



The WorldFish Center is an autonomous nonprofit international scientific research organization. Its mission is to reduce poverty and hunger by improving fisheries and aquaculture. The Center, established in Manila in 1977, became a member of the Consultative Group on International Agricultural Research (CGIAR) in 1992. In February, 2000 the Center's headquarters moved to Penang, Malaysia.

The WorldFish Center works in developing countries. Its program of work aims to resolve critical technical and socioeconomic constraints to increasing production, improving resource management and ensuring the equitable distribution of benefits. It pursues these objectives in the fields of aquaculture, capture fisheries and coastal area management, biodiversity conservation, genetic enhancement, socioeconomic and policy research, and information exchange. This is achieved through cooperative research with institutions in developing and developed countries.

The WorldFish Center in Malawi



Malawi

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WorldFish in Malawi – History

In 1987 the Center established an aquaculture project office at the National Aquaculture Center in Domasi, Malawi, with funding from Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ). GTZ provided further funds till 1994 for vital research and training.

The office now services the Southern Africa Development Community (SADC). It undertakes research in partnership with the Department of Fisheries – Malawi, the University of Malawi, and the Department of Fisheries – Zambia.

WorldFish, and its partners in Malawi and Zambia, have focused on fisheries research within the broad context of watershed management, and have contributed to capacity building both within SADC (Mozambique) and outside (Cameroon and Ethiopia) through:

- development and transfer of integrated aquaculture-agriculture (IAA) technologies
- research on extension methods (farmer-scientist research partnership approach)
- enhancement of farmed tilapia by selective breeding
- fisheries and watersheds studies
- policy issues
- institutional strengthening and capacity building that include:
 - training of scientists
 - training of government and NGO extensionists
 - organization of study tours and farmer exchange visits
 - joint publication of papers
 - participation in workshops and conferences
 - networking in aquaculture and fisheries.

Partners

- Malawi Department of Fisheries
- Zambia Department of Fisheries
- University of Malawi
- Mozambique Ministry of Fisheries
- Non Governmental Organizations
- Memorial University of Newfoundland, Canada

Donors

The following donors have supported research projects:

- Bundesministerium für Wirtschaftliche Zusammenarbeit und Entwicklung (BMZ) (1986-1994)
- United States Agency for International Development (USAID) (2001-2003)
- Danish International Development Assistance (DANIDA) (1999-2001)
- Canadian International Development Agency (CIDA) (2003-2005)
- WorldFish Center core funds
- United Nations Development Programme (UNDP)

Projects specific to SADC are managed from the Center's Malawi office while interdisciplinary and multi-country projects that include Malawi are managed from the Center's regional office for Africa and West Asia in Cairo, and from the Center's headquarters in Penang, Malaysia.



Impacts from Collaborative Research

Bigger fish for smallholders in southern Africa

(Investors: BMZ, DANIDA and USAID)

The WorldFish Center, working in collaboration with the Malawi Department of Fisheries since 1986, has developed low input technologies for integrated aquaculture-agriculture (IAA). These new methods are being delivered to thousands of farmers through the Department of Fisheries, various NGOs and community-based organizations. Adoption of new technologies has resulted in fish production rising from 800 kg.ha⁻¹ in ponds not integrated with agriculture to over 2500 kg.ha⁻¹ from ponds that are fully integrated. About 30% of fish farmers are women and income from their ponds is helping empower them within their rural communities.

The implementation of the farmer-scientist research partnership approach to aquaculture technology and transfer has increased both farmer to farmer interactions and the involvement of

NGOs in aquaculture development. A 300% rise in the number of fish farmers has taken place over the period 1999-2004.

Spotting a good investment

(Investors: CGIAR Standing Panel on Impact Assessment)

A study to examine the impact of the development and distribution of small-scale IAA technologies over 15 years in Malawi has shown that the donor investments in aquaculture research and development have yielded an internal rate of return of 15%. This implies that the net social benefit of the investment is equivalent to an asset with a 15% annual return. The study shows a benefit cost ratio of 1.56. Of the total benefits around 70% will be enjoyed by the consumers in the form of decreased fish prices and the remaining 30% will go to the producers.

In addition, investment in IAA research, development and information dissemination has led to increases in farm incomes, productivity and farm sustainability. The study indicates a 28% increase in farm profitability, a 163% increase in fresh fish consumption and a 23% per capita rise in protein consumption by IAA farmers compared with non-IAA households. Further valuable impacts have been achieved through the adoption of IAA techniques by HIV/AIDS affected households and the spillover effects of this technology to Mozambique and Zambia.

Collaborative work between the Malawi Department of Fisheries and the WorldFish Center Regional Office for Africa and West Asia has resulted in

the incorporation of fish into the Malawi Food and Nutritional Security Policy.

Productivity and rivers

(Investors: DANIDA)

Research has been undertaken by the WorldFish Center, in collaboration with the Ministry of Agriculture and Irrigation, on the impacts of land use and soil erosion on the reproductive and spawning success of *Barbus* sp. in rivers flowing into Lake Chilwa. It shows that sediment yield, river flow rate, electrical conductivity and total suspended solids are the major predictors of the migratory pattern and reproductive status of the fish. The results also indicate that the productivity of the *Barbus* fishery in the Lake can be maintained if fishing pressure on breeding females and soil loss in the catchment area are reduced.

Skills and Experience

The WorldFish Center is committed to developing the scientific capacities of its partner institutions in Malawi, Mozambique and Zambia and to this end, it has:

- conducted training programs for scientists, extension workers and farmers
- produced scientific publications, training manuals, technology brochures, fact sheets, and
- supported and supervised a number of studies by Malawian and Zambian postgraduate students, and examined MSc and PhD theses.



Current Projects

The good news travels

(Investors: The WorldFish Center's core funding)

The WorldFish Center, together with the Departments of Fisheries in Malawi and Zambia, is working to institutionalize the farmer-scientist research partnership approach to aquaculture technology development and dissemination. Personnel from government departments and NGOs are being trained to distribute aquaculture technologies using these participatory extension methods. The impact of these technologies on production, farm sustainability, household incomes and nutrition is being carefully monitored.

High performance fish

Collaborative research with the Malawi National Aquaculture Center is focused on the improvement of three important tilapia species (*Oreochromis shiranus*, *Tilapia rendalli* and *Oreochromis karongae*). Studies indicate that traditional selective breeding is the best approach for improving the performance of tilapia in Malawi and that only one strain should be developed for all environmental conditions. A plan has been developed to ensure distribution of the improved strain through satellite stations and fingerling producers across Malawi.



A watershed for inland fisheries

The Malawi Department of Fisheries, the Memorial University of Newfoundland (Canada), the Ministry of Agriculture (Mozambique), and The WorldFish Center are working to develop management strategies to improve watershed health and fish productivity in Lake Chilwa.

Research studies involve:

- characterizing and quantifying land use patterns, soil erosion rates, river system dynamics, migratory behavior and spawning success of *Barbus* in the Mnembo, and in three rivers flowing into Lake Chilwa from Malawi and Mozambique;
- determining the linkages between watershed processes and river system dynamics on reproductive success of *Barbus* sp.

A management plan for the Lake Chilwa Wetland will be developed based on the results of the research efforts, and fisheries and agriculture policy stakeholders will be informed about the impact of catchment land use on fish production. This will help to influence and guide policy decisions towards integrated catchment management.

Technology for fish

(Investors: BMZ)

This global project, involving Malawi as one of four case-study countries, will estimate the most likely areas for development of a range of aquaculture technologies. The likely gains in fish production, income and supply, as well as the required enabling factors and supporting policies will be determined.

Fish in the City

(Investors: DFID)

This regional project in sub-Saharan Africa, involving Malawi as one of six case-study countries, will develop new knowledge on the roles of aquaculture in the context of urbanization. Based on this knowledge, strategic opportunities for support will be identified to ensure that benefits from aquaculture will accrue to urban and peri-urban poor communities.

The Future

The WorldFish Center will continue to work in partnership with national institutions and NGOs for the sustainable management and development of aquatic resources, improving the livelihoods of the people of the SADC region.