

Science & Management 101: Life History Information

Life history characteristics play an important role in the management and assessment of a species. They provide information on how productive and resilient a species may be and how much harvest they can sustain. Examples of fish life history questions that provide important information to both the general understanding of the species' biology and stock assessments are provided in the table below.

Fish Life History Parameters	Management & Assessment Uses
How long does it live?	To estimate natural mortality and set maximum age in assessment models.
How large does it grow?	To set size limits and estimate total biomass.
How fast does it grow?	Implications as to how fast it will reach the fishery's minimum size limit.
Where does it live?	Identifies habitat needs and areas to protect.
What is the age and size of first spawning?	To establish minimum size limits to ensure species reproduce at least once prior to being harvested.
When, where, and how does it spawn?	Identifies areas and times of increased vulnerability to harvest; may lead to seasonal closures to protect spawning aggregations or specific habitat types.
How many eggs are produced?	Helps to determine the reproductive capacity of the stock as well as develop egg per recruit estimates.
How does it develop and what habitats does it rely on?	Identifies important habitats to protect during vulnerable life stages.
What does it eat? How does it eat? What eats it?	Predator/prey, food web, and species interactions; multispecies and ecosystem management.

A couple of ways scientists collect fish life history information is through the measurement of length and weight and assessing age by growth marks on hard structures such as otoliths (ear bones). Combined, these data help scientists determine length-at-age, a key variable in stock assessments. 🐟

Source: www.asmf.org/fisheries-science/fisheries-science-101.

Fish Life History Biosamples

An otolith (ear bone) forms annual lines, similar to the rings in a tree trunk. The distance between lines indicates fish relative growth each year.

Gonads tell scientists information about reproductive development.

(L) Fish ovaries and (R) testes.

The stomach contents show the fish's diet.

Fork length, along with **weight**, can be used for fish population assessments.

Section of a snapper otolith. Photo: NMFS/Joel O'Malley.

(L) Fish ovaries and (R) testes. Photos: Poseidon Fisheries Research.