

Northwest Ocean Acidification



The hidden costs of fossil fuel pollution

Tiny sea butterflies dissolve before researchers' eyes. Baby oysters die by the tankful. Sea urchins grow deformed. These are a few consequences of raising marine creatures in increasingly corrosive water, and a preview of what could be in store for the Northwest as carbon dioxide pollution from cars and power plants and other human sources changes the chemistry of our marine waters.

Oceans—and their salt-water extensions like Puget Sound—play an enormous role in our region's prosperity. But years of addiction to fossil fuels are putting that resource at risk. Here are the basics:



What is ocean acidification?

Every day, the oceans do us a huge favor by absorbing a third of the carbon dioxide we release into the atmosphere—emissions that would otherwise make global warming worse. But that rising fossil fuel pollution has another cost: **as oceans absorb more carbon dioxide, they become more acidic and corrosive.** The process also robs seawater of carbonate ions, a key building block for shells and skeletons and an ingredient so essential to ocean life that some call it “the soil of the marine world.”

Is it happening now?

Just five years ago, scientists believed the effects of ocean acidification would be confined to deep, offshore ocean waters for decades—until oceanographers started hunting for it off the Pacific Coast. In the last few years, they've **found evidence of acidification nearly everywhere** they looked, from British Columbia to Baja California to Washington's Puget Sound.





What can the Northwest expect?

Some creatures will do fine in a more corrosive ocean. Others will die. In laboratory experiments, the **animals that struggle or dissolve** range from mussels to endangered abalone to cornerstones of the marine food web like krill and pteropods—tiny sea snails that Alaskan pink salmon eat. Yet some crustaceans have developed thicker shells, and some eelgrass grew more abundantly. Northwest researchers are working to understand how local species will fare.

What could it cost us?

Among commercially valuable species, shellfish appear to be the most vulnerable. Two Northwest oyster hatcheries have had massive die-offs, some of which have been linked to acidified seawater. It's unclear whether ocean acidification will directly affect salmon or pollock or other finfish, but it could make their prey less abundant. The executive director of Alaska's largest commercial fishing organization, Mark Vinsel, put his concerns this way: **"On a scale of 1 to 10, it would be 20 or 30."**



What can we do about it?

- ◆ Reduce damaging emissions by approving policies that limit or **put a price on carbon dioxide pollution.**
- ◆ **Use existing laws to curb pollutants** that worsen the impacts of acidification.
- ◆ Invest in **research and monitoring** to determine how species will be affected, better manage fisheries, protect important habitat, and help seafood producers adapt.

Learn more: <http://www.sightline.org/ocean-acidification>

About Sightline Institute

Sightline is a nonprofit research and communications center, founded in 1993 by Alan Durning, working to make the Northwest a sustainable model for the world. Learn more and sign up for sustainability news emails at www.sightline.org.