

Plate Watch

With every drop of water you drink, every breath you take, you're connected to the sea. Sylvia Earle

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Special points of interest:

- Climate change and Alaska
- *D. vex* update

Harbor gets an Innovative Facelift: Containing the Spread of Invasives in Decommissioned Marinas

Work is in progress to replace the aging docks in ANB Harbor in downtown Sitka. Normally such projects involve selling off useable sections of the dock to whoever is interested, but not at ANB. For what may be the first time in Alaska's history, invasive species have helped shaped the process of decommissioning. The ANB docks are home to two invasive Botryllid tunicates, one from Europe and one from Asia. "A few years ago almost no one in Sitka had heard of invasive tunicates. The Smithsonian and the Plate Watch Program made us aware of the problem and are helping us deal with it," says professor Marnie Chapman. The botryllid tunicates are currently only known from one other location in Alaska, (Ketchikan) and were probably brought to the state from the lower 48 on a boat hull or possibly on a piece of dock, just like the ones being removed from ANB now. To avoid spreading the tunicates further, the Harbor and the Army Core of Engineers came up with a simple, but ground breaking solution - barge the old dock down to Seattle and dispose of it on land. This represents a new way of thinking about management of marine



Barge removing docks in ANB Harbor, Sitka, Alaska. Photo: Marnie Chapman

invasives in the state, and we commend the efforts of the Harbor Master (Stan Eliason), the Army Core (Linda Speerstra), the University of Alaska, SE (Professor Marnie Chapman) and National Marine Fisheries Service (Linda Shaw) for their vision. Our hope is that this will pave the way to incorporate invasive species considerations into protocols for dock decommissioning and renovations state-wide.

Who's Afraid of the Big Bad Octopus?



Species persist partly because they develop and evolve mechanisms which ensure survival. One of those mechanisms involves avoiding predators. Students at the Illinois Institute of Technology studied a possible defense mechanism in green crabs, by testing the crab's ability to detect a predator using their

sense of smell. 'Eau d'octopus' was released in a water flume with the green crabs and their behaviors recorded. The crabs very clearly avoided the octopus's scent, moving quickly to the other end of the flume. Read about the study at: <http://mypages.iit.edu/~urjiit/?p=83>

Bioblitz or Bust: Ketchikan Hosts a Hunt for Invasive Species



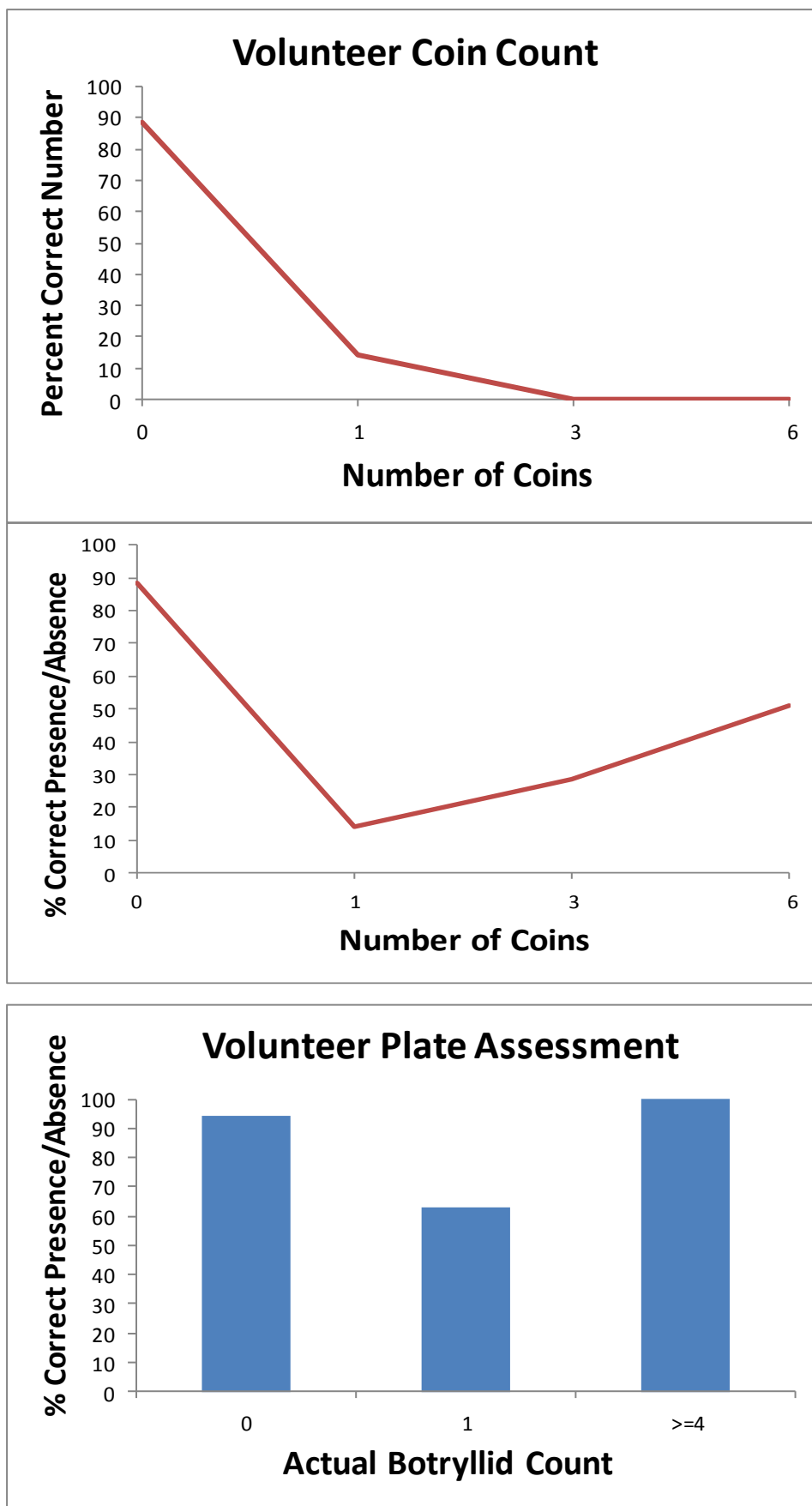
Upper left: Participants at the bioblitz looking for invasives. Upper right: native sea star grazing plate. Lower left: native (clear) and non-native (orange) tunicates on a plate. Photos: Gary Freitag

The Bioblitz, an intensive survey to catalog species in a specific area, took place last summer (Sept 28th) in the coastal waters of Ketchikan, Alaska. In addition to the survey it was also a great training opportunity for Plate Watch volunteers from across Alaska. The event was hosted by the Smithsonian, San Francisco State and University of Alaska, and the Alaska Sea Grant Marine Advisory Program. Training focused on identification of key species that have recently invaded the West Coast and may be able to hitch a ride to Alaska on recreational and commercial vessels. Species targeted included solitary tunicates *Ciona intestinalis*, *Ciona savignyi*, and *Styela clava*, colonial tunicates *Didemnum vexillum*, bryozoans *Watersipora subtorquata* and *Bugula neritina*, and the sea weed *Undaria pinnatifida*, all known or potential invaders. Special emphasis was given to two invasive tunicates already present in Ketchikan, *Botryllus schlosseri* and *Botrylloides violaceus*. After the training, most volunteers joined the bioblitz field crew to carefully survey for these species at Refuge Cove Marina in Ketchikan.

If invasive species are to be detected and their effects understood and managed, they must be detected early, when populations are small enough to control. A great example of early detection of an invader assisted by citizen science was the discovery of the invasive tunicate *Didemnum vexillum* (sometimes called *D.vex* or rock vomit) during the June 2010 Bioblitz in Whiting Harbor, Sitka, AK. This small embayment is the only known locality of the invader in the state, making the likelihood of eradication in Alaska more feasible than if it were present at multiple locations. Several agencies sprang into action, developing and implementing a rapid response plan for the tunicate (see the [December 2010 Feature Story](#) for more). In addition, researchers from the Smithsonian Environmental Research Center (SERC) got to work on methods to eradicate the tunicate from Whiting Harbor (look for the paper by McCann et al in the 2013 Marine Pollution Bulletin).

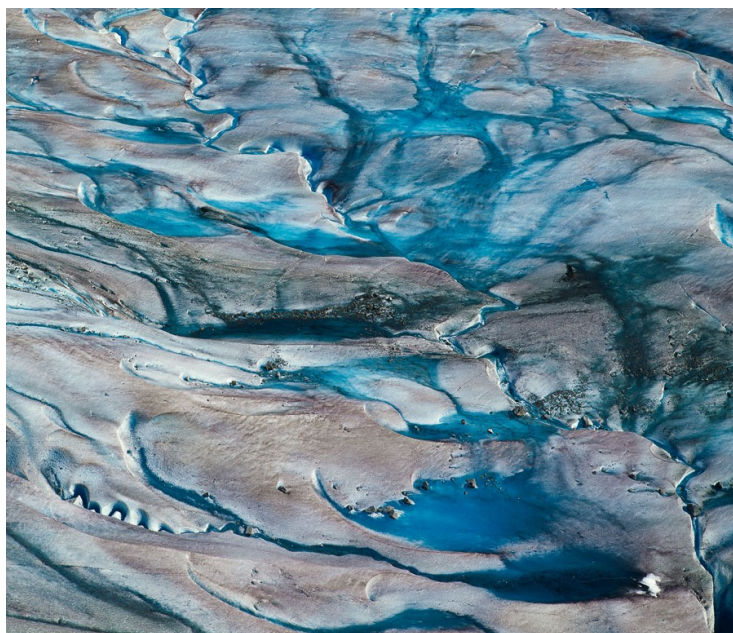
Bioblitz Results: finding Pennies in the sea

"Find a penny, pick it up. All day long, you'll have good luck." Not many bioblitzers were feeling very lucky after a test at this year's Bioblitz in which volunteers were asked to find pennies underwater on the sides of the docks. To test the accuracy and precision with which volunteers spot new, sometimes small, invaders from the plethora of species growing on the docks and pilings, about 150 pennies were glued to the sides of the docks, within a foot of the surface. Our newly trained volunteers were then asked to count how many pennies they found inside their search areas. The graph to the right shows how successful they were, as a function of how many coins were actually there (top graph). In the second graph we scored how well volunteers noted presence or absence of the coins, regardless of the actual number present. Notice that the plots show very different patterns. The ability to detect the exact number of coins decreased with the total number of pennies, while the ability to detect the presence of any coin increased with increasing number of pennies. We also scored the ability to identify botryllids on panels that could be removed from the water and examined up close, (bottom graph) with similar results. This exercise suggests that it can be difficult to detect small invaders, even when you know exactly what to look for, but the more invaders that are present, the more likely they are to be found. There is still much analysis to be done. These data will help us determine what direction to take our monitoring program in the future –what kind of training is most effective to teach monitors to recognize invasive species, what we can expect from the data collected, and much more. A big thank you to all of the volunteers who came out to help!



What Climate Change Means to Alaska

Climate change is a popular topic right now, on both sides of the isle. The evidence is pretty overwhelming that we humans are having dramatic impacts on the planet. From the early migration of birds, accelerated flowering of plants, melting glaciers, warming of the world's oceans and atmosphere, range extensions of species, and the breakup of the ice cap in the Arctic, climate change is impacting communities everywhere. Perhaps one of the most important changes for Alaska is the opening of the Northwest Passage to shipping traffic. With this opening comes new opportunity for commerce, and new opportunity for hitchhiking invasive species. Plans for port development in Nome and port expansion in Prince Rupert, British Columbia could dramatically increase the number and size of ships coming to Alaskan waters and bring invaders from new areas. Rising water temperatures make it more likely that species brought to Alaska will establish and thrive in their new surroundings. All of these factors mean that our monitoring efforts are more important than ever. Plate Watch volunteers make up a critical early detection network around the state, gathering valuable background data and warning us of invasions before they become firmly established. You can make a difference! Consider becoming a monitor in your community <http://platewatch.nisbase.org>.



Upper images National Geographic: Columbia Glacier 2012 and same view 2004. Lower Image thesuperslice.com: Melt water on the Medenhall Glacier.

Portrait of an Invader *Schizoporella japonica*

Have you ever noticed an orange crust covering many hard surfaces in the intertidal? One of these 'crusts' is the invasive bryozoan, *Schizoporella japonica*. The species may have been present in Kodiak in the 1940s, but the first definitive record in Alaska came in 1999 from Smithsonian's settlement plates. It is now found throughout Prince William Sound and Southeast Alaska. Likely transported to the west coast with oysters, possibly from more than one location, as early as 1927, it is abundant throughout the Pacific, and on the west coast from southern California to Alaska. Its distribution worldwide is probably even more extensive, but its identification has been confused with two other cosmopolitan invasive bryozoans from Europe, *Schizoporella unicornis* and *Schizoporella errata*.

Schizoporella japonica from Ketchikan Photo: Linda McCann



Rock Vomit—is it Spreading in Alaska?

Rock vomit, (also known as *D. vex* or *D. vexillum*) is the invasive tunicate found in Whiting Harbor, an uninhabited embayment, just outside of Sitka, in 2010 (<http://platewatch.nisbase.org/pdfs/feb%202012e.pdf>). Unlike the native species, *D. carnulentum*, which generally forms small, thin colonies (photo right), rock vomit often covers large areas, smothering organisms in its path (photos below). During the winter of 2011, a series of storms broke apart many structures in the harbor that were overgrown with this invasive. A large shed was washed out of Whiting and ended up across Western Channel where it sank. After these storms, an impressive volunteer effort removed much of the floating debris in the harbor, some of it infested with *D. vex*, but it is unclear how many colonies were fragmented and set adrift, that might potentially colonize other areas. Last year, Alaska Department of Fish & Game (ADF&G) redid a bottom dive survey of Whiting Harbor to determine the extent of its distribution and found little change from a survey in 2011. Knowledgeable volunteers have made concerted efforts to examine all floating docks in Sitka. Participants in Plate Watch, and Whale Fest place collecting plates in nearby Eliason Harbor each spring, summer and fall and fortunately the species has not been sighted. ADF&G removed the last floating structures from Whiting Harbor this fall, greatly reducing the surface available for settlement of this invader. Whiting is now closed to boating and recreational use and there has been extensive public education about marine invasives in the community. To date, no new areas of infestation have been found around Sitka or elsewhere in the state. Is this due to restrictions on the use of Whiting Harbor and precautions taken by citizens made aware of the potential risk? Is this because the waters were too cold for attachment when the storms dispersed the fragments? Or is it because our efforts to look are dwarfed by the size of the marine environment? We can't answer these questions without help from volunteers like you. So please visit our website for more information about the species <http://platewatch.nisbase.org> and contact Linda McCann (mccannl@si.edu), Marnie Chapman (imdchapman@uas.alaska.edu) or the ADF&G Invasives Hotline (800 INVASIV) if you see anything you suspect might be this tunicate.



Native *Didemnum carnulentum* at Browns Beach in Sitka, Alaska. Photo: Paul Norwood



Invasive *Didemnum vexillum* in Whiting Harbor, Sitka, Alaska. Photos: Heather Woody (above), Ian Davidson (left).



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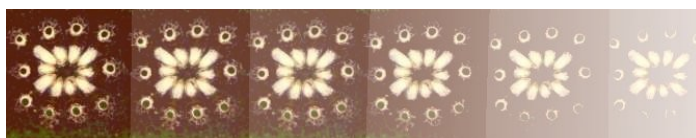
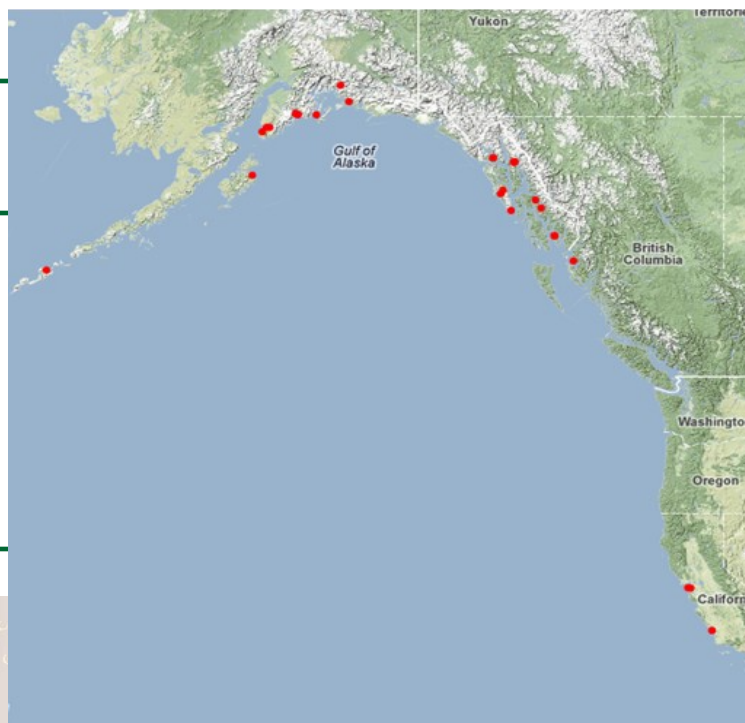
<http://platewatch.nisbase.org>



Smithsonian Environmental
Research Center



We are a group of concerned citizens and scientists working to safeguard our marine environment. We are monitoring for invasive species at sites up and down the west coast. The graph below shows the bays where monitoring has occurred since 2007. We'd like to expand our coverage to increase our likelihood of detecting non-native species. If you or someone you know might be interested in participating, we'd love to hear from you. Contact Linda McCann for more information about joining the network (mccannl@si.edu).



Monitoring News

Invasive species monitoring is expanding across Alaska. Last year marked the second ever monitoring for marine invasives in Polar Regions, thanks to our new monitor in Nome Alaska, Gay Sheffield. We hope to have an additional site up and running in 2014 in the town of Kotzebue. Unlike, Nome, which has a dock from which to deploy our plates, Kotzebue has no permanent structures in the water, so the Park Service's Marci Johnson will use a sled to deploy the plates (see the article on our first attempts to monitor in the Arctic in Barrow for a picture of the sled and its challenges). Good luck Marci! Monitoring is also set to expand on Prince of Wales Island, with several potential sites to be monitored around the island by Cheryl Fecko, Brandy Prefontaine and others. Cordova has a new monitor this year, Sarah Hoepfner, who will take over from one of our most dedicated monitors, Scott Pegau. Thanks Scott and Sarah!



Whiting Harbor, Sitka Alaska, site of the *D. vex* infestation. Photo was taken before 2011 when the old aquaculture farm was still there (blue and white structures at the head of the harbor). Photo: US Coast Guard.

Thanks to Marnie Chapman and Monaca Noble for editing assistance.