

**California Marine Life Protection Act Initiative:
Goals of the MLPA and Definitions of MPAs Sections of the Draft Master Plan Framework**

Draft for Discussion Purposes Only
February 9, 2005

X.X. GOALS OF THE MARINE LIFE PROTECTION ACT

After a declaration of findings and declarations, the Marine Life Protection Act requires adoption of a Marine Life Protection Program, which shall have all of the following goals (Fish and Game Code Section 2853[b]):

- (1) To protect the natural diversity and abundance of marine life, and the structure, function, and integrity of marine ecosystems.
- (2) To help sustain, conserve, and protect marine life populations, including those of economic value, and rebuild those that are depleted.
- (3) 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.
- (4) To protect marine natural heritage, including protection of representative and unique marine life habitats in California waters for their intrinsic value.
- (5) To ensure that California's MPAs have clearly defined objectives, effective management measures, and adequate enforcement, and are based on sound scientific guidelines.
- (6) To ensure that the state's MPAs are designed and managed, to the extent possible, as a network.

The MLPA itself defines only the following terms (FGC Section 2852): adaptive management, biogeographical regions, marine protected area, marine life reserve. The Marine Managed Areas Improvement Act also defines state marine reserve, state marine park, and state marine conservation area. (See attachment of these definitions).

Abundance

- The number of abalone counted or estimated. See relative and absolute abundance. (DFG 2002)

Absolute abundance

- The total number of individuals in a population. This is rarely known, but usually estimated from relative abundance, although other methods may be used. (DFG 2004)

Relative Abundance

- An index of total population used to compare populations from year to year. This does not measure the actual numbers but shows changes in the population over time. (DFG 2002); an estimate of biomass usually measured by indices that track trends in population biomass over time. This method is neither a direct nor usually precise estimate. (DFG 2004)

Biological Diversity

- "Biodiversity" is a component and measure of ecosystem health and function. It is the number and genetic richness of different individuals found within the population of a species, of populations found within a species range, of different species found within a natural community or ecosystem, and of different communities and ecosystems found within a region. (Public Resources Code Section 12220[b])
- The variation in living systems at all organizational levels, from the large-scale diversity of ecosystems to the minutiae of genetic diversity within a particular population. It is often evaluated through measurement of species diversity in a given area or over a specified period of time. (NRC 2001)
- "Biological diversity" means the variability among living organisms from all sources including, among others, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems. (UNEP 1992)

Ecosystem

- The physical and climatic features and all the living and dead organisms in an area that are interrelated in the transfer of energy and material, which together produce and maintain a characteristic type of biological community. (DFG 2002a)
- An integrated system of living species, their habitat, and the processes that affect them. (NRC 2001)
- "Ecosystem" means a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit. (UNEP 1992)
- A community of organisms and their physical environment interacting as an ecological unit. (European Environment Agency (EEA), European Topic Centre on Catalogue of Data Sources (ETC/CDS) : General Multilingual Environmental Thesaurus)

Ecosystem Disturbance

- A discrete event, either natural or human induced, that causes a change in the existing condition of an ecological system. (Kaufmann 1994)

Ecosystem Function

- The roles played by the biotic and abiotic components of ecosystems in driving the processes that sustain the ecosystem. (EPA 1996)
- The processes through which the constituent living and nonliving elements of ecosystems change and interact, including biogeochemical processes and succession. (Kaufmann 1994)

Ecosystem Health

- An ecosystem in which structure and functions allow the maintenance of the desired condition of biological diversity, biotic integrity, and ecological processes over time. (Kaufmann 1994)
- A measure of ecosystem resilience (ability to maintain its structure and pattern of behavior in the presence of stress), organization (number and diversity of interactions between ecosystem components) and vigor (a measure of activity, metabolism or primary productivity). A healthy ecosystem to maintain its structure (organization) and function (vigor) over time in face of external stress (resilience). (FAO 2003)
- The state of ecosystem metabolic activity levels, internal structure and organization, and ability to resist external stress over time and space. (Sutinen 2000)
- A measure of the stability and sustainability of ecosystem function or ecosystem services that depends on an ecosystem being active and maintaining its organization, autonomy, and resilience over time.

Ecosystem health contributes to human well-being through sustainable ecosystem services and conditions for human health. (Alcamo et al. 2003)

Ecological Health

- The state of an ecosystem in which processes and functions are adequate to maintain diversity of biotic communities commensurate with those initially found there. (Streamnet 2004)
- Both the occurrence of certain attributes that are deemed to be present in a healthy, sustainable resource, and the absence of conditions that result from known stresses or problems affecting the resource.
www.borealforest.org/nwgloss3.htm
- The overall condition or wellbeing of the relationship between organisms (people, animals, or plants) and their environment.
www.mmr.org/irp/genprog/glossary.htm
- A metaphor used to invoke ideas about the integrity, complexity, and autonomy of an ecosystem (Norton 1991). A definition of ecosystem health as an actual entity with specific scale has not been resolved; the terms are useful because they facilitate "a set of rules of thumb, which can be thought of analogically, for analyzing what is going wrong when environing (sic) systems undergo rapid change" (Norton 1991, 116). (See related: epidemiologic ecology, condition, nominal, subnominal.)
www.epa.gov/emap/html/pubs/docs/resdocs/mglossary.html

Ecosystem Integrity

- The ability of an ecosystem to support and maintain a balanced, harmonious, adaptive biological community that demonstrates species composition, diversity and functional organization comparable to that of natural habitat in the region. (FAO 2003)
- The maintenance of the community structure and function characteristic of a particular locale or deemed satisfactory to society. (Cairns 1977)

- The capability of supporting and maintaining a balanced, integrated, adaptive, community of organisms having species composition, diversity, and functional organization comparable to that of natural habitats of the region. (Karr and Dudley 1981)

Ecosystem Structure

- Pattern of the interrelations of organisms in time and in spatial arrangements. (Odum 1971)
- The spatial arrangement of the living and nonliving elements of an ecosystem. (Kaufmann 1994)

Habitat

- A physical area characterized by a unique assemblage of species that constitute the biotic community that utilizes and/or inhabits area and which provides some subset of essential or preferred ecological and biological needs (i.e., reproduction, feeding/foraging, cover/shelter) for each of those species. (Shaffer 2002)
- The living place of an organism or community, characterized by its physical or biotic properties. (Allaby 1998)

Representative Habitat

Unique Habitat

Minimal Human Disturbance

- The threshold of human activity that does not alter habitat function or otherwise injure, disturb, or detrimentally affect native marine life. (Shaffer 2005)

Human Impact

- A disturbance or change in ecosystem composition, structure, or function caused by humans. (Kaufmann 1994)

Undisturbed ecosystem

- An ecosystem that has not been influenced by human activity. (Kaufmann 1994)

Minimally Disturbed [Habitat] Condition

- Condition in the absence of significant human disturbance e.g., “natural”, “pristine”, or “undisturbed”). (EPA 2003a)

Least Disturbed [Habitat] Condition

- Found in conjunction with the best available physical, chemical, and biological habitat given today’s state of the landscape. (EPA 2003a)

Best Attainable [Habitat] Condition

- This condition is equivalent to the ecological condition of (hypothetical) least disturbed sites where the best possible management practices are in use. (EPA 2003a)

Minimally Impaired

- Sites or conditions with slight anthropogenic perturbation relative to the overall region of the study. (EPA 2003b)

Naturalness

Natural Abundance

- The total number of individuals in a population protected from, or not subjected to, human-induced change. (Drawn from DFG 2004, Kelleher 1992)

Natural Diversity

- The species richness of a community or area when protected from, or not subjected to, human-induced change. (Drawn from Allaby 1998, Kelleher 1992)
- The biological diversity of native biota and biological communities in a given area. (Shaffer 2004)

Natural Ecosystem

- An ecosystem that is minimally influenced by humans and that is, in the larger sense, diverse, resilient, and sustainable. (Kaufmann 1994)

Network

- The Marine Life Protection Program is charged with ensuring that MPAs "are designed and managed, to the extent possible, as a network" [Fish and Game Code Section 2853(b)(6)]. Although neither statute nor legislative history defines "network," the ordinary dictionary usage contemplates *interconnectedness* as a necessary characteristic of the term. The term "reserve network" has been defined as a group of reserves which is designed to meet objectives that single reserves cannot achieve on their own (Roberts and Hawkins, 2000¹). In general this definition also requires some direct or indirect connection of MPAs through the dispersal of adult and/or larval organisms. In some cases, larval dispersal rates are not known and oceanography or ocean current patterns are combined with larval biology to help determine connectivity.

Networks, however, may differ in each region. The Act also requires that the network as a whole meet the various goals and guidelines set forth by the law and contemplates the adaptive management of that network [Fish and Game Code Section 2857(c)(5)]. In order to meet those goals a strict interpretation of an ecological network across the entire State may not be possible. Biologically, there are separations between various oceanographic regions within the State

¹ Roberts, C.M. and J.P. Hawkins. 2000. Fully-protected marine reserves: a guide. WWF Endangered Seas Campaign, Washington, DC. 131 pp.

forming what are known as “bioregions”. Many species would not be expected to cross these bioregional separations. Within a single bioregion, however, a network as described above could be established. Thus, regionally, the concept of a network of MPAs is the desired goal. (DFG Clarification Guidelines 2002)

- A group of reserves designed to meet objectives that single reserves cannot achieve on their own. Networks of reserves are linked by dispersal of marine organisms and by ocean currents. (NRC 2001)
- Reserve networks: a series of reserves that are individually too small to be self-seeding, but that are close enough together so that one reserve can seed another. (Palumbi 2002)

Sound Science

Best Readily Available Science

- Location-specific empirical evidence, or, absent such information, a combination of scientific theory and theoretical studies. (CFGC 2002)

Sustain

- To cause to continue (as in existence or a certain state or in force or intensity): to keep up especially without interruption, diminution, or flagging. (Webster 2002)
- “Sustainable,” “sustainable use,” and “sustainability,” with regard to a marine fishery, mean both of the following: (a) Continuous replacement of resources, taking into account fluctuations in abundance and environmental variability. (b) Securing the fullest possible range of present and long-term economic, social, and ecological benefits, maintaining biological diversity, and, in the case of fishery management based on maximum sustainable yield, taking in a fishery that does not exceed optimum yield. (Fish and Game Code Section 99.5)

Conserve

- To keep in a safe or sound state (as by deliberate, planned, or intelligent care): preserve from change or destruction. (Webster 2002)

Conservation

- The careful protection, utilization, and planned management of living organisms and their vital processes to prevent their depletion, exploitation, destruction, or waste. (Kaufmann 1994)

Protect

- To cover or shield from that which would injure, destroy, or detrimentally affect: secure or preserve usually against attack, disintegration, encroachment, or harm. (Webster 2002)

Value

Heritage Value

- Site possessing historical, archaeological, architectural, technological, aesthetic, scientific, spiritual, social, traditional, or other special cultural significance associated with human activity. (NRC 2001)

Intrinsic Value

- The value that that thing has “in itself,” or “for its own sake,” or “as such,” or “in its own right.” (Zimmerman 2004)

DRAFT

X.X DEFINITIONS OF MARINE PROTECTED AREAS

The Marine Life Protection Act includes a definition of marine protected area and of marine life reserve, as follows (Fish and Game Code Section 2852[c and d]):

(c) "Marine protected area" (MPA) means a named, discrete geographic marine or estuarine area seaward of the mean high tide line or the mouth of a coastal river, including any area of intertidal or subtidal terrain, together with its overlying water and associated flora and fauna that has been designated by law, administrative action, or voter initiative to protect or conserve marine life and habitat. An MPA includes marine life reserves and other areas that allow for specified commercial and recreational activities, including fishing for certain species but not others, fishing with certain practices but not others, and kelp harvesting, provided that these activities are consistent with the objectives of the area and the goals and guidelines of this chapter. MPAs are primarily intended to protect or conserve marine life and habitat, and are therefore a subset of marine managed areas (MMAs), which are broader groups of named, discrete geographic areas along the coast that protect, conserve, or otherwise manage a variety of resources and uses, including living marine resources, cultural and historical resources, and recreational opportunities.

(d) "Marine life reserve," for the purposes of this chapter, means a marine protected area in which all extractive activities, including the taking of marine species, and, at the discretion of the commission and within the authority of the commission, other activities that upset the natural ecological functions of the area, are prohibited. While, to the extent feasible, the area shall be open to the public for managed enjoyment and study, the area shall be maintained to the extent practicable in an undisturbed and unpolluted state.

The Marine Managed Areas Improvement Act (MMAIA), which concerns a broader group of special areas than does the MLPA, includes definitions for the three types of marine protected areas identified in the MLPA (Public Resource Code Section 36700):

Six classifications for designating managed areas in the marine and estuarine environments are hereby established as described in this section, to become effective January 1, 2002. Where the term "marine" is used, it refers to both marine and estuarine areas. A geographic area may be designated under more than one classification.

(a) A "state marine reserve" is a nonterrestrial marine or estuarine area that is designated so the managing agency may achieve one or more of the following:

- (1) Protect or restore rare, threatened, or endangered native plants, animals, or habitats in marine areas.
- (2) Protect or restore outstanding, representative, or imperiled marine species, communities, habitats, and ecosystems.
- (3) Protect or restore diverse marine gene pools.
- (4) Contribute to the understanding and management of marine resources and ecosystems by providing the opportunity for scientific research in outstanding, representative, or imperiled marine habitats or ecosystems.

(b) A "state marine park" is a nonterrestrial marine or estuarine area that is designated so the managing agency may provide opportunities for spiritual, scientific, educational, and recreational opportunities, as well as one or more of the following:

(1) Protect or restore outstanding, representative, or imperiled marine species, communities, habitats, and ecosystems.

(2) Contribute to the understanding and management of marine resources and ecosystems by providing the opportunity for scientific research in outstanding representative or imperiled marine habitats or ecosystems.

(3) Preserve cultural objects of historical, archaeological, and scientific interest in marine areas.

(4) Preserve outstanding or unique geological features.

(c) A "state marine conservation area" is a nonterrestrial marine or estuarine area that is designated so the managing agency may achieve one or more of the following:

(1) Protect or restore rare, threatened, or endangered native plants, animals, or habitats in marine areas.

(2) Protect or restore outstanding, representative, or imperiled marine species, communities, habitats, and ecosystems.

(3) Protect or restore diverse marine gene pools.

(4) Contribute to the understanding and management of marine resources and ecosystems by providing the opportunity for scientific research in outstanding, representative, or imperiled marine habitats or ecosystems.

(5) Preserve outstanding or unique geological features.

(6) Provide for sustainable living marine resource harvest.

Within these three areas, certain activities are prohibited and other may be allowed. The MMAIA defines these activities as (Public Resources Code Section 36710):

(a) In a state marine reserve, it is unlawful to injure, damage, take, or possess any living geological, or cultural marine resource, except under a permit or specific authorization from the managing agency for research, restoration, or monitoring purposes. While, to the extent feasible, the area shall be open to the public for managed enjoyment and study, the area shall be maintained to the extent practicable in an undisturbed and unpolluted state. Access and use for activities including, but not limited to, walking, swimming, boating, and diving may be restricted to protect marine resources. Research, restoration, and monitoring may be permitted by the managing agency. Educational activities and other forms of nonconsumptive human use may be permitted by the designating entity or managing agency in a manner consistent with the protection of all marine resources.

(b) In a state marine park, it is unlawful to injure, damage, take, or possess any living or nonliving marine resource for commercial exploitation purposes. Any human use that would compromise protection of the species of interest, natural community or habitat, or geological, cultural, or recreational features, may be restricted by the designating entity or managing agency. All other uses are allowed, including scientific collection with a permit, research, monitoring, and public recreation, including recreational harvest, unless otherwise restricted. Public use,

enjoyment, and education are encouraged, in a manner consistent with protecting resource values.

(c) In a state marine conservation area, it is unlawful to injure, damage, take, or possess any living, geological, or cultural marine resource for commercial or recreational purposes, or a combination of commercial and recreational purposes, that the designating entity or managing agency determines would compromise protection of the species of interest, natural community, habitat, or geological features. The designating entity or managing agency may permit research, education, and recreational activities, and certain commercial and recreational harvest of marine resources.

DRAFT

Sources

- Alcamo, J. et al., 2003. Ecosystem and human well-being. A framework for assessment. Millennium Ecosystem Assessment. Island Press, 245 p.
- Cairns, J. 1977. Quantification of biological integrity. Pages 171-187 in R. K. Ballentine and L. J. Guarraia, editors. *The integrity of water*. U.S. Environmental Protection Agency, Office of Water and Hazardous Materials, Washington, D.C., USA.
- Karr, J. R., and D. R. Dudley. 1981. Ecological perspective on water quality goals. *Environmental Management* 5: 55-68.
- Kaufmann, M. R. et al. An ecological basis for ecosystem management. Gen. Tech. Rep. RM 246. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 22 p.
- Kelleher, G. & Kenchington, R. (1992). *Guidelines for Establishing Marine Protected Areas. A Marine Conservation and Development Report*. IUCN, Gland, Switzerland. vii+ 79 pp.
- National Research Council. 2004. *Improving the Use of the "Best Scientific Information Available" Standard in Fisheries Management*. Washington, D.C.: National Academy Press. 118 p.
- National Research Council (NRC). 2001. *Marine Protected Areas: Tools for Sustaining Ocean Ecosystems*. Washington, D.C.: National Academy Press. 288 p.
- Odum, E.P. 1971 (Odum). *Fundamentals of Ecology*. Philadelphia: Saunders.
- Palumbi, S.R.. 2002. *Marine Reserves: A Tool for Ecosystem Management and Conservation*. Arlington, Virginia: Pew Oceans Commission. 44 p.
- Shaffer, K. 2002. *Preliminary Revision to Marine and Estuarine Habitats of the California Wildlife Habitat Relationship System*. Monterey, CA: State of California Department of Fish and Game. 52 p.
- Shaffer, Kevin. 2005. Staff Environmental Scientist, State of California Department of Fish and Game. Personal communication. 31 January 2005.
- State of California Department of Fish and Game, Marine Region (DFG). 2002. *Draft Abalone Recovery and Management Plan (ARMP)*.
- State of California Department of Fish and Game, Marine Region (DFG). 2004. *Draft Market Squid Recovery and Management Plan (MSRMP)*.

State of California Fish and Game Commission (CFGC). 2002. Statement of reasons for regulatory action. (Pre-adoption Statement of Reasons): Amend Sections 27.82(a) and 630 And Adopt Section 632 Title 14, California Code of Regulations Re: Marine Protected Areas.

StreamNet. 2004. Glossary of Terms. <http://www.streamnet.org/pub-ed/ff/Glossary/index.html>. (Accessed 31 January 2005.)

Sutinen, J.G., ed. 2000. *A framework for monitoring and assessing socioeconomics and governance of large marine ecosystems*. NOAA Technical Memorandum NMFS-NE-158, 32 pp.

United Nations Environment Programme (UNEP). 1992. *Convention on Biological Diversity*. United Nations.

United Nations Food and Agriculture Organization (FAO). 2003. *The Ecosystem Approach to Fisheries*. *FAO Technical Guidelines for Responsible Fisheries*, No.4, Suppl.2.

U.S. Environmental Protection Agency (EPA). 1996. *Land of the Lakes: Nearshore Terrestrial Ecosystems*. Prepared for the State of the Lakes Ecosystem Conference 1996. <http://www.epa.gov/glnpo/solec/96/landbylakes/glossary.html>. (Accessed 26 January 2005.)

U.S. Environmental Protection Agency (EPA). 2003a. March 31 – April 4, 2003 *National Biological Assessment and Criteria Workshop*, RFC 101_01

U.S. Environmental Protection Agency (EPA). 2003b. Glossary. Bioassessment and Biocriteria Program. <http://www.epa.gov/waterscience/biocriteria/glossary.html>. (Accessed 31 January 2005.)

Webster's Third New International Dictionary, Unabridged (Webster). 2002. Merriam-Webster. <http://unabridged.merriam-webster.com> (30 Jan. 2005).

Zimmerman, M.J. 2004. "Intrinsic vs. Extrinsic Value." *The Stanford Encyclopedia of Philosophy* (Fall 2004 Edition), Edward N. Zalta (ed.). <http://plato.stanford.edu/archives/fall2004/entries/value-intrinsic-extrinsic/>.