

**The Fisheries Science Services Team**

In order to ensure the sustainable harvesting of the fisheries resources, it is essential that management is underpinned by sound marine science that is clear, transparent, timely, impartial and inclusive.

The Marine Institute's Fisheries Science Service Team works closely with the fishing industry to provide this marine science through.

- Research Vessel Surveys (Acoustic, Groundfish, Egg and Larval Fish, Underwater TV)
- Surveys on Commercial Vessels
- Market Sampling of Landings
- Discard Sampling at Sea
- Analysis of Logbook Data
- Studies on the Biology of Fish
- Working with the Regional Advisory Councils (RAC's)
- Articles in the trade press
- Working with our international scientific colleagues
- Regular meetings with Industry Representatives and DCMNR
- Regular Meetings with EU

This information is essential to our understanding of the current state of the fisheries resources and the ecosystem in which they live.

More detailed information, as well as similar leaflets on related issues are available from

Marine Institute, Fisheries Science Services (FSS), Rinville, Oranmore, Co. Galway, Ireland. Phone: + 353(0) 91 387200

**Or your local Port Based Technician in**

- Clogherhead (041) 9889788
- Dunmore East (051) 385011
- Castletownbere (027) 71937
- Ros a Mhíl (091) 572584
- Killybegs (074) 9741871

**HEADQUARTERS**

MARINE INSTITUTE  
Rinville,  
Oranmore,  
Co. Galway  
Tel: +353 91 387200  
Fax: +353 91 387201

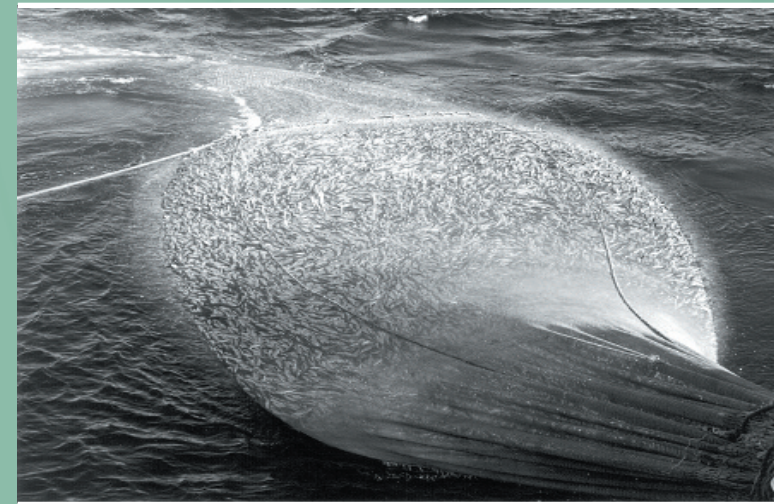
**MARINE INSTITUTE REGIONAL OFFICES & LABORATORIES**

MARINE INSTITUTE  
80 Harcourt Street  
Dublin 2  
Tel: +353 1 4766500  
Fax: +353 1 4784988

MARINE INSTITUTE  
Furnace  
Newport  
Co. Mayo  
Tel: +353 98 42300  
Fax: +353 98 42340

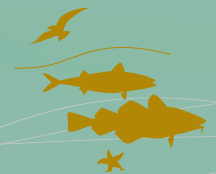
A DEEPER UNDERSTANDING...

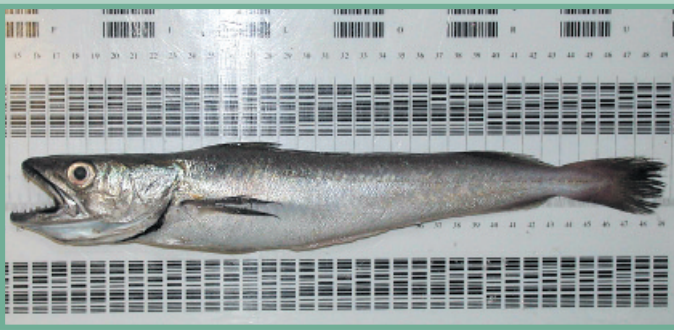
# WHAT IS FISHERIES SCIENCE ?



## FISHERIES SCIENCE SERVICES

Assessing, researching and advising on the sustainable exploitation of living marine resources in a healthy ecosystem





## What is Fisheries Science ?

Fisheries science is a branch of marine science that deals with studies on the life history and state of fish stocks. The term 'life history' refers to the general biology of a fish stock (e.g. when/where do the fish spawn? How fast do they grow?). The term 'state of a fish stock' refers to the number and weight of fish in the stock (i.e. current stock biomass in tonnes).

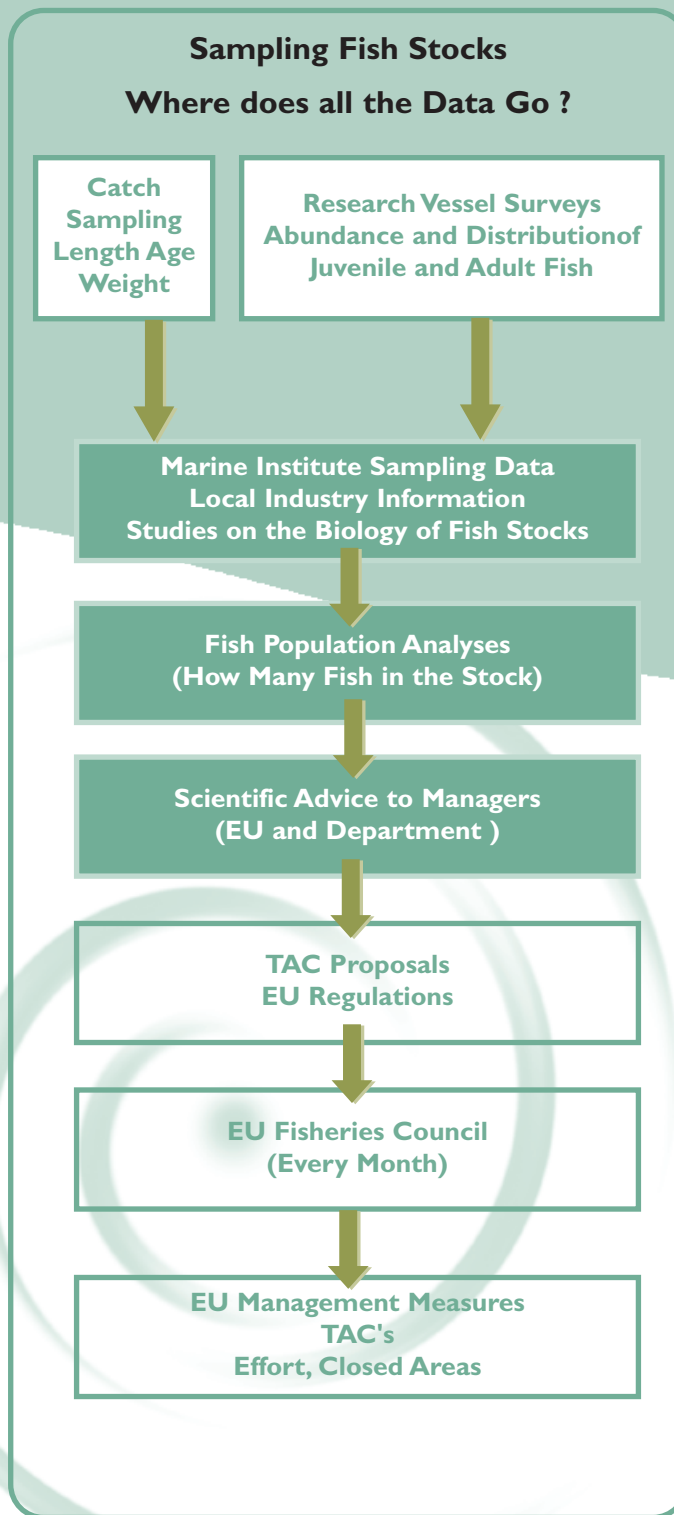
The overall aim of fisheries science is to provide information to managers on the state and life history of the stocks. This information feeds into the decision making process. Fisheries science, economic, social and political considerations all have an impact on the final management decision.

## How is Fisheries Science Used ?

The diagram describes, in a very general way, how sampling carried out by the Marine Institute fits into the decision making process that leads to the annual TAC's and other management measures such as effort control and closed areas.

The Marine Institute sample commercially caught fish from port landings (landings) and from sea trips (catch). Juvenile fish are sampled through research surveys. Fish are 'aged' to give an indication of the health of the stock. A broad range of ages signifies a healthy stock; a lack of young fish could mean poor spawning in a particular year; a lack of older fish may signify overfishing.

Data collected by fisheries scientists are assessed each year using special computer packages. These produce estimates of stock size (biomass). If we know about the biomass and biology of the fish stock, we can estimate on how many fish can be safely removed from the stock in order to ensure a sustainable resource.



## What Does 'State Of The Stock' Mean?

This term defines how "healthy" the stock is. There are four characteristics of a commercially exploited fish population that are used to indicate the 'state of the stock'. These characteristics are;

1. Fishing mortality (F) - the proportion of fish stock killed each year through fishing.
2. Spawning stock biomass - the total weight of mature fish in the population
3. Landings - The annual tonnage of commercial landings taken from a fish stock
4. Recruitment (Spawning success) - The number of off-spring produced by a fish stock each year.

Each year scientists plot these parameters when they carry out the annual "fish stock assessments" for each stock. They look at trends over time and decide on the "state of the stock". They also try to predict what will happen the stock in the future.

*So lets take a look at an example from a fictitious stock (See overleaf).*

**We will look at the Fishing Mortality, Spawning Stock Biomass, Landings & Recruitment from 1968 to 2004. See Figure (1-4)**

**Have a look at the plots and see what has happened in this stock over time.**

- Are Landings increasing/decreasing?
- Is Recruitment high or low in recent years?
- Is Fishing Mortality rising or failing?
- How does the current Stock Biomass look?

## The Future of Fisheries Science

Fisheries science is changing rapidly and has diversified to include studies on the impacts of fishing on seabirds, mammals, rare fish, habitats and ecosystems. Fisheries science is now concerned with providing advice on fisheries (e.g. trawl fisheries in the Irish Sea) rather than on single stocks (e.g. cod in the Irish Sea). Managers and the public are asking new questions about the management and use of the oceans. Fisheries science must respond by providing the science to answer these questions.

The need for scientists, managers and industry to continue to work closely together, is greater than ever.