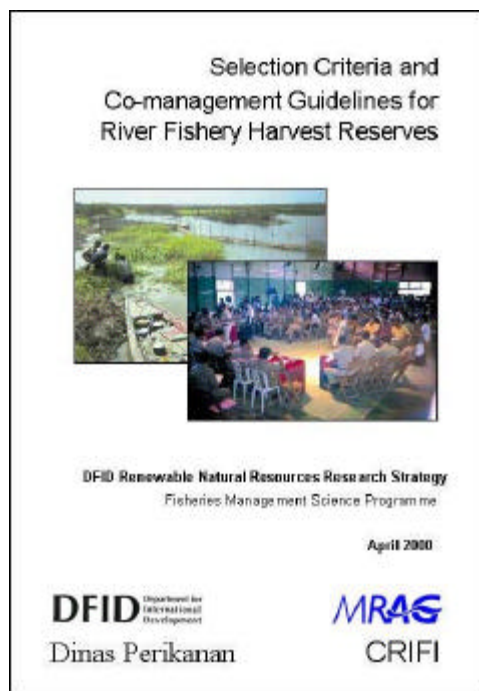


## For further information....

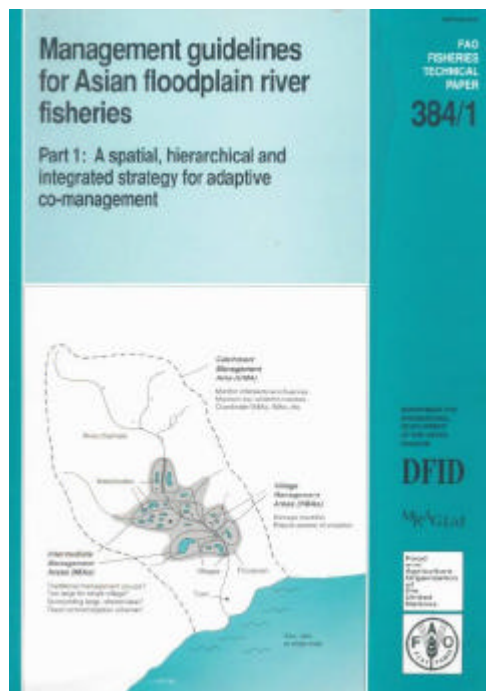
These 'key messages' are mainly based on the guidelines developed by FMSP project R7043, in collaboration with Indonesia's Central Research Institute for Fisheries (CRIFI) (see Hoggarth, 2000, below left). General guidance on the management of floodplain river fisheries is also available in Hoggarth et al (1999a, below right). These documents may be downloaded from the FMSP and FAO web sites as listed below. PowerPoint presentations for use in training workshops on harvest reserves are also available on the FMSP project R8486 web site.



<http://www.fmsp.org.uk/FTRs/r7043/r70439.pdf>

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<http://www.fao.org/DOCREP/006/X1357E/X1357EOO.HTM>

## Using harvest reserves or fish sanctuaries in floodplain river fisheries – Helping to ensure sustainable rural livelihoods



### Introduction

Protected areas, variously known as sanctuaries, reserves, closed areas etc, are valuable management tools in floodplain river fisheries for the following reasons:

- ▶ they conserve fish stocks and may increase local catches;
- ▶ their high visibility makes illegal fishing easy to detect;
- ▶ they are conceptually simple, with easily understood effects; and
- ▶ they are traditional approaches in many places, with proven local acceptability.

In Bangladesh, fish 'sanctuaries' are now formally promoted by government policies, and are being put in place by large donor-funded projects and elsewhere in the country. Such sanctuaries or reserves may benefit fish stocks in a number of different ways, such as protecting fish over the dry season so that they can spawn at the start of the next flood. These benefits to fish stocks will only help *fishers* if the reserve is located in a water-body from which fish can migrate easily to fished areas (or if fish eggs or larvae can drift out), or if some fishing is allowed inside the reserve (e.g. in limited seasons, or with non-threatening gears). The term 'harvest reserve' emphasizes the need to design such protected areas for the benefit of *rural livelihoods*, ensuring that more fish are produced for capture in the fishery, and not just to conserve the stock. This leaflet gives summary guidelines, and links for further materials, about selecting and managing harvest reserves for the benefit of fishery stakeholders. These guidelines were produced by the UK DFID's Fishery Management Science Programme (FMSP).



## What are the possible benefits of using harvest reserves?

FMSP studies have shown that in Bangladesh, fishing is so intense that less than 2% of fish survive each year (<http://www.fmosp.org.uk/FTRs/r5953/.htm>). Fish survival and hence the production of new recruits in the following year could be substantially increased by restricting fishing particularly during the dry season. Working in Indonesia, FMSP project R7043, found that fish stocks in community-managed reserves were 5-21 times more abundant, comprised up to 31 more species and were 5-6 times larger by weight, than at a nearby comparison site that was fished with poison in the dry season. The actual benefits at your site will depend on the specific ecological conditions and the current level of exploitation.

## How should I select and manage harvest reserves?

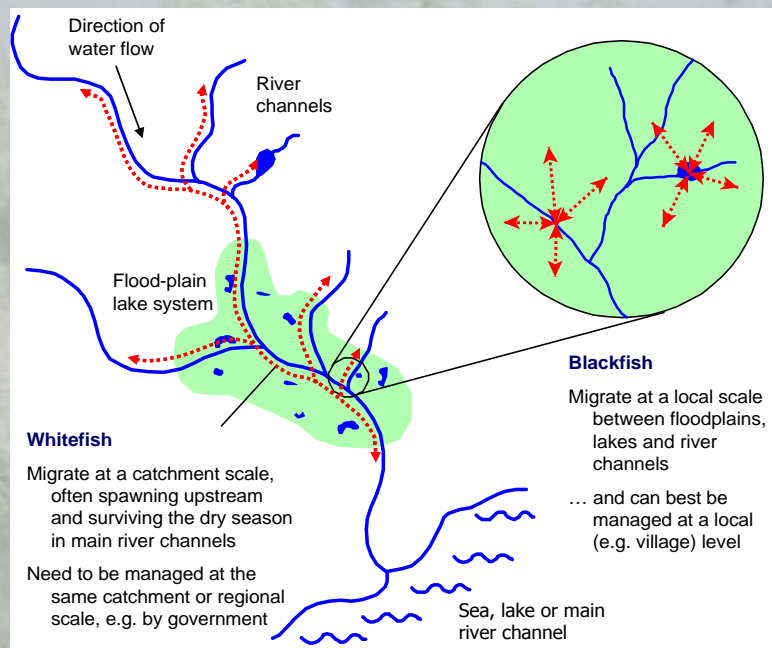
The following 'key messages' will give you some pointers. More detailed guidance is available in the FMSP documents described overleaf.

### (1) Select and manage your reserves in collaboration with local people

A participatory, co-management approach draws on the knowledge, skills and capacities of resource users, government officers, local development NGOs and other stakeholders, as appropriate in each location. Where conditions are suitable for 'co-management', local people should take the lead in the selection of reserves, using their local experience to identify the most suitable water-bodies.

### (2) Manage 'whitefish' at a catchment level and 'blackfish' at a local level

Reserves for relatively non-migratory, local 'blackfish' species will mainly increase fish catches within a small local area. Reserves designed to protect more migratory, river 'whitefish' species may give benefits to the whole river catchment due to their wider dispersal patterns.



### (3) Select reserve locations carefully, considering who will benefit and how

Reserve locations should be selected that will give the best possible benefits for local people. Selection must consider the flows of water in and out of the reserve, the migration routes of the fish, and the locations where the extra fish produced by the reserve will be caught. Both social and technical criteria should be used to select suitable water bodies. Recommendations for selection include the following.

- ▶ Select several small reserves rather than one large one.
- ▶ Include different habitat types to give protection to a range of different fish species and their various life stages.
- ▶ Select locations well away from potential sources of pollution (upstream).
- ▶ Where reserves are fully closed, leave enough alternative fishing grounds to maintain fishing opportunities for local people.
- ▶ Use a water-body that is close to the village(s) involved in its management, so as to reduce the chance of illegal fishing. Management should be easier where reserve water-bodies are fully inside a village boundary.

### (4) Use reserve management rules that are appropriate to local conditions and that will deliver the best overall benefits to stakeholders

Harvest reserves in floodplain rivers may either be closed year-round or just for certain seasons or certain gears. What is best will depend on the objectives and the local situation. In blackfish reserves, the most dangerous dry-season gears (poison, electric fishing, fish drives and de-watering – as in this photo) should always be restricted to protect the spawning stock over the dry season. In addition to the reserve, you should consider a range of other management measures to both protect the environment and manage the fishery. These may include restoring degraded habitats, protecting fish migrations routes (managing sluice gates, and restricting barrier traps), licensing waterbodies or gears and stocking fish.



### (5) Manage adaptively – monitor the results, compare with other places, and adapt rules as needed

Beyond the generalisations above, the best management rules for each location are hard to predict in advance, and need to be found by a process of learning and experience. Reserves will be more effective in some places than others, and the number of reserves needed or the relative area that should be set aside will vary. We therefore recommend that you use a long-term, 'adaptive' management style, monitoring your fishery to see if your goals are being met, and meeting regularly with stakeholders to discuss what to do if they are not. Both local and regional partners can play important roles in such an adaptive management approach.