



Environmental Conservation Issues: Grassroots Efforts in Mexico

Grupo Tortuguero and Baja California's Sea Turtles

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SEA TURTLE NATURAL HISTORY

Like all turtles, sea turtles are cold-blooded, egg-laying, air-breathing reptiles. All but one species has a hard shell composed of scales or *scutes*. They belong to the order Testudines and present day species are divided into two families, Cheloniidae (six species) and Dermochelyidae (one species). Of the seven extant species, five are almost cosmopolitan in their range while the Flatback (*Natator depressus*) is limited to northern coastal waters of Australia and the Kemp's Ridley (*Lepidochelys kempii*) is restricted to the Atlantic & Caribbean waters of the Americas.

Sea turtles have lived on Earth for at least 200 million years. The most intact fossilized remains of the world's largest sea turtle species, *Archelon ischyros* (pronounced Ar-key-lon is-key-ros), was found in South Dakota in the 1970's and was dated at 74 million years old. It measures 15 feet long from beak to tail, and 16.5 feet across from flipper to flipper. The live animal probably weighed about 4,500 pounds and the species may have lived to about one hundred years old. This, and other specimens discovered date from the Cretaceous Period (75-65 mya) when the Midwest region was covered by a shallow sea. The basic design of the smaller present day species has changed little from that of their ancient ancestors, though, like *Archelon*, they probably had a leathery carapace.

Sea turtles, once they hatch and make their way to the ocean, will never set flipper on land again, except in the case of mature females who will come ashore every two to four years to dig from 4 to 7 nests per season. The number of eggs laid (70-180) and the incubation period (52-65 days) depends on the species and nest temperature. Nest temperature also plays a role in the determination of gender, with temperatures above 30° C (86°F) producing females, while those below 28° C (82° F) will produce males. Nests must also have ample moisture and air for proper egg development and hatchling survival.

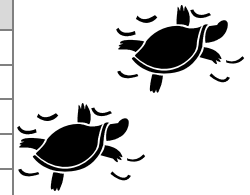
Young turtles spend many years in open ocean waters, floating within seaweed and debris rafts, evading predators while feeding and growing. Once they have reached an adequate size to be less of a tasty morsel for predators such as sea birds and larger fish, they will make their way towards the coast to feed, remaining either well offshore or venturing closer in to shallow waters. Most are opportunistic omnivores and will eat according to available food sources. Some species of sea turtles prefer crustaceans (crabs, shrimp), mollusks (snails, squid, octopus) or jelly fish. The Hawksbill finds sponges a delicacy while sea grass and algae is more to the Green's liking.

EASTERN PACIFIC SEA TURTLES

Five species of sea turtle occur in high concentrations off of the Baja California peninsula in either the Pacific Ocean or the Gulf of California (see chart below). This concentration constitutes a large portion of the respective species' regional population. This area is a major feeding ground for all five species as well as a minor nesting area for three (Green, Olive Ridley and Leatherback). Turtles feeding in the Baja California region will spend most of their lives there except for when

they migrate elsewhere to breed. The principal nesting area for the Olive Ridley population is the west coast of mainland Mexico from the states of Sinaloa south to Costa Rica. When mature, they will migrate between June and November to the breeding grounds where they will mate and the females will go ashore to nest. Ridleys participate in mass nesting events called *arribadas* (the “arrival”).

| Common Name (US) | Nombre Común (México) | Scientific Name |
|------------------|-----------------------------------|-------------------------------|
| Green/Black | Tortuga prieta, Tortuga negra | <i>Chelonia mydas</i> |
| Hawksbill | Carey | <i>Eretmochelys imbricata</i> |
| Leatherback | Tortuga laúd | <i>Dermochelys coriacea</i> |
| Loggerhead | Tortuga amarilla, Tortuga cabezón | <i>Caretta caretta</i> |
| Olive Ridley | Tortuga golfina | <i>Lepidochelys olivacea</i> |



In the early 1990’s, a connection between Loggerhead turtles off the Pacific coast of the peninsula and those in the waters of Japan and the South China Sea was scientifically established. After an ID tag from a dead Loggerhead that had been marked off Baja California was recovered by a fisherman in Japan, scientists set out to confirm a long-held theory of a connection. In 1996 Grupo Tortuguero researcher J. Nichols was the first to successfully track a mature female Loggerhead named *Adelita* by satellite as she traveled almost directly from Baja to Japan. Since then, several other mature female turtles have been tracked and this data, along with DNA evidence, has proved that Loggerheads born on the beaches of Japan (as well as other Asian countries) migrate about 5,600 miles across the Pacific to spend their adolescence along the Baja California peninsula and then as adults return to remain in their natal waters where they will mate and nest.

TURTLES AND HUMAN INTERACTION

Sea turtles have historically been an important source of protein in coastal populations world wide. Many indigenous cultures have revered sea turtles and include them in their religious ceremonies. Sea turtles continue to play a central role in the culture of the Comcaac Nation (the Seri) of Sonora, Mexico and the tribe has become an active participant in the sea turtle conservation movement. A traditional Turtle Island story of the Onondaga tribe (New York state) tells of the Earth being supported on Turtle’s back (see: <http://www.turtleisland.org/front/article3.htm>). In Baja California, sea turtle images appear in 1000 to 1500 year old rock paintings found on cliffs and cave walls in remote canyons throughout the southern peninsula, indicating that these peoples were familiar with the animals and that turtles must have held some significance within their culture to have been depicted in their art. Mexicans have long believed that turtle meat and blood have medicinal properties and that the eggs have aphrodisiacal effects. These traditions and myths persist to this day in many areas and present a great obstacle to sea turtle conservation.

ENDANGERED SPECIES

Currently all seven species are recognized by the IUCN (International Union for Conservation of Nature and Natural Resources) as either threatened (Loggerhead), endangered (Olive Ridley, Green & Flatback), or critically endangered (Leatherback & Kemp’s Ridley). They are protected worldwide by the *Convention on the International Trade of Endangered Species of Wild Fauna and Flora* (CITES). All species were placed on the CITES endangered list between 1975 and 1977 except for the Flatback of Australia (1981). Mexico’s sea turtles are specifically protected within Mexico by federal decree (*NOM-059-ECOL-2001*) and the *Carta Nacional Pesquera* of 2004, although enforcement continues to be problematic. In spite of all these protections, illegal, unsustainable consumption continues in Mexico as well as worldwide. In northwest Mexico and

the southwest United States alone, at least 30,000 turtles are slaughtered and sold on the black market annually mostly during Easter, Christmas and other important religious holidays, where the eating of the meat is not considered to break the Lenten rules. National holidays as well as political and social events are also times of increased turtle consumption and even officials working on environmental issues have been known to procure a turtle meal for their honored guests.

Poaching for personal or commercial consumption is not the only factor contributing to the sea turtles' plight. Incidental by-catch is another major cause of turtle mortality, killing untold thousands yearly. They drown after they are scooped up in gill nets lacking turtle exclusion devices or snagged on long lines designed to catch large fish such as swordfish or tuna. They are injured by boat propellers or drowned when they become entangled in old nets and fishing lines. Chemical contaminants (such as PCB's or the heavy metals cadmium and lead) weaken individuals and may affect long term fertility. They choke on plastic bags (commonly mistaken for jellyfish). Even the eggs are not safe once they are laid. Poachers can easily decimate a season's crop on an entire beach in some areas, as can wild and feral predators (coyotes, raccoons, wild pigs, feral dogs) that raid or otherwise disturb the carefully constructed nests.

Last but not least, the loss of pristine nesting habitat is reducing the rate of repopulation of the species as beaches are consumed for tourism or industrial projects. Coastal development brings with it invasive dune plant species that make nest digging difficult. Off-road vehicles run rampant, compacting the sand and suffocating eggs. Nocturnal lighting from hotels, homes and streets can confuse the hatchlings' ability to navigate safely and quickly toward the ocean. And it can be only assumed that global climate change will further contribute to this loss of habitat if, as projected, a substantial sea rise occurs.

Unchecked human exploitation of sea turtles, the continued systemic denial of the connection between human activity and environmental degradation, and our patent disregard for the health of the environment and all of its unique ecosystems have placed the sea turtle, among many other species, in a tightening, downward spiral. However, there are a growing number of individuals worldwide who have taken up the call to explore and address these issues as they pertain to sea turtles and in doing so, perhaps these efforts will have some rippling effect in the collective consciousness.

CONSERVATION PROJECTS—GRUPO TORTUGUERO (GT)

In 1999, a small group of international scientists, community activists and local fishermen came together in Loreto, BCS for the first time to form Grupo Tortuguero. Their goal was to better understand and address the factors that were leading to the decline in the Eastern Pacific sea turtle populations. A drastic decline had been witnessed in nesting populations worldwide during the 1970's and 1980's. By the mid 1990's marine scientists and environmental groups were becoming ever more alarmed by the continued decline. On one beach alone in Michoacán, the number of nesting females coming ashore during a weekend-long *arribada* had declined from 25,000 in 1970 to less than 500 in 1999 (just 2% of the previous population).

The meeting launched Grupo Tortuguero's conservation work which was begun in a few fishing villages where there was a history of heavy poaching as well as an expressed interest in the project by local people. In the intervening years, the group has brought together fishermen, poachers (now ex-), government officials, scientists, school children, business people and environmental activists to work both within individual communities and on a regionally coordinated basis. The group uses

a number of different approaches and works to promote behaviors and social norms that will help to preserve turtles and their environment.

Environmental Education. This is a key component of GT's work, which uses the sea turtle as a *flagship species*, linking its success to the health of both marine and terrestrial environments as well as to the economic success of the region. Its national and international media campaigns have been innovative and many have addressed the myths surrounding turtles in Mexican society. Its workshops, scientific meetings and environmental festivals have helped to increase participant knowledge about the environment, current environmental challenges, and how individuals and communities can take proactive measures in its stewardship. Information gathered from outside activities will be taken back to a participant's community and may be incorporated there into further activities and workshops, assuring that information is cycled through the region. Many of these activities are geared toward children and youth, who are seen as future stewards of the area's resources. "*El futuro está en tus manos*" is the motto of EcoAmigos de Mulegé, local non-profit youth group.

Monitoring Program. Since 2001, GT has managed a scientifically based monitoring project that is currently active in 27 locations in four Mexican states. The monitoring program brings much needed funding to local fisherman, and involves them as active participants in the research and protection of their local resources. Teams conduct a monthly monitoring where, over a 24 hour period, they capture, weigh, photograph, tag and release turtles. They receive a monthly stipend that covers expenses as well as a small salary. A number of the sites included in this project are involved only with the protection of nesting beaches and egg relocation to nearby hatcheries that they maintain and guard. Team members from each community are expected to attend and present their data at the annual monitoring meeting which is held in a different community each August.

A recent event marks the success of this program. As a result of his experience with GT fisherman and scientists from Mexico, the US and Japan, the captain of a major Mexican fishing fleet working off the peninsula's Pacific coast earlier this year made a landmark decision. He voluntarily retired the fleet's long lines, thereby making a commitment to the protection of at least 700 Loggerheads yearly that would have been killed by his fleet alone within a key turtle feeding hotspot. It is further hoped that local groups will be able to pressure the Mexican government to declare their area a national marine refuge, off limits to further large-scale commercial fishing harmful to turtles.

Community-directed resource conservation continues to be central to GT whose leaders are chosen biannually from local community members. Members have benefitted through their work and involvement in GT and new and dynamic activists have emerged from the least expected places. Perhaps Grupo Tortuguero's greatest accomplishment has been the interconnectedness of communities and organizations that it has fostered both on a local and international level.

Grupo Tortuguero recently celebrated its 10th annual meeting in Loreto in January 2008 concurrently with RETOMALA (a network from Sinaloa) and the 25th Annual Symposium of the International Sea Turtle Society where over 1200 tortugueros attended. From the original 45 people who formed GT in 1999, the yearly meeting has grown and in 2007 attendance topped 300. Today, GT members represent at least: 20 countries; 26 communities in the two states of the Baja California peninsula, Sonora and Sinaloa; eleven local and ten international associations; 18 institutions and universities; and ten bi-national governmental agencies. ¡Viva la Tortuga!





TURTLE FACTS

- 🐢 **Worldwide species:** 7
- 🐢 **Weight:** 80 - 880 lb (adult)
- 🐢 **Size:** 2.5 ft - 9 ft long (adult)
- 🐢 **Age:** 50 -100+ (?) years
- 🐢 **Food:** crustaceans, jellyfish, sea grass, algae and sponges (species dependent)
- 🐢 **Migration:** 5600 miles (Loggerhead)
- 🐢 **Age of sexual maturity:** 15-30 years old

DATOS SOBRE LAS TORTUGAS MARINAS

- 🐢 **Especies mundiales:** 7
- 🐢 **Peso:** de 80 a 880 libras (adulto)
- 🐢 **Longitud:** de 2.5 a 9 pies (adulto)
- 🐢 **Edad:** de 50 a 100 (¿o más?) años
- 🐢 **Alimentos:** los crustáceos, pastos marinos, medusas algas y esponjas (depende de la especie)
- 🐢 **Migración:** 5600 millas (Tortuga amarilla)
- 🐢 **Edad de maduración:** entre 15 y 30 años

DID YOU KNOW?

- 🐢 It is estimated that only one in 1000 turtles survive to reach reproductive age.
- 🐢 Black market trade results in the death of approximately 30,000 turtles each year in California, and northwest Mexico alone.
- 🐢 Once they leave the nest and head to sea, male sea turtles will normally never come ashore again in their lifetime.
- 🐢 Green sea turtles have been known to hold their breath for up to 5 hours.
- 🐢 Sea turtles are extremely sensitive to the earth's magnetic field and use it to navigate.
- 🐢 Leatherback turtles can dive up to 3200 ft.

¿SABÍAS QUÉ?

- 🐢 Se calcula que solamente una entre cada mil tortugas alcanza la madurez.
- 🐢 El comercio furtivo resulta en la muerte de aproximadamente 30 miles de tortugas cada año sólo en California y el noroeste de México.
- 🐢 Al brotar del nido y entrar al mar, las tortugas machos generalmente nunca jamás caminarán en la tierra fuera del mar.
- 🐢 Las tortugas prietas pueden contener su respiración hasta 5 horas.
- 🐢 Las tortugas marinas son muy sensibles al campo magnético de la tierra y lo utilizan para navegar.
- 🐢 La tortuga laúd puede zambullirse hasta 3,200 pies de profundidad.

Ick! I don't want to eat turtles or their eggs

- 🐢 they are contaminated with heavy metals (cadmium, lead...)
- 🐢 Green turtles have herpes and papillomatosis
- 🐢 their flesh and eggs are very high in cholesterol
- 🐢 they have cooties!! (internal parasites)

Me da asco. No quiero comer las tortugas o sus huevos

- 🐢 son contaminadas por los metales pesados (el cadmio, el plomo...)
- 🐢 Las tortugas prietas sufren de herpes y papillomatosis
- 🐢 la carne y huevos contienen altos niveles de colesterol
- 🐢 ¡Son infestadas por parásitos internos!

VOCABULARY/VOCABULARIO

| | | | |
|-----------------------------|-----------------------------|------------------------------|--|
| adolescence | la adolescencia | investigate/the research | investigar/la investigación |
| ban/banned | la veda/en veda | jellyfish | la medusa/malagua |
| beach | la playa | lay eggs | desovar/poner huevos |
| black market | el mercado negro | male | el macho |
| blood sample | la muestra de sangre | maturity | la madurez |
| boat, a type of small | la panga | migrate | migrar |
| breed or mate | aparearse | monitoring | el monitoreo |
| by catch | la pesca incidental | nest | el nido |
| carapace | el carapacho/el caparazón | nest/the nesting | anidar/la anidación |
| capture | la captura | net | la red |
| cholesterol | el colesterol | non-governmental org | organización no gubernamental |
| conservation program | el programa de conservación | non-profit organization | organización sin fines de lucro |
| conserve/the conservation | conservar/conservación | ocean | el mar/el océano |
| consumption | el consumo | patrol/to patrol | la vigilancia/vigilar |
| crab | el cangrejo | plastron (lower shell) | el plastrón |
| crustacean | el crustáceo | poacher | el cazador furtivo |
| decrease | la disminución | poaching | la caza furtiva |
| discharge (of waste) | la descarga | predator | el depredador |
| dive | zambullirse | retractable | retráctil/replegable |
| education campaign | la campaña educativa | satellite transmitter | la trasmisora satelital |
| egg | el huevo | scute (scales of shell) | el escudo |
| endangered | en peligro de extinción | sea grass | los pastos marinos |
| erupt (nest) | brotar | species | la especie |
| environment | el medioambiente | tag/tagging | la placa/el marcaje |
| environmental contamination | la contaminación ambiental | TED (Turtle Excluder Device) | TED (Dispositivo Excludor de Tortugas) |
| feed/food | alimentar/la alimentación | the arrival = mass nesting | la arribada |
| female | la hembra | threaten/the threat | amenazar/la amenaza |
| fisher(man) | el pescador | tissue sample | la muestra de tejido |
| flipper | la aleta | tourist guide | el guía turística |
| fossil | el fósil | trade/the trade | comercializar/el comercio |
| garbage/waste | la basura/los desechos | turtle | tortuga, caguama |
| gender (also genus) | el género | turtle activist | el tortuguero |
| heavy metals | los metales pesados | turtle group | el grupo tortuguero |
| in decline | en declive | virus | el virus |
| internal parasites | los parásitos internos | young turtle, hatchling | la tortugueta/la cría |

RESOURCES/RECURSOS

www.grupotortuguero.org (*English and Spanish*)

www.wildcoast.net

www.seaturtle.org *International Sea Turtle Society*

www.seaturtles.org *Sea Turtle Restoration Project*

<http://www.cep.unep.org/programmes/spaw/widecast.html> *Wider Caribbean Sea Turtle Conservation Network*

<http://www.grupotortuguero.org/content/1/2/11.html> (*research papers page*)

¿En las manos de quién? video— <http://www.youtube.com/watch?v=W45Rmkw3tcg>

Mi hombre no necesita huevos de tortuga video— <http://www.youtube.com/watch?v=YnVN2VgLNZQ>

Santo salva las tortugas video— <http://www.youtube.com/watch?v=a0J4S6pZY8w>

Santo vs. Chupacaguas video— <http://www.youtube.com/watch?v=DGJROh2c6CE>

Delgado, Stephen and Wallace J. Nichols. *Saving Sea Turtles from the Ground Up: Awakening Sea Turtle Conservation in Northwestern Mexico*. Mast 2005, 3(2) and 4(1): 89-104. available at:

<http://www.grupotortuguero.org/files/file/185Mast-2004p%5B1%5D%5B1%5D.89-104.pdf>

