

**SURVEY OF WILDLIFE MANAGEMENT  
IN SOLOMON ISLANDS**

**SPREP PROJECT PA 17**

**A JOINT PROJECT OF  
SOLOMON ISLANDS GOVERNMENT,  
SOUTH PACIFIC REGIONAL  
ENVIRONMENT PROGRAMME (SPREP),  
AND  
TRAFFIC (OCEANIA)**

**FINAL REPORT FEBRUARY 1990**

**BY  
TANYA LEARY**

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## Abbreviations

The following abbreviations are used in the text:

AVA: Australian Volunteers Abroad Programme

CITES: Convention on Trade in Endangered Species

IATA: International Air Transport Authority

ICOD: International Centre for Ocean Development/Canadian South Pacific Ocean Development

IFTA: Insect farming and trading agency (PNG)

IUCN: International Union for the Conservation of Nature

MNR: Ministry of Natural Resources

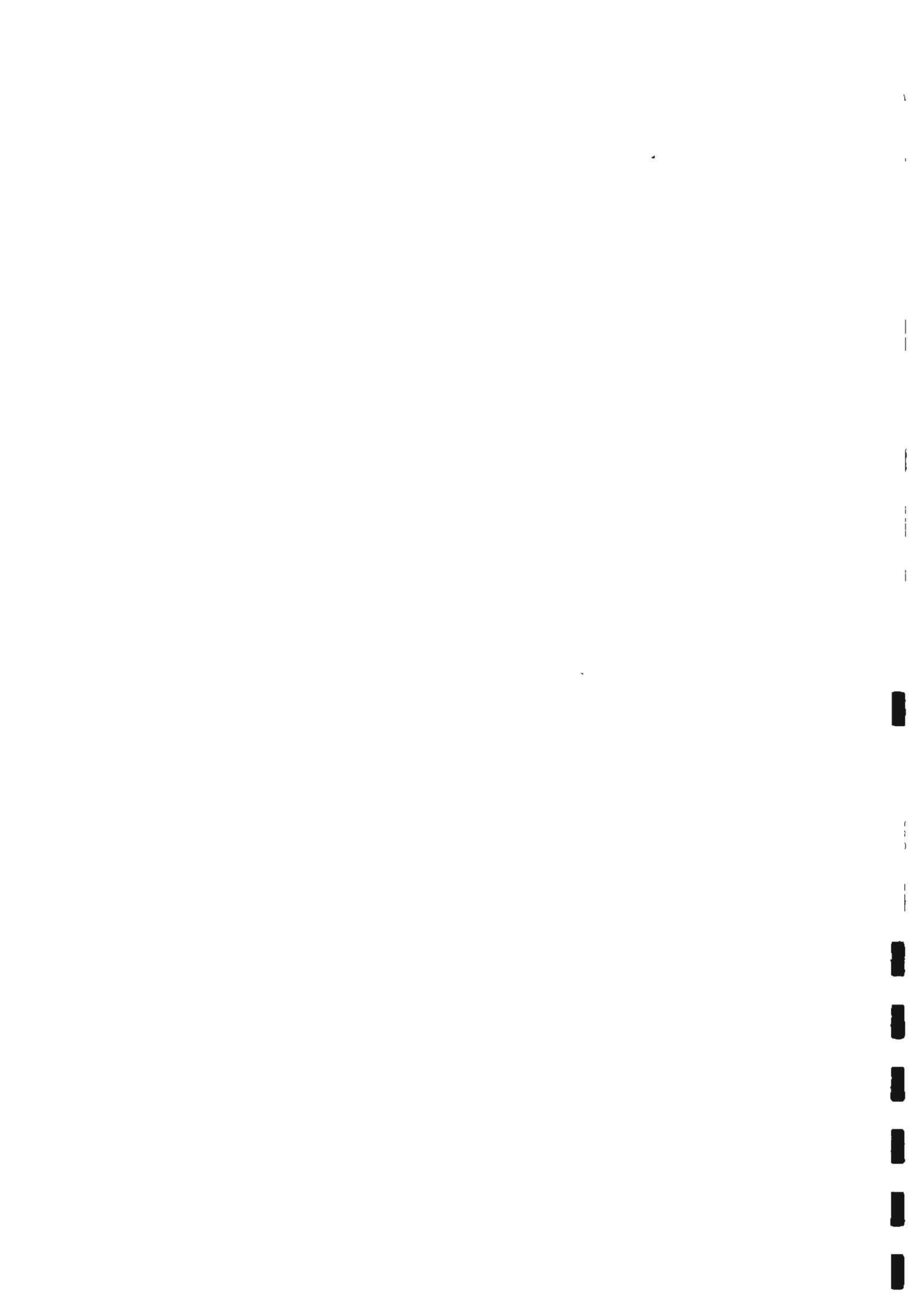
NSW: New South Wales, Australia

SIG: Solomon Islands Government

SPREP: South Pacific Regional Environment Programme

TRAFFIC: Trade Records Analysis of Flora and Fauna Inc.

WWF: World Wide Fund for Nature.





## EXECUTIVE SUMMARY

This project surveyed the wildlife management needs of Solomon Islands. Its primary focus was wildlife trade, however other areas of concern are highlighted in Chapters 6 and 7. Existing trade investigated included the export of reptiles, amphibians, insects, coconut crabs, crocodiles and turtle shell. Potential bird and mammal trade was also evaluated.

It is possible for wildlife trade in some species to be carried out without unduly threatening the animal populations, but it requires a commitment from Government to ensure that trade is well managed and that on-going monitoring of the trade takes place.

Current administration of trade is inadequate as there is no legislation to regulate trade or exporters activities, and no means to ensure that trade does not endanger wild populations. Recommendations for the administration and management of wildlife trade are made, and guidelines for legislation are given in this report.

If trade is not well managed it is likely that international organisations and conventions such as CITES will assert pressure on importing countries and Solomon Islands markets will be closed. Therefore if the Solomon Islands Government desires wildlife exporting to continue, it is important that it is seen internationally to be acting responsibly in its management of the trade.

The following sections provide a synopsis of trade by animal group and recommendations arising from this project:

### Reptiles and amphibians

A total of 14,137 reptiles and amphibians were exported during 1989. At least 17 species of reptile and amphibian were exported. 93% of all animals went to the USA.

There are currently four licensed exporters of reptiles and amphibians operating. The licensee for Isabel Province exported 76% of all animals. It is recommended that no more than seven reptile and amphibian export licences be issued for the whole of Solomons. It is also recommended that this no longer be restricted to one licence per province and that licence fees be introduced to partially recover costs of administration.

New licensing procedures have been suggested (section 4.3.1) as well as conditions for the confinement and consignment of fauna (section 4.3.2), and should be legislated for as soon as possible. Exporters should be legally required to keep records of where animals are purchased to enable field monitoring of the effectiveness of wildlife quotas. Every shipment should still require an export permit, and a fee should be charged to cover costs.

A proposed schedule of species which are permissible for commercial export is given in Schedule 1 (Appendix 1). Some species require restriction on the number of individuals exported and require further monitoring to ensure that this restricted level of exploitation is not too high.

### Insects

There are currently five licensed exporters of insects. Exporters are concentrating on birdwing butterflies, particularly *O. victoria victoria* (Queen Victoria birdwing) and *O. priamus urvillanus* (D'Urville's birdwing). The USA imported the largest number of Solomon Island insects.

It is recommended that licensed exporters of insects no longer be restricted to one per province, and that licensees be charged a licensing fee. Each shipment should still require an export permit. Section 4.4.3 outlines new procedures for the administration of insect exports. The number of licence holders and the volume of trade should be reviewed annually and if necessary restrictions on the number of licence holders could be re-instated.

The farming and ranching of butterflies is an enterprise which should be vigorously encouraged and promoted by both the Environment and Conservation Division of the Ministry of Natural Resources and Ministry of Agriculture and Lands. It is recommended that a system of butterfly farm/ranch registration be established. Registered butterfly farmers should be automatically licensed to export on registration and should be exempt from the licence fee.

It is recommended that no more than 2,000 pairs or 4,000 individuals of *O. victoria* and *O. priamus urvillanus* be exported per year. Six species listed in Schedule 1 should not be exported. All other insects may be exported on an unlimited basis.

### Coconut crabs

Until May 1989, the Environment and Conservation Division issued export permits for coconut crabs (*Birgus latro*). They then came under the jurisdiction of Fisheries Division of the Ministry of Natural Resources and the Fisheries Regulation 1972. In response to the rising number of coconut crabs exported and concerns that over-exploitation was taking place, the Minister for Natural Resources announced a moratorium on the export of coconut crabs on the 22nd of June 1989. This moratorium has not been officially rescinded to date.

From work on coconut crabs in Vanuatu, it may be concluded that the continued harvesting of coconut crabs for export is likely to lead to the extinction of coconut crabs in the Solomon Islands. It is recommended that the ban imposed by the Minister of Natural Resources in June 1989 be continued and no export licences be issued.

### Turtles

During 1989, 3,397 kg of turtle shell was exported. This appears to be the largest amount of shell exported since 1974. It is still unclear if the decline in numbers of nesting hawksbill turtle in Isabel Province is due to turtle shell trade or a natural decline in the area of suitable nesting beaches. It is recommended that surveys be undertaken in other provinces, particularly Western Province, to determine if the decline in nesting hawksbill turtles is widespread, or only restricted to Isabel.

Current size limits on turtle shell, actively persecute the animals that should be protected i.e. the breeding stock. It is recommended that the Fisheries Regulation be amended to prohibit the trade in turtle shells of greater than 75 cm. A lower size limit should also be legislated for to discourage wastage of resources and to prevent stuffed hatchlings being exported.

### Crocodiles

During 1989 7,452 belly inches of crocodile skin were exported. This represents a sharp rise in skin exports. An extensive survey by Messel and King (1989) found that the Solomons crocodile resource is severely depleted and in danger of extinction. They recommended that a total ban on crocodile skins of all sizes and from all sources in Solomon Islands be established immediately and effectively implemented. The ban should remain in force for 5 years, after which time it should be reviewed.

If this strategy is implemented, the potential for crocodile farming may exist in 5 - 10 years. Annual surveys should be conducted to monitor the recovery of crocodile populations.

### Birds

No parrots have been commercially exported from Solomons. However, recently, the first two permits for the export of parrots (225 *Cacatua ducorpsi* and 100 *Chalcopsitta cardinalis*) were issued. These have not yet left the country. These two species are not protected by the Wild Birds Protection Act 1914.

It has been argued that there is a limited potential for export of parrots and other birds which cause crop damage, but this should not occur until such time as nationwide surveys have been conducted to determine population sizes and population dynamics as parrots are particularly susceptible to over-exploitation. A situation similar to the existing reptile trade, where trade commenced prior to the institution of proper management guidelines, should be avoided.

### **Mammals**

Export of flying-foxes should not be allowed until survey work which justifies their exploitation has been undertaken on populations. The flying-foxes of Guam, Yap, American Samoa, Western Samoa, and Saipan have been severely depleted by over-harvesting to supply the demands of Guam and Singapore. If Solomon Islands wishes to avoid a similar situation caution should be used in the export of flying foxes. Flying-foxes are major plant pollinators and seed dispersal agents and the depletion of populations may result in losses to both the forestry and agricultural sectors.

### **Revenue from wildlife trade**

Currently, the only revenue the government receives from trade is from a 10% excise duty levied on turtle shell and crocodile skin. Prior to 1987 exporters appeared to be under-declaring the value of these exports to avoid paying duty. It is therefore recommended that Customs Officers be regularly supplied with current market values.

It is recommended that an analysis be undertaken to establish a suitable excise duty, which should not be less than 10%, and that the Customs Act (1960) be amended to charge an appropriate excise duty on all wildlife exports.

The wildlife trade is costing the Solomon Islands Government (SIG) money to administer and fees should be implemented to cover the costs of issuing permits and the general administration of trade. The management procedure proposed in this report will require new responsibilities and functions for the Environment and Conservation Division, and it is recommended that a licence fee be charged to partially recover costs to SIG. Reptile and amphibian exporters should be required to pay a larger fee than butterfly and other insect exporters. Registered butterfly farmers should be automatically licensed to export, and exempt from the licence fee.

Only a few Solomon Islanders are reaping the benefit from the wildlife (reptile, amphibian, and insect) trade. One exporter is receiving 76% of the total income from this trade. Foreign importers are making a disproportionately large share of the profits, while the village collector is making a significantly smaller share. The US importer receives up to 70 times more per animal than the Solomon Island villager who collects it.

Income to the Solomons generated by wildlife trade in 1989 lies between \$288,315 and \$1,200,322. The total yearly income for all village collectors combined was \$88,906 in 1989. Several means of ensuring village collectors receive a greater percentage of the profits are discussed.

### **Legislation needs**

The government currently has no power to ensure that wildlife trade is well managed. The current system is open to fraud and abuse. This is seldom detected, but the recent incident where an exporter's shipment was returned to Solomon Islands by Australian Customs Officials due to discrepancies in the permit and the contents of the shipment and because of the poor health of the animals, highlights the potential for this abuse to occur.

Hence, there is an urgent need for legislation covering procedures for reptiles, amphibians and insects. This should include Schedule 1 (Appendix 1) of animals permissible for export and the appropriate quota, the conditions under which licences are issued and penalties for failure to comply with licence conditions. This needs to be implemented immediately.

Environment and Conservation Division Officers should also be empowered to randomly check shipments to ensure that only the animals listed on the permit are exported.

In the long-term, it is a priority that a comprehensive Conservation Act is developed for Solomon Islands. Such an act should encompass the establishment of conservation areas, the protection of flora and fauna, regulation of wildlife trade, and the conservation of traditional resource management knowledge. A system of natural areas protection suitable for Solomon Islands urgently needs to be developed. In addition to large scale reserves, consideration needs to be given to the protection, in terms of good management, of small areas. One such means is the concept of Wildlife Management Areas which has proven successful in Papua New Guinea. It is recommended that Wildlife Management Area legislation be enacted at the provincial or national level as soon as possible.

## CHAPTER 1: INTRODUCTION

### 1.1 BACKGROUND TO THE PROJECT

Increasing overseas demand for Solomon Islands fauna prompted the request for this project as knowledge of the ecology of species, basic data on populations and the extent to which they can be sustainably harvested was not available.

As a result of concern over the increasing demand for Solomon Island wildlife, the Solomon Island Government submitted a project proposal to the Inter-governmental Meeting on the South Pacific Regional Environment Programme (SPREP) 1989/90 Work Programme, held in Noumea in June 1988. This project, No. PA 17 - Survey of Wildlife Management, Solomon Islands, was subsequently included on the SPREP Work Programme in a modified form. It provided for a SPREP funded specialist to be seconded to the Solomon Islands Ministry of Natural Resources Environment and Conservation Division for 1 to 2 years to work on the project and related activities.

In conjunction with the Australian Volunteers Abroad Programme of the Australian Overseas Service Bureau, SPREP obtained the services of the author on a volunteer basis. Assistance in financing the project was secured from Traffic (Oceania), the international wildlife trade statistics and monitoring organisation. Work on this project, Project No. PA17 - Survey of Wildlife Management in the Solomon Islands, commenced in February 1989.

### 1.2 OBJECTIVES

Effective management of any resource requires a sound knowledge of that resource. The Solomon Islands Government's recognition of the importance of such knowledge is reflected in their submission of this project.

The objectives of the project may be summarised as follows:

- 1) To document past and present trade and trade practices;
- 2) To identify species which may be traded on a sustainable basis and to set quotas where appropriate;
- 3) To provide information on the status and distribution and habitat requirements of key trade species;
- 4) To provide recommendations for trade practices which will ensure minimal wastage of wildlife resources and the equitable distribution of commercial profits;
- 5) To provide recommendations and guidelines for the preparation of legislative protection and management of fauna and for the control of wildlife trade;
- 6) To provide guidelines for the establishment of an efficient administrative structure to regulate and monitor wildlife trade;
- 7) To identify species threatened by factors other than trade e.g. habitat destruction and traditional usage, and where appropriate to make recommendations for the diminution of such threats and for the management of threatened species;
- 8) To identify species or areas of special faunal interest which require more detailed study;

- 9) To clarify, document and publicise culturally significant fauna;
- 10) To increase community awareness of the role of indigenous fauna in the environment and the relationship between fauna, the health of the environment and the community.

An interim report was prepared in July 1989. That report documented past trade practices, the administration of the trade and identified some areas and species of concern. These are not repeated in detail in this report (see Appendix VI) but recommendations have already been adopted from that report which include the keeping of more accurate records, and the development of a new permit system.

In addition to this report, two technical papers have been produced: 1) an annotated bibliography of all references of Solomon Island terrestrial vertebrates; and 2) a supplementary document with notes on the ecology of the main trade species, based on a review of all published information, and information collected during this project.

Investigations have found that a large volume of reptiles, amphibians, and insects are being exported from Solomon Islands each year and that administration arrangements do not adequately ensure that wildlife trade is well managed and that wild populations are not threatened. A new administrative procedure is proposed and guidelines for legislating for good management of wildlife trade are given in this report. Species which may be traded on a sustainable basis are also identified.

The distribution of profits from wildlife trade was also found to be inequitable. The village based collector is receiving only a small share of the profits from wildlife trade. The government is also not reaping any financial benefits from the trade. Means of improving the equity of distribution of profits are also discussed.

## CHAPTER 2: EXISTING ADMINISTRATION AND VOLUME OF WILDLIFE TRADE

### 2.1 CURRENT ADMINISTRATION OF WILDLIFE TRADE

#### 2.1.1 *Brief History of Wildlife Trade*

The Division of Environment and Conservation, Ministry of Natural Resources was formed in 1985. A moratorium on the export of wildlife (primarily reptiles and birds) commenced on the 10th of June 1985. Turtle, crocodile and some insect trade continued throughout the moratorium.

On the 1st of January 1987 the moratorium was lifted and the Ministry of Natural Resources issued the following policy statement on the aims of trade:

- 1) To take measures to ensure that Solomon Islands indigenous wildlife is not over-harvesting, so leading to its' decline or disappearance;
- 2) To make it possible for Solomon Islanders to export certain wildlife for commercial gain, and to maximise financial benefits from this trade for the Solomon Islands;
- 3) To encourage where appropriate, the farming or ranching of wildlife so as to ease harvesting pressures on natural wildlife populations;
- 4) To make wildlife specimens available for genuine scientific purposes, but only to institutions officially recognised by the Ministry of Natural Resources;
- 5) To respect the provisions of the Convention of International Trade in Endangered Species (CITES);
- 6) To ensure that wasteful, harmful, unhealthy or cruel practises are not used in the wildlife export trade.

To date, none of these aims have been fully met.

#### 2.1.2 *Current Wildlife Legislation*

The ~~only~~ legislation covering terrestrial animals is an antiquated Wild Birds Protection Act 1914. This Act prohibits the taking, holding, sale and export of a number of bird species (all parrots are protected with the exception of Ducorps' cockatoo [*Cacatua ducorpsi*] and the Cardinal lorikeet [*Chalonsitta cardinali*]). The schedule attached to this Act lists some species that do not even occur in the Solomon Islands. With the exception of prohibition of export, this act is not enforced. Up to February 1990, no birds were commercially exported.

Marine fauna falls under the jurisdiction of the Fisheries Division of the Ministry of Natural Resources. The Fisheries Regulation 1972 (as amended) sets minimum size limits for turtles (75 cm carapace length) and for crocodiles (50 cm belly width). It also prohibits the taking of, or commerce in, luth or leatherback turtles (*Dermochelys coriacea*). A further amendment to the Fisheries Regulation was made in May 1989. This sets a minimum size limit for coconut crabs (*Birgus latro*) of 9 cm carapace length, prohibits the taking of coconut crabs carrying eggs, and prohibits the export of coconut crabs without the permission of the Minister of Natural Resources. However the Solomon Islands Government announced a total ban on the export of Coconut crabs on the 22nd June 1989. Prior to May 1989, the Environment and Conservation Division was responsible for issuing permits for the export of coconut crabs.

### 2.1.3 *Current Administration Of Trade*

The responsibility for Solomon Islands fauna falls under three Divisions within two Ministries of the central government (Fisheries Division and Environment and Conservation Division, Ministry of Natural Resources; and Dodo Creek Research Station, Ministry of Agriculture and Lands). The provincial governments are also involved by issuing Business Licences to wildlife dealers (reptile, amphibian and insects). The provincial governments charge a fee for the licence which varies between provinces eg Central Province \$60.00, Makira \$100.00 and Temotu \$50.00 per year.

The reptile, amphibian and insect trade is administered under policy guidelines (not legislation), by the Environment and Conservation Division. Only one exporter of reptiles is licensed per province, and in some cases another person is licensed to export insects. A policy of a limit of 50 individuals per species per shipment was instigated in May 1989, due to concern over the large number of individuals (up to 500 frogs) per shipment. This was temporarily lifted in December 1989, but is now in force again.

Each export consignment requires a "General Export Permit for Wildlife". This is issued by the Environment and Conservation Division.

Currently no person ascertains whether or not the export permit lists all the animals in the consignment, and often other species are included in the consignment (particularly small gekkos and frogs). The number of animals indicated on the Export Permit does not always reflect the actual number of individuals exported. The number indicated on the permit indicates the maximum number of animals which are permitted to be exported, but the consignments often contain fewer animals.

Insect exports require further documentation which is currently provided by the Ministry of Agriculture and Lands Entomologist, at Dodo Creek Research Station. This is a "Certificate to Export Insects" and is countersigned by the Senior Quarantine Inspector. The entomologist checks the identity of insects to order rather than species. Birdwing butterflies (*Ornithoptera* sp.) are identified to sub-species where possible.

Coconut crab, crocodile skin and turtle shell trade is administered by the Fisheries Division, MNR, under the Fisheries Regulation 1972 (as amended). A 10% excise duty is payable on turtle and crocodile exports.

## 2.2 ANALYSIS OF TRADE

Details of trade prior to 1989 are contained within Appendix 6. Record keeping prior to August 1988 was patchy, but trade volume of reptiles, amphibians and insects did not appear to be significant until late 1988. This section details trade volume for 1989 and current trade activities.

### 2.2.1 *Reptiles and amphibians*

There are currently four licensed exporters of reptiles and amphibians operating. They are licensed for the provinces of Isabel, Guadalcanal, Malaita and Temotu. The licensee for Makira (whose licence also covers reptiles and amphibians) has to date only exported insects. Live reptiles and amphibians are exported. Their final destination are private pet owners and collectors. The licensee for Isabel exported the largest number of reptiles and amphibians in 1989; a total of 10,677 animals or 76% of all trade.

Although a licence is issued for a province, it does not mean that collecting activities are confined to that province. The licence holder for Isabel is known to have collected from Isabel, Guadalcanal, Savo, Makira and the Duff Islands. This situation makes it difficult to place restrictions on the number of animals collected from each province.



Species known to have been exported to date are shown in Table 1.

**Table 1: Species of reptiles and amphibians exported from Solomon Islands**

<b>GEKKONIDAE (Gekkos)</b>	<b>SCINCIDAE (Skinks)</b>
<i>Gekko vittatus</i>	<i>Emoia sp</i>
<i>Gehyra oceanica</i>	<i>Lamprolepis smaragdina</i>
<i>Gehyra mutilata</i>	<i>Eugongylus albofasciolatus</i>
<i>Lepidodactylus guppyi</i>	<i>Corucia zebrata</i>
<i>Cyrtodactylus sp</i>	<i>Prasinohaema virens</i>
<b>VARANIDAE (Monitor Lizards)</b>	<b>AGAMIDAE (Dragon Lizards)</b>
<i>Varanus indicus</i>	<i>Gonocephalus godeffroyi</i>
<i>Varanus indicus spinulosus</i>	
<b>RANIDAE (Frogs)</b>	<b>BOIDEA (Boas and Pythons)</b>
<i>Discodeles guppyi</i>	<i>Candoia carinata</i>
<i>Ceratobatrachus guentheri</i>	<i>Candoia bibroni</i>
<b>ACROCHORDIDAE (File Snakes)</b>	
<i>Acrochordus granulatus</i>	

Figure 2 shows the total number of animals exported per month during 1989, and also shows the number of individuals by species, genus or animal group each month, e.g. Frogs, Scincidae (All skinks except *C. zebrata*) and Gekkonidae (all species of gekko) exported. *Corucia zebrata* (the prehensile tailed skink, or "Uru") and *Candoia carinata* (pacific ground boa, or "Sleeping snake") were the two most commonly and consistently exported species. These species were exported in large numbers almost every month. *Varanus indicus* (mangrove monitor, or "Iguana") was the next most commonly exported species followed by *Ceratobatrachus guentheri* (horned frog), and *Gekko vittatus* (striped gekko). Notes on the ecology of these species can be found in section 3.1.1 to 3.1.6 and the supplementary document.

A total of 14,137 reptiles and amphibians were exported from January to December 1989. In April, the highest number of animals were exported, but this was largely due to the export of 1,123 frogs during that month.

Table 2 shows the total number of individuals per species exported during 1989. 93% of all animals were imported by the USA, 5% went to West Germany, 1% to Japan and 1% to Belgium.

Table 3 shows the number of animals imported by the USA, West Germany, Belgium and Japan.

### 2.2.2 Butterflies and other insects

There are currently five licensed exporters for the provinces of Isabel, Makira, Malaita, Temotu and Guadalcanal. All licensees with the exception of Guadalcanal, are also licensed to export reptiles, although the licensee for Makira has not yet done so.

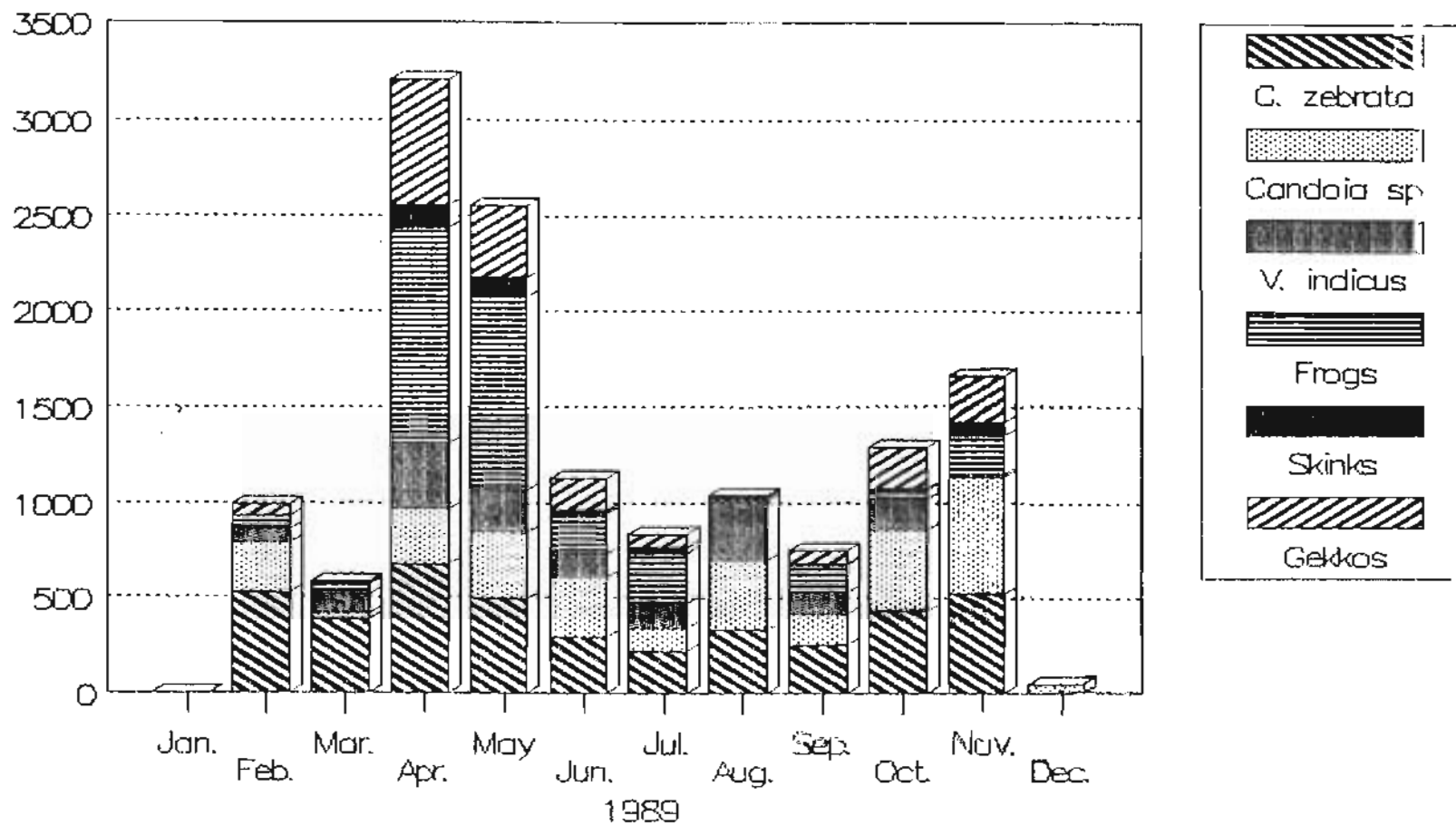
All insects are exported dead and are destined for curio collectors and insect enthusiasts. Ornithoptera are the most important component of the insect trade as they receive the highest prices. In order of descending value and hence importance as an export, they may be ranked as follows: Ornithoptera (birdwing butterflies); other Papilionidae butterflies (i.e. Graphium and Papilio); non-Papilionidae butterflies (i.e. common butterflies); and other non-butterfly insects (e.g. beetles).

The two largest exporters of Ornithoptera were the Isabel (48%) and the Makira (41%) licensees. The licensee for Makira sent 86% of the non-papilionidae butterflies. The licensee for Malaita sent 72% of all other non-butterfly insects.

Number of individuals

Figure 1

TOTAL NUMBER OF ANIMALS EXPORTED DURING 1989



**Table 2: Total number of reptiles and Amphibians exported  
January - December 1989**

<i>Corucia zebrata</i>	4104
<i>Candoia carinata</i>	2520
<i>Candoia bibroni</i>	491
<i>Varanus indicus</i>	1592
<i>Ceratobatrachus guentheri</i>	1832
Frogs*	1308
<i>Discodeles guppyi</i>	9
<i>Gekko vittatus</i>	1015
Gekkonidae**	857
<i>Cyrtodactylus</i> sp	20
<i>Emoia</i> sp	180
<i>Lamprolepis smaragdina</i>	108
<i>Eugongylus albofasciolatus</i>	71
<i>Gonocephalus godeffroyi</i>	23
<i>Acrochordus granulatus</i>	7
<b>Total</b>	<b>14137</b>

**NOTES:**

- \* Record keeping was not always accurate. Frogs includes some *D. guppyi*, *C. guentheri* and may include some other species.
- \*\* Gekkonidae includes some *G. vittatus*, and some *Cyrtodactylus* sp. and may include some other gekko species listed in Table 1.

**Table 3: Number of animals imported by the USA, West Germany, Belgium and Japan  
(January - December 1989)**

Species	USA	West Germany	Belgium	Japan
<i>C. zebrata</i>	3699	260	25	120
<i>C. carinata</i>	2260	210	10	40
<i>C. bibroni</i>	468	18	5	-
<i>V. indicus</i>	1477	90	10	15
Gekkos (mostly <i>G. vittatus</i> )	1812	60	20	-
Frogs (mostly <i>C. guentheri</i> )	3029	120	-	-
<i>G. godeffroyi</i>	13	-	10	-
<i>E. albofasciolatus</i>	66	-	5	-
<i>Emoia</i> sp.	180	-	-	-
<i>L. smaragdina</i>	108	-	-	-
<i>A. granulatus</i>	7	-	-	-
<b>Total</b>	<b>13119</b>	<b>758</b>	<b>85</b>	<b>175</b>

Table 4 shows the total number of butterflies known to have been exported from Solomon Islands during 1989.

**Table 4: Total number of butterflies exported  
January - December 1989**

**FAMILY: PAPILIONIDAE**

Genus: *Ornithoptera* (Birdwing butterflies)

<i>O. victoria victoria</i>	1590
<i>O. victoria regina</i>	484
<i>O. victoria epiphanus</i>	530
<i>O. victoria rubianus</i>	160
<i>O. priamus urvillanus</i>	<u>1992</u>

**TOTAL** 4756

Genus: *Papilio* (Swallow-tail butterflies)

<i>P. polydorus</i>	100
<i>P. fuscus</i>	70
<i>P. bridgei</i>	15
<i>P. ulyses</i>	2

Genus: *Graphium* (Sword-tail or triangle butterflies)

<i>G. codrus</i>	55
<i>G. hileaton</i>	20

*Graphium* & *Papilio* (Mixed and not classified) 15

**TOTAL: *Papilio* and *Graphium*** 277

**Non Papilionidae butterfly families** 636

Exporters are concentrating on birdwing butterflies, particularly *O. victoria victoria* (Queen Victoria birdwing) and *O. priamus urvillanus* (D'Urville's birdwing). Birdwing butterflies are generally exported in pairs i.e. one male and one female. The sex ratio is roughly 1:1, although 74 males were sent singularly. Males of these species are more spectacularly coloured than females. The following countries were the destination for birdwing butterflies: USA = 48%; PNG = 30%; Japan = 19%; Philippines = 2%; and France = 1%.

Table 5 shows the number of insects other than butterflies exported from the Solomons. These species form only a minor component of the trade and receive much lower prices.

**Table 5: Total insect exports excluding butterflies  
January - December 1989**

ORDER: COLEOPTERA (Beetles, family unspecified)	623
Family: <b>Cerambycidae</b> (Longhorn beetles)	718
Family: <b>Lucanidae</b> (Stag beetles)	390
Family: <b>Cetoniinae</b> (Rosechaffers)	192
Family: <b>Buprestidae</b> (Jewel beetles)	365
Family: <b>Curculionidae</b> (Weevils)	175
<b>TOTAL NO. OF BEETLES</b>	<b>2463</b>
ORDER: ORTHOPTERA	
Family: <b>Phasmidae</b> (Stick insects)	24
Family: <b>Tettigonidae</b> (Grasshoppers)	83
ORDER: HOMOPTERA (Cicadas)	52

Of these, beetles (Coleoptera) were the main type exported, particularly longhorn beetles (Cerambycidae).

Of the 11 insect export permits issued during 1989, 4 shipments went to the USA, 2 to PNG, 3 to Japan and 1 each to France and Philippines. The USA imported the largest number of Solomon Island insects.

### 2.2.3 Coconut crabs (*Birgus latro*)

Until May 1989, the Environment and Conservation Division issued export permits for coconut crabs (*Birgus latro*). In May 1989 the Fisheries Division took over administration of trade and proposed an amendment to the Fisheries Regulation 1972 to set a minimum size limit of 9 cm carapace length, to prohibit taking of females carrying eggs and to prohibit the export of coconut crabs without the permission of the Minister of Natural Resources. This is known as the Fisheries (Amendment) Regulation 1989. In response to the rising number of coconut crabs exported, and concerns that over-exploitation was taking place, the Minister for Natural Resources announced a moratorium on the export of coconut crabs on the 22nd of June 1989. This moratorium is still in place.

Figure 2 shows the number of kilos of coconut crab exported per month from May 1988 to May 1989.

Figure 2

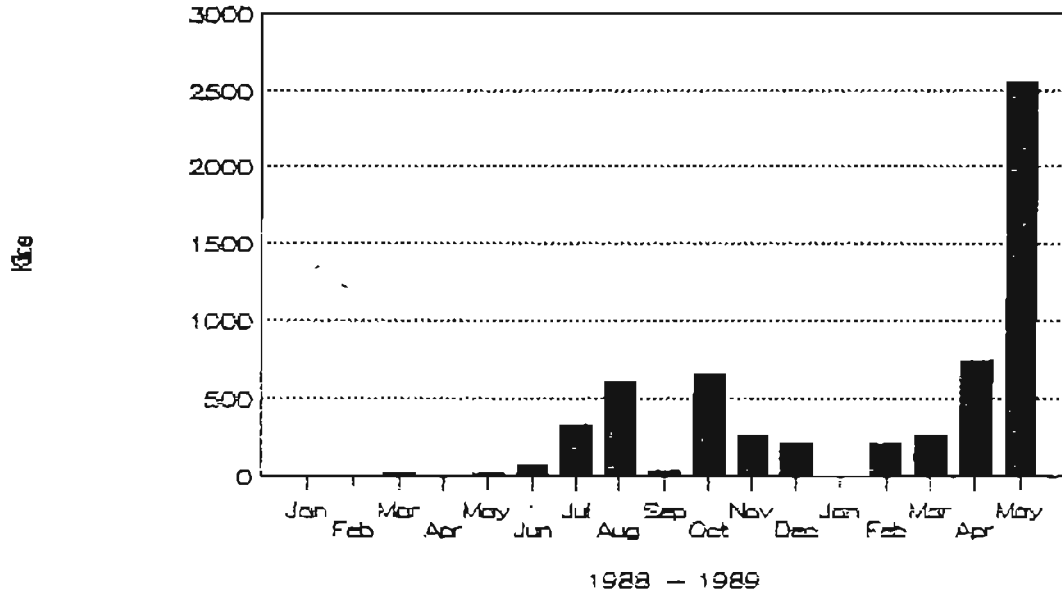


Figure 2 shows the number of kilograms of coconut crab exported per month from January 1988 to May 1989.

Figure 3

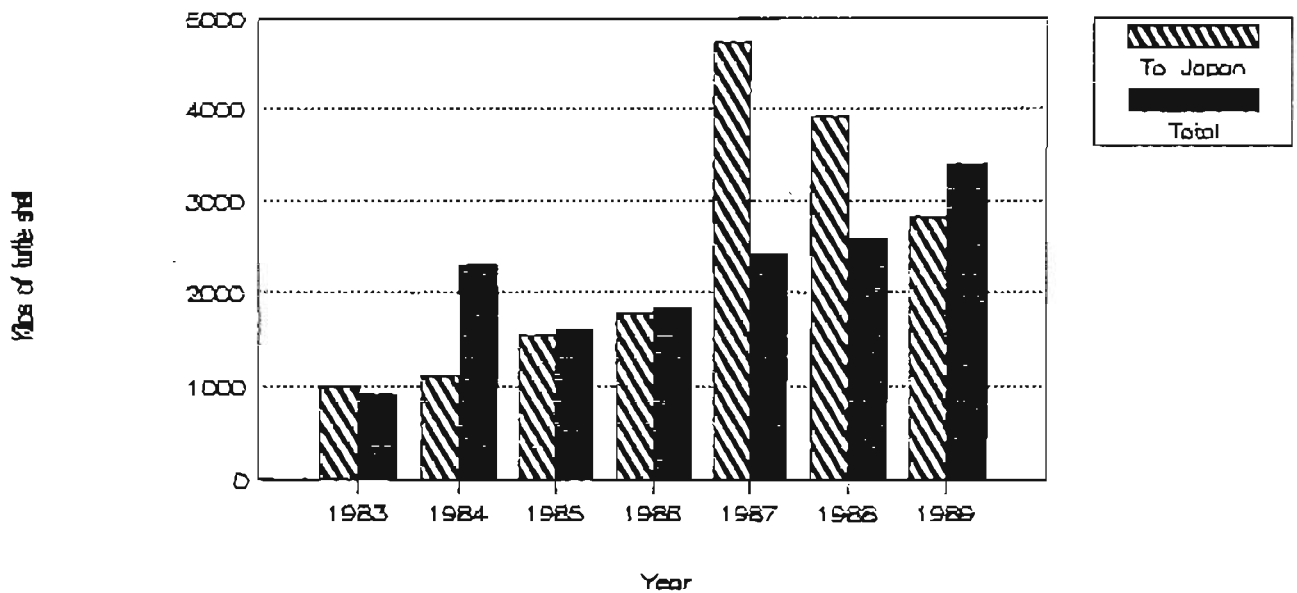


Figure 3 shows the total turtle shell exports (in kgs) from Solomons, and to Japan.

#### 2.2.4 Turtles

Marine fauna falls under the jurisdiction of the Fisheries Division. The Fisheries Regulation 1972 (as amended) sets minimum size limits for turtles (75 cm carapace length) and prohibits the taking of, or commerce in, hawksbill or leatherback turtles (*Dermochelys coriacea*). An excise duty is collected on turtle shell exports which is currently set at 10% of the value declared by the exporter.

Although a minimum size limit for turtle shell exists, this was not enforced until late 1989. Shells were broken into platelets for export, which made it difficult to ascertain the size of the individual turtles. However, Fisheries Division now requires whole shells to be inspected by a Fisheries Officer before they are broken down. Platelets are stamped to avoid undersized platelets being included.

The hawksbill turtle (*Eretmochelys imbricata*) is the only species whose shell is exported. The shell of this species is the most suitable for working. Although there is some local trade in the meat of the green turtle (*Chelonia mydas*), the level of this trade is insignificant. Figure 3 shows the number of kilos of hawksbill turtle shell exported (based on Solomon Islands Customs statistics), and the number of those kilos which went to Japan (based on Japanese Customs Department statistics), between 1983 and 1986. The accuracy of the Solomons Customs figures is questionable. Shipments are not checked in the Solomons, and as turtle shell is subject to 10% excise duty based on the value declared by the exporter, under-declaration of volume and value is likely. There are anomalies between the volume exported and the value declared (see section 5.2). The volumes recorded to be imported by Japan in several years far exceed exports recorded by Solomon Islands Customs. The accuracy of these figures is uncertain, but may suggest any of the following has been happening: 1) that a large amount of turtle shell is leaving the Solomons illegally, possibly via fishing vessels, and has not had excise duty paid on it; 2) that exporters are under-declaring the volume of shell exported to avoid paying excise duty; or 3) that other countries which have embargos on turtle shell export, are claiming the Solomons as the country of origin.

It is also difficult to ascertain whether the volume of turtle shell being exported per year has increased or decreased as figures given in Vaughan (1981) and McKeown (1977) are derived by different means. Prior to 1982 statistics on kilogrammes of turtle shell exported was included in the category "marine products" and was not recorded separately. Comparison with either set of figures however, shows that with the exception of some years, the volume of turtle shell exported has generally increased. During 1989, 3,397 kg of turtle shell was exported. This appears to be the largest amount of shell exported since 1974 when it was 3,818 kg (Vaughan, 1981). Although the weight of a turtles shell varies according to the quality, the average weight of a 75 cm turtle shell is approximately 0.92 kg. Thus 3,397 kilogrammes exported in 1989 represents approximately 3,692 turtles with a carapace length of 75 cm.

There are at least ten traders with fish processing licences known to purchase turtle shells. A mail questionnaire to traders distributed in March 1989 received only 2 responses, and it is unclear how many of these traders are still purchasing turtle shell, and if there are other traders purchasing turtle shell for export. Although official Japanese import statistics for 1987-1989 are not available, the majority of turtle shell is still believed to be exported to Japan. Fisheries Division proposes to examine the books of traders with fish processing licences in 1990 and to collect statistics on volume of turtle shell purchased. This will provide a clearer picture of turtle shell trade.

### 2.2.5 Crocodiles (*Crocodylus porosus*)

Administration of crocodile trade lies with the Fisheries Division. Under the Fisheries Regulation 1972 (as amended) sale of crocodiles with a belly width of less than 50cm is prohibited.

The amount of skin exported annually (measured in belly inches of skin) from 1985 to 1989 was: 4163, 4350, 6445, 4772, and 7452. Japan and Singapore are the major importers, but the destination of some skins is unknown.

There is only one major exporter of crocodile skins from Solomon Islands, although a number of other traders export small quantities from time to time.

### 2.2.6 Birds

Until February 1990, no birds have been legally exported on a commercial basis. In 1987 special permission was given by the Minister of Natural Resources to export birds which were claimed to be pets. There have throughout 1989, been numerous enquiries regarding the export of parrots. On the 13th February 1990, the first two permits for the export of parrots were issued, however these consignments have not yet left the country. These were for 150 *Cacatua ducorpsi* (Solomons' white cockatoo) and 50 *Chalcopsitta cardinalis* (cardinal lorikeet) to go to West Germany, and 75 *C. ducorpsi* and 50 *Chalcopsitta cardinalis* to go to the USA. These permits were issued as these two species are not protected by the Wild Bird Protection Act, and hence there is no legal basis on which to prohibit their export. This development in bird trade emphasises the need for legislation to be drafted as soon as possible to regulate this new aspect of wildlife trade.

### 2.2.7 Mammals

No native mammals have been legally exported on a commercial basis. There have been a number of enquiries regarding the export of flying-foxes (*Pteropus* sp.).



## CHAPTER 3: MANAGEMENT OF TRADE

There are many biological and ecological reasons for ensuring that populations are not over-exploited or threatened with extinction, but there are also a number of economic reasons.

The strongest economic reason that trade should be well managed is to ensure that the industry is sustainable and that financial benefits may continue to be reaped in the long term. Unmanaged over-exploitation of the resource will result in depletion of the resource and the cessation of the industry in the short term. If the trade is well managed exploitation will be able to continue in the long run and financial benefits will continue to accrue without threatening populations of wild animals.

Uncontrolled export risks flooding the overseas markets. The potential repercussion of this is a decline in returns per animal to Solomon Islands, thus requiring more animals to be exported to make the same amount of money. This has already been observed to some extent. The large number of individuals of some species of animal on the US market has resulted in a decline in US retail price and hence the income to the Solomons per animal. Thus uncontrolled trade risks flooding the market and pushing the returns to the exporter and to the village collector, even further down.

If trade is not well managed in Solomon Islands, it is also likely that international organisations and parties to conventions such as CITES will assert pressure on the importing countries and Solomon Islands markets will be closed. Already pressure from IUCN and parties to the CITES convention has resulted in the closure of the Solomon's Japanese market for crocodile skins. Now only the Singapore market exists for their legal sale. It is likely that this will also soon be closed.

Bad management and over-exploitation of Solomon's wildlife resources now, risks foregoing future sustainable income from wildlife farming/ranching and nature tourism. Rural communities in PNG have reaped large financial benefits from the careful management of their wildlife and the encouragement of farming/ranching operations.

If Solomon Islands Government desires wildlife export to continue, it is important that it is seen to be acting responsibly in its management of the trade. It is possible for wildlife trade in some species to be carried out without unduly threatening the animal populations, but it requires a commitment from Government to ensure that trade is well managed and that on-going monitoring of the trade takes place. Otherwise, trade activities are likely to have a detrimental effect on wild populations.

The following sections outline ways in which the Solomon Islands Government may take steps towards the responsible management and sustainable utilisation of its wildlife resources.

### 3.1 REPTILES AND AMPHIBIANS

**It is recommended that no more than seven reptile and amphibian export licences be issued for the whole of Solomons and that a fee be charged for the licence. It is recommended that this no longer be restricted to one per province as some provinces have no interest in the export of wildlife, and collection of wildlife is not restricted to the province for which the licence is issued.** To date the policy on which the Environment and Conservation Division has been operating is one licensee per province (i.e. seven). More licensed exporters than this would be too difficult to manage as quotas would be difficult to impose, and flooding the US market with reptiles may result. Reptile and amphibian exports require greater restrictions than insects due to the danger of depletion and extinction of populations.

Knowledge of Solomon Island reptiles and amphibians is largely confined to taxonomy and distribution information. Much is still unknown regarding ecology and behaviour of these animals and exports need to be carefully regulated.

The proposed Schedule 1 (Appendix 1) lists species which are permissible for export and the appropriate annual quotas. All other species of reptile and amphibian cannot, with the current level of knowledge, be safely exploited. This situation may change as further knowledge comes to light, but it is recommended that until such time all species not included on the schedule be prohibited exports. See section 4.2.3 for explanation of decisions concerning Schedule 1.

The following sections provide brief notes on the ecology of species which are subject to restricted quotas.

### 3.1.1 *Discodeles guppyi*

Although only nine individuals were recorded to have been exported last year, it is most likely that others were included under the category of frogs. This species is believed to be the fourth largest frog in the world and is reputed to reach a weight of 7 kg. It is reported to frequent lowland forest areas often in close proximity to rivers. It is not believed to be aquatic. *D. guppyi* has been recorded from Fauro, Shortland, Isabel, New Georgia, Rendova, Gatukai, Guadalcanal, Florida and Malaita. Although its distribution is widespread, population density is reported to be low. *D. guppyi* is particularly light sensitive, inhabiting leaf litter in forests where light penetration is low. The high light sensitivity of this species means that it often does not survive in captivity, suffering from desiccation. Mortality in captivity is reported to be high. It is also important in the diet of some Solomon Islanders. To date, few *D. guppyi* have been exported, so it is therefore recommended that the number exported be no greater than 200 per year.

### 3.1.2 *Cyrtodactylus lousiadensis*

It is difficult to ascertain how many have been exported to date as they are often included under the category Gekkonidae, with other gekkos such as *G. vittatus*. This species is recorded from New Georgia, Guadalcanal, Malaita and probably occurs on other larger islands. It is arboreal and prefers the larger forest trees where it shelters by day. It is rarely seen, and little is known of its habits. Until more is known of its ecology and population densities, it is recommended that the number exported be no greater than 200 individuals per year.

### 3.1.3 *Corucia zebrata*

*Corucia* is a monotypic genus endemic to the Solomons geographic region i.e. it also occurs on Bougainville. Its distribution is widespread throughout the Solomons, however its preferred habitat appears to be lowland rainforest (below 400m). This is the most threatened habitat throughout the Solomons from logging and rural development. The gestation period is believed to be between four to six months (Liley, 1986) and one or two individuals are thought to be born per year. Its low reproductive rate, preference for lowland rainforest habitat, and use as a food item by some Solomon Islanders, means that there is already considerable pressure on populations and is likely to be threatened by over-exploitation.

During 1989, 4,104 individuals were exported. Since 1987 at least 5,886 individuals have been exported. Numbers exported appear to be rapidly increasing. *Corucia zebrata* is known to breed readily in captivity, and therefore captive breeding should be encouraged. It is recommended that the number of wild caught individuals exported per year be limited to 3,000.

### 3.1.4 *Eugongylus albofasciolatus*

Although the distribution of this species is widespread, it is uncommon and population densities appear to be quite low. It is recommended that export be restricted to no more than 200 individuals per year.

### 3.1.5 *Varanus indicus*

This species, locally known as "iguana", is distributed widely. It is uncommon on larger islands, although on smaller islands very large populations are known to occur. 1,592 individuals were exported during 1989. Originally large individuals were favoured, but more recently village collectors are receiving higher prices for smaller animals. The US buyers prefer these as they are easier to handle. *V. indicus* is collected from a variety of locations in the Solomons, but large numbers appear to be coming from small offshore islands such as Savo, Ndai, and Lele Islands.

For example, discussion with local collectors on Savo in April 1989 indicated that in the vicinity of 300 iguanas had been removed from Savo in the previous six months. Savo is approximately 30 square km and this represents a removal rate of approximately 10 animals per square kilometre. This is probably severe over-harvesting. Savo's close proximity to Honiara (and hence accessibility to the market) coupled with its small size and the degree of disturbed forest suggest that pressure on its wildlife resources will be great. In view of the susceptibility of species on small islands to extinction, the large number of *V. indicus* coming from offshore islands, and the low reproductive rate of this species (probably from three to ten months for egg incubation), it is recommended that a quota on number of animals exported be no more than 1,500 individuals per year.

### 3.1.6 *Candoia bibroni*

491 individuals of *C. bibroni* were exported in 1989. It is recorded from Rennell, Makira, Ugi, Olu Malau, Santa Anna, Santa Cruz, Reef Is. and Vanikoro. In some areas population densities appear high, however in other areas population densities are low. This species is more difficult and more aggressive to handle than *Candoia carinata*. It is recommended that export of this species be limited to no more than 500 individuals per year.

## 3.2 SPECIES WHICH SHOULD NO LONGER BE EXPORTED

The following species are currently exported, but for the reasons explained below have not been included in the proposed Schedule 1, and should not be included until such time as research on their population status, which supports their inclusion, has been undertaken.

### 3.2.1 *Varanus indicus spinulosus*

Little is known of population densities and dynamics of this restricted endemic species. It is known from the Thousand Ship Bay area and San Jorge Island. The taxonomy of *Varanus* is poorly studied and it is likely that further examination of *V. indicus spinulosus* may result in assignment of it to a distinct species in its own right. Until such time as further is known of *V. indicus spinulosus* it is recommended that it be prohibited from export.

### 3.2.2 *Gonocephalus godeffroyi*

Only 23 individuals were exported in 1989. This species is known from Shortlands, Isabel, Makira, Ugi, Olu Malau and Santa Ana. Although quite common in the eastern Solomons it is uncommon elsewhere. It is believed not to fare well in captivity being reluctant to feed, its natural diet being insects, ants, spiders and smaller lizards. Due to the difficulty of keeping this species in captivity and in light of the small number of individuals exported to date it is recommended that it be prohibited from export.

### 3.2.3 *Acrochordus granulatus*

Only seven individuals were exported in 1989. Commonly known as the file snake, it is known to occur on Isabel, Ngella and Malaita, although it probably occurs on other islands. It is totally aquatic and occurs in marine or brackish conditions. This species does not fare well in captivity requiring brackish water and suffering from dehydration. Due to this, and the small number of individuals exported last year it is **recommended that it be prohibited from export.**

## 3.3 BUTTERFLIES AND OTHER INSECTS

### 3.3.1 *Administration of trade*

The current licensing system allows only one licensed exporter per province. Unlike the reptile trade, a restriction on number of exporters is probably unnecessary. Insects have considerably higher reproductive rates, and with the exception of birdwing butterflies (genus *Ornithoptera*) are unlikely to be threatened by trade. Only species of restricted distribution are likely to be threatened. Known species of restricted distribution are discussed in section 3.3.2.

**It is recommended that licensed exporters of insects no longer be restricted to one per province, and that licences be issued upon request.** A small fee should be payable for that licence. The number of licence holders and the volume of trade should be reviewed annually and if necessary restrictions on the number of licence holders may be re-instated.

The farming and ranching of butterflies is an enterprise which should be vigorously encouraged and promoted by both the Environment and Conservation Division and Ministry of Agriculture and Lands. Not only does insect farming and ranching provide a lucrative income to rural dwellers with little capital, but when properly managed promotes the conservation of butterfly populations. In order to have a successful butterfly farm, the farmer must retain some uncut bush in the vicinity of the farm, and enrichment planting of food plants in the farm results in an increase in the wild butterfly population. Hence both the butterfly population and the habitat are protected. To date, there is only one butterfly rancher producing for export. Many individuals have expressed interest in farms/ranches, and some have sought advice on establishment of them.

Dodo Creek Research Station have established a number of trial research butterfly farms. Technically butterfly farming in the Solomon Islands is very feasible. However there are a number of problems, mainly on the marketing side, which still need to be overcome before widespread promotion of butterfly/insect farming/ranching is undertaken. The main problems are:

- 1) the current marketing arrangements are such that villagers receive a very small proportion of the total profits from butterflies and other insect exports;
- 2) it is difficult for villagers to directly access overseas markets;
- 3) it is unclear how many commercially viable butterfly and other insect species there are in Solomons.

Villagers receive a disproportionately small percentage of profits for a number of reasons. There are so few licensed exporters, some of whom are inactive, that there is little price competition between them. Consequently prices offered to villagers particularly for birdwing butterflies are low. There are also, in some cases, a number of middlemen between the villager and the overseas buyer. This results in considerably diminished profits to the villager. There is also a lack of information flow to the village collector and potential butterfly farmers regarding what is a reasonable price for different species of butterfly.

These problems and the difficulty of villagers accessing overseas markets were solved in PNG, by the establishment of a non-profit making government-run Insect Farming and Trading Agency (IFTA). This agency purchases insects from villagers and acts as the sole marketing agency for PNG. The IFTA pays the villager the price it receives from overseas buyers, less about 20% which is used to cover overheads of the agency. IFTA ensures that villagers receive a fair price and a higher percentage of total profits from insect exports, that quality control is high, and it provides the villager with direct access to the market. The PNG IFTA also provides extension services in assisting villagers to set up butterfly farms/ranches and collects biological information on butterfly food plants and on wild population sizes.

The establishment of such an agency would be unpopular with existing insect exporters, and will initially require a large capital investment from Government. It is also likely to need to be subsidised for a number of years. It is recommended that funding be sought from international donor agencies to undertake a feasibility study of setting up a government run insect marketing agency along the lines of PNG's IFTA and for an assistance programme for the establishment of butterfly farms (see section 7.8).

In the interim steps should be taken to encourage butterfly farming and ranching. It is recommended that a system of butterfly farm/ranch registration be established. This will require the inspection of butterfly farms/ranches and the keeping of a register by Environment and Conservation Division.

Registered butterfly farmers should be automatically licensed to export farmed butterflies and not be required to pay a licence fee (see section 4.4.1). They should still be required to obtain export permits issued by Environment and Conservation Division for every shipment. An extension leaflet on establishing butterfly farms should be produced and distributed to prospective butterfly farmers by Environment and Conservation Division and MAL extension Officers. The Entomologist at Dodo Creek Research Station has already expressed his willingness to produce one.

### 3.3.2 Recommendations regarding species of insects to be exported

*Graphium meeki*, *Graphium mendana* and *Papilio tobora* are rare species of butterfly restricted to small areas and are considered by the World Conservation Monitoring Centre to be globally threatened (Paine, 1989). For this reason, they should be prohibited from export. *Tiradelphe schneideri* and *Tirumala euploeomorpha* are also considered rare or threatened species (Pearson, 1988) and should be prohibited from export. It is therefore recommended that all species of butterfly and insects with the exception of the six afore-mentioned species may be exported.

Birdwing butterflies of the genus *Ornithoptera* are the most commonly exported butterflies. 2,764 individuals or approximately 1,382 pairs of *Ornithoptera victoria* of various subspecies were exported in 1989. 1,992 individuals or approximately 996 pairs of *O. priamus urvillanus* were exported in 1989. *O. priamus urvillanus* is not currently under threat as their distribution appears widespread. Likewise *O. victoria* does not appear to be threatened. Export of farmed or ranched butterflies should be encouraged and not restricted. Currently none of the exported *Ornithoptera* are farmed or ranched.

Other species of Ornithoptera outside the Solomons are considered threatened by trade, and the total number exported per year from Solomons has in general grown since 1987, (Table 6).

**Table 6: Number of individuals of Birdwing butterflies (Ornithoptera) exported 1987-1989**

Species	1987	1988	1989
<i>O. victoria</i>	3135	1577	2764
<i>O. priamus urvillanus</i>	665	377	1992
<b>Total Ornithoptera</b>	<b>3800</b>	<b>1954</b>	<b>4756</b>

Caution should be exerted in the number of wild caught species exported until such time as good data on population sizes and dynamics are obtained. **It is recommended that no more than 2,000 pairs or 4,000 individuals of *O. victoria* and *O. priamus urvillanus* be exported per year.** There should be no restriction on the number exported by registered butterfly farmers.

#### 3.4 COCONUT CRABS (*Birgus latro*)

Dr R. Fletcher, who undertook a study of coconut crabs in Vanuatu, found that it takes 12 to 15 years for coconut crabs to reach the legal size limit (9 cm carapace length) and more than 30 years for them to become large (greater than 2 kg). He also found that few juveniles appear to enter the population to replace those adults which have been harvested, and that there was no evidence to suggest that after an area has been depleted of crabs that natural restocking from other areas was occurring. Thus continued harvesting of coconut crabs for export is likely to lead to the extinction of coconut crabs in the Solomon Islands, and should not be permitted.

In view of the findings of Dr Fletcher **it is strongly recommended that the ban on the export of coconut crabs imposed by the Minister of Natural Resources in June 1989 be continued.**

Vanuatu has banned export of coconut crabs, but still allows them to be sold to local restaurants. Coconut crab is now considered one of the specialities of Vanuatu cuisine. Solomon Islands could follow in its example and coconut crabs could become a specialty and large revenue earner on tourist menus. La Perouse restaurant, Honiara often has Coconut crab as a speciality retailing at \$25 a meal.

#### 3.5 TURTLES

The effects of trade on hawksbill turtle populations in Solomon Islands is still not clear. Survey work in Isabel Province (which contains the most important nesting areas) provided inconclusive evidence. The total nesting population of hawksbill turtle has decreased. The decrease in this province was due to the decline in the number of turtles nesting on the Arnarvon group of Islands. Comparison with aerial photos reveals that much of the beach has been lost to tidal action since the last survey in 1980 which may explain the decline. Numbers of turtles nesting on other beaches in Isabel has risen. This may mean that turtles previously nesting on Arnarvon have moved elsewhere in Isabel, and to other provinces. Until such time as other provinces are surveyed, it is impossible to determine if hawksbill turtle populations have declined. **It is recommended that surveys be undertaken in other provinces, particularly Western Province, to determine if the decline of nesting hawksbill turtles in Isabel is due to natural decline in the area of suitable nesting beaches, or is attributable to the turtle shell trade.**

The laws governing turtle shell trade, Fisheries Regulation 1972 (as amended) need revision. The current size limit, i.e. only turtles over 75 cm carapace may be exported, does not encourage good management or protection of the species. This size class limit actively persecutes the animals which should be protected, i.e. the breeding stock.

Almost all hawksbills over 75 cm will be reproductively mature. During the Arnarvon Turtle Project in the late 1970's the smallest turtle seen to nest on Arnarvon was 72 cm over the curve carapace length (Vaughan, 1981). To ensure that the population does not decline it is essential that the breeding stock be protected. For this reason, it is **recommended that the Fisheries Regulation be amended to prohibit the trade in turtle shells of greater than 75 cm. A lower size limit should also be legislated** for to discourage wastage of resources and to prevent stuffed hatchlings being exported. The lower size limit is not as important as natural mortality in small turtles is high.

Limpus (1989) has also established a relationship between platelet size and total carapace length. This now means that even shells which have been broken down into platelets may be measured and undersized, or if the Fisheries Regulation is amended, oversize shells may be detected.

### 3.5.1 *Leatherback turtles*

Under the Fisheries Regulation 1972 (as amended) it is prohibited to take, kill, sell or expose for sale, buy or export leatherback turtles or their eggs. This means that subsistence as well as commercial usage of leatherback turtles is prohibited.

The leatherback law although well known is disregarded throughout the Solomons. It creates resentment towards Fisheries Officers and makes people criminals for following their traditional ways. The argument that the law is there to keep the turtles from disappearing holds little water, because if this law is obeyed it means that turtles disappear from their lives anyway.

The law is unrealistic and needs to be reviewed. The 1989 Isabel Province turtle survey estimated that there were approximately 329-466 leatherback turtle nests last year as compared with 166-210 in 1980. Thus the number of nests has doubled, and the prohibition of subsistence usage of leatherback turtles seems unnecessary. The objective of the leatherback turtle law should be to achieve sustainable utilization of this resource for subsistence and cultural purposes, and to prohibit commercial exploitation. With the existing law, it is unlikely that this will ever be achieved, as it is unenforceable at the community level. Instead, a concerted effort is needed to raise the awareness of local communities about the need for conservation of turtle resources. Further encouragement should be given to the establishment of self-regulatory controls by the local communities involved. These may or may not be backed up by legislation, for example by establishing community controlled Wildlife Management Areas (see Section 6.5). It is recommended that funding also be sought to undertake community education activities.

## 3.6 CROCODILES

The crocodile survey conducted by Professors Messell and King during 1989 revealed that the Solomon Islands crocodile population is severely depleted and is estimated to be in the vicinity of only 720 animals. Professors Messell and King stated that "unless urgent and strict measures are taken to protect the species, the saltwater crocodile (*Crocodylus porosus*) may soon become extinct in the Solomon Islands". They recommend a total ban on crocodile skins of all sizes and from all sources in the Solomon Islands be established immediately and effectively implemented. They recommend that such a ban should remain in force for 5 years after which it should be reviewed. Currently farming and ranching programmes based on Solomon Island wild crocodiles does not appear feasible as removal of animals from the wild to stock ranches and farms would severely threaten the remaining crocodile population.

It is recommended that the above strategy of Messell and King (1989) be implemented. If this is implemented, the potential to establish crocodile ranching or farming may exist in 5 to 10 years time when the wild crocodile population has recovered.

### 3.7 BIRDS

The scope of this study did not allow significant work to be carried out on birds. It was considered that time would more profitably be spent on species which were already being exported such as reptiles, amphibians, turtles and insects. However, export permits for *C. ducorpsi* and *C. cardinalis* were issued in February 1990. **It is recommended that legislation be immediately implemented to prohibit this trade until survey work has been conducted to determine population sizes and dynamics.**

Birds in general, and parrots in particular, have in other countries been threatened and often severely depleted by trade. Birds have a greater susceptibility to over-exploitation than amphibians and insects and some reptiles due to their generally lower reproductive rates.

As all parrots (with the exception of *Cacatua ducorpsi* and *Eos* [now *Chalcopsitta*] *cardinalis*), are protected under the Wild Birds Protection Act 1914 it is **recommended that trade in parrots and other birds does not occur until nationwide surveys have been conducted to determine population sizes and population dynamics.**

It has been argued that a potential for limited export of Solomon Island parrots which inflict crop damage may exist, but until work on the distribution and status of these species has been conducted and assessed **export of birds should continue to be prohibited.** (See section 7.6 regarding recommendations for survey work on certain species of parrot.)

### 3.8 MAMMALS

There have been several enquiries concerning the export of flying-foxes (*Pteropus* species) from the Solomons, but no exports have occurred. It has been argued that a potential may exist to export limited numbers of flying-foxes, particularly from areas where flying-foxes are causing crop damage. As populations of flying-foxes on other Pacific Islands have already been threatened or depleted by trade, this should not occur until more is known of the status and distribution of flying-foxes.

In Guam, over-harvesting has resulted in the extinction of one species of flying-fox and resulted in the decline of another species. The flying-foxes of Yap, American Samoa, Western Samoa and Saipan have been severely depleted by over-harvesting to supply the demands of Guam and Singapore. If the Solomon Islands wishes to avoid a similar situation caution should be used in the export of flying foxes. Flying-foxes are major plant pollinators and seed dispersal agents and the depletion of populations may result in losses to both the forestry and agricultural sectors.

**It is strongly recommended that export of flying-foxes be prohibited until surveys and population studies have been completed and the results assessed.**



## CHAPTER 4: ADMINISTRATION OF TRADE

### 4.1 PAST ADMINISTRATION OF TRADE

The lack of legislation governing the administration of export of fauna has severely limited the Environment and Conservation Division's ability to properly manage wildlife trade. Management of trade in the past, has been based on policy guidelines and has no legal basis. Legislation is now needed. The policy on which this trade is based and the current administration of trade was outlined in detail in section 2.1, and 3.1 to 3.3.

### 4.2 NEW MANAGEMENT AND PROCEDURES

#### 4.2.1 *Types of Licences*

This report proposes that there be only two types of export licence. The first, a licence to export reptiles and amphibians, should remain restricted to a maximum of seven licences per year (See section 3.1 and 4.3). The second, a licence to export insects (including butterflies) should be issued on an unrestricted basis.

#### 4.2.2 *Licencing Fee*

The proposals outlined in this chapter and other parts of this report, if implemented, will require the Environment and Conservation Division to undertake additional administrative and technical responsibilities. These include recording export statistics, inspecting exporters premises and consignments, monitoring the effects of trade on wild populations, and preparation of export permits and licences. At present licensees are required, in many cases, to pay a fee for the provincial business licence, but there is no fee for the export licence or export permit, and thus no cost recovery mechanism for Solomon Island Government. To offset some of the additional administration costs associated with the management of wildlife trade it is **recommended that a licence fee (e.g. \$500) be required for each licence to export reptiles and amphibians.** This export activity shows the greatest level of returns to exporters, and also has the greatest level of administration costs and should hence be required to pay a higher licence fee than insect exporters.

**For a licence to export butterflies and other insects it is recommended that a smaller fee (e.g. \$50) should be charged, as there are less administration costs and smaller returns to the exporters.** As an incentive to encourage butterfly farming, it is recommended that registered butterfly farmers be exempted from the licence fee.

#### 4.2.3 *Species Permissible for Export*

Species which are permissible for export, and the appropriate annual quota are listed in the proposed Schedule 1 (Appendix 1). Some species require a restriction on the number of individuals exported and will require further monitoring to ensure that this restricted level of exploitation is not too high. Once baseline estimates are established and a monitoring programme as outlined in section 7.2 is conducted, quotas may be adjusted up or down on a yearly basis according to the findings of the monitoring programme. If monitoring does not occur, Solomon Islands will still be at risk of over-exploiting its' wildlife resources. All other species of reptile, amphibian, bird and mammals cannot, with the current level of knowledge, be safely exploited. This situation may change as further knowledge comes to light, but it is **recommended that until such time, all species of reptile, amphibian, bird and mammal not included in the schedule be prohibited exports.** All species of insects, with the exception of the named prohibited species and two restricted species are permissible for export. Exemption from the ban on export may be authorised in the case of specimens for the purposes of bona fide scientific or zoological research. Authorisation of exemption must be preceded by confirmation of the applicants credentials.

The export of marine resources, particularly marine turtles and crocodiles is currently controlled under the Fisheries Regulation 1972 (as amended) and therefore have not been included in the proposed Schedule 1. As crocodiles and turtles are both reptiles and are subject to export, for consistency, consideration should be given to their future inclusion in the proposed Schedule 1.

Decisions concerning species included in the proposed Schedule 1 were based on all published information on Solomon Islands fauna, on the local knowledge of Solomon Island villagers and collectors and on direct observations of animal populations during 15 weeks of field work throughout the Solomon Islands (see Appendix 2). In many cases village collectors have a better understanding of animal populations than existing scientific information. Although these sources of information by no means give a comprehensive understanding of Solomon Island animal populations, it is the most thorough that can be achieved within the time frame of this project and the financial resources of both the Solomon Island Government and SPREP.

Management and procedures are dealt with in two sections 4.3 reptiles, and 4.4 insects, as two different procedures apply.

### 4.3 REPTILES

The current system of having only 7 licensed exporters should be maintained, however this should no longer be restricted to one per province as licensees are collecting from more than one province. Licences should be issued on order of application regardless of province of origin, until seven licences have been issued. More licence holders would be too difficult to manage and monitor given existing staffing constraints.

#### 4.3.1 Licensing Procedure

It is recommended that the following procedures be adopted and legislated for:

Prospective exporters should apply simultaneously in writing to the province where a business will be established and to the Environment and Conservation Division. The Provincial Government will be responsible for issuing a business licence, and the Environment and Conservation Division will be responsible for issuing a licence to export. The Provincial business licence should be issued subsequent to the issuing of the export licence by the Division.

Before renewal of an existing licence, the Environment and Conservation Division should inspect the premises on which reptiles for export will be kept. This inspection should establish that suitable conditions for the holding of animals are present. Application for new licences should include a written proposal outlining holding facilities and location of premises. Once the exporter has a licence and is operational, the premises will be inspected by an officer of the Environment and Conservation Division to ensure that the premises are as planned.

If premises are found to be inadequate the licence may be suspended until such time as the premises are upgraded to a suitable standard. The export licence should be a standard form. Appended to this form should be the list of species permissible for export (Schedule 1) and the conditions under which the licence is issued. These conditions are outlined in sections 4.3.2, 4.3.3, 4.3.4, and 4.3.5. A draft proforma licence form is shown in Appendix 3.

#### 4.3.2 Conditions for caging and holding fauna in confinement prior to export

The following are recommended as conditions of licences:

- a) Cages used to be maintained in an adequate sanitary state to the satisfaction of the Environment and Conservation Division;
- b) Sufficient drinking vessels to be placed in each cage and adequately filled with clean water;

- c) Sufficient food to be provided to maintain the animals in a healthy condition;
- d) Animals to be housed in cages so as to provide adequate ventilation with extremes in temperature avoided, to the satisfaction of the Environment and Conservation Division;
- e) Animals on dealers premises to be confined in cages of a box type enclosed all over, with the exception of the front or roof which may be wired. The base of cages should not be wired, unless the mesh is less than 1 mm diameter;
- f) The cage used to be maintained to ensure that no sharp objects, edges, loose nails, or other projections can damage the animals;
- g) Cages to have sufficient room for the animal to be able to turn completely around, and to enable them to stand fully erect at full height (with the exception of snakes);
- h) Arboreal animals such as "Unus" (*Corucia zebrata*) if confined for a period of time longer than two weeks to be provided with a sufficient number of round or oval perches of a size adequate for the species;
- i) Adequate hiding facilities and adequate shade from direct sunlight to be provided;
- j) The maximum number of reptiles (other than snakes) to be such that the floor space available should be sufficient so that if all animals are stretched out, they would not be touching;
- k) Each snake shall have a floor space of no less than 50 cm squared;
- l) If any paint or preservatives are used on the containers, it should not be toxic or a skin irritant.

The following conditions to apply to specific groups of animals:

#### **Venomous Snakes**

A person who keeps venomous snakes to:

- 1) ensure that the cage or enclosure is escape proof;
- 2) keep the cage or enclosure securely locked at all times other than when animals are being fed, watered, transferred, or maintenance of the cage is being undertaken.

#### **Frogs**

A person who keeps frogs to :

- 1) ensure that adequate water facilities are available to allow the frog to be fully emersed if it so desires.

#### **4.3.3 Failure to comply with condition**

Should the licensee fail to comply with the above conditions, the Environment and Conservation Division, Ministry of Natural Resources should have the authority to:

- i) order the recaging of animals;
- ii) direct that fauna be fed, watered, or released in a suitable cage or place;

- iii) seize the fauna and any cage or container involved in a breach of these conditions, and require them to be dealt with according to law;
- iv) suspend or cancel the exporters licence.

**It is in the interest of the exporter that these conditions are met. Animals which are well maintained will be more healthy and are likely to receive a higher price than animals which are in poor physical condition. By keeping the animals in good physical condition the exporter will be minimizing his losses of revenue by minimizing mortality in captivity. It is also in the interest of the exporter and his workers to ensure that good sanitary conditions are maintained so that it does not impose a health risk to himself. For example the faeces of *C. zebrata* has a high *Salmonella* bacteria content. *Salmonella* has been implicated in food poisoning cases.**

#### 4.3.4 *Conditions for the consignment of reptiles and amphibians*

It is recommended that all fauna exported should be packed in accordance with IATA guidelines. The conditions applying for the packing of reptiles and amphibians should include:

- a) Reptiles to be enclosed within strong, durable, porous, cloth bag which in turn is enclosed and affixed to a sufficiently ventilated, escape proof box. Amphibians should be packed in a shallow ventilated container, the bottom of which is lined with damp material, then placed inside an escape proof ventilated box. The box should have adequate framework to ensure that it is strong enough to house the reptile and to withstand handling during transport.
- b) A label of not less than 20 cm in length and 14 cm in width, to be affixed to the box. Printed on which in capital letters, should be "snake", "lizard" or "frog" as the case may be, preceded where appropriate by the word "venomous" or "dangerous", and the words "Origin Solomon Islands". Lettering should be not less than 60 mm high.
- c) Attached to the outside of the box, an envelope in which is contained a consignment note showing the consignees name and address, and the scientific name and common name of the species, and the date on which the consignment was packed.
- d) A copy of the consignment note placed inside the box.
- e) "This Way Up" labels attached, with arrows indicating the top on all sides.

#### 4.3.5 *Record keeping*

**As a condition of the export licence, wildlife exporters should be required to keep records of animals received and disposed of, which should be submitted quarterly to the Environment and Conservation Division.** These records should include the name of the person from whom the animals were purchased, the locality of collection of animals, the price paid for them and details of their disposal i.e. if they died or were sold, and the price received for them. These records should be available for inspection at any time by officers of Environment and Conservation Division. A proforma record sheet is shown in Appendix 4. **These could be issued by Environment and Conservation Division and a fee could be charged to recover costs.**

The keeping of records by exporters will enable the Environment and Conservation Division to monitor the export trade. It will allow areas which appear to be subject to over-collection to be identified at an early stage and field monitoring of these areas to be undertaken to identify the effects on the population (See Section 7.2). It will also help the dissemination of information regarding reasonable prices and price trends to the village collectors.

Other businesses based on exploitation of natural resources such as logging operations are required to keep records, and it is not unreasonable to require wildlife exporters to do the same.

#### 4.3.6 *Permits for export*

Every shipment shall require an export permit. This export permit is required by the importing country to provide assurances that collection of animals is not harming wild populations. Currently the government cannot provide that assurance in good faith. **The exporter should apply in writing to the Environment and Conservation Division for a permit, and shall pay a servicing/processing charge of at least \$10 per permit, to cover costs.** A new wildlife permit has been designed and printed, (see Appendix 5). This permit is less open to fraud and abuse than the existing permit and allows the Environment and Conservation Division to keep a better check on the number of animals actually exported. Customs returns one copy of the form which has the actual number of animals declared to be in the shipment. Previously it was impossible to get an accurate count of the number of animals exported from the country as the number of animals on the permit represents the maximum number permissible, and generally less animals were exported.

**The existing policy of allowing only 50 individuals per species per permit should be maintained,** as it seems to have successfully limited the number of individuals being exported per month after May 1989. This will help prevent flooding the overseas market, and will also assist the management of quotas. A tally of numbers of individuals of species under quota restrictions should be kept, and once 90% of the quota level for that species is reached, inspection of licensees premises should take place to assess stock on hand. If the recorded tally plus the stock on hand is less than the annual quota, the remaining permits will be evenly divided between the licensees who will be notified of their entitlement, and the intention to cease issue of export permits for that species. This will avoid problems of dealers claiming to have a backlog of stock on hand and demanding the quota be wavered.

### 4.4 INSECTS

#### 4.4.1 *Licensing procedures*

With the exception of registered butterfly farmers, prospective exporters should apply simultaneously in writing to the province where the business is to be based and to the Environment and Conservation Division. There should be no restriction on the number of licensed exporters per province and a fee should be charged for the export permit. Registered butterfly farmers (See section 3.3.1) should automatically be licensed to export their farmed/ranched butterflies at the time of registration and should not be charged a licensing fee. **They should also be required to obtain a business licence from the province and an export permit for each shipment. Thus all butterfly and other insect exporters should be issued with a licence as per the pro forma licence in Appendix 3.**

#### 4.4.2 *Current administration of insect exports*

Currently a certificate to export insects is issued by Ministry of Agriculture and Lands entomologist at Dodo Creek. This is countersigned by the Senior Quarantine Inspector. The entomologist checks the identity of insects to order rather than species. Birdwing butterflies are identified to subspecies where possible. The entomologist is heavily committed to on-line duties and this additional duty detracts time from his primary concerns. **More efficient administration of wildlife exports would be achieved if this duty were transferred to the Conservation Officer (Wildlife) Environment and Conservation Division, Ministry of Natural Resources.** This will also save exporters considerable inconvenience as they will no longer need to go to Dodo Creek Research Station (20 km from Honiara) to obtain a certificate. Preliminary discussions have been held with Mr Charles Williams, Entomologist, and he believes that an officer from the Environment and Conservation Division could be quickly trained. However, current staffing limits in the Environment and Conservation Division dictate that this duty remain with the Entomologist until such time as staff levels in the Environment and Conservation Division are increased.

#### 4.4.3 *Proposed procedures for permits to export insects*

As for reptile exports, every shipment of insects should require an export permit (see section 4.3.6 with regards to procedures and fees). However, before the export permit is issued the exporter should comply with the following procedures:

- 1) **Deliver the shipment to the Entomologist, Dodo Creek, for inspection. Insects should already be sorted into taxonomic groups i.e. insects of similar appearance. For example, longhorn beetles, jewel beetles, Queen Victoria butterflies, *Graphiums*, and common butterflies.**
- 2) **The identification of insects will be checked by the Entomologist and the number of insects counted and the certificate to export be filled out.**
- 3) **The insects shall then be delivered to Environment and Conservation Division, and the numbers of sorted insects checked, and the export permit then filled out.**
- 4) **The insects shall then be packed in the presence of the Wildlife Officer and the container sealed with a tape with the words "Export Permit invalid if this seal is broken".**

Step 4) will ensure that additional specimens are not added after the export permit is issued. Currently there is no means of ensuring that the contents of the shipment are as stated on the export permit, as packing occurs away from the Environment and Conservation Division and extra specimens may be added.

#### 4.5 LEGISLATION

**There is an urgent need for these procedures for both reptiles and amphibians and for insects to be legislated for. This should include the proposed Schedule 1 (Appendix 1) of animals permissible for export with appropriate quotas and the conditions under which licences are issued.**

Legislation should be at the national rather than provincial level because: 1) exporters collect from more than one province; 2) all trade leaves the country via Honiara; 3) there is a need to monitor national trade as opposed to individual provinces; and 4) quotas can only be applied at a national level as dealers are collecting from many areas rather than one province.

**In the interim, before national legislation is drafted a means for ensuring conditions are met i.e. that records are kept and that animals are maintained in good condition may be by applying these conditions to the provincial business licence. This will need to be pursued in more detail with provincial authorities if this interim action is endorsed by Government.**

## CHAPTER 5: REVENUE FROM TRADE

## 5.1 REVENUE FROM REPTILE, INSECT AND AMPHIBIAN TRADE

One of the most common justifications for the wildlife export trade has been its ability to generate cash income for village dwellers who have no capital resources. However, villagers receive a disproportionately small share of the profits.

Table 7 shows the range in prices received for different species of animals as stated by villagers and two wildlife exporters. There is a large discrepancy between prices stated by the two exporters A and B. Figures provided by the dealers appear to be unreliable. In reality the prices paid to Solomon Island exporters by US importers probably lies somewhere between the two dealers estimates.

Table 7: Prices received per animal by the village collectors and by two licensed exporters 1989

Species	Range of prices received by:		
	Village Collectors \$SI	Exporter A \$US	Exporter B \$US
<i>C. zebrata</i>	5-20	10-15	30-50
<i>Candoia</i> sp.	5-10	10-25	50
<i>Varanus indicus</i>	2.5-20	5-10	50
<i>Gonocephalus godeffroyi</i>	3-4	NS	NS
<i>Lamprolepis smaragdina</i>	2-3	3-5	15
<i>Emoia</i> sp	1-5	NS	NS
Gekkonidae	0.5-1	3-5	25-30
Frogs	2-3	3-5	25
<i>Ornithoptera</i>			
Females	3-5	NS	25
Males	0.5-2	NS	25

NOTES: NS = not stated.  
 Exporter A: prices quoted on the 9th June 1989.  
 Exporter B: prices quoted on the 26th August 1989.

It is difficult to obtain regular figures on the prices that animals are being sold for on the US market, Table 8 presents the prices advertised at various times in the last 17 months.

**Table 8: Retail prices advertised by US wildlife dealers on the market (\$US)**

Species	Aug '88	Sep '88	Apr '89	Jul '89	Aug '89	Nov '89	Dec '89
<i>C. zebrata</i>	225-275	300 <sup>1</sup>	-	225	150	150	150-175
<i>Candoia bibroni</i>	-	150 <sup>1</sup>	175-250	150	150	50	150
<i>Candoia carinata</i>	125 <sup>2</sup>	-	-	50	50	50	50
<i>V. indicus</i>	-	-	-	300	200	200	200
<i>V. ispinulosus</i>	-	-	-	-	-	750	-
<i>G. vittatus</i>	-	-	-	30	-	-	-
<i>E. albofasciolatus</i>	-	250	-	-	-	-	-

**Source of information:**

<sup>1</sup>. Pet Farms, Miami, Florida (28 August-20 Sept 1988).

<sup>2</sup>. California Zoological Supply, Los Angeles (August 1988).

The Source of remaining prices was: Center for Reptile and Amphibian Propagation, Fresno, California, pricelists as dated.

Figure 4 compares what the village collector, dealer A and dealer B and the US importer claim to receive when an animal is sold. The US importer receives up to 70 times more per animal for a large *Candoia* than the Solomon Island villager who collects it. *Varanus indicus* is bought from the village collector for SI \$10, and exporter A and exporter B claim that they sell these animals for SI \$30 and \$95 respectively. The US importer then resells it on the US market for \$200 US or \$474 SI. This is 47 times the price the villager received. It is the US importers who are gaining the most out of Solomon Island wildlife trade.

Figure 5 shows the total monthly income to all village collectors and an upper and lower estimate of the total monthly income to all exporters. The income estimates for villagers is derived using the average prices stated by villagers. Likewise, the upper and lower income estimates for all dealers are based on average prices given by dealer A and the average prices given by dealer B in Table 7.

Estimates for total annual income to all wildlife exporters vary between \$288,315 based on dealer A prices and \$1,200,322 based on dealer B prices. The true income probably lies somewhere in between. So, income to the Solomons generated by wildlife trade in 1989 lies between \$288,315 and \$1,200,322. The total yearly income for all village collectors combined was \$88,906 in 1989. The village based income is much more accurate, as both the prices villagers reported to receive and the prices exporters reported they were paying to village collectors were roughly the same. The village collector also had little reason to give inaccurate information.



# Figure 4

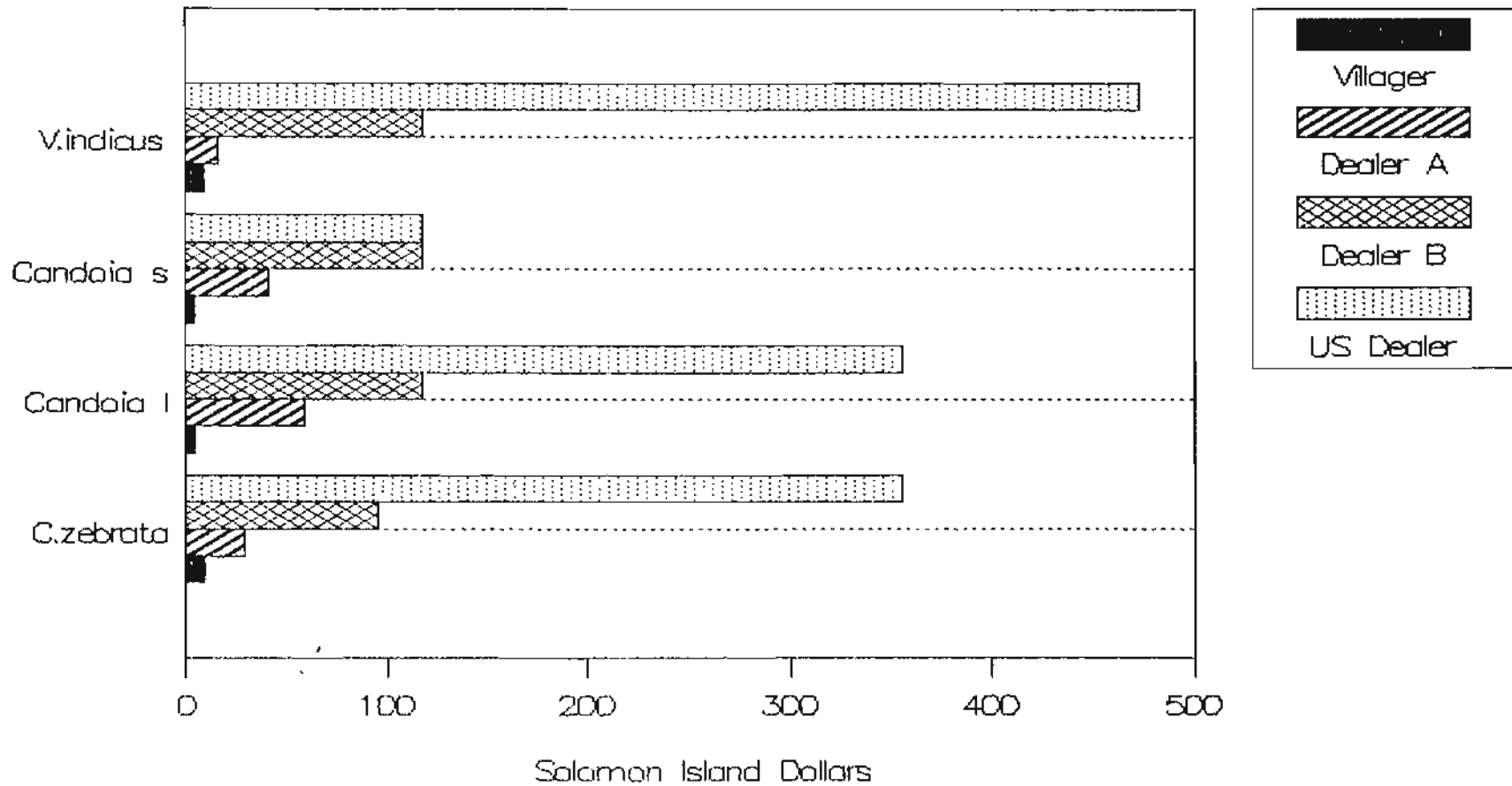


Figure 4 compares what the village collector, dealer A, dealer B (the prices quoted by two Solomon Island exporters, and hence represent a maximum and a minimum price), and the US dealer (importer) receives when an animal is sold. These figures are based on August 1989 prices. A comparison is made with *Varanus indicus*, small (less than 3 ft) *Candoia* (*Candoia s*), large (over 3 ft) *Candoia* (*Candoia l*) and *Corucia zebrata*.

# Figure 5

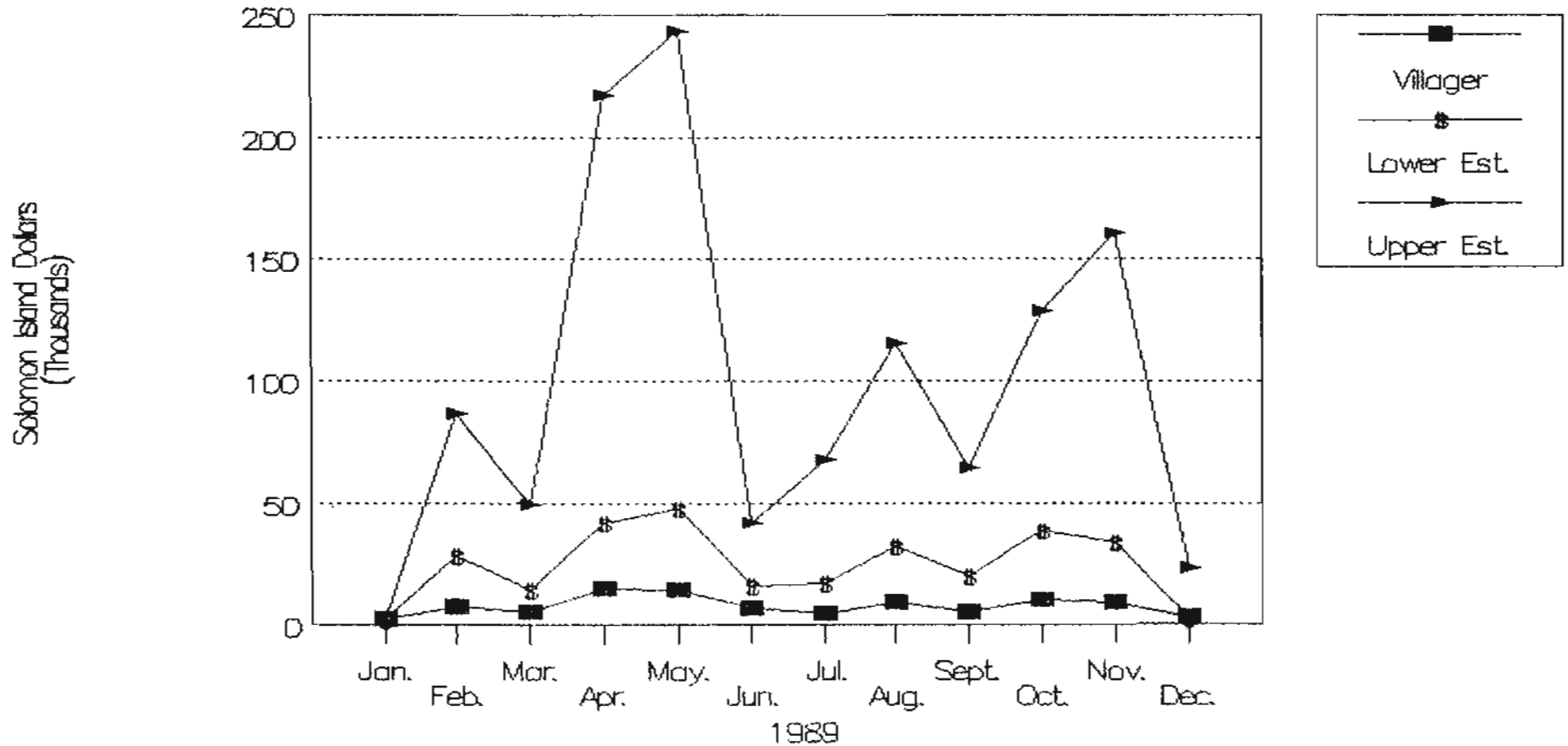


Figure 5 shows estimated income to all village collectors compared with an upper and lower estimate of all exporters income. All prices are given in Solomon Island dollars. The exporters' prices are converted from US dollars to Solomon Island dollars using the average exchange rate for that month. As dealer A had not stated prices received for *G. goddefroyi*, *Emoia* sp and *Ornithoptera* and dealer B had not stated prices for *G. goddefroyi* and *Emoia* sp., the upper and lower total monthly income will be underestimated by these animals. Only small numbers of these animals were exported with the exception of *Ornithoptera*.

Only a few Solomon Islanders are reaping the benefit from the wildlife trade. One exporter is receiving 76% of the total income from wildlife trade, or between \$219,119 and \$912,244 during 1989. Foreign importers are making a disproportionately large share of the profits, while the village collector is making a significantly smaller share.

Some means of ensuring that the village collector receives a better price is needed. One means is price control. Ensuring that village collectors receive a fair price is difficult, because of the wide dispersal of collectors, and the exporters ability to find alternate collectors if a higher price is asked. More exporters would also mean that the collector had a better chance of receiving a good price, but given the current administrative structure, more than seven exporters could not be well managed.

One means by which the collector could be assured of receiving the best and fairest price would be through the establishment of a non-profit making government-run fauna trading agency which acts as the sole exporter of wildlife, similar to PNG's Insect Farming and Trading Agency (IFTA). This suggestion may meet with considerable opposition from the five operating licence holders. Setting up such an agency would require considerable financial investment by the government, and would be likely to run at a loss for the first few years of its operations. The IFTA is now only just breaking even. If the government is keen on generating further rural income then a feasibility study of setting up such an agency should be undertaken.

Another means would be through wide publicity of market prices of exported species to assist collectors to determine a fair and reasonable price. This could be undertaken through Solomon Island Broadcasting Commission and through community groups.

## 5.2 REVENUE FROM TURTLE SHELL EXPORT

Figure 6 shows customs statistics of the average value per kilogramme of turtle shell declared by exporters. Prior to 1987 it appears that exporters were under-declaring the value of turtle shell. As turtle shell is subject to a 10% excise duty on declared value, it is likely that exporters will understate values. **It is therefore recommended that Customs Officers be regularly supplied with current market values for turtle shell.**

Figure 6

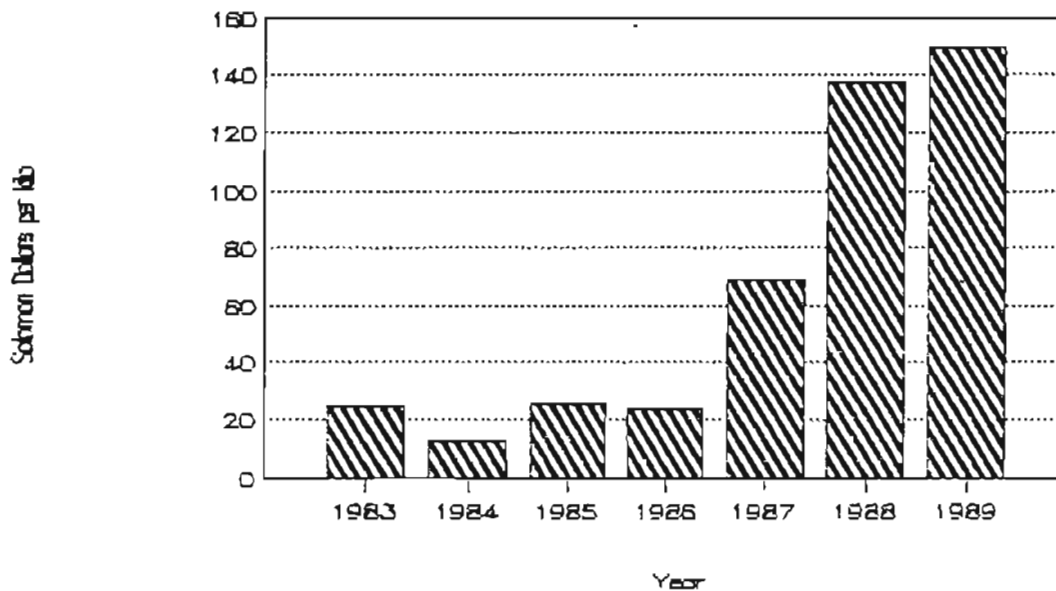


Figure 6 shows the average value per kilo of turtle shell (in \$SI) declared by exporters to Solomon Islands custom officials.

Figure 7

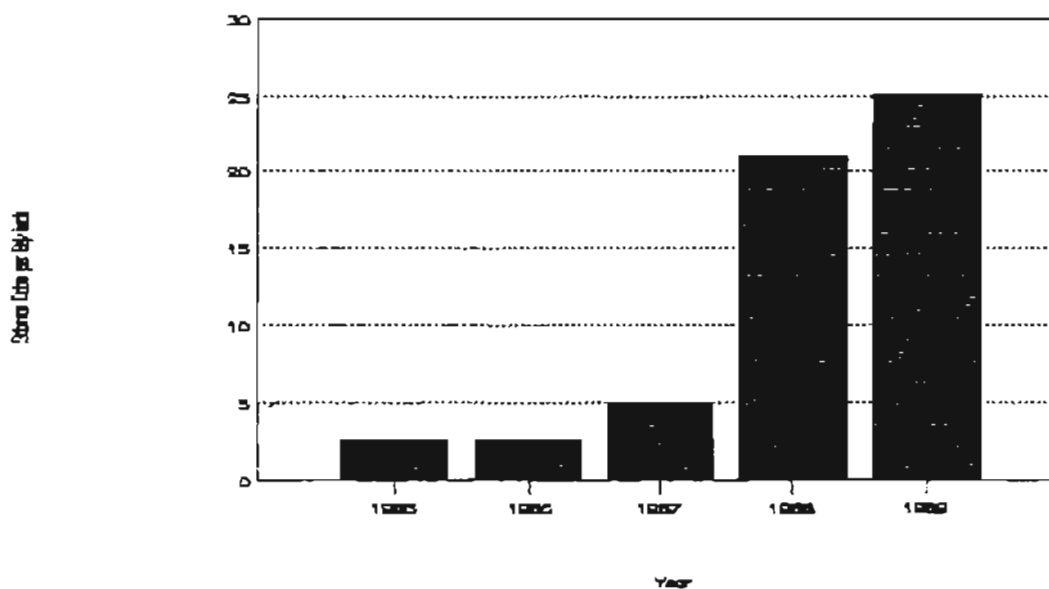


Figure 7 shows the average value per belly inch (in \$SI) declared by exporters to Solomon Islands customs officials.

### 5.3 REVENUE FROM CROCODILE SKINS

Figure 7 shows customs statistics of the average value of crocodile skin (measured in belly inches), declared by exporters. Prior to 1988, the declared value was less than 20% of what could have been sold on the open market. It appears that exporters were avoiding paying larger excise duties by under-declaring the value of their exports.

### 5.4 GOVERNMENT REVENUE FROM WILDLIFE TRADE

The only revenue the government receives from wildlife trade is from excise duty levied on turtle shell and crocodile skin exports. A 10% excise duty is charged on the declared value of these items. The potential for understating the true value of turtle shell and crocodile skin is high as customs officers have no information on current retail prices.

Customs officers should be supplied by Fisheries or Environment and Conservation Division with updated current market value of both these goods to avoid exporters understating the value of their shipments, and to ensure that Solomon Islands Government receives the revenue it is entitled to.

All other wildlife exports do not generate income for Solomon Islands Government. The wildlife trade is costing the government money. Section 4.2.2 recommends that a licence fee be charged to recover some of the costs associated with the management of the wildlife export trade. In addition, section 4.3.6 recommends that a processing fee be instituted to meet the costs of administration and export permit processing. 107 permits were issued in 1989, and if a processing charge of \$10 had been levied \$1070 would have been earned towards meeting the costs of administration.

Other natural resources such as timber are subject to excise duty and there is no reason why export of reptiles, amphibians and insects should be exempt from duty. If the government had charged an excise duty of at least 10% in 1989, the revenue received would have been between \$28,831 and \$120,032 based on the prices given by exporters A and B respectively. The true value of excise duty lost probably lies between these two estimates.

From Figure 5 it is obvious that exporters have a large profit margin, particularly as freight charges are generally borne by the importers. This means that the exporters can afford to pay an excise duty of greater than 10% and still make a profit. **It is recommended that an analysis be undertaken to establish a suitable excise duty, which should not be less than 10%, and that the Customs Act (1960) be amended to charge an appropriate excise duty on all wildlife exports.**

## CHAPTER 6: CONSERVATION AREAS SYSTEM FOR SOLOMON ISLANDS

### 6.1 WHY DEVELOP A CONSERVATION AREAS SYSTEM ?

The fauna and flora of the Solomon Islands is a part of a national heritage all Solomon Islanders are proud of, and must be used with care. The fauna and flora of the Solomon Islands is also of international value. There is no other place in the world, not even the Galapagos Islands, where the biological phenomenon of speciation and population variation among islands are so obvious (Diamond, 1976). The short term economic value of some of these resources, especially timber and fish is already appreciated, however, their long-range potential value is unknown and generally disregarded. All also have a role in maintaining essential biological processes, which ensure the health and continuing viability of the natural environment in which we live.

To ensure that fauna and flora and the natural resources of Solomon Islands are maintained in perpetuity it is necessary to ensure that representative examples of all habitats in the Solomon Islands are afforded protection from environmental change through development projects. This does not necessarily mean these areas need to be set aside in the form of "National Parks" of other countries, but there is a need to develop a system of conservation areas, which are appropriate to Solomon Islands land-tenure system and custom.

### 6.2 WHY IS IT INCREASINGLY URGENT TO CONSERVE AREAS?

Traditional conservation practises have long been a part of Solomon Islands resource management. Tambus are still often effective in giving protection to a specific area or species of wildlife. However, many traditional conservation practices have begun to break down with the introduction of a cash economy and new technologies and coupled with a high population growth exerting pressure on limited resources.

The greatest threat to flora and fauna is habitat destruction. Shifting agriculture and forestry operations are the most widespread causes of habitat destruction, lowland primary rainforest being the habitat most threatened.

Solomon Islands' development has largely been based on resource exploitation. The rate of resource development is rapidly increasing and therefore it is important that conservation areas be identified quickly, and a means of establishing a conservation area system developed before representative habitats are lost.

**It is a priority that a comprehensive Conservation Act is enacted for Solomon Islands.**

### 6.3 PRESENT CONSERVATION AREAS SYSTEM

In various pieces of Solomon Islands legislation there are limited provisions for the protection of areas of land and sea. The following areas have been designated protected areas under a variety of legislation: Queen Elizabeth II National Park, Tulagi Bird Sanctuary, Kolombangara Forest Reserve, Dalakalong Bird Sanctuary, Mandoleana Bird Sanctuary and Oema Island Bird Sanctuary. These areas cover less than 0.2% of the land area of the Solomons. However, despite their designation as conservation areas they do not always function as such.

Recently Temotu Province has gazetted an ordinance for the protection of endangered species. Under this ordinance any plant, animal or place may be designated protected. Amarvon Wildlife Sanctuary is also designated under an Isabel Province Ordinance. However, this sanctuary no longer functions as a protected area and is subject to heavy exploitation. Isabel Province has expressed an interest in reviving the sanctuary.

The various national and provincial legislations all have a separate "sector" or area specific origin and the lack of success in maintaining any of these areas reflects the weakness of narrow approaches.

#### 6.4 POTENTIAL CONSERVATION AREAS

**In the long-term, a comprehensive Conservation Act for the Solomon Islands needs to be developed. This would encompass the establishment of conservation areas, the protection of flora and fauna, regulation of wildlife trade and the conservation of traditional resource management knowledge.**

**A system of conservation areas suitable for Solomon Islands urgently needs to be developed.** Typically, representative reserves in developed nations have been established on government owned land. In Solomons however, only nine percent or 246,000 ha of land is government owned, of which 117,616 ha is committed to forestry plantations or operations. There appears little potential for development of representative conservation areas on government owned land.

This leaves the prospect of development of conservation areas on customary land. Currently there is no legislation and little incentive for this to happen. There is a strong need to identify conservation measures appropriate for customary lands in Solomon Islands.

In addition to large scale areas, consideration needs to be given to the protection, in terms of good management, of small areas. A type of natural area conservation system which may be suitable for the Solomon Islands and which allows continued (but well managed) use of materials from parts of or all of the area needs to be developed. Wildlife Management Areas which have proved successful in PNG are one such means and are discussed in the following section.

#### 6.5 THE WILDLIFE MANAGEMENT AREA CONCEPT - THE PNG MODEL

In PNG a unique system of conservation areas known as Wildlife Management Areas have been established. Since 1975 10,529 square kilometres have been designated as Wildlife Management Areas (WMA).

A WMA is an area of land reserved for the conservation and controlled utilisation of wildlife and preservation of natural habitat. In PNG, the area covered by a WMA can cover a piece of land owned by one man, a clan, a village, a census division or a council area.

##### 6.5.1 *The objectives Of Wildlife Management Areas*

The objectives are:

- 1) Conservation of wildlife and habitat at village level for present and for future generations;
- 2) Conservation of unique and valuable species, for example, megapodes and turtles;
- 3) Control of hunting and harvesting of resources.

##### 6.5.2 *Why establish Wildlife Management Areas?*

Many traditional conservation practices have begun to break down with young people no longer respecting customs or outsiders ignoring local custom conservation practices. While this may have led to decline in wildlife species, the clearing of land for development projects has caused the loss of natural habitats and resulted in further detrimental effects on some species. Increased pressure on wildlife is also due to population increase, commercial exploitation (e.g. crocodile and reptile exports) and domestic sales.

It was therefore necessary to introduce new conservation measures compatible with traditional ownership rights and custom in areas where there is pressure on wildlife resources. Many communities had already expressed interest in the Wildlife Management Area concept or other measures by which they could legally enforce traditional conservation practices. The Wildlife Management Area concept does not prevent use of resources but ensures that they are well managed. It can for example, help ensure that the use of resources such as megapode eggs is sustainable. Where a community wishes to protect all resources in an area, it may also do so.

### *6.5.3 Legislating for Wildlife Management Areas*

Wildlife Management Areas may be legislated for at the national or provincial level. Legislating at the national level is preferable as it would ensure that uniform legislation and procedure applies across the country. However, there is interest at provincial level and some provinces are already drafting WMA ordinances.

The establishment of Wildlife Management Areas under provincial ordinances would allow for the demarcation of an area of land for protection of wildlife species or habitat, managed by a representative committee of land owners that enforce a set of management rules made by themselves and approved by the Environment and Conservation Division and the Provincial Assembly.

### *6.5.4 Draft Wildlife Management Area Ordinance*

Appendix 7 is a suggested draft Wildlife Management Area Ordinance which is modelled on the provisions for Wildlife Management Areas under the PNG Fauna (Control and Protection) Act and could form a basis for WMA legislation in Solomons. The WMA ordinance has been drafted by Guadalcanal Province legal adviser and has recently been passed by the provincial assembly. **It is recommended that Wildlife Management Area legislation be enacted at the provincial or national level as soon as possible.**

### *6.5.5 The establishment of Wildlife Management Areas*

Wildlife Management Areas may be declared following a request from land owners after they have identified a wildlife or resource management problem on their land, or following a recommendation by wildlife or other government officers who find important areas for the conservation of animals or plants.

The decision to have a Wildlife Management Area is made by land owners. When they have decided on a Wildlife Management Area, discussions are held to decide the boundaries and the name of the area and to elect a representative management committee. A report is then submitted to either the Provincial or National Assembly (depending on the legislation option adopted), for approval. Once the declaration of the area is approved by the Assembly, it should be published in the Government Gazette.

### *6.5.6 Enforcement of Wildlife Management Area rules*

Rules could be developed by the land owners with assistance from Environment and Conservation Division Officers to render them consistent with conservation and protection principals.

Once finalised, the rules are gazetted and enforcement is by the land owners who may be assisted by provincial and national government officers where necessary.



## CHAPTER 7: AREAS AND SPECIES OF CONCERN WHICH REQUIRE FURTHER WORK

### 7.1 OVERVIEW

Wildlife management issues in Solomon Islands result from actions pertaining to:

- 1) Wildlife trade;
- 2) Changes to traditional usage;
- 3) Habitat destruction; or
- 4) Pest control.

The following sections outline ten project proposals on wildlife of immediate management concern under the above categories. Solomon Islands has no trained wildlife ecologists. In the long-term, it is essential that the Solomon Islands has this expertise to address the above management problems or new ones as they arise. **Manpower Planning Division should be made aware of the need for strengthening Solomon Islands environmental management capabilities in general.**

In the short-term, many of these projects and management problems require action. If steps are not taken in the near future extinction of some species is likely. Small islands and islands in general have a greater susceptibility to extinction of species than large continents where recolonisation from other areas is possible.

Given that there are limited funds available, the projects have been prioritised according to the perceived urgency of the management problems. Possible funding sources are also suggested. Elements of the latter five projects may be combined in the first five.

### 7.2 PROJECT NO. 1: Monitoring of export quotas

This is the highest priority as exploitation is already underway. If Solomon Islands wishes to be seen as managing the wildlife trade responsibly, it is essential that monitoring be implemented immediately. The risk of appearing to be irresponsible are twofold: 1) extinction or severe depletion of populations in some areas may occur and Solomons will suffer the ir retrievable loss of a part of its national heritage; and 2) pressure may be asserted by international agencies to close the Solomon Islands outlets for wildlife export.

Quotas on the number of individuals permissible for export have been recommended for wildlife identified in the proposed Schedule 1. These quotas should not be regarded as fixed levels in perpetuity, and should be subject to annual review. It is not possible with current data to be able to set optimal harvesting levels or optimal quotas, and it is therefore necessary to monitor (rather than depend on inadequate predictions), the effectiveness of the quota system, and modify it accordingly.

The following is a proposal for the continued monitoring of wildlife trade:

Section 4.3.5 recommends that wildlife exporters be required to keep records of the origin of collection of animals purchased for export. Six months after the commencement of this record keeping the records should be analysed and areas of heavy collection for different species should be identified. Baseline survey counts of populations in those areas should be undertaken. The methodology for surveys must be repeatable and it is recommended that permanent survey plots be established and resurveyed annually. It will be necessary for Solomon Islands to obtain outside assistance in the short-term to set up these survey systems. Re-surveys in each area should only take a short time each year once the monitoring plots are established and a Solomon Islands Wildlife officer could be trained to do this. Information should also be collected on catch per unit effort by collectors. Possible sources for technical and financial assistance include IUCN, TRAFFIC, World Conservation Monitoring Centre, WWF and SPREP.

Areas which have been subject to heavy collection identified by this study include; CDC and the Tasimboko area on Guadalcanal, the districts of Hogarano and Maringe on Isabel, and Savo, Central Province. Monitoring should pay particular attention to small islands which are being heavily collected from.

### 7.3 PROJECT NO. 2: BROADSCALE FAUNA SURVEY

The distribution and habitat requirements of most species is still poorly understood making it difficult to assess threat to species from habitat destruction. A broadscale fauna survey of Solomons would do much to bridge this gap in knowledge. The survey should attempt to survey all the major habitat types or at least landsystems in the Solomons. This would provide insight into the types of faunal assemblages found throughout Solomons and a better understanding of distribution and status of fauna. Particular emphasis should be placed on amphibians and mammals as these two groups are the most poorly studied. This survey will allow species threatened by development to be identified and will also provide baseline information for future reserve selection.

Solomon Islands has neither the expertise nor the equipment to undertake extensive survey work. One option for achieving such work would be through a co-operative effort with an overseas research institution. Currently the Australian Museum is undertaking a co-operative project with Environment and Conservation Division and SPREP. The project includes training a Solomon Island counterpart. This person will be able to conduct further survey work as required.

Some components of project Nos. 8, 9, and 10 could be incorporated into this survey. Information on the status and distribution of populations of *V. indicus spinulosa*, the giant rat and flying-fox species could be collected.

### 7.4 PROJECT NO. 3: TURTLE SURVEY AND THE ARNARVON SANCTUARY

As indicated in section 3.5 the effects of trade on hawksbill turtle is still unclear. It is recommended that funding be sought to further survey nesting beaches, particularly on Choiseul, New Georgia and the Shortlands, to assess the nationwide population changes since 1980. Subsidiary to this project should be re-instatement of the Arnarvon Wildlife Sanctuary, if it is in accordance with the wishes of those who claim traditional ownership. The emphasis of a turtle project/sanctuary based on the Arnarvon group of Islands should be public education (particularly encouraging land owners to ban diving on their reefs); headstarting and hatchling release; preventing harvesting of turtle eggs and monitoring population changes of nesting turtle on the Arnarvon group (particularly with respect to mean size. Despite the controversial nature of the impacts of headstarting and hatchling release, it proved during the previous Arnarvon project to be a worthwhile exercise in opening up communications between Fisheries Officers and local residents. This project has been discussed with Fisheries Division, MNR and they would prefer such a project came under Environment and Conservation Division due to its conservation rather than commercial emphasis.

WWF originally funded the Arnarvon Turtle Sanctuary Project and could be approached again. The project may also fall under the scope of the SPREP/ICOD marine turtle conservation and management programme. The Tourist Council of the South Pacific have also expressed interest in incorporating such a programme into tourist development in Isabel. Greenpeace Turtle Campaign could also be approached as a possible source of funding.

## 7.5 PROJECT NO. 4: Monitoring of crocodile populations

Messel and King (1989) expressed grave concern for the fate of Solomon Islands crocodiles. Annual surveys in the six localities recommended by them, Lauvi and Ghahirahabo Lagoons, Lakes Tatao, Korea and Matimi and those in Renard Cove should be carried out to monitor the status of crocodile populations in these important locations.

Solomon Island Government personnel have already been trained in crocodile survey techniques and it is recommended that IUCN be approached to provide finance for travel and subsistence.

## 7.6 PROJECT NO. 5: Parrots

Due to the recent commencement in export of *Cacatua ducorpsi* and *Chalcopsitta cardinalis* and the increasing pressure to commence the export of other parrots (see section 3.7), this project is of extreme urgency. It is recommended that survey work and studies on population size and dynamics are conducted before any further trade takes place.

Priorities for assessment include : *Chalcopsitta cardinalis* (cardinal lorikeet); *Trichoglossus haematodus* (rainbow lorikeet or coconut lorry); *Cacatua ducorpsi* (Solomon's white cockatoo); *Eclectus roratus* (eclectus or king parrot); and *Lorius chlorocercus* (yellow-bibbed lory or lorrikeet). These species superficially appear relatively abundant.

## 7.7 PROJECT NO. 6: Megapode Management

Megapode eggs are harvested by many communities in Solomons, and are sometimes the primary protein source in a communities diet. Often there are customary, family or clan ownership and harvesting rights over the egg-laying areas.

Traditionally there were custom laws regarding harvesting of eggs which acted as a conservation measure and ensured good management of the resource. The breakdown of traditional management practices coupled with trading of eggs for cash income and increased population growth has resulted in greater harvesting pressure. Concern that populations are declining have been expressed by several communities.

The Wildlife Management Area concept discussed in Chapter 6 provides a means by which the population may be well managed, and customary laws which act as conservation measures may be strengthened by provincial law. Communities with megapode fields such as Simbo, Savo, Tasimboko and Tere should be encouraged to set up Wildlife Management Areas. Otherwise the populations of megapodes on some of these fields may be extinct within the next five years. Western Province has already produced a draft Megapode Management Ordinance for Simbo. Current harvesting practices in some areas take all the eggs from the field, and there is no juvenile recruitment to the field. Interest has been expressed by some communities in increasing the population of megapodes through the artificial incubation of eggs. However, in some areas the roosting and foraging habitat in close proximity to the megapode field is small. Efforts to increase the population through artificial means may be wasted, if these areas are the only areas available to megapodes.

Information is needed on the mobility of this species, i.e. on distances moved between foraging and egg-laying grounds, and the territoriality of individuals. It is recommended that a short-term radio tracking study be conducted on birds from the Savo and Tasimboko fields. SIG through its involvement with SPREP, is party to a Memorandum of Understanding (MOU) with NSW National Parks and Wildlife Service which provides for the short-term secondment of officers for technical assistance. NSW National Parks and Wildlife Service has both the expertise and the equipment to undertake such a study. The duration of secondment would only need to be one month. It is recommended that SIG apply through SPREP for secondment of officers to undertake this study. This will be part of a study on the feasibility of increasing and preventing further decline of megapode populations which are being harvested. Baseline population estimates should also be collected to ascertain the success of wildlife management instituted. If increasing the population of megapodes seems feasible through artificial means, funding should be sought through WWF or a similar body to continue the project.

#### **7.8 PROJECT NO. 7: Feasibility study of an Insect Farming and Trading Agency for Solomons**

Section 3.3.1 recommends that a feasibility study be carried out on the potential for Solomon Islands to establish a government-run insect farming and trading agency. This should include an assessment of commercially viable butterfly species occurring in the Solomons. WWF may be interested in assisting such a project.

#### **7.9 PROJECT NO. 8: The Giant Rats (*Uromys* sp. and *Solomys* sp.)**

It appears likely that the giant rats are the only truly non-flying land mammals in the Solomon Islands. All other species have been introduced by man. Very little is known of these species and only a few specimens of them exist in museums. Specimens in museums come from Choiseul, Guadalcanal, Ugi and Isabel. Whether these species still survive in the mountains is uncertain, and it is important that investigations be carried out. Although these species appear to be mountain dwellers, many of the areas adjacent to potential habitat areas are subject to logging proposals. It is essential that these areas be investigated before these areas are logged and if necessary appropriate conservation plans be implemented. Particular attention should be paid to the north western end of Choiseul where logging is already underway.

#### **7.10 PROJECT NO. 9: Flying-foxes**

During 1989, reports of damage to tree crops originated from Temotu and Western Province. Lack of finance and manpower prevented the Environment and Conservation Division investigating these complaints. There is a need to acquire information on the population status of Solomon Island flying-foxes before eradication programmes of species considered pests cause irreparable population damage. Investigations into population dynamics of species believed to be pests, and measures to alleviate damage should be undertaken. Nationwide surveys could also ascertain, which if any species are suitable for export. Concerns regarding trade in flying-foxes have already been outlined in section 3.8.

#### **7.11 PROJECT NO. 10: *V. indicus spinulosus***

Although very few individuals of this subspecies have been exported, it is of concern as little is known about it, and its distribution is unclear. It is known from some localities on Isabel only. This subspecies may be a distinct species in its own right, and warrants further investigation. Information on its distribution and status should be collected.

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## PROPOSED SCHEDULE 1 FOR WILDLIFE REGULATIONS

## SCHEDULE 1

Species which may be commercially exported and recommended quotas

CLASS AMPHIBIA (Frogs)

## ORDER ANURA

Family **Bufonidae**

Genus <i>Bufo</i>	
<i>B. marinus</i>	unlimited

Family **Hylidae**

Genus <i>Litoria</i>	
<i>L. thesaurensis</i>	unlimited

Family **Ranidae**

Genus <i>Batrachylodes</i>	
<i>B. vertebralis</i>	unlimited

Genus <i>Ceratobatrachus</i>	
<i>C. guentheri</i>	unlimited

Genus <i>Discodeles</i>	
<i>D. opisthodon</i>	unlimited
<i>D. guppyi</i>	(200)

Genus <i>Platymantis</i>	
<i>P. papuensis</i>	unlimited
<i>P. solomonis</i>	unlimited

CLASS REPTILIA

## ORDER SQUAMATA

## SUBORDER SAURIA

## Family Gekkonidae (Gekkos)

Genus <i>Cyrtodactylus</i>	
<i>C. louisianensis</i>	(200)
Genus <i>Gehyra</i>	
<i>G. oceanica</i>	unlimited
Genus <i>Gekko</i>	
<i>G. vittatus</i>	unlimited
Genus <i>Hemidactylus</i>	
<i>H. frenatus</i>	unlimited
Genus <i>Lepidodactylus</i>	
<i>L. lugubris</i>	unlimited
Genus <i>Nactus</i>	
<i>N. arnouzii</i>	unlimited

## Family Scincidae (Skinks)

Genus <i>Corucia</i>	
<i>C. zebrata</i>	(3,000)
Genus <i>Emoia</i>	
<i>E. atrocostata</i>	unlimited
<i>E. caeruleocauda</i>	unlimited
<i>E. cyanogaster</i>	unlimited
<i>E. cyanura</i>	unlimited
<i>E. maculata</i>	unlimited
<i>E. nigra</i>	unlimited
Genus <i>Eugongylus</i>	
<i>E. albofasciolatus</i>	(200)
Genus <i>Lamprolepis</i>	
<i>L. smaragdina</i>	unlimited
Genus <i>Prasinohaema</i>	
<i>P. virens</i>	unlimited
Genus <i>Sphenomorphus</i>	
<i>S. coccinatus</i>	unlimited
<i>S. solomonis</i>	unlimited

## Family Varanidae (Monitor Lizards)

Genus <i>Varanus</i>	
<i>V. indicus</i>	(1,500)

N.B.: *V. indicus spinulosus* prohibited from export



## ORDER SQUAMATA

## SUBORDER SERPENTES

Family **Boidae** (Boas and Pythons)

Genus <i>Candoia</i>	
<i>C. bibroni</i>	(500)
<i>C. carinata</i>	unlimited

Family **Colubridae** (Snakes)

Genus <i>Boiga</i>	
<i>B. irregularis</i>	unlimited

Genus <i>Dendrelaphis</i>	
<i>D. calligaster</i>	unlimited

Genus <i>Laticauda</i>	
<i>L. colubrina</i>	unlimited

Family **Ramphotyphlops** (Blind Snakes)

Genus <i>Ramphotyphlops</i>	
<i>R. bramina</i>	unlimited
<i>R. flaviventer</i>	unlimited

CLASS INSECTA

All species of the class insecta are permissible for export with the exception of those with quota restriction as indicated and the following 6 species which are prohibited from export:

*Graphium meeki*

*Graphium mendana*

*Papilio tobori*

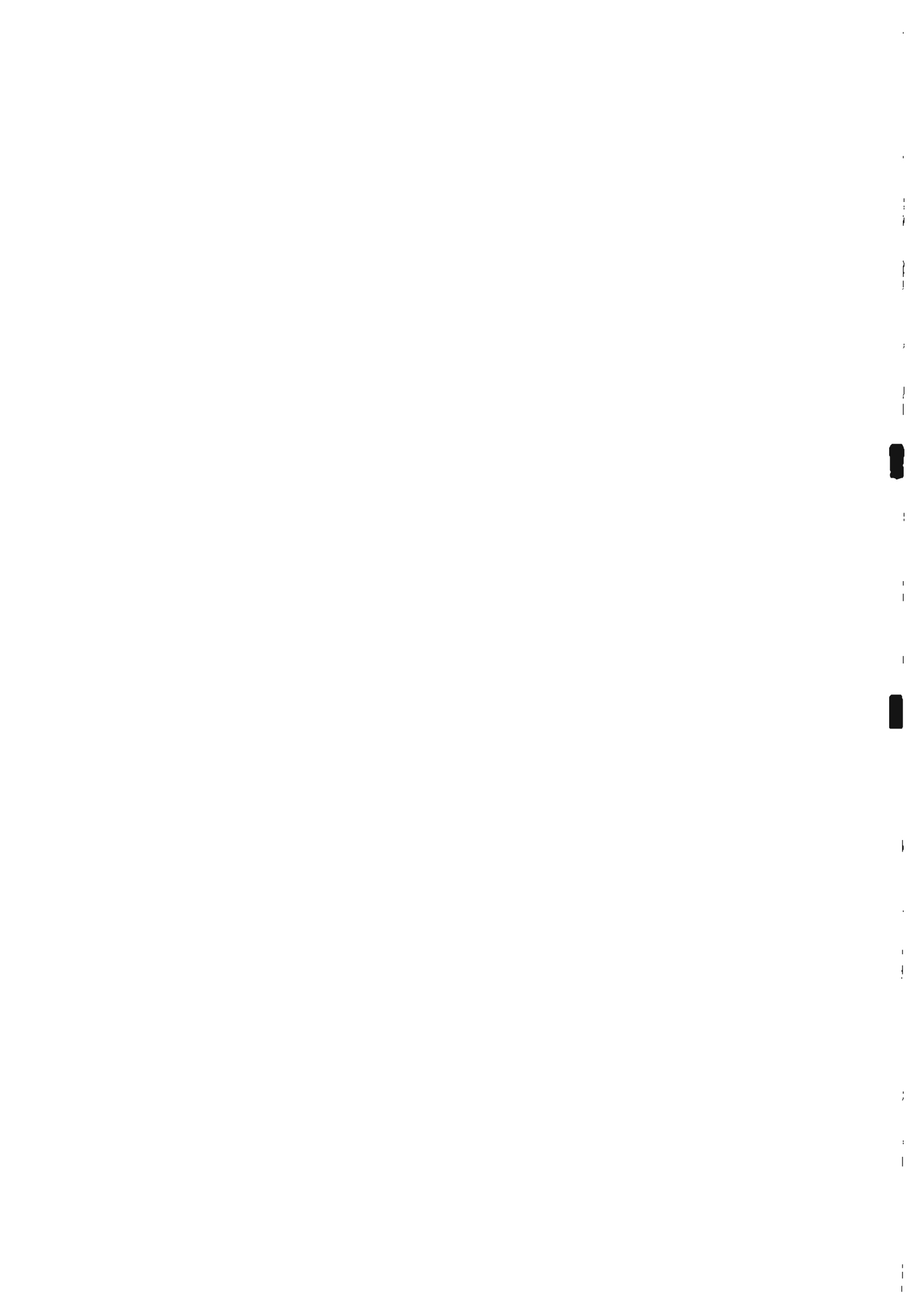
*Parantica gramantis*

*Tiridelphe schneideri*

*Tirumala euploeomorpha*

**Quota Restricted species:**Family **Papilionidae**

Genus <i>Ornithoptera</i> (Birdwing Butterflies)	
<i>O. victoria</i>	(4,000)
<i>O. priamus urvillanus</i>	(4,000)



## FIELD WORK CARRIED OUT BY TANYA LEARY IN 1989

27-31 MARCH: - Numbu and Pui (East Guadalcanal)

**Objectives:** To gain information on the ecology of *Corucia zebrata* and collection of this species from that area.

19-25 APRIL: - Savo (Central Province)

**Objectives:** To gain information on the ecology of *V. indicus* and *G. vittatus* and other species collected from this island. To investigate management problems of megapodes (*Megapodius eremita*) and to collect information on the ecology of this species.

15-24 MAY: - Isabel Province

**Objectives:** 1) To hold discussions with provincial authorities on the fate of the wildlife sanctuary by-law; 2) To assess the extent of trade and collecting activities in the vicinity of Popoheo (Maringe District); 3) To gain information on the status, distribution and ecology of species collected from that area and 4) To undertake some preliminary survey of turtle nesting beaches.

Villages and areas visited: Buala, Popoheo, Ghoveo, Hakelake Island and Kiaba Island.

21-27 JUNE: - Small Malaita, In the vicinity of Tawa'aro village near Walande

**Objectives:** To assess the extent of collecting activities and to gain information on the ecology, status and distribution of reptiles, amphibians and insects collected.

12-25 JULY: - Western Province

**Areas visited and Objectives:**

Kolombangara: To undertake bird and bat surveys on the ecological/riparian reserve along the Villa R, to assess conservation potential of remaining forested areas.

Simbo: To investigate megapode management problems and to collect information on the ecology of this species.

Roviana Lagoon and New Georgia (Zovi village, Munda, Nusa Hope): To investigate crocodile ranching in these areas and to assess turtle exports originating from these areas.

Tetepare Island: Survey work on reptiles and bats, and preliminary investigations of its conservation potential and reports of illegal trade.

Rendova (Near Ugele): Survey work on reptiles, amphibians and bats.

**16-19 AUGUST:** - Tasimboko, East Guadalcanal

**Objectives:** To investigate megapode management and to make recommendations for improved management of the field. Also to gain information on collection for export from this area, particularly information on the ecology of *Candoia carinata*.

**23-28 AUGUST:** - Malaita

**Areas visited and Objectives:**

Dala: To inspect a butterfly farm

Kwara'ae area: To investigate collecting activities of the Malaita licensed exporter and to gain information on the ecology of reptiles and amphibians collected.

**25 OCTOBER:** - Numbu (Guadalcanal)

**Objectives:** To collect food plants of *Corucia zebrata* and further information on its ecology.

**7-21 NOVEMBER:** - Isabel Province

**Objectives:** To undertake an extensive survey of turtle nesting grounds in Isabel Province, to assess the status and distribution of marine turtles. Estimates of nests per year were obtained for 66 beaches. Information was also collected on the ecology of turtle species, shell trade and traditional usage of turtles.

## PRO FORMA LICENCE FORM

\_\_\_\_\_  
 (Name in Full) (Postal Address)  
 is hereby licensed to conduct wildlife export business from the  
 premises situated at \_\_\_\_\_ and to export  
 (Location of Premises)  
 fauna subject to the issue of permits, for one year from  
 \_\_\_\_\_ subject to the standard conditions contained below  
 (Year and Month)

Dated this \_\_\_\_\_ day of \_\_\_\_\_ 19 \_\_\_\_\_

\_\_\_\_\_  
 Principal Conservation  
 Officer  
 Environment and  
 Conservation Division

Records of areas from which animals are purchased and how they are disposed of, (as outlined in Appendix 4) must be submitted to the Environment and Conservation Division quarterly. The licensee shall maintain the animals in captivity to the standard outlined in the attached conditions (see section 4.3.2 and 4.3.3). Officers of the Environment and Conservation Division may inspect the premises at any time to ascertain that conditions are being complied to, and to inspect records. Failure to comply may result in suspension or cancellation of the above licence.



Recommended Record Keeping Sheet for Exporters, only one species per sheet.

Common name of sp \_\_\_\_\_ Scientific name of species \_\_\_\_\_

EXPORTERS RECORD KEEPING SHEET

RECEIVED				DISPOSED			
Date of Receipt	No. of animals (state sex if known)	Name of supplier and nearest village to capture	Unit Value (Price Paid) \$SI	Date of Disposal	No. of Animals disposed *	Export Permit Number	Unit Value (Price Paid) \$SI

I \_\_\_\_\_ Certify that the above is a true and accurate record


Signature: \_\_\_\_\_

Date: \_\_\_\_\_





NEW WILDLIFE EXPORT PERMIT

		<p><b>SOLOMON ISLANDS</b></p> <p><b>WILDLIFE EXPORT PERMIT</b></p>	
THE WILDLIFE TO BE EXPORTED UNDER THIS PERMIT WAS TAKEN IN THE SOLOMON ISLANDS AND IS NOT BEING EXPORTED WITH INTENT TO SUBVERT THE APPLICATION OF THE CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES SHOULD THE RECEIVING COUNTRY AND/OR ANY OF THE TRANS-SHIPMENT COUNTRIES BE SIGNATORIES TO THAT CONVENTION		<p><b>PERMIT NO.</b> _____</p>	
CONSIGNEE - name and address		PERMITTEE - name and address	
SCIENTIFIC NAME	COMMON NAME	DESCRIPTION/COMMENTS	QUANTITY
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
VOID - SPECIMEN ONLY			
THIS PERMIT ISSUED BY:			
PLACE	DATE	SIGNATURE	OFFICIAL STAMP & TITLE
I, _____ AM AN AUTOMATIC CITIZEN OF THE SOLOMON ISLANDS/A REPRESENTATIVE OF AN AGENCY AUTHORIZED BY THE PERMANENT SECRETARY, MINISTRY OF NATURAL RESOURCES, TO REPRESENT AUTOMATIC CITIZENS IN WILDLIFE EXPORTS. IN ALL CASES WHERE THE WILDLIFE COVERED BY THIS PERMIT WAS TAKEN FROM CUSTOMARY LAND OR SEA THE NECESSARY CUSTOMARY APPROVALS WERE OBTAINED. (DELETE WHICHEVER DOES NOT APPLY)			
THE INVOICE VALUE OF THE EXPORT IS: _____	SIGNATURE OF PERMIT HOLDER: _____		
THIS AUTHORITY IS GIVEN UNDER SECTION 2(a) 1 OF THE GENERAL EXPORT LICENCE NO. 1; THE CUSTOMS ACT, 1980, AND IN LINE WITH SOLOMON ISLANDS GOVERNMENT POLICY ON WILDLIFE EXPORTS WHICH IMPOSES CONTROLS ON THE TRADE SO AS TO ENSURE THAT THE CONSERVATION STATUS OF NATURAL POPULATIONS OF WILDLIFE IS NOT ENDANGERED.			
NOTE: THIS PERMIT IS ONLY VALID FOR THE EXPORT FROM SOLOMON ISLANDS OF THE ABOVE SPECIMENS ON OR AFTER THE DATE OF ISSUE AND ON OR BEFORE THE "VALID UNTIL" DATE			
<p><b>ISSUED WITHOUT ALTERATION OR ERASURE</b></p> <p><b>THIS STAMP VOID THIS PERMIT FOR FURTHER TRANSACTION</b></p> <p style="font-size: 3em; font-weight: bold;">VOID</p>			
A PARCEL, CAGE OR CONTAINER IN WHICH A SPECIMEN IS TO BE EXPORTED UNDER THIS PERMIT SHALL BE MARKED WITH THE WORDS "WILDLIFE" AND "ORIGIN SOLOMON ISLANDS" IN LETTERS NOT LESS THAN 60 MILLIMETERS HIGH.			
EXPORTER - THIS FORM MUST BE PROVIDED TO THE RELEVANT AUTHORITY IN THE COUNTRY OF IMPORT IN ORDER TO CLEAR THE SPECIMENS			



WILDLIFE EXPORT PERMIT

	<b>PERMIT NO.</b>
	VALID UNTIL: _____ COPY: _____

CONSIGNEE - name and address	PERMITTEE - name and address
------------------------------	------------------------------

SCIENTIFIC NAME	COMMON NAME	DESCRIPTION/COMMENTS	QUANTITY
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

VOID - SPECIMEN ONLY

THIS PERMIT ISSUED BY:

PLACE	DATE	SIGNATURE	OFFICIAL STAMP & TITLE
-------	------	-----------	------------------------

THE INVOICE VALUE OF THE EXPORT IS ..... SIGNATURE OF PERMIT HOLDER: .....

COPY ONLY - NOT VALID FOR CLEARING PURPOSES IN COUNTRY OF IMPORT  
ISSUED WITHOUT ALTERATION OR ERASURE.

EXPORT ENDORSEMENT  BILL OF LADING/AIRWAY - BILL NUMBER	SPECIMEN QUANTITY 1 2 3 4 5 6	SPECIMEN QUANTITY 7 8 9 10 11 12
PORT OF EXPORT	DATE	SIGNATURE
OFFICIAL STAMP & TITLE		

2. EXPORTER - PRESENT TO CUSTOMS WITH EXPORT CLEARING DOCUMENTS  
(CUSTOMS RETURN TO ENVIRONMENT & CONSERVATION)



WILDLIFE EXPORT PERMIT

PERMIT NO.

VALID UNTIL

COPY

CONSIGNEE - Name and address

PERMITTEE - Name and address

SCIENTIFIC NAME	COMMON NAME	DESCRIPTION/COMMENTS	QUANTITY
1			
2			
3			
4			
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6			
7			
8			
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11			
12			

~~VOID - SPECIMEN ONLY~~

THIS PERMIT ISSUED BY:

.....  
PLACE DATE SIGNATURE OFFICIAL STAMP & TITLE

COPY ONLY - NOT VALID FOR CLEARING PURPOSES IN COUNTRY OF IMPORT



## ANALYSIS OF WILDLIFE TRADE PRIOR TO 1989

Crocodile and turtle trade prior to 1989 is dealt with in the main report and is not repeated in this appendix.

## 6.1 REPTILES, AMPHIBIANS AND COCONUT CRABS

From January 1987 a register of export permits issued by the Environment and Conservation Division was kept. Unfortunately, the number of animals per consignment was not recorded until August 1988. From August 1988 to December 1988 only the main export species were included.

In 1987, 71 export permits were issued. These were: 19 non-commercial exports for scientific institutions and museums, 28 for insects, 7 for reptiles, and 1 for coconut crabs. The contents of the remaining 14 consignments was not stated. Records for 4 of the 7 reptile exports were found from records kept by Customs. The total number of animals exported in these four consignments were a 150 *Corucia zebrata* and 12 *Candoia carinata*. Three licensed dealers were operating at that time (Guadalcanal, Temotu and Malaita Provinces).

From January 1988 to July 1988 25 export permits were issued : 7 for reptiles, 7 for insects, 6 for coconut crabs, 2 non-commercial exports for scientific purposes, and the contents of the remaining 5 consignments were not stated. Records for 5 of the reptile exports permits were obtained from Customs and the Chief Veterinary Officer, MAL. Total number of reptiles exported were 18 *C. carinata*, 101 *C. zebrata*, 13 *Lamprolepis smaragdina* and 2 *Cyrtodactylus* sp.

From August 1988, more accurate records of reptile and amphibian exports were kept. Total reptile and amphibian exports from August to December 1988 are shown in Table 1. Not all records are accurate, and often the number of individuals actually sent was lower than that stated on the permit. Only *Candoia* sp, *Varanus indicus* and *Corucia zebrata* were recorded in all instances.

**Table 1: Number of individuals of reptiles and amphibians exported  
From Solomon Islands (August - December 1988)**

<i>Corucia zebrata</i>	1501
<i>Candoia</i> sp.	250
<i>Varanus indicus</i>	75
Gekkonidae	70
<i>Lamprolepis smaragdina</i>	10
<i>Ceratobatrachus guentheri</i>	17

*C. zebrata* was the main export species. *Candoia* species, predominantly *C. carinata*, but occasionally including *C. bibroni* were the next most consistently exported.

In 1987 only one export permit was issued for 56 coconut crabs. 1988 and 1989 exports are included in the main text.

## 6.2 BUTTERFLIES AND OTHER INSECTS

In 1981 an export permit book was designed by MAL for the export of insects. In July 1986 the issuing of export licences was transferred to the Environment and Conservation Division, MNR. Unfortunately, records of exports are patchy. Some analysis of trade from January 1987 is possible. Table 2 and Table 3 give the total exports of butterflies and other insects respectively from January 1987 to December 1988. Numbers of individuals per species exported for 5 consignments (of a total of 18) are missing for 1988, but records for 1987 are complete.

**Table 2: Butterfly exports from January 1987 to December 1988**

	<u>1987</u>	<u>1988</u>
Family: PAPILIONIDAE		
Genus: <i>Ornithoptera</i> (Birdwing butterflies)		
<i>O. victoria</i> (all sub-species)	3135	1577
<i>O. priamus urvillanus</i>	665	377
Genus: <i>Pachliopta</i>	5	
Genus: <i>Papilio</i>	19	73
Genus: <i>Graphium</i>	-	31
<b>NON - PAPILIONIDAE BUTTERFLY FAMILIES</b>	<b>560</b>	<b>-</b>

**Table 3: Total insect exports excluding butterflies**

	<u>1987</u>	<u>1988</u>
Order COLEOPTERA (Beetles)	4387**	
Family: <i>Cerambycidae</i> (Long-horn beetles)	991	262
Family: <i>Lucaniidae</i> (Stag beetles)	435	132
Family: <i>Cetoniinae</i> (Rose chaffers)	68	274
Family: <i>Buprestidae</i> (Jewel beetles)	77	0
Order PHASMIDAE (Stick insects)	16	10
Order ORTHOPTERA (grasshoppers)	0	75
Order HOMOPTERA (Cicadas)	94	0

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NOTES: \*\* in early 1987 beetles were not identified to family

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It is impossible to analyse trends in butterfly species exported due to the variability of the level of identification between years. For example, some individuals are identified to species while others are just classified as non-Papilionidae. Coleoptera exports were extremely high in 1987. In early 1987 beetles were only identified to order and not to family as they were in the latter part of the year. It is uncertain whether these beetles were predominantly the families and species currently being exported or whether other species were included.

The policy of the previous government was that all birdwing butterflies (*Ornithoptera*) were to be ranched specimens only. To the knowledge of the Division none of the specimens exported were ranched, and the first real butterfly farm became operational in May 1989.





**GUADALCANAL PROVINCE DRAFT WILDLIFE MANAGEMENT AREA ORDINANCE**

In order to protect certain species of plants or animals in certain area of \_\_\_\_\_ Province so as to assure their continued existence and availability for use by the indigenous people of the area for subsistence and custom purposes, the \_\_\_\_\_ Provincial Assembly enacts the following ordinance.

1. This ordinance may be cited as the \_\_\_\_\_ Province Wildlife Management Area Ordinance 1990 and shall come into effect after assent by the Minister for Provincial Government and publication in the Solomon Islands Gazette.

2. In this Ordinance, except where the context requires otherwise :-

"Assembly" mean the \_\_\_\_\_ Provincial Assembly;

"Executive" means the \_\_\_\_\_ Provincial Executive as established in accordance with Section 1 (3) (a), 21 and 22 of Provincial Government Act;

"National Museum" means the Solomon Islands National Museum administered by the Ministry of Education and Training;

"Person" means any person and includes any public body, company or association, and any body of persons corporate or incorporate;

"Wildlife Management Area" means an area established under Section 3 of this Ordinance.

"Wildlife species" means any plant or animal including any mammal, fish, reptile, bird, crustacean, fungus or insect, and not including man.

3. (a) The Executive may, by regulation, declare any area to be a Wildlife Management Area.

(b) No declaration shall be made pursuant to subsection (a) above unless:

(1) the Executive finds, after consultation with local landowners and the appropriate environment and conservation division of the National Government, that the area requires management rules for the protection, maintenance, improvement or propagation of any species of plant or animal that uses that area as a habitat; and

(2) with the written consent or request of the bonafide representative(s) of the owners of the land in respect of which the declaration is to be made, said owners and representatives to be determined by the Area Council(s) within which the Wildlife Management Area is located.

4. Following the declaration of an area as a Wildlife Management Area, the owners of the area shall be responsible for marking its boundaries so as to afford reasonable notice to all persons approaching the area, of the existence of the Wildlife Management Area and the protected species within the Area.

5. The Executive or any public officer or provincial employee designated by the Executive shall as soon as practicable publish in the Gazette and establish and maintain at the provincial headquarters and the substation in the local council area or areas where the Wildlife Management Area is located, a register of the protected species and Wildlife Management Areas. The register shall define as accurately as possible the boundaries of each such Area and the method by which the site boundaries have been marked. Said register shall be available for inspection at Provincial Head Quarters during regular business hours.
6. (a) The owners of the land within the Wildlife Management Area shall through their representatives, by Committee or otherwise, establish rules for the use and management of the Wildlife Management Area for the protection of the named specie or species.
- (b) The rules shall be made after consideration of custom management practices and in consultation with the appropriate Public Officer(s) or Provincial employee(s) engaged in Agriculture, Fisheries or Forestry Services to the people of Province or with appropriate staff of Solomon Islands Ministry responsible for the protection of natural resources and the environment.
- (c) The Executive shall promulgate by regulation the rules established under (a) and (b) above. A copy of the said regulations shall be posted at Provincial Headquarters, local council and Provincial substations, the boundaries of the Wildlife Management Area, and where permitted, local churches and schools. The regulations shall be tabled at the next meeting of the Assembly.
7. The primary responsibility for enforcing the regulations governing use of the Wildlife Management Area shall be with the owners of the land. The Executive shall appoint, upon recommendation of the landowners' representatives as determined under Section 3 above, a Special Constable who shall enforce the regulations governing the use of the Wildlife Management Area.
8. (a) With the exceptions under (b) below, any person who violates any of the regulations governing the activities in the Wildlife Management Area shall be guilty of an offence and on conviction shall be liable to a fine not exceeding \$500 per offence or imprisonment for a period of six months or both.
- (b) It shall not be an offence under this section -
- (1) for persons, exercising customary rights within any Wildlife Management Area to use that Area for its custom purpose in accord with the regulations promulgated under Section 6 of this Ordinance.
- (2) for persons to use any shelters in a Wildlife Management Area as temporary shelters in an emergency.
- (3) for persons acting on behalf of the National Museum or a scientific institution approved by the Assembly to enter and use the Area, provided that such persons:-
- (a) have in their possession a letter signed by the Provincial Secretary giving them authority to enter the Area for scientific purposes; and
- (b) have permission from the landowners, representatives or management committee, as provided for under Section 6 of this ordinance, for the specific scientific activities to be engaged in.

9. (a) It shall be lawful for any landowners, special constable appointed under Section 7 of this Ordinance, police officer, area constable, member of the staff of the National Museum or any provincial employee or public officer, to make enquiries at all reasonable times to ascertain whether any offence under this Ordinance is being or has been committed.
  - (b) Any person who obstructs or impedes any landowners, special constable or police officer, area constable, provincial employee, public officer or member of the National Museum staff acting in due exercise of his powers under this Ordinance, is guilty of an offence and liable to a fine not exceeding \$250 or, in default of payment, to imprisonment for a period not exceeding three (3) months.
10. This Ordinance and the imposition of any penalties under it shall not operate to bar other civil or custom claims or relieve any person from liability which may exist to answer for compensation in respect of any persons or property injured.
11. The Executive upon written application of the bona fide landowners, as determined pursuant to Section 3 of this Ordinance, may remove any area from the status of Wildlife Management Area, and from the Register provided for in Section 5.



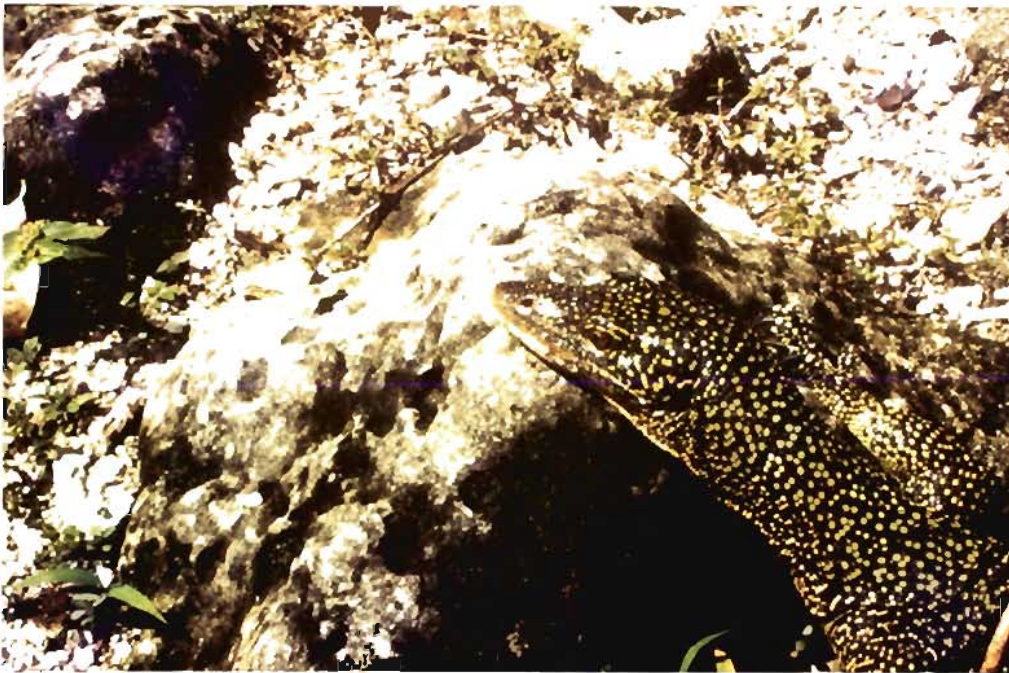
SUPPLEMENTARY PHOTOGRAPHS OF MOST COMMONLY EXPORTED  
SOLOMON ISLANDS WILDLIFE SPECIES



*Corucia zebra* or prehensile tailed skink, commonly known as "Unu" is the main trade species.  
During 1989 4,104 individuals were exported



*Candoia carinata* or Pacific ground boa is the second most commonly exported species.  
Locally known as "sleeping snakes", this species shows much variation in colouration as is apparent  
from the above four individuals



*Varanus indicus* or mangrove monitor is locally known as "iguana", and is another important trade species.  
1,592 individuals were exported during 1989



*Ceratobatrachus guentheri* or horned frog is the most commonly exported frog species.  
1,838 individuals were exported during 1989



*Cyrtodactylus lousiadensis* is a commonly exported species.  
It is often only listed under the category Family *Gekkonidae*, or gekkos.



*Lamprolepis smaragdina* is a member of the Family *Scincidae*  
or the skink family



*Ornithoptera victoria*. The males are much more brightly coloured than the female *O. victoria*, but they are generally exported in pairs



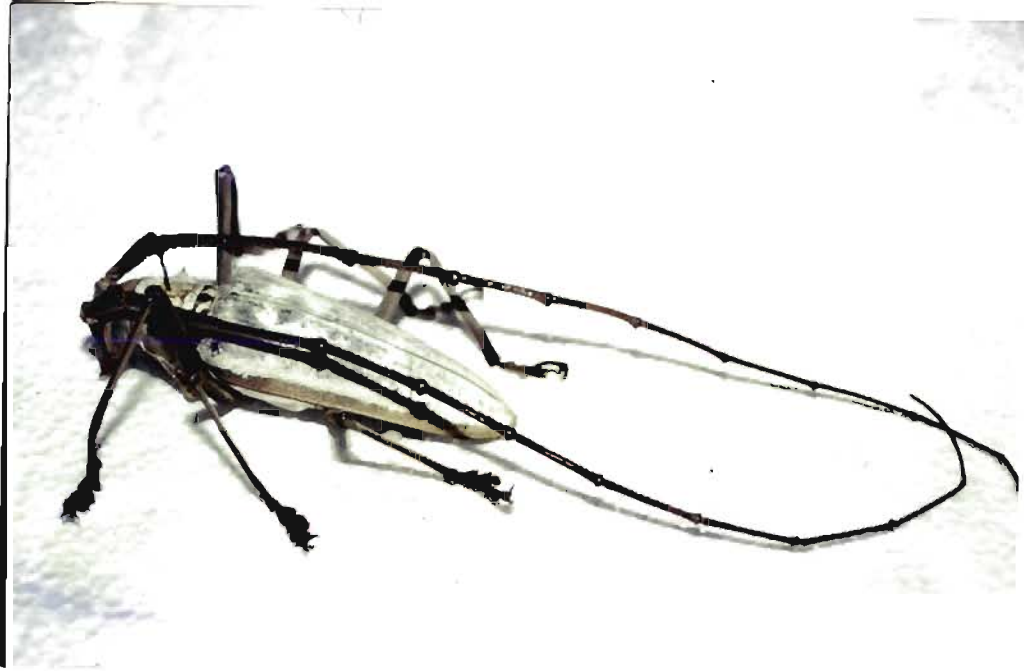
*O. victoria* - Female. 1,382 pairs of Queen Victoria birdwing butterfly were exported during 1989





*Ornithoptera priamus urvillanus* - D'Urville's Birdwing butterfly.  
The bright blue males are much more colourful than the females





Long-horned beetle (Family: *Cerambycidae*).  
The most commonly exported beetle family from the Solomons