Smithsonian Environmental Research Center

iTunicate Newsletter

Feb 2013

The edge of the sea is a strange and beautiful place

Rachel Carson

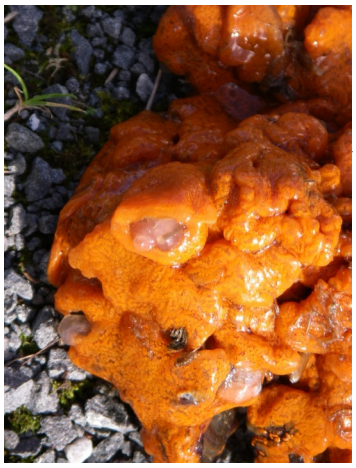
Special points of interest:

- Field Guide to Invasives
- J-TAT team created
- *D. vex* and herring
- Conversation on communication

What is that orange blob and other earth shattering questions

If you are an avid beach comber or dock walker and you happen across some marine creature you've never seen before, what do you do? Look no further, the Field Guide to some common fouling invertebrates of Alaska is now up on our website here. You can download a page or the whole guide. The focus of the guide is on known and potential marine fouling invasives in Alaska. A joint effort of SERC and Kachemak Bay Research Reserve (KBRR), the guide includes taxonomically similar native species with pointers on how to tell them apart from related invasives. The guide is a work in progress and will be updated annually. Contact Linda McCann (mccannl@si.edu) or Catie Bursch (catie.bursch@alaska.gov) for more information.

Also new, we have an invasives species facebook page that includes all kinds of interesting tidbits about invasives around the country. For recent articles on invasives in Alaska you can find them in the news section of the website.

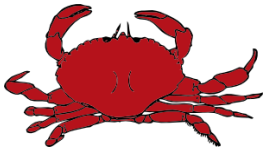


Botryllus schlosseri from Sitka, Alaska. Photo: Heather Meuret-Woody

Green Crab website goes live

In addition to spending their time looking for invasive tunicates, some monitors in Alaska are also focused on a more mobile invader, the European green crab. The species has been making its way up the coast for a decade and now is poised to invade Alaska. A study by C. DeRivera looking at the temperature and salinity tolerances of green crab larvae, and habitat suitability models indicate that much of coastal Alaska is prime habitat for the crab (more on page 2). The site will be set up much like the Plate Watch website, with an area to upload crab monitoring data, as well as information about identifying the crab, its distribution, relevant publications and articles of interest. The website will be up later this month. http://greencrab.nisbase.org

Soccer ball from Japan found off Ketchikan with goose neck barnacles - article page 3. Photo: Linda Shaw



Highlights of the Marine Invasive Species Workshop

Upper left: Participants at the workshop looking for invasives. Upper right: native Sabellid worms provide substrate for native and invasive tunicates. Lower left: Examining kelp for organisms. Photos: Linda McCann and Linda Shaw

Photo right: Catch from crab trapping included rock crab, sculpin and sun star. Gary Freitag

Last July, 15 intrepid monitors, teachers and scientists gathered in Ketchikan for the first Marine Invasive Species Monitoring Workshop. Monitors from as far away as Barrow Alaska, shared their experiences in 2 days of lectures, sampling and field trips at the University of Alaska, SE, Ketchikan. The group reviewed the targeted invasive species and completed the summer monitoring at Carlin Air, one of the Ketchikan monitoring sites. Field trips included a visit to the new Mariculture facility, a boat trip out to the islands with Allen Marine Tours to see how they are using tourists to assist with green crab trapping efforts and a demonstration of a newly acquired ROV by Gary Freitag, from the Sea Grant Marine Advisory Program which can be used to survey for invasives. A search of the Carlin Air site for the invasive tunicate, *Botryllus schlosseri*, yielded no new sightings.

The tunicate, whose distribution in Alaska has been limited to Sitka for some years, had been found at this location in Ketchikan twice since 2010, but had been removed each time. We are hopeful that it has not established there.

J-TAT Tsunami Taxonomic Assessment team formed

With the arrival of unmanned 'ghost' ships, and large sections of docks over the last year, Japanese tsunami debris represents an important potential pathway for invasive species to reach the west coast and Alaska. To address this threat, researchers from throughout the west coast region participated in a Regional Preparedness and Response workshop at Portland State University last July. The result of the workshop was a comprehensive document outlining the potential problem, with detailed recommendations for management and response. The document is posted on the Aquatic Nuisance Task Force website at http://www.anstaskforce.gov/Tsunami.html. One recommendation was implemented this summer, the creation of the J-TAT or Taxonomic Assessment Team. Headed up by renowned invasive species biologist, James Carlton from Williams College, at Mystic Connecticut, the assessment team is made up of scientists and administrators from the states in the debris fields path. The group is tasked with giving timely responses to anyone reporting animal and plant life associated with tsunami debris. If you see organisms on debris that is likely from Japan, please take a photo, remove any living organisms to well above the high tide line where possible, and contact the coordinator in the appropriate region (listed at the ANS link above). Monitors in Alaska can contact Tammy Davis at (907) 465 6183 to report organisms associated with debris and details will be forwarded on to the J-TAT team.

Above Photo: Steve Rumrill. Removing marine life from a Japanese dock washed up on the Oregon coast.

Marine vomit and herring– a recipe for disaster?

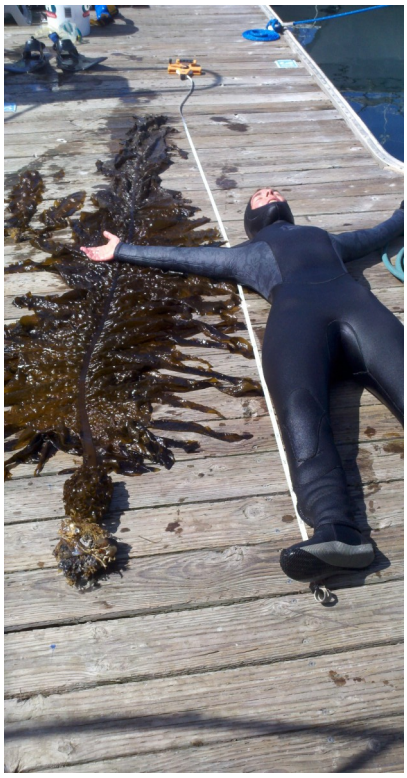
Mix herring eggs with the invasive tunicate, *D. vex* (aka marine vomit) and what do you get? No it's not a creative new recipe by a famous cook, but could it be a recipe for disaster in Alaska? A new grant funded by the National Pacific Research Board (NPRB), will look at the effect of the invasive tunicate *D. vex,* on herring spawning. This invasive tunicate is known in Alaska only from Whiting Harbor, part of one of the most important spawning areas for herring in the Sitka Sound. The herring fishery is an important subsistence and commercial fishery in Alaska. Initial lab and field testing to determine if herring are deterred from spawning on the tunicate have begun at the Romberg Tiburon Center, San Francisco State Univ., in Sarah Cohen's lab. Field trials will be undertaken in California and on site in Alaska later this spring.

Photo: http://www.buzzle.com/articles/herring-fish-facts.html

Portrait of an invader Carcinus maenas

Imagine a crab so dense you could merely walk down to the edge of the water and pluck one out of the shallows. That's what Seadrift lagoon in Stinson Beach, California was like a few years ago, before a research team from Smithsonian and UC Davis began removal efforts. The Lagoon is just north of San Francisco Bay, the site of a recent invasion of *Carcinus maenas* or the European green crab. The crab made its first appearance in the United States on the east coast over a century ago, but until recently, it was not present on the west coast. In the 1990s, it was recorded in San Francisco Bay, presumable introduced via ships. It is spreading north rapidly and is now poised to reach Alaska. Trapping for the crab is occurring at several sites around the state, including the Ketchikan and Sitka area in Southeast, where the species is most likely to appear first. Green crab is of concern since it eats commercially valuable shellfish such as clams, mussels and oysters and can compete with native crabs, including the Dungeness. Learn about monitoring and eradication efforts, and how to identify this crab at http:// nisbase.greencrab.org.

Carcinus maenas catch from Seadrift Lagoon, Stinson Beach, CA. Photos: Lina Ceballos



Some *Undaria pinnitifida* in San Francisco Bay reaches 3 meters or more. Photo: Vanessa Guerra

Portrait of an invader Undaria pinnatifida

Undaria pinnitifida reproductive structure Photo: Chela Zabin

If you have ever eaten miso soup, you may have eaten this kelp. Native to Asia, it was discovered in the Los Angeles area in 2000 and is now present in numerous marinas throughout California as far north as San Francisco Bay. Its tolerance of cold water indicates that it could invade many parts of coastal Alaska and has been put on the monitoring list for Plate Watch. Efforts to eradicate it from northern California embayments are underway through several agencies. Volunteers remove *Undaria* in Half Moon Bay and the San Francisco Bay area on a regular basis. For more information about the species, how to identify it, and how to join the removal efforts, visit: http://undaria.nisbase.org

New site coming online in California

Since 1980, the Ocean Institute at Dana Point, California, has been educating children and adults and teaching them to be good stewards of our oceans. The Institute has a variety of programs on land and sea, where students and educators experience hands on learning in marine biology, maritime history, marine mammals and oceanography. This year, the Institute is expanding and opening a brand new learning center called The Maddie James Seaside Learning Center. One of the new education programs will include a collaboration with SERC to do marine invasive species monitoring with the Plate Watch Program. Dana Point, located in Orange County in southern California and abutting a marine preserve, will expand the reach of the Plate Watch program and provide valuable opportunities for students and scientists to share data from vastly different regions of the west coast. (The new Center and waterfront at Dana Point pictured above).

NEMESIS: the go to website for invasive species

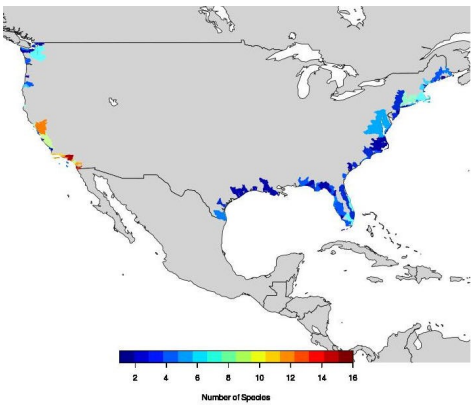
Fouling community on a dock in Sitka, Alaska. Photo: Kim Holzer

NEMESIS – the National Estuarine and Marine Exotic Species Information System – is a powerful research tool for collecting information on introduced marine and estuarine invertebrates and algae in the US. Perusing these records, one can gather information on how and when species are moved and where they have established populations. Transport of aquatic species has been happening for hundreds of years, mostly as a result of global trade. Trade includes introductions resulting from transport by ship, hull fouling and ballast water, and through the goods themselves, the seafood or pet trade and the intentional introduction of species used to create new fisheries.

Over time, the mechanisms of transport have changed, but species are still making their way across oceans and along the coastlines. NEMESIS provides information at multiple scales of detail. Brief overviews and species maps provide the species' native and introduced regions at a glance, and detailed information on the history of spread and bay specific collection locations are available for those wanting more than a cursory view. You can generate your own species lists for select bays in the lower 48 (sorry Alaska, your Bays are still to be added) or bioregions and find references to primary research papers on a given species or region. A quick search of the Southern Alaska/Puget Sound bioregion (NEP-III) returned a list of 92 introduced species.

Interested in an entire group? View summary reports for each taxonomic group. Summaries cover the means of introduction, timeline of invasion, and the number of species in each bay. For example, a summary of tunicates shows that most tunicates were introduced to North America through hull fouling.

The greatest number of introduced tunicates is along the southwestern coast from San Francisco Bay southward. With hundreds of species to include and numerous references and occurrence records per species, NEMESIS has been years in the making. Given the sheer volume of records yet to be reviewed and finalized, we decided to roll out the database one taxonomic group at a time. The tunicates, crabs, shrimp, and crayfish are available now, and barnacles and bryozoans will soon follow. NEMESIS is continually updated as new records and new species are discovered. For news on NEMESIS updates and record releases, follow us on Facebook and Twitter.



Invasive tunicate records in the NEMESIS database, showing increasing numbers (orange and red) at West coast ports.

iTunicate Issue 2

Smithsonian Environmental Research Center c/o
Romberg Tiburon Center
3152 Paradise Dr.
Tiburon Ca 94920

Phone: 415 435 3528
Fax: 415 435 7128
E-mail: mccannl@si.edu

We're on the web at

http://platewatch.nisbase.org

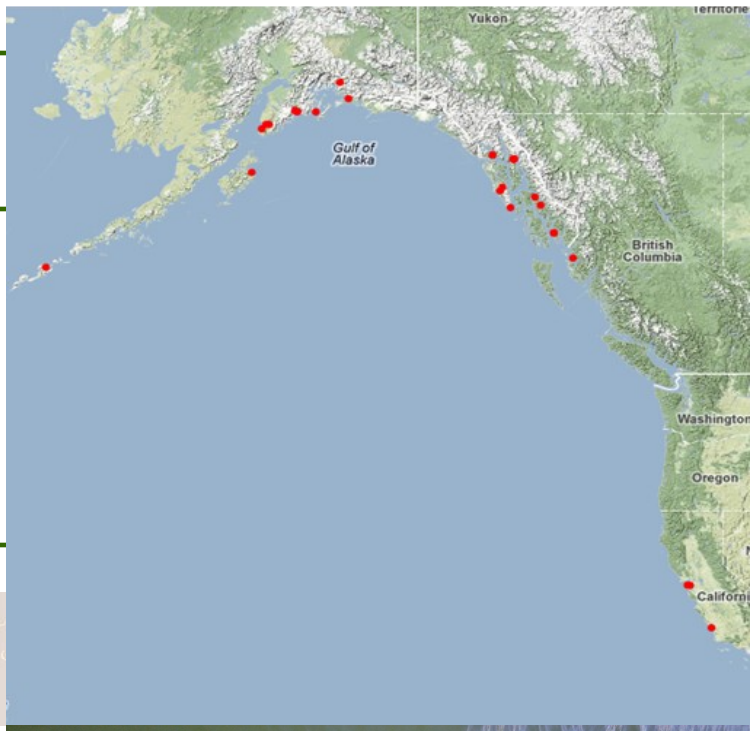
Smithsonian Environmental Research Center

ROMBERG TIBURON CENTER FOR ENVIRONMENTAL STUDIES

Lets Start a Conversation

There are so many ways to communicate these days – email, listserves, Facebook, Twitter, blogs, newsletters, websites, forums, RSS feeds, Yammer, Pinterest - you get the idea. It can be a little overwhelming and hard to keep up with. But they are also powerful tools for communicating with large groups of people and, when effective, starting conversations that engage the community and lead to change. Consider how these new methods of communicating are changing the world; the role of social media in world events such as the Arab Spring, for example. Over the last few months we have tried several things to engage in a larger conversation with the plate watch community. We started a public forum, and more recently a Facebook page with 60 likes but no two-way conversation as yet on either. So the question is, are we using the wrong tools, or not asking the right questions?

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).



Removing the invasive kelp *Undaria pinnitifida* from a dock at a San Francisco marina. Photo: Vanessa Guerra

What communication tool would you find most useful in starting a conversation with the group? And what topics would you like to see discussion on? How do we get the community to use these tools? We'd like to establish a communication channel that connects our monitors, while at the same time broadening the conversation on invasive species issues to the larger community of interested and concerned citizens. How best to do this? Now is your chance to have your voice heard. Please send your suggestions to Monaca Noble at noblem@si.edu.