

Global warming may impede eelgrass growth

July 26 2009, By Michelle Ma

Scientist Ron Thom probably knows more than anyone else about the growth of eelgrass, the humble marine plant commonly found in sheltered bays, inlets and other shallow waters.

Each summer, he and other researchers at Pacific Northwest National Laboratory here tread patiently along the muddy tidal flats of Sequim Bay counting, snipping and tagging strands of the plant that's so crucial to shoreline ecosystems.

Thom, a staff scientist at the Marine Sciences Laboratory, started the research almost 20 years ago. It's become the world's longest-running study measuring eelgrass growth.

Pollution and shoreline development have killed much of the world's eelgrass. Now, Thom's work has attracted widespread attention for data that suggest the plant's growth also could be vulnerable to changes in climate.

"Growth rate is so important with these plants because they are producing habitat for so many things," Thom said. "We typically don't have these long-term data sets to evaluate these things."

Eelgrass, native to Puget Sound, is found along the entire West Coast and throughout the [Northern hemisphere](#).

The plant provides habitat for young salmon, shellfish and birds, and helps prevent shoreline erosion.

It grows in large clusters or as individual plants. In Puget Sound the thin, ribbonlike plants grow everywhere from shallow waters to depths greater than 30 feet.

Thom's study suggests that yearly eelgrass growth changes according to variations in climate. For example, during warmer, wetter years, eelgrass plants in shallow water grow faster. But when temperatures in the Northwest are cooler, Thom's data has shown less growth.

"The bottom line is, climate affects plants," Thom said, adding that eelgrass is most sensitive to changes in temperature and sea level.

The variations in climate known as [El Nino](#) and La Nina have caused different growth rates in eelgrass, the study has found.

During El Nino, scientists have measured higher sea levels and warmer temperatures in the Northwest -- changes similar to those predicted under global warming. So scientists can look at how eelgrass responds during El Nino to see how it might behave as the Earth warms, Thom said.

But it's still unclear whether a warmer Earth will help or hurt eelgrass. Shallow-water eelgrass tends to grow faster when sea level is higher, Thom said. But for eelgrass that grows deep below the surface, a rise in the sea level could diminish its access to light, killing the plants, he said.

Thom started keeping track of eelgrass growth in Sequim Bay nearly two decades ago as a project for summer interns. Over the years, he has returned to the same plot of tidelands to collect more data. Thom started noticing a strong connection between eelgrass growth rates and different climate patterns.

At the mouth of Sequim Bay, researchers and interns measure eelgrass

every two weeks during the summer. They poke a hole at the base of each plant using a hypodermic needle, then return two weeks later to harvest each plant.

Back in the lab, they find the marked spot in each plant. They snip and save all of the new plant growth, dry it in an oven, then weigh it for a precise biomass reading. Those numbers go into the database to be compared with past and future measurements.

Eelgrass is declining worldwide and has disappeared completely from a number of sites in Puget Sound, said Jeff Gaeckle, a sea-grass ecologist with the state Department of Natural Resources. Its Soundwide eelgrass-monitoring program is the largest on the West Coast and seeks to track changes in eelgrass abundance.

The good news is that overall in Puget Sound, eelgrass isn't declining year to year. But several locations, mostly in Hood Canal and the San Juan Islands, are seeing decreases, which has scientists concerned, Gaeckle said.

"It's hard to pinpoint what's causing the changes," he said. Scientists suspect development, polluted runoff, commercial fishing, and now changes in climate as possible reasons.

Thom plans to submit his findings on eelgrass growth for publication later this summer. He said he's concerned that a large-scale eelgrass die-off could happen in Sequim Bay, like in other parts of the Sound. He also will continue the study, with the hope that his data will help provide more answers on what's affecting the plant.

Losing eelgrass could hurt the future survival of fisheries and impact the economy worldwide, Thom said.

"There is a big, big concern," he said.

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