10th ANNUAL TEACHING WITH THE OUTDOORS WORKSHOP

Environmental & Field Science Workshop for K-12 Educators
Friday, May 7 and Saturday, May 8, 2004 ~ at MTU Ford Forestry Center

To Request Registration Form: contact Loret at loret@ccisd.k12.mi.us or 906-482-0331
Registration forms available online at: wupcenter.mtu.edu

Registration Fees: $85 for May 7-8, includes workshop materials, lodging, and meals.
$45 for one day, includes workshop materials and lunch.

WORKSHOP PROGRAM

FRIDAY, MAY 7 (Choose TWO half-day sessions OR ONE full-day session)

FULL-DAY SESSIONS ~ 9:00 AM - 4:00 PM

(1) Brockway Mountain Hawk Migration (K-12)
Dr. David Flaspohler or Joe Kaplan (graduate student), School of Forest Resources & Environmental Science, MTU
Migrating hawks and other raptors are found in large numbers near Brockway Mountain because the Keweenaw Peninsula and a few high ridges near the tip act as funnels that concentrate the flight paths of spring migrants.

(2) Creative Ways to Teach Probability, Statistics and Data Analysis (Grades 5-9)
Shawn Oppliger, Western UP Center for Science, Mathematics and Environmental Education
Teachers will explore hands-on activities from AIMS (Activities that Integrate Math and Science) and GEMS (Great Explorations in Math and Science) to teach probability, statistics and data analysis.

HALF-DAY SESSIONS ~ 9:00 AM - Noon

(1) Michigan's Major Ecosystems (Gr. 3-6)
Pamela Schmidt, Western UP Center for Science, Mathematics and Environmental Education
What are the principal ecosystems of Michigan and how did they come to exist as they do today? Participants in this session will learn about and receive materials related to activities that are being developed for Michigan’s New Environmental Education Curriculum: Michigan’s Changing Ecosystems. This project-based, interdisciplinary unit is being developed for grades 4-6 and will address Michigan science and social studies content standards. Concepts include ecosystems, biodiversity, exotic species, food chains & food webs, biological amplification, interdependence, and succession.

(2) Using Technology to Conduct Lake Superior Shipwreck & Maritime Investigations (Gr. 6-12)
Mark Gleason, Director, Isle Royale Institute
Using historical information and technology, students will gather data about Lake Superior maritime history and local shipwrecks using a Remotely Operated Vehicle (ROV). Participants will learn how an ROV works, participate in a demonstration of an ROV in nearby Ford Lake, and gather ideas for classroom activities that illustrate ROV research techniques.

Noon-1:00 PM LUNCH

HALF-DAY SESSIONS ~ 1:00 - 4:00 PM

(1) Bats---Flyers of the Night Sky (Gr. 1-12)
Laura Kruger, graduate student, School of Forest Resources and Environmental Science, Michigan Tech
Explore the contents of the Center’s new hands-on Bat learning kit filled with bat specimens, lessons and enrichment materials to add fun and depth to your unit on bats.

4:00-6:00 PM Free Time
Hike Canyon Falls
Canoeing/kayaking on Ford Lake

Tour of Alberta Sawmill
School Gardening Idea Exchange

6:00 PM DINNER

Hike around Ford Lake
7:30 PM      **EVENING PROGRAM - Spiders of the North Woods**
Larry Weber, author of Backyard Almanac & Spiders of the North Woods and teacher...
Spiders are a unique and virtually unknown inhabitant of our north woods ecosystems. Participants will learn about the behavior, ecology, and identification of the members of this group that can be found in Michigan’s Upper Peninsula.

9:00 PM      **Bat Surveys** - Laura Kruger OR **Frog Calling Surveys** - Joan Chadde

**SATURDAY, MAY 8** (Choose TWO half-day sessions OR ONE full-day session)

**FULL-DAY SESSIONS ~ 8:30 AM - 3:30 PM**

(1) **Geologic Teaching Sites of Porcupine Mountain State Park (Gr. K-12)**
Robert Sprague, Park Ranger, Porcupine Mountain State Park
Visit interesting geologic sites in Porcupine Mountain State Park to view evidence of igneous rocks (volcanism), sedimentary rocks, and plate tectonics as you gather ideas for classroom field trips
AND
**Caledonia Mine Tour**
Richard Whiteman, owner, Red Metal Minerals

(2) **Energy and Resources (Gr. 6-9)**
Heather Luoto, Science Education Consultant
What kind of energy do most people use? Are there alternatives to traditional oil, nuclear and coal? Can conservation and energy efficiency really make a difference? Participants in this session will conduct activities from Michigan’s NEW Environmental Education Curriculum: Energy and Resources and gain some very useful information about energy sources, energy use, and pollution prevention (reduce, reuse, recycle!).

**HALF-DAY SESSIONS ~ 8:30 AM - 11:30 AM**

(1) **MDNR Environmental Education Trunks for Teachers Program (K-6)**
Ann Wilson, Michigan Department of Natural Resources

(2) **Teaching A Phenology-based Science Class (K-12)**
Larry Weber, author of Backyard Almanac & Spiders of the North Woods and teacher...
For the last 22 years, I have been teaching using phenology, the study of recurring natural events, as a very effective way to teach. During this session, I will explain what, where, when, and why I use phenology as I do in the classroom. Any teacher of any grade level could benefit from this workshop. We will begin indoors, but be prepared for a walk outdoors.

11:30-12:30 LUNCH

**HALF-DAY SESSIONS ~ 12:30-3:30 PM**

(1) **Education Program Evaluation (Gr. 1-12)**
David Kronk, Education Outreach Coordinator, Pictured Rocks National Lakeshore
Explore a variety of ways to assess the effectiveness of education programs and how to conduct your own “in class” research.

(2) **Global Change (Gr. 6-12)**
Andy Burton, School of Forest Resources and Environmental Sciences, Michigan Tech University
Warmer temperatures, altered precipitation patterns, elevated carbon dioxide and ozone concentrations, and atmospheric nitrogen deposition, all have the potential to alter the composition and productivity of forest ecosystems. An overview of potential species and ecosystem responses to these interacting global change factors will be given, and a visit to chronic nitrogen deposition research plots at Ford Forest will be made (if snow is gone!).

3:30-4:00 PM   Evaluations & Sharing