

Gulf Region 2016 DFO Aquatic Invasive Species (AIS) Coastal Biofouling Monitoring Program Summary

Goals: Early detection (presence/absence) of marine non-indigenous biofouling species; determine their spread, establishment and spatial distribution within the southern Gulf of St. Lawrence (sGSL), Gulf Region boundaries (coastal northern and eastern shores of NB, Gulf shore of NS and PEI shores).

Status of biofouling AIS (Gulf Region):

1. Biofouling monitoring of 49 stations within Gulf Region in 2016:

Golden star (*Botryllus schlosseri*) and violet (*Botrylloides violaceus*) tunicates are the most common non-indigenous tunicate species in coastal areas of the Gulf Region, being established in 45% (22 stations) and 41% (20 stations) of all monitored stations (see distribution maps). Percent coverage of golden star and violet tunicates varies by station where they are established, covering 1-75% and 1-50% of plates from biofouling monitoring collectors, respectively. Golden star tunicate was previously reported from Cocagne and Cocagne Cape marinas (NB), but it has recently spread to oyster leases in Cocagne Bay (2016). Violet tunicate was reported at four new stations in 2016; North Lake and New London (PEI) as well as in Caribou and on Port Hood Island (NS).

The vase tunicate (*Ciona intestinalis*) is restricted to SE portions of the sGSL within the Gulf Region (eastern PEI and eastern Gulf shore of NS) and is established in 10% (5 stations) of monitored stations (see distribution map). Average percent coverage of the vase tunicate ranges from 1-50%, but remains highest (26-50%) in Georgetown, PEI. In September 2016, several vase tunicates were found on biofouling collector lines in Wood Islands (PEI). The vase tunicate is not presently found along the northern or eastern shores of NB.

Within the Gulf Region, the clubbed tunicate (*Styela clava*) is only present in coastal areas of PEI and is established in 10% (5 stations) of the monitoring stations (see distribution map). Biofouling monitoring collectors were covered from 1-75% with clubbed tunicate in areas where this species is established. Highest % coverage of biofouling monitoring collectors was found in Souris (PEI), with an average of 51-75% cover in 2016 compared to <25% cover in 2015. See section 2 for additional clubbed tunicate 2016 reports.

2. Rapid assessment surveys and lobster larvae bio-collector monitoring

The Gulf Science AIS monitoring program has been collaborating internally (e.g. DFO Gulf lobster section, Community Aquatic Monitoring Program-CAMP) as well as externally with PEI Department of Agriculture and Fisheries (PEI DAF) and the University of Prince Edward Island, Atlantic Veterinary College (UPEI AVC) to provide opportunities for additional screening of other non-indigenous and invasive biofoulers in the sGSL, within Gulf Region boundaries.

In August 2016, a joint Rapid Assessment survey (DFO Gulf and PEI DAF) of North Rustico Bay and Rustico Bay (PEI) was conducted following an alleged clubbed tunicate report from aquaculture leases in 2015. A total of 9 clubbed tunicates were collected and confirmed from mussel lines and buoys from Rustico Bay.

In its second year of collaboration with the DFO Gulf Region's lobster section, the Gulf Region's scientific AIS monitoring program screened a total of 215 lobster larvae bio-collectors at 6 sites in PEI for potential non-indigenous AIS. Violet tunicate was identified in bio-collectors located near

Skinner's Pond, Covehead Bay, Beach Point and Nine Mile Creek (PEI), where it was previously established. Likewise, golden star tunicate was found in bio-collectors near Nine Mile Creek and the vase tunicate was found in bio-collectors near Fortune and Beach Point (PEI). As of yet, the pancake batter tunicate (*Didemnum vexillum*), which is on Gulf Region's 'most watched for' AIS list, has not been reported in the Gulf Region.

Other non-indigenous AIS in Gulf Region

The oyster thief (*Codium fragile*), Japanese skeleton shrimp (*Caprella mutica*) and the coffin box bryozoan (*Membranipora membranacea*) are present, but less frequently reported in the Gulf Region (see distribution maps). The distribution range for the green crab (*Carcinus maenas*) extends from Pokemouche Bay (northern range limit along the east coast of NB), along the eastern shores of NB and northern shores of NS to the western coast of Cape Breton (Chéticamp, NS) (see distribution map). Please report any sightings of these species or suspected AIS within the Gulf Region to XGLFInvaders@dfo-mpo.gc.ca or 1-866-759-6600.

DFO Science wishes to acknowledge the contribution and support of the general public, aquaculture and fishing industries, NB Dept. of Agriculture, Aquaculture and Fisheries (NB DAAF), PEI DAF, UPEI AVC, Parks Canada, DFO CAMP, NGO's, harbour authorities and marina management, and partner organizations who are jointly monitoring Gulf Region's coastal waters. In addition to routine biofouling monitoring efforts, DFO Science AIS monitoring program personnel (Gulf Region) will continue to collaborate with these many partners to detect the presence of non-indigenous AIS and monitor their spread in 2017. A new collaborative project with Gulf Region's Molecular Biology Unit (2-yr project funded by the Genomics Research and Development Initiative) will be undertaken in 2017 to further develop environmental DNA (eDNA) methods for early detection of AIS in the Atlantic Region.