

G. Balago

A proposal submitted to:

National Biological Service
State Partnership Program.
Mail Stop 3070-MIB
1849 C Street NW,
Washington DC 20240

March 10, 1995

**1. TITLE: TRACKING MIGRATIONS OF SAMOAN SEA TURTLES
USING SATELLITE TELEMTRY.**

2. ABSTRACT: This proposal addresses one of the most pressing conservation issues in the South Pacific -- the regional loss of sea turtles. Sea turtles populations are declining in American Samoa as they are throughout the South Pacific Ocean. The last remaining nesting area in Samoa for the threatened green turtle is at Rose Atoll, a small uninhabited atoll that is a National Wildlife Refuge. Only about 30 females nest there per year.

While sea turtles are legally protected in American Samoa, they are not protected when they migrate out of the Territory to distant feeding grounds, but the locations of these areas are not well known. Preliminary evidence indicates that Fiji, where it is legal to harvest turtles, may be a major feeding area for turtles that nest in American Samoa.

It is therefore important to identify the distant foraging areas for the Samoan turtles so that we can develop management plans that span their entire life cycle. Once the feeding grounds of Samoa's turtles are known, we can begin direct dialogues with the specific countries that share our turtle resources.

The proposed project will locate the distant feeding grounds of Samoan turtles by use of satellite transmitter tags. This interagency project seeks funding for the tags and logistical support.

A supplemental budget for preparation of a public information video about this project is also appended to this proposal (Appendix 1).

3. NEED: Sea turtle populations are rapidly declining throughout the South Pacific region (SPREP 1993), and they have been listed in the US as endangered or threatened species. To promote conservation awareness of this valuable but dwindling resource, South Pacific Regional Environmental Program (based in Western Samoa) has called for a reduction in the commercial and

subsistence kill of turtles throughout the South Pacific. The South Pacific Commission (New Caledonia) also declared 1995 to be the "Year of the Sea Turtle" in the Pacific region.

In American Samoa, turtle populations have seriously declined and now total only about 120 nesting females (species combined) per year throughout the Territory (Tuato'o-Bartley et al. 1993). The last remaining nesting area for green turtles in Samoa is at Rose Atoll, a small uninhabited island which has been designated a National Wildlife Refuge. Only about 30 green turtles nest there per year.

Green turtles generally undertake extensive migrations between their nesting and feeding areas, which may be separated by 1000's of miles (Balazs et al. 1993). In Samoa, we are just beginning to identify their migratory patterns, and limited tagging data indicate that Samoan turtle populations must be viewed in a broad regional context.

Nesting green turtles at Rose Atoll have been tagged opportunistically by USFWS, NMFS and DMWR in past years, but only 3 recaptures were made, 2 in Fiji (where they were eaten) and one near Vanuatu.

To increase recoveries, we recently initiated a satellite tagging program at Rose Atoll. In November 1993, we fitted 3 green turtles with satellite transmitters and followed their daily progress as they migrated directly to feeding grounds located in Fiji (Balazs 1993a). The following year, we satellite-tagged an additional green turtle at Rose Atoll (data from this on-going effort are not yet available).

This pattern of large-scale movements between a turtle's nesting area and feeding area means that turtle stocks in the South Pacific Ocean are intermixed, which greatly complicates conservation efforts. It means that region-wide cooperation among the island countries of the South Pacific is essential; otherwise, while we may try to protect turtles in Samoa, these same turtles may be killed later when they migrate to other islands.

The first step in addressing the need for regional conservation is to demonstrate how the islands are inter-related by turtle migrations, and more specifically to locate where Samoa's turtles go when they leave Rose Atoll. Once the feeding grounds of Samoa's turtles are identified, we can begin direct dialogues with specific countries about our shared resource.

4. OBJECTIVES: To locate the distant feeding grounds of Samoa's threatened green turtles so that we can initiate meaningful management measures with the specific island countries that share Samoa's turtle resources. Secondary objectives are to determine the duration of the turtle nesting season in American Samoa, their migration routes and timing between nesting and foraging areas, and their movement patterns while at nesting and foraging areas.

5. METHODS: Our overall strategy is to put satellite transmitter tags on 3 nesting green turtles at Rose Atoll each year for 5 years to build a composite picture of their migration patterns. There are several reasons for this approach. First, there are few nesting turtles present at any one time to tag (typically only 2-4 turtles nest per week during the nesting season). Second, different nesting turtles may have different feeding areas, so we wish to spread out the sampling effort to decrease the chance that all tagged turtles will go to the same site (for example, our Year-1 turtles went to Fiji, and the Year-2 turtle appears to be going in the opposite direction). Third, the cost of the satellite tags and subsequent processing requires a balance between field efforts, costs, and results. It should be noted here that satellite tags are highly competitive with the more traditional metal-clip tags which cost much less but yield few results.

Our satellite tag project began in 1993 when we successfully put satellite transmitters on 3 green turtles at Rose Atoll. In 1994, an additional turtle was tagged with a satellite transmitter (information from this effort is not yet complete -- the transmitter is relaying data but the migration is still underway).

We now propose to continue this effort and put an additional 3 tags on turtles at Rose Atoll in October 1995. A field crew of 2 biologists would camp on Rose Island, and conduct nightly turtle patrols at about 2-hr intervals until nesting turtle are located. Tagging procedures will follow the protocol developed by Balazs and others to minimize disturbance to the turtles (Balazs 1993b). After the turtle finished laying eggs, a large plywood box (with an open top and bottom) would be placed over it to confine it while the satellite transmitter is fixed to the turtle's shell. This effort requires only about 3 hours, so the turtle can be released that same day.

The transmitters will provide information about the length of the nesting season at Rose Atoll for the tagged turtles, as well as their daily progress as they migrate to unknown feeding areas. We will monitor the turtles until the transmitter batteries cease to function (estimated to be 6-8 months). However, we anticipate that the tagged turtles will reach their destinations (foraging areas) within 4 months after tagging.

State/federal permits needed to conduct this study are (1) a permit to work on the endangered green sea turtle (already possessed by G. Balazs), and (2) a USFWS permit to work at Rose Atoll National Wildlife Refuge.

6. PROJECT OFFICER:

Dr. Peter Craig, Chief Biologist
Dept. Marine and Wildlife Resources
Box 3730, Pago Pago
American Samoa, 96799
Phone: 684-633-4456, Fax: 684-633-5944

7. STUDY AREA: Rose Atoll National Wildlife Refuge, which is located in the US Territory of American Samoa. No access to private property is needed to conduct this project.

8. INVESTIGATORS: This project is a cooperative effort between the Department of Marine and Wildlife Resources in American Samoa and the National Marine Fisheries Service (Honolulu). It has also been strongly supported by interagency cooperation and in-kind contributions by local non-governmental groups. Previous satellite tags for this project were purchased by the American Samoa Environmental Protection Agency, US National Parks Service, Dept. Marine and Wildlife Resources, and American Samoa Coastal Management Program.

To promote public awareness about turtle conservation, DMWR also sponsored contests for the public to guess where the tagged turtles would go. This successful effort was assisted by the local newspaper (Samoa News) and environmental group (Le Vaomatua).

9. EXPECTED PRODUCTS: A final report will be prepared after the turtles reach their foraging areas. A video will be prepared if the the supplemental proposal in Appendix 1 is also funded.

10. WORK AND REPORTING SCHEDULE:

- 1) May 1995: Order satellite tags (2-month construction time required).
- 2) October: Field trip -- a vessel would be chartered for a 7-10 day field trip to Rose Atoll during the turtle nesting season in September-November 1995. Specific dates for the trip will depend on vessel availability and weather. In general, a field effort scheduled towards the end of the nesting season is preferred because the tagged turtles are more likely to migrate away from the island thereby reducing potential damage to the tags.
- 3) November-March: Monitor turtle migrations.
- 4) June 1996: Final report submitted.

11. PROPOSAL BUDGET: \$20,500. An itemized budget is provided in Table 1. The principal cost is for the satellite transmitters themselves, totalling \$10,500. These are ST-3 transmitters manufactured by Telonics Inc. of Mesa, Arizona for use in the Tiros-Argos satellite tracking system.

The second item is the cost of chartering a vessel to Rose Atoll from Pago Pago. We estimate this to be \$10,000 based on recent charters. Total in-kind costs would be approximately \$33,000 as outlined in Table 1.

TABLE 1. BUDGET AND IN-KIND COSTS.

	<u>Proposal</u>	<u>DMWR, NMFS in-kind</u>
1. Satellite tags (3 @ 3500)	10,500	
2. Vessel charter	10,000	
3. Satellite usage (3 @ 8000)		24,000
4. Manpower: field work, analysis, report preparation		6,000
5. Per Diem		500
6. Supplies		500
TOTALS	<u>20,500</u>	<u>31,000</u>

12. **QUALIFICATIONS OF PROJECT PERSONNEL:** This interagency project will be conducted by Dr. Peter Craig (Dept. Marine and Wildlife Resources) with cooperative assistance from George Balazs (National Marine Fisheries Service, Honolulu). Dr. Craig is the Chief Biologist at DMWR. George Balazs is a recognized authority on Pacific sea turtles and he has successfully conducted similar satellite-tag studies of green turtles in the Hawaiian Islands. Both Craig and Balazs are members of the USFWS/NMFS Pacific Sea Turtle Recovery Team, and both conducted the first phases of this project at Rose Atoll in 1993 and 1994.

13. **LITERATURE CITED:**

- Balazs, G. 1993a. Satellite telemetry of green turtles nesting at French Frigate Shoals, Hawaii, and Rose Atoll, American Samoa. Proc. 14th Symposium on Sea Turtle Biology and Conservation. 4p.
- Balazs, G. 1993b. Homeward bound: satellite tracking of Hawaiian green turtles from nesting beaches to foraging pastures. Proc. 13th Symp. Sea Turtle Conservation and Biology.
- Balazs, G., P. Siu, and J Landret. 1993. Ecological aspects of green turtles nesting at Scilly Atoll in French Polynesia. Proc. 1992 Sea Turtle Symposium. Jekyll Island, Georgia.
- SPREP (South Pacific Regional Environmental Program). 1993. Third Regional Marine Turtle Conservation Programme. June 1993. Apia, Western Samoa.
- Tuato'o-Bartley, N., T. Morrell, and P. Craig. 1993. Status of sea turtles in American Samoa in 1991. Pac. Sci. 47:215-221.

APPENDIX 1. VIDEO SUPPLEMENTAL PROPOSAL

To maximize the conservation value of this project, we propose the following supplemental package to produce a public awareness video of the turtle project.

There are several reasons why a video would be advantageous. It would:

- help further the public's understanding of the serious survival problem faced by sea turtle resources in the South Pacific,
- increase public interest in letting the migrating turtles live in both nesting areas and feeding grounds,
- illustrate the need for regional management of the shared turtle resource,
- be usable as an educational tool in schools and communities as well as a television program for broadcast,
- help explain to funding agencies and organizations why satellite tagging is worth the cost and effort.

The video would be made in documentary style and be presented in plain language, understandable to most people. Narration would be in English. Short interview bits, dialogue, field sequences and informative segments would interchange in an interesting and informative way.

The video presentation must be captivating: we land on the island; we go along with the expedition to find the turtles without knowing what will happen; will there be any turtles at all? where will the tagged turtles go?

The enthusiasm and personal commitment of the team would be apparent. The viewers will have no doubt that the team is working to help save the turtles of the Pacific. The viewers will follow the work of the expedition as it progresses, while still learning more about satellite tagging and about the biology and behavior of sea turtles. The flora and fauna of remote Rose Atoll would be described. Graphics, drawings, and perhaps models would be used to explain the details of satellite transmitters and how the signals from the turtle reach the scientists. The turtle's progress would be plotted.

The video would be 24 min duration, shot and edited in broadcast quality so that it can be used as a public service television program.

The following is an outline for the proposed video production:

Going ashore on Rose Atoll.

We follow the team of scientists landing at Rose.

Preparing the tags.

Explain why we are here, what the tags are and how they will be used. Graphics could illustrate how and where signals are sent from the turtle's back to the satellite to France, then back to the US via Hawaii to American Samoa.

Rose Atoll.

Shots showing this remote atoll and the beaches where the turtles will lay their eggs. Impressions of isolation.

Looking for turtles at night.

Follow the team out at night, looking for turtle tracks. Find nesting turtle. Explain briefly the turtle's life cycle, and specifically about the turtles at Rose from previous tagging data.

Tagging a turtle.

Fixing the tag to the turtle shell. The tagged turtle returns to the sea and swims away.

Plotting the turtles as they migrate.

Migrations plotted on chart.

Conclusion.

What have we learned? What steps do we have to take to prevent these turtles from being eaten when they leave American Samoa?

The video would be produced by Hans Andersen, Producer, of Tradewind Communications Ltd., PO Box 5761 Wellesley Street, Auckland, New Zealand. Phone (64)9-520-4014, fax (64)9-522 2295. Tradewind Communications has recently prepared a video describing the plight of sea turtles in the South Pacific for SPREP (South Pacific Regional Environmental Program) and is currently preparing a wetlands video for the American Samoa Coastal Management Program.

Video Budget: \$24,000

\$1900	Pre-production
3000	Travel
7400	Crew and gear
7700	Editing
1600	Duplication
<u>2400</u>	Contingency
24,000	

APPLICATION FOR FEDERAL ASSISTANCE

2. DATE SUBMITTED:
3-10-95

Applicant Identifier

1. TYPE OF SUBMISSION:
Application Preapplication

3. DATE RECEIVED BY STATE

State Application Identifier

Construction Construction
 Non-Construction Non-Construction

4. DATE RECEIVED BY FEDERAL AGENCY

Federal Identifier

5. APPLICANT INFORMATION

Legal Name: AMERICAN SAMOA GOVERNMENT

Organizational Unit: DEPT. OF MARINE & WILDLIFE RESOURCES

Address (give city, county, state, and zip code):

Name and telephone number of the person to be contacted on matters involving this application (give area code)

P.O. BOX 3730
AMERICAN SAMOA GOVERNMENT
PAGO PAGO, AM. SAMOA 96799

RAY TULAFONO, Director
(684)633-4456

6. EMPLOYER IDENTIFICATION NUMBER (EIN):

97 - 0000676

7. TYPE OF APPLICANT: (enter appropriate letter in box) **A**

8. TYPE OF APPLICATION:

New Continuation Revision

If Revision, enter appropriate letter(s) in box(es):

- A. State
- B. County
- C. Municipal
- D. Township
- E. Interstate
- F. Intermunicipal
- G. Special District
- H. Independent School Dist.
- I. State Controlled Institution of Higher Learning
- J. Private University
- K. Indian Tribe
- L. Individual
- M. Profit Organization
- N. Other (Specify)

- A. Increase Award
- B. Decrease Award
- C. Increase Duration
- D. Decrease Duration
- Other (specify):

9. NAME OF FEDERAL AGENCY:

US FISH & WILDLIFE SERVICES

10. CATALOG OF FEDERAL DOMESTIC ASSISTANCE NUMBER:

-

11. DESCRIPTIVE TITLE OF APPLICANT'S PROJECT:

TRACKING MIGRATIONS OF SAMOAN SEA TURTLES USING SATELLITE TELEMTRY

TITLE:

12. AREAS AFFECTED BY PROJECT (Cities, Counties, States, etc.):

TERRITORY OF AMERICAN SAMOA

13. PROPOSED PROJECT:

14. CONGRESSIONAL DISTRICTS OF:

Start Date: 5-1-95
Ending Date: 6-30-96

a. Applicant

NA

b. Project

NA

15. ESTIMATED FUNDING:

a. Federal	\$	20,500	.00
b. Applicant	\$	31,000	.00
c. State	\$.00
d. Local	\$.00
e. Other	\$.00
f. Program Income	\$.00
g. TOTAL	\$	51,500	.00

16. IS APPLICATION SUBJECT TO REVIEW BY STATE EXECUTIVE ORDER 12372 PROCESS?

a. YES. THIS PREAPPLICATION/APPLICATION WAS MADE AVAILABLE TO THE STATE EXECUTIVE ORDER 12372 PROCESS FOR REVIEW ON:

DATE _____

b. NO. PROGRAM IS NOT COVERED BY E.O. 12372
 OR PROGRAM HAS NOT BEEN SELECTED BY STATE FOR REVIEW

17. IS THE APPLICANT DELINQUENT ON ANY FEDERAL DEBT?

Yes No If "Yes," attach an explanation.

18. TO THE BEST OF MY KNOWLEDGE AND BELIEF, ALL DATA IN THIS APPLICATION/PREAPPLICATION ARE TRUE AND CORRECT, THE DOCUMENT HAS BEEN DULY AUTHORIZED BY THE GOVERNING BODY OF THE APPLICANT AND THE APPLICANT WILL COMPLY WITH THE ATTACHED ASSURANCES IF THE ASSISTANCE IS AWARDED.

a. Type Name of Authorized Representative

Ray Tulafono

b. Title

Director

c. Telephone Number

(684)633-4456

d. Signature of Authorized Representative

Ray Tulafono

e. Date Signed

3-13-95