

2011

Crayfish Distribution Project



Connecticut Department of Energy &
Environmental Protection
Bureau of Water Protection and Land Reuse

Work Summary Document

Crayfish Distribution Project

-2011-

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Purpose: The purpose of this document is to provide a summary of the seven (7) crayfish species noted while conducting ambient fish community data collection in wadeable streams and rivers during the 2011 index period (June-September).

Synopsis: Concurrent with ambient fish community data collection crayfish, when present, are identified by Connecticut Department of Energy and Environmental Protection (DEEP) Bureau of Water Protection and Land Reuse (WPLR) staff (using internal key modified from existing key(s) by Inland Fisheries Division (IFD)).

One hundred thirteen (113) locations sampled between June and September 2001 had at least one crayfish species present (Figure 1). Twenty-eight (28) site locations had more than 1 species present; 20 sites had 2 species and 8 had 3 (Table 1). The majority of the locations sampled during 2011 were selected as targeted sites and were concentrated in the Housatonic major basin. There were a few others site locations outside of the Housatonic major basin to support other WPLR projects. WPLR staff began collecting crayfish occurrence data in 2006 to help support IFD and DEEP Wildlife Division document crayfish species distribution across Connecticut. To date WPLR has provided crayfish species records from 383 locations (Figure 1).

The seven species collected during the 2011 fish community index period were; *Cambarus robustus*, *Orconectes limosus*, *Orconectes neglectus*, *Orconectes virilis*, *Orconectes rusticus*, *Procambarus acutus*, and *Procambarus clarkii* (Table 2 and Figure 2). *Cambarus bartonii* were not observed by WPLR staff while Electrofishing (Figures 3 thru 7). Two species were collected for the first time by WPLR staff; *Orconectes neglectus* and *Procambarus clarkii*.

Populations of *Orconectes neglectus* were documented at 2 locations, Gerrow Brook and Quaker Brook, both in New Fairfield. These locations are within the same drainage (Hudson). A single specimen of *Procambarus clarkii* was collected at 2 locations in separate drainages, one specimen was in the Fivemile River Basin, New Canaan and the other in the Naugatuck River, Waterbury.

***Cambarus bartonii*:** This species has not been collected by WPLR fish survey crews to date. However, it has been collected by WPLR macroinvertebrate survey crews at 11 sites statewide (Indian Meadow Brook-Winchester, Stickney Hill Brook-Union, Pomperaug River and Wood Creek- Woodbury, Steele Brook-Watertown, Pequabuck River-Bristol, Stony Brook-Kent, Eagleville Brook-Mansfield, and Umpawaug Pond Brook-Redding). In



addition anecdotal information suggests populations exist in many small streams in northwestern, CT. The lack of documentation in WPLR fish samples could be related to:

- *C. bartonii* are not as susceptible to capture by electrofishing as macroinvertebrate sampling methods.
- Streams with *C. bartonii* have not been electrofished by WPLR staff or were sampled prior to 2006 and therefore crayfish species were not being co-collected.
- *C. bartonii* are mis-identified as *C. robustus* (large bartonii are roughly equal to medium sized robustus and as such may “blend in” when robustus are abundant).
- *C. bartonii* are not a very abundant at any particular site and may be easily missed or not netted while co-collecting fish.
- *C. bartonii* are not very common in CT streams.
- WPLR fish community sites are not preferred habitat for *C. bartonii*

Future work: It is the intent to continue to collect crayfish species occurrence data concurrent with ambient fish community work into the future. Additional effort will emphasize collection of small to mid-sized crayfish and continued close examination of netted specimens to differentiate *C. robustus* from *C. bartonii*.

Exploratory data analysis will occur with by combining crayfish records collected as part of WPLR fish community and WPLR benthic macroinvertebrate collections to see if species distributions are influenced by human and natural variables such as watershed size, impervious cover, stream temperature, etc.

Additional crayfish distribution records may be obtained by contacting the Inland Fisheries Division at 860-295-9523.

Acknowledgements: Thank you to Robert Jacobs, Supervising Fisheries Biologist, DEEP Inland Fisheries who granted permission for use of all photographs contained within this document. Thanks to Michael Humphreys and Neal Hagstrom, Fisheries Biologists, DEEP Inland Fisheries for technical assistance. Finally, thanks to those WPLR and Inland Fisheries staff who participated in the field sampling without which the data contained within would not be possible.

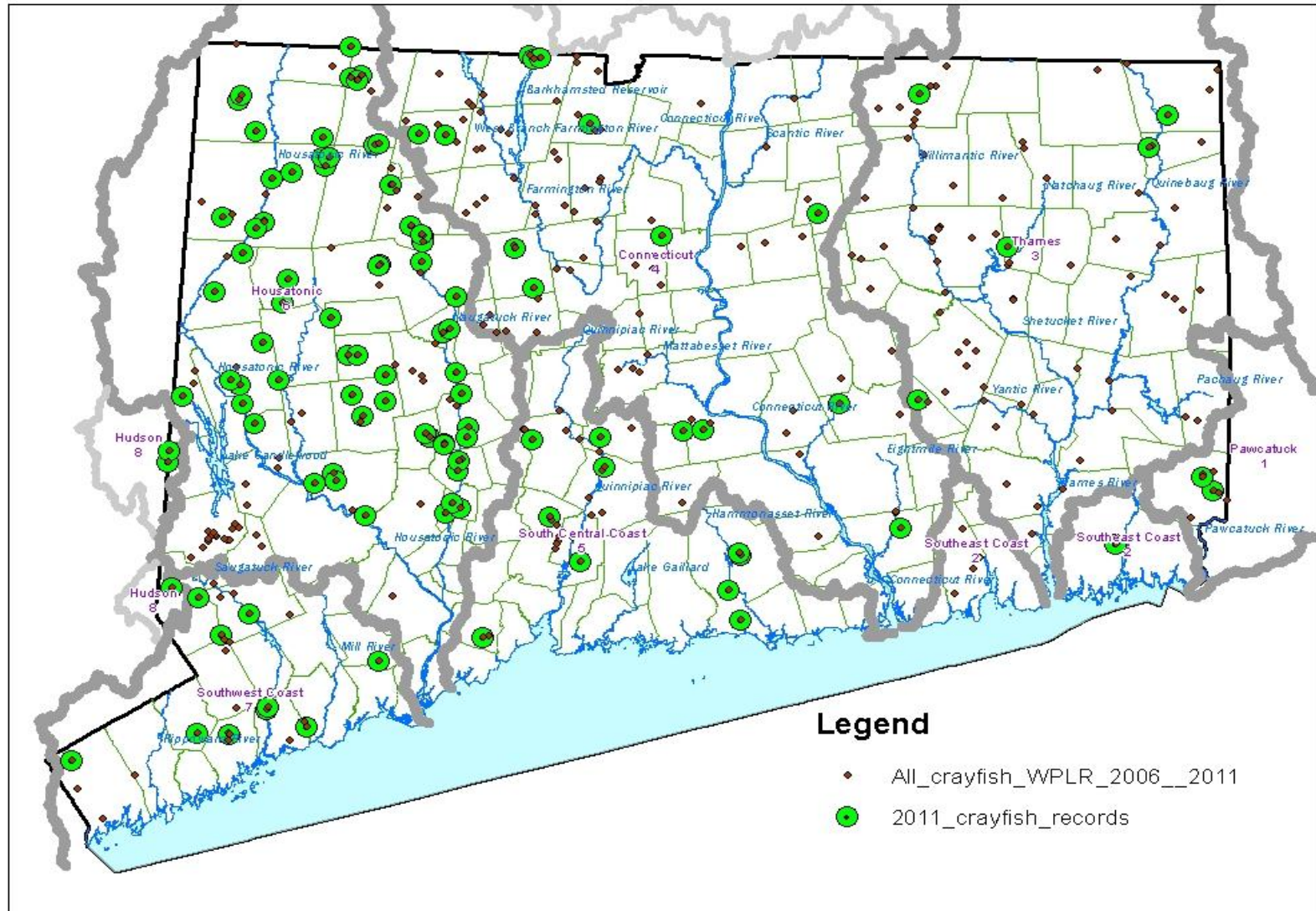


Figure 1. The 113 locations where at least 1 crayfish species was collected in 2011 (large green circles). Since 2006 WPLR has collected crayfish species at 383 sites (small red circles) while simultaneously collecting ambient fish community data.

Table 1. Location where crayfish species were collected as part of ambient fish community samples for WPLR 2011. Records are sorted by basin id and then stream name. There were 28 locations with 2 or more species co-occurring.

Basin ID	Stream	proximity	landmark	Municipality	YLat	XLong	StationID	Cambarus robustus	Orconectes limosus	Orconectes neglectus	Orconectes rusticus	Orconectes virilis	Procambarus acutus	Procambarus clarkii	Grand Total
1001	PENDLETON HILL BROOK	Upstream Grindstone Hill Road	PENDLETON HILL BROOK NEAR CLARKS FALLS	North Stonington	41.47482	-71.8342	1748		X				X		2
1001	Wyassup Brook	at mouth	upstream of Clarks Falls Road	North Stonington	41.45664	-71.8172	605		X						1
1002	Green Fall River	upstream	confluence with Wyassup Bk US Clarks Fall Rd.	North Stonington	41.45677	-71.8169	606		X						1
2105	Haleys Brook	DS	Packer Road in gorge area	Groton	41.38712	-71.9768	6185		X				X		2
3103	Furnace Brook	upstream	Orcuttville Road	Stafford	41.98408	-72.2947	89	X							1
3204	Stonehouse Brook	off old trail	downstream Palmer Road	Chaplin	41.7812	-72.1509	2331	X							1
3300	French River	adjacent	Route 12	Thompson	41.95477	-71.884	81						X		1
3708	Little River	behind #145 Pomfret Street (Medical offices)	US of Route 44 crossing	Putnam	41.91204	-71.9163	1062		X			X			2
3903	Sherman Brook	at	Harbor Road	Colchester	41.5792	-72.3	6147	X				X	X		3
4013	Long Hill Brook		at Dunkin Donuts near the inlet to long hill pond at South Main Street	Middletown	41.54084	-72.653	2648		X						1
4302	Indian Meadow Brook	between	Route 44 crossing and end of Loomis Street	Winchester	41.93048	-73.079	742	X							1
4302	Rugg Brook	US first road crossing from reservoir	at #224 Old Waterbury Turnpike	Winchester	41.93276	-73.1214	2299	X							1
4306	Valley Brook	downstream	Route 20 on MDC property	Hartland	42.03152	-72.9318	1452	X							1
4307	Hubbard Brook	upstream	Route 20 on MDC property	Hartland	42.03562	-72.9384	1156	X							1
4308	Hurricane Brook	adjacent to	Hurricane Brook road	Hartland	42.033	-72.9208	2728	X							1
4311	Bunnell Brook	upstream diversion for	at recreation area at vineyard rd and clear brook rd	Burlington	41.78067	-72.963	2711		X						1

		swimming area															
4314	Wildcat Brook	upstream of Prospect Street		Burlington	41.72791	-72.9326	6264		X								1
4319	West Branch Salmon Brook	upstream foot bridge	At Holcomb Farm USGS monitoring well at the site	Granby	41.94639	-72.8392	1433	X				X					2
4404	North Branch Park River	at	Sunny Reach Drive	Bloomfield	41.797	-72.72	2741					X					1
4503	Tankerhoosen River	upstream	Tunnel Road	Vernon	41.8272	-72.464	345					X					1
4607	Coginchaug River		DS rte 157 at #740 Wadsworth Street	Middletown	41.5394	-72.6858	2664		X								1
4700	Salmon River	downstream 0.7 miles	RR bridge	Colchester	41.5742	-72.4294	316		X								1
4803	Beaver Brook	Downstream	bridge at 55-123 Beaver Brook Road	Lyme	41.41005	-72.3289	1236		X								1
5000	Chatfield Hollow Brook, tributary to		5 M US Papermill Rd	Madison	41.28917	-72.5928	5473		X								1
5105	Chatfield Hollow Brook	at	covered bridge in state park	Killingworth	41.37422	-72.593	1998		X								1
5105	Pond Meadow Brook	upstream confluence with Chatfield Hollow Brook	at hiking trail crossing	Killingworth	41.37768	-72.5946	1853		X								1
5106	Hammonasset River	upstream	Summer Hill Road	Madison	41.32782	-72.6116	96		X								1
5200	Meetinghouse Brook		100 meters US confluence w/Quinipiac River	Wallingford	41.49126	-72.816	1035		X			X					2
5202	Ten Mile River	upstream	Route 70	Cheshire	41.52667	-72.9331	348					X					1
5206	Harbor Brook	upstream	Coe Road	Meriden	41.53135	-72.8218	101		X			X					2
5208	Muddy River	at end of	Old Maple Street (DS of RR bridge)	North Haven	41.36679	-72.8543	997		X								1
5302	Mill River	at first pull-off DS	Tuttle Road	Hamden	41.4259	-72.9056	923		X								1
5306	Indian River	US	Old Tavern Road	Orange	41.2651	-73.0129	2340		X								1
6000	Great Brook	upstream	Mill Street	New Milford	41.57325	-73.4094	6282	X									1
6000	Gunn Brook	upstream	Mouth	Cornwall	41.80596	-73.3903	1444					X					1
6000	PURCHASE BROOK		Parallel to Little York Rd 100 M US parking lot	Southbury	41.46861	-73.2911	5545	X									1
6000	Town Farm Brook (Clatter Valley)	Downstream	Clatter Valley Road	New Milford	41.54772	-73.3889	1951					X					1
6005	Factory Brook	upstream	Salmonkill Road	Salisbury	41.97509	-73.4212	395					X					1
6007	Moore Brook	at well field	end of Indian cave road	Salisbury	41.98141	-73.4165	6275					X					1

6703	West Branch Bantam River		behind school	Litchfield	41.75797	-73.1861	1170	X			X	X							3
6705	Bantam River	Downstream	Smokey Hollow Road	Morris	41.68836	-73.2668	3				X								1
6705	Bantam River	upstream	Confluence with West Branch Bantam River	Litchfield	41.75885	-73.1841	915	X			X	X							3
6800	Pomperaug River	upstream	Transylvania Brook	Southbury	41.47171	-73.256	279		X										1
6801	East Spring Brook	at	Nonewaug Road and Porter Hill road	Bethlehem	41.61214	-73.1761	5932	X											1
6802	Nonewaug River	at	USGS gage adjacent to route 6	Woodbury	41.57831	-73.1745	2676	X											1
6802	Nonewaug River	Downstream	Route 47 (Washington Road)	Woodbury	41.55753	-73.2122	230		X		X								2
6804	Weekeepeemee Brook		Wood Creek Road	Bethlehem	41.63883	-73.2224	919	X											1
6804	Weekeepeemee Brook	upstream	Route 132	Woodbury	41.58564	-73.2292	1975	X	X										2
6804	Wood Creek	upstream	Paddy Hollow Road	Bethlehem	41.63868	-73.2362	933	X											1
6806	Transylvania Brook	25 meters downstream	Whale Road	Southbury	41.48264	-73.2595	597	X											1
6900	Hemp Swamp Brook	Downstream	Emissions testing Road	Beacon Falls	41.42937	-73.0766	102	X											1
6900	Hockanum Brook		Bethany Road	Beacon Falls	41.43729	-73.051	104	X											1
6900	Naugatuck River	at	Palmer Bridge Street	Torrington	41.78911	-73.1145	216					X							1
6900	Naugatuck River	behind	Fire Station	Beacon Falls	41.44348	-73.0642	192				X								1
6900	Naugatuck River	upstream	Frost Bridge Echo Lake Rd and Route 262	Watertown	41.61593	-73.0579	191				X								1
6900	Naugatuck River		Route 222 (6) Crossing	Thomaston	41.67429	-73.0695	725				X	X							2
6900	Naugatuck River		South Leonard Street	Waterbury	41.53043	-73.0402	204				X						X		2
6900	Naugatuck River	Downstream	Route 118	Harwinton	41.76306	-73.1173	223	X	X			X							3
6901	Hall Meadow Brook	adjacent to Rte 272	across from South Norfolk lumber company	Norfolk	41.9173	-73.1949	2394	X											1
6901	HALL MEADOW BROOK, tributary to		100 M US Parker Hill Rd	Norfolk	41.91889	-73.1881	5710	X											1
6902	Hart Brook	mouth to rte 272		Goshen	41.86438	-7.3E+07	6263	X											1
6902	Jakes Brook	at	Route 272	Torrington	41.86461	-73.1679	2312	X											1
6904	West Branch Naugatuck River	upstream 100 m	Wolcott Street	Torrington	41.80999	-73.1349	391					X							1
6904	West Branch Naugatuck River	upstream	confluence with East Branch	Torrington	41.798	-73.1177	1812	X	X			X							3
6905	East Branch Naugatuck River	Downstream	Franklin Drive	Torrington	41.79773	-73.1158	54	X				X							2

Table 2. Crayfish species observed by WPLR staff while collecting fish community data during the 2011 index period (June-September) and the percentage of sites each species was present. One hundred thirteen sites had at least 1 species of crayfish present.

Species	percentage of sites with crayfish present 2011 (N=113)
<i>Cambarus robustus</i>	46.9
<i>Orconectes limosus</i>	33.6
<i>Orconectes neglectus</i>	1.8
<i>Orconectes rusticus</i>	22.1
<i>Orconectes virilis</i>	20.4
<i>Procambarus acutus</i>	4.4
<i>Procambarus clarkii</i>	1.8

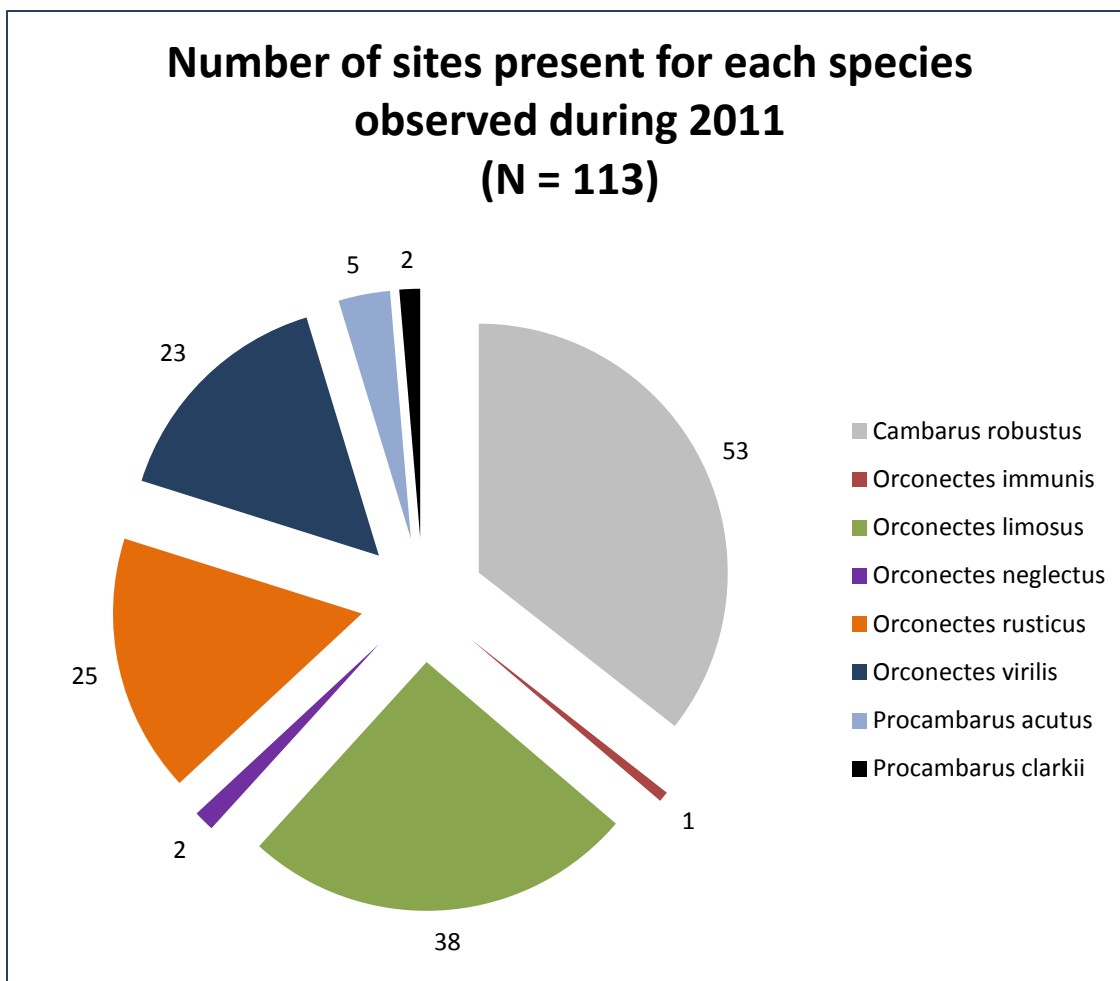
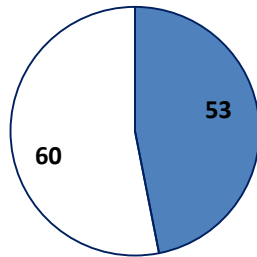


Figure 2: The percent of site locations each species was present during the 2011 sampling season. Note: sites with crayfish absent are not included in the N=113.

Species Distribution Maps 2011:

Cambarus robustus were found at 46.9 % of the sites with at least 1 species present. *C. robustus* appears to be more commonly found in streams with some elevation as it is not often found in either the Connecticut River valley or coastal basins.

2011 observations



■ Cambarus robustus was present

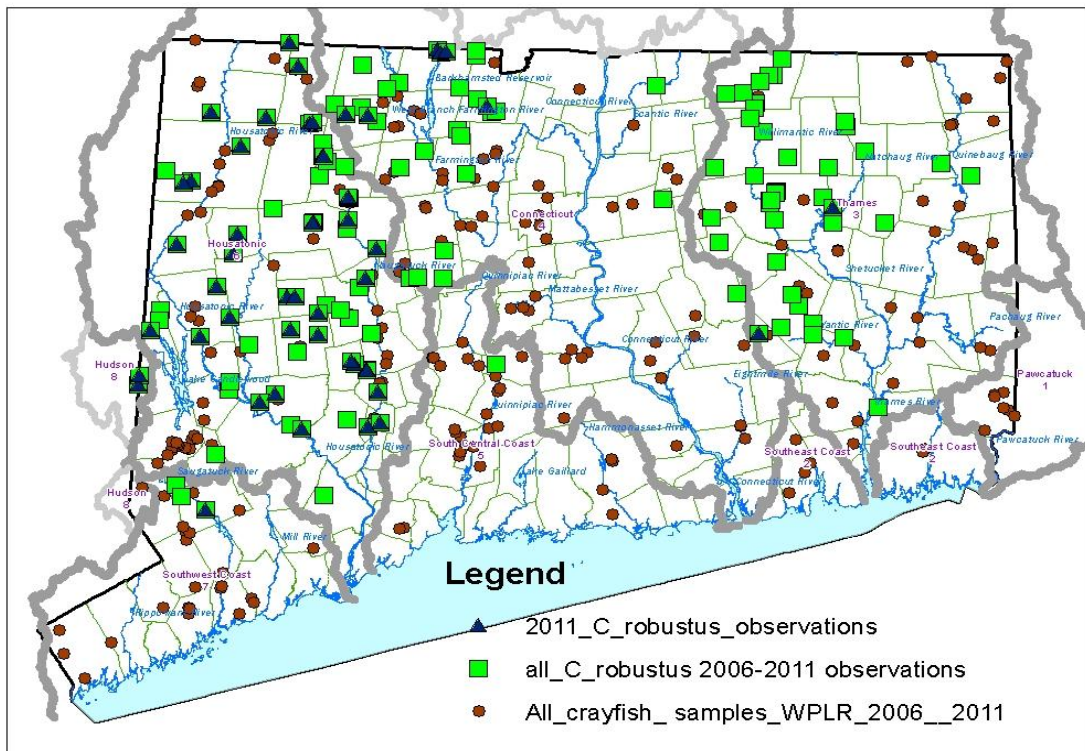
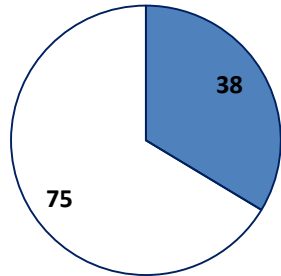


Figure 3. The distribution of *Cambarus robustus* in WPLR electro-fishing samples 2011 (as blue triangles) prior to 2011 (green square) and locations where *C. robustus* was not present in the sample (red dot).

Orconectes limosus were observed in 33.6 % of the locations with at least 1 species present. The distribution appears to be even throughout the entire state with the exception of upper the Housatonic major Basin.

2011 observations



■ Orconectes limosus was present

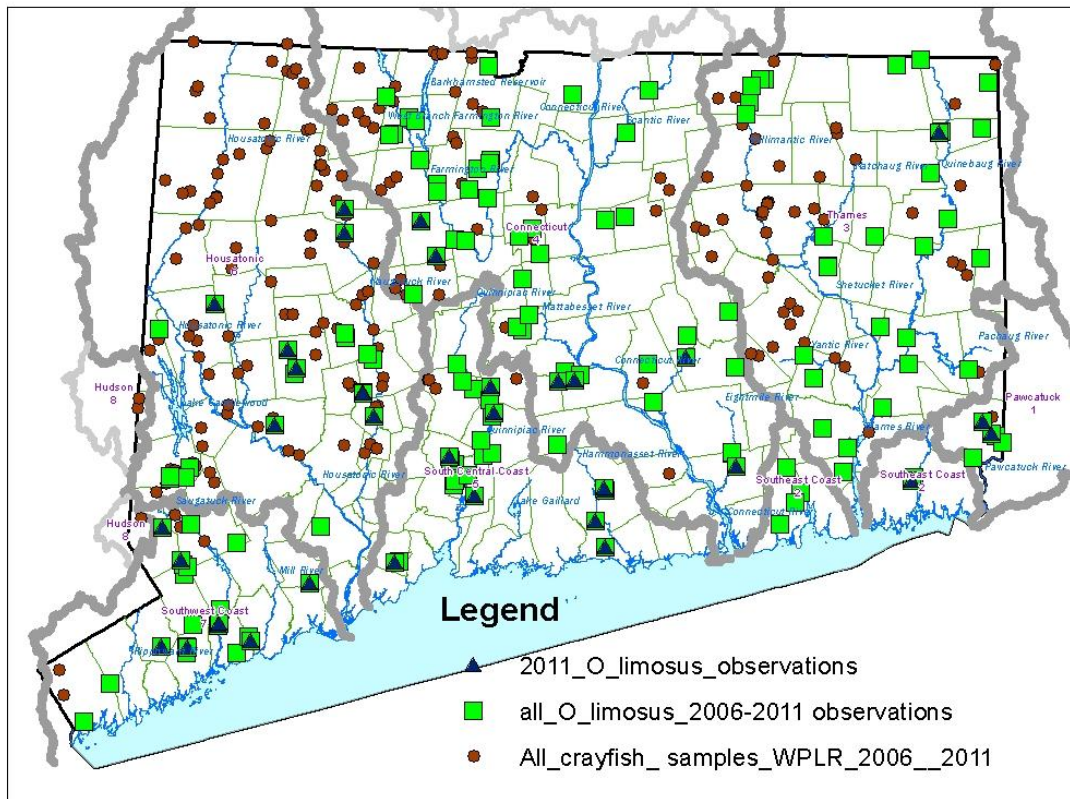


Figure 4. The distribution of *Orconectes limosus* in WPLR electro-fishing samples 2011 (as blue triangles) prior to 2011 (green square) and locations where *O. limosus* was not present in the sample (red dot).

Orconectes neglectus were observed in 1.8 % of the locations with at least 1 species present. The distribution of this species is restricted to the Hudson major basin (number 8) which comprises only a very small portion of Connecticut. Populations of *Orconectes neglectus* were documented in Gerrow Brook and Quaker Brook, New Fairfield.

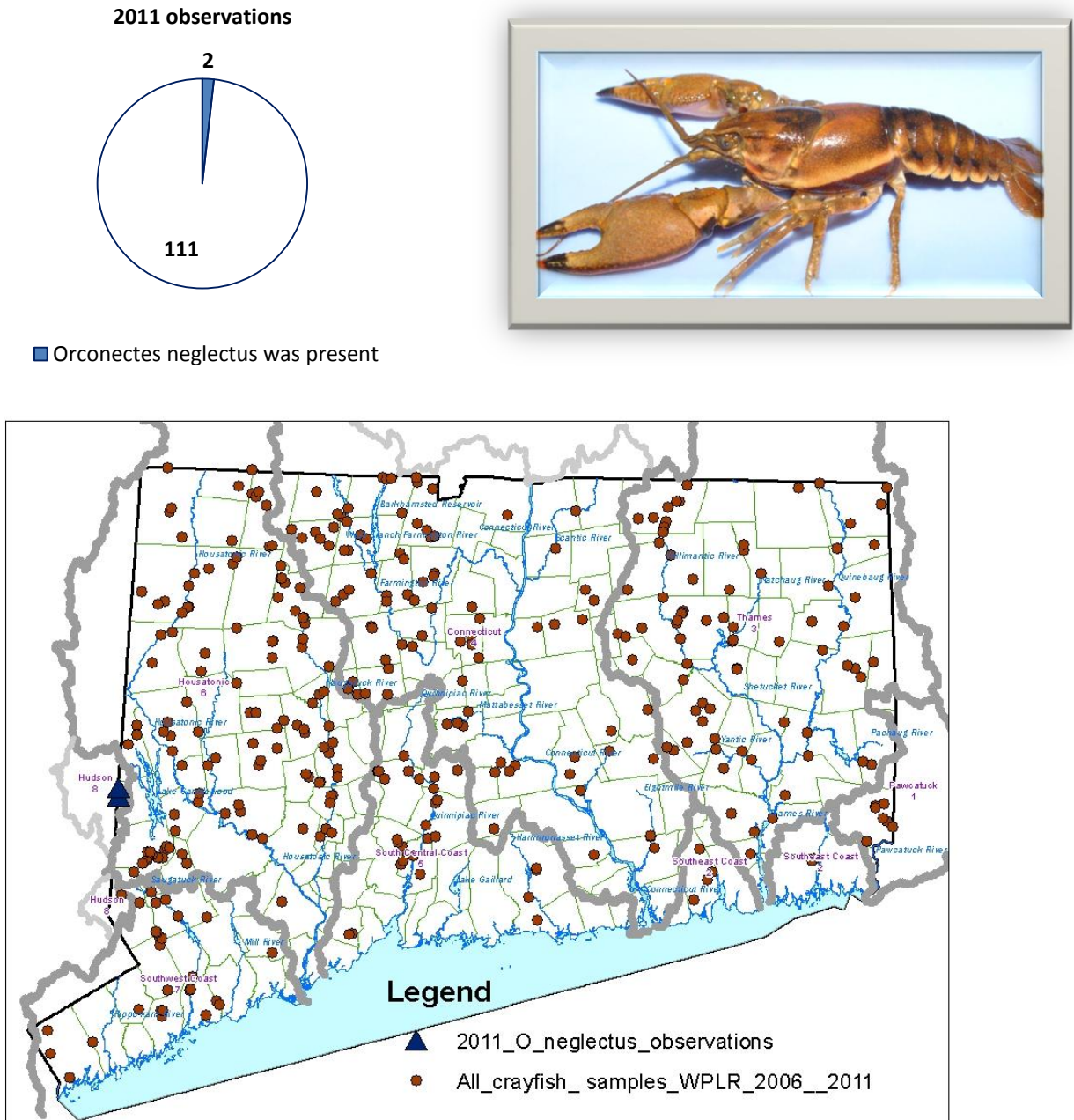
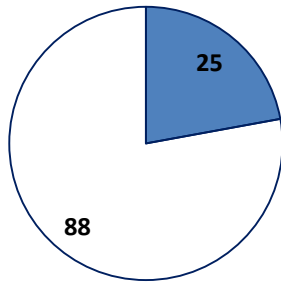


Figure 5. The distribution of *Orconectes neglectus* in WPLR electro-fishing samples 2011 (as blue triangles) prior to 2011 (green square) and locations where *O. neglectus* was not present in the sample (red dot). *O. neglectus* had not been observed in WPLR samples prior to these 2 locations during 2011.

Orconectes rusticus were found at 22.1% of sample sites. This species was found commonly during 2011 sampling as the majority of scheduled work sites were within the Housatonic basin where this species is widely distributed. No additional populations were observed by WPLR outside of the Housatonic major basin during 2011.

2011 observations



■ Orconectes rusticus was present

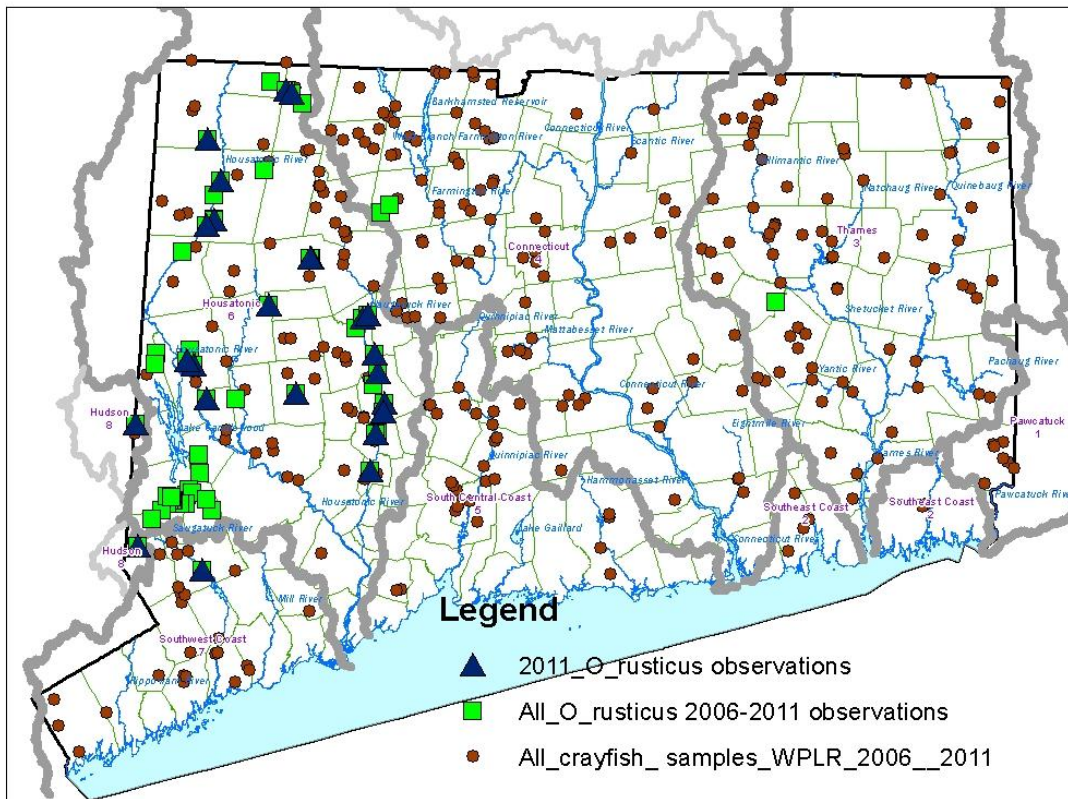
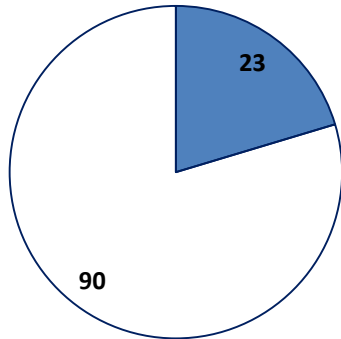


Figure 6. The distribution of *Orconectes rusticus* in WPLR electro-fishing samples 2011 (as blue triangles) prior to 2011 (green square) and locations where *O. rusticus* was not present in the sample (red dot).

Orconectes virilis were found at 20.4 % of the sites with at least 1 species present. 2011 records were consistent with previous distribution data and appears to be absent from streams along the coast of Long Island Sound.

2011 observations



■ Orconectes virilis was present

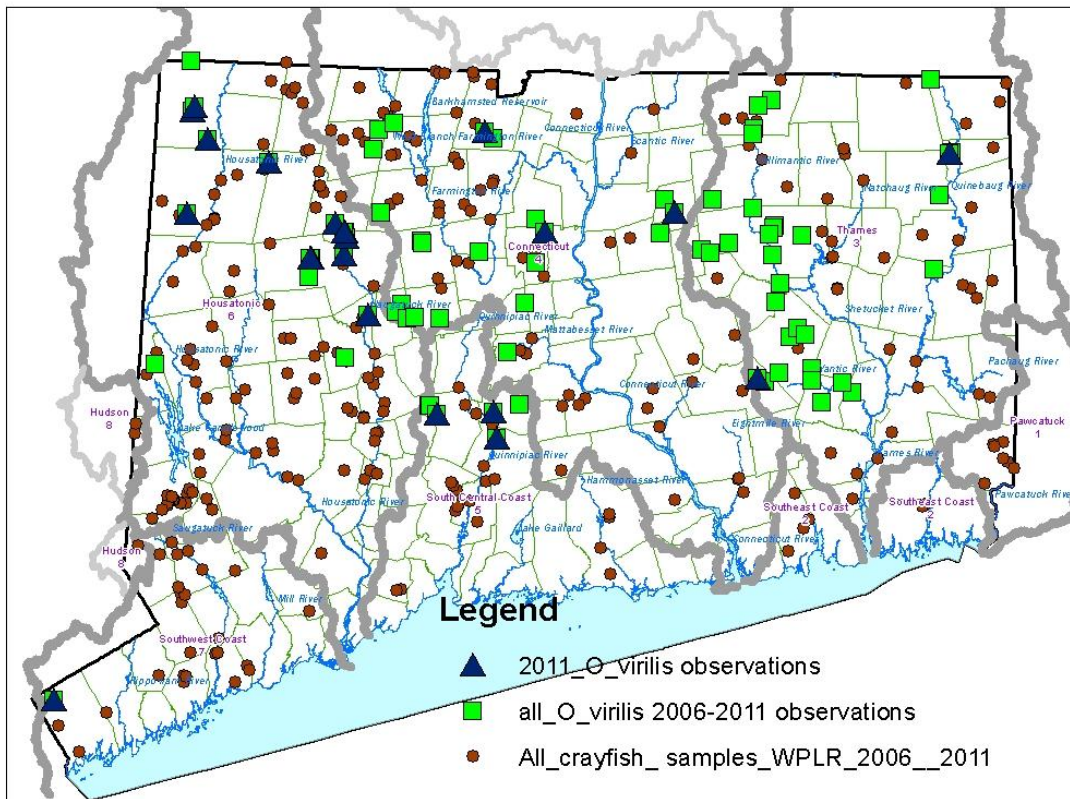
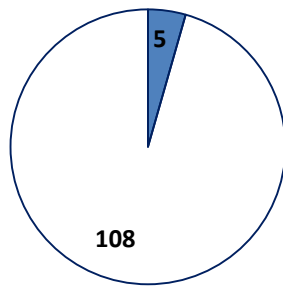


Figure 7. The distribution of *Orconectes virilis* in WPLR electro-fishing samples 2011 (as blue triangles) prior to 2011 (green square) and locations where *O. virilis* was not present in the sample (red dot).

Procambarus acutus were found at 4.4 % of the sites with at least 1 species present. As expected most observations were in streams located in southeastern Connecticut. However, a record of note was a specimen collected in far western Connecticut from Kent Falls Brook, Kent, Connecticut.

2011 observations



■ Procambarus acutus was present

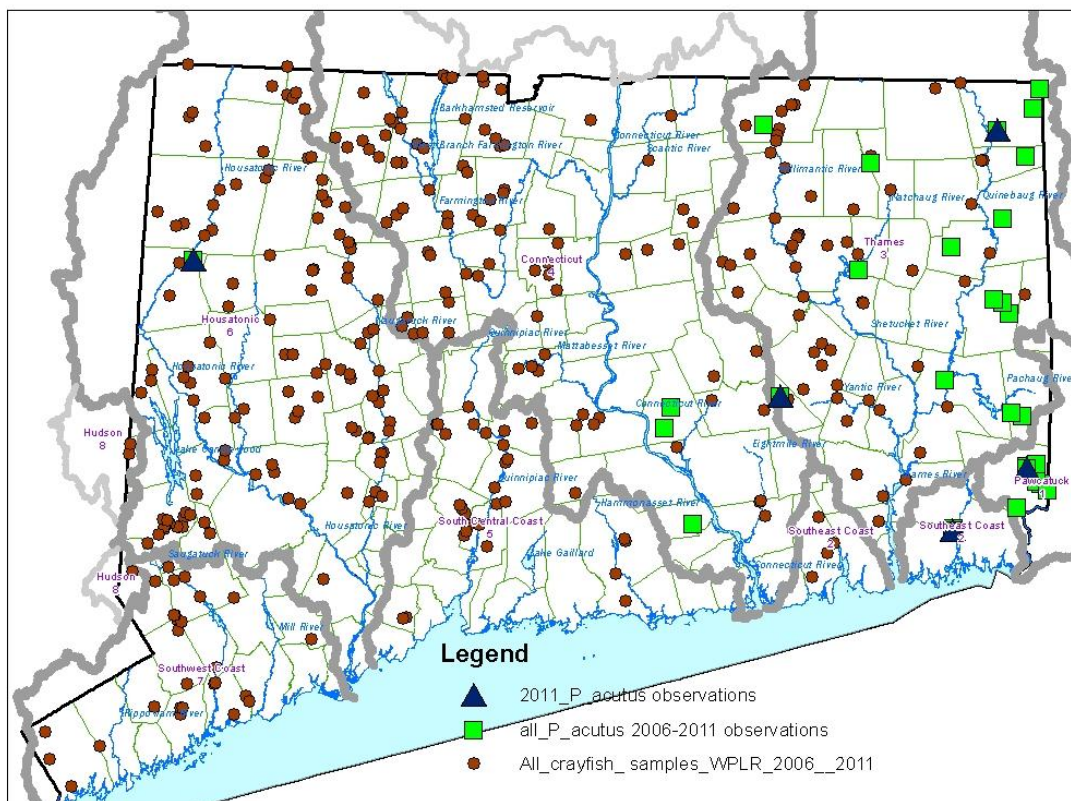


Figure 8. The distribution of *Procambarus acutus* in WPLR electro-fishing samples 2011 (as blue triangles) prior to 2011 (green square) and locations where *P. acutus* was not present in the sample (red dot).

Procambarus clarkii were found at 1.8 % of the sites with at least 1 species present. A single specimen of *Procambarus clarkii* was collected at 2 locations in separate drainages, one specimen was in the Fivemile River Basin, New Canaan and the other in the Naugatuck River, Waterbury.

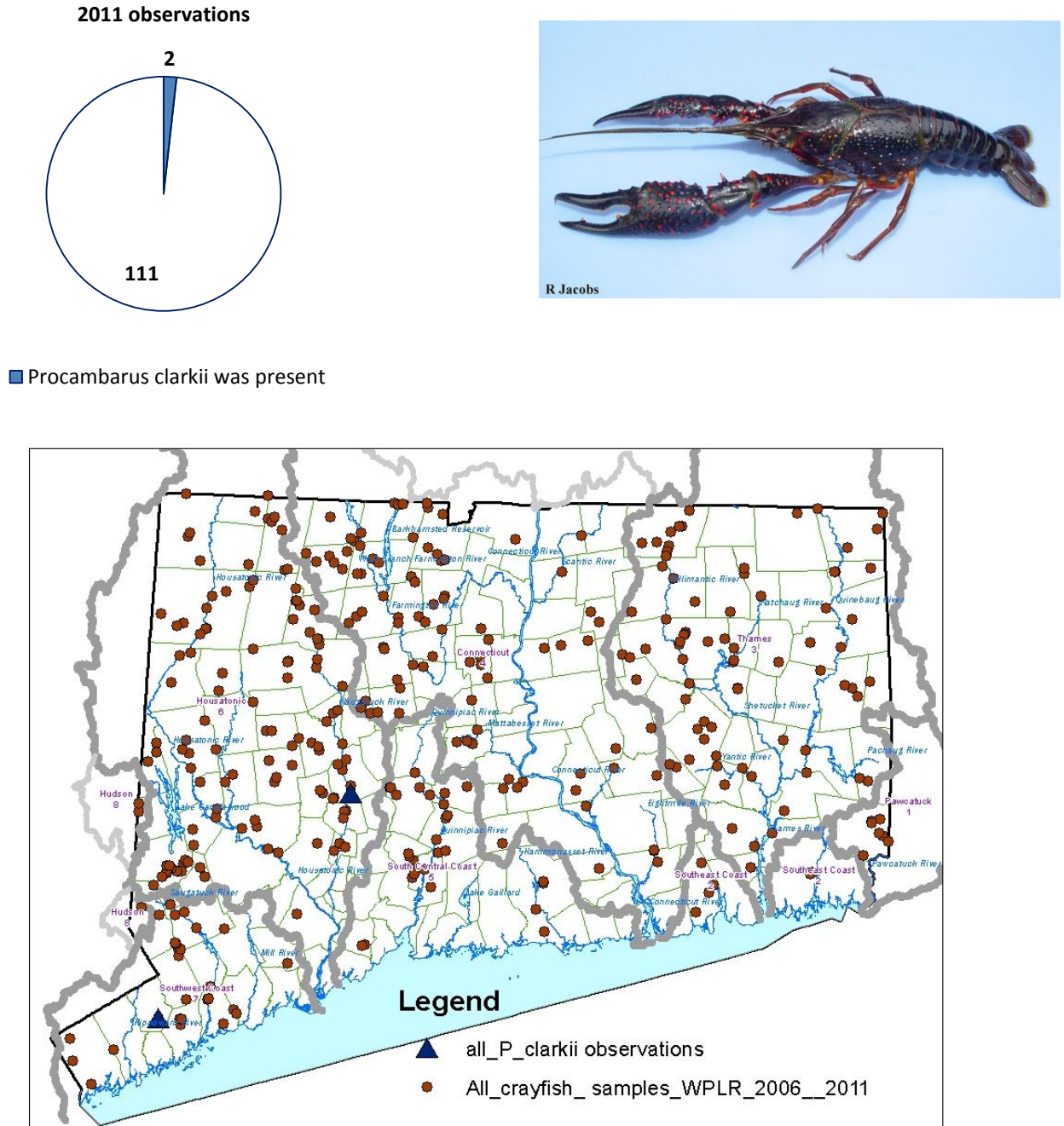


Figure 9. The distribution of *Procambarus clarkii* in WPLR electro-fishing samples 2011 (as blue triangles) prior to 2011 (green square) and locations where *P. clarkii* was not present in the sample (red dot). *P. clarkii* has not been observed in WPLR samples prior to these 2 locations during 2011.