



CRAYFISH NEWS

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OF ASTACOLOGY

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TRIALLING TAU KŌURA IN THE UK

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At IAA 21 in September 2016 I was fascinated by Ian Kusabs' talk on the use of tau koura, or bracken bundles, to monitor for native crayfish *Paranephrops planifrons* in New Zealand (Kusabs & Quinn 2009). This is a traditional Maori harvesting method involving the placement of large bundles of a bracken fern *Pteridium esculentum* on lake or river beds which the crayfish then colonise. As the UK has an abundant source of its own bracken fern, *Pteridium aquilinum*, I determined to have a go when I got home.

'Our' bracken is abundant at one of my American signal crayfish *Pacifastacus leniusculus* field sites, the river Barle in Exmoor south west England, so in August 2018 bracken was collected and tied into a large bundle which was then deployed in a backwater of the river, tied to a tree and weighed down so it stayed on the river bed (Fig. 1). The bundle was left for a month and then harvested (Fig. 2) by placing a tarp underneath and carefully removing it from the river, allowing water to run out. We then dismantled the bundle and removed all crayfish within. We caught a total of 15 mainly juvenile crayfish, size ranging from 13 to 39 mm orbital carapace length (OCL) with the mean size being 21 mm OCL. We deployed a second bundle in September and retrieved it in October with similar results.

In my tiny sample the catches were lower than that of Ian's, which were 25-97 crayfish per bundle (or whakaweku), and we caught a smaller size range. This may be explained by the northern hemisphere's bracken *P. aquilinum* being less robust than its southern cousin. *P. aquilinum* grows to around 150 cm, does not reach full height until late summer and

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PRESIDENT'S CORNER



Tadashi Kawai, Ph.D.
IAA President (Japan)

Dear IAA members

Let me take you on a journey back in time. You might not believe it, but our knowledge on fossil freshwater crayfish appears to be remarkably limited. So far, only professor Steve Hasiotis has contributed publications on fossil crayfish burrows in our journal *Freshwater Crayfish* (for example Hasiotis, 1999). However, there is a new wave of paleontology coming up for the IAA, as French paleontologist Dr. Audo Denis will join

our association. He is working on fossil crayfish in China during his postdoctoral position with his Ph.D. students. I recently have collaborated on fossil crayfish with him and his laboratory members.

Because of these new paleontologists joining the IAA, I took a closer look at the fossil of the IAA insignia (Figures 1 and 2). This specimen of a fossil crayfish has been passed on from one IAA president to the next since 1994. More detailed information on this tradition can be found in *Crayfish News* volume 38(2), in an article written by past IAA president Dr. Susan Adams. The fossil is kept in a solid iron case and housed in a nice display box. The case contains two pieces of paper: one is a list of successive IAA presidents, the other one is an explanation on the fossil crayfish (Figure 3). It is described on the paper that the scientific name of the fossil is *Aeger tippularius* (Schlotheim, 1822), "*Aeger bronni*" (sic) (Oppel, 1862), or "*Aeger Antrimpos speciosus*" (sic) (Münster, 1839), Probably Horton Hobbs would know better and with pleasure (sic) (Figure 2). To tell the truth, there



Figure 1. The IAA fossil with its display box, a velvet cover and two pieces of paper.



Figure 2. Close-up of the fossil, *Aeger* sp.

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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*.

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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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appears to be a problem with the scientific names of "*Aeger bronni*" (sic) (Oppel, 1862) and "*Aeger Antrimpos speciosus*" (sic) (Münster, 1839). I searched in the list of fossil decapod crustacean species by Schweitzer et al. (2010), to find a taxon named "*A. bronni*". However, there appeared to be no *Aeger bronni* in the list and I could find only two fossils with the the same specific name: *Dusa bronni* (Oppel, 1862) and *T. bronni* (Vosinsky, 1848) (= *Glypheia vosinskyi* Lahusen, 1894). These two species are very different from the taxon of Solnhofen. Another thing is that "*Aeger Antrimpos speciosus*" (sic) (Münster, 1839) has two genus names. Unfortunately, Dr. H. Hobbs Jr. never observed the fossil crayfish. If he had had the chance to have a look at it, I believe that he would have recognized that this is not even a freshwater crayfish. The genus *Aeger* is classified as a group of penaeoid shrimps (Burkenroad, 1963, De Grave *et al.* 2009). Freshwater crayfish have large first pereopods forming chelae, whereas penaeoid shrimp rarely have such large chelae (Figure 2). More precisely, Dr. Guenter Schweigert from the State Museum of Natural History in Stuttgart - who is a recognized specialist of Solnhofen crustaceans - suggests this fossil may be a *Franconipenaeus meyeri* (Oppel, 1862).

From the point of view of crustacean biology and paleontology, this fossil is a shrimp. However, as President of the IAA, I declare fair and square, that this fossil is a crayfish! Because this fossil forms the basis of a noble tradition and symbolizes the pride of our academic society of specialists on freshwater crayfish.

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According to Dr.Theo Kress,Weissenburg,Bavaria
one of the 3 species

Aeger tippularius (1822 SCHLOTHEIM)

Aeger bronni (1862 OPPEL)

Aeger Antrimpos speciosus (1839 MÜNSTER)

The petrified crayfish was found in the limestone-
dises of Solnhofen,Bavaria.Jura,135-145 million years
years ago.Probably Dr. Horton Hobbs would know
better and with pleasure.

At the same place the Archaeopterix
was found!

Presidents of the IAA:

Per Brinck (Sweden) 1972-1974
James Avault Jr. (USA) 1974-1976
John Mason (Canada) 1976-1978
Ossi Lindqvist (Finland) 1978-1981
Stellan Karlsson (Sweden) 1981-1984
Pierre Laurent (France) 1984-1987
James Payne (USA) 1987-1990
David Holdich (England) 1990-1992
Jay Huner (USA) 1992-1994
Jostein Skurdal (Norway) 1994-1996
Paula Henttonen (Finland) 1996-1998
David Rogers (England) 1998-2000
Glen Whisson (Australia) 2000-2002
Keith Crandall (USA) 2002-2004
Francesca Gherardi (Italy) 2004-2006
Catherine Souty-Grossett (France) 2006-2008
James Furse (Australia) 2008-2010
James Fetzner Jr. (USA) 2010-2012
Leopold Füreder (Austria) 2012-2014
Susan Adams (USA) 2014-2016
Lennart Edsman (Sweden) 2016-2018
Tadashi Kawai (Japan) 2018-

Figure 3. Two pieces of paper in the box of the IAA fossil

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(Continued from page 1)

dies off by December in the UK, whilst *P. esculentum* in New Zealand had grown sufficiently large to be used in whakaweku from December through to the following September. 'Our' bracken also broke down rapidly, being completely dead and decomposing within a month of deployment (Fig. 2).

Although the catches in our bundles were relatively low and our bracken cannot form the large and robust bundles used in New Zealand, this is a useful way of monitoring the reproductive status of native crayfish populations through detecting juvenile crayfish, which are hard to capture using other methods.

Nicky Green
United Kingdom

Reference

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Figure 2. Bracken bundle one month later

SHORT ARTICLES

NEW FINDINGS OF EAST ASIAN CRAYFISH

In Asia, a total of six crayfish species has been reported in Far East Asian countries with the genus *Cambaroides* (Decapoda: Cambaroididae) being the only member in East Asia (Kawai et al. 2015). *Cambaroides dauricus* (Pallas, 1772) has been recorded from the mainland of Russia, North Korea, China and Mongolia (Kawai et al. 2015), and the closely related species *C. koshewnikowi* and *C. wladivostokiensis*, were originally described as subspecies of *C. dauricus* from Russia (Birstein and Vinogradov, 1934). Starobogatov (1995) elevated *C. dauricus koshewnikowi* and *C. dauricus wladivostokiensis* from subspecies level to the species level based on morphology of rostrum and telson, but Fitzpatrick (1997) disagreed with this elevation. Taxonomic re-examination using molecular analyzing of *C. koshewnikowi* and *C. wladivostokiensis* is an urgent issue for Asian astacologists. Known localities of *C. koshewnikowi* are in the Lower Amur River near Nikolaevsk-na-Amure in freshwater or brackish water including the adjacent waters of the Amur estuary (Amur Liman or Amur Mouth). However, samples of *C. koshewnikowi* have not been obtained since its original description. It was supposed that the species may be extinct (Kawai et al., 2015). This has led to a limited development of the taxonomic study of East Asian crayfishes.

Evgeny Barabanshchikov, one of the authors, has occasionally visited the type locality. He has been talking to fishermen in

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Figure 1. Bracken bundle deployed and weighed down in the river



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order to obtain any information available on the freshwater crayfish that are being fished from Lower Amur. Finally, he got a photo of a crayfish that was collected from Lower Amur in Licha Bay, 45 km upstream from the mouth of Amur River, in 2017 (Figures 1 and 2). Since the quality of the photo is not good, we could not identify this East Asian crayfish. However, we feel that the morphology of the crayfish resembles the type specimens of *C. koshewnikowi* in the Museums of the Moscow State University and Zoological Institute in Saint Petersburg. Previously, only one species of crayfish was found in this zone: *C. koshewnikowi*. We hope that more samples of the species can be collected from Lower Amur in the summer of 2020.

Evgeny Barabanshchikov

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Tadashi Kawai

Hokkaido, Japan

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Figure 1. (above) Photo of a freshwater crayfish, collected from the type locality of the presumably extinct *Cambaroides koshewnikowi*.

Figure 2. (below) Locality of the freshwater crayfish from Lower Amur, Russia.



INVASION HISTORY OF THE ALIEN RED SWAMP CRAYFISH, *PROCAMBARUS CLARKII*

The red swamp crayfish, *Procambarus clarkii*, is one of the most popular among astacologists and it is of economic importance in many countries. Native to southern USA and northeast Mexico, this species has been intentionally translocated to Asia, Africa, Europe, South America, as well as the western and eastern sides of North America. For example, the first introduction to Asia from Louisiana, New Orleans, was motivated by farmers who used crayfish as food for breeding bullfrogs in 1927 (Kawai and Kobayashi, 2011). However, since the 1960s, the red swamp crayfish was mainly introduced outside of its native range to set up a similar harvesting system as the farmers in Louisiana State had done. In fact, the red swamp crayfish has been harvested for commercial activities in North America, Africa, Europe and China, where the species has subsequently been translocated by human (secondary introductions), leading to a rapid spread worldwide. Therefore, unravelling the complex history of this highly invasive species represents a relevant step in understanding its global invasion process and is of vital importance to establish efficient strategies for controlling or preventing future invasions.

Recently, one paper has showed the main invasive routes of the red swamp crayfish as well as the genetic differences between native and invasive populations in the Northern Hemisphere based on molecular techniques (Oficialdegui et al., 2019). To do

that, a total of 1416 mtDNA sequences of the red swamp crayfish from 122 populations (22 native and 100 invaded) were used. Our results confirmed several invasion routes reported historically and unveiled others that were not previously described. For example: two invasion routes eastwards and westwards from the native range in the USA; the small propagule pressure (few individuals were translocated) in the introduction to Japan and subsequently to China; the introduction of the red swamp crayfish from Louisiana to southern Spain and, from there, multiple secondary introduction events took place to the rest of the Iberian Peninsula, the south of France and Italy; and also, the appearance of an unknown haplotype in the north of the red swamp crayfish distribution, absent in southern populations, suggested that other introduction events could have occurred in Europe (Figure 1). Additionally, we found a high haplotype diversity in the native range, but also in some non-native areas such as western USA and some diversity hotspots in Europe (e.g. southern Spain or Italy), suggesting a complex pattern of multiple introductions with many introduction events and individuals involved. All these findings suggest that the invasion patterns of the red swamp crayfish are more complex than generally assumed.

For decades, the red swamp crayfish has been commercially used as seafood and has also been sold in shops. This fact could have caused accidental or deliberate introductions

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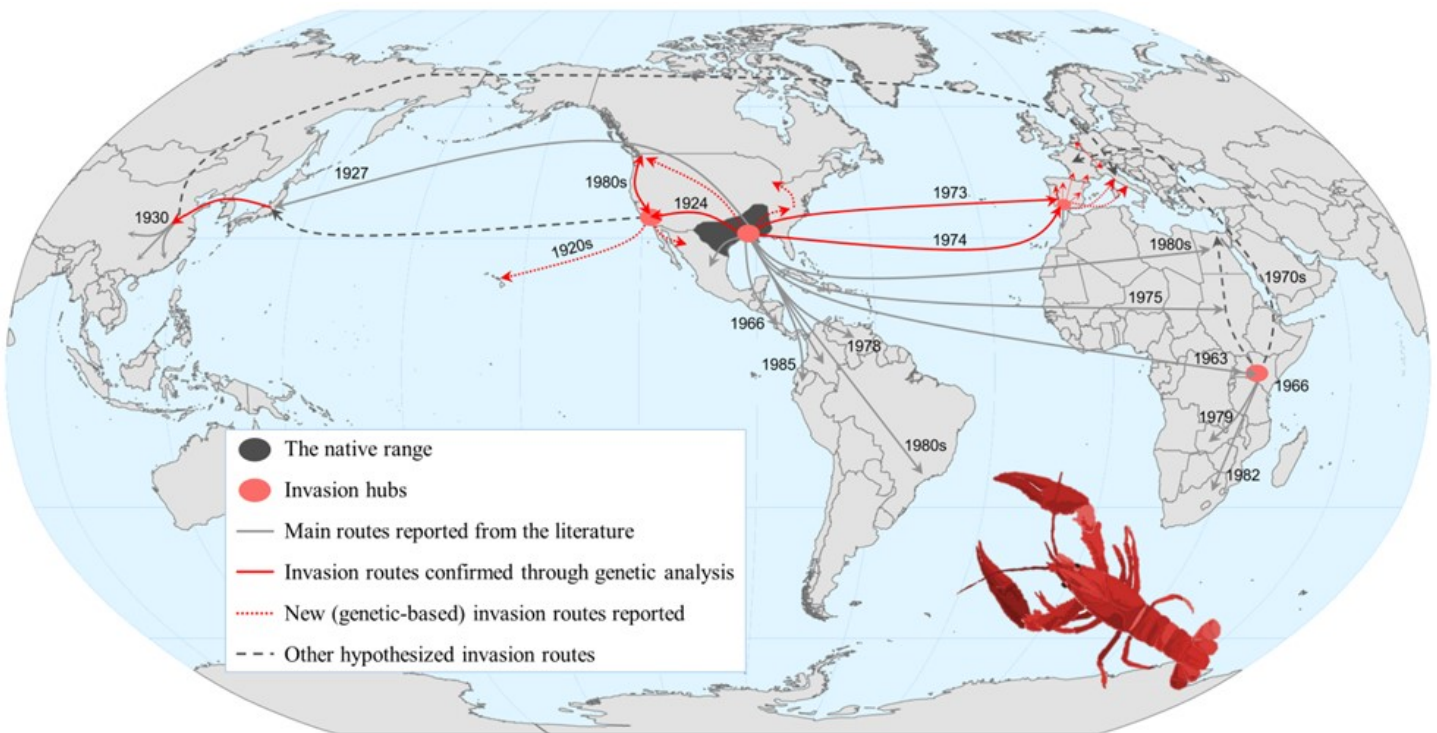


Fig. 1. The global invasion routes of the red swamp crayfish, *Procambarus clarkii*, based on mitochondrial DNA (present study) and reports from the literature.



(Continued from page 6)

into the wild. For instance, the red swamp crayfish was sold in department stores or night shops of Changchun City, southwestern China, in August 1939. The cost of one specimen was around 50 Japanese Sen (100 sen = 1 Japanese Yen) so that the value of 50 Japanese Sen in 1939 could be exchanged to 3 USD/specimen in 2019. An exchange based on the [website of the National Diet Library](#), Japan (information was downloaded on 1st September 2019). Although this cost is approximate, the price of one specimen seems to be not too expensive and affordable to anyone. Thus, this reasonable cost of the red swamp crayfish in China could have facilitated its rapid spread across East Asia in the beginnings of the invasion. This approach could be similar to the pet trade nowadays. Therefore, more effort to control the trade involving highly invasive species should be taken due to their ability to be established, thrive and spread rapidly causing severe damage over non-native ecosystems.

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Red swamp crayfish (*Procambarus clarkii*). Photo by Thomas Abeel

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GOTLAND CRAYFISH MEETING

CRAYFISH PARTY SOMEONE?

Kräftskiva (crayfish party) is a traditional summertime celebration in Sweden. The consumption of crayfish is an important part of traditional Scandinavian culture. At the same time, the noble crayfish is critically endangered due to continuous spread of crayfish plague, pollution, acidification, and competition from introduced North American signal crayfish.

In August, I participated at the regional European meeting of the International Association of Astacology at Uppsala University - Campus Gotland. Apart from usual crayfish topics like crayfish plague, conservation, genetics, physiology, management and invasives there was a special theme on aquaculture in general and crayfish culture in particular.

Why Gotland? Since the island is free from the crayfish plague, there is a huge potential to cultivate noble crayfish there. The meeting was organised by the Swedish University of Agricultural Sciences, Blue Centre Gotland, Eastern Finland University, Swedish Rural Network and Gotland County Administrative Board.

It was really inspiring to meet all crayscientists, crayexperts, cray-enthusiasts and any other - farmers, managers, scientist etc., as well as these beauties in the picture (Figure 1) - noble crayfish cultivated in one of the farms on Gotland.

Izabela Alias
Sweden



Figure 1. Noble Crayfish (*Astacus astacus*) in a Gotland farm



Figure 2. IAA Gotland group picture



IAA GOTLAND 2019 AWARDS FOR MERITORIOUS EFFORTS

At the IAA Gotland 2019 conference, the student award committee had a tough process of choosing among many praiseworthy candidates. Finishing their task, they decided to hand out four awards for best scientific and innovative oral and poster presentations. The awards included a diploma signed by the price committee, travel expenses support and a set of useful and essential utensils when organising a traditional Fennoscandian crayfish party.

To receive the price for best oral presentation the criteria were: a talk with a content to be remembered for the good reasons, good timing, an outline that was clear, including description of methods, reasonable presentation and use of statistics, future perspectives like what needed to be done now following the results, and a good contact with the audience. The winners were **Mihaela Ion** (Romania) and **Ángel Correa** (Spain).

To receive the price for best poster presentation the criteria were: eye catching layout, I stop and read the poster, I stay and read more even though it is not my topic, necessary information but not too much, scientifically sound with reasonable conclusions, and could answer questions and explain poster content to visitors. The winners were **Ranja Andriantsoa** (Germany) and **Caterina Francesconi** (Germany).

In addition, honorary awards went to **Nicky Green** who received the Scandinavian award, **Gunilla Rosenqvist** for always being in the centre of organising everything, **Andreas Pettersson** for being the steady pillar in the organising committee, and **Per Nyström** for excellent essential assistance whenever he or we thought it was needed.

The Student Awards committee:

Lennart Edsman
Susanne Eriksson
Japo Jussila
Per Nyström



THE IAA GOTLAND RESOLUTION

BACKGROUND

The IAA Gotland 2019 crayfish conference took place August 27-30, 2019 at Campus Gotland. It started with a local and regional day in the Swedish language and after a reception, the international participants joined in for two days of keynotes, oral and poster presentations and a workshop on Alien Invasive Species. The last day was devoted to an excursion on Gotland visiting sites for noble crayfish farming, for extermination of the invasive signal crayfish and for restoration of noble crayfish populations. The tour ended at the research station Ar where we also had the conference banquet in the form of a traditional Swedish crayfish party. The international part of the conference attracted more than 50 participants from 15 different countries.

FOREWORD

(From the Book of Abstracts for the IAA Gotland 2019 Crayfish Conference)

We should take freshwater crayfish seriously since they are partially responsible for the European aquatic ecosystems wellbeing and health. When present in healthy populations freshwater crayfish constitute an overwhelming majority of the biomass that dwells and moves around on the bottom of lakes and running waters. This native ecosystem engineer and manager is facing dire straits, mainly due to the careless introduction of alien crayfish, construction of waterways, pollution and general destruction of the aquatic environment.

One of the key players in this complex network of natural resource management are the researchers focusing on various issues of freshwater crayfish ecology and biology. The facts and the best current knowledge should be presented and shared openly at all times, including at scientific seminars like this one. Common public and decision makers should also be informed. We cannot expect that only wise decisions will be taken in the future, but decision makers must be aware of the risks they are dealing with. Current facts and best available knowledge may be ignored but the information to support good decisions must always be available. We need to act - soon - and preferably yesterday. No later than today. Let us discuss debate and publish the information required

to improve the chances of the wellbeing of aquatic ecosystem thus offering a brighter future for native European crayfish.

We choose Gotland as the venue for a reason. It is a kind of a heaven for the native noble crayfish with the whole island declared an ark site for noble crayfish. Gotland is free from the invasive North American species signal crayfish and the fatal disease crayfish plague, since the county administration has promptly eradicated the five illegal occurrences of signal crayfish found earlier, with insect poison. Conditions are good for noble crayfish farming with lots of sun hours, mild climate, good water quality with high pH and plenty of calcium for the crayfish shells. Noble crayfish farming is the only form of crayfish farming that is economically feasible and with the recent EU regulation on invasive alien species it is the only form of crayfish farming permitted in Sweden. Gotland has a strong tradition of successful crayfish farms. Noble crayfish fetches good prices as crayfish for consumption, with an even better price as stocking material for restoration of populations in natural waters as a conservation measure. The by far best price is paid when noble crayfish is used as a basis for events and experiential tourism.

The presentations at IAA Gotland 2019 centres on freshwater crayfish and the usual hot topics like ecology, physiology, genetics, management, conservation, invasive species, crayfish plague and the side theme aquaculture. It also stretches out to kelp and lobster farming and subjects spans from plate tectonics over eDNA to molecular genetics. Geographically, apart from Europe it also deals with crayfish in Australia and on Madagascar. The wide variety of topics just shows how essential crayfish are in freshwater ecosystems.

This conference is a joint effort of Swedish University of Agricultural Sciences, Blue Centre Gotland, University of Eastern Finland, Uppsala University, Gotland County Administrative Board, International Association of Astacology and the Swedish Rural Network.

The IAA Gotland 2019 organising team



RESOLUTION

The “IAA Gotland 2019 Crayfish Conference” of the International Association of Astacology was held at Campus Gotland in Visby, August 27-30, 2019. These conclusions from the conference and the workshop of managing invasive alien species was summarised by Lennart Edsman, presented to the participants on August 29 and approved by the participants of the conference.

1. The native European freshwater crayfish species are endangered throughout their habitat range. There is a need for urgent actions to prevent the negative factors affecting them and to promote the conservation of these species. Key actions are prevention, early detection, rapid eradication, efficient restriction and control of the alien crayfish species. In addition, common public awareness campaigns are urgently needed.
2. It has been scientifically demonstrated, that there are actions and measures that will favour the restoration and conservation of native European crayfish species, that have been implemented and that have been successful. On the contrary, choosing the “no-action” strategy inevitably results in the decline of native crayfish species.
3. Currently, the main threat is the effect of alien invasive crayfish species, which negatively impact not only native crayfish, but also the functioning of freshwater ecosystems and their ecosystem services.
4. In Europe, the main negative effect is the transmission of the detrimental disease named “crayfish plague”. This disease is spread by introduced North American freshwater crayfish such as *Procambarus clarkii*, *Pacifastacus leniusculus*, and *Faxonius limosus*. Therefore, translocations and introductions of these alien crayfish species represent the main reason for the spread of the crayfish plague.
5. The constant spread of alien crayfish species is also causing a rapid loss of native crayfish habitat in addition to human habitat alteration. This urges decision makers to apply methods to prevent, control and eradicate these invasive crayfish species, following successful case-study examples carried out in the UK, Italy, Norway, Spain and Sweden. These actions must be prioritised and financially supported.
6. It is clear from the scientific evidence presented, that the control of invasive crayfish species by intensive recreational and commercial fisheries does not represent a feasible method for this purpose. Instead, it favours the further spread and increase of these alien populations.
7. Activities disseminating information should be continuously promoted to increase the public awareness of native crayfish conservation and to avoid the further spread of alien crayfish and crayfish plague.

On behalf of the IAA Gotland 2019 delegates, Visby, Gotland, Sweden, 30.8.2019



Dr. Lennart Edsman



Adjunct Prof. Japo Jussila



Dr. Rolf Gydemo



THE UNEXPECTED BUT POSITIVE EFFECTS OF A PIECE OF PAPER

THE GOTLAND RESOLUTION

A new EU regulation (EU 1143/2014) concerning invasive alien species and their control came into force in August 2016. Freshwater crayfish like signal crayfish, red swamp crayfish, spiny-cheek crayfish, marbled crayfish and virile crayfish were all listed as invasive and lethal due to their role in spreading the crayfish plague to vulnerable native crayfish species. In response to the regulation EU member states had to take management measures to counter the negative effects of alien crayfish.

In England, Wales, Denmark and Sweden a not so bright idea was advocated, to open up an intense fishery in order to eradicate or at least control the invasive crayfish. Easier rules to promote commercialisation and further marketing and selling of the catch was another idea. The expression “if you can’t beat them, eat them” has been used as a slogan in this respect. The strongest lobby was obviously from fisherman who could first be subsidised for removing crayfish and then also profit by selling the catch.

There is however a serious catch to this idea. Firstly fishing in itself has never managed to eradicate a population of crayfish, mainly because the traps only catches a fraction of the smaller individuals. Eradication has not worked even when predatory fish were also added. Heavy fishing

in turn relaxes the competition and you instead may end up with a much denser, but stunted population, of no commercial value. Moreover, the plague remains in the population. More serious though, is that crayfish are transported, handled and traded live and there are numerous examples from several countries that this rather furthers the spread of crayfish and plague to new waters in the neighbourhood, instead of controlling it (see point 6 in the resolution on page 11 in this issue).

The Department for Environment, Food and Rural Affairs (DEFRA) and the Welsh Government issued a consultation for views on the management measures of invasive crayfish. An intense fishery for control was a much favoured suggestion from many stakeholders and a strategy that the authority also first were inclined to accept. I then submitted the Gotland resolution and our experiences in Fennoscandia, Switzerland, Italy and Spain and got immediate response from DEFRA. They wanted more material, facts and scientific publications on the eradication issue. We sent that and they decided to give up the “intensive fishing as an eradication tool” strategy. The following was publicly published after a decision was made by the Minister:

“Based on the consultation and stakeholder engagement we will amend the proposals set out in Appendix D for Signal crayfish in the following way:

- i. Exclusion Zones (in England and Wales) - The current policy of not allowing the commercial exploitation of Signal crayfish in the “exclusion zone”, (currently, commonly referred to as the “no-go area” as prescribed by the Schedule to the Prohibition of Keeping of Fish (Crayfish) Order 1996) will be maintained. This would mean that the status quo will be maintained, with trapping in the exclusion zones allowed only for conservation, scientific, or fisheries management purposes, and no commercial use of any kind permitted.
- ii. Containment zones (in England) - Trapping of signal crayfish will be allowed in the containment zones (currently, commonly referred to as the “go area” under the Prohibition of Keeping of Fish (Crayfish) Order 1996) (where an authorisation has been granted), but sale of live Signal crayfish will not be permitted. Crayfish must be dispatched at the place of capture or taken to a processing facility which has a licence to handle live Signal crayfish. Facilities would not be licensed to obtain or receive crayfish taken from exclusion zones. This

(Continued on page 13)



(Continued from page 12)

would not remove the opportunity for the sale of trapped and processed dead Signal crayfish, or prevent the exploration of alternative markets for dead Signal crayfish, such as in bait products, or animal feed (subject to the necessary treatment).

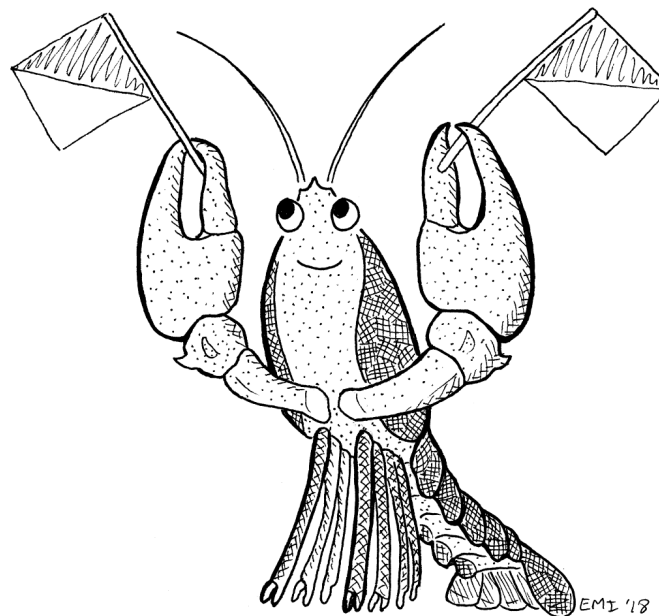
- iii. Containment zones (in Wales) - The commercial exploitation of Signal crayfish in the “containment zone”, (currently, commonly referred to as the “go area” as prescribed by the Schedule to the Prohibition of Keeping of Fish (Crayfish) Order 1996) will not be permitted. This would mean that the status quo will be maintained, with trapping in the containment zones allowed only for conservation, scientific, or fisheries management purposes”.

At the same time in Denmark, armed with the Gotland resolution, IAA member Sune Agersnap went to a meeting with the Danish environmental agency (DEA) and people from the fisheries control. The meeting was about a management plan for invasive crayfish. DEA listened to the arguments and were very interested to find solutions. Before this meeting, they were trying to make it easier for people to fish and sell their catches. The first outcome of the meeting was that they recognized that they cannot eradicate signal crayfish by trapping. So all thoughts of experimental and commercial fisheries on signal crayfish are now stopped and restrictions on using traps for fishing will come. The resolution was a strong tool to show DEA that the scientific crayfish community in Europe was behind the

statement and the advice given by Sune.

So a resolution may seem like a paper tiger of no significance, but in these cases it actually made changes happen to the better. A two-fold success story!

Lennart Edsman
Sweden



Signal crayfish by Emily M. Imhoff © 2018



STUDENT TRAVEL AWARDS – IAA23

- STUDY CRAYFISH AND SEE THE WORLD? YOU BET! -

Dear Astacologists

The 23rd Biennial Symposium of the International Association of Astacology (IAA) will be held in Hluboká nad Vltavou (in the Czech Republic) June 29th - July 3rd 2020.

The IAA23 symposium website can be accessed via IAA23.com.

The IAA is offering 5 Student Travel Awards, valued at \$500 USD each (cash), to assist students in attending the symposium, and applications are now open for the IAA23 Student Travel Awards.

To be eligible to apply for a Student Travel Award, applicants **must be** IAA student members in good standing by the application deadline, and **must be** presenting at the symposium (poster or oral presentation).

Deadline and other dates:

- Deadline for Student Travel Award applications is the 10th February 2020
- Applicants will be notified of application outcome on or before the 15th March 2020
- The symposium early student registration deadline is the 31st March 2020

Please visit the IAA23 website to download the Student Travel Awards application form, which includes additional details on the awards.

Note that IAA student memberships **are free for the first year**. However, processing IAA membership applications may take several days, so act early.

Membership forms for the IAA, and additional information on IAA membership, is available at: www.astacology.org/Membership.asp.

For IAA membership questions, contact Jim Stoeckel (the IAA Secretariat): jimstoeckel@auburn.edu

All questions regarding the Student Travel Awards should be directed to the Chair of the IAA Student Travel Awards Committee (not the symposium organisers): j.furse@griffith.edu.au

We hope to see you at IAA23.

Sincerely,

James Furse

Chair - IAA23 Student Travel Awards Committee



CALL FOR NOMINATIONS: THE 2020 NOBLE CRAYFISH AWARD

Greetings fellow astacologists!

Have you or a fellow International Association of Astacology (IAA) member been actively involved with projects focused on educating and introducing the public to our most cherished aquatic organisms? Would you like to win \$100 and critical recognition from your peers? If so, then this announcement is for you! We, the members of the Noble Crayfish Award Committee, are proud to present the 3rd Noble Crayfish Award. This prestigious award is presented on a biennial basis during IAA symposiums to recognize outstanding astacologists involved in public outreach and extension during the previous two years. We are happy to announce a call for nominations for the period of July 2018 - July 2020 and are very eager to read about the creative ways you have sparked public interest in crayfish biology and conservation.

Eligible nominees are any currently active IAA members including professors, governmental and non-governmental scientists, and, of course, students. Valid outreach activities must be crayfish-focused and must have occurred within the aforementioned time period. Examples of such outreach activities include, but are not limited to: volunteer lectures for classes or organizations, advocacy for crayfish conservation, internet blogs, online and radio interviews, and other similar and relevant activities. Nominating materials may be obtained from the [IAA23 website](#). Only complete applications will be considered for the prize. The deadline for all nominating materials will be May 29, 2020 and the winner will be announced during the IAA Biennial Symposium on Freshwater Crayfish (June 29 - July 3, 2020; attendance not required to be eligible for the award). We look forward to hearing from you!

Lastly, the Noble Crayfish Award Committee is made up entirely of current students. Because most or perhaps even all of the current committee members will finish their graduate degrees in the foreseeable future, we will be looking for new members to take our places following IAA23. If you are a student, active in the IAA and interested in serving on this committee in the future, please contact us at noblecrayfishaward@gmail.com to express your interest.

Sincerely,

The Noble Crayfish Award Committee

Mael Glon
Zanethia Barnett
Will Budnick

“

SCIENCE THAT IS LOCKED
IN AN ‘IVORY TOWER’
DOES LITTLE FOR SOCIETY.

”

AUTHOR UNKNOWN



CALL TO APPENDAGES – SEEKING EXPRESSIONS OF INTEREST

The IAA would like to sincerely thank Mael Glon for his service since IAA22 (Pittsburgh 2018) as the inaugural IAA Social Media Coordinator. Similarly, many thanks to Zanethia Barnett, William “Bill” Budnick, and Mael Glon for serving as the Noble Crayfish Award Committee members since IAA22 (Madrid 2016).

Zanethia, William and Mael have indicated they will be stepping down from their Social Media Coordinator and Noble Crayfish Award Committee positions after IAA23 (Czech Republic 2020). The IAA is seeking expressions of interest from members interested in filling the soon-to-be vacated positions.

These volunteer positions have no fixed terms, but candidates able to fill the positions for 2 years would be ideal (i.e. fill the positions between biennial IAA symposia).

The anticipated duties for these positions are outlined below:

IAA SOCIAL MEDIA COORDINATOR

- Finding and identifying material of interest to the IAA Membership.
- Posting and sharing that material *via* the IAA Facebook and Twitter accounts.
- Actively communicating with scientists, institutions and organizations related to the interest of the IAA *via* the IAA social media accounts.

Duties may be ‘weekly’ in nature. Accordingly, this position is well suited to members who monitor the news and are well connected to social media.

NOBLE CRAYFISH AWARD COMMITTEE

- Soliciting applications for the Biennial Noble Crayfish Award.
- Assessing and ranking the applications.
- Announcing and presenting the award at IAA Symposia.

The duties associated with these positions are somewhat more sporadic in nature.

The IAA is seeking expressions of interest from applicants interested in filling these positions; please send expressions of interest (or any questions) to James or Juan Carlos.

If possible, the outcomes of this recruitment process will be announced at IAA23 in July 2020.

James M. Furse

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Universidad de Costa Rica, Centro de Investigación en Ciencias del Mar y Limnología (CIMAR), San José, Costa Rica
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LITERATURE OF INTEREST TO ASTACOLOGISTS

To view abstracts, etc., click on a reference to be taken to the journal website (some references may not contain links).

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