Citizen Science Meets Burrowing Crayfish

The endangered Central North Burrowing Crayfish ("CNBC"), Engaeus granulatus, a Tasmanian endemic, faces an image problem that may be familiar to crayfish biologists who work in agricultural or urbanised areas. We often hear “Oh them! They’re everywhere” from people lucky enough to live close to a colony, but when all those colonies across the species’ range are put together its area of occupancy boils down to less than two square kilometres. The CNBC suffers from that sort of rareness that involves local abundance, but in a rather small number of isolated colonies.

To help with this image problem, and to collect some data that will be useful for the species’ conservation, Dr Clare Hawkins devised the “Claws on the Line” citizen science project. Until recently Clare worked for the Threatened Species Section of the Tasmanian State government, but after receiving a Churchill Fellowship that took her around the world looking at citizen science she resigned to devote more time to this sort of project, working with the Bookend Trust. “This is about democratising science, and having a great deal of fun along the way”, she says.

Claws on the Line uses distance sampling to measure the density of local colonies of the CNBC. Thirty metre transects are set out across the colony and recorders move along the lines spotting crayfish chimneys and measuring the perpendicular distance between them and the transect line. Some fancy maths (which takes into account differences in chimney detection due to distance from the line, and potentially other factors such as vegetation) produces density estimates from which total numbers in the colony can be calculated. Chimneys are also scored for their age (from “fresh” to a mere hole), giving a measure of activity.

(Continued on page 4)
Dear Crayfish Enthusiasts

At the IAA meeting in Madrid 2016 I was invited by Thomas Stucki, the present president of Forum Flusskrebsere, to take part in their next meeting in the autumn 2017. For those of you that do not know Forum Flusskrebsere (FF) is a very active and lively society that among other things runs meetings every second year, alternating with the IAA meetings. Members of Forum Flusskrebsere are also members of the IAA since part of their membership fee goes to the IAA and thus FF constitute an important and substantial part of the IAA. The meetings are held in German to attract a larger crowd locally and target people that are more comfortable with speaking their native tongue, in this case German.

The meeting took place in Vaduz, the capital of Liechtenstein, a small alpine country between Switzerland and Austria. The meeting was masterly organized by Rainer Kühnis and his wife Andrea. The weather was fine and the view across the alpine landscape was marvelous. The organization ran smoothly and the food during the meeting was excellent comprising numerous small dishes that tasted wonderful.

My three year education in the German language took place a very very long time ago. In addition there are some very strong and difficult dialects of the German language. The talks where however of good quality, very pedagogic and so where the figures and illustrations of the presentations so I think I grasped most of it. I gave a talk myself in the end and luckily for all of us I was allowed to give my presentation in English.

An impressive number of different topics were covered like aquaculture, monitoring and distribution, ecosystem effects of crayfish, evaluation of different actions and measures, protection of native species, invasive species and the new EU regulation on invasive species, combat, removal and eradication of alien crayfish to the benefit of native crayfish. There also were several talks on different methods of outreach activities, the best way to get workable and sustainable actions for preserving biodiversity.

We visited a running water close to Vaduz where major restoration works were carried out. The habitat had become totally unsuitable for the white claw crayfish that once was there due to siltation and heavy deposition of mud. The removal of the mud was done by a large suction truck costing close to 1.5 million Swiss Franc and managed by three men. The truck sucked up the sludge and slurry to make the habitat suitable for crayfish again. There was so much that after cleaning a 3 meters stretch the tank of the truck was filled and the truck had to go away to be emptied before continuing the work. A serious and impressive effort to the benefit of their native crayfish.

We also had a field trip where we visited an aquaculture facility and then passed the border to Austria to have a look at a brock population of the native stone crayfish.
crossed the Swiss border to have a look at a lake with a population of the introduced narrow-clawed crayfish.

The second day finished with a tour up in the Alps to an inn 1400 meters above sea level with a fantastic view for a nice evening meal. When darkness fell we saw no crayfish but had a walk with lit torches uphill and tried to get male red deer to respond to us by imitating their challenge call, before returning to Vaduz.

The final day before returning home we had a guided tour of the Liechtensteiner Landtags. As I understood it this is something like the parliament of Liechtenstein, and we got the opportunity to sit down in the room for the plenary sessions and try the chairs of the people that run the affairs in Liechtenstein, together with the Fürst.

When this reaches you the webpage for registering for the next IAA22 in Pittsburgh in July will be up and running. The meeting is organized by Jim Fetzner and crew and promises to be an excellent event. Please go into the webpage for more details about most things concerned: www.astacology.org/IAA22.

Applications for student travel grants are due quite soon. People attending IAA22 in need of a visa should get that process going soon since this may take some time. Nominations for the Distinguished Astacologists reward are also asked for by the Honorary Members committee as informed in a recent announcement.

Until next all the best and hoping for a prosperous and successful 2018. 🎉

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This approach lends itself very well to amateur science, given a little preparation (particularly choosing and laying out the transects). We recently ran a three day exercise in Turners Wetland, a small swampy creek entirely surrounded by the southern suburbs of Devonport on Tasmania’s north coast. Primary students from two local schools came along, had a muddy morning collecting data and thoroughly enjoyed pushing through the tree ferns and scrub to find burrows. Matthew, 11, with mud up to his elbows and knees said “I thought science was boring, being in a room. This is a lot of fun. When I grow up I would like to be a scientist”. We like that sort of feedback! And the teachers report that the exercise fits well with curriculum content on measuring and data handling.

The final day was open to the general public and attracted a small group of interested locals who went away with a much better understanding of the threatened species that lives right in their neighbourhood. 🦞

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(Continued from page 1)
Short Article

Cambarus bartonii in Berwick, Pennsylvania: Chasing a tiny thread of North American astological history

Recently, while reading a copy of Ortmann (1906)’s historic monograph on the crayfish of Pennsylvania, USA, I noted that Ortmann cited Girard (1852) in referencing the presence of the crayfish Cambarus bartonii at the locality of Berwick in Columbia County, Pennsylvania, USA. Now, this crayfish is rather common and widespread throughout Pennsylvania, as well as other portions of eastern North America (Ortmann, 1906; Hobbs, 1989), and so a very old record of its presence within a small borough in eastern Pennsylvania would probably be of no real importance or significance to most Astacologists. However, this citation in Ortmann (1906) immediately raised my eyebrows because I happen to live in Columbia County, Pennsylvania, and in fact was born at Berwick Hospital!

So of course, out of personal interest I immediately tracked down a copy of Girard (1852)’s paper to see if I could find any other information. In his paper, Girard (1852) simply lists the collection of C. bartonii in Berwick, Pennsylvania. Girard (1852) described material from the collection of the Smithsonian Institution, which was primarily (according to Girard, 1852) collected by Spencer Fullerton Baird, the first curator of the National Museum at the Smithsonian. Baird collected an impressive amount of biological material in his day. Prior to his appointment at the Smithsonian, he grew up in southeastern Pennsylvania and attended and then taught at Dickinson College in Carlisle, Pennsylvania, so it is likely Baird had collected the C. bartonii specimen(s) from Berwick, as Baird collected prolifically during this time (Smithsonian Institution Archives, 2017). Unfortunately, any definitive information regarding the collector and other collection details regarding the C. bartonii collected in Berwick and mentioned by Girard (1852) appears to be lost to history: inquiries into the holdings at the Smithsonian National Museum of Natural History suggest these and associated records have been lost. Interestingly, Hagen (1870) also mentions a female specimen of C. bartonii from Berwick, Pennsylvania “communicated” by Professor (William) Stinson, which Hagen determined was consistent with specimens of C. bartonii collected in the Schuylkill River in southeastern Pennsylvania. Since no other data appear to be available on these collections, I casually speculate that they might have been taken from the Briar Creek watershed, which encompasses much of the municipality of Berwick, Pennsylvania. Briar Creek is a smaller tributary of the “north branch” of the Susquehanna River (and I fondly recall collecting Cambarus bartonii last summer within Briar Creek!). It is possible they also might have been collected in the Susquehanna River itself, which borders the southern portion of Berwick, although this is unlikely as C. bartonii in Pennsylvania are not typically found within large rivers (Ortmann, 1906).

If any readers of Crayfish News might have any comments, suggestions, information, etc. on further “chasing” this small historical thread, I’d love to hear from you! I wish to express my sincerest gratitude to Rafael Lemaitre and Karen Reed (Department of Invertebrate Zoology, Smithsonian National Museum of Natural History) for looking into my inquiries regarding C. bartonii specimens from Berwick, Pennsylvania in the collections under their care.

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References


Meeting Announcements

The IAA22 Organizing Committee, on behalf of the International Association of Astacology, invites you to attend its 22nd International Crayfish Symposium, which will be held in Pittsburgh, PA, USA. The event will be hosted by the Carnegie Museum of Natural History and will commence with a crayfish identification workshop on the Sunday afternoon before the meeting (July 8), followed by 4 days of talks/posters, a 1-day field trip (mid-week), and will wrap up with a 2-day post-conference tour (limited availability). Details on the submission of abstracts, meeting program schedule, and registration fees will appear on the IAA website as the meeting approaches.
Literature of Interest to Astacologists


NISHIMA S, NISHIKAWA C AND MIYASHITA T (2017). Habitat modification by invasive crayfish can facilitate its growth through enhanced food accessibility. BMC Ecology 17(1).


