

Thank you for the opportunity to comment on the next Abalone FMP program.
Submitted for the record, per your request.

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I suggest the following:

1) REVERSE ENGINEERING HISTORIC ABALONE MANAGEMENT

In order to understand what is or is not working with abalone management in California, over the past 100 plus years, begin with the current management strategies and work backwards.

For example, it should be clear that managing all California abalone species the same way has failed. Some abalone species may not successfully spawn every year, or over decades. White abalone may only spawn successfully ever two decades. Why treat all species the same?

* One size fits all abalone management has clearly failed. If the Abalone FMP mimics past management strategies, what have we learned?

* North coast index sites may have had merit, but declines were apparently misinterpreted beginning 2012.

* Does density requirements, base on north coast assessments, make sense for southern California red abalone management; southern California representing the southern end of the red abalone US range.

* Should each abalone species be managed individually? (Addressed in ARMP Executive Summary).

* Do quota fisheries, trip limits, tags and total allowable catch limits improve management?

* Should CDFW reallocate more abalone to commercial use and reduce sport take like other countries with abalone fisheries around the world?

* How should shore picking be better managed? This appears where the most resource damage has been done.

2) ABALONE ADVISORIES

DFW has requested and received assistance from several advisory groups. So far, the recommendations of these groups appear to have been ignored. DFW and the public would benefit from acceptance of these advisory groups and implementing their recommendations. Examples:

* California Abalone Association (in association with the Bren School, UC Santa Barbara) 2009: Red Abalone Market Fishery Operating Guidelines, 172 pp.

* Abalone Advisory Group, 2010, Management Options for a Potential Fishery on San Miguel Island, 44 pp.

* A New Beginning for Abalone Management in California: Critique and Comment on the Abalone Advisory Group Discussions, Jeremy Prince & Sara Valencia, 2009, 44 pp.

* California Ocean Science Trust, Science Advisory Committee, recommendations on density and methods, pages 9-13, 2014.

3) UNPUBLISHED CDFG LITERATURE

In recent months, I have been citing unpublished CDFG studies from the mid-1970s, drafted by Richard Burge, Steve Schultz, and Melvyn Odemar:

* December 18, 1974, Draft: Results of Recent Abalone Research in California with Recommendations for Resource Management, CDFG, 20 pp.

* January 17, 1975, Draft: Report on Recent Abalone Research in California with Recommendations for Management, Resources Agency/CDFG, Report to the Fish and Game Commission, 31 pp.

* Schultz, Steven A., (no date), Draft: The Red Abalone Resource and Fishery of Northern California, The Resources Agency/CDFG, 70 pp.

I respectfully request these papers be published as soon as possible. I have to assume these papers remain unpublished because the sportsmen were shown to be causing unnecessary mortality on all abalone species through ignorance and poor harvest practices. These papers address several management options and improvements:

* Commercial fishery quotas.

* Identified incorrect size limits.

* What Burge refers to as "gregarious recruit association" which is year class abalone size structure on reefs where juveniles are located inside reef structure with larger individuals located on the outer areas, providing potential protection from predators. These observations were at "virgin" sites. Burge suggests these stable populations are likely requirements of successful spawning and recruitment. Disruptions occur when these abalone are fished and/or are eliminated--90%--by sea otters.

* What Burge called "spawning potential by size class" has become "Length Base Spawning Potential Ratio."

* Replacement of short abalone in the sport fishery of 113% with 100% estimated mortality of bar cut and replaced abalone. Schultz reported for every 3 abalone take, 3.1 were replaced. California's Living Marine Resources, 1971, estimated sport abalone take at 3,000,000 to 4,000,000 pounds per year in southern California. With bar cut/replacement mortality of 100% total sport take may have actually been 6,000,000 to 8,000,000 pounds per year. Commercial harvest (all species plus the remaining coast, northern Santa Barbara County north to Morro Bay) was approximately 3,000,000 pounds. Declines in the commercial landing began at this same time. All blame for these declines place on the commercial fishery, plus the loss of San Nicolas Island beginning with the 1987 sea otter translocation. CDFG (1991) estimated declines from 41% red abalone commercial landings following the SNI sea otter translocation.

4) PUBLISHED LITERATURE

In recent years, I was able to find some historic CDFG published literature on abalone online. Recent searches have proved frustrating. Pursuant to recommendations by

California Ocean Science Trust, Scientific Advisory Committee, please create a site where all CDFG/DFW abalone literature is made available to the public.

* A good place to start might be the References (Bibliography) and Appendix contained in Cox, 1962, Fish Bulletin 118, California Abalones, Family Haliotidae, 133 pp. Reference are pages 123-129. Appendix pages 130-133.

5) DEMINIMIS (SMALL SCALE) ABALONE FISHERY

* Recognize that some of us have more than 30 years experience fishing abalone in the sea otter range. This region, basically from Monterey to northern Santa Barbara County has had abalone densities diminished by 90% (Miller, 1980, et al) due to sea otter range expansion. Commercial fisheries were terminated at Morro Bay by the mid-1970, but sport abalone continued, on a small scale, until the closure of all abalone fishing, south of San Francisco, in 1997. This provides evidence that small scale human use fisheries can function.

* One questions why so many state agencies: California Department of Fish and Wildlife (CDFW), California Fish and Game Commission (CFGC), California Ocean Science Trust (COST), California Ocean Protection Council (COPC), Resources Agency (RA) et al, are wasting time and money, drafting an abalone FMP for a section of coast, where it is unlikely for a resumption of abalone fishing to occur for the next couple decades. It appears unlikely that CDFW will allow abalone fishing with densities at such low levels. Meanwhile, abalone continue to die of old age in southern California. It appears too that green abalone may have recovered to a point where they too could be fished. Would it not be a better investment for the FMP to cover the entire state?

The best area to consider a small scale commercial and/or sport fishery is southern California. Unfortunately, one man, Sonke Mastrup has continued to say this cannot happen until the northern sport fishery FMP is concluded. In 1997, we were told by CDFG the FMP process would last two years, not the 23 that have elapsed.

* Red abalone are a statewide resource, Oregon to Mexico.

* Red abalone are not a threatened and/or endangered species. Why are they being treated as if they are?

* Use technologies like smart phones to record harvest quantity, size of individuals harvested, locations, and individual harvesters.

- * Require a test for sportsmen which would include: Species identification and knowledge of harvesting laws.
- * Both commercial and recreational take can be managed more efficiently: Fixed tags and landing reports.
- * Provides "fishery dependent data" which does not now exist.
- * Provides much needed finance for management and law enforcement.
- * Prohibit all abalone fishing inside 20 feet sea water.
- * Allow air (SCUBA and Hookah) to be used statewide.

6) INVESTIGATE POSSIBLE ENVIRONMENTAL INSULTS ORIGINATING FROM NORTHERN WINE INDUSTRY

There are currently a number of law suits regarding the chemical Glyphosate used in Round Up.

Cook, Kara, February 2019, Glyphosate in Beer and Wine, Calpirg Education Fund, 22 pp. Reported on the toxic chemical Glyphosate found in beer and wine products.

Question: Are chemicals commonly used in north coast agriculture production leeching into the watershed and making their way to the nearshore marine environment through creeks, streams and rivers? What might their impacts be on kelp and other marine life?

* Northern California wine industry is 3,000,000 acres, 100 miles by 50 miles, Napa, Sonoma, Mendocino, Lake Counties, plus portions of Marin and Solano Counties (Source: Wine Institute).

- * Vineyard footprint almost identical to kelp loss area.
- * Fertilizer use: 600 lbs per acre, 1,800,000,000 pounds regional.
- * Unknown amounts of herbicides, pesticides, fungicides.
- * Assess water quality in the affected region.

7) INVESTIGATE OTHER REGIONAL CHEMICAL INSULTS IN THE WATERSHED

- * Unknown amounts of fire retardants entering the nearshore marine environment.
- * Untreated human waste and other street materials being washed into San Francisco Bay daily by homeless street cleaning and pressure washing, dumping into storm drains.
- * Chemical waste from marijuana production on the north coast.

8) SEA OTTERS

We are slowly losing human use access to abalone resources. CDFG (Ebert, 1968; Wild and Ames, 1974; Miller, 1980; Gotshall, 1984; Wendell, 1994, et al) literature reports a loss of invertebrates, including abalone, in sea otter dominated habitats, averaging 90%.

- * Support delisting from the Endangered Species Act for sea otters in California (DFW News Release Sept. 26, 2018). Delisting would allow the State of California to resume management of sea otters. Create "zonal management" program (similar to Public Law 99-625) to allow both human use conservation and sea otter preservation.

9) MARINE PROTECTED AREAS

Important papers on Marine Protected Areas should be made available to the public:

- * Miller, D.J., J.J. Geibel, 1973, Summary of blue rockfish and lingcod life histories: a reef ecology study; and giant kelp, *Macrocystis pyriera*, experiments in Monterey Bay, California, CDFG, Fish Bulletin 157 249 pp.
- * Fanshawe, Samantha, G.R. VanBlaricom, A.A. Shelly, 2002, Restoring top carnivores as detriments to the performance of marine protected areas intended for fishery sustainability: a case study with red abalone and sea otters, *Conservation Biology*, pages 273-283.