

Proposal for a Marine Turtle Survey in New Caledonia

Proposal Prepared By

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PROPOSAL FOR A MARINE TURTLE SURVEY IN NEW CALEDONIA

BACKGROUND

The green turtle, Chelonia mydas, is found throughout the shores of the tropical oceans, but is declining nearly everywhere because of local and international demand for food, eggs, leather, oil, and other products. The U.S. Department of the Interior now lists all populations as threatened with the exception of those of Florida and Pacific Mexico which are considered Endangered. Internationally, the Convention on Trade in Endangered Species of Fauna and Flora lists the green turtle as "Appendix I", corresponding to endangered status and banned from international commerce among signatory nations, with the exception of the Australian populations that are listed as Appendix II.

Despite its declining status, however, certain remote areas still harbor large nesting populations of the green turtle. The importance of these refugia will increase annually as smaller or more accessible colonies are progressively decimated or eliminated. With one or two exceptions (such as Europa Island in the Mozambique Channel), these large nesting colonies are concentrated in the Coral Sea, notably the islands of the Great Barrier Reef, where a number of them are effectively protected by the Government of the State of Queensland.

On the opposite side of the Coral Sea, on the shores and offshore islands of New Caledonia, published information on the status of marine turtles of all kinds is extremely fragmentary. For a century bibliographers have been forced to cite Chimmo (1856) as the only information on nesting turtles in the 15,000 square mile d'Entrecasteaux Reef area, north of New Caledonia. The enormous

reef, still inadequately charted (the French Naval Survey in 1979-80 found major errors in all existing charts of this area), breaks the surface of the sea to form tiny islands in only four places -- the islands of Surprise, Leleixour, Fabre, and Huon -- apart from one or two vegetation-free sandbanks.

William Billings, the American master of the Chinese junk Ningpo that ran aground on the d'Entrecasteaux Reefs in 1854, offered the following comments on the green turtles of the Islands in the middle part of the reef, presumably Leleixour and Fabre:

"Every preparation was now made for a long sojourn on the island by keeping a vigilant look-out for turtle, which now began to come on shore in great numbers. Two large pens were built, and upwards of eighty, weighing on an average 5 cwt, were put into them.

"The pens being full they commenced drying the flesh of others to provide against the time they would desert these shores; which they do during the months of November and December, after depositing their eggs, and return as early as July, increasing daily from this period. They were so numerous in September that the master turned twenty-seven one morning without wetting his feet, and he counted eighteen more asleep in about six inches of water, which could have been captured without difficulty."

Although sea turtles in the d'Entrecasteaux Reef area have doubtless been observed casually from time to time by personnel visiting the automatic weather station on Isle Surprise, such observations do not appear to have been made public. In order to update the observations of Billings, and to confirm the continued existence of the green turtle colony, the opportunity was taken by several participants in the November 1979 South Pacific Commission Turtle

Conference in Noumea to overfly the islands around New Caledonia and to gauge the intensity of nesting wherever it was found. This was done by the present applicant, accompanied by George Balazs, Rene Grandperrin, and Sylvia Spring, immediately after the conference. (Pritchard, in press)

We were able to confirm that the four islands large enough to have scrub or tree cover in the interior area were still attracting large numbers of turtles; the beaches and dunes of these islands gave the appearance of being nested to capacity, and the tracks seen every few yards along the shoreline of each island appeared to be very fresh; possibly all were from the previous night.

On 10-11 February 1980 the French Navy ship "La Dunkerquoise" visited Huon Island, which was then estimated to be 3 km. in length (including the elongate sandbanks), a maximum of 200 meters wide, and with only 12 of the 200 hectare surface covered with vegetation (a single species of creeper). Anon (1980) reports on the findings. Turtle nesting density was impressive. Twenty hectares were used for nesting, of which a single 50 X 50 meter sample contained approximately 140 nest pits, about 25% of which were 48 hours old or less. Evidence of much hatchling emergence was visible, and about 15 dead and decaying adult turtles were seen on land. The density of tracks of adult turtles along the shoreline averaged about 25 distinct departures every 100 meters (only counting tracks estimated to be 24 to 48 hours old). Clutch sizes, reported as 60 ± 20 , were surprisingly small.

Calculations based on these figures suggest $25 \times 60 = 1500$ emergences over the entire 6 km. perimeter of the island over a two-night period. The numbers of nests in this same period calculated from the area mentioned above would be

35 X 4 X 20 = 2800. Actual observations during a four-hour period one night revealed only about 50 nesting emergences. It therefore appears likely that the nests and tracks had accumulated over more than 24-48 hours; but still the island, together with its three neighbours in the d'Entrecasteaux Reef system, constitute the most important turtle nesting area among all the oceanic islands of the Pacific.

Other recent information on the turtles of the New Caledonia area may be summarized as follows:

1) Interviews by the applicant and colleagues in December 1979 revealed that a turtle locally called the "grosse-tête" (big head) was locally common in the southern part of the New Caledonia lagoon, south of Noumea. From the description, this species would appear to be the loggerhead (Caretta caretta). This identification was confirmed in July 1980, when I saw a film made by René Jupet in the southern islands of New Caledonia. This film showed four individual sea turtles, all of them loggerheads. Two adult males and one adult female were filmed in the water, and a nesting sequence of another female on Ile Coco was also shown. Jupet informed me that there were 7-10 islands in the southern part of the New Caledonia lagoon, each of which had 3 or 4 nesting loggerheads each night during the season.

2) A significant concentration of nesting activity was observed during our 1979 aerial survey on the island of Beautemps-Beaupré, the only emergent point of land in an atoll of the same name located about 35 miles northwest of Ouvea Island. Ouvea is the northernmost of the principal islands in the Loyalty Group off the eastern coast of New Caledonia. It was not possible to identify these tracks from the air, but discussions in 1980 with the chief of the San Josef

tribe on Ouvea (this tribe being the traditional owners of Beautemps-Beaupré) suggested that more than one species nested there -- probably both the green turtle and the loggerhead, possibly also the hawksbill which is known to be ubiquitous, though thinly spread, throughout the waters of New Caledonia.

3) Tagging experiments at Scilly Atoll in French Polynesia have revealed that Scilly green turtles may occasionally (or regularly) travel as far as New Caledonia after nesting, presumably for feeding purposes. New Caledonia is thus not only a major nesting ground for the species, but also a feeding ground for turtles derived from nesting grounds several thousand miles away. One could speculate extensively as to how this peculiar circumstance arose, but such speculations would certainly be more rewarding and accurate if the data base were to be enlarged.

PROPOSED WORK

It is proposed to initiate a study of turtle nesting in both the d'Entrecasteaux Reef system and on Beautemps-Beaupré during the 1980-81 nesting season. The objectives of this study will be as follows:

- I. To evaluate the nesting habitat on the islands of Surprise, Huon, and Beautemps-Beaupré.
- II. To tag as many nesting turtles as possible on these islands, with the intention of both providing the groundwork for population estimates and also obtaining information on migrations when the tags are returned by the fishermen.
- III. To establish an estimate of the comparative abundance of each species on these nesting grounds.
- IV. To obtain series of morphometric data on the nesting turtles, and to take a series of standard color photographs for purposes of comparing the New Caledonia turtles with those of both neighboring and distant populations.
- V. To determine the average value and range of clutch size, and to make the best possible quantitative estimate of the percentage of eggs and hatchlings that survive predation by crabs, birds, or other organisms; also to evaluate egg loss by erosion and other tidal influences, and by the action of turtles nesting at a later date on the same spot. If sufficient data can be gathered, algebraic formulae will be derived to provide a predictive model for the latter.
- VI. To evaluate predation of nests and turtles by humans, both by direct observation and by interviews with local people on the islands of Belep and Ouvea, which are the nearest islands inhabited close to the d'Entrecasteaux Reef and to Beautemps-Beaupré respectively.
- VII. To collect skulls and other voucher material from specimens that have died of natural causes on each of the islands. Any hatchlings found freshly dead will also be preserved.

In order to minimize disturbance to the turtles and their nests, eggs will only be counted when this can be done while the turtle is actually laying them. No nests will be excavated for the purpose of counting the eggs. Also, field camps will be established on Surprise and Beautemps-Beaupré Islands in protected situations away from the beach areas frequented by nesting turtles. Huon has no such camp sites available, and personnel will remain on

board the boat at this island except when actually conducting turtle studies.

PERSONNEL AND PROPOSED PROGRAM OF WORK

The applicant and his wife will travel to New Caledonia in early December 1980.

An option of travel to the d'Entrecasteaux Reefs with the French Navy is still being pursued. However, on the assumption that this service will not be available, contact has been made with Monsieur Hans Jobbert, an industrial executive in Nouméa who has available a schooner that he is willing to rent to us at well below commercial rates for a vessel of this size. The schooner has a length of 15.5 meters and draft of 1.5 meters. It is powered by twin diesel engines and is fully equipped with fathometers, radio, radar, and related equipment which is essential to navigation in such a complex and uncharted reef system. Moreover, the turtle nesting takes place during the cyclone season, and provision has to be made for a fast exit if a cyclone warning is received. This will be possible with Monsieur Jobbert's vessel.

In addition to myself and Mrs. Pritchard, there will be a space for two other additional persons aboard the vessel. It is hoped that these places will be taken by Dr. George Balazs of the Hawaii Institute of Marine Biology and a representative of the Association pour la Sauvegarde de la Nature in New Caledonia. The itinerary will involved passage northwestwards along the Coral Sea coast of New Caledonia, with overnight anchorage at Ile Pott at the northernmost tip of the mainland. Passage will then be made to Ile Surprise, where two of the biologists will be deposited on shore. This island is the only one in the Reef suitable for a campsite. As can be seen in the photo-

graphs, Surprise has a well-wooded interior that will provide shade and some protection from weather. The remaining party will proceed through the passage between Ile Fabre and Ile Leleixour, and if possible visits will be made to both islands at night to evaluate the extent of turtle nesting there. The destination is Huon Island, where the schooner will be used as a base of operations for a five to seven night survey of nesting turtles. The vessel will then return to Ile Surprise to collect the other party and return to Nouméa.

The second phase of the work will take place on Beautemps-Beaupré Island at the northern extreme of the Loyalty Group. Time at this island can be relatively longer since the logistics and physical character of the island do not require that a boat be kept standing by. We propose to fly to Ouvea from Nouméa, and ship heavy provisions to Fayoué, the "capital" of Ouvea, on the 200-ton cargo steamer "le Boularie" that travels from Noumea to Ouvea on a fortnightly basis.

Travel to Beautemps-Beaupré will take place in early January. A twin-engined outboard will be rented on Ouvea for the two hour journey to Beautemps-Beaupré, and the party, consisting minimally of myself and Mrs. Pritchard and possibly French biologists also, will camp close to the main (southeastern) beach on the island for approximately three weeks. The data gathered on the nesting turtles will follow the same lines as that listed for the d'Entrecasteaux Islands.)

PERMISSION AND LIAISON

A visit was made to Noumea and to Ouvea in August 1980 for the purpose of evaluating the response of local officials and interested parties to the proposed work, to determine what sources of logistic assistance might be available, and to find out all levels of permission that would be required for the proposed work. Contacts made in the course of this trip were as follows:

1) An interview was held with Monsieur Raymond Munch, Chef des Affaires Maritimes. Monsieur Munch indicated that his office would need to issue a permit for the proposed work, and he indicated a willingness to consider such an application. This is now being pursued. Monsieur Munch clarified that permission from Paris would only be necessary if we were proposing to study turtles in the water, which is not the case. He also advised that it would be much easier to issue a permit if we did not propose to undertake disruptive activities such as excavating eggs for counting clutch size.

2) Officials of the South Pacific Commission were advised of the plans and asked for their response. At the official level, SPC is not prepared to offer any material or financial support since the Commission's mandate is to conduct programs more directly related to human welfare. However, no objections were raised or foreseen and Mr. Mark Gentle, a fisheries specialist who recently started working for the Commission in Noumea, has a strong interest in turtles and will be a vital local contact.

3) Although the island of Beautemps-Beaupré is uninhabited, it had a human population until about the mid 1930's, and the St. Joseph Tribe on Ouvea still lay claim to the island. I therefore arranged to meet with both the "big Chief" and the "little Chief" of this tribe and described to them my plans. They had no objections to the work and were quite prepared to grant permission to reside on the island for the period in question. The lesser chief, Underwood Joseph, also said that he expected to have a suitable boat available by the time of our next visit that could be used for the trip to Beautemps-Beaupré.

4) Liaison was established with representatives of the Association pour la Sauvegarde de la Nature Neo-Caledonienne, and in particular with the Director, Jean-Louis d'Auzon. A member of the Association, Pierre Guidot, accompanied me to Ouvea and was of invaluable assistance. It is to be hoped that Guidot will be available to participate in the expedition to the d'Entrecasteaux Islands. The representatives of the Association had no "territorial" problems with outsiders conducting the initial phases of a turtle survey of New Caledonia, though they expressed the hope that work would ultimately be taken over by the French overseas research organization, ORSTOM, that maintains a substantial presence in Noumea. This is also my hope and intention.

5) Meetings were held with the Director and officials of ORSTOM. This organization has a major interest in the marine biology of the New Caledonia region but at the present time has no scientists on staff interested in turtles. A response of "no objection" was received about our proposed work, but as with the SPC, no substantial help could be expected. However, an

ORSTOM scientist, Dr. J. P. Rebert, was of substantial informal help in advising on local contacts in the Loyalty Islands and on customary procedures for initiating productive negotiations with local chiefs.

FOLLOW-UP

It is anticipated that, once initial documentation of the New Caledonia turtle fauna has been generated by the proposed work, local institutions will take over the project in future years. For this reason it is deemed highly desirable for a representative of the Association pour la Sauvegarde de la Nature to be present during this initial phase, and the Association is therefore being invited to nominate a participant for the proposed work, either Pierre Guidot or another individual. Later it may be possible for ORSTOM to obtain the services of a turtle specialist and take over a tagging program for future seasons. The purpose of the work proposed herein for funding is emphatically catalytic rather than self-perpetuating.

GOAL

The ultimate goal of the proposed work is to ensure the lasting integrity of one of the few places in the world where green turtles still nest in apparently primordial numbers, and where, with a little care, these numbers can be maintained in perpetuity.

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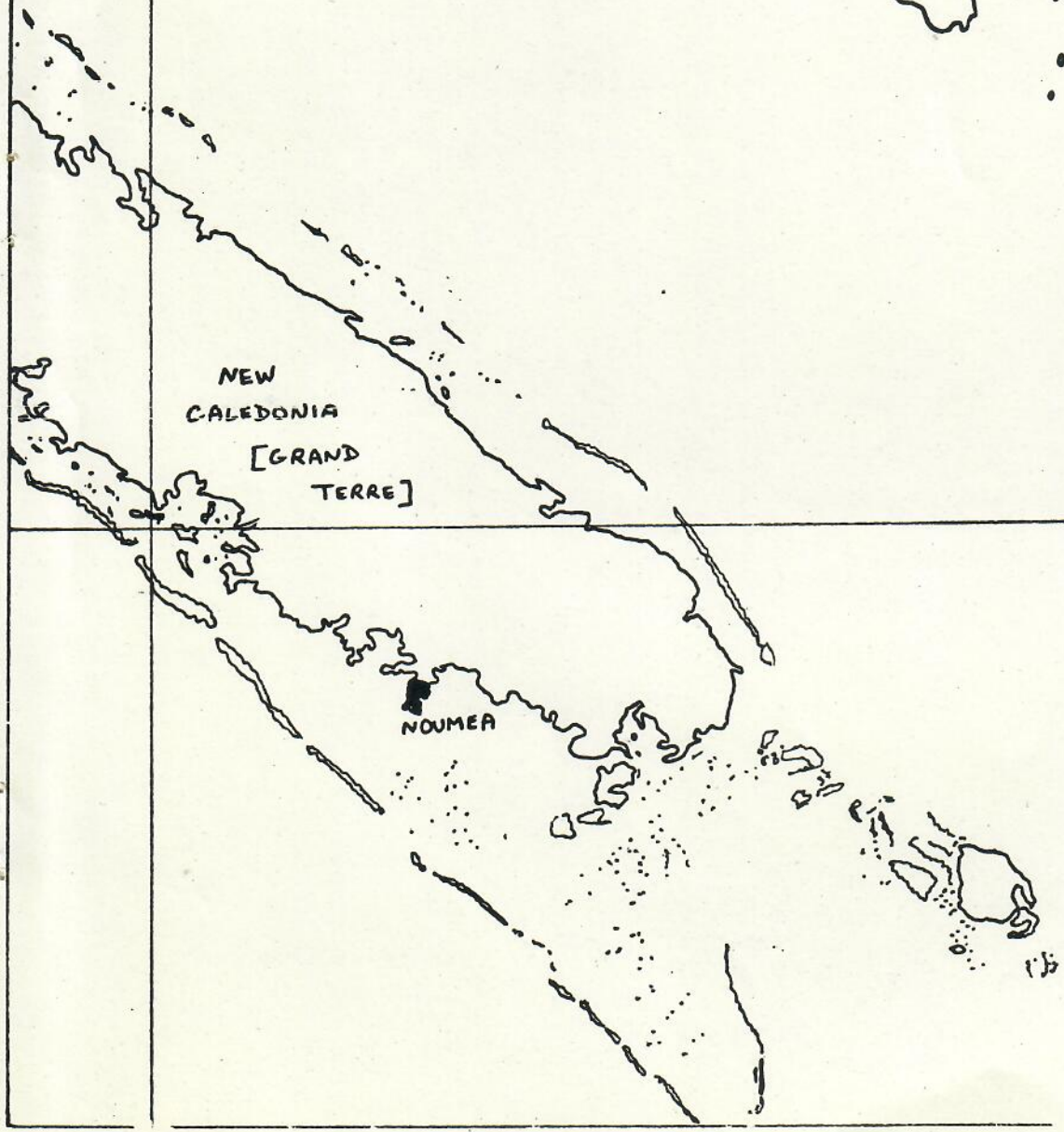
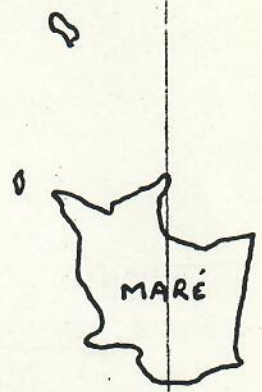
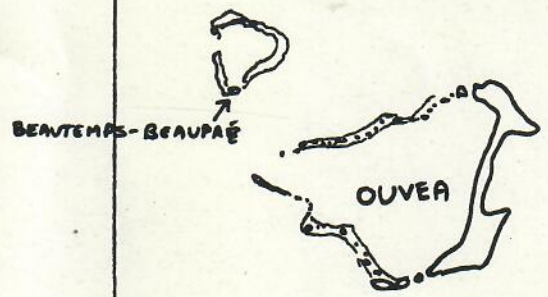
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APPENDIX

166°

168°

20°



22°

170° E

18° S

MUON ISLAND
LELEIXOUA
FABRE
SURPRISE ISLAND

POTT IS.
BELEP IS.

20° S

NEW
CALEDONIA
[GRAND TERRE]

