



“The ocean is this beautiful, unexplored place. Why on earth everyone isn’t down there I don’t know”

Graham Hawkes

diver and designer of submersibles

The Mysterious Case of a Solitary Sea Squirt - Is Ciona Established in Alaska?

What is shaped like a sausage, clear and full of water? A sea squirt called *Ciona*. The first sighting of any *Ciona* in Alaskan waters was back in 1903 in Loring Alaska, just to the North of Ketchikan (Ritter, 1913). There were no further records until 2009, when 6 specimens showed up in an aquarium in Seward Alaska. These specimens survived a number of years, even producing eggs, but no evidence could be found of the species in local waters, though there are reports that it is in Resurrection Bay. We documented 2 specimens that most closely resemble *Ciona savignyi* on plates in Ketchikan in 2016, but it has not been seen there since. In the summer of 2018, A *Ciona* was found in an aquarium at the Sitka Sound Science Center. A similar tunicate was found recently at the DIPAC aquarium in Juneau. There are anecdotal reports that the species occurs in other areas, including Chatham Straits. None of our volunteers have seen it on plates around the state—a very intriguing, suspicious distribution! If you see this sea squirt, please note where you saw it (if confirmed we will ask you for a sample), take a photo and send photo to: mccannl@si.edu.

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Schizoporella japonica from Alaska Photo: SERC



Left: *Ciona* in a tank at the Sitka Sound Science Center. Right: *Ciona* in an Aquarium at the Seward Marine Center, Hood Lab. Photos Marnie Chapman and Richard Hocking respectively.

Pribilofs' Bering Sea Days

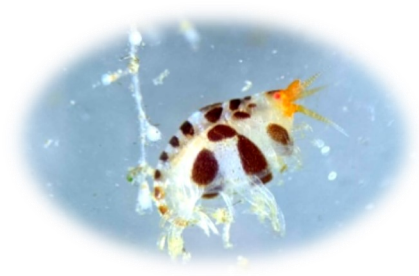
In Sept of 2019, SERC and NOAA scientists boarded a small plane to fly out to a tiny island in the Bering Sea, for an event called Bering Sea Days. A tradition since 2010, Bering Sea Days is a week long event held at the school (K-12) to teach the students and community about science relevant to the Pribilof Islands and the Bering Sea. Scientists and educators from all over the western US come to this island every year to share their knowledge and research with the islanders.

The week includes hands on learning, field trips, and community events in all areas of science relevant to the islands. Some of the topics covered this year included: birds and plants of the islands, archaeology, physiology of fur seals, and invasive species on land and sea. Even the pre-K takes part! In addition, SERC researchers monitored settlement plates put out in the harbor to look for non-natives, and collected samples from the harbor for the Smithsonian's Global Genome Project. Preliminary assessments suggest that nothing obviously non-native was found, but scientists will be examining the material carefully with experts and reviewing the molecular analyses. The work will help fill in the gaps in our knowledge of the marine invertebrate fauna of the far north!

Bottom: students prepare posters on their chosen non-native invertebrates with Gail Ashton as part of the "Worlds Most Awesome Invertebrate" Project. Photo: Linda Shaw.



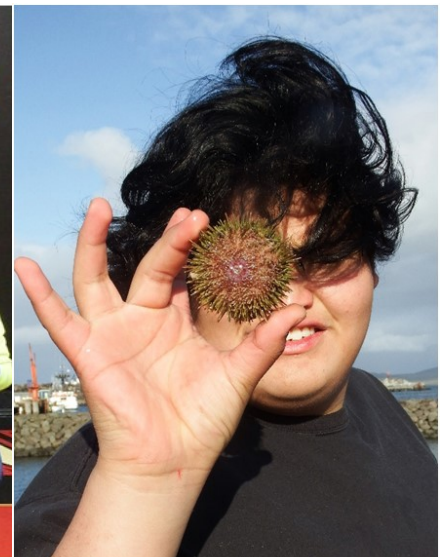
Above: Students Learning and making invasive crabs Photo: Linda Shaw. Below: 'Cow Amphipod' Photo: Katy Newcomer



And more Bering Sea Days



Top Right and Left: Students looking at live marine invertebrates collected from the harbor. Middle Left: Budding scientist in the 6-8 grade class measures the salinity of the harbor with a refractometer. All Photos this page Linda Shaw



Bottom Left: 4-5th graders track a mysterious non-native virus's spread through ship's ballast. Each student is issued a boat and a log. No one knows which ship is infected! Students visit 5 ports, keeping record of where they have been and then the class tries to determine which port had the virus to start. Right: Field trip to the harbor a student finds a green sea urchin.

Floating Ocean Ecosystem Tracker

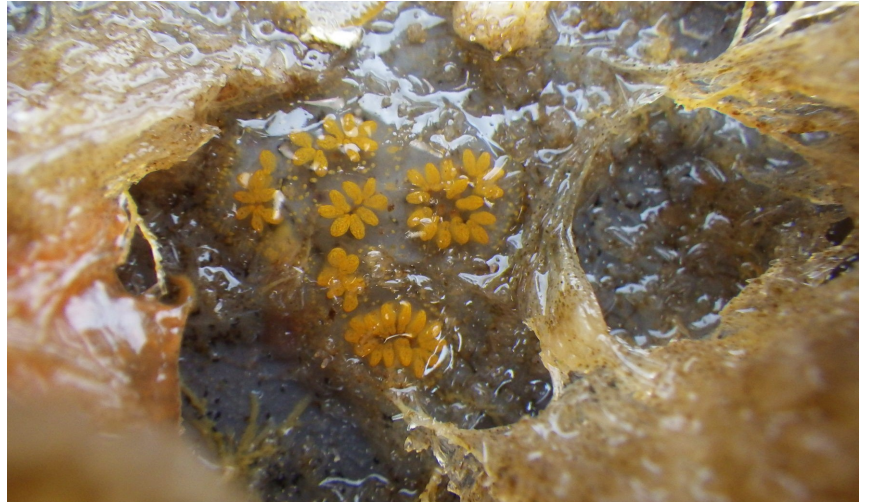
In 2018 when Ocean Cleanup went out to the Pacific Gyre to collect plastic debris they estimated that there were 1.8 trillion pieces of plastic out there, which was 250 pieces for every person on earth at the time <https://theoceancleanup.com/great-pacific-garbage-patch/>. And we know that plastics in the ocean are increasing by millions of pounds every day <https://seastewards.org/projects/healthy-oceans-initiative/marine-debris-and-plastics/>. Plastic pollution is a danger to marine life through entanglement or consuming the plastic, causing injury or death, but did you know that floating plastic can also carry marine animals and plants from one place to another? Plastic debris forms floating 'islands' that are long lived habitats for many marine organisms. Marine animals and plants from our coasts, like mussels, barnacles, and seaweeds, can settle on plastic debris and circulate in the ocean for years, in some cases traveling far enough to reach new shores. Hitchhiking species introduced to new areas can threaten local species, by taking over the resources that they need to survive. SERC researchers are looking at what species survive on plastics offshore, by deploying plates on offshore buoys and examining floating plastic in the Pacific. If you have a boat and are sailing the US west coast or Hawaii, we'd love your help collecting plastics in the open ocean. Sign up to help at: <https://serc.si.edu/floating-ocean-ecosystem-tracker/how-get-involved>

Bottom: Floating plastic in the Pacific Gyre. Photo: The Swim, Right: Picking up plastic for "Floating Ocean Ecosystem Tracker" while sailing in the North Pacific. Photo: Russ Johnson, SV Blue Moon.



Invader ID needs you!

Want to learn about all the cool critters that attach to your boat hull, dock or local rocky shore? Want to help scientists better understand marine communities and monitor new ‘invaders’? Then check out **Invader ID** on Zooniverse. Invader ID is a cloud sourced project anyone can participate in. We are tracking changes in marine invertebrate communities that attach to hard substrates (fouling communities). Smithsonian scientists upload photos of plates from marine waters (exactly like the ones we use in Plate Watch), for citizen scientists to identify the species that colonize it. Citizens are doing an excellent job on the identifications. So far the photos are all from San Francisco, but we are working to expand this to other sites, including Alaska. If you are a Plate Watch monitor and would like to see your site on Invader ID, email me: mccannl@si.edu. You can help us identify invertebrates at: <https://www.zooniverse.org/projects/serc/invader-id>



plates from Ketchikan. Above and far Left: Some *Botryllus schlosseri* tunicates Left: A plate with Botryllids from Refuge Cove. Photos SERC staff.

Last summer SERC piloted a study using a simple, inexpensive set up similar to Plate Watch plates in hopes of launching the program globally. Anyone can purchase the materials for less than \$20 at Home Depot and put it off of their own dock. Want to try? Contact our citizen science coordinator: cawoodl@si.edu. Check out this article: <http://chesapeake.org/2019/08/09/serc-invaderid-update/>

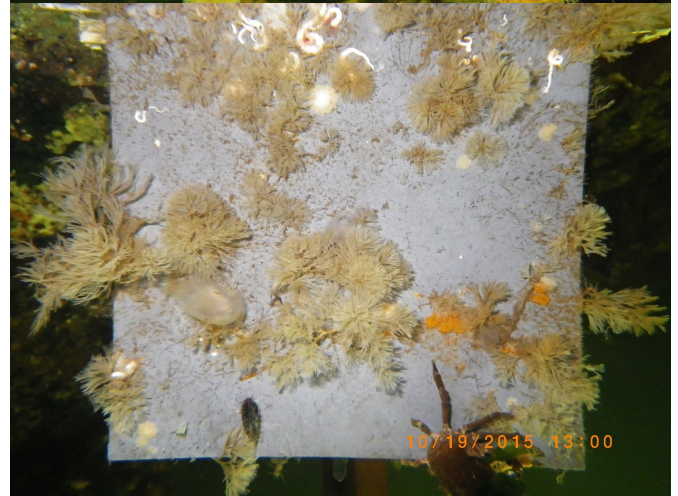
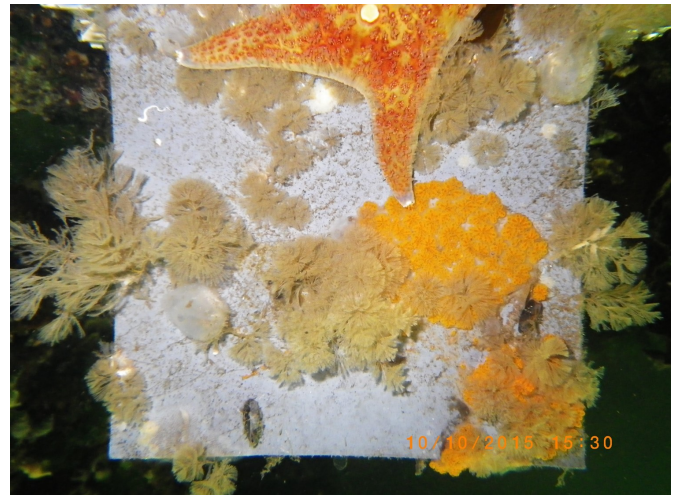
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Monitor Spot Light

Ketchikan lies at the southern boundary of Alaska, essentially the gateway to the state from both land and sea. Gary Freitag, a Sea Grant Marine Advisory agent in Ketchikan (<https://alaskaseagrant.org/about/directory/gary-freitag/>), wears many hats, including being a dedicated monitor for both the green crab and the Plate Watch monitoring programs. He has been putting out plates since the inception of Plate Watch in 2007 and has helped document the presence of non-native Botryllids there. Gary goes above and beyond basic monitoring by placing underwater cameras to record day to day changes on the plates, catching some predators in the act (photos left). We salute your efforts Gary!



Above: Gary examines a plate held by Sarah Cohen at the 2013 Bioblitz Photo: Linda McCann. Left from top to bottom: time lapse photos of a plate at Carlin Air, Ketchikan showing a non-native Botryllid colony being eaten by a sea star. Underwater photos: Gary Freitag



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We're on the web at <http://platewatch.nisbase.org>