

Abundance and Utilization of Sea Turtles on Pohnpei, Federated States of Micronesia: Islanders' Perceptions

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Abstract — Forty three resident islanders contributed their knowledge on the status of sea turtles on Pohnpei, Micronesia during an island-wide survey in 1999. The green turtle (*Chelonia mydas*) and the hawksbill (*Eretmochelys imbricata*) are the two most common turtles in Pohnpei. Local islanders hunt turtles regularly and take them opportunistically while fishing, often disregarding size limits, closed seasons, and other restrictions. Nesting occurs rarely (more frequently in the past than now), and is limited to a few beaches on some of the lagoon islands; the main island is surrounded by mangroves. The leatherback (*Dermochelys coriacea*) has been recorded from time to time, mainly outside the reef. The Pohnpeian name oarkalahp is used for putative green turtle/hawksbill hybrids.

Introduction

Pritchard's (1977) statement that "marine turtles [in Micronesia]...have received scant attention despite their importance to both traditional and modern Micronesian economics" is still timely. Addressing issues concerning turtles in the Federated States of Micronesia, the National Marine Fisheries Service and U.S. Fish and Wildlife Service (1998a:10) state "very little information exists on the range of numerous green turtles foraging in the FSM" and (1998a:22) "there has been a general decline in numbers of nesting turtles"; furthermore (1998b:25),

“there is very little information on hawksbill turtle populations in the FSM,” and (1998b:11) “if hawksbills are nesting...their numbers are low and very much at risk.”

Information on the status of sea turtles in Pohnpei State is especially scanty. Locality records and notes on nesting on some of the outlying atolls have been summarized by Buden (1995, 1996a, 1996b, 1998, 1999, 2000a). Data for Pohnpei proper are almost nonexistent, but turtles seem more abundant than the literature suggests (Buden 2000b). Inasmuch as tagging recoveries indicate the FSM “is dealing with a shared resource [among the widespread islands],” at least for the green turtle (National Marine Fisheries Service and U.S. Fish and Wildlife Service 1998a:23), information on Pohnpei populations could potentially benefit conservation efforts over a much broader area. The present study contributes information on relative abundance and utilization of sea turtles on Pohnpei, its lagoon islands, and immediately adjacent waters, and it is based largely on inter-

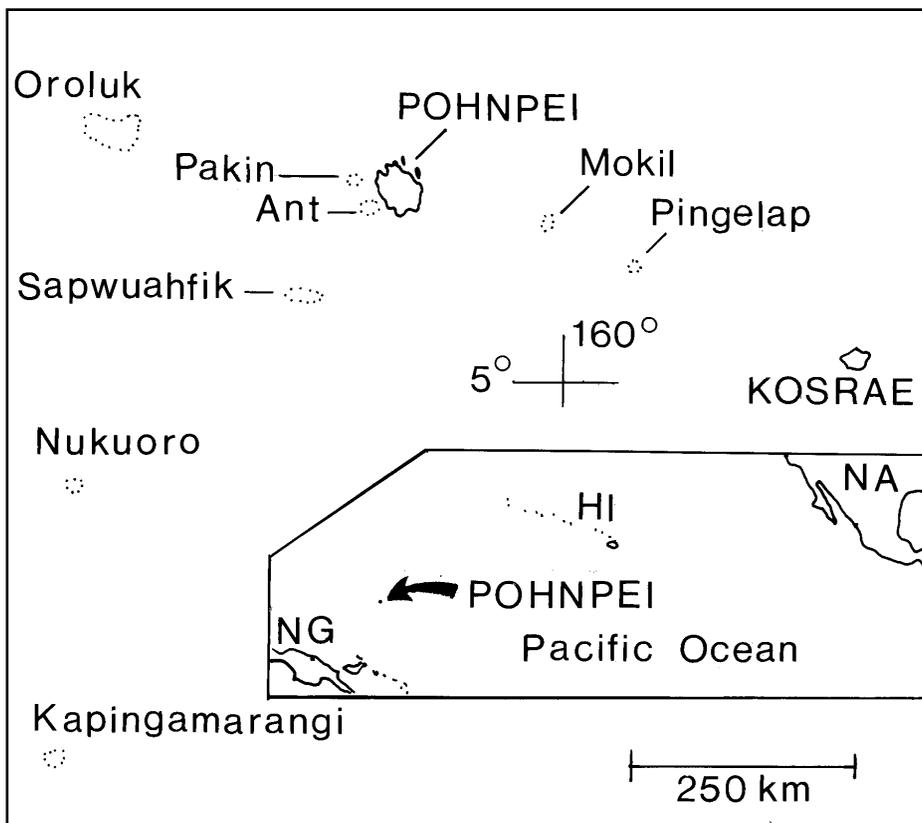


Figure 1—Location map for Pohnpei and outlying atolls (dotted lines) of Pohnpei State; HI = Hawaiian Islands, NA = North America, NG = New Guinea.

views of resident islanders during January-July 1999. We are confident that local participants contributed information to the best of their ability and knowledge, but recognize that some inaccuracies may occur in their perceptions and recollections.

Study Area and Methods

Pohnpei is a mountainous, tropical Pacific island (about 355 km² in area) located 766 km north of the equator in the Eastern Caroline Islands, Federated States of Micronesia (Fig. 1). Rainforest cloaks steep ridges and deep valleys that radiate outward from the central highlands to coastal lowlands and surrounding mangroves; maximum elevation is just under 800 m (U.S. Army Corps of Engineers, 1986). Sandy beaches are more or less confined to some of the lagoon islands, which are protected by a barrier reef dissected by numerous channels. The 1994 census recorded 31,540 people living on Pohnpei (Office of Planning and Statistics 1996), mainly in coastal areas—6,660 of them in Kolonia the main settlement, on the northern coast.

Approximately 150 copies of a questionnaire (English and Pohnpeian versions combined) soliciting information on sightings, abundance, and utilization of turtles on Pohnpei were given to “field assistants” (mainly local college students) to distribute among residents islandwide and to assist in their completion. As some copies were lost, misplaced, or otherwise unused, we have no record of how many people received survey sheets, but we were able to examine responses from 43 contributors. Five additional forms were returned incomplete, were self-contradictory, or contained unclear answers that could not be used. Twenty-four of the 43 contributors were in age group 20–29, five were 30–39, eight were 40–49, and the four oldest were 51, 52 (2), and 57. Twenty-six supplemental reports on “recent sightings” also were submitted by these and other contributors.

Results and Discussion

SPECIES AND RELATIVE ABUNDANCE

The two most common turtles recorded in Pohnpei waters are the green turtle (*Chelonia mydas*), locally called kalahp, and the hawksbill turtle (*Eretmochelys imbricata*), called sapwake. Thirty-one (72%) of the respondents reported the green turtle as being the most common, 11 (26%) considered the hawksbill more numerous, and the remaining three indicated both species were present in about equal numbers. Most people interviewed had not encountered any other species, but D. Poll, Principal of Ohmine Elementary School, Kolonia, recalled seeing a leatherback (*Dermochelys coriacea*) about 3.2 km off Palikir Channel (on the west side of Pohnpei) in 1997, and another swimming at the surface about 8 km offshore in 1998. He also reported seeing a large gravid female that was captured for food by local islanders on Mokil Atoll (about 174 km southeast of Pohnpei) during the 1960s. P. Gallen, former Chair of the Education

Department, College of Micronesia, recalled seeing a leatherback captured near Kolonia harbor and brought to market for sale sometime during the 1950s, and another during the 1970s. One of these earlier sightings may pertain to the undated record of a 444 kg leatherback caught by two fishermen off Parem Reef, northeast of Kolonia (Pritchard 1977).

Three of the people interviewed referred to a turtle known locally as oarkalahp, which they described as having a "combination" of green and hawksbill turtle characteristics (T. Charley, pers. comm.), including a smooth shell like the green turtle, but with a hawksbill's color pattern, and a snout intermediate between the two (D. Charley, pers. comm.), or as having the head of a hawksbill and the shell of a green turtle (D. Paul, pers. comm.), or in some cases the head of a green turtle and the shell of a hawksbill (P. Gallen, pers. comm.). Whether the oarkalahp is a variant of one or both of the two more common species, a hybrid of the two, or an example of another species is uncertain. P. Gallen (pers. comm.) reported that his son Patrick, an experienced fisherman, once saw a hawksbill and a green turtle in copula, and that many Pohnpeians consider the oarkalahp to be the offspring of such matings. Aside from the leatherback, the only other sea turtle recorded in the FSM is the olive ridley (*Lepidochelys olivacea*), which has been observed rarely in the Western Caroline Islands (Falanruw et al. 1975).

As to how long since they had last seen a turtle in the lagoon, 15 (35%) replied less than one week, nine (21%) said 1–4 weeks, 12 (28%) said 1–3 months, and four (9%) said more than three months; three did not answer the question. Thirteen (30%) of these turtles had a carapace estimated to be 1–2 feet long, 17 (40%) as 2–3 feet long, seven (16%) were reported as greater than 3 feet, and six were not estimated. Twenty-five (58%) of the records were from Kitti Municipality in the southwestern part of the island, but this may be more an indication of where most of the interviews took place than it does concentrations of turtles. Nevertheless, Kitti is one of the more remote areas of Pohnpei with extensive lagoon and reef areas.

An additional 26 survey sheets covering only current sightings of turtles (1/sheet) were returned to us by some of the same as well as other contributors. Nine were from K. Rhodes, who observed turtles during the course of his study on groupers. All records were January–July 1999; 12 of them in February. Nineteen (73%) were identified as green turtles, five (19%) as hawksbills (one tentatively) and two were unidentified. Eight (and two others not included in the counts) had carapace length roughly estimated as 1–2 feet, 11 were estimated 2–3 feet long, and seven as greater than three feet. Nine of the turtles were observed swimming, seven had recently been captured or killed, five were feeding on sea weed or sea grass, and one was resting on the bottom.

NESTING

Sandy beaches are limited to some of the lagoon islands, whereas the main island is surrounded largely by mangroves, thus greatly limiting potential nesting

sites. Pritchard (1981) stated “populations [of turtles] around Pohnpei itself appear to be relatively insignificant, and very little nesting, if any, takes place.” The U.S. Army Corps of Engineers’ (1985, 1986) listings of historical and possibly then still current nesting sites in Pohnpei lagoon include Na and Nahpali islands in Madolenihmw Municipality (southeastern Pohnpei) and Penieu, Ros, Nahtik, Laiap, and Nahlap islands, Kitti Municipality (southern Pohnpei). Thirty-two (74%) of the 43 people we surveyed indicated they had no knowledge of nesting activities of turtles on Pohnpei and its lagoon islands and four (9%) left the question unanswered. Four others contributed unsolicited comments on nesting on Ant Atoll, and three described incidents of nesting on three different lagoon islands in Kitti. M. Charley (pers. comm.) found a nest with unhatched eggs and saw a hawksbill turtle digging a nest hole on Black Coral Island at about 02:00 during a full moon and at high tide sometime in 1972. I. Minkel (pers. comm.) saw a green turtle returning to the water from a beach on Ros Island at 9:00 (AM?) on 4 December 1977, and E. B. Charley (pers. comm.) reported finding a green turtle nest with unhatched eggs on Nahlap island in February 1997.

Although Pohnpei State Atolls were not included in this study, a recent report of a hawksbill nest on nearby Ant Atoll (Fig. 1) bears mention. At dusk, on 21 October 2000, Diane Cole, wife of the Australian Ambassador, together with several friends from the Australian Embassy and the Australian Maritime Association observed hatchlings emerging from a nest about 3–4 m inland from the forest edge on Pasa Island. Many of the turtles were being eaten by unidentified fish in the shallow water off the beach, and several Pacific Reef-Herons (*Egretta sacra*) in the immediate vicinity may have been feeding on them as well. Ms Cole collected 48 of the turtles, which were subsequently brought to the Marine Environment Research Institute of Pohnpei (MERIP) at Pohnpei Agriculture and Trade School (PATS) in southern Pohnpei. The turtles are being kept in a raceway and are soon to be released outside the reef.

HUNTING METHODS

The most common ways of hunting turtles are with underwater spears, harpoons thrown from boats, set nets, and capturing them by hand. J. Tomczuk, a Peace Corps Volunteer residing with a local family in one of the more remote villages reported that turtles are frequently baited with bundles of sea grass or sea weed. The bait is replenished periodically, and turtles drawn to the sites are speared or captured by hand. These and other hunting methods used widely throughout the Pacific are described in greater detail by Johannes (1986). Also, many turtles probably are taken opportunistically while fishing.

UTILIZATION

Although Pohnpeians depend largely on imported foods to meet their nutritional needs, traditional, small scale agriculture and fishing contribute significantly to the local economy. Laws restricting the harvest of turtle (and other

marine resources), however, are often ignored and only sporadically enforced. Undersized and out of season turtles destined for local consumption are not an uncommon site. As the human population grows, pressure on this resource also increases. P. Gallen (pers. comm.) saw about 15 turtles being prepared for a feast in honor of one of the traditional community leaders in spring 1999, and another reliable source requesting anonymity knew of 29 turtles that were consumed in two different settlements in U Municipality (northeastern Pohnpei) during Easter week, 17–23 April 2000.

As to how often they ate turtle, 18 (42%) of the people surveyed indicated 1–2 times/month, seven (16%) indicated 1–3 times/year, six (14%) replied 3–5 times/month, six said once, seldom, or occasionally, one said never, and five gave no answer. Regarding identification of the turtle they ate most recently, 30 (70%) said green turtle, seven (16%) said hawksbill, and six gave no answer or were uncertain as to its identity. Turtle is eaten during regular meals (20 reported cases) as well as during feasts or special celebrations (18 cases). Many people who do not have pigs or dogs to contribute to a traditional feast often substitute turtle (AE, pers. obs.)

When asked how many people they knew that sold turtle meat, 20 (47%) of those interviewed gave no answer, probably reluctant to implicate others or in any way acknowledge illegal activities; seven said they did not know any. Six respondents indicated they knew of 1–2 “sellers,” five indicated 3–5, three said 6–10, one said 15–25, and another said more than 20. We have heard unconfirmed reports of some families generating a large part of their income through the sale of turtle meat. As to their knowledge of any shell products currently being produced, 16 (37%) of the people surveyed gave no answer, 16 others said none, four (9%) said they did not know, and 7 (16%) said that combs, hair decorations, buttons, fans, and earrings were still being produced, from hawksbill shell but did not stipulate as to whether for sale or for personal use. As recently as June 2000, a store in the greater Kolonia area was selling green turtle shells for \$45–\$75 each. The largest (66 cm along the curve from the middle of the anterior edge of the nuchal scute to the posteriormost edge of the shell) was still below the legal limit (see under Conservation), and the smallest was 46 cm.

TURTLE POISONING (CHELONITOXICATION)

Buden (2000a) reported two separate incidents of turtle poisoning resulting in fatalities among the residents on Sapwuahfik Atoll after they had eaten flesh from hawksbill turtles. But chelonitoxication occurs only rarely in the Pohnpei area; 33 (77%) of the people surveyed had no knowledge of anyone being poisoned, four (9%) did not address the subject, and three others (7%) alluded to the Sapwuahfik incidents. One other knew of allergic (skin rash) reactions attributed to eating hawksbill turtle, and another related information from his grandfather regarding an incident occurring more than 60 years ago when two children died after eating hawksbill turtle caught off Palikir, Pohnpei.

CONSERVATION

As outlined in the Organization List of the Fourth Pohnpei Legislature, First Regular Session, 1996, and based on Trust Territory Code (Title 45, Sections 1–3, 1980 edition), Pohnpei law states that “no hawksbill turtles or sea turtles shall be taken or intentionally killed while on shore, nor shall their eggs be taken.” The minimum size limit for hawksbills is “27 inches [69 cm] when measured over the carapace shell lengthwise,” and the minimum for the green turtle is “34 inches [86 cm].” No sea turtle of any size shall be taken or killed during 1 June–31 August and 1 December–31 January, and “any person found offering turtle for sale, or selling turtle in violation of this chapter or of rules and regulations pursuant hereto shall be subject to a civil penalty of five times the market value of the turtle so offered for sale, or sold.” But these regulations are neither vigorously upheld nor stringently enforced, and underground markets for turtle exist; we do not know of any citation or prosecution relating to this law.

Although some islanders voice genuine concern over the future of turtle populations and of other marine resources, a conservation ethic is not well-ingrained among Pohnpeians. The addition of culturally appropriate conservation and environmental science courses to primary and secondary school curricula may help foster more environmentally conscious ideals, but possibly too late for already critically endangered species. In any event, we find the National Marine Fisheries Service and U.S. Fish and Wildlife Service (1998a:49) assessment of turtle conservation policies in the Pacific to be particularly pertinent to Pohnpei: “No amount of research, tagging, regulatory actions and protected areas designation will succeed in reversing this trend [of declining populations] unless the turtle and egg harvesters are educated or convinced enough to cease or drastically curtail harvesting activities. It will be virtually impossible for enforcement measures to reverse these trends by themselves; Pacific islanders are not accustomed to fining or confiscating gear of friends and neighbors or imprisoning violators. Massive education and public pressure will be essential to save the sea turtle stocks from complete collapse throughout most of the recovery region.”

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