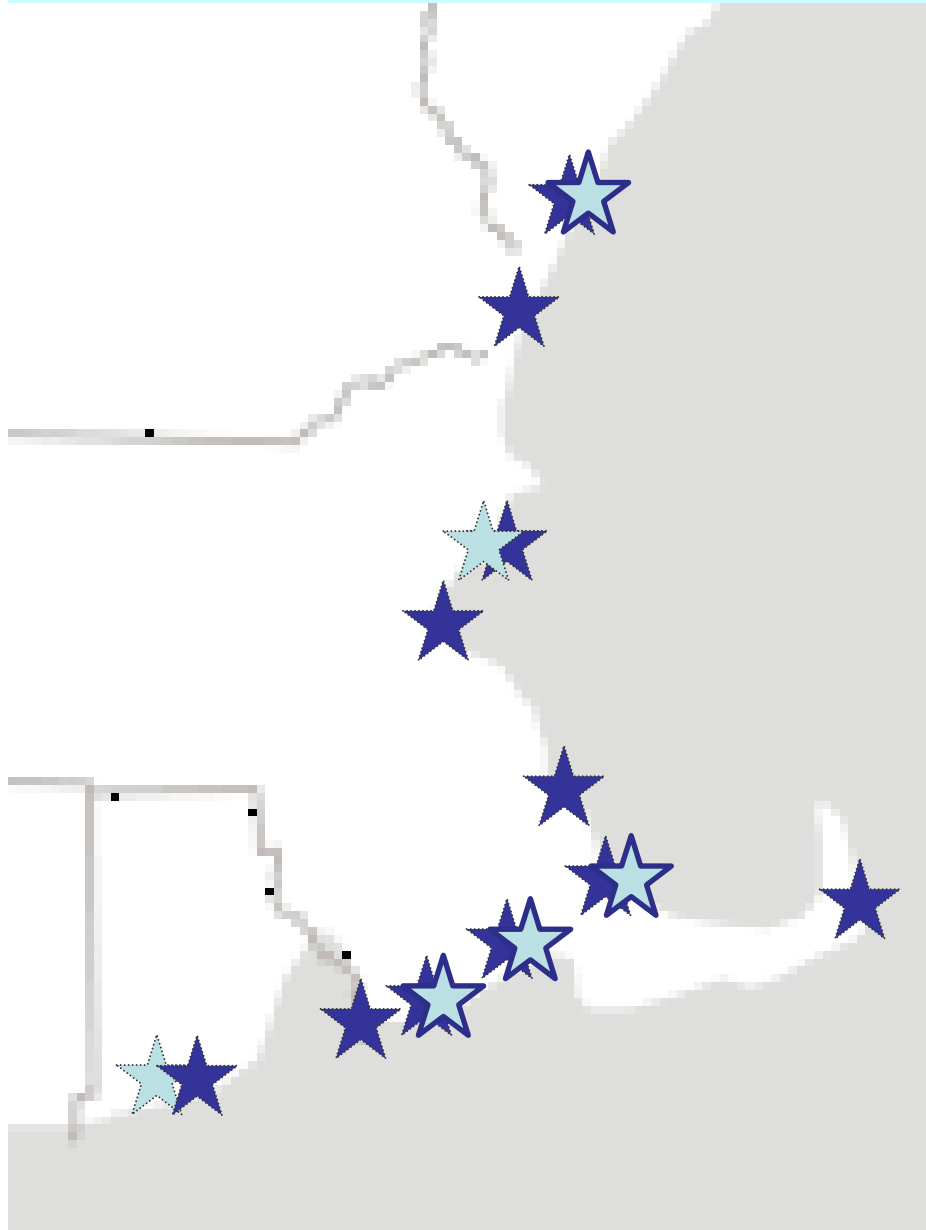


# 2012 Crustacean Rapid Assessment Survey of New England

...a solo odyssey

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University of Rhode Island

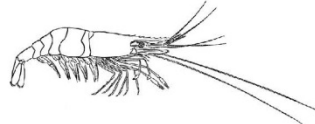
# Fall 2012 Survey



- Survey 16 sites from western Rhode Island to southern Maine, mixing marinas with rocky shore sites
- Catalog crustacean species, and particularly monitor for invasive shrimps, *Palaemon* spp., and assess range and rank abundance (S<F<C<A)
- Compare to previous Rapid Assessment Surveys
- Conduct three NIS crustacean workshops for regional volunteer groups or agencies aiding in monitoring of NIS

# Monitor training workshops

## Non-native Crustacean Workshop, Fall 2012 - quick handout



*Palaemon elegans*



*Palaemon macrodactylus*



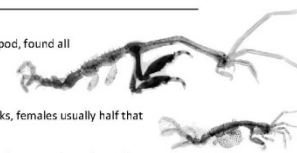
*Palaemonetes vulgaris* (native)

***Palaemon elegans*** – Large European shrimp, well established north of Cape Cod. Distinctive BLUE claws, and shovel-shaped rostrum, 3 teeth on top of rostrum behind eye socket.

***P. macrodactylus*** – Large Asian shrimp, established south of CC, but recently found as far north as Boston. Often distinctly marked, sometimes with white stripe down back, and white joints, rostrum narrower than *P.e.* but with 2-3 teeth behind eye socket and fine double row of hairs along underside of rostrum.

***Palaemonetes*** – Native genus of shrimp, with three common species. *P. vulgaris* has 2 teeth behind eye socket (potentially confused with *Palaemon* spp.), but usually has red eye sockets and 4-5 teeth on underside of rostrum, unlike *Palaemon* spp.

***Caprella mutica*** – very common Asian “skeleton shrimp” amphipod, found all over New England in coastal areas, particularly on heavily fouled docks.



Large males typically up to 50-60mm, 2” long with very long necks, females usually half that with short necks. Females always have brood pouches

Both males and females have numerous short spines on main body segments, and are often reddish orange in color.

***Laniropsis serricaudis*** – a small isopod crustacean from Asia. Has been in New England for at least 15 years, but arrival unknown. Now well established.

Typically not longer than 3 - 4mm body-length, or 1/16 of an inch. Has very long antennae that can be ~ as long as body.

Common in dock fouling habitats, on or under smooth surfaces such as mussel shells, algae – particularly found on the invasive compound tunicate *Dilemnium vexillum*.



### ***Carcinus maenas*** – the “Green Crab”

European native, now common in New England since 1800s. Adults are large (carapace can be more than 4” across) and either dark green or dark orange.

Distinguished by five teeth on each side of carapace, three teeth between the eyes, and overall oval carapace shape.

, etc.

England coast for the tiled, banded occasional purple hue.

three reduced teeth on large males (carapace up to large claws.



### **SPECIES - PLEASE KEEP YOUR EYES OPEN!**

#### ***Stomatopoda takanoi*** –

Native, now well-established on west coast of U.S. and in other waters. Arrival in New England is probably imminent if not here.

Similar to *H. sanguineus* in both size and shape, but coloration muted, and pronounced hairy patch at joint of claws.

#### ***Libinia sinensis*** –

Another Asian native, steadily making its way here. Established in New York and reported in Connecticut. Very destructive introduction on westcoast.

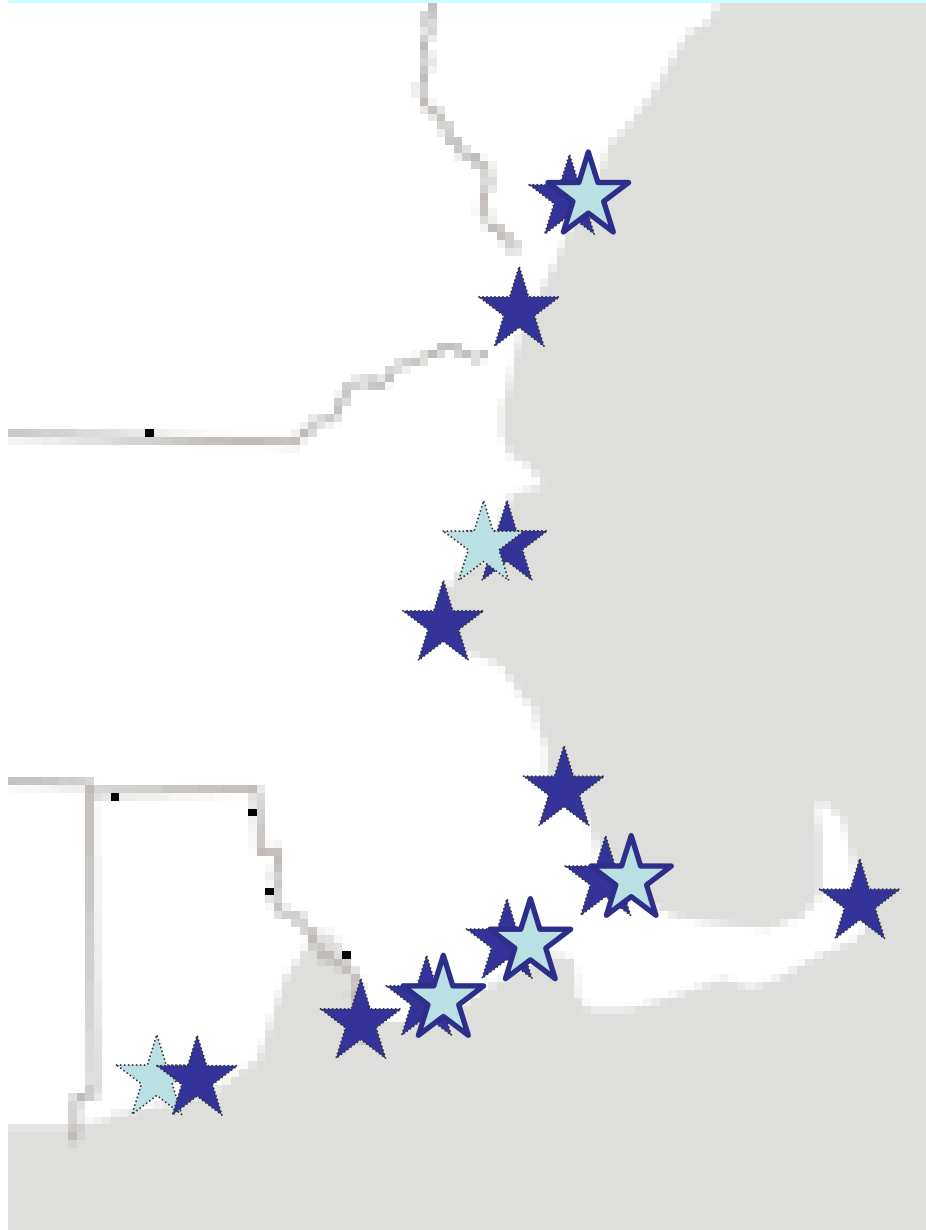
Juveniles found in freshwaters, rivers/streams that feed to saltwater where adults migrate. Very large round-shaped crab. Claws almost entirely covered by thick hair.

Prepared by Niels Hobbs, 2012

***H. takanoi***

***Libinia sinensis***

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## 2012 SURVEY RESULTS

	SPM	WSM	SAL*	MCD*	RWB	BPM	SM	SI	CFP	MMA	TPM*	GII	TM	SPM	PJM	PPD*
<i>Palaemon elegans</i>		F	F		F	C		C	C		S	.	.			
<i>Palaemon macrodactylus</i>	.		.		.							.	.			F
<i>Palaemonetes vulgaris</i>	.		.		.		C			C		.	A	A	C	
<i>Palaemonetes pugio</i>	.		S		.	C				C	A	.	.			
<i>Hemigrapsus sanguineus</i>					S		S	F		F		F	F	F	C	
<i>Cancer irroratus</i>					S											
<i>Carcinus maenas</i>	F	F			F		F	F		S					F	
<i>Panopeid - D. sayi, R. harrisi</i>	F	F			F		S						F		C	
<i>Praunus flexuosus</i>	C	F	A		.	F						.	.			
<i>Ianiropsis serricaudis</i>	F				C	F		C		F			C	C	C	.
<i>Idotea balthica</i>	F	S	S		F	S			S	S		A	F	F	F	
<i>Idotea phosphorea</i>	C	F								S						
<i>Jaera marina</i>		S						F								
<i>Ampithoe longimana</i>										F						
<i>Ampithoe rubricata</i>					S											
<i>Ampithoe valida</i>										F						
<i>Calliopius laeviusculus</i>		F							A							
<i>Caprella equilibra</i>													F			
<i>Caprella mutica</i>	F	F			A	C	F						C	C	C	
<i>Caprella penantis</i>										F		F				
<i>Corophium ascherusicum</i>	F															
<i>Corophium acutum</i>										F			F	F		
<i>Corophium insidiosum</i>	C	F			C	A	C							C		
<i>Corophium lacustre</i>						F										
<i>Cymadusa compta</i>													F	F	F	
<i>Elasmopus levis</i>													C	F	F	
<i>Gammarus oceanicus</i>	C	S			S											
<i>Jassa marmorata</i>	F	F			A	A	F		F	C			F	C	A	
<i>Microdeutopus anomalus</i>						S	F									
<i>Microdeutopus gryllotalpa</i>	S	F														
<i>Tanais dulongii</i>										C			S	F	S	

## 2012 SURVEY RESULTS

	SPM	WSM	SAL*	MCD*	RWB	BPM	SM	SI	CFP	MMA	TPM*	GII	TM	SPM	PJM	PPD*
<i>Palaemon elegans</i>		F	F		F	C		C	C		S	.	.			
<i>Palaemon macrodactylus</i>	.		.		.							.	.			F
<i>Palaemonetes vulgaris</i>	.		.		.		C			C		.	A	A	C	
<i>Palaemonetes pugio</i>	.		S		.	C				C	A	.	.			
<i>Hemigransus sanguineus</i>					S		S	E		E		E	E	E	C	

7 Non-indigenous species, out of 32 identified crustacean species, divided into...

2 distinct groups of Malacostraca

Eucarida: 5 shrimp spp – 2 non-native

5 crab spp – 2 non-native

Peracarida: 17 amphipod spp - only one clearly known NIS

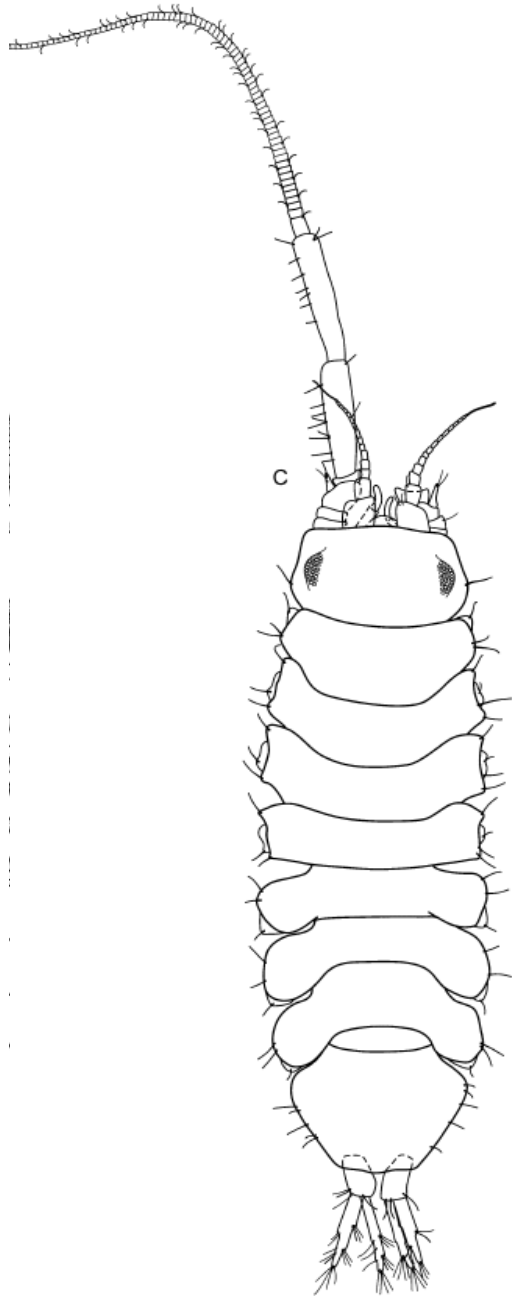
4 isopods – 1 non-native

1 tanaid, native

1 mysid, non-native.

\*Most species identified are known from previous rapid assessment surveys and other studies

<i>Elasmopus levis</i>													C	F	F	
<i>Gammarus oceanicus</i>	C	S			S											
<i>Jassa marmorata</i>	F	F			A	A	F		F	C			F	C	A	
<i>Microdeutopus anomalus</i>						S	F									
<i>Microdeutopus gryllotalpa</i>	S	F														
<i>Tanais dulongii</i>										C			S	F	S	



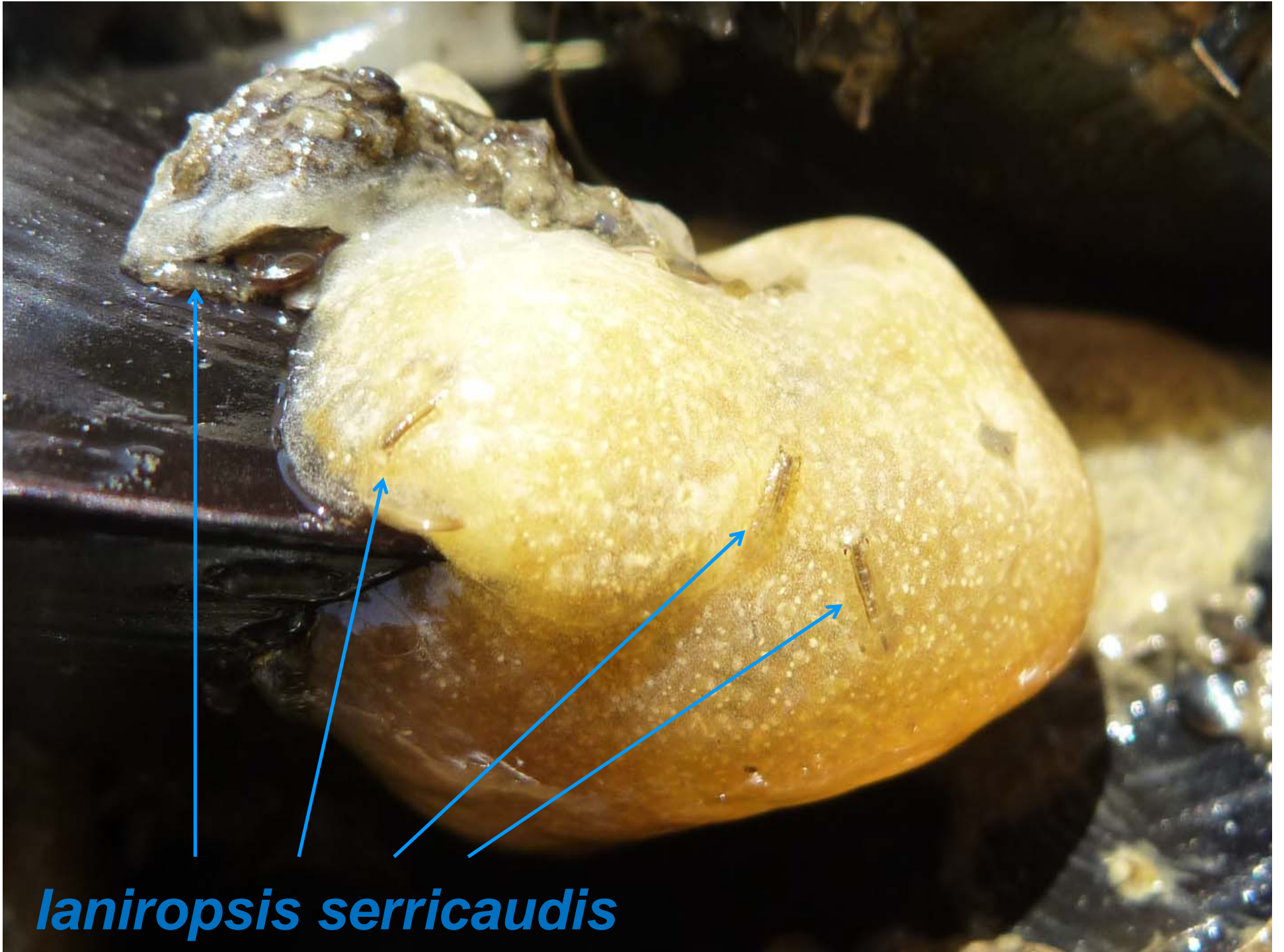
***Laniropsis serricaudis***



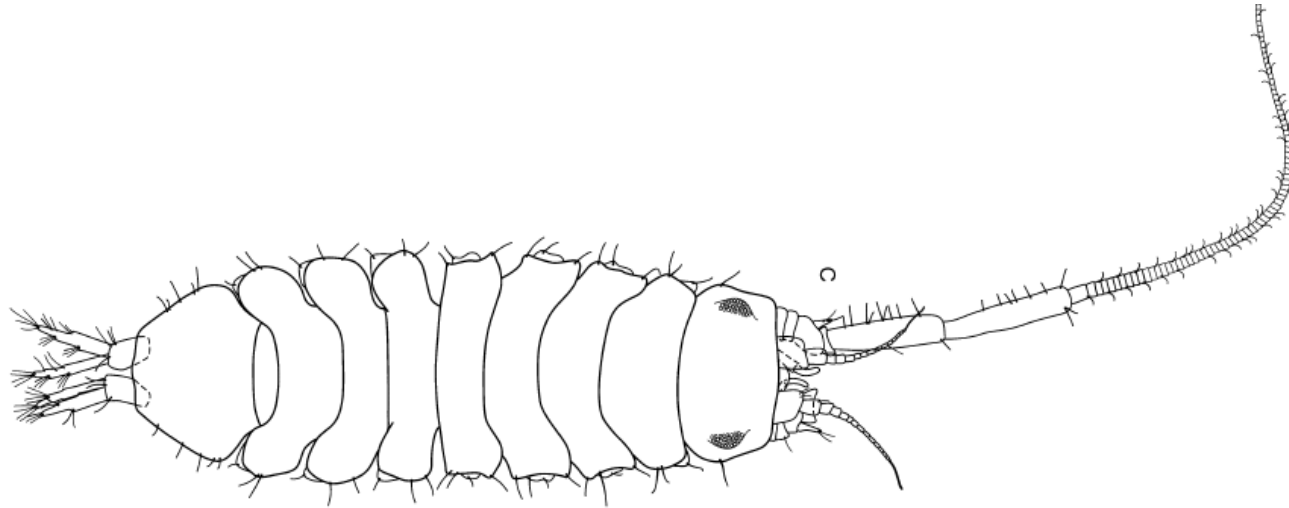


*Ianiropsis serricaudis*



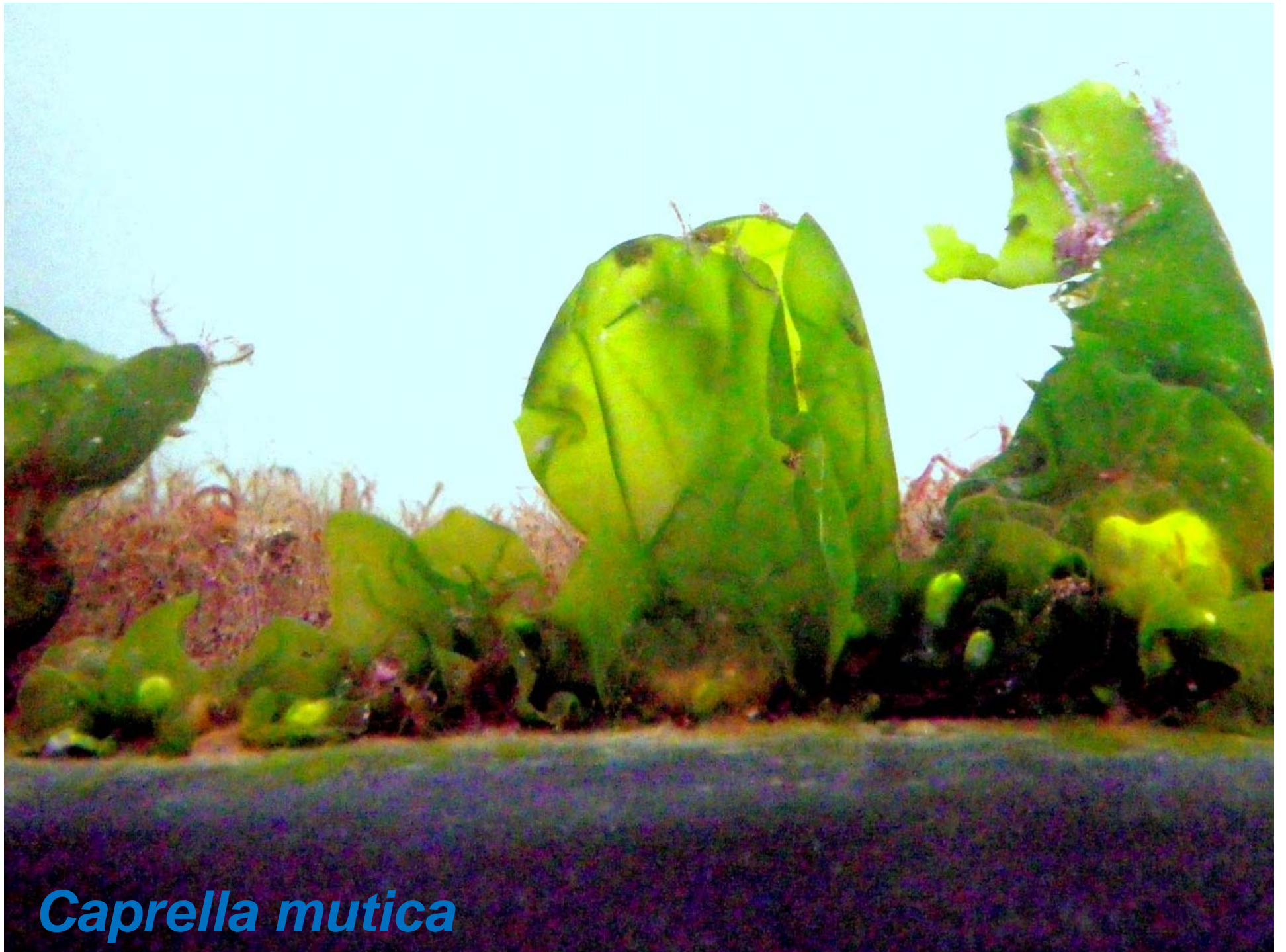


*laniropsis serricaudis*



	SPM	WSM	SAL*	MCD*	RWB	BPM	SM	SI	CFP	MMA	TPM*	GII	TM	SPM	PJM	PPD*
<u><i>Ianiropsis serricaudis</i></u>	F	.	.	.	C	F	.	C	.	F	.	.	C	C	C	.
<i>Idotea balthica</i>	F	S	S	.	F	S	.	.	S	S	.	A	F	F	F	.
<i>Idotea phosphorea</i>	C	F	.	.	.	.	.	.	.	S	.	.	.	.	.	.
<i>Jaera marina</i>	.	S	.	.	.	.	.	F	.	.	.	.	.	.	.	.

## *Ianiropsis serricaudis*



*Caprella mutica*



	SPM	WSM	SAL*	MCD*	RWB	BPM	SM	SI	CFP	MMA	TPM*	GII	TM	SPM	PJM	PPD*
<i>Caprella equilibra</i>	.	.	.	.	.	.	.	.	.	.	.	.	F	.	.	.
<i>Caprella mutica</i>	F	F	.	.	A	C	F	.	.	.	.	.	C	C	C	.
<i>Caprella penantis</i>	.	.	.	.	.	.	.	.	.	F	.	F	.	.	.	.

## *Caprella mutica*

Native  
*Palaemonetes* sp.



*Palaemon macrodactylus*



*Palaemon elegans*



## *Palaemon elegans*

- Widespread European distribution, well-documented, very recent arrival in New England
- Tolerant of different salinities and temperatures, prefers marine
- Grows much larger than native Palaemonid shrimp

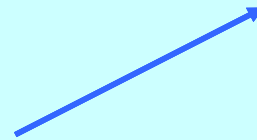
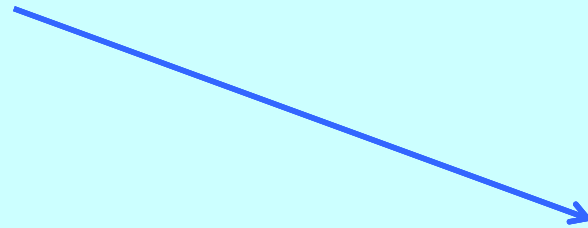


## *Palaemon macrodactylus*:

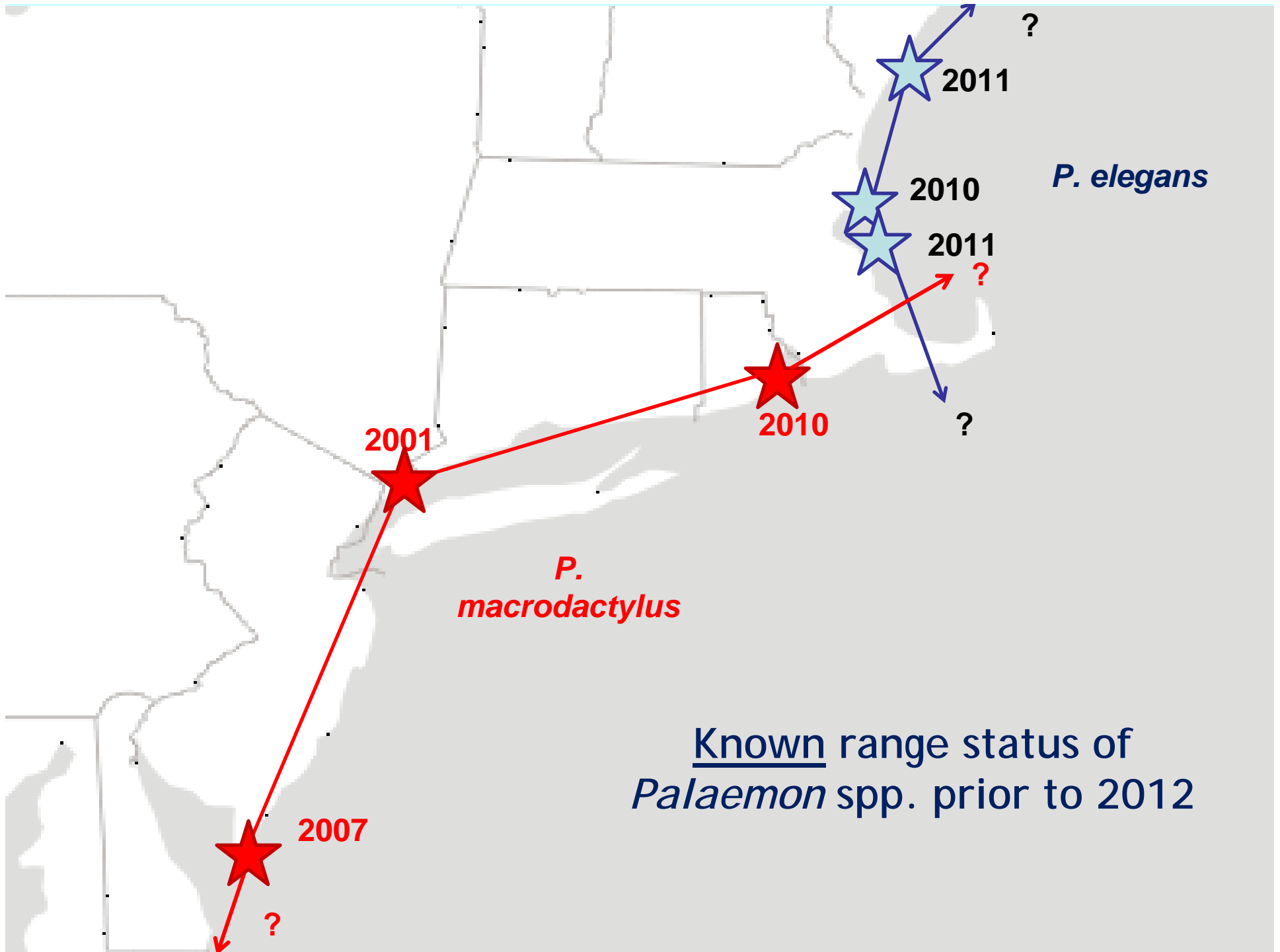
- invasive species with worldwide distribution, native to northwestern Pacific, only recent arrival in NW Atlantic
- euryhaline and eurythermal species (Newman, 1963)
- tolerant of polluted environments (Siegfried, 1980)

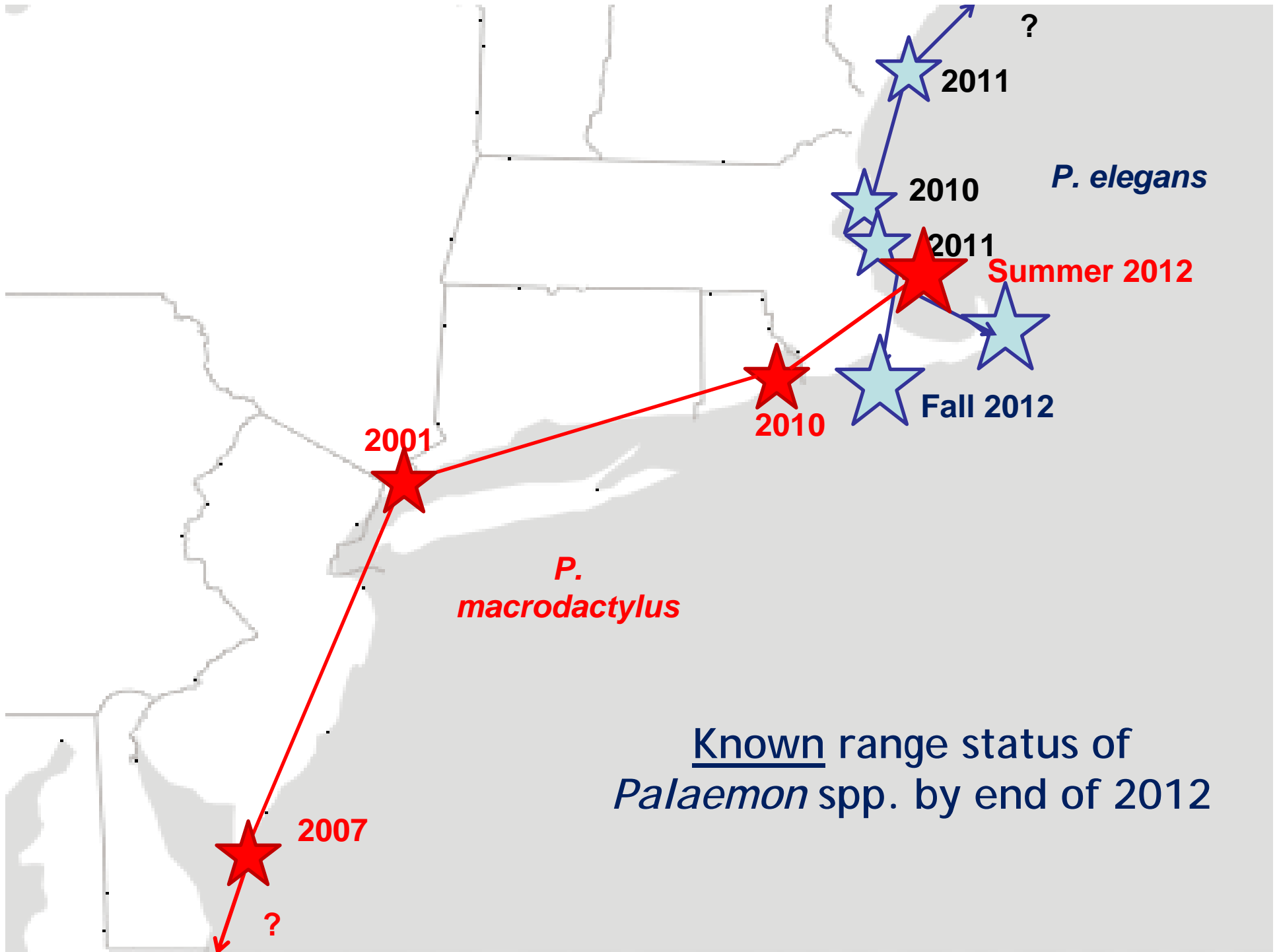


# Distinguishing *P. elegans* and *P. macrodactylus* in the field











Bourne, Massachusetts - October, 2012



*Palaemon elegans!*

(in a stew of *Palaemonetes pugio*)

Bourne, Massachusetts - October, 2012

*Palaemon elegans* vs. *Palaemonetes pugio* - a size comparison



Native

*Palaemonetes* sp.



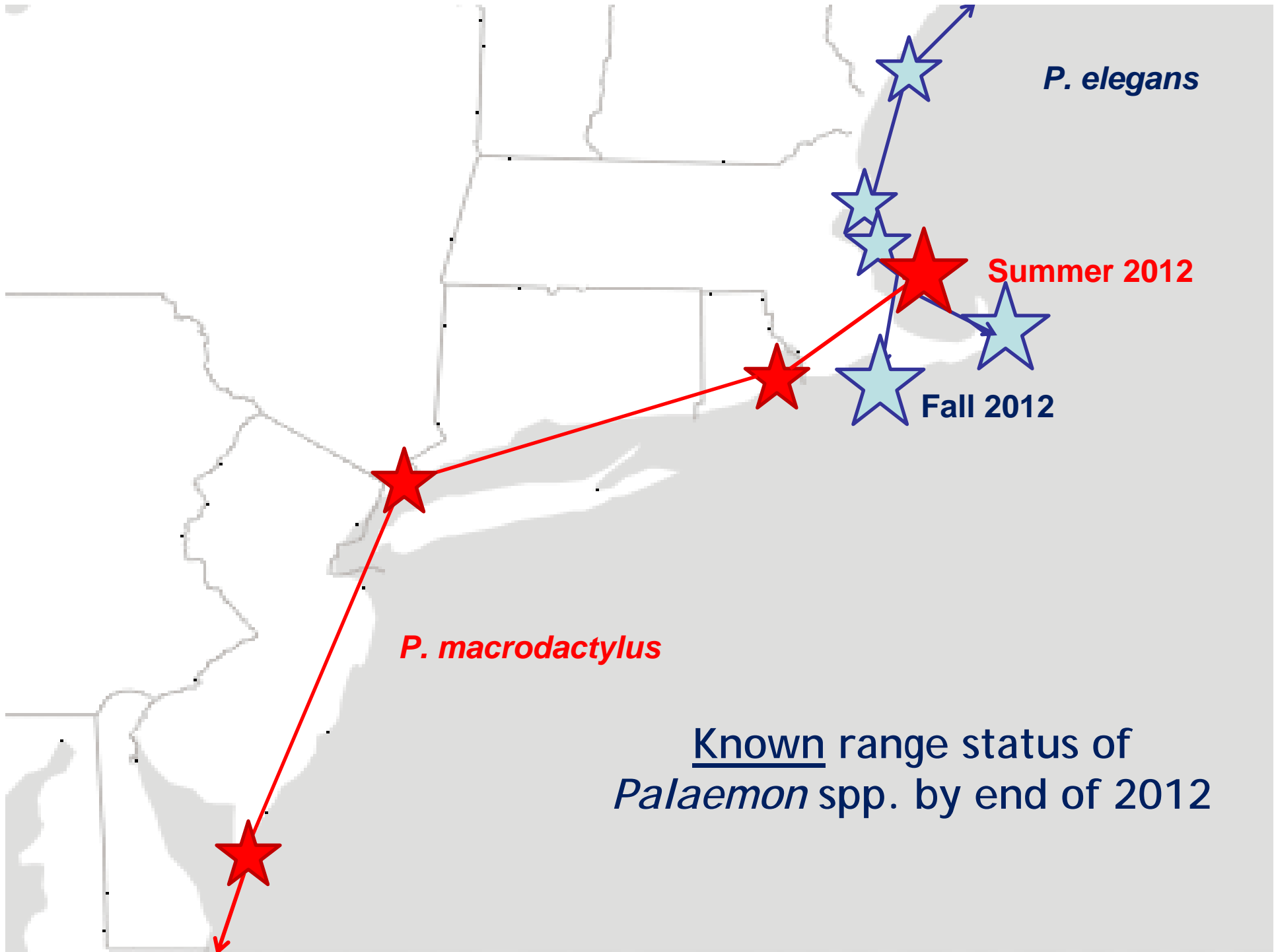
*Palaemon macrodactylus*

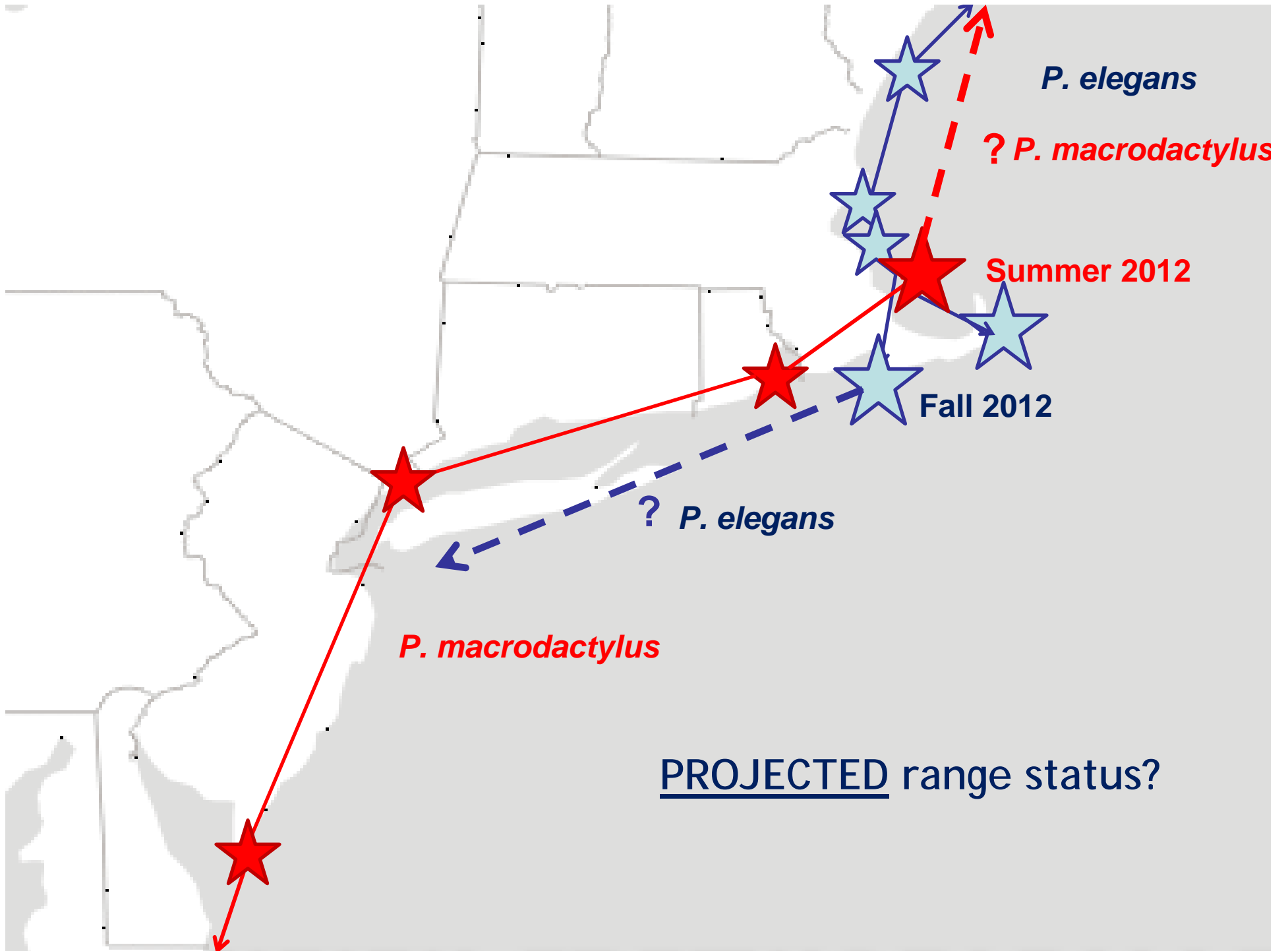


*Palaemon elegans*



	SPM	WSM	SAL*	MCD*	RWB	BPM	SM	SI	CFP	MMA	TPM*	GII	TM	SPM	PJM	PPD*
<u><i>Palaemon elegans</i></u>	.	F	F	.	F	C	.	C	C	.	S	.	.	.	.	.
<u><i>P. macrodactylus</i></u>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	F
<i>Palaemonetes vulgaris</i>	.	.	.	.	.	.	C	.	.	C	.	.	A	A	C	.
<i>Palaemonetes pugio</i>	.	.	S	.	.	C	.	.	.	C	A	.	.	.	.	.







**Thank you, NEANS!**

**...Now, back to work!**



*Eriocheir sinensis* - The Chinese mitten crab