### **Marine Life Protection Act Initiative**



Marine Birds and Marine Mammals Evaluations for Round 1 External Proposed MPA Arrays in the MLPA North Coast Study Region

Presentation to the North Coast Regional Stakeholder Group March 25, 2010 • Crescent City, CA

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## MLPA Goals\* and SAT Guidelines

### **MLPA Goals**

- 1. To protect the natural diversity and function of **marine ecosystems**.
- 2. To help sustain and restore marine life populations.
- 3. To improve **recreational**, **educational**, **and study opportunities** in areas with minimal human disturbance.
- 4. To protect representative and unique marine life habitats.
- 5. Clear objectives, effective management, adequate enforcement, sound science.
- 6. To ensure that MPAs are designed and managed as a **network**.

\*Note that this language represents a summary of the MLPA goals

**SAT Guidelines** – No birds and mammals specific guidelines have been developed by the SAT, beyond the broad MLPA goals



# **Marine Birds and Marine Mammals**

- Long-lived, often greater than 20 years
- Few offspring with high parental care
- Seasonally sensitive to disturbance at colonies
- Feed near the top of marine food webs









## **Marine Mammals Overview**

- Pinnipeds 5 species
  - Steller Sea Lion\*
  - Harbor Seal\*
  - California Sea Lion
  - Northern Elephant Seal\*
- Cetaceans 16 species
  - Harbor Porpoise\*
  - Gray Whale







\* Breeds in study region



## **Marine Birds of the Nearshore**

- 12 breeding species
  - Common Murre
  - Pigeon Guillemot
  - Pelagic, Brandt's, and Double-crested Cormorant
- Neritic non-breeding species
  - Loons and Grebes
  - Surf and White-winged Scoters
  - Gulls
  - Phalaropes
  - Procellariiformes







## **Estuarine and Marsh Birds**

High seasonal numbers, high diversity, few breeders

- Shorebirds Beach and tidal flat Greater than 25 species
- Waterfowl Estuarine waters
  Greater than 25 species

Waders - Marsh and Shallows

- Herons and Egrets
- Others:
  - Raptor predators
  - Gulls and Terns
  - Belted Kingfisher









## Coastal Birds, Rock & Sand Shore

- Rocky Shoreline Birds
  - Wandering Tattler
  - Black Turnstone
  - Surfbird
  - Black Oystercatcher\*
- Sandy Beach Foraging Birds

High seasonal numbers, many species also use estuaries

- Sanderling
- Marbled Godwit
- Snowy Plover\*









## **Threats**

### Human Disturbance

- To nesting colonies and rookeries: short-term loss of young and long-term loss of breeding and rest/haulout sites
- To estuarine habitats: from short term to chronic loss of foraging; energetic loss for migration and nesting
- Boats (all types), hunting (estuaries) and shoreline activities (all types)



<sup>\*</sup> Breeds in study region



# Threats, continued

- Anthropogenic pollution
  - Oilspills, catastrophic and chronic
  - Other (e.g.: sediment contaminants, water quality)
- Fisheries bycatch
- Disturbance to neritic foraging hot spots







## **Methods Overview**

Analyses quantify north coast study region (NCSR) marine bird and mammal populations likely to benefit from MPAs for three use categories:

- 1. Breeding
- 2. Resting
- 3. Foraging

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## **Notes about Round 1 Analyses**

- Evaluate by whole study region, not bioregions
- Assumption that state marine reserves (SMRs) will result in a reduced level of activity/disturbance
- Marine mammal analyses considered only proposed SMRs
- Marine bird analyses included only proposed SMRs
- Effects on benefits to birds and mammals by proposed tribal uses were not evaluated
- Analyses of External MPA Array C (ExC\*) include state marine conservation areas (SMCAs) that only include proposed tribal uses since ExC did not use the SMR classification for these MPAs, as did other external arrays
- Mobile MPAs in external MPA array A were consider static for the purpose of evaluation



## **Marine Bird and Mammal Analyses**

# Analysis 1: Protection at Breeding Sites Investigated:

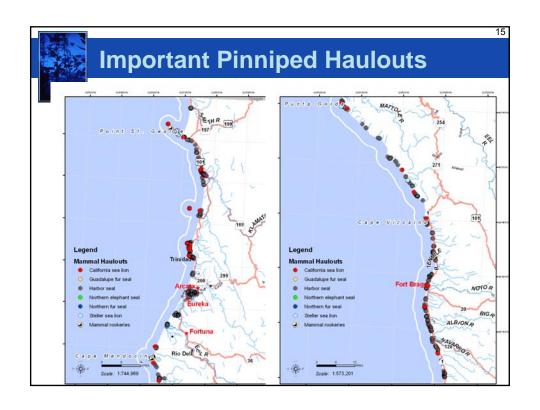
- percent (%) of bioregion marine bird breeding populations protected
- number of pinniped rookery sites protected
- protection of important marine bird breeding hot spots
- protection of important pinniped hot spots

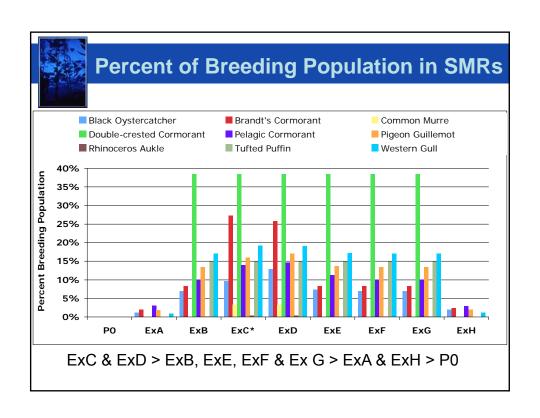






Seabird Breeding Colonies						
Species	Number of Animals in the Study Region					
Black Oystercatcher (BLOY)	248					
Brandt's Cormorant (BRCO)	13105					
Cassin's Auklet (CAAU)	4833					
Common Murre (COMU)	258010					
Double-crested Cormorant (DCCO)	2873					
Fork-tailed Storm-Petrel (FTSP)	419					
Leach's Storm-Petrel (LESP)	9414					
Pelagic Cormorant (PECO)	5675					
Pigeon Guillemot (PIGU)	3148					
Rhinoceros Auklet (RHAU)	1063					
Tufted Puffin (TUPU)	181					
Western Gull (WEGU)	4046					
Study Region Total	303014					









# **Marine Bird Breeding Hot Spots**

Breeding Hot Spots	ExC	ExD	ExE
Castle Rock			
			False
	False Klamath	False Klamath	Klamath
False Klamath Rock	Cove SMCA	SMCA	SMCA
Green Rock			
Flatiron Rock			
			False Cape
False Cape Rocks			SMCA
Steamboat Rock			
	Vizcaino		Vizcaino
Rockport Rocks	SMCA	Usal SMR	SMCA
	Vizcaino		Vizcaino
Cape Viscaino	SMCA	Usal SMR	SMCA

• P0, ExA, ExB, ExF, ExG, and ExH did not capture any marine bird breeding hot spots



# **Marine Mammal Hot Spots**

	Population Hot Spots								
	SW Seal	Sugarloaf	Vicinity of Castle	South Bay,	Arcata Bay,	Mouth of Eel			
	Rock*	Island*	Rock, Crescent City	Humboldt Bay	Humboldt Bay	River			
PO									
				Humboldt Bay					
ExA				SMRMA					
				Humboldt Bay					
ExB				SMRMA					
				Humboldt Bay					
ExC				SMRMA					
				South Humboldt					
ExD				Bay SMCA					
				South Humboldt					
ExE				Bay SMRMA					
				Humboldt Bay					
ExF				SMRMA					
		•		Humboldt Bay					
ExG				SMRMA					
				Humboldt Bay					
ExH				SMRMA					

<sup>\*</sup> These locations contain the two Steller sea lion rookeries in the study region



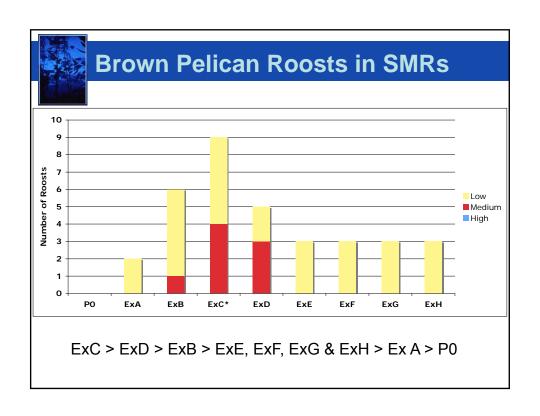
# **Marine Bird and Mammal Analyses**

Analysis 2: Protection at Roosting and Haulout Sites Investigated:

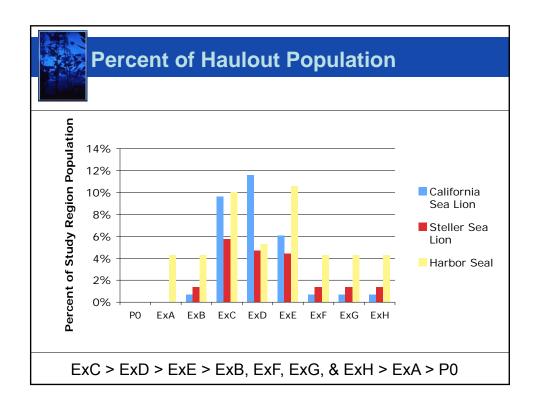
- percent (%) of study region populations protected for pinnipeds
- number and size of Brown Pelican roosts

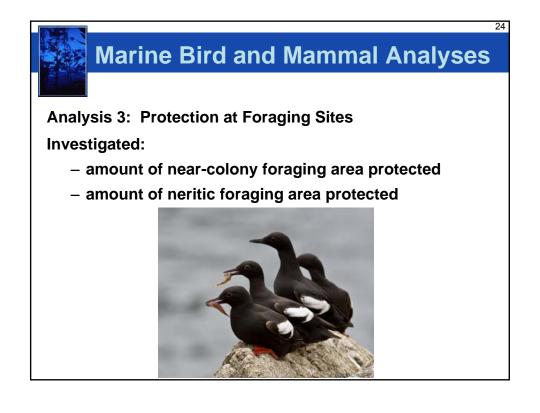


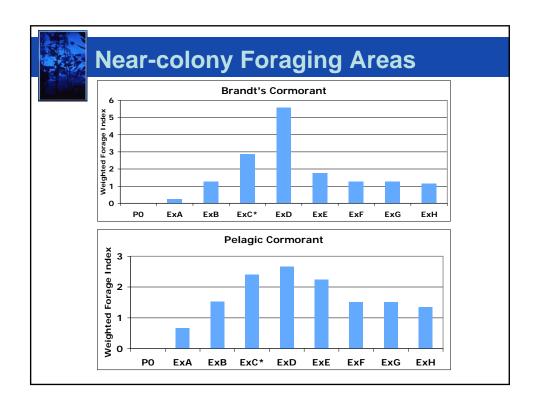


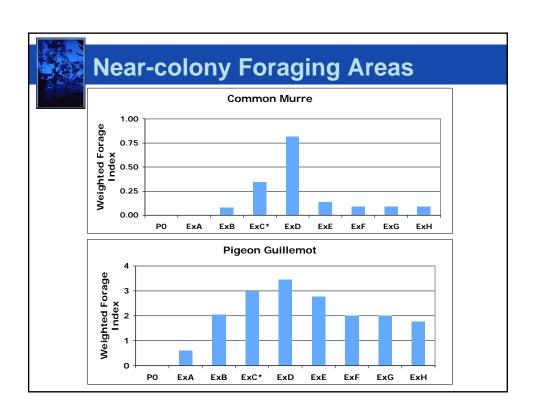


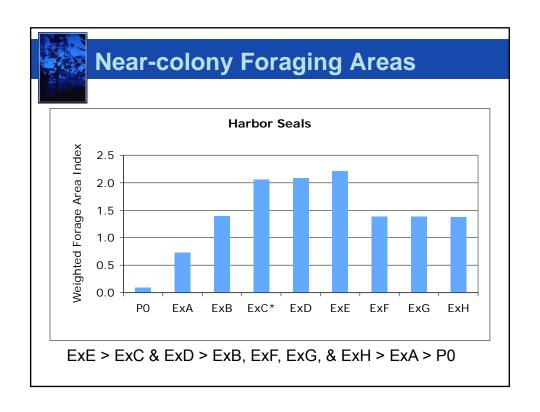
	No. of Species	California Sea Lion	Steller Sea Lion	Harbor Seal	Total Number of Animals	Percent of Study Region Population
P0	0	0	0	0	0	0.00%
ExA	1	0	0	380	380	1.29%
ExB	3	93	94	383	570	1.94%
ExC*	3	1311	396	893	2600	8.84%
ExD	3	1577	326	472	2375	8.07%
ExE	3	829	307	944	2080	7.07%
ExF	3	93	94	383	570	1.94%
ExG	3	93	94	383	570	1.94%
ExH	3	93	94	383	570	1.94%
Study Region Total	3	13608	6905	8902	29415	100%













# **Neritic Foraging Area Analysis**

### Gray whale foraging index within proposed MPAs

MPA Proposal	MPA Name	Whales Weighted Forage Index	Sum of weighted index in SMRs
PO	None	0.00	0
	Crescent City Mobile SMCA	1.01	
ExA	Crescent City Mobile SMCA	4.87	
	Trinidad Mobile SMCA	5.22	0
ExB	None	0.00	0
ExC	False Klamath Cove SMCA	2.87	0
	False Klamath SMCA	4.45	
Patrick's Point SMCA		4.16	0
ExE	False Klamath SMCA	5.70	0
ExF	None	0.00	0
ExG	None	0.00	0
ExH	None	0.00	0





## **Marine Bird and Mammal Analyses**

**Analysis 4: Protection in Estuarine and Coastal Habitats** 

Investigated number of estuaries and percent of available tidal flat, coastal marsh, Humboldt Bay eelgrass and beach habitat protected









## **Estuarine and Coastal Habitat**

### Estuaries

- ExA, ExB, ExC, ExD, ExF and ExG contained 2 estuaries in SMRs: Ten Mile Estuary SMR and Navarro River Estuary SMR
- ExE and ExH included only Ten Mile Estuary SMR

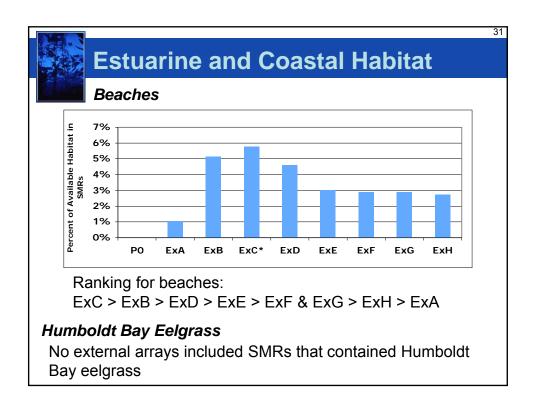
#### Coastal Marsh

- ExA, ExB, ExC, ExD, ExF and ExG contained coastal marsh areas in Ten Mile Estuary SMR and Navarro River Estuary SMR
- ExE and ExH contained coastal marsh area in Ten Mile Estuary SMR

### Tidal Flats

- ExA, ExB, ExC, ExD, ExF, and ExG contained tidal flats area in Navarro River Estuary SMR
- ExE and ExH did not contain tidal flats in SMRs

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## **Summary of Round 1 Analyses**

- Overall, ExC and ExD provide the most benefits to marine birds and mammals, including only SMRs
- Considering SMCAs, the nature of allowed activities and additional hotspot colonies included, ExE performs best in protecting nesting colonies and neritic foraging sites
- ExC, ExD and ExE also afford the most protection of marine mammal haulouts; marine mammal analyses considered only proposed SMRs
- No marine mammal hot spots or gray whale foraging areas were captured in SMRs

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Analysis	P0	ExA	ExB	ExC	ExD	ExE	ExF	ExG	ExH
Seabird Breeding Colonies	-			+	+				-
Sea Lion Breeding Rookeries	-	-	-	-	-	-	-	-	-
Seabird Roost Sites				+					
Seabird Breeding Hot Spots				+	+				
Pinniped Hot Spots				+	+	+			
Brandt's Cormorant Foraging					+				
Common Murre Foraging					+				
Pigeon Guillemot Foraging				+	+	+			
Pelagic Cormorant Foraging				+	+	+			
Gray Whale Foraging	_	-	-	-	-	_	_	-	_
Harbor Seal Foraging				+	+	+			
Estuarine and Coastal Habitats	=	=	=	=	=		=	=	



# **Analyses in Progress**

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- Pinniped Rookery Analysis
  - -California sea lion: No rookeries
  - Steller sea lion: One rookery at SW Seal Rock and one rookery at Sugarloaf Island
  - -Harbor seal: Analyzing and evaluating data
- Neritic Foraging Analysis
  - -Gray whale analysis: Running
  - -Marine bird and mammal analysis: In progress
- Water Fowl Analysis
  - -Analyzing and evaluating data