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Assistant Regional Administrator Protected Resources Division  
National Marine Fisheries Service Southeast Regional Office  
263 13th Ave. South  
St. Petersburg, FL 33701

Re: Proposed Listing Determinations for 82 Reef-Building Coral Species;  
Docket No. 0911231415-2625-02

To Whom It May Concern:

I am a biologist, native Floridian, graduate of the University of Florida,  
and I love corals.

I have written, illustrated, and contributed to several seminal books on the subjects of coral taxonomy and captive propagation. I have studied corals on reefs in Florida, the Caribbean, Red Sea, Solomon Islands, Singapore, Australia, Fiji, Japan, Hawaii, and the Eastern Pacific. I have grown living corals in reef microcosms at home, in college, and at work continuously since 1982. I mention all of this to put in perspective my qualifications to comment on the proposed listing.

My life's work has produced not only my own 22 year old manufacturing business in the aquarium industry, but the information I've shared has also promoted an industry of reef aquarium keeping that has grown and produced jobs for many other businesses. I am just one of many thousands of coral growers in the USA and abroad that are enthusiastically engaged in this activity. Over the past 25 years, the secrets of coral husbandry have been unraveled. What scientists once considered impossible (keeping corals alive and growing them in an aquarium) is now commonplace. Groundbreaking discoveries by home aquarists and technological advances in lighting and filtration from the private sector have paved the way for public aquariums and universities to follow in our footsteps. Furthermore, the techniques developed and used for cultivating corals in home aquariums have inspired the development of successful aquaculture and mariculture of corals, which has led to the development of reef restoration based on coral propagation techniques. These industries continue to evolve together in a positive direction, but the ESA listing proposal appears ready to make us basically go away--throwing the baby out with the bathwater. The position of NOAA and the Center for Biological Diversity appears to be, "It's not our job to protect your industries, it's our job to protect corals, sorry." That's true, it's ironic, but we are not laughing.

What is “Take?”

With corals the term “take” as implied by the ESA means more than the common usage of the word.... it means touch, physically damage, as well as remove. Corals naturally propagate vegetatively, through various ways of fragmentation. Thus for corals one can “take” thousands upon thousands of fragments from a colony and still leave that colony in its place on the reef-- no net removal of the individual or the species, but an unlimited resource for reef restoration, and a perpetual economic resource when utilized by knowledgeable conservation-minded people.

To achieve its goals, the ESA mandates a listing procedure for threatened and endangered species, and prohibits both public and private actions that result in the “take” of an endangered species. Corals would need to be taken and aquacultured and maricultured to best be protected. Therefore, in the example of corals the stated goals of the ESA are at odds with the best plan for the recovery of any coral species that might ever need a recovery plan.

Coral population size and structure across the world's oceans is nearly impossible to determine with any accuracy for ESA standards. The petition asserts that all of the petitioned species have suffered population reductions of at least 30 percent over a 30-year period. Despite the provided literature support of this statement, for corals it is not accurate to equate loss of coral cover percentage on reefs to loss of population (ie numbers of individuals). Corals are able to encrust bare skeletons quite rapidly, and a loss of cover often is manifest by loss of coral tissue over large portions of still living colonies, without the loss of the individual. Furthermore, genetic "individuals" are often large areas of separate clones, several meters across or at times acres, so that the loss of many coral heads within such a formation still does not equate to the loss of even one “individual” if some survive. The math gets fuzzy with counting corals compared to Polar Bears. Corals furthermore colonize any suitable substrate where chemical and physical conditions allow them to survive. The cradles of diversity for coral species are not exclusively coral reefs. Corals thrive in places that are not coral reefs, even when corals on nearby coral reefs are not thriving and are unable to build reefs. The survival of corals as individual species, what the ESA protects, is thus not as dependent on the survival of reefs as the CBD petition suggests.

It is also not correct to assign just one range of response per species to environmental change. In some determinations the BRT generalized even further, assuming that the response could be assigned by genus. Coral response to temperature, pH and other environmental parameters varies by individual, not species. Thus the generalizations used for deciding whether to list or not could not be made objectively or in any informed way by anyone.

Many eminent scientists studying coral reefs have already resoundingly rejected the Biological Review Team’s methods and conclusions, have pointed out the inadequacies of the literature cited, and rejected the proposal to list corals under the ESA. I know that many of my colleagues who are coral reef researchers have already recommended that NMFS reject the proposal to change the status of *Acropora cervicornis* and *A. palmata*,

or list any corals for ESA protection. Many coral reef researchers have stated publicly their opposition to the use of the ESA to protect corals. Yet NMFS appears poised to carry on with its proposal.

Some of the people who attended the public meeting held at NOVA University got up to publicly declare their support for the ESA listing of corals, to essentially applaud NOAA for *DOING SOMETHING*, but they also came to point out that NOAA was still *NOT DOING ENOUGH!*

There is a perception that the existing laws designed to protect corals are paper tigers, offering no real protection. Rather than recognize the futility of the approach of using bureaucracy to protect corals, the paper tiger notion is used as a rationale in favor of repeating the experiment - to essentially add more bureaucracy to the same failed approach by employing ESA listing. This is, as Einstein put it, the definition of insanity... trying the same thing over and over and expecting a different outcome. If science does not support the use of the ESA to protect corals, how does one explain the direction that NOAA appears to be taking?

Section 10(a)(2) allows FWS and NOAA to authorize the otherwise-prohibited taking of a listed species by issuing an “incidental take permit” under certain circumstances.

At the public meeting held at NOVA I asked the following question: If Caribbean corals were to be listed as endangered, what would happen along the entire coast from Miami to the Palm Beaches, (more than 50 miles of “critical habitat”) when it came time to do beach renourishment? The answer was telling: Scientists would be hired to locate and move all colonies that would be affected. We can see in this response a few facts:

1. The ESA does not prevent habitat destruction wherever or whenever. The “no take” rule gets to be broken, and the notion of actually protecting the habitat gets thrown out the window so long as scientists are employed in the activity.
2. There is then a big potential for a conflict of interest for scientists and institutions making a decision to list corals as endangered or threatened, since it may increase the chance for them to be hired in removal and restoration projects. It is also likely that listing corals as threatened or endangered increases the likelihood that grant funding will be made available to scientists and institutions doing research on these corals.
3. Since the habitat gets no protection, what new opportunity for coral protection does the ESA actually offer compared with existing protections afforded by CITES, MPAs, national parks, US state, federal and other regulations already in place to protect corals? All stony corals in US and territorial waters are protected from harassment and harvest. Extensive marine protected areas (MPA's) and restrictions on coastal development are already well established.

The NMFS appear committed to the conclusion to list corals, even as a basis for doing research, not bothered that data is lacking to support the conclusion in the first place.

Worse still, despite the call for public input, they appear to have disregarded information contrary to their conclusion and made findings on selective information. This is not science. It is fraud.

In NOAA Technical Memorandum NMFS-PIFSC-27 September 2011 Status Review Report of 82 Candidate Coral Species Petitioned Under the U.S. Endangered Species Act, which can be found online here:

[http://www.nmfs.noaa.gov/stories/2012/04/docs/exec\\_sum\\_and\\_intro\\_corals\\_status%20review%20report.pdf](http://www.nmfs.noaa.gov/stories/2012/04/docs/exec_sum_and_intro_corals_status%20review%20report.pdf)

there is a long list of reef researchers who were consulted. But thanking them for their contributions in this document is tantamount to using them as an endorsement of the NMFS “product.” That is advertising, not science, and it is very misleading to the individual researchers to flatter them, ignore their objections when making a decision, and use them this way. But I suppose that was not really the intention of listing their names.

The same document states: “In the absence of species-specific abundance and trend information, BRT members relied heavily upon the best available information on the spatial extent of the species ranges and on their understanding of the likely impacts of the suite of threats on each of the individual coral populations over the period until 2100. The lack of adequate information on complex coral ecology and interactions between threats made the assessment of extinction risk for each of the 82 nominal coral species extremely challenging and uncertain.”

This sounds to me like an admission that there is no “best available science.” Without sufficient population data they have made guesses. Such guesses are nothing more than expressions of prejudice. There is really no such thing as “informed guesses” when there isn’t data to back them up. Data should guide management decisions, not faith.

At least one can see that in the peer review Terry Hughes offered a well thought out criticism of the defects. See: [http://www.nmfs.noaa.gov/stories/2012/04/docs/review\\_of\\_noaa\\_status\\_review\\_report\\_hughes.pdf](http://www.nmfs.noaa.gov/stories/2012/04/docs/review_of_noaa_status_review_report_hughes.pdf)

#### Conclusion

It seems to me that the CBD petition and the NMFS status review exemplify a case where bad science is used to promote what most people would consider good policy. The determination to list should be based on science, not what feels right.

Any proposal to protect corals and reefs needs to consider industries that have a financial incentive to protect corals. I am referring to the aquarium industry, the ornamental marine aquaculture industry, the mariculture industry (which grows corals in the sea), and the reef restoration industry (which grows and transplants corals on reefs).

These industries account for a very large number of jobs in the USA and abroad in many tropical nations, but this ESA listing proposal threatens to make their activities illegal or so complex as to make business impossible.

Sovereign, developing nations that are dependent on their coral reefs for subsistence have the most to lose if corals were to be listed as endangered, as it would eliminate one of the most sustainable fisheries they have to provide them with income. Lagoon-based coral aquaculture provides these countries with an economic reward to protect and manage their coral reef resources. This type of incentive promotes coral reef preservation, and it can be utilized wherever and whenever a recovery plan might be needed, but only if the ESA is not a part of the equation.

I support the proposal by the Pet Industry Joint Advisory Council attorney who is submitting a letter on behalf of PIJAC, recommending that NMFS delay this proposed listing. Listing corals as “species of concern” makes sense given the lack of data and the time frame. I would also wholeheartedly support a rejection of the proposed listing entirely.

Respectfully,

A handwritten signature in blue ink, appearing to be 'J. M.', is located below the text 'Respectfully,'.