

NEANS, 2011 - Invasive shrimp species monitoring



Palaemon elegans
European rock shrimp,
rock pool prawn, etc.



Palaemon macrodactylus
Asian shrimp, Oriental shrimp

Niels-Viggo S. Hobbs

Salem Sound Coastwatch

Rhode Island Coastal Resources Management Council

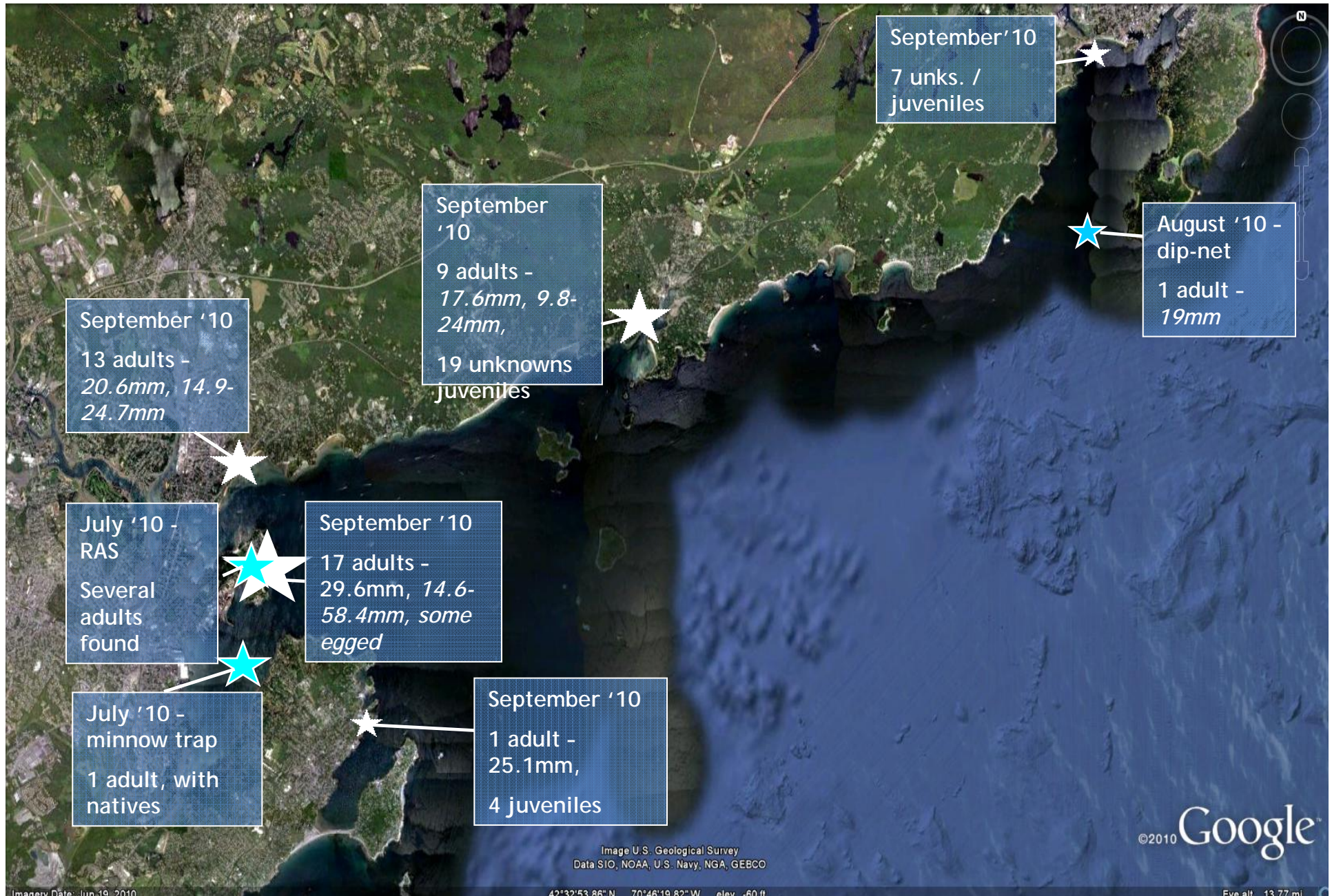
Marine Invader Monitoring and Information Collaborative (MIMIC)

Palaemon elegans

- widespread European distribution, well-documented, very recent arrival in NW Atlantic
- euryhaline, eurythermal
- grows much larger than native Palaemonid shrimp



Palaemon elegans - Salem Sound locations by September 2010



Palaemon elegans – Salem Sound locations by September 2011





On the move...

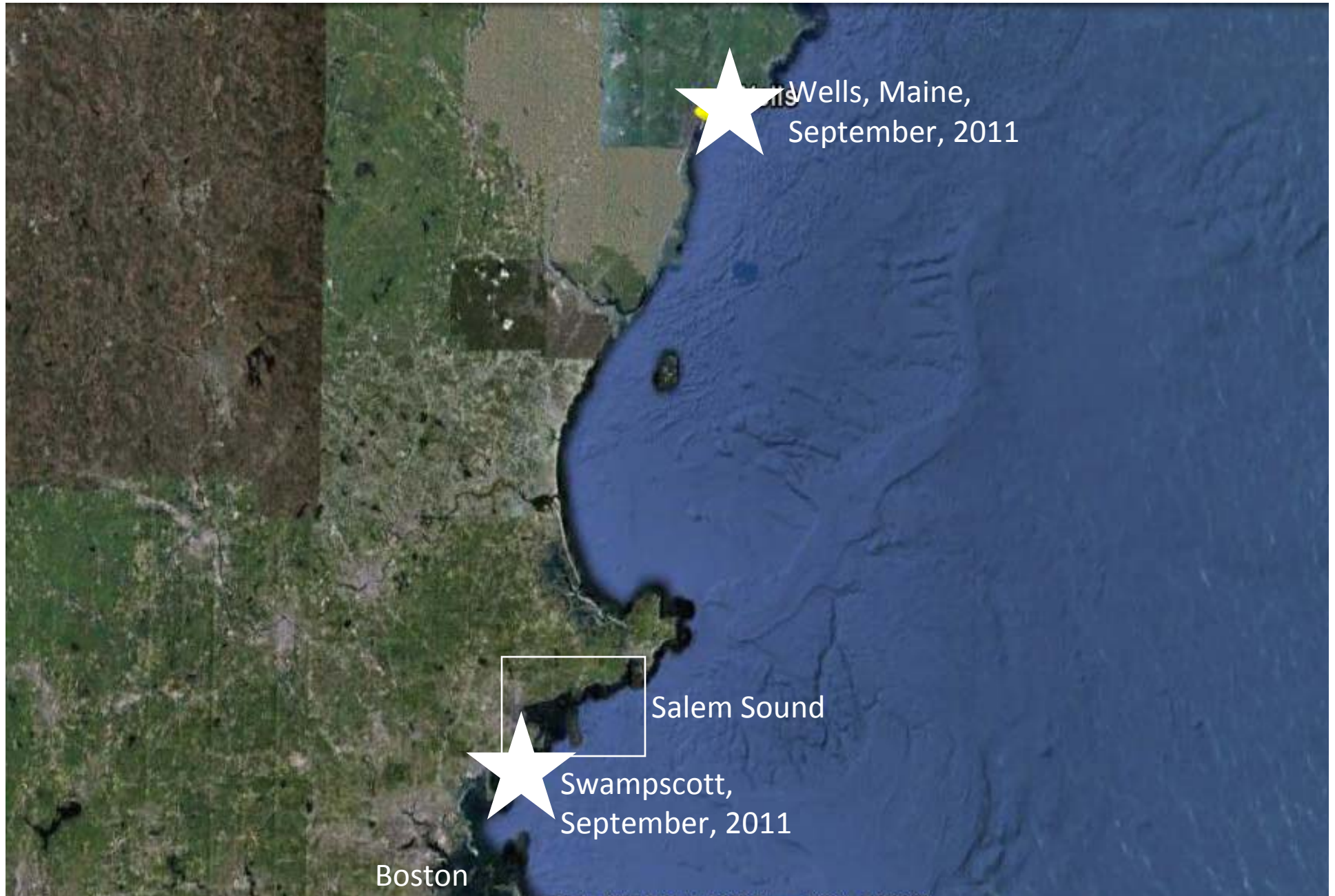
Palaemon elegans

Collected by Jeremy Miller,
Wells, Maine, NERR
September, 2011



EGGS!

Palaemon elegans - locations outside of Salem Sound, 2011



Distinguishing *P. elegans* in the field

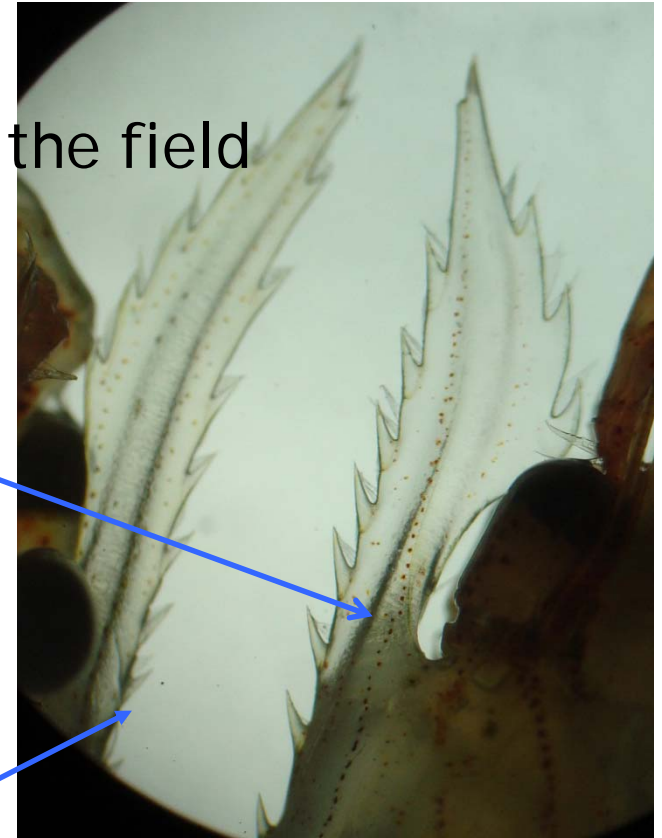
Palaemon elegans



Palaemon macrodactylus

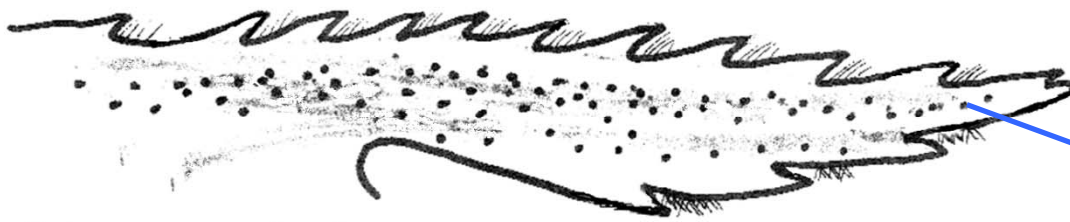


Palaemonetes vulgaris (native)



Distinguishing *P. elegans* in the field

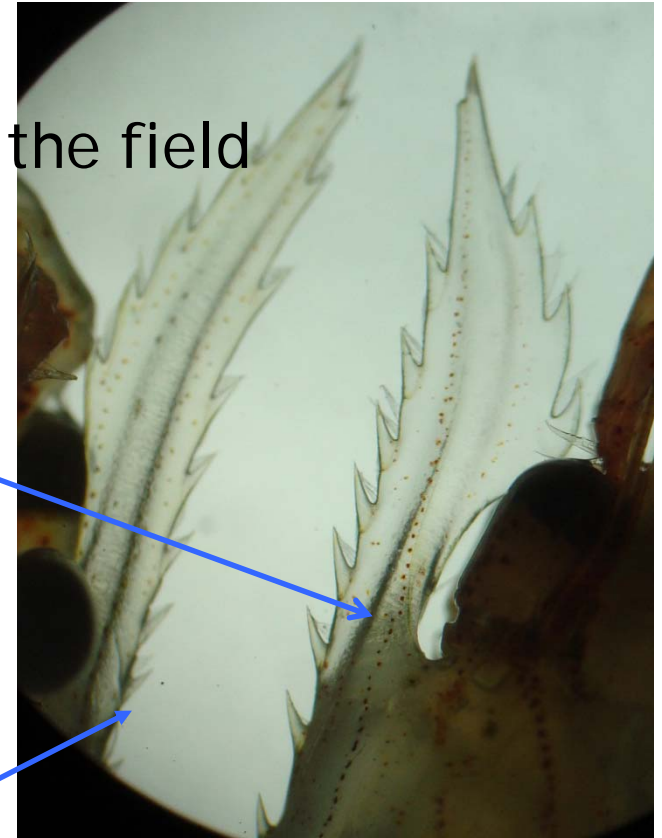
Palaemon elegans



Palaemon macrodactylus



Palaemonetes vulgaris (native)



And, speaking of *P. macrodactylus*...

Palaemon macrodactylus:

- invasive species with worldwide distribution, native to northwestern Pacific, only recent arrival in NW Atlantic
- euryhaline and eurythermal species (Newman, 1963)
- tolerant of polluted environments (Siegfried, 1980)



Kelly Lab, University of New Haven

First collected in the waters around New York City in 2001, with more collected in subsequent years, including a large number in 2006 in Connecticut waters.

No published reports until 2010.

Northeastern Naturalist

17(1): 91-102. 2010

The First Record of *Palaemon macrodactylus* (Oriental Shrimp) from the Eastern Coast of North America

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Abstract *Palaemon macrodactylus* (Oriental Shrimp), native to estuarine waters of Southeast Asia, has been reported outside of its native range. The spreading of this species to new regions has been well documented, and its disjunct distribution strongly speaks for its transport being attributed to ballast water. In this paper, we report the first record of *P. macrodactylus* from the eastern coast of the United States and in the estuarine system of New York City (NYC). While this animal has been reported to have crossed the Pacific, and has been found in the eastern Atlantic along the coasts of Spain, France, Germany, and the British Isles, and in the southwestern Atlantic off the coast of Argentina, it has not been previously sighted in the northwest Atlantic. Our preliminary life-history data indicate that the size range for the 98 adult individuals in the 2001 collection was from 2.05 to 5.05 cm, and exhibited a one-to-one sex ratio. The finding of gravid females among these shrimp collected from 2001–2002 and again in 2008 indicates that the oriental shrimp populations in the coastal waters of NYC have become established, and show reproductive activity from May through October. Further studies are required to evaluate whether *P. macrodactylus* poses a threat to native aquatic organisms in this region.

Characteristics commonly used for distinguishing *Palaemon macrodactylus*:

- 3-jointed mandibular palp
- 9-14 teeth on dorsal margin of rostrum
- 3 teeth on the dorsal rostrum are posterior to the ocular orbit
- 3-4 rostral teeth on ventral margin
- Ventral margin of rostrum has double row of setae
- Rostrum is relatively straight with the dorsal line of the carapace
- The propodus of the second pereopod is not significantly shorter than the carpus
- The free part of the shorter ramus of the upper antennular flagellum is longer than the fused part
- Whitish longitudinal dorsal stripe present on live specimens



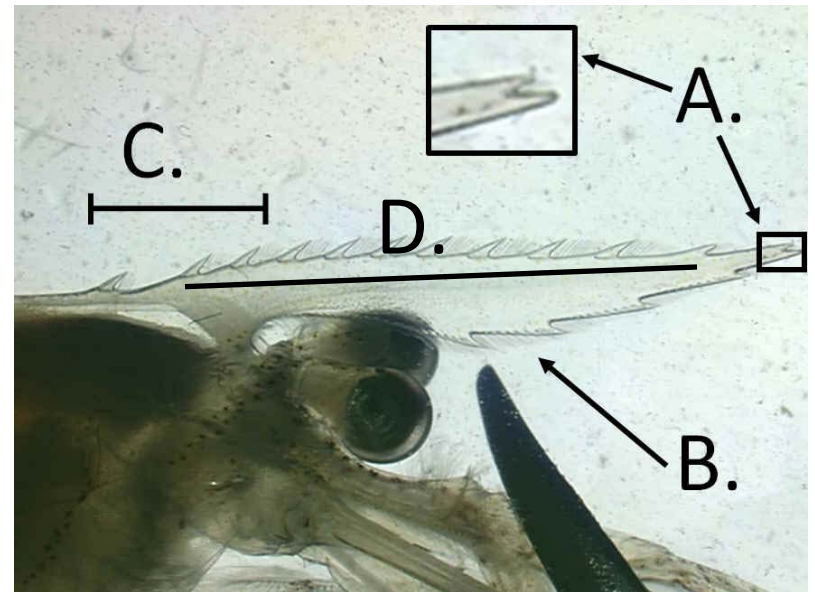
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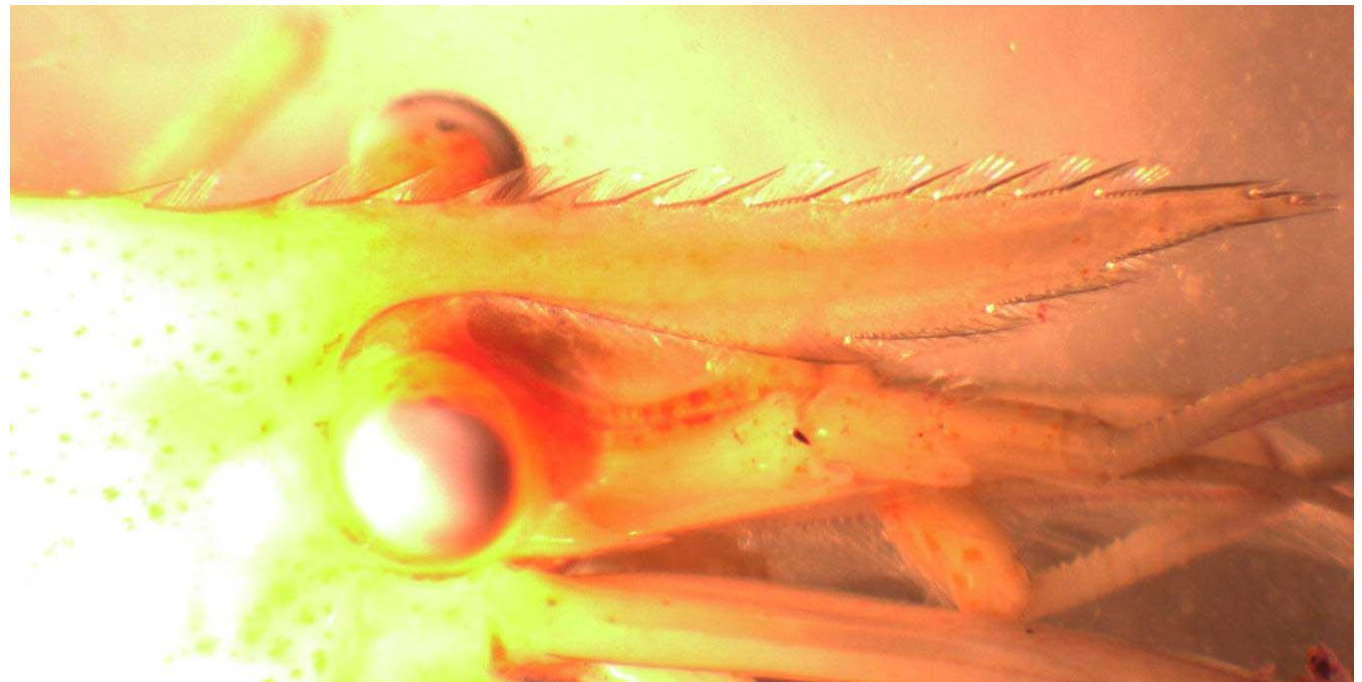


Kelly Lab, University of New Haven

Rostrum characters -
Possibly most helpful for expedient
field identification



SERC



P. macrodactylus in Rhode Island

- first collected Sept 2010 in Providence River
- similar numbers collected in May 2011, monoculture
- also present in two subsequent collections in summer 2011
- with ovigerous females present in collection, species now seems fully established.
- expect widespread occurrence in Narragansett Bay, given natural tolerances.



ENVIRONMENT

In search of alien life in local waters

On the lookout for invasive species: Asian shrimp in the Providence River

By RICHARD SALIT
JOURNAL STAFF WRITER

PROVIDENCE — On a brisk autumn evening, wispy clouds glow pink and red over the downtown skyline as a Hollywood TV crew

films the medical drama "Body of Proof" under bright lights off South Water Street.

But just across the way, on the shore of the Providence River, a real-life thriller is unfolding. Call it "Alien Invaders."

The protagonist, Ray Hartenstine, a library technician by day and naturalist by night, grips a chicken bone with rotten meat on it and places the

bait in an umbrella-shaped net. He casts it into the murky water and watches it sink to the bottom. Then he waits.

The sky darkens. Suspense builds. Will Hartenstine once again confront the alien lurking in these waters? In August, in these very waters, with the hour approaching mid-



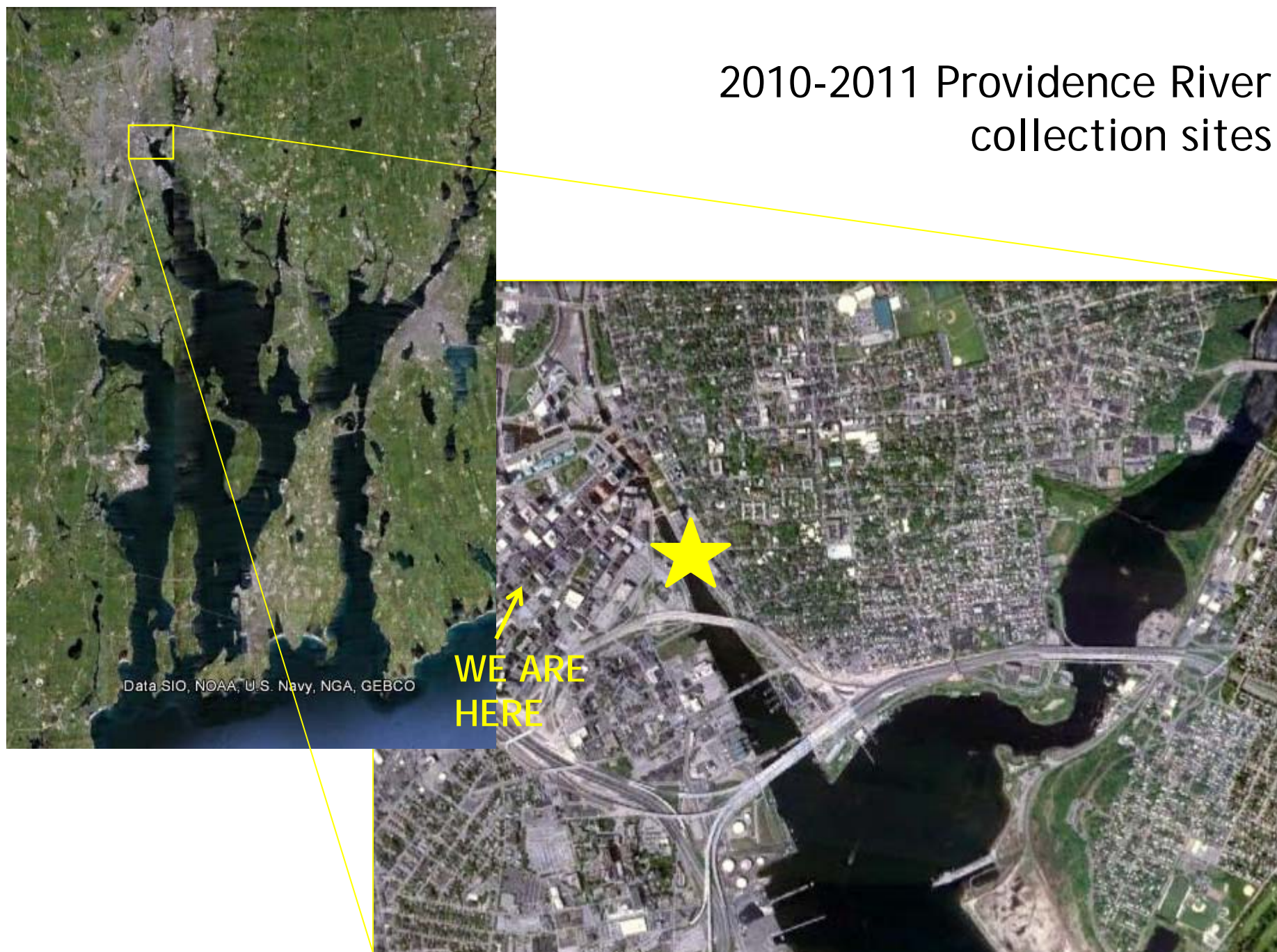
Ray Hartenstine, a volunteer with the R.I. Coastal Resources Management Council, checks his net as he searches for invasive Asian shrimp in the Providence River.

SEE SHRIMP, A10

THE PROVIDENCE JOURNAL / ANDREW DICKERMAN

Nov. 10, 2010

2010-2011 Providence River collection sites



More recent finds

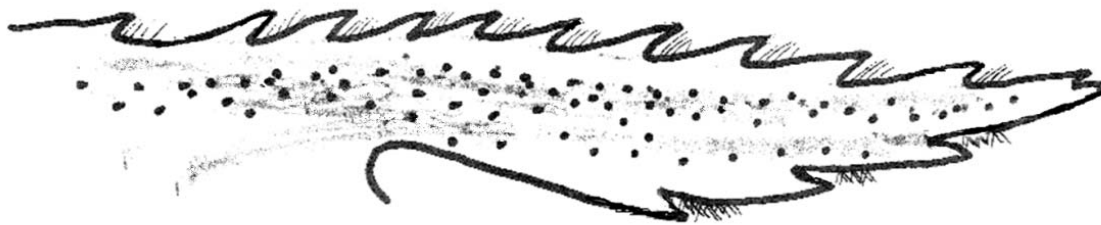
In other portions of
Narragansett Bay



Distinguishing friend from foe



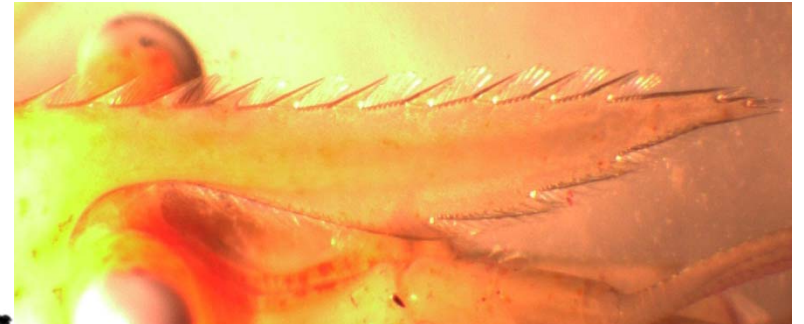
Palaemon elegans



Palaemon macrodactylus



Palaemonetes vulgaris (native)



Palaemonetes pugio (native)- “daggerblade” shrimp



Haram, Carlton Lab, Williams Mystic



Haram, Carlton Lab, Williams Mystic



Native
Palaemonetes sp.



Haram, Carlton Lab, Williams Mystic

Palaemon macrodactylus



Haram, Carlton Lab, Williams Mystic

Palaemon elegans



