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The Mayfly Newsletter

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The Mayfly Newsletter

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The Mayfly Newsletter is the official newsletter of the Permanent Committee of the International Conferences on Ephemeroptera

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Feature Article:

Photo-identification of mayflies, a relatively new field of exploration

Daan Drukker
Leiden, Netherlands

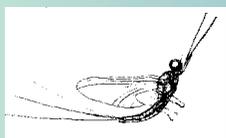


D. Drukker

Male subimago *Rhithrogena beskidensis*.

Mayfly identification is usually done by examining specimens in alcohol or pinned museum material. Field identification is normally something that is reserved for groups such as birds and butterflies. People have looked at these species for such a long time that characters can even be seen in flight. The thought that a mayfly can be identified with a single view sounds like a futuristic utopia. I've made it my goal to contribute as much as I can to achieve this utopia, and in this piece, I would like to tell you my approach.

Every hydrobiologist who regularly collects and identifies mayflies will probably agree with me that many larvae are already recognizable to some level while they are swimming around in your white sample tray. That's where you can already see if you've found something out of the ordinary, which forms the basis of my approach: get acquainted with the fauna of a specific region. I dare to say that I now can recognize a large proportion of the mayflies of Belgium and The Netherlands at first sight, provided I have the right optics (macro lens or loupe), or at least I can make an educated guess. This is not restricted to the larvae, but also to the subimagines and imagines. Their ephemeral existence makes it difficult to gain a lot of personal experience. They are hard to find, and you have to be lucky to find a large hatch or swarm. Nevertheless, I've compiled a photo-database of a very large proportion of the mayflies I've ever found. The procedure is that I photograph



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(see link on Ephemeroptera Galactica: <http://www.ephemeroptera-galactica.com/>)

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the living specimen and then collect it in alcohol (in the case of a subimago I let it molt to imago and photograph it again). If you can make sure that you can link the collected specimen to the photos, some characters you don't see when you only look at the dead specimen become remarkably clear. The next level is rearing the mayfly from larval stage, in which I am not very good yet, and combining it with DNA-barcoding. In addition to this, I learn an incredible amount from our local citizen science websites Waarneming.nl, Waarnemingen.be and Observation.org. Here, nature enthusiasts can submit observations of every species that they can find and accompany it with photographic evidence and exact date, time and location. It is very popular and more and more people submit observations of mayflies, for example the ones they find as "bycatch" on light traps for moth-watching. On the Dutch website alone, we have so far validated more than 4600 observations that were accompanied with photos that were sufficient as proof! Although most of it is the omnipresent *Cloeon dipterum* (see Fig. 1), it is still a great way to truly understand the characters of the species, especially now that I am also allowed to validate the Belgian Ephemeroptera on their website.

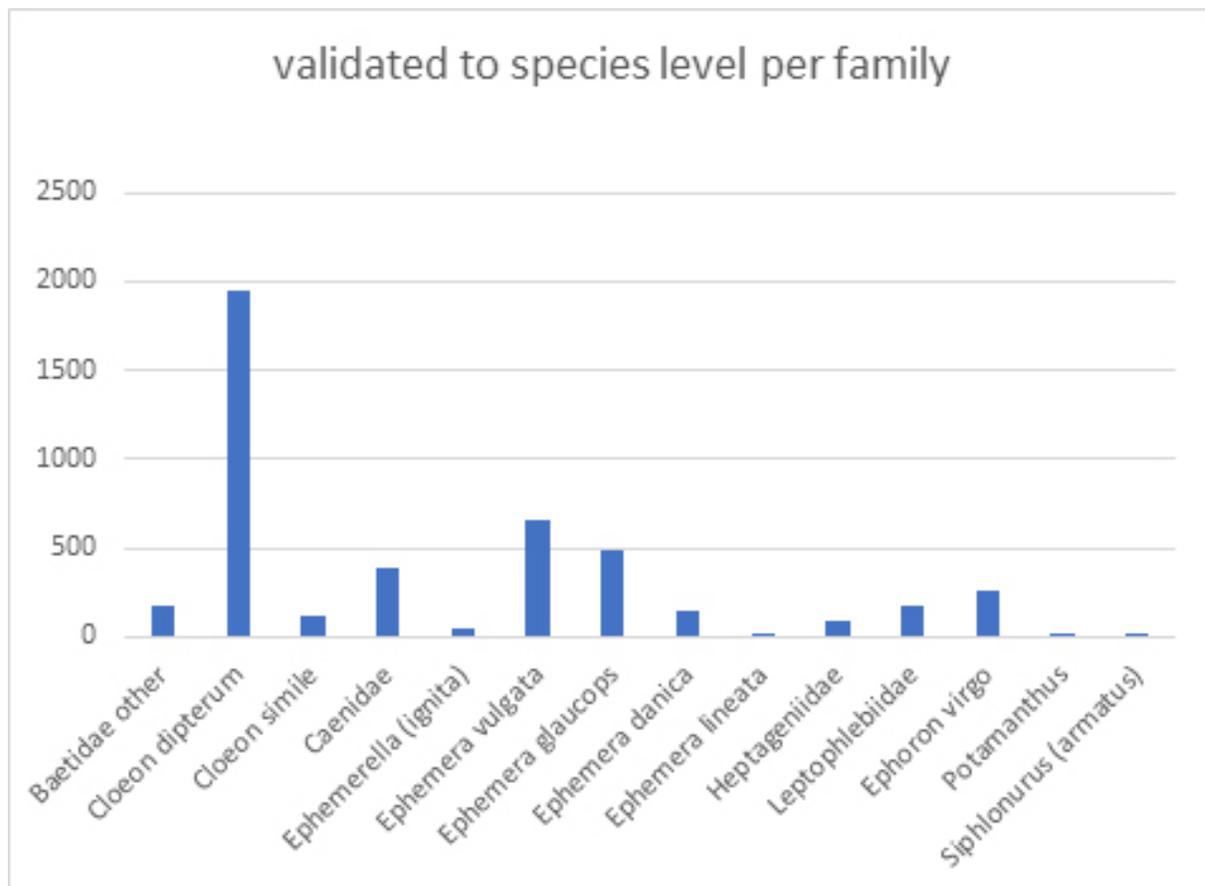


Figure 1: Number of observations validated to species level per group in the Netherlands on Waarneming.nl. Some species, such as *Cloeon dipterum* and the large *Ephemera*-species have their own bar, as they are submitted more often.

The Netherlands and Belgium collectively hold around 80 species of mayflies, many of which have become extirpated from this relatively flat and densely populated area. This makes it easier to recognize species here, especially in the Dutch lowlands, which are very poor in species. Of course, there are factors that make things difficult, such as cryptic variation and (sub)imago females of some Baetidae as examples that are not identifiable at all, even when they are collected.

The real challenge, however, is to expand the knowledge to other parts of the world. I've already made a start for myself in the rest of Europe, where I look for mayflies nowadays on holidays, while also trying to validate photos on the citizen science portal of Observation.org. Here many Dutch and Belgian people upload their vacation discoveries, as well as several local people who report their mayfly findings. Also, on Facebook groups devoted to entomology and to mayflies in particular, I take up "The Mayflies of Europe" by Bauernfeind and Soldán and try to get to species or genus level. With extra literature, it is remarkably often that a species ID is possible. I've noticed that it is mainly people from Spain who are interested in mayflies and upload their pictures, both to Facebook as well as to Observation.org. One day, I hope to understand the Iberian mayflies better and collect and photograph as many species as possible, although it is not easy to obtain permits, I've heard. It would be nice to exchange thoughts with other specialists. That

is why I want to ask everyone who reads this for help. Please let me know if you can help identify photos of mayflies in any part of the world, or if you disagree with identifications. I am toying with the idea of making an online photo database, with for every species as many reference photos of living specimens (preferably specimens that have been identified based on their genitalia afterward). If anyone wants to collaborate, find me on daandrukker@gmail.com.

Have a look at these citizen science websites and Facebook pages, with so many nice photos of these amazing insects:

[Waarneming.nl](#) (in this link the photos of Baetidae in the Netherlands, the green check means that the validator agrees with the identification. To change family, check another in the dropdown menu "Family". Click on the date to see the full observation with date and location)

[Waarnemingen.be](#) (in this link the photos of Leptophlebiidae in Belgium, the green check means that the validator agrees with the identification. To change family, check another in the dropdown menu "Family". Click on the date to see the full observation with date and location)

[Observation.org](#) (in this link the photos of the Heptageniidae outside the Netherlands and Belgium. Note how many are not been validated, with the absence of a green check. Click on the date to see the full observation with date and location)

[iNaturalist](#) (with many photos worldwide, but not many validated and lots of misidentifications)

[Ephemeroptera Facebook](#)

[Mayfly Identification of North America Facebook](#)

[Entomology Facebook](#) (with search to "mayfly", try also "Ephemeroptera")

[Dagsländor Facebook](#) (for Scandinavian mayflies)

[Ephemeroptera de Portugal](#)

[Ephemeroptera de Colombia](#)

[Ephemeroptera da America do Sul](#)

[Mayfly Central Facebook](#)



D. Drukker

Female imago *Metreletus balcanicus*. This splendid looking species was rediscovered in Belgium after more than 50 years thanks to someone recording his observations he did as bycatch during moth-watching.



To the Order Ephemeroptera

**Holly Biller
Ball State University
Muncie, Indiana**

This stream allows her to cling to a seashell embedded dolomite,
crawl to smooth Ohio shale when the current slows.

Carboniferous. Winter did not lead with entrapment under ice –
first distinct Autumn decorated ancestors' dwelling

with seemingly undue organic matter. She recognizes these
leaves now, gracefully glides onto dull orange in shallow waters.

Adults assumed a name to embrace their quick puberty
into death, emerge a grand stem to host fragile wings in May.

She waits her whole life for tragic romance, to flaunt genetic
perfections to the swarm of males who could love her.

Trade an adolescent career of algae connoisseur for a moment
of heat in the heaven of the tributary to gift her eggs

back to that which raised her. She rests her wings on its surface,
succumbs to the cycle in the cradle of her beloved Sandusky River.

Finished, she has left the legacy of her nature to the next generation,
has given her slender body as a feast to the order of Perciformes.

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

**Save the Date: Sunday 25 July through 1 August 2021
Mountain Campus, Colorado State University, Fort Collins, Colorado, USA**

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

Location: The Mountain Campus is a high elevation enclave west of Fort Collins that provides dormitory and private housing, a cafeteria, and conference facilities in an idyllic setting.



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

Participants: All are welcome who study any aspect of Ephemeroptera and Plecoptera.

Schedule: General 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.

More detailed information will follow in 2020.

How to Donate to the International Permanent Committee on Ephemeroptera Scholarship Fund

This fund (Canadian Tax Reg. No. BN 88915 1379 RR001) provides travel scholarships to assist upcoming scientists to attend our international conferences. You have several options to donate to the mayfly travel fund. The committee can accept a cheque, a wire transfer or you can use our PayPal account. More details are provided below.

- 1) Cheque.** Please make cheque payable to: "International Permanent Committee on Ephemeroptera" and mail to Alexa at the address below.
- 2) Wire transfer.** Wire transfer. By arrangement with the treasurer. Please email alexa@ecobmi.com
- 3) PayPal.** Business account: International Permanent Committee for Ephemeroptera Scholarship Fund, Merchant account #: X5YQ83HA2AFML Email: alexa@ecobmi.com.

Do let me know how I can help if any of this information is unclear.

Alexa C. Alexander Trusiak,

Permanent Committee Treasurer

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Need PDFs for Ephemeroptera Galactica

Two questions:

Have you published a paper on mayflies?

If so, did you send a PDF to EG?

Ephemeroptera Galactica (EG) is a web site that was developed by Mike Hubbard and is now maintained by Arnold Staniczek. One of the great features of EG is the bibliography of mayfly literature at this site. PDFs of hundreds of mayfly articles are available. To keep this bibliography updated, please send a PDF of your articles on mayflies to Arnold (arnold.staniczek@smns-bw.de).

We're looking for submissions to the *Mayfly Newsletter*!

Do you have anything you'd like to share with your fellow ephemeropterists? In addition to the Notices, Mayfly Bibliography, and information about the upcoming International Meeting, we'd like to include project updates, book reviews, notices of upcoming meetings of interest to Ephemeroptera workers, requests for collaboration, and any interesting notes about mayflies.

So - my questions to you - Are you looking for collaborators on a project? Do you have some spectacular mayfly photos that you'd like to share with your colleagues? Is there a special collecting site or new collecting method whose details would be of interest to other mayfly workers? Have you ever had an adventure in collecting mayflies? We publish our data in our research papers, but sometimes the story behind the story is equally interesting!

Deadlines:

- Summer issue: May 15

- Winter issue: Dec. 1

The *Mayfly Newsletter*

Starting with the Winter 2016 issue, the Mayfly Newsletter has gone digital! You will be able to find the link to the issues on the Digital Commons site: <https://dc.swosu.edu/mayfly/> (or see link on *Ephemeroptera Galactica* (<http://www.ephemeroptera-galactica.com>)). If you haven't already passed your email address to Peter Grant, remember to contact Donna (djgiberson@gmail.com) with your email address if you would like to receive notification when new issues are posted. Unfortunately, due to costs of printing and postage, we won't be able to send a printed newsletter out by post.

However, original copies of many of the printed issues are still available Contact Peter Grant if you would like a set and he can arrange to send them to you: peter.grant@swosu.edu

The *Mayfly Newsletter* is the official newsletter of the Permanent Committee of the International Conferences on Ephemeroptera and is published to facilitate communication among ephemeropterists.

Subscriptions to the Newsletter are free. To place your name on the e-mailing list or to contribute information for the next issue, contact:

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