St. Croix Watershed Research Station

Highlights of 2004

Science Museum of Minnesota

15 YEARS OF RESEARCH AND ACTIVITIES

Scientific Expedition to Mongolia

Jim Almendinger and Mark Edlund led an 18-member scientific team to the western Great Lakes area of Mongolia in August, 2004. In the first of two expeditions funded by the National Science Foundation, the team explored more than 30 lakes ranging from the great plains to the high elevations of the Altai Mountains. Cooperating scientists from the University of Minnesota, St. Olaf College, the National University of Mongolia, the Mongolian Academy of Sciences, and the Royal Belgian Institute studied the hydrology and examined the diatom, insect, and invertebrate populations of some of the world's most remote lakes. The team will return in the summer of 2005.

Guidelines Developed for Nutrient Inputs to St. Croix River

In 2004 station scientists completed critical studies of nutrient and sediment inputs to the St. Croix River. By looking at clues in sediment cores from Lake St. Croix, scientists were able to go back in time and determine the natural, pristine state of the river. By contrasting this natural baseline against modern conditions, we now know that the St. Croix River–despite its unarguable beauty and perceived high quality–is significantly degraded and needs more stringent protections. This information is now being used by the St. Croix Basin Water Resources Planning Team as the objective, scientific foundation for setting a goal to reduce inputs of nutrients and sediment to the St. Croix River by 20 percent.

Restoration in the St. Croix Valley

Old farm fields at the research station are being restored to prairie, but with a difference–in work directed by Shawn Schottler, restoration is a science. Prairie restorations at the station use experimental plots to test methods for maximizing florisitic diversity. The diversity of plantings affects the wildlife that use restored habitats, and these studies are evaluating varied planting mixes and seeding rates to see which support the most diverse wildlife populations.

An 8-acre site acquired by the Station in 2003 has been cleared of trees and readied for planting. This site, on the corner of state Highway 95 and 152nd Street, will be a demonstration and interpretation site for the public. Two projects on National Park Service lands–Arcola and Rice Lake Flats–will test seeding mixes and rates. Cooperative work is underway on projects with the Hormel Nature Center near Austin and with Pheasants Forever in Mower County. Schottler has presented his findings at several scientific conferences focusing on restoration in the midwest.

Cooperative Projects with the National Parks

The research station has cooperated in numerous scientific studies within the St. Croix National Scenic Riverway. We have now joined efforts on a wider scale within the Park Service's Great Lakes Network. Two projects are addressing biomonitoring as a means of detecting changes in aquatic environments caused by climate change, atmospheric pollution, and invasive species.

Diatoms will be used as a means of monitoring water quality in several national park units: Voyaguers, Isle Royale, Sleeping Bear, Pictured Rocks, Apostle Islands, and the St. Croix. Staff scientist, Mark Edlund, will use paleolimnological techniques and diatom analysis to determine the natural variability, or reference condition, of national park lakes and to reconstruct a detailed history of lake response to ecological changes that have occurred in and around the lakes during the last 150 years.

A biomonitoring plan for large river-based parks in the Great Lakes Network will be developed in a year-long effort beginning in November, 2004. Scientists under the direction of Dan Engstrom will develop monitoring protocols relating to the physical, chemical, and biological condition of the St. Croix and upper Mississippi rivers.

(top) Lake Manitou, Sleeping Bear Dunes National Lakeshore (photo Paul Murphy)
(bottom) Grand Sable Lake, Pictured Rocks National Lakeshore

Laura Triplett Named Canon National Parks Science Scholar

Laura Triplett, a Ph.D. candidate at the University of Minnesota, has been awarded a prestigious Canon National Parks Science Scholarship by Canon U.S.A., Inc., the American Association for the Advancement of Science, and the U.S. National Park Service. This scholarship will support Laura's work on the St. Croix River for up to three years, as she completes her dissertation research studying nutrient cycles, contaminant inputs, and sediment flux to the lower St. Croix River.

The Canon National Parks Science Scholars program honors eight outstanding graduate students in the Americas who are conducting significant original research in the national parks. Laura has been doing her graduate research at the St. Croix Watershed Research Station, working with Dan Engstrom (her academic advisor) and Mark Edlund, for four years, completing her Masters' Degree in 2003.

Motel Lot, 2004 Susan Maakestad

Merlyn Chesterman teaches printmaking

Artists at Pine Needles

The third season of the Artist at Pine Needles residency program welcomed Susan Maakestad from Memphis, Tennessee and Merlyn Chesterman from Devon, England.

Susan Maakestad is an Associate Professor at Memphis College of Art. Originally from the midwest, Susan's landscape paintings have evolved as her residence has changed from rural midwestern to mid-southern urban. She shared this journey in a public program and created numerous watercolors to use as the basis for oil paintings.

Merlyn Chesterman studied the St. Croix as a subject for her woodcut designs. She canoed the river in early morning light, taking photographs and making sketches as a basis for woodcuts. She will produce a series of large-scale, multi-colored woodcut prints from her stay in the program. She conducted two hands-on workshops for community participants, teaching the art of woodcuts and printmaking.