

CHAPTER

1

Fish Reproduction and Development

- Explain how fish reproduce and develop.



How do fish reproduce?

Wild male and female Sockeye salmon before spawning. Sockeye salmon are blue tinged with silver in color while living in the ocean. Just prior to spawning, both sexes turn red with green heads. Sockeye spawn mostly in streams having lakes in their watershed. The young fish spend up to three years in the freshwater lake before migrating to the ocean. Migratory fish spend from one to four years in salt water, and thus are four to six years old when they return to spawn. Navigation to the home river is thought to be done using the characteristic smell of the stream, and possibly the sun.

Fish Reproduction and Development

Nearly all fish reproduce sexually, and most species have separate sexes. Those without separate sexes avoid self-fertilization by producing sperm and eggs at different times. Each fish typically produces a large number of gametes. In most fish species, fertilization takes place externally. These fish are **oviparous**. Eggs are laid and embryos develop outside the mother's body. In a minority of fish, including sharks, eggs develop inside the mother's body but without nourishment from the mother. These fish are **ovoviviparous**.

Spawning

In many species of fish, a large group of adults come together to release their gametes into the water at the same time. This is called **spawning**. It increases the chances that fertilization will take place. It also means that many embryos will form at once, which helps ensure that at least some of them will be able to escape predators. With

spawning, there is no way for fish parents to know which embryos are their own. Therefore, fish generally don't provide any care to their eggs or offspring. There are some exceptions, however, including the fish described in **Figure 1.1**, which is performing **mouth brooding**.



FIGURE 1.1

Mouth Brooding. Some species of fish carry their fertilized eggs in their mouth until they hatch. This is called mouth brooding. If you look closely, you can see the eggs inside the mouth of the African tilapia fish pictured here.

Fish Larvae

Fish eggs hatch into larvae that are different from the adult form of the species (see **Figure 1.2**). A larva swims attached to a large yolk sac, which provides the larva with food. The larva eventually goes through **metamorphosis** and changes into the adult form. However, it still needs to mature before it can reproduce.

Summary

- Nearly all fish reproduce sexually and have separate sexes.
- Fertilization is generally external, and most fish are oviparous. Many adults of the same species may come together in a group and release gametes into the water at the same time, which is called spawning.
- Fish hatch into larvae that are different from the adult form of the species.

**FIGURE 1.2**

Salmon Larva. This newly hatched salmon larva doesn't look very fish-like. The structure hanging from the larva is the yolk sac.

Practice

Use this resource to answer the questions that follow.

- **Life Cycle of Salmon** at <http://www.youtube.com/watch?v=EqmGSexPaEk&feature=related>.

**MEDIA**

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1. Describe the stages in the life of a salmon.
2. How does a salmon remember where to return to spawn?