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**INTERACTIONS BETWEEN SEABIRDS AND PACIFIC ISLANDS' FISHERIES,  
PARTICULARLY THE TUNA FISHERIES**

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Paper prepared by

SPC

Secretariat of the Pacific Community  
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**INTERACTIONS BETWEEN  
SEABIRDS AND PACIFIC  
ISLANDS' FISHERIES,  
PARTICULARLY THE TUNA  
FISHERIES**

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## ABBREVIATIONS & ACRONYMS

DW	Dick Watling
EEZ	Exclusive Economic Zones
FAO	Food & Agriculture Organisation (of the United Nations)
NGO	Non-government Organisation
NPA	National Plan of Action for Reducing the Incidental Catch of Seabirds in Longline Fisheries - Assessment Report
PNG	Papua New Guinea
SPC	Secretariat of the Pacific Community
TAP	Threat Abatement Plan

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## SUMMARY

This report documents a wide-ranging overview of the issue of seabird bycatch from fisheries, in particular the tuna longline fisheries in the tropical Pacific, more specifically the Exclusive Economic Zones of the member countries of the Secretariat of the Pacific Community. Australia, New Zealand and USA (Hawaii) were excluded from this report because the issue is well documented for these corporate member countries.

The study was intended to be an overview from which recommendations could be drawn depending on the findings, and an experienced Pacific ornithologist was tasked with preparing the report to ensure that it was not industry dominated or perceived to be partisan. The study was conducted mainly through personal email contact with a wide range of people and organisations within the Pacific or elsewhere with interest in the issue. Industry sources were all personally known to the author and/or from personal contact of intermediaries known to the author.

Very little substantive information was found concerning this issue. That which does exist, mainly the limited observer coverage of the tuna longline fisheries, indicates that seabird bycatch is extremely rare by comparison with the situation at higher latitudes and in the Hawaiian longline fisheries. This is also the unanimous opinion of those industry sources interviewed.

That seabird bycatch has not been a significant issue in 'tropical' waters has long been the opinion of the Australian authorities with all their significant mitigation and abatement measures being required only south of 20° or 30° S.

An analysis of the seabird avifauna of the tropical Pacific in comparison with the seabird avifauna of New Zealand (and higher latitudes Australia) indicates that there is very little overlap in species. Only four of the 36 known seabird bycatch species in Australian and New Zealand waters occur in the tropical Pacific, three of these are migrants and the only resident is the Wedge-tailed Shearwater.

An analysis of the types of birds caught as seabird bycatch (throughout the Pacific), indicates that albatrosses, petrels and shearwaters, over 500g comprise the vast majority of the birds caught.

An analysis of such species occurring in the SPC region (excludes Australia, New Zealand, Hawaii) reveals that in addition to the four known by catch species, seven species can be classed as species potentially vulnerable as bycatch. Of these, five breed in the region, the other two are annual migrants. Six of these seven "potentially vulnerable species" are globally classified as threatened (Red List 2000 - Birdlife International, 2000).

Overall the number of known and potentially vulnerable bycatch species in the SPR region is small - 11 (of which six are Pacific residents and five migrants) by comparison with the 36 known bycatch species at higher latitudes in the South Pacific. However, the high proportion of internationally classified "Threatened" species is of concern. In this respect, there are, in addition, two Critically Endangered Petrels in the region - the Fiji Petrel and

Beck's Petrel which are not identified here as vulnerable, because they are small, both well under 400 g weight.

Given the high proportion of species of conservation concern potentially vulnerable to longline bycatch, the issue in the SPR region is likely to be much more serious than the simple number of birds hooked.

# 1 INTRODUCTION

## 1.1 SCOPE OF STUDY

The Terms of Reference for the study are provided as Appendix 1. The study was not intended to be precisely defined, but was designed to allow the consultant to develop the scope as information became available or issues appeared important. The overall interpretation of the Terms of Reference was to provide Secretariat of the Pacific Community (SPC) with an overview of the significance of the incidental seabird bycatch issue within the Exclusive Economic Zone's (EEZ) of the SPC countries (refer Figure 1) for consideration of the 3<sup>rd</sup> SPC Heads of Fisheries Meeting.

Two refinements and/or generalisations emerged soon after the study was initiated. It soon became apparent that for ease of enquiry:

?? the area under consideration was the Exclusive Economic Zone's (EEZ) of the SPC countries (refer Figure 1), but information was sought for the 'tropical Pacific', although there are considerable areas of the tropical Pacific not associated with SPC countries; and,

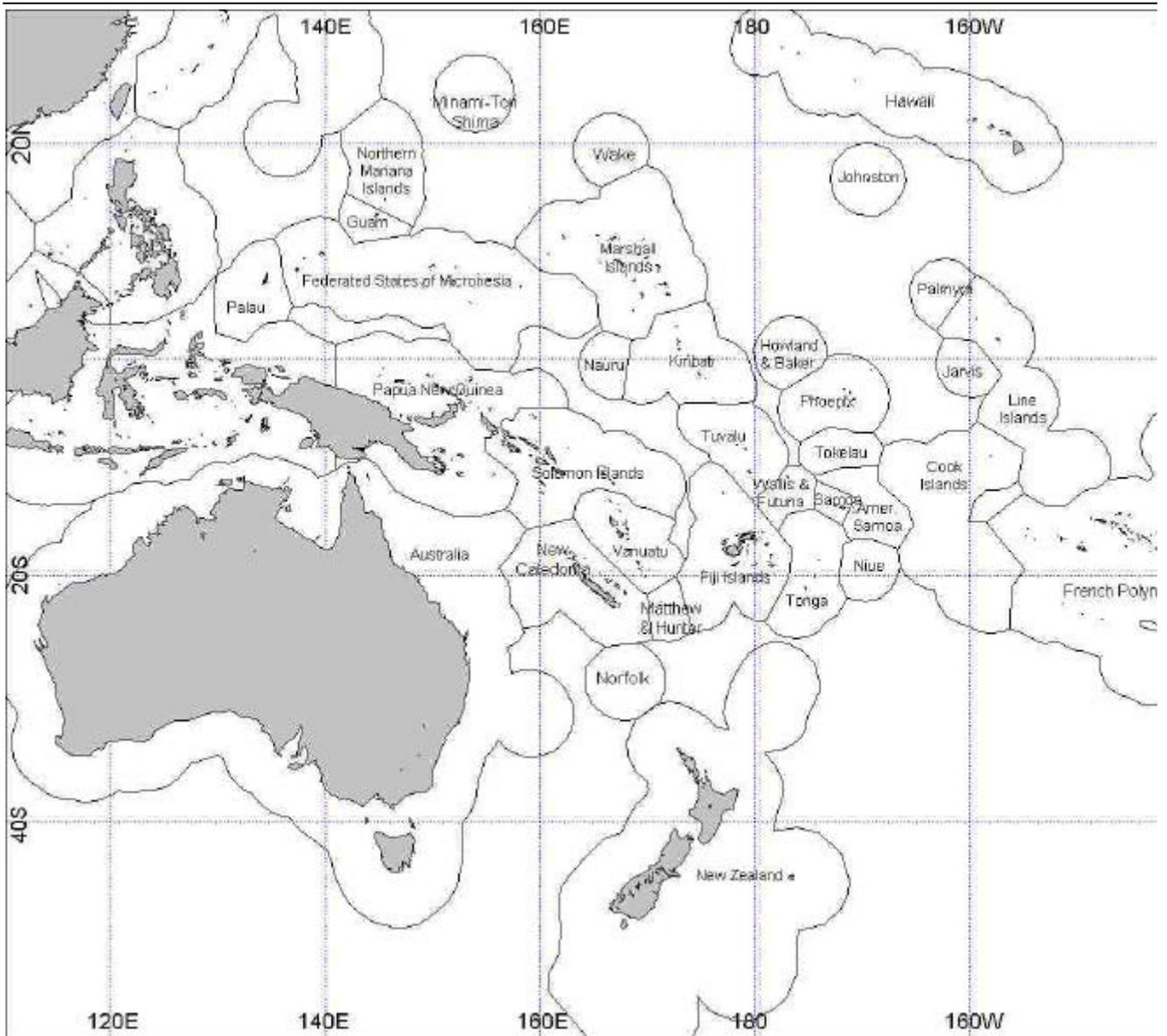
?? the focus narrowed to longline fisheries.

## 1.2 METHODS

The consultancy was undertaken solely by Dick Watling (DW), Principal of Environment Consultants Fiji, an ornithologist and author of '*A Guide to the Birds of Fiji & Western Polynesia*'. Information was gathered primarily by correspondence (mainly email), secondarily through personal interview and thirdly by telephone. An attempt was made to cover all SPC countries. Although the primary focus was to contact ornithologists and non-government organisations, it soon became apparent that the best information was coming from the industry, Government representatives and the SPC, especially through personal rather than third-party contact.

## 1.3 COVERAGE

A total of 135 people were contacted and there was a response from 81 individuals or groups. Other than to ensure that known tropical Pacific ornithologists and NGOs were contacted, and as many people in the industry who could be approached on a personal basis (either known to DW or someone whom DW personally knew), there was no intention given the resources available (mainly time) to contact all Government fisheries personnel. Further it is felt that knowledge in this sector is known to SPC. Refer Appendix 2.



**Figure 1: EEZ's of SPC Countries**

## 1.4 OVERVIEW OF INCIDENTAL SEABIRD BYCATCH BY FISHERIES

### 1.4.1 Global Situation

FAO (1999) provides a global overview of the issue. An up-to-date overview of the global significance of incidental seabird bycatch in longline fisheries is given by Gilman and Holyfield (2003), refer Appendix 3 for an excerpt from this paper. In short:

- ?? Of all the threats to seabirds, one of the most globally critical is mortality in longline fisheries;
- ?? Birds are hooked or entangled primarily while fishing gear is being set and are dragged underwater and drown as the gear sinks;
- ?? Hundreds of thousands of seabirds, including tens of thousands of albatrosses, are caught annually in longline fisheries worldwide;
- ?? Seabird populations are particularly sensitive to increases in adult mortality rates because of their life history traits;
- ?? The potential exists to minimise seabird mortality in longline fisheries to insignificant levels.

### 1.4.2 Tropical Pacific

Very little appears to have been published on incidental seabird bycatch in the tropical Pacific, with the exception of Hawaii where considerable information exists (refer section 2.1.2). Brothers *et al.* (1999) summarised it as follows. "*Based on observer data, Bailey et al. (1996) reports no seabird mortality from the longline fishery for tuna in the tropical western Pacific Ocean. Garnett (1984) found no records of incidental mortality from commercial tuna longlining in the South Pacific, defined as between 160°E and 125°W. Heberer (1994) reports only one bird (species not recorded) caught out of 700 000 observed hooks on 51 fishing trips in the Federated States of Micronesia tuna fishery in the tropical Pacific Ocean during the period 1993-1994*".

FAO's IPOA-SEABIRDS<sup>1</sup> makes no specific or general references to seabird bycatch in the tropical Pacific.

The only published records noted<sup>2</sup> appear to be from South American coastal waters and the Galapagos area (Jahncke *et al.* 2001; Brothers *et al.* 1999; Gales 1998; Spear *et al.* 1995, and Warham 1982), refer section 2.1.3. This area is not representative of the Pacific Islands because here the cooler Humboldt current brings nutrient-rich waters from temperate well into tropical areas and hence, the avifauna as with the fisheries are correspondingly different..

Australia's Threat Abatement Plan (TAP) for seabird bycatch from longline fishery's (Environment Australia 1998) states: "*The seabird species affected by the key threatening process are principally found in waters south of 25°S..... and more commonly below 30°S. Other seabird species which are found in northern areas*

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<sup>1</sup> International Plan of Action for reducing incidental catch of seabirds in longline fisheries. FAO 1999.

<sup>2</sup> No comprehensive literature search was undertaken for the study.

where longline fishing operations occur are not caught as by-catch because they are not attracted to the fishing vessels or the longline baits"<sup>3</sup>.

Presumably, as a response to this, Australia's principal requirements for the mitigation of seabird bycatch only apply south of 30°S.

During a setting device trial between September 2001 and March 2002 around Lord Howe island, 160 seabirds were incidentally caught. 97% of these were flesh-footed shearwaters (major colony on Lord Howe Island), the others were wedge-tailed shearwaters and great-winged petrels. The highest interaction being between 30-32°S (NPA 2002). However, the same source records the following:

"Recent data collected as part of the underwater setting chute trial in the domestic tuna fishery, however, indicate that seabird bycatch north of 30° S may be unacceptably high in that fishery, in contrast to the situation observed previously in the Japanese fleet. These data record three birds taken on 19,250 hooks observed. All birds caught were Flesh-footed Shearwaters, which were caught between 25°S to 30°S and taken during the day when boats were fishing without mitigation measures employed. Whilst these data indicate that there may be greater potential for seabirds to interact with longline fisheries in the AFZ than initially envisaged when the TAP was prepared, caution needs to be applied in placing too much emphasis on these results at this stage. The number of hooks observed was small and it may be premature to adjust the TAP prescriptions at the present time. Nonetheless, the results do indicate that this situation should be closely monitored over the next 12 months".

The only reported information for tropical latitudes found was from close to Christmas and Cocos (Keeling) Islands where 55% observed hook coverage of 11,670 hooks revealed no observed seabird interaction (NPA 2002).

## 1.5 TYPES OF SEABIRDS TAKEN ON LONGLINES IN THE PACIFIC

### 1.5.1 Species

Not all seabirds are equally attracted to and taken on longlines, in fact, the vulnerable species are quite specific, though it does vary from area to area within the Pacific<sup>4</sup>.

The species of seabirds most frequently taken in the Southern Ocean are:

?? albatrosses;

?? petrels

In the North Pacific fisheries, the species of seabirds most frequently taken are:

?? albatrosses

?? fulmars (a type of petrel)

?? gulls,

In the artisanal longline fisheries of the tropical waters off northern Peru (Jahnke *et al.* 2001)

?? albatrosses - two species constitute 42% of seabirds taken;

?? pelicans - one species constitutes 18% of seabirds taken;

?? boobies - five species which constitute 22% of seabirds taken;

?? shearwaters - constitute 13% of seabirds taken;

?? gulls - constitute 2% of seabirds taken

<sup>3</sup> NPA (2002) records that "During the period when the TAP was developed, only one bird had been observed killed in the AFZ north of 25°S in over 700,000 observed hooks (Brothers *et al.* 1998)".

<sup>4</sup> Consultant's conclusion from a wide variety of sources

Clearly the procellariids (albatrosses, petrels, shearwaters and fulmars) is by far the most commonly taken group. Gales and Brothers (1995) reported that 75% of the birds killed on longlines and retained for identification were albatrosses.

### 1.5.2 Occurrence of the Vulnerable Seabirds in the SPC Region

As noted (section 1.5.1) certain groups are known to be 'vulnerable' - albatrosses, petrels, shearwaters, boobys, gulls, skuas and pelicans. Table 1 provides general comments on the overall occurrence of these 'vulnerable' groups in the SPC Region. Albatrosses - the most vulnerable group - do not occur except as rare vagrants (Hawaii excluded). Similarly, gulls, fulmars and pelicans do not occur as significant breeding populations in the SPC region (excluding Australia and New Zealand).

**Table 1: Comments on the Vulnerable Groups and their occurrence in the SPC Region.**

Species	Comment
<b>Albatrosses</b>	Albatrosses are very rare vagrants in the tropical Pacific islands of the SPC region. Two species breed in Hawaii and both are currently at risk of extinction, which is widely attributed to mortality in the longline fisheries. The Laysan Albatross is declining at a rate of 3.3% annually and the Black-footed Albatross at 1.1% annually (Gilman & Holyfield 2003; refer section 2.1.2).;
<b>Petrels (including shearwaters)</b>	Only twelve species (including shearwaters and storm-petrels) breed in the tropical Pacific, only one - the Wedge-tailed Shearwater in comparatively large numbers. Thirty four species breed in New Zealand, many in enormous numbers and several of these (petrels and shearwaters) migrate to or across the tropical Pacific in enormous numbers.
<b>Fulmars</b>	None breed or visit the tropical Pacific.
<b>Gulls, Skuas</b>	only one species of gull breeds in the tropical Pacific (excluding Hawaii and the eastern Pacific, Galapagos region), an outlier colony of the Silver Gull in New Caledonia. Four or five species of skua are regular migrants to the tropical Pacific.
<b>Boobies/gannets</b>	three species are resident breeders in the tropical Pacific islands of the SPC region. Two additional species are found in the western tropical Pacific where they have been recorded as seabird bycatch (Jahncke <i>et al.</i> 2001);
<b>Pelicans</b>	There are no pelicans in the tropical Pacific islands of the SPC region - one species, Peruvian Pelican, is taken in eastern Pacific (Jahncke <i>et al.</i> 2001)

Thirty nine species of seabird are known to breed in the tropical Pacific islands of the SPC region (refer Figure 1, excluding New Zealand, Australia and Hawaii - the latter has an additional nine species). A further 17 visit or pass through the region on annual migration. This is considerably fewer than, for instance New Zealand, which has 83 breeding seabird species and a further 15 annual visitors.

Not only is the number of seabird species far fewer in the Pacific islands, but there are also major differences in the type of birds found there. Only 12 seabird species breed in both the tropical Pacific and in New Zealand (predominantly on its northern outlier

islands and only one of these has been reported as bycatch - the Wedge-tailed Shearwater).

At an overview level, the potentially vulnerable groups that emerge for the tropical Pacific are: petrels, shearwaters and boobies. Skuas (a relative of gulls) could be added to this list since four species are regular migrants to the region.

In section 2.3, the tropical Pacific members of these groups are looked at in detail, and compared with known bycatch species from Australia and New Zealand.

## 2 RESULTS

This chapter looks firstly at available information or opinions on the occurrence of seabird bycatch, the results are presented in two forms - evidence indicating that there is a significant issue in respect of seabird bycatch, and the evidence indicating that there is not a significant issue of seabird bycatch in the SPC region. Secondly, an overview analysis is made of the 'vulnerability' of tropical Pacific seabirds to bycatch in comparison with the quite well-known seabird bycatch species in Australia and New Zealand.

### 2.1 EVIDENCE FOR SIGNIFICANT INCIDENTAL SEABIRD BYCATCH

#### 2.1.1 Tropical Pacific Islands (excluding Australia, Hawaii, Coast of south America)

No reports were received, in any form, representing direct evidence of significant seabird bycatch in the longline or other fisheries. All reports could be classified as rare occurrences in the context from which they came.

#### 2.1.2 Hawaii

The extensive mortality of seabirds in the longline fisheries around Hawaii and the northern Pacific is well documented (CCAMLR 2002; Cousins & Cooper 2000; Cousins *et al.* 2001; Crowder & Myers 2001; Brothers *et al.* 1999). Gilman & Holyfield (2003) provide an overview:

"Available estimates for total albatross mortality in North Pacific pelagic longline fisheries, along with population modelling experiments on the Black-footed Albatross, highlight the concern that mortality in longline fisheries may threaten the existence of Black-footed Albatrosses and poses a significant threat to Laysan and Short-tailed Albatrosses (Cousins & Cooper, 2000; Gilman, 2001). Population modelling experiments indicate that the world Black-footed Albatross population can withstand a loss of no more than 10,000 birds per year from all mortality sources and remain stable (Cousins & Cooper, 2000). Mortality in pelagic longline fisheries alone may exceed this threshold (Cousins *et al.*, 2001; Crowder & Myers, 2001; Gilman, 2001). Based on their lowest mortality estimates of 1.9% of the Black-footed population killed per year in pelagic longline fisheries, Crowder & Myers (2001) project that the Black-footed Albatross population likely will continue to decline over the next 20 years. Similar modelling experiments have yet to be conducted for the Laysan and Short-tailed Albatrosses."

#### 2.1.3 Artisanal longline fisheries of North Peru

Jahnke *et al.* (2001) found that this small-scale fishery for dolphin fish, shark, rays and tuna was responsible for catching between 2,370-5,610 albatross a year which was of conservation concern to the two species involved, the Waved Albatross which breeds only in the Galapagos Islands and the Chatham Island Albatross. In addition, smaller numbers of identified petrels and shearwaters and boobies were also taken.

#### 2.1.4 Seabird Bycatch should be Presumed to be Significant

The most common response by Pacific and other ornithologists (ie scientists) was of the following opinion articulated by one of them:

*"I unfortunately have no direct information (and to my knowledge very little exists) on the issue here. However, my reading of the literature suggests that it appears to be a problem in virtually every system that has been studied, and across a wide range of*

*taxa (e.g., from fulmars in the nearctic to albatrosses in the Pacific). Therefore I suspect that the problem may well be one of lack of information rather than lack of interaction".*

Certain individuals contacted maintain there is a significant issue, an opinion derived from one or more of the following:

- ?? A small number of recovered banded birds represents a significant mortality in the population of certain birds, and the banding data has not been properly analysed;
- ?? A belief that evidence is lacking because of a lack of observer coverage and industry deception either;
  - ?? Because extent of observer coverage is too small or not systematic; and,
  - ?? Some fisheries have no observer coverage at all;
- ?? Lack of evidence (i.e. no systematically collected data) for a significant issue is not evidence at all;
- ?? The precautionary principle should apply - until such time as there are data which prove the absence of a significant issue, then it should be assumed there is an issue since the fishing methods are comparable to southern temperate/subarctic waters where it is known there is a major issue.

### **2.1.5 Observer Coverage**

From the perspective articulated above, the only credible evidence is gained from systematic observer coverage of fisheries, and thus it is important to appreciate the extent of observer coverage.

#### **2.1.5.1 SPC Region**

The first observer programme in the region started nearly thirty years ago and programmes have been developing slowly in regional and national organisations through the region ever since. All tuna fisheries in the SPC region have had observers active in them at some time, however, the distant water longline fishing fleets of Taiwan and especially Korea have had negligible coverage until very recently. Shark fisheries of Solomon Islands and PNG have had observer coverage as has the prawn trawl fishery of PNG.

Until 1995, SPC's observer programme was essentially opportunistic, but between 1995-2000 it was systematic and 131 longline observer trips were made. Since then there has been more emphasis on developing national observer programmes. In some countries these have started with up to 10 observer trips a year, in others they have yet to be initiated (refer Appendix 4). There has been no observer coverage of any other fishery in the SPC region and certainly there is no systematic coverage of other fisheries (Sharples, *in litt.*).

#### **2.1.5.2 Hawaii**

Observer data of seabird bycatch in the Hawaii fisheries is available from 1994. Observer coverage has historically been very low, only about 4%, but in the past few years has been around 20%. There is not as much known about seabird bycatch in Taiwanese, Japanese, Korean, Chinese, and other longline fisheries that fish at the same grounds as the Hawaii fleet in the central and north Pacific where the vessels interact with albatrosses (Gilman *in litt.*), refer Figure 3).

## 2.2 EVIDENCE THAT INCIDENTAL SEABIRD BYCATCH IS NOT SIGNIFICANT

### 2.2.1 Official Observer Programmes

The tuna fishery is the largest fishery in the SPC region, the fishing effort is well documented (refer Figure 2; Figure 3; SPC 2001), and official observer coverage is comparatively better developed than for all the other fisheries (refer Appendix 4).

Official observer records for seabird bycatch are insignificant, eight birds in 13 years, these and other observations are recorded in Box 1.

#### Box 1.

##### Observations of seabird bycatch by official observers in the tuna fisheries

1. All observer data for longline vessels from 1990 to 2003: there were 2403 sets and a total of 8 birds (unidentified by observers) caught. This does not include NZ, Aust and Hawaii.
2. Of those 8 reported seabird captures, 2 were reported from separate trips by SPC observers. The other 6 were recorded by a single observer on a single trip in FSM waters.
3. All observer data for longline vessels from 1990 to 2003 - from 10° S to 35° S there were no sea birds caught/recorded by observers. There were 948 sets altogether. Countries covered were CK, FM, FJ, MH, NR, NC, PW, PG, SB, TO and WS. Aust and NZ excluded.
4. I was an observer on the SCTB albacore fishery for almost the entire season for 5 years and can recall only two sea-birds caught and released - both in the far east of the fishery end of season - one, an albatross of some sort, about two days south east of Tahiti, heading back at the end of the trip and the other similarly at the end of the trip - a medium sized petrel - caught a day out of the grounds a long way directly south of the Cooks.
5. SPC Observers have monitored about 25% of all the observed sets in the Western Tropical Pacific.
6. SPC Observers have monitored about 65% of all observed sets in the southern area (10° -35° south)
7. SPC has a high level of confidence in the reporting of bird catch by the SPC Observers
8. In five years as an SPC Observer/Coordinator in Fijian and other SPC country waters, I have seen only one instance of seabird bycatch involving two birds taken on one set.
9. As the principal trainer and regional support person for nearly all observer programmes in this region for nearly 10 years, I feel that seabird catch is not an issue in the areas that we work in. Although I have no doubt that some instances have been missed by observers (highly unlikely for the SPC observers, however) I believe that this would more than likely be because of the rarity of the event causing confusion as to what should be done rather than any systematic ignoring of the issue.
10. Heberer (1994) reports only one bird (species not recorded) caught out of 700 000 observed hooks on 51 fishing trips in the Federated States of Micronesia tuna fishery during the period 1993-1994.

*Source: SPC in litt.2003 (unless otherwise indicated)*

### 2.2.2 Observations from the Industry or Experienced Personnel

Reproduced in Box 2 are eleven responses (direct quotes) from experienced longlining captains, fleet owners or other experienced personnel in the tropical Pacific which reflect their observations over decades of fishing in the region.

**Box 2****Observations by longline vessel captains, fleet owners or experienced sea-going personnel<sup>5</sup>**

1. Seabird mortality in the Tongan longline fishery is almost non-existent. Even though many of the longline boats set their gear at dawn and morning instead of night time, we do not have much interaction with birds. I put this down to setting some distance from the islands and also not targeting surface schools with high bird activity. In my own experience, I doubt I would have more than two or three known bird deaths in over two million hooks set and a thousand fishing days, although I've never kept a record. These would have been the brown booby birds. In fact I've caught more boobys trolling bait behind the boat, although there's no mortality there as it's easy to retrieve the trolling line and release the birds.
2. We have not had a bird by-catch problem at all in Fiji since I started in 1992, ..vaguely recall catching one way to the south years ago, and as far as I know this is the only one caught by us in about 11,700 fishing days since 1992.
3. I have asked a trustworthy friend how many seabirds he caught in the last six months of longlining for tuna around the Southern Cooks - answer none, and how many he caught in four months longlining around Midway four years ago (west of Hawaii) - answer three or four (I think medium sized petrels/shearwaters by his description).
4. Well no doubt there is the odd instance of fatalities, but with all our observer boardings we have not had a single reported incident. In my experience of observer boardings in the Cooks EEZ and the Pacific region I have not encountered this problem. Even though this is an important issue I consider this as no problem whatsoever in the Cooks.
5. So, as far as I know, there is presently no (or very few) incidental mortality of seabirds due to local longliners in French Polynesia. I have raised this issue during meetings with local fishermen and the answer was invariably negative.
6. Pêcheries de Nouvelle-Calédonie. A un recul de 10 ans de pêche hauturière, actuellement avec une flotte de 10 bateaux, des prises de 1400 T/an de Thons, germonts, Big eye, Marlin, Coryphènes... N'a pas connaissance de capture accidentelle d'un seul oiseau par ses bateaux.
7. Unfortunately we don't have any records. This is not surprising as sea-bird bycatch in the tropics is rare or if not, nil. I have not heard of any sea bird bycatch incident here in PNG or in the other Pacific countries. I know it is a problem especially with Albatrosses down south, but not in the tropics.
8. While in Samoa in 2000 I made a point of talking to some long-line fishermen at the Apia wharf where dozens of boats came in late in the day. None were aware of associated birds and, in fact, would have considered it a notable event if they saw birds in attendance while fishing apparently. There was no idea of by-catch.
9. This is not an issue in tuna fisheries anywhere north of at least 30 degrees South. In fact, in all my time at sea tagging tunas amongst vast bird flocks, doing seagoing research etc, I have never seen a single bird interaction with commercial gear - longline, purse seine or pole-and-line .....
10. In the last 5 years in Samoa I have never heard of any incidental mortalities of seabirds in the tuna longline fishery or any other fishery. Incidental catches of turtles, whales, dolphins and sharks are quite common. For the last year we have been collecting data concerning these incidental catches from log sheets for fishing vessels over 12.5 meters in length.
11. Unfortunately we don't have any records. This is not surprising as sea-bird bycatch in the tropics is rare or if not, nil. I have not heard of any sea bird bycatch incident here in PNG or in the other Pacific countries.

<sup>5</sup> All these personnel are either known to the consultant or colleagues of his.

### 2.2.3 Fijian Tuna Longline Fishery

Table 3 summarises the results of interviews with five masters of longliners operating in Fiji with their fishing effort in 2002. Not one of the masters had recorded an incident of seabird bycatch since the beginning of 2002.

**Table 2: Fijian Longliners, seabird bycatch and fishing effort**

Vessel	Master	Hooks set in 2002 (source: Fiji Fish Ltd.)	Seabird Bycatch 2002-3	Bait Setting Method
Captain Van	Korean	282 days x 2600 = 733,200	0	Normally, lines are set with bait (sardines/pilchards/ muraji) around 4-5 am and finished at around 10-11am Lines are set with a "shooter" that fires the baited hook directly into the water. As such there is no float time. Seabirds are often present and take bait pieces or discarded bait
Katamara	Korean	261 days x 2500 = 652,500	0	
Cajun Queen	Korean	255 days x 2600 = 663,000	0	
Omjoo	Fijian	250 days x 1800 = 450,000	0	
San Antone	Korean	273 days x 2500 = 682,500	0	
Labella	Fijian	245 days x 2300 = 563,500	0	

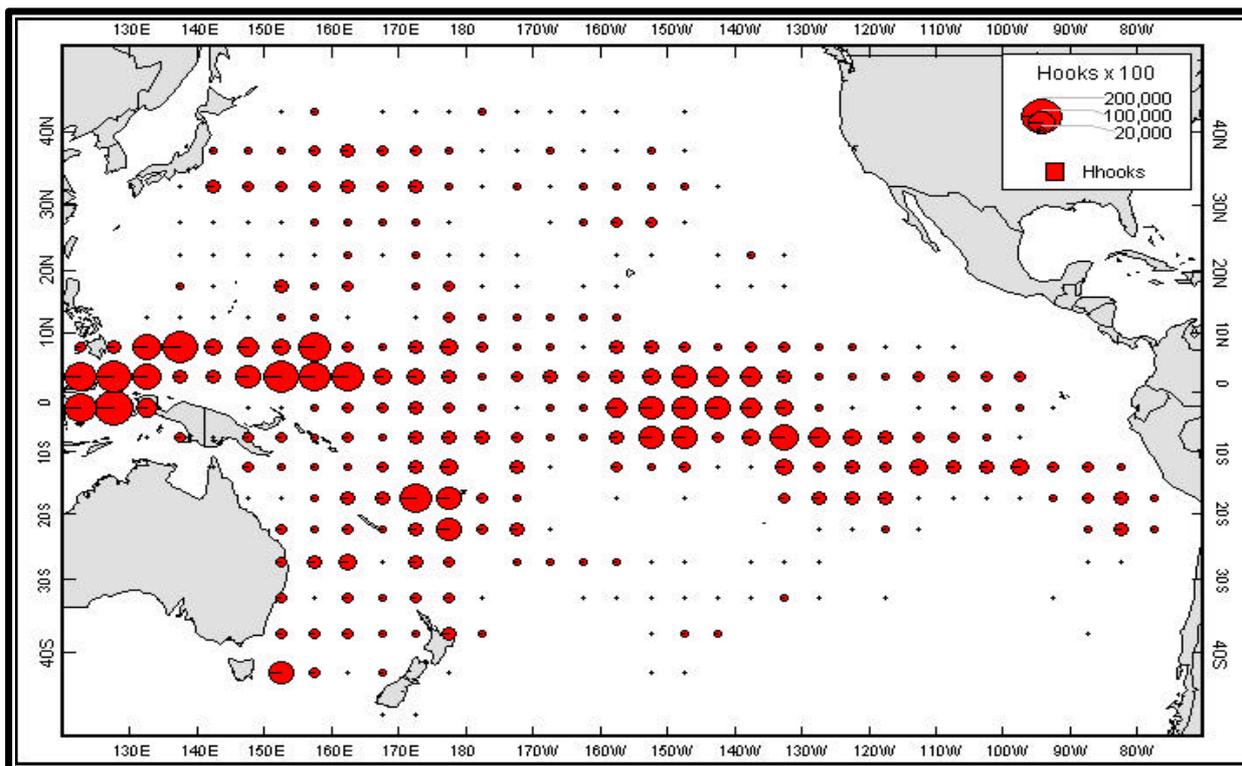
### 2.2.4 Other Fisheries

Just about every fisherman contacted indicated that they had experienced at one time or another and some of them quite regularly, the capture of seabirds while trolling. All of those who did identify the species indicated that they were boobys, *Sula* spp.

From 1977-80 a SPC Research Vessel, with four lines out at all times, trolled over 240,000 miles in the tropical Pacific and caught three or four birds (Bob Gillett *pers. comm.*).

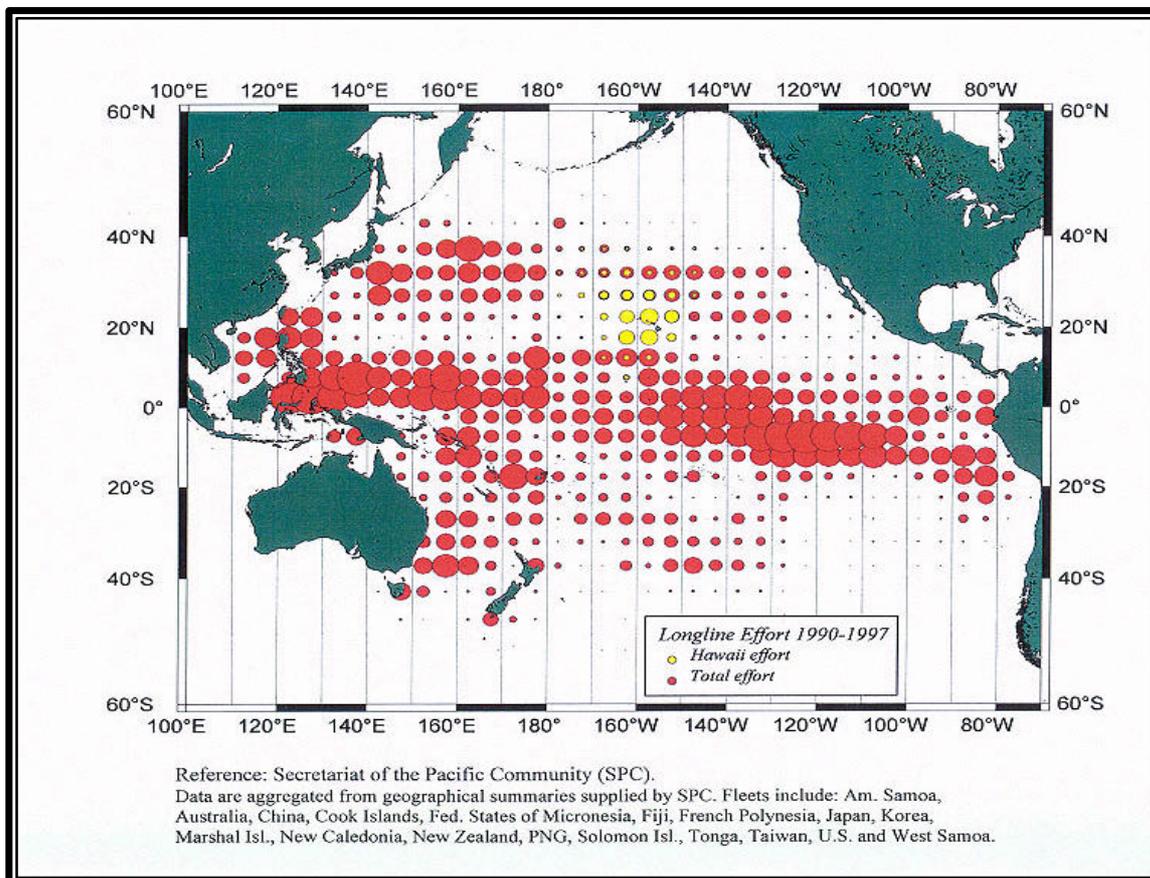
#### NPA (2002) records

"Trolling involves a vessel steaming along while towing hooks that may or may not be baited. Most game fishing is performed by trolling with lighter gear used than that for commercial trolling. Trolling operations off Western Australia were noted to catch Yellow-nosed Albatrosses and Flesh-footed Shearwaters (A. de Fries *pers. comm.*). Catch rates of seabirds when trolling for southern bluefin tuna off the Western Australia coast were not kept. Drawing upon this limited observation, an estimate of the catch rate was about one Flesh-footed shearwater every 50 to 100 hours trolling (these boats trolled two lures for about eight to ten hours each fishing day); therefore, one Flesh-footed Shearwater per eight to 12 fishing days (A. de Fries *pers. comm.*). Yellow-nosed albatross were incidentally caught at much less common rates with about one bird caught per season per boat (80-100 fishing days). Wedge-tailed Shearwaters and Australian Pelicans have also been caught. They are caught either by taking hooks, or by colliding with gear and becoming entangled. Some birds have been observed to collide with gear resulting in them crashing into the sea without becoming tangled. As is the case with longline fishing, the fate of birds released after being caught this way is unknown. Due to the nature of the fishing operation, birds caught would be quickly retrieved and released".



**Figure 2: Total tuna fishing effort in the Pacific in 2001**

(Source: SPC - total effort with the exception of some small longline fleets in Vietnam and the Eastern Pacific Ocean, for which SPC has no information)



**Figure 3: Longline Effort 1990-1997 with Hawaiian fleet distinguished**

(source: [www.seaturtles.org](http://www.seaturtles.org) ; presented without scale)

## 2.3 AN OVERVIEW OF THE TROPICAL PACIFIC SEABIRD AVIFAUNA IN RELATION TO LONGLINE BYCATCH SUSCEPTIBILITY

Petrels, shearwaters, boobies and skuas were identified (section 1.5.2) as potentially vulnerable species in the tropical Pacific. In this section seabird bycatch data from Australia and New Zealand are examined with the intention of seeing if anything can more can be learned about the vulnerable species or groups in the tropical Pacific seabird avifauna.

### 2.3.1 Australia

Australia's TAP (Environment Australia 1998) provides a detailed list of vulnerable species and grades them according to "likely incidence as longline bycatch". Table 3 lists these species with their grade and adds their occurrence in the SPC region. As noted above (section 1.4.2) these are southern ocean species and "*other seabird species which are found in northern areas where longline fishing operations occur are not caught as by-catch because they are not attracted to the fishing vessels or the longline baits*". These "northern birds" will, in many cases, be the same seabird species as found throughout the tropical Pacific and the SPC Region. Table 3 reveals that only four of the 32 'affected' NZ -Australia seabirds - occur in the SPC Region and that only one - the Wedge-tailed Shearwater is a common breeding resident, two other shearwaters are common annual migrants which pass through the region, while the other shearwater is an uncommon annual migrant.

### 2.3.2 New Zealand

Robertson *et al* (2003) report the autopsy results of the 1229 birds killed by longline fisheries (domestic bottom, domestic tuna and joint vessel tuna longliners) for five years from 1 October 1996 to September 2001. Twenty three species were recorded as longline bycatch, four of which comprised 74.1% of the total (Antipodean albatross, Salvin's albatross, Grey Petrel and White-chinned Petrel). Table 3 lists those species caught as bycatch. The Flesh-footed Shearwater is an uncommon annual passage migrant through the SPC region, the remainder either have never been recorded in the region or are rare vagrants.

It is not known whether the sample reported by Robertson *et al* (2003) is representative of all seabird bycatch but it represents the best data available. This sample does not add any species to the 'likely affected species' identified from the Australian list. On this and the Australian evidence, there is almost no overlap in species known to be susceptible to bycatch in southern waters. Only one species, the Wedge-tailed Shearwater is a common breeding resident in the Pacific Islands, two other shearwaters which are common annual passage migrants, and another which is an uncommon annual passage migrant.

These four species must be considered as 'likely affected species' in the SPC region. As three of these are passage migrants through the region, an important question is whether they feed in the region or just pass rapidly through to and from the northern Pacific, which is their main wintering ground. Two of them, the Short-tailed Shearwater and Sooty Shearwaters are both known to be caught on longlines in the Bering Sea and Gulf of Alaska as well as in the drift net fisheries in the Sea of Okhotsk (NPA 2002; Johnson *et al.* 1993).

**Table 3: Southern Ocean seabird species affected by pelagic longline fishing and their occurrence in the SPC Region**

<b>Species name</b>	<b>New Zealand longline bycatch returns 1996-2001 (N= 1,229) <sup>1</sup></b>	<b>Australia: Likely Incidence in Longline By- catch <sup>2</sup></b>	<b>Occurrence in SPC Region EEZ (excl. Aust.,NZ) <sup>3</sup></b>
Wandering albatross <i>Diomedea exulans</i>	/	Moderate	Rare vagrant in southern waters - < one record per year
Antipodean albatross <i>Diomedea antipodensis</i>	7.2%	Low	Not recorded
Gibson's albatross <i>Diomedea gibsoni</i>	3.6%	Moderate	Not recorded
Snowy (wandering) Albatross <i>Diomedea chionoptera</i>	0.2%	/	Not recorded
Southern royal albatross <i>Diomedea epomophora</i>	0.3%	Low	One unconfirmed record
Northern royal albatross <i>Diomedea sanfordi</i>	/	Low	Not recorded
Amsterdam albatross <i>Diomedea amsterdamensis</i>	/	Low	Not recorded
Black-browed albatross <i>Thalassarche melanophrys</i>	1.9%	High	Rare vagrant to Kiribati, French Polynesia
Campbell albatross <i>Thalassarche impavida</i>	5.0%	High	Not recorded
Buller's albatross <i>Thalassarche bulleri</i>	3.4%	Low	Not recorded
Pacific albatross <i>Thalassarche nov. sp.</i>	/	Low	Not recorded
Shy albatross <i>Thalassarche cauta</i>	/	Moderate	Not recorded
White-capped albatross <i>Thalassarche steadi</i>	2.0%	Moderate	Not recorded
Salvin's albatross <i>Thalassarche salvini</i>	9.7%	Low	Not recorded
Chatham albatross <i>Thalassarche eremita</i>	0.4%	Low	Not recorded
Atlantic yellow-nosed albatross <i>T. chlororhynchos</i>	/	Low	Not recorded
Indian yellow-nosed albatross <i>T. carteri</i>	/	Moderate	Not recorded
Grey-headed albatross <i>Thalassarche chrysostoma</i>	/	Moderate	Not recorded

Table 3 (contd.)

<i>Species name</i>	New Zealand longline bycatch returns 1996-2001	Likely Incidence in Longline By-catch	Occurrence in SPC Region EEZ (excl. Aust.,NZ)
Laysan albatross <i>Phoebastria immutabilis</i>	/	Low	N. Pacific species; breeds Hawaiian Is, disperses north, but a small number are found as vagrants to the south
Sooty albatross <i>Phoebetria fusca</i>	/	Low	Not recorded
Light-mantled albatross <i>Phoebetria palpebrata</i>	3.1%	Low	One record
Southern Giant Petrel <i>Macronectes giganteus</i>	0.3%	Low	Rare vagrant in southern waters
Northern Giant Petrel <i>Macronectes halli</i>	0.7%	Low	
Cape Pigeons <i>Daption</i> spp.	0.3%	/	Rare vagrant in southern waters
Great-winged Petrel <i>Pterodroma macroptera</i>	1.0%	Low	Not recorded
White-chinned Petrel <i>Procellaria aequinoctialis</i>	20.4%	Moderate	Not recorded
Westland Black Petrel <i>Procellaria westlandica</i>	0.5%	Low	Not recorded
Grey Petrel <i>Procellaria cinerea</i>	36.8%	Moderate	Not recorded
Wedge-tailed shearwater <i>Puffinus pacificus</i>	/	Moderate	Common breeds in most island groups
Flesh-footed shearwater <i>Puffinus carneipes</i>	1.9%	Moderate	Rare but annual passage migrant.
Sooty shearwater <i>Puffinus griseus</i>	1.1%	Low	Common passage migrant
Short-tailed shearwater <i>Puffinus tenuirostris</i>	/	Low	Common passage migrant
Buller's Shearwater <i>Puffinus bulleri</i>	0.2%	/	Rare but annual passage migrant
Fluttering Shearwater <i>Puffinus gavia</i>	0.1%	/	Not recorded
Australasian Gannet <i>Morus serrator</i>	/	Moderate	Not recorded
Southern Skua <i>Catharacta antarctica</i>	/	Low	Rare vagrants in southern waters

Source: 1. New Zealand - extracted from Robertson, Bell & Scofield (2003). 2. Environment Australia (1998) 3. From Pratt et al (1987); Watling (2001).

### 2.3.3 Size

A review of Table 3 and other available information on the species affected by longlines is that they are large or medium -large seabirds - all over 500 g weight. This is not surprising if the major cause of mortality is ingestion of bait and hook. Typical longline hooks used in the SPC region are 7 x 4cm and baits of 100 -110g are used. It would seem unlikely that any seabird under 400 g weight will be seriously vulnerable in the longline fishery and this figure is used to analyse which seabird species in the SPC Region (excluding Australia & New Zealand) may be vulnerable to longline bycatch if this is true.

Table 4 reviews all of the seabirds in these groups in the SPC Region (excl. Aust. & NZ) which are over 400g in weight.

Of the 28 species identified, six are known bycatch species, the two Hawaiian albatrosses are endangered as such, while the four shearwaters are minor bycatch species in Australia or New Zealand (such a status does not necessarily transpose to the tropical Pacific - though three of them are only passage migrants). Fifteen species are identified here as not vulnerable because they occur regularly in Australian waters and have not been identified in the TAP. The remaining seven species can be classed as "potentially vulnerable species", five of these breed in the region, the other two are annual migrants. Six of these seven potentially vulnerable species are globally classified as threatened (Red List 2000 - BirdLife International, 2000).

What is of concern is that six of these seven potentially vulnerable species are globally classified as threatened (Red List 2000 - BirdLife International, 2000). In this respect, there are two Critically Endangered Petrels in the region - the Fiji Petrel and Beck's Petrel which are not identified here because they are small, both well under 400g weight.

Given the high proportion of species of conservation concern identified as potentially vulnerable to longline bycatch, the issue is much more serious than the simple number of birds hooked.

**Table 4: Species recorded from the SPC Region which are not included in Table 1 but which are potentially vulnerable to Longline Fishing (see text)**

Species (1)	Likely Incidence in Longline By-catch (2)	Occurs in Australian waters(3)	Occurrence in SPC Region EEZ (excl. Aust.,NZ) (4) (6)
Short-tailed Albatross <i>Diomedea albatrus</i>	High (5)	No	N.Pacific species - rare but annual visitor NW Hawaii. (VU)
Black-footed Albatross <i>Diomedea nigripes</i>	High (5)	No	N.Pacific species - breeds in Hawaiian Is. Not recorded elsewhere in SPC region. (VU)
Streaked Shearwater <i>Calonectris leucomelas</i>	Not vulnerable	Yes	Rare migrant to west Micronesia, present waters north of PNG.
Pink-footed Shearwater <i>Puffinus creatopus</i>	Potentially Vulnerable	No	Vagrant in east part of SPC region (VU)
Wedge-tailed shearwater <i>Puffinus pacificus</i>	Known bycatch species	Yes	Common breeds in most island groups
Flesh-footed shearwater <i>Puffinus carneipes</i>	Known bycatch species	Yes	Rare but annual passage migrant.
Sooty shearwater <i>Puffinus griseus</i>	Known bycatch species	Yes	Common passage migrant
Short-tailed shearwater <i>Puffinus tenuirostris</i>	Known bycatch species	Yes	Common passage migrant
Buller's Shearwater <i>Puffinus bulleri</i>	Not vulnerable	Yes	Passage migrant (VU)
Christmas Shearwater <i>Puffinus nativitatis</i>	Potentially Vulnerable	No	Uncommon species, breeds and disperses throughout SPC region.
Newell's Shearwater <i>Puffinus newelli</i>	Potentially Vulnerable	No	Breeds on Hawaiian islands, rare vagrant in SPC region (VU)
Heinroth's Shearwater <i>Puffinus heinrothi</i>	Potentially Vulnerable	No	Breeds New Britain, Solomon Islands - very poorly known - very rare. (VU)
Tahiti Petrel <i>Pseudobulweria rostrata</i>	Not vulnerable	Yes	Breeds throughout much of the region but uncommon (NT/LR)
Cape Petrel <i>Daption capense</i>	Not vulnerable	Yes	Rare vagrant in southern waters
Dark-rumped/Hawaiian Petrel <i>Pterodroma phaeopygia/sandwichensis</i>	Potentially Vulnerable	No	May be quite common in eastern seas of the SPC region (CE or VU)
Mottled Petrel <i>Pterodroma inexpectata</i>	Not vulnerable	Yes	Annual passage migrant (NT/LR)
Kermadec Petrel <i>Pterodroma neglecta</i>	Not vulnerable	Yes	Breeds south of the region but migrates or disperses throughout the entire SPC region
Herald Petrel <i>Pterodroma arminjoniana</i>	Not vulnerable	Yes	Breeds in region in small numbers and disperses throughout SPC region
Juan Fernandez Petrel <i>Pterodroma externa</i>	Potentially Vulnerable	No	Non-breeding season dispersal over the eastern part of the SPC region. (VU).
Murphy's Petrel <i>Pterodroma ultima</i>	Potentially Vulnerable	No	Breeds in French Polynesia and disperses in nearby waters (LR/NT)
Providence Petrel	Not vulnerable	Yes	Breeds Lord Howe I. Migrates north

<i>Pterodroma solandri</i>			through SPC region to north Pacific.
Red-footed Booby <i>Sula sula</i>	Not vulnerable	Yes	Common throughout the SPC region
Brown Booby <i>Sula leucogaster</i>	Not vulnerable	Yes	Common throughout the SPC region
Masked Booby <i>Sula dactylatra</i>	Not vulnerable	Yes	Present throughout the SPC region
Pomarine Skua <i>Stercorarius pomarinus</i>	Not vulnerable	Yes	Uncommon passage migrant across SPC region
Long-tailed Skua <i>Stercorarius longicaudus</i>	Not vulnerable	Yes	Uncommon passage migrant across SPC region
Arctic Skua <i>Stercorarius parasiticus</i>	Not vulnerable	Yes	Uncommon passage migrant across SPC region
South Polar Skua <i>Cartharacta maccormicki</i>	Not vulnerable	Yes	Uncommon passage migrant across SPC region

- Notes: 1 Species not in Table 1 but identified as vulnerable because they are either Procellariids (Albatrosses, Petrels, Shearwaters) or other vulnerable groups such as Skuas and Boobys above 400 g weight - see text.
- 2 If the species occurs in Australian waters (see adjacent column) and is not listed on Table 1, then it is a species not considered vulnerable in longline fishing operations (see text), as such it is classified in this study as 'not vulnerable'. All others are considered as Potentially Vulnerable, by default unless confirmation otherwise exists.
- 3 Resident or annual migrant; consultant's analysis from a variety of sources.
- 4 From Pratt et al (1987); Watling (2001).
- 5 Gilman & Holyfield (2003)
- 6 Threat Status: CE - Critically Endangered; E - Endangered; V - Vulnerable; NT/LR - Near Threatened/Lower Risk. (Red List 2000 - BirdLife International, 2000).

### 3 CONCLUSIONS

This study has accessed a wide variety of sources but remains a superficial overview of the issue. However, it is clear that an unequivocal and widely accepted answer to whether or not seabird bycatch is a significant issue in the fisheries of the SPC region will only be gained if there is systematic data collected by independent observers on the fishery vessels. The tuna fishery in the SPC Region has a long history of observer coverage which is collecting and analysing data in a systematic manner. Some of this data, collected by the SPC, stretches back 30 years; six SPC countries have observer programmes which have run for 10 or more years and four countries have initiated programmes in the last two years. The coverage, therefore, is by no means comprehensive or anywhere near adequate to definitively report on the issue, nonetheless, the data from this source indicates quite clearly that incidents of seabird bycatch are of very infrequent occurrence. A similar level of observer coverage (only recently considerably increased) of the Hawaiian longline fleet was sufficient to show that seabird bycatch is a significant issue there. Increased coverage there has produced enough data to indicate that it may be threatening two species of albatross with extinction.

This conclusion is supported by a reasonable number of industry sources (vessel captains or fleet owners) as well as a reasonable number of industry observers or fisheries consultants with very long experience in the tropical Pacific. Not a single one of these believed that there was any issue whatsoever. The consultant believes this to be credible supporting evidence for the absence of a significant number of seabirds being caught in the tuna longline fishery.

However, in general, ornithologists and biologists, especially those from outside the region and with knowledge of the serious issues in the north and south Pacific were sceptical of this type of evidence. Some believed that existing observer coverage was insufficient to determine the significance of the issue.

NGOs including those vocal and involved with the issue at higher latitudes were silent on the issue in respect of the tropical Pacific.

Longline fisheries in tropical coastal areas off south America and around the Galapagos may also have significant levels of bycatch, though this is based on only one source of information uncovered during this study. The eastern tropical Pacific with the cold Humboldt current is not representative of the tropical Pacific islands of the SPC region, and so this study did not seek further information from this area.

That the seabird bycatch issue is of little or no importance in the 'tropical' waters was clearly recognised by Australia's '*Seabird Threat Abatement Plan*' (Environment Australia 1998) which mandated the 'serious' mitigatory measures only south of 30 °S (refer Table 5; but see section 1.5.2).

Data from banding schemes, notably those of New Zealand and Australia, may provide some evidence that an issue exists, although not all ornithologists agreed that a thorough analysis of banding records would contribute.

The analysis of albatrosses, petrels and shearwaters, over 500 g in weight (the dominant bycatch group) which occur in the SPC region (excluding Australia, New Zealand, Hawaii) reveals that in addition to the four known bycatch species, seven species can be classed as species potentially vulnerable as bycatch. Of these, five

breed in the region, the other two are annual migrants. Six of these seven "potentially vulnerable species" are globally classified as threatened (Red List 2000 - BirdLife International, 2000).

Overall the number of known and potentially vulnerable bycatch species in the SPR region is small - 11 (of which six are Pacific residents and five migrants) by comparison with the 36 known bycatch species at higher latitudes in the South Pacific. However, the high proportion of internationally classified "Threatened" species is of concern. In this respect, there are, in addition, two Critically Endangered Petrels in the region - the Fiji Petrel and Beck's Petrel which are not identified here as vulnerable, because they are small, both well under 400 g weight.

Given the high proportion of species of conservation concern potentially vulnerable to longline bycatch, the issue in the SPR region is likely to be much more serious than the simple number of birds hooked.

**Table 5: AFMA's Fisheries regulations under the Seabird TAP**

(source: Environment Australia 1998)

<b>Regulation</b>	<b>Tuna (pelagic) longlining south of latitude 30 S</b>	<b>Tuna (pelagic) longlining north of of latitude 30 S</b>	<b>Demersal longline, droplining or trotline methods</b>
Set longlines only at night	Yes	No	No
Use a tori line when setting	Yes	Voluntary	No
Use thawed baits	Yes	No	No
Manage offal discharge	Yes	Yes	Yes

## 4 RECOMMENDATIONS

Although the limited evidence indicates that seabird bycatch is rare or very rare indeed in the tropical Pacific EEZ's of SPC members, there will be no widespread acceptance of this by the general public or concerned scientific community until such time as there is substantive data from independent observer coverage. This is all the more likely in view of the Threatened Status of a high proportion of the potentially vulnerable species in the SPC region.

It is recommended that:

1. SPC distribute this report widely in the ornithological, NGO, seabird specialist groups - its conclusions and results may stimulate:
  - ? ? Stimulate additional information to that uncovered during this essentially 'superficial overview'; and,
  - ? ? Stimulate additional interest in the groups themselves
2. SPC review if its current observer coverage protocol is adequate in respect of seabird bycatch;
3. SPC target a specific fishery where the known and potentially vulnerable species occur in greatest numbers, and organise a high percentage of coverage of the fishery for a season or two. This may involve dedicated seabird observers over and above normal observer coverage.
4. SPC review how seabird bycatch species caught in the SPC region can be collected and professionally identified.

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## APPENDIX 1 TERMS OF REFERENCE

### Terms of Reference (per T.Adams SPC: PRO 7/1; 1<sup>st</sup> December 2002)

You will be ultimately responsible to the Director, Marine Resources for all parts of the work as defined below:

#### **During the consultancy your tasks will be:**

- ?? Ultimately, to produce a written report summarizing knowledge about the interactions between seabirds and fisheries in the Pacific Islands region, particularly tuna fisheries, for consideration by the 3<sup>rd</sup> SPC Heads of Fisheries Meeting (date not finalized, but likely to be the last week of March, in Fiji, but possibly the first week of May, in Noumea);
- ?? This report shall include:
  - ?? historical, available written information on seabird/fishery interactions in the region;
  - ?? information resulting from independent on-board observer programmes supplied by SPC;
  - ?? any new or anecdotal information that the consultant can acquire during the course of the consultancy period, by interview or by correspondence;
  - ?? if possible within the time available, a comparison of Pacific Island seabird/fishery interactions with such interactions in other regions;
  - ?? although the aim of the consultancy is primarily to compile information, the consultant is invited to draw conclusions and make recommendations based on the information compiled;
- ?? In pursuit of new information, the consultant may visit one other Pacific Island country (other than Fiji), and the costs for one such trip are intended to be covered by the basic consultancy fee described above;
- ?? Additional overseas fieldwork may be subject to supplementary agreement and a supplementary fee. This is not immediately specified in this contract, since funding will need to be obtained from a third party and terms have not yet been finalized.

## APPENDIX 2: LIST OF CONTACTS AND/OR RESPONDENTS

### Societies/Groups:

Audubon Society, Hawaii  
 Bird Park, Tonga  
 BirdLife International,  
 BirdLife International, Fiji  
 BirdLife International, Seabird Core Group  
 Birds Australia  
 Conservation International  
 Greenpeace  
 International Marinelife Alliance  
 O Le Siosiomaga Society, Samoa  
 Pacific Seabird Group ([www.pacificseabirdgroup.org](http://www.pacificseabirdgroup.org))  
 Palau Conservation Society  
 Royal Forest & Bird, New Zealand,  
 Société Calédonienne d'Ornithologie  
 Société Ornithologie Polynésienne  
 SPACHEE, Fiji  
 Taporoporoanga Ipukarea Society Inc. Cook Islands  
 Te Ara Nui No Tubuai, French Polynesia  
 Wildlife Conservation Society, South Pacific Programme  
 World Wildlife Fund New Zealand  
 World Wildlife Fund South Pacific Programme,

### Individuals

Andrew Jones,	Marine Resources, Cook Islands
Alan Bowe,	Tonga
Alan Lieberman,	San Diego Zoo
Alan Tennyson,	TePapa Museum, NZ
Alison Duncan,	BirdLife International, France
Anama Solofa,	Samoa Fisheries
Anna Tiraa,	Cook Islands
Barry Weeber,	Seabird Core Group, WWF NZ
Bill Holden	Alatini Fisheries, Tonga
Bob Gillett,	Consultant, Fiji
Chris Howe,	WWF, NZ
Christian Moulin,	French Polynesia
Claudia Matavalea,	BirdPark, Tonga
Claudie Pavis,	French Polynesia
Dave Lucas,	Solander, Fiji
David Ardill,	IOTC
David Priddel	NPWS, NSW
Deirdre Brogan,	SPC
Deon Nel,	Seabird Core Group, BirdLife International
Dermot O'Gorman,	WWF South Pacific Programme
Dieter Rincke,	(Tonga), VogelPark, Germany
Eric Dorfman,	Birds Australia
Eric Gilman,	Seabird Core Group, Audubon Society, Hawaii
François Martel,	Conservation International,
Gary Allport,	BirdLife International
Graham Southwick,	Fiji Fish
Graham Wragg	(French Polynesia, Kiribati, Cooks)

Grant Priest,	Cook Islands
Guy Dutton,	BirdLife International, Fiji
Ian Wilmott,	Cook Islands
Iliapi Tuwai,	International Marinelife Alliance, Fiji
Janice Molloy	Southern Seabird Solutions, DOC, NZ
Jean Luc Poillot,	French Polynesia
Jean-Claude Thibault,	French Polynesia
Jean-Marc Lernould,	French Polynesia
Jeff Kinch	Artisanal Fisheries, PNG
Jo Breese	WWF, New Zealand
John Fanshawe,	Seabird Core Group, BirdLife International
Josh Mitchell,	Marine Resources, Cook Islands
Josua Seamon,	American Samoa
Kelvin Passfield,	Consultant, Cook Islands, Samoa
Kesaia Tabunakawai	WWF South Pacific Programme
Lisette Wilson,	WWF Fiji
Liz Dovey,	SPREP
Lyn Bates,	Royal Forest & Bird, NZ
Ludwig Kumoru	Fisheries, PNG
M.Matepi	WWF, Cook Islands
Marc Boussekey,	French Polynesia
Mark Ziembicki,	French Polynesia
Melissa Stevens,	International Marinelife Alliance,
Mike Imber,	DOC, NZ
Nicholas Carlisle	NPWS, NSW
Nicolas Barre,	New Caledonia
Penina Namata,	WWF Fiji
Peter Sharples	SPC
Phillipe Raust,	Societe Ornithologie Polynesie
Pio Manoa,	Greenpeace, Fiji
Robert Stone,	Fiji
Russell Dunham,	Fiji Fish Ltd.,
Sandy Bartle,	TePapa Museum, NZ
Sebastian Moncorps,	IUCN, France
Seri Hite	WWF, Solomon Islands
Sifa Fukofuka,	SPC
Steve Beverly,	SPC
Steve Brown,	Samoa
Steve Why,	International Marinelife Alliance,
Sue Miller	IUCN, Samoa
Suzy Randall,	SPREP
Tim Adams	SPC
Tony Lewis,	National Fisheries Authority, PNG
Veena Nair,	WWF Fiji
Vincent Bretagnolle,	French Polynesia
Yves Gentilhomme,	French Polynesia

## APPENDIX 3: OVERVIEW OF SEABIRD MORTALITY IN LONGLINE FISHERIES

(excerpt from the Introduction of *Seabird Mortality in North Pacific Longline Fisheries* by Eric Gilman, National Audubon Society and Holly Freifeld, U.S. Fish and Wildlife Service Pacific Islands Office)

Of all the threats to seabirds, one of the most globally critical is mortality in longline fisheries (Brothers *et al.*, 1999; Gilman, 2001a). Birds are hooked or entangled primarily while fishing gear is being set and are dragged underwater and drown as the gear sinks. Hundreds of thousands of seabirds, including tens of thousands of albatrosses, are caught annually in longline fisheries worldwide (Brothers, 1991; Gilman, 2001a and b; CCAMLR, 2002). During the 1980's the Japanese pelagic longline tuna fleet south of 30 degrees South latitude alone was estimated to take 44,000 albatrosses per year (Brothers, 1991). Pirate fishing (illegal, unregulated and unreported) for Patagonian Toothfish (*Dissostichus eleginoides*) in the Southern Ocean, conducted primarily by vessels who choose a "flag of convenience" from a state which neglects to ensure that vessels flying its flag comply with fisheries management measures, kill approximately 1 45,000 seabirds per year (CCAMLR, 2002).

The species of seabirds most frequently caught by longliners are albatrosses and petrels in the Southern Ocean; Arctic fulmar (*Fulmarus glacialis*) in North Atlantic fisheries; and albatrosses, gulls, and fulmars in North Pacific fisheries (Brothers *et al.*, 1999). The health of populations of albatrosses and large petrels are most at risk from this threat.

According to IUCN (The World Conservation Union), of the 61 species of seabirds affected by longline fisheries, 25 are threatened with extinction, including 17 species of albatrosses, and there is compelling evidence that longline mortality is a significant component in the declines of many of these species (Gales, 1998; Brothers *et al.*, 1999). An estimated 10% of the world's population of Wandering Albatrosses (*Diomedea albatrus*) is killed on longline hooks each year (Brothers, 1995). The Spectacled Petrel (*Procellaria conspicillata*), a single-island endemic with a small population, is taken in fisheries off the Atlantic coast of South America (Brothers *et al.*, 1999). The remaining albatrosses of the family Diomedidae, the Southern Giant Petrel (*Macronectes giganteus*), Northern Giant Petrel (*M. halli*), White-chinned Petrel (*Procellaria aequinoctialis*), and Grey Petrel (*P. cinerea*) of the Southern Ocean are other seabird species at risk of extinction that are taken in large numbers by the large pelagic longline fisheries targeting Southern Bluefin Tuna (*Thunnus maccoyii*) and the pirate fisheries for Patagonian Toothfish (Brothers *et al.*, 1999).

The increase in anthropogenic-induced mortality above natural levels is especially significant in seabirds. Seabirds populations are particularly sensitive to increases in adult mortality rates because of their life history traits. Seabirds live relatively long lives (e.g., albatrosses live into their 60s), have delayed maturity (e.g., albatrosses do not begin breeding until they are between 5 and 12 years old), and have relatively low reproductive rates (seabirds can raise only one chick every one or two years) (Hamer *et al.*, 2002). Both parents take part in incubation and chick rearing in most albatross species, so if one parent is killed on a longline hook, the chick likely will die of starvation. Also, albatrosses typically stay with the same partner for life, so if one partner is killed, it may take several years for the remaining bird to find a new mate.

One-third of all albatross populations comprise fewer than 100 breeding pairs, making them extremely sensitive to acute increases in mortality rates (Gales, 1998). All of these characteristics mean that seabird populations may be severely stressed by the continual loss of a large number of individuals.

## APPENDIX 4: LONGLINE FISHERIES OBSERVER COVERAGE

(extracted from SPC, Sharples *in litt.*, 2003)

### INTRODUCTION

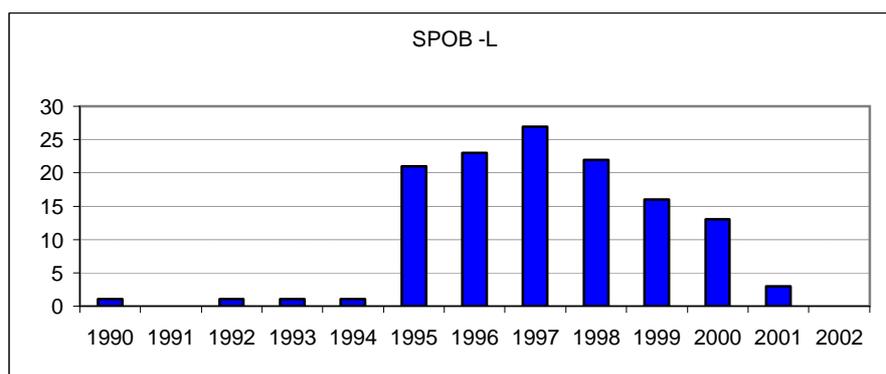
The first observer programme in the region started nearly thirty years ago and programmes have been developing slowly in regional and national organisations through the region ever since. The programmes were created to monitor activities such as compliance with licensing agreements and restrictions on incidental catches, but were soon recognised for providing the only reliable, detailed information on catches discarded at sea, catch and bycatch statistics at the species level and fishing effort information. Greater importance is being given to these types of information than ever before and observer programmes in the region are now expanding rapidly.

Observers record any fish or other species that is either hooked or tangled with the longline gear (form LL-4). In addition, on another form (GEN-2) observers record species of special interest whether sighted or landed on deck, and the species interaction with the gear or vessel.

### SPC OCEANIC FISHERIES PROGRAMME

**Observers** – The OFP has funded occasional observer trips since the early 1980s. In 1995, the South Pacific Regional Tuna Resource Assessment and Monitoring Project (SPRTRAMP) was established within the OFP, with funding for the Port Sampling and Observer Co-ordinator, four full-time observers and five contracted observers. The SPC observers collected baseline data on every fleet operating in the region (except the Australian longline fleet). In 2000, SPRTRAMP came to an end, after the observers had taken 130 longline trips, 52 purse seine trips and 8 pole-and-line trips<sup>6</sup>.

**Figure 4: SPC Longline Observer Trips**



In 2002, the OFP enhanced its technical support for observer programmes with the appointment of a Port Sampler and Observer Trainer and a Port Sampler and Observer Coordinator, in addition to the Fisheries Monitoring Supervisor. This team will provide training in conjunction with FFA, management support and assistance with

<sup>6</sup> The **observer** activity is measured as the number of discrete observer trips.

data quality control. The emphasis for 2002 and 2003 is on the production of tools to improve feedback to observers and to improve data quality control. Training new observers will remain an important activity, in order to meet the increasing demand for observer data, but refresher training of experienced observers will become more important.

### NATIONAL OBSERVER PROGRAMMES

SPC COUNTRY	CURRENT OBSERVER EFFORT ON LONGLINERS	PLANNED OBSERVER EFFORT
American Samoa	Nil - assists USTreaty Programme	50 observer trips in 2003
Australia	For tuna fisheries, a vigorous observer programme started at the end of the 1980s and existed until 1997 (upto 80 trips/year), when the access agreement with the Japanese longline fleet was not renewed. The Observer Programme was recently re-established in order to cover domestic longliners.	Coverage of the Pacific tuna fishery currently operates under the Threat Abatement Programme (TAP), with very specific tasks, and an agreement under which industry will fund 10% coverage may soon be concluded.
Cook Islands	Initiated in 2002 - 7 trips (6% coverage)	Expand to 20% coverage
Federated States of Micronesia	The longest running national observer programme amongst Pacific Island countries, it has operated since the early 1990s. Upto 28 trips/year or c.3% coverage	Subscribes to the regional goal of 10%
Fiji	Initiated in 2002 - 10 trips	
French Polynesia	Initiated in 2002 - 7 trips	
Guam	There is no observer programme	
Kiribati	Kiribati has had a national observer programme since 1996. 10 trips in 2002	
Marshall Islands	3 trips since 1995	
Nauru	One observer trip in 1996	
New Caledonia	Initiated in 2001, 8 trips on 2002	Newly trained staff and observer programme in place in 2002
New Zealand	Up to 28 trips/yr 1990-1999.	An overall doubling of the Observer Programme to 100 observers and 10 shore staff was proposed in 2002, in order to address growing bycatch concerns. In 2002, there were 720 observer sea days planned for longliners and 770 are forecast for 2003.
Niue	There is no observer programme	
Northern Marianas	There is no observer programme	
Palau	2 trips in 1999	In 2002, Palau were planning to re-establish an observer programme
Papua New Guinea	The PNG Observer Programme is the largest and best-supported observer programme among the Pacific Island countries. Up to 21 trips/yr between 1996-2002	Target coverage is 5% in longliners
Pitcairn	One SPC sponsored trip in 1994	
Samoa	There is no observer programme planned for	

	Samoa	
Solomon Islands	Upto 14 trips/yr between 1995-2001.	
Tonga	There is no observer programme	
Tokelau	There is no observer programme	
Tuvalu	There is no observer programme	
USA Hawaii	There has been an observer programme in Hawaii since 1996, but coverage levels increased considerably in 2000 in response to environmental concerns, principally regarding turtle mortality in the swordfish fishery.	The government has mandated 20% overall coverage, when averaged through the year, and, at times, coverage has been as high as 40%.
Vanuatu	There is no observer programme	