Smithsonian Environmental Research Center

PlateWatch

Issue 12

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"There's heaven on earth. It just happens to be in the ocean ."

-Sylvia Earle

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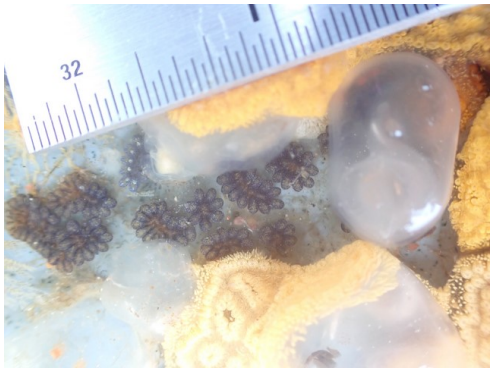
2024 Plate Watch Results



A big **Thank You** goes out to all of our Plate Watch Team! Monitors were active at 11 sites in 2024, including sites in Southeast Alaska, Prince William Sound, Kachemak Bay, Kenai Peninsula, Bering Sea, and the Aleutian Islands. For the first time in several years we were able to monitor in Nome, where the port is slated for expansion. As more traffic is expected to come through this area, we are very fortunate to have monitors provide baseline data on the marine life which will better enable us to track changes over time.

Four non-native species were detected in 2024, and all were previously found in these areas. The encrusting bryozoan *Schizoporella japonica* was found in Ketchikan, while the Botryllid tunicates *Botrylloides violaceus* and *Botryllus schlosseri* were noted again in Sitka and Ketchikan. *Didemnum vexillum* is still present in Whiting Harbor just outside of Sitka, but there is no indication yet of spreading beyond the harbor so this is encouraging.

In 2023, monitors found a single specimen of a solitary tunicate *Ciona sp.* on the brick of a plate in Cordova. After further examination, this specimen was confirmed as *Ciona savignyi*. This species was found in Ketchikan in 2016 by researchers at Temple University and SERC, but it is not clear that it is established in Alaska given the infrequency of detection.

Photos top to bottom: Plate from Tongass Narrows in Ketchikan (Maya Chari); *Ciona savignyi* (Brianna Tracy, SERC); and plate from Norton Sound in Nome (Michele Remer)

Plate Watch Deployment Refresher

As we embark on another season of Plate Watch, we thought it might be helpful to include a little refresher on how to assemble the plate arrays even though many of you are already pros at this. New team members may also find this useful, and there are more detailed instructions and protocols on the Plate Watch website: **http://platewatch.nisbase.org**

Assembling the Settlement Plate Units

Step A: Lace a short (yellow in figures) cable tie from top of one hole in the plate, under rough (sanded), bottom of plate and up through second hole on the SAME side. Close cable tie so there is a loose loop. See Figure A.

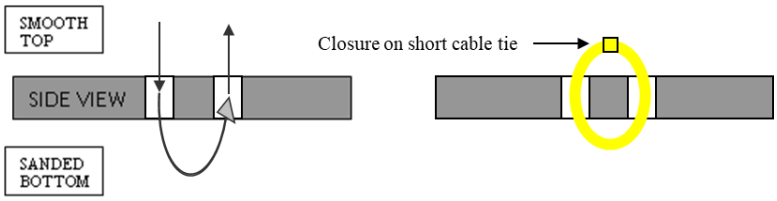


Figure A. Side views of PVC Plate Construction

Step B: Repeat on other side of plate.

Step C: Place brick (or weight) in middle of plate on smooth, top side of plate so the cable tie loops are on the sides of brick.

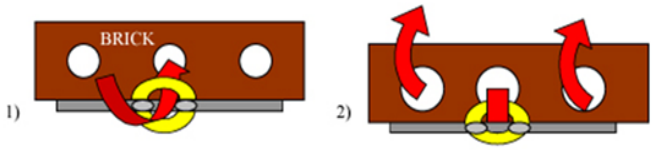


Figure B. Side views of brick attachment to PVC plate. 1) Step D and 2) Step F

Step D: Lace an extra long cable tie (red in figures) through small cable tie loop you made, through middle hole of brick, through small cable tie loop on other side and back through same hole to the other side to close cable tie. See Figure B.

Step E: Tighten all cable ties.

Step F: Loop an extra large cable tie through one hole on each end of the brick (1 tie per side). Do not close these cable ties tightly; line gets attached to these loops. See Figure C.

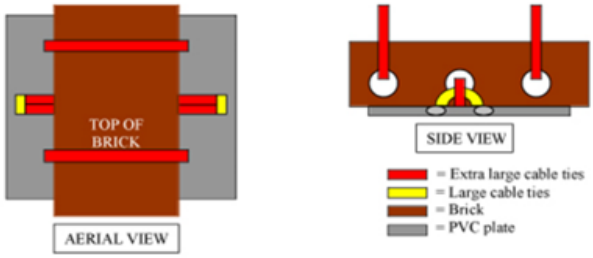


Figure C. Final views (before line attachment) of brick/plate units.

Attach the temperature logger to the top of one plate through the cable ties. The units are now ready for attachment to a line (by the 2 large cable ties) and deployment into the water.

Watercraft Inspection and Decontamination (WID) Protects Alaskan Waters

Recreational vessels moving from place to place can unknowingly carry non-native species and potentially introduce them to new areas. Watercraft inspection and decontamination (WID) stations have been established in a collaborative effort among federal, state, tribal, and provincial agencies, and have played a key role in preventing the spread of aquatic non-native species like dreissenid mussels (including quagga and zebra mussels). These species have severely impacted some ecosystems since their introduction to the US Great Lakes in 1986.

Early this year, the California Department of Water Resources discovered the non-native freshwater golden mussel (*Limnoperna fortunei*) in the Port of Stockton. This species is native to freshwater systems in China and Southeast Asia and has established outside of its native range in several regions in East Asia and South America. Like quagga and zebra mussels, it has the potential for severe negative impacts on ecosystems. It is the first record of the species in North America and coordinating monitoring is ongoing among a variety of partner agencies.

At the Alaska-Canada Highway (Alcan) Land Port of Entry (LPOE), the US Fish and Wildlife Service (USFWS) operates the sole WID station in Alaska. Inspections include a physical inspection of watercraft and gathering information on the history and movement of the vessel. If the inspection reveals the presence of aquatic invasive species, has standing water, or other potential risk factors, the vessel is cleaned with a portable decontamination unit using high pressure and temperature water (140°F), and is kitted to clean the internal compartments and engines along with the outer surfaces of the vessel. In 2022, inspectors identified a vessel with zebra mussels attached to the hull and engine. In 2024, they detected standing water in a vessel with no indication of the source of that water. In both cases, the vessels were fully decontaminated and the vessel owners resumed their journeys. To date, no dreissenid mussels have been found in Alaska!

Photos Left: Golden mussel *Limnoperna fortunei* (Dunker, 1857) by pcarp (licensed under http://creativecommons.org/licenses/by-nc/4.0/). Right: Zebra mussel *Dreissena polymorpha* (Pallas, 1771), by US Fish & Wildlife Service (public domain).

Environmental DNA (eDNA) Pilot Program

Plate Watch has been an invaluable tool for monitoring and detecting non-native species in Alaska. With the support of the Plate Watch Team, we're hoping to embark on a new environmental DNA (eDNA) pilot program with Monitors that are willing and able to collect such samples in the field.

Many of you may already be familiar with or have taken eDNA samples previously. With eDNA sampling, water is collected from a water body with a sampling device that pulls the water through a filter. The DNA is collected on the filter, and then the filter is processed to extract, amplify, and identify the DNA via laboratory methods. Field collection is relatively straightforward but requires a little bit of attention to minimize contamination.

We hope to hold a workshop in late August (pending funding) to roll out the eDNA pilot program and provide training on the use of samplers and associated data collection protocols. The workshop is expected to be in Homer for those that are interested and available to attend in person. We will try to have an online option and/or make a training video for those who are not able to travel. Please let us know if you are interested in helping with the new eDNA collection and whether you might be available to attend the workshop. More details will be forthcoming as we finalize plans for the pilot program. Finger crossed that we get the funding!!

Along with the eDNA workshop, SERC researchers are returning to Alaska this year for another comprehensive survey. We will deploy plates in Kachemak Bay and follow our standard protocol for collecting, processing, and identifying invertebrates that settle on the plates in late August.

Photo: A PESCA eDNA sampling device developed by Dr. Jessica Glass at the University of Alaska Fairbanks. We hope to use these in our pilot eDNA program. Photo Linda McCann

Monitor Spotlight

We can't do what we do without our faithful monitors. Lynn Wilbur has been helping us look for non-native marine invertebrates in Alaska since 2009. She started as a monitor for Plate Watch in Sitka. When in 2017, SERC initiated a Latitudinal Monitoring program in the Americas called PANAMEX, once again Lynn stepped up to help. This project was more involved than Plate Watch requiring more frequent monitoring of the plates and the deployment of something called a squid pop—basically a squid popsicle to attract predators., which also meant deploying a camera to catch them in action. The work spanned both coasts of the Americas across 115 degrees of latitude and was published in the journal Science https://www.science.org/doi/10.1126/science.abc4916. She went on to get her PhD at the University of Aberdeen, but that didn't slow down her volunteer efforts on the other side of the globe. She moved to Juneau in 2022 and reestablished our monitoring efforts there, where she continues to monitor to this day! Thank you Lynn for your unwaivering commitment to non-native species detection efforts in Alaska!

Photo Top: *Botryllus schlosseri* one of the non-natives detected in Sitka (Melissa Frey), Photo Bottom: Lynn sampled at the IVF dock in Juneau this year.

Detection of Non-native Invertebrates in Prince William Sound

As reported in the last newsletter, SERC surveyed numerous sites across Prince William Sound for non-native invertebrates in September 2023. At that time, we initially suspected only one potential non-native based on our field identifications. As part of our protocol, we reexamined those specimens over the winter months to confirm or correct field identifications, and classify specimens that were not fully identifiable in the field.

After many months of work on numerous taxa groups, we identified 3 non-native species from our survey: the bryozoan *Schizoporella japonica*, the caprellid amphipod *Caprella mutica,* and the gammarid amphipod *Monocorophium acherusicum*.

Schizoporella japonica and *Caprella mutica* have been detected in Alaska previously through both SERC comprehensive surveys and PlateWatch, and both species are established in Southeast Alaska. *S. japonica* is also established in Prince William Sound, while *C. mutica* is additionally established in the Aleutian Islands and Central Alaska (Cook Inlet).

Monocorophium acherusicum is a tube-building amphipod that is widely distributed and is considered non-native to the Northeastern Pacific, including Alaska. This is the first known record of the species in Prince William Sound and the single specimen was found and confirmed at Tatitlek. SERC researchers also detected this species in Ketchikan in 2022 surveys but previously it had not been noted in Alaskan waters. It is not clear yet whether it is established in Alaska.

Photos from Top: the gammarid amphipod *Monocorophium acherusicum*; the caprellid amphipod *Caprella mutica*; and the byozoan *Schizoporella japonica*. Photos by SERC.

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We're on the web at

http://platewatch.nisbase.org