Third Annual Watershed Symposium
March 15, 2006
UW Green Bay

July 19, 2003
Lake Water Clarity Monitoring and Analysis
With Satellite Remote Sensing
at the University of Wisconsin-Madison
Overview: Lower Fox River Watershed Monitoring Program

- Multi-year water monitoring & assessment program
- Established in 2003
- Connects university and agency scientists with teachers and their students and the community
Watershed Symposium

• Summary of program activities
• Students learn about Fox-Wolf basin and watershed science
• Make Connections
• Share information about their watershed; monitoring techniques and research findings
• Exposure to college student research
Project Goals

• Measure WQ and Biotic Integrity -- relate to watershed.
• Improve ability to predict future impacts.
• More informed decision making.
Major Program Elements

• School-based monitoring program
  – hands-on learning, citizen scientists, meaningful data

• Stream biotic integrity monitoring

• Continuous monitoring
  – Sediment & P loading
  – Real-time sensors
Program Partners: Introductions

• UW Green Bay
  Kevin Fermanich, Paul Baumgart,
  Jill Fermanich, Bob Howe, Bud Harris, Nick Reckinger, Jesse Baumann, Jessie Fink, many others

• UW Milwaukee
  Tim Ehlinger, Dani Anholzer, many others

• 6 High Schools
  – GB Southwest HS: Lynn Terrien, Rick Berken
  – Appleton East HS: Kara Pezzi, Ryan Marx
  – Markesan Schools: Dave Burbach, Aaron Burbach
  – Luxemburg-Casco HS: Charlie Frisk
  – GB Preble: Kevin Hendrickson, Chris Hansel
  – West DePere: Dana Lex
Program Partners: Introductions

- **US Geological Survey**
  Dave Graczyk, Dale Robertson, Paul Reneau and Troy Rutter …..

- **Green Bay Metropolitan Sewerage District**
  John Kennedy, Tracy Valenta; Lab Staff

- **Oneida Nation**
  Michael Finney

- **Arjo Wiggins Appleton Inc.**

- Monitoring site hosts

- Others
School-Based Monitoring Program

- Enhance student/teacher & community understanding of landscape and land use impacts on water quality and stream ecosystems.

Structured to provide meaningful, long-term data:
- Picture of existing conditions (Baseline)
- Changing conditions over time (Trends)
- Can be used by students, teachers, scientists and managers to answer questions about watershed dynamics and integrity. (Cause and effect relationships)
Five Watersheds / Six Schools

Spring, summer and fall monitoring for water quality and habitat at:

- **Baird** (Luxemburg-Casco / Green Bay Preble)
- **Duck Creek** (Green Bay Southwest)
- **Apple Creek** (Appleton East)
- **Spring Brook** UF04(Markesan)
- **Ashwaubenon Creek** (West DePere)
School-Based Parameters

**Physical Elements**
- Temperature
- Turbidity (Clarity)
- Specific Conductance
- Streamflow

**Chemical Elements**
- pH
- Dissolved Oxygen
- Soluble Reactive P
- Nitrate
- Ammonia

**Habitat and Biotic Elements**
- Habitat
- Macroinvertebrates
- Amphibians
- Birds
How many students are involved and what have they (you) been doing?

- 72 year 1
- 88 year 2
- ?? year 3

- Water quality
  - 79 site-days
  - >400 data pts
Biotic Monitoring

• Birds
  – 68 point counts (std methods, good site data)
  – 96 species, 2655 bird data points, 11 days
  – Thank You: Expert Birding Leaders
    • Bob Mead
    • Ryan Atwater
    • Joan Berkopec
    • Nick Walton
Biotic Monitoring

- Stream macroinvertebrates & habitat
  - 8 sites, 4 watersheds, 2 times
- Amphibians
  - >33 site-days

**Baird Creek - Superior Rd.**

**Macroinvertebrates**

July 20, 2005

- Caddisfly: 18%
- Midge Larva: 12%
- Water Strider: 9%
- Crayfish: 12%
- Riffle Beetle: 6%
- Mayfly: 22%
- Dragonfly nymph: 3%
- Pred. Diving Beetle: 15%
- Cranefly Larva: 3%
- Caddisfly: 18%
- Mayfly: 12%
- Crayfish: 12%
March 2005 Symposium

• Proposed study objectives.

• For example: Determine whether or not the retention basin located off County JJ and French Road is effectively filtering sediments.
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| 9:15 – 10:45 | Oral Presentation Sessions  
(Niagara A and B) |
| 10:45 – 11:00 | Break                        |
| 11:00 – 12:45 | Poster Session  
(Niagara Rooms)  
Student, university, agency, web  
ASK QUESTIONS! |
| 12:00 – 1:00 | Lunch  
(Niagara Buffet) |
| 12:30 - 1:00 | Optional Information Session on College Programs at UWGB & UWM |
| 1:00 – 2:30 | Student Break-out Sessions  
– Cofrin Student Research Symposium  
– Watershed Quiz Bowl  
– GPS Skills |
Student Presentations

Niagara A: Scott Ashmann, UWGB, moderator


9:30 Nicole Martin and Fei Yin Luk, Green Bay Southwest High School. Artificial Substrates….To Do or Not To Do.


10:00 Theresa Qualls*, UW Sea Grant Institute. Lower Green Bay Trophic State Indicators.

10:15 Matt Fenske, Kaylin Werth, and Josiah Zacharias, Markesan High School. Seasonal Diversity and Population Density of Macro-invertebrates in Spring Brook

10:30 Greta Jochman and Bryan Swanson; Appleton East High School. The Effectiveness of Detention Basins on Apple Creek
Student Presentations

Niagara B: Pat Robinson, UWEX, moderator


9:30  Ryan Pollesh, Markesan High School. Factors That Are Directly Affecting the Spring Brook Watershed.

9:45  Kevin Dombrock and Jon Fischer, Appleton East High School. Effect of Cow Manure on Nutrient Levels.

10:00 Amanda Lederer*, graduate student, UW – Green Bay. Impacts of Round Gobies on Macroinvertebrates in Green Bay, Lake Michigan

10:15 Brittany Mertens, Green Bay Southwest High School. Got Frogs?

10:30 Danielle Anholzer*, graduate student, UW – Milwaukee. Effects of Land Use and Riparian Cover on Invertebrate Communities.
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Ongoing Plans

• School Monitoring:
  – Continue w/ current schools
  – Add school for Ashwaubenon Creek, others?
  – Continue to build community linkages
    • DNR Steam Water Quality Monitoring Pilot Project
    • Municipalities
    • Community Groups
    • Industry
  – Long-term funding
Continuous Monitoring Program

• 5 Monitoring Stations
  – Real-time flows
  – Precipitation
  – Sediment and nutrient loads
  – Real-time sensors

• 2 Complete WY
  – continuing Sept’06

• Biotic Monitoring
Baird Creek
Precipitation

WY 2004 = 813 mm
NWS 30 yr = 741 mm
WY 2005 = 719 mm
TP (mg/L): All Samples
- Sed. and P exported per ha of watershed
- Highly event driven
- Continuing Sept. 2006
- See poster for more details
For more information…

• [http://www.uwgb.edu/watershed/](http://www.uwgb.edu/watershed/)
  – Integration of project elements
  – Online and real-time data
  – resources

• Poster Session

• Questions?