

# STREAM Policy Brief



www.streaminitiative.org

## Number 3

### Summary

#### What is this about?

A new framework and tool for analysis of aquaculture-based fisheries enhancements (stocking of hatchery fish to improve fisheries).

#### Read this if ...

.... you want to improve the performance of aquaculture-based fisheries enhancements.

#### It involves:

- An integrated framework for analyzing fisheries enhancement systems.
- Engagement with resource users and other stakeholders.
- A computerized decision tool to analyze enhancement production, economics, and impacts on wild stocks.

The EnhanceFish decision tool and toolkit is applicable to a wide range of enhancements.

It is best applied by interdisciplinary teams and in direct interaction with resource users.

A briefing on ...

Development and management of aquaculture-based fisheries enhancements

... in two pages or less

#### If you can only do one thing with this Policy Brief, do this ...

...promote better management of aquaculture-based fisheries enhancements (stocking of hatchery fish to improve fisheries) through integrated analysis of enhancement systems and quantitative assessment of management practices.

#### The briefing ...

Aquaculture-based fisheries enhancements aim to increase production or productivity of fisheries through the release of hatchery reared fish (this includes culture-based fisheries and stock enhancement). Effective enhancement involves more than just stocking of hatchery fish: hatchery production, release and harvesting regimes must be adapted to local ecological and socio-economic conditions for benefits to be achieved. This requires a good understanding of the overall enhancement system, as well as quantitative analysis of the effects of management measures on biological and economic outcomes of enhancement. Poorly managed enhancements may fail to generate benefits, and can cause damage to wild fish stocks and the fisheries they support.

**EnhanceFish** is a methodology for the quantitative assessment of aquaculture-based fisheries enhancement. It can be used for example to:

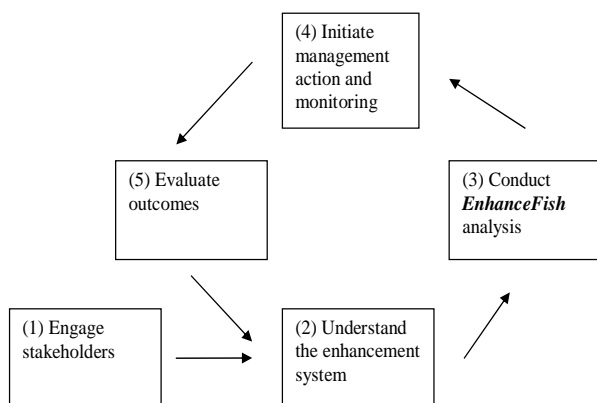
- Evaluate whether releases of hatchery fish are likely to increase yields in a fishery for which enhancement has been proposed.
- Assess the likely impacts of releases on the wild stock of the target species where one exists.
- Analyze data from release experiments to estimate population parameters.
- Identify optimal release and harvesting regimes.

The **EnhanceFish** toolkit has three components:

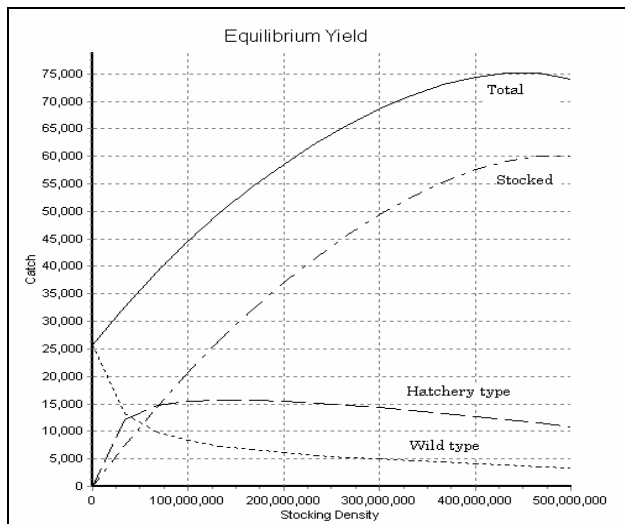
- (1) The **EnhanceFish** tool, a software package. It contains a mathematical population model for enhanced fisheries and is used to carry out the quantitative analyses.
- (2) The **EnhanceFish** manual, which explains the principles underlying the **EnhanceFish** model and assessment methods. It also provides guidance on the practical use of the tool, including worked examples.
- (3) The **EnhanceFish** guide, which provides guidance on how to link the quantitative analyses supported by **EnhanceFish** to management and development of enhancements.

## A briefing on ... development and management of aquaculture-based fisheries enhancements

**EnhanceFish** is designed for use by fisheries professionals including government officers, NGO staff or development consultants. It is best used by interdisciplinary teams interacting closely with relevant stakeholders before, during and after the quantitative analysis. Use of **EnhanceFish** requires understanding of some basic concepts of fish stock assessment. It does not require specialist knowledge of mathematical skills.



**Process framework for using *EnhanceFish* in the development of enhancements**



**Quantitative assessment with *EnhanceFish*: effects of stocking density on catch from stocked, naturally spawned 'hatchery type' and wild fish**

To use **EnhanceFish** effectively in the development and improvement of fisheries enhancements, the biological-technical analyses supported by the **EnhanceFish** tool should be integrated into a participatory decision making process, and an integrated analysis of the enhancement system. The **EnhanceFish** guide provides guidance on how to do this.

**Visit the *EnhanceFish* website to download the Tool, Manual and Guide, and get started...**

### Links to other documents and information sources on this topic:

For further information and downloads please visit the **EnhanceFish** web site:

[www.aquaticresources.org/enhancefish](http://www.aquaticresources.org/enhancefish)

There is also an **EnhanceFish** discussion list at: [www.enaca.org/modules/newbb/viewforum.php?forum=33](http://www.enaca.org/modules/newbb/viewforum.php?forum=33)

### Where has this come from?

The policy brief series is prepared by the Support to Regional Aquatic Resources Management (STREAM) Initiative of the Network of Aquaculture Centers in Asia-Pacific (NACA).

The **EnhanceFish** decision tool and toolkit was developed by Imperial College London with financial support from the UK Department for International Development, Fisheries Management Science Programme. **EnhanceFish** is based on extensive research on the population dynamics and management of fisheries enhancements. To find out more about the scientific basis of **EnhanceFish** visit the **EnhanceFish** web site (see above).