



SAN FRANCISCO BAY
BIRD OBSERVATORY

Colonial Waterbird Nesting Summary for San Francisco Bay, 2011



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INTRODUCTION AND METHODS

San Francisco Bay Bird Observatory (SFBBO) staff biologists and volunteers monitored active waterbird nesting sites in the San Francisco Bay during the 2011 nesting season. For this report, we include data from the South San Francisco Bay, and several colonies in the Central and North San Francisco Bay and inland locations in Contra Costa County. The Colonial Waterbird Monitoring Program at SFBBO is a citizen science program, and we rely primarily on our volunteers to monitor the species we report below. The program began in 1982 and the methods have remained the same throughout the duration of this project. While we do not have the ability to monitor every nest of every species in the South Bay, this data set is useful for looking at long-term trends in these species. An analysis done by Abe Borker, University of California Santa Cruz, looked at four of the Forster's Tern colonies SFBBO monitors and compared the SFBBO numbers to numbers obtained with more intensive nest monitoring methods. Borker found that SFBBO's reported relative abundance was comparable to more intensive nest monitoring methods at the four colonies over the two years of data (Borker, pers comm.).

We focused principally on colonies of California Gull (*Larus californicus*), Forster's Tern (*Sterna forsteri*), Caspian Tern (*Hydroprogne caspia*), California Least Tern (*S. antillarum browni*), Great Blue Heron (*Ardea herodias*), Great Egret (*A. alba*), Snowy Egret (*Egretta thula*), and Double-crested Cormorant (*Phalacrocorax auritus*). Additionally, we counted American Avocets (*Recurvirostra americana*), Black-necked Stilts (*Himantopus mexicanus*), Black Skimmers (*Rynchops niger*) and Black-crowned Night Herons (*Nycticorax nycticorax*) only when nesting with other species of interest. SFBBO monitored Western Snowy Plover (*Charadrius alexandrinus nivosus*) nests (see Robinson-Nilsen et al. 2011 for methods), and here we include the total number of known nests in each salt pond for this species.

SFBBO biologists and volunteers monitored colonies using binoculars and scopes during pre-set three day periods over the course of the breeding season. We counted all adults, nests, and chicks at the colony site. We monitored all heron species seven times between 5 March and 11 July 2011, cormorants eight times between March 5 and August 8 2011, and gulls and terns six times between 7 May and 8 August 2010. SFBBO staff also performed one walk-through of most California Gull colonies (see Table 2 for colonies) between 9 and 19 May 2011 to count all existing nests, eggs and chicks. Here, we report the peak number of nests in all colonies monitored by SFBBO.

Additionally, we include information on colonies provided by the U.S. Geological Survey (USGS; J. Ackerman), Oregon State University (OSU; D. Roby and D. Battaglia), East Bay Regional Park District (EBRPD; D. Riensche, M. Taylor and D. Bell), and U.S. Fish and Wildlife Service (USFWS). USGS, USFWS, OSU and EBRPD data represent the total number of nests counted throughout the season, rather than the peak number of nests observed. In past years, we have reported USGS data for Forster's Tern colonies when SFBBO volunteer data was not available.

This report summarizes the 2011 colonial waterbird breeding results. In Table 1 and Table 2, we only report presence of species. Because of the difficult survey conditions and the secretive nature of many of these birds, we do not assume absence of these birds if none were recorded. Therefore, we only reported numbers of bird species that were specifically surveyed and reported, and we do not include zeros for birds that were not mentioned on the survey datasheets.

RESULTS AND DISCUSSION

***Anhingidae*: Cormorants**

Double-crested Cormorants.--- Double-crested Cormorants nesting in the South Bay increased by 11% over 2010 number, and is close to the population we were monitoring before the large decrease in cormorants in 2008 and 2009 (Table 1). The largest Double-crested Cormorant colonies were Steinberger Slough in Redwood City (136 nests), the Alviso levee A9/A10 (130 nests) and Lake Merritt (87 nests; Table 1).

***Ardeidae*: Herons and Egrets**

Great Blue Herons.--- The Great Blue Heron population in the South Bay has remained stable since 2005 and increased slightly from 115 nests in 2010 to 126 nests in 2011 (Table 1). The largest colony in 2011 was in Portola Valley, with 21 active nests. A few of the smaller colonies increased slightly in size, such as the Don Castro and the Llagas Creek colonies. The Great Blue Heron colonies at Eden Landing Ecological Reserve in Hayward remained stable from 2009 to 2011 but are expected to continue to decline as the duck blinds they nest on deteriorate. A volunteer reported a new colony at the Sunol Water Temple, which hosted 12 nests. Due to financial and time limitations, surveys were not performed at the Bair Island or Greco Island colony site in 2011 (6 nests in 2009).

Great Egrets.--- The number of Great Egret nests monitored by SFBBO remained stable from 2009 to 2011. Since 2005, the number of Great Egrets nesting within the study area has remained fairly stable, ranging from 115 to 141 nests (Table 1). In 2011, the majority of the Great Egret nests monitored were at two colonies: Shorebird Way (40 nests) and Ruus Park in Hayward (38 nests). In small breeding colonies, the numbers of nests were similar to previous years. Surveys were not performed at the Bair Island colony site in 2011 (3 nests in 2009).

Snowy Egrets.--- Snowy Egret nest numbers in 2011 in the South Bay increased by 233% from 64 in 2010 to 213 in 2011 (Table 1). Most of the increase in the number of nests is from two large colonies: Lakeshore Park and Lake Elizabeth. The colony at Lakeshore Park in Newark increased from 12 nests in 2010 to 76 nests in 2011. The Lake Elizabeth colony in Fremont increased from zero nests monitored in 2010 to 84 nests monitored in 2011. The Steinberger Slough colony in San Mateo was not used by Snowy Egrets this year. This colony had 46 nests in 2009 and declined to 5 nests in 2010.

For more information on herons and egrets in the North San Francisco Bay, see Kelly et al. (2006) or the Audubon Canyon Ranch website at www.egret.org.

Laridae: Terns

Forster's Terns.--- Forster's Terns nesting in the South Bay increased by 5% in 2011. We based the number of nests on the peak number of nests observed by SFBBO volunteers as well as the total number of nests counted by EBRPD (Table 2). The number of Forster's Tern nests in the study area has varied since 2005 and ranges from 771 in 2005 to 1214 nests in 2006 (Table 2). The largest colony in 2011 was on Hayward Shoreline which hosted 725 total nests, has nearly doubled in size since 2009. Forster's Terns also nested at the Napa Sonoma Marshes Wildlife Area this year (K. Taylor pers. comm.).

Caspian Terns.--- In 2011, SFBBO volunteers monitored four Caspian Tern nests in the South Bay, all at Agua Vista Park in San Francisco. No Caspian Terns nested on Eden Landing pond E10 though we did see adults roosting on the island. The annual numbers at E10 have fluctuated from 22 nests in 2007 to 147 nests in 2009 (Table 2). The South Bay's Caspian Tern numbers were lower in 2010 and 2011 than previous years. They may have nested in areas that we were not monitoring, or have relocated outside of the South Bay.

California Least Terns.--- California Least Tern is a federally endangered species. The colony on pond E8A in Eden Landing Ecological Reserve in Hayward (established with six nests in 2007) did not have any nests this year due to changes in water level management for construction related to the South Bay Salt Pond Restoration Project (Table 2). The East Bay Regional Park District created a nesting island for Least Terns in 2004. The island hosted 147 breeding terns (73) pairs which produced 77 nests (D. Riensche, East Bay Regional Park District, pers. comm.).

Laridae: Gulls

California Gulls.--- The number of California Gulls breeding in the Bay decreased by 17% from 2010 (Table 2). In December 2010, pond A6 was restored to tidal action as part of the South Bay Salt Pond Restoration Project. This pond, which was formerly the largest California Gulls colony in the Bay and held just over 50% of the total nests 2010. Restoring this pond to tidal action displaced the thousands of nesting gulls. The presumably displaced gulls nested along the levees between ponds A9, A10, A11 and A14. This was a previously established colony that had been abandoned in 2006. We also found one California Gull nest on the PG&E boardwalk in pond A3W. Two gull colonies doubled in size: the Coyotes Hills colony N6/N7 and the Palo Alto Flood Control Basin colony.

SFBBO biologists conducted intensive surveys all around the South Bay during the gull nest initiation period to prevent them from nesting in areas that were known Snowy Plover or Forster's Tern breeding habitats. California Gulls attempted to nest on the levee between pond A22 and A23 at Warm Springs. Through persistent hazing activities, SFBBO successfully deterred them from establishing a colony at this site (Robinson-Nilsen and Demers, 2011).

The gull abatement program at Newby Island Landfill in Milpitas is continuing to significantly reduce the number of gulls using the landfills as a food source (Robinson-Nilsen and Demers 2010).

Charadriidae: Plovers

Western Snowy Plovers.--- The Western Snowy Plover is a federally threatened species. SFBBO monitored 224 Snowy Plover nests on 23 former salt ponds in the South Bay and two former salt ponds in the North Bay (Table 3). Plovers also nested on levees at the Napa Cargill Plant Site, on the levee between ponds 7/7A and the Wingo Unit at the Napa Sonoma Marshes Wildlife Area (K. Taylor, pers. comm.). For more information on Snowy Plovers in the San Francisco Bay, see Robinson-Nilsen et al. (2011).

RECOMMENDATIONS:

1. Regulatory agencies, such as U.S. Fish and Wildlife Service and California Department of Fish and Game, should work with private land owners to protect colonies on privately owned land. Kelly et al. (2006) suggest that the conservation of heron and egret colonies should focus on the protection of colony sites with more than 100 nests, however, herons and egrets in the South Bay are much more likely to be found in smaller colonies of 5 – 50 nests. These smaller colonies may be more sensitive to disturbance and more likely to be abandoned than larger sites (Kelly et al. 2006).
2. The displaced California Gulls from the A6 colony did not nest in any sensitive habitats in 2011 due to the intensive surveys and hazing activities conducted by SFBBO. Without surveys and abatement in 2012, there is still the potential that gulls may outcompete other waterbirds for nesting habitat in the 2012 breeding season. California Gulls initiate nests before many other nesting waterbirds, and may exclude them from historical nesting habitat (Strong et al. 2004). Therefore, the hazing program implemented in 2011 to keep gulls from nesting at current waterbird colony sites should continue in 2012. Managers should make necessary management plans in the event that California Gulls begin to nest in sensitive habitat, such as Western Snowy Plover nesting ponds, or the newly created islands at pond SF2. Management plans could include hazing gulls away from certain areas before they initiate their nests, which worked in 2011, or oiling eggs to limit nest success.
3. It is unknown if the population growth of California Gulls in San Francisco Bay is due to local breeding success or is being supported by emigration of California Gulls from colonies outside of the Bay Area. Further study is needed to assess California Gull nest survival rates and chick growth and survival rates to address this question.
4. The number of California Gulls using Newby Island Landfill has decreased significantly since the landfill began an abatement program in 2008 (Robinson-Nilsen and Demers 2010). The change in available food resources due to the abatement may contribute to where future colonies arise the South Bay. Newby Island Landfill should continue their gull abatement program as one measure to reduce the number of nesting California Gulls in the San Francisco Bay.

5. Continued monitoring of the South Bay waterbird species over the next few years will be crucial as the South Bay Salt Pond Restoration Project continues its Phase One actions, including construction near or at waterbird colony sites and conversion of habitats currently supporting breeding waterbirds to tidal marsh. Land managers should plan to provide alternative habitat for nesting birds during construction in nesting ponds, and study where the displaced birds nest.

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Table 1. Numbers of nests within heron, egret, and cormorant colonies in the South San Francisco Bay, CA, 2011. Counts are based on peak numbers of active nests observed by SFBBO staff or volunteers.

Site Location	Land owner/operator	Pond # or tower location	Double-crested Cormorant	Great Blue Heron	Great Egret	Snowy Egret	Black-crowned Night Heron	Method
Alameda Point	other	n/a		1				
Alviso	DESFBNWR	A18	22					SFBBO
Alviso	DESFBNWR	A9/A10	130					SFBBO
Almaden Lake	other	n/a		1	16	4	6	volunteer
Bair Island	DESFBNWR	n/a						not surveyed
Bay Farm Island - Alameda	other	n/a			14	16		volunteer
Calaveras Reservoir	other	n/a		0				volunteer
Coyote Parkway Lakes	other	n/a		1				volunteer
Crocker Lake	other	n/a						not surveyed
Don Castro	other	n/a		9				volunteer
Dumbarton	DESFBNWR	PG&E towers	51					SFBBO
Eden Landing	CDFG	E9/E14		3				SFBBO
Eden Landing	CDFG	Heron House		7				volunteer
Grant Lake	other	n/a		1				volunteer
Greco Island		NW Tower						not surveyed
Hayward Shoreline	other	n/a					1	volunteer
Lake Chabot	other	n/a		6				volunteer
Lake Cunningham	other	n/a					5	volunteer
Lake Elizabeth	other	n/a			9	84	7	volunteer
Lake Merced -MESA	other	n/a	22	3				volunteer
Lake Merced - NORTH	other	n/a	75	6				volunteer
Lake Merced - SOUTH	other	n/a	32	2				volunteer
Lake Merritt	other	n/a	87					volunteer
Lakeshore Park	other	n/a			6	76	13	volunteer
Moffett	DESFBNWR	Towers in A2W	15					volunteer
Moffett	DESFBNWR	Towers in A3W	0					volunteer
Moffett	DESFBNWR	Towers in A2E	3					volunteer
Morgan Hill, Llagas Creek	other	n/a		8	10			volunteer
Ovation court	other	n/a		17				volunteer

Table 1 (cont).

Site Location	Land owner/operator	Pond # or tower location	Double-crested Cormorant	Great Blue Heron	Great Egret	Snowy Egret	Black-crowned Night Heron	Method
Oyster Cove Pier	other	n/a		0				not surveyed
Palace of Fine Arts				1				volunteer
Palo Alto Baylands	other	n/a				17	33	volunteer
Portola Valley	other	n/a		21				volunteer
Quarry Lakes	other	n/a		0				volunteer
Redwood Shores	other	n/a			0	0	0	volunteer
Ruus Park	other	n/a			38	10		volunteer
Shadow Cliffs	other	n/a	23	15	8			volunteer
Shorebird way	other	n/a			40	5		volunteer
Steinberger Slough			136	3				volunteer
Stow Lake	other	n/a		3				volunteer
Sunol Water Temple	other	n/a		12				volunteer
Vasona County Park	other	n/a		4				volunteer
Vasona Reservoir	other	n/a				1	3	volunteer
Veterans Park, Livermore	other	n/a		3				volunteer
2011 TOTALS			596	126	141	213	68	
2010 TOTALS			532	115	133	64	80	
2009 TOTALS			347	116	130	87	79	
2008 TOTALS			608	117	115	106	74	
2007 TOTALS			701	127	139	138	133	
2006 TOTALS			769	106	133	168	112	
2005 TOTALS			662	102	123	272	59	

Table 2. Numbers of nests within shorebird, tern and gull colonies in the San Francisco Bay, CA, 2011. Counts are based on peak numbers of active nests either observed by volunteers during the breeding season from levees or areas adjacent to colonies (volunteer), calculated from a single walkthrough of the colony conducted by SFBBO staff (walkthrough). Numbers provided by an outside agency are total numbers of nests monitored during the season. ^A

Site location	Land owner/ operator	Pond / tower	American Avocet	Black-Necked Stilt	California Gull	Caspian Tern	Forster's Tern	Least Tern	Black Skimmer	Method
Alcatraz	other	n/a			134					NPS/USGS
Alameda Point	other	n/a			0			A		USFWS
Alviso	DESFBNWR	A7	5				49		1	volunteer
Alviso	DESFBNWR	A5			78					SFBBO
Alviso	DESFBNWR	A9/A10			5978					SFBBO
Alviso	DESFBNWR	A6			0					walkthrough
Alviso	DESFBNWR	A5/A7	5				49		1	volunteer
Alviso	DESFBNWR	A8	4				48			volunteer
Alviso	DESFBNWR	A16					10			volunteer
Alviso	DESFBNWR	A12	5							volunteer
Coyote Hills	DESFBNWR	N6/N7			2055					SFBBO/USGS
Coyote Hills	DESFBNWR	N2A/N3A/N4AB			3197					walkthrough
Dumbarton	DESFBNWR	N3	21	1			40			volunteer
Moffett	DESFBNWR	A2W	7	4			48		1	USGS
Moffett	DESFBNWR	A3W			1					SFBBO
Moffett	DESFBNWR	B1	2							volunteer
Moffett	DESFBNWR	B2			56					walkthrough/ volunteer
Mountain View	DESFBNWR	A1 SE Island	2	2			21			volunteer
Mountain View	DESFBNWR	A1 NW Island			195					walkthrough / volunteer
Mowry	DESFBNWR	M1/M2			2082					walkthrough
Mowry	DESFBNWR	M4/M5			3131					walkthrough
New Chicago Marsh	DESFBNWR	n/a	36	2						volunteer
Ravenswood	DESFBNWR	R1	10							volunteer
Eden Landing	CDFG	E10				0				volunteer

Table 2 (cont).

Site location	Land owner/operator	Pond / tower	American Avocet	Black-Necked Stilt	California Gull	Caspian Tern	Forster's Tern	Least Tern	Black Skimmer	Method
Eden Landing	CDFG	E8A					0	0		SFBBO
Agua Vista	other	n/a				4				volunteer
Belmont Slough	other	n/a					0			volunteer
Charleston Slough	other	n/a	1				32			volunteer
Hayward Shoreline	other	n/a	114				725	77	8	volunteer/EBRPD
Palo Alto Flood Control Basin	other	n/a			2239					walkthrough
Redwood Shores	other	n/a					0			volunteer
2011 TOTALS			209	9	19012^B	4^D	977	77	10	
2010 TOTALS			90	11	23026 ^C	5	930	53	8	
2009 TOTALS			237	20	21672	147	841	81	11	
2008 TOTALS			308	27	22718	82	874	64	5	
2007 TOTALS			1304	266	18452	22	766	11	3	
2006 TOTALS			448	345	16475	84	1214	15	5	
2005 TOTALS			437	144	13800	72	771	8	5	

^A Alameda Point California Least Tern data not included. Please contact Susan Euing at USFWS for more information.

^B This number does not include data from the Brooks Island California Gull colony. For more information on the Brooks Island colony, contact Caitlin Robinson-Nilsen.

^C The total number of nests from previous years, now includes data from the Alcatraz California Gull Colony (we did not include this colony in previous reports).

^D This number does not include the data from the Brooks Island Caspian Tern colony. For more information on the Brooks Island Caspian Tern colony, contact Dan Roby at Oregon State University.

Table 3. Western Snowy Plover nesting sites and numbers of nests in South San Francisco Bay, CA, 2011 (see Robinson-Nilsen et al. 2011).

Location	Pond	Total nests
Alviso	New Chicago Marsh	6
Eden Landing	E6B	11
	E8	40
	E8A	60
	E12	20
	E13	4
	E14	1
	E16B	15
	E11	5
	E6	7
	E4C	2
Ravenswood	R1	1
	R3	3
	R4	9
	R5	6
	RSF2	18
Warm Springs	A22	11
	A23	2
Hayward Shoreline	Hayward	3
Napa Sonoma Marshes Wildlife Management Area	Napa Plant Site	2
	Napa Sonoma Marsh	1
	Wingo Unit	1
Total		228