

EDUCATION

Master of Science	(1986)	Fisheries Science, Virginia Polytechnic Institute and State University
Bachelor of Science	(1982)	Wildlife Ecology, University of Florida

EXPERIENCE

Mr. Kurt Jirka has worked in the field of biological consulting since 1987, participating in aquatic and terrestrial studies with an emphasis on aquatic macroinvertebrates and fishery resources. Through his research and consulting experience, Mr. Jirka has developed expertise in sampling fish and aquatic invertebrate populations from a variety of habitats ranging from small streams to large lakes and rivers. He is a recognized expert on native freshwater mussels in New York State and has conducted numerous investigations related to threatened and endangered mussel species. Mr. Jirka is also recognized as a Certified Fisheries Professional by the American Fisheries Society. He has supervised and participated in aquatic habitat, fisheries and macroinvertebrate investigations in New York State, Massachusetts, Vermont, Connecticut, Maine, Pennsylvania, West Virginia, Wisconsin, Michigan, Virginia, and Florida and has been responsible for associated analysis of data and the preparation of study reports. Examples of some investigations in which Mr. Jirka has had a prominent role are listed below.

Fisheries and Aquatic Habitat Investigations

- **Evaluation of Fish Habitat, Jackson Pond, Chenango County, NY**

Mr. Jirka conducted an evaluation of a private, 9-acre pond to assess the potential of the pond to support a quality largemouth bass fishery for the landowner. A site visit was conducted to collect information on the physical, chemical, and biological attributes of the pond. A similar site visit was made several years earlier and provided a baseline to which new information could be compared. Water quality parameters (dissolved oxygen, specific conductance, pH, water temperature) were measured near the surface and at 1.0-m depth intervals through the water column. The physical characteristics of this bog-like lake were documented with regard to depth/bottom contour, aquatic vegetation, and other cover. A DC-powered backpack electrofisher was used to sample for fish in and around vegetation and near shore. The collected information was synthesized into a report that described the lake's physical and chemical condition and how some of these conditions (e.g., low pH, low dissolved oxygen, thermal stratification) serve to limit fish production and the capacity of the lake to support the desire fishery. Potential approaches to mitigate undesirable conditions were provided, as was an assessment of the likelihood of success for these approaches.

- **Habitat Characterization, Mountain View Lake and Indian Lake, Franklin County, NY**

Mr. Jirka conducted a field survey to characterize habitat within the littoral zone (<6 ft deep) of Mountain View Lake, Indian Lake, and the channel connecting the two lakes. This work was conducted for the Town of Belmont, NY as part of investigations associated with a plan to dredge both lakes and the connecting channel to improve navigation and aquatic recreation opportunities. Individual habitat units within the littoral zone were identified based on substrate type, the presence and type of vegetation, other cover types, and bottom slope. The various habitats within the littoral zone were delineated on a base map of the lake system. The field survey was conducted by a three-person crew observing the littoral zone from a small pontoon boat. Kayaks were used to access areas that were too shallow or vegetated to access by pontoon boat. Habitat units were identified during field reconnaissance as segments of the littoral zone with relatively uniform habitat characteristics. Observations of fish and wildlife use of the littoral zone and adjacent areas also were recorded. Areas of special interest, such as those bordering wetlands or supporting notable vegetation, were specifically documented. In addition, photographs were taken at representative points within each habitat unit to document habitat. The information gathered during the survey was compiled into a report that was used in support of a larger study of the feasibility of dredging portions of the lake system.

- **Black Brook Fish Community and Aquatic Habitat Assessment, Seneca County, NY**
Mr. Jirka conduct an assessment of the fish communities of Black Brook and one of its tributaries in the vicinity of a landfill owned and operated by Seneca Meadows Incorporated and to identify potential impacts to these communities under proposed plans to expand the landfill. The fish communities of the two streams were sampled by backpack electrofisher. The physical habitat and fish communities of the sampling reaches were characterized using U.S. EPA protocols for rapid biological assessment of wadeable streams. A report was prepared incorporating the information on stream habitat conditions and the fish communities and identifying potential impacts to these resources from the proposed landfill expansion.
- **Assessment of the Flora, Fauna, and Habitats of Shank Painter Pond, Provincetown, MA**
Mr. Jirka conducted a field investigation of Shank Painter Pond in the Town of Provincetown, MA, to document the flora and fauna of the pond and evaluate habitat for fauna as part of a larger investigation of water quality impacts from nearby development. Shank Painter Pond is a quaking bog wetland consisting of a mosaic of open water and floating bog mat. A field assessment was conducted around the perimeter of the open-water portions of the central section of the pond to make observations (both visual and audio) of flora, fauna, and habitat within and immediately adjacent to the pond. A seine and dip net were used to sample for fish and amphibians at several locations where the pond bottom was firm enough to allow wading and pulling a seine. Photographs were taken of characteristic habitats, flora, and fauna, and field notes were recorded regarding the identification of observed flora and fauna and location of unique or noteworthy habitats or features. In addition, dissolved oxygen, specific conductance, and water temperature were measured from the surface to the bottom in two locations within the central open-water portion of the pond. A report was prepared and submitted to the client for use in the larger assessment of impacts to the pond from watershed development.

Freshwater Mussel Investigations

- **Freshwater Mussel Surveys of the Olean Flood Protection Project, Olean, NY**
Mr. Jirka has led two surveys for rare freshwater mussels in waters associated with the Olean Flood Protection Project operated by the New York State Department of Environmental Conservation (NYSDEC). The first of these investigations was a survey of a 970-m reach of Olean Creek, and the second a survey of a 550-m of the Allegheny River, both in Cattaraugus County, NY. These investigations consisted of a qualitative mussel survey aimed at identifying areas likely to support mussels and determining the presence of mussels in such areas. Of particular interest was determining the existence of the federally endangered rayed bean (*Villosa fabalis*) and clubshell (*Pleurobema clava*) and the state-threatened wavy-rayed lampmussel (*Lampsilis fasciola*) in the study areas. Each qualitative survey was followed by an intensive quantitative survey to determine the status, abundance, and distribution of the target species within the study area. Reports were prepared for each survey and provided: the findings of the surveys; a discussion of potential impacts from proposed riprap placement to mussels in the study area; and potential strategies to avoid, minimize, or mitigate these impacts.
- **Mussel Survey of the Delaware River in the Vicinity of a Proposed Whitewater Park, Port Jervis, NY**
Mr. Jirka led a survey for rare freshwater mussels in the Delaware River in the City of Port Jervis, NY. The City is proposing to build a whitewater park along the New York side of the river, and a survey was required to determine if dwarf wedgemussel (*Alasmidonta heterodon*, a federally and New York State endangered species) and brook floater (*Alasmidonta varicosa*, a New York State threatened species) were present within the project area. A field survey for these species was conducted in a 1,300-meter reach of the river using snorkeling and viewing buckets as the means of searching for mussels. All mussels (species of concern and otherwise) encountered were identified and enumerated. Specimens of species of concern were individually measured. The locations of all encountered specimens of species of concern were noted on a base map of the study area, and the GPS coordinates of the location recorded. Locations of non-target mussel species also were recorded. General habitat conditions, search time, and specific habitat used by any of the species of concern were recorded. The survey area, selected habitats, and species of concern found at the project site also were photo-documented. Following completion of the field survey, a report was prepared that provided a description of mussel species composition, abundance, and distribution in the surveyed areas, an assessment of potential impacts of the project to protected mussel species, and recommendations for avoiding such impacts.

- Freshwater Mussel Survey of the Route 352 Patterson Bridge Crossing, Chemung River, Corning, NY**
 Mr. Jirka conducted a freshwater mussel survey in the Chemung River in the vicinity of a New York State Department of Transportation (NYSDOT) bridge replacement project located on the Chemung River in the vicinity of the Route 352 Patterson Bridge in Corning, NY. The mussel survey was necessary to determine if yellow lampmussel (*Lampsilis cariosa*, a U.S. Fish and Wildlife Service species of concern), green floater (*Lasmodonta subviridis*, a New York State threatened species), brook floater (*Alasmodonta varicosa*, a New York State threatened species), and the elktoe (an unprotected species both federally and within New York State) were present within the project area. An approximately 650-m reach of river was surveyed using snorkeling, viewing buckets, and scuba diving. Collected specimens of green floaters and yellow lampmussels were tagged and relocated to an area outside of the impact zone of bridge replacement activities. The success of relocation was monitored during subsequent visits to the new site (approx. one month and one year after relocation) to determine the survival of the transplanted mussels. Reports were prepared detailing mussel species composition, abundance, and distribution; aquatic habitat; and the survival of transplanted mussels.

Aquatic Macroinvertebrate Investigations

- Aquatic Macroinvertebrate Community Analysis, South Branch Moose Creek, NY**
 Mr. Jirka conducted a multi-year macroinvertebrate community analysis for the Oneida-Herkimer Solid Waste Authority. EcoLogic collected macroinvertebrate samples from five stations on the South Branch of Moose Creek and a sixth station on a tributary of the creek. A subsample of 100-organisms from each sample was identified to the genus level. These data were then analyzed used to calculate five community metrics and assess the degree of biological impairment of each site using the New York Department of Environmental Conservation's biological assessment protocols. Samples were collected every two years, and macroinvertebrate community condition from the most current year was compared to that of past years.
- Biological Assessment of Conesus Creek, Lakeville, NY**
 Mr. Jirka led a biological assessment of Conesus Creek in the vicinity of the Livingston County Water and Sewer Authority (LCWSA) Lakeville Sewage Treatment Plant (STP). The LCWSA was required to conduct ambient monitoring of Conesus Creek as a Special Condition of its State Pollution Discharge Elimination System permit. The macroinvertebrate community upstream and downstream of the STP was sampled following NYSDEC protocols for multi-plate sampling. Two multiplate samplers were deployed at each of two locations (one upstream and one downstream of the Lakeville STP outfall) for three consecutive 5-week periods from June into September. A subsample of 250-organisms was identified to genus/species for one sample from each station for each sampling period. The data from each sample were used to calculate the standard indices for multiplate sampling of non-navigable waters. Values for the three sampling events were averaged for each station and used to assess biological impairment and water quality. Physical and chemical parameters were measured at each sampling location during each deployment/retrieval event. Substrate particle size classes and the amount of moss, macro-algae, micro-algae, and silt cover were characterized within the riffle habitat nearest to each sampling station. Data were analyzed to determine if water quality and the degree of biological impairment downstream of the STP differed significantly from that found upstream.

SELECT PUBLICATIONS

Books

Strayer, D. L., and K. J. Jirka. 1997. The pearly mussels of New York State. **New York State Museum Memoir** 26, Albany, NY. 113 pp. + 27 plates.

Journal Articles

Josephson, D. C., J. M. Robinson, J. Chiotti, K. J. Jirka, and C. E. Kraft. 2014. Chemical and biological recovery from acid deposition within the Honnedaga Lake watershed, New York, USA. **Environmental Monitoring and Assessment** 186: 4391–4409.

Robinson, J. M., K. J. Jirka, and J. A. Chiotti. 2010. Age and growth analysis of the central mudminnow, *Umbra limi* (Kirtland, 1840). **Journal of Applied Ichthyology** 26: 89-94.

Jirka, K. J., and R. J. Neves. 1992. Reproductive biology of four species of freshwater mussels (Mollusca: Unionidae) in the New River, Virginia and West Virginia. **Journal of Freshwater Ecology** 7: 35-44.