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Initial Sampling Reveals the Presence of *Pseudo-nitzschia*

STRAIT OF JUAN DE FUCA

On Friday, September 2nd, the R/V Melville departed from Seattle heading north through the Puget Sound. High waves and storms at sea could seriously damage expensive scientific equipment and injure people aboard, so scientists and crew alike immediately set themselves to tying down gear.

***Pseudo-nitzschia* is of particular interest because it can produce a toxin called domoic acid, or D.A.**

Large objects were secured with thick straps which were passed through eyelet bolts screwed to the deck. Lab gear, such as computers, filters, and refrigerators, were held down with colorful bungee cords.

As the ship passed south of Victoria and north of the Olympic Peninsula, through the Strait of Juan de Fuca, scientists conducted a preliminary test of the waters with the help of a most useful piece of scientific equipment – a simple bucket.



The 5-gallon bucket is white with a rusty, metal handle. A moveable plastic piece around the handle makes for a comfortable hand-hold. Most

ocean scientists would agree, a bucket is a very useful tool.

Since deployment (the act of putting any gear in the water) followed a strict protocol, scientists had to communicate regularly with the bridge for permission to do so.

On a particular deployment, one of the scientists, Vera Trainer, readied the equipment by fastening a line to the ship's railing. The resident technician spoke into her walkie-talkie, “Deck to bridge. Permission to deploy?”

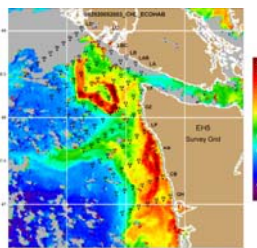
“All’s clear,” confirmed a static-laden voice through the hand-held radio. Vera then lowered the bucket attached to a rope about 8-meters toward the water, and with a skilled flick of the wrist, scooped up a sample of seawater. She drew the line up and over the railing and set the bucket down on the deck. “Alert the bridge we are out of the water,” she called.



A small drop of water from the bucket placed on a microscope slide revealed the reason for this research voyage: long, thin chains of skinny diatom cells called *Pseudo-nitzschia*. Diatoms are single-celled phytoplankton characterized by silicon skeletons and photosynthetic chlorophyll. *Pseudo-nitzschia* is of particular interest because it can produce a toxin called domoic acid, or D.A.

Pseudo-nitzschia can rapidly multiply resulting in an algal bloom. During a bloom, D.A. can reach high levels and enter the food chain. Filter feeding organisms such as oysters, clams, sardines and herring accumulate D.A. Their predators, large fish and marine mammals, can suffer from domoic acid poisoning. Humans can also be affected by eating contaminated shellfish.

ECOHAB Pacific Northwest is studying the physiology, toxicology, ecology and oceanography of the *Pseudo-nitzschia* species. The research team sample at over 120 grid stations along Vancouver Island and the Washington coast during their 3 weeks at sea.



P.I. Preps Research Team



Principal Investigator (P.I.) Vera Trainer convenes her team of scientists on the

Melville stern. “Here’s the work schedule. Let me know if a shift doesn’t work for you,” she says. Colored bars show the staggered 12-hour shifts: 3p.m to 3a.m. or noon to midnight. The team will work 24-hours while onboard to make the most of their time at sea.

Vera runs a “tight ship” with her research team but she doesn’t get so caught up in the science that she forgets about the individuals she works with. When asked what she most enjoys about her research she says, “Interacting with many different people and helping them challenge themselves with new ideas.”

Vera enjoys sipping a good cup of coffee (her favorite: a single, tall, soy latte). She shares photos of her 2-year-old son Roberto on hiking trips and speaks often of the joys of motherhood. Vera is an avid mountaineer having summited Mt. Rainer three times and recently, Pico de Orozaba in Mexico (18,000-feet).

Vera’s studies include a B.S. in Biology from Indiana University in Pennsylvania, M.A. in Biological Oceanography from University of Miami Rosenstiel School of Marine and Atmospheric Science, and a PhD in Biochemistry and Molecular Biology from the University of Washington School of Pharmacology.

Vera’s colleagues describe her as passionate, diligent, focused, driven, and mindful – important characteristics for leading a successful research team!