

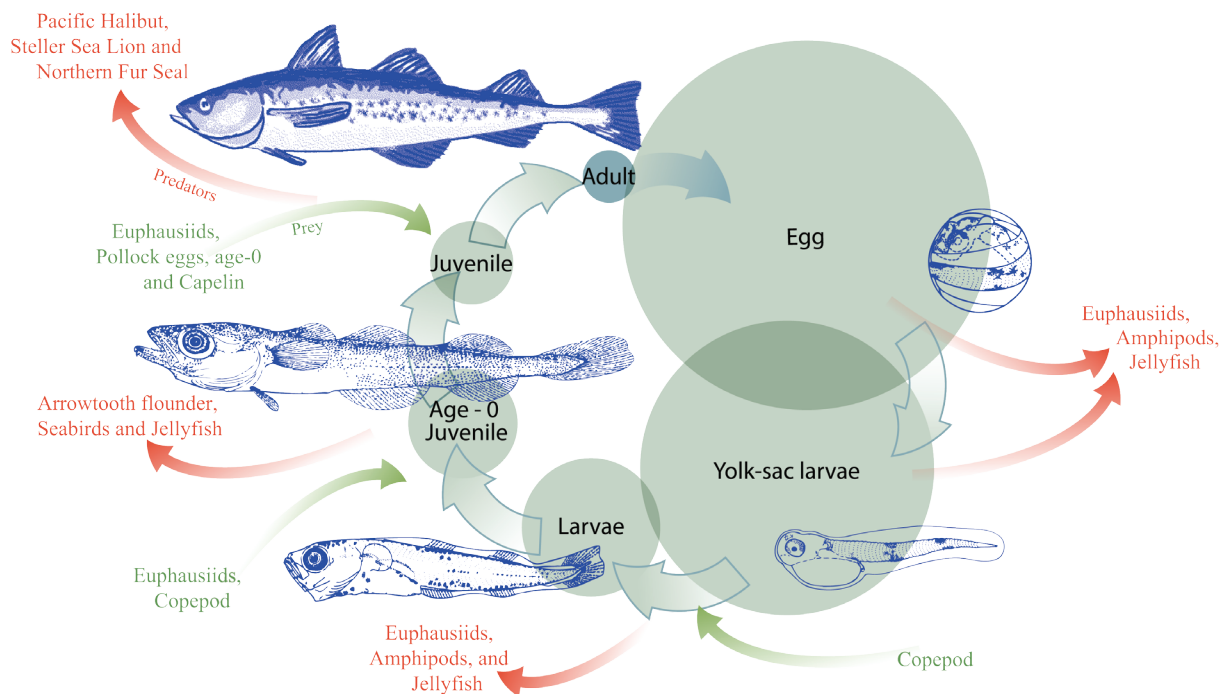
SUSTAINABLE U.S. SEAFOOD: WHAT'S SCIENCE GOT TO DO WITH IT?

Join NOAA Fisheries Service in this five-part series to learn about the science behind responsibly managed U.S. fisheries.

Survival in a dangerous environment

Take a spin around the walleye pollock life cycle:

Imagine that you are a walleye pollock egg adrift in the cold waters near Alaska. You are only slightly larger than a pinhead. In order to survive, you must overcome big challenges. You are not only fragile, but vulnerable to changing ocean currents and temperature. Ocean temperatures may limit or increase your growth potential. Strong ocean currents can sweep you far out to sea where prey is scarce and you may starve. You don't have to worry about food until you hatch because your yolk sac has been supplying you with precious nutrients. A few days after hatching, your yolk sac is empty and you now must swim and search for food. Even as you search for prey, you are also prey for many predators such as jellyfish, euphausiids (krill) and small fish. As you get older, new predators like arrowtooth flounder find you appetizing. If you should be in good ocean conditions, find lots to eat, and manage to escape being eaten, then there's a good chance you will grow up to be an adult to contribute by spawning the next generation of fish. If too many young pollock don't survive to adulthood, then there is a possibility the population of pollock will decrease in the future. This would mean lower quotas for fishermen, to ensure pollock populations are kept at a sustainable level.



What are a pollock's life stages?

Egg

Beginning in late winter, trillions of tiny walleye pollock eggs are spawned near the ocean bottom in specific areas in Alaska waters. In the Gulf of Alaska, pollock spawn in Shelikof Strait. In the Bering Sea, they spawn around the Pribilof Islands and along the Alaska Peninsula. These eggs will drift for two weeks, impacted by currents and predators.

Yolk-sac-larvae

When larvae (plural of larva) first hatch they rely on food stored in a membranous pouch under their bodies called a yolk sac. While their eyes, stomachs and mouths develop, the yolk sac is their only food source for about a week after hatching.

Larva

Once the yolk sac is consumed, the larvae, still tiny at about 5 millimeters in length, catch their own food as they drift with the ocean currents. For about three months, the larvae will continue to grow.



Did you know that oceanographic factors affect survival of young pollock? Fierce storms can mix the water and make finding food difficult; ocean currents can take larvae away or toward their food; and ocean temperatures can help or hinder their development.

Age-0 juvenile

After their larval stage and before their first birthday, walleye pollock are called "Age-0 (zero)" and measure about 5 inches in length (about 13 centimeters). These juveniles are an important food source for sea birds, jellyfish and even adult pollock.

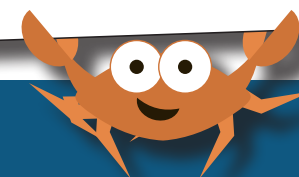
Juvenile

Walleye pollock are considered juveniles until they have developed enough to spawn (3–4 years). Juvenile fish in the Gulf of Alaska spend their time near shore in coastal bays and estuaries known as nursery areas. In the Bering Sea, they have no place to hide.

Adult

Walleye pollock mature into adults at 3 to 4 years of age and are about 14 inches (35 centimeters) long. Adults can live up to 17 years, and can grow as large as 3 feet in length (1 meter).

Data collection: Scientists tow small meshed nets called bongo nets through the upper layer of the ocean's water column to collect pollock eggs and larva. Can you think of why they are called bongo nets?



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