



Photo by George H. Balazs

Two members of endangered species, a monk seal and a green turtle, nap together in the Leeward Islands.

by George H. Balazs

Green Turtle's Uncertain Future

Protection vital if remnant population is to survive

EARLY HAWAIIANS were well acquainted with the green turtle, which they called *honu*. A second kind of sea turtle, the hawksbill or *'ea*, was also familiar to them. This animal's range appears to have always been restricted to the southeast portion of the island chain, and presently so few exist that the population is nearly extinct. Both of these native turtles, which are referred to in mythology and illustrated in petroglyphs, were carefully utilized in the old Hawaiian culture to ensure a lasting supply.

For the past three years, I have worked toward gaining a better biological understanding of the Hawaiian green turtle. Information resulting from this research has been used to aid in the conservation of these magnificent animals. My continuing field studies are focused on French Frigate Shoals, a 15-mile crescent-shaped atoll that includes several small sand islands and a

volcanic pinnacle. Located 480 miles northwest of Honolulu, in the Hawaiian Islands National Wildlife Refuge, French Frigate Shoals is the site of Hawaii's last green-turtle breeding colony and the only one left in the United States. Most egg laying takes place at this location between June and August on the 11-acre island of East, or Turtle Island, as it was originally called. Thus far, I have spent a total of 162 days at this remote location tagging and censusing turtles and collecting information on hatchling production. Results of this work, along with the findings from earlier taggings by U.S. Fish and Wildlife Service personnel, have made a start in piecing together the complex natural history of the population. Our work has shown that many members of the seasonal breeding colony come from feeding pastures around the major inhabited islands to the southeast. Additionally, some turtles have been found

Photo by Robert J. Shallenberger



A hatchling green turtle reaches the surf. Eggs hatch 55 to 65 days after laying; the young turtles normally run to sea after dark. They are seldom seen again until they weigh about ten pounds.



Photo by D.L. Olsen

Adult Hawaiian green turtles basking on the sand at French Frigate Shoals, the only nesting colony in the United States.

to travel to the breeding site from around the small islands northwest of French Frigate Shoals. Because no tagged animals have been recovered from anywhere outside the chain, it appears that Hawaii has one of the few *Chelonia* populations in which protection is not complicated by international migrations. This factor is a major problem in efforts to conserve green turtles in other parts of the world.

With both the feeding pastures and breeding grounds under the jurisdiction of a single country, one would hope to find a healthy population that has not undergone ecologic decline. Unfortunately, Hawaii's green turtles have nevertheless experienced serious losses and, in many ways, reflect the global problem. Although events contributing to the Hawaiian situation have taken place over a 150-year period, the last 40 years have been the most devastating.

At the time of Captain Cook's arrival in 1778, native Hawaiians were unaware of the small islands northwest of Nihoa. Following the discovery of these uninhabited areas by foreign explorers during the late 1700s and early 1800s, visits involving wildlife exploitation became common. Although information is scarce on the actual number of turtles taken, the log of one expedition in 1882 suggests that it was considerable.

After four months in these islands, the crew of the schooner *Ada* had killed more than 400 turtles, as well as many monk seals and seabirds. Ironically, at Laysan Island, a sign was found that appealed to voyagers not to take turtles. The sign was repainted before the *Ada* left, but 130 basking turtles were nevertheless removed from the beaches. Turtles were also regularly killed during this period to provide food for resident guano miners, Japanese feather hunters, and numerous shipwreck victims. One account states that several hundred were eaten by the crew of a single whaling vessel wrecked at French Frigate Shoals in 1888. When the barque *Wandering Minstrel* captured turtles at French Frigate Shoals during the 1891 breeding season, one island alone was described as having hundreds of turtles basking on the beaches and at least ten times that many in the water. To provide a modern comparison, during the 1975 season, I found no more than 35 basking turtles on any single island.

Primarily due to the massive destruction of nesting seabirds by feather hunters, all of the northwestern islands except Midway and Kaula were set aside as a federal wildlife refuge in 1909. This far-sighted conservation measure should have put a stop to the killing of turtles and prevented the dis-

turbance of critical habitat. But this was certainly not the case. During the 1923 nesting season, a scientific expedition visiting French Frigate Shoals found evidence of a recent turtle slaughter. In 1926, a commercial fishing station was established at Pearl and Hermes Reef, an important basking and feeding site for Hawaiian *Chelonia*. The station remained active until 1931, and during those years turtles were exploited both at that location and at Lisianski Island, 145 miles to the southeast. Between 1930 and 1940, U.S. military exercises were regularly conducted at French Frigate Shoals. East Island was the base for these operations, which included seaplane runways in adjacent waters and encampments of 150 tents or more. During the early 1940s, related war games involving artillery bombardments were carried out at both French Frigate Shoals and Pearl and Hermes Reef. Although large numbers of turtles may not have been directly killed by these activities, disturbances of such magnitude contributed to the decline, particularly at the breeding site. In 1942, a military air station was constructed at French Frigate Shoals. The area utilized for this facility was Tern Island, a small 11-acre site originally very similar in appearance to East Island. After massive dredging and landfill operations

were completed, the "new" Tern Island encompassed 57 acres of packed coral and sand held in place with iron pilings. I have estimated that this single project destroyed 19 percent of Hawaii's total acceptable green turtle nesting habitat.

Further degradation of the ancestral breeding grounds was yet to follow. In 1944, a radio-transmitting navigation station was established on East Island. Permanent buildings and roads were built, and an extensive antennae ground wire system was buried over much of the island. It is difficult to understand why this important 11-acre piece of green turtle real estate in the Hawaiian chain was selected for such an incompatible human use. Eight years later, in 1952, the station was completely abandoned, and transmitting facilities were constructed on Tern Island, six miles to the north. Rotting wood, rusting metal, and buried wire still interfere with turtle nesting at East Island.

In 1946, the killing of turtles at French Frigate Shoals for markets in the major islands was greatly simplified. In that year, Tern Island was opened to commercial fishing interests. It would appear that the area's wildlife refuge status was all but forgotten. Over a three-year period, flights were made between Tern Island and Honolulu to transport fish and turtles. At least 200 turtles were taken by one company involved, and turtle meat made up a large portion of the fishing crew's diet. Exploitation at the breeding site was reduced after 1949, partly due to economic reasons related to declining numbers of fish and turtles. Sporadic killing of turtles for commercial purposes did, however, continue at French Frigate Shoals throughout the 1950s, and it is likely that other northwestern refuge islands were also involved.

The last recorded instance of turtles being slaughtered at the breeding site took place in 1959, exactly half a century after the refuge was established. In that year, a commercial fishing company destroyed a minimum of 25 percent of the nesting females present for the season. One of the "harvesting" methods involved clubbing the turtles on the head while they were in the process of laying eggs. Many shipments were made to Honolulu before the operation stopped abruptly, possibly because of a plane crash. Whole dead animals awaiting removal were left to rot on the beaches alongside the remains of the previously butchered turtles. In 1964, personnel of the U.S. Fish and Wildlife Service were permanently assigned to Hawaii to administer all of the refuge islands. Since that time, turtles in the area have enjoyed relative freedom from destruction and harassment.

IN THE MAJOR inhabited islands to the southeast, an important green turtle-breeding colony formerly nested on Lanai. This site last hosted animals in the 1920s and probably represented a more recent colonization than the geologically older area of French Frigate Shoals. Several select beaches on Molokai, Oahu, and Kauai were also used by *Chelonia* as recently as 40 years ago. Today, a single such nesting anywhere in the major islands would be a newsworthy event. Several factors are responsible for these losses of reproductive capability. Land development and advanced modes of transportation have made nearly all previously isolated beach areas accessible to exploitation and disturbance by man. Additionally, on Lanai in particular, native vegetation has been significantly altered by plant and animal introductions, and erosion has occurred. These factors have produced changes in the nesting habitat. Even if offspring of this breeding colony still remained alive, I seriously doubt that the characteristics of the present beach would be acceptable.

Over the years, hunting pressures have also steadily increased on all sizes of turtles in feeding pastures around the major islands. This was brought about by Hawaii's growing human population and by the dollar incentive of commercialization. No site could be considered safe from the fast boats launched from trailers, modern diving gear, high-powered spear and shark guns, synthetic turtle nets of great length, and even rifles. It is surprising to realize that before June of 1974, the only law relating to the capture of turtles around the major islands was a ban on the use of firearms, poisons, and explosives. Commercial fishing had always been permitted, and essentially no conservation regulations ever existed to help protect these unique native animals. In the early 1960s, turtle killing accelerated in order to satisfy the expanding tourist industry's desire to offer visitors an exotic luxury food. Green turtle meat was sold as "tasting something like veal." This description was well suited to the appetites of most tourists who had visions of Hawaiian food consisting of fish heads and seaweed. Visitors were able to return home satisfied at having sampled the native cuisine, restaurants turned a high profit margin, and weekend fishermen prospered. Everyone seemed to find the business rewarding except the Hawaiian green turtle who was being openly sold down the road to extinction.

In 1972, efforts were started to inform the general public about what was taking place and, hopefully, to obtain some form of legal protection. Public hearings on the matter were held over a one-year period and the gravity of the situation became

George H. Balazs is a research biologist with the Hawaii Institute of Marine Biology. Supported by the Fish and Wildlife Service, he has studied the green turtle breeding colony at French Frigate Shoals.

fully known. Sport divers, conservation-minded fishermen, and longtime residents described the declines they had witnessed. I received one account from a pilot who had casually counted turtles in the water while flying over a comparatively remote coastal area for a ten-year period. His observations indicated that a 90 percent decrease had taken place.

In short, overwhelming evidence and support existed for the overdue protection. Among the few dissenters was a small group of efficient part-time turtle hunters who were supplying restaurants all over the state with tens of thousands of pounds of meat. In 1974, a state regulation was effected which prohibited the sale of Hawaiian green turtles, but still allowed capture for home consumption with restrictions on size and method of capture. The nearly extinct hawksbill (*Eretmochelys*) population was given full protection along with the rare open-ocean leatherback (*Dermochelys*) which occasionally wanders into local waters. However, proposals for a moratorium on all turtle killing and a systematic study of remaining animals were unsuccessful. At this late date in the turtle's dismal history, such a plan seems essential if viability is to be assured.

While waiting for turtles to finish nesting, I have had ample time during the long nights on East Island to think about what the future holds for these gentle creatures. Certainly the remaining numbers would not be able to tolerate any reoccurrence of the past abuses. Realizing full well the precarious survival status of all green turtles, I am nevertheless encouraged by recent events that have taken place. A policy statement issued in April, 1975, by the International Union for the Conservation of Nature and Natural Resources (IUCN) officially recognized *Chelonia* as being in danger of becoming extinct. Although carrying no legal power, this action will still serve as an important guideline in the formulation of laws in many nations. In addition to the decisive statement by IUCN, the U.S. Departments of the Interior and Commerce have recently proposed changes in the law that would give *Chelonia* full protection. While waiting for these necessary measures to be adapted, each of us can aid in the animal's survival by refusing to buy derived products and urging others to do the same.

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Pages tell

DEAR EDITOR:

You are to be commended for your October issue of DEFENDERS. As in the classic work of Charles Dickens, David Copperfield in the opening lines begins—Whether I am to be the hero of my life or that that station be held by another these pages must tell. Certainly your open and positive articles have exposed trapping for what it is; you are the heroes of your lives.

*Rudolph A. Peuhs
Lynn Haven, Florida*

Impact

DEAR EDITOR:

Not until I opened the front and back covers of your October issue into one picture did the full impact of its terrible message hit me.

I wish this picture could be reproduced in every newspaper in the country. Unfortunately, it will probably be seen only by subscribers to DEFENDERS, who are already aware of and angered by the butchery of innocent animals so their skins can be stripped from them to adorn the pitiless human animal.

*Ginny Schlageter
Denver, Colorado*

Best ever

DEAR EDITOR:

Your last issue (October, 1975) was by far one of your best ever. Never have the pages of any one magazine shown so clearly all animals' right to live. In your magazine I have found all that is good: man's desire to help creatures who cannot help themselves and to speak for those who cannot speak. No aspiration could be nobler or closer to God.

*Joyce Brumitt
Kankakee, Illinois*

Best yet

DEAR EDITOR:

I must congratulate you on the October issue of DEFENDERS, which just arrived. I've read enough of it to see that it is the best issue yet. Special thanks for James A. Cox's "If You Want to Be Good—Join the Big Brotherhood." Maybe he can do one of his epic poems about beavers.

Tomorrow morning New Jersey small-game season begins. From then on, my husband and I will spend much of our time patrolling the [Unexpected Wildlife] refuge, and we will be witness to many atrocities in the name of "sport." It seems to me your magazine is taking a stronger stand than ever regarding hunting, and I'm glad to see it.

*Mrs. Hope Sawyer Buyukmihci
Newfield, New Jersey*

NOTICE

The American Carnivore Series of collectors' prints by Paul Breen, announced in the October, 1975, issue, has been cancelled. If you have already placed orders, refunds will be made.

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Defenders



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