

# Ascidians

## Diplosoma Tunicate

*Diplosoma listerianum*

**description** smooth, thin encrusting colony, grayish tinge, often with small white spots; up to 8 in (20 cm)

**distribution** introduced; New Hampshire to Connecticut; attached, docks, protected areas; overgrows other organisms; hard subtidal surfaces



Larry Harris

## Club Tunicate

*Styela clava*

**description** brown, tough, bumpy exterior, stalked; up to 6 in (15 cm)

**distribution** introduced from Japan; Maine to New Jersey; attached, docks and protected areas; shallow subtidal



Judith Pederson

## Star Tunicate

*Botryllus schlosseri*

**description** small zooids (0.06 in) with white or yellow markings; colonial, star-like appearance; up to 3-4 in (7.5-10 cm)

**distribution** introduced from Europe; Bay of Fundy to Chesapeake; attached, docks and protected areas; subtidal to 60 ft (18 m)



Paul Erickson

## Orange or Red Sheath Tunicate

*Botrylloides violaceus*

**description** small zooids (0.1 in), arranged in loose circles, rows, or dense clusters; bright orange or reddish or dull purple; up to 5 in (13 cm)

**distribution** introduced from Pacific; Maine to Virginia; attached, docks, protected areas; overgrows other organisms; shallow subtidal



Paul Erickson

## Tunicate

*Ascidella aspersa*

**description** grayish to whitish with pink tinges; rigid surface with papillae, gritty, elongate; attached on side; up to 2 in (5 cm)

**distribution** introduced from Europe; Massachusetts to Connecticut; attached, docks and protected areas; shallow subtidal



Robert Buchsbaum

## "Mystery" Tunicate

*Didemnum* sp., aff. *D. lahillei*

**description** cream to white; microscopic individual zooids; gritty, large colonies with hanging lobes; colonies up to 12-18 in (30-46 cm)

**distribution** possibly introduced from Pacific; New Hampshire to Connecticut; attached, hangs into water; docks and protected areas; subtidal



Judith Pederson

# Barnacles



## "Down Under" Barnacle

*Elminius modestus*

**description** usually smooth edges, 4 plates; up to 1 in (2.5 cm)

**distribution** anticipated introduction from Europe (native to New Zealand/Australia); hard surfaces; intertidal

## Northern Rock Barnacle

*Semibalanus balanoides*

**description** the most common New England intertidal barnacle; 6 plates; broad basal plate; up to 1 in (2.5 cm)

**distribution** native; northern Atlantic to Delaware; hard surfaces; intertidal to shallow subtidal



### Definitions

**intertidal** - the area between high and low tide

**subtidal** - areas below low tide

**estuarine** - where fresh and sea water mix

**carapace** - the shell of a crustacean

**zooid** - individual animal of colonial tunicate or bryozoan

\* indicates first record of organism at this location, may be found further north or south

§ organism may be found further north or south

for more information please contact

MIT Sea Grant College Program

Judith Pederson, Ph.D.

292 Main Street, E38-300

Cambridge, MA 02139

tel 617-252-1741

email [hitchhikers@mit.edu](mailto:hitchhikers@mit.edu)

web [massbay.mit.edu](http://massbay.mit.edu)

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## guide to exotic species

This guide identifies 15 of about 40 marine exotic (introduced) species that may be found along the New England coast. It includes 2 anticipated exotic and a few native species to illustrate distinguishing comparative traits. Some exotic species, such as the periwinkle snail, green fleece alga, green crab and many tunicates (sea squirts), have been here for a long time and are very common. Others, such as the Asian shore crab, the purple anemone, and the "mystery" tunicate, are relatively new arrivals. The "down under" barnacle and shore crab have not yet been observed on our shores. You may find exotic and native species attached to rocks, piers, floats, and other structures; under rocks; in the water; or in wrack at the high tide line.



# Hitchhikers



# Sea Anemones



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## Purple Anemone

*Sagartia elegans*

**description** up to 200 tentacles; magenta to pink tentacles, tan to brown body; up to 8 in (20 cm)

**distribution** introduced from Europe; Salem, MA\*; attached, protected areas; subtidal to 30 ft (9 m)

## Striped Anemone

*Diadumene lineata*

**description** 50-60 tentacles; white or orange stripes, greenish; up to 1.5 in (<4 cm)

**distribution** introduced from the Pacific; Massachusetts to Florida; attached, protected areas; subtidal



Robert Buchsbaum



Andy Martinez

## Fried Anemone

*Metridium senile*

**description** 100 to 1,000 tentacles; pink, cream, brown, sometimes striped or blotchy; up to 18 in (46 cm)

**distribution** native; Arctic to Delaware Bay; attached; intertidal to deeper than 100 ft (30 m)

## Red Alga

*Grateloupia turuturu*

**description** yellow to pink red to burgundy; flat, silky blades, simple or divided, single or in clumps; up to 15 in (40 cm) wide and 6 ft (2 m) long

**distribution** introduced from the Pacific; Narragansett Bay\*; attached to rocks, stones and mussels; low intertidal to 18 ft (5.5 m)



Martine Villalard-Bohnsack

## Green Fleece Alga

*Codium fragile* ssp. *tomentosoides*

**description** green spongy, finger-like branched alga; bleaches whitish; up to 36 in (91 cm)

**distribution** introduced from Asia; Nova Scotia to North Carolina; attached to hard surfaces, rocks, shells; bays; subtidal



Robert Buchsbaum

# Seaweeds

# Mollusks

## Common Periwinkle

*Littorina littorea*

**description** shell usually dark, transverse black stripes on tentacles, poorly developed sutures on whorls; up to 1.7 in (4 cm)

**distribution** introduced from Europe; Nova Scotia to Virginia; prefers hard surfaces; estuarine; intertidal to subtidal during winter



Robert Buchsbaum

## Rough Periwinkle

*Littorina saxatilis*

**description** light shell, longitudinal stripes on tentacles, deep sutures on whorls; up to 0.5 in (1.3 cm)

**distribution** native; Arctic to New Jersey; hard surfaces; splash zone to intertidal



Robert Buchsbaum

## Yellow or Smooth Periwinkle

*Littorina obtusata*

**description** brown, olive, yellow or banded shell with no spire; round shell; up to 0.5 in (1.3 cm)

**distribution** native; Arctic to Long Island; on rockweed; intertidal



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## Eastern (Virginia) Oyster

*Crassostrea virginica*

**description** variable shape, elongated; grayish outside, single purple muscle scar; up to 10 in (25 cm)

**distribution** native; southern Maine to Gulf of Mexico, often cultivated; estuarine; intertidal to subtidal



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## European Oyster

*Ostrea edulis*

**description** shell rounder than native oyster; grayish white, slightly scalloped; white muscle scar; up to 8 in (20 cm)

**distribution** introduced from Europe; Maine to Rhode Island; estuarine; intertidal to subtidal



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# Isopods

## Asian Isopod

*Synidotea laevidorsalis*

**description** elongated, flattened, wider in middle, mottled brown and tan; distinguished from native species by blunt, concave tail; up to 1.25 in (3 cm)

**distribution** introduced from the Pacific; Long Island Sound\* to South Carolina; hydroid fouling species; feeds on hydroids



Leslie Harris

## Shore Crab

*Hemigrapsus penicillatus*

**description** banded legs; square shape; red spots on claw, variable colors; distinguished from *H. sanguineus* by tuft of fuzz on claw rather than between claws; up to 1 in (2.5 cm)

**distribution** anticipated introduction from Europe (native to Pacific); under rocks, oysters; intertidal to subtidal



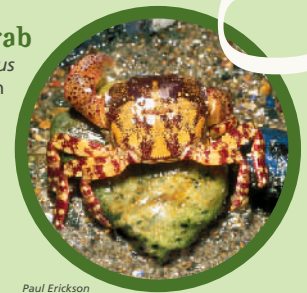
Reindert Nijland

## Asian Shore Crab

*Hemigrapsus sanguineus*

**description** banded legs, red spots on claws, variable colors; square shape, 3 marginal teeth; up to 1 in (2.5 cm)

**distribution** introduced from Asia; Maine to North Carolina\*; prefers rocks, cobble; intertidal to subtidal in winter



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## Green Crab

*Carcinus maenas*

**description** green, reddish orange, or tan carapace with darker mottling; 5 marginal teeth; up to 3.6 in (7.6 cm)

**distribution** introduced from Europe; Nova Scotia to Delaware; hard and soft surfaces; intertidal to shallow subtidal



Paul Erickson



We are asking for your help to study the distribution of a few particular species:

● introduced

● native

● purple anemone  
*Sagartia elegans*

● Asian isopod  
*Synidotea laevidorsalis*

● European oyster  
*Ostrea edulis*

● "down under" barnacle  
*Elminius modestus*

● "mystery" tunicate  
*Didemnum* sp.

● *Diplosoma* tunicate  
*Diplosoma listerianum*

If you see one of the exotic species, please send us information on the location (habitat, beach, town, state), time, date, size, abundance, and special comments by mail, email or web site (on back). Photos and preserved specimens are welcome. We appreciate your contributions to this research project.

# Crabs