

Starfish

STUDENT & TEACHER RESOURCE

FACTSHEET 8

Fisheries Research

To make sure that our fisheries are managed well and that fish stocks remain in a healthy state into the future, we need to understand the behaviour of fish and figure out how many there are in each stock. We need to understand how fast they grow, how they reproduce, and how they interact with other fish species and the environment.

There are scientists who research all this information for the fish species in our waters.



Why is research important?

There are many fisheries in our Exclusive Economic Zone (EEZ) that are important to both commercial and recreational fishers. These fisheries range from coastal species such as rock lobster, blue cod, snapper, and kahawai to deep-water fisheries, such as orange roughy, hoki, and oreo.

If a fishery is over-fished, it can take a very long time for the fish to rebuild their population.

The government uses information from scientists' research to work out how many fish can be caught in each fishery without over-fishing, and sets catch limits for each fishery to help protect the fish.



New and interesting species
are regularly discovered.

How do scientists research fish stocks?

Fish stocks are difficult to measure because the fish move around a lot and may live on the seafloor at depths of more than 1000 metres. Scientists use a wide range of research techniques to monitor fish stocks including:

1. Trawl surveys

In trawl surveys, a large trawl net is towed along the bottom of the sea to catch deep-water fish like orange roughy and hoki. The number of fish caught in the net gives an indication of how many fish are in that area, and what their average weight might be.

Problem

Fish move around and live in different areas, so there will be large areas where no fish are found and other areas where lots of fish are found. It would be too expensive to trawl over the whole area where a fish species is thought to live.

2. Tagging

Tagging helps show the movements of fish like snapper, kahawai, and school shark.

When fish are caught, details such as their length and weight are recorded and a small tag is attached to them (it's either inserted internally or clipped on externally), then they are returned alive to the sea. The tag has a serial number and an address on it.

If fishers catch a tagged fish, they should return at least the tag (and usually the fish as well) with details about where and when they caught the fish. Because the scientists know where and when the fish was tagged, they can work out where the fish travelled before it was caught again.

Problems

Some fishers do not return tags, some tags fall out, and some tagged fish die before they are caught again.

3. Catch sampling

Sometimes observers take samples of fish from the catches on commercial fishing boats to measure the length and age of fish. This information helps to monitor how healthy a fish stock is by monitoring changes in the average size and age of fish that are caught.

4. Age and growth

Age and growth information are important for understanding the impact of fishing on a fishery. Faster growing species can be fished a lot more than slow growing species.

We can work out the age of most fish by counting the rings on the fish's otoliths. We can work out the age of other species by looking at growth markings on the hard parts of the fish (such as shells or spines).

Problems:

These rings can be hard to count accurately, and slower growing species like orange roughy may have over 100 growth rings.

Related factsheets

- 2 What is a Fishery?
- 3 Managing Fisheries
- 9 Observers



A fish that has been tagged.



Crew on a research trip sort species that have been caught.



Otoliths from two different types of fish, Ling and Hake.