



IRGC NEWS



INTERNATIONAL RESEARCH GROUP ON CHAROPHYTES

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26

April 2015

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EDITORIAL

I am pleased to present this new issue of the IRGC-News and the editors apologize for the delay in its preparation. In this issue you will find the report of the 19th GEC Meeting in Vilnius (Lithuania) excellently organized by Zofija Sinkevičienė and a very efficient team of her colleagues and collaborators from the Lithuanian Institute of Botany. Also, in this issue, Susi Schneider has written a very enjoyable overview about what is going on around the research of living charophytes. Information about the 20th GEC meeting in Geneva, other meetings, thesis reports and publications is included. Take special attention in making your reservations for the 7th IRGC Symposium that will take place in Kazakhstan at the end of August 2016; the first circular is added to this News. Please be aware also that in 2016 we have the election of the new IRGC Executive Committee and that the President and the Vice-president positions need to be renewed according to our statutes; also, the position of Secretary will be vacated. I am asking all IRGC members to think about participating in the board of our exciting and active association. We will convoke the election in due time, i.e. by the beginning of 2016 but is important to emphasise that the present and, more importantly, the future of the association rely on your active participation.

Carles Martín-Closas

EXECUTIVE COMMITTEE

Carles Martín-Closas (President)
Susanne Schneider (Vice-President)
Adriana García (Secretary)
Emile Nat (Treasurer)

Members at large

Robin Scribailo (USA)
Dominique Auderset-Joye (Switzerland)

Regional Correspondents

Uwe Raabe (Europe)
Simone Baecker-Fauth (North and South America)

The task of the Regional Correspondents is to **collect relevant information about meetings, books, individuals, etc. from their area and forward it to the IRGC Secretary** by February-mid-March every year.

WELCOME TO NEW IRGC MEMBERS

It is a great pleasure to welcome our new members, most of them interested in modern charophytes. Vincent Bertrin (France) dedicated to study communities interactions; Martynas Bučas (Lithuania), Laars Baastrup-Spohr (Denmark) undertaking ecological research; Eugeniusz Pronin (Poland) dealing with stable-isotope geochemistry; Roman Romanov (Russia) working on taxonomy and ecology; Karl-Georg Bernhardt (Austria) focused on ecological and floristic aspects; and Tom Kirschey (Germany) is interested in ecological research. Sha Li (China) is studying the taxonomy, biostratigraphy and palaeoecology of Cretaceous - Paleocene charophytes from North China.

FINANCIAL MATTERS OF THE IRGC

In order to reduce costs the Executive Committee decided last year to stop the credit card service. The only way to pay your membership fee is by bank to bank transfer (see page 19). It is also possible to pay to one of the members of the EC during meetings. I can then provide a receipt if requested.

Emile Nat, The Netherlands
IRGC Treasurer

IRGC WEBSITE

It is a great pleasure that the ‘renewed’ IRGC website (<http://irgc.uow.edu.au/>) is now active! Several issues made the transfer from the ‘old’ system to the new one adopted by the host institution of the site (University of Wollongong) complicated because I needed help. I have to thank the University’s IT people and specially the Secretary of the School of Earth and Environmental Sciences, Ms Denise Alsop, who sat with me to transfer files, actualise data and change the formatting.

Hopefully, the navigation through the website is easier and the information clearer than before. We are still deciding how to add more interesting points about charophytes to reach a wider audience; so, if the IRGC members have valuable ideas to incorporate, their propositions can be evaluated by the Executive Committee.

Many thanks for your patience, and let’s try to make our website useful.

Adriana García, Australia
IRGC Secretary

REPORT OF PAST MEETINGS

2014

11 – 14 September
19th Meeting of the GEC (Group of European Charologists), Vilnius (Lithuania) (Group photo on page 20)

Scientific sessions

The scientific sessions of the 19th Meeting of the European Group of Charophyte specialists occurred on 11-12 September 2014 in Verkiai Palace, a beautiful historical building of late baroque style, surrounded by a large garden and with nice views over the river Neris. This building now houses part of the premises of the Lithuanian Institute of Botany in Vilnius. After the welcome address from the Authority of the Lithuanian Natural Parks and the IRGC President, the meeting started. Up to 31 oral and poster presentations were given by speakers from 12 countries from Europe and Asia, covering a wide spectrum of subjects in

charophyte research and showing a high degree of multidisciplinary that reflects the long-term interactions among GEC members. Herein, I will try to summarize the main results of the GEC contributions by ordering them within three main subjects: (1) Species characterization, (2) Biogeography and ecology and (3) Plant physiology.

Species characterization continues to be one of the main points of attention both by palaeontologists and neontologists working with charophytes. New techniques based on genetics were applied by **S. Schneider** and colleagues to analyse the affinities between *Chara* species that show conflicting affinity from the morphological viewpoint. They were grouped as unresolved groups by rbcL and matK sequencing methods. A nomenclatural revision by **T. Georg**, showed that some very well-known charophyte names such as *C. intermedia* are taxonomically illegitimate or that there is an older name for *L. barbatus* (“*Chara spinosa*” Amici 1827). **S. Calero and M. Rodrigo** explored the signification of long-stalked antheridia in *Chara hispida*, and whether this feature may represent any reproductive advantage for it. **A. Holzhausen** showed us that in spite of the problematic determination of *Chara* oospores, they allow discrimination of some species from brackish environments. **P. Novak** and colleagues tested experimentally the hypothesis that *Chara liljebladii* was just a morphotype of *C. baltica* grown under light limiting conditions. The results supported the hypothesis and previous genetic investigations that both taxa are ecotypes of the same species.

The study of rare species becomes a hot topic in GEC meetings once people and authorities are aware of their importance for the preservation of biodiversity. **R. Romanov et al.** revised *C. globata* from different localities and described a higher range of morphological variation than previously known. The taxonomic status of *Chara rohlenae* was discussed by **J. Blaženčić and B. Stevanović** (presented by **A. Vesić**). **R. Romanov and E. Chemeris** reported the occurrence of *C. strigosa* in Eastern Siberia for the first time. **E. Lambert** and colleagues described new occurrences of the still overlooked *Tolypella salina* in the Mediterranean countries. **M. Pelechaty** and colleagues reported a new record of *L. barbatus* in western Poland.

Taxonomy has always been one of the main topics in the study of fossil charophytes. **J.**

Sanjuan and C. Martín-Closas documented the synonymy of two significant Cenozoic species by taking into account the polymorphism from gyrogonite assemblages of different localities. **C. Martín-Closas and R. Segura** described a *Nitella*-like thallus preserved within possible periphytic encrustations. This may represent the oldest occurrence of the genus, 100 Ma ago.

Biogeography and ecology were the topics that motivated the highest number of presentations at the 19th GEC meeting. Studies of two regions that are uncommon in our meetings were presented, Siberia and the Andes. **L.M. Kipryanova and R. Romanov** characterised the different aquatic plant communities including charophytes (*Chara contraria*, *C. globularis*, *C. braunii*, *C. vulgaris* and *Nitella mucronata*) from a huge water reservoir in Novosibirsk. **R. Romanov** and colleagues described up to 12 species from the Irkutsk region in Baikalian Siberia, including new taxa for the region and even for entire Russia. Biogeographic similarity was found with Altay-Sayan and Southern Urals. Regarding the Andes, **H. Schubert et al.** reported up to 26 taxa from Chile, showing a latitudinal distribution and that the Andes were an effective biogeographic barrier for charophytes between Chile and Argentina.

Another area of biogeographic interest was obviously the Baltic and neighbouring areas. **K. Torn et al.** presented a predictive model about the occurrence of *Chara* species in Estonia. The model, based in the Boosted regression trees algorithm, predicts that most charophyte diversity is to be found in the West Estonian Archipelago. **E. Zviedre and L. Grinberga** documented the distribution of fluvial charophytes from Latvia. Only 6 of 18 species from Latvia are capable of withstanding fluvial conditions and occur in deeper areas of the channels away from the margins overgrown by aquatic angiosperms. **M. Bučas** and colleagues analysed the occurrence and distribution of charophytes in the Curonian lagoon, showing that most of them occurred along the shallow northeastern coast, except *N. obtusa* which was found in deeper and more oligohaline habitats of the southeast. **Z. Sinkevičienė et al.** presented a historical study about the occurrence of charophytes in Lithuania since the 19th Century. Finally **L. Baastrup-Spohr et al.** studied the historical development of charophytes in Denmark and showed that rare

species occur in deep habitats from alkaline lakes.

The ecology of charophytes in relation with the present scenario of global climate change was also one of the subjects dealt with in the meeting. **A. Rey-Boissezon** and **D. Auderset-Joye** showed us how *Nitellopsis obtusa*, which usually grows sterile in deep oligotrophic Swiss lakes, is able to adapt to shallower waters, like semi-permanent gravel-pits, by reproducing sexually and this lets us hope that this species will not necessarily decrease in a more arid central-Europe but will simply shift its habitats. **M. Rodrigo et al.** presented their results on the response of several charophyte species to changing UV-radiations resulting from Ozone layer depletion. Charophytes appear to display good protection against UV radiation although the response to this danger is remarkably species-specific. **A. Vesić et al.** also studied the effect of human disturbance in the wide Vojvodina flood plain (Serbia), where only a relatively low number of charophyte species are found to occur in ponds and pools. Finally three presentations dealt with the ecology and biogeography of fossil charophytes from the Upper Cretaceous to the Holocene. **A. Vicente** and **C. Martín-Closas** presented an example of charophytes from temporary floodplain ponds of the Upper Cretaceous, where a rare species bearing very small gyrogonites was found, suggesting an opportunistic behaviour. **A. Zhamangara et al.** evaluated the biogeographic similarity between fossil charophyte assemblages from the Cenozoic of different regions in Kazakhstan and North China using the Jaccard coefficient. High similarity was found between different basins during the Oligocene. **I. Soulié-Märsche et al.** studied the fossil charophytes and ostracods of the Albanian part of the beautiful Shkodra Lake, which several of us visited during our GEC meeting in Serbia and Montenegro. *Lychnothamnus barbatus* that was never found living in the lake, was dominant in the lake sediments older than 1384 years ago, when the lake suddenly deepened.

Charophyte physiology includes the third main subject of interest during the meeting. This subject has been poorly developed by GEC members in the past but is increasingly developed in recent GEC meetings. **L. Manusadžianas et al.** and **S. Jurkonienė et al.** presented the long experience of their team in the use of charophyte cell metabolism (H^+ -ATPase plasma membrane inhibition) to assess

water toxicity. New results on carbonate isotopy precipitated by charophytes were presented by the Polish team. **M. Pelechaty et al.** and **E. Pronin et al.** revealed that there are species – specific isotopic signatures (especially $\delta^{13}C$) in carbonate precipitation of *Chara tomentosa* and *C. globularis*, with *C. tomentosa* being much enriched in $\delta^{13}C$ than the water and than the other species studied. **A. Pukacz et al.** analysed how biometric features and carbonate production changed yearly in *Chara rudis* and *C. polyacantha*. The results showed that the carbonate production was similar in both species even if the latter is a much larger plant, but *C. rudis* is thicker and more branched.

Carles Martín-Closas
(Catalonia, Spain)

GEC Assembly

The assembly started by noon on 12 September 2014 with a summary of the results of the contributions to the meeting by C. Martín-Closas followed by general congratulations to the organizing committee of the 19th GEC. We especially thanked Zofija Sinkevičiėnė, for her role in the excellent organization and for creating such a nice atmosphere that was the key for the success of this meeting and the active discussions that followed the presentations. An oversized copy of the model of a fossil gyrogonite (the Eocene *Maedleriella embergeri*) created by Louis Grambast more than 50 years ago was offered to Zofija as she is now the GEC President. The assembly then discussed the possible venues for future meetings and for 2015 it was decided to support the proposal by Dominique Auderset-Joye to organize the GEC-20 in Geneva. The initial proposal was to organize a charophyte symposium within the frame of the SEFS-9 (Symposium for European Freshwater Sciences) that will take place also in Geneva from 5-9 July. A small discussion followed analyzing the strengths (larger visibility of our group) and weaknesses (very expensive inscription fees) of such a possibility. Later Dominique suggested to make a proposal of a specific Charophyte session in this symposium and to look for a cost reduction. I must say that Dominique presented an excellent proposal by October 2014 but that the organizers of the SEFS-9 didn't like the idea of hosting a taxonomically-oriented session, so that by the

end of the year she decided to propose a normal GEC-meeting before the larger symposium, so, interested colleagues can attend both. The GEC assembly ended with a presentation by Aizhan Zhamangara, who gave more details concerning the 7th IRGC meeting in Kazakhstan.

Carles Martín-Closas
(Catalonia, Spain)

Fieldtrip report (13 – 14 September)

Charophyte identification in South Lithuanian lakes.

Our group consisted of about 30 people including the organizer Zofija Sinkevičienė and her nice crew from the Nature Research Centre, Institute of Botany. We boarded a bus and started southwards to Šventininkai (Trakai district), probably the first known locality of *Lychnothamnus barbatus* of Europe. During the trip we could observe wonderful landscapes such as amazing *Pinus* and *Betula* forests while the members of the Institute of Botany shared with us interesting anecdotes of Lithuanian history and culture. The botanical assemblages in Lake Šventininkai were composed by submerged macrophytes such as charophytes (*Chara contraria*, *C. globularis*, *Lychnothamnus barbatus* and *Nitellopsis obtusa*) and angiosperms (*Alisma plantago-aquatica*, *Alopecurus aequalis*, *Ceratophyllum demersum*, *Eleocharis palustris* agg., *Elodea canadensis*, *Lemna trisulca*, *Myriophyllum spicatum*, *Potamogeton lucens*, *P. pusillus*, *Ranunculus circinatus*). We also had the opportunity to observe and distinguish nice rounded cyanobacterial mats formed by *Nostoc* spp., but including *Volvox* spp. (a colonial chlorophyte). There were very large gastropods such as *Lymnaea* sp. and *Planorbis* sp. attached to the charophytes harvested from the shoreline banks, which surprised the collectors. Charophyte meadows cover the whole littoral up to about 2 metres depth, and samples were taken by hand and using a hook.

After the botanical stop, our excursion proceeded westwards to a one of the most important historical places from Lithuania, the 14th century Trakai Castle. This impressive castle was built by Duke Kęstutis on Trakai Island, situated near the southern shore of Lake Galvė. During the guided visit inside the castle,

we could observe a wide range of beautiful objects, paintings and sculptures related to Lithuanian history. On our way for lunch we could also observe a dense *Stratiotes aloides* meadow thriving together with charophyte meadows of *Chara subspinoso* and *Nitellopsis obtusa*. For lunch, the group had the opportunity to taste a typical and delicious kosher food in front of Trakai Castle.



Collection and expert field identification of the charophytes from Lake Balsys. Left to right: Aizhan Zhamangara, María Rodrigo, Carles Martín-Closas and Roman Vázquez.

In the afternoon, as a final destination of the first day, we visited the Lake Balsys. This small thermokarst lake is located in the northern part of Vilnius city, in the Verkiai Regional Park. Thanks to the members of the park, we spent a memorable afternoon rowing small boats and enjoying the crystalline waters of the lake. The shallow and almost swampy south area of the lake contrasted with the deeper waters, around 5 m deep, of the main lake. Near the shoreline, incredibly dense charophyte meadows of *Chara* (*C. intermedia*, *C. filiformis*, *C. subspinoso*, *C. rudis* and *C. tomentosa*), *Lychnothamnus barbatus* and *Nitellopsis obtusa* captivated our attention. Detailed field observations using hand lenses allowed us to distinguish curious cortical deformations in the thalli of *C. rudis* nicely explained by Mariusz Pelechaty.

Much later, in the time reserved for charophyte determination at the Institute of Botany of NRC (Verkiai Palace), the participants had time for taxonomic discussions.

On the second day, the field excursion led us to the southward lands of the Alytus district. On the route to the Žuvintas Biosphere Reserve we went through a swampy landscape. The first stop in the natural reserve was a shallow lake with an average depth of 0.67 m. This area

represents one of the richer biodiversity spots from Lithuania. With less than 10 km² of water, Žuvintas Lake houses thousands of migratory birds, being a territory of exceptional natural value. In this context, macrophyte communities have a key role to keep the equilibrium of the ecosystem. The shoreline of the lake shows wide reed belts, and abundant angiosperms share the shoreline with diverse charophyte meadows. A total of 10 charophyte species were observed through the shoreline lake, i.e. *Chara aspera*, *C. contraria*, *C. globularis*, *C. tomentosa*, *Chara virgata*, *C. vulgaris*, *Nitella confeveracea* and *Nitellopsis obtusa*. The observations also allowed us to include the first record of *Chara intermedia* in this lake, and also encouraged the participants in a taxonomic discussion regarding the assignment of one specimen to *Nitella syncarpa* or *N. capillaris*.

When we finished the harvest and the botanical identification, we headed southward to Seirijai, where we enjoyed a traditional Lithuanian lunch. After that break, we went northward to the Meteliai Regional Park (*Metelių regioninis parkas*).

The Meteliai Regional Park has an area of more than 150 km² and includes three large lakes with a very high biodiversity. Lake Dusia is the largest and deepest lake in the park and is located in the western part. The clear waters of this lake contain diverse mesotrophic submerged macrophyte assemblages. After a preliminary harvest in the poor meadows of the shoreline the group continued reaping charophytes from boats. During the sailing we completed our macrophyte identification harvesting the deepest part of the lake with a tangle-fork. We collected and identified at least five different species i.e. *Chara aspera*, *C. contraria*, *C. globularis*, *C. intermedia* and *Nitellopsis obtuse*; including many species of *Potamogeton* that were very abundant in the lake. However, several taxonomic discussions took place for their specific determination. On the way back to Vilnius, we enjoyed a trip through the awesome forest landscape.



Zofija Sinkevičienė collects charophytes with a hook from Lake Dusia

On behalf of all the participants, we would like to thank Zofija Sinkevičienė and the organizers, and also other members of the Institute of Botany, for their help and for making the excursion and the whole 19th GEC meeting an unforgettable experience. Special thanks also to Thomas Gregor, who provided a complete list of the species observed during the fieldtrip.

**Alba Vicente and Josep Sanjuan
(Catalonia, Spain)**

FORTHCOMING MEETINGS

2015

**2 – 4 July
20th Meeting of the GEC (Group of
European Charologists), Genève
(Switzerland) (pages 17-18)**

This year the 20th GEC is organised by Dominique and Aurelie in Switzerland, and will be dedicated to all fields related to charophytes, including interesting excursions!



**Deadline for registration and abstracts:
15 April 2015**

Please find more information in **pages 17-18** of this IRGC News.

Contact: Dominique Auderset-Joye
e-mail: Dominique.Auderset@unige.ch

5 - 9 July
**9th SEFC - Symposium for European
Freshwater Sciences, Genève
(Switzerland)**

This Symposium, which follows and therefore can be combined with the 20th GEC Meeting, celebrates the 100th anniversary of F.A. Forel, the founder of limnology, hence the title of this congress "Freshwater Sciences coming Home". It covers all domains of limnology with 19 regular sessions and 18 special sessions. Only late registration is still available.

Contact: Conference Secretariat, Kuoni
Destination Management
Congress.GVA@ch.kuoni.com
Website: <http://www.sefs9.ch/>

27 July - 2 August
XIX INQUA Congress, Nagoya, Japan
Theme: *Quaternary Perspectives on Climate
Change, Natural Hazards and Civilization.*

The International Quaternary meeting provides a platform to present research involving the last 2.6 Ma of Earth history. In particular, researchers dealing with palaeoenvironmental and palaeoclimatic issues involving the use of biological proxies (of course with the inclusion

of charophytes!), have in this conference a nice opportunity to discuss with colleagues from around the world. Usually 1,000 to 2,000 delegates participate in the INQUA meetings, where also field excursions are offered.

Contact: Secretary of the event: 2015inqua-sec-ml@aist.go.jp

Website: <http://inqua2015.jp/>

4 - 7 August
**13th International Paleolimnology
Symposium (IPS2015)**

The organizing committee and Chinese paleolimnologists have announced that the 13th International Paleolimnology Symposium (IPS2015) will be held in Lanzhou, China (the conference's official website will be launched soon).

The guiding theme of the IPS2015 is "Paleolimnological Perspectives on Environmental Change", however it will also embrace all other aspects related to paleolimnological research.

This would be an opportunity to present paleolimnological research involving charophytes!

Contact: Prof. Fahu Chen, Lanzhou University, China
e-mail: fhchen-ips2015@lzu.edu.cn

23-28 August 2015
**6th European Phycological Congress,
London, UK (Novotel Hotel West London)**

There are fifteen symposia organized, dedicated to, algae in stressful environments; algal biodiversity and ecosystem function; algal-microbiome interactions; shedding new light on photosynthesis; global change and algal assemblages; the fate of marine forests; phylogenomics; molecular cell biology; ecology, physiology and taxonomy of freshwater phytoplankton; algal diversity and species delimitation; genetic engineering in algae; algae and signalling; omics and genetic resources; algal lipids; *Symbiodinium* as a model organism

Plenary speakers are John Archibald, Ellen van Donk, Georg Pohnert & Ester Serrao.

Contacts: <http://www.epc6.org>
<http://www.facebook.com/EPC6London>
Twitter: @EPC6.org_congress;
e-mail: epc6@nhm.ac.uk

21 -24 October 2015

International scientific conference on Problems of taxonomy and geography of aquatic plants, Borok, Nekouz, Yaroslavl, Russia

People interested in this conference please contact the organisers of the meeting.

Contact: **Dr Elena V. Chemeris**, member of the organising committee and member of the IRGC; e-mail: elchem@ibiw.yaroslavl.ru

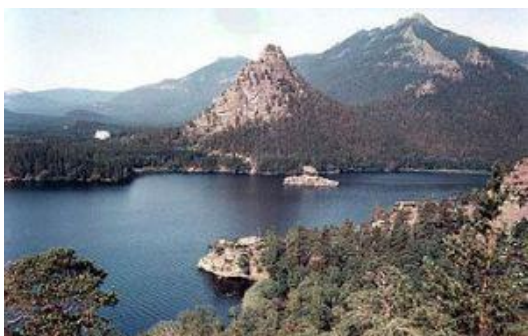
2016

***31 August – 2 September
7th Symposium of the International
Research Group on Charophytes, Astana,
Kazakhstan***

The 7th IRGC Symposium will be held at the L.N. Gumilyov Eurasian National University, Astana, Republic of Kazakhstan, 31 August – 2 September (28 August – 6 September including both fieldtrips) (**First Circular included with this issue**).

Pre-symposium fieldtrip

29 - 30 August: we will visit several extant charophyte localities: Astana – Burabay (= Borovoye) – Zerendy – Astana, and the freshwater lakes: Burabay, Ulken Shabakty (= Bolshoye Chebachye), Katarkol, Zerendy.



Burabay lake

Scientific Program

31 August (Monday): registration, opening ceremony, plenary lecture, presentations, workshop

1 September (Tuesday): oral and poster session, IRGC General Assembly, conference dinner

2 September (Wednesday): oral and poster sessions, closing ceremony.

Post-symposium fieldtrip

3 - 6 September: we will visit two paleontological localities: Shinzhaly - western foothills of Dzhungarien Alatau (Eocene deposits with gyrogonites of charophytes and remnants of vertebrates), and Aktau Mountains - Oligocene-Quaternary section including Neogene charophytes and Oligocene-Miocene fauna and flora.



Part of the Altyn Emel National Park

Organiser

Dr Aizhan Zhamangara, L.N. Gumilyov Eurasian National University, 5 Munaitpasov Street, 010008 Astana, Kazakhstan
e-mail: kashagankizi@mail.ru

***28 August - 4 September
35th International Geological Congress,
Cape Town, South Africa***

The 35th International Geological Congress (IGC) will be held in Cape Town, South Africa from 28 August to 4 September 2016. This is one of the largest international geological congresses. Every four years the IGC is held under the auspices of the International Union of Geological Sciences (IUGS). IUGS together with the IGC African Organising Committee seeks to make this Congress a prime scientific event. The event will showcase the region's

geoscientific superlatives; world-famous geology and geo-heritage together with its geological and scenic wonders. There will be an extremely diverse scientific program of oral and poster presentations, workshops, short courses and business meetings.

Contact: Daniel Barnardo, General Secretary;
barnardo@geoscience.org.za
Website: <http://www.35igc.org>

PUBLICATION OF THE PROCEEDINGS 6TH IRGC, MENDOZA

The proceedings of the 6th IRGC, Argentina (2012) have been published recently in a Special Issue of *Aquatic Botany* 120A: 1-150. Hard copies of the SI (picture of the cover attached) have been offered at a convenient price to interested people, and the process has just been finalised, doing a bulk buying through the IRGC dealing directly with Elsevier.



The Guest Editors of the issue want to thank the authors for their contributions and the long list of reviewers who helped to produce a nice volume including 15 papers on very diverse topics on modern and fossil charophytes, including palaeolimnology, palaeobiogeography, taxonomy, ecology, biogeography, chemistry and physiology. It has been a long process, a bit painful sometimes, but the prize was worthwhile: to produce an interesting and well done volume!

**Guest Editors (A. García, A.R. Chivas,
C. Martín-Closas & S.C. Schneider)**

REFERENCE ARTICLE: STUDIES ABOUT CHAROPHYTES

What's new about *Chara*? A short overview over some interesting charophyte studies published in 2014.

It seems to have become my “spring” habit to check last year’s publications about charophytes, and again I would like to share some of the findings with you. As in the last years, I searched ISI Web of Science using the terms “Chara” and “2014”, and in February 2015 this resulted in 76 hits. Many of them dealt with astrophysical sciences, since CHARA seems to be some stellar phenomenon. I also searched for “Nitella” and “Tolypella”, which clearly gave a lower number of hits (and most of them redundant with the “Chara” search). But even after I cut out the astrophysics I had to choose, because summarizing all interesting charophyte papers would have been far too long for the IRGC News. In 2014, there were many studies that used charophytes as models for studying plant cell physiology. Since I do not really understand all the details, I skipped those. Sorry to those who surely presented interesting results. The same is true for palaeontology. I am afraid I do not really grasp all the details of biostratigraphy.

But some of the papers dealt with sediments, and these can serve as a bridge between fossil and extant charophytes. A highly interesting detail was published by Stobbe et al. They managed to germinate oospores of *Nitella mucronata*, which they collected from 50 cm depth in the sediment of a lake in Russia. Radiocarbon dating showed that this sediment layer was nothing less than **300 years old!** Although the results should be interpreted with caution because bioturbation is always an issue, it seems that charophyte oospores can survive for an impressively long period of time. This should be good news for all restoration projects, if charophyte oospores are still present in the sediment. Similar “good news” came from van Zuidam et al., who studied the effects of redox potential on the emergence of propagules of three different species of macrophytes (*Potamogeton pusillus*, *Zannichellia palustris*, *Chara cf. contraria*). They buried the propagules in different sediment depths, and found that emergence of *P. pusillus* and *Z. palustris* decreased with increasing burial depth, while *Chara contraria*

germinated equally well irrespective of burial depth (they studied up to 5 cm depth). Also, *C. contraria* emerged equally well in sandy and loamy-muddy sediments.

So, oospores seem to be quite tough, and remain viable even after they have been buried in the sediment for a long period of time. But under which conditions do charophytes produce oospores? Sato et al. published a highly interesting study about the influence of light intensity and nutrients on sexual reproduction of *Chara braunii*. Under high light conditions, *C. braunii* did not form reproductive organs. Under low-light conditions, they sometimes observed lone antheridia (= antheridia without the corresponding oogonium; note: *C. braunii* is monoecious!). Fertilizer addition increased the number of sex organs, but the number of lone antheridia was less than at unfertilized conditions. It seems the formation of sex organs in *Chara* is influenced by the environment, to a larger degree than we probably were aware of.

But what happens to charophytes in an ecosystem? Bakker & Nolet fertilized experimental ponds and found that fertilized ponds became dominated by *Elodea nuttallii* while ponds without extra nutrients became dominated by *Chara globularis*. This seems not surprising, but the interesting thing is what happened after they introduced plant eating ducks to half of the ponds: the ducks reduced macrophyte biomass in the fertilized ponds by about 50% compared to the control, while macrophyte (mainly *Chara*) biomass in the unfertilized ponds was approximately the same as in the control. They conclude that top down control of submerged vegetation is stronger in nutrient-rich conditions, maybe because plant N and P is higher in eutrophic conditions. But what if *Elodea* simply tastes better than *Chara*? This would not be so strange, given that most of the *Chara* fresh weight actually may not be very tasty. Pukacz et al. found in a lake in Poland that at a water depth of 5m, CaCO₃ encrustations constituted around 40% of the dry weight of charophytes, while in shallow water of 1 m depth more than 80% may be CaCO₃. In total, charophyte dry weight may exceed 2 kg/m²!!! With such biomasses, charophytes have the potential to be efficient bioengineers in the littoral of lakes. However, the “when and how” of charophyte lime encrustations is not well known. Asaeda et al. studied how water calcium and magnesium concentrations impacted the growth and calcite

encrustation of *Chara fibrosa*. Calcite encrustation was positively correlated with water Ca concentrations, but the presence of Mg in the water inhibited calcite encrustation; magnesite was not deposited on the plants; however, when plants were grown in water containing high concentrations of Ca, shoot elongation was retarded and chlorophyll content was relatively low.

In spite of heavy lime encrustation, charophytes may serve as habitat for a number of organisms. Kotta et al. studied how mechanical disturbance affected the biomass of the non-indigenous amphipod *Gammarus tigrinus* in a macrophyte community. They found that disturbance generally reduced *Gammarus* biomass. Interestingly, the effect persisted even though total benthic invertebrate and plant biomass recovered after the disturbance. The authors speculate that the persisting reduction of *Gammarus* may be explained by the reduced biomass of *Chara aspera*, which is a preferred habitat of *Gammarus*. These results are a bit at odds with Zhang et al., who also studied the effects of mechanical disturbance on submerged macrophytes (they slashed a plastic rake through a community that consisted of *Hydrilla verticillata*, *Elodea canadensis*, *Ceratophyllum demersum*, *Chara globularis*, and *Myriophyllum spicatum*). They found that strong disturbance greatly decreased total macrophyte biomass, but increased species diversity (evenness). While growth of *Hydrilla* was reduced, growth of the other four species (including *Chara globularis*) was unaffected by the disturbance. But maybe it anyway is better not to disturb charophytes. After all, they have some quite advantageous effects. Juan et al. tested if macrophytes can control waterborne phytopathogens in irrigation ponds. Irrigation ponds may act as a source of phytopathogenic species that might infest crops through the irrigation systems. They found that *Chara globularis*, *Potamogeton pectinatus* and *Najas marina* all inhibited bacterial density in the water of the irrigation ponds, and that *C. globularis* in addition reduced the viability of *Pythium* (a parasitic oomycete that can cause rotting of plant roots). The authors conclude that preserving charophyte vegetation in irrigation ponds, besides its purely environmental interest, may have important agronomic benefits owing to their role as biological control against some phytopathogenic agents.

Last, but not least, Perez et al. had a closer look on morphology and genetics of North American *Tolypella*. Their genetic analyses support the previously suggested (by Wood and Imahori) subdivision of *Tolypella* into the sections *Rothia* and *Tolypella*. Interestingly, they also observed substantial morphological variability among individual *Tolypella* specimens within a species. Also, *T. glomerata* and *T. longicoma* shared identical sequences despite their radically different growth forms. After correcting for such instances, however, gene sequences generally were identical or nearly identical for individuals of the same morphologically recognizable species from various localities. Still, the agreements and disagreements between charophyte morphology and genetics likely will remain a challenge for the coming years.

- Asaeda T, Senavirathna MDHJ, Kaneko Y, Rashid MH. 2014. Effect of calcium and magnesium on the growth and calcite encrustation of *Chara fibrosa*. *Aquatic Botany* 113, 100-106.
- Bakker ES, Nolet BA. 2014. Experimental evidence for enhanced top-down control of freshwater macrophytes with nutrient enrichment. *Oecologia* 176, 825-836.
- Juan M, Casas JJ, Elorrieta MA, Bonachela S, Gallego I, Fuentes-Rodriguez F, Fenoy E. 2014. Can submerged macrophytes be effective for controlling waterborne phytopathogens in irrigation ponds? An experimental approach using microcosms. *Hydrobiologia* 732, 183-196.
- Kotta J, Torn K, Reialu G, Veber T. 2014. Relationships between mechanical disturbance and biomass of the invasive amphipod *Gammarus tigrinus* within a charophyte-dominated macrophyte community. *Marine Ecology-An Evolutionary Perspective* 35, 11-18.
- Perez W, Hall JD, McCourt RM, Karol KG. 2014. Phylogeny of North American *Tolypella* (Charophyceae, Charophyta) based on plastid DNA sequences with a description of *Tolypella ramosissima* sp nov. *Journal of Phycology* 50, 776-789.
- Pukacz A, Pelechaty M, Frankowski M. 2014. Carbon dynamics in a hardwater lake: effect of charophyte biomass on carbonate deposition. *Polish Journal of Ecology* 62, 695-705.
- Sato M, Sakayama H, Sato M, Ito M, Sekimoto H. 2014. Characterization of sexual reproductive processes in *Chara braunii*

(Charales, Charophyceae). *Phycological Research* 62, 214-221.

- Stobbe A, Gregor T, Ropke, A. 2014. Long-lived banks of oospores in lake sediments from the Trans-Urals (Russia) indicated by germination in over 300 years old radiocarbon dated sediments. *Aquatic Botany* 119, 84-90.
- van Zuidam BG, Cazemier MM, van Geest GJ, Roijackers RMM, Peeters ETHM. 2014. Relationship between redox potential and the emergence of three submerged macrophytes. *Aquatic Botany* 113, 56-62.
- Zhang Q, Xu YS, Huang L, Xue W, Sun GQ, Zhang MX, Yu FH. 2014. Does mechanical disturbance affect the performance and species composition of submerged macrophyte communities? *Scientific Reports* 4, Article Number: 4888.

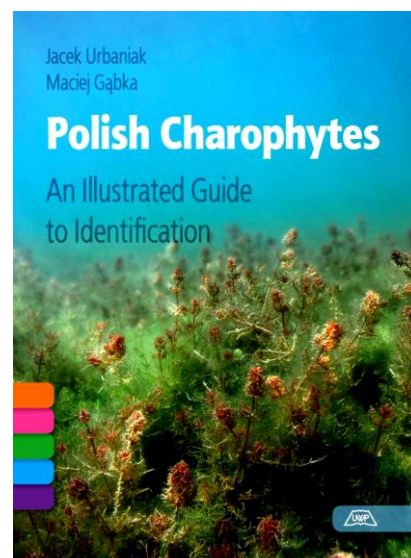
Susanne Schneider, NIWA
(Norway)

NEWS FROM INDIVIDUALS AND REGIONAL GROUPS

News from Individuals

Charophytes from Poland

The authors want to contribute to the material for the identification of charophyte species, often quite correctly considered difficult to distinguish. Even if it deals with charophytes found in Poland, its general content makes it also helpful to researchers from other countries. Additionally it provides excellent images for the recognition of charophyte taxa.



The book contains more than 300 photographs, detailed description of morphological features of the species, and new and actual taxonomical checklist of charophyte vegetation.

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Hard copy: Price aprox. 40 EUR (+shipping costs), e-mail: wyd@up.wroc.pl

pdf version: free

e-mail: jacek.urbaniak@up.wroc.pl

**Jacek Urbaniak & Maciej Gąmbka
(Poland)**

News from regional groups

North and South America

USA

Mary A Bisson and **Mary Beilby** have published the following paper in the Journal of Membrane Biology: Beilby, M.J., Al Khazaaly, S. Bisson, M.A. 2014. Salinity-induced noise in membrane potential of Characeae *Chara australis*: effect of exogenous melatonin.

Joe Hannibal has submitted a paper to a proceedings volume on millstone archaeology and geology:

Widespread North American occurrence of millstones made of imported French chert (French buhr) containing charophytes

The paper notes sites where fossil charophytes belonging to the genus *Gyrogona* can be found in millstones across the US, and at one site in Canada.

If anyone happens to notice charophytes in millstones in other countries, they might contact him at jhanniba@cmnh.org. The chert containing these fossils is light colored and the millstones made of it may be monolithic or may be composed of segments held together by an iron band.

**Simone Baecker-Fauth
Technol. Institute of Micropaleontology
(Brasil)**

Website update: Coded List of Freshwater Algae of Britain and Ireland

The Coded List of Freshwater Algae of Britain and Ireland has been updated and can now be downloaded from the Centre for Ecology and Hydrology website

http://www.ceh.ac.uk/news/news_archive/update-coded-list-freshwater-algae-britain-ireland-2014-68.html.

Compilers: Brian A Whitton: School of Biological and Biomedical Sciences, Durham University, Durham DH1 3LE, UK, <b.a.whitton@durham.ac.uk>; and David M John: Life Sciences Department, Genomics and Microbiology Division, Natural History Museum, Cromwell Road, London SW7 5BD, UK, <d.john@nhm.ac.uk>.

PhD THESIS COMPLETION

**Núria Flor Arnau, University of Barcelona
Supervisor: Jaume Cambra Sánchez**

PhD Thesis title: **Diversity, ecology and bioindication use of charophytes and macrophytes from the Iberian Peninsula**

On December 12, 2014, Núria Flor Arnau defended her thesis in front of the jury composed of Xavier Llimona (Barcelona), María A. Rodrigo (Valencia) and Cristiana Vieira (Porto).

The Iberian Peninsula is very diverse in terms of aquatic ecosystems. However, there are few publications on the flora present in these bodies of water. This thesis presents a floristic catalogue of 846 charophyte samples collected from 456 different localities, with 28 species or varieties within the five genera present in Spain being identified, being *Chara* the most frequent. New data is provided regarding the area of distribution of 18 species or varieties and the ecology of 8 of them, some of which are vulnerable or endangered.

Thus, the knowledge on this algal group has increased and some of the main causes that have led to the decline of species over time in

the Douro river basin (Spain) are also proposed. They are mainly related to agriculture and farming.

Moreover, charophytes are organisms with high morphological plasticity in relation to the environmental conditions and there also exist complexes of species that make their identification not always a straightforward matter. The pair of taxa *Chara aspera* - *Chara galioides* was traditionally discriminated by the diameter of the mature antheridia, but has been shown that this character do not have any systematic significance. In order to determine the effect of light, temperature and salinity on the morphometry of different structures, they have been grown in a culture chamber and new vegetative characteristics, such as the diameter of the main axis, are proposed to segregate *Chara aspera* and *Chara galioides*.

The lotic and lentic aquatic ecosystems of the Iberian Peninsula are subjected to many anthropogenic pressures that seriously compromise their continuity and the survival of their interesting flora. Unfortunately, Spain does not currently have any suitable index for the assessment of the ecological status of these ecosystems. However, many studies and the Water Framework Directive highlight the role of macrophytes as bioindicators, and charophytes in particular.

In this thesis, two indexes were proposed which are useful to assess the ecological status of the lakes and lagoons of the Douro river basin (INEQUAL) and the Mediterranean rivers (IMF). It would be possible to apply this information in management, conservation and, if necessary, restoration measures of these aquatic habitats.

This thesis has produced so far five publications in indexed journals, a brief floristic note and an extensive catalogue of charophyte species making the results available to a large readership and they can be freely downloaded from the following site: <http://hdl.handle.net/10803/285506>.

Xavier Llimona i Pagès, Barcelona, Spain

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20th Meeting of the Group of European Charophytologists (GEC)

2-4 July 2015
GENEVA, SWITZERLAND



**UNIVERSITÉ
DE GENÈVE**

Organised by Aquatic Biology and Ecology Group -
Institute F.-A. Forel & Institute for Environmental
Sciences

Organizers

Dominique Auderset Joye & Aurélie Rey-Boissezon

Preliminary program:

1 July (Wednesday): informal meeting in Geneva Old Town

2 July (Thursday): field excursions, charophyte collection and determination at
the Institute of Environmental Sciences - University Geneva

3-4 July (Friday and Saturday): registration, oral and poster sessions at the
Institute of Environmental Sciences - University Geneva

Registration fees (excursion not included):

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Fee for the excursion: 40 Euros

CONTACT PERSON: Please send registration and abstract submission by e-mail
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Geneva, Switzerland, 2-4 July 2015

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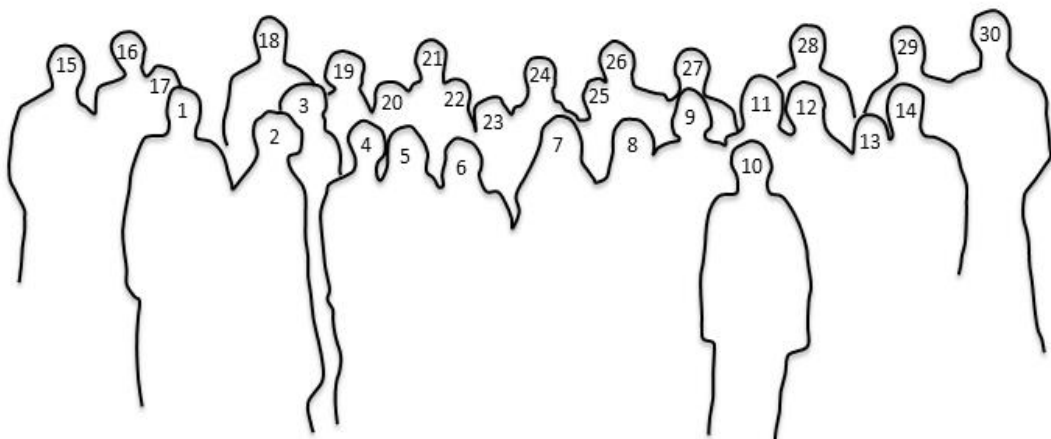
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**19 GEC, Vilnius, Lithuania (group photograph)
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