

Erratum

Patrick Chan points out that there were two mistakes in fish names in his article on marketing in the Hong Kong live reef food fish trade in issue #7. The corrections are:

Plectropomus leopardus = Red coral trout = Tung Sing
Plectropomus areolatus = Spotted coral trout = Sai Sing

Trial community fishing and management of live reef food fisheries in Papua New Guinea

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Live reef food fish operations

The live reef food fish (LRFF) trade began in PNG in 1990 at the Hermit Islands in Manus Province. This operation lasted until 1992 when it ceased as a result of socio-economic concerns raised by the islanders and other factors associated with over-fishing. Since then LRFF operations have occurred in Milne Bay, Bougainville, New Ireland and East New Britain Provinces. Handlines and traps were the most common types of gear used but investigations by National Fisheries Authority during the time when the companies were operating revealed that cyanide was also used secretly. Investigations also revealed that cyanide was stored on some fishing vessels/carriers operating at the time.

Up to 32 target species of fish were recorded in the catches and comprised fish from the families Serranidae (19 spp.), Labridae (1 sp.), Lutjanidae (8 spp.), Carangidae (1 sp.), Lethrinidae (2 spp.) and Scorpaenidae (1 sp.). Catch rates were relatively low (ranging from 0.5 to 20 kg per fisherman per day) compared to catch rates recorded in the Philippines and Indonesia. Annual harvest of live reef food fish in PNG has been relatively low, ranging from 3 tonnes in 1993 to just over 35 tonnes in 1997.

Operators in Hong Kong considered PNG to be the "next frontier" for the live reef fish trade in the early 1990s. It didn't turn out that way, however, for a number of reasons related to restrictions on the issue of LRFF licences, customary marine tenure and the introduction of a moratorium on the issuing of new licences.

Moratorium

Briefings to the National Fisheries Authority Board and efforts of international NGOs led the Board to impose an indefinite moratorium on issuing new licences for the LRFF fishery. The moratorium came into effect in late 1997 and the last licensed operation ceased in 1998. Realising that there was strong interest in the LRFF and that there was an opportunity for village communities to benefit from the LRFF fishery, the National Fisheries Authority Board approved two trial LRFF operations in December 2000. The trial licences will be issued for a period of one year. The Board will maintain the moratorium other than for the two trial licences approved to operate at M'Buke Islands in Manus Province and Tingwon Islands in New Ireland Province.

Interest in live reef food fish

A number of companies and communities have expressed interest in the LRFF trade. Among the communities is a village community from Goodenough Island in Milne Bay Province that was involved in the LRFF trade with a foreign-licensed operator. Between 1997 and 1998 a total of 12 license applications and or expressions of interests were lodged with the National Fisheries Authority to be involved in the LRFF fishery. Between 1998 and 2000 three companies expressed interest in the LRFF fishery and maintained infrastructure by getting involved in some other fishery. Two of these companies have been issued with trial LRFF licences while the third has a business

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arrangement with one of the companies undertaking trial fishing.

Consultative process with stakeholders

A series of meetings in 2000 were held with stakeholders of the LRFF trade in anticipation of the Board lifting the moratorium. The consultative process was undertaken by officers from the National Fisheries Authority and focused on management of the LRFF fishery. Key stakeholders consulted included LRFF operators in Kavieng and Port Moresby, two village communities, and the New Ireland and Manus Provincial Governments.

Key issues and concerns raised by LRFF operators were that:

- they wanted to fish spawning aggregations,
- they wanted to be allowed to use hookah gear,
- they wanted to fish as soon as possible,
- they would cooperate with the management of the live reef food fish fishery.

Key issues raised by the communities were that:

- they were not aware of the destructive potential of the live food fish trade,
- they realised that management was needed,
- they wanted higher prices,
- they wanted greater involvement in management,
- they wanted to do their own fishing and sell or export to buyers.

During the consultative process stakeholders had the opportunity to comment on the draft national and area specific management plans.

Following the Board decision in December 2000 to issue two trial licences, the National Fisheries Authority convened another consultative meeting with the two companies that will be issued with trial licences. The meeting clarified the Board's decision and outlined the implications for the companies. It also gave stakeholders the opportunity to give input towards the monitoring regime during the one-year trial period.

Trial fishing

The National Fisheries Board approval of the two trial licences is conditional on the trials being monitored intensively. One full-time observer has been assigned to each of the two trial operations. The observers are experienced in fishery data collection, and as part of the preparation, will be participating in a grouper spawning aggregation survey to be undertaken between 13 and 27 March 2001.

Very specific licensing conditions will be imposed on the two trial licences and include:

- no interference with traditional fishing;
- only fish from the villagers will be bought by the company, which will not undertake any fishing itself;
- only handlines and traps will be used for fishing;
- use, storage and transportation of explosives, noxious substances (including cyanide in any form) for the purpose of killing, stunning, disabling or capturing fish is prohibited;
- specific data must be recorded on the forms provided and submitted in a timely period as specified; and
- free access to be granted to observers to all company facilities while conducting their duties.

The company that will be operating at M'Buke village in Manus is owned exclusively by the people of M'Buke Islands while the company operating in New Ireland Province is a national company but owned by people from outside of Tingwon Islands.

Monitoring trial fishing

The monitoring of trial fishing will be conducted by an observer in each of the two LRFF operations. The observers will be funded by the National Fisheries Authority and will be on site for the full duration of the one-year trial fishing. A number of forms have been designed for collecting data when fishing, buying fish, and during the transshipment of fish from the boats to the cages.

It is anticipated that after the spawning aggregation survey, which will be conducted in March 2001, the observers will be involved in monitoring the spawning aggregations identified in the survey.

National Live Reef Food Fish Fishery Management Plan

Although the National Live Reef Food Fish Fishery Management Plan has not been approved by the Board, it is anticipated that by April 2001 a final draft will be available for the Board to consider. The National Live Reef Food Fish Fishery Management Plan provides a broad framework for the management of the fishery through area-specific plans. Strategies under the plan include management through a total allowable catch limit for each of the specific fisheries, closures of spawning aggregation areas, limits on fishing effort and management of bycatch.

The formulation of area fishery management plans enables communities to be active participants in the management of the LRFF fishery. The National

Fisheries Authority wants to use the LRFF fishery management plans and the experience as a model for other coastal fisheries in PNG.

Community Fishery Management Plans

The draft community fishery management plans (area specific) are designed to enable communities to manage the fishery. Control of licensing is still with the National Fisheries Authority but the latter is only a co-manager of the fishery. Among the management measures being proposed under the Community Fishery Management Plans are the closure of spawning aggregations areas, gear restrictions, size limits, total allowable catches and restrictions on fishing by foreigners and outsiders.

Information needs

Key gaps in information required for basic management of the fishery have been identified, and include the standing stock of target species, the level of stock that can be fished sustainably, spawning areas, spawning seasons and size at sexual maturity. Information required for the national and area specific management plans will be extrapolated from similar tropical areas (in-country or regionally), gathered during the one-year trial fishing and from other relevant sources. The National Fisheries Authority is working collaboratively and exploring ways to address the information gaps with NGOs and other scientific organisations.



Protecting grouper spawning aggregations, a potential target of the live reef food fish trade in Ysabel and Wagina Islands, Solomon Islands

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Introduction

The Solomon Islands government has lifted the moratorium on the live reef food fish (LRFF) trade in its waters. The single worst biological threat posed by the trade in this country is its ability to eliminate spawning aggregations³ of certain target species, especially groupers (serranids), through heavy fishing pressure. The destruction of grouper spawning aggregations in more than ten different tropical countries has been documented; and apparently none of these aggregations has become reestablished (Johannes et al. 1999). Once these aggregations disappear, the fisheries associated with the stock also collapse.

It is important, therefore, that Solomon Islands fisheries authorities obtain details concerning the existence of grouper spawning aggregations in their waters so that they can ensure their protection from the LRFF trade. To this end, between 7 and 15 December 2000, we interviewed fishermen along the east and north coasts of Ysabel Island and on Wagina Island in order to find out what they knew about the location and timing of spawning aggre-

gations of groupers in their waters. We interviewed in the villages of Bualo, Baolo, Kolopakisa, Kia, Babahayo, Cookesin and at a few isolated locations west of Sabahayo. The purpose was to find out as much as possible about these spawning aggregations in order to prepare contingency management plans for use in the event that the LRFF trade targets these waters.

If it does not, such plans could nevertheless prove useful to future generations. Although the fishing pressure on these marine resources is relatively low (see below) this may not be the case indefinitely; Solomon Islands has one of the highest birth rates in the world.

We used the excellent photographs in Lau and Li's Identification Guide to Fishes in the Live Seafood Trade of the Asia-Pacific Region (Lau and Li 2000) to identify those species fishermen were familiar with. Fishermen leafing through this guide demonstrated a sophisticated appreciation for grouper taxonomy, having specific local names for the majority of the 36 *Epinephelus* and *Plectropomus* species⁴ pictured in the book.

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3. The use of cyanide in this trade has been a serious problem in some Southeast Asian countries (e.g. Johannes and Riepen 1995), but appears to have posed little or no threat in Solomon Islands.

4. Members of the grouper genera *Cephalopholis* and *Variola* were not included in our discussions because members of this genus do not tolerate holding and long-distance transport well and are thus not targeted by the LRFF trade in Solomon Islands.