Brown Pelican Roost Site Atlas: A Database and Management Tool for the California Coast

The endangered California brown pelican has been studied extensively; however no comprehensive statewide database or mapping project has adequately documented pertinent information necessary for oil spill response and Natural Resource Damage Assessment (NRDA) personnel. This presentation discusses an electronic atlas created to aid in wildlife recovery, NRDA, and restoration following marine oil spills.

California Brown Pelican Roost Site Atlas Project

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Project Director: Deborah Jaques (Pacific Eco Logic)
Collaborators: Harry Carter and Phil Capitolo (Carter Biological Consulting)

Background

- California Brown Pelicans roost communally at traditional sites along the California coast
- Pelican surveys have been conducted but no comprehensive database or set of roost site maps have been developed

Needs for Site-Specific Pelican Data

- Monitoring consistency
- Oil Spill Contingency Planning
- Oil Spill Search and Collection
- Natural Resource Damage Assessment
- Restoration Planning
- Management and Conservation

Primary Project Objectives

- Collate historical roosting pelican distribution and abundance data from multiple sources into master database
- Identify, georeference, and map roost sites in northern and central California
- Present results in electronic, hardcopy atlas and GIS ready database

Roost Site Description

- Seasonal pelican abundance
- Diurnal pattern of use (night roost status)
- Site ownership and management
- Known management issues
- Ground-based viewpoints

Today's Talk

- Describe database
- Walk through roost atlas
- Discuss how atlas can be used for
  - 1. monitoring
  - 2. contingency planning
  - 3. nrda
  - 4. restoration planning
  - 5. management and conservation

Sources of Data (1986-2007)

- Graduate Research (UCD)
- Moss Landing Wildlife Area Study (CDFG)
- Oil Spill Response Surveys/NRDA
  - *Torch/Irene, Kure* (ECI)
- Restoration Planning Efforts (*American Trader* Trustees)
- Annual Aerial Seabird Colony Surveys (CDFG, *Apex Houston* Trustees, HSU)
- Coastal Bird and Mammal Study (CDPR)
- Mugu Lagoon Disturbance Study (USN)
- Southern California Bight Seabird Distribution Study (MMS)
- Opportunistic surveys (Jaques)

Challenges of Data Mining

- No established or long-term monitoring effort
- No established database structure
- No consistent definition or grouping of roost sites
- Different observers with different methods
- Data is in a variety of formats
- Data hard to retrieve due to relocation, change in computers, change in work associations
- But overall, very rewarding!

35.4843 -121.0345
35.4788 -121.0255
35.4756 -121.0263
Alapay Way
© 2008 Tele Atlas
©2007 Google™
852 m
Pointer lat 35.481590° lon -121.031166° elev 0 m
Streaming 100%
Eye alt 2.95 km

The Database

- 196 roost sites defined
- 1,833 records collated
- 50% Aerial Survey, 50% ground or boat- based
- 43% first decade (1986-1996); 57% second decade (1997-2007)
- Warning! Uneven sampling limits statistical use

Fieldname:	Field Meaning
STATE:	State where roost site occurs
CO:	County, 2 letter code
CONO:	County number, numbered from south to north along the California coast
NEWNO:	New roost site number, revised from earlier databases, resets at south end of each county.
LOC:	Location. Roost site name.
HAB:	Habitat. Primary habitat category, one that best describes roost site.
DATE:	Date of observation.
TIME:	Time of observation.
METHOD:	Method of observation
TOTRST:	Total number of pelicans at roost site
LATITUDE:	Latitude in decimal degrees
LONGITUDE:	Longitude in decimal degrees
OWNER:	Owner of roost site
MANAGER:	Manager of location where roost site exists
FWSCOLN:	USFWS Seabird Colony Catalog number from Carter et al. 1992.
COLONYNAME:	USFWS Seabird Colony Catalog name from Carter et al. 1992.
OBSERVERS:	Observers involved in collecting field data
DOTTERS:	Person(s) that dotted and counted pelicans from aerial photographs
YEAR:	Year in which data were collected
MO:	Month in which data were collected
DAY:	Day that data were collected

SHELL BEACH ROCKS

Roost No: SL 6.0 | 35.1512, -120.673 | Map No. 20
USFWS Colony No: 477-035 | Owner: BLM | Manager: BLM

Habitat: Offshore Rock | Night Roost: Confirmed

High Counts of Brown Pelicans at Shell Beach Rocks								
	Spring		Summer		Fall		Winter	
Time Period	Total	N	Total	N	Total	N	Total	N
1986-1996	ND	0	**1,674**	12	**1,098**	22	ND	0
			(7/25/87)		(11/1/91)			
1997-2007	**119**	2	**1,655**	6	**2,330**	6	**33**	3
	(5/24/01)		(8/26/99)		(9/7/00)		(1/17/01)	
	High Count: **2,330**				Total Counts in Database: 51			

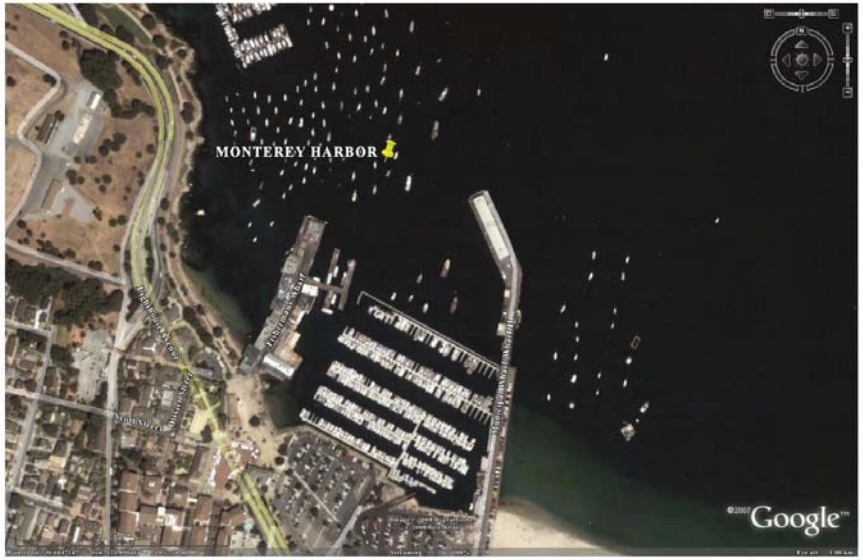
Access and Site Viewing: View from various public access points along Ocean Blvd. in Shell Beach.

Management Concerns: Human disturbances from both water and shore-based activities, including landings on rocks. Effects of commercial kayak tours and new shoreline park development are unknown.

MONTEREY HARBOR

Roost No: MO 21.0 | 36.6062, -121.891 | Map No. 71
USFWS Colony No: 454-053 | Owner: PRIV | Manager: CITY

Habitat: Man-made Structures | Night Roost: Confirmed



High Counts of Brown Pelicans at Monterey Harbor								
	Spring		Summer		Fall		Winter	
Time Period	Total	N	Total	N	Total	N	Total	N
1986-1996	ND	0	212	1	**634**	10	**530**	2
			(6/17/91)		(11/19/87)			
1997-2007	ND	0	**42**	2	**261**	4	ND	0
			(7/6/00)		(9/2/98)			
	High Count: **634**				Total Counts in Database: 19			

Access and Site Viewing: View from various vantage points on the Monterey Fisherman's Wharf and Commercial Wharf.

Management Concerns: Harm to pelicans from contaminants, fishing-related conflicts, disease, accidents, and human malice. Nuisance issues due to negative effects of pelican use on public and private property.

SMITH RIVER MOUTH

Roost No: DN 18.0 | 41.9433, -124.204 | Map No. 192
USFWS Colony No: None | Owner: PRIV | Manager: PRIV

Habitat: River Mouth | Night Roost: Not Suitable

High Counts of Brown Pelicans at Smith River Mouth								
	Spring		Summer		Fall		Winter	
Time Period	Total	N	Total	N	Total	N	Total	N
1986-1996	ND	0	**462**	4	**29**	8	ND	0
			(7/6/87)		(9/10/86)			
1997-2007	ND	0	**44**	15	**590**	13	ND	0
			(8/27/99)		(10/14/07)			
	High Count: **590**				Total Counts in Database: 40			

Access and Site Viewing: View from parking lot at end of Mouth of Smith River Road and/or from parking lot at Ship-a Shore Motel.

Management Concerns: Human disturbance from motorized vehicles. Disturbance cannot be managed due to private ownership.

POINT CONCEPTION

Roost No: SB 20.0 | 34.4497, -120.471 | Map No. 1
USFWS Colony No: 501-013 | Owner: USCG | Manager: USCG

Habitat: Offshore Rock and Mainland Shore | Night Roost: Unknown

High Counts of Brown Pelicans at Point Conception								
	Spring		Summer		Fall		Winter	
Time Period	Total	N	Total	N	Total	N	Total	N
1986-1996	ND	0	**104**	3	**431**	2	ND	0
			(6/11/92)		(9/28/93)			
1997-2007	**12**	1	**113**	1	**150**	3	**712**	4
	(5/24/01)		(7/17/01)		(10/2/97)		1/15/01	
	High Count: 712				Total Counts in Database: 14			

Access and Site Viewing: All data are from aerial surveys. No tested shoreline observation points. Site is a USCG Light Station. Permission to access required.

Management Concerns: Restricted public access has a positive effect, any changes to this condition may degrade roost habitat. Effects of USCG Operations unknown.

CASTLE ROCK NATIONAL WILDLIFE REFUGE

Roost No: DN 15.0 | 41.762, -124.249 | Map No. 188
USFWS Colony No: 325-006 | Owner: USFWS | Manager: USFWS

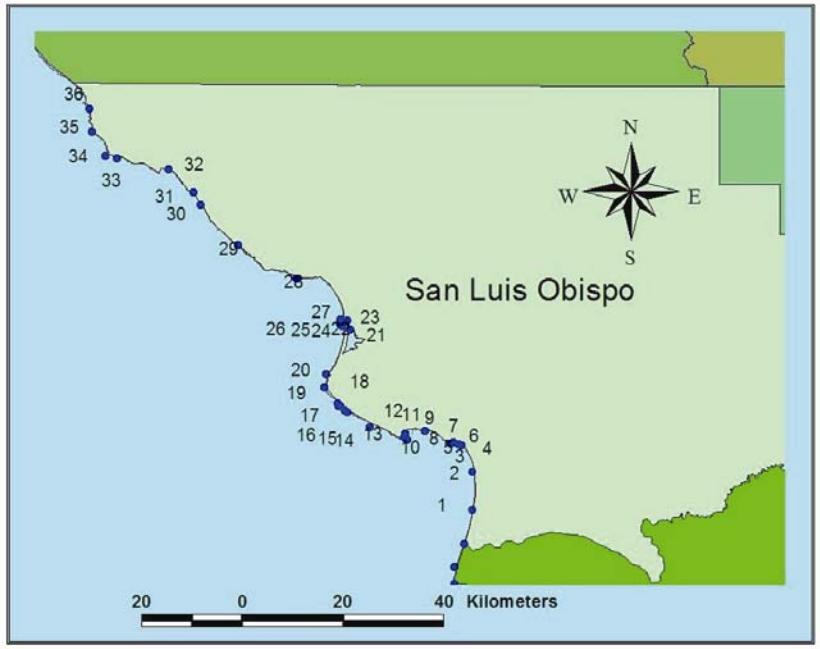
Habitat: Offshore Rock | Night Roost: Confirmed

High Counts of Brown Pelicans at Castle Rock NWR								
	Spring		Summer		Fall		Winter	
Time Period	Total	N	Total	N	Total	N	Total	N
1986-1996	ND	0	ND	0	**ND**	0	ND	0
1997-2007	**58**	13	**467**	13	**3,155**	21	ND	0
	(5/16/98)		(8/19/07)		(11/13/03)			
	High Count: **3,155**				Total Counts in Database: 47			

Access and Site Viewing: Castle Rock is closed to public access. View from Point St. George, various pull-outs on North Pebble Beach Drive, or by boat.

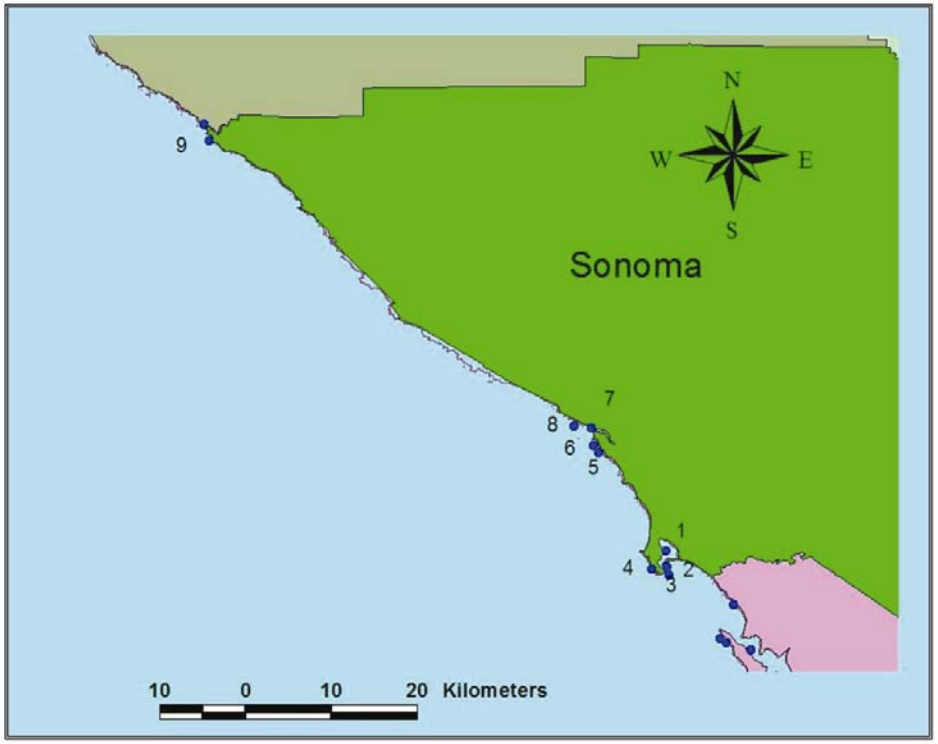
Management Concerns: Limited government research activities, and associated U.S. Coast Guard helicopter landings on the island, are the only known human disturbances affecting pelicans. Illegal trespass and boat-based disturbances may occur at times.

SAN LUIS OBISPO COUNTY



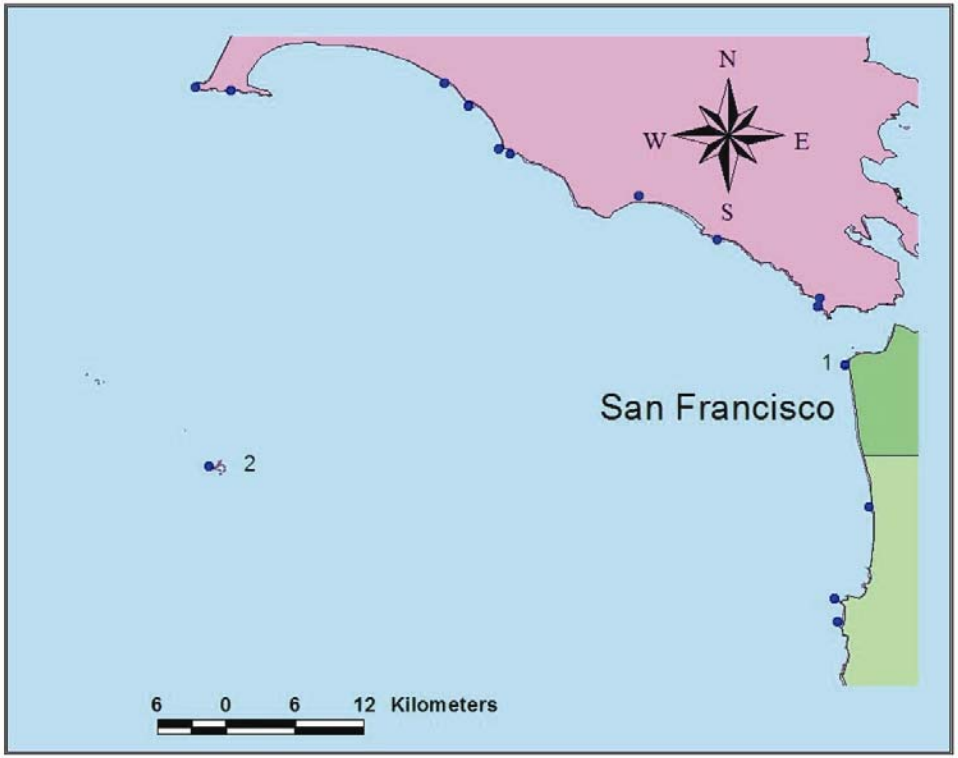
San Luis Obispo County Roost Summary	
County number:	6
Number of roost sites:	36
Number of confirmed night roosts	4
Roost sites with known management issues:	14
Roost sites with >1,000 pelicans	5: *Oso Flaco Creek Mouth, Pismo Rock, Shell Beach Rocks, Shell Beach Rocks Margo Dodd, Morro Bay North Jetty*
Roost sites with >500 pelicans	10: *Pismo Rock Area, Fossil Point Area, Pecho Rock, Lion Rock Diablo Canyon, Pup Rock, Morro Bay South Spit, Morro Bay South Jetty, Morro Rock, San Simeon Bay Rocks, Piedras Blancas Rock*

SONOMA COUNTY



Sonoma County Roost Summary	
County number:	12
Number of roost sites:	9
Number of confirmed night roosts	0
Roost sites with known management issues:	2
Roost sites with >1,000 pelicans	None
Roost sites with >500 pelicans	None

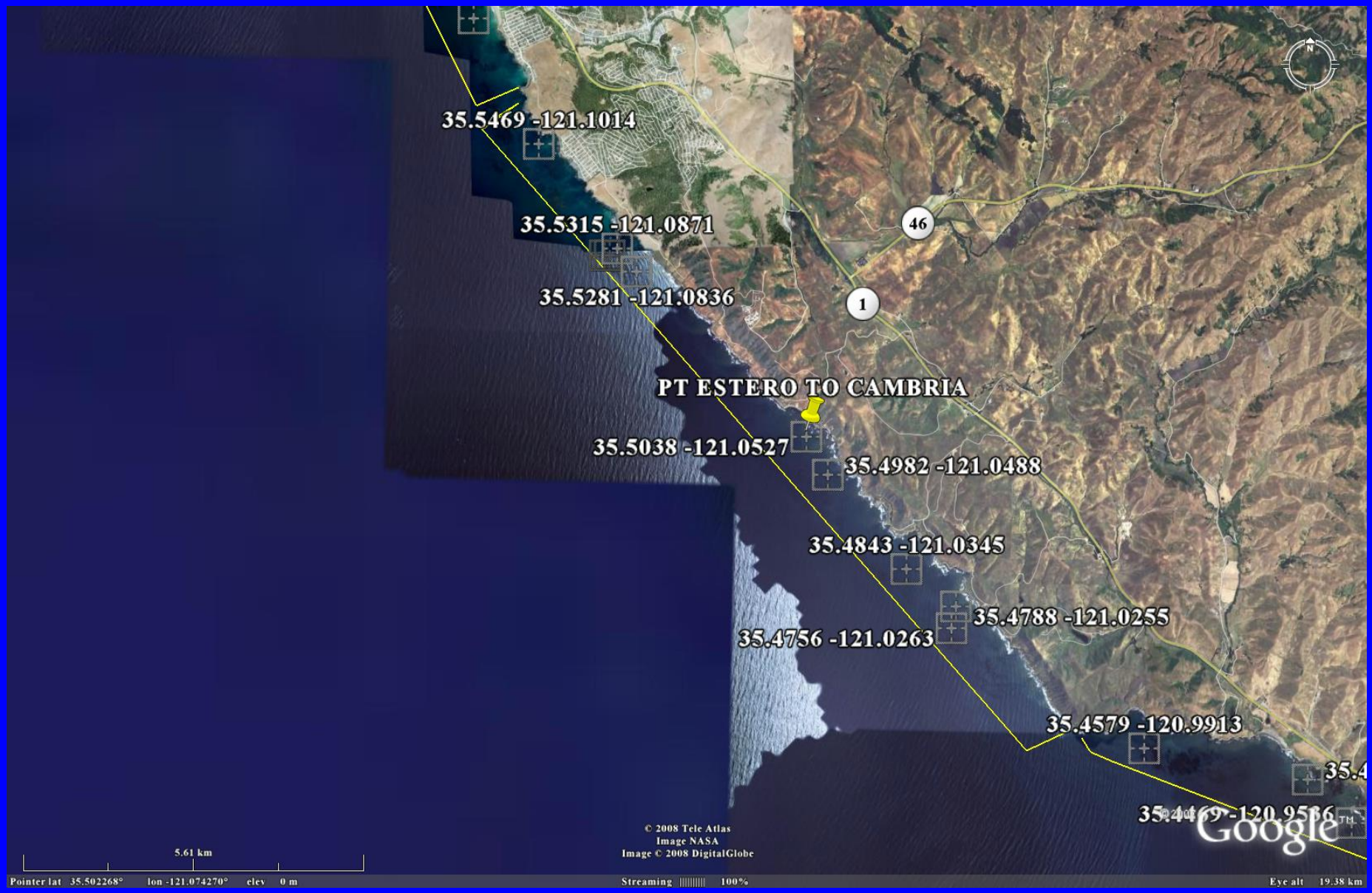
SAN FRANCISCO COUNTY



San Francisco County Roost Summary	
County number:	10
Number of roost sites:	2
Number of confirmed night roosts	2
Roost sites with known management issues:	1
Roost sites with >1,000 pelicans	2: *Seal Rocks San Francisco, Southeast Farallon Island*
Roost sites with >500 pelicans	No others

Atlas Values

- Research and Monitoring
  - Maps and numbering system will facilitate future site specific monitoring
    - Have GPS and hardcopy on hand
    - Use photo counts for aerials; record zeros for means !
  - Baseline data is preserved and may be used for subsequent indication of trends in site use (with caution)


35.5469 -121.1014
35.5315 -121.0871
35.5281 -121.0836
46
1
PT ESTERO TO CAMBRIA
35.5038 -121.0527
35.4982 -121.0488
35.4843 -121.0345
35.4788 -121.0255
35.4756 -121.0263
35.4579 -120.9913
© 2008 Tele Atlas
Image NASA
Image © 2008 DigitalGlobe
5.61 km
Pointer lat 35.502268° lon -121.074270° elev 0 m
Streaming 100%
Eye alt 19.38 km
Google

POINT ESTERO TO CAMBRIA

Roost No: SL 29.0 | 35.5046, -121.053 | Map No. 43
USFWS Colony No: None | Owner: BLM | Manager: BLM

Habitat: Offshore Rock | Night Roost: Unlikely

High Counts of Brown Pelicans at Point Estero to Cambria								
	Spring		Summer		Fall		Winter	
Time Period	Total	N	Total	N	Total	N	Total	N
1986-1996	ND	0	ND	0	ND	0	ND	0
1997-2007	ND	0	**6**	3	**30**	3	**48**	2
			(8/26/99)		(9/12/00)		(1/16/02)	
	High Count: 48				Total Counts in Database: 8			

Access and Site Viewing: Most data are from aerial surveys. There are no discrete traditional communal roost sites in this area, so viewpoints will vary.

Management Concerns: None.

Atlas Values to OSPR

- Area Contingency Plans
  - Provides new and improved information for pelicans (sensitive site pages)

Oil Spill Response

– May affect oil containment strategies, hazing efforts, selection of staging areas, etc.

MANILLA OYSTER RACKS

Roost No: HU 9.0 | 40.8234, -124.169 | Map No. 154
USFWS Colony No: None | Owner: PRIV | Manager: PRIV

Habitat: Artificial Structure | Night Roost: Unknown

High Counts of Brown Pelicans at Manilla Oyster Racks								
	Spring		Summer		Fall		Winter	
Time Period	Total	N	Total	N	Total	N	Total	N
1986-1996	ND	0	**ND**	0	**ND**	0	ND	0
1997-2007	ND	0	**116**	1	**135**	8	ND	0
			(8/27/99)		(9/11/98)			
	High Count: **116**				Total Counts in Database: 9			

Access and Site Viewing: View from Vance Avenue at western base of Samoa Bridge.

Management Concerns: Privately owned artificial structures, subject to disturbance from commercial activities.

Search and Collection

- Can help locate pelicans dead and alive
  - Increased efficiency of pelican recovery efforts
  - Possibly lead to more pelicans going to rehab
  - If alive, are there choices to be made re: capture?

PILLAR POINT HARBOR

Roost No: SM 9.0 | 37.4998, -122.482 | Map No. 98
USFWS Colony No: None | Owner: SMHD | Manager: SMHD

Habitat: Breakwater | Night Roost: Confirmed

High Counts of Brown Pelicans at Pillar Point Harbor								
	Spring		Summer		Fall		Winter	
Time Period	Total	N	Total	N	Total	N	Total	N
1986-1996	ND	0	**268**	3	**55**	5	ND	0
			(7/6/86)		(9/12/88)			
1997-2007	ND	0	**787**	1	**460**	3	ND	0
			(8/31/99)		(9/07/00)			
	High Count: 787				Total Counts in Database: 12			

Access and Site Viewing: Portions of roost visible from ground based access points within harbor, but boat may be required to see entire area.

Management Concerns: Fishing-related conflicts, contaminants, and intentional harm by humans. Pelicans have some negative impacts on private property at this site.

NRDA: Assessment of free-ranging oiled, but not recoverable pelicans

- Can get you there and increase search efficiency, but very important to:
  - Respond ASAP after spill in pelicany area
  - Use observers qualified to discern oiled versus natural plumage

Restoration Use Starting Point

- Provides some information on roosts
  - distribution abundance, ownership etc.
- Suggests types of management issues in area

Restoration Limitations

- Should not replace further data collection prior restoration effort
- Has limited value for prioritizing, planning, designing or implementing cost-effective and successful restoration projects

Other Atlas Values

- Species Conservation and Management
  - Clear identification of major roost sites
  - Starting point for development of management plans for key traditional night roosts
  - Establishes agency responsibility

Acknowledgements

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