

PBMS

NEMI

Biology

**Methods and
Data Comparability Board**

Nutrients

Accreditation

WQDE

*New
Technologies*



Biology Methods Workgroup

Mission:

“Identify, compile, and develop a framework for characterizing and comparing biological methods for water monitoring, using: whole organisms, biomolecular materials, or population assessments”

What does data comparability mean?

- Ability to:
 - Use existing data from different programs or methods for
 - temporal or spatial trends,
 - greater site density, or
 - broader aerial coverage
 - Provide recommendations on different methods to supply necessary and sufficient information
 - fewer samples needed per program
 - increased cost efficiencies
 - similar and/or improved information

Comparability is USER-defined; what is considered comparable to one organization may not be for another.

Comparability is a direct outcome of one's Data Quality Objectives (DQOs)

DQOs for Biological Methods

- Method is able to detect a 20% change in IBI from reference or baseline conditions
- Method has $< 20\%$ misclassification error rate; i.e., $> 80\%$ of the time, sites that are truly impaired will be assessed as impaired.

DQOs Lead to Method Performance and Data Acceptance Criteria

- Determination of assessment error rates requires precision and accuracy estimates
- Determination of changes from reference or baseline requires precision and sensitivity estimates

Generalized Comparability Process

- **DQOs Defined**
- **Determine Method Precision for metric, IBI, or endpoint**
- **Determine Method Sensitivity**
- **Determine Discrimination Efficiency**
- **Based on program purpose; historical data**
- **Replicate samples from reference and test sites; multiple reference sites**
- **Minimum difference from reference detectable; number of condition classes discernable**
- **Rate of correct site classification based on known reference and impaired sites**

Challenges

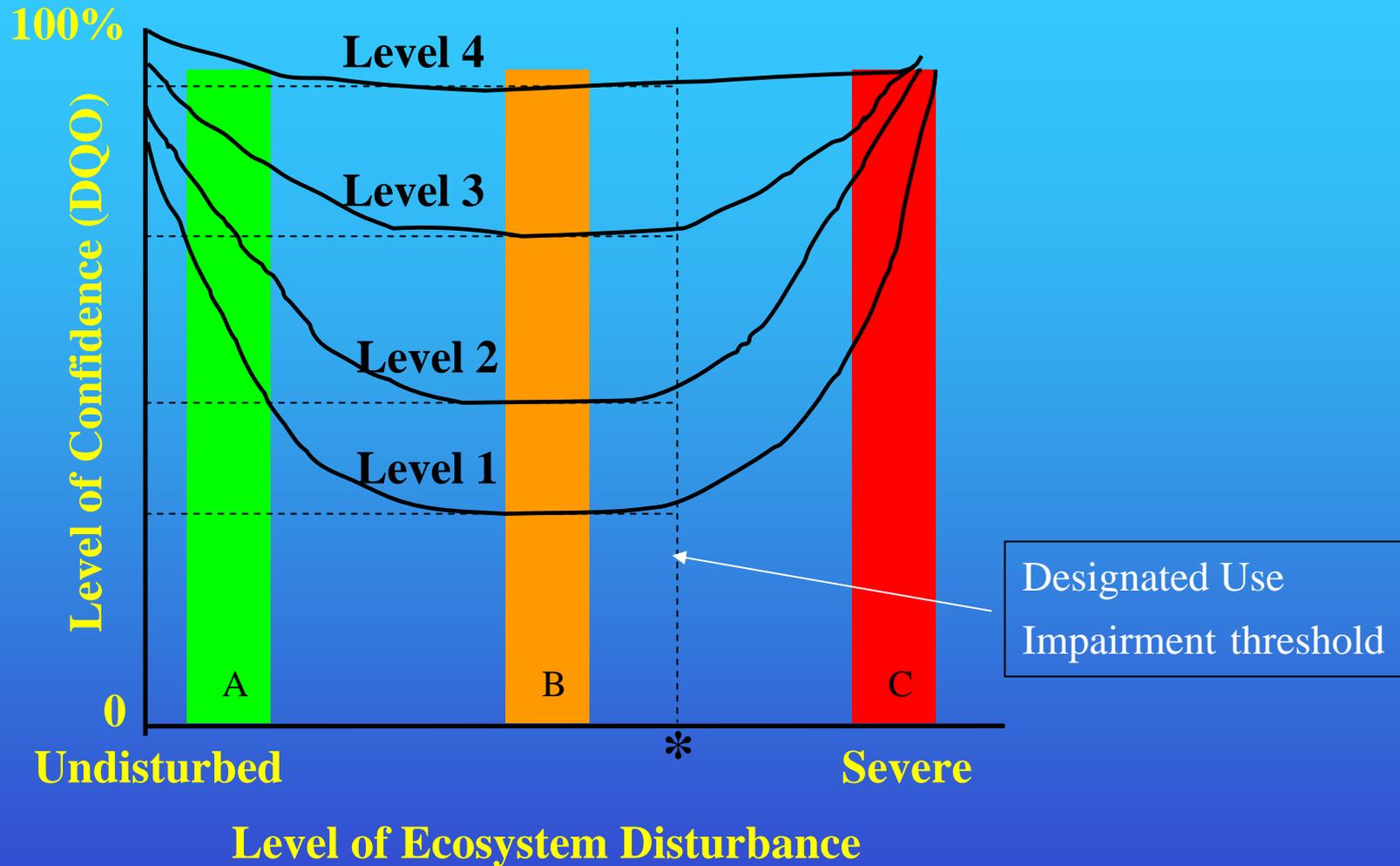
How do we define “accuracy”?

How do we define “representativeness”?

What data characteristics are sufficient to claim comparability?

- measures of similar environmental features
- the same assemblage(s) and/or habitats sampled?
- the same or similar index period? sampling characteristics?

Confidence in detecting different impairment levels as a function of assessment rigor (Levels 1-4 with 4 being most rigorous).



At a given level of stress, different levels of confidence in the assessment might be obtained, depending on level of rigor

Charge to Participants

- **Issue 1: Can comparability be evaluated for bioassessments? On what level(s)? What approaches work?**
- **Issue 2: What are the information gaps to determining bioassessment comparability currently? What do we need to know and encourage others to do to evaluate bioassessment comparability?**
- **Issue 3: How well does the Board's comparability framework address bioassessment methods and data? What is needed to integrate biological data from various programs into a "national" assessment?**