WorldFish
CENTER

malaysia

WorldFish Center in Malaysia

The WorldFish Center is an independent scientific research organization that works to reduce poverty and hunger by improving fisheries and aquaculture. It is funded by donations from governments and charitable foundations. The Center is one of 15 international research organizations of the Consultative Group on International Agricultural Research (CGIAR).

With offices across the globe, Malaysia is home to the headquarters of the WorldFish Center. Following a generous invitation from the government, WorldFish moved from its previous location in the Philippines to Penang in 2000. Beautiful new facilities were constructed on a 5.4 acre site adjacent to the Fisheries Research Institute in Batu Maung. The Center recruits extensively from its host country; 69% of headquarters staff are from Malaysia. The Director General of Fisheries, Malaysia, Dato' Junaidi bin Che Ayub appointed October 2003, is an ex-officio member of the WorldFish Center Board of Trustees.

WorldFish Center

Fisheries in Malaysia

Malaysia has a vibrant and thriving fisheries sector. In the year 2003 there were over 89,000 fishermen working on licensed fishing vessels and 21,000 fish culturists involved in a variety of aquaculture systems. Total production in the fisheries sector exceeded 1,483,000 tonnes, valued at RM 5.22 billion (USD 1.41 billion). Marine capture fisheries contributed over 86% of this production; aquaculture contributed 13% (196,874 tonnes valued at RM 1,172 million); production from inland fisheries contributed less than 0.3% of the total. Brackish water and marine culture accounted for 74% of aquaculture production, freshwater culture only 26%. In addition, the ornamental fish industry produced about 428 million pieces of fish valued in excess of RM 97 million.

'Hapas' are used to separate different groups of fish during experimental trials

The fisheries sector contributed about 1.37% to GDP. Fish exports play an important role in offsetting the trade balance, as Malaysia is a net importer of agricultural products.

Fish, along with poultry, is an important source of cheap animal protein and a large portion of the fish produced in the country is consumed fresh in the domestic market. Future scenarios indicate that fish production from capture fisheries will become unreliable as many fish stocks have either been over-exploited or have reached maximum yields. Recognizing this, various means of increasing production through aquaculture are now being explored. As has been proved in the case of crops and livestock, genetics research has a major role to play in increasing production from aquaculture.

Malaysia's National Agriculture Policy (version 3) set specific targets for fisheries production: coastal areas 900,000 t, off-shore fisheries 450,000 t and aquaculture 600,000 t. This represents a 10% increase from capture fisheries but more than 250% for aquaculture. Tilapia has been identified as the major species for freshwater aquaculture under the Third National Agricultural Policy. Production is expected to increase from 16,000 t in 2001 to 120,000 t by 2010. Raft/stake culture of mussels, on-bottom culture of cockles, and monoculture of snappers and sea bass in cages are considered to be suitable brackish water/marine aquaculture enterprises requiring lower investment.

Collaboration between WorldFish Center and Government of Malaysia

The WorldFish Center is one of three research centers that are part of the National Centre for Marine Biotechnology and Biodiversity Research and Industry (MaBBRI). This initiative is based on a recommendation from the Ministry of Science, Technology and Environment (MOSTE) with the approval of the National Biotechnology and Biodiversity Council (NBBC). The National Centre's objective is to enhance the capabilities of the marine biotechnology sector of Malaysia and mobilize linkages between the private sector and R&D institutions.

Recent projects carried out by WorldFish have made an impact on the approaches used in coastal fisheries research in Malaysia, and in the near future we should see this reflected in improved management.

The Sustainable Management of Coastal Fish Stocks in Asia Project

The project collected data from over 20,000 hauls/stations and developed a database, "Fisheries Resource Information System and Tools" (FiRST), which contains both resource and socioeconomic data for the marine fisheries sector in South and Southeast Asia, and relevant tools for analysis. This important regional repository of information is a vital tool for fisheries managers developing policies for sustainable management of coastal fish stocks.

This work highlighted the depleted nature of Malaysia's coastal fishery resources, down to 4% of their original biomass in some areas. Assessments have also shown that the relative abundance of the more valuable fishes (such as groupers, snappers, sharks and rays) has decreased sharply and that there has been a proportionate increase in smaller, less valuable species (such as cardinal and trigger fishes).

Coastal Resource Co-Management Project: A Worldwide Collaborative Research Project (Phase III) (with DANIDA)

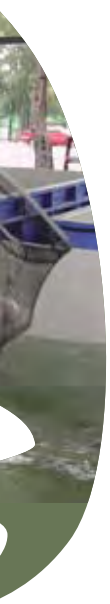
Is co-management a suitable management strategy for Malaysian fisheries? "Fisheries" are very diverse,

Harvesting fish from aquaculture ponds

Tagging tilapia for identification in breeding experiments

from artisanal to industrial, from coastal to open ocean, freshwater to marine, capture to culture—and a wide variety of management structures have evolved. Research has been conducted in selected coastal, coral reef, lake, river, floodplain and inland water-body systems in several countries of Asia and Africa to determine if and under what conditions (political, social, cultural, economic, biophysical and technological) co-management is a viable management strategy. The current focus is on issues of scale and conflict resolution, recognizing that use and protection of coastal resources are connected to specific interests.

This work is carried out in collaboration with a group of international and regional institutions including CARICOM, SEAFDEC-AQD, SEARCA, and various institutions in Cambodia, Denmark, Indonesia, Lao PDR, Malawi, Mozambique, Philippines, South Africa, Thailand, Vietnam, Zambia, Zimbabwe, and Malaysia through the University Putra Malaysia.



Strategies and Options for Increasing and Sustaining Fisheries and Aquaculture Production to Benefit Poor Households in Asia (with Asian Development Bank)

Research in this multi-disciplinary international project focuses on determining the most viable and sustainable aquaculture and fisheries practices (including prioritization of fish species, farming systems, fishing technologies, and management practices); analyzing the policies and support services to fisheries and aquaculture; analyzing fish supply and demand; and preparing national action plans. This should lead to increasing fish production, improving both nutrition and income, while protecting fisheries resources and so benefit poor fish producers and low-income consumers.

The project is implemented in nine countries namely, Bangladesh, India, Indonesia, China, Philippines, Sri Lanka, Thailand and Vietnam, and in Malaysia with the Department of Fisheries, Fisheries Development Authority, and the Universiti Putra Malaysia.

Population Interdependencies in the South China Sea Ecosystem (PISCES), (with UNEP and UNFIP)

Fish are no respecters of international boundaries at sea. From this project it has been possible to define trans-boundary management areas for coral reef resources in the South China Sea. This work has been presented at several ministerial level meetings in the region (e.g., the Informal Working Group on Diplomacy in the South China Sea, and the Preparatory Conference IV for the World Summit on Sustainable Development).

The PISCES project investigates the degree of connectivity among selected reefs in Thailand, Vietnam, Indonesia, East and Peninsular Malaysia, the Philippines, and Taiwan. This is done by evaluating genetic variations based on isozyme and DNA micro-satellite markers and using the differences between populations to establish genetic linkage relationships among them.

PISCES also initiated the formation of a tight network of molecular genetics laboratories in the region. This network has created synergies among research groups that use biotechnology for fisheries management in the region. It promotes efficiency for molecular genetics work, and integration of this research to mainstream fisheries management. Thus far it has led to joint supervisory arrangements among research labs (e.g., USM and Academia Sinica in Taiwan; UMS and the National Center for Genetic Engineering and Biotechnology Institute in Thailand), formal and informal training at the WorldFish Center and other labs in Taiwan and Thailand, and the joint publication of research that involves both molecular genetics and fisheries management information.

International Network on Genetics in Aquaculture (INGA) (with NORAD)

INGA, coordinated by the WorldFish Center, is a network of 13 developing countries that fosters international cooperation and strengthens capacity

in aquaculture genetics research. It develops strategies for national fish breeding programs, exchanges information and germplasm among the network members and supports the conservation of biodiversity. Malaysia is represented through two organizations, namely the Department of Fisheries and the Universiti Malaya.

Genetic Enhancement of Nile Tilapia and Utilization of F1 Crossbred Clones as Control Populations (with DFID)

Tilapia culture in Malaysia is on the rise, supported by the National Agricultural Policy. Previous research carried out by WorldFish in the Philippines on tilapia has shown substantial genetic improvement demonstrated by increased growth performance of the GIFT variety. A pilot study carried out at Jitra Research Station (Kedah, Malaysia) showed that GIFT had better growth performance than the local, but popular, Red Tilapia. Culture in Malaysia is still largely based on unimproved stocks or natural mixes of wild populations. This project will address that problem providing benefits to both the fish farmers who will utilize the genetically enhanced stocks and the consumers.

Flexible, Low Input, Production Strategies and Feeds for Inland and Coastal Tilapia Aquaculture in Asia, with an Emphasis on Tsunami-Affected Areas (CGIAR – Canada Linkage Fund)

The WorldFish Center is an expert in tilapia-based aquaculture. With the goal of increasing the food production capacity and improving nutrition, the Center is aiming to develop low-input aquatic systems. The project will identify sustainable feeding strategies and will contribute to a larger project focused on the role of aquaculture in rebuilding livelihoods in tsunami-impacted communities. Work will be carried out with the University of Guelph, Canada, and the Universiti Sains of Malaysia.

A parallel project will include research programs for enhancing biodiversity and genetic resources, specifically in Malaysia. The main activities will include providing administrative and management mechanisms for aquaculture policymaking and technical assistance, and scientific training on various aspects of fish feed, aquaculture and post-harvest handling.

Genetic Improvement of Tilapia and Freshwater Prawn in Malaysia – An additional grant from the Malaysian Agricultural Research and Development Institute will assist in the creation, maintenance, and improvement of both tilapia and freshwater prawn. The topics to be explored by researchers include methods and policies to minimize the risk of long-term loss of genetic variability in aquaculture species. Researchers will assist in ensuring that national breeding programs adequately manage population sizes and control inbreeding. The WorldFish Center will conduct capacity building activities in genetic improvement among Malaysian staff. Partners include the Department of Fisheries of Malaysia and the Malaysian Agricultural Research and Development Institute.

Maximizing the Contribution of Aquaculture and Ornamental Alien Species Towards Poverty Reduction (WorldFish core funds)

The ornamental fish trade is important for revenue generation in Malaysia. To support this trade a report on the impact of aquatic aliens and their utilization has been initiated with partners in Malaysia and the Philippines. In particular this documents the role of two alien species (i.e., flower horn and discus) in the Penang ornamental fish trade, and local knowledge on the application of genetic principles in breeding different varieties of these two species. A national strategy and guidelines for Malaysia on aquatic alien species is being developed.

Local WorldFish Partnerships

Ministry of Agriculture (MOA) Malaysia;
Dept. of Fisheries (DOF) and its agencies, the Fisheries Research Institute
Fisheries Development Authority of Malaysia (LKIM)
INFOFISH
Borneo Marine Research Institute
Malaysian Agricultural Research and Development Institute (MARDI)
Universiti Malaya (Department of Fisheries)
Universiti Putra Malaysia
University Sains Malaysia

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