

Connections Between Salinity/Tidal Regimes and Oyster Restoration and Rehabilitation Efforts in NC

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UNC Chapel Hill Institute of Marine Sciences



EXPERIMENTS IN
OYSTER CULTURE IN PAMLICO SOUND
NORTH CAROLINA

BY
ROBERT E. COKER



Coker

RALEIGH
E. M. UZZELL & Co., PUBLIC PRINTERS
1907

REPORT
ON THE
WATERS OF NORTH CAROLINA,
WITH REFERENCE TO THEIR POSSIBILITIES FOR
OYSTER CULTURE;
TOGETHER WITH THE RESULTS OBTAINED BY THE SURVEYS
DIRECTED BY THE RESOLUTION OF THE GENERAL
ASSEMBLY, RATIFIED MARCH 11, 1885.

Winslow

BY
LIEUTENANT FRANCIS WINSLOW,
UNITED STATES NAVY.

RALEIGH:
P. M. HALE, STATE PRINTER AND BINDER,
PRESSES OF E. M. UZZELL,
1886.

INVESTIGATIONS FOR THE PROMOTION OF THE
OYSTER INDUSTRY OF NORTH CAROLINA.

BY
CASWELL GRAVE, Ph. D.,
Director of Fisheries Laboratory, Beaufort, N. C.


Grave

Extracted from U. S. Fish Commission Report for 1903. Pages 247 to 341, 11 plates.

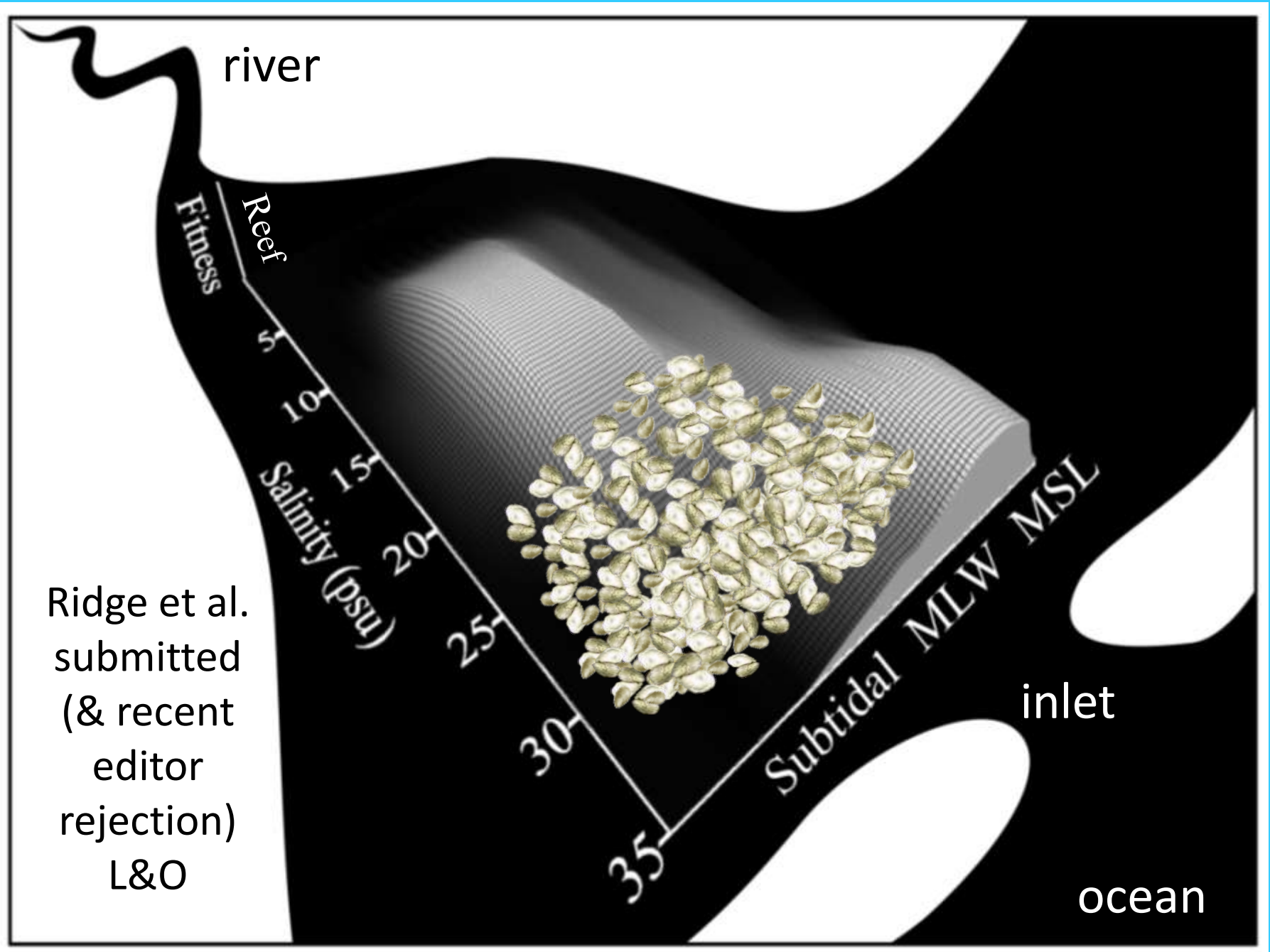
REPORT
ON THE
SOUNDS AND ESTUARIES OF NORTH CAROLINA
WITH REFERENCE TO
OYSTER CULTURE,
By FRANCIS WINSLOW,
LIEUTENANT U. S. NAVY, ASSISTANT U. S. COAST AND GEODETIC SURVEY,
COMMANDING SCHOONER SCORSBY.

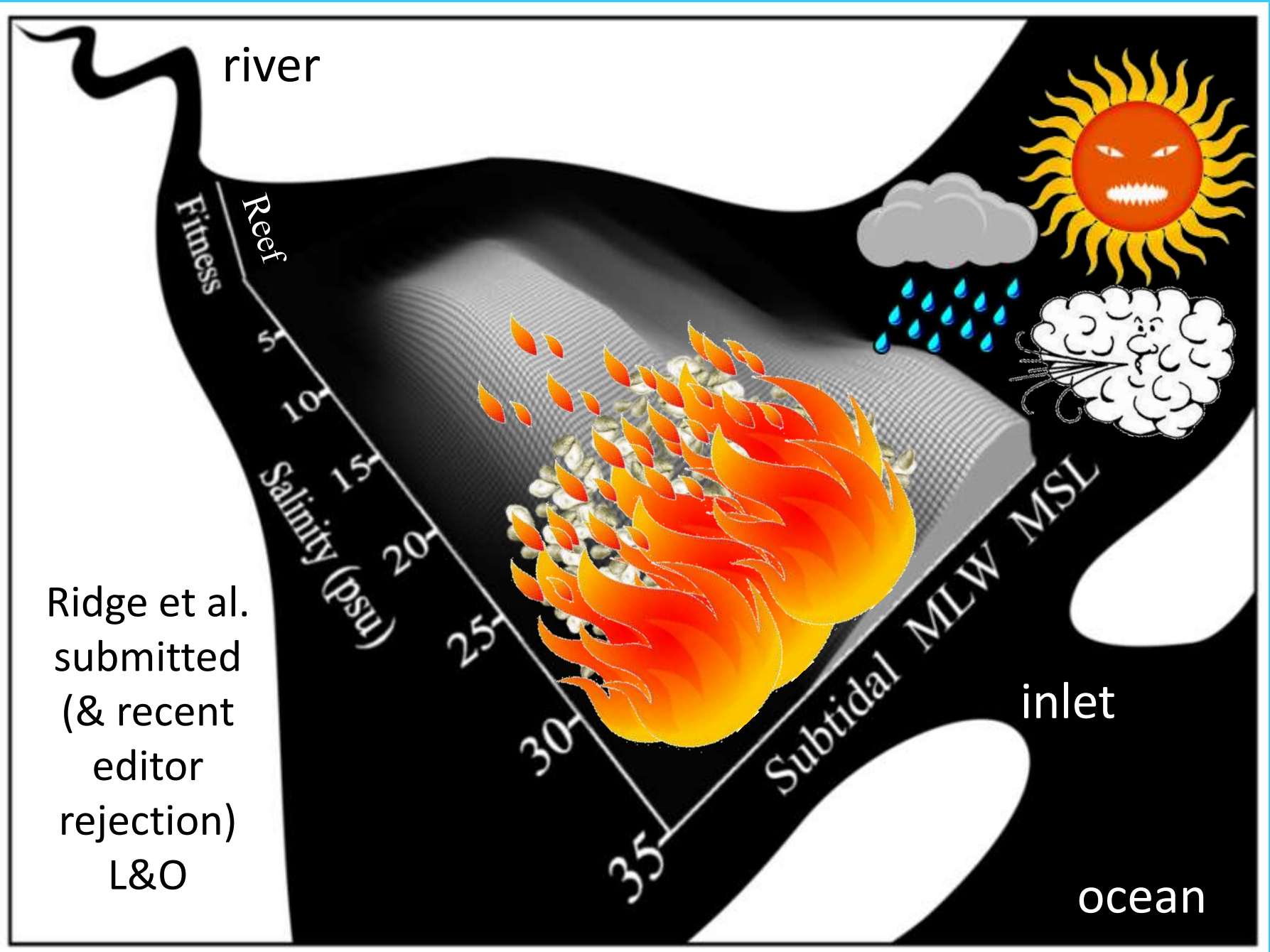
Required reading!

OYSTER CULTURE
IN
NORTH CAROLINA
BY
ROBERT E. COKER.



RALEIGH:
E. M. UZZELL & Co., STATE PRINTERS AND BINDERS,
1905.



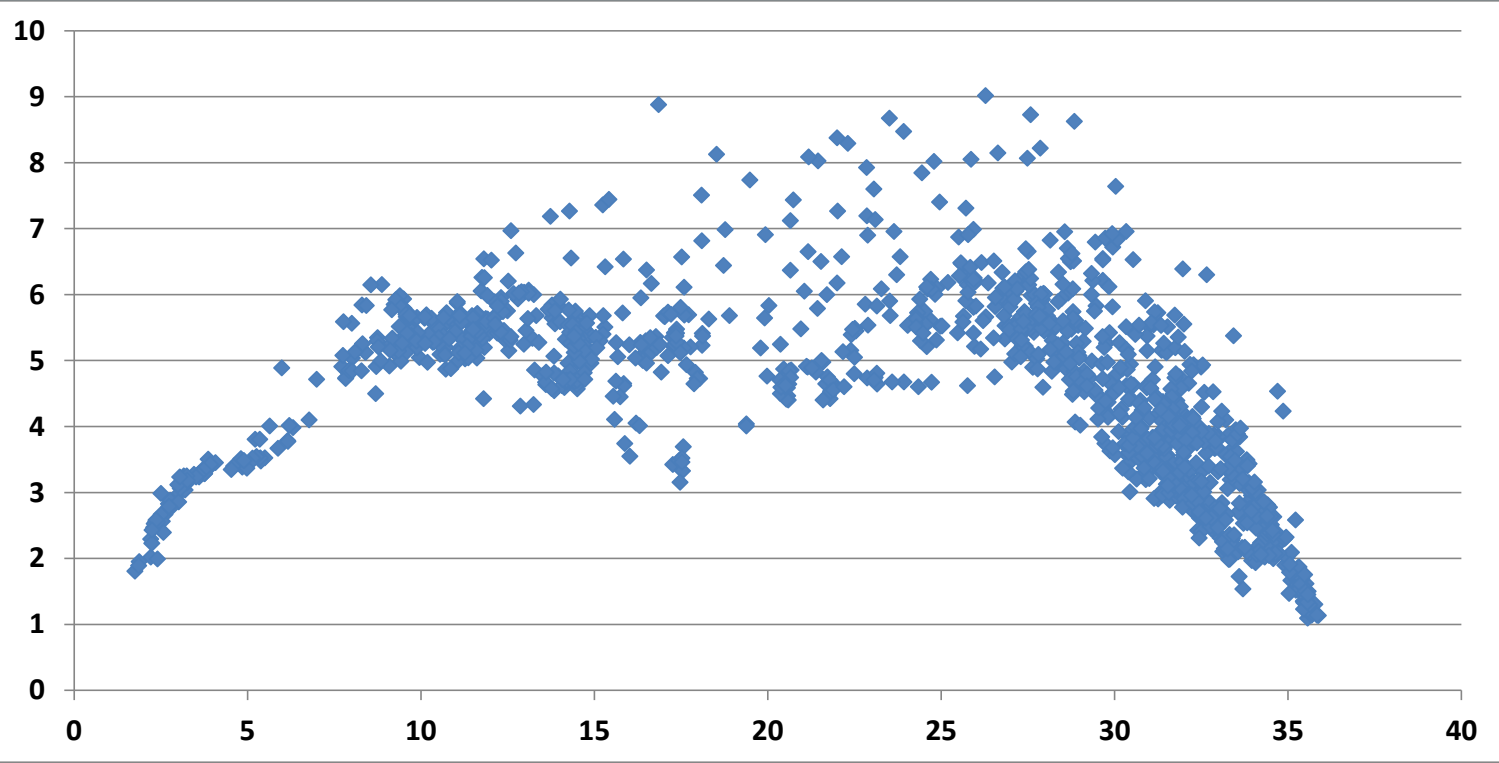


Ridge et al.
submitted
(& recent
editor
rejection)
L&O

NC DMF Shellfish Sanitation Station Data - 2007 to 2012

1230 stations, 30+ observations per stations

Standard Deviation of
Station Mean Salinity



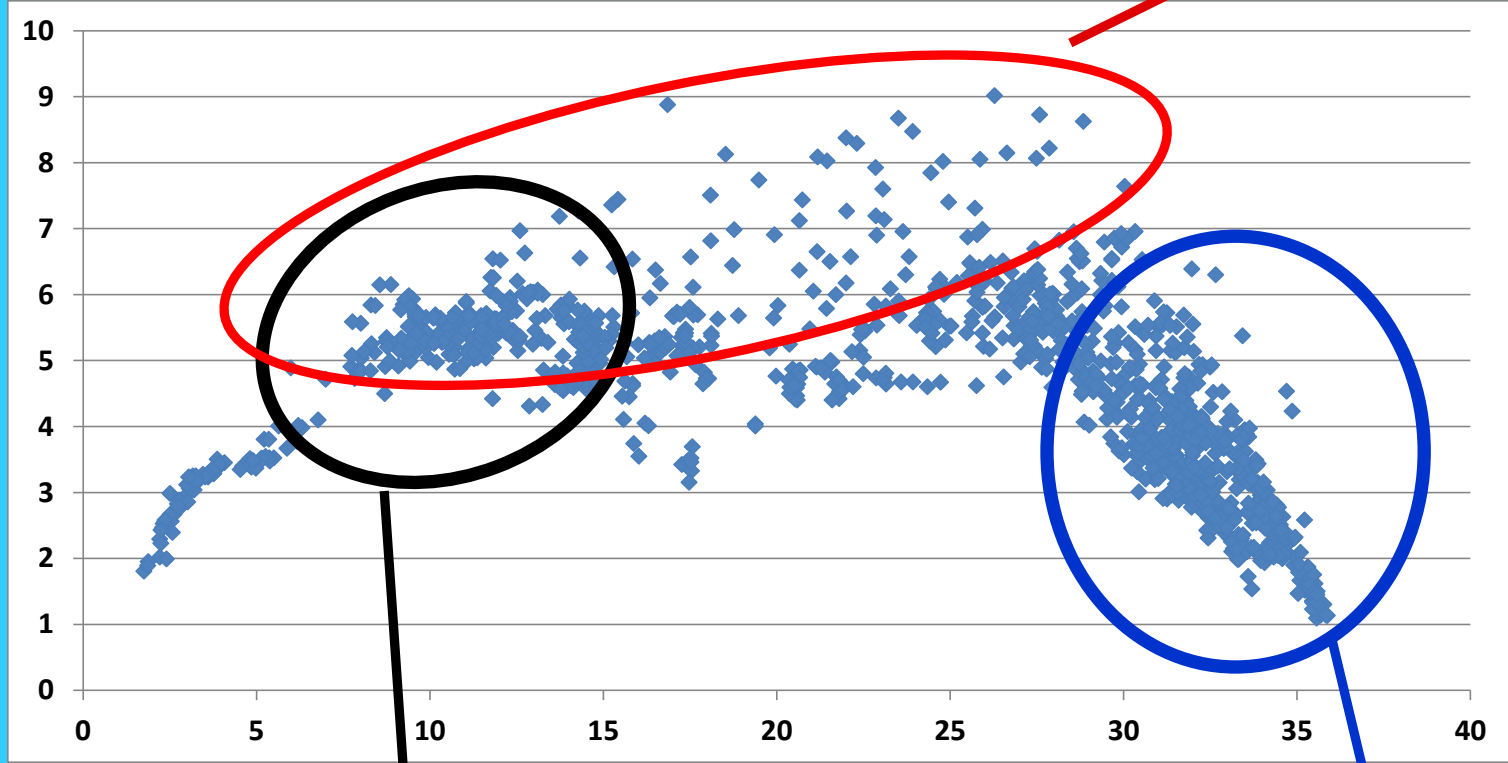
Mean Station Salinity (ppt)

NC DMF Shellfish Sanitation Station Data - 2007 to 2012

1230 stations, 30+ observations per stations

**subtidal
reef areas**

Standard Deviation of
Station Mean Salinity

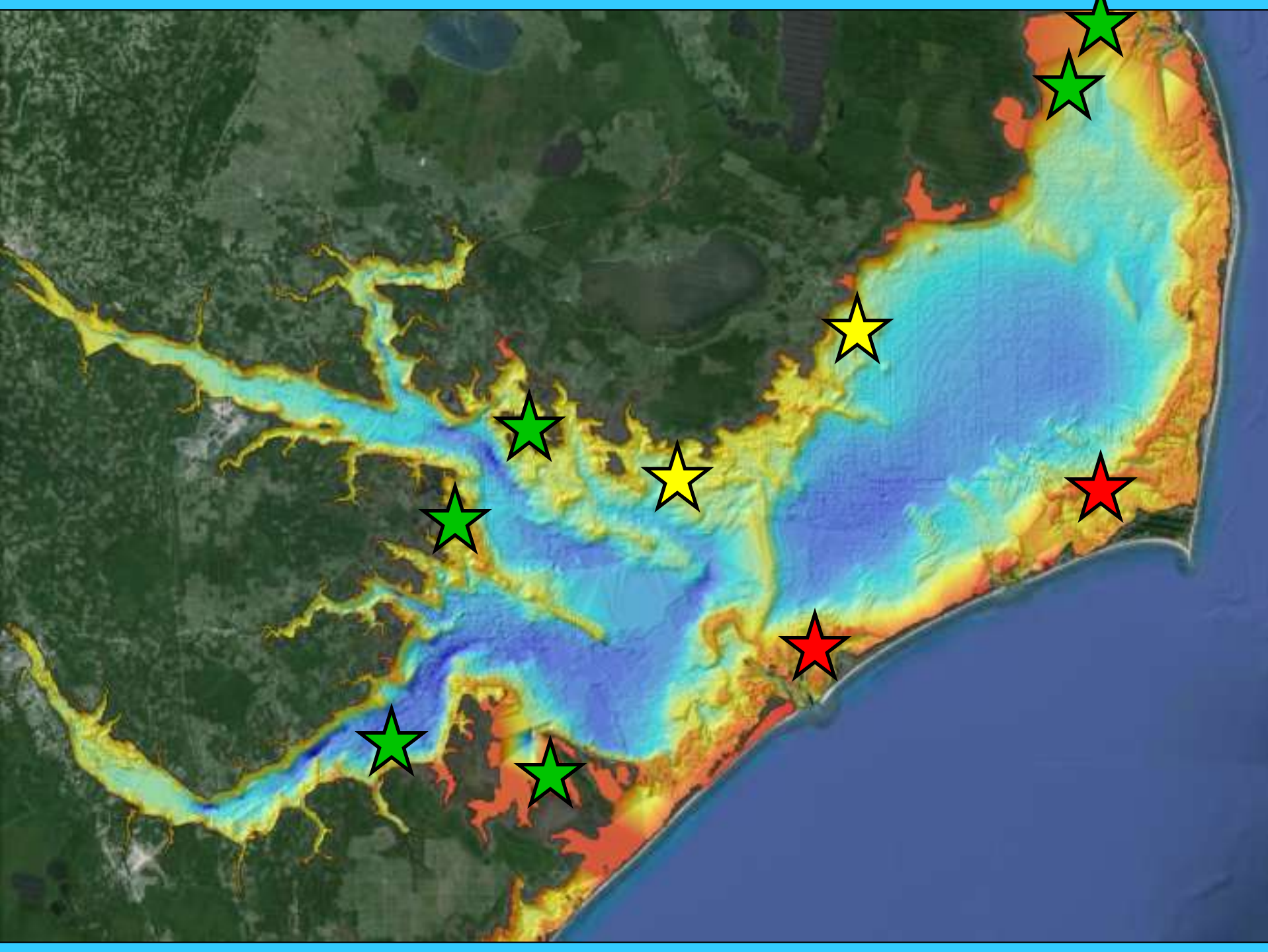


Mean Station Salinity (ppt)

**building for
the future**

**intertidal
reef areas**





Pamlico Sound Oyster Sanctuary Salinity Characteristics ~1990-2012

Sanctuary	Mean Salinity	SD	Salinity Range	% obs < 10 ppt	% obs > 25 ppt
<i>Ocracoke</i>	24.5	5.6	10-38	0	50
<i>Hatteras</i>	21.7	4.8	10-35	0	31
<i>West Bay</i>	17.6	6.2	2-37	10	12
<i>West Bluff</i>	17.2	5.5	0-30	5	9
<i>Gibb Shoal</i>	16.9	5.1	0-30	6	7
<i>Crab Hole</i>	14.4	5.4	0-30	14	5
<i>Middle Bay</i>	14.1	4.8	1-31	17	1
<i>Deep Bay</i>	13.4	5.9	0-28	27	4
<i>Neuse River</i>	12.2	5.5	0-37	30	1
<i>Croatan Sound</i>	11.1	5.8	0-28	40	2

Ocracoke

Year Planted

2004

2006

2008

2009

2007

2009

2010-s

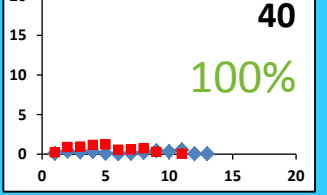
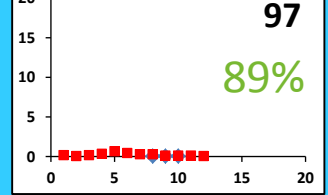
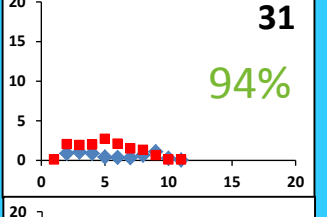
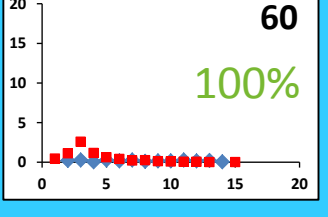
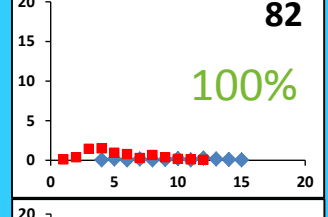
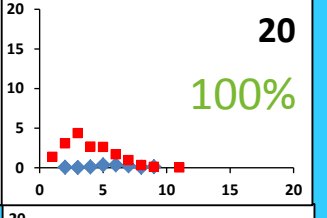
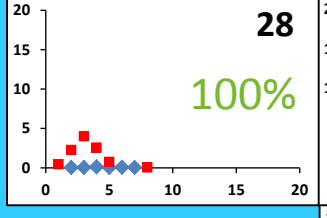
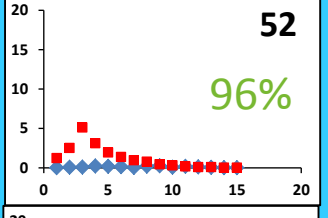
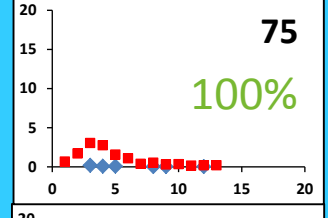
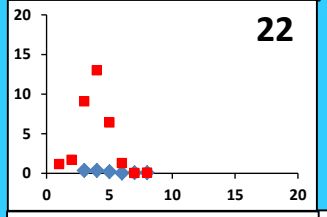
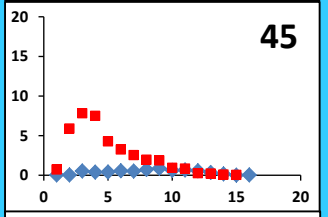
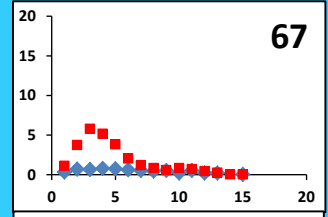
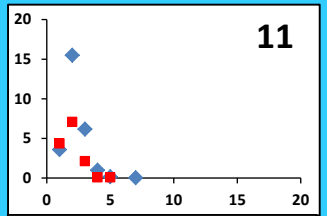
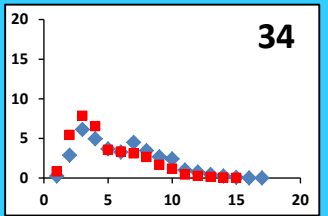
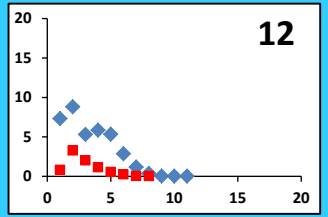
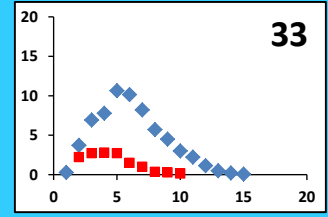
2010-f

2011

2012

Individuals per rock

Year Sampled



Shell Length (1-cm bins)

~3-4 years post deployment



~6+ years post deployment



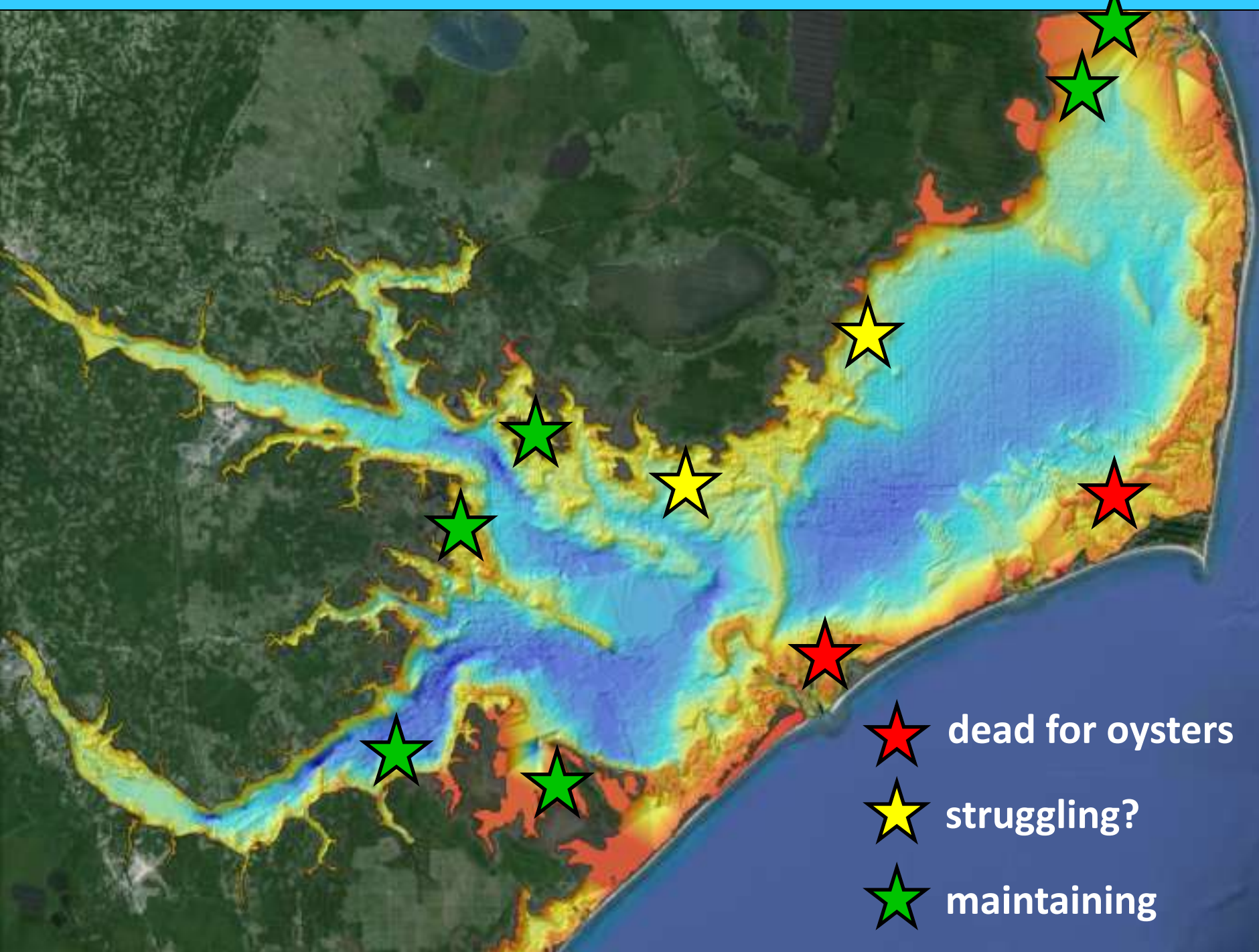
~5-6 years post deployment



West Bluff

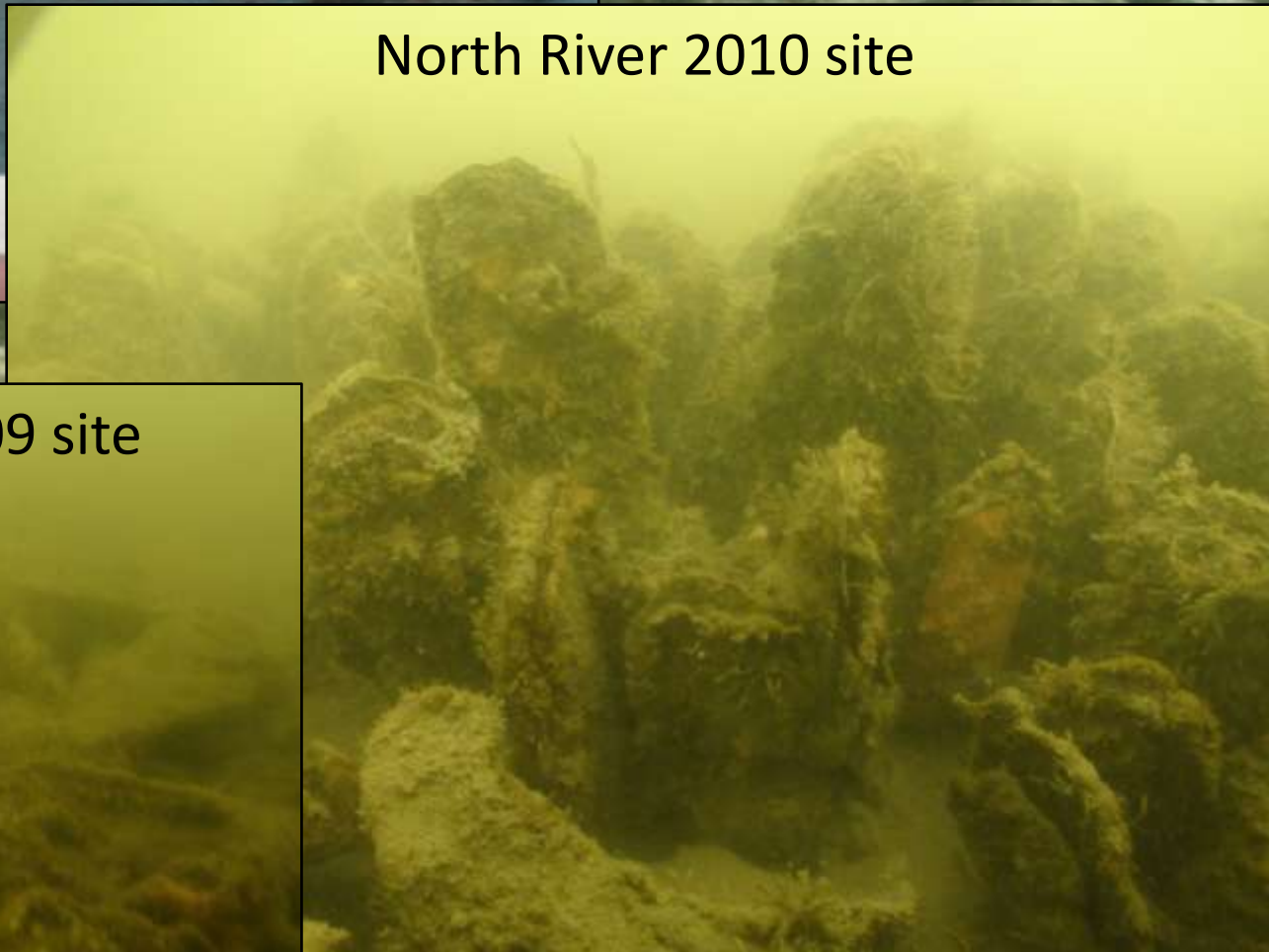
**western
Pamlico
Sound**



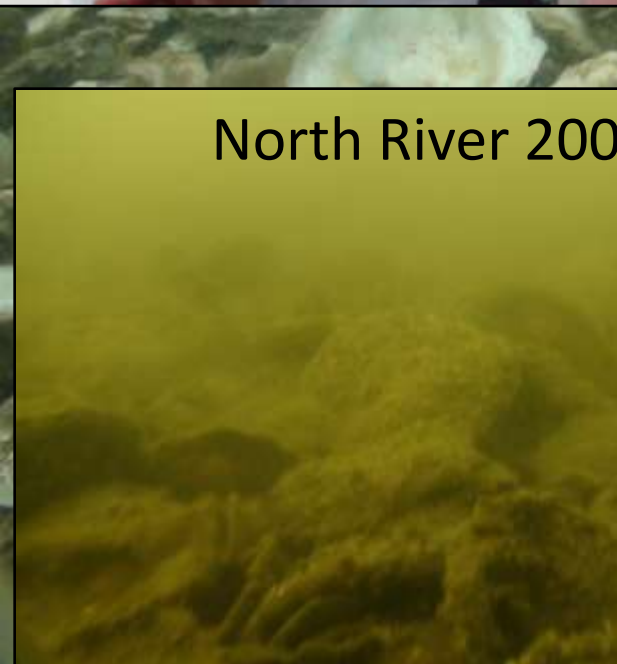




North River 2010 site

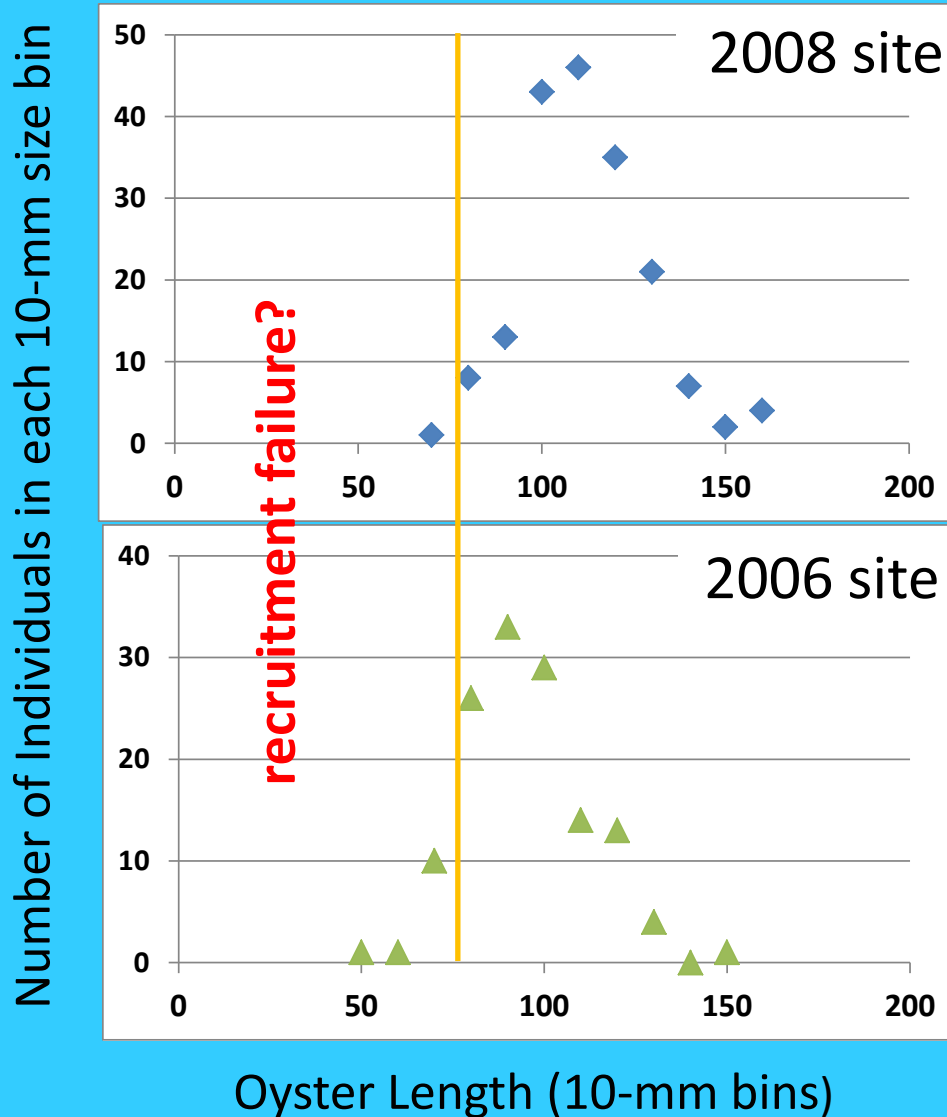


North River 2009 site



2009 site – no live oysters
or boxes larger than spat

Oyster size-frequency
distributions on North
River cultch plant sites.



N=180

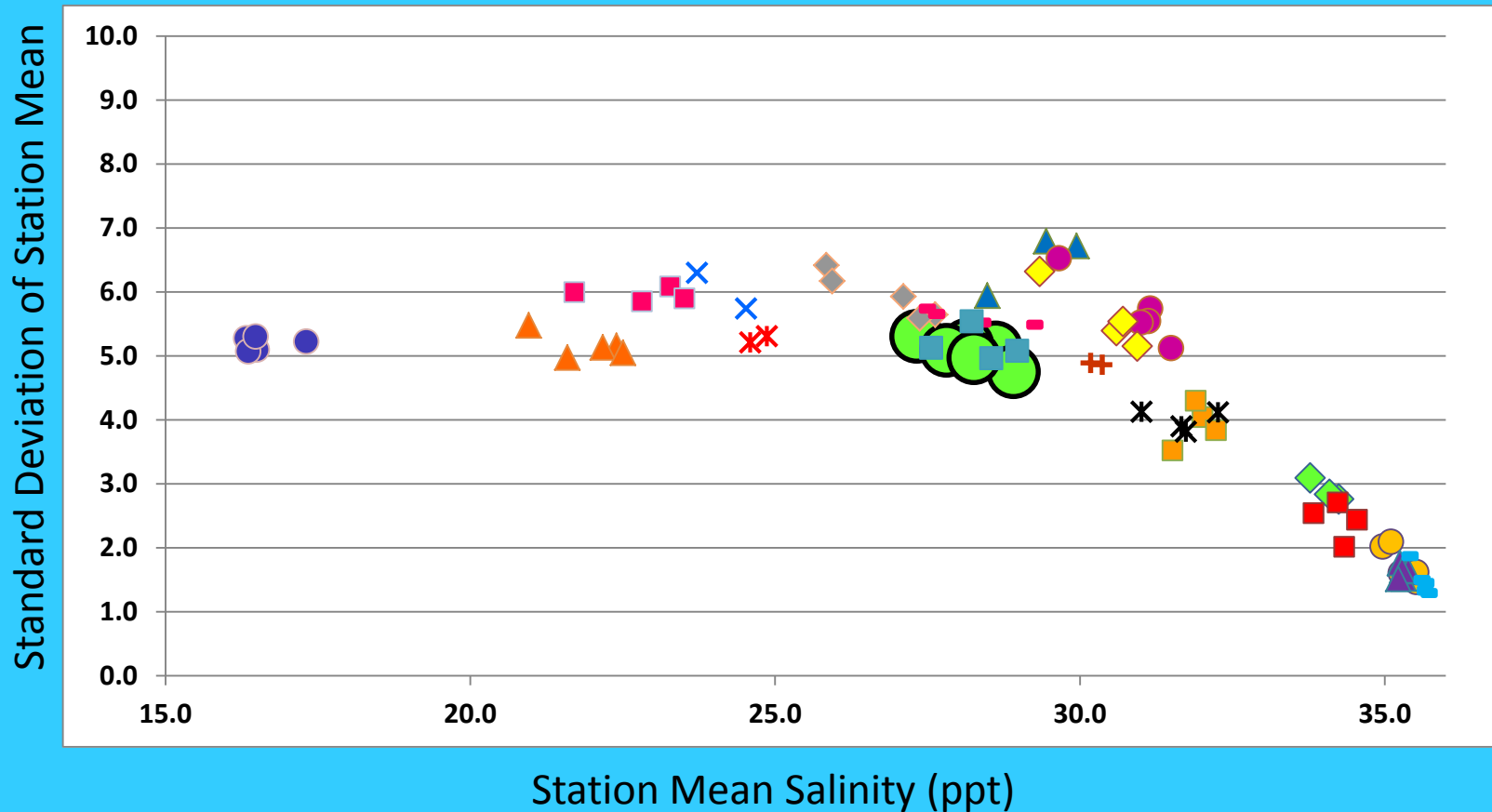
92% of oysters infested

N=131

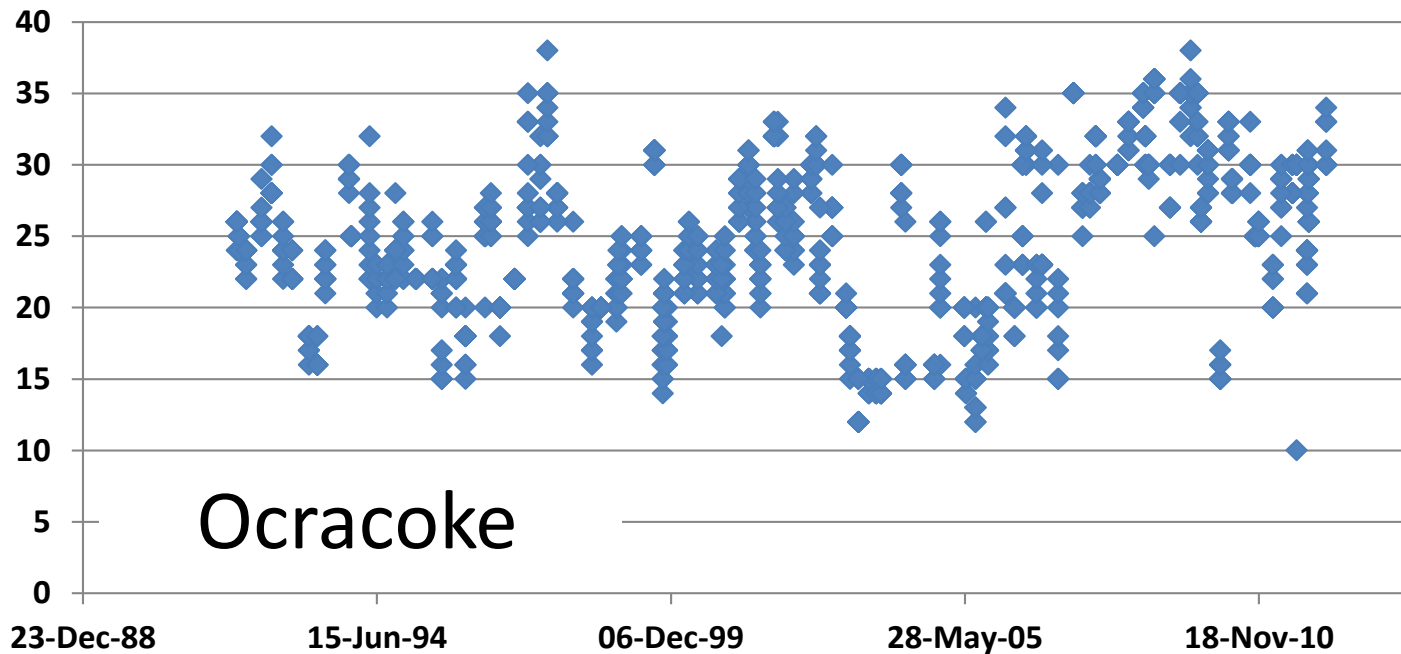
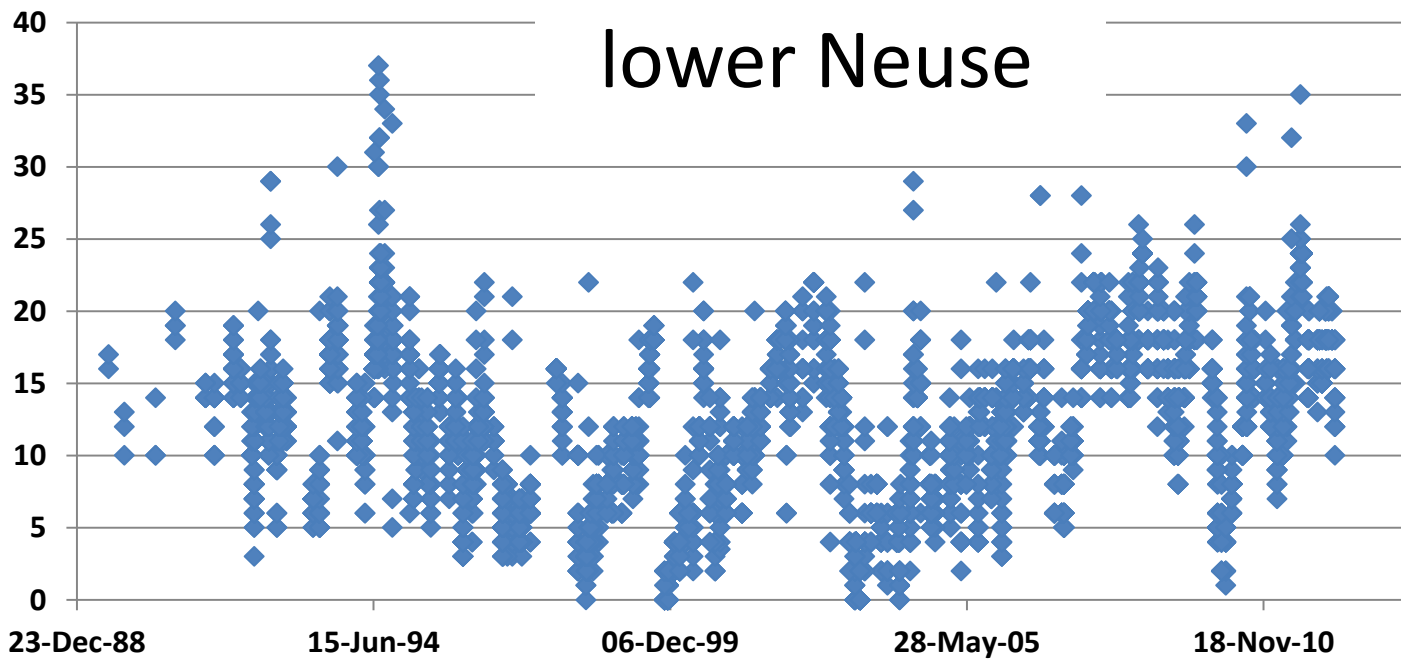
98% of oysters infested



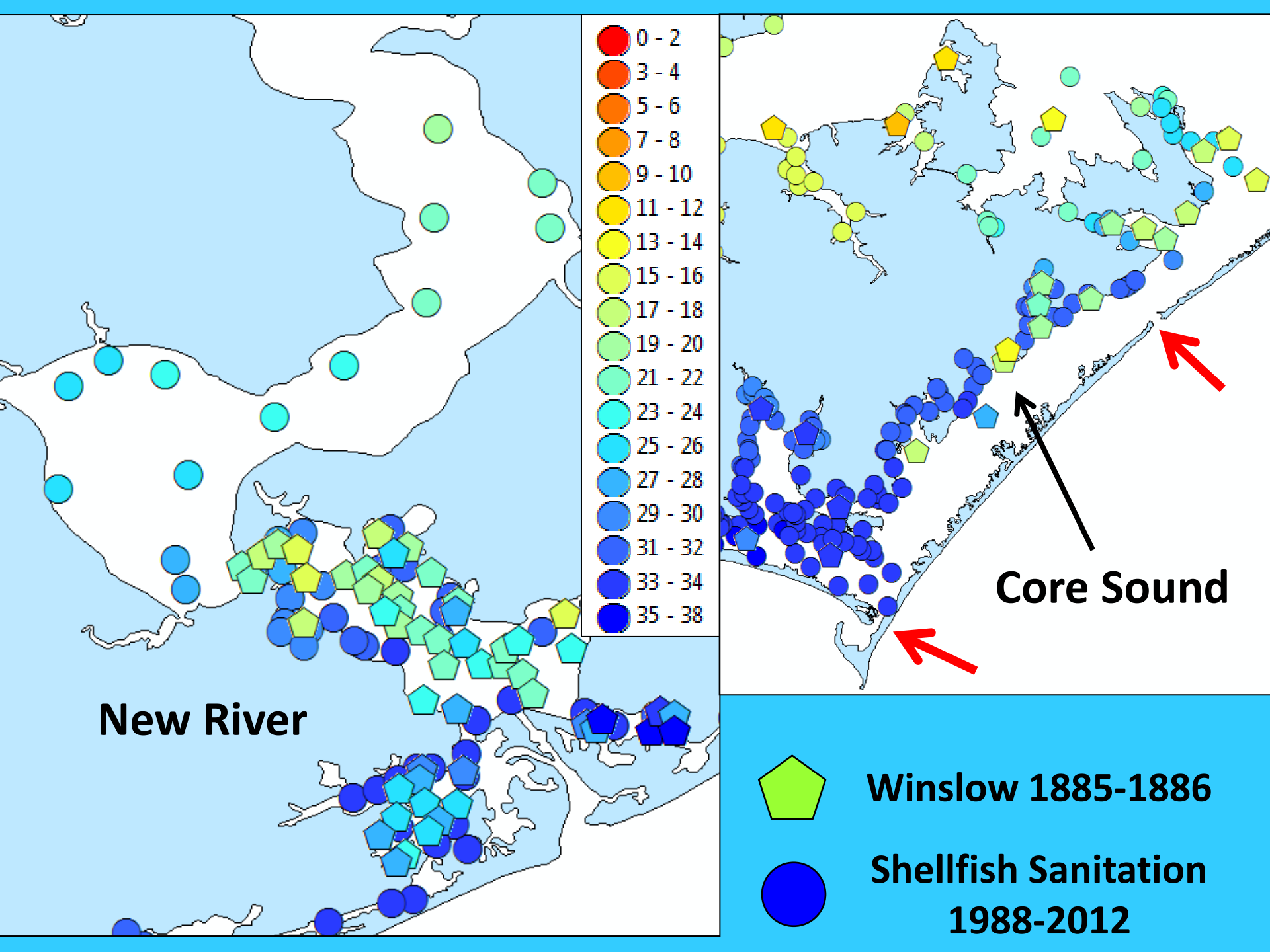
1988-2012 data



- | | | | |
|-----------------|---------------------|-------------------|-------------------------|
| ● West Bay | ● North River | ✱ NR-Inlet area | ▲ Figure 8 Is marshes |
| ■ Cedar Is. Bay | ✱ Newport River-NE | ■ Chadwick Bay | ● Wrightsville channels |
| ◆ Nelson Bay | ✱ Newport River-SW | ◆ Alligator Bay | ▲ Masonboro marshes |
| ■ Jarrett Bay | ▲ NR-Stones Bay | ● Everett Bay | ■ Davis Creek area |
| ✱ Sleepy Creek | ■ NR-Sneads Ferry S | ■ Lea Is. marshes | ◆ Shallotte River |



Climate-
Driven
Shifts
...and
Sea-Level
Rise?



David Cessna
aka "Clammerhead"



Adam Tyler

Acknowledgements

UNC Institute of Marine Sciences

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University of North Florida

Katie Chellemi (undergrad)