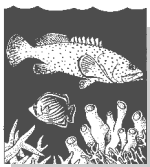


Countries exporting LRFF should establish quotas to ensure the long-term sustainability of their fisheries. Lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to prevent environmental degradation (FAO, 1996).

Further research into hatchery-based mariculture should be encouraged as currently all mariculture operations, with the exception of mariculture operations for Green grouper *E. cooides* and Malabar grouper *E. malabaricus* in Taiwan, are based upon grow-out of wild-caught juveniles.



The use of chemicals in the live fish export industry

by Katherine Kelly¹

Attention has recently been drawn to the use of chemicals in the live fish trade. This article will attempt to clarify the use of chemicals, the Australian Quarantine and Inspection Service's (AQIS) role and the National Registration Authority's (NRA) requirements.

The live fish trade has an annual export income of about AUS 20 million accounting for 15% of the total commercial landings of demersal reef fish in Queensland, with catches primarily of coral trout in north Queensland. In the reef/line fishery about 110 licensed fishing boats have changed over to live reef fish operations, with production in 1997 at 369 tonnes (*QLD Fisheries News*, Issue 2, June 1998).

The pressure to use chemicals such as anaesthetics and antibiotics has increased with the reduction in airfreight capacity due to the down turn in tourism flights from Asia to far north Queensland. Purpose-built cargo boats are currently used to transport fish to Hong Kong.

Transportation time has increased resulting in a greater need for water conditioners to remove ammonia, antibiotics to reduce infection and anaesthetics to sedate fish.

Asian companies are pressuring exporters to use chemicals banned for use in Australia. Chemicals used for veterinary or agricultural purposes during the production of food intended for human consumption must be approved and registered for use by the NRA. The NRA is responsible for registering chemicals for that 'use pattern' (this means for a particular species and purpose).

A chemical may be used 'off label' if prescribed by a veterinarian or if the user has obtained a 'minor use permit' form NRA. According to legislation, it is an offence to possess and use an unregistered

chemical product or unapproved active ingredient, or to use a registered product in a manner not included on the label.

One chemical registered for use in the handling and harvesting of Salmonids is 'AQUIS-S', an aquatic anaesthetic. This chemical may currently be used for other species in a 'off-label' capacity (with a veterinarian prescription) or with a 'minor use permit' obtained from NRA. Restrictions apply on when and how the chemical is to be used and permission for use is only for the applicant concerned.

There are currently no antibiotics registered for use on fish destined for human consumption. As the NRA can only deal with drugs and chemicals that have a direct effect on animals, the debate over water conditioners being a NRA issue continues.

The process to register a chemical with NRA is currently expensive and time consuming. It has been argued that no single manufacturer is likely to invest in registering new uses for existing chemicals because their share of an increased market will be too small, to warrant the investment. In addition, once chemical is registered, all competing companies can expand their own label claims without significant expense.

The process of obtaining a 'minor use permit' for a registered chemical to be used in another 'use pattern' is less costly and more acceptable than 'off label' veterinary prescriptions.

AQIS is responsible for ensuring that exported fish is safe and wholesome for human consumption, under the Commonwealth's *Export Control Act's 1982* and its subordinate regulations the *Export Control (Processed Food) Orders*. The 'Orders' require that exported fish may not contain contaminants or residues potentially harmful to humans or in quantities exceeding limits determined by relevant domes-

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tic importing country or international food standards authorities. The onus of responsibility to prove that an export consignment is safe for human consumption rests entirely with the exporter.

The use of unapproved chemicals in the live fish trade can be considered hazardous due to the potential consumption of fish before the allowable 'withholding period' is complete. If exporters fail to comply with NRA approval protocol, 'Control of Use' legislation at the State/Territory level and AQIS regulations, they can jeopardise the overall viability of Australia's seafood export trade.

The question of unregistered chemical use in the live fish export trade surfaced in Australia on 11 May 1998 following the release of a public notice by AQIS to exporters of live fish. The notice issued a warning about the inappropriate use of Sodium Nifurstyrenate, an antibiotic, on live fish during containment. The Chemical Residues Section of the Victorian department of Natural Resources and Environment generated a report following analyses of the chemical. The report stated that Sodium Nifurstyrenate might cause cancer, birth defects, and liver disease in humans particularly if consumed before the recommended withholding period.

Interestingly, a few years prior, this chemical was classified as 'not permitted for aquacultural use' by

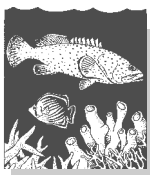
the Registration liaison Committee (RLC) of the NRA due to its deleterious side effects.

A National Task Force on Aquaculture Drugs and Chemicals was established in 1995 to address the registration of drugs and chemicals for use in aquaculture and live fish export. A joint industry and government project funded by Fisheries Research and Development Corporation (FRDC) titled *Registration of Aquaculture Chemicals* was initiated in 1996, aimed at gaining registration or permits for 12 or more drugs or chemicals. The relatively small demand for these products compared to the cost of registration has resulted in a general lack of interest by drug and chemical companies.

When dealing with the use of chemicals in the live fish export trade, the task force states that this industry currently has not drugs or chemicals registered or with permits for the use pattern required.

The task force is due to meet again in mid-February 1999 to address this issue. If there is any appearance of chemical residues in the flesh of exported live fish it will potentially damage a developing and lucrative export and lucrative export industry.

Source: *The Queensland Fisherman*, March 1999, page 32.



The capture and culture of postlarval coral reef fish: Potential for new artisanal fisheries

by Johann Bell¹, Peter Doherty² & Cathy Hair³

Introduction

There has been much debate about the merits of harvesting and growing wild juvenile coral reef fish to supply the aquarium market and live fish trade. Arguments centre on whether the harvesting of juveniles will affect natural replenishment of coral reefs, and the effects of removing juveniles of different ages (Sadovy & Pet, 1998; Johannes & Ogburn, this issue). The age of the juveniles is pivotal to the debate; harvesting of postlarvae from the water column is considered to have a much lower (negligible) impact on rates of replenishment than the removal of the larger juveniles from benthic habitats because the postlarvae have yet to undergo severe mortality.

The effects of harvest levels and times are not the only factors to be considered in assessing the scope for capturing and culturing wild juvenile coral reef fish, however. The acceptance and success of such ventures will also depend on cost-effective methods for rearing the juveniles to market size. Postlarval groupers are removed from artificial habitats designed to attract them and then sold to growers (Johannes & Ogburn, this issue) but there is little documentation of culture methods. We need to know more concerning whether postlarvae can be collected in a way that does not damage them, whether they can be weaned easily onto simple diets, and whether they can be grown at low cost to create new artisanal enterprises.

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