Presentations   Casco Bay Estuary Partnership (CBEP)

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Clam Abundance and PH: Preliminary Data From Casco Bay (2013 Mud Summit Presentation)

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CLAM ABUNDANCE AND PH – PRELIMINARY DATA FROM CASCO BAY

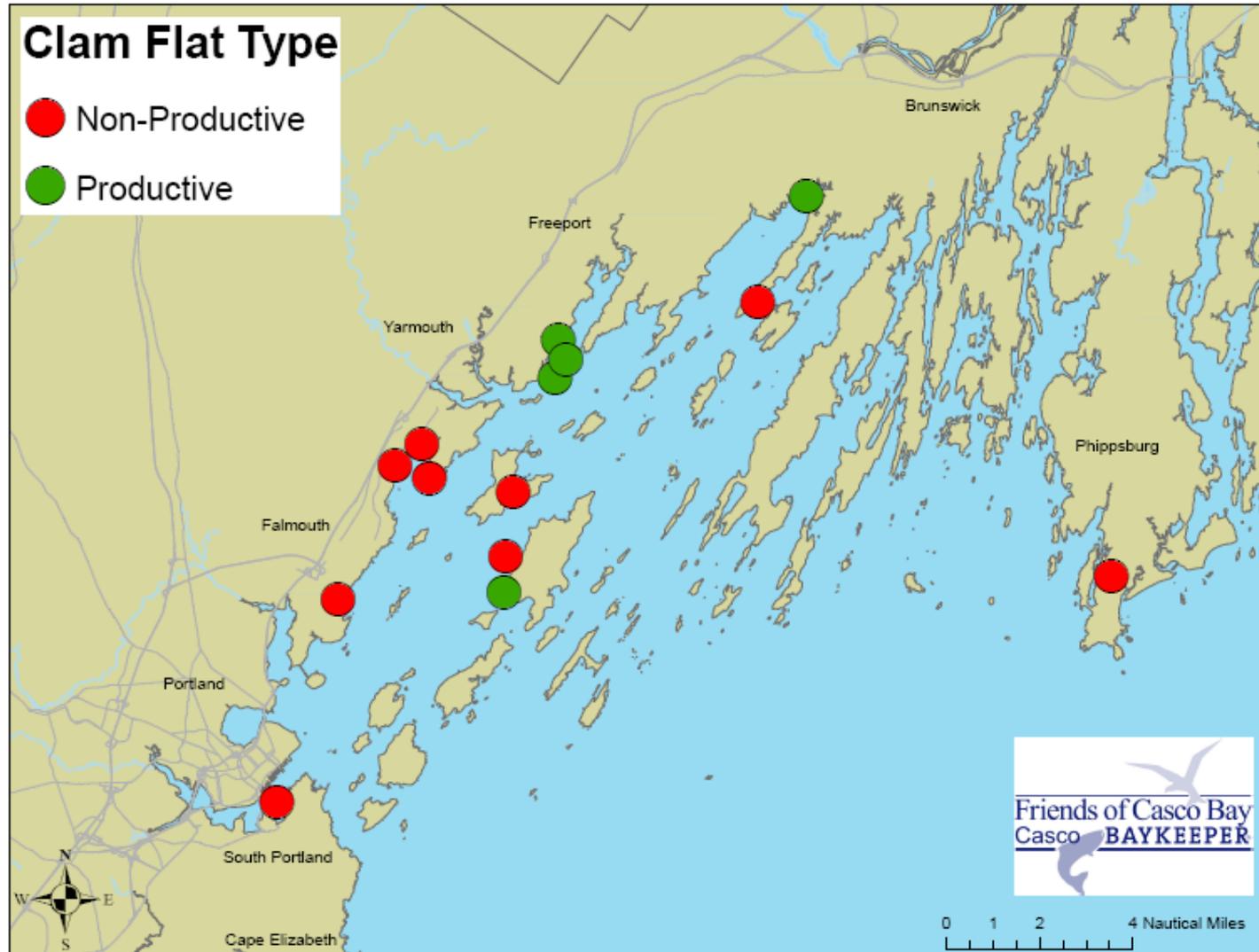Mud Summit, January 18, 2013

Curtis C. Bohlen
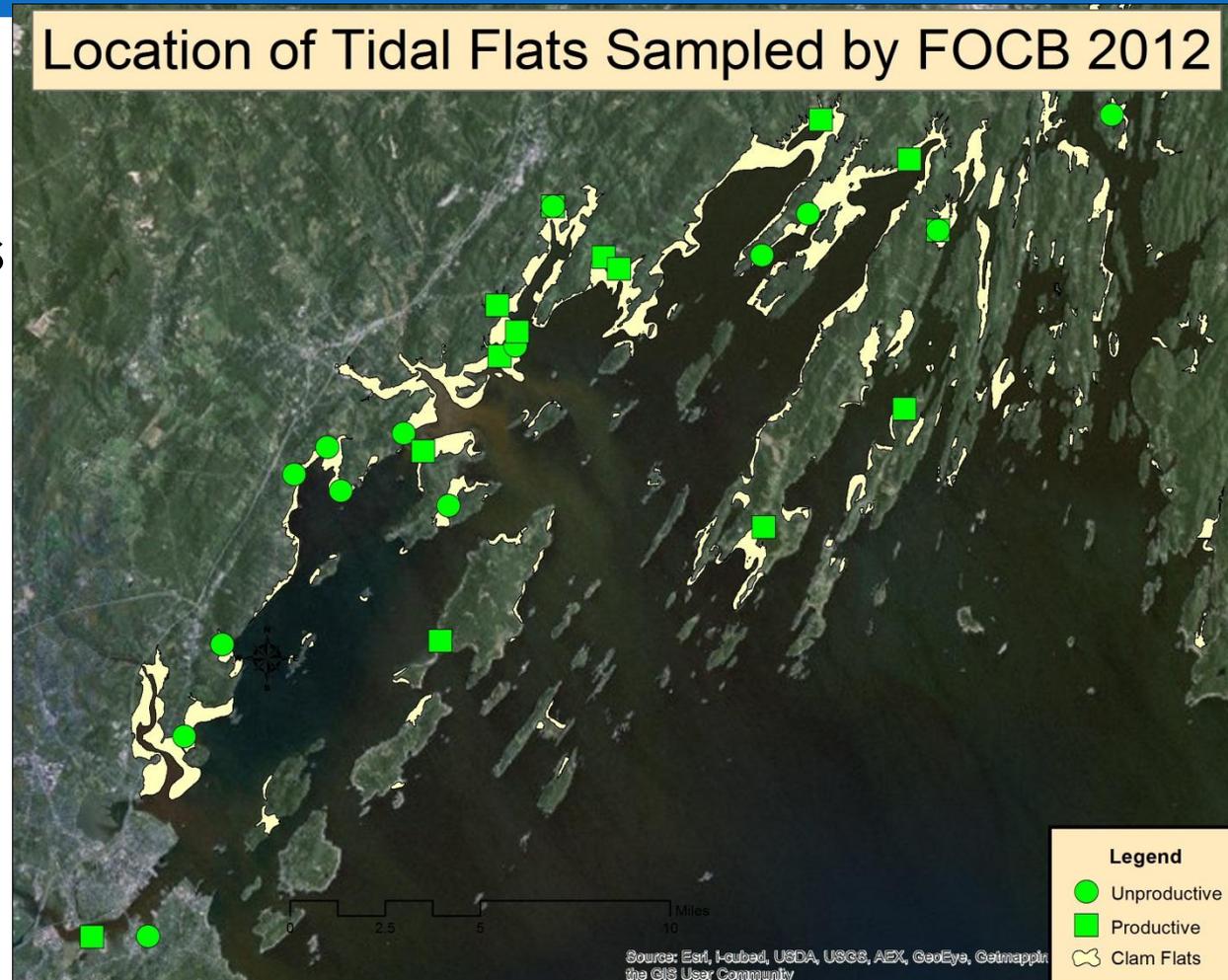Director, Casco Bay Estuary Partnership

Special Thanks

- The people who did the field work
  - Chris Heinig (MER Assessment)
  - Steve Karpiak (MER Assessment)
  - Matthew Craig
  - Caitlin Gerber
  - Cayce Dalton (FB Environmental)
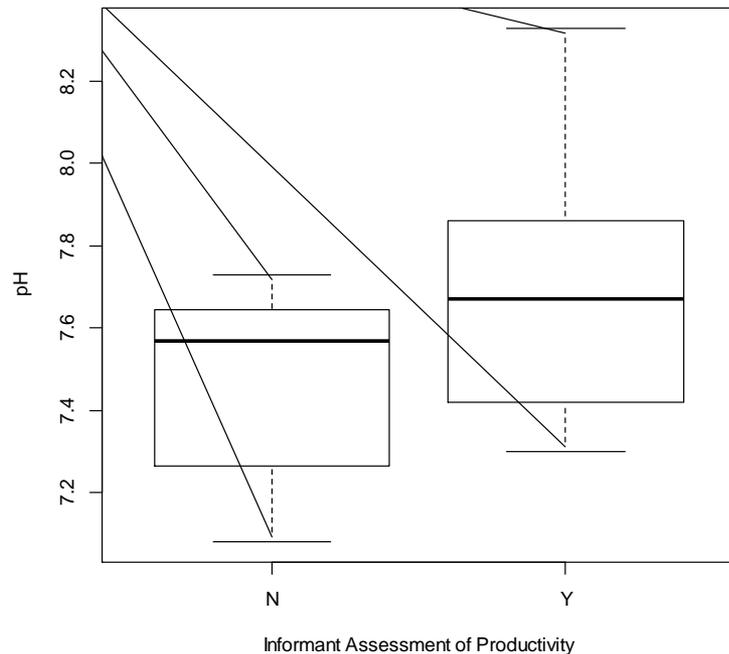
Clam Flat pH Sites, 2011

Site Selection (Reminder)

- Sites selected by contacting local informants in each town

- Identify productive flats and flats that are no longer considered productive

Location of Tidal Flats Sampled by FOCB 2012

Legend
- Unproductive
- Productive
- Clam Flats

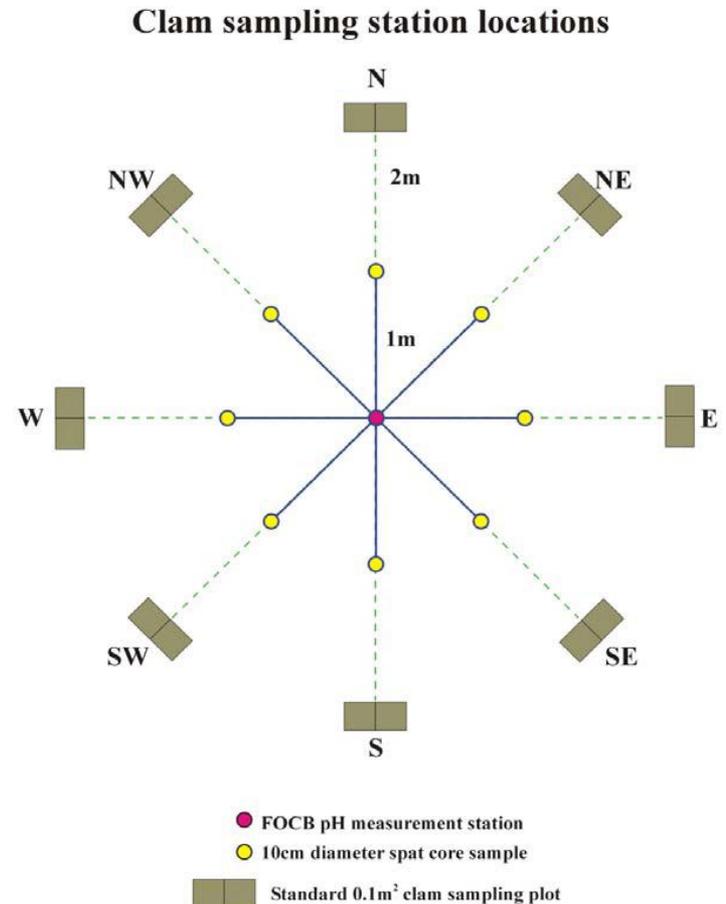Source: Esri, I-cubed, USDA, USGS, AEX, GeoEye, Getmapping, the GIS User Community

pH and Informant Assessment of Productivity

- "Productive" flats have higher average pH than "Unproductive" Flats

- Difference =

  0.23 +/- 0.101

  (p<0.05)

Methods

- Clam abundance data collected in November
- Return to recorded GPS position of FOCB pH measurement
- Eight spat and eight clam samples collected radially around that point
  - 10cm diameter PVC pipe Spat cores
 - 0.1 m^2 rectangular Clam sampling plot (hand dug)

Clam sampling station locations

- FOCB pH measurement station
- 10cm diameter spat core sample
- Standard 0.1m^2 clam sampling plot

Productivity of Flats

	Informant Assessment of Productivity		
		Unproductive	Productive	Total
Observed Productivity	**Unproductive**	13	9	22
	Productive	2	6	8
	Total	15	15	30

- When researchers visited more than one third of the "Productive" flats, they found few clams near the sites where pH had been measured.

- But in some cases, clams were abundant nearby.

Adults and Spat are Correlated

- Six flats had spat, but no adults

- Three flats had adults, but no spat

- Spat and adult abundance are correlated, but not strongly

Adult Clams vs. Spat
By Informant Assessment of Productivity

pH and Shellfish Abundance

ADULTS
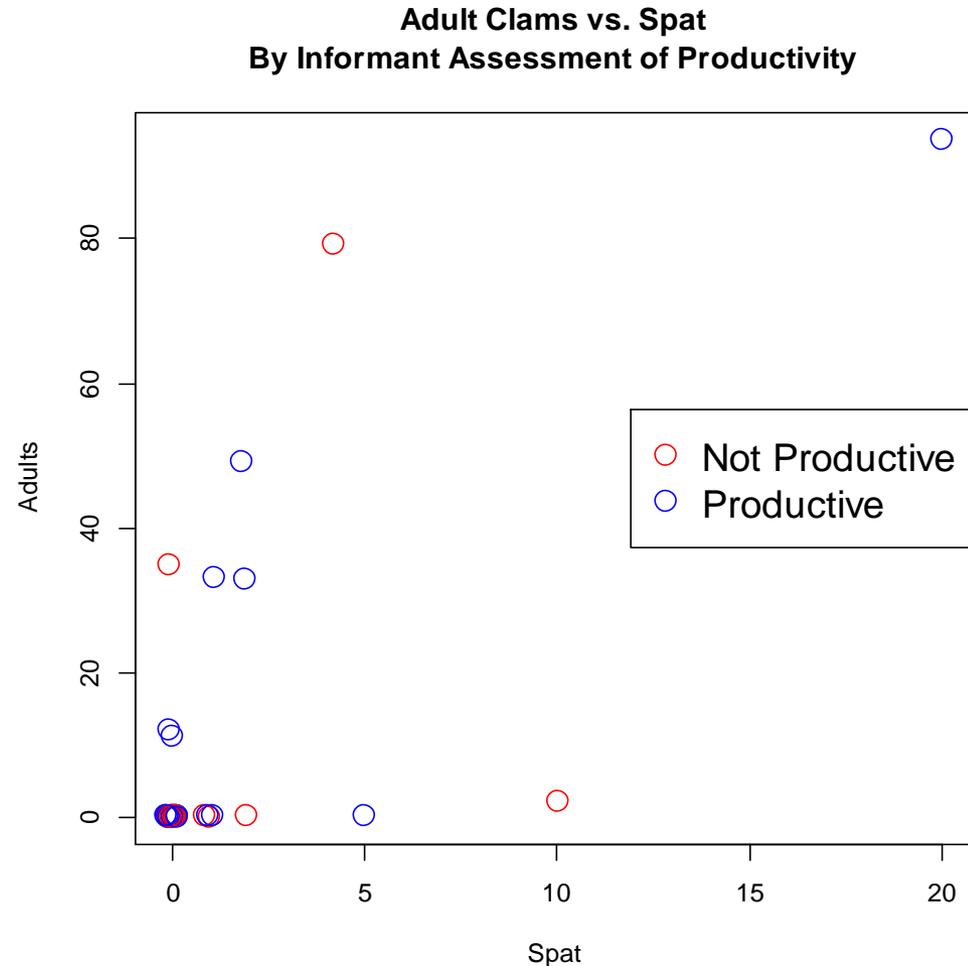
SPAT

Preliminary Conclusions

- Data on relation between pH and shellfish abundance is suggestive but not conclusive
- Sample locations in many flats were located in areas with few clams, reducing sensitivity
- Better understanding of spatial pattern is needed
  - Spatial distribution of clams
  - Spatial autocorrelation function of pH
- Future studies need
  - Improved sampling design
  - More complete measurement of environmental correlates