

Tahiti

TAHITI

FOLDER 1990s

G. H. BALAZS

2

# INVITATION

***La ferme Corail de la REUNION ;  
un scandale, une illégalité !***

*Derniers développements, dernières informations, par Didier DERAND,  
animateur à la Réunion du COLLECTIF CONTRE LA FERME CORAIL.*

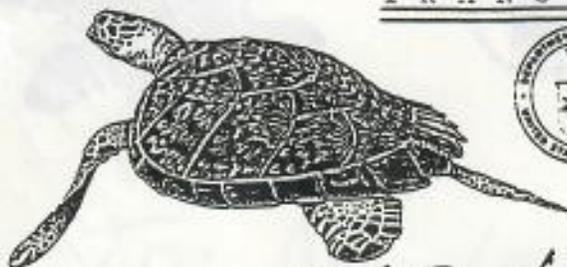
**Jeudi 16 Juin ( 18 h.) Muséum d'Histoire Naturelle  
Salle d'entomologie, 45 Rue Buffon**

*Présentation avec diapositives et vidéo, et la participation de nombreuses  
associations et personnalités qui se battent depuis des années pour que cesse  
l'exploitation des tortues de mer protégées, à la Réunion (France Nature  
Environnement, S.P.A., Traffic-Europe, W.W.F France, S.H.F., Fondation  
BARDOT, ASPAS, SOPTOM, IFAW, etc...)*

**Merci de nous rejoindre le jeudi 16 Juin ( diapositives et documents pour les  
journalistes). Informations : Dupré 43 08 88 48 / Devaux 16-94 78 26 41.**



TRANSMITTAL SHEET



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL MARINE FISHERIES SERVICE  
Southwest Fisheries Center Honolulu Laboratory  
2570 Dole St. • Honolulu, Hawaii 96822-2396

Commercial: (808) 943-1221  
Telefax: (808) 943-1290

TELEFAX FOR: J-P LANDRET

DATE: 5 MAY 94

FROM: GEORGE BALAZS

TELEPHONE EXT: \_\_\_\_\_

NUMBER OF SHEETS TRANSMITTED (including this page) ONE

Dear Jean-Pierre:

I have just recently received a fax from the South Pacific Commission relaying information about the capture (and consumption) of a turtle with our tag S197. The turtle was taken on 4 April 1994 at Baie de Upi, I'lle des Pins in the south of New Caledonia. The "finders" name is listed as Mme Marie Douperre, but no address has been provided for her. There is no information at all about the size of the turtle. The information has been relayed by Tony Lewis of SPC, but currently he is on 5 weeks vacation away from his office.

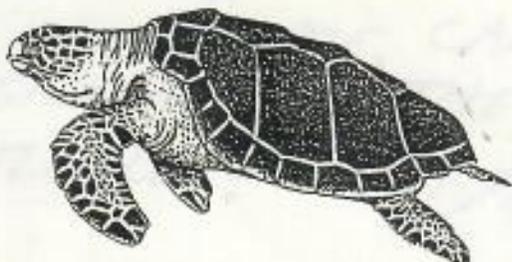
As you may recall, tag S197 was one of the series of tags I left with the residents of Motu-One in October 1991 (tags S139 through S250). Apparently they were able to tag some turtles at Motu-One after we left, but before they had to be evacuated in December 1991 due to Hurricane Wasa. I assume that the remainder of the tags were lost in the storm. Do you have any information about this? Perhaps the tags we're lost at Motu-One, and were returned to you in Tahiti and used elsewhere. Please clarify. Many thanks for any help you can offer.

*Bellinghshansen*  
S197/S198  
MOTU  
ONE  
CCL# 101  
11/91

Also,

- Have you heard anything back from Papua New Guinea regarding the carapace measurement of your tagged turtle X732?
- Do you still have turtles in your pens at Taravao? Do you have any small guest facilities at your research station in Taravao where I could stay if I visit Tahiti for a short time again?
- Are you still in contact with Philippe? If so, is it still possible that the bones from Scilly and Motu-One could be shipped to me?

Best Regards- I am appreciative of your assistance.



South Pacific Commission  
FAX Number (687) 26.38.18  
Noumea, New Caledonia



Commission du Pacifique Sud  
Numéro de FAX (687) 26.38.18  
Nouméa (Nouvelle-Calédonie)

### FAX MESSAGE

FAX NO.: 1 808 236 7443

NO. OF PAGES: 1 ENCLOSURE THIS ONE

TO: Dr. George Balazs, HIMB, University of Hawaii.

FROM: A.D.Lewis, SPC, Noumea.

DATE: 6 April, 1994

S197

FILE: PRO 93/3/30

SUBJECT: Turtle tag return - New Caledonia.

4/5/94

#### MESSAGE:

Dear George,

I have been notified today of the recapture (and presumably consumption) of one of your tagged turtles here in New Caledonia, at the Isle of Pines, details as below :-

Date: 5th April 1994  
Location: Baie de Upi (2297S, 16732E), l'île des Pins.  
Finder: Mme Marie Douperre  
Tag No. S197

I have asked the finder to send the tag to me, with further details if possible. Grateful if you could send details of release, plus any reward or handout that you normally send.

With best wishes,

A.D.Lewis,  
Oceanic Fisheries Coordinator.

MOTU ONE  
(Bellingshausen)

10/91  
S139-  
S250  
MOTU-ONE

S197/5198  
~~MOTU~~ CCL = 101cm  
11/91

10/91  
Sally  
S273-  
S400  
Rene  
Taputu

ECLOSERIE POLYVALENTE  
DE TARAVAO

E.V.A.A.M.

B.P. 7031  
TARAVAO - TAHITI  
Télécopie : (689) 57.70.56

Taravao, le 10 Mai 1994

NREF 9MEPT/JM/66

TELECOPIE

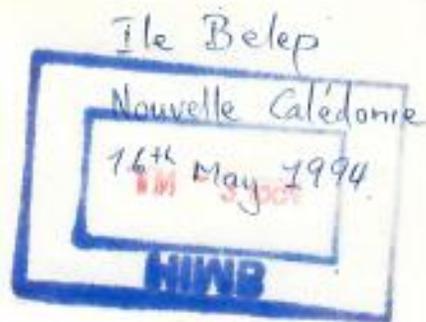
FROM: Jean Pierre LANDRET  
TO FAX MESSAGE N°: 001 (808) 943 12 90  
COMPAGNIE: NATIONAL MARINE FISHERIES  
ATTENTION: M. George BALAZS  
NB PAGES: 1  
REF:

- Dear George,
- Thank you for your fax of 05/05; I was in vacation for the day.
- I have not received any news from Papua New Guinea about the turtle X732.
- Philippe will be seen in Hanoahano and bring the turtle bones and stomach cut out of an Hawksbill Turtle (*Eretmochelys imbricata*) found dead in the lagoon of PIRAKI at Tahiti. It seems to be a female without eggs (P: 45, 3 kg; LL: 76 cm; CC: 07,0 cm).
- Philippe will answer to your other questions when he will meet you.

Best regards

Jean Pierre

Recaptured/harpooned  
27 APRIL 94 S318  
Balabio, N.C. S319



The Rector  
Write Himb University  
Hawaii 96744

10/28/91 S318, S319 CCL=99cm  
MOTU OIA NESTING  
By RENE TAPUTU

Dear Sir,

I am writing to inform you, that a turtle bearing the tags of Write Himb University Hawaii 96744 had been caught by Mr. THEAYOUEN Philippe a fisherman of the island of Belep of New-Caledonia.

The turtle was harpooned by a companion of T. Philippe on the 27<sup>th</sup> of April 1994 at 2:30 p.m. off the island of Balabio which is situated at the North East of New Caledonia.

The turtle was of 1.51m in length and 0.75m in width. With an estimated weight of 100-120 kg.

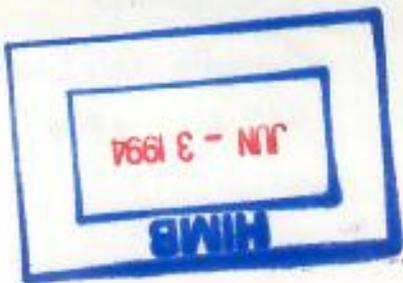
On the front left flipper, it had a tag with the initials S.318 and on the back left flipper a tag with the initials S.319. Both the tags carrying the University's address.

We regret having killed this turtle bearing your tags. Do receive our sincere apologies, if this turtle had been of a protected species, or for whatever reasons it had been tagged by the University.

You could contact Mr. THEAYOUEN at the above address or Rev. Father

KUMAR Sarwan writing on behalf of Mr. THEAYOUEN at the following address  
B.P. 10 Pouébo 98 224 Nouvelle Calédonie.

Yours faithfully  
Rev. KUMAR Sarwan.



2318  
2318  
2318

- check Motu one tagged list
- xerox for Tahiti book  
NIC recovery into
- xerox this letter  
+ find orig. data

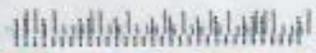
Left at Scilly  
10/91 = 5273-5400

Left at  
Motu one 10/91 =  
5139-5250



THE RECTOR  
WRITE HIMB UNIVERSITY  
HAWAII 96744

PAR AVION  
AIR MAIL



Philippe SUI  
c/o MUCB-ROEJ  
Fax 689 45 04 50  
Papete Tahiti  
French Polynesia

Papete le 10 mai, 1994

Dr. George BALAZS  
US Department of Commerce  
NMFS  
Southwest Fisheries Service  
Southwest Fisheries Center Honolulu Laboratory  
2500 Delo Street, Honolulu Hawaii 96822-2356

TELEX 808543 1250

Dear George,

I appreciate your invitation to the manta survey on Thursday 19 on Big Island. I accept your offer and I can tell you right now that I will not miss the opportunity to join your team, so you can make the reservation for this trip.

~~I will need diving gear~~ because I do not bring my equipment with me. I am also very interested in visiting your laboratory and I think that it will be possible on Tuesday from 11:00 to 12:00 during the conference.

Demond MCB/ROEJ on the way will also spend the next week and a half in Tahiti. This has given us the opportunity to visit the Ministry of Environment. We have also been able to visit the local administration (MFA). We have provided all the necessary information regarding the manta survey. We have also provided all the necessary information regarding the manta survey.

We are bringing the manta survey material to Moorea. We suggest that you (you) and a good job on behalf of the Ministry of Environment. Most of the tagging material were lost on Moorea and Scilly.

There is no more material in Tahiti. We have retained all of them on Scilly and kept only 50 bottles of 3.5 to 4.5 year old. As I told you, we are selling our manta's exception station at the main office of EYAAH in Papete for the cost of manta tagging. We are waiting for your answer. This is a good moment to talk with you directly on the manta survey.

  
Philippe SUI

*Lipana*

Need FAX  
WITES

c/o MR. MARTIN COEROLI  
689 450450

ECOLOGIE POLYVALENTE  
DE TARAVAO  
E.V.A.A.M.  
B.P. 7031  
TARAVAO - TAHITI  
Téléphone 28889 57 70 56

Tahiti, le 5 Mai 1994

NRIE. SUEPTDPLTNS16

TELECOPIE

FROM: Philippe SUI  
TO FAX MESSAGE N°: 001 689 450 450  
COMPAGNIE NATIONAL MARINE FISHERIES  
ATTENTION: M. George BALAZS  
NB PAGES: 1  
REF:

Dear Georges,

Thank you for your fax relayed the information about the capture of the turtle with the tag S177 in the lagoon south of New Caledonia.

I am working at this moment on the video documentary with Mr. Hans Andersen for the SPIEP and we are just talking about our tagging program and your turtle program here when I received your message.

I am glad to tell you that I will be in Honolulu from 13 to 20 May for the Prof Conference 1994 in the Sherman Hotel. I will bring the turtle tag with me and we can have some time to talk about the future of turtle in French Polynesia.

Best regards and see you soon in Honolulu.

m

Philippe SUI

You can FAX to the number 689 4504 50

CC Mr. Martin COEROLI



U. S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL MARINE FISHERIES SERVICE  
Southwest Fisheries Science Center Honolulu Laboratory  
2570 Dole St. • Honolulu, Hawaii 96822-2396  
(808)943-1221 • Fax: (808)943-1290

May 9, 1994

F/SWC2:

Dear Philippe:

It was indeed good to hear from you. I am happy to learn that you will be visiting Honolulu 13 to 20 May for the Pearl Conference at the Sheraton Waikiki Hotel.

I am already scheduled to travel to Kauai on 17 May, and to Kailua-Kona on 19 May, to conduct tagging of green turtles in coastal foraging pastures. If your conference schedule will allow you to travel with me on May 19th (Thursday), I am certain you will have an interesting and enjoyable time. We would depart Honolulu Airport at 630am, and return about 5pm. We will spend the day near the Mauna Lani Bay Hotel doing some snorkeling and netting of immature turtles. I will have about a dozen high school student assistants from the Hawaii Preparatory Academy to work with me. I cordially invite you to accompany me. I will cover all your airline and other travel expenses for the day.

If you are unable to go with me on 19 May, I will arrange to have lunch with you on 16, 18 or 20 May and, if your time permits, give you a short tour of our research laboratory. On 21 May I must leave for a meeting in Washington, D.C. on mitigation measures for longline fishery hooking of sea turtles by U.S. fleets. I must prepare for the meeting on 16, 18 and 20 May, hence I will not have as much free time to spend with you as I would prefer. Of course, I know you will be busy yourself with the pearl conference.

I hope that your video taping was successful. We are all anxious to see the completed educational documentary for the SPREP turtle program.

I will be interested to learn if you can obtain any information on tagged turtle S197, along with any of the other tags in that series that we left with Moko and his friends at Motu-One in October 1991.

If convenient, maybe you could bring a copy of the October 1991 Scilly video with you (if it was completed). I would like to have it duplicated while you are here, and promptly return it to you before you leave.

Looking forward to seeing you soon. A copy of my cites permit accompanies this fax. Best regards,



September 27, 1993

Mr. HAMJA ALI  
F/N USMAN ALI  
RAVI RAVI  
P.O. Box 277  
BA, FIJI

Dear Mr. Hamja Ali:

Thank you very much for your recent letter reporting the capture of a sea turtle in Ba area on 9/2/93 with our tag X735. We appreciate your taking the time to send us this important information.

The turtle was a young green turtle, Chelonia mydas, that had been raised in captivity in Tahiti and released during December 1991 at Scilly Atoll to the northwest of Tahiti. At the time of release the turtle weighed 12 kg (26.5 lbs) and measured 47 cm (18.5 inches) along the back of the upper shell.

I would be interested to know if the turtle was dead when caught in your fishing line, or was it alive? If it was alive, was it released back into the ocean? Could you estimate for me the length of the upper shell or weight? Did the turtle appear to be healthy? Were you fishing from a boat, or from shore?

As a small reward for your assistance, I am sending you a shirt with a sea turtle design. You will also be receiving a letter of appreciation and shirt from the South Pacific Regional Environmental Program (SPREP). I look forward to hearing from you again.

Sincerely,

George H. Balazs  
Zoologist

cc: Adrienne Farago, SPREP  
Suzie Geermans, SPREP  
Aisake Batibassaga, Fiji Fisheries Division

Laurie McKeon  
1404 Foothill Rd.  
Ojai, Ca. 93023

George H. Balazs  
National Marine Fisheries Service  
Honolulu, Hawaii 96822-2396

April 1, 1994

Dear George,

Many thanks for sending the materials. I got them from Craig and am enjoying "digging in" on the reading. Sorry we didn't connect while you were in the mainland.

I trust that your presentation in Tokyo went well and that you're happy to be back in Hawaii. Wish I could be in Punaluu next week! The monument plans sound wonderful and I look forward to seeing it the next time I visit.

Alan Bolton was kind enough to call last weekend. The world just keeps getting smaller... Helen Martins gave me a tour of the Institute when I was there. Meanwhile, several years ago, Alan met our friends, Jim and Pat, who live in Faial! I've passed on their phone number to him and I'm sure he'll call them the next time he is there. (He couldn't believe the sea conditions that I experienced swimming with the whales...that Atlantic is pretty nasty in the winter).

Speaking of ironies, I was most surprized to learn that you have worked in French Polynesia. I'd love to learn more about your research there as we have never seen turtles diving there but, most unfortunately, have been served turtle meat in private homes. I have been thinking about some ideas for a project there (specifically in the Australs or Tuamotus) re: turtle conservation and/or coral bleaching. I'd like to talk to you about this...its phone stuff so I'll call you.

Meanwhile, you asked about our Tahiti ties. We sailed there in 1973, spent 6 months exploring French Polynesia, returned several years later via the Australs (by yacht) and lived on the s.e. side of Tahiti for a year. During that time, my husband learned Tahitian and I tried, with limited success, to master French. I spent 5-6 hrs./day diving the reef in front of our house and have a collection of 100+ species of cypraeaes. Mostly, we just lived an idyllic life and got to know our Tahitian neighbors. That is how I ended up with a Tahitian goddaughter. Heinuui was just born last July so I'll be meeting her for the first time.

What do you make of the Scripps global warming proposal for underwater speakers in Monterey and Hawaii?? I'd be very interested in your opinion. I'll give you a call after April 6 and hope to catch you. Again, many thanks.

*Best Regards,  
Laurie*

REPUBLIQUE YVALENTINE  
DE L'ARABIE SAUDITE  
ROYAUME

BP 7000  
Riyadh 11161 SAUDIE ARABIE  
Téléphone : 011 966 11 511 1111  
TELEX : 96600

TELETYPE  
111111

FROM: J. P. Landre  
TO: FAX MESSAGE  
SUBJECT: ...  
ATTENTION: M. KASS  
NO PAGES: 2  
REF:

Dear Mr. ...

Very kind regards  
from the ...  
copy of the letter

...  
...

The letter X 774 ...  
dated ... 18 September 1992 ...

On 18 September 1992, the ...  
... and ...

... M. BALAZS

Yours ...



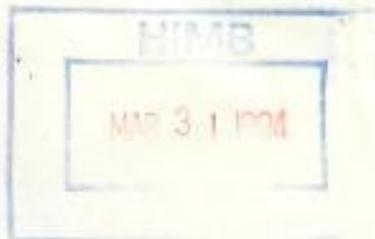
J.P. LANDRE

**United States  
Information  
Service**

Embassy of the United States of America  
P.O. 1492  
Port Moresby, Papua New Guinea

Telephone: (675) 21-1759  
Fax: (675) 21-4593

X-723



March 21, 1994

Hawaii Institute of Marine Biology  
University of Hawaii  
Honolulu, Hawaii 96744  
United States of America

To Whom It May Concern:

A sea turtle was recently netted in Papua New Guinea which was wearing a metal identification tag from the University of Hawaii, number X-723. The tag bears the inscription:

"WRITE HIMB  
UNIVERSITY OF  
HAWAII 96744"

We are enclosing some photographs of the turtle, taken on March 14, 1993, in Port Moresby, to aid in identification purposes.

We presume that the tag represents part of a turtle migration study that your institute is conducting. If so, you may be interested to learn that the turtle has crossed the Pacific and was netted in sea waters off of the southern coast of Papua New Guinea (near Port Moresby). The Embassy does not have any more specific details on where or how the turtle was caught, but we will be happy to seek that information or put you in contact with those who caught it if you are interested.

To our knowledge, the turtle is still alive, as its captors are waiting to hear if more information is needed before they follow local tradition and kill and eat it.

The "University of Hawaii turtle" has already attracted considerable attention in PNG media. We would be grateful if someone associated with the sea turtle tagging project could contact us (tel. 675-21-1759, fax 675-21-4593) and leave a telephone number, as the national television station would like to conduct a follow-up interview by telephone on where the turtle was first tagged and what is the purpose of this study.

We hope the information we are providing is useful to your ongoing project. Please contact the Embassy if we can help further.

Sincerely,

Karl Stoltz  
Public Affairs Officer

FAXED  
FYI - ~~WAG~~  
JAW  
GHB



U. S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL MARINE FISHERIES SERVICE  
Southwest Fisheries Science Center Honolulu Laboratory  
2570 Dole St. • Honolulu, Hawaii 96822-2396  
(808)943-1221 • Fax: (808)943-1290

X-723

March 23, 1994

F/SWC2:skk

Mr. Karl Stoltz  
Public Affairs Officer, USIS

No Oct 18, 92  
Release Scilly  
at raised in  
Tahiti -  
no 12/90

Dear Mr. Stoltz:

The turtle that was netted near Port Morseby on 14 March 1993 and, presumably, is still being held alive was originally tagged and released in Tahiti. The turtle was one of a group of hatchling green turtles (*Chelonia mydas*) from Scilly Atoll (north of Bora Bora) that had been raised in captivity. It is my understanding that the turtle was released from captivity during September 1992 at Papeari District, Tahiti. However, by copy of this fax, I am requesting Mr. Philippe Siu and/or Mr. Jean-Pierre Landret, of EVAAM Tahiti, to send us the exact information. I am sure they will both be very excited to learn of this recovery of one of their Tahitian sea turtles. Also, the SPREP Regional Marine Turtle Program based in Apia will be eager to hear this news.

As I mentioned in my fax sent to you yesterday, it is scientifically very important to obtain the live weight of the turtle, as well as the length of the upper shell (carapace) over the curve, along the mid-line. We would also be most appreciative to know the general condition of the turtle when captured. That is, did it appear to be healthy? Were there any signs of injuries or abnormalities? Are other turtles found in the area where it was netted? Were the fishermen specifically net fishing for turtles, or did they catch the turtle incidental to another fishery?

If possible, I would very much like to have copies of any newspaper articles (in English) that tell about the case.

George H. Balazs  
Leader, Marine Turtle Research Program

cc: P. Siu/J.-P. Landret, EVAAM Tahiti  
L. Moriarty, East-West Center  
L. Apis, SPREP



TRANSMITTAL SHEET



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL MARINE FISHERIES SERVICE  
Southwest Fisheries Center Honolulu Laboratory  
2570 Dole St. • Honolulu, Hawaii 96822-2396

Commercial: (808) 943-1221  
Telefax: (808) 943-1290

TELEFAX FOR: JEAN-PIERRE LANDRET

DATE: 18 MARCH 94

FROM: GEORGE BALAZS

FAX 808-943-1290  
TELEPHONE EXT: \_\_\_\_\_

NUMBER OF SHEETS TRANSMITTED (including this page) ONE

MESSAGE:

Dear Jean-Pierre: Thank you very much for your fax supplying all of the data on the use of the tags I had sent you, I am most appreciative. It has been a pleasure to work with you and Philippe. I regret that we were not able to visit Scilly again. Maybe that will be possible some time in the future.

When I heard from Philippe about 2 months ago, he said that the turtle bones I collected at Scilly and Motu-one would be sent soon on Hawaiian Airlines cargo. They have not yet arrived. Can you please check on this for me? Also, Philippe was going to send me a few duplicated 35mm slides taken during "WASA" clean-up at Scilly. If you can help, I would be thankful.

If you need assistance, or more tags, I will be able to help you.

ALOHA, *Ge*



980-211029



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL MARINE FISHERIES SERVICE  
Southwest Fisheries Center Honolulu Laboratory  
2570 Dole St. • Honolulu, Hawaii 96822-2396

Commercial: (808) 943-1221  
Telefax: (808) 943-1290

E.V.A.A.M. TAHITI

TELEFAX FOR: PHILIPPE SIU & J.-P. LANDRET

DATE: 18 JANUARY 1994

FROM: GEORGE BALAZS

TELEPHONE EXT: 808-043-1221

FAX 808-943-1290

NUMBER OF SHEETS TRANSMITTED (including this page) ONE

MESSAGE: DEAR PHILIPPE AND JEAN-PIERRE:

I AM FAXING YOU TODAY TO REPORT ANOTHER RECOVERY OF THE NESTING TURTLES WE TAGGED AT SCILLY DURING OUR VISIT IN OCTOBER OF 1991. THE TURTLE WAS S23, S24 AND S25 TAGGED ON THE NIGHT OF 18 OCTOBER 1991 AT MOTU OIA. THE TURTLE, ACCORDING TO MY RECORDS, MEASURED 103 CM IN CURVED CARAPACE LENGTH WHEN IT WAS TAGGED. THE TURTLE HAS NOW BEEN REPORTED TO ME AS BEING CAUGHT IN A NET AT SAVU SAVU, FIJI, ON 9 OCTOBER 1993. THE TURTLE WAS SAID TO WEIGH 262 LBS (120 KG). THE TURTLE WAS REPORTED TO HAVE BEEN BOUGHT BY A CHINESE RESTAURANT, HENCE ACCURATE WEIGHT BEING TAKEN. I HAVE ONLY RECENTLY RECEIVED INFORMATION ABOUT THIS CASE, HENCE THE DELAY IN TRANSMITTING IT TO YOU.

THE SECOND PIECE OF INFORMATION I WANT TO CONVEY TO YOU IS ABOUT THE TURTLES WE DEPLOYED WITH SATELLITE TRANSMITTERS AT ROSE ATOLL, AMERICAN SAMOA, DURING EARLY NOVEMBER 1993. TWO OF THE THREE TURTLES HAVE NOW MIGRATED AWAY FROM ROSE ATOLL. AS OF LAST FRIDAY, ONE OF THE TURTLES WAS AMONGST THE TONGA ISLANDS, BUT STILL MOVING. THE OTHER TURTLE WAS APPROACHING THE WESTERN ISLANDS OF FIJI. THE THIRD TURTLE IS STILL AT ROSE ATOLL, LAYING MORE CLUTCHES OF EGGS. WE EXPECT HER TO START HER OCEAN MIGRATION VERY SOON.

I HOPE THAT YOU RECEIVED MY FAX ABOUT THE NEW CITES PERMIT, ASKING THAT THE BONES FROM SCILLY BE SENT TO HONOLULU FOR STUDY. ALSO, I WOULD APPRECIATE LEARNING IF THE TAGS I SENT TO YOU A FEW MONTHS AGO WERE ABLE TO BE USED ON HEAD-START TURTLES YOU RELEASED. IF SO, WERE THE YOUNG TURTLES TAKEN BACK TO SCILLY?

BEST REGARDS,

*George Balazs*



Suzie Geermans  
South Pacific Regional Environment Programme  
PO Box 240  
Apia  
WESTERN SAMOA

10 November 1993

Mr Isikeli Rabuka  
Building Section  
Public Works Department  
Lambasa  
FIJI

Dear Mr Rabuka

Thank you for sending information about the turtle tagged R482 which was captured near Lambasa, Fiji on 27 September 1993.

This tag was applied to a green female turtle while she was nesting on Scilly Atoll, French Polynesia (refer to map attached) on 15 October 1991. She had a curved carapace length of 100.0cm.

The South Pacific Regional Environment Programme (SPREP) are involved with the conservation and management of sea turtles within the South Pacific region. Therefore any information you can give us regarding tagged turtles is very important to our understanding of these animals.

Enclosed is a page with some questions about the turtle that was captured. It would be appreciated if you could help us by returning the answers to the address provided.

Some posters and identification sheets are enclosed for you as a reward for reporting the tags.

Yours sincerely,

*Suzie Geermans*

Suzie Geermans  
Turtle Conservation Consultant  
South Pacific Regional Environment Programme (SPREP)

cc. Philippe Siu, EVAAM, French Polynesia  
Aisake Batibasaga, Fisheries Division, Fiji  
Tara Costello, OCEAN, Fiji  
Adrienne Farago, SPREP, Western Samoa  
George Balazs, NMFS, Hawaii

Spmp

ISIKELI RABUKA,  
BUILDING SECTION,  
PUBLIC WORKS DEPT.  
LAMBASA.  
FIJI ISLANDS.

→ Adresse

RETURN SPC / REP,  
BPD5 NOUMEA CEDEX,  
NEW CALEDONIA.

SOUTH PACIFIC REGIONAL ENVIRONMENTAL  
PROGRAMME ACTION FILE AP 8/15/11

DATE 03 NOV. 1993

ACTION OFFICER - A6/B10

Dear Sir,

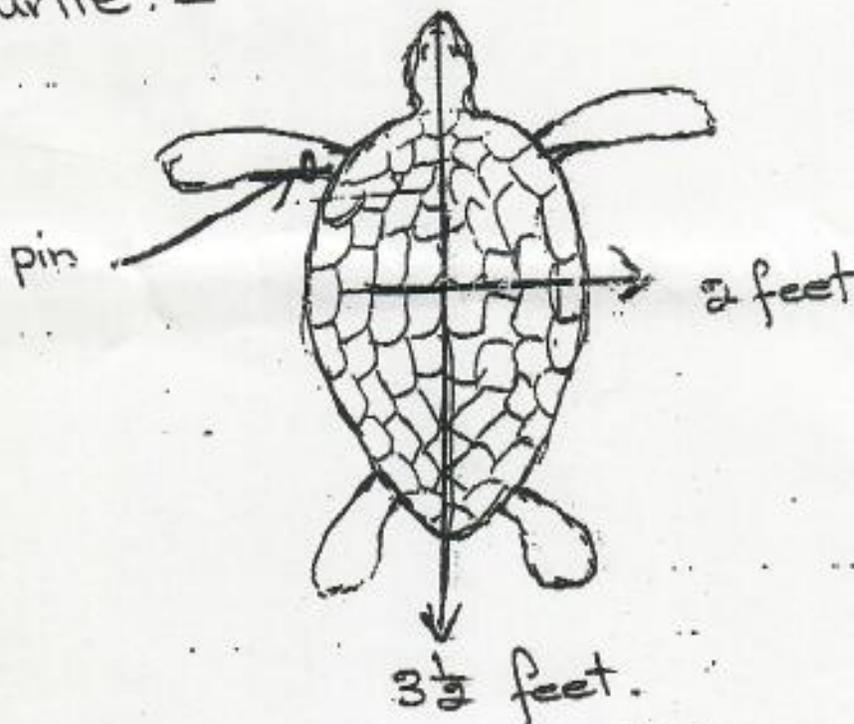
Ni sa bula, Good morning,  
good evening to whom it may concern.  
According to the time you receive this  
letter of mine.

I ISIKELI RABUKA (aged  
29) and an employee of P.W.D and  
also a fisherman. On 27th September 1993  
I went out fishing with some of my  
friends. We were diving and caught  
a turtle. On our way ~~back~~ back home,  
I found a ~~piece~~ piece of iron attached  
on the left (wing or hand) what ever  
it is.

This were the words written  
on it: - RMTP 482 other side was  
the address: - Return SPC / REP  
BPD5 Noumea Cedex  
New Caledonia.

So this letter is to inform you ~~about~~ <sup>to which</sup>  
about the ~~the~~ turtle.  
Wish to hear from you <sup>as</sup> soon as possible.  
Thank you Miss Anne

This is a rough sketch of the turtle: -



## APPLIED TAG DETAILS

515	R	482	R	482	LF	15/10/91	Y	P	G	F	A	SC	SIU/BALAZS
516	R	482	X	666	RF	15/10/91	Y					SC	SIU/BALAZS
608	R	482	X	667	LH	15/10/91	Y					SC	SIU/BALAZS
609	R	482	X	668	RH	15/10/91	Y					SC	SIU/BALAZS

## CAPTURE DETAILS

2442	R	482	P			G	F	A	15/10/91	SC	0	N	?	100.0	0	28	16	40	154	40
------	---	-----	---	--	--	---	---	---	----------	----	---	---	---	-------	---	----	----	----	-----	----



U. S. DEPARTMENT OF COMMERCE  
 National Oceanic and Atmospheric Administration  
 NATIONAL MARINE FISHERIES SERVICE  
 Southwest Fisheries Science Center Honolulu Laboratory  
 2570 Dole St. • Honolulu, Hawaii 96822-2396  
 (808)943-1221 • Fax: (808)943-1290

September 27, 1993 F/SWC2:GHB:JLB  
 ALI-10L.GHB

Mr. HAMJA ALI  
 F/N USMAN ALI  
 RAVI RAVI  
 P.O. Box 277  
 BA, FIJI

25 inches

23 kg

Dear Mr. Hamja Ali:

Thank you very much for your recent letter reporting the capture of a sea turtle in Ba'area on 9/2/93 with our tag X735. We appreciate your taking the time to send us this important information.

The turtle was a young green turtle, *Chelonia mydas*, that had been raised in captivity in Tahiti and released during December 1991 at Scilly Atoll to the northwest of Tahiti. At the time of release the turtle weighed 12 kg (26.5 lbs) and measured 47 cm (18.5 inches) along the back of the upper shell.

I would be interested to know if the turtle was dead when caught in your fishing line, or was it alive? If it was alive, was it released back into the ocean? Could you estimate for me the length of the upper shell or weight? Did the turtle appear to be healthy? Were you fishing from a boat, or from shore?

As a small reward for your assistance, I am sending you a shirt with a sea turtle design. You will also be receiving a letter of appreciation and a shirt from the South Pacific Regional Environmental Program (SPREP). I look forward to hearing from you again.

Sincerely,

George H. Balazs  
 Zoologist

cc: Adrienne Farago, SPREP  
 Suzie Geermans, SPREP  
 Aisake Batibassaga, Fiji Fisheries Division

APPLIED TAG DETAILS  
 2968 X 735 X 735 18/09/92 Y P G I I TH SIU

CAPTURE DETAILS  
 2809 X 735 P G I I 18/09/92 TH SC HS R 47.0 0 28 17 37 149 27



Suzie Geermans  
South Pacific Regional Environment Programme  
PO Box 240  
Apia  
WESTERN SAMOA

27 October 1993

Mr Hamja Ali  
F/N Usman Ali  
Ravi Ravi  
PO Box 277  
Ba  
FIJI

Dear Mr Ali

Thank you for sending the information about the turtle tagged X735 that was caught in the Ba area on 9 February 1993.

As Mr George Balazs has already stated in his letter, X735 was a young green turtle which was raised in captivity and released at Scilly Atoll, French Polynesia.

The South Pacific Regional Environment Programme (SPREP) are involved with the conservation and management of sea turtles within the Pacific region. Any information regarding tagged turtles is extremely valuable to our understanding of the migration of these animals.

With this letter are some identification sheets to help recognise the different types of sea turtles in the Pacific area. Some turtle conservation posters are also enclosed as a reward for reporting the tag numbers to SPREP.

Regards

*Suzie Geermans*

Suzie Geermans  
Turtle Conservation Consultant  
South Pacific Regional Environment Programme (SPREP)

cc. Adrienne Farago, SPREP, Western Samoa

Hamjad Ali / Usman Ali

Ravi Ravi

P.O. Box 277

BA; Fiji

National marine fisheries service  
Southwest fisheries science center  
Honolulu laboratory  
2570 Dole street  
Honolulu Hawaii.

Dear Sir,

Thank you very much for  
~~reply~~ reply back me a letter, there was  
one shirt inside it. The turtle weighed  
23 kg and the measured was 25 inches  
along the back of the upper shell.  
Yes, the turtle was alive when  
caught in the fishing line. Yes  
it was released back in to the  
ocean, yes the turtle was appear  
to be healthy. I keep at home  
4 day in water, after that we live

it in the ocean. I am looking  
toward to hearing from you  
again, THANKS.

Sincerely,

Hamjad Ali.

Hamja Ali / Usman Ali

Ravi Ravi

P.O. Box 277

BA; Fiji

National marine fisheries service  
Southwest fisheries science center  
Honolulu laboratory  
2570 Dole street  
Honolulu Hawaii.

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again, THANKS.

Sincerely,

Hamja Ali.

Hamja Ali/Usman Ali  
Ravi Ravi  
P.O. Box 277  
BA; Fiji

National marine fisheries service  
Southwest fisheries science center  
Honolulu laboratory  
2570 Dole street  
Honolulu Hawaii

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ocean. yes the turtle was appear  
to be healthy. I keep at home  
4 day in water after that we live

it in the ocean. I am looking  
toward to hearing from you  
again, THANKS.

Sincerely,  
Hamza Ali.

Sander  
HAMISA ALI  
P.O. Box 277



VIA AIR MAIL  
PAR AVION CORREG AEREO

NATIONAL MARINE FISHERIES SERVICE  
SOUTHWEST FISHERIES SCIENCE CENTER  
HONOLULU LABORATORY  
2570 DOLE STREET  
HONOLULU, HAWAII.



faxed 10-8-93 1:48  
2pc SK

TRANSMITTAL SHEET



**U.S. DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
**NATIONAL MARINE FISHERIES SERVICE**  
Southwest Fisheries Center Honolulu Laboratory  
2570 Dole St. • Honolulu, Hawaii 96822-2396

Commercial: (808) 943-1221  
Telefax: (808) 943-1290

TELEFAX FOR: Mr. Anapa Auri

DATE: October 8, 1993

FROM: Ms. Shawn Koga for  
Mr. George H. Balazs

TELEPHONE EXT: 808-943-1240

NUMBER OF SHEETS TRANSMITTED (including this page) 2

MESSAGE:

Dear Mr. Auri,

Please be advised that George has sent 500+ tags to you via Hawaiian Airlines. The airbill number is 1095 2771. It should be on this afternoon's flight. If you have any questions please feel to call you. WS. Thank you.

Sincerely,

*Shawn Koga*  
Shawn K. Koga



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HNL

1095 2771

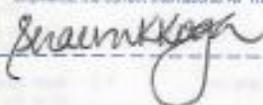
173

1095 2771

SHIPPER'S NAME AND ADDRESS <b>GEORGE BALAZS 2570 DOLE ST PH 9431240 HON HI</b>		SHIPPER'S ACCOUNT NUMBER		NOT NEGOTIABLE <b>AIR WAYBILL</b> (AIR CONSIGNMENT NOTE)		 P.O. BOX 30008 HONOLULU, HAWAII 96820-0008 Copies 1, 2 and 3 of this Air Waybill are originals and have the same validity.	
CONSIGNEE'S NAME AND ADDRESS <b>ANAPA AURI BP 20 PAPEETE</b>		CONSIGNEE'S ACCOUNT NUMBER		It is agreed that the goods described herein are accepted for carriage in apparent good order and condition (except as noted) and SUBJECT TO THE CONDITIONS OF CONTRACT ON THE REVERSE HEREOF, THE SHIPPER'S ATTENTION IS DRAWN TO THE NOTICE CONCERNING CARRIER'S LIMITATION OF LIABILITY. Shipper may increase such limitation of liability by declaring a higher value for carriage and paying a supplemental charge if required.  NOTE: U.S. DOMESTIC CONDITIONS OF CONTRACT APPLY TO SHIPMENTS BETWEEN POINTS IN THE U.S. STATES AND TERRITORIES (i.e., AM, SAMOA, GUAM, etc.)  <b>TO EXPEDITE MOVEMENT, SHIPMENT MAY BE DIVERTED TO MOTOR OR OTHER CARRIER AS PER TARIFF RULE UNLESS SHIPPER GIVES OTHER INSTRUCTIONS HEREON.</b>			
ISSUING CARRIER'S AGENT NAME AND CITY				ALSO NOTIFY NAME AND ADDRESS (OPTIONAL ACCOUNTING INFORMATION)			
AGENTS IATA CODE		ACCOUNT NO.		ACCOUNTING INFORMATION			
AIRPORT OF DEPARTURE (ADDR OF FIRST CARRIER) AND REQUESTED ROUTING <b>HON INT</b>							
ORIGIN AND DESTINATION							
TO	BY FIRST CARRIER	TO	BY	CURRENCY	OTHER	DECLARED VALUE FOR CARRIAGE	DECLARED VALUE FOR CUSTOMS
PPT	HA			CC	X	NVD	\$1.00
AIRPORT OF DESTINATION <b>PAPEETE</b>		FOR CARRIER USE ONLY		AMOUNT OF INSURANCE		INSURANCE - If shipper requests insurance in accordance with conditions on reverse hereof, indicate amount to be insured in figures in box marked amount of insurance.	
		FLIGHT/DATE	FLIGHT/DATE				

HANDLING INFORMATION: Those commodities licensed by United States for ultimate destination. Division contrary to United States law is prohibited.

NO. OF PIECES RCP	GROSS WEIGHT	RATE CLASS	CHARGEABLE WEIGHT	RATE / CHARGE	TOTAL	NATURE AND QUANTITY OF GOODS (INCL DIMENSIONS OR VOLUME)
1	9 L 6 K	GEN	6	MIN	\$50.00	CTN TAGS
1	9				\$50.00	

PREPAID	WEIGHT CHARGE	COLLECT	PICKUP CHARGES	ORIGIN ADVANCE CHARGES	DESCRIPTION OF ORIGIN ADVANCE	ITEMS PREPAID
		\$50.00	A.	B.	K.	
	VALUATION CHARGE		DEL. ZONE	DELIVERY CHARGES	DEST. ADVANCE CHARGES	DESCRIPTION OF DEST. ADVANCE
			C.	L.		ITEMS COLLECT
TAX			OTHER CHARGES AND DESCRIPTION			
TOTAL OTHER CHARGES DUE AGENT			The shipper certifies that the particulars on the face hereof are correct, agree to the CONDITIONS ON REVERSE HEREOF, accepts that carrier's liability is limited as stated on the reverse hereof and accepts such value unless a higher value for carriage is declared on the face hereof subject to an additional charge and that insofar as any part of the consignment contains dangerous goods (hazardous materials) such part is properly described by name and is in proper condition for carriage by air according to applicable national governmental regulations and for international shipments, the current International Air Transport Association's Dangerous Goods Regulations.			
TOTAL OTHER CHARGES DUE CARRIER			 SIGNATURE OF SHIPPER OR HIS AGENT			
G. COD <input type="checkbox"/>	TOTAL PREPAID		TOTAL COLLECT		EXECUTED ON	
J. RFC <input type="checkbox"/>			\$50.00		OCT 18, 1993 HNLFF 1115 JR	
CURRENCY CONVERSION RATES			TOTAL COLLECT IN DESTINATION CURRENCY		SIGNATURE OF ISSUING CARRIER OR ITS AGENT	
FOR CARRIERS USE ONLY AT DESTINATION			CHARGE AT DESTINATION		TOTAL COLLECT CHARGE	

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1095 2771

Papeete, le 24 SEP. 1993

Réf. N° 1317 /EVAAM  
Département Rech/Dév

The Director of EVAAM, p.i

to

Dr George BALAZS  
U.S Department of Commerce  
National Oceanic and Atmospheric Administration  
Southwest Fisheries Center  
Honolulu Laboratory  
2570 Dole street

Honolulu - Hawaii 96822-2396  
USA

Dear Dr BALAZS,

We have received your messages and we want to thank you for the information on tags recovery from turtles released by us on Scilly atoll. The small iconel tags is working really well.

We will be pleased to welcome you on our next scientific trip to Scilly. But at this time, we have not yet scheduled it. It will be a special an multidisciplinary survey of the reserve of Scilly -Bellingshausen conducted with several department (Agriculture, fishery, social, etc...) in order to finalize the management plan of the reserve.

We will let you know as soon as we have fixed the agenda.

A special and short trip is planned on september 28, to released some 425 young turtles from Papeari. We will need some more tags for Scilly to tag 2000 youngs turtles (15 to 20 cm diameter).

For the satellite transmittes project, Philippe SIU has reported that you will be ready to cooperate and to contribute to the project with one transmitter. We are very interested by this high technology project and we can purchase one to deploy at Scilly atoll during the next nesting season from René TAPUTU's park.

As we have started with your tags we think that it is important to work in cooperation with you for those turtle. The SPREP's tag will be used for adults females and males during nesting seasons.

Many thanks for your contributions.



ETABLISSEMENT POUR LA VALORISATION  
DES ACTIVITES AQUACOLEES ET MARITIMES

**EVAAM**

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AIRPORT OF  
DEPARTURE  
HNL

1083 3852

173

1083 3852

SHIPPER'S NAME AND ADDRESS <b>BALAZS HONOLULU LAB 2570 DOLE ST HONOLULU, HAWAII (808)943 1240</b>		SHIPPER'S ACCOUNT NUMBER		NOT NEGOTIABLE <b>AIR WAYBILL</b> (AIR COMBINATION NOTE) <b>HAWAIIAN AIRLINES</b> P.O. BOX 30008 HONOLULU, HAWAII 96820-0008 Copies 1, 2 and 3 of this Air Waybill are originals and have the same validity.	
CONSIGNEE'S NAME AND ADDRESS <b>PHILIPPE SIU VAAM PAPEETE BOX 20 TAHITI FRENCH POLYNESIA TEL 43-12-58</b>		CONSIGNEE'S ACCOUNT NUMBER		It is agreed that the goods described herein are accepted for carriage in apparent good order and condition (except as noted) and SUBJECT TO THE CONDITIONS OF CONTRACT ON THE REVERSE HEREOF. THE SHIPPER'S ATTENTION IS DRAWN TO THE NOTICE CONCERNING CARRIER'S LIMITATION OF LIABILITY. Shipper may increase such limitation of liability by declaring a higher value for carriage and paying a supplemental charge if required.  NOTE: U.S. DOMESTIC CONDITIONS OF CONTRACT APPLY TO SHIPMENTS BETWEEN POINTS IN THE U.S. STATES AND TERRITORIES (i.e., AM, SAWSA, GUAM, etc.)  TO EXPEDITE MOVEMENT, SHIPMENT MAY BE DIVERTED TO MOTOR OR OTHER CARRIER AS PER TARIFF RULE UNLESS SHIPPER GIVES OTHER INSTRUCTIONS HEREON.	
ISSUING CARRIER'S AGENT NAME AND CITY		ALSO NOTIFY NAME AND ADDRESS (OPTIONAL ACCOUNTING INFORMATION)			
AGENTS IATA CODE		ACCOUNT NO.		ACCOUNTING INFORMATION	
AIRPORT OF DEPARTURE (ADDR OF FIRST CARRIER) AND REQUESTED ROUTING <b>HONOLULU INT'L AIRPORT</b>		<b>COLLECT</b>			
ROUTING AND DESTINATION TO <b>PPT</b> BY FIRST CARRIER <b>HAWAIIAN AIR</b> TO <b>PPT</b> BY <b>HA</b>		CURRENCY USD		DECLARED VALUE FOR CARRIAGE NVD	
AIRPORT OF DESTINATION <b>PAPEETE</b>		AMOUNT OF INSURANCE		DECLARED VALUE FOR CUSTOMS \$5.00	
HANDLING INFORMATION: These commodities licensed by United States for ultimate destination.		Diversions contrary to United States law is prohibited.			

NO. OF PIECES RCP	GROSS WEIGHT	RATE CLASS COMMODITY ITEM NO.	CHARGEABLE WEIGHT	RATE CHARGE	TOTAL	NATURE AND QUANTITY OF GOODS (INCL. DIMENSIONS OR VOLUME)
1	6L 3K	GEN	6	MIN	\$50.00	TAGS - PRINTED MATTER
1	6				50.00	
PREPAID		WEIGHT CHARGE		COLLECT		
A.		50.00		PICKUP CHARGES		ORIGIN ADVANCE CHARGES
VALUATION CHARGE		DEL. ZONE		DELIVERY CHARGES		DEST. ADVANCE CHARGES
D.		TAX		OTHER CHARGES AND DESCRIPTION		
L.		TOTAL OTHER CHARGES DUE AGENT		F.		
TOTAL OTHER CHARGES DUE CARRIER				The shipper certifies that the particulars on the face hereof are correct, agrees to the CONDITIONS ON REVERSE HEREOF, accepts that carrier's liability is limited as stated on the reverse hereof and accepts such value unless a higher value for carriage is declared on the face hereof subject to an additional charge and that insofar as any part of the consignment contains dangerous goods (hazardous materials) such part is properly described by name and is in proper condition for carriage by air according to applicable national governmental regulations and for international shipments, the current International Air Transport Association's Dangerous Goods Regulations.		
B. COD <input type="checkbox"/>				SIGNATURE OF SHIPPER OR HIS AGENT <i>Shawn Klog</i>		
J. RFC <input type="checkbox"/>				EXECUTED ON <b>SEP 08T 1, 1993 HNLFF1035 MEL</b>		
TOTAL PREPAID		TOTAL COLLECT		(Date) (Time) at (Place) SIGNATURE OF ISSUING CARRIER OR ITS AGENT		
50.00						
CURRENCY CONVERSION RATE:		TOTAL COLLECT IN DESTINER CURRENCY				
FOR CARRIERS USE ONLY AT DESTINATION		CHARGES AT DESTINATION		TOTAL COLLECT CHARGES		
ALL COLLECT CHARGES IN DESTINER CURRENCY						

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1083 3852

TRANSMITTAL SHEET



**U.S. DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
**NATIONAL MARINE FISHERIES SERVICE**  
 Southwest Fisheries Center Honolulu Laboratory  
 2570 Dale St. • Honolulu, Hawaii 96822-2396

Commercial: (808) 943-1221  
 Telefax: (808) 943-1290

TELEFAX FOR: PHILIPPE SIU, EVAAM

DATE: 1 OCTOBER 93

FROM: GEORGE BALAZS

TELEPHONE EXT: 808-943-1221

NUMBER OF SHEETS TRANSMITTED (including this page) TWO

MESSAGE:

DEAR PHILIPPE:

TODAY I SHIPPED YOU SOME TAGS AND APPLICATORS ON HAWAIIAN AIRLINES. THE PACKAGE SHOULD ARRIVE THERE TONIGHT. THE AIR BILL (ATTACHED) IS 1083 3852. I AM SORRY THAT I DID NOT HAVE MORE TAGS IN STOCK TO SEND YOU. I HAVE A VERY LOW SUPPLY AT THIS TIME BECAUSE OF OUR CHANGE IN FISCAL YEAR AND THERE IS A "FREEZE" ON ALL SPENDING. I MAY NOT HAVE A NEW BUDGET FOR ANOTHER MONTH OR MORE.

MY TRIP TO ROSE ATOLL, AMERICAN SAMOA, WAS CANCELLED DUE TO VESSEL PROBLEMS. THE TRIP MAY BE RESCHEDULED FOR LATE OCTOBER, BUT IT IS UNCERTAIN AT THIS TIME.

I HAVE STILL NOT RECEIVED ANY FAX OR LETTER FROM YOU THAT YOU TOLD ME ABOUT BY TELEPHONE. I LOOK FORWARD TO READING IT.

IF YOU PLAN TO GO TO SCILLY FOR ATTACHMENT OF SATELLITE TRANSMITTERS, WHEN WILL THAT BE? IT IS VERY IMPORTANT THAT I HAVE SOME IDEA OF THE DATES YOU MAY HAVE IN MIND. DURING NOV 15-20 THERE IS A VERY IMPORTANT MEETING HERE IN HONOLULU THAT I MUST ATTEND. I VERY MUCH REGRET NOW THAT I HAD TO CANCEL AND NOT GO WITH YOU LAST YEAR. PLEASE ADVISE IF YOU CAN SUPPLY ME WITH ANY POSSIBLE INFORMATION ABOUT SCHEDULING OF A TRIP THIS YEAR.

BEST REGARDS,





U. S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL MARINE FISHERIES SERVICE  
Southwest Fisheries Science Center Honolulu Laboratory  
2570 Dole St. • Honolulu, Hawaii 96822-2396  
(808)943-1221 • Fax: (808)943-1290

September 27, 1993 F/SWC2:GHB:JLB  
ALI-10L.GHB

Mr. HAMJA ALI  
F/N USMAN ALI  
RAVI RAVI  
P.O. Box 277  
BA, FIJI

Dear Mr. Hamja Ali:

Thank you very much for your recent letter reporting the capture of a sea turtle in Ba area on 9/2/93 with our tag X735. We appreciate your taking the time to send us this important information.

The turtle was a young green turtle, *Chelonia mydas*, that had been raised in captivity in Tahiti and released during December 1991 at Scilly Atoll to the northwest of Tahiti. At the time of release the turtle weighed 12 kg (26.5 lbs) and measured 47 cm (18.5 inches) along the back of the upper shell.

I would be interested to know if the turtle was dead when caught in your fishing line, or was it alive? If it was alive, was it released back into the ocean? Could you estimate for me the length of the upper shell or weight? Did the turtle appear to be healthy? Were you fishing from a boat, or from shore?

As a small reward for your assistance, I am sending you a shirt with a sea turtle design. You will also be receiving a letter of appreciation and a shirt from the South Pacific Regional Environmental Program (SPREP). I look forward to hearing from you again.

Sincerely,

George H. Balazs  
Zoologist

cc: Adrienne Farago, SPREP  
Suzie Geermans, SPREP  
Aisake Batibassaga, Fiji Fisheries Division



Raviravi.

P.O Box 277,

BA

Fiji.

SEP 13 1993

WRITE HMB.  
UNIVERSITY,  
HAWAII. 96744.

Dear Sir,

I would like to know about  
the turtle, which I had found in  
the sea in Ba area. on 2th of Septem-  
ber 1993. It had the clips on the  
leg with the address: WRITE HMB  
UNIVERSITY

HAWAII. 96744

and the another side it had the  
No: X 735. I caught it in the  
fishing line. The line was 12 lbs  
test. About 20 year long I have  
stayed in Raviravi this is the first

kg

12,02  
Lc

lc

47cm 46cm

12/91 Scilly

time I had caught the turtle with  
the Hawaii address on the fishing  
line. I had keep the clip with  
the address.

So I would like to  
have a reply as soon as you can.

THANKS

yours faithfully  
Hamja Ali

ADDRESS:

HAMJA ALI F/N USMAN ALI

KAVIRMI

P.O Box 277

BA

Fiji.

Phone No. 676647.

Raviravi.

P.O. Box 277,

BA

Fiji.

SEP 13 1993

WRITE HIMB.

UNIVERSITY,

HAWAII. 96744.

Dear Sir,

I would like to know about  
the turtle, which I had found in  
the sea in Ba area, on 2th of Septem-  
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UNIVERSITY

HAWAII. 96744

and the another side it had the  
No: X 735. I caught it in the  
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time I had caught the turtle with  
the Hawaii address on the fishing  
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the address.

So I would like to  
have a reply as soon as you can.  
THANKS

yours faithfully  
Hamja Ali

ADDRESS:

HAMJA ALI F/N USMAN ALI  
KAVIRMI

P.O. Box 277

BA

Fiji.

Phone No. 676647.

S/chap.	Art.	Libellés	En —	En +
943.04	645-28	Promotion universitaire Prise en charge des Intérêts des prêts d'étude Socrédo	4.000.000	
943.02	657-04	Enseignement primaire Subvention au Centre des langues océaniques		
Total			4.000.000	4.000.000

Par arrêté n° 1208 CM du 9 novembre 1992. — Un virement de crédits de 606.100 F CFP est autorisé comme suit :

S/chap.	Art.	Libellés	En +	En —
93002	828	Titres annulés	606.100	
93000	671	Intérêts		606.100

**MINISTÈRE DE LA MER,  
DU DÉVELOPPEMENT DES ARCHIPELS  
ET DES AFFAIRES FONCIÈRES**

ARRETE n° 1206 CM du 9 novembre 1992 portant nomination de Mme Simone Grand en qualité de déléguée à la recherche.

Le Président du gouvernement de la Polynésie française,

Sur le rapport et la proposition du vice-président, ministre de la santé, de l'habitat et de la recherche,

Vu la loi n° 84-820 du 6 septembre 1984 modifiée portant statut du territoire de la Polynésie française ;

Vu l'arrêté n° 622 PR du 4 avril 1991 modifié portant nomination du vice-président et des autres ministres du gouvernement du territoire de la Polynésie française ;

Vu la délibération n° 88-130 AT du 13 octobre 1988 portant création du haut-comité territorial de la recherche ;

Vu la délibération n° 89-5 AT du 9 février 1989 portant création de la délégation de la recherche, et notamment son article 4 ;

Vu les termes de la lettre n° 1075 VP du 16 octobre 1992 ;

Vu les termes de la correspondance d'acceptation de l'intéressée en date du 16 octobre 1992 ;

Vu l'avis favorable des membres du haut-comité de la recherche, consultés à domicile le 20 octobre 1992 ;

Le conseil des ministres en ayant délibéré dans sa séance du 4 novembre 1992,

Arrête :

Article 1er. — Pour compter du 4 novembre 1992, Mme Simone Grand est nommée déléguée à la recherche.

Art. 2. — Sont abrogées, pour compter de la même date, les dispositions de l'arrêté n° 804 CM du 16 mai 1985 portant nomination de Mme Simone Grand en qualité de chef du service de la mer et de l'aquaculture.

Art. 3. — Le vice-président, ministre de la santé, de l'habitat et de la recherche et le ministre de la mer, du développement des archipels et des affaires foncières sont chargés, chacun en ce qui le concerne, de l'exécution du présent arrêté qui sera publié au Journal officiel de la Polynésie française.

Fait à Papeete, le 9 novembre 1992.

Gaston FLOSSE.

Par le Président du gouvernement du territoire :

*Le vice-président,  
ministre de la santé,  
de l'habitat et de la recherche,*  
Michel BULLARD.

*Le ministre de la mer,  
du développement des archipels  
et des affaires foncières,*  
Edouard FRITCH.

ARRETE n° 1230 CM du 12 novembre 1992 prononçant le classement des atolls Scilly (Manuae) et Bellinghausen (Motu One) en réserve territoriale s/s dans la commune de Maupiti.

Le Président du gouvernement de la Polynésie française,

Sur le rapport conjoint du vice-président, du ministre de la mer, du développement des archipels et des affaires foncières et du ministre de l'agriculture, de l'environnement et de la condition féminine,

Vu la loi n° 84-820 du 6 septembre 1984 modifiée portant statut du territoire de la Polynésie française ;

Vu l'arrêté n° 622 PR du 4 avril 1991 modifié portant nomination du vice-président et des autres ministres du gouvernement du territoire de la Polynésie française ;

Vu le code de l'aménagement de la Polynésie française, et en particulier son livre I, titre V ;

Vu l'arrêté n° 2559 DOM du 28 juillet 1971 portant classement en vue de leur préservation du lagon de l'île Manuae ou Scilly dépendant de la circonscription administrative des îles Sous-le-Vent et de divers îles et îlots dépendant de la circonscription administrative des îles Marquises ;

Vu la convention internationale du 12 juin 1976 sur la protection de la nature dans le Pacifique Sud, dite convention d'Apia, et spécialement les dispositions de son article 2 ;

Vu la convention internationale du 24 novembre 1986 pour la protection des ressources naturelles et de l'environnement de la région du Pacifique Sud, dite convention du P.R.O.E., et spécialement les dispositions de son article 14 ;

Vu l'avis de la commission des sites et des monuments naturels en sa séance du 3 avril 1992 ;

Vu la délibération n° 92-185 AT du 20 octobre 1992 portant avis de l'assemblée territoriale sur le projet de classement en réserve des atolls de Scilly et Bellinghausen ;

Considérant l'intérêt scientifique de protéger les écosystèmes, les ressources naturelles et espèces menacées qui dépendent des atolls Scilly et Bellinghausen ;

Le conseil des ministres en ayant délibéré dans sa séance du 9 novembre 1992,

Arrête :

Article 1er.— A raison de son intérêt scientifique majeur, est prononcé le classement, en qualité de réserve territoriale au sens des dispositions de l'article 1er de la convention d'Apia, des atolls Scilly (Manuae) et Bellinghausen (Motu One), sis dans la commune de Maupiti. Cette réserve est dénommée "réserve territoriale de Scilly et Bellinghausen".

Art. 2.— L'ensemble des formations géomorphologiques (récifs, "hoa", "motu", lagon...) se situant dans le périmètre ci-après défini est ainsi classé.

Le périmètre formant la limite extrême de la réserve territoriale de Scilly et Bellinghausen est situé à 100 m de la crête récifale de chaque atoll concerné.

Et tel que le tout est fixé au plan joint au dossier.

Art. 3.— La création de la réserve territoriale Scilly et Bellinghausen répond à l'objectif général de gérer au mieux le patrimoine naturel exceptionnel de ces atolls.

Cette gestion comporte les actes de :

- la protection et la préservation des écosystèmes ;
- la protection des ressources naturelles ;
- l'organisation de la recherche scientifique, notamment dans le cadre de programmes régionaux d'études et de protection de certaines espèces.

Art. 4.— L'administration de la réserve territoriale Scilly et Bellinghausen est assurée par le service de la mer et de l'aquaculture, en relation avec la délégation à la recherche, la délégation à l'environnement et le service de l'économie rurale.

Art. 5.— La réserve territoriale Scilly et Bellinghausen est gérée conformément à une charte approuvée par arrêté pris en conseil des ministres dans l'année suivant l'adoption du présent arrêté.

La charte met en œuvre les objectifs qui sont énoncés à l'article 3 ci-dessus et fixe :

- le plan de la réserve indiquant l'implantation des équipements prévus et la localisation des différentes zones en fonction de leur vocation, en particulier de sanctuaire ;
- les mesures complémentaires nécessaires pour renforcer la réglementation en vigueur ;
- le programme des équipements à réaliser et leur plan de financement ;
- le règlement intérieur de la réserve, lequel est affiché sur ses lieux d'application.

L'arrêté agréant la charte précise les dispositions pénales applicables aux infractions constatées.

Art. 6.— Il est constitué un comité de gestion de la réserve territoriale Scilly et Bellinghausen, dont la mission est de veiller

A ce titre, il étudie et propose toutes mesures propres à la meilleure gestion de la réserve, et ainsi prépare notamment la charte ou sa révision.

Art. 7.— Ce comité est composé :

- du ministre chargé de la mer ou son représentant, *prés.*
- du maire de la commune de Maupiti ou son représentant ;
- de l'administrateur territorial des îles Sous-le-Vent représentant ;
- du délégué à la recherche ou son représentant ;
- du chef du service de l'économie rurale ou son représentant ;
- du chef du service de la mer et de l'aquaculture représentant ;
- du délégué à l'environnement ou son représentant ;
- et de deux membres cooptés, l'un dans le domaine de la recherche scientifique et l'autre représentant les associations de protection de l'environnement.

Les membres cooptés ont un mandat de trois ans renouvelable.

Lors de sa première réunion, le comité de gestion désigne son vice-président et un secrétaire et établit son règlement intérieur.

Le comité de gestion peut décider de s'adjoindre, avec un caractère consultatif, toute personne dont il souhaite l'avis à raison de sa compétence.

Art. 8.— Les dispositions de l'arrêté n° 1074 CM du 4 novembre 1991 portant affectation des atolls Scilly et Bellinghausen à la commune de Maupiti sont abrogées.

Art. 9.— Le vice-président, ministre de la santé, de l'enseignement supérieur et de la recherche, le ministre de la mer, du développement des archipels et des affaires foncières et le ministre de l'agriculture, de l'environnement et de la condition féminine sont chargés, en ce qui le concerne, de l'exécution du présent arrêté, publié au *Journal officiel* de la Polynésie française.

Fait à Papeete, le 12 novembre 1992.  
Gaston FLOSSE.

Par le Président du gouvernement du territoire :  
*Le vice-président, ministre de la santé,  
de l'habitat et de la recherche,  
Michel BUIILLARD.*

*Le ministre de la mer,  
du développement des archipels  
et des affaires foncières,  
Edouard FRITCH.*

*Le ministre de l'agriculture,  
de l'environnement et de la condition féminine,  
Haamoetini LAGARDE.*

Par arrêté n° 5539 MMA du 6 novembre 1992.—  
exceptionnel et par dérogation aux dispositions de son cahier de charges, le navire Tamariki Tuamotu est autorisé à desservir Raroia lors de son voyage n° 79 du 11 août 1992.

## tallation du comité de gestion

# ILLY ET BELLINGHAUSEN CLASSÉS RÉSERVE TERRITORIALE



Le Comité de gestion de Scilly et Bellinghauseen est présidé par E. Fritch.

est bouclée, après l'adoption en 1971 le classement de la réserve territoriale de Scilly, le 22 novembre 92, des espaces réservés de Scilly et de Bellinghauseen en réserve territoriale. Le comité de gestion a été créé par décret le 15 décembre 1991. Il a pour mission de gérer la réserve territoriale de Scilly et Bellinghauseen, dont la gestion sera dévolue, le 15 décembre 1993, au service territorial de la Mer et de l'Aquaculture, en relation avec la Délégation de l'Environnement, la Délégation à la Recherche et le Service de l'Économie rurale, s'étant vu confier la charge de son adm-

Il a ainsi créé la réserve territoriale de Scilly et Bellinghauseen, dont la gestion sera dévolue, le 15 décembre 1993, au service territorial de la Mer et de l'Aquaculture, en relation avec la Délégation de l'Environnement, la Délégation à la Recherche et le Service de l'Économie rurale, s'étant vu confier la charge de son adm-



La mission du comité est de veiller à la gestion du patrimoine naturel exceptionnel de ces atolls.

## Transport aérien

### NOUVELLE MENACE DE GRÈVE CHEZ AIR FRANCE LE 15 DÉCEMBRE

Tous les syndicats du personnel au sol et une partie des navigants d'Air France ont lancé un appel à la grève pour le 15 décembre pour protester contre l'annonce des premiers licenciements dans la compagnie, à-t-on appris jeudi au près de FO-Air France.

octobre, avec notamment 1.500 suppressions d'emplois supplémentaires en 1993, soit 5.000 emplois en moins au total sur la période 1991-93.

«Un licenciement, c'est le drame d'un homme, d'une femme, d'une famille brutalement confrontés sans

## Scilly et Bellinghausen seront mieux protégés

*Le comité de gestion de ces deux atolls a été installé*

Le 12 novembre dernier, le conseil des ministres, après avis favorable de la commission des sites et de l'Assemblée territoriale, a prononcé le classement de Scilly et Bellinghausen en réserve territoriale. Cette mesure a été prise en raison de "l'intérêt scientifique de protéger les écosystèmes, les ressources naturelles et espèces menacées qui dépendent de ces atolls".

L'administration de la réserve a été confiée au service de la mer et de l'aquaculture en liaison avec d'autres services. Un comité de gestion prévu par les textes, a été mis en place hier sous la présidence d'Edouard Fritch, ministre de la Mer.

La mission du comité de gestion sera de "veiller à la gestion du patrimoine naturel exceptionnel de ces atolls" et notamment à "la protection et la préservation des écosystèmes, la protection des ressources naturelles, l'organisation de la recherche scientifique, notamment dans le cadre de programmes régionaux d'études et de protection de certaines espèces".

D'autre part, le comité aura en charge de préparer la charte selon laquelle la réserve sera gérée.

Présidée par le ministre de la Mer ou son représentant, le comité de gestion comprend en outre le maire de la commune de Maupiti, l'administrateur territorial des Iles-Sous-le-Vent, le délégué à la recherche, le chef du service de l'économie rurale, le chef du service de la mer et de l'aquaculture, le délégué à l'environnement et deux membres cooptés représentant la recherche scientifique et les associations de protection de l'environnement.

Dans une déclaration ouvrant les travaux du comité, Edouard Fritch a souligné la volonté du gouvernement de préserver le patrimoine naturel de ces atolls en concluant: dans un monde qui évolue en permanence, qui égratille s'il ne détruit la nature, j'estime qu'il y a dans la création de cette réserve un espoir à devoir saisir pour la formation de nos générations futures à l'idée que la nature est un bien précieux et fragile, résolument indissociable de la personne humaine et de ses actes.

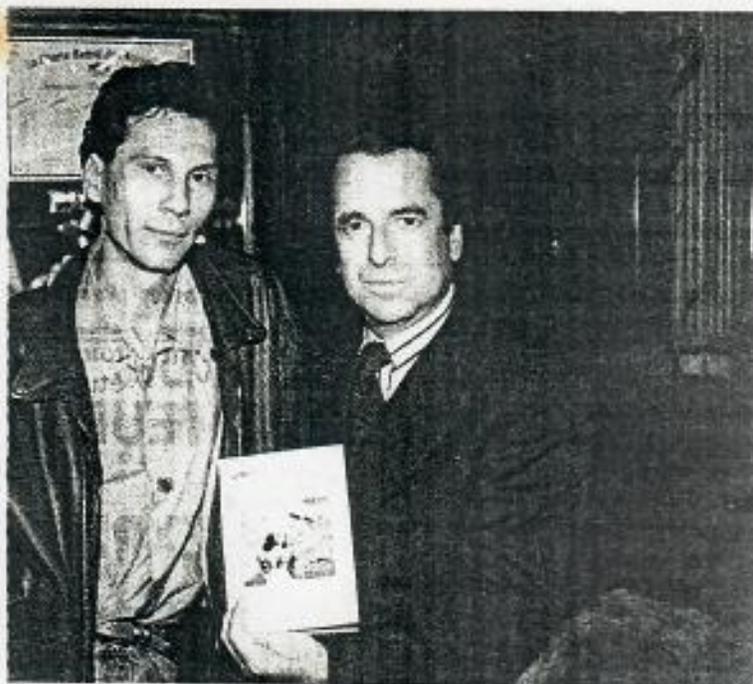
Le ministre de la Mer a annoncé que le Fonds d'Entraide aux Iles se prononcera ce vendredi sur les mesures d'intervention à Scilly pour réhabiliter les lieux de ponte des tortues. Le conseil a poursuivi ses travaux en adoptant son règlement intérieur. Il se réunira à nouveau le 28 janvier pour poursuivre la préparation de la charte de la réserve.



Un classement dicté par l'intérêt scientifique.

Les Nouvelles - Ve 4. Dec 1992

greffer  
no



## Le nono

Les tortues ont de la chance, elles vont se payer un petit voyage en bateau jusqu'à Scilly et Bellinghausen pour aller repeupler ces deux atolls déserts, paradis des tortues. Ces pauvres bêtes chassées et tuées pour agrémenter des mets délicats lors de grandes réceptions dans certaines des ISLV, ont failli disparaître totalement. Le service de la mer et l'EVAAM ont donc décidé de protéger ces bêtes, de les choyer et de surveiller leur croissance pour qu'une fois assez grandes, elles puissent se débrouiller seules là-bas. Ces animaux seront transportés aujourd'hui à bord d'un bateau vers les îles éloignées puis lâchés dans la nature.

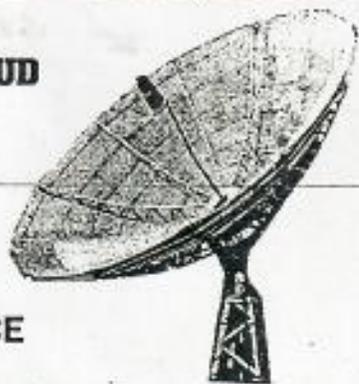
Vous voyez pas le gag dans quelques mois de retrouver nos tortues frappant à la porte des bassins de l'EVAAM? Comme les pigeons voyageurs ou les chats qui retrouvent leur chemin à des centaines de kilomètres de leur point de départ. Faudrait alors monter une "manip" pour déplacer Scilly et Bellinghausen à côté de l'EVAAM pour que les tortues ne soient pas trop dépaysées.

EMBLEMENT DE TERRE AU VANUATU

# Comprendre les séismes

P. 4-5

SUD



NCE

CENTRE VAIMA

B.P. 45 Papeete - Tahiti - Tél: (689) 42.24.81

FAX : (689) 43.42.28

Service après-vente: S.A.R.L.

Tél: 42.62.56



## AQUACULTURE

## Mission tortues à Scilly

Opération de sauvegarde et de repeuplement de l'espèce

Mardi en début d'après-midi à 14H, aura lieu l'embarquement des tortues à bord de l'AORAI au quai EVAAM à Fare Ute. Cette opération s'inscrit dans le cadre du programme "tortues 1992" de sauvegarde concernant cette espèce en voie de disparition: remise en liberté de 100 tortues marquées et élevées à la ferme de l'EVAAM à Papeari. Cette remise en liberté des jeunes tortues dont les oeufs ont été collectés en 1991 à Manuae (Scilly) est une première sur le Territoire, voire dans la région. Cette opération permettra d'évaluer le taux de réussite de ce type de ré-ensemencement avec des espèces en captivité.

Cette mission s'étalera sur onze jours, du 13 au 24 octobre. Arrivée prévue à Scilly, jeudi 15 octobre. Une mission de repeuplement et de sauvegarde des tortues: les spécialistes estiment que près de 3000 tortues sont braconnées chaque année en Polynésie, malgré la réglementation stricte qui en fait une espèce protégée. Si ce massacre continue, la tortue de mer disparaîtra bientôt de nos eaux. L'EVAAM, établissement pour la valorisation des activités aquacoles et maritimes, a donc entrepris un programme de sauvegarde et de repeuplement.

Environ 800 tortues sont élevées en bassin à Papeari sous la responsabilité de Jean-Pierre Landret. Ce type d'aquaculture est maintenant parfaitement contrôlé grâce à une bonne maîtrise de la nutrition et des conditions de l'environnement.

Une partie d'entre elles qui auront atteint une taille raisonnable après un an, seront au terme de cette mission, relâchées à Scilly, île qui constitue une réserve naturelle et un lieu de ponte habituel. Leurs chances de survie sont ainsi multipliées par 20.

Ces tortues avant d'être relâchées, seront baguées afin d'essayer de mieux connaître leurs migrations.

Il y a quelques mois, une tortue baguée en Polynésie a été retrouvée à Fidji..!



Une espèce en voie de disparition..

VDB

**Préservation de la faune**

**LÂCHER DE TORTUES D'ÉLEVAGE À SCILLY**

**D**E retour de Tahaa, un ami nous racontait pas plus tard qu'hier soir avoir assisté au retour de bonitiers. Une véritable flotte de retour de Scilly. Et à bord de chaque bonitier, une cargaison de tortues. De grosses tortues très rapidement entreposées dans un hangar. Loin des regards.

Le lendemain, elles avaient toutes disparu. Ou plus exactement, elles avaient déjà été acheminées vers les acheteurs. Les spécialistes estiment que près de 3.000 tortues sont braconnées chaque année en Polynésie. Et ce malgré la réglementation pourtant très stricte. On le sait, la tortue est protégée. Tout le monde le sait et surtout les pêcheurs. Ceux que l'on appelle «les professionnels» de la pêche. Qui disposent de bonitiers bien équipés et que l'on peut voir parfois les uns ancrant à Mehetia (île privée) les autres relâchant à Scilly ou Bellingshausen. Là, les marins y braconnent à qui mieux mieux. On assiste alors à de véritables massacres.

Si ces massacres continuent, la tortue de mer disparaîtra. C'est juste une toute petite question d'années. Face à cette situation jugée alarmante, l'EVAAM a par conséquent entrepris depuis quelques années déjà, un programme de sauvegarde et de repeuplement.

Ainsi, environ 800 tortues sont élevées en bassins à Papeari. C'est une première indiscutablement. L'opération d'élevage s'est déroulée sous la responsabilité de Jean-Pierre Landret.

Ce type d'aquaculture est maintenant parfaitement contrôlé. En majeure partie grâce à une bonne maîtrise de la nutrition et des conditions de l'environnement.

Une partie d'entre elles, ont atteint une taille raisonnable, après une année et peuvent être relâchées. Et elles le seront sur des lieux de ponte. Ainsi leurs chances de survie sont multipliées par 20, affirment les spécialistes qui suivent avec une attention particulière l'opération pilote.

Avant d'être relâchées, les tortues seront baguées afin d'essayer de mieux connaître leurs migrations. Actuellement, soyons francs, on ne sait rien ou presque sur les migrations des tortues de mer. On se contente d'observer. Il y a quelques mois une tortue baguée en Polynésie a été retrouvée à Fidji.

Cependant à quoi peut servir l'apport scientifique, le travail des chercheurs, l'élevage en bassin, ce type même d'aquaculture, et ensuite la remise en liberté des tortues de mer, si aussitôt, les pêcheurs se ruent pour les massacrer ?

Plus on relâchera de tortues et plus les braconniers feront recette. Puisque les Polynésiens raffolent de la chair de tortue de mer, et sont prêts à payer pour s'en procurer, ce qui engendre le braconnage et les massacres, pourquoi ne pas élever des tortues pour leur commercialisation...

Christian DUROCHER



**Visite de**

**MME AUGÉ LAFORÊTE REÇUE PAR**

**À** l'occasion de sa visite en Polynésie française, Mme Monique Augé-Laforête, membre du conseil d'administration du Conseil supérieur de l'audio-visuel, a été reçue jeudi après-midi par le président du gouver-

nement, accompagné par M. Albert, coordinateur des services techniques radiophoniques et télévisuels du Conseil Supérieur de l'Audio-Visuel. Alfred Poupet, président du Conseil technique radiophonique et télévisuel de la Polynésie, Mme Augé-Laforête, le président Gaston de la Commission de l'audio-visuel et dans la région.

**... ET**



SENT  
2:10 PM  
June 4-93  
BWU.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL MARINE FISHERIES SERVICE  
Southwest Fisheries Center Honolulu Laboratory  
2570 Dole St. • Honolulu, Hawaii 96822-2396Commercial: (808) 943-1221  
Telefax: (808) 943-1290

TELEFAX FOR:

EVAAM  
MR. ANAPA TAURU

DATE:

4 JUNE 93

FROM:

GEORGE BALAZS

TELEPHONE EXT: \_\_\_\_\_

NUMBER OF SHEETS TRANSMITTED (including this page)

2

MESSAGE:

Dear Mr. Tauru;

500 tags and 2 applicators  
were taken to Hawaiian Airlines  
Cargo for tonight's flight to  
Tahiti. The Air Bill # is1083 4202. Shipping has

already been paid by me.

Good luck in releasing  
your turtles! Please use the forms  
I sent to record  
length, tag number,  
dates, and place of  
release.ALOHA,  
*George Balazs*

173

HNL

1083 4202

173

1083 4202

SHIPPER'S NAME AND ADDRESS <b>NATIONAL X MARINE FISHERIES SERV 2570 DOLE ST HON HI PH 9431221</b>		SHIPPER'S ACCOUNT NUMBER		NOT NEGOTIABLE <b>AIR WAYBILL</b> (AIR CONSIGNMENT NOTE)		<b>HAWAIIAN AIRLINES</b> P.O. BOX 30008 HONOLULU, HAWAII 96820-0008 Copies 1, 2 and 3 of this Air Waybill are originals and have the same validity.	
CONSIGNEE'S NAME AND ADDRESS <b>MR. ANAPUA TAURU PAPEETE PH 42 81 48</b>		CONSIGNEE'S ACCOUNT NUMBER		It is agreed that the goods described herein are accepted for carriage in apparent good order and condition (except as noted) and SUBJECT TO THE CONDITIONS OF CONTRACT ON THE REVERSE HEREOF, THE SHIPPER'S ATTENTION IS DRAWN TO THE NOTICE CONCERNING CARRIER'S LIMITATION OF LIABILITY. Shipper may increase such limitation of liability by declaring a higher value for carriage and paying a supplemental charge if required.			
ISSUING CARRIER'S AGENT NAME AND CITY				ALSO NOTIFY NAME AND ADDRESS (OPTIONAL ACCOUNTING INFORMATION)			
AGENTS IATA CODE		ACCOUNT NO.		ACCOUNTING INFORMATION			
AIRPORT OF DEPARTURE (ADDR OF FIRST CARRIER) AND REQUESTED ROUTING <b>HON INT</b>							
ROUTING AND DESTINATION				CURRENCY		DECLARED VALUE FOR CARRIAGE	
TO <b>PPT</b> BY FIRST CARRIER <b>HA</b>		TO BY TO BY		CHGS PP X		DECLARED VALUE FOR CUSTOMS	
AIRPORT OF DESTINATION <b>PAPEETE</b>		FOR CARRIER USE ONLY FLIGHT/DATE		AMOUNT OF INSURANCE		INSURANCE - If shipper requests insurance in accordance with conditions on reverse hereof, indicate amount to be insured in figures in box marked amount of insurance.	
HANDLING INFORMATION These commodities licensed by United States for ultimate destination.				Diversion contrary to United States law is prohibited.			

NO. OF PIECES RCP	GROSS WEIGHT	kg lb	RATE CLASS COMMODITY ITEM NO.	CHARGEABLE WEIGHT	RATE CHARGE	TOTAL	NATURE AND QUANTITY OF GOODS (INCL. DIMENSIONS OR VOLUME)
1	9 L 5 K		GEN	9	MIN	\$50.00	CTN FISH TAGS
1	9					\$50.00	
A. PREPAID \$50.00		WEIGHT CHARGE		COLLECT		PICKUP CHARGES	
D. VALUATION CHARGE 2.00		TAX		OTHER CHARGES AND DESCRIPTION		DELIVERY CHARGES	
G. COD <input type="checkbox"/>		TOTAL OTHER CHARGES DUE AGENT		TOTAL OTHER CHARGES DUE CARRIER		ORIGIN ADVANCE CHARGES	
J. RFC <input type="checkbox"/>		TOTAL PREPAID \$52.00		TOTAL COLLECT		DEST. ADVANCE CHARGES	
CURRENCY CONVERSION RATES		TOTAL COLLECT IN DESTINATION CURRENCY		CHARGES AT DESTINATION		TOTAL COLLECT CHARGES	
FOR CARRIERS USE ONLY AT DESTINATION		CHARGES AT DESTINATION		TOTAL COLLECT CHARGES		DESCRIPTION OF ORIGIN ADVANCE	
(ALL COLLECT CHARGES IN DESTINATION CURRENCY)						DESCRIPTION OF DEST. ADVANCE	

The shipper certifies that the particulars on the face hereof are correct, agrees to the CONDITIONS ON REVERSE HEREOF, accepts that carrier's liability is limited as stated on the reverse hereof and accepts such value unless a higher value for carriage is declared on the face hereof subject to an additional charge and that neither as any part of the consignment contains dangerous goods (hazardous materials) such part is properly described by name and is in proper condition for carriage by air according to applicable national governmental regulations and for international shipments, the current International Air Transport Association's Dangerous Goods Regulations.

*[Signature]*  
SIGNATURE OF SHIPPER OR HIS AGENT

EXECUTED ON  
JUNE 4, 1993 HNLFF 1230 JE  
(Date) (Time) at (Place)

SIGNATURE OF ISSUING CARRIER OR ITS AGENT

173

1083 4202

**URGENT**

REF: 115 REYAM TACTIC

TO: Department of Justice, National Security Council  
FROM: [Faint text]

RE: [Faint text]

Dear Madam,

It is very urgent for us to release our assets...  
We would greatly appreciate if you could...  
Sincerely yours,



619 435479

6/27/93

S704-5999  
P803-  
P900



and Valenciennes) and *Abudefduf septemfasciatus* (Kendall and Goldsborough). These fish are customarily eaten only by the old people—who are forgetful anyway. It was not possible to find out if these fish were at times genuinely "toxic," or merely considered so on account of their habits.

#### Scombroid Poisoning

There is no evidence of any scombroid poisoning in the Gilbert or Ellice islands. This type of poisoning appears to be caused by a bacterium (Kawabata et al., 1956), which may be found in the flesh of certain scombroid fishes. This microbe reacts on certain chemicals in the flesh of the fish when too long a time is allowed to elapse between catching and cooking the fish. The reaction is quickened by tropical temperatures. In the Gilberts scombroid fishes of various species are frequently caught early in the morning and left in the sun, and later the flesh is salted for consumption the next day. No poisoning has been reported, and it is thought that the scombroid fishes inhabiting this part of the Pacific are not infected with the specific bacterium (Banner, personal communication).

#### "Castor Oil" Fish Poisoning

On a few islands where the sea is very deep, close to the shore is found the castor oil fish, *Ruvettus* sp. Although this is a favorite food, it has the reputation of causing poisoning from the purgative properties of the oil in its flesh (Fish and Cobb, 1954). The choicest part of the fish is considered to be the roe, which is boiled whole, but the flesh is eaten as well. If the fish is cooked soon after catching, no "poisoning" results. However, the Gilbertese, and in particular the Ellice people, are well aware of its purgative properties; indeed, if there is a prolonged shortage of them, perhaps due to rough seas, the amount of epsom salts sold by the stores increases to quite staggering proportions.

#### Clupeoid Poisoning

During the time that the author was in the Gilberts, clupeoid poisoning was unreported. However, in November 1962 two children are reported to have died and other people have been taken ill after eating "sardines" (*te tarabuti*) caught off Betio, Tarawa. No details are

known, except that there were two separate catches involved.

Some years ago at Bairiki, Tarawa, a woman died after eating what was described as "sardines" (possibly *Harengula* sp.). This woman was the only person taken ill among a number of people who ate the catch. At the time she was blamed for her own death, as she threaded her fish on an old piece of corroded brass wire before cooking them, instead of using a piece of coconut midrib: it was considered that she had died from copper poisoning.

#### Turtle Poisoning

The hawksbill turtle, *Eretmochelys imbricata* (Linnaeus), is considered to be deadly poisonous throughout the Gilbert and Ellice islands. It is not generally eaten, but occasionally one will be eaten in error, either in mistake for the green turtle or by someone who does not know the hawksbill's reputation.

The poisoning caused by the hawksbill is very severe, and the Gilbertese describe it as being similar to ciguatera but very much worse. It is so rare for anyone to eat this turtle, and so to be poisoned, that none of the assistant medical officers who were consulted had ever seen a case. The details of the following cases were supplied by eye witnesses on whom the severity of the poisoning had made an everlasting impression.

On Arorae, about 15 years ago, a group of people ate a hawksbill turtle. All of them became very ill and five of them died. Their symptoms were described as follows: vomiting; very severe stomach ache, and diarrhea; their skin was "very hot to touch; they were very thirsty, but something was wrong with their mouths and they were unable to drink; they were unable to move their arms and legs; finally, their skin peeled off as if they had been cooked." One man was so severely poisoned that he is said to have died less than a day after he ate the turtle, but even in that short time he peeled. The others died at various intervals, the longest surviving about a week.

The symptoms in a more recent incident on Tabiteuea involving an unknown number of people were described as follows: vomiting; severe stomach ache, and diarrhea; gradual paralysis; flaking skin, leaving great sores, especially

on the mouth, lips, and in the armpits; intense thirst, but due to the condition of the mouth, inability to drink; finally, the victims died, described as being unable to breathe.

The green turtle, *Chelonia mydas* (Linnaeus), is eaten throughout the Gilbert Islands and has not been implicated in any poisoning.

It should be noted that the hawksbill turtle is primarily a carnivore (Loveridge, 1946), preferring crabs and molluscs, although in captivity they will eat fish as well as seaweeds. On the other hand, the green turtle is primarily a herbivore, grazing many hours a day on beds of *Thalassia* (Loveridge, 1946, citing Deraniyagala, 1939). In captivity the green turtle may prefer animal food (Loveridge, 1946). In the Gilberts young green turtles are sometimes kept until they are large enough to eat, being fed almost exclusively on fish.

The hawksbill and green turtles were and still are Gilbertese family totems. Members of the families concerned will often maintain that all turtles are poisonous.

#### *Invertebrate Poisoning*

Several species of crabs are considered by the Gilbertese to be deadly poisonous, but very few species of crabs are commonly eaten. *Te kukua*, *Zoerymus aeneus* (Linnaeus), is reported by Banner and Randall (1952) to be deadly poisonous on Onotoa; although Tarawa people would agree that it is toxic, this species is eaten on Arorae, Beru, and Nonouti. Another species, *Carpilius convexus* (Forskål) generally considered to be poisonous, is similar to a commonly eaten species, *te ntababa*, the red-eyed crab, and in the dark may easily be confused with it, especially by an inexperienced fisherman. Another with the reputation of being deadly poisonous is an uncommon small black and green or yellow crab. Because of its size it would never be taken for food; but it is said to have been used by the practitioners of black magic to poison their victims. However, the Gilbertese are reluctant to discuss such practices and the crabs involved.

In September 1961 a Bairiki, Tarawa, woman died after eating crabs. The crabs had been collected by torch fishermen on the Bairiki reef. When they returned they flung the whole catch on the ashes of a fire, an unusual procedure, boiling being the usual Gilbertese method of cook-

ing crabs. It is said that the woman, being greedy, did not wait until the crabs were fully cooked, but grabbed them half-cooked from the fire and ate them. She was taken ill, removed to the Colony Central Hospital, and died. The assistant medical officer who dealt with the case described her death as being due to acute allergy poisoning. As it was dark when the crabs were cooked and eaten, identifying the species responsible was not possible.

Molluscs are not considered to be toxic by the Gilbertese on any island. Banner and Randall (1952) stated that the Onotoans reported that large tritons, *Charonia tritonis* (Linnaeus), were toxic; however, they could find no specific case of intoxication from this snail (Banner, personal communication). The large conch, *Strombus* sp., has been reported as toxic from certain areas in the Bahamas (Randall, 1958), but apparently this mollusc is not found in the Gilberts. The blood-mouth conch, *Strombus* sp., is one of the most common shellfish in the Gilberts. Vast numbers are collected and eaten, either raw or cooked, but so far none have caused any poisoning. Both small and large spider conches, *Lambis* spp., found on the algae-covered reef flats as well as in deeper water, are commonly eaten by the Gilbertese, but have never been reported toxic. The commercial trochus, *Trochus niloticus* (Linnaeus), is not found in the Gilberts, but smaller *Trochus* spp. are not uncommon; although these are eaten when collected during general gleaning on the reef, they are considered somewhat small for food. Turban shells, *Turbo* spp., are eaten and are commonly used for bait. These snails are picked up on the reef, broken open, a piece is bitten off and put on the hook, and the rest is eaten raw at the time. Cowries of various kinds are found throughout the Gilberts, but are never eaten by the Gilbertese. Many varieties of polychaetes are eaten without any causing illness.

The Gilbertese, surprisingly enough, do not make as much use of the various seafoods on their reefs as do many islanders in the Pacific. Sea urchins, again reported by Randall (1958) as causing a ciguatera-like poisoning, are not eaten by the Gilbertese.

During the Japanese occupation some varieties of seaweeds were eaten by the Gilbertese, but as soon as food supplies returned to normal



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Dr. G. H. Balazs April 19, 1993  
c/- Southwest Fisheries Science Center Honolulu Lab.  
National Marine Fisheries Service, NOAA  
2570 Dole St., Honolulu, Hawaii 96822-2396

Dear George,

Thanks for sending your reprints - very interesting indeed. Your package arrived just as we were about to leave for a month in Central America. (We stayed with Jack Frazier in Merida, where Cam gave a slide talk at Jack's Institute on the fragility of coral islands, with special reference to Arrecife Alacran: seabirds, turtles, etc.).

It was great to renew acquaintance with you at Jekyll Island, and especially to hear about your travels in the far-flung isles of French Polynesia. You obviously did far more than me at Bellingshausen, so my comments are few. However, it may be of interest that the people there also told us that they rarely eat turtles, preferring the plentiful fish. There is evidently a large population of turtles in the lagoon. Because of the shallow surrounding reefs, sharks never enter the lagoon, thus the lagoon is safe for turtles. The lagoon may be "perched", as at Caroline. I did not make a note of this at the time, but I do recall the extremely shallow reef-flats (we lost a paddle, so I walked part of them) and having to slide the Zodiac down into the swirling "passage", hoping that the darned engine would start. I saw two turtles - big ones, prob. 90-100 cm curved carapace.

We circumnavigated the entire atoll looking for a better spot than the "landing" - no beaches at all. Upraised, very jagged reef. Plenty of fine sandy beaches on several islets facing the lagoon. There were 13 people there at the time of our visit: 4 females, 7 males, and 2 babies. In your conservation pursuits for this atoll, I'm sure you will mention the importance of the Vini peruviana, since this harbors one of its largest populations.

Enclosed are a few items that may be of interest:

1. Fact Sheets on Vostok, <sup>Caroline</sup> and Flint. Papers in prep on both islands.
2. A paper on Caroline Atoll - a better version is in press at ARB. There's a bit on turtles in Pt. II (pp. 149, 152)
3. Photo of small green turtle shells killed by fishermen. I had to take these pix surreptitiously so had no time to measure carapaces. You can figure out the approximate sizes in comparison to the corrugated iron sheet. They were taken in May 1990; in 1988 the turtles seen swimming in the lagoon were larger.

4. ICBP Line & Phoenix Islands Expedition Report. Jim Maragos & I spent much time trying to get the Kiribati Govt. to agree to a triple-island preserve (Caroline, Vostok, Flint), to no avail.

5. Relevant pages from my diary. We arrived at Bellingshausen near the end of a 3-month trip, half of which we sailed without a backup engine ... has anyone else visited there en route from Christmas Island to Caroline, unable to make any easting?? We were all pretty worn out by the time we arrived there, as you will gather from the tone of my diary. I had to push hard to even get <sup>the boat</sup> onto the island. How I wish we could have spent a night there.

Keep up the good work 

Aloha

Kay 

George

**VOSTOK ISLAND**

**FACT SHEET**

NAME: Vostok Island.

FORMER NAMES: Stavers, Anne, Reaper, Augusta, Leavitts Island

DISTRICT: Southern Line Islands

COUNTRY: Republic of Kiribati

REGION: South-central Pacific Ocean

LOCATION: 10°06'S, 152°23'W; 86 nautical mi. NNW of Flint Island and 125 naut. mi. W of Caroline Island

MAXIMUM/MINIMUM ELEVATION: 0 to 5 m

GENERAL DESCRIPTION: A small, triangular, filled-in atoll surrounded by a fringing reef which is widest in the N and SE. Primarily of windward character. Interior soils composed of thick peat and phosphatic hardpan. No fresh water.

SIZE: 1.5 Km long, 1.2 km wide at its widest point (excluding reef)

AREA: 24 ha

OWNER: Government of Kiribati. As of October 1989, not leased to private parties; as of November 1990 lease pronounced unrennewable.

PROTECTION STATUS: Wildlife Sanctuary, as of 19th June, 1979

MOTIVES FOR SANCTUARY DESIGNATION: The least disturbed of the Line Islands, with no prospects for development.

HABITATS: Vegetated 18.5 ha, unvegetated (sand/coral rubble plus fire-damaged clearings) 6.5 ha, reef 11.4 ha

1. **Pisonia forest** (Pisonia grandis). Area 13.5 ha, to 25 m tall. Dominates the island.

2. **Herb mats** (Boerhavia repens, B. tetrandra). Area 5.0 ha, few cm. tall. Fringes pisonia forest and occurs sparsely within burned clearings in the interior.

PLANT SPECIES: Three species, one tree and two herbs (see above), all indigenous. No introductions.

ANIMAL SPECIES: **Breeding Seabirds:** Eight species known to breed, mostly in high densities. Figures represent the largest numbers of individuals estimated: Brown Booby (Sula leucogaster) 28 ± 5, Masked Booby (S. dactylatra) 495 ± 50, Red-footed Booby (S. sula) 3000 ± 1000, Great Frigatebird (Fregata minor) 4500 ± 1500, Lesser Frigatebird (F. ariel) 500 ± 125, Brown Noddy (Anous stolidus) 500 ± 100, Black Noddy (A. minutus) 3000 ± 1000, White or Fairy Tern (Gygis alba) 1250 ± 750.

**Non-breeding Seabirds:** Sooty Tern (Sterna fuscata) and at least 3 species of wintering shorebirds: Bristle-thighed Curlew (Numenius tahitiensis),

Lesser Golden Plover (Pluvialis dominica), Wandering Tattler (Heteroscelus incanum). One migratory landbird: Long-tailed Cuckoo (Eudynamis taitensis).

**Reptiles:** Azure-tailed Skinks (Emoia cyanura) very common on the forest floor. Green turtles (Chelonia mydas) reported offshore but no nests of signs of their activity have been found; the incessant high surf and steep, coarse coral gravel beaches are quite inhospitable to potentially nesting turtles.

**Land Crabs:** Scarlet land hermits (Coenobita perlatus) very common. Coconut crabs (Birgus latro) uncommon.

**Mammals:** Polynesian rats (Rattus exulans) abundant.

**HUMAN ACTIVITIES:** Essentially uninhabited for its entire history. No pre-historical remains known. Never supported more than a few temporary workers. Few landings ever made. First recorded landing 1873. Soon after a small encampment was established to dig guano. However, no moorings were laid down and the blasted boat passage through the reef remains unfinished, so "it may be surmised that the island was speedily abandoned as being useless" (Maude, unpub. ms, ca 1942).

In 1922, 100 coconut palm seedlings planted, of which there was no trace in 1934 or later. Stones outlining a grave-like structure found in March 1990 in a clearing by the landing (dead sailor?).

Very little known. Scientific visits: Mangaravan Expedition 1934, Line Islands Expeditions 1974 and 1977, ICBP Line & Phoenix Island Expedition 1990.

**CONSERVATION IMPORTANCE:** Vostok, a tiny filled-in atoll constantly buffeted by strong winds and protected by wave-lashed reefs, is a unique coral island having, as its most famous attribute, the smallest number of plant species of any land mass in the world. Its vegetation is composed almost entirely of tall pisonia forest, around and within which clamour approximately 15,000 seabirds. Its waters are rich in marine life. It is very difficult of access. Its conservation qualities are mostly of international importance:

1. An outstanding preserve of pisonia forest, one of the largest pure stands known.

This tree, to 25 m tall, is becoming rare in the Pacific. Other groves exist at Washington, Fanning, Caroline, Flint, Christmas (Line Islands) and tiny Jemo (Marshall Islands).

2. Sanctuary for 8 species of breeding seabirds, most of which breed in high densities. Total population estimates 13,300 + 4500. Vostok also shelters several species of migratory land- and shorebirds.

3. Sanctuary for azure-tailed skinks.

4. Sanctuary for coconut crabs.

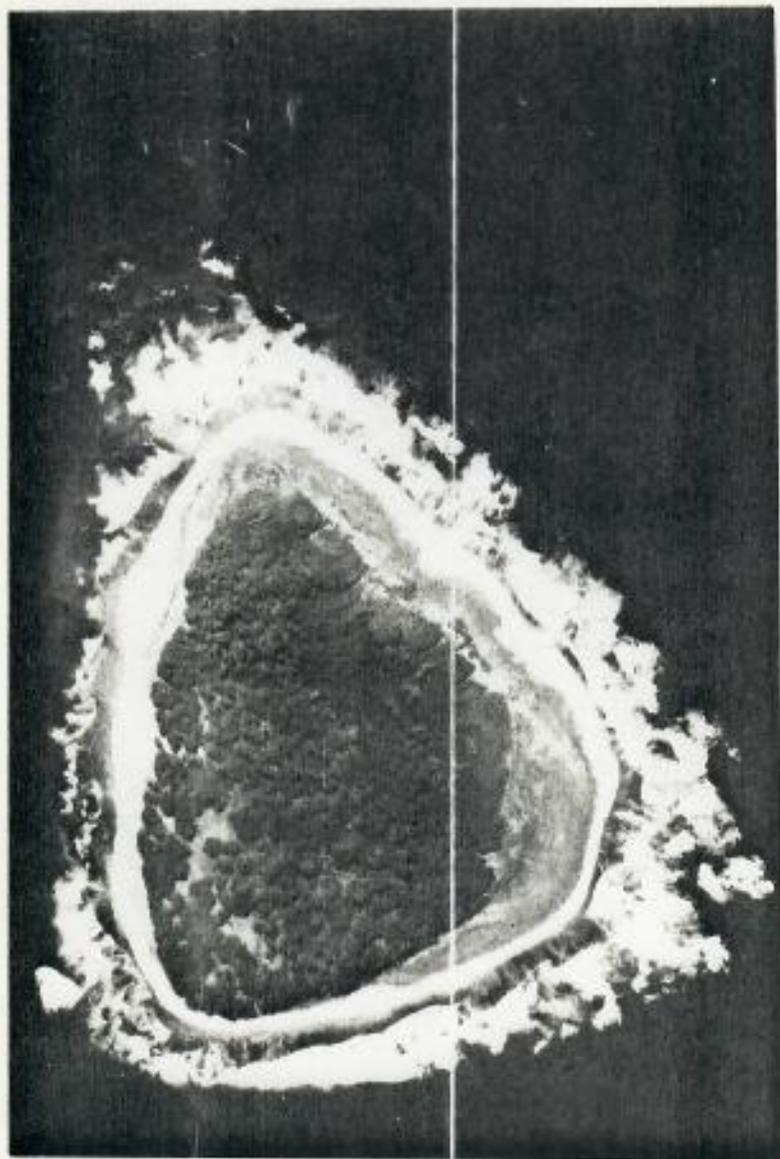
This huge crab, the largest terrestrial invertebrate, is currently under consideration for world-wide threatened status.

5. Sanctuary for an intact, undisturbed marine ecosystem. Vostok abounds

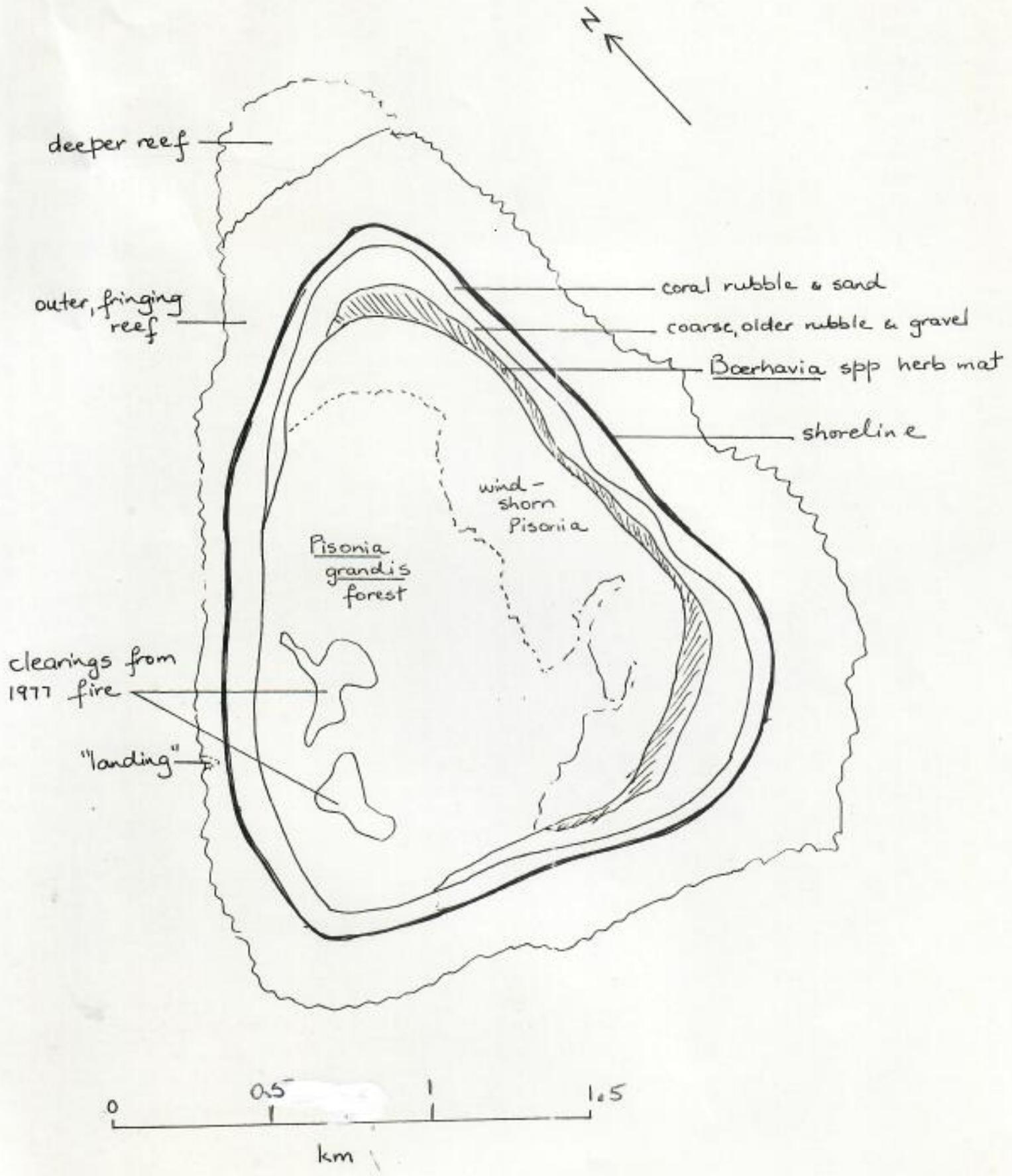
with fish and black-tipped reef sharks. Its nearshore waters, like Flint, have never been fished commercially.

November 1990

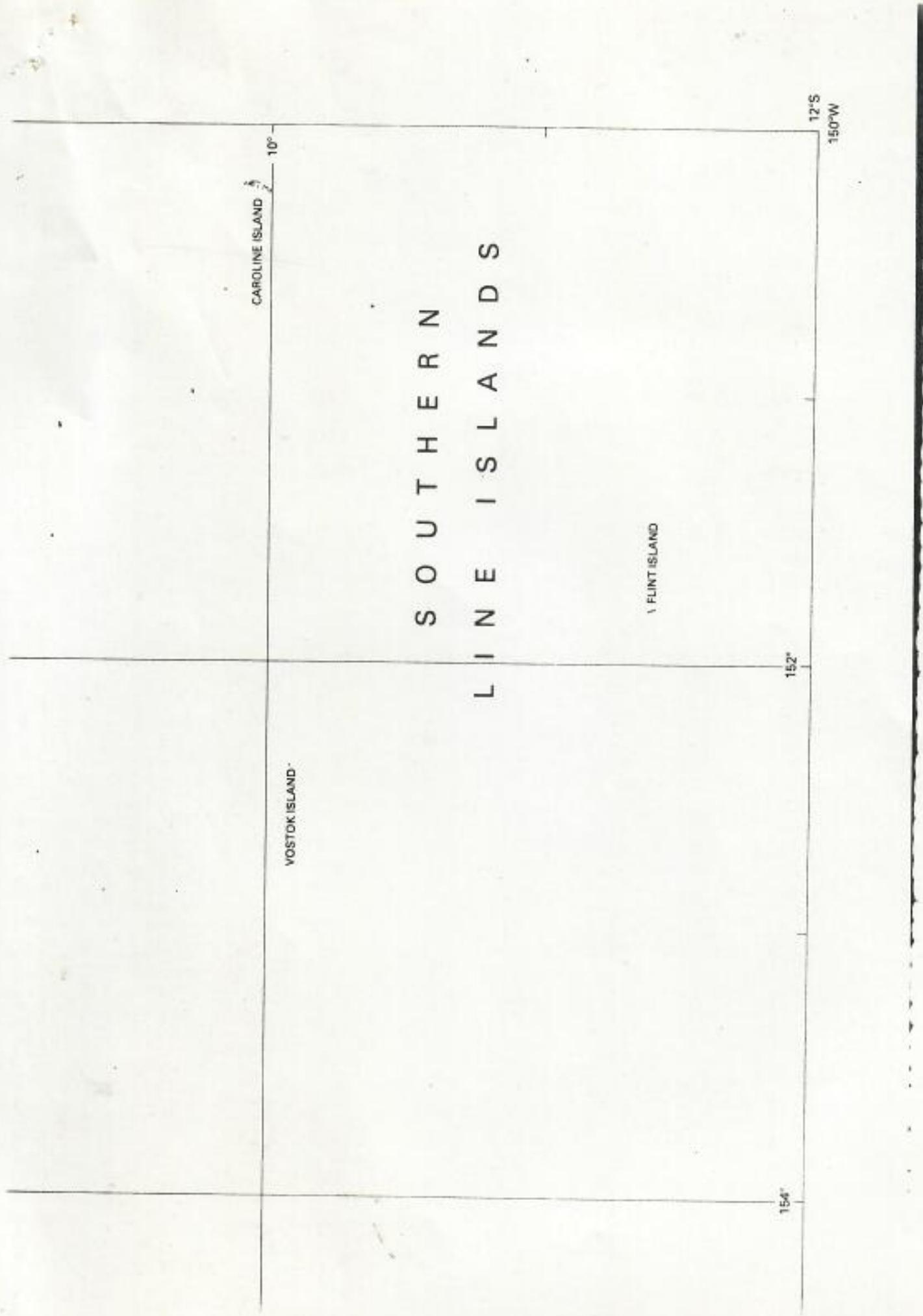
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Athens, Georgia, USA 30605  
ph. (404) 546 - 1156



# VOSTOK ISLAND (24 ha)



drawn from RNZAF aerial photo, 1986  
and field work 1990



CAROLINE ISLAND

VOSTOK ISLAND

FLINT ISLAND

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152°

12°S

150°W

tropic of Cancer

HAWAII

20'

10'

- KINGMAN REEF
- PALMYRA ATOLL
- < . WASHINGTON IS.
- / . FANNING IS.
- ⚡
- ⚡
- KIRITIMATI (CHRISTMAS IS.)

equator

0'

JARVIS IS.

PHOENIX GROUP

KIRIBATI

- MALDEN IS.
- STARBUCK IS.
- FILIPPO REEF

TOKELAU

VOSTOK IS.

CAROLINE ATOLL

MARQUESAS IS.

10'

AMERICAN SAMOA

FLINT IS.

FRENCH POLYNESIA

WESTERN SAMOA

COOK ISLANDS

TUAMOTU ARCHIPELAGO

NIUE

SOCIETY ISLANDS

TAHITI

tropic of Capricorn

**FLINT ISLAND****FACT SHEET**

NAME: Flint Island

DISTRICT: Southern Line Islands

COUNTRY: Kiribati

REGION: South-central Pacific Ocean

LOCATION: 11°26'S and 151°41'W; 86 nautical mi. SSE of Vostok Island and 126 nautical mi. SW of Caroline Island

MAXIMUM/MINIMUM ELEVATION: 0 to 7 m

GENERAL DESCRIPTION: Filled-in atoll of elongated, trapezoid shape, surrounded by a fringing reef which tapers north and south. Four interior ponds contain fresh, peaty water.

SIZE: 3.5 km long, 0.8 km wide at its widest point (excluding reef)

AREA: 324 ha

OWNER: Government of Kiribati. As of November 1990, no longer leased to private citizens.

PROTECTION STATUS: None

PRINCIPAL PROTECTION MEASURES TAKEN: Negotiations begin soon between the Kiribati government and The Nature Conservancy Hawaii for Flint to become part of a triple-island wildlife preserve, along with nearby Caroline and Vostok.

HABITATS: Lush vegetation 249 ha, unvegetated 75 ha, reef 140 ha.

1. **Overgrown coconut plantations** (192 ha, 60 - 100 years old, 18 m tall)

2. **Indigenous forests** (57 ha, to 30 m tall, peripheral fringe, best developed on the windward side):

a) **Tournefortia scrub**

b) **Mixed Forest** (Pisonia grandis, Cordia subcordata, Guettarda speciosa, Calophyllum inophyllum, Pandanus tectorius)

3. **Peat bogs and lakes** (1 "large", 3 small, 3 ha total, distributed evenly along north-south axis). Shallow depressions of peaty, fresh water, surrounded by pure Thespesia populnea and Cocos nucifera. Possibly hollows from guano diggings in late 19th Century.

PLANT SPECIES: At least 28 species, at least 18 of which are indigenous. Total of 43 species recorded, but some exotics around settlement appear extinct. Indigenous species, in addition to trees noted above, include Ipomoea macrantha, Laportea ruderalis, Phymatosorus scolopendria, Psilotum nudum, Cyperus pennatum, Hibiscus tiliaceus (introduced also?)

ANIMAL SPECIES: **Breeding Seabirds:** Seven species known to breed, although in relatively small numbers. Figures represent the largest numbers of individuals estimated: Brown Booby (Sula leucogaster) 4+, Red-footed

Booby (S. sula) 3000, Great Frigatebird (Fregata minor) 200+, Lesser Frigatebird (Fregata ariel) 1500, Brown Noddy (Anous stolidus) 500, Black Noddy (Anous minutus) 500, White or Fairy Tern (Gygis alba) "many".

**Non-breeding Birds:** Sooty Tern (Sterna fuscata) and at least 4 species of wintering shorebirds: Bristle-thighed Curlew (Numenius tahitiensis), Lesser Golden Plover (Pluvialis dominica), Wandering Tattler (Heteroscelus incanum), Ruddy Turnstone (Arenaria interpres).

**Reptiles:** Green Turtles (Chelonia mydas) breed in fair numbers. Azure-tailed Skinks (Emoia cyanura) in prodigious numbers.

**Land Crabs:** Coconut crabs (Birgus latro) superabundant. Coenobita, at least 3 species, common (crimson perlatus, bluish brevimanus?, maroon, unidentified), Cardisoma spp. common.

**Mammals:** Polynesian rats (Rattus exulans) very common. Feral dogs probably extinct.

**HUMAN ACTIVITIES:** In 1874 ship moorings laid down and around 1902 a boat passage was blasted through the reef. Phosphatic guano mined 1872 - 1890 (30,000 tons). Managed as a coconut plantation 1875 - 1935 (av. 2000 tons/year). Since then uninhabited except for sporadic trips by Tahitian laborers for copra cutting. Main settlement by northwest point, with tramway extending down center of island. Both now overgrown.

No pre-historical remains known. Never supported a long-term population. Very little known. Scientific visits: Eclipse Expedition 1908, Mangaravan Expedition 1934, Line Islands Expedition 1974, ICBP Line & Phoenix Islands Expedition 1990.

**CONSERVATION IMPORTANCE:** The following attributes are mostly of international importance:

1. An outstanding haven for coconut crabs; their astronomical numbers include a sizable proportion of their population of world record size. Flint probably supports the highest densities and largest individuals of these enormous land crabs in the world (up to three feet across, including legs). The world's largest living invertebrate, coconut crabs are currently under consideration for world-wide threatened status. On Flint, 1990 estimate is approximately one million, density 1 crab/2 sq. meters. Measurements of 49 crabs indicate that more than 25% of males are larger than the largest crabs ever recorded within the species' Indo-Pacific range: thoracic width 65 - 213 mm,  $\bar{x}$  = 149 mm. Females to 157 mm wide,  $\bar{x}$  = 139 mm; this average size is the exact size of the largest females previously recorded from the Pacific.

2. An important green turtle nesting site.

A 1990 perimeter survey revealed 20 sets of tracks, many pits, and one skeleton.

3. A sanctuary for indigenous trees, particularly quality species such as Pisonia and Cordia, which are becoming increasingly rare in the Pacific. Small pure stands and mixed indigenous forest fringe the abandoned coconut plantations, totalling 57 ha. Canopies to 30 m tall.

Excellent for longterm studies on atoll tree growth & recovery of indigenous forests.

4. Sanctuary for prodigious numbers of azure-tailed skinks. Subjective population estimate in 1990: 2 million skinks, approximately

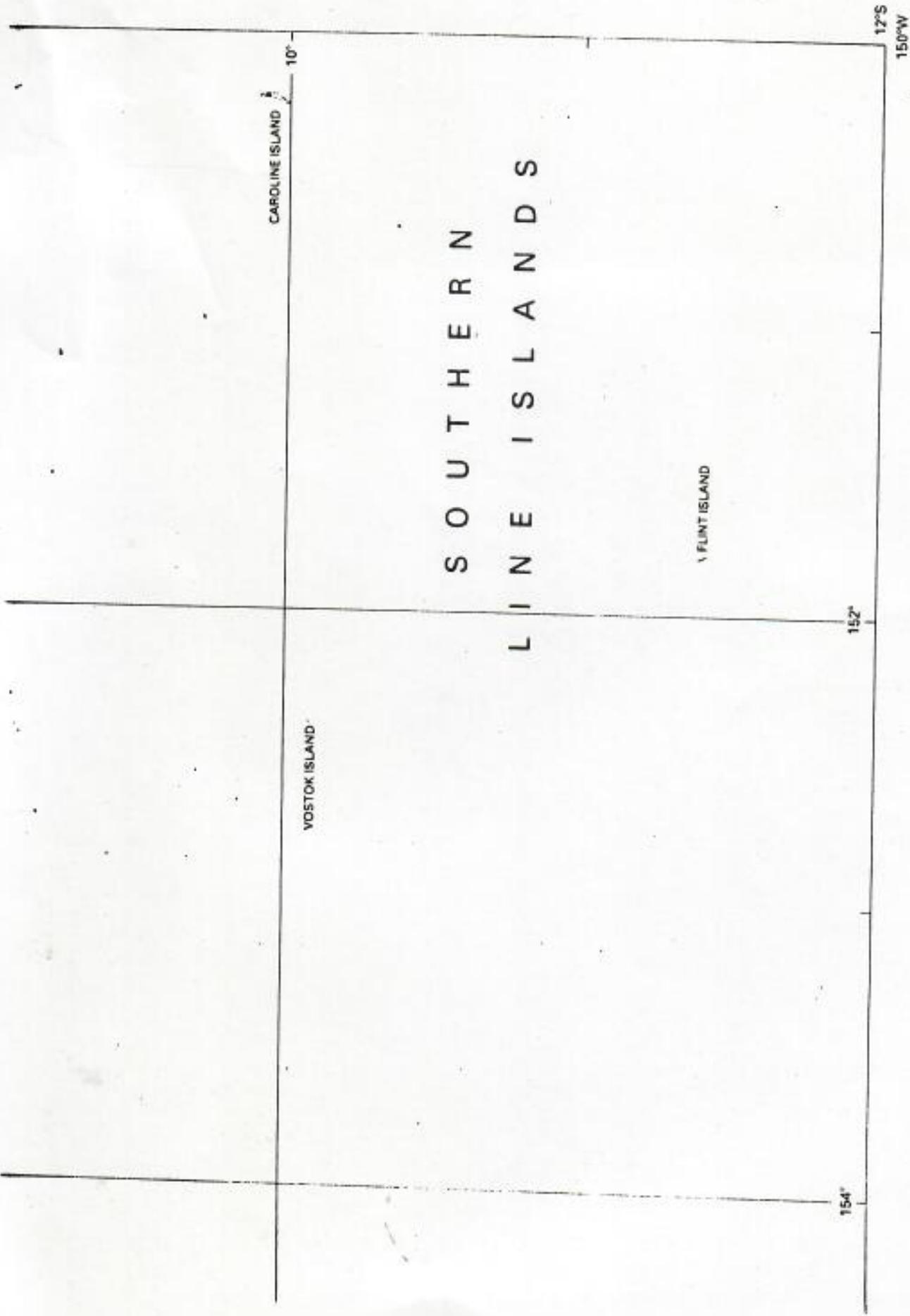
one per sq. meter. A remarkable density, perhaps unique.

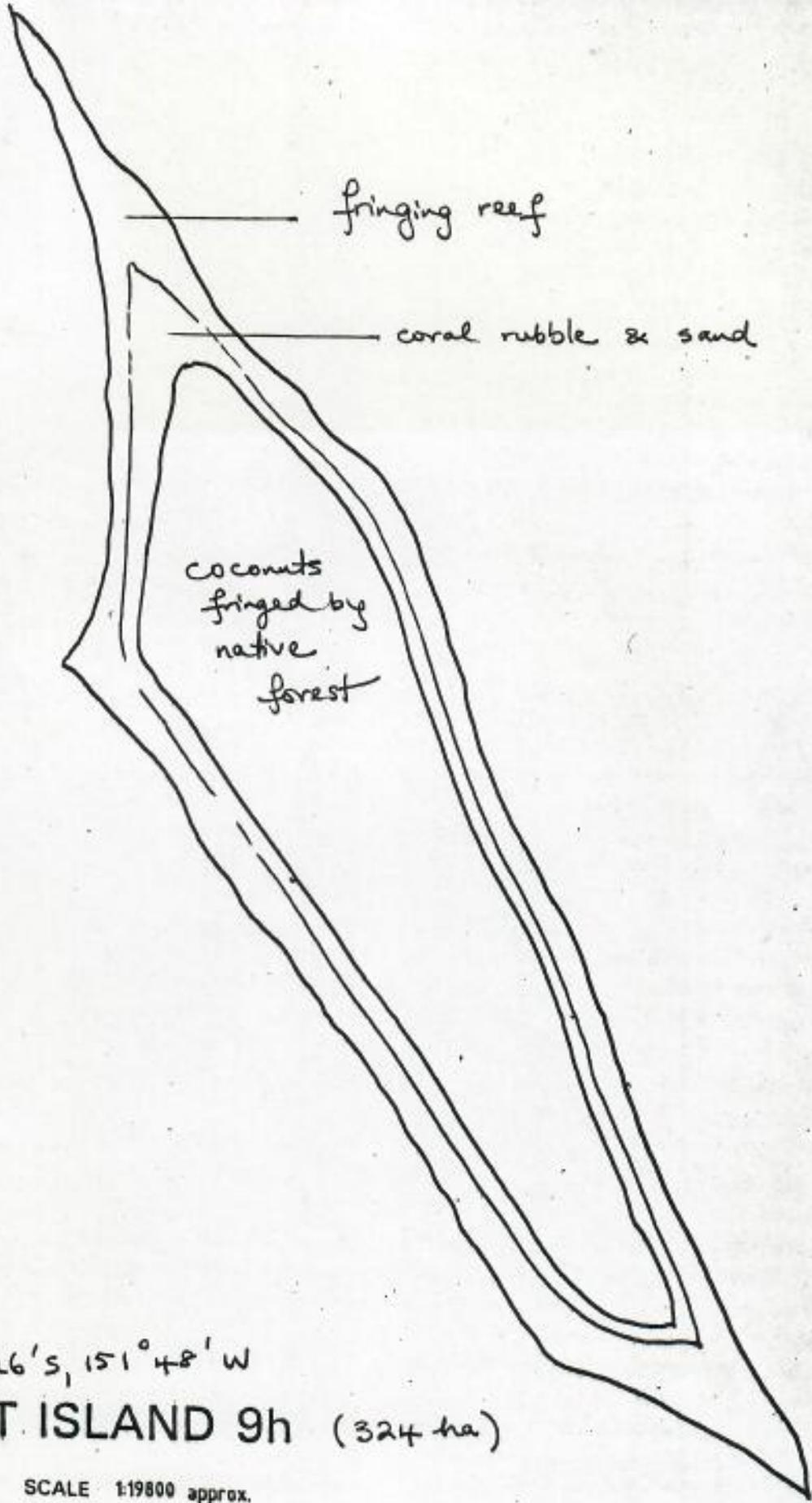
5. **Sanctuary for 7 species of breeding seabirds** and wintering ground for shorebirds. Seabirds do not breed in extraordinary numbers, but nevertheless this uninhabited island provides undisturbed habitat, and as the native forests expand their numbers will increase.

6. **Sanctuary for an intact, undisturbed marine ecosystem.** Flint abounds with fish and black-tipped reef sharks. Its nearshore waters and surrounding seas have never been fished commercially.

November 1990

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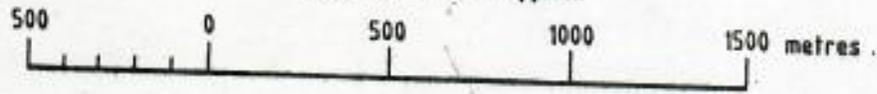




11° 26' S, 151° 48' W

**FLINT ISLAND 9h** (324 ha)

SCALE 1:19800 approx.



drawn from RNZAF aerial photo 1986

## CAROLINE ATOLL

NAME: Caroline Atoll

DISTRICT: Southern Line

COUNTRY: Kiribati

REGION: South-central

LOCATION: 10°00'S and

MAXIMUM/MINIMUM ELEVATION: 0 to 5 m



SHAPE: A true atoll consisting of a crescentic co of 39 islets centered on a continuous reef enclosing a relatively shallow lagoon

SIZE: 9.7 km long, 2.3 km wide at its widest point

AREA: 399 ha

OWNER: Government of Kiribati, with pending 50-year lease (renewable every five years) to Mr Felix Urima, French Polynesia

PROTECTION STATUS: None

PRINCIPAL PROTECTION MEASURES TAKEN: Since November 1988 two international conservation agencies have been contacted: The Nature Conservancy (U.S.A.) and International Council for Bird Preservation (U.K.). From February to June, 1990, this latter organization (ICBP) part-sponsored the ICBP 1990 Line Islands Expedition, which included ecological surveys of Caroline, Flint and Vostok, as well as discussions with the Ministry of the Line & Phoenix Islands at Christmas Is.

LIST OF HABITATS: Natural herb mats, beach scrub with Suriana, Pandanus forest, Tournefortia scrub and forest, Cordia forest, Pisonia forest, and overgrown coconut woodlands. Atoll is dominated by fairly lush woodlands up to 21 m tall, covering 86% of the land area.

PLANT SPECIES: 25 (excluding extinct and temporary garden species), 80% of which are indigenous (native). Coconuts present, but only dominate one islet; 23 islets harbor wholly indigenous vegetation.

ANIMAL SPECIES: Ten species of seabirds breed: Red-tailed Tropicbird (Te Taake), Brown Booby (Te Kibui), Masked Booby (Te Mouakena), Red-footed Booby (Te Kota), Great and Lesser Frigatebirds (Te Eitei), Black Noddy (Te Mangkiri), Brown Noddy (Te Kunei), White/Fairy Tern (Te Matawa), Sooty Tern (Te Tarariki), Blue-gray Noddy (Te Kunei), and Reef Heron (Te Kaai) probably also breed.

Wintering grounds for at least five species of migratory shorebirds (including Bristle-thighed Curlews) and the

Key

A.K. Kopler

Chelonia mydas shells  
Caroline Atoll, N. Line Is.  
May 1990, Killed by  
Tobitara Johnson

**CAROLINE ATOLL**

NAME: Caroline Atoll or Caroline Island

DISTRICT: Southern Line Islands

COUNTRY: Kiribati

REGION: South-central Pacific Ocean

LOCATION: 10°00'S and 150°14'W

MAXIMUM/MINIMUM ELEVATION: 0 to 5 m

SHAPE: A true atoll consisting of a crescentic coral ring of 39 islets centered on a continuous reef enclosing a relatively shallow lagoon

SIZE: 9.7 km long, 2.3 km wide at its widest point

AREA: 399 ha

OWNER: Government of Kiribati, with pending 50-year lease (renewable every five years) to Mr Felix Urima, French Polynesia

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PLANT SPECIES: 25 (excluding extinct and temporary garden species), 80% of which are indigenous (native). Coconuts present, but only dominate one islet; 23 islets harbor wholly indigenous vegetation.

outdated politically but not factually  
Key

Long-tailed Cuckoo (Te Kabunei), a migrant from New Zealand.

Polynesian rats are common to abundant. Green turtles occur in relatively small numbers and probably breed. Three species of skinks and geckos.

Large terrestrial coconut crabs and at least three other species of land crabs are important elements of the fauna.

HUMAN ACTIVITIES: Inhabited by small numbers of Tuamotans in pre-historical times. Never supported a long-term population. During periods of guano export 1873-1895 and copra production 1886-1936 maximum population known was 31 people. From 1936-1987 occasional copra parties from Tahiti.

Very little known by the outside world until 1988. From 1988 to present, inhabited by a single European family. Number of visiting boats increasing.

CURRENT EXPLOITATION: In March 1990 Urima, though his lease is not yet fully approved, nor does it include exploitation of the lagoon and seaward reefs, began commercial fishing along Caroline's outer reefs and within the lagoon (2 tons of fish on his first trip). His Polynesian workers have also killed dozens of coconut crabs (for eating and preservation in formalin for curios), and unknown quantities of green turtles, seabirds, seabird eggs, giant clams, lobsters and marine crabs. Urima's plans for the exploitation of Caroline include exporting timber, running a small hotel and casino, pearl culture, turtle farming, constructing an airstrip and blasting a channel through the leeward reef. In April 1990 he also permitted a large cruise ship, the World Discoverer, to take tourists to Caroline without consulting the Kiribati Government.

CONSERVATION IMPORTANCE: Caroline, with the majority of its islets still in pristine condition, is one of the most beautiful, least spoiled atolls in the Pacific. The Line and Phoenix Is., of which Caroline is a part, harbor some of the largest colonies of tropical seabirds in the world, and many of the last breeding refuges in the Pacific. It is important that Caroline, whose exploitation is just beginning, should be protected immediately.

Caroline Atoll's most outstanding attributes, annotated in the appendix to this report, are:

1. Seabird populations of national and international importance
2. Plant ecosystems (including Pisonia, Cordia, and Tournefortia forests) of national and international importance
3. Its geology, and marine and terrestrial ecosystems are prime outdoor ecological laboratories for research on ground water, fish poisoning and numerous facets of ecology
4. Coconut crab populations of Pacific-wide importance

5. The stunning beauty of its multicolored lagoon-reef system and its lushly wooded islets (see photos)
6. Outstanding coral reefs thickly studded with giant clams
7. Breeding site for green turtles
8. Ancient Tuamotan marae

EFFECTS OF DEVELOPMENT AND EXPLOITATION: Man's presence anywhere - especially on pristine or near-pristine islands - brings rapid, generally irreversible, changes. There are few, if any, islands remaining in the Pacific which can claim the impressive array of conservation features exhibited by Caroline, thus it is imperative that such a relatively untouched island should remain undeveloped.

Currently Caroline is uninhabited, except for one family of volunteer caretakers who live a spartan yet ecologically sound lifestyle. There are no roads, stores, vehicles, stores, jetties, services (water, sewage, food), and no communication except a private HAM and marine SSB radio. There is no passage into the lagoon or safe sea anchorage.

There are many factors to consider before allowing even a small amount of development on Caroline:

1. It is not an island for tourists. It has high populations of rats and mosquitoes. It is several days' boat trip from medical aid (Tahiti, 830 km distant) and there is no airstrip. The lagoon has many sharks, dangerous to swimmers.
2. It is hot and humid, with no beaches suitable for sunbathing. Sand comes and goes with storms, leaving coastlines thickly littered with coarse coral rubble.
3. Solid waste and sewage disposal pollute lagoons, killing corals, destroying the immaculate clarity of the waters, and ushering in fish poisoning (ciguatera).
4. People introduce weeds and garden plants, which interfere, often drastically, with natural ecosystems. This has happened on every inhabited island in the world, resulting in diminishing numbers and extinctions of plants, seabirds, insects and others forms of wildlife.
5. Caroline has no water supply except rain. Efforts to dig for drinkable ground water have been unsuccessful.
6. There is no commercial timber. Urima's plans include timber export, yet he has not yet visited Caroline, and knows nothing of its conservation attributes or international worth. He is ignorant of its types of trees and hence their unsuitability for commercial harvest. For example, wood from the tallest trees, pisonia or Te Buka (Pisonia grandis), is soft and spongy, disdained by Polynesians even for firewood!
7. There is no passage into the lagoon. Blasting a channel

so popular that the former is now a Cook Islands' National Park, and owners of the latter (a private, U.S.-owned island south of Hawaii) are actively seeking protection status for it. Illegal activities, wanton destruction of wildlife, littering, lagoon pollution, and even a scandalous murder on Palmyra, prompted these changes. Neither is as pristine as Caroline.

It is urgently requested that the Kiribati government understand the aesthetic and conservation values of Caroline and act quickly to ensure its protection before it is too late.

2. Before Urima's lease to exploit and develop Caroline is granted, an alternative proposal involving preservation of its wildlife, should be considered.

This idea was suggested by the Ministry for the Line & Phoenix Is. and is excellent. We heartily endorse it, and will co-operate to bring this about. Reports will continue to be sent, and liaison with the Wildlife Unit and conservation agencies will increase. The same applies to Flint and Vostok Islands.

3. Because the Kiribati Government has sensibly established policies for protecting wildlife, it is recommended that officials seek advice both from the Wildlife Unit on Christmas Island, and from the group of international biologists whose sole purpose for existence is to advise Kiribati on matters pertaining to Wildlife (Scientific Advisory Panel for Nature Conservation in the Line and Phoenix Groups\*).

One of the panel members and his wife (Drs. Cameron and Kay Kepler), as well as Katino Teeb'aki (Wildlife warden, Christmas Is.) visited Caroline with the Russian Expedition in 1988, becoming the first biologists to thoroughly survey the entire atoll. A short report and draft of a long one have been sent to Christmas Is. Teeb'aki's report (attached) highly recommends that Caroline be afforded full protection, possibly as an International Biosphere Preserve.

Another panel member, Dr. M. Garnett, lived three years on Christmas Is., instigated the Wildlife Unit, and supplied detailed reports on wildlife management of the Line & Phoenix Is. to the Kiribati Government. He was the force behind the 1990 ICBP Expedition to the Line & Phoenix Is., and co-leader with Dr. Kay Kepler (above). The 1990 expedition visited Caroline, Flint, Vostok and Christmas Islands. Dr. Garnett and the Keplers are also exploring the possibilities of a World Heritage Site and or Nature Conservancy (U.S.) Preserve.

4. As part of the conservation proposal, it is recommended that one or more authorities on the wildlife of Caroline accompany government officials on their pending visit to the island with Urima.

If two lease proposals are to be considered, then each should be fairly represented before Caroline's future is determined. Urima's lease is for 50 years. Both the financial

through Caroline's reef would:

- a) be a difficult and prohibitively expensive task. It will destroy the wilderness nature of Caroline by creating enormous piles of rubble and debris and opening the way for increasing numbers of people, pollution, and wildlife destruction
- b) be useless because the lagoon is shallow and criss-crossed with a maze of reefs over most of its lower end and middle half (see aerial photos). These are Caroline's most stunning reefs; anchors, sewage, detergents and other pollutants will soon kill them.
- c) be impractical, as no boats, keeled or not, are suitable to Caroline's lagoon. Even inflatables cannot venture up-lagoon without the passengers "walking" the boat across shallow sections.
- d) alter the flow dynamics of the lagoon, especially during outgoing tides, when the trapped water level is higher than the surrounding sea. A deep-water passage would expose the lagoon reefs and clam beds to the air as much as 1.5 feet (0.5 m), causing deterioration. Simultaneously the lagoon level would fall, making it even less appropriate for boats.
- e) introduce fish poisoning, a direct and predictable result of reef disturbance and pollution.

8. People disturb and destroy wildlife. Traditionally, islanders eat marine life, clear land, eat coconut crabs, etc. but in an overpopulated world with fast disappearing resources, traditions must change.

9. Overfishing occurs. Caroline's fish are typically more abundant and larger than those of inhabited atolls. However, commercial fishing rapidly reduces both numbers and size of fish.

6. There is no excess of tourists or shortage of beautiful islands nearby. No part of the Society Islands, including Tahiti (having the closest international airport), has a booming tourist industry. French Polynesia includes dozens of gorgeous high islands and atolls which can adequately, and more cheaply, serve as tourist destinations. Getting to, and staying in, the Society Islands is very expensive already. Bringing tourists from a French dependency to Kiribati also creates immigration problems (now it is all done illegally!) High islands such as Moorea are far superior to Caroline from a scenic point of view. There is no purpose in spoiling another atoll, especially when the Kiribati Government is not contributing workers or receiving any of the profits!

#### RECOMMENDATIONS

1. Immediate action be taken by the Kiribati Government on matters concerning Caroline.

During the last two years Caroline has become more visited than ever before, mostly without the knowledge, or consent, of the Kiribati Government. Caroline could easily become the "new Suvarov" or "new Palmyra", atolls which became

and conservation benefits to the Kiribati Government resulting from such a long-term commitment need careful consideration.

Caroline is very remote. It takes much time, effort and expense to visit it, therefore any opportunity should maximize the number of people who may be influential in shaping its future.

The Keplers, world authorities on Caroline and experienced environmental consultants, are offering their free services to the Kiribati Government for consultation (see attached letter). If possible, one or more representatives from international conservation agencies should also be included.

5. Until measures are taken to adequately protect wildlife and plant communities from further exploitation, it is recommended that the Kiribati Government appoint Caroline's residents, Ron and Anne Falconer, to be their representatives in monitoring the activities of Urima

The Investment Proposal by Urima to develop Caroline and Flint Islands (MTIL Memo No. 85/89, attached), states that he wishes to lease "an area to be identified by him on either or both of the islands". However, despite the fact that his lease has not yet been fully approved, his men are taking fish, turtles, seabirds and their eggs, crayfish, and terrestrial coconut crabs. Unless a manager is on the island to monitor his activities, what will stop him from disturbing and killing wildlife from the lagoon and islets that he is officially not leasing? The fact that his workers are killing turtles illegally indicates that they disregard wildlife laws.

As mentioned earlier, Caroline is very isolated and the close monitoring of Urima's projects, as requested in Memo 85/89, is impossible unless the Falconers, voluntary wardens of Caroline, be designated as the Government's appointee. (Please note that the Falconers, for conservation reasons, have killed no turtles or seabirds, hardly any coconut crabs, and take no more fish than they can eat daily).

5. If a proposal for Caroline's conservation, rather than for its exploitation, is accepted, the next step would be for the Kiribati government to work directly with the conservation agency on financial and legal matters.

The island's previous lease-holder, Mr. Omer Darr, paid relatively small annual dues to cover three islands: Caroline, Vostok and Flint. If Urima's dues, covering only Caroline and Flint, are comparable, there is no doubt that a conservation agency will be happy to discuss a more profitable financial contract with the Kiribati Government, in the interests of protecting wildlife.

It is possible that a small amount of wildlife oriented tourism might be possible on Caroline, for example, day-visits from cruise ships. This has already happened once; in April 1990 the World Discoverer visited Caroline without the knowledge of the Kiribati Government. This ship plans to

return to Caroline.

Wildlife oriented tourism forms part of the Management Plan for Nature Conservation in the Line & Phoenix Islands (Garnett 1983b). It is already operating on Christmas Island, and has been recently proposed for Kanton. The governments of countries such as Kenya, Costa Rica, Seychelles Is. are discovering financial benefits to "ecotourism".

## APPENDIX

### CONSERVATION ATTRIBUTES OF CAROLINE ATOLL

#### 1. Seabird populations of national and international importance

Kiribati, though a small island nation, probably supports more seabirds per land area than any other country in the world. Its rich seabird reserves, notably those of the Line and Phoenix Islands, are crucial for tropical seabirds throughout the Pacific. These uninhabited islands provide safe breeding locations for many millions of birds. Caroline's breeding seabirds constitute important elements in the overall wildlife reserves of Kiribati. Up till 1988 the quality and quantity of Caroline's plants and animals were not realized.

Caroline harbors ten species of breeding tropical seabirds and two other possible breeding species. Highlights include:

- a) Several colonies of Te Tarariki or Sooty Terns (Sterna fuscata), totalling approximately one million birds
- b) The fifth largest colony of Te Kota or Red-footed Boobies (Sula sula) in the world (7,000 birds)
- c) One of the largest Te Matawa or Fairy/White Terns (Gygis alba) colonies in the world, and the largest colony in Kiribati (8,000 birds).
- d) The largest population of Te Mangkiri or Black Noddy (Anous tenuirostris) in the Line Islands: 17,000 birds. These are primarily associated with Caroline's outstanding Pisonia forests (see below).
- e) Substantial numbers of Te Eitei or Great Frigatebird (Fregata minor): 6,100 birds.
- f) Sizable population of Te Kunei or Brown Noddy (Anous stolidus): 3,000 birds.
- g) An important breeding site for Te Taake or Red-tailed Tropicbird (Phaethon rubricauda), a ground nesting seabird which suffers particularly heavy predation on inhabited islands. Its principal predators are people, cats and dogs, none of which are present on Caroline (the Falconers, Caroline's sole family, do not kill seabirds).

#### 2. Plant Ecosystems of national and international importance

Caroline's lush, pristine and near-pristine woodlands cover 70% of the atoll's land area, and include tree species which, though formerly widespread in the Pacific, are now quite rare.

In addition, Caroline's flora is 80% native (indigenous). In other words, eight out of ten of its plant species occur naturally. This is an extremely high percentage, shared with only a handful of other islands in the Pacific (primarily those in Kiribati).

Caroline only harbors three species of weeds (exotic introductions: Malvastrum coromandelianum, Phyllanthus amarus, Cyperus brevifolius). To date, all occur in a tiny area around 3 square meters on South Island. Once again, this is remarkably low number of introductions for any island in the world\*\*.

\*\* This figure does not include a few Polynesian introductions: coconut, breadfruit (one tree), Polynesian arrowroot, and pandanus (probably also native). The small number of garden plants are not included, as none have escaped into the wild.

a) Te Buka or Pisonia (Pisonia grandis) Forest (62 ha)

Reaching to 21 m tall, this majestic forest occurs on 29 of the 39 islets (74%). Although not as large as the prime forests on Washington and Fanning, (Nth. Line Is.), which enjoy a heavier rainfall, those on Caroline nonetheless constitute some of the finest representatives of this forest community in the entire Pacific. Although precise information on the dimensions of Te Buka forests elsewhere does not exist, the groves on Caroline may well cover a larger area than on any other Pacific island.

b) Te Kanawa or kou (Cordia subcordata) Forest (26 ha)

Today a rare forest hardwood on Pacific islands, Cordia groves on Caroline reach 15 m tall, having trunk circumferences (breat height) up to 156 cm. These groves, though patchy, and often occurring in mixed woodlands, are widespread on Caroline. Research and information from the foremost Pacific botanist, Dr. Ray Fosberg, indicates that the Te Kanawa groves on Caroline cover a greater than on any other Pacific island.

This is the only hardwood on Caroline. Because of its scattered distribution, it would be very difficult to harvest. Almost all the trees were taken last century from the largest, and most accessible island, South Is. Because of the rarity of this species, Urima should not be given permission to cut even one tree of Te Kanawa.

c) Te Ren or tree heliotrope (Tournefortia argentea) scrub and forest (146 ha)

Abundant on Caroline on every islet except tiny dots of pure coral rubble, Te Ren forms 40% of the atoll's woodlands. Caroline's scrub and forests of this species are some of the most extensive in the Pacific; on most other islands Te Ren forms only a fringe around the coast, but on Caroline it extends well inland.

3. Caroline is ideal for scientific research involving atoll vegetation, geological processes, marine biology, and the ecological relationships of plants and animals on islets of different sizes. It also provides a rare example of an "outdoor ecological laboratory", ideal for to human-oriented studies such as underground freshwater supplies and biomedical research such as fish poisoning.

Near-pristine Caroline contains 39 islets ranging from tiny (0.02 ha) to relatively large (107.50 ha), as well as three incipient islets. Though seemingly of academic interest, research on plants, birds, geology, soils and marine animals is of great practical importance. Valuable clues as to the nature of underground water supplies from an untouched island such as Caroline may lead to a better understanding of the regulation of water supplies on inhabited islands.

Similarly, marine biological and biomedical research could unearth further clues as to the causes and treatment of fish and crab poisoning, tropical infections, etc. Such topics become increasingly important as more and more islands are subjected to marine disturbance and pollution. For example, the abundant red snapper, (Lutjanus vaigiensis) and red spotted crab (Carpilius

maculatus), both of which are notorious for their potent poisons (at times leading to death), are safe to eat at Caroline.

Caroline would be, in all types of research, a "control" area lacking many of the problems and pollution that beset other islands today. Research projects, carried out by a small number of biologists based on a ship, would result in minimal disturbance to the atoll.

**4. Coconut Crabs are present in fair numbers (1100-1500)**

Coconut crabs (Birgus latro), the largest terrestrial invertebrate in the world, are now rare or absent on inhabited islands. Their abundant, delicious meat and oily abdomens are deemed great culinary delicacies on islands throughout the Indian and Pacific Oceans. These huge crabs, with leg-spans over approaching one meter when fully mature, are the first animals to be extirpated when people begin to inhabit islands.

They are common on Caroline, occurring primarily in the coconut woodlands, but also within natural woodlands such as pisonia (Te Buka) forest.

**5. Caroline's lagoon has exceptional aesthetic beauty; its lagoon waters are stunning in their crystalline clarity and exquisite colors**

Beauty is a relative and abstract concept. Enclosed are some photographs, which may convey, in a small way, the remarkable beauty of Caroline's lagoon. Few people have visited Caroline, therefore opinions are few. However, eight of the nine biologists who have visited Caroline on scientific expeditions during the last two years have travelled extensively in the Pacific and Indian Oceans, the Caribbean Sea and Southeast Asia. In addition, the Keplers lived for 14 years in Hawaii and Dr. Garnett, three years on Christmas Island. None of us have seen colors and clarity which are as immaculate as those at Caroline. For this attribute alone Caroline should be preserved, as a reminder of the beauty and harmony of pristine lagoons and coral reef ecosystems.

**6. Giant clams are superabundant**

A maze of patch reefs and coral "mushrooms" crisscross the lagoon, supporting abundant vertebrates and invertebrates. Of particular interest is the superabundance of giant clams (Tridacna maxima), whose multicolored, iridescent "lips" (mantles) dot the reefs with vibrant color. These are tightly packed along and within the coral up to the second highest density ever recorded: 40 clams per square meter.

**7. Green Turtles occur in small numbers within the lagoon and Caroline's surrounding seas.**

Te On or green turtle (Chelonia mydas) is a fully protected animal on Caroline (Wildlife Ordinance No. 2 of 1975, Schedule 2). It is not common, as Caroline does not have large areas of sand. It apparently breeds, or at least attempts to breed, as the 1990 Line and Phoenix Islands Expedition found several old nesting holes.

**8. An ancient Tuamotan marae still exists.**

Basically undisturbed since the 1870s, this relic of prehistoric

11

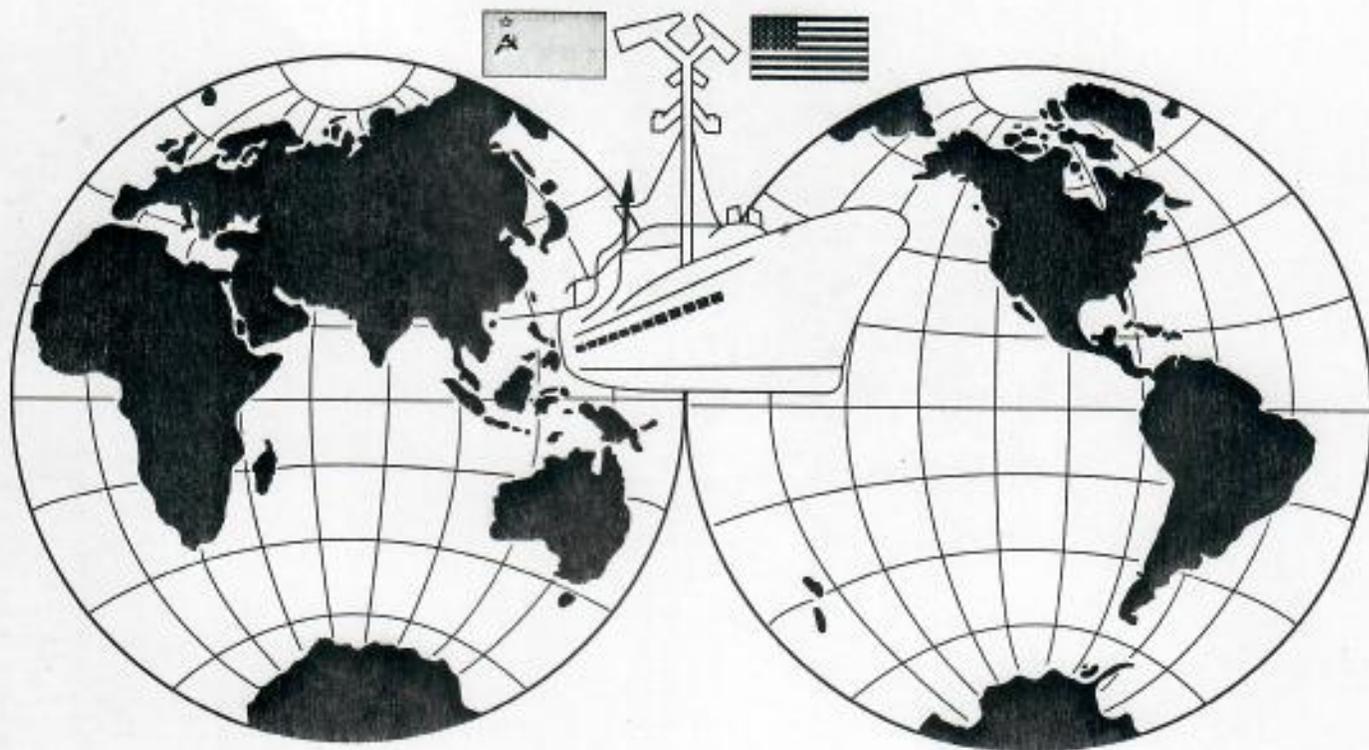
occupation is worthy of protection, and is the only Tuamotan marae (ancient religious site) in the Line and Phoenix Islands.

\* Address of the Scientific Advisory Panel for Nature Conservation in the Line and Phoenix Islands:  
c/- Dr. M. Garnett, Maes Llech, Rhydymain, Dolgellau, Gwynedd, North Wales, United Kingdom or  
Dr. C.B. Kepler, U.S. Fish and Wildlife Service, School of Forest Resources, University of Georgia, Athens, Georgia, U.S.A. 30602

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# RESULTS OF THE FIRST JOINT US-USSR CENTRAL PACIFIC EXPEDITION (BERPAC)



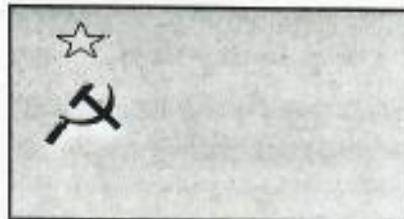
AUTUMN 1988

**Results of the First Joint  
US-USSR Central Pacific Expedition  
(BERPAC)**

**Autum 1988**



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Copies of this publication may be obtained from the Publications Unit, US Fish and Wildlife Service, 1849 C Street, NW, Mail Stop 130—ARLSQ, Washington, DC 20240.

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### *Long-tailed Cuckoo* (*Eudynamis taitensis*) (Fig. 16)

The long-tailed cuckoo breeds in New Zealand and winters in the southwest Pacific. The center of its winter range lies in central Polynesia, but birds have been recorded as far as Palau in the northwest and Pitcairn Island in the southeast. Although occurring throughout French Polynesia and the Cook Islands, it had not been recorded from the Line Islands prior to our expedition (Bogert, 1937; Clapp & Sibley, 1971a,b; Pratt *et al.*, 1987; Ellis *et al.*, 1990).

We found long-tailed cuckoos on 4 of Caroline's 39 motus (Fig. 16). We heard its distinctive monosyllabic and disyllabic call notes on South, Long, and Pisonia, identified one on Nake, and on 28 September collected a male in a mist net on Tr. 4, Long Island (USNM 607191). Soon after our return home we sent a description and photograph of this species to the Falconers; they, and AKK, have since seen them several times on Motu Ana-Ana in March, April, and May 1989-90.

All the cuckoo sightings were at canopy or subcanopy level, and three of the four birds were found in *Pisonia*. The South Island cuckoo was located in a *Cocos* canopy over 20 m high. The netted male flitted secretively within an undisturbed, tangled low-canopy (4-6 m) *Pisonia-Tournefortia* interface. We suspect that this elusive migrant occurs throughout the mid-to-upper levels of Caroline's forest canopy.

These records establish the long-tailed cuckoo as a winter visitor to Caroline Atoll. Our observations on four islets, including the southernmost, northernmost, windwards, and leewards, suggest that many individuals were present. A March 1990 first sighting on Vostok (J. Phillips, personal communication) further suggests that the species disperses regularly to the Southern Line Group.

### Other Vertebrates

#### Lizards

Although "small lizards" were observed on Caroline in 1825 (Paulding, 1831), it wasn't until 1965 that the first collections were made (Clapp & Sibley, 1971a). We collected four additional lizard species, which increased the known terrestrial herpetofauna from three to six (Table 8). Although all are indigenous, the azure-tailed skink (*Emoia cyanura*) is suspected of being partly dispersed by man (Brown, 1956). All but two of the small lizard species known from the Line Islands (Crombie, 1990) have now been found on Caroline.

#### Turtles

We found three Pacific green sea turtles (*Chelonia mydas*), a threatened species (McKeown, 1978), at Caroline in 1988. Two were swimming over the lagoon reef flats, one west of Arundel, the second east of Ana-Ana. The third was in the open sea about 100 m west of South Island near the "boat entrance." Ron Falconer has seen up to seven turtles in the lagoon in a single day. In April and May 1990, AKK saw workers from Tahiti capture and kill a minimum of four green turtles in the lagoon; two more entered the lagoon during the following 4 months (R. Falconer, personal communication).

In March 1990, AKK and G. Wragg found three old nests, presumably of this species, on the northwest coast of Nake within 100 m of the northern tip of the islet. These are the first known turtle breeding records for the atoll. Young (ca. 1922) notes that the copra plantation laborers ate green turtles from September to December each year. The February 1990 storm added large amounts of sand to Caroline's shorelines, providing potential new habitat for turtle nesting.

#### Terrestrial Mammals

None of the terriers (see Subchapter 1.1) that were introduced to control rats on South Island in the early part of this century (Young, ca. 1922) have survived (F. Sibley, personal communication; R. Falconer, personal communication). In May 1990 the Falconers kept a dog and a cat on Motu Ana-Ana. Despite the fact that both animals generally remained close to the settlement, the dog regularly visited the other Southern Leeward Islets and accompanied the family on excursions in their sailing canoe throughout the atoll. As a result of our recommendations, the cat was removed from Caroline in October 1990. The Falconers, with their dog, vacated the atoll in mid-1991.

Bennett (1840) noted "rats of a red-brown color," the first reference to rodents on Caroline. Dixon (1884) found that rats were "not numerous" and that they nested "just at the base of the fronds" of the coconuts. Two specimens collected by the POBSP proved to be *Rattus exulans* (Clapp & Sibley, 1971a). They reported that rats were uncommon and restricted to South Island.

The 19th and 20th century settlers found rats (presumably *R. exulans*) to be extremely abundant and very destructive to the coconut plantations. Maude (ca. 1938) states that rats destroyed the nuts, and that they contributed greatly to the eventual abandonment of copra enterprises on Caroline and Flint. They voraciously devoured both growing and fallen nuts, as well as dried copra. Being arboreal, they also lapped the juices of the flower stalks, preventing nut development (Young, ca. 1922). In a single year (1920) over 4,600 were trapped on South Island (Maude, ca. 1938). Thousands more were killed by terriers introduced to Caroline in a vain attempt to control them.

We found rats on almost every islet; they were especially abundant on South, Long, Nake, and in the vicinity of coconut palms on smaller islets. We recorded rats during daylight hours on most transects, especially within the *Pisonia* forests. At our campsites on Long and South we noticed groups of 10-20 each night, so tame as to approach within 1 m while we were eating. The rats evidently undergo wide population fluctuations, as they were less abundant in March and May 1990 than in September 1988.

We suspect that rats periodically reach most motus, and that the islets apparently lacking rats (such as Noddy Rock) are too small and/or depauperate to support a resident population. Because *R. exulans* is a known seabird predator (Kepler, 1967; Fleet, 1972; Norman, 1975), the restriction of some species (i.e., red-tailed tropicbird) to small islets may be due to rat populations on larger islets.

**REPORT: ICBP 1990 LINE & PHOENIX ISLANDS EXPEDITION**  
**FEB.20 - MAY 31, 1990**

pp. 6-7  
turtles

<b>Personnel</b>	Joint Co-ordinators	Dr. Martin C. Garnett (U.K.)
	Captain/Seabird Biologist	Dr. A. Kay Kepler (N.Z./ U.S.A.)
	Ecologists	Mr. Graham Wragg (N.Z.)
		Mr. John Phillips (U.K.)
		Mr. Mark Linsley (U.K.)
		Mrs. Annabel Garnett (U.K.)
	Seaman	Mr. Alve Henricson (Sweden)

Note: Mr. Katino Teeb'aki, Wildlife Officer, Wildlife Unit, Christmas Is. (Kiribati), was not able to accompany us due to unavoidable changes of plan associated with the Gilbertese government (see below).

**Vessel** Research Vessel Te Manu, a 10 m cutter from Auckland (N.Z.)

**Objectives** The ultimate aim of the ICBP 1990 Line and Phoenix Islands Expedition was to conduct detailed surveys of the birds, plants, and other biota (turtles, coconut crabs, terrestrial and marine mammals, insects). This information, supplemented by color photographs, maps, and data from previous surveys, is now being used in efforts focussing on the future establishment and management of inviolable, international preserves.

We planned to visit 19 of the 20 Line & Phoenix Islands (Fig. 1), which stretch eastwards from Howland (lat. 01°00'N, long. 177°00'W) to Washington Is. (04°43'N, 160°25'W), and south to Caroline (10°00'S, 150°13'W) and Flint (11°26'S, 151°48'W). Politically, 16 of these islands are affiliated with the Republic of Kiribati (formerly Gilbert and Ellice Is.) and 4 to the United States. Fifteen are uninhabited (3 are U.S. National Wildlife Refuges), and 4 are inhabited.

**Background** These islands, all low coral atolls or filled-in atolls, are some of the least visited and remotest crumbs of land dotting the world's oceans. Of immense conservation value, they are some of the last havens for large colonies of breeding seabirds. Up to 18 species of seabirds, numbering millions of breeding pairs, utilize their shores, and up to a dozen species of migrant shorebirds winter on them. They feature the world's largest (or close to largest) colonies of Great and Lesser Frigatebirds (Fregata minor and F. ariel), Red-footed and Masked Boobies (Sula sula and S. dactylatra), Sooty Terns (Sterna fuscata), and Fairy (White) Terns (Gygis alba).

Botanically, the Line & Phoenix Islands offer examples of relatively untouched atoll plant communities and groves of tree species that have dwindled remarkably elsewhere. For example, pisonia (Pisonia grandis) forests (to 30 m high), occurring on several islands, are the largest, most magnificent, and some of the last basically unmodified groves in the Pacific. Similarly, the formerly common hardwood, kou (Cordia subcordata), once used in native cultures for carving quality bowls, is hard to find anywhere except on Caroline.

Other notable biological attributes, common to many of the islands, are discussed in the attached fact sheet on Caroline: the outstanding coral reef ecosystems (including abundant giant clams, Tridacna maxima), turtle nest sites, archaeology, lack of anthropogenic pollutants, record densities and sizes of coconut crabs, and the kaleidoscopic beauty of

its lagoon. One of their most important features is lack of disturbance: since most of the Line & Phoenix Is. have been minimally altered by man, they provide examples of atoll ecosystems "before" modification. They also harbor potential value as outdoor ecological laboratories for both pure and applied science. For example, Caroline would be excellent for biomedical research on ciguatoxic (fish) poisoning, an increasing problem on inhabited Pacific islands. Here, the red snapper Lutjanus vaigiensis) and three-spotted crab (Carpilius maculatus), normally poisonous, are safe to eat.

**Background on Personnel** The researchers' combined experience spans the Pacific and Indian Oceans, Caribbean, South China Sea, Indonesia, Africa, Asia, North and South America, New Zealand, Australia, and Europe. Dr. & Mrs. Garnett, and Dr. K. Kepler (with her husband, Dr. Cameron Kepler, U.S. Fish & Wildlife Service Endangered Species biologist), have an ongoing commitment to wildlife conservation in the Line & Phoenix Islands. Martin Garnett lived 3 years on Christmas Is., initiating and training the Wildlife Unit there, advising the central Kiribati government (Tarawa) on key preserve areas and wildlife management, and wrote a long monograph on the Line & Phoenix Is. (Garnett 1983). The Keplers' involvement began in 1961, when Cameron first visited seven of them as a member of the Smithsonian Institution's 10-year Pacific Biological Survey Program (POBSP), later visiting Jarvis, Christmas (5 times) and Caroline. The Keplers, involved in setting up wildlife refuges and natural reserves in the Caribbean and Hawaii, where they lived for 14 years, have just completed a monograph on Caroline (Kepler et al, in press) after a 1988 visit there on a joint US/USSR Oceanographic Expedition.

We were very fortunate to have Captain Wragg as our skipper. A conservationist and seabird biologist (currently pursuing a Ph.D. at Oxford University, U.K.), he assisted in data acquisition both on land and at sea. Widely travelled, he has participated in, and led, several scientific expeditions, including 12 months of archaeological research in Africa with the British Museum. He is presently involved in an extended expedition to Pitcairn and Henderson Is. His personality was delightful, he made every effort to accommodate us, his well-researched equipment was the best available, and his fees were unbeatable.

### **Accomplishments**

**Itinerary:** The six of us on the Tahiti-Christmas leg arrived in Moorea at different times: February 5 (KK), 10 (AS,JP), 15 (ML), 17 (GW), 19 (AH). We welcomed MG aboard at Christmas Is. on April 4, and bid farewell to JP and AH on April 11. We lived on Te Manu the entire time except for 5-25 February, when we stayed at the University of California (Berkeley) Richard Gump Marine Laboratory, Paopao, Moorea.

Between departing from Moorea on March 2 and returning there May 31, 1990, we travelled, mostly under sail, 4100 nautical miles (4600 miles) within the Line and Society Islands (Fig. 2). Our passage spanned latitudes 18°S to 02°N and longitudes 155°W to 149°W. From Moorea we sailed east to Tahiti then north to Caroline, Flint, Vostok. It was on these three islands that we did most of our terrestrial work. We continued northward to Starbuck and Malden, where sea and wind conditions prevented us from landing. Further north and west brought us to Christmas Is., where we were informed that although the Government of Kiribati was in full approval of our expedition, permission had been granted

by the Minister for Natural Resources without approval of the Cabinet. Because of this bureaucratic nuance, plus miscommunication between Tarawa and Christmas, we were obliged to return to Tahiti immediately. For three weeks we tried desperately to secure provisional permission (with ICBP's help), to no avail except that the Secretary of the Cabinet, the highest political officer in Kiribati, assured us that in 6 to 8 weeks they would consider our situation and eventually grant us permission to continue. Regrettably we sailed homeward. En route we again attempted to land on Starbuck (in vain), spent two hours on Bellingshausen (Motu One), and revisited Caroline.

**Survey Results:** We visited 7 islands, landing on five: Caroline, Flint, Vostok, Christmas, and Bellingshausen. Three were uninhabited, two nearly so. Please see pp 3-13 of the updated ICBP Project Proposal (enclosed) for a complete description of our planned research. We used tested survey techniques in conjunction with 1985 aerial photographs taken by the RNZAF (Royal New Zealand Air Force). Predesigned, fill-in-the-blank field forms were prepared for cross-island transects, perimeter surveys and seabird colony counts, tailored for each of the 19 islands we planned to visit. The transects involved detailed coverage (birds, plants, mammals, coconut crabs, lizards, etc.) of at least 5% of each island's area.

A brief summary of our findings, primarily on Caroline, Flint and Vostok, and organized according to the updated expedition proposal (Feb. 1990), follows:

#### A. SEABIRDS - On Islands

- We gathered data on the current status, distribution, phenology (breeding cycle), and population sizes of all resident and non-resident seabird species present during our visits. Results included: a) full nest counts of discrete colonies (e.g. Masked Boobies, Lesser Frigatebirds) and b) estimated population sizes of species whose nests were dispersed within the various plant communities (Red-footed Boobies, Great Frigatebirds, White Terns). Only one or two sets of previous seabird population estimates were available - from decades ago except for Caroline (1988). Highlights on Caroline included more than twice as many Red-tailed Tropicbird nests than were previously known; predation or scavenging on Sooty Terns by coconut crabs (Birgus latro); and two new island records, White-tailed Tropicbird (Phaethon lepturus) and a possible Whimbrel (Numenius phaeopus). The latter, a rare migrant in the eastern tropical Pacific, is a new record for the Line & Phoenix Islands.

- At Christmas Is. we found a bird ring (band) on a long-dead Masked Booby. The Smithsonian Institution (Washington D.C.), who requested us to look for rings, have banded millions of seabirds in the Pacific, and use such returns in research on longevity and distribution.

- ML and AG recorded several hours of seabird vocalizations, requested by the French Colonial Research Service, Papeete. The species, mostly from Christmas Island, included Audubon's Shearwater (Puffinus l'herminieri), Wedge-tailed Shearwater (P. pacificus), Christmas Shearwater (P. nativitatus), Phoenix Petrel (Pterodroma alba), Polynesian (White-throated) Storm Petrel (Nesofregetta fuliginosa), Black Noddy (Anous tenuirostris), Brown Noddy (A. stolidus), and Sooty Tern (Sterna fuscata).

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- We collected some avian skeletal remains, requests from the New Zealand National Museum (Wellington, N.Z.), Smithsonian Institute, and British Museum (London, U.K.): Phoenix Petrel, Wedge-tailed Shearwater, Great Frigatebird, Red-footed Booby, and Red-tailed Tropicbird. All were victims of poaching or the recent cyclone, "Peni", which coursed through the South Pacific just prior to our trip. (N.B. we collected specimens only when we assumed we were permitted to do so, stopping when permission was retracted.)

- On Caroline, Flint and Vostok the effects of feral mammals, rodents, and land crabs on seabird breeding activities were slight, see p. 14. Of unique interest were the predatory interactions of Sooty Terns and coconut crabs on Brothers Islet, Caroline Atoll. Here, in mature Pisonia grandis forest, where the rotting boles of old trees provided shelter for coconut crabs, rotting tern carcasses disclosed telltale evidence of recent crab feasts. We have the first detailed record, and first photographs, of coconut crab-bird predation or scavenging.

- Mapping of the seabird distribution relative to vegetation type is presently underway. Although maps were almost complete for Caroline, this expedition added details that improved our overall comprehension of the atoll's ecology. Flint and Vostok have never previously been mapped in detail.

#### B. SEABIRDS - At Sea

- We conducted continuous dawn-to-dusk, at-sea observations of seabirds (12-13.5 hours daily for 8 weeks). At two-hourly intervals we recorded data on weather, cloud, swell, compass direction and boat speed. Of a possible 35 species known to inhabit this section of the Pacific, we observed 26 (Table 1), including uncommon species such as the Black-winged Petrel (Pterodroma nigripennis), Collared Petrel (Pt. leucoptera), Stejneger's Petrel (Pt. longirostris), White-necked Petrel (Pt. externa) and Kermadec (Juan Fernandez) Petrel (Pt. cervicalis). As Te Manu's course passed through oceanic swaths little known by ornithologists, our first-time sightings of several species extended their known ranges in every compass direction. For example, that of Stejneger's Petrel was a westerly and northward extension, while the White-necked and Kermadec Petrels were to the south and east. cursory examination of our data indicates that we have new information on at-sea distribution, and flight directions and dates of migratory paths. For example, we saw no Stejneger's Petrels on our northward track (March-April) but encountered many flying north as we proceeded south (May). As they breed on islands off Chile, we were observing postbreeding dispersal through a previously unknown area, with birds heading towards Japan.

#### C. LAND BIRDS AND WATERBIRDS

- We searched for possible Acrocephalus warblers on Flint, Vostok and Caroline, in vain.

- Although we were unable to study the Scarlet-breasted Lorikeet (Vini kuhlii) in the wild (Washington, Fanning Islands), we located three captives on Christmas. Information on ecology, care and diets of Vini spp. was a special request from the San Diego Zoo (California, U.S.A.), whose endangered species program is currently focussing on the captive propagation and establishment of native reserves of these Pacific island endemics, and also from the Dept. of the Environment, Tahiti. We

obtained preliminary information on the distribution and abundance of the rare Tahitian Lorikeet (Vini peruviana) at Bellingshausen Island, a remote, little visited atoll at the far western extremity of the Society Islands. A 5-page report on Vini spp was sent to the San Diego Zoo and Dr. Philippe Siu, Minister of the Environment, French Polynesia.

- We observed the New Zealand migrant, Long-tailed Cuckoo (Eudynamis taitensis) on Caroline in March and May. The Falconers had further sightings. The first record of this species from Caroline, and the Line Islands, was in September 1988 (Kepler, et al, in press). We also observed this species on Vostok, a new record for the island.

**D. SHOREBIRDS**

We saw 6 species, updating island species lists. Population estimates, based on perimeter surveys, will soon be calculated. We saw no color-banded Bristle-thighed Curlews, but noted bill lengths, a request from the U.S. Fish & Wildlife Service, Alaska.

**E. PLANTS**

Species Lists We obtained total (or near-total) plant lists for Caroline, Vostok and Flint. All islands had received ample rainfall during the past 8 months; vegetation was lush and any species present were likely to be present and identifiable.

Caroline: Its list of established species now totals 24, 83% of which are endemic (an extremely high figure), to which we added three: Hibiscus tiliaceus, Thespesia populnea, and Species "A". The latter, a tall shrub (similar to Clerodendron inerme), is unidentifiable as it was sterile. All are theoretically indigenous, although the first 2 may also have been introduced last century.

To the known list of extinct/temporary species, we added an indigenous species not seen since 1884 (Sida fallax), a potential weed (Kyllinga brevifolia) and recent garden plants (Hibiscus schizopetale, peppermint, okra, Gardenia taitensis, etc.). Kyllinga was limited to a clearing adjacent to a new cistern; it is hoped that it does not become established, as the atoll presently harbors only one weed (Phyllanthus amarus) represented by 2-3 dozen individuals. This weed, a legacy of the 19th century, was absent in 1988, having been resurrected since a small patch of land was cleared around the cistern in 1989. AKK's correspondence with the Falconers resulted in the addition of a few uncommon, local plants (including Tribulus cistoides) that we had not located in 1988.

Flint: We found 28 species, including 6 new island records: Terminalia catappa, Tacca leontopetaloides, Leucaena leucocephala, Portulaca oleracea, Paspalum vaginatum, and Boerhavia tetrandra. We hope this list is complete; Flint's outdated total is 38, a figure which includes several probable extinctions from a now-abandoned, 19th century settlement.

Flint boasts many sizable indigenous trees in its peripheral buffer zone: Pisonia grandis, Cordia subcordata and Calophyllum inophyllum. We measured several circumferences and heights.

Vostok: This tiny 24-ha, filled-in atoll is notorious as the island with the fewest number of species in the world. It still is, but now has three instead of two. We found a new island record, Boerhavia

tetrandra within the peripheral herb mats and burned clearings within the forested interior.

- We are currently preparing vegetation maps for Flint and Vostok detailing the distributions of major species and plant communities.

Plant Collection (161 specimens) These were requested by the Bishop Museum (Honolulu, Hawaii), Smithsonian Institution, University of Georgia (Athens, Georgia), and ORSTOM (Papeete, Tahiti). Bishop Museum personnel checked identifications, prepared and mailed duplicate specimens. ORSTOM kindly gave us botanical preservative (FAA), cut newspapers, and strong plastic sacs.

Notable Plants Buka (Pisonia grandis). Formerly widespread, this grand tree is now rare in the Pacific; its finest groves occur in the Line Islands. Research conducted on this expedition will allow us to evaluate the size and extent of Pisonia groves of Flint and Vostok. It was formerly assumed that Flint had no groves of any worth; similarly with Caroline (prior to 1988). It is possible that Caroline's 62'ha of Pisonia grandis forests cover more area than those on any other Pacific island. It was unfortunate that we could not examine the magnificent groves on Fanning and Washington, reputed to possess exceptional diameters and rise to 35+m tall (Garnett, pers comm).

We measured heights, cbh (circumference at breast height), base circumference, and number of accessory trunks of 124 Pisonia trees on 3 islands. Maximum measurements were:

Is.	No. trees	hgt.(m)	cbh(cm)	base (cm)	no. trunks
Caroline	46	21	500	660	15
Flint	20	30	200	450	multi
Vostok	58	25	510	not meas.	multi

Kou (Cordia subcordata) was less common, but we measured 8 trees, mostly on Caroline. Maximum measurements were: height 25 m, cbh 175cm, base 170 cm.

Miscellaneous We photographed and noted the condition of the abandoned plantations of Caroline and Flint, concentrating on the presence of persistent exotic plants leftover from the 19th century guano-workers' settlement.

- We searched for, and collected, plant species which had been specifically requested by Dr. Ray Fosberg, Smithsonian Institute, viz. Boerhavia and Lepturus.

F. REPTILES

Turtles

Caroline: Found 3 old nests, far northern tip of Nake Is. and 2 live green turtles (Chelonia mydas), obtained a report of a possible Pacific hawksbill sea turtle (Eretmochelys imbricata), and photographed shells of two illegally killed green turtles. We also discussed wildlife laws with the Tahitian fishermen employed by Felix Urima (pending leasee for the atoll), who had killed and trapped an unknown number of green turtles during, and just prior to, our visit.

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**Flint:** A complete perimeter survey revealed about 20 turtle tracks (mostly old), many nest holes, and one Chelonia mydas skeleton.

**Vostok:** Several complete perimeter surveys disclosed no turtle sign.

### **Skinks, Geckos**

- Incidental notes on 3 islands on at least 4 species: azure-tailed skink (Emoia cyanura), snake-eyed skink (Cryptoblepharus boutoni), ?black skink (? Emoia nigra), and mourning gecko (Lepidodactylus lugubris). Sight identification only.

**Caroline:** No additions to the known small reptiles

**Flint:** No lizards previously recorded. We observed only one species, the azure-tailed skink, in prodigious numbers. With practically every step several skinks scurried away. Our density estimate of 1/sq. m. is not unreasonable. The total area of Flint is 324 ha, of which 238 ha (75%) are covered with either native or Cocos forest, both of which provide prime habitat for the skinks: our population estimate is approximately 2 million. Such an outstanding density, perhaps unequalled anywhere, surely reflects the absence of large rats and other introduced mammals. In damp areas their density increased by at least a factor of two.

**Vostok:** Azure-tailed skinks abundant

### **G. INSECTS**

- We collected hundreds of specimens of insects, spiders, and scorpions on Caroline, Flint, Vostok, and Christmas (including 3 lagoon islets). Specimens, data, and ecological notes were personally delivered to Dr. Scott Miller (Bishop Museum, Honolulu), who had requested them and provided vials and alcohol. cursory sorting indicates that about 20 species are of particular interest.

- The collection included scale insects (Coccidae) and Neuropteran larvae (Chrysopa sp) from Pisonia trees on Caroline as a special request. These insect pests, present on all the southern Line Is. visited, appeared to be endangering the health of the most mature trees.

### **H. MAMMALS (Terrestrial and Marine)**

**Rats:** Polynesian rats (Rattus exulans) were abundant on Caroline, Flint and Vostok, especially in the Cocos and Pisonia forests. We found no evidence of them disturbing breeding seabirds.

**Cats and Dogs:** We found no trace of the terriers imported to control rats on Flint and Caroline in the early 1900s, and which were last seen on Caroline in the 1930s. Here the resident family own a dog which, together with four people, contributes disturbance which is responsible for the essential lack of breeding seabirds on Motu Ana-Ana. The dog visits all 5 of the Southern Leeward Islets and accompanies the family in their sailing canoe excursions throughout the atoll. Urima's fishermen took a large dog everywhere with them during their 6-week stay there.

As a result of our discussions with the Falconers concerning

the ecological disasters that can result from the presence of cats on seabird islands, they returned their cat to Tahiti on the first possible occasion.

On Christmas Is., a cat eradication program, instigated by Martin Garnett and presently directed by Katino Teeb'aki, has been operating for nearly 10 years. The Wildlife Unit currently have a bounty program in operation (cat tails), which supplements regular cat-shooting. During our visit, Garnett further advised Teeb'aki on this subject.

**Pigs and Goats:** We saw no evidence of feral ungulates on Caroline, Flint or Vostok. However, the Falconers had been hoping to import dairy goats to Caroline, an idea which met with our strong disapproval.

**Humans:** Caroline: The increased visitation of yachts; current plans for exploitation, development and tourism; and the destructive and illegal activities of Urima's fishermen are discussed in a separate report. In a nutshell, despite the fact that Urima's lease is not yet fully approved, his men are taking commercial catches of fish, and are killing green turtles (theoretically protected on Caroline), seabirds and their eggs, crayfish and coconut crabs. They also burned 7000 sq ft of land on South Island and erected a "tin" shack (since destroyed by high summer 1990 winds).

**Vostok and Flint:** No evidence of recent human visitation. Urima was planning to visit Flint in May 1990 but evidently did not go at that time. On Vostok we evaluated the effects of a 4+ month fire, a legacy of the 1977 "scientific" expedition sponsored by the Kiribati government. Dr. Ray Fosberg, an authority on Pacific botany who had visited Vostok in 1934, was particularly concerned about this fire and its effect on the dwindling Pisonia forests of the Pacific. Supplementing field work with a dot matrix over an enlarged aerial photo, we estimated that the fire cleared approximately 1.5 ha. A further unknown amount of land was affected, but because of the natural openness of pisonia forests, the abundance of black algal slime on the trunks, and the natural tendency for the tree's branches to drop off and disintegrate, it was difficult to evaluate the true extent of damage. We also suspect that this fire, smoldering in Vostok's damp peaty soil, was responsible for the dearth of coconut crabs. Lacking the speed to escape from the searing heat, and lacking burrows in which to shelter from each other (these crabs are highly aggressive), many must have died or been killed in cannibalistic fights.

On Christmas Is. we were disturbed by the blatant human predation on two islets designated as wildlife refuges (Motu Tabu and Motu Upua). Species included Phoenix Petrels, Wedge-tailed Shearwaters, Red-tailed Tropicbirds, Great Frigatebirds and Red-footed Boobies. On Motu Upua, accessible by wading at low tide, we found mounds of seabird skulls and wings. Few species were nesting. This predation was reported to the Wildlife Unit.

**Marine Mammal Skeleta:** We collected ribs and vertebrae of a spinner dolphin at Motu Upua, Christmas Island. The bones, sun-bleached and in excellent condition, now reside in the New Zealand National Museum (Wellington). Larger cetacean remains on Vostok and Caroline were measured and photographed.

**Marine Mammals : At-sea Observations:** During our dawn-to-dusk "sea-watches" we observed 7 species of cetaceans:

- Sperm whale, Physeter macrocephalus
- Pilot whale (probably short-finned), Globicephala macrorhynchus
- Pacific bottlenose dolphin, Tursiops gilli
- Spinner dolphin, Stenella longirostris
- Risso's dolphin, Grampus griseus
- Common dolphin, Delphinus delphis
- False killer whale, Pseudorca crassidens

At each sighting Capt. Wragg slowed down or stopped Te Manu, enabling us to observe the cetaceans with minimum disturbance. Data included numbers, behavior, sea temperature, geographic position, time of day, and age structure of the pods. Information on spinner dolphins was requested by Michael Poole, Ph.D student, University of Southern California (Berkeley and Moorea, French Polynesia), who provided us with cetacean field forms. Marine mammal data will be presented to the Cetacean Group, Mammal Society, U.K., by Annie Garnett.

**I. PHYSIOGRAPHY**

- Soils and substrates will be described briefly in island accounts.

**J. ARCHAEOLOGY and PALAEOLOGY**

**Caroline:** We located both Tuamotan marae (ancient religious sites), taking detailed measurements and photographs of the main, intact marae on Nake Island (probably not seen since the 1870s). The smaller site, though storm-damaged, was still recognizable. It was located approximately 100 m north of the southern tip of Long Is. Duplicate color slides, data, and relevant literature have been sent to Prof. Jeff Irwin, Polynesian anthropologist, University of Auckland, New Zealand.

**Flint:** We photographed the former copra-cutting settlement (abandoned in 1929), including cisterns, shacks, and a copra-drying urn. We also explored the entire length of the interior railroad and guano pits (now swamps).

**Starbuck:** Though unable to land, we spent two nights offshore. We photographed the settlement ruins (north-east point).

**Christmas:** We collected over a hundred sub-fossil shells from two sites in the interior lagoons. These specimens, together with ecological notes and photographs, were sent to Dr. Gustav Pauley, specialist in molluscs at the Smithsonian Institute.

**COCONUT CRABS**

**Caroline:** We were dismayed to find a dwindling coconut crab population. This enormous hermit crab, up to one meter across (including legs), largest of the world's terrestrial invertebrates, is currently under consideration for world-wide endangered status. On Caroline, Urima's fishermen have killed an unknown number of them. As well as eating them they brought a container of formalin to preserve some to sell as curios in Tahiti. As coconut crabs are a greatly esteemed delicacy throughout

their range (Indo-Pacific), and remain alive for weeks on a boat, it is only natural that Urima has plans for harvesting them on a larger scale. He may be doing it already.

Our rough estimate of Caroline's coconut crab population (Képler et al, in press) is approximately 2200 individuals. This is only based on daytime transect data, not nocturnal mark/recapture.

**Flint:** The sole known information on coconut crabs was that they were "abundant": we found them in prodigious numbers. Our population estimate is remarkable and needs some explaining. Using standard techniques and the proven fact that approximately one-third of the crab population is active on any given night, we estimate 1,900,000 crabs on Flint. This is roughly one crab per sq. meter. Even considering that the crabs might have been attracted to our study plot, we halved the population estimate and still came up with an overall density of 1 crab per 2 sq meters, or approximately one million crabs. (In actual fact, our plot was in a peripheral forest, part-Cocos and part-native, and our subjective impression was that the crabs were more abundant in the pure Cocos forest which covers 77% of the island.) The highest density ever recorded is 1 crab per 14 sq m on Ngerkersiul, Palau. We do not have data for crabs on Aldabra Is. (Indian Ocean), which reportedly has "millions" (Dr. Stoddart, pers comm).

We also obtained record data on crab sizes: More than one quarter of our males were larger than the largest coconut crabs ever recorded. In addition, the average size of our females was the exact size of the largest female that Dr. E. Helfman (specialist in coconut crabs) has ever seen. Measurements of the thorax (carapace) width of 49 randomly chosen crabs follow:

**Males:**  $\bar{x}$  = 149 mm, range 65 - 213 mm. The largest crab ever recorded (from North Keeling Is., Indian Ocean) was 178 mm wide; we had 8 larger than this, averaging 195 mm. Maximum size was a whopping 213 mm (8½").  
**Females:**  $\bar{x}$  = 109 mm, range 63 - 150 mm. The largest female crab reported by Helfman was 109 mm; 50% of our females were larger than this, averaging 139 mm. Maximum female size was 157 mm.

The coconut crab data, currently being analysed, was requested by two authorities on this species: Dr. E. Reese (University of Hawaii, Honolulu, HI) and Dr. E. Helfman (University of Georgia, Athens, GA). AKK has recently been requested to deliver a paper on our findings at the XVII Pacific Science Congress, Honolulu, 1991.

In summary, Flint Is. is an outstanding haven for coconut crabs, perhaps supporting the highest density in the world. This astronomical number of crabs - including a sizable proportion of crabs of world record size - are indeed global treasures. There is no doubt that Urima (who, as far as we know, is not aware of them yet), will extirpate them for a handsome profit only to himself, perhaps even without the knowledge of the Kiribati Government. Flint is one days' trip from Caroline in his fishing boat.

**Vostok:** Coconut crabs were uncommon; in two days were saw only nine (see discussion under Pisonia, p.6).

## L. MISCELLANEOUS

### Updating of Nautical Information

AKK, GW, and Ron Falconer are collaborating on updating the Pacific Islands' Pilot (British Admiralty and U.S. Hydrographic Office). Data includes anchorages, "landings", environmental conditions, and more accurate geographic co-ordinates of several islands. Te Manu carried a compact, state-of-the-art navigation aid ("Magellan" GPS NAV 1000), which communicated daily with overhead satellites to compute our exact position. We found, for example, that Caroline was situated one mile east of its charted position; its corrected latitude is 10° 13' S.

### "Mailboxes"

As planned in Garnett's initial expedition proposal, we left small plastic containers - with notebook, pencil, brief notes on special island features, and a request to write to the Garnett's c/- ICBP - on Flint and Vostok. The Wildlife Unit at Christmas Island had also built large wooden, engraved signs for erection on the northern Line & Phoenix Is.; these will wait until the next expedition.

### Learning Experiences

During our three months in an extremely remote portion of the tropical Pacific, visiting islands notoriously difficult to land on, we learned many refinements in safety procedures, equipment back-up, first aid, sailing techniques, judgement of environmental conditions, and government protocol. We established and strengthened important personal contacts - crucial in developing nations such as Kiribati - which are already assisting in conservation matters. Overall, we are all better prepared for a future, similar expedition. We thank ICBP for their dedication to our efforts and follow-up support.

## M. CONSERVATION

The ultimate goal of the ICBP Line & Phoenix Islands Expedition was to obtain scientific information to be used as ammunition in the establishment of international preserves. In this respect we were successful.

The bulk of the information known about the 3 southern Line Islands was gathered in the 1960s and 1970s by the Pacific Ocean Biological Survey Program (POBSP), in 1988 on the US/USSR expedition to Caroline, and on the present expedition. Christmas Is. is better known, with conservation information primarily from Garnett in the early 1980s. We can now confidently say that Caroline, Vostok, Flint, and the three major motus of Christmas Island (Tabu, Upua and Cook) eminently qualify for status as international preserves. These islands, and their motus (islets) harbor atoll ecosystems of both national and international importance: breeding seabirds, plant species and forests, coconut crabs, virgin coral reefs, and (for some) remarkable lack of disturbance. All except Vostok are currently threatened by private business ventures and spinoffs from world overpopulation.

A further aspect of the expedition's success revolved around conservation discussions (in person or by phone) with the Kiribati

Government: the Ministry of the Line and Phoenix Islands, Christmas Island, and the highest political officer in the nation, Secretary for the Cabinet. Associated with this, we were also able to observe and photograph the exploitative activities of the Tahitian fishermen working for Felix Urima, pending leasee of the atoll. Living with the Falconers on Caroline revealed that they possess a high conservation ethic, an intense love for the atoll, and strong desire to be its wardens/managers. Since our initial correspondence with them 1½ years ago they have learned much about its wildlife, and as a result, have become quite attuned to its rhythms.

Since returning to our respective countries, we have been actively involved in analysing data, sending information, photographs, and conservation recommendations to the central government (Tarawa) and Ministry (Christmas). Our hopes are that an international conservation agency acquire Caroline, Flint and Vostok by outright purchase or by negotiating a long-term lease. The important point is that a proposal involving wildlife protection and management should be more financially lucrative than a developmental one. Since the previous leasee's annual dues were about Aust.\$350 for all three islands, this does not promise to be an undue strain on an international agency's resources.

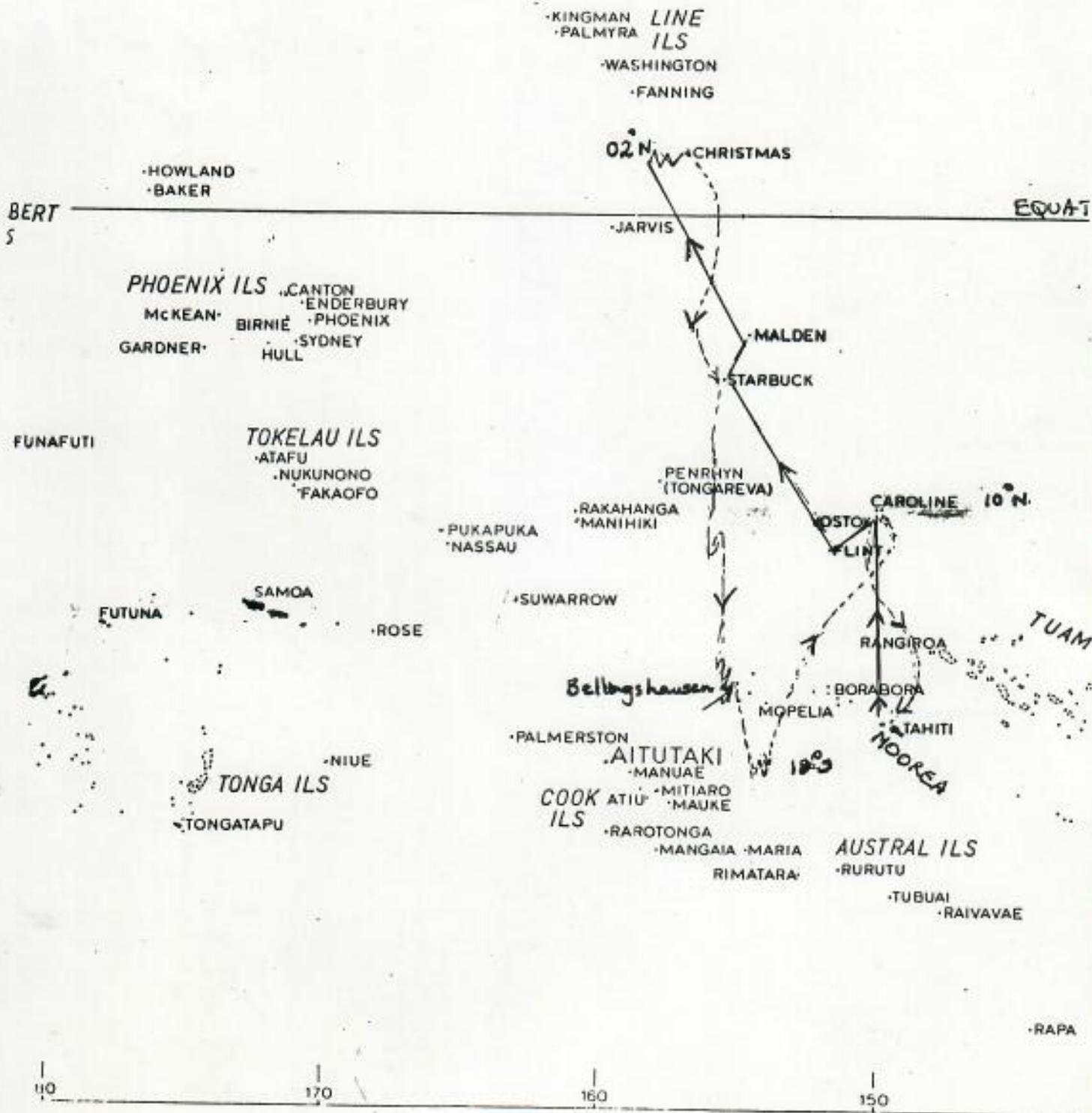
A brief summary of our recommendations follow:

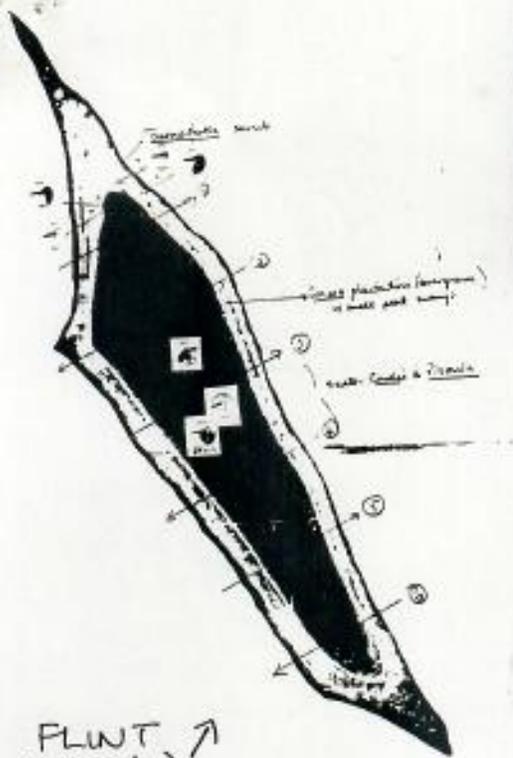
1. Immediate action be taken by the Kiribati Government concerning wildlife management of the three Southern Line Islands
2. Before Urima's lease to exploit and develop Caroline is fully granted, we wish an alternative proposal involving wildlife preservation and management to be considered
3. That officials seek advice from the Wildlife Unit (Christmas), and from an international group of biologists whose sole purpose for existence is to advise Kiribati on matters pertaining to wildlife (Scientific Advisory Panel for Nature Conservation in the Line & Phoenix Groups - of which Drs. M. Garnett and C. Kepler are key members).
4. That one or more specialists on wildlife of the Line Islands, along with a representative from an international conservation agency, accompany government officials on their pending visit to Caroline with Mr. Urima (this visit is necessary before the final contract is finalized).
5. Until measures are taken to adequately protect wildlife and plant communities from further exploitation, we recommend that Caroline's residents, Ron and Anne Falconer, represent the government in monitoring Urima's activities
6. The government of Kiribati forbid Urima from further visitation of Caroline, and ban entry to Vostok and Flint. This could be done through co-operation with customs officials in Papeete, who are already (from summer 1990) denying Urima clearance to visit Caroline.

Note: References in this report may be found in the Caroline fact sheet.

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# LINE & PHOENIX ISLANDS EXPEDITION



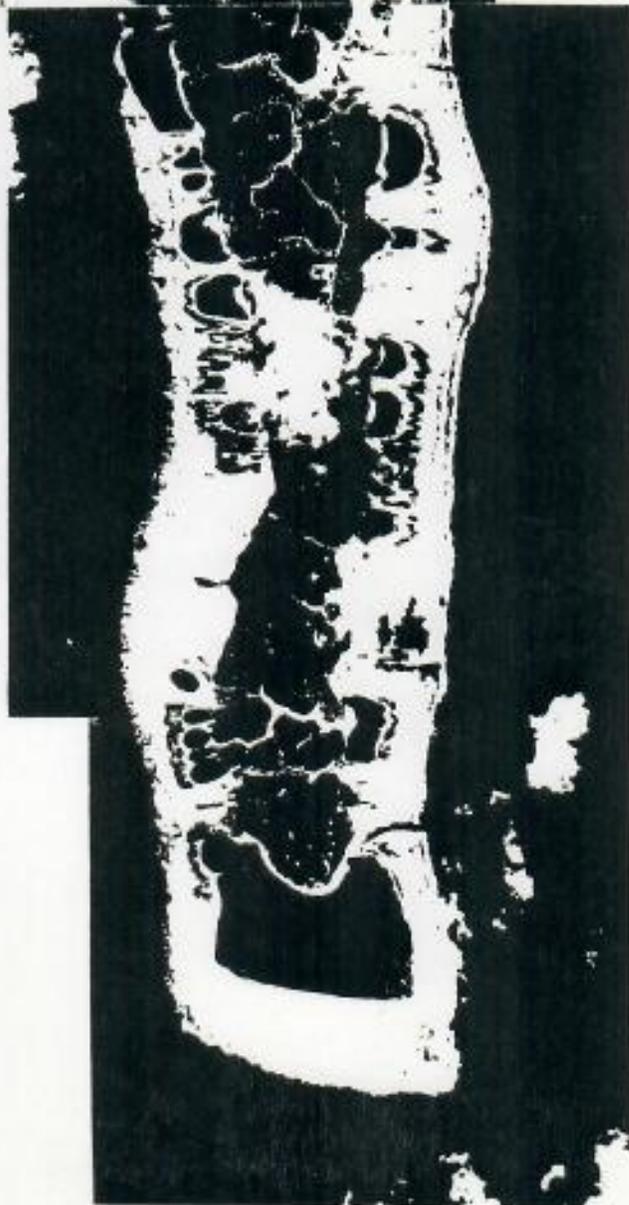


FLINT (324 ha) ↗

VOSTOK (24 ha)



CAROLINE (399 ha)



K. Kepler, May '90  
Diary.

The other night I worked out a few more constellations - Orion, The Bear, Bootes, Triangle (below the pointer to the S. Cross), Gemini, Centaurus. Boy - people who named these star patterns sure had weird imaginations. Also Canis major & canis minor (a little dog out of 2 stars?)

Will be so nice to get to a place where one is comfortable. That's one of the worst aspects of this boat - my little shade up-top or in the cockpit, stuffy in the cabin, & nowhere to sit really. The 2 "couches" are OK, but they tilt a bit, & you always have to brace yourself. Prob. G's bed isn't too bad - it looks flat.

More birds today - lots of boobies, FATE, BRNO - must be somewhere near an is.

Thurs. MAY 10

Arr. Motu One (Bellinghousen)

A bad night - "becelmed" again for ~6 hrs incredible rocking & rolling. Up at 6 to watch birds, tho' didn't get much sleep.

We saw Bellinghousen at 6:45, & tacked till ~2:00 to get there. Circumnavigated the atoll - surrounded by jagged, upraised. Lovely, lush atoll - looking a bit like reef. Flint. All islets in Cocos with a

substantial fringe of native vegetation;  
Pernp's outer fringe, basically pure  
strand Cordia, Tournefortia, no Pisonia  
seen but could be on some other islets.  
Large, healthy coconuts, plenty of water inside,  
good quality meat, saw much copra in  
shed, people returned w/ sacks.

People: ~ 4  $\frac{00}{11}$ , 1 baby boy, 1 ♀ ~ 1-1/2 yrs,  
~ 7 new. So ~ 13<sup>6 months</sup> all Tahitian. None spoke  
English. Communicated in (my) broken French,  
but learned a lot.

I went w/ Mark & Martin<sup>in the Lancer</sup> to check out  
the "landing", supposedly at the n. end  
of the large leeward islet. We found  
a pole & a cairn ~~near~~ the n. way up  
the leeward coast, but no way. Seas were  
not rough, but a few waves & swells  
enough to deter, → 1.5 m. We kept  
going.

I noticed a square concrete platform  
(perhaps 15' square), & ~~we~~ opposite it, 2  
buildings on diff. islands that looked like  
corrugated iron & copra sheds. Red roofs.

Looked like a passage blasted in the  
reef opp. it, the best we'd seen so far -  
the only possible way in! Not that  
great a looking, so we continued on Nth  
past the 2 larger w. islets to the "big gap" -  
nothing. Waves bigger, stronger & biter, sur

Motu One ( )  
Tentative Plant List

- Pemphis acidula  
Cocos nucifera  
Thespesia populnea  
Cordia subcordata  
Phyllanthus amarus  
Euphorbia hirta  
 (tiare Tahiti) Gardenia taitensis  
 (manioc)  
 c Scaevola \_\_\_\_\_ (not Lepturus)  
Gramineae sp  
Triumfetta procumbens openish areas  
 Polyp. Asplenium nidus thick ground cover  
Rhymatosorus scolopendria cult.  
Tacca leontopetaloides cult, wild  
Tournefortia argentea  
Crinum asiaticum cult.  
Musa paradisiaca 1 or 2 cult.  
Ochrosia oppositifolia  
Cretarda speciosa

map (v. tiny, from "Charlie's Pacific Charts")  
that the "landing" was  $\frac{1}{2}$  way down the  
side.

### Motu One Birds

WHITE  
BRNO  
LE FR  
GRFR  
RFBO  
BRBO

GOPL  
BTCU  
WATA  
REHE (wh, int, dk)  
COMY  
Vini peruviana

lee side; the copra sheds, white boat & concrete  
~~landing~~ block for loading copra sacks were  
there. It was the only gap remotely  
like a "passage". So we returned.  
However, Mark seemed to be bent (as  
usual) on going as fast as he could,  
& was racing like a madman back  
to Te Mene. I asked sev. times for us  
to check it out, & finally he & Martin  
gave in - they'd already given up on  
the is., which (of course) meant forget  
any other islands nearby. Recently we'd all  
discussed the idea of visiting Bellingshausen, Scilly,  
maybe Mopelia too.

So we went a little closer & I noticed a  
man, then 2, then 3 - running from a small is.

where we had noticed a white boat & some tri rafts, over  $\frac{1}{4}$  mi. to the "passage" (Pacific Pilot says there is no passage into the lagoon). Mark didn't want to go in, but the waves were quite small & it didn't look like too bad a deal. Passage ~ 15' wide, ~ 25' long, & not real confused waves or a <sup>to</sup> strong backwash. Trouble was the "passage" ended immediately in a shallow reef-flat. We had discussed this.

Well - we went for it. It looked good, but as soon as I saw the shallow reef (I was in front of the bowline), I turned back to Mark, & yelled "Hit the reef. Pull the engine up"! And he didn't. Damn.

The boat, with engine, banged into the 6" shallow reef - I heard it click & shuddered - we moved sideways, & there were just enough seconds elapsed so that a wave came in, caught us broadside on and over we went! It was not a hard entrance, the waves weren't big, but there we were overturned again!

Fortunately I could easily swim over to the Lancer, & push it to the far side, where one of the guys directed us to go (current was flowing in that direction). So we all scrambled out of the water, grabbed the Lancer, pulled it to the reef & gathered ourselves together. All was safe, as the reef-

flat is v. wide & shallow. By this time there were 3 men, a lady with baby (Cynthia) all Tahitian, all (Georgia) v. nice & extremely surprised to see us.

The Lancer engine now wouldn't work! All was safe, except we had lost a canoe paddle, which Martin & I searched the reef flats for with no luck. Mark & Martin had several coral cuts on their legs. I was lucky - escaped injury of any sort. My heart was beating a bit faster than usual for a while, that's all ... & I was really thirsty, so happy to be on terra firma for a little while (how long? Mark wanted to return to Te Manu immediately). Profoundly thirsty, so while the men fiddled with the engine, Georgia, the baby & I walked  $\sim \frac{1}{8}$  mi. across the "reef-flat lagoon" & fed to this gorgeous, idyllic setting of their cleaning  $\sim 12$  people, incl. 2 kids, 5 ♂♂ & 5 ♀♀. Lots of Pemphis on the outer rocks (not fed there Town, Cordia & Cocos, & a few other spp. like Guettarda. Heard Vini peruviana Great, (one of my excuses for walking over to the islet), then saw several very well. Vini p. is all over the place! In an area of 200 m x 20 m I saw at least 30. Mostly in pairs, flitting between Cocos palms. At one pt. I lay down & watched.

a pair feeding on, or from, coconut flowers  
from 3 adjacent trees. Fly directly to  
inflorescence, hop around on it but with  
definite intent to feed, bend over, & (didn't  
have binocs or camera) feed from indiv. flowers.  
V. chattering. Quite active. It ~ 4 pm.

Also saw other sm. birds w/ big white wing  
patches (mynahs?), but didn't look ~~small~~  
large enough for mynahs. Mark & Martin said  
they heard some too. I also thought they  
sounded like mynahs but not sure.

Very hot & Thirsty. Georgia showed me  
cocoa shed - spacious, filled w/ cocoa, which  
she had pulled out, mostly in <sup>roily</sup>  $\frac{1}{2}$ -shells -  
then took a v. neat cleaning to their  
simple dwelling. Concreted iron roof &  
wood (?) sides. Sand floor, like outside.  
Table & bench, few beds w/ mosquito nets,  
sink w/ kitchen "counter". Few shelves.

Like Katrina's place but less. Virtually nothing...  
We went outside & I poked down 3  
green cypriates (big!) with a forked stick,  
drinking it.

Mr. A  
was terrific!

 draught of cypriate water.  
Mark & Martin then  
arrived & a man opened some more &  
also shared some "jelly cypriate".

Georgia told me there were hundreds in  
the lagoon, but they rarely ate them. Plenty.

of fish. All work the copra, Did not eat Viri  
but keep as pets. They are just there. Many  
All over the island. Good.

There are 1000's of Viri, maybe as many  
as 10,000. Will have to figure out the area  
the entire atoll. Books say 2-3 mi. across  
Quite a bit of land area. Looks like Flat, with  
the same area of native veg. along the lagoon  
fringe. Copra people lived on the v. small  
narrow island way up w. coast. Really lovely  
view of lagoon (deep), other motes, & reef-  
flats. Pure colors like Caroline.

No sharks in lagoon. Closed off. Not even  
a small pass apart from the one we entered  
in.

Mark & Martin anxious to go, so  
reluctantly we waded out to the "entrance"  
(opp. the concrete block) w/ 2 men (w/ whom we  
shared our 1 pkt. digestive bikkies). However  
I wandered around looking at plants, coll-  
a few specimens of a Scalvola (looked v.  
diff. from sericea). Narrow lvs. Put in small  
plastic bag in survival kit. No more room for  
other plants.

Waited at reef at about 5 pm. Waves bigger  
I asked Martin to take us out - more  
experience. Didn't look great. Mark wanted  
to wait till a.m., but we went for it,  
Martin got us out v. smoothly. Suddenly

The channel was quite flat, ~~and~~ the men pushed our boat over the reef lip, we started the engine & zipped out. No delays. How grateful we were that the engine started. Would have been bad news if it hadn't.



Tricky as you can't start the engine before you're into the channel's backwash, & you have to time the waves & "calm" periods. We couldn't have done it w/ the right timing w/out the Tahitian men's help. But it was certainly doable. Cam wouldn't have worried; Graham or Alve were perfectly capable of handling it.

Back at Te Manu Anne & Graham knew nothing of the capsizing etc. & were surprised when M&M announced they refused to return. I wasn't even told! I thought it was rather undemocratic, & said so. At which pt. both M&M got v. angry at me & said we could have died, the backwash was really

strong, it was v. dangerous. Compared it w/  
Vostok! It was not easy, but several  
levels of safety ~~below~~ <sup>above</sup> Vostok.

So everything got packed on board, &  
off we sailed again to God knows where.  
No land for a bunch more days.  
I was irritable annoyed at Mark for not  
listening to me when he very well  
heard me yell at him to pull the  
engine up. It wasn't for many days  
that I finally told Martin what  
happened as he kept on saying it  
was a puzzle.



FRI. MAY 11 & about the next week

Had a dream about scrambled eggs,  
vanilla ice-cream, broccoli, fruit juices, yogurt,  
fresh milk, & teriyaki chicken!

Am tired of drinking tea all the time!  
So I begin drinking plain water, but our  
port tank is infected badly w/ bacteria. Water  
tastes horrible, & so does everything made  
with it! Begin a horrible taste in my  
mouth constantly, & intestinal gas & bloatedness.

which lasts ~ 2<sup>+</sup> wks. As I write this on Caroline it still is not better, but improving.

We keep tacking back & forth..... we're all learning more about sailing & taking advantage of every breath of wind!

Every day, every few hours, we watch the winds, swells, & adjust the sails, autopilot & automatic wind vane. Our main concern is to get east, & we still don't seem to get very far, but are picking up more SE winds, so we're doing better than the last 2 weeks!

G. notes that when we have squalls, he can utilize the strong winds preceding the squall, & get some miles out of them as they move in a crosswind direction instead of the usual East, which is just what we don't want!

After the disappointment at Bellinghousen (& our plans to visit Scilly & Mopelia) we hoped to visit Maupiti, which looked like a simply gorgeous island in the distance one afternoon!

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But in the a.m. it was gone - a ghost in the night, & no more islands for days.

Kept going 5th (i.e. a bit east), finally getting to 18°S before tacking N with SE!