

## How Fish Reproduce

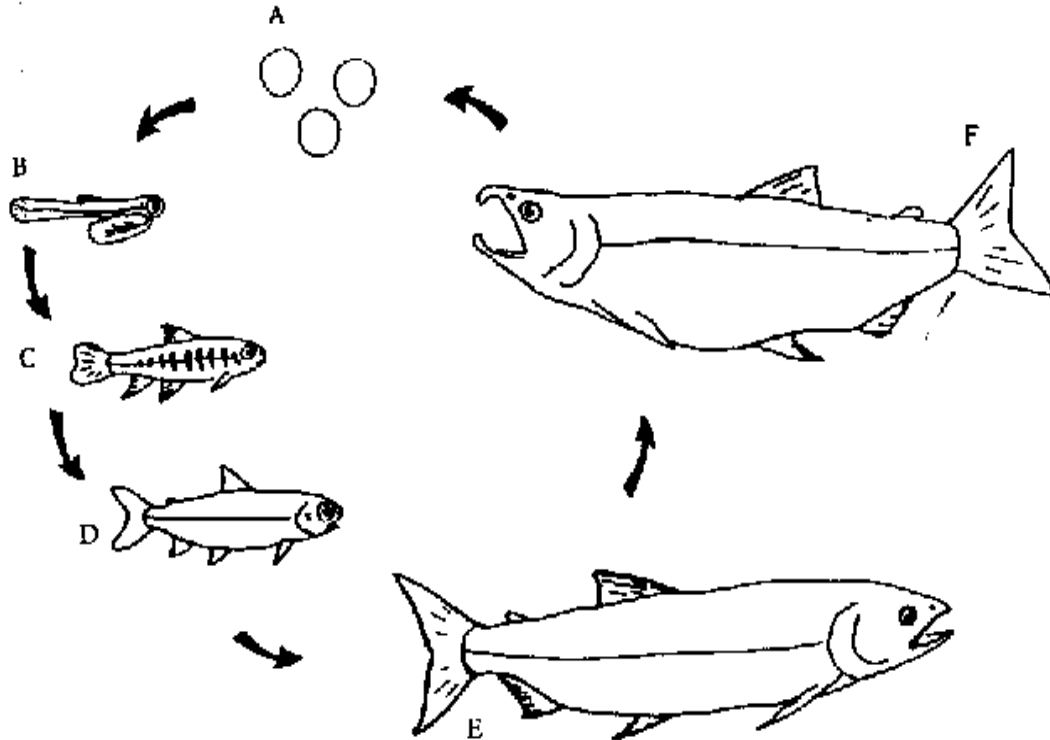


Illustration of a generic fish life cycle. Source: Zebrafish Information Server, University of South Carolina (<http://zebra.sc.edu/smell/nitin/nitin.html>)

Reproduction is an essential component of life, and there are a diverse number of reproductive strategies in fishes throughout the world. In marine fishes, there are three basic reproductive strategies that can be used to classify fish.

The most common reproductive strategy in marine ecosystems is **oviparity**. Approximately 90% of **bony** and 43% of **cartilaginous** fish are oviparous (See Types of Fish). In oviparous fish, females spawn eggs into the **water column**, which are then fertilized by males. For most oviparous fish, the eggs take less energy to produce so the females release large quantities of eggs. For example, a female Ocean Sunfish is able to produce 300 million eggs over a spawning cycle. The eggs that become fertilized in oviparous fish may spend long periods of time in the water column as **larvae** before settling out as **juveniles**. An advantage of oviparity is the number of eggs produced, because it is likely some of the offspring will survive. However, the offspring are at a disadvantage because they must go through a larval stage in which their location is directed by oceans currents. During the larval stage, the larvae act as **primary consumers** (See How Fish Eat) in the **food web** where they must not only obtain food but also avoid predation. Another disadvantage is that the larvae might not find suitable habitat when they settle out of the

water column. Oviparous Sharks and Rays do not have the advantage of producing high numbers of eggs, however they spawn eggs that have a large amount of yolk to provide nourishment as the embryo develops. These offspring also do not go through a larval stage, but are instead laid on the seafloor. The eggs of oviparous **cartilaginous** fish are often leathery and are attached to structures along the seafloor. These are often called "[mermaid purses](#)".

**Ovoviviparity** is another reproductive strategy that occurs in most Sharks and Rays, as well as **species** of Rockfish. In ovoviviparous fish, the eggs are fertilized inside of the female. The eggs remain within the mother while they develop allowing for a greater degree of protection from **predators** and difficult environmental conditions than in oviparous fish. However, there is no direct nourishment provided by the mother. Another advantage of ovoviviparity is that the offspring are advanced in their development when they are born live, thus the juveniles are more likely to fend for themselves in the wild. A disadvantage of ovoviviparity is that fewer individuals are born and it takes more energy for the females to carry the eggs inside.

**Viviparity** occurs in some Sharks and Surfperches. Similar to ovoviviparous fish, internal fertilization and development occurs. However, the embryos receive direct nourishment from the mother, similar to the development of an embryo in mammals. Like ovoviviparous fish, the viviparous fish give birth to live young, however viviparous fish are fully advanced at birth allowing for a greater chance of survival. Viviparous fish are at a disadvantage if the mother dies because the offspring are likely to die and the mother is more vulnerable to predators when in labor.

## References

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