

Moon jellies appear to be gobbling up zooplankton in Puget Sound

March 3 2022, by Hannah Hickey



A GoPro camera shows moon jellies below the water in Sinclair Inlet on August 25, 2021. Moon jellies tend to aggregate in protected bays. New research suggests that when populations spike the moon jellies can consume a significant amount of the zooplankton in those waters. Credit: University of Washington

Swarms of jellies have been seen more frequently in Puget Sound over the past several decades, and some biologists speculate these fast-growing jellyfish will do especially well in the warmer oceans of the

future.

Moon jellies, or *Aurelia labiata*, are unique among the various jellyfish species inhabiting Puget Sound in that they form vast blooms. When populations spike, they can take over a single bay—creating a dramatic sight.

University of Washington-led research suggests moon jellies are feasting on zooplankton, the various tiny animals that drift with the currents, in the bays they inhabit. This could affect other hungry marine life, like juvenile salmon or herring—especially if predictions are correct and climate change will favor fast-growing jellyfish.

The team, which included researchers at Highline College, Western Washington University and the National Oceanic and Atmospheric Administration, presented this work March 2 as a poster at the Ocean Sciences Meeting.

"These aggregations can contain thousands to millions of individuals, and they can cover a broad range of space," said lead author Haila Schultz, a UW graduate student in oceanography. "It's kind of really amazing to see these aggregations when you run into them, oftentimes in protected bays."

Team member Correigh Greene at NOAA's Northwest Fisheries Science Center has studied jellyfish in Puget Sound for more than a decade. Many species are becoming more common, he's found, thriving in the warmer water seen in 2015 and expected in the future.



A view of the ocean's surface on August 25, 2021, in Sinclair Inlet shows a pack of moon jellies during the sampling cruise. Other types of jellyfish, like lion's mane or egg-yolk jellyfish, also have population spikes in summer but don't congregate in a single area like moon jellies. Credit: Haila Schultz/University of Washington

"Why are the jellyfish increasing? And if the moon jellies are increasing, what are their impacts on the ecosystem in Puget Sound?" asks Julie Keister, a UW professor of oceanography.

Through field sampling and lab experiments, the new study suggests that population blooms of moon jellies could have significant local effects on

the base of the marine food web.

The team took water samples from Quartermaster Harbor on Vashon Island and Sinclair Inlet, south of Bremerton, during moon jelly population spikes late each summer of 2019, 2020 and 2021. In collaboration with the Squaxin Tribe, they also sampled water at two South Puget Sound hotspots for moon jellies: Budd and Eld inlets.

Water samples taken during moon jelly population spikes in Quartermaster Harbor and Sinclair Inlet during the last three summers showed that levels of zooplankton—especially copepods—were dramatically lower inside the moon jelly aggregations. The average copepod densities were as much as 73% lower within aggregations than in other parts of the bay.

"This strongly suggests to us that the moon jellies are feeding on the copepods inside the aggregations, depleting their populations," Schultz said.

The team also conducted an experiment at Highline College's MAST Center in the summers of 2019 and 2020. They placed different numbers of moon jellies in 10 large tanks filled with local seawater and zooplankton. When researchers measured the zooplankton levels two hours later, the copepod levels had dropped by as much as 75% in the tank containing the most moon jellies.

"When we pair those two results, we get an idea that the jellyfish in Puget Sound are able to eat a lot of copepods, and that they might be altering the zooplankton population in these embayments," Keister said. "We don't have any rates yet for the field, but from what we observed in the experiments, the moon jellies are clearly preying on those copepods at a very fast rate."

The researchers are still analyzing their data. Eventually they hope to establish the moon jellies' feeding rates and incorporate that into an ecosystem model of Puget Sound that predicts how various populations will fare depending on the environmental conditions.

More information: Presentation: osm2022.secure-platform.com/abstracts/3/details/1441

Provided by University of Washington

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