

OF SOUP AND SURVIVAL

The plight of the sea turtles

BY SUSAN S. GREGG

Just after dark on a hot July night, we met our guide at the entrance to a tunnel that burrows a short distance under the road and opens onto Juno Beach, Florida. Our group, numbering about 50, was about to take a "turtle walk" and perhaps witness a drama that would have a small but vital part to play in a much larger drama: the survival of a species.

Our guide was a compact, rugged-looking woman, of a remarkable 70 years of age, I guessed, barking orders at us like a drill sergeant: "If you folks expect to learn anything and get a glimpse of our night visitor, keep quiet and turn off those flashlights!"

We quietly followed her through the tunnel and began our vigil on the otherwise deserted beach. We stood on the sand, expectantly peering into the dark and slapping the sand flies feasting on our legs. After about an hour of waiting, our guide reassured us that the visitor

A threatening world awaits a baby green turtle as it struggles free of its shell. Even if it survives the natural perils that prevent most turtle hatchlings from reaching maturity, it will still have to face the human threats of pollution and fishing.



John P. Hensley



© Doug Perrine

1.



© Doug Perrine

2.



© Doug Perrine

3.



© Doug Perrine

4.



George H. Baasz

1. A young loggerhead looks, and is, completely at home in the water.

2. Rarest of all, the Kemp's ridley is threatened on all fronts. Poachers at nesting beaches and trawlers at sea have drastically reduced the numbers of this small turtle.

3. Prized for their distinctive tortoiseshell, hawksbills have been hunted for centuries.

4. Without a shell, leatherbacks grow from hatchlings into the largest of the sea turtles.

5. The turtle of turtle soup, green turtles are still illegally harvested in many places, decreasing their already diminished numbers.

would arrive that night. It was the perfect spot, she said, with no condominiums with their betraying lights.

"There!" she whispered, pointing at the surf. "Don't move a muscle and don't turn on those flashlights; you'll scare her away!"

Like witnesses to an extraterrestrial phenomenon, we stood there, staring, suddenly overwhelmed by the thought that this was to be a close encounter, as the visitor emerged from the rolling Atlantic Ocean and, with great effort, dragged her bulk inch by inch up the beach.

The 300-pound visitor was one of approximately 500 loggerhead turtles (*Caretta caretta*) that would lay eggs on the beach in this part of Florida during summer 1987. In fact, 90 percent of the western Atlantic population of loggerheads nest on Florida beaches, second only to Masira Island, Oman, in the Middle East as the world's largest nesting area for this species. Our guide and narrator was Eleanor Fletcher, founder and former director of the Juno Beach Children's Museum. A feisty guardian angel of these endangered, ocean-going reptiles and the eggs they lay on the beach, she is known locally as "The Turtle Lady."

Until humans started plying the oceans, turtles flourished as they had since the days of dinosaurs. Then from Columbus's arrival in the New World through the 1800s—a matter of only 300 years—the millions of green turtles that once populated the world were devastated. By 1878 Europeans were shipping home 15,000 green turtles (*Chelonia mydas*) a year from the Caribbean for meat and soup.

Today, Europeans are still consuming turtles, only now much of the consumption is illegal. And in the Caribbean, where turtle is on the menu at many island resorts, a green turtle in the wild is a rare sight. It has been said that green turtles were once so plentiful in the Caribbean, you could almost island-hop by walking on the turtles' backs.

From the time it hatches from its sandy nest, the sea turtle faces staggering natural and man-made obstacles. In fact, the chances of a hatchling ever making it to maturity range from 1 in 10,000 to 1 in 50,000. Such astronomical odds can, in part, be blamed on the forces of nature.

"Some populations wax and wane,

in a natural fashion," Dr. Peter C. H. Pritchard of the Florida Audubon Society said. "Important populations may build up over 50 or 100 years from almost nothing and then, if conditions change (predators, beaches shifting), they may disappear. Even without man in the picture, a given nesting population may, for inexplicable reasons, be building up today while others will be thinning out and disappearing."

Civilization's threat to turtles

It is an undeniable fact, however, that with humans in the picture, worldwide populations are endangered and still in decline. Complicating the picture is the fact that each of the six sea turtle species classified endangered or threatened falls prey to a different type of exploitation and different mortality

Some populations wax and wane, in a natural fashion

factors. Some species are killed indirectly by humans, while others are deliberately exploited with callous disregard for domestic or international regulations against such exploitation. The indirect effects of pollution on sea turtles are not considered when we dump our 14 billion pounds of garbage into the oceans each year. Plastic in the water resembles jellyfish, the primary food source of the leatherback turtle (*Dermochelys coriacea*). After several pieces of plastic are ingested, the gut becomes impacted and the turtle starves to death. Off Costa Rica, even green turtles, which are herbivores, have reportedly died as a result of eating plastic banana bags.

Gill nets used by commercial fishermen are made of monofilament plastic that breaks apart easily and ends up drifting around for years. Many kinds of marine life, turtles included, get caught in the net fragments and die.

A more bizarre problem has begun threatening green turtles nearly exclusively, and scientists now assume it is

related to pollution. In Brevard County, Florida, the Indian River is a lagoonal area visited by three sea turtles: the green, the loggerhead, and the hawksbill turtle (*Eretmochelys imbricata*). Because of relatively poor flushing, the river is polluted. The green turtles here are developing papilloma viruses (herpes) which, in some cases, grow into large tumors in the soft tissue around the eyes and mouth, the flippers, and the underside of the shell. But loggerheads and hawksbills, which live together with the green turtles in the same environment, are not infected with the virus. Pritchard says that the same virus has been showing up in green turtles in Hawaii in deep water, not shallow lagoons like in Florida.

Oil from oil spills travels with the ocean currents fouling anything unfortunate enough to encounter it. Green turtles have been found with their mouths tarred shut. Hawksbills have been found off the Florida coast literally encased in tar balls with only the flippers and head visible. Hatchlings have suffocated from tar lodged in their nostrils and eyes. A 1979 blowout in the Ixtoc, Mexico oil field spewed 3 million barrels of oil that fouled not only the feeding grounds of the seriously endangered Kemp's ridley (*Lepidochelys kempi*), but was carried by Gulf currents to Tamaulipas, the only known nesting area for this species. Later that year, a ship in the same area spilled 390,000 barrels of oil.

Perhaps the greatest threat to some species, particularly the Kemp's ridley and the loggerhead, is their incidental capture in commercial shrimp nets. Thousands of shrimp fishermen from North Carolina to Texas capture an estimated 48,000 sea turtles each year, according to the U.S. National Marine Fisheries Service (NMFS). More than 11,000 of these animals are drowned each year, 10,000 of them loggerheads. And although the loggerhead (threatened in the United States, endangered in the Mediterranean) is not in as dire straits as the Kemp's ridley, experts estimate that its population is declining at a rate of 3 percent per year.

Fortunately, as of April 1987, Mexico mandated the use of turtle excluder devices (TEDs)—which may reduce

300 pounds=136 kilograms
14 billion pounds=6.3 billion kilograms

the capture of turtles in shrimp trawls by up to 97 percent—in the Gulf of Mexico for its entire shrimp fleet. The United States is attempting similar regulations but currently is being met with much debate from commercial shrimpers.

A popular international trade

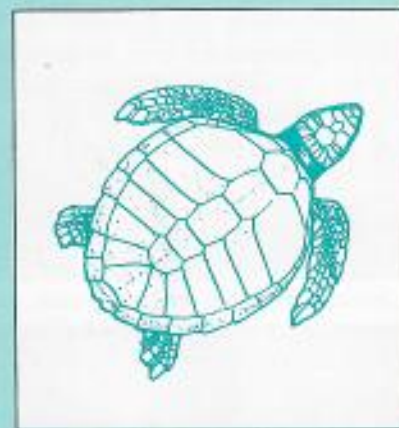
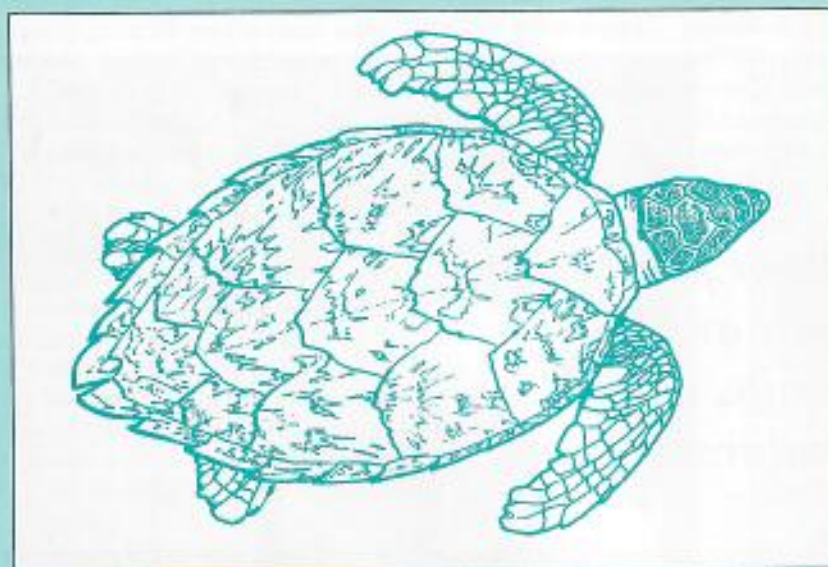
Although pollution, commercial fisheries, and habitat destruction all take their toll on turtle populations, these deeds are, nevertheless, not committed with the intention of killing

turtles. But international trade of turtle products is deliberate and preventable slaughter. It remains the single greatest threat to the green turtle, the hawksbill, and the olive ridley (*Lepidochelys olivacea*). Japan, the world's largest consumer of wildlife products on a per capita basis, imports and consumes the lion's share of all three species.

A study of Japanese turtle trade completed in June 1987 by the Center for Environmental Education revealed that Japanese trade consumed

1,986,000 to 2,186,000 sea turtles between 1970 and 1986. According to the report, that figure includes: 600,000 hawksbills for shell, 577,000 stuffed hawksbill juveniles, 380,000 to 400,000 stuffed green juveniles, 429,000 olive ridleys for leather, and an undetermined number of green turtles for meat, soup, and shell.

In 1973, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) was drafted to control such international



From just a silhouette, an expert can identify most sea turtle species. The elongate hawksbill (top) is easily distinguished from the ridleys. On the other hand, the olive ridley (above left) and Kemp's ridley (above right) are so similar that they cannot be separated on the basis of shape.

Six sea turtles of the Atlantic

Hawksbill turtle (*Eretmochelys imbricata*). Endangered. Length 30 to 36 inches; weighs between 100 and 200 pounds. Found in tropical waters worldwide. Population size unknown due to scattered nesting habits. Harvested primarily for its shell.

Olive ridley (*Lepidochelys olivacea*). Endangered. Length 24 to 30 inches; weight to 100 pounds. Found in the tropical regions of the Pacific and Indian oceans, and in the southern and eastern regions of the Atlantic. Population estimates are from 300,000 to 400,000. Exploited largely for its leather.

Kemp's ridley (*Lepidochelys kempi*). Most endangered of all sea turtles. Length 22 to 30 inches; weight 85 to 100 pounds. Found on the Gulf coasts of Mexico, Texas, Louisiana, and Florida; occasionally seen on the east coast of the United States. Breeding females number less than 600, with a population decline of approximately 3 percent per year. The most serious threats to the species are shrimp trawls and poaching of eggs in the single known nesting beach.

Green turtle (*Chelonia mydas*). Endangered in Florida and the Pacific coast of Mexico; threatened elsewhere. Length 36 to 48 inches; weight 300 pounds and greater. Found in the tropical regions of the Atlantic, Pacific, and Indian oceans. Nesting population approximately 200,000. Highly exploited for its meat, eggs, and calipee.

trade in endangered and threatened species. Currently, 95 nations have signed the agreement. However, some European and Asian nations have taken exception to (or reservations on) some of the species included and continue to trade in large numbers of turtle products. Other member nations circumvent the convention by using loopholes in the regulations or, because of a lack of enforcement of the CITES regulations, blatantly ignore them.

Japan is the most notable example of

using the "reservations" loophole. Taking a reservation means that a country can, within 90 days of the time that a species is listed under the "most protected" status according to CITES, reserve the right to continue trade. However, the country may not trade with other CITES countries.

"Japan, however, does not follow the letter of the law," Marydele Donnelly, director of the Sea Turtle Rescue Fund, said. For example, Donnelly reports that each year Japan imports well over

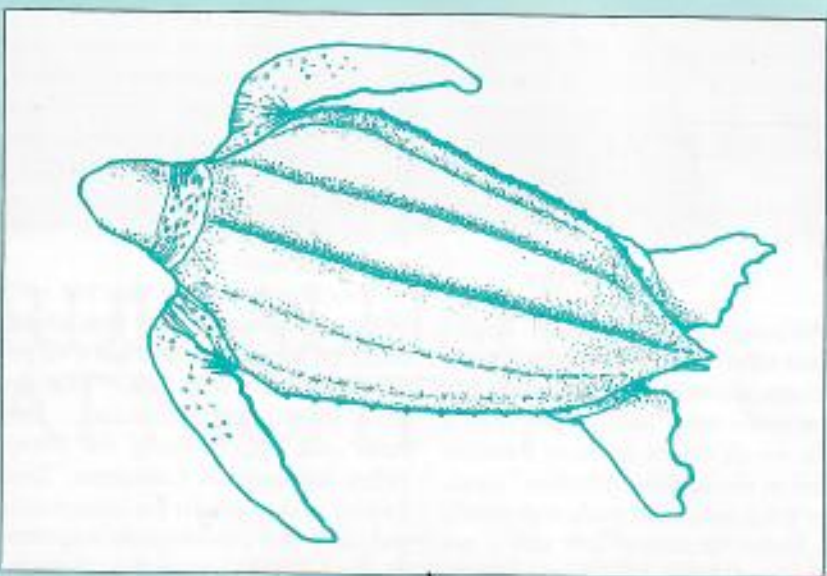
66,000 pounds of hawksbill tortoise-shell, primarily for traditional and decorative purposes. This figure does not include immature hawksbill turtles that are stuffed and sold to tourists.

Forty percent of the shell going to Japan comes from the Caribbean where most countries are not members of CITES. There, 1 pound of shell sells for between \$50 and \$100. By weight, in

66,000 pounds=30,000 kilograms
1 pound=0.45 kilogram

Loggerhead turtle (*Caretta caretta*). Endangered in the Mediterranean, threatened in the United States. Length 36 to 38 inches; weight 200 to 350 pounds. Found from subtropical to temperate waters, its largest nesting area is in the Middle East, followed by the southeastern coast of the United States. About 30,000 nests are made in each of the two areas during each nesting season. The loggerhead population is declining at about 3 percent per year. An estimated 10,000 loggerheads are drowned in shrimp trawls each year. Commercial development at nesting sites and scavenging of eggs by raccoons are the greatest threats to the reproduction of the species.

Leatherback (*Dermochelys coriacea*). Endangered. Length up to 6 feet; weight up to 1,300 pounds. Found throughout the Atlantic, Pacific and Indian oceans, the leatherback nests primarily in Malaysia, Mexico, Central America and the Guianas. Breeding females number approximately 100,000 worldwide. The primary threats to the species are extensive egg poaching, fishing gears, and plastic pollution that resembles its jellyfish diet.



30 to 36 inches=76 to 91 centimeters
100 to 200 pounds=45 to 90 kilograms
24 to 30 inches=61 to 76 centimeters
100 pounds=45 kilograms
22 to 30 inches=56 to 76 centimeters
85 to 100 pounds=38 to 45 kilograms
36 to 48 inches=91 to 122 centimeters
300 pounds=136 kilograms
8 feet=2.4 meters
1,300 pounds=590 kilograms
36 to 38 inches=91 to 97 centimeters
200 to 350 pounds=90 to 159 kilograms

The smooth, round shell of a green turtle (top left) is clearly different from the long ridges of the unmistakable, shell-less leatherback (above). With five or more pairs of plates on its shell, a loggerhead (top right) can be separated from a green.

The status of turtle excluder devices

Federal regulations require that shrimp fishermen trawling in certain U.S. waters, or for tows longer than 90 minutes in all U.S. waters, use turtle excluder devices (TEDs) in their trawls. The target is for 80 percent use of TEDs in 1990.

However, Louisiana shrimpers obtained an injunction against the law requiring TEDs. A July 11 court order by the Fifth Circuit Court of Appeals upheld the TED regulations and, as of September 1, lifted the injunction. Several amendments to

pending Congressional legislation may modify the regulations.

TEDs are designed so that when a turtle enters one, the turtle strikes an angled bar that deflects it down and out through an opening in the bottom of the net. The shrimpers complained that the standard, bulky, metal TED is expensive (about \$400 to \$600), difficult to handle, and dangerous in rough seas. They also claimed the device reduces shrimp catches up to 20 percent. Prompted by shrimpers' objections to the metal

devices, two new "soft" TEDs have been developed, using webbing in place of the metal bars. Initial tests show some problems with seaweed clogging the device, and resultant loss of catch.

The Louisiana Department of Wildlife and Fisheries estimated that using TEDs could cost the state's \$206 million industry as much as \$50 million a year. The final battle over the use of TEDs in the U.S. will be decided in Congress and the courts.

fact, tortoise shell is now more valuable than elephant ivory.

Indonesia and Kenya still export hawksbill shell to Japan, even though they are CITES members, because such illegal export and import are not enforced. Turtles also are traded by "middlemen" or intermediary countries, which bring the products in from producing countries—either a CITES-lapsed or non-CITES country—and redistribute them to consumers. The unfortunate reality is that CITES is just a convention and secretariat headquartered in Switzerland and has no enforcement ability. As long as there is a market, the law of supply and demand will prevail regardless of the exhaustibility of the supply.

Ranches raise turtles

Although CITES-member France has not taken a reservation on sea-turtle products, it continues its importation of green-turtle meat and calipee from a turtle ranch on its territory Reunion Island in the southwest Indian Ocean. This is because such trade technically falls under "domestic" law and is not subject to international regulations under CITES. However, according to the Trade Record Analysis of Fauna and Flora in Commerce (TRAFFIC France), which is part of the World Wildlife Fund, the calipee coming from Reunion Island to France is being made into turtle soup and exported to CITES-member Austria.

Another illegal import to France is turtle oil from the Cayman Island turtle farm. The oil is used in cosmetics. Donnelly said: "That's a violation of

CITES because that farm has not been given status for CITES trade. It is legal to have a turtle farm for local consumption but not for export."

What on the surface may sound like a conservation measure—turtle farming such as that practiced in the Caymans—has not been totally successful, according to Donnelly. The difference between a farm and a ranch is that a ranch is dependent on wild stock, which must be replaced every year. A farm is intended to be a closed system where turtles are raised from hatchlings to marketable size and bred to produce a second generation. On the Cayman Island turtle farm, the wild stock has produced eggs, but hatchlings have not produced a second generation of any significant number.

New statistics show that the turtle meat and calipee ranch that already exists on Reunion Island has a 42 percent turtle mortality rate. "That says poor mariculture techniques," Donnelly said. "Conversely, the Kemp's ridley hatchery in Galveston, Texas (which is used strictly for conservation purposes, not consumption), operated by the NMFS, shows a 1 or 2 percent mortality rate."

There are adequate, cheaper substitutes for tortoise shell (plastic substitutes are practically indistinguishable), leather, meat, and oil. A difficult problem exists, however, in convincing countries whose economic situation is improved by the consumption of an endangered species. Ecuador, for example, is a member of CITES and no longer exports turtle leather. However, some recent reports indicate that turtle

meat is being used to make sausage, which is cheaper than using beef or pork. Where there is a money crunch, conservation is placed low on the list of priorities.

About all that agencies such as the Sea Turtle Rescue Fund can do is inform the ambassador to Ecuador and relay the information to the U.S. Fish and Wildlife Service to put pressure on its connections in Ecuador. Sometimes this does work, according to Donnelly. A few years ago, Ecuador was a high consumer of the olive ridley. Pressure was put on that government from outside the country, and it reduced its takes substantially.

The combined efforts of wildlife conservation organizations and well-meaning, but ineffectual, regulatory boards may not be enough to save the endangered sea turtles from extinction. It can only be hoped that, through education, the weight of conscience and conservation will overcome the balance against the demands of luxury.

Susan S. Gregg, an enthusiastic diver, boater, and lover of the sea, is the editor of a biweekly health and fitness publication and a parttime writer.

Related reading:

Hamm, Rod. "Egg thieves of Playa Grande." *Sea Frontiers*, January-February 1987, pp. 27-33.

Batrago, Joaquin. "Will the Caribbean hawksbill survive?" *Sea Frontiers*, July-August 1985, pp. 219-226.

Sheppard, Charles. "A surfeit of turtles." *Sea Frontiers*, November-December 1983, pp. 329-334.

Sea Frontiers®



• SEPTEMBER-OCTOBER 1988

SEA TURTLES ON THE
BRINK

THE FEARED
TIGER SHARK

TSUNAMI WARNINGS

UNDERWATER MAGIC:
UV PHOTOGRAPHY