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SOUTH PACIFIC COMMISSIONJOINT SPC-NMFS WORKSHOP ON MARINE TURTLES
IN THE TROPICAL PACIFIC ISLANDS
(Noumea, New Caledonia, 11 - 14 December 1979)THE MARINE TURTLE SITUATION IN THE KINGDOM OF TONGA

By W.A. Wilkinson

1. Considerable interest has been shown in the past several years over the marine turtle plight around the globe. Some scientists, such as Dr Archie Carr and Dr Peter Pritchard of the University of Florida, have been involved in marine turtle research for over fifteen years. The one thing most concerned people realize, is the rapidly dwindling populations of all five genera. Caretta, the loggerheads; Lepidochelys, the ridleys; Eretmochelys, the hawksbills; Chelonia, the green turtles; and Dermochelys, the leatherbacks. Lepidochelys and Chelonia have clearly differentiated, named species, unlike the other three genera.
2. In an article written last year by Dr Carr, he put the kinds of marine turtles in a relative order of decreasing security. They are as follows:-
 1. Dermochelys coriacea, the leatherback. Not used for meat, skin not used, no true shell is present. Eggs taken at main nesting beaches. (Still considered endangered by Carr).
 2. Chelonia depressa, the flatback turtle - many nesting beaches in Australia where it is strictly protected.
 3. Caretta caretta, nesting rookeries protected on Sululand coast of Southeastern Africa, Heron Island (Great Barrier Reef) and the American rookeries. Eggs, meat, taken elsewhere.
 4. Chelonia agassizi, black turtle of the Pacific, taken by the hide hunters and egg poachers in many areas, especially Central and South America. Great slaughters take place. Stock in the mid Pacific Islands and Indian Ocean may be less endangered.
 5. Lepidochelys olivacea, the Pacific ridley. This turtle nests in large groups and thus it is easy to quickly decrease the numbers of its population, which has occurred in a number of nesting areas. A large nesting "Arribada" in the State of Guerrero, Mexico, dwindled from 30,000 in 1968 to a few hundred in 1969. They are taken for the turtle leather; the eggs are taken as well. This turtle was not placed lower on the list because of some indication of a dwindling sea turtle leather trade.

6. Chelonia mydas, the green turtle. This "species" actually includes many varieties of green turtles. The most research done on any marine turtle has involved the green turtle. Dr Carr says, "In the case of the western Caribbean green turtle, the course of events is especially dismal, because long-term tagging has roughed out the migratory cycle of the Tootuguere colony in Costa Rica, it can be shown to be increasingly under attack everywhere. Even in Florida, medieval legislation, staunchly supported in recent political controversy, permits the commercial exploitation of an almost vanished green turtle colony".

7. & 8. Dr Carr places these last two turtles together as the most endangered sea turtles - Lepidochelys kempfi, the Mexican ridley, and Eretmochelys imbricata, the hawksbill. The Mexican ridley is listed here because it nests in "concentrated groups" - its total population, all nesting in two or three places, makes it easy prey for the hide hunters and egg poachers. The hawksbill is listed here, because it is more solitary in its nesting than any other sea turtle. Occasionally small groups will come ashore together, but generally the females come ashore singly on the beach, sometimes where other turtles nest and sometimes on little patches of beach few other turtles would consider. There has been a drastic increase in the past twenty years involving the exploitation of the hawksbill. Although turtle shell products are barred from the U.S.A., there is still a rising market for them in Europe and Japan. The skins are used and the turtle meat is eaten. Hawksbill eggs are favoured by more people than other turtle eggs, and seaside gifts and curio shops also sell young hawksbills stuffed and polished. Its diffuse nesting makes it difficult to have adequate breeding sanctuaries. With all this pressure on the population of hawksbills, it is no wonder that it is heading for extinction and considered the most endangered species along with the Mexican ridley.

3. The life cycle of the sea turtle is complicated. With the rising rate of increase of man's seaside population and the rise in local demand for sea turtle products, the consumption and destruction wrought by people, has grown beyond the tolerance of the relatively small populations in which marine turtles exist.

4. A wrong contention people hold, is that any organism from the great oceans must be without limit, but this is far from true, with sea turtles as well as a large number of other marine organisms. Great nesting colonies of marine turtles have been decimated before - the Bahamas, Bermuda, all around the Caribbean, Florida, Cape Verde Islands, and the Hawaiian Archipelago.

Professor George H. Balazs of the Hawaii Institute of Marine Biology, in a report on "The status of marine turtles in the Hawaiian Islands", says nesting of green turtles took place on some of the main Hawaiian Islands just forty years ago. Sightings were made on a number of beaches on Oahu, the west coast of Molikai and north shore of Lanai. It is probable sites existed on Kauai, Maui, Kahoalawe and Hawaii, although no substantiated reports of past nestings have been found. Today no animals are reported to nest on any of the main Hawaiian Islands. The few small outer islands which green turtles do nest in are given complete protection by the United States Government.

5. Even when all human predation is stopped, the eggs and young hatchling are faced with many natural predators ready to reduce their numbers. Dogs and pigs often eat eggs just after having been laid. On small nesting islands such as in Tonga, Polynesian rats, Rattus exulans, are a potential predator. The ghost crab, Acypode sp. (Keviki), is in large numbers on all nesting beaches, and when the hatchlings emerge from the nest the ghost crabs are waiting to pull them into their holes. Beach rocks must then be passed which is difficult enough for young hatchlings, but rock crabs (Grapsidae) live in large numbers here and prey heavily on the young turtles. Again sea birds nest on these same islands as the turtles, and when the hatchlings emerge the birds have a feast. Young turtles cannot swim and dive properly for the first two or three weeks, so they are constantly in danger from these birds, even miles out to sea. There are many predators in the ocean itself, sharks, wrasses, grouper, trevally, snapper, barracuda, garfish, as well as deep water bonito and skipjack tuna. Out of the 100 eggs laid in each nest, possibly two or three hatchlings will grow to adult reproducing members of the population. With heavy human predation, especially the taking of eggs and nesting females during the breeding season, the tolerance level of the turtle population is exceeded and the population continually dwindles toward its fateful end.

6. Previous Peace Corps marine biologists did a preliminary survey in December 1971 to assess the approximate turtle population in Tonga. Five islands in the Ha'apai group were surveyed, these supposedly being some of the best turtle nesting islands in Tonga. They found very low levels of nesting occurring during this peak nesting month of December, concluding that the hawksbill turtle (fonu koloa) would be non-existent in the Tonga area in five to ten years. They found evidence of only hawksbill nesting but no other genera of sea turtles. Thereafter the biologists also established a small hatchery for hawksbill at the marine station in Sopu. They raised the young turtles for one or two months before releasing them, hoping to aid the population by growing the turtles large enough to avoid most potential predators. Unfortunately, the biologists involved had to terminate the work and leave Tonga due to illness. Nothing has been done on this project since they left.

7. In May 1973 a fisheries survey was carried out in the Ha'apai group. The islands of Nomuka, Fonoifua, 'O'ua, Tunga, Ha'afeva, 'Uiha, Lifuka, Foa and Ha'ano were covered in this survey. Information was collected on types of fish caught, relative amounts in a given time, names of fishermen, boats and fishing equipment used, etc. Along with this information a general invertebrate habitat and frequency survey was done, specimens were collected for the marine station at Sopa, and sea turtle nesting island information was collected from all the islands visited on the survey. Information regarding sea turtles included main turtle nesting islands for fonu koloa (hawksbill); names of sea turtles caught; whether any other turtles besides the hawksbill have been seen nesting and, if so, which islands; the most common and least common kinds of turtles; and the main nesting months. They found that the hawksbill nests on the following islands:

- | | |
|--------------------------|---------------------------|
| 1. Kelelesia | 15. Putuputua |
| 2. Tonumea | 16. Limu |
| 3. Telekitonga | 17. Uonukuhahake |
| 4. Lalona | 18. Tofanga |
| 5. Telekivava'u | 19. Uonukuhihifo |
| 6. Fetokopunga | 20. Luangahu |
| 7. Nukufaiva | 21. Hakauata |
| 8. Meama (near Fonoifua) | 22. Tatafa |
| 9. Fonuaika | 23. Luaheka |
| 10. Tokulu | 24. Nukutula |
| 11. Nukulai | 25. Nukupule |
| 12. Luanamu | 26. Meama (near Nukupule) |
| 13. Kito | 27. Niniva (uninhabited) |
| 14. Fetoa | 28. Nukufaiiau |

One additional uninhabited island which is a probable hawksbill nesting site is Lekeleka.

The turtles are known to nest on three inhabited islands: Mango, 'Uiha (Liku side), Ha'ano (Muitoa).

8. The following are the Tongan names of the different marine turtles in Ha'apai and the English and scientific names which fit descriptions of the Tongan names:-

- | | | |
|-------------|---|--|
| Fonu koloa | - | the hawksbill (<u>Eretmochelys imbricata</u>) |
| Tuangange | - | probably Pacific ridley (<u>Lepidochelys olivacea</u>) but may possibly be the Indo-Pacific loggerhead, since they are somewhat the same in appearance (<u>Caretta caretta gigas</u>) although the descriptions sound like the Pacific ridley. |
| Ika ta'one | } | males of the green turtle; different size, colour. (<u>Chelonia mydas</u>) |
| Hulemui | | |
| Tu'a polata | } | females of the green turtle (<u>Chelonia mydas</u>) - |
| Tu'a 'uli | | different names due to size |
| Tongotongo | | age variation as well as colour variation |
| Aleifua | | possibly the black turtle (<u>Chelonia agassizi</u>) is |
| Tu'a kula | | included here. |
| Tufonu | | |

9. Of the ten Tongan names for marine turtles, eight of these describe Chelonia mydas (the green turtle) with possibly one of the names describing Chelonia agassizi (black turtle). This is reasonable however, since Chelonia mydas is really a combined species name for a number of yet unnamed races of the green turtle. There are small differences in colour, head, flipper size and overall size between these unnamed races.

10. Therefore, it is believed that of the five genera of marine turtles in the world the Ha'apai Island group has three (Eretmochelys, hawksbill; Lepidochelys, ridley; Chelonia, green), Lepidochelys, Chelonia and Eretmochelys were the last three turtles selectively listed on Carr's endangered list. Eretmochelys (hawksbill: fonu koloa) is more common in Tonga, Fiji and Samoa than anywhere else in the South Pacific. The reason is that hawksbills do not travel long distances between nesting and feeding grounds like other marine turtles. Since Tonga, Fiji and Samoa are its breeding grounds, the hawksbill would appear to be much more abundant than the endangered species report indicates; however, all the hawksbills in these three areas include the major populations for the entire South Pacific! A hawksbill hatchery and restoration project began early in 1971 to attempt to replenish the turtle stocks in Western Samoa. They found that only four nesting beaches on three small islands still support nesting turtles in Western Samoa. The great increase in population of Western Samoa caused the greatly reduced turtle population, and pushed the hawksbill off some of the most excellent nesting beaches. The same situation is occurring in Tonga, although the greatest rate of population growth is not in the Ha'apai group - fortunately for the turtles for the time being.

11. Fishermen from the Ha'apai islands were also asked whether they had seen (and not just heard it from others) any of the other turtles nesting besides the fonu koloa (hawksbill). The tu'a 'uli, one of the names describing the female green turtle (Chelonia mydas) has been seen nesting by fishermen from Tungua, 'O'ua and Ha'afeva islands (also the aleifua, the green turtle). The islands the green turtle has been seen nesting on include two uninhabited and one inhabited island.

12. Uninhabited nesting islands of the green turtles:

Nukufaiva
Fetoa

13. Mango island is the inhabited island where they have been seen nesting.

14. It is probable that two other islands on which the hawksbill nests are also nesting islands for the green turtle. Unlike the hawksbill, the green turtle nests in groups, so there would be fewer islands where they are found nesting. A portion of the green turtles found around Ha'apai are probably migrants from other areas just using the feeding grounds here, but some may also be the greens, which nest on at least these three islands. Green turtles are ones most commonly seen aboard the Olovaha and along the Government Market in Nuku'alofa.

15. No one mentioned having seen the ridley nest anywhere in Ha'apai.

16. The most common and least common turtle names were asked of the fishermen. Almost consistently they mentioned the tu'a 'uli (green turtle) as being the most commonly caught, which is what we have observed as well. Many said the fonu koloa (hawksbill) was not the least common turtle in Ha'apai, so apparently the population is not down to its most critical level as yet. Tuangange (ridley) and tu'a kula (Chelonia sp.) were often mentioned as being the least common and maybe the black turtle. This is what was expected since no ridleys have been seen, nor their shells at the market or on the boats.

17. Finally, the main nesting months were asked of the fishermen. The nesting begins very sparsely in October, increases in November and reaches a peak through December/January, slackens off quickly, and nesting probably ceases sometime after the middle of January.

18. This, then, is the picture we have of the marine turtles situation in Ha'apai. During December 1979 a tagging and nesting survey is planned to take place. Hopefully twenty or twenty-five of the uninhabited islands will be surveyed by four groups of people. This will give us the best available information on the actual population of nesting turtles in Ha'apai, and by tagging the turtles we will hopefully get information on migrations of these turtles, etc. when they are caught by fishermen. Some hatchlings will be raised at the marine station at Sopa, mostly for studies on feeding and growth.

19. In the Vava'u group the composition of the turtle population is the same as identified in the Ha'apai group, viz: tungange - is most likely the Pacific ridley Lepidochelys olivacea; aleifua, probably the green turtle Chelonia mydas; fonu koloa, the hawksbill Eretmochelys imbricata; tufonu - possibly Chelonia agassizi. In discussions with fishermen, it was found that the main egg laying season is from November to January, though the gathering of turtles on the sea, off the nesting sites, begins as early as October.

20. The main nesting islands are in the southwestern area. They are Fonua'one'one, Fangasito, Folifuka, Foeata, and Maninita. These islands are relatively accessible and all should be declared seasonal breeding sanctuaries. Fishermen admit the islands are visited by people and the eggs taken. In the long-term, this practice could be disastrous for the turtle population in Tonga. Enforcement of sanctuary regulations should not be a difficult exercise if a fisheries station and regulatory staff were stationed in Vava'u. It is also possible that assistance may be solicited from international conservation bodies for funds to employ sanctuary wardens equipped with small fast patrol launches. The conservation of marine turtles has become an international issue of some significance. Tonga would gain considerable prestige if effective measures are taken now.

21. Turtle nesting is reputed to occur on Malinoa Island off Tongatapu. Nowhere else, on or around Tongatapu, do turtle nesting areas presently exist, mainly due to human production and interference.

22. Tonga must take some action to protect the marine turtles which feed and nest within her boundaries if turtle meat is to be eaten very much longer by Tongans. With sensible protection the population of marine turtles in Tonga should be able to tolerate the turtle catch being taken with the present methods. Any up-dated methods, including the spear gun method of catching turtles, would certainly cause the populations to dwindle quickly. The important point to be made is that the eggs must not be taken by people, nor the turtles congregating and breeding offshore, nor the nesting females. The breeding and nesting time is the most valuable period in a marine turtle's life, and protection from human predation must be given at this time or the population of turtles will continually move down toward extinction. Carr has said this many times; that "the greatest need is for inviolate sanctuaries where the capture of turtles is prohibited on or anywhere near the beach, and where no eggs are taken".

23. It is suggested that the Government of Tonga set aside seasonal sanctuaries for marine turtles. It is obvious that restrictions would be hard to police on the uninhabited islands where turtles nest, but there are only three inhabited islands in the Ha'apai group where turtles do nest. Most of the uninhabited turtle nesting islands listed in this report are government islands; a few belong to inhabitants of Ha'apai. If these government owned uninhabited islands were made off-limits to people during the months of November to January it would greatly aid the survival of the marine turtle population in Tonga. December and January are suggested because the peak season for nesting is December, and giving the eggs one more month (January) to develop would assure the eggs of not being taken for food by people. Enforcement of this would be the difficulty because the islands are so far away from main inhabited areas. The presence of the tagging and nesting survey groups going to these islands in December would help to keep poachers away. Also, beginning in September and October, explanatory information regarding these sanctuaries and the law could be given for a short time on the radio. This would help inform the people and explain to them that the long-range effects of this protection will help ensure a continued turtle population.

24. It is also suggested that a year-round sanctuary for all marine life, including turtles, be made on and around Malinoa Island, off Tongatapu. The shellfish, so badly depleted around Tongatapu, are abundant around some of the small islands off Tongatapu; Malinoa is included as well. With reports of turtles nesting on Malinoa, it being the farthest off Tongatapu and having its own reef makes it the best possible site for a marine reserve for the Tongatapu group. It can quite easily be patrolled as well.

25. It is imperative that these seasonal and year-round sanctuaries for turtles and marine life be set aside now, not next year or the next, because a dwindling population of living things will be at a much lower level, perhaps beyond the point of no return, if human action is not immediately taken.

26. The Government of the Kingdom of Tonga has already taken conservation measures such as the setting up of marine parks and reserves, and control over the killing of marine mammals. The marine turtles are protected during the peak nesting season from November to the end of January. Due to the widely isolated nature of the traditional nesting sites, enforcement of regulations is extremely difficult. Only a public awareness that the marine turtle is joining an ever-increasing list of animals which face extinction will stimulate enlightened administrations to take action. It may be too late now.
