

**APPENDICIES
TO
WILDLIFE RESPONSE PLAN
FOR CALIFORNIA**

**California Department of Fish and Game
Office of Spill Prevention and Response**

June 30, 2005



WILDLIFE RESPONSE PLAN APPENDICES

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APPENDIX Ib

**WILDLIFE BRANCH OPERATIONS
TIPS AND CONSIDERATIONS FOR THE WILDLIFE BRANCH DIRECTOR**

These are intended only as guidelines. These tips and considerations are a result of real-life incidents encountered during oil spills. This is intended to be a dynamic document with the expectations that additional tips and considerations are added.

I. WILDLIFE BRANCH DIRECTOR (WBD)**A. Administration**

1. Establish / Determine The Appropriate Level of Response
 - a. Communicate with local biologists and experts. In combination with the spill scenario, season, and habitat-at-risk, etc ...determine the appropriate amount of response resources required.
 - b. If in doubt mobilize the recommended tiered level response or more. It is easier to turn back resources than try to catch up to the response. When additional Wildlife Ops resources are needed, use ICS 204 and 215 forms, after coordinating with Ops Section Chief, request State IC to call for additional OSPR staff and/or contractors
 - c. Careful consideration should be taken if Threatened and Endangered species are present. Specialized team(s) within the Wildlife Reconnaissance Group may be required.
 - d. Know what personnel and equipment resources are deployed. You will have to initially complete and submit an ICS-204 form daily.
 - e. Refer to the MOUs with National Marine Fisheries Service and U.S. Fish and Wildlife Service when cetaceans, pinnipeds, or otters are impacted.
2. Get a Deputy Wildlife Branch Director
 - a. During an oil spill the WBD is inundated with meetings, requests, data, and tasks. The first week and a half is critical to ensure that the operation of the Wildlife Branch runs smoothly, effectively, and timely. The Deputy Branch Director will be able to assist to meet the demands and deadlines of a spill response.
3. Get The Facts
 - a. From the initial response, obtain a hard file case to store all documentation.
 - b. From the initial response, obtain a bound notebook to log all calls, notes, and issues.
 - c. Acquire coastal and operational division boundary maps for group leaders for documentation.
 - d. Make sure each functional group is supplied with proper forms and given instructions on filling out the forms.
4. Communicate within the ICS/Information Flow
 - a. Update the Unified Command and Environmental Unit (Planning section) of wildlife at risk and spill related wildlife statistics (e.g. numbers of dead/live oiled birds).
 - b. Coordinate with the Sampling Specialist in the Planning Section,
 - c. Environmental Unit regarding wildlife samples being collected by Wildlife Operations personnel.
 - d. Coordinate with land managers and/or Trustees for wildlife reconnaissance, hazing, recovery, and rehabilitation. E.g., integrate Sanctuary staff in recovery

- operations and provide them copies of Dead Bird/Mammal logs for their non-spill databases (i.e. provide data on beachcast toe-clipped birds that are picked up)
 - e. Inform Planning/others of protocols if they find oiled wildlife during field work (e.g., during SCAT, or beach cleanup) – inform who to call & how to transport animal
 - f. Inform Planning/Operations personnel that if anyone that collects an animal to provide on each animal transport container the following information: collector's name (and phone number if not part of the Recovery & Transportation Group effort); Collection location: general name and GPS coordinates (if possible); Beach search number (as determined by the Beach Search Effort Log if available); The date the bird was *recovered* from the beach; The time the bird was *recovered* from the beach; and Preprinted label number or band/tag number or Field ID number (e.g., collector's initials plus unique ID number) if labels/bands/tags are not available.
 - g. Coordinate with OSPR Legal & RP regarding wildlife stipulations
5. Establish check-in locations and staging areas – can use all OWCN established facilities, all OSPR offices and/or other DFG offices, State Parks offices and National Marine Sanctuary offices.

B. Safety

1. Training
 - a. You are responsible for the overall safety of the Wildlife Operations Branch.
 - b. You are responsible for each team member being HAZWOPER / HAZCOM trained and ATV trained.
2. Communications
 - a. Establish a check-in / check-out protocol.
 - b. Acquire and distribute radios and / or cell phones for each team. Ensure each field team member reports in and out-of-field.
 - c. Conduct daily briefing / debriefing with each. functional groups
3. Injuries
 - a. All injuries should be documented, assessed, and treated appropriately.

C. Demobilization

1. Use your best judgment based on return numbers and potential resources at risk.
2. Consider final deposition of carcasses.
3. Assign local OWCN group for continued collection, recovery, and care after demobilization.
4. Coordinate with NRDA Team for post-response activities. Remember, these activities are NOT to be charged to response expenses.

II. WILDLIFE RECONNAISSANCE GROUP

A. Administration

1. Obtain consultant rate sheet in-writing.
2. Discuss consultant payment method with Responsible Party (RP). Invoicing directly to RP is preferable.
3. Daily group briefing / debriefing meeting within the Wildlife Reconnaissance Group.
4. Daily Group Supervisor briefing / debriefing with WBD.

5. Submission of daily activities in writing by each team.
 6. Submission of reconnaissance protocol.
 7. Anticipate equipment needs to complete reconnaissance mission.
- B. Safety
1. Site Safety Plan read and signed prior to any field activities.
 2. HAZCOM or HAZWOPER trained.
 3. ATV trained.
 4. Supply of proper Personal Protection Equipment (PPE) available.
 5. Supply equipment and forms, bird bands, etc.
- C. Other Duties
1. Inform group that if live or dead birds are encountered they shall be collected unless a safety issue prevents it.
 2. A team specialized in threatened and endangered species may be needed if present.
 3. Fill out proper observation form as described in the Wildlife Ops Manual

III. WILDLIFE HAZING GROUP

- A. Administration
1. Obtain consultant rate sheet in writing.
 2. Discuss consultant payment method with RP. Invoicing directly to RP is preferable.
 3. Daily group briefing / debriefing meeting within the Wildlife Hazing Group.
 4. Daily Group Supervisor briefing / debriefing with WBD.
 5. Submission of daily activities in writing.
 6. Anticipate equipment needs to complete hazing mission.
- B. Safety
1. Site Safety Plan read and signed prior to any field activities.
 2. HAZCOM or HAZWOPER trained.
 3. ATV trained.
 4. Supply of proper PPE available.
- C. Other Duties
1. Post signs to alert public and cleanup crews of sensitive areas.
 2. Physical presence may be required to divert cleanup crews.
 3. Inform group that if live or dead birds are encountered they shall be collected unless a safety issue prevents it.

IV. WILDLIFE RECOVERY AND TRANSPORTATION GROUP

- A. Administration
1. Obtain consultant rate sheet in writing.
 2. Discuss consultant payment method with RP. Invoicing directly to RP is preferable.
 3. Daily group briefing / debriefing meeting within the Wildlife Recovery and Transportation Group.
 4. Daily Group Supervisor briefing / debriefing with WBD. .
 5. Anticipate equipment needs to complete recovery and transportation mission e.g. ATV's, trucks, bags, boxes, pillow cases, nets; assign a person to inventory equipment and deal with supply issues and tracking supplies
 6. Volunteer Coordinator to process all volunteers prior to assignments

7. In a large incident, assign dedicated transporters to pickup birds. Do not use searchers and collectors as transporters.
8. Recovery and Transportation Group personnel (or anyone that collects an animal) should provide on each animal transport container the following information: collector's name (and phone number if not part of the Recovery & Transportation Group effort); Collection location: general name and GPS coordinates; Beach search number (as determined by the Beach Search Effort Log); The date the bird was *recovered* from the beach; The time the bird was *recovered* from the beach; and Preprinted label number or band/tag number or Field ID number (e.g., collector's initials plus unique ID number) if labels/bands/tags are not available.

B. Safety

1. Site Safety Plan read and signed prior to any field activities.
2. HAZCOM or HAZWOPER trained
3. ATV trained.
4. Supply of proper PPE available.
5. Consider weather and tide limitations for beach access

C. Issues

1. Night time operations permitted only with IC approval
2. Dead or injured marine mammals to be immediately reported to Wildlife Branch Director. NMFS/USFWS MOA protocols should be followed. Fill out NMFS Stranding Form.

D. Other Duties

1. Dead birds shall to be collected unless a safety issue prevents it.

V. WILDLIFE CARE & PROCESSING GROUP (Wildlife Processing Unit)

A. Administration

1. Obtain consultant rate sheet in writing.
2. Discuss consultant payment method with RP. Invoicing directly to RP is preferable.
3. Daily group briefing / debriefing meeting within the Processing Group.
4. Daily Group Supervisor briefing / debriefing with WBD.
5. Anticipate equipment needs to complete processing mission
6. Volunteer Coordinator to process all volunteers prior to assignments
7. Summary of dead birds transmitted to IC twice daily and on time.
8. Assemblage and transfer of all documentation to OSPR concluding the spill in a reasonable amount of time, this includes:
 - i. Final Report
 - ii. Original Live/dead Log-in sheet
 - iii. Original Medical sheets
 - iv. Original Photographs
 - v. Original Chain-of-Custody
9. Assemblage and transfer of all documents to OSPR are considered as a response activity and should be coded/charged as such.

B. Safety

1. Site Safety Plan read and signed prior to any field activities.
2. HAZCOM or HAZWOPER trained.
3. Supply of proper PPE available.

C. Issues

1. Animal bodies and Chain-of-Custody (COC) forms should be secured and locked each night in separate containers from other functional group supplies.
2. In a large incident, consideration should be made to rotate or train replacement personnel.

VI. WILDLIFE CARE & PROCESSING GROUP (Wildlife Care Unit)

A. Administration

1. Obtain OWCN rate sheet in writing.
2. Discuss OWCN payment method with RP: Invoicing directly to RP is preferable.
3. Daily group briefing / debriefing meeting within the Veterinary Services Group.
4. Daily Group Supervisor briefing / debriefing with WBD.
5. Anticipate equipment needs to complete veterinary services mission
6. Communicate and educate RP regarding animal medical care and equipment needs.
7. Assign logistical personnel to acquire veterinary care supplies for center and prepare daily accounting costs for Wildlife Branch Director.
8. Summary of live birds transmitted to IC twice daily and on time.
9. Assemblage and transfer of all documentation to OSPR concluding the spill in a reasonable amount of time, this includes:
 - a. Final Report
 - b. Original Live/dead Log-in sheet
 - c. Original Medical sheets
 - d. Original Photographs
 - e. Original Chain-of-Custody
10. Assemblage and transfer of all documents to OSPR are considered as a response activity and should be coded/charged as such.
11. Instruct care providers the importance of updating the data to the Incident Command when marine mammals and listed birds are impacted.

B. Safety

1. Site Safety Plan read and signed prior to any field activities.
2. HAZCOM or HAZWOPER trained.
3. Supply of proper PPE available.

C. Issues

1. Security
 - a. 24 hour security may be needed to limit access to non-essential personnel.
 - b. Guards instructed regarding site access policy.
 - c. Issue ID badges.
 - d. Develop sign-in / sign-out protocols.
2. Animal bodies and Chain-of-Custody (COC) forms should be secured and locked each night in separate containers from other functional group documentation/supplies.
3. Consider acquisition vs. rental equipment Refrigerator / Freezer (standard vs. trailer size, separate animal food from human food, public vs. lockable).
4. Generator or hire electrician if power demands exceeds capability.
5. Ice machine vs. ice delivery.
6. On-demand water heater.
7. Cellular phones.
8. Porta-Potties.

9. Heaters or fans.
10. Temporary shelters if number of animals exceed facility capacity.
11. Swimming pools and netting for live processed birds.
12. Hazardous waste services should be scheduled.
13. Press Conferences
 - i. Press conferences should be scheduled through Wildlife Branch Director.
 - ii. Joint Information Center shall be included in press conferences.
 - iii. No special access to any media.
 - iv. All media inquiries to be directed to Wildlife Branch Director.
 - v. No independent media event or press conference shall be scheduled without Wildlife Branch Director's approval.
14. Volunteers
 - i. Volunteer Coordinator to process all volunteers prior to assignments.
 - ii. Food and drinks to be provided.

Other Issues:

1) Natural mortality events: If a natural mortality event occurs (e.g. a disease outbreak, parasites, or algal intoxication) during or just before a spill response, or if there are numbers of dead animals on beaches that were not storm swept before the spill, not all beachcast animals may be able to be recovered as normally preferred, due to limitations in staff, equipment, and/or other resources. During any response, some level of natural background mortality can be expected to contribute to the number of beachcast animals. Recovery and care for live birds should be the priority when there are personnel and/or equipment limitations. Under special circumstances, in coordination with the ICS, dead beachcast birds can be evaluated in the field

by a special qualified team to attempt to identify oiled vs. unoiled dead birds. If there are large numbers of visibly unoiled dead birds, these birds can be tagged, noted, and relocated to the back beach. Some of these birds that are classified as unoiled may actually be oiled even when evaluated by qualified people but spill priorities (wildlife care, removal of oiled wildlife from the environment (pathway for secondary impacts), injury documentation), may have to be set by picking up live then dead oiled animals. Necropsies (on fresh, unfrozen animals) may need to be performed to attempt to determine cause of death.

2) Necropsies: During any response, some level of natural background mortality can be expected to contribute to the number of beachcast animals. In order to estimate the natural resource impacts of a spill it is necessary to separate spill-related mortalities from natural mortalities. It is most often not sufficient to assume animals without visible oiling are not spill related for the following reasons: 1) small traces of oil and/or light oils (e.g. diesel and gasoline) may be difficult to see; 2) oiled animals still get scavenged so it may be difficult to see oiling due to the scavenging; 3) birds that are wet and/or have dark plumage are often difficult to differentiate as being oiled or not; 4) gross examination of an unoiled bird will not reveal if it has ingested oil. Necropsies are performed to attempt to determine cause of death and need to be performed on fresh, unfrozen animals.

APPENDIX Ic

SEARCH AND COLLECTION: CHECK LIST

List of Equipment to bring in field for Search & Collection

This check-list has been developed as a job aid for search and collection teams. This includes people identified for both current search and collection efforts as well as those identified as on-call for future effort. This document is intended to outline the general roles and responsibilities for people staffing the search and collection unit and to assist in providing answers to many general questions. Any lingering questions, problems or concerns should be directed to the Search and Collection (S&C) Coordinator.

In terms of ICS structure, in your capacity as search and collection teams, you are a part of the Wildlife Operations Branch in Wildlife Recovery and Transportation Group, the search and collection unit. The Index and PCA for the spill are _____. You will be reporting directly to the S&C Coordinator. All questions regarding scheduling or availability should be directed to the S&C coordinator.

If you have not worked search and collection on this spill previously, please contact the S&C coordinator and let him/her know the following information: ATV training; HazWoper training; and, any pertinent experience you may have (shoreline assessment/cleanup, etc.) Also he/she will need the best phone numbers to contact you (including home phone numbers). We will always do our best to team inexperienced people with experienced people to ensure consistency and safety.

Please read and review the following carefully:

1. You should plan to be available to work on 24 hour notice for those days you are identified as on-call. You may be called out for one day or multiple days so you may need to make arrangement for a hotel.
2. Each team will need to have a GPS unit, bags and/or pillow cases, search and collection forms, OSPR Daily Activity Report Forms, tide charts and weather conditions, writing implements, sample jars, appropriate driving maps, cell-phone and pager. Additionally, the S&C coordinators will have the latest protocols for search and collection, including any special instructions for avoiding snowy plovers/nests, coordinating with State and Federal Park/Beach rangers, etc...
3. All collection of live and dead oiled birds needs to be appropriately documented. The transfer of live and dead oiled birds needs to be coordinated with the Wildlife Veterinarian and the search and collection coordinator. All animals will eventually be transferred to an OWCN facility for appropriate processing.

A field banding/numbering system should be implemented during the spill to better track individual animals through the processing and rehabilitation system as well as to begin the chain of custody tracking. This should begin with recovery teams providing the animal with a unique field number by:

- Placing field labels with preprinted numbers on the animal transport container; or
- By placing a bird band/mammal tag on the carcass with the band/tag number on the transport container; or
- If labels/bands/tags are not available a unique ID field number (e.g., collector's initials plus ID

number) should be written on the transport container and in the collector's field notes.

The unique filed number should be included in the Beach Search Effort log or other field notes.

Recovery and Transportation Group personnel should provide on each animal's box or bag the following information:

- Collector's name (and phone number if not part of the Recovery & Transportation Group effort);
- Collection location: general name and GPS coordinates;
- Beach search number (as determined by the Beach Search Effort Log);
- The date the bird was *recovered* from the beach;
- The time the bird was *recovered* from the beach; and
- Field ID number, or preprinted label number or band/tag number.

This information will then be transferred to the appropriate data log with the Wildlife Processing Unit

4. Divisional maps generally available for each of the areas, including beach names, access roads and any other pertinent information. Please check with the search and collection coordinator regarding the status of divisions and maps. These maps will also identify any species of special concern, such as Snowy Plover nesting areas etc.

5. You should bring appropriate clothing. This would include good walking shoe for the beach and warm/cool, comfortable clothing depending on weather conditions. Rubber boots can be used. Sun protection is also helpful, sun screen and hats. If you have an OSPR hat or jacket, please wear it if appropriate. A backpack that can carry some water, food, a cell-phone, your pager, paper for notes is also helpful. Some of the locations are remote, so please bring food and water with you.

6. Depending on tides, you should expect to be out on the beach as soon as possible after first light and should be off the beaches before sunset. Animals often strand over night and are often most easily collected early in the morning before scavenger find them. Use your best judgment.

7. Safety of personnel is number one. All personal must read and sign the site safety plan prior to beginning operations on this spill. People will not be sent out during storm conditions. If there is any doubt about safety, don't go out. Additionally, all areas should be searched as a team. Individuals should not out of eye sight of each other in case help is needed. There will be no beach collection after night fall (the only exception to this is night-time boat operations).

8. You should check in with the S&C coordinator at least twice a day even if you have not found anything. Unless stated otherwise by the S&C coordinator, check-in times are 1000 and 1400. This helps keep the command structure informed in terms of making staffing decisions for the next days as well as keeping track of your safety. Everyone should check in and be off beaches before sunset.

9. You should try to complete your search and collection forms and your DARs at the end of each day.

APPENDIX Id

**Specialized Wildlife Operations (WO) Equipment
Dedicated vs. Non-Dedicated Resources (OSPR)**

EQUIPMENT TYPE	LOCATION	QTY	WO DEDICATED (Y/N)	CONTACT PERSON
23' Aluminum boat	Santa Cruz	1	Yes	Michael Harris 805 772-1135 Cell - 831 212-7090
17' Radon skiff	Morro Bay	1	Yes	Michael Harris 805 772-1135 Cell - 831 212-7090
16' Zodiac RHI (OWCN)	Santa Cruz	1	Yes	Michael Harris 805 772-1135 Cell - 831 212-7090
12' Zodiac with motor and trailer	Eureka	1	N	Kris Wiese 707 441-5762
RHI Skiff	Eureka	1	N	Joaquin Mariante 707 444-3728
19' Zodiac RHI (OSPR wardens)	Santa Cruz	1	N	Michael Harris 805 772-1135 Cell - 831 212-7090
10' Caribe RHI	Santa Cruz	1	Yes	Michael Harris 805 772-1135 Cell - 831 212-7090
RHI Skiff	San Luis Obispo	1	N	Victor Blalack 805 474-6563
RHI Skiff	Channel Islands Harbor / Ventura	1	N	Darren Walther 562 714-3348
RHI Skiff	Long Beach	1	N	Greg Horne 562 708-7797
RHI Skiff	Newport Beach	1	N	Mike McDermott - 949 533-5993
RHI Skiff	San Diego	1	N	Sean Moe 619 322-3989
Panther Airboat	Sacramento	1	Yes	Randy Imai 916 324-0000
Sea Kayak	San Diego	1	N	Paul Hamilton 619 890-2029
Sea Kayak	Long Beach	1	N	Greg Horne 562 708-7797
Sea Kayak	Morro Bay/Santa Cruz	2	Yes	Mike Harris 805 772-1135
Mobile Vet Lab	Santa Cruz	2	Yes	Frank Wilhelm

				831 469-1722
Vet. Trailer 25'	Santa Cruz	2	Yes	Frank Wilhelm 831 469-1722
Vet. Transport Trailer 15'	Santa Cruz	1	Yes	Frank Wilhelm 831 469-1722
Hazing Response Trailer	UC Davis	1	Yes	Paul Gorenzel 530 752-2263
Wildlife Response Trailer	Fairfield	1	Yes	Jay Holcomb 707 207-0380
ATV	Sacramento	3	Yes	Randy Imai 916 324-0000
ATV	Santa Cruz	3	Yes	Frank Wilhelm 831 469-1722
ATV	Morro Bay	1	Yes	Michael Harris 805 772-1135 Cell - 831 212-7090
ATV Trailer (3 ATVs)	Santa Cruz	1	Yes	Frank Wilhelm 831 469-1722
ATV Trailer (1 ATV)	Santa Cruz	1	Yes	Frank Wilhelm 831 469-1722
ATV Trailer (3 ATVs)	Sacramento	1	Yes	Randy Imai 916 324-0000
ATV Trailer (1 ATV)	Fairfield	1	Yes	John Tarpley 707 864-4906
ATV	Long Beach	1	N	Greg Horne 562 708-7797
1 Ton Flatbed PU	Santa Cruz	1	Yes	Frank Wilhelm 831 469-1722

APPENDIX Ie – Example Press Release

THE RESOURCES AGENCY DEPARTMENT OF FISH AND GAME
OFFICE OF SPILL PREVENTION AND RESPONSE
OSPR News Release

DATE: THURSDAY, JANUARY 13, 2005

TIME: 4:00 P.M.

MEDIA CONTACTS: On-scene, after 5:00 p.m. Thursday, Rob Hughes: 916-804-9156
(alternate) Dana Michaels: 916-327-9948

Oil spills affect seabirds off Ventura coast

The California Office of Spill Prevention and Response - the pollution division of the Department of Fish and Game - is responding to an oil spill or spills of unknown origin along the coast between Santa Barbara and Venice. The source is unknown, but presumed to be related to the recent floods, road wash-outs, submerged motor vehicles, and mudslides.

Over 500 oiled seabirds, mostly western grebes, have been observed in this area. About 100 have been seen on the shoreline of Ventura Harbor, and another 100 were observed at Port Hueneme. Smaller numbers were counted at Channel Island Harbor and Point Mugu.

OSPR has established an incident command post at Ventura Harbor. A mobile oiled bird care and recovery trailer has been dispatched to Ventura for wildlife rescue and collection.

California's Oiled Wildlife Care Network (OWCN) has been activated, and their wildlife veterinarians are on-scene. The OWCN's Los Angeles Oiled Bird Care and Education Center in San Pedro already has approximately 100 oiled seabirds in-house. Members of the International Bird Rescue Research Center's wildlife rescue team - under direction of the OWCN - are en route to the site, to work with OSPR's wildlife operations staff.

The public is advised to not touch or even approach oiled or otherwise injured wildlife. Injured animals are even more dangerous to humans than healthy ones. Grebes have particularly sharp beaks and can easily poke a person's eye out. Anyone seeing an animal in distress is asked to please report it by phone to 562-342-7222, and provide the animal's exact location and condition, as quickly as possible. Trained wildlife handlers will be dispatched with the appropriate equipment to capture and transport the animal to the nearest care center.

###

APPENDIX If

INSTRUCTION SHEET & PHONE LOG FOR VOLUNTEERS MANNING BIRD HOTLINE VENTURA BIRD INCIDENT JANUARY 12, 2005

Prepared by Melissa Boggs – OSPR

Pager (805) 614-2106, Cell (805) 558-1005, Office (805) 772-1756

The following information should be collected/logged from the public as they call in to report oiled birds (this should also be on the voice mail greeting message i.e. to have the public leave the following information if volunteers are not able to answer the call).

Date of call

Time of call

Caller's name

Caller's return phone number

Time of observation

Date of observation

Location of oiled bird(s) – get the most detailed description as possible

Number of oiled birds observed at the location

Is the bird(s) live or dead?

If bird is live what is the condition, if known (e.g. lightly oiled or heavily oiled)

What species (if known)?

The above information should be documented in writing on a log (attached). At the end of each shift each volunteers should compile their logs and note volunteers' name and contact information on the daily log. Logs will be eventually collected.

Other instructions to provide to the public:

Members of the public should not handle the wildlife due to health and safety of the person and the animal. Trained personnel are responding and will be collecting the animals which will be brought to an Oiled Wildlife Care Network facility for treatment.

Thank the public for their assistance.

Response Coordination & Information Flow

Volunteers should contact Veterinarian **Dr. Greg Massey via his cell phone (530) 979-0380** at the top of every hour (if possible) to provide summary reports of the call information. Dr. Greg Massey or a designee will then arrange to send a search and collection team out to collect the animals. If Dr. Massey does not answer his cell phone please leave him a voice mail message. If you are unable to get through to Dr. Massey's cell phone (e.g. he is out of range) contact **Melissa Boggs via pager at (805) 614-2106**, as the back up contact. If the public has further questions that you can not answer please give the caller ID information (name, phone number, and question) to Melissa Boggs and she will return their call. A press release will be provided to the media to inform the public of the phone number to call to report oiled birds.

PHONE LOG
PUBLIC REPORTINGS OF OILED BIRDS
VENTURA BIRD INCIDENT REPORT

Date	
Time	
Caller's Name	
Return Phone Number	
Date of Observation	
Time of Observation	
Location (specific)	
Number of Oiled Birds	
Live or Dead?	
Condition	
Species	
Report Delivered to OWCN	

Date	
Time	
Caller's Name	
Return Phone Number	
Date of Observation	
Time of Observation	
Location (specific)	
Number of Oiled Birds	
Live or Dead?	
Condition	
Species	
Report Delivered to OWCN	

APPENDIX IIa: OWCN Mission and History



Oiled Wildlife Care Network

The Oiled Wildlife Care Network (OWCN)

Mission

The Oiled Wildlife Care Network, a statewide collective of wildlife care providers and regional facilities interested in working with oil-affected wildlife, strives to ensure that wildlife exposed to petroleum products in the environment receive the best achievable treatment by providing access to permanent wildlife rehabilitation facilities and trained personnel that are maintained in a state of readiness for oil spill response within California.

History

Due to the potential risk to California from oil spill events, the Lempert-Keene-Seastrand Oil Spill Prevention and Response Act was passed in 1990. This Act required the Administrator of the Department of Fish and Game, Office of Spill Prevention and Response (OSPR) to establish rescue and rehabilitation stations for seabirds, sea otters and other marine mammals. This mandate for addressing the problems of oiled wildlife care was reaffirmed in 1993 by Senate Bill 775 (Watson), and was further refined by the legislature in 1995 (Assembly Bill 1549) and 1996 (Assembly Bill 748). The OWCN, established by the OSPR in 1994, is currently funded by interest generated by the state's Oil Spill Response Trust Fund, and its management is a collaborative program with Wildlife Health Center located in the School of Veterinary Medicine at the University of California, Davis.

Program

The OWCN's oil spill response capabilities include immediate mobilization upon notification, search and collection, rehabilitation, release and post-release survival studies to evaluate the efficacy of our rehabilitation techniques. Through development of animal care protocols and continued training of staff and volunteers, the OWCN has streamlined the response to oil spills and greatly increased the chances of survival for oiled wildlife. During response, the OWCN receives assistance from its 25 participating organizations and uses one or more of 12 regional facilities either built specifically for, or modified to accommodate, oiled wildlife. All OWCN facilities have also been developed for year-round use in programs that benefit and educate the community when not in use for emergency oil spill response. The OWCN is also extremely supportive of research and technology development. Since 1996, more than fifty (50) applied research projects funded by the competitive OWCN have increased the knowledge of the consequences of oil exposure to wildlife and improved the quality of response technology for oil spills in California and around the world.

Contact Info

For more information about the OWCN, please refer to our web site at www.owcn.org.

To contact the OWCN for a spill drill, please call: Wildlife Health Center (530-752-4167)

To activate the OWCN for an oil spill, please page: Dr. Michael Ziccardi (530-792-7803), or
Dr. Greg Massey (916-556-7509).

APPENDIX IIb.**Volunteers in Wildlife Operations Oil Spill Contingency Plan for California****General**

Volunteers are our lifeline to having a successful oil spill response. When using volunteers during a response, our first concern is the health and safety of each volunteer. For this reason, volunteers cannot be directly used in the cleanup of oiled beaches and waters, nor can untrained volunteers be used in many situations involving search collection of oiled wildlife or in areas where there is a potential health hazard due to chemical exposure such as oil recovery. However, wildlife transport, husbandry and rehabilitation operations can be substantially benefited by volunteer resources, and volunteers can be quickly trained before or during a spill to participate in many of these activities. In these settings, volunteers can and have made significant contributions in responding to the needs of oiled wildlife. With appropriate training and direction, potential safety hazards to the volunteers, as well as the wildlife and environment they wish to save, are greatly reduced, and volunteers gain the recognition they deserve as a critical element of effective oil spill response. Volunteers are deemed employees of the State for the purpose of workers' compensation. Unfortunately, no volunteers under the age of 18 will be allowed to work with wildlife during oil spill response due to state and federal restrictions.

Oil spill response utilizes the Unified Command (UC) system, a structure designed to organize and facilitate operations, logistics, planning and financial components of a response. Operating through an UC can be especially helpful when there is multiple agencies (local, state, and federal agencies) responding to an oil spill. If the spiller of the oil or other product has been identified (Responsible Party, or RP), then the RP is also part of the UC. A small number of volunteers maybe utilized under the Planning Section for non-wildlife duties, such as; data entry, clerical, construction, electrical, laundry, and logistics, but the majority of volunteers will be used under the Operations Section to assist in the care of oiled wildlife.

Partners in Volunteer Coordination

The California Department of Fish and Game, Office of Spill Prevention and Response (OSPR) and the Oiled Wildlife Care Network (OWCN) are both involved in volunteer planning and coordination before and during oil spill response. The OSPR program supports the OWCN through interest earned on its Oil Spill Response Trust Fund. The University of California, Davis, School of Veterinary Medicine Wildlife Health Center administers the OWCN, created by the Lempert-Keene-Seastrand Oil Spill Prevention and Response Act of 1990.

OWCN

In the event of an oil spill, the OWCN, a cooperative system of specialized wildlife health centers, under the direction of the Wildlife Branch Director and the UC, responds with prompt, coordinated rescue of affected wildlife. When oiled wildlife such as aquatic birds, marine mammals, and sea turtles are affected by an oil spill, trained personnel which may include volunteers, transport the oiled wildlife, evaluate their need for treatment, and remove the toxic products from the animals. Some animals are stabilized prior to transport but then go to the closest primary care OWCN facility where experts are prepared to respond and facilities can house large numbers of animals. The OWCN participants operate at 25 sites along the California coast from Crescent City to San Diego.

Types of Volunteers

Volunteers can usually be characterized as belonging to one of two categories; pre-trained, or convergent. Pre-trained individuals are volunteers that have previously worked on spills for the OWCN or have worked in one of the 25 primary care OWCN facilities on research and rehabilitation. Their names and contact information are available for use by the OWCN VC or the OSPR VC. The OSPR/OWCN VCs maintain a volunteer data-base of pre-identified and pre-trained volunteers throughout the state.

Convergent volunteers are usually individuals from the general public who spontaneously appear to participate in the cleanup effort following an oil spill; they may or may not have access to training relevant to oiled wildlife operations.

Sources of Volunteers

The main body of pre-trained volunteers are those that have previously worked on spills for the OWCN or OSPR, and/or have participated in OWCN's volunteer supervisor training program.

List of volunteers from OWCN's participants (see table 1) are not maintained by the OWCN, but by the individual organizations, agencies, and institutions. The OSPR and OWCN maintain regional lists of key contact people for these other organizations, and utilize those contacts during oil spill notification and activation. These key contact people are asked to assess the ability and availability of their volunteers and members for an oil spill response in their area.

Convergent volunteers are primarily recruited through media resources, using UC approved press releases. The OSPR maintains a toll free 1 800 number to update the need for volunteers and oil spill information.

Depending on the need, counties in which a spill occurs, the County Volunteer Center may also be able to assist by taking and forwarding names and phone numbers of potential volunteers to the OSPR Volunteer Coordinator.

OWCN Volunteer Induction During Spill Response

Most volunteer induction takes place at one of the primary care OWCN facilities responding to the oil spill. In some cases, field-based volunteers that do not regularly log in and out at an OWCN facility are instead supervised by the OWCN staff person leading their team. That OWCN staff member, rather than the OWCN Volunteer Coordinator, is the primary person responsible for making sure any necessary paperwork (e.g., State Volunteer Service Agreement, Oath of Allegiance, Authorization to Use Private Vehicle on State Business, Travel Expense Claim) is appropriately completed, maintained, submitted and filed.

All volunteers reporting for work at and through the Primary Care OWCN facility are required to complete the following paperwork:

OWCN Forms

Timesheet

State Forms

Volunteer Service Agreement

Oath of Allegiance

Authorization to Use Private Vehicle on State Business (if needed)

Press Release

The OSPR/OWCN Volunteer Coordinators

Reviews all paperwork for completeness and signs where necessary.

Reviews log-in/log-out requirements with each volunteer

Makes and gives name badge to the volunteer

Schedules Health and Safety training (required)

Schedules Site Safety training (or has each volunteer review Site Safety Plan)

Schedules viewing of oiled wildlife rehabilitation videotape

Provides facility orientation, emphasizing areas for volunteer meals, relaxation, showers; areas of facility that have restricted access

Shows volunteers where personal protective gear and cleanup materials are located.

Introduces new volunteer to lead staff and volunteers at the facility;

Assigns initial tasks to the volunteer.

Provides for volunteer meals

Schedules volunteer shifts

With lead OWCN staff, assesses ongoing need for volunteers

Provides volunteer recognition

Participates in oil spill debriefings

On-going Planning Efforts of the OWCN Volunteer Coordinators

For OWCN Volunteer Coordinators that frequently respond to spills, a “Go-Kit” of critical Volunteer Coordination materials should be prepared and periodically refreshed. Information on how to supply and pay for “Go Kit: components can be determined through consultation with the OWCN Director.

Continue to outreach to the volunteers during non spill time. This will keep the volunteers up to date on new techniques and interested in the oil spill program.

Table 1: Participant Organizations and Centers of the Oiled Wildlife Care Network

Organization	Primary Response Facility	Activation	Maximum Oiled Animal Caseload
North Coast Marine Mammal Center, Crescent City	*	Nov. 1995	15 marine mammals
Humboldt State University, Arcata	*	Jan. 1997	400 birds
Santa Rosa Bird Rescue Center, Santa Rosa		Aug. 1995	25 birds
Point Reyes Bird Observatory, Pt. Reyes		August 2003	No animal care facilities
Wildcare, San Rafael		Aug. 1995	25 birds
The Marine Mammal Center, Sausalito	*	Dec. 1995	40 marine mammals 10 sea otters
International Bird Rescue Research Center, Cordelia	*	May 2000	1000 birds
Wildlife Health Center, UC Davis, School of Veterinary Medicine, Davis		June 1995	Intensive care unit: birds and endangered species as needed
Lindsay Wildlife Museum, Walnut Creek		Aug. 1995	50 birds
Peninsula Humane Society, San Mateo		Aug. 1995	50 birds
UC Santa Cruz, Santa Cruz	*	Aug. 2000	400 birds
Marine Wildlife Veterinary Care Research Center, Santa Cruz	*	July 1997	125 sea otters, 50 birds, 10 other marine mammals
Native Animal Rescue, Santa Cruz		Aug. 1995	25 birds
Monterey Bay Aquarium, Monterey		Apr. 1997	10 sea otters
Monterey SPCA, Monterey		Mar. 1996	25 birds
Pacific Wildlife Care, Morro Bay	*	Apr. 2000	200 birds
UC Santa Barbara, Santa Barbara	*	Pending	100 birds
Santa Barbara Wildlife Care Network, Santa Barbara		Aug. 1995	50 birds
Santa Barbara Marine Mammal Center		Pending	Pending
The California Wildlife Center, Malibu		Pending	200 birds
International Bird Rescue Research Center, San Pedro	*	Sept. 1999	1000 birds
The Marine Mammal Center at Fort MacArthur, San Pedro	*	Nov. 1995	20 marine mammals
Aquarium of the Pacific, Long Beach		Nov. 2001	No animal care facilities
Wetlands and Wildlife Care Center of Orange Co., Huntington Beach	*	Mar. 1997	400 birds
Friends of the Sea Lion Marine Mammal Center, Laguna Beach		Aug. 1995	5 marine mammals
Sea World of California, San Diego	*	Dec. 1996	20 marine mammals including sea otters; 400 birds; sea turtles as needed
Project Wildlife, San Diego		Aug. 1995	25 birds
Wildlife Assist, San Diego		July 2003	No animal care facilities

CALIFORNIA DEPARTMENT OF FISH AND GAMEHAZMAT TRAINED ☐ HAZCOM TRAINED ☐**VOLUNTEER SERVICE AGREEMENT**

NAME (<i>First, MI, Last</i>)	SS# (<i>Optional</i>)
HOME ADDRESS:	Telephone Number () Cellular Number Email Address ()

<input type="checkbox"/> I am 18 or over	<input type="checkbox"/> I am under 18
<input type="checkbox"/> I do not know of a health limitation which may restrict my performance of assigned duties OR <input type="checkbox"/> I do know of a health limitation which may restrict my performance of assigned duties	
EMERGENCY Name:	
NOTIFICATION Telephone Number:	
I will comply with all policies, rules, regulations, directives and instructions. I understand that I am a non-paid employee of the State Department of Fish and Game when working on an approved schedule, and will receive worker's compensation insurance coverage. I will conduct myself in accordance with those standards set forth for regular department employees. I understand and agree to the following policies and conditions: Any training provided by the Department is to assist the volunteer in performing functions and duties which are of benefit to the community and/or to the volunteer; The volunteer will not replace any regular department employee; The volunteer may be reimbursed for necessary allowable expenses for subsistence and travel in connection with approved volunteer services. Such Reimbursement shall be in accordance with Board of Control Rules; and If the volunteer operates a private motor vehicle as a part of their volunteer activities, they must file a Certification of Insurance coverage and Mechanical Safety of the automobile. NOTE: OATH OF ALLEGIANCE (STD 689) REVERSE SIDE	
VOLUNTEER'S SIGNATURE:	DATE:
VOLUNTEER COORDINATOR'S SIGNATURE:	DATE:

EMPLOYER SECTION USE ONLY

REGION/DIVISION	SECTION	LOCATION
VOLUNTEER WILL WORK FROM		THROUGH
(Effective Date)		(Expiration Date)
Duties: (<i>Attach job description</i>)		
INDICATE IF DUTIES WILL INCLUDE ANY OF THE FOLLOWING: <input type="checkbox"/> Travel <input type="checkbox"/> Handling of Money <input type="checkbox"/> Driving a State Vehicle <input type="checkbox"/> Driving a Personal Vehicle (IF PART OF DUTIES, VEHICLE AUTHORIZATION STD 261 REQUIRED) DRIVERS LICENSE NUMBER EXPIRATION DATE		

VOLUNTEER SERVICE AGREEMENT EXTENSION		
Date/Year	Volunteer's Signature	Supervisor's Signature

RESIGNATION VERIFICATION

<input type="checkbox"/> I officially resign as a DFG Volunteer		
Volunteer's Signature	Date	Volunteer Coordinator Signature
Date		

STATE OF CALIFORNIA

OATH OF ALLEGIANCE AND DECLARATION OF PERMISSION TO WORK FOR PERSONS EMPLOYED BY THE STATE OF CALIFORNIA

STD. 689 (REV. 10-97)

Oath may be administered by a person having general authority by law to administer oaths—or may be administered by the appointing power, or by a person for whom written authorization to witness oaths has been executed by the appointing power. The appointing power maintains a file of such authorizations.

PART 1—OATH OF ALLEGIANCE TO BE COMPLETED BY UNITED STATES CITIZENS ONLY

WHO MUST SIGN OATH--As required in Section 3 of Article XX of the Constitution of California, every State employee except legally employed noncitizens, must sign the following oath or affirmation before he or she enters upon the duties of his or her State employment. Noncitizens are required to possess a Declaration of Permission to Work. If an alien employee becomes a naturalized citizen, an oath must then be obtained and filed.

WHEN OATH MUST BE SIGNED--As required in Government Code Section 3102, all public employees and all volunteers in any disaster council or emergency organization accredited by the California Emergency Council must sign an oath or affirmation before entering upon the duties of their employment. For intermittent, temporary or emergency employments, an oath or affirmation may, at the discretion of the employing agency, be effective for all successive periods of employment which commence within one calendar year from the date of the oath.

OATH OF ALLEGIANCE (Type or print name of employee)—Then complete Part 3.

I, _____, do solemnly swear (or affirm) that I will support and defend the Constitution of the United States and the Constitution of the State of California against all enemies, foreign and domestic; that I will bear true faith and allegiance to the Constitution of the United States and the Constitution of the State of California; that I take this obligation freely, without any mental reservation or purpose of evasion; and that I will well and faithfully discharge the duties upon which I am about to enter.

WHERE OATHS ARE FILED--As required in Government Code Section 3105, all oaths for public employees and all volunteers in any disaster council or emergency organization accredited by the California Emergency Council, shall be filed in the official employee file within 30 days of the date the oath is executed. The oath is considered a public record.

FAILURE TO SIGN--As stated in Government Code Section 3107, no compensation or reimbursement for expenses incurred shall be paid to any public employee or any volunteer in any disaster council or emergency organization accredited by the California Emergency Council unless such public employee has taken and subscribed to the oath or affirmation.

PENALTIES (Government Code)

"3108. Every person who, while taking and subscribing to the oath or affirmation required by this chapter, states as true any material matter which he knows to be false, is guilty of perjury, and is punishable by imprisonment in the state prison not less than one nor more than 14 years."

PART 2—DECLARATION OF PERMISSION TO WORK TO BE COMPLETED BY LEGALLY EMPLOYED NONCITIZENS ONLY

I am a lawful permanent resident alien of the United States. ☐ YES ☐ NO

If **NO**, please read the following:

I hereby certify, that I have permission to work in this country and have declared any restrictions placed upon me in this regard by the United States government to the appointing power.

PART 3—SIGNATURE AND CERTIFICATION (No fee may be charged for administering) TO BE COMPLETED BY UNITED STATES CITIZENS AND LEGALLY EMPLOYED NONCITIZENS

EMPLOYEE'S SIGNATURE		
STATE DEPARTMENT OR AGENCY	DIVISION/UNIT	
Taken and subscribed before me this _____ Day of _____		
AUTHORIZED OFFICIAL'S SIGNATURE		
AUTHORIZED OFFICIAL'S TITLE		
		(SEAL)

**AUTHORIZATION TO USE PRIVATELY OWNED
VEHICLES ON STATE BUSINESS**

STD. 261 (REV. 3-95)

***This approval must be renewed annually.
Supervisor: Retain Original Copy*****I. CERTIFICATION**

In accordance with State Policy (*S.A.M. 0753 & 0754*) approval is requested to use privately owned vehicles to conduct official State business.

I hereby certify that, whenever I drive a privately owned vehicle on State business, I will have a valid driver's license and proof of liability insurance in my possession, all persons in the vehicle will wear safety belts and the vehicle shall always be:

1. Covered by liability insurance for the minimum amount prescribed by State Law (\$15,000 for personal injury to, or death of one person; \$30,000 for injury to, or death of, two or more persons in one accident; \$5,000 property damage). Vehicle Code Section 16020 (effective July 1, 1985) requires all motorists to carry evidence of current automobile liability insurance in their vehicle.
2. Adequate for the work to be performed.
3. Equipped with safety belts in operating condition.
4. To the best of my knowledge, in safe mechanical condition as required by law.

I understand that the mileage rate I claim is full reimbursement for the cost of operating the vehicle, including fuel, maintenance, repairs and both liability and comprehensive insurance.

I further certify that, while using a privately owned vehicle on official State business, all accidents will be reported on form STD. 270 within 48 hours (S.A.M. 2441).

I understand that permission to drive a privately owned vehicle on State business is a privilege which may be suspended or revoked at any time.

DRIVER'S LICENSE NUMBER	STATE	EXPIRATION DATE
EMPLOYEE'S SIGNATURE	PRINT NAME	DATE SIGNED

II. APPROVAL

Use of a privately owned vehicle on State business is approved.

APPROVING AUTHORITY SIGNATURE	TITLE	DATE APPROVED
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III. RENEWAL

I have reviewed the above certification and approval and certify that the information provided is correct and valid.

EMPLOYEE'S SIGNATURE	APPROVING AUTHORITY SIGNATURE	DATE APPROVED
----------------------	-------------------------------	---------------

I have reviewed the above certification and approval and certify that the information provided is correct and valid.

EMPLOYEE'S SIGNATURE	APPROVING AUTHORITY SIGNATURE	DATE APPROVED
----------------------	-------------------------------	---------------

I have reviewed the above certification and approval and certify that the information provided is correct and valid.

EMPLOYEE'S SIGNATURE	APPROVING AUTHORITY SIGNATURE	DATE APPROVED
----------------------	-------------------------------	---------------

I have reviewed the above certification and approval and certify that the information provided is correct and valid.

EMPLOYEE'S SIGNATURE	APPROVING AUTHORITY SIGNATURE	DATE APPROVED
----------------------	-------------------------------	---------------

I have reviewed the above certification and approval and certify that the information provided is correct and valid.

EMPLOYEE'S SIGNATURE	APPROVING AUTHORITY SIGNATURE	DATE APPROVED
----------------------	-------------------------------	---------------

I have reviewed the above certification and approval and certify that the information provided is correct and valid.

EMPLOYEE'S SIGNATURE	APPROVING AUTHORITY SIGNATURE	DATE APPROVED
----------------------	-------------------------------	---------------

I have reviewed the above certification and approval and certify that the information provided is correct and valid.

EMPLOYEE'S SIGNATURE	APPROVING AUTHORITY SIGNATURE	DATE APPROVED
----------------------	-------------------------------	---------------

Sample Press Release

Agency logo(s)

Date:

Time:

Contact:

Phone:

Fax:

For Immediate Release

(Insert suggested title for news article)

City Name, CA – In response to the approximately X gallons of spilled (product name) in (location), the (U.S. Coast Guard / Office of Spill Prevention and Response / Oiled Wildlife Care Network) has/have activated a Volunteer Hotline (1-800-228-4544). The Volunteer Hotline will be updated frequently with information on the spill and the response, and callers can leave a message noting their name, phone number, skills, and availability to help.

Volunteers have been extensively used in previous oil spill responses, with activities coordinated through a Unified Command (a decision structure that includes federal and state government representatives). By calling the Volunteer Hotline number, prospective volunteers will get the most up-to-date information on whether their time and skills will be needed to support the Unified Command in its response to possible wildlife impacts.

Volunteers and other people are advised to stay away from the spill site, as their presence can hamper clean-up efforts and increase the danger to both wildlife and humans. Oil is a hazardous material, and to work in or near the oil, one is required to have completed appropriate Hazardous Materials training. Additionally, for the safety of both the public and the animals, only trained wildlife specialists will handle oiled wildlife.

The public can help at this time by reporting any oiled animals to (name of responding OWCN facility) at (general phone number - not the Volunteer Hotline number). This facility is a member of the statewide Oiled Wildlife Care Network, which uses modern equipment and facilities and has trained staff to care for the oiled wildlife. Personnel experienced in animal capture and handling will respond at the earliest opportunity, presenting the best chance for wildlife survival. The public's cooperation is greatly appreciated.

Please call the Volunteer Hotline (1-800-228-4544) for frequent recorded updates.

APPENDIX IIc OWCN PARTICIPATING ORGANIZATIONS

Aquarium of the Pacific

100 Aquarium Way
Long Beach, CA 90802
(562) 590-3100
Volunteer Coordinator: Margaret Brewer (562) 951-1672

Bird Rescue Center

3430 Chanate Road
Santa Rosa, CA 95404
(707) 523-2473
Primary Contact: Dona Asti

Friends of the Sea Lion

20612 Laguna Canyon Road
Laguna Beach, CA 92651
(949) 494-3050
Michelle Hunter/Volunteer Info.

Lindsay Wildlife Museum

1931 First Avenue
Walnut Creek, CA 94596
(925) 935-1978 General Info.
Volunteer Coordinator: Susan Heckly (925) 935-1978 ext. 18

Los Angeles Oiled Bird Care and Education Center

3601 South Gaffey Street
San Pedro, CA 90731
(310) 514-2573/2574
Primary Contact: Lana Emo

Marine Wildlife Care Center

Department of Wildlife

Humboldt State University
Arcata, CA 95521-8299
(707) 826-3450
Primary Contact: Tamar Danufsky

Marine Wildlife Veterinary Care Research Center

1451 Shaffer Road
Santa Cruz, CA 95060
(831) 469-1744/General Info
Volunteer Coordinator: Sharon Toy-Chouka (831) 469-1719

San Francisco Bay Oiled Wildlife Care and Education Center

4369 Cordelia Road
Fairfield, CA 94585
(707) 207-0380 General Info
Volunteer Coordinator: January Bill
(707) 207-0380 Ext. 109

Santa Barbara Wildlife Care Network

819 Garden Street
Santa Barbara, CA 93160
(805) 966-6977
Primary Contact: Diane Cannon

SeaWorld San Diego

500 SeaWorld Drive
San Diego, CA 92109-7904
(619) 226-3900 - Auto/24 hr
(619) 226-3800 - Live/24 hr Volunteer Information
Lauren DuBois ext. 2407 (Avian)
Mark Bressler (619) 226-3893 (Mammals)

SPCA of Monterey County

1002 Highway 68
Monterey, CA 93924
(831) 373-2631 ext. 227
Primary Contact: Shawn Wilson

The California Wildlife Center

P.O. Box 2022
Malibu, CA 90265
(818) 222-2658
Volunteer Info: (818) 222-2658
Primary Contact: Beth Caskie
e-mail: volunteer@californiawildlifecenter.org

The Marine Mammal Center

Marin Headlands
Sausalito, CA 94965
(415) 289-7325 General Info.
Volunteer Info: (415) 979-4357

The Marine Mammal Center at Ft. MacArthur

3601 South Gaffey Street
San Pedro, CA 90731
(310) 548-5677
Primary Contact: Jackie Jaakola

Monterey Bay Aquarium

886 Cannery Row
Monterey, CA 93940-1085
(831) 648-4976
Volunteer Coordinator: Debbie Keller (831) 647-6866

**Native Animal Rescue
Wildlife Rehabilitation Center**

P.O. Box 1001
Santa Cruz, CA 95061
(831) 462-0726/General Info
Volunteer Coordinator: Molly Richardson (831) 475-6489

North Coast Marine Mammal Center

424 Howe Drive
Crescent City, CA 95531
(707) 465-6265

Pacific Wildlife Care

P.O. Box 3257
San Luis Obispo, CA 93403
Volunteer Coordinator: Barbie Dugan (805) 772-4030

Peninsula Humane Society

12 Airport Boulevard
San Mateo, CA 94401-1098
(650) 340-7022 ext. 328 Volunteer Info
Primary Contact: Jennifer Stokley (650) 340-7022 ext. 314

Project Wildlife

Facility address:
887 1/2 Custer St.
San Diego, CA 92110
Mailing address:
8400 Magnolia Ave. #K
Santee, CA 92071
(619) 692-0390
Primary Contact: Debbie Bean

Pt. Reyes Bird Observatory

4990 Shoreline Highway
Stinson Beach, CA 94970
(415) 868-1221
Primary Contact: Christine Abraham x334

**UC Santa Barbara
Marine Science Institute**

UCSB
Santa Barbara, CA 93106
(no contact established)

UC Santa Cruz Avian Facility

Institute of Marine Sciences
100 Shaffer Rd.
Santa Cruz, CA 95060
(831) 459-2883

Wetlands and Wildlife Care Center

21900 Pacific Coast Highway
Huntington Beach, CA 92647
(714) 374-5587
Volunteer Coordinator: Star Howard (949) 494-8320

Wildcare

76 Albert Park Lane
San Rafael, CA 94901
(415) 453-1000 General Info.
Volunteer Information: (415) 453-1000 ext. 21

Wildlife Assist

4203 Genesee Avenue, #103
San Diego, CA 92117
(858) 278-2222
Primary Contact: Marie Molloy

Wildlife Health Center

University of California
TB 128, Old Davis Road
Davis, CA 95616
(530) 752-4167 General Info.
Volunteer Coordinators: Yvette or Sue (530) 754-5481

**APPENDIX IIIa.
EXAMPLE OF SPILL SPECIFIC WILDLIFE OPERATIONS PLAN**

**SONS DRILL
WILDLIFE OPERATIONS PLAN
APRIL 21 0600-1800 HRS OPERATIONAL PERIOD
Point Loma Drill**

I. SUMMARY OF WILDLIFE OPS OBJECTIVES

- 1) Provide the best care to impacted wildlife
- 2) Document for the UC impacts to wildlife
- 3) Minimize injuries to wildlife and habitats
- 4) Protect wildlife and habitats from oiling and adverse effects from response activities

II. WILDLIFE BRANCH ORGANIZATION

Branch Director – Melissa Boggs OSPR

Recovery and Transportation/Wildlife Reconnaissance Group Supervisor – Annie Nelson OSPR plus 8 plus 3 for air reconnaissance

Care and Processing Group Supervisor – Mike Ziccardi OWCN plus 6

III. WILDLIFE BRANCH DIRECTOR RESPONSIBILITIES

Safety of Branch personnel. Supervise Groups within Branch. Coordinate with Ops and Planning Sections Chiefs. Update UC. Develop Wildlife Branch portion of IAP. Determine resource needs. Coordinate with other Trustee Agencies (USFWS, Navy).

IV. RECOVERY AND TRANSPORTATION/ RECONNAISSANCE GROUP

For the April 21 operational period, the Recovery and Transportation Group has been combined with the Reconnaissance Group and is responsible for collection and capture of dead and live oiled wildlife and identifying wildlife resources at risk by collecting real-time data.

1. Recovery and Transportation

a. STAFFING RECOVERY AND TRANSPORTATION TEAMS/ASSIGNMENTS

Recovery and Transportation teams will consist of two people per each team to perform search and collection as directed by the Wildlife Branch Director in Divisions I and J. The current schedule for the April 21 operational period will include 1 team with 4-wheel drive and 3 teams surveying on foot. See Appendix A for beach access directions.

Team 1: B. Atkins (OWCN) & Jack Ames (OSPR) Division I (Mission Bay Jetty south to Ocean Beach Pier)

Team 2: S. McAllister (OWCN) & Mike Harris (OSPR) Division I (Ocean Beach Pier south to Cabrillo Natl. Monument)

Team 3: K. Brewer (OWCN) & C. Lieberman (USFWS) Division J (Cornado Island – requires Navy approval, contact Navy Police Dispatch 619-524-2030 for access)

Team 4: Regina Donohoe (OSPR) & B. Collins (USFWS) Division J (Imperial Beach south to boarder, contact USFWS re Tijuana Slough National Wildlife Refuge

Each team will maintain and come equipped with appropriate PPE/safety and capture equipment for these operations.

b. SHORELINE SURVEY PROTOCOLS

Full beach searches typically involve coverage of the full length of beaches and more detailed searching. Sweeps typically consist of limited coverage of beach lengths, binocular searches from vantage points and search effort concentrated in the key search areas listed below by division. Once at the site each team should determine which search type is most appropriate for the situation.

Teams are directed to search and collect live and dead oiled wildlife, and on the Beach Search Effort Log properly document date/time/location (GPS coordinates) information and transport birds to intake center at the Sea World Facility.

Teams should pick-up all dead birds, oiled or not, during beach collection except for birds that are clearly well into the decay process and show no signs of being oiled. Birds that have *recently* been scavenged (mostly feathers and bones) should be picked up.

All dead and live animals should be identified by installing a bird band or mammal tag which will be the identifying number to track the animal to the processing center. This band/tag number should be written in the Beach Search Effort Log.

Teams are directed to contact the OWCN Wildlife Veterinarian if a stranded marine mammal is spotted or found. The OWCN Wildlife Veterinarian will contact Mr. Joe Cordero of the National Marine Fisheries Service as consistent with the MOU.

c. COMMUNICATION PROTOCOLS

Teams should check in with the Search & Collection Coordinator between 10-11 am and between 3-4 pm every day to report search results. The Beach Search Effort Logs must be provided to the Group Supervisor at the end of the shift.

d. EQUIPMENT

Suggested items for teams to carry (Bird and search items can be obtained at the OWCN Sea World facility):

- | | |
|------------------------------|-----------------------------|
| 1. Water | 2. Sunscreen |
| 3. Cell phone(s) | 4. Pager(s) |
| 5. Gloves | 6. Rubber boots |
| 7. Leather boots | 8. Extra socks |
| 9. Binoculars | 10. Net |
| 11. Bird boxes | 12. Bird bags |
| 13. Bird bands & mammal tags | 14. Beach Search Effort Log |

- | | |
|--|------------------|
| 15. GPS unit | 16. GPS log |
| 17. Jacket | 18. Raingear |
| 19. Lunch, snacks (e.g. power bars, bananas) | |
| 20. Enthusiasm | 21. Common sense |

e. SAFETY ISSUES

Teams shall be of two or more. You should never be out of eye contact with your partner(s). Beach walkers should not be out after dark. If you feel that conditions are unsafe STOP ALL SEARCH AND COLLECTION OPERATIONS and inform your Coordinator immediately.

f. RECOVERY AND RECONNAISSANCE IN SNOWY PLOVER HABITAT

1. In general, snowy plovers (SNPL) nest high on the beach, above the high wrack line, but they may nest below it. Attempt to avoid SNPL broods (aside from conducting all search and collection on foot) is to conduct activities on the wet shoreline, well below the most recent wet wrack line.
2. If survey people see (or hear) vocalizing or displaying (broken wing or tail drag displays) SNPL, they should proceed cautiously out of the area at once—a minimum of 100m away to allow the adult SNPL to return to broods that may be crouching along the wrack line. Similarly, if people observe SNPL chicks, they should proceed cautiously out of the area immediately to avoid separating chicks from parents. The caveat to this is that anytime survey people respond by proceeding out of the area, they may be likely to encounter chicks from the same or other broods in their line of exit. To this end, try to avoid any lower beach areas that are heavily covered in kelp wrack, as detecting chicks with the naked eye would be difficult.
3. Where plover breeding habitat is marked by rebar, flagging, tape, or any other method (e.g. on Navy property), search and collection personnel will not walk into these areas to recover oiled wildlife unless they have spoken directly with the Wildlife Branch Director as the USFWS and/or Navy need to be contacted. If you see a dead oiled bird in these areas, note it on your log, but do not remove it from the habitat. Try to have the USF&W biologists monitor the areas while you are there.
4. When using ATVs or 4-wheel drive vehicles to conduct beach surveys, drivers will stay along the coastline in wet sand to bypass known plover breeding habitat. Drivers will stop approximately every 100 meters to scan for plover nest areas that might be encountered as they travel forward. If nesting areas are encountered, survey via scans or by observing marked nesting habitat. ATV operators will stay on the wet beach area and proceed at less than 5 MPH until they have passed the plover breeding habitat.
5. All search and collection staff will be briefed on these protocols prior to conducting search and collection efforts. Any animals inadvertently injured during search and collection operations will be recovered and the WBD will be notified immediately.

2. Aerial Reconnaissance

The air survey team, consisting of the pilot and 2 experienced observers, using a standardized protocol will characterize abundance, distribution and species ID of on-water birds and mammals in or near the spill area. Contractors from UC Santa Cruz perform this task. These flights complement but do not replace operational overflights for mapping oil. The DFG Partenavia twin-engine fixed wing aircraft is used. Immediately after landing verbal summaries of observations are forwarded to Group Supervisor and then to WBD.

IV. WILDLIFE CARE AND PROCESSING GROUP

Wildlife Care ensures wildlife exposed to oil will receive the best achievable care and processing ensures impacted wildlife are tracked so the UC can obtain spill wildlife statistics data.

Under the direction of Dr. Mike Ziccardi response veterinarian with OWCN, the Group Supervisor, during this operational period the Sea World rehabilitation facility will be activated.

As more spill information is obtained the Group Supervisor will coordinate with the WBD on resource needs for processing and care.

Once animals start to be brought into the facility specific care protocols will be followed.

The Group Supervisor will be responsible to provide the WBD with updates twice/day regarding numbers of animals collected and numbers in care.

The Volunteer Coordinator with OWCN will establish the spill volunteer plan.

The OWCN Facility Coordinator is also on scene to manage the facility to keep the facility running smoothly.

A toll-free number (800-228-4544) has been established and provided to the PIO for members of the public who want to volunteer and help with wildlife care and processing. A number (310-514-2573) has been established and provided to the PIO for the public to report oiled wildlife.

APPENDICES

- I. Beach Access Directions**
- II. Division Maps**
- III. Search Effort Beach Log**
- IV. Site Safety Plan**

APPENDIX IIIb

EXAMPLE OF HEIGHTENED AWARENESS PROTOCOL -

Heightened awareness protocols will be activated if any of the below circumstances occur. Notification and communications between USFWS Refuge Manager, CDFG-OSPR Wildlife Operations Branch Director and OWCN Response Coordinator will be made as necessary to implement these protocols. Funding needs to implement these protocols will also need to be worked out.

1. If more than 20 oiled birds or mammals are observed by SEFI biologists during a week
2. If an oil spill or release occurs in the vicinity of SEFI, or has a trajectory with the potential of affecting wildlife on the Farallon Islands
3. If greater than 30 oiled birds are captured during a 48 or 72 hour period on the mainland between Bodega Bay and Monterey (Divisions BB – E).

Heightened awareness protocols involve the following activities:

Twice each day, 15 minute visual surveys will be conducted to detect live, sub-lethally oiled birds on the water from the following observation points: East landing, North landing. If oiled wildlife are observed, the species, location of the oil, and % body covered with oil will be noted and reported (see 7 below).

Once each day, “shoreline surveys” will be conducted to detect dead and sub-lethally oiled wildlife at places where they are likely to wash up: sea lion cove, sewer gulch, garbage gulch, sea pigeon gulch, North landing, and others as sea and weather conditions determine. (approx. length of survey: 1-1/2 hrs).

Birds in monitored colonies will be observed closely for signs of oil. If oiled birds are observed, the species, location of the oil, and % body covered with oil will be noted and reported.

Documentation of oiled birds will be conducted and include taking an oiled feather sample and photograph of the deceased animal (as described in Appendix B).

Other mainland observations will be conducted (see below, Mainland Heightened Awareness Protocols).

Oiled bird and mammal numbers will be reported daily via email to OWCN Response Coordinator via email [mhziccardi@ucdavis.edu; jkmazet@ucdavis.edu], OSPR [yaddassi@ospr.dfg.ca.gov; jyamamot@ospr.dfg.ca.gov], and USFWS [joelle_buffa@fws.gov, James_Haas@fws.gov].

If greater than 60 oiled animals are observed in a single day, phone notification should be made to the OWCN Response Coordinator (916)-998-8131.

Heightened awareness protocols will be deactivated when, when conditions drop back below threshold levels for two consecutive days or when otherwise directed by the Wildlife Operations Branch Director or designee or by the Refuge Manager.

APPENDIX IIIc - ATV PROTOCOL

Revised October 2003

Safe Operations of All-Terrain Vehicles

1. Riding Gear

ATV riding requires protection for head, eyes, hands and feet against occasional spills, flying debris, or contact with foliage.



Helmet:

Helmet should be DOT-approved motorcycle helmet. Full-coverage helmets are recommended but not required. Helmets provide protection against injury and discomfort from windblast, cold, noise and flying objects. The most important piece of protective gear you can wear.

Eye Protection

Motorcycle goggles should be worn outside the helmet. Protects against injury from flying debris and reduces dust which irritates your eyes and impairs vision.

Long-sleeved Shirt:

They protect against abrasion, sunburn, windburn, dehydration and hypothermia. Bright colors increase your visibility on the trail.

Gloves:

Select gloves that are specially designed for off-road motorcycle or ATV gloves. Protect against injury from flying debris, trailside hazards like branches and bushes. They also provide a more secure grip on the handlebars and protection in case of a fall.

Boots:

Thick leather boots that cover the ankles are the best. Boots protect against foot and ankle injuries. They also provide the best grip on footrests and provide sure-footing when you get off the ATV.

Long Pants:

Denim jeans or specialized riding pants offer the best protection against abrasion, sunburn, windburn, dehydration and hypothermia.

2. The ATV

Ride within your capabilities. The ATV can weigh upwards to over 500 pounds. In soft sand, you will not be able to lift the ATV by yourself in the event of a turn-over.

Prior to riding the ATV make sure it is properly fueled and oiled.

The ATV use **PREMIUM** gasoline

3. Starting the ATV

BONE-C is the acronym used to start the ATV

B – Brake, make sure parking brake is set

O – On, ignition switch and fuel is in the “on” position

N – Neutral, ATV should be in neutral gear

E – Engine switch, the engine stop switch is in the “on” position

C – Choke, choke is in the “on” position during cold starts

Allow the ATV to properly warm up and TURN OFF the choke prior to riding.

4. Riding the ATV

Allow the ATV to properly warm up and TURN OFF the choke prior to riding.

Stretch your body to loosen and warm up prior to riding.
Get familiar with the controls before riding.
Ask the rider before you if there are things particular with that ATV.
Ask your coworker for advice if you are an ATV newbie.
Use your riding gear.
Feet should always be on the footrests.
Lean into the turn.
Look forward all the time.
Release the throttle when shifting
Make sure you are in the proper gear, don't race or lug the engine.
Approach obstacles at a 90 degree.

5. Safety and riding strategies

Wear your protective equipment.
Notify Unit Leader of your riding plan for the day.
Carry a communications device (e.g. 2-way radio, cellular or satellite phone).
Obtain clearance from all agencies prior to beach searches.
Display official insignia or uniform to clearly identify official capacity.
Ride in pairs, if required.
No passengers are allowed on ATVs.
Know when low/high tides are.
Be aware of waves, the ATVs will float away in the surf.
Do not cross deep water (past the footrest).
Stay away from Snowy plovers, marine mammals, sensitive habitats, and/or exclusion areas.
Know locations of sensitive species and/or exclusion areas.
Slow down when approaching or leaving other beach users.
Travel no more than twice the walking speed of beach users.
Avoid beach debris, plywood and 2X4s typically have nails that could puncture tires.
Notify the Unit Leader at the end of the search day.

6. Trailering and maintenance

Check and double-check lights and hitch prior to travel.
Use the hitch lock for an added safety measure.
ATVs should be in gear with parking brakes on when trailering.
ATVs should be strapped to the trailer.
Use the cable and lock the ATVs to the trailer frame.
Drive at a safe speed.
Trailer requires wide turns, think ahead and don't get caught in a dead end.
Wash the ATVs every night with **FRESH WATER** (about 10 min/ATV).
Refuel every night with **PREMIUM** gas and check the oil.
Keep the trailer and ATVs locked on overnight trips.

For a Review of the ATV RiderCourse:

<http://www.atvsafety.org/content/ridertraining.html>

Department of Fish and Game Contact:

Randy Imai
DFG-OSPR
916 324-0000

APPENDIX IIIId

Boat Wildlife Survey Methodology for Oil Spill Response

Introduction

Surveys for birds and marine mammals present during an oil spill can provide estimates of the potential impacts of a spill on individuals or populations in the area. Standardized protocols and skilled observers provide invaluable information for immediate evaluation and response, as well as long-term planning or mitigation for impacted species. Surveys should be started as soon as possible after a spill occurs and continue as long as needed to monitor the effects on the surveyed populations.

Survey Types

Surveys are conducted using Distance Sampling Techniques (Buckland et al. 1993). This survey technique is used primarily to survey for marbled murrelets. The boat travels along a transect line at speeds between 8 and 12 knots during surveys. Birds in the nearshore environment tend to be distributed relative to the depth of water, therefore transect lines are generally positioned parallel to the coastline at increasing increments away the shore. Surveys may include nearshore, offshore, or bay/estuarine components and should be adapted to the coastline or bathymetric configuration of the area being monitored in order to measure population or density of the various seabird and marine mammal species within the area. The goal in determining the transect design is to efficiently and effectively sample areas in and around the spill site which represent areas of potential impact and/or which potentially contain birds at risk of oiling. Strip transect survey methodologies could also be appropriate depending upon the species at risk.

Boat and Navigation

Boats used during an oil spill response to survey for birds and marine mammals should allow an unobstructed view of the water within a 180° arc forward of the observers. Small boats that allow observers to pick up dead and sick birds are preferred. The survey route and transect design is established just prior to the survey to accommodate the specific areas, issues, and species of concern for a particular spill. A Global Positioning System (GPS) is used for navigation and to record the boat's trackline for analysis. Transects are subdivided into 1- or 2-km segments for recording data. The position of sick and dead birds is marked with GPS coordinates.

Data Collection

Survey methods generally follow those of Ralph et al. (1995). One or two observers stand near the bow of the boat where they have a clear view of the ocean and scan an 180° arc from port to starboard. The driver can assist observers as navigation duties permit. Observers should be skilled in seabird and marine mammal identification, and, preferably, in distance sampling techniques.

Birds and Mammals. Data are recorded on audio cassettes for later transcribing. For each individual or group of birds or mammals detected during the survey, the observers record the species, number of individuals, their perpendicular distance from the transect line, and behavior (such as diving). All birds detected are recorded, including flying birds for most species.

Oiled Birds. Birds are checked for visible oil on the plumage. The observers judge the degree of oiling as light, moderate, or heavy. A bird with discolored breast plumage only is recorded as "light oiling," a bird with soiled or discolored plumage is recorded as "medium oiling," while a thick, solid covering of oil would be recorded as "heavy." Behaviors such as preening, bathing, or diving, inability to take flight, loss of buoyancy, or a general sick appearance, are

recorded as possible indicators of oiling. When possible, sick or dead birds should be picked up and the pickup location recorded on the survey data form with GPS coordinates.

Oil on water. Observations of oil along the transects are also recorded. Record the segment or latitude and longitude where oil is first encountered and when it is no longer present. The percentage of the water's surface with oil (where oil is present within approximately 50 m of the boat) and the character of the oil are noted, for example, "a silver sheen on 40 percent of the water's surface." Other categories, such as tar balls, thick mousse, oily foam, and oil mixed with eel grass are noted.

Real Time Data Reporting

Upon returning to the dock or during surveys, summaries of bird and mammal observations are verbally reported to the Command Post. Summaries can include an estimate of the number of birds and mammals observed, the number of each species, the general location of high densities of birds and mammals, and the location of any oil.

Literature Cited

- Buckland, S.T., D.R. Anderson, K.P. Burnham, and J.L. Laake. 1993. Distance Sampling: Estimating Abundance of Biological Populations. Chapman and Hall, New York, NY. 446 p.
- Ralph, C.J. and S.L. Miller. 1995. Offshore population estimates of Marbled Murrelets in California. pp 353-360 *in* C.J. Ralph, G.L. Hunt, Jr., M.G. Raphael, and J.F. Piatt (Tech Eds.) Ecology and conservation of the Marbled Murrelet. Gen Tech. Rep. PSW-GTR-152, Albany, CA: Pacific Southwest Research Station Forest Service, U.S. Department of Agriculture; 420 pp.

APPENDIX IIIe

Aerial Survey Methodology for Wildlife Reconnaissance During Oil Spill Response

Introduction

Oil spill response aerial surveys are conducted, usually by experienced contractors, using a twin-engine high wing aircraft, typically a Partenavia. Surveys are flown at an altitude of 200ft (~60m) and a speed of approximately 90 knots (167 km/hr), although in bays and estuaries the aircraft may need to increase its altitude. The survey route and transect design is established just prior to the flight to accommodate the specific areas, issues, and species of concern for a particular spill.

Survey Types

Surveys may include near shore, offshore, or bay/estuarine components. Offshore surveys usually consist of multiple long legs running perpendicular to the shoreline, usually spaced about 8 kilometers miles apart. In some cases, a sub-region that is particularly sensitive or is especially likely to be affected by a spill may be sampled using parallel lines spaced as closely as 1 kilometer apart. The nearshore environment usually contains groups of birds arranged in a linear fashion, just seaward of the surf line. These birds are best sampled by flying parallel to the coast, about 100m seaward of the breakers. Within small bays and estuaries, it is most practical to circle repeatedly until observers are able to estimate the entire population of the various bird species within the area. Aircraft navigation hazards and other concerns often make it desirable to gain altitude while overflying these enclosed waters. The goal in determining the transect design is to efficiently and effectively sample areas in and around the spill site which represent areas of potential impact and/or which potentially contain birds at risk of oiling. An example of an actual survey flight track is shown in Figure 1.

Data Collection and Navigation

Aerial survey methods used are similar to those described by Briggs et al. (1983, 1985, 1987). Two experienced observers each continuously surveys a 50-meter strip transect, one on either side of the plane. A third person acts as navigator and data entry person, recording bird, spatial, and ambient data onto a laptop computer connected to a Global Positioning System (GPS).

The software program *dLog* running on the laptop records the latitude/longitude position, time, and other data at designated intervals, and also displays a map of the survey area and a real-time picture of the survey route. Real-time display of the trackline is critical because it allows navigators to quickly and accurately change the survey route depending on weather, spill updates, bird distributions, etc. Navigators typically vector the pilot by indicating a sequence of waypoints to follow. When time does not permit entry of waypoints or the survey track needs to be altered while in flight, a navigator can vector the pilot using turning points and compass bearings. On-screen maps usually contain designations of critical habitats such as rookeries or colonies, as well as associated buffer strips so that the aircraft can avoid sensitive areas.

Observations and Data Entry

Observers call their observations to the navigator/data recorder who enters these data into the computer. Observers need to be highly trained for these activities, since the speed of the aircraft allows less than 1 second to locate, identify, and count a flock of birds. The suite of possible species includes as many as 150 species of seabirds and marine mammals. Where bird densities are high, it is often necessary for the observers to summarize observations and to call guilds rather than species (e.g. Gull).

Because of this limitation, and to provide a backup in case of computer failure, observations are also recorded by each observer using a hand-held tape recorder. All birds and mammals are identified to lowest taxon (e.g. “unidentified cormorant”), and their behavior and time of observation are noted. These audio data are later transcribed by the observer biologists and entered into a spreadsheet. Observations are combined with the track of the aircraft by interpolating the position according to the time of each observation. If required, the tape-recorded data can subsequently be used for more a detailed analysis of animal distributions.

Real Time Data Reporting

While in the air or immediately after landing, summaries of bird and mammal observations are verbally reported to the Command Post. These summaries can include the total number of birds and mammals observed, the number of each species observed, the general location of high densities of birds and mammals, the location of any oil observed, and a qualitative estimate of birds and mammals at immediate risk of being oiled. Additionally, if an offshore grid has been designated, the navigator and observers can subjectively score each cell as Low, Medium, or High, and transmit these rankings verbally to the Command Post.

Quick Response Mapping

Using the real-time data entered by the navigator, summary files of the survey results can be generated and transmitted to the Command Post within hours of the completion of the mission. These files include *ArcView*-compatible shape files showing the trackline of the survey aircraft, and a database of observations that includes the location, size, species, etc. of each group of animals seen by the observers. GIS technicians working at the Command Post use these data to generate maps of animal distributions, and to overlay distributional data with other environmental or spill related features.

Resource at Risk Reporting

Within 24 hours of the completion of a survey, a detailed Resource at Risk (RAR) report can be generated. This report integrates survey results with output from the NOAA HAZMAT or other trajectory simulation model. This analysis includes maps of sensitive or abundant species relative to the oil pathway as predicted by the HAZMAT model. It also includes estimates of the numbers of animals of various species projected to be within the envelope of possible oil spill effects at various times in the future (e.g. 3, 6, 12, 24, 36, and 48 hours). Reports of this type were generated on a weekly basis during the response to the lightering of the *J.S. Luckenbach* during the summer of 2002 which may or may not always be necessary. Examples taken from these reports are shown in Figures 1 and 2.

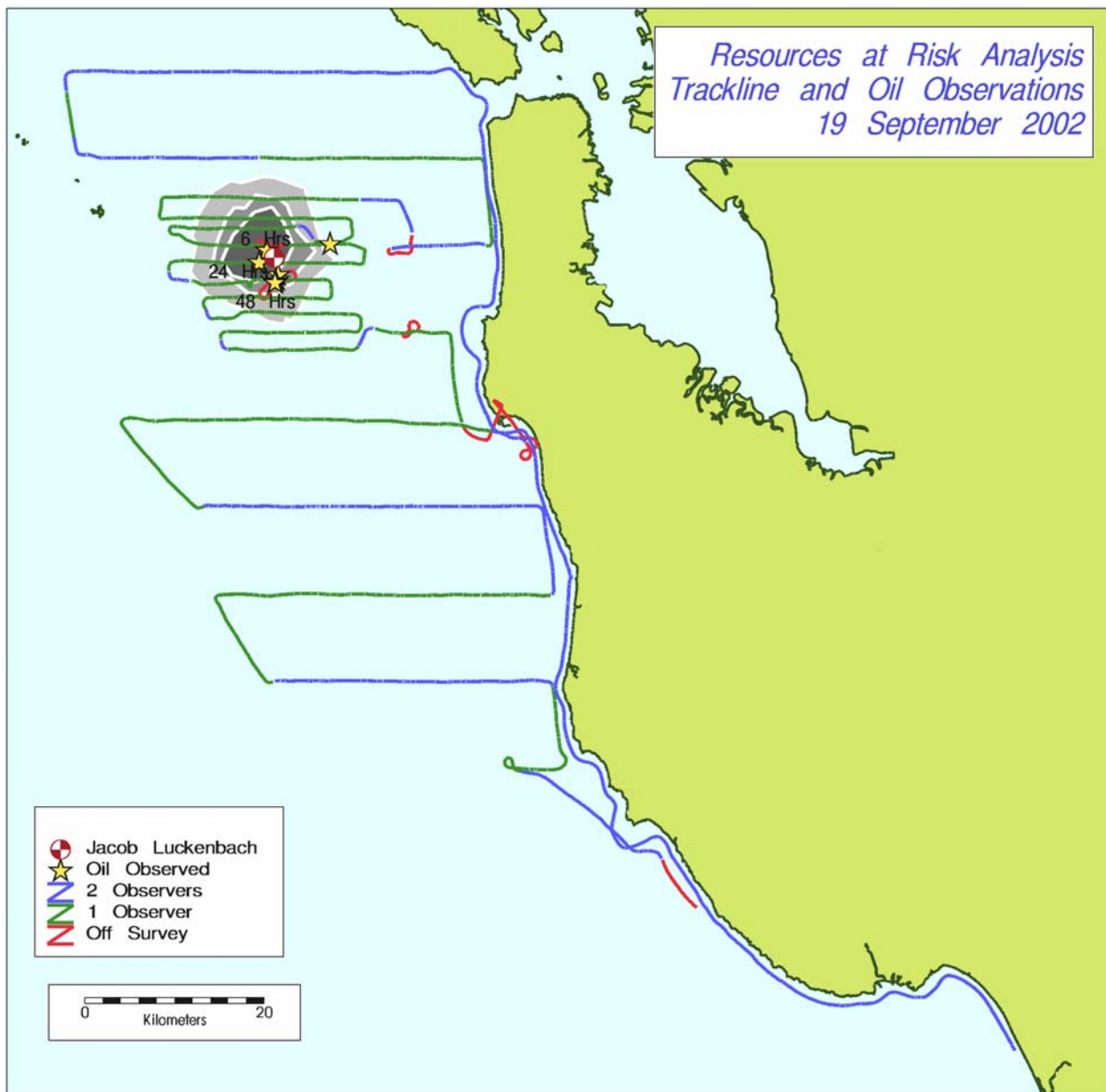


Figure 1. Example of a typical survey trackline. This case is from the response to the *J.S. Luckenbach* lightering operation, 19 September 2002. The trackline was recorded at 5-second intervals using a GPS unit linked to an on-board computer running *dLOG*. This survey trackline included a coastal component extending from Monterey Bay in the south to the Golden Gate in the north. The offshore component includes east-west lines spaced 8-km apart and a 1-km grid flown in the immediate vicinity of the *Luckenbach* wreck. Grey polygons indicate areas potentially affected by a spill after 6, 24, and 48 hours. Yellow stars indicate where observers sighted surface slicks.

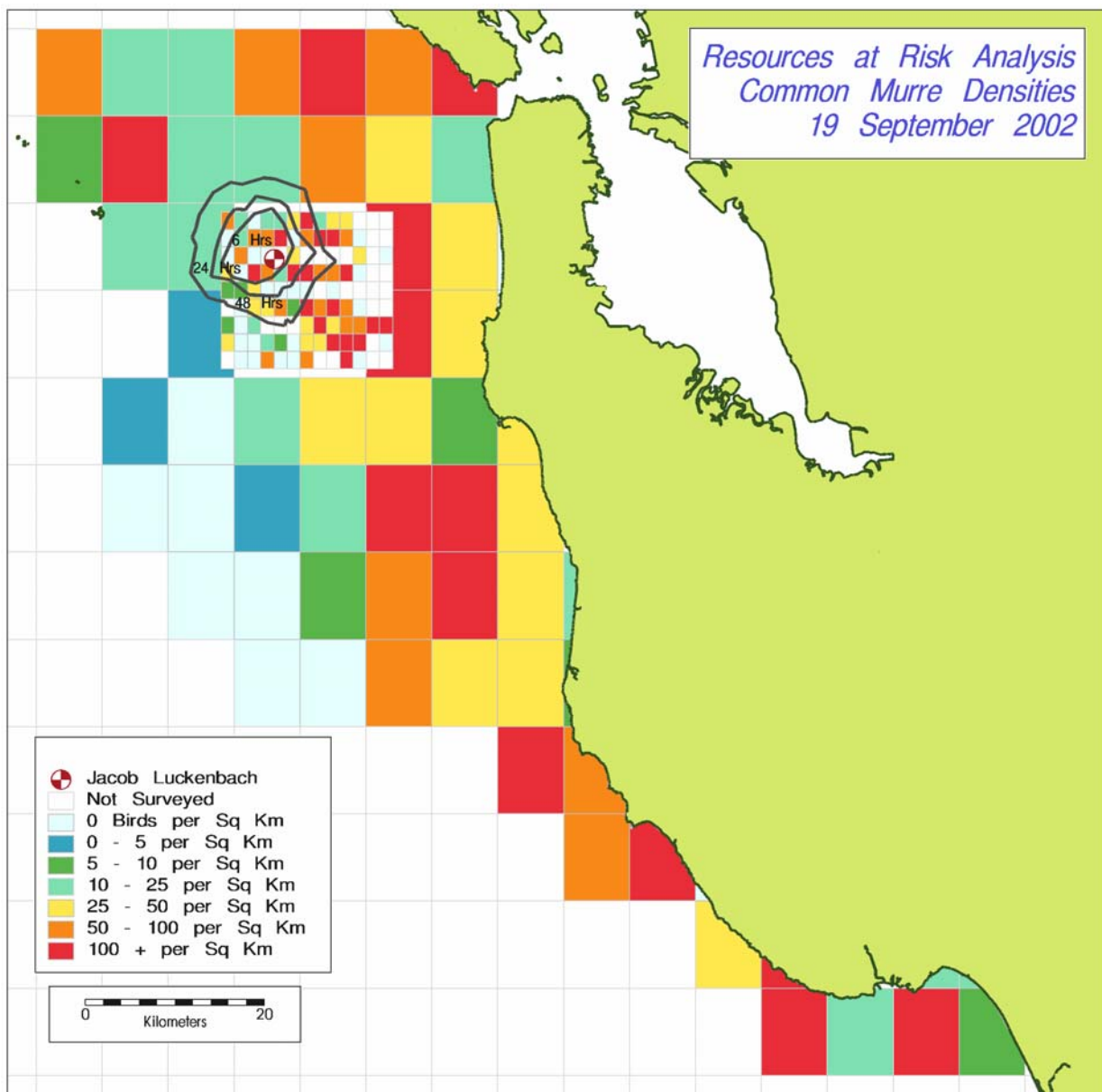


Figure 2. This Figure shows example of how surveys can estimate seabird and/or mammal densities. The density of Common Murres displayed as 5-minute latitude by 5-minute longitude cells. Density data in the vicinity of the *Luckenbach* wreck are displayed as 1-minute latitude by 1-minute longitude cells. Grey lines around the wreck site indicate areas potentially affected by a spill after 6, 24, and 48 hours.

References

Briggs, K.T., W.B. Tyler, and D.B. Lewis. K.F. Dettman. 1983. Seabirds of central and northern California, 1980-1983: Status, abundance, and distribution. Center for marine studies University of California, Santa Cruz. 246 pp.

Briggs, K.T., W.B. Tyler, and D.B. Lewis. 1985. Aerial surveys for seabirds: Methodological experiments. J. Wildl. Manage. 49:412-417.

Briggs, Kenneth T., Tyler, WM. Breck, Lewis, David B. and Carlson, David R. Dec. 1987. Bird Communities at Sea Off California: 1975 to 1983. Studies in Avian Biology No. 11, Cooper Ornithological Society, 74 pp.

APPENDIX IIIf.

GENERAL WILDLIFE HAZING PLAN FOR OIL SPILLS IN CALIFORNIA

1. BIRDS

A. Initial Considerations

1. *Determine current location and predicted extent of spill* - The current location of the spill is the 1st step in determining resources that have been impacted and that may need hazing to protect wildlife. The predicted extent or movement of a spill identifies areas that could be impacted in the short-term and that might require hazing. The size and extent of the spill is also helpful in making an initial determination of equipment and personnel needs for adequate coverage.

2. *Identify wildlife areas* - Wildlife favor certain locations over others. High use areas threatened or impacted by a spill are priority targets for hazing. Important areas include marshes, sheltered bays, tidal mudflats, and offshore rocks and islands that could be used for feeding, nesting, roosting, and loafing. Such sites can tentatively be identified with the help of maps (e.g., NOAA Environmental Sensitivity Index maps). Local experts may be the best source and should be consulted.

3. *Availability of alternative sites* - Where birds may go when hazed is an important consideration. If other attractive sites for birds are also contaminated, then it may be necessary to deploy deterrent devices in those areas also. For this reason it is important to recognize important habitats and locations used by birds within the region affected by the oil spill. It is generally easier to move birds from a particular site if there are other sites that are equally attractive. In some cases it may be possible to make uncontaminated areas more attractive to birds by temporarily limiting access by people, boats, or other activities.

4. *Identify species of bird present* - The species present in the area will in part determine the types of hazing equipment that can be used. Some hazing techniques are very effective in deterring certain species, but could be completely ineffective and sometimes counterproductive with other species. Waterfowl and hunted species in general, can be dispersed from an area with propane cannons and pyrotechnics. However, diving birds such as grebes or loons will dive and swim away from the danger source, surface, and dive again if the threat remains. This behavior can make it difficult to herd the birds away from the oil spill and may add to a buildup of oil. Therefore, hazing with pyrotechnics, for example, may not be the best deterrent for diving birds close to the spill area. Another example is the use of biosonics. Distress or alarm calls are available for only a limited number of species and they are usually species-specific although closely related species may respond also (e.g., gull species). Other species may not respond at all.

5. *Safety issues* - Are the hazing techniques safe to use? Some spill materials may be flammable or produce flammable gases. Propane cannons, pyrotechnics, and CAPA rockets are explosive devices. Phoenix Wailers or Breco Bird Scarers use batteries that may produce a weak spark. These devices should not be used in the presence of flammable substances or oxidizers that could endanger workers. These devices also produce loud noises and are a threat for eye injury.

Workers using hazing equipment must be trained in the safe and proper use of that equipment and must use eye and ear protection. Other workers in the vicinity of such devices should use ear

protection or remain a safe distance away. Weather conditions at times may play a role in safety considerations.

6. *Weather conditions* - Weather can have an impact on safety, equipment selection and operation, hazing effectiveness, and spill movement. High winds or waves, fog, or other inclement conditions can be hazardous to personnel and may prevent the use of boats and aircraft to haze birds. Hazing during such conditions may be limited to land-based operations. High winds can prevent propane cannons from firing. Moderate winds may be a problem for kites and balloons, which can be blown down or away, or if attached to poles, become entangled. Mylar tape frequently breaks in high winds. The possibility of equipment failure may require more personnel and frequent checks to insure proper operation. In fog and wind the effective range of propane cannons, pyrotechnics, and visual deterrents is reduced. Birds may also be more difficult to disperse from sheltered areas during bad weather conditions. High winds or waves can affect the speed and direction of spill movement and be a consideration in identifying locations in danger of contamination.

7. *Season and phenology of birds* - The phenological status of birds may affect hazing success. Migration and breeding are two factors strongly influenced by season. Migrants in general are easier to disperse than breeding birds from a nesting colony or a breeding area. Molting is also a factor, as some birds (e.g., ducks, geese) cannot fly at certain stages in their molt. Flightless birds may take to the water when hazed, which may not be the desired response if the water is contaminated.

8. *Continuity and limits of coverage* - Hazing becomes impractical for areas larger than 7 to 10 miles in length or diameter due to equipment and manpower requirements. Ideally the hazing effort should be equal and continuous in all contaminated areas to prevent birds from being hazed into an area where they might be in danger. This may be difficult to achieve on a large spill event. Also, birds hazed into a contaminated area may attract other birds, which is unacceptable.

B. Flexibility in Planning

1. Once the decision to haze has been made remember that each spill situation will be unique and preplanned hazing activities must be viewed as tentative at best. The pros and cons of every hazing operation must be evaluated in view of site and incident specific details and after consultation with local expertise where available.

C. Hazing Equipment

A variety of hazing equipment is available. Effectiveness will vary depending on the situation and the species of birds. The equipment listed below in a rough order of importance based on overall applicability and effectiveness.

1. *Helicopter* - Helicopters provide both visual and auditory deterrence. They are useful in not only hazing birds, but also in monitoring the direction of the oil spill, discovering any sites that may be attractive to birds, discovering the locations of flocks that may need to be hazed, and contributing to the organization of the hazing effort. Helicopters should be flown low and if possible underneath the flock of birds being repelled from the area. They should be pushed or “herded” out of the area. Helicopters are labor intensive and expensive to operate. They would probably be most useful for initiating and periodically reinforcing a hazing operation. (Approximate cost \$500/hr, some government owned and many available for hire.)

2. *Propane cannon* - An effective and relatively inexpensive piece of equipment for shore-based hazing. Propane cannons produce a loud, directional blast by slowly filling a bellows with propane gas from a LPG tank then rapidly transferring this gas to a firing chamber and igniting it with a spark. The interval between detonations can be varied from 3 to 30 minutes. After deployment these devices operate automatically. They are inexpensive to operate and require little maintenance. The down side, common to most hazing devices, is that many species habituate to the noise within 1 to 3 days. They are most useful when used as one element of an integrated hazing scheme where they are moved frequently and interchanged with a variety of other devices.

A standard refillable 5 lb propane gas tank produces about 12,000 explosions. This bottle of propane must be replaced every 2 weeks at a firing rate of 13 explosions an hour, or an explosion every 4 minutes. Cannons should be moved every 1-3 days. In windy conditions the rear portion of the cannon, which houses the ignitor, should be protected from the wind by a large piece of plywood or other barrier.

Placement of cannons is not determined by any rigid formula or rule they should be a set distance apart. Cannons should be placed where birds congregate, including shoreline areas, creek mouths, and mudflats, and in areas where oil may accumulate. The effective range of a cannon varies depending on the species, weather conditions, and ambient noise levels. Cannons have been effective over distances of more than 2000 ft. For most situations, it is likely a minimum spacing of between 600 to 700 ft between cannons will be sufficient, but cannons can be placed closer together as local conditions dictate. As a baseline estimate of the number of cannons required, a spill that is ½ mile in length along shore could require 4 or 5 cannons. A spill 2 miles in length could require 16 to 20 cannons. (About \$300 each for basic model and 20 lb propane tank, CDFG-OSPR has 17 cannons and they are widely available for purchase from agricultural pest control suppliers or may be rented by the month from some vendors.)

3. *Bird bombs and screamers* - Bird bombs and screamers are pyrotechnic cartridges fired from a modified starter pistol using a .22 caliber blank. Bird bombs travel approximately 75 to 125 ft before exploding. They are effective when range is not a factor. Screamers, sometimes called whistlers make screaming and whistling noises as they travel through the air but do not explode. The range of screamers is about 150 to 200 ft. They are good for lessening the chances for habituation to the hazing program, and are most effective when they are used with other techniques. Because they can

be fired from a starter pistol, they can be used as a land- or water- based hazing technique. Eye and ear protection is required with the use of bird bombs and screamers. (About \$40 for 100 rounds of screamers or bird bombs, \$6 for blanks, and \$30 to \$40 for a launcher. OSPR has several launchers and approximately 1500 rounds of bird bombs and screamers. Readily available for purchase from agricultural pest control suppliers.)

4. *Shell crackers* - These shotgun launched fire crackers are very effective against most species. They are an important tool in most integrated hazing strategies. Shell crackers are fired from a 12 gauge shotgun and explode with a flash about 300 ft from the operator. For safety, the shotgun should be inspected after every shot for possible lodging of wadding in the barrel. Single-shot break action shotguns are recommended to facilitate inspection and cleaning of the barrel. Quality shotguns should never be used to fire shell crackers, as the burning fuse is extremely corrosive to the gun barrel. The improved cylinder choke tube is the best choke to use for shooting shell crackers. Run a cleaning rod with a bore brush through the barrel after the end of a shooting session. Shell crackers should never be fired into a strong wind, and should be fired at a 45 degree angle above the horizon. If the operator does not hear or see the shell cracker explode, do not look down either end of the shotgun barrel, as a shell cracker in the barrel may explode in your face. As with all pyrotechnics, be aware of potential fire hazards. Eye and ear protection is required with the use of shell crackers. (About \$100 for 100 rounds, readily available for purchase. OSPR has about 500 rounds and 3 single-shot shotguns.)

5. *CAPA launcher and rockets* - The launcher is a modified flare gun that fires a rocket-propelled cartridge about 1000 ft before exploding with a very loud report. At about \$10/cartridge, the CAPA is used sparingly, but is very effective when long range is desired. Eye and ear protection is required. (Launcher about \$210, \$250 for 25 rounds. OSPR has 1 launcher and about 50 rounds. Available from vendor in Mississippi.)

6. *Airboats* - In shallow water and marsh areas airboats provide auditory as well as visual deterrence, may be used directly to move animals or as taxis to deploy, redistribute, or service other hazing tools. Airboats are the most versatile and capable of all boats in navigating shallow waters. Pyrotechnics also may be launched from airboats. (Several potentially available from CDFG and US Fish and Wildlife Service sources.)

7. *Boats* - Small boats can be used to directly haze animals or as platforms for other hazing devices. Small, shallow-draft aluminum boats with noisy outdoor motors are the least costly for hazing waterfowl or other water birds from large ponds. Pyrotechnics may be fired from boats. (OSPR has several boats potentially available from CDFG and US Fish and Wildlife Service sources.)

8. *All terrain vehicles (ATV)* - ATVs can produce auditory and visual deterrence where their use is suitable. They are excellent taxis for shuttling other hazing devices. On oiled sections of shore, beware that the approach of an ATV may frighten oiled birds back into the water. (OSPR has several ATVs potentially available from CDFG and US Fish and Wildlife Service sources.)

9. *Planes* - Small fixed-wing aircraft have been used with success for hazing some species, but in general are not as effective as helicopters because they are less maneuverable and cannot herd the birds as well. Like helicopters they are labor intensive and expensive to operate.

10. *Phoenix Wailer* - The Canadian-built Phoenix Wailer (PW) is a relatively new electronic sound-generating device that broadcasts a programmable variety of sounds at up to 130 dB through 4 speakers (1 facing each direction), with an option of 4 additional speakers. The variety of sounds produced and the random nature of the broadcasts are intended to minimize habituation. A strobe light option is also available. The floating version, the Marine Phoenix Wailer (MPW), is best suited for calm to moderate water situations. The MPW has been reported to be effective within a 1600 ft radius. Four marine batteries should be available for each MPW used; 2 for use during operations, and 2 being charged at all times. Batteries should be changed every 5 days. If the MPW is used on a 24-hr basis, the batteries may need to be changed more often. The unit, fully assembled, should be placed on a boat and transported offshore for placement. Towing or pushing it through the water is a slow, difficult process as the unit tends to dive underwater. The MPW should be monitored frequently. The PW could function as the central unit of a shore-based integrated hazing scheme, while the MPW could serve as the primary unit on a sheltered bay or other body of water. (About \$2,100 to \$5,000 each, available only from Canada. OSPR has 2 MPW. If the floats are not attached, the MPW could be set up as a ground-based device. The MPW is not stocked; it is a special order item only.)

11. *Breco Bird Scarer* - Very similar to the MPW, this unit broadcasts random frightening sounds at up to 130 dB through 4 speakers, 1 in facing each direction, for up to 72 hours of continuous operation with a lithium battery. The unit is designed to drift with an oil spill. The completely sealed buoy design allows deployment from ship or helicopter in virtually any sea state. The Canadian Wildlife Service recommends this device. This is the only unmanned hazing tool that is available for offshore or open water use. Deployment of several of these devices at a 4600 ft spacing might be effective for hazing marine ducks such as scoters from relatively large open water areas. Initial tests by OSPR did not replicate the results from the Canadian test of this device. (\$10,000 each, distributor in Cleveland, Ohio.)

12. *Mylar tape* - Mylar comes in 250 to 300 ft rolls in widths of ½ in, 1 in, 1¼ in, and 6 in and is relatively inexpensive. The tape is usually red on one side and metallic silver on the other. Short lengths of tape may be tied to a bamboo or PVC pole. Lengths up to 25 ft may be tied between 2 poles. The tape flashes when it reflects sunlight and produces a humming or crackling noise when it stretches or flaps in the wind. The efficacy of mylar tape in dispersing birds depends on the bird species present, the type and size of area that birds are being dispersed from, wind conditions (motion increases efficacy), and other methods that may be used in conjunction with the mylar tape to disperse the birds. Alternating placement and removal helps to avoid habituation. Mylar tape deters ducks, geese, gulls, and some herons. Mylar tape is best deployed to deter birds from specific, limited areas (e.g., a breakwater, mudflat or a field). (About \$3 - \$8/roll depending on width, readily available.)

13. *Lasers* - Lasers are a new bird control device, used at night or other light conditions. Hand-held lasers (comparable in size to a flashlight or pistol) are light, portable, silent, and do not pose a fire hazard. They represent a valuable tool to disperse birds at night, from roosts for example, when other techniques cannot be used or are nonfunctional. Lasers have a range of up to 1 mile. Although tests are still required for many species, cormorants, and Canada geese have shown extreme avoidance to laser beams in field trials. Other species that react to laser beams include wading birds, gulls, crows and vultures. (About \$1,000 each, available from distributor in New Mexico.)

14. *Flags* - Flags have been fashioned from white or black trash bags attached to a bamboo stake or other pole. Flags have been used to deter geese and waterfowl from feeding in

pastures and grain crops. They may deter other species as well for the short-term.

15. *Distress and alarm calls* - Broadcasts of the actual distress or alarm calls of certain species have been effective in dispersing birds. Usually birds only respond only to their own species calls. Gulls are an exception as they respond to the calls of other gull species. Tapes of alarm and distress calls are available for gulls, terns, herons, and the double-crested cormorant. Calls may be broadcast from portable tape players, or commercially available setups with speakers mounted atop a vehicle's roof. The initial behavior of gulls is flight towards the source of the calls, thus pyrotechnics fired as the bird aggregate overhead are often used to reinforce the calls. (Tapes about \$25 each from vendor in Colorado.)

16. *BirdGard[®] or Av Alarm[®]* - These are small, electronic sound generating devices. The older design Av Alarm produces a variety of synthetic, electronic-type noises and is probably no longer commercially available, although units may still be available for deployment. The newer and available BirdGard broadcasts real alarm and distress calls. The BirdGard unit can be custom programmed at the factory with up to 4 calls of the desired species (assuming they are available). The BirdGard unit also offers a number of features designed to reduce habituation including random intervals between broadcasts and the ability to turn a particular call or calls on or off as needed. A marine sound chip includes calls from 6 species of gulls and the double-crested cormorant. These units require little maintenance other than battery checks and an optional solar panel is available for power. Multi-speaker units with 20 speakers are claimed to be effective over 40 ac. These devices could be used as part of a ground-based hazing scheme, provided the units were programmed with the appropriate calls. (BirdGard units \$200 to \$600 each depending on model, 12-volt battery extra. Readily available and may be rented monthly from some vendors.)

17. *Effigies* - Scarecrows are one of the scaring devices used for bird control. They have shown some success with cormorants and waterfowl, but usually they provide only short-term protection. Human-shaped effigies can be fashioned from a wide variety of inexpensive materials such as grain sacks, old clothes stuffed with straw, or cut-out plywood silhouettes. The more realistic the facial features and the human shape, the more effective effigies are likely to be. Effigies require preparation time, but could be employed at roosting or loafing sites if reinforced with other hazing techniques. A pop-up effigy that periodically inflates, produces a screeching siren-like noise, and then deflates is commercially available. (\$800 for inflatable effigy.)

18. *Balloons* - Includes air and helium balloons, eyespot balloons, weather balloons, and balloons with a highly reflective coating.) Helium balloons require a considerable amount of servicing. Balloons need to be moved every 3 to 5 days to prevent habituation, and must be refilled every 3 to 4 days. They should be taken down if strong winds are anticipated. Vandalism to the balloons can also be a problem. When wind speeds exceed 10 miles per hour, balloons are blown around and become entangled in vegetation. They are less effective than shell crackers and noise bombs. (Eyespot balloons about \$6 to \$10 each, readily available.)

19. *Lights* - Flashing and strobe lights could be useful in deterring birds from an oil spill at night and during twilight periods. Lights are portable, easy to deploy and require very little maintenance. They could be set up on booms around a spill or placed on boats or rafts for greater mobility. Spotlights used from the ground or a vehicle may frighten some species at night. However, on foggy, misty nights, lights may attract birds.

20. *Kites* - Hawk kites suspended from helium balloons have been found to be successful in dispersing birds. They may not be suitable in calm conditions or strong winds. Kites fly best in a breeze or moderate wind, but wind speeds exceeding five miles per hour may blow down kites (Hothem and DeHaven 1982). When attached to poles, kites often become entangled or damaged. Habituation to the kites may occur after five to eight hours of exposure.

21. *Seal bombs* - Seal bombs are underwater firecrackers. They explode with a flash of light and high amplitude sound at a depth of about 3 yd. Sound output is about 190 dB at the source. They may have some effect on diving birds and marine mammals. (Availability limited, OSPR has 72 bombs.)

22. *Remote control model airplanes* - Radio-controlled model aircraft have shown some promise in scaring birds such as cormorants, gulls, and herons. Model aircraft could have limited use on small wetlands, lakes, and lagoons. High wind or rain will ground model planes. Skilled operators are necessary and the technique is labor intensive. A landing area nearby is required. Operators are potentially available from model plane clubs, but the use of volunteers makes regular deployment over a number of days problematic.

D. Equipment and Personnel Needs for Various Size Spills

1. *Very small spill scenario (5 ac contaminated, e.g., overturned truck)* - One person full time, at least initially, to direct and conduct the bird hazing. One helper to set up hazing devices and one airboat or boat operator if needed. One or 2 propane cannons with propane tanks, or 1 Phoenix Wailer (PW) or 1 BirdGard if PW is not available. Shell crackers and 1 shotgun, bird bombs and screamers with 2 launchers, abundant reflective tape on stakes, poles, or rope, 1 to 4 3-ft diameter weather balloons, 1 ATV if terrain is appropriate, 1 small boat or airboat if conditions are appropriate. One laser and a spotlight for scaring at night. Eye spot or other balloons, and effigies could be rotated into the hazing plan.

2. *Small spill scenario (slick ½ mi in size, e.g., McGrath lake)* - One to 3 people full time, at least initially. All of the devices above but with 3 to 5 propane cannons. In calm water 1 or 2 cannons could be mounted in small boats or 1 Marine Phoenix Wailer (MPW) could be deployed. A helicopter might be appropriate initially.

3. *Large spill scenario (slick 2 to 5 mi in size, e.g., Humboldt Bay)* - 5 to 15 full time personnel. All of the devices above but with 15 to 40 cannons, increased numbers of pistols and pyrotechnics, 5 to 10 PW or BirdGard units, 5 MPW, 5 to 10 BBS, 4 ATVs, 4 lasers, 4 shotguns for shell crackers, 4 to 5 airboats or boats with operators, and seal bombs.

4. *Offshore or open water scenario* - Two to 5 full time personnel. One or 2 helicopters, 1 or 2 boats with operators capable of handling ocean conditions, 2 CAPA launchers and 200 cartridges, 2 lasers, and seal bombs.

E. Potential Usefulness of Hazing Equipment at Various Habitats or Sites

Hazing equipment	<u>Location</u>		
	Bays	Coastal Marsh	Offshore
Helicopter	very good	very good	very good
Propane cannon	good	good	unlikely
Bird bombs and screamers	good	good	variable
Shell crackers	good	good	variable
CAPA	good	good	variable
Airboats	very good	very good	unlikely
Boats	good	good	variable
All terrain vehicles	variable	variable	none
Planes	good	good	good
Phoenix Wailer	fair	fair	unlikely
Marine Phoenix Wailer	good	fair	unlikely
Breco Bird Scarer	good	fair	good
Mylar tape	good	good	none
Lasers	possible	possible	possible
Flags	variable	variable	none
Distress/alarm calls	fair	fair	none
BirdGard	fair	fair	unlikely
Effigies	fair	fair	none
Balloons	possible	possible	none
Lights	possible	possible	possible
Kites	possible	possible	none
Seal bombs	possible	none	possible
Model planes	possible	possible	none

2. MARINE MAMMALS

A. Initial Considerations

Same considerations as for birds in I.A. 1-8 above.

B. Hazing

Hazing marine mammals has generally not been successful and would often be considered inappropriate. However, in some instances, it might be appropriate and possible to keep pinnipeds away from limited areas (*e.g.*, a badly contaminated haul-out with abundant clean areas nearby). One to 10 personnel, 1 helicopter briefly, 1 or 2 boats, possibly and ATV, 1 BBS and/or 1 PW if available, 1 to several propane cannons, shell crackers, bird bombs and screamers, mylar tape, balloons, effigies, and seal bombs all might be effective if rotated into a hazing scheme for harbor seals or sea lions.

3. HAZING CONTRACTORS

See Attachment 1

4. EQUIPMENT AVAILABILITY AND LOCATIONS

See Attachments 2-4

HAZING PLAN ATTACHMENT 1

Hazing Contractors

Purpose and duties: To provide personnel, equipment and expertise during an oil spill for the purpose of hazing birds, marine mammals, and other animals away from the oil. These actions are intended to minimize wildlife impacts.

Name ✓ Primary Contact	Specialty/Geographic Area Covered	Company	Contact Numbers
Gorenzel, Paul✓		UCDavis	Work:530-752-2263 Work: 530-754-6257 Pager:530-669-1273 Cell:530-304-1392 Home:530-668-1825 Emergency: home Email:wpgorenzel@ucdavis.edu
Salmon, Terry		UCDavis	Work:530-752-8751 Pager:530-759-4763 Cell: Home:530-756-5046 Emergency: home Email:tpsalmon@ucdavis.edu
Whisson, Desley Secondary Contact		UCDavis	Work:530-754-8644 Cell:530-304-1394 Home:530-753-6845 Emergency: home Email:dawhisson@ucdavis.edu

HAZING PLAN ATTACHMENT 2.

OSPR-Owned, CDFG-Owned, and Other Agency-Owned Hazing Equipment

Specialized Wildlife Operations (WO) Equipment Dedicated vs. Non-Dedicated Resources (OSPR)

EQUIPMENT TYPE	LOCATION	QTY	WO DEDICATED (Y/N)	CONTACT PERSON
24' Aluminum boat	Santa Cruz	1	Yes	Michael Harris 805 772-1135 Cell - 831 212-7090
17' Radon skiff	Morro Bay	1	Yes	Michael Harris 805 772-1135 Cell - 831 212-7090
12' Caribe inflatable boat and trailer	Santa Cruz	1	Yes	Frank Wilhelm 831 469-1722
Munson 24' PISMO alum. Boat and trailer	Santa Cruz	1	Yes	Frank Wilhelm 831 469-1722
16' Zodiac RHI (OWCN)	Santa Cruz	1	Yes	Michael Harris 805 772-1135 Cell - 831 212-7090
12' Zodiac with motor and trailer	Eureka	1	N	Kris Wiese 707 441-5762
RHI Skiff	Eureka	1	N	Joaquin Mariante 707 444-3728
21' Hurricane inflatable boat and trailer	Santa Cruz	1	N	John Sutton 408 939-6192
19' Zodiac RHI (OSPR wardens)	Santa Cruz	1	N	Michael Harris 805 772-1135 Cell - 831 212-7090
10' Caribe RHI	Santa Cruz	1	Yes	Michael Harris 805 772-1135 Cell - 831 212-7090
RHI Skiff	San Luis Obispo	1	N	Victor Blalack 805 474-6563
RHI Skiff	Channel Islands Harbor / Ventura	1	N	Darren Walther 562 714-3348
RHI Skiff	Long Beach	1	N	Greg Horne 562 708-7797
RHI Skiff	Newport Beach	1	N	Mike McDermott - 949 533-5993
RHI Skiff	San Diego	1	N	Sean Moe 619 322-3989
Panther Airboat	Sacramento	1	Yes	Randy Imai 916 324-0000

Sea Kayak	San Diego	1	N	Paul Hamilton 619 890-2029
Sea Kayak	Long Beach	1	N	Greg Horne 562 708-7797
Mobile Vet Lab	Santa Cruz	2	Yes	Frank Wilhelm 831 469-1722
Vet. Trailer 25'	Santa Cruz	2	Yes	Frank Wilhelm 831 469-1722
Vet. Transport Trailer 15'	Santa Cruz	1	Yes	Frank Wilhelm 831 469-1722
Hazing Response Trailer	UC Davis	1	Yes	Paul Gorenzel 530 752-2263
Wildlife Response Trailer	Fairfield	1	Yes	Jay Holcomb 707 207-0380
ATV	Sacramento	3	Yes	Randy Imai 916 324-0000
ATV	Santa Cruz	3	Yes	Frank Wilhelm 831 469-1722
ATV	Morro Bay	1	Yes	Michael Harris 805 772-1135 Cell - 831 212-7090
ATV Trailer (3 ATVs)	Santa Cruz	1	Yes	Frank Wilhelm 831 469-1722
ATV Trailer (1 ATV)	Santa Cruz	1	Yes	Frank Wilhelm 831 469-1722
ATV Trailer (3 ATVs)	Sacramento	1	Yes	Randy Imai 916 324-0000
ATV Trailer (1 ATV)	Fairfield	1	Yes	John Tarpley 707 864-4906
ATV	Long Beach	1	N	Greg Horne 562 708-7797
1 Ton Flatbed PU	Santa Cruz	1	Yes	Frank Wilhelm 831 469-1722

EQUIPMENT TYPE	LOCATION	QTY	WO DEDICATED (Y/N)	CONTACT PERSON
Balloons (foil)	UCDavis	500	Yes	Paul Gorenzel Work:530-752-2263 Work: 530-754-6257 Pager:530-669-1273
Balloons (scarey eye)	UCDavis	1	Yes	“ “
Bamboo poles with mylar tape	UCDavis	200	Yes	“ “
Bird bombs	UCDavis	1290	Yes	“ “
Blanks (.22 cal.)	UCDavis	2500	Yes	“ “
CAPA launcher	UCDavis	1	Yes	“ “
CAPA rockets	UCDavis	47	Yes	“ “
Helium tanks	UCDavis	2	Yes	“ “
Launcher pistols	UCDavis	11	Yes	“ “
Marine Phoenix Wailer	UCDavis	2	Yes	“ “
Mylar tape	UCDavis	10 rolls	Yes	“ “
Propane cannons	UCDavis	15	Yes	“ “
Propane tanks	UCDavis	4	Yes	“ “
Screamers	UCDavis	1300	Yes	“ “
Seal bombs	UCDavis	72	Yes	“ “
Shell crackers	UCDavis	485	Yes	“ “
Shotgun (12-gauge)	UCDavis	1	Yes	“ “
Spotlights	UCDavis	3	Yes	“ “

HAZING PLAN ATTACHMENT 3. Hazing Equipment Vendors in California

21-Apr-03

Hazing Equipment Vendors Grouped by Region

Region	Vendor				
North Coast	Mendocino County Farm Supply 303 Talmage Rd. Ukiah, CA 95482 phone: 707 462-1492 fax: 707 462-2603 email: website: www.farm-supply.com	Propane cannons	X	Eye/ear safety gear	X
		Bird bombs/screamers		Mylar tape	X
		Launcher pistols		Lasers	
		Shell crackers		Balloons	X
		Shotguns		Predator models/kites	
		CAPA rockets/launchers		Effigies	
Central Coast	Bamboo Depot 393-D East Channel Rd. Benicia, CA 94510 phone: fax: 707 751-0168 email: eBamboo@aol.com website: www.bamboobridge.com	Propane cannons		Eye/ear safety gear	
		Bird bombs/screamers		Mylar tape	
		Launcher pistols		Lasers	
		Shell crackers		Balloons	
		Shotguns		Predator models/kites	
		CAPA rockets/launchers		Effigies	
Central Coast	San Luis Obispo County Farm Supply 675 Tank Farm Rd. San Luis Obispo, CA phone: 805-543-3751 fax: email: website:	Propane cannons	X	Eye/ear safety gear	X
		Bird bombs/screamers	X	Mylar tape	X
		Launcher pistols	X	Lasers	
		Shell crackers	X	Balloons	X
		Shotguns		Predator models/kites	X
		CAPA rockets/launchers		Effigies	
Central Coast	San Luis Obispo County Farm Supply 1220 West Main St. Santa Maria, CA 93548 phone: 805 922-2737 fax: 805 922-6982 email: website:	Propane cannons	X	Eye/ear safety gear	X
		Bird bombs/screamers	X	Mylar tape	X
		Launcher pistols	X	Lasers	
		Shell crackers	X	Balloons	X
		Shotguns		Predator models/kites	X
		CAPA rockets/launchers		Effigies	
Central Coast	Select Ag Services, Inc. 1520 East Donovan Rd. Santa Maria, CA 93454 phone: 805 922-7923 fax: 805 922-7643 email: itchygamehog@aol.com website: none	Propane cannons	x	Eye/ear safety gear	x
		Bird bombs/screamers	x	Mylar tape	x
		Launcher pistols	x	Lasers	
		Shell crackers		Balloons	x
		Shotguns	x	Predator models/kites	x
		CAPA rockets/launchers		Effigies	
Central Coast	Sutton Agricultural Enterprises 746 Vertin Ave. Salinas, CA 93901	Propane cannons	X	Eye/ear safety gear	X
		Bird bombs/screamers	X	Mylar tape	X
		Launcher pistols	X	Lasers	

	phone: 831 422-9693 fax: 800 482-4240 email: suttonag@earthlink.net website: www.suttonag.com	Shell crackers Shotguns CAPA rockets/launchers	X	Balloons Predator models/kites Effigies	X X
Central Coast	Vegetable Growers Supply Co. 40602 El Camino Greenfield, CA 93972 phone: 831 674-8416 fax: 831 674-8418 email: website: www.veggro.com	Propane cannons Bird bombs/screamers Launcher pistols Shell crackers Shotguns CAPA rockets/launchers	X X X	Eye/ear safety gear Mylar tape Lasers Balloons Predator models/kites Effigies	X X X X X
Central Coast	Vegetable Growers Supply Co. 1360 Merrill St. Salinas, CA 93902 phone: 831 759 4634 or 800 422-4855 fax: 831 759-4638 email: website: www.veggro.com	Propane cannons Bird bombs/screamers Launcher pistols Shell crackers Shotguns CAPA rockets/launchers	X X X	Eye/ear safety gear Mylar tape Lasers Balloons Predator models/kites Effigies	X X X X
Central Coast	Vegetable Growers Supply Co. 2250 Mahoney Rd. Santa Maria, CA 93454 phone: 805 349-0290 fax: email: website: www.veggro.com	Propane cannons Bird bombs/screamers Launcher pistols Shell crackers Shotguns CAPA rockets/launchers	X X	Eye/ear safety gear Mylar tape Lasers Balloons Predator models/kites Effigies	X X X X
South Coast	Bird Barrier America, Inc. 20925 Chico St. Carson, CA 90746 phone: 800 503-5444 fax: 310 527-8005 email: cameron.riddell@birdbarrier.com website: www.birdbarrier.com	Propane cannons Bird bombs/screamers Launcher pistols Shell crackers Shotguns CAPA rockets/launchers	X	Eye/ear safety gear Mylar tape Lasers Balloons Predator models/kites Effigies	X X X X
South Coast	ButlerBamboo 3514 Westminster Ave. Santa Ana, CA 92703 phone: 714 554-0600 or 800 666-0606 fax: 714 554-0606 email: website: www.butlerbamboo.com	Propane cannons Bird bombs/screamers Launcher pistols Shell crackers Shotguns CAPA rockets/launchers		Eye/ear safety gear Mylar tape Lasers Balloons Predator models/kites Effigies	
South Coast	Fruit Growers Supply 980 W. Telegraph Rd. Santa Paula, CA phone: 805 933-2723 fax: 805 933-2557 email: website:	Propane cannons Bird bombs/screamers Launcher pistols Shell crackers Shotguns CAPA rockets/launchers		Eye/ear safety gear Mylar tape Lasers Balloons Predator models/kites Effigies	X X X X X

South Coast	Tri-Tech Ag Products 300 East 5th St. Camarillo, CA 93010 phone: 805 388-9855 fax: 805 388-2953 email: website:	Propane cannons		Eye/ear safety gear	X
		Bird bombs/screamers	X	Mylar tape	X
		Launcher pistols	X	Lasers	
		Shell crackers		Balloons	
		Shotguns		Predator models/kites	
		CAPA rockets/launchers		Effigies	
South Coast	Vegetable Growers Supply Co. 3803 Dufau Rd. Oxnard, CA 93033 phone: 805 488-2502 fax: 805 488-2352 email: website: www.veggro.com	Propane cannons		Eye/ear safety gear	X
		Bird bombs/screamers	X	Mylar tape	X
		Launcher pistols	X	Lasers	
		Shell crackers		Balloons	X
		Shotguns		Predator models/kites	
		CAPA rockets/launchers		Effigies	
Inland	Vegetable Growers Supply Co. 280 N. Dogwood El Centro, CA 92243 phone: 760 352-2133 fax: 760 352-2154 email: website: www.veggro.com	Propane cannons	X	Eye/ear safety gear	X
		Bird bombs/screamers	X	Mylar tape	X
		Launcher pistols	X	Lasers	
		Shell crackers		Balloons	
		Shotguns		Predator models/kites	
		CAPA rockets/launchers		Effigies	
Inland	Wildlife Control Technology 2501 N. Sunnyside Fresno, CA 93727 phone: 800 235-0262 fax: 559 490-2260 email: wctmiket@qnis.net website: www.wildlife-control.com	Propane cannons	X	Eye/ear safety gear	
		Bird bombs/screamers	X	Mylar tape	X
		Launcher pistols	X	Lasers	
		Shell crackers	X	Balloons	X
		Shotguns		Predator models/kites	
		CAPA rockets/launchers		Effigies	
Out of State	Bird Guard 601 North Larch St., PO Box 1690 Sisters, OR 97759 phone: 541 549-0205 or 888 332-2328 fax: 541 549-5286 email: info@birdgard.com website: www.birdgard.com	Propane cannons		Eye/ear safety gear	
		Bird bombs/screamers		Mylar tape	
		Launcher pistols		Lasers	
		Shell crackers		Balloons	
		Shotguns		Predator models/kites	
		CAPA rockets/launchers		Effigies	
Out of State	Hyde Marine 28045 Ranney Parkway Cleveland, OH 44145 phone: 440 871-800 fax: 440 871-8104 email: sales@hydmarine.com website: www.hydmarine.com	Propane cannons		Eye/ear safety gear	
		Bird bombs/screamers		Mylar tape	
		Launcher pistols		Lasers	
		Shell crackers		Balloons	
		Shotguns		Predator models/kites	
		CAPA rockets/launchers		Effigies	
Out of State	Phoenix Agritech (Canada) PO Box 10 Truno, Nova Scotia, Canada B2N5B6	Propane cannons		Eye/ear safety gear	
		Bird bombs/screamers		Mylar tape	
		Launcher pistols		Lasers	

phone: 902 662-2444
 fax: 902 662-2888
 email: phoenix@fox.nstn.ca
 website: www.phoenixagritech.com

Shell crackers
 Shotguns
 CAPA rockets/launchers

Balloons
 Predator models/kites
 Effigies

Out of State Reed-Joseph International Co.
 Box 894 or 800 Main St.
 Greenville, Mississippi 38702
 phone: 800 647-5554
 fax: 662 335-8850
 email: jbj3@reedjoseph.com
 website: www.reedjoseph.com

Propane cannons	X	Eye/ear safety gear	X
Bird bombs/screamers	X	Mylar tape	X
Launcher pistols	X	Lasers	X
Shell crackers	X	Balloons	X
Shotguns		Predator models/kites	
CAPA rockets/launchers	X	Effigies	X

Out of State SeaTech
 5651-B Jefferson NE
 Albuquerque, NM 87109
 phone: 505 884-2300
 fax: 505 346-0635
 email: info@shopseatech.com
 website: www.shopseatech.com

Propane cannons		Eye/ear safety gear	
Bird bombs/screamers		Mylar tape	
Launcher pistols		Lasers	X
Shell crackers		Balloons	
Shotguns		Predator models/kites	
CAPA rockets/launchers		Effigies	

Out of State Signal Education Aids
 2314 Broadway
 Denver, CO 80225-2115
 phone: 303 751-4192
 fax: 303 751-4192
 email:
 website:

Propane cannons		Eye/ear safety gear	
Bird bombs/screamers		Mylar tape	
Launcher pistols		Lasers	
Shell crackers		Balloons	
Shotguns		Predator models/kites	
CAPA rockets/launchers		Effigies	

HAZING PLAN ATTACHMENT 4.**Private and Agency-Owned Helicopters Potentially Available for Hazing.**

Private & Agency Owned Helicopters as a Possibility for Hazing					
Company	Contact	Address	Phone	Fax	Helicopters Passengers
Air One Helicopters, Inc.					
	Don Allen Hill Bldg	1144 Coleman Ave San Jose, CA 95110	(408) 292-5043	(408) 292-5622	4) 350D 1) 858T 2) 212
					3 9 9
Air Resources Helicopters, Inc.					
	Chuck McFarland Cindy McFarland Randy Conway	19401 Campus Dr, Hangar 7 Sunnyvale, CA 92707	(714) 442-4450	(714) 442-0483	1) 350B1 1) 350H2
					3 5
Airix Helicopters, Ltd.					
	Paul Collins	1118 Coleman Ave. San Jose, CA 95110	(408) 998-3366	(408) 998-4061	2) 500B1 1) 206B3 2) 320H 3) 538T 1) 315D
					4 4 5 9 4
Aspen Helicopters, Inc.					
	Barry Hanson Mike Pascher	2599 West 5th Street Orland, CA 94050	(805) 925-5416	(805) 925-7327	6) 206L3 2) 206B
					6 4
California Department of Forestry					
	Marshall Graves Cecil Dill	1841 Barley Way Madera, CA 93651	(916) 315-4483	(916) 253-4194	10) UH-1H
					9

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Tuesday, May 30, 2000

Company	Contact	Address	Phone	Pager	Fax	Helicopters	Passengers
Civic Helicopters, Inc.							
	Chao Yi Tu Melba Ellis Mark Moreno	2193 H Palomar Airport Rd Carlsbad, CA 92008	(619) 433-8424		(619) 433-0431	2) 300C 1) 206 2) 200	2 4 4
Clark Helicopters							
	James Clark Lynn Clark	545 Kennedy Street, G-1 El Cajon, CA 92020	(619) 449-0501		(619) 449-0330	1) 200D	4
Cooperative Helicopters of San Diego							
	Ivor Shier	2204 Pacific Hwy. San Diego, CA 92103	(619) 291-4356			2) 206B3 1) 206L3 1) R32 1) 350RA 1) 421B	4 6 1 3 6
Crane Helicopter Services, Inc.							
	Linda Josephich Steven Josephich	918 Forest Lane Alamo, CA 94507	(510) 820-0174		(510) 831-9507	1) 204TH	3
East Bay Regional Parks							
	Officer Smith	17910 Lake Chabot Road Castro Valley, CA 94546	(415) 881-1833			2)	

Tuesday, May 30, 2000

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Company	Contact	Address	Phone	Pager	Fax	Helicopters	Passengers
Federico Helicopters, Inc.							
	Leonardo Federico Ortiz Olivarez	4955 E. Anderson, Suite 113 Fresno, CA 93727-1321	(209) 454-7683			2) 853T 1) 1314R 1) 1041H205 1) 55R	7 3 9 9
Helicare							
	Niela Anderson Ove Larson	P.O. Box 3138 Salinas, CA 95912	(408) 422-2188		(408) 757-2069	2) 206B2	4
Helicopter Adventures, Inc.							
	Patrick Carr Gordon Cox	81 John Glenn Drive Livermore, CA 94520	(510) 686-2917	(415) 998-9105	(510) 686-2986	5) 821 13) 300CB	1 3
Helinet Aviation Services							
	Gary Farrell Gary Gumber	16425 Han Street, Hangar 2 Van Nuys, CA 91406	(818) 902-0229		(818) 902-9287	1) 206LJ 4) 206B3 1) 206R2	6 4 4
Helistream, Inc.							
	Rod Anderson	3000 Airways, Suite 200 Costa Mesa, CA 92626	(714) 422-3163		(714) 662-1687	1) 844 6) 822 1) 206L	3 1 6

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Tuesday, May 30, 2000

Company	Contact	Address	Phone	Pager	Fax	Helicopters	Passengers
Helitac Aviation, Inc.							
M. V. Pressman	1910 W. Sunset Blvd., 89100 Los Angeles, CA 90026	(213) 487-0398			(213) 487-4185	1) 206B 1) 206C 1) 200	4 6 4
Hughes Aircraft Company							
Dale House Paul Morris	P.O. Box 7631 Van Nuys, CA 91409	(818) 375-4501			(818) 375-4508	1) 222A	6
Island Express Helicopters							
Ken Putman John Moore Gary Allin	P.O. Box 2249 Aviation, CA 90704	(310) 510-2525			(310) 510-9671	3) 350D	5
L.A. City of (Department of Water and Power)							
Clay Yates	8060 Balboa Blvd. Van Nuys, CA 91406	(818) 902-3060			(818) 756-9134	1) 206B 3) 206L3 2) 205A1 3) 412 4) 350B1 1) 091B	4 6 9 9 3 3
Landell's Aviation							
Elaine, Rene	39273 Silver Moon Trail Desert Hill Springs, CA 92240	(619) 329-6468			4) 206B3		4

Tuesday, May 30, 2000

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Company	Contact	Address	Phone	Pager	Fax	Helicopters	Passengers
Pasadena Police Dept. Helicopter Sect.							
	David Harris Glenn Beckley	207 North Charfield Ave Pasadena, CA 91101	(818) 404-4425		(818) 392-4124 4) F22F 1) 206B3	4) F22F 1) 206B3	7 4
Pritchard Corporate Air Services, Inc.							
	Chuck Pritchard Scott Pritchard	P.O. Box 2358 Newton, CA 94645-2458	(415) 898-7142		(415) 898-5142 1) 4762	1) 4762	1
Redding Air Service, Inc.							
	Don Truman Doug Pryde David Burlingame	6831 Airway Ave. Redding, CA 96002	(916) 221-2851		(916) 221-3728 2) 206B3 1) 370BA 1) 206L3	2) 206B3 1) 370BA 1) 206L3	4 3 6
Sacramento Executive Helicopters, Inc.							
	John or Tracy Hamilton	4107 Frequent Blvd. Sacramento, CA 95821	(916) 424-9691		(916) 424-0304 1) 206B3 4) B22	1) 206B3 4) B22	4 1
Verticare							
	James Chesterton	P.O. Box 5127 Sutter, CA 95915-5127	(916) 422-0685		1) B22B	1) B22B	1

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Company	Contact	Address	Phone	Fax	Helicopters	Passengers
Western Helicopters, Inc.						
	Dick Silva Peter Gillies	P.O. Box 579 Rialto, CA 92377	(909) 829-1051	(909) 829-4904	1) 500D 2) 300C	4 1
Western Operations, Inc.						
	RL Green Peter Gillies Roger Horgen	P.O. Box 2420 Rialto, CA 92377	(909) 829-1056	(909) 829-2110	1) 500D 1) 300C 1) 206B3	4 1 4
Wharfbirds, Inc.						
	Charles Abby Lew Phillips Orville Cox	24618 Aviation Ave. Davis, CA 95616-5403	(909) 676-0110	(930) 736-0147	2) 1H12 1) FH100B 1) 47GA3	3 2

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Tombles, May 10, 2000

HAZING PLAN

GETTING EQUIPMENT TOGETHER

For UCD Contractor

Below is the sequence of events you will complete before leaving campus for a spill and a checklist of equipment that potentially could be used at a spill. You may take all of it, or just some items based on the type and size of the spill.

1. **Obtain a vehicle:** Fleet Services, private rental agency. The vehicle must have a hitch with a 7 round or flat pin connection for the electrics to be compatible with the OSPR trailer. If available, a van with a hitch is preferred as it provides better security for equipment.
2. **Determine hazing equipment needs.**
3. **Load vehicle and trailer** with appropriate equipment, keeping in mind compatibility requirements for propane, helium, and explosives. If propane and pyrotechnics are to be transported they must be in separated (e.g., propane in trailer, pyrotechnics in vehicle).
4. **Equipment Checklist:**

Toolkit: Each is numbered and labeled: #1 PG, #2 DW, #3 TS

Location: Cabinet #19

batteries, AAA (PG toolbox only)
 batteries, D
 duct tape
 ear muffs
 flashlight
 gloves, work
 hand tools (PG toolbox only)
 safety glasses
 Sharpie pens
 scissors/snips, all purpose
 spotlight
 string for balloons
 vest, multi-pocketed

Pyrotechnics:

Location: Magazine

bird bombs
 bird whistlers
 blanks
 CAPA launcher
 CAPA exploders
 ear plugs
 flares
 gun cleaning oil
 Record launchers
 safety goggles
 shell crackers

Location: Shelves

Zon guns

Location: 1323 Academic Surge

shotgun

Location: Cargo container by pen 14

propane tanks

Location: Cabinet #19

gun cleaning kit

keys to magazine and shotgun case

Other Bird Scaring Items:

Location: Shelves

balloons, microfoil

bamboo stakes

helium tanks

Location: Cabinet #19

helium regulators

mylar tape

Scare Eye balloon

Location: Outdoor Lockers

Marine Phoenix Wailers

Personal Protection Items:

Location: Cabinet #7

boots, disposable

boots, hip

boots, steel-toed

boots, mudders (muck-luks)

gloves, rubber

suits, hazmat type

Bird Capture/Restraint Items:

Location: Cabinet #19

brown paper bags

pillow cases

Location: Shelves

live animal boxes

nets, long-handled

Miscellaneous Items:**Location: Cabinet #7**

bungee cords
 plastic tubs
 socket wrenches
 tie downs

Optical Equipment:**Location: Grey cabinet Rm 1323**

binoculars
 camera
 film

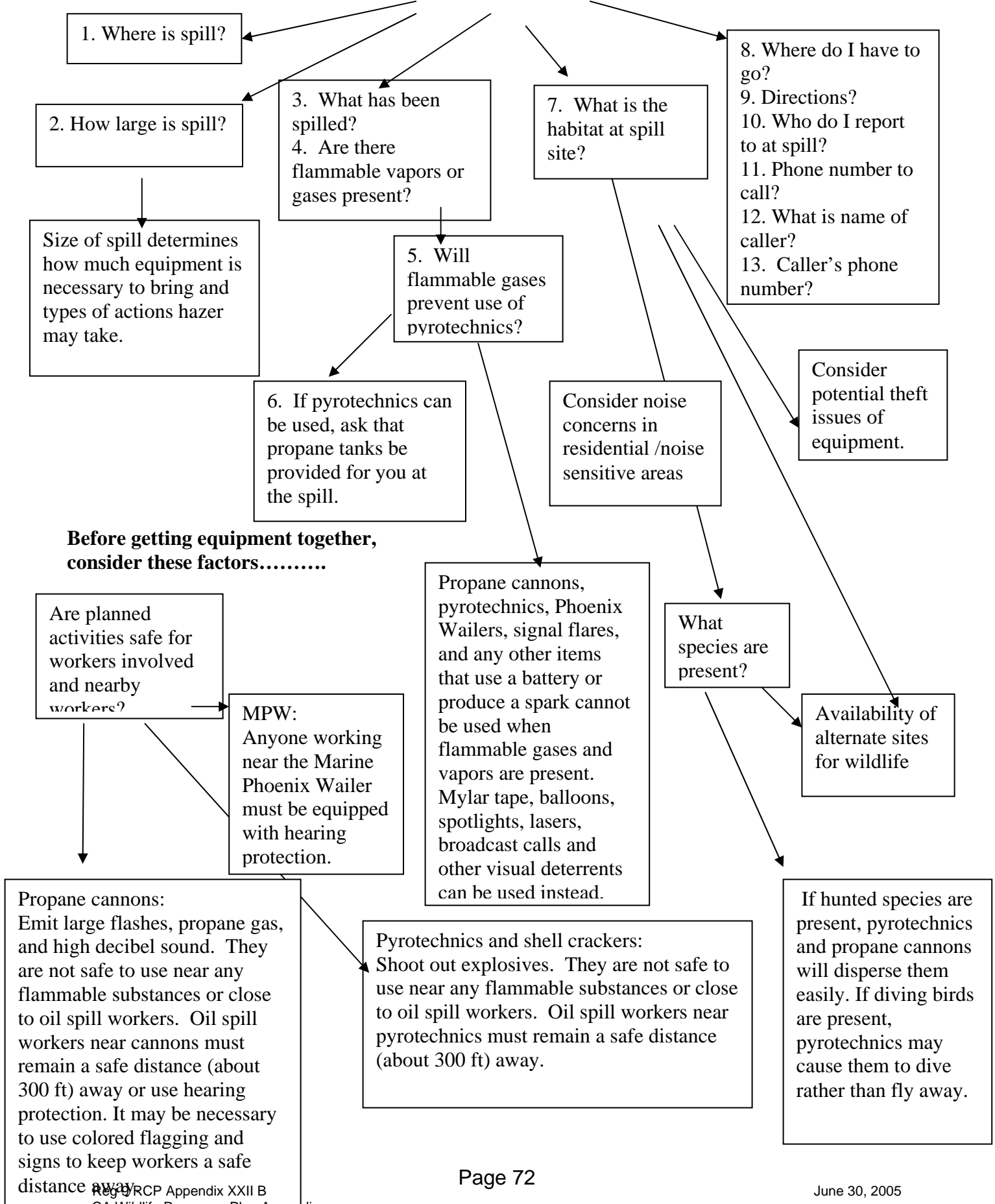
Office-related Items:**Location: Rm 1323 rolling tub**

Wildlife Hazing 3-ring notebook
 ESI maps of California coastline

UCD Inventory**Pyrotechnics Status**

19-Aug-02

	<u>OSPR</u>	<u>UCD</u>	<u>Total</u>	<u>Given Away</u>	<u>Loaned Out</u>
Whistlers	700	600	1300	664	
Bird bombs	842	450	1292	625	
Shell crackers	472	15	487		
Blanks	1300	1200	2500	1400	
Record launchers	7	4	11		6
Shotgun	1	0	1		
CAPA exploders	47	0	47		
CAPA launcher	1	0	1		
Flares	2	0	2		
Seal bombs	72	0	72		

HAZING PLAN Questions to ask when you're paged...

Office issues....

Go to Rm 1323
Academic Surge and
pick up the final

Oil Spill Wildlife Hazing 3-ring notebook, located
in Gorenzel's office in the rolling tub containing the
OSPR files.

Binoculars and camera gear in gray cabinet.

Maps of the spill site from the ESI Maps file in the
rolling tub containing the OSPR files.

Obtain vehicle from Fleet Services (2-0787) or a
private rental company. A list of local rental
companies is in the Hazing 3-ring notebook
mentioned above, in the "First Response Activities"
section.

Getting the equipment...

Equipment at TB-1
is in the following
locations:

Cabinet #19 in
Room 101A

Shelves in
Room
101A

Cabinet #7 in
Room 101A.

Magazine in
Room 101A

Outdoor
lockers, cargo
container.

Shipping papers.....

Shipping papers must be
filled out when transporting
helium gas, propane gas, or
pyrotechnics. The quantity
of the hazing equipment
should be entered onto sheet,
and it should be signed.

Shipping papers are
located in Cabinet
#19. Sample
shipping papers are
taped to the inside of
the locker door.

Place shipping papers
in pocket on driver's
side door. If you
leave truck, place
shipping papers on
seat of truck.

Compatibility issues.....

A transportation
compatibility chart is also
taped to the inside of locker
door.

Propane may not be transported with any of the
pyrotechnics in the same vehicle. If have to transport
propane and pyrotechnics, then you must use a second
vehicle and driver or a trailer hitched to your vehicle.
Gases cannot be in same vehicle as pyrotechnics, no
matter the amount. Therefore, one truck or trailer should
carry gas, & 2nd truck should carry pyrotechnics.
Pyrotechnics should be transported in day magazine.

Finally....

Don't forget to pack your own bag of personal gear, enough for a
multi-day stay. Include clothing for inclement weather

HAZING PLAN

Date:

THE CALL!!

What to ask when that call finally comes.

Ask several important questions:

1. **Where is the spill?** _____

2. **How large is the spill (gallons and area)?**

3. **What has been spilled?**

4. **Is it flammable?** Yes _____ No

5. **Does it give off flammable vapors that prevent the use of pyrotechnics or cannons?** Yes
No

6. **If pyrotechnics are ok to use, then can propane tanks be provided for me at the site?**
Yes _____ No

7. **What does the habitat look like? (e.g., open water, rocky coast, sandy beach, marsh, mudflats, harbor)** _____

8. **Where do I go to report in?** _____

9. **Can you give me directions?** _____

10. **Who do I report to when I arrive?**

11. **Can you give me a phone number to call? (in case I get lost or can't find the place)**

_____ 12.

What is your name?

13. **What is your phone number?**

HAZING PLAN

Transportation Compatibility Chart

X - denotes materials that may not be loaded, transported or stored together in the same vehicle.

Blank indicates no restrictions.

	Bird bombs	Whistlers	CAPA	Shell crackers	Flares	Propane	Helium
Bird bombs 1.4 explosives						X	
Whistlers 1.4 explosives						X	
CAPA 1.4 E explosives						X	
Shell crackers 1.4 E explosives						X	
Flares 4.1 flammable solid						X	
Propane 2.1 flammable gas	X	X	X	X	X		
Helium 2.2 nonflammable gas							

APPENDIX IIIg

Example of Recovery & Transportation Group Protocols From the San Mateo Mystery Spill

SUMMARY

The three situations which could result in activation of oiled bird search and collection (S&C) operations are oiled birds brought in by the public, oil on the water observed during wildlife reconnaissance aerial operations, and oil/oiled wildlife observations from the shoreline wildlife reconnaissance team. Activation of S&C teams will not be initiated without consultation between the Wildlife Operations Branch Director and the Planning Chief. If activation is warranted, the Wildlife Operations Branch Director will immediately alert the OWCN Response Veterinarian for mobilization of their staff. The Planning Chief will notify the Incident Command SOSC and FOSC.

ACTIVATION CRITERIA

1) Birds Recovered by the Public

If the public brings in three or more oiled birds from any division or similar geographic area, the Wildlife Branch Director can activate S&C teams. Depending on the number of birds, degree of oiling, and area or areas in which they were collected, a single team or multiple teams can be activated for search and collection on subsequent days.

2) Wildlife Reconnaissance Observations – Aerial

If oil on the water is observed during overflights, the location and perceived amount of the observed oil will be communicated to the Wildlife Operations Branch Director and the Planning Chief. Depending on the oil location, weather conditions (25 knot on-shore winds sustained for 6 hrs or more) proximity to wildlife, amount and footprint, a single S&C team or multiple teams can be activated for search and collection on subsequent days. See Attachment 1 for Aerial Operations schedule.

3) Wildlife Reconnaissance Observations – Shoreline (foot)

If oil or oiled wildlife is observed on the shoreline or on the water during beach reconnaissance operations, the location and amounts will be communicated to the Wildlife Operations Branch Director and the Planning Chief. Depending on weather (on-shore winds) and sea states (high swell), oil location, proximity to wildlife, amount and footprint, a single S&C team or multiple teams can be activated for search and collection on subsequent days. The threshold of 6 or more oiled birds (live, dead or any combination) in any single division should be used as a guideline for activation.

STAFFING SEARCH AND COLLECTION TEAMS

The OWCN will make 2 OWCN teams (4 people) available daily to perform search and collection as deemed necessary based on current search and collection protocols. This schedule will include 1 team capable of conducting ATV operations, and 1 team capable of performing foot based search efforts. Within these 4 personnel, 2 team members will be capable of conducting boat operations. The OWCN personnel will maintain and come equipped with appropriate PPE/safety and capture equipment for these operations and will rely on OSPR to provide ATV's, helmets, a boat, and a boat operator. If necessary, the OWCN can utilize its boat, stored at the Marine Wildlife Veterinary Care and Research

Center in Santa Cruz. The boat driver will be responsible for transporting the boat and returning it to Santa Cruz if this boat is used. The OWCN response coordinator will report directly to the Wildlife Branch Director unless a larger S&C effort is mobilized (see below) and coordinate with the OSPR S&C coordinator as appropriate.

Concurrently, the OSPR S&C coordinator will continue to develop the OSPR personnel availability matrix on a monthly basis. The Wildlife Branch Director will be responsible for distributing OWCN and OSPR schedules to the IC as they become available.

If the Wildlife Branch Director, in consultation with the OWCN response coordinator, determines that more than 2 S&C teams are needed, s/he will ask the OWCN response coordinator if the OWCN has additional personnel available to provide further search and collection coverage. If this is not possible, the OSPR personnel matrix and/or OSPR contractors will be utilized to supplement the OWCN teams and mount a larger S&C effort. If this scenario occurs, the OWCN response coordinator will report to the OSPR S&C coordinator who will then report to the Wildlife Branch Director.

AGENCY NOTIFICATION OF SEARCH AND COLLECTION EFFORTS

The following notifications will be made by either the OWCN response coordinator or the OSPR search and collection coordinator prior to conducting operations in the following divisions: (See Appendix I for maps or on the OSPR-GIS Website, <http://www.cwo.com/~rimai/>.)

Division AA& A – All search & collection

Jan Roletto, NOAA, (415) 561-6622 ext. 207, jan.roletto@noaa.gov
Sarah Allen, Pt. Reyes National Seashore, (415) 464-5187; home, (415) 456-0187

Division B – All search & collection (or only ATV operations, as noted)

1. Jan Roletto, NOAA, (415) 561-6622 ext. 207, jan.roletto@noaa.gov
2. ATV ops on Ocean Beach – Aline Forbes, GGNRA, (415) 716-6396
3. ATV ops on Pacifica Beaches – Pacifica Police Department, (650) 738-7314

Division C – All Search & collection

Jan Roletto, NOAA, (415) 561-6622 ext. 207, jan.roletto@noaa.gov

Division D – All search & collection

Jan Roletto, NOAA, (415) 561-6622 ext. 207, jan.roletto@noaa.gov

Division E (south) – All search & collection (or only ATV operations, as noted)

1. ATV operations only - State Park Dispatch, (831) 649-2817
2. Physically check in at the office of Hopkins Marine Lab before walking their beaches- if before or after hours, leave a message at Hopkins Dispatch, (831) 655-6200
3. Snowy Plover monitoring :

- a. north of Elkhorn Slough, call Carleton Eyster at (831) 334-3407 (c) or (831) 466-9820 (h) and
- b. south of Elkhorn Slough, call Kriss Neuman (831) 332-0631 daytime and (831) 475-8769

SEARCH EFFORTS AND LOCATIONS

Once search and collection teams are activated, they may be deployed for beach searches or sweeps, as well as boat operations, as determined by the Wildlife Operations Branch Director in consultation with the Planning Chief. Full beach searches typically involve coverage of the full length of beaches and more detailed searching. Sweeps typically consist of limited coverage of beach lengths, binocular searches from vantage points and search effort concentrated in the key search areas listed below by division. Boat operations typically consist of on-water recovery in a limited area of operation of live, oiled birds. Thus far, these operations have only taken place in Monterey Bay but the Wildlife Branch Director can authorize additional boat operations as needed. These operations may also be conducted at night, as safety permits.

Teams are directed to search and collect live and dead oiled wildlife, properly document date/time/location information and transport birds to intake center, collect representative samples of fresh oil or tar balls and transport to DFG Santa Cruz lab, assess beach areas for stranded oil and determine whether cleanup is necessary. GPS coordinates for all samples should be provided whenever possible. (See Appendix II for GPS set up and usage.)

Teams should pick-up all dead birds, oiled or not, during beach collection except for the following:

- 1) *Non-visibly oiled birds that are toe-clipped* within Division E only (visibly oiled toe-clipped birds should be picked up);
- 2) Birds that are clearly well into the decay process and show no signs of being oiled.

Note: Birds that have *recently* been scavenged (mostly feathers and bones) should be picked up.

Teams are directed to contact the OWCN Wildlife Veterinarian if a stranded marine mammal is spotted or found. The OWCN Wildlife Veterinarian will contact Mr. Joe Cordero of the National Marine Fisheries Service as consistent with the MOU.

Teams should also record start/end times of searches, distances actually covered, and submit Search Effort Logs to Kathleen Jennings (OSPR). (See Appendix III for Beach Logs.)

OSPR teams should check in with the Search & Collection Coordinator between 10-11 am and between 3-4 pm every day to report search results. OWCN and Santa Cruz Field Office staff will check in with the OWCN Spill Response Coordinator.

Tide information, current weather, and sunrise/sunset times are available through the Search & Collection Coordinator.

If you have been assigned more than one division to search and do not have time to cover all beaches, key search areas in each division are listed in order of priority:

Divisions A and AA

- Drake's Beach
- Limantour Spit
- Great Beach

Division B:

- Fitzgerald Marine Reserve
- Rockaway Beach (Pacifica)
- San Pedro Creek Beach (Pacifica)
- Montara Beach

Division C:

- Pillar Point – break water & beach/south beach in Harbor
- Pescadero Beach and coves south to Bean Hollow – Pebbles Beach & North area
- San Gregorio Beach
- Pomponio Beach
- Miramonte Beach
- Dunes Beach
- Martin's Beach

Division D:

- Gazos Creek
- Waddell Creek
- Greyhound Rock Beach
- Scott's Creek
- Davenport Beach
- Wilder Ranch/Creek, to the Lighthouse at Santa Cruz

Division E:

- Santa Cruz Boardwalk Beach – pier and
- Capitola Beach
- Seacliff Beach to Sunset Beach
- Moss Landing State Beach – breakwater north and south
- Marina State Beach
- Del Monte Beach

Suggested items for teams to carry:

2. Water
3. Sunscreen
4. OSPR jacket
5. Raingear
6. Gloves
7. Rubber boots
8. Leather boots
9. Extra socks
10. Binoculars
11. Net
12. Bird boxes
13. Bird bags

14. Beach Search Effort Log
15. GPS unit
16. GPS log
17. Cell phone(s)
18. Pager(s)
19. Lunch, snacks (e.g. power bars, bananas)
20. Enthusiasm
21. Common sense

Bird and search items can be obtained at the OWCN/IBRRC at 4629 Cordelia in Cordelia, or the office in Santa Cruz next to the Long Marine Lab.

SAFETY ISSUES

Please note that all staff conducting search and collection operations **MUST** read and sign the Site Safety Plan, copies of which are located in the DFG office at Cordelia and at the OWCN/IBRRC facility. A copy of the SSP is included as Appendix IV, and also on the OSPR-GIS Website, <http://www.cwo.com/~rimai/>. Please also keep your Hazwoper card up-to-date and available.

Teams shall be of two or more. You should never be out of eye contact with your partner(s). Beach walkers should not be out after dark. Please check out with the OWCN Spill Response Coordinator (OWCN and Santa Cruz Field Office staff) or the Search & Collection Coordinator (OSPR staff) when you leave the beach. . If you feel that conditions are unsafe STOP ALL SEARCH AND COLLECTION OPERATIONS and inform your Coordinator immediately.

Boat operations: All staff assigned to boat operations will wear a lifejacket. If the boat driver determines that conditions are too dangerous, all on-water operations will cease.

GPS

You must write down GPS waypoint coordinates and time as a backup in case the GPS unit malfunctions. You may use the Search Effort Log (Appendix III) to record this information. See Appendix II for GPS set up and usage.

ATV ETIQUETTE DURING BEACH OPERATIONS

1. Make yourself clearly recognizable to everyone who may observe you on the beach. Try to have some type of official insignia readily visible at all times. The green OSPR jacket and the OWCN windbreakers would be appropriate for use.
2. When approaching someone on the beach, slow down to about twice the walking pace. Do not immediately speed up once you have passed. Instead, try to maintain a “low speed envelope” for at least 50 yards around beach contacts.
3. When contacting people on the beach show some form of acknowledgement – eye contact, a wave or a nod. When possible, talk to people. Tell them who you represent and what you are doing.

4. See attached Appendix V, “Safe Operations of All-Terrain Vehicles”

5. ATV operation in Snowy Plover Habitat (see below SEARCH AND COLLECTION IN SNOWY PLOVER HABITAT)

SEARCH AND COLLECTION IN SNOWY PLOVER HABITAT

1. In general, snowy plovers (SNPL) nest high on the beach, above the high wrack line, but they may nest below it. The most important thing to do to avoid SNPL broods (aside from conducting all search and collection on foot) is to conduct all activities on the wet shoreline, well below the most recent wet wrack line.

2. If survey people see (or hear) vocalizing or displaying (broken wing or tail drag displays) SNPL, they should proceed cautiously out of the area at once—a minimum of 100m away to allow the adult SNPL to return to broods that may be crouching along the wrack line. Similarly, if people observe SNPL chicks, they should proceed cautiously out of the area immediately to avoid separating chicks from parents. The caveat to this is that anytime survey people respond by proceeding out of the area, they may be likely to encounter chicks from the same or other broods in their line of exit. To this end, try to avoid any lower beach areas that are heavily covered in kelp wrack, as detecting chicks with the naked eye would be difficult.

3. In all cases, where plover breeding habitat is marked by rebar, flagging, tape, or any other method, search and collection personnel will not walk into these areas to recover oiled wildlife unless they have spoken directly with the OWCN Spill Response Coordinator. From Santa Cruz north, the OWCN Spill Response Coordinator must obtain approval from the Division Chief of the Endangered Species Division (Chris Nagano), Sacramento Fish and Wildlife Office, (916) 414-6600/6601, before disruption of nesting plovers can occur. From Santa Cruz south, the OWCN Spill Response Coordinator must obtain approval from the David Pereksta of the Ventura Fish and Wildlife Office, at (805) 644-1766, before disruption of nesting plovers can occur. If you see a dead oiled bird in these areas, note it on your log, but do not remove it from the habitat. Try to have the USF&W biologists monitor the areas while you are there.

4. When using ATVs to conduct beach surveys, drivers will stay along the coastline in wet sand to bypass known plover breeding habitat. Drivers will stop approximately every 100 meters to scan for plover nest areas that might be encountered as they travel forward. If nesting areas are encountered, survey via scans or by observing marked nesting habitat. ATV operators will stay on the wet beach area and proceed at less than 5 MPH until they have passed the plover breeding habitat.

5. All search and collection staff will be briefed on these protocols prior to conducting search and collection efforts. Any animals inadvertently injured during search and collection operations will be recovered and the OWCN Spill Response Coordinator will be notified immediately.

As of 6-14-02, there have been over 100 SNPL nests initiated between the Moss Landing Harbor mouth and Reservation Rd. to the south, so there is really no way to exit or “get past” the active habitat without potential disturbance, so please proceed with caution. To the north of Moss Landing Harbor mouth there have been at least 50 nests initiated through the area of Monterey Bay Academy, until you are north of MB Academy/Sunset State Beach.

See Appendix VI for Snowy Plover pictures and maps.

DEACTIVATION OF SEARCH AND COLLECTION OPERATIONS

Search and collection may cease for a given division when fewer than 6 oiled birds (live, dead on any combination) are recovered within any division for two consecutive days. The Wildlife Branch Director, in consultation with the Planning Chief and the OWCN Response Veterinarian may extend search and collection within a division or geographic area if warranted by a change in weather or sea state conditions (on-shore winds and/or extreme tidal fluctuations) that could likely bring oiled wildlife ashore.

DOCUMENTATION

For DFG-OSPR employees, Search and Collection operations are not over until you have completed and submitted your Daily Activity Reports. These may be filled out in hardcopy or electronically. The Index code for the Luckenbach spill is N300; PCA, F1060; Activity, 533030. Please be specific but not overly detailed as to your activities. Please state the time you depart, the beaches covered, the times you check out for lunch and back in, and time of return.

ALL field staff must fill out the Search Effort Log and Chain of Custody for any live or dead recovered animals. These forms are found in Appendices III and VII, and also on the OSPR-GIS Website, <http://www.cwo.com/~rimai/>.

APPENDICES

- V. Division Maps**
- VI. GPS Guides**
- VII. Search Effort Beach Log**
- VIII. Site Safety Plan**
- IX. Safe Operations of All-Terrain Vehicles**
- X. Snowy Plover pictures and map of breeding sites**
- XI. Chain of Custody Form**

APPENDIX IIIh**EXAMPLE OF PROTOCOL FOR SEARCH AND COLLECTION IN LISTED SPECIES
HABITAT - SNOWY PLOVER HABITAT EXAMPLE**

Once search and collection teams are activated, they may be deployed for beach searches or sweeps, as well as boat operations, as determined by the Wildlife Operations Branch Director in consultation with the Planning Chief. Full beach searches typically involve coverage of the full length of beaches and more detailed searching. Sweeps typically consist of limited coverage of beach lengths, binocular searches from vantage points and search effort concentrated in the key search areas listed below by division. Boat operations typically consist of on-water recovery in a limited area of operation of live, oiled birds.

Teams are directed to search and collect live and dead oiled wildlife, properly document date/time/location information and transport birds to intake center, collect representative samples of fresh oil or tar balls and transport to DFG Santa Cruz lab, assess beach areas for stranded oil and determine whether cleanup is necessary. GPS coordinates for all samples should be provided whenever possible.

Teams should pick-up all dead birds, oiled or not, during beach collection. If search and collection will be conducted in areas known to contain Snowy Plovers, the following precautions will be observed:

1. In general, snowy plovers (SNPL) nest high on the beach, above the high wrack line, but they may nest below it. The most important thing to do to avoid SNPL broods (aside from conducting all search and collection on foot) is to conduct all activities on the wet shoreline, well below the most recent wet wrack line.
2. If survey people see (or hear) vocalizing or displaying (broken wing or tail drag displays) SNPL, they should proceed cautiously out of the area at once—a minimum of 100m away to allow the adult SNPL to return to broods that may be crouching along the wrack line. Similarly, if people observe SNPL chicks, they should proceed cautiously out of the area immediately to avoid separating chicks from parents. The caveat to this is that anytime survey people respond by proceeding out of the area, they may be likely to encounter chicks from the same or other broods in their line of exit. To this end, try to avoid any lower beach areas that are heavily covered in kelp wrack, as detecting chicks with the naked eye would be difficult.
3. In all cases, where plover breeding habitat is marked by rebar, flagging, tape, or any other method, search and collection personnel will not walk into these areas to recover oiled wildlife unless they have spoken directly with the OWCN Spill Response Coordinator. From Santa Cruz north, the OWCN Spill Response Coordinator must obtain approval from the Division Chief of the Endangered Species Division (Chris Nagano), Sacramento Fish and Wildlife Office, (916) 414-6600/6601, before disruption of nesting plovers can occur. From Santa Cruz south, the OWCN Spill Response Coordinator must obtain approval from the David Pereksta of the Ventura Fish and Wildlife Office, at (805) 644-1766, before disruption of nesting plovers can occur. If you see a dead oiled bird in these areas, note it on your log, but do not remove it from the habitat. Try to have the USF&W biologists monitor the areas while you are there.

4. When using ATVs to conduct beach surveys, drivers will stay along the coastline in wet sand to bypass known plover breeding habitat. Drivers will stop approximately every 100 meters to scan for plover nest areas that might be encountered as they travel forward. If nesting areas are encountered, survey via scans or by observing marked nesting habitat. ATV operators will stay on the wet beach area and proceed at less than 5 MPH until they have passed the plover breeding habitat.

5. All search and collection staff will be briefed on these protocols prior to conducting search and collection efforts. Any animals inadvertently injured during search and collection operations will be recovered and the OWCN Spill Response Coordinator will be notified immediately.

As of 6-14-02, there have been over 100 SNPL nests initiated between the Moss Landing Harbor mouth and Reservation Rd. to the south, so there is really no way to exit or “get past” the active habitat without potential disturbance, so please proceed with caution. To the north of Moss Landing Harbor mouth there have been at least 50 nests initiated through the area of Monterey Bay Academy, until you are north of MB Academy/Sunset State Beach.

See Attachments for Snowy Plover pictures and maps: (Not included)

SAMPLE

APPENDIX IIIi.

Example of Protocol for Monitoring, Reporting, and Collecting in a National Marine Sanctuary - Farallon Islands National Marine Sanctuary Example

Summary

Due to the sensitivity of the resources at risk on the South-East Farallon Island (SEFI), this plan was developed to determine what search and collection activities would be appropriate, what procedures would be followed for data collection and reporting, and what activation criteria would trigger these protocols. An earlier version of these protocols were developed in partnership with US Fish and Wildlife Service (USFWS), California Department of Fish and Game Oil Spill Prevention and Response (CDFG-OSPR), Oiled Wildlife Care Network (OWCN), NOAA Gulf of the Farallons National Marine Sanctuary (NOAA), National Marine Fisheries Service (NMFS), and US Coast Guard (USCG) to prepare for the Luckenbach vessel recovery. They were activated a few times, and worked well, so it was determined worthwhile to modify them so that they would be applicable for any future oiling events. In keeping with the site safety plan for this response, all operations will be conducted in a safe and appropriate manner.

The Farallons National Wildlife Refuge (FNWR) is managed out of the Refuge headquarters in Fremont, CA (Contact = Farallons Refuge Manager, P.O. Box 524, Newark, CA 94516; 510-792-0222). The USFWS has a cooperative agreement with Point Reyes Bird Observatory (PRBO) to staff the island "24/7", conduct biological monitoring, and other caretaking duties. PRBO staff biologists or interns would be the primary personnel involved in conducting activities outlined below. (Contact = PRBO; 4990 Shoreline Highway; Stinson Beach, CA 94970; 415-868-1221).

Routine Monitoring Activities

PRBO personnel routinely record any oiled wildlife observed either on the island or in waters near the shoreline in the course of conducting their daily monitoring, research and other chores. PRBO personnel conducting weekly pinniped surveys, daily shorebird surveys, elephant seal tagging during the winter, seabird monitoring during the spring/summer, and shark watch during the fall will be alert for the presence of oiled wildlife. When encountered, the species and % of body oiled are tallied and recorded in the Island Journal daily. All personnel will be made aware of the weather/sea conditions that are associated with an increased likelihood of encountering oiled wildlife, and be extra vigilant during these times.

Information on oiled wildlife is summarized from the Island Journal at the end of each month for the monthly report. This information will be provided monthly to the OWCN Response Coordinator via email [mhziccardi@ucdavis.edu; jkmazet@ucdavis.edu], and OSPR [yaddassi@ospr.dfg.ca.gov; jamamot@ospr.dfg.ca.gov].

Heightened Reporting Activities

If one of the following occurs, island personnel will send weekly reports of oiled wildlife observed to the following e-mail tree:

yaddassi@ospr.dfg.ca.gov; jamamot@ospr.dfg.ca.gov; mhziccardi@ucdavis.edu; jkmazet@ucdavis.edu; James Haas@fws.gov; jan.roletto@noaa.gov; ckreuder@ucdavis.edu; pkelly@ospr.dfg.ca; wjsydeman@prbo.org; joelle_buffa@fws.gov

- 1) Three or more birds observed on/around SEFI per day
- 2) Ten or more birds observed on/around SEFI per week

- 3) If increased occurrence of oiled wildlife on mainland shorelines triggers a Search and Collection effort by CDFG-OSPR or OWCN. A request for heightened reporting will be sent by OSPR to the Refuge Manager, who will request weekly reports from the island.

Daily reports MAY be requested if the number of birds encountered on SEFI is three or more per day, or if an oil spill is reported.

Heightened Reporting will cease, and frequency of reporting will return to monthly, when the number of oiled wildlife falls below the above thresholds for two continuous days, or when informed by the CDFG-OSPR Wildlife Operations Branch Director or the Refuge manager that weekly reports are no longer needed.

Heightened Awareness Protocols

Heightened awareness protocols will be activated if any of the below circumstances occur. Notification and communications between USFWS Refuge Manager, CDFG-OSPR Wildlife Operations Branch Director and OWCN Response Coordinator will be made as necessary to implement these protocols. Funding needs to implement these protocols will also need to be worked out.

1. If more than 20 oiled birds or mammals are observed by SEFI biologists during a week
2. If an oil spill or release occurs in the vicinity of SEFI, or has a trajectory with the potential of affecting wildlife on the Farallon Islands
3. If greater than 30 oiled birds are captured during a 48 or 72 hour period on the mainland between Bodega Bay and Monterey (Divisions BB – E).

Heightened awareness protocols involve the following activities:

Twice each day, 15 minute visual surveys will be conducted to detect live, sub-lethally oiled birds on the water from the following observation points: East landing, North landing. If oiled wildlife are observed, the species, location of the oil, and % body covered with oil will be noted and reported (see 7 below).

Once each day, "shoreline surveys" will be conducted to detect dead and sub-lethally oiled wildlife at places where they are likely to wash up: sea lion cove, sewer gulch, garbage gulch, sea pigeon gulch, North landing, and others as sea and weather conditions determine. (approx. length of survey: 1-1/2 hrs).

Birds in monitored colonies will be observed closely for signs of oil. If oiled birds are observed, the species, location of the oil, and % body covered with oil will be noted and reported.

Documentation of oiled birds will be conducted and include taking an oiled feather sample and photograph of the deceased animal (as described in Appendix B).

Other mainland observations will be conducted (see below, Mainland Heightened Awareness Protocols).

Oiled bird and mammal numbers will be reported daily via email to OWCN Response Coordinator via email [mhziccardi@ucdavis.edu; jkmazet@ucdavis.edu], OSPR [yaddassi@ospr.dfg.ca.gov; jamamot@ospr.dfg.ca.gov], and USFWS [joelle_buffa@fws.gov, James Haas@fws.gov].

If greater than 60 oiled animals are observed in a single day, phone notification should be made to the OWCN Response Coordinator (916)-998-8131.

Heightened awareness protocols will be deactivated when, when conditions drop back below threshold levels for two consecutive days or when otherwise directed by the Wildlife Operations Branch Director or designee or by the Refuge Manager.

Shore Based Island Search and Collection Operations: The Entire Year

There will be no search and collection activities on SEFI. This determination was made based on the large numbers of breeding birds on the island (>200,000) including common murres, Cassin's auklets, Western gulls, Ashy storm petrels, rhinoceros auklets, and cormorants and the potential for large scale disturbance and destruction of sensitive breeding habitat. Post-breeding season concerns include crushing burrows and logistical constraints.

Due to extreme sensitivity of SEFI wildlife and habitat to human disturbance, search and collection procedures would likely negatively impact more seabirds than the small number it would benefit through treatment and rehabilitation. However, if a large proportion of the SEFI common murre population is affected by an oil spill, the prohibition of island search and collection may be re-evaluated, based on the following guidelines and criteria.

If greater than 300 -500 oiled live common murres are observed on the island over a 1-3 day period, an emergency meeting may be convened between USFWS, OSPR, and the OWCN to evaluate whether island based search and collection operations will be undertaken. An island-based search effort will only be conducted if it is determined that 1) a recovery effort can be conducted in a way that will not disturb nesting colonies; 2) the benefits of a recovery effort will outweigh any negative impacts to wildlife; 3) sufficient island resources exist to support the recovery effort; and 4) logistics associated with temporary housing of birds on the island and transportation of birds and personnel can be worked out.

This sensitivity criterion was based on breeding population size. In particular, for common murres, a rough estimate of 5% (3500-5000) of the breeding population (70,000-100,000) was used as a threshold number of birds for which search and collection activation will be reevaluated during breeding season. Estimates are that only 10% of birds oiled are ever found so 3,500-5,000 multiplied by .10 = 350-500).

Boat-based Search and Collection Operations around Farallon Islands

If 60 or more oiled animals are observed within a 1-3 day period, boat-based collection of oiled wildlife may be considered for waters around the Farallon Islands. The CDFG-OSPR Wildlife Branch Director in consultation with OWCN Response Coordinator will determine the appropriateness of such activities. All activities, personnel and resources necessary will be provided by the OWCN and OSPR. Support from SEFI should not be counted on due to resource, logistical, and operational constraints.

Breeding Season Protocols March 15-August 15

Boat operations are allowed on the south-east section of SEFI between Mirounga Bay to south of Little Murre Cave (see attached map). Such operations will only be conducted if: 1) It is deemed safe and necessary by the Wildlife Branch Director in consultation with the OWCN Response Coordinator, and 2) It is determined (in consultation with the Refuge Manager) that boat recovery can be conducted in such a way that it will not disturb wildlife on the refuge. Please note that the majority of SEFI is closed to boat operations within 300ft of shore based on fisheries closures, however, during breeding season, special caution adjacent to permitted search areas needs to be exercised to avoid flushing birds from nest sites. It is a violation of federal law to disturb wildlife on the Refuge (50CFR 27.51). Prior to conducting boat operations, marine mammal breeding or haul out locations will be verified and all exclusion zones must be avoided.

During boat operations, island personnel will monitor the response of wildlife on the island. If there is any disturbance, the refuge manager will be immediately notified. The boat recovery operation may be directed to cease or modify its operation if disturbance is occurring.

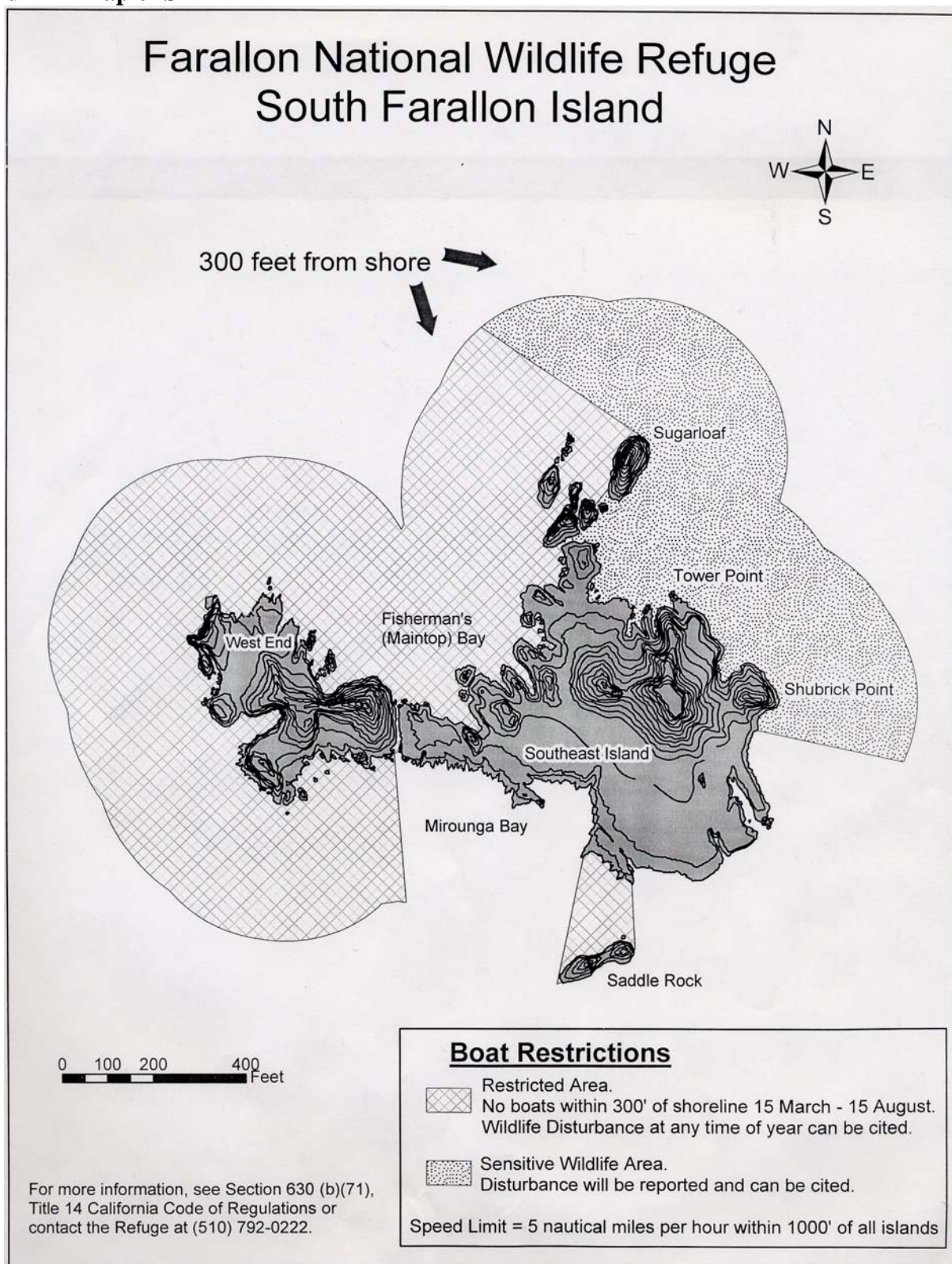
Post-breeding Season Protocols

Boat operations are allowed along all shorelines of SEFI, as long as they can be conducted in such a way that will not disturb wildlife on the Refuge. It is a violation of federal law to disturb wildlife on the refuge (50CFR 27.51). Prior to conducting boat operations, the wildlife operations branch director shall ensure that the following procedures are followed: 1) a determination shall be made that boat recovery is appropriate and necessary and can be conducted in a safe manner; 2) the Refuge Manager shall be contacted to verify bird activity and other sensitive wildlife areas on the island; 3) NMFS and SEFI personnel will be contacted to verify marine mammal breeding or haul out locations; 4) maps and other directional information shall be provided to the boat crews so that exclusion zones can be avoided.

Monitoring of Oiled Marine Mammals

If oiled marine mammals are observed, the OWCN Response Coordinator will be notified by phone (916)-523-7941. The OWCN Response Coordinator will contact the NMFS (Joe Cordera) and the marine mammal biologist to discuss if further evaluation is warranted. If necessary, the mammal biologist and personnel from OWCN or OSPR will perform an animal capture evaluation and make recommendations to NMFS. Upon approval from NMFS, capture procedures will be planned and undertaken.

Appendix A- Map of SEFI



Appendix B

Feather samples will be collected from all oiled birds by staff who have completed at least 4 hour HAZCOM class. Samples will be obtained wearing a nitrile glove using a hemostat and by removing 3-5 oiled feathers and placing them in a small piece of aluminum foil. The foil will be folded, labeled (see below) with masking tape, and placed in a freezer.

Photographs will be taken with either a Polaroid or digital camera to include the entire bird with the oiled portion of the bird being centered in the photograph.

Photos and feathers will be labeled with the following information: (MIKE: PLEASE FILL THIS IN).

Appendix C: Contact List

<u>Name</u>	<u>Organization</u>	<u>Phone: Office</u>	<u>Phone: Cell</u>	<u>Phone Home</u>
Yvonne Addassi	CDFG-OSPR	916-324-7626	916-956-1162	916-455-8555
Joelle Buffa	USFWS	510-792-0222 X32	510-377-5958	510-494-1098
Farallon Islands	USFWS/PRBO	415-868-2608		
Jim Haas	USFWS	916-414-6604	916-414-9435	
OSPR Dispatch	CDFG-OSPR	916-445-0045		
Mike Parker	USFWS	510-792-0222 X27	510-377-2986	510-632-3081
Scott Rickettson	USFWS	510-792-0222 X33	510-377-4926	510-797-6310
Bill Sydeman	PRBO	415-868-1221	415-250-2232	707-769-7881
Julie Yamamoto	CDFG-OSPR	916-327-3196		
Mike Ziccardi	OWCN	530-754-5701	530-792-7803	

APPENDIX IIIj**Bird Transport Procedures**

Birds must be transported inside a vehicle with a functional heater/air conditioner. When transporting birds maintaining proper temperature in the vehicle is very important to prevent birds from overheating or becoming too cold. Wet birds may require a temperature close to 80°F. Dry oiled birds need to be kept cool.

Place only one animal in each transport box. If space or materials are limited, non-aggressive, colonial species (e.g. murres) that have been captured at the same location and which have a similar degree of oiling, can be transported two or three to a box if necessary and if the transport box is sized appropriately).

When transporting birds in vehicles leave room for ventilation between boxes and always maintain adequate ventilation in vehicle to protect birds (and humans) from inhaling fumes from oiled birds.

Animals should be checked periodically on long transports. Take care to avoid excess stress to the birds when monitoring (e.g., do not talk around the birds).

If the animals condition deteriorates during transport call veterinarian for advise.

Transporter should coordinate with the Group Supervisor or designee so departure and arrival times and other pickups (if needed) can be coordinated.

Questions regarding this protocol should be addressed to the Wildlife Branch Director.

Transport Protocol for Brown Pelicans

All pelicans must be transported in appropriately sized containers. Examples include either a large plastic airline-type pet kennel, or a well ventilated (i.e., lots and lots of holes) cardboard box. Cardboard boxes should measure at least 2 x 2 x 2 feet.

Do not use tape or any other material to keep birds' bills closed. This impairs their ability to pant and thermoregulate.

Birds must be transported inside an appropriate vehicle (e.g., van or SUV) with a functional heater/air conditioner. This allows the transport driver to regulate the ambient air temperature inside the vehicle and prevent birds from overheating or becoming too cold.

On long trips, birds should be occasionally checked for signs of heat stress (e.g., panting, wings held away from the body) and the temperature adjusted accordingly.

When pelicans are captured, transport to the primary care facility should be accomplished as soon as possible, even if this means oiled bird recovery activities in that division must be temporarily suspended.

APPENDIX IIIk

**SEA OTTER - OIL SPILL CONTINGENCY PLAN
FOR CALIFORNIA
March 17, 2003 Version**

General

The decision to conduct any capture and rehabilitation effort for sea otters will be made by the Wildlife Branch Director in the Unified Command (UC) after consultation with CDFG-OSPR and the USFWS. The Oiled Wildlife Care Network (OWCN) and/or OSPR will make all personnel call-outs. Capture and handling of sea otters will be by UC approved personnel only which will generally be USFWS or OSPR crews.

Facilities

The primary facility in-taking oil-injured sea otters will be the CDFG's Marine Wildlife Veterinary Care and Research Center (MWVCRC) located on the west side of Santa Cruz. Up to 125 rehabilitating sea otters could be handled at a time at MWVCRC. Other facilities with extensive marine mammal care capability and expertise that could be called on by OWCN to cooperate in a rehabilitation program for sea otters include: 1) Monterey Bay Aquarium, up to 10 otters; 2) The Marine Mammal Center (TMMC), up to 10 otters; 3) Sea World, up to 10 otters; and 4) Long Marine Laboratory, up to 5 otters. Portable, floating pens for holding larger numbers of rehabilitated or preemptively caught sea otters may be installed at Horseshoe Bay (in San Francisco Bay) in cooperation with the National Park Service's Golden Gate National Recreation Area (GGNRA) or at Moss Landing Harbor in cooperation with Duke Energy Power Services.

Capture and Transport

Capture and transport will be conducted by UC approved personnel only. Each captured sea otter will be flipper tagged (with Temple, original, cattle size ear tags) and PIT tagged (passive integrated transponder) subcutaneously in the right inguinal area. Transport kennels (#300 or #400 sky kennels) will be fitted with a raised bottom grate (to avoid further fur fouling). Shaved ice or any other form of fresh water ice (to combat dehydration) and a chew toy or toys (to combat tooth damage) would usually be provided in transport kennels. Food should be offered only if transport time is to be more than four or five hours (to lessen additional fur fouling). Sea otters should not be taken into commercial veterinary facilities containing domestic pets. Upon arrival at MWVCRC or other facility each animal will be logged in as per OWCN/OSPR protocols to insure proper information collection and to maintain a chain of evidence.

In California, sea otters will generally be captured by Federal or State trustee agency led crews. Southern sea otters that are not visibly oiled, acting ill or abnormally, or likely to become oiled will not be intentionally captured. If questions or doubts exist on the part of the UC authorized capture crew, individual animals may be captured for further evaluation or inspection. Every effort will be made to have petroleum detection kits capable of rapid oil detection available to assist with this. Captured animals that do not have obvious evidence of oil or debilitation due to oil and are not at risk will be tagged, blood sampled and immediately released.

Preemptive captures may be considered under dire circumstances at the direction of the UC and when adequate transport and holding facilities exist. (see Floating Pens below).

In general, preemptively captured sea otters will be held in floating pens in protected bays in the ocean for short periods of time and returned to the location where they were captured, providing it is safe.

Cleaning and Recovery

Oiled otters arriving at a rehabilitation facility will be placed in a quiet area, examined and possibly treated by the veterinarian(s) and/or animal health technicians (AHTs) on duty. Fresh water and/or fresh water ice and perhaps food will be made available during this period. (Ice usually would have also been available during transport). Only when a veterinarian on duty determines the otter is stable will cleaning procedures be initiated. A variety of data sheets including an individual medical record will accompany each otter through the cleaning and rehabilitation process. The importance of careful data collection can not be overemphasized.

Cleaning procedures, modified appropriately by the nature of the petroleum product and site specific equipment availability, are as follows. Sea otters to be cleaned will be anesthetized using fentanyl and diazepam or similar drugs by an experienced veterinarian and placed on the washing table. Ideally, washing tables will be equipped with three or four well aerated nozzles dispensing temperature controlled (80 to 98° F), softened, fresh water. Washing will constitute a cyclic wash, rinse, wash, rinse *etc.*, with a dilute (5%) Dawn dish washing detergent and water. Four to six people are required per washing table, one (with heavy gloves) specifically to hold the head-paws area. Depending on the degree of oiling, washing will usually take from 40 minutes to one hour. The oily wash water should be held in a container which may be examined by someone from the local waste water treatment plant to determine if the small quantity of oil present may be disposed of along with the rinse water. The first wash water will probably not amount to more than 25 gallons per otter and probably less. The total quantity of oil on even a heavily contaminated sea otter will be very small. Small quantities of petroleum residues are allowed in domestic sewage. Second and additional washes may, without question, be directed into the domestic sewer system. Each animal will be rinsed for 40 minutes to one hour upon completion of the washing cycle. For more details, please see Williams and Davis (1995) or the OWCN Oiled Marine Mammal protocols (available at www.vetmed.ucdavis.edu/owcn).

Animals will then be towel dried and moved to a drying table. Ideally, each drying table will be serviced by three or four air hoses with nozzles which deliver high volume, dried, temperature controlled air. Following drying, each animal will be reversed from the anesthetic and placed in a large, slat-floor kennel with a sliding top (intensive care cage) or other easy access pen for intensive care monitoring.

When fully recovered from anesthesia, and if its medical condition allows, each otter will be moved to one of the “two-otter pen-pools” (1 pool, 2 haul-outs) which will be serviced by abundant, clean, chlorine-free salt water. As health and fur condition improve, otters may be moved to larger pools. All pools will have abundant haul-out space. It will generally take approximately seven to ten days for the fur to recover its water repellency. Additional procedures may be found in the Oiled Marine Mammal Care Protocols.

Oily equipment (e.g., cages and dip nets) should be wiped down thoroughly with oil sorbent pads then washed with detergent and water and disinfected with a chlorine solution. Cages *etc.* should be steam cleaned in a proper decontamination area. All oil contaminated solid waste must be treated as hazardous waste and disposed of properly.

Feeding

Food will be offered every two to three hours around the clock for animals in intensive care and four or five times a day for animals once they enter a two-otter pool-pen or larger pool. Food will be prepared in each facility's existing food room closely coordinated by that facility's food room supervisor. Food

offered will amount to 10 to 15 pounds per day per otter and consist of recently thawed clams, shrimps, sea urchins, market crabs, fish fillets, mussels, abalones, squids etc. as available. (The ink sack should be removed from each squid to prevent confusion in diagnosing enteritis). Exoskeletons and squid pens may have to be removed to prevent drain clogging. Uneaten food will be removed and discarded prior to each feeding to insure that spoiled food is not consumed. Notes on amount of food consumed, behavior and coat condition will be kept on each otter, and data sheets will be filled out at regular intervals as per OWCN protocols.

Holding

Rehabilitated otters will be held in large pools and/or floating holding pens for the minimum time possible. As soon as the contamination in the habitat has been reduced sufficiently, otters will be released.

Release

If there is negligible danger of introducing disease into the wild population and giving due consideration to possible quarantine protocols, release will be as soon as possible (to minimize the disease potential, captivity stress and human habituation) once animals are deemed physiologically and behaviorally normal, and will be released as near the original capture site as practicable (to reduce dispersal, and thereby increase survival). In almost all situations otters will be placed in transport kennels and driven to the release site in air conditioned vans.

Floating Pens

An excellent site for mooring a few or all 10 of our floating holding pens is Horseshoe Bay, which is approximately five miles away from TMMC and still within GGNRA. The National Park Service responded favorably to an inquiry about using the area for sea otter rehabilitation and the US Coast Guard has been helpful with drills in the past. The entrance to the salt water intake structures for Duke Energy Power Services' electric power plant, units 1 through 5, in Moss Landing Harbor, provides an alternate place to moor floating holding pens for sea otters. There is ample shore-side space to assemble and launch floating pens at both locations. There is, or is the potential for, controlled access at both locations.

NRDA Related Capture and Sampling

It may become desirable for NRDA purposes to capture and sample southern sea otters in the area in which an oil spill has occurred. Should this be desired by the UC and trustee agencies, a statistically relevant sample (approximately 20 animals per site) may be captured, marked and sampled by the same means and in the same ways generally used for sea otter research in California for comparative purposes. USFWS and CDFG will develop a draft generic and pre-reviewed permit which can be put into place quickly.

APPENDIX III I

WILDLIFE PROCESSING UNIT PROTOCOLS

A Supplement to the Wildlife Response Plan

Introduction

This document is intended to serve as a supplement to Wildlife Response Plan for California. These protocols provide operational guidance to personnel as they receive and process debilitated animals and carcasses at Processing Centers during an oil spill response. This unit is referred to as the Wildlife Processing Unit (WPU), and prior to 2001 was called the Oil Spill Wildlife Response Team (OSWRT). The Wildlife Processing Unit is now part of the Wildlife Care and Processing Group under the Wildlife Branch within the Unified Command/Incident Command System (UC/ICS). Wildlife Processing Unit personnel are responsible for the receiving and processing of dead and/or debilitated wildlife in close coordination with the Wildlife Care Unit. During smaller spills, the duties of the WPU may be handled by the Wildlife Care Unit. Moderate to large spills may require the WPU to be divided into two distinct Strike Teams: one to process live animals prior to rehabilitative care by the Care Unit, and one to process dead animals prior to archival storage. These protocols have been adapted from the 1998 draft report *Protocols for the Oil Spill Wildlife Response Team* (Schuster et al. 1998), prepared by the Point Reyes Bird Observatory (PRBO) for the California Department of Fish & Game - Office of Spill Prevention and Response (CDFG-OSPR), and have been further refined and updated to reflect changes to the forms and protocols that occurred in 2001, 2003, and 2004.

Wildlife Handling

This section will provide a brief and basic overview of the techniques for handling marine birds and mammals. It is included here to emphasize worker and animal safety. It is not a substitute for proper training, experience or supervision. Under all circumstances when handling any wildlife, proper personal protective equipment (PPE) must be worn (e.g. safety glasses or face shield, vinyl or nitrile gloves, protective outer covering for clothing). More detailed animal handling guidelines may be found in the Oiled Wildlife Care Network (OWCN) documents "Protocols for the Care of Oil-Affected Mammals" and "Protocols for the Care of Oil-Affected Birds".

Handling Live Birds. Teamwork is essential to minimize stress to oiled birds. Optimally, a warm, quiet, dark environment should be created at each center for the boxed live birds awaiting processing and/or transportation. All personnel must be trained and experienced using methods that minimize human contact with the animals. Simultaneously, handlers must protect themselves from injury and oil contamination. They must also protect the bird from oil contamination: even when birds do not appear oiled, new gloves must be worn and new towels used for each bird handled.

Towels can be folded to act as straight jackets, restricting the motion of the bird. Covering their heads, specifically the eyes, with care taken to not cover the nares and impede respiration may calm them. One good method for maintaining physical control over a marine bird (depending on the size of the animal) is to hold it pressed against your abdomen. This can be accomplished with one hand, allowing for freedom of motion with the other. Since marine birds defend themselves with their bills, it is important to have control of their head at all times. Protective eyewear should be used, particularly with certain species such as grebes, loons or egrets. Most shorebirds can be comfortably held with one hand using the bander's grip, which holds the neck between the middle and forefinger and pins the wings against the body with the same hand. Personnel unfamiliar with this method should

be trained how to do it by experienced handlers. Larger birds and some species with sharp bills should be carried using both hands near the handler's waist with one hand controlling the head at all times.

Aggressive birds such as raptors, cormorants and herons can seriously injure handlers. The most important consideration is to primarily restrain the part of the bird that can cause the most serious injury (i.e., raptors should have their legs and talons secured). When restraining a bird, it is extremely important to be sure that the wings are folded in their natural position. This ensures that a bird's injuries are not exacerbated and that new injuries are not inflicted during handling. It is essential to remain calm but alert while handling all wildlife; a bird that is calm at one moment may suddenly surprise you with its energy.

Handling Dead Animals: Minimize direct physical contact with contaminated carcasses. Do not handle without proper gloves and PPE. Always replace gloves before handling the next carcass. Each specimen is considered as evidence and should be treated as such. It is of the utmost importance that dead wildlife are placed into individually labeled clean bags to prevent cross-contamination.

Handling Live Marine Mammals. Protocols for handling marine mammals (pinnipeds, cetaceans, sea otters) and sea turtles are standardized and set by interagency agreements among the following trustee agencies: the CDFG, the National Marine Fisheries Service (NMFS), and the U.S. Fish and Wildlife Service (USFWS) (see Interagency Agreements in Appendix V and the Sea Otter Oil Spill Contingency Plan in Appendix IIIk of the Wildlife Response Plan; and the OWCN: Protocols for the care of oil-affected marine mammals). In the event of marine mammal capture, it is likely that all handling and information collection and recording will be performed by personnel from the California Marine Mammal Stranding Network (CMMSN) or veterinarians from the OSPR or the OWCN. However, the forms identified in this document should be used for consistency in record keeping, with the pertinent data then transcribed on to the appropriate Agency paperwork at a later date.

Personnel

Wildlife Processing Unit staff can include six basic positions at each Center: the Station Manager, a Receiver, a Data Collector, a Data Recorder, a Photographer, and an Animal Handler (Table 1). More staff may be necessary if the number of animals entering the Center is excessive, especially if data entry and documentation needs cannot be met by the above personnel; or less, under light impact situation where individual staff can perform multiple duties. Since most of the wildlife likely to be oiled are birds, wildlife receiving and processing should be conducted by field biologists trained in the identification and systematic collection of information from dead and live birds, and, if possible, in the collection of oil spill data from birds.

Table 1: Processing Unit Personnel

Position Title	Responsibilities
Station Manager	Oversees station communication and acts as point of contact with the Wildlife Care & Processing Group Supervisor; directs activities of station personnel; requests additional equipment through the appropriate ICS channels; and keeps Processing Center running smoothly.
Receiver	At Receiving center, receives dead and/or debilitated wildlife from Recovery and Transportation Group personnel; gives each animal a unique intake number and makes sure all are separated; responsible for acquiring complete collection and collector information from deliverer; organizes order of processing if there are priority species or emergency cases among live birds.
Data Collector	During processing and completing the <i>Data Log</i> , identifies birds and wildlife, assesses condition and oil data, takes oil sample, and bands or tags specimens.
Data Recorder	During processing and completing the <i>Data Log</i> , keeps accurate, complete records of data collection, records observations, prompts collector for data log information, and assists collector when needed.
Photographer	During processing, maintains uniform photographic record of all processed birds and wildlife; maintains log in event that an instant camera is unavailable.
Animal Handler	For live station only: assists data collector with bird handling during photography, banding and processing.

An Overview of Wildlife Receiving and Processing

For most oil spills or incidents there will be two stations for each Processing Center: one for live animals and one for dead animals. Each station may be made up of several evaluation teams working on different animals, but there will only be a single Data Log for each station in order to prevent repetition of log numbers for within the same taxa. If the Processing Unit has to set up centers in multiple locations, each location will have uniquely identified live and dead stations and Data Logs (with facility name being the unique identifier). Additionally, birds and mammals will also have separate Data Logs, as these animals will most likely be processed at different facilities. Circling the appropriate species identifier (Bird, Mammal, or Other) on the Data Log, in addition to completing the Facility Name information, will ensure these Logs are kept separate from others. Therefore, all data forms must be labeled with the appropriate facility, taxa and station information.

During most spills, receiving and processing of live birds will fall under the responsibility of the Wildlife Care Unit; however, during larger spills or at the discretion of the Wildlife Care and Processing Group Supervisor, these responsibilities will fall under the Wildlife Processing Unit. In either case, the protocols and the data to be collected remain the same and therefore are not differentiated between in this document. The WPU's Dead Animal Strike Team will be responsible for receiving and processing dead wildlife; and, if necessary, a Live Animal Strike Team will conduct the receiving and processing of live wildlife.

Each station (live or dead) is subsequently made up of two basic parts:

- Receiving center, where all wildlife are received from the Recovery and Transportation Group,
- Processing center, where data is recorded on the *Data Log* prior to beginning rehabilitation or before dead wildlife is stored in the morgue freezer.

Receiving for both live and dead wildlife can take place at the same location for logistical purposes as long as data for the two stations are kept separate.

All debilitated birds, mammals and carcasses will be brought to a Processing Center, usually located with the rehabilitation facility. Live birds will be kept in crates or cardboard boxes with towels or blankets **with only one bird per container**. Individual dead or debilitated animals must be kept separate from live animals or from each other to prevent cross-contamination by body contact. Carcasses and bird body fragments should arrive individually wrapped in aluminum foil or paper bags. **Plastic bags are made from petroleum products and therefore must not be used in direct contact with live or dead wildlife.** Do not handle without PPE and do not handle more than one specimen without replacing gloves.

Receiving

Once animals are turned over to the Processing Center, they become the responsibility of WPU personnel who are legally responsible for the management of specimens as well as accurate documentation. Collectors or delivery personnel from the Recovery and Transportation Group must remain at the center until all collection information is determined to be completely filled out on each box or bag.

Separate logs are kept for live birds, live mammals, dead birds and dead mammals; additional taxa will also be documented separately. Each should be clearly marked by use of the appropriate animal form (Live versus Dead), facility name, and appropriate taxa information (Bird, Mammal or Other). When these Data Logs are subsequently transcribed into the computer, each station will be uniquely identified so as not to ensure any overlap of log numbers. Consecutive intake log numbers will be assigned to each individual immediately upon delivery and must be clearly marked; these intake log numbers will have a prefix of "D" for dead animals and "L" for live animals. For corpses the intake number is written on the paper bag it is placed in. For live animals the intake number is written in more than one location on the carrying box it is in and is cross referenced with the temporary leg band number once it is applied during processing (See *An Overview of Live Bird Processing* below). It is crucial that intake numbers are clearly visible as live birds will most likely be processed in order of their arrival (i.e., intake number sequence), with the exception of priority species, special cases and those needing more intensive medical attention. All individuals are then given to their respective processing station.

A field banding/numbering system may also be implemented during the spill to better track individuals through the processing and rehabilitation system as well as to begin the chain of custody (COC) tracking. Note that there are no formal COC forms to track COC from field to center, and official DFG COC forms are only used when carcasses or other evidence are removed from the facility. Tracking individual animals would begin with recovery teams providing the animal with a unique field number by:

- Placing field labels with preprinted numbers on the animal transport container; or
- By placing a bird band/mammal tag on the carcass with the band/tag number on the transport container; or
- If labels/bands/tags are not available a unique ID field number (e.g., collector's initials plus ID number) should be written on the transport container. .

Recovery and Transportation Group personnel should provide on each box or bag the following information:

- Collector's name (and phone number if not part of the Recovery & Transportation Group

effort);

- Collection location: general name and GPS coordinates;
- Beach search number (as determined by the Beach Search Effort Log);
- The date the bird was *recovered* from the beach;
- The time the bird was *recovered* from the beach; and
- Field ID number, or preprinted label number or band/tag number.

This information will then be transferred to the appropriate *Data Log*. **It is the responsibility of the WPU personnel receiving dead or debilitated birds to ensure that all of this information is complete before the deliverer leaves.**

A. Receiving Live Birds

If both live and dead birds are received simultaneously, live animals should be moved through the receiving center first to reduce the amount of time before they can begin the rehabilitation process. The receivers briefly examine the condition of the live birds brought to them and confirm the bird is still alive; if it has died in transport from either the beach or another facility – even if it was treated at the other facility – it is given the next consecutive **dead** bird intake number starting with a D, and it is recorded in the notes that it was alive when recovered and/or transferred. If during a large spill event when there are official remote processing centers set up elsewhere, any bird that dies on its way to the primary facility will nevertheless retain its original (live) intake log number. Receivers are responsible for confirming that each box contains only one individual, that live birds have towels or blankets to keep them warm, that animals do not remain in cloth bags, and that all appropriate collector and location information (see above) is associated with the bird, either written on the box or included in a Beach Search Effort form. Prioritize the birds for the live processing station according to the following criteria:

- Birds of endangered, threatened or special concern status should be dealt with first.
- Any birds which appear to be in critical condition should be seen by the veterinarians as soon as possible, or at least the veterinarians should be alerted of their condition.
- All other birds should be processed in the order of arrival, which should correspond with the order of their intake number. The intake number must be clearly visible on the carrier box, along with all the collection data listed above.

B. Receiving Dead Birds

Processing Unit receivers must make sure that corpses are packaged properly before passing them on to be processed. If a dead bird arrives wrapped in plastic and time allows, the corpse should be removed from the plastic and placed in the smallest paper bag that will accommodate it. The fact that it was initially contaminated by plastic must be noted on the paper bag, as this will be recorded on the *Data Log* during processing. However when the receiving center is busy, it is better for the corpse to remain wrapped as it is so that receipt of wildlife does not slow down. Remind the collector not to use plastic if they recover any additional specimens. Processing Unit receivers must also confirm that each bag contains only one dead bird, and, if not, must place each extra corpse in its own bag with a unique intake number. Be sure to note on each bag that the carcass inside was contaminated by other dead birds so that this information will be put on the *Data Log* when the bird is processed.

On the outside of each bag containing a dead bird, write (in permanent marker):

- The intake number identifying the individual (beginning with a D, for dead bird)
- The date and time the corpse was brought to the collection station
- If the corpse was contaminated by other corpses or by plastic
- Confirm that all appropriate collection and location information is associated with the carcass

If possible, the date and time the corpse was brought to the collection station, as well as contamination information, can be written directly on the *Data Log* instead of on the bag at the time of receipt. Receivers will do whatever approach they determine to be the most streamlined in a given situation.

All information will be transferred onto the *Data Log* as described above. Until they can be processed, these individually packaged birds should be stored in boxes or other containers, along with other corpses collected on the same date. If they are not going to be processed until a later date, they should be stored in a locked freezer.

Processing Station

All information collected during processing is recorded on the *Live Animal Data Log* or the *Dead Animal Data Log* (see Attachments). According to interagency agreements, CMMSN personnel or veterinarians from the OSPR or OWCN will process marine mammals.

An Overview of Live Bird Processing

Under unusual circumstances (where a spill has occurred at a significant distance from a Primary Care facility, and the veterinary stabilization facility/facilities close to the spill site does/do not include Processing Centers), live animals will most likely only receive first aid (i.e., fluids, warmth therapy) at these facilities. Separate stabilization forms will be used at these sites to indicate these therapies. Animals will not be processed at these sites, but information critical for ultimate processing (capture and location data) will be collected prior to transport to the Primary Care facility. Another possible option, should large numbers of live and dead animals be collected at a significant distance from the Care facility, is that temporary Receiving Centers (based out of one of OSPR's mobile veterinary laboratories or another temporary structure) may be established at the remote location and staffed by one or more members of the WPU to ensure appropriate data collection.

If the Processing Center and the Medical Intake area of the Primary Care facility are indeed joined or adjacent to one another, as will generally be the case, it is in the best interest of the bird to combine the preliminary medical examination with processing. To minimize stress to debilitated birds, only one person (an animal handler) should handle each bird during this period, unless the species requires two or more handlers for safe restraint. The process will generally go as follows, with modifications as necessary, but whether it is WPU or WCU personnel conducting the processing will depend on the situation and the assessment of both Care and Processing Unit personnel, as generally only in larger spills will the Care Unit personnel need the assistance of the WPU.

- Processing Unit personnel identifies and bands bird. Numbered color bands are generally used, except for shorebirds which will usually be given federal bands. All data is recorded on the *Live Animal Data Log*. During this time Processing Unit personnel prepares backdrop for the photograph.
- Bird is photographed, with one Processing Unit member taking the photograph and another safely holding the bird. If an instant camera is not available, the photo log is filled out at this time.
- Veterinarian takes feather sample and examines the bird (see Processing Birds part O, below). The bird may now begin the rehabilitation process.
- Details are written on the feather sample and photograph as outlined in the processing instructions (part N and O, below). Both are filed according to protocol.

An Overview of Dead Bird Processing

Before processing dead birds, a large, clean sheet of aluminum foil with the dull side facing upwards will be spread upon the counter where the WPU Data Collector is situated. The carcass will be placed on this aluminum foil during processing, and upon completion the foil will be used to completely wrap the carcass. The foil and the paper bag it is subsequently placed in will then both be accurately labeled (see below).

Processing Instructions for the *Live and Dead Animal Data Logs*

Because techniques and effort involved in information documentation must be uniform at all processing centers, a standardized protocol is presented here. The order in which items are presented corresponds to either (or both) the *Oiled Live Animal Data Log* or the *Oiled Dead Animal Data Log*. Differences between the *Live* and *Dead Logs* are due to some additional animal information being captured for live animals on the Intake form (such as degree of oiling), therefore negating the need to record the information in both places, or to additional information being captured for dead animals (such as scavenging information). Remember that proper PPE and procedures should be employed at all times to ensure protection from contamination.

On top of each *Data Log* form, record the spill name, facility name, PCA/Index number (if known), and animal group to be logged (i.e., Bird, Mammal or Other).

The codes that are used to complete the *Data Log* are also found in a one-page summary (the Data Log Code Key; see Attachments). Data recorders should make sure all fields are filled in with the appropriate code.

The following list of fields is filled out by receivers upon the animal's arrival:

- a. **Intake Number:** The unique number (using a different sequence in numerical order for each station, generally beginning with L for live birds and D for dead birds) used to identify each individual animal; prescribed upon receiving the animal.
- b. **Date Collected:** Record the date the animal was collected from the beach/spill area by the recovery team or other person (i.e., member of the public, Agency/clean-up personnel). This information is recorded by the Processing Unit receivers. For carcasses, the date collected will be written on the bag. For live animals, the date will be written on the box.
- c. **Time Collected:** Record the time the animal was collected from the beach/spill area in 24-hour military format. If there is no data, put a dash in the space provided.
- d. **Collector Name:** Record the first initial and last name of the person who initially captured the animal, as detailed on the bag or box in which the animal arrived. If not Recovery & Transportation Group personnel (e.g. general public), put phone number as well.
- e. **Beach Search Number:** Record the beach search number (identified as the search number plus a beach segment identifier, such as 25A for the first beach on the 25th search pattern) as detailed on the box/bag. If no search number is given, put a dash in the space provided.
- f. **Collection Location:** Record the beach or other location name where the animal was collected/captured. Further details are described in the Notes section (see below).
- g. **GPS Coordinates (2 fields):** Record GPS coordinates, if provided, for where the animal was collected/captured.
- h. **Field ID/Band/Tag Number:** Provide the temporary band/tag/Field ID number affixed during initial collection.

- i. **Date Arrived:** Enter the date the animal or carcass arrived at the collection station. For dead birds that were collected the same day in which they arrived at the station, only one date will be written on the bag. Live birds will most likely be processed the day of arrival.
- j. **Time Arrived:** Record the time the animal arrived at the facility in 24-hour military format.

The following list of fields is filled out during processing, not during receiving:

- k. **Date Processed:** Enter the date of processing (i.e., collection of the rest of the data).
- l. **Time Processed.** Record the time when processing commences in 24-hr military format.
- m. **Processor's Name:** Record the first initial and last name of the Data Collector on this animal.
- n. **Species Code:** Great care must be given to the accurate identification of beachcast animals. It is best to identify all organisms to their species level. However, this task may be extremely difficult as they are often heavily oiled and/or fragmented. If an animal is not readily identifiable, and if time permits, consult NOAA's *Beached Marine Birds and Mammals of the North American West Coast: A Revised Guide to their Census and Identification, With Supplemental Keys to Beached Sea Turtles and Sharks*, or Hass and Parrish's *Beached Birds: A COASST Field Guide*. These field guides are designed to aid in the identification of oiled species or carcasses, even when only skeletal fragments remain. **It is important to become familiar with these guides.** Other reference manuals that may be useful are (1) *Seabirds: An Identification Guide* (P. Harrison), (2) *Ducks, Geese and Swans of North America* (Bellrose), (3) *Gulls: A Guide to Identification* (P.J. Grant), (4) *Shorebirds: An Identification Guide* (P. Hayman et al.), (5) *National Geographic Field Guide North American Birds*, (6) *Peterson's Field Guide to Western Birds*, (7) *Guide to North American Birds* (Sibley), (8) *Marine Mammals of the World* (T.A. Jefferson, S. Leatherwood, and M.A. Webber), and (9) *Skeletal Identification of California Sea Lions and Harbor Seals for Archeologists* (J.C. Kasper).

Even with the aid of these guides, species identification may be impossible. In these cases a more general taxonomic category may be assigned. The lowest taxonomic designation that can be made with certainty should be recorded, such as "gull", "loon", "pinniped". It may be necessary to leave the designation as "seabird" or just "bird" if the remains are too damaged, or if there is not adequate time to make a positive identification. If a bird is identified to species, use the standard American Ornithologists' Union (AOU) four-letter abbreviation. These are listed in **Table 3**, which also includes appropriate four-letter abbreviations for some birds not identified to species (e.g., unidentified scaup). If the species is not listed there and the code is not known, write out the entire name of the species in the *Notes* section. The *Notes* section should also be used to record characteristics or measurements of birds not identified to species.

- o. **Temp Band/Tag Color and Number (primarily live animals):** All live birds will be fitted with bands provided by the OWCN; dead birds will be fitted with these only if field band numbers were not provided. Preferably, numbered color bands will be used, except for live shorebirds that may be given metal USGS/BRD bands if their legs are too small to retain available color bands (see Disposition Info below). Band numbers will be used to track birds throughout processing, storage and rehabilitation, particularly for live birds entering the rehab process. See *Avian Species Codes and Status* in **Table 3** for the appropriate band sizes for most bird species that may be encountered in a California marine oil spill. To increase processing speed in the dead bird data collection station, for birds not already given a field band, a single size of color bands can be used for all dead specimens, and can simply be tied with twine or

wire to those which it does not fit or carcasses that lack legs. Once a band is in place, the band number is read to the data recorder. The accurate recording of this information is critical and should be double-checked during processing.

A few birds that arrive may already be bearing bands; see Disposition Info section below. For shorebirds this will serve as their tracking band number. Live birds other than shorebirds arriving with a federal band will still be fitted with a temporary band that will be used as the tracking number while the bird is under care at the facility.

Care should be taken to select which leg to apply the colored band to on live animals that may have burns or other wounds on their legs.

Plastic NMFS tags should be fitted on a hind flipper of all phocids (seals) and sea turtles and on the fore flipper of otariids (sea lions and fur seals). If such tags are not available for dead animals simply tie a bird band to the carcass.

- p. **Condition:** (dead log only) A code is entered to indicate the physical condition of the animal at the time of processing.
- 1=freshly dead with no body parts missing and no scavenging
 - 2=freshly dead whole carcass (no body parts missing) that has been scavenged.
 - 3=decomposing whole carcass
 - 4=body parts only - fresh. This includes birds complete except for missing heads. The details of the fragment should be described in the *Notes* section (i.e. “wing only”)
 - 5=body parts only - decomposing (elaborate on which body parts are present in *Notes*.)
 - 6=dessicated, mummified carcass
 - 99=not evaluated
- q. **Extent of Scavenging:** (dead log only) A code is entered to indicate the degree and presence of scavenging.
- 0=no scavenging detected
 - 1=light scavenging (small areas of tissue removed or impacted)
 - 2=moderate scavenging (moderate amount of tissue removed)
 - 3=heavy scavenging (large amounts of body with tissue removed)
 - 99=not evaluated
- r. **Oiling Status** (recorded at time of processing on dead log only; data on live birds recorded on Intake forms and later transferred over). Indicate whether oil or evidence of oiling was detected during processing. This may include several different possible types of oil (e.g. jet fuel, diesel, gasoline, vegetable oil, fish oil, other). Note that these codes are hierarchical, meaning that you should choose the first (lowest) numbered code that applies.
- 0 = no, the presence of oil not detected
 - 1 = yes, oil visually detected

- 2 = yes, smell oil
 - 3 = yes, skin burned
 - 4 = unknown, but skin is wet/not waterproof
 - 5 = unknown, but plumage is misaligned, parted or sticky
 - 99 = not evaluated
- s. **% of Bird Oiled or Sheened** (recorded at time of processing on dead log only; data on live birds recorded on Medical Intake forms and later transferred over). Enter a code for the extent of the body surface covered by oil.
- 1=<2% of body
 - 2=2-25% of body
 - 3=26-50% of body
 - 4=51-75% of body covered
 - 5=76-100% of body covered
 - 6=oil is detected but extent undeterminable due to state of carcass. This is sometimes the case if the carcass is heavily scavenged (dead bird log only)
 - 7=no oil is detected but this may be due to state of carcass. This is sometimes the case if the carcass is heavily scavenged or is excessively wet and sandy (dead bird log only)
 - 99=percent oiled not evaluated or applicable (use if not visibly oiled).
- t. **Depth of Oil** (dead log only; data on live birds recorded on Medical Intake forms). Refers to the physical appearance of the oil on the animal.
- 1=surface (oil has penetrated $\frac{1}{4}$ of the way or less down the feather shaft)
 - 2=moderate (oil has penetrated $\frac{1}{2}$ of the way or less down the feather shaft)
 - 3=deep (oil has penetrated to skin)
 - 99=not evaluated or applicable (use this if no external oil is visible)
- u. **Where Oiled:** (dead log only; data on live birds recorded on Medical Intake forms). Enter the appropriate code to indicate the body region(s) of the carcass coated in oil. The codes describe the following areas:
- 1=bill/mouth area only (look inside of mouth)
 - 2=body (one spot on body, spot not on waterline)
 - 3=spotty (more than one spot in multiple areas on body; but not 100% oiled)
 - 4=waterline (oil from keel downwards)
 - 5=entire body (100% oiled)
 - 99=not evaluated or applicable (use this code if no external oil is visible)

v. Feather/Oil Sample and Photograph Taken?

- i. **Feather/Oil Sample Taken:** Oiled feather/pelage samples are collected for chemical fingerprinting from all dead and debilitated wildlife brought to the collection stations in order to determine the origin of each sample. Take from oiled locations. Record this as:

- y=yes, a feather/fur/tissue/swab sample was taken
- n=no sample was taken

If no apparent oil is found on the specimen, a sample still must be taken. It should be taken from the region (live) or regions (dead) where oil is commonly found, such as the breasts or the flanks. Samples are to be taken without contact with human skin, plastic, or equipment (e.g., gloves) that were used on a prior specimen without being replaced or cleaned with alcohol between uses, as contamination can invalidate the chemical analysis. For human safety as well as chemical fingerprinting, nitrile gloves are the best choice as nitrile will show a paraffin peak when analyzed. Latex gloves must not be used.

For live birds, the best technique is to pull out several body feathers (2-3 moderate-sized or 4-5 smaller ones) with clean hemostats (rather than using scissors) grasping the base of each feather, as body feathers will then be able to grow back. Take obviously oiled feathers for analyses. Should no visible oil be present but oiling has been established, another sampling method is to wipe a strip of fiberglass cloth over areas that appear to be oiled. For more detailed information, refer to the OWCN's "Protocols for the Care of Oil-Affected Birds" For dead wildlife, remove contaminated feathers or pelage with scissors, generally from more than one location. Wipe the scissors with alcohol between specimens, and make sure no oil is left on them. For heavily tarred birds it may be more efficient to take the feather sample with a disposable scalpel. For samples from live or dead birds, wrap the samples in aluminum foil with the dull or shiny side (it makes no difference for analysis) facing the sample. Wrap the foil around the sample; label foil with masking tape, a pre-made sample sticker, or directly onto the foil; and place the foil in a plain letter-sized envelope. The envelope and the foil, tape or sticker must be clearly marked with the following information:

- Intake log number (live or dead)
- Collection location (envelope only)
- Collection date (envelope only)
- Species (four letter code)
- Band or tag number
- Facility name (envelope only)
- Spill name
- Date of processing

Place the samples in a designated container or in freezer bags. Freezer bags should be clearly marked as feather samples, along with the processing date, station designation (live vs. dead), and range of intake numbers. Samples must be kept in a locked freezer for preservation, therefore samples should regularly be compiled and placed there during large-scale processing, or in a regular freezer during very small-scale processing. CDFG chain of custody forms are to be filled out for all feather samples leaving the OWCN facility for any reason.

- ii. **Photo Taken?:** All dead and debilitated animals will be photographed; even animals with no apparent oil must have a photo taken of them. If available, a photo scale should be used for each photo.

- y=yes, photo was taken
- n=no photo was taken

Position the bird so that the oil on the bird is visible in the frame. For the live bird station at least one animal handler will safely hold the bird in place, while WPU or WCU personnel take the photograph. It is best to use a Polaroid camera as it can then be ascertained immediately if any aspect of the picture does not come out, in which case it can be retaken. In the event that Polaroid cameras are not available and photographs are taken with non-instant cameras, a photographic log will be kept at each collection station by the photographer. The standard photo backdrop should clearly show, written in heavy black marker or on a dry-erase board:

- Date of processing
- Spill name
- Facility
- Intake number
- Species code; and
- Band number.

Date, spill name, and facility are on a semi-permanent backdrop; the intake number, species code, and band number will obviously be changed for every new individual, and it is the responsibility of one of the WPU personnel to prepare this backdrop prior to the photograph being taken. If any of this is not clearly visible it should be rewritten on the bottom of the picture or, if possible, the picture should be retaken. If a Polaroid camera is not used, in the *Photographic Log* (see Attachments) record the following:

- Spill name
- Facility
- Intake log number
- Species code
- Band number
- Date of processing
- Time the photograph is taken
- Name of the photographer
- Camera roll; and
- Frame number.

On the back of the log record if necessary any additional notes pertaining to the photograph; be sure to cross-reference the notes with the intake log number. Photo logs, in addition to physical evidence, will be retained for later use. Photos should be filed in order of

intake number and date. CDFG chain of custody forms are to be filled out for all photos leaving the OWCN facility for any reason.

- w. **Disposition Date:** (live log only). Enter the date the animal left veterinary care of the Wildlife Care and Processing Group (transferred over from vet forms or *Live Bird Mortality Log*).
- r. **Disposition Status:** (live log only). This describes the status of the animal when it has left the rehabilitation process at the primary care facility, and is added at a later time. CDFG chain of custody forms are to be filled out should animals leave the primary care facility and enter into the care of another facility.
 - R=released
 - D=died
 - E=euthanized
 - T=transferred
- s. **Disposition Info (Federal Band and Morgue Box; 2 fields)**
 - i. **Federal band number.** Some birds (live and dead) will arrive already bearing a federal metal band. The number should be read to the data recorder (*twice* for confirmation) and recorded in this section. For shorebirds that arrive already bearing a federal band, this will serve as their tracking band number and they will not be fitted with an additional one. If the bird is released, it will have a federal band number place on it beforehand. This number is to be carefully recorded, or transferred over from another data form, here. Both newly placed bands and bands that are on birds (live or dead) when they arrive will be reported by the Wildlife Care and Processing Group Supervisor to the national Bird Banding Lab at the conclusion of the spill.
 - ii. **Morgue box.** Animals that arrived dead or arrived alive and later died should be packaged together after processing in morgue boxes for storage. The purpose behind this sorting is to facilitate the retrieval of certain individuals (particularly special status or unidentified remains) for response- and post-response-related activities, such as verification of species, sex, age, breeding condition, or cause of death. **In some cases (such as if small enough boxes are unavailable), morgue bags will be used to separate individuals within the large boxes for easier retrieval, and both the bag number and box number must be recorded on the appropriate Data Log.** Animals are sorted based upon the following criteria (also see *Avian Species Codes and Status*):
 - “Special Status” (Endangered, Threatened, or Species of Special Concern) carcasses that are identified should be placed in morgue boxes that contain only special status species. The morgue box number is recorded on the *Data Log*.
 - Fragments and carcasses that were *not* identified to species (often due to degree of oiling or scavenging) should be morgue boxes that contain only these kinds of carcasses. The morgue box number is recorded on the *Data Log*.
 - All other carcasses that are identified to species are placed in additional morgue boxes. The morgue box number is recorded on the *Data Log*.
 - Birds that arrived dead are to be boxed separately from birds that arrived alive and subsequently died (see *Procedures for Handling Animals that Die While in Rehabilitation* below). Labeling systems should be non-overlapping between the

two groups; for instance, a numeric series for dead arrivals and an alpha series for live arrivals that died. Each box should be labeled consecutively.

Morgue boxes should be labeled with the following information:

- Morgue box number
- Spill name
- Facility
- Dead or Live Processing
- Date carcasses first placed in morgue box (as box can span multiple dates)

See *Packaging Carcasses after Completion of Processing*, below, for more details. CDFG chain of custody forms are to be filled out for individual carcasses or morgue boxes leaving the OWCN facility for any reason.

- t. **Notes:** All additional observations (excluding those mentioned below) are written in the lines on the reverse side of the data log. Notes may possibly include any of the following: any conspicuous cause of death not related to oil (e.g. gun shot wound); a note if the specimen was known to have been contaminated by other petroleum products (e.g. if it was wrapped in plastic) or other carcasses; any other observations or measurements; and **on dead birds be sure to always check for and comment here if a toe or wing has been clipped.**

The following data will be collected whenever possible; this will be done during processing for dead birds, and generally either at medical intake, before release, or post mortem (during morguing process) for live birds and recorded on the individual animal's medical record. However, time constraints may prevent processors from collecting this data, at the discretion of the Wildlife Processing Unit or Wildlife Care Unit leaders:

- **Morphometrics:** these measurements should only be done by properly trained individuals. They should only be done on birds where the state of the carcass (if dead) allows it. The protocols (except some mentioned under bill depth) are taken from Peter Pyle's *Identification Guide to North American Birds, Part I* (1997, Slate Creek Press) for passerines and near-passerines; however, the bill measurements detailed here are not all useful for seabirds. There are specific bill measurements that are useful for different species groups, and processors must take those most appropriate measurements (e.g., as recommended in Pyle and Howell's *Identification Guide to North American Birds, Part II* once it is available).
 - i. **Wing**=unflattened (relaxed) wing chord (mm). Do not put any pressure on the wing that might flatten or extend it, and use a ruler with a perpendicular stop at zero.
 - ii. **Tarsus**=the length between the intertarsal joint and the distal end of the last leg scale before the toes emerge. There is often a crevasse marking the intertarsal joint, otherwise you can generally feel it with your nail; and the distal end of the last leg scale before the toes emerge can also be determined by bending the foot in a natural position and resting the calipers on top of that bend.
 - iii. **Bill depth**=There are numerous species-specific methods for taking bill depth, and for some species multiple methods are useful. The manner in which this measurement is taken for each species should be carefully documented during each oil spill, and should follow recommendations in the literature for each species. One method is the depth

perpendicular to the axis of the bill and taken with calipers at the anterior end of the nares (towards the tip of the bill). Place the top jaw of the calipers even with the anterior ends of the nares and the bottom against the lower mandible below that so that the calipers are exactly perpendicular to the axis of the bill. Other methods include at the gonys, at the deepest part of the bill, or at the base of the proximal end of the upper mandible feathering.

- iv. **Culmen (“bill from nares to tip”)**=distance between the anterior end of the nares and the tip of the bill, taken with calipers. Only possible for species with external nares, and only useful for certain species.
- v. **Exposed culmen**=the length between the posterior tip of the feathering at the top base of the bill and the tip of the bill, taken with calipers. Taken on most species.
- i. **Age:** If determinable indicate the age of the individual (Juv=juvenile, Ad=adult, 1st yr, 2nd yr, 3rd yr, etc.). Note that some ageing may take place post-processing based on the morphometrics collected.
- ii. **Sex:** If possible by breeding condition, plumage, or morphometrics, indicate if the individual is a male (M) or female (F). Note that some sexing may take place post-processing date based on the morphometrics collected.

Packaging Carcasses after the Completion of Processing

Once the Data Log has been filled out for a given carcass, it is to be wrapped completely in aluminum foil so that no part of it is visible. It is then placed in the smallest paper bag that will accommodate it. The data recorder should prepare this bag so that it is ready upon completion of processing. The following information is written on foil and on the outside of the corpse bag in black marker:

- Intake Log Number;
- Species Code;
- Band Number;
- Date of Packaging;
- Facility;
- Spill Name;

The bag is then sealed securely with masking or other freeze-proof tape and placed with other corpse bags until it can be properly morgued.

Procedures for Handling Animals that Die While in Rehabilitation

- Animals that die after entering rehabilitation will return to the hands of Processing Unit personnel for data, organization, and storage purposes. For such animals, the following is recorded on a separate log sheet (*Post Arrival Mortalities Log*): the initials of the person recording the data, intake log number, band number, species, arrival date (if known), date of death, and an indication (Y/N) of whether morphometrics have been taken elsewhere for that individual. Please fill out the *Post Arrivals Mortalities Log* before wrapping the carcass - this is to ensure that the information on medical intake and other medical forms has been checked against the carcass (e.g. species, band number), and that the correct information is entered here. Keeping track of this data is often very helpful to veterinarians, as it allows them to more accurately track the fate of their patients. If time allows and if this has not already been done for the individual, processors will collect morphometric data at this point to be later transferred to the animal's medical record form. These

animals are wrapped in foil and placed in paper bags, and are labeled and morgued in the same process used for birds that arrive dead (see *Packaging Carcasses After Completion of Processing* and *Morgue Box* above). **However, they are not to be placed in the same morgue bags/boxes as those from the dead bird station and generally should be given a different sequence of box numbers.** For example, birds morgued from the dead animal processing station might go into boxes 1 through 20; and those that arrived alive, but dead into boxes A through M. See *Morgue Box* section above for separating out Special Status species. These morgue box numbers must then be transferred to the *Live Bird/Mammal Data Log* sheet so that an individual specimen can be easily retrieved.

Demobilization:

Processing Unit demobilization is initiated when the rate of birds and other oiled wildlife washing ashore approaches zero, search and rescue stops, and the number of mortalities within the Wildlife Care Unit is low. Demobilization is complete once all the birds and carcasses are processed and morgued. Due to the unpredictable nature of oil spills, the duration of Processing Center operation will vary. Orders to demobilize will come via the chain of command through the Wildlife Care & Processing Group Supervisor, and standard checkout and demobilization procedures will be followed as outlined in the Wildlife Response Plan and the ICS.

Attachments

1. Suggested Equipment List for the Processing Station
2. Dead Bird/Mammal Data Log
3. Live Bird/Mammal Data Log
4. Codes for Live & Dead Bird/Mammal Data Logs
5. Photographic Log
6. Post Arrival Mortalities Log
7. Avian Species Codes and Status
8. Marine Mammal & Sea Turtle Species Codes and Status

Equipment List

Items Needed at the Processing Center

Alcohol, isopropyl – for cleaning hemostats
Aluminum foil rolls ¥ sizes large and medium.
Banding Pliers
Band size measurement device
Bird bands - numbered color bands
Bird bands sizes 1 ¥ 4 (BRD aluminum)
Bird carrying boxes, cardboard/plastic pet carriers for live bird storage
Boxes, small for storage
Calipers
Cellular phones or other communication equipment
Chain of Custody forms (DFG form)
Chairs
Cleaning supplies – heavy duty cleaning fluid and sponges
Clipboards (7)
Clocks or wrist-watches (2)
Computer, laptop (1)
Copies of protocol
Copies of Species List
Copies of Index to Reference Guides
Cotton balls
Dry-Erase board – if not using cards for photos
Envelopes, letter-size
Evidence Tape
File boxes for data forms
File boxes for photographs
File boxes for feather samples
Forms (multiple copies): Live and Dead Animal Data Logs, Photographic Log, Post-arrival Mortalities Log
Glass specimen/evidence jars
Gloves ¥ disposable nitrile or vinyl, all sizes
Garbage bags
Hemostats
Human First Aid Kit
Identification Guides: Beached Bird/Mammal Guide, Sibley Guide, National Geographic, Guide to Gulls, Guide to Shorebirds, Guide to Seabirds, Guide to Waterfowl, Marine Mammal Guide
Identification badges
Manila folders (letter size)
Markers ¥ thick black, thick colored and permanent
Paper ¥ 8.5" x 11" and notepad
Paper bags ¥ double-strength lunch-size & grocery size
Paper towels
Polaroid or Digital Camera (2)
Polaroid Film
Refrigeration and freezers for corpses and samples
Rulers ¥ regular and for photographs

Safety glasses
Scalpels, disposable
Scissors ¥ regular (2 pairs) & surgical (1 pair)
Small gauge aluminum wire to secure bands to fragments
Standardized backdrop for filming
Tables, waist-high
Tape, duct, masking (2○) & clear packaging
Towels to place in live bird carrying boxes
Tweezers (large)
Twine/String
Tyvek/Kleenguard suits (or other impermeable protective clothing)
Water proof pens
White garbage bags, medium-sized
Wing chord rule ¥ large (300mm or greater)
Ziploc bags

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Last updated 19 October 2004

Front Side of Page _____ of _____

Back Side of Page _____ of _____

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Front Side of Page ____ of ____

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Code Key for OWCN/Wildlife Processing Unit Live & Dead Oiled Animal Data Logs

Record incident name, location, and page; circle live vs. dead. Please be sure all fields are filled in with the appropriate code.

The following list of fields are filled out by receivers upon the animal's arrival:

Intake #: Starting with L for live and D for dead, record the sequential i.d. number which animal was given upon arrival.

Date and Time Collected (2 fields): Date and time (24-hour format) of collection.

Collector Name: Record first initial and last name of collector (from bag/box); if public, put phone number as well.

Beach Search Number: Record the official beach search code if the system is implemented.

Collection Location: Name of initial collection/capture location. If necessary use Notes on back for overflow.

GPS Coordinates (2 fields): Coordinates of collection/capture location.

Field Band Number: Provide # of temporary band affixed during initial collection/capture; for dead this will be only band.

Date and Time Arrived (2 fields): Date and time (24-hour format) animal arrived at processing station.

The following list of fields are filled out during processing, not during receiving, or are transferred from other forms:

Date and Time Processed (2 fields): Date and time (24-hour format) the rest of processing (data fields below) was initiated.

Processor Name: First initial and last name of data collector for the individual animal.

Species: Standard 4-letter abbreviation; if unknown, indicate lowest taxonomic category determined (e.g. gull; alcid; bird).

Temp Band/Tag #: For birds enter color and number of band (i.e., B198 if Blue band #198) placed on leg (or elsewhere with string as necessary for incomplete carcasses). This is for live birds other than shorebirds, and dead birds not given a field band. For turtles or phocids, plastic NMFS tags should be fitted on the hind flipper. For otariids, tags go on front flipper

Condition: (dead log only) **1**=freshly dead whole carcass with no evidence of scavenging; **2**=freshly dead and scavenged with no body parts missing; indicate in Notes the location (e.g., breast) and degree (e.g., light, medium, heavy) of scavenging. **3**=decomposing whole carcass; **4**=body parts only - fresh (elaborate on which body parts are present in Notes); **5**=body parts only - decomposing (elaborate in Notes); **6**=dessicated, mummified carcass; **99**=not evaluated.

Extent of Scavenging: (dead log only) **0**=none detected; **1**=light; **2**=moderate; **3**=heavy

Oiling Status: In hierarchical order (choosing lowest number to apply), indicate presence of oil (jet fuel, diesel, gasoline, vegetable oil, fish oil or other) by: **0**=no signs of oil detected; **1**=yes, oil visually detected; **2**=yes, smell oil; **3**=yes, skin burned; **4**=unknown but skin wet/not waterproof; **5**=unknown but plumage misaligned, parted, or sticky; **99**=not evaluated.

% of Bird Oiled or Sheened: (dead log; for live, transferred over from medical forms) **1**=<2% of body; **2**=2-25% of body; **3**=26-50% of body; **4**=51-75% of body; **5**=76-100% of body; **6**=oil detected but extent undeterminable due to state of carcass; **7**=no oil detected but this may be due to state of carcass (i.e., partial); **99**=not evaluated or applicable (use if not visibly oiled).

Depth of Oil: (dead log only) **1**=surface (oil penetrated $\leq 1/4$ way down feather shaft); **2**=moderate ($\leq 1/2$ down shaft); **3**=deep (penetrated to skin); **99**=not evaluated or applicable (use if not visibly oiled).

Where Oiled: (dead log only) **1**=bill/mouth area only; **2**=body (1 spot); **3**=spotty (spots in multiple areas); **4**=waterline (keel downwards); **5**=entire body; **99**=not evaluated or applicable (use if not visibly oiled).

Feather/Oil Sample Taken?: Take a sample from oiled locations. If no apparent oil, take samples from areas frequently oiled. **Y**=feather/fur/tissue/swab sample taken; **N**=no sample taken. Shiny or dull side makes no difference. Record the following on both the envelope AND foil in which sample is placed: intake #, species code, band number, processing date, spill event name.

Photo Taken?: **Y**=yes; **N**=no. Write the time it was taken on photo (if polaroid); see protocols if not polaroid. In photo itself backdrop should clearly show: intake #, species code, band number, date, facility, and spill name (if designated).

Disposition Date: (live log only): Record the date of the disposition (transferred over from Post Mortality Log).

Disposition Status: (live log only): Manner in which live animals left the care of veterinarians at the facility. **R**=released; **T**=transferred for rehabilitation; **E**=euthanized; **D**=died (transferred over from Post Mortality Log).

Federal Band number: Record here any federal metal bands birds arrived with; federal bands given to shorebirds in lieu of temporary plastic bands; and federal bands given upon release. WPU will report recoveries and OWCN newly placed bands.

Morphometrics and Age/Sex: If time allows, during processing on dead birds record the unflattened wing, tarsus, bill depth(s), nares to tip, exposed culmen, age, and sex, as appropriate for the species. Proper training is required; refer to the complete protocols for the Wildlife Processing Unit for a thorough description of how to collect each data type.

Morgue Box #: Box # in which the carcasses is placed. If bags are used record those numbers also. Live and dead are given different series (alpha vs. numeric); Special Status and unidentified birds placed in unique boxes. Live are transferred over from Post Mortality Log.

Notes: Any extra observations, e.g., breeding condition; conspicuous cause of death if not related to oil; contamination by other petroleum products (e.g. wrapped in plastic) or other carcasses; and **detection of toe or wing clipping** on dead birds.

**For use only when instant camera is unavailable

Location/Spill Name: _____

[illegible]

Last modified November 2002 PRBO

Log of Post Arrival Mortalities (Received through Live Station) for the Oiled Wildlife Care Network

[illegible]

Last updated 15 October 2004

Avian Species Codes and Status – For OWCN/Wildlife Processing Unit

Bird species, species status, 4-letter codes, suggested federal band sizes, likelihood of each to be processed at wildlife processing centers, and the type of morgue box in which the corpse should be stored. *Species of federal or state special status (endangered, threatened, special concern) are to be placed in morgue boxes designated for special status carcasses. All other identified carcasses are to be placed in morgue boxes with no designation. Unidentified fragments or carcasses are to be placed in morgue boxes designated for unidentified carcasses.* This table is not exhaustive and is generalized for all of coastal California. You may encounter species not occurring here (e.g., landbirds); see the Bird Banding Lab website for appropriate federal band size and code (<http://www.pwrc.usgs.gov/BBL/manual/bandsize.htm>). Birds are listed in alphabetical order.

Species	Code	Band	Likelihood	Morgue Box
Albatross, Black-footed	BFAL	7B	Rare	No Status
Albatross, Laysan	LAAL	7B	Rare	No Status
Albatross, Short-tailed ***	STAL	8	Extremely Rare	Special Status
Alcid, Unidentified	ALCI	n/a	n/a	Unidentified
Auklet, Cassin's	CAAU	3B-3A	Common	No Status
Auklet, Parakeet	PAAU	4	Rare	No Status
Auklet, Rhinoceros *	RHAU	6-5	Common	Special Status
Avocet, American	AMAV	4-4A°	Extremely Rare	No Status
Blackbird, Red-winged	RWBL	2	Rare	No Status
Blackbird, Tricolored *	TRBL	2	Rare	Special Status
Brant *	BRAN	7A	Uncommon	Special Status
Bufflehead	BUFF	5	Rare	No Status
Canvasback	CANV	7A	Rare	No Status
Coot, American	AMCO	6-5	Rare	No Status
Cormorant, Brandt's	BRAC	8	Common	No Status
Cormorant, Double-crested	DCCO	8-7B	Uncommon	No Status
Cormorant, Pelagic	PECO	7A-7B	Common	No Status
Cormorant, Unidentified	CORM	n/a	n/a	Unidentified
Curlew, Long-billed	LBCU	5-6	Rare	No Status
Dowitcher, Long-billed	LBDO	2	Rare	No Status
Dowitcher, Short-billed	SBDO	2	Rare	No Status
Dowitcher, Unidentified	DOWI	n/a	n/a	Unidentified
Duck, Harlequin *	HARD	5	Rare	Special Status
Duck, Ring-necked	RNDU	6	Rare	No Status
Duck, Ruddy	RUDU	6-7A	Uncommon	No Status
Duck, Unidentified	DUCK	n/a	n/a	Unidentified
Dunlin	DUNL	1B-1A	Rare	No Status
Egret, Great	GREG	7A-7B	Extremely Rare	No Status
Egret, Snowy	SNEG	6	Extremely Rare	No Status
Fulmar, Northern	NOFU	6	Common	No Status
Gadwall	GADW	6	Rare	No Status
Godwit, Marbled	MAGO	4	Rare	No Status
Goldeneye, Barrow's *	BAGO	7A	Extremely Rare	Special Status
Goldeneye, Common	COGO	6	Rare	No Status
Goldeneye, Unidentified	GOLD	n/a	n/a	Unidentified
Goose, Canada	CAGO	8	Rare	No Status
Goose, Greater White-fronted	GWFG	7B-8	Extremely Rare	No Status
Grebe, Clark's	CLGR	7A-B	Rare	No Status
Grebe, Eared	EAGR	5	Common	No Status
Grebe, Horned	HGR	6-5	Common	No Status
Grebe, Pied-billed	PBGR	5-6	Rare	No Status
Grebe, Red-necked	RNGR	7A	Rare	No Status
Grebe, Western	WEGR	7A-B	Very Common	No Status
Grebe, Western/Clark's	WCGR	7A-B	n/a	Unidentified
Grebe, Eared/Horned	EHGR	5-6	n/a	Unidentified
Grebe, Unidentified	GREB	n/a	n/a	Unidentified
Guillemot, Pigeon	PIGU	4A	Common	No Status
Gull, Bonaparte's	BOGU	3-3B	Uncommon	No Status

Gull, California	CAGU	5	Common	No Status
Gull, Glaucous	GLGU	7A	Rare	No Status
Gull, Glaucous-winged	GWGU	7A	Common	No Status
Gull, Heerman's	HEEG	4A	Common	No Status
Gull, Herring	HERG	6	Common	No Status
Gull, Mew	MEGU	4A	Common	No Status
Gull, Ring-billed	RBGU	4A	Common	No Status
Gull, Sabine's	SAGU	3	Uncommon	No Status
Gull, Thayer's	THGU	6	Common	No Status
Gull, Western	WEGU	6	Very Common	No Status
Gull, Western x Glaucous-winged	HYGU	6-7A	Common	No Status
Gull, Unidentified	GULL	n/a	n/a	Unidentified
Heron, Black-crowned Night	BCNH	7A	Rare	No Status
Heron, Great Blue	GBHE	7B	Extremely Rare	No Status
Heron/Egret, Unidentified	HERO	n/a	n/a	Unidentified
Jaeger, Long-tailed	LTJA	4A-4	Rare	No Status
Jaeger, Parasitic	PAJA	4A	Rare	No Status
Jaeger, Pomarine	POJA	5	Rare	No Status
Killdeer	KILL	2	Uncommon	No Status
Kingfisher, Belted	BEKI	3B-3A	Uncommon	No Status
Kittiwake, Black-legged	BLKI	4A	Common	No Status
Loon, Arctic	ARLO	7B	Uncommon	No Status
Loon, Common *	COLO	8	Common	Special Status
Loon, Pacific	PALO	7B	Common	No Status
Loon, Red-throated	RTLO	7B	Common	No Status
Loon, Yellow-billed	YBLO	9	Extremely Rare	No Status
Loon, Unidentified	LOON	n/a	n/a	Unidentified
Mallard	MALL	7A	Rare	No Status
Merganser, Common	COME	7A	Rare	No Status
Merganser, Hooded	HOME	5-6	Rare	No Status
Merganser, Red-breasted	RBME	6-5	Rare	No Status
Murre, Common	COMU	6M	Very common	No Status
Murrelet, Ancient	ANMU	3B-3	Rare	No Status
Murrelet, Craveri's	CRMU	2	Rare	No Status
Murrelet, Marbled ***	MAMU	3B-3	Rare	Special Status
Murrelet, Xantus' *	XAMU	2	Rare	Special Status
Oystercatcher, Black	BLOY	5	Rare	No Status
Peep, Unidentified "Peep" shorebird	PEEP			Unidentified
Pelican, American White *	AWPE	9-9C °	Rare	Special Status
Pelican, Brown ***	BRPE	8-9	Common	Special Status
Petrel, Mottled	MOPE	3	Extremely Rare	No Status
Phalarope, Red	REPH	1A	Common	No Status
Phalarope, Red-necked	RNPH	1B	Common	No Status
Phalarope, Wilson's	WIPH	1A-2	Uncommon	No Status
Pintail, Northern	NOPI	6	Rare	No Status
Plover, Black-bellied	BBPL	3B	Rare	No Status
Plover, Semipalmated	SEPL	1A-1B	Rare	No Status
Plover, Snowy **	SNPL	1B, 1P	Rare	Special Status
Plover, Unidentified	PLOV	n/a	n/a	Unidentified
Puffin, Horned	HOPU	5	Rare	No Status
Puffin, Tufted *	TUPU	6-5	Rare	Special Status
Rail, Black **	BLRA	5	Extremely Rare	Special Status
Rail, Clapper ***	CLRA	5	Extremely Rare	Special Status
Rail, Virginia	VIRA	2-3°	Extremely Rare	No Status
Redhead *	REDH	6	Extremely Rare	Special Status
Sanderling	SAND	1A	Rare	No Status
Sandpiper, Least	LESA	1-1B	Rare	No Status
Sandpiper, Pectoral	PESA	1A	Extremely Rare	No Status
Sandpiper, Spotted	SPSA	1B-1A	Rare	No Status
Sandpiper, Western	WESA	1B	Rare	No Status

Scaup, Greater	GRSC	6-5	Rare	No Status
Scaup, Lesser	LESC	6-5	Rare	No Status
Scaup, Unidentified	SCAU	n/a	n/a	Unidentified
Scoter, Black	BLSC	7A	Rare	No Status
Scoter, Surf	SUSC	7A	Common	No Status
Scoter, White-winged	WWSC	7A	Common	No Status
Scoter, Unidentified	SCOT	n/a	n/a	Unidentified
Shearwater, Black-vented	BVSH	4	Rare	No Status
Shearwater, Buller's	BULS	4	Uncommon	No Status
Shearwater, Flesh-footed	FFSH	4	Uncommon	No Status
Shearwater, Pink-footed	PFSH	4	Common	No Status
Shearwater, Short-tailed	SHOS	4	Common	No Status
Shearwater, Sooty	SOSH	4-5	Common	No Status
Shearwater, Unidentified	SHOR	n/a	n/a	Unidentified
Shoveler, Northern	NSHO	5-6	Rare	No Status
Skimmer, Black *	BLSK	4	Rare	Special Status
Snipe, Common	COSN	3	Rare	No Status
Sora	SORA	2°	Extremely Rare	No Status
Stilt, Black-necked	BNST	3A-4 °	Rare	No Status
Storm-Petrel, Ashy *	ASSP	1B	Rare	Special Status
Storm-Petrel, Black *	BLSP	1A	Rare	Special Status
Storm-Petrel, Fork-tailed *	FTSP	1B	Rare	Special Status
Storm-Petrel, Leach's	LHSP	1B	Rare	No Status
Storm-Petrel, Unidentified	SPSP	n/a	n/a	Unidentified
Surfbird	SURF	2	Rare	No Status
Tattler, Wandering	WATA	3-2	Rare	No Status
Teal, American Green-winged	AGWT	4-4A	Rare	No Status
Teal, Blue-winged	BWTE	5-4A	Rare	No Status
Teal, Cinnamon	CITE	5-4A	Rare	No Status
Tern, Arctic	ARTE	2-1A	Rare	No Status
Tern, Black *	BLTE	2-1A	Extremely Rare	Special Status
Tern, Caspian	CATE	5-4A	Rare	No Status
Tern, Common	COTE	2	Rare	No Status
Tern, Elegant *	ELTE	3	Rare	Special Status
Tern, Forster's	FOTE	3	Rare	No Status
Tern, Least ***	LETE	1A-1B	Rare	Special Status
Tern, Royal *	ROYT	4A	Rare	Special Status
Tern, Unidentified	TERN	n/a	n/a	Unidentified
Turnstone, Black	BLTU	2	Rare	No Status
Turnstone, Ruddy	RUTU	2-3	Rare	No Status
Turnstone, Unidentified	TURN	n/a	n/a	Unidentified
Vulture, Turkey	TUVU	8V	Extremely Rare	No Status
Whimbrel	WHIM	4	Rare	No Status
Wigeon, American	AMWI	6	Rare	No Status
Willet	WILL	4	Rare	No Status
Yellowlegs, Greater	GRYE	3-3B	Rare	No Status
Yellowlegs, Lesser	LEYE	2	Extremely Rare	No Status
Yellowlegs, Unidentified	YELL	n/a	n/a	Unidentified

Last modified 13 October 2004

*Indicates a California Species of Special Concern

**Indicates a species of federal or state threatened status

***Indicates a species of federal or state endangered status

° Band above the tarsometatarsal joint only.

Marine Mammal & Sea Turtle Species Codes and Status

Marine Mammal and sea turtle species (by common name), species status, and suggested name abbreviation are present. Although no official four letter species codes exist for marine mammals and turtles, the convention used for birds was applied. The first two letters of the first and last common name were used as the code. This table is not exhaustive, so it is possible to encounter species not listed. This table has been generalized for all of coastal California.

Common Name	Code Abbr.	Common Name	Code Abbr.
Baleen Whales		Seals & Sea Lions	
Whale, Blue ***	BLWH	Fur Seal, Guadalupe **	GFSE
Whale, Fin ***	FIWH	Fur Seal, Northern	NFSE
Whale, Gray	GRWH	Sea Lion, California	CASL
Whale, Humpback ***	HUWH	Sea Lion, Steller **	STSL
Whale, Minke	MIWH	Otariid, Unidentified	OTAR
Whale, Sei ***	SEWH	Seal, Harbor	HASE
Whale, Baleen - Unidentified	WHALE	Seal, Northern Elephant	NESE
		Phocid, Unidentified	PHOC
Toothed Whales: Dolphins & Porpoises		Pinniped, Unidentified	PINN
Dolphin, Bottlenose	BODO		
Dolphin, Common	CODO	Otters	
Dolphin, Northern Right Whale	NRWD	Otter, River *	RIOT
Dolphin, Pacific White-sided	PWSD	Otter, Sea **	SEOT
Dolphin, Risso's	RIDO		
Dolphin, Unidentified	DOLP	Sea Turtles	
Porpoise, Dall's	DAPO	Turtle, Eastern Pacific Green ***	GRTU
Porpoise, Harbor	HAPO	Turtle, Hawksbill ***	HATU
Porpoise, Unidentified	PORP	Turtle, Leatherback ***	LETU
Whale, False Killer	FKWH	Turtle, Loggerhead ***	LOTU
Whale, Killer	KIWH	Turtle, Pacific (Olive) Ridley ***	ORTU
Whale, Dwarf Sperm	DSWH		
Whale, Pigmy Sperm	PSWH		
Whale, Sperm ***	SPWH		
Whale, Toothed - Unidentified	ODON		
Beaked Whales			
Beaked Whale, Baird's	BABW		
Beaked Whale, Cuvier's	CUBW		
Beaked Whale, Hubb's	HUBW		
Beaked Whale, Unidentified	BEAK		

* Indicates a California Species of Special Concern

** Indicates a species with a threatened status

*** Indicates a species with endangered status

PROTOCOLS FOR THE CARE OF OIL-AFFECTED BIRDS



Oiled Wildlife Care Network

*The Oiled Wildlife Care Network is sponsored by
California Department of Fish and Game, Office of Spill Prevention and Response
and administered by the
Wildlife Health Center, School of Veterinary Medicine, University of California, Davis*



The development of this document has been a combined effort of many different interested and willing parties and organizations. The bulk of these procedures are based on protocols developed from years of oil spill response work by International Bird Rescue Research Center (Cordelia, California). This information was further modified to work within the framework of the Oiled Wildlife Care Network with the California Department of Fish and Game, Office of Spill Prevention and Response. Additions and modifications to this document will be made regularly as advances are made in oil spill response techniques. As such, any suggestions for additional material or comments on methods included in this document are welcome (wildlifehealth@ucdavis.edu).

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INTRODUCTION AND BACKGROUND

INTRODUCTION

This manual serves as a supplement to the Basic Supervisors course offered by the Oiled Wildlife Care Network (OWCN), California Department of Fish and Game. It should serve as a referral guide outlining some of the basic procedures and protocols to follow in the event of an oil spill response or the occasional oiled bird. It is important that these procedures are understood and followed by all participants in the OWCN. By using the most current procedures and protocols, we should be able to provide the “best achievable treatment” for all wildlife affected by oil in the state of California. In addition, the standardization of this information allows for more accurate collection of data for analysis, which then may yield further improvements in protocols. The procedures and protocols outlined in this manual are a *work in progress*, with constant changes being made as research and clinical experience suggest improvements.

AN OVERVIEW OF THE OILED WILDLIFE CARE NETWORK

The *Lempert-Keene-Seastrand Oil Spill Prevention and Response Act* of 1990 required the California Department of Fish and Game’s Office of Spill Prevention and Response (OSPR) to establish rescue and rehabilitation stations for aquatic birds, sea otters, and other marine mammals in California. Amendments to the Act in 1993 and 1995 guarantee the construction of regional oiled wildlife care facilities and ongoing operations and maintenance funding for the Oiled Wildlife Care Network. These regional facilities have been or are in the process of being established in the north coast, San Francisco Bay, Monterey Bay, central coast, Los Angeles Harbor, Orange County, and San Diego areas. The OWCN provides statewide protection through its geographic coverage and by capitalizing on the considerable talent and resources which exist within the community of marine wildlife care providers in California. Working with the University of California at Davis and International Bird Rescue Research Center, the OWCN provides annual trainings for supervisors in participating organizations. In addition, the OWCN administers a competitive grants program overseen by advisors from wildlife trustee agencies, academic and research organizations, the oil industry, and wildlife rehabilitators. This program enables the OWCN to develop and evaluate current treatment methods to ensure that wildlife are protected and that those released can contribute to free ranging populations.

ESSENTIALS OF THE UNIFIED COMMAND SYSTEM

When oil spills occur in California, the actions that are taken to protect wildlife resources are called Wildlife Operations. Wildlife Operations are guided in the initial phase of a response by an Area Contingency Plan that has been developed jointly by the United States Coast Guard and OSPR. All activities of the oil spill response are coordinated through the Unified Command (UC). The UC is the governing body responsible for all decision making processes during the spill response and is made up of a Federal On-Scene Coordinator (OSC) (usually a U.S. Coast Guard Captain of the Port for the affected area), a State Incident Commander (IC) (usually the OSPR administrator or his/her designee), a local government representative (MAC Group representative), and a qualified individual from the responsible party (RP), if known (see Unified Command Structure and detail of Wildlife Operations Branch, Appendix 1). The OSC has the ultimate responsibility for directing the oil spill response if a consensus cannot be reached among the members of the UC. However, the State IC usually takes the lead for environmental clean-up issues and the wildlife response. Early but prudent initiation of a wildlife response and the development of the Wildlife Operations section of the UC ensures timely mobilization of dedicated staff, equipment, and volunteers.

The Recovery and Rehabilitation sections of the Wildlife Operations branch are primarily staffed by OWCN personnel. The structure of the UC, and thus that of the OWCN, is designed to be flexible and scalable to the size of the oil spill response. The reporting structure for the OWCN response personnel is illustrated in Appendix 2 along with brief descriptions of the duties associated with each position. Only those positions necessary and appropriate for a specific spill incident are filled, and most oil spill responses do not require the filling of all listed positions. The OWCN Director must be aware of the number of staff in each personnel category for every response to ensure a smooth operation, to better assess additional staffing needs, and to arrange for reimbursement from the RP. If an individual is responding to an oil spill for the OWCN for the first time in a non-volunteer position, the OWCN Director must determine that individual's qualifications and assign him or her to an appropriate personnel category. Similarly, all requests for additional staffing, equipment, supplies, or changes in operational activities should pass through the chain of command to the OWCN Director (Appendix 2). If the chain of command is diligently followed, all appropriate personnel are included in communications and the response effort is much more efficient. Responses to oil spills since the implementation of the UC and adherence to chain of command protocols have been significantly less chaotic and resulted in more efficient wildlife handling and an overall improvement in wildlife care.

THE ROLE OF VOLUNTEERS

The OWCN is operated primarily by a cadre of dedicated, trained wildlife rehabilitation volunteers. Because volunteers are crucial to all oil

spill responses, we greatly value their commitment and dedication and hope to be able to provide them with the training necessary for them to adequately complete their desired jobs within the OWCN. If a volunteer feels that he or she has not been adequately trained for the duties requested, has been dealt with unfairly or inappropriately, or has concerns about his or her role in Wildlife Operations, those concerns should be immediately brought to the attention of his or her supervisor. In the case of a problem arising between the volunteer and the supervisor, concerns should be voiced directly to the Volunteer Coordinator. All volunteer issues are important to the operation of the OWCN. Unfortunately, no volunteers under the age of 18 will be allowed to work with wildlife, within a response facility, or within the hot zone of an oil spill due to federal restrictions on the use of volunteers for potentially hazardous activities.

CHAIN OF CUSTODY PROCEDURES

Systematic searching, recovery, transportation, processing, and treatment of all affected wildlife are critical for gaining an understanding of the short-term and long-term consequences to wildlife populations and guiding response actions. In order to track the samples and data collected during an oiled wildlife response, the OWCN must adhere to strict chain of custody procedures. Data on live animals are compiled on standard OWCN log forms (Appendix 3) for tracking purposes. During large-scale responses, log forms will be completed by wildlife agency personnel or their agents; however, OWCN personnel should be familiar with the forms and their completion for smaller-scale responses and for the occasional oiled bird. As detailed in the agreements between OSPR and OWCN organizations, data on all oiled birds must be collected and the OWCN Director immediately notified upon receipt of oiled wildlife. The occurrence of oiled birds prior to declared oil spill events has been critical to the early detection of oil pollution in the environment and the establishment of oiled wildlife responses. In addition to the tracking of live animal data, all samples (carcasses, feathers, photos) which may be used in legal cases must be tracked and secured at all times. An additional chain of custody form (Appendix 4) must be completed for all such samples. Once the spill has been declared over, the original records from oiled animals during a response must be completed and sent to the OWCN administrator at the Wildlife Health Center within four weeks.

Return all records and evidence samples to the OWCN within four weeks after completion of the spill

2

GENERAL HUMAN AND ANIMAL CONCERNS

THE EFFECTS OF OIL ON WILDLIFE

There are many different effects that petroleum products have on the health of wildlife. These effects vary depending on the types of petroleum involved and on the type of wildlife affected by oiling. For instance, major distillates such as diesel fuel and kerosene are highly volatile and often result in inhalant pneumonia, emphysema, and skin and ocular burns. Crude oils are less likely to cause these problems, but more likely to cause abnormalities related to ingestion of toxic substances.

The initial effect that any type of petroleum product has on any bird is rapid penetration into the feathers, leading to loss of insulation, buoyancy and flight. Because of this disruption in waterproofing, birds lose thermoregulatory abilities and rapidly become hypothermic while in the environment. This hypothermia can cause rapid death or force the bird to beach itself, leaving it vulnerable to predators and unable to feed and hydrate. Additionally, because of this loss of the ability to maintain appropriate body temperature, when brought into captivity, animals may also become hyperthermic if not carefully monitored.

When oil is preened from feathers, a variety of toxic materials are ingested. Most of the toxic effects result from ingestion of substances known as polycyclic aromatic hydrocarbons (PAHs). Once absorbed across the gastrointestinal tract, well documented effects include gastrointestinal irritation and motility disturbances, dehydration, hemolytic anemia, liver abnormalities and long term reproductive failure (Leighton, 1995).

Secondary effects of oil on wildlife are those that result from prolonged periods of time in captivity. Many birds are immune suppressed and thus susceptible to a number of infectious diseases, including aspergillosis. Aspergillosis begins as a fungal respiratory disease and can quickly become a systemic disease in captive seabirds. Chronic anemia is also seen from malnutrition, chronic disease and the stress of captivity. Holding aquatic birds out of the water for too long in captivity can lead to the development of pressure sores. These pressure sores tend to develop over the keel, hock joints and feet. Therefore, one of the goals of the rehabilitation effort is to avoid these secondary problems through the use of proper nutrition and housing and a knowledge of the “window of opportunity” for successful rehabilitation that exists for different species of birds.

Effects vary depending on the type of petroleum

Hypothermia and toxic effects are common

Captivity related problems can result with improper husbandry

HUMAN HEALTH AND SAFETY CONSIDERATIONS

Human safety comes first!

Always wear appropriate PPE

Always wash hands after handling animals to prevent zoonotic disease transmission

Working at an oil spill presents many different challenges to human health and safety. Along with the Basic Supervisors Training, a minimum of 4-hours HAZCOM training is required of all supervisors. It must be kept in mind that the petroleum product is often a hazardous substance, therefore all personnel should be familiar with the Material Safety Data Sheet (MSDS) on the product with which they are working. Appropriate personal protective equipment (PPE) is required at each oil spill response, which can include safety goggles, protective suits, latex or nitrile gloves, and protective footwear. Do *not* touch oiled birds with ungloved hands. In addition, personnel working on search and collection will be required to undergo more extensive safety training and may be required to wear other forms of PPE, including Personal Flotation Devices (PFDs). The Site Safety Officer will supervise all aspects of human health and safety.

Remember that human safety always come first in any response effort! If anyone is bitten, scratched or otherwise injured, report the injury to the supervisor immediately and seek appropriate medical attention. Safe lifting practices should be observed when lifting animals and equipment. In the rehabilitation facility, special attention should be paid to the potential for slips, trips, and falls. Recognize areas of particular potential for harm to both humans and animals, e.g., heat lamps hanging near sheets, inadequate ventilation leading to an accumulation of toxic fumes, and certain drugs or disinfectants that may have undesirable secondary effects.

While disease transmission between oiled birds and humans is uncommon, the potential for these to occur exists. A list of zoonotic diseases is presented in Appendix 5. The key to avoiding these diseases is to practice good preventative techniques. These techniques include making sure that all staff are adequately rested, fed and have current tetanus vaccinations. Pregnant or immune compromised personnel should not participate in direct animal care and should consult with their physicians before working during a spill response. Always wash your hands after handling any animals or their caging material and before eating, drinking, or smoking (However, no smoking is allowed inside the rehabilitation facility). For more details on these topics, please refer to the 24-hour HAZWOPER manual (Berliner, 1994).

ANIMAL HANDLING AND RESTRAINT

Ask for help before handling unfamiliar species

Minimize visual and auditory stressors

Always remember that human safety is your primary consideration, closely followed by the safety of the animal being handled. Handling and restraint techniques will vary from species to species, so an unfamiliar species should only be handled with the guidance of a more experienced supervisor. In general, most birds in the rehabilitation facility are restrained by placing a towel or sheet over the bird, holding the head behind the neck and holding the wings to the body. Keep birds at waist level in order to avoid injuries to the handler's face. With this in mind, the bird can be moved to another area or passed to another person, transferring first the body, then the head, and

making sure to communicate your actions to the other person. Visual and auditory stresses should be minimized as much as possible whenever animals are handled. Thus, cages should be covered with a visual barrier, such as a towel or sheet, and loud noises avoided in areas of animal housing. Again, be sure to wear any required personal protective equipment, such as exam gloves, safety goggles and protective clothing when handling animals. If handling a clean, nonoiled bird, always use clean latex gloves and a clean towel to prevent feather contamination.

3

SEARCH AND COLLECTION

GUIDELINES

Unless specifically authorized by appropriate trustee agencies, no normal, unoiled animals will be collected during spill incidents. Preemptive capture and/or hazing will be accomplished only under the supervision of the wildlife trustee agencies. Only trained and authorized individuals may handle oiled birds. Search and collection personnel are assigned duties by the OWCN. Because search and collection duties vary with each response and may involve more risk than other duties, the OWCN will determine the level of training appropriate for field response personnel for each spill incident. No volunteer will be compelled to perform any task that they feel is dangerous or beyond their skill level. Human safety is the first priority for animal rescues.

Only trained and authorized individuals may handle oiled birds

Develop a plan of action

Have all equipment ready and in working condition

Teamwork is essential to safe, efficient collection of oiled birds. A rescue team will consist of two or more people. A plan of action should be discussed among all search and collection personnel prior to entering the search area. Each capture site should be evaluated and strategies developed to suit the terrain and species involved. Have all equipment ready and in working condition. These materials may include dip nets, carrying boxes or pillowcases, towels or sheets, two way radios and all safety equipment. Two way radios and cellular telephones are often used to communicate between search and collection teams and with the search and collection coordinator. In addition to PPE required by the site safety officer, appropriate attire for capture teams includes closed-toed shoes or boots, long sleeves, long pants, and organizational identification (e.g., name tags, marked clothing). A central field stabilization site where oiled birds are brought as soon as possible after collection should be established prior to search and collection teams dispersing into the field.

TECHNIQUES

During search and collection efforts, always be aware of any hazards in the surrounding environment such as incoming tides or slippery cliffs. Collection during periods of low tide may yield more successful results than

Always be aware of environmental hazards

Knowledge of species habits is helpful

Field stabilization techniques should be employed

those planned during other times. Never attempt to rescue animals in areas of dangerous access. When working near water, one member of the capture team should be assigned to watch the ocean and warn of dangerous wave activity. Other potential physical hazards can also include hypothermia or hyperthermia. For their own well-being and safety, team members should use sunscreen and have drinking water readily available. A first aid kit, which includes wound disinfectant and bandaging materials, must be readily available to the rescue team. Be sure to carry your 24-hour HAZWOPR verification card when entering the “hot zone” at a spill site (Berliner, 1994). Consult with the site safety officer when entering the “hot zone” for special safety and clothing requirements.

Once an oiled bird is spotted, the first task is to prevent the bird from returning to the water. Place yourself between the bird and the water, then to net the bird, place the net in front of the fleeing bird rather than making a “swatting” motion. Gently remove the bird from the net while keeping it under control to avoid breaking feathers or ripping toe nails. Try to refrain from making eye contact with the bird. Carry birds at or below waist level and maintain control over the head at all times. “Wing holds” (lifting and holding by the wings only) are not recommended. Hold birds firmly wrapped in a towel or by hand to discourage struggling but do not restrict their breathing.

It is helpful to be aware of the special traits each species possesses that may affect the capture situation. For example, 1) scoters may “faint;” 2) loons, egrets, and herons all have dangerous, long beaks that can injure the handler’s eyes, therefore always wear eye protection when working with these species; 3) puffins, cormorants and gulls bite like parrots and will crush and twist flesh resulting in painful, bruising injuries to the handler; 4) cormorants and pelicans have no external nares (nostrils) and will not be able to breathe if their mouths are held tightly closed; 5) birds with long legs must be handled carefully so as not to twist or bend their fragile legs; and 6) loons should be provided with extra padding in their transport box to prevent hock abrasions and keel lesions during transport.

Birds may be captured and placed in pillowcases for short periods of time until they can be transferred into airline kennels, portapets or cardboard boxes with ventilation holes. Minimize the amount of time in the pillowcases as much as possible, especially when a volatile petroleum product, such as diesel or jet fuel, is involved. Be aware that animals in pillowcases may also be highly susceptible to hyperthermia.

Prior to transport, field stabilization techniques may be employed if it will be more than one or two hours until the bird reaches the rehabilitation facility. These techniques include assessing the bird for hypothermia or hyperthermia and treating accordingly (see section: “Physical Examination/ Intake Procedures”); gavage tubing the bird with an oral electrolyte solution (such as Pedialyte®) at approximately 30cc/kg body weight; and removing large amounts of oil from the eyes, nares, and glottis.

After the bird has been stabilized, it should be placed in a well padded and ventilated box, carrier, or airline kennel for transport. This container should be at least twice the size of the bird and well ventilated with holes of approximately 1 inch in diameter over at least two sides and near the top and bottom of the box. Pad the bottom of the container with sheets, towels or absorbent pads. Make sure boxes are properly closed to prevent unexpected escapes. Place this container in a quiet, sheltered area while awaiting transport. Record the exact location of the capture, the reason the animal was captured (e.g., oiled), species, date and time of capture, and the name of the person collecting the animal. Attach or write this information on the transport box. In the future, mobile Global Positioning Satellite (GPS) technology will allow accurate latitude and longitude coordinates of the collection site.

When long stretches of beaches are covered during a search and collection process, it is often useful to scan these areas in all terrain vehicles (ATVs). Permission for the use of these vehicles must be given by the proper authorities, and only personnel with OSPR-approved training and experience with these vehicles will be permitted to drive them.

If birds are being collected from a boat, special human safety precautions need to be taken. These include the use of Personal Flotation Devices (PFDs) and appropriate water repellant clothing and footwear. Knowledge of the diving habits of the birds that are being collected is necessary in order to efficiently accomplish boat capture. If the capture is not successful after a few attempts, then an informed decision must be made as to whether to continue the pursuit.

If the search and collection team is to collect oiled carcasses, there will be instruction given by wildlife trustee agency personnel as to which animals to collect, methods of collection, and recording procedures.

TRANSPORT PROCEDURES

Animals are generally transported in an enclosed van-type vehicle. When loading boxes that have side holes for ventilation, at least 1-1/2" must be left between boxes to allow air in and out of side vents (top vents are not by themselves adequate). Remember, freshly oiled animals are often emitting fumes; therefore always maintain adequate ventilation in the vehicle to protect both humans and animals from inhaling such fumes. Only one animal per transport box is acceptable except in the case of non-aggressive, colonial species (e.g. murres) which may be transported two or three to an appropriately sized box. Wet birds may require a temperature close to 80°F to be comfortable during transport; however, dry, oiled birds will require a cooler environment. Boxes in direct sunlight inside an air conditioned vehicle may still overheat. Please note that human comfort during transport may not necessarily be synonymous with or sufficient for the temperature and ventilation needs of the transported birds. No domestic animals are allowed in transport vehicles.

Animals should be monitored periodically on long transports (e.g. those taking longer than one hour), as directed by the responding veterinarian.

Leave room for ventilation between boxes

One animal per box except in the case of colonial species

Ambient temperature will depend on the birds' needs

Monitor birds during transport

It may be necessary to gavage an electrolyte solution periodically during transport. Critical cases (e.g. unstable, hypo- or hyperthermic animals) may require frequent monitoring. Therefore, good judgment is required. Take care to avoid excess stress to the birds when monitoring (e.g. do not talk to or around the bird). If the animal's condition deteriorates suddenly during transport, call for veterinary advice from either the veterinarian at the point of origin or at the receiving facility.

It is important that the person transporting animals between the field and the rehabilitation center maintain contact with their supervisor at all times so that departure and arrival times may be anticipated at these different locations.

4

INTAKE

INITIAL INTAKE PROCEDURES

The person who is transporting animals from the field is responsible for establishing contact with the person(s) who is (are) in charge of intake at the rehabilitation center. The transporter must fill out appropriate chain of custody information to transfer the birds and must make sure that all capture information is present for each admitted bird. It is critical that the location of capture, and date and time of collection be recorded along with the name of the collector.

Appropriate chain of custody must be maintained

All birds are entered into the admission log

While awaiting the intake examination, all boxes containing birds should be placed in a warm, well ventilated area in such a manner that the order of admission is apparent. In this way, birds that have been waiting longer for intake will be examined prior to more recent admissions. Any birds that are designated in unstable condition from the field will be prioritized for examination and treatment.

All birds are entered into the “Live Bird/Mammal Log” (Appendix 3) in the order that they are admitted to the rehabilitation center. The log records information such as admission number, date of admission, species, capture site, temporary leg band number, final disposition, and date of final disposition. Codes for the log can be found at the end of the Appendix.

PHYSICAL EXAMINATION/INTAKE PROCEDURES

All personnel performing intake should wear appropriate PPE, e.g. safety goggles, protective clothing, and latex or nitrile gloves. It is best to work in teams of two (handler, examiner) or three (handler, examiner, recorder) in order to perform the intake in an efficient manner. Have all equipment needed for the intake procedure ready before beginning the examination.

A brief physical examination at the receiving facility will be made upon arrival of each individual oiled bird. Following the form provided (Appendix 6), examine the bird for any abnormalities. Please fill out all information requested on the form as completely as possible. It is especially

Intake Procedure

- 1. Capture location, date and time*
- 2. ID species, age, sex*
- 3. Physical exam*
- 4. Feather sample*
- 5. Photograph*
- 6. Legband*
- 7. Fill out record form completely*

important that information such as spill acquisition number, intake date, and capture site be recorded. Appendix 6C provides details regarding each item requested on this form.

Birds need to be identified to species and, when possible, general age (chick, subadult, or adult) and sex (male or female) should be recorded. For details on aging birds, the reader is referred to any good field guide, such as “A Field Guide to Western Birds” (Peterson, 1990) or “Field Guide to the Birds of North America” (Scott, 1989).

Temporary legbands will be placed on all birds for identification purposes. It is essential to make sure that there are no duplicate bands during a spill response. It is also important to ensure that bands fit well and are not too tight or so loose that they will fall off of the bird. Bands are usually identified by the first letter of the band's color, followed by the number. For example, a bird with a green band number 94 will be classified as “G94.” Federal bands replace the temporary leg bands at the time of release. Please refer to the Band Size Guide (Appendix 7) to ensure that appropriate sized bands are placed on birds.

All birds will have the following information recorded regarding oiling: type of oil (if known), percent oiled, depth of oiling, and area that is oiled. Excess oil, if present, should be removed from the eyes, mouth and nares with a cotton swab. If the bird has thick oil or tar on or around the cloaca, it should be wiped off so that the bird can defecate. Obtain an oiled feather sample by pulling or cutting a few small contour feathers that have oil on them (preferably from above the waterline) and place them in aluminum foil. Fold all the edges of the foil over to seal the contents. Label the wrapped sample with the following information: date of sample, species of bird, ID band number, spill name, and acquisition number. Enclose the sample in a “zip lock” type bag and place in a locked freezer for storage, in order to secure these samples as legal evidence. All samples should be shipped to the Wildlife Health Center at the end of the spill response.

The bird is weighed on a scale designated for oiled birds. All weights are recorded in grams. The temperature of the bird is taken with a digital thermometer gently inserted into the cloaca and is recorded in degrees Fahrenheit. Normal cloacal temperatures usually range between 102–105 °F or 39–41 °C (Walraven, 1992). If an animal is hypothermic or hyperthermic, the veterinarian may choose to postpone the examination until measures are taken to correct the problem. If the bird is hypothermic, warm the bird to normal body temperature as quickly as possible. Warming can be accomplished using water filled latex gloves, warm water bottles, warm air pet dryers, heat lamps, or incubators. Birds must be regularly monitored for overheating once they are dry. Birds that display open-mouth breathing are usually either hot or stressed. If being handled, give the bird a rest in a dark, cool environment. If the bird is hot, try misting the bird with water to cool it. In addition, alcohol pads can be applied to the feet, or the bird's body can be immersed in cool water to reduce hyperthermia. It is important to monitor the cloacal temperature closely during these procedures.

The percent dehydration will be estimated for all birds by using the chart provided (Appendix 8). Although recording heart rates is not absolutely required, it is valuable data to obtain. A table containing heart rates at rest and during restraint is provided in Appendix 9. Occasionally, a heart murmur may be ausculted in birds that are extremely anemic. It is important to carefully auscult the lungs, noting respiratory rate, difficulty breathing, or abnormal lung sounds.

The head of the bird should be examined to note any obstruction of or discharge from the eyes, nares, and mouth. Eyes that are sunken in their orbits are an indication of dehydration. Any abnormal head tilts or movements may be an indication of central nervous system (CNS) problems.

The wings and legs are carefully palpated for any fractures, wounds, or swelling. Abnormal wing droops or leg lamenesses are noted. The body of the bird is examined for any traumatic wounds, keel lesions, and the degree of muscle loss. The abdomen is gently palpated to detect any obvious masses, fluid accumulation, or vent abnormalities.

A photograph should be taken of each oiled bird on admission. An “instamatic” flash type camera or Polaroid® camera will be provided by OSPR for this purpose. The photograph should include the entire bird but highlight the area oiled and the leg band number of the bird. If the leg band cannot be read using this method, pertinent information, including the name of the spill, date of admission, species of bird, acquisition number, and leg band number can be written on a piece of paper or a dry erase board and placed behind the bird for the photo. Otherwise, this information can be written on the Polaroid® photo at the time the picture is taken. Cameras and photos should be considered as legal evidence and therefore kept in a secure place to be delivered to the Wildlife Health Center at the end of the spill response.

ROUTINE BLOOD SAMPLING

All birds will have blood drawn for a packed cell volume (PCV), total solids (TS) reading, blood glucose (BG), and two blood smears. This sampling requires approximately .10 -.15 ml of blood which is usually drawn from the leg (medial metatarsal vein) into microhematocrit tubes. Alternatively, blood can be drawn from the wing (brachial vein) or the jugular vein if necessary. A rule of thumb for *maximum* recommended amounts of blood to draw is 1 ml/100g body weight of bird. More commonly, no more than 0.6cc of blood/100 g body weight is taken (see Appendix 10). Small quantities of blood can be taken for PCV, TS and BG readings with a 25 gauge needle inserted into the medial metatarsal vein. Fill the hub about halfway full and then use this blood to fill three microhematocrit tubes. The two blood smears should be labeled with the in-house band number, species and date collected and then stored (at room temperature) in a slide box.

PCV, TP and BG concentrations are determined as soon as possible after intake. The results of these blood tests will be used to determine treatment protocols while in rehabilitation. If a bird is extremely anemic (has a PCV of

Blood will be taken for these tests:

1. Packed cell volume (PCV)
2. Total Solids (TS)
3. Blood glucose (BG)
4. Blood smears

15% or less) and/or extremely hypoproteinemic (TP < 1.0 g/dl), the veterinarian should be consulted. In many instances, it has been found that these birds are unlikely to survive the rehabilitation process or do not ever meet release criteria. A clinical judgement must be made by the veterinarian regarding euthanasia of these individuals.

Special Blood Sampling Protocols

Other samples may be taken for:

1. *Complete blood counts (CBC)*
2. *Serum or plasma chemistries*
3. *Specialized tests*

Various oils affect different species of birds in different ways. It is important to record these effects (altered behavior, physical exam findings) and catalog the effects through the collection of blood for hematology, serum chemistry, and other tests. At times, protocols may be used that require additional blood samples for other tests (e.g. complete blood counts, serum chemistries, plasma samples), depending on the discretion of the OWCN veterinarian. Minimize additional blood sampling (e.g., for serum chemistries) other than microhematocrit tubes once the PCV is known to be 15% or less as further blood loss can be life-threatening (Ritchie et al., 1994).

For larger quantities of blood, it is possible to use a 25 gauge needle or a 23 or 25 gauge butterfly catheter attached to a tuberculin or 3cc syringe. Do not use a needle that is smaller (has a higher gauge) than 25 gauge. Smaller sized needles may rupture blood cells as they pass through the small aperture. When using a 25 gauge needle, do not pull hard on the syringe plunger to increase the draw of blood or it may also cause some red cell damage. Once the sample is in the syringe, remove the needle and gently push the syringe plunger downward to transfer the sample from the syringe into the appropriate test tube.

Complete Blood Cell Counts (CBC). This series of tests includes: white blood cell count, red blood cell count, hemoglobin concentration, hematocrit, mean corpuscular volume (MCV), mean corpuscular hemoglobin concentration (MCHC), mean corpuscular hemoglobin (MCH), a differential white blood cell count, a platelet count, and detection of any blood parasites or morphological abnormalities of any cell types. Lavender top microtainer or glass tubes contain EDTA to prevent clotting and are used to submit samples for complete blood counts. If multiple tubes are being used, the lavender top tubes should be filled with blood first, with microtainers requiring a minimum of 0.25 cc of blood. When taking a small sample (less than 0.5 ml) and using a 2 ml lavender top tube, remove the top and give one shake to removed excess EDTA. Gently invert the lavender top tube several times to evenly mix the blood sample with the EDTA.

Two blood smear slides are made, preferably with blood fresh from the syringe, and placed in a protective transport container which is labeled with the birds case or band number.

Plasma or Serum Chemistry Profile. This panel of serum chemistry tests usually includes: albumin, alkaline phosphatase, bicarbonate, bilirubin (total and direct), calcium, chloride, cholesterol, CPK, globulin, glucose, phosphorus, potassium, total protein, sodium, AST (SGOT), ALT (SGPT),

and uric acid. This profile requires *at least* 0.25 ml of serum but the lab prefers 0.50 ml. To get these volumes, draw 0.5-1.0 ml of blood. The sample should be placed in a red top or a green top tube with a gel serum separator if possible. If red top serum tubes are used, samples should be allowed to clot by leaving them at room temperature for 15–30 minutes. Check for a clot prior to centrifugation. Spin the tubes in a clinical centrifuge for 15 minutes to separate red blood cells from serum or plasma prior to sending to the laboratory. If using a green top plasma tube, it is preferable to spin the sample and then separate the plasma from the red cells and submit the plasma alone for the panel.

Other tests. Green top plasma separator microtainers or larger green top tubes may also be submitted for other specialized tests, such as detection of aspergillus antigens or antibodies. See Appendix 23 for instructions on blood sample submission.

POST EXAMINATION INTAKE PROCEDURES

Administer a mix of isotonic fluids and activated charcoal orally (75 mg/ml strength) at a rate of 50 ml/kg body weight once (see Appendices 11 and 14). This mixture is given to help adsorb toxins in ingested oil before they have a chance to be absorbed by the body. All gavage mixes should be warmed in pans filled with warm water before being administered.

Give activated charcoal slurry

House newly admitted birds together if possible

The rehabilitation supervisor will instruct the animal handler where the newly admitted bird is to be housed. In general, every attempt should be made to keep birds of the same species that arrive at approximately the same time housed together. This makes it easier to find groups of birds for certain procedures, such as weighing and bleeding. Cage or pen cards should be on all pens and must contain information such as species, leg band number and date of admission. These cards need to be kept as current as possible.

COMMON PROBLEMS SEEN DURING INTAKE

Regurgitation. If regurgitation occurs immediately after the bird has been tubed, make sure that the tube mix is not cold and take care to tube a smaller volume and more slowly the next time. If regurgitation reoccurs, take the bird's cloacal temperature and correct for hypothermia or hyperthermia, if necessary. Do not force feed. If the bird shows repeated episodes of regurgitation, consult the veterinarian as soon as possible. Regurgitating birds should be treated in the following manner: 1) temporarily discontinue oral feeding, 2) attempt to determine why the bird is regurgitating, e.g. gastrointestinal obstruction, hypothermia, infection etc., and treat accordingly, and 3) give isotonic 2.5% dextrose or Lactated Ringers solutions (LRS) subcutaneously (SQ) in normothermic birds at a rate of 5% of body weight divided over two bolus administrations. Do not give SQ fluids to pelicans due to large areas of subcutaneous air, they do not absorb fluids well from the subcutaneous space. Record episodes of regurgitation in individual animal records as soon as possible.

Make sure the tube mix is not cold and tube more slowly

If continues, see veterinarian

Check for mechanical obstruction, see veterinarian

Oral fluid replacement for minor dehydration, otherwise see veterinarian

Consult veterinarian prior to rehydration

Wheezing or showing signs of respiratory distress. Check glottis to see if there is a mechanical obstruction that can be dislodged. If not, isolate the bird and present it to a veterinarian for evaluation. Note: be careful when looking down the bills of birds who are aggressive (e.g. loons, herons). If the veterinarian is not immediately available, housing the bird in an oxygen cage is often beneficial in cases of respiratory distress.

Dehydrated. If the bird is mildly dehydrated (5% or less), oral fluid replacement will suffice for rehydration. If a bird is moderately dehydrated (5–8%), the veterinarian may decide to add parenteral (SQ, intravenous or intraosseous) fluids to the rehydration regimen. Severely dehydrated birds (8% or higher) will often require intravenous (IV) or intraosseous (IO) fluids under veterinary supervision to restore them to normal hydration status. In the case of pelicans or any bird that is suffering from severe dehydration, 2.5% dextrose or (LRS) is given IV or IO at a *minimum* rate of 50 ml/kg body weight in a 24 hour period by drip or divided into two or three boluses until rehydrated. The veterinarian will often rehydrate a hypothermic bird with IV or IO fluids because SQ fluids are not well absorbed under these circumstances due to peripheral vasoconstriction. Please see Appendix 12 for fluid therapy calculations.

Hypoproteinemic. If a bird has a total solids reading of less than 2.0 g/dl., fluid therapy will decrease this value further and may result in pulmonary edema and potentially, death. When birds have a reading less than 2.0 g/dl, a veterinarian should be consulted prior to hydration. Special fluid therapy solutions such as hetastarch (high molecular weight solutions) may be of assistance and prescribed by the veterinarian.

In cases involving moderately to severely anemic birds, care must be taken during the hydration procedures to offset the reduction potential of fluids on the PCV. Consult a veterinarian prior to hydration.

Lethargic or obtunded. Examine the bird carefully for any signs of head trauma, such as swelling, bruising, or bleeding. If these are detected, contact the veterinarian immediately. Take the bird's cloacal temperature and correct for hypothermia or hyperthermia, if necessary. Perform a blood glucose test using the glucometer and record results in record. Normal glucose concentrations for species commonly encountered during oil spills in California range between 200 - 365 mg/dl (Newman and Zinkl, 1996). Birds are likely to seizure if the glucose levels fall below 80 mg/dl. If a bird is severely hypoglycemic and no veterinarian is immediately available, administer an amount equivalent to 5% of body weight of 2.5% dextrose SQ or, if the bird is not regurgitating, give up to 10% dextrose orally using the gavage chart provided (Appendix 14) (Ritchie et al., 1994). Please be aware that administering these hypertonic fluids may exacerbate dehydration in affected birds.

Central nervous system (CNS) signs. Ataxia, seizures, obtundation: Find the veterinarian immediately for a consultation.

Wound or a suspected or obvious fracture of a long bone (wing/

Common reasons:

1. Hypothermia/hyperthermia
2. Head trauma
3. Hypoglycemia

leg). Consult a veterinarian as quickly as possible. If none is immediately available, remove any large pieces of debris and flush the wound with sterile saline or dilute chlorhexiderm solution (Nolvasan®). For more information on wound management the reader is referred to “Basic Wound Management for Wildlife Species” (Newman, 1994). For temporary stabilization of wing fractures, wrap the wing in a flexed position to the body with Vetrax®. If the leg is broken, it can quickly be wrapped to the body in a flexed position with tape that will not damage feathers (Micropore® tape). For specific information on how to immobilize fractures using these methods, see the Wildlife Rehabilitation 1AB manual, p. 43-47 (Nance, 1993). Place the bird in a well ventilated box and put the box in a darkened quiet area. Present the bird to a veterinarian immediately for continued care.

Clean and stabilize fractures ASAP

Consult veterinarian

5

PREWASH REHABILITATION

PREWASH REHABILITATION

The goal in rehabilitating animals during an oil spill response is the release of a healthy animal back into its natural environment. In order to achieve this goal, it is necessary to treat the presenting problem, as well as preventing any secondary infections or injuries while in captivity. The following sections will discuss different aspects of the rehabilitation protocols that are designed to minimize captivity related problems and maximize the chances of release.

FEEDING

All oil-exposed birds with normal PCV and TS values are initially gavage fed high-calorie slurries at least four times daily alternating with rehydrating solutions (Pedialyte®) four times daily, resulting in a total of eight gavage feedings per day per bird. See Appendix 13 for nutritional slurry recipes. For more information on oiled animal nutrition the reader is referred to a review by Donoghue (1991).

The amount of fluid or slurry given varies and is partially dependent upon the species, size, and health status of the bird. The initial volumes are about one-half the total that the bird will receive per gavage feeding once it acclimates to this procedure. In general, a bird can accommodate about 50 ml/kg body weight (Williams, 1985). It is safest to start at low volumes and increase to larger amounts over time. Appendix 14 lists recommended tube feeding quantities. For an example of a feeding schedule, please refer to Appendix 15.

Shallow pans with water and non-oily small fish (white bait or smelt) may be provided in daylight hours to each pen for free feeding in addition to gavage feedings. These pans should be small enough that the birds cannot climb into them, thus avoiding the problem of the feathers becoming further soiled and wet. If free feeding is offered, record the number of fish eaten/pen on the pen feeding record (Appendix 16). Gavage feedings are gradually reduced as birds gain weight and start to self feed. There are variations in feeding behavior among species, and regular observation and common sense

Most oiled birds are initially gavaged electrolytes 4x/day and nutritional slurries 4x/day

Smelt may be offered for free-feeding

If the TS is <2.0 g/dl, feed Ensure® instead of nutritional slurry

must be used along with regular weight determination to ensure that the birds are receiving adequate fluids and nutrition. A written entry must be made daily in the individual animal record regarding the amount of feed offered, food consumption and/or gavage feeding, especially if the feeding or treatment plan changes. It is also the role of the feeding team to routinely observe animals during feeding/handling for lesions, wounds, keel/hock sores, as well as noting any regurgitation during feeding. All abnormal findings should be reported to the veterinarian.

For some species, such as cormorants and pelicans, the usual 50 ml/kg body weight of fluids may not be adequate when fed simultaneously with grain-based diets or hyperosmolar human liquid diet products such as those labeled HCN (e.g. Isocal HCN®, Ensure Plus®) (Luccitti, 1993). For these species, additional fluids may be required.

Birds should have a total solids test performed and read prior to their first hypertonic high calorie feeding. Normal TS values range between 4.5 to 6.0 g/dl in most seabirds. If a bird has a TS less than 2.0 g/dl, typical gavage mixes, such as the nutritional slurries listed in Appendix 13, should not be given. Instead, a more easily digested diet, such as Ensure®, should be tube fed. It is often more efficient to house birds on similar diets together. Once the total solids in the serum are at least 2.0 g/dl and the bird shows no signs of regurgitation, then complex foods, such as the nutritional slurries, can be gradually mixed into the medium chain triglyceride diet. Birds with other medical problems may require other individual feeding regimens which will be supervised by the veterinarian.

Animal Food Preparation

Discard unused gavage mixes after 24 hours

Because large quantities of animal foods are being prepared daily by a number of people, it is essential that handling procedures be instituted to minimize contamination of these foods. All personnel should wash hands prior to starting work, at each rest break and again after finishing their shifts. Most food should be used the same day that it is prepared. Gavage mixes can be held overnight if they are refrigerated. Write the date and time on gavage mix containers so that those older than 24 hours can be thrown away if unused. Monitor temperatures of refrigerators, freezers, thawing tubs and food handling areas to ensure food quality. All food for human consumption must be stored in another refrigerator separate from animal food.

Food preparation utensils, food containers, and all gavage materials should be thoroughly disinfected between each use. Gross contaminants are washed off with warm soapy water, then all materials are soaked at least 20 minutes in a dilute disinfectant solution, such as chlorhexiderm (Nolvasan®) or a quaternary ammonia (Roccal®). Once disinfected, rinse all materials with water before use again.

WEIGHING BIRDS

All birds are weighed on a regular basis during the rehabilitation process. Weights should be recorded daily and, at a minimum, every two to three days before birds are washed. Ideally, weights should be obtained at approximately the same time every day, in order to make valid comparisons. Weights are taken on birds in outdoor pools every two to four days as part of the evaluation for release. Two different scales are employed in the rehabilitation center—one for oiled birds, and one for cleaned birds—to prevent soiling of clean feathers. For additional information on normal weights of birds, see Appendix 17 or “Weights of 686 North American Birds” (Dunning, 1984).

Weights should be recorded daily on oiled birds

HOUSING

Facility Design

The physical facility should be designed in such a way as to maximize the efficient flow of people and animals and minimize the possibility of the spread of disease. Birds should be admitted to an intake area directly from the outside, then go immediately to appropriate animal holding areas.

Maximize the efficient flow of people, minimize the spread of disease

Because oiled birds are usually immune compromised, both from exposure to petroleum products and from stress, they are especially prone to developing infectious diseases. Therefore, any birds suspected of harboring any potential pathogens should be brought to the attention of the veterinarian. A decision will be made concerning the feasibility of treating any individual animal with an infectious disease versus the risk of spreading this disease to the general population. If the animal is to be treated, then it will be necessary to quarantine that animal in an isolation area with separate air ventilation from the rest of the facility. When entering this quarantine area, masks and protective gloves are worn and a footbath is used on entering and exiting this room.

Good ventilation is needed to reduce irritating petroleum fumes and may reduce the potential of developing aspergillosis, a fungal respiratory disease. Ten to fifteen air changes per hour has been recommended as adequate for animal holding spaces (NIH, 1985) and has also been recommended in oil spill rehabilitation. If multiple cases of aspergillosis are diagnosed, ventilation and sanitation should be investigated. Contact the Wildlife Health Center for further information.

Ideally, the hospital and laboratory will be easily accessed from animal housing but will also have separate ventilation systems to minimize pathogen spread. Washing/rinsing/drying areas should be close to indoor animal housing, while the drying/clean bird indoor caging should also be accessible to outdoor pool areas. Oftentimes, necropsy and morgue facilities are entirely separate from any other parts of the rehabilitation center, again to decrease the possibility of infectious disease spread.

Avoid pressure sores with the use of net bottom cages, "donuts" and proper flooring material

Inside Cage Designs

Pelagic species, such as loons, grebes, murres, and sea ducks shall be housed on "net-bottomed" caging (Holcomb, 1988). "Donuts" should be placed on any thin or emaciated birds that are not standing well to protect the keel from pressure sores (Goodfriend, in press). Veterinary cages can be adapted with netting attached to insertable plastic frames or solid-sided pens (preferably of nonporous material) of various sizes can be used. Most gulls, ducks, geese, wading birds and pelicans can be kept in large veterinary caging or solid-sided housing with regular flooring or on rubber matting prior to washing. The ambient air temperature in indoor housing for oiled birds should be closely monitored and maintained at approximately 80°F. Floors of solid-sided pens must be cleaned at least twice daily. Shorebirds and rails do best in solid-sided enclosures and will escape through the bars of traditional veterinary caging. They also will injure their heads on ceiling netting if it is too low. Raptors should be housed in solid-sided mew enclosures or veterinary caging. Consideration should be given to the bird's housing relative to its natural habitat to ensure healthy feathers and feet prior to release. Avoid the use of wire cages to decrease the possibility of feather damage. Information regarding minimum standards for indoor caging sizes are extracted from the "Minimum Standards for Wildlife Rehabilitators" by the National Wildlife Rehabilitators Association and the International Wildlife Rehabilitation Council and is presented in Appendix 18.

Perch Designs

Perching surfaces should be based on species natural history

Pelagic species should be moved into water as quickly as possible

Preferred surfaces for perching vary based on the natural history of the species. Perches should be provided to birds that will use them, such as raptors, marshbirds and shore birds. The diameter of the perch should be large enough to prevent the hallux from injuring the metatarsal pad (Redig, 1993) and the surface should be uneven. Suggested perching materials include large curl-shaped bristled astroturf (Monsanto Daisy Mat®), sisal rope or natural branches. Perches wrapped with astroturf should be provided for pelicans. They may also have stumps or branches, provided the surfaces are varied and include padded perches and no foot problems are observed. Unless oiled or otherwise not waterproof, pelagic species such as murres, grebes and loons should be in water all of the time. Warm water pools are recommended for birds that are not yet ready for cold water pools, but should be in water to avoid captivity related problems (Goodfriend, in press). If it is unclear whether or not the bird is totally waterproof, a haul-out area can be provided. However, these should be removed as soon as possible when the bird is determined to be waterproof. For alcids, irregularly shaped rocks are recommended as haulout areas (Heaphy and White, 1990). For ducks, geese, cormorants and grebe species, a net platform slanted from the water level upward is suitable (Holcomb, 1988). For species utilizing marshes (e.g., herons, egrets, rails, coots), pools should be surrounded with a suitable walking substrate such as pea gravel or pea gravel mixed with sand.

Outdoor Cage Designs

The type of outdoor housing also varies by species and spill conditions. Principal concerns are safety of the species housed, predator and escape-proofing, and shelter from inclement weather. Double-door entries are highly recommended for all enclosures, except those that encompass pools and are a continuation of the pool wall upward. Pelagic birds must live in pools with impeccable water quality to prevent them from losing their ability to repel water. This is accomplished by having clean water flowing over the pool surface at all times, skimming debris from this surface. Pools must be siphoned as often as needed, but at least once a day, to remove dead fish and feces from the bottom of the pool. Pool size and depth requirements will vary by species. While shore birds need shallow water, loons, murres and Western grebes should have a water depth of at least 36 inches to assure waterproofing. Small shorebirds can be housed with access to “kiddie pools” but the larger pelagic species will need pools at least 10 - 12 feet in diameter. It is important to place pools in areas with limited human access. Construction of pens with visual barriers is encouraged. Walk-by traffic causes unnecessary stress on the birds and should be controlled. Again, minimum standards for outdoor housing of some of these species is presented in Appendix 18.

It is extremely important to have enough surface overflow to remove all debris from outdoor pools

Animal Cage Cleaning

Effective disinfection of all animal housing is necessary to minimize disease transmission and ensure the maintenance of good feather quality in captive birds. All transport cages and restraint equipment should be cleaned after each use and soaked or sprayed down with disinfectant solutions, as listed above. Solid-sided animal holding cages should have all dirty newspapers and towels on flooring surfaces removed from the cages twice daily and all surfaces should be sprayed down with disinfectant solutions. Newspapers underneath net bottom cages should be removed twice daily or as often as needed. Removable net bottoms from individual animal cages should be changed at least once daily and large net bottoms from group housing cages should be changed at least every other day. Individual net bottoms can be cleaned in the laundry while larger net bottoms can be effectively cleaned with steam cleaners.

MEDICAL PROCEDURES

While it is often not possible to provide individual medical treatments for birds during an oil spill response, there are several commonly-encountered medical problems and procedures that can and should be followed.

Hypothermia or hyperthermia are not only seen when birds are admitted, but can also be encountered during the rehabilitation process. Whenever birds are handled, it is important to observe for these problems.

The most common infectious disease seen in captive aquatic birds during an oil spill response is *aspergillosis*. To try to decrease the incidence of this disease in a spill response, all susceptible species are dosed with itraconazole (Sporanox®), an antifungal medication, on a prophylactic basis.

The most common infectious disease seen is aspergillosis
Itraconazole is dosed at 15 mg/kg PO SID

The dosage for this drug is 15 mg/kg orally once a day. Because itraconazole commonly comes in time-release capsules, the easiest way to administer this medication is to place the capsule beads into a mildly acidic liquid (flat cola works well), soak for several hours, then mix it using a 1cc or 3cc syringe. Make sure to record the concentration of your slurry (in mg/ml).

PCV, TP and BG concentrations are determined at intake and are followed on an every other day schedule in all birds prior to the wash in order to objectively determine their physiologic status. All anemic birds (birds with PCVs below 30%) are dosed with iron dextran at 10 mg/kg intramuscularly (IM) at least once. Additional doses of iron dextran may be given by the veterinarian every 5 to 7 days. Iron dextran should not be given in birds with suspected or confirmed bacterial diseases, as the iron can serve as a growth medium for these organisms. It is important to attempt to determine the cause of the anemia, e.g. blood loss, destruction of red blood cells, or decreased production of red blood cells by the bone marrow. All birds with total solids readings less than 2.0 g/dl are given an intramuscular injection of vitamin B complex at 20 mg/kg body weight (based on the thiamine concentration) every 5 to 7 days (Johnson-Delaney, 1996).

Groups of birds on similar medication schedules may be housed together to make treatment easier. Any birds being treated for individual medical problems are usually housed in the hospital area and are closely observed and treated by the veterinary staff. When medications are given, they must be recorded into the chart of the animal to which they have been administered. The veterinary medical order shall include the generic name of the drug, the dosage, the strength of the solution used, the route of administration (oral, SQ, IM, etc.) and the length of time it is so ordered. When recording a previously ordered drug, the name, amount of the drug, the time and date, and the initials of the person who gave the drug shall be written in the actual record.

ANIMAL RECORDS

The importance of recording information cannot be over-emphasized in its value to the individual animal, response evaluations and research efforts to better characterize adequate care. In-house records will be maintained at the rehabilitation facility. In small oil spill events or for the occasional animal, the individual animal record may be the only record. However, during an oil spill response, it is difficult to record each feeding or blood test result in individual records at the time of feeding or blood sampling. Use the pen feeding charts to record group gavage feedings (Appendix 16). A form to record in-house blood values (Appendix 19) can be used to record group results as they are run. The data on these forms is then transferred into the individual animal records on a daily basis. The batch forms become the backup method to retrieve this information, so please save them. If you require additional personnel for recordkeeping, please notify your supervisor in the Unified Command System.

All information recorded on "batch" records should be transferred to individual animal records ASAP

6

WASHING AND POSTWASH REHABILITATION

WASHING/RINSING

In general, birds will not be washed unless they meet the following criteria: 1) they must be bright, alert, and responsive; 2) they must have been “in-house” at least 48 hours; and 3) they must have a PCV \geq 30% and a TS \geq 2.5 g/dl on a nonintake blood sample taken within 24 hours of the proposed wash. The exception arises when highly toxic products (e.g., diesel or jet fuel) are removed through a “quick wash” procedure soon after admission; the need for this procedure will be determined by the OWCN director, response coordinator, and veterinary staff. Birds with PCV of less than 30% or total solids values of less than 2.5 g/dl may be sent to wash only after an individual examination and referral by a veterinarian. Note: The process will be taught in network classes. This is a procedural description only.

Birds are generally not washed until they have had at least one Pedialyte® and one nutritional tubing the morning prior to the wash. This procedure is important because the washing is stressful and can induce hypoglycemia in birds that are already low in body fat reserves.

All wash and rinse personnel must wear appropriate personal protective equipment. This includes safety goggles, waterproof covering over clothing, wash gloves, and rubber boots. Remember to stay adequately hydrated while working and take frequent breaks to prevent exhaustion.

If the oil is tarry, pretreatment will often be necessary. Several different pretreatment solutions are currently available, including canola oil, methyloleate, or Rescue®. Coat the affected areas with the solution that has been heated to 95–100 °F. Manually work the warmed oil into the tarry areas and let the oil sit on the feathers for about 30 minutes prior to washing (Williams, 1985).

Birds are always washed by a two person team—never alone. One person is designated the holder and the other person is the washer. Large birds, such as brown pelicans, should be washed by a three person team. Dawn® dish washing soap is preferred for washing birds. For a review of the efficacy of other detergents, the reader is referred to Bryndza, et al. (1991). Birds are washed in 1-2% Dawn® solution in water that is heated to 104 °F. In no case should the water be allowed to fall below 99 °F. Birds are moved

Birds must meet the following criteria before washing:

1. BAR
2. Inhouse at least 48 hours
3. PCV \geq 30%,
TS \geq 2.5 g/dl

Pretreatment of tarry substances may be necessary

It is important to wash and rinse with water of 2–3 grains hardness

from one bath to another, as each tub becomes oily, until the bird no longer has oil on it. This process can involve several tubs depending on how heavily oiled the bird is. The procedure takes about 10–30 minutes depending on the extent and type of oil, the species of the bird, and the proficiency of the washer and handler(s).

Remember that this is a very stressful procedure for the birds. Practice safe animal handling techniques, such as keeping the head of the animal pointed slightly downwards to keep water from getting into the nares. The person holding the animal is responsible for constantly assessing the physiologic status of the animal and letting your supervisor know if there are any problems. Try to keep the noise level down during the washing and rinsing.

Birds are then rinsed with 104–106 °F water using a Spa 2000® spray nozzle until water beads up and rolls off of their feathers. The time involved in this process varies among birds, but is often 15–30 minutes. It is important to use water of 2–3 grains hardness for the rinse. If the water is softer, it is not effective in rinsing the detergent. If the water is harder, the minerals in the water will bind with microscopic amounts of detergent and cause calcium carbonate crystals to form in the feathers, causing problems with waterproofing (Clumpner, 1991). For this same reason, it is recommended that birds be placed into outdoor pools of similar hardness when initially moved outside (at least the first 24 to 48 hours).

DRYING

Monitor drying birds frequently for overheating

The birds are placed in a clean drying pen in which the ambient air is heated with a pet dryer to about 90–95 °F. These are often net bottom pens for species such as loons, grebes, or murres but may be floor pens for birds such as pelicans. Heat is retained in the pen by placing a light colored sheet over the top. Heat can be reduced as necessary by partially rolling the sheet back or by adjusting the pet dryer. Birds in drying pens must be frequently checked for overheating as they dry. Overheating can present as open mouth breathing, an increased respiratory rate, and splaying out over the cage floor. The drying time will vary by species, with small birds drying in as little as 30 minutes and larger birds, such as loons, taking as long as three hours. Birds stay in the pen until they are dry.

WATERPROOFING

Test for waterproofing ASAP when completely dry

When completely dry, the birds can be tested for waterproofing by placement into a clean, fresh water swimming pool with water of 2–3 grains hardness while under close observation. They are checked regularly to determine whether water is reaching their skin which will result in chilling. Behaviors such as shivering, agitation, excessive preening and attempts to haul out are to be watched for. If waterproof, the birds remain in outside housing. If not, they are brought inside for reevaluation or into warm water pools, as appropriate.

COMMON PROBLEMS ENCOUNTERED IN WASHING BIRDS

Oil is not coming off with Dawn®: Pretreatment with substances such as canola oil, methyloleate, or Rescue® is required. See pretreatment section above.

The bird is not waterproof in the pool: First, check the bird for damaged, stripped or missing feathers (especially around the vent). There may also be burns or wounds that are seeping serous exudate onto the feathers, thus affecting waterproofing. If these problems are not seen, other explanations include: the bird was not cleaned or rinsed thoroughly, the water is too soft or too hard or the pool is not clean. Water hardness should be checked before the birds are washed and before placing into outdoor pools. Check the pool to see if there are food oils or debris floating on the surface that are re-oiling the bird. Review the filtration and surface skimming capability of the pool to see if it is adequate. If these processes do not identify the problem, the bird may not have been washed or rinsed adequately. Any wet birds are brought inside, dried, and tried again in the pools. If no improvement is seen in waterproofing over 24–48 hours, and the bird is physiologically stable, it may need another washing/rinsing session. For further information on washing oiled birds, the reader is referred to *Rehabilitating Oiled Seabirds: A Field Manual* (Williams, 1985).

It is important to identify the reason a bird is not waterproof

POSTWASH REHABILITATION PROCEDURES

When birds reach the outdoor pools or caging areas, the extent that these birds are handled rapidly decreases. Hydration tubings are no longer necessary as the birds drink water from the pools. Birds are tossed fish, preferably smelt, and observed for self-feeding. Birds that are not adequately self-feeding may still be gavage-fed while outdoors but this usually becomes unnecessary after the first few days in the pools. Antifungal medications are discontinued after the birds are outdoors, as ventilation is no longer an issue and there is a decrease in exposure to fungal spores. Blood samples and weights are obtained on a schedule determined by the veterinary staff but are commonly taken every 4 to 6 days.

DISPOSITION

RELEASE

Oil-rehabilitated birds need to be fully recovered prior to release back into the wild. While much remains to be learned regarding the criteria for determining that recovery has occurred, current guidelines have been established to help release appropriate birds. As more research is done, these criteria are likely to change. Network participants will be involved in the process and kept apprised of new criteria.

Current criteria are as follows: 1) Birds should behave normally (feeding, swimming, and diving); 2) Their weights should be within 10% of the normal for that species (see Appendix 17); 3) They should be waterproof; 4) Those pelagic species, such as alcids, cormorants, and kittiwakes, who have been maintained on fresh water for over 14 days should be “salted” (i.e. acclimated to salt water) prior to release (Holcomb, 1987). Although brown pelicans are pelagic, they have been rehabilitated and released without being salted and have not shown ill effects (Holcomb, 1987); 5) Birds should have hematological and, if known, serum chemistry values within normal ranges (Newman et al. 1996). Of particular concern is anemia which can result from the ingestion of petroleum products or from malnutrition, chronic disease, or prolonged periods in captivity which can result in a precipitous drop in PCV values. Since many of these birds dive to obtain food, having enough red blood cells to carry oxygen is critical. Anemic birds will usually lack the stamina to carry on normal foraging activities; 6) All problems noted on physical examinations should be resolved; and 7) Clean, nonoiled release sites should be chosen after consulting appropriate wildlife trustee agencies.

All birds that are released are banded with a permanent USFWS metal leg band. The release information is recorded on the individual animal record and on the admission log form.

Postrelease Monitoring

In order to determine the long-term effectiveness of oil spill rehabilitation on birds, post-release monitoring of animals released after a spill event is a very necessary aspect to the rehabilitation effort. Through

Current release criteria:

1. *Normal behavior*
2. *Normal body weight*
3. *Waterproof*
4. *+/- salted*
5. *Normal blood values*
6. *Normal physical exam*
7. *Suitable clean habitat available*

follow-up on these animals, we can better determine and modify release criteria and better understand the role that exposure to oil can have on both medical and behavioral aspects to seabird ecology, such as short-term and long-term survival and breeding status.

There are several different methods currently used to follow birds after rehabilitation. The most commonly used technique is to acquire federal band return data (collected by hunters, beach walk programs, or individuals discovering banded animals in the wild) to determine mortality levels in released birds. While this method is relatively simple to undertake, due to the very small proportion of band returns that do occur (typically less than 1% of all released birds), it is difficult to appropriately test hypotheses with any confidence. Also, behavioral information (except perhaps dispersal trends) cannot be collected using this technique. Another method which can allow for more behavioral information to be collected is color banding and visual observation of released animals. This method can be used effectively for animals that do not migrate and remain close to land but, overall, due to these limitations and the large amount of observation effort required, it is not an effective means to determine long-term information.

Currently, the most effective means to acquire information on released oil rehabilitated animals is through the use of radiotelemetry. This method involves the placement of a transmitter onto birds prior to release. These devices, some of which are the size of a dime, can be either surgically attached to (or inserted into) birds or attached to larger-bodied birds using a sling. These transmitters, once activated, emit a very specific signal and are then detected by receivers set to that frequency either on land (by hand or at receiving stations), in the air (through the use of fixed-wing aircraft or helicopters) or, more recently, through satellite detection. In this way, animals may be followed for months to years after attachment.

These methods have been successfully accomplished in the past for a number of species in California, including brown pelicans and Xantus' murrelets. Currently, several OSPR-sponsored oil spill post-release studies are underway involving telemetry in seabirds. By continued observation, it is hoped that these studies can help to shed light on the long-term survivability and behavioral changes that may occur to animals involved in spill (and rehabilitation) events. Therefore, these studies may and will be incorporated into many oil spill incidents in the future in California in order to better understand the true effects of oil on wildlife.

MORTALITY AND EUTHANISIA

During a spill event, a morgue will be established. Dead animals will be logged into the morgue using "Dead Bird/Mammal Log" form (Appendix 20). Log codes are located at the end of the Appendix. This function is usually performed by PRBO or OWCN personnel. The person delivering the animal to the morgue will be required to sign for it. No birds should be put into the morgue refrigerator or freezer unless they have been entered into this log.

All dead animals will be logged into the morgue

Wrap dead animals in aluminum foil and identify appropriately

When a bird dies or is euthanized during rehabilitation, it should be wrapped in aluminum foil. It should be refrigerated, not frozen, until it is clear whether a necropsy will be performed. The carcass should have a piece of masking tape wrapped around the midline outside the foil with the name of the species, date of death, whether it died or was euthanized, the spill name and band ID number clearly written with a permanent ink marker on the tape. If a necropsy cannot be performed within 72 hours by a veterinarian, the bird carcass should be frozen.

All animals that die or are euthanized during rehabilitation must have this disposition information recorded on their individual animal records as well as on the admission log.

Necropsy

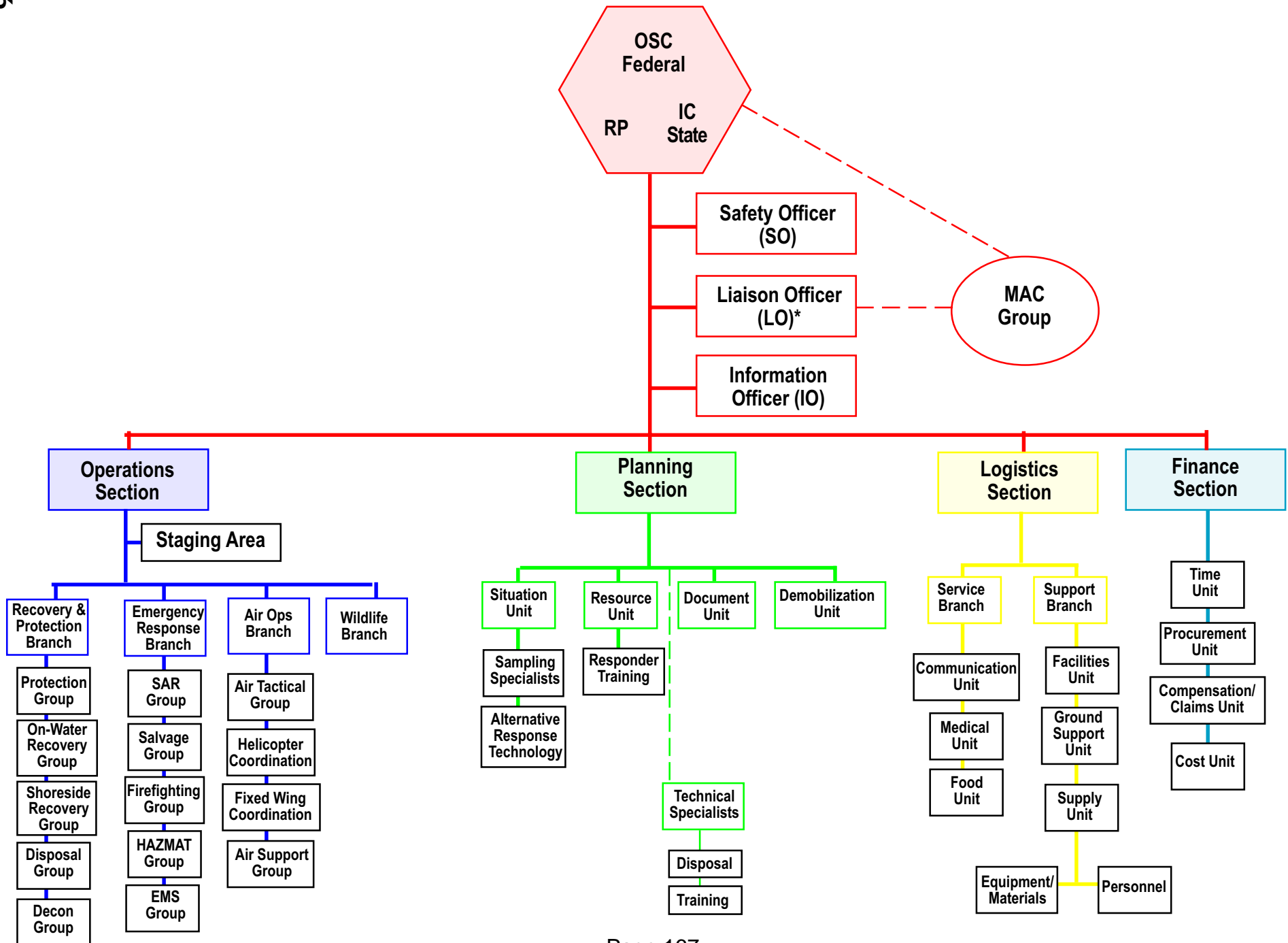
Prior to performing a necropsy, specific permission must be obtained from OSPR. Contact the OWCN Director for permission (Appendix 21). If a necropsy is performed by a facility's veterinarian, use the form provided with the protocols (Appendix 22) and save the indicated tissues in buffered formalin unless directed to do otherwise by an OWCN veterinarian. All tissue samples must be thinner than the width of a pencil. Histopathology samples will be sent for analysis to a laboratory designated by the OWCN veterinarian. See Appendix 23 for current information on sample submissions.

A necropsy should be performed only by the OSPR veterinarian or with proper authorization

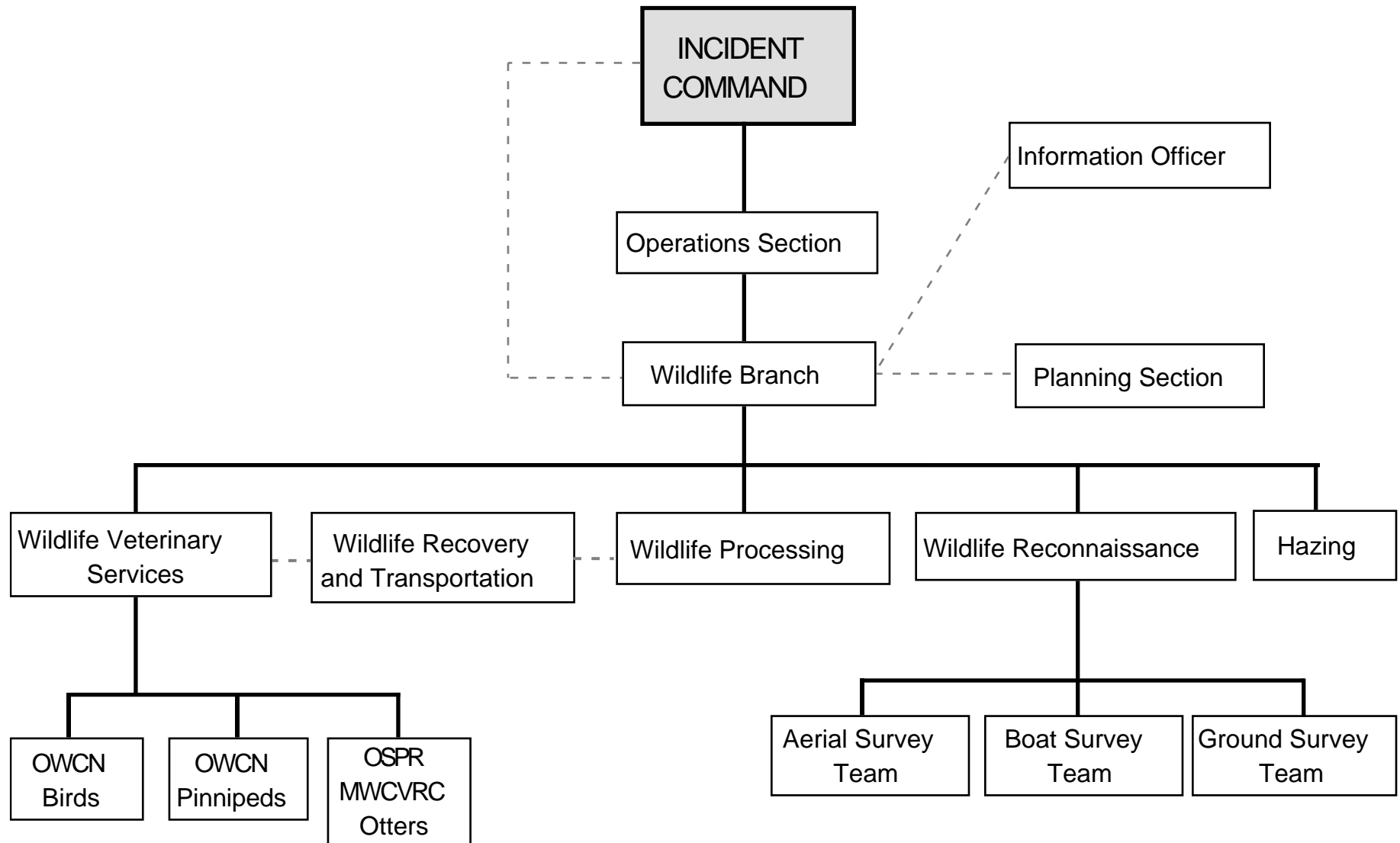
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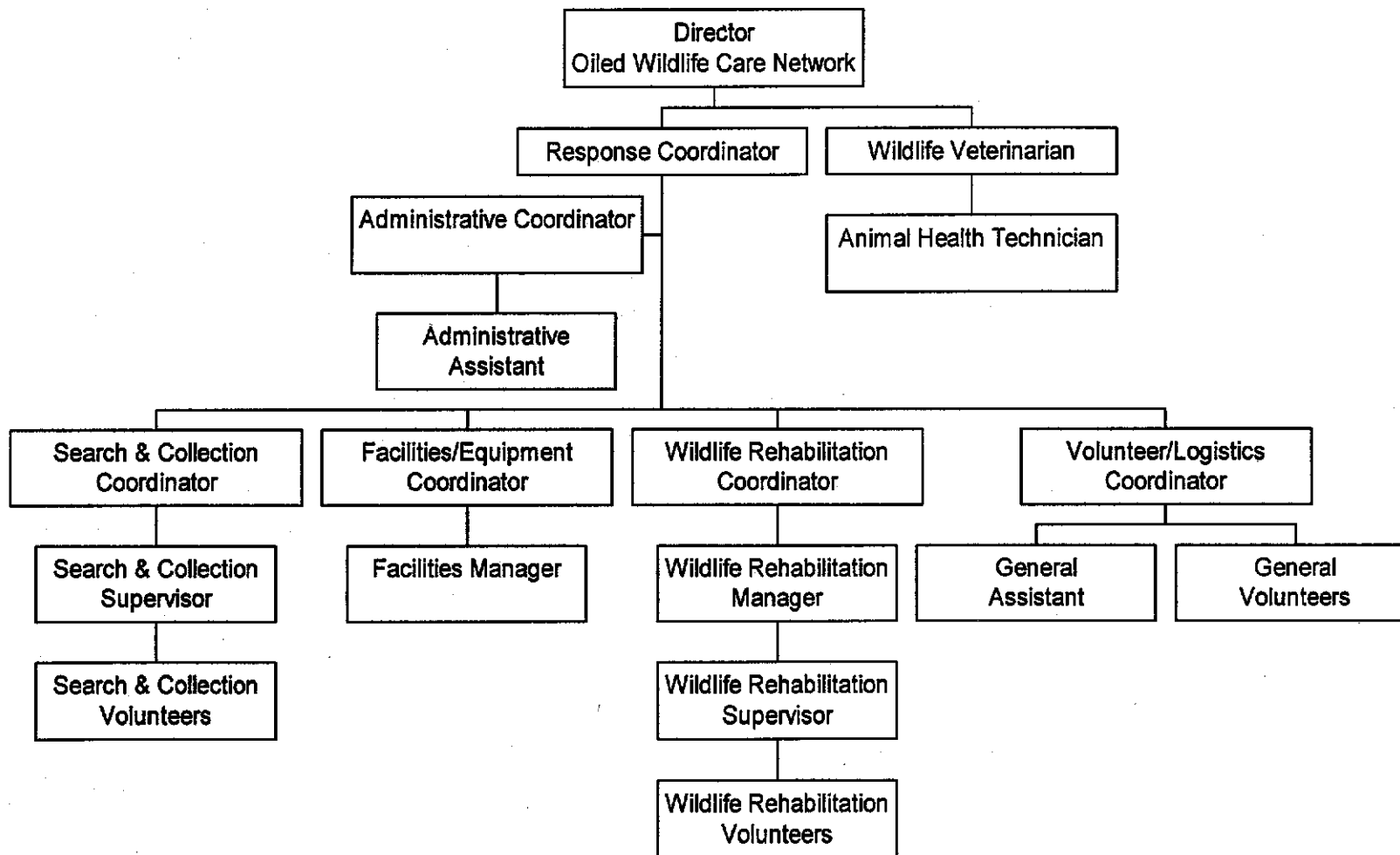
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APPENDIX 1A. UNIFIED COMMAND STRUCTURE/INCIDENT COMMAND FOR OILSPILL CLEAN-UP



APPENDIX 1B. WILDLIFE OPERATIONS



APPENDIX 2. OWCN RESPONSE PERSONNEL

APPENDIX 2B. OWCN RESPONSE PERSONNEL DESCRIPTIONS

Veterinarian

A licensed veterinarian within the State of California with extensive experience, background and understanding of the treatment of oiled wildlife care and rehabilitation during an oil spill event. Must have oil spill and crisis management experience. Works closely with the OWCN Director and/or Response Coordinator to oversee general care of animals. Must have at least 24 hour Hazwoper training.

Response Coordinator

In conjunction with OWCN Director or his/her representative, provides direction for and oversees oiled wildlife response operation. Makes recommendations/decisions regarding wildlife care staffing during spill response. Must have oil spill and crisis management experience and extensive background in all aspects of oiled wildlife care, rehabilitation, response and search and collection. Twenty-four hour Hazwoper training required. Must have full understanding of Incident Command system and experience managing media inquiries. In small-scale responses, this position may be filled directly by the OWCN Director or his/her representative.

Facilities Manager

Participating organization's local facility manager assures that local facilities are maintained in a constant state of readiness in the event of a spill. Assures that OWCN supplies are pre-identified (including animal food) and on-hand prior to a spill event (only spill-specific hours will be billed to Responsible Party for response). Assists Facilities Coordinator as needed with any unusual or specialized local facility needs or repairs necessary to accommodate injured wildlife and spill response personnel. Assists Volunteer Coordinator in locating and scheduling local volunteers. Must have an understanding of oil spill response and wildlife rehabilitation. Reports to OWCN Director and Response Coordinator.

Facilities/Equipment Coordinator

Coordinates response equipment and equipment at rehabilitation facilities. Assures functionality of response equipment and facility operation, including on-site repairs as needed. Must have extensive experience, background and understanding of oiled wildlife rehabilitation and response and the equipment used in a spill event (e.g. pools, pumps, hot water heaters, water softeners, mobile veterinary labs, telephones, fax machines, automobiles, boats). Must have extensive oil spill and crisis management experience. Must have 24 hour Hazwoper training and full understanding of Incident Command system.

Search & Collection Coordinator

Coordinates search and collection program. Works closely with OWCN Director and Response Coordinator in developing capture strategy. Oversees Search and Collection Supervisors. Must have extensive experience, background and understanding of oiled wildlife rehabilitation and response, search and collection techniques, and capture equipment. Must have extensive oil spill and crisis management experience. Must have 24 hour Hazwoper training and full understanding of Incident Command system.

Wildlife Rehabilitation Coordinator

Coordinates and oversees the housing, washing, rinsing, nutrition, and general care of animals during a spill event. Reports to Response Coordinator. Works closely with on-site veterinarian following strict protocols for wildlife care and rehabilitation. Oversees Wildlife Rehabilitation Manager and Supervisors. Must have extensive experience, background and understanding of oiled wildlife care, rehabilitation and response. Must have oil spill and crisis management experience and 24 hour Hazwoper training.

Administrative Coordinator

Coordinates financial and administrative matters relating to spill response either on-site or off-site. Assists with special forms, daily logs/reports, daily cost accounting and coordinating volunteers when necessary. Compiles billings and reviews billings for accuracy, acquires supplies as needed and assists with logistics when necessary. Manages office and provides staff assistance to all Coordinators. Usually reports directly to OWCN Director and/or Response Coordinator. Must have knowledge of oil spill response and wildlife rehabilitation.

Search and Collection Supervisor

Assists Search and Collection Coordinator with search and collection program. Oversees search and collection volunteers. Must have experience in search and collection of oiled wildlife and background and understanding of oiled wildlife rehabilitation and response. Must have crisis management experience. Reports to Search & Collection Coordinator. Must have 24 hour Hazwoper training.

Wildlife Rehabilitation Manager

Assists Rehabilitation Coordinator with the housing, washing, rinsing, nutrition, and general care of animals during a spill event. Work with on-site veterinarian following strict protocols for wildlife care and rehabilitation. Oversees Wildlife Rehabilitation Supervisors and Volunteers. Must have experience, and background and understanding of oiled wildlife care, rehabilitation and response. Must have crisis management experience and at least 4 hour Hazcom training. Reports to Wildlife Rehabilitation Coordinator when both positions are staffed.

Volunteer/Logistics Coordinator

Organizes and schedules volunteers on a daily basis. Schedules and conducts orientations and safety trainings as needed. Handles volunteer issues and problems and reports them to the Response Coordinator. Handles logistical needs for staff (e.g. travel arrangements, car rentals, hotels, bird transport, staff and volunteer meals, supply ordering). Reports directly to the Response Coordinator. Oversees General Assistant. Must have 24 hour Hazwoper training.

Wildlife Rehabilitation Supervisor

Assists Wildlife Rehabilitation Manager with the general care of oil affected wildlife. Must have experience in the handling and rehabilitation of oiled wildlife. Must have participated in an OWCN Supervisor Training. Manages up to six volunteers per shift. People who have participated in the OWCN Supervisor Training, but do not have extensive rehabilitation experience and/or oiled wildlife experience, should be classified as volunteers until that experience has been obtained. Must be available to work a minimum of two six-hour shifts per week. Must have 4 hour Hazcom training. Reports to Wildlife Rehabilitation Manager or Wildlife Rehab Coordinator if Manager position not staffed.

Registered Veterinary Technician (RVT)

California licensed RVT who assists and reports to on-site Veterinarian and Wildlife Rehabilitation Coordinator in caring for affected oiled wildlife. Must have understanding of oiled wildlife rehabilitation and response and at least 4 hour Hazcom training.

Administrative Assistant/General Assistant

These two positions can assist any or all of the above in performing their responsibilities. Administrative Assistants may be on or off-site assistants who perform a multitude of general clerical duties and whose responsibilities may include answering telephones and taking messages, xeroxing, or running errands. General Assistants may be responsible for going to the grocery store, hardware store, delivering supplies/samples/personnel to the airport, etc.

Search & Collection Assistant and Volunteers

Assists Search & Collection Supervisor with search and collection of injured wildlife. Must have experience in the handling and rehabilitation of wildlife. Search and Collection Assistants must be available to work a minimum of two six-hour shifts per week. Must have 24 hour Hazwoper training. Reports to Search & Collection Supervisor.

Volunteer

Volunteers are non-paid assistants. If Volunteers have not participated in the OWCN Supervisor Training, they must go through a basic orientation and receive the amount of safety training hours determined at the time of the spill by the OSHA qualified Site Safety Officer. Volunteers must be available to work at least two four-hour shifts per week. Volunteers are responsible for their own transport. Volunteers can receive financial compensation for personal auto miles during oil spill response at a rate of 24 cents/mile and for meals not provided directly by the OWCN or participating organization.

APPENDIX 3. OWCN LIVE BIRD INTAKE LOG SHEET

Station:
Location/Spill Name:
Year of Processing:
Page of

LIVE BIRD/MAMMAL LOG
OWCN/OSWRT

Station Manager:
Data Collector:
Data Recorder:
Photographer:

[illegible]

*Oil not visible but animal is oiled based on one or more of the following: smell oil, plumage malaligned/parted or sticky, skin wet/not water-proof, skin burns

APPENDIX 4. OIL SPILL WILDLIFE RESPONSE TEAM CHAIN OF CUSTODY INTAKE LOG

Date:

Station Number:

Location:

Intake Number	Time Rec'd	Printed Name of Collector	Signature of Collector	Phone Number	Time Collected	Beach Seg.	Description of Collection Location

Receivers:

APPENDIX 5. ZOONOTIC DISEASES OF WILD BIRDS

Disease	Etiology	Transmission	Occurrence	Clinical Syndrome
CA Encephalitis	Arboviruses	Mosquitoes	Sporadic	Influenza like symptoms, encephalitis
Newcastle disease	Paramyxovirus	Aerosal, contact	Occasional	Conjunctivitis
Botulism	Clostridium botulinum	Ingestion, wound infection	Rare	Neurological symptoms
Campylobacteriosis	Campylobacter	Fecal-oral	Common	Gastroenteritis
Colibacillosis	Escherichia coli spp.	Fecal-oral	Rare	Enteritis
Erysipeloid	Erysipelothrix rhyiopathiae	Wound infection	Occasional	Skin lesion
Listeriosis	Listeria monocytogenes	Oral, possibly airborne	Rare	Septicemia, meningitis
Pasteurellosis	Pasteurella multocida	Bite wounds, aerosal	Occasional	Infected wounds, respiratory dx
Salmonellosis	Salmonella sp.	Fecal-oral	Common	Gastroenteritis
Tuberculosis	Mycobacterium sp.	Aerosal	Occasional	Pulmonary disorders
Yersiniosis	Yersinia sp.	Fecal-oral	Common	Mesenteric lymphadenitis, enteritis
Aspergillosis	Aspergillus sp.	Airborne	Occasional	Pulmonary dx
Dermatophytosis	Microsporum, Trichophyton spp.	Contact	Common	Dermatitis
Chlamydiosis	Chlamydia psittaci	Aerosal	Sporadic	Respiratory disease

APPENDIX 6A. OWCN OILED BIRD INTAKE FORM

SPILL AND CAPTURE INFORMATION

Barcode

Spill Name _____ Animal Intake Number _____

Intake Date/Time _____ Examiner's signature _____

ANIMAL AND PHYSICAL EXAM INFORMATION

Temporary Band No. _____ Species _____

Type of Oil Crude Refined Veg/Fish Tar Other Area Oiled Entire Waterline Body Spotty

Percent Bird Oiled _____ % or sheen? Depth of oiling Deep Moderate Surface

External Oil Visible Yes No^a External Oil Not Visible but Bird is Oiled? Yes No^bOil not visible but bird oiled based on one or more of the following (circle): smell oil plumage malaligned or parted
sticky texture wet skin burns

Age Chick Sub-Adult Adult Unknown Sex Male Female Unknown

Weight _____ g. Temperature _____ °F Dehydration _____ %

Heart Rate _____ /min. Resp. Rate _____ /min. CRT _____ sec.

Attitude BAR QAR Nonresponsive Body Condition Normal Thin Emaciated

Head/Mouth/Bill NSL Other _____

Eyes/Ears NSL Other _____

Heart/Lungs NSL Other _____

Gastrointestinal NSL Other _____

Musculo-skeletal NSL Other _____

Integument NSL Other _____

INTAKE DIAGNOSTICS AND INITIAL PLAN

PCV _____ BC _____ TP _____ BG _____ Blood Taken? Crit LTT RTT GTT

Initial Feeding Plan _____ Toxiban _____ ml given @ _____

Treatment Plan _____ Itraconazole? No Yes Dose _____

Date Washed _____ Date(s) Rewashed _____

DISPOSITION INFORMATION

Disposition Status Released Died Euthanized Transferred Placed Date _____

Disposition Location _____ Federal Band No. _____

^aMay be diesel, jet fuel, gasoline, vegetable oil, fish oil, or other.^bExaminer cannot smell oil, feel oil, plumage intact (not wet or parted).

APPENDIX 6B. OWCN OILED BIRD DAILY PROGRESS FORM

Spill Name _____ Log#/Temp. Band# _____ Species _____

[illegible]

APPENDIX 6C. OILED BIRD INTAKE FORM DEFINITIONS AND INSTRUCTIONS

Spill and Capture Information

Spill Name: Spills are generally named after the responsible vessel (e.g., Exxon Valdez), the responsible party (e.g., Texaco Spill) or the site of the spill (e.g., Huntington Beach Spill). This name will be assigned at the start of the spill by the OWCN Director. This information is to be written both on the log sheet (see Appendix 3) as well as the individual animal record.

Animal Log Number: Non-repeating sequential numbers are assigned to animals on intake in the order in which they are processed. This number is extremely important to record because it is the means by which records are referred between spills. This information is to be written both on the log sheet as well as the individual animal record.

Capture Date/Time: The date and time that the bird is captured is to be written on the log sheet and the individual animal record.

Capture Location: This information should be collected from the search and collection team when the animal is brought to the intake facility. It should be as detailed as possible, including GPS coordinates if available. This information is to be written on the log sheet as well as the individual animal record.

Intake Date/Time: The date and time that the bird undergoes the intake process is to be written both on the log sheet and the individual animal record.

Examiner's Signature: This is the legible signature of the veterinarian or rehabilitator who is performing the intake exam.

Animal and Physical Examination Information

Temporary Band Number: This is color of and the number on the plastic temporary band that is placed on the bird's leg at intake. This band is for in-house use only and will be replaced by a metal Federal band on release. This number is the first letter of the color followed by the number on the band (e.g. G93 for green band number 93). Please be sure that the band is the appropriate size for the animal (see Appendix 7) and that is not a number already used during this spill. This information is to be written both on the log sheet and the individual animal record.

Species: Identification to the species level is required. Group names such as grebe or loon are not acceptable. Please refer to a good bird identification reference if necessary. This information is to be written on the log sheet as well as the individual animal record.

Age: Circle the appropriate age class (if possible). Please refer to a good bird identification reference if necessary.

Sex: Circle the appropriate sex (if possible). Please refer to a good bird identification reference if necessary.

Type of Oil: When known, please write in oil or fuel type, such as crude oil, bunker C fuel oil, jet fuel, gasoline or diesel or others.

Area Oiled: Circle the appropriate area. If spotty, indicate areas on appropriate physical exam places below.

% of Bird Oiled: This a judgment call. In general, use 0, 10, 25, 50, 75 or 100% as appropriate.

Depth of Oiling: Circle the appropriate oil penetration depth. If skin can be observed, circle deep. If spotty oiling present, circle the most appropriate depth.

Weight: All birds must be weighed during the intake process. Use the appropriate "dirty" scale to reduce cross-contamination with washed animals. Record the weight in grams.

Temperature: Cloacal temperature is taken by inserting the silver tip of a digital thermometer just inside the cloaca. Should the animal present either hypo- or hyperthermic, full intake should be delayed until normothermia is achieved.

Hydration: Enter the appropriate % dehydration based on the dryness of mucous membranes, skin turgor, and general appearance (sunken eyes, wrinkled skin, etc.) (see Appendix 8).

Heart Rate: Use either (# of beats per 6 sec. X 10) or (# of beats per 10 seconds X 6).

Respiration Rate: Use # of inspirations per 10 seconds X 6). If abnormal respiratory sounds are observed (e.g., gasping, crackling, wheezing, clicking, or labored) record in the physical exam sheet under Thoracoabdominal.

Capillary Refill Time (CRT): Record the number of seconds it takes for the gums, tongue, or cloaca to refill (return to redness) after digital pressure is applied. A normal CRT is 1 second or less.

Attitude: If the bird is bright, alert and responsive to environmental stimuli, please circle BAR. If the bird is quiet and subdued but will respond to environmental stimuli, circle QAR. If no response is noted on exam, circle non-responsive.

Keel Estimation: Pectoral musculature is estimated by touch. However, different species have considerable differences in normal muscle mass (e.g. herons, egrets or similar birds normally have a “sharper” keel than ducks). If the keel is palpable only on the top edge (surrounded by muscle), the bird is well fleshed. If there is some pectoral muscle present but less than “normal”, the bird is considered thin. If the muscles are not palpable, the bird is judged to be emaciated.

Physical Exam Findings: Circle NSL if there are no significant lesions present. Write in any abnormalities noted.

Head/Mouth/Bill: Look for injuries, swellings, cuts, parasites, or oral or skin lesions.

Eyes/Ears: Look for injuries, abrasions, discharge, redness of surrounding tissue, corneal plaques, skin lesions, foreign bodies, or parasites.

Integument: Look for broken or missing feathers, skin lacerations, skin burns, or parasites.

Thoracoabdominal: Look for respiratory difficulty, heart murmurs, abdominal masses, cloacal impaction, or abnormal feces.

Wings: Look for drooping or dragging wing, palpable fractures or dislocations, patagial burns, decrease extension or motion, clavicular damage, or wrist lacerations/bruising.

Legs/Feet: Look for partial or non-weight-bearing, injured or swollen hocks, “bumblefoot” lesions, fractures or dislocations, or broken digits or nails.

Sampling Information and Initial Plan

Feather Sample Taken? Each bird must have a feather sample taken on intake. See Intake section of Protocols for technique.

Blood Taken: Circle Crit if hematocrit tubes were taken, LTT if lavender-top (i.e. EDTA-containing) were taken, RTT if red-top (i.e. serum separation) tubes were taken, and GTT if green-top (i.e. heparin-containing) tubes were taken.

Photo? All animals must have a photograph taken on intake. If not using a Poloroid-type camera, enter the roll (or disposable camera) number and photo number (or remaining number of frames) here.

Packed Cell Volume (PCV): This is the red blood cell fraction (in %) of a blood sample. If unsure how to read, see a member of the medical staff for instruction.

Buffy Coat (BC): This is the white blood cells fraction (in %) of a blood sample. It is located just above the red cell fraction and is white in color. If unsure how to read, see a member of the medical staff for instruction.

Total Protein (TP): This is the concentration of protein (in mg/dl) in the fraction of the blood sample on top of the buffy coat. This component of the sample is usually clear in color, however, it may appear bright orange or pink if hemolysis (broken red blood cells) is occurring or if different pigments are in the diet. It can also appear cloudy if the bird has just eaten and triglycerides are in the serum. If unsure how to read, see a member of the medical staff for instruction.

Blood Glucose (BG): This is the amount of “sugar” in the blood. If unsure how to read, see a member of the medical staff for instruction.

Feeding Plan: This indicates the food type and feeding frequency for the bird. Commonly seen abbreviations used are BID, TID and QID (i.e. twice, three times and four times per day, respectively). Record here the volume of Toxiban administered on Intake (see Appendices 11 and 14) and time of administration.

Treatment Plan: Should the bird require medical intervention, record the initial medical plan (including, if used, the dose and initiation date and time of Itraconazole) here.

Washing Information

Date Washed: This is the date the bird is first washed.

Date(s) Rewashed: If the bird is not waterproof and must be rewashed, record the date(s) here.

Disposition Information

Disposition Status: Circle whether the bird was released, died, euthanized, transferred to another facility for rehabilitation or permanently placed in another facility.

Disposition Date: Record the date that the final disposition occurred.

Disposition Location: Record the disposition location as specifically as possible.

Federal Band Number: Record the entire metal band number.

APPENDIX 7. TEMPORARY BAND SIZE GUIDE FOR COMMON SPECIES

Species	Band Size
Western Grebe	7
Horned, Eared, Pied-billed Grebe	5-6
Common Loon	8
Pacific Loon	7
Tufted, Horned Puffin	5-6
Rhinoceros Auklet	6-5
Marbled Murrelet	3
Pigeon Guillemot	4
Common Murre	6
Parasitic Jaeger	4
Black Legged Kittiwake	4
Glaucous Gull	7
Western Gull	6
Herring Gull	6
California Gull	5
Ring-billed, Mew, Heerman's Gulls	4
Bonaparte's Gull	3
Caspian Tern	5-4
Northern Fulmar	6
Sooty Shearwater	4-5
Ashy Storm Petrel	1
Double Crested Cormorant	8-7
Brandt's Cormorant	8
Pelagic Cormorant	7
Brown Pelican	9-8
Common Merganser	7
Mallard	7
Gadwall	6
Wigeon	6
Wood Duck	6-5
Greater, Lesser Scaup	6-5
Common Goldeneye	6
Bufflehead	5
Oldsquaw	5-6
Black, White-winged, Surf Scoters	7
Ruddy Duck	6
Canada Goose	8
American Bittern	6
Great Blue Heron	7
Snowy Egret	6
Green-backed Heron	5
Black-crowned Night Heron	7
Sora Rail	3
American Coot	6-5
Red-necked Phalarope	1
American Avocet	4
Black-necked Stilt	3

APPENDIX 8. CLINICAL SIGNS OF DEHYDRATION

<i>Percent Dehydration</i>	<i>Clinical Signs</i>
< 5	Not detectable
5–6	Subtle loss of skin elasticity
7–10	“Tenting” of the skin Loss of brightness around the eyes Slow upper eyelid turgor Dry, ropy mucous membranes
10–12	“Tented” skin stands in place Muddy color to scales of feet Dry membranes Cool extremities Rapid heart beat Depressed
12–15	Extreme depression. Shock. Near death.

Source: Redig, P., 1984. “Fluid Therapy and Acid Base Balance in the Critically Ill Patient.” Proceedings of the International Conference on Avian Medicine, Toronto, Canada. pp. 59–73.

APPENDIX 9. NORMAL HEART AND RESPIRATORY RATES OF BIRDS (PER MIN.)

Weight	Heart Rate (Rest)	Heart Rate (Restraint)	Resp. Rate (Rest)	Resp. Rate (Restraint)
25 g	274	400-600	60-70	80-120
100 g	206	500-600	40-52	60-80
200 g	178	300-500	35-50	55-65
300 g	163	250-400	30-45	50-60
400 g	154	200-350	25-30	40-60
500 g	147	160-300	20-30	30-50
1000 g	127	150-350	15-20	25-40
1500 g	117	120-200	20-32	25-30
2000 g	110	110-175	19-28	20-30
5000 g	91	105-160	18-25	20-30
10 kg	79	100-150	17-25	20-30
100 kg	49	90-120	15-20	15-30
150 kg	45	60-80	6-10	15-35

*Source - Ritchie, B.W., G.J. Harrison, and L.R. Harrison. 1994. Avian Medicine: Principles and Application. Lake Worth, Florida: Wingers Publishing, Inc. pp39-60.

APPENDIX 10. SAFE BLOOD VOLUMES THAT CAN BE TAKEN FROM AVIAN SPECIES ON A WEEKLY BASIS

WEIGHT IN GRAMS	VOLUME IN MILLILITERS
50g	0.3 ml
100g	0.6 ml
150g	0.9 ml
200g	1.2 ml
250g	1.5 ml
300g	1.8 ml
350g	2.1 ml
400g	2.4 ml
450g	2.7 ml
500g	3.0 ml
550g	3.3 ml
600g	3.6 ml
700g	4.2 ml
800g	4.8 ml
900g	5.4 ml
1000g	6.0 ml
1200g	7.2 ml
1400g	8.4 ml
1600g	9.6 ml
1800g	10.8 ml
2000g	12.0 ml
2200g	13.2 ml
2500g	15.0 ml

APPENDIX 11. DIRECTIONS FOR MIXING TOXIBAN® SLURRY

Add 250 ml Pedialyte® and 3 bottles of Toxiban® to an empty liter bottle. Shake well. This mixture yields a slurry of approximately 75 mg of activated charcoal/ml. At a dosage of 3.75 gm of activated charcoal/kg body weight, this slurry can be given at a volume of 50 ml/kg. Thus, the volumes for different species of birds will be the low volume listed in Appendix 14, “Initial Maintenance Avian Tube Feeding Amounts.”

APPENDIX 12. VOLUME OF FLUIDS TO ADMINISTER

The purpose of fluid therapy is to replace fluid deficits (Dehydration), supply daily fluid needs (Maintenance) and to replace ongoing losses (Ongoing Losses). These are the 3 components which should be considered when planning the volume of fluids necessary to treat a patient. Calculating fluid doses requires some basic math. Information which should be committed to memory include;

1 kilogram (kg) = 1000 grams (g) so:

to go from g to kg, divide by 1000

to go from kg to g, multiply by 1000

AND

2.2 pounds (lbs) = 1 kg so:

to go from lbs to kg, divide by 2.2

to go from kg to lbs, multiply by 2.2

Dehydration

Fluid deficits are estimated based on the hydration status determined from physical exam findings. The percent of dehydration is multiplied by the animal's weight in kilograms and this equals the volume of replacement fluid in liters:

Volume of fluid in milliliters (ml) needed for rehydration can be calculated in one of two ways:

A) % dehydration given in decimal form x body weight in kilograms (kg) x 1000 =

B) % dehydration given in decimal form x body weight in pounds (lbs) x 500 =

Example 1: 970 gram common murre which is 12% dehydrated requires:

A) $(.12) \times (.970 \text{ kg}) \times (1000) = 116 \text{ ml}$ for rehydration

B) $(.12) \times (2.1 \text{ lbs}) \times (500) = 126 \text{ ml}$ for rehydration

Example 2: 47 lb black bear cub that is 7% dehydrated requires:

A) $(.07) \times (21.4 \text{ kg}) \times (1000) = 1498 \text{ ml}$ for rehydration = 1.498 L

B) $(.07) \times (47 \text{ lbs}) \times (500) = 1645 \text{ ml}$ for rehydration = 1.645 L

As demonstrated, calculations based on kilograms and pounds can result in slightly different fluid volumes. This emphasizes the fact that fluid therapy is not an exact science. The percentage of dehydration is an estimate based on subjective parameters from the physical exam. Furthermore, ongoing losses are difficult to determine in a very precise manner. These two points reiterate the importance of post fluid therapy monitoring. If inadequate volumes of fluid were given, or if too much fluid has been given, this will be detected and adjustments to the next volume administered will be made.

Maintenance

Maintenance fluids are the volume of fluids which would normally be required during a 24 hour period by a healthy animal. Maintenance requirements include water lost through “insensible losses” such as sweating, panting, saliva and feces, or through evaporation from mucosal membranes or during respiration.

Canids	45 ml / kg / day
Felids	50 ml / kg / day
Avian	50 ml / kg / day
Reptile	10 - 15 ml / kg / day
Rodent	50 - 100 ml / kg / day
Rabbit	50 - 100 ml / kg / day
Guinea Pig	50 - 100 ml / kg / day
Ferrets	75 - 100 ml / kg / day
In Shock	90 ml / kg

Example 1: 31 gram passerine

$$(.031 \text{ kg}) \times (50 \text{ ml / kg / day}) = 1.6 \text{ ml for maintenance per day}$$

Example 2: 33 lb coyote

$$(15 \text{ kg}) \times (45 \text{ ml / kg / day}) = 675 \text{ ml for maintenance per day}$$

Ongoing Losses

This volume of fluid represents continuing losses such as those resulting from diarrhea, vomiting or other problems associated with illnesses. This volume is also an estimated amount since it is very difficult to exactly quantitate the amount of fluids in these other sources of fluid loss. If one is uncomfortable with estimating the amount of fluid lost through ongoing mechanisms, it is preferable to provide an animal with rehydration and maintenance fluids rather than potentially overloading the animal with too much fluid volume. As mentioned previously, fluid therapy is not an exact science, and you will be reassessing the patient periodically and will have the opportunity to make adjustments to fluid volumes if they are indicated.

Example 1:

11 lb rabbit that is 10% dehydrated and has watery diarrhea estimated at 10 ml every 12 hours

Rehydration	$(.10) \times (5 \text{ kg}) \times 1000$	= 500 ml for rehydration
Maintenance	$(5 \text{ kg}) \times (75 \text{ ml / kg / day})$	= 375 ml for maintenance per day
Ongoing Losses	$10 \text{ ml} \times 2 \text{ times / day}$	= 20 ml for ongoing losses per day
TOTAL		895 ml / day

APPENDIX 13. NUTRITIONAL SLURRY RECIPES

For oiled birds:

- 2 cups Trout Chow®
- 2 cups Ensure Plus®
- 1/2 cup water
- 3 tbsp. vegetable oil
- 1 tablet Centrum® vitamin
- 100 mg thiamine tablet
- 2000 mg oystershell calcium

Slurry is approximately 2 kcal/ml.

For clean birds:

- 3 cups Flamingo Breeder Chow®
- 3 1/2 cups water
- 1 tablet Centrum® vitamin
- 100 mg thiamine tablet

Slurry is approximately 1 kcal/ml.

For both recipes, grind dry ingredients in a blender until uniform. Add liquid ingredients and blend five minutes until smooth. Slurries should be dated and used within 24 hours.

APPENDIX 14. AVIAN TUBE FEEDING AMOUNTS

Toxiban slurry: 250ml Pedialyte + 3 bottles Toxiban=75 mg activated charcoal/ml. Administer 50 ml/kg.

Species	Amount (cc)	Fish Size
Loons, Grebes, Pelicans, etc.		
Brown Pelican	180-360	Lg whole Fish
Red-throated/Arctic/Pacific Loon	75-120	Sm Whole Fish
Common/Yellow-billed Loon	180-200	Sm Whole Fish
Pied-billed/Horned/Eared Grebe	20-30	Chopped Fish
Western/Red-necked Grebe	50-60	Strips
Northern Fulmar	25-35	Chopped/ SWF
Hooded Merganser	35-45	Chopped/ SWF
Common/Red-breasted Merganser	50-60	Chopped/ SWF
Shearwaters/Petrels		
Sooty	40-50	Chopped/ SWF
Manx	20-30	Chopped
Short-tailed	25-35	Chopped/ SWF
Black-vented	15-25	Chopped
Leach's/Fork-tailed Storm-petrel	2-3	Chopped
Cormorants		
Pelagic	80-90	Sm Whole Fish
Red-faced	90-100	Sm Whole Fish
Double-crested/Brant's	90-120	Sm Whole Fish
Gulls		
Bonaparte's	5-15	Chopped
Mew/Kittiwake	20-30	Chopped
Heerman's/Ring-billed	35-45	Chopped
Herring/Western/Glaucous/ Glaucous-wing	50-60	Sm Whole Fish
Ducks		
Golden-eye	35-45	Chopped
Bufflehead	10-20	Chopped
Cinnamon/Blue-winged/Green-winged Teal	10-20	Chopped
Canada Goose	180-360	Grain eater
Wood Duck	20-30	Chopped
Mallard/Northern Pintail/Canvasback	50-60	Sm Whole Fish
Gadwalls	40-50	SWF/ Chopped
Scaup	40-50	Sm Whole Fish
Ruddy	25-35	Chopped
Harlequin	30-40	Chopped
Oldsquaw	40-60	Sm Whole Fish
Surf/Black Scoter	40-60	Sm Whole Fish
White-winged Scoter	50-70	Sm Whole Fish
Coots	25-30	Chopped
Alcids		
Thick-billed/Common Murre	50-60	Sm Whole Fish
Pigeon Guillemot	25-35	Sm Whole Fish
Murrelet	10-15	Chopped
Parakeet Auklet	15-20	Chopped
Rhinoceros Auklet	25-35	Chopped
Tufted Puffin	40-50	Strips or SWF
Horned Puffin	30-40	Strips or SW
Misc.		
Raven	60-70	SWF/ Chopped
Crow	20-30	SWF/Chopped
Dunlins		Mealworms

APPENDIX 15. SAMPLE FEEDING SCHEDULES

Example: A common murre with Total Protein < 2.0 g/dl

7:30 AM	50 cc Pedialyte®
9:00 AM	50 cc Ensure®
11:00 AM	50 cc Pedialyte
12:30 PM	50 cc Ensure
2:00 PM	50 cc Pedialyte
3:30 PM	50 cc Ensure
6:00 PM	50 cc Pedialyte
7:30 PM	50cc Ensure

Example: A common loon with Total Protein > 2.0 g/dl

7:30 AM	180 cc Pedialyte
9:00 AM	180 cc nutritional slurry
11:00 AM	180cc Pedialyte
12:30 PM	180 cc nutritional slurry
2:00 PM	180 cc Pedialyte
3:30 PM	180 cc nutritional slurry
6:00 PM	180 cc Pedialyte

APPENDIX 16. AVIAN FEEDING SCHEDULE

Date:

Pen Number & Location:

Feeding Plan:

Band Number(s)	Intake Date(s)	Species	Feeding Comments

Feeding Time	Food/Fluid Type

APPENDIX 17. NORMAL WEIGHTS OF SELECTED COASTAL CALIFORNIA AREA BIRDS.

Species	Sample	Mean±SD	Range	Location
Loon, Red Throated	12	1551±258	1150-1980	Ontario
Loon, Arctic	17	1659±397	990-2450	AK
Loon, Common	5	4134	3600-4480	
Grebe, Pied-billed	33	442±66	343-551	WS
Grebe, Horned	47	453	327-528	MD
Grebe, Eared	7	297	218-375	AZ
Grebe, Western	13	1477	795-1818	WA
Albatross, Black-footed	306	3148		
Fulmar, Northern, Female	29	479±50	395-582	OR
Fulmar, Northern, Male	16	609±78	485-727	OR
Shearwater, Pink-footed	6	721	665-791	CA
Shearwater, Bulls	2	380	342-418	
Shearwater, Sooty	100	787±43	666-978	New Zealand
Shearwater, Black-vented	1	276		CA
Storm-Petrel, Ashy	20	37±2	33-42	Pacific
Storm-Petrel, Black	44	59±4	50-67	Pacific
Pelican, American White		7500		
Pelican, Brown, Female	42	3148±268		FL
Pelican, Brown, Male	53	3636±309		FL
Cormorant, Double-crested, Female	32	1540±215		FL
Cormorant, Double-crested, Male	33	1818±224		FL
Cormorant, Brandt's	5	2103		CA
Cormorant, Pelagic	14	1915	1475-2440	AK
Bittern, American	16	706±183	520-1072	Ontario
Heron, Great Blue, Female	15	2204±337		
Heron, Great Blue, Male	17	2576±299		
Egret, Great, Female	9	812		
Egret, Great, Male	12	935±134		
Egret, Snowy	17	371±25		
Egret, Cattle	9	338		
Heron, Green-backed	34	212±6		FL
Heron, Black-crowned Night-	5	883	727-1014	ME, MA
Brant, Female	361	1230	880-1590	NW Territory
Brant, Male	430	1370	1080-1790	NW Territory

Species	Sample	Mean±SD	Range	Location
Goose, Canada, Female	58	1264±29	940-1490	CA
Goose, Canada, Male	52	1480±30	1240-1700	CA
Duck, Wood, Female	163	635	to 908	
Duck, Wood, Male	248	681	to 907	
Teal, Green-winged, Female	81	318	to 409	
Teal, Green-winged, Male	194	364	to 454	
Mallard	5847	1082±129	720-1580	England
Pintail, Northern, Female	60	986		IL
Pintail, Northern, Male	232	1035		IL
Teal, Blue-winged, Female	101	363	to 545	
Teal, Blue-winged, Male	105	409	to 590	
Teal, Cinnamon, Female	19	363	to 499	
Teal, Cinnamon, Male	26	408	to 549	
Shoveler, Northern, Female	71	590	to 726	
Shoveler, Northern, Male	90	636	to 908	
Gadwall, Female	14	849		IL
Gadwall, Male	16	990		IL
Wigeon, American, Female	68	719±81	512-872	W. Canada
Wigeon, American, Male	65	792±79	635-1036	W. Canada
Canvasback, Female	304	1190		MD
Canvasback, Male	743	1248		MD
Redhead, Female	485	990		
Redhead, Male	1157	1100		
Duck, Ring-necked, Female	151	680	to 1180	
Duck, Ring-necked, Male	285	730	to 1090	
Scaup, Greater, Female	9	957	856-1117	AK
Scaup, Greater, Male	17	932	844-1046	AK
Scaup, Lesser, Female	118	790	540-960	
Scaup, Lesser, Male	112	850	620-1050	
Scoter, Surf, Female	10	900	to 1100	
Scoter, Surf, Male	12	1000	to 1100	
Scoter, White-winged, Female	19	1200	to 1500	
Scoter, White-winged, Male	13	1500	to 1800	
Bufflehead, Female	16	334±23	297-374	OR

Species	Sample	Mean±SD	Range	Location	Species	Sample	Mean±SD	Range	Location
Bufflehead, Male	29	473±33	424-551	OR	Oystercatcher, Black, Female	5	689	618-750	AK
Merganser, Common, Female	11	1232	1050-1362		Oystercatcher, Black, Male	5	607	555-648	AK
Merganser, Common, Male	13	1709	1528-2054		Stilt, Black-necked	18	166		CA
Merganser, Red-breasted, Female	17	908	to 1271		Avocet, American	33	316	CA	
Merganser, Red-breasted, Male	18	1135	to 1317		Yellowlegs, Greater	15	171±15	124-224	Sumnam
Duck, Ruddy, Female	17	499	to 635		Willet	41	215		VA
Duck, Ruddy, Male	12	590	to 816		Tattler, Wandering, Female	16	116	98-130	AK
Vulture, Turkey	20	1467±132		FL	Tattler, Wandering, Male	13	101	87-114	AK
Eagle, Bald, Female	37	5244			Sandpiper, Spotted	56	40±6	29-60	PA
Eagle, Bald, Male	35	4123			Whimbrel, Female	36	404±29	345-459	
Chukar, Female	24	537		NM	Whimbrel, Male	29	355±22	310-403	
Chukar, Male	22	619		NM	Curllew, Long-billed, Female	24	642±32	570-698	ID
Pheasant, Ring-necked, Female	759	953	to 1453		Curllew, Long-billed, Male	12	531±33	493-597	ID
Pheasant, Ring-necked, Male	6378	1317	to 1861		Godwit, Marbled	9	371	277-420	
Turkey, Wild, Female	55	4222	to 5584		Turnstone, Ruddy, Female	5	141	97-178	Great Lakes
Turkey, Wild, Male	54	7400	to 10805		Turnstone, Ruddy, Male	14	117±21	90-164	Great Lakes
Quail, California, Female	272	170	to 207		Turnstone, Black, Female	2	134	133-136	AK
Quail, California, Male	418	176	to 207		Turnstone, Black, Male	5	120	113-127	AK
Quail, Mountain	56	233	to 293		Surfbird, Female	6	205	182-226	AK
Rail, Black	3	32	25-34		Surfbird, Male	27	183±16	156-222	AK
Rail, Clapper, Female	7	271	250-275	SC	Knot, Red, Female	9	148	135-169	Ellesmere Is.
Rail, Clapper, Male	15	323±21	300-350	SC	Knot, Red, Male	13	126	112-136	Ellesmere Is.
Rail, Virginia, Female	3	75	67-80	Ontario	Sanderling, Female	10	60±3	55-67	AK
Rail, Virginia, Male	9	89	64-120	Ontario	Sanderling, Male	12	58±8	44-71	Canada
Sora	11	75			Sandpiper, Western	42	23±3	18-30	CA
Moorhen, Common	20	334±25			Sandpiper, Least	46	21±1	18-24	CA
Coot, American, Female	20	560	427-628		Sandpiper, Pectoral, Female	10	60	58-69	AK
Coot, American, Male	27	724	576-848		Sandpiper, Pectoral, Male	25	86	64-105	AK
Plover, Black-bellied	31	220±24	181-263		Dunlin, Female	244	60		AK
Plover, Snowy	38	41±3	37-49	CA	Dunlin, Male	407	55		AK
Plover, Semipalmated, Female	24	46±5	39-57	Eastern US	Dowitcher, Short-billed, Female	30	116	83-154	NJ
Plover, Semipalmated, Male	26	47±6	38-57	Eastern US	Dowitcher, Short-billed, Male	12	111	73-152	NJ
Killdeer, Female	6	101	88-121	Great Plains	Dowitcher, Long-billed, Female	11	109	93-119	AK
Killdeer, Male	10	92±10	84-109	Great Plains	Dowitcher, Long-billed, Male	28	100	90-114	AK

Species	Sample Mean±SD	Range	Location	Species	Sample Mean±SD	Range	Location
Snipe, Common, Female	14	116	to 156	Tem, Forster's	24	158±17	127-193 OK
Snipe, Common, Male	15	128	to 156	Tem, Least	18	43±2	39-48 KS
Phalarope, Wilson's, Female	58	68±3		Murre, Common, Female	117	979±76	815-1187 Newfor
Phalarope, Wilson's, Male	117	50±1		Murre, Common, Male	121	1006±80	775-1202 Newfor
Phalarope, Red-necked, Female	7	35	29-33(?)	Guillemot, Pigeon	5	487	433-543 CA
Phalarope, Red-necked, Male	14	32	29-35 (?)	Murrelet, Marbled	76	222	
Phalarope, Red, Female	78	61		Murrelet, Xanthu's	375	167±13	136-215 CA
Phalarope, Red, Male	132	50		Murrelet, Ancient	154	206	177-249 Br. Coli
Jaeger, Pomarine, Female	52	740±12	576-917	Auklet, Cassin's	25	188±16	Br. Coli
Jaeger, Pomarine, Male	73	648±6	542-797	Auklet, Rhinoceros	48	520±37	Br. Coli
Jaeger, Parasitic, Female	11	508±24	346-644	Puffin, Tufted	16	779	
Jaeger, Parasitic, Male	20	421±12	301-540	Pigeon, Band-tailed, Female	942	386	300-470 CA
Gull, Bonaparte's	12	212±28	162-270	Pigeon, Band-tailed, Male	1860	398	300-515 CA
Gull, Heerman's	10	500±70	371-643	Owl, Common Barn, Female	21	490	382-580
Gull, Mew, Female	72	375	290-530	Owl, Common Barn, Male	16	442	299-580
Gull, Mew, Male	96	432	340-552	Owl, Great Horned, Female	29	1769	1417-2503
Gull, Ring-billed, Female	51	471±46		Owl, Great Horned, Male	22	1318	985-1588
Gull, Ring-billed, Male	48	566±42		Owl, Burrowing, Female	15	151	129-185
Gull, California	101	609±63	486-775	Owl, Burrowing, Male	31	159	120-228
Gull, Herring, Female	139	1044	717-1385	Kingfisher, Belted	29	148±21	125-215 PA
Gull, Herring, Male	220	1226	755-1495	Crow, American, Female	6	438	
Gull, Thayer's, Female	4	899	846-980	Crow, American, Male	6	458	
Gull, Thayer's, Male	3	1093	1028-1152	Raven, Common, Female	3	1158	1050-1300 AK
Gull, Western	48	1011±25	800-1190	Raven, Common, Male	5	1240	1100-1400 AK
Gull, Glaucous-winged	110	1010±36	730-1400				
Kittiwake, Black-legged, Female	183	393	305-525				
Kittiwake, Black-legged, Male	223	421	305-512				
Gull, Sabine's, Female	4	177	158-190				
Gull, Sabine's, Male	4	205	190-214				
Tern, Caspian	10	661±38	604-709				
Tern, Royal	28	470±20					
Tern, Elegant	14	257±22	217-300				
Tern, Common	265	120	103-145				
Tern, Arctic	261	110±8	86-127				

APPENDIX 18. MINIMUM HOUSING GUIDELINES FOR NON-RAPTOR AVIAN SPECIES

Family	Height (inches)	Temporary Confinement (WxLxH)*	Recovery (WxLxH)*	Conditioning (WxLxH)*	Codes
Gaviiformes (Loons)	~24	24"x24"x30"	4'x8'x4'	Swim Area	SI,W
Podicipediformes (Grebes)	<9 >9	12"x12"x12" 18"x18"x18"	18"x18"x18" 18"x18"x18"	Swim Area Swim Area	S,F S,W
Procellariiformes (Petrels, Shearwaters)	<12 12-18 >18	12"x12"x12" 18"x18"x18" 36"x36"x36"	18"x18"x18" 24"x24"x24" 4'x4'x4'	Swim Area Swim Area Swim Area	S,P,F Pi,SI,Sp,F W,SI,Sp,F
Pelecaniformes (Pelicans, Gannets, Boobies, Cormorants)	<36 >36	36"x36"x36" 36"x48"x36"	4'x8'x4' 4'x8'x8'	Swim Area Swim Area	Pi,SI,Sp,F Pi,SI,Sp,F
Ciconiiformes (Bitterns, Herons, Egrets)	<20 >20	24"x24"x24" 36"x36"x36"	24"x24"x24" 36"x36"x36"	4'x4'x8' 4'x4'x8'	S,P,F,Q S,P,F,Q
Anseriformes (Swans, Geese, Ducks)	<20 >30	24"x24"x24" 24"x24"x24"	24"x24"x24" 24"x24"x24"	Pen/Pool Swim Area	S,F SI,F
Galliformes (Pheasants, Quail)	<20 >20	24"x24"x24" 36"x36"x36"	36"x36"x36" 4'x4'x8'	4'x4'x4' 4'x4'x8'	H H
Gruiformes (Rails, Coots, Cranes)	<9 >9 >15	12"x12"x12" 18"x18"x18" 36"x36"x60"	18"x18"x18" 24"x24"x24" 4'x8'x8'	4'x8'x8' 4'x8'x8' 8'x16'x8'	H H H
Charadriiformes (Gulls, Terns, Plovers, Sandpipers, Alcids)	<9 9-15 15-20 20-30	12"x12"x12" 18"x18"x18" 24"x24"x24" 36"x36"x36"	18"x18"x18" 24"x24"x24" 36"x36"x36" 4'x4'x4'	4'x8'x8' 4'x8'x8' 8'x8'x8' 16'x8'x8'	H,Pi H,Pi H,S,Pi H,S,Pi
Columbiformes (Pigeons, Doves)	>9	12"x12"x12"	12"x12"x12"	16'x8'x8'	
Cuculiformes (Cuckoos)	<12 >12	18"x18"x18" 24"x24"x24"	24"x24"x24" 36"x36"x36"	8'x8'x8' 16'x8'x8'	
Caprimulgiformes (Nighthawks, Goatsuckers)	~9	12"x12"x12"	12"x12"x12"	8'x8'x8'	P
Apodiformes (Swifts, Swallows)	<9	12"x12"x12"	12"x12"x12"	4'x8'x8'	P,C
Trochiliformes (Hummingbirds)	<9	7"x11"x5"	12"x17"x7"	2'x4'x6'	P,Z
Coraciiformes (Kingfishers)	<9	12"x12"x12"	18"x18"x18"	4'x8'x8'	C,D

Family	Height (inches)	Temporary Confinement (WxLxH)*	Recovery (WxLxH)*	Conditioning (WxLxH)*	Codes
Piciformes	<9	12"x12"x12"	18"x18"x18"	4'x8'x8'	C,D
(Woodpeckers)	9-15	18"x18"x18"	24"x24"x24"	8'x16'x8'	C,D
Passeriformes	<9	12"x12"x12"	18"x18"x18"	4'x8'x8'	P
(Perching & Songbirds)	9-15	18"x18"x18"	14"x24"x24"	8'x8'x8'	P
	>15	24"x24"x24"	36"x36"x36"	8'x16'x8'	P

* Listed in order: Width x Length x Height

- ~ = approximately
- < = less than
- > = greater than
- " = inches
- ' = feet

Codes for Special Caging Requirements Used in Table 1.

- C Birds such as woodpeckers and nuthatches require angled and/or vertical logs for climbing. Provide suitable materials (e.g., towels without strings) for clinging birds such as chimney swifts.
- D Birds with this designation require old logs, etc., as drumming materials.
- F Special substrate needed. These species are susceptible to foot problems. Depending on the species, padded flooring, towels, sheeting, carpets, kitty litter, crumpled newspaper covered with toweling, sand, or suspended net flooring may be used.
- H Hides; provide natural vegetative material or human-devised areas for cover. (All birds would benefit from an area of cover.)
- P Requires two or more perches of varied diameter.
- Pi Piling or shelves required for perching.
- Q Quiet and extreme privacy required.
- S Bathing area required; "kiddie pool" size.
- Sl Swimming area required; large pool (deeper than 2-feet), tank, pond.
- Sp Resting platform in swimming pool.
- W Use waterbed, suspended netting, sheepskin padding, or crumpled newspapers (6-inches deep minimum) covered with towels.
- Z Although larger conditioning cage sizes are preferred for hummingbirds, great care must be taken to seal off small openings or cracks that can act as traps.

Source: NWRA/IWRC Wildlife Rehabilitation Minimum Standards Program, 5/93.

APPENDIX 19. BATCH SAMPLING FORM

Spill Name: _____ Date: _____ Sampling: Intake Pre-Wash Pre-Release

[illegible]

Page ____ of ____

APPENDIX 20. DEAD BIRD/MAMMAL LOG FORM

Station:
Location/Spill Name:
Year of Processing:
Page of

DEAD BIRD/MAMMAL LOG OWCN/OSWRT

Station Manager:
Data Collector:
Data Recorder:
Photographer:

Intake No.	Date Coll'ted m/d	Date Arrived m/d	Date Proc'd m/d	Coll'tion Location	Time Proc'd 24 hr	Species	Band Number	Cond-ition	Extern. Oil Visible?	Oil not visible but oiled ?*	%Bird Oiled or Sheened	Depth of Oil	Where Oiled	Feather/Oil Sample Taken ?	Photo Taken?	Morgue Bag/ Box	Bar Code

*Oil not visible but animal is oiled based on one or more of the following: smell oil, plumage malaligned/parted or sticky, skin wet/not water-proof, skin burns

APPENDIX 20B. BACKSIDE OF DEAD BIRD/MAMMAL LOG

Date:

Station:

Backside of Dead Bird/Mammal Data Log Page ____ of ____

[illegible]

APPENDIX 20c. OIL SPILL WILDLIFE RESPONSE TEAM CHAIN OF CUSTODY DATA LOG FOR BEACHCAST WILDLIFE

Record collection station number and location, year, and get printed names and initials of personnel present at the collection station while the animals listed on the page were processed.

Intake #: Using a different sequence for each station, record i.d. number which animal was given upon arrival.

Date Collected: Record the date on which the animal was collected. Include year only if different from year of processing.

Date Arrived: Record the date on which the animal was brought to the collection station. Include year only if different from year of processing.

Date Processed: Record month and day of processing.

Time 24hr: Record the time which the processing for this specimen began. Use 24hr military format.

Species: Use the standard four-letter abbreviations if the species name is known. If the species is unknown, indicate the lowest taxonomic category that can be determined (i.e. gull; alcid; bird).

Band/Tag #: For all recovered birds (live or dead) enter the color and number (i.e. B198 if Blue band #198) or simply the band number (if USFWS band) of the band placed on the metatarsus. If carcass is incomplete, the band can be placed elsewhere (i.e. sternum) or else should be secured to the carcass with string or wire. For turtles or mammals (live or dead) this refers to the tag number attached to the rear flipper.

Condition: 0=alive and alert; 1=alive but unresponsive, weak; 2=freshly dead; 3=not freshly dead but carcass whole; 4=fragment(s) only (elaborate in Notes)

% of Body Oiled: 0=no apparent oil; 1=<2% of body; 2=2-33% of body; 3=33-66% of body; 4=66-100% of body covered; 5=oil detected but extent undeterminable due to state of carcass; 6=no oil detected but this may be due to state of carcass; 7=no visible oil but has petroleum odor; 9=was not evaluated.

Where Oiled: 0=no apparent oil; 1=dorsal side only; 2=ventral side only; 3=entire body; 4=head only; 5=feet only; 6=wings only; 7=bill/mouth area only; 8=more than one area but not entire body; 9=was not evaluated.

Thickness of Oil: This is the visible appearance of the oil. 0=no apparent oil; 1=no oil visible but has petroleum odor; 2=light; 3=medium; 4=heavy; 5=tar; 9=was not evaluated.

Sample Taken?: Take a sample from oiled locations. If no apparent oil, take samples from areas which are frequently oiled. 0=no; 1=feather sample taken; 2=tissue sample taken. Place a copy of Intake #, species code, band number, processing date, time processing began, and station number on both the envelope AND foil in which sample is placed.

Photo Taken?: 0=no; 1=yes. If yes, write time it was taken on photo (if polaroid). In photo itself backdrop should clearly show: date, station, intake #, species code, and band number. If any of this is not clear, write it clearly on the bottom of the photograph.

Bag Color/#: Indicate the Color/Number combination of the morgue bag in which the corpse is placed for storage, i.e., Y5 for yellow bag number 5.

Box #: If morgue bags were placed in boxes for movement or storage, indicate box number here.

Notes: Indicate "Yes" (Y) if any notes are taken for this animal on the reverse side of the data sheet. On this reverse side write the Intake #; and notes may include any of the following: location or beach segment of collection; any measurements taken; age, sex or breeding condition if determined; degree to which body has been scavenged, including which parts were recovered if body not whole; any conspicuous cause of death if not related to oil (e.g. gun shot wound); and a note if the specimen was known to have been contaminated by other petroleum products (e.g. if it was wrapped in plastic) or other carcasses. Any other observations or details of collection can be recorded here as well.

APPENDIX 21.

OILED WILDLIFE CARE NETWORK

PHONE NUMBER LIST

OSPR Dispatch (916) 445-0045

Jonna Mazet (530) 754-9035 (916) 556-7509 (pager) (530) 304-1231 (cell phone)

Kathy Collins (530) 754-9032 (916) 523-6957 (pager) (916) 952-7942 (cell phone)

Scott Newman (530) 754-9424 (916) 523-7941 (pager)

Kirsten Gilardi (530) 752-4896 (916) 523-2589 (pager)

Wildlife Health Center
University of California
Davis, CA 95616
(530)752-4167

Jay Holcomb (510) 841-9087 (510) 774-9235 (cell/pager)

Shawn Johnson (510) 841-9087 (510) 774-9239 (cell/pager)

International Bird Rescue Research Center
699 Potter St., Aquatic Park
Berkeley, CA 94710

Veterinary Medical Teaching Hospital, University of Calif., Davis, CA 95616

Hematology Dept. (530) 752-1303

Clinical Chemistry (530) 752-7380

APPENDIX 22. PATHOLOGY REPORT

Clinic No. _____ Pathology No. _____

Species _____ Sex _____ Age _____ Date _____

Ident. _____ Pathologist _____

Clinician _____ Student _____

Owner _____ Address _____

Dr. _____ Address _____

Specimen _____ Died or killed _____ hrs. Destroyed by _____ preservative

Postmortem state _____ nutritional state _____ Reported

Pathologic diagnoses:

Clinical abstract:

Integument:

Peritoneum:

Digestive Canal:

Liver:

Pancreas:

Spleen:

Urinary system:

Mammary Gland:

Pleura:

Respiratory System:

Cardiovascular System:

Lymph Nodes:

Musculoskeletal system:

Nervous system:

Other endocrines:

Bone Marrow:

Special Senses:

APPENDIX 23. SAMPLE PACKING AND SHIPPING INSTRUCTIONS:

Blood Products

Use appropriate packing materials (supplied by the lab). Blood tubes may be shipped in Styrofoam holders or packed well by using a rubber band to position them together and then cushioning them with appropriate packing materials. All mailed specimens containing blood or serum must be kept cold using ice packs. Do not use ice—it will melt and wet the shipping container. It is important to keep blood samples cool and, at the same time, avoid freezing the samples since this may cause cellular artifacts. Blood smears will become moist and may be destroyed if packed in direct contact with ice packs, so keep them separated. They do not need to be cold. Place ice packs so that they will keep the blood samples cool but are not directly in contact with the tubes. Sending any blood products by overnight carrier requires that the entire package be sealed in a plastic sack (provided by the carrier) that will not allow leakage even if the vials break open. Packages without this wrapping are often refused by the carriers. Blood samples collected during a spill response should be submitted under the direction of the OWCN veterinarian to the University of California at Davis, Veterinary Medical Teaching Hospital (VMTH). All samples will be picked up or mailed overnight mail to the University of California at Davis, Veterinary Medical Teaching Hospital.

Tissue Samples in Formalin

Tissue samples are placed in a small plastic or glass jar with 10% buffered formalin (provided by the lab) and labeled with the spill name, species, ID number (admission log number), leg band (e.g. in-house band or USFWS band), and date the samples were taken. This jar is then placed into a larger jar (provided by the lab) to prevent accidental leakage in shipping. A copy of the necropsy form should accompany the tissues. Tissue samples for histopathology are submitted under the direction of the OWCN veterinarian to the University of California at Davis, Veterinary Medicine Teaching Hospital.

Submission Procedures

The submitting veterinarian should call ahead to let the laboratory know of the number of samples being submitted and the tests requested. The samples should be identified as oil spill submissions. The phone number for the Hematology Laboratory at UC-Davis, VMTH is (530) 752-1303. The phone number for the Pathology Laboratory at UC-Davis, VMTH is (530) 752-1368. Samples should be sent via Federal Express or other overnight courier. Be sure that delivery of these samples does not fall on a weekend or holiday as the laboratories are closed on these dates.

Laboratory Test Results Distribution

The laboratory will fax the results to your facility simultaneously with the Wildlife Health Center. During a major spill, many samples may be processed and it may take a few days to get results that are done by hand (such as blood cell counts and differentials). However, serum chemistries are usually available overnight.

OILED WILDLIFE CARE NETWORK MONTHLY OILED WILDLIFE REPORT

OWCN Participant: _____

Report for the Month of: _____

Prepared by: _____

Phone#: _____

Today's Date: _____

[illegible]

CODES FOR OWCN/OSWRT LIVE AND DEAD BIRD/MAMMAL LOG FORMS

Record collection station number and location, year, and get printed names and initials of personnel present at the collection station while the animals listed on the page were processed.

Intake #: Using a different sequence for each station, record i.d. number that animal was given upon arrival.

Date Collected: Record the date on which the animal was collected.

Date Arrived: Record the date on which the animal was brought to the collection station. Include year only if different from year of processing.

Date Processed: Record month and day of processing.

Collection Location: Location from which the animal was retrieved.

Time 24hr: Record the time when processing for this animal began. Use 24hr military format.

Species: Use the standard four-letter abbreviations if the species name is known. If the species is unknown, indicate the lowest taxonomic category that can be determined (i.e. gull; alcid; bird).

Band #: For all recovered birds (live or dead) enter the color and number (i.e. B198 if Blue band #198) or simply the band number (if USFWS band) of the band placed on the metatarsus. If carcass is incomplete, the band can be placed elsewhere (i.e. sternum) or else should be secured to the carcass with string or wire. For turtles or phocids, plastic NMFS tags should be fitted on the hind flipper. For otariids, tags go on front flipper.

Condition: (for dead animals only) 1=freshly dead; 2=decomposing whole carcass; 3=body parts only-fresh; 4=body parts only-decomposing; 5=desiccated, mummified carcass.

External Oil Visible: 1=yes; 2=no, may be jet fuel, diesel, gasoline, vegetable oil, fish oil or other.

Oil Not Visible But Oiled?: 0=no; 1=yes, smell oil; 2=yes, plumage malaligned or parted; 3=yes, plumage sticky; 4=yes, skin wet/not waterproof; 5=yes, skin burn.

% of Bird Oiled or Sheened: (for dead animals only) 1=<2% of body; 2=2-33% of body; 3=34-66% of body; 4=67-100% of body covered; 5=oil detected but extent undeterminable due to state of carcass; 6=no oil detected but this may be due to state of carcass; 7=was not evaluated.

Depth of Oil: (for dead birds only) 0=no apparent oil; 1=superficial; 2=moderate; 3=deep; 4=tar; 5=not evaluated.

Where Oiled: (for dead animals only) 0=no apparent oil; 1=dorsal side only; 2=ventral side only; 3=entire body; 4=bill/mouth area only; 5=head only; 6=wings only/fore flippers; 7=feet only/hind flippers; 8=more than one area but not entire body; 9=was not evaluated.

Sample Taken?: Take a sample from oiled locations. If no apparent oil, take samples from areas which are frequently oiled. 0=no; 1=feather/fur sample taken; 2=tissue sample taken. Place a copy of Intake #, species code, band number, processing date, spill event name, and processing station on both the envelope AND foil in which sample is placed.

Photo Taken?: 0=no; 1=yes. If yes, attach barcode and write the time it was taken on photo (if Polaroid). In photo itself backdrop should clearly show: date, intake #, species code, and band number, and processing station

Morgue Bag/Box Color/#: Indicate the Color/Number combination of the morgue bag in which the corpse is placed for storage, i.e. Y5 for yellow bag number 5. If morgue bags were placed in boxes for movement or storage, indicate box number here.

Bar Code: Attach bar code sticker.

Notes: Indicate whether any notes have been taken for this animal on the reverse side of the data sheet. On this reverse side write the Intake #; and notes may include any of the following: measurements taken; age, sex or breeding condition if determined; which parts were recovered if body not whole; any conspicuous cause of death if not related to oil (e.g. gun shot wound); and a note if the specimen was known to have been contaminated by other petroleum products (e.g. if it was wrapped in plastic) or other carcasses. Other observations or details of collection can be recorded here.

PROTOCOLS FOR THE CARE OF OIL-AFFECTED MARINE MAMMALS



Oiled Wildlife Care Network

The Oiled Wildlife Care Network is sponsored by
California Department of Fish and Game, Office of Spill Prevention and Response
and
administered by
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Protocols For The Care Of Oil-Affected Marine Mammals

INTRODUCTION

The oiled marine mammal protocols are designed to be a supplement to the Oiled Wildlife Care Network (OWCN) training courses for oil-affected marine mammal care. Only experienced, National Marine Fisheries Service (NMFS) permitted facilities will care for oiled marine mammals; therefore, these guidelines do not address marine mammal husbandry in detail but are intended to provide basic information on capture and transport, emergency care and stabilization, and procedures (such as washing and drying) specific to oil spill response. It is important that these procedures are understood and followed by all participants in the OWCN. By using the most current procedures and protocols, we should be able to provide the “best achievable treatment” for all wildlife affected by oil in the state of California. In addition, the standardization of this information allows for more accurate collection of data for analysis, which then may yield further improvements in the protocols and care. The procedures and protocols outlined in this manual are a *work in progress*, with constant changes being made as research and clinical experience suggest improvements. For more information on marine mammal rescue and rehabilitation, the reader should consult references such as Marine Mammals Ashore (Geraci and Lounsbury, 1993), Emergency Care and Rehabilitation of Oiled Sea Otters (Williams and Davis, 1995), and the Handbook of Marine Mammal Medicine (Dierauf and Gulland, 2001).

The oiled marine mammal protocols were established in conjunction with federal regulations established by NMFS for marine mammal care and rehabilitation; through the memorandums of understanding that exist between the Department of Fish and Game-Office of Spill Prevention and Response (OSPR), NMFS, and the OWCN. Because these protocols were designed for use by OWCN participants, the OWCN is not responsible for any injury to personnel or animals that might occur should non-OWCN personnel outside California use these materials and information.

BACKGROUND INFORMATION

Overview of the Oiled Wildlife Care Network

The *Lempert-Keene-Seastrand Oil Spill Prevention and Response Act of 1990* required the California Department of Fish and Game's Office of Spill Prevention and Response (OSPR) to establish rescue and rehabilitation stations for aquatic birds, sea otters, and other marine mammals in California. Amendments to the Act in 1993 and 1995 guaranteed the construction of regional oiled wildlife care facilities and ongoing operations and maintenance funding for the Oiled Wildlife Care Network. In 1996, administration of the OWCN was transferred to UC Davis, School of Veterinary Medicine and is now a key program within the Wildlife Health Center. The OWCN provides statewide protection through its geographic coverage, by capitalizing on the considerable talent and resources that exist within the community of marine wildlife care providers in California and provide oil-specific trainings for supervisors in participating organizations. In addition, the OWCN administers a competitive grants program overseen by advisors from wildlife trustee agencies, academic and research organizations, the oil industry, and wildlife rehabilitators. This program enables the OWCN to develop and evaluate current treatment methods to ensure that wildlife are protected and that those released can contribute to free ranging populations.

Essentials of the Unified Command System

When oil spills occur in California, the actions that are taken to protect wildlife resources are called Wildlife Operations. An Area Contingency Plan developed jointly by the United States Coast Guard and OSPR guides Wildlife Operations in the initial phase of a response. All activities of the oil spill response are coordinated through the Unified Command (UC) (Appendix 1). The UC is the governing body responsible for all decision making processes during the spill response and is made up of a Federal On-Scene Coordinator (OSC) (usually a Coast Guard Captain of the Port for the affected area), a State Incident Commander (IC) (usually the OSPR administrator or his/her designee), a local government representative (MAC Group representative), and a qualified individual from the responsible party (RP), if known. The OSC has the ultimate responsibility for directing the oil spill response if a consensus cannot be reached among the members of the UC. However, the State IC usually takes the lead for environmental clean-up issues and the wildlife response. Early but prudent

initiation of a wildlife response and the development of the Wildlife Operations section of the UC ensure timely mobilization of dedicated staff, equipment, and volunteers.

The Wildlife Care and Processing sections of the Wildlife Operations branch are primarily staffed by OWCN personnel (Appendix 2). The structure of the UC, and thus that of the OWCN, is designed to be flexible and scalable to the size of the oil spill response. The reporting structure for the OWCN response personnel command structure is illustrated in Appendix 3 along with brief descriptions of the duties associated with each position. Only those positions necessary and appropriate for a specific spill incident are filled, and most oil spill responses do not require the filling of all listed positions. The OWCN Response Coordinator must be aware of the number of staff in each personnel category for every response to ensure a smooth operation, to better assess additional staffing needs, and to arrange for reimbursement from the RP. If an individual is responding to an oil spill for the OWCN for the first time in a non-volunteer position, the OWCN Response Coordinator must determine that individual's qualifications and assign him or her to an appropriate personnel category. Similarly, all requests for additional staffing, equipment, supplies, or changes in operational activities should pass through the chain of command to the OWCN Response Coordinator. If the chain of command is diligently followed, all appropriate personnel are included in communications making the response effort is much more efficient. Responses to oil spills since the implementation of the UC and adherence to chain of command protocols have been significantly less chaotic and resulted in more efficient wildlife handling and an overall improvement in wildlife care.

The Role of Volunteers

The OWCN is operated primarily by dedicated, trained wildlife rehabilitation volunteers. Because volunteers are crucial to all oil spill responses, we greatly value their commitment and dedication and strive to provide them with the training necessary to adequately complete their desired jobs within the OWCN. As such, both the OWCN and OSPR have dedicated Volunteer Coordinators to call out, schedule, and oversee the training of volunteers during spill responses. If a volunteer feels that he or she has not been adequately trained for the duties requested, has been dealt with unfairly or inappropriately, or has concerns about his or her role in Wildlife Operations, those concerns should be immediately brought to the attention of his or her supervisor. In the case of a problem arising between the volunteer and the supervisor, concerns should be voiced directly to the Volunteer Coordinator. All volunteer issues are important to the operation of the OWCN. Unfortunately, no volunteers under the age of 18 will be allowed to work with wildlife, within a response facility, or within the hot zone of an oil spill due to federal restrictions on the use of volunteers for potentially hazardous activities.

*Oil spill volunteers
must be at least 18
years old*

Chain of Custody Procedures

Systematic searching, recovery, transportation, processing, and treatment of all affected wildlife are critical for gaining an understanding of the short-term and long-term consequences to wildlife populations and guiding response actions. In order to track the samples and data collected during an oiled wildlife response, the OWCN must adhere to strict chain of custody procedures. Data on live animals are compiled on standard OWCN Log forms (Appendix 4) for tracking purposes. During large-scale responses, wildlife agency personnel or their agents will complete log forms; however, OWCN personnel should be familiar with the forms and their completion for smaller-scale responses and for the occasional oiled animal. As detailed in the agreements between OSPR and OWCN organizations, data on all oiled animals must be collected and the OWCN immediately notified upon receipt of oiled wildlife. In addition to the tracking of live animal data, all samples (carcasses, feathers, photos) that may be used in legal cases must be tracked and secured at all times. When a sample is removed from a primary OWCN facility, it must be accompanied by a chain of custody form which will be supplied by the managing agency (CA-DFG, NMFS, USFWS) representative that is acquiring the sample. Once the spill has been declared over, the original records from oiled animals during a response must be completed and sent to the OWCN at the Wildlife Health Center within four weeks.

All records must be sent to the OWCN after the completion of the spill

MARINE MAMMALS AND OIL: A BRIEF OVERVIEW

In comparison to marine birds, marine mammals are infrequently affected by oil spill incidents. In the past 6 years, the OWCN has treated over 4,000 oiled marine birds but has rehabilitated only a few oiled marine mammals. Over the same time frame, greater than 10,000 dead oiled bird carcasses have been recovered compared to several oiled sea lions. In addition, while marine mammals have been observed on land or in the water adjacent to oiled habitat or ocean surfaces, very few reports of marine mammals swimming through oil or lying in oil deposited on beaches have been reported to the OWCN or OSPR. These findings correspond to what has been seen in most other spill events, with the exception of the Exxon Valdez (1989) oil spill where thousands of marine mammals were killed and the Jessica (2001) oil spill on Galapagos Islands where 79 sea lions were oiled (Salazar, 2002; Loughlin, 1994; St. Aubin, 1990).

In general, certain marine mammals (cetaceans and most pinnipeds) have a lower susceptibility to becoming oiled because they appear to be able to detect and avoid surface slicks (Geraci and St. Aubin, 1990). Most marine mammals also have thick blubber layers making them less prone to experience thermoregulatory problems and hypothermia when exposed to petroleum compared to birds. Depending on the extent of external exposure, the toxicity of the petroleum product, the volume ingested or inhaled, and the presenting clinical signs, some pinnipeds and cetaceans may not need to be captured and rehabilitated. The exceptions to this rule are young pups of any species, which do not yet have a thick

Pinnipeds and cetaceans are less susceptible to oil exposure than sea otters and marine birds

protective blubber layer and possibly northern elephant seals undergoing a complete body molt, which occurs between April and August.

In contrast to species with thick blubber layers, densely furred marine mammals, such as fur seals and sea otters, may undergo thermoregulatory problems similar to marine birds after they are externally exposed to oil. The protective barrier provided by the dense pelage is disrupted by external contamination with oil destroying its water repellency. In addition, the fastidious habits of sea otters will likely result in the ingestion of oil during attempts to groom and bathe. These species will most likely require rehabilitation when oiled due to the physical and toxicological effects of petroleum exposure.

SEARCH AND COLLECTION

Agency Oversight

The OWCN, in consultation with trustee agencies and the Unified Command, will determine if an attempt to capture an oiled marine mammal is warranted. In many cases, marine mammals cohabitate on large rookeries amongst hundreds or thousands of animals. If a disturbance to these populations is deemed to be more detrimental than allowing an individual animal to remain exposed to oil, minimal effort to capture the affected animal will occur until the animal isolates itself on the shoreline and is easily accessible.

The OWCN will determine if an attempt to capture an oiled marine mammal is warranted

Once a decision is made to capture an animal, only trained and authorized personnel will be allowed to undertake these activities. Whenever possible, members of the California Marine Mammal Stranding Network (CMMSN, permitted by the National Marine Fisheries Service) will be responsible for capture and transport of oiled pinnipeds, and experienced field biologists from the CMMSN, U.S. Fish and Wildlife Service, USGS Biological Research Division, or California Department of Fish and Game will be responsible for capture and transport of oiled sea otters.

If members of the marine mammal stranding network rescue a marine mammal outside of a spill response, and it is tarred or has fresh oil on it, please contact the OWCN immediately to alert us of this situation. You may have recovered the first animal of a spill incident.

The OWCN and the Unified Command may assign other personnel to assist in capture and transport of marine mammals. Because search and collection duties vary with each response and may involve more risk than other duties, the OWCN will determine the level of training appropriate for field response personnel; this training may include a 24 hour HAZWOPR training, OWCN-sponsored supervisor training, first aid/CPR, water safety, or boat safety courses. No volunteer will be compelled to perform any task they feel is dangerous or beyond their skill level. Human safety is the first priority for animal rescues.

Unless specifically authorized by appropriate trustee agencies, no non-oiled animals will be collected during spill incidents. Preemptive capture and/or hazing will be accomplished only under the direct supervision of the wildlife trustee agencies and NMFS.

Facilities for the rehabilitation of oiled marine mammals are located in various locations along the California coastline. In table 1, the facilities and their capacity for oiled animals are listed.

Table 1. Oiled Wildlife Care Network Marine Mammal Facilities

Facility Name	Location	Managing Participant	Capacity
North Coast Marine Mammal Center	Crescent City	North Coast Marine Mammal Center	15 pinnipeds
The Marine Mammal Center	Sausalito	The Marine Mammal Center	40 pinnipeds 10 sea otters sea turtles
Marine Wildlife Veterinary Care Research Center	Santa Cruz	DFG - OSPR	125 sea otters 10 pinnipeds
Long Marine Laboratory	Santa Cruz	University of CA, Santa Cruz	5 sea otters
Monterey Bay Aquarium	Monterey	Monterey Bay Aquarium	sea otters
Marine Mammal Center at Fort MacArthur	San Pedro	Marine Mammal Center at Fort MacArthur	20 pinnipeds
Aquarium of the Pacific	Long Beach	Aquarium of the Pacific	sea otters
SeaWorld Oiled Wildlife Care Center	San Diego	SeaWorld, San Diego	20 pinnipeds 10 sea otters sea turtles

The primary facility for intaking petroleum exposed sea otters will be the Marine Wildlife Veterinary Care and Research Center (MWVCRC) located in Santa Cruz. Other facilities with extensive marine mammal care capability and expertise that could be called on by the OWCN to cooperate in a cleaning and rehabilitation program for sea otters include: Monterey Bay Aquarium, The Marine Mammal Center, Sea World San Diego, and Long Marine Laboratory. Portable floating pens for holding larger numbers of rehabilitated or preemptively caught sea otters may be installed at Horseshoe Bay (in San Francisco Bay) in cooperation with the National Park Service's Golden Gate National Recreation Area (GGNRA) or at Moss Landing Harbor in cooperation with Duke Energy Power Services.

Search and Collection Guidelines

Teamwork is essential to safe, efficient collection of oiled marine mammals. A rescue team will consist of two or more people. A plan of action should be developed and discussed among all search and collection personnel prior to entering the search area. Each capture site should be evaluated and strategies developed to suit the terrain and species involved. Capture of affected animals will not be attempted if adverse weather, sea conditions, cliffs, or other physical and chemical hazards in the "hot zone" are present.

Prior to a response, ensure that all equipment is ready and in working condition (it may be helpful to post a checklist in the transport vehicle and use it prior to departing for capture operations). Capture materials may include communication equipment (portable phone or radio), specialized vehicles (4-wheel drive with lifting tailgate or crane, adequate floor space, easily cleaned and good ventilation), boats (capture vessel & support vessel), aircraft (fixed wing or helicopter), SCUBA gear, nets (type varies by species and location of capture), cages and transport boxes (type varies by species), herding boards, personal protection equipment (PPE) and a first aid kit for humans. Any injuries to staff or volunteers should be treated immediately and reported to the site safety officer and the OWCN response coordinator.

In addition to PPE required by the site safety officer to protect personnel from oil exposure, appropriate attire for capture teams includes closed-toed shoes or boots, long sleeve shirts, long pants, rain gear or “yellows”, coveralls, and organizational identification (e.g., labeled clothing). The demeanor of members of the capture team should be calm and professional at all times; loud noises, talking, shouting, and music should be minimized. Remember that good record keeping starts here! Record the details of the beach search effort on the appropriate form, and include data on the stranding or collection (location of capture, GPS coordinates, reason for capture). If samples are collected prior to reaching the intake facility, make sure they are labeled properly with a unique field identification number for each animal.

Good record keeping starts at the capture location

Domestic animals are not permitted near the capture location nor should they come into contact with marine mammals. Domestic animals will not be allowed in the transport vehicle and if the vehicle has previously been used to transport domestic animals, it should be disinfected and cleaned prior to transporting marine mammals.

Domestic animals are not allowed near the capture location or in transport vehicles

Animal Collection Techniques

During search and collection efforts, always be aware of any hazards in the surrounding environment such as incoming tides, slippery cliffs, or aggressive animals nearby. When working near water, one member of the team should be assigned to watch the ocean and warn of dangerous wave activity. Other potential physical hazards include hypothermia or hyperthermia of capture personnel. Team members should use sunscreen and have drinking water readily available. A first aid kit, which includes wound disinfectant and bandaging materials, must be readily available to the rescue team. Carry your HAZWOPR verification card when entering the “hot zone” at a spill site. Consult with the site safety officer before entering the “hot zone” for special safety and clothing requirements.

Capture and restraint of marine mammals should only be attempted by experienced personnel

Once an oiled marine mammal is spotted on land, the first task is to prevent it from fleeing into the water. In general, capture will be accomplished using nets (e.g., long-handled hoop nets, throw nets) and/or herding boards rather than by hand (Fowler, 1995; Geraci and Lounsbury, 1993). In the case of neonates or animals that are unconscious or in a position that makes manual capture and restraint safer than using rigid equipment, exceptions are made. Aquatic captures may involve additional specialized training and equipment such as SCUBA gear, tangle or float nets, hoop or dip nets, and Wilson traps (Geraci and Lounsbury,

1993; Benz and Britton, 1995). These operations are very dangerous for both the animal and the capture team, and will only be undertaken by experienced personnel.



Figure 1. Wilson trap for sea otter capture

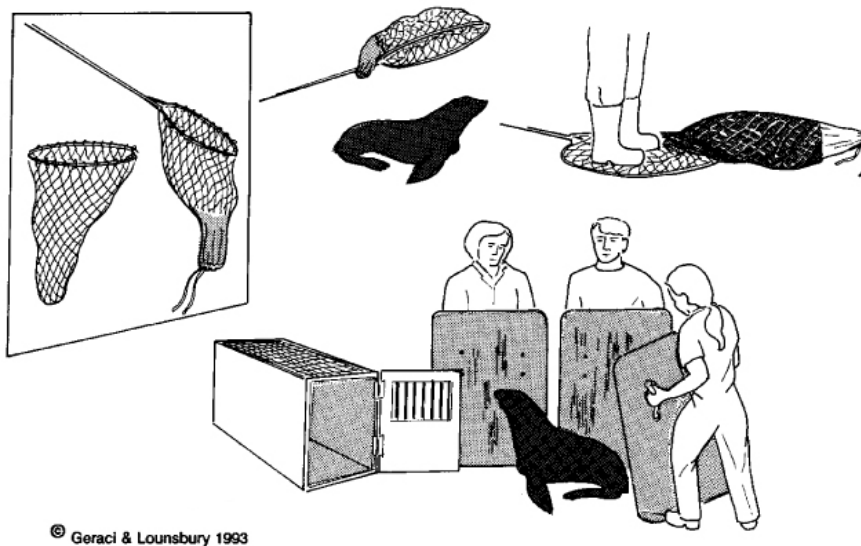


Figure 2. Capture and handling techniques for otariids and large phocids

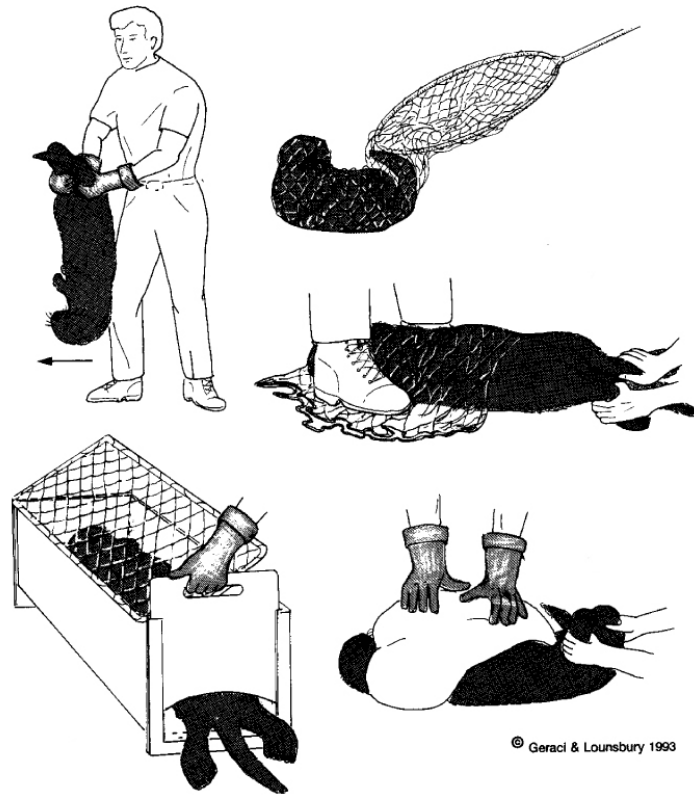


Figure 3. Sea otter handling and restraint techniques.

Prior to transport, field stabilization techniques may be employed if it will be more than one or two hours until the animal reaches the rehabilitation facility. These techniques may involve assessing the animal for hypo or hyperthermia and treating accordingly; administering oral electrolyte solution and subcutaneous fluids, removing large amounts of oil from the eyes and nares, and administering emergency medications under the guidance of a veterinarian. See Chapter 4 for descriptions of specific treatments.

*Field stabilization
may be necessary prior
to transport*

After capture and field stabilization, the oiled animal should be placed in a well-ventilated transport box, airline kennel, or cage for transport. Animals should be staged in a quiet, sheltered area or moved directly into the transport vehicle. The cage should be large enough to allow the animal to lie down in a comfortable position. Only one animal per transport cage is recommended. Females and their pups are most safely transported in separate cages, although they should be positioned so that they can hear, see, and smell each other. If necessary, immature pinnipeds can be transported in small groups of 2 - 4 individuals per single large cage, provided the animals are matched by age, species, and condition (for example, an active animal should not be placed in the same cage as a severely depressed or obtunded animal).

Pinnipeds less than 70 kg (145 lbs) can be transported in large airline sky kennels. Aluminum or other lightweight material is recommended to minimize weight of cages designed for

larger animals. Vertical sliding doors and lift points for attaching a winch are recommended, as are built-in handles or poles that allow a team of two to four people to carry the cage. Rectangular cages with slots in the top for vertical dividers increase flexibility, allowing two or three smaller pinnipeds to be transported in separate compartments within one large cage. Each cage must be firmly tied or otherwise secured in the vehicle.

Sea otter transport kennels should be fitted with a raised bottom grate to avoid additional fur fouling. Shaved ice or any other form of fresh water ice (to combat dehydration) and chew toys (to combat tooth damage) will usually be provided in transport kennels but food should be offered only if transport time is greater than four or five hours.

Hyperthermic animals may be sprayed gently with water, or ice cubes may be added to the top of the cage and allowed to drip onto the animal as it melts. In order to prevent inhalation and subsequent drowning by unconscious animals, do not allow water to accumulate to greater than ½ inch deep in the bottom of transport cages. Hypothermic animals should be placed in a sheltered location out of the wind, although good ventilation must be maintained to prevent animals and humans from inhaling petroleum fumes. Keep in mind that oiled, stressed, or injured seals are not able to regulate their body temperature effectively, and their conditions can change within minutes. For example, a hypothermic animal may become hyperthermic following a seizure, excessive handling, or inadequate ventilation or shade.

Transport Procedures

Animals are generally transported in either a pick-up truck or an enclosed van-type vehicle. Adequate ventilation must be maintained to protect both humans and animals from inhaling fumes emitted by freshly oiled animals. Unless hypothermia is observed or suspected, keep animals damp and cool. The preferred air temperature for pinniped transport is 10 - 20°C (50 - 68°F) but should not exceed 15°C for sea otters (Geraci and Lounsbury, 1993; Benz and Britton 1995). Fur seals or sea otters whose coats are oiled or saturated, neonates of all species, and animals with extensive wounds or severe emaciation may require higher temperatures compared to minimally oiled animals or non-oiled, stranded animals. Keep in mind that human comfort during transport may not be synonymous with or sufficient for the temperature and ventilation needs of the transported marine mammals.

*Air temperature
during transport:
Pinnipeds: 10-20°C
(50-68°F)
Otters: not to exceed
15°C*

Animals should be monitored periodically on long transports of greater than one hour, as directed by the OWCN response veterinarian. In most cases, sedation during transport is not recommended. Critical cases (e.g., unstable, hypo or hyperthermic animals) may require more frequent monitoring. Take care to avoid undue stress when monitoring and transporting animals (e.g., do not talk around the animal). If the animal's condition deteriorates suddenly during transport, call for veterinary advice from either the veterinarian at the point of origin or at the receiving facility. It is important that the persons transporting animals between the field and the rehabilitation center maintain contact with their supervisor at all times so that departure and arrival times may be anticipated at these different locations.

HOUSING FOR OTTERS AND PINNIPEDS

General Considerations

There are published standards for the design of facilities housing marine mammals in captivity. In the United States these standards are published by the Department of Agriculture, Animal and Plant Health Inspection Service (APHIS, www.aphis.usda.gov/ac/cfr/9cfr3.html) and are a requirement for facilities that wish to display animals to the public. They include such items as haul-out requirements, pool size and depth, water quality, number of animals to be kept in a particular environment, and strict standards for food preparation areas and medications. Currently no standards have been published for marine mammal rehabilitation centers and oil spill facilities. The USDA standards are a good guideline but may not be appropriate for animals that require constant medical attention and handling, or for facilities that only keep animals for a short period of time.

Facility design in rehabilitation centers is an ongoing area of debate and no perfect facilities exist to suit all needs for each animal and every oil spill. Still, certain principles should be kept in mind when designing an oil spill facility or when attempting to house oiled marine mammals in an existing facility.

Indoor and outdoor housing should maximize safety to the species, provide an escape-proof enclosure, and minimize visual stress and human traffic. Within an oil spill response facility, housing should be set up so that there are appropriate areas for keeping animals prior to intake, pre-wash assessment and stabilization, post-wash, quarantine, and longer term housing. These areas will differ in the amount of access to the animals that is required, the space that each animal requires, the degree to which the environmental temperature can be controlled, and water requirements (fresh versus salt). Ideally, all of these areas will have separate filtration systems. Separate systems are required for pre- and post-wash animals in order not to contaminate animals that have already been washed.

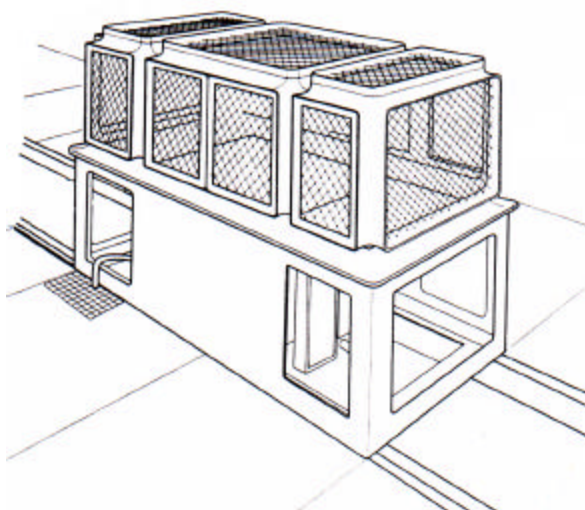


Figure 4. Fiberglass one pool-two haul out pen designed for two adult sea otters (U.S. Patent #5,315,965)

A finer degree of environmental control is required for newly admitted animals, neonates, and animals that are more compromised due to poor nutritional state, higher degree of secondary effects, or underlying disease. Animals that are compromised require better control over their ability to access water, haul out of water with ease, and access to heat sources such as heating pads and lamps. Care must be taken to ensure that severely debilitated animals are able to get away from heat sources to prevent hyperthermia and burns. Some animals may require more frequent handling for monitoring, sample collection, feeding or medicating. Housing should minimize stress but maximize accessibility and ease of monitoring.

Adequate ventilation is an extremely important factor for maintaining marine mammals in captivity and may be even more important in oil spill situations to protect against the toxic effects of volatile agents and prevent the spread of infectious agents between animals. Ten to fifteen air changes per hour has been recommended as adequate for inside animal holding (NIH, 1985) and these standards should be adhered to as much as possible. Outdoor housing is ideal for maintaining ventilation but drawbacks include lack of environmental control and discomfort for personnel working with the animals.

Social groupings of marine mammals in captivity are very important. Staff responsible for allocating animals to holding areas should be aware of incompatible groupings and take into account such factors as age, species, season, and degree of compromise, foraging ability, and the possibility of infectious disease. Species requirements for housing are an important consideration for male otariids and polygynous phocids. During the breeding season, males larger than 130 kg (290 lbs) cannot be housed together because of their aggressive behavior and sexually mature males and females should also not be housed together. Conversely, juvenile and adult otariids can be placed together. Non-polygamous or non-aggressive

Housing Requirements:

Ventilation (10-15 air exchanges per hour)

Temperature control

Water filtration

Quarantine protocols

Species requirements and social groupings

phocids of nearly all ages and sizes can be housed together, but do require sufficient room to maintain normal distances between animals.

The potential for the spread of disease is an important issue to consider for marine mammals in captivity. Staff should use effective quarantine protocols including foot baths between housing areas, changing gloves between animals, designating feeding and cleaning equipment for certain areas, and minimizing movement of animals and personnel between housing areas and pens. Extra care must be taken in areas where animals with infectious disease are kept and when handling immunocompromised animals.

INTAKE AND ADMISSION PROCEDURES

Initial Intake Procedures

While completing the intake procedures, it is important to perform a thorough evaluation, collect all samples and data, be safe, and minimize the animal handling time. All personnel performing intake procedures should wear appropriate PPE including safety goggles, protective clothing, and nitrile gloves (or nitrile gloves inside leather gloves). It is best to work in teams of two (handler, examiner) or three (handler, examiner, recorder) in order to perform the intake in an efficient manner. For larger animals, more than one handler may be required. Physical restraint devices such as squeeze cages, otter restraint boxes and stuff bags may be needed for larger pinnipeds and sea otters (Geraci and Lounsbury, 1993, Williams and Sawyer, 1995). Some animals (e.g., sea otters) may require chemical restraint for safe handling and examination (Haulena, 2001; Williams and Sawyer, 1995). Have all equipment and supplies needed for the intake procedure (and potential emergency treatment) ready and available before beginning the examination.

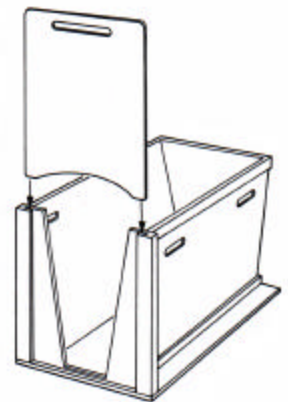


Figure 5. Otter restraint box

It is necessary to complete several different forms for every animal captured for rehabilitation during an oil spill. The animal must first be logged into the OWCN **Live Bird/Mammal Data Log** (Appendix 4) and all of the boxes on that form must be completed. In addition, the OWCN **Oiled Marine Mammal Intake** form (Appendix 6) must be completed for each animal. This form contains important questions about the extent of oiling, location and depth of oiling, as well as a place for documenting physical examination findings. In addition to the Intake form, the rehabilitation facility's standard forms for stranded marine mammals can be used to record physical exam findings, laboratory values, treatments, and feedings, provided the information required by the OWCN has been documented on the OWCN forms.

A brief physical examination will be made upon admission of each individual oiled animal (see below). A veterinarian or animal care specialist should conduct the examination and treat

Intake Forms:

Live Mammal Data Log

Oiled Mammal Intake

Facility Rehabilitation

any conditions that are considered to be life threatening. The capture, transport, and intake process is extremely stressful and an oiled animal's condition may be very unstable. The intake area should be as dark and quiet as is practical and animals must be monitored closely during the examination and intake process. If an animal's condition deteriorates and a veterinarian is not participating in the examination, seek veterinary advice immediately.

Animals need to be identified to species and, when possible, age class (pup, yearling, subadult, adult) and sex should be determined. Consult charts on age estimation for pinnipeds and sea otters (Appendix 7) and marine mammal guides such as Geraci and Lounsbury (1993), Reeves et al., (1992) and Ainley et al., (1980) for species and sex identification. All animals should be tagged or marked for individual identification. This can be done with plastic livestock ear tags (e.g., Roto™ tags, Temple™ tags), by applying hair dye or bleach marks to the pelage, or by clipping a small patch of pelage on the flank in a recognizable pattern (sea lions only). Dye marking and clipping is not be advisable in sea otters and may be difficult in other species depending on the location and extent of oiling. Sea otters and possibly other species may be identified using a commercially available pet microchip insert subcutaneously in the scapular region.

For legal purposes, it is necessary to collect an oil sample from each individual animal. Visible oil should be scraped from the fur with a wooden spatula and placed into a glass jar. For animals with no visible oiling, an affected area is rubbed with a 4x4 piece of fiberglass cloth with forceps or hemostats that have been cleaned with alcohol. It is important to collect the sample without allowing nitrile gloves to touch the oil sample or the cloth it is collected on. The oil sample should be placed in a glass container and labeled appropriately with the following information: the oil spill name, date, species and intake log number of that animal, animal capture location, and flipper tag color and number. Sampling supplies (glass jars and fiberglass cloth) can be obtained through the OWCN.

It is also necessary to take a Polaroid photograph of the oiled animal. The photograph should include the entire animal, highlighting the oiled region, and if possible, show the flipper tag numbers. After the photograph develops, it should be labeled with the same information as the oil sample; the oil spill name, date, species, intake log number of that animal, animal capture location, and flipper tag color and number. The photograph and oil sample are both pieces of evidence and should be securely stored until the OSPR warden retrieves the sample or the OWCN Response Coordinator provides you with further instructions. If samples are to be sent for analysis, a completed Chain of Custody form is required.

Intake Procedure:

1. Intake forms
2. Physical exam
3. Flipper tag
4. Oil sample
5. Photograph

Oil Sample & Photograph Label:

1. Oil spill name
2. Date
3. Species
4. Log number
5. Capture location
6. Tag color & number

Detection of Petroleum Products with Field Assay

Many marine mammals have dark pelts with a natural sheen, often making it difficult to determine whether an animal has been exposed to petroleum products. With low-level exposure or extended periods since oiling, it can also become very difficult to clinically diagnose oil exposure in fur. In order to objectively diagnose oil exposure and prevent the stressful rehabilitation of non-exposed animals, the use of field diagnostic tests for the

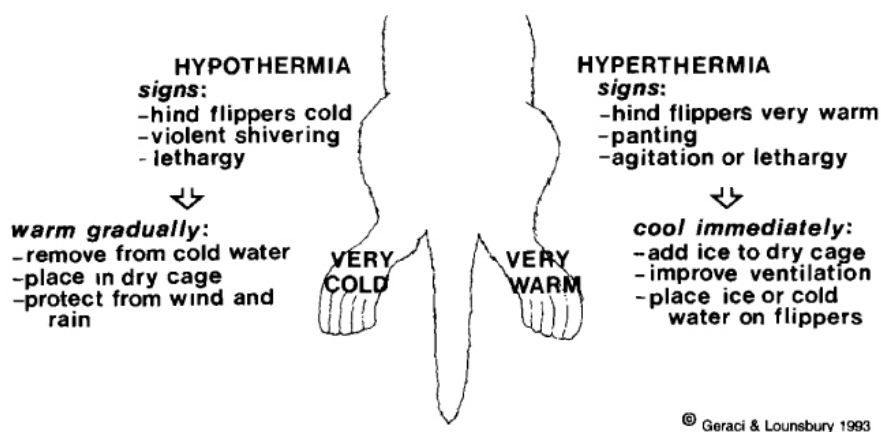
detection of petroleum products on marine wildlife have been evaluated (Fritcher et al., 2002; Mazet et al., 1997). The EnviroGard™ PAH immunoassay (Strategic Diagnostics, Newark, DE, USA) was found to be the most practical for use during an oil spill response because of its portability, ease of use, cost (\$20 per sample), and ability in adequately discriminate between oiled and non-oiled samples. Results can also be obtained within a clinically relevant time (9 samples tested within one hour). During an oil spill, the use of a field assay may be instituted to quickly identify oil exposure in captured animals in order to allow quick release or relocation of non-exposed animals.

Samples for the immunoassay are collected by swabbing an animal in a circular three-inch diameter area just anterior to the tail head for 15 seconds with a 4x4 rayon/polyester general-use gauze saturated with methanol. The gauze is placed into an extraction container following the manufacture's directions carefully in order to complete the test. In animals testing positive with the field assay, additional samples may need to be taken for petroleum characterization and fingerprinting to be performed by the Petroleum Chemistry Laboratory.

Physical Examination

Animals are to be weighed and measured (standard length and axillary girth) and the temperature measured with a flexible, electronic, thermometer with a flexible thermister probe (e.g., Physitemp Model BAT-12 Digital Laboratory Thermometer) inserted 15 cm into the rectum. Standard thermometers can be used in sea otters, but do not accurately measure core temperatures in pinnipeds. Normal core temperature for sea otters is 99.5-100.6 °F and most pinnipeds range from 98-102 °F (36.6-39 °C). If the use of a thermometer is not possible, feel the flippers (e.g., icy cold or dry and hot) and observe the animal's behavior (e.g., shivering, agitation) in order to evaluate abnormally high or low body temperature (Figure 4). If an animal is dry and alert/active prior to the exam, assume it will overheat with handling.

Normal core body temperatures:
Otters: 99.5-100.6 °F
Pinnipeds: 98-102 °F



Hypothermia:
Temperature < 98°F (36°C)

Hyperthermia:
Temperature > 102°F (39°C)

Figure 6. Signs and treatment of hypothermia and hyperthermia

A complete whole body examination should be conducted, making note of the degree and nature of oil contamination. Assess behavior, activity level and alertness; if possible, observe the animal in the transport cage prior to handling to evaluate locomotion and central nervous system status. Evaluate overall body condition and estimate the percent dehydration. Most stranded animals are at least slightly dehydrated (<5%, demonstrated by decreased tear production and subdued behavior). More severely dehydrated animals (5-10%, demonstrated by lack of tear production, thick ocular mucus, “sunken” or crusty eyes, dry mucous membranes, skin tenting in otariids, and lethargic or depressed behavior) may need to be treated with fluids prior to continuing the examination and intake procedures; however it is preferable to obtain blood samples prior to hydration treatments.

Obtain blood sample prior to hydration treatments

A thorough oral exam is possible only in anesthetized, dead, comatose, and young animals, but a visual inspection of the oral cavity is often possible during vocalization in alert animals. Palpate the neck and thorax for evidence of subcutaneous emphysema and the

musculoskeletal system for fractures, wounds, or swellings. Subcutaneous emphysema is often found in the neck and axillary area in oiled sea otters and is an indicator of severe pulmonary damage. Palpate the abdomen gently to detect masses, pregnancy, or fluid accumulation and observe the urogenital area for urine, feces, or abnormal discharges.

Routine Blood Sampling

Following the general examination, blood samples should be drawn for hematology (collected in a EDTA anticoagulant, lavender-top tube) and chemistry panels (collected in a serum separator tube or red top tube) and serum banking. In phocids, blood is generally drawn from the epidural sinus or ventral (plantar) interdigital veins (at the apex of the web between the inner digits) of the hind flippers (e.g., harbor seals, elephant seals). In otariids, the caudal gluteal vein and plantar network (dorsal surface of the hind flipper just medial to the lateral digit or just lateral to the medial digit) are used for blood collection (sea lions and fur seals). In sea otters, blood may be drawn from the popliteal (saphenous) or femoral vein on a non-anesthetized animal using a restraint box and/or stuff bag. Alternatively, the jugular vein can be used on an anesthetized otariid or sea otter.

Blood sampling for:

Complete blood count (CBC) and Serum biochemistries

At least three times:

- 1. Intake exam*
- 2. Prior to washing*
- 3. Prerelease exam*

Blood samples should be collected at least three times during the rehabilitation: on admission/intake, immediately prior to washing, and prior to release. At these times, baseline blood work should include a complete blood count and standard serum chemistry tests. A form for documenting serial blood results is provided in Appendix 10. Normal blood values for marine mammal species can be found in Bossart, et al. (2001).

Sea Otter anatomical landmarks for blood collection

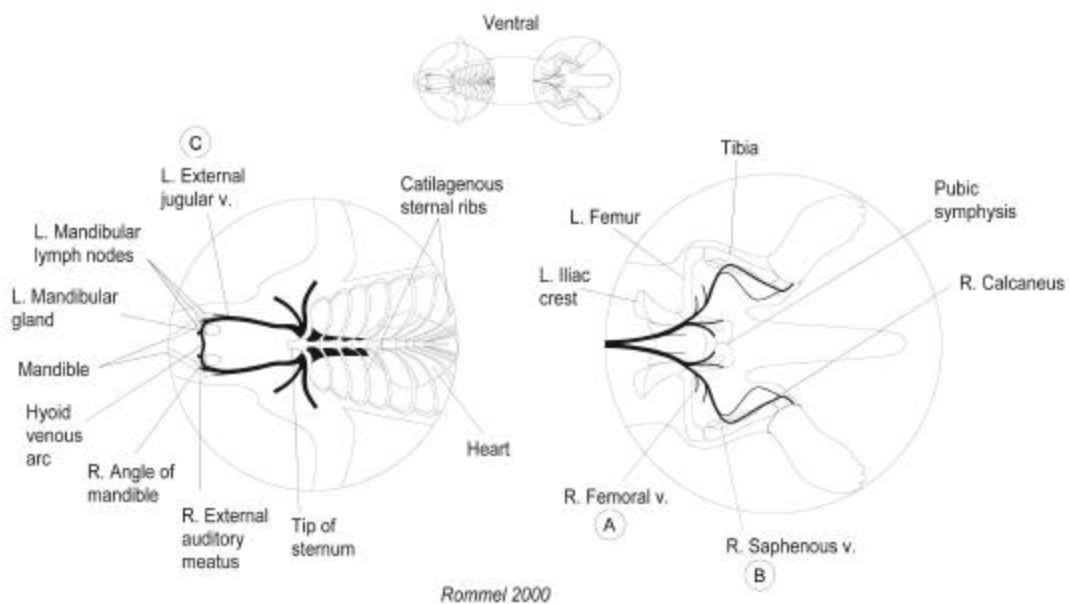
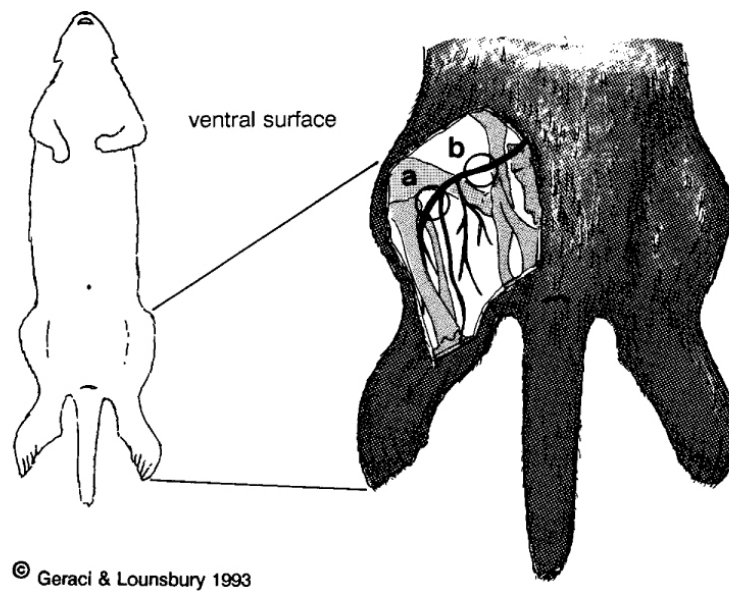
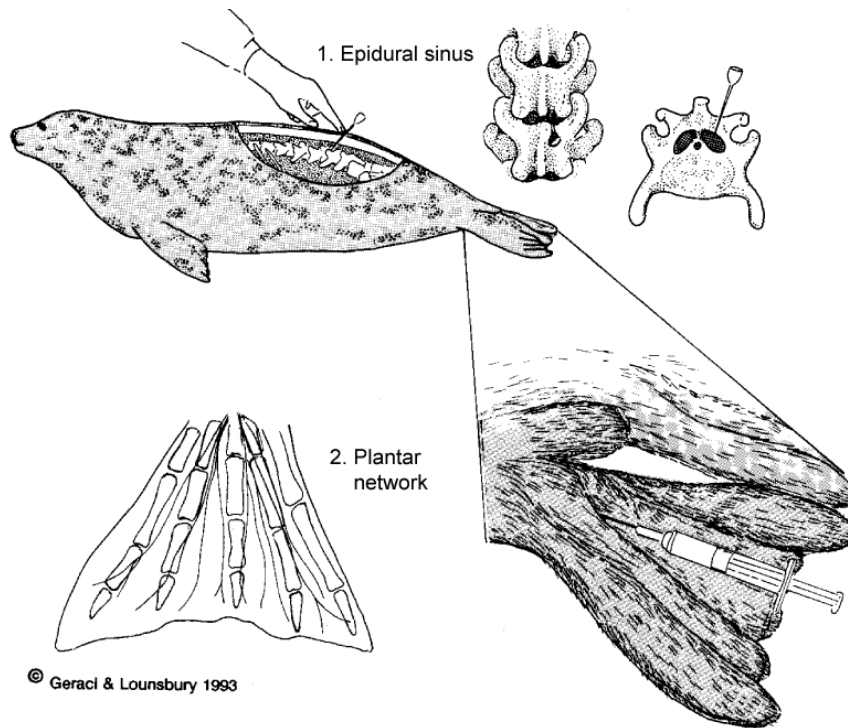


Figure 7. Sea otter blood collection sites (viens): A. Popliteal/Saphenous , B. Femoral , C. Jugular



Phocid Anatomical Landmarks

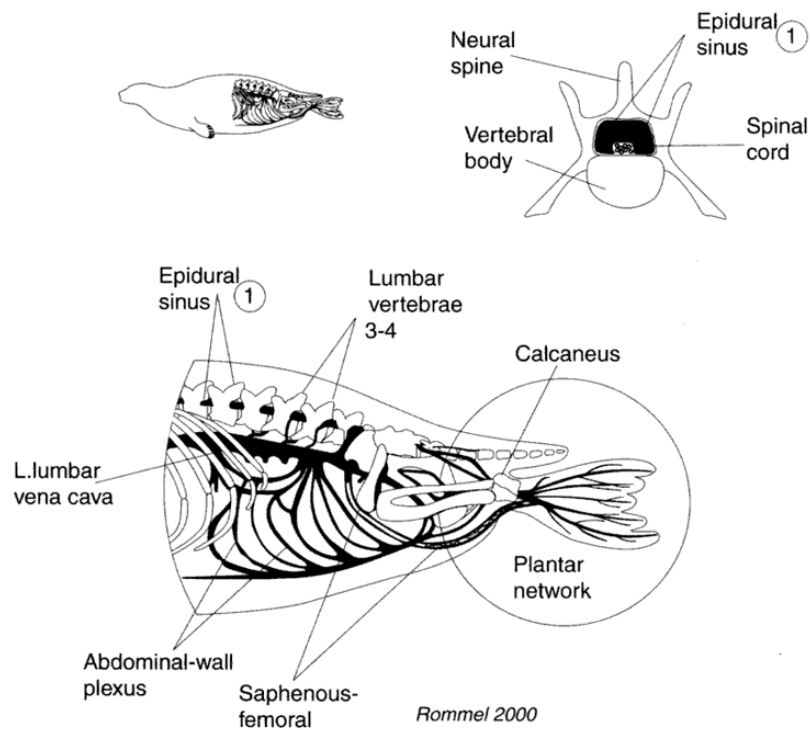


Figure 8. Blood collection sites for phocids: 1. Epidural sinus 2. Plantar network

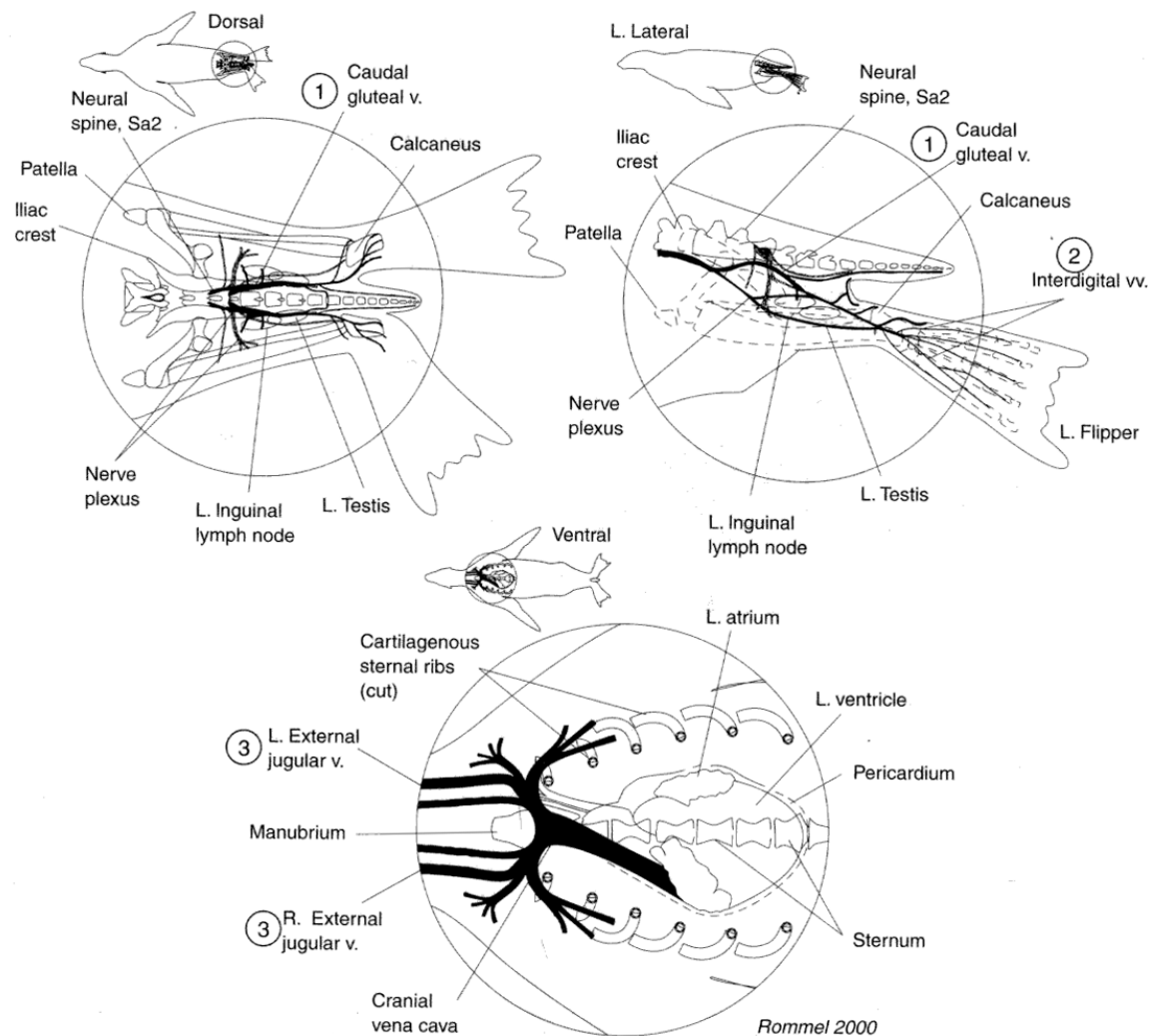


Figure 9. Blood collection sites for otariids: 1. Caudal gluteal, 2. Interdigital, 3. External jugular vein

Standard Blood Tests

Complete Blood Cell Counts (CBC): White cell blood count, red cell blood count, hemoglobin, hematocrit, mean corpuscular volume (MCV), mean corpuscular hemoglobin concentration (MCHC), mean corpuscular hemoglobin (MCH), a differential cell count, and a platelet count. On full LTT (1 or 3 ml) should be taken and refrigerated until analysis.

Chemistry Profile: Albumin, alkaline phosphatase, bicarbonate, bilirubin (total and direct), BUN, calcium, chloride, cholesterol, CK, creatinine, globulin, glucose, phosphorus, potassium, total protein, sodium, AST (SGOT), ALT (SGPT), GGT, and ratios of albumin:globulin, BUN:creatinine, and the sodium:potassium ratio. Blood should be placed in a serum separator tube or red top tube, allowed to clot, centrifuged, and refrigerated prior to sending for analysis. Excess serum should be saved and banked at the rehabilitation facility.

Special Biomedical Sampling Protocols

At times, additional protocols may be used that require additional blood samples for other tests (e.g., PAH estimation, immune function assays, serum protein electrophoresis, plasma chemistries, serological tests for infectious diseases). Other biomedical samples (e.g., urine sample, fecal sample, microbiological swab, blubber biopsy) may also be collected at the discretion of the OWCN veterinarian.

Post-examination Intake Procedures

All animals are assumed to be at least 5% dehydrated. Administer isotonic fluids (e.g., Pedialyte™, Replenish™, Revive™) to animals that appear to have not ingested oil orally at a rate of 10-20 ml/kg once either orally or subcutaneously. If the animal is alert and it is likely to have ingested oil (e.g., fur seals during grooming, neonates during nursing), administer activated charcoal (Toxiban™, 6 ml/kg) orally. When administering oral fluids, pre-measure the length of stomach tube needed by noting the distance from tip of nose to base of ribs. The tip of the tube should be lubricated and gently introduced, taking care to avoid the trachea (the chances of the tube entering the lungs instead of the stomach can be minimized by using a tube with a diameter larger than the trachea). Check the position of the tube (listen for gastric sounds, sniff for gastric contents, feel for expired air at the tip of the tube as the animal breathes) prior to administering any fluids; if in doubt, remove the tube and replace it carefully.

Animals that are chemically immobilized for intake procedures or are weak and obtunded should not be given oral fluids. Subcutaneous fluids (e.g., lactated Ringer's solution), may be administered instead at 20 - 40 ml/kg. If ingestion of oil is suspected, a Toxiban™ slurry (6ml/kg) can be administered via stomach tube just prior to anesthetic reversal (Williams and Sawyer, 1995). Extreme care must be taken to prevent gastric reflux and aspiration during this procedure. The risks associated with passing a stomach tube must be weighed against the risks associated with continued exposure to ingested petroleum. The OWCN veterinarian will determine which treatment option is best.

Initial treatment:

Fluid therapy

Activated charcoal tubing if oil ingestion suspected

Severely depressed animals may require intravenous fluid administration and may require other medication in addition to isotonic fluids. Additional fluid therapy (maintenance fluids plus correction of fluid deficits) will be determined by the attending veterinarian, based on an evaluation of the animal's blood work and continuing assessment of its condition. The fluid deficit is calculated by multiplying an animal's mass in kg x 1000 ml fluid/kg x the percent dehydration (e.g., 5% = .05). This should be added to the animal's daily maintenance fluid requirement (at least 40 ml/kg/day) and administered within the first 24 hr if possible.

Monitoring

Animals should be regularly monitored during the rehabilitation process. Clinical observations, feeding observations (food consumption and/or preferences), and behavior should be written on the medical records. Body weight should also be monitored repeatedly during rehabilitation and recorded, at a minimum, upon admission, pre-washing, and prior to release (Appendix 9). More extensive body weight monitoring may be required in critical cases. Physical examinations should be performed upon admission, prior to washing, and prior to release with all information recorded on individual medical records. Whenever medications are administered, the name of the drug, dose and route (oral, SQ, IM, IV) should be recorded as well as the initials of the person who administered the medication (Appendix 9. Treatment Orders). It is important to recognize that medical records are viewed as potential evidence by the law and should be carefully and completely filled out by animal caretakers.

Monitor during rehab and record in medical records:

Clinical observations

Body weight

Food consumption

Behavior

Medications

IMPORTANT MEDICAL CONSIDERATIONS

General Overview

Oiled marine mammals may present in a wide range of physical conditions when admitted into a rehabilitation facility. The severity of effects is dependent on the particular petroleum product that has affected the animals as well as the duration of exposure. In addition, the physical condition of the animal at the time of oiling, which may be affected by concurrent illness or nutritional status, will determine how severely an animal might be affected during an oil spill. As discussed previously, there are species, age, and seasonal differences that will influence susceptibility to the effects of petroleum products. There are several medical conditions that should be addressed as quickly as possible after an oiled animal has been admitted to a care facility. In some cases these conditions need to be diagnosed and treated by professional veterinary staff.

Stress

The term "stress" is often used very loosely by veterinary staff and lay people to describe the psychoendocrine response of an animal to environmental and psychological stimuli that cause physical and mental tension. Stressors are those factors that may interfere with the maintenance of homeostasis in an animal. Examples of stressors may include nutritional deficits, disease, or inappropriate environmental conditions. Environmental conditions that may cause stress include a temperature that is too high or too low, improper ventilation, noxious stimuli, or inadequate housing. Small haul-out space, poor accesses to haul-out areas, aggression from conspecifics, inappropriate animal groupings, too much noise or too much handling are other environmental factors that may result in stress.

A physiologic stress response is an animal's way of dealing with various stressors. The stress response may include release of catecholamines and corticosteroids, which help in preparing an animal for rapid "flight or fight" by increasing heart rate and mobilizing energy stores. In the short term, the stress response is a beneficial adaptation to cope with stressors. Unfortunately, long term activation of the stress response or chronic stress can have serious detrimental effects. These may include interfering with the immune response which may in

Typical signs of stress:

Stereotypic repetitive behaviors

Increased respiration rate/ open mouth breathing/ panting

Excessive vocalization

Increased heart rate

Anorexia

turn lead to immunosuppression and increased susceptibility to disease, poor wound healing, and the development of gastric ulcers. Diagnosing stress in an animal may be very difficult. Hematological and endocrine changes may be detected in the blood, but it may take several days to these obtain results. Changes may also be hard to interpret because of the possible effects from other factors. Behavioral diagnosis of stress may also be difficult as some animals may show anxiety or stereotypic behavior as a result of stress, while others may react by withdrawing or acting very placid and not showing outward signs of stress. Signs of stress in pinnipeds may include pacing (or other repetitive behaviors), open mouth breathing, excessive vocalization, pale mucous membrane color, rapid respiration and/or heart rate and panting. Signs of stress in the sea otter may include continuous vocalization, incoordination, anorexia, and stereotypic behaviors such as pacing, excessive grooming, and fur chewing (Williams et al., 1995).

Minimizing stressors is an important aspect of creating a good rehabilitation environment. Individual animal needs must be taken into account when trying to provide adequate housing for animals during an oil spill. These needs may be affected by such factors as the animal's species, age, physical condition, degree of oiling, and nature of the product with which it was oiled. Pharmacological agents such as benzodiazepines (Diazepam) may be used sparingly to relax animals if they do not respond to changes made in their captive housing situation. A brief overview of appropriate, low stress animal housing and rehabilitation practices are provided in Chapter 2.

Hypoglycemia

Hypoglycemia is a very common finding in animals affected during an oil spill. In general, hypoglycemia is usually diagnosed when serum levels of glucose fall below 80 mg/dl in most mammalian species. Most marine mammals fasting blood glucose levels are normally higher (≥ 100 mg/dl) than those in domestic animals except in sea otters. Blood glucose normal reference ranges are between 80-180 mg/dl for pinnipeds and 31-174 (median = 87) mg/dl for sea otter pups less than 3 months of age and 67-161 (median = 121.5) mg/dl for adult sea otters and (Bossart, et al., 2001; Rebar and Williams, 1992). Since hypoglycemia usually develops secondarily to malnutrition, animals with a high metabolic rate (such as sea otters), animals with low energy stores (such as neonates), and animals in poor body condition are particularly predisposed to developing hypoglycemia during an oil spill event. Otters tend to have relatively low energy stores in comparison to pinnipeds and have a high metabolic rate necessary for thermoregulation, and are therefore, required to eat large volumes of food very frequently. When oiled, loss of insulation (due to disruption of the fur coat) and loss of buoyancy interfere with foraging ability while increasing the need for metabolically derived heat. This uses up energy stores even quicker, resulting in rapid development of hypoglycemia.

Hypoglycemic animals are typically lethargic, may be huddled to conserve heat, shiver, are very weak, and possibly unresponsive. When glucose levels drop extremely low, seizures may be observed. Hypoglycemia should be treated as an emergency. Rectal or intravascular boluses of 5 to 25% dextrose solutions are often required if an animal is seizing due to hypoglycemia (e.g., 5-20 ml/kg of 10-20% dextrose given IV slowly to effect). Unfortunately, a rapid increase in insulin after a bolus of dextrose will result in a rapid loss of glucose from

Hypoglycemia:

Pinnipeds
glucose < 80 mg/dl

Sea otters
glucose < 60 mg/dl

the circulation and result in a further hypoglycemic episode. Once a bolus has been given and the animal begins to respond, other longer-term sources of energy should be administered. These may include such treatments as subcutaneous fluids containing 2.5% dextrose in electrolytes, stomach tubing with an appropriate formula, or offering food when an animal starts to eat on its own. Animals with repeated bouts of hypoglycemia may be candidates for long-term intravascular administration of fluids containing dextrose until it is able to maintain adequate serum glucose levels.

Predisposing factors that may lead to hypoglycemia should be addressed immediately. Hypothermia may exacerbate energy requirements and lead to hypoglycemia. Establishing a thermoneutral environment, and constant monitoring of rectal temperature in animals predisposed to hypothermia and hypoglycemia is essential. Poor environmental design may also lead to hypoglycemia. Animals that cannot get out of the water or are not provided with adequate dry haul-out space may expend too much energy and become hypoglycemic. Poor social groupings may cause some animals to get inadequate nutrition because of competition for food by conspecifics. Animals should be weighed regularly and weight-loss or poor weight gain should be addressed immediately. Animals need to be fed appropriate diets for their age and species. The nutrient composition of whole foods and formulas should be available and record keeping must be accurate. This may be especially true in bottle-fed otter neonates that may require being fed up to 50% of their body weight (It is easy to not notice such things as formula that is spilled or left in bottles at the end of a feeding session and miscalculate how much an animal is actually being fed). Prolonged vomiting and diarrhea may also lead to hypoglycemia unless they are addressed quickly.

Shock

Shock is defined as a profound hemodynamic and metabolic disturbance that results in a failure of the circulatory system to maintain adequate perfusion of vital organs. There are many causes of shock but in stranded marine mammals, hypovolemic (as a result of blood loss or severe dehydration) and septic shock (as a result of severe infection) are the most common.

Clinical signs of shock may include muscle weakness, cold extremities, pale or mottled mucous membrane, poor capillary refill time, and increased heart rate with decreased arterial pulse strength. Shock is a life-threatening emergency and the aim of therapy is to restore adequate circulatory volume and tissue perfusion, while diagnosing and treating the underlying cause. Initially, balanced electrolyte solutions such as lactated Ringer's (LRS) are administered intravascularly at a rate of 40 to 90 ml/kg. Sympathomimetic therapy with such agents as dobutamine might be indicated if fluid therapy alone has not restored circulatory function; however, the use of these agents has not been adequately studied in marine mammals. The use of short acting glucocorticoids remains controversial in treatment of shock and may depend on the etiology.

Vomiting

Vomiting in stranded marine mammals, and in those affected by oil, may be caused by a variety of conditions. If left untreated, vomiting may quickly lead to dehydration, electrolyte abnormalities, and malnutrition. Treatment of vomiting is especially important in animals with nutritional compromise and those predisposed to developing hypoglycemia. Animals that are already lethargic or obtunded have an increased chance of aspiration if vomiting occurs.

In animals affected during an oil spill, the petroleum product itself may cause vomiting by either irritating the lining of the stomach or by stimulating vomiting centers in the brain. General intake procedures as discussed above, should alleviate the toxic effects of the product. Other causes of vomiting may include gastrointestinal ulceration, foreign bodies, gastric impaction or obstruction, maldigestion, and sepsis. Gastric ulcers may be associated with stress, ingestion of a petroleum product, or large gastrointestinal parasite loads and can lead to gastrointestinal perforation and peritonitis or intestinal lumen obstruction. In sea otters melena (black tarry stool or vomit) and gastric ulcers have also been associated with lack of food intake.

One of the most common causes of vomiting in stranded pinnipeds is associated with gastric tube feeding of formulas. Animals may regurgitate or vomit due to mechanical irritation of the esophagus and stomach if feeding tubes are introduced too roughly or tubes are too stiff. Overfeeding formula by either feeding too high a volume or feeding at too great a frequency may also result in regurgitation of undigested formula. Some formulas may thicken in the stomach and cause gastric impactions. Animals that are inadequately hydrated prior to receiving formula or in which inadequate fluid maintenance has been provided seem to be higher at risk for developing stomach impactions. It is extremely important to maintain adequate hydration, introduce complex dietary formulas slowly (only after adequate hydration has been provided), and increase the volume of formulas in small increments.

Diagnosis of the cause of vomiting should include a complete physical examination and routine hematology and clinical chemistry tests. Radiography, ultrasonography and endoscopy may be required to evaluate vomiting or regurgitation that does not respond to initial therapy. Animal weights need to be monitored closely. Treatment is aimed at controlling the underlying cause and correcting any fluid and electrolyte abnormalities that may have occurred while maintaining adequate nutrition and hydration. Formula volume, frequency and delivery should be addressed carefully in a vomiting animal. If possible, one or two feeds should be skipped and oral electrolytes should be administered with a slow reintroduction to complex nutrients and full strength formula over the next 24 to 36 hours. During this period, hydration must be maintained with subcutaneous or intravenous fluid therapy at a rate of 50 - 100 ml/kg/day depending on the amount of fluid loss, dehydration, and animal size. Specific treatments such as antibiotics, antihelminthics, anti-ulcer medication, agents that speed up gastric passage time, and other medications may be required as directed by veterinary staff dependent upon the cause of the vomiting and response to therapy.

Central Nervous System Disorders

Clinical indications of central nervous system (CNS) disorders may range from signs such as weakness and lethargy to muscle fasciculations, ataxia, paralysis and seizures. Many systemic conditions can produce CNS signs. A thorough physical examination, careful review of laboratory data, and an accurate patient history are required for diagnosing the cause.

Many petroleum products (especially the more volatile agents) may be responsible for causing CNS signs due to direct toxic effects. However, many CNS signs can be attributed to secondary effects of oiling including hypoglycemia, electrolyte imbalances, hypothermia, hyperthermia, and trauma. Animals already clinically ill prior to an oil spill may also show CNS signs due to other conditions including: protozoal encephalitis (toxoplasmosis, sarcocystis), sepsis, renal failure, trauma, neoplasia, and marine biotoxins (domoic acid).

Treatment of neurological disorders is also dependent upon adequate diagnosis of the underlying cause. Seizures are considered an emergency and should be treated immediately. Appropriate therapy for seizures requires rapid determination of the cause. Treatment of seizures from secondary conditions such as hypoglycemia, hyperthermia and electrolyte abnormalities may vary greatly. Persistent and recurring seizures, especially those that do not have an underlying metabolic cause, should be controlled with the use of benzodiazepines, barbiturates, and other agents depending on severity, duration and response to therapy.

Respiratory Distress

Respiratory distress is a common finding in animals affected during an oil spill. The product itself can cause respiratory problems by damaging the airway lining, especially in animals that have come into contact with more volatile compounds. Sinus infections and secondary pneumonias as a result of poor nutrition, stress leading to immunocompromise, poor ventilation, and infectious diseases are also common during an oil spill. Animals may show clinical signs as a result of being oiled, but they may have already been suffering from pneumonia prior to the oil spill. Numerous infectious agents can cause pneumonia in marine mammals under the right conditions. Such infectious agents include a variety of parasites, bacteria, viruses and mycotic agents. Respiratory compromise can also result secondary to trauma and other causes. Respiratory distress may also be an indication of an underlying metabolic disorder such as an acidosis or hyperthermia.

Unfortunately, aspiration pneumonias do occur occasionally in rehabilitation centers. Careful training and implementation of appropriate stomach tubing techniques must be observed. More commonly, animals may aspirate secondary to vomiting or regurgitation. Aspiration may occur especially if the animals are severely depressed, have CNS disorders, or regurgitate during anesthetic procedures. Unfortunately, aspiration pneumonias have an extremely poor prognosis; therefore, it is critical to emphasize prevention versus treatment.

Diagnosis of respiratory disease requires a complete physical examination including examination of the oropharynx and proximal airway as well as thoracic auscultation, and review of laboratory data. Clinical signs associated with respiratory diseases may include a rapid respiration rate, open mouth breathing, panting, diaphragmatic breathing and

congested nasal passages. In sea otters with interstitial emphysema, the axillary area and neck may contain subcutaneous air and exhibit crepitation (a feeling of air bubbles popping under the skin). Radiographs, ultrasound, or bronchoscopy may be required to determine the extent and cause of interstitial emphysema and pneumonias.

Treatment of respiratory distress is dependent on the underlying cause. Excessive rapid or difficult breathing (tachypnea, dyspnea) and blue or purple mucous membranes (cyanosis) should be treated as an emergency. These animals need to have their airways checked, and may require intubation, oxygen therapy or emergency drugs to stimulate breathing or dilate airways. Treatment for interstitial emphysema is limited to supportive care and mild sedation to calm excited or agitated sea otters that exhibit labored breathing or hyperventilation (Williams, et al 1995). Only trained professionals should administer emergency therapy. Severe hypothermia may result in cyanosis and doesn't necessarily warrant intubation and oxygen therapy. Appropriate therapy for underlying infectious agents, trauma or other causes should be initiated with adequate supportive therapy to maintain oxygenation.

ANIMAL WASHING AND CONTINUED CARE

General Topics Associated With Cleaning

The facility where oiled animals will be cleaned should be designed to accommodate the variety of species that might be cared for at that facility. Each wash station must have adequate space for the animals, animal handlers, and restraint equipment that might be necessary. Water hardness should be tested before washing animals and adjusted to 35 grains of hardness (Clumpner, 1990). Dawn™ dish detergent is the preferred washing product and has been shown to be safe and effective for removing oil from the coats of sea otters and harbor seals (Rash et al., 1990). Wastewater storage, containment, and removal must meet the requirements of the municipality, city, and county. A minimum team of two or three persons usually washes animals. Fur seals and sea otters may require teams of four or five persons. Large animals such as elephant seals may require a washing team with three or four persons. Large animals, especially those weighing over 35 kg (77 lbs), aggressive animals, fur seals and sea otters may require sedation and veterinary assistance for washing and cleaning (Chen-Valet, 1990; Williams and Sawyer, 1995).

General Washing Needs:

- Softened water (3-5 gr)
- Temperature controlled warm water (80-98°F)
- Pressured spray nozzles (30-40 psi)
- Dawn™ detergent
- Wastewater removal

Pre-Wash Evaluation

Oiled marine mammals will require at least 24 hours of supportive care prior to being washed. Initial care is focused on addressing thermoregulatory problems, rehydration, and providing nutritional sustenance so animals are no longer in a negative metabolic balance. The washing procedure is very stressful; therefore, prior to the procedure, the animal needs to have regained some of its strength. In the case of sea otters, they also need to be able to tolerate anesthesia and start to groom once recovered. A veterinarian should conduct a pre-wash evaluation and include a physical examination, evaluation of alertness, strength and body condition, and blood parameters. If the animal passes the pre-wash evaluation, it is referred to the washing team.

Pre-Wash Exam:

- Must be conducted by veterinarian
- Criteria:
 - alertness
 - body condition
 - blood parameters

Cleaning Tar Patches From Animals

If the oil present on an animal is a tar patch or very firm and thick, pretreatment may be necessary. This is accomplished by applying warmed (95-98°F or 35°C) olive oil, canola oil, or methyloleate to the affected region. The pretreatment solution should be manually worked into the tarred areas for up to 30 minutes or until the tar loosens and can be wiped off using an absorptive pad or towel. While pre-treating the animal, it is important to monitor the animal's body temperature and be prepared to treat the animal for hyperthermia or hypothermia. Tar removal is necessary for furred marine mammals and non-furred marine mammals if the patch(es) are large, potentially interfering with thermoregulation, or contribute to toxicity and result in clinical symptoms. Clipping away tar patches (with accompanying fur) is not recommended because animals will have a bald patch where there will be a reduction in heat retention until hair growth occurs. This procedure could have serious or life-threatening implications for fur seals, sea otters or debilitated animals.

Pinnipeds – Harbor Seals, Elephant Seals, Sea Lions, and Fur Seals

Sea lions, harbor seals and elephant seals rely on their thick blubber layer for insulation, making them less susceptible to hypothermia when they become externally oiled. These species are washed with Dawn® detergent in thermoneutral (~ 98°F or 37°C) water. Soap is applied and rubbed on the fur until the oil is visibly removed. The detergent can be made into a uniform solution by mixing it with water at a 1:1 ratio prior to applying thus making it easier to work into the hair and oil. Washing pinnipeds requires between 10-30 minutes depending on the extent and type of oil, species and health of the animal, and the proficiency of the staff. An initial quick rinse can be done at the wash station and then completed with the animal unrestrained in its pen using a pressure nozzle. This modified rinse procedure decreases the duration of manual restraint. In general, rinsing should be continued until there is no evidence of oil or detergent in the rinse water.

In contrast, fur seals possess a thin subcutaneous fat layer and a thick pelage that thermally insulate these animals (Ridgway, 1972; Reidman, 1990). Since they rely more heavily on their fur, they are washed in a similar fashion to otters. Oiling 30% of a fur seal's coat will result in a 50% increase in heat loss (Geraci and Aubin, 1990), emphasizing the need for these animals to be closely monitored during the washing procedure. Fur seals are washed using a thermoneutral (~98°F or 37°C), 5% diluted Dawn™ dish washing detergent solution. The diluted detergent solution is gently massaged into the fur and, as with other species, the washing duration depends on the extent and type of oil, the strength of the animal, and the proficiency of the staff. Fur seals are rinsed with fresh, soft (3-5 gr) water under moderate pressure (30-40 psi) with a spray nozzle. This process can require up to 40-60 minutes and animals are rinsed until no oil is visible in the rinse water and no petroleum odor is detectable on the fur (Williams et al., 1995). For all pinnipeds, animals may become hyperthermic during washing in which case they may need to be washed and rinsed in cold water.

Most pinnipeds are placed directly into their outdoor pens to dry. Fur seals, which depend on their coat for thermoregulation, may need to be placed in a drying enclosure that is warmed

Washing Pinnipeds:

Undiluted Dawn™

Thermal neutral water

Pressurized rinse

Self drying

Fur seals are washed in the same manner as sea otters.

with an industrial pet dryer that blows room temperature air (68°F or 20°C). Animals in drying pens must be monitored for dehydration, hyperthermia, hypothermia, and alertness. Once dry and alert, fur seals can be returned to their outdoor pens.

Sea Otters

Sea otters have the densest fur of any mammal, and unlike most other marine mammals replace their fur throughout the year instead of undergoing a seasonal molt (Tarasoff, 1974; Williams et al., 1995). Otters have guard hairs and many fine under hairs that are interlocked microscopically providing thermal insulation and buoyancy. Oil contamination causes fur clumping which leads to a loss of insulation and predisposes otters to hypothermia from the cold ocean water.

Due to their temperament, sea otters generally require sedation or anesthesia to be washed. A variety of anesthetics have been used, however, the current preferred drug combination in adult sea otters for nonsurgical procedures is fentanyl (0.22 mg/kg) and diazepam (0.07 mg/kg) used together. The opioid antagonist naltrexone at 0.44 mg/kg is recommended for reversal, but often 3 - 4 times the total dose of fentanyl administered is needed for complete reversal (Monson, 2001). While sedated supplemental oxygen is routinely provided either via facemask, or, if the sea otter is sedate enough to tolerate it, via endotracheal tube. During sedation and cleaning, the core temperature of the sea otter must be monitored continuously because otters can become hypothermic or hyperthermic very quickly. Bags of crushed ice should be readily available whenever a sea otter is sedated and placed under the animal's neck and flippers if hyperthermia occurs.

Sea otters are washed with multiple applications of diluted (5%) Dawn™ dishwashing detergent. Ideally, washing tables will be equipped with three or four well-aerated nozzles dispensing temperature controlled (28-37 °C, 80-98 °F), softened (3-5 gr.) fresh water. Water temperature needs to be regulated according to the otter's body temperature to prevent hyper or hypothermia (Stoskopf et al., 1997). Four to six people are required per washing table, one (with heavy gloves) specifically to hold the head and forearms. The detergent is gently massaged into the oiled fur and then rinsed off under moderate pressure (30-40 psi) with a spray nozzle. Washing will consist of a wash, rinse, wash, rinse cycle until there is no indication of oil in the rinse water and no petroleum odor on the fur. Depending on the degree of oiling, washing will usually take from 40-60 minutes. A final rinse with a spray nozzle lasting an additional 40 minutes to one hour is essential to thoroughly remove the detergent and restore the furs water repellency. Otters are initially hand dried with dry, clean, cotton terry cloth towels. Once the bulk of the water has been absorbed, the fur is dried with commercial pet dryers that deliver high volume, dried, temperature controlled air (Williams et al., 1995). Sea otters become increasingly prone to hyperthermia as their hair is drying and cooler drier temperatures may be necessary.

Following drying, each animal will be reversed from the anesthetic and placed in a large, slat-floor kennel with a sliding top or other easily accessible dry pen for intensive care monitoring. Animals in dry holding should be closely monitored for hyperthermia and fecal, urine, or food debris must be rinsed away immediately. When fully recovered from

Washing Sea Otters:

1. Anesthesia/Sedation
2. Diluted Dawn™
3. Temperature controlled warm water
4. Monitor body temperature
5. Pressurized rinse (40-60 minutes)
6. Dry with towels and blow dryers
7. Anesthesia reversal

*Diluted Dawn™ Solution (5%) =
0.8 cups detergent per
1 gal water (6.4 oz /
1 gal)*

anesthesia, otter should be offered small blocks of ice to chew on and food (Davis and Hunter, 1995). Once medical conditions allow, each otter will be moved to one of the “two-otter pen-pools” (1 pool, 2 haul-outs) which will be serviced by abundant, clean, chlorine free salt water (Figure 4). Pools must have high seawater flow rates (i.e. 5 gallons per minute for 150 gallon pool) and drain skimmers at water level to collect debris from the pool. Fecal and food contamination of the pool water can cause fur fooling and prevent restoration of water repellency.

During rehabilitation, sea otters need to be monitored 24 hours a day by qualified personnel familiar with normal sea otter behavior and able to recognize clinical signs of distress. Sea otters often develop hypothermia once returned to pool pens due to lack of air insulation in washed fur and inadequate grooming. Otters that appear hypothermic, are having difficulty hauling out, or are experiencing seizures should be immediately removed from the water and evaluated by a veterinarian. As health and fur condition improve, otters may be moved to larger pools and/or floating holding pens. All pools should have abundant haul-out space. It will generally take a minimum of seven to ten days for the fur to recover its water repellency (Tuomi et al., 1995)

Common Problems Encountered While Washing Animals

Oil is not coming off with Dawn™
Pretreatment with canola oil, olive oil, or methylolate is required.

The animal's coat is not clean
The animal may not have been washed or rinsed adequately. In either case, the animal may need to be re-washed or re-rinsed.

The wash or rinse water is too hard and mineral deposits are forming on the fur. Water hardness should be rechecked to make sure it is 3-5 grains.

The holding pool is not clean. Check whether there is fish oil or debris floating on the pool surface.

Feeding Guidelines

The diet requirements of stranded marine mammals are generally grouped into two categories according to age and nutritional needs: unweaned pups and subadult and adult animals. Pups need special dietary formulas and feeding regimes based on species and age while free-feeding animals are generally feed a diet of good quality fish such as herring. Adult sea otters are usually feed a variety of fish and shellfish depending on their preference. Marine mammals also usually receive a supplemental multivitamin, vitamin E, and salt tablets (if housed in fresh water) with amounts based on species and weight. Monitoring fecal production and hydration status is especially important when beginning any formula, switching diets, and weaning animals. Recommended diets change with continued research and experience and OWCN participants will play an important role in the development of dietary protocols for each species and facility. More information can be obtained on marine

mammal nutrition and energetics from Worthy (2001), and hand-rearing and artificial milk formulas from Williams et al., (1995) for sea otters, and Townsend and Gage (2001) and Gage (2002) for pinnipeds. Generalized feeding guidelines and examples of dietary formulas and feeding recommendations for common marine mammals of California are presented in Appendix 11.

Disposition

Release

Animals completing rehabilitation after oiling need to be fully recovered prior to release into the wild. While little is known about optimal marine mammal release criteria, current criteria are based on information from the Exxon Valdez spill and husbandry practices at aquaria and rehabilitation centers in the United States. As more research is conducted, these criteria will likely change.

Current criteria require that animals show normal species-specific behavior (feeding, swimming, and diving), adequate body weight for a age class and species (Appendix 7), pelage proven to be in good condition, normal hematological and serum chemistry values, no evidence of infectious diseases, and physical exam findings should be unremarkable. Other ancillary tests (e.g. leptospira titer, morbillivirus titer, microbiological cultures, urinalysis, fecal examinations, etc.) may also be performed on a per-case basis depending on individual animal and population level concerns. An exit photo of each marine mammal must be taken for Natural Resource Damage Assessment purposes. The Unified Command will decide upon the location of the release with guidance from the OWCN, NMFS, USFWS, and OSPR.

Post-release monitoring may be undertaken during marine mammal releases following oil exposure. Pre-approved research teams are available to conduct survival studies, focusing on survival rates, behavior, and reproductive success following oil contamination and rehabilitation. These studies will also focus on enabling the OWCN to evaluate the efficacy of oiled marine mammal care.

Mortality and Necropsy

All oiled dead marine mammals will be collected from beaches and taken to a designated morgue. Dead animals will be logged in at the morgue using **OWCN Dead Animal Log** (Appendix 5).

Release Criteria:

1. Behavior
2. Body Weight
3. Pelage Condition
4. Physical Exam
5. Blood Parameters

Exit photo must be taken of animal prior to release

Animals that die or are euthanized during an oil spill response must have this disposition information recorded on their individual animal's record as well as in the Live Mammal Data Log. The carcass should be identified with a written tag including the species name, date of stranding and/or admission, date of death, and the flipper tag (if a tag was affixed prior to death). If a flipper tag is present, it should remain with the carcass until final disposition of the carcass.

The carcass should be refrigerated or kept on ice until a necropsy is performed. If a necropsy cannot be performed within 72 hours of death, the carcass should be frozen. Prior to performing a necropsy on an oiled marine mammal, specific permission must be obtained from OSPR. Permission will be requested by the OWCN response coordinator and cannot be conducted until he or she receives approval for the necropsy. In many cases, a pathologist with specialized training on marine mammals will be asked to perform the necropsy. If a necropsy is performed, please use the OWCN necropsy form provided in Appendix 8 and save all indicated tissues unless directed to do otherwise by the OWCN veterinarian. All tissue samples collected must be cut into widths less than 1cm thin and placed in a small plastic or glass jar with 10% buffered formalin (provided by the OWCN or collaborating lab) and labeled with the species name, field identification number, case number, and date the samples were taken. Jars should be placed into a larger empty plastic jar or Zip lock bag to prevent accidental leakage during shipping.

Necropsy can be performed only after proper authorization from OSPR

Required Paperwork

Within four weeks of the completion of an oil spill response, all oiled animal medical records including copies of required NMFS reporting forms, photographs and oil samples should be sent to the OWCN for archiving at:

Wildlife Health Center
School of Veterinary Medicine
University of California
1 Shields Avenue
Davis, CA, 95616.

Once the records are archived, OWCN participants are not required to keep the originals. Records from individually oiled animals recovered when there is no active oil spill response should be completed and mailed to the OWCN within 2 weeks of release or death of that animal.

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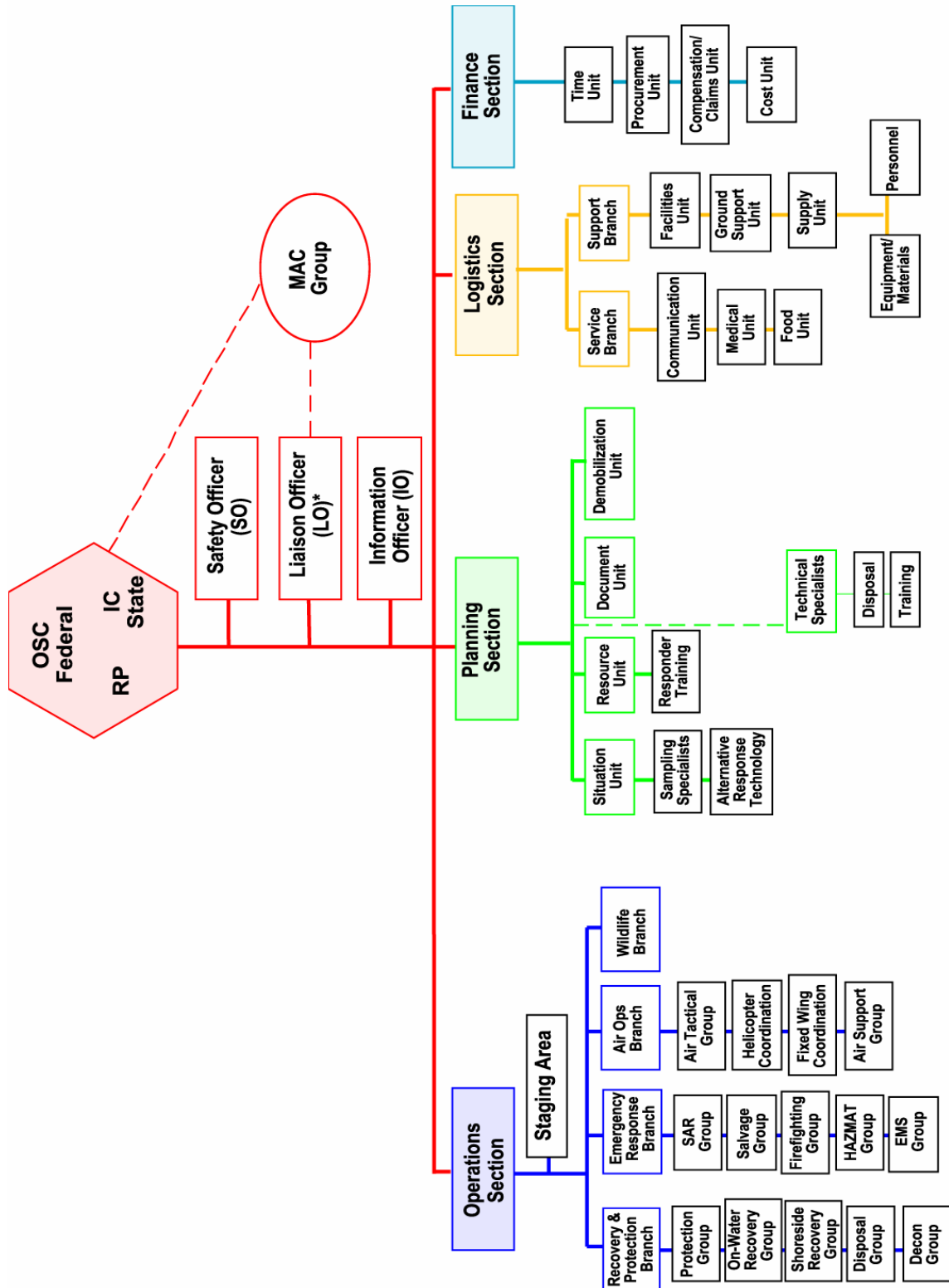
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Appendices

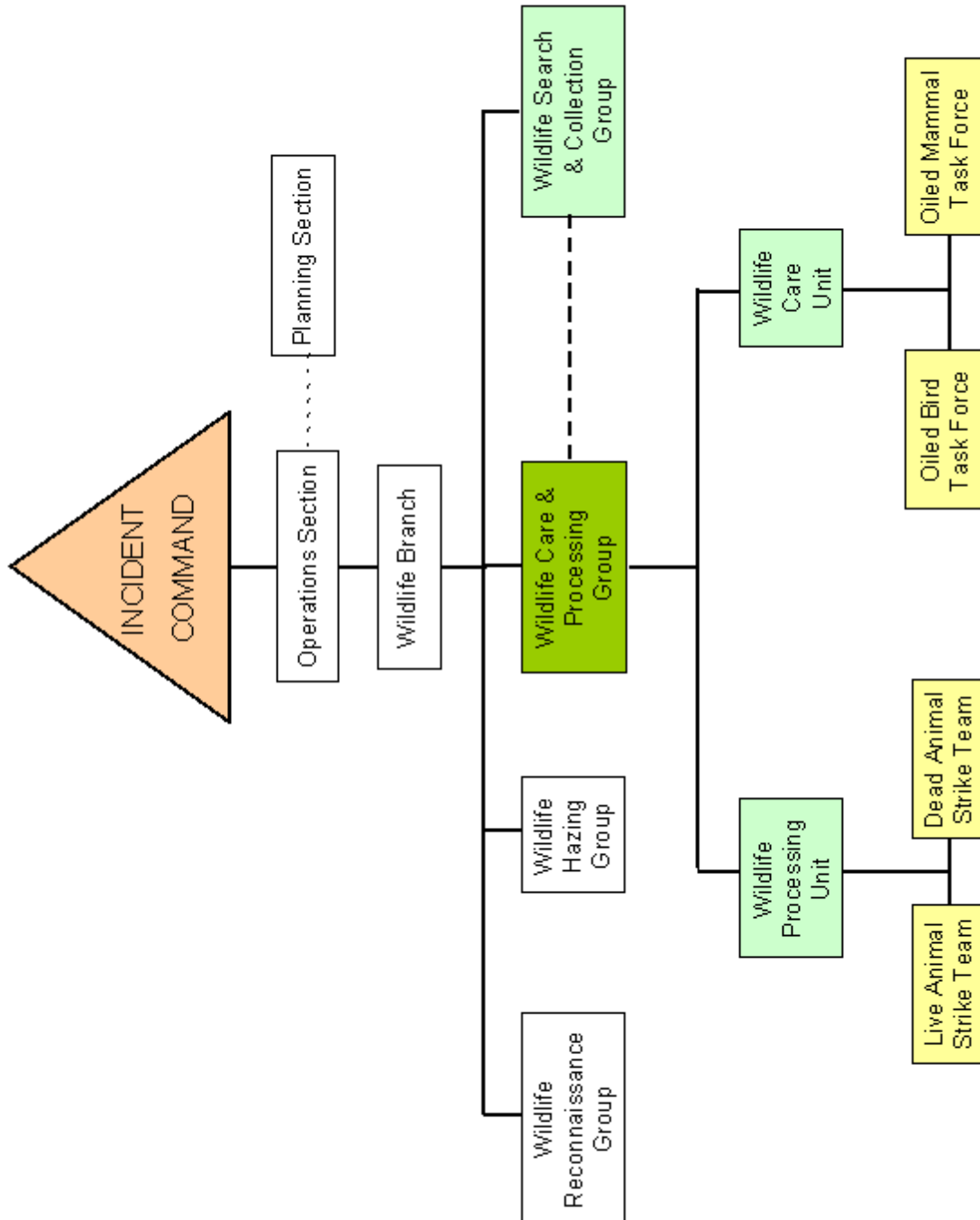
1. Unified Command Structure
2. Wildlife Operations Command Structure
3. OWCN Oil Spill Command Structure
4. OWCN Live Mammal Data Log
5. OWCN Dead Animal Log
6. OWCN Oiled Marine Mammal Intake Form
7. Weight and Length Ranges for Common Marine Mammals of California
8. Necropsy Form
9. Treatment Orders
10. Blood Results Form
11. Feeding Recommendations and Formulas

Forms are for instructional purposes only. Obtain the most current forms from the OWCN website: www.vetmed.ucdavis.edu/owcn

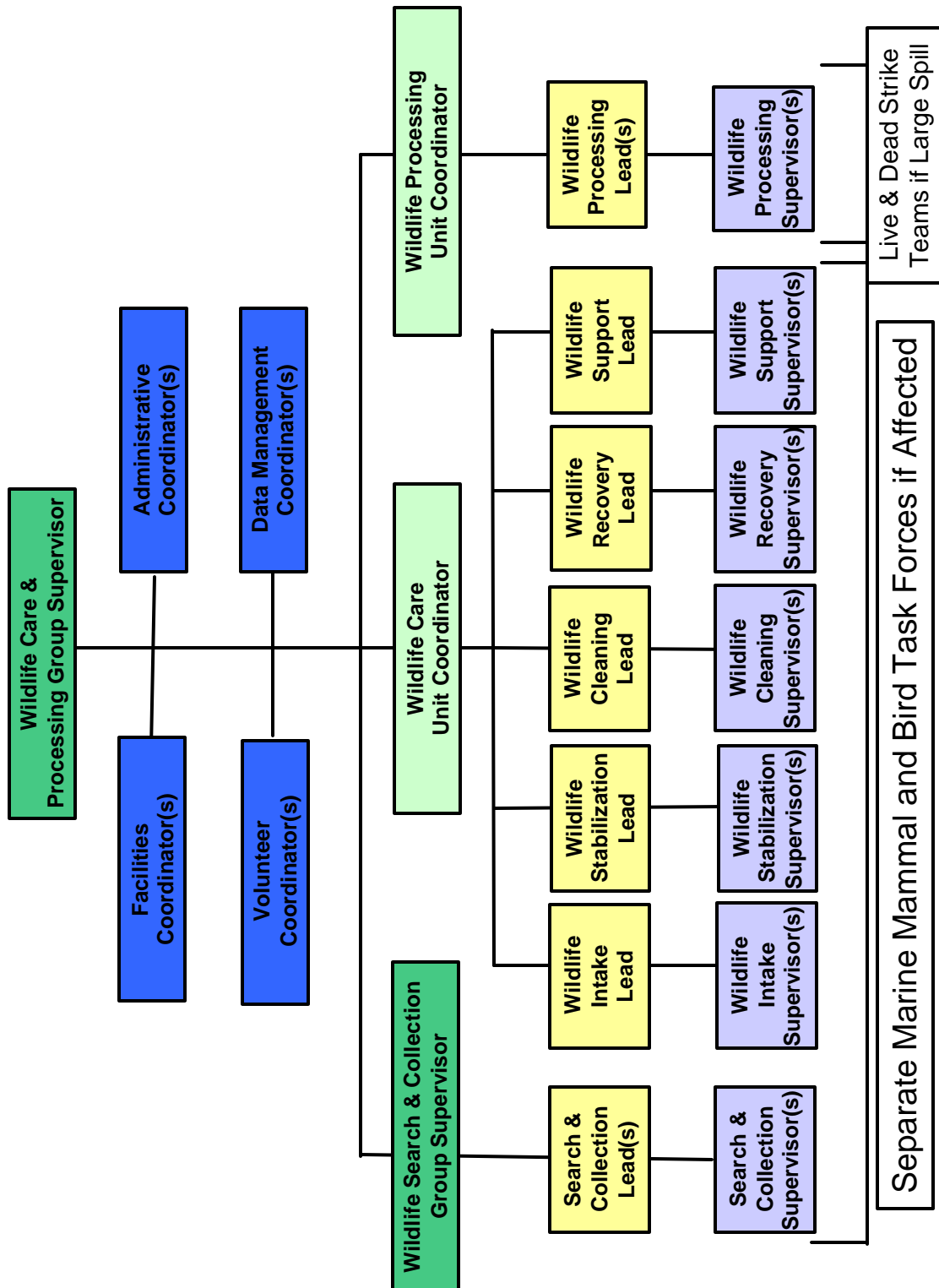
Appendix 1. Unified Command Structure/Incident Command for Oil Spill Clean-up



Appendix 2. Wildlife Operations Command Structure



Appendix 3. OWCN Oil Spill Command Structure



Back of Live Bird/Mammal Data Log

Date:

Station:

Intake no.	Bar Code (if applicable)	Beach Search Code (if applicable)	Record All Notes Here (e.g., location details, measurements taken, sex/age/breeding condition details, degree of scavenging, etc.)

Rev. 7-03

Station:
Location/Spill Name:
Year of Processing:
Page of

DEAD BIRD/MAMMAL DATA LOG
OWCN/Wildlife Processing Unit

Station Manager:
Data Collector:
Data Recorder:
Photographer:

Intake No.	Date & Time Collected	Date Arrived m/d	Date Proc'd m/d	Time Proc'd 24 hr	Species	Band Number	Condition	Extern. Oil Visible?	Oil not visible but oiled ?*	%Bird Oiled or Sheened	Depth of Oil	Where Oiled	Feather/Oil Sample Taken ?	Photo Taken?	Morgue Bag	Morgue Box	Collection Location	GPS Coordinates	Notes: If Y see Back

*Oil not visible but animal is oiled based on one or more of the following: smell oil, plumage malaligned/parted or sticky, skin wet/not waterproof, skin burns. Rev. 7-03

Back of Dead Bird/Mammal Data Log

Date:

Station:

Intake no.	Bar Code (if applicable)	Beach Search Code (if applicable)	Record All Notes Here (e.g., location details, measurments taken, sex/age/breeding condition details, degree of scavenging, etc.)

Rev. 7-03

Appendix 6. Oiled Marine Mammal Intake Form

Appendix 7. Weight and Length Ranges for Common Marine Mammals of California

Species	Weight	Standard Length	Age
California Sea Lions^{1,2}			
Pup	8 – 27 kg	70 – 113 cm	0 - 1 yr
Yearling	22 – 36 kg	105 – 134 cm	1 - 2 yrs
Juvenile female	36 – 90 kg	127 – 150 cm	2 – 4 yrs
Subadult male	36 – 90 kg	126 – 188 cm	2 – 6 yrs
Adult female	50 - 110 kg	150 – 180 cm	> 4 yrs
male	250 - 300 kg	175 – 230 cm	> 6 yrs
Northern Elephant Seals³⁻⁵			
Pup	35 - 49 kg	110 - 135 cm	0 - 4 wks
Pup, weaned	38 - 220 (125)kg	111 - 173 (144) cm	4 wks – 1 yr
Yearling/Juveniles	90 - 202 kg	166 – 208 cm	1 - 2 yrs
Subadult male	576 - 727 kg	205 - 360 cm	2-7 yrs
Adult female	200 - 710 kg	213 - 282 cm	= 3 yrs
male	895 - 2265 kg	367 - 399 cm	> 8yrs
Harbor Seal^{1, 6}			
Pup	7 - 20 kg	70 – 90 cm	0 – 4 wks
Pup, weaned	20 - 27 kg	90 – 100 cm	4 wks – 1yr
Yearling/Juveniles	27 – 63 kg	90 - 125 cm	1 – 3 yrs
Adult female	60 - 120 kg	125 - 170 cm	> 4 yrs
male	87 - 120 kg	150 - 180 cm	> 4 yrs
Sea Otter⁷			
Pup	1.6 – 8.2 kg	50 – 85 cm	0 - 3 months
Pup, immature	5.1 – 15.4 kg	76 – 106 cm	3 m - 1yr
Subadult	10.1 – 22.9 kg	96 – 118 cm	1 - 4 yrs
Adult female	16 - 32 kg	110 – 130 cm	> 4 yrs
male	17.6 – 48 kg	110 – 150 cm	> 5 yrs

Northern fur seals ⁸⁻¹⁰			
Pup	3.3 - 7.1 kg	56 - 76 cm	birth
Pup, weaned	7 - 22 kg	85 - 101 cm	3 m - 1 yr
Yearlings/Juvenile females	14.5 - 27 kg	90 - 120 cm	1 - 4 yrs
Subadult males	17.3 - 83.5 kg	94 - 159 cm	2 - 6 yrs
Adult female	24 - 60 (41) kg	119 - 143 (124) cm	> 4 yrs
male	80.8 - 278 (198) kg	151 - 215 (176) cm	= 7 yrs

Standard Length is the measurement from the tip of nose to the tip of the tail

The weights and standard lengths measurements in this table were taken from multiple published reports and personal communications.

Weights of marine mammals are highly variable depending on geographic, seasonal, and temporal factors thus making them unreliable for estimating age. Standard Length appears to be a more reliable indicator of age in marine mammals.

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Appendix 8. Marine Mammal Necropsy Form (cont.)

Instructions: circle response under each category.

NSF: no significant findings, NE: not examined, NA: not applicable

HAIR COAT: NSF, NE

lanugo, partial lanugo, patchy alopecia, extensive alopecia, lice, mites, other ectoparasites, molting, loss of guard hairs

INTEGUMENT (SKIN) and PINNAE: NSF, NE

puncture wounds, lacerations, scars, NEESDz, shark bite (wound sheet attached: yes/no)
pox, vesicles, pustules – RFF, LFF, RHF, LHF

MAMMARY GLANDS AND NIPPLES: NSF, NE, NA

swelling, discharge, lactating, parasites

OCULAR DISCHARGE: NSF, NE

Right: slight, moderate, copious

Color/type: green, yellow, white, mucoid, serous

Left: slight, moderate, copious

Color/type: green, yellow, white, mucoid, serous

EYES: NSF, NE

Right: conjunctiva reddened, third eyelid redness, third eyelid prolapsed, corneal opacities, ulcers, lacerations, rupture, desmetocoel (bulge), phthisis bulbae, lens opacity

Left: conjunctiva reddened, third eyelid redness, third eyelid prolapsed, corneal opacities, ulcers, lacerations, rupture, desmetocoel (bulge), phthisis bulbae, lens opacity

NASAL DISCHARGE: NSF, NE

Right: slight, moderate, copious

Color/type: green, yellow, white, mucoid, red, clear, vomitus

Left: slight, moderate, copious

Color/type: green, yellow, white, mucoid, red, clear, vomitus

MUCOUS MEMBRANES: NSF, NE

color: pink, pale pink, red, yellow, white, purple, brown

ORAL CAVITY AND PHARYNX: NSF, NE

ulcers on tongue, ulcers on gums, ulcers on hard palate, fluid, vomitus, foreign bodies

teeth: black, brown, white,

unerupted, just erupting, missing teeth, broken teeth, worn teeth

tonsil: enlarged, red, purple, pus

NASOPHARYNX: NSF, NE

nasal mites, long type or fat type, approx. no. _____, fluid

EXTERNAL GENITALIA AND ANUS: NSF, NE

swollen perineum/scrotum/vulva, prolapsed penis, necrotic penis,

diarrhea: green, yellow, black, brown, blood

UMBILICUS: NSF, NE

open, red, purple, moist, stump, dry stump, healed, exudate present: yellow, red, green, thin, purulent

FALCIFORM LIGAMENT: NSF, NE

patent, closed, pus filled

BLUBBER: NSF, NE

color: white, yellow, pink, red, brown

edema, focal hemorrhage, extensive hemorrhage, cysts, abscesses, necrotic fat, parasites

SKELETON AND JOINTS: NSF, NE

fractures: open, closed, simple, compound, comminuted, compression, dislocations,

osteomyelitis, tumors, deformities, callus, periosteal reaction

lesion locations:

MUSCULATURE: NSF, NE

pale, abscesses, hematomas, congested, necrosis, parasites,

other lesions

describe:

SALIVARY GLANDS: NSF, NE

describe abnormalities:

THYROID: NSF, NE

describe abnormalities:

SUBMANDIBULAR LN: NSF, NE

Right: hemorrhagic, abscessed, gelatinous, serous fluid, soft, hard; slightly, moderately, severely enlarged

Left: hemorrhagic, abscessed, gelatinous, serous fluid, soft, hard; slightly, moderately, severely enlarged

RETROPHARYNGEAL LN: NSF, NE

Right: hemorrhagic, abscessed, gelatinous, serous fluid, soft, hard; slightly, moderately, severely enlarged

Left: hemorrhagic, abscessed, gelatinous, serous fluid, soft, hard; slightly, moderately, severely enlarged

AXILLARY LN: NSF, NE

Right: hemorrhagic, abscessed, gelatinous, serous fluid, soft, hard; slightly, moderately, severely enlarged

Left: hemorrhagic, abscessed, gelatinous, serous fluid, soft, hard; slightly, moderately, severely enlarged

PLEURAL CAVITY: NSF, NE

fluid: approx. _____ ml, purulent, serous, fibrinous, yellow, white, green, blood tinged, frank blood.

adhesions, plaques

ESOPHAGUS: NSF, NE

dilated, constricted, perforated, ulcerated, mucosa hemorrhagic, foreign bodies, fluid filled, obstructed, diphtheritic membrane

MEDIASTINAL LN: NSF, NE

hemorrhagic, abscessed, serous fluid, soft, hard, slightly enlarged, moderately enlarged, severely enlarged, gelly, enlarged

LARYNX: NSF, NE

describe lesions:

TRACHEA: NSF, NE

punctures, lacerations, foam, mucoid, purulent, white, yellow, red, green, blood

mucosa: congestion, hemorrhagic, ulcer

parasites: mites, Parafilaroides,

Otostrongylus – approx. # and length: _____

BRONCHI: NSF, NE

punctures, lacerations, foam, mucoid, purulent, white, yellow, red, green, blood

mucosa: congestion, hemorrhagic, ulcer

parasites: mites, Parafilaroides, Otostrongylus – approx. # and length: _____

LUNGS:

Parafilaroides 1+ 2+ 3+ 4+, none detected

Right: NSF, NE

color: pink, red, purple, mottled

interstitial edema: severe, moderate, mild

congested, atelectic, consolidated, abscesses, granulomas, emphysema, metastases

lesion locations: cranial, caudal, dorsal, ventral, middle

lesion distribution: diffuse, focal, multifocal, miliary

severity: severe, moderate, mild, slight

describe lesions:

Left: NSF, NE

color: pink, red, purple, mottled

interstitial edema: severe, moderate, mild

congested, atelectic, consolidated, abscesses, granulomas, emphysema, metastases

lesion locations: cranial, caudal, dorsal, ventral, middle

lesion distribution: diffuse, focal, multifocal, miliary

severity: severe, moderate, mild, slight

describe lesions:

PULMONARY ARTERIES AND AORTA: NSF, NE

thrombi, plaques, rupture, parasites, *Otostrongylus*, other heartworm: number:____, size:____cm

DUCTUS ARTERIOSUS: NSF, NE wide open, partially closed, sealed

PERICARDIUM: NSF, NE

thickened, plaques on surface, contains fluid

describe fluid:

HEART AND VALVES: NSF, NE

Right ventricle: NSF, NE, thickened, dilated (thickness mm:____)

Left ventricle: NSF, NE, thickened, dilated (thickness mm:____)

Atria and auricles: NSF, NE, foramen ovale sealed, not sealed, open

Myocardium: NSF, NE, pale, dark, tumors abscess, white foci

Epicardium and valves: NSF, NE, plaques

lesions and parasite locations, describe:

THYMUS: NSF, NE atrophy, enlarged

ABDOMINAL CAVITY: FLUID : none, approx _____ml, yellow, green, brown, blood tinged, clear, chunky, ingesta, frank blood, tenacious; Odorous? yes/no, uremic, worms

PERITONEUM, OMENTUM AND MESENTERY: NSF, NE

tumors, granulomas, abscesses, adhesions congested, hematomas, parasites

GALL BLADDER, BILE DUCT, PANCREATICODUODENAL DUCT: NSF, NE

full, empty, thickened wall, thin wall, flukes

bile: thick, thin, black, dark green, light green yellow, orange, calculi

LIVER: NSF, NE

enlarged, small, cirrhotic, fatty infiltration, ruptured, lacerated, parasites

congestion: mild, moderate, severe

color: normal, dark, pale, mottled, yellow, orange, nutmeg pattern

lesions: abscesses, granulomas, masses, cysts, fibrin tags, hemorrhages

distribution of lesions: diffuse, focal, multifocal, miliary, pinpoint

degree of severity: slight, mild, moderate, severe

if friable: mildly, moderately, severely

elaborate:

SPLEEN: NSF, NE

masses, slightly enlarged, severely enlarged, constricted, congested, abscesses, scars, pale, purple, brown, red

PANCREAS: NSF, NE

loss of lobulation, hemorrhage, abscesses, swollen

color: white, pink, other _____

STOMACH: NSF, NE

loss of rugae, swollen rugae, thickened, volvulus, perforated ulcer

mucosa: white, pale pink, red, purple, other _____

erosions or ulcers: mild, moderate, severe, volcanic, pinpoint

ascarids: 1+ (<10) 2+ (10-20) 3+ (20-50) 4+ (>50)

contents: empty, dilated with gas, mucus, formula, fluid, fish, crustaceans,

cephalopods, foreign bodies, sand, rocks, undigested, partially digested, digested

INTESTINES: NSF, NE

tape worms 1+ 2+ 3+ 4+, empty, bile, digesta, parasites, other lesions:

color: normal, autolyzed (green), congested, purple, black, red, yellow, white

CECUM: NSF, NE

empty, digesta, parasites, other lesions:

color: normal, autolyzed (green), congested, purple, black, red, yellow, white

COLON: NSF, NE

feces: normal (firm), empty, thin, dry, tarry, meconium

color: normal, autolyzed (green), congested, purple, black, red, yellow, white

MESENTERIC LN: NSF, NE

hemorrhagic, grey, chylous, abscessed, gelatinous, serous fluid, soft; slightly, moderately, severely enlarged

INGUINAL LN: NSF, NE

Right: hemorrhagic, grey, abscessed, gelatinous, serous fluid, soft; slightly, moderately, severely enlarged

Left: hemorrhagic, grey, abscessed, gelatinous, serous fluid, soft; slightly, moderately, severely enlarged

SUBLUMBAR LN: NSF, NE

hemorrhagic, grey, abscessed, gelatinous, serous fluid, soft, tumors; slightly, moderately, severely enlarged

GASTRIC LN: NSF, NE

hemorrhagic, grey, abscessed, gelatinous, serous fluid, soft, tumors; slightly, moderately, severely enlarged

PANCREATIC LN: NSF, NE

hemorrhagic, grey, abscessed, gelatinous, serous fluid, soft, tumors,
slightly enlarged, moderately enlarged, severely enlarged

ADRENAL GLANDS:

Right: NSF, NE

size: enlarged, shrunken

cortex: normal, thick, thin, dark, pale, hemorrhagic, striated

medulla: normal, dark, pale

C:M ratio:

Left: NSF, NE

size: enlarged, shrunken

cortex: normal, thick, thin, dark, pale, hemorrhagic, striated

medulla: normal, dark, pale

C:M ratio:

KIDNEYS:

Right: NSF, NE

size: slightly enlarged, severely enlarged, shrunken
 cortex color: pale, dark, red, pink, tan, purple
 medullae color: pale, dark, red, pink, tan, purple
 lesions: congestion, hemorrhage, hematomas, abscesses, parasites,
 cysts, hydronephrosis, masses, calculi, wedge emboli
 loss of renule differentiation: mild, moderate, severe

Left: NSF, NE

size: slightly enlarged, severely enlarged, shrunken
 cortex color: pale, dark, red, pink, tan, purple
 medullae color: pale, dark, red, pink, tan, purple
 lesions: congestion, hemorrhage, hematomas, abscesses, parasites,
 cysts, hydronephrosis, masses, calculi, wedge emboli
 loss of renule differentiation: mild, moderate, severe

URETERS:

Right: NSF, NE

dilated, tumors, abscesses, calculi (SAVE), hydroureter

Left: NSF, NE

dilated, tumors, abscesses, calculi (SAVE), hydroureter

URINARY BLADDER: NSF, NE

empty, dilated, thickened, tumors

mucosa: hemorrhagic, ulcerated, masses, ulcers, plaques, necrotic

other lesions:

urine: bloody, golden, dilute, purulent, other _____

URETHRA: NSF, NE

patent: yes/no, ulcers, calculi, strictures, tumors

GONADS:

Right: NSF, NE

enlarged, shrunken, masses, corpora lutea (#), follicles (#), tumors, cysts

Left: NSF, NE

enlarged, shrunken, masses, corpora lutea (#), follicles (#), tumors, cysts

UTERUS, CERVIX, VAGINA: NSF, NE, NA

enlarged, dilated, hemorrhagic, purulent fluid, tumors, masses, mucus, fetus,

placental scar on endometrium, plaques

describe:

CSF: NSF, NE

increases amount, blood tinged

DURA MATER AN INSIDE CALVARIUM: NSF, NE

gunshot, purulent exudate, hemorrhage, congested, meninges

CEREBRUM: NSF, NE

congested, abscesses, purulent exudate, hemorrhage, asymmetry, edema

CEREBELLUM: NSF, NE

congested, abscesses, hematomas, asymmetry, edema

SPINAL CORD: NSF, NE

hematomas, congestion, purulent exudate

Appendix 9. Treatment Information and Orders

Oiled Wildlife Care Network

TREATMENT INFORMATION AND ORDERS

Spill name: _____

Animal Log Number: _____

start/stop	FOOD TYPE	Amount	Time
/			
/			
/			
/			
/			
/			
/			
/			

Date	Weight (kg)	Wet/Dry

start/stop	SUPPLEMENTS	Amount	Time
/	Pinnivites		
/	Vitamin E		
/	NaCl		
/			

HOUSING / HUSBANDRY

start/stop	MEDICATIONS / FLUIDS	Dose	Route	Time
/				
/				
/				
/				
/				
/				
/				
/				

Appendix 10. Marine Mammal Blood Results

OWCN Blood Results

Spill Name: _____

Animal Log Number: _____

Date Sample Taken							
Laboratory							
Complete Blood Count							
WBC	x10 ³ /uL						
RBC	x10 ⁶ /uL						
HGB	g/dl						
HCT	%						
MCV	fL						
MCH	pg						
MCHC	g/dL						
PLATELET	x10 ³ /uL						
Differential							
NEUTROPHIL SEG	%						
	absolute						
NEUTROPHIL BANDS	%						
	absolute						
LYMPHOCYTE	%						
	absolute						
MONOCYTE	%						
	absolute						
EOSINOPHIL	%						
	absolute						
BASOPHIL	%						
	absolute						
REMARKS:							
Serum Chemistry							
ALK. PHOSPHATASE	IU/L						
ALT (SGPT)	IU/L						
AST (SGOT)	IU/L						
CK	IU/L						
GGT	IU/L						
SDH	IU/L						
LDH	IU/L						
AMYLASE	IU/L						
LIPASE	IU/L						
ALBUMIN	g/dL						
TOTAL PROTEIN	g/dL						
GLOBULIN	g/dL						
TOTAL BILIRUBIN	mg/dL						
DIRECT BILIRUBIN	mg/dL						
INDIRECT BILIRUBIN	mg/dL						
BUN	mg/dL						
CREATININE	mg/dL						
URIC ACID	mg/dL						
GLUCOSE	mg/dL						
CALCIUM	mg/dL						
PHOSPHORUS	mg/dL						
TCO2 (BICARBONATE)	mEq/L						
CHLORIDE	mEq/L						
POTASSIUM	mEq/L						
SODIUM	mEq/L						
CHOLESTEROL	mg/dL						
TRIGLYCERIDES	mg/dL						
IRON	ug/dl						
ANION GAP	mEq/L						
THYROID (T4)	ug/dl						

Appendix 11

Guidelines for Formula Diets and Hand-Rearing of Marine Mammals in California

Portions reprinted from: LA Dierauf and F.M.D. Gulland (eds.) CRC Handbook of Marine Mammal Medicine, Boca Raton, FL: CRC Press, Inc., 2001, with permission.

Harbor Seals

Although harbor seals are the most common species of phocid to be hand-reared, relatively little has been published about the composition of harbor seal milk. Rearing of other species is less well documented, and although it is likely that similar methods would be successful, readers are referred to further literature on the biology of these species.

Formula (Harbor Seal Formula, HSF)

Zoologic® Milk Matix 30/55 (Pet-Ag Inc., Hampshire, IL)	450mL (dry)
Filtered Water	450 mL
Fish oil (Salmon oil, Menhaden oil)	350 mL
Lecithin granules	1 tsp.
Pinniped multivitamin (Mazuri®, Purina Mills, Inc., St. Louis, MO)	1 tablet

Do not use a blender to mix this formula. Scoop dry ingredients into a large bowl, add water, and blend slowly with a wire whisk until powder is dissolved. Mix in oil and lecithin granules. Be careful not to overmix the formula, as it tends to thicken and turn pasty. The formula should be smooth with no lumps, ideally the consistency of pancake batter. Warm to 25-30°C (77-86°F) prior to feeding. While the formula can be kept refrigerated and used for 24 hours, it is not recommended since the formula tends to thicken over time and may not pass through the stomach tube. It is simpler and less aggravating to make the amount required just prior to feeding.

Delivery Methods and Techniques

A clear vinyl stomach tube (1 cm outside diameter) is preferred. Estimate the length of tubing required by measuring from the animal's snout to the last rib and clearly mark this distance on the tube for future reference. Pass the tube to this depth each time. A 400mL dose syringe or several 60mL or 140mL catheter-tipped syringes will need to be pre-filled with the

appropriate mixture and used to slowly deliver the formula. Bottles with lamb or human baby nipples have been used successfully, but are more labor intensive, and tend to result in pups being more used to human handling, thus choice of method will be influenced by plans for the pup's future.

Feeding Frequency and Daily Requirements

The tube-fed pups are fed approximately every four hours. The following schedule is used to rehydrate the pups and work them up slowly from an electrolyte solution to full strength formula. Electrolyte formula (EL) may be any balanced electrolyte solution, such as Pedialyte (Ross Products Division, Abbott Laboratories, OH), or lactated Ringers.

Weight at admission:	Formula Mixture:	Frequency/Number of feedings:
< 6 kg (< 13 lb)	150 mL EL	q4hr x 3 tubings
	110 mL EL + 40 mL HSF	q4hr x 1 tubing
	75 mL EL + 75 mL HSF	q4hr x 2 tubings
	40 mL EL + 110 mL HSF	q4hr x 2 tubings
	150 mL HSF	q4hrs
6-7 kg (13-15 lb)	170 mL EL	q4hr x 3 tubings
	125 mL EL + 45 mL HSF	q4hr x 1 tubing
	85 mL EL + 85 mL HSF	q4hr x 2 tubings
	45 mL EL + 125 mL HSF	q4hr x 2 tubings
	170 mL HSF	q4hrs
7-8.5 kg (15-19 lb)	190 mL EL	q4hr x 3 tubings
	140 mL EL + 50 mL HSF	q4hr x 1 tubing
	95 mL EL + 95 mL HSF	q4hr x 2 tubings
	50 mL EL + 140 mL HSF	q4hr x 2 tubings
	190 mL HSF	q4hrs
> 8.5 kg (> 19 lb)	220 mL EL	q4hr x 3 tubings
	165 mL EL + 55mL HSF	q4hr x 1 tubing
	110 mL EL + 110mL HSF	q4hr x 2 tubings
	55 mL EL + 165mL HSF	q4hr x 2 tubings
	220 mL HSF	q4hrs

Once the pups have been fed full strength formula for 24 hours, the volume may be increased by 20-25 mL each day.

Weaning Procedures

Once a pup has reached one month of age, is clinically healthy, gaining satisfactory weight, and the teeth have erupted, it is time to introduce fish to the diet. Initially, the pup is shown a fish by placing

the pup into a pool and offering the fish held with forceps. The preferred fish for pups is small herring, but smelt may be used. Smaller fish are preferred for the fish introduction process whenever available. Floating fish in the water or offering live fish are other alternatives to fish introduction. This is repeated on a daily basis until the pup exhibits a response. Fish pieces and/or whole fish may be offered at this point. Harbor seals tend to start eating fish with little encouragement, although swallowing fish may be difficult, if the fish offered is too large. Pups tend to gnaw and chew larger fish prior to actually swallowing. Force-feeding is necessary if the pup has not responded to the above methods of offering fish. Force-feeds involve restraining the pup, placing the fish in the animal's mouth, and assisting the swallowing reflex by gently pushing the fish past the gag point. It is best to use long, slender fish, preferably herring. The fish should be firm, but not frozen. Dipping the fish in water before placing into the mouth is helpful. During the force-feeding process, the number of stomach tubings is decreased to twice daily. Animals that are still not eating after attempting force-feeds may be fasted in order to stimulate appetite.

Elephant Seals

Very young northern elephant seals (*Mirounga angustirostris*) with lanugo coats ("blackcoats") are reared on harbor seal formula (HSF, above). Older pups that are weaned, but have not started to feed on live prey in the wild, are reared on a different formula (elephant seal formula, ESF). However, as elephant seals are adapted to prolonged periods of fasting, the physiological and biochemical sequences that occur in healthy wild animals may be hard to mimic when hand-rearing pups. Many pups strand as emaciated weaned pups, and are rehabilitated by increasing their body weights to a level similar to those of their cohorts prior to release. Thus methods used to hand-rear these pups are very different from the natural sequence of nutritional events for this species.

Formulas

Fish Mash (FM; used with ESF 50-50 and ESF 75-25)

Fish pieces (preferably herring)	1 kg
Bottled or filtered water	450 mL
Grind fish and mix with water in a blender until smooth.	

Elephant Seal Formula (ESF)

Ground Fish (preferably herring)	0.75 kg
Water	225 mL
Fish oil (Salmon or Menhaden oil)	5 mL
Lecithin	1 tablet
Whipping cream*	250 mL

*The whipping cream must be treated with the 0.75 mL lactase 24 hours prior to use. Grind whole fish in a meat grinder. Place ground fish, water, oil, and lecithin into blender. Blend on low for 10-20 seconds. When ingredients are thoroughly mixed, pour into large bowl. Do not mix cream into the formula in the blender; as the formula becomes too thick. Fold the whipping cream into the formula with a spatula.

ESF 50-50

Fish Mash 50% volume

Elephant Seal Formula 50% volume

Fish oil 10 mL

Mix ingredients in a bowl. Do not mix in a blender, since the formula becomes too thick.

ESF 75-25

Fish Mash 25% volume

Elephant Seal Formula 75% volume

Fish oil 10 mL

Mix ingredients in a bowl. Do not mix in blender as formula becomes too thick. These three formulas above may be made and kept refrigerated for 24 hours.

Feeding Frequency and Daily Requirements

Any pup admitted with a full or partial blackcoat (lanugo) will be tubed HSF.

Upon admission, the following schedule is used to rehydrate animals, which are slowly introduced to full strength formula.

Weight at admission	Formula Mixture:	Frequency/Number of tubings
< 30 kg (< 66 lb)	300 mL electrolyte fluid (EL)	q4hr x 4 tubings
	150 mL EL + 150 mL HSF	q4hr x 2 tubings
	100 mL EL + 200 mL HSF	q4hr x 2 tubings
	300 mL HSF	q4hrs
> 30 kg (> 66 lb)	500 mL EL	q4hr x 4 tubings
	250 mL EL + 250 mL HSF	q4hr x 2 tubings
	125 mL EL + 375 mL HSF	q4hr x 2 tubings
	500 mL HSF	q4hrs

Once pups are on full strength formula, the volume may be increased 50 mL per day. Pups are tubed every 4 hours, with the first tubing at 0800 hrs and the last at 2400 hrs. Each animal is supplemented with 1 marine mammal vitamin (Mazuri, Purina Mills, Inc. St. Louis, MO) 200 IU Vitamin E, and 2 grams NaCl, BID.

Weaners are pups that are approximately one month old (or older), have teeth coming through, and have lost their black lanugo coat. Most weaner pups are started on ESF 50-50 and worked slowly up to ESF 75-25 and eventually to full ESF. Upon admission, the following schedule is used to rehydrate weaned animals and work them slowly up to full strength formula.

< 30 kg (< 66 lb)	300 mL EL	q4hr x 2 tubings
	150 mL EL + 150 mL ESF 50-50	q4hr x 2 tubings
	300 mL ESF 50-50	q4hrs
30-35 kg (66-77 lb)	500 mL EL	q4hr x 2 tubings
	250 mL EL + 250 mL ESF 50-50	q4hr x 2 tubings
	500 mL ESF 50 - 50	q4hrs
>35 kg (> 77 lb)	750 mL EL	q4hr x 2 tubings
	325 mL EL + 325 mL ESF 50-50	q4hr x 2 tubings
	750 mL ESF 50-50	q4hrs

Once they are on full strength formula the volume can be increased by 50 mL per day. Pups are tubed every four hours. Each animal's diet is supplemented with 1 Mazuri Pinniped Vitamin, 200 IU Vitamin E, and 2 gm NaCl BID.

Delivery Methods and Techniques

All formulas are delivered through a stomach tube using a 400 mL dose syringe. Clear vinyl tubing with 1/2" inside diameter and 3/4" outside diameter cut in 36" lengths is ideal for the stomach tube.

Weaning Procedures

Once the animal's teeth have erupted, the blackcoat has been shed, and the pup appears clinically healthy, fish may be offered. Initially with the pup in a pool, offer it floating fish, live fish, or fish held in forceps. This exercise is repeated on a daily basis. If the pup accepts the floating fish, pieces or whole fish may be offered. Forced feeding may be required if the pup refuses to take fish offers after several daily attempts. Similar techniques as described in the harbor seal section are recommended. Since elephant seals usually undergo a marked fast post-weaning in the wild, a reduction in body weight of up to 10% body weight may be needed to trigger eating behavior in tube-fed animals. It may become necessary to resume SQ fluids for a few days when transitioning elephant seals from formula to fish or from gruel to whole fish to prevent dehydration.

Sea Lions

California sea lions (*Zalophus californianus*) are the species most commonly reared by this method, but Steller sea lions (*Eumatopias jubatus*) and northern fur seals (*Callorhinus ursinus*) have also been reared successfully using it.

Formula

Fish paste (see below)	0.23 kg
Pedialyte	150 mL
Safflower oil	5 mL
Lecithin	5 mL
Heavy whipping cream*	200 mL
Lactase*	0.75 mL
Multivitamin	1 capsule
NaCl	1.25 g
Vitamin B1	250 mg
Vitamin C	250 mg
Vitamin E	400 IU
Calcium gluconate	150 mg

*The whipping cream must be treated with the 0.75 mL lactase 24 hours prior to use.

To prepare fish paste, use high quality fish, such as herring that is greater than 10% fat and remove the heads, tails and fins. Begin with 0.34 kg of fish cut into pieces and placed in a food processor with 100 mL of Pedialyte® (Abbott Laboratories, Inc., Columbus, OH). Blend until the mixture is a smooth paste, transfer to rice strainer and grind the larger bone fragments out of the paste. This process will yield about 0.23 kg of herring paste. Add this herring paste to a blender with the other ingredients except the whipping cream, and blend until smooth. Pour the contents into a clean container and add the 200 mL of lactase-treated heavy whipping cream. Rock the container to blend the fish paste with the whipping cream. This yields approximately 637 mL of formula. Label the container with the date and time. The formula should be kept refrigerated until used, and heated just prior to feeding. Formula should be discarded after 24 hours.

Delivery Methods and Techniques

Bottle-feeding is the preferred method of feeding sea lion pups. Some pups prefer a rubber lamb's nipple, others accept only nursers or baby nipples for humans. It often will take three or four days of constant encouragement before a pup will accept the bottle. Pups that do not suckle readily will need to be fed via stomach tube until they accept the bottle. California and Steller sea lions imprint easily on their caregivers, and extreme measures must be taken to eliminate virtually all human contact with pups that are to be released back into the wild. This poses a problem when encouraging pups to nurse from a bottle; however, once this process has been achieved, bottles may be placed so they emerge from a large padded box or other similar arrangement that allows the pup to nurse comfortably without human contact.

Feeding Frequency and Daily Requirements

The initial feeding should be an electrolyte formula with 5% glucose via stomach tube at 20mL/kg body weight. The second feeding consists of 50% electrolyte solution and 50% formula giving the same volume

as the initial feeding. The total volume the second day is 100mL/kg via stomach tube divided into five or six feedings on the second day. Offer 120-150 mL of formula at each of the five to six feedings daily, initially. Once the pup is nursing well, the amount of formula offered each feed may be increased gradually. By three to four weeks of age the pup should be suckling 200-250 mL at each of the five feedings. By six weeks of age pups should be nursing 250-300 mL per feeding four times a day. If the pup will not accept the bottle, it must be fed via stomach tube until it can be weaned. Pups fed by stomach tube will not tolerate the same amounts per feed as pups that are nursing. The amounts given via gavage should be reduced by 15-20%, and the full amount should be given very slowly to help avoid regurgitation.

Weaning Procedures

Although sea lions may suckle until one year old in the wild, pups weighing over 12 kg (26 lb) may have fish introduced to their diet. Ground chunks of fish may be offered to the pups mixed in the bottle with their formula. Eventually enlarge the nipple hole and feed small fish pieces through it in place of the formula. Pups may also be force-fed small pieces of fish at this point. It may take one to four weeks until they begin to eat fish voluntarily. This process may be accelerated using the force-feeding method. Gradually increase the amount of fish offered until the pups are eating 20% of their body weight per day. Vitamin supplements should be given daily. Another method that can be used to wean the pup from formula to a fish diet is the "ice cube method". The formula feeds are reduced to twice daily and the pup is given ice cubes to play with. Small bits of fish are frozen into the ice cubes. The pups may reject the first "fish cubes" but will eventually accept them. Once the pup is eating these, a slurry of ground fish is frozen into cubes. Once the pup accepts these, offer small pieces of fish and then whole fish. The entire process usually takes about one week, and the pups may lose 2 kg (4.4 lb) body weight during this process.

SEA OTTERS

Formula and Preparation

Clams, finely chopped	120 g
Squid, remove beak, quill and ink sac	120 g
Dextrose 5% in water	100 mL
Lactated Ringers' solution	100 mL
Whole milk/whipping cream 50/50	200 mL
Multivitamin supplement w/iron (HiVite)	2 mL
DiCalcium phosphate	500 mg
Cod Liver oil	2 mL

Chop squid and clams into fine pieces and then puree (do not whip). Add liquids and vitamins/minerals to puree and mix well. Blend in dairy products last. Treat the dairy blend with Lactaid® (McNeil Consumer Healthcare, Ft. Washington, PA) and/or lactobacillus to aid in milk digestion if diarrhea occurs. Add ALL BRAN® (Kellogg's, Battle Creek, MI) cereal (5 g to formula batch above) for fiber, if

stools are chronically soft. Mix enough formula for 24 hours, label with time and date of preparation and refrigerate. Discard unused portion after 24 hours or immediately freeze individual portions and label time and date, thaw/warm and use as needed. Discard unused frozen portions after one week.

Delivery Methods and Techniques

Very young sea otter pups seem to adapt to nursing a bottle readily. Older pups may not have a strong enough suckle urge and may need to be tube-fed until weaned onto solids. If pups will nurse on a bottle use a infant latex nurser bottle with disposable bags (4 oz size for newborns up to 4 kg (9 lb) body weight, and then the 8 oz size), plus a standard infant nipple with an "X" - cut opening at the nipple aperture to accommodate the thicker formula. Feed formula to the pup (face down, lying on its belly) and push the formula through the nipple by applying pressure to the nurser bag with a home made "syringe plunger" allowing delivery of formula more rapidly as the pup nurses and/or sucks food from the nipple. Pups like the nipple pushed up through a hole in a clean terry washcloth. If feeding via gavage is necessary, use a red rubber urethral catheter, 12-14 french, 16" long and a 60 mL catheter-tip syringe.

Feeding Frequency and Daily Requirements

Because sea otters have a high metabolic rate, they require a food intake of 20-35% of their body weight daily. Initially, their daily formula intake should equal 30% of their body weight divided into 8-10 feedings for the first 1-3 weeks of age. At this point, gradually increase the amount of formula offered at each feeding, and decrease the feeding frequency to 4-6 feedings per day.

Adjust total daily formula amount based on the rate of weight gain. Weigh pups at the same time each day, preferably in the morning prior to the first feeding. Expect an average weight gain of approximately 1% body weight per day. The weight may plateau every 2-5 days. Loss of more than 5% body weight at any time, or loss of weight over two consecutive days may be because too little formula is being offered, or may indicate a medical problem.

Weaning procedures

At 34 weeks of age, offer small soft pieces of clam, squid, peeled shrimp, or other seafood before offering formula. Record total weight of solid food consumed. At 6 weeks of age or when the pup is taking soft bits readily, open shells and loosen the muscle of whole clams or mussels. At 8-10 weeks start to offer unpeeled shrimp and whole crab legs, and then intact mussels by 12-16 weeks of age.

Gradually decrease formula feedings equal to the measured amount of voluntary solid food intake. Most pups are weaned to an exclusively solid diet by 4 months of age. Continue to weigh each pup frequently and supplement with formula if a weight loss occurs, or if the pup fails to gain weight occurs.

APPENDIX IV - FORMS:

- a. Staff Availability Forms (pages 283-285)
- b. ICS 204 and 215 Forms (pages 286-292)
- c. Beach Search Effort Log (pages 293-297)
- d. Wildlife Recovery and Transportation Daily Report Form (pages 298-299)
- e. Wildlife Reconnaissance Survey Form: Shoreline or On-Water Observations (pages 300-301)
- f. Wildlife Care and Processing Daily Report Form (page 302)
- g. OWCN Oiled Animal Data Log – Dead Animals (pages 303-304)
- h. OWCN Oiled Animal Data Log – Live Animals (pages 305-306)
- i. OWCN Oiled Bird Daily Progress Form (page 307)
- j. OWCN Oiled Mammal Daily Progress Form (page 308)

San Mateo Mystery Spill Telephone Roster

OSPR Emergency Operations Center

Main : 916-323-0716 Ext 3016

Fax : 916-324-9785

1700 K Street Suite 250, Sacramento, California 95814

P.O. Box 94209, Sacramento, California 94244-2090

OSPR Receptionist: 916-445-9338

Fax : 916-324-8829

Legal Receptionist: 916 327-3407

Legal Fax 916 324-5662

[illegible]

Location: B=Bishop, E=Eureka, F=Fairfield, HMB=Half Moon Bay, LA=Los Alamitos, M=Monterey, RC=Rancho Cordova, S=Sacramento, SB=Santa Barbara, SC=Santa Cruz, SLO=San Luis Obispo

APPENDIX IVa **Example Staff Availability Form**

SAN MATEO MYSTERY SPILL WILDLIFE OPERATIONS STAFFING

NAME	ORGANIZATION	ATV	MO 7/Jan	TU 8/Jan	WE 9/Jan	TH 10/Jan	FR 11/Jan	SA 12/Jan	SU 13/Jan	MO 14/Jan	TU 15/Jan	WE 16/Jan
Addassi, Yvonne	OSPR, ES	N	Y	Y	Y	Y	Y	N	N	N	N	N
Amber, W	OWCN	N										
Ames, Jack	OSPR, VET SERV	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Arnold Christine	OSPR, VET SERV		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Austin, Bryant	OSPR, VET SERV		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ballard, Don	OWCN	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Battaglia, Chris	OWCN	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Blurton, Dave	OSPR, FRT, OSP											
Boggs, Melissa	OSPR, FRT, ES											
Boyes, Ed	OSPR, FRT, OSP			Y	Y	Y	Y	Y	Y	Y	Y	Y
Dodd, Erin	OSPR, VET SERV		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Donohoe, Regina	OSPR, RAP, TOX			Y	Y	Y	Y	Y	Y	Y	Y	Y
Douke, Brieanne	OSPR, VET SERV		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Dymtryk, Rebecca	OWCN	N										
Espinosa, Larry	OSPR, FRT, ES	Y	Y							Y	Y	Y
Flores, Tommy	OSPR, MS	N										
Foster, Barbara	OSPR, MS	N										
Haas, Jim	USFWS											
Haley, Lorrie	USFWS											
Hall, Charlene	USFWS											
Hampton, Steve	OSPR, RAP, NRD											
Harris, Heather	OSPR, VET SERV		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Harris, Mike	OSPR, VET SERV		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Hawkes, Jack	OSPR, VET SERV	N	Y		Y	Y	Y	Y	Y	Y	Y	Y
Henderson, John	USFWS											
Holcomb, J	IBRRC	Y										
Imai, Randy	OSPR, GIS	Y										
Jennings, Kathleen	OSPR, FRT, ES	Y	Y									
Jessup, Dave	OSPR, VET SERV		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Jochums, Carl	OSPR, FRT, ES	Y	Y									
Kelly, Sean	OSPR, FRT, OSP		N									
Kevo, Helen	OSPR, FRT, ENF											
Lipp, Thomas	OSPR, RAP, RA		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Martin, Mike	OSPR, RAP, RA	N	Y	Y	Y	Y	Y	Y?	Y?	Y	Y	Y
Martin, Ted	OSPR, FRT, OSP	Y										
McAllister, Sean	OWCN	Y										
McCleneghan, Kim	OSPR, FRT, ES	Y										

APPENDIX IVa **Example Staff Availability Form**

			MO	TU	WE	TH	FR	SA	SU
NAME	ORGANIZATION	ATV	7/Jan	8/Jan	9/Jan	10/Jan	11/Jan	12/Jan	13/Jan
Addassi, Yvonne	OSPR, ES		Y	Y	Y	Y	Y	N	N
Amber, W	OWCN	N							
Ames, Jack	OSPR, VET SERV	Y	Y	Y	Y	Y	Y		Y
Arnold Christine	OSPR, VET SERV		Y	Y	Y	Y	Y	Y	Y
Austin, Bryant	OSPR, VET SERV		Y	Y	Y	Y	Y	Y	Y
Ballard, Don	OWCN	Y	Y	Y	Y	Y	Y	Y	Y
Battaglia, Chris	OWCN	N	Y	Y	Y	Y	Y	Y	Y
Blurton, Dave	OSPR, FRT, OSP								
Boggs, Melissa	OSPR, FRT, ES								
Boyes, Ed	OSPR, FRT, OSP			Y	Y	Y	Y	Y	Y
Dodd, Erin	OSPR, VET SERV		Y	Y	Y	Y	Y		
Donohoe, Regina	OSPR, RAP, TOX			Y	Y	Y			
Douke, Brienne	OSPR, VET SERV		Y	Y	Y	Y	Y	Y	Y
Dymtryk, Rebecca	OWCN	N							
Espinosa, Larry	OSPR, FRT, ES	Y	Y						
Flores, Tommy	OSPR, MS	N							
Foster, Barbara	OSPR, MS	N							
Haas, Jim	USFWS								
Haley, Lorrie	USFWS								
Hall, Charlene	USFWS								
Hampton, Steve	OSPR, RAP, NRD								
Harris, Heather	OSPR, VET SERV		Y	Y	Y	Y	Y	Y	Y
Harris, Mike	OSPR, VET SERV		Y	Y	Y	Y	Y	Y	Y
Hawkes, Jack	OSPR, VET SERV	N	Y		Y	Y	Y	Y	Y
Henderson, John	USFWS								
Holcomb, J	IBRRC	Y							
Imai, Randy	OSPR, GIS	Y							
Jennings, Kathleen	OSPR, FRT, ES	Y	Y						
Jessup, Dave	OSPR, VET SERV		Y	Y	Y	Y	Y	Y	Y
Jochums, Carl	OSPR, FRT, ES	Y	Y						
Kelly, Sean	OSPR, FRT, OSP		N						

ASSIGNMENT LIST (ICS FORM 204-OS)

Special Note. The Assignment List, ICS form 204-OS submits assignments at the level of Divisions and Groups. The Assignment List Attachment, ICS form 204a-OS shows more specific assignment information, if needed. The need for an ICS form 204a-OS is determined by the Planning and Operations Section Chiefs during the Operational Planning Worksheet (ICS form 215-OS) development.

Purpose. The Assignment List(s) informs Division and Group supervisors of incident assignments. Once the assignments are agreed to by the Unified Command and General Staff, the assignment information is given to the appropriate Divisions and Groups.

Preparation. The Assignment List is normally prepared by the Resources Unit, using guidance from the Incident Objectives (ICS form 202-OS), Operational Planning Worksheet (ICS form 215-OS), and the Operations Section Chief. The Assignment List must be approved by the Planning Section Chief. When approved, it is included as part of the Incident Action Plan (IAP). Specific instructions for individual Task Forces / Strike Teams may be entered on an ICS form 204a-OS for dissemination to the field, but not included in the IAP.

Distribution. The Assignment List is duplicated and attached to the Incident Objectives and given to all recipients of the Incident Action Plan. In some cases, assignments may be communicated via radio/telephone/fax. All completed original forms MUST be given to the Documentation Unit.

Item #	Item Title	Instructions
		A separate sheet is used for each Division or Group. The identification letter of the Division is entered in the form title. Also enter the number (roman numeral) assigned to the Branch.
1.	Incident Name	Enter the name assigned to the incident.
2.	Operational Period	Enter the time interval for which the form applies. Record the start and end date and time.
3.	Branch	Enter the Branch designator.
4.	Division/Group	Enter the Division/Group designator.
5.	Operations Personnel	Enter the name of the Operations Chief, applicable Branch Director, and Division Supervisor.

Item #	Item Title	Instructions
6.	Resources Assigned This Period	Each line in this field may have a separate Assignment List Attachment (ICS form 204a-OS). Enter the following information about the resources assigned to Division or Group for this period:
	Strike Team / Task Force / Resource Identifier	List identifier
	Leader	Leader name
	Contact Information	Primary means of contacting this person (e.g., radio, phone, pager, etc.). Be sure to include area code when listing a phone number.
	Number of Persons	Total number of personnel for the strike team, task force, or single resource assigned.
	Special Notes / Remarks	Special notes or directions, specific to this strike team, task force, or single resource.
	Assignment List Attachment	Enter an "X" check if an Assignment List Attachment (ICS form 204a-OS) will be prepared and attached. The need for an ICS form 204a-OS is determined by the Planning and Operations Section Chiefs during the Operational Planning Worksheet (ICS form 215-OS) development.
7.	Assignments	Provide a statement of the tactical objectives to be achieved within the operational period by personnel assigned to this Division or Group.
8.	Special Instructions for Division/Group	Enter a statement noting any safety problems, specific precautions to be exercised, or other important information.
9.	Communications	Enter specific communications information (including emergency numbers) for this division /group. If radios are being used, enter function (command, tactical, support, etc.), frequency, system, and channel from the Incident Radio Communications Plan (ICS form 205-OS). Note: Phone numbers should include area code.
10.	Prepared By	Enter the name of the person completing the form, normally the Resources Unit Leader.
	Date/Time	Enter the Date (month, day, year) and Time (24-hour clock) the form was prepared.
11.	Approved By	Enter the name of the person approving the form, normally the Planning Section Chief.
	Date/Time	Enter the Date (month, day, year) and Time (24-hour clock) the form was approved.

SAMPLE ICS 204 & 215 FROM 2004 SONS DRILL

1. Incident Name Point Loma SONS Drill		2. Operational Period (Date / Time) From: 4/23/04 0600 hrs To: 4/24/04 0600 hrs		ASSIGNMENT LIST ICS 204-OS	
3. Branch Wildlife Operations		4. Division/Group Wildlife Reconnaissance Group, Air Survey Unit			
5. Operations Personnel		Name		Affiliation	
Operations Section Chief: XXXX					
Branch Director: Melissa Boggs		DFG OSPR		(805) 614-2106 (pager)	
Division/Group Supervisor: Annie Nelson		DFG OSPR		(916) 328-8578	
6. Resources Assigned This Period "X" indicates 204a attachment with special instructions					
Strike Team / Task Force / Resource Identifier	Leader/Team Member	Contact Info. #	# of Persons	Notes / Remarks	
Air Survey Unit	Glen Ford & 1 Observer	XXXX	2	Supplied by OSPR	
Air Survey Unit	Pilot & fixed wing aircraft	XXXX	1	Supplied by DFG/OSPR	
7. Assignments: Conduct morning wildlife (oiled/injured birds and mammal) aerial reconnaissance survey of nearshore and offshore waters of San Diego County and in San Diego Bay and Mission Bay per survey protocols in the California Wildlife Response Plan. Report back to Wildlife Branch Director results as soon as possible. With the Wildlife Branch Director, coordinate with the Air Operations Branch.					
8. Special Instructions for Division / Group: Follow flight safety rules.					
9. Communications (radio and / or phone contact numbers needed for this assignment)					
Name / Function		Radio: Freq. / System / Channel		Phone	Pager
Melissa Boggs, Branch Director, OSPR				(805) 614-2102	pager
Annie Nelson, Group Supervisor, OSPR				(916) 328-8578	pager
Emergency Communications					
Medical - 911	Evacuation	Other			
10. Prepared By (Resource Unit Leader)		11. Approved By (Planning Section Chief)		Date / Time	
Melissa Boggs				4/22/04 1600 hrs	
ASSIGNMENT LIST		June 2000		ICS 204-OS	

Electronic version: NOAA 1.0 June 1, 20

1. Incident Name		2. Operational Period (Date / Time)				OPERATIONAL PLANNING WORKSHEET						
Port/Loam SONS Drill WILDLIFE OPERATIONS BRANCH		From: 4/23/04 0600 To: 4/24/04 0600 hrs				ICS 215-OS						
3. Division/ Group or Location	4. Work Assignments	5. Resource / Equipment							6. Notes / Remarks	Reporting Location	Requested Arrival Date/Time	
		Personnel	ATV	BOAT	Fixed wing aircraft							
Division H	Wildlife Recovery & Transportation	Req.	2									
		Have	2									
		Need	0									
Division I	Wildlife Recovery & Transportation	Req.	8		1					CP	4/23	
		Have	4		1						0600 hrs	
		Need	4		0							
Division J	Wildlife Recovery & Transportation	Req.	4	2						CP	4/23	
		Have	2	2							0600 hrs	
		Need	2	0								
Air Ops	Wildlife Reconnaissance Air Ops	Req.	3			1						
		Have	3			1						
		Need	0			0						
SeaWorld Wildlife Care & Processing Facility	Wildlife Care	Req.	17							All needed resources will be supplied by OWCN or OSPR	Sea World Wildlife Facility	4/23
		Have	7								0600 hrs	
		Need	10									
SeaWorld Wildlife Care & Processing Facility	Wildlife Processing	Req.	11							All needed resources will be supplied by OWCN or OSPR	Sea World Wildlife Facility	4/23
		Have	3								0600 hrs	
		Need	8									
10. Total Resources Required		45	2	1	1					13. Prepared by: WBD Melissa Boggs		
11. Total Resources On Hand		21	2	1	1					Date: 4/22/04 Time: 1200 hrs		
12. Total Resources Needed		24	0	0	0							
OPERATIONAL PLANNING WORKSHEET												
June 2000												
ICS 215-OS												

Electronic version: NOAA 1.0 June 1, 2000

[illegible]Reg 9 RCP Appendix XXII B
CA Wildlife Response Plan Appendices

UNIT LOG (ICS FORM 214-OS)

Special Note. ICS Form 214-OS is used to log activities for an entire unit, whereas the ICS form 214a-OS is designed for individual use.

Purpose. The Unit Log records details of unit activity, including strike team activity. These logs provide the basic reference from which to extract information for inclusion in any after-action report.

Preparation. A Unit Log is initiated and maintained by Command Staff members, Division/Group Supervisors, Air Operations Groups, Strike Team/Task Force Leaders, and Unit Leaders. Completed logs are submitted to supervisors who forward them to the Documentation Unit.

Distribution. The Documentation Unit maintains a file of all Unit Logs. All completed original forms MUST be given to the Documentation Unit.

APPENDIX IVc

SEARCH AND COLLECTION BEACH SURVEY FORM – Search Effort Log

PHOTO LOG

[illegible]

California Department of Fish and Game
Office of Spill Prevention and Response

Beach Search Effort Log

Searchers: _____

Date: _____

Time Offset: _____

Datum Setting: _____

OSPR-NRDA Use Only

Search Number: _____

Book _____ of _____

Revised June 8, 2004
L:\QSPR UNITS\Science\GPS\GPS-Birdlog.pdf

Page 2

Lat / Long South Extreme	Total Distance Searched	Method (ATV/Foot/Scan)	Animal Collected Note: Live/Dead, GPS Coordinate, Temp Band/Tag/Unique #, Toe/Wing-Clipped Y or N

Page 1

Beach Name and/or Divisions	Start Time	End Time	Lat / Long North Extreme
A			
B			
C			
D			

Beach Name and/or Divisions		Start Time	End Time	Lat / Long North Extreme
E				
F				
G				
H				

Page 3

Lat / Long South Extreme	Total Distance Searched	Method (ATV/Foot/Scan)	Animal Collected Note: Live/Dead, GPS Coordinate, Temp Band/Tag/Unique #, Toe/Wing-Clipped Y or N

Page 4

Page 6

Animal Collected Note: Live/Dead, GPS Coordinate, Temp Band/Tag/Unique #, Toe/Wing-Clipped Y or N	Method (ATV/Foot/Scan)	Total Distance Searched	Lat / Long South Extreme

Page 5

Beach Name and/or Divisions	Start Time	End Time	Lat / Long North Extreme	

SEARCH EFFORT LOG GUIDELINES

The Beach Search Effort Log documents the search effort associated with finding live and dead birds. This assists DFG analyze the effectiveness of the response and well as estimate the full impacts of the spill.

California Department of Fish and Game
Office of Spill Prevention and Response

Beach Search Effort Log

Searchers: _____

Date: _____

Time Offset: _____

Datum Setting: _____

OSPR-NRDA Use Only
 Search Number: _____

Book _____ of _____

Revised June 8, 2004
 L:\OSPR UNITS\Science\GPS\GPS-Birdlog.pdf

Searchers
 Enter the names of the search members.

Date
 Enter the date search was conducted

Time Offset
 Enter the time offset from GMT (Zulu Time).

Datum Setting
 Enter GPS Datum Setting (should be set at NAD83).

OSPR-NRDA Use Only
 Ignore Search Number in the upper right and letters in the first column; these are for "internal use only" (tracking purposes).

	Beach Name and/or Divisions	Start Time	End Time	Lat / Long North Extreme
A				
B				
C				
D				

Beach Name and/or Divisions

Location or Descriptive Name.

Start Time / End Time

This should include all time spent on the beach with your eyes open. This includes time spent doubling back and retracing your steps. Think of it as the time from when you step onto the beach until the time you step off it.

Lat / Long North & South Extreme

This refers to the endpoints of your search area. Ideally, these should be GPS points. Thus, when you go as far as you are going and turn around, take a GPS point or otherwise describe the location. (Note that the North and South extremes may be West and East for south facing

Total Distance Searched

If you entered GPS points above, you may leave this blank and we will calculate it later. If the beach is a well-defined cove beach with cliffs at each end, you may simply write "all". Do NOT write "all" for open continuous beaches. If you don't have a GPS, please estimate the length of the beach you searched (perhaps using a map).

Method

Describe your method any way you want. "Scan" or "spot" for short scoping searches is fine and we encourage you to write that if that's what you did.

Animals collected

Write "None" for no animals; otherwise list animals collected and GPS location or physical location noting whether the animal is live or dead. For live and dead animals collected a bird band or mammal tag should be placed on the animal and band/tag number noted here. If band/tag is not available (or not able to be put on live animal), a unique number must be designated on the animal container and noted here for chain of custody purposes. In addition, note any identifying marks from previous existing beach surveys such as toe or wing clips. Also note if a live/dead animal is observed but not collected (and note GPS location, etc as above).

Lat / Long South Extreme	Total Distance Searched	Method (ATV/Foot/Scan)	Animal Collected Note: Live/Dead, GPS Coordinate, Temp Band/Tag/Unique #, Toe/Wing-Clipped Y or N

[illegible]

Enter the picture number displayed on your digital camera or on the camera roll.

Enter the date
photograph was taken.

Brief description of photograph or any other comments worth noting.

APPENDIX IVd.**Wildlife Recovery & Transportation Daily Report**

Report Date/Time: _____

Spill Name: _____

Reported By: _____

PCA & Index _____

Animals Reported Collected: As of _____ (Time) _____

Division &/or Beach Name	Live Birds		Live Mammals		Dead Birds		Dead Mammals		Notes (T&E Species, main beaches, etc)
	Daily #	Total	Daily #	Total	Daily #	Total	Daily #	Total	

Planned R&T Personnel for Next Operational Period: _____ (Date/Time)

Division &/or Beach Name	Contact 1	Contact 1 Number	Contact 2	Contact 2 Number

Numbers of Daily Personnel

Oiled Bird Task Force

Recovery: _____ Transportation: _____

Oiled Mammal Task Force

Recovery: _____ Transportation: _____

Equipment In-Use

All terrain Vehicles _____

Off-road beach vehicles _____

¾ ton response truck _____

Other on-road vehicles _____

Other _____

Non-powered hard-hull boats _____

Powered inflatable boats <18' _____

Powered hard-hull boats <16' _____

Powered hard-hull boats 16'-20' _____

Other _____

Wildlife Recovery & Transportation Daily Report Page 2

Animals Reported Collected: As of _____(Time)

Division &/or Beach Name	Live Birds		Live Mammals		Dead Birds		Dead Mammals		Notes (T&E Species, main beaches, etc)
	Daily #	Total	Daily #	Total	Daily #	Total	Daily #	Total	

Planned R&T Personnel for Next Operational Period: _____(Date/Time)

Division &/or Beach Name	Contact 1	Contact 1 Number	Contact 2	Contact 2 Number

Revised: 05/14/99

Wildlife Field Reconnaissance Form - Shoreline or On Water Observations

Page ... of ...

[illegible]

APPENDIX IVf

Wildlife Care & Processing Daily Report

Report Date/Time: _____ Reported by: _____

Spill Name: _____ PCA & Index: _____

Numbers of Daily Personnel

Wildlife Processing: _____ Rehabilitation: _____

Other Paid Personnel: _____ Volunteers (est.): _____

Summary of Animal Intake & Care Information

<u>Total Live on Arrival</u>			<u>Total Dead on Arrival</u>		
As of (date/time):			As of (date/time):		
	<u>Birds</u>	<u>Mammals</u>		<u>Birds</u>	<u>Mammals</u>
# Pre-Wash:			# Visibly Oiled:		
# Washed			# Not Visibly Oiled but Oiled:		
# Died/Euthanized:			# Unoiled:		
# Released			# Unassessed:		
Totals:			Totals:		

Total Released & Recaptured:			Total Released & Recaptured:		
T & E Species (species name, status [E, T, SSC], & #'s):			T & E Species (species name, status [E, T, SSC], & #'s):		

OWCN Oiled Animal Data Log: DEAD Animals (continued from front side)

Oil Spill Name:								Facility:				PCA/Index:				Circle One: Bird Mammal Other		
Intake Log Number (D-xxxx)	Condition	Scavenging	Oiling Status	% Oiled	Depth Oiled	Where Oiled	Sample/Photo Taken? (Y/N)	Federal Band #	Wing (mm)	Tarsus (mm)	Bill Depth (mm)	Culmen / Nares to Tip (mm)	Exposed Culmen (mm)	Age	Sex	Morgue Box #	Notes (any other observations, including wing/toe clipping, breeding condition, contamination by petroleum products such as plastic or another specimen)	

Back Side of Page _____ of _____

APPENDIX IVh

OWCN Oiled Animal Data Log: LIVE Animals

[illegible]

Last updated 19 October 2004

Front Side of Page ____ of ____

Back Side of Page ____ of ____

APPENDIX IVi – Care Unit Form

OWCN OILED BIRD DAILY PROGRESS FORM

Spill Name _____ Log# _____ Temp. Band# _____ Species _____

[illegible]

Page ____ of ____

APPENDIX V. MEMORANDUM OF UNDERSTANDINGS/AGREEMENTS BETWEEN AGENCIES & ORGANIZATIONS

Va. USFWS Cooperative Agreement and MOU

Vb. NMFS MOA

Vc. BLM MOU regarding National Monuments

Vd. OWCN MOU between OSPR and University of California (Not included in this text.)

Ve. MOC between Pacific States and British Columbia

Vf. MEXUSPAC & other relevant information regarding Mexico

MEMORANDUM OF UNDERSTANDING
DESIGNATING CALIFORNIA DEPARTMENT OF FISH AND GAME
AS PRIMARY CONTACT FOR FISH AND WILDLIFE ISSUES
IN THE EVENT OF OIL OR TOXIC SUBSTANCE SPILLS
WITHIN THE STATE OF CALIFORNIA

Background:

Oil or toxic substance spills require rapid, efficient response and coordinated clean up to minimize their effects on both human and wildlife and fisheries resources. The United States Coast Guard has been given the primary responsibility to respond to major oil or toxic material spills within the marine environment. The Environmental Protection Agency has been designated the lead agency to respond to major spills in inland areas. A Regional Response Team plans for and facilitates the rapid response to major spills or to spills which have no designated "responsible party." Interagency cooperation and response is coordinated by an On-Scene-Coordinator from the United States Coast Guard or the Environmental Protection Agency who must communicate rapidly and efficiently with various local, State and Federal agencies to minimize damage and facilitate clean up efforts. On occasion, the On-Scene-Coordinator may be a designate of the "responsible party" who may also need to communicate with agencies with natural resource trust responsibilities.

Trust responsibilities for certain wildlife resources and their habitats, in the event of an oil or toxic spill are clearly given to the U.S. Fish and Wildlife Service (Service) through several legislative acts and regulations associated with the acts (Comprehensive Environmental Response Compensation and Liability Act, Clean Water Act, National Oil and Hazardous Substances Contingency Plan). The California Department of Fish and Game also has trust responsibilities for wildlife and fisheries resources within the State boundaries under various State statutes. Because of overlapping areas of responsibility for certain endangered species, migratory birds and migratory fishes which may be impacted by a spill event, both agencies are responsible for responding. To facilitate the most efficient and effective coordination of response to an ongoing operation being conducted by the On-Scene-Coordinator, a lead agency represented by a single individual coordinator should be designated as the primary contact for advice concerning fish and wildlife resources during a natural resources emergency situation. Additionally, issues of resource commitment and legal permits to handle wildlife need to be addressed as well as cooperative roles in damage assessment to natural resources.

Memorandum of Understanding

2

(A) Purpose:

The purpose of this Memorandum of Understanding between the Service and California Department of Fish and Game is to designate for the On-Scene-Coordinator a primary contact person who can respond within certain designated limits of authority concerning fish and wildlife resources in the event of an oil or toxic material spill within the State of California and its coastal habitats.

(B) The specific provisions of this Memorandum of Understanding are:

- (1) California Department of Fish and Game will designate a primary contact person for the On-Scene-Coordinator. The primary contact person will advise on and coordinate activities related to fish and wildlife problems resulting from a spill and:
 - (a) Give advice and direction to minimize or prevent damage to wildlife resources during clean up operations.
 - (b) Locate, select and coordinate efforts of qualified private groups to collect and care for injured birds or mammals and oversee the adherence to permit conditions for both Federal and State wildlife permits.
 - (c) Immediately contact appropriate Service area response coordinators and the Environmental Contaminants Coordinator, Regional Office and inform them of the spill event if migratory birds, endangered or threatened species or Service-administered lands are threatened or impacted.
 - (d) Continue to update the above personnel of significant happenings related to the event.
 - (e) Maintain close communications with the designated Service field response advisor and communicate action requests by the Service to the On-Scene-Coordinator or from the On-Scene-Coordinator to the Service representative.
 - (f) Subject to permit, reporting, and other requirements of Federal law, provide for the collection of samples or data on impacted wildlife during salvage or emergency operations so that an accurate damage assessment may be generated.

- (2) The Service will designate a secondary contact person for the On-Scene-Coordinator, who will advise and coordinate with the California Department of Fish and Game primary contact person on activities related to wildlife and fisheries resource problems resulting from a spill and specifically:
 - (a) Will act as the primary contact only if the California Department of Fish and Game designate is unavailable to carry out assigned activities.
 - (b) Will coordinate arrangements for entry to and use of resources of National Wildlife Refuges and/or other Service administered facilities.
 - (c) Will provide coordination with specialized Service groups such as the Sea Otter Recovery Group and the National Wildlife Health Center, which have unique technical knowledge, training, equipment or facilities that may be valuable in the emergency or for assessing damages to natural resources by the spiller.
- (3) Additionally, the Service will expeditiously review and act upon applications for necessary Federal permits to recover and provide temporary assistance to migratory birds affected by the spill. Such permits shall be applied for by the California Department of Fish and Game primary contract person. Bird rescue organizations under the direct control of the California Department of Fish and Game or employed by or under contract to the California Department of Fish and Game, may carry out the activities authorized by the permit. The Service will expeditiously review and act upon applications from qualified treatment centers for permits to authorize care and treatment of endangered or threatened species.
- (4) California Department of Fish and Game and the Service will work cooperatively to assess damages to natural resources including but not limited to the Department of the Interior Type A and Type B damage assessment regulations developed under the Comprehensive Environmental Response Compensation and Liability Act. Data will be developed and cooperatively shared to document clean up and natural resource damage liability costs and recover these costs from the spiller.

Memorandum of Understanding

4

(C) Limitations:

- (1) Nothing in this Memorandum of Understanding shall be interpreted to conflict with or to be inconsistent with any statute, regulation, or other provision of law applicable to the California Department of Fish and Game or the Service. The Service will carry out the duties of primary contact person in those instances wherein the protected species receives Federal but not State protection or as requested by either the California Department of Fish and Game or Department of the Interior.
 - (2) Implementation of this Agreement by the Service shall be subject to the limits of appropriated funds.
 - (3) No commitment of Service funds to the California Department of Fish and Game shall be made with regard to any spill or planning operation without express written agreement to that effect. Likewise, no commitment of California Department of Fish and Game funds shall be made with regard to spill or planning operation without express written agreement to that effect.
- (D) This agreement may be canceled by either party by providing 30 days prior written notice to the other party or by mutual agreement.

In witness whereof, the parties have executed this Memorandum of Understanding (Agreement) as of the day and year last below written.

Pete Butadella 1-20-88
Director, California Department of Fish and Game Date

Wally Stenche 3-15-88
Acting Regional Director, U.S. Fish and Wildlife Service, Reg 1, Date

**COOPERATIVE AGREEMENT BETWEEN
THE CALIFORNIA DEPARTMENT OF FISH AND GAME
AND
THE U.S. FISH AND WILDLIFE SERVICE
Endangered and Threatened Fish, Wildlife and Plants**

This Cooperative Agreement is entered into pursuant to Section 6(c) of the Endangered Species Act of 1973, as amended 16 U.S.C. § 1531-~~et seq~~ (hereinafter referred to as "the Act"), and the California Endangered Species Act of 1984 (CESA), Species Preservation Act of 1970, and California Native Plant Protection Act of 1977, between the U.S. Fish and Wildlife Service, U.S. Department of the Interior, and the California Department of Fish and Game. Hereinafter, the parties shall be referred to as "USFWS", and "CDFG" respectively.

WHEREAS, the Congress of the United States has found that there are resident species of fish, wildlife and plants which are in danger of extinction and that these species of fish, wildlife and plants are of aesthetic, ecological, educational, scientific, economic, and other value to the Nation and its people;

WHEREAS, the purposes of the Act are to provide a means whereby the ecosystems upon which endangered and threatened fish, wildlife and plants depend may be conserved, to provide a program for the conservation of such species, and to take such steps as may be appropriate to achieve the purposes of the various treaties and conventions related to the conservation of fish, wildlife and plants;

WHEREAS, the Congress of the United States has declared that encouraging the States and other interested parties, through Federal financial assistance and a system of incentives, to develop and maintain conservation programs which meet national and international standards as expressed in the said Endangered Species Act is a key to meeting the Nation's international commitments and to better safeguarding, for the benefit of all citizens, the Nation's heritage in its fish, wildlife and plants;

WHEREAS, the Secretary of the Interior has delegated his responsibilities under the Act to the Director, USFWS;

WHEREAS, the Director, USFWS, desires to enter into this Cooperative Agreement for the purpose of assisting in the implementation of the endangered and threatened fish, wildlife, and plant conservation program of the State of California for those species under his jurisdiction;

WHEREAS, the State of California acting through the CDFG, wishes to administer its program for the conservation of endangered, threatened and rare fish, wildlife and plants in harmony with the terms and spirit of the Act;

WHEREAS, the parties agree that programs of the State of California are designed to assist in the conservation and recovery of resident endangered and threatened and rare fish, wildlife and plants, and that it is the mutual desire of the CDFG and the USFWS to work in harmony for the common purposes of planning, developing and conducting programs to protect and enhance populations of all resident endangered and threatened and rare fish, wildlife and plants within the State of California;

Whereas, the Director, USFWS, has the statutory and administrative responsibility to establish programs for the conservation of endangered and threatened fish, wildlife and plants which are under his jurisdiction to provide periodic review of the State program at no greater than annual intervals; to provide funding to that program as such funding is available and in accordance with the terms of the Act, to provide coordination among the programs of the various States; and to exchange with the CDFG such biological data or other information which may result in the enhancement and recovery of endangered, threatened and rare fish, wildlife and plants;

WHEREAS, the CDFG has a statutory responsibility to conserve endangered, threatened and rare fish, wildlife and plants which are resident in the State of California. Resident wildlife species is defined for purposes of this Act in 50 CFR Part 81 (40 FR 47509, Oct. 9, 1975) and plant species as included in the term "species" under amended definitions; and

WHEREAS, the CDFG (a) has the authority to conserve resident fish or wildlife and plants determined by the State agency or the Secretary to be endangered, threatened or rare; (b) has established an acceptable conservation program, consistent with the purposes and policies of the Act, for all resident fish, wildlife and plants in the State which are deemed by the Secretary to be endangered and threatened and has furnished a copy of such a program together with all pertinent details, information, and data requested by the Secretary; (c) has the authority to conduct investigations to determine the status and requirements for survival of resident fish, wildlife and plants; (d) has the authority to establish programs, including the acquisition of land or aquatic habitat or interests therein, for the conservation of resident endangered, threatened or rare fish, wildlife and plants; and (e) has provided for public participation in designating resident fish, wildlife and plants as endangered, threatened or rare;

Now therefore the parties agree as follows:

1. Cooperative Program

- (a) The CDFG will carry out the activities identified in its program for the benefit of the endangered, threatened and rare fish, wildlife and plants which are resident in the State of California.
- (b) The Director, USFWS, may agree with the State to provide financial assistance for the implementation of an acceptable project for the conservation of endangered and threatened fish, wildlife and plants. Such financial assistance will require the submission of an Application for Federal Assistance and the successful negotiation of a Project Agreement. These will comply with the Secretary's Rules and Regulations 50 CFR Part 81, (40 FR 47509, Oct. 9, 1975), and the USFWS Federal Aid Manual.
- (c) As a part of this cooperative program, the law enforcement authorities of USFWS and the CDFG shall cooperate in the detection, apprehension, and prosecution of violators of the Act or State law intended to conserve endangered, threatened and rare fish, wildlife and plants.
- (d) As additional species of resident fish or wildlife and plants in the State of California are listed as endangered or threatened by the USFWS or endangered, threatened or rare by the State, the parties agree to cooperate in the development of programs and projects for the benefit of such species.
- (e) It is understood that any Federal funding pursuant to Section 6(d) of the Act is contingent on the continued implementation of an adequate and active program for the conservation of federally listed endangered and threatened fish, wildlife and plants that are resident in the State of California as defined in 50 CFR Part 81 (40 FR 47509, Oct. 9, 1975). If the program for the conservation of such fish, wildlife or plants is determined by the Director,

USFWS, to be inadequate or inactive, this Agreement and funding shall be terminated in accordance with Sections 5 and 7 of this Agreement.

- (f) As part of the listing process pursuant to Section 4 of the Act for the determination of endangered and threatened fish, wildlife and plants, and of critical habitat for Federally listed endangered or threatened species, the parties agree to exchange biological and other data as necessary to facilitate such determination by the Director, USFWS.
- (g) As part of the Interagency cooperation and consultation process, provided for by Section 7 of the Act and Section 2095 of the CESA, the parties agree to exchange information, as appropriate, during their respective consultation processes.

2. Permits

(a) General Rule

The CDFG agrees not to engage in, or issue a permit authorizing the taking of resident federally listed endangered or threatened fish, wildlife or plants as defined in 50 CFR Part 81, (40 FR 47509, Oct. 9, 1975) without prior issuance of a permit to the applicant by the Director, USFWS, except as authorized in subsection 2(b), (c), or (d) of this Agreement, pursuant to a special rule in 50 CFR § 17.21.

- (b) Any qualified employee or agent (contractor to the CDFG for implementation of specific recovery actions) of the CDFG who is designated by that Agency for such purposes, may, when acting in the course of his official duties, take any resident federally listed endangered or threatened fish, wildlife or plant for conservation purposes that are consistent with the Cooperative Agreement and any approved Application for Federal Assistance attached thereto, or any recovery recommendations in draft or recovery plans, provide that such taking is not reasonably anticipated to result in:

- (1) the death or permanent disabling of the specimen;
- (2) the removal of the specimen from the State of California;
- (3) the introduction of the specimen or any of its progeny into an area beyond the historical range of the specimen; or
- (4) the holding of the specimen in captivity for a period of more than 45 consecutive days in the case of animals; and
- (5) that the authority conveyed to the CDFG by this subsection may, at any time, be temporarily suspended for a particular project or that part of the conservation program by written notification by the Regional Director, USFWS, upon his receipt and determination that there is substantial evidence demonstrating the CDFG is using this authority for purposes inconsistent with the purposes of the Act. Such suspension will not be imposed until after consultation between the Regional Director, USFWS, and CDFG. Upon notification of the temporary suspension and the reasons therefore, the CDFG may request from the Director, USFWS, an opportunity to demonstrate compliance with the purposes of the Act. The Director shall promptly consider the evidence so submitted by the CDFG and either reaffirm the conclusion of the Regional Director, USFWS, and revoke the authority temporarily suspended pursuant to this subsection, or reverse the conclusion of the Regional Director, USFWS, and reinstate the authority temporarily suspended.

(c) Emergency Provisions

Any employee or agent of the CDFG who is designated by that Agency for such purposes may, when acting in the course of his official duties, take federally listed

endangered and threatened fish, wildlife or plants without a permit if such action is necessary to:

- (1) aid a sick, injured, or orphaned specimen; or
- (2) dispose of a dead specimen; or
- (3) salvage a plant or dead animal specimen which may be useful for scientific study; or
- (4) remove specimens which constitute a demonstrable, but non-immediate threat to human safety, provided that the taking is done in a humane manner; the taking may involve killing or injuring animals only if it has not been reasonably possible to eliminate such threat by live capturing and releasing the specimen unharmed in remote area; or
- (5) defend his own life or the lives of others.

Any taking pursuant to this subsection 2 (c) must be reported in writing within 5 days to the Regional Director, USFWS, for transmission to the Division of Law Enforcement, USFWS, in Washington, D.C. The specimen may only be retained, disposed of, or salvaged in accordance with directions from the USFWS.

3. Records

The CDFG agrees to maintain records of:

- 1) the federally funded projects for the conservation of endangered threatened and rare fish, wildlife or plants in accordance with Chapters 4 and 5 of the USFWS Federal Aid Manual; and
- (2) the number of specimens of each species of federally listed endangered and threatened fish, wildlife or plants taken by State employees or agents pursuant to 50 CFR § 17.21(c)(5) and § 17.31(b) as amended, the conservation purposes for which they were taken, and any mortalities or permanently disabling injuries resulting from the taking.

4. Notification

The CDFG agrees to inform the USFWS of any change in circumstances that could cause the state program to be in nonconformance with the requirements of Section 6(c) of the Act. Included without limitation are changes in the CDFG's relevant constitutional, statutory, or regulatory authority. The CDFG shall promptly furnish the USFWS with an assessment of the effect of such a change on the State's ability to remain in compliance with the requirements of Section 6(c) of the Act. The Director, USFWS, agrees to notify the State of all regulations and rulemakings made pursuant to the provisions of the Act, that might affect the State's program.

5. Effective Date and Renewal

- (a) This Agreement shall become effective when signed by the Regional Director, USFWS, and the Director, CDFG, and may be renewed in the following manner: Not later than June 30th of each year the CDFG shall submit to the USFWS, the following items: (1) additions and/or deletions to the Federal and State lists of endangered, threatened, and rare fish, wildlife or plants which are resident in the State; (2) a memorandum of law analyzing any changes in the CDFG's statutory authority for endangered, threatened and rare fish, wildlife or plants which were made since the date of the previous program submission. This memorandum shall also analyze the application of State law to any resident fish, wildlife or plant species that have been added to the Federal endangered and threatened species list since the date of the previous program submission; (3) a list of any substantial changes in the State's endangered, threatened and rare fish, wildlife or plant conservation programs since the date of the previous program submission; (4) a detailed description of the number of specimens of each species of federally listed

Endangered and Threatened species taken by State employees or agents pursuant to 50 CFR § 17.21(c)(5) and 17.31(b) as amended, the conservation purposes for which they were taken, and any mortalities or permanently disabling injuries to them resulting from the taking; and (5) copies of such reports the CDFG has prepared since the previous program accomplishments for resident, federally listed endangered and threatened species.

- (b) USFWS will, on or before October 1st of each year, notify the CDFG in writing either that the Cooperative Agreement is renewed effective October 21st of that year, or that the CDFG endangered and threatened fish, wildlife and plant conservation program or authorities are not in compliance with the criteria of Section 6(c) of the Act, and unless appropriate changes are made by June 30th of the following year, this Agreement shall be terminated.
- (c) For the purposes of this section, the phrase "previous program submission" means either the program submission of (1) the original Cooperative Agreement and amendments or (2) the most recent renewal application for the Cooperative Agreement, whichever is later in time.

6. Amendment

This Agreement may be amended at any time with the concurrence of the signatory parties.

7. Termination

This Agreement may be terminated: (a) by mutual agreement; (b) by the CDFG upon 60 day written notice to the USFWS; or (c) notwithstanding the renewal provisions in Section 5(b) of this Cooperative Agreement, by the USFWS upon 60 days written notice to the signatory party for the State of California from the Regional Director, USFWS, stating that the State's endangered and threatened fish, wildlife or plant conservation program is no longer in compliance with the criteria of Section 6(c) of the Act or that the State has violated a provision of this Agreement. The CDFG may submit a written request for review to the Director, USFWS, within 30 days of receipt of the termination notice. The Director, USFWS, will consider all evidence submitted by the CDFG in its request for review and either reaffirm the conclusion of the Regional Director and terminate this Agreement at the end of the 60-day notification period, or reverse the conclusion of the Regional Director and revoke the notice of termination. All Federal funds which have been obligated to but not expended by the CDFG as of the date of the termination notice shall be retained by the USFWS for reallocation pursuant to Section 6(d) of the Act, unless: (1) those funds are specifically approved by the Regional Director for expenditure before the date of actual termination; or (2) the notice of termination is revoked by the Director, USFWS.

AUG 28 1991

Date

Original Signed By
Howard A. Sarasohn for

Director

California Department of Fish and Game

JUN 6 1991

Date


Acting Regional Director

U.S. Fish and Wildlife Service

WILLIAM E. MARTIN

me
NHD-TA



United States Department of the Interior
FISH AND WILDLIFE SERVICE

911 N.E. 11th Avenue
Portland, Oregon 97232-4181

Colarte

In Reply Refer To:
FWS/AFF/FA

February 9, 1994

Boyd Gibbons, Director
California Department of Fish and Game
1416 Ninth Street
Sacramento, California 94244-2090

Dear Mr. Gibbons:

We appreciate your January 25, 1994 letter that provides information for renewal of the Cooperative Agreement between the California Department of Fish and Game and the U.S. Fish and Wildlife Service (Service) as required for the continuation of the Section 6 Grant Program of the Endangered Species Act. The necessary information has been supplied pursuant to Section 5(a) of the Cooperative Agreement. By fulfilling the requirements of this Section of the Agreement and also Section 6(c) of the Act, the Cooperative Agreement can be renewed for another year.

Enclosed is a copy of approved Grant Proposal Amendment 9 (Form 424). This Amendment requests the continuation of Project E-2, Statewide Endangered, Threatened and Rare Species Program and provides a list of proposed projects.

Please understand the approval of the Form 424 along with the renewal of the Cooperative Agreement only completes the eligibility requirements to participate in the Section 6 Grant Program of the Endangered Species Act. Funding and recovery actions funded are contingent on appropriations from Congress and the recovery needs and priorities as determined by the Service, State and other responsible agencies. When final selections have been made from the proposed projects submitted by your and other state agencies, you will be notified of the projects funded for California with Fiscal Year 1994 Section 6 funds.

If you have any questions, please contact Tom Williams at (503)231-6273.

Sincerely,

A handwritten signature in dark ink, appearing to read "Donald V. Friberg".

for Donald V. Friberg
Deputy Assistant Regional Director
Division of Federal Aid

Enclosure

MEMORANDUM OF AGREEMENT
BETWEEN
THE CALIFORNIA DEPARTMENT OF FISH AND GAME
OFFICE OF OIL SPILL PREVENTION AND RESPONSE
AND
THE NATIONAL MARINE FISHERIES SERVICE
SOUTHWEST REGION
REGARDING THE CALIFORNIA MARINE MAMMAL-STRANDING
NETWORK AND THE OILED WILDLIFE CARE NETWORK

ARTICLE I - BACKGROUND AND OBJECTIVES

Acting in furtherance of the purposes of the Marine Mammal Protection Act of 1972 (MMPA), 16 U.S.C. Section 1361 et seq.; the Endangered Species Act of 1973 (ESA), 16 U.S.C. Section 1531 et seq.; the Oil Spill Prevention and Response Act of 1990 (OSPR), California Government Code Section 8670 et seq.; and the California Endangered Species Act, California Fish and Game Code Section 2050 et. seq., and

RECOGNIZING THAT:

1. The California Department of Fish and Game (DFG) is the State trustee agency for marine mammals and sea turtles. The Administrator of the Office of Oil Spill Prevention and Response (OSPR), acting through the DFG, has the primary State authority to direct prevention, removal, abatement, response, containment, and cleanup efforts with regard to all aspects of any oil spill in marine waters of the State, and the DFG has delegated to the OSPR the duty of directing all other DFG response efforts for spills impacting State waters.
2. The California State Legislature has mandated the OSPR to: (a) establish rescue and rehabilitation facilities to provide best achievable treatment for birds and marine mammals affected by oil spills in marine waters of the State; (b) establish these facilities in the Los Angeles Harbor area, San Francisco Bay area, San Diego area, Monterey Bay area, Humboldt County area, and the Santa Barbara area; (c) establish facilities in other coastal areas of the State that the OSPR deems necessary; and (d) whenever possible, improve existing authorized marine mammal rehabilitation facilities. These facilities collectively comprise the Oiled Wildlife Care Network (OWCN).
3. The California State Legislature has provided the OSPR with the authority to enter into agreements with organizations to establish and equip wildlife rescue and rehabilitation stations, and to ensure that they are operated in a professional manner.

4. The National Marine Fisheries Service (NMFS) is the Federal trustee agency responsible for pinnipeds, cetaceans, and sea turtles in the State of California, and the MMPA conveys pre-eminent Federal jurisdiction to the NMFS over all pinnipeds and cetaceans in the State of California.

5. The NMFS oversees the operation of the California Marine Mammal Stranding Network (CMMSN), which is responsible for the rescue and rehabilitation of all live-stranded pinnipeds, cetaceans, and sea turtles, and the disposition of all dead-stranded pinnipeds, cetaceans, and sea turtles in the State of California.

6. It is in the best interest of the pinniped, cetacean, and sea turtle resources in the State of California for the OSPR and the NMFS to cooperate jointly in the rescue, rehabilitation, and disposition of these resources affected by oil spills in marine waters of the State, as performed by the CMMSN and the OWCN.

ARTICLE II - STATEMENT OF AGREEMENT

THE OSPR AND THE NMFS (THE PARTIES) DO HEREBY CONCLUDE THIS AGREEMENT TO govern the rescue and rehabilitation of live-stranded pinnipeds, cetaceans, and sea turtles affected by oil spills in marine waters of the State, and the collection of life history information and disposition of dead-stranded pinnipeds, cetaceans, and sea turtles suspected of having been affected by oil spills in marine waters of the State.

A. The OSPR hereby agrees to:

1. Cooperate fully with the NMFS and the CMMSN in the rescue and rehabilitation of pinnipeds, cetaceans, and sea turtles affected by oil spills in marine waters of the State.

2. Incorporate the NMFS guidelines and protocols on the rescue of live-stranded pinnipeds, cetaceans, and sea turtles, and the collection of life history information and disposition of dead-stranded pinnipeds, cetaceans, and sea turtles, as outlined in the NMFS/OSPR Contingency Plan for Response to Pinnipeds, Cetaceans, and Sea Turtles Affected By Oil Spills in Marine Waters of the State of California (Attachment A), into the OWCN protocols for response, rescue, rehabilitation, and medical treatment of pinnipeds, cetaceans, and sea turtles affected by oil spills in marine waters of the State.

3. Develop and implement cleaning and release protocols for use by the OWCN, in consultation with the NMFS, for pinnipeds, cetaceans, and sea turtles affected by oil spills in marine waters of the State.

4. Develop training materials, in consultation with the NMFS, for use by the OWCN dealing with species identification, restraint and capture techniques, medical care, biological sampling; and sample preservation consistent with applicable laws and regulations.

5. Ensure that the NMFS is fully informed prior to the release of information to the Information Officer and/or the Joint Information Center (JIC) regarding the numbers, species, or condition of pinnipeds, cetaceans, and sea turtles affected by oil spills in marine waters of the State.

B. The NMFS hereby agrees to:

1. Cooperate fully with the OSPR and the OWCN in the rescue and rehabilitation of pinnipeds, cetaceans, and sea turtles affected by oil spills in marine waters of the State.

2. Encourage the CMMSN to provide the OSPR, upon request, with copies of all data and medical records regarding pinnipeds, cetaceans, and sea turtles affected by oil spills in marine waters of the State.

3. Encourage the CMMSN to provide the OSPR with pelage, blood, tissue, and organ samples, as requested, to the extent that they are available or can be collected as part of regularly conducted veterinary practices.

4. Develop training materials, in consultation with the OSPR, for use by the CMMSN and the OWCN, dealing with species identification, restraint and capture techniques, medical care, biological sampling, and sample preservation consistent with applicable laws and regulations.

5. Ensure that the OSPR is fully informed prior to the release of information to the Information Officer and/or the Joint Information Center (JIC) regarding the numbers, species, or condition of pinnipeds, cetaceans, and sea turtles affected by oil spills in marine waters of the State.

6. Provide to the OWCN Program Director, with regular updates, contact phone numbers and addresses of all CMMSN rehabilitation facilities and scientific institutions, and provide, in advance, copies of all forms to be completed by the OSPR pursuant to the attached protocols.

C. The OSPR and the NMFS further mutually understand and agree that:

1. The primary purposes of this agreement are (a) to ensure that pinnipeds, cetaceans, and sea turtles affected by oil spills in marine waters of the State receive the best achievable treatment and (b) to ensure the collection of sound biological and chemical data on such affected resources

in order that natural resource injuries and/or damages can be accurately identified and assessed.

2. To the extent possible, and as determined by the Unified Command, pinnipeds, cetaceans, and sea turtles affected by oil spills in marine waters of the State will be captured and transported to an appropriate rehabilitation facility which is part of both the CMMSN and the OWCN. Factors to be considered by the Unified Command in deciding to which rehabilitation facility an affected animal will be transported include: (a) CMMSN member geographical area of authorization; (b) animal species; (c) medical condition and needs of the animal; and (d) special medical capabilities and current carrying capacity of individual CMMSN and OWCN members.

3. No pinnipeds, cetaceans, or sea turtles affected by oil spills in marine waters of the State and successfully rehabilitated will be released back into the wild without prior approval by the NMFS. All animals released will be fitted with NMFS-approved tags. The fate of non-releasable animals will be determined by the NMFS in consultation with the OSPR.

4. All original records and data collected by members of the CMMSN relating to pinnipeds, cetaceans, and sea turtles affected by oil spills in marine waters of the State and regarded as potential evidence in a natural resource damage assessment will be provided to the OSPR upon request. These records will continue to be the property of the State and Federal trustee agencies, but will be placed in the custody of the OSPR.

5. All dead pinnipeds, cetaceans, and sea turtles suspected of having been affected by oil spills in marine waters of the State will be, as practical, recovered by the OSPR or the CMMSN. The carcasses will be taken to the appropriate OWCN scientific facility for necropsy and/or storage, and then transferred to a secured storage facility identified by the OSPR, using appropriate chain of custody procedures, until full resolution of any State criminal or civil claims with the Responsible Party. During this time, the OSPR will be responsible for maintaining the chain of custody of these carcasses. Upon conclusion of full settlement, the OSPR will coordinate with the NMFS regarding proper disposition of the carcasses.

6. All dead pinnipeds, cetaceans, and sea turtles recovered by the OSPR but not suspected of having been affected by oil spills in marine waters of the State will be released to the CMMSN as soon as practicable following consultation with the NMFS. The OSPR will not dispose of any carcasses without the prior approval of the NMFS.

7. The Parties may enter into funding agreements to upgrade rehabilitation facilities, provide supplies, and provide training in order to improve their efficiency in treating and rehabilitating pinnipeds, cetaceans, and sea turtles affected by oil spills in marine waters of the State.

8. The Parties may enter into agreements with research organizations, scientific institutions, or with other Federal or State agencies for the purpose of carrying out their responsibilities under this Agreement. Each Party shall give prior notice to the other Party of the intent to pursue such agreements. Any such agreement must be consistent with the provisions of this MOA, and any conflicts shall be resolved by the Parties before any such agreement is signed by a Party. Confirmed copies of any such agreements must be provided to both Parties. Any such proposed agreement related to natural resource damage assessment shall be confidential, shall include signed confidentiality agreements, and a copy shall be provided to the other Party for review and comment prior to signing.

9. All samples, including biological and chemical materials, collected by the CMMSN which may be regarded as potential evidence in a natural resource damage assessment will be provided to the OSPR, upon request, using appropriate chain of custody procedures. These samples and materials will continue to be the property of the State and Federal trustee agencies, but will be placed in the custody of the OSPR. The OSPR will be responsible for maintaining the chain of custody of these samples and materials.

10. Nothing contained in this MOA is intended to conflict with current NMFS or OSPR authorities or responsibilities; each Party will advise the other of potential or known conflicts.

11. The NMFS will notify the OSPR within thirty days of authorizing a new rehabilitation facility or scientific institution to participate in the CMMSN or within thirty days of removing a rehabilitation facility's or scientific institution's authority to participate in the CMMSN. The OSPR may invite new CMMSN members to join the OWCN.

ARTICLE III - TERMS OF AGREEMENT

1. This agreement shall commence on the date of last signature, and shall be effective through June 30, 2003. This MOA will be automatically renewed every five years thereafter, unless the Parties agree otherwise.

2. The terms of this MOA may be modified by a written agreement signed by both Parties. Any action to modify or amend this agreement may only be taken by the Key Officials, or their designees.

3. Should any disagreement arise concerning the interpretation of the terms of this MOA that cannot be resolved at the staff level, the area (s) of disagreement shall be reduced to writing for consideration by both Parties. If agreement on interpretation is not reached within a reasonable amount of time, but not to exceed thirty days, the Parties shall forward the written presentation of the disagreement to respective higher officials for resolution.

ARTICLE IV - TERMINATION

This MOA may be terminated sixty days after written notice from either Party, or modified or extended by mutual agreement.

ARTICLE V - KEY OFFICIALS

Regional Administrator
Southwest Region
National Marine Fisheries Service

Administrator
Office of Oil Spill Prevention and Response
California Department of Fish and Game

Pete Bontadelli 11 Jun 1997
Pete Bontadelli DATE
Administrator
OFFICE OF OIL SPILL PREVENTION
AND RESPONSE

William T. Hogarth 26 March 1997
William T. Hogarth, Ph.D DATE
Acting Regional Administrator
Southwest Region
NATIONAL MARINE FISHERIES SERVICE

ATTACHMENT A

NMFS/OSPR CONTINGENCY PLAN FOR RESPONSE TO PINNIPEDS, CETACEANS, AND SEA TURTLES AFFECTED BY OIL SPILLS IN MARINE WATERS OF THE STATE OF CALIFORNIA

Free-Swimming Pinnipeds

1. Any sighting of a free-swimming pinniped believed to be affected by an oil spill is to be immediately reported to the OSPR personnel on site.
2. The OSPR personnel will investigate the sighting using one of the response vessels or support vessels listed in the appropriate Area Contingency Plan.
3. The OSPR personnel will then make a decision on whether or not to initiate a rescue attempt based on the NMFS guidelines on page 5 of this document.
4. If the OSPR personnel decide that a rescue attempt should be initiated, the OSPR personnel will contact the appropriate marine mammal rehabilitation center (MMRC) to coordinate the rescue.
5. Upon capture and prior to transport to the appropriate MMRC, a marine mammal stranding report form will be completed by either the MMRC or the OSPR personnel. At this time, the animal will be assigned a case number for damage assessment purposes. The case number will be recorded on the marine mammal stranding report form.

Live Beached Pinnipeds

1. Any sighting of a live beached pinniped in the general area of an oil spill is to be immediately reported to the OSPR personnel on site.
2. The OSPR personnel will then investigate the sighting and will make a decision on whether or not to initiate a rescue attempt based on the overall health of the animal.
4. If the OSPR personnel decide that a rescue attempt should be initiated, the OSPR personnel will contact the appropriate marine mammal rehabilitation center (MMRC) to coordinate the rescue.
5. Upon capture and prior to transport to the appropriate MMRC, a marine mammal stranding report form will be completed by either the MMRC or the OSPR personnel. At this time, the animal will be assigned a case number for damage assessment purposes. The case number will be recorded on the marine mammal stranding report form.

Dead Beached Pinnipeds

1. Any sighting of a dead beached pinniped in the general area of an oil spill is to be immediately reported to the OSPR personnel on site.
2. The OSPR personnel will investigate the sighting and document the dead beached pinniped (whether or not the carcass is fresh or decomposed) following the protocol on Page 6 of this document.
3. Every carcass examined will be assigned a case number for damage assessment purposes. The case number will be recorded on the marine mammal stranding report form.
4. Every attempt will be made to transport all fresh dead carcasses to the appropriate scientific institution for a complete necropsy in a laboratory environment. A field necropsy should not be conducted, except in the case where a carcass is too large for transport.

Free-Swimming and Live Beached Cetaceans

1. Any sighting of a free-swimming cetacean believed to be affected by an oil spill is to be immediately reported to the OSPR personnel on site.
2. The OSPR personnel will investigate the sighting using one of the response vessels or support vessels listed in the appropriate Area Contingency Plan.
3. If the OSPR personnel decide that a stranding is imminent, they will immediately contact the appropriate marine mammal rehabilitation center (MMRC), scientific institution (SI), and NMFS Stranding Coordinator for assistance. (No rescue attempts are to be made on free-swimming cetaceans).
4. Prior to returning a live beached cetacean back to the ocean or transporting the cetacean to the appropriate MMRC, a marine mammal stranding report form will be completed by either the MMRC, SI, or OSPR personnel. At this time, the animal will be assigned a case number for damage assessment purposes. The case number will be recorded on the marine mammal stranding report form.

Dead Beached Cetaceans

1. Any sighting of a dead beached cetacean in the general area of an oil spill is to be immediately reported to the OSPR personnel on site.
2. The OSPR personnel will investigate the sighting, document the dead beached cetacean (whether or not the carcass is fresh or decomposed), and immediately contact the appropriate scientific institution (SI) and the NMFS Stranding Coordinator.
3. Every cetacean carcass will be assigned a case number for damage assessment purposes. The case number will be recorded on the marine mammal stranding report form.
4. Every attempt will be made to transport all cetacean carcasses (both fresh dead and decomposed) to the appropriate SI for a complete necropsy in a laboratory environment. (No necropsies are to be attempted in the field unless permission is granted by the NMFS Stranding Coordinator).

Free-Swimming and Live Beached Sea Turtles

1. Any sighting of a free-swimming sea turtle believed to be affected by an oil spill or a live beached sea turtle in the general area of an oil spill is to be immediately reported to the OSPR personnel on site.
2. The OSPR personnel will investigate the sighting using one of the response vessels or support vessels listed in the appropriate Area Contingency Plan.
3. If the OSPR personnel decide that a free-swimming or live beached sea turtle has not been affected by an oil spill, but is likely to become affected if no action is taken, the OSPR personnel will translocate the animal to another site for release. (Prior to release, the OSPR personnel will contact the appropriate scientific institution and the NMFS Stranding Coordinator to ensure proper species identification).
4. If the OSPR personnel decide that a free-swimming sea turtle has been affected by an oil spill, the OSPR personnel will capture the animal and immediately contact the appropriate sea turtle rehabilitation center (STRC) and the NMFS Stranding Coordinator for assistance.
5. Prior to translocating a free-swimming or live beached sea turtle to another site for release or transporting the animal to the appropriate STRC, a sea turtle stranding report form will be completed by either the STRC or the OSPR personnel. At this time, the animal will be assigned a case number for damage

assessment purposes. The case number will be recorded on the sea turtle stranding report form.

Dead Beached Sea Turtles.

1. Any sighting of a dead beached sea turtle in the general area of an oil spill is to be immediately reported to the OSPR personnel on site.
2. The OSPR personnel will investigate the sighting, document every dead beached sea turtle (whether or not the carcass is fresh or decomposed), and immediately contact the appropriate scientific institution (SI) and the NMFS Stranding Coordinator.
3. Every sea turtle carcass will be assigned a case number for damage assessment purposes. The case number will be recorded on the sea turtle stranding report form.
4. Every attempt will be made to transport all sea turtle carcasses (both fresh dead and decomposed) to the appropriate SI for a complete necropsy in a laboratory environment. (No necropsies are to be attempted in the field unless permission is granted by the NMFS Stranding Coordinator).

NMF'S GUIDELINES FOR RESCUING PINNIPEDS AFFECTED
BY OIL SPILLS

(To be implemented under the guidance of CDFG-OSPR
and NOAA NRDA staff for the Incident Commander)

1. No rescue should be initiated on free-swimming or beached pinnipeds in the vicinity of an oil spill unless the animal in question is in obvious distress. A good rule-of-thumb to follow is, if the animal attempts to evade capture, leave it alone.
2. No rescue attempt should be made of any pinnipeds hauled out on a mainland or offshore island rookery site, or hauled out on a breakwater, barge, or bell buoy. The primary goal at these sites should be to boom off the immediate area, thereby creating a buffer zone around the site.
3. No hazing of pinnipeds should occur unless authorized by the Incident Commander.

PROTOCOL FOR DETERMINING IF A PINNIPED HAS BEEN AFFECTED BY
AN OIL SPILL

A. Live Animal

(In coordination with the CDFG-OSPR and the NOAA NRDA staff for the Incident Commander).

1. Determine if the animal is a candidate for capture based on the NMFS guidelines.
2. Capture may be initiated by the appropriate marine mammal rehabilitation center under the guidance of the CDFG-OSPR and the NOAA NRDA staff.

B. Dead Animal

(In coordination with the CDFG-OSPR and the NOAA NRDA staff for the Incident Commander, determine if the carcass is fresh or decomposed).

1. Fresh Carcass

- a. Complete a NMFS stranding report.
- b. Tag the carcass with a field identification number.
- c. Transfer the carcass to a designated holding facility (freezer storage).
- d. Perform a necropsy.
- e. Forward the original stranding report and a copy of the necropsy report to the NMFS.

2. Decomposed Carcass

- a. Complete a NMFS stranding report.
- b. Tag the carcass with a field identification number and spray paint.
- c. Contact the responsible beach agency for disposal.
- d. Forward the original stranding report to the NMFS.

NMFS GUIDELINES FOR RESCUING CETACEANS
AFFECTED BY OIL SPILLS

(To be implemented under the guidance of CDFG-OSPR
and NOAA NRDA staff for the Incident Commander)

1. No rescue should ever be initiated on free-swimming cetaceans in the vicinity of an oil spill.
2. A rescue should always be attempted on a beached cetacean. The animal should be covered with a light material such as a sheet or towel to protect it from heat stress and kept wet at all times. The eyes, snout, blowhole, flippers, and flukes should be left uncovered at all times. The animal should be positioned on its belly with shallow depressions made in the sand for the flippers to fit into.
3. No beached cetacean is to be pushed back out to sea without first being examined by a NMFS-approved marine mammal veterinarian. The animal should be affixed with a NMFS-approved tag or brand prior to being returned to the open ocean.

PROTOCOL FOR DETERMINING IF A CETACEAN HAS BEEN AFFECTED BY
AN OIL SPILL

A. Live Animal

(In coordination with the CDFG-OSPR and the NOAA NRDA staff
for the Incident commander).

1. Determine if the animal is a candidate for rehabilitation
based on the NMFS guidelines.

2. Capture may be initiated by the appropriate marine mammal
rehabilitation center under the guidance of the CDFG-OSPR and
the NOAA NRDA staff.

B. Dead Animal (Fresh or Decomposed)

1. Complete a NMFS stranding report.
2. Tag the carcass with a field identification number.
3. Transfer the carcass to a designated holding facility
(freezer storage).
4. Perform a necropsy.
5. Forward the original stranding report and a copy of the
necropsy report to the NMFS.

NMFS GUIDELINES FOR RESCUING SEA TURTLES
AFFECTED BY OIL SPILLS

(To be implemented under the guidance of CDFG-OSPR
and NOAA NRDA staff for the Incident Commander)

1. A rescue should always be initiated on a free-swimming sea turtle in the vicinity of an oil spill unless the animal attempts to evade capture. If the animal is captured but does not appear to have been affected, the animal should be translocated and released at another site following consultation with the appropriate scientific institution or the NMFS Stranding Coordinator.
2. A rescue should always be attempted on a beached sea turtle. The animal should be covered with a light material such as a sheet or towel to protect it from heat stress and kept wet at all times. The head and flippers should be left uncovered at all times. The animal should be positioned on its belly with shallow depressions made in the sand for the flippers to fit into.
3. No beached sea turtle is to be pushed back out to sea without first being examined by a NMFS-approved sea turtle veterinarian. The animal must be affixed with a NMFS-approved tag prior to being returned to the open ocean.

PROTOCOL FOR DETERMINING IF A SEA TURTLE HAS BEEN AFFECTED
BY AN OIL SPILL

A. Live Animal

(In coordination with the CDFG-OSPR and the NOAA NRDA staff
for the Incident Commander).

1. Determine if the animal is a candidate for capture based on the NMFS guidelines.
2. Capture may be initiated by the appropriate sea turtle rehabilitation center under the guidance of the CDFG-OSPR and the NOAA NRDA staff.

B. Dead Animal (Fresh or Decomposed)

1. Complete a NMFS stranding report.
2. Tag the carcass with a field identification number.
3. Transfer the carcass to a designated holding facility (freezer storage).
4. Perform a necropsy.
5. Forward the original stranding report and a copy of the necropsy report to the NMFS.

MARINE MAMMAL AND MARINE TURTLE STRANDING REPORT

Date: _____
(NMFS USE)

FIELD NO.: _____ NMFS REGISTRATION NO. _____

COMMON NAME: _____ GENUS: _____ SPECIES: _____

EXAMINER
Name: _____ Agency: _____ Phone: _____

Address: _____

LOCATION State: _____ County: _____ City: _____ Locality Details: _____ _____ _____ *Latitude: _____ N *Longitude: _____ W	TYPE OF OCCURRENCE Mass Stranding: (Yes) / (No) # Animals _____ Human Interaction: (Yes) / (No) / (?) Check one: <u> 1 </u> Boat collision <u> 2 </u> Shot <u> 4 </u> Fishery interaction <u> 5 </u> Other _____ How determined: _____ Other Causes (if known): _____ _____
--	---

DATE OF INITIAL OBSERVATION: Yr _____ Mo _____ Day _____ CONDITION: Check one: <u> 1 </u> Alive <u> 2 </u> Fresh dead <u> 3 </u> Moderate decomp. <u> 4 </u> Advanced decomp. <u> 5 </u> Mummified <u> ?</u> Unknown	DATE OF EXAMINATION: Yr _____ Mo _____ Day _____ CONDITION: Check one: <u> 1 </u> Alive <u> 2 </u> Fresh dead <u> 3 </u> Moderate decomp. <u> 4 </u> Advanced decomp. <u> 5 </u> Mummified <u> ?</u> Unknown
--	--

LIVE ANIMAL - Condition and Disposition: Check one <u> 1 </u> Released at site or more: <u> 2 </u> Sick <u> 3 </u> Injured <u> 4 </u> Died <u> 5 </u> Euthanized <u> 6 </u> Rehabilitated and released <u> ?</u> Unknown Transported to: _____ (Died) / (Released) Date: _____	TAGS APPLIED?: (Yes) / (No) TAGS PRESENT?: (Yes) / (No) <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;"></th> <th style="width: 20%; text-align: center;">Dorsal</th> <th style="width: 20%; text-align: center;">Left</th> <th style="width: 30%; text-align: center;">Right</th> </tr> </thead> <tbody> <tr> <td>Tag No. (s): _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>Color(s): _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>Type: _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>Placement: _____</td> <td>_____</td> <td>Front/Rear</td> <td>Front/Rear</td> </tr> </tbody> </table>		Dorsal	Left	Right	Tag No. (s): _____	_____	_____	_____	Color(s): _____	_____	_____	_____	Type: _____	_____	_____	_____	Placement: _____	_____	Front/Rear	Front/Rear
	Dorsal	Left	Right																		
Tag No. (s): _____	_____	_____	_____																		
Color(s): _____	_____	_____	_____																		
Type: _____	_____	_____	_____																		
Placement: _____	_____	Front/Rear	Front/Rear																		

CARCASS - Disposition, check one: Check one: <u> 1 </u> Left at site <u> 2 </u> Buried <u> 3 </u> Towed <u> 4 </u> Sci. collection (see below) <u> 5 </u> Edu. collection (see below) <u> 6 </u> Other _____ <u> ?</u> Unknown NECROPSIED? (Yes) / (No)	MORPHOLOGICAL DATA: Sex - Check one: <u> 1 </u> Male <u> 2 </u> Female <u> ?</u> Unknown Straight Length: _____ (cm) / (in) / (est) *Weight: _____ (kg) / (lb) / (est?) PHOTOS TAKEN? (Yes) / (No)
--	---

REMARKS: _____

DISPOSITION OF TISSUE/SKELETAL MATERIAL: _____

MEMORANDUM OF UNDERSTANDING (MOU)
BETWEEN
THE BUREAU OF LAND MANAGEMENT, DEPARTMENT OF INTERIOR
AND
RESOURCE AGENCY OF CALIFORNIA
AND
THE CALIFORNIA DEPARTMENT OF FISH AND GAME
AND
THE CALIFORNIA DEPARTMENT OF PARKS AND RECREATION

Management of the California Coastal National Monument

Whereas, all unappropriated or unreserved lands and interest in lands owned or controlled by the United States in the form of islands, rocks, exposed reefs, and pinnacles above mean high tide within 12 nautical miles of the shoreline of the State of California were designated as the California Coastal National Monument (Monument) by Presidential Proclamation on January 11, 2000;

Whereas, the Monument was nationally recognized in the Proclamation as a biological and geological treasure, rich in biodiversity, and providing essential habitat for many species of scientific interest;

Whereas, Monument designation mandates the protection of historic and scientific objects, particularly wildlife species which normally inhabit the Monument area, and the designation limits management discretion that the Federal managers otherwise have;

Whereas, the Secretary of Interior manages the monument through the Bureau of Land Management (Bureau) and under the Bureau's existing authorities, subject to the overriding purpose of protecting the objects described in the Presidential Proclamation of January 11, 2000;

Whereas, the Secretary of Resources for the Resource Agency of California has responsibility for all nonstatutory marine and coastal resources management programs for the State of California pursuant to the 1991 amendments of the California Ocean Resources Management Act.

Whereas, the California Department of Fish and Game (CDFG) recognizes the crucial wildlife values of the lands within the Monument;

Whereas, the Bureau has always retained legal responsibility for the Monument area but the CDFG has been handling day-to-day management since 1983 under a mutually signed MOU called "Management of the California Islands Wildlife Sanctuary" (see Attachment A);

Whereas, the California Department of Parks and Recreation (CDPR) manages 25 percent of the coastline of California, including lands and waters adjacent to the Monument, and is a public trust agency with responsibilities for protecting the natural and historic values;

Whereas, the Bureau, the Secretary of Resources, CDFG, and CDPR are interested in management of the Monument as partners for the benefit of its natural and historic resources and are so authorized by appropriate federal or state legislation; and

Whereas, the Bureau, Secretary of Resources, CDFG, and CDPR recognize that the cooperation of other federal, state, local, and private entities which manage resources along the California coast are essential to ensure the protection of objects recognized in the Presidential Proclamation of January 11, 2000:

1. Bureau Authority.

- A. Intergovernmental Cooperation Act (PL 91-648).
- B. National Environmental Policy Act (PL 91-198).
- C. Federal Land Policy and Management Act (PL 94-579).

2. State of California Authority.

- A. California Fish and Game Code, Article 4, Section 1580, Ecological Reserves.
- B. Title 14, California Code of Regulations, Chapter 11, Section 630, Ecological Reserves.
- C. California Public Resources Code, Chapter 1, Section 5003
- D. Public Resources Code 36000 et seq.

Now Therefore,

WITNESSETH:


The Bureau, the Resources Agency, CDFG and CDPR Mutually Agree:

1. To collaborate in the management of the Monument by carrying over to this MOU the provisions of the Memorandum of Understanding signed in 1983 "Management of the California Islands Wildlife Sanctuary" but subject to:
 - A. the conditions in the Presidential Proclamation for designation of the California Coastal National Monument,
 - B. the recognition that BLM retains the ultimate legal responsibility for the area, and
 - C. any additional agreements stated below.
2. To only authorize uses of the Monument within the constraints of the Proclamation and this agreement.
3. To authorize appropriate uses within the Monument only following consultation between the parties,
4. To work as partners in preserving the objects of historic and scientific interest outlined in the Presidential Proclamation of January 11, 2000.
5. To work as partners in mapping and understanding resources within the Monument as well as working with the public to explain the values of the Monument;
6. That this MOU and Memorandum of Understanding signed in 1983 (Attachment A) be considered an Interim MOU until the Bureau, Secretary of Resources, CDFG, and CDPR develop a new MOU which they mutually agree would accommodate additional interested coastal

partners and/or has revised or alternative provisions that benefit the purposes for which the Monument was designated.

7. That it is expressly stipulated and agreed by all parties that each and every provision in this MOU is subject to the laws of the State of California, the laws of the United States, and to the delegated authority assigned in each instance.
8. That nothing in this agreement shall be construed as obligating the parties hereto to expend funds, or for the future payment of money, in excess of appropriations authorized by law.
9. To accomplish all cooperative work under the provisions of this memorandum or supplemental memorandum of understanding or cooperative agreements without discrimination against any employee, or applicant for employment, because of race, creed, color, or national origin.
10. That this MOU shall become effective when signed by the designated representatives of the parties hereto and shall remain in force until terminated by mutual agreement, or by any party upon thirty days notice in writing to the other of its intention to terminate upon a date indicated.

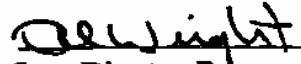
Approved


Director, California Department of
Fish and Game

5-31-00

Date

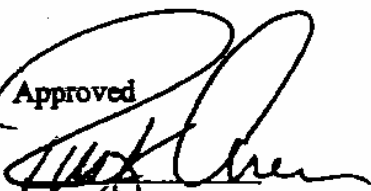
Approved


State Director, Bureau of Land Management

5/18/00

Date

Approved


Director, California Department of
Parks and Recreation

6/5/2000

Date

5/17/00 3:00 PM, Reply, Inter-AG2000/MOU, With, State

I CONCUR



Secretary for Resources, State of
California

May 30, 2000

Date

Attachment A
MEMORANDUM OF UNDERSTANDING
BETWEEN
THE CALIFORNIA DEPARTMENT OF FISH AND GAME
AND
THE BUREAU OF LAND MANAGEMENT
DEPARTMENT OF INTERIOR

Management of the California Islands Wildlife Sanctuary

Whereas, the Bureau of Land Management (Bureau) is responsible for the rocks, islands, reefs and pinnacles lying off the coast of California which are presently unappropriated or reserved (other than by Executive Order 5326) and which lie above the mean high tide line; and

Whereas, the Bureau and the California Department of Fish and Game (Department) recognize the crucial value of these lands to wildlife, including the federally listed endangered Brown Pelican and threatened southern sea otter; and

Whereas, the Bureau has, through publication of Public Land Order (PLO) 6369, segregated the rocks, islands, reefs, and pinnacles off the coast of California from the action of the general public land laws, including the mining and mineral leasing laws; and

Whereas, the Bureau has, through PLO 6369, designated the California rocks and islands as the California Islands Wildlife Sanctuary; and

Whereas, the sanctuary is defined by the contents of PLO 6369 which states that it is "All of the islands, rocks, pinnacles, and reefs...situated in the Pacific Ocean off the coast of California, lying above the mean high tide from Oregon to the Mexican border...which are withdrawn from...settlement, sale, location, or entry under the general land laws, including the mining and mineral leasing laws, subject to valid existing rights....;" and;

Whereas, the Bureau and Department are both interested in management of the Sanctuary for the benefit of its wildlife resources and are so authorized by appropriate federal or state legislation:

1. Bureau Authority.

- A. Intergovernmental Cooperation Act (PL 91-648).
- B. National Environmental Policy Act (PL 91-198).
- C. Federal Land Policy and Management Act (PL 94-579).

2. Department Authority.

- A. California Fish and Game Code, Article 4, Section 1580, Ecological Reserves.
- B. Title 14, California Administrative Code, Chapter 11, Section 630, Ecological Reserves; and

Whereas, the Department has the capability to manage offshore resources;

Now Therefore,

The Bureau Agrees:

1. To turn over management responsibilities of the Sanctuary to the Department.
2. To only authorize use of the Sanctuary within the constraints of PLO 6369 and this agreement.
3. To authorize appropriate uses within the Sanctuary only following consultation and concurrence by the Department.

The Department Agrees:

1. To be responsible for management of the Sanctuary.
2.
 - A. To only allow public uses of the Sanctuary which are consistent and compatible with the protection and conservation of the wildlife resources.
 - B. During the nesting season (April 1 - August 15), to only allow activities demonstrated as non-detrimental to breeding pelagic birds.
 - C. To prohibit removal of vegetation, minerals, or other products having commercial value.
3. To conduct, when feasible, biological surveys at seasons appropriate for estimating breeding bird and marine mammal populations by species. Such data will be reported to the Bureau so trend analysis can be made.
4. To allow entry into the Sanctuary by agents of the United States government when on official duty status.
5. To insure that authorized use does not significantly alter the Sanctuary's capacity to support wildlife.
6. To consult with the Bureau on any matters pertaining to the Sanctuary which are above and beyond the intent of this Memorandum of Understanding, e.g., leasing on submergent lands, other activities which could significantly affect the objectives of the Sanctuary.

It is Mutually Agreed:

1. It is expressly stipulated and agreed by both parties that each and every provision in this Memorandum of Understanding is subject to the laws of the State of California, the laws of the United States, and to the delegated authority assigned in each instance.
2. Nothing in this agreement shall be construed as obligating either agency hereto in the expenditures of funds, or for the future payment of money, in excess of appropriations authorized by law.
3. That no member of, or delegate to Congress, or Resident Commissioner, shall be admitted to any share of part of this agreement, or to any benefit that may arise therefrom.
4. To accomplish all cooperative work under the provisions of this memorandum or supplemental memorandum of understanding or cooperative agreements without discrimination against any employee, or applicant for employment, because of race, creed, color, or national origin.
5. This Memorandum of Understanding shall become effective when signed by the designated representatives of the parties hereto and shall remain in force until terminated by mutual agreement, or by either party upon thirty days

5/17/83 3:00 PM; Rocky_Islands(2000)MOU_Wish_State

notice in writing to the other of its intention to terminate upon a date indicated. Amendments to this MOU may be proposed by either party and shall become effective upon approval by both parties.

Approved

E.C. Fullerton

Director, California Department of
Fish and Game

May 13, 1983

Date

I CONCUR

Gordon VanVleck

Secretary for Resources, State of
California

May 24, 1983

Date

Approved

Ed Hastey

State Director, Bureau of Land Management

May 23, 1983

Date

I CONCUR

Robert Burford

Director, Bureau of Land Management

May 24, 1983

Date

Approved by the Department of General Services - May 13, 1983

OIL SPILL MEMORANDUM OF COOPERATION

Between the Pacific
States of Alaska, California,
Hawaii, Oregon, and Washington
and the
Province of British Columbia

June 2001

OIL SPILL

MEMORANDUM OF COOPERATION

Whereas the Province of British Columbia (the "Province") and the Pacific States of Alaska, California, Hawaii, Oregon, and Washington (the "States") share and protect common Pacific Ocean fish and wildlife resources and their supporting environments, as well as common cultural and economic values; and

Whereas the Province and the States each have a mandate to enhance and protect their environmental, cultural, and economic resources from oil spills; and

Whereas the Province and States also share the benefits, risks and impacts from oil transportation and carriage; and

Whereas the impacts of oil spills and pollution may cross jurisdictional boundaries; and

Whereas it is paramount to both maintain and improve a coordinated response to prevent, prepare for, and respond effectively to oil spills in our shared waters; and

Whereas the Province and the States have coordinated effectively for over a decade under an initial Memorandum of Cooperation signed in 1989, producing Agreements and Recommendations that have significantly improved the protection of our shared resources and established an internationally respected model of cooperation; and

Whereas the future requires continued cooperation in preventing or abating oil spills in our respective jurisdictions, including the provision of opportunities for the participation of appropriate federal agencies and all affected stakeholders of both Canada and the United States;

Now therefore, in recognition of the spirit of co-operation which has characterized their efforts thus far, the Province of British Columbia, through its Premier, the Honorable Ujjal Dosanjh, the State of Alaska through its Governor, the Honorable Tony Knowles, the State of California through its Governor, the Honorable Gray Davis, the State of Hawaii through its Governor, the Honorable Benjamin Cayetano, the State of Oregon through its Governor, the Honorable John Kitzhaber, and the State of Washington through its Governor, the Honorable Gary Locke, join together in this Memorandum of Cooperation pertaining to the resolution of mutual problems of oil spill pollution in the aforementioned jurisdictions.

In this regard the Province and the States will continue to participate in and support an

Oil Spill Task Force to develop coordinated programs for oil pollution prevention, preparedness, and response as well as improved communications.

The members of the Pacific States/British Columbia Oil Spill Task Force will be the British Columbia Deputy Minister for the Environment, Lands, and Parks, the Commissioner of the Alaska Department of Environmental Conservation, the Administrator of the California Office of Spill Prevention and Response, the Hawaii Deputy Director for Environmental Health, the Director of the Oregon Department of Environmental Quality, and the Director of the Washington Department of Ecology.

To ensure effective coordination of their intergovernmental efforts, representatives of each member agency will be appointed to maintain this Memorandum and coordinate Task Force activities. These representatives and the Task Force Executive Coordinator will form the Task Force Coordinating Committee. The Coordinating Committee will meet quarterly and the Task Force members will meet annually to review progress and plan future cooperation as outlined in Strategic Plans adopted by the Task Force Members.

Issues addressed by the Task Force Strategic Plans will include shared issues of concern with regard to:

- Oil spill prevention, preparedness and response;
- Information exchange on issues of vessel pollution other than oil;
- Effective communications; and
- Consistency and compatibility between Task Force jurisdictions.

Each party shall bear its own expenses of cooperating pursuant to this Memorandum, and will contribute to the operating expenses of the Task Force according to interagency agreements established for that purpose.

The duration of this Memorandum of Cooperation is intended to be perpetual, but each party may terminate its agreement at will by giving written notice to the other parties.

The parties do not intend by this memorandum to create any separate legal or administrative entity.

Appendix Vf Excerpt from MEXUSPAC

**& Information Regarding U.S. Spill Responders Entering Mexico during a Spill & Information
Regarding Wildlife Transport Across Border**

International cooperation during spill responses is enabled by the MEXUSPAC, an accord signed by the United States and Mexico; pages from MEXUSPAC that are relevant to Wildlife Operations are attached. The entire document can be found in an Annex of the ACP.

The following information regarding spill responders crossing the border was developed during the Spill of National Significance drill held in Long Beach and San Diego in April, 2004. Representatives from the Mexican government participated in the drill because it was scripted to be a spill which crossed the international boundary.

Spill responders entering Mexico

Assuming there is an oil spill which moves into international waters, and involves the Mexican government, the Planning Chief should forward to the Mexican liaison the following:

- [] A list of people who will cross the international border (state and federal), signed and stamped by the FOISC. The list will include:

First Name

Last Name

Age

Gender

Citizenship

Transport Mode

City of Residence

City or Port of Entry

- [] A letter for each DFG or other state employee, signed by the SOS as representative of the Administrator. The letter should state declare, under the Administrator's emergency action powers, that the state employee has permission to cross the border.

- [] A photographic identification for each person – California Driver’s License or Passport, or both.

- [] A list of Equipment to be used by SCAT and Wildlife Operations teams. The list will include:

Name of Equipment (Description)

Trademark

Model

Owner

Number of Pieces

Status (new or used)

Place of Origin

Destination

State vehicles may be used in Mexico provided Mexican insurance is purchased prior to crossing the border. (Source: Office of Risk Management).

The Mexican liaison will coordinate with Mexican Immigration and Customs to obtain needed clearances.

Transport of oiled wildlife across the international boundary

In the event that injured and/or dead animals are to be imported across the Mexican border into the U.S. to Oiled Wildlife Care Network (OWCN) or other facilities, the preliminary indication from the USFWS is that a blanket permit will be required to cover import of bird species listed under the Federal Endangered Species Act, the Migratory Bird Treaty Act and/or the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Additionally, transport of marine mammals triggers compliance issues under the Marine Mammal Protection Act involving either the Department of Commerce (for cetaceans and pinnipeds other than walrus) or the Department of Interior (all other marine mammals). The possibility of streamlining the process by entering into Cooperative Agreements, MOUs or other agreements with the USFWS and other potentially involved agencies to cover the import of wildlife species as part of an emergency spill response should be explored.

In addition to the issue of import permits, USFWS law enforcement personnel would be involved in the inspection of wildlife transported across the border. Upon transport of injured or dead birds across border the, USFWS inspectors would have to be notified so that they may inspect wildlife and fill out the required wildlife declarations (FWS 3-177 form).

The Mexican government also has laws and policies in place to deal with the export of wildlife. Generally, export and collection permits are required. Such permits are usually issued in conjunction with research permits. The California Department of Fish and Game, Office of Spill Prevention and Response is currently in communication with Mexican government officials to determine what permits or other procedures would be triggered in the event of export of injured or dead wildlife as part of an emergency spill response. The possibility of streamlining the process through blanket permits or through agreements such as the MEXUSPAC should be explored.

Overall, given the difficulties surrounding border crossings, from the time consumed to simply cross the border to the complexities of coordination, obtaining permits or other agreements and arranging inspections, it may be simpler, more expedient and more humane to transport equipment and supplies to Mexico rather than import wildlife from Mexico to U.S. facilities. Whether this approach could be expedited by purchasing equipment and supplies, especially veterinary drugs, in Mexico rather than transporting them across the border should also be explored. Additionally, a longer-term solution such as the establishment of a Mexican Oiled Wildlife Care Network or equivalent program or facilities in Mexico should be considered thereby providing the programs and infrastructure needed to maximize cooperative international spill response capabilities.

Contact Information

USFWS Contacts:

USFWS Otai Wildlife Inspectors 619-661-3130.

USFWS San Diego Law Enforcement Office, John Brooks 619-557-5063

Mexican Government Contacts

SEMARNI, coordinatiocion de Asuntos Internacionales
Subdirectora de Conservacion y Medio Ambiente
Anillo Periferic Sur 4209-6 piso
Fracc. Jardines en la Montana
MX, D.F. 14210
Tel: 628-06-51/52
FAX: 628-06-53

Profepa
Inspector in TJ
011-52-66-24-31-52 (otay)
Or 34-30-73 (main)
FAX: 34-31-17

Paseo De Los Heroes Y Jose Clemente Orozco
Zona Del Rio, TJ B.C.

Internet Resources:

Permit information

<http://international.fws.gov/permits/import.html>

Transport information for birds

<http://www.cites.org/eng/resources/transport/av1.shtml>

Oiled wildlife rehabilitation information

<http://www.globalcrisis.info/wildlife.html>

* International Fund for Animal Welfare (IFAW) source [U.S. Intn'l HQ] Mass. 1 508 744 2000 or 1 800 932 4329 Fax: 1 508 744 2009
info@ifaw.org Phones for branches in Canada, EU, United Kingdom, Netherlands, Germany, France, Asia Pacific, Russia, China, Southern Africa, East Africa, Mexico



U.S. Department
of Transportation

United States
Coast Guard



MEXUSPAC ANNEX

**ANNEX OF THE JOINT CONTINGENCY PLAN BETWEEN
THE UNITED MEXICAN STATES AND THE UNITED
STATES OF AMERICA REGARDING POLLUTION OF THE
MARINE ENVIRONMENT BY DISCHARGES OF
HYDROCARBONS OR OTHER HAZARDOUS SUBSTANCES.**

P 406 REHABILITATION OF NATURAL RESOURCES

There are bordering areas both in Mexico and in the U.S.A. that are considered susceptible to environmental and/or economic harm following a hydrocarbon spill.

P 406.1 SENSITIVE AREAS

P 406.1.1 ECOLOGICALLY SENSITIVE AREAS

P 406.1.1.1 ENVIRONMENTALLY SENSITIVE AREAS IN MEXICO

Reference section 301.1 to section 301.5 of the Second Mexican Naval Zone Local Contingency Plan.

P 406.1.1.2 ENVIRONMENTALLY SENSITIVE AREAS IN U.S.A.

Reference section 3600 of the San Diego County ACP.

P 406.1.2 ECONOMICALLY SIGNIFICANT AREAS

P 406.1.2.1 ECONOMICALLY SENSITIVE AREAS IN MEXICO

Reference section 301.5.2 of the Second Mexican Naval Zone Local Contingency Plan.

P 406.1.2.2 ECONOMICALLY SENSITIVE AREAS IN U.S.A.

Reference section 4622 of the San Diego County ACP.

P 406.1.3 CULTURAL, HISTORIC AND ARCHAEOLOGICAL AREAS

P 406.1.3.1 CULTURAL AND HISTORIC SITES IN MEXICO

National Parks in the marine area of Baja California do not exist. Nevertheless, all the islands of the Pacific of interest to Mexico are considered protected ecological areas in respect to this geographic annex.

P 406.1.3.2 CULTURAL AND HISTORIC SITES IN THE U.S.A.

Reference section 4621 of the San Diego County ACP.

P 504.1.2 U. S. CUSTOMS AND BORDER PROTECTION PROCEDURES FOR MEXICAN RESPONSE PERSONEL AND EQUIPMENT TRAVELLING INTO THE U.S.A.

To facilitate passage into the U.S. for response operations, U. S. Customs and Border Protection (CBP) advises the Consulate General of Mexico in San Diego, California and the American Consulate General in Tijuana, BC. A relation of the response equipment and material shall be sent to the Coast Guard showing:

Machinery designation
Machinery owner
Number of units (if more than one)
Commercial name
Model
Serial number
Value of equipment (in dollars)
Hazardous materials list
New or used
Origin
Destination in the U.S.A.

When the personnel coming from Mexico arrive at the U.S./Mexican Border, CBP will examine and validate the documentation so that the equipment may enter the United States.

*U.S. Customs and Border Protection, San Ysidro, California 619-690-8800 or Otay Mesa, 619-671-8064
the Customs Management Center at 619-557-5455.
Mexico Customs 011-52-66-46-24-2211*

To facilitate passage into the U.S. for response operations, CBP requires a relation of the response personnel and material be sent to the Coast Guard, showing:

*Surnames
First Names
Date of birth
Nationality
Sex
Transportation means
Staying place
Entry city*

At least the first three data should be given. As soon as this information arrives to the Coast Guard, they will present the corresponding documentation to:

The *U.S. Customs and Border Protection* 1240 North Harbor Drive, San Diego, California 92101 or facsimile to: CBP
San Diego office at: 619-557-6818, phone: (619) 557-5637 ext 212.

As soon as CBP receives the information, they will check the background of all response personnel traveling to U.S. and prepare the form I-94 (for non-immigrants), and the arrival file of each response team member. Likewise, every member of the response team traveling to the U.S. will be responsible for checking their paperwork and signing their form I-94.

The Consulates can be reached at:
American Consulate, Tijuana, Mexico 011-52-664-622-7400
Consulate General of Mexico, San Diego, California 619-231-8414.
San Ysidro 619-690-5717

APPENDIX III

MEXUSPAC CONTACT LIST

Mexican Office of Maritime Customs (Ensenada): 011-52-64-61-78-8327

Mexican Office of Immigration (Ensenada): 011-52-64-61-74-0164

The U.S. National Oceanic and Atmospheric Administration (NOAA) California Scientific Support Coordinator can be contacted at phone: 510-437-5344; pager 800-759-8888 PIN #579-8818.

For emergency border crossing assistance contact the U.S. Customs Emergency Border Crossing Coordination Center at 619-690-8888 (24 Hr).

The contact for the San Ysidro Port of Entry shift supervisor 619-690-8887 (24 Hr).

Heavy equipment or large vehicles should coordinate customs clearance at the Otay Mesa Border Station, Commercial Vehicle Port of Entry: 619-671-8064 (inbound to U.S.) and 619-671-8282 (export).

For emergency U.S. Immigration coordination contact the Immigration Operations Supervisor at 619-662-7311 (24 Hr).