

Obituaries



Il'ja Krno (1950-2021)

Obituary contributed by Tomáš Derka

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Il'ja Krno was born on May 27, 1950 in Moscow, Soviet Union, where his father Miloš, an antinazi resistance fighter and writer, worked at the Czechoslovak Embassy. As sincere Russophiles, the parents of the first-born son chose the name after one of the main characters of old legends of Slavic mythology, Il'ja Muromec. Only a friend of his family, the great Russian writer Il'ja Erenburg, thought that the boy was named after him. The family returned from Moscow to Czechoslovakia in 1953. Il'ja lived ever since in the capital of Slovakia, Bratislava, where the Danube meets the Pannonian Plains and the Carpathians. When choosing a profession, he was guided by his father, who loved nature, as well as his grandfather, who was a pioneer in the Tatra Mountains historiography, promoter of evolution and Darwinism in Slovakia at the beginnings of the 20th century. In Bratislava he received primary, secondary and university education. He began his university studies at the Comenius University in Bratislava in the turbulent year 1968, a month after the occupation of Czechoslovakia by the Soviet army. He first

studied biology and chemistry, graduating in 1973 with a master's degree in zoology. Afterwards, he spent a year in compulsory military service, "defending" the western border of Czechoslovakia. After his military service, he returned to science. In his next career he was influenced by his doctoral supervisor Dr. Eva Ertlová from the Comenius University and by Prof. František Kubíček from the Masaryk University in Brno, Czech Republic. He completed doctoral studies in 1979, when he finished his study about structure and dynamics of benthic invertebrate communities of the Lupčianka river that flows in his father's homeland in northern Slovakia. After graduating he worked as a scientific assistant in the Institute of Zoology of the Faculty of Natural Sciences, Comenius University in Bratislava. From 1998 he worked as an assistant professor of hydrobiology, and from 2009, until his retirement in 2020, as a professor of ecology at the Department of Ecology.

Il'ja has dedicated his entire professional life to the study of benthic invertebrate communities and aquatic insects ecology. He specialized in ecology and taxonomy of stoneflies, but he was also an expert in ecology and identification of central European mayflies. He was the first author of the identification key of stonefly and mayfly nymphs of Slovakia. Il'ja loved mountains. In the highest part of the Carpathians, the Tatra Mountains in northern Slovakia, he discovered and described a new stonefly species *Leuctra pusilla* Krno, 1985. In his work he focused on the influence of ecological factors on the distribution and production ecology of benthic invertebrates in Central Europe, with the focus on stoneflies. He devoted a lot of effort to assessing the various human impacts, such as water pollution, flow regulation, deforestation, soil erosion, acidification, and land use, on the structural and functional properties of benthic invertebrate communities. He published about 240 original scientific papers, including 8 monographs and university textbooks. His publications have been cited almost 1500 times. There is no naturalist in Europe who deals with the ecology of stoneflies and does not meet with the name Il'ja Krno. However, as former students and colleagues, we especially appreciated his human dimension. Whether as a teacher, grant manager, or head of department, he was always kind, never raised his voice, never ruined the fun, and he always tried to help.

Il'ja Krno died suddenly during a spa treatment in Považská Bystrica, Slovakia, on October 17, 2021 at the age of 71. He left his wife Maria whom he met at the university, son Andrej, daughter Zora, three grandchildren and younger brothers Svätozár and Martin and many friends and colleagues. We will all miss him greatly.

Prof. I. Krno's most important publications concerning stoneflies:

1. Cívik J., Beracko P., **Krno I.**, Lánčzos T., Navara T., Derka T. 2021. The taxonomical and functional diversity of three groups of aquatic insects in rheocene karst springs are affected by different environmental factors. *Limnologia* 91, DOI: 10.1016/j.limno.2021.125913
2. **Krno I.**, Žiak M., Lánčzos T., Beracko P., Šporka F., Thomková K. 2021. Stoneflies (Plecoptera) of the Western Carpathians: does the geological bedrock influence their biodiversity? *Biologia*, DOI: 10.1007/s11756-021-00843-5
3. Beracko P., **Krno I.**, Lánčzos T. 2021. Key environmental drivers structuring stonefly assemblages in the mid-sized streams on the southern slope of the Western Carpathians. *Ecohydrology & Hydrobiology* 21(1): 164-176, DOI 10.1016/j.ecohyd.2020.06.003

4. Cívik, J., Beracko P., **Krno I.**, Derka T. 2020. Stonefly (Insecta: Plecoptera) assemblages of Western Carpathians Karst springs. *Entomofauna Carpathica* 1: 153-164.
5. **Krno I.**, Beracko P., Navara T., Šporka F., Elexová E.M. 2018. Changes in species composition of water insects during 25-year monitoring of the Danube floodplains affected by the Gabikovo waterworks. *Environmental Monitoring and Assessment* 190(7), DOI: 10.1007/s10661-018-6773-5
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10. Žiak M., **Krno I.** 2014. New and interesting records of Plecoptera (Insecta) from Slovakia and several autecology notes. *Illiesia* 10 (6): 52-59.
11. **Krno I.** 2013. Determinačný kľúč pre hydrobiológov. Časť II. Pošvatky (Plecoptera). [Identification key for hydrobiologists. Part II. Stoneflies (Plecoptera).]. Výskumný ústav vodného hospodárstva v Bratislave, 64 pp.
12. **Krno I.**, Šporka F., Štefková E. 2013. The influence of environmental variables on larval growth of stoneflies (Plecoptera) in natural and deforested streams. *Biologia* 68(5): 950-960, DOI: 10.2478/s11756-013-0236-9
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Larry E. Serpa (1951-2021)

Aquatic Ecologist at The Nature Conservancy, Fairfax, California, United States
Obituary contributed by Lynn Lozier, February 2022

Larry Serpa, lover of streams and aquatic insects, passed away from T-cell lymphoma on May 17th, 2021. As an ecologist with The Nature Conservancy for his entire career, he was able to indulge his personal interest in aquatic invertebrates and amassed a meticulously documented collection of material from 50 California counties over 46 years. It has been donated to the California Academy of Sciences.

Larry spent his early years outdoors in the San Francisco Bay Area, hunting for snakes, lizards and insects. He attended San Rafael High School and there, on a class field trip to the desert, he met his partner in life, Lynn Lozier. He attended Cal Poly State University in San Luis Obispo studying Biology but transferred to Sonoma State University after two years to join Lynn. Larry and Lynn both received their BA and MA Biology degrees from that institution.

While in Sonoma County, Larry and Lynn lived on Sonoma Mountain and managed the Fairfield Osborn Preserve, for the University's Biology Department. Their caretaker duties for this natural area included designing and building a trail system, creating displays, compiling species lists and keeping weather records. In 1976, the Nature Conservancy, which owned the property, asked that they put together an environmental education program aimed at grade school children. Larry and Lynn designed a curriculum, recruited, and trained volunteer naturalists and launched a program, the first of its kind in the county. Through these guided explorations, generations of kids and their parents developed comfort in the natural world and had personal experiences with what biodiversity really means. Their care for the environment encouraged and informed generations of children and student naturalists. The program continues to this day.

The headwaters of Copeland Creek run through the Preserve. Larry began his Master's project hoping to do a synecological study of energy flow through that system. He surveyed the

vegetative community, captured, dried and weighed leaf fall, and then tried to document the animals in the aquatic realm. He was shocked to discover that although there was a rich and dynamic community of aquatic insects in this fishless stream, he could not identify them because they were juveniles, and the taxonomy is based on adult structures. So, he shifted his focus. In his master's thesis *The Rearing Imperative*, he reared nymphs from the creek's many microhabitats, so that when they matured, he was able to correlate them with the adults they emerged to be. He reared over 90 species and created a species-level key of those nymphs to assist future researchers.

As Larry began to work to identify adult aquatic insects, he reached out to experts for information. Richard Bauman and Vincent Resh were encouraging and generous with their engagement. Not being in an institution with taxonomic expertise, Larry felt that they "opened the door" for him to the professional world of aquatic entomology for which he was very grateful. Throughout his life, a number of taxonomists provided encouragement, feedback, advice, ideas and also questions he could explore. Larry shared sites and material with many. With John Sandberg, he especially enjoyed learning about *Calileuctra* drumming behavior. Larry loved to go out and look for some species that were little known or of interest to another colleague and with his ecological focus, he was often successful in finding them. Some of those explorations resulted in new records and more specimens. *Calileuctra ephemera* Shepard & Baumann, 1995 and *Paraleuctra divisa* (Hitchcock, 1958) are examples.

After graduating, working for The Nature Conservancy, Larry managed natural areas, assisted in preserve design, did restoration planning, evaluated properties for preservation, particularly the presence of special status amphibians, and led field trips known for both their humor and insights. His field work included searching for, and expanding the known distributions of many rare species including the California freshwater shrimp *Syncaris pacifica*, the Tomales isopod, *Caecidotea tomalensis*, a suite of vernal pool fairy shrimp; *Branchinecta conservatio*, *B. longiantenna*, *B. lynchi*, *B. sandiegonensis*, *Streptocephalus woottoni*, the vernal pool tadpole shrimp *Lepidurus packardi*, the Delta green ground beetle *Elaphrus viridis*, Rickseker's water scavenger beetle *Hydrochara ricksekeri*, and the Coastal tailed frog *Ascaphus truei*. In 1993, Larry supported and inspired the genesis of STRAW (Students and Teachers Restoring a Watershed). The program engages school children in understanding and caring about endangered species by actually having an impact in saving them. STRAW initially focused on creating habitat for the California freshwater shrimp. Today kids are planting to restore riparian habitat in support of biodiversity at sites across northern California.

Larry loved to explore new habitats, and to search for and find things that were unexpected. In 2008 at 10,300 feet (3140 m) asl, at a location above Ruby Lake in the high Sierra Nevada with his wife Lynn, she happened to catch an adult *Megarcys yosemite* (Perlodidae). Larry became fascinated with these high altitude beasts, an interest that expanded to include *Lednia sierra* (Nemouridae). Larry and Lynn undertook a project to try to determine the California distribution of both stoneflies. Not being backpackers, they identified all the trailheads to which they could drive that would get them up to 10,000 feet. Then each location was scoured using Topo and Google Earth to determine whether there might be likely habitat within day-hiking distance from that trailhead. Ultimately, Larry identified nine different jumping-off points. Over the course of ten summers, he and Lynn drove to these trail heads and then undertook lengthy day hikes even

higher to explore creeks, tributaries and snowfields. Most sites were searched for multiple years. In ten years of exploring, *M. yosemite* was found at six locations, and *L. sierra* at five places, most of them new localities, while five more apparently promising areas yielded neither species.

Larry was interested in “what lived where ” across the state’s freshwater microhabitats. His collection reflects over 3,000 collecting events across 50 of California’s 52 counties. In 46 years, he collected, and documented over 200,000 aquatic invertebrate specimens exploring diversity and distribution from sea level to over 11,000 feet. Material was meticulously documented in a relational database which, in addition to location, water temperature and vegetative community type also included significant details including microhabitat, collection method, type of specimen (nymph, adult), etc. The collection includes over 23,000 individually identified and labeled vials, as well as cases of bulk material linked with each collection event. Over 1,500 identified species are represented. Larry believed that what he documented would inform future understanding of ecosystems, how complex they are, and how they change over time. He wanted the specimens and the information they contain and represent to be available to aquatic entomologists all over the world. Consequently, his wife Lynn has donated his material to the California Academy of Sciences (CAS), making that institution’s aquatic insect collection the largest in California.

CAS reports that once specimen vials are processed with unique identifiers at the Academy, data will be uploaded to <https://monarch.calacademy.org/> (a Symbiota database), and pushed to data aggregators including iDigBio and GBIF. A fund has been set up to support the curation of this voluminous material; to date, about 1,200 specimen records have been uploaded, with tens of thousands remaining. In the meantime, the entire dataset without unique identifiers is available by request to the entomology collection manager, Chris Grinter.

Larry loved the natural world, starting with the smallest creatures. He felt himself a humble servant to the diversity of life. Colleagues remember his sense of wonder and his cynical wit, with a through-line of play and delight. Larry was a deeply knowledgeable naturalist, fortunate to apply his skills and passion for real conservation impact with The Nature Conservancy. He is remembered by generations of staff as an inspiring and generous mentor. We hope that his life’s work, this scientific legacy, will continue to encourage and support the work of those who care about biodiversity long into the future. Editor’s note: see CAS blog about the donation of Larry’s collection at <https://www.nature.org/en-us/newsroom/larry-serpa/>.

Bibliography of stonefly papers by Larry E. Serpa

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Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Perla](#)

Jahr/Year: 2022

Band/Volume: [40](#)

Autor(en)/Author(s): diverse

Artikel/Article: [Obituaries 4-12](#)