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COASTAL FISHERIES STATISTICS IN THE SOUTH PACIFIC
(Paper prepared by the Secretariat)

INTRODUCTION

1 The maintenance of fisheries statistics in the countries and territories of the South Pacific region varies greatly in the quality and coverage of fishing activities. Information on commercial tuna catches are the most developed, but are usually collected and processed by the SPC Tuna Programme's statistical section, rather than being processed in-country. The Tuna Programme has, however, also established in-country data-base systems in some of the countries of the region for the production of maps of catch and effort, vessel trip reports etc. Of concern to the Coastal Fisheries Programme, however, are records of fish and invertebrate landings from near-shore and coastal fisheries. The differences in quality of catch data between the different countries and territories of the region varies from a complete absence of records, to well-developed contact creel census data and market records.

2 Although the subject of fisheries statistics has been raised at this and other fisheries meetings, it is nevertheless timely to consider the present status of coastal fisheries statistics in the South Pacific and to explore areas where improvements can be made. The Coastal Fisheries Programme is currently in the process of updating the SPC Fisheries Directory. To be of any practical use, this will require the most accurate data available on fisheries production in countries of the region. The compilation of the Directory has given the Coastal Fisheries Programme the impetus to look at a wide range of fisheries statistics in the region and the output of these various data gathering exercises.

3 The importance of fisheries statistics has been illustrated by the many different assignments undertaken by the Inshore Fisheries Research Project staff, who are regularly asked to provide some quantitative assessment of fisheries resources, usually in the absence of information on landings and fishing effort. The continuing development of micro-computer technology has improved the lot of the fisheries statistician by streamlining information processing. These improvements have created new opportunities, and thus challenges, for those charged with maintenance of fisheries statistics.

4 This paper reviews the current status of fisheries statistics in the region, for two reasons:

to stimulate discussion on what possible assistance can be rendered by the SPC Fisheries Programme to improve the quality of coastal fisheries statistics in member countries.

to provide an update and better picture for the IFRP of the status of coastal fisheries statistics and volume of fish landings from the coastal sector to enable it to better plan allocation of activities and resources.

IMPORTANCE OF FISHERIES STATISTICS

Development

5 The main reason for the existence of the Fisheries Programme is to provide technical assistance for development. However, not all initiatives are bound to succeed and the success or failure of a project should be measurable and quantifiable. Improvements in fishing methods and techniques should be detectable from records of landings, catch per effort and if possible in the effect on fishermen's incomes. Provision of good statistical data is also required to support or reject fisheries development proposals made by both national and external agencies. Without good statistical data it is difficult to assess the suitability of a particular development proposal, with the net result that inappropriate fisheries development initiatives may produce undesirable results, such as wasteful use of limited resources, overfishing or environmental problems. Further, not all fisheries development is directed by fisheries managers and planners. Many development initiatives are in response to market forces and are essentially unplanned and uncontrolled. Changes in fisheries through innovations can only be properly assessed if the correct statistical data are at hand.

Management

6 Where fisheries are already established or are developing, rational management of the resource is desirable to maximise the returns from fishing and ensure an equitable return to fishermen. Without information on catches and landings no rational decisions can be taken on maximum and minimum sizes in the catch, numbers of vessels, catch quotas, etc, nor is there any way to assess the effects of such decisions. When there is no data from catches and landings, information on declines in catch rates is, at best, informed guesswork, and at worst, wrong. Regulation of fisheries by closed seasons, access limitation, bans on certain species and regulation of gears and vessels by licensing, cannot be carried out rationally without a flow of information about the status of the fisheries themselves.

Risk assessment

7 Areas of reef or lagoon may need to be closed for fishing due to the presence of ciguatoxic fish or other form of marine poisoning. Without good fisheries statistical data, there is no way of assessing the impact of such a closure of fish production and on fishermen's incomes.

Marine tenure and compensation

8 Marine tenure is common in the South Pacific, with areas of reef and lagoon being claimed by different clans and tribal units. Claims for compensation due to environmental disturbance, for entry of foreign fishing craft, or for commercial shoreline development, may require current statistical information on the scale of fishing activity within a given area so that a fair settlement to the claim can be made.

Legislation

9 Legislation enacted by governments should reflect conditions in a fishery or fisheries. Statistical data are essential to provide the correct information by which legislation can be drafted. Information is also required so that existing laws and regulatory powers can be reviewed in the light of changes within a fishery.

Planning

10 Rational economic planning of various sectors of a nation's economy requires statistical information so that realistic development targets can be set. Governments need to be able to prioritise the allocation of funds and resources so that the benefits from development initiatives can be maximised. Fisheries managers and planners also need up-to-date statistics to maintain awareness on the dynamics or changes within a fishery so that decisions can be made in a realistic time-frame.

Training and professional development

11 Although a fisheries officer may be personally aware of the characteristics within a fishery through contacts with fishermen, good statistical information is still required to lend authority to any decisions that result in the modification of the fishery. Further, involvement in the collection and processing of information provides excellent hands-on training for young fisheries scientists and technical officers in familiarising themselves with fisheries under their supervision.

REVIEW OF COASTAL FISH CATCHES

12 The nominal coastal fin-fish landings for the South Pacific region are given by country in Table 1. Nominal landings should not be confused with absolute values, rather this is the best estimate that can be made given the sources of data that are currently available. Where possible, commercial landings have been distinguished from subsistence catches. In most countries, commercial catch data is better reported than subsistence production.

13 The total estimated production as shown in table 1 is almost 90,000 t/yr. Assuming a regional average range of \$ US 0.5-2.00/kg for the value of these landings then the nominal value of coastal production in the region amounts to between \$ US 44,000,000/yr and 174,000,000/yr. These catch figures are almost certainly underestimates of true landings.

14 Food accounts for about 20 % of all imports into Pacific Island countries as opposed to less than 10 % of imports into the metropolitan countries. Domestic food production, and hence fisheries production, is important to diminish the reliance of the Pacific nations on imported foods. However, as island populations increase, fish harvests will also increase correspondingly, both in the subsistence and commercial sectors. There is evidence to suggest that in some countries of the region, harvest levels from coastal fisheries are already high and are unlikely to diminish. Development and maintenance of small scale commercial fisheries in the region will thus need to be monitored effectively through reliable statistics on catches and landings if management is to evolve and succeed.

Table 1. Summary of land area, population and fisheries statistics for South Pacific states and territories

Country/Territory	Land area (km ²)	Population (N)	Nominal fish landings (t)	Subsistence catch (t)	Commercial catch (t)	Source
American Samoa	201	33,000	400	300	100	Wass (1980)
Cook Islands	240	17,200	1,100			FAO (1991)
Fiji	18,274	715,375	21,500	15,000	6,500	Anon (1991a)
French Polynesia	4,000	197,000	1,719			FAO (1991)
Federated States of Micronesia	700	73,160	1,406	1,003	433	Dalzell (unpub. data)
Guam	541	106,000	421	350	71	Hamm et al (1991)
Kiribati	4,849	68,207	12,300			Mees, Yeeting & Taniera (1988), Anon (1991b)
Marshall Islands	701	73,160	200			FAO (1991)
Nauru	21	8,900	190			Anon (1988)
New Caledonia	18,734	164,173	5,160	2,000	3,160	Anon (1991c)
Niue	2,459	2,200	60	48	12	Dalzell et al (1990)
Northern Mariana Islands	478	16,800	229			Hamm et al (1991)
Palau	488	16,000	1,050	900	150	Kitalong & Dalzell (1991)
Pitcairn Island	5	53				
Papua New Guinea	462,840	3,592,900	25,000	23,000	2,000	FAO (1991), Anon (1989)
Solomon Islands	28,370	307,597	8,000	7,900	100	Anon (1986), Cook (1988)
Tokelau	12	1,700	231			Gillett & Toloa (1987)
Tonga	780	94,535	270			FAO (1991)
Tuvalu	24	8,230	927			FAO (1991)
Vanuatu	12,190	142,630	2,400	1,350		David & Cillauren (1988)
Wallis & Futuna	153	14,000	1,000			FAO (1991)
Western Samoa	2,831	156,349	3,500			FAO (1991)
Total	558,891	5,809,169	87,063	51,851	12,526	

REVIEW OF FISHERIES STATISTICAL PROGRAMMES

15 A summary of the different fisheries statistical data collection programmes in the South Pacific region is given in Table 2. Commercial landings are fairly well covered in most countries, usually through some form of market survey or records from landing points. Territories such as Guam and American Samoa receive direct assistance with fisheries statistics from the US National Marine Fisheries Service.

16 The most difficult information to obtain are estimates of the subsistence production. In some cases, this has been extrapolated from nutritional data collected by health officers, or from agricultural census data collected at infrequent intervals. In most countries subsistence production is not regularly monitored and must be estimated by such indirect methods. Subsistence fisheries production remains the largest fraction of the total fisheries production and the least understood.

17 Whilst there is no comprehensive documentation of coastal fisheries statistics programmes in the South Pacific, there is considerable variation in data collection between member countries. Well developed creel census and market surveys are used to monitor coastal fisheries in the US territories of American Samoa and Guam, and the Commonwealth of the Northern Marianas. However, even these statistics vary in the methods used to collect the data and the degree of accuracy that can be associated with them. In those countries that collect regular fisheries statistics, there appears to be a combination of records of commercial landings to markets and/or retail outlets in urban areas in conjunction with periodic surveys to assess subsistence fisheries and fisheries production in remote areas.

18 It is likely that different circumstances within the individual countries of the region will require separate approaches to collecting fisheries statistics. However, some form of common format may be a useful strategy to improving the coverage of fisheries statistics in the region. Such an approach might be achieved by a review of current fisheries data gathering exercises with the aim of:

permitting a better understanding of inshore data collection on a regional basis and allow comparisons between different countries and territories

comparing and contrasting data collection systems for similar types of fisheries, comparing methodologies and assessing what works and what does not.

suggesting future directions for dealing with unresolved problems of coastal fisheries data collection, particularly in the subsistence fisheries sector

CONCLUSIONS

19 The advent of micro-computers and the training imparted by SPC and FFA in fisheries statistical data collection and data processing has led to gradual improvements in the volume of statistical data on coastal fisheries. However, coverage of data collection can be improved for most countries, particularly for subsistence level fisheries. Several reasons have been given why coastal fisheries statistics are important and why the present volume of fisheries should be improved to provide better information for planning, management and regulation.

Table 2. Summary of the status of coastal fisheries data collection in each of the countries and territories of the South Pacific region.

Country/territory	Fisheries statistical programmes
American Samoa	Fisheries statistics on commercial and non-commercial landings in American Samoa collected as part of NMFS-WPACFIN system
Cook Islands	No formal reporting of fisheries statistics. Some ad-hoc information on subsistence catches has been collected
Fiji	Good coverage of commercial fisheries catches sold through produce markets and stores. Subsistence production estimated empirically
French Polynesia	Reporting of commercial fisheries production in produce markets
Federated States of Micronesia	Some fisheries statistics collected but not formally reported. Quality of information varies between the different States.
Guam	Fisheries statistics on commercial and non-commercial landings in Guam collected as part of NMFS-WPACFIN system
Kiribati	Good coverage of coastal fish landings in South Tarawa, with extrapolations made for other atolls based on periodic short term records.
Marshall Islands	No fisheries statistics were found for Marshall Islands.
Nauru	No fisheries statistics data were found for Nauru.
New Caledonia	Good coverage of commercial fisheries catches sold through produce markets and stores. Subsistence production estimated empirically.
Niue	No reported fisheries statistics were found for Niue. Commercial landings based on fishermen's records and subsistence production estimated empirically.
Northern Mariana Islands	Fisheries statistics on commercial and non-commercial landings in NMI collected as part of NMFS-WPACFIN system
Palau	Reasonable coverage of commercial landings. Subsistence production estimated empirically.
Pitcairn Islands	No fisheries statistics were available
Papua New Guinea	Only commercial landings to government maintained fisheries stations recorded but not formally reported.
Solomon Islands	Only commercial landings to government maintained fisheries stations recorded and published in annual report.
Tokelau	No commercial production. Subsistence catch extrapolated from short term field studies
Tonga	Good coverage of commercial landings of deep slope catches.
Tuvalu	Landings of government fishing vessels and commercial fishermen collected in Funafuti
Vanuatu	Good coverage of commercial deep slope fisheries landings. Subsistence extrapolated from field surveys.
Wallis & Futuna	No fisheries statistics available
Western Samoa	Good coverage of commercial landings to produce markets. Subsistence production extrapolated from field surveys

20 Programmes for the collection of fisheries statistics appear to be difficult to establish and maintain. Some countries of the region have established coastal fisheries data bases but which have been discontinued after a few years of operation. Collection of statistics on other natural resources is routinely carried out by statistical officers in the countries of the region, whilst for fisheries there appears to be some increment in the level of difficulty with the generation of this data. These difficulties may be due to a lack of emphasis imparted to fisheries officers during training on the importance of numerical records for managing fisheries. Certainly, the perceived role of fisheries officers seems to be strongly orientated towards development rather than management and monitoring of fisheries. Perhaps there has to be a fundamental change in the perception and function of fisheries officers before statistical data collection will improve.

21 Collection of fisheries statistics will require the allocation of manpower and resources devoted to this task. In some of the smaller states and territories of the region this may only need to be a part-time occupation for a fisheries officer. In some of the larger island archipelagos, the manpower and resources commitment may be substantial if good data coverage is to be achieved. It would be useful for those countries where collection of fisheries statistics is relatively well developed to comment on the manpower and funding requirements needed to maintain their programmes. The Inshore Fisheries Project and the Tuna Programme's statistical section can then advise and help with developing in-country skills through country visits and training attachments

22 Two other presentations will be made during this session of the meeting by the Fisheries Education and Training Advisor on the advantages of log-books for commercial fishermen and fisheries statisticians, and by the Health Programme's Nutritionist on the use of nutritional data for fisheries production estimates. The meeting is invited to comment on these presentations and to discuss ways in which the Fisheries Programme and the Inshore Fisheries Research Project can assist countries in strengthening their data gathering and processing capabilities.
