

## ***Rachel Carson Award Nomination-2010***

***Dr. Jim Maragos***

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In recognition of his outstanding contributions to coral reef conservation at the most remote islands and atolls in the Pacific Ocean, Jim Maragos is nominated for the Rachel Carson Award for Science Excellence.

### **Scientific Contribution.**

After a 15 year career with the Army Corps of Engineers overseeing NEPA compliance to protect native species from developmental projects, Dr. Maragos turned his vision and energies to secure protections for sparse or uninhabited, unspoiled coral reef ecosystems before projects might require mitigation measures. As the senior coral reef biologist for the Service since 1999, Dr. Maragos has initiated, led, or participated in dozens of ship-based expeditions to some of the most remote islands and atolls in the vast Pacific Ocean, documenting the species found and surveying the ecosystems' health. Across these Pacific reefs, he established approximately 100 permanent monitoring stations at 71 atolls and islands and has continued collecting data, when scant transportation allows, beginning our understanding of the changes to these systems over time. Dr. Maragos was the first to establish permanent coral reef assessment and monitoring plots at multiple islands and atolls in the Northwestern Hawaiian Islands, documenting for the first time the extensive endemism of corals in the Hawaiian archipelago. Jim's species inventories, photographs, and rapid ecological assessments spurred significant interest from the scientific community and have had a multiplying effect for producing purposeful science that is necessary to conserve these fragile systems. His widespread scientific work, published reports, and outstanding behind-the-scenes education of constituents and decision-makers provided background rationale, justification, and enthusiasm which led to the extraordinary conservation achievement established by four marine national monuments. His collaborative work with molecular geneticists is also challenging established ideas regarding coral species boundaries, including those of a taxon currently listed by NOAA as a Species of Concern. Such information is essential for understanding coral diversity and for informing conservation decisions.

Jim's accomplishments span decades for coral conservation. His doctoral thesis focused on assessing the impacts of sewage and other anthropogenic stresses on corals in Kaneohe Bay, Hawaii. This research was instrumental in compelling the local government to remove the sewage outfalls from the bay and leading to recovery of corals later documented by University of Hawaii students and Dr. Maragos. This seminal project is recognized as the first highly successful habitat restoration programs for coral reefs and it helped introduced the necessary discipline of coral reef management to the world stage. Since then, Jim has worked tirelessly to continue this effort to ensure science and management work closed to restore degraded reefs and conserve those that are 'untouched'.

Dr. Maragos's career is culminated in wide recognition as the Hawaii-central Pacific field specialist in coral taxonomy and biodiversity, compiling records, guides, and photos of corals for thousands of reefs throughout Oceania. Since his first publication in *Science* in 1973, he has published hundreds of articles, photographs, and helped dozens of graduate students – many who are leaders in their fields today - to promote protection and conservation of coral reefs in the Pacific Region. With his extensive knowledge of coral taxonomy, Dr. Maragos has described one new species and with partners in the 2010 summer has identified at least ten other species that are likely new to science.

**Scientific Application.** Inventories and surveys developed by Dr. Maragos established the baseline of coral reef ecosystem health across many Pacific atoll and islands. With the baseline and succeeding data, extensive reports, informational booklets, publications, and full-length movies have been developed. Jean-Michel Cousteau personally contacted Dr. Maragos with a vision to create a movie about the Northwestern Hawaiian Islands. Jim, along with FWS colleague Dr. Beth Flint, accompanied Cousteau on the pivotal voyage. The subsequent movie is widely recognized as the medium which gained the attention of President George W. Bush and spurred him to establish Papahānaumokuākea, as well as three other Pacific Marine National Monuments.

Dr. Maragos serves as an invited member of the Coral Species Group within the International Union for Conservation of Nature (IUCN) Species Survival Commission. The Coral Species Group provides scientific advice to multiple governmental agencies, conservation groups, and the IUCN on biodiversity conservation, the inherent value of species, their role in ecosystem health and functioning, the provision of ecosystem services, and their support to human livelihood. Dr. Maragos has also applied his extensive field experience as an Advisor for UNESCO on World Heritage Sites in the Pacific.

In October 2009 the nongovernmental Center for Biological Diversity petitioned the National Oceanic and Atmospheric Administration to list 83 species of corals under the U.S. Endangered Species Act, including 75 species reported to occur in the U.S. Pacific. Dr. Maragos' surveys documenting the distribution and abundance of coral species throughout the Pacific have significantly informed the Biological Status Review currently in preparation to independently assess the extinction risk of these species. Dr. Maragos was specifically invited onboard an extended NOAA-sponsored cruise in 2010 to conduct targeted surveys to further inform the Status Review as to the occurrence of the petitioned species in remote areas of the U.S. Pacific. Evidence based on collaborative work with molecular geneticists suggests that two of the petitioned taxa may represent population-level variation or incipient species rather than distinct species, alternatives that have very different conservation implications.

### **Extraordinary Results.**

In 2005, there was no such thing as a “marine national monument.” Because of the pioneering work of Dr. Jim Maragos and many others with whom he has worked, today, the United States boasts protection and management over more than 215 million acres of tropical marine habitats in the Pacific that are unparalleled for their biodiversity and intact ecological structure. The National Wildlife Refuge System, with joint or primary management responsibility over each of the four marine national monuments (Papahānaumokuākea, Pacific Remote Islands, Rose Atoll, Marianas Trench), is a leader in global marine conservation. As many reefs continue to degrade world-wide in response to multiple anthropogenic stressors, the reefs managed by the National Wildlife Refuge System within the four marine national monuments provide an unparalleled scientific resource as models of the structure and dynamics of near-pristine tropical Pacific marine ecosystems. Their biodiversity and intact trophic dynamics additionally represent a huge

investment in improving the planet's resilience to climate change. As stated by President George W. Bush at a White House ceremony designating three of the national monuments in 2009, "For sea birds and marine life, they will be sanctuaries to grow and thrive. For scientists, they will be places to extend the frontiers of discovery. And for the American people, they will be places that honor our duty to be good stewards of the Almighty's creation". In 2010 the Papahānaumokuākea Marine National Monument was also inscribed as one of only 26 mixed World Heritage Sites in the world based on its unique natural and cultural values; it is the first mixed World Heritage Site in the U.S.