

# Chapter VI A Wetland Field Study

## USING WETLANDS AS OUTDOOR CLASSROOMS

Getting students out into a wetland is at the heart of *A World in Our Backyard*. The success of any learning program is to give students plenty of direct experience and hands-on activity. The field projects in this chapter give your students the opportunity to do just that – to investigate a number of wetland characteristics first hand: surveying wetland vegetation, soils, water and wildlife; documenting the wetland from an artist’s perspective; investigating land uses along its periphery; and refining a base map upon which all collected information can be recorded.

Student instructions and data sheets have been provided for seven field activities:

Activity 1: *Plant Inventory*

Activity 2: *Soils Survey*

Activity 3: *Wildlife Inventory*

Activity 4: *Water Watchers*

Activity 5: *Sounds, Shapes,  
Colors, and Prose*

Activity 6: *Changes to the Wetland*

Activity 7: *Mapmakers*



### ***Organizing the Field Study***

A field study can be coordinated in a number of ways – from taking one day to simply explore a local wetland to conducting an intensive, yearlong stewardship project. Taking your students out in the field, even for just one class period, is valuable since it provides a concrete frame-of-reference for the information taught in the classroom. “Mucking about” gets students excited about and interested in the things they see, hear, feel, and smell. It engages them in the subject to be studied while having a lot of fun in the process. Ideally, students should be able to visit their wetland at least twice: first as an introduction to the topic before any classroom instruction and again in the middle of the study to reinforce concepts taught in class.

- **Use an interdisciplinary approach in your study.** The topic of wetlands lends itself to a number disciplines: history, social studies, language arts, math, art, and of course, science. Investigate the wetland through history – how has the use of the

wetland changed over time? Can students chart the succession of plants and animals of this area? Have students document their observations of wetland characteristics through writing, art, and photography. Math skills are used in the mapping exercise, and in the water quality and velocity experiment.

- **The entire class might investigate one or two aspects of a wetland**, such as studying birds that depend on local wetlands during fall and/or spring migrations. A census of bird populations could be passed on to a local birding club. Students might organize a cleanup or restoration of a wetland that has served as a dumping ground for household trash and other debris.

- **Individual or small group projects are natural extensions of a larger thematic study.** Students can be organized into teams to study one specific aspect of the wetland – water quality (see box on next page), soils, plants, wildlife – and report their findings to the rest of the class. Within each team, students can take on certain roles – as recorder, equipment specialist, or surveyor. See the field activities 1-7 at the end of this chapter for different team project ideas.

- **Field activities may take the form of environmental monitoring or stewardship projects.** Students may collect data that are helpful to the conservation commission, such as recording the location of reptile and amphibian populations or evidence of illegal dumping or filling. The Massachusetts Audubon Society is coordinating a statewide effort to document the presence of *herps* by collecting the results of volunteer surveys.



### *Securing the Interest of Your Students*

Design experiences that create a ‘need to know’ in students. Walking into a wetland or performing an experiment in the classroom surfaces *why?*, *how?* and *what?* questions. Getting students to begin their study by asking questions is guaranteed to lock them into the rest of the wetland study unit. There are a number of approaches you can take to get your students invested in their field work:

- *Have students ask as many questions as they can think of.* As they walk through the wetland ask students to think aloud, forming their observations into questions. For example: Wetlands are inhabited by a diversity of plants and animals. Why does this plant or animal inhabit this wetland? Water flows through the area in some manner. Why does the water gather here? Wetlands are important ecosystems. How does the wetland purify my water? How is the wetland helpful during a flood?

- *Record the students' questions.* Take the list back to the classroom. Either you or your students can sort and categorize the questions to focus your study. Two or three questions may become the basis for a comprehensive study that includes water quality testing, plant and wildlife inventories, local development issues, or historical use of the wetland.
- You may want to approach the field trip as a way to *prove that a particular area is in fact a wetland.* Have students work in teams and collect information on water, plants, and soils that will prove your hypothesis.



Poison Ivy

### ***Pre-Planning Checklist***

- ✓ Once you've found a wetland to study, check with the town assessor's office to determine who owns the land – is it under town, state, or private ownership? If the wetland is privately owned, you should obtain the permission of the owner to visit the property.
- ✓ Before you take your students to the wetland, try to determine a few access routes from which to enter and exit. Varying your routes will help reduce the impact you may create by walking over wetland plants.
- ✓ Urge students to wear appropriate clothing – long-sleeve shirts, long pants, boots, raingear, and an extra pair of socks. A brown bag lunch should also be packed for the trip.
- ✓ Obtain permission from students' parents to take a field trip.
- ✓ Take plenty of chaperones. In general, one adult should be able to manage two groups of 4-5 middle school students at a time. For younger students, secure a chaperone for each group.
- ✓ Determine if there are any rest room facilities nearby or on route to the field site.
- ✓ **Make sure you and your students can identify poison ivy** (see illustration) **and poison sumac.**
- ✓ You might want to request a local wetlands expert (e.g., a member of the conservation commission) to assist you in making observations during the field trip, including evaluating the health of the wetland. Someone with extensive field experience can point out indicators of wetland degradation that, to the untrained eye, may go unnoticed. Examples of degradation include the presence of invasive species and evidence of erosion and sedimentation.
- ✓ Perform an *Observation Exercise* (see p. 93) in class before heading out to the field to heighten the students' awareness of the importance of good observation skills in field work.
- ✓ Obtain as many field guides as you can for yourself and the students. A list of suggested field guides is provided in the Appendix. A particularly useful field resource, *Maine Wetlands and Their Boundaries*, is available for \$5 by writing the Maine Office of Community Development, 219 Capitol St., Station House Station 130, Augusta, ME, 04333, (207) 287-2656. Though specific to the state of Maine, this 72-page document includes color photos, illustrations, and descriptions of wetland communities, soil profiles, wetland vegetation, hydrologic indicators, and other useful field information applicable to wetlands in other states.

## ***Establish the Ground Rules for Students***

- Carry in, carry out! Leave nothing but footprints behind.
- Do not pick any plants or remove any organisms.
- Handle living organisms gently and with *wet* hands, always putting them back where they were originally found.
- Be careful to avoid disturbing nesting wildlife – many birds are sensitive to intrusion while raising young.
- Do not taste or eat anything.
- Anyone who causes another person to become excessively wet or muddy will be given indoor assignments only.

### ***A Note on Water Quality Monitoring for the Teacher:***

The topic of water quality monitoring is too expansive to cover in great detail in this guidebook. There are, however, a number of reference publications written for teachers that cover this subject in-depth:

*Field Manual for Water Quality Monitoring: An Environmental Education Program for Schools* (6th edition). 1992. Mitchell, Mark and William Stapp. This manual contains instructions for eight chemical and physical water quality tests plus fecal coliforms and macroinvertebrates. Spiral-bound, 240 pages, numerous photographs and illustrations. Available for \$9.95 by writing Dr. William B. Stapp, 2050 Delaware Drive, Ann Arbor, MI 48103. Make checks payable to William B. Stapp.

*Pond and Stream Safari* by Karen Edelstein. This guide for youths discusses the world of aquatic invertebrates and includes illustrations, activities, and instructions for building sampling equipment. Available for \$12.75 through Cornell University, Resource Center, 7 Business and Technology Park, Ithaca, NY 14850. (607) 255-2080.

#### *Water Quality Testing Equipment*

The following companies carry a number of water quality testing kits and each has a catalog that can be ordered for more specific information:

##### *LaMotte*

LaMotte Chemical Products Company  
P.O. Box 329  
Chestertown, MD 21620  
Tel: (800) 344-3100  
Fax: (301) 778-6394

##### *Hach*

Hach Chemical Company  
World Headquarters  
P.O. Box 389  
Loveland, CO 80537  
Tel: (800) 227-4224  
Fax: (303) 669-2932

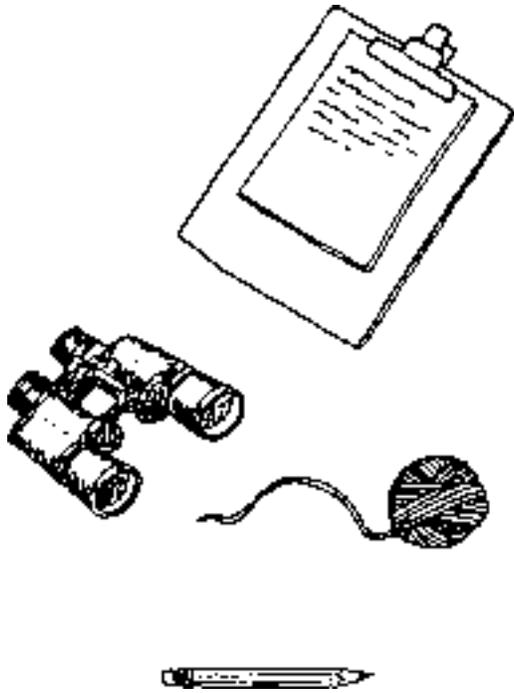
#### *Disposal of Waste Materials*

Most water quality monitoring kits provide a material safety data sheet (MSDS) on disposal of monitoring wastes. There are two things to keep in mind when disposing of these materials:

- 1) Know what you're handling. The MSDS will list all the materials contained in your testing kit. Check your MSDS specifically for products listed as *regulated* materials. Contact your local or state government for instructions on how to best dispose of these materials, as waste disposal regulations tend to vary from state to state.
- 2) Store *regulated* materials in separate containers.

*For more information on disposal, contact:*

*Project Green (Global Rivers Environmental Education Network), 216 S. State St., Suite 4, Ann Arbor, MI 48104. (313) 761-8142.*



## Field Trip Materials & Equipment

First aid kit, camera, bug spray (applied in the parking lot or road, *not* in the wetland), clip boards, data sheets, pencils, insect nets, holding buckets or containers (white plastic or enamel works best), bug collection containers,\* a ball of twine, wooden stakes, flagging tape, indelible marker, shovel or soil auger, baking tray, fish nets, binoculars, rubber boots. Ask your Parent/Teacher Organization if it can help you with the purchase of these last two items.

\* Bug boxes (1-by-1-by-1 inch) are available for \$1.00 each from Museum Products, 84 Route 27, Mystic, CT 06355. (800) 395-5400.

## Observation Exercise

Discuss the importance of making careful observations before taking the class outside. Keen observation skills is the basis for excelling at science, art, writing, interpersonal relationships – just about everything!

Play a game with the class to test their powers of observation. Wear something different from normal, such as colored socks or a button. Before class, plant a paper towel soaked in rubbing alcohol or vinegar at the back of the room, color part of the blackboard with colored chalk, tape a random word on the wall, put up a map, etc. Pass out this questionnaire and tell students they must not look up from their desks until they are finished.

1. How many windows are there in this classroom?
2. What color are the teacher's socks?
3. What is written on the teacher's button?
4. How many plants are there in the classroom?
5. A map of what part of the world is hanging on the wall?
6. What color hair does the person have sitting in the seat behind you? (if you're in the last row, the teacher in the room next door)
7. What new word is hanging on the wall behind you?
8. What material is the front walk of the school made of?
9. What is the smell in the room today?
10. How many different sounds can you hear right now?
11. Are there any animals in the classroom? If so, what?
12. Name the five senses:

Follow up on this concept the day of your field trip by trying a similar exercise just as you approach the boundary of the wetland. Instruct the students to perform a "three-minute notice." Ask them to jot down on a piece of paper what they see, hear, smell, and feel about the wetland they've just entered for a three minute period. Once the three minutes are up, ask each student to describe to the class one or two of their observations.