

Biophysical Survey of a Wetland Ecosystem

by Tom Briggs

Objective: For students to engage in field research and analyze their findings.

Materials: Paper, pencil, poster board, markers, long pole or stick.

Part I: Field

Students divide into four teams. At the pond, survey stakes are installed around the edge of the pond in five or ten foot increments, gridding the site (see figure). The work is then divided among four teams. First team is responsible for recording information. Second team measures the depth of the pond at the intersections of the grid lines. Third team performs a physical survey of the site, recording the features of the bottom, (ie: sandy, rocky, muddy, etc.) Fourth team performs a biological survey of the site, recording the type and variety of plant and animal life discovered.

The physical and biological aspects of the survey can be as ambitious as time and equipment permit. With more accurate sampling equipment, students could more accurately determine water quality. Also, consider collecting organisms by seine net and plankton net. If funds are limited, students could design their own collection gear from improvised materials.

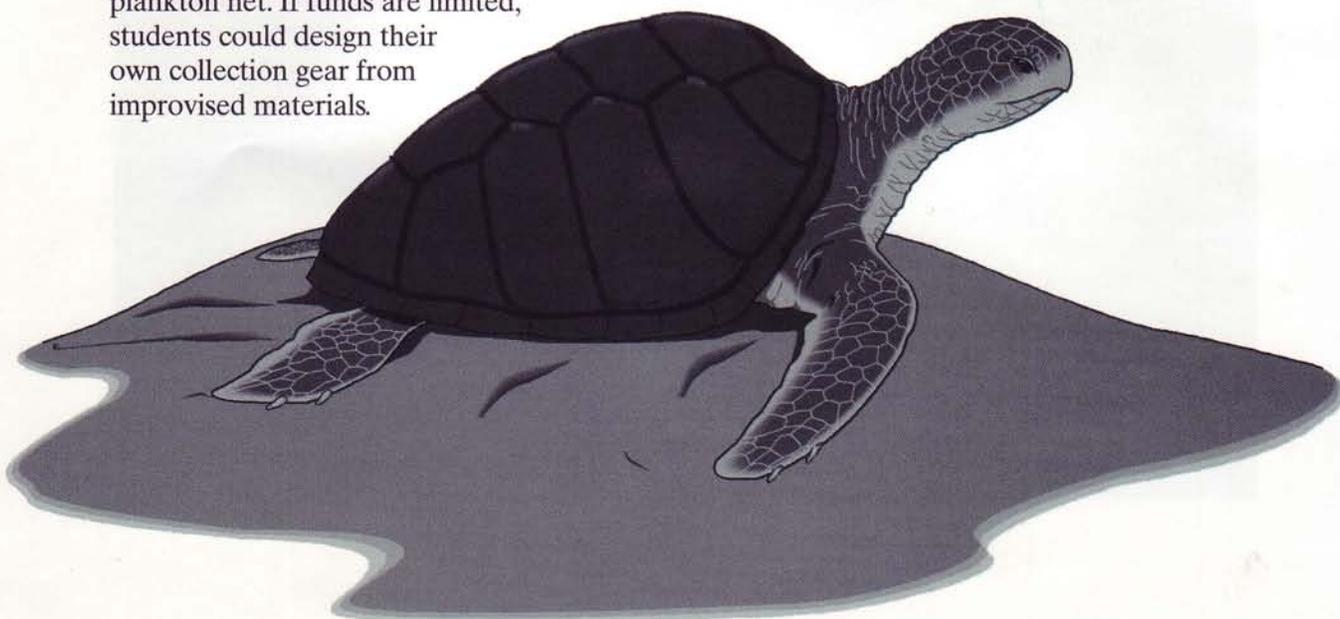
(Window screen stretched between two sticks to make a seine net, for example.) Once the first quadrant is surveyed, teams meet to share their findings and suggest improvements. Then, teams switch roles, rotating through all four jobs. Upon completion of the survey, students meet as a group to discuss their findings.

Part II: Classroom

In the classroom, students tabulate the data they recorded during the "secretarial" phase of the survey and develop a working chart of the data.

Then, they develop a final presentation style chart that can be integrated with the other groups' charts to form a complete image.

The charts can be as detailed as time and equipment permit. The scope of the chart could be expanded to show the surrounding 50-100 yards of land. It could indicate such factors as erosion, sources of chemical or natural pollution, and water quality. Students should be encouraged to suggest other data that can be incorporated into the chart.



Along with the chart, each group is responsible for submitting a report to the class that deals with one or more of the following factors:

The process by which the group completed the project.

The biological, physical, and aesthetic properties of the site.

A brief history of the site derived from primary sources.

Conclusions drawn from the information gathered.

Suggestions to future researchers from lessons learned during the survey.



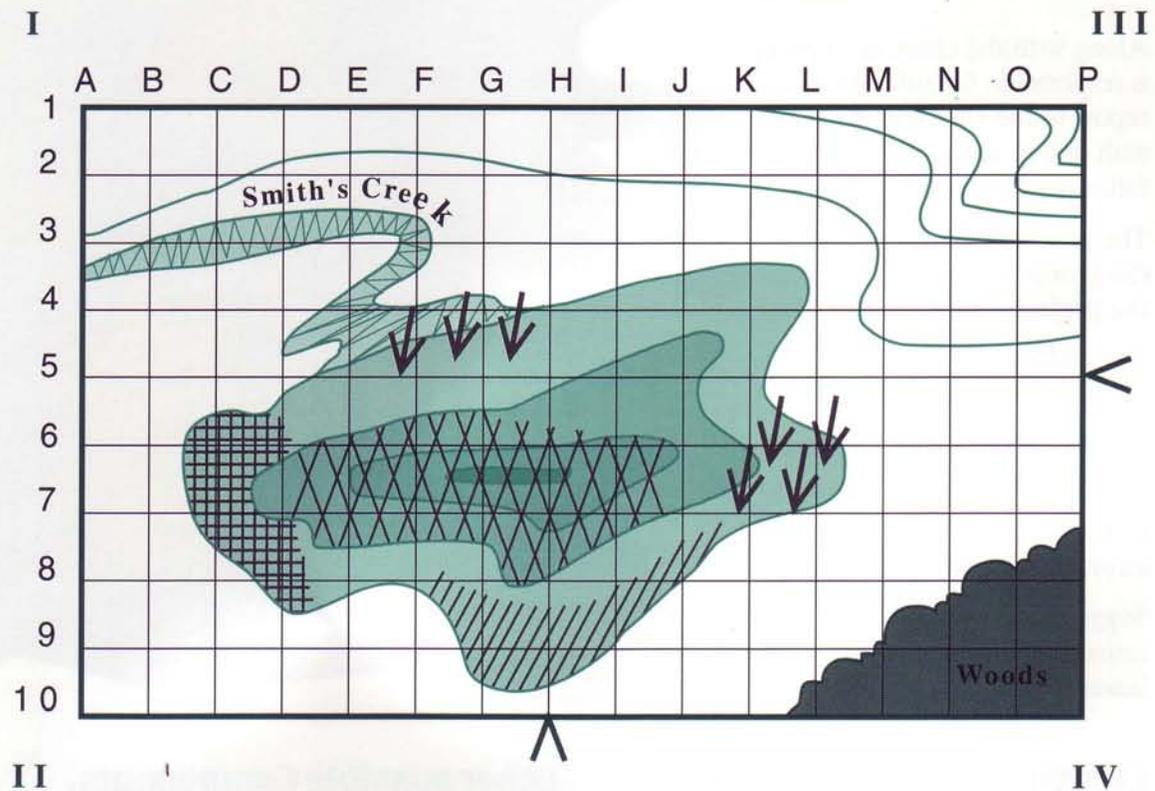
Components of the activity:

- 1.** Teamwork—share information, cooperatively create chart and survey.
- 2.** Mathematics—tabulate and interpret findings.
- 3.** Learn and practice survey techniques.
- 4.** Note-taking with careful attention to detail.
- 5.** Use and improvisation of survey equipment
- 6.** Biology/life studies—interdependence of life.
- 7.** Language skills—create a detailed report of methodology and survey results.

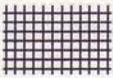
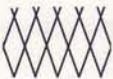
Other possible Components:

- 1.** Photography—students photograph or videotape project.
- 2.** Laboratory Microscopy—using plankton net and microscope, inventory as many microorganisms as possible.
- 3.** Water quality tests—pH, dissolved oxygen, phosphorous, salinity, turbidity.
- 4.** Leadership skills—students return next year to act as project mentors.
- 5.** Historical research, journalism, library skills—students interview sources knowledgeable about the site and conduct primary source research (ie: farm records, county survey documents, narrative accounts, etc.)
- 6.** Computer skills—word processing, database, graphics, research.

Biophysical Chart of Our Pond



Key

-  rooted aquatic vegetation
-  rocky
-  muddy
-  sandy
-  contour lines (5')
-  creek

Misc. Information

- pH:
- chemical pollutants:
(any evidence?)
- organic pollutants:
(fertilizer? nutrients?)
- water temp:
- air temp:
- turbidity:
- weather: