

Sea Turtle Project Formulation in Yap State, Federated States of Micronesia

March 2004

Steven P. Kolinski

NOAA Fisheries, Pacific Islands Regional Office

Turtles are an important cultural and subsistence resource to the people of Yap State, Federated States of Micronesia. Since the 1970s, measurements of various turtle life history parameters and documentation of traditional and modern human use and regulation have been made in an effort to expand local understanding of resource limitations, impacts, and past and present use pertinent to local management and recovery of turtle populations, whose status is perceived locally to be in decline (McCoy 1974, 1981, 1988, Smith 1991, unpublished data, Kolinski 1991, 1992a & b, 1993 a – e, 1994a & b, 1995 a & b, unpublished data, Kolinski & Hachiglou 1993). However since 1994, little has been done to further assess and address population recovery for turtles in the region. NOAA Fisheries is interested in supporting renewed efforts towards turtle conservation and population recovery within Yap State and the Federated States of Micronesia.

Each island/atoll within Yap State differs in turtle resource availability and mechanical and regulatory access to turtle as resources. A variety of conservation incentives geared towards the maintenance and/or recovery of sustainable turtle populations will likely need to be employed to adequately address resource use and population recovery on a statewide level. Although local harvesting of turtles continues, there is a definite concern that turtle populations continue to decline. Previous studies (Kolinski 1995a) have shown Yap States turtle resources to be shared across international political boundaries, thus ultimately efforts at conservation and sustainable use will need to be widespread, determined by the migration boundaries of the turtles themselves.

This report summarizes projects ideas related to turtle conservation discussed with representatives of the Yap State Department of Resources and Development (R&D), Marine Resources Management Division (MRMD), the Yap Institute of Natural Science (YINS), the Yap Community Action Program (YapCAP), the Environmental Stewardship Consortium (ESC), and the Pacific Resources for Education and Learning (PREL) between 1 and 12 October 2003. Relevant comments and ideas of outside advisors contacted prior to and after the trip are also included.

Projects Ideas

1. **Turtle Education Program.** This is the critical component to addressing issues related to turtle resource sustainability throughout Yap State. However, to be convincing, the focus of any educational program must be based on and relate directly to Yap State's turtles and cultural circumstances. This was recognized in previous projects (Kolinski pers. obs.) and in numerous discussions with island inhabitants; nearly all were reluctant to believe that various pertinent life history findings from outside areas applied to "their" turtles (such as long range migration), until such concepts were shown to be true for "their" turtles. Previous projects in Yap State thus focused on collecting relevant life history information that could act as a foundation for applicable management and education. Although many relevant findings have permeated throughout the community, the education component has never been adequately addressed.

Data relevant to life histories and harvesting of Yap's turtles exists, and has only to be shared with the communities of interest. Kolinski and McCoy have power point presentations that might be combined with traditional information collected by Smith and tailored towards sharing what's known regarding Yap States turtles, how Yaps findings relates to findings (similarities and differences) in other areas, how traditional practices and techniques have changed over the years, what impacts such changes are likely having and/or will have, and what questions remain to be addressed. Consultation with the Yap State Department of Education and PREL may help in incorporating local flavor to the presentation, thus enhancing applicability for the target audience. Presentation by an islander who is respected and believable should be considered. John Mangefel (PREL Board Member) indicated PREL would be very interested in such activities and would be keen to incorporate relevant information in curriculum development for the Federated States of Micronesia.

The Yap State R&D, MRMD, YINS and YapCAP are supportive of such a program being developed. In discussions with MRMD, it was agreed that the theme of any such program should not be in telling Yap citizens not to utilize turtles as resources (that's a losing battle), but rather that, given known life history characteristics, turtles might more practically be viewed as, "Special resources for special occasions". A focus on pride in having such resources, given that so many island areas have lost them, may provide a basis for having people look to what they will be leaving their grandchildren. Long-term sustainability will be dependent on the choices and tradeoffs people make based on their current understanding of the various types of impacts and the timing when such impacts will likely be experienced. Development of an education program would need to be contracted out. Public awareness involving the tracking of migrating turtles via satellite tags may enhance the education value of any program. Partial funding for an education program might be sought from the U.S. Fish & Wildlife Service.

- 2. Turtle Based Eco-tourism at Gielop and Iar Islands, Ulithi Atoll:** The islands of Gielop and Iar, just outside of Ulithi Atoll, make up the largest green turtle rookery known to all of Micronesia. Nesting turtles are believed to number in the high hundreds to possibly low thousands each nesting season (Kolinski per. obs). Strict traditional controls related to human interactions with turtles exist (Lessa 1983), but some conflict occurs between those who oversee the lands (Falalop Island) and those who oversee the turtles (Mogmog Island). Only one turtle survey was conducted on these islands in 1991 (Kolinski 1992a). None has been allowed since. A follow-up survey by MRMD in 1992 was denied following the death of an island Chief on Falalop. MRMD tentatively arranged with Mark Rice of Hawaii and his group of student volunteers to tag and monitor turtles on these islands for a short period of time, but access was denied by Falalop (Andy Tafileichig pers. comm.). Falalop claims the 1991 turtle survey scared all the turtles away, however there are many that believe this may be a ruse to keep from interfering with local poaching activities. Turtle harvests may go beyond local subsistence levels, with outside trade occurring (Andy Tafileichig pers. comm.).

A hotel has been developed on Falalop Ulithi and Junior Rimal (son of John Rimal, a very influential man on Falalop) has been studying to earn a degree in tourism in Hawaii. Tourism to Falalop Island is reportedly low. The Nature Conservancy (TNC-Micronesica, Bill Raynor) apparently has been keen on an idea to facilitate tourism development in the area via conservation by incorporating turtle nesting into eco-tourism events. Andy Tafileichig indicated that Andrew Smith (TNC Pacific Coastal Marine Program) at one time discussed

having representatives from Falalop travel to an area with turtles as a focus of eco-tourism to show them that conservation could be a key component of their efforts to develop. Mike McCoy suggested Bill Acker (Owner Manta Ray Bay Hotel) has marketing ability and may be interested in developing eco-tourism packages focusing on reefs and turtles in Yap and Ulithi. Bill Acker was off island during this visit.

Correspondence with Andrew Smith and Bill Raynor regarding this topic is needed, as TNC may be the appropriate agency to take a lead role in such activities. It may be that the right people (i.e. Junior Rumal) are not in right place to implement a program at this time. Assistance with eco-tourism development would be needed.

- 3. Genetic Sampling of Harvested Turtles and Collection of Harvest Data:** Adequate assessment of turtle population sizes requires an understanding of the geographic boundaries of breeding areas. The boundaries of Yap States turtle rookeries are not well understood in terms of distinct population usage. There are no active turtle programs presently in Yap State (with the exception of a turtle head-start program – see below). However, turtles continue to be harvested for consumption throughout the islands. The collection of tissue from multiple turtles in each nesting region for genetic analysis is a means by which to assess individual turtle rookery areas. Genetic profiling of nesting populations serves as reference for samples collected from turtles in near and distant resident turtle areas. The collection of tissue from harvested turtles by island representatives over time throughout Yap State may provide an adequate number of samples for distinguishing ecologically separate turtle rookeries at little cost, with little effort. Data on harvested turtles may provide a means by which to assess population dynamics through comparison with data collected over a four-year period from 1990 through 1994.

Previous tagging of nesting turtles suggests that Elato Atoll, Lamotrek Atoll and Satawal Islands may be utilized by a single breeding population (Kolinski 1995a). Boundary information is lacking for other Yap State regions. Although tissue samples were collected from Ngulu Atoll, Pig Island Ulithi Atoll, and Elato Atoll in 1992 and 1993 and were analyzed by the University of Queensland for Pacific wide comparisons, the numbers of samples were too small to distinguish population differences between island areas (Moritz et al. 2002, but see Moritz and Limpus 1993). MRMD is willing to be a focal point for distribution and collection of harvest datasheets and solution vials for data and sample collection. They are also willing to work through the Council of Tamol to implement and coordinate this work. NOAA Fisheries (Peter Dutton) has expressed great interest in receiving and analyzing such samples, and appears willing to provide necessary collection and storage materials. However, a requirement must be made to ensure that samples are analyzed specifically to address Yap State turtle rookery boundary considerations, prior to use for addressing more regional questions. Kolinski maintains previous harvest data, and is interested in renewing the collection of harvest data for comparison (note original data resides with MRMD).

An opportunity also exists to clarify a possible local misconception concerning resident and nesting turtles at Elato Atoll. Resident turtles at Elato appear numerous (Kolinski 1993 b & d). The people of Elato believe the resident turtles grow up and nest on their islands, thus tying nesting to resident turtle demographics. Such a case would be extremely unusual and is not supported by limited tag returns for the region (Kolinski 1995a). The management

implications are tremendous. Elato has a relatively high turtle consumption rate, and turtles are apparently being traded for off-island goods (Andy Tafleichig pers. comm.). Impacts to nesting populations might only be discernable by monitoring the nesting population itself. The issue could be clarified through a genetic comparison of feeding and nesting turtles within the atoll. Information gained may be applicable to addressing similar misconceptions at Ifaluk Atoll and other atoll areas having significant resident and nesting turtle populations. MRMD supports addressing this issue. Previous turtle efforts employed and trained numerous personnel from Elato. Turtle tags, applicators, measuring instruments and vials would be needed, as well as compensation for employment. Opportunity for initiating this project may be limited by capacity issues at MRMD, however coordinated efforts with YINS and/or YapCAP increase potential project feasibility.

4. **Tagging (Metal and Satellite):** MRMD indicated continued interest by the Council of Tamol (with the exception of Falalop, Ulithi) in gaining locally relevant information on Yap State turtles through tagging efforts in the Neighboring Islands. Continued effort and expansion to islands not previously surveyed would be greatly beneficial to documenting turtle activities statewide. Renewed surveys on islands previously sampled would also be beneficial, although comparisons with previous efforts might be limited in scope. Capacity issues presently limit the ability of MRMD to re-institute a tagging program. However, MRMD is open to outside assistance in re-instituting turtle tagging projects. Organizations such as YapCAP and YINS may be able to facilitate preparation of appropriate proposals and project implementation. Satellite tagging of a few nesting turtles might be pursued for educational outreach and awareness. Database and data storage systems at relevant agencies should be developed.
5. **Head Start Programs (Lamotrek Atoll):** A proposal to collect and raise hatchling turtles for later release at larger sizes (head-starting) by two youth clubs at Lamotrek Atoll has been accepted and funded by the FSM Congress. The proposal was submitted by Peter Itiral of Lamotrek, and the funds are being administered by MRMD. Roughly 150 hatchling turtles have already been collected from islands in Elato Atoll and transported to Lamotrek for raising. The project is to last 19 months, although funding for continuation may be sought.

Discussions with Peter indicated some need for advice on how large to raise turtles prior to their release, and what measurements to take. It was emphasized to Peter that such efforts should remain small scale and experimental as impacts of head-starting are presently unknown. Peter was advised to take only a few turtles from a few nests for raising, letting nature take its course for the remaining turtles. Instead of emphasizing any uncertain conservation value of head-starting, Peter was advised that the focus of his project might shift to evaluating the impact of head-starting on collected and raised hatchlings turtles. Measurements of mortality and growth are key components to assessing head-starting impacts. The effects of head-starting on migration patterns and long-term survivability need also be determined.

Although head-starting is not typically encouraged by NOAA Fisheries, there is little collective empirical information related to portended positive or negative impacts of such programs. Palau was recently planning to construct a turtle head-start facility for raising turtles (project status unknown, but perhaps abandoned due to questions on conservation effectiveness; Andrew Smith pers. comm.). A purely educational raise and release program

(“Turtle Ambassador Program”) appears to be ongoing for a limited number of turtles on Hawaii (the Big Island), and education and release efforts are coordinated with NOAA Fisheries representatives (George Balazs). At Lamotrek, some effort might be made to raise turtles to a size large enough for tagging with inconel/titanium tags and, if possible, satellite transmitters. At least one raised turtle in Hawaii was recently satellite tagged to study its migration pattern and survival following release (Akaka 2003, Command 2003). Similar efforts might be made in Lamotrek, not necessarily in support of head-starting activities, but as a means to assess impacts on raised and released turtles. A full-scale evaluation of past and present head-starting activities world-wide should be made to assess collective efforts and findings.

Local Capacity

The Marine Resource Management Division will need to play a key role in organizing and/or facilitating turtle related projects within Yap State. The capacity of MRMD, however, to propose and implement turtle related activities is presently very limited, although the desire is strong. The philosophy at this time is to focus on present projects well rather than becoming overwhelmed with too many projects. MRMD is willing to help implement projects given enough outside assistance.

YapCAP, YINS, and the ESC have great interest in participating in turtle related activities. These organizations have the capacity to write and submit proposals, and have potential to receive funding directly.

The Council of Tamol remains very interested in reinitiating projects to address turtle issues in the Neighboring Islands of Yap State (Andy Tafleichig pers. comm.). The exception is, unfortunately, Falalop Ulithi, although given the right people at the right time in the right place this may change (see above).

Conclusions

Local resource agencies and community members appear to be interested in further investigations and activities related to turtle recovery in Yap State. While the capacity of individual agencies may be limited, coordinated efforts by multiple agencies have the potential to lead to effective project creation and implementation. All of the proposed activities above were received with favorable interest and input by local agencies. Two of the activities, the education program and genetics and harvest study, could be initiated outside with local support without taxing present agency capacities. It is recommended this report be distributed to interested and relevant parties for comment and discussion, and further effort be made to initiate to whatever extent possible the projects discussed above.

Contacts

Jesse Gajdusek, R&D
Andy Tafleichig, MRMD
Charles Chieng, YapCAP, ESC
Gabrielle Wilhelm, YapCAP
Margie Falanruw, YINS, ESC

John Mangafel, PREL
Peter Iternal, DOE
Mike McCoy
Andrew Smith, TNC
Bill Raynor, TNC
George Balazs, NOAA Fisheries
Peter Dutton, NOAA Fisheries
Chris Swenson, FWS
Irene Kinan, WPRFMC

References

- Akaka, K. 2003. Honu: Where do they go from here? VIEW 2: 1-2.
- Command, B. 2003. Traveling turtle returns. Westhawaiiitoday.com.
- Kolinski, S. P. 1995a. Migrations of the green turtle, *Chelonia mydas*, breeding in Yap State, Federated States of Micronesia. *Micronesica* 28: 1 - 8.
- Kolinski, S. P. 1995b. The green turtle, *Chelonia mydas*, in Yap State, Federated States of Micronesia: Understanding various pressures on a resource. Unpublished manuscript, 24 p.
- Kolinski, S. P. 1994a. *Chelonia mydas* (green turtle) predation. *Herpetological Review* 25: 120.
- Kolinski, S. P. 1994b. Carapace lesions of *Chelonia mydas* breeding in Yap State are diagnosed to be fibropapilloma. *Marine Turtle Newsletter* 67: 26 - 27.
- Kolinski, S. P. 1993a. Outer island turtle project: Stage III, report on Ngulu Atoll fieldwork. Marine Resources Management Division Report to the Yap State Government, January, 23 p.
- Kolinski, S. P. 1993b. Outer island turtle project: Stage III, report on Elato Atoll fieldwork (resident and breeding turtle populations). Marine Resources Management Division Report to the Yap State Government, March, 22 p.
- Kolinski, S. P. 1993c. Outer island turtle project: Stage IV, report on Ngulu Atoll fieldwork. Marine Resources Management Division Report to the Yap State Government, August, 18 p.
- Kolinski, S. P. 1993d. Outer island turtle project: Stage IV, report on Elato Atoll fieldwork (resident and breeding turtle populations). Marine Resources Management Division Report to the Yap State Government, October, 20 p.
- Kolinski, S. P. 1993e. Outer island turtle project: Stage IV, report on Pig Island fieldwork. Marine Resources Management Division Report to the Yap State Government, September, 15 p.
- Kolinski, S. P. 1992a. Outer islands turtle project: Stage II, report on Gielop Island fieldwork. Marine Resources Management Division Report to the Yap State Government, April, 23 p.

- Kolinski, S. P. 1992b. A brief overview of threats to marine turtle species within Yap State, Federated States of Micronesia (Draft). Marine Resources Management Division Report to the Pacific Sea Turtle Recovery Team, May, 6 p.
- Kolinski, S. P. 1991. Outer island turtle project: Stage I, final report on the Olimarao Atoll fieldwork. Marine Resources Management Division Report to the Yap State Government, March, 20 p.
- Kolinski, S. P. & V. Hachiglou. 1993. Outer islands turtle project, Yap State, F.S.M. - status report, April, 1993. Third Meeting of the Regional Marine Turtle Conservation Programme, Apia, Western Samoa, June, 1993, 4 p.
- Lessa, W. A. 1983. Sea turtles and ritual: Conservation in the Caroline Islands. Pages 1183 – 1201. *In*: B. Gunda (ed.), *The Fishing Cultures of the World*.
- Moritz, C. and C. J. Limpus. 1993. Report to SPREP, Marine Turtle Genetics Program. Unpublished report to SPREP.
- Moritz, C., D. Broderick, K. Dethmers, N. FitzSimmons and C. Limpus. Population genetics of southeast Asian and Western Pacific green turtles, *Chelonia mydas*. Final Report to UNEP/CMS.
- McCoy, M. A. 1988. The marine turtles of Micronesia, 1988 review. International Symposium on Sea Turtles '88 in Japan: 105 – 108.
- McCoy, M. A. 1981. Subsistence hunting of turtles in the Western Pacific: The Caroline Islands. Pages 275 – 280. *In*: K. A. Bjorndal (ed.), *Biology and Conservation of Sea Turtles*. Smithsonian Institution Press, Washington D.C.
- McCoy, M. A. 1974. Man and turtles in the Central Carolines. *Micronesica* 10: 207 – 221.
- Smith, A. 1991. MRMD working paper on turtles. Unpublished manuscript.