

## ***NEW RUSSIA CRIB WORK***

Sometimes the best laid plans to control streambank erosion are outwitted by the course a river wishes to take.

In 1993, BRASS constructed a 150-foot long log cribbing structure in New Russia with the help of Tim Hendricks and John Northup, ENCON Supervisors, and Moriah Shock inmates. A streambank was eroding, the river was encroaching upon an old school house turned into a home, and the last large hemlock and maple trees were in danger of falling into the water. Fortunately, the landowners agreed to pay for all equipment needs and materials. This burden was lessened by a donation of cedar logs from Gerald Smith's wood lot. Still, over 220 cubic yards of rock was transported, and purchases were required of 600 pounds of spikes, 60 lengths of steel rebar, rolls of welded wire, and 35 lbs. of fence staples.

The resulting structure was beautiful and practical. But sometime during the winter of 2001-2003 a two-foot slump appeared in the mid section of the crib. A worried landowner pleaded for assistance, not finding anyone willing to design and fix the problem slump. With Moriah Shock willing to send a crew and John Northup back to the site, BRASS agreed to submit a design and permit to the agencies and coordinate the repair if the owner again picked up the equipment and material costs.

We assumed the front base log--or a section of the cedar pole flooring--had broken, and were prepared to employ hydraulic jacks to replace any logs, poles or cross ties. To our surprise, the slump was due to undermining of that section. Had we performed longitudinal and cross-section surveys of this river reach in 1992 (a task we didn't know how to do at the time, nor did we own the necessary equipment), we would be eager to show you the difference in the channel geometry over a 10-year period of time. Depth of water at the face of the crib when it was built in 1993 was only ankle to shin deep; this fall water could easily enter chest waders if someone was silly enough to bend over. (There were several silly and surprised people.) The thalweg, the deepest part of the channel, had moved over about 25 feet.

What would make the river move that much? Rivers can and must move around to efficiently carry their water and sediment load. But we suspect the river had some help. Several major floods occurred in the next two years after the crib was built, and Route 9 was flooded in several locations immediately upstream. After-flood response by the Department of Transportation included the removal from the river of a large collection of gravel which was errantly piled on top of point bars on the inside bends. This action created artificially high embankments forcing a change in river currents and streambed configuration.

The result was the undoing of a lot of previous hard work. The inmates ripped off the welded wire from the crib and lifted out the stone, rock by rock. Logs on the top tier were sawn and pried out. The same procedure began on the bottom tier, except the logs were kept in place. Once the weight of the stone was removed, three large logs were chained together as a tripod, and a hand "come-along" allowed the inmates to vertically winch up sections of the slumped crib. Hemlock planks were set down on the empty crib so huge stones could be rolled

over into the river and moved slowly into the space under the raised base log with heavy steel bars.

With the bottom tier once again at the correct level, and with enormous stones hindering the escape of smaller stone placed behind them in the crib, refilling of the crib commenced. Then the placement of welded wire and the rebuilding—from scratch—of the crib's top tier. A finishing touch of insurance was the spiking of hemlock planks onto the face of the bottom tier. Planks were placed as far into the streambed as possible to make additional undermining more difficult.

Will this save the crib? We don't know. Without redirecting the current, we can only hope the crib might live out the rest of its life (another 10-15 years) before logs in the bottom tier begin to rot. In the meantime, we owe Moriah Shock many thanks for their labor, for Bill Wright's oversight, and for John Northup and Paul Hooper's ingenuity, patience, and directions to the crews. Thanks, too, to Hugh Goff and Atwood Pierce of Lewis for responding so quickly to orders for hemlock planking and stone.



*Photo taken during the summer. Note how far the angled section of the crib has slumped down into the water. The large hemlock tree in the background had listed before the crib was constructed, but with the slump it looks even more precarious.*