



Appendix

GLOSSARY

<i>bank:</i>	where a stream or river meets the land
<i>benthic:</i>	bottom dwelling
<i>biotic index:</i>	represents the relative sensitivity to, or tolerance of macroinvertebrates to environmental stress
<i>boulder:</i>	any rock larger than 256 mm (10 inches) in diameter
<i>control pack:</i>	contains leaves from the three dominant tree species found alongside the stream (<i>constitutes the minimum involvement in the Leaf Pack Network</i>)
<i>deciduous:</i>	broad-leafed trees that shed seasonally or at a certain stage of development within their life cycle
<i>discharge:</i>	measures the amount of water moving past a point in the stream
<i>erosion:</i>	the wearing away of the surface of the earth by natural forces like wind and water
<i>evergreen trees:</i>	conifers (Coniferales); trees and shrubs including forms with true cones
<i>experimental pack:</i>	this will change from one group to another. Groups become creative and test variables different from the control pack.
<i>foamy:</i>	resembling soap suds; usually natural organic compounds released by decomposing plants and animals
<i>forest:</i>	trees at least 5 meters tall with >40% interlocking canopy cover) ≥ 20 meters deep
<i>impervious surface:</i>	not permeable; not allowing entrance or passage
<i>macroinvertebrate:</i>	compared with “micro” a relatively “large” (>0.2-0.5 mm) animal, without vertebrae
<i>oily sheen:</i>	resembling motor oil slick but usually caused by organic compounds from rotting vegetation or decomposition of cases of recently hatched insects

<i>percent composition of dominant taxa:</i>	The number of individuals in the most dominant (common) taxa compared to the total number of organisms.
<i>percent EPT:</i>	The total number of Ephemeroptera (mayflies), Plecoptera (stoneflies), and Trichoptera (caddisflies)
<i>pools:</i>	a small and deep body of fresh water, slow moving and usually with muddy or sandy bottoms
<i>riffles:</i>	shallow and fast moving water in an area with a rocky bottom
<i>riparian:</i>	relating to the bank/area adjacent to a river
<i>runs:</i>	continued rapid movement; little surface agitation and no major flow obstructions
<i>sediment:</i>	soil that is carried from the land into the water
<i>shrubs:</i>	several-stemmed woody plant, usually under 6-7 feet
<i>silt:</i>	soil made up of sand and clay
<i>stream channel:</i>	the bed where a natural stream of water flows
<i>taxa richness:</i>	measures the diversity of different groups of macroinvertebrates within a sample
<i>turbid:</i>	cloudy; opaque; not clear
<i>watershed:</i>	a land area bounded by a divide and draining to a particular body of water or watercourse
<i>wetlands:</i>	areas covered with water most or part of the year and supporting aquatic vegetation

LEAF PACK EQUIPMENT LIST 2003

TOPIC	COMPANY	PHONE & FAX	MATERIALS	SPECIFIC	CATALOG #	COSTS	MISC.
Boots	Ben Meadows	800-241-6401	Monarch Knee boots; steel toe	sizes 7;13	252700; 252706	\$17.95	
	Forestry Suppliers, Inc.	1-800-647-5368	LaCrosse Monarch PVC	93366 (men 7)	93368 (men 9)	\$13.90	
Camera	Douglas Stewart Co.	1800-279-2795	disposable cameras for schools				donates Kodak cameras to K-12 & colleges
Compass	Forestry Suppliers	800-647-5368	compass	Swento Partner II	37177	\$7.50	10+ = \$6.50 each
Macro. ID materials	Izaak Walton League of America	800 BUG-IWLA www.iwla.org	<i>Hands on Save Our Streams: Teacher's Manual and Macroinvertebrate Guide</i>	1994		\$31.00	
						\$8.00 (S&H)	
Magnifying lenses	Delta Education	800-442-5444 800-282-9560 (fax)	magnifiers - TriLens (2X, 6X, 8X)	set of 30	56-130-0562 56-130-3224	\$1.95 \$28.50	
Maps	Franklin Maps	610-265-6277	7.5' (minute) quadrangles DMA World Map	land forms		\$10 + shipp \$9.95	laminated - \$50
	USGS	800-ASKUSGS 303-302-4693 (fax)	7.5' (minute) quadrangles	topomaps		\$6.00 each \$5.00 (S&H)	
Maps-models	Delta Education	800-442-5444	contour model kit		59-032-1804	\$16.50	
Measuring devices [distance]	Forestry Suppliers, Inc.	800-647-5368	folding wood meterstick wood meter stick		71177 71166	\$11.95 \$27.15	model 062CME model 7112ME
Microscopes	Forestry Suppliers, Inc.	800-647-5368	magiscope w/lumirod	20mag-objective 4x 50mag-objective 10x	61000 61001	\$119.00 \$21.00	
Safety Equipment	Lamotte	800-344-3100 www.lamotte.com	gloves (size M)	100 pack	Feb-34	\$21.40	
Scales	Top Notch Scales	512 417-9069; sales@ www.topnotchscales.com	postal scales - 100 g	pk. 3 pk. 10	*020	\$8.95 \$19.90	
Stop-Watch	Delta Education	800-442-5444 FAX 800-282-9560	digital stopwatch		87-190-6410	\$9.95	battery replaceable
Thermometer	LaMotte	800-344-3100			1066	\$18.95	
Tours - Kits	Lamotte	800-344-3100 708-655-4410 410-778-6396 (fax) www.lamotte.com	Watershed Tour Reagent Refill Leaf Pack Experiment Kit mesh bags flashcards sorting sheets	30 set of 18 6	5419 R-5419 5882 5882-LPB 5882-SA1 5882-SS6	\$69.95 \$9.80 \$169.00 \$16.95 \$35.00 \$28.30	
Trays	K-Mart type store		sorting trays	drawer inserts	K-mart type store		

LPN WEB RESOURCES

(updated May 2012)

Habitat

EPA Rapid Bioassessment Protocols for Use in Wadeable Streams and Rivers - Visual assessment with photos of optimal and poor range of conditions of specific habitat parameters. 5-10

<http://www.epa.gov/owow/monitoring/rbp/>

Macroinvertebrates

Macroinvertebrate Key – Developed by Stroud Water Research Center.

<http://www.stroudcenter.org/education/MacroKeyPage1.shtm>

Macroinvertebrate Photographs -

<http://www.stroudcenter.org/research/projects/schuylkill/macrosideshow.shtm#taxa/images/taxon01.jpg>

Macroinvertebrate Key - Good photographs and descriptions

<http://www.dec.ny.gov/animals/35772.html>

Macroinvertebrates as Bioindicators - Covers a broad area of using macroinvertebrates as bioindicators as well as identification keys.

<http://www.epa.gov/bioindicators/>

PA Aquatic Insects - Penn State - Shows distribution maps of species of caddisflies and stoneflies and information on other macroinvertebrate projects.

<http://paaquaticfliesrus.bd.psu.edu>

Maps

Microsoft Research Maps – MSR Maps contain USGS aerial imagery and USGS topographic maps. You can locate imagery by clicking on the map, entering a city or town name, or entering a U.S. street address. Click on Advanced Find to see other methods for searching their imagery database.

<http://msrmaps.com/>

PA Land Cover And Relief Maps - Order free maps from (717-702-2017).

<http://www.dcnr.state.pa.us/topogeo/pub/map67recent.aspx>

Precipitation

Integrated Flood Observing and Warning Systems – IFLAWS - Maintained by the NWS and NOAA, this site for automated flood warning systems has precipitation data archived for most of the NE states, divided by counties and local weather stations.

<http://www.afws.net/>

Weather - AWS WeatherBug - All weather information including current high/low, forecasts, sunrise/sunset, moon phase, etc. Allows user to put local temperature next to the clock on your PC. Also alerts user of weather warnings. Only PC compatible.

<http://weather.weatherbug.com/>

Weather - Intellicast.com - Queries can be specified to individual cities across the world. Forecasts, current weather, radar imagery, NEXRAD imagery, severe weather, satellite imagery, historic weather, daily/weekly precipitation, averages and records.

<http://www.intellicast.com/LocalWeather/World/>

Tree Identification

What Tree is That? - Identify trees by their leaves, fruit, or by name.

<http://www.oplin.lib.oh.us/tree/>

Tree ID and Forest Biology - Lots of background information, fact sheets, photographs from the University of Virginia.

<http://www.cnr.vt.edu/dendro/>

Tree ID Online

<http://www.arborday.org/trees/treeID.html>

Watersheds

EPA's: Surf Your Watershed (U.S. Environmental Protection Agency) - Allows you to zoom in on your watershed, and to request electronic or printed copies of customized maps; also has other watershed information and web links.

<http://cfpub.epa.gov/surf/locate/index.cfm>

Know Your Watershed (Purdue University) - Lots of excellent material, including National Watershed Network, National Watershed Library, watershed materials, management practices; calendar, etc.

<http://www.ctic.purdue.edu/Know%20Your%20Watershed/>

USGS Real-Time Water Data - Real-time data includes states broken down into various weather stations. Once the user finds the nearest weather station, the precipitation can be found along with the following information: nearest stream: precipitation, stream discharge, gage height, specific conductance, pH, water temperature, and dissolved oxygen.

<http://water.usgs.gov/realtime.html>

UNIT CONVERSIONS

NOTE: There are 10 millimeters in a centimeter, 100 centimeters in a meter and 1,000 meters in a kilometer. There are 1,000 milliliters in a liter and 1,000 grams in a kilogram.

Converting Temperatures

<i>If You Know</i>	<i>Do The Following</i>	<i>To Get</i>
fahrenheit	Subtract 32, then divide by 1.8	celsius
celsius	Multiply by 1.8, then add 32	fahrenheit

Converting Into Metric

<i>If You Know</i>	<i>Multiply By</i>	<i>To Get</i>
Length		
inches	2.54	centimeters
feet	30	centimeters
yards	0.91	meters
miles	1.6	kilometers
microns	0.0001	centimeters
Area		
sq. inches	6.5	sq. centimeters
sq. feet	0.09	sq. meters
sq. yards	0.8	sq. meters
sq. miles	2.6	sq. kilometers
acres	0.4	hectares
Mass(Weight)		
ounces	28	grams
pounds	0.45	kilograms
short ton	0.9	metric ton
Volume		
teaspoons	5	milliliters
tablespoons	15	milliliters
fluid ounces	29.57	milliliters
cups	0.24	liters
U.S. pints	0.47	liters
U.S. quarts	0.95	liters
U.S. gallons	3.78	liters
cubic feet	0.03	cubic meters
cubic yards	0.76	cubic meters