

Synopsis of the issue

Over the past decade, there has been an increase of approximately 20 million tons in annual global fisheries production. Most of this increase is due to aquaculture, as capture fisheries have remained relatively stable. More than one in every four fish eaten around the world is now farmed. In fact, aquaculture production expanded at an average annual compounded rate of 10 percent from 1984 to 1995. Aquaculture increased its contribution to the world food fish supply from 12 percent in 1984 to 31 percent in 2002. A rough estimate of annual aquaculture production in the Pacific would be in the order of U.S. \$130-180 million.

It is not possible to characterize all aquaculture operations as good or bad in terms of environmental impact. In general, operations that cultivate invertebrates and/or filter feeders may actually improve water quality. Operations that grow carnivores (often vertebrates) can create significant amounts of local wastes and can require a large amount of high protein feed items as a result of their higher position in the food chain. The ratio of wild fish (meal and oil) it takes to grow an aquaculture fish is important to consider when evaluating the overall ability of aquaculture to reduce pressures from overfishing.

Aquaculture *can* be conducted in an environmentally sustainable manner that adds seafood to the world food supply. The species farmed and their production methods are the key to “doing it right.” However, many people incorrectly assume this growth is relieving pressure on ocean fish populations, many of which are now overfished, and hope it will provide a reliable source of food to the world population. In fact, many types of aquaculture contribute to the depletion of marine fisheries through inefficient practices that rely on feeding wild caught fish to farmed fish. Aquaculture activities can also have negative ecological impacts such as habitat destruction to create space for aquaculture farms and pollution that results from farming operations. Production of a single pound of species such as shrimp, salmon, grouper, or tuna now takes two to twenty pounds of wild caught fish in the form of fishmeal and fishoil. Shrimp farming now accounts for half of all internationally traded shrimp, producing some 800,000 metric tons yearly world wide for a total value of \$6 billion.

Aquaculture Issues Specific to the Pacific

In Asia, there is long tradition and experience base of freshwater and marine species cultivation. Commercial industries for pearl culture, prawn, seaweed and tilapia are established in various parts of the Pacific Islands region. The potential for further development of aquaculture in the region, particularly in developing countries, is substantial. Many Pacific Island communities are exploring aquaculture as a way to generate food, jobs and revenue. As a result, aquaculture in the Pacific is in a state of expansion and diversification. However, most aquaculture in the Pacific Islands occurs in areas where we know very little about the local oceanic conditions.

Recently, Pacific Island aquaculture experts identified the priority species for future regional aquaculture development including seaweed, corals, giant clams, shrimp, milkfish, pearl oysters, sea cucumber, and tilapia. Other aquaculture species of interest in the region include tuna baitfish, trochus, carp, ornamental fish, catfish, abalone, grouper, sponges, and mud crabs.

Developing Sustainable Aquaculture

- Promote the aquaculture of seafood that does not require other seafood as part of its diet. Examples include catfish, tilapia, carps or filter feeders like scallops, mussels and oysters. This type of aquaculture doesn't put as much pressure on already strained wild fish populations.
- Promote ecologically sound management of aquaculture by regulating the treatment of wastewater, enforcing strict health measures (e.g. by reducing the use of antibiotics, pesticides) and restricting the siting of farm ponds in mangroves and other coastal wetlands.
- Develop integrated seafood farming systems that use multiple species to reduce costs and wastes while increasing productivity.
- Reward the aquaculture industry for engaging in environmentally friendly practices.

Primary sources: Asian Development Bank and Secretariat for the Pacific Community Aquaculture Program

Aquaculture Experts

Name	Organization	Country
Austin Bowden-Kerby	Coral Gardens Initiative	Fiji
Willy Kostka	Conservation Society of Ponepei	Federated States of Micronesia
Paul Lokani	The Nature Conservancy	Papua New Guinea
Raymond Newnham	Ora Moana Ltd.	Cook Islands
Tim Pickering	University of the South Pacific	Fiji
Bob Richmond	University of Guam	USA (Guam)
Neil Sims	Editor, <i>Pearl Oyster Information Bulletin</i>	Pacific
Anna Tiraa	Taporoporoanga Ipukarea Society (TIS)	New Caledonia
Ben Ponia	Secretariat for the Pacific Community	New Caledonia

Selected Links and Publications

Australian Institute of Marine Science <http://www.aims.gov.au/pages/search/aquaculture.html>

Komodo Mariculture Project <http://www.spc.int/coastfish/News/lrf/8/LRF8-15-> A project to establish aquaculture activities as a substitute for overexploitation.

Pearl Oyster Information Bulletin <http://www.spc.int/coastfish/News/POIB/POIB.htm>

SeaWeb Aquaculture Clearinghouse www.seaweb.org/resources/sac/. Information clearinghouse on aquaculture issues.

Secretariat of the Pacific Community Aquaculture Web Site <http://www.spc.int/aquaculture>