**CALIFORNIA MARINE LIFE PROTECTION ACT INITIATIVE**
**MASTER PLAN SCIENCE ADVISORY TEAM**
**AUGUST 2, 2005 MEETING SUMMARY**
**Elihu Harris State Building**
**1515 Clay Street, Room 10**
**Oakland, California**

**SAT members present:** Loo Botsford, Mark Carr, Doyle Hanan, Steven Murray (acting chair), Jeff Paduan, Kenneth Schiff, Astrid Scholz, Rick Starr, William Sydeman, Mary Yoklavich

**SAT members not present:** Steve Gaines, Rikk Kvitek, Steve Palumbi, Kevin Piner, Dave Schaub, Susan Schlosser, Dean Wendt, Richard Young

**Others present:** Heather Galindo (note taker; SAT support staff), Dr. Mary Gleason (MLPA staff), Carrie Kappel (note taker; SAT support staff), John J. Kirlin (MLPA staff), Paul Reilly (DFG staff), John Ugoretz (DFG staff) and approximately seven members of the public

**Acronyms used:** California Department of Fish and Game (DFG); geographic information system (GIS); marine protected area (MPA); MLPA Blue Ribbon Task Force (BRTF); MLPA Central Coast Regional Stakeholder Group (CCRSG); MLPA Central Coast Science Sub-Team (CCSST); MLPA Master Plan Framework (MPF), MLPA Master Plan Science Advisory Team (SAT)

## Introduction

Steve Murray, acting chair for the meeting, welcomed the SAT, members of the MLPA Initiative staff and the public.

Steve Murray and John Kirlin thanked everyone for being present and for all their work between meetings. John Kirlin noted the success of the recent science presentations to the BRTF, which he characterized as informative and well received. John reinforced the credibility of and trust placed in the SAT by the MLPA Initiative staff and BRTF. He noted that the same three presentations will be given at the next CCRSG meeting. The CCRSG has gained a great deal of momentum though it still faces significant challenges. CCRSG members have been generating requests, questions, and concerns for the SAT. A process for responding to these requests and questions has been established. More on this process to follow.

John Ugoretz reviewed last meeting's action items:

- SAT guidelines – revised version was not completed between last meeting and this one. Carrie and Heather will receive comments and edits so that it may be finalized at the September meeting.
- Species likely to benefit subteam will present its progress today.
- Presentation topics – Carrie Pomeroy was invited and will get back to us on whether she can participate. Draft presentations 4, 5, and 6 will be heard today. Presentation 8 has been put off until a later date.
- Upcoming meetings are from 9 a.m. to 5 p.m. unless otherwise noted:
    - August 30, San Luis Obispo

- September 19, Santa Cruz
- October 18, San Luis Obispo
- November 15, Santa Cruz

**Revised Science Advisory Team Guidelines**

SAT members discussed the latest version of the SAT guidelines document; they were directed to send revisions to Heather and Carrie, who will work with Steve Murray to produce a new version for final SAT approval.

Recent updates to the document include:

- A new paragraph on the process of reviewing and prioritizing questions and data requests, included under the section on working with the CCRSG (paragraph 2);
- A new paragraph on the role of an executive or planning committee, which will be created in the near future, and the SAT chair.

Suggestions from SAT members included:

- The need for a core group of people who are willing to take turns attending BRTF meetings and representing the SAT; for the next few meetings, the SAT members who are giving scientific presentations to the BRTF will cover this role;
- The need for a SAT executive or planning committee to work with John Kirlin, John Ugoretz, Mike DeLapa and Mike Weber on agenda-setting, prioritization and delegation of tasks, and to provide counsel and chair meetings;
- Creation of a more formal communication structure (with a spokesperson(s)) for dialogue between the BRTF and the SAT to be implemented when proposal review and evaluation begins in the fall;
- Alteration of the language around the SAT's responsibility for responding to questions and information requests to reflect the fact that SAT members will only be asked to respond to those questions that have been flagged as requiring SAT attention via an MLPA Initiative staff/CCSST filtering process.

Other issues that were discussed included:

- The process for reviewing recommendations of the CCRSG: John Ugoretz explained that the intent is for the SAT to review and rate alternative CCRSG proposals for MPAs, based on pre-determined evaluation criteria. The BRTF will then take those ratings under consideration when it makes its final recommendation. Doyle Hanan and Ken Schiff offered to work on clarifying the section of the document dealing with this.
- The process for receiving and responding to questions: The central clearinghouse for stakeholder questions is the online comment/question submission form. All stakeholders should be directed to submit their questions there. Questions received online will go through the MLPAI/SST filtering process discussed below under the CCRSG meeting update.

**Report from Species Likely to Benefit Sub-Team**

Doyle Hanan reported on progress from the species likely to benefit subteam, which had been charged with reviewing the list of species likely to benefit from MPAs and ranking the species based on their likelihood to respond to protection via spatial management. The team discussed criteria for which species should be prioritized for consideration in the design of MPAs, but did not decide on a final list of criteria. Some suggested criteria include range size, habitat specificity, protected or evolutionarily significant unit (ESU) status, and fraction of lifetime egg production (FLEP) status. The team also discussed the issue of adding marine mammal and bird species to the list, but again has not made final decisions. Doyle asked that SAT members contact him with further input on the list and criteria.

Several ideas came out of the ensuing discussion. First, SAT members agreed that a preface should be created to accompany the list, explaining the basis for the proposed ranking of species. It should discuss what characteristics are shared by those species whose populations are likely to respond to spatial management via MPAs, giving examples of species from the central coast to illustrate. This document might also answer such questions as: Do we have higher certainty about the effects of MPAs on particular groups of species? If these species are going to benefit, what is required in terms of design and management particulars? And, what can we affect through spatial action?

Second, while most SAT members felt comfortable identifying some example species likely to benefit, they expressed reservations about making a comprehensive ranking of all species, given the lack of information on the biology and status of some. The final document will be crafted to reflect this uncertainty about the effects of MPAs on some organisms. It will include the preface, the highlighted list of priority species (about which there is relatively high certainty), and the full list as it exists now.

Third, it was suggested that the evaluation subteam and species likely to benefit subteam should coordinate their activities given that their products will need to dovetail eventually. This led to the more general idea of producing a flowchart or organizational chart that documents the interaction of work products and activities among the various SAT, CCRSG, and MLPA Initiative working groups and subteams.

John Ugoretz reported that students at UC Santa Barbara have been reviewing life history traits and stock status for species on the current list. This information will be available to the SAT before the next meeting. He also encouraged the subteam to contact non-SAT scientists for additional information about individual species. John reminded the group that the list has been limited from the beginning to species that are taken by fisheries either directly or indirectly, and he encouraged them to be very explicit about why they have added new species if they choose to add bird or mammal species to the list.

**Report from Proposal Evaluation Sub-Team**

Astrid Scholz gave an update on progress of the proposal evaluation subteam, (Astrid Scholz, Steve Gaines, Steve Palumbi, Loo Botsford, Jeff Paduan, Kevin Piner, Mary Gleason), that had been charged at the last meeting with reviewing the template for proposals, considering approaches to and draft criteria for MPA designs, and reviewing potential tools that might be useful in the evaluation process. The team members met over lunch at the last SAT meeting to brainstorm infrastructure and analytical needs. They developed a draft proposal for needs for staff support and resources. The proposal lays out a framework for a potential decision support tool to be developed and used by the SAT in evaluating proposals and suggests funding for a dedicated GIS analytical staff person, some work to be done in the Botsford lab, and additional work to be done to advance the science and understanding of zonal management and the potential impacts of different levels of protection. Loo Botsford, Steve Gaines, and Astrid Scholz are currently listed as principal investigators on the proposal, which is pending with the MLPA Initiative. The team has not yet discussed the first two items, reviewing the template and considering criteria for MPA design.

The SAT discussed the proposal at length. A number of concerns were raised, including the potential perception by outsiders that the SAT has given charge to a small group of people to develop a proposal to support their own work. The order of priorities within the committee was also questioned as some wondered whether evaluation criteria should be developed first, before evaluation tools, as the choice of criteria might influence the choice of tools. Some SAT members also expressed discomfort with not having had a thorough discussion of the pros and cons of various tools before this proposal was developed. SAT members expressed general concern that they weren't being more broadly involved in the development of criteria for evaluation and the design of tools.

John Ugoretz emphasized that the sub-team had done what was asked of them by outlining what they needed to support their work. He also noted the importance of getting tool development started as soon as possible because of the rapid pace of the process.

John Kirlin explained that the task of the evaluation sub-team included both reviewing the template for proposals, and developing and reconciling criteria for proposal evaluation, which would be entering in two streams, one from the CCRSG in the form of goals and objectives, the other from the various recommendations of the SAT – in the MPF, the species of concern rationale, documents of the evaluation subteam, etc. These criteria need to be brought into alignment so that they are not conflicting. The evaluation tool idea came out of this task of reconciling the various criteria.

John Kirlin indicated that a simpler data visualization tool to support the work of the CCRSG is being developed under contract and is in draft form now, but is unlikely to meet the needs of the SAT. Most of the GIS capacity for this project is housed at UCSB and is available to the SAT and to anyone else via internet map service (IMS). GIS is primarily an inductive tool, data and experience driven. A deductive tool, e.g. something like MARXAN, might also be useful to allow us to look at sets of data and judge the effects of different alternative proposals. MLPA

Initiative staff decided to support use of such tools for the MLPA process over the long run, though they may or may not be available in time for central coast decision-making. In order to make this happen, we have to identify the need, identify people who can make it happen, and commit funds. The Resources Legacy Fund Foundation board has eight decision windows a year and they are meeting this week. MLPA Initiative staff asked for a proposal they could submit at this time to earmark funds for development of a potential deductive tool. A broader discussion now of the evaluation process, the criteria, and the work plan will definitely inform the sort of tool needed.

The sub-team will meet again via conference call(s) between this and the next meeting and develop a presentation to be delivered to the whole group on draft evaluation criteria and the pros and cons of various spatial analysis tools that could be applied to evaluation. Following the presentation there will be an opportunity for a substantive discussion of these issues by the whole SAT.

**Definition and Examples of Rare and Unique Habitats**

John Ugoretz reported that the question of what constitutes a rare or unique habitat in the central coast had come up in staff discussions with scientists and with constituents on the CCRSG. John asked the SAT for further guidance on how rare and unique habitats should be defined and how this definition might impact MPA design.

As with rare species, rare habitats are those that have either limited abundance or a restricted distribution. The SAT discussed how spatial scale impacts rarity (e.g. rocky intertidal might be rare if you consider the southern California region, but not rare if you consider its distribution within the intertidal zone of the whole state). They recommended that the rarity of any given habitat (i.e. its level of representation) be assessed at three spatial scales: within the state, the biogeographic region, and the depth zones outlined in the MPF. For example, depending on the spatial scale, nearly every habitat but sand bottom might be considered rare in some areas. In particular, pinnacles, estuaries, canyon heads and the rocky intertidal might be considered under-represented at some scales.

The SAT requested that Mary Gleason and her team produce a matrix of the abundance of each of the defined habitat types by depth zone in order to identify the relative area within each habitat at both state and regional levels across different depths. Though this will be difficult for some habitats for which there are not currently statewide data in the regional profile, Mary reported that it should be possible for most habitats.

Mary Gleason requested that the SAT provide some guidance for CCRSG members on how to think about rare and unique habitats and also on what might constitute areas of biodiversity significance. There was some discussion about how best to do this, either starting from scratch or borrowing from efforts at The Nature Conservancy and other NGOs and agencies where prioritization of sites based on their rarity or contribution to biodiversity is a regular activity.

The question of what constitutes a unique habitat was more difficult to define, since uniqueness of a habitat may only be meaningful in reference to a particular species that depends on that habitat or a particular ecosystem function it provides. In addition, uniqueness may derive from non-biological characteristics (e.g. educational uses, aesthetic values, etc.). SAT members recommended that any alternative proposals for MPAs that depend on the definition of a given habitat or site as unique for its inclusion in their proposal should contain a description of why they have considered that habitat or site unique.

Outcomes:

1. Mary Gleason will develop a matrix of the relative abundance of each of the different habitat types (from MPF) by depth zone for each of the biogeographic regions and the state as a whole.
2. As guidance when considering relative uniqueness of habitats, proposals should consider statewide and regional distribution as well as distribution across depth zones.
3. The SAT recommends that the CCRSG include a description of the criteria used to classify particular habitats as rare or unique in any alternative proposals developed.

**Draft Science Presentations for the BRTF and CCRSG**

Three draft presentations were delivered to the SAT for comment:

1. Sustainability and age structure in marine populations;
2. Larval dispersal and recruitment; and
3. Movements of marine species.

A brief summary of their content, followed by an outline of any major points of discussion, is included below for each presentation. The final annotated presentations will be available on the MLPA website in the future. The SAT also discussed a potential future presentation on water quality that is yet to be developed.

***Sustainability and age structure in marine populations – Loo Botsford (lead)***

Main Points:

- MLPA goals ask us to sustain populations and design and manage MPAs to the extent possible as a network.
- *Sustainability:* By definition, in sustainable populations, individuals replace themselves. Mortality rates for fish eggs, larvae and juveniles are very high. In order to have a sustainable population, adult fish must produce enough eggs so that a juvenile will survive to replace each adult.
- *Effects of fishing on age structure:* In order to maintain that level of replacement, we must account for effects of fishing on the population. Main effect of fishing is to shorten the age structure or to remove large individuals.

- *Lifetime egg production:* Measure current sustainability by calculating lifetime egg production (LEP). Fishing reduces LEP by removing older females. When LEP falls below a certain threshold (35-60%), the population collapses.
- If there are MPAs where fishing is prohibited for a given species, some of the larvae will go into reserves, others, into fished areas. The basic requirement for sustainability for a population in an area must be 35-60% of natural settlement.
- Some species show evidence of a shift in age structure since the 1980s and a decrease in LEP, sometimes to below the threshold at which the population can be sustained.
- *Young rockfish do not reproduce as well as old rockfish*: New data from Steve Berkeley add another wrinkle to this story. Berkeley has found that larvae of black rockfish have different survival rates. Larvae of young fish have poorer survival than those from older, larger mothers. Larvae of older females have a larger stored oil globule, therefore they resist starvation longer.
- *Implications for conventional fishery management*: As fishing pressure increases, LEP declines. If we include variation in larval survival due to variation in the age of mothers in the populations, we can get a revised estimate of lifetime larval production under fishing. This produces a lower line, or a larger impact of fishing.
- *Implications for reserves*: To achieve the same level of sustainability for a given population, you need either less fishing between reserves or larger reserves.

Feedback:

- Anticipate a question about whether blue rockfish populations are really declining. It looks from the graph like they've been stable at 35% LEP.
- Females produce 100s of 1000s or millions of young. Make the point on the life cycle slide that they do that year after year and live to be pretty old. Also make the point that fecundity increases with age. Make it clear that most eggs and larvae don't make it.
- Explain why it takes a while for populations to collapse.
- The result that larvae from older mothers have higher survival may likely be universal, but these are new results that remain to be tested on other species.
- If you had the same shortened age structure, but you had successful cohorts of younger fish coming through, would that affect LEP? Loo's answer: Yes. Strong year classes will impair our ability to successfully estimate LEP. You need to describe LEP in a different way if you have strong year classes. Another potential issue with these datasets is that they are fisheries dependent and you will have more young fish in them over time because people become more likely to keep younger fish through time.
- Summary slide – think about rewording point 6 to make it slightly less explosive to an audience that will hear the "theory of larval dispersal" being invoked to advocate for less fishing or more area in reserves.
- How universal is the 35-60% threshold across different species? Can the threshold be raised by ameliorating environmental effects on them? Loo's answer: Thirty-five percent comes from the slope of the recruit-egg production curve at very low numbers, from analyses of collapsed populations.

- Explain the ways in which MPAs are equivalent to a reduction in fishing effort. For example, do MPAs result in a more natural size distribution? Loo's answer: In simulations, we always find you can get the same yield out of conventional fisheries management as out of reserves. Don't think it's been convincingly shown that you can do anything differently with MPAs.

***Larval dispersal and recruitment – Mark Carr (lead)***

Main points:

- Larval dispersal is important because: (1) Larvae replenish marine populations; (2) Larvae disperse individuals and genes among populations; (3) Larval dispersal has implications for the design of MPAs.
- Vast majority of fishes and invertebrates produce larvae that are adapted for life in the pelagic environment. Therefore they are transported away from the parent populations. This leaves the adult populations dependent on larval transport from elsewhere back into the population.
- Most invertebrates and fishes, most fished species, mature fish of all sizes, and both mobile and sessile species produce larvae.
- How far and in what direction they disperse depends on:
    - Timing of release (birth)
    - Time spent drifting in the ocean
    - Direction and speed of ocean currents
    - Behavior of larvae
- For a suite of western North American coastal fishes, the average time spent in the larval stage is 94 days, based on rings in ear bones (otoliths). Majority of reef fish spend 1-3 months in plankton. Most invertebrates have a shorter pelagic larval duration. The majority are in plankton for <1 day, nearly all for <1 month.
- Using a variety of different methods (otoliths, statoliths, oceanographic modeling, and genetics) we find similar results: many invertebrates exhibit dispersal distances on the order of 5-100km, fish – 20-200km.
- *Time as larvae versus dispersal distance*: Data on known larval distances and dispersal distances are plotted and compared to the expected relationship given passive dispersal and average current speeds along the west coast. Larvae are not going as far as we would expect based on passive dispersal, and instead must be doing something to reduce how far they are dispersed by currents.
- *Conditions for larval settlement and recruitment:* Mid-water rockfish recruit during cold, nutrient-rich water, during upwelling periods. Benthic rockfish appear to recruit during warm water periods between upwelling periods.
- *Variation from year to year:* Mid-water rockfish recruit better during La Niña years (cold water, strong upwelling). Benthic species recruit better in El Niño periods (warm water, reduced upwelling). Both experience intermediate recruitment during intervening years.
- Implications for design of MPAs:

- Individual MPAs are likely to protect species with dispersal distances similar to the length of reserve (i.e. short dispersers).
- Larger MPAs are likely to sustain populations of more species.
- Larvae of some species will disperse beyond boundaries into surrounding areas.
- The magnitude of contribution to surrounding areas depends on size of the MPA relative to the surrounding area, time the MPA has been protected, and the intensity of historical fishing.
- Spacing of MPAs – to contribute to an effective network, MPAs should be placed at distances that allow exchange of larvae between MPAs.
- MPAs located in retention areas are more likely to retain and receive larvae than other areas along the coast.
- MPAs located in upwelling areas are more likely to export larvae to other areas along the coast.
- Networking of MPAs – populations may be sustained even for species whose larvae and adult dispersal exceeds size of MPA if populations are protected in multiple reserves close enough together to be connected by dispersal of larvae.

Feedback:

- Spacing graphic – need to acknowledge and make clear the contribution of young from outside to inside as well as inside to outside. Mention the assumption of 20-25% LEP outside.
- Make clear that the model does not make predictions based on specific oceanography or geography, but rather just assumes diffusion of larvae away from the source and makes predictions based on the fact that larvae disperse different distances. In addition, the empirically measured dispersal rates already include upwelling, eddies, and other oceanographic processes that impact effective dispersal distances.
- There was discussion about whether we have enough information to know whether it's advisable to put an MPA in or out of a retention zone. This may be a higher order question. However, in the SAT recommendations, the diversity in export probabilities represented by different oceanographic zones was considered habitat diversity that must be replicated in MPAs. Oceanographic variation is likely important, but true retention zone are likely to be sinks which do not contribute to production, so we may not want to recommend replicating MPAs within them.
- There was discussion about whether or not to use the model of dispersal effects on reserve design at Point Reyes. In general, a larger scale model of Monterey Bay was considered a better choice because it was less subject to questions about the particular geography and oceanography of the coastline and was likely to be less contentious.
- How much larval export goes to other regions will also be affected by the shape of the reserve (i.e. the ratio of boundary to area).
- Can we include more information about the tradeoffs decision-makers might be making when they consider this information? This could be choices like do we use oceanographic models or stochastic models, models based on LEP, genetics, etc.? Can

we give them something more than just that it's better to put the reserves closer together? Mark's answer: I think the dispersal estimates based on the tools we have to date are the best we can give them right now. The oceanographic tools we have currently are not accurate enough or comprehensive enough to use them for MPA siting up and down the coast. We're forced to fall back on average dispersal distances and the variation in those distances among species to make siting and spacing decisions.

- This might be a good place to tie things in with species likely to benefit, if we can think about their dispersal distances when thinking about rebuilding populations.
- Will having models moving propagules around hurt us if we are trying to fight for acceptance of the "theory" of larval dispersal?

***Movements of marine species – Rick Starr (lead)***

Main points:

- Species move to seek shelter, food, and reproduction. Types of movements are related to growth. They occur over different temporal scales – daily to monthly, seasonal, annual or decadal. Information on adult movements comes from fishing, direct observation, acoustics, tagging, genetics, and ocean current data. This talk focuses on how far non-planktonic adult and subadult animals move (primarily those with movements from 0-100km) and how that relates to MPAs.
- We only know much about patterns of movement for a few dozen fish species. Most of what we know comes from external tagging data.
- An MPA will protect some individuals whose entire home range is inside the MPA, but others will only be protected part of the time because their home range extends beyond the MPA. Level of protection depends on time spent in versus out, distance they travel, behavior (e.g. frequency of movements, desire to eat), the amount of fishing outside the reserve (especially at edge), and the lifespan of the fish.
- *Yield*: With a reserve, some of the individuals move in and out of the reserve, reducing their chances of getting caught, increasing their chances of surviving to larger age classes. End up with larger individuals in the reserve. Yield in fisheries outside depends on how much fish move back and forth, relative contribution of eggs from adults within reserve, how much area is in reserve and where.
- We still don't know what role an MPA will have for highly migratory species. We don't know the importance of genetic contribution from individuals that stray long distances.
- The SAT recommends MPAs 5-10km long to encompass the home ranges of many species. Many deeper water species may need to move further as they move among more widely dispersed deep water habitat patches, thus we recommended a wedge shape.

Feedback:

- There was some discussion about the wedge recommendation, which may conflict with DFG recommendations around shapes that are easily enforceable and understandable by the public. Because it is a science-based recommendation, though, consensus was

that it should be included, but that a comment about the trade-off with enforceability could be added as well. The wedge comes partly from evidence that some shallower dwelling species have smaller home ranges than deep species, though this is based on a small subset of all species. In shallower water one may be able to get away with a smaller reserve while in deeper water a larger reserve is needed.

- Emphasize that we're focused on the shorter dispersal distance species. We've said the long-dispersing adults aren't protected by MPAs, but perhaps it's just a proportionate protection of a diffuse distribution?
- We might recommend that specific habitats be protected to help protect highly migratory species, e.g. birds in estuaries. Guidelines say that protecting areas that connect among habitats is critical. Protection of MPAs that encompass multiple habitats will both protect species that move among different habitats and achieve representation.
- You could tie this to previous talks by showing the effect on LEP instead of yield. If a reserve provided a certain decrease in fishing mortality for sedentary species, then species with more movement would have less protection and a decreased benefit in terms of LEP.
- Might want to discuss the relationship between size and configuration of habitat relative to size and shape of MPA (e.g. fish will have different chances of moving out of a long linear patch partly in the MPA versus a round patch entirely encompassed by the MPA).
- A major concern is that this information is limited to 10-15% of species. How does this correspond with the species of concern list? Do we have better information about the species that we're concerned about (those on the shorter end of dispersal scale)?

***Water quality and design***

John Ugoretz opened a discussion on how considerations of water quality might impinge on MPA design. This was proposed as the subject for an additional unit in the science presentations series. The discussion was led by Ken Schiff.

Ken framed the issues in terms of three questions:

1. Is it safe to swim?
2. Is it safe to eat the seafood?
3. Is the ecosystem protected?

Ken posed these questions in order to think about how they might impact MPA design. For example, if an MPA has as a goal the improvement of recreational opportunities, might you want to consider water quality for swimmers as a criterion for its siting?

The group discussed whether and how these questions relate to MPA design. Other questions that might be relevant to design are: What is the status of water quality in central California? Is it improving or getting worse? Are there hotspots for concern?

There was discussion about how an MPA could impact water quality, whether by some special provisions for input or other mechanism. A few examples were offered. Establishment of MPAs on the Great Barrier Reef led to a large movement to control water quality on land in adjacent areas. Areas of special biological significance (ASBS) have associated regulations about discharges. Strategies might include either avoiding putting MPAs in areas where water quality is so poor that it will impair ecosystem health or nonconsumptive use, or putting an MPA somewhere you want increased attention or action around water quality.

John Ugoretz reported that the Fish and Game Commission does not have the authority to restrict the introduction of pollutants into an MPA, but the MLPA does bring up these issues for consideration. The BRTF is interested in hearing about these and other issues that might be regulated under other processes or jurisdictions.

Establishing MPAs may afford an opportunity to test the hypothesis that populations are small because of adverse water quality versus fishing, because an MPA can control fishing effort, but without special provisions, will not control water quality. We know that the status of resources is declining. If we think water quality might be related, then we need to know if water quality has also been declining.

Much of the discussion focused on the third question about ecosystem protection. The question was posed whether the SAT wants to consider the other two. Some argued that human health and safety considerations should be included because of the interest of stakeholders and nonconsumptive users.

Maps exist of vulnerability or risk from the introduction of pollutants, which should be taken into account. Variation in pollution will reflect spatial variation in human use along coast – information that will be useful for multiple purposes. Mary Gleason reported that the regional profile already has a lot of information on water quality including written descriptions, web sites, mapped beach closures, known impaired sites, ASBSs, etc.

John Ugoretz noted that outside expertise can be called in on this issue if the SAT would like to involve experts who know more about water quality issues in the central coast region.

Ken Schiff outlined a potential presentation on water quality issues and MPA design that he will develop. Building from his three initial questions (listed above), the talk will cover sources, fates and effects of pollutants and relate these to design recommendations.

Additional topics that were suggested for inclusion:

- Larval entrainment in power plants;
- Classes of toxins, reasons each is dangerous, relevant levels, fates, maps of spatial distribution/hotspots for each;
- Design implications of these maps and temporal trends in pollutants.

### *Scheduling*

The first three presentations are scheduled for the August 10, 2005 CCRSG meeting. Scheduling of the three latest presentations for the CCRSG will happen outside the meeting; they will be presented to the BRTF at its September meeting.

### Update on CCRSG Process and Questions

Mark Carr provided an update on activities of the CCRSG and CCSST. During the last CCRSG meeting, the regional profile, regional goals and objectives were discussed, Charlie Wahle (NOAA National MPA Center) presented on the monitoring of MPAs, and there were a variety of work groups that met during the second day. A process was developed to deal with questions that arose for the SAT. Mark had hoped to summarize questions during the meeting, project them for transparency's sake and ask stakeholders to review and confirm them. However, it turns out there is not enough time during the meeting for this. As an alternative, the note takers and CCSST leads will meet and clarify questions at the meeting then pass them onto Rita Bunzel who will compile them in a spreadsheet. There will then be a conference call involving key MLPA staff, CCSST gatekeepers plus any other interested members of the CCSST, Heather, and Carrie. The goals of the conference call are to (1) prioritize questions based on clarity of question, relevance to the CCRSG effort, and ready availability of information; (2) divide up questions among SAT and MLPA Initiative staff (may need additional support staff for this); and (3) identify particular individuals or groups to help answer those questions. Rita will then re-summarize these priorities and tasks and send them back out as a spreadsheet.

Mark Carr indicated that questions that arise outside of CCRSG meetings will be submitted via the website and then will be directed through this same process – review by conference call, prioritization, assignment, draft response, review, and posting of final responses. This is the process that was followed for the July meeting and it seems to be working. Though it was not sent out in July, the spreadsheet of questions will be sent to the whole SAT in the future. Responses to the questions will be posted on the MLPA Initiative webpage.

Mark reviewed the spreadsheet, sharing some specific questions and the process for prioritizing and answering them. Many of the questions were related to the regional profile. Others were more general scientific questions. Another set were primarily socioeconomic questions that were submitted by Jay Elder, but which came out of the socioeconomic working group of the CCRSG.

The primary questions or requests that arose in July for the SAT to consider were:

1. Develop a review process to assess data quality and objectivity in the regional profile;
2. Relate the data included in the regional profile directly to the design process;
3. What is the appropriate baseline and historical context for MPA goal and objective setting;
4. An eelgrass dataset is available for the state; and

5. The Marine Interests Group out of Morro Bay is gathering relevant information of which the SAT should be aware

A number of other questions were submitted after the July meeting and have not yet been formally reviewed, but several of them may end up being directed toward the SAT. In addition, there were a large number of economic questions that have so far been directed to Linwood Pendleton for prioritization. After that, some of these may come to the SAT. A process for addressing all these questions must be devised. Mark Carr suggested the evaluation sub-team should address the third question above. Others may be tackled by the whole SAT in an upcoming meeting.

Mark Carr stated that the SAT will have a chance to review the responses to scientific questions that are generated by staff or SAT members. John Ugoretz emphasized that responses crafted by the staff will not be characterized as “SAT responses” even if reviewed by the SAT.

One question that arose in the SAT discussion of the information request process was whether questions can be pre-filtered and digested in the work groups before they come to the SAT, so that requests do not come from individuals but from the groups. John Ugoretz responded that the process devised so far allows for openness and fairness, while at the same time allowing staff to prioritize among questions and keep the volume manageable. He did not feel that the individuals in the workgroups would be able to agree on what were the key questions.

It was suggested that the spreadsheet that details the question response process be published on the web so that stakeholders can see how questions are progressing.

Mark Carr also reported that a definitions document (e.g. for terms such as ecosystem structure, connectivity, networks, etc.) has been developed, relying on statutory language and published literature. The definitions will be distributed to the CCRSG shortly. Steve Murray noted that the MPA Federal Advisory Committee’s document is out now and it also has a glossary that might be useful.

John Kirlin reported that there are three standing working groups within the CCRSG: goals and objectives, mapping, and socioeconomic concerns (formerly data scoping group). Kirk Sturm is now chairing the socioeconomic working group and Astrid Scholz is acting as a CCSST representative to the group. Linwood Pendleton should be encouraged to participate with this working group (Astrid will invite him).

John Ugoretz distributed the CCRSG’s recommended provisional goals and objectives document and a spreadsheet delineating the rationale behind each of the objectives, references to supporting data, design considerations that each might impact, and potential indicators that you might use to determine if that objective is being met. They intend to adopt the goals and objectives at the next CCRSG meeting. At the next meeting the SAT should conduct a full review of the final version of the CCRSG goals and objectives, which will be

distributed when available. These will become an important part of the template for proposals and the evaluation process.

**Public Comment**

Karen Garrison (Natural Resources Defense Council) recommended qualifying the final statement in Loo Botsford's presentation because though fisheries management and MPAs may be equivalent in terms of yield or rebuilding populations, they are not equivalent in terms of other goals of the MLPA, including protecting natural diversity and abundance, structure and function of ecosystems, marine natural heritage, opportunities for recreation in undisturbed areas, etc.

**Action Items**

- SAT guidelines document
    - Steve Murray, Heather Galindo and Carrie Kappel will revise it based on comments received so far, by August 12.
    - Steve Murray will work on the executive committee section.
    - Doyle Hanan and Ken Schiff will work on the section on reviewing CCRSG recommendations.
    - Comments will be due back by August 18.
    - A final draft will come back out to the SAT on August 23.
- Species likely to benefit sub-team
    - Doyle will set up a conference call for the week of August 8 to discuss the issues that have come up (to include Mary Gleason, Paul Reilly, John Ugoretz, John Kirlin, as well as sub-team members).
    - Steve Murray will provide input on seaweed species.
    - John Ugoretz will send out the life history trait review by Bren School students as soon as possible.
    - The group will come to a decision and bring a first draft of criteria for ranking species to the next meeting (August 30).
- Proposal evaluation sub-team
    - Will set up conference call for the week of August 8 to start working on draft criteria and review the CCRSG provisional goals and objectives.
    - Sub-team will present to SAT on August 30 on draft criteria and on the proposed tools for evaluation.
- Rare and unique habitats: Mary Gleason will develop matrix of the relative abundance of each of the different habitat types (from MPF) by depth zone.
- Water quality presentation: Ken Schiff will draft presentation for September 19 meeting.
- Literature needed for SAT guidelines for design included in MPF. Mark Carr will coordinate with John Ugoretz. Needed before August 5.

**Agenda Items for Next Meeting**

1. Approval of finalized SAT guidelines
2. Discussion of draft rationale for prioritization of species likely to benefit
3. Presentation from proposal evaluation team, discussion of draft criteria for evaluation
4. Review of CCRSG goals and objectives
5. Review of CCRSG questions to SAT and potential responses

**Upcoming Meetings**

The next SAT meeting will be on August 30, 2005 in San Luis Obispo.