

# California MLPA Master Plan Science Advisory Team Draft Evaluation of Benefits to Marine Birds from Proposed Marine Protected Areas in the South Coast Study Region

*October 5, 2009 Draft*

## Overview

Marine birds are long-lived (often living more than 20 years), produce few offspring, provide a large amount of parental care compared to most marine species, and feed at the top of marine food webs. Marine birds can be categorized into four broad categories based on habitat use: seabirds, shorebirds, waterfowl, and marsh birds. Seabirds use coastal waters and at-sea habitats and typically come to land only to breed. However, there are a number of seabird species breeding in the SCSR that depend on land throughout the year. Shorebirds utilize intertidal habitat along the coast and within bays and estuaries. Waterfowl consist of ducks, grebes and loons that forage and raft in protected nearshore waters and waters within bays and estuaries. Marsh birds consist of herons and egrets that typically forage along the vegetated coastal habitat of bays and estuaries. There are >40 species of seabirds, >25 species of shorebirds, >25 species of waterfowl, and 6 species of marsh birds that use the SCSR for breeding, migration, and/or overwintering. **Additionally, there are**

While marine birds are not targeted by recreational or commercial fisheries, they can benefit both directly and indirectly from MPA establishment. Direct benefits include reduced disturbance at breeding and roosting sites and lower probability of interaction with humans and fishing gear at foraging grounds. Indirect benefits include reduced competition for important prey resources. We conducted five separate analyses on proposed MPA arrays to estimate levels of direct and indirect benefits to marine birds. Analyses included 1) protection of seabird breeding colonies, 2) protection of major seabird roosts, 3) protection of nearshore foraging areas, 4) protection of neritic foraging 'hot spots', and 5) protection of estuary and coastal habitats. In this document, proposed marine protected areas (MPAs) for the MLPA South Coast Study Region (SCSR) are evaluated for their potential benefits to marine birds. Evaluations follow the methods described in "Draft Methods Used to Evaluate MPA Proposals in the MLPA South Coast Study Region." Evaluations are subdivided by bioregions (North Mainland, South Mainland, East Channel Islands, Mid Channel Islands, West Channel Islands).

### ***Protection at Breeding Colonies and Roosting Sites***

Some species breeding in the SCSR such as guillemots, murrelets, and petrels only come to land to breed, and spend the remainder of their lives at sea. Many other species, such as most pelicans, cormorants, and gulls, come to shore on a daily basis to rest and preen. For pelicans and cormorants, trips ashore are essential for survival because their wettable plumage must be dried to avoid hypothermia. Thus, it is important that both breeding and roosting sites be protected against human disturbances. For most species, preferred breeding habitats are on offshore rocks, islands, or mainland cliffs free of mammalian predators. However, in the SCSR, several species of terns, including the endangered California Least Tern, nest in the open on the ground of coastal beaches and sand bars within bays and estuaries.

Most species are known to be sensitive to human disturbance to varying degrees (summarized in Carney and Sydeman 1999). Impacts of human disturbance are known to be greatest at breeding sites, where reproduction can be dramatically affected. Because most seabirds are colonial breeders (i.e., nesting in high concentrations), high proportions of populations can be affected by severe or frequent disturbances. Impacts to birds tend to be most pronounced when humans enter the immediate area. Responses vary by species and location, but for many species, intrusion results in most if not all birds fleeing from the immediate area. Birds on nests often will flee, leaving the eggs or chicks behind. During that time, nest contents are susceptible to predators such as gulls. While some birds return to nests once an intruder has gone, others tend to abandon nesting efforts. For example, Brandt's Cormorants have been observed to abandon nests en masse from even single events of human intrusion to the colony (McChesney 1997). Many studies have documented reductions in breeding success and colony attendance, as well as colony abandonment, resulting from human intrusion (Carney and Sydeman 1999). Birds disturbed at foraging areas can incur high energetic costs, with high energy utilization spent while fleeing and reduced energy intake because of lost foraging time. Thus, disturbance can lead to low fitness of individual birds, leading to abandonment of popular foraging areas or starvation (Davidson and Rothwell 1993).

Although often not as easily identified, activities such as close approaches to colonies and roosts or loud noises can evoke responses similar to direct human intrusions. Close approaches can include humans on foot, boats, low-flying aircraft, motor vehicles, surfers, or other sources (Jaques et al. 1996, Carney and Sydeman 1999, Jaques and Strong 2002). Studies of such disturbances on seabirds and other waterbirds have shown various results that often depend on species, location, habitat, and level of habituation to human activity. However, several studies have shown reductions in breeding success or population sizes as a result of such human disturbance (e.g., Wallace and Wallace 1998, Carney and Sydeman 1999, Thayer et al. 1999, Beale and Monaghan 2004, Bouton et al. 2005, Rojek et al. 2007). In some cases, reductions in breeding success from disturbance can occur in the absence of visible behavioral changes (Beale and Monaghan 2004).

### ***Reduced Competition for Food Resources***

During the breeding season, marine birds are central place foragers, continuously returning to the breeding site throughout the day to provision young. Provisioning young is energetically taxing to breeding adults and the spatial constraints of central place foraging makes them highly dependent on localized prey availability (Pichegru et al. 2009). Seabirds and other waterbirds may benefit from MPAs if increases in their forage base occur as a result of the MPAs. Since those seabird species most likely to benefit forage mainly on juvenile fish, increased recruitment of prey species would be a needed result to benefit these seabird species. These species are sensitive to changes in prey availability that can have dramatic effects on breeding success, survivorship, and population status (Ainley and Boekelheide 1990, Nur and Sydeman 1999, Sydeman et al. 2001). For example, the Pelagic Cormorant and Pigeon Guillemot colonies at the South Farallon Islands have undergone declines in reproductive performance and population size, apparently due to decreased prey availability. These reductions are consistent with a decline in the numbers of juvenile rockfish fed to chicks that began in the early 1990s (Sydeman et al. 2001, Warzybok and Bradley 2007). For

waterfowl, the eelgrass beds of the coastal estuaries provide food that is crucial for Brant and several species of dabbling ducks. Protection and restoration of eelgrass beds, and estuarine habitat in general, would provide direct benefits to these birds.

## Methods

Evaluations follow the methods described in the “Draft Methods Used to Evaluate Marine Protected Area Proposals in the MLPA South Coast Study Region June 5, 2009”. The MLPA SCSR evaluation uses the five bioregions identified by the MLPA Master Plan Science Advisory Team. The evaluation includes analyzing the potential benefits to: 1) seabird breeding areas, 2) seabird roosting areas 3) nearshore seabird foraging areas, 4) neritic seabird foraging areas, and 5) estuary and coastal habitats used by shorebirds, marsh birds, and waterfowl.

## Results

### *Seabird Breeding Colonies*

The abundance and distribution of all seabird species breeding within the south coast study region are shown in Table 1. Thirteen of the 18 species are most abundant at the Middle and West Channel Islands, with the West Channel Islands containing almost half of the total breeding population for the study region. Terns and skimmers are the most abundant species breeding in the North and South Mainland bioregions, with the endangered California Least Tern showing the highest abundance in both.

The Seabird Breeding Colony Analysis investigated the eight highest ranking species on the south coast study region list of species likely to benefit from MPAs. These were the Ashy Storm-Petrel, Black Oystercatcher, Brandt’s Cormorant, Pelagic Cormorant, California Brown Pelican, Pigeon Guillemot, Xantus’s Murrelet, and California Least Tern. Only state marine reserves (SMRs) were included in this analysis because they are the most likely to decrease boat traffic enough to reduce disturbance at seabird colonies.

Tables 3 through 5 show the potential benefits provided by each MPA within the three SCRSG MPA proposals. All proposals were identical in benefits offered within the Mid Channel Islands bioregions, and almost identical in the West Channel Islands bioregion with the exception of SCRSG MPA Proposal 3 which included the San Nicolas Island Alpha Area Pending Military Closure. These islands contain recently established MPAs that will not be changed during the MLPA process. Additionally, only one MPA within the East Channel Islands bioregion (Blue Cavern SMR) contained seabird colonies (see Tables 3 and 5).

All three SCRSG MPA proposals provide increased protection over Proposal 0 in the North Mainland and South Mainland bioregions. All three were identical in terms of protection provided within the North Mainland study region, protecting 100% of the Pigeon Guillemot, Pelagic Cormorant, and Black Oystercatcher populations, but providing no protection to the

California Least Tern population (Table 6). SCRSG MPA Proposal 3 provides the most protection within the South Mainland bioregion due to designating the Bolsa Chica MPA as a SMR. The Bolsa Chica SMR will protect 22.9% of the bioregion's California Least Tern population and 37% of the bioregion's total seabird population (Table 5). In addition to the Least Tern, six species scoring lower on the 'Species Likely to Benefit' list breed within the Bolsa Chica SMR. All three proposals will protect 100% of the Brandt's Cormorant population within the South Mainland bioregion (Table 5).

### **Major Seabird Roosts**

Data on California Brown Pelican roosting abundance and distribution were used in this analysis to identify major seabird roosts. California Brown Pelicans have been well studied in the south coast study region and use all habitats used by other roosting seabirds. Despite the attention pelicans have received, only data from the North and South Mainland bioregions have been compiled in a manner compatible with this analysis. Therefore, only the MPAs proposed within the North and South Mainland bioregions could be analyzed. As with the breeding colony analysis, only SMRs were considered for the roost analysis. All pelican roosts were placed in one of three categories dependent on the number of pelicans observed at the roosts when the data were collected. Roosts were placed in the 'high' category if >1,000 pelicans were consistently observed, 'medium' if 500-1,000 pelicans were consistently observed, and 'low' if 100-499 pelicans were consistently observed.

Table 7 shows the number of roosts captured by all proposed MPAs while Table 8 shows the number of roosts captured by SMRs for each proposal. Proposal 0 did not capture any important pelican roosts in the North Mainland bioregion and only one in the South Mainland. All proposals captured 1 high-use roost in both the North and South Mainland bioregions. SCRSG MPA Proposal 1 captured the most medium-use roosts in both the North and South Mainland bioregions (3 and 4, respectively). Overall, SCRSG MPA Proposal 1 captured the most roosts of all classifications in the North Mainland bioregion (6 total) while SCRSG MPA Proposal 3 captured the most in the South Mainland bioregion (10 total).

### **Nearshore Seabird Foraging Areas**

The nearshore foraging analysis focused on five species with limited foraging ranges during the breeding season: Brandt's Cormorant, Pelagic Cormorant, Pigeon Guillemot, Bald Eagles, and California Least Terns. Only MPAs that met the criteria outlined in the methods document were included in this analysis. Weighted areas were calculated by multiplying seabird colony size with the amount of that colony's foraging area captured by a given MPA. Tables 9 through 12 show the weighted area captured by each proposed MPA. Table 13 compares all proposals based on the total weighted areas captured by MPAs that met the criteria for this analysis.

All three SCSR proposals increased benefits to nearshore foraging seabirds over Proposal 0. However, SCSR proposals were very similar with differences limited to three species and few bioregions. SCSR Proposal 3 provides the most benefits to Brandt's Cormorants in the South Mainland bioregion and Bald Eagles in the East Channel Islands bioregion. SCRSG MPA Proposals 2 and 3 provide the most benefits to Least Terns in the North bioregion while

SCRSG MPA Proposal 1 provides the most benefits to Least Terns in the South bioregion. The South La Jolla Reefs SMR accounted for most protection to Brandt's Cormorants while the North Catalina Island SMR accounted for most protection for Bald Eagles. Least Terns will receive the most protection from the Helo SMR on the North Mainland and the Ocean Beach and Sunset Cliffs SMR on the South Mainland.

### ***Neritic Foraging 'Hot Spots' (includes California sea lion and coastal bottlenose dolphin)***

The neritic foraging analysis identified areas of persistent use by pelagic foraging seabirds and marine mammals and quantified the amount of these areas captured by proposed MPAs. Most of the identified 'hot spots' occurred within the North and South Mainland bioregions (Figure 1). Only MPAs that met the criteria outlined within the methods document were included in this analysis. Tables 14 through 17 show the areas captured by MPAs from each proposal. Table 18 compares the total protected 'hot spot' areas among proposals.

All SCRSG MPA proposals were increased benefits to neritic-foraging seabirds over Proposal 0. All SCRSG proposals were very similar with Proposal 3 providing slightly more protection in the North and South Mainland bioregions. Within Proposal 3, the Point Conception and UCSB SMRs provide the most protection in the north and the Palos Verdes and South La Jolla Reefs provide the most protection in the south.

### ***Estuary and Coastal Habitats***

The estuary and coastal habitats analysis quantified the amount of estuary, tidal flat, coastal marsh, and beach habitat protected by proposed MPAs. Table 19 compares the amount of each habitat type protected by each proposal. Only MPAs that met the criteria outlined in the methods document were used for this analysis. All SCRSG MPA proposals increased protection to marine birds over Proposal 0. SCRSG MPA Proposal 3 provides the most protection to beach habitat in the North and South Mainland and East and West Channel Islands bioregions; and to coastal marsh, tidal flat, and estuarine habitat in the South Mainland bioregion. SCRSG MPA Proposal 1 provides the most protection to coastal marsh and estuarine habitat in the North Mainland bioregion.

### **Summary**

Differences in seabird protection among the three SCRSG MPA proposals were for the most part subtle. All proposals provide increased protection over Proposal 0. Aside from the Bolsa Chica SMR in Proposal 3, all proposals were identical in their protection to seabird breeding populations. Overall, Proposal 3 provides the most protection over the most categories, including Bald Eagle foraging habitat, neritic 'hot spots', and beach, coastal marsh and tidal flat habitats. Proposal 1 provided most protection for seabird roosts. And Proposals 2 and 3 provided more protection to Least Tern foraging habitat over Proposal 1.



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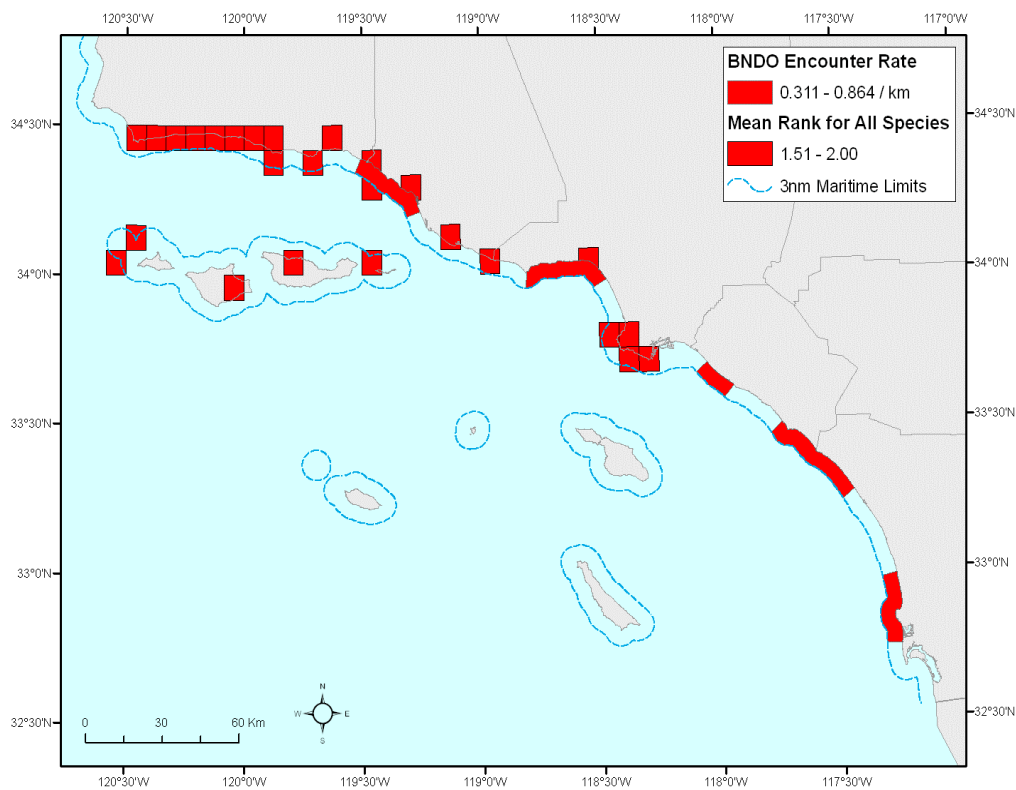
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**FIGURES AND TABLES**

**Figure 1. Neritic foraging ‘hot spots’ for Bottlenose Dolphins and other species**



Note: BNDO = Coastal bottlenose dolphins.



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**Table 1. Numbers of breeding seabirds of 18 species within each of the five bioregions of the south coast study region.**

	Bioregion					Total
	North Mainland	South Mainland	East Channel Islands	Mid Channel Islands	West Channel Islands	
No. of Species	5	9	4	11	10	18
Total Breeding Population	753	16151	3460	16179	30818	67361
ASSP	0	0	0	373	801	1174
BLOY	2	0	6	36	53	97
BLSP	0	0	0	150	0	150
BLSK	0	395	0	0	0	395
BRCO	0	6	40	476	5400	5922
BRPE	0	0	0	2690	0	2690
CATE	0	1100	0	0	0	1100
CAAU	0	0	0	490	22020	22510
DCCO	0	0	0	266	150	416
ELTE	0	2900	0	0	0	2900
FOTE	0	2200	0	0	0	2200
LESP	0	0	0	0	4	4
LETE	714	9518	0	0	0	10232
PECO	6	0	0	62	362	430
PIGU	29	0	0	140	1010	1179
ROTE	0	8	0	0	0	8
WEGU	2	24	164	8313	3958	12461
XAMU	0	0	160	3183	150	3493

<sup>1</sup> Species codes: ASSP – Ashy Storm-Petrel, BLOY – Black Oystercatcher, BLSP – Black Skimmer, BRCO – Brandt’s Cormorant, BRPE – Brown Pelican, CATE – Caspian’s Tern, CAAU – Cassin’s Auklet, DCCO – Double-crested Cormorant, ELTE – Elegant Tern, FOTE – Forster’s Tern, LESP – Least Storm-Petrel, LETE – California Least Tern, PECO – Pelagic Cormorant, PIGU - Pigeon Guillemot, ROTE – Royal Tern, WEGU – Western Gull, XAMU – Xantus’s Murrelet.

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**Table 2. Proposal 0 summary of numbers of breeding birds, percent of bioregional totals, and combined total for species likely to benefit. See Table 1 for species codes. Proposed marine protected areas not listed here did not contain breeding populations of these bird species.**

NAME	No. of Species	Total Birds	Total Birds Pct.	ASS P	ASSP Pct.	BLO Y	BLO Y Pct.	BRC O	BRCO Pct.	BRP E	BRP E Pct.	LET E	LETE Pct.	PEC O	PEC O Pct.	PIG U	PIGU Pct.	XAMU	XAMU Pct.
<b>South Mainland</b>																			
Bolsa Chica SMP <sup>1</sup>	7	3128	19.4%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	400	4.2%	0	0.0%	0	0.0%	0	0.0%
Upper Newport Bay SMP <sup>1</sup>	1	7	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	7	0.1%	0	0.0%	0	0.0%	0	0.0%
Batiquitos Lagoon SMP <sup>1</sup>	1	1142	7.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1142	12.0%	0	0.0%	0	0.0%	0	0.0%
Laguna Beach SMCA <sup>1</sup>	1	100	0.6%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	100	1.1%	0	0.0%	0	0.0%	0	0.0%
La Jolla SMCA <sup>1</sup>	2	10	0.1%	0	0.0%	0	0.0%	6	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
<b>Mid Channel Islands</b>																			
Scorpion SMR	5	543	3.4%	40	10.7%	2	5.6%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	9	6.4%	0	0.0%
Anacapa Island SMR	7	7669	47.4%	0	0.0%	2	5.6%	4	0.8%	2516	93.5%	0	0.0%	4	6.5%	10	7.1%	0	0.0%
Anacapa Island SMCA <sup>1</sup>	3	202	1.2%	0	0.0%	1	2.8%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	100.0%	0.0003	14169
Gull Island SMR	6	466	2.9%	2	0.5%	8	22.2%	134	28.2%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	0.1%
<b>West Channel Islands</b>																			
Harris Point	10	2450	72.3%	601	75.0%	7	12.7%	1824	33.8%	0	0.0%	0	0.0%	216	59.7%	560	55.4%	150	100.0%

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NAME	No. of Species	Total Birds	Total Birds Pct.	ASSP	ASSP Pct.	BLOY	BLOY Pct.	BRCO	BRCO Pct.	BRPE	BRPE Pct.	LETE	LETE Pct.	PECO	PECO Pct.	PIGU	PIGU Pct.	XAMU	XAMU Pct.
Carrington Point SMR	4	138	0.4%	0	0.0%	0	0.0%	54	1.0%	0	0.0%	0	0.0%	24	6.6%	0	0.0%	0	0.0%

<sup>1</sup>Not included in Table 6 because benefits to seabirds are reduced by allowed take activities.

**Table 3. SCRSG MPA Proposal 1 summary of numbers of breeding birds, percent of bioregional totals, and combined total for species likely to benefit. See Table 1 for species codes. Proposed marine protected areas not listed here did not contain breeding populations of these bird species.**

NAME	No. Species	Total Birds	Total Birds Pct.	ASSP	ASSP Pct.	BLOY	BLOY Pct.	BRCO	BRCO Pct.	BRPE	BRPE Pct.	LETE	LETE Pct.	PECO	PECO Pct.	PIGU	PIGU Pct.	XAMU	XAMU Pct.
North Mainland																			
Point Conception SMR	4	39	39.0%	0	0.0%	2	100.0%	0	0.0%	0	0.0%	0	0.0%	6	100.0%	29	100.0%	0	0.0%
South Mainland																			
Bolsa Chica SMCA <sup>1</sup>	7	2978	34.5%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	250	12.6%	0	0.0%	0	0.0%	0	0.0%
Upper Newport Bay SMCA <sup>1</sup>	1	7	0.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	7	0.4%	0	0.0%	0	0.0%	0	0.0%
Laguna SMR	1	100	1.2%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	100	5.0%	0	0.0%	0	0.0%	0	0.0%
Batiquitos Lagoon SMR	1	55	0.6%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	55	2.8%	0	0.0%	0	0.0%	0	0.0%
San Elijo Lagoon SMR	1	34	0.4%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	34	1.7%	0	0.0%	0	0.0%	0	0.0%

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NAME	No. Species	Total Birds	Total Birds Pct.	ASSP	ASSP Pct.	BLOY	BLOY Pct.	BRCO	BRCO Pct.	BRPE	BRPE Pct.	LETE	LETE Pct.	PECO	PECO Pct.	PIGU	PIGU Pct.	XAMU	XAMU Pct.
San Dieguito Lagoon SMR	1	10	0.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	10	0.5%	0	0.0%	0	0.0%	0	0.0%
Los Penasquitos Marsh SMR	1	30	0.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	30	1.5%	0	0.0%	0	0.0%	0	0.0%
La Jolla Cove SMR	2	10	0.1%	0	0.0%	0	0.0%	6	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Tijuana River Mouth SMCA <sup>1</sup>	1	50	0.6%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	50	2.5%	0	0.0%	0	0.0%	0	0.0%
East Channel Islands																			
Blue Cavern SMR	1	52	25.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Mid Channel Islands																			
Scorpion SMR	5	543	3.4%	40	10.7%	2	5.6%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	9	6.4%	0	0.0%
Anacapa Island SMR	7	7669	47.4%	0	0.0%	2	5.6%	4	0.8%	2516	93.5%	0	0.0%	4	6.5%	10	7.1%	0	0.0%
Anacapa Island SMCA <sup>1</sup>	3	202	1.2%	0	0.0%	1	2.8%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	0.0%
Gull Island SMR	6	466	2.9%	2	0.5%	8	22.2%	134	28.2%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	0.1%
West Channel Islands																			
Harris Point SMR	10	24500	72.3%	601	75.0%	7	12.7%	1824	33.8%	0	0.0%	0	0.0%	216	59.7%	560	55.4%	150	100.0%
Carrington Point SMR	4	138	0.4%	0	0.0%	0	0.0%	54	1.0%	0	0.0%	0	0.0%	24	6.6%	0	0.0%	0	0.0%

<sup>1</sup>Not included in Table 6 because benefits to seabirds are reduced by allowed take activities.

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**Table 4. SCRSG MPA Proposal 2 summary of numbers of breeding birds, percent of bioregional totals, and combined total for species likely to benefit. See Table 1 for species codes. Proposed marine protected areas not listed here did not contain breeding populations of these bird species.**

NAME	No. Species	Total Birds	Total Birds Pct.	ASSP	ASSP Pct.	BLOY	BLOY Pct.	BRCO	BRCO Pct.	BRPE	BRPE Pct.	LETE	LETE Pct.	PECO	PECO Pct.	PIGU	PIGU Pct.	XAMU	XAMU Pct.
North Mainland																			
Point Conception SMR	4	39	39.0%	0	0.0%	2	100.0%	0	0.0%	0	0.0%	0	0.0%	6	100.0%	29	100.0%	0	0.0%
Point Mugu SMRMA <sup>1</sup>	1	24	24.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	24	39.3%	0	0.0%	0	0.0%	0	0.0%
South Mainland																			
Bolsa Chica SMCA <sup>1</sup>	7	2978	34.5%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	250	12.6%	0	0.0%	0	0.0%	0	0.0%
Upper Newport Bay SMCA <sup>1</sup>	1	7	0.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	7	0.4%	0	0.0%	0	0.0%	0	0.0%
Laguna South SMCA <sup>1</sup>	1	100	1.2%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	100	5.0%	0	0.0%	0	0.0%	0	0.0%
San Dieguito Lagoon SMR	1	10	0.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	10	0.5%	0	0.0%	0	0.0%	0	0.0%
La Jolla SMR	2	10	0.1%	0	0.0%	0	0.0%	6	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
East Channel Islands																			
Bird Rock SMCA <sup>1</sup>	1	52	25.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Mid Channel Islands																			
Scorpion SMR	5	543	3.4%	40	10.7%	2	5.6%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	9	6.4%	0	0.0%
Anacapa Island SMR	7	7669	47.4%	0	0.0%	2	5.6%	4	0.8%	2516	93.5%	0	0.0%	4	6.5%	10	7.1%	0	0.0%
Anacapa Island	3	202	1.2%	0	0.0%	1	2.8%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	0.0%



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NAME	No. Species	Total Birds	Total Birds Pct.	ASSP	ASSP Pct.	BLOY	BLOY Pct.	BRCO	BRCO Pct.	BRPE	BRPE Pct.	LETE	LETE Pct.	PECO	PECO Pct.	PIGU	PIGU Pct.	XAMU	XAMU Pct.
SMCA <sup>1</sup>																			
Gull Island SMR	6	466	2.9%	2	0.5%	8	22.2%	134	28.2%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	0.1%
West Channel Islands																			
Harris Point SMR	10	24500	72.3%	601	75.0%	7	12.7%	1824	33.8%	0	0.0%	0	0.0%	216	59.7%	560	55.4%	150	100.0%
Carrington Point SMR	4	138	0.4%	0	0.0%	0	0.0%	54	1.0%	0	0.0%	0	0.0%	24	6.6%	0	0.0%	0	0.0%

<sup>1</sup>Not included in Table 6 because benefits to seabirds are reduced by allowed take activities.

**Table 5. SCRSG MPA Proposal 3 summary of numbers of breeding birds, percent of bioregional totals, and combined total for species likely to benefit. See Table 1 for species codes. Proposed marine protected areas not listed here did not contain breeding populations of these bird species.**

NAME	No. Species	Total Birds	Total Birds Pct.	ASSP	ASSP Pct.	BLOY	BLOY Pct.	BRCO	BRCO Pct.	BRPE	BRPE Pct.	LETE	LETE Pct.	PECO	PECO Pct.	PIGU	PIGU Pct.	XAMU	XAMU Pct.
North Mainland																			
Point Conception SMR	4	39	39.0%	0	0.0%	2	100.0%	0	0.0%	0	0.0%	0	0.0%	6	100.0%	29	100.0%	0	0.0%
Mugu Lagoon SMRMA <sup>1</sup>	1	24	24.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	24	39.3%	0	0.0%	0	0.0%	0	0.0%
South Mainland																			
Bolsa Chica SMR	7	2978	34.5%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	250	12.6%	0	0.0%	0	0.0%	0	0.0%
Upper Newport Bay SMR	1	7	0.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	7	0.4%	0	0.0%	0	0.0%	0	0.0%
Laguna Beach SMR	1	100	1.2%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	100	5.0%	0	0.0%	0	0.0%	0	0.0%
Batiquitos Lagoon SMR	1	55	0.6%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	55	2.8%	0	0.0%	0	0.0%	0	0.0%

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NAME	No. Species	Total Birds	Total Birds Pct.	ASSP	ASSP Pct.	BLOY	BLOY Pct.	BRCO	BRCO Pct.	BRPE	BRPE Pct.	LETE	LETE Pct.	PECO	PECO Pct.	PIGU	PIGU Pct.	XAMU	XAMU Pct.
San Eljio Lagoon SMR	1	34	0.4%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	34	1.7%	0	0.0%	0	0.0%	0	0.0%
San Dieguito Lagoon SMR	1	10	0.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	10	0.5%	0	0.0%	0	0.0%	0	0.0%
Matlahuayl SMR	2	10	0.1%	0	0.0%	0	0.0%	6	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Tijuana River Mouth SMCA <sup>1</sup>	1	50	0.6%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	50	2.5%	0	0.0%	0	0.0%	0	0.0%
East Channel Islands																			
Blue Cavern SMR	1	52	25.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Mid Channel Islands																			
Scorpion SMR	5	543	3.4%	40	10.7%	2	5.6%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	9	6.4%	0	0.0%
Anacapa Island SMR	7	7669	47.4%	0	0.0%	2	5.6%	4	0.8%	2516	93.5%	0	0.0%	4	6.5%	10	7.1%	0	0.0%
Anacapa Island SMCA <sup>1</sup>	3	202	1.2%	0	0.0%	1	2.8%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	0.0%
Gull Island SMR	6	466	2.9%	2	0.5%	8	22.2%	134	28.2%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	0.1%
West Channel Islands																			
Harris Point SMR	10	24500	72.3%	601	75.0%	7	12.7%	1824	33.8%	0	0.0%	0	0.0%	216	59.7%	560	55.4%	150	100.0%
Carrington Point SMR	4	138	0.4%	0	0.0%	0	0.0%	54	1.0%	0	0.0%	0	0.0%	24	6.6%	0	0.0%	0	0.0%
San Nicolas Alpha Area Military Closure <sup>1</sup>	3	3092	9.1%	0	0.0%	2	3.6%	290	5.4%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

<sup>1</sup>Not included in Table 6 because benefits to seabirds are reduced by allowed take activities.

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**Table 6. Comparison between proposals of numbers and percentages of marine birds breeding within proposed MPAs in each bioregion and overall.**

NAME	No. of Species	Total Birds	Total Birds Pct.	ASSP	ASSP Pct.	BLOY	BLOY Pct.	BRCO	BRCO Pct.	BRPE	BRPE Pct.	LETE	LETE Pct.	PECO	PECO Pct.	PIGU	PIGU Pct.	XAMU	XAMU Pct.
North Mainland																			
Proposal 0	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
SCRSG MPA Proposal 1	4	39	39.0%	0	0.0%	2	100.0%	0	0.0%	0	0.0%	0	0.0%	6	100.0%	29	100.0%	0	0.0%
SCRSG MPA Proposal 2	4	39	39.0%	0	0.0%	2	100.0%	0	0.0%	0	0.0%	0	0.0%	6	100.0%	29	100.0%	0	0.0%
SCRSG MPA Proposal 3	4	39	39.0%	0	0.0%	2	100.0%	0	0.0%	0	0.0%	0	0.0%	6	100.0%	29	100.0%	0	0.0%
South Mainland																			
Proposal 0	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
SCRSG MPA Proposal 1	3	239	2.8%	0	0.0%	0	0.0%	6	100.0%	0	0.0%	229	11.5%	0	0.0%	0	0.0%	0	0.0%
SCRSG MPA Proposal 2	3	20	0.2%	0	0.0%	0	0.0%	6	100.0%	0	0.0%	10	0.5%	0	0.0%	0	0.0%	0	0.0%
SCRSG MPA Proposal 3	8	3194	37.0%	0	0.0%	0	0.0%	6	100.0%	0	0.0%	456	22.9%	0	0.0%	0	0.0%	0	0.0%
East Channel Islands																			
Proposal 0	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
SCRSG MPA Proposal 1	1	52	25.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

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NAME	No. of Species	Total Birds	Total Birds Pct.	ASSP	ASSP Pct.	BLOY	BLOY Pct.	BRCO	BRCO Pct.	BRPE	BRPE Pct.	LETE	LETE Pct.	PECO	PECO Pct.	PIGU	PIGU Pct.	XAMU	XAMU Pct.
SCRSG MPA Proposal 2	1	52	25.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
SCRSG MPA Proposal 3	1	52	25.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Mid Channel Islands																			
Proposal 0	18	8678	53.6%	42	11.3%	12	33.3%	138	29.0%	2516	93.5%	0	0.0%	4	6.5%	19	13.6%	2	0.1%
SCRSG MPA Proposal 1	18	8678	53.6%	42	11.3%	12	33.3%	138	29.0%	2516	93.5%	0	0.0%	4	6.5%	19	13.6%	2	0.1%
SCRSG MPA Proposal 2	18	8678	53.6%	42	11.3%	12	33.3%	138	29.0%	2516	93.5%	0	0.0%	4	6.5%	19	13.6%	2	0.1%
SCRSG MPA Proposal 3	18	8678	53.6%	42	11.3%	12	33.3%	138	29.0%	2516	93.5%	0	0.0%	4	6.5%	19	13.6%	2	0.1%
West Channel Islands																			
Proposal 0	14	24638	72.7%	601	75.0%	7	12.7%	1878	34.8%	0	0.0%	0	0.0%	240	66.3%	560	55.4%	150	100.0%
SCRSG MPA Proposal 1	14	24638	72.7%	601	75.0%	7	12.7%	1878	34.8%	0	0.0%	0	0.0%	240	66.3%	560	55.4%	150	100.0%
SCRSG MPA Proposal 2	14	24638	72.7%	601	75.0%	7	12.7%	1878	34.8%	0	0.0%	0	0.0%	240	66.3%	560	55.4%	150	100.0%
SCRSG MPA Proposal 3	14	24638	72.7%	601	75.0%	7	12.7%	1878	34.8%	0	0.0%	0	0.0%	240	66.3%	560	55.4%	150	100.0%

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**Table 7. Major Brown Pelican roosts by roost size category within proposed mainland MPAs. Proposed MPAs not shown do not contain Brown Pelican roosts.**

MPA Name	Roost Category	Number of Roosts	MPA Name	Roost Category	Number of Roosts
<b>North Mainland</b>			<b>South Mainland continued</b>		
<i>Proposal 0</i>			<i>SCRSG MPA Proposal 1</i>		
None	N/A	0	Bolsa Chica SMCA <sup>1</sup>	Low	1
<i>SCRSG MPA Proposal 1</i>			Crystal Cove SMCA <sup>1</sup>	Medium	1
Kashtayit SMP <sup>1</sup>	Low	1	Crystal Cove SMCA <sup>1</sup>	Low	1
Point Conception SMR	Medium	1	Laguna SMR	Low	2
Point Conception SMR	High	1	Laguna SMR	Medium	1
Point Conception SMR	Low	1	Dana Point SMCA <sup>1</sup>	Low	1
Devereux Lagoon SMR	Medium	1	San Elijo Lagoon SMR	Low	1
Helo SMR	Low	1	La Jolla Cove SMR	High	1
Carpinteria Salt Marsh SMR	Medium	1	La Jolla South SMR	Medium	1
Point Dume SMCA <sup>1</sup>	Medium	1	Ocean Beach Pier SMCA <sup>1</sup>	Low	1
<i>SCRSG MPA Proposal 2</i>			Ocean Beach SMR	Medium	1
Point Conception SMR	Medium	1	Cabrillo SMR	Medium	1
Point Conception SMR	High	1	<i>SCRSG MPA Proposal 2</i>		
Point Conception SMR	Low	1	Abalone Cove SMCA <sup>1</sup>	Medium	1
Point Mugu SMRMA <sup>1</sup>	High	1	Bolsa Chica SMCA	Low	1
Point Dume SMCA <sup>1</sup>	Medium	1	Laguna North SMCA <sup>1</sup>	Low	1
<i>SCRSG MPA Proposal 3</i>			Laguna SMR	Low	1
Point Conception SMR	Medium	1	Laguna SMR	Medium	1
Point Conception SMR	High	1	Laguna South SMCA <sup>1</sup>	Low	2
Point Conception SMR	Low	1	La Jolla SMR	High	1
Mishopsno SMCA	Low	1	Ocean Beach Pier SMCA <sup>1</sup>	Low	1
Mishopsno SMCA		1	Sunset Cliffs SMR	Medium	1
Mugu Lagoon SMRMA <sup>1</sup>	High	1	Cabrillo SMR	Medium	1
Point Dume SMR	Medium	1	<i>SCRSG MPA Proposal 3</i>		
<b>South Mainland</b>			Palos Verdes SMR	Low	2
<i>Proposal 0</i>			Bolsa Chica SMR	Low	1
Abalone Cove SMP <sup>1</sup>	Medium	1	Newport Coast SMCA <sup>1</sup>	Low	1
Bolsa Chica SMP <sup>1</sup>	Low	1	Laguna Beach SMR	Low	2
Irvine Coast SMCA <sup>1</sup>	Low	1	Laguna Beach SMR	Medium	1
Crystal Cove SMCA <sup>1</sup>	Low	1	Dana Point SMCA <sup>1</sup>	Low	1
Laguna Beach SMCA <sup>1</sup>	Low	2	San Elijo Lagoon SMR	Low	1
Laguna Beach SMCA <sup>1</sup>	Medium	1	Matlahuayl SMR	High	1
Heisler Park SMR	Medium	1	South La Jolla Reefs SMR	Medium	1
Dana Point SMCA <sup>1</sup>	Low	1	Cabrillo SMR	Medium	1
San Elijo Lagoon SMP <sup>1</sup>	Low	1			
La Jolla SMCA <sup>1</sup>	High	1			



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MPA Name	Roost Category	Number of Roosts	MPA Name	Roost Category	Number of Roosts
Mia J Tegner SMCA <sup>1</sup>	Medium	1			

<sup>1</sup>Not included in Table 8 because benefits to seabirds are reduced by allowed take activities.

**Table 8. Comparison between proposals of size and number of Brown Pelican roosts within proposed MPAs in the mainland bioregions.**

<b>North Mainland</b>				
	High	Medium	Low	
Proposal 0	0	0	0	
SCRSG MPA Proposal 1	1	3	2	
SCRSG MPA Proposal 2	1	1	1	
SCRSG MPA Proposal 3	1	2	1	
<b>South Mainland</b>				
	High	Medium	Low	
Proposal 0	0	1	0	
SCRSG MPA Proposal 1	1	4	3	
SCRSG MPA Proposal 2	1	3	1	
SCRSG MPA Proposal 3	1	3	6	

**Table 9. Proposal 0 weighted contributions to foraging areas for five species of breeding seabirds within proposed MPAs. MPAs not shown did not contribute to foraging area for any of these species.**

MPA Name	Brandt's Cormorant	Pelagic Cormorant	Pigeon Guillemot	Bald Eagles	California Least Tern
<b>North Mainland</b>					
Goleta Slough SMP <sup>1</sup>	0.00	0.00	0.00	N/A	<0.01
<b>South Mainland</b>					
Point Fermin SMP <sup>1</sup>	0.00	0.00	0.00	N/A	0.01
Batiquitos Lagoon SMP <sup>1</sup>	0.00	0.00	0.00	N/A	0.17
Bolsa Chica SMP <sup>1</sup>	0.00	0.00	0.00	N/A	0.02
Encinitas SMCA <sup>1</sup>	0.00	0.00	0.00	N/A	0.01
La Jolla SMCA <sup>1</sup>	0.77	0.00	0.00	N/A	0.00
San Diego-Scripps SMCA <sup>1</sup>	0.11	0.00	0.00	N/A	0.00
<b>East Channel Islands</b>					
Catalina Marine Science Center SMR	0.00	0.00	0.00	0.06	N/A
Lover's Cove SMCA <sup>1</sup>	0.00	0.00	0.00	0.02	N/A

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<b>Mid Channel Islands</b>					
Anacapa Island SMCA <sup>1</sup>	0.05	0.40	0.44	0.00	N/A
Anacapa Island SMR	0.08	0.63	0.70	0.00	N/A
Footprint SMR	0.01	0.09	0.00	0.00	N/A
Gull Island SMR	7.37	12.98	0.11	11.21	N/A
Santa Barbara Island SMR	2.79	0.67	4.48	0.00	N/A
Scorpion SMR	0.00	0.00	0.48	0.00	N/A
<b>West Channel Islands</b>					
Carrington Point SMR	0.13	0.83	0.00	0.00	N/A
Harris Point SMR	11.41	12.38	12.68	0.00	N/A
Judith Rock SMR	0.48	0.20	0.28	0.00	N/A
Richardson Rock SMR	1.17	0.48	0.69	0.00	N/A

MPAs not shown did not contribute to foraging area for any of these species.

<sup>1</sup>Not included in Table 13 because benefits to seabirds are reduced by allowed take activities.

**Table 10. SCRSG MPA Proposal 1 weighted contributions to foraging areas for five species of breeding seabirds within proposed MPAs. MPAs not shown did not contribute to foraging area for any of these species.**

<b>MPA Name</b>	<b>Brandt's Cormorant</b>	<b>Pelagic Cormorant</b>	<b>Pigeon Guillemot</b>	<b>Bald Eagles</b>	<b>California Least Tern</b>
<b>North Mainland</b>					
Point Conception SMR	0.00	14.24	14.24	N/A	0.00
Helo SMR	0.00	0.00	0.00	N/A	68.76
Devereux Lagoon SMR	0.00	0.00	0.00	N/A	0.72
Goleta Slough SMR	0.00	0.00	0.00	N/A	1.60
<b>South Mainland</b>					
Point Fermin SMCA <sup>1</sup>	0.00	0.00	0.00	N/A	218.53
Batiquitos Lagoon SMR	0.00	0.00	0.00	N/A	431.40
Bolsa Chica SMCA <sup>1</sup>	0.00	0.00	0.00	N/A	246.62
La Jolla Cove SMR	0.77	0.00	0.00	N/A	0.00
La Jolla South SMCA <sup>1</sup>	0.89	0.00	0.00	N/A	46.72
La Jolla South SMR	1.47	0.00	0.00	N/A	0.00
Famosa Slough SMR	0.00	0.00	0.00	N/A	26.56
Ocean Beach Pier SMCA <sup>1</sup>	0.00	0.00	0.00	N/A	22.66
Ocean Beach SMR	0.00	0.00	0.00	N/A	875.42
Cabrillo SMR		0.00	0.00	N/A	11.42
Tijuana River Mouth SMCA <sup>1</sup>	0.00	0.00	0.00	N/A	722.41
<b>East Channel Islands</b>					
Blue Cavern SMR	0.00	0.00	0.00	0.85	N/A
Cat Harbor SMCA <sup>1</sup>	0.00	0.00	0.00	0.25	N/A
Emerald Bay SMCA <sup>1</sup>	0.00	0.00	0.00	0.22	N/A

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MPA Name	Brandt's Cormorant	Pelagic Cormorant	Pigeon Guillemot	Bald Eagles	California Least Tern
Long Point SMR	0.00	0.00	0.00	3.54	N/A
Lover's Cove SMCA <sup>1</sup>	0.00	0.00	0.00	0.06	N/A
San Clemente Pending Military Closure 1 <sup>1</sup>	1.45	0.00	0.00	0.00	N/A
San Clemente Pending Military Closure 2 <sup>1</sup>	0.64	0.00	0.00	0.00	N/A
<b>Mid Channel Islands</b>					
Anacapa Island SMCA <sup>1</sup>	0.05	0.40	0.44	0.00	N/A
Anacapa Island SMR	0.08	0.63	0.70	0.00	N/A
Footprint SMR	0.01	0.09	0.00	0.00	N/A
Gull Island SMR	7.37	12.98	0.11	11.21	N/A
Santa Barbara Island SMR	2.79	0.67	4.48	0.00	N/A
Scorpion SMR	0.00	0.00	0.48	0.00	N/A
<b>West Channel Islands</b>					
Carrington Point SMR	0.13	0.83	0.00	0.00	N/A
Harris Point SMR	11.41	12.38	12.68	0.00	N/A
Judith Rock SMR	0.48	0.20	0.28	0.00	N/A
Richardson Rock SMR	1.17	0.48	0.69	0.00	N/A

<sup>1</sup>Not included in Table 13 because benefits to seabirds are reduced by allowed take activities.

**Table 11. SCRSG MPA Proposal 2 weighted contributions to foraging areas for five species of breeding seabirds within proposed MPAs. MPAs not shown did not contribute to foraging area for any of these species.**

MPA Name	Brandt's Cormorant	Pelagic Cormorant	Pigeon Guillemot	Bald Eagles	California Least Tern
<b>North Mainland</b>					
Point Conception SMR	0.00	14.24	14.24	N/A	0.00
Campus Point SMR	0.00	0.00	0.00	N/A	63.57
Goleta Slough SMR	0.00	0.00	0.00	N/A	1.60
Point Mugu SMRMA	0.00	0.00	0.00	N/A	199.25
<b>South Mainland</b>					
Bolsa Chica SMCA <sup>1</sup>	0.00	0.00	0.00	N/A	246.57
La Jolla SMR	0.77	0.00	0.00	N/A	0.00
Ocean Beach Pier SMCA <sup>1</sup>	0.00	0.00	0.00	N/A	44.23
Sunset Cliffs SMR	0.00	0.00	0.00	N/A	915.72
Cabrillo SMR	0.00	0.00	0.00	N/A	11.31
<b>East Channel Islands</b>					
Bird Rock SMCA <sup>1</sup>	0.00	0.00	0.00	0.45	N/A
Blue Cavern SMR	0.00	0.00	0.00	0.40	N/A
Lover's Cove SMCA <sup>1</sup>	0.00	0.00	0.00	0.06	N/A
San Clemente Pending Military Closure 1 <sup>1</sup>	1.45	0.00	0.00	0.00	N/A

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MPA Name	Brandt's Cormorant	Pelagic Cormorant	Pigeon Guillemot	Bald Eagles	California Least Tern
San Clemente Pending Military Closure 2 <sup>1</sup>	0.64	0.00	0.00	0.00	N/A
<b>Mid Channel Islands</b>					
Anacapa Island SMCA <sup>1</sup>	0.05	0.40	0.44	0.00	N/A
Anacapa Island SMR	0.08	0.63	0.70	0.00	N/A
Footprint SMR	0.01	0.09	0.00	0.00	N/A
Gull Island SMR	7.37	12.98	0.11	11.21	N/A
Santa Barbara Island SMR	2.79	0.67	4.48	0.00	N/A
Scorpion SMR	0.00	0.00	0.48	0.00	N/A
<b>West Channel Islands</b>					
Carrington Point SMR	0.13	0.83	0.00	0.00	N/A
Harris Point SMR	11.41	12.38	12.68	0.00	N/A
Judith Rock SMR	0.48	0.20	0.28	0.00	N/A
Richardson Rock SMR	1.17	0.48	0.69	0.00	N/A

<sup>1</sup>Not included in Table 13 because benefits to seabirds are reduced by allowed take activities.

**Table 12. SCRSG MPA Proposal 3 weighted contributions to foraging areas for five species of breeding seabirds within proposed MPAs. MPAs not shown did not contribute to foraging area for any of these species.**

MPA Name	Brandt's Cormorant	Pelagic Cormorant	Pigeon Guillemot	Bald Eagles	California Least Tern
<b>North Mainland</b>					
Point Conception SMR	0.00	14.24	14.24	N/A	0.00
UCSB SMR	0.00	0.00	0.00	N/A	64.02
Goleta Slough SMR	0.00	0.00	0.00	N/A	1.60
Mugu Lagoon SMRMA	0.00	0.00	0.00	N/A	199.25
<b>South Mainland</b>					
Bolsa Chica SMR	0.00	0.00	0.00	N/A	246.37
Batiquitos Lagoon SMR	0.00	0.00	0.00	N/A	649.80
Swami's SMCA <sup>1</sup>	0.00	0.00	0.00	N/A	159.88
San Diego-Scripps Coastal SMCA <sup>1</sup>	1.42	0.00	0.00	N/A	0.00
Matlahuayl SMR	1.11	0.00	0.00	N/A	0.00
South La Jolla Reefs SMR	3.43	0.00	0.00	N/A	103.73
Cabrillo SMR		0.00	0.00	N/A	22.57
Tijuana River Mouth SMCA <sup>1</sup>	0.00	0.00	0.00	N/A	1563.09
<b>East Channel Islands</b>					
North Catalina SMR	0.00	0.00	0.00	8.60	N/A
Blue Cavern SMR	0.00	0.00	0.00	0.60	N/A
Long Point SMR	0.00	0.00	0.00	1.67	N/A

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MPA Name	Brandt's Cormorant	Pelagic Cormorant	Pigeon Guillemot	Bald Eagles	California Least Tern
San Clemente Pending Military Closure 1 <sup>1</sup>	1.45	0.00	0.00	0.00	N/A
San Clemente Pending Military Closure 2 <sup>1</sup>	0.64	0.00	0.00	0.00	N/A
<b>Mid Channel Islands</b>					
Anacapa Island SMCA <sup>1</sup>	0.05	0.40	0.44	0.00	N/A
Anacapa Island SMR	0.08	0.63	0.70	0.00	N/A
Footprint SMR	0.01	0.09	0.00	0.00	N/A
Gull Island SMR	7.37	12.98	0.11	11.21	N/A
Santa Barbara Island SMR	2.79	0.67	4.48	0.00	N/A
Scorpion SMR	0.00	0.00	0.48	0.00	N/A
<b>West Channel Islands</b>					
Carrington Point SMR	0.13	0.83	0.00	0.00	N/A
Harris Point SMR	11.41	12.38	12.68	0.00	N/A
Judith Rock SMR	0.48	0.20	0.28	0.00	N/A
Richardson Rock SMR	1.17	0.48	0.69	0.00	N/A
San Nicolas Alpha Area Military Closure	0.62	0.00	0.00	0.00	N/A

<sup>1</sup>Not included in Table 13 because benefits to seabirds are reduced by allowed take activities.

**Table 13. Comparison of proposals to total contributions of weighted foraging areas for five species of breeding seabirds in the study region by bioregion.**

	Brandt's Cormorant	Pelagic Cormorant	Pigeon Guillemot	Bald Eagle	California Least Tern
<b>North Mainland</b>					
Proposal 0 SCRSG MPA	0.00	0.00	0.00	N/A	0.00
Proposal 1 SCRSG MPA	0.00	14.24	14.24	N/A	71.08
Proposal 2 SCRSG MPA	0.00	14.24	14.24	N/A	264.41
Proposal 3 SCRSG MPA	0.00	14.24	14.24	N/A	264.87
<b>South Mainland</b>					
Proposal 0 SCRSG MPA	0.00	0.00	0.00	N/A	0.00
Proposal 1 SCRSG MPA	2.24	0.00	0.00	N/A	1344.80
Proposal 2 SCRSG MPA	0.77	0.00	0.00	N/A	927.04
Proposal 3 SCRSG MPA	4.54	0.00	0.00	N/A	1022.47
<b>East Channel Islands</b>					
Proposal 0	0.00	0.00	0.00	0.00	N/A



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	<b>Brandt's Cormorant</b>	<b>Pelagic Cormorant</b>	<b>Pigeon Guillemot</b>	<b>Bald Eagle</b>	<b>California Least Tern</b>
SCRSG MPA Proposal 1	0.00	0.00	0.00	4.39	N/A
SCRSG MPA Proposal 2	0.00	0.00	0.00	0.40	N/A
SCRSG MPA Proposal 3	0.00	0.00	0.00	10.87	N/A
<b>Mid Channel Islands</b>					
Proposal 0	10.26	14.38	5.77	11.21	N/A
SCRSG MPA Proposal 1	10.26	14.38	5.77	11.21	N/A
SCRSG MPA Proposal 2	10.26	14.38	5.77	11.21	N/A
SCRSG MPA Proposal 3	10.26	14.38	5.77	11.21	N/A
<b>West Channel Islands</b>					
Proposal 0	13.19	13.89	13.65	0.00	N/A
SCRSG MPA Proposal 1	13.19	13.89	13.65	0.00	N/A
SCRSG MPA Proposal 2	13.19	13.89	13.65	0.00	N/A
SCRSG MPA Proposal 3	13.81	13.89	13.65	0.00	N/A

**Table 14. Proposal 0 contributions to neritic foraging area 'hot spots' based on 11 species of seabirds and 2 marine mammals within proposed MPAs. MPAs not shown did not contribute to neritic foraging area 'hot spots'.**

<b>MPA Name</b>	<b>Area of Overlap (sq mi)</b>
<b>North Mainland</b>	
Goleta Slough SMP <sup>1</sup>	0.19
Refugio SMCA <sup>1</sup>	1.03
Big Sycamore Canyon SMR	0.01
<b>South Mainland</b>	
Abalone Cove SMP <sup>1</sup>	0.10
Point Fermin SMP <sup>1</sup>	0.07
Niguel SMCA <sup>1</sup>	0.48
Dana Point SMCA <sup>1</sup>	0.20
Doheny SMCA <sup>1</sup>	0.19
Doheny Beach SMCA <sup>1</sup>	0.14
San Diego-Scripps SMCA <sup>1</sup>	0.11

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La Jolla SMCA <sup>1</sup>	0.77
<b>Mid Channel Islands</b>	
Anacapa Island SMCA <sup>1</sup>	5.80
<b>West Channel Islands</b>	
Richardson Rock SMR	15.65

<sup>1</sup>Not included in Table 18 because benefits to seabirds are reduced by allowed take activities.

**Table 15. SCRSG MPA Proposal 1 contributions to neritic foraging area 'hot spots' based on 11 species of seabirds and 2 marine mammals within proposed MPAs. MPAs not shown did not contribute to neritic foraging area 'hot spots'.**

MPA Name	Area of Overlap (sq mi)
<b>North Mainland</b>	
Point Conception SMR	11.30
Kashtayit SMP <sup>1</sup>	1.54
Naples SMCA	2.57
Helo SMR	11.81
Devereux Lagoon SMR	0.09
Goleta Slough SMR	0.19
Point Dume SMR	4.24
<b>South Mainland</b>	
Palos Verdes SMR	8.77
Point Fermin SMCA <sup>1</sup>	0.16
Dana Point SMCA <sup>1</sup>	2.35
Del Mar SMR	8.43
La Jolla Cove SMR	0.77
La Jolla South SMR	2.12
La Jolla South SMCA <sup>1</sup>	2.77
Ocean Beach Pier SMCA <sup>1</sup>	0.08
Ocean Beach SMR	2.13
<b>Mid Channel Islands</b>	
Anacapa Island SMCA <sup>1</sup>	5.80
<b>West Channel Islands</b>	
Richardson Rock SMR	15.65

<sup>1</sup>Not included in Table 18 because benefits to seabirds are reduced by allowed take activities.

**Table 16. SCRSG MPA Proposal 2 contributions to neritic foraging area 'hot spots' based on 11 species of seabirds and 2 marine mammals within proposed MPAs. MPAs not shown did not contribute to neritic foraging area 'hot spots'.**

MPA Name	Area of Overlap (sq mi)
<b>North Mainland</b>	
Point Conception SMR	13.90
Campus Point SMR	10.35
Goleta Slough SMR	0.19
Point Mugu SMRMA <sup>1</sup>	1.67
<b>South Mainland</b>	
Point Vicente SMR	4.38
Abalone Cove SMCA <sup>1</sup>	4.78
Laguna SMR	0.11

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MPA Name	Area of Overlap (sq mi)
Laguna South SMCA <sup>1</sup>	0.65
Del Mar SMR	11.29
La Jolla SMR	0.77
Ocean Beach Pier SMCA <sup>1</sup>	0.16
Sunset Cliffs SMR	2.50
<b>Mid Channel Islands</b>	
Anacapa Island SMCA <sup>1</sup>	5.80
<b>West Channel Islands</b>	
Richardson Rock SMR	15.65

<sup>1</sup>Not included in Table 18 because benefits to seabirds are reduced by allowed take activities.

**Table 17. SCRSG MPA Proposal 3 contributions to neritic foraging area 'hot spots' based on 11 species of seabirds and 2 marine mammals within proposed MPAs. MPAs not shown did not contribute to neritic foraging area 'hot spots'.**

MPA Name	Area of Overlap (sq mi)
<b>North Mainland</b>	
Point Conception SMR	16.56
Naples SMR	2.57
UCSB SMR	10.44
Goleta Slough SMR	0.19
Mishopsno SMCA <sup>1</sup>	14.62
Mugu Lagoon SMRMA <sup>1</sup>	1.67
Point Dume SMR	4.55
<b>South Mainland</b>	
Palos Verdes SMR	12.67
Laguna Beach SMR	0.15
Dana Point SMCA <sup>1</sup>	2.32
San Diego-Scripps Coastal SMCA <sup>1</sup>	1.42
Matlahuayl SMR	1.11
South La Jolla Reefs SMR	9.98
<b>Mid Channel Islands</b>	
Anacapa Island SMCA <sup>1</sup>	5.80
<b>West Channel Islands</b>	
Richardson Rock SMR	15.65

<sup>1</sup>Not included in Table 18 because benefits to seabirds are reduced by allowed take activities.

**Table 18. Comparison of proposals to total contributions of neritic foraging area 'hot spots' for 11 species of breeding seabirds and 2 marine mammals in the south coast study region.**

	North Mainland	South Mainland	West Channel Islands
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Proposal 0	0.01	0.00	15.65
SCRSG MPA Proposal 1	30.20	22.22	15.65
SCRSG MPA Proposal 2	24.44	19.05	15.65
SCRSG MPA Proposal 3	34.31	23.91	15.65

**Table 19. Comparison of proposals to total contributions of coastal habitats used by shorebirds and waterfowl.**

	North Mainland	South Mainland	East Channel Islands	Mid Channel Islands	West Channel Islands
<b>Beaches (linear miles)</b>					
Proposal 0	0.00	0.21	0.08	3.90	6.33
SCRSG MPA Proposal 1	5.75	11.49	5.18	3.90	6.33
SCRSG MPA Proposal 2	3.84	9.16	1.66	3.90	6.33
SCRSG MPA Proposal 3	7.24	13.62	10.60	3.90	7.72
<b>Coastal Marsh (square miles)</b>					
Proposal 0	0.00	0.01	N/A	N/A	N/A
SCRSG MPA Proposal 1	0.46	0.81	N/A	N/A	N/A
SCRSG MPA Proposal 2	0.19	0.17	N/A	N/A	N/A
SCRSG MPA Proposal 3	0.19	1.74	N/A	N/A	N/A
<b>Tidal Flats (linear miles)</b>					
Proposal 0	0.00	0.00	N/A	N/A	N/A
SCRSG MPA Proposal 1	0.59	0.70	N/A	N/A	N/A
SCRSG MPA Proposal 2	0.56	0.66	N/A	N/A	N/A
SCRSG MPA Proposal 3	0.56	3.56	N/A	N/A	N/A
<b>Estuary (square miles)</b>					
Proposal 0	0.00	0.04	N/A	N/A	N/A
SCRSG MPA Proposal 1	0.62	1.90	N/A	N/A	N/A
SCRSG MPA Proposal 2	0.25	0.55	N/A	N/A	N/A
SCRSG MPA Proposal 3	0.25	3.45	N/A	N/A	N/A