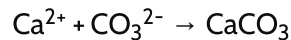


Oyster Life Cycle

Stage 1. Larvae are fertilized.

Oysters spawn in the spring by releasing eggs and sperm into the water. When an egg and sperm meet, the egg is fertilized and within 6 to 10 hours develops into a free-floating larva (singular of larvae). Then each larva begins to develop a shell. This small shell is complete within 24 to 48 hours, at which point it makes up 90% of the oyster's weight. During this time, the oyster removes calcium ions (Ca^{2+}) and carbonate ions (CO_3^{2-}) from the water and combines them to form calcium carbonate (CaCO_3), which is the same compound found in rocks like chalk, limestone, and marble. The reaction by which oyster shells are formed is shown below:



Stage 2. Larvae grow shells and begin to filter feed from the water.

The oyster has to use **energy** to build its shell out of the available calcium and carbonate ions. It also uses energy to get rid of other ions that cannot be used to form shells, such as HCO_3^- . The relatively low concentrations of calcium and carbonate ions and high concentrations of other ions in the water requires oysters to expend even more energy to build their shells. This can be especially hard on oyster larvae, which do not feed from the water and depend entirely on getting their energy from the relatively small amount of food that is stored in the egg. Oyster larvae need to start making their shells within the first 12 hours of their life and finish within about two days. They cannot filter feed (take food from the water) until a shell begins to form. If calcium and carbonate are not available, or if other problems occur in this time frame that slow down the rate of shell formation, then the larvae are unable to fully build their shells and eat and they will die.

Stage 3. Spat attach to rocks.

The young oyster continues floating around for two to three weeks before attaching itself to a hard surface (like a rock or another oyster). Attached small oysters are called "spat." In the wild, spat will grow in the same spot for one to three years before becoming adult oysters, growing at a rate of about one inch per year depending on water quality.

Stage 4. Seed oysters are placed out at sea.

In oyster hatcheries, spat are allowed to grow for a few weeks or months, at which point they are large enough to be used as “seed oysters” to throw out into bays. Unlike seeds from plants, seed oysters are young organisms that feed and behave much like adults, but like plant seeds, they can be placed in a particular location where they will continue to grow. Seed oysters can be used to build new reefs in restoration projects, or placed in oyster farms where they will be grown for food. Most states require farmers and those who gather wild oysters to wait until the oysters are 2 ½ to 3 inches across, or about three years old, before harvesting them.



Seed oysters attach to hard surfaces (left) and grow into adults in reefs (right). NOAA

Stage 5. Adult oysters leave behind important minerals.

Oysters can live to be 20 years old, before dying and leaving their shells. These shells may then become an anchoring spot for new oysters or slowly crumble and become part of the ocean bottom. The smaller pieces in these deposits can form into chalk or limestone rocks over time.

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