

## STATE OF THE MANTAS 2002 REPORT

Manta rays are found in every tropical ocean. Although often confused with other members of the family Mobulidae, the Great Manta (*Manta birostris*) stands apart as the largest of all rays with wingspans of up to 22 feet. Related to the sharks, mantas have sometimes been feared and hunted. Like the sharks, their role and value in the ecosystem is widely misunderstood.

Fishing of *Manta birostris* generally occurs as accidental catches or taken in small numbers for food by remote fishing villages. This situation now appears to be changing rapidly as demand increases for the manta's skin and gills. The increased market permits fishermen to better equip themselves with advanced fishing methods.

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Manta rays are now facing many of the same pressures experienced by the larger sharks. (1) The following is a list of facts and conditions contributing to the health of worldwide *Manta birostris* populations:

- Manta ray's inaccessibility and the difficulty associated with long-term studies have excluded them from the level of investigation that the great whales have enjoyed. (2)
- Surprisingly little is known about the migration patterns of manta rays and the size of the worldwide population. Almost nothing is known about their ecology, use of critical habitats, movements or reproduction. (2)
- *Manta birostris* is listed as species number 13.17 on the IUCN Red list and is presently assessed at Lower Risk (least concern). However, it has received a Vulnerable listing in the Gulf of California, South China Sea, and the Sulu Sea.
- Once very common in the Sea of Cortez, Mexico, manta rays are now rarely sighted. Their decline in the Sea of Cortez appears to have occurred in less than a decade. (2)
- Although manta rays are now receiving serious research attention in Baja, Mexico and Kona, Hawaii, efforts to survey populations and migration patterns in other parts of the world are limited to a few local efforts without the assistance of research funds. (1)
- A few specific manta ray fisheries exist along the West Coast of Mexico and in the Philippines. They are used as a food source for humans and as bait for shark and other fish species. However, the primary threat is their accidental entrapment in nets set for other species. (2)
- Whales and mantas were historically harvested by harpoon from homemade wooden boats powered by paddles and sails woven from palm fronds. (3)

- Increased economic value of manta fishing is leading to improved fishing techniques employing motorized boats with longer ranges which further impact populations. (3)
- In Eastern Indonesia, a strictly limited number of deep inter-island channels are suspected to function as migration corridors for cetaceans (PHPA 1984). These straits and passes are sensitive bottlenecks for large migratory marine life such as manta rays. (6)
- The harvest of manta rays in Eastern Indonesia has increased by an order of magnitude in just the past few years and the sustainability of this harvest is in question. (3)
- There is an increased demand for brachial filter plates removed from the gills of manta rays (gill plates) which are used in traditional Chinese medicines. (3)
- The skin of manta rays is increasingly being used in the production of shoes and wallets. (3,4)
- The Philippines fishery is now expanding to meet the need for manta-skin wallets. (4)
- In 1998, it was reported that unregulated manta ray fisheries were decimating whole populations in the Visayas, and throughout the Philippines. A nationwide ban on the hunting of manta rays was lifted after only four years. This was done without sufficient public consultation, without new scientific evidence from experts as basis for a sustainable management system, but simply due to misguided political pressure.(4)
- The total harvest over the six-month season in Lamalera, Indonesia has been estimated at 1,500 mantas (range 1,050-2,400), representing about a six-to-ten-fold increase over historic levels.(3)
- The fecundity of manta rays is among the lowest of any elasmobranch, giving birth to only one pup (twins are rare). Repeated commercial harvests for long-lived species with low reproductive rates similar to mantas, have resulted in the collapse of populations. (2)
- Protective status has been legislated in only a small number of countries such as the Philippines and Mexico, but is rarely aggressively enforced.
- The manta populations appear to be more stable in areas such as the island of Yap in Micronesia and the Hawaiian Islands, where they are protected for their value to the tourist industry. (2)

## WHAT NEEDS TO BE DONE

Immediate actions that are necessary to define the status of the worldwide manta ray population today and in the future include:

- Collection and cataloging of both current and historical *Manta birostris* sightings. This will enhance our understanding of population sizes and migration patterns.
- Create and maintain a centralized database of information on the status of manta ray populations, research efforts, conservation and protection efforts worldwide.
- Develop a field collection program to catalog information about mantas employing marine researchers, the dive industry, underwater photographers and volunteer divers.
- Develop effective environmental education programs based on the collection of biological and conservation information.
- Identify strategically important areas of habitation and populations in order to develop routine monitoring programs. Work with local groups to develop these programs.
- Perform tagging studies to determine the habitat and range of manta populations within local regions in conjunction with marine researchers.
- Develop a "Manta Alert" system that makes up-to-date information about critical manta threats available to scientists, governments, conservation groups and concern citizens.
- Create photographic, video and educational materials that assist volunteer-supported community and dive industry associates.
- Create a forum to discuss public awareness initiatives and proposed conservation measures. Seek to involve affected local groups.

## PROPOSAL: Pacific Manta Sightings Program

The Manta Network is in need of financial support to significantly expand current programs. Since 1996, Robert Aston, MS Earth Sciences, has been working with marine researchers to collect information about Manta birostris populations. Traveling throughout the Pacific, sightings, underwater photographs and video has been collected to further our understanding of manta populations and migration patterns. In 1998, a more formal program was initiated to collect manta sightings employing encounters with manta rays by photographers and divers.

### **Significance**

It is becoming increasingly apparent that changes in fishing practices are exerting increased pressures on the Manta population. There is a delicate balance between the economic well being of third-world fishing villages, the demands for traditional Chinese medicines and the need to protect manta populations for ecosystem health. Helping local groups protect ecosystems frequented by mantas for tourism may be one solution. More information is critically needed on the nature of the threat and whether manta populations will be able to withstand it.

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### **Project's Objectives**

Since 1996, The Manta Network has been publishing information on the Internet about manta rays and has developed the Worldwide Manta Sightings Program and database. This the only research program that collects, analyzes and presents sightings of manta rays worldwide. A "Manta Alert Program" has recently been established through the [www.save-the-mantas.org](http://www.save-the-mantas.org) Website. It strives to make accurate information available about areas where manta populations are threatened.

The principal objectives of The Manta Network fall into four areas: population studies, environmental education, environmental assessment studies and public awareness initiatives. Our initial efforts have focused on population studies and environmental education employing the Internet. As these programs progress, it is our goal to use the gained understanding to identify strategically important areas. These areas could then be routinely monitored to provide the most valuable information to access population health. Local action programs can then be fashioned to increase awareness and provide alternatives to overfishing.

Funding is now being sought to formalize and expand these efforts into four major areas: 1) population studies, 2) environmental education, 3) environmental assessment studies and 4) public awareness initiatives. The funds will be used to:

## **Population Studies**

- Expand the methods used to collect sighting information from divers and photographers encounters.
- Develop a routine local data collection program with the assistance of the dive and resort operators around the world.
- Identify strategically important areas and manta populations where routine monitoring would provide valuable information.

## **Environmental Education**

- Develop a comprehensive on-line source for environmental education about manta rays.
- The Manta Network serves as an on-line clearinghouse about manta rays providing information useful to scientists, conservation groups, legislators and the general public.
- Develop a prototype of an educational program that can be replicated in villages worldwide.
- Develop and conduct educational seminars at industry trade shows and other important public events.
- In conjunction with environmental groups, marine researchers and local dive operators, develop and promote ecotourism focused on education, manta research and protection.

## **Environmental Assessment Studies**

- Conduct and support marine research into the behavior, migration, conservation and protection of manta ray populations worldwide.
- Perform field research including personally interviewing local fishermen, dive operators and local conservation groups.
- Develop a funding program to permit teams of researchers to conduct specific field research on select manta populations.
- Install continuous monitoring stations to provide valuable information about the residency of local manta populations. Seek grants to fund the installation, monitoring and maintenance of wireless underwater video monitoring stations.
- Sponsor students to assist researchers and environmental education initiatives.

## Public Awareness Initiatives

- Develop public awareness initiatives including environmental assessment, monitoring projects and volunteer-supported community involvement.
- Provide information and eco-alerts about the conservation and protection of Manta birostris including conservation and protection issues and efforts worldwide. "Manta Alerts" will be issued to concerned parties as situations demand.
- Provide authoritative information for the media and for government conservation programs.
- Develop and prototype public awareness initiative programs to assist in converting local economies from fishing to other sources of income.

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## References:

- 1) Robert Aston, The Manta Network (see above)
- 2) Dr. Bob Rubin, Pacific Manta Research Associates, Department of Biology, Santa Rosa Jr. College, 1501 Mendocino Ave., Santa Rosa, CA 95401, Email: [r Rubin@santarosa.edu](mailto:r Rubin@santarosa.edu). Karey Kumli, assistant to Dr. Bob Rubin, Email: [Manta\\_birostris@excite.com](mailto:Manta_birostris@excite.com)
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- 5) Tim Clark, Dept. Wildlife & Fisheries Science, Texas A&M University, College Station, TX 77840, [tclark@labs.tamu.edu](mailto:tclark@labs.tamu.edu) working with manta rays in Kona, Hawaii.
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