Stream Walk Survey

DESCRIPTION:

Groups will get to know a local stream or river by walking along the shorelines.

OBJECTIVES

By participating in this activity, your group will:

1. Become aware of the plants and animals that live near the stream or river.
2. Understand how the stream or river is being used by people.
3. Understand how land uses affect river/stream water quality and streambank habitat.

TIME

A stream walk survey will take one afternoon (depending on the length of stream being surveyed).

AGE

People of all ages can participate in a stream walk survey.

COST

A stream walk survey is an inexpensive activity. You only need the items listed.

YOU WILL NEED:

- Permission to be on private land
- Waders, waterproof boots, old tennis shoes or other footwear
- *Stream Walk Worksheet* (insert)
- A camera if you want to take pictures
- A topographic map of the area
- Life jackets (optional)
- Parent/guardian permission slips, if necessary

BACKGROUND

Conducting a survey is the first way to collect information about your stream or river. From this survey, you will gain information to help you to decide what actions may be needed to improve the quality of the stream or river.

Use the *Stream Walk Worksheet* form to evaluate the health of your waterway. This form is similar to the Citizen Volunteer Monitoring Habitat Rating form. For more detailed habitat assessment tools, contact the WAV program about the Citizen Monitoring Program.

HOW TO DO A SURVEY

1. Get permission.

Ask for permission to conduct a survey if the survey site is on private property.

2. Make copies.

Before going on your stream walk, make copies of the *Stream Walk Worksheet* for all members of the group. This worksheet will be your guide to completing the survey.

3. Use a map.

If you get a topographic map of the waterway, draw a circle around the area to be surveyed.

5. Follow the pipes.

If storm drains or drainage pipes enter the stream, do your best to follow the pipes to find their sources.

6. Create visual records.

Take pictures or a video of the stream or river to document your trip and the stream's quality.

7. Complete the worksheet.

Complete a new *Stream Walk Worksheet* for every survey done. Include photos and other information that you collect.

Use this information to build a portfolio about your stream, or share the information with your community through media releases, newsletters, or displays at local malls, schools, banks, etc.

HOW TO COMPLETE THE FORM

Complete the box that asks for information about the name of the stream, where it is located, and the date and time that you collected the data.

In the weather section, check the box that best describes the weather conditions.

1. Water Appearance is a physical indicator of water pollution. Select the term(s) that best describe the physical appearance of the water in the stream:

Clear: Colorless, trans-parent.

Turbid: Cloudy brown. Due to silt or plant material suspended in the water.

Milky: Cloudy-white or gray. May be natural or due to pollution.

Foamy: Caused by excessive nutrients from either natural sources or from pollution.

Dark Brown: May indicate that acids are being released into the stream due to decaying plants.

Oily Sheen: A multi-colored reflection. Can occur naturally or it may indicate oil or other petrochemicals in the stream.

Reddish: May indicate acids draining into the water or iron bacteria.

Green: Caused by algae that may indicate excess nutrients being released into the stream.

2. Water Odor is also a physical indicator of water pollution.

None: Indicates good water quality.

Sewage: May indicate the release of human waste material, livestock manure flow from an upstream feed lot. If you smell sewage/manure or rotten eggs, please do not enter the water. Notify the nearest DNR Service Center.

Chlorine: May indicate that a sewage treatment plant is over-chlorinating its effluent. Also a component of milkhouse cleaning.

Fishy: May indicate the presence of excessive algal growth or dead fish.

Rotten Eggs: A sulfurous smell may indicate muck soils or sewage/manure pollution, as hydrogen sulfide gas is a product of organic decomposition.

Petroleum: May indicate an oil spill from boats, land or storm drains.

3. Temperature controls the growth/activity of bacteria which can strongly influence the amount of oxygen in the water. Cold water holds more dissolved oxygen than warm water, thus temperature directly affects the amount of oxygen available to these organisms.

a) Measure water temperature by submerging a thermometer for at least two minutes in a stream run. Do not measure temperature in a slow moving part of the stream or right next to the banks. Repeat in another section of the stream and record both measurements.

b) Measure air temperature by holding the thermometer in the shade for at least two minutes. If there is no tall vegetation, use your body to shade the thermometer. Repeat and record both measurements.

4. Submerged Aquatic Plants. Record submerged plants in the stream.

5. Riparian (streamside) vegetation and other riparian surfaces. Identify the riparian vegetation or other land covers by type. Use the left column for the left-hand side of the waterway (looking upstream); right column for the right-hand side.

6. Canopy Cover. Estimate how shaded your site is. Do not include overhanging grasses. Check the box that is closest to your estimate.

7. Bottom Substrate is the material in and on the stream bottom that macroinvertebrates attach to, feed from or crawl on. Check the boxes that best describe the stream bottom in the study site.

8. Stream Discharge Estimate. To estimate the volume of water flowing through the stream at a particular point, measure the width, depth and average water velocity. You will need someone to help you with this measurement.

a) Stream Width: Measure the width of the stream with a tape measure.

If the stream is too deep, wide or polluted to measure directly, you might be able to measure the depth indirectly by using a bridge. Indicate on the data sheet that the measurement was an estimate.

b) Stream Depth: Record the stream depth at five evenly distributed points across the channel. Total the five depth values and divide by five to determine the average depth in feet.

c) Stream Velocity:

i. Mark off a distance of ten feet from your site. Place a person in the water or on the bank at the "top" spot. Again, the two people should be 10 feet apart.

ii. Have one person be the time keeper with a stop watch or second hand. This person should be at the "downstream" spot.

iii. The person at the "top" spot should gently toss an orange, apple or other float at least five feet upstream from the "top" spot. Once the object passes the "top" person, that person should yell "start" to begin timing how long it takes the object to float 10 feet.

iv. When the object passes the "downstream" person, that person should yell "time" and stop the watch. Don't forget to retrieve the object for a few more trials.

v. Record the time in *seconds* in the appropriate space on the *Stream Walk Worksheet.*

vi. Repeat this procedure two more times, try to use different places in the channel, do not count any trials where the float gets stuck in debris, along the bank or in an eddy.

vii. Keep track of the type of float used.

Notes on floats: Oranges and apples seem to work very well. Many groups use tennis balls. If tennis balls are used, they should have a slit cut in them and then be sightly filled first as the increased weight will help reduce effects of wind on them. Vials half full of water, corks and even sticks have been used as well. The type of float used should be consistent. Do not use something that can be affected by the wind. Many people like to use something that is biodegradable.

viii. Total the three trial times and divide by three to determine the average time.

ix. Divide this number into 10 to get the velocity (feet/second).

For example if the three times it took your orange to travel 10 feet were 18, 9, and 11 seconds. The average time equals 36 divided by 3 = 12 sec. To get the final velocity divide 10 feet by 12 seconds = .83 feet/sec.

d) Stream Discharge:

Multiply the width times the average depth times the velocity to get the discharge.

9) **Watershed Features.** Record all land uses observed upstream of your site for about 1/4 mile. Indicate which land uses are present with a check in the first column. If the land use is clearly having an impact on the stream, check the second column.

10) **Channel Alteration.** Indicate whether or not the stream segment has been channelized or straightened.

11) **Personal Observations.** Enter here any observations that you feel are important to the quality of the habitat of the stream and its environs. Include any characteristics not mentioned on the data sheet.

RESOURCES

The Wisconsin River: River of a Thousand Isles

Murphy Entertainment Group
murphyentertainment.com
This video explores the Wisconsin River before 1870. (48 minute video)

Streamwalk – A Stream Monitoring Tool for Citizens (pamphlet)

U.S. Environmental
Protection Agency Region 10
Public Information Center
1200 Sixth Avenue
Seattle, WA 98101
206-553-1200

WAV materials revised
Summer, ©2005.

Water Action Volunteers is a cooperative program between the University of Wisconsin–Extension and the Wisconsin Department of Natural Resources. For more information, contact the Water Action Volunteers Coordinator at 608-264-8948.