# NYS STREAM BIOMONITORING

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NYSDEC Stream Biomonitoring Unit
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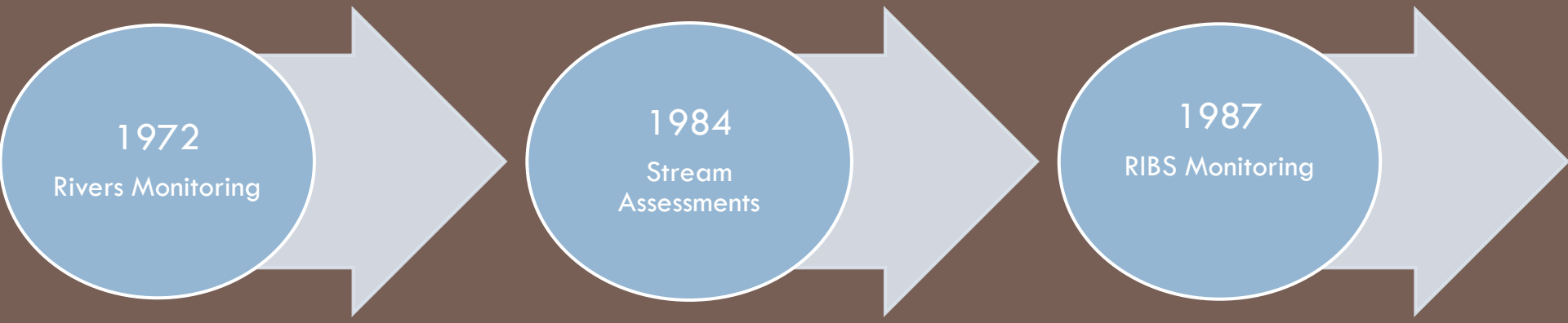
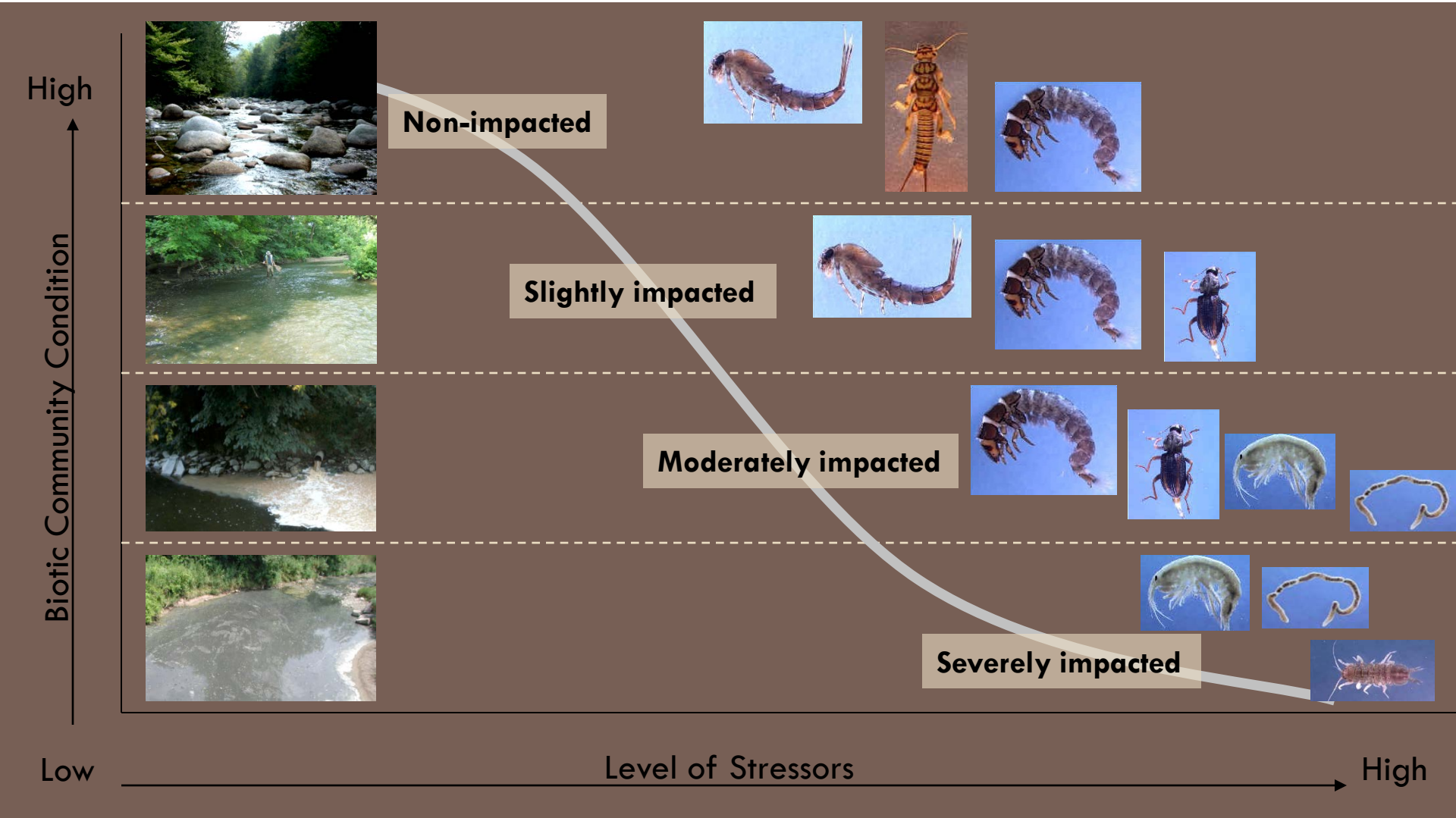
# The Stream Biomonitoring Unit

- Initiated in May of1972
  - Clean Water Act "Biological Integrity"

- Evaluate the relative biological health of the State's surface waters



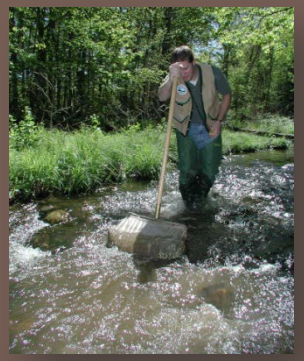
# Biological Monitoring



# Biological Monitoring

# Field Work

- Kick Sampling ($1^0$)
  - Hard bottom wadeable streams and rivers
- Multiplate Sampling ($2^0$)
  - Large Rivers and impoundments
- Ponar Sampling
  - Soft bottoms substrates special studies
- Net Jab Sampling
  - Lake littoral zones and soft bottom wadeable streams and rivers

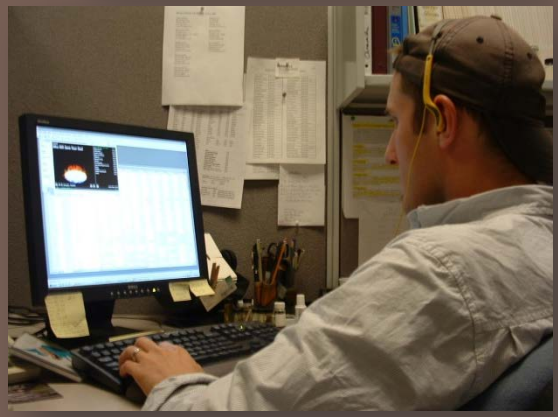


# Field Work

- Field Assessment
- Algae
- Basic Water Chemistries
- User Perception Assessment
- Habitat Assessment
- Pebble Count
- Additional information as needed (project specific)

# Lab Work

- All samples are subsampled
- Taxonomy to lowest possible taxonomic resolution
  - Everyone spends some time in the lab
- Strict QA/QC procedures
- Process ~ 400 samples/year
- All data entry is automated
- Custom-built centralized database



# User Perception Survey

- Used often in Lake water quality assessment programs
- Widespread surveys targeting lake associations
- Link sampling parameters and recreational impacts
- Provides a rationale for selecting nutrient criteria for the maintenance of desired aesthetic qualities and recreational uses

# User Perception Survey

**NYSDEC - Assessment of Recreational Use Perception**

Circle the one answer which best describes your ability to participate in $1^0$ contact recreation:

a. Beautiful, could not be nicer. Ability to swim, wade, dive, water ski etc…fully attained.
b. Minor aesthetic problems, but still excellent for $1^0$ contact recreation.
c. $1^0$ contact recreation slightly impacted.
d. Desire to participate in $1^0$ contact recreation substantially reduced.
e. Awful! $1^0$ contact recreation impossible.
f. Not applicable (headwater/high flows/dry, etc.)

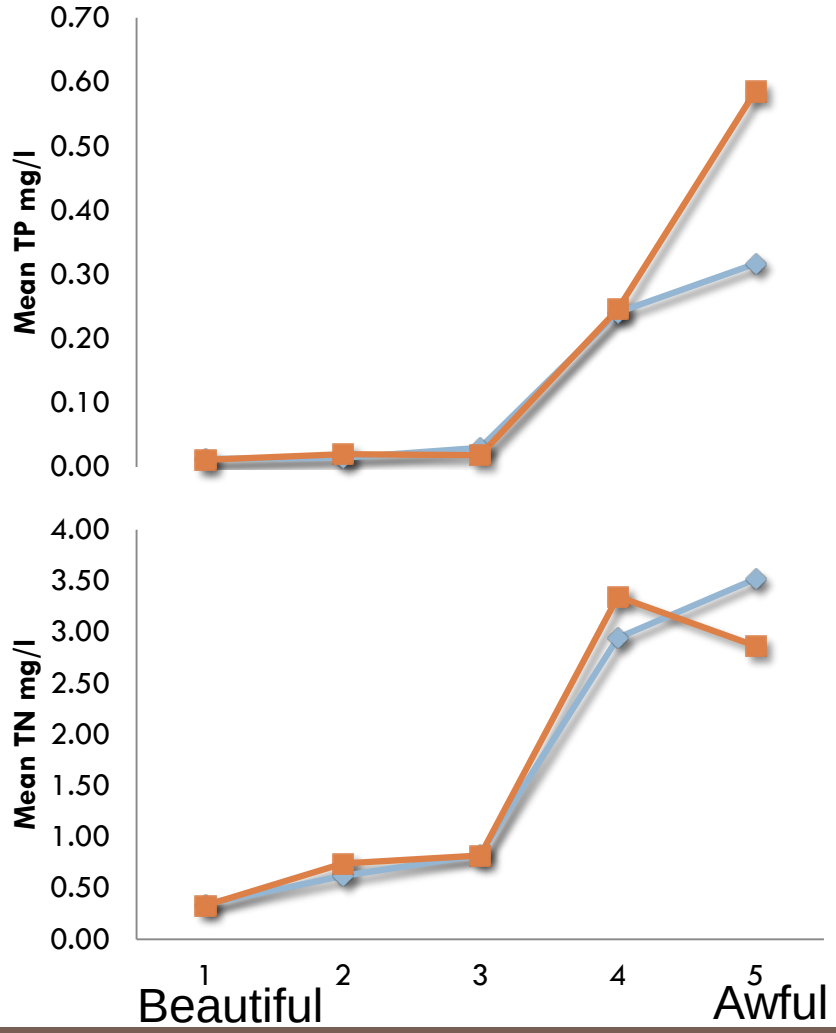
Circle the one answer which best describes your ability to participate in $2^0$ contact recreation:

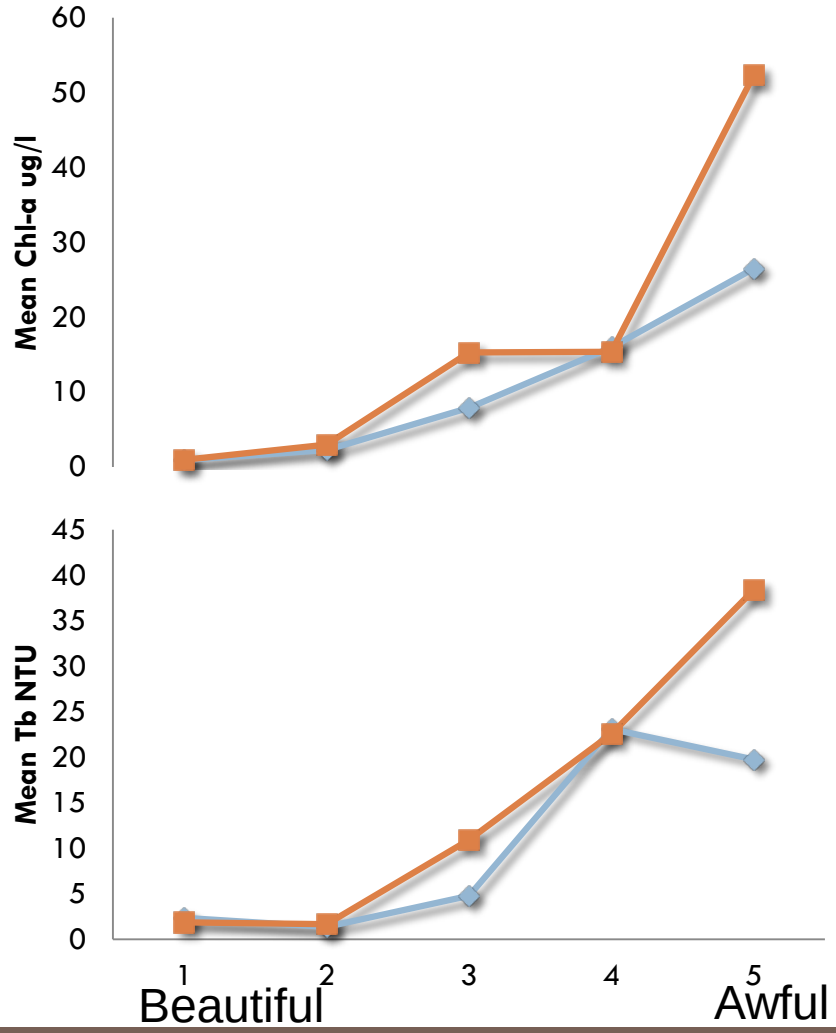
a. Beautiful, could not be nicer. Ability to fish and boat fully attained.
b. Minor aesthetic problems, but still excellent for $2^0$ contact recreation.
c. $2^0$ contact recreation slightly impacted.
d. Desire to participate in $2^0$ contact recreation substantially reduced.
e. Awful! $2^0$ contact recreation impossible.
f. Not applicable (headwater/high flows/dry, etc.)

# User Perception Survey

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Weather conditions (Current): | | | | Sun | | | | Rain | | | Clouds |
| Weather conditions (Past 24hrs): | | | | Sun | | | | Rain | | | Clouds |
| Water Clarity: | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | Clear | | | | Intermediate | | | | | | Turbid |
| Phytoplankton: (suspended) | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | Natural | | | | Intermediate | | | | | | Severe |
| Periphyton Cover: | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | Natural | | | | Intermediate | | | | | | Severe |
| Macrophyte Cover: | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | Natural | | | | Intermediate | | | | | | Severe |
| Odor: | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | Natural | | | | Intermediate | | | | | | Noxious |
| Trash: | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | None | | | | Intermediate | | | | | | Landfill |
| Discharges/Pipes: | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | None | | | | Intermediate | | | | | | Dominant |

# User Perception Survey



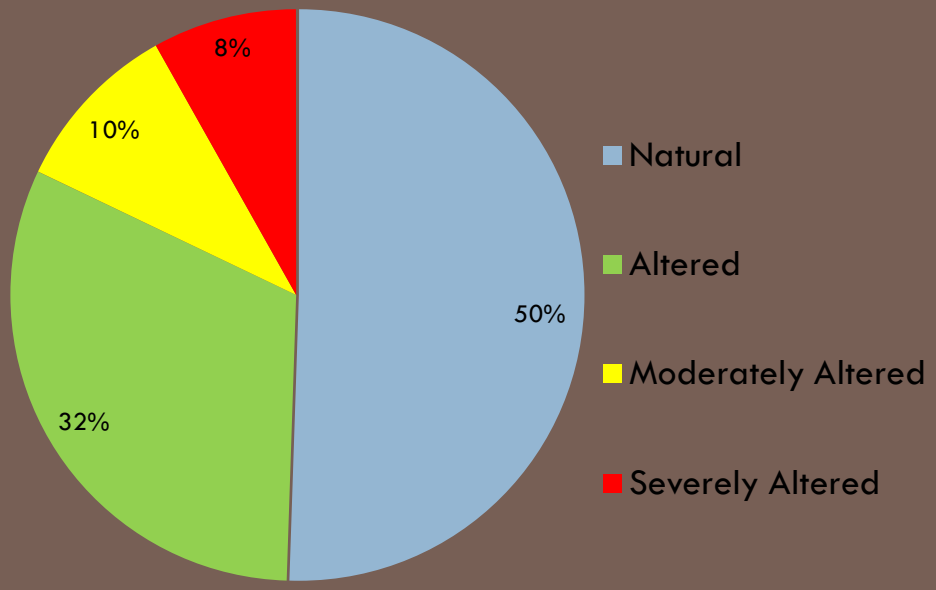
# Habitat Assessment

- Incorporate greater habitat information into assessments
  - In-stream to Riparian
  - Reach scale
- Adapted from USEPA rapid bioassessment methods
- Observed/Expected Model

# Habitat Assessment

| Variable | Model | Sample |
|---|---|---|
| Available Cover | 17 | 18 |
| Embeddedness | 17 | 10 |
| Velocity/Depth Regime | 19 | 12 |
| Sediment Deposition | 18 | 10 |
| Channel Flow Status | 19 | 20 |
| Channel Alteration | 18 | 5 |
| Riffle Frequency | 19 | 10 |
| Bank Stability | 18 | 8 |
| Vegetative Protection | 18 | 15 |
| Riparian Zone Width | 18 | 10 |
| HMA Score | | 64% |

Assessment Thresholds
Natural: 80-100%
Altered: 70-79%
Moderately Altered: 60-69%
Severely Altered: ≤ 59%



# Pebble Count

- Finer scale, objective record of stream substrate
- 100 pebbles
  - Silt, Sand, Gravel, Course Gravel, Rubble, Rock
- Summary Metrics:
  - Silt, Moss, Macro- and Micro-algae

# Pebble Count