

CLEAN WATER ACT • COAL LEASING • SEA TURTLES

SIERRA



SEPTEMBER/OCTOBER 1983 \$1.50

SIERRA

THE SIERRA CLUB BULLETIN SEPTEMBER/OCTOBER 1983 VOLUME 68/NUMBER 5

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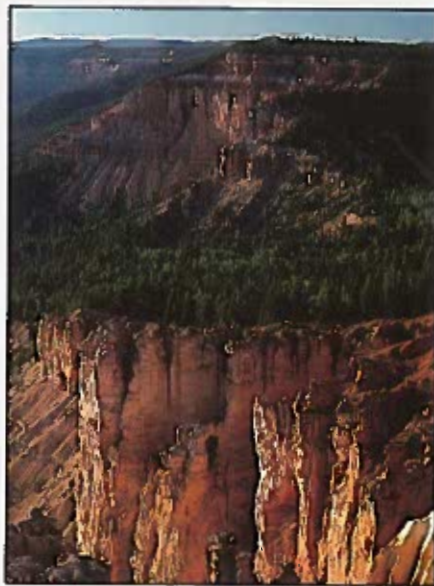
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COVER: Autumn colors at Chequaqua Falls, Watkins Glen, N.Y. Photo by David Muench.

Sierra (USPS 495-920) (ISSN 0161-7362), published bimonthly, is the official magazine of the Sierra Club, 530 Bush St., San Francisco, California 94108. Annual dues are \$29, of which \$3 is for subscription to *Sierra* (nonmember subscription: one year \$8, three years \$20, foreign \$12, single copy \$1.50). Members may purchase additional one-year subscriptions for \$6 (send to 530 Bush St., Attn: Subscriptions). Second-class postage paid at San Francisco, Calif., and additional mailing offices. Copyright © 1983 by the Sierra Club. Reprints of selected articles are available from Sierra Club Information Services.

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FROM THE GIANT TORTOISES that lumber over the Galapagos Islands in the South Pacific to the 10-pound Plymouth red-bellied turtles of coastal Massachusetts, turtles throughout the world are becoming the players in a tragic, no-win "shell game" that pits them against the fishing industry, real-estate developers, and poachers.

While scientists are quick to point out that the battle to preserve a species is more than a numbers game, the numbers themselves are not encouraging. Today about 25 species of turtles worldwide are listed as either threatened or endangered under the Endangered Species Act of 1973. But that is only part of the problem.

Scientists estimate that 20 percent of all the freshwater turtles in the world, for example, are in danger because of some human-related activity. At least half of the 35 species of tortoise are facing serious obstacles, even though only the desert tortoise in the Beaver Dam Slope area of Utah is actually listed as "threatened." But by far the most critical situation—at least in the eyes of U.S. observers—is the plight of the sea turtle. Of the eight turtles native to the United States on the endangered or threatened list, six are species of sea turtle.

The Kemp's ridley is a good example. In 1947 a Mexican engineer wandering along a beach in Tamaulipas took some photographs of an enormous congregation of nesting sea turtles. When the photographs became public 14 years later, it was determined that the beach had been blanketed with about 40,000 Kemp's ridleys. Yet today it is believed that only 400 to 1,000 breeding females remain. This decimation is primarily attributed to egg hunters. Since the Kemp's ridley doesn't breed anywhere else in the world, it has become a bettor's favorite to be the next turtle to disappear forever.

The outlook for the other sea turtles on

A newborn Kemp's ridley (below), one of a species facing imminent extinction. The green turtle (right), highly prized for its meat and shell, is also endangered.



C. Allan Morgan/Peter Arnold, Inc.

SEA TURTLES

The tortoise may have enjoyed the last laugh on the hare in the popular children's story, but his real-life cousins are now in grave danger of losing a far more important race—the race against extinction.

NICHOLAS G. PAPPAS



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A female Kemp's ridley (right) deposits its eggs in a sand nest. Should a turtle's eggs not fall prey to human or animal predators, the babies (inset, three greens) will emerge to begin the reproductive cycle anew.

the endangered list—the olive ridley, hawksbill, green, leatherback, and loggerhead—isn't quite so bleak; yet their situations range from serious to critical. Part of the problem is that turtles are among the more exploited animals in the world—from their eggs to the shells on their backs.

Turtle meat, for example, is considered a delicacy by many. So is turtle soup, made from shell cartilage. Turtle shells are also highly valued in many countries as a jewelry item, while turtle skins are often tanned and used in the production of expensive shoes, handbags, and luggage. Hence the demand for turtles—dead turtles—throughout the world.

While killing nesting females and taking their eggs is not considered to be as widespread today as it once was, it is still one of the leading threats to the survival of many turtle species.

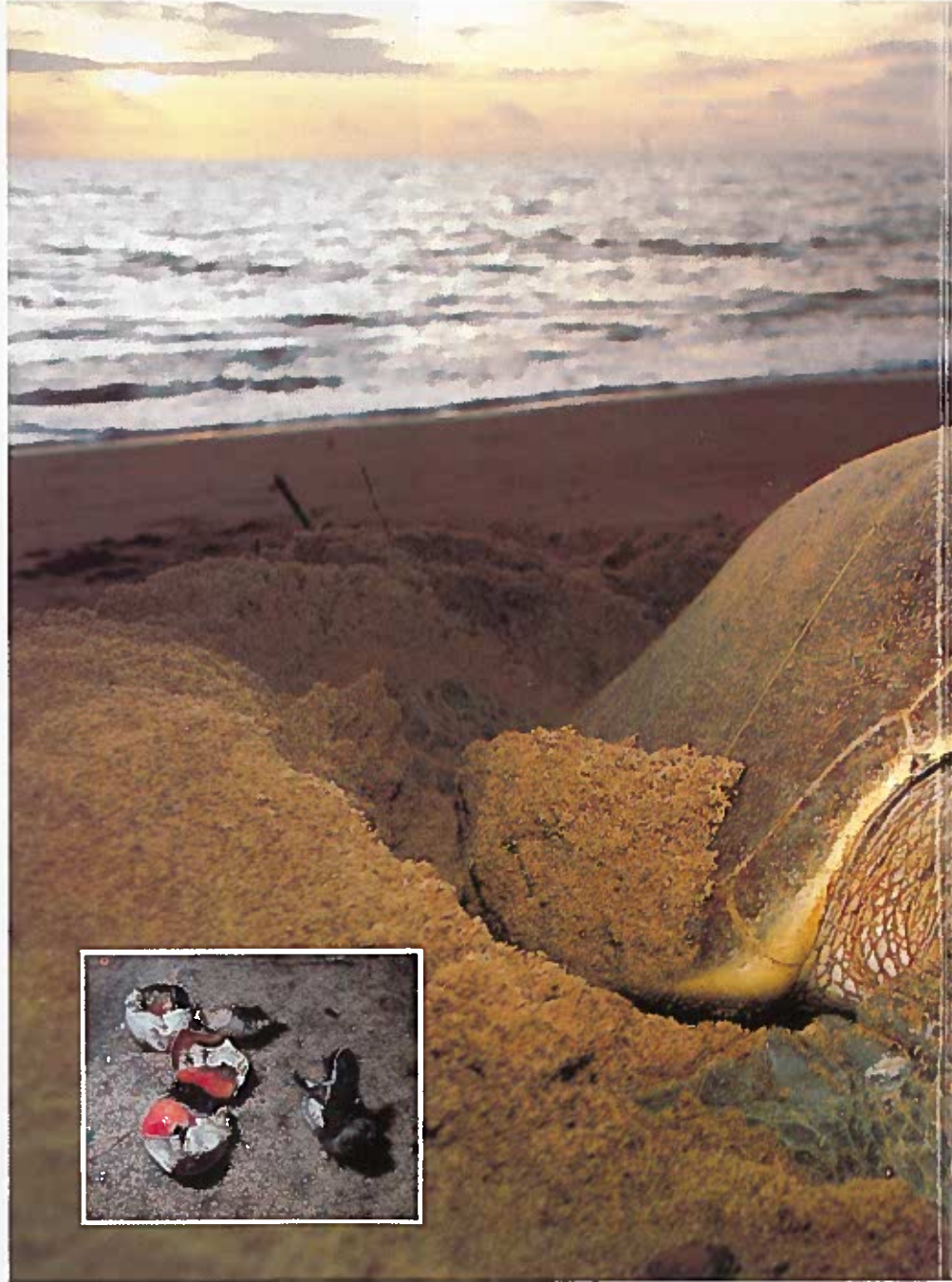
"Outside of the United States it's a major problem," says C. Kenneth Dodd, Jr., a staff herpetologist for the U.S. Fish and Wildlife Service's Office of Endangered Species. "In some areas, for instance, such as the beaches in Mexico where you have huge numbers of leatherbacks, essentially every egg is taken. In other countries, eggs are taken in huge amounts. We're talking about a million or so eggs a year from some beaches, perhaps more."

Another major problem is development, residential and otherwise, at nesting beaches. The Florida coast, for example, considered to be the largest nesting area for the loggerhead, is being altered forever by the construction of condominiums and other projects likely to have a detrimental effect on the loggerhead's reproductive cycle.

The problems posed by development are not restricted to the United States. The west coast of Mexico, held by turtle researchers to be one of the best sea-turtle grounds in the world, also appears vulnerable because of its aesthetic beauty.

"There's no earthly way they're going to keep people away from those magnificent cliff shores, which look like Big Sur in California," predicts Dr. Archie Carr, a University of Florida professor regarded by many as the dean of sea-turtle study. "The turtles nest on those beaches in enormous numbers, and any development is going to worsen their already grim situation."

While poaching and beach development remain serious problems, some think the incidental capture of sea turtles by fishing vessels has become the animals' chief prob-



lem today. Researchers estimate that thousands of sea turtles drown every year after becoming entangled in large shrimping nets.

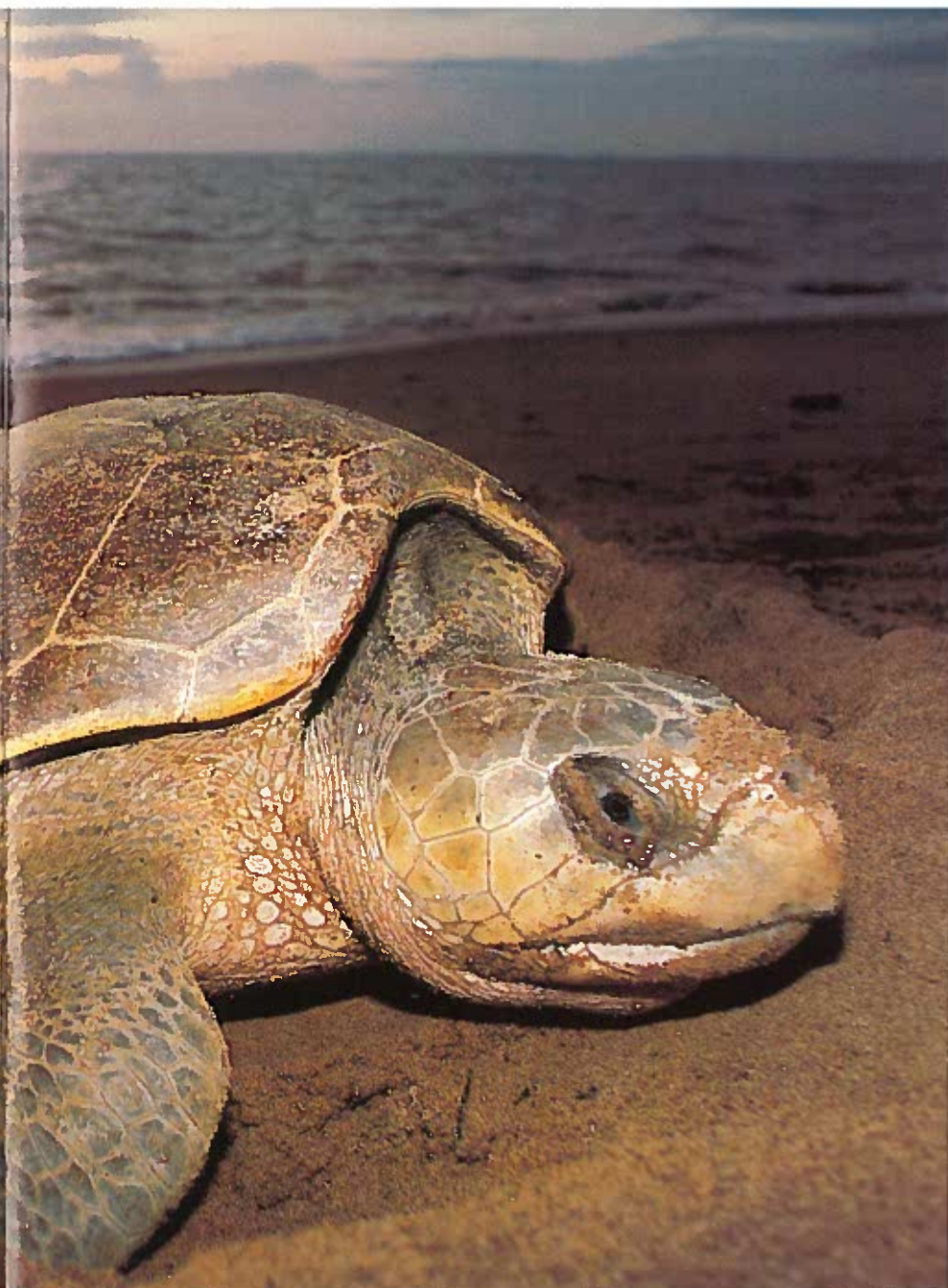
Fortunately, something is being done to reduce the number of deaths attributed to such incidental catches. The National Marine Fisheries Service (NMFS) has been working toward a solution for several years and is optimistic that a device it has developed to keep turtles out of fishing nets will be acceptable to the shrimping industry. Known as a TED—for "turtle excluder device"—the contraption resembles an iron trap door and fits onto the back of a shrimping net. Whereas earlier versions of the device had the undesirable side effect of reducing the shrimp catch, the latest model is touted as causing no such problem.

"Our tests with that device show it to be amazingly effective," says Charles Karnella,

a specialist in the management of marine resources for the NMFS. "The tests we conducted have not resulted in the taking of a single dead turtle. We estimate that with this device we would reduce the catch of sea turtles somewhere between 95 and 97 percent."

While the outlook for the survival of sea turtles is far from rosy, there are some encouraging signs. Among the most significant is a growing international awareness that the turtle species exploited yesterday are in need of protection today. This awareness has resulted in some cooperative research projects aimed at increasing the population of certain sea-turtle species.

For the last several years, for instance, the United States and Mexico have been working together to save the Kemp's ridley. The goal of the program is to protect the females



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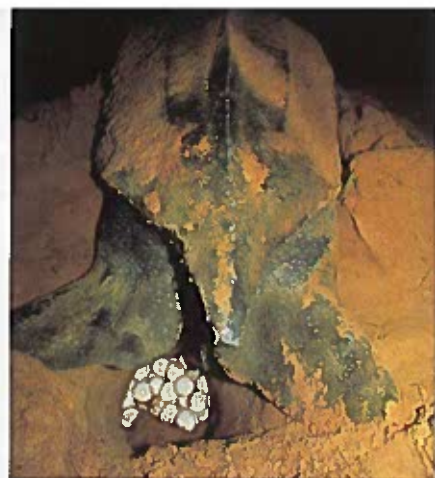
and their eggs during the nesting season. To this end, this country has contributed technical personnel, money, and supplies, while Mexico has responded by assigning military personnel to patrol the beaches.

As part of a Kemp's ridley headstart program, eggs are being flown from nesting beaches in Mexico to Padre Island in Texas, where they are allowed to hatch in the sand. The hatchlings are then allowed to enter the sea, as instinct directs them to, after which they are recaptured. They are then reared in captivity until they are about the size of a dinner plate, which tends to reduce the number lost to natural predators. Similar programs have been launched for green sea turtles, hawksbills, and loggerheads in California, Florida, Maryland, Texas, and Washington.

Although the Kemp's ridley headstart

program began about five years ago, it's still too early to determine if it is achieving its goal. Since turtles may take from 10 to 15 years to mature, there may not be any definitive answers before the turn of the century.

A more firmly established program is based at Tortuguero National Park in Costa Rica, a country that began to take steps to preserve its colony of green sea turtles in the late 1950s. This project, begun with Dr. Carr's help more than 25 years ago, involves tagging the turtles in order to determine their routes and schedules of migration. While the number of nesting females varies from season to season, recent reports indicate that the population of green sea turtles at Tortuguero may be holding its own. If these reports prove accurate, it will be of particular significance, since some turtle experts consider this region to be the green's



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A leatherback (top) lays its eggs in the sands of Surinam. The odds against many of her offspring reaching maturity—like the fully grown loggerhead above—are quite high. Eggs are taken in vast numbers by human gatherers, while hatchlings have a variety of natural enemies to watch out for (below, a ghost crab devours a baby green sea turtle).



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most important Caribbean nesting ground.

Karnella sees even more reason for optimism. "We're now involved in a symposium," he says, "to which most of the Caribbean countries are contributing money and information. This effort will ultimately lead to a broad assessment of turtle stocks throughout the Caribbean. I think the fact that the governments of those countries are paying that kind of attention to the sea turtle is very encouraging."

One worldwide organization working toward the survival of the sea turtle is the International Union for Conservation of Nature and Natural Resources. The group, which has been in existence for almost 30 years, has brought together turtle experts from around the world to form a Marine Turtle Specialist Group within its Species Survival Commission. With funding as-

sistance from the World Wildlife Fund, the specialists have targeted the identification and protection of nesting beaches as its primary goals.

On the international-trade front, a major breakthrough occurred in 1973 with the signing of the Convention of International Trade in Endangered Species of Wild Fauna and Flora (CITES). Nearly 70 nations, including the United States, adopted this treaty's restrictions on the trade of items made from endangered species. The treaty calls for each member country to establish an agency to administer the regulations.

Ratification of the treaty may have been a major step forward in protecting turtles and other endangered species, but enforcement of the agreement is another matter.

Baby Kemp's ridleys (above) are released as part of a headstart survival program. The eggs are protected in hatcheries from predators who seek out their sand nests on the open beach, like the one the green sea turtle below is digging.



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C. Allan Morgan/Peter Arnold, Inc.

"In some countries it has been effective, and in some it hasn't," says government herpetologist Dodd. "I think you can understand why when you recognize that some of these countries are extremely poor, and so it's very hard for them to implement some of the provisions. And let's face it: I don't think I'm going to tell anybody anything new by saying that CITES is just ignored in some countries."

While almost all would agree that the intent of the international trade treaty is commendable, the same can't be said about another approach to world trade—turtle farming.

In 1968 the only turtle farm in existence was launched on Grand Cayman Island in the West Indies. The farm, which raised

green sea turtles for meat and other products, was taken over by a German-British consortium in 1974. Although the consortium is believed to be the largest exporter of green-turtle meat in the world, the United States has so far rejected its request that the CITES-mandated ban on the importation of turtle products be lifted.

Proponents of turtle farming argue that captive breeding of the animals helps to conserve the green turtle and has no impact on sea turtles in the wild. Opponents contend, however, that turtle farming serves only to stimulate the demand for turtles in the marketplace, thus making illegal trade more prevalent.

Dodd subscribes to the latter theory. "First of all," he reasons, "there is no scien-

tific basis for taking a turtle in and raising it to maturity. In other words, before you begin any aquaculture study, you have to have basic knowledge about the life history of the animal you're dealing with—and that's knowledge we haven't got for turtles. Number two, I believe there is ample evidence to indicate that turtle farming stimulates trade."

When it comes to combatting the illegal trade in turtle items or the development of the sea turtles' all-important breeding grounds, scientists and government officials aren't the only ones who can play significant roles. Public awareness of the problem could go a long way toward its solution, since many times it's the unsuspecting tourist who inadvertently helps fuel the demand for things made from illegally caught turtles.

"Folks think that if turtle products are for sale somewhere, they must be legal," says Meg Durham of the U.S. Fish and Wildlife Service. "Then they get back here and find out that they're not. If people were more aware of the problem, it would at least help diminish the market for the illegal turtle products."

Although much is being done to ensure that the sea turtle and other endangered turtles don't follow the dodo bird down the road to extinction, not everyone is brimming with optimism.

"The data suggest to me that the problems we face now are going to get worse," says Dodd, who concedes he has a reputation for pessimism. "And I don't know what can be done about that—simply because, although the solutions are there, there are a lot of reasons why many of them are not going to be carried out."

"For instance," he explains, "if you want to protect freshwater turtles, you have to stop damming the rivers, you have to stop dumping pesticides and pollutants into rivers, and you have to protect the habitat where the animals are nesting and carrying out their activities."

Archie Carr is one of those experts who hold little hope for the survival of the more imperiled turtle species, such as the Kemp's ridley. He believes it's time to step back and take stock of the situation.

"It isn't because of any religious belief that the fruits of nature shouldn't be harvested," Carr says. "It's just that when you overharvest, you risk eliminating them. We believe that all species of turtles are now at such a risk that we've simply got to stop for a while."

If we don't, the tortoise in the famous children's story may be the only turtle to ever win a race. □

Nicholas G. Pappas is city editor for the Lowell (Mass.) Sun. He has published nature pieces in Sea, Country Gentleman, and Turkey Call.