

June 30, 2011

Well, the past 2 years has been rather tumultuous for North Carolina's Bioassessment Unit (BAU) and 2011 was no different. Trish MacPherson retired (in 2010) after 25 years of service. In the wake of her retirement there was a monthly, rotation of supervisors (which persisted for nearly an entire year) which proved to be a challenge. Eventually, Eric Fleek was hired as Trish's replacement. Within the last 6 months, two staff have moved on to better paying positions and Mike Walters was promoted to Eric's old job. The net result is that we have three vacant positions, or put another way: we are operating at -30% staffing relative to normal years. Despite that, BAU has instituted an informal larval rearing program to better elucidate the species of *Isoperla* and *Perlesta* (contact Steve Beaty: steve.beaty@ncdenr.gov for more information) and have conducted sampling in 11 river basins comprising approximately 150 samples collected from February to the end of June. From July until the end of our sampling season (September), we are projecting the collection of an additional 130 samples. Studies include routine basinwide sampling of the Lumber and Yadkin river basins, numerous Trout, High Quality Waters, and Outstanding Resource Waters reclassification studies, as well as continued long-term monitoring of the effects of pesticides associated with tomato farms on the Mills River, the effects of trout farms and landfills, and sampling in support of a biological TMDL for Mine Creek in Raleigh. The most interesting sample collected to date was—by far—collected by DD Black. This study was in support of an enforcement case and was taken below a multi-acre mulching operation. The sample, despite favorable habitat, favorable flow, and three people sampling resulted in ZERO taxa collected. Of additional interest, there was a fungus present on the substrate that has yet to be identified but appears to belong to a larger group known to be parasitic on aquatic invertebrates. The bottom-line—keep an eye on your commercial scale mulching operations!

In addition to routine fish community sampling of the Lumber and Yadkin river basins, Bryn Tracy is currently developing biocriteria for fish communities of the sandhills. Given the naturally low diversity of these systems that will be a challenging and complex project. Contact Bryn (bryn.tracy@ncdenr.gov) for more information. Jeff Deberadinis is in the midst of BAU's busiest sampling year to date for fish tissue and includes several collaborative sampling efforts including extensive PCB sampling with the EPA and Charlotte/Mecklenburg County. Contact Jeff (jeff.deberadinis@ncdenr.gov) for more information on his efforts.

Over at the the Program Development Unit, we are in the process of switching gears. The Southeastern Headwater Stream grant is starting to wind down. Our final series of sampling trips had us following spring north from Florida and south Alabama in February, to Kentucky and flooding in May. Trips averaged around 2000 miles each and gave Ross Vander Vorste, our new midwestern biologist, plenty of opportunities to determine which style of southern BBQ was best. We still have over 100 samples yet to work up before the grant ends in November, so we will stay busy for awhile yet. A couple of interesting finds from this sampling has been collecting the caddisfly *Goerita betteni* from a rock face below a spring in south central Kentucky and the amphipod *Synurella dentata* in northwestern Kentucky in one of the few counties it lives in outside

of Indiana and Ohio. As part of our efforts to learn the bugs of other states, Ross and I ran across the following paper that suggests that most of the *Lirceus* isopods that we have been finding in Tennessee and Kentucky have been *L. fontanalis*, rather than *L. lineatus* as we initially thought. Would one of our fellow biologists from a state that regularly collects *Lirceus* be willing to check this for us?

The Freshwater Isopods of the Genus *Lirceus* (Asellota, Asellidae). Leslie Hubricht and J. G. Mackin. American Midland Naturalist, Vol. 42, No. 2 (Sep., 1949), pp. 334-349.
<http://www.jstor.org/stable/2422012>

The next project we will be working on is to try to define the limits of some small stream biocriteria that Eric Fleek came up with a couple of years ago. We hope to expand the sampling window, which is right now only April and May, and define just how small a stream the criteria apply. Once we know these things, the State plans to start requiring biological monitoring as part of success criteria for stream restorations – a move that will keep more biologists employed in these tough times.

Another grant we have applied for, but haven't heard back yet, is a cooperative study looking at the effects of climate change on the distribution of temperature sensitive taxa – which also turn out to be the some of the pollution sensitive taxa we use in our biological criteria. If the EPA approves the proposal, NC biologists will work with the NC Climate Center, hydrologists, modelers and statisticians to try to figure out how great of an increase in air temperature will bring about an increase in water temperatures high enough to extirpate enough temperature sensitive taxa to require an alteration to our biocriteria for rating streams. We should know something in the next couple of months. For further information on any of these projects, contact Larry Eaton (larry.eaton@ncdenr.gov) or Ross Vander Vorste (ross.vandervorste@ncdenr.gov).