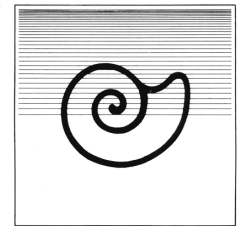


Commercial Hookah Divers of Puerto Peñasco Receive Mexico's National Conservation Award



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The upper Gulf of California is an area of great conflict in terms of fisheries management. It is also an area recognized worldwide for its ecological, historical, cultural and political importance and is the target for numerous conservation efforts.

In this context, we are proud to share news about a fishing cooperative of divers, the *Sociedad Cooperativa Buzos de Puerto Punta Peñasco* at Puerto Peñasco. These fishermen, with whom CEDO has been working for the past six years, were presented with Mexico's 2003 National Conservation Award by the National Commission of Protected Natural Areas (CONANP) and the Secretary of the Environment and Natural Resources (SEMARNAT). The divers received the award at a ceremony at the Pantanos de Centla Biosphere Reserve in Tabasco in November 2003.

This award represents an historic moment in Mexico as it demonstrates the federal government's recognition of local management and conservation efforts. Local fishers, who have been the most affected by years of fishery maximization policies, are being acknowledged for their efforts to find solutions to local problems. The award also celebrates years of collaboration among fishers, academic and conservation institutions, and local, state and federal governments; proof that positive changes in fisheries management don't occur in a day,

but succeed with time and effort on many levels. But even more important, the award gives a public voice to the realities of fisheries in Mexico. The divers' management and conservation efforts at Puerto Peñasco are testimony to a widespread need to restructure Mexico's fisheries, evidenced by increases in disputes over territories and access to marine resources and by communities adopting their own initiatives to achieve more responsible fisheries and defuse these problems.

Using simple air compressors and hoses 50 or more meters long, the divers of Puerto Peñasco have worked the northernmost rocky reefs of the Gulf of California and the bordering sandy and muddy zones for more than 25 years. In this region dominated by intense tidal currents and poor visibility, divers collect benthic resources, mainly mollusks, as well as fish (snappers and groupers), for national and international markets. On a given trip, divers spend up to 7 hours submerged at depths from 5 to 40 meters (15 to 130 feet), with most of their time spent between 10 to 20 meters (35 to 65 feet).

Many of the resources captured by the Peñasco divers are important for maintaining the biological diversity in the upper Gulf. The black murex (*Hexaplex nigrinus*) as well as the octopus (*Octopus* sp.) are top predators in the benthic ecosystem of

this region. In addition, the huge breeding aggregations (up to 5,000 individuals) of the black murex act like temporary reefs, serving as a refuge and substrate for the juveniles of numerous species of fish, crustaceans and mollusks. This phenomenon is especially important in the upper Gulf where the sea floor is mostly muddy and sandy.

Historically, local management of the diving fishery in Puerto Peñasco was defined by a combination of (a) seasonal rotation of fishing grounds, (b) informal fishing seasons responding to resource availability, (c) natural interruption of the use of fishing zones by winds, tidal currents, and algal blooms, and (d) permanent natural refuges in deeper waters. These intrinsic aspects helped sustain the fishery over the years. Eventually, however, growing international demand, numbers of fishermen, and harvest of species at inappropriate seasons and locations, have reduced the resources available to divers and had a negative impact on the ecosystem. These factors have forced the fishers to spend more time underwater, exposing them to serious decompression problems.



Black Murex Snail
(*Hexaplex nigritus*)

In 1992, increased demand from the Asian market, where the snail meat was served as a specialty dish and the operculum was used for producing incense, led to the exploitation of the large breeding aggregations of the black murex. By the late 1990s the divers were very concerned about the abrupt decline in the black murex snail populations. In 1992 the total capture in Puerto Peñasco was 600 metric tons, more than double the total catch of snails that historically had been taken in all of Sonora. After only seven years, the capture had declined to 80 tons. Breeding aggregations were no longer found near the coast, and they were smaller in size.

The snail situation brought the divers together on various occasions to discuss

better methods of exploiting these and other resources on which they depended, and to how to create a more sustainable fishery. Since 1998 these collaborative efforts have generated growing enthusiasm and a number of management initiatives. Throughout this process CEDO has facilitated discussions between fishermen and the government as well as provided logistical and technical support when needed. This direct participation has given us the opportunity to follow the Puerto Peñasco divers' growth as an organization and in managing their fisheries resources.

Among the divers' specific activities that culminated in the National Conservation Award are:

Establishment of closed snail seasons

In the summer of 1999 we conducted a thorough study of the reproductive ecology of the black murex snail and its fishery. This study combined scientific knowledge and experiments with the empirical knowledge of the fishermen. Fishermen helped gather and analyze data and then used it to make decisions about fisheries management. Supported by these data, the divers decided to close the black murex fishery completely for one year and, in following years, to close it from April to July. In the words of the fishermen, this closure would "give a rest" to a species that had been subject to intense exploitation during its reproductive peaks. This decision gave total protection to the resource for one year and protection for the snail during the principal part of its reproductive period in years to follow. This protection is especially important for zones closest to the coast, where the snails tend to aggregate for reproduction between April and July.

Conservation of Isla San Jorge

Isla San Jorge is one of the northernmost rocky island in the Gulf of California and forms part of a corridor of protected islands

within the Protected Area for Flora and Fauna of the Gulf of California. Its location and topography make it an important refuge and breeding and feeding grounds for many marine and terrestrial species, including 35 listed in Mexico (NOM 059) and/or on the Red List of the IUCN under some protection category. The island also contains one of the densest beds of mussels (*Modiolus capax*), mother of pearl (*Pinctada mazatlanica*), rock scallops (*Spondylus calcifer*), pen shells (*Atrina sp.*, *Pinna sp.*) and western winged oyster (*Pteria sterna*) in the upper Gulf of California—possibly one of the most extensive and densest beds in all the Gulf. It is also an important refuge for the giant Eastern Pacific conch (*Strombus galeatus*), a species that has been overexploited along the Mexican Pacific, as well as for the black murex (*Hexaplex nigritus*), pink murex, (*Phyllonotus erythrostomus*), and the sea cucumber (*Parastichopus fuscus*).

The divers' protection of Isla San Jorge grew along with their efforts on behalf of the black murex fishery. In October 2001 the divers opted to cease all diving fishing activity at the island for one year to allow the rich beds of mollusks to recover. When they closed the island, the beds were in better condition than the zones closer to the coast, but their abundance and density were not what they had been 25 years earlier when San Jorge first began to be intensively fished.

One year after closing the island to fishing, the divers and CEDO researchers began monitoring the commercial invertebrates in the subtidal zone around the island. This monitoring showed dramatic increases in populations, with densities of commercial species as much as 5 times higher than those



near shore, motivating the divers to extend similar management methods to

other fishing grounds.

Establishment of refuges for management of benthic resources (mollusks and fish)

The positive experience at Isla San Jorge motivated the divers not only to maintain the island as a reserve, but to apply similar efforts along the coast. In June 2002, the divers established a corridor of three fishing reserves for a minimum of three years. After this period, which includes a monitoring program, they will work with the Fisheries Department to formalize these reserves in a manner that benefits both the diving fishery and the conservation of the rocky reefs. These reserves comprise a total area of approximately 8 km², which represents a little more than 20% of the rocky and coquina reefs (unique to the upper Gulf) worked by the divers of Peñasco. This corridor includes (a) Isla San Jorge, (b) Sandy Beach-La Cholla, coastal zones with some of the major concentrations of benthic resources and diversity of fish in the region, and (c) Las Conchas, a zone that less than 10 years ago was one of the richest and most important for the diving fishery.

Community monitoring of management initiatives

Fishermen's direct participation in the scientific evaluation of their management initiatives has played a critical role in maintaining their interest in collaborating on this project. In addition to collecting data on their catch, approximately 70% of the fishermen have received training on underwater sampling methods and have participated in underwater monitoring of commercial species. Three times a year, together with CEDO researchers, the divers conduct counts in 58 permanent sampling quadrants, which are distributed within and beyond the boundaries of the reserve. Since the summer of 2002 the divers have invested approximately 100 days underwater in monitoring activities.

Establishment of a certification program for divers

In order to reduce the problems of decompression and air embolisms, and to control access to the diving fishery, the divers took steps to establish a certification program for the commercial divers of Puerto Peñasco. Last year, as part of this program, CEDO helped more than 20 divers participate in a diving course taught by doctors from the Divers Alert Network Latin-America and the department of Hyperbaric Medicine of the Ángeles del Pedregal Hospital. In addition, 25 local doctors have received training in diagnostic techniques and treatment for decompression sickness.

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This national recognition of the divers comes at a time when marine reserves are being promoted all over the world by academics and conservation workers, but often with little buy-in from the fishing industry and with negative economic and social consequences. The Puerto Peñasco divers have not only established their own system of marine reserves but also collaborated to monitor the effectiveness of their actions. The results of their efforts promise increased productivity and longevity for their fishery.

The timing of these accomplishments is critical not only for the divers, but also for fisheries administration throughout Mexico and the world. Like the majority of small-scale fishermen, the divers of Peñasco have had to deal with numerous discrepancies in the granting and issuing of fishing permits, conflicts over access to the marine territory, and corruption at various levels. An award of this caliber puts the spotlight on positive aspects of this story and also puts the divers of Peñasco in a unique position to influence fisheries management beyond Puerto Peñasco.

The importance of the Upper Gulf region merits that the divers efforts are recognized

at the highest levels. Though there is still much to be done to achieve ecological and social justice in fisheries management, news such as this brings renewed hope that it can be done.



Divers award (Lindsey Haskin)

CEDO commends the Federal Government of Mexico, in particular SEMARNAT, for taking this initiative, and offers congratulations to each and everyone who has collaborated in this effort. This project has been made possible through the funding generosity of The Tinker Foundation, Inc., the Sandler Family Foundation, the International Community Foundation, The David and Lucile Packard Foundation, the World Wildlife Fund – Mexico Program, the George A. Binney Foundation and others.