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Pacific Islands Region Species of Concern FY 2009 Year-End Report

In March, the National Marine Fisheries Service (NMFS) Pacific Islands Regional Office (PIRO) Species of Concern (SOC) regional program coordinator, Krista Graham, was a panel reviewer for the FY 2009 external SOC grant proposals. Ten proposals were submitted, but due to limited funding of approximately \$100,000, only the top-ranking proposal for the sand tiger shark in Delaware was funded. In addition, our headquarters office and the PIRO were able to collectively fund the Commonwealth of the Northern Mariana Islands' (CNMI) proposal for the "Development of an Archipelagic Management Plan for *Cheilinus undulatus* and *Bolbometopon muricatum* in the Mariana Islands", submitted by John Starmer of the CNMI Coastal Resources Management Office (CRMO) (Office of the Governor). Project objectives include: (1) Produce a quantitative assessment of the abundance and distribution of *Cheilinus undulatus* (humphead wrasse) and *Bolbometopon muricatum* (bumphead parrotfish) in coral reefs and associated habitats on Guam; (2) Produce a qualitative assessment of recent (1950-present) abundance and habitat preference of *C. undulatus* and *B. muricatum* on Guam; (3) Build the understanding of range and aggregation seasonality on Saipan, Tinian, Rota, and Guam; (4) Develop an Archipelagic Management Plan (AMP) for *C. undulatus* and *B. muricatum* in collaboration with management agencies and resource users; and (5) Raise awareness of SOC status and AMP and build support for voluntary compliance with plan through outreach activities. Research for this project began on October 1, 2009 and continues until September 30, 2012. NMFS PIRO looks forward to progress reports as this research will address data gaps in our knowledge of the two fish species. This study will also aid the CNMI CRMO in project permitting decisions, and determine target areas for habitat restoration programs.

Also in March, the regional program coordinator was a panel reviewer for the FY 2009 internal SOC grant proposals. Twenty proposals were submitted this year requesting \$652,970 from the available pot of approximately \$300,000. Nine proposals were selected to receive funding, including a proposal submitted by the PIRO regional program coordinator for \$31,307, titled "Gene flow and morphological variation in one of the rarest known corals: is *Montipora dilatata* genetically isolated?" The goals of this research, conducted by Drs. Rob Toonen and Zac Forsman of the University of Hawaii/Hawaii Institute of Marine Biology, are to: (1) Determine if *M. dilatata* has interbred with *M. turgescens* and *M. flabellata* (presently or in the recent past); (2) Determine the degree of genetic isolation between these closely related morphospecies; and (3) Characterize morphological similarity of microskeletal traits between the morphospecies. Funds for this research contract were awarded in June and a final report is anticipated by September 30, 2010.

Also in June, NMFS PIRO awarded SOC funds for a projected titled "Spatially predictive modeling of potential habitat for two NOAA Species of Concern (*Lingula reevii* and *Montipora dilatata*) in Kaneohe Bay, Oahu, Hawaii." The goals of this contract, totaling \$21,702 and

awarded to Dr. Cindy Hunter of the University of Hawaii at Manoa, are to: (1) Create GIS-based maps of potential spatially-referenced *M. dilatata* and *L. reevii* habitat based on previous survey data and expert knowledge of the species environmental requirements; (2) Integrate potential habitat field validation data into GIS to evaluate the predictive model of *M. dilatata* and *L. reevii* in Kaneohe Bay; (3) Continue field surveys to validate and provide an accuracy assessment of the spatially predictive models of *M. dilatata* and *L. reevii* potential habitat in Kaneohe Bay; (4) Quantify the current occurrence of alien/invasive algae in SOC habitats, remove alien/invasive algae in proximity to observed occurrences of the SOC, and monitor regrowth of algae; and (5) Expand surveys to areas outside of Kaneohe Bay (on Oahu) that show potential for SOC environmental requirements. A final report is anticipated by March 31, 2010.

Funding research, monitoring, and outreach and education of NMFS Species of Concern not only identifies data deficiencies and uncertainties in species' status and threats, but stimulates cooperative research efforts to obtain the information necessary to evaluate species status and threats. On October 20, 2009, NMFS received a petition filed by the Center for Biological Diversity seeking to protect 83 imperiled coral species under the Endangered Species Act. One of these species is *Montipora dilatata*. Data from current and past funded research on this species will help NMFS determine if listing this coral species is warranted.

Finally, NMFS PIRO received the final report from the Waikiki Aquarium on a project titled "Create a live animal outreach and education exhibit for two Species of Concern: the Hawaiian reef coral and the inarticulated brachiopod, and support genetic analysis of recently collected *Montipora* fragments." PIRO provided \$14,745 in funding in August of 2007 and the goals of the exhibit, with an audiovisual video loop highlighting both species, were to: (1) Increase public awareness about these species; (2) Discuss the value of establishing protective measures for these species and proactively conserving the population; (3) Explain the importance of collecting data on these species so that scientists and resource specialists may better manage them in the wild; and (4) Describe the mutually beneficial partnership between the Waikiki Aquarium and NMFS and how both partners have collaborated to promote the conservation of these two SOC. The exhibit opened to the public in the fall of 2009. NMFS is extremely excited about this new exhibit since the video message reaches roughly 320,000 Aquarium visitors each year. The public at large has been made aware of these species and their plight, and has been able to see them, likely for the first time, in life for *M. dilatata* and on video for *L. reevii* (see Figure 1). Copies of this final report, as well as others from previous years can be found on our website at http://www.fpir.noaa.gov/PRD/prd_species_of_concern.html.

As for feedback from previous research and conservation efforts on Pacific Islands Region SOC, NMFS PIRO is pleased to report that through a 2006 contract with the Waikiki Aquarium, *M. dilatata* has continued to be successfully asexually propagated in captivity, providing an abundance of fragments and colonies (see Figures 2 and 3). Through the same contract where the Waikiki Aquarium also built a husbandry tank for *L. reevii*, captive husbandry efforts continue to be successful (see Figures 4 and 5).



Figure 1. Kaneohe Bay exhibit at the Waikiki Aquarium.



Figure 2. *Montipora dilatata* holding tank in the Coral Farm at the Aquarium.



Figure 3. The fragments placed in the dedicated *Montipora dilatata* holding tank in 2006 have grown well.



Figure 4. *Lingula reevii* holding tank showing fine sand layer and drop bucket used to provide phytoplankton to the animals.



Figure 5. View of sand surface in *Lingula reevii* holding tank. One specimen resides within each of the mesh circles. The three respiratory pores of one animal are clearly visible in the upper right circle.