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Also in the same series - 'Adaptive learning - lessons from Southern Lao PDR' - detailing this project's method of combining resource management with research.



## Community Fisheries

## Lessons from Southern Lao PDR



project logo designed by Jeff Eden (j.eden@rbgkew.org.uk)

MRAG RDC

## ACKNOWLEDGEMENTS

These guidelines have arisen from a perceived need to synthesise, in an accessible manner, the wealth of experience gained about community fisheries and their management in Southern Lao PDR since 1995 in general, and 1999 in particular.

This experience, the result of close collaboration between MRAG Ltd (London, UK) and the RDC (Savannakhet, Lao PDR) could not have been gained without the help and participation of a vast number of people. In particular, we thank the Department of Livestock and Fisheries, (DLF), in Savannakhet for making their staff available whenever possible, and the district staff of 8 districts in Savannakhet and 4 districts in Khammouane who worked with energy and enthusiasm throughout. Very little would have been achieved without the interest and effort of the 38 villages who are managing community fisheries and who shared their knowledge and experiences with us. We are extremely grateful to them.

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Cover photo. Community fishing day at Dong Noi, Outhomphone taken by Robert Arthur.

It is also anticipated that copies will be available in Lao and also downloadable from the MRAG website (<http://www.mragltd.com>).

## WHY PROMOTE.....

'Community fisheries' - the name that has been given to a particular rural development initiative; Systems of management where small waterbodies are managed by the local community, collectively, to obtain benefits for the village as a whole.

### Financial benefits

During the last decade, these benefits have been increasingly in the form of cash income, raised from fish and used for development such as;

- improving the village school or health centre,
- building local access roads,
- improving the village temple,
- contributing towards costs of bringing electricity to the village.

Where they exist, these community fisheries are often one of the principal, if not only, ways that villages can generate communal income to help themselves.

### Other material benefits

Besides much needed cash income,



Selling tickets on fishing day, Yomolad 2001

community fisheries can also be managed to produce other material benefits including;

- cheaper or free fish for local household consumption,

- fish for households assisting in community work,
- fish for village festivals or to feed guests visiting the village,
- fish for poorer households at times of household emergency (e.g. funerals).

### Non-material benefits

But it is not only for their material benefits that community fisheries are valuable.

Other benefits can include;

## COMMUNITY FISHERIES IN CONTEXT

- increasing village managerial capacity, a sense of ownership and awareness of the importance of aquatic resource management,
- increasing village harmony and solidarity,
- through the entertaining of guests, fulfilling a traditional social function of strengthening links between villages.

Finally, many of these initiatives involve the stocking of fish, often a new technology in the village.

Community fisheries are therefore a means of extending a new aquaculture technology to a large sector within a community at little personal risk or cost to individual households.



Entertaining guests in Outhomphone, 2002

Whilst all these benefits have been seen, they rarely all occur in one place. Chances of sustainability are enhanced by villages deciding which benefits they want for themselves.

### Who should be interested in community fisheries development?

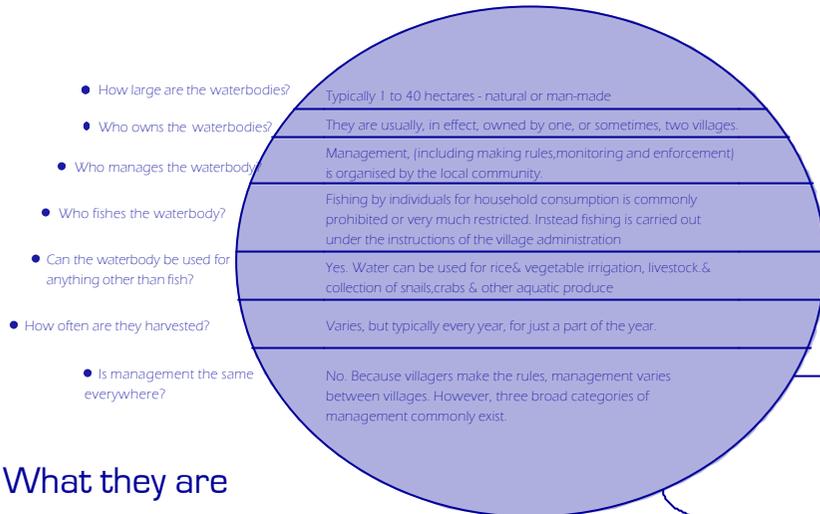
Community fisheries have already brought benefits to thousands of people in Southern Lao PDR and still have great potential for expansion.

Given the benefits they can produce, they should not only be the concern of fisheries departments, but ANY organisation whose remit is to promote rural development in a way that enables villagers to develop their own capacity and set and realise their own development priorities

# COMMUNITY FISHERIES.....

# WHAT ARE THEIR CHARACTERISTICS?

## General characteristics of community fisheries

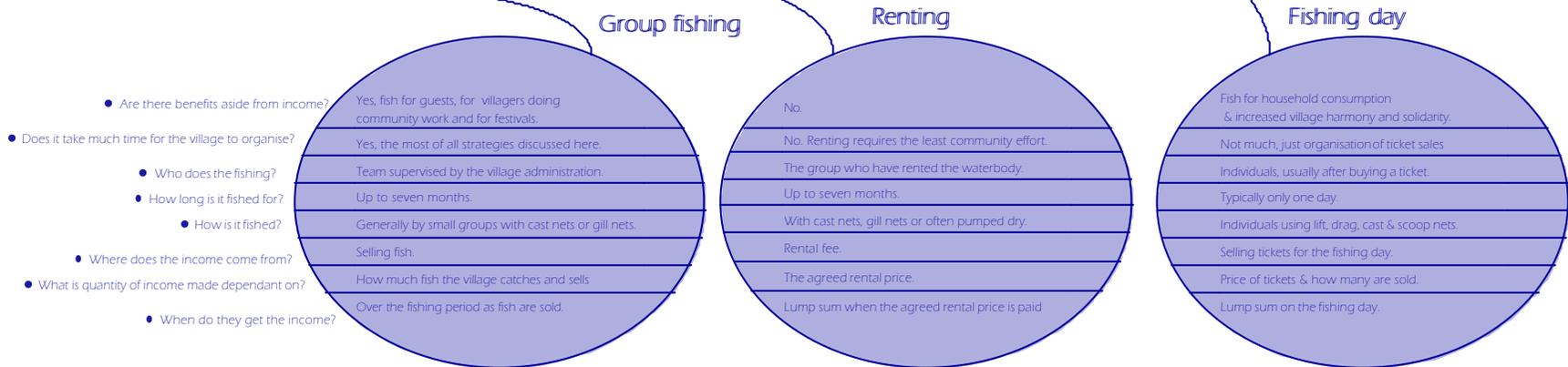


## What they are

The diagram on this page details;

- the characteristics that all community fisheries share (top circle)
- the characteristics that differentiate the most commonly found management categories (3 smaller circles)

In fact, given that local villages determine management for themselves, there are



an infinite number of small management variations based on

local experience of what works best. However, they

generally fit into the 3 broad management categories discussed here and throughout the guidelines.

## What they are not

While community fisheries are managed to bring benefits to the

of fish for food security, neither are they always managed to maximise fish yields. If these are objectives of yours it is important to determine whether the villages share them BEFORE starting.

 Successful community fisheries cannot be established overnight. Establishment is an incremental process that needs to build upon what the community want, what they know and, often, what they already do.

community, they are not necessarily managed as a source

The benefits and constraints of the different types of management are discussed more on pages 18-23. References on p26 also provide more

## WHAT DO I NEED TO START?

### Is it expensive?

No. Community fisheries can be initiated with minimal financial investment in the resource.

Management does not require the input of artificial feed or fertiliser, more frequently relying instead, on the flora and fauna already in the waterbody and extra fertilisation from livestock using the waterbody. (Extra inputs may increase yields but they are not a requirement.)

Costs can therefore be restricted to buying fingerlings and, if nursing is being carried out, hapas and a low cost food such as rice bran. Stocking itself is not absolutely essential.

 Costs here refer to cases where waterbodies already exist. Whether it would be worth investing in the creation of a new waterbody specifically for this purpose is doubtful, particularly if one wished to recover costs. Community fisheries work because they are low input and relatively low output systems. Man-made waterbodies are suitable but usually if they have already been built or are being built for additional purposes.



Boy washing buffalo in a community fishery

### What information do I need?

Before starting it is necessary to have, or to develop, the following;

- a good understanding of the needs and wants of the villages that you work with,
- an understanding of the types of waterbodies in your jurisdiction and what they are used for,
- An understanding of any waterbody

## SOME QUESTIONS ANSWERED

management already being carried out in your area or any other local experience with 'aquaculture',

- communication with organisations who already have experience with community fisheries,
- where applicable, knowledge of local fingerling suppliers and basic technical understanding of stocking and nursing.

All of these are relatively easy to obtain.

### Knowledge of local conditions

A lot of information probably already exists. For waterbody information check Provincial or District Agricultural Departments. Even if not written down,

extension staff are likely to have a lot of local time and place knowledge and their local knowledge should be used. After that, visits to villages will be necessary. PRA techniques are a useful means of learning about village priorities, resources and capabilities. Specific information needed to enable selection of villages is discussed on subsequent pages.

### Organisations with experience of community fisheries

Whilst guidelines are a help, nothing will beat talking to those with hands-on experience. Again, check with the local Agriculture or Planning Departments. They are likely to know of any initiatives being

carried out by themselves or NGO's. In Southern Lao PDR, experience with community fisheries exists in at least Savannakhet, Khammouane and Champassak Provinces.

### Training needs

These are minimal. Information about stocking and nursing can be



Training farmers to build hapas with RDC, Savannakhet

obtained from the local Livestock & Fisheries Department or from literature (some suggestions on p.26] RDC also conduct training courses and if interested, contact them.

## PRINCIPLES OF PROMOTION.....

### Underlying guiding principles

From research over the past seven years, it is known that villages;

- can and do manage local waterbodies to produce benefits, that are seen to be useful by all the villagers.
- have extensive time and place knowledge of their resources, their needs and their capabilities.
- appreciate, and benefit from, sharing experiences with other villages.
- are more likely to be successful in management if they have interest and commitment prior to stocking.

Any promotional strategy must play to these strengths, whilst at the same time

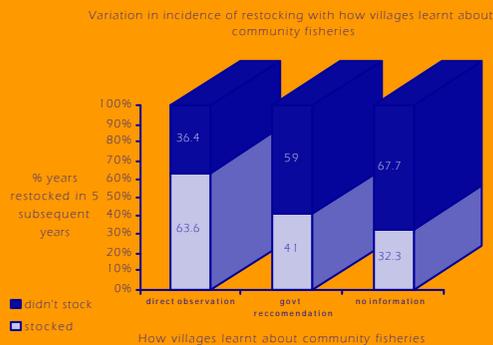
making up for constraints such as lack of technical understanding, or limited opportunities to learn from other villages. Experience has taught us that best results occur when outside organisations and villages work in **PARTNERSHIP**, sharing

responsibilities and learning together.

The role of the outside organisation is partly to provide technical advice, and possibly financial resources (but see orange box) to help the village manage for itself. However, the most important

### How do you introduce community fisheries to villages?

The graph below shows that villages who had seen the benefits of community fisheries directly for themselves had stocked again more often than villages who got verbal recommendations or who received no information at all.



## LESSONS FROM EXPERIENCE

function is to facilitate communication between villages - so that those villages new to community fisheries can see or hear for themselves, and those already practising can learn from each other and build from what is already known.

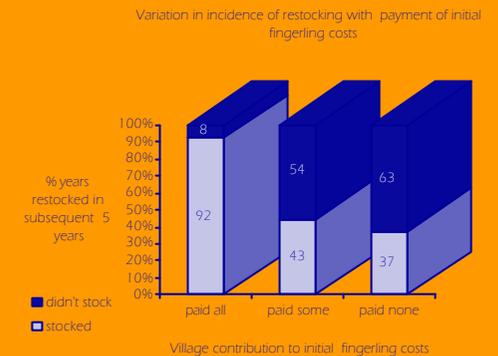
### Ways to facilitate learning from each other

#### Study tours

Taking inexperienced villages to villages with community fishery management experience enables them to see things for themselves; the waterbody, how management works and the benefits it brings. This is particularly

### Who should pay for fingerlings?

This graph shows that villages who had paid some, or all costs of fingerlings, stocked again more often than those villages who had paid none of the costs. Those villages that had invested already had a commitment to try to manage prior to stocking and this should be considered.



beneficial for villages new to the idea and will encourage interest and commitment.

#### Village workshops

Workshops, bringing villages together from different districts or even Provinces, provide

good opportunities for sharing experiences, discussion, reflection and evaluation.

For more information about facilitating learning, see the adaptive learning guidelines in the same series.

# PLANNING ACTION

## Activities

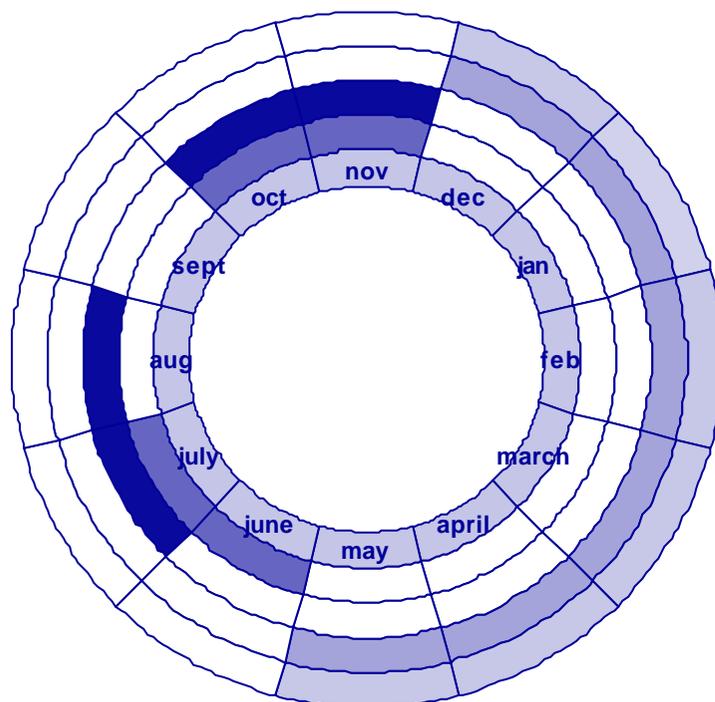
Harvesting in community fisheries is usually an annual event. Activities to consider within the year include;

- finding out about, and choosing, villages and waterbodies,
- giving villages the opportunity to share experiences about possible management strategies, with each other, and with you,
- stocking (if desired),
- nursing (if desired),
- harvesting of fish
- evaluating success & sharing what has been learnt.

## Timing

Community fisheries can fit well with the demands of wet season rice

Some of the community fishery activities are fixed, timewise. Stocking is constrained by factors such as seed



cultivation, peaking when agricultural labour demands are low, and vice-versa. The diagram, showing peak times for annual activities, highlights this.

availability and the need to maximise the growing season so is commonly carried out in July (unless the waterbody is prone

to flooding in which case stocking should not occur until October). Nursing, if occurring, directly follows stocking, and so any nursing training has to be arranged before the waterbodies are stocked. Time and duration of harvesting will depend on the harvesting method chosen (discussed in subsequent pages). It can range from 1 day

The timing of other activities is more flexible. The first step - collect information and choosing communities and waterbodies - inevitably comes first. We recommend that research on this starts well before intentions of stocking (up to six months before). Later sections of this booklet explain more on this

management begins (where strategies can be discussed) and after harvesting (where success and failures can be highlighted). Again this is likely to occur in the December to June period.

## How many villages?

As many appropriate sites as you can accommodate! The more villages you involve, the greater the opportunity to share experiences and learn from each other.

-  planting and harvesting wet season rice
-  stocking and nursing (where applicable)
-  harvesting fish
-  other activities concerning community fisheries

up to 6 months but will almost always occur between the months of December and May.

selection process. The other two activities involve discussing plans with villages, both before

For more details on how to learn together, see p10. or the adaptive learning guidelines.

## WHERE TO PROMOTE ?....

Over the next few pages we will be discussing, in turn, how to select villages, waterbodies, stocking strategies and, finally, management options. There are some instances when a community fishery is not appropriate or has little chance of success and how to avoid selecting these is the subject of these two pages.

### Village criteria

**Commitment.** As discussed on p.10, there needs to be a commitment to manage before stocking. Perhaps the village has already expressed interest in a community fishery or there is evidence that the village is actively trying to improve and develop.

### Strong leadership.

Linked to the last point, the village leadership should be active and 'strong'. Evidence for this could be other activities already organised in the village, or the purpose and frequency of village meetings.

**Jurisdiction to manage.** The village must have at least de facto ownership of the waterbody and be in a position to make decisions about the management of it.

**Village agreement.** Most importantly there must be broad agreement within the village for establishing a community fishery. This will ease monitoring and enforcement of regulations but also, given the importance of

waterbodies to rural households (see p15), is vital for equity considerations.

It is not necessary for a village to have prior experience of aquaculture to successfully manage a community fishery. If it does exist however, it can be a useful foundation to build upon.

### Waterbody criteria

**Not the only, or most highly rated, fishing spot.** Given the importance of subsistence fisheries, the waterbody should not be the only fisheries resource for the community, or the most important source of fish for households (see p.15).

**Between 1 and 40 hectares.** Although other sizes may be

## SELECTING VILLAGES & WATERBODIES

### The importance of fish, and fishing, to rural households



Research has shown that small waterbodies have a very important, direct role in the livelihoods of almost all rural households, primarily for subsistence needs but also, and increasingly, for income generation. Participation is almost universal and, in one study (Garaway 1999), personal fishing in small waterbodies accounted, on average, for at least 70% of the fish acquired by rural households. When household size is taken into account, members of the poorest rural households utilise local fishery resources the most and have the highest total catches. For more information see Garaway (1999).

This highlights the importance of ensuring that the waterbody selected for a community fishery is not an important source of local fish.

considered, larger waterbodies are difficult to monitor and in smaller waterbodies, the returns can be insufficient to make it worthwhile.

**Close to village.** The further away the waterbody the more difficult it will be to monitor or enforce regulations. Most community fisheries are in, or adjacent to, villages.

Other considerations include: **few aquatic plants** such as lotus or emergent trees which make harvesting difficult, **understanding of flooding/drying regime.** Flooding and drying will both reduce the growing season and therefore the choice of species to stock – see page 16.

# TO STOCK OR NOT TO STOCK?

This will depend upon certain characteristics;

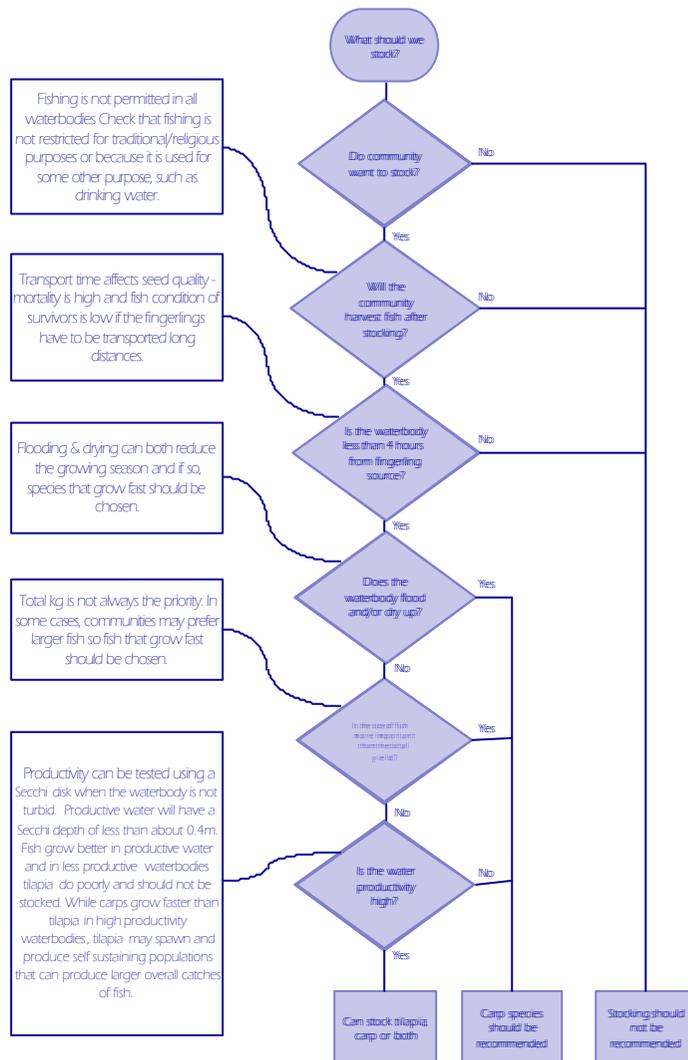
- the waterbody and the fish species,
- the management objectives.

The flow chart can be used to help you make a decision.

Work through the questions starting at the top with “what should we stock?” The advice written here is based on what has been learned from stocking carps (Chinese and Indian) and tilapia in Southern Lao (see Garaway & Arthur (in prep)).

 If stocking is not desirable or possible, a village can still have a community fishery but they are less likely to be able to make

income, except perhaps from renting.



# THAT IS only one of THE QUESTIONS!

## How many fish should we stock?

As stocking density increases, individual fish size at harvest time decreases. After a point, if there are too many fingerlings, total yield will also decrease. In order to obtain high yields together with good size fish, we recommend that fingerlings should be stocked at densities between 3000 and 6000/ha.



Stocking in Kong Knak village, 2001

## What size fingerlings should we buy?

Bigger fingerlings (5-10cms) have a better

chance of survival than smaller fingerlings (3-5cms), as they have a broader diet and will be safer from predators. Bigger fingerlings will also mean larger fish when it comes to harvesting. However, they are often harder to find and more difficult and costly to transport. An alternative is to buy smaller fingerlings (3-5cms) and then nurse these in hapas before releasing them into the waterbody.

## What are the practicalities and benefits of nursing?

Nursing in hapas has been shown to improve fingerling survival, which can lead to larger catches. Nursing can be low cost with

physical requirements limited to hapas and a cheap, locally available, feedstuff such as rice bran. In addition to this the villages will need some basic



Releasing fingerlings into a hapa

training (for details contact the RDC) and the commitment and motivation to regularly tend to the fish for up to eight weeks.

 In community fisheries, this commitment has often been difficult, though not impossible to secure, so must be considered carefully.

## CHOOSING MANAGEMENT OPTIONS

Having decided whether or not stocking is advisable, decisions must be taken on management strategy. Management choice will be a **TRADE-OFF** between what villages want from their waterbodies and what their constraints are.

On p.7 the characteristics of three broad categories of management were outlined. In fact, if stocking is not to be carried out, experience tells us that 'group fishing' is not a good option, as the outputs would not justify the level of effort put in to harvesting. Instead, an option would be a fishing day (likely to be free) or, if the village were intent on making income, they may be able to rent it.

Throughout these pages management categories are discussed as though they are mutually exclusive. However there are examples where villages have combined strategies. e.g used fish for guests or community work throughout most of the year and had a fishing day at the end of the dry season.

Over the next few pages we will be highlighting the benefits and drawbacks of the different types of management.

As a starting point, the diagram on the opposite page gives a summary of each of the option's principal benefits and the objectives that they seek to achieve. As can be seen, there

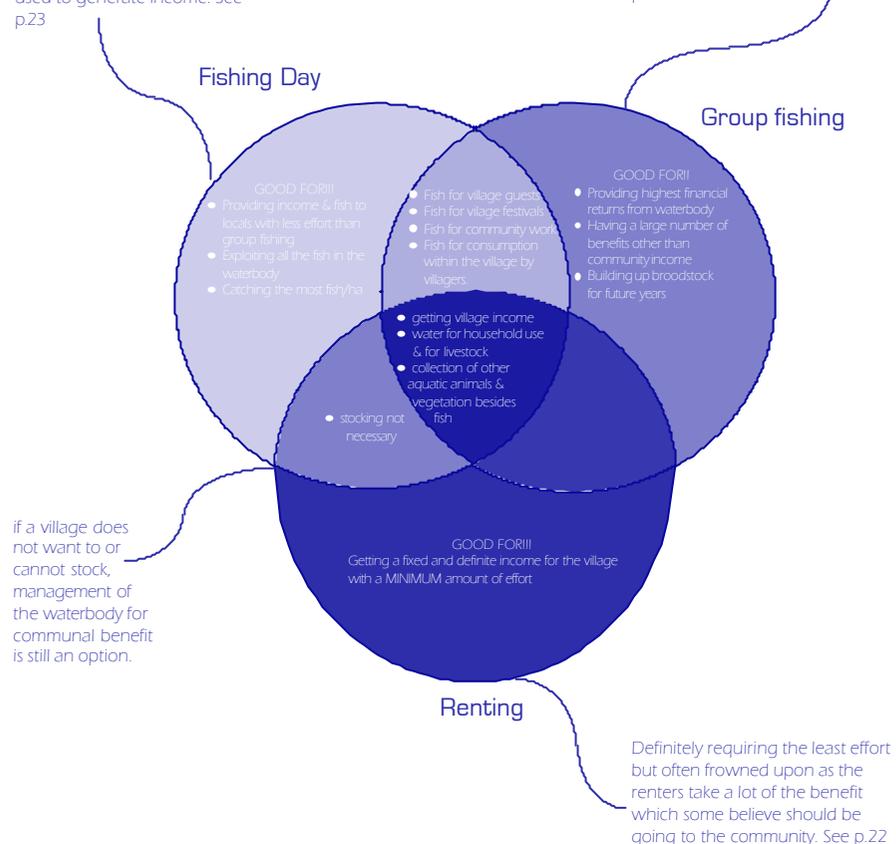
are overlaps.

Working through the next few pages will give some ideas on what management may be appropriate. However, as mentioned previously, developing community fisheries management is a slow and incremental process and success is unlikely to be achieved overnight. Likewise small incremental changes to what is already being done are more likely to be successful than large or abrupt ones. We advise using traditional decision-making structures and building on any management that already exists. This may, above anything else, influence what management options are chosen.

## A SUMMARY OF BENEFITS

A traditional system that is also common in North East Thailand. It is only recently, and with the advent of stocking, that it has been used to generate income. See p.23

This strategy has been promoted the most strongly and, when operational does on average bring in more community income than the other options. However, more recently it has been recognised that it requires a lot of effort and it is now considered only one of a range of options. See p.20 - 21



# GROUP FISHING

## Benefits

'Group fishing' was the first system of management that got the, then Department of Livestock & Fisheries Dept, (DLF), in Savannakhet, excited about community fisheries back in the early 1990's.

Since that time it has always been promoted as an 'ideal' strategy. Indeed, in research over the last four years, this system of management has consistently earned

the villages more community income than other systems and has other benefits besides. (see graph below and references by Garaway).

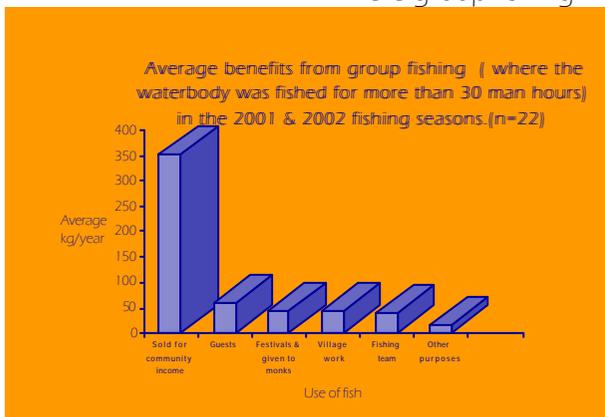
As can be seen, the vast majority of fish is for community income (>60%) but fish is also given, for example, to guests when they visit the village or to village households if they have been involved in village work.

Garaway (1999) found that in places where group fishing

occurred, household annual contributions of food and/or money to the village had gone down as a direct result of the administration being able to get the food and money from other sources.

Even seemingly indirect benefits such as 'food for guests' have a more direct benefit therefore than one might originally think.

The graph only shows values for group fishing initiatives (in our project) where the community had fished for more than 30 man hours (22 instances over the two years). In fact in the two years there were another 20 cases (almost 50%) where villages had fished for less than 30 hours. The types



of benefit they got from the waterbody were similar, but, unsurprisingly, less.

Group fishing will only be beneficial in proportion to the amount of effort the village puts in to harvesting it. Towards the end of the fishing season a village will not get as many fish as at the start and there will come a point where catches are too low to warrant continuing fishing. In our experience this is not the only reason villages stop fishing. They also stop because the activity is not a priority in the village. Whilst such cases are not unsuccessful, for group fishing to produce the scale of benefits often described, real commitment is required.

## Constraints

Whilst arguably giving the greatest benefits to the community, it also requires the most;

- harvesting effort,

how?

- a system for recompensing fishers for their labour,
- a transparent



Group fishing with cast nets in Nong Chang, Hinboun, Khammouane

- organisation
- leadership skills

Before choosing group fishing as a management strategy the following must be organised;

- a system for harvesting. Will it be a fixed team or will everyone in the village participate and

system for recording catches and income,

- a system for looking after money during the fishing season,
- a system for monitoring regulations and avoiding illegal fishing.

# RENTING

## Benefits

The most obvious benefit of renting a waterbody is that the village does not have any responsibility for monitoring the waterbody, enforcing regulations or harvesting fish. It therefore requires little effort on the part of the village and is good in cases where;

- the village are busy with other work and do not have the time and/or inclination to look after the waterbody,
- the village lacks the leadership skills to organise activities requiring greater collective effort.

Renting is also the only system, in our

experience, where a village has been able to generate income from their waterbody without stocking and, unlike group fishing, the income is fixed and guaranteed.

It is also the only system in our experience that has included waterbodies some

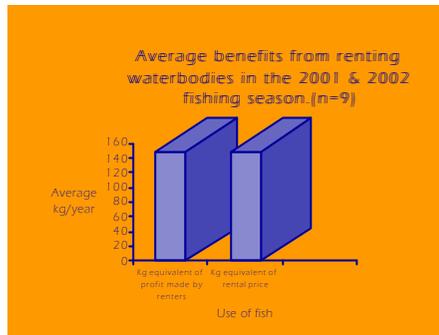


Community fishery that has been pumped dry by renters, Sonbuli, Savannakhet

distance from the village.

## Constraints

Contrary to other systems, a significant



proportion of benefits (50% in the graph above) go to a few (the renters) at the expense of the village. This can cause criticism. It is also not unknown for the renters to be 'relatives' of village leadership leading to claims of corruption.

In addition, not all waterbodies are suitable for renting with renters preferring those that can be harvested completely (smaller and shallower). Finally, total harvesting implies that the broodstock will not be protected.

# FISHING DAYS

## Benefits

Fishing days, a tradition that in some cases goes back hundreds of years, have begun to re-establish themselves.

Our research suggests that, on average, more fish is harvested in this system than the others. Other benefits include;

- an inclusive system with men, women and



Women fishing with drag nets on fishing day in Champon, Savannakhet 2002

children all participating on the fishing day.

- a social occasion where households and

neighbouring villages can maintain and strengthen links.

- a transparent system of harvesting
- the villagers' catch is generally worth more than the ticket price, thus households benefit directly (see graph).

This last point is often seen as a disadvantage.

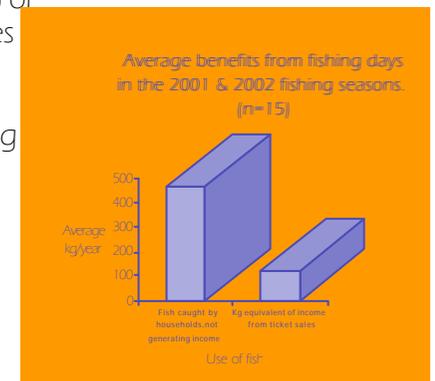
## Constraints

A far smaller % of total catch goes to making community income, making it an inferior system in this respect. The village leadership are often under pressure to

keep ticket prices low, perhaps because of the traditional nature of the management system.

Another issue to consider is that the fishing day must be advertised, as its success relies on how many people attend. If the fishing is not too good one year, this may have knock on effects for the next.

Finally, with all types and sizes of fish being exploited, this is not a good system if the village is trying to grow on broodstock for the following year.



## MEASURING SUCCESS

### What do we mean by success?

Success to one person may not be success to another. This fact has implications for any attempt to measure and evaluate the success of a community fishery.

One important way of evaluating success is to measure the extent to which it has achieved the realistic objectives of those managing it i.e. villagers. However, this is not necessarily enough. Firstly, villages are not homogenous entities and not all the village may agree with the objectives of management, particularly in cases where there has been a reduction in personal access to



Weighing fish on a fish catching day, Champon

the waterbody. Secondly, outside organisations may have their own evaluative criteria.

Discussion prior to management should attempt to establish what the objectives of the different stakeholder groups are, whether they are in anyway contradictory and whether broad agreement has been reached. This should lead the way to identifying what needs to be monitored, and whose opinions need to be sought before the initiative begins.

### Selecting indicators

As mentioned above, indicators (i.e. what needs to be measured) will be case-specific but some examples are given in the orange box. Joint

#### Possible indicators and the aspects they are measuring

##### Benefits to the community

- Income from ticket sales, renting, fish sales\*
- Total kg of fish caught\*
- Use made of all fish caught\*
- Cost/benefit analysis for different user groups
- Opinions of different stakeholders

##### Performance of stocked fish

- Total catch of stocked fish (kg/ha)\*V's wild fish
- Size of individual stocked fish\*

##### Possible intermediate indicators

- Increased management experience - development of ideas and adaptation in the light of experience.
- Community involvement in decision making - extent of stakeholder involvement & their satisfaction with this.
- Improvement in knowledge and/or skills (including those of extension staff) - opinion of stakeholders.

## WHAT & HOW?

identification of what should be measured and how, will increase the likelihood that the information gathered is relevant and easily understood. Desired outcomes are unlikely to be fully realised in one year, so it is

important to have indicators that can show a move towards their achievement. Evaluation itself, like selection of indicators, should be carried out jointly.

### Collecting information

Experience has shown us that communities are well equipped to collect information about catches, income and what fish from the fishery was used for. Some of this information is automatically collected but designing a standard form together has the

advantage of clarity, and making comparison between waterbodies easier.

### Checking and sharing the information

As hinted at above, most can be learned from the comparative analysis of the performance of different community fisheries. An explicitly experimental approach can even be taken (see adaptive learning guidelines). Sharing of results at village workshops ensures that learning potential is maximised.

Village records showing how much and what type of fish has been caught

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## ABOUT THE ORGANISATIONS

**RDC** The Regional Development Co-ordination for Livestock and Fisheries Development in Southern Laos (RDC) is a regional tier of the government of the Lao PDR, co-ordinating livestock and fisheries development in the six southern Provinces of the country. The RDC has many partners in its development activities, and acts as a link between external agencies and target populations. Its primary focus has been in aquatic resources management, these resources being a major proportion of the protein intake in the local diet. The RDC has taken a low input, low technology approach that has relatively quick results; when success is observed, it can be a key for opening up other development activities. The RDC approach is to work firstly with Provincial Government Officers, who then work with District Officers (government staff at ground level who are often farmers/villagers themselves). These District Officers are then well placed to encourage participation and monitor results within local communities.

**MRAG LTD** MRAG are a UK-based consulting firm dedicated to promoting sustainable utilisation of natural resources through sound integrated management policies and practices. MRAG has a long and highly productive history of designing and implementing integrated resource management systems in marine, estuarine, riverine and floodplain environments. It has a core staff of more than 30 full time specialists with a wide variety of expertise and practical and technical experience, providing a multi-disciplinary approach to every project. For over a decade, MRAG has worked in more than 60 countries for government agencies, international agencies, non-governmental organisations and private sector companies. MRAG's capability to service an extensive array of resource management needs is further extended through our network of associations and collaborations with internationally acclaimed experts from academic institutions and other private organisations worldwide.

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Also in the same series - 'Adaptive learning - lessons from Southern Lao PDR' - detailing this project's method of combining resource management with research.



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