California MLPA Master Plan Science Advisory Team
Draft Evaluation of Ecological Contributions of Pending Military Closures and Proposed MPAs at San Nicolas Island, Begg Rock and San Clemente Island

Revised May 16, 2009

On April 16, 2009, the Marine Life Protection Act (MLPA) Blue Ribbon Task Force (BRTF) requested that the MLPA Master Plan Science Advisory Team (SAT) evaluate the contribution of available habitat in three pending military closures and marine protected areas (MPAs) proposed by the MLPA South Coast Regional Stakeholder Group (SCRSG) on San Nicolas Island, Begg Rock and San Clemente Island. This analysis is supplemental to the SAT evaluation of military activities in the MLPA South Coast Study Region (SCSR) and is intended to provide information for how well the pending military closures or MPAs proposed by the SCRSG meet the goals of the MLPA.

This document includes five sections:

1. Habitats in state waters around San Nicolas Island and Begg Rock, and San Clemente Island out of the West Channel Islands bioregion and the East Channel Islands bioregion, respectively;
2. Habitats within pending military closures and MPAs proposed by the SCRSG on San Nicolas and San Clemente islands;
3. Marine birds and mammals of the West and East Channel Islands bioregions; and
4. Additional ecological features of pending military closures at San Nicolas Island, Begg Rock and San Clemente Island.
5. Key findings of the analysis.

Habitats in State Waters around San Nicolas Island, Begg Rock and San Clemente Island

The first portion of this analysis is to evaluate the contribution of available habitat in state waters on San Nicolas Island, Begg Rock and San Clemente Island relative to available habitat in the relevant bioregions. Figure 1 shows the percentage of available habitat on a) San Nicolas Island and Begg Rock out of the West Channel Island bioregion and b) San Clemente Island out of the East Channel Island bioregion. The actual amount of habitat available on San Nicolas Island and Begg Rock and San Clemente Island can be found in Table 1a. For example, the amount of beach habitat on San Clemente Island (24.8 miles) constitutes 40% of the total beach habitat available in the East Channel Islands bioregion. It is also important to point out that the East Channel Islands bioregion constitutes San Clemente Island and Santa Catalina Island only. As such, the percentage of available habitat <u>not</u> represented by San Clemente Island in Figure 1 can be attributed to the percentage of available habitat on Santa Catalina Island out of the East Channel Islands bioregion. To revisit the above example, the amount of beach habitat on Santa Catalina Island therefore would constitute 60% of the total beach habitat available in the East Channel Islands bioregion.

Figure 1. Percentage of available habitat on a) San Nicolas Island and Begg Rock out of the West Channel Island Bioregion and b) San Clemente Island out of the East Channel Island Bioregion.

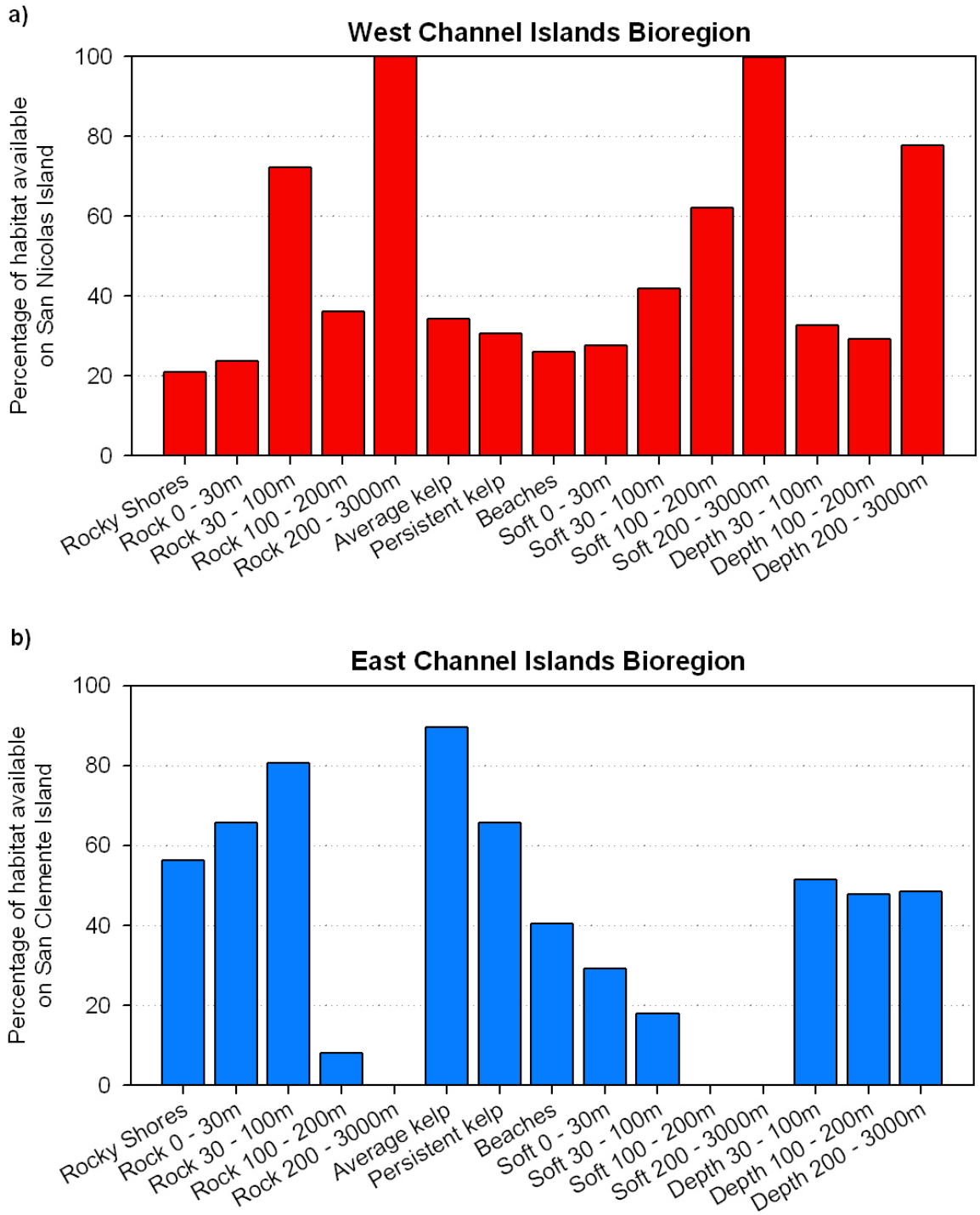


Table 1a. Amount of each habitat included in state waters around San Nicolas Island and Begg Rock, and San Clemente islands, West and East Channel Islands Bioregions and the South Coast Study Region.

Habitat	Unit	South Coast Study Region Total	San Nicolas Island, Begg Rock	West Channel Islands bioregion Total	Percentage of San Nicolas Island and Begg Rock relative to West Channel Islands bioregion	San Clemente Island	East Channel Islands bioregion Total	Percentage of San Clemente Island relative to East Channel Islands bioregion
Area	sq miles	2350.9	163.2	499.8	32.6%	209.8	422.6	49.7%
ESI shoreline	miles	1046.5	26.4	115.9	22.8%	59.9	126.1	47.5%
Min Depth	feet	0	219.0	219.0		0	0	
Max Depth	feet	0	2732.0	4999.0		3938.0	7612.0	
Beaches	miles	379.6	10.6	40.7	26.0%	24.9	61.4	40.3%
Rocky shores	miles	280.7	15.7	75.0	20.9%	35.0	62.3	56.2%
Coastal marsh (linear)	miles	59.5	0	0	0%	0	0	0%
Coastal marsh (area)	sq miles	6.1	0	0	0%	0	0	0%
Tidal flats	miles	28.8	0	0	0%	0	0.7	0%
Surfgrass	miles	72.4	0	35.2	0%	0	0	0%
Eelgrass	sq miles	4.7	0	0	0%	0	0	0%
Estuary	sq miles	43.3	0	0	0%	0	0	0%
Soft 0 - 30m	miles	362.6	14.0	50.5	27.6%	13.5	46.3	29.1%
Soft 30 - 100m	sq miles	672.1	68.5	163.8	41.9%	10.2	56.8	18.0%
Soft 100 - 200m	sq miles	158.4	18.6	29.9	62.2%	0.1	36.5	0.1%
Soft 200 - 3000m	sq miles	234.3	23.8	23.9	99.8%	0	112.8	0%
Rock 0 - 30m	miles	191.6	10.5	44.0	23.8%	36.7	55.9	65.6%
Rock 30 - 100m	sq miles	47.8	23.2	32.2	72.1%	5.0	6.2	80.6%
Rock 100 - 200m	sq miles	3.9	0.8	2.2	36.0%	0.01	0.2	8.1%
Rock 200 - 3000m	sq miles	2.2	0.1	0.1	100%	0	0.9	0%
Depth 30 - 100m	sq miles	933.4	91.8	281.1	32.6%	50.5	98.3	51.4%
Depth 100 - 200 m	sq miles	275.3	19.4	66.3	29.2%	33.5	70.2	47.8%
Depth 200 - 3000m	sq miles	438.5	23.9	30.7	77.7%	109.9	227.3	48.4%
Average kelp	sq miles	20.9	3.5	10.3	34.4%	3.6	4.0	89.5%
Persistent kelp	miles	182.5	20.1	65.9	30.5%	35.2	53.7	65.6%

Table 1b. Amount of each habitat included in pending military closures at San Nicolas and San Clemente islands, state waters around Begg Rock, and within the West and East Channel Islands Bioregions and the Study Region.

Habitat	Unit	South Coast Study Region Total	West Channel Islands Bioregion Total	San Nicolas Island Pending Military Closure	State waters around Begg Rock	East Channel Islands Bioregion Total	San Clemente Pending Military Closure 1 (Area G, SWAT I)	San Clemente Pending Military Closure 2 (Wilson Cove)
Area	sq miles	2350.9	499.8	25.2	38.0	422.6	17.4	19.2
ESI shoreline	miles	1046.4	115.9	5.0	0	126.1	1.8	6.1
Min Depth	feet	0	219.0	0	219.0	0	0	0
Max Depth	feet	0	4999.0	288.0	374.0	7612.0	1682.0	3938.0
Beaches	miles	379.6	40.7	1.4	0	61.4	0.8	5.2
Rocky shores	miles	280.7	75.0	3.6	0	62.3	1.0	0.8
Coastal marsh (linear)	miles	59.5	0	0	0	0	0	0
Coastal marsh (area)	sq miles	6.1	0	0	0	0	0	0
Tidal flats	miles	28.8	0	0	0	0.7	0	0
Surfgrass	miles	72.4	35.1	0	0	0	0	0
Eelgrass	sq miles	4.7	0	0	0	0	0	0
Estuary	sq miles	43.3	0	0	0	0	0	0
Soft 0 - 30m	miles	362.6	50.5	2.8	0	46.3	0	1.3
Soft 30 - 100m	sq miles	672.1	163.8	13.6	22.2	56.7	1.0	0
Soft 100 - 200m	sq miles	158.4	29.9	0	11.6	36.5	0	0
Soft 200 - 3000m	sq miles	234.3	23.9	0	0	112.8	0	0
Rock 0 - 30m	miles	191.6	44.0	1.8	0	55.9	2.4	4.6
Rock 30 - 100m	sq miles	47.8	32.2	6.7	4.1	6.2	1.0	0
Rock 100 - 200m	sq miles	3.9	2.2	0	0.1	0.1	0	0
Rock 200 - 3000m	sq miles	2.2	0.1	0	0	0.9	0	0
Depth 30 - 100m	sq miles	933.4	281.1	20.3	26.3	98.3	5.7	2.2
Depth 100 - 200 m	sq miles	275.3	66.3	0	11.6	70.2	4.8	1.6
Depth 200 - 3000m	sq miles	438.5	30.7	0	0	227.3	5.7	14.4
Average kelp	sq miles	20.8	10.3	0.6	0	4.0	0.4	0.1
Persistent kelp	miles	182.5	65.9	3.8	0	53.7	2.8	4.3

Habitats within Pending Military Closures and MPAs Proposed by the Regional Stakeholder Group on San Nicolas Island, Begg Rock and San Clemente Island

The second section of this analysis is to evaluate habitats within the pending military closures and MPAs proposed by the SCRSG on San Nicolas Island, Begg Rock, and San Clemente Islands. Table 2 lists these pending military closures and proposed MPAs for round 1 draft MPA arrays. Pending military closures include San Nicolas Island Pending Closure (Area Alpha) and San Clemente Island Pending Military Closures 1 (Area G, SWAT I) and 2 (Wilson Cove), while various combinations of MPAs were proposed by the SCRSG in draft MPA arrays.

Figure 2 shows the percentage of available habitat in the pending military closures and proposed MPAs on San Nicolas Island and Begg Rock out of the West Channel Islands bioregion. Figure 3 shows the percentage of available habitat in the pending military closures and proposed MPAs on San Clemente Island out of the East Channel Islands bioregion.

All pending military closures and other MPAs proposed at the military islands are sufficiently large to meet or exceed the SAT guidelines for MPA size (Table 3).

Table 2. List of pending military closures and MPAs proposed by the Regional Stakeholder Group on San Nicolas Island and Begg Rock, and San Clemente Island for each Round 1 draft MPA array.

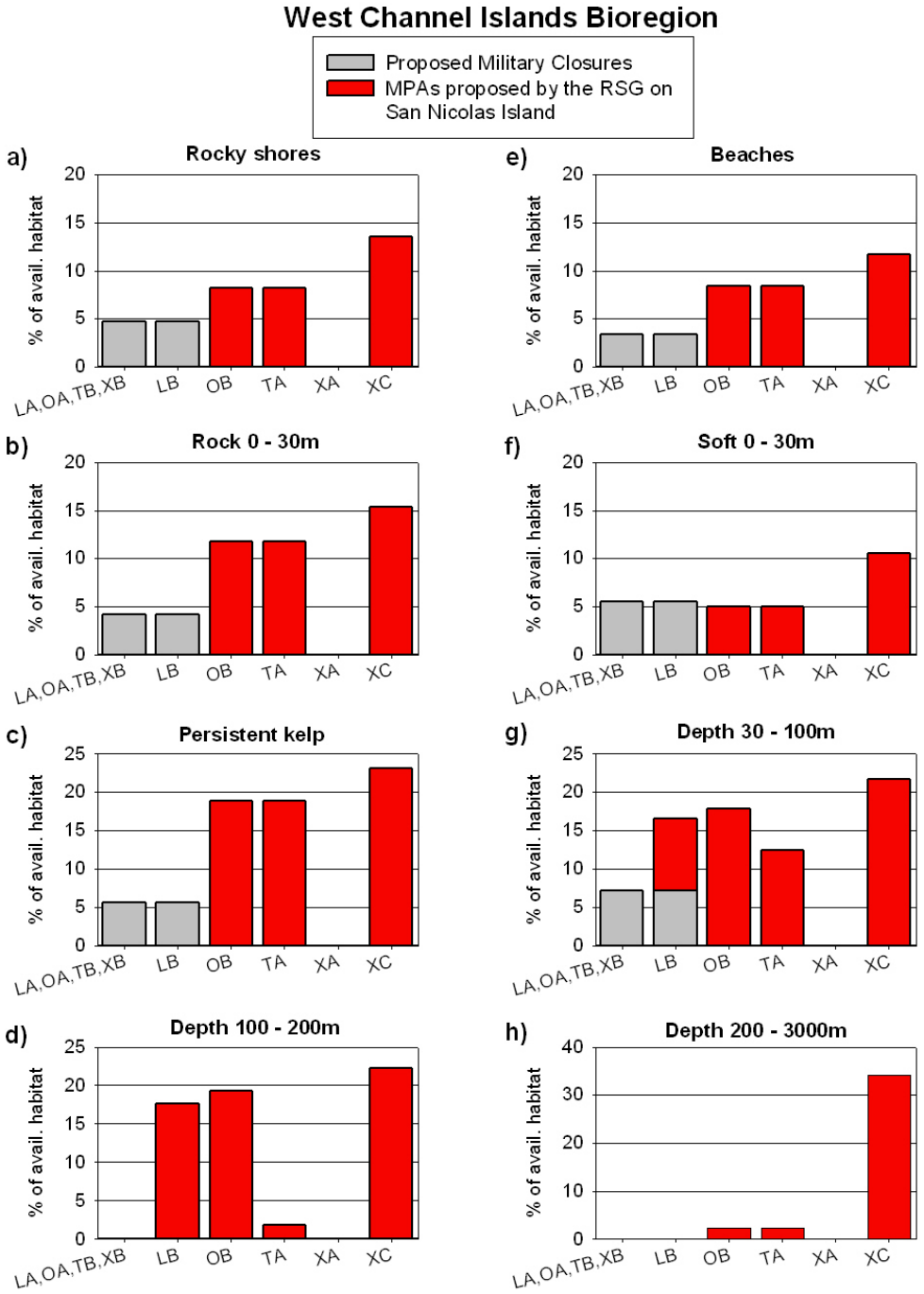
Round 1 Draft MPA Arrays	Pending military closures?	Proposed MPAs by the SCRSG on San Nicolas and San Clemente Islands?
Lapis A	Yes	No
Lapis B	Yes	Begg Rock SMR
Opal A	Yes	No
Opal B	No	San Nicolas SMR, Begg Rock SMR, SWAT 1 SMR, Wilson SMR, and China Point SMR
Topaz A	No	Begg Rock SMR, San Nicolas Island SMR, Castle Rock SMR, West San Clemente SMR, and Pyramid Head SMR
Topaz B	Yes	No
External A	Yes*	No
External B	Yes	No
External C	No	Begg Rock SMR, West San Nicolas SMR, North End SMR, China Point SMR, and Pyramid Head SMR

** Includes San Clemente Island Pending Military Closures 1 and 2 only, not San Nicolas Island Pending Military Closure (Area Alpha).*

Table 3. Sizes of pending military closures and proposed MPAs at San Nicolas Island, Begg Rock and San Clemente Islands.

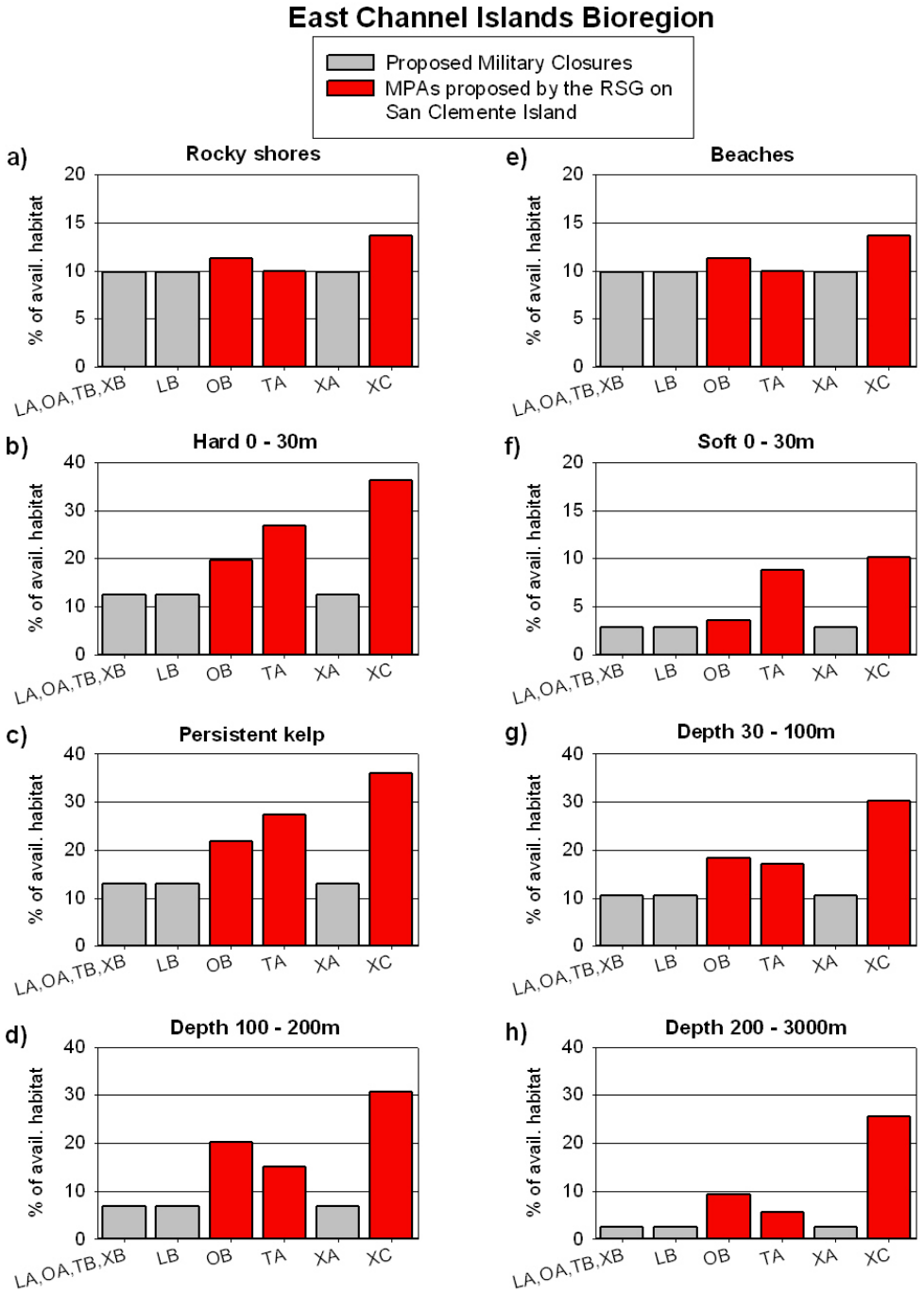
MPA/Closure Name	Proposed By	Area (square miles)
San Nicolas Island Pending Military Closure	Lapis A, Lapis B, Opal A, Topaz B, External B	25.2
State waters around Begg Rock	Lapis B, Opal B, External C	38.0
Begg Rock SMR	Topaz A	11.5
San Clemente Pending Military Closure 1 (Area G, SWAT I)	Lapis A, Lapis B, Opal A, Topaz B, External A, External B	17.4
San Clemente Pending Military Closure 2 (Wilson Cove)	Lapis A, Lapis B, Opal A, Topaz B, External A, External B	19.2
Wilson SMR	Opal B	17.1
China Point SMR	Opal B	23.3
China Point SMR	External C	41.7
San Nicolas SMR	Opal B, Topaz A	40.1
West San Nicolas SMR	External C	66.2
North End SMR	External C	47.7
Pyramid Head SMR	Topaz A	9.1
Pyramid Head SMR	External C	28.8
Castle Rock SMR	Topaz A	25.6
West San Clemente SMR	Topaz A	12.3

Figure 2. The percentage of available habitat in the proposed military closures and SCRSG-proposed MPAs on San Nicolas Island and Begg Rock relative to the West Channel Islands bioregion.



Notes: LA is Lapis A, LB is Lapis B, OA is Opal A, OB is Opal B, TA is Topaz A, TB is Topaz B, XA is External A, XB is External B, and XC is External C. Lapis A, Opal A, Topaz B, and External B include pending military closures. Lapis B and External A include some elements of the pending military closures. Opal B, Topaz A and External C include MPAs designed by the SCRSG for the waters around San Clemente and San Nicolas islands.

Figure 3. The percentage of available habitat in the proposed military closures and SCRSG-proposed MPAs on San Clemente Island relative to the East Channel Islands bioregion.



Notes: *LA is Lapis A, LB is Lapis B, OA is Opal A, OB is Opal B, TA is Topaz A, TB is Topaz B, XA is External A, XB is External B, and XC is External C. Lapis A, Opal A, Topaz B, and External B include pending military closures. Lapis B and External A include some elements of the pending military closures. Opal B, Topaz A and External C include MPAs designed by the SCRSG for the waters around San Nicolas and San Clemente islands.*

Pending military closures include patches of some habitats that are equal to or larger than the minimum size identified by the SAT as a single replicate. Table 4 lists the habitat replication in existing MPAs, pending military closures and state waters around Begg Rock. In the West Channel Islands Bioregion, all habitats are replicated in existing MPAs at San Miguel and Santa Rosa islands, except deep soft bottom habitat (200-3000 m depth). Tidal flats, coastal marsh, estuary, and eelgrass are not replicated in the West Channel Islands Bioregion because available sources of data on marine habitats indicate insufficient amounts of these habitats to count as replicates. The San Nicolas Island Pending Military Closure includes replicates of many different habitats in the West Channel Islands bioregion, but does not include replicates of surfgrass, hard bottom (100-3000 m), and soft bottom (100-3000 m depth). State waters around Begg Rock could contribute additional replication of hard (30 – 100 m depth) and soft (30 – 200 m depth).

In the East Channel Islands Bioregion, habitats are not replicated in existing MPAs. The pending military closures on San Clemente Island include patches of some habitats that are sufficiently large to match or exceed the SAT's recommended size for replicates of these habitats. San Clemente Island Pending Military Closure 1 (Area Alpha) includes replicates of rocky shores, kelp, nearshore hard bottom (0-30 m proxy), and hard bottom (30-100 m depth) and habitats at depths of 30-3000 m. San Clemente Island Pending Military Closure 2 (Wilson Cove) includes replicates of beaches, rocky shores, kelp, shallow hard and soft bottom (0-30 m proxy), and habitats at depths of 100-3000 m.

Table 4. Replication of Habitats in the West and East Channel Islands Bioregions

Bioregion	**West Channel Islands**	**West Channel Islands**	**West Channel Islands**	**West Channel Islands**	**East Channel Islands**	**East Channel Islands**	**East Channel Islands**
Habitat	Replicate possible?	Proposal 0 Existing MPAs	San Nicolas Island Pending Military Closure	State Waters around Begg Rock	Replicate possible?	San Clemente Island Pending Military Closure 1 (SWAT I)	San Clemente Island Pending Military Closure 2 (Wilson Cove)
Beaches	yes	2	1	0	yes	0	1
Rocky Shores	yes	3	1	0	yes	1	1
Surfgrass	yes	3	0	0	no	0	0
Kelp (linear)	yes	3	1	0	yes	1	1
hard 0 - 30m proxy	Yes	3	1	0	yes	1	1
hard 30 - 100m	yes	3	1	1	yes	1	0

hard 100 - 3000m	yes (100-200 m) no (200 - 3000 m)	1	0	0	no (100-200 m), yes (200-3000 m)	0	0
soft 0 - 30m proxy	yes	3	1	0	yes	0	1
soft 30 - 100m	yes	3	1	1	yes	0	0
soft 100 - 200m	yes	2	0	1	yes	0	0
soft 200 - 3000m	yes	0	0	0	yes	0	0
soft 0 - 3000m	yes	3	1	1	yes	1	1
depth zone 30 - 100m	yes	4	1	1	yes	1	0
depth zone 100 - 200 m	yes	3	0	1	yes	1	1
depth zone 200 - 3000m	yes	1	0	0	yes	1	1
Estuary	no	0	0	0	no	0	0
Coastal Marsh (area)	no	0	0	0	no	0	0
Eelgrass	no	0	0	0	no	0	0
Tidal Flats	no	0	0	0	yes	0	0

Birds and Mammals at San Nicolas and San Clemente Islands

Many species of birds and marine mammals use San Nicolas and San Clemente islands as important habitat:

- San Nicolas Island supports the majority of the western gulls (71%) and western snowy plovers (90%) (Table 5). San Nicolas Island also supports a large proportion of the California sea lions (44%), Pacific harbor seals (26%) and Northern elephant seals (35%) for the West Channel Islands Bioregion. The island also supports a large proportion of the SCSR's populations of California sea lion (66%) and Northern elephant seal (20%). San Nicolas Island supports 44% and 35% of the breeding population of California sea lions and Northern elephant seals, respectively, in the West Channel Islands Bioregion and the only resident breeding population of the southern sea otter in the SCSR. The proposed military closure areas include 6% of the California sea lions on the island, which is 0.4% of the SCSR population. The haulout used by California sea lions is not known to be a rookery.
- San Clemente supports all of the Brandt's cormorants and black oystercatchers, and the majority of the ashy storm-petrels and western gulls of the East Channel Islands Bioregion population (Table 6). San Clemente Island also supports all of the Northern elephant seals in the East Channel Islands Bioregion as well as 97% of the California

sea lions and 33% of the Pacific harbor seals. These are 21%, 5% and 4% of the SCSR population for Northern elephant seals, California sea lions and Pacific harbor seals, respectively. San Clemente Island supports all of the California sea lion and northern elephant seal rookeries in the East Channel Islands Bioregion. The proposed military closure area includes sites used by 26% of the Pacific harbor seals and 2% of the Northern elephant seals on the islands, which is 0.4% and 0.8% of the SCSR populations for Pacific harbor seals and Northern elephant seals, respectively. The site used by Northern elephant seals within the closure area is known to be a rookery.

Table 5. Breeding and haul-out population estimates for birds and marine mammals at San Nicolas Island relative to the West Channel Islands Bioregion and Southern California Bight populations.

San Nicolas Island West Islands Bioregion	Population Size	Percentage of San Nicolas Island relative to West Channel Islands Bioregion	Percentage of San Nicolas Island relative to Southern California Bight
Brandt's Cormorant	290	5.4%	5%
Black Oystercatcher	2	3.8%	2.4%
Western Gull	2,800	70.7%	28.1%
Western Snowy Plover	44	89.8%	9.5%
California Sea Lion	51,397	44.4%	41%
Pacific Harbor Seal	784	20.3%	10.2%
Northern Elephant Seal	11,301	36.7%	36.6%

Table 6. Breeding and haul-out population estimates for birds and marine mammals at San Clemente Island relative to the East Channel Islands Bioregion and Southern California Bight populations.

San Clemente Island East Islands Bioregion	Population Size	Percentage of San Clemente Island relative to East Channel Islands Bioregion	Percentage of San Clemente Island relative to Southern California Bight
Ashy Storm-Petrel	<100	~50%	3.2%
Brandt's Cormorant	40	100%	0.7%
Black Oystercatcher	4	100%	4.9%
Western Gull	112	68.3%	1.1%

Xantus's Murrelet	20	28.6%	1.1%
California Sea Lion	5184	97%	5%
Pacific Harbor Seal	95	35%	1.4%
Northern Elephant Seal	196	100%	21%

Ecological Features of Pending Military Closures at San Nicolas and San Clemente Islands

One military closure is pending on the northeast side of San Nicolas Island.

The San Nicolas Island Pending Military Closure includes some shoreline and extends in a wedge into deeper waters offshore. The area also includes some kelp, but the largest and most persistent kelp beds on the island are located to the northwest of the island and not in the pending military closure. Habitat in the San Nicolas Island Pending Military Closure is primarily low relief with less diversity overall than the northwest tip of the island. The San Nicolas Island Pending Military Closure tends to be dominated by purple urchins. The closure includes a subtidal monitoring site (Estes) and a biodiversity monitoring site (Raimondi).

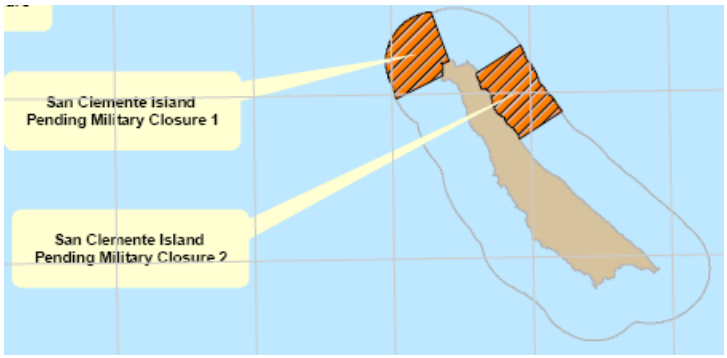
A resident population of approximately 40 otters occurs on San Nicolas Island, off the northwest point of the island. In the areas where otters occur, there are important cascading effects of their predation on herbivores (e.g., sea urchin) and consequently, the northwest side of the island tends to support vigorous and sustained growth of kelp. At the northwest tip, the kelp beds extend offshore into deep waters (about 120 feet), forming a highly productive ecosystem. The northwest side of the island has a variety of high relief and canyon habitats. The San Nicolas Island Pending Military Closure does not overlap the northwest tip of the island and the primary distribution of otters on the island.

Historically, San Nicolas Island supported black abalone populations in the intertidal region around the entire island with concentrations on the west side.

Begg Rock is also an area of interest in the region because it supports a unique assemblage of

invertebrates including purple coral and *Metridium*, as well as other anemones.

Two military closures are pending at San Clemente Island, one on the northwest side of the island and another on the northeast side.



San Clemente Island Pending Military Closure 1 includes a variety of interesting ecological features. This area includes Castle Rock and 9-Fathom Bank, which support large populations of purple coral (*Stylaster*). San Clemente Island Pending Military Closure 1 also includes submerged rocky pinnacles and other rocky features, which support abundant giant kelp beds. Giant kelp extends to deeper waters here as compared to most other areas of the study region because of the water clarity and suitable substrate. At depths below the giant kelp is a rare rock-morph of elk kelp (*Pelagophycus porra*). Closer to Northwest Harbor, which is situated between the two pending military closures, the rocky substrate and elk kelp beds are known to occur at 120-140 feet depth.

To the south of San Clemente Island Pending Military Closure 1 is West Cove, a sandy beach habitat. Along the west side of the island are lush kelp beds on rocky substrate. The shoreline is varied but includes rocky habitat that once supported large populations of black and white abalone.

San Clemente Island Pending Military Closure 2 is characterized by a narrow rocky shore with intermittent surfgrass beds and a few patches of eelgrass. A narrow band of kelp is parallel the shoreline within the proposed closure and the seafloor rapidly drops to sand in deeper water. San Clemente Island Pending Military Closure 2 contains no deep water corals (purple coral *Stylaster*). Purple coral is concentrated on the west side of San Clemente Island as well as at Farnsworth Bank off of Santa Catalina Island.

At the southern tip of San Clemente is Pyramid Cove. The cove is known for a productive surfgrass bed and likely serves as a lobster nursery and is not included in either pending military closure.

San Clemente Island is within the northern range extensions of several Panamic species, including panamic arrow crab (*Stenorhynchus debilis*), warty sea slug (*Pleurobranchus areolatus*), arbacia sea urchin (*Arbacia incise*), guadalupe cardinalfish (*Apogon*

guadalupensis), pink cardinalfish (*A. pacificus*), swallow damselfish (*Azurina hirundo*), and purple brotula (*Oligopus diagrammus*).

Key Findings

Habitats on San Nicolas Island and Begg Rock, and San Clemente Island relative to the West Channel Islands bioregion and East Channel Islands bioregion

- Of the habitats in the East Channel Islands bioregion, more than half of the rock (0-30 m depth) and rock (30-100 m depth), and 70% of persistent kelp and 90% of average kelp occur around San Clemente Island.
- Of the habitats in the West Channel Islands bioregion, state waters around San Nicolas Island and Begg Rock contain over 75% of the deep water habitat (>200 m depth), 30% of kelp and more than 25% of beaches, and nearshore hard and soft bottom habitats.

Habitats within pending military closures and MPAs proposed by the SCRSG at San Clemente Island

- With the exception of External Proposal C, the proposed MPA arrays and pending military closures at San Clemente Island include about 10% of the rocky shores and sandy beaches in the East Channel Islands bioregion. External Proposal C includes about 14% of these habitats.
- The pending military closures, and MPAs proposed by Lapis B and External A all include a bit more than 10% of hard bottom (0-30 m) and about 3% of the soft (0-30 m) around San Clemente Island. Opal B and Topaz A include about 20% or more of the nearshore hard bottom habitat while External C includes the most nearshore hard bottom habitat at about 35%. About 10% of the nearshore soft bottom habitat in the East Channel Islands bioregion is included in Topaz A and External C.
- Pending military closures include about 13% of the persistent kelp while Opal B and Topaz A include more than 20% of this habitat and External C includes about 35% of persistent kelp for the East Channel Islands bioregion. Pending military closures include about 10% of the habitats at 30-100 m depth while Opal B and Topaz A include just under 20% of these habitats, and External C includes about 30% for the East Channel Islands bioregion.
- Pending military closures include about 7% of the habitats at depths of 100 – 200 m while Opal B and Topaz A include 15-20% of these habitats and External C includes about 30% for the East Channel Islands bioregion. Pending military closures include only a small amount (less than 5%) of deep water habitats; Opal B includes just about 10% and External C includes about 25% for the East Channel Islands bioregion.

Habitats within pending military closures and MPAs proposed by the SCRSG at San Nicolas Island

- The pending military closure at San Nicolas Island includes less than 5% of the rocky shores and sandy beaches in the West Channel Islands bioregion, while Opal B and

Topaz A include about 7% of these habitats and external C includes over 10%. External A does not include an MPA at San Nicolas Island.

- The pending military closure includes about 4% of hard bottom (0-30 m) and over 5% of the soft (0-30 m) around San Nicolas Island. Opal B and Topaz A include about 12% the nearshore hard bottom habitat while External C includes the most nearshore hard bottom habitat at about 15%. About 5% of the nearshore soft sediment in the West Channel Islands bioregion is included in Opal B and Topaz A, while External C includes more than 10% of this habitat.
- Pending military closure at San Nicolas Island includes about 5% of the persistent kelp while Opal B, Topaz A, and External C include almost 20% or more of this habitat for the West Channel Islands bioregion. The pending military closure includes about 7% of the habitats at 30-100 m depth while Lapis B and Opal B include over 15% of this habitat and External C includes over 20% for the West Channel Islands bioregion.
- The pending military closure at San Nicolas Island does not include habitats deeper than 100 m, while Lapis B and Opal B include between 15-20% and External C includes over 20% of deep water habitats at 100-200 m and only External C includes a substantial portion of deepwater habitats below 200 m.

Size and Replication of Habitats

- All pending military closure areas and proposed MPAs at the San Nicolas and San Clemente islands and Begg Rock, and meet or exceed the SAT guidelines for MPA size.
- The pending military closure at San Nicolas Island and the state waters around Begg Rock would add replicates for a variety of habitats in the West Channel Islands bioregion, though those habitats are well represented in the existing MPAs in this region.
- The pending military closures at San Clemente Island would provide replication of a variety of habitats in the East Channel Islands bioregion, and would constitute a significant portion of the replicates in the bioregion.

Marine Birds and Mammals of the West and East Channel Islands Bioregions

- San Nicolas Island supports large proportions of marine birds and mammals in the West Channel Islands Bioregion, and large proportions of the SCSR's populations of California sea lion and Northern elephant seal. San Nicolas Island supports the only resident breeding population of the southern sea otter in the SCSR. The pending military closure includes a haulout used by 6% of the California sea lions on the island, or 0.4% of the SCSR population. The haulout is not known to be a rookery.
- San Clemente supports the majority of marine birds and mammals and all of the California sea lion and Northern elephant seal rookeries in the East Channel Islands Bioregion. The proposed military closure areas include sites used by 26% of the Pacific harbor seals on the island, or 0.4% of the SCSR population. The pending military closures also include a known Northern elephant seal rookery and haulout used by 2% of the island population, or 0.8% of the SCSR population.

Additional Ecological Features of Proposed Military Closures at San Nicolas and San Clemente Islands

San Nicolas Island Pending Military Closure 1

- Includes:
  - Some kelp (*Macrocystis pyrifera*)
  - Low relief habitats
  - Abundant purple urchins
  - One subtidal monitoring site and one biodiversity monitoring site
- Does not include:
  - Large persistent kelp beds (to the northwest)
  - Resident breeding southern sea otter (*Enhydra lutris nereis*) population (to the northwest)

San Clemente Island Pending Military Closure 1

- Includes:
  - Castle Rock and 9-Fathom Bank
  - Submerged rocky pinnacles
  - Abundant giant kelp (*Macrocystis pyrifera*), deeper than other areas due to water clarity
  - Large populations of purple coral (*Stylaster*)
  - Rare rock morph of elk kelp (*Pelagophycus porra)*
- Does not include:
  - Sandy beach habitat at West Cove (to the south)
  - Open coast habitat along west side of San Clemente

San Clemente Island Pending Military Closure 2

- Includes:
  - Narrow rocky shore with intermittent surfgrass beds and a few patches of eelgrass
  - Narrow band of kelp parallel to the shoreline
  - Seafloor drops rapidly to deeper sand
- Does not include:
  - Deep water corals (*Stylaster*), which are abundant on the west side of San Clemente and Santa Catalina islands