

5-4-82

Dear George,

I hope you're not offended by the "casual" introduction, but I can't address someone as Mr.

Anyway, thank you very much for the letter. I enjoyed hearing from you. At the symposium lunch, I realize I monopolized the conversation. I hope the "monk seal" person was not offended. I'm just really interested in the environment and conservation, and I saw an opportunity to "absorb" information from you.

School, this year, is coming to an end and I've been really busy. My family and I are going to Oregon this summer to establish some sort of home. I regret that I am leaving Hawaii because the islands have turned on my interest in science and the ocean. However, I look at this move as an adventure and some place new to experience.

My ocean science class is now doing some population studies of the shoreline / surge zone. We set up a transect line, recording the movement of the purple urchin and the red slate-pencil urchin. We made substrate maps, including the areas of coral growth. Next, we're going to do a fish study. We're going to record the population as well as the behavior of the Butterfly fish and tang/surgeon fish. I'm learning a lot in that class and it's very interesting. (Also, we go to the beach about 3 days a week.)

Last week we were diving and we came across two green sea turtles. It looked like a rather large mother and her baby.



They were swimming off the reef face at Puako, the big island. That's the first time I've ever seen one in its natural habitat!! It was exciting, after doing all that research through books, to finally see one in the water!

The day after tomorrow is my birthday and my mother is taking me to Kauai as a present. I hope to do some diving there. I've heard it's very beautiful off Kauai's coast.

I am still very interested in doing some volunteer work connected with an ocean science program. I sent a letter off to one of the addresses you gave me, but I haven't received a response yet.

Enclosed is my turtle report that you asked me to send you. Although it only scratches the surface concerning turtles, I learned a great deal while collecting information.

I realized that it is extremely important to inform people about animals and the survival problems they are having.

I once saw a mutilated carcass of a sea turtle lying in the sun to rot and it almost made me sick.

I feel it is partly my responsibility to let people know what's happening to them. If my report has ~~been~~ sparked a little concern in one person, I know that my efforts are worthwhile.

Thank for keeping in touch.....

Aloha, Heidi

Heidi Dring
Po Box 455
Kailua - Kona Hawaii
96740

PS I lost your address. Perhaps you could give me one so that my letters go directly to you or is this the right address?

TURTLES OF HAWAII

by

Heide Dring

December 11, 1981

Parker School, Kamuela, Hawaii

LIBRARY OF
GEORGE H. BALAZS

MARINE TURTLES OF HAWAII

The turtle is a marine animal belonging to the Family Cheloniidae, and the Family Dermochelidae, whereas tortoises are land turtles and are a part of the Family Testudinidae.

Turtles look much like their ancestors did two million years ago. The lower portion of their shell is called the plastron and the upper portion is the carapace. Turtles breathe through lungs; however, some aquatics absorb additional oxygen from water through the wall of their cloaca and pharynx. (McKeown, S., 1978).

Turtles do not have teeth; some are vegetarians, others are carnivorous. They are endowed with powerful flipperlike limbs and a streamlined body, allowing them to swim rapidly.

In the Hawaiian Chain, all chelonians (turtles) lay their eggs on land, nesting several times during the breeding season of May through August. The female uses her rear feet to dig a hole above the high-water mark and she deposits her eggs there. After an unattended incubation, the small hatchlings dig to the surface and race to the water. Little is known about the growth, survival, and travel of young turtles. After mating and egg-laying, many turtles disperse hundreds of miles throughout the Hawaiian Archipelago. Adults are periodic migrators, traveling long distances between resident feeding areas and reproduction beaches. They are known to return to the same beaches on which they were hatched to lay their eggs. (Balazs, G., 1976).

Between 1800 and 1900, the turtle was greatly exploited for its shell, soup stock (made from cartilage or the "calipee"), eggs, shell artifacts, and leather; and the list goes on. As a result, several species are now endangered. Man is the greatest enemy of the Pacific Green Sea Turtle and the Hawksbill Turtle.

PACIFIC GREEN SEA TURTLE

The Pacific Green Sea Turtle, Chelonia mydas agassizi, ("honu" to the Hawaiians), the most abundant of the two species native to the Hawaiian Chain, is a shy, gentle, air-breathing herbivore, weighing 150-400 pounds. The carapace is dark olive, dark brown, or blackish in color. The plastron is coral, white, or yellow. Adults are most pigmented on the upper surfaces. The name Green Sea Turtle comes from the color of the fat inside the body. They feed on marine plants growing in shallow coastal waters. (McKeown, S., 1978).

The male's long tail extends beyond the hind flippers, whereas females have tails that barely reach beyond the end of their shells.

Males use flippers to clasp females' shells while mating. After mating in the water, the female crawls from the ocean at night, selects a nesting site, excavates and meticulously scoops out a chamber, deposits 100-200 eggs, and covers the clutch of eggs. Sometimes this process lasts through the night until dawn. Incubation is fifty to sixty days after the eggs are laid. The newly hatched turtles, averaging two inches in length and weighing one ounce, go to the ocean immediately. Crabs and reef fish prey on the hatchlings. Few survive the five to thirteen years before returning to the nest to continue the reproduction cycle.

These turtles mature sexually at 200 to 400 pounds and 32 to 42 inches in length. The Pacific Green Sea Turtle is found in tropical and subtropical waters of the Pacific and Indian Oceans.

On September 6, 1978, the United States Department of the Interior proclaimed that turtles were threatened and they could no longer be taken from Hawaiian waters. However, commercial fishermen and seasonal fishermen still exploit these animals. In the past 150 years, there has been a serious decline in the population of this species. Man's exploitation is responsible for such a small percentage of survivors.

There is some hope for turtles in Hawaii. French Frigate Shoals, located 1,200 miles northwest of Hawaii, is a wildlife sanctuary, established in 1909 by the Hawaiian Islands National Wildlife Refuge. (Balazs, G., 1976).

This refuge island is essential to the life cycle of hundreds of species. Unlike any other known place in the world, seabirds at French Frigate Shoals do not prey on hatchling turtles.

Green Sea Turtles are unique because they are the only turtles that bask in the sun. Most commonly, both females and males bask during the breeding season in the late morning through the late afternoon. The higher the temperature, the faster they return to the ocean. They do not bask when it rains. Flipping sand on their carapaces keeps them cool. The male basking provides an unusual opportunity to tag him and follow his activities. Otherwise, tagging has to be done in the ocean where the turtles are hauled aboard a boat with each turtle weighing up to 400 pounds.

Turtles migrate to French Frigate Shoals from May through August. Migration studies, including tagging, are done at Pearl and Hermes Reef.

At Sea Life Park on the Island of Oahu, turtles bask on artificial beaches of sand and concrete. Evidence has been found that turtles do not orient their bodies to alter their solar heat load as do other reptiles. They are selective; beaches must face the prevailing northeast trade winds. The turtles choose beaches that face the fringing reef of French Frigate Shoals where they feed and rest under the water. (Whittow, G., Balazs, G., 1981).

There are several reasons why turtles bask in the sun. The solar heat increases their body temperature, enhancing their digestive processes. Also, turtles bask in the sun as an energy conservation measure. An energy balance is obtained by the sun. Furthermore, basking insures their security from attack. The Tiger Shark, Galleocerdo cuvier, is the main predator of sea turtles in northwest Hawaii. (Whittow, G., and Balazs, G., 1981).

THE HAWKSBILL TURTLE

The Hawksbill Turtle, Eretmochelys imbricata bissa, commonly known to Hawaiians as ea, is the second most prevalent species found in Hawaii. They are distinguishable from other turtles in that their shell is shield-shaped, the individual plates of which clearly overlap, ranging in color from mottled brown above to yellow below. The adult shell is small, approximately 32 inches in length and they weigh approximately 75-150 pounds. These turtles have two prefrontal scales on their heads, whereas the Green Sea Turtle has only one.

These turtles have a unique pointed hawklike beak which is excellent for probing into coral and rock in search of food. They feed on crabs, fish, sea urchins, shellfish, seaweed, and other benthic marine invertebrates. They also have a "taste" for jellyfish. (Balazs, G., 1976).

The female, like most turtles, comes on shore at night to lay her clutch of eggs above the high-water mark. She deposits 125-175 perfectly rounded eggs. Incubation is 52 to 74 days. This species has been documented as having a life span of more than a century. (McKeown, S., 1978).

These turtles are found in tropical oceans worldwide, but in Hawaii they are confined to waters around the main islands. However, this species is becoming increasingly rare. Man exploits the Hawksbill Turtle by commercially profiting from the "tortoise shell" or "carey" from shell scutes producing combs, brushes, buttons, and other items.

This species is on the endangered list and cannot be taken from Hawaiian waters. Only four nesting locations have been found in Hawaii in the past ten years. Three were found on the Island of Hawaii and one on the Island of Molokai. Exploitation outside of the United States is widespread.

ENDANGERED SPECIES AND CONSERVATION

"Each species and subspecies develops certain characteristics which fit it for a special niche in the complex world." The marine turtles found in Hawaii have developed their own distinctive qualities which insure their survival against natural predators. (Hawaii's Endangered Wildlife).

However, man, a seemingly powerful, intelligent animal, causes harm and destruction to these defenseless creatures. Pollution, commercial interests, and uncaring local fishermen have led to the endangering and extinction of many species. Man has annihilated the majority of marine turtles before their reproductive maturity through stupidity, ignorance, and lack of concern.

During the past century, man has become increasingly aware of the devastation he has wrought; specifically, the harm that has been done to our wildlife. Is it too late to right this wrong? And, if not, what can be done to reverse this negative process? Perhaps, if we, the most intelligent species in the world, can come together to educate ourselves and attempt to understand the vast and complex system in which we live, we can eliminate the responsibility of men for the possible extinction of these animals, the sea turtles, and perhaps of mankind itself. Natural extinction occurs through time when certain species can no longer adapt to the world in which they live, but we do not have the right to determine this adaptation. It is to be hoped that, left to nature and instinct, these animals and all our endangered wildlife can outrace technology and adopt a means of survival.

Bibliography

1. Whittow, Causey G., and George H. Balazs
Sea Frontiers - Miami, Florida
International Oceanographic Foundation, 1981
2. Balazs, George H.
Hawaii's Seabirds, Turtles and Seals - Honolulu, Hawaii
World Wide Distributors, 1976
3. Balazs, George H.
Defenders - Washington D.C.
Defenders of Wildlife, 1975
4. U. S. Bureau of Sport Fisheries and Wildlife
Hawaiian Islands National Wildlife Refuge
Portland, Oregon, 1970
5. McKeown, S.
Hawaiian Reptiles and Amphibians
Oriental Publishing Co., 1978