Marine Life in Whatcom County

Invasive Species Series

Tunicates

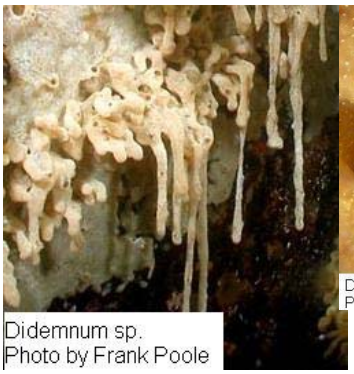
Club tunicate (*Styela clava*)
Transparent tunicate (*Ciona savignyi*)
Colonial tunicate or "sea-snot" (*Didemnum sp.*)

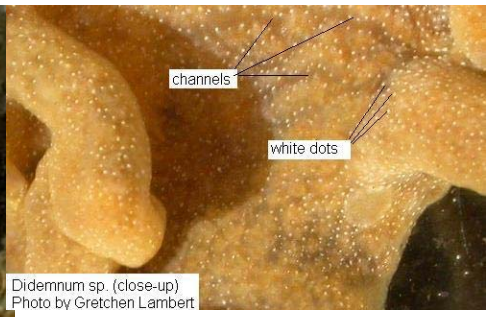

Styela Clava
Photo by Janna Nichols

Description:
Styela clava has a tough, leathery body or "tunic" with wart-like bumps and can grow to 5-6 inches. It has alternating light and dark bands along its siphons (openings at top of individual), has a club-shaped body (giving it its nickname) and attaches to substrates via a short stalk.


Ciona savignyi
Photo by Rich Zade

Ciona savignyi is translucent with yellow flecks or dots on its body and uneven siphons. The siphons are scalloped along the top edges with orange dots encircling them. It has a long, gelatinous body and can grow up to 6 inches. Both *Styela* and *Ciona* are solitary tunicates, meaning that each individual has its own stalk, adhering separately to a substrate.

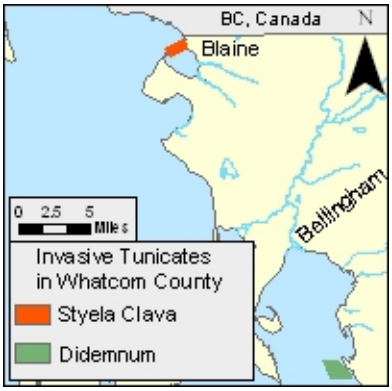

Didemnum sp.
Photo by Frank Poole



Didemnum sp. (close-up)
Photo by Gretchen Lambert

Didemnum sp. is a colonial tunicate made up of individuals, which often attach to each other, creating "mats" with the appearance of one large organism. The "mat" is yellow/green to tan in color, has tiny white dots along its body, and channels running just underneath its almost transparent outer layer**.** Larger openings may be present along the outside surface. It is slimy to the touch and has a noticeable "drippy" look, hence the nickname "sea snot". Its appearance can take on several different forms depending on the age of the colony, but the "globule look" is more prevalent in mature and older colonies.

Distribution: The invasive tunicates have been reported throughout the Pacific Northwest ranging from Oregon to Canada. However, little is known about their exact distribution. Whatcom County sightings include, *Didemnum sp.* found at Larrabee State Park, and extensive populations of *Styela clava* at Blaine and Semiahmoo Marinas in Drayton Harbor.



Life Cycle: These three species have likely been present in local waters for several decades, but have flourished with rising water temperatures. Both *Styela* and *Ciona* reproduce sexually, whereas *Didemnum* sp. reproduces both sexually and asexually through fragmentation. *Styela clava* (club tunicate) reproduces every 24 hours when water temperatures reach 60 °F or above, and can spawn upon contact.

All three tunicate species produce planktonic larvae which settle onto various substrates, emerging as juveniles and adults. The larvae of *Styela clava* stay in the water column for only one to three days which confines the species to a small area.

Ecology: The invasive tunicates have few or no predators so they can grow vigorously and out-compete native tunicates for food, space and other necessities. *Styela* is found in calm, shallow waters in areas around marinas and underneath docks. *Ciona*, on the other hand, is usually found in deeper waters ranging from 40 to 120 feet and seems to prefer the dark.

Economic Value: Invasive tunicates are a serious threat to the shellfish aquaculture industry. In the case of the colonial *Didemnum sp*., extensive mats are found on mussel beds which suffocate the molluscs and prevent them from drawing food and oxygen from the surrounding waters. Furthermore, the invasives pose a threat to the biodiversity of a given area because they can out-compete and replace other filter feeders. The disappearance of native filter feeders and the proliferation of these inedible tunicates creates a lack of food for native predators, a disconnect in the food chain, and a loss of biodiversity.

Sources:

* NIWA Science: I*nvasive Sea Squirt (Styela clava) Fact Sheet.* 2007.
* Schultz, Jesse. *Is it Possible to Eradicate Invasive Species?* Washington Department of Fish and Wildlife. 2007.
* www.pnwscuba.com/invasives/index.htm
* www.nwgeogirl.smugmug.com
* Presentation by Pam Meacham, Assistant Aquatic Nuisance Species Coordinator, Washington Department of Fish and Wildlife. 2007.

Current Status

In April 2006, Governor Gregoire allocated emergency funding to the WDFW to survey and determine the extent of the club tunicate, *Styela clava*, infestation in Puget Sound, stop the population from spreading and to determine the cost of eradicating the species. This work is ongoing. Numerous methods have been attempted to kill these invasives, from using chlorine to removal via pressure washing and hand picking. Thus far, hand picking appears to be the most feasible option, though it requires many hours of tedious labor, mostly by divers.

What You Can Do: Commercial and recreational divers are encouraged to keep an eye out for the invasives as they are often found subtidally. Beach walkers can also watch for the tunicates as they have been spotted attached to rocks. Other places to look include docks, pilings and boats.

If you think you may have encountered any of the species listed above, please take a picture and report the date and location of your sighting to:

Washington Department of Fish and Wildlife: 1-800-54-SOUND or (360) 902-2700. You can also email the Assistant Aquatic Nuisance Species Coordinator for WDFW, at meachpmm@dfw.wa.gov.

For More Information: Whatcom County Marine Resources Committee (360) 715-7450 www.whatcom-mrc.wsu.edu/MRC/index.htm

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