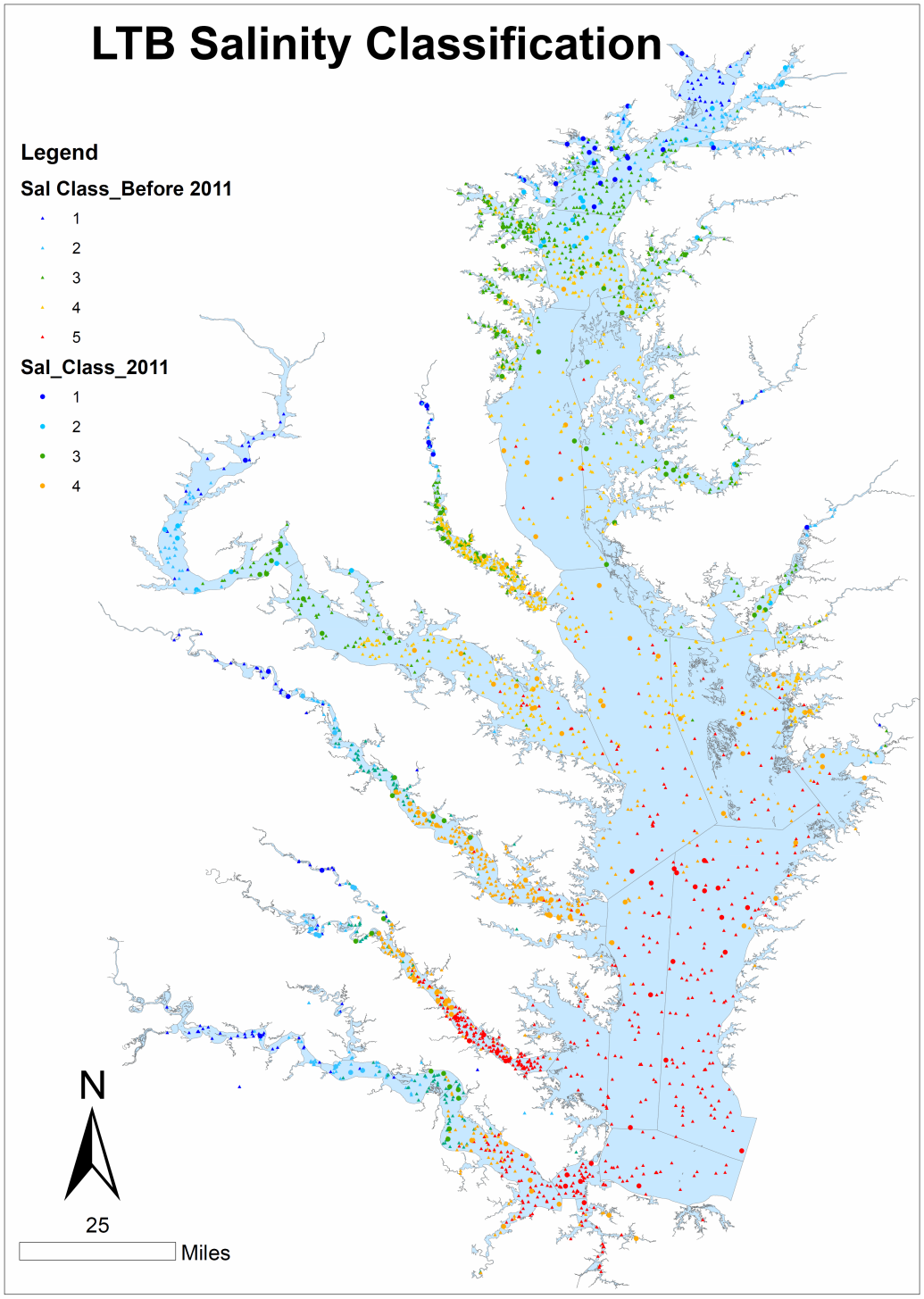
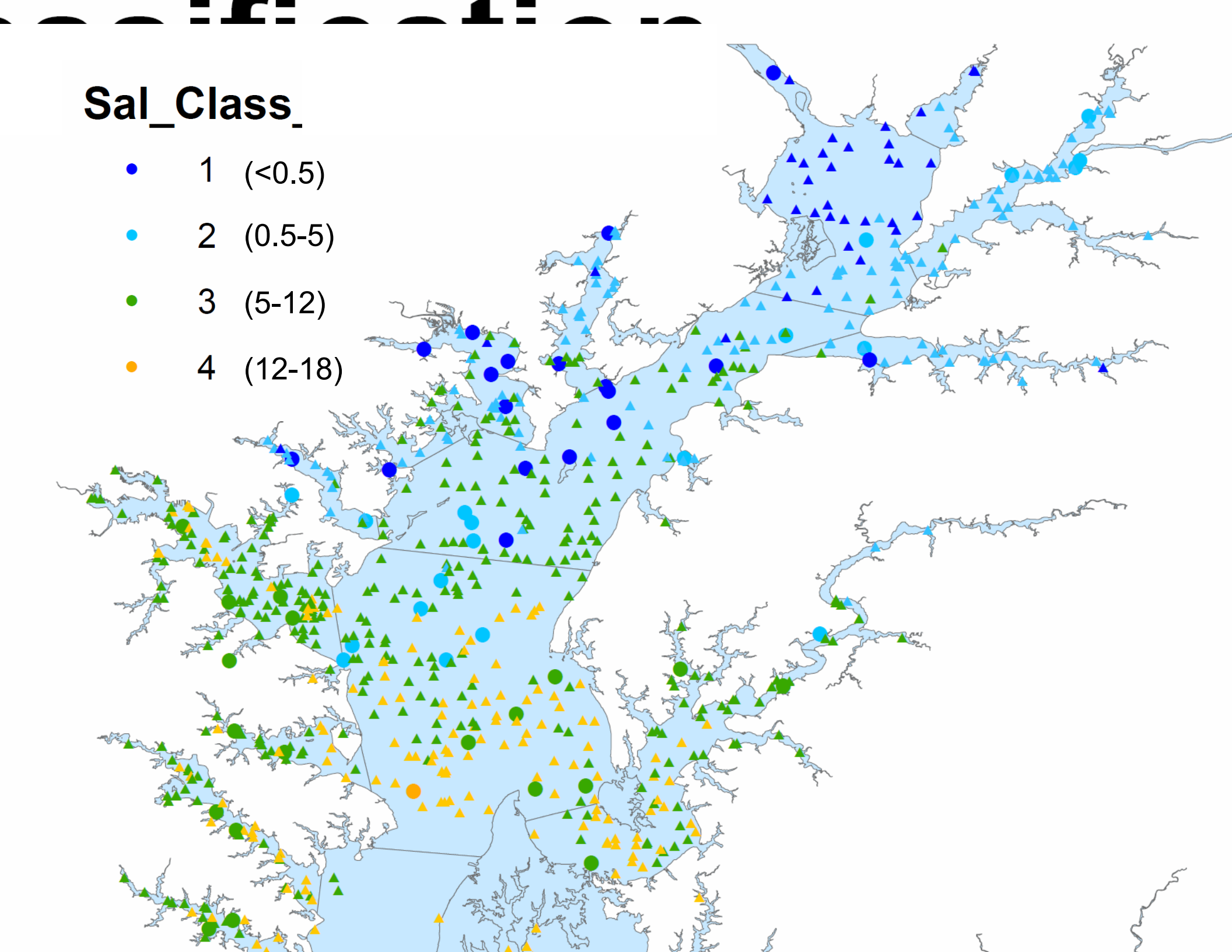
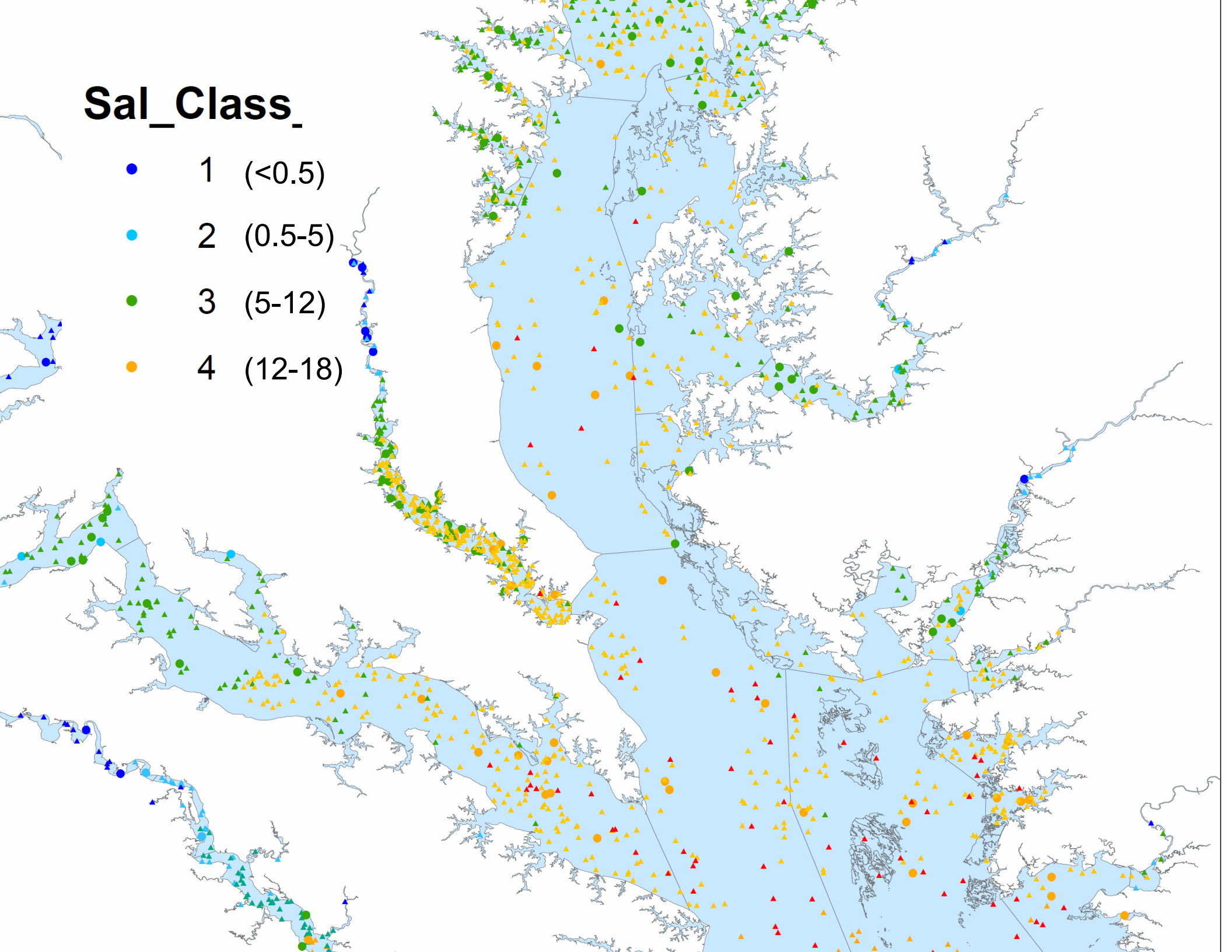
2011 Benthic Program Results

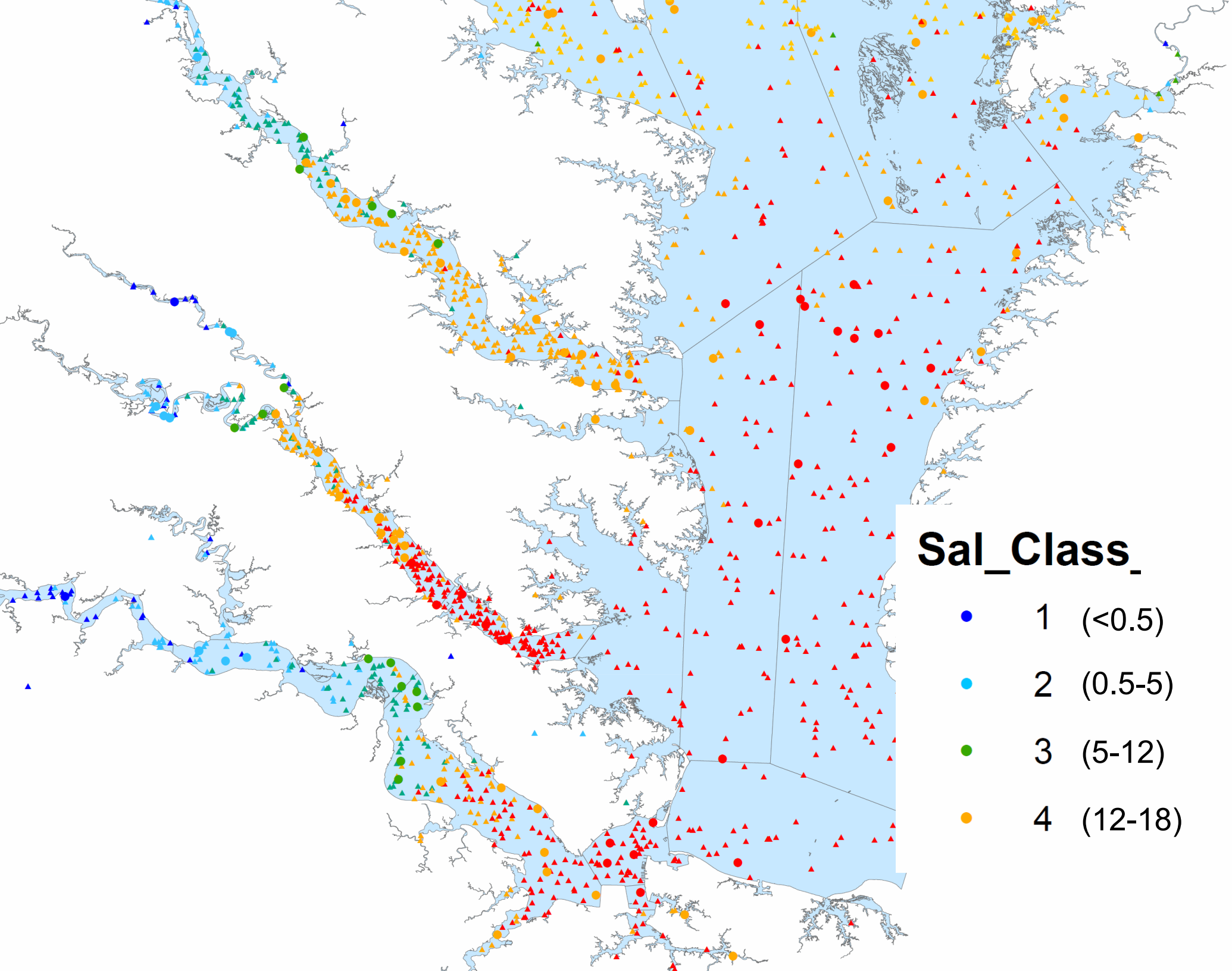
- Many sites were sampled after Hurricane Irene (Aug 27) and during and after Tropical Storm Lee (Sep 7)
- Lower salinities after the storm
- Upper Bay areas that are usually low mesohaline had bottom salinities in the tidal freshwater range after Lee
- The species composition of 2011 and 2010 nearby sites was similar; however the B-IBI values were different
- A salinity habitat class correction was necessary for making the B-IBI more comparable to previous years
  - Salinity class of post-storm sites was re-assigned to reflect the predominant salinity class of the average year
  - Some of the 2011 sites did not need re-assignment because their salinity, although low (e.g., 6) was still within the salinity class of the average year (e.g., 5-12)
- Affected sites included many of the sites in the Upper Bay and Maryland upper Western Tribs strata; some sites in the Maryland Eastern Tribs and Maryland mainstem; and a few Patuxent River sites

LTB Salinity Classification



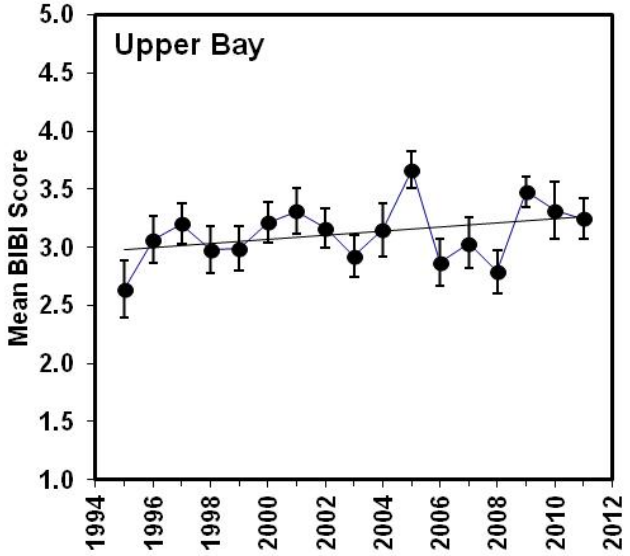

Sal_Class_
1 (<0.5)
2 (0.5-5)
3 (5-12)
4 (12-18)

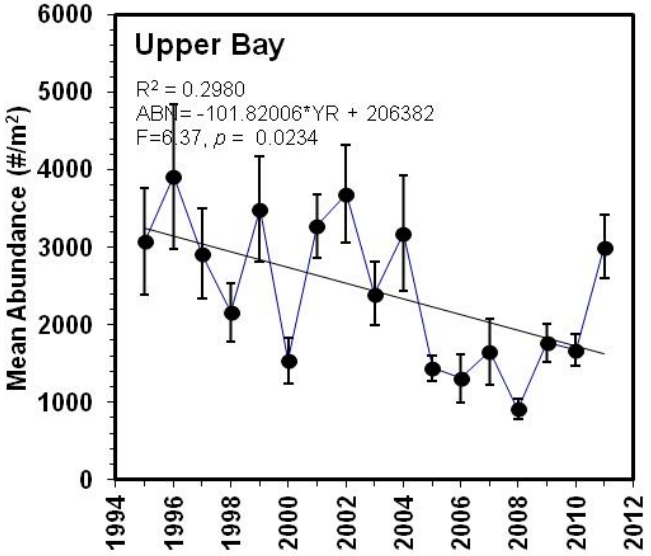

Sal_Class_
1 (<0.5)
2 (0.5-5)
3 (5-12)
4 (12-18)

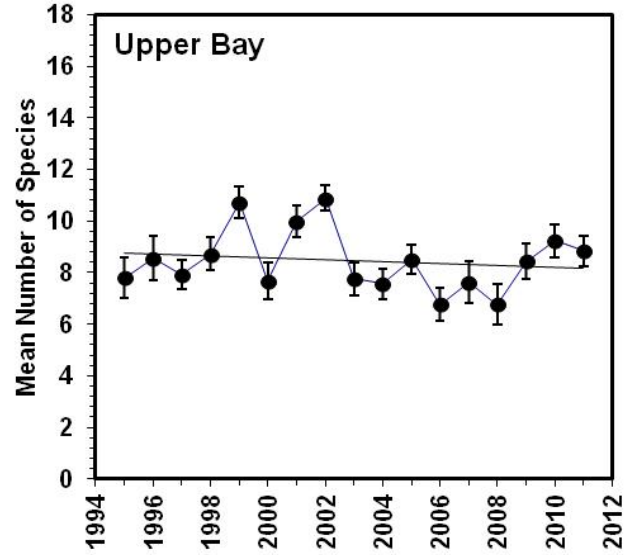

Sal_Class_
1 (<0.5)
2 (0.5-5)
3 (5-12)
4 (12-18)

2011 Benthic Program Results (Cont.)

- The 2011 sites in Virginia were all sampled prior to the storms, they did not need re-assignment nor did they exhibit lower salinity than expected
- Overall degradation in Chesapeake Bay was only slightly higher for 2011 than for 2010
- At the Bay Health Index reporting region level, there were substantial improvements in percent area degraded
  - *Improvements*: North West tributaries, Patapsco/Back Rivers, South west tributaries, Patuxent River, North East tributaries, Choptank River, Rappahannock River
  - *About the Same*: Upper Bay and Lower (Virginia) mainstem
  - *Increased Degradation*: Maryland mainstem, South East tributaries, and Potomac, York, and James rivers
- Aside from the lower salinity values generally and after the storms, there was no indication of storms effects on the B-IBI


Upper Bay
Mean BIBI Score
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012


Upper Bay
R² = 0.2980
ABN = -101.82006*YR + 206382
F=6.37, p = 0.0234
Mean Abundance (#/m²)
6000
5000
4000
3000
2000
1000
0
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012


Upper Bay
Mean Number of Species
18
16
14
12
10
8
6
4
2
0
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

- Differences between 2011 and 2010 were found for total organic carbon, but not for percent silt-clay content