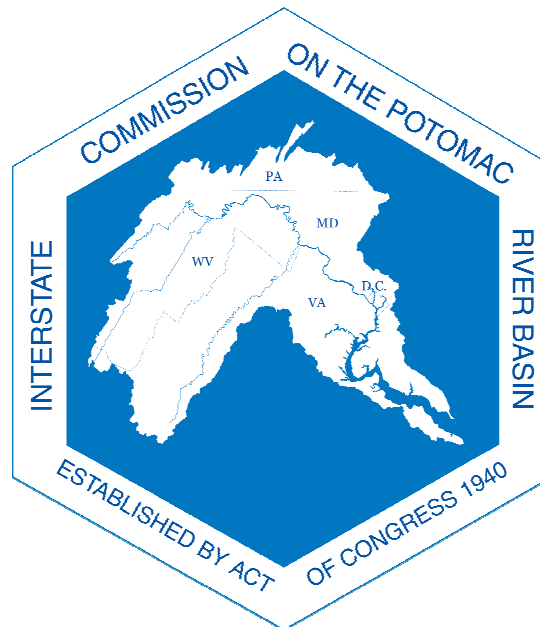


Chessie BIBI Updates

Zachary M. Smith

zsmith@icprb.org

ICPRB



Objective

Update and refine the 2011 Chessie BIBI for Chesapeake Bay Program assessment purposes.

Master Taxa List

Taxa

- Freshwater Benthic Macroinvertebrates collected in the Chesapeake Bay watershed
 - 222 of families (151 insect families)
 - 760 of genera (621 insect genera)

Master Taxa List

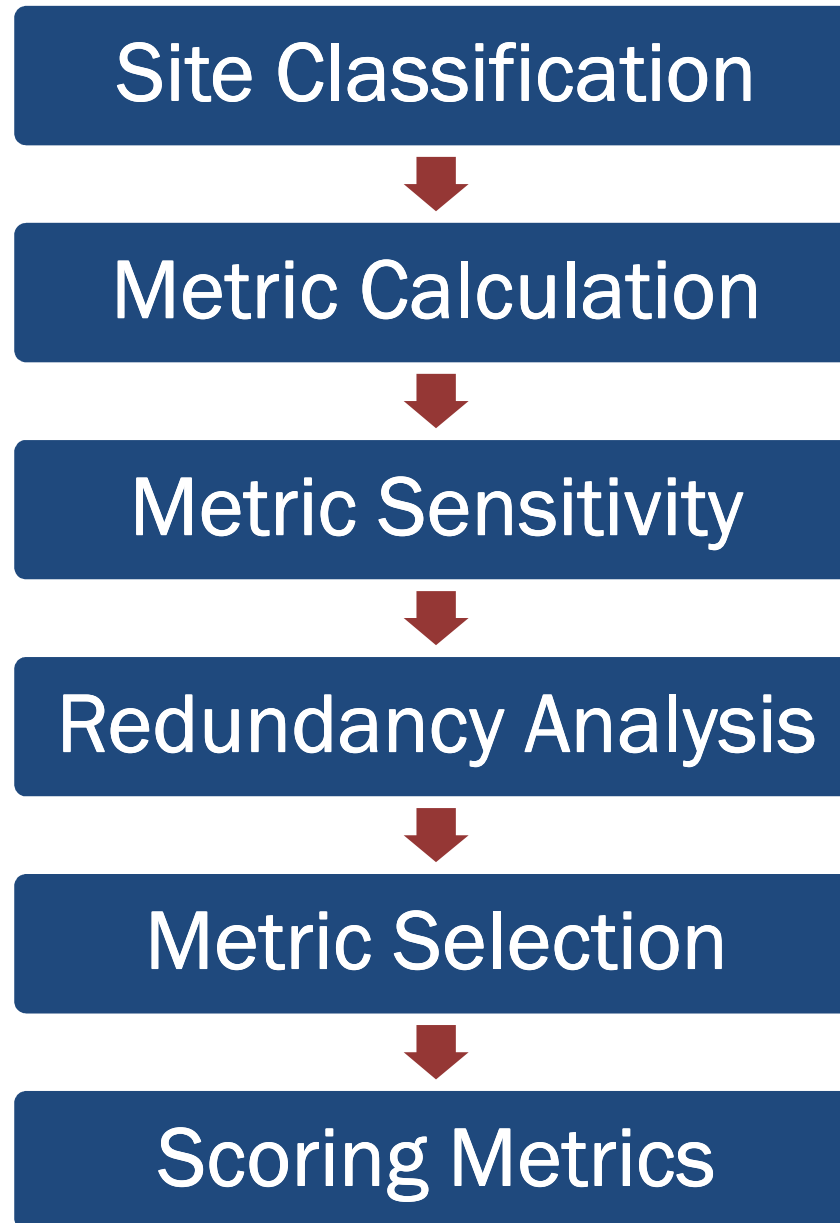
Common Attributes

- Municipal Waste Tolerance Values
- Functional Feeding Groups (FFG)
- Habits

EPA Attributes ([USGS 2006](#), [EPA 2012](#))

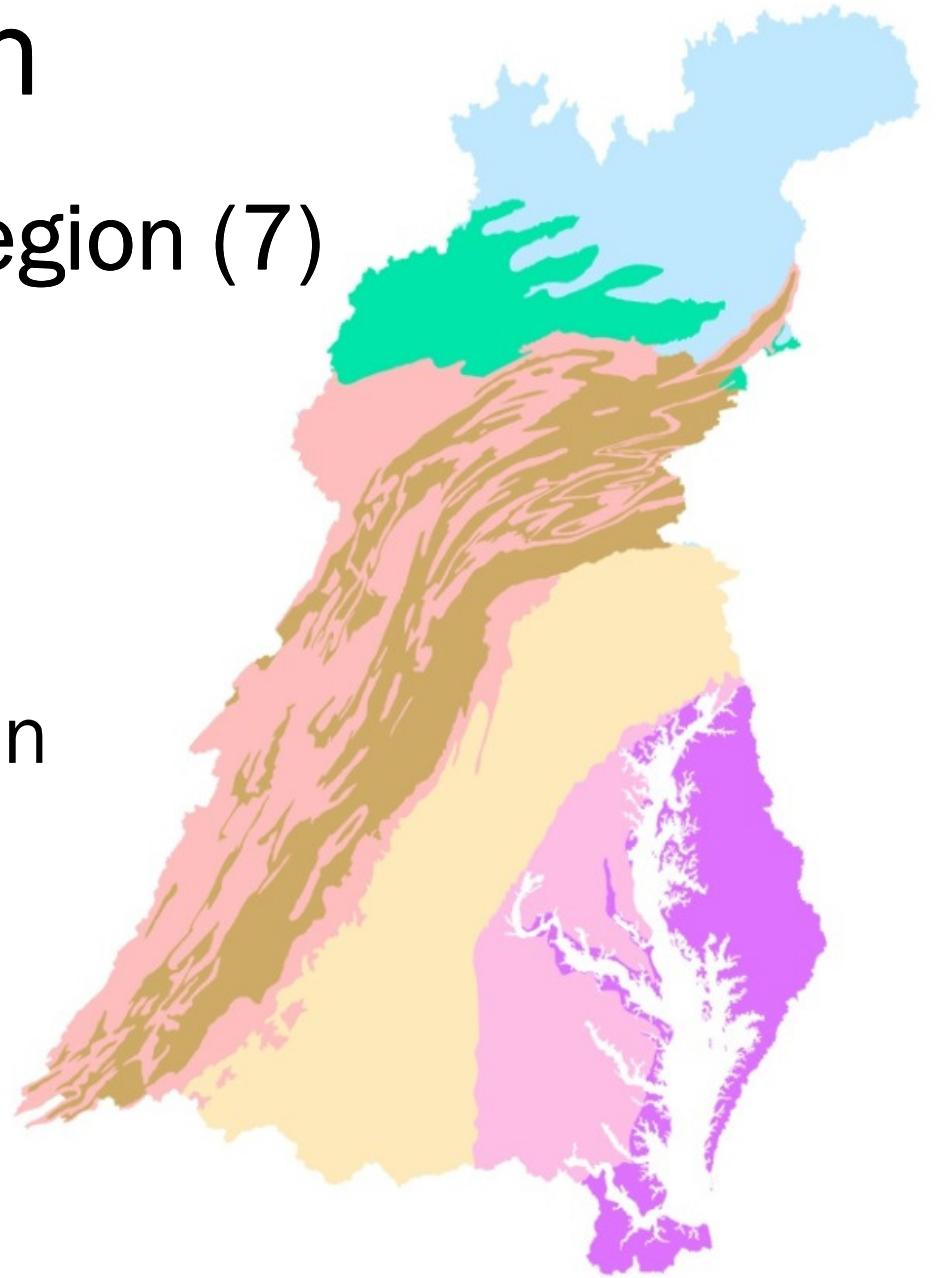
- Respiratory Type
- Voltinism
- Specific Stressors

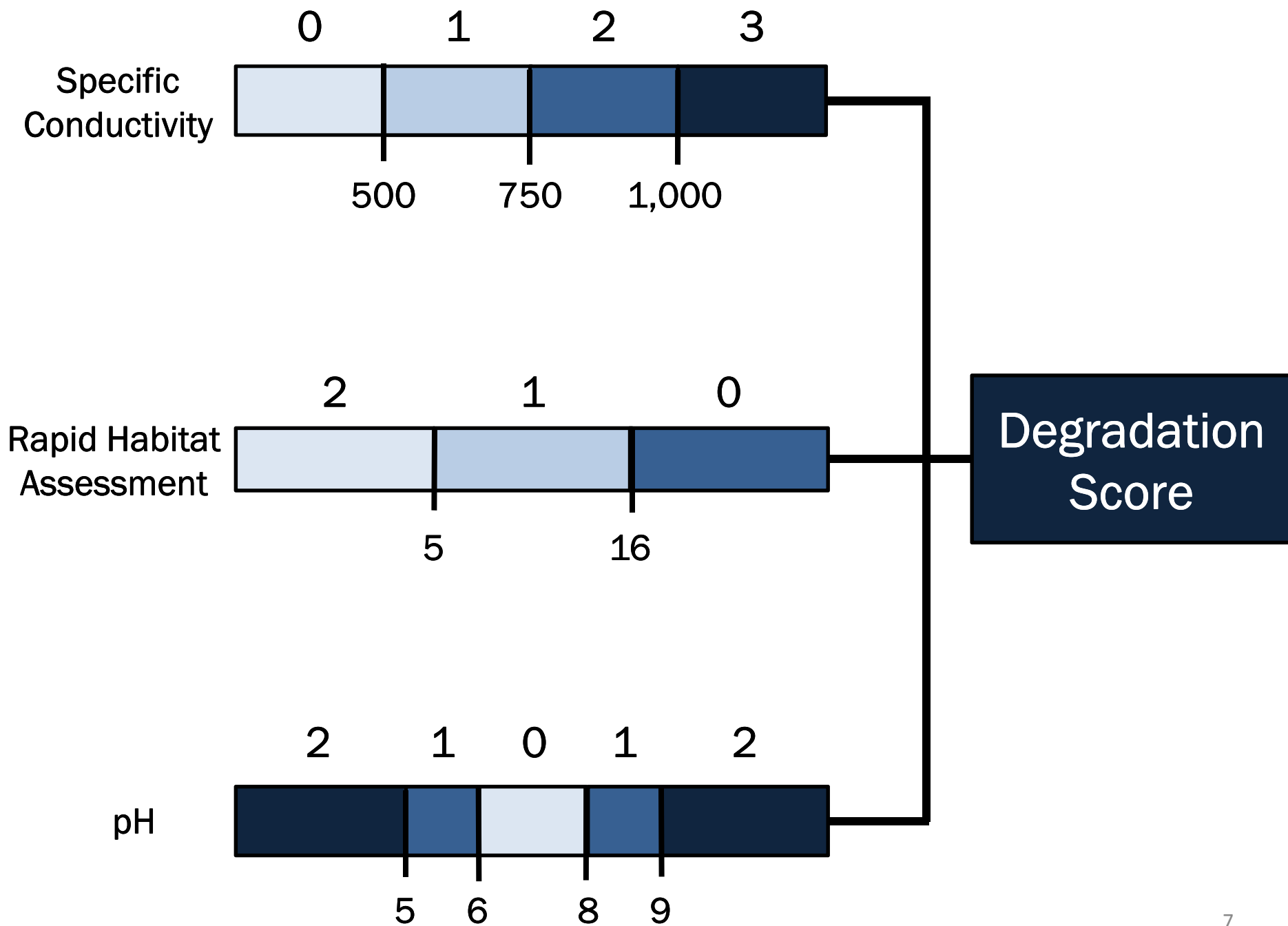
BIBI Workflow



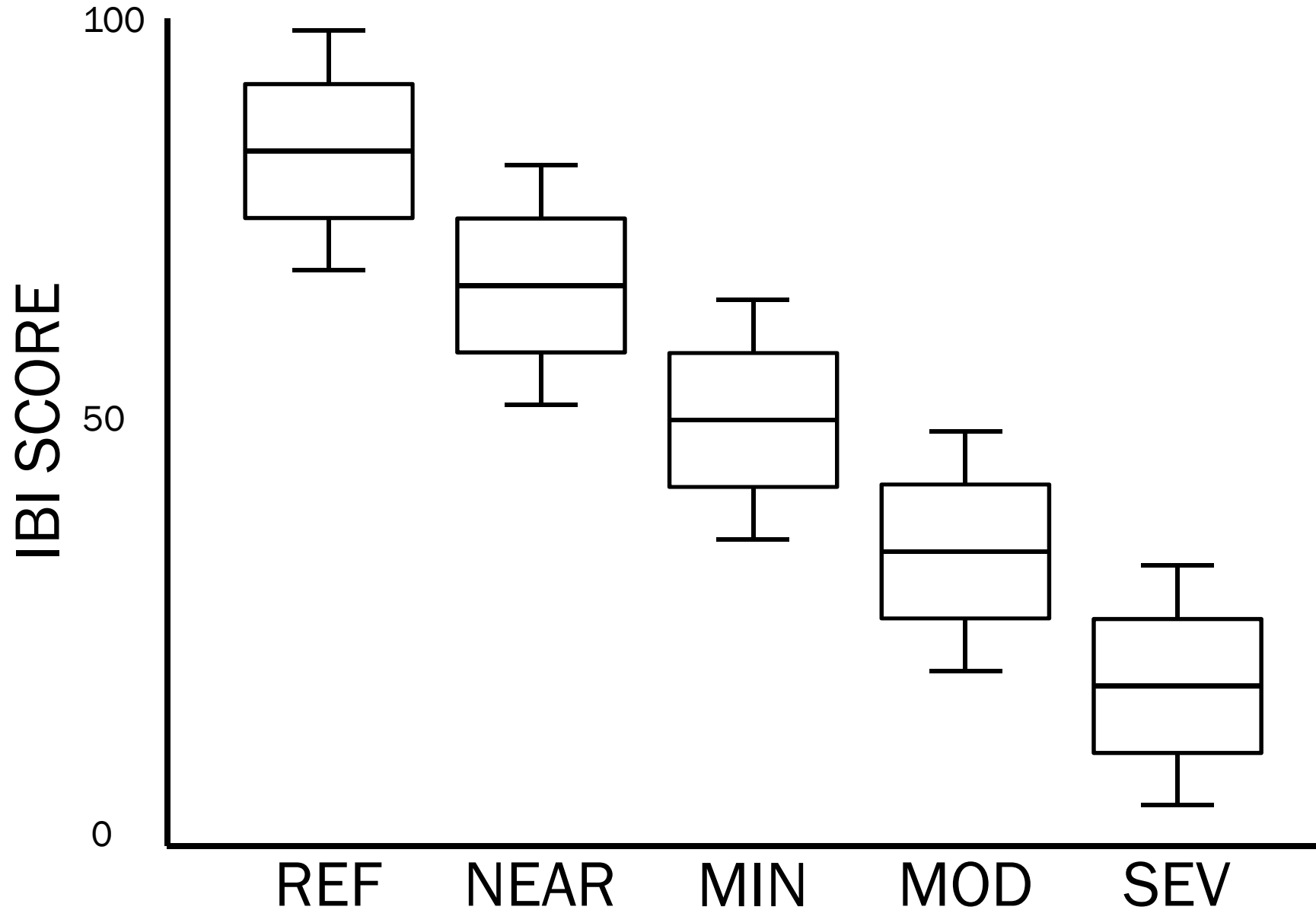
Site Classification

- Classes in each bioregion (7)
 - Reference
 - Near Reference
 - Minor Degradation
 - Moderate Degradation
 - Severe Degradation
 - Mixed

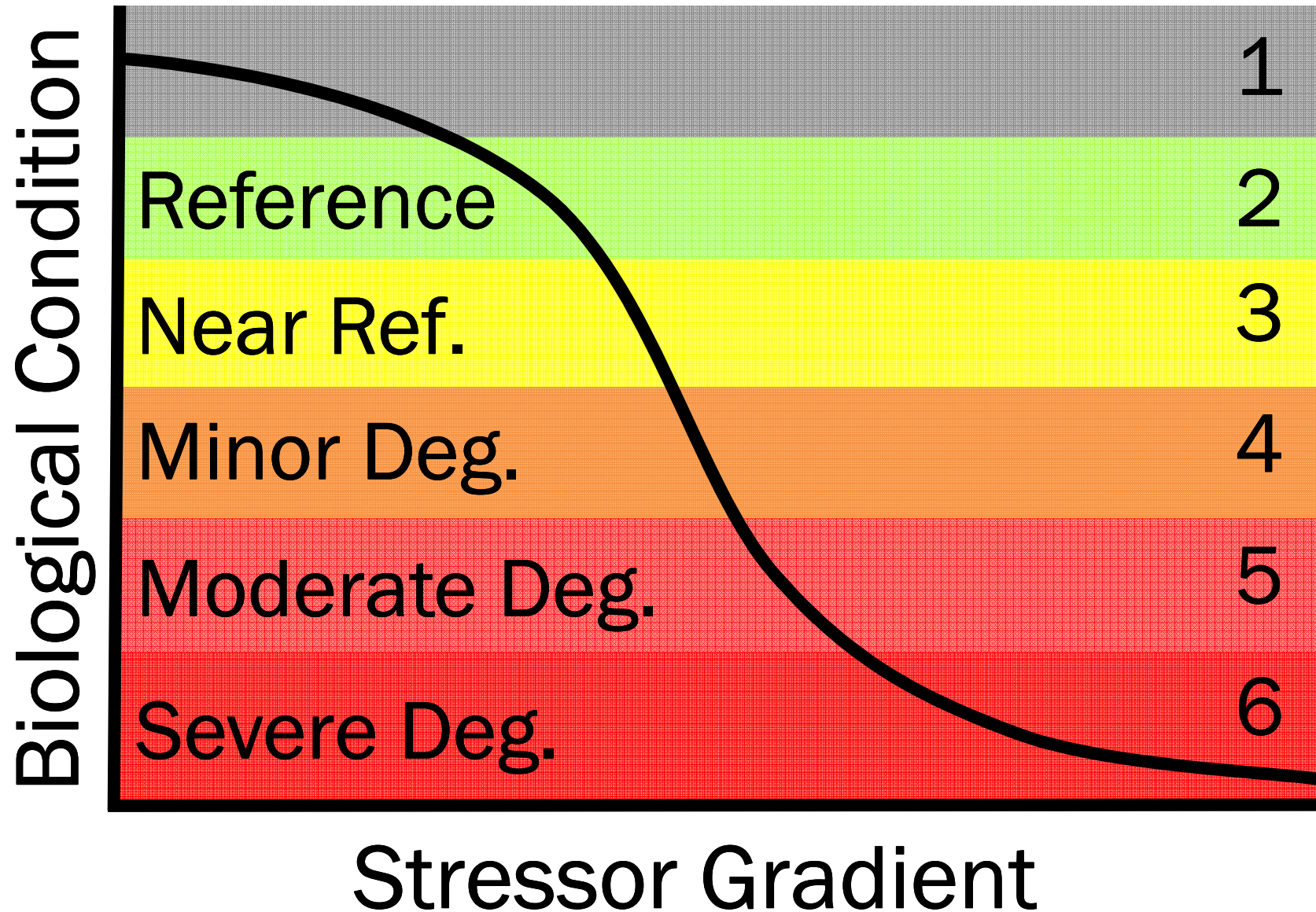




Ideal Class Gradient



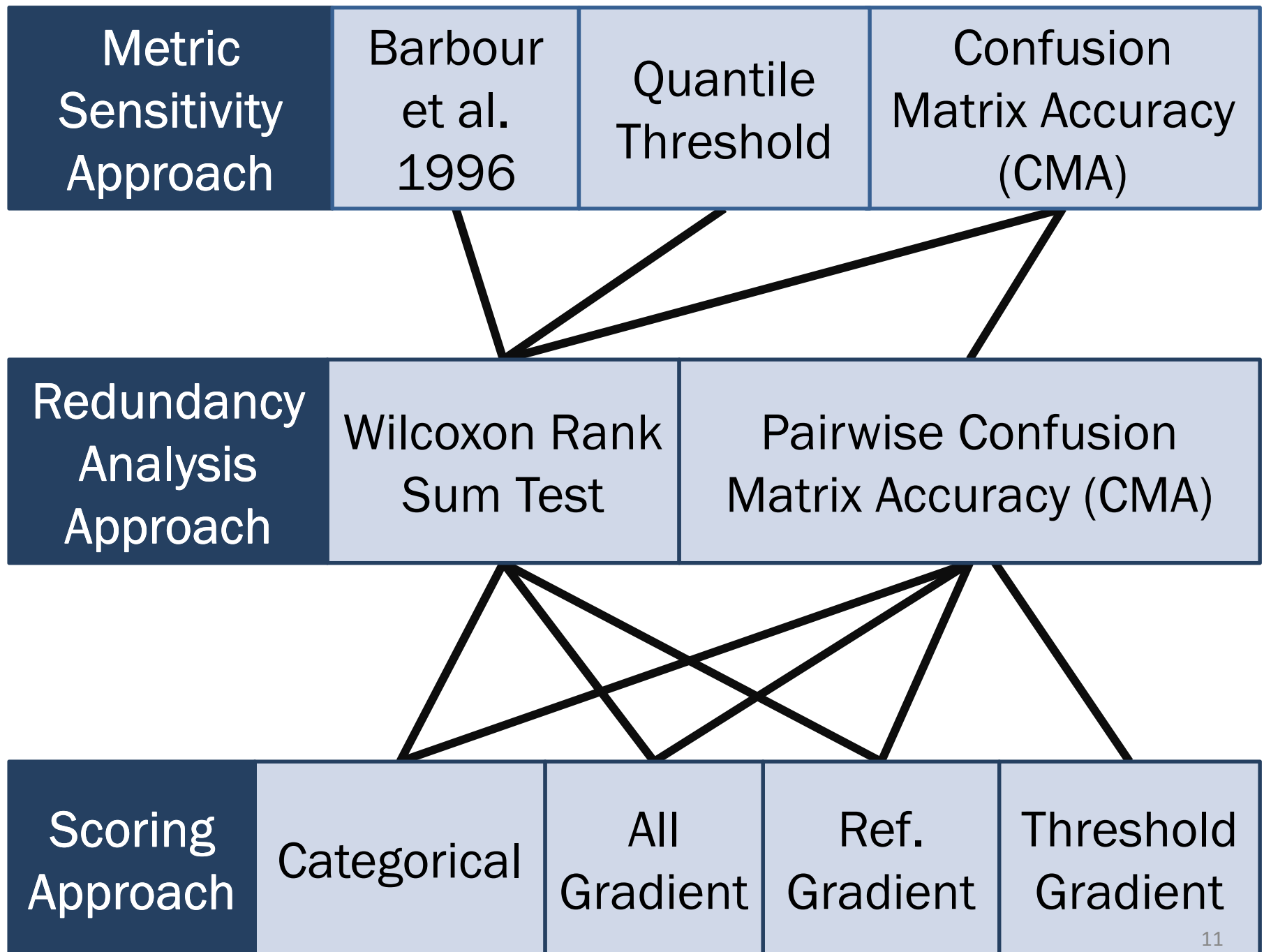
Biological Condition Gradient



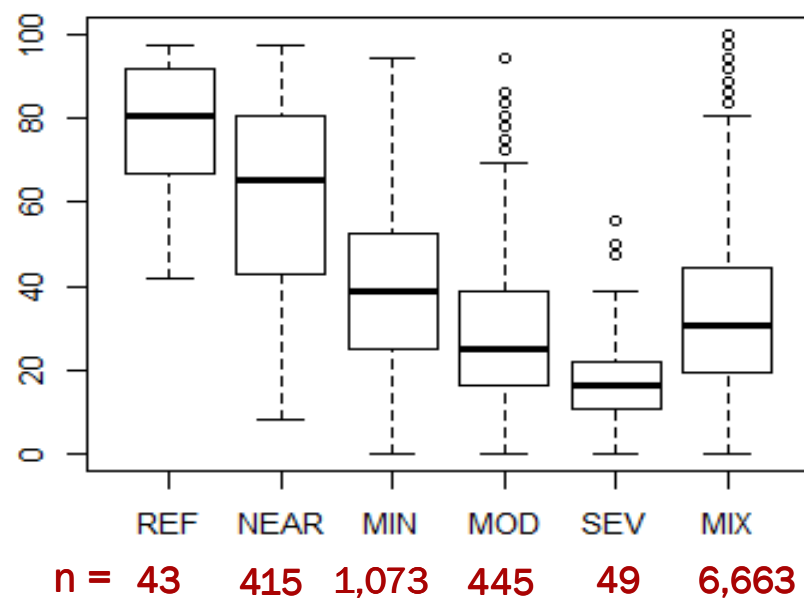
Metric Calculation

Metrics

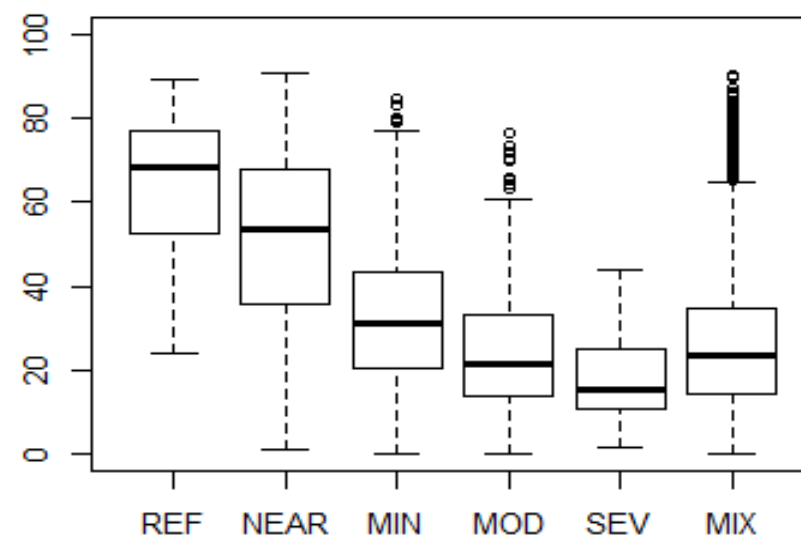
- BIBI R-package
 - 78 metrics from the literature
 - Exploration of new metrics



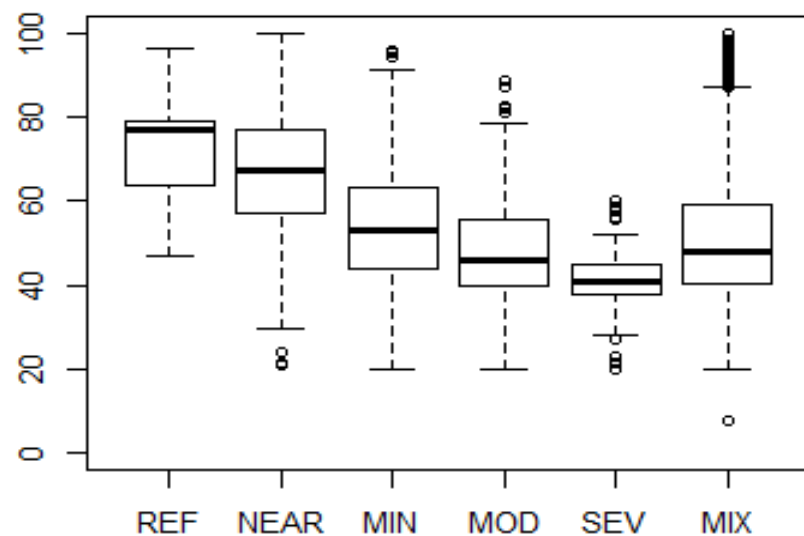
Reference Threshold CMA



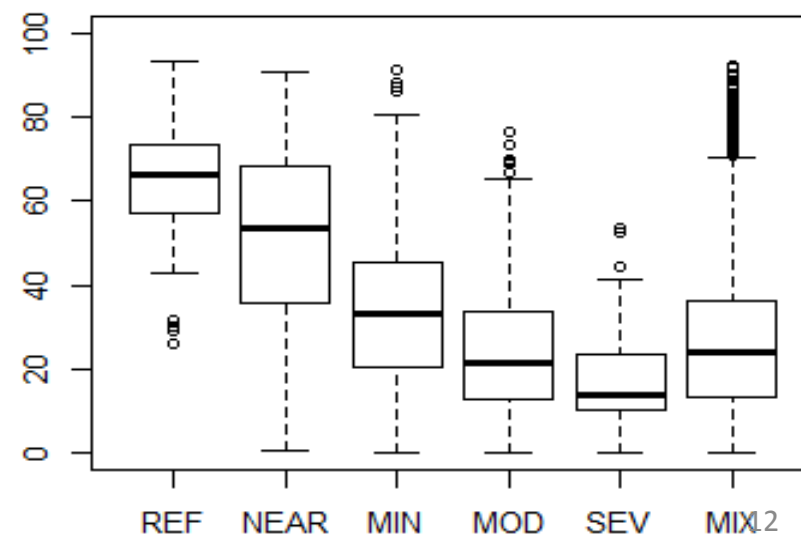
All Gradient CMA



All Gradient Quantile



All Gradient Barbour



Index Resolution Type

Low Resolution

- **Order** Level Index
- Volunteer programs and in situ identification

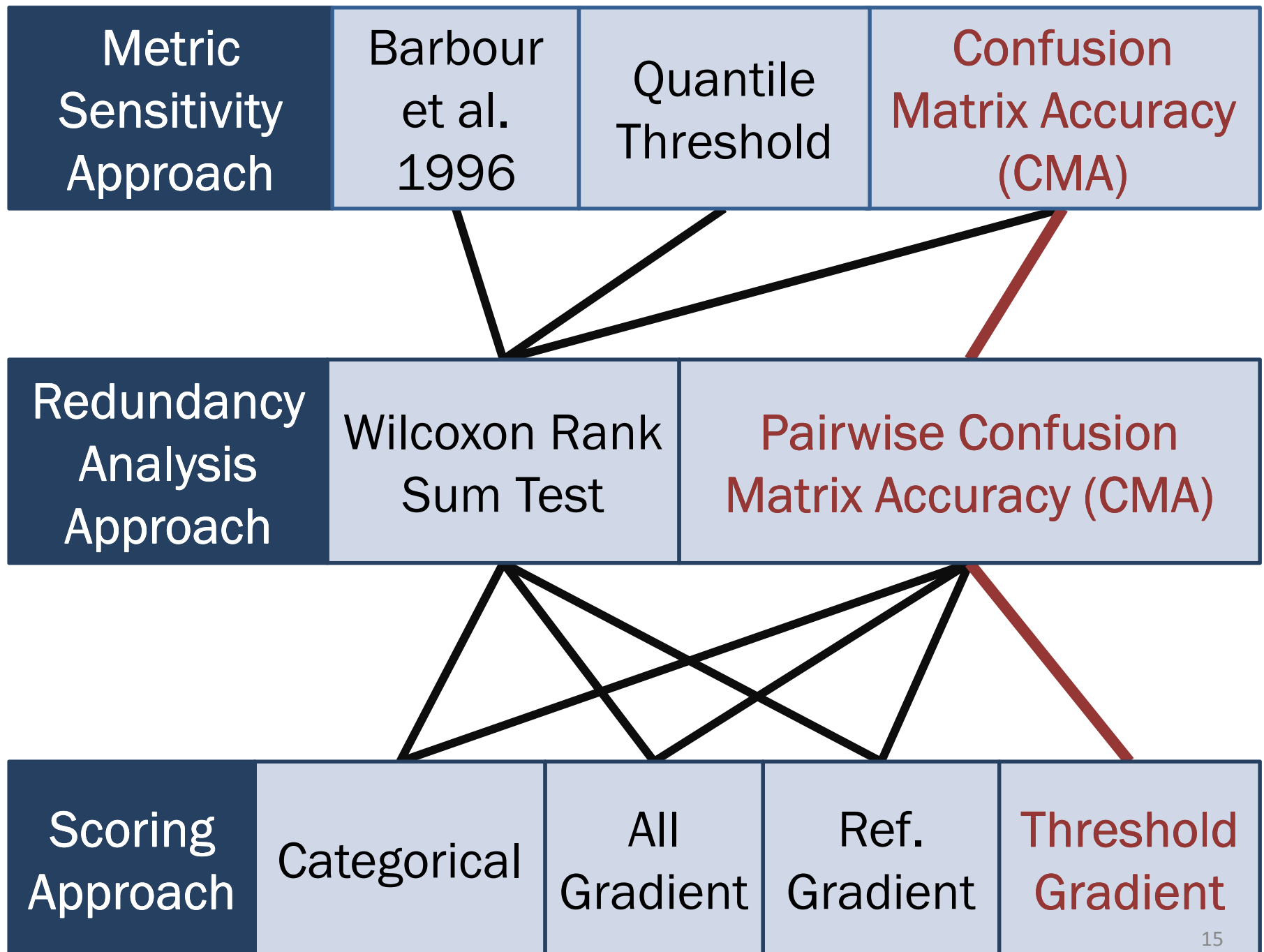
Moderate Resolution

- **Family** Level Index
- Studies with limited funding and/or minimal macroinvertebrate identification experience.

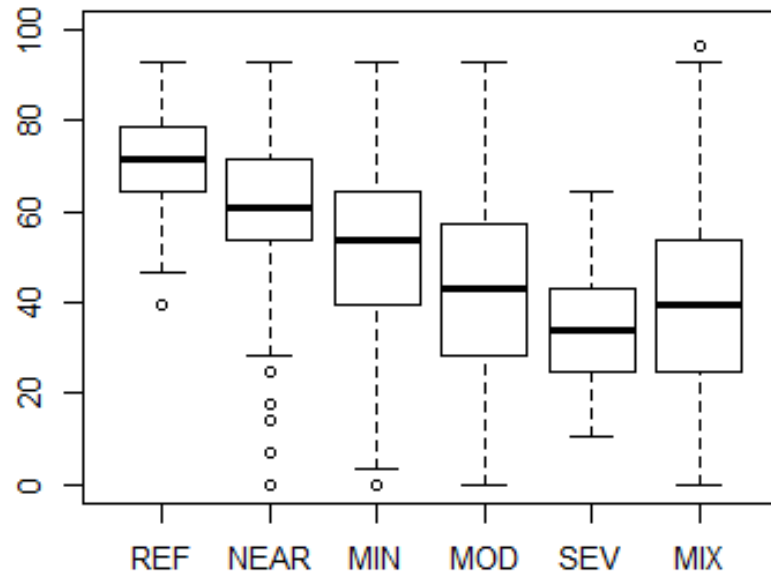
Index Ranks

High Resolution

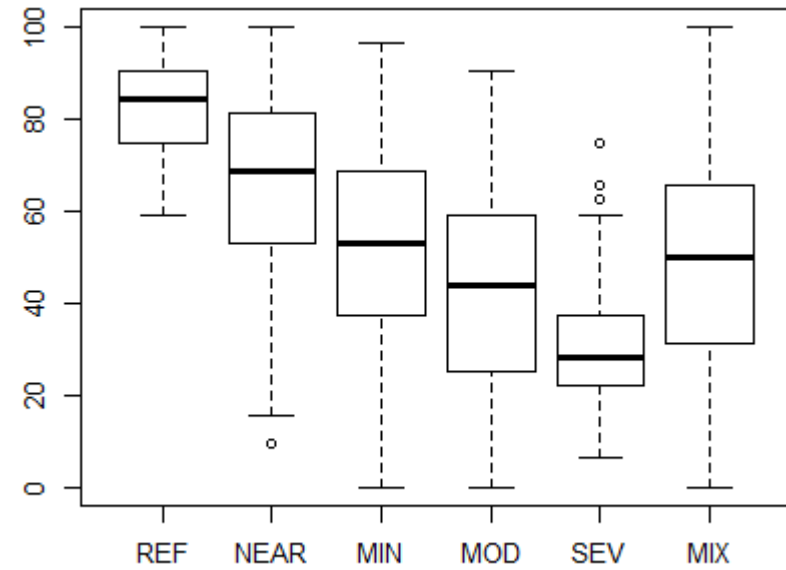
- **Genus** Level Index
- Studies with extensive funding and macroinvertebrate identification experience.
- Secondary indices identifying specific stressors



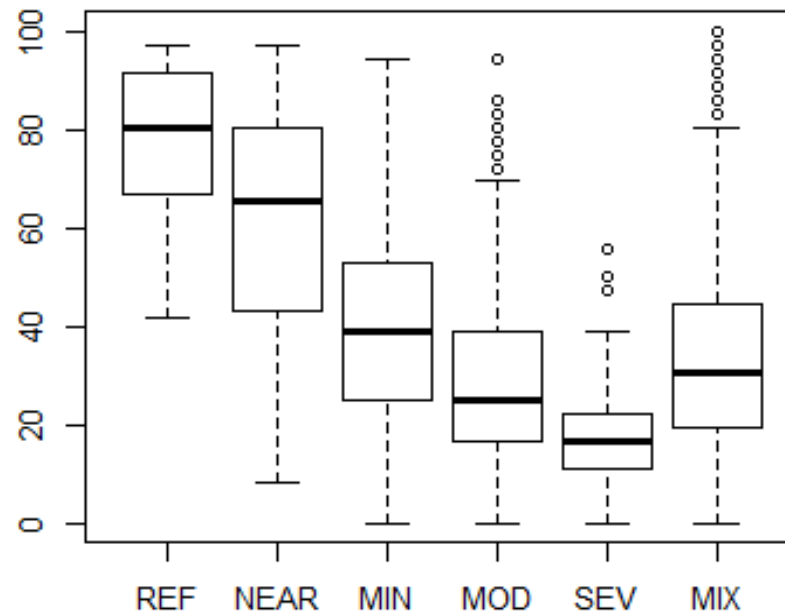
Order



Family



Genus



Ongoing Analyses

- Test for agency differences within each bioregion
 - Sampling period differences
 - Differences in taxa identified
- Deal with unidentified taxa and unclassified taxa
 - Missing tolerance values, FFG, or habits
- Compare the 2011 indices to the 2016 indices