Department of
**Primary Industries and
Regional Development**
GOVERNMENT OF
WESTERN AUSTRALIA

**Protect
Grow
Innovate**

Stock assessments

A health check for our aquatic resources

The Department of Primary Industries and Regional Development (DPIRD) is responsible for the sustainable management of aquatic resources in Western Australia (WA). To monitor the status of our fish stocks, scientists conduct stock assessments using a wide range of methods.

What is a stock assessment?

A stock assessment is basically a 'health check' on our most valuable aquatic resources. Counting all the fish in a population is virtually impossible – imagine trying to count the number of trees in a forest, but you can't see them, and they move around!

The department's scientists use a range of fishery-dependent and fisheries-independent data to determine how our aquatic resources are doing in the face of fishing and environmental pressures.
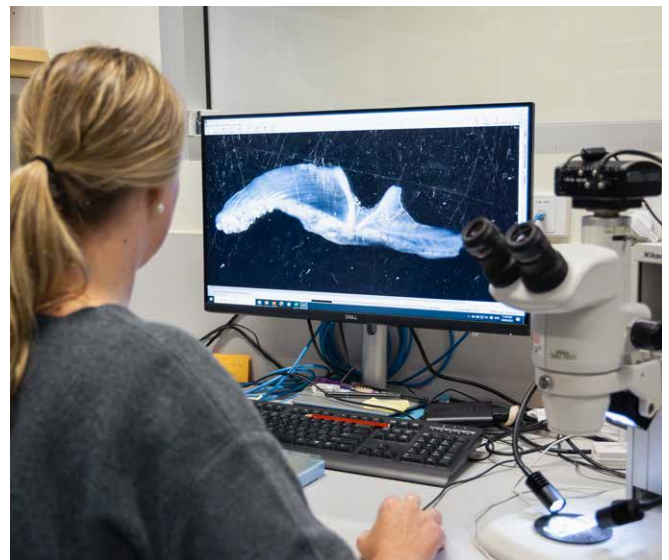
A DPIRD research scientist reading an otolith section

Fishery-dependent data

Comes directly from the fishery, from biological sampling of fishers' catches to catch and effort information from commercial and charter logbooks and recreational fishing surveys.

Fishery-independent data

Comes from scientific surveys (e.g. baited camera surveys and recruitment surveys) undertaken to standardise sampling methods and remove effects on data of fishing selectivity and efficiency.

Level 1	Biological information and trends in commercial, recreational and charter catches.
Level 2	Catch per unit effort data to evaluate changes in stock abundance.
Level 3	Analysis of age and/or size structure data.
Level 4	Fishery-independent survey estimates of stock abundance.
Level 5	Integrated population model incorporating all available data.

Figure 1 Levels of stock assessment

How are stock assessments conducted?

Fisheries scientists in WA have been assessing stocks for over 50 years, using a range of methods that have been continuously innovated and improved over time.

The methods used to assess stocks vary between species, and are influenced by the following factors:

- data availability
- biology and population dynamics
- type, size and value of the fishery
- level of sustainability risk
- historical level of monitoring.

There are different levels of assessment based on what data scientists are able to collect on the stock, which range from simple catch analyses to complex age and/or size structured, integrated stock assessment models (Figure 1).
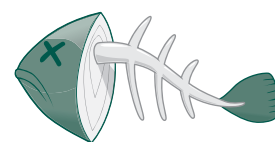
Modelling is used to produce estimates of key performance indicators, such as fishing mortality and spawning biomass, which are compared against internationally-accepted biological reference points.

Stock assessments are important for informing the current status of stocks. The most sophisticated (integrated) population models also allow predictions to be made about future changes in mortality and biomass under different catch scenarios. These projections are important for understanding the recovery of depleted stocks.

DPIRD's responsibility is to maintain the sustainability of our marine resources for current and future generations. Following global scientific best practices, stock assessments constantly evolve and improve, particularly as new data become available. The science is backed up by third-party, independent experts, meaning they are peer-reviewed and validated.

How can you contribute?

To contribute to fisheries science and stock assessments of our aquatic resources, you can donate fish frames to the Send Us Your Skeletons program or record your demersal catch using the voluntary FishCatchWA™ reporting tool in the Service WA app.

Important disclaimer

dpird.wa.gov.au