

Golden Gate Audubon

SAN FRANCISCO CONSERVATION COMMITTEE



Western Snowy Plover Monitoring at the Crissy Field Wildlife Protection Area of The Presidio of San Francisco and the Relative Recreational Use Patterns 2008/2009

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Introduction

The bayside beach within the Wildlife Protection Area (WPA) at Crissy Field in the Presidio is of an ecological composition found nowhere else in San Francisco. From its shallow bay waters to its open, intertidal beach to its vegetated dunes, this area supports a variety of birds and other wildlife including the western snowy plover, a small shorebird listed as threatened under the Federal Endangered Species Act.

Continued study since 2005, through a Golden Gate Audubon volunteer monitoring program, has established that the WPA is a regular wintering site for the western snowy plover, and as a result it has been included in the U.S. Fish & Wildlife Service's recovery plan for the species (USFW, 2007).

Monitoring has also identified conflicts between recreational use of the WPA and the western snowy plover recovery effort. By identifying and understanding the impacts of recreational use on western snowy plovers and their habitat, recommendations can be made to the National Park Service that will assist in the development of sustainable management policies and practices.

This report contains the results of 20 surveys carried out from November 1, 2008 through February 28, 2009, as well as active searches during the pre-survey and post-survey periods.

Observers (* incidental)

Devin Hallett *, Richard Horrigan, Terry Horrigan, Nancy Smith*, Lynn Strandberg, Rachel Townsend*, Matt Zlatunich.

Survey Area

The survey area includes the bayside beach and dunes within the WPA from the Coast Guard Pier eastward to the shoreline rip-rap and extending 100m offshore.

Methods

Active searches were made of the area from July 15 to October 31 and from March 1 to March 31 to detect the presence of Western Snowy Plovers, making note of the number of individuals and leg band combinations.

One hour static surveys were conducted, from November 1 to February 28, from the wooden observation platform using binoculars and spotting scope. Survey times included mornings, afternoons, weekdays, weekends, high and low tides. All bird and mammal species were recorded as well as all wildlife disturbances both natural and human induced.

Current Conditions

Access points

There are currently six access points to the portion of the WPA that is the study area. Access can be made from either end of the beach along the waters edge as well as from four access points along the Crissy promenade.

Signage

Signage is currently in place at entry points to the WPA alerting the public that this area is habitat for the Western Snowy Plover, that disturbance from humans and dogs can impact snowy plover survival, and to walk near the waterline to avoid areas used by plovers. The signage also indicates that off-leash dogs, disturbing wildlife and disturbing threatened species are violations of the law.

Pet Restrictions

In September of 2008 the National Park Service adopted a final interim leash rule that requires all dogs to be on-leash within the WPA from July 1 to the following May 15 of every year.

Habitat Maintenance/Enhancement

There is currently no habitat maintenance plan for the WPA. Issues concerning habitat maintenance include the management of vegetation, driftwood, debris, and storm drain outlet issues. A substantial quantity of debris, mostly plastic, was collected from the WPA on Coastal Clean-Up Day, September 20th. Clean-up volunteers were not briefed about the sensitivity of the WPA and plovers were displaced from the dunes.

Law Enforcement

US Park Police and NPS rangers have been issuing warnings and citations, as well as developing a dog walker database.

Temporary Closures

To protect against anticipated heavy recreational use, the National Park Service closed the WPA to all recreation on several occasions throughout the wintering season, including the Fourth of July Weekend and Fleet Week. The WPA was not closed during the Festival of Sail.

Docent Program

In February of 2008, the National Park Service initiated a volunteer outreach program and began recruiting and training volunteers to educate park visitors within the plover habitats at Ocean Beach and Crissy Field.

Storm Runoff

A storm drain outlet located within the WPA has been problematic during rainy conditions and has required mechanical clearing after any rain event. This work requires bring a backhoe into the WPA.

Educational Opportunities

San Francisco Nature Education ran a pilot field trip on January 7th for two classes of fifth grade students to Crissy Field focusing on natural resources, habitat restoration endangered species and national park values. The field trip included a visit to the WPA to study the Snowy Plover habitat.

Recreational Use & Disturbance

The WPA is currently open to a variety of recreational activities. Observed activities include: walking, jogging, dog walking, kite flying, fishing, boating, swimming, picnicking, golfing, ball playing, disc golf, photography and wildlife viewing.

Previous survey data has shown that the greatest disturbance impact to wildlife within the WPA is caused by dogs, joggers and walkers.

Species Diversity

The following is a cumulative list of bird species that have been observed using the shoreline and dunes of the study area during the course of the surveys from 2005 to the present. Species of concern are listed in **bold** lettering.

Great Blue Heron
Black-bellied Plover
Semipalmated Plover
Western Snowy Plover
Killdeer
Greater Yellowlegs
Willet
Whimbrel
Long-billed Curlew
Marbled Godwit
Sanderling
Western Sandpiper
Least Sandpiper

Ring-billed Gull
California Gull
Herring Gull
Western Gull
Heermann's Gull
Rock Pigeon
Anna's Hummingbird
Belted Kingfisher
Black Phoebe
Say's Phoebe
Common Raven
American Crow
Horned Lark

Cliff Swallow
Barn Swallow
European Starling
American Pipit
Yellow-rumped Warbler
Savannah Sparrow
White-crowned Sparrow
Song Sparrow
Western Meadowlark
Brewer's Blackbird
House Finch
Lesser Goldfinch
American Goldfinch

Western Snowy Plover History at the WPA

Table 1. Western snowy plovers observed 2005 through present. Letter codes indicate color band combinations. “Unb” indicates unbanded birds. Residents are birds that are observed regularly throughout the wintering season (Nov 1 – Feb 29).

	2004/2005	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013
Residents	OG:YO	OG:YO	OG:YO	OG:YO					
	PG:BY	PG:BY	PG:BY	PG:BY	PG:BY				
				LW:YY	LW:YY				
				LW:BR	LW:BR				
				LW:WB					
	unb	unb	unb	unb	unb	unb			
	unb	unb	unb			unb			
		unb	unb						
		unb	unb						
Migrants		WW:RY	BY:WV		AA:RL				
Total	4	7	7	6	6				

Table 2. Banded Bird Roster – snowy plovers observed at the Crissy Field WPA and their original history.

BAND ID.	SEX	HATCH YR.	BANDING LOCATION
OG:YO	F	2003	Monterey Bay Aquarium
PG:BY	M	2004	Pismo Beach
WW:RY	F	2000	Humboldt Co.
BY:WV	F	2006	Salinas NWR
LW:WB	?	?	Local
LW:YY	?	?	Local
LW:BR	?	?	Local
AA:RL	?	2008	Zmudowski SB

Survey Data

Western Snowy Plovers Observed

There were, at minimum, six western snowy plovers observed in the WPA throughout the wintering season, with the first seasonal observation occurring on 7/26/2008 (Devin Hallett) and the last occurring on 3/5/2009 (Matt Zlatunich). Three banded birds that had been observed in the previous season were resident in the WPA throughout the fall and winter; PG:BY, a male banded in 2004 at Pismo Beach, LW:YY, and LW:BR, both banded locally subsequent to the oil spill of 2007. Additionally, AA:RL, a bird banded in 2008 at Zmudowski SB, was observed on Aug 22.

All of the winter resident banded birds were observed at Ocean Beach on several occasions, indicating that some birds use both sites throughout the winter season.

Survey Dates

Active Search

Jul	26
Aug	2, 6, 9, 12, 13, 15, 17, 22
Sep	4, 20, 24, 28
Oct	5, 8, 21, 22, 29

Static Survey

Nov	5, 9, 19, 21, 27, 30
Dec	4, 9, 18, 20, 28
Jan	10, 11, 15, 19, 29
Feb	8, 9, 12, 27

Active Search

Mar	5,7,11,13,17,26,31
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Data Tables

Table 3. Western Snowy Plover observation data 2008/2009. Inclusive of active searches, static surveys, and incidental observations.

Plover sightings Jul - Oct					
	PG:BY	AA:RL	LW:YY	unb	unk
7/26 dh				1	
8/2 ns					2
8/6 rt	x				
8/9 rt	x				
8/12 mz	x				
8/13 ls					
8/15 mz	x				
8/17 rh					
8/22 mz	x	x			
9/4 mz					
9/20 mz			x		
9/24 ls					
9/28 rh					
10/5 mz					
10/8 ls					
10/21mz				1	
10/22 ls			x		
10/29 rt	x		x		

Plover sightings Nov - Feb					
	PG:BY	LW:YY	LW:BR	unb	unk
11/5 ls		x	x		
11/8* mz	x	x	x		
11/9 rh					
11/19 ls	x	x	x	1	
11/21mz					
11/27mz	x		x	1	1
11/30 rh	x			1	
12/3* rt	x	x	x	2	
12/4 ls					1
12/9 mz	x	x	x	2	
12/18 ls	x	x	x	1	
12/20mz	x	x	x	1	
12/28 rh	x	x	x	2	
1/10 mz	x	x	x	2	
1/11 rh	x	x	x	1	
1/15/ ls	x		x		
1/19 mz					
1/29 ls					
2/6* mz	x	x			
2/8 rh					
2/9 mz	x	x	x		
2/12 ls					
2/27 mz					

Plover sightings March					
	PG:BY	LW:YY	LW:BR	unb	unk
3/5 mz		x	x		
3/7 rh					
3/11 mz					
3/13 ls					
3/17/mz					
3/26 ls					
3/31/mz					

dh = Devin Hallett
 rh = Richard Horrigan
 ns = Nancy Smith
 ls = Lynn Strandberg
 rt = Rachel Townsend
 mz = Matt Zlatunich
 * = non-survey observation
 unb = unbanded
 unk = unknown

Table 4. Recreational use data 2008/2009. Data is for static survey period, Nov. 1 – Feb. 28.

DATE	DAY	TIME	WALKERS		JOGGERS		ON-LEASH DOGS		OFF-LEASH DOGS	
			shore / dunes	shore / dunes	shore / dunes	shore / dunes	shore / dunes	shore / dunes		
11/5/2008	W	8:40-9:40a	10	3	4	0	8	0	1	4
11/9/2008	Su	10:30-11:30a	8	21	7	4	2	2	3	11
11/19/2008	W	12:20-1:20p	13	0	0	1	0	0	0	0
11/21/2008	F	2:50-3:50p	13	12	0	1	0	1	3	5
11/27/2008	Th	8:40-9:40a	2	3	0	0	2	0	0	2
11/30/2008	Su	11:25-12:25p	8	20	3	2	0	1	1	8
12/4/2008	Th	9:30-10:30a	4	2	2	0	1	0	0	1
12/9/2008	Tu	10:05-11:05a	9	1	1	0	2	1	0	1
12/18/2008	Th	9:45-10:45a	10	3	1	0	1	0	0	2
12/20/2008	Sa	10:05-11:05a	14	23	5	1	1	2	6	4
12/28/2008	Su	2:55-3:55p	140	11	7	3	6	2	22	1
1/10/2009	Sa	11:05-12:05p	15	16	3	1	1	3	3	4
1/11/2009	Su	10:35-11:35a	56	11	2	2	1	0	0	18
1/15/2009	Th	11:30-12:30p	11	4	0	0	1	0	4	0
1/19/2009	M	1:50-2:50p	74	84	0	0	4	13	3	14
1/29/2009	Th	10:10-11:10a	5	7	1	0	1	0	1	0
2/8/2009	Su	11:15-12:15a	5	3	0	0	4	0	4	1
2/9/2009	M	1:30-2:30p	7	4	1	0	0	2	0	2
2/12/2009	Th	10:25-11:25a	10	5	0	0	0	1	0	2
2/27/2009	F	12:40-1:40p	13	13	2	0	2	5	1	5
SUB-TOTAL			427	246	39	15	37	33	52	85
TOTAL			20 HOURS		673	54	70		137	

Table 5. Plover disturbance data 2008/2009. Indicating plovers observed at the shoreline (s) and on the dunes (d), the number of disturbances (DIST.) recorded, and the source of disturbance; walker (w), jogger (J), leashed dog (LD), and off-leash dog (OLD).

DATE	DAY	TIME	PLOVERS	DIST.	W	J	LD	OLD
11/5/2008	W	8:40-9:40a	2s	1		1		
11/9/2008	Su	10:30-11:30a	0					
11/19/2008	W	12:20-1:20p	4s	1	1			
11/21/2008	F	2:50-3:50p	0					
11/27/2008	Th	8:40-9:40a	4sd	1	1			
11/30/2008	Su	11:25-12:25p	2d	1	1			
12/4/2008	Th	9:30-10:30a	1s	2	1	1		
12/9/2008	Tu	10:05-11:05a	5d					
12/18/2008	Th	9:45-10:45a	4sd	1	1			
12/20/2008	Sa	10:05-11:05a	4sd	2	1			1
12/28/2008	Su	2:55-3:55p	5d	1			1	
1/10/2009	Sa	11:05-12:05p	5d	2			1	1
1/11/2009	Su	10:35-11:35a	4d	1				1
1/15/2009	Th	11:30-12:30p	2s					
1/19/2009	M	1:50-2:50p	0					
1/29/2009	Th	10:10-11:10a	0					
2/8/2009	Su	11:15-12:15a	0					
2/9/2009	M	1:30-2:30p	3d	2			1	1
2/12/2009	Th	10:25-11:25a	0					
2/27/2009	F	12:40-1:40p	0					
TOTAL		20 HOURS		15	6	2	3	4

Data Analysis

Recreational Use

Table 6. Recreational use rate per survey hour. Survey data indicates that recreational use of the WPA has dramatically increased over the past several years, walking being the predominant recreational activity.

	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013
Walkers	n/a	11.39	17.8	33.65				
Joggers	n/a	0.92	0.87	2.7				
On-Leash Dogs	n/a	1.31	1.6	3.5				
Off-Leash Dogs	n/a	3.15	4.4	6.85				
Total Per Hour	n/a	16.77	24.67	46.7				

Table 7. Percentage of recreational traffic through dunes. Of all pedestrian traffic, 40% traversed the dune area while 60% remained along the shoreline. Although off-leash dogs entered the dunes at the highest rate, walkers, by volume, were the most intrusive.

	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013
Walkers	n/a	36%				
Joggers	n/a	28%				
On-Leash Dogs	n/a	47%				
Off-Leash Dogs	n/a	62%				
Total Per Hour	n/a	40%				

Table 8. Plover disturbance rate 2008/2009 (13 surveys). Walkers, with the lowest disturbance rate but the highest volume, were the cause of the greatest number of disturbances to snowy plovers. However, the combined category of on and off-leash dogs surpassed the walker category in both disturbance rate and total disturbances per hour.

	TOTAL	SHORE	DUNES	SNPL DIST.	DIST. RATE
Walkers	409	288	121	6	1.47%
Joggers	39	29	10	2	5.13%
On-Leash Dogs	36	24	12	3	8.34%
Off-Leash Dogs	83	35	48	4	4.82%
Combined Total	567	376	191	15	2.65%

Western Snowy Plovers

Table 9. Plover presence. Indicating early and late detection dates and number of surveys in which plovers were detected. Showing a decline in plover presence.

	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013
Early Date	n/a	25-Jul	1-Aug	26-Jul				
Late Date	n/a	28-Mar	19-Mar	5-Mar				
# of Surveys	18	26	15	20				
Plovers Present	17	24	14	13				

Table 10. Plover abundance per survey hour. Indicates decline in plover abundance.

	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013
Shore	1.22	0.15	0.2	0.65				
Dunes	2.89	3.54	2.67	1.5				
Total Individuals	4.11	3.69	2.87	2.15				

Table 11. Plover density per month. Plovers are most reliably present in December.

	2004/2005	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013
Nov			4						
		6	3		2				
		5	3	4	0				
	n/a	5	4		4				
		5	3	3	0				
		5	4		4				
Dec					2				
		5	4	1	1				
		5	4	4	5				
	n/a	4	4	4	4				
		4	3	3	4				
		4	4	3	5				
Jan			4						
		4	5		5				
		4	6	3	4				
	n/a	2	6		2				
		4	2	3	0				
		4	6		0				
Feb			4	5					
		4	5	0	0				
			0	4					
	n/a	0	0	3	3				
			1	1	0				
		3	2	2	0				

Pet Rule Compliance

Table 12. Pet rule compliance rate. Survey data indicates that 34% of dog walkers were compliant with the leash requirement during the survey period. This number is an increase of 5-7% over the previous two years indicating that outreach, education and enforcement has been minimally effective.

	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013
Total Dogs	n/a	116	90	207				
On-Leash	n/a	34	24	70				
Off-Leash	n/a	82	66	137				
Compliance Rate	n/a	29%	27%	34%				

Conclusions

Data indicates that western snowy plover presence within the WPA has been declining over the past several seasons as human recreational activity has increased (see charts 1 & 2). Impacts to western snowy plovers are predominantly from two sources; walkers who traverse the dune area and dogs, both on and off leash.

Walkers who access the WPA via the Crissy promenade are directed, by virtue of the trail positioning, to tread through plover habitat toward the shoreline. Conversely, walkers also cross the plover habitat from the shoreline to access the Crissy promenade. This foot traffic, crossing the dunes from four access points and in both directions, is a significant source of disturbance to western snowy plovers and other bird species that use the dune area.

Dogs, both on and off leash, are commonly and routinely brought into the WPA by park visitors, and are the greatest source of disturbance to western snowy plovers. Despite education and enforcement efforts, compliance with the leash requirement remains extremely low.

The elimination of pedestrian access points from the Crissy promenade and the elimination of domestic dogs from the WPA will likely result in a significant reduction of disturbance to western snowy plovers.

Chart 1. Recreational Uses of the Crissy Field WPA per Survey Hour

This chart shows that since the 2006-2007 season, recreational use of the Crissy Field WPA has been increasing in all measured categories.

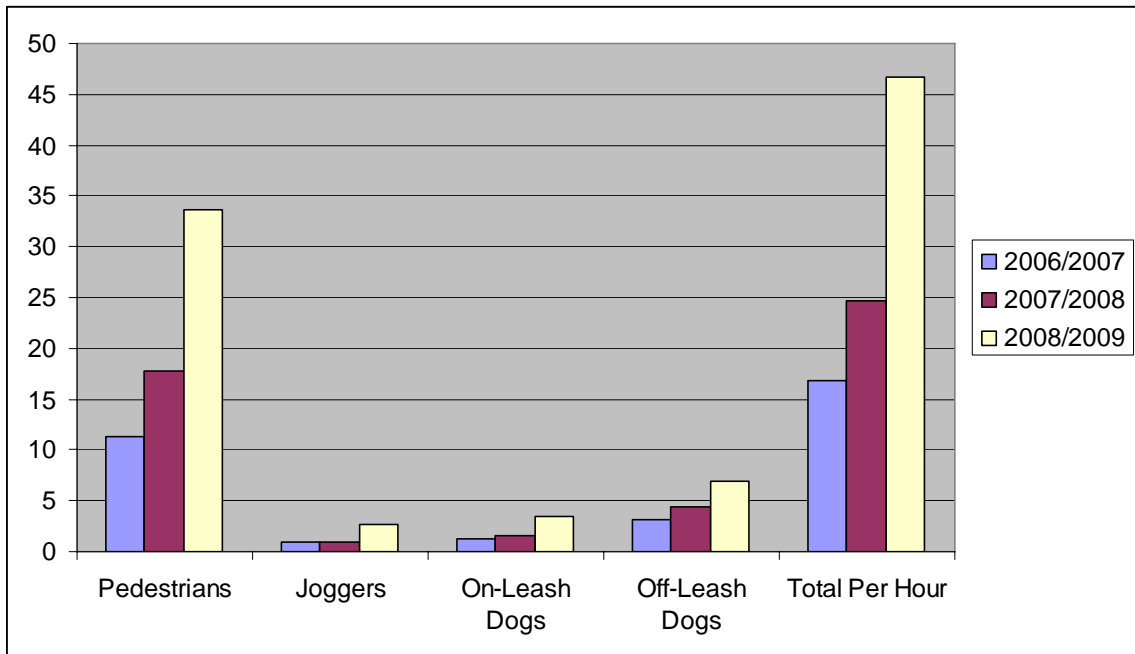
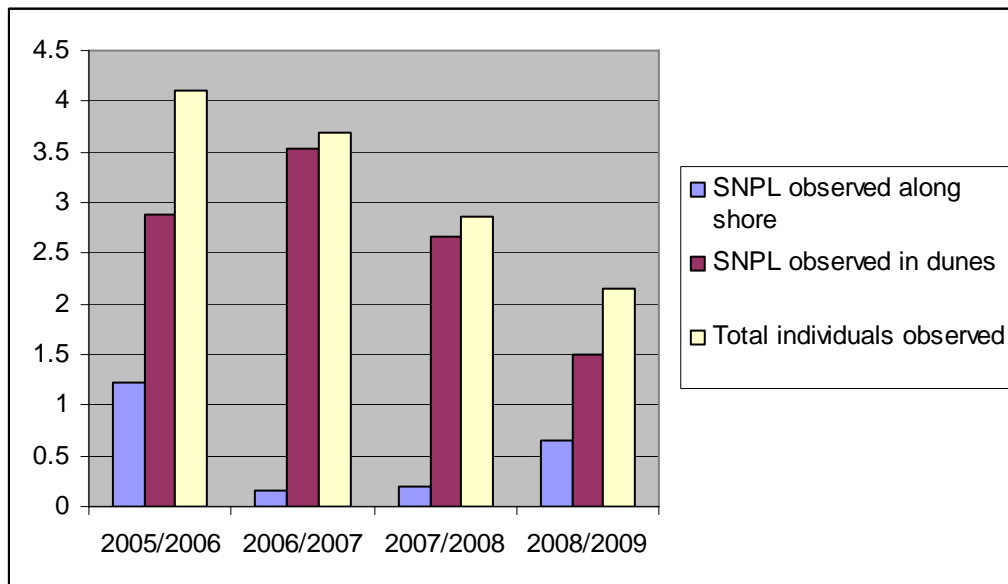


Chart 2. Western Snowy Plovers Observed per Survey Hour

This chart shows the number of western snowy plovers observed by the monitoring team per survey hour has been steadily declining since the 2005-2006 season.



Recommendations

In response to the results of this study the following actions are recommended to the management of the Golden Gate National Recreation Area:

- **Recovery Plan** – Implement policies and practices that will align with the U.S. Fish and Wildlife Service recovery plan for the Western Snowy Plover.
- **Access** – High volumes of recreational traffic are occurring throughout the dune areas of the western snowy plover habitat subjecting plovers to frequent disturbance. The USFWS Recovery Plan Recovery Action 2.3.1.2.2 states, “For sites where access is determined...to adversely affect western snowy plovers, develop and implement plans to minimize effects. Actions that could minimize effects of access include seasonal restrictions, signs, fencing, or relocation or modification of access points or trails.” As a means of reducing pedestrian traffic through the plover habitat it is recommended that, at minimum, the four access points from the Crissy Promenade be closed to pedestrian traffic using appropriate fencing with explanatory signage.
- **Pet Restrictions** – The current rule requiring dogs to be on leash within the WPA is not being adhered to, as only 34% of dog walkers are compliant. This has been the condition for the past several years despite public education and enforcement efforts. The USFWS Recovery Plan Recovery Action 2.3.2 states, “Pets should be prohibited on beaches and other western snowy plover habitats if, based on observations and experience, pet owners fail to keep pets leashed and under full control.” This recovery action is applicable to the WPA and it is therefore recommended that all dogs be prohibited within the WPA.
- **Signage** – The current signs are not adequately conveying information to park visitors and are frequently ignored. Signs placed at access points from the Crissy Promenade ask park visitors to walk near the water line to avoid areas used by plovers, yet, from these access points, visitors must cross the plover habitat to get to the water line. It is recommended that improved signage be developed and installed so that messaging will be easily and accurately conveyed.
- **Site Stewardship** – There is currently no habitat maintenance plan. It is recommended that a beach clean-up schedule be developed and implemented, with a major cleanup and educational event in early July, and additional controlled clean-ups throughout the year. Also, dune vegetation and driftwood presence should be evaluated and necessarily modified to maximize habitat value.

- **Public Education** – It is recommended that the NPS continue to develop and expand the volunteer docent program and to explore and develop additional methods to heighten public awareness of the western snowy plovers and their habitat.
- **Temporary Closures** – It is recommended that the NPS continue to identify potential heavy recreational use days, including Fleet Week, Coastal Clean-up Day and fair weather weekends, and to close off the WPA to park visitors on those days.



References

U.S. Fish and Wildlife Service. 2007. Recovery Plan for the Pacific Coast Population of the Western Snowy Plover (*Charadrius alexandrinus nivosus*). In 2 volumes. Sacramento, California. xiv + 751 pages.

Zlatunich, M. 2007. Western Snowy Plover Monitoring at the Crissy Field Wildlife Protection Area of The Presidio of San Francisco and the Relative Impact of Human Disturbance 2006/2007. Golden Gate Audubon, San Francisco, CA. 12pp.