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TRIBUTE TO DR. KANJAN ADULYANUKOSOL



On January 10, 2015, Dr. Kanjana Adulyanukosol passed away from liver cancer. Kanjana was the foremost dugong scientist in Thailand. In 1986, she began working as a marine biologist at the Phuket Marine Biological Center, at first studying algae. She began to study dugongs in 1988, and worked tirelessly to bring awareness of dugongs and their conservation to Thailand and beyond. In 1997, Kanjana conducted the first aerial survey for dugongs along the Andaman Coast of Thailand. Through her years as a scientist, then a Director for the Thai Department of Marine and Coastal Resources, she published over 20 papers and books on dugongs and marine mammals of

Thailand, including an extensive field guide, bringing Thai marine mammal science into the international marine mammal community for the first time. Her dedication to conducting top-quality scientific inquiry is an example to us all, as is Dr. Kanjana's commitment to spreading knowledge about marine mammals and their conservation to local communities. Her four children's picture books about dugongs and Bryde's whales have been published in Thai, English, Japanese and Braille.

UNION INTERNATIONALE POUR LA CONSERVATION DE LA NATURE ET DE SES RESSOURCES

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Dr. Kanjana was a wonderful and generous woman who inspired, mentored and challenged many of us, and became our lifelong friend. Her books and papers are an impressive scientific contribution, while her exhibits, posters and famous t-shirts became lessons and examples in the importance of reaching out beyond the scientific community. Her pioneering research on Bryde's whales in the upper Gulf of Thailand has brought us a wealth of valuable knowledge. She tirelessly communicated her message of marine mammal conservation to countless local communities. For myself and many others, to have known and loved Kanjana has shaped our lives and our science. To continue within her legacy will be the greatest honor. - **Ellen Hines**



BRAZILIAN MANATEES FOR GUADELOUPE

As has been publicized in other issues of *Sirennews*, the Parc National de Guadeloupe, in Guadeloupe (an Antillean Department of France) has been planning to conduct an experiment on reintroduction of manatees into its waters. Approximately a year ago, during Biodiversity Day, the Brazilian Secretary of Environment announced the transfer of five West Indian manatees (*Trichechus manatus*) from the country to this project, and the possible transport is planned to occur within the next few weeks. The species was considered, until last year, the most endangered species of aquatic mammal in Brazil, and listed as "critically endangered" in the country. The total population along the Brazilian coast is estimated to be 500 individuals, with a discontinuous and patchy distribution, suffering several anthropogenic threats and having been extirpated from three states in the past, due to hunting.

The specimens offered for the experiment would be wild manatees rescued as calves and rehabilitated, and presently captive at Centro Mamíferos Aquáticos (Aquatic Mammal Center) of ICMBio (Chico Mendes Institute for Biodiversity Conservation, an agency of the Secretary of Environment) in Pernambuco on the northeastern coast. Legal permits and a CITES export permit have been issued by IBAMA (Brazilian Institute for the Environment and Renewable Natural Resources), the Administrative Authority in the country for those matters. Unfortunately, this governmental decision was made without consultation with most of the experts who have been working alongside, and by invitation from the government, on the Action Plan for the species in Brazil, its Advisory Group and the Brazilian Aquatic Mammal Stranding Network (both National and North and Northeast regional branches). Some of those experts are members of the IUCN Sirenian Specialist Group (SSG) and SSG South American Region.

The situation has generated a lot of discomfort and concern among those experts and environmentalists, who have been trying to bring about a dialogue with the government, without success. We believe the contribution of any individual, both in the wild and captive, is extremely valuable for the recovery of the species in Brazil. Four of the animals targeted for export are adults who have proven good breeders. These animals are important for conducting research and conservation actions with the species in Brazil, and could be maintained in captivity in a natural setting, as part of a breeding and release or reintroduction program in the country, as has been done with several other animals over time. The fifth animal is a male juvenile suitable to be released back into the wild.

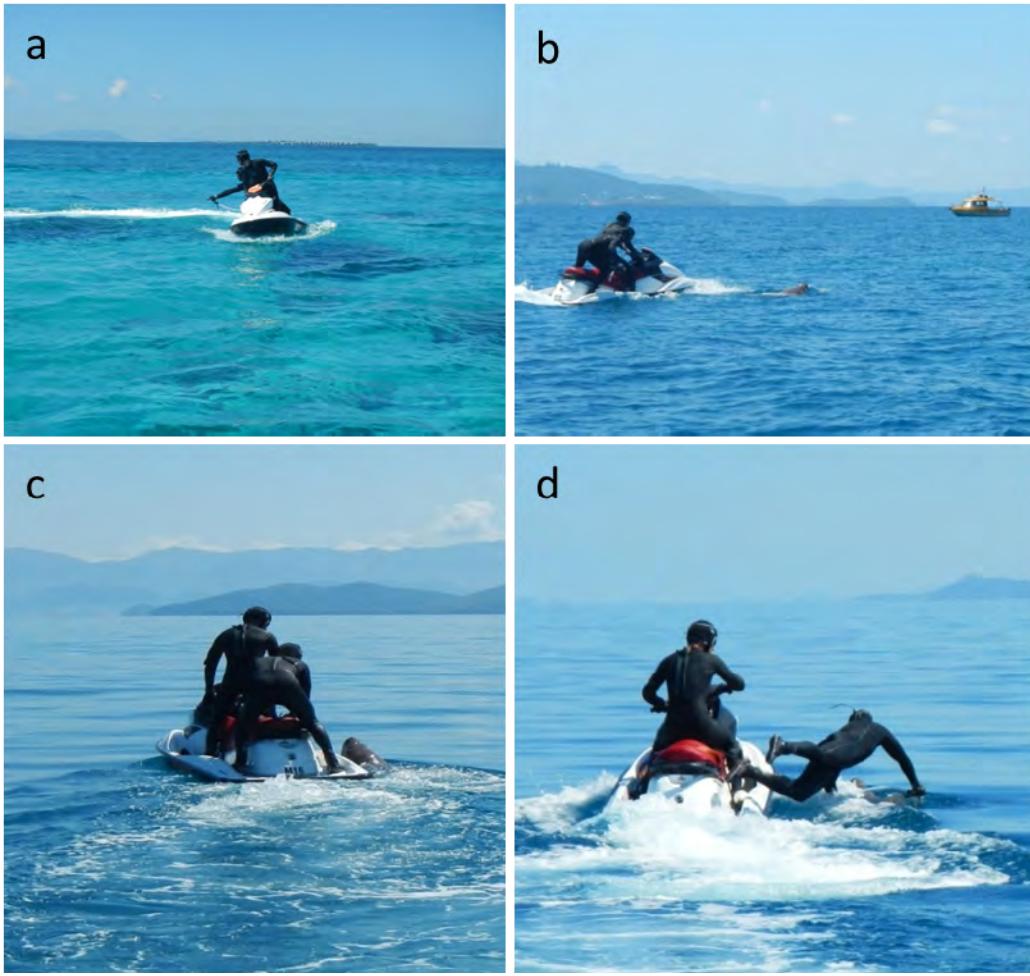


Figure 1. Use of a sit-down Personal Watercraft (PWC) to approach and catch dugongs in New Caledonia: (a) primary catchers pursuing a dugong in a shallow coral reef environment, the primary catcher is pointing at the animal; (b and c) PWC approaching the dugong at a catchable distance –note the safety boat in the background in (b); (d) primary catcher jumping from the back of the PWC onto the dugong’s tail to stop the animal.

QATAR

A New Initiative to Assess Dugongs of Qatar: Persistent Population or Population in Decline?

Dugongs of the Arabian Gulf are consistently referred to as the largest population of dugongs outside of Australia, and the most important region for dugongs in the western portion of their range. These statements are based upon Preen’s (1989) gulf-wide survey almost 30 years ago. While certain countries in the region, such as the United Arab Emirates (UAE), have made significant progress in understanding the natural history of Arabian Gulf dugongs, others have lagged behind. The State of Qatar shares two of the three most important regions within the Arabian Gulf for dugongs and was also home to the largest single dugong group ever recorded (674 individuals) during Preen’s surveys. Yet little work has been done in the past 30 years to understand the population abundance and distribution in Qatar’s coastal waters. Much has changed in the Arabian Gulf since Preen’s surveys. Coastal development, energy exploration, and drilling for natural gas and oil have transformed this region of the world. As a result, dugongs in Qatar face many threats including incidental fisheries bycatch and habitat degradation and loss. In addition, the extreme marine and physical environment of the Arabian Gulf, as well as the

northern limit of dugong distribution in this area, likely means that their life-history differs from populations in Australia. However, there are virtually no life history data for Qatari dugongs, and the species remains mostly unstudied in the State of Qatar.

This past June 2014, researchers from Texas A&M University, Qatar University and ExxonMobil Research Qatar signed a Tri-Party agreement to initiate research to begin to assess the dugong population in the State of Qatar and to collect data to investigate their natural history. We started with three basic objectives to ensure success and buy-in from government agencies. These included (1) conduct fishermen interviews to locate and estimate dugong numbers in Qatar in preparation for future aerial surveys, (2) create a stranding response team to characterize the number, length, sex, and circumstances of dugong strandings, as well as to conduct opportunistic necropsies, and (3) collect tusks for aging stranded dugongs. Our long-term goals include conducting aerial surveys of the entire Qatari coastline, collecting skin samples for population genetics, and to build up technical capacity for eventual capture of dugongs to deploy satellite tags.

To initiate this endeavor we conducted a 2-day dugong workshop on September 28-29 2014, hosted by Qatar University. The workshop reviewed the current state of knowledge of dugongs globally, but also specifically to both the Arabian Gulf and the State of Qatar. It outlined both the short-term and long-term objectives of members of the Tri-Party agreement and reached out to government agencies, academic institutions, non-governmental organizations and grass-roots organizations. The dugong workshop was enthusiastically received by all attending, which included ~45 individuals from the Ministry of the Environment, Ministry of the Environment Biotechnology Center, Ministry of Municipality and Urban Planning, Qatar National Master Plan Project, Private Engineering Office of Qatar, Qatar Petroleum Ras Laffan Industrial City, Qatar Management of Environmental Protection, Qatar Ministry of Defense, Qatar University Environmental Science Center, and Qatar University Department of Biology and Environmental Science. In addition to raising awareness of dugong conservation, the outcomes of this workshop included the establishment of a country-wide stranding response team in cooperation with the Ministry of the Environment (MOE) and the MOE ranger stations that are located throughout coastal Qatar.

Activities have included community outreach to local schools and grass-roots organizations such as the Qatar Natural History Club and Qatar Science Club. Additional training on beach surveys and biological sample collection has been conducted with the Private Engineering Office and Ministry of the Environment Rangers.

To date, fishermen surveys are on-going and the stranding team has surveyed 80% of the Qatar coastline. The stranding team has responded to reports of whole dugong carcasses washed on shore. In total, the stranding response/beach survey team has recovered 18 dugongs that range from code 2 (fresh carcass) to code 6 (only skeletal parts remaining). Two code 2 dugongs were necropsied and used to train local biologists regarding dugong anatomy and the procedures of a dugong necropsy following Eros et al. (2007). Several code 3 and 4 individuals were found wrapped in fishing nets or lines, and several additional individuals displayed evidence of drowning in fishery gear. As found in the UAE, bycatch is likely a serious issue for dugongs in Qatar.

In addition to beach surveys for stranded dugongs, the team has been conducting boat surveys, with the assistance of the Private Engineering Office, in the northwest region of Qatar. Between January and March 2015, four surveys were conducted. Several large groups have been located in this region and aerial photographs and videos have been collected using unmanned aerial vehicles. These images have been used to quantify group size. Currently the largest group encountered was comprised of ~500 individuals and is likely the progeny of the large herd documented by Preen (1989). Assessment and data collection of dugongs in the State of Qatar will continue with funding committed from ExxonMobil

Research Qatar. Planning for a second State of Qatar Dugong Workshop for next fall has begun, and the team is currently reaching out to colleagues in neighboring gulf coast states engaged in dugong conservation. **-Christopher D. Marshall, Ph.D.** (Texas A&M University, Department of Marine Biology); **Mehsin Al Ansi, Ph.D.** (Qatar University, Department of Biology and Environmental Sciences); and **Jennifer Dupont, Ph.D.** (ExxonMobil Research Qatar)

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UNITED STATES

Further Range Extension, and Market Demand, for the Extinct Steller's Sea Cow. Although hunted to extinction for its meat nearly 250 years ago, Steller's sea cow (*Hydrodamalis gigas*) not only continues to expand its known geographic range, but continues to be subject to commercial exploitation!

Several years ago it was shown that in relatively recent times (perhaps even as late as the 18th century, while sea cows were being exterminated by Europeans in the Commander Islands to the west), they were still present in the westernmost Aleutian Islands and figured in the oral history of the Aleut people. In fact, hunting and killing these largest of all sirenians – by herding them into shoal water and stranding them on a falling tide – was regarded as women's work (Domning et al., 2007).

Even more surprising is the latest discovery, that *Hydrodamalis* once occurred at least 1500 km and 8 degrees of latitude farther north than previously known: at St. Lawrence Island, almost up to the Bering Strait itself. Olaus Murie (1937) interpreted an Eskimo tradition as indicating that sea cows once existed at St. Lawrence, but until now no bones had been collected to substantiate this speculation. It turns out that dense bones, allegedly of sea cows, are being dug up there all the time by the local inhabitants, and sold for the manufacture of knife handles and other carvings available on the international market. Dr. Lorelei Crerar, a researcher at George Mason University in Virginia, has successfully extracted DNA of *H. gigas* from such bones – finally proving the former presence of sea cows in the northernmost part of the Bering Sea (Crerar et al., 2014).

Besides DNA, these bones also yielded radiocarbon dates, and stable isotopes of carbon and nitrogen. The dates place the sea cow samples in the period between 780-1030 CE -- roughly the same age as some *H. gigas* bones dated from Bering Island. The isotopes, however, indicate different diets for the sea cows from the two localities, confirming that the analyzed bones really represent distinct populations (and that the ones claimed to come from St. Lawrence were not smuggled out of the Commander Islands instead).

These results are of more than just academic interest. DNA analysis shows that not all of the bones being exported from St. Lawrence Island are sea cows, as claimed; some represent whales or other dense-boned marine mammal species that are protected under the U.S. Marine Mammal Protection Act, CITES, and/or other regulations. There is thus the real potential for circumventing such laws by trading in extant, protected species under the guise that the bones (which are typically incomplete and not