

Clams and Water Quality

Good water quality is an important factor in the growth of clams, but did you know clams can also contribute to maintaining good water quality?

Clam digging is an important component of the economy and lifestyle within the Coos watershed. The estimated population of clams in the Empire region of Coos Bay alone is over five million (ODFW).

How are clams affected by water quality?

The water quality factors that affect the growth and survival of hard clams include temperature, salinity, chlorophyll, and turbidity.

Clams live in estuaries, which are partially enclosed water bodies with multiple rivers or streams flowing into them. Therefore, water quality conditions and contaminants in every river that flows into Coos Bay, effects the clams living there.



Clamming is a popular recreational activity on Oregon's Coast. Photo source: www.katu.com

Water temperature

Like most aquatic organisms, clams are cold-blooded, meaning their metabolic rate, and therefore their feeding, respiration, and burrowing capacities, are directly influenced by the temperature of the water they are in.

The ideal water temperature for clams is 68°F. Growth rate is reduced above or below this temperature, and growth stops below 48°F or above 88°F. Water temperature is a function of many parameters such as

season, water depth, and the temperature of water flowing in through the tributaries.

Salinity

Salinity refers to the relative salt content in the water, which is influenced by tides, rainfall, physical barriers to water movement, and mixing by wind.

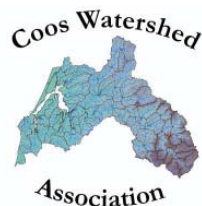
Hard clams do best in water with a salinity value of between 20 and 30 parts per thousand (ppt). Clams begin to die in waters with a salinity greater than 40 ppt. For reference, the average salinity of sea water is 35 ppt and the average salinity of fresh water is 0.5 ppt.

Nutrients

Clams are filter-feeding, bottom-dwelling organisms that eat tiny organisms called phytoplankton. Phytoplankton grow through photosynthesis. However, algae, a form of tiny seaweed, also grow through photosynthesis and can outcompete phytoplankton when excess nutrients are introduced to the water body. Often excess nutrients are introduced through fertilizers and organic matter in the streams that flow into Coos Bay.

Turbidity

Turbidity is a measure of the optical properties of water, or how clear it is. Turbidity increases with increased fine sediment particles or plankton in the water column. Excessive fine sediment can reduce the clams ability to filter-feed by stressing their filtration apparatus, therefore clams are more likely to thrive in less turbid water.



Coos Watershed Association
PO Box 5860 Charleston OR 97420
541-888-5922
<http://www.cooswatershed.org>

What are the signs of stress in clams?

Most clams can survive stress due to decreased water quality for several days by closing their valves or shells. However, they will die if their valve or shell remains closed for too long. It is hard to identify signs of stress in juvenile clams as they are usually buried.

How do clams contribute to good water quality?

As mentioned above, clams are filter-feeding, bottom-dwelling organisms that feed on phytoplankton. A single clam can filter 50 gallons of water a day (source: Pacific Coast Shellfish Growers Association).

Therefore, clams may have a positive impact on water quality through their ability to remove phytoplankton from the water column. A healthy clam population helps keep algae populations under control. When algae grows out of control, it can effectively choke out other aquatic life by decreasing the oxygen levels in the water.

An additional benefit of shellfish filtering the water is the benefit to aquatic vegetation. Clearer water provides for deeper sunlight penetration which promotes crucial and beneficial aquatic vegetation.

Shellfish are also carbon-fixers. They help to reduce carbon dioxide levels in the water by removing the carbon and incorporating it into their shells as they grow.

What can you do to help clams in the Coos watershed?

Here are some simple tips you can follow to ensure that you do not negatively impact clams in the Coos watershed:

- Reduce sediment inputs from your property by planting native vegetation and covering bare ground with mulch or gravel
- Apply fertilizers and other chemicals to your lawn only as directed using the minimum amount necessary
- Be sure to always properly dispose of pet waste, automotive materials, and household hazardous waste
- Maintain healthy stream-bank vegetation around any water bodies on your property. This promotes stream bank stabilization and cooler water temperatures through shading.
- When you are out clamming be sure to follow “clamming ethics” rules such as limiting your harvest, staying off of the eel grass, and always filling your holes
- Remember, the watershed is completely connected; upstream conditions affect downstream conditions. If you would like to discuss watershed restoration projects on your property call CoosWA at 888-5922.



There is a popular clam clinic in Coos Bay annually, this photo is from the 2006 clinic. Photo source: www.clamdigging.info