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PRIORITIES AND PRAGMATISM:
FISHERIES STATISTICS PROGRAMMES IN THE COOK ISLANDS

by

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ABSTRACT

In the Cook Islands, commercial shell-fisheries receive the highest priorities for research and fisheries statistics collection. Some of the problems encountered in collection of statistics for seasonal, small-scale, or subsistence fisheries are discussed. The fisheries are described, the information requirements identified, and the statistics collection methods reviewed, from the perspectives of prioritisation of needs, and the intrinsically ad-hoc nature of the programmes. This pragmatic approach has satisfied the more immediate statistics needs, identified areas for further effort, and helped raise the perceptions of the importance of such low-profile fisheries.

1. THE PRIORITIES

In Pacific Islands, commercial fisheries for economically important, and/or biologically vulnerable species receive the greatest emphasis for management and development. Consequently, these fisheries attract most of the research and monitoring efforts, and most of the available administrative, logistical, and man-power supports for statistics collection.

In the Cook Islands, the export-based fisheries for pearl-shell on Manihiki and Penrhyn atolls, and for trochus on Aitutaki, are the highest-profile commercial fisheries. These fisheries are identified as research and management priorities by their fulfillment of the following criteria:

- (i) Export-orientation, providing much needed foreign exchange;
- (ii) Economic significance to those outer islands where the fisheries are based;
- (iii) Proven vulnerability of stocks to overexploitation.

The trochus fishery of Aitutaki has been monitored and managed by a series of regular surveys of stocks (usually pre-harvest and post-harvest). The results, and significance to management of this work is described elsewhere (this meeting). Trochus are especially suited, by their obvious nature and accessible habitat to such intensive survey work. Considerable research has been conducted throughout the region into the biology, assessment methods, and management of trochus. All that is really now required to effectively manage trochus stocks is access to the information and experiences from other fisheries, ongoing monitoring of the fishery, and a transect rope and ruler.

In the Cook Islands, the long-standing importance of the pearl-shell fisheries to the socio-economic status of the atoll islands, and to the country, has been coupled with recent developments in pearl-oyster culture and

pearl-farming, in emulation of the French Polynesian example. There has been, then, increased recognition of the need to address the issues of pearl-oyster stock management from a more rational, informed perspective.

The research programme for pearl-oyster fisheries involves stock assessment work, biological research, and fishery statistics collection. The approaches taken, and applicability of the results to stock management are described elsewhere. (See other report this meeting.)

2. THE PROBLEM AREAS

Other fisheries may be regarded as less significant because of any or all of the following reasons:

<u>Nature of Resource or Attribute of Fishery</u>	<u>Consequent Perceptions</u>
(a) Part-time, or sporadic activity	Limited scale employment Low level economic significance
(b) Fluctuating, or seasonal stocks	" "
(c) Informal market/trade	Low level economic significance
(d) Small scale activity	No threat to stocks
(e) Traditional basis	Limited growth potential Modern management inappropriate

These 'less significant' fisheries are largely unmonitored. Development plans or management efforts in these lower-profile fisheries often suffer because insufficient information is originally available upon which to base project decisions.

One of the principal goals of a statistics programme is to demonstrate the importance of the lower-profile fisheries to administrators and decision-makers. Once the importance of 'knowing the numbers' is recognised, then not only will there be greater support for the aims and approaches of a statistics collecting programme, but there will be an increased receptivity to the results and the recommendations arising from the data.

The most immediate areas of need for fisheries statistics collection in the Cook Islands were determined on the following basis:

- (a) the ecological and economic status of the various fisheries;
- (b) the areas where management plans and development options can be identified and reasonably implemented;
- (c) the capacity to collect data.

3. THE PROGRAMMES

In the Rarotongan offshore artisanal fishery, for example, (reported elsewhere in this meeting), irregular funding for FAD construction and deployment was limiting the profitability, and constraining the growth of the fishery. Some cost-benefit justification of the considerable expenditure involved in FADs was considered to be a useful lever with both local and external funding bodies. Consequently, only the catch and effort of the fleet were investigated, to give dollar values for the benefits derived from the FAD programme.

The monitoring of the Palmerston parrot-fish (Scaridae) fishery is designed primarily to assess the status of stocks, and the impact of current fishing levels. The economics of the fishery are of secondary importance, as the fishery is considered capable of developing itself, under its own commercial incentives, to the full resource potential. The statistical monitoring is intended only to identify this potential, and to determine appropriate management options.

Catch data from the Rarotongan SCUBA spear-fishery has been used to compute indicators of relative abundance of target species, under a standardised unit of effort (one dive). Estimation of the impact of all spear-fishing activities, indications as to how spear-fishing might best be regulated (reserve locations, etc), and means for measuring the ecological and economic benefits of such regulations (eg: Do increased catches in areas adjacent to reserves compensate for the loss of access?) are all determinable from this data. The emphasis of the programme is on identifying appropriate means for controlling the fishery, rather than investigating other biological or economic aspects.

The outer islands' subsistence catch and consumption survey programme has been limited to those islands on which capable fisheries officers are currently based. Shorter surveys on other islands can then be conducted as logistics allow, to provide a correlative basis for extrapolation to full-year estimates for these islands. The status of subsistence stocks on outer islands is not likely to alter dramatically in the near future. Further, there are no adequate means of enforcing any management strategies in subsistence fisheries on the outer islands. The immediate information requirement, then, is for a broad-based assessment of the economic and nutritional importance of these fisheries. Future management and development options, and thereby, future priorities for statistics gathering needs can then be identified.

Fisheries statistics programmes undertaken, or intended, are detailed in the attached tables (Tables 1 and 2), together with descriptions of the fisheries, and itemisation of the issues and information needs out of which the programmes arose.

4. CONCLUSION

The work is pragmatic in its aims, and largely ad-hoc in its implementation. Nevertheless, quantitative information is now available for decision-makers to use in planning for Cook Islands fisheries management and development, and the perspective of 'significance' in lower-profile fisheries has been somewhat broadened.

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Table 1: RarotongaDESCRIPTION

Fishery	Rarotonga FAD fishing	Rarotonga lagoon-reef	Rarotonga SCUBA spear-fishing
Level of Activity	Part-time/ Artisanal	Part-time/ Subsistence	Fluctuating:Part- -time/subsistence
Targets	All pelagics	All lagoon- -reef fish	Reef fish
\$ Level	Commercial/ Subsistence	Subsistence: Excess catch sold	Subsistence: Excess catch sold

REQUIREMENTS

Issues	Irregular funding for FADs	Unregulated/ Heavily fished	Unregulated. Poten- -tial conflict with free-divers/tourist charters
Development/ /Management	Ongoing FAD deployments	Conservation measures?	Prohibition, or regulation?
Information Needed	\$ Analysis of FADs	Suitable reserve areas	Impact of all U/W spearing on stocks
Statistics Needed	CPUE & \$PUE FAD vs no-FAD	Distribution of effort	CPUE and total catch
Incidental Information	Total catch and value	Patterns of reef-use	Standardised CPUE for U/W spear

PROGRAMME

Method	Creel-census. Wharf-side interview/ Catch records	Random time block surveys around island by observers	Catch forms completed by divers
Status	1 Year done & Reported	1 Year survey data done	1985-present collected
Results	FAD Value Supported	Analysis Pending	Standardised CPUE for @ reef sector. No change/time
Future	Periodic Monitoring of Fishery (2 month/yr)	Catch and Consumption Surveys	Continuation. Test-fish to assess value of Reserves

Table 2: Outer IslandsDESCRIPTION

Fishery	All fishing on Outer Islands	Palmerston Parrotfish	Aitutaki Shellfish
Level of Activity	Subsistence - some Artisanal	Part-time/ Artisanal	Part-time/ artis.& subsis.
Targets	All Food-fish	Parrot-fish (Scaridae)	<u>Tridacna maxima</u> <u>Turbo setosus</u>
\$ Level	Subsistence. Excess catch sold on island	Commercial shipments to Rarotonga	Commercial shipments to Rarotonga

REQUIREMENTS

Issues	Unregulated. No measures of catch or consumption	Unregulated/ Possibly over-fished	Unregulated/ Heavily fished
Development/ Management	Goals? Approaches?	Expansion, or controls?	Instigate management?
Information Needed	Base-line catch data	Stock/fish-ing levels	Monitor fishery
Statistics Needed	Volume and value of catch	CPUE and volume for @ species	Volume of catch
Incidental Information	Comparative island data	Value of fishery	Value of fishery

PROGRAMME

Method	Random time block surveys of selected households	Creel census. Beach-side interview/ catch count	Monitor weights through air-cargo?
Status	Palmerston, Penrhyn, Aitutaki:6 mths	11 mths done & reported	Intended
Results	Awaiting full years data	Seasonal fluctuations in fishery	- - -
Future	Extend to Rarotonga and makatea islands	Continue monitoring	- - -