

CT 2013 *Vibrio parahaemolyticus* Season and 2014 *Vibrio parahaemolyticus* Control Plans

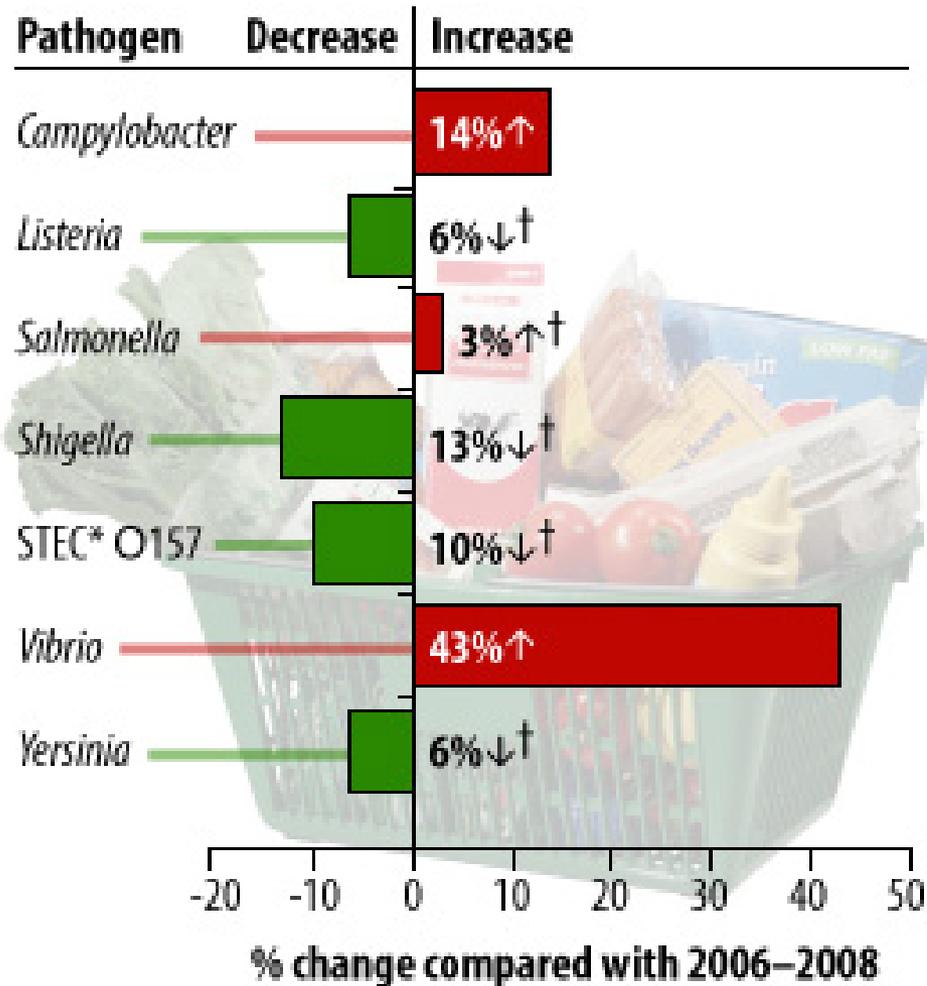
2014 Milford Aquaculture Seminar/North East Shellfish Sanitation
Association
Vibrio Session
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STATE OF CONNECTICUT
DEPARTMENT OF AGRICULTURE
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Changes in incidence of laboratory-confirmed bacterial infections, US, 2012



*Shiga toxin-producing *Escherichia coli*

†Not statistically significant

Vp Outbreak Strain 2013 (O4:K12)



One hundred and four *Vibrio parahaemolyticus* isolates with the same DNA “fingerprint” were reported to PulseNet from persons in 13 states who became ill from May 12, 2013 through August 19, 2013. Of the 104 *Vibrio parahaemolyticus* isolates, 76 have been serotyped and all 76 were found to be serotype O4:K12

<http://www.cdc.gov/vibrio/investigations/vibriop-09-13/map.html>

Vp Outbreak Strain 2013 (O4:K12)

- Serotype O4:K12
- More virulent than other pathogenic Vp strains
- **Infectious at lower doses** than native strains typically found on the East Coast
- First identified in 1988
- Identified outside of Pacific NW in 2012 (Oyster Bay, NY)
- During 2013, 76 of the 104 isolates collected by CDC were determined to be O4: K12

Vp Outbreak Strain 2013 (O4:K12)

How did it get here???

- Mechanism of introduction is unknown
- Importation of contaminated shellfish into local waters
- Ballast water movement
- Long-distance oceanic transportation

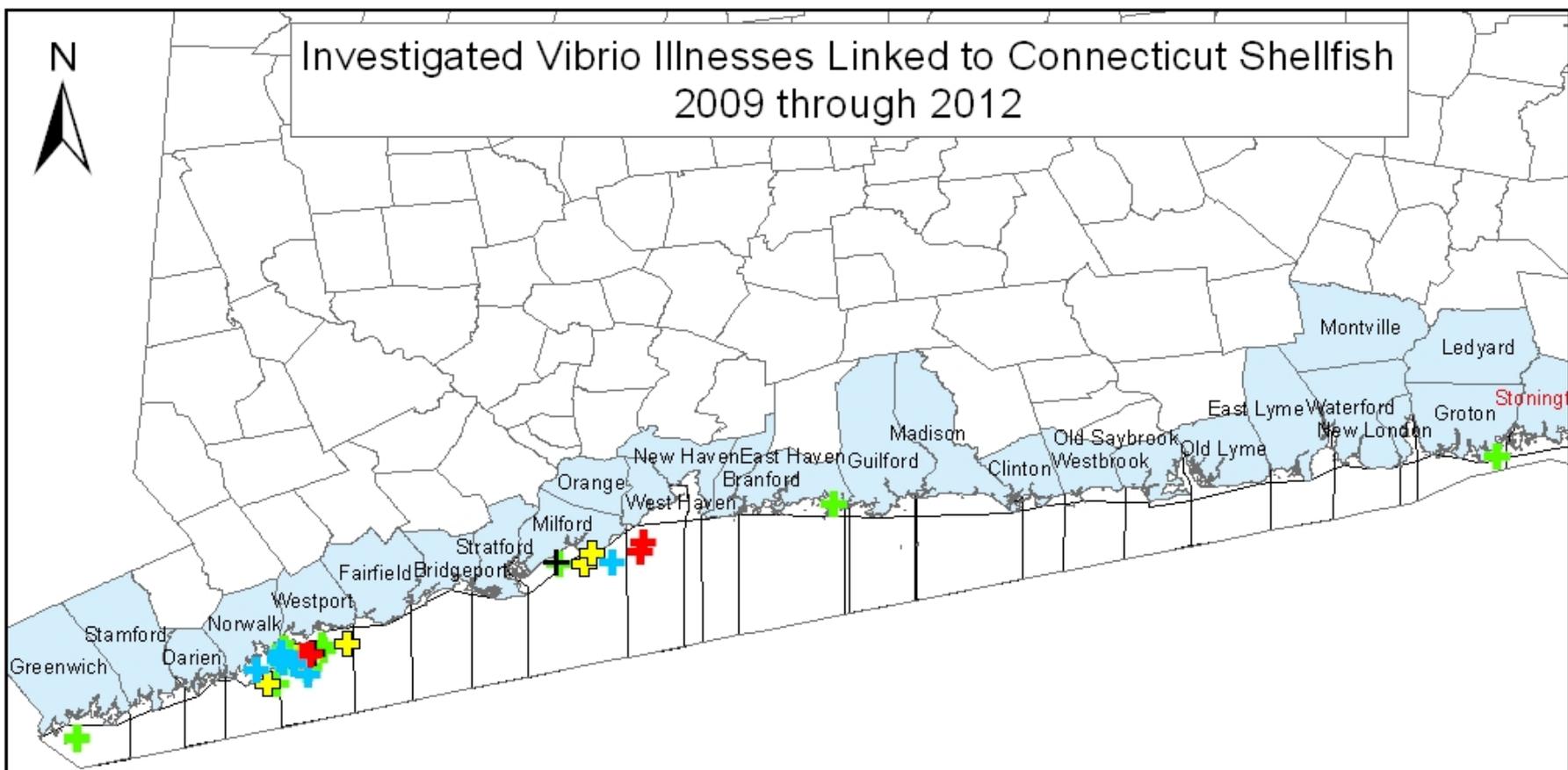
Vp Outbreak Strain 2013 (O4:K12)

What can we do?

- Strain is naturally occurring
- Now that it is present in CT waters, it is probably not going away
- Difficult to ID in environment
- Research collaboration into genotyping of strains (underway)
- Post-harvest controls for Vp (time-temperature controls)

Year	Number of Cases	Source States
2009	7 (1 confirmed CT)	1 MA 1 CT or RI 1 CT or NY 2 Unknown 1 Vv likely CT, 1 definitely CT
2010	5 (1 confirmed CT)	1 ME, MD or VA 1 CT, ME, or WA 1 NY, WA, ME, MA 1 likely CT, 1 Definitely CT
2011	6 (1 confirmed CT)	1 CT, PE, NY 1 Unknown 3 CT (1 Vp/Vf, 1 Vc, 1Vf) 1 CT or WA
2012	8 (1 confirmed CT)	1 RI 1 PE, MA, NY or CT 1 OB NY or CT 1MA 1 OB NY 1 CT or OB NY 1 NY, MA, NB 1CT

Investigated Vibrio Illnesses Linked to Connecticut Shellfish 2009 through 2012



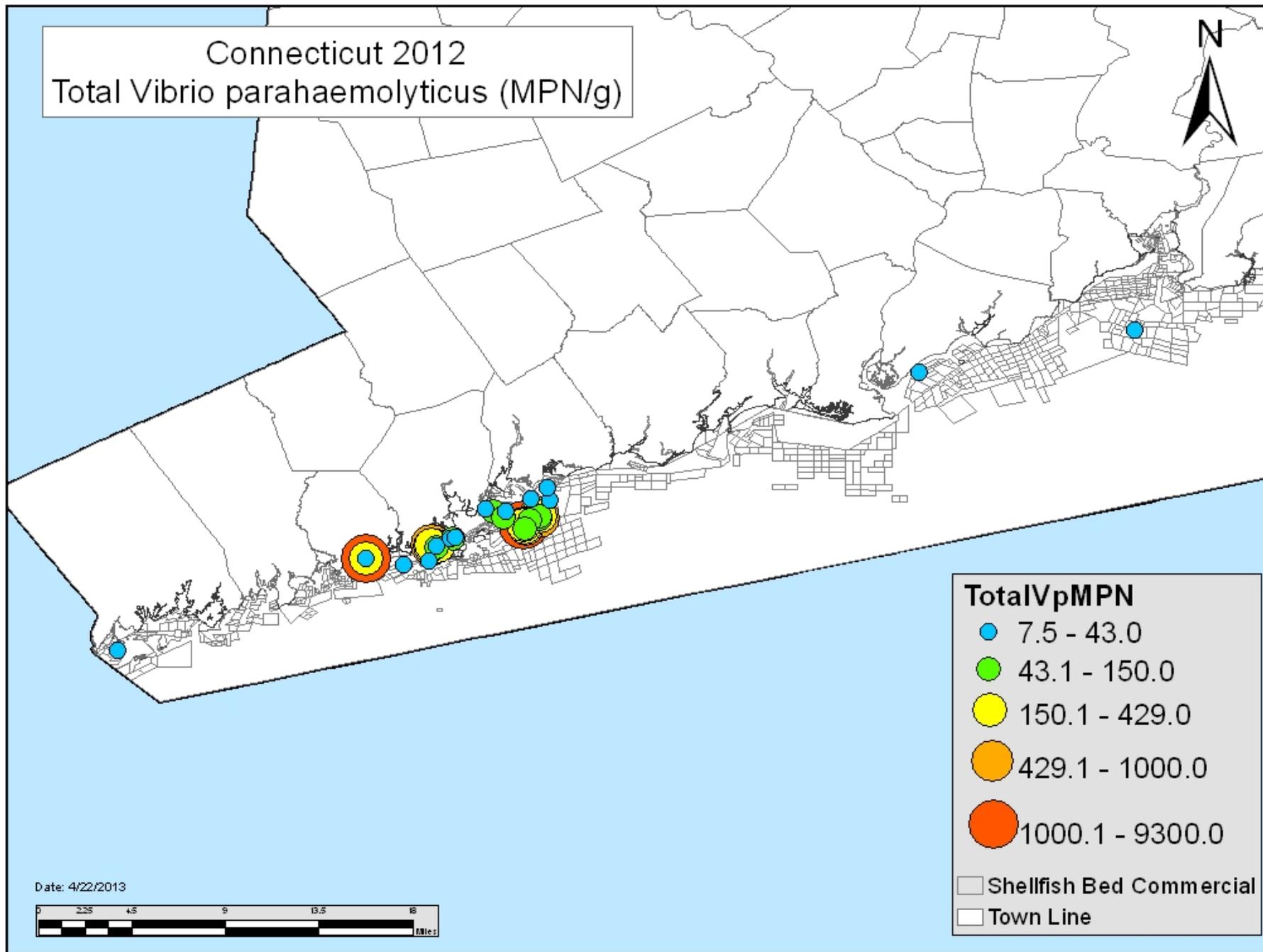
Date: 4/25/2013



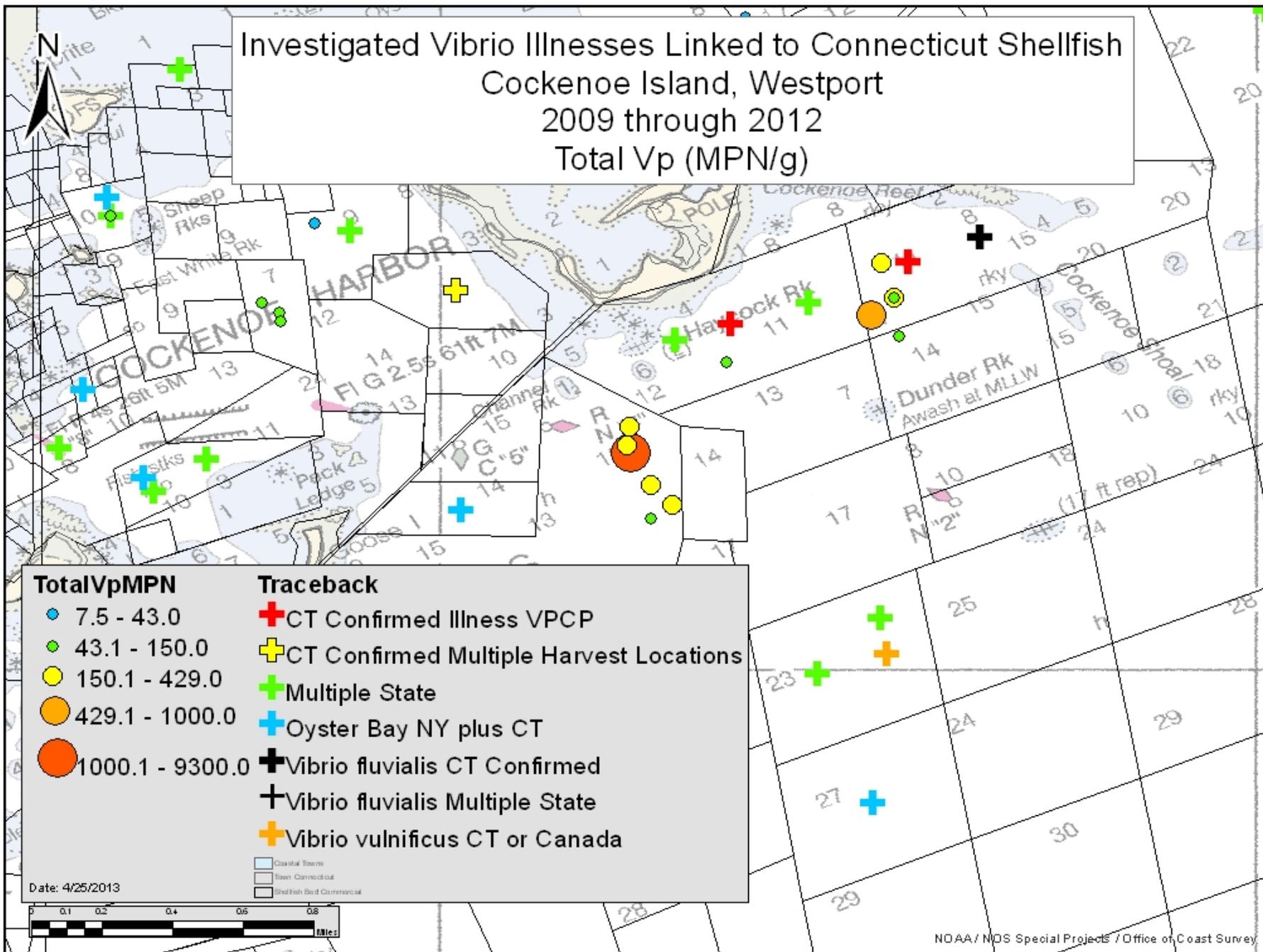
Traceback

- + CT Confirmed Illness VPCP
- + CT Confirmed Multiple Harvest Locations
- + Multiple State
- + Oyster Bay NY plus CT
- + Vibrio fluvialis CT Confirmed
- + Vibrio fluvialis Multiple State
- + Vibrio vulnificus CT or Canada
- Coastal Towns
- Town Connecticut

Connecticut 2012
Total *Vibrio parahaemolyticus* (MPN/g)



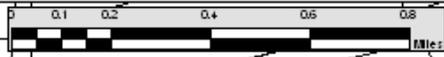
Investigated Vibrio Illnesses Linked to Connecticut Shellfish Cockenoe Island, Westport 2009 through 2012 Total Vp (MPN/g)



Total Vp MPN	Traceback
● 7.5 - 43.0	✚ CT Confirmed Illness VPCP
● 43.1 - 150.0	✚ CT Confirmed Multiple Harvest Locations
● 150.1 - 429.0	✚ Multiple State
● 429.1 - 1000.0	✚ Oyster Bay NY plus CT
● 1000.1 - 9300.0	✚ Vibrio fluvialis CT Confirmed
	✚ Vibrio fluvialis Multiple State
	✚ Vibrio vulnificus CT or Canada

Coastal Towns
 Town Connecticut
 Shellfish Bed Commercial

Date: 4/25/2013



2013 Vibrio Parahaemolyticus

Control Plan for Connecticut: Oysters

- 1. OYSTERS: Limit time from harvest to refrigeration to no more than 5 hours during the months of June, July and August; 7 hours during September.**

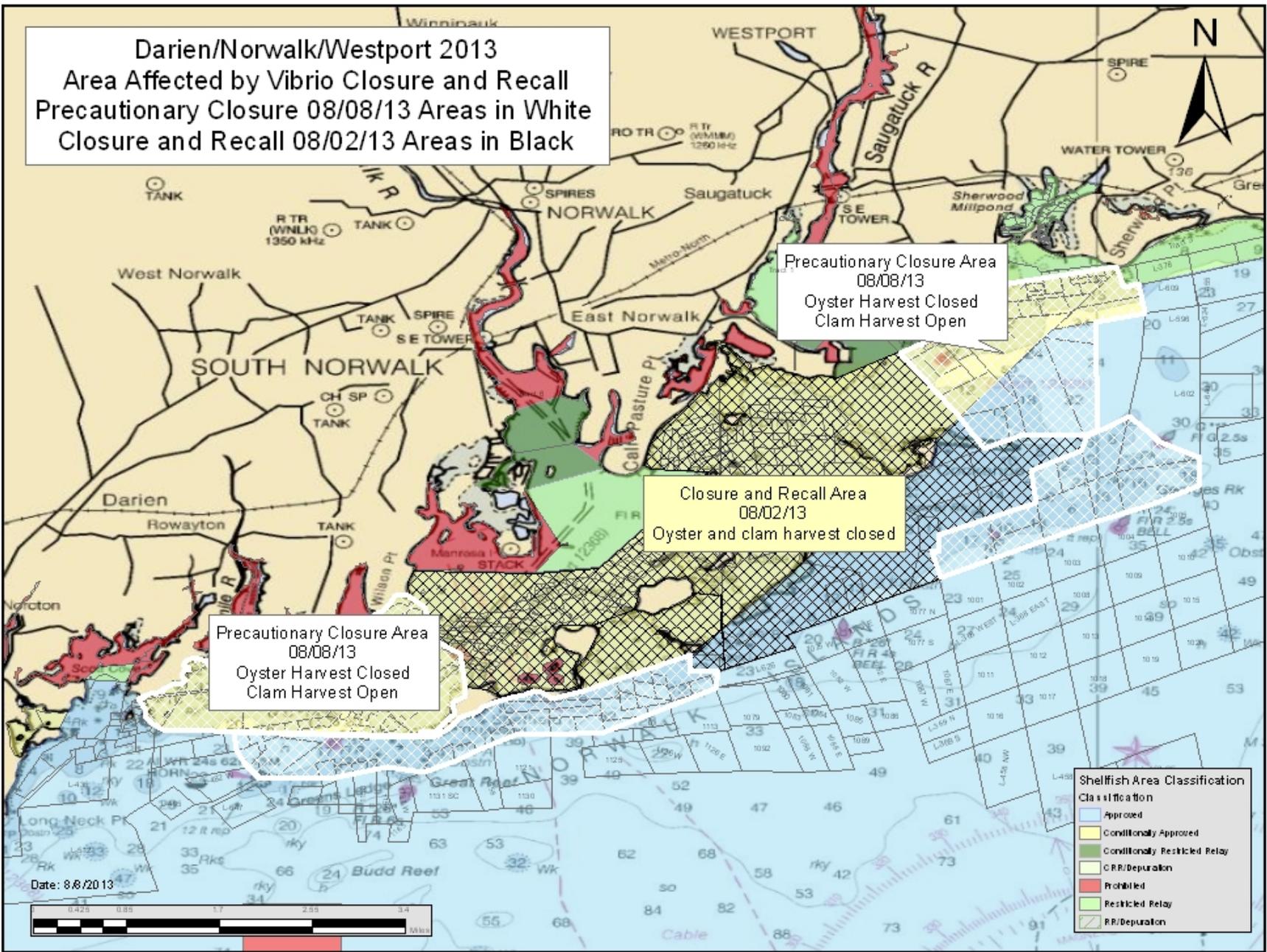
Time begins once the first shellstock harvested is no longer submerged.

Dealers may harvest and place shellstock into refrigeration within 5 hours, then make subsequent harvest trips, provided that each trip allows the shellstock to be placed into refrigeration within 5 hours.

2013 Vibrio Parahaemolyticus Control Plan for Connecticut: Oysters

- 2. Require the original dealer to cool oysters to an internal temperature of 50°F (10°C) or below within 10 hours or less, however the DA/BA strongly recommends cooling to 50°F within 5 hours.** The 2012 verification studies of dealers cooling practices have demonstrated that cooling to 50 °F takes between 1.5 and 5 hours.
- 3. All shellstock (clams and oysters) shall be shaded onboard the vessel and as needed at points of transfer to prevent the shellstock from increasing in temperature.**

**Darien/Norwalk/Westport 2013
Area Affected by Vibrio Closure and Recall
Precautionary Closure 08/08/13 Areas in White
Closure and Recall 08/02/13 Areas in Black**



Precautionary Closure Area
08/08/13
Oyster Harvest Closed
Clam Harvest Open

Closure and Recall Area
08/02/13
Oyster and clam harvest closed

Precautionary Closure Area
08/08/13
Oyster Harvest Closed
Clam Harvest Open

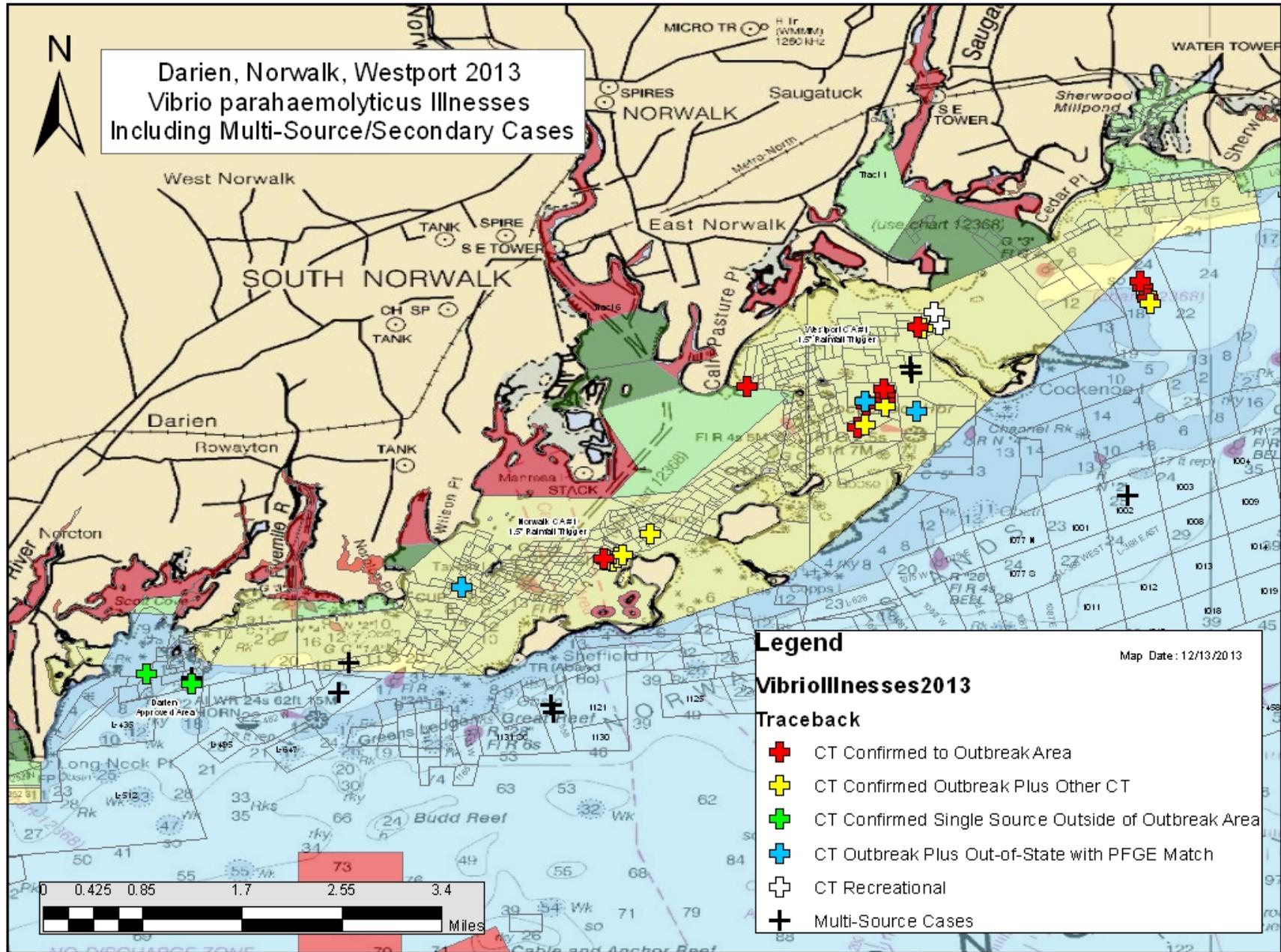
- Shellfish Area Classification**
- Approved
 - Conditionally Approved
 - Conditionally Restricted Relay
 - CR/Depuration
 - Prohibited
 - Restricted Relay
 - RR/Depuration

Date: 8/8/2013



CT Shellfish Related Illness Investigations 2013		
	Total Vp/Total All CT Shellfish Investigations	45/52
Traceback Code		Number of Cases
1	CT Confirmed to Outbreak/Closure Area	11
2	CT Confirmed (Outbreak/Closure plus other)	8
3	CT Confirmed (outside of outbreak area)	2
4	Out-of-State Confirmed	7
5	CT Outbreak Plus Out-of-State (with PFGE Match)	5
6	CT Plus Out-of-State (NO PFGE Match)	6
7	Unconfirmed case, CT Product	2
8	Recreational Case	3
9	CT Multi-Source Cases	2
	Total Vp Outbreak Area	19
	Total Confirmed CT cases	23

Darien, Norwalk, Westport 2013
 Vibrio parahaemolyticus Illnesses
 Including Multi-Source/Secondary Cases



Legend Map Date : 12/13/2013

Vibri Illnesses 2013

Traceback

- + CT Confirmed to Outbreak Area
- + CT Confirmed Outbreak Plus Other CT
- + CT Confirmed Single Source Outside of Outbreak Area
- + CT Outbreak Plus Out-of-State with PFGE Match
- + CT Recreational
- + Multi-Source Cases

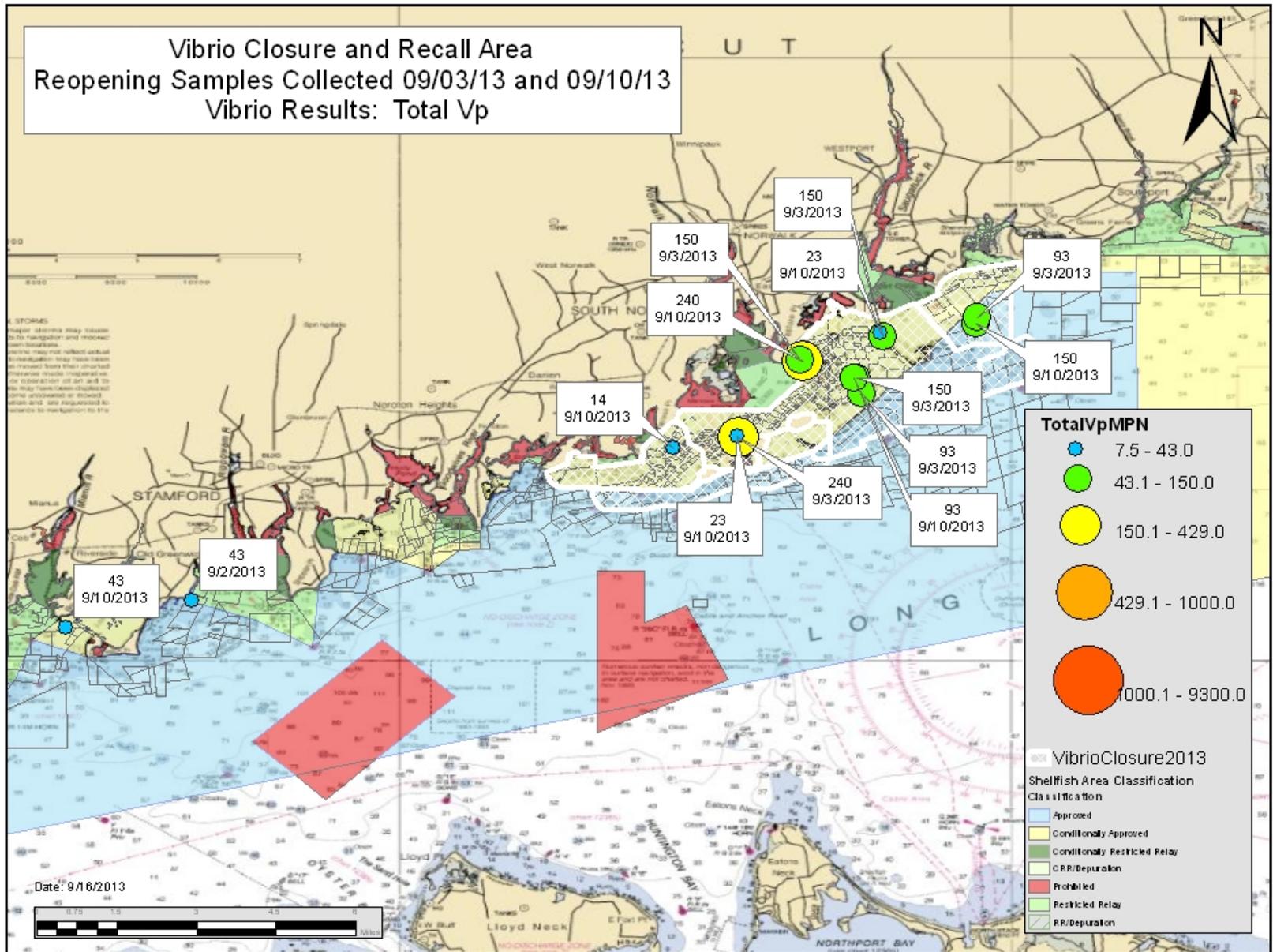
2013 Vibrio Outbreak CT

- Harvest dates ranged from 06/26/13 through 08/01/13
- Many cases only consumed 1 or 2 oysters
- Many cases affected young and healthy persons with no underlying conditions
- No confirmed single-source clam cases (those reporting only clam consumption)
- Closure and recall appears to have been successful in limiting the extent of illnesses

Temperatures at Time of Harvest

	Air Temp (NOAA Bridgeport)	Water Temp ° F (DA/BA)	Water Temp ° F (DEEP)
GeoMean	85.9	70.4	65.8
Max	95	74.5	69.5
Min	76	67.8	60.0

Vibrio Closure and Recall Area
 Reopening Samples Collected 09/03/13 and 09/10/13
 Vibrio Results: Total Vp



Outbreak Timeline

- Initial illnesses reported and confirmed to outbreak area (2nd and 3rd case reported 08/02/13)
- 08/02/13 Closure of Darien, Norwalk and Westport growing area
- Recall of shellfish harvested between 07/03/13 and 08/02/13 and
- Closure area extended on 08/08/13 based upon additional illness reports
- No additional illnesses reported from shellfish harvested after 08/01/13
- Samples collected 09/03/13 and 09/10/13
- 09/16/13: Outbreak area reopened with 5 hour harvest limit for oysters
- 10/17/13: All time/temperatures controls lifted in outbreak area