

## **BACKGROUND INFORMATION**

### **RI JELLYFISH MONITORING PROGRAM** (rev. 7.01.15)

#### **PROJECT DESCRIPTION**

The goal of this project is to work with citizens monitoring programs, e.g., URI's Watershed Watch, Salt Ponds Coalition, and to involve new groups such as Save the Bay, Surfrider, the RI Saltwater Anglers Association, commercial fishers and party and charter boat captains to gather observations regarding the abundance and distribution of jellyfish and other gelatinous zooplankton in RI waters. The ctenophore or comb jelly, *Mnemiopsis leidyi*, is sometimes considered a "nuisance" at bathing beaches, as are other "true" jellyfish such as the Lion's Mane or the increasingly common stinging sea nettle. Perhaps just as importantly, jellyfish may represent useful "sentinels" or indicators of ecological change in near coastal waters since trends in their abundance and distribution are hypothesized to be related to over-fishing; predation on larval stages of commercially important fish species; oyster cultivation; and/or changes in water quality caused by coastal development, wastewater discharges and/or the effects of warming-induced climate change.




#### **INSTRUCTIONS FOR SETTING UP THE <JELLYFISH COLLECTOR APP>**





1. Download free <<*collector for arcgis*> for:
  - iPhone @ <https://itunes.apple.com/us/app/collector-for-arcgis/id589674237?mt=8>
  - iPad @ <https://itunes.apple.com/us/app/arcgis/id379687930?mt=8>
  - Android devices @ <https://play.google.com/store/apps/details?id=com.esri.arcgis.collector&hl=en>
2. Open the app on your phone and sign in:
  - \* [Brown.maps.arcgis.com](http://Brown.maps.arcgis.com)
  - \* USER NAME = jfish
  - \* PW = squishy1
3. Once you are logged in, tap on the map of Narragansett Bay, look at the menu at top of your smart phone (bottom of your android) and click << + >> to enter your jellyfish observation.



#### **INSTRUCTIONS FOR COLLECTING OBSERVATIONS ABOUT JELLYFISH**

1. Please see the ***Guide To Locally Common Gelatinous Plankton*** (below) to help you to identify commonly observed jellyfish and related species in Narragansett Bay and coastal waters.
2. Please estimate the number of jellyfish you observe in one (1) square meter (3 ft x 3 ft). **Please record "zero" if you do not see any jellyfish.**
3. Take a minute to fill in the menu-driven observations about weather, water quality and presence/absence of sea grass and marine algae. Please feel free to upload a photo. Photos can be helpful, especially if you have doubts about the identity of the species. They can also reveal useful information about related water quality and ecological conditions, e.g., turbidity, SAV, algal growth.

4. Don't forget to submit your observations while you are on location because we rely on your telephone's internal GPS to tell us where your observation was collected.

<b>GUIDE TO LOCALLY COMMON GELATINOUS PLANKTON in NARRAGANSETT BAY AND SALT PONDS</b>		
<b>SPECIES</b>	<b>PHOTO</b>	<b>OTHER INFO</b>
<b><i>Mnemiopsis leidyi</i></b> (comb jelly, sea walnut)		<p>Description: Oval or spherical shape with distinct lobes and rows of cilia. Commonly 1 to 2" but can grow up to 4". Brilliant luminescent combs.</p> <p>Prey: copepods, fish &amp; oyster larvae            Predators: turtles, tuna, sunfish, butterfly, dogfish, pink comb jellies, Lion's mane and stinging sea nettles</p> <p>Often bloom forming; does not sting</p>
<b><i>Beroe cucumis or ovata</i></b> (comb jelly, cigar jelly)		<p>Description: Elongate spherical shape without tentacles or lobes. Some local species can reach over 6" (15cm) after feeding.</p> <p>Prey: comb jellies            Predators: unknown but probably species that feed on <i>Mnemiopsis</i></p> <p>May be found in large numbers when <i>Mnemiopsis</i> is blooming; does not sting</p>
<b><i>Aurelia aurita</i></b> (moon jelly)		<p>Description: bell is commonly 4" but can grow to 12". Short tentacles; gonads look like pink 4-leaf clover.</p> <p>Prey: zooplankton            Predators: turtles, tuna, sunfish, butterfly, dogfish</p> <p>Can form swarms ("smacks"); does not have a venomous sting</p>

<p><b><i>Cyanea capillata</i></b> (Lion's mane jellyfish)</p>		<p>Description: 8 lobes w/ numerous tentacles and red-brown or yellow feeding arms depending on age. Bell is commonly 4" to 8" south of Cape Cod; can reach 8' w/ tentacles over 98' in Gulf of Maine.</p> <p>Prey: Ctenophores, jellies, zooplankton, small fish,. Juvenile fish often shelter in the tentacles</p> <p>Predators: seabirds, leatherback turtles, large fish, other jellies, sea turtles</p> <p>Can appear in swarms in spring; solitary in fall. Contact w/ tentacles can produce a sting and rash.</p>
<p><b><i>Chrysaora quinquecirrha</i></b> (Stinging sea nettle)</p>		<p>Description: Milky white with 24 tentacles in estuaries and salt ponds. Bell is &lt;1" to 4" in diameter; tentacles up to 16' long.</p> <p>Prey: zooplankton, including other jellies</p> <p>Predators: sea turtles, tuna, sunfish, butterfish, spiny dogfish</p> <p>Can occasionally be found in large numbers. Contact with tentacles can produce a sharp, painful sting.</p>
<p><b><i>Aequorea spp.</i></b> (Crystal OR Ribbed jellyfish)</p>		<p>Description: Free-swimming stage is transparent with distinctive radial ribs and short uneven tentacles. Bioluminescent.</p> <p>Prey: ctenophores, zooplankton</p> <p>Predators: Lion's mane, ctenophores. Cannibalistic.</p> <p>Occurs in swarms.</p>
<p><b><i>Earleria spp.</i></b> (Cross Jellyfish)</p>		<p>Description: Free-swimming stage is small and transparent with distinctive cross on the bell. It may luminesce in a band along the margin of the bell if disturbed.</p>

<p><i>Physalia physalis</i> (Portugese Man o' war)</p>		<p>Description: Each animal is a colony with a brilliant blue gas-filled float and sail, and specialized feeding and reproductive tentacles. The float can be 1'' to 12'' long; feeding tentacles can be &gt;&gt;100'.</p> <p>Prey: other jellies, small fish, zooplankton Predator: turtles, sunfish, shepherd fish</p> <p>Typically found offshore though solitary animals may blow in from the Gulf Stream. Tentacles produce a powerful sting, even when the animal is dead.</p>
<p><i>Thalia fusiformis</i> <i>Thalia democratica</i> (Salps, Sea squirts)</p>		<p>Description: Planktonic free-swimming tunicates. Salps can be found as part of long chains of &gt;12'' in length (colonies) or as fragments and solitary individuals. Transparent except for the viscera. Swarms may have significant effect on fishing nets, water intakes and 'burial' of carbon in the sea.</p> <p>Prey: Micro algae, phytoplankton Predators: Anemones, starfish, crabs, fish</p>

## SOME ADDITIONAL RESOURCES

### Identification

Dickerson, N. *New England Jellyfish*. Available on *Jellyfish Facts* @ <http://www.jellyfishfacts.net/new-england-jellyfish.html> (accessed Apr 2014)

CT DEEP. *Gelatinous plankton likely to occur in Long Island Sound*. Avail on-line @ [http://www.ct.gov/deep/lib/deep/water/lis\\_water\\_quality/hypoxia/gelatinousplanktonlong\\_island\\_sound.pdf](http://www.ct.gov/deep/lib/deep/water/lis_water_quality/hypoxia/gelatinousplanktonlong_island_sound.pdf) (accessed Jun 2015)

Gosner, K. *Peterson Field Guide: A Field Guide to the Atlantic Seashore* (any edition)

The Dunn Lab at Brown University. *Moving on rainbow-colored legs: Cilia and ctenophores*. See *Creature Cast*, Available online @ <http://www.nature.com/scitable/blog/creature-cast>; <http://creaturecast.org>

### Biology

Beaulieu, W. et al. *Seasonality of the ctenophore Mnemiopsis leidyi in Narragansett Bay, RI*. J. Plankton Res. 35(4): 785 (2013)

Condon, R. et al., *Questioning the rise of gelatinous plankton in the world's oceans*. BioScience 62(2):160 (2012)

Duarte, C. et al. *Is global ocean sprawl a cause of jellyfish blooms?* Front. Eco. Envt. (2012) doi:10.1890/110246

Jackson, J. *Ecological extinction and evolution in the brave new ocean*. PNAS 105:11458 (2008)

Rich, N. *Can a jellyfish unlock the secret of immortality?* NYT (11.28.2012)

## COLLECTING AND PHOTOGRAPHING GELATINOUS PLANKTON

**Jellyfish and other gelatinous plankton are very fragile. Handle them carefully and with caution.**

1. Use the same precautions you normally use when wading, swimming in the Bay. Wear gloves (or put your hands inside plastic bags) when handling jellies.
2. Some gelatinous plankton commonly found in Rhode Island waters can cause a painful sting or rash. If you get stung:
  - Remove the tentacles. Jellyfish tentacles will keep stinging unless you scrape them off. Wash the area with seawater, NOT fresh water, and pull them off with a towel wrapped around your hand. You can also use a credit card to help scrape them from the skin.
  - Apply white vinegar to the area. This deactivates the nematocysts still in the skin. Use a paste of baking soda and seawater to deactivate the nematocysts of Portuguese man-o-wars or sea nettles.
  - Soak the area in hot water.

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[Lynn\\_Carlson@Brown.edu](mailto:Lynn_Carlson@Brown.edu) for information about the app or the ArcGIS map  
[ckarp@brown.edu](mailto:ckarp@brown.edu) for additional information related to the project