
# Crayfish News

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## First record of The Marbled Crayfish in Canada/North America

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**Figure 1**. Live mature marbled crayfish from minnow trap catches. Photo: P. Hamr.

Suspected marbled crayfish (*Procambarus virginalis*) were first reported in Southern Ontario in October 2021. The reports came from a Burlington City Park and were made by a naturalist (Ms. N. Bucik) as well as park staff who observed and photographed individual crayfish walking on a nature path as well as on a nearby football (soccer) pitch. All the reports were made near three stormwater ponds in the park where it was suspected the crayfish came from. (The identity of the crayfish was subsequently confirmed by EU crayfish experts when I showed the photos at IAA 23 in the Czech Republic in July 2022).

In the following spring (in May 2022), the Invading Species Awareness Program of the Ontario Federation of Anglers and Hunters (OFAH) was tasked with initial surveys to confirm these reports and I was invited to take part to help and confirm the identity of the species. Minnow traps and sweep nets were used in three surveys however no further crays were captured that summer and fall. The margins of the

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# President's Corner

**Javier Dieguez-Uribeondo PhD**
IAA President (Spain)

Dear colleagues,

It has been already one year since the last IAA Symposium in Czech Republic, and a lot has happened at IAA in the meantime. First, I want to especially mention the organizers of the Association of Southeastern Biologists meeting in April in Winston Salem, North Carolina. The session had over 30 presentations and was very well attended with crayfish studies well represented. I would also like to mention the Crayfish European Meeting in Pavia, Italy, supported by IAA. The European meeting has been very successful. More than 80 delegates attended the meeting, which was extraordinarily well organized by Daniela Ghia and Gianluca Fea. There were excellent presentations and posters showing new technically and scientifically advanced studies. Once more, it is clear that there is an increasing interest in crayfish, both as an organism and as a model for studying diverse topics. Congratulations to all and in particular to oral presentation and poster prize winners Luka Bostjancic (best oral presentation), Anita Tarandek (2nd best oral presentation), Azeem Iqbal (best poster), Lena Bonassin (2nd best poster), Caterina Francesconi (special prize innovation), and Miloš Buřič (best senior presentation). It will soon be possible to present and discuss new crayfish studies in a number of coming events. Already in November, Ivana Maguire will be hosting a 2-days Symposium of the Croatian Ecological Society, to gather experts dealing with many different aspects of invasive species, with crayfish in the main starring role (www.ekolosko-drustvo.hr/5CSIS.html). Susie Adams will be co-hosting with Becky Rosamond a 1-day meeting of the Mississippi Crayfish Working Group, followed by a 1-day sampling blitz for primary burrowing crayfishes in southeast Mississippi on January 24-25, 2024. They will be sharing information about ongoing crayfish research and conservation issues in the state. The sampling will focus on clarifying the ranges of two recently described primary burrowing species: *Lacunicambarus mobilensis* (lonesome gravedigger) and *L. freudensteini* (banded mudbug). Right after this, Chris Bonvillain, Jacob Westhoff, and Zachary Loughman are hosting a Crayfish symposium at the upcoming SDAFS meeting in Chattanooga this winter in Tennessee (units.fisheries.org/tn/sdafs2024chattanooga). Zachary Loughman will also be teaching a Crayfish Biology course for the U.S. Fish and Wildlife Service this October. Do not forget September 2024, since it will be the time for the 26th IAA International Symposium in Croatia. I am sure that we will have a record for registrations, as well as high quality presentations. IAA students should be preparing their proposal for travel awards, and those that are not IAA members are encouraged to register soon.

Furthermore, I would like to remind members interested in hosting the 2026 venue for submitting proposals for the 2026 meeting. The proposals are usually in the form of a PowerPoint that includes approximate dates, costs, any potential field trips, and information about the facilities and lodging options. Finally, I would like to thank Lucian Parvulescu for his excellent proposal of the IAA venue 2024 in Romania, that I hope will be again presented for the next world or European venue. I hope to see you soon during this intense IAA agenda.

**Javier Dieguez Uribeondo PhD**

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Madrid, Spain


The International Association of Astacology (IAA), founded in Hintertal, Austria in 1972, is dedicated to the study, conservation, and wise utilization of freshwater crayfish. Any individual or institution interested in furthering the study of astacology is eligible for membership. Service to members includes a quarterly newsletter (*Crayfish News*), a membership directory, biennial international symposia and publication of the journal *Freshwater Crayfish*.

## Secretariat:

The International Association of Astacology has a permanent secretariat managed by **James Stoeckel**. Address: IAA Secretariat, Room 203, Swingle Hall, Department of Fisheries and Allied Aquacultures, Auburn University, AL 36849-5419, USA.

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## IAA Executive Board Members:

In addition to the IAA Officers and Past President, the Executive Board also includes **Jacob Westhoff** (USA), **Chris Bovillain** (USA), **Ivana Maguire** (Croatia), **James Furse** (Australia), **Quinton Burnham** (Australia) and **Felipe Ribeiro** (Brasil).

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Header photograph: Noble crayfish (*Astacus astacus)* © 2018 Karolina Śliwińska

This issue edited by **Thomas Abeel**, Managing Editor
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**Figure 2.** Dead individual found on land by park staff. Photo: P. Hamr.

ponds were very difficult to sample due to thick emergent aquatic vegetation, but eDNA samples of the water taken during the surveys showed positive hits for all three ponds.

During the winter of 2022/23 the ponds at the park were dewatered in an effort to freeze out the crayfish. Spring surveys yielded no crayfish but still showed positive hits of eDNA for marbled crayfish in the ponds again.

In mid-July of this year, more crayfish turned up walking on land near the ponds and traps were subsequently set in all three ponds. Conservation Halton Staff trapped several more crayfish over a period of two weeks, which were all positively identified marbled crayfish. Carapace lengths (CPL) of the crayfish ranged between 20 and 45 mm (or 4 to 9 cm total length). They appeared to be all mature, even the smaller ones, as the onset of age of maturity has been reported as between 14 and 22 mm CPL in European populations. None of the females carried eggs or young and none had visible glair glands and therefore were likely in an interclutch period. Furthermore, they all looked like they have moulted since they last reproduced.

Following the trapping of the adults, an OFAH crew (of which I was a part) conducted further surveys by using sweep nets in shore areas. This extensive survey unfortunately yielded only one small juvenile. The size of this young of the year (CPL 9 mm) corresponds nicely in size to a juvenile which may have been spawned this spring. I think we did not get many young crayfish despite sweeping that area thoroughly for a while because they are no doubt vulnerable to predation by the many goldfish we observed there and they are also quite fast moving in the warm water. They no doubt seek shelter in shallower water among/at the base of the reeds/cattails. They are also too small to go in the traps.

Fortunately, the three stormwater ponds are not directly connected to any flowing streams and it is hoped that the population is confined to the park.

Further surveys continue in and around the park in order to confirm that the crayfish are breeding (since no ovigerous crayfish were trapped to date) and a strategy to contain and eradicate this population is being developed. The ponds may be dewatered again for a longer period of time and for once we are hoping for a cold winter in Southern Ontario!

I would like the acknowledge the OFAH Invasive Species & Halton Conservation crews as well as the Burlington City Park staff for their efforts in this project.

**Premek Hamr**

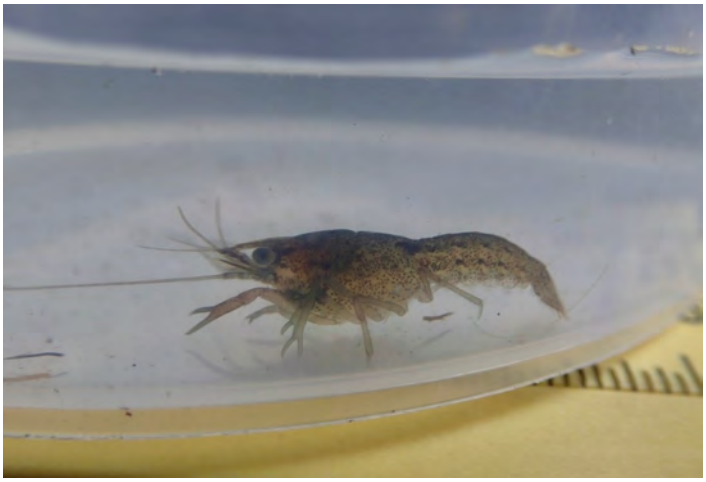

**Figure 3.** Young of the year *P. virginalis* captured in sweep net surveys. Photo: P. Hamr.

**Figure 4.** Sweep surveys of habitat where young marbled crayfish was captured. Photo: P. Hamr.

# World of Crayfish

## A Comprehensive Platform for Global Crayfish Biodiversity Mapping

World of Crayfish (WoC, world.crayfish.ro) is a dynamic initiative designed to address the need for a centralized platform for monitoring crayfish species distribution globally. The platform provides an interactive map displaying the range of crayfish species and the crayfish plague pathogen, and is populated with scientifically validated records. WoC is a nascent platform and requires more data contributions to enhance its relevance. Therefore, we invite astacologists allover the world to constantly deliver their published data in the format provided on the platform, thus making the maps complete and up to date.

WoC aims to provide an array of features, including categorized users as registered or non-registered. Non-registered users can only view crayfish locations covered with a hexagon, protecting the species, whereas registered users will be allowed to view exact locations as the source provider allows. Registered users will also be able to download maps and tabular data to their geographic area convenience, selecting for display certain crayfish species or strains of *A. astaci*.

In the future we plan to develop the platform by integrating modern AI tools for automated scrutinization of WoC-indexed and non-indexed literature about crayfish records in the interrogated area and also the management of geospatial data to calculate the ecological optimum for a given species and predict coverage areas.

In conclusion, with our joint involvement, WoC might grow to offer a comprehensive platform for exploring crayfish populations globally. The platform requires your data contributions as astacologists, to ensure that its functionality relies only on scientifically validated records. Contributors will be part of the collective team effort to write the first scientific article about WoC.

**Lucian Pârvulescu**
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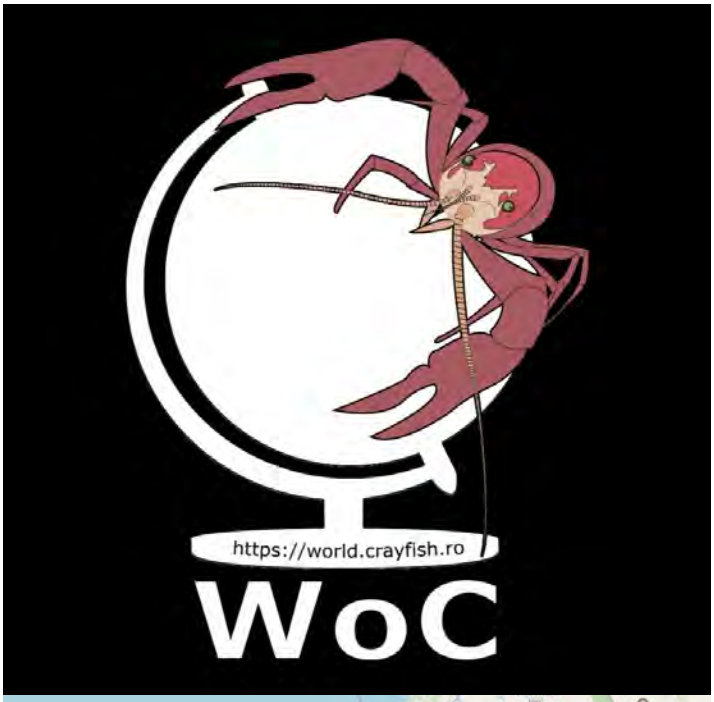


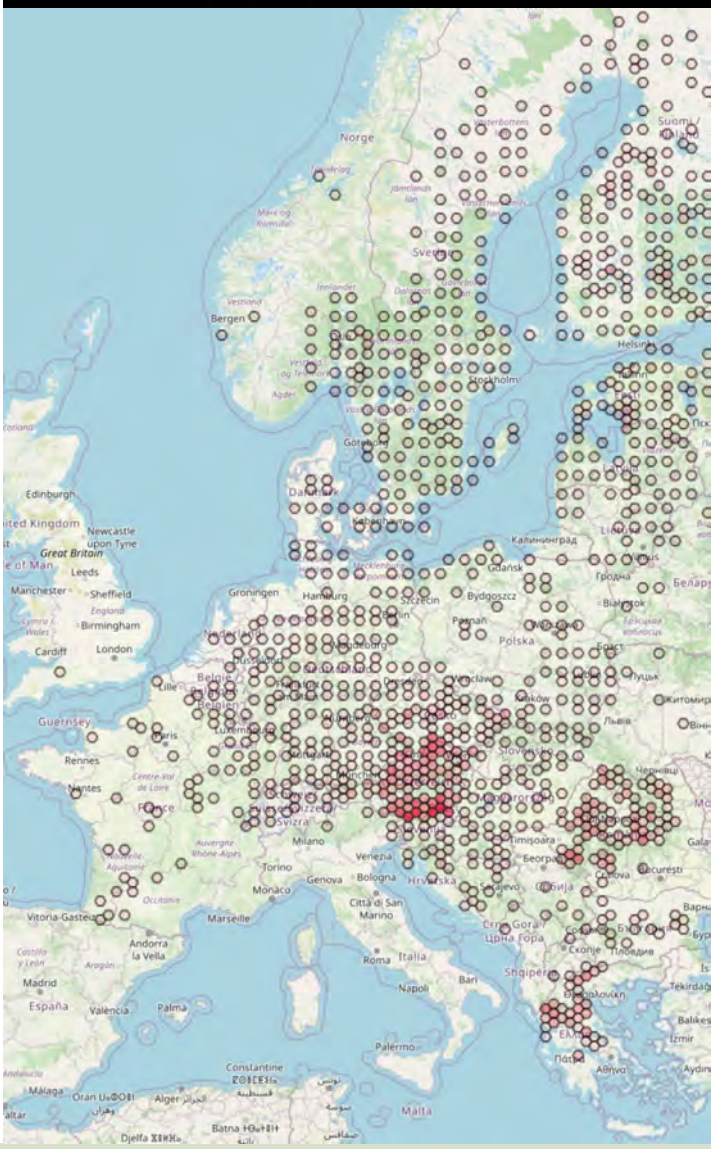

# In Memoriam

## James F. Payne (1941-2023)

James F. (Jim) Payne received his doctorate from Mississippi State University where he studied the life cycle of *Procambarus hayi*. I found out about his work while doing literature review for my dissertation research dealing with culture of *Procambarus clarkii*. We met in 1974 when he traveled to Baton Rouge in April to attend the second International Association of Astacology Symposium following the organization of IAA in Hinterthal, Austria in 1972. Dr. James W. Avault, Jr. was my major professor at Louisiana State University. Dr. Avault had participated in the first IAA symposium and volunteered to host the second one in Louisiana.

I had assisted Dr. Avault in developing a review of current crayfish (crawfish) research in the USA for his presentation in Hinterthal. Of course, this assisted me with the review needed for my research!

At Dr. Avault's direction, I sent out many invitations to those involved in crayfish (crawfish) research in North America. As I recall, I typed many of the invitations myself! There were no word processors back then! I don't have a copy of the letter I sent to Jim but he reminded me a number of times how impressed he was by my polite invitation asking him to participate in our IAA symposium.

Jim was a very enthusiastic supporter of IAA. He served in elected offices including Secretary/Treasurer, President Elect, and President. He actively participated in biennial symposia in North America and Europe.

Jim and I became good friends and visited each other from time to time. Jim was eventually a Professor and Biology Department Chair for Memphis State University/University of Memphis in Memphis, Tennessee. He also served during his 37 years as Acting Dean of the College of Arts and Sciences.

Jim's interest in astacology was career long. He directed several crayfish (crawfish) life history studies and becoming involved in an effort to cultivate *Procambarus* spp. at an agricultural demonstration complex in Memphis. I made several trips to this site to provide advice.

The year 1988 was a time of trial for IAA. Jim was president at that time. He had lost contact with the IAA Secretary/ Treasurer. We had no idea the status of the treasury and who had/had not paid dues. Jim was able to recover IAA's funds and needs to be recognized for his efforts to, quite literally, "save" IAA.

Figure 1. James F. Payne

I became Secretary/Treasurer during Jim's tenure as President and with his encouragement and board approval established the IAA's Permanent Secretariat at the University of Southwestern Louisiana in Lafayette. I had recently been employed there as the Director of the university's Crawfish Research Center.

We established a checking/savings account in Lafayette, Louisiana. We regretted that we were unable to find out who all had paid dues as the membership records dated from before the Secretary/Treasurer problem occurred! We surely lost some members who joined during the period of turmoil.

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Despite membership problems, we had a great Symposium in Baton Rouge. IAA VIII was very well attended with excellent paper presentations, poster presentations, field trips and, of course, a wonderful crawfish boil!

Jim continued to stay abreast of IAA and crayfish studies well past his retirement some years ago. He felt especially honored to be awarded an Honorary Life Membership from IAA for his service to the association.

Jim is survived by his wife of 60 years, Marcella Ryan Payne, a son Dr. Christopher R. Payne, a daughter Polly P. Walker, and three beloved grandchildren Madeline R. Payne, C. Bennett Payne, and J. Parker Payne.

**Jay V. Huner**
Boyce, Louisiana

# Torgny Unestam (1931-2023)

Professor emeritus Torgny Unestam has passed away at the age of 92 in Uppsala, leaving behind his wife Inger, and children Maria and Jan. He began his scientific career in the 1960s at the Department of Physiological Botany at Uppsala University. He began studying the crayfish plague fungus, *Aphanomyces astaci*. During the 70s, the spread of crayfish plague increased mainly because the American signal crayfish was planted in Sweden and later in the rest of Europe. Torgny and I showed that the signal crayfish carries crayfish plague and that this species transmits crayfish plague and makes the restoration of native crayfish species very difficult or basically impossible in Swedish and many European waters.

After a period as a Fulbright scholar in University of California, Berkeley, in 1966-1968, he returned to Uppsala University and built up a research group where several PhD students devoted themselves to studies of crayfish plague and also to some other fungi. His research on the crayfish plague was outstanding and also attracted attention outside the scientific world, partly through our discovery that sugar molecules from fungi can activate the immune system of crustaceans. This work was published in the prestigious scientific journal Nature in 1977. This discovery was then found to apply to all other invertebrates and fish. This resulted in several different companies around the world developing products containing fungal glucans in feed for aquaculture to strengthen defenses against infections.

Torgny was always open to discussing scientific problems. He took his PhD students to congresses, and introduced them to his colleagues abroad. His former PhD students have spent many exciting trips with him in different parts of the world. I remember several trips with Torgny to the USA, UK and a trip together with his family in 1974 when we got to travel and meet several of his friends from his time at Berkeley. This trip went to several American states and for a young PhD student was both exciting and educational.

In 1979, Torgny became professor of forest microbiology at the Swedish University of Agriculture, where he studied the symbiosis between fungi and tree roots, mycorrhiza. One of his works resulted in an article in Nature, which has contributed to new research on the ability of mycorrhizal fungi to bind carbon from the atmosphere.

I also became friends with his family, and was privileged to share Torgny and his wife Inger's hospitality, usually together with visiting researchers and colleagues from all corners of the world. I remember Torgny as a very good and listening mentor, but perhaps above all as a very good friend and my thoughts go out to his family.

**Kenneth Söderhäll**
Professor at Uppsala University, Sweden
Honorary life member of IAA

**Figure 2.** Torgny Unestam, 30 years of age, at Uppsala University studying a crayfish. Source: digitaltmuseum.se.


# 24TH SYMPOSIUM OF THE INTERNATIONAL ASSOCIATION OF ASTACOLOGY


On behalf of the official organizers, the International Association of Astacology, as well as the local organizing and international scientific committee, it is our great pleasure to announce that the 24th Symposium of the International Association of Astacology (**IAA24**) will take place in the city of **Zagreb, Croatia**, from **the 15th to 19th of September 2024**.

Registration will be opened in September 2023 at the IAA24 website:

**iaa24.biol.pmf.hr**

# LITERATURE OF INTEREST TO ASTACOLOGISTS

To view abstracts, etc., click on a reference to be taken to the journal website


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