

## Data Requests

- Variable list TBD
- Data for Fig 1 & 2 TBD
- Estuarine volume, tidal range, FW input for all study systems: TBD
- Systems with significant TN impairments: unknown

## Questions

- Yes
- TDN was calculated using the NLOAD (NLM) watershed model; see Latimer and Charpentier 2010 paper for details. Upstream (watershed) sources were considered as well as atmospheric deposition to estuarine surface.
- We did not document TN impairments to the estuaries
- Basis for 99 percentile for dilution potential

Dilution value: source: Bricker SB, et al, (1999):  $1/(\text{estuarine volume})$  for non-vertically stratified estuaries

Dilution potential: Bricker SB, et al, (1999); High dilution potential  $10^{-13}$  to  $10^{-12}$ ; MED dilution potential  $10^{-11}$ ; LOW dilution potential  $10^{-10}$  to  $10^{-9}$ ; but these were from very large estuaries where the estuarine volumes are huge.

Adjusted dilution potential: Used 33.33, 66.6 and 99.9 percentile cut-off values to separate categories - HIGH  $\leq 2.1485 \times 10^{-7}$ ; MOD  $> 2.1485 - < 8.4504 \times 10^{-7}$ ; LOW  $\geq 8.4504 \times 10^{-7}$ . We looked for a way to scale down NOAA's values to the volume ranges of our estuaries. We looked at the statistical characteristics for break points and used best professional judgment to divide the volumes in 3 bins (33, 66.6, 99<sup>th</sup> percentiles).

- We did not consider trophic state (chl-a) in our analysis
- We did not consider phytoplankton biomass (chl-a) in our analysis
- Regarding water depth. Bathymetry for each estuary was used to generate a triangular irregular network (TIN) model. A contour line for the 0.5, 2 and 3m depth was generated from the TIN model. The area between the 0.5 and 2m depth was determined along with the area between the 0.5 and 3m depth
- We have SAV data from aerial photography – that we considered representative of the period of the last decade of the 2000s; similar to the land use data and therefore the N loading rate data (1990s).
- We have no knowledge of timing of gains or losses in SAV.
- Yes; we used general conclusions from the Vaudrey 2008 report. We had no data on CDOM levels for the estuaries
- Aerial surveys were taken (decisions of when to take aerial photos considered weather, water clarity and phenology by the respective states): CT, Spring 2006; MA, Spring-Summer 2001; RI, August 2006
- Anomalous estuaries (n=5): the cause of the anomalies were purely based on general ecological knowledge and not specific data, except where noted in Table 3.

- We did not account for wasting disease; although in general southern new England phenomenon system wide losses from wasting disease has been documented to be before the imagery was collected for this study
- We did not characterize the hydrodynamics of the study systems except for general tidal range, volume, etc.
- Portions of Great Bay likely have tidal ranges similar to the study systems
- Only non-river dominated systems were studied
- My understanding is that total nitrogen loads to entire Great Bay estuary are  $\sim 150 \text{ kg ha}^{-1} \text{ yr}^{-1}$
- Annual loading rate was used because the model used to estimate loading is based on land use and thus integrates over time (average loading)