

# AQUATIC BIOLOGY ASSOCIATES, INC.

## Supplies and Equipment

Sources for supplies & equipment used in field sampling of macroinvertebrates are listed below. Please let us know if you encounter other sources that are cheaper or more convenient.

Aquatic Biology Associates, Inc. has some rental equipment and supplies (see **Equipment Rental**).

### Alcohol Preservative

**Isopropyl alcohol (technical grade 99+%)** is probably the cheapest and best alcohol preservative available. Most local chemical & scientific supply houses will sell & deliver 5 gallon metal cans for about \$75, if you are in their courier service area. Drums (55 gallon) of alcohol are the most cost effective (about \$250/drum). Look in your Yellow Pages under *Chemicals* or *Scientific Supplies*. Specify technical grade. In the Willamette Valley and southwest Oregon, Springfield Scientific Supplies, Inc. (541 726-9176) is a good source. In emergencies, isopropyl (rubbing) alcohol from grocery or discount stores can be used. This will usually be 70% concentration.

**Denatured ethanol** can also be used, but is not preferred. Denatured means they have taken drinkable, grain distilled ethanol, and combined it with some solvent that stinks, so people won't drink it. It is usually more expensive than isopropyl alcohol, plus the denaturing solvents are usually obnoxious and toxic. **Pure grain ethanol** is a great preservative, but unfortunately can only be obtained cheaply if you have a permit from the Federal Alcohol, Tobacco and Firearms Agency. It is prohibitively expensive when obtained through a liquor store.

### Sample Bottles

"You get what you pay for" when it comes to plastic sample jars. Strong, leak-proof jars, with lids that won't vibrate loose during shipment are expensive. However, they can be recycled enumerable times.

Aquatic Biology Associates, Inc. prefers to use 1 liter or 500 ml., wide-mouth, polypropylene or low density polyethylene Nalgene® jars. They are leak-proof, and when screwed on tightly, the lids will not vibrate loose during transport. These jars can be rented from Aquatic Biology Associates, Inc., or obtained through scien-

tific or forestry supply houses. The 1 liter size usually costs between \$4 and \$5, and the 500 ml. size between \$3 and \$4 each.

### **Shipping Containers**

Aquatic Biology Associates, Inc. rents plastic coolers with sample jars to our clients for shipping. Coolers can also be bought at many retail outlets. Be sure that the length/girth of the cooler is less than 130" for shipping by UPS, or you will incur oversize charges. UPS now charges more for shipping coolers with flip-up handles. Buy coolers with handles molded into the side if possible. Aquatic Biology Associates, Inc. will return coolers and sample jars belonging to clients.

### **Kick-nets**

An Aquatic Biology Associates, Inc. type D-frame kick-net can be obtained from Research Nets in Bothell, WA. Ask for Robert W. Wisseman's kick-net design, and specify 500 micron Nitex® mesh. The frame is 30 cm wide X 20 cm tall. The bag is 500 micron Nitex® netting, with a heavily reinforced abrasion collar. A cut-off plastic bottle is sewn into the tip of the net to allow easy emptying. Specify that Research Nets use a wide mouth 500 poly bottle for this. A wooden handle is supplied by Research Nets. With some modification, a telescoping, aluminum handle can be fitted to the frame for easy transport or shipping.

Be aware that the D-frame kick-net sold by many scientific and forestry supply houses is meant for qualitative collecting and classroom use. It has a coarse, non-standard mesh size. You need a net with 500 micron Nitex® netting.

### **Hess Samplers**

These may be obtained from quite a few outlets including WildCo (very expensive), Research Nets (best price/design), and some forestry and scientific supply houses. Make sure you get the mesh size you want. Aquatic Biology Associates, Inc. can rent a Hess Sampler to our clients on a short term basis.

### **Net Repair & Replacement**

Small holes in Nitex® nets can be repaired with Aquaseal®, Shoe-Goo 2® or an equivalent. This type of glue is available at many sporting goods stores and dive shops. Larger holes can be repaired by sewing. Use a nylon thread. Replacement nets can be ordered from Research Nets.

### **Surber Samplers**

Available from Research Nets (best design and price), WildCo, and some scientific and forestry suppliers. Make sure the mesh size is what you want....e.g. 500 micron.

### **Dredges**

Dredges can be used to sample the invertebrate communities of soft substrates in lentic waters, or slow moving streams and rivers. Ekman and Petite Ponar dredges are commonly used. These are available from WildCo or forestry supply catalogs. They are expensive. Aquatic Biology Associates, Inc. can rent a Petite Ponar dredge.

### **Suction Dredges**

Aquatic Biology Associates, Inc. has pioneered the adaptation of suction dredges used for placer gold mining for benthic invertebrate sampling in standing water habitats, rocky lake bottoms and deep rivers. A suction dredge is available for rent through Aquatic Biology Associates, Inc. Call for more details.

### **Sieves**

A sieve is needed to concentrate samples in the field. Sieves are available directly from the Gilson Company or through scientific supply houses. Ask for U.S.A. Standard Testing Sieves. These are available in a variety of mesh sizes, diameters, and in brass or stainless steel. A standard height, 8" diameter sieve is best. The 500 micron sieve is No. 35. The 250 micron sieve is No. 60. Stainless steel will hold up better in the field, though it is more expensive.

### **Caton subsampling tray (for sample splitting in the lab or field)**

This is a 250 micron mesh, rectangular, stainless steel, gridded sieve that nests in a plastic tray. Samples are suspended in water and dispersed evenly across the nested sieve & tray. The sieve is then lifted out of the tray. Any desired fraction of the total sample can then be sectioned off and scooped from the sieve. Available from Larry Caton, 7024 SW 52nd Avenue, Portland, OR 97219. Phone (503) 246-7986.

### **5 & 1 Gallon Plastic Buckets**

Paint stores usually have these for sale.

### **Brush**

The Rubbermaid® Vegetable Scrubber with a short handle has the ideal brush stiffness for brushing invertebrates off rocks while sampling. The model with a short handle is ideal, but apparently is no longer manufactured. Dish & pot scrubbing brushes with 6-8" handles can also be used. These are available at most grocery or variety stores. Brass or wire brushes will mangle invertebrates, and should not be used.

### **Tweezers**

Utility forceps are ideal for field work. These are available from Carolina Biological Supply (Utility Forceps, Stainless Steel, item number AA-62-4540).

### **Sorting Tubs**

Sorting tubs are used to clean large debris from samples before concentrating in a sieve and transferring to a sample bottle. White dish tubs are ideal, and are available at grocery & variety stores.

## **Specimen Vials**

Aquatic Biology Associates, Inc. recommends the following vials for storing invertebrate specimens. These are a snap-cap vial with a positive seal. They are cheap. When filled with alcohol and properly sealed, they will not dry out for 10+ years. Vials should be checked every few years for loss of preservative.

### **Miniature glass scintillation vial.**

125502 or 125502BP 5ml soda lime glass 15mm dia. X 45mm, natural polyethylene stopper 1728/short case \$91 or 3456/BP case \$147

Research Products International, 410 N. Business Center Drive, Mt. Prospect, IL 60056. Order Toll-Free 1-800-323-9814, FAX 1-708-635-1177.

## **Rite in the Rain® paper & field notebooks**

Field notebooks and reams of paper for copying field forms are available directly from the J.L. Darling Co., or through forestry supply outlets.

## **Write-on Label Tape®**

This is special laboratory tape that will stay on sample jars, but can be peeled off cleanly, so jars can be recycled. Permanent inks will “bleed” when exposed to alcohol. Writing with permanent ink on this special label tape will bleed some, but still remain legible.

All Aquatic Biology Associates, Inc. rental jars will have a ring of this label type on the outside. Label tape is available from many scientific supply houses. When ordering, ask for: Bel Arts Products, Write-on Label Tape®. The 1" wide white tape is best. It is also available in other colors & sizes.

## **Maps**

Forest Service or BLM District maps are good for determining transportation access to sampling sites, obtaining Township/Range/Section coordinates, and for describing the general site location and basin. However, they usually don't have elevation contours. Maps for many Northwest Forests and BLM districts are now available at most forest supervisor's offices, university & other bookstores, and outdoor recreational equipment stores. Individual Forest Service or BLM districts usually stock larger scale district maps with elevation contours. The Oregon Department of Geology and Mineral Industries (DOGAMI) apparently has a map outlet store in the Portland area.

Delorme Mapping has put together state atlases & gazetteers for the Pacific Northwest states. These are 1:150,000 topographic maps. These are very handy, and available at many outdoor and book stores.

More detailed topographic maps are supplied by the USGS of course. Maptech has digitized complete sets of 1:24,000/25,000 USGS topographic maps for some western states and put them on CD ROM. They are amazing. It is easy to look up sites and get instant elevation and lat./long. readings.

You can also produce longitudinal profiles of stream systems. These CD ROM map sets are not cheap, e.g. coverage for an entire state is about \$600.00; but then again cheaper and more convenient than a complete set of USGS paper maps. You can download a free demonstration at <www.maptech.com>.

### **Aluminum Site Tags**

Aquatic Biology Associates, Inc. uses 3 X 4" double face aluminum tags to mark biomonitoring sites by nailing them high in a stream side tree or wiring them to fiberglass stakes. These are available from forestry suppliers.

## **Supplier Addresses & Phone Numbers**

**Ben Meadows Company**, Equipment for Natural Resource Managers, 3589 Broad Street, Atlanta, GA, 30341, 1-800-241-6401, <www.benmeadows.com>. Very complete selection of environmental monitoring supplies and equipment.

**Bioquip Products**, 17803 LaSalle Ave., Gardena, CA 90248-3602. 310-324-0620 FAX: 310-324-7931. Entomological laboratory & field supplies.

**Carolina Biological Supply Company**, 2700 York Road, Burlington, NC, 27215, 1-800-334-5551, <www.carolina.com>. Tweezers and some environmental monitoring supplies and equipment.

**DeLorme Mapping**, P.O. Box 298-6858, Freeport, Maine 04032. 1-800-227-1656, ext. 6858. Phone, credit card orders accepted. State atlases & gazetteers. Full-color topographic maps.

**Forestry Suppliers, Inc.**, P.O. Box 8397, Jackson, MS, 39284-8397. 1-800-647-5368. FAX 1-800-543-4203. Carries quite a lot of stream and lake sampling equipment.

**Gilson Company, Inc.**, P.O. Box 677, Worthington, OH 43085-0677, 1-800-444-1508, FAX 1-800-255-5314, e-mail: gilson@coil.com, <www.GLOBALGILSON.com>. Sieve manufacturer & retail sales.

**International Reforestation Suppliers**, 2100 W. Broadway, P.O. Box 5547, Eugene, OR 97405. 800-321-1037 FAX: 800-933-4569. General forestry supplier, survey & field equipment, water quality equipment, tags, Rite-in-the-Rain® products, etc.

**J.L. Darling Corp.**, 2212 Port of Tacoma Rd., Tacoma, WA 98421-3696. 206-383-1714 FAX: 206-383-1722. Manufacturer of Rite-in-the-Rain® products. They have a catalogue available and do sell retail.

**MAPTECH, Inc.**, P.O. box 9468, Boston, MA, 02209-9468, 1-800-627-7236, <www.maptech.com>. Digitized USGS maps on CD ROM.

**Nurnberg Scientific**, 6310 SW Virginia Ave., Portland, OR 97201, 1-800-527-8594. Full range of laboratory and chemical supplies.

**Quill Corporation**, P.O. Box 50-050, Ontario, CA 91761-1050. 1-800-789-1331, FAX 1-800-789-8955, e-mail: ask-us@quillcorp.com, <www.quillcorp.com>. Full range of office supplies. Good prices and excellent service.

**Research Nets, Inc.**, P.O. Box 249, Bothell, WA 98041-0249. 206-821-7345 FAX 206-775-5122. Kick-nets, fisheries nets, Hess, Surber, collecting buckets, drift nets, plankton nets, trawls, and any custom netting & sewing. Reasonable prices.

**Research Products International Corp.**, 410 North Business Center Drive, Mount Prospect, Illinois, 60056, 1-800-323-9814, FAX 847-635-1177, e-mail: service@rpcorp.com, <www.rpcorp.com>. Glass vials for reference and synoptic collections of invertebrates.

**Springfield Scientific Supplies, Inc.**, 1124 Main St., Springfield, OR. 541-726-9176. Alcohol. Best prices. Serves Willamette Valley and SW Oregon.

**VWR Scientific** has outlets in most major cities in the Pacific Northwest. Laboratory and chemical supplies. Check your Yellow Pages.

**WildCo, Wildlife Supply Co.**, 301 Cass St., Saginaw, MI 48602. 517-799-8100 FAX: 517-799-8115. Dredges, Surber, Hess, plankton, sediment cores, artificial substrates, drift nets, nets, etc.....very expensive.