

Self-recruiting species - a new approach in aquaculture:

Dave Little and colleagues explain the thinking behind a new DFID research project

Conventionally extension messages aiming to promote inland aquaculture in rural Asia have sought to encourage stocking hatchery-produced juveniles.

Making hatchery seed available to farmers was considered to be an essential first step in intensifying the management of aquatic resources. Such



fish, usually herbivorous or omnivorous, respond to feed and fertilisation in a predictable way and are responsible for a large proportion of the regions cultured yield. Analysis of farmer-practice, however, quickly identifies a 'silent harvest' of un-stocked animals that remain in such culture systems, find their own way in or are actively encouraged by farmers to enter at times of flood. The reality is that such 'weeds', as scientists and extensionists have typically viewed them, are valued by rural people and this has given rise to a new project funded jointly by the DFID Aquaculture and Fish Genetics and Fisheries Management Research Programmes. The project 'Self-recruiting species in aquaculture-their role in rural livelihoods' is being implemented through by a consortium of UK and Asian- based institutions in five countries in South and Southeast Asia.

Self-recruiting species (SRS) have been defined as animals that do not require repeated stocking in farmer-managed

systems and include both indigenous and exotic species. The knowledge gap-we currently don't know much about which species are important and why, their biology or what can be done to stabilise or improve their production- has been identified by those primarily working in aquaculture, fisheries and rural development.

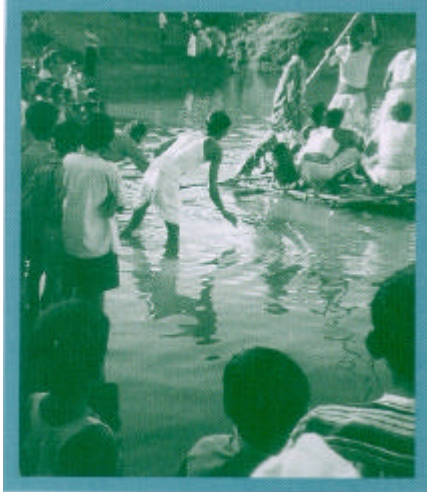
The roots of the project are long standing. I recently found a related concept note that Kai Lorenzen and myself had drafted almost ten years ago but the main ideas of the project are a hybrid, developed out of a group of people interested in understanding the interface between culture and capture. This, of course, is the 'edge' that rural people all over Asia have come to implicitly understand and manage; although hatchery seed and 'culture' systems have become increasingly available the taste for indigenous fish, crustaceans, molluscs etc remains. Indeed relative scarcity has often led to such animals becoming relatively more valuable. Just how important these animals are is still poorly understood or the level to which they are really 'managed'. An initial project meeting in Bangkok in February struggled with drawing boundaries to the system we are hoping to understand, and they were only firmed up after an initial phase of community-level fieldwork and another workshop in Dhaka in August.

The project builds on a foundation of work in the region by the Asian Institute of Technology and its partners in



Vietnam, Cambodia and Thailand. An improved understanding of rice field fisheries from work in NE Thailand, Cambodia and southern Vietnam over the last few years, the value of 'by catch' in stocked systems, and farmer managed research will be drawn on during the current project. Darryl Siebert of the British Museum has been involved in other collaborations requiring knowledge of the taxonomy and life history of local species in Southeast Asia and has already led an initial workshop at AIT with project field staff.

IACR-Rothamstead is contributing expertise on biometrics to the challenge of understanding the seemingly endless variation likely to be encountered. Janet Riley has risen to the challenge and, as a merciless critic of the statistically challenged, is taking no prisoners. The project is well-integrated from the perspective of the institutions involved. Two researchers, Ernesto 'Jack' Morales and Elsa Amilhat have been appointed by AIT and are based in Bangkok and are registered for PhD degrees at the Institute of Aquaculture and Imperial College respectively. Staff working on the projects in Vietnam, Cambodia and Thailand have usually been involved in previous AIT field research work. Anton Immink is co-ordinating work in West Bengal and Bangladesh from the IOA. He is working with the Gramin Vikas Trust in Purulia, with whom he has just completed a previous NRSP Rainfed Agriculture project, and with the Intermediate Technology Group in Dhaka.



Our difficulties in drawing boundaries around the systems under study are not surprising. Any visitor to the rice growing areas of Asia will know that water moves everywhere - and takes many SRS with them. They move in time and space to cross both physical and social boundaries but many appear to be in decline. However, some species appear robust in the face of changing land and water use and the project seeks to identify and learn more about them.

In addition to the ecological and biological research issues, a major focus is understanding how SRS affect people. Clearly, maintaining or enhancing SRS may not lead to large increases in cash flow but their current role in food security is suspected to be high. When and how SRS contribute to peoples' livelihoods is a key research issue of the project and initial work has indicated that benefits occur through trade and consumption, as well as production. Seasonality is expected to be important. Small shrimp harvested in the wet season, snails and frogs dug from holes in pond and rice field dikes in the dry season may complement income and diets at critical times.

A major question posed in the research is the level to which conventional fish culture techniques and proximity to perennial water and markets affect the importance of SRS in aquaculture. Refuges, often deeper community managed water bodies, may be critical to yields of SRS within household-managed

systems in many of the areas in which the project is working that are prone to seasonal drought

A major challenge is identifying a Third Way. Can farmers gain from the considerable benefits of semi-intensive aquaculture but also retain or improve production of SRS? Management methods friendly to SRS will undoubtedly contradict current extension practice 'Drain and sundry that pond', 'Broadcast that quicklime to kill off pests'. After an initial 12 month monitoring of current practice the project will attempt to pilot some interventions developed by researchers and farmers.

The hope is that improved management approaches for SRS can be developed and institutions responsible for rural livelihoods (involving for example food production, irrigation, public health) will modify or develop sound policies around this new information. Such aquatic animals are too important in the rural economies of the five countries we are working in to be ignored and the profile of their value and importance will be raised in both the research and development communities,

The project is in line with a broader interest in developing eco-friendly



approaches to food production. It takes the 'integrated pest management' paradigm one step further, re-casting the pest as a 'product'. Moreover this research, tantalisingly, begs the question can SRS in aquaculture enhance biodiversity, improve productivity and lead to improvements in peoples' livelihoods. Working papers that document the community-level PRAs in the five countries will shortly be available in the AFGRP website.

<http://www.dfid.stir.ac.uk>

