



Photo: Martin Neptune

# Pəskehtək<sup>w</sup>ok

## *Joining of the Branches*

Penobscot Indian Nation  
Department of Natural Resources

Fall 2005 ~ Issue 1

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## *~ Safe Journey, Clem ~*

*You will be missed.*

On Sunday, October 16th, Clem Fay was out walking with Sydney and suffered cardiac arrest. Sydney, the ever-faithful companion, sat with her friend through his last moments. Staff at the DNR are still finding it hard to believe that the PIN Fisheries Program will never again have Clem Fay at the helm. He dedicated more than 17 years of his life and career to working here and made many significant

contributions to the health of the Penobscot River and the fish who live in the waters.

Clem's passion for fishing was the foundation for his deep commitment to making the rivers they call home healthier and more accessible. For starters, we wanted to dedicate space in this issue to pictures of Clem in action and a brief introduction to his time spent with Penobscot Nation. More details about his life and career will follow in future

*(Continued on next page)*



Clem and Sydney checking fish at the West Enfield hatchery.

*(Continued from previous page)*

newsletters.

Clem Started with PIN/DNR in May, 1988 as the Fisheries Development Specialist. He developed the program from scratch and was the first Fisheries Program Manager for PIN. In his position, Clem represented PIN fisheries issues when working with other state, federal, and tribal governments. A few of the places he focused his efforts included being a member of:

- the TAC (Technical Advisory Committee) of the Atlantic Salmon Commission,
- the Biological Review Team for the Atlantic Salmon ESA (Endangered Species Act) listing process, and
- the Fisheries Committee for the Penobscot Partners and their work on dam removal (PRRP).

As you can see, Clem was well respected and known for his outstanding professionalism in the fisheries field.

In addition to the more technical and intense part of Clem’s job, he also made time for the children of the Penobscot community. Beginning in the 1994-1995 school year, Clem started the Salmon Incubation Tank Program at the Indian Island School. He was the local coordinator for the program that was co-sponsored by the U. S. Fish and Wildlife Service and the Atlantic Salmon Federation. The program involves the 5<sup>th</sup> Grade class caring for 200-300 Penobscot Atlantic salmon eggs in a 30-gallon aquarium housed in the classroom. Over the course of the school year the program includes several specific events, including:

- Visiting the Craig Brook National Fish Hatchery in Orland in early November to watch biologists obtaining the eggs and milt from the large adult salmon brought to the hatchery each year from the Veazie Dam fish trap on the Penobscot River,
- Setting up the incubation tank in January and getting the “eyed” salmon eggs delivered,



- Clem visiting the classroom and helping the kids to watch the development of the young hatchling salmon under a special “microvideo” camera,
- Working with the Water Resources staff on identifying aquatic insects,
- Releasing the 1 inch long salmon fry in a local stream and seeing the habitat that salmon need (and getting eaten alive by those hungry spring mosquitoes!).

In the Spring 2004 Issue 2 of this newsletter, Clem described this work with the kids as “the most enjoyable and rewarding.”

All those who had a chance to know and work with Clem got to experience a man who always stood true to his values and beliefs and focused his energies toward making a difference in the world according to them. That is a difficult road to walk and something from which we can all get some inspiration.

Our best to you on your next journey, Clem. You will always be in our thoughts.



*Clem with the 2003-2004 5th grade class and USFWS on their trip to the hatchery.*



# The Many Cases of Caddisflies

Caddisflies are one of the most interesting types of insects that start their life in water. These critters go through a complete metamorphosis - or change from one form to another - by transforming from a larva into an adult. In their larval stage they are very creative in the ways that they make their living. Their choices include:

- building nets to collect food and provide protection,
- constructing cases for protection and camouflage, or
- free-living.

## NET SPINNERS

If you ever look closely into the water near the edge of a river or lake, you can often see their nets attached to rocks. Generally, there are three different kinds of nets.

1. Made with sand, plant material, and small pebbles. Larvae of the Hydropsychid family, for example, construct these nets in fast flowing water and generally on the upper surface of rocks (see **Figure 1**).

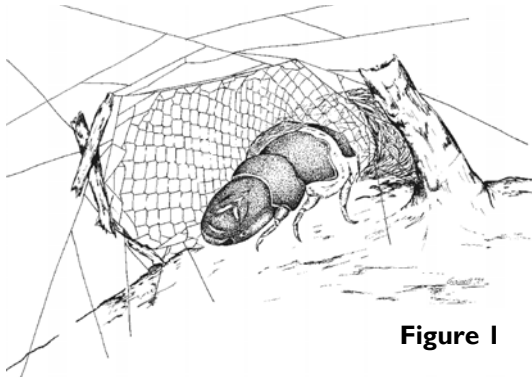
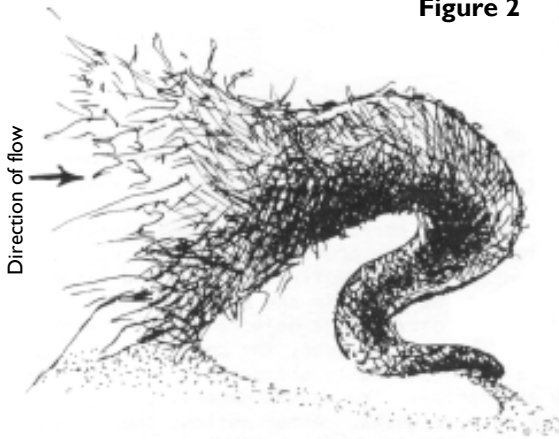


Figure 1

2. Long tube-like or trumpet-shaped nets. Larvae of the Polycentropid family build these nets in gently flowing

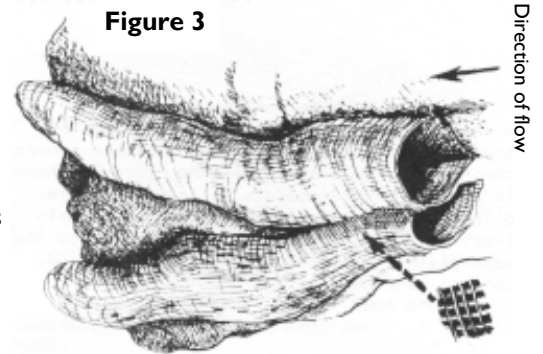
Figure 2



areas of streams and rivers (see **Figure 2**). Some are put in the bottom sediments to filter out food material from water forced down the tube by the current.

3. Made from over a kilometer (6/10<sup>th</sup> of a mile) of silk and incorporating millions of openings. The larvae of Philopotamid family build these nets on the underside of rocks in areas protected from the current (see **Figure 3**). Their nets are lightly fastened to the rocks by the front-ends so that they expand when the current flows through them.

Figure 3

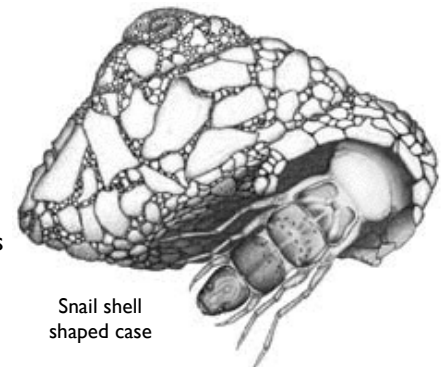


## CASE-BUILDERS

Even more obvious than the nets are the MANY different kinds of cases that caddisflies build. Some of them are so big that you might think you were seeing things when you find yourself watching a bunch of sticks of walking around in the water. The cases are made from things like grains of sand, twigs, small pieces of bark or vegetation, or some combination of many or all of these materials. They also come in a bunch of different tubular shapes and some that look like snail shells.

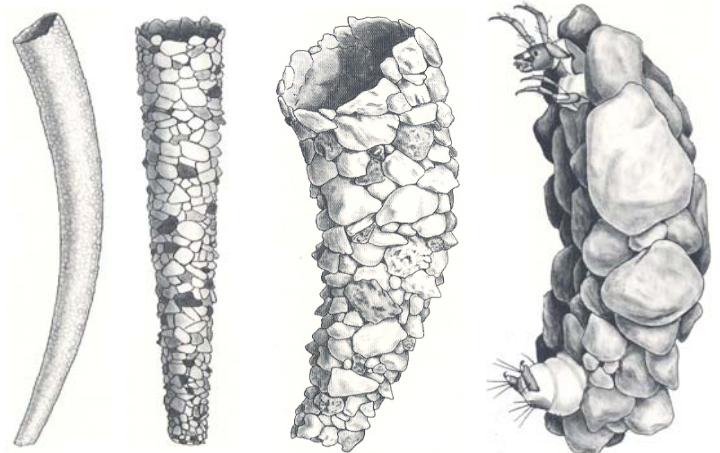
## SAND GRAIN CASES -

Here are examples of cases built with an increasing size of sand grain (left to right) and the various shapes in which they come.

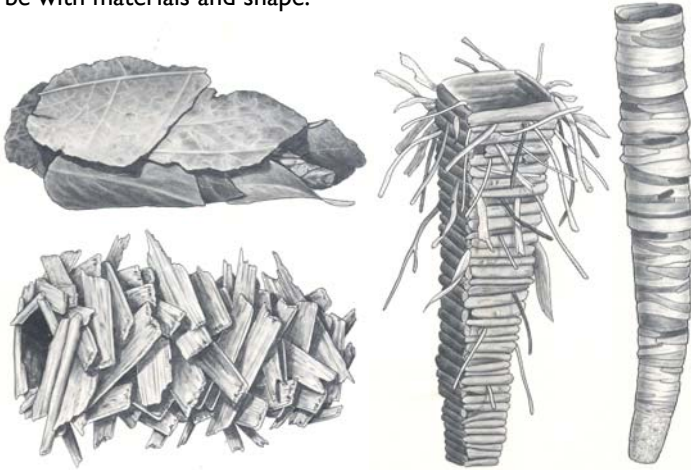


Snail shell shaped case

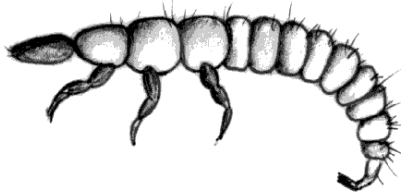
These pictures are not at all to scale so if you look for these in a stream they may be much smaller or bigger than you might imagine.



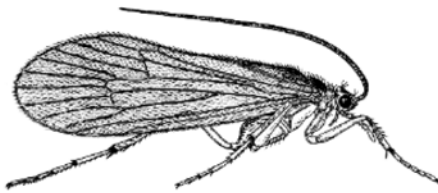
**TWIGS AND VEGETATION CASES** - These pictures are great examples of just how creative these critters can be with materials and shape.



**FREE-LIVING** - Of course we must remember that not all caddisflies live in a case. Some of those who are free-living look like this.



**ADULTS** - Last but not least, remember that these critters do change shape and become an insect who flies around in the air and lives on the land rather than the water. This is what they look like at that stage - they hold their wings in a tent-like way over their body. This is a very good way to tell them from



either stoneflies who hold their wings flat on their body or mayflies who hold their wing upright and away from their body.

**WATER QUALITY WITH BUGS**

Because aquatic insects generally spend much of their lives in the water, they are exposed to a wide range of sources of pollution and other stresses. PIN Water Resources Program incorporates this biological response by taking samples of all kinds of aquatic insects living in the waters we monitor. The quality of the water can be described by knowing which kinds of insects are present and how many are there. This summer we took samples at 6 sites - 2 downstream of the Lincoln Paper and Tissue mill, 1 in the Medway impoundment downstream of Katahdin Paper mill (East Millinocket) on the West Branch, 2 in Alder Stream, and 1 in Little Alder Stream.

At each of the sites we put out 3 containers full of the same amount of rocks that are generally the same size. In Figure 4 you can see that each of these containers are located with a buoy so that we can more easily find them when it comes time to take them out. We use 3 containers at each site so that we can get a better idea of whether there is any variation in the insect community at that location. Without some measure of variation within a location we would not be able to describe the variation between locations.



Figure 4: Arrows locating sampling containers at the Medway Impoundment.



Figure 5: Cone-shaped container for deep sites.

For the deep sites we use a cone-shaped container (see Figure 5) and for the shallower sites we use a tube-shaped container (see Figure 6). For the very shallow sites we use a bag so that the rocks can be flattened out and kept wet the entire time. After sitting in the water for a month the containers are removed and all of the insects are taken for identification.



Figure 6: Tube-shaped container for shallower sites.

We have lots of preserved samples of these insects. So if you ever want to see some caddisflies, or other insects, please feel free to come to the office!