California Marine Life
Protection Act Initiative
c/o California Resources Agency
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To: **MLPA North Central Coast Regional Stakeholder Group**

From: **MLPA Initiative Staff**

Subject: **Evaluation of North Central Coast Regional Stakeholder Group draft MPA proposals 1-4 and revised draft External MPA Proposal A relative to MLPA Goal 3**

Date: **January 26, 2008**

1.0 Summary

Goal 3 of the Marine Life Protection Act (MLPA) is:

> *"To improve recreational, educational, and study opportunities provided by marine ecosystems that are subject to minimal human disturbance, and to manage these uses in a manner consistent with protecting biodiversity*."

MLPA Initiative and Department of Fish and Game (DFG) staff evaluated North Central Coast Regional Stakeholder Group (NCCRSG) draft marine protected area (MPA) proposals 1-4 and the revised Draft External Proposal A for their fulfillment of MLPA Goal 3. Access is a key issue for recreational, educational, and study opportunities; the evaluation focused on proximity of MPAs to access points, boat launches and ports, and marine research institutions. The number of long-term monitoring sites inside MPAs and the replication of habitats within MPAs were also tabulated.

Overall, the draft proposals 1-4, developed by the NCCRSG work groups, and revised Draft External Proposal A, provided better recreational, educational, and study opportunities than the existing MPAs (Proposal 0).

To summarize the evaluation (excluding Proposal 0):

- *Number of access points within and near proposed MPAs.* Access points located inside MPA boundaries and within 2 miles of MPAs were counted. The number of total access points included in draft proposals 1-4 and the draft external proposal ranged from 108 (Draft Proposal A) to 130 (Draft Proposal 3).
- *Distance of proposed MPAs to boat ramps/launches/ports.* Draft proposals 1-4 and the draft external proposal had 16 (Draft Proposal A) to 20 (Draft Proposals 1 and 3) proposed MPAs within 5 miles of a boat ramp, launch, or port (excluding major ports).

- *Distance of proposed MPAs from the region's major ports.* Draft proposals 1-4 and the draft external proposal had 4 (Proposal 4) to 6 (Proposal 3) proposed MPAs within 5 miles of a major port.
- *Distance of proposed MPAs from major marine research institutions.* Draft proposals 1-4 and the draft external proposal had 4 (Draft Proposal 4) to 8 (Draft Proposal 1) proposed MPAs of all protection levels within 15 miles of a major research institution. Draft Proposal 4 had 2 higher protection (very high and high) MPAs within 15 miles of a research institution while Draft Proposal 1 had 7 higher protection MPAs within that radius.
- *Number of established long term marine research monitoring sites.* The Partnership for Interdisciplinary Research of the Coastal Ocean (PISCO) has 14 monitoring sites within the study region. Across all draft proposals, there were 4 (Draft Proposal 3) to 8 (Draft Proposal 4) monitoring sites within proposed MPAs of all protection levels.
- *Replication of habitats within the study region*. Replication provided by the draft proposals ranged from 2-10 replicates across proposed MPAs of all protection levels. Rocky intertidal and hard bottom habitats had the greatest replication, with each draft proposal having at least 6 replicates of these habitats. The draft proposals also included at least 2 replicates of each habitat in MPAs with a moderate-high protection level. For high and very high protection levels, not all habitats are replicated within each draft proposal, particularly sandy beaches, rocky intertidal, surfgrass, kelp[1], soft bottom, and hard bottom habitats.

The California Department of Fish and Game evaluation of the potential impacts of draft proposals on recreational abalone harvest and the Ecotrust evaluation of potential impacts to areas of importance to recreational fishing modes are found in separate documents.[2]

2.0 Methodology

MLPA Initiative and DFG staff used simple metrics and available data within geographic information systems (GIS) to evaluate the extent to which draft MPA proposals address Goal 3 of the MLPA. The evaluation compared draft proposals relative to one another, including:

- Proposal 0 (existing MPAs) no action alternative
- Draft Proposal 1 (EC)
- Draft Proposal 2 (JD)
- Draft proposal 3 (TC)
- Draft Proposal 4 (JC)
- Revised Draft External Proposal A

1 Mapped data for kelp is poor. Where kelp data was available, a linear measure was used to assess its presence in a MPA. Kelp was considered to be present if the linear measure met or exceeded 1 mile (sufficient length to contain 90% of kelp forest biodiversity).

2 The separate evaluation documents are: "Evaluation of the Potential Impact MPA Proposals May Pose for Abalone Management and Abalone Recreational Fisheries" and "Summary of potential impacts of the December 2007 MPA proposals on commercial and recreational fisheries in the North Central Coast Study Region."

Evaluation of recreational opportunities focused on accessibility of different types of MPAs, specifically:

- *Number of access points within and near proposed MPAs.* The number of access points inside or within 2 miles of a) proposed very high and high protection MPAs, b) proposed moderate and low protection MPAs and c) proposed MPAs of all protection levels. Only shoreline MPAs were considered in the evaluation of access. Access points that were within the border of a MPA *and* within 2 miles of another MPA were only counted once.
- *Distance of proposed MPAs to boat ramps/launches/ports*. The number of MPAs within 0-5, 5-15, and 15-50 miles of a boat ramp, launch, or port (excluding major ports). The 0-5 mi distance reflects potential use of MPAs by users with small water craft.
- *Distance of proposed MPAs from the region's major ports*. The number of MPAs within 0-5, 5-15, and 15-50 miles of a major port (i.e. San Francisco, Bodega, or Half Moon Bay).

Evaluation of educational and study opportunities focused on:

- *Distance of proposed MPAs from major marine research institutions.* The number of MPAs within 0-15 and 15-50 miles of major marine research institutions in the study region (i.e., Bodega Bay Marine Lab of University of California, Davis and Romberg Tiburon Center for Environmental Studies of San Francisco State University).
- *Number of established long-term marine research monitoring sites*. The number of sites monitored by PISCO within a) proposed high protection and very high protection MPAs, and b) within proposed MPAs of all protection levels.
- *Replication of habitats within the study region.* Replication of 12 habitats within proposed MPAs was evaluated: sandy beaches, rocky intertidal, surfgrass, soft substrate (0-30 m), soft substrate (30-100 m), hard substrate (0-30 m), hard substrate (30-100 m), average kelp, coastal marsh, tidal flats, eelgrass, and estuary. A habitat was considered to be present within a MPA if a threshold amount of that habitat was present, based on the Science Advisory Team (SAT) evaluation[3]. Habitat replication was considered for a) proposed high protection MPAs (very high, high, and moderate-high), and b) for proposed MPAs of all protection levels.

3.0 Evaluation Results

3.1 *Recreational Opportunities*

Access to MPAs is important for both consumptive and non-consumptive users of the marine environment (Figure1). However, an increased number of access points in very high and high protection MPAs that limit take of marine resources may result in fewer consumptive recreational opportunities. Draft Proposal 3 had the greatest overall accessibility when considering MPAs of all protection levels; this draft proposal had 130 general access points

3 The Master Plan Science Advisory Team considers a habitat to be "present" within a MPA if that MPA contains enough habitat to capture 90% of the local biodiversity. The method used to measure this threshold varies by habitat. See the document, *Methods Used to Evaluate Draft MPA Proposals in the North Central Coast Study Region,* for more detail.

that are either within, or within 2 miles of a MPA. Revised Draft External Proposal A had the fewest access points within or near a MPA, with 108 access points overall.

Draft proposals 1 and 4 had the greatest number of access points within or near high or very high protection level MPAs, with 91 and 92 access points respectively. Proposal 2 had the fewest number of access points within or near high or very high protection level MPAs (54 access points). This proposal provided greatest access to moderate-high and lower protection MPAs, with 63 access points within or near MPAs of these protection levels. Revised Draft External Proposal A provided the fewest access points to MPAs of moderate-high and lower levels of protection, with 28 access points within or near these MPAs.

The five draft proposals provided similar overall access to boat launches, ramps, and smaller ports. Draft Proposals 1 and 3 offered the greatest access, with each proposal having 20 MPAs that were near (within 5 miles) these features. Of these MPAs, 12-13 had high or very high protection levels. Draft proposals 1-4 had 7-9 moderate and low protection MPAs near boat ramps, launches, and smaller ports, while revised Draft External Proposal A had 4 MPAs near these features (Figure 2).

A measure of distance of MPAs from major ports found that all draft proposals had 4 (Proposal 4) to 6 (Proposal 3) MPAs near (within 5 miles) of major ports (Figure 3). Draft Proposal 1 had the most MPAs (4 MPAs) with higher (high or very high) protection levels near major ports, while Draft Proposal 4 had the fewest (2 MPAs). Draft Proposal 3 has the most MPAs (3 MPAs) of moderate-high protection or lower near major ports while Draft Proposal 1 has just 1 MPA of moderate or low protection near major ports.

3.2 *Educational and study opportunities*

Educational and study opportunities are improved by the presence of proposed MPAs near research institutions and MPAs that include established long term monitoring sites (Figures 4 and 5). Habitat replication within the study region is also an essential consideration in the design of MPA proposals, given the importance of replicate sites for robust design of scientific studies (Figure 6).

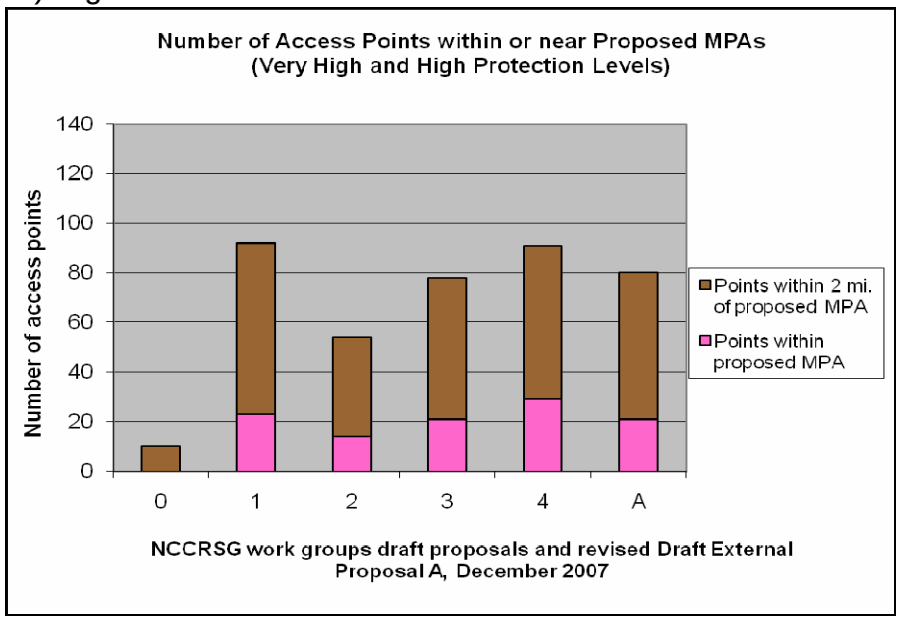
Draft Proposal 1 had the greatest number of proposed MPAs near a major marine research institution on the north central coast, with 8 MPAs near (defined as within 15 miles) either UC Davis's Bodega Bay Marine Lab or San Francisco State University's Romberg Tiburon Center for Environmental Studies; seven of these were very high or high protection MPAs. Draft Proposal 4 had the fewest MPAs (4 MPAs) near a major research institution; two of these were very high or high protection MPAs. (Figure 4).

There are 14 long-term monitoring sites in the study region monitored by PISCO. Draft Proposal 4 included the most PISCO monitoring sites (8 sites) within MPAs of all protection levels; six of these sites were within MPAs of very high or high protection levels. Draft Proposal 3 had the fewest PISCO monitoring sites (4 sites) within MPAs of all protection levels; three of these sites were within MPAs of very high or high protection levels (Figure 5).

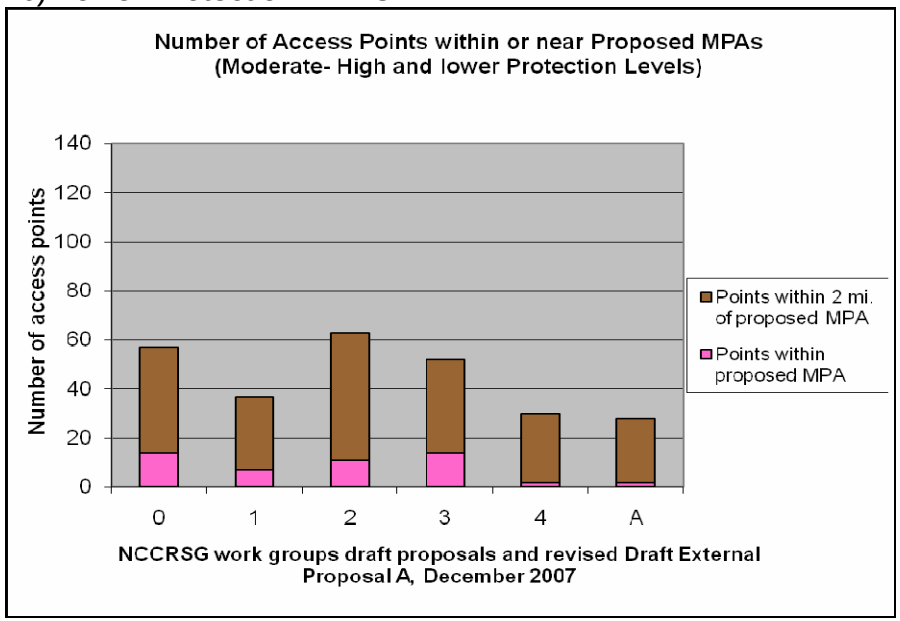
The NCCRSG draft proposals and Draft External Proposal A each provided at least 2 replicates across proposed MPAs of all protection levels. For MPAs of all protection levels there was greatest replication for rocky intertidal habitats (6-9 replicates) and hard bottom habitats of all depths (6-10 replicates), (Figure 6d). The draft proposals also included at least 2 replicates of each habitat for MPAs with a moderate-high protection level. For high and very high protection levels, not all habitats are replicated within each draft proposal. Proposal 2 and revised Draft External Proposal A have 1 or 0 replicates of sandy beaches, rocky intertidal, surfgrass, kelp, soft bottom, or hard bottom habitats in the very high and high protection level MPAs.

Figure 1: Number of access points within or near proposed MPAs

1a) Higher Protection MPAs



1b) Lower Protection MPAs



1c) All proposed MPAs

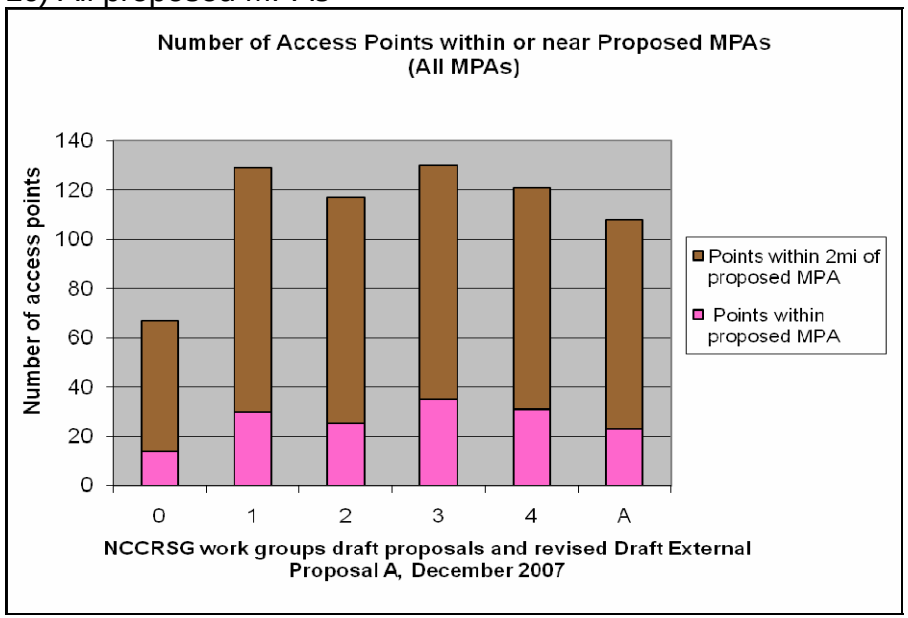
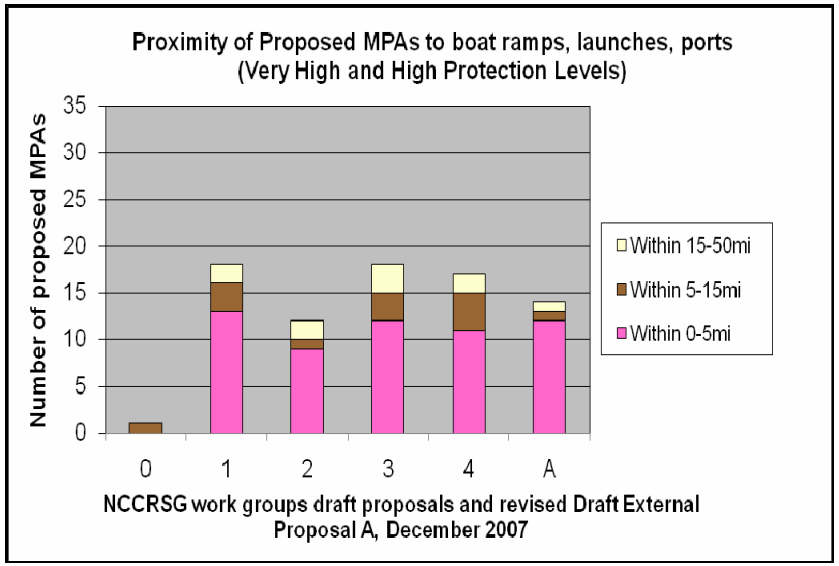
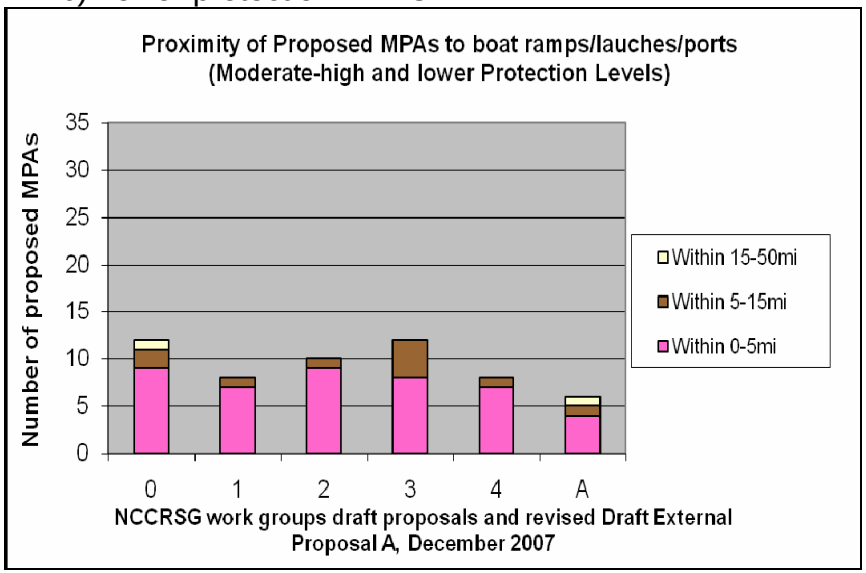


Figure 2: Proximity of proposed MPAs to boat ramps/launches/ports

2a) Higher protection MPAs



2b) Lower protection MPAs



2c) All proposed MPAs

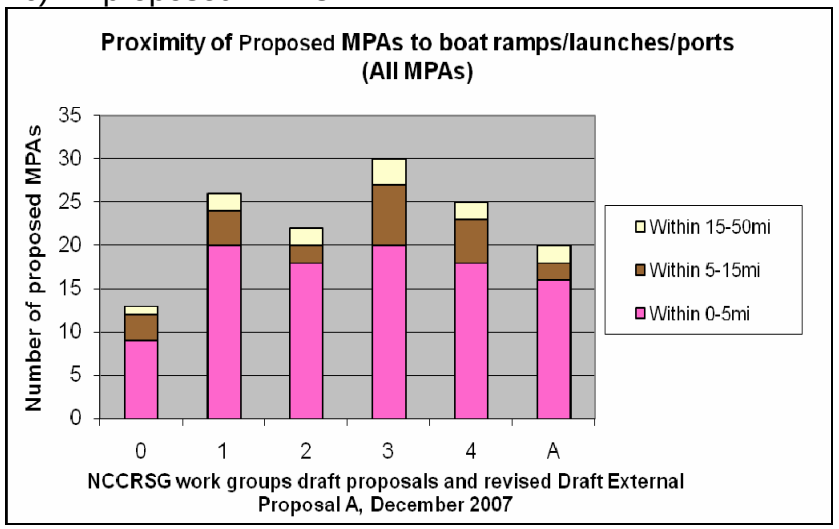
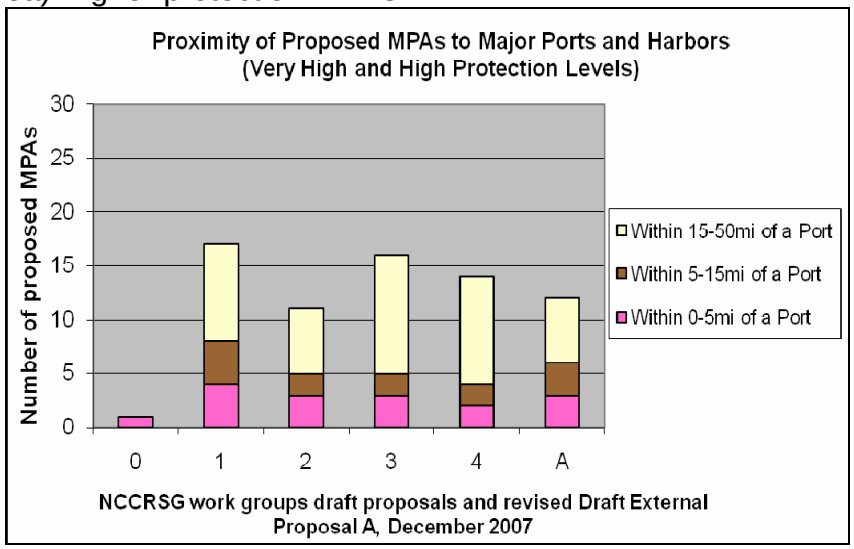
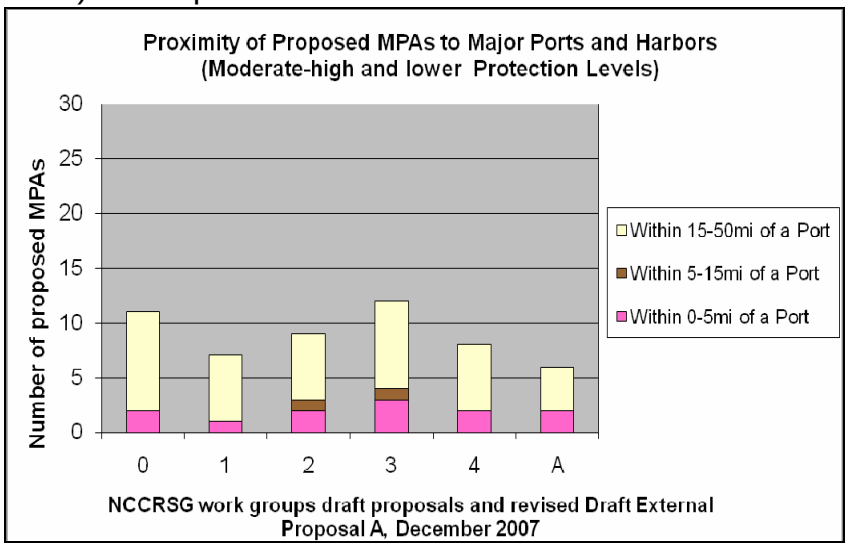


Figure 3: Proximity of proposed MPAs to major ports and harbors (Bodega Bay, San Francisco, and Half Moon Bay)

3a) Higher protection MPAs



3b) Lower protection MPAs



3c) All proposed MPAs

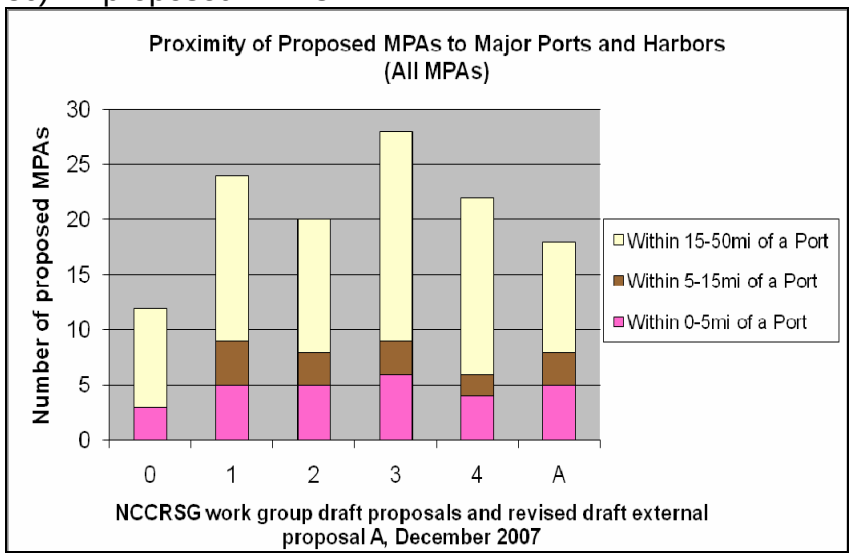
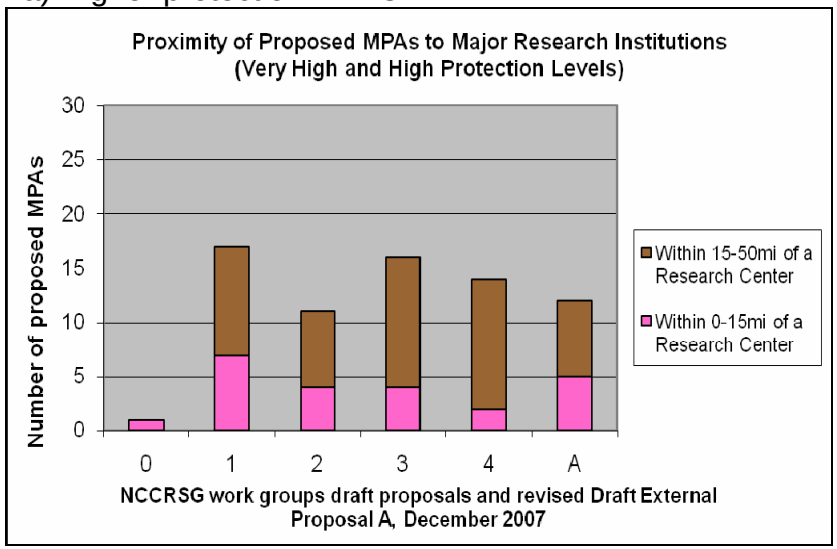


Figure 4: Proximity of proposed MPAs to major marine research institutions (Bodega Bay Marine Lab and Romberg Tiburon Center)

4a) Higher protection MPAs



4b) All proposed MPAs

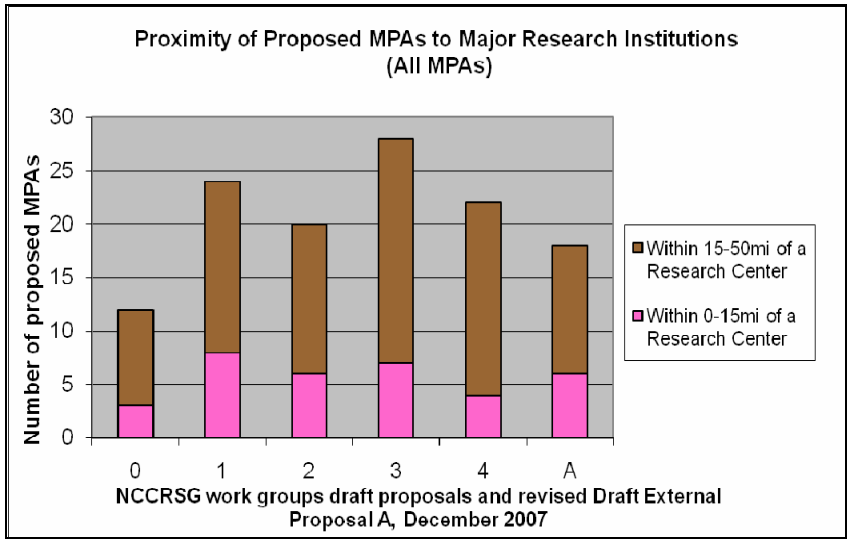


Figure 5: Number of long-term monitoring sites in proposed MPAs

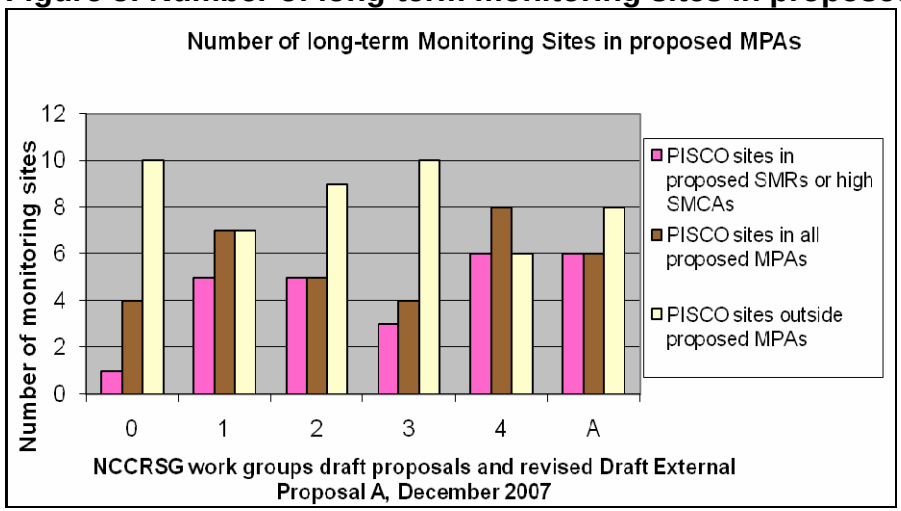
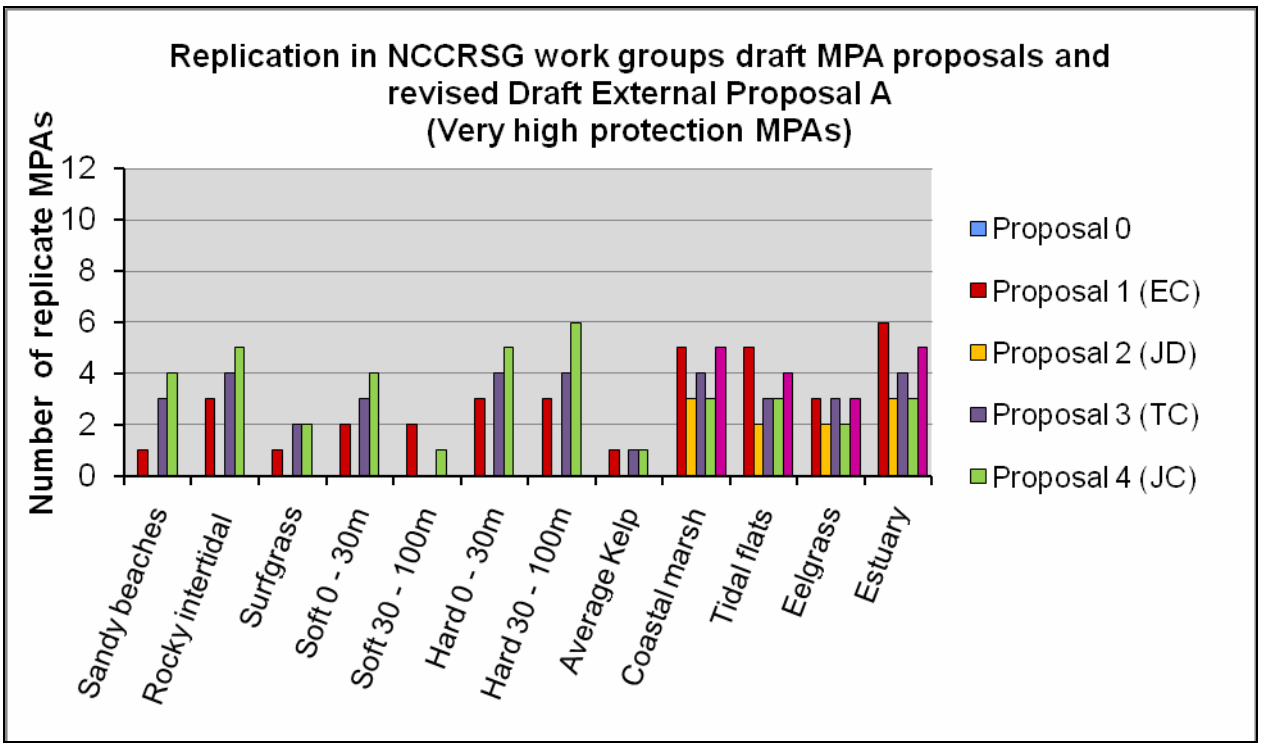
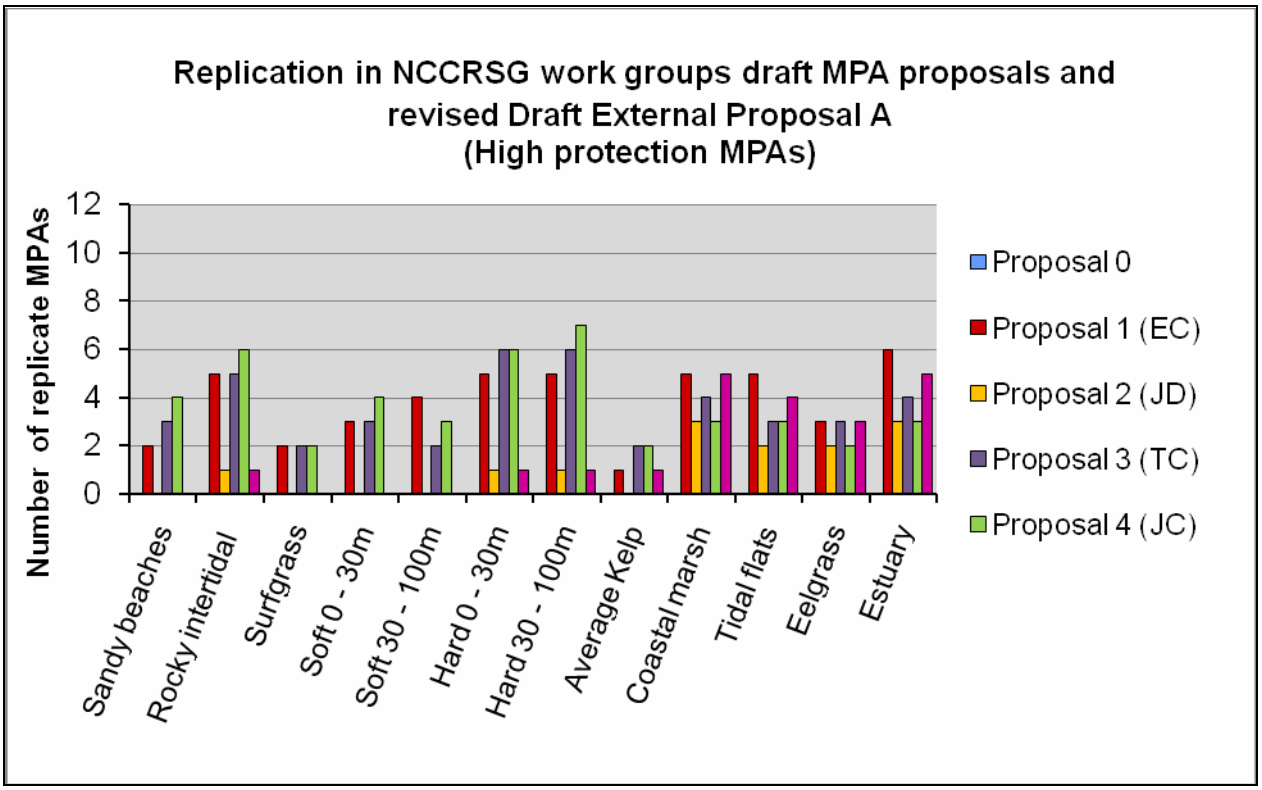


Figure 6 – Habitat replication within NCCRSG work groups draft MPA proposals and External Draft MPA Proposal A

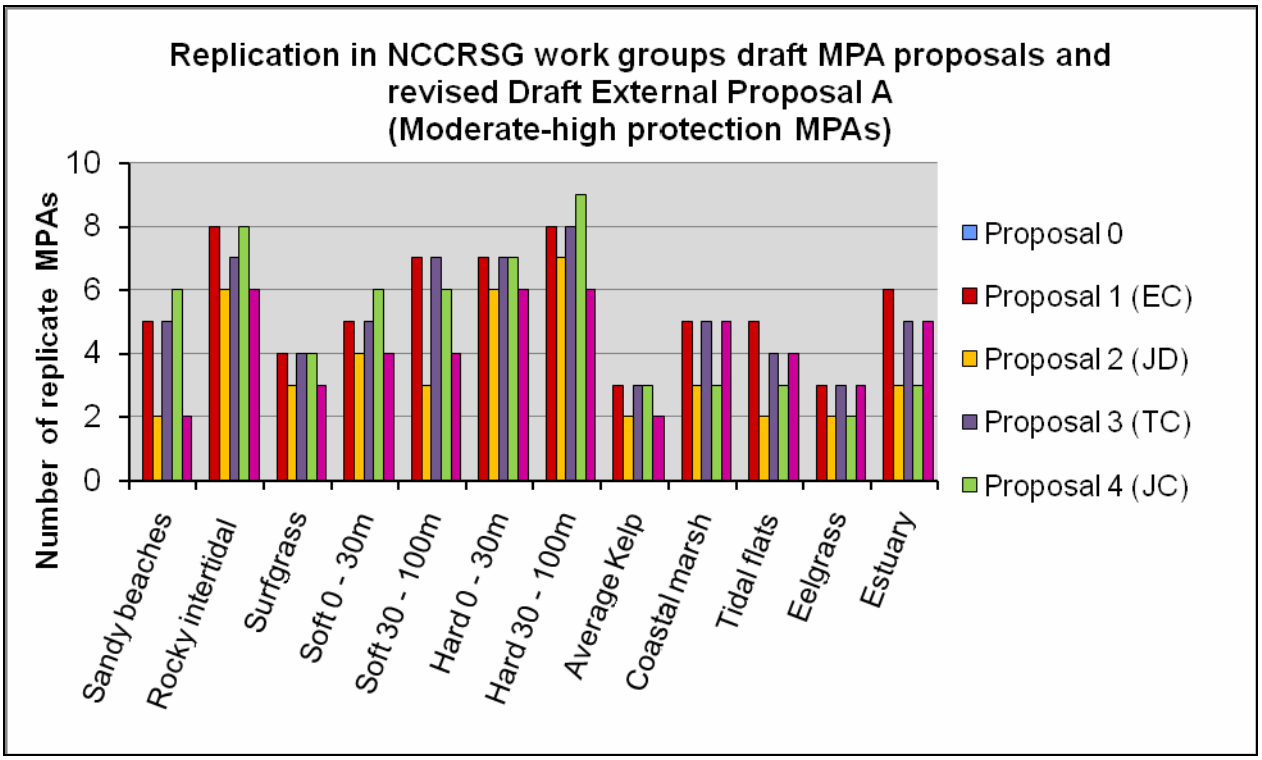
6a) Proposed MPAs with very high protection level



6b) Proposed MPAs with high protection level



6c) Proposed MPAs with moderate-high protection level



6d) All proposed MPAs