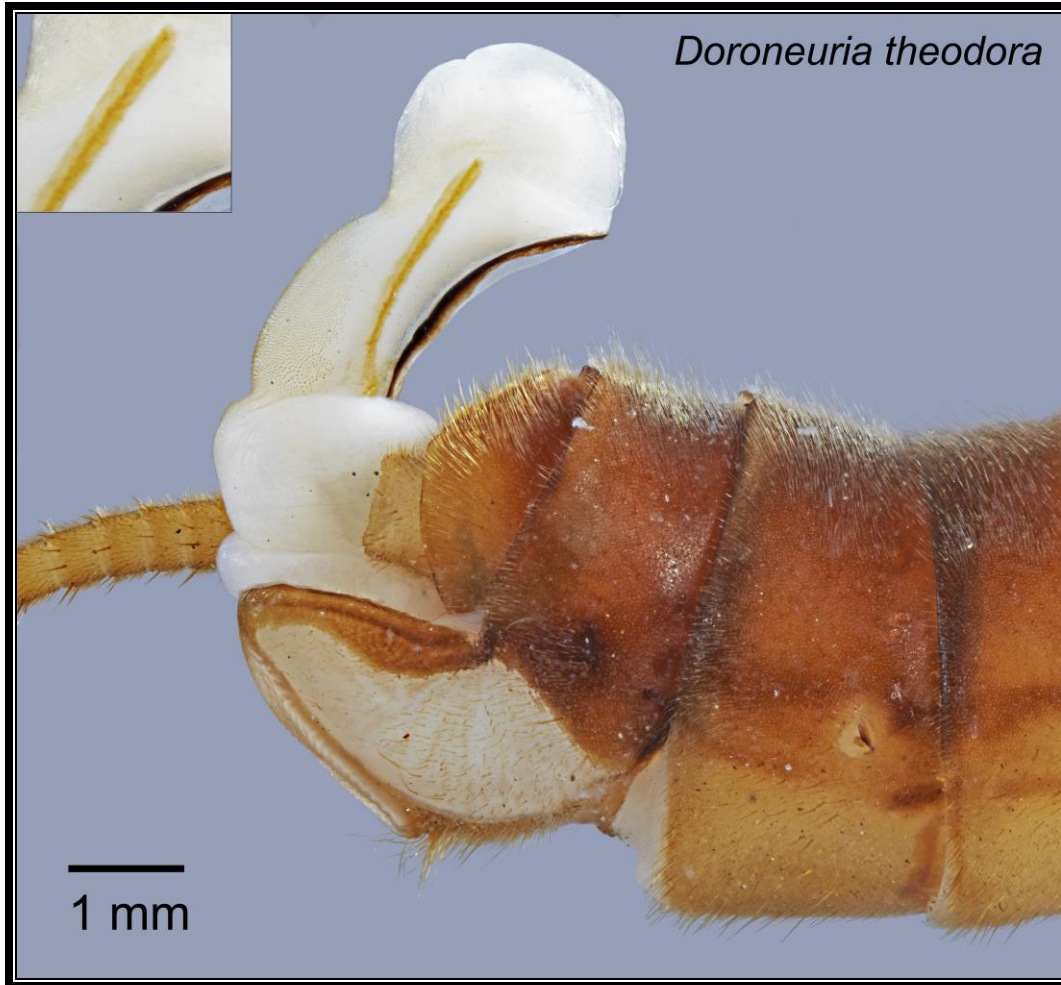


PERLA

Annual Newsletter and Bibliography of
The International Society of Plecopterologists



Doroneuria theodora (Needham & Claassen, 1922) (Perlidae), Idaho: Lemhi Co., North Fork Salmon River, Hwy 93, 4 August 2015, B. Kondratieff & C. Verdone. Male terminalia, aedeagus everted, lateral, inset, lateral bar. Photograph by Chris Verdone.

PERLA NO. 38, 2020

Department of Bioagricultural Sciences
and Pest Management
Colorado State University
Fort Collins, Colorado 80523 USA

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International Society of Plecopterologists
Available on Request to the Managing Editor

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PERLA SUBSCRIPTION POLICY

Dues for membership in the International Society of Plecopterologists are \$15 U.S. per year. Members will automatically receive PERLA. Libraries or other institutions may receive PERLA by making a \$10 annual donation, or through an exchange of publications agreement approved by the Managing Editor and Editorial Board. Five dollars (\$5) of the dues will become part of the Scholarship Fund of the Society, to be used for helping active and deserving workers or students participate in future symposia.

Persons or institutions who have no support or are financially unable to pay dues may continue to receive PERLA by writing a brief note to the Managing Editor requesting a waiver of dues and to be retained on the mailing list.

It is therefore important that you respond to this receipt of PERLA 38 (2020) in one of the following ways, in order to be kept on the mailing list for PERLA 39 (2021): (1) pay your annual dues, (2) make a \$10 donation (institutions), or (3) request a waiver. A form and self-addressed envelope are included with this issue, (PERLA 38) for your convenience in responding.

You may send your dues or donation in the form of a personal check, bank note, cashier's check, or postal money order designated in U.S. funds to the Managing Editor. Because of high bank costs for exchange in some countries, you may send cash, in which case the Managing Editor will respond with a personal acknowledgment when received. NO CREDIT CARD CHARGES CAN BE ACCEPTED.

Dues and donations are used to help pay the costs of publishing and mailing PERLA, for Lifetime Achievement Award plaques presented by the Society at International Symposia and for the Scholarship Fund. The Managing Editor will make a financial report to the International Committee at each International Symposium Business Meeting or at any other time when requested.

Members or institutions whose dues remain unpaid for two consecutive years, or have not been granted exchange, waiver or emeritus status, will be dropped from the PERLA mailing list.

XII NORTH AMERICAN PLECOPTERA SYMPOSIUM

XII North American Plecoptera Symposium 16-19 May 2019



It hardly seems possible, but the North American Plecoptera Symposium met for the 12th time in its history on 16-19 May 2019. This was the second time (1st 2006) it was held at the Springs Agricultural Experiment Station in the beautiful Shawnee National Forest of southern Illinois. Attendees totaled 19, a small but powerful group. We enjoyed 15 presentations. Attendees included Bill Stark, Charlie Nelson, Jane Earle, Boris Kondratieff, Scott Grubbs, Ed DeWalt, John Sandberg, Audrey Harrison, Luke Myers, Steve Beaty, Victor Holland, Chris Verdone, David Rees, Jason Robinson (a trichopterist!), and were most pleased to have four graduate students attend and present their work: Taylor McRoberts (WKU), Madeline Metzger (WKU), Eric South (U-IL), and Evan Newman (U-IL). Last but not least, we were well fed and organized for meals by the very efficient Lesley Deem (U-IL).

A significant development occurred at our business meeting. Dr. Charlie Nelson proposed that we postpone our next NAPS meeting until 2023 (not 2022). This would give NAPS members incentive to attend the international meeting without the added cost of a North American meeting in the next year. This would also provide some incentive for members to donate funds to Perla in order to support student travel grants.

We were treated to 15 presentations (see titles and abstracts below) that ranged from species descriptions, to state and regional faunistic studies, and proposals to rank imperilment for species in northeastern states. All presentations may be viewed from the

following link: double click on a presentation and then chose “Open with” and “Google Slides”, then under tab “View”, click “Present”:

<https://drive.google.com/drive/folders/1QvgeCOFTiugx5xuOBWeuJRBUYp-Z52o?usp=sharing>

1. A COLLABORATIVE NORTHEAST REGIONAL SGCN FOR STONEFLIES (INSECTA: PLECOPTERA)

R. Edward DeWalt, Illinois Natural History Survey. Luke Myers, Lake Champlain Research Institute. Boris C. Kondratieff, Colorado State University. Scott A. Grubbs, Western Kentucky University. Jane Earle, Mechanicsburg, PA.

We argue that insects in the order Plecoptera (stoneflies) are highly imperiled in the Northeast USA due to habitat destruction, urbanization, and most recently by changing climate and are worthy of protection and the funding necessary to formally establish their conservation status. Stonefly larvae inhabit streams of all sizes and some high latitude or altitude lakes. They are food for myriad predators and help to process organic matter. The adults feed both aquatic and terrestrial predators, but also transport nutrients and energy back to the terrestrial environment. These insects have poor dispersal capabilities and are highly sensitive to environmental changes and therefore are used as indicators of water quality. Range loss, extirpation, and extinction have been documented in many areas of the world, including several states in the USA Midwest and many locations in Europe. Climate modeling has predicted dramatic shifts northward for the distribution of stonefly genera in North America. At least 246 species of stoneflies are known from the 13 states in the US Fish and Wildlife Service (USFWS) Northeast Region. Species richness is concentrated in five large or altitudinally diverse states, ranging from 109 (MD) to 188 (VA). A unique consortium of stonefly scientists, state and federal biologists, and conservation organizers has formed and met remotely several times to generate a list of 33 Regional Species in Greatest Conservation Need (RSGCN). These 33 species form the basis of a USFWS Competitive State Wildlife Grant proposal currently being drafted to formally establish conservation status of species by gathering specimen data from literature, museums, and through rigorous fieldwork across the region in collaboration with local, state, and federal biologists. This presentation is being shared remotely with The NE Fish and Wildlife Diversity Technical Committee that is simultaneously meeting.

2. DRUMMING DESCRIPTIONS OF TWO STONEFLIES (*PTERONARCYS BILOBA* NEWMAN AND *ACRONEURIA FRISONI* STARK & BROWN) FROM NEW YORK STATE

Luke Myers, Lake Champlain Research Institute. John Sandberg, California DFW Aquatic Bioassessment Lab.

The drumming signals of two species of stoneflies from northeastern New York are described: *Acroneuria frisoni* Stark & Brown and *Pteronarcys biloba* Newman. *Pteronarcys biloba* intersexual exchanges were 3 way with decreasing varied beat interval call pattern similar to previous descriptions for males of this species from North America. We also provide the first drumming description of *Acroneuria frisoni*. Male calls consisted of a diphasic rub tap call with intersexual exchanges ranging from 2 to 3

way. Variables measured included, ambient air temperature, age of reared adults, interbeat interval pattern, number of beats per signal, rub duration, mean interbeat interval (call, answer and response), interval difference (ID) and call answer exchange interval (MFEI and FMEI). Charts providing the complete interval pattern and raw character data are included.

3. EFFECTS OF STREAM PERMANENCE ON STONEFLIES (PLECOPTERA) IN THE MAMMOTH CAVE REGION

Taylor McRoberts and Scott A. Grubbs, Western Kentucky University.

Protected natural areas (i.e. national parks) are important refuges for native flora and fauna. Understanding the distribution of species across environmental gradients can aid land managers in the creation of conservation and protection initiatives. Aquatic insects, including stoneflies (Insecta, Plecoptera), have evolved life history strategies to survive periods of extended, seasonal droughts. The objective of this study is to assess if stream permanence influences stonefly distributions in the Mammoth Cave Region, mainly at Mammoth Cave National Park (MACA). Several questions are being addressed, including:

1. How many species and what proportion of the regional pool are present?
2. Do biological traits of species correlate with habitats available?

Three collecting events have occurred across 44 unique sites from December 2018–March 2019. A timed, structured sampling design has been implemented based on a collection of adults for 30 minutes per site. Monthly sampling will continue through October. The number and types of sites chosen are intended to fully characterize the stonefly fauna across the full gradient of stream size and flow permanency patterns present, especially within MACA. Only 13 species have been collected through the first two sampling events, but several more are anticipated, especially in families Leuctridae and Perlidae, with spring and summer sampling. In addition, benthic sampling for stonefly larvae will occur in late winter-early spring 2020 to capture species that are typically less commonly-collected as adults.

4. ALTITUDINAL DISTRIBUTION OF PLECOPTERA (STONEFLIES) IN MOUNT MITCHELL STATE PARK AND PISGAH NATIONAL FOREST

Madeline Metzger and Scott A. Grubbs, Western Kentucky University.

Stoneflies are good water quality indicators due to their high sensitivity to organic pollution and environmental changes. A predicted temperature increase of 1.8–4.0 °C is expected by the year 2100. This increase will affect cold-adapted species due to a change in dissolved oxygen levels. Climate change is known to impact species ranges and can lead to summit traps in montane environments. Understanding which species exist across environmental gradients will allow for futuristic climate modeling, ultimately contributing to a variety of applications in ecology and conservation efforts. Mount Mitchell State Park and adjacent Pisgah National Forest provide a protected landscape with a ca. 1,000 km elevation gradient from which to sample species, many of which ranges could decrease or be lost altogether with increasing temperatures. At a minimum, the following questions will be addressed:

1. What portion of the regional species pool is present and why?
2. Do diversity hotspots exist? (e.g. specific stream size or elevation range)
3. Is there evidence of or potential for species loss over time?

Sampling efforts have occurred seasonally (spring, summer, fall and winter) from 2014–2017 and represent the broadest ranges of altitudes and stream sizes present within the sampling area. To date, over the course of 12 sampling trips, 41 species have been collected from 86 unique sites. More species are expected with further *Isoperla* identifications and sampling trips. Approximately 4–6 sampling trips are scheduled through 2019. Results to date are limited. Species altitude ranges using box plots were generated in R to assess how many species are habitat generalists versus specialists. Distributional data could be further mapped for temperature increases using Maxent software.

5. NOTE ON THE EGG OF *UTAPERLA GASPESIANA* (PLECOPTERA: CHLOROPERLIDAE)

Charles H. Nelson, University of Tennessee at Chattanooga.

The egg of *Utaperla gaspesiana* (Harper & Roy, 1975) is described and illustrated using scanning electron photomicrographs. Information on structure (general shape, cross-section shape and chorionic detail), color and egg and collar size is provided.

6. MOLECULAR PHYLOGENY OF THE NORTH AMERICAN PLECOPTERA

Eric J. South, R. Edward DeWalt, Boris C. Kondratieff, Rachel K. Skinner, Kevin P. Johnson, Mark A. Davis, Jonathan J. Lee, Richard S. Durfee

Stonefly phylogenetic hypotheses proposed since the mid-20th century have shown incongruence and/or unresolved relationships. The advent of Next Generation Sequencing (NGS) and genomics/transcriptomics provides a new opportunity to propose a well-supported and fully-resolved stonefly phylogenetic hypothesis. Transcriptomes, complete sets of RNA molecules which reflect all gene expressions in an organism at a specific point in time, contain protein coding sequences from which numerous phylogenetically informative genes can be selected to ultimately yield well-supported phylogenetic hypotheses. The primary objective of this study is to develop a robust phylogeny of the North American Plecoptera using multiple genes selected from transcriptomes. RNA transcripts have been assembled for 52 of the 109 North American genera, representing all nine families, 14 subfamilies, and 12 tribes. RNA extractions for an additional 27 genera have been prepared for sequencing.

7. HISTORICAL RECONSTRUCTION OF A ONCE DIVERSE FAUNA: STONEFLIES OF THE MIDWEST USA

R. Edward DeWalt¹, Scott A. Grubbs², Jason L. Robinson¹, Matt Yoder¹. ¹Illinois Natural History Survey. ²Western Kentucky University

Plecoptera are sensitive to water and habitat quality changes. Copious museum specimens allow for reconstruction of the Midwest stonefly assemblage. In Illinois long-lived, predatory species are in the process of being lost from a large portion of their range.

Similar losses are predicted for other Midwest states due dominance by agriculture and urbanizations. We used museum specimen data and recent collections to reconstruct the historical distributions, richness patterns, and assemblage structure of stoneflies in Iowa, Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. Specimens constituting 32,000 species-level records from 25 museums/agencies and recent collections were examined. Legacy records were georeferenced and the locations projected into United States Geological Survey Hierarchical Unit Code scale 6 (HUC6) watersheds. At least 154 species were recovered including several new and undescribed species with predictions to 162 species. Assemblage clusters resulted for unglaciated and nearby glaciated HUC6 drainages, a Great Lakes assemblage of drainages, and a prairie oriented assemblage. Richest HUC6 drainages were in unglaciated landscapes of eastern latitudes and higher slope, wooded HUC6s of the east and north. Naturally low richness areas also occurred. Lake Superior HUCs afforded refuge for several cold-water adapted species. These data will be used in the future to assess conservation status by species and state and distribution modeling of past and future ranges. Broader impacts include the training of several graduate and undergraduate students, the salvage of decades-old specimens from obscurity and decay, the identification of all specimens to current taxonomic standards, and the sharing of digital specimen records conforming to global data standards.

8. REFORESTING THE LOWER MISSISSIPPI RIVER: NEW EFFORTS TO PROVIDE SUBSTRATES FOR CLINGING INVERTEBRATES

Audrey B. Harrison, Army Corps of Engineers.

A novel study focusing on invertebrate colonization on natural and artificial riverine substrates is in progress in the Lower Mississippi River, USA. In February 2019, baskets containing different substrates were attached to buoys and deployed in a secondary channel near Helena, Arkansas. Retrievals were timed in three-week increments over a 12-week study period, in order to quantify colonization rates. Initial results indicate unexpected levels of invertebrate drift during this period, particularly for stoneflies, including *Hydroperla* and *Isoperla* (Plecoptera: Perlodidae). This study marks the beginning of a three-year study focused on Mississippi River invertebrates. Additionally, recent cooperation with river engineers and managers is promising for large river invertebrates, including stoneflies, mayflies, caddisflies, and true flies. Efforts to create wood jams in Lower Mississippi River secondary channels are ongoing. Herein, project plans are discussed, and suggestions welcomed.

9. PLECOPTERA OR STONEFLIES (INSECTA) OF INDIANA: DIVERSITY AND CONSERVATION STATUS OF SPECIES

Evan A. Newman and R. Edward DeWalt, Illinois Natural History Survey, Scott A. Grubbs, Western Kentucky University

Stoneflies (Plecoptera) are indicators of water quality and have been lost in dramatic numbers from Midwest states, including Indiana. This study synthesizes over 5,000 specimen level records from museums and recent fieldwork to build a current species list, assess watershed level species richness, and calculate state level conservation

assessments using NatureServe's Conservation Rank Calculator. Results include 1,050 positive occurrence records that yielded 92 species. Among these is one recently described species, a new species not yet described, and three previously described species new to Indiana. We have also found additional locations for rare species and confirmed the presence of a few species thought to be extirpated. United States Geological Survey Hierarchical Unit Code scale 6 (HUC6) drainages with the highest species richness values were the Patoka-White (73 species), Lower Ohio-Salt (60 species), and the Wabash River (57 species). The other seven drainages produced from five to 28 species, being limited by low gradient streams due to lake plain landscapes and by stream nutrient enrichment from agriculture. Eleven species were rated as extirpated or presumed extirpated, leaving 81 extant species. Of these, 17 were rated as critically imperiled (S1), 26 imperiled (S2), 25 vulnerable (S3), while only 13 species were rated as secure (S4 & S5). Watersheds and specific streams were discussed for their ability to support individual species or rich assemblages.

10. *Taeniopteryx harpi* (Plecoptera: Taeniopterygidae), a new species of willowfly from Quebec, Canada and New York state, USA

R. Edward DeWalt and Nicole Gamble. Illinois Natural History Survey

Dr. Peter Harper hosted DeWalt at his home in Montreal during March 2016 to prepare borrowed Leuctridae specimens for return to USA colleagues. Before leaving, Harper and DeWalt enjoyed three days of winter stonefly collecting from several locations in Quebec. This effort yielded a new willowfly. The name of the new species, *Taeniopteryx harpi* honors both Peter and Francois Harper for their many contributions to Plecoptera and aquatic insect science. The 9th sternum of the Males narrows at the midpoint rearward, forming an excavated posterior margin. The male paraprocts are unique in having a narrow basal sclerite and a detached, dorsally directed arm forming a short, apically curled tip. The female's subgenital plate is U-shaped with a sclerotized, semicircular plate that lacks the quadrate tab of other species. A new, potentially useful character is a darkly pigmented area on the head that encompasses the anterior ocellus. This pigment pattern is not known from other *Taeniopteryx*. We illustrate these characters using light microscopy. *Taeniopteryx harpi* is similar to *T. parvula* Banks, 1918 and *T. metequi* Ricker & Ross, 1968 with which it has been confused in the past. The type locality is the Riviere Doncaster, Ste-Marguerite-Du-Lac-Masson at Chemin du Ste-Marguerite, 46.02764, 74.06409. The species occurs in lower Quebec, adjacent to New York and Maine. It is likely to occur in other states and provinces near the USA/Canada border to the east.

11. 2021 XVIth International Conference on Ephemeroptera and XXIth International Symposium on Plecoptera in Fort Collins, Colorado, USA

Boris C. Kondratieff, Colorado State University, R. Edward DeWalt, Illinois Natural History Survey

A proposal to host the international mayfly and stonefly meeting in 2021 at the Mountain Campus of Colorado State University was presented at the 2018 meeting in Brazil. The proposal was enthusiastically accepted. The Mountain Campus is a high elevation (be

prepared) enclave west of Fort Collins that provides dormitory and private housing, a cafeteria, and conference facilities set in idyllic surroundings. Proposed inclusive dates are Sunday 25 July through 1 August. Registration will start the afternoon of the 25th, oral and poster sessions would be held 26-27 and 29-30. A group field trip will occur on the 28th. The conference wraps up business with a farewell banquet and awards ceremony will be held Friday evening the 30th. Stay another day for the post-conference trip (optional) on Saturday. A full program for accompanying guest is being planned with trips to local attractions. Local costs are moderate. Abundant volunteer opportunities exist! Please consider donating to *Perla* to support student travel costs. We hope to see all of you there.

12. SOYEDINA RICKER, 1952 (PLECOPTERA: NEMOURIDAE) IN THE EASTERN NEARCTIC REGION: REVIEW OF SPECIES CONCEPTS AND PROPOSAL OF MORPHOLOGY-BASED SPECIES GROUPS

Scott A. Grubbs, Western Kentucky University and Richard W. Baumann, Brigham Young University

The eastern Nearctic species of the genus *Soyedina* Ricker, 1952 (Plecoptera: Nemouridae) are reviewed. Morphology-based species groups are proposed based on characteristics of the epiproct.

13. PENNSYLVANIA CHLOROPERLIDAE

Jane Earle, Mechanicsburg, PA

The nineteen species of Chloroperlidae have interesting distributions, many based on ancient river basin connections and ecoregions. Few species are found in the Piedmont of southeastern Pennsylvania, due to the more extensive urban-suburban development, fewer forested area, and warmer waters. Only *Alloperla atlantica* Baumann, 1974, *Haploperla brevis* (Banks, 1895), and *Sweltsa onkos* (Ricker, 1936) have been collected from the southeastern Pennsylvania Piedmont. The Allegheny Front, which separates the Ridge and Valley from the Allegheny Plateau is also a major dividing line for species distribution. The Potomac River, part of the Chesapeake Bay drainage, shares several species with its ancient river connection to the present day Ohio River-Gulf of Mexico drainage. Several species are found in the Ohio River Basin plus the West and North Branch Susquehanna River drainages north of the Allegheny Front.

14. MITIGATING THE MORASS: THE STATUS OF ISOPERLA NYMPHAL-ADULT ASSOCIATIONS IN NORTH CAROLINA

Steven R Beaty, North Carolina Department of Environmental Quality

The number of known species of *Isoperla* in North Carolina was previously thought to be 30 species based on published records. However, three additional undescribed species are now thought to occur within the state and at least one more previously described species has also now been collected in North Carolina. This brings the total number of known *Isoperla* species to 34 within the state. Of these 34 species, we have reared and associated 24, 15 of which are new associations with the remaining associations confirming

published nymphal descriptions. The status, challenges, and goals of these rearing and collection efforts will also be discussed.

Examine specimens, discuss projects, ask questions, rest until dinner.

15. PRELIMINARY NOTES ON THE WINTER EMERGING STONEFLY FAUNA OF NORTH CAROLINA

Chris J. Verdone, North Carolina Department of Environmental Quality

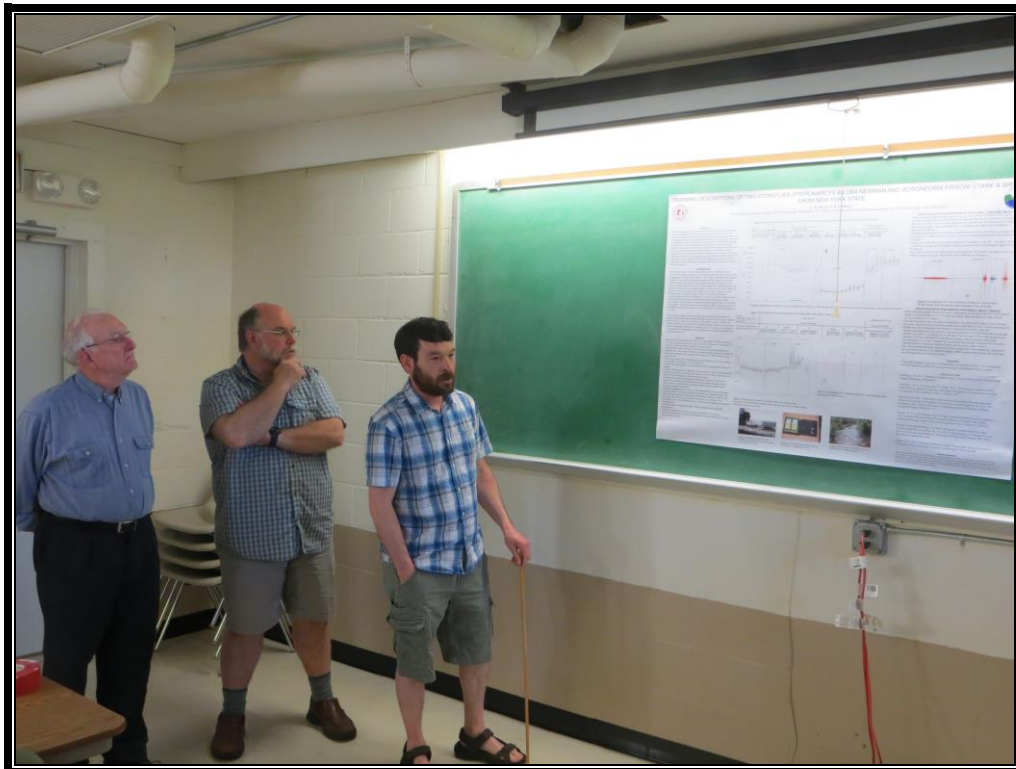
In the winter of 2018-2019, winter emerging stoneflies were collected from the various ecoregions of North Carolina. An overview of the winter emerging stonefly fauna of North Carolina is presented, including historical background, new distributional data, and the description of a new species of *Zealeuctra* Ricker. Data are given as photographs and maps.



Director of Operations, Dr. R. Edward DeWalt checking details during the meeting. Dr. Kondratieff, Luke Myers, Dr. Robinson, the future PhD Eric South, Steven Beaty, Chris Verdone, Jane Earle, Drs. Charles R. Nelson, Audrey Harrision, Bill Stark all paying close attention.



Dr. Audrey Harrison, U.S. Army Engineer Research and Development Center presenting her talk, with Drs. Charles R. Nelson, John Sandberg, Bill P. Stark, and Scott Grubbs listening to every detail.



Drs. Charles R. Nelson and R. Edward Dewalt scrutinizing Luke Myers' presentation.



Dr. Scott Grubbs presenting his review of the eastern Nearctic nemourid genus *Soyedina*.

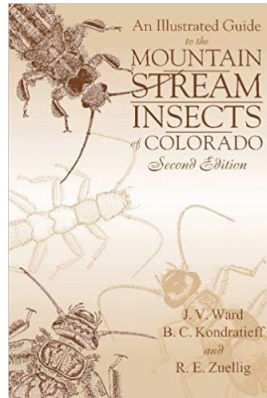
ANNOUNCEMENTS

2021 XVITH INTERNATIONAL CONFERENCE ON EPHEMEROPTERA AND XXIST INTERNATIONAL SYMPOSIUM ON PLECOPTERA

Organizers: **Boris C. Kondratieff**, Colorado State University, Director C. P. Gillette Museum, 1177 Campus Delivery, Fort Collins, Colorado 80523, boris.kondratieff@colostate.edu. **R. Edward DeWalt**, Illinois Natural History Survey, 1816 S Oak St., Champaign, Illinois 61820, dewalt@illinois.edu

The dates of the meeting are Sunday 25 July through 1 August 2021. It will be held at the Mountain Campus, Colorado State University, Fort Collins, Colorado, USA. The meeting website will be up by Spring 2020. The site is a high elevation enclave west of Fort Collins, Colorado, about three hours North of Denver Colorado. The facility provides dormitory and private housing, a cafeteria, and conference facilities in an idyllic setting. There are no restrictions in regard to collecting insects and other invertebrates in the nearby mountain streams, ponds, and wetlands. The Ephemeroptera and Plecoptera fauna

of this region of the southern Rocky Mountains. Each participant will receive a free copy of “*An Illustrated Guide to the Mountain Stream Insects of Colorado, Second Edition, 2nd Edition*”



**Colorado State University Mountain Campus
a research and education village in the Rocky Mountain Front Range**

The preliminary schedule of activities:

- arrival Sunday 25th
- Monday and Tuesday 26th-27th, paper and poster sessions
- Wednesday 28, group field trip
- Thursday and Friday 29th-30th paper and poster sessions and awards banquet
- Saturday 31st, checkout or after conference trip (optional, additional cost)
- Sunday 1 August, checkout

Accompanying Guests Activities: A full week of activities is planned to local attractions (Rocky Mountain National Park, Shambhala Mountain Center (Buddhist retreat), Fort Collins shopping and breweries, hiking, museums, dude ranching).

Scholarships: Participant support costs are being sought, mayfly and stonefly groups have travel funds for students, additional funds are being sought. Make donations to your respective group's funds now.

Travel Arrangements: Flights into Denver International Airport (DEN) are the most convenient. We will be arranging for Broome Travel (a shuttle service, your cost) transport to Ft. Collins, where you will meet passenger vans for a 1-1.5 hr trip to Mountain Campus (included in registration).

Registration Costs: Registration covers food, housing (prices vary), mixers, group field trip, and transportation to and from Fort Collins to the Mountain Campus. Cost varies by housing style:

Private and semiprivate cabins

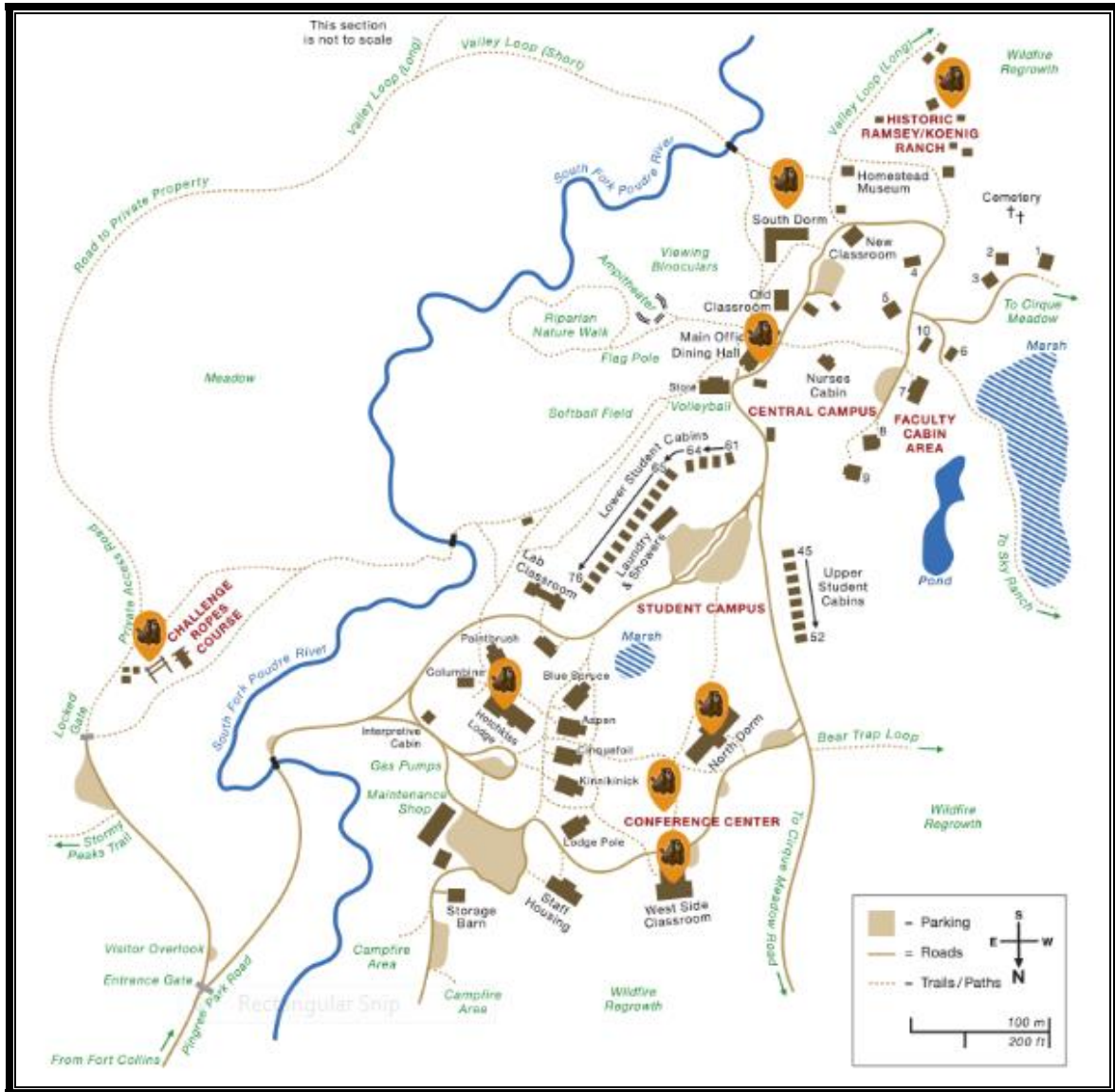


dormitory style housing



- Dormitory housing (multiple occupancy, 3 meals per day)
 - \$69/night + \$10 for linens
- Conference Center Cabins (6 cabins, each with 6 rooms, each room with private bathroom, linens included)
 - Single occupancy \$136/night/person
 - Double occupancy \$116/night/person
 - Triple occupancy \$96/night/person
- Example registration
 - Dormitory: 6 nights * \$69/night + \$10 linens + \$60 incidentals = \$484
 - Private single: 6 nights * \$136/night/person + \$60 incidentals = \$876
 - Double occupancy: 6 nights * \$116/night + \$60 incidentals = \$756
 - Triple occupancy: 6 nights * \$96/night + \$60 incidentals = \$636

Additional costs for accompanying guest outings are unknown at this time, but please budget for \$250-\$300. These are estimated prices that will likely increase slightly by 2021.



Map of the Mountain Campus of Colorado State University, Colorado.



South Fork of the Poudre River, a pristine Rocky Mountain stream flowing through the campus area.

ILLIESIA



***Illiesia* Is Closing**

R. Edward DeWalt, Ignac Sivec, and Bill Stark

Illiesia, The International Journal of Stonefly Research, was founded by Bill Stark and Nace Sivec in 2005 as a taxonomic journal counterweight to publication models with high page charges and limited access. *Illiesia* provided a model that was free and completely open access, a noble goal that helped authors to publish 231 articles and two monographs issues (see graph).

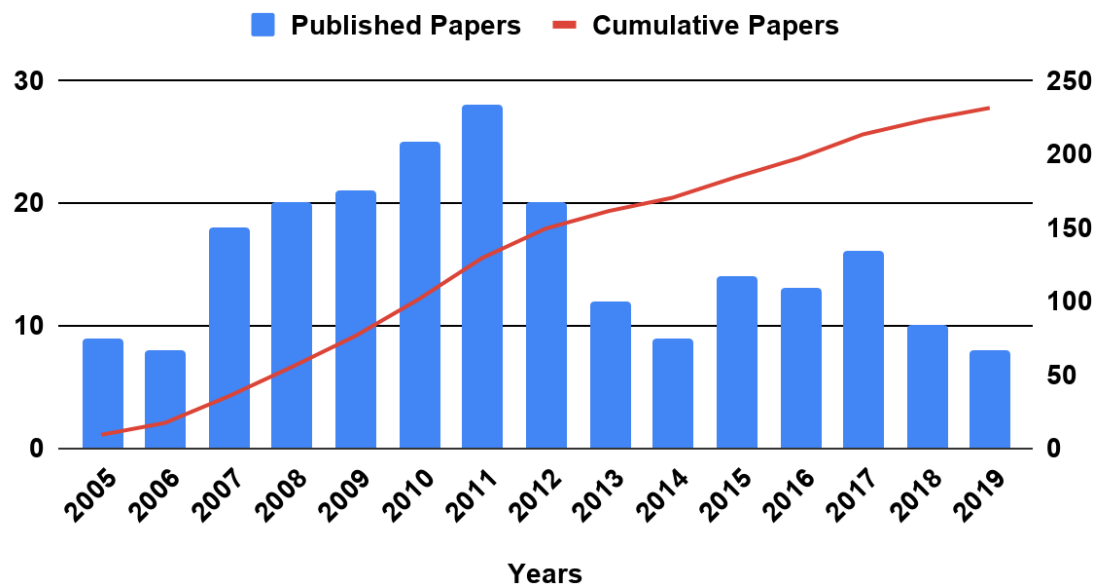
Though the pay-to-play model is still alive and well, there are now venues where publication is free and access is open or at nominal cost (*Zootaxa* is one example). Often these journals allow posting of pdf copies of articles on social media sites to promote

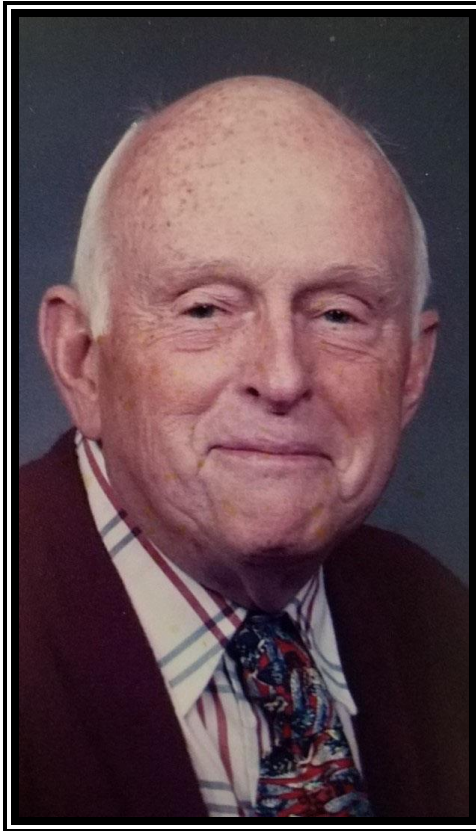
access for educational/research purposes. Many of the reasons for the creation of *Illiesia* are now gone.

The editors of *Illiesia* (Ed DeWalt, Bill Stark, and Nace Sivec) have recently witnessed a decline in the number of submitted manuscripts. We believe that this is due to our inability to offer certain services to our authors. The lack of an impact factor is key among these services. Unfortunately, the amount of effort it would take the editors to develop impact factors for *Illiesia* is prohibitive and nearly impossible with our small yearly output.

The dwindling submissions, lack of key modern services, and an aging web infrastructure has led the editors to the unfortunate decision to close the journal, effective immediately. We will work to archive all volumes and articles with ClockSS (archival service) and Ed will keep the website open for the next several years. There are a few manuscripts that have been reviewed and have been in the authors' hands for many months without revision. We realize this is a major inconvenience, but authors are requested to re-submit at another journal for publication. To all of you who have published in *Illiesia*, thank you for supporting the journal. You have contributed greatly to the science and knowledge of Plecoptera and it has been a pleasure publishing your papers.

Published Papers and Cumulative Papers





Dr. Ollie Flint 1931 – 2019.

Dr. Oliver S. Flint, Jr. the long-time Smithsonian National Museum of Natural History (NMNH) curator of Aquatic Insects and Neuropterida passed away on 18 May 2019. Ollie, as he was fondly known to us dedicated his life to the systematic study of aquatic insects, especially the Trichoptera, but also extensively collected and identified Odonata, Ephemeroptera, Plecoptera, as well as Neuropterida, and Mecoptera. Through his efforts, the NMNH has one if not the best representations of these insect groups worldwide, representing more than 12,000 species and almost 400,000 specimens. Ollie received his bachelor's and master's degrees from the University of Massachusetts before earning his Ph.D. in Entomology from Cornell University in 1960. He joined the NMNH Department of Entomology in 1961 as Curator of Neuropteroids, serving in this role for 35 years before becoming an Emeritus Curator in 1996.

Ollie authored more than 230 papers and books on aquatic insects. This remarkable scientific output spanned almost 70 years; his first paper was in 1951 and there are publications still in press. The majority of his research output focused on the

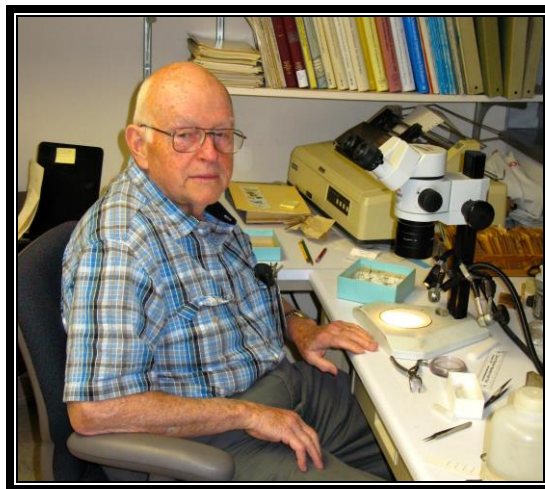
systematics of Neotropical caddisflies, a group for which he was a world-recognized authority. Ollie described more than 1,200 species, 21 genera, and one family of caddisflies during his career. Many of us have fond memories of joining Ollie on collecting trips, enjoying his wit and his amazing expertise.

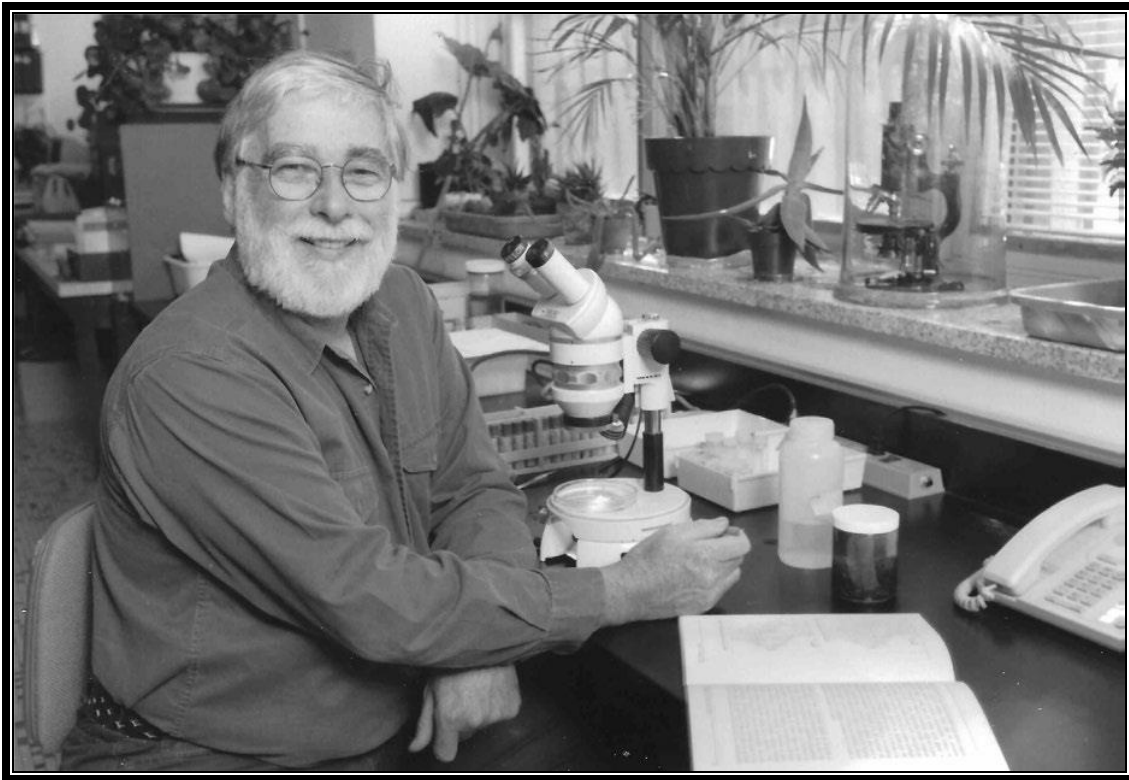
Throughout his career, Ollie held key positions and received significant honors from organizations including the Entomological Society of America, the Society of Freshwater Science and the Virginia Museum of Natural History Foundation. Ollie made special efforts to attend regional and international meetings including those that centered on the Plecoptera. Ollie participated in the Tenth North American Plecoptera Symposium hosted by Jane Earle and the late Larry Jackson at Lock Haven University's Sieg Center Field Station in Pennsylvania. He always freely made material available for loan that he collected or acquired to experts and students for scientific study.

A remarkable measure of the great impact that Ollie has had on his beloved insect groups, is that three genera and 91 species in 11 orders of insects have been named after him and his wife Carol who joined him for most of his many collecting forays and expeditions worldwide, by 87 authors, including the following stoneflies:

Acroneuria flinti Stark & Gaufin, 1976
Alfonsoperla flinti McLellan & Zwick, 2007
Anacroneuria flinti Stark & Sivec, 1998
Enderleina flinti Stark, 1989
Gripopteryx flinti Froehlich, 1993
Macrogynoplax flinti Stark, 1996
Megaleuctra flinti Baumann, 1973
Neoperla flinti Sivec, 1984
Tupiperla flinti Froehlich, 2002

The above information was taken or summarized from Dikow, T. 2019. Asiloid Flies [18 December 2019 blog post: Ollie Flint 1931–2019], <https://nmnh.typepad.com/asiloidflies/2019/12/ollie-flint-1931-2019.html>





Dr. Pierre-Paul Harper 1942 – 2019

Pierre-Paul (aka Peter) Harper died peacefully in his sleep, 29 April 2019, at home in Saint-Hubert, Quebec. Peter was born 4 September 1942 in Masson, a small town in southwestern Quebec. His Scottish father was from Tignish, Prince Edward Island, whereas his mother was a French-Canadian from Buckingham, in the same vicinity as Masson. Peter enjoyed his Catholic secondary schooling at the Collège Saint-Alexandre, Gatineau, and thought he had found his calling early on, that of teaching priest in Africa. He went on to earn a B.A. degree in classics (Greek and Latin) at Laval University in Quebec City. He continued with a biology degree at the University of Montreal, still with the intention of becoming a missionary. He did receive his B.Sc. in 1966, but during these years, two events altered his trajectory. First, Peter worked as a summer intern at the University's biological research station at Saint-Hippolyte, now known as the Station de Biologie des Laurentides. He worked on a botanical inventory of the station with Brother Roland Germain. In so doing, he discovered the fauna and flora of the Laurentians and became a fervent naturalist; surveying the research station became a significant part of the rest of his life. Second, having previously attended boys' schools, he discovered the fairer sex: he fell in love with his colleague, Françoise Delorme, and his dream of the priesthood and teaching in the French colonies faded away.

Peter reoriented his professional life towards research. He pursued a master's degree at the University of Montreal under the tutelage of Étienne Magnin, with whom he had already developed a friendship during his undergraduate work, one that would persist the

rest of their lives. Magnin, a free-living Frenchman from Savoie, renowned for his work on sturgeon, supervised Peter's work on the stoneflies of the Saint-Hippolyte research station. Working side by side with Françoise, she on mayflies, the two sparked a long-term research collaboration, both receiving their M.Sc. degrees in 1967. Peter continued his education at the University of Waterloo, earning a Ph.D. in 1971 with the eminent stonefly expert and father of modern stream ecology, H.B. Noel Hynes. During this time, Françoise gave birth to their one and only child, Catherine.

The young family left for Europe when Peter took a postdoctoral position at University Paul Sabatier in Toulouse, France, in the hydrobiology lab of Eugène Angelier. He explored the Pyrenees and surveyed back-country streams, collecting avidly. After their year in France, Peter returned to Canada to a professorship in the Department of Biological Sciences at the University of Montreal. Peter held that position from 1972 until his early retirement in 2004, when he devoted himself to the care of Françoise who had fallen ill and subsequently died of a degenerative form of Parkinson's disease.

At the University of Montreal, Peter's teaching load was composed of undergraduate-level courses including entomology, introductory ecology, the history of biology, and bio-ethics. He had a phenomenal memory and knowledge that extended well beyond biology. He taught for hours without notes, his lectures were full of historical, philosophical, and other anecdotes, and his former students still comment on his impressive erudition. He had a way of sparking student interest, for example by introducing higher Diptera as "shit-lovers".

Throughout his career, Peter took on various administrative tasks. He was the director of the Saint-Hippolyte Research Station from 1975 to 1986. During these years, he spent his summers in a nearby chalet and, net in hand, surveyed the terrain of the station and its environs. Emergence traps were installed on its lakes and streams from May through October every year. Impressive inventory series were collected and analyzed, provisioning multiple student theses, dissertations, and publications. Peter was also the curator of the Ouellet-Robert Entomological Collection and its aquatic insect collections grew considerably during his tenure.

Every year, Peter collected insects across the territory of Quebec and eastern Canada. These days were overfilled and those who accompanied him knew what to expect: cover great distances, collect as much as possible to make the travel worthwhile, and stop at villages along the road to discover the region, its history, its culture, and the local food. The abundant identified material, now integrated into the Ouellet-Robert Collection, makes first class of our knowledge of the aquatic insects of Quebec and the Maritimes. Peter's almost 100 publications mostly covered the ecology and taxonomy of stoneflies, mayflies, caddisflies, and aquatic Diptera. His last scientific publication was with Ed Masteller on empidids in Puerto Rico.

His scholarly interests went beyond biology; Peter earned a bachelor's degree in theology at McGill University (1998-1993) and later focused on eastern Orthodox theology, earning a certificate (1998-2003) and then a master's degree (2003-2013) from

Sherbrooke University. During the 1970s, Peter joined the “Red Roof Church” community at Saint John the Evangelist. He was an active member and remained strongly attached to this particular and unique downtown Montreal Anglican high church. He penned a number of documents about its history, its architecture, and its succession of priests. He loved everything about the site and its people, and he led guided tours of the church and its cemetery in order to pass on his love of this special place. A great traveler devoted to his faith and a lover of history, Peter visited many countries on several continents, never forgetting to stop at places of worship. As Françoise’s illness began to keep him more at home, he began genealogical research on the Harper and Soucy (maternal) families. He found long-lost cousins and made fun discoveries about his family’s past.

From his marriage to Françoise was born Catherine, for whom his devotion was limitless. She had two sons that were the pride and joy of their grandfather. Peter loved recounting stories about his daughter, son-in-law, and grandsons. Always interested in history, people, and places, Peter wrote his memoirs during his last year in order to pass on the family history.

Peter was presented in absentia the Lifetime Achievement in Plecopterology at the XII International Conference on Ephemeroptera and the XVI International Symposium on Plecoptera held in June 2008 at the Staatliches Museum für Naturkunde in Stuttgart, Germany for his exemplary contributions to the study of the Plecoptera. This contributions are summarized in Perla No. 27, 2009.

Most of the above was written by **Louise Cloutier**, translated and edited by Dr. **Colin Favret**, University of Montreal. Bulletin de la Société d’entomologie du Canada. 51(4) Décembre 2019

Dr . Peter Harper’s papers:

- Harper, P. P. and E. C. Masteller. 2014. Five new aquatic dance flies of the genus *Hemerodromia* Meigen (Diptera: Empididae: Hemerodromiinae) from Puerto Rico. Can. Entomol. 146: 241-247.
- Sivec, I., Harper P. P. and Shimizu, T. 2008. Contribution to the study of the Oriental genus *Rhopalopsola* (Plecoptera: Leuctridae). Scopolia 64:1-122.
- Harper, P. P. and F. Harper. 2003. Comparison of Nearctic and Palaeartic species groups of *Leuctra*: Affinities and Origin of the North American Fauna (Plecoptera: Leuctridae). pp. 219-223 in Gaino, E. (editors) Research Update on Ephemeroptera and Plecoptera, University of Perugia, Perugia, Italy.
- Harper, P. P. and F. Harper. 1997. The genus *Leuctra* Stephens in North America: a preliminary report. pp. 467-472 in Landolt, P. and M. Sartori (Eds.) Ephemeroptera & Plecoptera: Biology – Ecology-Systematics. MTL, Fribourg
- Harper, P. P. and F. Harper. 1997. Mayflies (Ephemeroptera) the Yukon. pp. 151-167 in Danks, H.V. and J.A. Downes (eds.) Insects of the Yukon. Biological Survey of Canada (Terrestrial Arthropods), Ottawa, 1034 pp.

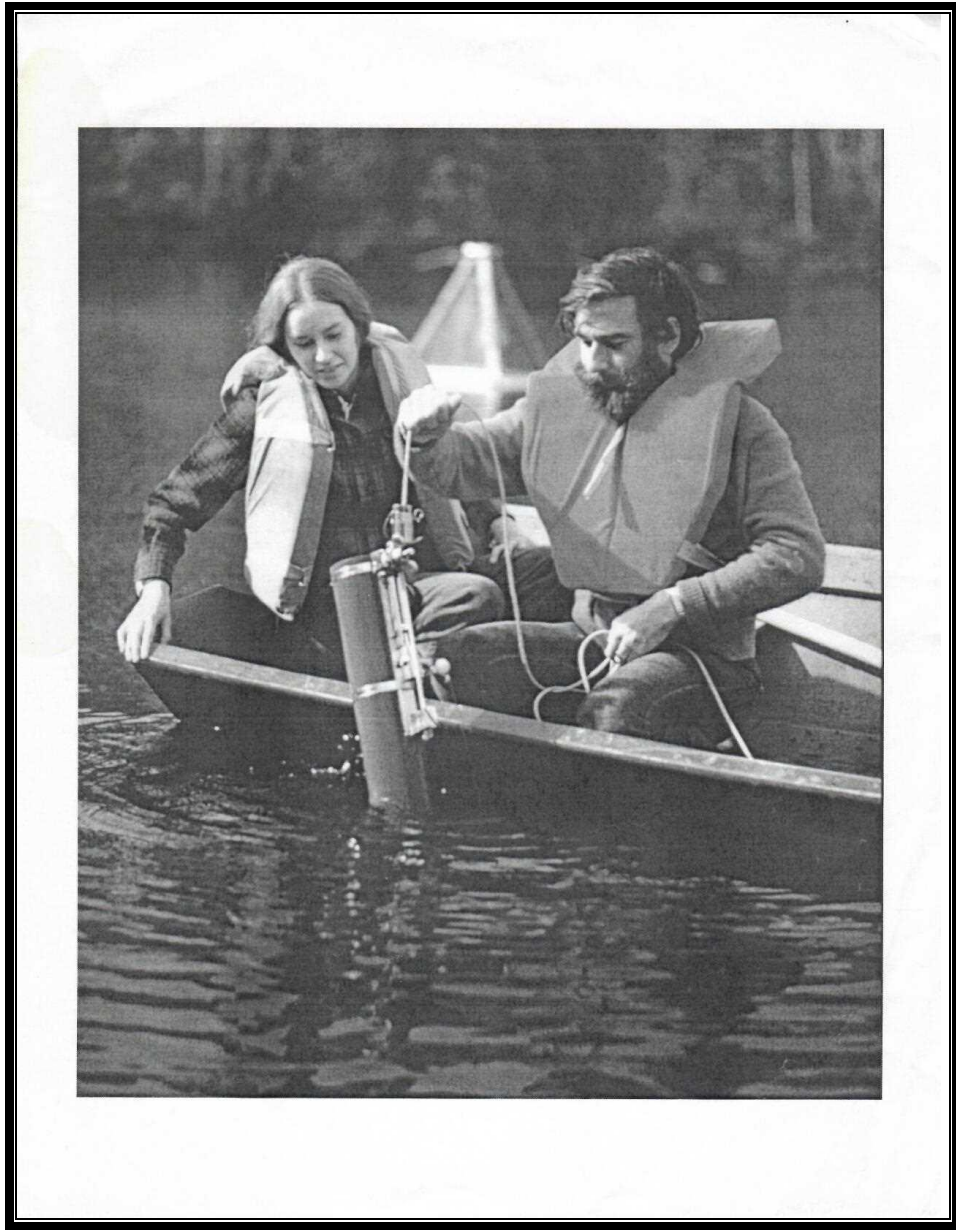
- Stewart, K. W. & P. P. Harper, 1996. Plecoptera. p. 217-266 in R. W. Merritt & K. W. Cummins (ed.) An introduction to the aquatic insects of North America. 3rd edition Kendall-Hunt, D, Iowa. 862 p.
- Harper, P. P. 1995. Croissance et dynamique des populations d'invertébrés benthiques. in R. Pourriot et M. Meybeck (editors) Collection Écologie #25, Limnologie générale, Paris: Masson, pp. 368-388.
- Harper, P. P. 1994. Plecoptera. in Morse, J. C. (editor) Aquatic Insects of China useful for detecting water pollution. Hohai University Press, Nanjing, pp. 176-209.
- Harper, P. P. 1992. La Grande Rivière, a subarctic river and a hydroelectric megaproject. In P. W. Calow (editor) The River Handbook, Blackwell, London. Volume 1., pp. 411-425.
- Harper, P. P. 1992. The stoneflies of Panama (Plecoptera). p. 114-121 in: D. Quintero and E. Aiello (editors), Insects of Panama and Mesoamerica, Selected studies. Oxford University Press.
- Harper, P. P. and K. W. Stewart. 1984. Plecoptera. p. 182-230 in R. W. Merritt and K. W. Cummins (ed.) An introduction to the aquatic insects of North America. 2nd edition. Kendall-Hunt. 722 pp.
- Harper, P. P. 1981. Ecology of streams at high latitudes. in M. A. Lock and D. D. Williams (editors) Perspectives in running water ecology. Plenum Publishing, p. 313-337.
- Harper, P. P. 1978. Plecoptera. p. 105-118 In R. W. Merritt and K. W. Cummins (ed.) An introduction to the aquatic insects of North America. 1st edit. Kendall-Hunt, 441 p.
- Harper, F., N. H. Anderson and P. P. Harper. 1995. Emergence of lotic mayflies (Ephemeroptera) in the Cascade Range of Oregon. Proc. VIIth Internat. Conf. Ephemeroptera. Current Directions in Research in Ephemeroptera. Toronto: Canadian Scholars' Press, pp. 207-222.
- Harper, P. P. and M. Lauzon. 1994. The life cycle of *Serratella deficiens* (Morgan) (Ephemeroptera: Ephemerellidae) in Oakville Creek in southern Ontario. Proc. Entomol. Soc. Ontario 125:13-17.
- Harper, P. P. and W. E. Ricker. 1994. Distribution of Ontario stoneflies (Plecoptera). Proc. Entomol. Soc. Ontario 125: 43-66.
- Harper, P. P. and M. Lauzon. 1994 (1991). Life cycles of sundry stoneflies (Plecoptera) from Québec. Rev. Entomol. Québec 36: 28-42.
- Harper, P. P. and L. Cloutier. 1993. Systematics and the synecology of aquatic insects: phenology and temporal structure of temperate lake assemblages. Mem. Entomol. Soc. Can. 165:243-256.
- Harper, P. P., L. LeSage and M. Lauzon. 1993. The life cycle of *Podmosta macdunnoughi* (Ricker) in the Lower Laurentians, Québec (Plecoptera:Nemouridae), with a discussion on embryonic diapause. Can. J. Zool. 71: 2136-2139.
- Lauzon, M. and P. P. Harper. 1993. The life cycle of the aquatic snipefly *Atherix lantha* Webb (Diptera Brachycera; Athericidae) in Québec. Can. J. Zool. 71: 1530-1533.
- Harper, P. P., M. Lauzon and F. Harper. 1991. Life cycles of twelve species of winter stoneflies from Québec (Plecoptera: Capniidae and Taeniopterygidae). Can. J. Zool. 69:787-796. 77.
- Harper, P. P. and L. Cloutier. 1991. Les effets de travaux de curage sur la faune benthique d'un cours d'eau agricole. Rev. Sci. Eau 4: 143-168.

- Alarie, Y., P. P. Harper and R. E. Roughley. 1990. Larvae of *Hygrotus* Stephens 1828 (Coleoptera: Dytiscidae: Hydroporinae), with phylogenetic comments. Can. Entomol. 122: 985-1035.
- Harper, P. P. 1990. Life cycles of *Leuctra duplicata* Claassen and *Ostrocerca prolongata* (Claassen) in an intermittent streamlet in Québec (Plecoptera: Leuctridae and Nemouridae). Great Lakes Entomol. 23: 211-216.
- Harper, P. P. 1990. Associations of aquatic insects in a network of subarctic lakes and streams in Québec. Hydrobiologia 199: 43-64.
- Alarie, Y., P. P. Harper and A. Maire. 1990. Primary setae and pores on legs of larvae of Nearctic Hydroporinae (Coleoptera; Dytiscidae). Quaest. Entomol. 26: 199-210.
- Alarie, Y. and P. P. Harper. 1990. Primary setae and pores on last abdominal segment and urogomphi of larval Hydroporinae (Coleoptera: Dytiscidae) with notes on other dytiscid larvae. Can. J. Zool. 68: 368-374.
- Alarie, Y., P. P. Harper and A. Maire. 1989. Rearing dytiscid beetles. Entomol. Basil. 13: 147-149.
- Harper, P. P. 1989. Zoogeographical relationships of aquatic insects from the Eastern James Bay drainage. Can. Field Natural. 103: 535-546.
- Harper, P. P. and M. Lauzon. 1988. Life cycle of the nymph fly *Palaeodipteron walkeri* Ide 1965 (Diptera: Nymphomyiidae) in the White Mountains of southern Québec. Can. Entomol. 121: 603-607.
- Power, M. E., C. E. Cushing, P. P. Harper, F. R. Hauer, W. J. Matthews, P. B. Moyle, B. Statzner, R. J. Stout and I. R. Wais de Badgen. 1988. Biotic and abiotic controls in river and stream communities. J. North Amer. Benthol. Soc. 7: 456-479.
- Lauzon, M. and P. P. Harper. 1988. Seasonal dynamics of a mayfly (Ephemeroptera; Insecta) community in a Laurentian stream. Holarct. Ecol. 11: 220-234.
- Harper, P. P. and L. Cloutier. 1986. Spatial structure of the insect community of a small dimictic lake in the Laurentians. Intern. Revue Ges. Hydrobiol. 71: 655-685.
- Lauzon, M. and P. P. Harper. 1986. Life history and production of the stream-dwelling mayfly *Habrophlebia vibrans* (Ephemeroptera; Leptophlebiidae). Can. J. Zool. 64: 2038-2045.
- Harper, P. P. 1986. Relations entre les macrophytes et les insectes dans les milieux d'eau douce. Rev. Entomol. Québec 31: 76-86.
- Morin, A. and P. P. Harper. 1986. Phénologie et microdistribution des adultes et des larves de trichoptères filtreurs dans un ruisseau des Basses Laurentides (Québec). Arch. Hydrobiol. 108: 167-183.
- Harper, F. and P. P. Harper. 1986. An annotated key to the northwestern Nearctic species of *Paraleptophlebia* Lestage (Ephemeroptera: Leptophlebiidae) with the description of a new species. Can. J. Zool. 64: 1460-1468.
- Morin, A., P. P. Harper and R. H. Peters. 1986. Microhabitat preference curves of black fly larvae (Diptera; Simuliidae): a comparison of three estimation methods. Can. J. Fish. Aquat. Sci. 43: 1235-241.
- Cloutier, L. and P. P. Harper. 1986. A new species of *Rheotanytarsus* from subarctic Québec. Entomol. News 97: 1-6.
- Harper, P. P. and P. Turcotte. 1985. New Ecuadorian Trichoptera. Aquat. Insects 7: 133-140.

- Harper, P. P. and L. Cloutier. 1985. Composition et phénologie de communautés d'insectes du lac Geai, un lac dystrophe des Laurentides (Québec). *Natur. Can.* 112: 405-415.
- Landry, B. and P. P. Harper. 1985. The aquatic dance fly fauna of a subarctic river system in Québec, with the description of a new species of *Hemerodromia* (Diptera; Empididae). *Can. Entomol.* 117: 1379-1386.
- Harper, P. P. and M. Lauzon. 1985. The crane fly fauna of a Laurentian woodland, with special reference to the aquatic species. *Rev. Entomol. Qué.* 30: 3-22.
- Harper, P. P. and R. C. Wildman. 1985. A new *Paraleuctra* from the Cascade and Coast ranges. *Can. J. Zool.* 63: 982-983.
- Harper, P. P. 1984. *Alloperla acadiana* n. sp. (Plecoptera; Chloroperlidae) du Nouveau-Brunswick. *Rev. Entomol. Qué.* 29: 83-85.
- Harper, F. and P. P. Harper. 1984. Phenology and distribution of mayflies in a southern Ontario lowland stream. *Proc. IVth Intern. Conf. Ephemeroptera.* Pp. 243-251.
- Harper, P. P. and F. Harper. 1983. Biogéographie et associations des Plécoptères d'hiver du Québec méridional. *Can. Entomol.* 115: 1465-1476.
- Kirchner, R. F. and P. P. Harper. 1983. The nymph of *Bolotoperla rossi* (Frison). *J. Kans. Entomol. Soc.* 56: 411-414.
- Harper, F., E. Magnin, and P. P. Harper. 1983. Diel periodicity of emerging mayflies in a Laurentian stream. *Aquat. Ins.* 5: 21-31.
- Thibault, J. and P. P. Harper. 1983. Les peuplements de taons d'une forêt des Basses-Laurentide: inventaire, phénologie, activité et habitats. *Natur. Can.* 110: 27-36.
- Harper, P. P. and F. Harper. 1982. Mayfly communities in a Laurentian watershed. *Can. J. Zool.* 60: 2828-2840.
- Turcotte, P. and P. P. Harper. 1982. The macro-invertebrate fauna of a small Andean stream. *Freshwater Biol.* 12: 411-419.
- Turcotte, P. and P. P. Harper. 1982. Drift patterns in a high Andean stream. *Hydrobiologia* 89: 141-151.
- Harper, F. and P. P. Harper. 1981. Northern Canadian mayflies, records and descriptions. *Can. J. Zool.* 59: 1784-1789.
- Roy, D. and P. P. Harper. 1981. An analysis of an adult Trichoptera community in the Laurentian highlands of Québec. *Holarct. Ecol.* 4: 102-115.
- André, P., P. Legendre, and P. P. Harper. 1981. La sélectivité de trois engins d'échantillonnage du benthos lacustre. *Ann. Limnol.* 17: 24-40.
- Roy, D. and P. P. Harper. 1980. *Oxyethira roberti* n. sp., trichoptère nouveau du sud du Québec. *Natur. Can.* 107: 117-119.
- Harper, P.P. 1980. Phenology and distribution of aquatic dance flies (Diptera; Empididae) in a Laurentian watershed. *Amer. Midl. Nat.* 104: 110-117.
- Roy, D., H. Décamps and P. P. Harper. 1980. Taxonomy of male and female *Plectrocnemia* (Trichoptera; Polycentropodidae) from the French Pyrenees. *Aquat. Ins.* 2: 19-31.
- Roy, D. and P. P. Harper. 1980. Females of the nearctic *Molanna* (Trichoptera; Molannidae). *Proc. Entomol. Soc. Wash.* 82: 229-236.
- Harper, P. P. and L. Cloutier. 1979. Chironomini and Pseudochironomini of a Québec highland stream (Diptera; Chironominae). *Entomol. Scand., Suppl.* 10: 81-94.

- Harper, P. P. 1979. Plecoptera. in H. V. Danks (ed.) Canada and its insect fauna. Mem. Entomol. Soc. Can. 108: 311-313.
- Back, C. and P. P. Harper. 1979. Succession saisonnière, émergence, voltinisme et répartition de mouches noires des Laurentides (Diptera; Simuliidae). Can. J. Zool. 57: 627-639.
- Roy, D. and P. P. Harper. 1979. Liste préliminaire des Trichoptères (insectes) du Québec. Ann. Soc. Entomol. Qué. 24: 148-172.
- Cloutier, L. and P. P. Harper. 1978. Les Chironomides Tanypodinae (Diptères) de ruisseaux des Laurentides. Natur. Can. 105: 125-135.
- Harper, P. P. 1978. Variations in the production of emerging insects from a Québec stream. Verh. Internat. Verein. Limnol. 20: 1317-1323.
- Harper, P. P. 1978. Observations on the early instars of stoneflies (Plecoptera). Gewässer Abwässer
- Harper, P. P. and R. F. Kirchner. 1978. A new stonefly from West Virginia (Plecoptera: Chloroperlidae). Proc. Entomol. Soc. Wash. 80: 403-406.
- Cloutier, L. and P. P. Harper. 1978. Phénologie de Tanypodinae de ruisseaux des Laurentides (Diptera; Chironomidae). Can. J. Zool. 56: 1129-1139.
- Back, C. and P. P. Harper. 1978. Les mouches noires (Diptera: Simuliidae) de deux ruisseaux des Laurentides, Québec. Ann. Soc. Entomol. Qué. 23: 55-66.
- LeSage, L. and P. P. Harper. 1977. Description de cinq espèces de larves d'Elmidae néarctiques (Coléoptères). Ann. Soc. Entomol. Qué. 22: 18-32.
- Harper, P. P. 1977. Capniidae, Leuctridae, and Perlidae (Plecoptera) from Nepal. Orient. Insects 11: 53-62.
- LeSage, L. and P. P. Harper. 1976. Cycles biologiques d'Elmidae (Coléoptères) de ruisseaux des Laurentides, Québec. Ann. Limnol. 12: 139-174.
- LeSage, L. and P. P. Harper. 1976. Notes on the life history of the toed-winged beetle *Anchytarsus bicolor* (Melsheimer) (Coleoptera: Ptilodactylidae). Coleopt. Bull. 30: 233-238.
- Harper, P. P. and P. P. Harper. 1976. Inventaire et phénologie des Ephéméroptères du lac Saint-Louis, Québec. Ann. Soc. Entomol. Qué. 21: 136-143.
- Harper, P. P. 1976. *Oxyethira barnstoni* n. sp. un nouveau trichoptère de Radissonie, Québec (Hydroptilidés). Ann. Soc. Entomol. Qué. 21: 35-38.
- Harper, P. P. 1976. Plecoptera collected by the Hokkaido University expedition to the Himalaya, 1968. Mushi 49: 25-33.
- LeSage, L. and P. P. Harper. 1976. Description de nymphes d'Elmidae néarctiques (Coléoptères). Can. J. Zool. 54: 65-73.
- LeSage, L. and P. P. Harper. 1975. Les Dryopoïdes aquatiques du Québec (Coléoptères). Ann. Soc. Entomol. Qué. 20: 157-68.
- Harper, P. P. and G. Méthot. 1975. *Goera radissonica* n. sp., nouveau trichoptère de la région de la Baie James. Natur. Can. 102: 593-595.
- Harper, P. P. and D. Roy. 1975. *Utaperla gaspesiana* sp. nov., le premier Plécoptère Paraperliné de l'Est canadien. Can. J. Zool. 53: 1185-1187.
- Roy, D. and P. P. Harper. 1975. Nouvelles mentions de trichoptères du Québec et description de *Limnephilus nimmoi* sp. nov. (Limnephilidae). Can. J. Zool. 53: 1080-1088.

- Harper, P. P., J. G. Pilon, and J. M. Perron. 1975. Insectes aquatiques du Nord du Québec (Ephéméroptères, Odonates, Plécoptères, Trichoptères). *Ann. Soc. Entomol. Qué.* 20: 33-43.
- Harper, P. P. 1975. Quelques *Amphinemura* et *Nemoura* nouvelles du Népal (Plécoptères: Némouridés). *Nouv. Rev. Entomol.* 2: 119-127.
- Harper, P. P. 1974. New *Protonemura* (s.l.) from Nepal (Plecoptera; Nemouridae). *Psyche* 81: 367-376.
- Harper, P. P. 1974. A new eastern nearctic *Hemerodromia* (Diptera: Empididae). *Entomol. News* 85: 295-297.
- Harper, P. P. 1973. *Hydroptila eramosa* a new caddis fly from Southern Ontario (Trichoptera, Hydroptilidae). *Can. J. Zool.* 51: 393-394.
- Harper, P. P. 1973. Emergence, reproduction, and growth of setipalpiian Plecoptera in southern Ontario. *Oikos* 24: 94-107.
- Harper, P. P. 1973. Life histories of Nemouridae and Leuctridae in Southern Ontario (Plecoptera). *Hydrobiologia* 41: 309-356.
- Harper, P. P. and H. B. N. Hynes. 1972. Life histories of Capniidae and Taeniopterygidae (Plecoptera) in Southern Ontario. *Arch. Hydrobiol., Suppl.* 40: 274-314.
- Harper, P. P. and H. B. N. Hynes. 1971. The nymphs of the Nemouridae of Eastern Canada (Insecta: Plecoptera). *Can. J. Zool.* 49: 1129-1142.
- Harper, P. P. and H. B. N. Hynes. 1971. The nymphs of the Taeniopterygidae of Eastern Canada (Insecta; Plecoptera). *Can. J. Zool.* 49: 941-947.
- Harper, P. P. and H. B. N. Hynes. 1971. The Capniidae of Eastern Canada (Insecta; Plecoptera). *Can. J. Zool.* 49: 921-940.
- Harper, P. P. and H. B. N. Hynes. 1971. The Leuctridae of Eastern Canada (Insecta; Plecoptera). *Can. J. Zool.* 49: 915-920.
- Harper, P. P. 1971. Plécoptères nouveaux du Québec (Insectes). *Can. J. Zool.* 49: 685-690.
- Magnin, E. and P. P. Harper. 1970. La nourriture des esturgeons *Acipenser fulvescens* de la rivière Nottaway, tributaire de la Baie James. *Natur. Can.* 97: 73-85.
- Harper, P. P. and H. B. N. Hynes. 1970. Diapause in the nymphs of Canadian winter stoneflies. *Ecology* 51: 925-927.
- Harper, P. P. and J. G. Pilon. 1970. Annual patterns of emergence of some Quebec stoneflies (Insecta: Plecoptera). *Can. J. Zool.* 48: 681-694.
- Harper, P. and E. Magnin. 1969. Cycles vitaux de quelques Plécoptères des Laurentides (insectes). *Can. J. Zool.* 47: 483-494.
- Ricker, W. E., R. Malouin, P. Harper and H. H. Ross. 1968. Distribution of Québec stoneflies (Plecoptera). *Natur. Can.* 95: 1085-1123.





Dr. Donald C. Tarter 1936 – 2019.

Dr. Donald Cain Tarter passed away on May 9, 2019 at the age of 82. Don was a professor in the Biology Department with Marshall University, Huntington, West Virginia for more than 32 years. Don completed his undergraduate degree at Georgetown College in Georgetown, Kentucky, a Master of Science degree at Miami University, Miami, Ohio and his PhD at the University of Louisville. Throughout his long distinguished scholarly career, he was interested and published extensively on several taxonomic groups of aquatic animals from fish, crayfish, leeches to aquatic insects. Don and his undergraduate and graduate students were active studying the life histories of aquatic insects and inventorying the aquatic insects of West Virginia and surrounding states. He corresponded with many of us faithfully and sent us specimens to identify or verify. Don was honored with several patronyms including the peltoperlid stonefly *Peltoperla tarteri* Stark and Kondratieff, 1987.

Donald C. Tarter's papers on Plecoptera:

Ashley, D. L., D. C. Tarter and W. D. Watkins. 1976. Life history and ecology of *Diploperla robusta* Stark and Gaufin (Plecoptera: Perlodidae). *Psyche* 83: 310-318.

- Hissom, F. K. and D. C. Tarter. 1976. Taxonomy and distribution of nymphal Perlodidae of West Virginia (Insecta: Plecoptera). *Journal of the Georgia Entomological Society* 11: 317-323.
- Nelson, C. H., D. C. Tarter, and M. L. Little. 1977. Description of the adult male of *Allonarcys comstocki* (Smith) (Plecoptera: Pteronarcidae). *Entomological News* 88 :33-36.
- Ruggles, K. and D. C. Tarter. 1991. Ecological life history of *Peltoperla tarteri* (Plecoptera: Peltoperlidae) from Big Hollow of Paint Creek, Fayette County, West Virginia. *Psyche* 98: 33-46.
- Steele, B. D. and D. C. Tarter. 1977. Distribution of the family Perlidae in West Virginia (Plecoptera). *Entomological News* 88: 18-22.
- Tarter, D. C., M. L. Little, R. F. Kirchner, W. D. Watkins, R. G. Farmer and D. Steele. 1975. Distribution of pteronarcid stoneflies in West Virginia (Insecta: Plecoptera). *Proceedings of the West Virginia Academy of Sciences* 47: 79-85.
- Tarter, D. C. 1976. *Limnology in West Virginia: A lecture and laboratory manual*. Marshall University Bookstore, Huntington, West Virginia. 249 pp.
- Farmer, R. G. and D. C. Tarter. 1976. Distribution of the superfamily Nemouroidea in West Virginia (Insecta: Plecoptera). *Entomological News* 87: 17-24.
- Tarter, D. C., R. F. Kirchner, T. Mayberry, Jr., M. L. Little, and W. D. Watkins. 1976. A new stonefly, *Peltoperla arcuata* Needham for West Virginia (Plecoptera: Peltoperlidae). *Proceedings of the West Virginia Academy of Sciences* 48: 3.
- Tarter, D. C., R. F. Kirchner, F. Hissom, J. Nearhoff and W. Watkins. 1977. Additional state and county records of the superfamily Nemouroidea in West Virginia (Insecta: Plecoptera). *Proceedings of the West Virginia Academy of Sciences*. 49: 27-28.
- Tarter, D. C. and L. A. Krumholz. 1971. Life history and ecology of *Paragnetina media* (Walker) (Insecta: Plecoptera) in Doe Run, Meade County, Kentucky. *American Midland Naturalist* 86: 169-180.
- Tarter, D. C. and R. F. Kirchner. 1980. List of stoneflies (Plecoptera) of West Virginia. *Entomological News* 91: 49-53.
- Tarter, D. C., D. A. Adkins, K. B. Benson and C. V. Covell, Jr. 1984. A preliminary checklist of the stoneflies (Plecoptera) of Kentucky. *Transactions of the Kentucky Academy of Sciences* 43: 138-141.
- Tarter, D. C., D. A. Adkins, and C. V. Covell. 1984. A checklist of the stoneflies (Plecoptera) of Kentucky. *Entomological News* 101: 35-38.

Tarter, D. C. and D. L. Chaffee. 2003. A checklist of the stoneflies (Plecoptera) of the Daniel Boone National Forest in Kentucky, USA. *Entomological News* 114: 224-229.

Tarter, D. C. , C. H. Nelson. 2006. A revised checklist of the stoneflies (Plecoptera) of West Virginia (USA). *Proceedings of the Entomological Society of Washington*. 108: 429-442.

Tarter, D. C., D. L. Chaffee, and S. A. Grubbs. 2006. Revised checklist of the stoneflies (Plecoptera) of Kentucky, USA. *Entomological News* 117: 1-10.

Tarter, D. C. , C. H. Nelson. 2010. New state, county, and drainage basin records of West Virginia (USA) stoneflies (Plecoptera). *Entomological News* 121: 159-162.

Tarter, D. C., D. L. Chaffee, S. A. Grubs, and R. E. DeWalt. 2015. New state records of Kentucky (USA) stoneflies (Plecoptera). *Illiesia* 11: 167-174.

Yokum, K. A., T. R. Angradi and D. C. Tarter. 1995. Ecology of *Peltoperla arcuata* and *Tallaperla maria* (Plecoptera: Peltoperlidae) at the Fernow Experimental Forest, Tucker County, West Virginia. *Psyche* 102: 151-168.



Howard A. Rhodes 1936 – 2020.

Howard Allen Rhodes, 83, passed away January 20, 2020 in Cheyenne, Wyoming. He was born August 22, 1936 in Virginia. He served in the U. S. Air Force. He initiated a Ph.D program at Colorado State University, but left for a position with the U.S. Forest Service and retired from that agency. He loved aquatic entomology and maintained a large personal collection. He was a co-author of two papers on Plecoptera:

Rhodes, H. A. and B. C. Kondratieff. 1996. Annotated list of the stoneflies (Plecoptera) of Western Nebraska, U.S.A. *Journal of the Kansas Entomological Society Soc.* 69: 191-198.

Stark, B.P. & H.A. Rhodes. 1997. *Perlesta xube*, a new stonefly species from Nebraska (Plecoptera: Perlidae). Entomological News, 108: 92–96.

MEMBER NEWS

DeWalt Laboratory Work conducted in 2019 and proposed in the future.

Plecoptera of Indiana: using museum data to determine spatial distribution patterns and conservation need

Evan A. Newman, Master's student, University of Illinois, Entomology Department.
Additional authors R. Edward DeWalt and Scott A. Grubbs

Stoneflies (Plecoptera) are indicators of water quality and have been lost in dramatic numbers from Midwest states, including Indiana. For this study, we are using over 5000 records of Plecoptera from more than 2000 unique collection events to build a list of known species from the state of Indiana. We intend to answer four questions: First, how many species are native to Indiana? Second, what is the conservation status of each native species (using NatureServe criteria)? Third, do patterns exist in stonefly species assemblages across unique HUC8 watersheds? Fourth, what are the causal agents of differences in diversity across HUC8s? Results include 1,050 positive locality records that yielded 92 species. Among these is one recently described species, a new species not yet described, and three species previously unknown to Indiana. We have also found additional locations for rare species and confirmed the presence of a few species thought to be extirpated. Eleven species were rated as extirpated or presumed extirpated, leaving 81 extant species. Of these, 17 were rated as critically imperiled (S1), 26 imperiled (S2), 25 vulnerable (S3), while only 13 species were rated as secure (S4 & S5). Watersheds and specific streams were discussed for their ability to support individual species or rich assemblages. Regarding distribution patterns, southern unglaciated drainages supported the most species-rich assemblages. Watersheds that were most recently glaciated (Wisconsinan) held fewer species. Deep ravine systems act as cold water refugia where glaciated and unglaciated areas meet. The East Fork of the White River, Tippecanoe River, and the St. Joseph River drainage (a tributary to Lake Michigan) harbor several large river species. The next step in this project is to determine which factors are most important to Plecoptera species richness and to gather data on rare species and under-collected drainages.

Molecular phylogeny of the North American Plecoptera

Eric J. South, PhD student, University of Illinois, Department of Entomology.
Additional authors: Rachel K. Skinner, R. Edward DeWalt, Boris C. Kondratieff, Kevin P. Johnson, Mark A. Davis, Jonathan J. Lee, Richard S. Durfee

The primary objective of this study is to develop a well-supported and fully-resolved phylogeny of the North American Plecoptera using multiple genes selected from transcriptomes. A total of 373 live adult specimens across 132 species and 92 genera representing all North American families, subfamilies, and tribes were collected and

processed for RNA transcript assembly. A preliminary coalescent-based species tree estimation for 51 taxa was generated using 1,715 identified orthologous genes. The remaining 41 taxa have been sequenced and the data are being cleaned and modified for inclusion in a complete concatenated nucleotide transcriptome data set to be used to construct a Randomized Axelerated Maximum Likelihood (RAxML) analysis. Preliminary analyses demonstrate highly supported family groups with a few surprises to be announced later. This analysis will provide a strong backbone for higher taxa through to the genus in the Nearctic. It is hoped then that this analysis, with the help of significant collaboration, to build a phylogeny of Plecoptera at the global level. Having a stable backbone phylogeny will support other analyses focusing on more specific relationships such as barcoding of species.

Conservation status assessment of Watchlisted mayflies, stoneflies, and caddisflies of Illinois

R. E. DeWalt, University of Illinois, Illinois Natural History Survey

Evan A. Newman, Eric J. South, Lily V. Hart, Nicole Gamble

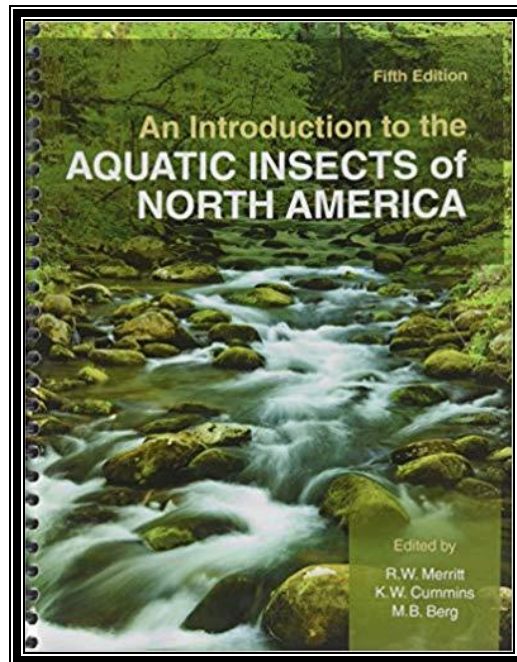
Significant funding was secured for a 3-yr project to search for 72 EPT species placed on a Watchlist within Illinois. This work will help to formally designate imperilment rankings for species. Several of the Watchlist species are thought to be extirpated; others were historically abundant and widespread, but now are rare in the state. In our first year, we conducted over 130 unique collecting events that spanned the months of January through August. Winter work in small, upland streams of the Shawnee National Forest of southern Illinois found several new locations for the rarely collected *Allocapnia smithi*, *Prostoia hallasi*, *Zealeuctra fraxina*, and *Z. narfi*. All but *Z. fraxina* can inhabit the smallest of streams that are only seasonally wet. Elsewhere on large rivers that border the east and west sides of the state, a few exuviae of *Isogenoides varians* were taken. This species was thought to have been extirpated from Illinois. At multiple locations, we examined over 60 *Hydroperla fugitans* exuviae in order to find a single exuviae of *I. varians*. Large river stoneflies are among the most imperiled in Illinois. Unfortunately, record floods on the Mississippi River limited access along the river. This often forced our team to work in adjacent states where high ground adjacent to the river was available. Despite this, two ultraviolet light trapping events at widely separated locations attracted a total of five *Attaneuria ruralis* specimens, another species thought extirpated from Illinois. With the help of our friends attending the North American Plecoptera Symposium a new state record, *Alloperla hamata*, was added to the Illinois list. Unfortunately, many large, long-lived species still appear to be absent from the interior of the state where agriculture occupies up to 95% of land cover. We were successful in recovering new specimens of several large river mayflies and several new state record mayflies from a variety of stream sizes. Several rare and one new state record caddisfly species also resulted. A big year of fieldwork is planned for 2020 with the hope of finding more ghosts from the past century.

DNA barcoding of North American Great Lakes Mayflies, Stoneflies, and Caddisflies

R. E. DeWalt, Lily V. Hart, Nicole Gamble

A collaboration with the David Lodge laboratory at Cornell University has provided the opportunity to DNA barcode (COI barcode fragment) additional EPT species that are known to occur in the Great Lakes region. Because compiled databases of specimen level data are largely unavailable, we used published checklists and taxonomic papers with specimen data to build a comprehensive list of all EPT known to occur in states and provinces that border the North American Great Lakes. Published works suggest that >1200 species exist. Examination of the BOLD Systems (<http://www.boldsystems.org/>) demonstrated that many species were not represented in BOLD (which also pulls in GenBank records), many others were represented by only one or two sequences, while others were well represented but consisted of a large number of Barcode Index Numbers (BINs), which to me suggests that many specimens were misidentified. Still, others were represented by specimens from areas far removed from the Great Lakes region--who knows what they really are? To date, my laboratory has submitted over 400 stonefly specimens and another 800 mayfly and caddisfly specimens. This effort greatly improves barcode library coverage for stoneflies, mayflies, and caddisflies in the Great Lakes region.

NEW AVAILABLE PUBLICATION



An Introduction to the Aquatic Insects of North America 5th edition, 2019. Edited by by **R. W. Merritt, K. W. Cummins, and M. Berg**. Kendall Hunt Publishing Company, Dubuque, Iowa. This edition serves as a standard guide on the immature and adult stages of aquatic and semiaquatic insects of North America. It offers information on the

distribution, tolerance values, trophic relationships, and functional adaptations of aquatic insects that allows an additional tool for categorizing them.

- Over 7000 references
- A chapter on *A Photographic Overview of Aquatic Insects of North America*
- A revision and expansion of keys, as well as new figures added to the taxonomic chapters
- Added figures to the *General Classification and Key to Orders* chapter
- All chapters have been updated with significant changes to chapters on Ephemeroptera, Plecoptera, Trichoptera, Coleoptera, Diptera and Tipuloidea
- Single chapters covering each order of all stages of aquatic insects

Chapter 16 Plecoptera was updated by R. E. DeWalt and B. C. Kondratieff from the original contributions by the P. P. Harper, P. P. Harper and K. W. Stewart, and K. W. Stewart and B. P. Stark.

RECENT PLECOPTERA LITERATURE (CALENDAR YEAR 2019 AND EARLIER). Papers made available after 1 February 2020 will be included in the next issue. **If papers were missed, please bring these to the attention of the Managing Editor.** Drs. Bill P. Stark, J. M. Tierno de Figueroa, and Peter Zwick are thanked for reviewing and providing additions to this present list.

Agboola, O. A., C. T. Downs and G. O'Brien. 2019. Macroinvertebrates as indicators of ecological conditions in the rivers of KwaZulu-Natal, South Africa. *Ecological Indicators*: 106. <https://doi.org/10.1016/j.ecolind.2019.105465>

Akamagwuna, F. C., P. K. Mensah, C. F. Nnadozie and O. N. Odume. 2019. Evaluating the responses of taxa in the orders Ephemeroptera, Plecoptera and Trichoptera (EPT) to sediment stress in the Tsitsa River and its tributaries, Eastern Cape, South Africa. *Environmental Monitoring and Assessment* 191(11), 664. <https://doi.org/10.1007/s10661-019-7846-9>

Alford, B. J. and H. S. Gotwald. 2019. Associations between fish and benthic macroinvertebrate biotic integrity and non-point source pollution estimates in the Nolichucky River Watershed. *Journal of the Tennessee Academy of Science* 94: (1-2): 56-70.

Almeida, L. H., R. Cardoso-Leite, M. F. B. Deodato and P. C. Bispo. 2019. *Anacroneuria iporanga* (Plecoptera: Perlidae): description of the nymph and biological notes. *Zootaxa* 4550: 141-145.

Anderson, H. E., L. K. Albertson and D. M. Walters. 2019. Thermal variability drives synchronicity of an aquatic insect resource pulse. *Ecosphere* 10 (8): DOI: [10.1002/ecs2.2852](https://doi.org/10.1002/ecs2.2852)

- Anderson, H. E., L. K. Albertson and D. M. Walters. 2019. Water temperature drives variability in salmonfly abundance, emergence timing, and body size. *River Research and Applications* 35 (7): 1013-1022. DOI: 10.1002/rra.3464
- Babu, R., K. G. Sivaramakrishnan and K. A. Subramanian. 2019. 4. Stoneflies (Insecta: Plecoptera) of India. Pp. 47-55. *In*: S. Ramani, P. Mohanraj and H. M. Yeshwanth (eds). *Indian Insects: Diversity and Science*. CRC Press, Boca Raton, Florida.
- Baillie, B. R., B. J. Hicks, I. D. Hogg, M. R. van den Heuvel and M. O. Kimberley. 2019. Debris dams as habitat for aquatic invertebrates in forested headwater streams: a large-scale field experiment. *Marine and Freshwater Research* 70 (5): 734-744.
- Beracko, P. and A. Revajova. 2019. Benthic life in karst spring-The life cycle and secondary production of benthic macroinvertebrates under the effects of constant water temperature. *Limologica* 74: 51-60.
- Berlin, A. 2019. 25 Jahre ökologischer Fließgewässerrenaturierung am Tieflandfluss Nebel (Mecklenburg-Vorpommern) – Änderungen in der Besiedlung mit Eintagsfliegen (Ephemeroptera), Steinfliegen (Plecoptera) und Köcherfliegen (Trichoptera) \ 25 years ecological restorations of the lowland river Nebel (Mecklenburg-Western Pomerania) – Changes in the colonization with Mayflies (Ephemeroptera), Stoneflies (Plecoptera) and Caddisflies (Trichoptera). *Lauterbornia* 86: 175-194.
- Besacier Monbertrand, A-L., P. Timoner, K. Rahman, P. Burlando, S. Fatichi, Y. Gonseth, F. Moser, E. Castella and A. Lehmann. 2019. Assessing the vulnerability of aquatic macroinvertebrates to climate warming in a mountainous watershed: Supplementing presence-only data with species traits. *Water* 11 (4): DOI: 10.3390/w11040636
- Birrell, J. H., J. B. Meek and C. R. Nelson. 2019. Decline of the giant salmonfly *Pteronarcys californica* Newport, 1848 (Plecoptera: Pteronarcyidae) in the Provo River, Utah, USA. *Illiesia* 15 (05): 83-97.
- Bravo, F., D. Romero, P. E. Gutierrez-Fonseca and S. Echeverria-Saenz. 2019. The description of *Anacroneuria suerre* sp. nov. from Costa Rica (Plecoptera: Perlidae) and using nymphs in ecotoxicological studies. *Zootaxa* 4608 (2): 357-364.
- Bray, J. P., S. J. Nichols, A. Keely-Smith, R. Thompson, S. Bhattacharyya, S. Gupta, A. Gupta, J. Gao, X. Wang and S. Kaserzon. 2019. Stressor dominance and sensitivity-dependent antagonism: Disentangling the freshwater effects of an insecticide among co-occurring agricultural stressors. *Journal of Applied Ecology* 56 (8): 2020-2033.

- Broome, H. J., B. P. Stark and R. W. Baumann. 2019. A review of the genus *Bolshecapnia* Ricker, 1965 (Plecoptera: Capniidae), and recognition of two new Nearctic capniid genera. *Illiesia* 15 (01): 1-26.
- Burnasheva, A. P. and N. K. Potapova. 2019. The communities of macrozoobenthos in tundra water bodies in low reaches of the Indigirka River (Northern Yakutia). *Acta Biologica Sibirica* 5 (2): 40-49.
- Burton, D. K. 2019. Capniidae (Plecoptera) in Canada east of Alberta. *Canadian Journal of Arthropod Identification* 36: 1-114. DOI:10.3752/cjai.2019.36
- Burton, D. K. 2019. Distribution of *Moselia infuscata* (Claassen, 1923) (Plecoptera: Leuctridae) in Canada. *Illiesia* 15 (07): 107-110.
- Cain, D. J., M. N. Croteau and C. C. Fuller. 2019. Competitive interactions among H, Cu, and Zn ions moderate aqueous uptake of Cu and Zn by an aquatic insect. *Environmental Pollution* 255: DOI: 10.1016/j.envpol.2019.113220
- Camacho, M. V. C. and R. M. Taniegra. 2019. Impacts of Anthropogenic disturbances on macroinvertebrate communities in streams of Catanduanes Water Forest Reserve, Catanduanes, Philippines and the need for conservation. *Asian Journal of Conservation Biology* 8 (1): 15-31.
- Cao, J., W. Li and Y. Wang. 2019. The complete mitochondrial genome of a Chinese endemic stonefly species, *Sinacroneuria dabiेशana* (Plecoptera: Perlidae). *Mitochondrial DNA Part B* 4 (1): 1327-1328.
- Cao, J., Y. Wang and W. H. Li. 2019. Comparative mitogenomic analysis of species in the subfamily Amphinemurinae (Plecoptera: Nemouridae) reveal conserved mitochondrial genome organization. *International Journal of Biological Macromolecules* 138: 292-301.
- Cao, J., W. Li, F. Yan and Y. Wang. 2019. The complete mitochondrial genome of a stonefly species, *Peltoperlopsis cebuano* (Plecoptera: Peltoperlidae). *Mitochondrial DNA Part B* 4 (1): 1103-1104.
- Cao, J., Mo, R., W. Li and D. Murányi. 2019. An additional new species of *Peltoperlopsis* Illies, 1966 (Plecoptera: Peltoperlidae) from China. *Zootaxa* 4686 (3): 429-434.
- Cao, J-J., Y. Wang, Y. R. Huang and W. H. Li. 2019. Mitochondrial genomes of the stoneflies *Mesonemoura metafiligera* and *Mesonemoura tritaenia* (Plecoptera, Nemouridae), with a phylogenetic analysis of Nemouroidea. *ZooKeys* 835: 43-63.

- Cao, J., Y. Wang, G. Ma and W. Li. 2019. Complete mitochondrial genome of a stonefly, *Nemoura papilla* (Plecoptera: Nemouridae). *Mitochondrial DNA Part B* 4 (1): 806-807.
- Cao, J., Y. Wang, M. Chen, M. Yuan and W. Li. 2019. The complete mitochondrial genome of a stonefly species, *Suwallia bimaculata* (Plecoptera: Chloroperlidae). *Mitochondrial DNA Part B* 4 (2): 2828-2829.
- Cao, J., Y. Wang, N. Li, W. Li and X. Chen. 2019. Characterization of the nearly complete mitochondrial genome of a Chinese endemic stonefly species, *Caroperla siveci* (Plecoptera: Perlidae). *Mitochondrial DNA Part B* 4 (1): 553-554.
- Cao, J., Y. Wang, X. Wei, S. Chen and W. Li. 2019. First mitochondrial genome of a stonefly from the subfamily Microperlinae: *Microperla geei* (Plecoptera: Peltoperlidae). *Mitochondrial DNA Part B* 4 (2): 2679-2680.
- Cao, J., Y. Wang, G. Zhang, S. Yi and W. Li. 2019. The characterization of the mitochondrial genome of *Calineuria stigmatica* (Plecoptera: Perlidae). *Mitochondrial DNA Part B* 4 (2): 2796-2797.
- Capistrano, F. A. and L. S. Barbosa. 2019. Plecoptera (Insecta) da Coleção Entomológica Costa Lima–Universidade Federal Rural do Rio de Janeiro, Brasil. [Plecoptera (Insecta) from the Entomological Collection Costa Lima – Universidade Federal Rural do Rio de Janeiro, Brazil]. *EntomoBrasilis* 12 (2): 77-80. (In Portuguese)
- Carr, M., L. Li, A. Sadeghian, I. D. Phillips and K-E. Lindenschmidt. 2019. Modelling the possible impacts of climate change on the thermal regime and macroinvertebrate species of a regulated prairie river. *Ecohydrology* 12: DOI: 10.1002/eco.2102
- Castillo Sánchez, K. N., Y. P. E. Aguirre, T. A. Ríos González and J. A. Bernal Vega. 2019. The Plecoptera of Panama. IV. Description of the last nymphal instar for two species of *Anacroneuria* Klapálek (Plecoptera: Perlidae) from the Caldera River, Chiriquí, Panamá. *Zootaxa* 4711 (3): 446-458.
- Chandra, K., D. Gupta and I. Ahmed. 2019. A Catalogue of Indian stoneflies (Insecta: Plecoptera). *Zootaxa* 4646 (2): 201-235.
- Chaumel, A. L. I., D. G. Armanini, J. A. Schwindt and A. G. Yates. 2019. Interannual variation of benthic macroinvertebrate communities at long-term monitoring sites impacted by human activities: Implications for bioassessment. *Diversity-Basel* 11 (9): 167.
- Chen, J., J. Cao, W. Li and Y. Wang. 2019. Characterization of the complete mitochondrial genome of a stonefly species, *Kamimuria klapaleki* (Plecoptera: Perlidae). *Mitochondrial DNA Part B* 4 (2): 3416-3417.

- Chen, M., J. Cao, W. Li and Y. Wang. 2019. The mitochondrial genome from the stonefly: *Claassenia* sp. (Plecoptera: Perlidae). *Mitochondrial DNA Part B* 4 (2): 3790-3791.
- Chen, M., Y. Wang, J. Chen and J. Cao. 2019. The complete mitochondrial genome of a stonefly species, *Indonemoura auriformis* (Plecoptera: Nemouridae). *Mitochondrial DNA Part B* 4 (2): 3392-3393.
- Chen, Z. T. 2019. A campaign to DNA barcode Chinese stoneflies (Insecta: Plecoptera). *Illisia* 15 (08): 111-117.
- Chen, Z. T. 2019. A new species and a new record of Perlodidae (Plecoptera) from China. *Zootaxa* 4623 (1): 189-200.
- Chen, Z. T. 2019. A new brachypterous *Filchneria* and two new generic records for China, *Arcynopteryx* and *Pictetiella* (Plecoptera: Perlodidae). *Zootaxa* 4679 (3): 511-526.
- Chen, Z. T. 2019. A new stonefly of Acroneuriinae (Plecoptera: Perlidae) from mid-Cretaceous amber of northern Myanmar. *Cretaceous Research* 99: 128-132.
- Chen, Z. T. 2019. A remarkable new stonefly with bisexual structures in mid-Cretaceous Burmese amber (Insecta: Perlidae). *Cretaceous Research* 104: 104189. <https://doi.org/10.1016/j.cretres.2019.07.019>
- Chen, Z. T. 2019. A synopsis of Chinese Plecoptera research. *Zoosymposia* 16: 62-87. [Proceedings of the Joint Meeting of the XV International Conference on Ephemeroptera and XIX International Symposium on Plecoptera, F. F. Salles and T. G. Sobrinho (eds)]
- Chen, Z. T. 2019. Additions to *Neoperla caii* Li & Wang and description of *Kamimuria petasus* sp. nov. from China (Plecoptera: Perlidae). *Zootaxa* 4613 (2): 355-362.
- Chen, Z. T. 2019. On the identity of the genus *Flavoperla* (Plecoptera: Perlidae), with description of a new species in southwestern China. *Zootaxa* 4613 (1): 127-134.
- Chen, Z. T. 2019. *Perlodinella mazehaoi* sp. nov., a new species of Perlodidae (Plecoptera) from Inner Mongolia of China. *Zootaxa* 4651 (2): 297-304.
- Chen, Z. T. 2019. *Peltoperlopsis mengmanensis* sp. nov., the second species of *Peltoperlopsis* (Plecoptera: Peltoperlidae) from China. *Zootaxa* 4656 (1): 177-182.

- Chen, Z. T. 2019. Redescription of *Rhopalopssole hamata* Yang & Yang, 1995 (Plecoptera: Leuctridae) based on the male, female, and nymph, with notes on the *R. dentata* group from China. *Zootaxa* 4613 (1): 172-180.
- Chen, Z. T. 2019. Review of the genus *Suwallia* (Plecoptera: Chloroperlidae) from China with description of *Suwallia jihuae* sp. nov. from Sichuan Province. *Zootaxa* 4603 (3): 583-588.
- Chen, Z. T. 2019. The discovery of a new species of *Neofilchneria* (Plecoptera: Perlodidae) from China and a review of the genus. *Zootaxa* 4586 (3): 562-570.
- Chen, Z. T. 2019. The first formal report of brachypterous stonefly of Leuctridae (Plecoptera) from China. *Zootaxa* 4624 (2): 230-240.
- Chen, Z. T. and L. D. Song. 2019. A new winter stonefly (Plecoptera: Capniidae) from Shaanxi Province of China. *Zootaxa* 4629 (2): 237-246.
- Chen, Z. T. and L. D. Song. 2019. A synopsis of *Microperla* (Plecoptera: Peltoperlidae), with a new species from Shaanxi Province of China. *Zootaxa* 4619 (3): 555-562.
- Chen, Z. T. and B. Wang. 2019. Review of the fossil genus *Largusoperla* (Plecoptera: Perlidae): Annotated checklist, taxonomic identification, and description of a new species. *Zootaxa* 4565 (2): 281-291.
- Chen, Z. T. and B. Wang. 2020. New females of Perlidae (Insecta: Plecoptera) from Cenomanian Burmese amber. *Cretaceous Research*, 106, 104203. <https://doi.org/10.1016/j.cretres.2019.104203>
- Chen, Z. T., L. D. Song and W. T. Feng. 2019. A new species of *Isoperla* (Plecoptera: Perlodidae) from the Qinling Mountains of northwestern China and notes on the Chinese species of the genus. *Zootaxa* 4651 (2): 379-391.
- Cheney, K. N., A. H. Roy, R. F. Smith and R. E. Dewalt. 2019. Effects of stream temperature and substrate type on emergence patterns of Plecoptera and Trichoptera from northeastern United States headwater streams. *Environmental Entomology* 48 (6): 1349-1359.
- Cui, Y., D. Ren and O. Béthoux. 2019. The Pangean journey of ‘south forestflies’ (Insecta: Plecoptera) revealed by their first fossils. *Journal of Systematic Palaeontology* 17 (3): 255-268.
- Cui, Y., C. Shih and D. Ren. 2019. Plecoptera–Stoneflies. Pp. 175-184. *In*: D. Ren, C. Shih, T. Gao, Y. Yao and Y. Wang (eds). *Rhythms of insect evolution: Evidence from the Jurassic and Cretaceous in northern China*. John Wiley & Sons Ltd., Hoboken, New Jersey.

- De Almeida, L. H., R. Cardoso-Leite, M. F. B. Deodato and P. D. C. Bispo. 2019. *Anacroneuria iporanga* (Plecoptera: Perlidae): description of the nymph and biological notes. *Zootaxa* 4550 (1): 141-145.
- De Carvalho Gonçalves, M., M. Carneiro Novaes, L. Silveira Lecci, L. H. De Almeida, V. Costa and F. F. Salles. 2019. Checklist of Plecoptera (Insecta) from the State of Espírito Santo, Brazil. *Zoosymposia* 16: 96-123. [Proceedings of the Joint Meeting of the XV International Conference on Ephemeroptera and XIX International Symposium on Plecoptera, F. F. Salles and T. G. Sobrinho (eds)]
- Derka, T., J. M. Tierno de Figueroa and F. Čiampor Jr. 2019. *Enderleina preclara* Jewett, 1960 (Plecoptera, Perlidae), from the Venezuelan Guayana – A description of a putative female, nymph and egg. *Zootaxa* 4585 (2): 332-342.
- Derka, T., C. Zamora-Muñoz and J. M. Tierno de Figueroa. 2019. Aquatic insects. Pp. 167-192. *In*: V. Rull, T. Vegas-Vilarrúbia, O. Huber and C. Señaris (eds). Biodiversity of Pantepui. The Pristine "Lost World" of the Neotropical Guiana Highlands. Elsevier. Academic Press, London, England.
- DeWalt, R. E. and G. D. Ower. 2019. Ecosystem services, global diversity, and rate of stonefly species descriptions (Insecta: Plecoptera). *Insects* 10 (4): 99. <https://doi.org/10.3390/insects10040099>
- Ding, S., W. Li, Y. Wang, S. L. Cameron, D. Murányi and D. Yang. 2019. The phylogeny and evolutionary timescale of stoneflies (Insecta: Plecoptera) inferred from mitochondrial genomes. *Molecular Phylogenetics and Evolution* 135: 123-135.
- do Amaral, P. H. M., E. de Almeida Gonçalves, L. S. da Silveira and R. da Gama Alves. 2019. Richness and distribution of Ephemeroptera, Plecoptera and Trichoptera in Atlantic forest streams. *Acta Oecologica* 99: <https://doi.org/10.1016/j.actao.2019.103441>
- Drover, D. R., C. E. Zipper, D. J. Soucek and S. H. Schoenholtz. 2019. Using density, dissimilarity, and taxonomic replacement to characterize mining-influenced benthic macroinvertebrate community alterations in central Appalachia. *Ecological Indicators* 106. <https://doi.org/10.1016/j.ecolind.2019.105535>
- Du, Y. Z. and Z. T. Chen. 2019. Review of the rare and little-known Chinese species of the family Taeniopterygidae (Plecoptera), with description of two new species of *Kyphopteryx*. *Zootaxa* 4550 (1): 129-134.
- Duarte, T., M. C. Novaes and P. D. C. Bispo. 2019. Five new species of *Tupiperla* Froehlich, 1969 (Plecoptera: Gripopterygidae). *Zootaxa* 4671 (4): 511-526.

- Egri, Á., D. Száz, Á. Pereszlényi, B. Bernáth and G. Kriska. 2019. Quantifying the polarised light pollution of an asphalt road: an ecological trap for the stonefly, *Perla abdominalis* (Guérin-Méneville, 1838) (Plecoptera: Perlidae). *Aquatic Insects* 40 (3): 257-269.
- Emerson, B. C., A. Salces-Castellano and P. Arribas. 2019. Dispersal limitation: Evolutionary origins and consequences in arthropods. *Molecular Ecology* 28 (13) DOI: 10.1111/mec.15152
- Faqhira, A. Z. and A. H. Suhaila. 2019. Drift pattern of tropical stream insect: Understanding the aquatic insect movement. *Serangga* 24 (1): 1-10.
- Fierro, P., C. Valdovinos, I. Arismendi, G. Díaz, A. Jara-Flore, E. Habit and L. Vargas-Chacoff. 2019. Examining the influence of human stressors on benthic algae, macroinvertebrate, and fish assemblages in Mediterranean streams of Chile. *Science of the Total Environment* 686: 26-37.
- Firmino, V. C., J. M. F. Ribeiro, E. M. Dos Santos and L. Juen. 2019. First occurrence of *Anacroneria singularis* Righi-Cavallaro & Lecci, 2010 (Plecoptera: Perlidae) in Rondônia, western Amazonia, Brazil. *Zootaxa* 4544 (3): 446-450.
- Fochetti, R., M. Oliverio, V. Russini, G. Tapia and J. M. Tierno de Figueroa. 2019. Molecular identity of *Nemoura lacustris* (Plecoptera: Nemouridae) throughout its distributional range. *Zootaxa* 4661 (3): 494-500.
- Foster, B. J., G. A. McCulloch and J. M. Waters. 2019. *Zelandoperla maungatuaensis* sp. n. (Plecoptera: Gripopterygidae), a new flightless stonefly species from Otago, New Zealand. *New Zealand Journal of Zoology* 1-7. DOI: 10.1080/03014223.2019.1624266.
- Freeley, H. B., R. Little, and J-R. Baars. 2019. Some additional notes on the life histories of *Nemurella pictetii* Klapálek and *Brachyptera risi* (Morton) (Plecoptera) in Ireland. *Irish Naturalists' Journal* 36 (2): 146-147.
- Gamboa, M. and J. Arrivillaga-Henríquez. 2019. Biochemical and molecular differentiation of *Anacroneria* species (Plecoptera, Insecta) in Andean National Park, Venezuela. *Systematics and Biodiversity* 17: 669-678.
- Gamboa, M. and K. Watanabe. 2019. Genome-wide signatures of local adaptation among seven stoneflies species along a nationwide latitudinal gradient in Japan. *BMC Genomics* 20: DOI:10.1186/s12864-019-5453-3
- Gamboa, M., D. Muranyi, S. Kanmori and K. Watanabe. 2019. Molecular phylogeny and diversification timing of the Nemouridae family (Insecta, Plecoptera) in the Japanese Archipelago. *PloS One* 14 (1), e0210269.

- Ghougali, F., A. S. Bachir, N. Chaabane, I. Brik, R. A. Medjber, and A. Rouabah. 2019. Diversity and distribution patterns of benthic insects in streams of the Aures arid region (NE Algeria). *Oceanological and Hydrobiological Studies* 48: 31-42.
- Gonzalez-Trujillo, J. D., D. K. Danielle, G. Cordoba-Ariza, K. Rincon-Palau, J. C. Donato-Rondon, M. I. Castro-Rebolledo and S. Sabater. 2019. Upstream refugia and dispersal ability may override benthic-community responses to high-Andean streams deforestation. *Biodiversity and Conservation* 28 (6): 1513-1531.
- Grubbs, S. A. and R. W. Baumann. 2019. *Alloperla clarki* sp. nov. (Plecoptera: Chloroperlidae), a new species from the eastern Nearctic with discussion of a new species group. *Zootaxa* 4624 (2): 241-255.
- Grubbs, S. A. and R. W. Baumann. 2019. *Soyedina* Ricker, 1952 (Plecoptera: Nemouridae) in the eastern Nearctic: review of species concepts, proposed morphology-based species groups, and description of a new species from North Carolina. *Zootaxa* 4658 (2): 223–250.
- Grubbs, S. A., B. C. Kondratieff and R. W. Baumann. 2019. A surprising rediscovery and description of a new species of *Soyedina* Ricker, 1952 (Plecoptera: Nemouridae) from Great Smoky Mountains National Park, USA. *Journal of Insect Biodiversity* 13 (1): 1-5.
- Hamada, N. and J. O. da Silva. 2019. Two new species of *Enderleina* Jewett (Plecoptera: Perlidae) from northern Brazil. *Zootaxa* 4712 (3): 377-391.
- Hazi, N., E. Kuhnert and D. De Aquino. 2019. Aquatic macroinvertebrates of the Bois de Chenes. *Memoires de la Societe Vaudoise des Sciences Naturelles* 28: 107-116.
- Herbst, D. B., S. D. Cooper, R. B. Medhurst, S. W. Wiseman and C. T. Hunsaker. 2019. Drought ecohydrology alters the structure and function of benthic invertebrate communities in mountain streams. *Freshwater Biology* 64 (5): 886-902.
- Heth, R. K. and R. L. Sine. 2018. Diversity and longitudinal patterns of stoneflies (Plecoptera) in a southwestern Missouri Ozark Stream. *Transactions of the Missouri Academy of Science* 46: 49-61.
- Hills, K. A., R. V. Hyne, and B. J. Kefford. 2019. Species of freshwater invertebrates that are sensitive to one saline water are mostly sensitive to another saline water but an exception exists. *Royal Society Philosophical Transactions Biological Sciences* 374 (1764): DOI: 10.1098/rstb.2018.0003
- Hoff, H., J. G. Martin, P. J. Liesch and E. R. Olson. 2019. *Acroneuria lycorias* (Boreal Stonefly, Plecoptera: Perlidae) Emergence behaviors discovered in *Pinus strobus* canopy. *The Great Lakes Entomologist* 52 (1-2): 53-56.

- Hohmann, M. and R. Küttner. 2019. Die Steinfliegen (Insecta, Plecoptera) der Sammlung Dietrich Braasch im Naturkundemuseum Potsdam. Veröffentlichungen des Naturkundemuseums Potsdam, 2018, 4: 29-37.
- Hohmann, M. and C.-J. Otto. 2019. In Erinnerung an Hon. Prof. Dr. Herbert Reusch (21. September 1955 – Juni 2019) \ In memory of Prof. h.c. Dr. Herbert Reusch (21. September 1955 – Juni 2019). *Lauterbornia* 86: 219-221.
- Hohmann, M. and D. Spitzenberg. 2019. Die Wasserinsekten (Ephemeroptera, Plecoptera, Trichoptera, Coleoptera aquatica) der unteren Mulde in Sachsen-Anhalt \ The aquatic insects (Ephemeroptera, Plecoptera, Trichoptera, Coleoptera aquatica) of the Lower Mulde river, Saxony-Anhalt/Germany. *Lauterbornia* 86: 195-209.
- Horak, C. N., Y F. Assef and M. L. Merendino. 2019. Assessing effects of confined animal production systems on water quality, ecological integrity, and macroinvertebrates at small piedmont streams (Patagonia, Argentina). *Agricultural Water Management* 216: 242-253.
- Horvath, G., A. Egri, V. B. Meyer-Rochow and G. Kriska. 2019. How did amber get its aquatic insects? Water-seeking polarotactic insects trapped by tree resin. *Historical Biology*. DOI: 10.1080/08912963.2019.1663843
- Hotaling, S., J. L. Kelley and D. W. Weisrock. 2019. Nuclear and mitochondrial genomic resources for the meltwater stonefly (Plecoptera: Nemouridae), *Lednia tumana* (Ricker, 1952). *Aquatic Insects* 40 (4): 362-369.
- Hotaling, S., J. J. Giersch, D. S. Finn, L. M. Tronstad, S. Jordan, L. E. Serpa, R. G. Call, C. C. Muhlfeld and D. W. Weisrock. 2019. Congruent population genetic structure but differing depths of divergence for three alpine stoneflies with similar ecology and geographic distributions. *Freshwater Biology* 64 (2): 335-347.
- Huo, Q. and Y. Du. 2019. *Microperla qinlinga* Chen reviewed with supplementary illustrations and the description of the nymph. *Zootaxa* 4706: 427-438.
- Hurtado-Borrero, Y. M., C. E. Tamaris-Turizo, M. J. López-Rodríguez and J. M. Tierno de Figueroa. 2019. Nymphal feeding habits of two *Anacroneuria* species (Plecoptera, Perlidae) from Sierra Nevada de Santa Marta, Colombia. *Journal of Limnology* 78(1): 40-46.
- Jones, G. 2019. Some observations of northern February red stonefly *Brachyptera putata* in Strathsey. *Highland Naturalist* 15: 25.
- Kietzka, G. J., J. S. Pryke, R. Gaigher and M. J. Samways. 2019. Applying the umbrella index across aquatic insect taxon sets for freshwater assessment. *Ecological Indicators* 107. <https://doi.org/10.1016/j.ecolind.2019.105655>

- Kondratieff, B. C. and B. J. Armitage. 2019. The Plecoptera of Panama. III. The genus *Anacroneuria* (Plecoptera: Perlidae) in Panama's national parks: 2017 survey results. *Zootaxa* 4565 (3): 407-419.
- Kondratieff, B. C., R. E. DeWalt and C. J. Verdone. 2019. Plecoptera of Canada. *ZooKeys* 819: 243-254.
- Kondratieff, B. C. and C. J. Verdone. 2019. A Review of the Adults of the Nearctic Species of *Kogotus* (Plecoptera: Perlodidae). *Zoosymposia* 16: 152-166. [Proceedings of the Joint Meeting of the XV International Conference on Ephemeroptera and XIX International Symposium on Plecoptera, F. F. Salles and T. G. Sobrinho (eds)]
- Lamine, S., A. Lounaci, J-P. G. Reding and G. Vinçon. 2019. *Marthamea bayae*, a new species of stonefly from Algeria (Plecoptera: Perlidae). *Zootaxa* 4603 (2): 311-326.
- Li, J., J. Cao, Y. Wang and F. Kong. 2019. The mitochondrial genome analysis of a stonefly, *Niponiella limbatella* (Plecoptera: Perlidae). *Mitochondrial DNA Part B* 4 (1): 1666-1667.
- Li, W. and R. Liu. 2019. A new species of *Neoperla* (Plecoptera: Perlidae) from southeastern Tibet of China with additions to the knowledge of *N. perspicillata* Zwick, 1980. *Zootaxa* 4686 (2): 271-281.
- Li, W., R. Mo and D. Muranyi. 2019. Additions to the genus *Hemacroneuria* Enderlein (Plecoptera: Perlidae) from China. *Zootaxa* 4652 (2): 349-358.
- Li, W., R. Mo and D. Yang. 2019. A complementary description of the male of *Kyphopteryx yangi* (Plecoptera: Taeniopterygidae) from China. *Zootaxa* 4686 (2): 264-270.
- Li, W., R. Mo and J. Yang. 2019. An interesting new species of *Kamimuria* (Plecoptera: Perlidae) from China, with notes on *K. grandispinata* Du & Sun. *Zootaxa* 4700 (1): 139-145.
- Liu, H., Y. Yan and W. Li. 2019. Two new species of *Flavoperla* (Plecoptera: Perlidae) from Shaanxi Province of China. *Zootaxa* 4614 (2): 395-400.
- Liu, R., R. Mo and W. Li. 2019. A new species of *Acroneuria* (Plecoptera: Perlidae) from Henan Province, China, with redescription of *A. hainana* Wu, 1938. *Zootaxa* 4619 (2): 371-381.
- Liu, Z., Y. Wang, W. Li and J. Cao. 2019. The complete mitochondrial genome of a stonefly species, *Etrocorema hochii* (Plecoptera: Perlidae). *Mitochondrial DNA Part B* 4 (2): 2690-2691.

- Lopez-Lopez, E., J. E. Seden-Diaz, E. Mendoza-Martinez, A. Gomez-Ruiz and E. M. Ramirez. 2019. Water quality and macroinvertebrate community in dryland streams: The case of the Tehuacan-Cuicatlan Biosphere Reserve (Mexico) facing climate change. *Water* 11 (7): DOI: 10.3390/w11071376
- López-Rodríguez, M. J., C. Márquez Muñoz, E. Ripoll-Martín and J. M. Tierno de Figueroa. 2019. Effect of shifts in habitats and flow regime associated to water diversion for agriculture on the macroinvertebrate community of a small watershed. *Aquatic Ecology*, 53: 483-495.
- Lü, D., Y. Yan, W. Li and H. Wang. 2019. A new species of the genus *Chinoperla* (Plecoptera: Perlidae) from southern China. *Zootaxa* 4614 (1): 187-190.
- Lü, D., Y. Yan, W. Li and H. Wang. 2019. Erratum: Dongbiao Lü, Yanhua Yan, Weihai Li & Hongliang Wang (2019) A new species of the genus *Chinoperla* (Plecoptera: Perlidae) from southern China. *Zootaxa* 4658 (3): 600.
- Macadam, C. R., A. Dixon, A. Farr and S. A. Crofts. 2019. A new Scottish record of the stonefly *Amphinemura standfussi* (Ris, 1902) (Plecoptera: Nemouridae). *Glasgow Naturalist* 27 (Part 1).
- Martens, A. M., U. Silins, H. C. Proctor, C. H. S. Williams, M. J. Wagner, M. B. Emelko and M. Stone. 2019. Long-term impact of severe wildfire and post-wildfire salvage logging on macroinvertebrate assemblage structure in Alberta's Rocky Mountains. *International Journal of Wildland Fire* 28 (10): 738-749.
- Martyniuk, N., B. Modenutti and E. G. Balseiro. 2019. Seasonal variability in glacial influence affects macroinvertebrate assemblages in North-Andean Patagonian glacier-fed streams. *Inland Waters* 9 (4): 522-533.
- Martyniuk, N., B. Modenutti and E. G. Balseiro. 2019. Light intensity regulates stoichiometry of benthic grazers through changes in the quality of stream periphyton. *Freshwater Science* 38 (2): 391-405.
- Martynov, A. V. and M. Žiak. 2019. A new micropterous species of *Leuctra* (Plecoptera: Leuctridae) from the Lesser Caucasus (Georgia). *Zootaxa* 4671 (4): 581-588.
- Mauvisseau, Q., J. Davy-Bowker, M. Bulling, R. Brys, S. Neyrinck, C. Troth and M. Sweet. 2019. Improving detection capabilities of a critically endangered freshwater invertebrate with environmental DNA using digital droplet PCR. DOI: 10.1101/661447

- Mauvisseau, Q., J. Davy-Bowker, M. Bulling, R. Brys, S. Neyrinck, C. Troth, and M. Sweet. 2019. Combining ddPCR and environmental DNA to improve detection capabilities of a critically endangered freshwater invertebrate. *Scientific Reports*. 14064. DOI: <https://doi.org/10.1038/s41598-019-50571-9>
- Mayorga, A. and R. Barba-Alvarez. 2019. A new species of *Anacroneuria* Klapálek, 1909 (Plecoptera: Perlidae) from Selva Lacandona, Mexico. *Aquatic Insects* 40 (3): 185-195.
- McCarty, E., R. Nichols, J. McCreddie and J. Grant. 2019. Assessment of aquatic macroinvertebrate sampling methods for nonregulatory water quality programs. *Journal of Environmental Quality*. 48: 1749-1757.
- McCulloch, G. A., B. J. Foster and J. M. Waters. 2019. Phylogeography reveals a North Island range extension for New Zealand's only sexually wing-dimorphic stonefly (*Stenoperla helsoni*). *New Zealand Journal of Zoology* 46 (3): 253-260.
- McCulloch, G. A., B. J. Foster, T. Ingram and J. M. Waters. 2019. Insect wing loss is tightly linked to the treeline: Evidence from a diverse stonefly assemblage. *Ecography* 42 (4): 811-813.
- McCulloch, G. A., B. J. Foster, L. Dutoit, T. Ingram, E. Hay, A. J. Veale, P. K. Dearden and J. M. Waters. 2019. Ecological gradients drive insect wing loss and speciation: The role of the alpine treeline. *Molecular Ecology* 28 (13): 3141-3150.
- McCulloch, G. A., A. Oliphant, P. K. Dearden, A. J. Veale, C. W. Ellen, and J. M. Waters. 2019. Comparative transcriptomic analysis of a wing-dimorphic stonefly reveals candidate wing loss genes *EvoDevo* 10 (1): DOI <https://doi.org/10.1186/s13227-019-0135-4>
- Menezes, J. P. C., L. F. C. Oliveira and M. R. Salla. 2019. Metrics of benthic communities and habitat quality associated to different types of land use. *Engeharia Sanitaria e Ambiental*. 24: 737-746.
- Mihalicz, J. E., T. D. Jardine, H. M. Baulch and I. D. Iain. 2019. Seasonal effects of a hydropeaking dam on a downstream benthic macroinvertebrate community. *River Research and Applications* 35 (6): 714-724.
- Mo, R., G. Wang and W. Li. 2019. A new species of *Caroperla* Kohno, 1946 (Plecoptera: Perlidae) from Guangxi of China. *Zootaxa* 4612 (4): 591-594.
- Mo, R., G. Wang and W. Li. 2019. A new species of *Indonemoura* (Plecoptera: Nemouridae) from Guangdong Province of southern China. *Zootaxa* 4658 (3): 585-590.

- Mo, R., G. Wang, W. Li and D. Murányi. 2019. A remarkable new species of *Kiotina* Klapálek, 1907 (Plecoptera: Perlidae) from China. *Zootaxa* 4623 (3): 583-588.
- Mo, R., G. Wang, D. Yang and W. Li. 2019. A new species of *Amphinemura* (Plecoptera: Nemouridae) from Guangxi Zhuang Autonomous Region of southern China. *Zootaxa* 4585 (3): 591-600.
- Mo, R., G. Wang, D. Yang and W. Li. 2019. Two new species and one new regional record of *Indonemoura* from Guangxi, China, with additions to larval characters (Plecoptera, Nemouridae). *ZooKeys* 825: 25-42.
- Mo, R., Y. Yan, G. Wang and W. Li. 2019. A new species of the *Phanoperla pallipennis* group (Plecoptera: Perlidae) from Vietnam. *Zootaxa* 4656 (1): 183-188.
- Mo, R., Y. Yan, G. Wang, W. Li and Murányi, D. 2019. Holomorphology of *Kamimuria peppapiggia* sp. n. (Plecoptera: Perlidae) from the foothills of Taihang Mountains, Henan Province of China. *Zootaxa* 4668 (4): 575-587.
- Mo, R., G. Yao, G. Wang and W. Li. 2019. First record and one new species of *Cerconychia* Klapálek, 1913 (Plecoptera: Styloperlidae) from Shaanxi Province of the Northwest China. *Zootaxa* 4624 (3): 424-430.
- Mo, R., G. Yao, G. Wang and W. Li. 2019. One new species and one new Chinese record of *Neoperla* (Plecoptera: Perlidae) from Mount Shiwandashan of the Guangxi Zhuang Autonomous Region of southern China. *Zootaxa* 4652 (3): 497-506.
- Negishi, J. N., A. Hibino, K. Miura, R. Kawanishi, N. Watanabe and K. Toyoda. 2019. Coupled benthic-hyporheic responses of macroinvertebrates to surface water pollution in a gravel-bed river. *Freshwater Science* 38 (3): 591-604.
- Pandiarajan, S., S. Thambiratnam and I. R. B. Sivaruban. 2019. Bio-monitoring and Detection of Water Quality using Ephemeroptera, Plecoptera and Trichoptera (EPT) Complex in Karanthamalai Stream of Eastern Ghats. *Indian Journal of Ecology* 46 (4): 818-822.
- Pessacq, P. and R. Rivera-Pomar. 2019. A new *Andiperla* Aubert (Plecoptera, Gripopterygidae) species from the Perito Moreno Glacier, Argentina. *Zootaxa* 4664 (2): 251-260.
- Pessacq, P., M. C. Zúñiga and T. Duarte. 2019. An updated checklist of Neotropical Plecoptera. *Zoosymposia* 16: 182-209. [Proceedings of the Joint Meeting of the XV International Conference on Ephemeroptera and XIX International Symposium on Plecoptera, F. F. Salles and T. G. Sobrinho (eds)].
- Prokop, J., E. Krzeminska, W. Krzeminski, K. Rosova, M. Pecharova, A. Nel and M. S. Engel. 2019. Ecomorphological diversification of the Late Palaeozoic

Palaeodictyoptera reveals different larval strategies and amphibious lifestyle in adults. Royal Society Open Science 6: DOI: 10.1098/rsos.190460

- Qian, Y. H., L. Fu, J. Y. Jiao and Y. Z. Du. 2019. Two new species of *Sphaeronemoura* (Plecoptera: Nemouridae) from Yunnan Province of China. *Zootaxa* 4568 (1): 194-200.
- Qian, Y. H., J. H. Xiang, J. Y. Jiao and Y. Z. Du. 2019. A new species of *Agnentina* from China with redescription of *Paragnentina indentata* Wu & Claassen, 1934 (Plecoptera: Perlidae). *Zootaxa* 4612 (2): 289-295.
- Raitif, J., M. Plantegenest and J-M. Roussel. 2019. From stream to land: Ecosystem services provided by stream insects to agriculture. *Agriculture Ecosystems & Environment* 270: 32-40.
- Rana, J. S., B. Semalty, P. Singh, N. Swami, S. Dewan, J. Singh, M. P. Gusain and O. P. Gusain. 2019. Checklist of benthic macroinvertebrate taxa along different riparian land use types in Alaknanda River Catchment of the Central Himalaya, Uttarakhand (India). 2019. *Proceedings of the Zoological Society (Calcutta)* 72: 130-153.
- Reding, J-P. G., B. Launay, J. Le Doaré, A. Ruffoni and G. Vinçon. 2019. Two new species of *Dictyogenus* Klapálek, 1904 (Plecoptera: Perlodidae) from the Jura Mountains of France and Switzerland, and from the French Vercors and Chartreuse Massifs. *Illiesia* 15 (02): 27-64.
- Rippel, M. L. S., M. C. Novaes and T. K. Krolow. 2019. First records of the genus *Anacroneuria* (Plecoptera: Perlidae) from Tocantins State, Brazil and description of a new species. *Zootaxa* 4560 (2): 355-364.
- Rippel, M. L. S., M. C. Novaes and T. K. Krolow. 2019. First records of *Kempnyia* and *Macrogynoplax* (Plecoptera: Perlidae) from Tocantins State, Brazil with description of the immatures and the adult female. *Zootaxa* 4700 (4): 471-478.
- Ruffoni, A. and J. M. Tierno de Figueroa. 2019. Description of the vibrational duet of *Besdolus ravizzarum* Zwick & Weinzierl, 1995 (Plecoptera: Perlodidae). *Annales de la Société Entomologique de France* 55 (6): 485-488.
- Sánchez-Bayo, F. and K. A. G. Wyckhuys. 2019. Worldwide decline of the entomofauna: A review of its drivers. *Biological Conservation* 232: 8-27.
- Schaeffer, M., C. Hellmann, S. Avlyush and D. Borchardt. 2019. The key role of increased fine sediment loading in shaping macroinvertebrate communities along a multiple stressor gradient in a Eurasian steppe river (Kharaa River, Mongolia). *International Review of Hydrobiology*. DOI: 10.1002/iroh.201902007

- Schmitt, R., A. L. L. da Silva, L. C. P. D. Soares, M. M. Petrucio, and A. E. Siegloch. 2019. Influence of microhabitat on diversity and distribution of Ephemeroptera, Plecoptera, and Trichoptera in subtropical forest streams. *Studies on Neotropical Fauna and Environment*. DOI: 10.1080/01650521.2019.1704984
- Schubnel, T., L. Perdu, P. Roques, R. Garrouste and A. Nel. 2019 Two new stem-stoneflies discovered in the Pennsylvanian Avion locality, Pas-de-Calais, France (Insecta: 'Exopterygota'), *Alcheringa: An Australasian Journal of Palaeontology*, 43 (3): 430-435.
- Shen, Y. and Y. Z. Du. 2019. The mitochondrial genome of *Leuctra* sp. (Plecoptera: Leuctridae) and its performance in phylogenetic analyses. *Zootaxa* 4671 (4): 571-580.
- Silva, D. P., A. C. Dias, L. S. Lecci and J. Simião-Ferreira. 2019. Potential effects of future climate changes on Brazilian cool-adapted stoneflies (Insecta: Plecoptera). *Neotropical Entomology* 48 (1): 57-70.
- Simões, T. V. D. 2019. Systematics of Gripopterygidae Enderlein, 1909 (Insecta: Plecoptera): cladistic analyses of Gripopteryginae with notes on Brazilian species and revision and phylogeny of *Paragripopteryx* Enderlein, 1909 (Doctoral dissertation, Universidade de São Paulo).
- Sint, D., R. Kufmann, R. Mayer and M. Traugott. 2019. Resolving the predator first paradox: Arthropod predator food webs in pioneer sites of glacier forelands. *Molecular Ecology* 28 (2): 336-347.
- Slimani, N., D. Sanchez-Fernandez, E. Guilbert, M. Boumaiza, S. Guareschi and J. Thioulouse. 2019. Assessing potential surrogates of macroinvertebrate diversity in North-African Mediterranean aquatic ecosystems. *Ecological Indicators* 101: 324-329.
- South, E. J., R. E. DeWalt and Y. Cao. 2019. Relative importance of Conservation Reserve Programs to aquatic insect biodiversity in an agricultural watershed in the Midwest, USA. *Hydrobiologia* 829: 323-340.
- South, E. J., R. E. DeWalt, M. A. Davis and M. J. Thomas. 2019. A new stonefly species (Plecoptera, Perlidae) from the Interior Highlands USA, with morphological and molecular comparison to other congeneric species. *ZooKeys* 858: 45-70.
- Sroka, P. and A. H. Staniczek. 2020. Retention of cervical and abdominal gills in the adult of a new fossil stonefly (Insecta, Plecoptera, Petroperlidae) from mid-Cretaceous Burmese amber. *Cretaceous Research* 107: <https://doi.org/10.1016/j.cretres.2019.104277>

- Stark, B. P. and A. B. Harrison. 2019. The larva of *Perlesta adena* Stark, 1989 (Plecoptera: Perlidae). *Illiesia* 15 (04): 79-82.
- Stark, B. P. and C. H. Nelson. 2019. First SEM micrographs of representatives of *Pachyleuctra* Despax, 1929 and *Tyrrhenoleuctra* Consiglio, 1957 (Plecoptera: Leuctridae). *Illiesia* 15 (06): 98-106.
- Suh, K. I., J. M. Hwang, Y. J. Bae and J. H. Kang. 2019. Comprehensive DNA barcodes for species identification and discovery of cryptic diversity in mayfly larvae from South Korea: Implications for freshwater ecosystem biomonitoring. *Entomological Research* 49 (1): 46-54.
- Takeshita, K. M., T. Misaki, T. Takahiro, I. Hayashi and H. Yokomizo. 2019. Associations of community structure and functions of benthic invertebrates with nickel concentrations: Analyses from field surveys. *Environmental Toxicology and Chemistry* 38 (8): 1728-1737.
- Teslenko, V. A. 2019. A new species of *Capnia* (Plecoptera: Capniidae) from Lesser Khingan Range (Amur River Basin, Far East of Russia). *Zootaxa* 4674 (4): 463-470.
- Teslenko, V. A. and D. M. Palatov. 2019. A new micropterous winter species of *Leuctra* (Plecoptera: Leuctridae) and little known endemic stoneflies from the Greater Caucasus. *Zootaxa* 4613 (2): 342-354.
- Teslenko, V. A., D. M. Palatov and A. A. Semenchenko. 2019. Description of new apterous winter species of *Leuctra* (Plecoptera: Leuctridae) based morphology and DNA barcoding and further records to stonefly fauna of the Caucasus, Georgia. *Zootaxa* 4585 (3): 547-560.
- Theischinger, G. and J. H. Mynott. 2019. A new species of *Dinotoperla* Tillyard, 1921 from the Shoalhaven Catchment, New South Wales, Australia (Plecoptera: Gripopterygidae). *Zootaxa* 4550 (3): 423-427.
- Tierno de Figueroa, J. M. and M. J. López-Rodríguez. 2019. Trophic ecology of Plecoptera (Insecta): a review. *The European Zoological Journal* 86 (1): 79-102.
- Tierno de Figueroa, J. M., M. J. López-Rodríguez and M. Villar Argáiz. 2019. Spatial and seasonal variability in the trophic role of aquatic insects: an assessment of functional feeding group applicability. *Freshwater Biology* 64: 954-966.
- Tierno de Figueroa, J. M., J. M. Luzón-Ortega and M. J. López-Rodríguez. 2019. Drumming for love: mating behavior in Stoneflies. Pp. 117-137. *In*: K. Del-Claro and R. Guillermo (eds). *Aquatic Insects: Behavior and Ecology*. Springer Nature Switzerland, Cham.

- Tolonen, K. E., F. Picazo, A. Vilmi, T. Datry, R. Stubbington, P. Paril, M. P. Rocha and J. Heino. 2019. Parallels and contrasts between intermittently freezing and drying streams: From individual adaptations to biodiversity variation. *Freshwater Biology* 64 (10): 1679-1691.
- Tyufekchieva, V. G., V. V. Evtimova and D. Muranyi. 2019. First Checklist of Stoneflies (Insecta: Plecoptera) of Bulgaria, with application of the IUCN Red List Criteria at National Level. *Acta Zoologica Bulgarica* 71 (3): 349-358.
- Urdanigo, P. J., M. D. Ponce, C. Tay-Hing Cajas, C. S. Fonseca, R. Y. Benitez, K. A. Alban, N. G. Chuez and N. J. Mancera-Rodriguez. 2019. Diversity of aquatic macroinvertebrates along creeks with different riparian cover in Murocomba Protector Forest, Ecuador. *Revista de Biología Tropical* 67 (4): 861-878.
- Valan, M., K. Makonyi, A. Maki, D. Vondráček and F. Ronquist. 2019. Automated taxonomic identification of insects with expert-level accuracy using effective feature transfer from Convolutional Networks. *Systematic Biology* 68: 876-895.
- Veale, A. J., P. K. Dearden and J. M. Waters. 2019. First complete mitochondrial genome of a Gripopterygid stonefly from the sub-order Antarcotoperlaria: *Zelandoperla fenestrata*. *Mitochondrial DNA Part B* 4 (1): 886-888.
- Vera, A. 2019. Taxonomic study of the genus *Araucanioperla* Illies 1963 (Plecoptera: Gripopterygidae), with the description of the male genitalia, eggs and the last instar larva for *A. brincki*. *Zootaxa* 4671 (1): 026-034.
- Verdone, C. J., S. R. Beaty, V. B. Holland and B. C. Kondratieff. 2019. A new species of *Zealeuctra* Ricker, 1952 (Plecoptera: Leuctridae) from North Carolina, U.S.A. *Illiesia* 15 (03): 65-78.
- Vidinova, Y. N., V. V. Evtimova and V. G. Tyufekchieva. 2018. Ephemeroptera, Plecoptera and Trichoptera (Insecta) from Water Bodies in the Region of Plovdiv City. *Bulletin of the Natural History Museum – Plovdiv*, 2018 (Suppl. 1): 69-79.
- Vlková, V., J. Cířik, Z. Āiamporová Zařoviočv and P. Beracko. 2019. Benthic life in a springbrook: Spatio-temporal changes of benthic macroinvertebrates in the longitudinal profile of karst springbrooks. *Lauterbornia* 86: 145-162.
- Wang, Y., J. Cao, M. Chen and W. Li. 2019. The complete mitochondrial genome analysis of the stonefly, *Flavoperla* sp. (Plecoptera: Perlidae). *Mitochondrial DNA Part B* 4 (2): 3902-3903.
- Wang, Y., J. J. Cao, N. Li, G. Y. Ma and W. H. Li. 2019. The first mitochondrial genome from Scopuridae (Insecta: Plecoptera) reveals structural features and phylogenetic implications. *International Journal of Biological Macromolecules* 122: 893-902.

- Wei, X., J. Cao, P. Wang, Y. Wang and W. Li. 2020. The mitochondrial genome analysis of *Paragnetina indentata* (Plecoptera: Perlidae). *Mitochondrial DNA Part B* 5 (1): 44-45.
- Wipfler, B., H. Letsch, P. B. Frandsen, P. Kapli, C. Mayer, D. Bartel, T. R. Buckley, A. Donath, J. S. Edgerly-Rooks, M. Fujita, S. Liu, R. Machida, Y. Mashima, B. Misof, O. Niehuis, R. S. Peters, M. Petersen, L. Podsiadlowki, K. Schutte, S. Shimizu, T. Uchifune, J. Wilbrandt, E. Yan, X. Zhou and S. Simon. 2019. Evolutionary history of Polyneoptera and its implications for our understanding of early winged insects. *Proceedings of the National Academy of Sciences* 116 (8): 3024-3029.
- Xiao, Q., J. Zhao, Y. H. Qian and Y. Z. Du. 2019. Two new species of *Mesonemoura* (Plecoptera: Nemouridae) from Yunnan Province of China. *Zootaxa* 4565 (4): 531-538.
- Yan, Y., R. Liu and W. Li. 2019. A new black species of *Kamimuria* (Plecoptera: Perlidae) from Shaanxi Province, China. *Zootaxa* 4577 (1): 180-186.
- Young, M. K., R. J. Smith, K. L. Pilgrim, M. P. Fairchild and M. K. Schwartz. 2019. Integrative taxonomy refutes a species hypothesis: The asymmetric hybrid origin of *Arsapnia arapahoe* (Plecoptera, Capniidae). *Ecology and Evolution* 9 (3): 1364-1377.
- Young, N. E., M. Fairchild, T. Belcher, P. Evangelista, C. J. Verdone and T. J. Stohlgren. 2019. Finding the needle in the haystack: iterative sampling and modeling for rare taxa. *Journal of Insect Conservation* 23 (3): 589-595.
- Zequi, J. A. C., J., A. A. Espinoza, J. de Almeida Paccola and J. Lopes. 2019. Aquatic insect communities in a small stream in the south of Brazil. *Environmental Monitoring and Assessment* 191 (7): DOI:10.1007/s10661-019-7536-7
- Zhang, G., Y. Wang and J. Cao. 2019. The complete mitochondrial genome of a stonefly species, *Neoperlops gressitti* (Plecoptera: Perlidae). *Mitochondrial DNA Part B* 4 (2): 3324-3325.
- Zhao, M. Y., Q. B. Huo and Y. Z. Du. 2019. A new species of *Styloperla* (Plecoptera: Styloperlidae) from China, with supplementary illustrations for *Styloperla jiangxiensis*. *Zootaxa* 4608 (3): 555-571.
- Zizka, V. M. A., F. Leese, B. Leinert, and M. F. Geiger. 2019. DNA metabarcoding from sample fixative as a quick and voucher-preserving biodiversity assessment method. *Genome* 62 (3): 122-136.

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Allocapnia wrayi Ross, 1964 (Capniidae): North Carolina, Nash Co., Sandy Creek, SR 1004, 15 January 2019, C. Verdone, S. Beaty, V. Holland, E. Fleek, B. Kondratieff. Photograph by Chris Verdone.