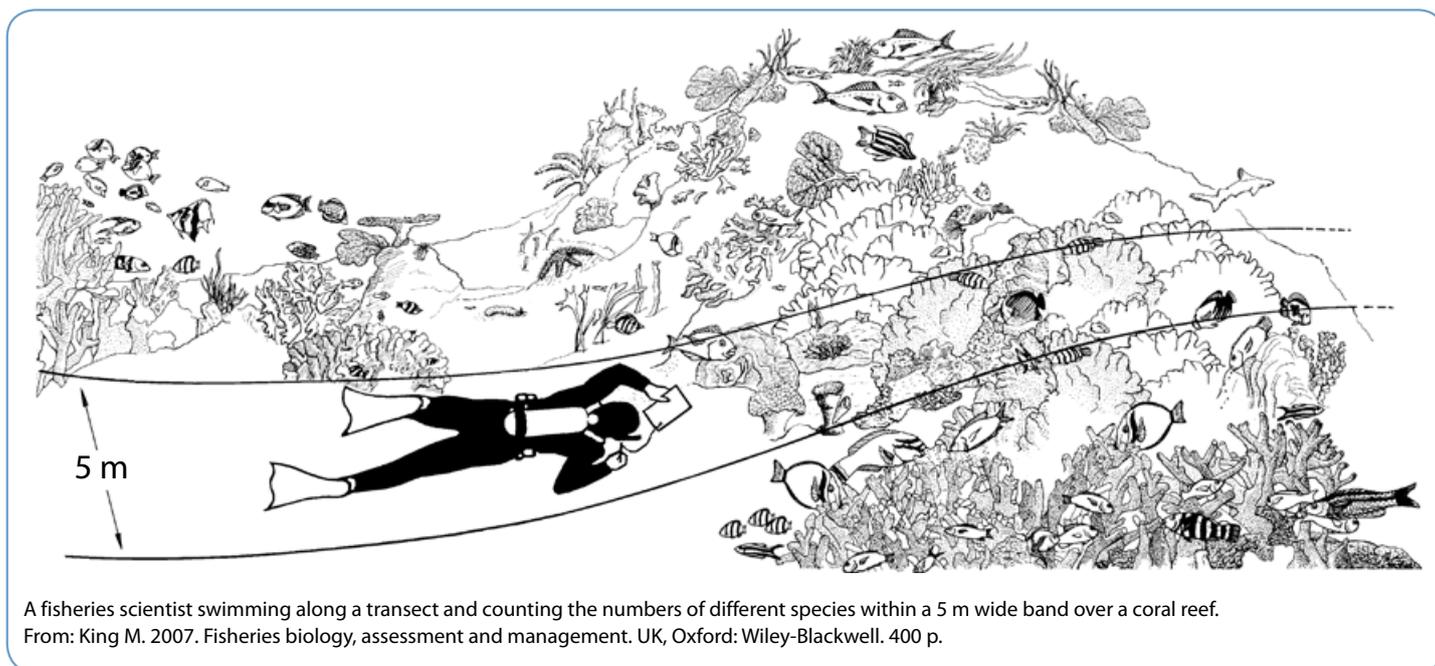# Fisheries assessment

3

To assess something is to examine its status or standing at a given time. In fisheries assessment we are gathering information on the status or health of a fish stock or fishery.* This assessment is used to provide fisheries managers with information that they can use to manage a fish stock.

A fisheries scientist swimming along a transect and counting the numbers of different species within a 5 m wide band over a coral reef.
From: King M. 2007. Fisheries biology, assessment and management. UK, Oxford: Wiley-Blackwell. 400 p.

5 m

Assessments can range from those made by fishers and fishing communities to more complex analyses made by fisheries scientists. The problem with scientific analyses is that they often require a lot of information and sometimes many years of data collection.

Examples of formal assessments are given in the accompanying guide book. One exercise is based on completing transects* to estimate the size of a population of sea cucumbers on a shallow bank (the diver in the above illustration is completing a transect across a coral reef).

One of most extensive scientific assessments in the Pacific is part of the tuna research programme completed by SPC. Part of this research depends on tagging experiments in which tuna are tagged and released in order to obtain information on their migrations and other biological parameters. An example of using tagging information to estimate the numbers of fish in a population is included in the accompanying guide book. Methods of tagging marine species* are shown in the figure at the back.

However, there are so many species in tropical waters that the individual assessment of each species is a very difficult task. Fisheries managers have to rely on less complex assessments and some of these can be made by fishing communities.

One of the most basic measures of the health or wellbeing of a fishery involves examining changes in fish sizes and catch rates. If fish sizes in catches are decreasing it may suggest that too many large adult fish are being taken from the stock.

i

Related facts to consider

Coastal waters in the tropics are home to many more species than those in cooler waters. The number of different species decreases with distance away from the equator. For example, big fisheries in New Zealand are based on large numbers of relatively few species whereas a Pacific Island in the tropics has fisheries based on smaller numbers of many more species.

Catch rates refer to the amount of fish caught in a given fishing time; say the number of standard strings of fish, basket of clams, or a number of lobsters caught in an hour of fishing. If catch rates have been decreasing over many years it is likely that too many fish are being taken from the stock.

When seeking this information from fishers or in fishing communities it is often easier to ask about catch rates in terms of time taken to obtain a standard catch rather than catch per standard time. That is, for example, the time taken to catch a standard string of fish, a basket of clams, or a number of lobsters.

- If this fishing time is remaining the same, the numbers of fish are probably remaining the same. In this case, the assessment may be that the fish stock is healthy.

- If this fishing time is increasing, the numbers of fish are probably decreasing and management, if any, is not effective. In this case, different or additional management measures should be applied.

This assessment based on information from local fishers has sometimes been called 'data-less management' as it is not based on time-consuming and often expensive surveys by fisheries scientists.
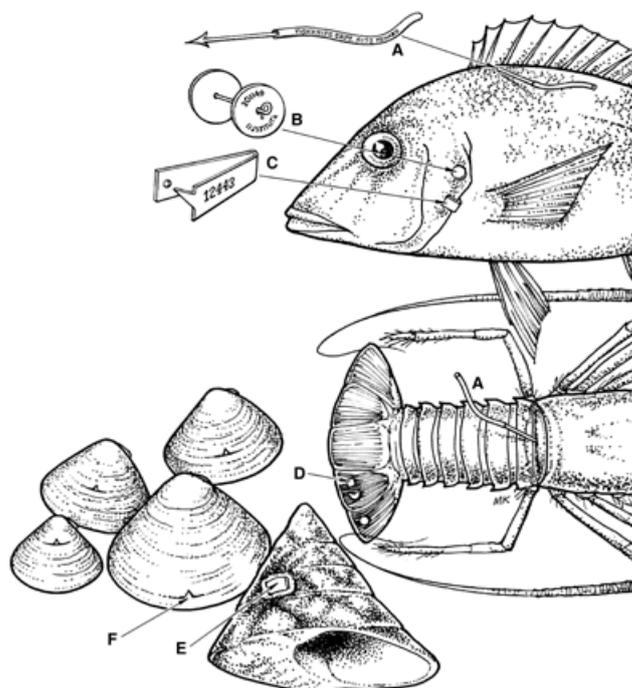
Tagged, or marked, marine species. Fish are often tagged with the brightly-coloured spaghetti tag (A) shown inserted between the rays of the base of the dorsal fin. A spaghetti tag is also shown inserted into the muscle of the lobster's abdomen between the covering plates. A disk tag (B) and an opercular clip tag (C) are attached to the gill cover of the fish. The tail fan of the lobster is marked by defacement (D). The trochus has a small printed plastic tag (E) glued to its shell with quick-setting epoxy resin. The bivalve molluscs* have been marked, at some previous date, by filing a notch (F) on the shell margin. After recapture, the increase in distance from the old shell margin to the new shell margin represents growth during the period between release and recapture.
From: King M. 2007. Fisheries biology, assessment and management. UK: Wiley Blackwell. 400 p.