

GEORGE BALAZS

TAHITI II

16-26 OCTOBER 1991 SCILLY ^{MOTU} ONE

7-15 DECEMBER 1996 TUPAI

2 of 2

G. H. BALAZS



DEBORAH BOOKER | The Honolulu Advertiser
In his office at the Bishop Museum, anthropologist Yoshiko Sinoto holds a bone pendant, an artifact he has recovered from his many research trips and archaeological digs at Huahine.

Sinoto

CONTINUED FROM D1

that Tahiti was the dispersal center — depicted in Polynesian legend as an octopus' head, with legs going out — where voyagers landed and went about their way. Sinoto's hypothesis is that the Marquesas might be the dispersal center. And further evidence, he says, supports this claim.

Sinoto can entertain for hours with his adventures in the Marquesas or in the Society Islands, including Huahine. And at 81, the adventures just keep coming.

"There's more work to be done!" says Sinoto, who cut back to half-time hours in 1994. "I have plenty of things to do, though my wife keeps saying I should retire. My head can do it, but my body ..."

He shakes his head as if to bemoan the sad state of his aged muscles, but don't believe it. Both his parents lived to be 94. And he still walks with a ramrod straight posture a beauty queen would envy.

When he takes visitors to Huahine, one of the Society Islands near Bora Bora and Raiatea, people have likened him to a mountain goat.

That's because, Sinoto jokes, he spends more time in the bushes than the tourists, who can be found in the bars.

OUTSIDE PERSPECTIVE

Sinoto's fans are widespread, and not just the top brass at the Bishop Museum.

"The Tahitians love him," said Tom Dye of the archaeology firm T.S. Dye and Colleagues.

Dye explained that an early breakthrough for eminent ethnologist Kenneth Emory and his then-protege, Sinoto, was the use of fishhooks to help date archaeological finds in eastern Polynesia. In most places, archaeologists do that with pottery, which is scarce in most parts of Polynesia.

In archaeological terms, using artifacts to track change over time is like the holy grail, Dye said.

"The question for Kenneth and Yosi was, could these fishhooks tell us something about where Hawaiians come from?" Dye says.

Looking at the respective languages was also key for Emory and Sinoto, and that opened doors to similar insights. "That work has been shown to be correct by the next generation of linguists," Dye said.

On Huahine, later excavations by Sinoto revealed fishhooks similar to those the Hawaiians used, which established a connection between Hawai'i and Huahine. There, Sinoto also uncovered a now-famous site — it was waterlogged, revealing preserved wooden artifacts that normally perish, such as original handles for adzes and a remarkable wooden canoe, Dye says.

"It really opened people's eyes to just how rich the ancient culture had been," Dye says.

On Huahine, Sinoto has been trying to convince the next generation to take up preservation and restoration.

Among the residents there, Dorothy Levy is among Sinoto's

admirers: "He's Japanese, but in his heart, he's Tahitian," she says.

Levy worked closely with Sinoto on native cultural projects: "He was one of the first who came here to restore maraes" (ceremonial structures similar to heiau), she says, adding that Sinoto convinced the natives not to raid the marae for trinkets to sell to the tourists and to avoid pulling apart the stone structures to make roads.

"For a lot of people, in Huahine especially, he's very respected, not just as a scientist but as a friend, because he knows everybody and speaks the language,"

Levy said. "We don't even call him Dr. Sinoto, we call him Yosi. He's part of the family."

ANNUAL TREKS

Sinoto recently returned from one of his trips — he's been going almost annually since 1960 — where he's working with government officials to protect the native treasures of the past.

For example, in 1972 he was asked to rebuild a fare pote'ea, or chief's meeting house.

"Archaeologists are always destroying sites," he says. "I'd like to (rebuild one). I did it, on the condition that we must have the

money to maintain it in the current budget. It took two years to get it."

Sinoto pushed aside boxes in his packed office to share the tales of more than a half-century exploring Polynesia. Atop one of the boxes is a framed tribute and award with the name Kenneth Emory attached.

Sinoto gives a look of mock horror when it's suggested that Emory might be his mentor. He calls him his "kidnapper."

HUMBLE BEGINNINGS

The son of a geneticist, Sinoto left Japan in 1954, a young ar-

"There's more work to be done! I have plenty of things to do, though my wife keeps saying I should retire. My head can do it, but my body ..."

YOSHIHIKO SINOTO | Anthropologist

chaeologist planning to study American Indian paleolithic culture at the University of California-Berkeley. In his pocket was a \$150 check from his father.

Sinoto learned Emory was digging at South Point on the Big Island. His sponsor telegraphed him to get off the boat in Honolulu and head to the excavation site, but Sinoto was afraid he'd get into trouble with his visa if he did. The purser convinced him it was OK, and that led to a long — though not necessarily lucrative — association with Emory. He never made it to Berkeley to study.

Sinoto laughs when he thinks of his first paychecks.

"Emory gave me 25 cents an hour," he recalls. "I later learned minimum wage at that time was 65 cents."

Pinching pennies helped. Sinoto learned where to get a 10-cent sandwich made from heels of bread. But the association paid off in other ways: Bishop Museum director Alexander Spoehr and Emory later ponied up a \$6,000 fellowship, enough to bring Sinoto's wife, Kazuko, and son, Aki, from Japan in 1957. They lived in a teacher's dormitory on the museum grounds.

When Emory and Sinoto traveled to Tahiti in 1960 for six months, Kazuko and Aki went back to Japan. Sinoto returned to his homeland to finish his thesis, but his long association with the Bishop Museum was set in stone.

MAJOR DISCOVERIES

Excavations were turning up remarkable things.

"The greatest archaeological finds are all accidental," Sinoto confides sagely.

In 1962, he'd crossed paths with Bruno, a male nurse on Maupiti, whom he'd met the previous year.

"I have something I want to show you," Bruno told Sinoto, and brought him to a friend's house, where Bruno had been staying.

As Sinoto tells this story, his voice is animated; his eyes are glinting with pleasure. He leans in, to tell the visitor exactly what Bruno brought out.

"Some whale-tooth pendants," Sinoto says with a flourish. Unfortunately, the visitor blinks in response.

He repeats himself, as if perhaps you didn't understand his accented English: "Whale ... pendants."

When Sinoto sees this is being met only with a blank stare, he continues:

"Now, this is not too exciting to you, but that type is unknown to the early Maori culture," he explains patiently.

It would be the first of many links he would find between New Zealand and French Polynesia.

partly answering a question that anthropologists the world over have wrestled with — namely, how did the early voyagers traverse the Polynesian Triangle?

When he learned the pendants' origins from Bruno, Sinoto became determined to go to Maupiti. Trips to Maupiti led to more island excavations, and finally to the place where Sinoto would make his greatest mark: Huahine.

ALL ROADS LEAD TO HUAHINE

In 1972, while Sinoto was rebuilding the fare pote'ea (the round-ended chief's house), he learned from workers creating an artificial lagoon at the Hotel Bali Hai that they'd found some interesting things while dredging sand for fill.

"We found some big bones," they told him.

"How big?" he asked.

"Big!" they said.

He immediately went to investigate what turned out to be whale bones. The hotel's architect showed Sinoto a piece of bone. Sinoto recognized it as a patu, a hand weapon until then only known in New Zealand. Research would uncover evidence of the oldest known settlement in the Society Islands, including large canoe planks and a steering paddle — even a mast.

Suddenly, the legends of Polynesian voyaging had tangible evidence.

MORE TO DO

It is impossible to catalog all of Sinoto's discoveries in a single story, but he's put more of them into a semi-biographical book. Unfortunately, it's only available in Japanese. Brown, the Bishop Museum president, is trying to get it translated.

Ask Sinoto what his saddest discovery was, and he grows contemplative before he tells this tale:

He's remembering a time during restoration of large temple sites for preservation, after the day's fieldwork had been done. It was a Friday, payday. The workers invited him to drink a few beers with them.

They were usually quiet, but after a few beers they opened up.

"Sinoto," they told him, "what you're doing, it's a waste of time and money. Our culture is gone, and we never learned about Polynesian culture in school. This would only benefit the French people and other tourists."

The anthropologist felt saddened by their words.

"Well," he pointed out in Tahitian, "Are you speaking Tahitian right now?"

They thought for a moment.

"That's culture."

He was reminding them that language was an important part of culture, and therefore all was certainly not lost.

In that moment, the reason he keeps going so hard at 81 comes to you in a flash. You see what drives Sinoto, even before he adds his own epilogue:

"Even one person can do something about preserving culture."

Reach Mary Kaye Ritz at mrutz@honoluluadvertiser.com or 525-8035.

YOSHIKO SINOTO

Profession: Senior anthropologist at the Bishop Museum

Family: Married 57 years to Kazuko, a historian of Japanese immigration. Son, Aki, is an archaeologist.

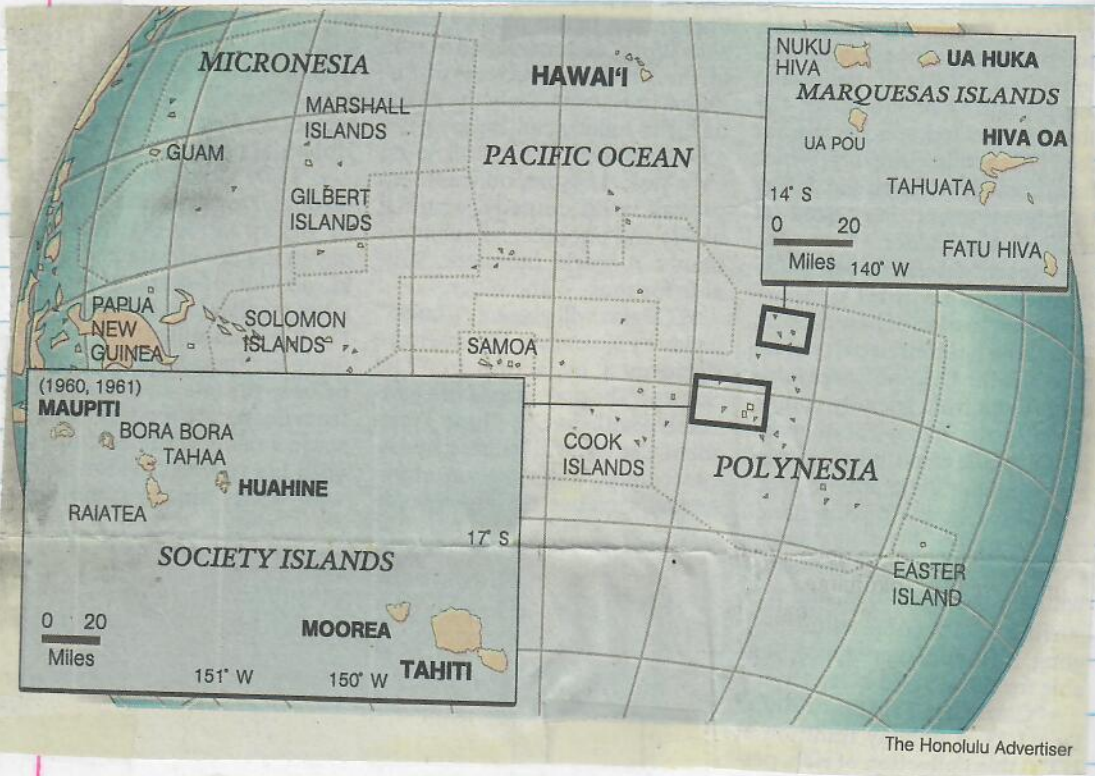
Came to the U.S.:

From Japan, as a young archaeologist in 1954. He stopped in Hawai'i on his way to the Mainland.

Sinoto's sponsor urged him to visit South Point on the Big Island, where an important archaeological dig was taking place. Despite worries that he'd be deported, he came ashore and stayed two months at South Point, where he met his lifelong mentor, anthropology pioneer Kenneth Emory.

Most recent honors:

Sinoto received the prestigious Robert J. Pfeiffer Medal from the Bishop Museum last year, for dedication to the advancement and perpetuation of Hawai'i's cultural heritage. He's also been honored with membership in Japan's Order of the Rising Sun and a Tahitian knighthood.



EVAAM
DEPARTEMENT AQUACULTURE

BP 20 PAPEETE - TAHITI
FRENCH POLYNESIA

Tel (689) 428144 - Fax (689) 434979

Papeete, le 01/04/1997

REF : N° 56 / EVAAM/JPL

← Please, note the new address and
name Jean-Pierre

TELECOPIE

P01/01 01.04.97 11:43

DE LA PART DE Jean-Pierre LANDRET
A FAX MESSAGE N° : 00* (676) 23891
COMPAGNIE : JICA Fisheries project
ATTENTION : Shigeaki SONE
NB PAGES : 1
V/REF :

689 434979 EVAAM PAPEETE

Mr. George BALAZS

FAX

Dear Mr. Sone,

Mr. George BALAZS relayed to me your letter from 04 March 1997.

Some turtles were reared from hatchlings at Scilly atoll (near Bora Bora, in French Polynésia) by a résident, and released:

- in September 1994 (580 turtles, Tags M 26 to M 912),
- in November 1994 (200 turtles, tags L 89 to L 825).

I send you the entire liste of the tags "M" and "L" .

The Turtles were from the same batch. I don't know how old they were; probably one year .

The curved length of the carapace was approximately 25 cm.

Right now, 5 turtles have been recaptured, and released again :

- M 137 in November 1994 at Maupiti island, near Bora Bora,
- M 820 in Mars 1996 at Tahaa, near Bora Bora. This is the turtle you have in captivity at ministry's Hatchery,
- M 54 in september 1996 in Fiji,
- M 618 in November 1996 in Western Samoa,
- M 133 in November 1996 in Western Samoa.

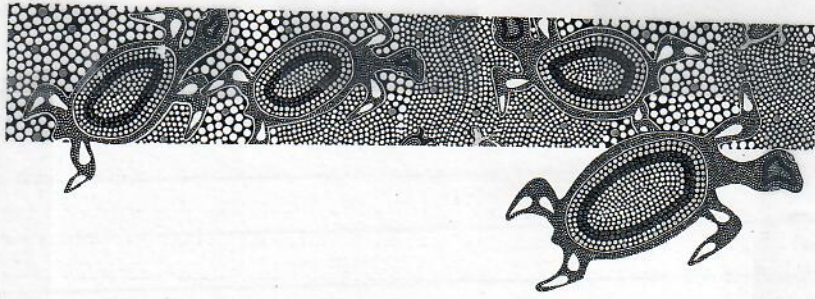
You can let the turtle M 820 go again in the ocean.

Thank you very much for your collaboration.

Best regards.

Copie : George BALAZS


Jean-Pierre LANDRET



Dear George,
this is the convention
you have to sign (at the end) in
duplicate and return here, at
the delegation for the environment
thank you for the information
about turtles in Cooks

Best regards,

Mini
TATARATA



VISÉ: CDE

POLYNESIE FRANCAISE
MINISTERE DE LA MER ET DE L'ARTISANAT
SERVICE DES RESSOURCES MARINES

**CONVENTION N°
de régularisation**

relative à la prise en charge du déplacement de monsieur
Georges BALAZS dans le cadre du suivi de l'évolution et de la
reproduction des tortues marines sur l'atoll de Tupai.

2001

CONVENTION de régularisation

relative au suivi de l'évolution et de la reproduction des tortues marines sur l'atoll de Tupai

ENTRE :

La Polynésie française (Service des Ressources Marines) représentée par Monsieur
Llewellyn TEMATAHOTOA, Ministre de la Mer et de l'Artisanat,

d'une part,

ET :

Monsieur George BALAZS, détaché de PROE, ci après désigné « l'expert »,

d'autre part,

ETANT PREALABLEMENT EXPOSE QUE :

Dans le cadre de l'opération « contribution à la sauvegarde des tortues marines
en Polynésie française » financée par le FIDES suivant les termes de l'arrêté n°
810/MIDCR du 09 octobre 1996, une mission sur le site de Tupai a été programmée en
décembre 1996 à laquelle a été convié Georges BALAZS, expert, détaché du PROE.

Dans le cadre de la venue de cet expert hawaïen, aucune convention n'avait été
établie rendant impossible la prise en charge de la réquisition visée du Service de la Mer
et de l'Aquaculture et, par la même, le paiement de la facture de la société Bon Voyage.

IL EST CONVENU ET ARRÊTÉ CE QUI SUIT :

Article 1 - Objet

L'objet de la présente convention est de régulariser la prise en charge du déplacement
de George BALAZS, expert détaché du PROE, lors de sa mission sur l'atoll de Tupai en
décembre 1996 dans le cadre du suivi de l'évolution et de la reproduction des tortues marines.

Article 2 - Durée

La présente convention de régularisation est conclue pour la durée de la mission de
l'expert du 07 décembre 1996 au 14 décembre 1996.

Prestataire	Date d'achèvement
George BALAZS	-

IMPUTATION		Montant
Chapitre	Article	
960.03	826.639	96.000 F CFP

Date d'approbation

Article 3 - Nature de l'intervention de monsieur George BALAZS

Dans le cadre de la présente convention, la mission confiée à l'expert est de développer, promouvoir et mettre en œuvre les programmes qui encouragent la restauration et la sauvegarde de populations de tortues marines en bonne santé et assurant leur rôle écologique.

Les travaux à réaliser porteront sur l'identification des populations et la connaissance de leur distribution, taille et tendance. Les moyens utilisés seront :

- La méthodologie à appliquer pour le recensement des sites de pontes
- Les méthodes de baguages
- La pose d'émetteur satellite sur la carapace de tortues
- La biologie des tortues marines

Il met également à la disposition du territoire le matériel de marquage (pinceaux et bagues) ainsi qu'un émetteur-récepteur pour le suivi des déplacements des tortues marines dans la région du Pacifique.

Article 4 - Obligations du SRM

Dans le cadre de la présente convention, le Service des Ressources Marines aura à sa charge :

- Les frais de transport de l'expert (Honolulu-Tahiti-Honolulu) pour la période du 07 décembre au 14 décembre 1996.

Article 5 - Rémunérations

- 1- L'expert ne bénéficiera pas de frais de séjour.
- 2- Le coût du transport est de 96.000 F CFP (QUATRE VINGT SEIZE MILLE FRANCS CFP) et le billet sera retiré auprès de la société Bon Voyage.

Les règlements se feront par virement bancaire sur le compte de la société Bon Voyage à la Banque de Tahiti sur le numéro de compte n° 330152.010.00.

Article 6 - Imputation budgétaire

La dépense est imputable au budget du Service des Ressources Marines, budget FIDES, chapitre 96003, article 826-639. Le comptable assignataire de la dépense est le Payeur du Territoire.

Article 8 - Election de domicile

Pour la présente convention, les parties font élection de domicile à :

- Service des Ressources Marines : B.P. 20 - 98713 Papeete
Tél. : 50.25.50
Fax : 43.49.79

- Monsieur George BALAZS : NOAA, 2570 Dole Street, Honolulu
Hawaii 96822-2396

Article 9 - Litiges

Les litiges liés à l'interprétation ou à l'exécution de la présente convention sont portés, par la partie la plus diligente, devant la juridiction compétente de Papeete, après vaine tentative de conciliation amiable.

Fait à Papeete, le

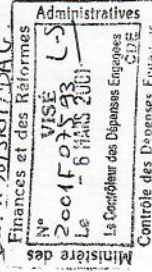
Le Ministre de la Mer et de l'Artisanat,

L'expert

sign
here



Llewellyn TEMATAHOTOA CA. A. 28/SRJI/DAC. Georges BALAZS



Translation from French

Ministry of the Environment
Officer in charge of Decentralisation

Commission for the Environment
Tel: 43 24 09 - Fax: 41 92 52

Contact person: Miri Tatarata

1997

DATE	28 FEB 1997
PROGRAMME ACTION FILE	AC 211514
SOUTH PACIFIC REGIONAL ENVIRONMENTAL	

No. 37/ENV
Papeete, 11 Feb. 97

SCHEDULE OF DOCUMENTS SENT TO:

Mr George H. BALAZS, SPREP Expert
P.O. Box 240 Apia - Western Samoa

SUMMARY AND COMMENTS	NUMBER OF DOCUMENTS
<p><u>Encl:</u> Report on mission carried out on Tupai atoll, 9 to 13.12.96. Contribution to the protection of marine turtles</p> <p><u>FOR INFORMATION</u></p> <p>The Commissioner for the Environment [signature] <u>Annie AUBANEL</u></p>	

Ministry of the Environment
Officer in charge of Decentralisation

Commission for the Environment

Contact person: Miri TATARATA

GOVERNMENT OF
FRENCH POLYNESIA

No. 16/ENV/

Papeete, 28 JAN. 1997

REPORT ON MISSION CARRIED OUT ON TUPAI ATOLL
9-13 DECEMBER 1996

CONTRIBUTION TO THE PROTECTION OF MARINE TURTLES
FIDES, Local Section
1995 issue

Object

The main object of this mission was to make an inventory of the various nesting sites of marine turtles on Tupai Atoll and, more specifically, of the species *Chelonia mydas*.

In addition, a quick survey of Tupai Atoll was also carried out on the occasion of this trip.

Participants

- Yves KELLERMAN, SMA
- Joël OREMPULLER, ORSTOM
- Miri TATARATA, Commission for the Environment
- George H. BALAZS, SPREP Expert.

Means of transport

- By air from Papeete to Bora Bora
- By ship from Bora Bora to Tupai
- A twelve-foot aluminium boat, complete with 15-HP engine, owned by the Commission for the Environment, was used in the Tupai lagoon.

Timetable

- Departure ex Papeete by Air Tahiti flight to Bora Bora on Monday 9 December 1996 at 0620 hours.
- Arrival at Vaitape landing stage, Bora Bora, on Monday 9 December 1996 at 0745 hours.
- Party met by Madame Maire Besson.
- 0900 hours: Meeting with the Town Clerk of the Bora Bora Municipal Council to inform him of the Tupai Atoll mission.

- 0930 to 1100 hours: Preparation and loading of the equipment on Mr Tinorua Tetuanutefare'i's boat.
- Departure ex Bora Bora for Tupai Atoll at 1100 hours.
- Arrival at Tupai the same day at 1200 hours.
- All participants and equipment unloaded at 1230 hours at the landing stage via the eastern channel.
- Report to Mr Christian Tehahe, Tupai's only permanent dweller, and set up base camp at the bungalows of the Société agricole de Tupai [Tupai farming company] kindly assigned to us by Mr Guy Lejeune.
- Mission: 9 to 13 December 1996.
- Departure ex Tupai on Friday 13 December 1996 at 1100 hours and return to Bora Bora with Mr Tinorua Tetuanutefare'i.
- Arrival at Bora Bora the same day at 1200 hours. Party met by Mr Jacky Bryant.
- Departure ex Bora Bora on Friday 13 December 1996 at 1800 hours on Air Tahiti flight.

Introduction to Tupai Atoll

Tupai Atoll lies about 30 nautical miles northwest of Bora Bora. It is part of the Leeward Island District.

Tupai is a very small atoll, approximately 8km long by 6km at its widest (northern) part, resting on a reef without a channel. It has an outside circumference of approximately 23km and an inside circumference of approximately 16.5km. The strip of dry land is almost continuous, broken only by very shallow channels, or *hoa*, one to the west and a series of others to the east. There are two large islets to the north and south, and three much smaller islets to the east.

In geological terms, the *motu* [islands] consist exclusively of coral debris, of various grain sizes from the finest silts to the coarsest blocks.

To the west the reef flats are particularly broad, especially opposite the *hoa*. The reef is narrower on the east and northeast coasts where sandstone or beach-rock strata can be found, bearing witness to shoreline changes. Above the flats are sand or gravel beaches, with blocks of various sizes, whose slope varies from place to place along the emerged crown.

The lagoon is shallow and many reef knolls¹ can be seen in it. The bottom is covered with very fine sediments which, on being stirred into suspension, give the lagoon waters a milky look.

The atoll has a tropical climate of the humid oceanic type. Temperatures are in the region of 27.2° in the warmest months (February-March) and 25.2° in the coolest months (July-August).

The winds follow a trade-wind pattern, predominantly from the northeast quarter. However, westerlies are also recorded and, though infrequent, these can be very strong.

The airstrip is located in the NNW, crossing from the ocean to the lagoon one of the widest parts of the crown. A channel was blasted through the reef to facilitate small craft access to the lagoon.

¹ French word: "karera"

The only village, consisting of a score of houses, lies to the west of the airstrip by the lagoon. To the east of the airstrip are the bungalows of the Société agricole de Tupai together with the sheds and workshop.

Overview of the vegetation

Like many atolls of the Leeward Islands, Tupai was turned into a plantation of coconuts. Among these are trees and shrubs that are the only remnants of the old vegetation. Our observations focused on the shoreline vegetation. Along the *hoa* and at some points along the lagoon, the coconut trees extend to the edge of the lagoon. On the ocean fringe the shoreline vegetation shows its vitality: many coconut plantlets can be seen together with Tahinu (*Tournefortia*). Also noted was the presence, on the coastal fringe, of Naupata (*Scaevola*), Tafano (*Guetarda*) and Miki Miki (*Peperomia actinota*).

To the north of the eastern *hoa* network, Mr H. Sachet mentioned in his mission report a clump of *Sesbania coccinea*. Due to lack of time for surveying this area, we are unable to confirm its presence.

To the back of the coastal fringe are pandanus and Tafano. Beyond these, moving inland, are *Pisonia*, especially to the south of the western *hoa*. These provide shelter for an undergrowth of fern bushes. Numerous pandanus are also scattered throughout this forest.

This inventory is succinct and very incomplete as this was not the object of our mission.

Results

The survey areas are shown on the attached map.

Night of 9-10 December 1996: Night survey of the northwestern part of Tupai Atoll, on foot, over a distance of approximately 3.5km one way and 3.5km back. The beach and the top of the beach were under meticulous scrutiny from 2300 hours to 3.30 a.m.

Comments: No landing of turtles on that night. No recent turtle tracks or nest were found. Mr Tehahe, who had joined us, showed us some old tracks of a turtle that came to nest in 1995. The tracks are still visible at the top of the beach, deeply engraved in the greyish gravel.

10 December 1996, 1500 to 1800 hours: Observation of the northeastern part of the atoll. We travelled to the *hoa* in the boat owned by the Commission for the Environment and surveyed the area on foot.

Comments: We came across grey gravel beds and the edges of broken or scoured conglomerate strata, which made the going difficult. Two or three metres beyond this zone a fine sand beach reappears. It is in this zone that George Balazs found four pre-1996 nests scattered over an area of approximately 400m.

11 December 1996, 0930 to 1130 hours: Observation of the northwestern part of the atoll, from the landing stage to the *hoa*.

Comments: This section of the beach seems to be the most favourable for nesting, though no recent traces were found. The beach material is fine sand and the lagoon is easily accessible.

11 December 1996, 1600 to 1800 hours: Survey of the west-southwestern part of the atoll, from the hoia and on a distance of approximately 3.5km.

Comments: No turtle tracks were found. No nests. At the entrance of the hoia, on the lagoon side, a group of fishermen had set up camp for a few days to catch some fish and crayfish.

12 December 1996, 1030 to 1415 hours: The party split into two. The southeastern part was surveyed on a distance of approximately 6km. This area is very uneven, consisting of greyish beach rock, debris and gravel of different grain sizes which makes the going rather difficult over several kilometres. Beyond it lies a more accessible beach.

Comments: An old, pre-1996 turtle track was found. No nest was sighted.

13 December 1996: Before leaving we visited the old village. We met a Bora Bora fisherman who had come to Tupai for some net fishing (the net was cast in the east coast hoia). In the course of the discussion, he informed us that hawkbills can be encountered in the Tupai lagoon. These are not caught as they are reputed to be toxic. A recent shell was nevertheless found abandoned in one the village fare. He also confirmed the regular presence of fishermen both off the atoll and in the lagoon.

Conclusions

A comprehensive survey of the shoreline on the ocean side revealed that no turtle had landed for nesting purposes from the beginning of the 1996 nesting season up to our visit (no traces, no nests, no turtles).

Being close to Bora Bora Island, Tupai Atoll is visited at regular intervals by fishermen, both on the ocean and lagoon sides. Consequently, the lagoon's resources are liberally exploited by the fishermen. Over the past week we have noted that those species subject to size and seasonal regulation (crayfish, crab, etc.) also featured amongst the species caught. It is evident that none of the regulations are observed.

Although the nesting season of marine turtles is not over yet, there is little likelihood of the turtles returning to nest. There are too many *poi marara*² in the area for turtles to have a chance to survive and reach the beaches.

The fishermen we interviewed acknowledge that fewer and fewer turtles are sighted on Tupai, and that such turtles are usually caught off the atoll before they even have a chance to nest. An argument too frequently put forward is that "if they were not caught by them, they would be caught by others".

² Tahitian fishing boat, specially designed for catching flying fish

On our return to Bora Bora, the chairman of the environmental society Atu Atu Te Natura advised us that three turtles had been caught off Tupai on Thursday 12 December 1996 and brought back to Bora Bora by some fishermen.

If concerted action is not taken urgently by the parties concerned (Territory, municipality, Police, associations, fishermen, etc.) Tupai Atoll will be doomed in the short term as a nesting site for marine turtles. The marine resources of Tupai lagoon, for their part, are also under threat.

[Map captions]

Base camp (bungalows - Société agricole Tupai)

Disembarkation and re-embarkation site

Unobserved section

SURVEY BEACH OBSERVATIONS

Night of 9-10.12.96 from 2300 hours to 3.30 a.m.

1500 to 1800 hours on 10.12.96

1) 0930 to 1200 hours on 11.12.96

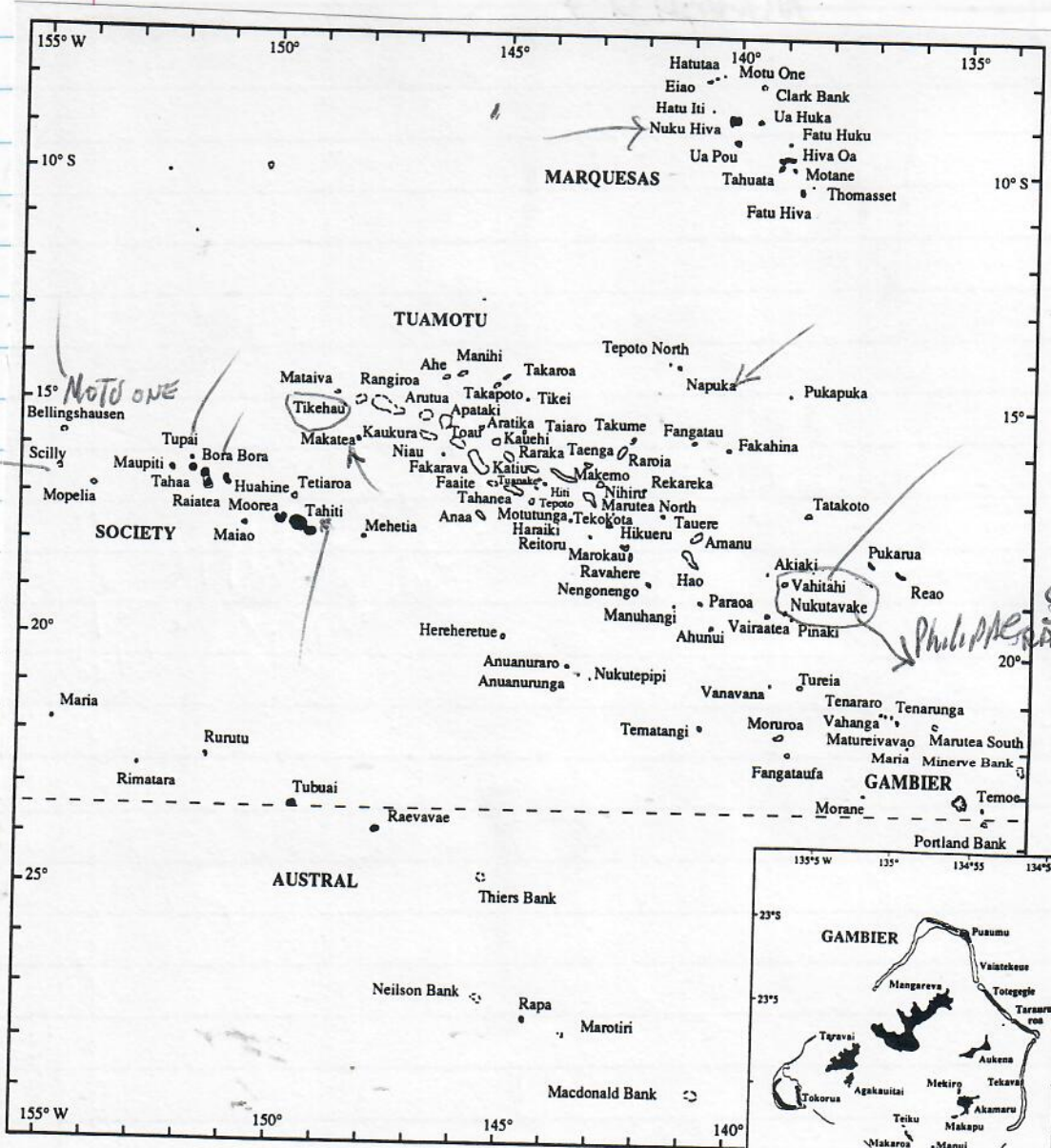
2) 1600 hours to 1800 hours on 11.12.96

1030 to 1415 hours on 12.12.96

Starting point - direction of survey

Boat trip

Tupai Atoll



NOTO ONE

Phil Me. Saw raised here NUKUTAVAKE

FRENCH POLYNESIA

MARCH 97

Date: Wed, 19 Mar 1997 14:33:57 -1000 (HST)
 From: "George H. Balazs" <gbalazs@honlab.nmfs.hawaii.edu>
 To: Alan Bolten <ABB@monarch.zoo.ufl.edu>
 Subject: ST10 fisasco

KCCVCC

Brenda finally got together with Stan to have him explain ^{How} it works. I spoke with her by phone today. She claimed that an instruction sheet came with each of our very first orders of ST10. The sheet purportedly tells what the unit "counts" and how to calculate it. They only send the sheet once, the first time someone places an order. I guess they trying to save paper and trees or something. What I should have asked her is, if the sheet tells it all, why didn't she just read it or fax it to me. Why did she have to seek Stan for an explanation, before she could tell me!! Ahhh, Telonics...

Anyway, the computations are made by reading from your dat file. Take a string of data from one time to another time. The numbers are subtracted from one another. Then $x's \ 1.024 =$ no. of seconds on the surface. Then you subtract the difference between the two times that are used. That the total time of the sample. The seconds on the surface subtracted from the total time is the time not on the surface.

Note there is no-compute factor in the units (like the 10 sec you had in your ST6's and the 10 sec I have in my St3/14's). This means that a wave splashing across the two screws would be counted as not on the surface. But, the splash might only be a second or two, so the effect of it might not be all that great in the total times computed. It seems to me that there might very well be some useful data from this mechanism. You should go back and recompute (correctly this time!) some of yours to see what results.

Here's an example:

for my unit 24181 from 3/15/97- "dat" ADS data stream

1997-03-15 13:35:41 1 59892 59892

--lots of data---
 then

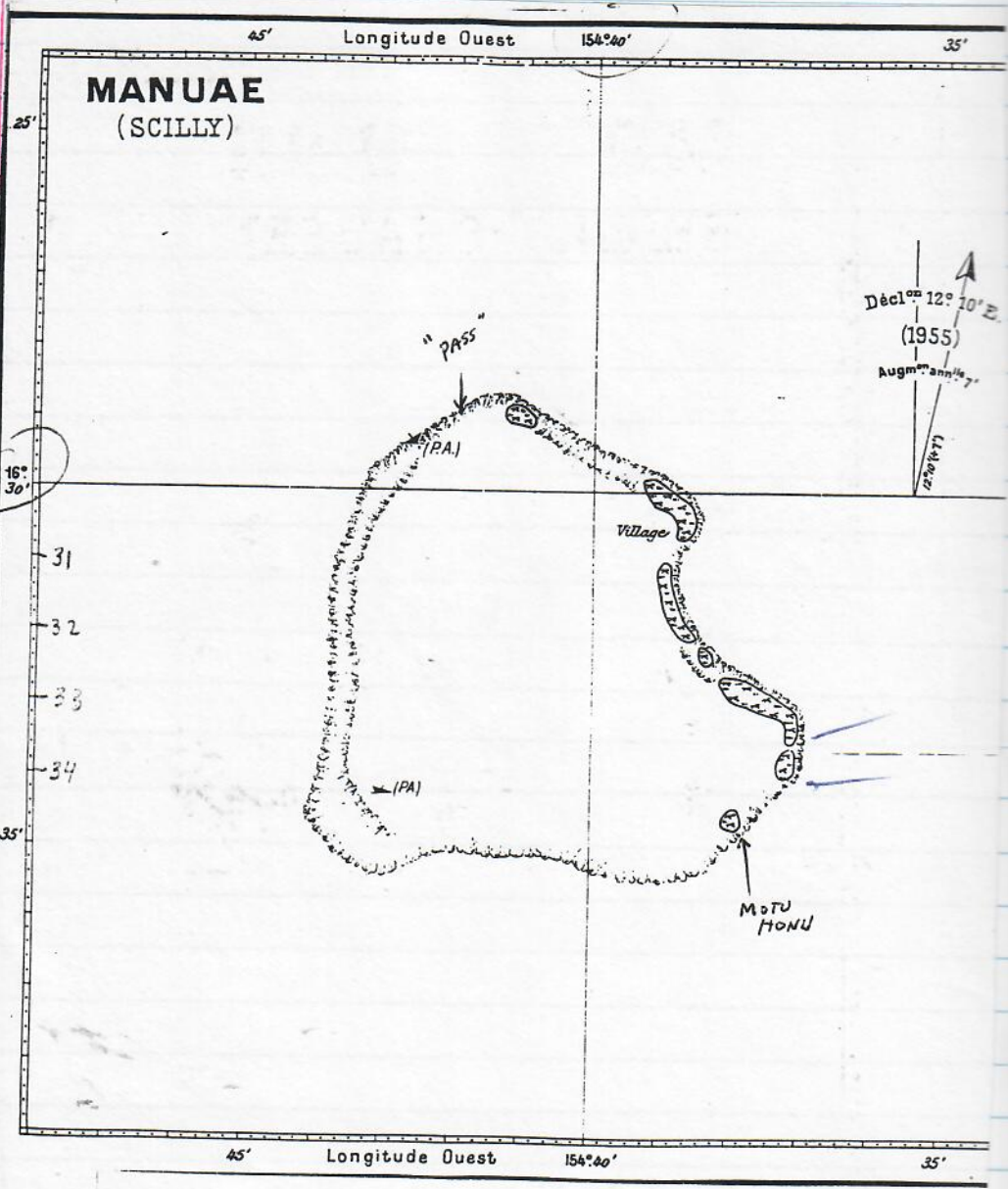
1997-03-16 01:07:02 1 62733 62733

Subtract 59892 from 62733 = 2841. Times 1.024 = 2,909 sec on the surface between the times of 13:35:41 and 01:07:02 (= 11 hours, 28 min, 39 sec or 41,319 seconds). 2,909 divided by 41,319 = about 7% of the time during the 11.5 hours was spent on the surface.

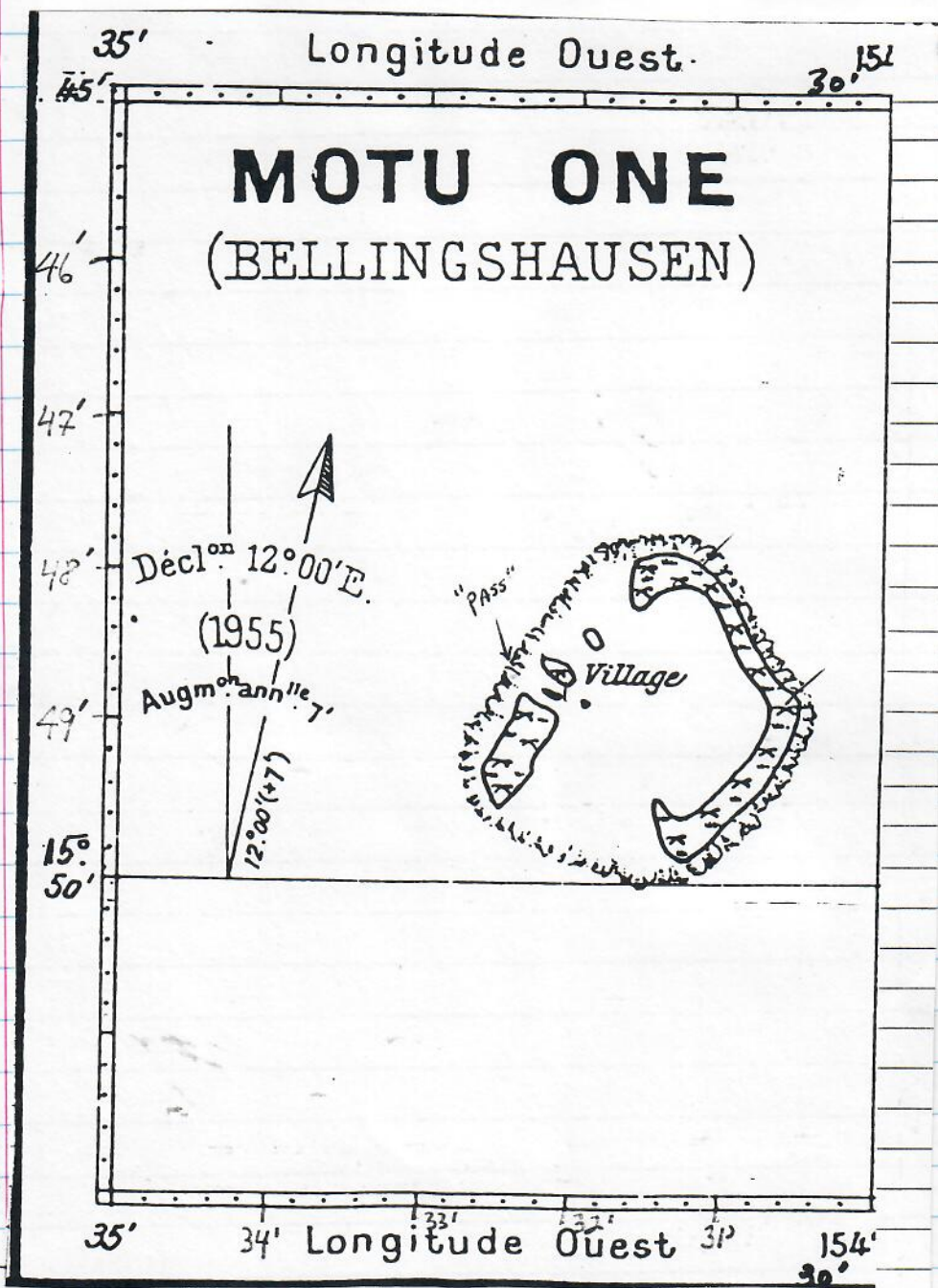
NOTE- The "counter" in the ST10 only goes to 65,535 and then starts over at zero. Keeps repeating itself that way.

I think that with an accumulation of lots of data there is some value in the above. It's worth having a student or someone work up in order to make an appraisal. For example, comparisons between night and day. Or, known period of very calm seas vs storms and winds. Well, at least that's what I have in mind doing for our data out here.

Engr. Charles ...
 1955
 - 1000 ft

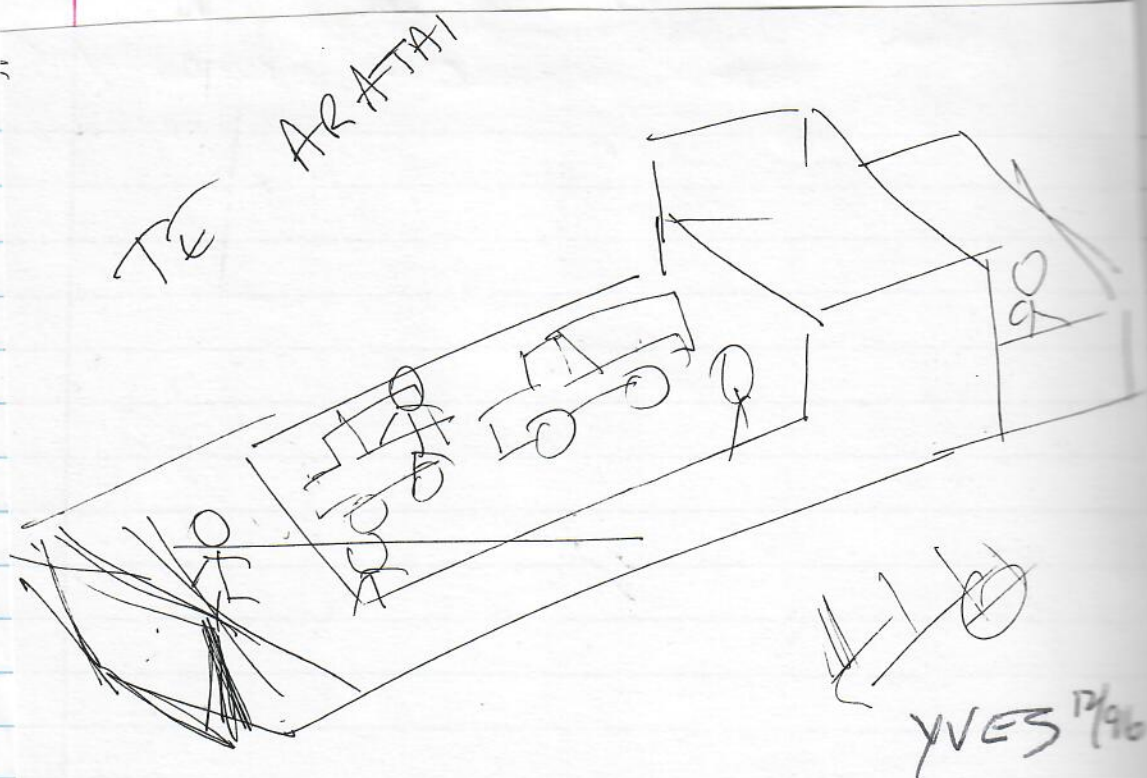


1 NM = 1852 meters
 7 NAUTICAL MILE by 7 NAUTICAL MILES
 = 12.96 km



1 NM = 1852 M

2 NAUTICAL MILES by 2 NAUTICAL MILES
= 3.7 KM



Tahiti police seize endangered turtles

6-10-2000 THA
 PAAPEETE, French Polynesia

Tahiti police have seized seven endangered green sea turtles, which were illegally kept in a residence in Tautira.

The turtles, which were about 2 feet long and 10 years old, were being kept in a concrete pool at the home.

The owner was arrested and faces charges of capturing and detaining a protected species. Police said the turtles will be tagged and then released into the ocean.

12

WH6BL9

BALAZS

TAGS 5139-5250
Coff at
MOTU ONE 10/20/91
Philippe Sid
Program Coordinator
EYAAAM
P.O. Box 20 Papeete
TAHITI
P.O. Box 519
Papeete
FAX 689-4349
Phone - 689-4312-38

BALAZS
992-A Awarawaea Place
Honolulu, Hawaii 96825

TEL- 808-395-6409
808-943-1221

TRAVEL SCHEDULE:

HONOLULU TO Papeete 11 OCT. 91 FRIDAY
TAHITI TO BORABORA (AIR) 12 OCT. 91 SAT.
BORABORA TO SCILLY (AORAI) 13 OCT. SUN.
To MOTU ONE (AORAI) 14 OCT. (MON.) - 17 OCT. (THUR.)
17 OCT. (THURS.)
MOTU ONE TO SCILLY (AORAI) 18 OCT. (FRIDAY) - 21 OCT. (MONDAY)
21 OCT. (MONDAY)
SCILLY TO BORABORA 22-23 OCT. (TUES.-WED.)
BORABORA TO TAHITI (AIR) 23-24 OCT. (WED.-THURS.)
24 OCT. (THURS.)



Composition Book • 9 3/4 in. x 7 1/4 in.

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	09-9132	60	College Ruled & Margin & Paged
	09-9134	100	College Ruled & Margin

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ARRIVE 5:30am Honolulu Oct 26th
Hawaiian Air FL 482 (SAT) 25-26 Oct. 91

BIRD

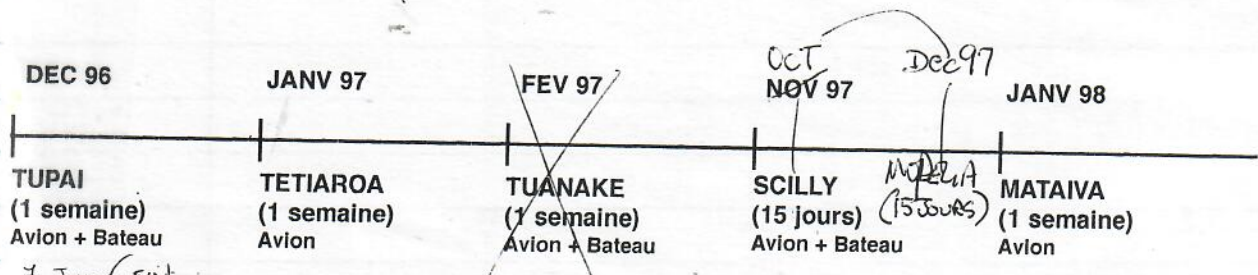
ALBERT VARNEY (Vini collector)
Jean-Pierre Landvet
Ariel LICHTLE
(His grandfather LE BRONNER GUILLAUME
Marguerite plant named after him
at the turn of the century - (BPMuseum)
LEBRONNECCA
METRIC SYSTEM WITH U.S. EQUIVALENTS

TE FAAITI
1er PARC NATUREL DE TAHITI

18 JUNE 1767 SAMUEL WALLIS
HMS "DOLPHIN" DISCOVERED
'OTAHEITI

From
MIREL
12/96

CONTRIBUTION A LA SAUVEGARDE DES TORTUES MARINES MISSIONS D'ETUDES ET DE BAGUAGES CALENDRIER D'EXECUTION (FIDES tranche 95)



7 jours soit
dans les 2 premieres
semaines de Dec. 96

Need Records with WPCA

TAGS LEFT AT MOTU-ONE (BELLINGSHAUSEN)

10/20/91 S-139 Through S-250 (112 TAGS)

10/23/91 TAGS LEFT WITH RENE AT SCILLY S-273 Through S-400 (128)

28

NAMES OF Bellinghausen people:

- ① MOKO
 - ② SANDLIN ♀
 - ③ NOEL
 - ④ Jean Pierre
 - Alice ♀
 - MOCO
- 3 OTHER BIRD =
- TEIKI
ABEL
HOROMAK

Backnote -

Man reportedly died on Motu Honu. His body was being kept in the hall by visitors from north. Man buried there. (But no grave seen).

Note

Nearly all turtles seen at both island had healing copulation scabs.

what tags? MONEL SIZE 44 WITH NO ADDRESS

Last tagged at Scilly 1984 - Lele

Jean-Pierre never came to Motu-ONE. Philippe has anchored there, but never landed.

Scilly, Motu-one and Motu claimed by Pomere.

Mayor of Maui: a French person. Election that got lost vote (about 400) said to be known as seafaring, good people. Mayor refused to register the birth of Rene's children born at Scilly.

Rene said to PS that the year starting out to be a good turtle season -- last year's wasn't so good.

SATELLITE TRACKING

10/25/91 MARO LUCIE

French (waitress at Hotel Tahiti from Philippe in Tuamotu. KNOWS RENE AND JACK WARD.)

1984 - Jean Pierre and Rene at Scilly. They were 3 people and Rene's father, Rene's brother (they are still alive now, and

1952 - Rene's father first came to Scilly to make Copra.

1952-67 - Report 1000 turtles a year sold at Papeete from Scilly.

1967 - 100 tagged in one night at Motu Honu.

1987 - Philippe here w/ Courteau - Sea plane (and helicopter) from here to make a TV movie (but has since)

Pat

OFFICE BANK OF
 EAST BANK OF
 NEW ATTI
 STREAM

10/19/91 Bora Bora for Radio repair instructions associated with NIGHT

ATUATU TE NATURA
 BP 44 Bora Bora 154

X BRYANT Jacky Naie BP 154 BB

"Queen's Bath"

Bora Bora
 Stone enclosure (some cement seen) w/ water in it

10/13/91 9-10:30am "OFFAI HONU"
 Sunday (Queen's Bath) site

Beyond 10/13 Emory 1933 site -
 many photos w/ MAIRE & COOKIE
 left petrification of Emory's stone
 unit is said to be "COMB" PART OF
 CAGOON VISIBLE FROM THIS SITE.

Seen Queens bath stone and upper stone
 first appear to have holes where
 spring water comes from.

Depart Bora Bora at 1pm right
 after lunch - Aboned "AORAI"

2:15 pm contact with Bruce "WGZL3"
 Box 297, Corning, CA 96021
 On this frequency at 2:20pm, only
 21.338.7 MHz local call

Bora Bora to Scilly

Sunday 10/13/91 Frank ZL2
 talks with William WGH/H/K/H/H Honolulu
 daily at 0830Z (local time is 10 hours
 behind Zulu time)
 4.324 MHz

Backnote - Bora Bora interviews -
 participants at Jacqpot - fishing
 contest in KONA - 1500 persons
 taken from Scilly. Suspect
 they cut up and ship to PIRETE,
 100,000 franc = 100 parts
 and 1000 franc each = ~\$1,000.05
 "TAPAI" has some workers -
 turtles nest here, but are frequently
 taken and sold, instead of just
 eaten or family.

Depart Bora Bora 1pm 10/13, ARRIVE OFF SCILLY
 about 7am 10/14/91

10/14 Monday Motored by village (photo) - Copulating
 pair honu seen outside reef but
 not by me. Several Bonito caught.
 LOADED 2 ZODACS (photos) and
 justing proceeded through very narrow (10 yards)
 longmen and shallow (3-4) "PASS" marked
 w/ (94) with red. Current outward very
 nearly strong! Once through area we entered
 channel a single red water wave

Report that 1952-1960's
Seyilly Copra workers feel
their pigs & turtles a day
were PAID 300 francs for each
turtle put in "pen".

WBFTW / 9
10/14/91 Mon.
a second narrow channel located
leading into Calmer inner lagoon. Light
Jrains Showers present TO village #1
Copra house (w/ copra) Met Rene and young Mex.
Continued along islets TO Village site #2 of southern
end of Motu Oia. Met Rene's wife and children + 9's
brother (JUNIA) (brother-in-law)

10/14/91
Monday Dinner at Rene's house
Village #2 (26 people live here) Rene and
I got to see 3 full turtle
Wife (Mama) ~ 7 months pregnant.
4 turtle shells in house.

1. One turtle dying in the ground.
Turtle cooking in the ground.
Philippe says they just cut it
open to kill. I sometimes did
in hand.
Dinner consisted of turtle meat
and liver (do they eat all organs? yes)
Baby in stroller blanket in house.
Spill floor. Coco bringing water for roof.
Girls waves hand away. Mama
would not sit at table with men.

Males here all year round.
Some nesting already. Males taste
better to Rene than females.
"Hook" technique for larvae.
Do males skin around a single
female female hole in shell
females occasionally avoid males.
not committed but settled out.

"TARIRAA HONAI"
Place to carry how
PASS OF chaine / (lagoon side)
Name of ocean side
of island

ON MOTU OIA
Set up camp - SHUTTER PRESENT
Proceeded to Motu Honai - far fewer
Copra trees here. Nice semi-circular white
sand beach ground most of islet.
I walked islet 0 and counted
TREES (see down pages)
LAGOON SIDE 30 0 0 0 0
21 "new"
(3 weeks for
leaves?)

NOTE
Ocean Side Rod (new)
Total est. (38) = 60
upland Jean-Pierre and 75
Crawls

"MOTU OIA (FROM TARIRAA HONAI)"
TO VILLAGE #2 POINT
COUNTED BY JEAN-PIERRE = (14)
Pedro = 14
Captured

10/14/91
Toll House

* Nesting under
MONDAY SITE
10-14-91

* Nesting under
TASUNA TREE, LIKE
out Rose - good

11AM All these eggs taken by
Penelope turtle by
chamber,

CCL 104 cm
RMP 477 LFL Yellow
X653 RFL #2

X654 LHMND
RHIND 1/3 carment (fresh) missing.

Photos

Walked Motu Home w/ Philippe Jean Pierre
got 4:30 am - no nest turtles
had been up.

10/15/91 Cobblers for breakfast
TUESDAY brought "Toll House" by
Rebec's "tube"

10 PM proceeded with Rene's
and boys to Motu OPA workshop
arranged to occur side to where
a buoyancy reported to have
washed out some of the best
sand beach, turtle nesting site.

11

Sully

10/14/91 Rene's house. Twittes

Monday seen only injuries from

* I think bit injuries from

Stomach contain lots of material

like pieces of coral, plastic, "but no

fish"

How old? "10+ years" (Rene)

Other species? "like he say the (a)

"by head turtle" but not nesting

Sample (only in the water, only

greggs (how) here.

Jan 1971 - permission given for Sully

to take "a week", so brought

off to 50 a year.

At about 9 pm we returned

to Motu Home. Rene said ~ 6

his sons came in their paper boat.

(Scoop) We found two turtles nesting

well end, beyond side of right

gel p. 100CCL RMP 476 RFL #1
RMP 477 LFL SPONGE
3 BARS HMB 651 LFL Yellow,
X652 LHMND #6 RENEAL

Note width of Tag 1 appears entirely

Sufficient.

Photos: RFL and LFL

DOES "Flap" Swell during nesting event?

Before an application made

Scilly

15

10/15/91 Rene's boys had walked the beach
TUES! A tiny minute thing missing and
I had turtles that had gone to
nest.

7 Turtles total Report up.

2 got away.

5 TURNED OVER BY US.

Amazing! That turtles come over the
sharp, jagged beachrock rim to nest
in sand landward! How do hatching fare
going back out?

Walked on ocean side to village #2. Saw
"pink" sand articles. Some plastic debris -
it useable Rene picks it up and uses
it - plastic float cut in half for bouys -
line, wood, etc.

Walked thru newly cleared, burned
area at end of MOTV OAI, village #2.

Tagged and released 14 1-year old
turtles + 1 turtle 50cm caught
during recent months in Rene's fish
trap on MOTV OAI.

Returned to MOTV Houv - Resting
hot - ATE Tabian grapefruit while
in the ocean.

4:30pm - 4:30pm made from radio
contacts.

Back to Rene's for fish

Scilly

17

10/15/91 dinner + Margaret goat meat +
TUES. At Casuarine while by Philips
most of beach looking over night. F1977

Returned ~ 8pm - Walked the
beach - One female ashore west end
beach side MOTV Houv. Tagged and
measured by Jean - piece and plunger
~ 11 AM. Went to bed at 10:10pm.
Dark clouds about lighting. Still a woman!

10/16/91 UP ~ 7 AM. At ~ 9pm to Village -
Wednesday then proceeded to inlet areas over
to ocean side of MOTV OAI where
Rene's boys report 2 turtles
come ashore last night along
the shore. We walked to
the North end 6 year old
IS mazel found and adult female
in the hollows. Captured
photo - moderately sunken, slotted
old "5km" around head appears.
Copulatory spin seen just outside
fangs/neck - perhaps 3+ males
1 possible. Photos, including
of AVE making video.
Rene trying to swing out job
watch that sample where they
brace apart, but turtle
fumble swim away.
Proceeded to 2 turned females,
tagged and released.

NOTE Similarities of Philippe Sid and I-Juan Cheng

PISONIAS

10/16/91 Reng thinks he
found a turtle skull
with 7 teeth
at the end of road.

Sept 15, 91

7 turtles investigated
by Philippe Gebelmann.

10/16/91 Reng thinks he
found "1 tuna boat" this
morning - someone from
Maupiti taking turtles?

Philippe reported it to Gebelmann to investigate.

Simone Girard - Head of
Service de Pêche

Mayor of Maupiti in on turtle taking
at Sully.

Dinner at Rene's also included
Caulerpa racemosa collected in
lagoon 0 to 1 meter on coral
creeds.

with pig or coconut
or milk

Philippe report
90% coconut

Orlando at Maupiti
90% coconut
Philippe report
90% coconut
Philippe report
90% coconut
Philippe report
90% coconut

Sully

10/16/91 Walked back to village
Wednesday where we talked about
photos of pig and pig pen
region - info. Pisonia that
were cut. Examined pig pen

(7 pigs). Turtle skulls spent one
thing returned. Talked
with ODILE TEMPEL who
said there are Rene's kids -
She takes care of babies. Inp. Mokia
to people Red Cross sent
troubled teens to Sully
(drugs, prostitution, theft)

5 been here 6 months - will
stay another 6 months. Good
French Tahitian. Also speaks
photos Spanish.

dictionary One of Rene's daughters =
Nadia Taputu - 5 years old.

Went back to Moty Hau,
they returned to Rene's
village. Then early
dinner of coconut cut, coconut
bread, and fruit (Mangrove).
Pain played out long
dinner.

TUES:

10/15 - Turtle served at dinner =

Carapace 109 CCL (mean of 100th)

Second carapace 99 cm CCL

Photos of above with Bertha (Rene's son) and TERE.

4 shells hanging in house

CCL = 95, 96, 102 & 93.5

photo with ODILE Temere

I wrote Rene found nothing turtle stomach near his house. I collected algae from it.

10/16 wed. Rene found nothing turtle stomach near his house. I collected algae from it.

SCILLY

21

10/16/91 Rene and boys came every so often. A lot of gas turtles. No expenses. At ~11:30 am from park and I walked around Motu town - "Nothing" seen! Lots of rain - "No Nothing" and jacket sure came in handy!

10/17/91 UP about 7pm. Philippe Thuis. walked around Motu town and saw 2 emergencies but neither appeared successful.

~9 am I went with Domingue Rene's adopted son, and Albert. When coming to Motu town Rene found an adult flat Brown pit to us for tagging and release.

4 turtles were tagged last night OPA by Rene's brother in southern tip. Always more missed Domingue Albert and I decided to try, measure and release each one. I continue to be advised by

ADDRESS ?
Yellow
Beak

166

TRAVEL BOOK

PRON
 TERNARA Bill R-46.1 9/10000 MARRIERS
 57 36 98
 " Maryhue of Sanford Manua Report
 " Rowline Mashina 41 30 R2
 " Yvonne PK 145 9/10000 TARNERS
 57 28 13

DEWITA

DIANA DEWITA - 25.8 km Para
 Son - Tove
 Daughter (deceased) - NARRA
 Grandchildren - Maria
 Harry

1981

Rene Taputu - 36 years old
 Need (DAMEI) - 32 years old
 BOBA
 BOBA
 PHOTO, CAT
 Address given: FIDERE
 VANIMORE BERNARDINO

FATHERS DIED ABOUT 1983
 ALBERT VARNAY
 DELEGATION #14 ENVIRONMENT
 DP

NO TO OPIUM
 BEHIND US
 (H. IERUSA.)
 INSIDE CARVING SOY 1950 21

10/18/91 Nice, though deteriorating village settl.
 Friday with several Copra stores & shops
 (1/4 full of copra) adjacent drying
 always long trucks (not in dust, no
 sooty in them). Village island, long
 sandy beach all the way around -
 upland it but says no trace whatever
 of nesting turtles. We were housed
 in wooden structure w/ tin (leaky) roof.
 Wooden roosting area at one end.

Wife of CCL 88 x 79 shell in copra shed
 said to be a male spurt 2 months
 ago on ocean side - also, no females nearby,
 if humans of kind by South in P
 from area where they boyfriend had set
 a small yellow gelling which provided
 fish for our drinks; bore cleared by
 they then died by me over the
 roosting fire.

As the ship is said by Rene bone of turtles
 (reportedly buried last 3 months in sea)
 as it will drive turtles away, I
 examined well behind roosting site
 (50 ft from) and found some turtle remains -
 perhaps 3 total - are very old, 1-2
 fresh (are was undoubtedly remains of
 107 surface). Bones when buried
 appear to char totally, and disintegrate.
 possibly reason why archaeologists find little
 turtle bones at site excavations.

to
 sub parts
 of
 (circled star)

10-18-91 Bellinghausen (MOTU ONE)

~~SATURDAY~~ FEIDA pieced of turtle eggs, unhatched, suggesting the people eat eggs. At about 8 pm, 4 local men (not Rene or brother) went across the lagoon to a motor - there about 2 hours. When they returned they said they had turned 2 turtles nesting.

Philippe says that people here recently helped 7 nesting turtles get into the lagoon that were stuck on the flats. (↑ no for above)

During the night (early morning) 10/19/91 the spin and wind came up - SATURDAY roof leaked at various places.

Rain continued to mid morning. Wopans went out to AORAK in their wood flat bottom boat. ISMAEL to bring in more supplies sent to them from Peperete. FLOUR etc.

At about noon we heard on 829.1 MHz an announcement in English about 'May Day' from a Taiwan ship - five aboard - 40 crewman in left boat at 140° 20' E, 09° 17' South.

At 7 pm we watched 9 crows the lagoon to by the turtles turned

Philippe (7 turtles 9-15-91)
6 turtles confiscated - Maupiti with last two weeks Pomare family claim to Scilly (Bellinghausen) Mopelitz, Maupiti. Taken legal issue to France. Pakalolo growth - Social problems

since 1952 Scilly inhabited by same family of Copra workers for many years. Bellinghausen also has Copra workers.

10/12 SAT out AND WENT TO PHILIPPE'S House PUNA FLOW TO Bora Bora on Air Taiti at 3:20 pm. Saw Tubai when landing. Ferry boat from landing strip terminal to Vaitape pier and village.

also used 8292.5 kHz

Radio MAHUA
8296.1 kHz USB

2182 kHz emergency calls
2638 kHz ship to ship traffic

"2 New frequencies on AORAI"
TX 4110 kHz / 8279 kHz / 16372 kHz
RX 4402 kHz / 8803 kHz / 17254 kHz

Bellingshausen
MOTU ONE

29

FRIDAY 1-18-91
NO pigs at this island but chickens running loose. Reported that chicken not eaten - they don't like to kill them - they like to see them in the house.

Phillippe says that starting ~1966, when labors for bomb testing were recruited, the number of Capra workers on all islands declined. Atmospheric testing done 1966-1975. Thereafter, underground explosions - said to be in volcanic cap. Trying to explode the smallest A-bomb possible.

Village has 4 domes.

I described tail wrapping on native divies in Cook IS and Tokelau.

Gene Spid this has never happened to him. Also - that turtles at Seilly never try to BITE. Note - A way to stop and control turtles (on the beach) at Seilly is to cover and or squeeze (causing them to shut) their eyes.

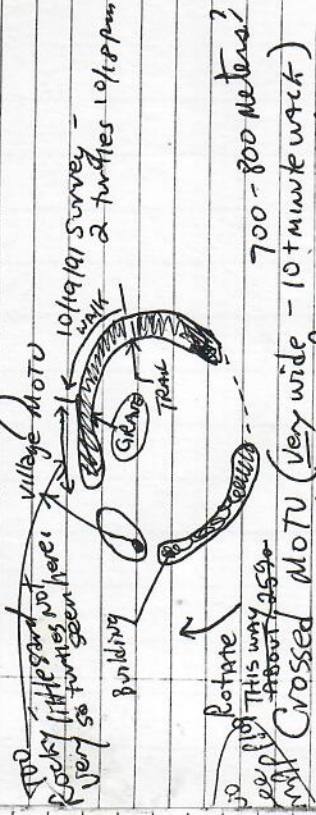
Cots of "talk-stay" all day long, but no decision was made by Philippe to go any where. Reportedly these residents say one all relatively new - groups to be in any out, coordinated by Coop, on "Maupiti". Reportedly, via Philippe, only 1-2 turtles a month are taken.

Some people don't like to kill them. In searching around beach, I found

32

10/19/91 last night.

SATURDAY
A turtle seems to be shaped about like this: (ignoring N-S directionality)



MOTU Pigeon TOU

Site where first turtle turned body. Spine structure with rear neck peel edge that looked like a turtle heading landward (photo) - "MOTU-ONE".

Photos and try demo for Alice and Jeanine.

From here we proceeded to the northwest - counting old and new pairs. Arrived at second turned turtle. There was near a surge channel that Gene Spid was often a landing site for turtles. (Sun set, the following day (with another turtle) come ashore though).

101

10/19/91 Straight tall tree that takes
 SATURDAY ^{long time to grow - used in traditional}
^{house construction - Said by}
 Philippe to be rare now in Motu -

"KAHAIA"

Returned to village - Big Dinner Ths
 night AT Alice AND Jean Pierre
 Strong wind & more rain during the night.
 10/20 Sunday Workers turned I turtle
 lost night.

"MOCO" ^{the} ~~was~~ me up with a
 hatching turtle - one of 57
 (ONE SEEN) he found newly emerged from
 egg JUL 21 ON MOTU from
 IMMEDIATELY TO THE EAST OF THE VILLAGE - NOT
 VISITED BY US, EXCEPT ALBERT
 Ocean side (PHOTOS on 10/21 in departure
 HIND FINGER having made of
 30 hatching) (see pages 110-117)

Sun out - not as cloudy. Mid
 morning we proceeded across bay
 TO MOTU that in water. Good
 ISMAEL. Little turtle hatching
 of many like now that
 captured as described in photo.

Bellinghansen 33

1/19/91 Tuesday Turbidity seen washed ashore
 along the way. Fast rate
 withers body Coulter's Lucernera
 Also ~ 28' fibreglass boat

NAME - "DARLING" older Australian
 man named "M. Wan" said to have
 been on it according to Alice.
 1983 humpage. Was on the
 island a week before encountering
 villagers. Then was on tall for one month.
 Friday he hit the reef where he
 did, because this side of
 motu, reef is very narrow and
 boat was shoved right up onto
 the island.

Serial number PCS 202600983

Count Old (more than 3-4 days) New
 less than 3-4 days

(5) = (6) (7)
 (11) = (12) = (13)

TOFFNU tree - Messerschmidia or
 MikiMiki tree (shrub)
 also Calag (shrub) & others
 with members in the wood.

0-20-91 center of the lagoon where the type
 W17 and R118 (Eremnissultra, and of type
 A) were collected, visibility only 2-20 feet.
 Pinnacles here and there to
 within 5-10 of surface. A lot of much
 growing in them. Some "staghorn"
 type coral. Microactinia of
 R. Noemera. No other macroalgae
 seen. At eastern point of Moth we
 saw, earlier, an adult turtle
 in the lagoon, but it took off
 feet when boat followed it. It
 used to be a throaty, jagoon
 but small elegant white shade
 totally of pearl shells. Most
 appeared very old. Very few but
 fishing kept by, we or Philippe. He
 only had a few old pearl shells

TAG KIT (PLASTIC CONTAINER,

"#3" BIK PLIER, measuring
 type, and TAGS;

(S-139 Two S-750
 (12 tags) left with Aline
 and Jean Pierre.

Rene said he would pay 2000 gpf
 for each turtle tagged - up to 50.

20/91 MOTU-ONE

Day like on all other I examined both the
 and at S-139. Orange-yellow; position
 with faint trace of black in same
 of markings. CCL=109.5 x 97
 I Brodnish to compare. Photo of Rene
 measuring. "Proceed to walk on Sunday pickpic
 along clean side of water / counting
 "old" and "new" pairs of nesting (through
 This covers the section to the east,
 not covered yesterday.

OLD

(11)

NEW

(4)

Lots of plastic debris along here, in
 comparison with other areas, in
 Newport. Bottles made of plastic
 predominate. Glass bottles are
 scarce. At the eastern end of
 was surprised to see how close it
 is to the south water. The reef
 stretch west of water appeared large?
 We proceeded from eastern end of water
 to lagoon-entrance of water. Quite
 a distance, again showing considerable
 width of water. ISMAEL was
 waiting for us.
 At about 3pm we went to

42

Sally

10/22/91 MOTORED BACK AROUND TO
TUESDAY the pass fishing on the
way. Caught 10 turtles along
out. Bunker. Motored just
outside wave-break. Crys tall
clear water. Slope goes quickly
down. No turtles seen. Piece
Saw hard bar islets. Piece
of shipwreck and piece
of rusty but intact near pass.
Turtles or Korean.
meter picked up ~ 10am by
one Zodiac. Rene's boys went
Apeel fishing near pass.
Motored to village. Reported
6 turtles up on OIA last
night - 4 tagged. 2 got away
later. Learned they overlooked
when tagging the rest. That
morning Duke had said that
they ran it. Duke all
last opposed to the sun.
Very hot day - still calm,
in Lapoon. But some beach
on the ocean side.
Turtle alive when found
10/22 pm and tagged. When
found up by it. Tagged. When
found up by it. Tagged. When
found up by it. Tagged.

41

1/20/91 He said they showed only
today eat 1 turtle for ~~month~~
He was convinced that there
would be turtles left for his
children when they grow up.

Nighttime we crossed the Lapoon
again and upland the beach. Rene
went to the west pier and
to the east. Saw 1 turtle and
No turtles seen ashore, or fresh
tracks.

21/91 Depart MOTU ONE about
MONDAY 9am. (OMEC) drove Zodiac
again out ~~pass~~. Big set of
turtles. He gives great MOTU
along MOTU where 52 turtles
found by Moco. Saw side
of under trees. Photos. Motored
along MON-MOTU section of atoll,
and the to Sally, driving
about 4pm. Waves high at pass,
so only Philippe, AXE and
Rene and (MUSE) prevent us.
About end of (and photo and
Kupper) Motored aboard Monday
(MUSE) Motored to OIA
(MUSE) Motored to OIA.

10/22 obviously digested, so we
 TUES. carried it back to the sea.
 Lunch at Rene's and lots of talk.
 Two turtles turned 10:00 at night.
 an MOTU Hornu were used in
 ARES VIDEQ took photo from
 boat of turtle turning's out of
 being surprised by boy's hiding
 in the bush.

Afternoon we went to turtle
 hatching pens. The first one was
 near an MOTU OVA. Stone (coal)
 village substitution, equal by Gopra
 chief when Rene's father came
 with him to Sicily. Actually a dug
 out ova where very soft
 water collects - very soft
 mud in surrounding area. Photo
 of turtles being held here
 * said to be able to hold 300+ turtles
 We then moved to village
 one #1 further to the north,
 where a smaller pen in use,
 made of coral chunks, and wooden
 sticks and fencing (photos) of
 5 turtles kept to be here,
 all caught during last few weeks
 water open, but impossible to
 verify #5, but from breathes

10/22/91 that seems reasonable. Photos.
 TUES. Many moogitoes in this
 area. Same likely time for
 village #1. Philippe said Rene
 inhabits are village for Gopra's
 working Gopra as that village. Damage
 shifts to other village. Damage
 exceeded to type sort of
 turtle which Rene said he
 wanted to release (non-selective).
 Philippe estimated 120 temperature
 38-40°. First turtle had
 * were many deep gouges in
 surface, P.P. and clipped surface as
 as if had been for held,
 even beach rock. No Bk P.
 Second turtle had extensive Bk
 in Bk - most of any seen yet with
 Benthic, turtle release.
 Proceeded to village #1 where
 saw old cement house, severely
 deteriorating (unusable), cement for
 drying water, Gopra stood in cement
 building, and a somewhat newly
 constructed house with new
 tin roof (2 stone boards) and
 partitioned to rooms. Lots
 of old engine parts, other debris
 all around. Old and very large
 brick - beach rock "oven" used

10/22/91 for making bread, according to
 TBS. Philippines In this area I found
 numerous turtles bones. Was able
 to pick up about 13 human -
 photo of we holding them. Was able
 proceeded back to village #2 and
 water tanks.
 At 9pm that night we started at
 2 mi HSA (Turtle area) walking the
 beach w/ Rene's boys. Axel video
 also. Found and tagged turtle
 that had been left on its back
 since yesterday night. 504 new (589)
 tagged + 1 yesterday's + 1 tag
 recovery dying eggs (photo by me).
 Got back to village at about
 midnight right when hatchlings
 were crawling down the beach
 and being picked up by everyone.
 Mike said to collect fresh Remy's
 TO TO ORNAMENTAL EGGS - so must have been
 BACHATI last August 91.
 Moted to MOTV Howl and saw
 a turtle just starting to emerge
 on sand point. Turned by
 boys and tagged in the morning.

10/23/91 Up ~ 7am. Packed gear
 Wednesday in preparation for departure -
 all good jobs for work (Honey
 boat) no problem. Arrived to

Tel. 42 60 61 Message at FASA
 HIC

10/23/91 7D Rene's house for photos of
 Wednesday various family members.
 Moted to site to see "double"
 account near ocean. Side very new
 large "upside down" by "found rock".
 7D PMS and out to off-load
 thing into AORAI. Jomungue
 (win) laptop and motor the
 to Philippines, Axel and I returned
 meeting longlines on reef. Arch
 and gave pack it. Photo.
 When going thru gins again, to
 Daminghe I checked, took
 turn around not enough steady
 to zoning so went up on
 reef edge. The 3 of us got out on
 reef, proceeded but after
 getting back into zone.
 537 by Marine boat over
 from Rene's boat. Rope tied to it got around
 boat's propeller.
 Departed for Boca Boca, arriving
 10am 10/24/91.

Went ashore to the market,
 bought some good supplies,
 they returned to AORAI for
 lunch. "Tang" boat involved in the
 of accident at 5:00 PM PY 1120
 70: and photo of

Photo requested by TENERE ODILE
 LOT CPS No. 86
 (PROFITER (1/2 REAR) HINARE!!
 ALSO: EMELIE TIDMOE

12/4/91 ^{PAPUA} Saw Jacky back on Borabora
 runway and had an interview with a
 newspaper reporter.

Departed on Shuttle boat ferry
 for Borabora airport w/in. Had
 married hickling from Motu-one
 and Village #2 Sublet. Met

Thina and Abraham Pinnera

on the way (they had been in the
 Marguities). Depart on Air
 Tahiti at 5:30 pm with a
 stop at Raiatea. Nearly
 dark when we landed at FASA. P
 Checked back in to Hotel Tahiti
 (Room 93). Walked to Papete
 that night and had pizza.

12/5/91 UP ~ 6:30 am - Call from Cuny
 Friday Fore. Breakfast at Hotel
 Tahiti. Walked to "Coach and
 Carry" browse.

Philippe picked me up at 11:30 am
 Drove to Tararua (called PAPER),
 to see turtle aquaculture project
 turtles being reared in
 suspended cages. Photos.
 Noted lots of Turbinaria, and
 some Sargassum floating
 drifting in so suspected
 they'd be put in with turtles as
 food, and also to distract

10-25-91 them from biting each other -
 Friday It seemed to work - turtles
 went right for it.
 Pelleted food high in fish meal is
 fed 4x day (pable locally).

Water quality here would
 seem to be a problem.
 Silty bottom waste-deep water.
 Turtles reported to not float.
 High-tech shrimp farming
 hatchery in Tararua.

Had lunch at a stand

near Army barracks of Tararua.

Returned to Papete to meet
 with Environment Minister ED OUNED

41.03.70 TERREY, FITCH - P.O. Box 2551 PAPERTE

to talk about protection of Seilly
 for turtles. Very receptive parish,

especially for Plate on a Friday
 afternoon.

Also met Jimmy Grand, head
 of Service de la Pêche.

Shopped in Papete afterwards then
 bought. Took back to Hotel.

Had dinner and saw Tahitian show
 that evening at Hotel Tahiti with

Philippe and his wife. NAME =

Departed on Hawaiian Air at

11:30 pm, Arrive Honolulu SAT.
 5:30 am 10/26/91 morning

Gloombridge
Luxmoor 30'

POPULATION: *Chelonia mydas*

Nesting sites The most important known site is Scilly (Manuae) atoll, situated at 16°46'S, 154°40'W, in the Leeward Islands sector of the Society Islands group (Anon., 1979; Lebeau, 1985; Hirth, 1971). Hopalua, Tupai and Bellinghausen, also in the Leeward Islands, appear to be of lesser importance, and there is reportedly some sparse nesting in the Marquesas and on most atolls in the north of the Tuamotu group (Lebeau in litt., 1986). Nesting on Scilly is concentrated on the three islets in the south-east of the atoll: Motu Papai (Rahi), Motu Otue Ola and Motu Honu (Anon., 1979).

Nesting numbers Department of Fisheries staff recorded 8-13 sets of tracks per night along about 3.5 km of beach on Motu Papai (= Rahi) and Motu Otue Ola, and 8-10 tracks/night on Motu Honu decreasing to 1-3 tracks/night (Anon., 1979). Surveys were made in 1972, 1973 and 1979, but the length and timing of each visit is not clear, nor is the percentage of tracks that ended in nesting.

Lebeau (1985) reported on three visits to Scilly in 1983-1984. Total number of tracks observed and mean number of emergences per night on the three south-east islets are shown in Table 66. Table 67 shows the estimated total for the three south-east islets, estimated total for all of Scilly, and the mean emergences per night on Scilly.

Lebeau (1985) concluded that around 400 females were nesting annually on Scilly at the time of his visits, with a total of around 800 nests and 80 000 hatchlings a season. There are suspected to be 10-15 nests annually at several sites in the northern Tuamotu group and the Marquesas (Lebeau 1986, in litt.), and the total nesting number in the Tuamotu and Marquesas groups combined is suspected to be approximately equal to the number on Scilly alone.

Trends in nesting numbers Local informants, reported in Anon. (1979), stated that in 1940-1950 it was not unusual to be able to turn 100-150 females a night on the Scilly nesting beaches; if correct, this indicates a very substantial decline in nesting numbers. Such decline appears to have continued into recent years (although it is unknown to what extent this is an artefact of natural seasonal fluctuations); Anon. (1979) recorded 8-13 emergences a night on Motu Papai (= Rahi), while Lebeau in 1983-84 recorded three at most. There are similar figures for the remaining two of the three south-east islets, which between them hold most nesting in Scilly. Decline is attributed by Anon. (1979) to excess harvest of adults for food.

Nesting season According to Anon. (1979) there is some nesting throughout the year, but with a well-defined peak season between September and December. Lebeau (1985), however, found most signs of nesting during his October visit, fewer signs in February, but least in December-January.

Foraging sites Little specific information is available. Lebeau (1986, in litt.) reports that juvenile *C. mydas*, greater than 1-2 years of age, are frequently seen over the outer reef slopes of many atolls in Polynesia.

Migration While some *C. mydas* appear to be present throughout the year at Scilly, long distance movements to possible foraging grounds, solely in the northern region of eastern Oceania, have been demonstrated by the returns (summarised in Table 68).

Table 66. Total tracks observed and mean emergences per night, on the three south-east islets of Scilly Atoll during three surveys (data from Lebeau, 1985).

	Motu Papai	Motu Otue Ola	Motu Honu	Total
4-18 February 1983				
Tracks	40	13	16	69
Mean/night	2.8	0.9	1.1	4.9
15 October-3 November 1983				
Tracks	49	25	26	100
Mean/night	2.9	1.5	1.5	5.9
20 December-7 January 1983-1984				
Tracks	10	13	15	38
Mean/night	0.59	0.8	0.9	2.2

Table 67. Estimated total number of emergences on Motu Papai, Motu Otue Ola and Motu Honu; estimated total for all of Scilly; estimated mean nightly emergences for all of Scilly (data from Lebeau, 1985).

	February 1983	October 1983	December 1983- January 1984
Estimated total emergences on 3 SE islets	84	100	52
Estimated total for all Scilly	107	133	87
Estimated mean nightly emergence	7.6	7.8	5.8

Table 68. Recovery sites of turtles tagged at Scilly, French Polynesia (data from Anon., 1979; Lebeau 1985).

Date tagged	Date recovered	Place recovered
30 April 1972	9 August 1972	Tonga (Vavau Is)
"	26 July 1972	Fiji (Rabi)
"	14 September 1973	Vanuatu (Makelimo Is)
5 December 1972	15 January 1975	New Caledonia
"	July 1974	Vanuatu (Malekula)
"	15 May 1975	New Caledonia (Baie de Comon)
"	October 1973	Vanuatu (Anatomo)
"	3 October 1974	Fiji (Kandavu Is)
"	15 October 1974	Fiji (Kandavu Is)
"	1 August 1974	Fiji (Kandavu Is)
31 December 1983	March 1984	Cook Islands

POPULATION: Eretmochelys imbricata

Although E. imbricata is known to occur in French Polynesian waters, it is seen less frequently than C. mydas, and has been cited as very uncommon (Anon./SPC, 1980). While the species may be suspected to nest in the area, no information is available on nesting sites or numbers, or on favoured foraging sites.

EXPLOITATION

Commodity Tahitians are said to be very fond of turtle meat and to eat it regularly (Anon., 1979). Eggs are also said to be collected on a subsistence basis (A. Lebeau in litt., 1986).

Hunting intensity The current intensity of exploitation is not known. P. Galenon (in litt., 15 September 1986) claimed that it had now ceased, but A. Lebeau (in litt., 1986) implied that it still continues on a subsistence basis.

Hunting methods The only hunting method that has been documented for French Polynesia is the turning of nesting females on the beaches (Anon., 1979).

Historical trends Harvests on Scilly were said to have declined over the 20-30 years preceding 1979; formerly, 100-150 turtles could be turned on the nesting beach in a single night (Anon., 1979).

Domestic trade There is some local trade in turtle meat. Trade in carapace is said to be very limited as it is now illegal (A. Lebeau in litt., 1986).

International trade CITES Annual Reports contain no records of commercial exports of sea turtle products from French Polynesia. However, three countries have reported importing small numbers of "shells" and "bodies" from French Polynesia, mostly for personal purposes or seized on entry. These are shown in Table 69.

Table 69. All trade in C. mydas, E. imbricata or unspecified sea turtle products involving French Polynesia recorded in CITES Annual Reports since 1976. The numbers refer to shells or bodies reported as imports to the countries given.

Year	<u>E. imbricata</u>	<u>C. mydas</u>	Cheloniidae
1984	2 Switzerland		
1983	1 USA		
1982	2 USA	2 USA	1 Canada
1981		3 USA	
1980		1 USA	1 USA
1978	2 Switzerland		

No evidence was found in Customs reports of any exports of tortoiseshell products from French Polynesia. However the Philippines Customs reports

show exports of 425 kg, 352 kg and 150 kg of raw tortoiseshell to "French Pacific Islands" in 1976, 1977 and 1978 respectively (Wells, 1979).

LEGISLATION

French Polynesia is an Overseas Territory of France, however it is not included in the French acceptance of CITES. It does not form part of the European Economic Community.

Délibération No 71-209 du 23 décembre 1977 réglementant la pêche de la tortue de mer (C. mydas) dans le territoire de la Polynésie française. Prohibits the capture of sea turtles (C. mydas) with shells of less than 65 cm in length.

Prohibits the capture on land of turtles from 1 November to 31 January. Prohibits the capture at sea of turtles from 1 June to 31 January.

Prohibits the sale of sea turtles for commercial purposes.

Prohibits the collection of turtle eggs on land.

The capture of sea turtles of all sizes may be permitted for purposes of scientific research.

Some turtles may be taken in accordance with quotas set by the Government.

Turtles must not be held longer than 10 days in containers which are not sheltered from the sun.

During transportation turtles must be handled in a way which causes no unnecessary suffering and must in particular be shielded from the sun.

The slaughter of turtles must be performed under the strictest hygienic conditions.

Proposed Legislation. (Supplied by the Ministère du Tourisme et de la mer).

Extension of legislation to include E. imbricata and D. coriacea.

Prohibition of the capture of sea turtles at all times except for scientific research and subsistence use on certain islands.

Prohibition of the collection of turtle eggs at all times except for scientific research and breeding purposes.

The possession and transportation of sea turtles to become illegal except for scientific research, breeding purposes and subsistence use.

The sale of all sea turtles to become illegal except for breeding purposes.

The import of all sea turtles and the export of breeding turtles to be prohibited.

RANCHING

A small-scale Green Turtle rearing trial was undertaken by the Fisheries Department at Rangiroa from 1971 to 1972. About 50 hatchlings were reared experimentally for a year. They were fed mainly on fish scraps, but as no suitable plant material could be found, they developed deficiency symptoms and had to be released. Over the year they grew rapidly, and attained an average weight of 5.6 kg (Anon., 1979).

A family on Scilly Atoll was said to have been experimenting with rearing hatchling C. mydas in floating cages before releasing them after 9-12 months. This trial was still in progress in October 1979 (Anon., 1979).

Local inhabitants of Manihi collect green turtle eggs, hatch out the turtles and raise them in village kraals for local consumption. They are fed on coconut meat and fish and between 3-3½ years of age they grow to carapace length of 20 to 28 inches.

Many males and some gravid females are speared as they mate off the nesting beaches on the atolls. Tahitian fishermen report a sex ratio in favour of males. The turtles sold in Papeete market in September were mostly males. Green turtle meat is considered a delicacy and sells for about \$3 per kg in the Papeete market but there is no market for eggs. A few cured shells are sold in tourist shops at \$25 but the demand is insignificant.

There are no regulations in French Polynesia concerning marine turtles.

Stomachs examined by the consultant were chiefly empty but a few contained a little green algae and one harboured a long piece of plastic. In the limited survey carried out by the consultant he did not find any extensive algae beds or grass flats.

Fisheries Department records indicate that between 1953 and 1967 from 24 (1954) to 262 (1962) turtles caught at Scilly were sold annually in the Papeete Market.

The consultant believes that he was able to build up a "turtle consciousness" in Tahiti as when he left, including the Governor and several Assemblymen.

4.3 Recommendations

- (i) A thorough four-month study (October-January) should be centred on Scilly Atoll. Emphasis should be placed on training a local counterpart in stock assessment, tagging, and if predation on eggs and hatchlings is high, then training is necessary in the establishment of an egg hatchery. This would ensure that the maximum number of hatchlings reach the sea. A boat would be needed in order to check nesting densities on Mopelia and Bellinghausen during the same period. (The World Wildlife Fund might be interested in supporting a project such as this, at least in part).

- (ii) It would be best to prohibit the commercial sale of green turtles until a study can be made of local stocks. However, people on atolls who depend upon turtles and their eggs for their source of protein should be allowed to take a moderate number for local consumption.

98 TAHITI - BIRTH FAO 1971

MANIHITI
PUKAPUKA

4.1 Synopsis of Activity

The following people were instructed in turtle biology and management: Mr. P. Angeli, Mr. L. Lenoir, Mr. S. Stein, Mr. J. Tapu and Mr. J. Drollet. The consultant carried out diving operations off beaches near Pirae and Papeete to check for turtle grass/algae. The main market in Papeete was checked alternate mornings for the abundance and price of turtle meat. Tourist shops were checked for stuffed specimens and shells. Many local fishermen were interviewed. Ten green turtles caught by fishermen near Motu-Honu were measured and Mr. Tapu was instructed in tagging and measuring techniques. Several stomach contents were analyzed. The consultant saw a French T.V. film on sea turtles. ^{social surveys of} nesting beaches and localities around Mopelia, Scilly and Tupai were made. Manihi Atoll in the Tuamotu Archipelago was visited and turtles and turtle kraal were inspected there.

4.2 Findings

As everywhere else in the world the numbers of green turtles in French Polynesia are decreasing rapidly. The consultant however believes that reasonably large populations still exist around some of the more inaccessible atolls. Whether these are resident or migratory populations is unknown.

The most common sea turtle in the area is the green turtle (French: tortue; Tahitian: honu). One of the principal nesting grounds is Scilly. Other important nesting sites are Mopelia, Bellinghausen, Tupai and some of the Tuamotu atolls. The peak nesting season in Scilly, Mopelia, Bellinghausen and Tupai is October through December. Reports indicate that some turtles can be found throughout the year off Scilly. The hawkbill turtle is sometimes taken by fishermen. There is one authentic record of a leatherback caught in a seine. On 24 September, the consultant counted 20 green turtles in the water around Mopelia (but there were no tracks on the beach) and 42 around Scilly, including 12 in a village kraal. He also noticed fresh tracks and nests on Motu Honu (islet of Scilly).

(iii) The Fisheries Department should map out all the nesting beaches in its territory with special emphasis placed on the seasonality of nesting.

(iv) The Government should show the T.V. film on sea turtles to school children. This film depicts nesting behaviour as well as predation on hatchlings.

↑ HEITH FAO 1971

Coastal
The
Geostie

2.1 Les missions. Matériel et méthodes

Trois séjours de 14 à 18 jours ont été effectués dans l'atoll de Scilly :

- du 04/02/83 au 18/02/83
- du 15/10/83 au 03/11/83
- du 20/12/83 au 07/01/84

au cours desquels 40 femelles ont été marquées et mesurées. Les marques utilisées sont du type MONEL TAG, taille 49, fabriquées par "THE KENTUCKY BAND & TAG Mfg", et portant la mention "RET SERVICE PECHE TAHITI". Elles sont été posées sur le bord postérieur de la patte antérieure droite, dans la plupart des cas au moment de la ponte ou après celle-ci. Les mensurations relevées sur chaque animal marqué ont été la longueur et la largeur de la dossière mesurées au compas ; étaient également notés le lieu de la rencontre et le nombre d'oeufs pondus lorsque cette observation était possible (Tableau N°1 Figure n°1).

86
85

N°	Sexe	Date	Longueur écaille/longue	Long	Larg	Date de renseignés	Notes et autres
2201	F	08/02/83	OTIE OIA L 96	75.5	07/02		118
2202	F	10/02/83					
2203	F	11/02/83					
2204	F	12/02/83					
2210	F	12/02/83	PAPAI	97.5	78		
2211	F	12/02/83		94	74.5		
2212	F			98	99		
2213	F			98.5	62.5		
2214	F	13/02/83		93	72.5		
2215	F	14/02/83		100	75		86
2216	F	14/02/83	HONU L 93	68			
2217	F	17/02/83	OTIE OIA L 93	69			95
2218	F	17/02/83	HONU	100	69		
2219	F	17/02/83	HONU			(non marqué)	90
2301	F	17/10/83	OTIE OIA	96	74		
2302	F		HONU	98.5	77.5		
2303	F		HONU	95	75.5		
2304	F	18/10/83	OTIE OIA	98	74.8	20/10 01/11	111/105
2305	F	20/10/83	HONU	91	70.2	21/10 21/12 04/01	98
2306	F	21/10/83		90.2	70.2		114
2307	F			95.5	73.5		
2308	F	22/10/83		97	76		
2309	F			94	75		
2310	F		OTIE OIA	103	80.5	23/10	
2312	F	24/10/83	HONU	102.5	74.5	05/11	
2313	F	25/10/83		97	75		132
2315	F			97	75		80
2316	F			100.5	75	26/10	
2319	F			97	73.5	26/10	
2320	F		OTIE OIA	92	72		
2323	F	26/10/83	HONU	98	74		37
2325	F			99.5	76.5		
2326	F			101.5	78.5		
2327	F	01/11/83	OTIE OIA	105	75		
2328	F	26/12/83	HONU	102	78		99
2329	F	31/12/83		96	75	20/12	
2330	F	31/12/83		96	75		
2331	F	02/01/84	OTIE OIA	95	73	(non marqué)	
2332	F	06/01/84	HONU	96	74		
2333	F	04/01/84					
2334	F	05/01/84	OTIE OIA	87	64		

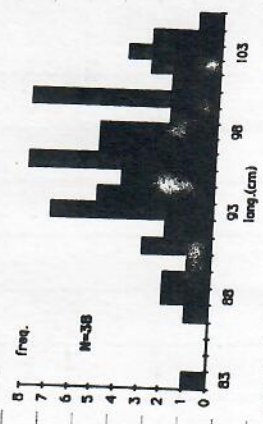


Figure n° 1 : Répartition des longueurs des dossières des femelles mesurées à Scilly en 1983 et 1984.

(40)

Resolution No. 71-209 dated 23 December 1971 on the control of
MARINE TURTLE (Chelonia mydas) FISHING IN THE TERRITORY OF FRENCH POLYNESIA

Article 1. All fishing of marine turtles (*Chelonia mydas*) whose carapace is under 65 cm in length is prohibited in the whole territory of French Polynesia.

Article 2. The capture, on land, of regulation size turtles is prohibited between 1 November and 31 January.

Article 3. The capture, at sea, of regulation size turtles is prohibited between 1 June and 31 January.

Article 4. Turtle concentration grounds are open to fishing according to a quota allotted to each zone and fixed by Council of Government decree on proposal of the head of the Fisheries Department.

Article 5. The holding of live turtles for more than 10 days is only permitted in a fish pond fitted with a sun shade. Live turtles may only be transported if excluded from the sun and provided they are not ill-treated in such a way as to cause unnecessary suffering.

Article 6. The gathering of mature turtle eggs on land is prohibited.

Article 7. Permits for the capture of turtles of all sizes and for harvesting of mature eggs may be granted for scientific research purposes by the head of the Fisheries Department.

Article 8. Slaughtering of turtles shall be carried out in good, sanitary conditions and especially away from flies, dust and any polluting or infectious matter.

Article 9. The sale of sea turtles is prohibited throughout French Polynesia.

Article 10. Anyone found to have collected mature eggs on land without permission and anyone who sells live whole turtles or turtle flesh shall be punished in accordance with the scale of sentences provided in Decree No. 2792/AA dated 24 October 1968 under the fifth category of offence.

Anyone who fishes turtles of non regulation size during the open fishing season or female turtles, on land, which have not finished laying their eggs will be punished according to the scale of sentences provided in Decree No. 2792/AA dated 24 October 1968 under the fourth category of offence. Anyone who fishes turtles during the closed fishing season will be punished according to the scale of sentences provided by Decree No. 2792/AA under the third category of offence.

Anyone who fails to comply with any other provision covered by this Resolution shall be punished according to the scale of sentences provided by Decree No. 2792/AA dated 24 October 1968 under the second category of offences.

Article 11. This Resolution is adapted for implementation by all concerned.

Philippine Soc
 "400", 1991

Sally Atell

FIFTY KILOMETERS west of Bora Bora lies Maupiti, beyond that, only crumbs of the Society archipelago—Maupihaa, Manuae, Motu One.

Maupiti is a rock inhabited by 700 people, and ringed by a reef with only one pass, a channel so dangerous that the freighter *Messia* has wrecked twice in its violent currents, once with the loss of 15 lives.

For many years this island was left to the white seabirds that constantly circle its central massif, but an airstrip was opened in 1975. Still, few tourists have come to Maupiti. There are no hotels, no running water, nothing to buy. It takes only three hours to walk around the island, and people still wave and call "*Te ora no—Health to you!*"

I remember simple pleasures from Maupiti: washing with buckets of rainwater in

The Society Islands, Sisters of the Wind

867

Pat. Geo. 6/79

Back at the "village," the eggs safely delivered to Etern, we turned our attention to Roo's turtle-conservation program. In the lagoon shallows more than a hundred baby turtles are kept in floating cages as part of a turtle-propagation idea begun by Roo several years before. The plan is roughly this: for every turtle a native raises to maturity and sets free, he is allowed to send another away to the Papeete market to be sold and credited to his account. As all natives participate in the scheme, all share equally in the sales.

At turtle time (only in November, Herr Luckner notwithstanding) men hide along the outer beach night after night and wait for mother turtles to clamber in over the reef. Sometimes they wait two weeks without seeing one, sometimes they spot a dozen in their first week's vigil. Always their job is to lie completely hidden until eggs have been laid, for the eggs are the important thing, and killing the female turtle is rarely attempted.

Eggleston - 1953
 Tahiti - Voyage thru
 Paradise

MORNING

French Polynesia

French Polynesia includes several far-flung archipelagoes, including the Society Islands (Isles de la Société), the Marquesas (Iles Marquises), the Tuamotu Islands (Archipel des Tuamotu-Gambier), the Austral Islands (Iles Austral), and Rapa. The most commonly encountered turtle in French Polynesia is the green; the hawksbill is reported to be almost extinct, and other species are unreported.

Society Islands

Green turtles are reasonably plentiful in the Society Islands. The principal nesting islands, as in Micronesia, are uninhabited or only seasonably inhabited by man. One such island is Mopelia, locally renowned for turtle nesting. According to Eggleston (1953) and Legand (1950), the peak of the nesting season is around November. Nevertheless, by continental standards the nesting colony is small; it is considered a good week in which a dozen turtles nest. Parsons comments on some locally initiated conservation measures that have taken place, including a program of protection of the young turtles and their eggs. Regulations allow the local people to "head start" the turtles in corrals in the lagoon, and to send a turtle to the Papeete Market for each one they release.

Hirth (1971) gives the following information for turtles in the Society Islands: The most common sea turtle in the area is the green turtle (French: Tortue; Tahitian: Honu). One of the principal nesting grounds is Scilly. Other important nesting sites are Mopelia, Bellinghausen, Tupai, and some of the Tuamotu atolls. The peak nesting season in Scilly, Mopelia, Bellinghausen, and Tupai is October through December. Reports indicate that some turtles can be found throughout the year on Scilly. The hawksbill turtle is sometimes taken by fishermen. There is 1 authentic record of a leatherback caught in a seine. On 24 September, the consultant counted 20 green turtles in the water around Mopelia (but there were no tracks on the beach), and 42 around Scilly, including 12 in a village kraal. He also noticed fresh tracks and nests on Motu Honu (Islet of Scilly).

Many males and some gravid females are speared as they mate off the nesting beaches on the atolls. Tahitian fishermen report a sex ratio in favor of males. The turtles sold in Papeete market in September were mostly males. Green turtle meat is considered a delicacy and sells for about \$3 per kg in the Papeete market but there is no market for eggs. A few cured shells are sold in tourist shops at \$25 each but the demand is

insignificant.

There are no regulations in French Polynesia concerning marine turtles. NOT TRUE

Stomachs examined by the consultant were chiefly empty but a few contained a little green algae and one harbored a long piece of plastic. During his limited survey, the consultant did not find any extensive algae beds or grass flats.

Fisheries Department records indicate that between 1953 and 1967 from 24 (1954) to 262 (1962) turtles caught at Scilly were sold annually in the Papeete market. NOT TRUE

Further information on green turtles in the Society Islands was provided by Anon (1979). This paper reports that the principal nesting island, Scilly, was declared a "protected area" on 28 July 1971, with a family appointed to watch over the nesting turtles. Nesting takes place primarily from September to December, but with significant year-round nesting. There is significant predation of hatchlings by frigate birds (by day) and hermit crabs (by night). NOT TRUE

The Scilly green turtle breeding colony was studied and tagged intensively in 1972 and 1973 and, after several years' hiatus, operations were resumed in 1979. 364 female turtles were tagged and measured in 1972, and 42 more in 1979. The population has dwindled considerably in recent decades; only 20 to 30 years ago, it was reported that 100 to 150 turtles could be turned in a single night. The fact that such numbers not only could be, but were, turned resulted in a decline to the point where today about 20 nest on a typical night on the islet of Motu Rahi, 5 to 6 on Motu Honu, and 8 or 9 throughout the rest of the atoll. It was also reported that, with the decline in numbers, average size of the turtles had declined, carapace lengths now typically lying between 93 and 97 cm, with the maximum 106 cm. Maximum weight was now 175 kg although a few years earlier, turtles weighing over 200 kg were supposed to have existed. NO 1991

These weights, although not so mentioned in the report, are unusually high for Pacific green turtles, especially when remembering that the green turtles nesting on the mainland Pacific coast of Mexico at Colola, Michoacan, average only 77.32 cm and 57.36 kg (females) and 72.68 cm and 43.19 kg (males) (Cliff-ton, unpublished data). The rather large size may well correlate with the extensive transoceanic migrations of this population. In the Atlantic, the transoceanic migratory green turtles of the Brazil-Ascension Colony are among the largest known anywhere in the world. Similarly, some extensive migrations to points hundreds or thousands of kilometers to the west have recently been reported for the Scilly green turtles. These recaptures of tagged turtles (Anonymous 1979), are summarized in Table 2. It should be noted that the turtles were kept in captivity for up to 4 months before re-

Table 2. Recaptures of green turtles (*Chelonia mydas*) tagged on Scilly Island, Society Islands, French Polynesia

Number	Sex	Carapace length	Tagging date	Recapture date	Location of recapture
1	F	101 cm	30 Apr. 1972	9 Aug. 1972	Vavau Is., Tonga
2	F	102 cm	30 Apr. 1972	26 Jul. 1972	Rabi, Fiji
3	F	93 cm	30 Apr. 1972	14 Sept. 1973	Maskeline Is. (New-Hebrides) Vanuatu
4	F	99 cm	5 Dec. 1972	15 Jan. 1975	New Caledonia
5	F	88 cm	5 Dec. 1972	Jul. 1974	Malekula, New-Hebrides Vanuatu
6	F	86 cm	5 Dec. 1972	15 May 1975	Baie de Gomen, New Caledonia
7	F	98 cm	5 Dec. 1972	Oct. 1973	Anatom, New-Hebrides Vanuatu
8	M	103 cm	5 Dec. 1972	3 Oct. 1974	Kandavu Is., Fiji
9	F	102 cm	5 Dec. 1972	15 Oct. 1974	Kandavu Is., Fiji
10	M	102 cm	5 Dec. 1972	Aug. 1974	Druadua Is., Fiji
	F	95	FEB 1973	JUNE 73	Fiji (SUVA)
	F	88	FEB 1973	JUNE 73	SWALLIS IS.

lease. They were fed on green plants during captivity and released in the lagoon.

The recapture of 2 male turtles at great distances is very interesting. These and D. Green's recaptures of male Galapagos green turtles in mainland South America are the only recorded instances of long-distance migrations by male turtles.

Similarly, the reports of a male and female, released on the same day and in the same place, and recaptured almost 2 years later within a few days of each other at Kandavu Island, Fiji, is of great interest, although no definitive interpretation can be given at this time.

All single tagged - Males

1972 - 4/72 = 67 females
 12/72 = 180 females, 13 males = 181
 248 ♀ + 07 = 248 TOTAL

49 TAG NOS. MISSING 235 ♀ = 248 of which there have been 12 recoveries (above)

1973 - 2/73 = 58 females 329

1974 12/74 = 24 females
 8 a TOTAL ♀ (NO MALE RECOVERIES)

BREEDING EVALUATION TRIALS IN THE GREEN TURTLE
CHELONIA MYDAS (LINNE) ON SCILLY ATOLL
 (Leeward Islands, French Polynesia)
 DURING THE BREEDING SEASONS 1982-1983 AND 1983-1984

ESSAI D'EVALUATION DES PONTES DE LA TORTUE VERTE
CHELONIA MYDAS (LINNE) SUR L'ATOLL DE SCILLY
 (Iles-sous-le-Vent, Polynésie française)
 AU COURS DES SAISONS 1982-1983 ET 1983-1984

A. LEBEAU

Centre Océanologique du Pacifique - BP 7004 Taravao, TAHITI, POLYNESIE FRANCAISE

ABSTRACT

Three field trips to Scilly Atoll (Leeward Islands, French Polynesia), allowed estimates to be made of the frequency of layings by *Chelonia mydas* during the breeding seasons of 1982-83 and 1983-84. These were calculated at 7/800; the number of eggs produced being in the order of 70-80,000, with a probable emergence rate approaching 80-90%. The number of females laying during these periods is evaluated at approximately 300/400 per season.

Other observations conducted on the green turtle at Scilly are similarly reported. The question of the status of *Chelonia mydas* and of other marine turtles frequenting Polynesian waters is tackled, particularly in terms of their conservation and protection.

Finally, the emphasis is placed on the necessity to state precisely the figures put forward, and to extend the assessment and biological study to other French Polynesian islands.

Tuamotu Archipelago

The scattered literature suggests that green turtles occur throughout the Tuamotu Archipelago. Beaglehole and Beaglehole (1938) reported on green turtles at Pukapuka Island (not to be confused with Pukapuka Island in the Cook Islands). The turtles there are commonly taken on the beaches or are seized in the lagoon by swimmers, who tie a rope around a foreflipper and pull the turtle ashore. At Pukapuka, a turtle is considered the property of the entire community, as is common in many unspoiled Pacific Island cultures, and a public feast is held when a turtle is brought ashore. One native offered the Beagleholes the observation that "it is only in recent times, since people have taken eggs of turtles from the nest, that turtles have been dying out," although in many other areas of the Pacific the eggs are sought even more assiduously than the turtle itself, and apparently always have been.

More recent information from Manihi atoll, also in the Tuamotus, by Hirth (1971), suggests that a fairly sophisticated turtle-ranching program has been developed by local people. Turtle eggs are collected and hatched, and the young turtles are raised in village kraals for later consumption. The turtles, fed on coconut meat and fish, reach a length of 50 to 71 cm in

South Pacific

3 to 3.5 years—a much more rapid rate of growth than seems to operate in the wild.

Very few data are available on turtles in other parts of French Polynesia. Turtles are apparently rare in the Marquesas, where capture of a turtle is now so infrequent that it is considered a special occasion. The Marquesas, Austral, and Gambier Islands all have rocky coasts with very few beaches, and turtle stocks appear to be very limited, although a hawksbill was reported from the southern Marquesas in 1978, and another in 1979.

"FRENCH POLYNESIA"
from 1992 World Almanac

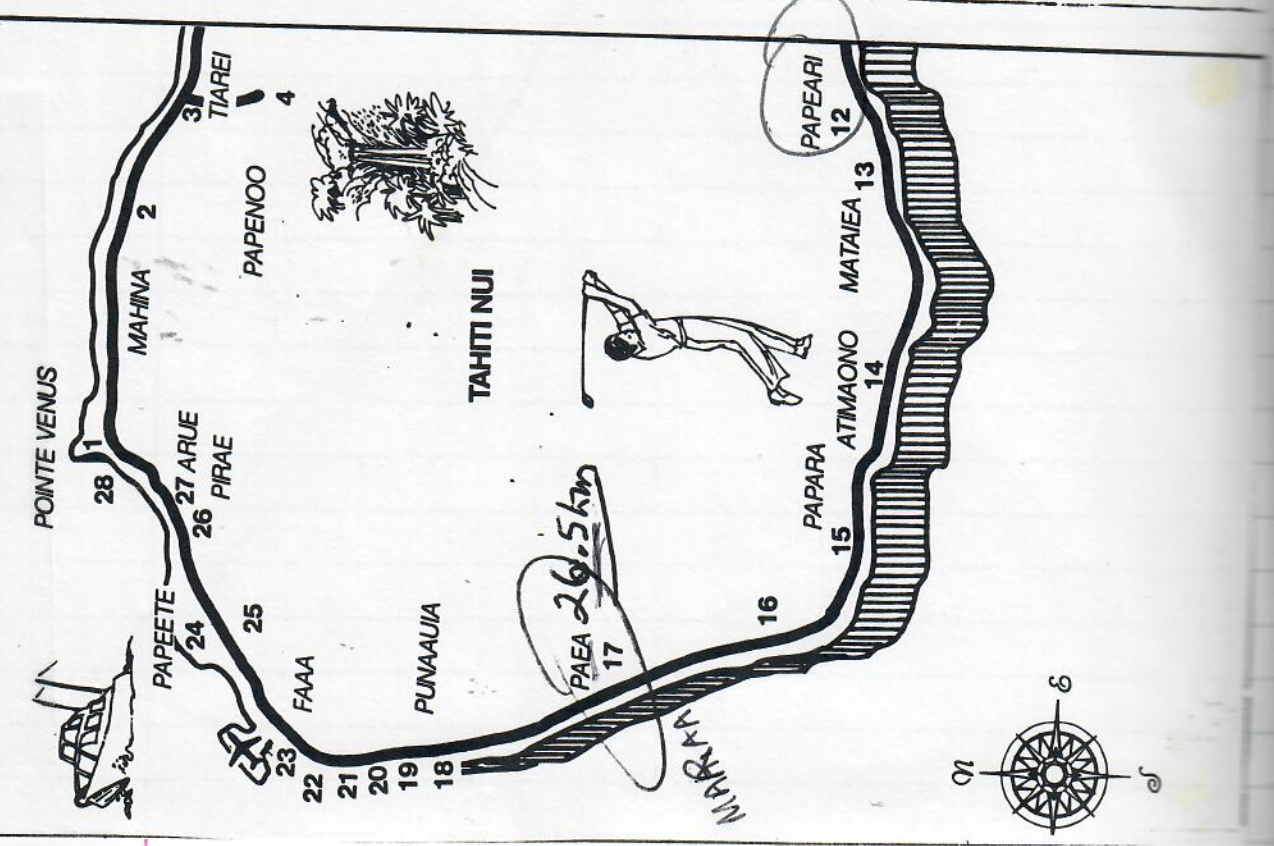
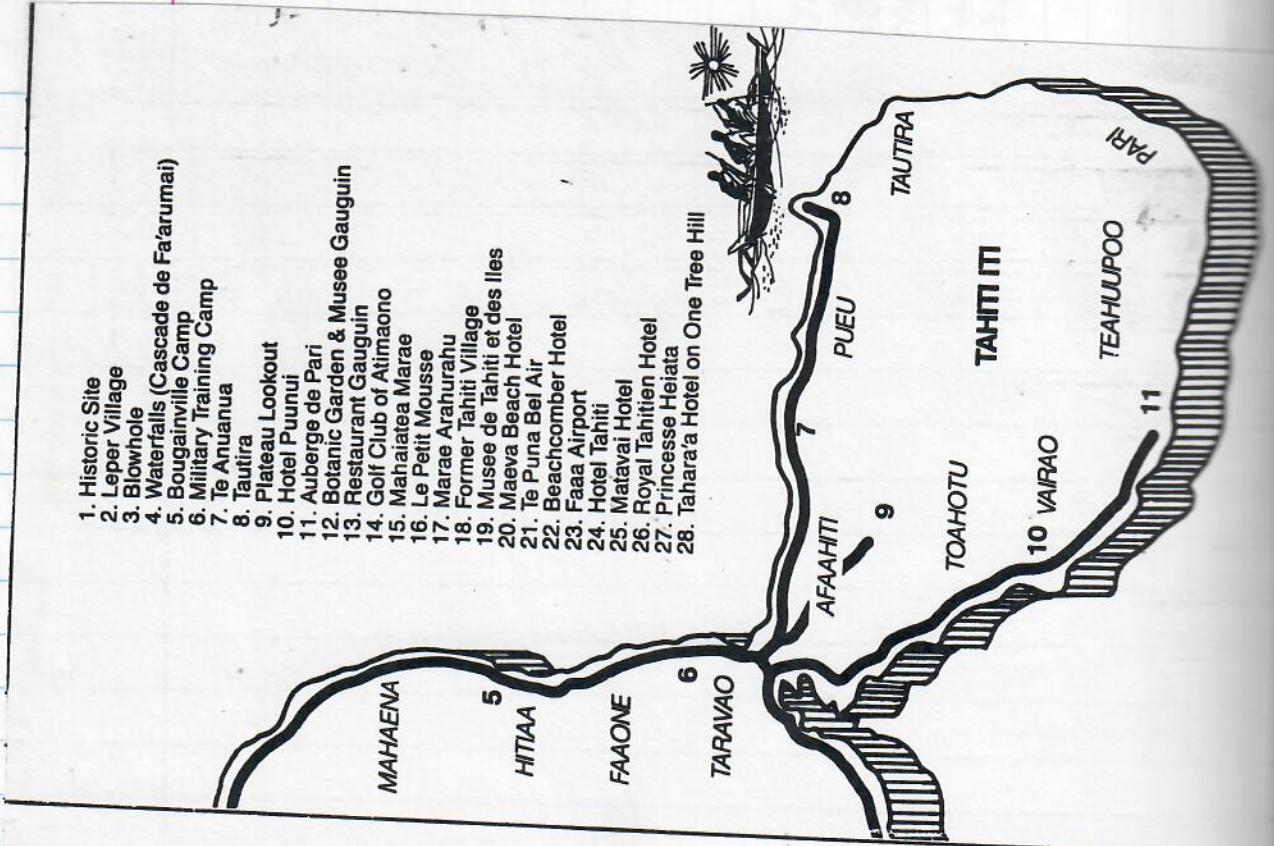
130 ISLANDS (1544 Sq. miles)
188,000 people (> 50% on TAHITI)
5 ISLAND GROUPS = 1) MARQUESAS 2) TUAMOTU
3) GAMBIEE 4) AUSTRALS 5) SOCIETY

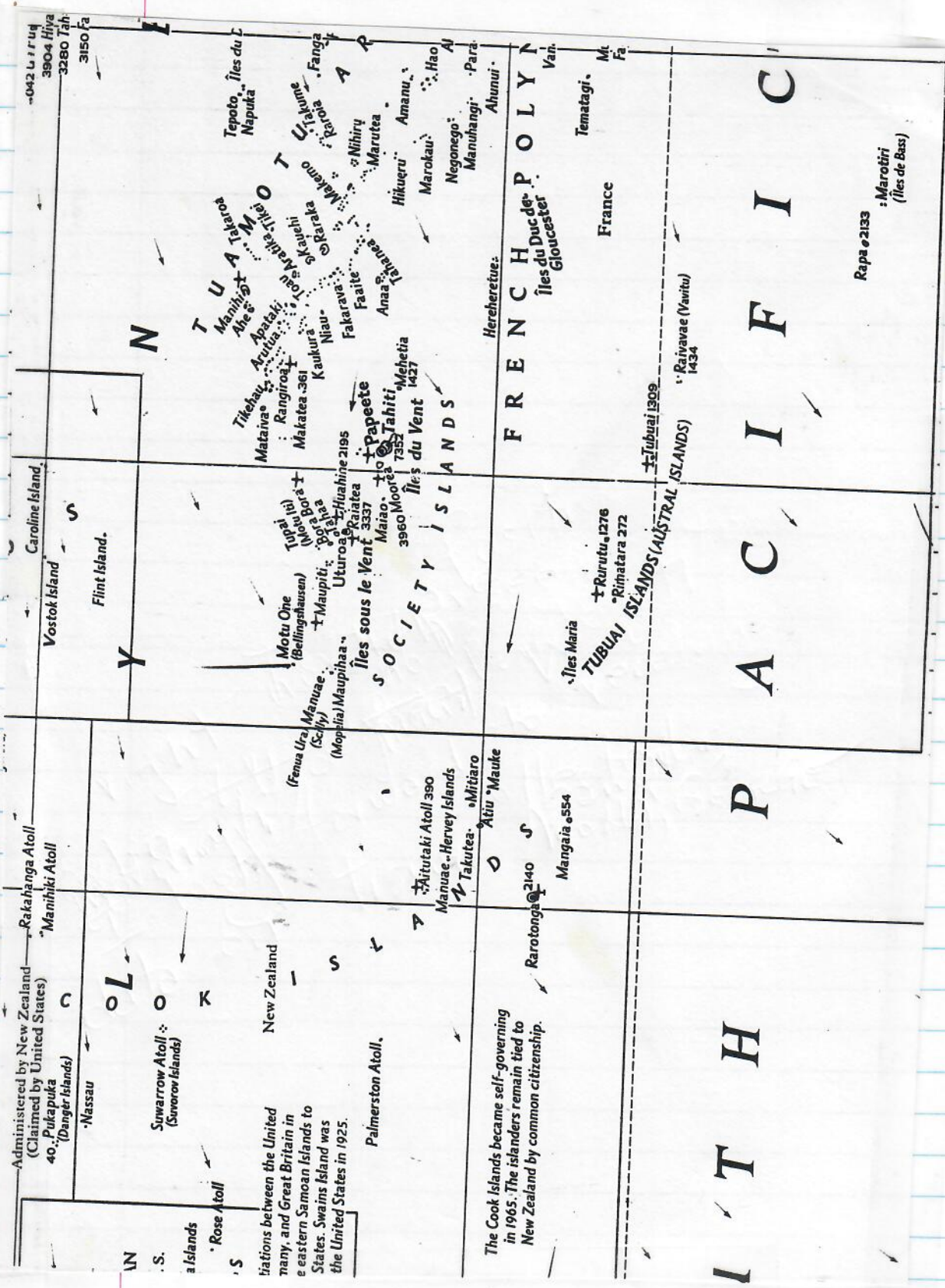
~~AUSTRALS~~

French Polynesia \,pɑl-ə-'ne-zhɑ-'shə/ or Fr. **Polynésie française** \pɑl-ə-na-ze-'frɑ̃-'sez-'saz/; formerly **French Oceania** \,o-'she-'an-ē-ə, -'ā-ne-ə/ or Fr. **Établissements (français) de l'Océanie** \ā-'tɑb-'lɛ-'smɑ-'(frɑ̃-'se)-dɑ-'lō-sā-ə-né/. French overseas territory in South Pacific Ocean, comprising **Marquesas**, **Society**, and **Tubuai Is.** and **Tuamotu Archipelago**; 1261 sq. mi.; pop. (1977c) 137,382; * Papeete on Tahiti, Society Is.; covers wide area, approx. from 7°S to 29°S and 132°W to 156°W; exports include phosphates, copra, vanilla.

History: Tahiti explored by Louis de Bougainville 1766 and Marquesas visited by French missionaries in late 18th cent.; Oceania visited by Dumont d'Urville 1837-40; annexation of Marquesas and protection of Society group accomplished by French in 1842 and remainder taken over by close of 19th cent.; placed under single administration 1903; administration reorganized 1946; French nuclear tests conducted in region 1966 and 1968.

15440





Administered by New Zealand
(Claimed by United States)
40: Pukapuka
(Danger Islands)
Nassau

Suvarrow Atoll
(Suvarrow Islands)

Rose Atoll

Palmerston Atoll.

The Cook Islands became self-governing in 1965. The islanders remain tied to New Zealand by common citizenship.

Rarotonga 2140 S
Mangaia 554

Manuae, Hervey Islands
Takutea, Mitiano

Aitutaki Atoll 390
Manuae, Hervey Islands
Takutea, Mitiano

Manuae (Sally)
(Mopelia) Maupihaa
Uturoa, Huahine 2195
Papeete
Tahiti
Moorea 7352
Iles du Vent 1427
Maiao 3960

Motu One (Bellingshausen)
Maupiti
Tupai (I)
Pora Pora
Raiaatea
Rangiroa
Makatea 361
Kaukura
Niau
Fakarua
Faita
Anaa
Taharua
Hikueru
Amanu
Marokau
Negonego
Manuhangi
Parahi
Ahuunui
Hereheretue

Heretue
FRENCH POLYN
Iles du Duc de Gloucester
Tematagi
Mt Fa
France
Rapa 2133
Marotiri (Iles de Bass)

Caroline Island
Flint Island.

Vostok Island

Tubuai Islands (Austral Islands)
Raiatea 1276
Rimatara 272
Iles Maria

Tubuai 1309
Raiatea 1434

French Polynesia

French Polynesia

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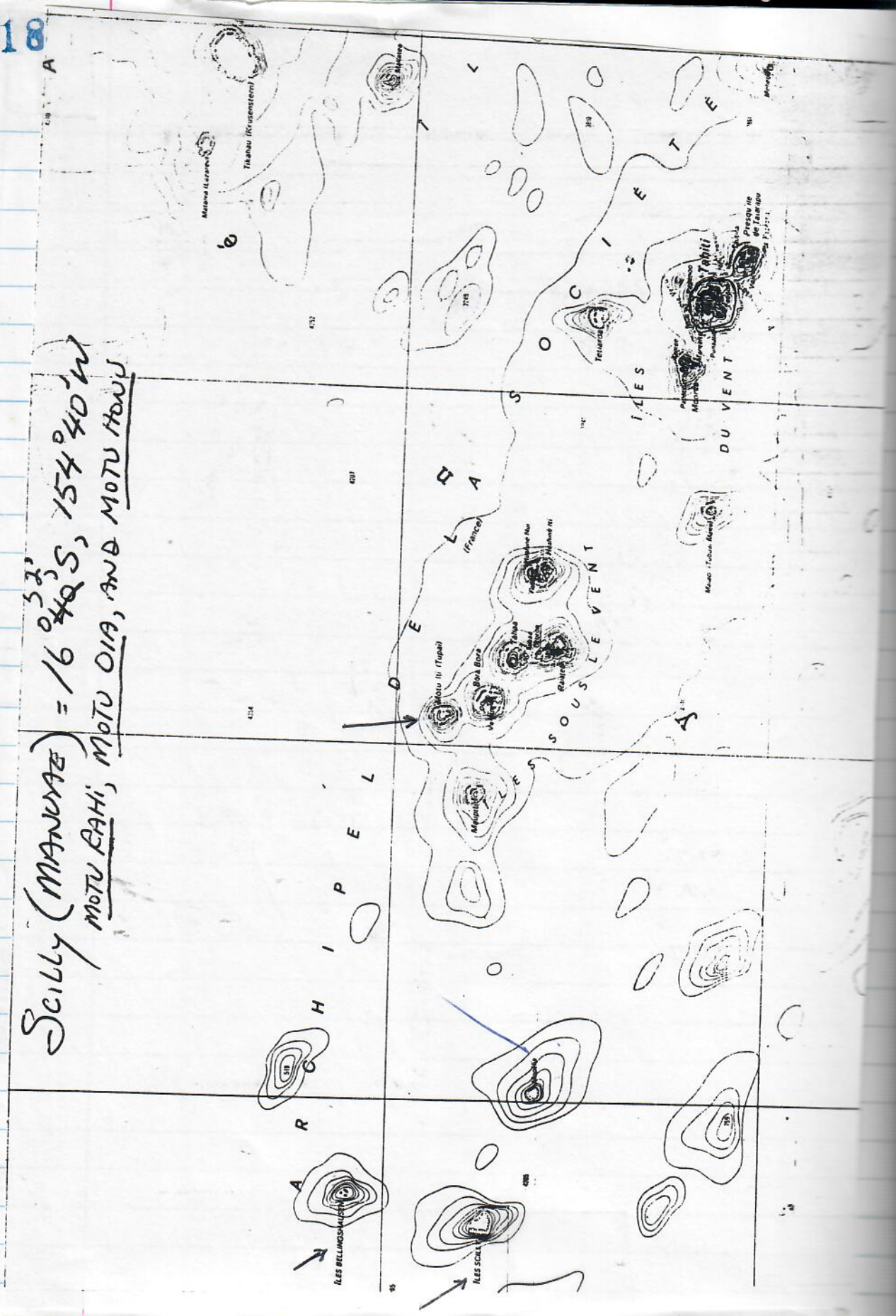
French Polynesia

French Polynesia

French Polynesia

French Polynesia

Scilly (MANUMAE) = 16° 42' S, 154° 40' W
MOTU RAHI, MOTU OIA, AND MOTU HOUJ



ARROW
DRAWN BY
POE MIRI

119

TUPAI

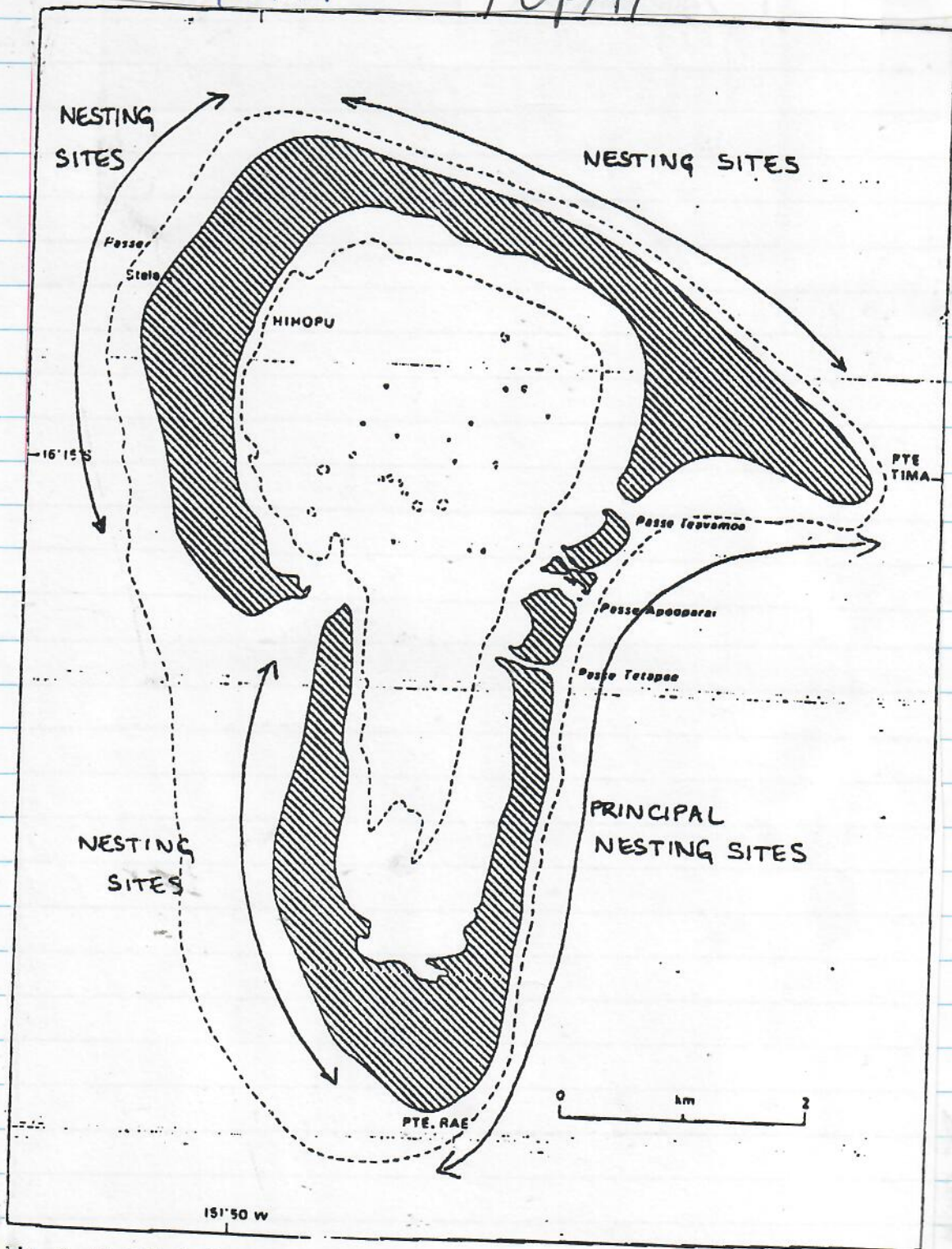


Fig. 2. L'atoll de Tupai

12/13/96

AIR TAHITI

CARTE D'ACCES A BORD / 搭乗券
TITETI TOMORAA I ROTO I TE MANUREVA / BOARDING PASS

PRIERE DE CONSERVER CETTE CARTE PENDANT LE VOL
 A TAPEA MAITAI I TEIE TITETI TE TAIME REVA RAA
 PLEASE KEEP THIS CARD DURING THE FLIGHT
 この搭乗券は目的地まで紛失なさらないようお持ちください

VOL/DATE **464**

DE **B** A **P**
 FROM **B** TO **P**

HINANO
 THE BEER OF TAHITI

I will take the first two passes you received for this example. This is the Dispose data (DS). The location, if there was one for that pass, is always shown in the first line of data. Below, I will explain what each of the field represents.

```
01092 19580 7 2 J 1 1997-03-26 13:21:30 30.203 187.885 0.000 401649672
1997-03-26 13:17:11 1 2805 2805
1997-03-26 13:21:21 2 2806 2806
1997-03-26 13:22:32 1 2807 2807
1997-03-26 13:23:35 1 2808 2808
1997-03-26 13:24:25 1 2809 2809
1997-03-26 13:25:48 1 2810 2810
```

Line 1:

01092 = program number
 19580 = platform number (turtle number)
 7 = number of lines (shown in this message)
 2 = number of sensors defined in our system
 J = satellite identifier
 1 = location class
 1997-03-26 = day of location
 13:21:30 = time of location
 30.203 = latitude (this would be North)
 187.885 = longitude (this would be West)
 0.000 = defined altitude
 401649672 = calculated frequency

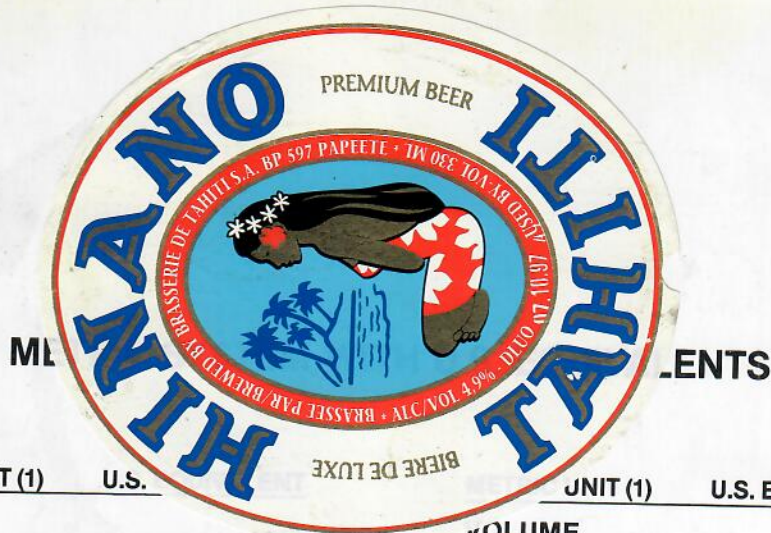
Line 2-7 = data collection information (day of data collection, time of data collection, number of identical messages received, then the sensors data values)

```
01092 19580 2 2 D
1997-03-26 19:44:20 1 4197 4193
```

The second pass shown here did not report a location, so the 1st line only shows: program number, platform number, number of lines, number of sensors defined, and satellite identifier. The second line shows the data collection information (same as above).

Hi George,

In my last message, I said that 187.885 was a West longitude. Well, I forgot to tell you that you need to subtract it from 360 to get the West value. For example, $360 - 187.885 = 172.115$ West. Got it? Anything under 180 is East, anything over 180, you need to subtract it from 360. Okay, and for the latitude, positive values are North and negative values are South. Sorry for the confusion.



METRIC UNIT (1) U.S. UNIT (1) U.S. EQUIVALENT

LENGTH

millimeter	(mm)	0.04 inches
centimeter	(cm)	0.39 inches
decimeter	(dm)	3.94 inches
meter	(m)	39.37 inches
decameter	(Dm)	32.81 feet
hectometer	(hm)	109.36 yards
kilometer	(km)	0.62 miles
myriameter		6.2 miles

AREA

square centimeter	(cm ²)	0.155 sq. inches
square meter	(m ²)	1.196 sq. yards
are	(a)	119.60 sq. yards
hectare		
sq. kilometer		

WEIGHT

milligram	
centigram	
decigram	
gram	
decagram	
hectogram	
kilogram	
quintal	
metric ton	

VOLUME

cubic centimeter	(cm ³)	0.061 cubic inches
cubic decimeter	(dm ³)	0.0353 cubic feet
cubic meter	(m ³)	1.31 cubic yards
cubic decameter	(Dm ³)	13.10 cubic yards

CAPACITY, CUBIC

milliliter	(ml)	0.06 cubic inches
centiliter	(cl)	0.6 cubic inches
deciliter	(dl)	6.1 cubic inches
liter	(l)	61.02 cubic inches
decaliter	(Dl)	0.35 cubic feet
hectoliter	(hl)	3.53 cubic feet
kiloliter		1.31 cubic yards



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Fabriqué par
PASSAIN Gérard
P.K. 18 PUNAAUIA

100cl.

TEL. : 58.35.09



INGREDIENTS : Eau ; Sucre (85 g/l) ; Concentré de jus d'orange ;
Conservateur E 211 ; Benzoate de sodium. TENIR AU FRAIS

	0.18 pints
	0.908 quarts
	1.14 pecks
	2.84 bushels
LIQUID	
	0.27 fluidrams
	0.338 fluidounces
	0.21 pints
	1.057 quarts
	2.64 gallons

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