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ANTHROPOLOGICAL WORKING PAPERS

A Series
Issued From the Office Of
The Staff Anthropologist
Trust Territory Of The Pacific Islands
Guam, M. I.



Number 1

NOTES ON THE PRESENT REGULATIONS AND PRACTICES
OF HARVESTING SEA TURTLE AND SEA
TURTLE EGGS IN THE TRUST
TERRITORY OF THE PACIFIC
ISLANDS

*By Jack Tobin and others (as per Hawaiian
collection card catalog)*

April 1957

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ISLANDS

April 24, 1957

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Exerpt from Trust Territory Code, Chapter 12, E, Sec 781

LIMITATIONS ON TAKING

OF TURTLES

NOTES ON THE PRESENT REGULATIONS AND PRACTICES
OF HARVESTING SEA TURTLES AND SEA
TURTLE EGGS IN THE TRUST
TERRITORY OF THE PACIFIC
ISLANDS

TRUK DISTRICT

A. Methods of Capture or Killing

In aboriginal times the Trukese utilized two general methods for hunting and capturing turtles. In the first method they constructed a net out of sennit twine approximately two hundred feet long and from ten to twenty feet wide. At night when the tide was high the net would be tied to poles and suspended in the water. When a turtle was sighted the net would be drawn around it in a wide circle. The diameter of the circle was gradually diminished until the turtle was enmeshed and could be taken alive. This method is no longer used.

The second method was to watch for signs of turtles on uninhabited beaches. When signs were seen they would search out the eggs and seize and count them. The odd number of eggs over even hundreds would be the number of days after which the turtle could be expected to return. Thus, if 217 eggs were found, the turtle would be expected to return in 17 days. At that time, they would return to the beach in hopes of picking up the turtle. The Trukese still pick up turtles on the beaches but they don't follow the old custom religiously. Furthermore, a husky man and a strong swimmer

will always jump on a turtle whenever he sees one.

When the Trukese acquired metal, they fashioned harpoons and would go turtle hunting at night by torch light. The turtles could be harpooned and taken alive. Apparently the Japanese used to go skin diving for turtles at great depths. They used a long pole which was barbed at one end. They would dive down and try to hook a turtle in the neck after which he could be dragged to the surface and, still living, be maneuvered into a boat.

B. Local Custom Regarding Capture of Turtle and Use of the Meat.

In Truk District there are no special regulations or taboos reserving harvesting rights to any particular individuals. Traditionally, certain parts of a turtle would be offered to one's own chief or to the chief or most important person on whose island or reef a turtle was captured. The traditional offering consisted of the head, certain strips of flesh from the belly and the sexual parts. However, this offering was made from all the larger and more important animal food resources. This is no longer being done.

C. Raising Turtles in Captivity.

Only one case was reported from Truk District of an attempt to raise turtles in captivity. In Japanese times an enterprising business man is said to have brought two turtles, a male and a female, into the lagoon at Tunnuk Village on Moen Island. This lagoon is sealed off at its normally open end by a causeway. Some sand was

brought into the lagoon and an artificial beach constructed in the hope that the turtles would mate and deposit eggs on the beach. After little more than a year no eggs were produced and the project was abandoned. This attempt was apparently made sometime in the mid-1930's.

D. Regulations

In regard to regulations, the present statute placing limitations on the taking of turtles is virtually unknown in the Truk District. It is almost certainly being disregarded whenever an opportunity presents itself. One informant was able to give his interpretation of Japanese regulations. This informant stated that no eggs could be taken at any time nor could females be taken when they were in the process of laying eggs. A turtle season was established and no turtles could be taken out of season. During the season, any size of the thin-shelled turtles could be taken but only the larger members of the thick-shelled variety could be taken. This sounds very much like the present statute in the Code. (See Appendix C). However, the present regulation is practically unknown.

YAP DISTRICT

A. Methods of Capture or Killing

Sea turtles are not common to the waters around Yap, although this belief may in part be due to the ineffective methods employed in capturing them. In the past, surround nets and weirs of coral

rocks and bamboo occasionally brought in a turtle. In Japanese times, a few Yapese learned to dive and spear turtles using a spear attached by a line to a float so that the speared turtle could be hauled in after swimming itself to exhaustion. Nonetheless, few turtles are caught today. At one time during the past five years, a couple of Yapese caught and sold turtle meat, but this venture ended abruptly when the diver half of this partnership died. Turtle eggs are not known to be found in Yap. Yapese believe that turtles in these waters go to Ngulu or Ulithi to lay their eggs. So far as is known, no attempt has been made here to raise turtles in captivity.

D. Local Custom Regarding Capture of Turtles and Use of the Meat.

As in other parts of Oceania, turtle meat is highly prized in Yap. Traditionally, rights to turtle depended upon ownership of the right to turtles within certain fishing grounds, such rights residing generally in high-ranking estates (tabinaw). This may serve to explain in part the complexities of customary Yapese concepts of rights to fishing grounds. Complete ownership of fishing grounds and their resources does not reside in one person or in the estate; rather, various rights such as the right to build fish weirs, set traps, to use surround nets and the right to certain types of fish and to turtles are each held by various estates with these rights dove-tailing into the same tract of fishing ground. Consequently, a fisherman finding a turtle in his fish weir was obligated

to present it to the owner of sea turtles, the suwon e wel. This requirement, however, is not too rigidly observed today although violations are not openly displayed.

Turtles in Ulithi Atoll belong to some of the high lineages residing on Hogmog. The chief turtle grounds in Ulithi are the islands of Yorr and Gillab which are controlled by the chiefs of Falalop who reside on the lands Gachalaw and Lipipi. Neither turtles nor their eggs may be taken from these islands without the consent of the Falalop chiefs. Turtles caught in the atoll are taken to the land Rolang, next to the Hogmog men's house where, under the supervision of someone from the land Falimey, they are killed and distributed with the head and intestines reserved for the atoll chief. In the past, Falalop got only the shell and part of the hind bone without any of the flesh. Changes have taken place in their methods of distribution to what is now believed to be more equitable although Hogmog still seems to get the lion's share. Turtle eggs need not be presented to the Hogmog chiefs.

On Ifaluk turtles are reserved for the ranking Kovalu clan to whose chief belongs the prerogative of butchering and distributing turtle meat. Here as elsewhere the meat is highly prized. Uninhabited Climarao Atoll is noted for its turtles and canoe-loads of people from Lamotrek regularly go there to make copra and capture turtles and hunt their eggs during their laying season. Gaferut (actually Fsyew) is said to be a favorite place for turtles but

Faraulep Islanders who own the island have not attempted going there since 1950 when canoes started for the atoll but were caught in a storm resulting in the loss of around twelve lives including their chief.

The hawk-bill turtle is not as important or prized for its flesh as it is for its shell. In Yap it is believed that burning the shell of this turtle causes leprosy. The Yapese words for hawk-bill turtles and leprosy are homonyms - darau.

C. Raising Turtles in Captivity

In Faraulep Atoll baby turtles have been seen kept as pets, but it has never been noted that they are raised to maturity. These turtles are released rather than being allowed to become full grown and killed. The concept of pets may here extend to turtles, although pigs sometimes treated as pets are nonetheless killed and eaten eventually.

D. Regulation

There seems to be no apparent design on the part of the Yapese to conserve turtles. Instead the intent seems to be that they should capture as many as possible and collect their eggs as well. Contrary to the Code (see Appendix C) most turtles are captured ashore during the breeding and laying season but the number captured each year by this method is not excessive and there are a number of distant uninhabited islands in Yap District which provide excellent

breeding grounds for sea turtles.

MARSHALL ISLANDS DISTRICT

(preliminary notes)

A. Methods of Capture or Killing

The Northern Radak atolls of Bikar, Bokak (Taoni), Toke, the island of Jemo, and the islands of Lrik and Luij in Erikub Atoll have been used from time immemorial as game reserves by the Marshall Islanders. Periodically, turtles and their eggs were harvested there. The traditional practices of harvesting these animals and their eggs usually took place on special islands with the chief opening the season. Stylized and elaborate rituals were connected with these first food gathering expeditions of the year which occurred in the summer. This gathering was apparently done at the time when the turtles were ashore laying eggs. Both the eggs and the turtles would be taken at this time. Though turtles and their eggs are still taken the ceremonialism formerly connected with this activity is no longer practiced.

The ability of the Marshallese to capture turtles at sea depends to a great extent on the fact that the habits of turtles, an important source of protein to the atoll dwellers and highly prized by them, are well known, having been observed by them for centuries. Certain of the Marshallese know more than the others about these reptiles and their opinion and guidance is sought and

respected.

B. Local Custom Regarding Capture of Turtles and Use of the Meat

As has been previously noted, expeditions were assembled to go to some of the islands known to be heavily populated by turtles. Upon arriving at the island the chief and all of the members of the expedition went ashore. The chief had to lead the first trip of the year and he was the first person to step ashore.

Before the party commenced their search for eggs, supernatural sanctions were requested. Everyone assembled on the beach, before proceeding in and cut a leaf of coconut frond. With the chief leading the way they walked in single file, each carefully stepping in the footprints of the person in front of him so that only one set of footprints would appear, as if only one person had been there.

The women were required to hold mats over their heads while on the island so that they could only see the ground well enough to gather the eggs and other items. Strict silence was observed. Often medicine was made by the chief from the leaves of a small rare plant (marutto). The leaves were pounded and the juice extracted and drunk by all to prevent anal bleeding and diarrhea which might result from an unaccustomed meal of turtle and bird's eggs. After the eggs were gathered the group assembled at a specified place before consuming any eggs. Four eggs were thrown in each of the

four cardinal directions by the chief as an offering. These "sacri-
ficial" eggs were then re-gathered and eaten by the leader of the
party and the remaining eggs were then divided up and eaten by the
others.

Turtle flesh was distributed according to a specified, tradi-
tional pattern but this custom is not followed today.

C. Raising Turtles in Captivity

Turtles are occasionally captured when small and kept in buckets
or tubs and moved into salt water ponds when they outgrow these
containers. These turtles are regarded as pets and are not eaten ←
but are released by their owners or else eventually escape.

D. Regulation

Aside from the limitations on turtle harvesting imposed by
the code, (see Appendix C), the Marshallese unintentionally practice
a form of conservation by allowing the turtle hatchlings to escape
from the nest. This is not really for reasons of conservation but
because the newly hatched turtles are not salty enough for the
Marshallese palate.

PONAPE DISTRICT

A. Methods of Capture or Killing

Several methods of hunting and catching turtles have been used
in Ponape. During the windy season one particular method was

which the fishermen know the turtle would pass if alarmed. When this is done, stones are thrown into the water to frighten the animal which then swims into the net and is thereby caught.

It is common for turtle hunters to seek out a pair of turtles copulating during the mating period. The male is captured and hauled into the canoe but the female is left in the water with one leg tied by a length of rope to a floating log. She supposedly will attract other males to her which, when they have mounted her and are engaged in copulation, can be very easily taken.

Probably the most common turtle hunting techniques traditionally used in Ponape were simply to catch them laying eggs on sand beaches during the months of March, April, May, June and July. The creature would simply be flipped over on its back after which it is virtually helpless.

B. Local Custom Regarding Capture of Turtles and Use of the Meat

The actual capture of certain kinds of turtles or the collection of their eggs has never been regarded as the special prerogative of certain individuals but the use of the meat was quite rigidly specified. This was a favorite food to offer to Namwarki (highest ranking individuals on the island). The Namwarki and other high-ranking individuals had the right to confiscate a turtle or its eggs from a fisherman who had failed to offer them to the Namwarki. The high-ranking people had certain property rights

especially popular and apparently fruitful. During the time of the day when the tide was going out it carried with it great loads of seaweed which had been piled up by the strong winds. Sometimes mile-long strips of this seaweed would drift outside the reef having been carried there by the tide. The Ponapeans, knowing the habits of the turtles, would follow the length of such strips of floating weeds and look for turtles which would come there to feed. When a turtle was sighted an expert swimmer in the canoe would tie a rope around his waist and jump on the turtle's back and transfer the rope from his own waist to one of the hind legs of the turtle so that he might be pulled in to the canoe by one of the other men.

During the calm season turtles were also captured inside the reef by searching them out in a canoe and jumping on their backs, stunning them enough to render them easy to catch. This would be done either during the night or during the day. At night this could prove to be dangerous, however, because of the possibility of mistaking a sting-ray for a turtle.

Another method commonly used is one whereby a marked area on the reef would be baited with a certain kind of seaweed thought to be irresistible to turtles. The fisherman waits with a spear near the baited spot and kills the animal when it comes up to feed.

Sometimes several canoes will set out and lay out a large net in the water around areas where turtles have been sighted. When a turtle is seen the net is maneuvered into a certain spot through

to turtle meat and eggs. Punishments were meted out to individuals who failed to offer the meat or eggs to appropriate high-ranking persons, especially to the Namwarki. A person neglecting this traditional custom might be exiled from his land, have his house burned, be forced to make prolonged atonement feasts to the Namwarki or even be killed.

C. Raising Turtles in Captivity

There were several cases of raising turtles in captivity reported from the old days but informants say that the meat of such turtles was not highly prized. During Japanese times, several individuals raised turtles under government sponsorship and special pens were constructed for this purpose. On Mokil such pens are still kept for this purpose. The shells of these animals have always been used for making ornaments and containers and tools. See Appendix A.

D. Regulations

Aside from the specifications in the Code (see Appendix C) there are no local traditional rules concerning the capture of turtles or the gathering of eggs. No special seasons were recognized as being better or safer, the fishermen deciding for themselves when to hunt them and when not to. No turtle flesh is known to be poisonous at Ponape at any particular season of the year.

PALAU DISTRICT

A. Methods of Capture or Killing

In Palau District a number of different methods are employed to kill or capture sea turtles. One of the most common is the following;

A man will walk on a beach known to be a turtle egg-laying area. When he finds the footprints of a turtle he follows them to the spot where the animal has laid her eggs. He digs up the eggs and examines them to determine when the female will return to lay another batch of eggs. Newly-laid eggs are yellow in color with a white spot on them about the size of a chicken's eye. An experienced man can tell how long the eggs have been developing by observing how much the white spot has increased in size for when the eggs are mature they are white all over. After the age of the eggs has been determined the number of days is subtracted from 15. This is done because the Palauans have observed that a turtle returns 15 days after laying her first group of eggs to lay another. If the age of the eggs is discovered to be 5 days the egg hunter knows that the turtle may be expected to return in 10 days. Usually the man will return to the spot two days before the calculated date in case he has mis-judged the age of the eggs.

When the eggs are first discovered they are counted in order to determine the size of the turtle which deposited them. According to Palauans 170-200 eggs indicated that the size of the

turtle is worth waiting for and catching. When the female turtle returns she is allowed to dig a hole and deposit her eggs before she is captured. The eggs are then collected also.

This is an especially preferred method particularly for the hawk-bill turtle for it assures the hunter that his catch will be a female. The shell of the female hawk-bill is, according to Palauans, thicker and more beautiful than that of the male. ←

Another method used by Palauans requires the services of experienced turtle hunters. Such men will examine the floor of the lagoon and by the nature of the topography are able to determine likely spots for turtles. Special nets called Marames are then stretched across such areas. These nets are woven of coconut fibre and have a large 5"-8" mesh and are specially made for catching turtles - either hawk-bill, green or loggerheads.

After the net is set it is visited twice a day to see if a turtle has become entangled in it by his head or flippers. Quite often when a turtle is found thus entangled, it is drowned.

Another method used in the Palau area is as follows:

A turtle hunter will dive in a likely looking area of the lagoon until he locates a large coral rock with an excavation or hollow under it. By examination he can tell from experience whether or not this is a place where a turtle frequently comes to "rest". If it proves to be such a place the man will wedge a wooden stick in the middle of the entrance to the hollow and tie a rope to it.

At the other end of the rope, which must be at least as long as the depth of the water at that point, he ties a stone which is set on the lagoon bottom a short distance from the hollow. The man returns to the spot by canoe several times each day. If the stick is found to be floating on the surface the hunter knows that probably a turtle has gone into the hollow to "rest" and in doing so has dislodged the stick which rose to the surface. The man then dives down to the rock and quite often the turtle will still be in the hollow and can be easily caught by spearing or by tying a rope on one of its flippers. This particular method of capturing turtles is infrequently used today.

Sometimes several canoe loads of men will go out to the reef and line the canoes up in such a way that they can be poled along in the same direction. Large areas can be "combed" in this way and turtles are seen and speared. The animal is retrieved by one of the men who will jump into the water after the speared turtle and stick his fingers into its eyes and bring it to the surface.

Divers sometimes swim about the lagoon until they see a turtle which they will try to spear in its neck or flipper or head in order to keep from damaging the shell. If the diver can get close enough he sometimes implants a hook in the soft parts of the turtle by using a long pole to which the hook is detachably fastened. The hook is tied to the end of a rope at the other end of which is a float. The turtle will swim about pulling the float after him

until he becomes exhausted and is then easily caught. This latter method was allegedly introduced by the Okinawans during Japanese times.

Whenever a pair of turtles are seen having sexual intercourse in the water the observer simply waits until they have exhausted themselves at which time they are relatively easily caught.

B. Local Customs Regarding Capture of Turtles and Use Of The Meat

There never seems to have been any particular class or group of individuals to whom the catching or killing of turtles was restricted. Any man was permitted to hunt these animals. When a man killed a turtle he would take it to his house and call the women members of his clan in the neighborhood to come and partake of the meat. The women would gather and bring their own taro and feast on the meat. At the close of the feast the women would take some of the meat to their homes for their husbands and family. At this time the man who killed the turtle would claim some of the meat for himself and his own family. It is not a Palauan custom for a group of men to gather together for the purpose of eating turtle meat.

On occasion turtle meat was used in the treatment of an illness. If a household had a sick member it could sometimes be determined by divination which spirit (Chelid) was causing the

malady. A turtle would then be caught and killed and taken to the place in the forest where this particular spirit was known to dwell. At this spot (sometimes a hut was erected there) the members of the sick person's household would gather to eat the turtle meat and plead with the offending spirit to restore the sick person to good health. Pigs could be used for the same purpose.

Several decades ago a new religion called Modelngei was started in the Palau area. One of the ceremonial practices of this group involved the burning of turtle meat as an offering to their "deity" on special offering days. Some of the practices of the Modelngei religion were considered unlawful by the Japanese and the religion was declared unlawful by them and the two founders of the sect were jailed. There are still individuals who make the turtle-meat offering today, however,

C. Raising Turtles in Captivity

The Palauans did not customarily attempt to raise turtles in captivity. See Appendix B.

D. Regulation

Aboriginally no restrictions were placed on the killing or capture of turtles or the collecting of their eggs. As has been previously stated, anyone could participate in this activity regardless of rank or clan or other affiliation. No seasons were declared for turtle hunting.

One local restriction was observed on Airai. If any person killed or captured a turtle on Ngerduais beach in Airai he was obliged to take the meat to the house of the Nger Kikelang family for they were the family of the god of Airai (Medechibelaw). Only this god required such an offering and the practice has been abandoned for many years.

APPENDIX A

Turtle Project on Oroluk Atoll
Ponape District

Through Field Trip Officers and other personnel visiting Oroluk it was learned that there is a very high mortality rate among the newly hatched turtles on that island. Since turtles are a very important source of food to the islanders a special study was made of the situation there. Edward Iwaniec, the District Agriculturalist at Ponape District submitted the following report as a result of the study as it has been made so far:

It was learned turtles come in to lay their eggs practically the year around, but the heaviest laying season is from April through July. The female comes ashore and digs a hole with her hind flippers - about 18" deep and about 12" in diameter. She deposits about 140 eggs, covers them up and goes back into the ocean. After about 10 days she returns and deposits about 80-90 eggs in another hole and repeats the same performance a third time with about 50-60 eggs.

The above observations were made possible by marking each turtle with wire. A wire was attached to a different part of each turtle and a record kept of the time elapsed between egg laying and quantity of eggs laid for each turtle.

The eggs when laid are about 1-1/2" in diameter and yellow in color. After a few days the eggs become white. Eggs were col-

lected and eaten when yellow and when boiled were found to be of good quality. The white eggs when cooked were gritty in texture and not so palatable.

Sixty days from the time of laying, the egg hatch, usually in the evening. The young turtles scatter and head for the water. They are white, about one inch in diameter and soft-shelled. As soon as they enter the water they are snatched up by sharks which seem to sense the time of hatching. These black-tipped sharks are between one and three feet long. They are able to run in water only a few inches deep and in such great numbers that only a very few young turtles survive.

Thus our efforts were directed toward raising the young to a size where the shell is hard enough so that they are relatively safe from predators.

The first harvest of 300 was made in June 1956 and released in September of the same year. One of the Assistant Agriculturalists spent three months on Oroluk and in February 1957 released an additional 300 small turtles. The following method is used in raising the turtles:

The spot where a female turtle lays her eggs is marked, the date is noted on a calendar and on the sixtieth day, toward evening, a group of men wait for the turtles to come out. The young are caught and placed in a wire mesh flat bed 3' by 4' with wooden sides so that they will float when anchored in shallow water. The young animals are fed bits of fish, clams and leaves of the

Messerschmidia. When they are about 4" long (approximately 4 months old) they are taken out in a boat into the deep water and released. When the Assistant Agriculturalist left Croluk in February 1957 seventy-seven additional young turtles were being raised there. Thirteen were brought to Ponape for further study. One turtle was kept in a box for six days without water to find out if young turtles could be shipped in this way. After six days the animal showed no ill effects. Six turtles were sent to Kusaie, three to Mokil and three to Pingelap. Holes were drilled through the shells in different parts of each turtle and they were copper wire-banded in such a way as to prevent snagging. Those for Kusaie were banded on the lower right corner of the shell. Those for Pingelap were banded on the upper left and for Mokil were banded on the lower left. They were measured and records were put on file. At four months the sizes ranged from four inches to five and a half inches.

It is hoped that when these turtles are again caught information can be obtained as to the distance travelled, rate of growth and other pertinent data.

APPENDIX B

A Recent Attempt To Raise Turtles In Captivity

In Palau District

Throughout Micronesia the Hawkbill turtle has gained in economic importance in recent years. Although the Green turtle is a better food source the Hawkbill can be eaten and the flesh, in fact, is very palatable. More Important, however, is the shell of the Hawkbill which is unsurpassed as a material for the manufacture of articles of handicraft. This is particularly true in the Palau District where the income from handicraft is higher than in any other district in the Trust Territory.

Unfortunately the survival of newly-hatched turtles is severely handicapped by beach and sea predators. When the young, tender, soft-shelled animals break free from their eggs and begin to crawl toward the sea they fall prey to crabs, birds and other creatures. Those that successfully reach the water find no haven there, for small sharks and other fish await them in great numbers. It is estimated that after the young turtles have run the gamut of hungry stomachs only about five percent of them survive to grow to a size where they are relatively safe.

In 1955 an enterprising Palauan business man named Lomisang recognized the above facts and decided to raise Hawkbill turtles in captivity on Peleliu. He felt that if he could gather the eggs from their nests on the beaches and hatch them artificially where

conditions could be controlled he should be able to accomplish as much as ninety percent survival instead of only five percent as under natural conditions. This method had been tried before but not successfully.

Lomisang had already had considerable experience with turtles and was able, by inspection, to determine the age of turtle eggs when he found them. He located a large number of nests and moved the eggs to a safe place off the beach in the sand. The eggs were not moved, however, until they were within a very short time of hatching.

When the transported eggs hatched it was discovered that nearly ninety percent of them had survived the move. The newly-hatched turtles were put into galvanized metal trays in about three inches of sea water. During the first few weeks they were fed the meat of the small tridachna clam cut into lead pencil eraser-sized pieces. When the claws of the small turtles hardened up a little they were able to shred and tear their own meat.

Lomisang had some trouble with a fungus disease which affected the eyes of the young turtles, blinding some and killing a few. There was relatively little loss, however.

It was Lomisang's plan to put the turtles in dyked areas along the shore or in artificial ponds. He felt that they could be raised there to a size large enough for the shells to have commercial value. From the sale of the shells he hoped to make enough

money to maintain the business and make a profit. The conservation angle had not been overlooked either for he intended to release ten percent of the turtles he successfully raised. He planned to return them to the sea as soon as they were large enough to be relatively safe from predators (approximately eight inches in diameter). Since an estimated mere five percent survived when hatched naturally, it was felt that a return of ten percent would more than compensate for the robbing of the turtle nests.

A pond was made at Feleliu and Lomisang had as many as 700 turtles in it in a number of stages of development. He attempted to get land in Koror on which to carry out his project on a larger scale. His request for the land was not granted, however. The administration authorities were placed in an uncomfortable position. Some of the people there, including the staff entomologist, recognized the value of the experimental part of Lomisang's project but what he was doing was actually in violation of the Trust Territory Code which makes it unlawful to molest the nests of sea turtles. (See Appendix C). Since Lomisang's efforts were purely a private business venture and not a government-sponsored experiment, the administration could not give its official recognition nor turn over land for that purpose.

Lomisang attempted to keep his turtle-raising project as quiet as possible because he didn't want other Palauans to get the same idea nor did he want too many people to know about his turtle

ponds because they would steal the animals unless they were constantly watched. Thirdly, Lomisang was fully aware that certain aspects of his program were, strictly speaking, illegal.

At any rate the project failed. First of all Lomisang found it difficult to keep the young turtles safe from human predators once they had grown to a size that required they be kept in ponds. He found the cost of hiring the watchmen too high and also the cost of hiring people to gather and prepare food for the newly-hatched animals in lots of 2,000 was more than he could financially handle. Also the local administration officials could not have continued to overlook the illegality involved once they had become officially aware of his work. In addition to all this, a storm destroyed his pond at Peleliu and all of the turtles escaped.

In spite of the fact that Lomisang's project failed, it made some interesting contributions to the problem of raising turtles in captivity. Although Lomisang failed in being financially able to carry out his proposed program, he succeeded very notably in certain aspects of the program in which many others have only met with failure - namely in being able to hatch transported turtle eggs with approximately ninety percent success.

PAPER No 11
SESSION III - Country reports

DOCUMENT No 11
SECTION III - Rapport nationaux et territoriaux

A CONSERVATION PROGRAM FOR THE TRUST TERRITORY

by

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1973

PROGRAMME DE PROTECTION DE LA NATURE DANS
LE TERRITOIRE SOUS TUTELLE

par

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Territoire sous tutelle des îles du Pacifique.

Summary

The Trust Territory of the Pacific Islands is a collection of 2,000 some islands in the western Pacific. These islands comprise a good cross-section of all the islands within the South Pacific Commission area of responsibility.

Ecologically, these islands were relatively undisturbed before the advent of European and Asiatic influence and occupation. Although there have been some serious environmental changes within the past one hundred years, the islands are still a beautiful and happy place for human beings, other animals and plants, composing the living environment.

Modern "progress", technology and world association imminently threaten this situation. This paper presents a suggested and partially implemented program for a government approach to keeping these islands a desirable place to live in both now and in the future.

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Résumé

Le Territoire sous tutelle, qui se compose de quelque 2.000 îles situées dans le Pacifique occidental, offre un échantillonnage de toutes les îles rentrant dans la zone d'action de la Commission du Pacifique Sud.

Du point de vue écologique, ces îles étaient à peu près intactes jusqu'à l'arrivée des Européens et des Asiatiques dont elles subissent l'influence et l'occupation. Malgré de profondes transformations du milieu au cours des cent dernières années, elles offrent encore beauté et bonheur aux hommes, aux bêtes et aux plantes qui y vivent.

Mais cet état de choses est sous la menace imminente du "progrès", de la technique et de l'ouverture au monde moderne. Le présent document expose un programme, en partie exécuté, d'action gouvernementale pour que ces îles restent à tout jamais des endroits où il fait bon vivre.

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Introduction

A conservation program for the Trust Territory should accomplish the protection and regulated use of its natural resources. These include the land, the air, the sea and the plants and animals associated with them. All the items of this natural resource system are in a dynamic state of inter-relationship. Man's existence and well being in the Trust Territory is dependant on these resources and these relationships. Man himself is a part of the system.

This total system is called an ecosystem. The study of the relationship of plants and animals (man included) and the physical environment is called ecology. Man, by virtue of his intelligence, size and large numbers is capable of drastically affecting the operation of the ecosystem either for his benefit or harm, depending on how he uses the natural resources or manipulates the various organic and physical factors. The production of food and the harvest of minerals and other useful substances from the land and the sea are a necessary and beneficial use of natural resources. However, if the process of harvesting and using these natural resources results in a disruption of the ecosystem, harmful effects may result which far outweigh whatever useful results may have resulted from the activity involved.

Water pollution, soil erosion, insect pest invasion, the spread of human disease and the disappearance of useful natural resources are all a result of a misuse and misunderstanding of the ecosystem and of the resources and dynamic factors involved.

Within the Trust Territory there have already been serious man-made disruptions which have been and are presently detrimental to its people. Some of the detrimental processes still going on are even accelerating. The present and future well-being, happiness and progress of the people of the Trust Territory is dependant on a conservation program which will serve as a watchdog over all aspects of the ecosystem, including man's use of the natural resources and manipulation of the factors affecting the ecosystem. In some cases, a full or at least partial rehabilitation of the environment can be accomplished where damage has already been done.

The problems

Environmental problems are common the world over. The Trust Territory shares many of these world problems and has some special ones of its own. Air pollution is one of the serious problems elsewhere in the world which has not affected and is not likely to affect the Trust Territory. The tremendous air space over the minuscule land area involved, the lack of air pollutant industrial activities, and the small number of internal combustion engines for the air space involved, preclude air pollution in the Trust Territory unless we eventually become victims of a world-wide air pollution produced elsewhere.

Water pollution definitely is a present and increasing problem in several parts of the Trust Territory. This involves both the fresh and marine water environments. Pollution of fresh water swamps, lakes, rivers and wells from the improper handling of sewage and garbage exists. Pollution of enclosed marine lagoon waters is approaching serious proportions in several parts of the Trust Territory. It is being caused by improper sewage, garbage, fish processing-plant refuse, ship waste or excess fuel disposal, by oil and other waste disposal from power generating plants and public workshops, and by the leaking of shore-side fuel storage tanks.

Marine lagoon pollution is also being caused by the washing of mud from quarried rock and the runoff of silt-laden water from soil erosion areas including areas of agricultural operations, areas suffering from the results of wildfires and areas of heavy construction and land movement activities, particularly airport, highway and dam projects. The pollution of lagoon waters, depending on the pollutants and intensity of pollution, kills both economic and subsistence marine life organisms and their food chains through the microscopic plankton. When the pollutant is sewage or garbage the results are unsightliness, foul odors, living human disease organisms which can affect human beings directly or concentrate in forms of marine life which are harvested for human consumption.

A further possible effect from the dumping of sewage, even treated sewage, in lagoon waters is the addition of so much organic material to the waters that a change in the ecological balance of the waters is affected, often to the detriment of the total environment. Lagoon pollution also affects or prohibits the recreational and aesthetic utilization of the lagoon waters.

Non-lagoon marine waters are so vast that their pollution by any activities carried on in the Trust Territory is unlikely in the foreseeable future. However, a world-wide pollution of the oceans from industrial and atomic wastes could eventually affect the Trust Territory oceanic waters and the usable resources therein.

Whatever pollution of the oceanic waters is countenanced, insignificant as it might be, would be a factor in the world-wide pollution of the oceans. A particularly serious marine conservation problem in the Trust Territory is the use of explosives and poisons for the purpose of taking fish. When fish are taken by this means, not only the desired species and sizes of fish are killed but also practically everything else in the affected waters is killed including smaller fish, molluscs, corals, plankton and other marine organisms. Many of these organisms are a part of the food chain leading up to the economically desirable fishes and shell fish. The result is an underwater desert which is very slow to recover its destroyed productivity.

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No one explosion or poisoning destroys any great quantity of under-water area but the persistent and expanding use of these fishing methods eventually leaves large areas of the reefs and lagoon floors essentially dead and unproductive. Where corals have been killed an ideal breeding ground for crown-of-thorn starfish is created which can lead to a starfish epidemic capable of destroying corals far beyond the area of original dynamite or poison destruction of the living coral. Dynamiting and poisoning for fish in the Trust Territory persists in spite of laws prohibiting them. The dynamiting is done mostly with powder taken from World War II ammunition, though some dynamite is secured from other sources, usually by theft. Most fish poisoning is done with clorox and other related chlorine compounds which are readily available in retail stores. A small but decreasing amount of fish poison is made from native plants. So far, other chemicals, particularly certain insecticides which are very efficient killers of marine organisms, have been little used for fishing but it is expected that their use will increase.

The taking of lagoon and reef fish by conventional and presently legitimate methods for sport, as bait fish for the skipjack industry, as subsistence food or for sale, does not appear to be causing any ecological unbalances. However, no one can be certain of this and some desirable fish species seem to be getting scarce. Some control over species caught, or a restriction on some types of fishing, like the use of butterfly nets, may have to be considered in order that the valuable food fishes can be harvested at their highest possible annual yield. Fish catch, sale and export statistics by species should be gathered regularly and ecological and life history studies carried out as a basis for regulation or determining whether or not regulation is necessary.

The taking of certain shellfish for commercial sale and export without restriction is presently being practised in the Trust Territory and is most likely depleting these resources to a point far below their optimum productivity. The principal items involved in this trade are mangrove crabs, spiny lobsters and tridacna clams (both for meat and shells). A prohibition on their export and a restriction on their capture based on ecological and life history studies are needed.

Sea shells in general, are apparently inexhaustably abundant in most parts of the Trust Territory and are presently collected without restriction by residents and tourists as curios, and for sale outside of the Trust Territory. This will inevitably result, if it has not already done so, in a growing scarcity of some of the larger, more beautiful and rare shells in the area. We do not know how most

of these shells fit into the ecological system and whether or not damage is being done. Only ecological studies can determine these questions. We do know that the large and beautiful Triton shell is a voracious predator and probably a control factor on the pest crown-of-thorns starfish and should therefore be completely protected.

The very rare and interesting marine mammal known as the dugong has been hunted almost to extinction in Palau (the only place it exists in Micronesia). Present laws give it complete legal protection, but poaching continues and it is doubtful if the animal will survive unless better law enforcement can be effected.

Sea turtles exist in most parts of the Trust Territory and are the subject of conservation laws limiting the seasons, places and sizes in which they can be taken. However, these laws are largely ignored or laxly enforced so that subsistence and commercial turtle production is far below its potential.

Soil erosion is a persistent and growing problem in the Trust Territory. Aside from the water pollution problems which result from soil erosion, and which have already been mentioned, the principal damage from soil erosion is the loss of valuable and meager top soil, thus reducing or eliminating the economic and subsistence agriculture potentials. In severely affected areas the rehabilitation of such land becomes practically an impossibility. The principal causes of soil erosion are the use of improper agricultural practices including non-contour cultivation, and the persistent use of fire for land clearing.

Wildfires cause far more damage than just setting the stage for soil erosion. They destroy the valuable moisture holding humus covering the top soil and because, in the Trust Territory, they mostly originate in grasslands, they are of sufficient intensity to encroach on adjacent forest lands, destroying a percentage of the forest each time, which thereafter becomes grassland and of little use for either forestry or agriculture. The wildfires also sweep over whatever cultivated areas are in their path, often causing severe crop losses. Ground nesting birds also perish. Wildfires are usually started by human beings for purposes of land clearing or exposing salvageable metal or explosives, or are simply maliciously set by people who like to watch fires.

The destruction of the natural vegetative cover on the islands of the Trust Territory has been going on for at least the past one hundred years. Some of this has been necessary and justifiable for purposes of producing food and for creating the living

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space and support facilities needed by the human population. However, a great deal of land use has been poorly conceived. Land best suited for agriculture has been used for other less appropriate purposes. Land poorly suited for agriculture has been cleared and used, only to be abandoned when this fact became evident and to revert to brush and grassland which is periodically reduced to practically bare soil by wildfires. Highway and other large construction projects have been based almost entirely on engineering principles without consideration of the rest of the environment. Innumerable examples could be given where the principles of best land use have not been used or even considered. Our present Division of Lands and Surveys has the capability and means for determining the best land use, and some method of enforcing such use based on environmental considerations must be incorporated into future planning, particularly for government or so-called public lands.

There is a relatively heavy rainfall over most of the Trust Territory. However, because of the past removal of the original forest and other vegetative cover, rainwater in some areas is subject to rapid runoff and is thus not available during drier seasons. Reforestation of many areas is needed and further destruction of the vegetative cover must be stopped. The harvest of commercial timber can still be carried out providing good forestry principles are observed. Most cutting of forests on public lands is presently uncontrolled. Watershed and forests areas should be set aside by official action and their use closely controlled.

Because of the isolation of the islands of the Trust Territory, a unique and scientifically interesting fauna and flora has developed. In the total environmental picture each and everyone of thousands of species of plants and animals has its own function. Most of the ecological relationships are not presently understood, but there has been enough experience to know that the total loss of any species can have bizarre and unexpected consequences. Some bird species have become extinct and others are close to it. Every reasonable effort should be made to save the endangered species and prevent others from getting into the same situation. The uncontrolled shooting of wild birds and the taking of sea bird eggs indiscriminately must be stopped. Legislation for the protection of individual species of plants and animals may be indicated in some situations but in most cases this must be buttressed by habitat protection and preservation. The environmental requirements of many birds, animals and plants are restricted and a destruction of their particular habitat will mean that the particular plants and animals associated with that habitat will also disappear. Individual protection of the species involved will be of no

avail. For this reason and others, wildlife preserves, national parks and underwater parks must be established in all parts of the Trust Territory.

Assuming that commercial agriculture is greatly expanded in the Trust Territory, a part of that expansion will be increased use of insecticides, fungicides and weedicides. The environmental side effects of the use of these chemicals can be damaging to disastrous. In agricultural programs every effort must be made to assure that these effects are avoided or minimized. Cultural practices and biological controls for the suppression of plant and animal pests should be used wherever possible rather than chemical control. When chemical control is used, non-polluting and non-residual chemicals should be favored.

The accidental or intentional introduction of exotic plants and animals is another factor of vital concern in a conservation program. Ecological balances are of necessity upset by such introductions. Many introductions are necessary in the production of subsistence and economic food crops and food animals and as long as they can be confined to specific controlled agricultural areas no great ecological upset or environmental change results. However, introduced plants and animals frequently escape from controlled situations and serious consequences result. Most of the insect pests in the Trust Territory attacking agricultural crops and animals as well as native vegetation, including valuable forest, are accidental introductions from other parts of the world. However, the Giant African Snail, a major pest, is an intentional introduction. There is a constant desire on the part of the public to bring in various exotic species of plants and animals - ornamental plants for aesthetic reasons, game birds and animals for hunting, birds for their songs and beauty and a bewildering variety of all sorts of animals as pets. Each of these proposed introductions must be closely scrutinized to evaluate their impact on the total environment. The world is full of examples of apparently well-intentioned introduction of plants and animals which have proven sad mistakes after it is too late to do anything about it. Some examples are the introduction of rabbits and cactus into Australia, the mongoose and guava into Hawaii and the Giant African Snail into Micronesia.

Although mining is not presently being carried out anywhere in the Trust Territory, the presence of phosphate and bauxite deposits could lead to their exploitation. Other exploitable minerals may be found, including underwater deposits. When and if it is decided

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that it is commercially feasible to mine these resources every precaution must be taken to assure that the marine and terrestrial environments in and adjacent to the affected areas are not destroyed or unduly damaged. Such considerations were not observed in previous phosphate and bauxite strip mining in the Trust Territory and environmental damage caused by this mining continues to exist today with a very slow recovery rate. Dredging for coral rubble and sand and the quarrying of rock for roads and construction works are being carried on at the present time. Again, environmental considerations are being largely ignored and this must be corrected. In spite of such past and present abuses to the environment, there still exist many areas of outstanding beauty. For the mental health, pleasure and recreation of the residents of Micronesia, these areas must be protected and damaged areas rehabilitated. But the better living standards and modern way of life being adopted by the Micronesians and other residents are spawning an increasing unsightliness and proliferation of disease-carrying insect habitats through the uncontrolled littering of the environment with the waste of modern living. Paper containers, plastic containers, bottles, cans, and abandoned vehicles are becoming an unwanted sight all over Micronesia - both on the land and in the lagoon and reef waters. Many modern packaging materials are very slow to deteriorate. Control over this situation both for public health and aesthetic reasons is badly needed. The Trust Territory is presently basing great economic hopes on tourism. The natural beauties of Micronesia are not going to attract tourists if uncontrolled litter presents the same kind of polluted environment that tourists have come to Micronesia to avoid.

Historic and archeological sites and artifacts abound throughout the Trust Territory. These cultural natural resources are for the most part completely neglected. Tree roots are forcing apart and destroying the great stone architectural ruins of Nan-Madol in Ponape. Fires and vandalism are scarring and defacing the stone pillars and foundations of the ancient stone men's meeting house in northern Babelthuasap. Cave paintings on limestone walls are flaking away and being lost in Palau, when there are means by which these could be saved. World War II battle sites and monuments are overgrown with jungle. Remaining ancient adze blades, mortars and pestles, pottery bowls, wood carvings and other artifacts are free for the picking and increasing quantities are being carried off rather than being kept in museums within the Trust Territory. This situation obviously needs correction.

The present situation

This gloomy picture of the conservations problems of the Trust Territory must be modified by a list of the positive actions that have and are being taken in furtherance of conservation.

Water pollution problems are being recognized. Planned and soon to be constructed sewage disposal and treatment systems should solve some of the major marine water pollution problems in and around the district centers of the Trust Territory. It remains to be seen whether or not treated sewage dumped into the lagoon waters will affect their ecology. Port regulations prohibit dumping of bunker oil in the harbors, but this regulation is sometimes ignored and no penalties exercised.

Over the years, the recognition that conservation problems exist has resulted in the promulgation of a variety of laws, regulations and district orders aimed at solving some of the problems. In the Code of the Trust Territory there are laws prohibiting the use of dynamite and poisons for fishing and laws regarding the taking of Trochus shell, pearl shell and turtles. There is also a code law concerning the setting of wildfires. There are an assortment of district orders and district legislature laws relating to the taking of Trochus, hunting of birds, deer hunting and other subjects. In some cases, though the intent of the laws is good, the way the laws have been written make them difficult to enforce and obtain court convictions for violations. Furthermore, such conservation laws as exist, with exceptions noted below, are expected to be enforced by the existing normal police forces. For every one hundred fish dynamiting and poisoning incidents, perhaps one culprit is apprehended and his chances of getting off with a suspended sentence or insignificant fine are good. The police, in their normal activities, which are usually in urban areas, are simply not available to apprehend conservation law violators. Nevertheless, at least in some parts of the Trust Territory, when conservation law violations are brought to their attention, they will make an attempt to apprehend the violators. In Palau, in particular, during the past year, cooperation between a Division of Agriculture conservation agent and the police has resulted in the apprehension and conviction of a number of persons for setting wildfires. There has been a noticeable decrease of wildfires in Palau. Also, on both Palau and Truk, Division of Marine Resources conservation agents have been able to slow down the rate of dynamiting and poisoning fish.

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The Trust Territory Plant and Animal Quarantine Laws have been effective during the past years in preventing the introduction and spread of exotic animals and plants which could cause ecological upsets, as well as serving their primary purpose of preventing the entry and spread of insects and diseases which could attack subsistence and economic agriculture.

The Forestry Section of the Division of Agriculture has accomplished a small amount of reforestation and is carrying out experiments which are aimed at determining how the extensive sterile savannah grasslands can be reclaimed. The Entomology Section of the Division of Agriculture has been carrying out a mangrove ecology study aimed at devising means for the best management of the extensive mangrove swamp areas. The Entomology Section has also sponsored studies of poisonous plants, medicinal plants and coconut crabs, and the Marine Resources Division has or is conducting studies on Tridacna clams, Trochus shell and spiny lobsters.

Outside scientific institutions are almost continuously carrying out scientific investigations in the Trust Territory, principally in the biological sciences, and many of these investigations are either conservation oriented or are of value in carrying out conservation programs. In 1968, the Trust Territory was host to a conference of the International Biological Program at which twenty scientists discussed and came up with recommendations for conservation in Pacific Islands. Some of the recommendations were specifically for the Trust Territory.

A special land use survey of the Trust Territory is being carried out by the Division of Lands and Surveys. The Congress of Micronesia has created an Historic Sites Commission which has met once and came up with a series of recommendations concerning the preservation of historic and archaeological sites, though there has not as yet been any funding provided to carry out the recommendations. One museum exists in the Trust Territory in the Palau Islands. This Museum, which is supported principally by funds from the Palau Legislature, is engaged in the preservation of historical documents and the collection, preservation and display of archaeological artifacts, among other activities. The President's Environmental Early Warning program is being carried out in the Trust Territory by a committee appointed by the High Commissioner. Palau District has established a Fish and Game Commission which is concerned with the establishment of hunting and fishing laws and regulations.

Natural history reference collections, principally of insects and plants, exist at the Entomology Laboratory in Palau. The laboratory also maintains a fairly extensive library of publications relating to the natural history of Micronesia. One small marine and a terrestrial wildlife preserve have been established in the Palau Islands and also a botanical park on Koror.

Conservation publicity by means of radio broadcasts and newspapers is being carried out, principally in the Palau Islands by the Entomology Section of the Division of Agriculture and the Marine Resources Division.

Last but not least, it should be mentioned that certain traditional Micronesian conservation practices are still in effect in some parts of the Trust Territory. These include restricted fishing areas, chiefly involving prerogatives in the taking of various fish and animals, and the setting aside of certain small islands as preserves where turtles and sea birds and their eggs can be taken only at certain times and in certain quantities. These practices are declining in effectiveness as the traditional values and authority are disappearing.

Action needed to solve the problems

Present conservation programs and policy as outlined above are completely inadequate to solve most of the conservation and environmental problems of the Trust Territory. The environment is degrading at an accelerating rate. The only solution would be the setting up of a conservation organization within the government of the Trust Territory with the authority and funding necessary to tackle and solve the existing problems and forestall the appearance of new ones.

This conservation organization should logically be a part of the Department of Resources and Development. Because conservation and environmental problems extend over a wide variety of subjects of concern to all the Divisions of the Department of Resources and Development (tourism, agriculture, forestry, land use planning, marine resources) and affecting the programs of some of the other Departments (Education, Public Works, Public Health), it is felt that the program should have divisional status - perhaps being called the Division of Environmental Protection.

The conservation program should be concerned with work in the following general categories:

- Law enforcement
- Preparation of legislation
- Ecological research
- Publicity and education
- Establishment of biological and geological resources collections
- Environmental rehabilitation.

Although the ultimate success of a conservation program must come through the understanding and cooperation of the public at large, it will take many years to educate the citizens of the Trust Territory in the value and importance of conservation. In the meantime, laws and regulations protecting natural resources and environment must be enforced or there will be little left to save by the time the public understands and is willing to give their wholehearted support to a conservation program. Therefore, conservation agents must be trained for conservation law enforcement and given law enforcement authority. Existing police forces in the Trust Territory are inadequate for this work both because they lack the specialized training a conservation agent must have and because they are not, for the most part, stationed or operating in the areas where most conservation law violations occur.

Existing conservation laws in many cases need to be re-written and presented as new legislation. In some cases this rewriting is necessitated by the fact that the biological facts on which the original laws were written were faulty, and in other cases the laws need to be tightened up legally so that violations can be successfully prosecuted and appropriate penalties levied. A great deal of new legislation needs to be written and presented for passage both by the Congress of Micronesia and the district legislatures. The need and biological reasons for much of this new legislation are known. Future legislation will be requested on the basis of new situations and the gathering of new knowledge through ecological research.

The causes of some of the environmental deterioration presently going on can only be guessed at. Ecological research by competent biologists will be necessary to bring up the answers from which solutions can be devised. Therefore, staff ecologists should be considered as necessary to the program. In some cases, it may be possible to enlist the support and scientific research necessary by contacting outside research organizations.

Of great and early importance in the conservation program will be the production of pamphlets, posters, newspaper articles, radio programs and films explaining conservation and its aims to the public. The development of a conservation curriculum for both the elementary and secondary schools of the Trust Territory should be accomplished and put into effect as soon as possible.

Insofar as this program is dealing with natural resources, permanent collections of these resources should be made and kept as necessary reference material. Eventually on the basis of this collection a natural resources catalogue should be produced listing the principal plants, animals, minerals and soils of the Trust Territory.

Environmental rehabilitation will sometimes be feasible and the conservation program should be in a position either to do the work directly or to advise and direct the work if done by some other agency of the government. Such environmental rehabilitation would include or deal with reforestation, erosion and devastated underwater areas.

To carry out such a conservation program will require the hiring of a Chief Conservationist, two or more ecologists and at least twelve conservation agents. Also needed will be a secretary and possibly an administrative assistant and whatever other support personnel are needed for operating one or more conservation offices and a small biological laboratory and resources collection establishment. In every case, when they qualified, Trust Territory citizens would be hired to fill the positions.

Material support needed would be two speed boats and four outboard engines for each district, one jeep for each district, one pick-up for the program headquarters, office space in each district and a combined office laboratory and collections building for the headquarters of the program. Such a building already exists in Palau and is available. District conservation offices could probably be consolidated with existing Agriculture or Marine Resources Division offices. Miscellaneous office supplies and laboratory supplies would also be needed.

The program can be accomplished only through close cooperation with other organizations in the Trust Territory government affected by and concerned with the conservation program. These would include marine resources, agriculture, forestry, lands and surveys and medical services. Correspondence would be initiated and maintained

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between the program and such outside organizations as could help and support us (possibly with material support in some cases). These would include conservation organizations within the U.S. Departments of Agriculture and Interior, foundations, scientific institutions and national and international conservation groups.

The Trust Territory government needs a watchdog for the environment with which it has been entrusted. The implementation of a conservation program will supply that need. The environment needs to be cleaned up and protected both for the economic and for the general well-being of the people. The Trust Territory can be a beautiful and dynamic part of the world not only for the people of Micronesia but also for the increasing thousands of the citizens of the world who wish to see the tropical Pacific at its best.

SOUTH PACIFIC COMMISSION

Regional Symposium on Conservation of Nature

- Reefs and Lagoons

Proceedings and Papers

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