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TERRESTRIAL CRITICAL HABITAT FOR SEA TURTLES UNDER UNITED STATES JURISDICTION IN THE PACIFIC REGION

-An overview of existing knowledge-

by

George H. Balazs

The concept of "critical habitat" for species designated as Endangered or Threatened is set forth in Section 7 of the Endangered Species Act of 1973 (Public Law 93-205 87 Statute 884). Entitled "Inter-agency Cooperation", Section 7 states:

"The Secretary shall review other programs administered by him and utilize such programs in furtherance of the purposes of this Act. All other Federal departments and agencies shall, in consultation with and with the assistance of the Secretary, utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of endangered species and threatened species listed pursuant to Section 4 of this Act and by taking such action necessary to insure that actions authorized, funded, or carried out by them do not jeopardize the continued existence of such endangered species and threatened species or result in the destruction or modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with the affected States, to be critical."

Those sea turtles presently listed as Endangered include the hawksbill, *Eretmochelys imbricata*, the Kemp's ridley, *Lepidochelys kempfi*, and the leatherback, *Dermochelys coriacea*. Three other species, the green, *Chelonia mydas*, the loggerhead, *Caretta caretta*, and the olive ridley, *Lepidochelys olivacea*, have been proposed for listing since April of 1974. Final rulemaking

on this matter is due to become effective during the latter part of August, 1978. At present no terrestrial or marine critical habitat has been legally designated for any of the species of sea turtles.

Except for the unique land basking behavior exhibited at select locations by Hawaiian *Chelonia*, the most apparent uses of terrestrial habitat by sea turtles are: 1) nesting by adult females, 2) incubation and hatching of eggs, and 3) movement of hatchlings to the ocean. It should be noted, however, that except for *Dermochelys*, sea turtles reside principally in shallow-water areas adjacent to land masses. The importance of the land in establishing suitable conditions for the turtles' marine habitat should not be overlooked. For example, land masses play an integral part in the formation of sheltered underwater areas (e.g. lagoons, bays) where some turtles regularly retreat for periods of quiescence. Additionally, freshwater runoff from land enhances the growth of certain algae, seagrasses and invertebrates used by turtles for food. In this context, there is no clear division between terrestrial and marine habitats for sea turtles. The two areas are interdependent in providing the proper living space, and activities that adversely affect one component could easily influence the other.

In July of 1977 a Memorandum of Understanding was finalized between the Fish and Wildlife Service (Department of the Interior) and the National Marine Fisheries Service (Department of Commerce) which gave the former agency jurisdiction over sea turtles while they are on land, and the

latter agency jurisdiction while they are in water. Consistent with this agreement, the Fish and Wildlife Service is currently assembling data on land areas under United States jurisdiction which serve as critical habitat for each of the six species.

The purpose of this paper is to provide information on such terrestrial aspects for the Pacific region.

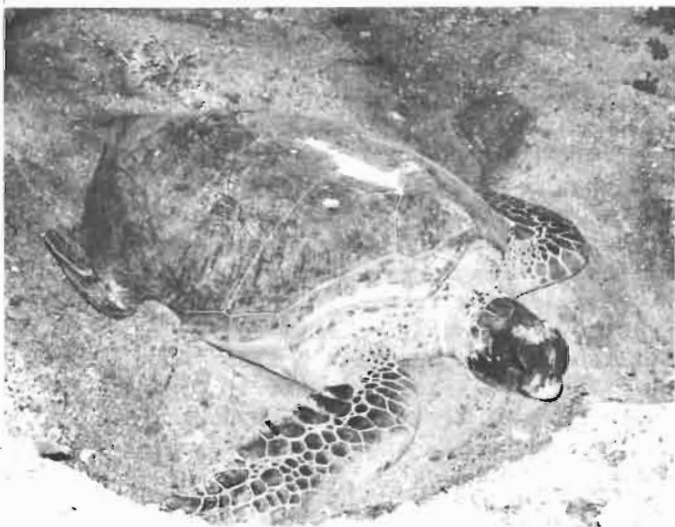
HAWAIIAN ISLANDS

Except for Midway, which is a U.S. territory administered by the Navy, all islands in the Hawaiian Archipelago ($18^{\circ}55'N$, $154^{\circ}49'W$ to $28^{\circ}15'N$, $178^{\circ}20'W$) are part of the State of Hawaii. Three kinds of turtles regularly occur in Hawaiian waters, and two others (olive ridley and loggerhead) have been recorded as accidentals.

Dermochelys - No records of nesting exist.

Eretmochelys - A low level of nesting has been documented on the Island of Molokai at Halawa Beach, and on the Island of Hawaii at Punaluu and Kawa (Kau District), Orr's Beach (6 km NW of Cape Kumukahi), and Kalapana (Puna District). Circumstantial evidence suggests that nestings may also have taken place in recent years on the Island of Oahu at Malaekahana and Kailua Beach.

Chelonia - Nesting and basking are not known to occur on any of the eight major islands (Hawaii, Maui, Kahoolawe, Lanai,



Adult Hawaiian green turtle nesting in the center of East Island, French Frigate Shoals. A numbered identification tag is present on the right front flipper. Photo by the author.

Molokai, Oahu, Kauai, Niihau) or their associated offshore islets. The known locations of nesting and basking in the Archipelago are listed as follows:

Necker Island ($23^{\circ}35'N$, $164^{\circ}42'W$) - Basking occurs on a small lava rock ledge and occasionally on a water-worn boulder beach, both within the confines of Shark Bay.

French Frigate Shoals ($23^{\circ}45'N$, $166^{\circ}10'W$) - This is the only colonial breeding site of green turtles in the Hawaiian Islands. Nesting occurs over the entire land area of the islets of East, Whale-Skate, Trig, Little Gin and Gin, as well as on the south of Tern. Basking takes place along the shores of all of these islets, as well as at Mullet, Round, Shark, Disappearing and several unnamed seasonally occurring sandbars.

Laysan Island ($25^{\circ}46'N$, $171^{\circ}44'W$) - A low level of nesting and basking takes place, principally on the west and north shores.

Lisianski Island ($26^{\circ}04'N$, $173^{\circ}58'W$) - A low level of nesting and a moderate level of basking have been recorded; however, insufficient information exists for this location.

and Hermes Reef ($27^{\circ}55'N$, $175^{\circ}45'W$) - A low level of nesting occurs on two (Southeast and North) of the atoll's nine islets. Basking also takes place on these two islets, as well as on Little North, Bird and Sand. Insufficient information exists for this location.

Midway Islands ($28^{\circ}13'N$, $177^{\circ}21'W$) - A single occurrence of nesting on Sand Island and a single occurrence of basking on Eastern Island have been recorded.

Kure Atoll ($28^{\circ}25'N$, $178^{\circ}20'W$) - A low level of basking occurs on the shores of Green and Sand Islands. Several nestings have been recorded on Green Island.

Although there are no reports of basking at Nihoa ($23^{\circ}03'N$, $161^{\circ}55'W$) or Maro Reef ($25^{\circ}25'N$, $170^{\circ}35'W$), this could be due to the low number of observations made, rather than an absence of such activity.

Nihoa, Necker, French Frigate Shoals, Maro Reef, Laysan, Lisianski, and Pearl and Hermes Reef (as well as Gardner Pinnacles at $25^{\circ}00'N$, $168^{\circ}00'W$) are all part of the Hawaiian Islands National Wildlife Refuge. However, there is currently disagreement between the State and Federal governments as to the boundaries of the area. Green and

Sand Islands at Kure are administered as a wildlife refuge by the Department of Land and Natural Resources of the State of Hawaii.

JOHNSTON ATOLL

Johnston Atoll ($16^{\circ}45'N$, $169^{\circ}31'W$) is a U.S. territory administered by the Defense Nuclear Agency. The atoll contains four islets (Johnston, Sand, Akau, Hikina) and is designated as a National Wildlife Refuge. Only one sighting of a turtle on land has been recorded. This involved an adult green turtle on Sand Island, but it is unknown if nesting or basking took place.

PALMYRA

Palmyra ($5^{\circ}53'N$, $162^{\circ}05'W$) is a U.S. territory that is privately owned. The atoll contains approximately 50 islets, and green turtles are known to reside in adjacent waters. Information on the occurrence of nesting is lacking for this location.

KINGMAN REEF

Kingman Reef ($6^{\circ}23'N$, $162^{\circ}18'W$) is a U.S. territory administered by the Navy. The area contains one small islet, but it is unknown if nesting takes place.

HOWLAND, BAKER AND JARVIS ISLANDS

Howland ($0^{\circ}48'N$, $176^{\circ}38'W$), Baker ($0^{\circ}13'N$, $176^{\circ}28'W$) and Jarvis ($0^{\circ}23'S$, $160^{\circ}01'W$) are U.S. territories that were designated as National Wildlife Refuges in July of 1974. Information on the occurrence of nesting is lacking for all three of these locations.

WAKE ISLAND

Wake ($19^{\circ}18'N$, $166^{\circ}35'E$) is a U.S. territory presently administered by the Air Force. Green turtles occur in adjacent waters, but nesting is not known to take place.

AMERICAN SAMOA

American Samoa is a U.S. territory with local self-government. The area consists of eight islands which are listed as follows:
Tutuila ($14^{\circ}16'S$, $170^{\circ}45'W$) and Aunuu ($14^{\circ}16'S$, $170^{\circ}35'W$) - A low level of nesting by green and hawksbill turtles sporadically takes place.

Manua Group: Tau ($14^{\circ}15'S$, $169^{\circ}30'W$), Ofu ($14^{\circ}11'S$, $169^{\circ}40'W$), and Olosega ($14^{\circ}12'S$, $169^{\circ}30'W$) - A low level of nesting by green and hawksbill turtles is known to occur; however, insufficient information exists for these locations.

Rose Atoll ($14^{\circ}33'S$, $168^{\circ}09'W$) - This area contains two islets (Rose and Sand) and both are used for nesting by green and, to a lesser extent, hawksbill turtles. In July of 1974 the atoll was designated as a National Wildlife Refuge. Insufficient information exists for this location.

Swains Island ($11^{\circ}33'S$, $171^{\circ}05'W$) - Nesting of green and hawksbill turtles is known to occur; however insufficient information exists for this location.

GUAM

Guam ($13^{\circ}27'N$, $144^{\circ}45'E$) is a U.S. territory with local self-government. A low level of nesting by green, and possibly hawksbill turtles is thought to occur along the south and east shores. Insufficient information exists for the north shore of the island which is under Air Force jurisdiction.

PHOENIX ISLANDS

Canton and Enderbury, the two northernmost of the eight islands in the Phoenix group, are administered jointly by the United States and the United Kingdom. The U.S. Air Force presently maintains a small facility on Canton.

Canton ($2^{\circ}50'S$, $171^{\circ}43'W$) - Nesting of green turtles, and possibly other species,



Adult Hawaiian green turtles basking on a beach at Whale-Skate Island, French Frigate Shoals. Photo by the author.

occurs principally along the northeast and southwest shores.

Enderbury (3°08'S, 171°04'W) - Nesting of green turtles, and possibly other species, occurs principally along the west and east shores.

Insufficient information exists for both of these locations.

NORTHERN MARIANA ISLANDS

This island group is a U.S. commonwealth located from 14°10'N, 145°10'E to 20°30'N, 144°54'E. The area contains 14 islands consisting of Rota, Aquijan, Tinian, Saipan, Farallon de Medinilla, Anatahan, Sarigan, Gaguan, Alamagan, Pagan, Agrihan, Asuncion, Maug, and Farallon de Pajaros. Nesting is not thought to occur on any of these islands except for Rota, where a low level of activity (genus unknown) has been reported.

U.S. TRUST TERRITORY OF THE PACIFIC ISLANDS

This area encompasses most of Micronesia and consists of approximately 2,200 islands distributed over three million square miles. Although not a U.S. territory (except for the recently-acquired Northern Marianas), the area is nevertheless governed by the U.S. under a United Nations trusteeship. Green and hawksbill turtles are the major species present; however for the most part, definitive information on nesting areas is lacking. Large concentrations of nesting hawksbills are not known to occur. The following locations are thought to be the most important sites of green turtle nesting:

Palau District - Helen's Island (2°59'N, 131°49'E) and Merir Island (4°19'N, 132°19'E)

Yap District - Ulithi (10°00'N, 139°48'E), Ngulu (8°30'N, 137°30'E) and Pikelot (8°05'N, 147°38'E)

Truk District - East Fayu (8°34'N, 151°21'E)

Ponape District - Oroluk Island (7°38'N, 155°10'E)

Marshall Islands District - Bikar Island (12°13'N, 170°05'E) and Jemo Island (10°8'N, 169°32'E)

UNSETTLED PACIFIC CLAIMS

In addition to the areas listed above, the U.S. also has unsettled claims to 23 Pacific islands that are counterclaimed by other countries. These disputed areas include the following:

Counterclaimed by United Kingdom:

Line Islands

Christmas (2°00'N, 157°30'W) - Green and hawksbill turtles are reported to occasionally nest; however, insufficient information exists.

Malden (4°03'S, 154°59'W), Starbuck (5°37'S, 155°55'W), Vostok (10°55'S, 152°23'W), Caroline (15°00'S, 150°15'W) and Flint (11°24'S, 151°48'W) - Status of nesting unknown.

Phoenix Islands

Birnie (3°35'S, 171°32'W) - Concentrated nesting occurs along the south shore; however insufficient information exists.

Sydney (4°28'S, 171°15'W) - Nesting occurs along the northwest shore; however insufficient information exists.

Hull (4°30'S, 172°14'W) - Nesting occurs along the south and west shores; however insufficient information exists.

Gardner (4°40'S, 174°32'W) - Nesting occurs along the south shore; however insufficient information exists.

McKean (3°35'S, 174°04'W) and Phoenix (3°43'S, 171°25'W) - Status of nesting unknown.

Tuvalu (formerly Ellice Islands)

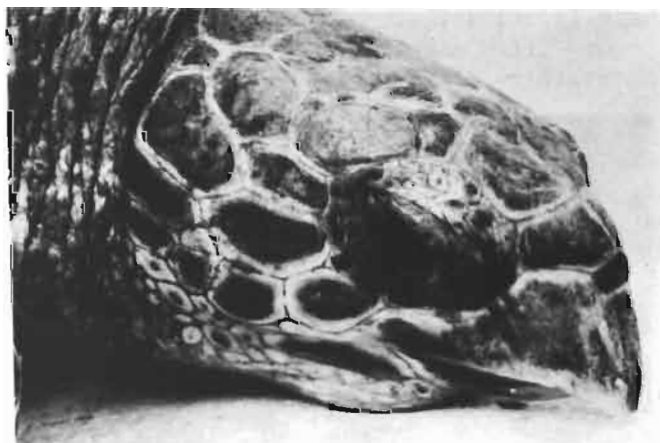
Funafuti (8°31'S, 179°13'E) - Green turtles are reported to occasionally nest; however insufficient information exists.

Nukufetau (8°00'S, 178°30'E), Nukulaelae (9°20'S, 179°50'E) and Nurakita (10°56'S, 179°29'E) - Status of nesting unknown.

Counterclaimed by New Zealand

Tokelau Islands

Atafu (8°33'S, 172°30'W), Nukunono (9°10'S, 171°55'W) and Fakaofu (9°25'S, 171°15'W) -



Hawksbill turtle, illustrating the elongated beak which is the most distinguishing characteristic of this species.

Photo by the author.

Green and, to a lesser extent, hawksbill turtles are reported to nest on these islands; however insufficient information exists.

Cook Islands

Penrhyn (9°00'S, 158°00'W), Rakahanga (10°03'S, 161°06'W), Manihiki (10°24'S, 161°01'W) and Pukapuka (10°53'S, 165°49'W) - Green turtles are known to nest at these locations; however insufficient information exists.

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