Another vital forest at risk: Scientists fear warming water could be killing off Puget Sound's kelp beds

September 17 2019, by Evan Bush

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Dozens of healthy bull kelp off Owen Beach stretched to the surface, trailing a moppish tangle of algae. It looked like overgrown clumps of pad thai had gone out to sunbathe.

Each kelp featured a grenade-shaped bulb, filled with gas to keep it straining toward the sun for photosynthesis. Translucent ribbons that felt like a film negative covered in frog skin dangled with the current.

"It creates these underwater forests," said state Department of Natural Resources (DNR) marine ecologist Helen Berry. "Kelp is an ecosystem engineer."

Aboard a DNR research vessel on Thursday with several journalists, Berry pointed into the kelp bed.

Small fish, likely perch, darted through the underwater thicket. Several starfish curled up on the sea floor. Crabs clung to bull kelp stipes—stems—like sloths to a jungle vine.

But, as the climate warms, this scene is becoming more rare. In portions of Puget Sound, these sunken canopies are vanishing, and scientists fear the consequences to local ecosystems.

"It forms the base of the food web," Berry said of bull kelp, from providing corridors of habitat for juvenile salmon to feeding invertebrates. Charismatic species at the top of that web, like orcas, depend on the creatures that depend on bull kelp.

In 2013, Berry and DNR began to study four kelp beds in South Puget Sound. Two—Brisco Point and Devil's Head—are now devoid of the species, she said. Bull kelp canopy near Squaxin Island is down to about a third of its size compared to just six years ago. Only a few dozen individual bull kelp remain in the bed near Fox Island.

A species that regrows each year, bull kelp typically retains its blades into fall.

Now, in South Puget Sound, "we're seeing them lose their blades in mid-July," Berry said. "When you lose your blades, you lose your ability to photosynthesize and reproduce."

Berry suspects several years of high marine temperatures, fueled by several El Nino events and the recent marine heat wave nicknamed "The Blob" are to blame for the "alarming" kelp losses in South Puget Sound.

"We measured record high temperatures at kelp sites," Berry said. When waters approach 70 degrees Fahrenheit, it stresses bull kelp reproduction, she said.

Meanwhile, areas less prone to warming have fared better. In the Tacoma Narrows, where strong currents and intense tidal mixing keep temperatures lower, bull kelp remains more abundant and healthy.

Sedimentation and water quality could also play a role in the declines. Suspended material can blot out the sunlight that aids kelp growth. Nutrient pollution could bolster competing species, like stringy sargassum, a nonnative macroalgae that Berry said has been found where South Puget Sound bull kelp beds once flourished.

DNR scientists are working to study bull kelp in other parts of the Salish Sea, and the agency is working with partners on a kelp-recovery plan.

Commissioner of Public Lands Hilary Franz, who joined two boatloads of journalists to visit the kelp beds, said the agency would ask the state Legislature, again, for more investment in studying and cleaning up Puget Sound.

Last legislative session, after several years of intense wildfires and unhealthy haze hovering over Washington cities, state lawmakers hiked Franz's budget for wildfire prevention and treatment of terrestrial

forests.

"We forget, sometimes, about the forest underneath," she said.