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**Data requirements of the Western and
Central Pacific Fisheries Commission:
Capacity of Pacific Island Countries and
Territories to Meet their Obligations**

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Introduction

In considering the issue of long-term data requirements of the Western and Central Pacific Fisheries (WCPF) Commission, the PrepCon through Working Group II (WG II), requested the SPC Oceanic Fisheries Programme (OFP) to compile information on the current capacity and capacity needs of Pacific Island Countries and Territories (PICTs) to fulfil their likely scientific data collection and reporting obligations.

Part I of this report provides overview material on topics related to this issue. First, we review the current status of fishery development in PICTs, as the level of development will bear considerably on the extent of data collection and reporting obligations. Second, we outline the likely long-term data requirements of the Commission, based on guidelines provided by the United Nations Fish Stocks Agreement (UNFSA), the WCPF Convention, and discussions that have taken place within the PrepCon framework, particularly in WG II and in the first two meetings of the Scientific Coordinating Group (SCG). Third, we describe the main sources, or methods of collection, of the data that are likely to be required. Fourth, we examine how the responsibilities for various data collection programmes might be allocated in the context of the tuna fisheries in the Convention Area, and the current capacity of PICTs to meet these responsibilities. Finally we summarise the additional capacity needs of PICTs generally in the area of data collection and reporting.

Part II of the report will provide more detailed, country-specific information on current data collection and reporting capacity by PICTs, and will identify specific areas where additional capacity is needed. This part of the report is still under development and has not been included in this Information Paper. Drafts will be circulated to PICT representatives during this meeting and feedback sought before finalising the report in early September.

Part I: Overview

Status of Tuna Fishery Development in PICTs

The extent of national obligations for data collection and reporting, however specified, will inevitably be related to the level of development of tuna fisheries in PICTs. There are two ways in which PICTs have “developed” their tuna fisheries, and both need to be recognised in the context of data collection and reporting obligations. First, the extent to which vessels flagged¹ by PICTs fish for tuna in the Convention Area will determine a principal data obligation. Second, the extent to which PICTs licence foreign vessels to fish in their EEZs may also have implications for data obligations of PICTs, as will be discussed below.

Table 1 provides an overview of both types of fishing activity in PICTs, as reflected by data available to the SPC’s Oceanic Fisheries Programme (OFP) for the year 2002. In terms of fishing activity by national fleets, many PICTs have developed small-scale longline fisheries in recent years. The largest of these (in terms of catch) are currently Fiji, American Samoa, French Polynesia and Samoa, with four other national fleets recording catches of more than 1,000 t in 2002. Fewer PICTs have developed national purse seine fleets. Papua New Guinea now has a purse seine fleet catching at approximately the level of the United States fleet, while Marshall Islands and Federated States of Micronesia also have catch levels that are significant in the regional context. Solomon Islands and Kiribati have smaller national purse seine fleets. Only Solomon Islands currently has a substantial pole-and-line fishery, with smaller operations in Fiji and French Polynesia.

¹ In SPC databases, nationality is not determined strictly by flag, but by the nationality of the controlling interest in a vessel. This definition of nationality may be different in some cases to the flag. The terms are used interchangeably in this report, but any data presented by nationality actually use the SPC definition.

Most of the equatorial PICTs licence foreign fishing in their EEZs, either through multilateral (US Treaty and FSM Arrangement) or bilateral access agreements. The two multilateral arrangements in place are administered by the Forum Fisheries Agency (FFA) on behalf of its members.

In 2002, the catch by foreign licenced purse seiners in the Kiribati EEZ was in excess of 300,000 t. The distribution of purse seine catches among EEZs varies considerably over time, with *El Niño* conditions (which prevailed in 2002) favouring EEZs in the east of the region (Nauru, Kiribati, Tuvalu and Marshall Islands) and *La Niña* conditions favouring EEZs towards the west (Palau, Federated States of Micronesia, Papua New Guinea, Solomon Islands). Overall, the 2002 purse seine catch in the EEZs of PICTs was in excess of 600,000 t. Much of this catch is unloaded or transhipped in regional ports, which provides opportunities for catch monitoring and sampling.

Federated States of Micronesia, Kiribati, Marshall Islands and Vanuatu licenced the majority of foreign longline fishing in their EEZs in 2002. Foreign longliners consist of smaller locally-based vessels that fish primarily in EEZs (Japanese, Taiwanese and Chinese fleets based in Guam, Palau, Federated States of Micronesia and Marshall Islands) and larger distant-water vessels (from Japan, Korea and Taiwan) that fish both in EEZs and on the high seas. The locally-based fleets unload their catches in base ports (from where they are air-freighted to Japan) while distant-water vessels typically undertake long campaigns and return to their home ports to unload.

The activities of the Japanese pole-and-line fleet in the tropical region of the Convention Area has reduced over the years. In 2002, the fleet fished in Marshall Islands and in previous years has regularly fished in Palau, Federated States of Micronesia, Kiribati Solomon Islands and elsewhere. The fleet also fishes extensively in international waters. All catch is landed directly in Japan.

Table 1. Longline, purse seine and pole-and-line catches and vessel numbers by flag for PICT fleets, and foreign catches and vessels numbers by PICT EEZ. Source: logsheet data held by OFF.

Flag or EEZ	2002 Fishing Activity by Domestically Flagged Vessel						2002 Fishing Activity within EEZs by Foreign Licenced Vessels					
	Longline		Purse seine		Pole & Line		Longline		Purse seine		Pole-and-line	
	Catch (t)	Vessels	Catch (t)	Vessels	Catch (t)	Vessels	Catch (t)	Vessels	Catch (t)	Vessels	Catch (t)	Vessels
FFA countries												
Cook Islands	1,134	17					83	9	2,674	22		
Federated States of Micronesia	825	22	18,128	7			3,003	175	58,892	136		
Fiji	10,974	119			431	2	79	15				
Kiribati			5,112	1			2,144	89	302,292	170		
Marshall Islands			38,242	5			1,996	71	28,812	121	7,316	35
Nauru									94,755	129		
Niue												
Palau							827	82				
Papua New Guinea	2,198	41	119,873	28					94,597	103		
Samoa	4,901	80							86	6		
Solomon Islands	856	25	8,079	2	9,642	12	839	46	1,786	48		
Tokelau									6,397	30		
Tonga	1,642	26										
Tuvalu							35	14	24,438	51		
Vanuatu	354	13					2,303	72	63	1		
US Territories												
American Samoa	7,754	70										
Guam												
Northern Marianas												
French Territories												
French Polynesia	5,755	45			620	15						
New Caledonia	1,936	25										
Wallis & Futuna												

Data Requirements of the Commission

The long-term data requirements of the Commission have not yet been precisely defined. However, some guidance is provided by the UNFSA Annex 1 and by recent recommendations of the SCG.

UNFSA Annex 1

The following data types are specified in Annex 1 of UNFSA:

Basic Fishery Data

- (i) time series of catch and effort statistics by fleet;
- (ii) total catch in number, nominal weight, or both, by species (both target and non-target) as is appropriate to each fishery;
- (iii) discard statistics, including estimates where necessary, reported as number or nominal weight by species, as is appropriate to each fishery;
- (iv) effort statistics appropriate to each fishing method;
- (v) fishing location, date and time fished and other statistics on fishing operations as appropriate;
- (vi) composition of the catch according to length, weight and sex;
- (vii) other biological information supporting stock assessments such as information on age, growth, recruitment, distribution and stock identity; and
- (viii) other relevant research, including surveys of abundance, biomass surveys, hydro-acoustic surveys, research on environmental factors affecting stock abundance, and oceanographic and ecological studies.

Vessel Data and Information

- (i) vessel identification, flag and port of registry;
- (ii) vessel type;
- (iii) vessel specifications (e.g. material of construction, date built, registered length, gross registered tonnage, power of main engines, hold capacity and catch storage methods);
- (iv) fishing gear description (e.g. types, gear specifications and quantity);
- (v) navigation and position fixing aids;
- (vi) communication equipment and international radio call sign; and
- (vii) crew size.

The annex further states that “States should ensure that data are collected from vessels flying their flag on fishing activities according to operational characteristics of each fishing method (e.g. each individual tow for trawl, each set for long-line and purse-seine, each school fished for pole-and-line and each day fished for troll) and in sufficient detail to facilitate effective stock assessment”. This suggests that a fundamental obligation of flag states is to collect catch and effort (i.e. logsheet) data, and possibly other information, such as size composition data, at an operational level.

Scientific Co-ordinating Group

At its second meeting (July 2003), the SCG made some progress towards identifying the long-term data requirements of the Commission. To this end, the SCG recommended that:

Operational level data be collected by all fleets and be made available to the Commission for stock assessment and other scientific analyses, with appropriate arrangements for data security and confidentiality;

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Annual catches by species, gear and fleet in the Convention area be reported by flag states and coastal states;

Size composition data should be collected, at the operational level where practical, according to a statistically sound sampling design to ensure that the data are representative of the fishery.

In most other fishery commissions, the obligations for collection and provision of such data would be on flag states. However, there is recognition that, because of the unique characteristics of this region, coastal states have a critical role to play in regional data collection. This arises because a substantial proportion of the catch occurs within the EEZs of coastal states, both through the operation of domestic fleets and through licenced foreign fishing. In respect of the latter, most coastal states require the submission (to them) of complete logsheet data as a condition of licence, and will continue to do so when the WCPF Commission is in place. As a result of these conditions, coastal states in some cases collectively hold more complete historical data on the fishing operations of some fleets than the flag states themselves. Also, many foreign vessels unload or transship their catches in regional ports, providing opportunities for catch verification and sampling. In recognising this situation, the SCG recommended that

Flexibility be maintained in establishing data reporting requirements for the Commission and that coastal states and flag states cooperate in ensuring that the Commission receive data in a timely fashion.

Data Verification

Verification of data is required under the UNFSA and examples of verification methods are provided in Annex 1 of the Agreement:

- position verification through vessel monitoring systems;
- scientific observer programmes to monitor catch, effort, catch composition (target and non-target) and other details of fishing operations;
- vessel trip, landing and transshipment reports; and
- port sampling.

WGII and the SCG have not yet discussed the details of data verification requirements, but for the purpose of this report, reasonable assumptions can be made based on the above.

Likely Data Requirements of the Commission

Given the above background, a list of likely initial data requirements by the Commission can be proposed for the purpose of determining the obligations of PICTs and assessing their capacity to meet those obligations. These are as follows:

- (i) Operational-level catch and effort data primarily for target and retained by-catch species;
- (ii) Estimates of appropriately verified total annual catches (including discards) of target and non-target species and levels of effort by gear and national fleet;
- (iii) Estimates of catch composition according to species, length, weight and (for some species) sex; and
- (iv) Vessel and gear characteristics.

In the next sections, we look in greater detail at the possible sources of such data, and the types of infrastructure and expertise that PICTs will require to apply them.

Fishery Data Sources

The data required by the Commission will be collected from a number of sources or methods, most of which are commonly utilised by other tuna commissions for these purposes. Table 2 presents a summary of the possible sources for each data type, which are discussed below.

Operational Level Catch and Effort Data

Operational level catch and effort data are most commonly collected by the use of logsheets. Additional information, for example details of fish aggregation device (FAD) use by purse seiners, may be collected by observers. Logsheets need to cover a high proportion of the total catch in order for it to be considered representative. Coverage rates in excess of 80% would likely be considered acceptable.

Total Annual Catch and Effort and Catch–Effort Verification

Estimates of total annual catch and effort are a product of several data sources. Verification is an important aspect of this process. If 100% coverage logsheet data are available in a timely fashion and the catch and effort estimates therein are considered accurate, the estimation of total annual effort and retained catch is a relatively trivial task. However, 100% logsheet coverage is rarely obtained and estimates of coverage rates are required to estimate total effort and catches of retained species. Also, verification of declared logsheet catches and fishing effort against other data sources is required.

Logsheets coverage rates may be estimated from landings (including transshipment) data if such data cover all fishing activity by the fleet concerned. Landings data are normally collected at the vessel-trip level at unloading locations by port sampling programmes with the cooperation of vessel operators and unloading or processing companies. Where landed catches are exported, export documentation (such as packing lists for sashimi longline fish) may provide a convenient estimate of landings. Currently, there is no other formal and widely applied system of documenting landings in most PICTs. In addition to determining coverage rates of logsheet data, landings data may also be used to correct logsheet catch declarations at the individual trip level.

The South Pacific Regional Fishing Trip and Port Visit Log, which was proposed by the 5th meeting of the SPC/FFA Tuna Fishery Data Collection Committee (Anon. 2003) may also provide an authoritative source of information on vessel activity. This form would be a vessel-specific annual return documenting fishing trip details and periods of inactivity throughout the year, and would be an effective means of verifying fishing activity and estimating the coverage of landings and logsheet data.

VMS also has the potential to provide complete records of vessel activity, and therefore will be invaluable for estimation of logsheet and landings data coverage when in universal use. VMS will also be important for verifying the fishing locations reported on logsheets.

Estimates of discarded target and non-target catch need to be incorporated into total catch estimates. Such data are only available through observer programmes, and the accuracy of the resulting estimates are dependent on the observer coverage rate for each fleet. For rare but important non-target species (such as turtles) very high observer coverage rates may be required to obtain reliable estimates. More common non-target species catches can be estimated with reasonable confidence with lower coverage rates, e.g. 20-30% (Lawson 2003). Generally, the level of observer coverage will depend on the level of precision desired and the frequency with which the various species of interest occur in the catch.

Catch Composition Data

Catch composition by species, length, weight and other characteristics (such as sex) are typically obtained by sampling catches at sea through observer programmes and at the point of unloading by port sampling programmes. Sampling programmes need to be designed to ensure that the samples are

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representative of the catch. At-sea sampling by observers has the advantage of enabling sampling of both the retained catch and the catches of target and non-target species that are subsequently discarded. An additional advantage is that operational-level sampling data can be obtained and, in the case of purse seiners, protocols adopted to promote representative sampling. Thus, observer programmes are the preferred method of sampling catches. However, there are often cost and logistical difficulties in achieving sufficiently high observer coverage rates for this method to be relied upon alone to generate catch composition data. Therefore, port-based sampling of catches at unloading sites is usually required to augment observer-based sampling. For some fleets (e.g. distant-water longline fleets that remain at sea for long periods), port sampling may be currently the only feasible method of sampling the catch.

For small-scale sashimi longline fleets that unload their catch in PICTs for export to overseas sashimi markets, export documentation, or so-called packing list data, provides an alternative to port-based size sampling. Packing list data comprise the individual weights of all fish exported. Often, similar data for export rejects are also available. Such data are usually attributable to a particular vessel and trip, and therefore information on time and location of catches can be derived in the same way as for port sampling data. The advantages of utilising packing list data are that they are readily available in written form and usually represent a very high proportion of the total catch, therefore ensuring representative sampling. However, the sheer volume of data can present data processing challenges.

Vessel and Gear Characteristics

Documentation of vessel and gear characteristics may be obtained in a number of ways. Information can be collected for each vessel trip by completion of a form incorporated into a logbook (which would also include the logsheets used for collecting operational-level catch and effort data). This method would have the advantage of recording any changes over time of vessel and gear parameters. Similar data could also be collected by observers, but unless coverage rates were high, documentation may not be sufficiently complete. However, observers are the only means of collecting detailed information on some gear parameters, such as fishing depth of longlines.

Less detailed information on vessel characteristics is usually available on vessel registries and sometimes on licencing databases. However, the experience has so far been that the quality of such data has been insufficient to support stock assessment and related analyses.

Port inspections allow for the collection of detailed information on vessel and gear characteristics. While port inspections have been recognised as being the best method of collecting information on vessel and gear characteristics (Anon. 2003), currently only one PICT (Papua New Guinea) conducts port inspections on a regular basis.

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Table 2. Required data types, methods of collection and possible responsibilities for collection and provision.

Data type	Data Source/Method	Comments
Operational level data	logsheet observers	Logsheets record mainly effort and catches of target and retained by-catch species. More detailed information (e.g. FAD deployment by purse seiners, hook-by-hook data for longliners) need to be collected by observers.
Total annual catch and effort and catch –effort verification	logsheet landings vessel activity log VMS observers	Estimation typically requires high-coverage logsheet data and estimates of coverage rates provided by landings/transshipment data, VMS data and vessel activity log data. Observer data are required for estimates of discards of target and non-target catch. Observers can verify the accuracy of operational-level data reported on logsheets; landings (including transshipment) data are used to verify trip-level data from logsheets; vessel activity logs provide documentation of fishing activity; VMS provides verification of fishing location and fishing activity.
Catch composition	observers port sampling export documentation	Length, weight and other catch composition sampling can normally be obtained at the operational level for purse seiners by observers and port sampling; operational-level data for longline and pole-and-line can be obtained by observers only, and trip-level data by port sampling. Trip-level weight frequency data of high coverage are often available through export documentation (packing lists).
Vessel and gear characteristics	logbook observers vessel registry licencing databases port inspections	Trip-specific data may be collected via logbooks. Vessel registries would need to record time-series data on vessel characteristics. Licencing databases may provide useful adjunct data. Port inspections allow for the collection of detailed information on vessel and gear characteristics.

Data Collection Responsibilities and Current Status of Data Collection in PICTs

Table 3 indicates the likely responsibilities for the various data sources, which parties may need to cooperate and whether or not Commission coordination is likely to be required in compiling data from those sources. Table 4 summarises the current status of data collection by PICTs in respect of their national fleets. Below we discuss likely data collection responsibilities and current status of data collection in PICTs for each of the major data sources identified.

Logsheet Programmes

Responsibility

While collection of logsheet data is primarily a flag state responsibility (as suggested by UNFSA Annex 1, article 2(a)), considerable collaboration between the flag state and the coastal states in whose EEZs the vessels fish is likely to be required in many cases. This is because the licencing arrangements under which many vessels fish require them to provide logsheet data to the licencing coastal state, whereas some flag states have not had the infrastructure in place to collect these data themselves. For some fleets, notably Korean purse seiners and Chinese longliners, the licencing coastal states collectively have more complete logsheet data than the flag states. While it is expected that flag states will develop the necessary capacity to collect complete logsheet data from their fleets, cooperation with coastal states is still likely to be critical. The Commission itself may provide a useful vehicle for such cooperation. It is therefore likely that PICT responsibilities will include the collection

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and provision of logsheet data to the Commission or its contracted data manager in respect of their national fleets, and the collection and provision of logsheet data collected in respect of licenced foreign fishing in their EEZs.

Current Status in PICTs

Almost all PICTs that are listed in Table 1 as having national tuna fishing fleets have logsheet data collection programmes in place. Likewise, countries that licence foreign fishing in their EEZs collect logsheet data from licenced vessels. For both categories of fishing activity, regional logsheets developed by the SPC/FFA Tuna Fishery Data Collection Committee are widely used. Most countries rely heavily on the OFP to provide data processing and data management services for both national and licenced foreign fleets². Exceptions to this include Fiji, French Polynesia, Papua New Guinea and Solomon Islands who undertake some or all of their own logsheet data processing. Cook Islands is in the process of developing in-house data processing capacity. Most countries have in-house national database systems developed and maintained by the OFP, and have staff that have been trained in the use of those systems.

The adequacy of logsheet coverage of the total catch of PICT fleets is indicated in Table 4. Many of the fleets are relatively new, and there has been some lag in implementing logsheet data collection systems. However, there has been rapid improvement, with 11 out of 19 national fleets recording high (>80%) coverage levels in 2002. This situation is expected to improve further in 2003.

Logsheet coverage of the total catch by foreign licenced fleets in PICT EEZs is difficult to measure in the absence of independent catch estimates for the EEZs. Coverage is likely to vary by licenced vessel nationality and gear type. Logsheet coverage of foreign licenced purse seiners is likely to be high if not 100% for all fleets and EEZs. For purse seine fleets other than Japan, high-coverage logsheet data for fishing activities on the high seas are also provided to coastal states that licence their activities in EEZs. Logsheet coverage of foreign longline fleets is more variable. High EEZ coverage of Japanese, Korean, Chinese and offshore Taiwanese (based in Micronesia) fleets is maintained, but there has been low coverage of the EEZ activities of the Taiwanese distant-water fleet (targeting albacore). Few if any logsheet data on high seas fishing activities by distant-water longline fleets are provided to PICTs. The activities of the Japanese pole-and-line fleet operating in the EEZs of PICTs is well covered by logsheet data. Overall, the logsheet data held by PICTs in respect of foreign licenced fishing, and consolidated in the Regional Tuna Fishery Database maintained by the OFP, represent a valuable source of historical logsheet data for all major fleets and in particular the purse seine fleets.

Landings/Transshipment Monitoring

Responsibility

The issue of responsibility for monitoring catch landings, including transshipments, has not been specifically dealt with in existing legal instruments nor has it yet been discussed in the PrepCon or its subsidiary bodies. Nevertheless, purely as a matter of logistics, it might be reasonable to assume that this monitoring function will become a port state responsibility, irrespective of the nationality of the vessel that is landing catch. This is because it would be difficult if not impossible for flag states to effectively monitor landings in the large number of foreign ports in which this occurs in the Convention Area³. Port state responsibility in this area would be consistent with Article 27 of the WCPF Convention.

² The US National Marine Fisheries Service provides tuna fishery monitoring and data processing and management services to the US Territories (American Samoa, Guam and Northern Marianas).

³ Only the Japanese fleets and distant-water longline fleets of Korea and Taiwan routinely unload their catches in non-PICT ports.

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Current Status in PICTs

The survey of national fleets in Table 4 indicates that the monitoring of landings in PICTs is currently poor and is largely inadequate to support verification of logsheet declarations and estimation of total annual catches. This is an area where PICTs will need to develop additional monitoring capability, both in respect of their national fleets, and, if catch landing monitoring is designated a port state responsibility, for foreign fleets landing their catches in PICT ports. It might be reasonable to expect Commission assistance in this respect.

Vessel Activity Log

Responsibility

The proposed regional fishing trip and port visit log would, if completed accurately, provide a definitive source of information on annual vessel activity and inactivity. We would suggest that completion of this form be a flag state responsibility and that its timely provision be linked to maintenance of good standing on the Commission's vessel register and on their national equivalents. This would ensure a complete and timely record of vessel activity throughout the Convention Area.

Current Status in PICTs

Data collection using this form is not yet being implemented, but countries are actively encouraged to do so as soon as possible.

VMS

Responsibility

Article 24, paragraphs 8–10 of the WCPF Convention indicate a shared responsibility among flag states, coastal states licencing foreign fishing and the Commission itself to have a coherent VMS that ideally covers all vessels fishing for highly migratory species in the Convention Area. Flag states would have the responsibility of requiring that vessels flying their flags use “near real-time position-fixing transmitters” while fishing on the high seas and in the EEZs of other Commission members. The Commission shall determine the standards, specifications and procedures for high seas VMS, while coastal states shall make such determinations for waters under their jurisdiction. Any coastal state would have the right to include its waters in the Commission VMS. Flag states are not obligated to require their vessels to use VMS while fishing in their own EEZs, but it would be clearly desirable for flag states to do this so as to ensure universal VMS coverage of all vessels wherever they are fishing in the Convention Area. Flag states and coastal states will need to cooperate through the Commission to ensure that VMS data are compiled in such a way as to allow verification of fishing activity and catch locations while protecting the confidentiality of such data.

Current Status in PICTs

VMS is in operation or soon to be implemented in only 5 out of the 19 PICT national fleets (Table 4). However, in some of these cases, coverage of vessels is less than complete. Therefore, considerable effort will be required for systems to be implemented across all national fleets.

In addition to national VMS, FFA operates a regional VMS for foreign vessels licenced by their member countries. Almost all purse seiners licensed by FFA members are in good standing on the FFA VMS Register, but slower progress has been achieved for foreign longline fleets, with the exception of Japan.

Observer Programmes

Responsibility

The WCPF Convention states (Article 28) that the Commission shall operate a regional observer programme and that flag states are required to ensure that their vessels, except those that operate exclusively in waters under national jurisdiction, are prepared to accept an observer from the

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Commission's regional observer programme. Flag state permission is required for Commission observers to continue their duties if the observed vessel enters the EEZ of the flag state. Vessels that fish exclusively in the national waters of the flag state are not required to carry Commission observers. Such vessels may be covered by national observer programmes, but this is the prerogative of the coastal state concerned.

The Commission will likely need to play a key role in ensuring that the regional observer programme is well coordinated with national programmes. Attention will need to be paid to specifying the overall scientific sampling objectives of the programmes and having an adequate level and distribution of observer coverage to meet those objectives. Some objectives (such as size sampling of retained target species) will be shared with port sampling programmes; therefore programme design will need to also consider the information that is available via this method.

Current Status in PICTs

The current status of observer coverage for the national fleets of PICTs is summarised in Table 4. Assessment of the adequacy of observer coverage for scientific purposes is somewhat complicated and has not been attempted here in a detailed way. The FFA-administered observer programmes conducted on US purse seine vessels operating under the US Tuna Treaty and on vessels operating under the FSM arrangement target a coverage level of 20% of trips over the course of annual licencing periods. Also, Lawson (2003) found that coverage levels on longliners of 20–30% were required to achieve reasonable precision in estimating catch rates of common by-catch species. We have therefore used >20% as an indicator of high coverage in assessing the current status of PICT observer programmes, with 10–20% defined as moderate coverage, and <10% defined as low coverage.

Of the 19 existing national fleets of PICTs, 9 did not have any observer coverage in 2002 (Table 4). For those fleets covered by national observer programmes, most had low coverage; only 4 fleets had moderate or high rates of coverage in 2002. While the development of national observer programmes is not a specific requirement of the WCPF Convention, it is clear that PICTs will need to develop such programmes in order to collect data that are likely to be required. Most PICTs have in fact signalled their intention to develop observer programmes, and the OFP is actively engaged in assisting countries in this respect. However, much remains to be done, and this is clearly an area where PICTs will require assistance for some time to come.

Port Sampling Programmes

Responsibility

As with several other data collection methods, responsibility for the implementation of port sampling programmes has not yet been discussed in any detail. However, as for monitoring vessel landings, logistics would seem to dictate that port sampling be designated a port state responsibility, with some overall coordination provided by the Commission. That is, sampling would be carried out by port state authorities for vessels landing or transshipping catch in their ports regardless of the flag of the vessel that is unloading. The OFP has assisted many PICTs to establish port sampling operations over the past 10 years, and generally speaking these operations sample vessels regardless of their nationality. So there is some precedence for port states taking this responsibility. Article 27 of the WCPF Convention would appear to provide some support for this.

Current Status in PICTs

Table 4 outlines the current coverage of PICT national fleets with respect to port sampling using a rating scheme similar to that used for observer programmes. Eleven of the 19 national fleets are currently covered by port sampling operations, and of those, 6 are at a level that is considered to be high coverage. Of the fleets not currently covered, the most important are the Solomon Islands fleets and the French Polynesian longline fleets. In the case of Solomon Islands, lack of port sampling is ameliorated to some extent by moderate to high observer coverage.

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The information in Table 4 covers sampling of PICT national fleets only. In addition to this, existing port sampling operations in American Samoa, Federated States of Micronesia, Fiji, Guam, Kiribati, Marshall Islands, Palau and Papua New Guinea also sample foreign vessels that land or transship their catches in those ports. For several foreign fleets, these sampling operations provide the only known size composition data for those fleets. As noted above, it would appear to be in the interests of the Commission to utilise these existing programmes, and expand upon them where necessary, to obtain adequate sampling coverage of all fleets landing or transshipping catches in the region.

Port sampling of purse seine fleets poses particular problems for PICTs. The spatial distribution of purse seine catches varies greatly from year to year, being influenced by oceanographic conditions associated with the *El Niño–La Niña* cycle. As a result, the location of purse seine landings and transshipments can vary greatly. It is therefore difficult for PICTs to establish port sampling infrastructure in individual ports when no unloading might occur there for periods of one year or more. On the other hand, it is difficult to rapidly establish a port sampling presence in a particular port at short notice when a large number of vessels begins to unload there. This problem may indicate that a greater reliance on sampling by observers is appropriate for purse seiners, augmented by sampling in ports that consistently receive unloading activity (e.g. those that have processing facilities, such as American Samoa, Marshall Islands and Papua New Guinea).

Export Documentation

Responsibility

Export documentation (packing lists) is a valuable source of weight-frequency data for sashimi longline fleets unloading their catches in the region. Such documentation is normally supplied to customs authorities of the exporting country, i.e. the country in which the catch is landed. Copies of the packing lists and associated vessel trip information can normally be collected from the local company handling the transaction. It is often convenient for port sampling staff to collect and compile such information in preparation for data processing. The nature of the system therefore points to the collection of this type of information as being a port state responsibility. Again, Article 27 of the WCPF Convention would provide support for port state responsibility in this matter.

Current Status in PICTs

The PICTs in which packing list data are potentially available include Cook Islands, Federated States of Micronesia, French Polynesia, Fiji, Guam, Marshall Islands, New Caledonia, Palau, Papua New Guinea, Solomon Islands and Tonga. Currently, such data are routinely compiled by fisheries authorities in Guam and Papua New Guinea and provided to the OFP for use in regional stock assessments. The OFP will be working with the other countries mentioned above to obtain similar data from fleets unloading catches in their ports. These data should be relatively easy to obtain, and could be incorporated into the functions of port sampling programmes with little additional effort. The main capacity implication of collecting packing list data is the additional data processing required. Presumably, this is an area where Commission assistance would be needed.

Vessel Registries, Licencing Systems and Port Inspections

Responsibility

Article 24, paragraphs 4–6 of the WCPF Convention requires flag states to provide information (as set out in Annex IV of the Convention) to the Commission on fishing vessels authorised to fish in the Convention Area beyond the EEZ of the flag state. The Commission will compile and maintain the accuracy of such information. Such a vessel register would provide basic information on vessel characteristics that could be used in scientific analyses.

There is no requirement in the Convention for flag states to maintain similar records for vessels that fish only in waters under their jurisdiction; however such information would be necessary in order to have complete records of all vessels fishing for highly migratory species in the Convention Area.

Current Status in PICTs

PICTs that licence foreign fleets generally have developed and maintained (with OFP assistance in most cases) licencing databases that contain similar information in respect of those foreign fleets to that given in Annex IV of the WCPF Convention. Most of these systems also cater for national flag vessels as well. Known systems are indicated in Table 4.

It is unlikely that vessel registries and licencing systems will be able to provide all of the technical information required on vessel and gear characteristics required for stock assessment and related analyses. It is possible, as noted previously, that such information could be collected at a vessel-trip level via a logbook system. It would not be too difficult to incorporate this into existing logsheet data collection systems operated by PICTs. To the extent that PICTs will be in a position to contribute logsheet data in respect of licenced foreign fishing in their EEZs, information on vessel and gear characteristics could also be provided by this source.

Port inspections are considered the best source of information on vessel and gear characteristics. While only Papua New Guinea currently collects such information through port inspections, it is anticipated that other PICTs will do so in the future.

Summary and Conclusions

This report has provided information on likely data requirements of the WCPF Commission, identified possible sources or methods of collecting those data, suggested key responsibilities for the various data collection programmes and assessed the current status of PICTs regarding their capacity to meet suggested responsibilities. The main conclusions of the report are:

- (i) The main data requirements of the WCPF Commission will be operational-level catch and effort data, annual catch and effort estimates with verification, catch composition data and data on vessel and fishing gear characteristics. A range of data collection programmes will be required to generate these data, the most important of which are logsheet (or logbook) programmes, catch landings/transshipment monitoring, vessel activity documentation, VMS, observer programmes, port sampling programmes, vessel registries and/or licencing databases, and port inspections.
- (ii) In respect of logsheet data collection, most PICTs have reasonably well established logsheet collection programmes in place for foreign licenced vessels fishing in their EEZs and for their national fleets. Logsheets data from foreign licenced fishing collected by PICTs and consolidated in the Regional Tuna Fishery Database maintained by the OFP will be a valuable source of historical and future logsheet data for the Commission. For PICT national fleets, higher logsheet coverage is required for Federated States of Micronesia longline, Samoa longline, Solomon Islands longline, Vanuatu longline, French Polynesia longline, French Polynesian pole-and-line and New Caledonia longline. Logsheets data collection from the small Fiji pole-and-line fleet should be re-introduced.
- (iii) Monitoring of catch landings and transshipments at the vessel-trip level is appropriately a port state responsibility. The status of current landings monitoring in most PICTs is poor and will need to be improved in order to provide useful information on total catches.
- (iv) Vessel activity monitoring via an annual vessel activity report is proposed as a flag state responsibility to provide supporting information for the estimation and verification of total catch and effort levels. A form as been designed for this purpose by the SPC/FFA Tuna Fishery Data Collection Committee (Anon. 2003).
- (v) An integrated VMS covering all fishing activity in the Convention Area would provide the ultimate documentation of vessel activity and verification of catch location. VMS will be a shared responsibility among the Commission, flag states and coastal states that licence foreign vessels. Some PICTs have implemented VMS for their national fleets, but considerable additional effort will be required for systems to be implemented across all national fleets.

Part II: Country-Specific Information

- (vi) Observer programmes are completely lacking or operating at low levels of coverage for most PICT national fleets. PICTs will require ongoing assistance to develop observer programmes, and in particular to train sufficient numbers of observers to achieve adequate levels of coverage and to train national programme coordinators to manage observer placements, provide on-going training and evaluate data quality.
- (vii) Port sampling programmes are appropriately a port state responsibility. A majority of PICT national fleets are covered by existing port sampling programmes, although not all at a sufficient level of coverage. As for observer programmes, most PICTs will require ongoing assistance to train port samplers and ensure consistent high-quality data collection. Some rationalisation of purse seine port sampling will be required because of the large variability in unloading locations.
- (viii) The use of export documentation (packing list data) for sashimi longline fleets is currently an under-utilised but potentially valuable source of size composition data. Collection of such data could be readily incorporated into port sampling programmes. Assistance with computer processing of these data may be required.
- (ix) Vessel registries and licencing databases may provide some information on vessel and gear characteristics. However, it may be more effective and efficient to incorporate the provision of such information into logbook programmes or to independently collect it through port inspections.
- (x) The system of data collection that has evolved in the region over many years is essentially a partnership between PICTs and the OFP. PICTs have the legal responsibilities of collecting data from national and foreign licenced fleets and for making informed management decisions regarding the activities of those fleets. The OFP has played a supporting role in providing a range of data-related services to PICTs over many years. The centralisation of some functions, such as data-form design, data processing and database management, has assisted in the maintenance of data consistency and quality and seems to have been a cost-effective means for PICTs to jointly collect and manage an extensive and diverse data system. The OFP will continue to supply these services and to assist PICTs as required and as funding allows. The OFP will also continue to work with PICTs and the WCPF Commission to develop the necessary in-country capacity for PICTs to fulfil their obligations for collection and provision of scientific data to the Commission.

References

- Anon. 2003. Report of the Fifth Meeting of the Tuna Fishery Data Collection Committee. 2–6 December 2002, Brisbane, Australia. Oceanic Fisheries Programme, Secretary of the Pacific Community, Noumea, New Caledonia and Forum Fisheries Agency, Honiara, Solomon Islands.
- Lawson, T. 2003. Observer coverage rates and the accuracy and reliability of CPUE for offshore longline fleets targeting South Pacific albacore. Standing Committee on Tuna and Billfish 16, Working Paper SWG-4.

Part II: Country-Specific Information

Table 3. Indicative responsibilities for various data sources.

Data Source	Main Responsibility	Cooperating Party	Commission Coordination Required
Logsheet	Flag state	Coastal (licencing) state	Yes
Landings/transshipment	Port state		No
Vessel activity log	Flag state		No
VMS	Flag state, Commission (high seas), coastal (licencing) state (EEZs)		Yes
Observers	Flag state (for home waters), Commission (multiple EEZs, high seas)	Coastal (licencing) state	Yes
Port sampling	Port state		Yes
Export documentation	Port state		No
Vessel registry	Commission	Coastal (licencing) state	Yes
Licencing databases	Flag state	Coastal (licencing) state	Yes

Part II: Country-Specific Information

Table 4. Current (2002) levels of fishery monitoring by logsheet, landings, observer, port sampling and VMS for national fleets of PICTs. For logsheet and landings data, a high (H) level of coverage is >80% of the total catch by weight measured or monitored, moderate (M) is 50–80% and low is <50%. For port sampling and observers, high coverage is >20% of the catch measured for length for longline and >20% of sets length sampled for purse seiners, moderate coverage is 10–20% and low coverage is <10%. For VMS, systems currently, partially or soon to be implemented are indicated by Y, but no attempt to rate the current operation is made. The known existence of vessel information on registries or licencing databases is indicated by Y. A dash indicates that data are not currently collected and ? indicates status unknown.

PICT		Logsheet	Landings	Observer	Port Sampling	VMS	Vessel Information
FFA Countries							
Cook Is.	Longline	H	L	-	L	Y	Y
FSM	Longline	M	M	L	H	-	Y
	Purse seine	H	L	M	L	-	Y
Fiji	Longline	H	L	-	M ⁴	Y	Y
	Pole & line	-	-	-	-	-	?
Kiribati	Purse seine	H	-	-	-	?	Y
Marshall Is.	Purse seine	H	L	-	H	?	Y
PNG	Longline	H	L	L	H ²	Y	Y
	Purse seine	H	L	L	L	Y	Y
Samoa	Longline	L	L	-	H	-	Y
Solomon Is.	Longline	L	-	M	-	?	Y
	Purse seine	H	L	M	-	?	Y
	Pole & line	H	-	H	-	?	Y
Tonga	Longline	H	L	-	H	-	Y
Vanuatu	Longline	M	L	-	-	-	?
US Territories							
American Samoa	Longline	H	H	L	L	Y	?
French Territories							
French Polynesia	Longline	L	-	L	-	-	?
	Pole & line	L	-	-	-	-	?
New Caledonia	Longline	M	H	L	H	-	?

⁴ For these fleets, considerable additional weight measurement data are available from either export documentation or from port sampling operations.