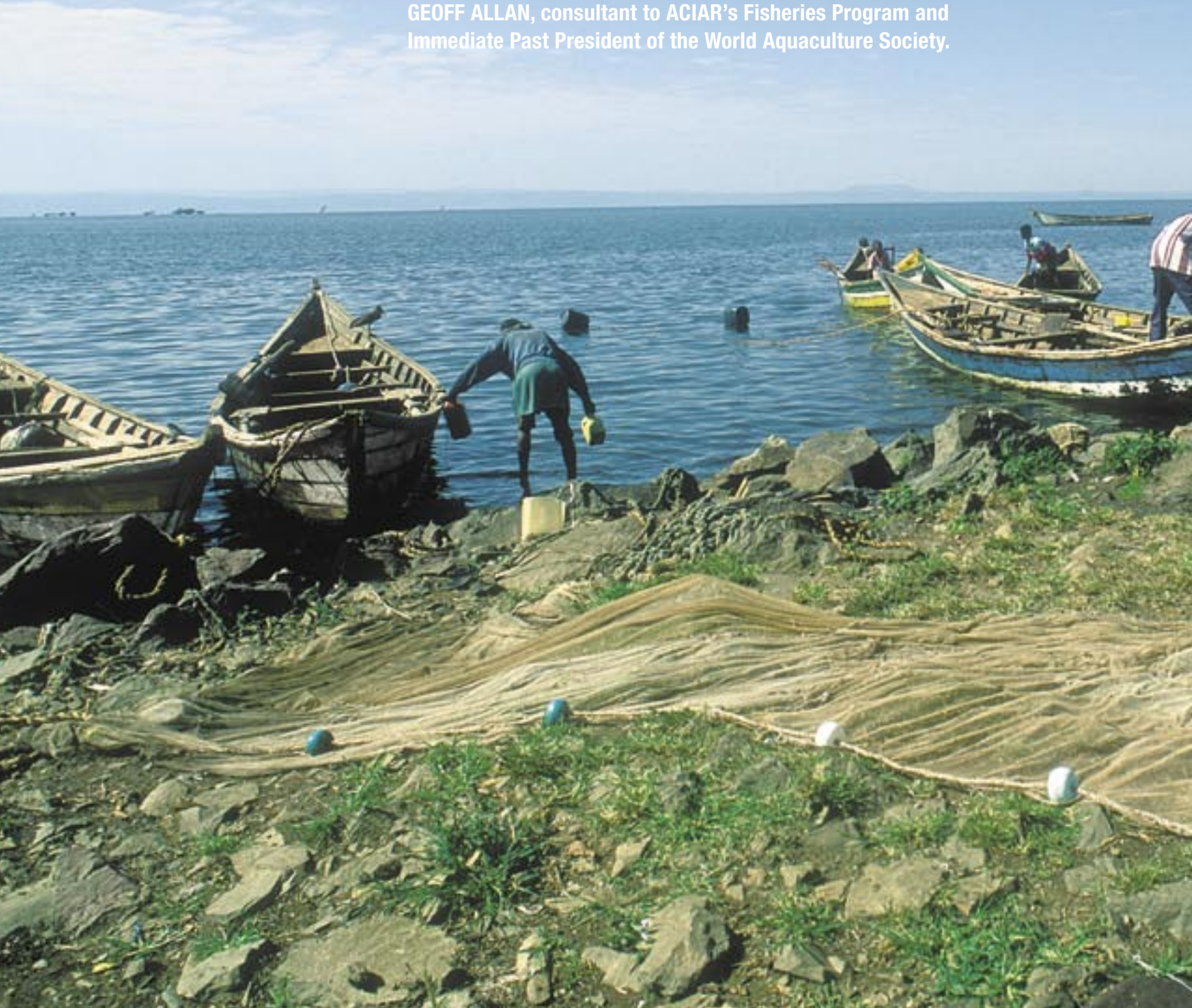


FISHING FOR TOMORROW

In August, the annual Crawford Fund Parliamentary Seminar examined the issues of sustaining fish as a global food supply. Two of the presenters were ACIAR's Fisheries Research Program Manager, Mr BARNEY SMITH, and Dr GEOFF ALLAN, consultant to ACIAR's Fisheries Program and Immediate Past President of the World Aquaculture Society.





Live now, pay later: for the coastal communities of many developing countries, fishing is the only pathway out of poverty.

BARNEY SMITH:

For many coastal communities fishing is not a way of life, it is life. But the subsistence nature of fishing in these communities is changing. Rising global seafood demand is resulting in more fishing, both by commercial and village fisher folk.

For many coastal communities, fishing has become a means of creating additional income as a way out of poverty.

Long-term sustainability, of fisheries and the communities that depend on them, can get lost in the push for increased catches. Without this, developing countries, Australia and the oceans of the world all lose.

In many countries in the Asia-Pacific region a lack of resources and expertise have hampered the ability of fishing authorities to monitor catch levels. This begins with a clear understanding of the fisheries themselves, the type of fish that spawn and feed in such areas, population levels and species biology.

Australia has developed a high level of expertise in the science needed to assess fisheries, to monitor catches and to ensure long-term sustainability.

To ensure fish and marine environments survive, ACIAR is partnering with developing countries in the region to identify solutions to protect the livelihoods of poor fishing communities. If overfishing is allowed, stocks of many high-value species may be depleted to the point of no return.

Collaborative initiatives to share our scientific expertise with Indonesia, the Philippines, East Timor, Papua New Guinea and Pacific island countries are underway, building cooperative links for the management of fisheries in the region.

Indonesia and the Philippines have agreed to cooperate in tackling the problems created by illegal, unreported and unregulated fishing in the Sulawesi Sea. If left unaddressed, it is likely that fish populations will collapse, and the Sulawesi Sea will be fished out.

Policy researchers supported by ACIAR are assisting both countries to formulate a joint management plan, ensuring a more sustainable approach to management and one that may help recoup much of the estimated \$US5 billion a year in losses.

Australia is also developing strong bilateral partnerships, including with Indonesia, to manage shared fishing grounds.

► For more than a decade, Indonesian and Australian experts have been working together to improve understanding of stocks and the impact of fishing on high-value species in the Arafura and Timor Seas. These waters are breeding and feeding grounds of many fish.

The needs and interests of small-scale fishers as well as larger fleet owners from Australia and Indonesia are being listened to, ensuring that mutual interests are accommodated in future management plans.

These research partnerships are also examining ways to improve fish farming to alleviate the pressures global demand is creating.

Successful farming of marine finfish and other high-value species such as mud crabs presents many challenges – finding the right feeds, managing disease outbreaks and ensuring local environments do not suffer.

Australia, Indonesia and the Philippines have worked together to develop production systems for raising juveniles of several high-value grouper species, as well as mud crabs. The work is already helping poor communities in Bali, where over 600 backyard hatcheries are producing healthy fish for sale, locally and increasingly to the lucrative live-fish markets of Asia.

Re-stocking of depleted coral species is helping indigenous rural communities in northern Australia, eastern Indonesia and the Pacific, who have traditionally lived off coral reefs.

Aboriginal communities in the Kimberley region have established hatcheries to raise young topshell (a species of trochus), the conical shell which is valued by the fashion trade.

Local communities have taken the initiative and are working with fisheries authorities to reseed nearby reefs, in an effort to restore the local industry.

For villages and communities throughout the Asia-Pacific region, opportunities to sustainably exploit local fishing grounds are likely to be preserved, ensuring they, Australia and the world's oceans all win.

FISH FOR FEED, OR FISH FOR FOOD?



Surface tension: trash fish or cash fish.

GEOFF ALLAN:

Aquaculture is the fastest growing food producing sector in the world. Fish is a main protein source for many in developing countries, representing up to 25 percent of protein intake.

Fish farming, or aquaculture, is increasingly meeting this rising demand, but at the heart of aquaculture production is a fundamental tension – fish for feed versus fish for food.

Where in the wild, fish feed on other marine life for survival, in aquaculture it stands to reason the best way to grow healthy fish remains to feed them other fish.

This has been the dominant viewpoint in aquaculture since the industry first began.

So fish are caught to produce fishmeal and fish oil as feeds for species suitable to aquaculture. To a lesser extent, fishmeal and fish oil are also used for feeding terrestrial animals and to a small degree in human diets.

But these fish must come from somewhere – the world's oceans still being the main source. The dilemma is that production (in tonnes) of fishmeal and fish oil consumed by aquaculture requires roughly three times more raw fish (in tonnes) than the final product. This ratio of three to one for raw fish caught versus fishmeal and fish oil consumed is of great concern.

Yet overall production of fishmeal and fish oil remains relatively static. Increases in their use in aquaculture are being offset by decreases in other sectors.

As a result international research has focused, over the past 15 years, on identifying alternative protein and lipid food sources suitable

for aquaculture, shifting the once dominant view of fish to feed fish and addressing this tension between fish for feeds and food.

Fishmeal has been completely replaced in the diets of many aquaculture species, or used at significantly reduced levels.

So too has fish oil consumption been reduced, now included at much lower proportions in feed diets.

Whole fish have also been increasingly used. Known as trash fish – species that when caught were previously discarded – they are fed mainly to species of marine fish and crustaceans in Asia and increasingly elsewhere.

Research is needed to assess the impacts of fishing for trash fish, which are rising in value, in recognition of their increasing value to aquaculture. But as catches rise, the impacts on coastal waterways and in-shore fisheries are likely to rise.

Another research priority is continued evaluation of the potential and current place of formulated feeds, as a replacement for fishmeal. These feeds are based on utilising protein found in grain cereals, oilseeds and legumes.

The main barriers to using such feeds are developing cost effective techniques to concentrate protein and then evaluating these in aquaculture settings with a variety of species.

Successful research has been a significant factor in rising global aquaculture production. The challenge now is to build on this research to limit pressures on wild fisheries before the demand for fish for feed causes long-term damage to the sustainability of fish for food.