

**Report of the  
Third Meeting of the  
Regional Marine Turtle  
Conservation Programme  
and the  
First Meeting of the  
Regional Marine Mammals  
Conservation Programme**

**9 - 11 June 1993**

**Apia, Western Samoa**

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**Third Meeting of the  
South Pacific Regional  
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on

**9 - 11 June 1993**



# Foreword

The number of turtles in the Pacific region is decreasing at an alarming rate, to the point where they are endangered. Coastal people are finding it harder to catch enough turtles to feed their families and fulfil ceremonial obligations. More turtles are being hunted, resulting in over-harvesting. As an adult turtle can be 20-50 years old before she lays eggs, the result of this over-exploitation may not be obvious for 20-40 years, when the next generation of females does not return to breed.

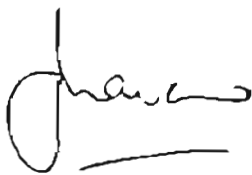
As turtles migrate and are therefore a shared resource in the region, and in recognition of their serious decline, the Regional Marine Turtle Conservation Programme (RMTCP) was developed by SPREP and the Australian National Parks and Wildlife Service (ANPWS) and adopted by the Fourth South Pacific Conference on Nature Conservation and Protected Areas in 1989. Since then the RMTCP has been adopted by the countries of the region as the focus for turtle conservation work in the Pacific islands region.

The objective of the Programme is "To conserve marine turtles and their cultural, economic and nutritional values for the coastal people of the countries served by SPREP". The Programme recognises the cultural and food significance of turtles in the South Pacific, and does not suggest that turtles should not be eaten at all.

This is the report of the Third Meeting of the countries involved in the RMTCP. The first was held in 1990 and the second in 1991.

The RMTCP has been funded substantially by the Australian and Canadian Governments. This Meeting was funded mostly by the Canadian Government. For the next four years the South Pacific Biodiversity Conservation Programme (SPBCP), funded by the Global Environment Facility (GEF) through the United Nations Development Programme (UNDP), will be the major source of funds.

I would specifically like to acknowledge and thank the Canadian Government, through, until recently, the International Centre for Ocean Development (ICOD); the US National Marine Fisheries Service (NMFS); the Australian National Conservation Agency (ANCA) - formerly ANPWS; the Queensland Department of Environment and Heritage (QDEH) and the World Wide Fund for Nature (WWF); for making this Meeting possible.



*Vili Fiuava*

*Director*



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# Meeting Report

## 1. Introduction and Welcome

The Third Meeting of the South Pacific Regional Marine Turtle Conservation Programme (RMTCP) was convened by the South Pacific Regional Environment Programme (SPREP) to assess the progress of the RMTCP, enable the exchange of information between country participants, and to determine the work programme for 1994-96.

The meeting was opened by Dr Vili A. Fuavao, the Director of SPREP, who welcomed the participants. He mentioned the commencement of the South Pacific Biodiversity Conservation Programme (SPBCP) and introduced Mr Iosefatu Reti as the SPBCP's new Programme Manager.

He commented on the need to keep in mind the cultural and food significance of turtles in the South Pacific, to clarify that SPREP is not suggesting that turtles should not be eaten at all. Dr Fuavao requested the Meeting to advise SPREP whether marine turtles and marine mammals are, in fact, a priority for SPREP; and he indicated that there should be more communication between the technical people from each participating country. He also requested that the Meeting ensure that these species conservation programmes are integrated into SPREP's total conservation programme. He ended by wishing the participants a pleasant and productive Meeting.

## 2. Election of Chairperson

The meeting elected Mr Noali Idechong of Palau as Chairperson.

## 3. Meeting Objectives and Procedures

Ms Adrienne Farago, the SPREP Project Officer (Biological Diversity Conservation), briefly outlined the background to the meeting and its objectives (see Annex 1), which were to:

1. provide a forum for exchange of ideas and information;
2. review progress towards the goals and objectives of the RMTCP; and,
3. assess future activities and prepare a workplan for 1994-96.

She reiterated Dr Fuavao's request that the Meeting be informal. She suggested that country participants take the opportunity to seek advice from Mr Balazs, Dr Limpus and Ms Geermans on their individual country projects. She welcomed the fact that the number of countries present had grown since the last Meeting from eight to thirteen, and hoped that this would result in a substantial number of new countries carrying out turtle conservation projects.

Formal products sought from the meeting were:

1. an agreed work programme for the regional elements of the RMTCP;
2. increased participation from countries whose in-country programmes play a key part in filling in gaps in regional knowledge; and,
3. any possible resolutions that the Meeting may feel are important.

Expected informal products were:

1. countries having the opportunity to seek expert advice on the commencement or continuation of their in-country projects;
2. new in-country projects from countries not previously involved; and,
3. feedback on regional documents circulated for comment at the Meeting.

## 4. Adoption of Agenda

The Meeting adopted the draft Agenda (see Annex 1), and requested the inclusion of items to discuss resolutions and the next meeting.

## 5. Overview of Regional Marine Turtle Conservation Programme

Ms Fargo outlined the background to the RMTCP and its principal features. The RMTCP was first developed by SPREP and the Australian National Parks and Wildlife Service (ANPWS) in 1989 and adopted by the Fourth South Pacific Conference on Nature Conservation and Protected Areas. Since then the RMTCP has been adopted by all the countries of the region as the focus for turtle conservation work in the South Pacific.

The objective of the Programme is "to conserve marine turtles and their cultural, economic and nutritional values for the coastal people of the countries served by SPREP".

Elements of the Programme include population census, tagging and monitoring; other research; the creation of a regional information database; public education (posters, school education etc); staff training; legislation and regulation review; and other conservation work (protection of nesting areas etc.)

Countries originally involved were:

- Fiji
- French Polynesia
- Federated State of Micronesia - Yap
- Marshall Islands
- New Caledonia (through an NGO)
- Palau
- Papua New Guinea
- Solomon Islands
- Vanuatu

American Samoa has its own turtle conservation programme not funded by the RMTCP.

After this meeting the RMTCP can look forward to the commencement of projects in:

- Federated State of Micronesia - Pohnpei
- Kiribati
- Tokelau
- Tonga
- Tuvalu
- Western Samoa

as well as the continuation of existing projects. SPREP also welcomes the involvement of OCEAN, a new participating NGO from Fiji, whose attendance at the meeting was sponsored by the World Wide Fund for Nature (WWF).

The RMTCP has been funded substantially by the Australian and Canadian Governments.

This Meeting was funded mostly by the Canadian Government. For the next 4 years the Global Environment Facility - funded South Pacific Biodiversity Conservation Programme (SPBCP) will be the major source of funds. The SPBCP has approximately US \$500,000 for species conservation, which will include marine turtles, marine mammals, avifauna, and any other species considered by SPREP member countries as a regional priority.

Ms Fargo ended by acknowledging and thanking the support of the Canadian Government, the US National Marine Fisheries Service (NMFS), the Australian Nature Conservation Agency (ANCA) - formerly ANPWS, and the Queensland Department of Environment and Heritage (QDEF).

## 6. Introduction to Turtle Biology

Mr George Balazs of the US National Marine Fisheries Service (NMFS) presented a short slide show and discussion on the biology of sea turtles, focusing on the fact that marine turtles are very slow growing animals and take decades to become reproductively mature. The rate of harvest should therefore take into account the fact that it will take several decades to replace the turtles that are being slaughtered now. Mr Balazs also discussed examples of the extensive migration of sea turtles, indicating that they are a shared resource and should be managed accordingly.

## 7. Review of Turtle Conservation Activities by Country

Participants provided a detailed account of marine turtle conservation activities in their countries.

### 7.1 American Samoa

Dr Peter Craig, the representative from American Samoa, stated that village interviews on turtle nesting and utilisation were conducted, public sightings monitored and surveys on remote islands undertaken. The results indicated that there is a total nesting population of approximately 120 within the whole Territory for both green and hawksbill species. The main nesting area for green turtles in American Samoa is located on Rose Atoll, where a rat eradication programme is being conducted. Dr Craig indicated that there has been a dramatic increase in the human population in American Samoa which is seriously contributing to the increase in turtle harvest. The question of what might be a sustainable harvest was raised.

Dr Craig also mentioned turtles tagged while nesting on Rose Atoll, that have been reported from Fiji where they were taken for food.

### 7.2 Australia (Queensland Department of Environment and Heritage)

Dr Colin Limpus discussed the various sea turtle research projects in Australia, and emphasised the need for further information regarding the nesting of loggerhead turtles within the SPREP region. He stated that over the past 10-15 years the number of loggerheads nesting in Australia has declined by 50-80%, causing great concern. It was noted that the only nesting aggregation of loggerheads within the SPREP region was located in the southern islands on New Caledonia, and that there was currently no monitoring to indicate the population size.

He discussed the tag recoveries relevant to the SPREP region, and indicated that he had received a large number of tag recoveries of loggerhead turtles from the Trobriand Islands area in PNG, where loggerhead turtles are frequently eaten.

Dr Limpus also discussed the large harvests of green turtles taking place in PNG and Fiji, and the harvest of hawksbills in other countries. He indicated that although Japan had technically ceased the import of tortoiseshell (bekko), some countries were still harvesting, in order to build up a stockpile, in case the legislation changes to allow trade at a later date. He suggested that it is more than reasonable to assume that there are not enough turtles being born to support the large amount of harvesting taking place, especially with the hawksbill species.

### 7.3 Federated States of Micronesia

#### (a) Pohnpei

Mr Donald David, the representative from Pohnpei State, indicated that utilisation of turtle resources is widespread. He proposed a tagging survey to be undertaken on Oroluk Atoll in 1993-94, and that the beach would be renovated to move the pig pens currently taking up space within the nesting area. Previous surveys indicated Oroluk was the only nesting area within Pohnpei State, and from the tagging already undertaken, one turtle was recovered in the Philippines.

#### (b) Yap

Mr Steven Kolinski from Yap State discussed the surveys undertaken in the 1992-93 season. Nesting studies were carried out on Ngulu, Elato and Ulithi Atolls, and feeding ground surveys were undertaken at Elato Atoll and around Yap proper. Genetic samples were obtained from the nesting populations and sent to the University of Queensland for analysis, the results of which indicated the nesting populations of Elato and Ngulu Atolls were genetically separate. An education programme is currently underway, focusing on a slide and video show, concentrating on green turtle life history and management recommendations.

He explained that Yap was trying to collect information of relevance to local communities, particularly on the outer islands. Mr Kolinski commented that it can be difficult to persuade local communities about turtle biology, but stressed the importance of community acceptance with regard to the success of conservation programmes.

Mr Balazs commented that some turtles tagged in the SPREP Region are being found in the Philippines, and suggested that at some stage SPREP will need to make contact with the Philippines, perhaps in the form of an invitation to the next meeting.

## 7.4 Fiji

Mr Aisake Batibasaga, the representative from Fiji, discussed the small hawksbill hatchery in Makogai Island, where about 360 hatchlings were released in 1992, and a further 200 are still in captivity. He indicated that some nesting beaches had been identified, and requested funding and tags from SPREP. He also indicated that a review of the turtle legislation is essential.

### Oceania Conservation and Environmental Awareness Network (OCEAN)

OCEAN is an NGO with the major purpose of heightening community awareness of the importance of protection and sustainable development of the marine environment. The participation of Ms Tarnivini Costello was funded by the World Wide Fund for Nature (WWF).

Ms Costello has submitted a proposal to WWF for funding, and requested feedback on the proposal. The proposal suggests methods by which to begin a major turtle conservation programme in Fiji with the consent and aid of the Fisheries Department and the Dive Association. OCEAN will network with both the Government and the community to obtain tagging information.

Ms Costello also indicated the need for a change in the Fisheries legislation regarding protection of turtles, suggesting that the law should indicate a maximum size, not just a minimum size. Ms Costello requested tags from SPREP to begin tagging turtles confiscated from the markets, and she indicated that one of OCEAN's aims was to ban the sale of turtles except for traditional purposes.

## 7.5 French Polynesia

Mr Phillippe Siu represented French Polynesia and discussed the green turtle tagging programme which has been running at Scilly Atoll since 1971. He indicated that there had been a nursery / headstart programme in operation since 1989 where several hundred hatchlings were released after 6-12 months in captivity. He stated that Scilly Atoll was declared a Turtle Sanctuary in 1992. Mr Siu indicated that information on nesting was becoming available from the islands in the Tuamotu and Marquesas Groups. A short paper, in press, was submitted by Mr Siu, which he requested be translated and distributed to participants.

Mr Siu presented a slideshow on post-cyclone rehabilitation of Scilly Atoll where the nesting beach had been totally devastated. Bulldozers were brought onto the island to move the sand back onto the beach from inland so the turtles may have somewhere to nest. Within four hours of the work being completed, turtle nesting had resumed on the beaches at Scilly. The meeting participants expressed their congratulations to French Polynesia for achieving such a positive step for turtle conservation.

## 7.6 Kiribati

Mr Rimate Tinga, the representative from Kiribati, indicated that very little is known about turtles in Kiribati. A survey of Canton Island was undertaken in 1975, but there had been no surveys since that time. However, he indicated that nesting did take place on islands within both the Phoenix and Line Island Groups.

Mr Tinga also stated that there had been some incidences of fatal poisoning by hawksbill and loggerhead turtles. He indicated that these deaths did not stop the harvest of hawksbills in Kiribati. The legislation forbids the killing of turtles on land, but not at sea.

The Fisheries Division was asked in 1990 by Japan to export bekkō, but they declined even though there was no scientific information available on which to base this decision. Kiribati is very interested in participating in the RMTCP and requested information on how to begin a programme.

## 7.7 New Zealand (Department of Conservation)

Mr Mike Donoghue stated that there were no nesting sites in New Zealand, but occasionally sick turtles are recorded. He indicated that tissue samples from dead turtles could be collected upon request. Turtles are totally protected by law in New Zealand.

Dr Limpus suggested that any tissue samples be sent to the University of Queensland for genetic testing to determine the populations, as post-hatchling loggerheads had been recorded from New Zealand. Mr Balazs also suggested that the Kermadec Islands host a good sized population of feeding turtles, and requested that some tagging be instigated. Mr Donoghue agreed, and SPREP supplied some equipment for the project.

## 7.8 Palau

Mr Noah Idechong, the participant from Palau, explained that a headstarting project was terminated when it was decided there were better ways to protect turtles. This was a difficult decision, as the headstarting project was supported by the Japanese Tortoiseshell Industry.

Green turtle nesting has been monitored in the Southwest Islands, and hawksbill nesting in the Rock Islands in 1992. There is a need to continue monitoring both areas, but at this point, there is only a plan for the Rock Islands area.

Palau is still under the Trust Territory legislation, and the US has a Recovery Plan for US Territories, with some input for Palau. However, a conservation plan for Palau has been drafted with assistance from The Nature Conservancy (TNC), a US NGO.

## 7.9 Papua New Guinea

Mr Rai Vui, the participant from PNG, stated that a nesting survey was undertaken at Long Island in 1991, where genetic samples were collected and sent to the University of Queensland. A nesting survey was also carried out in the Hermit Islands in 1992, and as a result of the survey, the area has been proposed as a Wildlife Management Area.

Market surveys were carried out in Daru and Port Moresby in 1991, and it was discovered that 56 turtles were recorded at Daru between August and December. The ratio of females to males was 9:1, indicating that the harvest targets female turtles. The tagging of leatherbacks at Maus Buang and Labu Tali was also undertaken in 1992.

Dr Limpus discussed previous surveys carried out at Long Island, notably those involving Ms Sylvia Spring in 1980-81. The results of this survey indicated that over 1,000 nesting turtles were being taken from the Long Island area annually.

## 7.10 Solomon Islands

Mr Moses Biliki, representing the Solomon Islands, stated that the hawksbill nesting in the Annavon Islands was one of the most significant rookeries in the South Pacific, and possibly the world. Surveys had been taking place in the Annavon area since 1989, and was continuing. Other areas surveyed in 1992 include the Russell Islands and the Shortlands area.

Mr Biliki stated that the Fisheries Division keeps a record of the export of tortoiseshell, and from 1983-1990 18,650 kg were exported. This corresponds to about 20,000 adult hawksbill turtles being killed for their shell in 7 years. There is no specific turtle legislation or policy besides size restrictions. The Fisheries Division has completed amendments to the Act banning the sale of products and the take of nesting adults and their eggs. The amendments are awaiting approval.

Dr Limpus described the open intention of Japanese bekko traders to establish the reintroduction of the bekko trade in the Solomon Islands and Indonesia, and that the bekko traders do their own research in an effort to collect information to convince the Government that there are enough turtles to allow export. Mr Balazs said that Japan was also in the process of developing an artificial "bekko" from silkworms

## 7.11 Tokelau

Dr Steve Brown, the Tokelau representative, explained that turtle nesting occurs on all of the three atolls in Tokelau, but no censusing had been undertaken since the early 1980s. A turtle hatchery had been commenced, but was terminated due to lack of success.

Dr Brown stated that in the past fishermen were traditionally obliged to take any nesting female and her eggs and present them to the chief. More recently, however, some turtles that are captured and presented are being returned to the sea by the chief, probably in recognition that their numbers are drastically declining. Dr Brown indicated that in some areas village laws were being introduced to restrict the taking of turtles and eggs. He guessed that over 3 months 6-8 turtles and 1,000 eggs are taken. There is no export or sale of turtles.

Dr Limpus suggested using existing tradition to tag turtles and release them when they are formally presented to chiefs, rather than to stop fishermen catching them at all.

## 7.12 Tonga

Mr Asipeli Palaki, the representative from Tonga, stated that the first nesting survey was in 1971, which indicated there was a small hawksbill population. A hatchery was set up and turtles were kept for up to two years before being released.

A second survey in the late 1970s indicated that green, hawksbill and loggerhead nesting occurred on the islands of Tonga. There are 35 nesting sites in all, 25 of which are on uninhabited islands. Harvesting takes place for cultural and subsistence uses, and the destruction of habitat areas are a problem.

After the survey in the late 1970s, the Government enacted laws to protect leatherback turtles and all nesting turtles from October to late January. The Fisheries Department is looking at introducing size limits and declaring marine parks and reserves for the nesting areas. There are already two marine parks which incorporate nesting sites.

### 7.13 Tuvalu

Mr Ian Keay, the representative from Tuvalu, explained that there is little information about turtles in Tuvalu. It is believed that there are nesting areas on the outer islands of Funafuti. Green turtles are known to nest, and immature hawksbills have been sighted. He stated that the majority of turtles are captured as contributions to feasts, and cost about AUS \$2 per kilo. Professional fishermen try to catch 6-8 turtles a trip, and they go out 1-2 times per month.

Mr Keay stated that turtles are frequently seen in Funafuti lagoon, and that fishermen don't think there has been any reduction in turtle numbers, making it difficult to convince them that turtles are endangered. It is illegal to capture turtles on land, but this is often ignored.

The Funafuti Council has turtle by-laws, but there are no copies at the Council and the legislation has never been enforced. Mr Keay indicated that Tuvalu is interested in starting a turtle project, possibly beginning with local information and education. A proposed Conservation Area, combining marine and terrestrial areas, includes one island with nesting turtles. This proposal already has community and political support.

### 7.14 USA - Hawaii (National Marine Fisheries Service)

Mr Balazs discussed the Hawaiian Islands projects on green turtle nesting and feeding areas. He stated that the population continues to show signs of recovery since the extensive fishery was halted in the 1970s. Mr Balazs stated that saturation tagging had been going on for over 5 years, and that population modeling could be used to extrapolate the information.

The US *Endangered Species Act* is enforced in Hawaii, and although it is not perfect, it is effective. Mr Balazs is still pursuing the cause of *fibropapillomas*, a disease which causes wart-like growths to appear on turtles. So far there is no indication that it is caused by pollutants.

### 7.15 Vanuatu

Mr Charles Vatu, the representative from Vanuatu, described the two surveys undertaken in 1992 - to the Maskelynes Islands and the Banks/Torres Islands, which were identified as possible nesting areas in village questionnaires. There is little harvest data, but in the Maskelynes it was stated that 50 turtles can be eaten at certain celebrations.

Mr Vatu stated that the response to education has been positive, but there is still a long way to go to convince the locals that as well as eating turtles they have a responsibility to preserve turtles. The next survey will be on Epi Island, where it is believed leatherback turtles nest.

### 7.16 Western Samoa

Dr Tony Robinson, representing Western Samoa, explained that hawksbill turtles were known to nest on several beaches on Savai'i Island as well as beaches in the Aleipata district of Upolu Island. In 1972 it was estimated that a nesting population of about 45 hawksbills existed for the Aleipata area, these figures being taken from the headstarting project running at the time.

At this time no legislation exists for protection of marine turtles in Western Samoa, but the annual harvest is believed to be small, possibly due to the positive publicity associated with the hawksbill headstart project from the 1970s. However, the Fisheries Division is keen to initiate some form of protection in the way of legislation.



## 8. Regional Overview - Turtles in the South Pacific

The SPREP Turtle Conservation Officer, Miss Suzie Geermans, discussed where different species of turtle were distributed in the SPREP member countries, and participants also contributed information (Annex 3). Several areas were identified as representing knowledge gaps in the region, and an estimate of total numbers of females nesting per year in the South Pacific was made.

Green turtles are the most common marine turtle species in the Pacific, and it was estimated that the total number of nesting females is between 3,000-5,000. The main areas where knowledge on green turtles is limited, is PNG, Fiji, Vanuatu and the states other than Yap in the FSM.

The estimated total number of hawksbills nesting in the South Pacific per year is between 500-1,000, and several key areas were identified as having little information, such as PNG, Vanuatu, Chuuk in FSM, and both American and Western Samoa.

The biggest leatherback nesting area within the SPREP region is located in PNG, together with minimal nesting in the Solomon Islands and Vanuatu. There would only be a number of hundreds (order of magnitude) nesting in the Pacific.

There is a loggerhead rookery of unknown size located in southern New Caledonia, and a small number in Kiribati. Apart from that the only two areas in the Pacific where loggerheads nest are Australia and Japan.

The discussion centered around the alarming nature of the total figures, and whether this level of information is sufficient to persuade Governments to act. Comments made were:

- hard and detailed data will be required by governments such as Fiji which have opportunities for lucrative international trade;
- other countries like Western Samoa already have the start of a commitment to act, and for these countries the regional/generic information available is sufficient;
- local communities are more likely to be convinced by conservation biology education than statistics; and,
- the human element cannot be ignored. If turtle harvesting is to be stopped, it must be replaced by alternatives.

## 9. Census and Tagging Projects

The SPREP Turtle Conservation Officer, Miss Geermans, summarised what surveys had been undertaken in the past three years since the SPREP RMTCP had been in action (Annex 4). This prompted discussion as to how to go about beginning a survey and what steps to take:

- ask the locals where the turtles are and how they are utilised;
- start the message immediately that turtles are endangered; and,
- once you know what exists and where the key areas are, start tagging.

Sustainable harvesting was discussed, and Dr Limpus presented a simple model and explained that in order to maintain 300 female nesting turtles a year, a total of at least 30,000 turtles need to be swimming in the sea. Recruitment (the rate at which new animals come into the population) would be at a rate of about 10% per annum.

To be sustainable, you cannot harvest more than 10% of the turtles recruited into the population. So of a population of 300 female nesting turtles a year, no more than 3 should be harvested, in order to be sustainable. It is important that the total population is known before what is a sustainable take can be determined. Also, harvesting of one source population takes place in several countries, not just one.

Dr Limpus presented a talk about sustainable harvesting of hawksbills, using the trade statistics obtained from the Solomon Islands Fisheries Department. Using the population models, if 20% of the nesting females are taken in order to make tortoiseshell, within 10 years, 90% of the population will have disappeared. With a population of about 1,000 nesting females, as the Solomon Islands was reported to have several years ago, this 20% would equate to less than 600 kg of tortoiseshell to be taken per year. Yet the Fisheries statistics state that 18,650 kg of tortoiseshell was traded to Japan between 1983-1990. It was reiterated that turtles are slow growing animals, and it takes hundreds of years to replace the losses caused by humans.

A series of maps was presented which indicated the tag recoveries within the SPREP region (Annex 5). Since the implementation of the SPREP Programme, several tags have been recovered from turtles caught in Yap, PNG, and Fiji.

There was a brief discussion about the SPREP Turtle Database, its function and method of access, as well as the results that can be obtained from utilisation of the programmes (Annex 6). The bibliographic database was also mentioned, and it was indicated that the data was readily available upon request.

The SPREP Turtle Conservation Officer requested each participant to review and comment on the Turtle Fact Sheet and Tagging Instruction Manual before the final day of the meeting. The suggestion was also made that SPREP should publish information stored in the database.

## 10. CITES and National Legislation and Regulations

SPREP's Legal Officer, Mr Bernard Moutou, discussed the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), the Convention on the conservation of migratory species of wild animals (the Bonn Convention), and other international and regional Conventions, and their importance with respect to marine turtle conservation.

CITES is the major tool to control international trade in turtle products, using restrictions. This initiated discussion which centered around the value of CITES for small islands; and the possibility of continuing to "take" turtle products, in an appropriate manner, under CITES. Mr Moutou stated that CITES does not cover restrictions on turtle products not related to international trade.

The aim of the Bonn Convention is to protect species of wild animals that migrate across or outside national boundaries. It covers in-country management issues for migratory species. This Convention also provides the opportunity to make bilateral agreements, by providing a framework for protecting and managing both endangered species, or precisely identified populations. With the recent advances in genetic identification, this is particularly relevant for marine turtles.

The International Convention on Biological Diversity emphasises that the protection of endangered species should not be attempted without protection of their habitats.

Mr Moutou then briefly mentioned the different types of legislation and regulations used in the SPREP countries, such as size restrictions and seasonal limits. He commented that the problem is not so much preparing and approving regulations as enforcing them, and in accordance with our information on the dramatically decreasing numbers of turtles nesting in some areas, there is an urgent need to enforce existing legislation.

He also acknowledged that the specific biology of animals must be known in order to draw up legislation, and that is why there are scientists who determine which species are entered into the CITES Appendices. The Legal Officer indicated that he was available to provide assistance to countries if requested, and urged all South Pacific nations to become signatories of CITES.

## 11. Other Management Measures

SPREP's Coastal Management Officer, Dr Andrew Smith, discussed measures that could be undertaken by the Pacific island countries with respect to in-country sea turtle conservation (Annex 7). Examples were loosely grouped into management measures based on:

- harvest limitations;
- usage limitations;
- location controls;
- turtle products;
- turtle life cycle; and,
- indirect measures.

Factors that need to be taken into account when determining management measures are:

- the particular species;
- turtle biology;
- the practicality of enforcement; and,
- local community acceptability.

The suggestion was made that a paper discussing these management options in detail, especially in relation to turtle biology, would be very useful.

In relation to size restrictions, the point was made that although it would be more appropriate to protect the larger breeding-age animals, and only take the smaller ones, it is the larger turtles that are the more attractive to Pacific island communities. Discussion also considered whether it would be better to try and restrict the taking of large turtles to males only, or whether to allow taking of females at the end of the breeding season after laying has finished.

No consensus was reached about the appropriate controls over harvesting. It was agreed that different management methods are appropriate for different countries. It was also agreed that the first three years of the RMTCP have built up a useful, if incomplete, picture of turtle distribution and priorities in the Pacific; and that the focus of in-country activity should now move increasingly towards management. The SPREP Technical Advisors indicated they were willing to discuss this in further detail if requested.

## 12. Other Research Requirements

Dr Colin Limpus from QDEH presented data collected on the SPREP samples submitted to the global population genetics study, on behalf of Dr Craig Moritz from the University of Queensland (UQ).

The study has so far determined that two of the green turtle nesting areas in Yap, (Ngulu and Elato Atolls), are genetically separate populations, as is the Long Island population in PNG. Dr Limpus stressed the importance of the genetics work, and emphasised that SPREP should continue to support the project by providing samples for analysis.

The price for analysis of samples has increased from AUS \$30 to AUS \$80 because of labour costs, and it was agreed that this is too expensive to be a regular component of the RMTCP. The suggestion was made that a joint proposal be submitted from SPREP and UQ to the Australian Nature Conservation Agency (ANCA) in order to seek funds to continue the sampling.

Mr George Balazs from the NMFS presented information regarding satellite tracking of sea turtles which had been undertaken in the Hawaiian Islands. Small transmitters are attached to turtles and their daily movements while migrating are followed. The cost of using the satellites and setting up the necessary computer links cost about US \$10,000 per turtle, and the cost of a transmitter is US \$3,500.

Mr Balazs proposed that two turtles be tracked by the RMTCP within the SPREP region, and he indicated the educational and media value as well as the research value. NMFS offered to plug SPREP into the NMFS system at no cost to SPREP except for the transmitter. Mr Balazs especially named Scilly Atoll, French Polynesia as a suitable area for study.

### 13. Education and Information

SPREP's Environmental Education Officer, Mrs Gisa Gaufa Salesa-Uesele, described 'education' as a process of learning, leading to a change in behaviour. She described the role of formal, non-formal and informal education; and explained the need to clearly identify the target groups and the message, so appropriate and relevant strategies and resources are produced to ensure the required changes in behaviour take place. Mrs Uesele emphasised the importance of local education in assisting with turtle conservation, and the Meeting discussed ideas on how to begin educational programmes with different target groups.

The major target group associated with Pacific Island Countries was identified to be the village communities. A list of specific target groups within the village were listed, and use of radio programmes, newspapers and word of mouth were identified as some appropriate methods of spreading the message. The most influential groups were highlighted to demonstrate some strategies which have proved to be effective in some countries. This led to discussion of the materials and resources needed, e.g. video, slides, posters, T-shirts, etc.

Discussion centered around issues such as an appropriate theme for a marine turtle conservation education campaign. The suggestion of "Save marine turtles for our grandchildren" was made. Countries also outlined some of their particular problems, such as the need to find alternative income sources to those provided by sale of turtle products; and the need to find alternative sources of protein.

SPREP's Environmental Education Officer indicated that she would be available to provide advice to countries on their educational projects, on request.

### 14. RMTCP - the next 3 years

Dr Colin Limpus of QDEH led the Meeting through a consideration of a work plan for the next three years. The Meeting agreed to maintain the same goal for the RMTCP -

*"To conserve marine turtles and their cultural, economic and nutritional values for the coastal people of the countries served by SPREP".*

The GEF-funded SPBCP will not be able to fund all the SPREP member countries, but it was agreed that the work programme would be structured to provide a framework for all South Pacific marine turtle conservation activity, whether or not it was funded by the SPBCP.

The work programme should address:

- *turtle database* - Only a maintenance function is now required; together with facilitating as wide access as possible to the countries of the region. The SPREP Secretariat was reminded to send copies of all tag recovery information to the countries, as well as the individuals, involved in either the tagging or the recovery of the tagged turtle.
- *education* - The programme currently includes posters, a facts sheet, a slide presentation being prepared by Yap (which may be able to be adapted for other countries), and a Greenpeace training video. The Meeting suggested that a specific SPREP/RMTCP video be made, for taking to villages. Some possible funding sources were discussed. The suggestion was made that media (radio, newspapers) could be used more often, together with in-country survey or tagging programmes, for example every time a tag is found or when a survey is about to commence.

French Polynesia was likely to find its own sources of funds for educational material in French, and was requested to forward all such information for the use of New Caledonia also.

- *training personnel* - Training can be provided by QDEH. The SPREP Turtle Consultant is also available for in-country training. SPREP was reminded that the personnel within countries change frequently, which has implications for continuing training needs.

- *monitoring* - The three points listed below comprise the absolute minimum that should be obtained from each area of significance for marine turtles:

1. identification of turtle stock, through the use of tagging and genetic analysis;
2. identification of stock size, by monitoring of nesting populations; and,
3. annual harvest information, by monitoring utilisation

Any extra information obtained is a bonus. This information is also able to be used for educational purposes.

Dr Limpus presented a table summarising the status of sea turtle knowledge within each of the SPREP member countries, and priorities for monitoring were identified as Fiji, FSM, New Caledonia, Palau, PNG, Solomon Islands and Vanuatu.

- *management* - Management initiatives and priorities need to be identified by each country. SPREP's role is to provide assistance, advice and support. It was noted that tourism and ecotourism attracted by marine turtles are very important opportunities for alternative income generation. There are excellent possibilities for funding tourism - related activities in the SPREP region over the next three years, and it was noted that SPREP would be looking for opportunities to incorporate tourism - related income generation projects into the RMTCP.

The SPREP three year plan has now been prepared from the framework presented by Dr Limpus (see Annex 8).

## 15. Meeting Resolutions

During the course of the Meeting the following formal resolution was agreed on:

**Recognising** the intrinsic values of turtles, and their special cultural and nutritional value to the present inhabitants and future generations of many peoples of the Pacific region;

**recognising** that the Pacific region contains some of the last remaining significant populations of sea turtles in the world;

**conscious** of the achievements of the Regional Marine Turtle Conservation Programme over the last 3 years and that significant steps have already been taken in turtle conservation, monitoring and research in the Pacific region;

**acknowledging** that turtles are migratory species that are shared resources between countries both inside and outside the region, and that there is a need to protect this resource for present and future generations;

**noting** that there is a continuing and serious decline of turtle populations throughout the Pacific region, to the point where they are endangered;

**recognising** that current levels of commercial and subsistence harvesting cannot be sustained on these depleted populations.

*The Meeting recommends that:*

1. there be an immediate and substantial reduction in the numbers of turtles being killed throughout the region;
2. countries of the region be encouraged to ban international trade in turtles and turtle products;
3. countries of the region be encouraged to introduce a moratorium, or where possible a permanent cessation, on within-country commercial transactions of turtles and turtle products, allowing only cultural and/or subsistence takes;
4. 1995 be ceremonially considered the "Year of the Sea Turtle" in the Pacific region, and that whenever and wherever possible and practical, on a voluntary basis, restraint be exercised in the killing of turtles for all purposes.

In addition, there were a number of other matters that the Meeting requested be added to the minutes.

It was requested that a special vote of thanks be acknowledged to:

- the consultant and advisors who have done such a good job for the first three years;
- the Chairman;
- the various sponsors (of the meeting and of participant attendance); i.e.
  - Canadian Government;
  - Australian National Parks and Wildlife Service (ANPWS) / Australian Nature Conservation Agency (ANCA);
  - Queensland Department of Environment and Heritage (QDEH);
  - US National Marine Fisheries Service (NMFS); and,
  - World Wide Fund for Nature (WWF).

The representative of French Polynesia advised the Meeting of potential funds for turtle conservation work from the European Community, to be used for the French Territories (not just French Polynesia). The Meeting expressed its congratulations to the French Polynesian representative, and expressed its full confidence that the work, if it goes ahead, will be planned and carried out in accordance with SPREP's RMTCP objectives and work plan.

The Meeting also expressed its encouragement of further co-operation wherever possible between the RMTCP and the French Territories and any possible European Community project.

The Meeting expressed its congratulations to American Samoa for its work independent of the RMTCP, and expressed its encouragement of further co-operation wherever possible.

The Meeting expressed its congratulations to and encouragement to the Meeting's host country, Western Samoa, for the proposed reinstatement of the turtle project.

## 16. Next Meeting

Discussion revolved around the fact that it may be more cost effective and appropriate to hold meetings every second year. However it was agreed that the next meeting of the RMTCP would be convened by SPREP, if possible and if funds permit, in 1994, to plan in particular for a 1995 Pacific Region Year of the Sea Turtle.

# Regional Marine Mammals Conservation Programme:

## Meeting Report

Mr Mike Donoghue, Department of Conservation, NZ, presented a slide show on the various types of marine mammals. He indicated the lack of knowledge of which species are to be found in the SPREP region, and urged the meeting participants to simply record any sightings and forward the information to SPREP. He distributed sightings sheets for this purpose (Annex 9). He also suggested the collection of tissue samples, to be sent to Auckland University, if any stranded animals are encountered.

Mr Donoghue targeted the Humpback Whale and the Sperm Whale as 'flagship' species for SPREP, which in particular require more information. The Humpback Whale is known to have breeding grounds in Tonga, and possibly American Samoa, Fiji, Cook Islands and Vanuatu. He stated that these are only remnant populations, after the extensive harvest, particularly of Sperm and Humpback Whales, throughout the world.

The country participants agreed that very little was known about marine mammals in the region, but many had isolated recordings, or stories, regarding beachings of marine mammals.

The Meeting agreed that while at this stage marine mammals are a low priority for many individual countries, it was a definite priority for regional action at the level of SPREP. Proposed priority actions were discussed (see Annex 10).

It was agreed that priorities should be:

- *SPREP action:* preparation of a field identification guide, base line information document and an educational poster. The field guide was identified as the first priority. The marine turtle database will be adapted to record marine mammals sightings.
- *Country action:* the sightings data sheets, together with the preliminary available identification information, will be distributed within countries to collect sightings data to start a database.

The value of tourism and ecotourism as sources of alternative income generation were discussed. The Meeting agreed that this is an avenue worth pursuing; but cautioned the need to first identify critical areas, type of animals and distribution, and instigate protection measures, before commencing tourism. The Meeting agreed to concentrate on information gathering at this stage.

# Annexes

## Annex 1: Agenda of the Third Meeting on the Regional Marine Turtle Conservation Programme

### Wednesday 9 June

- |                  |  |
|------------------|--|
| 08.30 - 10.00 am | 1. Introduction and welcome                            |
|                  | 2. Election of Chairperson                             |
|                  | 3. Meeting Objectives and Meeting Procedures           |
|                  | 4. Adoption of Agenda                                  |
|                  | 5. Overview of RMTCP                                   |
|                  | 6. Brief introduction to turtle biology                |
| 10.30 - 12.00 pm | 7. Review of turtle conservation activities by country |
| 01.30 - 03.15 pm | Above session continued                                |
| 03.30 - 05.00 pm | 8. Regional overview - turtles in the South Pacific    |
|                  | 9. Census and tagging projects                         |

### Thursday 10 June

- |                  |  |
|------------------|--|
| 08.30 - 10.00 am | 10. CITES and national legislation and regulations |
| 10.30 - 12.00 pm | 11. Other management measures                      |
| 01.30 - 03.15 pm | 12. Other research requirements                    |
| 03.30 - 05.00 pm | 13. Education and information                      |

### Friday 11 June

- |                  |                              |
|------------------|------------------------------|
| 08.30 - 10.00 am | 14. RMTCP - the next 3 years |
| 10.30 - 12.00 pm | 15. Above session continued  |

## First Meeting of the Regional Marine Mammals Conservation Programme

### Friday 11 June

- |                  |  |
|------------------|--|
| 01.00 - 02.00 pm | Marine Mammals in the South Pacific: <ul style="list-style-type: none"><li>- where are they</li><li>- what is happening to them</li><li>- why are they important</li></ul> |
| 02.00 - 03.00 pm | Review of marine mammal activities in the region   |
| 03.15 - 05.00 pm | Marine Mammal Conservation Programme   |



## Meeting Objectives

The objectives of the **Regional Marine Turtle Conservation Programme Meeting** are:

1. to provide a forum where all those interested or involved with marine turtle conservation in the South Pacific can meet to share their experiences and coordinate their activities within the framework of the RMTCP.
2. to obtain a consensus on priorities for marine turtle conservation activities in the South Pacific, which can be used as a guide for both regional and in-country activities.
3. to prepare a workplan for the coming year for both regional, and if relevant, in-country activities.

The objectives of the **Marine Mammals Meeting** are:

1. to brief regional personnel on the significance of and threats to marine mammals in the region, and on the value of regional and national activity for their protection.
2. to table the draft Regional Marine Mammals Conservation Programme and seek regional input and comment.
3. to discuss and broadly agree on priorities for the regional components of the Programme.

## Annex 2: List of Participants

### National Participants

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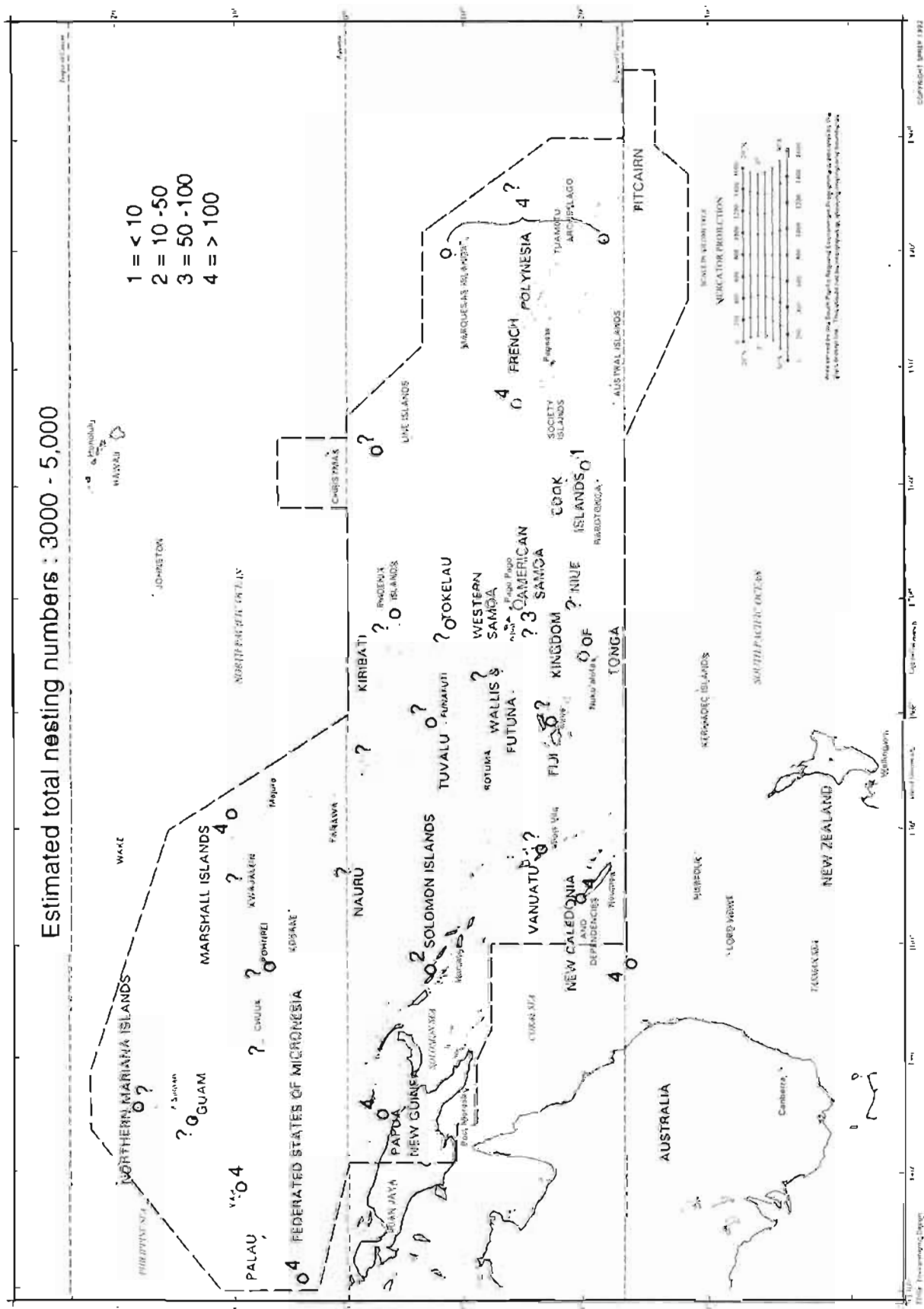
Dr Vili A. Fuavao                    Director  
Muliagatale Mr Ioeseafatu Reti    Programme Manager  
(SPBCP)  
Ms Adrienne Farago                 Project Officer (Biological  
Diversity Conservation)  
Mrs Faatupu Poihega                Secretary  
Gisa Mrs Gaufa Salesa-Uesele      Environmental Education  
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Officer  
Mr Bernard Moutou                 Environment Legal Officer

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c/ Department of Environment      Fax: (617) 227 6386  
and Heritage  
160 Ann Street  
BRISBANE QLD  
Australia

# Annex 3: Maps showing Marine Turtle Nesting Areas in the SPREP Region

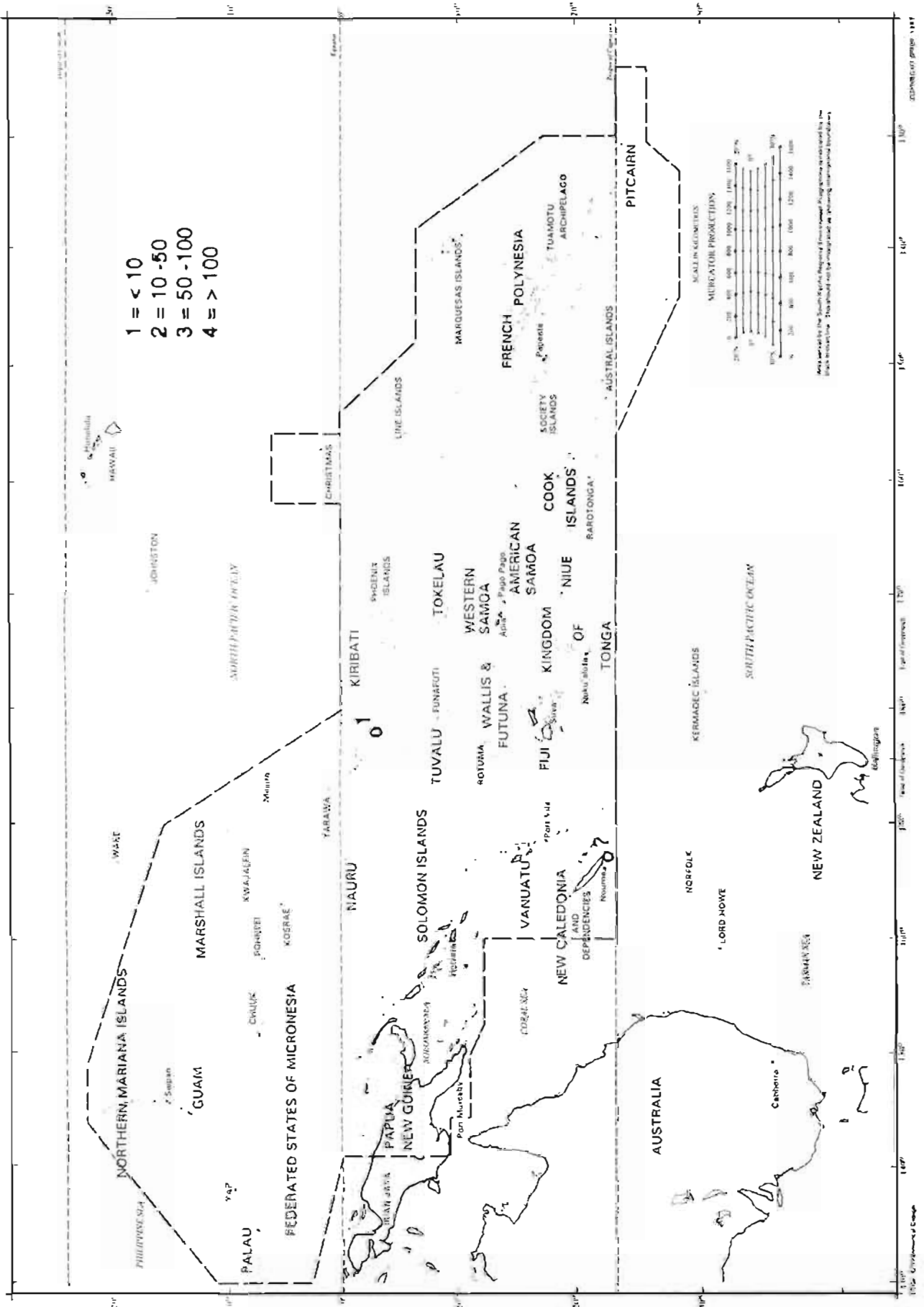
## Annex 3.1: Green Turtle Nesting Areas.

### GREEN TURTLE NESTING AREAS



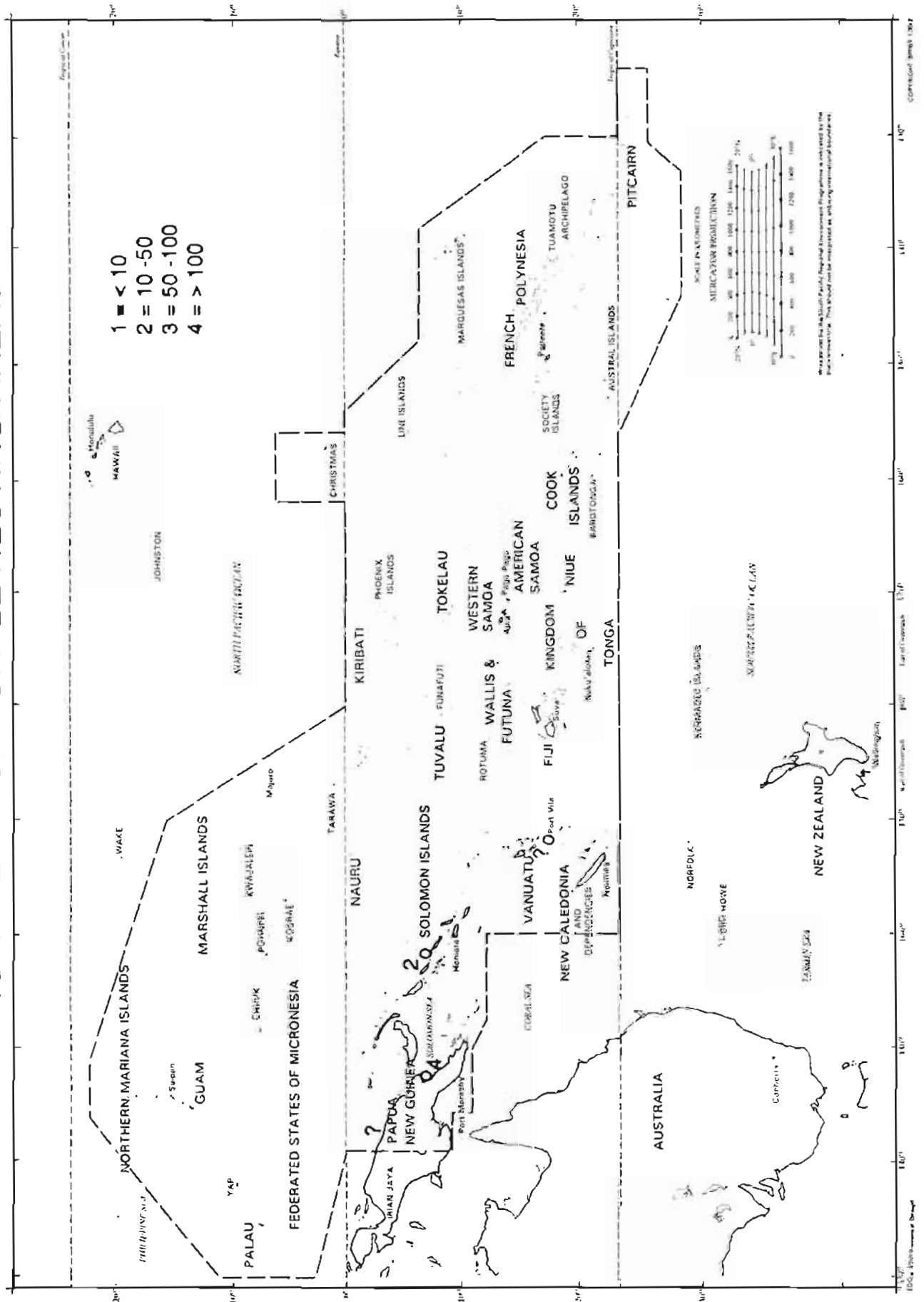
Annex 3.2: Loggerhead Turtle Nesting Areas.

LOGGERHEAD TURTLE NESTING AREAS



# Annex 3.3: Leatherback Turtle Nesting Areas.

## LEATHERBACK TURTLE NESTING AREAS

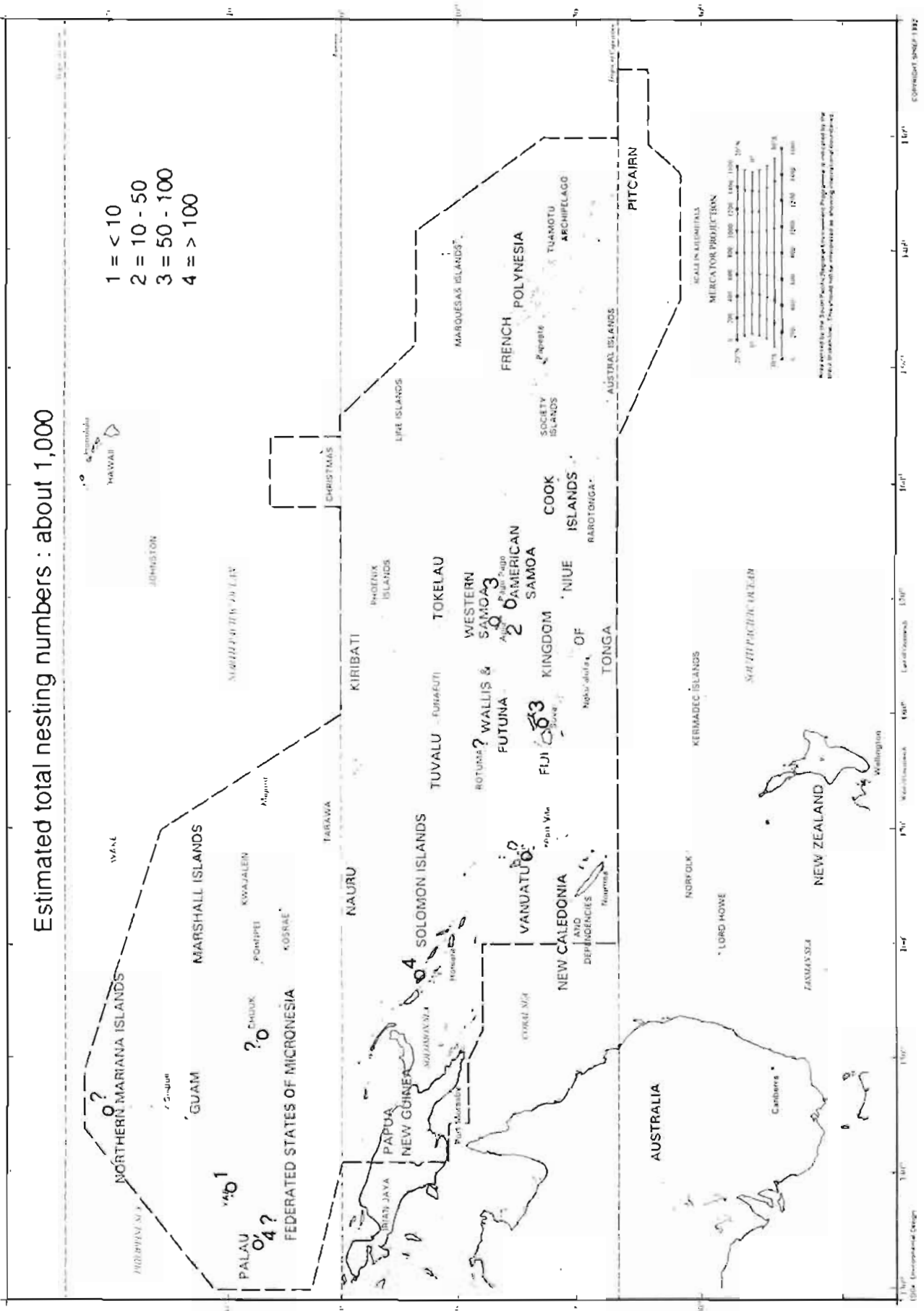


Annex 3.4: Hawksbill Turtle Nesting Areas.

HAWKSBILL TURTLE NESTING AREAS

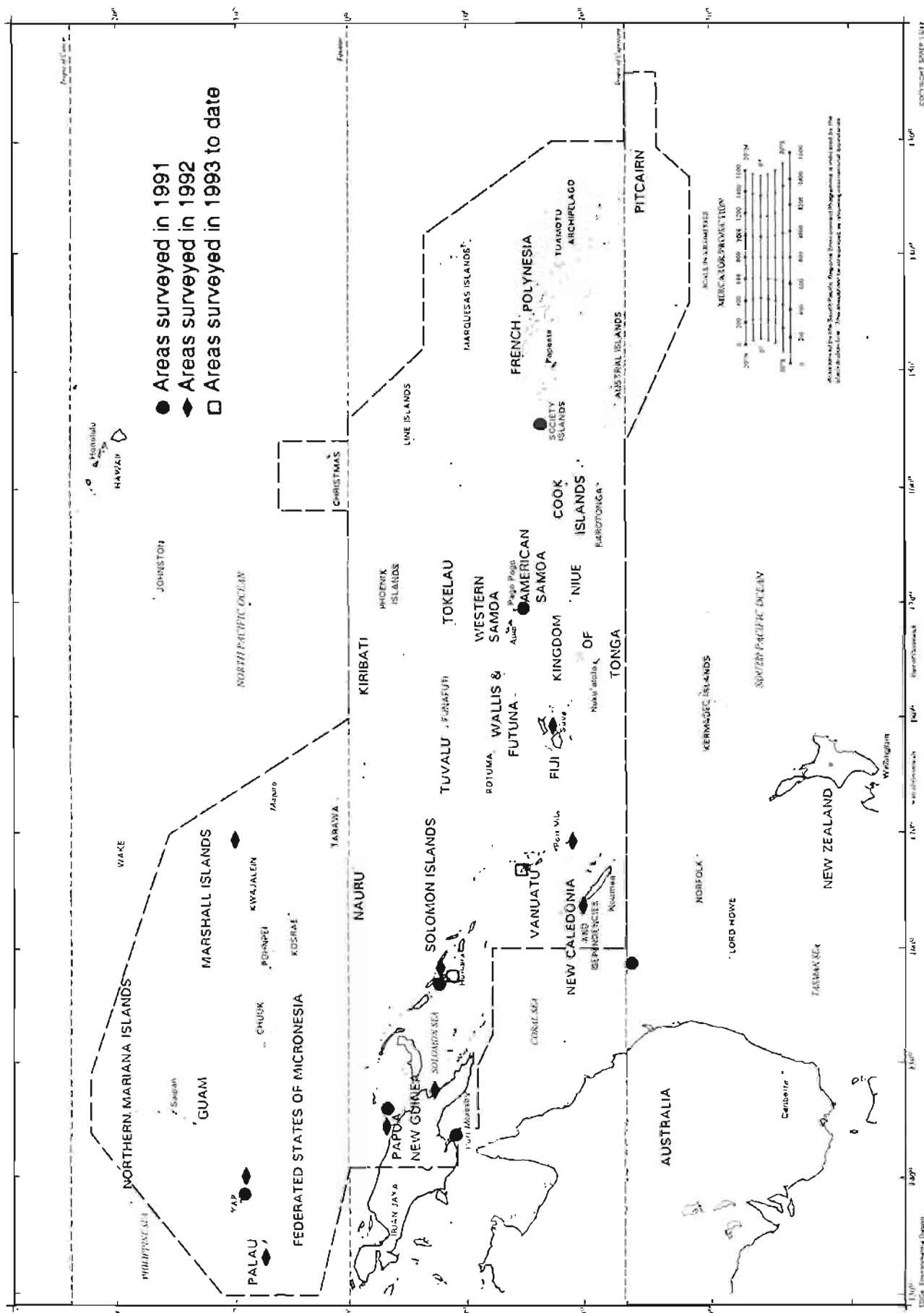
Estimated total nesting numbers : about 1,000

- 1 = < 10
- 2 = 10 - 50
- 3 = 50 - 100
- 4 = > 100



Annex 4: Areas Surveyed under the RMTCP

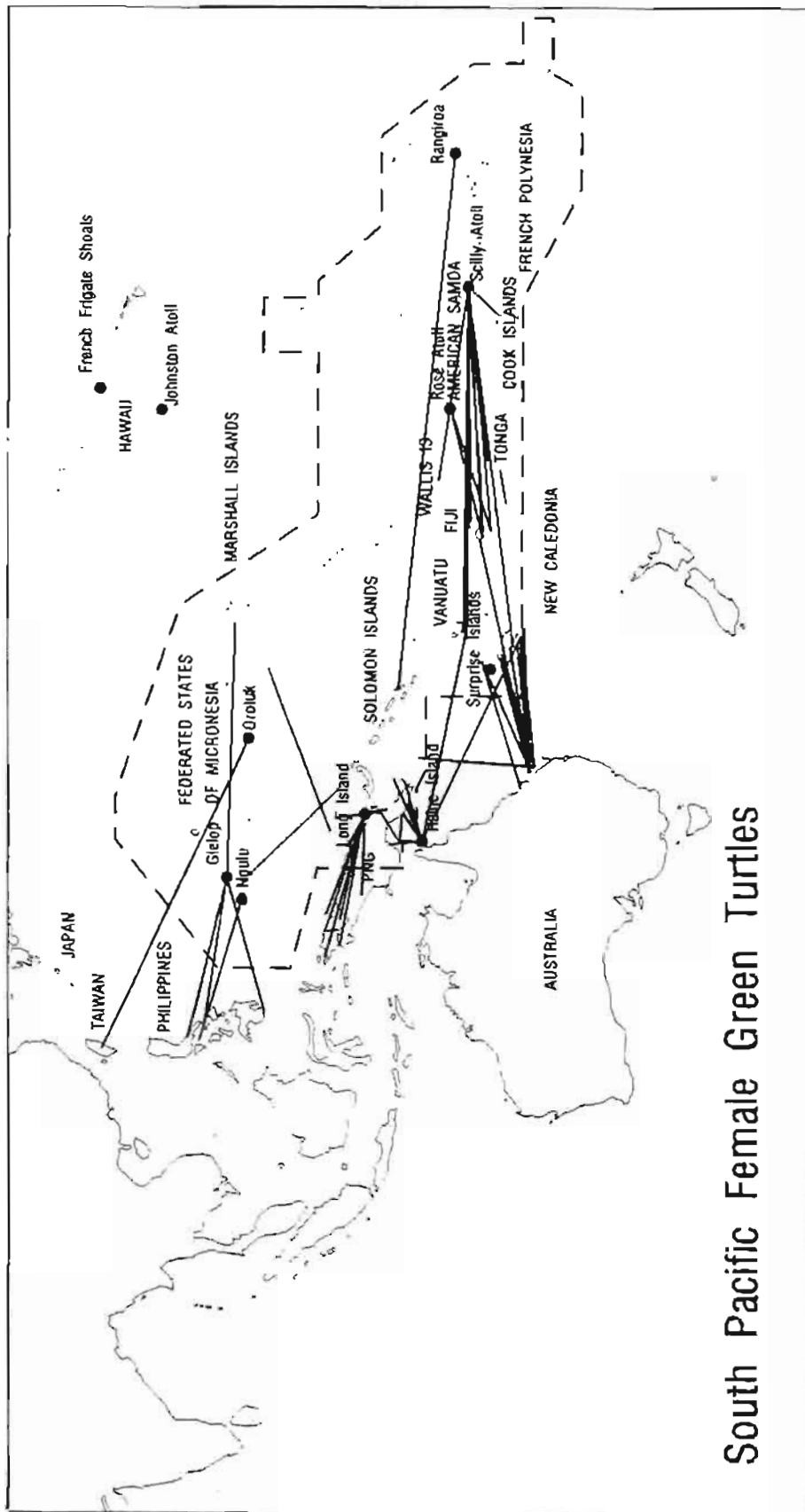
AREA SERVED BY THE SOUTH PACIFIC REGIONAL ENVIRONMENTAL PROGRAMME



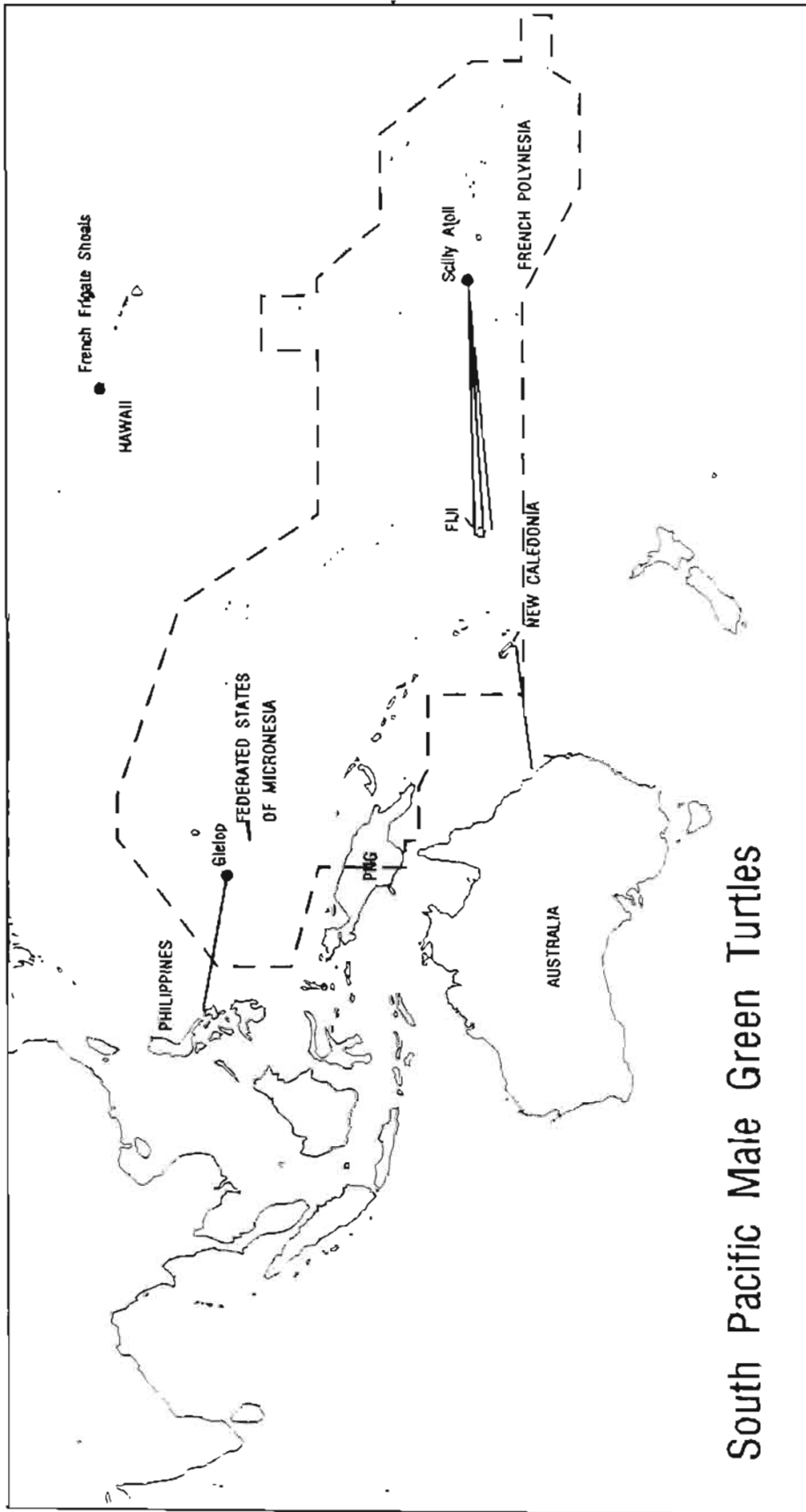


Annex 5: RMTCP Taggings and Recoveries in the SPREP Region in 1991-93

Annex 5.1: Female Green Turtle Recoveries.

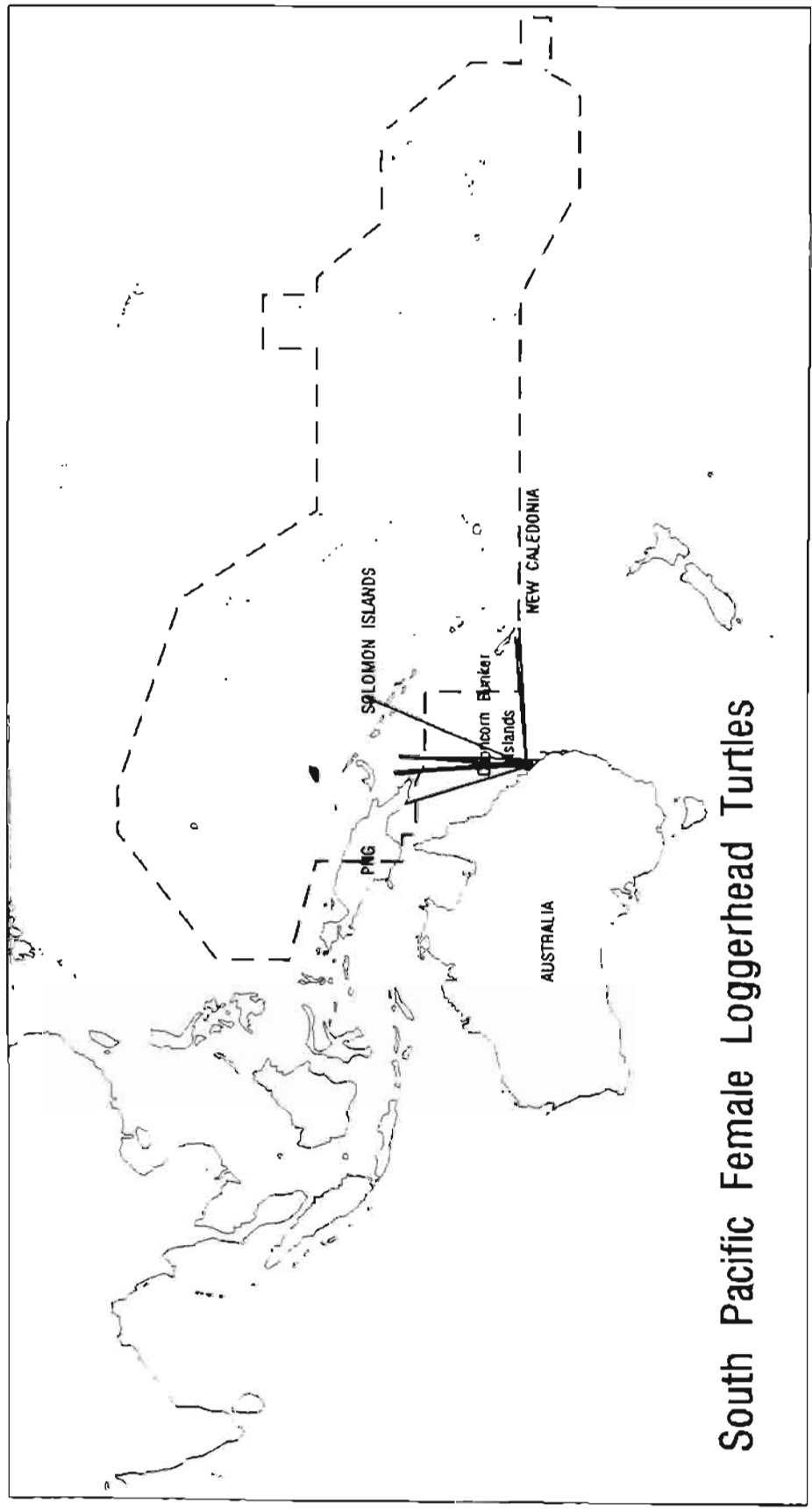


Annex 5.2: Male Green Turtle Recoveries.

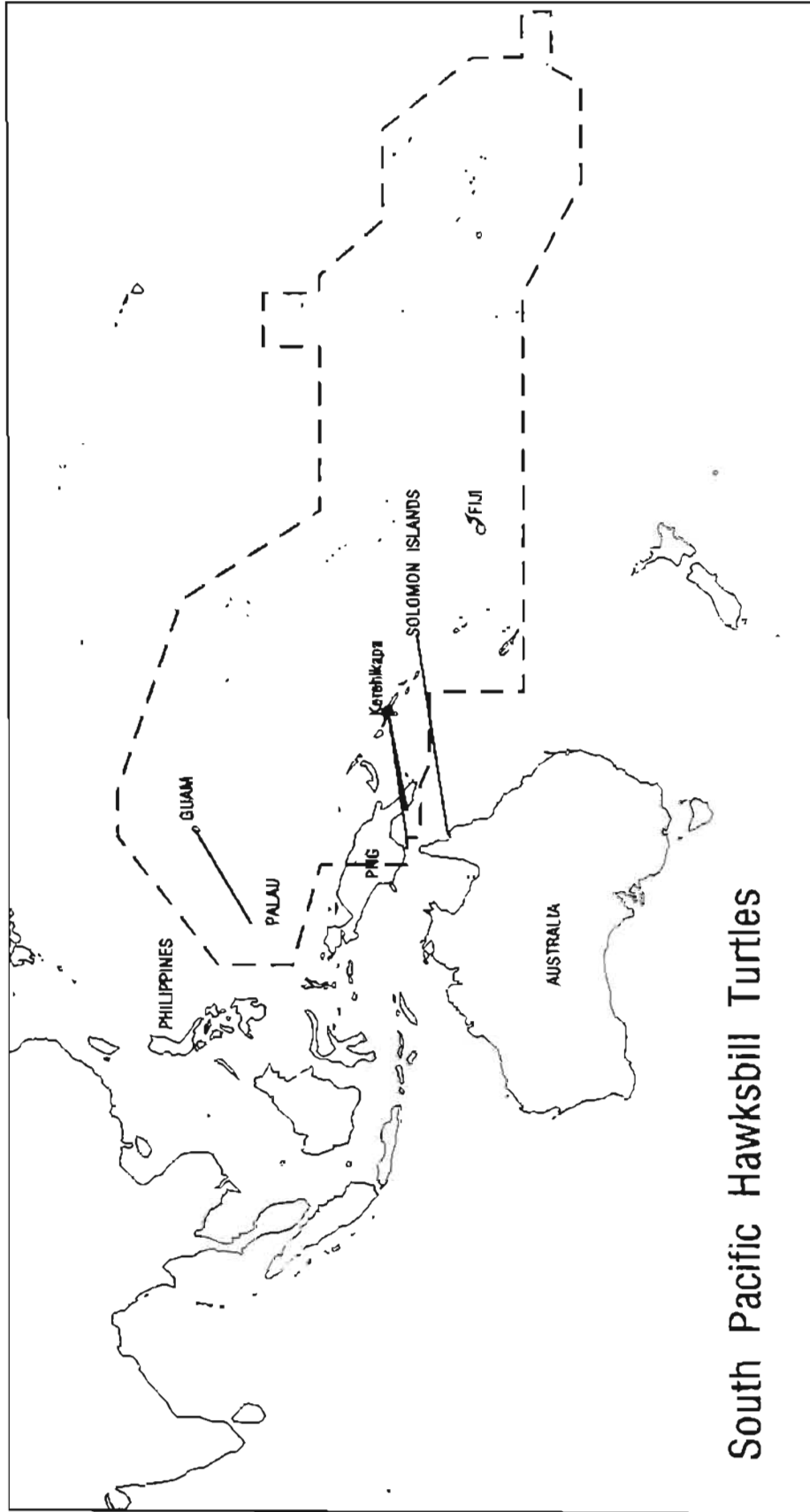


South Pacific Male Green Turtles

Annex 5.3: Female Loggerhead Turtle Recoveries.



**Annex 5.4: Hawksbill Turtle Recoveries.**



## **Annex 6: Data Files and Programs available for dBase and dBase IV Software**

*(by S. Geermans, SPREP, May 1993)*

There are several files and programs used in the SPREP database which store and analyse data collected from turtle surveys. A program called SPDATA is easily accessed and allows the turtle data collected to be stored on four files (TAGSSP, KAPTSP, CLUTSP and MEASSP). It contains information on tagging, capture, clutch and measurements.

A separate program called SPEMERG enters data on turtle hatching success for storage in the SPEMERG file.

Once all the data has been entered and checked, it is placed in a larger file which contains all the SPREP tagging information to date. This larger file is used to identify turtles from a single tag number, such as when a tag recovery is reported, by running the SPFIND program. This program is used by simply entering the tag number, and the tagging and capture history will be brought up onto the screen.

For analysis of the data, there are several programs which can calculate statistics usually put into final reports. The advantage of using these programs is that once the data is entered into the computer files via the SPDATA program, it is analysed simply by running a program. There is no further need to use a calculator.

For example, the SPTAGSUM program uses the data files to calculate the number of turtles captured by species and tag status, or by sex and age class (used in feeding ground situations only).

The HISTGRAM program is used to create histograms of data from the data files. For example, using the KAPTSP file, a histogram of curved carapace lengths can be illustrated. This program also calculates the range, mean and standard deviation of the data.

The MEANVAR program uses the data files to calculate the mean, standard deviation, sample size, and range of a data set. For example, using the CLUTSP file, the statistics for the number of eggs laid can be obtained.

TAGSUM, HISTGRAM and MEANVAR are the most commonly used statistical programs, as they calculate the number of turtles tagged, and the mean, standard deviation, sample size, and range of a data set.

There is a more advanced program called SPLINREG which uses the data files to calculate whether there is a linear relationship (regression) between two fields. For example, using the MEASSP file, a linear relationship may be found between carapace length and tail length. However, this program is not necessary for use within the SPREP program at this early stage in data collection.

## Annex 7: Possible Turtle Management Measures

(by A. Smith, SPREP, May 1993)

### I. BASED ON HARVEST LIMITATIONS

Management Measure	Comments
Size restrictions - maximum or minimum	Difficult to enforce; confusion over maximum versus minimum sizes
Quantity restrictions	Stock levels unknown; difficult to enforce
Seasonal restrictions	Difficult to enforce
Location restrictions	Requires community co-operation; difficult to enforce
Activity restrictions	e.g. don't take while mating or nesting; difficult to enforce
Ban/limitations on capture methods or equipment (including vessels)	Requires community co-operation; difficult to enforce
Limited access	Requires community co-operation; difficult to enforce
Harvest ratio of males to females	e.g. take more males; sex ratios unknown; difficult to enforce
Moratoriums	Requires community co-operation; difficult to enforce

### 2. BASED ON USAGE LIMITATIONS

Controls on traditional take	Requires community co-operation; extensive education programme
Controls on subsistence take	Requires community co-operation; extensive education programme
Controls on commercial take	Difficult to enforce
Ban/limitations on foreign take	Difficult to enforce in remote areas

### 3. BASED ON LOCATION CONTROLS

Habitat protection	May require integrated coastal area management
Beach/area closures	Requires community co-operation; difficult to enforce
Reserves or sanctuaries	Requires community co-operation; difficult to enforce

#### 4. BASED ON TURTLE PRODUCTS

Ban/limitations on export	Requires government control and commitment
Ban/limitations on import	Requires government control and commitment
Ban/limitations on possession	Difficult to enforce
Ban/limitations on sale	Difficult to enforce private sales

#### 5. BASED ON SPECIES

Greens	
Hawksbills	
Loggerheads	
Olive Ridleys	
Leatherbacks	
Flatbacks	

#### 6. BASED ON LIFE CYCLE

<b>Eggs:</b>	
Bar/limitation on harvesting	Difficult to enforce
Bar/limitation on consumption	Difficult to enforce
Bar/limitation on sale	Difficult to enforce private sales
Protection of nesting beaches	Requires community co-operation; difficult to enforce
Protection of nests against non-human predators	May be difficult to implement
Hatcheries/nurseries	Not recommended by turtle biologists

<b>Hatchlings:</b>	
Protection against non-human predators	Very difficult to implement
Hatcheries/head-starting/captive rearing	Not recommended by turtle biologists; apart from some education value, no proven benefit shown
Protection of nesting beaches	Requires community co-operation; difficult to enforce

<b>Juveniles:</b>	
Ban/limitation on harvesting	Difficult to enforce
Ban/limitation on consumption	Difficult to enforce
Ban/limitation on sale	Difficult to enforce private sales

<b>Sub-adults:</b>	
Ban/limitation on harvesting	Difficult to enforce
Ban/limitation on consumption	Difficult to enforce
Ban/limitation on sale	Difficult to enforce private sales
Protection of feeding grounds	Requires community co-operation; difficult to enforce

<b>Adults:</b>	
Ban/limitation on harvesting	Difficult to enforce
Ban/limitation on consumption	Difficult to enforce
Ban/limitation on sale	Difficult to enforce private sales
Protection of feeding grounds	Requires community co-operation; difficult to enforce

<b>Reproductive adults:</b>	
Ban/limitation on harvesting	Difficult to enforce
Ban/limitation on consumption	Difficult to enforce
Ban/limitation on sale	Difficult to enforce private sales
Protection of nesting/mating areas	Requires community co-operation; difficult to enforce
Protection while in nesting/mating areas	Requires community co-operation; difficult to enforce
Protection while mating	Difficult to enforce

<b>Nesting females:</b>	
Ban/limitation on harvesting	Difficult to enforce
Ban/limitation on consumption	Difficult to enforce
Ban/limitation on sale	Difficult to enforce private sales
Protection of nesting beaches	Requires community co-operation; difficult to enforce
Protection while on nesting beaches	Requires community co-operation; difficult to enforce
Protection while nesting	Requires community co-operation; difficult to enforce



## 7. BASED ON INDIRECT MEASURES

Education	Required before, during and after all management measures
Control of development near beaches	Requires government control and community co-operation; may require integrated coastal area management
Controls on solid waste disposal	Requires government control and commitment
Controls on sand mining	Requires government control and commitment
Controls on activities affecting feeding habitat	May require integrated coastal area management
Indirect cultural restrictions	Requires community co-operation

# Annex 8: SPREP Regional Marine Turtle Conservation Programme Strategic Plan

(by C. Limpus, for SPREP, July 1993)

## 1. Introduction

During its first three years, the SPREP Regional Marine Turtle Conservation Programme has achieved a great deal in increasing knowledge of marine turtles in the Pacific Region: distribution of rookeries, international migration and sharing of marine turtle stocks, genetic uniqueness of even small turtle stocks. This has been achieved through a dedicated effort by many people, including government staff and volunteers, working on remote nesting beaches and fishing boats and working out of their offices. It has been a successful team effort.

However, what has been accomplished so far still does not ensure the survival of viable populations of marine turtle stocks of the Pacific Region for future generations. Marine turtles are long-lived animals that take decades to complete a life cycle. Migrations of thousands of kilometres can occur between home feeding areas and traditional breeding sites. For maintaining stability, marine turtle populations require approximately 70% of the clutches of eggs to produce hatchlings into the sea. They also require a very high survival of adult and near adult individuals from year to year to maintain population stability.

Globally their stocks are in decline. The countries of the South and Western Pacific Region are sharing marine turtle stocks among themselves and with neighbouring countries and no one country can ensure the conservation of even a single stock.

The task of conserving marine turtle stocks for our children and grandchildren will be an ongoing process. Coastal peoples in the Pacific have long depended on turtles as a food and cultural resource and they wish to continue these traditional practices into the future. However, human population levels are increasing regionally. This is causing increased impacts on the coastal habitats and modern technology has made it easier to capture turtles. The region spanning from Asia to the mid Pacific now supports some of the largest harvests of green and hawksbill turtles in the world. Papua New Guinea appears to be supporting the second largest harvest of green turtles in the Pacific region after Indonesia.

Globally, Solomon Islands has been supporting the second largest international trade in tortoiseshell to Japan. However, even countries with lower harvests are contributing to the problem: in each small island nation, there is almost certainly more turtles being killed annually than the local nesting populations can replace. There is a regional problem for marine turtles in the Pacific region.

At the SPREP RMTCP meeting in Apia, Western Samoa in June 1993, at least 70% of the represented Pacific island nations identified significant declines in their turtle populations. In the extreme, green turtle breeding in French Polynesia appears to have declined by approximately 90% in the past few decades as a result of harvesting throughout the various island nations that share this stock.

The new knowledge gained from the first three years of the SPREP RMTCP has highlighted the need for developing cooperative management for sustainable utilisation of the shared but diminishing turtle resource within the Pacific region. The new knowledge gained from these projects needs to be disseminated to the community as a whole but especially to the turtle users, to the hunters in the villages. At the same time, monitoring of nesting populations and harvests are necessary for determining levels of management required and for assessing the effectiveness of new management programs.

Now is the appropriate time for integrated conservation action in the Pacific region, while there are still reasonable numbers of turtles in our seas - not when the regional populations are severely depleted.

## 2. Strategic Plan for 1994-1996

### 2.1 Goal

To conserve marine turtles and their cultural, economic and nutritional values for the coastal people of the countries served by SPREP.

### 2.2 Organisational Principles

Some principles can be applied in guiding the achievement of this goal:

- ecologically sustainable utilisation.
- maintenance of biodiversity.

- Were there is a conflict of interests, cultural utilisation takes precedence over commercial utilisation and conservation of species takes precedence over cultural utilisation.

### 2.3 Tasks

The goal can be achieved through the following tasks which are identified as the principal elements of the programme.

#### 2.3.1 Management

*Provide assistance to improve marine turtle management practices within the participating nations.*

##### Actions

To achieve ecologically sustainable utilisation of marine turtles the following priority actions can be taken:

- Reduce negative impacts from human activities on marine turtle feeding areas and nesting beaches.

For marine turtles, this particularly applies to maintenance of healthy coral reefs and seagrass pastures and their associated mangrove communities. Countries with the longest coastlines and greatest land masses will support the greatest amount of shallow water habitats that are home to feeding marine turtles.

- Reduce the regional level of turtle harvest.

While our knowledge of marine turtle population dynamics is far from complete, it is possible to take some preliminary steps towards reducing the impacts of the current harvest. It is stressed that these recommendations are not the final solution.

- Egg harvests:

Ensure that a minimum of 70% of turtle egg clutches successfully produce hatchlings to the sea.

Where there is an excessive harvest or mortality of turtle eggs, establish a beach management project to increase hatchling production.

Where excessive egg harvest or mortality can not be effectively corrected through leaving eggs in the natural state on the beach, establish a hatchery project to increase hatchling production.

- Turtle harvest:

Where practicable and in keeping with traditional cultural and nutritional needs, reduce the numbers of turtles being killed throughout the SPREP region.

In particular, without increasing the numbers of turtles being harvested, reduce the numbers of adult and near adult turtles being killed.

Where possible it is recommended that large turtles be protected, for example:

- a. protect green turtles with a carapace length greater than 80cm.
- b. protect hawksbill turtles with a carapace length greater than 60cm.

When turtles need to be harvested at courtship time, harvest the male rather than the female.

Where nesting turtles are being harvested, limit the harvest to 1% of the nesting population. If possible, take turtles late in the nesting season rather than at the beginning, thus permitting her to lay the eggs she has prepared for the season.

- Investigate the feasibility of developing a "turtle watching" tourist industry at selected sites within the Pacific region.

This type of non-destructive, sustainable utilisation of marine turtles, if correctly managed, has the potential for contributing to both the regional economy and the conservation of marine turtles.

- In collaboration with community leaders, develop mechanisms for maintaining the essential elements of cultural activities involving marine turtles while at the same time reducing the number of turtles required to be killed.

For example, in some island cultures where captured marine turtles are required to be presented to chiefs, it may be possible to maintain the capturing and presentation components but for the turtles to be tagged by the chiefs and released as a ceremonial investment for future generations.

### 2.3.2 Education

*Provide assistance to the participating national agencies to enable them to deliver an effective and accurate education program to the coastal people of the Pacific region.*

While it is recognised that all facets of the community are in need of education with respect to ecologically sustainable utilisation of marine turtles, the major emphasis of the SPREP RMTCP will be to provide support in environmental education of the village communities that depend on and are the users of marine turtles and their habitats.

#### **Actions**

- Facilitate the rapid transfer to the general public of new information and concepts being generated from the Regional Marine Turtle Conservation Programme.
- Complete the production of a "turtle fact sheet" in the national languages for distribution within the Pacific region.
- Complete the pilot production of a "marine turtle audiovisual" for schools in Micronesia. Depending on the success of the production for Micronesia, modify the production of the audiovisual for use in other Pacific island countries.
- Complete the translation into national languages of the Greenpeace training video on turtle research and monitoring.
- Produce a video that specifically addresses marine turtles of the Pacific Islands and places emphasis on their cultural significance while highlighting the difficulties of managing them in the face of increasing human impacts within the region.
- National agencies are encouraged to maximise the use of within country radio and TV broadcasts and newspapers for general dispersal of information.
- Produce teacher resource material on sustainable utilisation of marine turtles for use in schools throughout the Pacific Region.

- Promote 1995 as the "International Year of the Turtle" in the Pacific region.

Emphasis to be placed on the significance of turtles to the Pacific Island peoples, the current declined status of populations and the need for international cooperation in conservation action to ensure ecologically sustainable utilisation.

### 2.3.3 SPREP RMTCP Turtle Database

*Regularly update the SPREP RMTCP database, as new information is available, to maintain its relevance.*

The database will be maintained by the SPREP turtle consultant (or by the SPREP Secretariat, or in some cases by the scientific advisers) at SPREP headquarters in Apia, Western Samoa.

Back-up copies of the databases to be maintained by the SPREP RMTCP scientific advisors in their respective countries as a safeguard against catastrophes such as cyclones affecting the SPREP headquarters.

Components of the SPREP RMTCP database are:

- summary of turtle conservation legislation within each country.
- summary of traditional use of turtles of the Pacific region.
- bibliographic information: turtles of the Pacific region.
- turtle breeding and feeding sites and harvests by country.
- summaries of existing knowledge of marine turtles by country.
- tagged turtle data.

#### **Actions**

- Maintain and update the SPREP RMTCP database.
- Distribute the SPREP RMTCP database to participating national agencies as a tool to assist in improving marine turtle conservation management.

#### 2.3.4 Training and Personnel

*Provide training opportunities so that there can be people within each participating country who have the necessary skills to provide leadership in marine turtle conservation management and population monitoring.*

Within many countries, the turtle conservation tasks are too numerous and too time consuming to be successfully achieved by a single person. In such cases, a government employee with multiple responsibilities can not normally be expected to devote time to successfully meet all the programme objectives. Teams of participants can be recruited from:

- community groups.
- schools (teachers and students).
- university researchers and students.
- non-government conservation organisations such as: The Nature Conservancy, Greenpeace, WWF, OCEAN.

##### **Actions:**

- Produce a training manual for use in projects that monitor marine turtle populations.
- Facilitate training of replacement and new staff within national projects.

In some cases, training may be provided within country by the SPREP marine turtle consultant or out of country in Australia or Hawaii by the marine turtle specialist advisers to the SPREP RMTCP.

- Assist national projects in recruiting interested within - country participants to build national teams for turtle conservation.

#### 2.3.5 Research and Monitoring

*Conduct the monitoring and research of marine turtle populations within the Pacific region that is necessary for planning for ecologically sustainable utilisation and for determining the effectiveness of management activities.*

##### **Actions:**

- Determine the geographical distribution of the stock(s).

For marine turtles, this can be quantified most rapidly using mtDNA genetics studies.

For adult turtles, this also can be determined by tag recoveries in feeding areas of turtles previously tagged on nesting beaches and during courtship.

For selected adult turtles, actual migratory routes can be determined using satellite tracking of turtles carrying radio transmitters.

- Determine the population size of the various stocks.

For marine turtles this is usually measured as the number of females nesting annually at each rookery.

Monitoring of the nesting population needs to be conducted on a regular basis for stocks known to be actively harvested in any part of their range.

- Determine the size and form of the annual harvest within the turtle stock(s).

Quantify the size of egg harvests by rookery and species. The proportion of the regional egg production that produces hatchlings to the sea should also be recorded.

For marine turtles, harvest statistics are usually measured by species and size of turtles at each site. Ideally the harvest statistics should also include data on sex ratio.

- Quantify the size and sources of accidental mortality of marine turtles in fishing gear and other human related activities.
- Sum the harvest and accidental mortality statistics across countries and determine the current status and threats to individual breeding stocks.

#### 2.3.6 International Co-operation

*Facilitate international cooperation in marine turtle conservation management between participating countries within the Pacific region.*

##### **Actions:**

- Neighbouring countries to collaborate in development of bilateral or multilateral agreements for sustainable utilisation of marine turtles where those countries are identified as sharing the same stock of marine turtles.

# Annex 9: Marine Mammals Sightings Record Sheet

**CONSERVATION  
WHALE & DOLPHIN - STRANDING/ACCIDENT/DEATH REPORT**

Please return to:  
Anton van Heiden  
Museum of New Zealand  
P.O. Box 467  
WELLINGTON Ph: (04) 3859 609 ext.654

**RECORD TYPE** (tick box)

Stranding  Catch incidental to fishing  Accident/Collision   
Entanglement  Deliberately killed  Beach Cast

**ANIMAL TYPE** (tick Box)

Large Baleen Whale (>10m)  Large Toothed Whale  Deaked Whale   
Small Baleen Whale (<10m)  Small Toothed Whale  Dolphin

**SPECIES IDENTIFICATION** \_\_\_\_\_

Number of animals (Total) \_\_\_\_\_ Sex \_\_\_\_\_ Date & Time \_\_\_\_\_

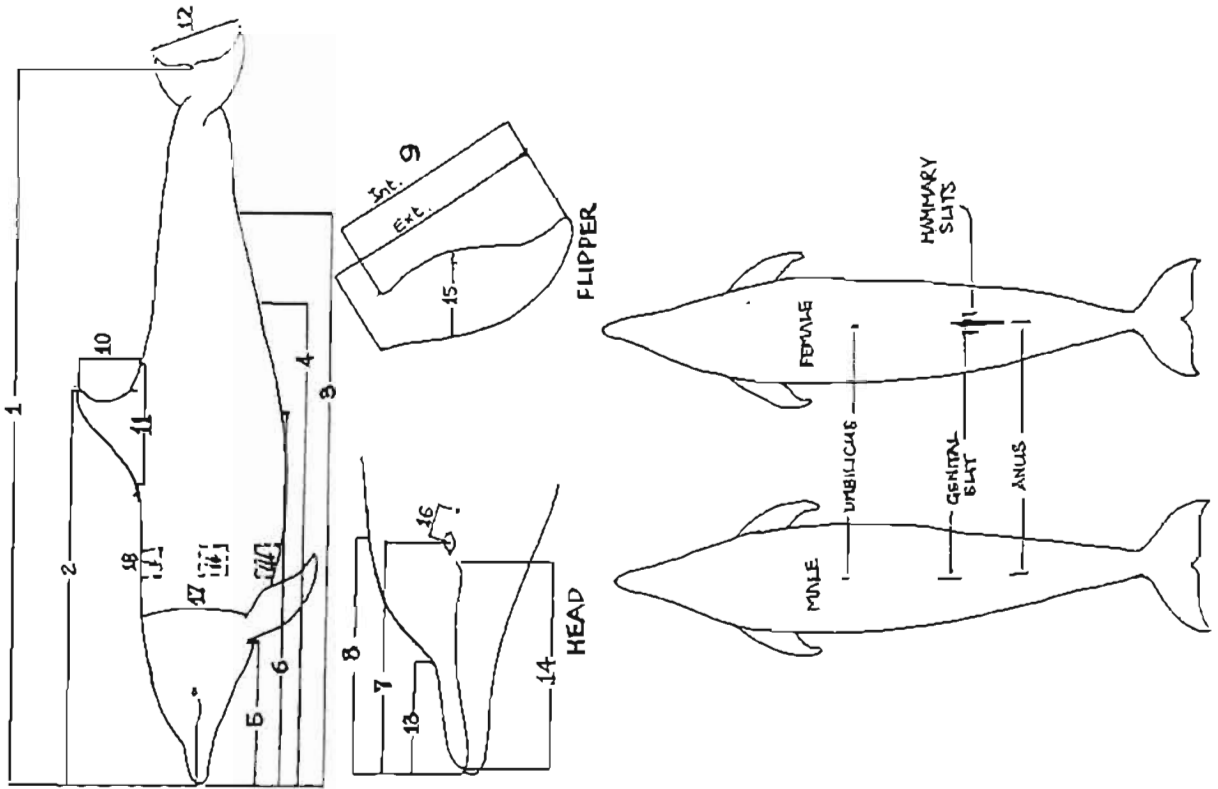
LOCALITY (Latitude & Longitude & Photocopy of Map) \_\_\_\_\_

O.C. Office \_\_\_\_\_ Ph: \_\_\_\_\_

Observer's Name \_\_\_\_\_ Ph: \_\_\_\_\_

**MEASUREMENTS:** All measurements should be taken in a straight line, not around the curve of the body.

1. Total Length (from tip of upper jaw to deepest part of fluke notch) \_\_\_\_\_
2. Tip of upper jaw to tip of dorsal fin \_\_\_\_\_
3. Tip of upper jaw to anus \_\_\_\_\_
4. Tip of upper jaw to genital slit \_\_\_\_\_
5. Tip of upper jaw to front (forward insertion) of flipper \_\_\_\_\_
6. Tip of upper jaw to umbilicus \_\_\_\_\_
7. Tip of upper jaw to centre of Eye \_\_\_\_\_
8. Tip of upper jaw to blowhole \_\_\_\_\_
9. Length of Flipper (external & internal) Ext \_\_\_\_\_ Int \_\_\_\_\_
10. Height of dorsal fin \_\_\_\_\_
11. Length dorsal fin base \_\_\_\_\_
12. Greatest width tail flukes \_\_\_\_\_
13. Length of rostrum \_\_\_\_\_
14. Length of gape (tip upper jaw to corner of mouth) \_\_\_\_\_
15. Greatest width of flipper \_\_\_\_\_
16. Length eye to ear \_\_\_\_\_
17. Axillary girth (immediately behind flippers) \_\_\_\_\_  
 i. Middorsal \_\_\_\_\_  
 ii. Lateral \_\_\_\_\_  
 iii. Midventral \_\_\_\_\_



# Annex 10: Proposed Priority Actions for the Regional Marine Mammals Conservation Programme

(by M. Donoghue, for SPREP, June 1993)

## 1. Identify Critically Endangered Species

Some species of marine mammals may be in danger of extinction within some parts of the SPREP region. Dugongs, for example, are slow-breeding, easy to capture and have very specific food requirements. Although a survey was conducted some years ago in Vanuatu, little detailed information is available on the distribution, abundance and status of dugong in the SPREP region. Identification of the most critically endangered species of marine mammals should be the first priority of any marine mammal conservation programme.

## 2. Identify Critical Breeding Habitat for Baleen Whales

### Background

Several species of baleen (filter-feeding) whales breed in the SPREP region during the winter months, and feed in Antarctic waters during the summer. Most species of baleen whales were severely depleted during the twentieth century in the Southern Hemisphere by commercial whaling. Blue whales have been depleted from approximately 200,000 - 250,000 to between 500 and 2,000 animals. Humpback whales, whose breeding population in the SPREP region once numbered at least 10,000, were probably reduced to no more than 250 animals by the early 1960s.

The only species for which there is reliable information on breeding grounds is the humpback whale, whose major breeding ground in the SPREP region is the Ha'apai and Vava'u groups in Tonga. Other breeding grounds may be found in Vanuatu, American and Western Samoa, Niue and the Cook Islands, but information on the numbers and seasonality of humpback whales in those areas is very scarce. Although the humpback whale populations breeding on the east and west coasts of Australia appear to be showing healthy recovery rates, humpbacks in the SPREP region do not appear to be recovering at all.

Other species of baleen whales which may have breeding grounds in the SPREP region include blue whales, fin whales, sei whales, Bryde's whales and minke whales. Very little information is available on the breeding areas for these species.

### Proposal

Humpback whales should be the *priority* for collection of information by SPREP member countries, because:

- (a) The breeding areas for humpbacks in the SPREP region are better defined than for any other baleen whale species;
- (b) Southern hemisphere humpback whales are a priority stock for assessment by the International Whaling Commission (IWC), which has already funded some research in Tonga;
- (c) Dr Scott Baker, who was funded by the IWC to conduct genetics research into humpback whales in the Southwest Pacific, has just taken up a permanent position at Auckland University, and will be conducting further research into humpbacks in the SPREP region; and,
- (d) Humpback whales are the most frequently observed species in the rapidly-growing whalewatch industry. On the Stellwagen Bank off Boston, for example, the whalewatch industry, which relies mainly on humpback whales, generates in excess of US\$50 million per year. In Hervey Bay, Queensland, and Western Australia, valuable whalewatch industries have developed, based on humpback whales. Whalewatching may thus present valuable economic opportunities within the SPREP region.

In addition, regional surveys (dedicated or opportunistic) could identify breeding aggregations of other species of baleen whales - for example, a proposal presented by the Japanese Government to the IWC last month identified the waters off the Solomon Islands as a potential breeding area for blue whales. Location of a specified area for blue whale breeding would generate considerable scientific and tourist interest.

### **3. Identify Critical Breeding Habitat for Toothed Whales**

Sperm Whales, the largest of the toothed whales, breed in tropical waters. The deep waters surrounding the Solomon Islands and Fiji have been identified as sperm whale breeding areas. A whalewatch industry based on sperm whales has grown rapidly at Kaikoura, on the east coast of the South Island of New Zealand, and now directly generates revenues in excess of NZ\$4 million per annum. Legislation has been developed by the New Zealand Government to protect the whales from harassment, and a considerable amount of scientific research has been carried out over the past three years which may have direct relevance to studies of sperm whales in their tropical breeding grounds.

### **4. Develop Legislation to Protect Breeding Whales**

Critical breeding habitat for threatened and endangered whale species must be protected from degradation by humans once identified. In addition, legislation to protect whales from harassment by vessels has been developed by the Governments of both Australia and New Zealand, as their tourism industries based on whalewatching have grown. These legislative frameworks would provide a valuable guide for SPREP countries seeking to encourage the development of whalewatch tourism, whilst at the same time protecting breeding whales.

### **5. Encourage Research Into Breeding Populations of Whales and Develop Photographic Identification Catalogues**

Some breeding populations of whales in the southern hemisphere have been closely studied in recent years (e. g. humpback whales in South Africa and Western and Eastern Australia). Individual humpbacks can be reliably identified from photographs of the underside of their tail flukes, and DNA fingerprinting is a powerful tool for establishing the genetic relationship between different stocks of humpback whales in the Southern Hemisphere.

Similarly, sperm whales can be individually identified from photographs of their tail flukes, and a catalogue of animals which occasionally frequent the Kaikoura region of New Zealand already exists. Each SPREP member country should encourage dedicated or opportunistic vessel surveys to photograph individual whales as they are encountered. Close examination of photographs often reveals characteristic distinguishing features of individual whales. Establishment and maintenance of a regional photographic catalogue of breeding whales could be a longterm goal. Over a period of 10 - 20 years, such a catalogue could provide valuable information on population abundance, growth rates, age at first reproduction and calving interval.

### **6. Assess Importance and Impacts of Cultural Harvest of Marine Mammals**

Small cetaceans have traditionally been harvested in a number of countries within the SPREP region. Updated information is urgently required on the level of take and the species involved, in order that assessments can be carried out on the sustainability of cultural harvests.

### **7. Assess Impact of Incidental Take in Fishing Operations**

In many areas of the world, incidental take of marine mammals in fishing operations is a serious problem. The impacts of large-scale driftnet fishing in the SPREP region, for example, were probably severe, judging by the limited observer data collected in the South Pacific and the more extensive data collected in the North Pacific. No recent information is currently available on the incidental take of small cetaceans in set gillnets, longlines, purse-seines or other fishing gear types in the SPREP region. Collection of this information should be undertaken, in association with national fisheries agencies and the Forum Fisheries Agency.



## **8. Assess Impacts of Global Climate Change and Pollution**

Increasing concern is being voiced about the impacts of global climate change (especially ozone depletion) and pollution on cetaceans. The effects of ozone depletion, with a consequent reduction in phytoplankton production in the Antarctic Ocean (estimated at 10 -15% during the recent austral summer), may result in a significant reduction in the quantity and availability of krill for baleen whales. Pollutant analyses are conducted on the tissues of stranded whales in New Zealand by the Institute for Environmental Health. This laboratory could also analyse tissue samples from stranded or incidentally- taken whales or dolphins in the SPREP region.

