



IRGC NEWS



INTERNATIONAL RESEARCH GROUP ON CHAROPHYTES

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Edited by: A. García (Wollongong, Australia), C. Martín-Closas and S. Schneider

President: Carles Martín-Closas (Barcelona) cmartinclosas@ub.edu

Vice-President: Susanne Schneider (Norway) susi.schneider@niva.no

Secretary: Adriana García (Australia) adriana@uow.edu.au

Treasurer: Emile Nat (Amsterdam) e.nat@kranswieren.nl

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EDITORIAL

The IRGC showed again its strong vitality in 2008, with the successful organisation and intensive participation in the 5th IRGC Symposium in Rostock (Germany) and the election of a new Executive Committee. I thank all the voting members for the confidence placed in the new Committee. On this occasion I would like to express also my recognition to the enthusiastic leadership of our former President, Ingeborg Soulié-Märsche who will be a helpful reference for the present Committee.

This year our organization celebrates the 20th anniversary (1989-2009), in happy coincidence with the celebration of the Year of Darwin. The intense activity of the IRGC members is demonstrated in this issue of the News by a number of international projects on Charophytes: the IUCN International Red List of Charophytes, the General Bibliography of Charophytes and also the Charophyte-L electronic list, a forum for exchange of information which allows fast communication between charophyte specialists. I encourage all of you to participate actively in all these projects of our association. Our research on Charophytes will be more useful and more visible for the international scientific community inasmuch we are able to show and share our data, our questions and results.

Carles Martín-Closas

NEW EXECUTIVE COMMITTEE

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

Members at large

Robin Scribailo (USA)
Joop van Raam (The Netherlands)

Regional Correspondents

Qi-fei Wang (China)
Uwe Raabe (Europe)
Michelle T. Casanova (Austral-Asia)
Eduardo A. Musacchio (South- and Central 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** (see also 'Regional Groups of the IRGC' in this issue).

NEW IRGC MEMBERS

During the Rostock symposium and earlier in 2008, 22 colleagues subscribed to the IRGC. The addresses and e-mails of these new members, coming from Brazil, Bangladesh, Russia (Siberia) and USA but also from many different parts of Europe such as Estonia, Finland, Greece, Germany, Great Britain, Norway, Poland, Russia, Sweden, Switzerland are included in the Directory of membership at the end of this NEWS.

MINUTES OF THE 2008 GENERAL ASSEMBLY

The General Assembly of the IRGC was held during the 5th IRGC Symposium at the University of Rostock Germany on 25 September 2008. The many colleagues who

subscribed as new members during this symposium reflect the increasing importance of Charophytes in aquatic sciences.

IRGC's President's Report

Ingeborg Soulié-Märsche presented a short review of the activities of the IRGC since our previous General Assembly in Robertson, Australia, 2004.

Following the suggestion made in Robertson, "Charophyte-L", a discussion forum for all matters relating to charophytes, was set-up by Robin Scribailo and has been operating since 2005. Although the list-server is user-friendly and could become the preferred communication medium between members, there's little traffic on the list. We encourage using the list as a new tool for quickly circulating recent information and discussing questions of general interest.

Thanks to Adriana García, the IRGC has an attractive web-site, which she has taken in charge for updating, re-shaping and maintenance at the University of Wollongong, Australia. She also took the necessary steps to provide our IRGC NEWS with an ISSN code so as to give your contributions to the NEWS a formal support that can be referenced as a Journal citation.

During the time-span 2004-2008, the IRGC also supported the two interim meetings of the Group of European Charophytists: in Barcelona, 2006 and Belgrade, 2007.

IRGC's Treasurer's Report

Dr Emile Nat from the Netherlands presented the state of affairs of our finances, based on the yearly balance from 2004 to 2008 (see table below). He underlined the modesty of our income based solely on membership fees but which was still sufficient to cover the regular expenses (hardcopies of the IRGC-NEWS) and to provide some support for specific Charophyte meetings. The accounts were unanimously approved.

The tight balance of our account needs regular payment by all members. Don't wait to receive a reminder, as from now on, according to the statutes – dismissal from membership will be applied for non-payment of fees for more than two years. Multiple-year payment is encouraged in order to reduce bank- and mailing costs. The Committee urgently invites

you to update your membership fees at your earliest convenience – many colleagues did so during the meeting in Rostock.

Please find the new membership form enclosed with this issue of the News.

IMPORTANT: bank's references have changed!

Table. IRGC balances of the years 2004 - 2008

	2004	2005	2006	2007	2008
Bank credit on 1 January	€ 605.69	€ 576.43	€ 1,082.18	€ 1026.10	€ 1094.49
INCOME					
Individual membership fees	€ 599.50	€ 816.59	€ 370.00	€ 603.00	€ 1,245.00
EXPENDITURES					
IRGC-News copies & mailing costs	- € 126.66	- € 309.84	- € 172.08	- € 278.11	- € 394.28
Bank charges	- € 2.10	- € 1.00	- € 4.00	- € 6.50	- € 8.00
Support for IRGC Symposium Robertson	- € 500.00				
Support for GEC meeting Barcelona			- € 250.00		
Support for GEC meeting Belgrade				- € 250.00	
Support for IRGC Symposium Rostock					- € 585.30
Total expenditures	- € 628.76	- € 310.84	- € 426.08	- € 534.61	- € 987.58
Yearly balance	- € 29.26	+ € 505.75	- € 56.08	+ € 68.39	+ € 257.42
Total credit, 31 December	€ 576.43	€ 1,082.18	€ 1,026.10	€ 1,094.49	€ 1,351.91

Auditors of the accounts

After the report, two volunteers were called to act as the auditors of the accounts during the next term of office (2008-2012). **Dominique Auderset-Joye** and **María Rodrigo** accepted the task.

Membership fees

Upon proposal from some members of the General Assembly, the increase of the annual membership fees of the IRGC from 10 to 20

Euros was accepted by an overwhelming majority.

Election of the Executive Committee

The voting material had been sent three months in advance to the whole membership in order to give all members the opportunity to vote and to suggest ideas for forthcoming activities. Three of the previous members were standing for re-election whereas Ingeborg Soulié-Märsche resigned after a two-term office as president (2000-2008). Susanne

Schneider had been nominated for the committee.

Fourty-three (43) ballots had been received and were opened and counted by Milena Primavera and José-Luís Alonso during the General Assembly. The new Executive Committee was unanimously elected as follows:

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

After the poll being declared, Ingeborg thanked the committee members for their collaboration during all these years. She expressed her wishes for a long-lasting continuation of the IRGC activities and handed the chair over to Carles Martín-Closas.

On behalf of the newly elected committee, the president expressed his thanks to the audience and to the former President and exposed the main lines of the future work. One of the main objectives will be increasing members' participation in the website and in the electronic forum "Charophyte-L". He also appealed for suggestions for further activities from the assembly. It was suggested that part of the available finance could serve to create an IRGC-award for the best poster presented by a young scientist at the IRGC Symposium. The criteria of choice, composition of the jury and possible amount will need to be discussed further.

Regional Correspondents and members-at-large of the Committee

The task of the Regional Correspondents shall be to collect information about activities of interest for Charologists such as meetings, books, work in progress etc. from their area and to forward it to the IRGC Secretary. At present, the Regional Correspondents are as follows:

Uwe Raabe (Europe)
Michelle Casanova (Austral-Asia)
Qi-fei Wang (China)

Eduardo Musacchio (South-and Central America)

In addition, **Robin Scribailo** and **Joop van Raam** were elected members-at-large of the committee. The responsibility of these members will be to keep in function and promote the use of the "Charophyte-L" forum and the Charophyte General Bibliography respectively.

As a consequence of the change of presidency, the legal domicile of the IRGC must be transferred to the new president's residence, i.e. to the University of Barcelona (Spain). In this regard, C. Martín-Closas (president) and I. Soulié-Märsche (past-president) are empowered to take the necessary steps to transfer the accounts to a banking institution in Barcelona.

Other business discussed by the General Assembly

Publication of papers presented during the 5th IRGC Symposium

The organizers of the Symposium proposed to the assembly to publish the proceedings in the journal "Charophytes" edited by Michelle Casanova, Australia. The proposal found general agreement and about 15 participants expressed a wish to submit their presentation for the proceedings volume. The deadline for submission of manuscripts was fixed as 15 December, 2008. Irmgard Blindow and Hendrik Schubert will be acting as guest editors of this special volume.

GEC 2009

Sasho and Sonia Trajanovski, the organizers of the next meeting of the Group of European Charologists to be held in Ohrid, Macedonia, September, 2009, showed an informative ppt-presentation about the cultural interest of Ohrid and the scientific activities at the Hydrobiological Station of Lake Ohrid. The meeting place has two great assets as a world

heritage city since 1980 and as the oldest lake in Europe.

Next IRGC Symposium

In a four-year sequence, the next IRGC shall be in 2012, and possibly in South America. Adriana García, on behalf of Eduardo Musacchio expressed his willingness to organize the Symposium in Malargüe, Argentina, with her collaboration, and presented promising preliminary elements about the program and the excursions. Also, the organizers will try to keep the costs as low as possible. The proposal received the enthusiastic support of the General Assembly.

REPORT OF PAST MEETINGS

2008

5th Symposium of IRGC (Scientific Report, Pre-Symposium fieldtrip, Determinations Workshop, and Post-Symposium fieldtrip)

The extremely successful meeting was organized by Prof. Hendrik Schubert (University of Rostock) and Dr Irmgard Blindow (University of Greifswald), who are warmly thanked for providing a very efficient working atmosphere during the meeting, workshops and excursions. It was attended by more than 80 participants from 25 different countries. All continents (with the exception of Africa) were represented. Obviously, charophytes have become a matter of wide interest.

Scientific report

Rostock (Germany)

24-26 September 2008

Wednesday 24 September 2008

The conference started Wednesday 24. After a short opening and welcoming session the scientific sessions began with oral

presentations dedicated to Fossil Charophytes. In the first session with Ingeborg Soulié-Märsche as chairman we had the oral sessions by **Carles Martín-Closas** and **Wang Qifei** about *Cosmopolitanism in Clavatoraceae (Cretaceous Charophyta) from the Northern Hemisphere*, and by **Qifei Wang**, **Carles Martín-Closas** and **Huinan Lu** entitled *Late Cretaceous charophyte distribution and paleogeography in China*. After a coffee break the fossil session continued moderated on this occasion by Carles Martín-Closas. **Nadežda Krstić**, **Ingeborg Soulié-Märsche**, **Jugoslav Zic** and **Desa Milutinović-Djordjević** presented the speech entitled *Miocene Charophyta of Maoče, Pljevlja (Montenegro Dinarides)*. **Adriana García** on behalf of **Eduardo A. Musacchio** presented the *Charophyta of the Mercedes Formation, Uruguay*, and **Wang Hailei**, **Liu Junying** and **Zheng Mianping** showed the *Preliminary Study on the Late Part of the Late Pleistocene Microfossil and Environment Change in Zaxi Lake, Central Tibet*.

After the lunch break a session on Charophyte Ecology started with Branka Stevanović as chairperson. **Andrzej Pukacz**, **Mariusz Pelechaty** and **Aleksandra Pelechata** talked about *The use of charophytes for the determination of habitat differentiation of lakes. Case study from mid-Western Poland*. **Helle Mäemets'** presentation was about the *Ecological status of charophyte-rich lakes in Estonia*. **Marian L Yallop** and **Chloe Onoufriou** talked about the *Persistence of Charophyte Communities in Restored Gravel Pit Lakes* and **Laura Kipriyanova** presented about Ecology and syntaxonomy of charophytes communities in the South of West Siberia (Novosibirsk Region).

After a short break for coffee, the next session also dedicated to ecology was conducted by Ralf Schaible. **Marius Pelechaty** and co-workers gave an oral presentation about *Lychnothamnus barbatus* in Poland: habitat conditions and social interrelations with other aquatic plants. **Shashi Bhushan Bhatia** talked about *Lamprothamnium papulosum (Wallroth) J.Groves (Charales): key indicator of paleosalinity variations in middle Holocene palaeolakes of southwestern Haryana, India*.

Branka Stevanović spoke about the *Distribution and ecology of Nitellopsis obtuse (Desv. in Lois.) J. Grov. in Western and Central Balkan*. **Rajat Chakraborty, Srinarayan Ojha** and **Samit Ray** talked about the *Determination of richness, evenness, diversity indices and interspecific association of some characean species in certain freshwater bodies of the state of West Bengal, India*. With this last talk the session dedicated to oral presentations ended and the poster session started. At least 27 posters of very different topics related to fossil and extant charophytes were presented and during almost two hours the conference participants discussed the posters with their authors.

Thursday 25 September

The program on this day started with the IRGC General Assembly where the results of the voting were given and the new Executive Committee was proclaimed. The scientific program started with a session dedicated to Laboratory Studies on charophytes. Mary Bisson was the chairperson of this session. We had two oral presentations: **Ralf Schaible** talked about *Sexual vs. parthenogenetic reproduction in Chara canescens* and **Mary J. Beilby** spoke about *Membrane potential oscillations in salt-stressed Chara australis*. After the lunch break the sessions continued (conducted by Mary Beilby). **Susanne Schneider** reported about *Chara - Morphology, Ecophysiology and Genetics: Conflict or Complement?* **Ronny Marquardt** talked about *Photosynthetic performance of Chara vulgaris in bioremediation ponds – analysis of the relation contribution of morphological and physiological acclimation*.

We stopped for a coffee break and also we took the traditional group photograph outside the buildings of the Faculty of Mathematical and Natural Sciences. Most people used the coffee break to continue looking at the posters.

The last session devoted to laboratory studies on charophytes was led by Susanne Schneider. The first presentation was given

Adriana García, who presented the collaborative paper by A. García, H. Sakayama, H. Nozaki, M. Ito and A. Chivas entitled *Taxonomy of species of Nitella subgenus Tieffallenia and subgenus Hyella: phylogeny based on rbcL gene sequences and oospore morphology*. Then **Michelle T. Casanova** developed results about *Morphological responses of charophytes to salinity variation*. The last session of the day was dedicated to a new topic: Taxonomy & Conservation. **Robin W. Scribailo** presented a talk entitled *Forty years after Wood and Imahori; progress toward the development of a revised key to charophytes of North America*. After the end of lectures most conference participants went to the city centre for a guided city tour. There, a tourist guide was waiting for us and she kindly showed and explained the most important monuments and places of Rostock. We could admire the fascinating astronomical clock in Marias' church, the oldest still working in Europe. We also enjoyed the city wall and the old university building. After the interesting city tour the conference dinner was reserved at a typical German brewery. We enjoyed a very good dinner in a quiet place, where excellent beer was served, produced in the same restaurant. There, we could admire the devices used for beer making.

Friday 26 September

This was the last day of the conference. The scientific sessions began with the topic already started the day before: Taxonomy and Conservation. Dominique Auderset Joye conducted the two oral presentations: *Taxonomy and phylogeny of the extant genus Nitella* by **Hidetoshi Sakayama, Adriana García, Allan Chivas, Hisayoshi Nozaki** and **Motomi Ito** and *Critical taxonomical studies in Charophytes -section Hartmania R. D. Wood* by **Jacek Urbaniak**. After a coffee break the last part of the taxonomy and conservation session was led by Adriana García. **Nick Stewart** talked about *Charophyte conservation in Britain* and **Dominique Auderset Joye** about the *First application of*

the IUCN Red List Categories and Criteria to Charophytes species found in Switzerland. After a break, the next session about charophytes at a regional scale started. Robin Scribailo was the chairman of this session. **Egita Zviedre** presented the *Freshwater charophyte distribution and occurrence in Latvia* and **Lothar Ratai** talked about *The distribution of characeans in the ditches of fen meadows in the Neustrelitz district.*

After the lunch break the session about regional studies ended with three oral presentations: **Anders Langangen** talked about *Charophytes in alpine alkaline lakes in Glomfjellet mountains, Northern Norway and remarks on the distribution of Tolypella canadensis Sawa*, **Laura Kipriyanova** on behalf of **Roman Romanov** presented the speech about *The charophytes of Western Siberia* and **Sabrina Naz** and **Nasrin Jahan Diba** talked on *Diversity of charales, past and present scenario of Bangladesh.* This session was conducted by Michelle Casanova. After a coffee break the last session of the conference dealt with Charophyte Oospores and Propagules. Mariusz Pelechaty was the chairman. We had 4 presentations: **Chloe Onoufriou** and **Marian L Yallop** presented the *Distribution of Charophyte propagules in restored gravel pit lakes.* **Jose L. Alonso-Guillén**, **María A. Rodrigo** and **Ingeborg Soulié-Märsche** presented the *Study of the oospore bank in sediments from a coastal lagoon for restoration purposes.* **Leeli Amon** talked about the *Occurrence of Charophyte oospores in Estonian Late-glacial sediments* and **Rudolf Ehwald**, **Inka Erichsen** and **Heidemarie Schneider** spoke about the *Viability test for the Chara oospores based on differential permeability of the sporopollenin envelope and the plasma membrane.*

After that we had the official closing of the conference. We were also given information about the post-conference excursion to Gotland and the planned workshops and a new one was proposed: European Red List for Charophytes: discussion about possibilities and difficulties. The day ended with this workshop.

Finally, I would just like to stress that the conference was very well organized, all

sessions and activities were on time. Thus, I wish to thank the organizers and also the participants for making the 5th IRGC conference 2008 in Rostock a real success.

María A. Rodrigo, Spain

Pre-symposium excursion report (to Thomsdorf, northeast Germany) 21-23 September

The pre-symposium excursion was arranged to the Uckermark and Feldberger Seenlandschaft area in north-eastern Germany, at the borderland between the federal states of Mecklenburg-Western Pomerania and Brandenburg. The region is a very popular tourist and holiday destination. It is appreciated because of the remoteness, untouched nature and the wealth of woods, meadows, lakes and rivers offering a broad variety of habitats for rare species of flora and fauna. The present topography of this area has been formed by the last glaciation, ending approx. 13,000 years ago. The excursion area has variable landscapes. They show a complete sequence of glacial shapes: ground moraine, end moraine, glacial outwash and glacial valley. The exceptional richness of lakes is characteristic of the region. Rare plants and animals can be found in the lakes and their surroundings.

On Sunday 21 September the participants of the 'extant charophytes excursion' gathered together in Thomsdorf, arriving from many countries around the world.

On Monday 22 September, the 41 people participating in the pre-symposium fieldtrip met for breakfast, and afterwards we divided into three groups, after the organisers described to us the different options.

Group 1 (guided by Hendrik Schubert and Irmgard Blindow) visited two lakes and collected charophytes mainly from a boat. **Carwitzsee** (Lake Carwitz) is situated next to Haus Thomsdorf, the hotel where we were

staying. The lake was rich in submerged vegetation. *Ceratophyllum demersum* and *Myriophyllum spicatum* were dominant species among vascular plants, and also *Elodea nuttallii* was seen during the excursion. Among charophytes, *Nitellopsis obtusa* formed dense vegetation. Other charophytes found in this lake were *Chara contraria*, *C. hispida*, *C. virgata*, *C. tomentosa*, *C. filiformis* and *C. aspera*.

Group 2 (guided by Lothar Ratai) collected charophytes from boats and by walking along lake shores. **Dreetzsee** is a clear-water lake with rich submerged vegetation, and charophytes are dominant. During the excursion 12 charophyte species were collected in this lake: *Chara intermedia*, *C. filiformis*, *C. virgata*, *C. tomentosa*, *C. aspera*, *Chara rudis* (including transitional forms between *C. hispida* and *C. rudis*), *C. globularis*, *C. contraria*, *Nitellopsis obtusa*, *Nitella opaca* (female plants), *N. cf. flexilis* (sterile) and *N. mucronata*. Amongst the vascular plants, the hybrid *Potamogeton lucens* x *perfoliatus* was found. In **Käthelkuhle** only *Chara globularis* was collected.

Groups 1 and 2 together visited **Krüselinsee**, a clearwater lake, one of the highlights of the excursion. *C. hispida*, *C. rudis*, *C. aspera*?, *C. globularis*, *C. virgata*, *Nitellopsis obtusa* and *Nitella cf. opaca* were collected. Also *Stratiotes aloides* and *Najas marina* s.l. were found.

Group 3 (“the rubber boot group”, guided by Rüdiger Mauersberger) collected charophytes mainly from the shore and in smaller water bodies. All sites are situated within the glacial outwash plain in the nature park “Uckermärkische Seen/Land Brandenburg”. The first two sites were close to Schreibermühle, a fen with closed vegetation, and a small peat ditch. Following the rising of the water level in 2001 new hollows developed. In the mixed *Phragmites* - *Typha* colony growing in **Moosbruch** fen, *Chara globularis* and *C. intermedia* were found in wet hollows. The flooding ditch in **Rohrbruch** was full of *Chara intermedia* and *C. virgata*.

The third site was **Fauler See**. The small, incompletely stratified, oligotrophic to mesotrophic clear-water lake has no surface water inflow. Only calcium-rich groundwater enters the lake, which is surrounded by pine forests. Charophytes dominated among the submerged vegetation, especially *Chara rudis* and *C. tomentosa*. We found also *C. intermedia*, *C. contraria*, *C. virgata* and transitional forms between *C. globularis* and *C. virgata*. *Najas intermedia* grew in shallow water. The fourth site was a **spring mire in the Lehtsee lowland**. It is a drained fen area, used as meadow up to 1999. By blocking up the drainage ditches with peat the water level had raised. Some peat cutting areas are filled by the emerging groundwater. Carpet-like charophyte vegetation of *Chara vulgaris* (short specimens) was found in black peat depressions. The species had an unusual appearance, an almost isostichous cortex with few and short spine cells and long bract cells.



Chara intermedia and *C. virgata* were growing in a flooding ditch in Rohrbruch. Photo: Marja Koistinen.

During the evening, all the groups gathered together into one of the halls downstairs in the hotel, to observe and identify the charophytes collected during the excursions. Every collection site had its own table with binoculars and microscopes and people moved freely from table to table trying to identify their collections. The hall filled with vivid discussions and a strong charophyte

smell. The most eager participants worked until late at night.



Determination of charophytes on Monday evening.
Photo: Marja Koistinen

Early in the morning on Tuesday September 22, we went to Rostock by bus. The first stop was in the city of Stralsund, a world cultural heritage resort and a beautiful Hanseatic town. We had only three hours to become acquainted with Stralsund. The group divided into two subgroups: one subgroup had a semi-guided stroll through the city, while the other visited the German Sea Museum, which is built inside an old Zisterzienser-church. At 2:00 pm we left the city. The next two stops were along the Darss-Zingster-Bodden Chain, a series of choked Baltic lagoons where, in spite of the very turbid water, it is possible to find charophytes. The first stop was at **Barther Bodden** lagoon in the harbour of Dabitz village, where we found abundant *Chara baltica* on soft ooze bottom next to the pier. The second site was **Bodstedter Bodden** lagoon, near Fuhlendorf village. We recovered plenty of *Chara aspera* with a rake, and also some *C. baltica* was collected.

At 6:00 pm, after two very nice and interesting days, we arrived to Rostock where everybody was taken to her/his hotel. The Symposium started next morning.

Marja Koistinen, Helsinki, Finland

References

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23.09.2008. – 5th IRGC Symposium 2008 in Rostock. 22 pp.

Determination workshops ***University of Rostock*** ***26-27 September***

Many colleagues had planned to stay in Rostock to participate in the determination workshops proposed and conducted by **Irmgard Blindow**. The announcement included a “general workshop” for determination of any species and a “specialist workshop” that would be focused on particularly tricky species i.e. the *Chara hispida* complex.

A large, well equipped room with about 20 binocular microscopes was made available for examination of fresh- and herbarium material. The lively atmosphere during these two days, with young people going from one table to the next to gather most competent information and advice from the “specialists”, and the concentrated examination and discussion of “intermediate” morphologies showed the enthusiasm devoted to the Characeae. Critical points were discussed at the blackboard. Uwe Raabe presented the *Chara baueri* story (see this issue) with humorous details. Definitely, the initiative to extend the meeting by the workshops (a usual practice of the German Working Group on Characeae and the GEC-Meetings) met full agreement and success and should be proposed for future IRGC meetings.

Ingeborg Soulié-Märsche

Post-Symposium excursion report ***(to Gotland, Sweden)*** ***27 September-1 October***

After a very enjoyable conference, we met at Neuer Markt in the evening of Saturday 27 September. We said thanks and goodbyes to conference organisers, Hendrik and Irmgard, and piled into three minibuses driven by two Ronnies and Arne. Ingeborg, who was in charge, checked that nobody was left behind.

We got to the ferry port quickly, but had to wait around a bit. I am always fascinated by the logistics of ferry travel, but have forgotten the long waits! But talking to everybody in our minibus passed the time. Once the cars got moving we were aboard quickly, having snacks and drinks. We did go to bed quite early, to be up at five on Sunday 28 September and have breakfast, as we docked at the Swedish town of Trelleborg. We had a long drive in front of us to catch the afternoon ferry at Nynashamn to the island of Gotland.

The drive was very pleasant: Sweden is just one long forest with picturesque towns among the trees and occasional Ikea (or some other familiar name) factory, also half hidden by the trees. There are also plenty of beautiful brooding and mysterious lakes. I read Swedish novels, featuring detective Kurt Wallander, and now I understand why he is always chasing villains through the forest!

We picked up our local guide, Lennart Jeppsson, experienced geologist from Lund University, who was also very knowledgeable about Swedish customs and culture spiced with a great dry sense of humour. We arrived at Nynashamn in good time to catch our ferry. The weather was sunny, but cool. We stretched our legs and it was time to get abroad. We arrived in Visby on Gotland in the dark and headed to Hemse. Tiredness was setting in. The organisers booked us into a hostel, believing that the rooms contain two or four beds, but this was not the case. After some confusion, we got sorted out. Our room with seven beds was shared with Casanova family and Rudolf and Heidi Ehwald. All charologists (and spouses) got on! Michelle's and Anthony's son Robby gets my vote as the best behaved boy!

On Monday 29 September, we woke up refreshed and found a café (and bar) down the street, which served excellent breakfast: smorgasboard with beautiful dark bread, home-made jam from forest berries, sour milk, apple purée, ham, eggs, cheese and good coffee.

Then we headed to stop number 1: **Uddvide quarry**. It is an amazing place that one could easily drive past without local knowledge. We found many fossils of trilobite

bits, oocytes, crinoids, corals and brachiopods by splitting the rocks. Lennart gave us a lecture about the geology of Gotland, which is summarised in the field trip handout. Gotland is famous for fossils from the Silurian period (443.7 ± 1.5 to 416.0 ± 2.8 million years ago). Almost all major clades known from some of the Silurian epochs are represented. The biostratigraphy is based chiefly on conodonts, the oral pieces of extinct jawless organisms, probably vertebrates. We were very fortunate to hear this lecture from Lennart, who has done extensive research on Gotland and found that the Silurian period was not as stable as previously believed. Changes in climate were caused by transitions between different oceanic states (Jeppsson 1990, *Journal of the Geological Society, London* 147, 663). These events caused extinctions and faunal changes. The oldest known charophyte, *Moellerina laufeldi*, was described and named by Conkin and Conkin (1992, *University of Louisville. Notes in Paleontology and Stratigraphy*. No. J. 22) at Gotland site at Hoburgen. The fossil specialists from our group took rock samples with them to look for gyrogonites back in the lab.

The bottom of the quarry contained a lake with living charophytes, which Branca and Jelena identified as *Chara contraria*, *C. aculeolata* (or *C. polyacantha*) and *C. aspera*.

The next stop was at a picturesque seaside. The Baltic Sea is not very saline and there are large white swans bobbing on the surf. Coming from Australia, this just does not look right! Shallow ponds near the beach contained charophytes, identified as *Chara virgata*, *C. aspera* and *C. hispida*.



We continued driving south to visit the Old Man of Hoburgen: an interesting rock

formation. The clear cool air of Gotland made us hungry and we stopped for lunch at Vamlingbo. Irmgard had organised in advance takeaway lunch from our breakfast café. The chicken lunch was as nice as the breakfast. After lunch we admired the old church.

The next three stops were at bird nature reserves. **Muskmyr Lake** did contain charophytes, identified as *Chara globularis*, *C. virgata*, *C. aculeolata*, *C. polyacantha* and *C. aspera*. We also enjoyed following the boardwalk and climbing the viewing tower. The second bird reserve also had charophytes as well as huge swarm of wild ducks getting ready to fly south. The final stop featured a lovely walk through pasture and bush to the seaside as the sun was setting. However, the charophyte ponds were dry.



In the evening we searched for a place to eat (the breakfast café was closed). We finished up having pizza in a place with an Egyptian décor! Pizza was OK, though. We walked through the quiet town and enjoyed the Swedish custom of welcoming lights in every window.

On Tuesday 30 September, we started with another nice breakfast and drove to two more locations to look for charophytes, but no luck. The second place was a lake (and bird reserve) in a lovely forest and we had lunch there. In the afternoon we drove to Visby. We admired the walls, old buildings and churches and botanical garden. We spent some time in the museum with great exhibits on geology and history, mainly about Vikings. We browsed through the touristy shops with many great sheep products (Gotland even features sheep on its flag) and found presents and souvenirs.

In the evening “our” café stayed open just for us and we had great dinner of sausages and chickpeas. Lennart talked about the history

of Gotland. Through time Visby was free Hanseatic town, taken over by the Swedish king, or the Danes! Now Gotland is part of Sweden again.

On Wednesday 1 October, we had an early morning to catch our ferry, this time to Oskarshamn (closer to Trelleborg). We had another pleasant drive, dropped Lennart near Lund and finally got our ferry at Trelleborg back to Sassnitz in Germany. A short drive and we were rewarded by a comfortable room in the Steigenberger hotel in Stralsund, the end of our trip. It was time to say goodbye to everybody.

Many thanks to Hendrik, Irmgard and Ingeborg (for organising this trip), our intrepid drivers, our local guide Lennart and to everybody for being such great company!

Mary Beilby, Australia

FORTHCOMING MEETINGS

There is a large variety of meetings where Charologists can take an active part and promote the significance of our favourite plants. Make your choice:

2009

23-26 June 2009

11th International Paleolimnology Symposium, Guadalajara, Jalisco, Mexico

The meeting will be held at the Hilton Hotel in Guadalajara. Scientific Sessions will be dedicated to General paleolimnology; Age-depth modelling; Stable isotopes; Organic geochemical paleoclimate proxies in lakes and bogs; Lake-sediment archives of trace-metals and organic contaminants; Paleolimnology of shallow lakes; Varved and laminated lacustrine sediments; Paleolimnological studies of arid regions of Eurasia; Paleolimnology of mountain lakes; Paleolimnology of high-latitude regions; Late Quaternary records from

lakes on the Southern Hemisphere; Human-environment interactions in the Americas; Rapid events and human answer as reconstructed from lacustrine archives; Quantifying the lake record of “paleo-precipitation” during the last 2 ka; Floodplain lake sediments as archives for environmental history; Paleolimnological applications in estuarine environments. Deadline for abstracts: 20 May 2009. Registration and abstract submission on-line; visit the website: <http://www.geofisica.unam.mx/paleolimnologia/scircular.html>

1-5 July 2009
6th Regional Symposium of the IFAA,
Milano, Italy

The scientific topics cover any aspects of calcareous algae and microbialites, including their present distribution and abundance. During the post-symposium field trip (6-10 July) a charophyte locality of the Oligocene will be visited.

Contact: Daniela Basso

daniela.basso@unimib.it

Website:

<http://www.geo.unimib.it/ifaa/index.html>

2-8 August 2009
9th International Phycological Congress,
Tokyo, Japan

The 9th International Phycological Congress which will be held in Tokyo, Japan, 2009. The topics included in the preliminary program are: comparative evolutionary genomics; phytoplankton dynamics and life cycle; chemical ecology; shifting concepts of speciation; symbioses; algae, bio-fuel and CO₂ sequestration; algae under multiple stress; biodiversity and ecological function; algal disease; alien algae and invasive species; phylogeny - new advances and insights; algae and bioremediation. **Several of these fields are of interest to IRGC members, and an opportunity to share our research with the wider phycological community!**

Information about the conference and pre-registration form is now available at: <http://www.ec-inc.co.jp/ipc9/>

7-10 September 2009
XVIII Congress of the Southern African
Society for Quaternary Research
SASQUA

This symposium will be held at Knysna, South Africa, with the main topic: “Understanding Quaternary Change: Southern Hemisphere Perspectives”

Contact: mmeadows@mweb.co.za

7-11 September 2009,
5th Speciation in Ancient Lakes
Conference, SIAL5, Ohrid, Macedonia

Host and local organizer: Hydrobiological Institute Ohrid (HBI), St. Kliment Ohridski University Bitola, Macedonia. Conference venue: Hotel Millenium Palace, Ohrid (on the shore of Lake Ohrid near the old town of the city). This meeting may be combined with the 16th GEC, and is a unique opportunity to know how long-lasting lakes influence in the allopatric speciation of aquatic organisms including charophytes.

Contact: Christian Albrecht
christian.albrecht@allzool.bio.uni-giessen.de

Our colleague Sasho Trajanovski (Macedonia) forms part of the Organizing Committee

12-16 September 2009
16th Meeting of the Group of European
Charophytologists (GEC), Ohrid, Macedonia

The 16th Meeting of the Group of European Charophytologists, devoted to living and fossil Charophytes (sensu Charales) to be held in **Ohrid (Macedonia) on 12-13 September 2009** immediately following the International Conference on Ancient Lakes (SIAL) in Ohrid.

Deadline for pre-registration is 15 April 2009.

Contact: Dr Sasho Trajanovski
Hydrobiological Institute, Naum Ohridski 50,
6000 Ohrid, R. of Macedonia. **E-mail:**
traja@hio.edu.mk

Circular and Registration Form also available at IRGC Website

17-19 September 2009

The Mesozoic terrestrial ecosystems symposium, Spain

The 10th MTE covers the whole range of Mesozoic terrestrial groups and their palaeoecological relationships. Fieldtrips are organized to important palaeontological sites including lacustrine rocks with charophytes and dinosaur remains (type localities of giant sauropods *Turiasaurus* or *Aragosaurus* near Teruel, Lower Cretaceous Las Hoyas Fossil-Lagerstätte in Cuenca or several Treppe Basin-Upper Cretaceous sites) and the great Dinópolis exhibitions in Teruel.

Contacts: Angela Delgado Buscalioni
angela.delgado@uam.es,
María Rosa Crespo
rosa.crespo@meetandforum.com

Website:
<http://www.meetandforum.net/MTE2009/>

14-17 October 2009

10th National conference and 25th Annual academic Conference of Palaeontological Society of China

More than 200 palaeontologists and students are expected to participate in the conference including several sessions. There are also the activities for the commemoration of 80th anniversary of the Palaeontological Society of China.

Post-symposium excursions

1. Geological and Palaeontological excursion in Nanjing and adjacent areas
2. GSSP excursion to Zhejiang Province (Meishan Section of Changxing County, P/T

GSSP and Huangnitang Section of Changshan County, O1/O2 GSSP)

3. Three gorges area, Mesozoic excursion
4. Excursion on Cambrian explosion and Chengjiang Biota, Chengjiang County of Yunnan

Contact: Dr Qifei Wang, Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences, 39 East Beijing Road, 210008 Nanjing, China. E-mail: qfwang@nigpas.ac.cn or qfwanghm@hotmail.com.

Or contact Dr. Yugang Tang, E-mail: psc@nigpas.ac.cn; a14@cast.org.cn
Webpage: www.china-psc.org.cn

CHARA BAUERI REDISCOVERED IN GERMANY – PLUS ADDITIONAL NOTES ON GUSTAV HEINRICH BAUER (1794-1888) AND HIS HERBARIUM

It was really a great experience at the end of June 2006 to hold in my hands a plant – already in the field it was very easy to identify – that nobody had seen in Europe for more than 130 years: *Chara baueri*!

This story started almost 3 years ago, at the beginning of June 2006. Searching for species of *Hieracium* in the southern part of the Uckermark (Brandenburg) NE of Berlin was becoming more and more boring because nothing really interesting was found. A little pond in the field just besides the small road between the villages of Parstein and Bölkendorf caught my attention; not as a place to find *Hieracium* spp., but maybe for other species. The pond was full of *Elatine alsinastrum* and some other rare species typical for this environment. Very close to this place there was a second pond, also containing a lot of *Elatine alsinastrum* and surprisingly, holding a large population of young specimens of *Tolypella prolifera*. *T. prolifera* is one of the very rare charophytes in Germany (Korsch et al. 2008), with only two old records from the 19th century (Raabe 2009) for the Brandenburg area. So, it was a very easy decision: stop

looking for *Hieracium* and continue exploring these pools in the fields.

The Brandenburg area has mainly formed during the ice age (Weichselian glaciation), with the typical development of lakes and kettle holes. There are many smaller depressions in the fields commonly with clay sediments which are normally dry and cultivated, though, after a very rainy/snowy autumn/ winter they are filled with water and a most interesting typical flora and vegetation develop in these temporary ponds during spring. The flora includes several very rare and endangered species in Germany like *Elatine alsinastrum*, *Schoenoplectus supinus*, *Juncus tenageia* and *Lythrum hyssopifolia*. Charophytes are rather rare in this type of water body, being the most “common” species *Chara globularis* and more interesting but rarer *Nitella opaca* and *Nitella mucronata*.

At the end of June the pond with *Tolypella prolifera* was visited again. But the water was gone and *Tolypella* disappeared. It was not difficult to find more pools in the fields with some interesting species except charophytes, until I reached to a quite big field pond near the small town of Greiffenberg in the Uckermark. Once again, *Elatine alsinastrum* and some *Chara globularis* were present, though I could not explore the pond better because I was wearing normal shoes. Luckily, curiosity won - would it be worth to go back to the car to fetch the boots? That proved to be a very good decision! Back at the pond there were these small charophytes growing in the shallow water between *Chara globularis* and looking a little “succulent”. They reminded very much of *Chara braunii* but this kind of pools and this part of Germany would be very untypical for it. A more detailed observation of the stems of the plants provided a big surprise and nice feeling. It was very difficult to distinguish the cortex (the upper parts of the stems - the upper internodes - are always corticated, the lower parts of the stems are commonly without a cortication) but it was easy to see that there are small very typical spines on the stems: *Chara baueri*! All the plants were very young, small and sterile. *Chara baueri* preferred the shallow parts of the pond and was associated with *Chara*

globularis, *Bolboschoenus maritimus* agg., *Alisma plantago-aquatica* agg. and *Ceratophyllum submersum*. A few weeks later the pool was dried up and the rare charophyte gone. Checking for more ponds similar to this all over Brandenburg, I discovered a second very small population in another field pond in the Uckermark near Angermünde.

In 2007 it was hopeless to look for *Chara baueri*. The depressions in the fields were dry and cultivated. In early spring 2008 the situation seemed to become again very interesting because there was a lot of rain during the late summer, autumn and winter and a lot of the depressions in the fields were again filled up with water. Since the spring was unusually hot and dry in Brandenburg a lot of pools dried up very fast. Nevertheless in June there were still a lot of water bodies in the fields. *Chara baueri* appeared again in small populations at the localities found two years before. Much more impressive was a third, new place in the so called Märkische Schweiz east of Berlin. A quite big shallow pool was full of *Chara baueri* forming large dense carpets. Some other charophytes were growing in this pond, *Chara vulgaris* (very few), *Chara globularis* (much less than *Chara baueri*), *Nitella mucronata* (very big and in some parts of the pond abundant) and *Tolypella prolifera* (a single specimen). Rather frequent phanerogams were *Ceratophyllum submersum*, *Lemna minor* and *Lemna trisulca* among several other rarer species.



Temporary pool with *C. baueri* near Greiffenberg, 2008 (photograph by A. Pucasz, Slubice, PL)

Stimulated by the findings in Germany, Dr Andrzej Pucacz (Slubice) looked

for *Chara baueri* in field ponds in adjacent Poland. Close to the border to Germany, he found this species for the first time in Poland in a similar type of pool.

Chara baueri was first collected in 1827 in small ponds in the area of Berlin by Gustav Heinrich Bauer (1794-1888). He stated his plants as a new species and described it as *Chara scoparia* in 1829. Later, it was thought to be identical with *Chara braunii*, and this resulted in some confusion up to recent times. The original name *Chara scoparia* was found to be illegal already by Alexander Carl Heinrich Braun (1805-1877), and he named the plants from Berlin *Chara baueri*. In the vicinity of Berlin *Chara baueri* was collected by a lot of botanists until the beginning of the 1870s. So there are many herbarium specimens distributed all over the world. After the founding of the German Empire in 1871 when Berlin became the capital of Germany the city grew rapidly and these localities have been destroyed.

Besides the records from Berlin there are only three other places where *Chara baueri* was found during the 19th century: one in southern Sweden, a second near Schwerin in northern Germany and a third in Austria. All these records are earlier than 1850 and all other records from Europe were mistakes or very doubtful and obviously could not be verified. So, the species was thought to be extinct in Europe since the beginning of the 1870s.

A very similar and supposedly closely related charophyte from Australia was thought to be another form or variety of *Chara baueri*, but since these plants do not develop spines they are nowadays accepted as a different species, *Chara muelleri*.

In 1994 *Chara baueri* was found in a shallow temporary pool in Kazakhstan, far away from the so far known former localities in Europe. This was the first record worldwide since the 19th century. The finding was in detail described by Langangen & Sviridenko (1995). The vegetation of this pool was very similar to the vegetation of the field ponds in Brandenburg.

Some interesting notes on Bauer's charophytes herbarium

The story about Bauer's charophyte herbarium is enlightening, considering also that its whereabouts are unknown at present.

The enthusiastic botanist Gustav Heinrich Bauer was born in Wittenberg, the town of Martin Luther, in 1794, becoming later a pharmacist. At the beginning of the 1820s he moved to Berlin where he spent the rest of his life. When Berlin became the capital of the German Empire the rent of properties became more and more expensive and Bauer had to move to a small and cheap flat, obliged to sell his herbarium (Magnus 1889). The buyer was Fritz Kurtz (1854-1920), who allowed Bauer to keep his cryptogam herbarium until his death. In 1884 Kurtz moved to Córdoba in Argentina, and Bauer died four years later, 1888. It seems that his cryptogam herbarium including the charophytes did not follow Kurtz to Argentina. The herbarium of Kurtz is kept in Córdoba (CORD), including Bauer's phanerogams and a small fascicle with charophytes from other collectors (as indicated by the curator of CORD Herbarium). It is not clear what happened with the charophytes of Bauer's herbarium. It is possibly that the collection remained in Germany and it would be great to find some information about it. However, there are charophytes collected by Bauer in a lot of herbaria because he gave specimens to other botanists. A strength of Bauer is the excellent way he preserved them, which makes 'his charophytes' impressive.



Chara baueri from Wien (photograph by Naturhistorisches Museum Wien)

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Uwe Raabe, Marl, Germany

BIBLIOGRAPHY OF MODERN AND FOSSIL CHAROPHYTES

It is a pleasure to announce that Joop van Raam from The Netherlands, as agreed during the General Assembly in Rostock, has compiled and updated all the references on modern and fossil charophytes. This implied a lot of voluntary work for him and we are grateful for his dedication and generous help to the people interested in charophytes.

This information will be available in our IRGC's website as a pdf file for general use and will be updated twice a year. It is important therefore that researchers whose papers are not included yet or publish in the future, provide the information to Joop.

In the name of all our members and future researchers on charophytes, the IRGC Committee thanks Joop for this effort.

IRGC Committee

IUCN RED LIST FOR CHAROPHYTES

Nick Stewart initiated a workshop at the Rostock IRGC meeting, aiming to assemble national experts on charophyte Red List status. The possibilities of establishing a world-wide and/or European charophyte Red List, and the

IRGC's acting as responsible organisation for charophytes within the IUCN were discussed. However, we concluded that for most charophyte species not enough data exist to establish such a world-wide or even European Red List. Some possible species that could be included into the IUCN Red List, like *Chara baueri* and *Tolypella salina*, were discussed further, but we agreed that we are at a too early stage now, and we will wait with discussing specific species in more detail until contact with the IUCN was established. Nick Stewart agreed to try to establish contact with the IUCN and to push matters forward in the future.

NEWS FROM THE REGIONAL GROUPS AND INDIVIDUALS

News from China

The 8th National Conference and 12th Annual Academic Conference of Chinese Micropalaeontological Society was held in Beihai, Guangxi of China, 19-27 October 2008. One hundred and forty-five association members and students participated in the meeting and elected the new committee. The reports and lectures covered a variety of topics on Micropalaeontology from Pre-Cambrian to Quaternary, e.g. early embryo fossils, isotopic elements in shells and the reconstruction of palaeoclimate based on foraminifera, ostracods, and diatoms. The participants also had a field excursion on Quaternary coastal environments in Beihai City and some localities in Vietnam.

German Working Group on Characeae (AGCD)

The AGCD continued holding an annual meeting. On 14-15 June 2008, 17 colleagues came together near the “Sweet Lake” in Seeburg (Saxony, Germany). The meeting had been prepared by Hendrik Schubert, with local organization by H. Korsch and K. van de Weyer.

The workshop included seven oral presentations but most of the time was devoted to common fieldwork for mapping the charophyte vegetation of natural and man-made lakes (gravel pits, mine voids) in order to complete the distribution map of Characeae in Germany.

Two rubber-boot teams were efficiently reinforced by a group of five experienced scientific divers. Determination of the collected material (9 species) was carried out during p.m. of the second day of the workshop.

In 2009, the AGCD will meet for 3 days (5-7 June) on the shores of Kulkwitzer See near Leipzig (Saxony, Germany). This workshop being organized by Angela Doege.

Ingeborg Soulié-Märsche
(summarized from report by H. Korsch
& K. van de Weyer)

News from South America

1. Brazil

Simone Baeker-Fauth (sbfauth@unisinis.br) and **Gerson Fauth** (gersonf@unisinis.br) from the Universidade do Vale do Rio dos Sinos, (UNISINOS), Laboratório de Micropaleontologia, Av. Unisinis, 950, 93022-000 São Leopoldo, RS. Brazil, continue studying the Late Cretaceous microflora from the Santos Basin. In addition, they will begin in 2009 a new project dealing with the Late Cretaceous–Earliest Neogene charophytes from Acre Basin. E. Musacchio was kindly invited to collaborate in the last mentioned project.

Rafael Faria (rafaelfaria@ige.unicamp.br), and the team oriented by **Fresia Riccardi-Branco** with **Isabel Cortez**, in the Instituto de Geociências da Universidade de Campinas (São Paulo, Brasil), P.O. BOX 6152, 13083-970, Campinas, SP, Brazil, are now devoted to Permian (Guadalupian) charophytes of the Teresina Formation, Paraná Basin. The studies include carbonaceous compressions.

Publications

2009. *Leonardosia langei* Sommer (Charophyta, Porocharaceae) from Corumbataí Formation (Guadalupian), Piracicaba, SP, Brazil: First register of an antheridium and of corticated thalli. *Ameghiniana*, in press.

2. Argentina

Adriana García (adriana@uow.edu.au) in the University of Wollongong, Australia, and Hidetoshi Sakayama of Japan are dealing with Gondwanan charophytes - a molecular approach.

Publications

2009: Late Quaternary vegetation and fire history in the northernmost Nothofagus forest region: Mallin Vaca Lauquen, Neuquen Province, Argentina. *Journal of Quaternary Science* 24: 248–258

Finally, **Eduardo A. Musacchio** (emusacchio@yahoo.com), in the Universidad de la Patagonia, Comodoro Rivadavia (9000) Argentina, is currently devoted to the Early Cretaceous record in Patagonia of two organ-genera of characeans associated to utriculi of clavatoraceans and *Cypridea*-assemblages (Ostracoda).

Publications

2009. Late Cretaceous *Lychnothamnus*, *Nitella* and *Tolypella* from Zampal, Argentina (submitted).

News from individuals

The *Charophyte* web site (< <http://www.charophytes.com>>) continues to be popular, receiving many visits from all over the world. It is on the first page of google hits, which is a good indication that it is being read. Students and researchers, and people who have a passing interest in charophytes send me comments about the site, all of them positive. The whole intention of the electronic journal *Charophytes* and the web site has been to increase awareness and communication about charophytes, and this seems to be working. I will continue to investigate the best way to make the journal useful and popular, including

ranking with ISI. The major problem with ISI ranking is that the journal needs to appear on a regular basis, which has not been possible in these early days. For regular publication we need regular submissions, which is up to you, the researchers and authors. *Charophytes* accepts papers that present good science and we are able to help authors who have English as a second language. If you have not published in English before (or even if you have), give it a try with *Charophytes*! It's all about communication!

I will post a message to the charophyte-L when papers start to appear, so sign up with charophyte-L and it will help to keep you up-to-date in the latest charophyte research.

Michelle Casanova, Australia

PUBLICATION OF ROSTOCK'S PROCEEDINGS (CHAROPHYTES)

A total of fifteen manuscripts have been received for the special issue of *Charophytes* (most before the deadline of 15 December, a couple more are still promised). All of these have been sent to referees, and the replies are trickling in. Hendrik Schubert and Irmgard Blindow are guest editors for the special issue and are handling the process, so people who are reviewing mss should send their assessment to them. The standard of submissions is generally good, and if referees are prompt with their reviews and authors speedy with their revisions the papers should become available on the web as the year progresses. When all the manuscripts have been processed, a limited edition of hard copies will be produced for those people who would like to have one on their shelf. Authors will receive a free pdf file of their paper. A message will be posted to the electronic forum charophyte-L when papers start to appear.

NEW BOOK

Charophytes of the Nordic countries by Anders Langangen 2007

Anders Langangen published in 2007 an interesting book about charophytes of the Nordic countries. It includes specimen of *Nitella*, *Tolypella*, *Nitellopsis*, *Lamprothamnium* and *Chara* from Denmark, the Faroe Islands, Finland, Greenland, Iceland, Norway and Sweden. Altogether 37 species are included, and for each species the most common synonyms, a short description, ecology, known distribution in the Nordic countries, current threats and red-listing in the Nordic countries is given. The book is written in English and presents an excellent overview of the present knowledge on charophytes in the Nordic countries. It can be ordered from egen.bok@egenbokforlaget.no

Susi Schneider (Norway)

CHAROPHYTE DISCUSSION FORUM

Dr Robin Scribailo (USA) has now established the **charophyte-L**, our quick and new way of communication.

<charophyte-L> is an open forum for discussion about all aspects of Charophyte research.

How to suscribe to charophyte-L?

Just send the message to the listserver: listserv@pnc.edu

In the body (not the subject) of the message type: **subscribe charophyte-L your name**

Leave the subject blank. Also make sure your signature is turned off for this email. It must be sent as a text message. You will receive an automatically generated message telling you how to make use of the list. Once you are subscribed, you can send messages to the list server who will distribute it to all subscribers.

BRUINSMA, J.	bruinsma@dse.nl
CASANOVA, M. T.	amcnova@netconnect.com.au
CHEN, Jing	chenjing_24@163.com
CHEMERIS, E.	elchem@ibiw.yaroslavl.ru
CHIVAS, A. R.	toschi@ow.edu.au
CHOU, Jui-Yu	jackyjau@yahoo.com.tw
CHRYSULA, C.	xchristi@upatras.gr
COMPÈRE, P.	P.Compere@BR.fgov.be
COOPS, H.	hugo.coops@wldelft.nl
DAMINO, S.	sara.damino@tin.it
DEREKE, Zane	zdekere@email.lubi.edu.lv
DOEGE, A.	adoege@pinzigberg.de
DU, Pin-de	dupinde@hotmail.com
ELKHIATI, N.	nelkhiati@gmail.com
FEIST, M.	mofeist@isem.univ-montp2.fr
FLOR-ARNAU, N.	nurnu@yahoo.es
FOISSNER, I.	ilse.foissner@sbg.ac.at
FU Hua-long	fuhl@pridns.scu.edu.cn
GAO Qin-qin	gaoqqin@sina.com
GARCIA, A.	adriana@uow.edu.au
GRILLAS, P.	grillas@tourduvalat.org
GUERLESQUIN, M.	micheline.guerlesquin@uco.fr
HAAS, J. N.	Jean-Nicolas.Haas@uibk.ac.at
HENRICSON, C.	catherine.henricson@helsinki.fi
HUTOROWICZ, A.	ahut@infish.com.pl
JIANG Fei-hu	jiangfeihu2002@sina.com
JOHANSSON, G.	Gustav@hydrophyta.se
JOHN, J.	J.John@curtin.edu.au
KALIN, M.	margarete.kalin@utoronto.ca
KAROL, K.	kkarol@nybg.org
KOISTINEN, M.	maria.koistinen@helsinki.fi
KOSSLER, A.	Kossler@zedat.fu-berlin.de
KRISHNAN, U.	ushak30@yahoo.com
KWIATKOWSKA, M.	kwiat@biol.uni.lodz.pl
KYPRIANOVA, L.	kipriyanova@ad-sbras.nsc.ru
KYRKANDER, T.	tina.kyrkander@terralimno.se
LAMBERT-SERVIEN, E.	elambert@uco.fr
LAN, Li-qiong	llqcg@263.net
LANGANGEN, A.	Langangen@getmail.no
LI, Wei-tong	lironc@sina.com
LIU, Jun-ying	liujunyingyh@sohu.com
LU, Hui-nan	luhuinan@nigpas.ac.cn
LUCAS, S.	spencer.lucas@state.nm.us
MAËMETS, H.	helle.maetmets@emu.ee
MAIER, E.	eduardmaier@wanadoo.nl
MANN, H.	hmann@swgc.mun.ca
MARTIN, G.	georg@klab.envir.ee
MARTIN-CLOSAS, C.	cmartinclosas@ub.edu
MCCOURT, R. M.	RMcCourt@nsf.gov
MEBROUK, F.	mebrouk06@yahoo.fr
MEIERS, S.	ST-Meiers@wiu.edu
MELZER, A.	arnulf.melzer@wzw.tum.de
MUSACCHIO, E. A.	aldo@unpata.edu.ar

NASRIN, J.D.	Nasrinjahan_diba@yahoo.com
NAT, E.	e.nat@kranswieren.nl
NAZ, S.	sabrina_naz@yahoo.com
PELECHATY, M.	marpelhydro@poczta.onet.pl
POPLONSKA, K.	popkat@biol.uni.lodz.pl
PORTER, J.	john.porter@unsw.edu.au
PREISIG, H. R.	preisig@systbot.unizh.ch
PRIMAVERA, M.	milena.primavera@ateneo.unile.it
PUKACZ, A.	andrzejpukacz@wp.p
QING, Ren-wei	qingrenweif@yahoo.com.cn
RAABE, U.	uraabe@yahoo.de
RATAI, L.	lothar.ratai@t-online.de
RAY, S.	ray_samit1@yahoo.co.in
REY-BOIZESSON, A.	Aurelie.Boissezon@unige.ch
RIVELINE, J.	riveline@ccr.jussieu.fr
RODRIGO, M.	maria.a.rodrigo@uv.es
ROMO, S.	susana.romo@uv.es
SAKAYAMA, H.	hsak@bio.c.u-tokyo.ac.jp
SCHAIBLE, R.	ralf.schaible@biologie.uni-rostock.de
SCHNEIDER, S.	susi.schneider@niva.no
SCHUBERT, H.	hendrik.schubert@biologie.uni-rostock.de
SCHUDACK, M.	schudack@zedat.fu-berlin.de
SCRIBAILO, R.	rscrib@purdue.edu
SIMONS, J.	JSMNS@bio.vu.nl
SINKEVICIENE, Z.	zofija.s@botanika.lt
SKURZYNSKI, P.	p.skurzynski@gmail.com
SOULIÉ-MÄRSCHÉ, I.	ingeborg.soulie-marsche@univ-montp2.fr
STEVANOVIC, B.	vstev@eunet.yu
STEWART, N.	Nfstewart@freeuk.com
SUGIER, P.	piotr.sugier@poczta.umcs.lublin.pl
SVIRIDENKO, B.	common@omsk.edu
TORN, K.	kairret@klab.envir.ee
TRAJANOVSKA, Sasha	trajsa@hio.edu.mk
TRAJANOVSKI, Sonja	trajsa@yahoo.com
URBANIĄK, J.	urbaniak@biol.uni.wroc.pl
VAN DE WEYER, K.	klaus.vdweyer@lanaplan.de
VAN RAAM, J.	charaboek@hotmail.com
WALLSTRÖM, K.	Kwm@hig.se
WANG, Qi-fei	qfwang@nigpas.ac.cn
WANG, Wei-Lung	wlwang@cc.ncue.edu.tw
WINTON, M. de	m.dewinton@niwa.co.nz
WOJTCZAC, A.	wojag@biol.uni.lodz.pl
YANG, Jing-lin	jlyang@nigpas.ac.cn
ZAKOVA, L.	luba_zhakova@mail.ru
ZAMANGARA, A.	kashagankizi@mail.ru
ZHANG, Ze-run	zhangzerun@yahoo.com.cn
ZHOU, Xiu-gao	clxb@cug.edu.cn
ZVIEDRE, E.	egita.zviedre@dabasmuzejs.gov.lv

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DIRECTORY OF IRGC-MEMBERSHIP

José L. ALONSO-GUILLÉN
Institut Cavanilles de
Biodiversitat i Biologia
Evolutiva, Universitat de
València, Apartado Oficial
2085, E- 46071-VALENCIA
Spain

Dr Pere ANADON
Institut de Ciències de la
Terra, "J. Almera" C.S.I.C.
Calle L. Sole Sabaris s.n.
E - 08028 BARCELONA
Spain

Dr Takashi ASAEDA
Dept of Environmental
Science, Saitama University
255, Shimo-okubo
Sakura, SAITAMA, 338-8570
Japan

Dr Dominique AUDERSET-
JOYE
Université de Genève
Laboratoire de Biologie
aquatique
18, Chemin des Clochettes
CH – 1206_GENEVA
Switzerland

Dr Simone BAECKER-
FAUTH
UNISOS, Laboratorio de
Micropaleontologia
Av. Unisos, 950
93022-000 SAO LEOPOLDO
Brazil

Barbara BASSLER-VEIT
Department für Geo- und
Umweltwissenschaften
Sektion für Paläontologie
LMU München
Richard-Wagner Str. 10
D- 80333 MÜNCHEN
Germany

Dr Mary Jane BEILBY
School of Physics &
Biophysics
University of New South
Wales
SYDNEY NSW 2052
Australia

Dr Roland BENGTTSSON
Mikroalg, Ölsåkra, Slottet
SE - 34037 TORPSBRUK
Sweden

Prof. Dr. JP BERGER
Institut de Géologie
Université de Fribourg
CH-1700 FRIBOURG
Switzerland

Dr S. BHARATAN
2980. 'Z' Block, 13th Main
Road, Anna Naga Chennai
600040 MADRAS
India

Prof. S.B. BHATIA
House N° 441, Sector 6
PANCHKULA - 134109,
Haryana
India

Dr Mary BISSON
Dept of Biological Sciences
University of Buffalo
Cooke Hall 109
BUFFALO, NY 14216
USA

Prof. Jelena BLAZENCIC
Institute of Botany
The University, Takovska 43
1100 BEOGRAD
Serbia

Dr Irmgard BLINDOW
Ernst-Moritz-Arndt
Universität Greifswald
Biologische Station Hiddensee
D-18565 KLOSTER
Germany

Prof. Katarzyna BOCIAG
University of Gdansk
Dept of Plant Ecology
Ul. Legionow 9
PL – 80-441 GDANSK
Poland

Christian BREITHAUPT
Dorfstr. 23, D -17509
LODMANNSHAGEN
Germany

Dr John BRUINSMA
Torbeckelaan 24
5694 CR BREUGEL
The Netherlands

Dr Michelle CASANOVA
'Langmorn', RMB L620

WESTMERE, Victoria 3351
Australia

Dr Elena CHERMERIS
Institute for Biology of Inland
Waters of Russian Academy
of Sciences, Yaroslavl region,
Nekouz district
152742 BOROK
Russia

Prof. Allan CHIVAS
School of Earth and
Environmental Sciences
Northfields Ave.
WOLLONGONG NSW 2522
Australia

Dr Jui-Yu CHOU
Dept of Biology
National Changhua University
of Education
CHANGHUA 500
Taiwan

Christia CHRYSOULA
10, Gr. Lambraki Street
P.O. 48100 PREVEZA
Greece

Dr Pierre COMPERE
Jardin Botanique National
Domaine de Bouchout
B-1860 MEISE
Belgium

Dr Hugo COOPS
RIZA
PO Box 17
NL - 8200 AA LEYLSTAD
The Netherlands

Sara DAMINO
Viale R. Elena
I - 61 MESSINA
Italy

Zane DEKERE
Institute of Biology,
Laboratory of Botany

University of Latvia, 3 Miera
street
LV -SALASPILS, LV - 2169
Latvia

Angela DOEGE
Zum Pinzigberg 2
D - 01665 TRIEBISCHTAL
Germany

Dr Najat EL KHIATI
Faculté des Sciences
Lab. De Biologie végétale
BP 5366, CASABLANCA
Morocco

Dr Monique FEIST
Laboratoire de Paléobotanique
Université Montpellier II, C.P.
062, Place E. Bataillon
F - 34095 MONTPELLIER-
Cedex 5
France

Nuria FLOR-ARNAU
C/Padre Claret, 103 (3-4)
0825 BARCELONA
Spain

Dr Ilse FOISSNER
University Salzburg
A - 5020 SALZBURG
Austria

Dr Adriana GARCIA
School of Earth and
Environmental Sciences
Northfields Ave.
WOLLONGONG NSW 2522
Australia

Dr Patrick GRILLAS
Station biologique de
la Tour du Valat, Le Sambuc,
F -13200 ARLES
France

Dr Micheline
GUERLESQUIN
Les Hespérides 49, Bd
Maréchal Foch

F - 49100 ANGERS
France

Dr Jean Nicolas HAAS
University of Innsbruck
Department of Botany
Sternwartestraße 15
A-6020 INNSBRUCK
Austria

Catherine HENRICSON
Lauttasaarentie 7B23
00200 HELSINKI
Finland

Dr Andrzej HUTOROWICZ
The Stanislaw Sakowicz
Inland Fisheries Institute
ul. M. Oczapowskiego 10
PL - 10-719 OLSZTYN –
KORTOWO
Poland

Dr Gustav JOHANSSON
Herrgarden 8
SE - 74941 ENKÖPING
Sweden

Prof. Jacob JOHN
School of Environmental
Biology, Curtin University,
GPO Box U1987
PERTH, W.A. 6001
Australia

Dr Margarete KALIN
Unterer Staldacher, Wellhorn
CH 6086 HASLIBERG –
8211- Reuti
Switzerland

Dr Kenneth G. KAROL
Assistant Curator
The New York Botanical
Garden, BRONX, NY 10458-
5126
USA

Dr Marja KOISTINEN
Botanical Museum of Natural
History, P.O. Box 7

University of Helsinki
FI - 00014 HELSINKI
Finland

Annette KOSSLER
FU-Berlin, Institut für
Geowissenschaften
Paläontologie
Malteserstr. 74-100, Haus D
D - 12249 BERLIN
Germany

Dr Usha KRISHNAN
3, Lakshmi Street
Alagappa Nagar, Kilpauk,
CHENNAI 600010
India

Prof. Maria KWIATOWSKA
Department of
Cytophysiology
The University ul. Pilarskiego
14, PL-90-237 LODZ
Poland

Dr Laura KYPRIYANOVA
Institute for Water and
Ecological Problems, Russian
Academy of Sciences
Morskoy prospect, 2
630090 NOVOSIBIRSK
Russia

Dr Tina KYRKANDER
TerraLimno Gruppen,
Bryngelsgata 2A
SE - 52143 FALKÖPING
Sweden

Dr Elisabeth LAMBERT-
SERVIEN
CEREA - IBEA/UCO
44, rue Rabelais
B.P. 10 808, F- 49008
ANGERS–Cedex 01
France

Dr Anders LANGANGEN
Hallagerbakeken 8213
1256 OSLO
Norway

Dr Spencer LUCAS
MNH, 1801 Mountain Road
ALBUQUERQUE
New Mexico 87104
USA

Dr Helle MÄEMETS
Vartsjärv Limnological
Station
Estonian University of Life
Sciences
Limnologia 2-3, Rannu
EE -61117 TARTU
Estonia

Dr E. X. MAIER
Dunantsingel 68
NL - 1902 EB CASTRICUM
The Netherlands

Dr Henry MANN
Dept of Biology
Sir Wilfred Grenfell College,
M.U.N.
CORNER BROOK, NF
Canada

Prof. Georg MARTIN
Estonian Marine Institute
Department of Marine Biology
Marja 4D
10617 TALLINN
Estonia

Dr Carles MARTIN-CLOSAS
Depto de Geología, Facultad
de Geología,
Zona Universitaria Pedralbes
08071 BARCELONA
Spain

Dr Richard M. McCOURT
Div. of Biol. Infrastructure
National Science Foundation
4201 Wilson Blvd.
ARLINGTON, VA 22230
USA

Dr Fateh MEBROUK
Departement de Géologie
Faculté des Sciences

Université de Jijel
BP 98 Ouled Aissa
18 000 JIJEL
Algeria

Dr Susan T. MEIERS
Department of Biology
372 Waggoner Hall
Western Illinois University
MACOMB, IL 61455
USA

Prof. Arnulf MELZER
Limnologische Station
der TU München
Hofmark 3
D - 82393 IFFELDORF
Germany

Prof. Eduardo MUSACCHIO
UNPSJB Ciudad Universitaria
9000 COMODORO
RIVADAVIA
Argentina

Jahan Diba NASRIN
C/o Dr. Sabrina Naz
Department of Botany
University of Rajshahi
RAJSAHNI – 6205
Bangladesh

Dr. Emile NAT
Landel. Informatiecent. voor
Kranswieren
c/o Nationaal Herbarium
Nederland
P.O. Box 9514
NL-2300 RA LEIDEN
The Netherlands

Dr Sabrina NAZ
Dept of Botany
University of Rajshahi
RAJSHAHI – 6205
Bangladesh

Dr Marius PELECHATY
Dept of Hydrobiology
Adam Mickiewicz University
Ul. Umultowska 89

PL 61-614 POZNAN
Poland

Dr Katarzyna POPLONSKA
University of Lodz
Dept of Cytophysiology
Pilarskiego 14
PL - 90-231 LODZ
Poland

Dr John PORTER,
Waterbirds Wetlands & Rivers
Research Lab
School of Biological, Earth &
Environmental Sciences
University of New South Wales
SYDNEY NSW 2052
Australia

Prof. H. R. PREISIG
Institut für systematische
Botanik
Zollikerstraße 107
CH-88008 ZÜRICH
Switzerland

Dr Milena PRIMAVERA
Dipto di Geologie e Geofisica
Campus Via Orabona
I - 70125 BARI
Italy

Dr Vernon W. PROCTOR
2622, 22nd Street
LUBBOCK,
TX 79410-1616
USA

Dr Andrzej PUKACZ
Collegium Polonicum
Ul. Kosciuszki 1
PL – 69-100 STUBICE
Poland

Dr Uwe RAABE
Borgsneider Weg 11
D - 45770 MARL
Germany

Lothar RATAI
Am Bahnhof 1

Feldberger Seenlandschaft
D – 17258 OT FELDBERG
Germany

Dr Samit RAY
Department of Botany
Visva-Bharati University
SANTINIKETAN 731235
West Bengal
India

Aurélie REY-BOISSEZON
University of Geneva
Laboratory of Ecology and
Aquatic Biology
Chemin des Clochettes, 18
CH -1206 GENEVA
Switzerland

Dr Janine RIVELINE
Géologie sédimentaire,
Tour 14-16, 4 ème étage
Université P et M Curie,
4 pl. Jussieu
F - 75252 PARIS Cedex 5
France

Prof. Maria A. RODRIGO
Institut Cavanilles de
Biodiversidad i Biologia
Evolutiva.
Universitat de València.
Apartat Oficial 2085.
E-46071-VALÈNCIA
Spain

Dr Susana ROMO
Unidad Ecologia
Edificio Investigation
Campus Burjasot
E-46100 Burjasot-Valencia
Spain

Dr Hidetoshi SAKAYAMA
Department of Biology
Graduate School of Science
Kobe University
1-1 Rokkodai Nada
KOBE 657-8501
Japan

Dr Ralf SCHAIBLE
University of Rostock,
FB Biowissenschaften
Aquatische Ökologie
Albert-Einstein Str. 3
D - 18051 ROSTOCK
Germany

Dr Susanne SCHNEIDER
NIVA, Gaustadalléen 21
NO-0349 OSLO
Norway

Prof. Hendrik SCHUBERT
Universität Rostock
Inst. Biowissenschaften
Einsteinstr.3
D -18051 ROSTOCK
Germany

Dr Michael SCHUDACK
Institut für Geologische Wiss.
Fachrichtung Paläontologie
FU Berlin, Malteserstr.74-100,
D-12249 BERLIN
Germany

Dr Robin W. SCRIBAILO
Biological Sciences,
Purdue University North
Central, 1401 S. U.S. 421,
WESTVILLE, IN 46391-9528
USA

Dr Jan SIMONS
Laan van Bloemenhove 8
1181 AP AMSTELVEEN
The Netherlands

Dr Zofija SINKEVICIENE
Institute of Botany
Zaliuju ezeru 49
LT - 2021 VILNIUS
Lithuania

Piotr SKURZYNSKI
National Centre for Science
and Development UL. Ks. I.J.
Skorupki 4
PL 00-546 WARSZAWA
Poland

Dr Ingeborg SOULIE-
MÄRSCHÉ
Institut des Sciences de
l'Evolution,
Paleoenvironments
Universite Montpellier 2,
C.P. 061, Place E. Bataillon
F - 34095 MONTPELLIER-
Cedex 5
France

Dr Nick STEWART
Cholwell, Posbury
Crediton, Devon
DEVON EX17 3QE
Great Britain

Dr Branca STEVANOVIC
Institute of Botany
The University, Takovska 43
1100 BEOGRAD
Serbia

Dr Piotr SUGIER
Department of Ecology
Maria Curie-Sklodowska
University, Akademicka ul. 19
PL - 20-033 LUBLIN
Poland

Dr Boris F. SVIRIDENKO
Omsk State Pedagogical
University
Botany department,
Tukhachevsky Emb., 14
644099, OMSK,
Russia, CEI

Kaire TORN
Estonian Marine Institute
Department of Marine Biology
Marja 4D
10617 TALLINN
Estonia

Drs Sasho TRAJANOVSKI &
Sonja TRAJANOVSKA
Hydrobiological Institute,
Naum Ohridski 5o,
MK- 6000 OHRID
Republic of Macedonia

Dr Jacek URBANIAK
Institute of Botany, Wroclaw
University
Kanonia 6/8
PL -50-328 WROCLAW
Poland

Dr Klaus Van de WEYER
Lana-Plan
Lobbericher Str. 5
D-41334 NETTETAL
Germany

Dr Joop C. VAN RAAM
S-Gravesandelaan 32
NL-1222 TA HILVERSUM
The Netherlands

Dr Kerstin WALLSTRÖM
Department of natural
Sciences/ Biology
University of Gävle
SE - 80176 GÄVLE
Sweden

Dr Qi-fei WANG
Nanjing Institute of Geology
and Palaeontology, NIGPAS
Academia Sinica,
39, East Beijing Road
NANJING 210008
P. R. China

Dr Wei-Lung WANG
Dept of Biology
National Changhua University
of Education
CHANGHUA 500
Taiwan

Dr Ursula WINTER
Im Hollergrund 69
D - 20209 BREMEN
Germany

Dr Agnieszka WOYTCZAK
University of Lodz
Dept of Cytophysiology
Pilarskiego 14
PL – 90-231 LODZ
Poland

Dr Liuba ZHAKOVA
Laboratory brackish water
biology
Zoological Institute of Russian
Academy of Science
University embankment, b.1
199034 St. PETERSBURG
Russia

Dr Aizhan K.
ZHAMANGARA
National Center for
BIOTECHNOLOGY of the
Republic of Kazakhstan
Valikhanov str., 43.
010000, ASTANA
Kazakhstan, C.E.I.

Dr Egita ZVIEDRE
Skolas 5-18,
LV – 5001-OGRE
Latvia

The Chinese Regional Group

Dr CHEN Jing
NW China Bureau of
Petroleum Geology
Beijing Road
ULUMUQI,
Xinjiang 830011
P. R. China

Miss DU Pin-de
Institute of Petroleum
Exploration and Exploitation
Division Company of
Tarim Oil field,
KUERLA, Xinjiang 841000
P. R. China

Prof. FU Hua-long
Department of Biology
Sichuan University
Wangjiang Road, 29
CHENGDU 610064, Sichuan
P. R. China

Dr GAO Qin-qin
Institute of Petroleum
Exploration and Exploitation
Division Company of
Tarim Oil field, KUERLA
Xinjiang 841000
P. R. China

Dr GE Chun-pei
Institute of Exploration
Jianghan Mineralogy
Administration
GUANGHUA,
Qianjiang 433124, Hubei
P. R. China

Dr GUO Shu-yuan
Geological Team
N China Bureau of Petroleum
Geology, Funiu Road South,
ZHENGZHOU
Henan 450007
P. R. China

Dr HU Ji-min
Geological Team
Central-South China Bureau
of Petroleum Geology
Dongjingpu, CHANGSHA
Hunan 410117
P. R. China

Dr HUANG Ren-jin,
Nanjing Institute of Geology
and Palaeontology
39, East Beijing Road,
NANJING 210008
P. R. China

Dr JIANG Fei-hu
Research Institute of
Exploration and Development
Zhongyuan Oilfield
PUYANG, Henan 457001
P. R. China

Dr LAN Li-Giong
Department of Biology
Sichuan University
Wangjiang Road, 29
CHENGDU, 610064, Sichuan
P. R. China

Dr LI Wei-Tong
Department of Geology
Jianghan Petroleum Institute
JINGZHOU, Hubei 434102
P. R. China

Dr LIU Jun-ying
Institute of Geology
Academy of Geological
Sciences
26, Baiwanzhuang Road
BEIJING 100037
P. R. China

Prof. LU Hui-nan
Nanjing Institute of Geology
and Palaeontology
Academia Sinica,
39, East Beijing Road,
NANJING 210008
P. R. China

Dr QING Ren-wei
Department of Biology
Sichuan University
Wangjiang Road, 29
CHENGDU 610064, Sichuan
P. R. China

Wang Hailei
Center for Saline lake and
Epithermal deposits
Chinese Academy of
Geological Sciences
Baiwanzhuang road 26#
100037 BEIJING
P. R. China

Dr. WANG Qi-fei
Nanjing Institute of Geology
and Palaeontology,
Academia Sinica,
39, East Beijing Road
NANJING 210008
P. R. China

YANG Jing lin
Nanjing Institute of Geology
and Palaeontology
Academia Sinica,
39, East Beijing Road
NANJING 210008
P. R. China

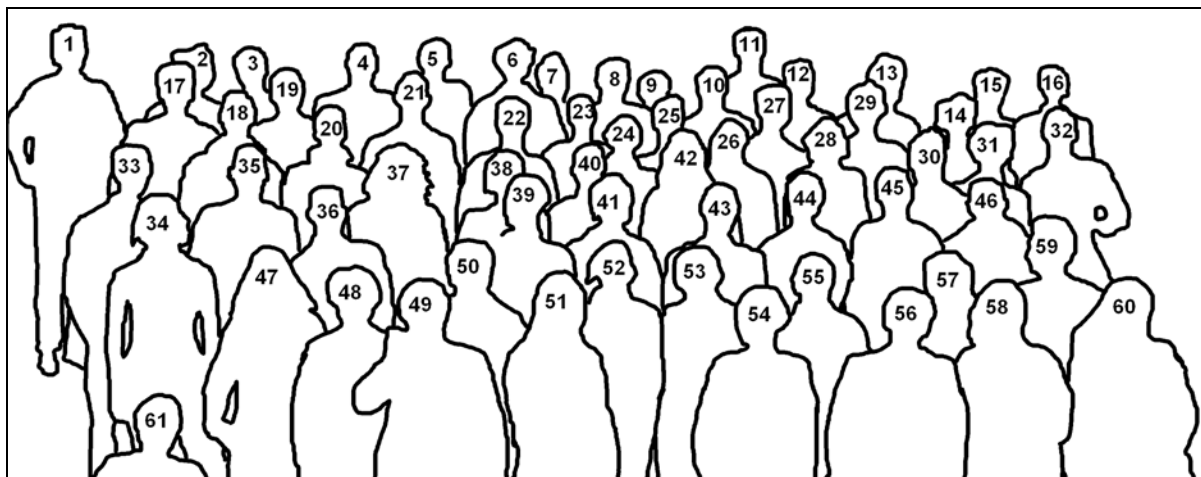
Dr YANG Ping
Exploration and Development
Research Institute,
Qinghai Oil Field Company
PetroChina
DUNHUANG,
Gansu 736202
P. R. China

Dr ZENG De-nim
Geological Team
Central-South China Bureau
of Petroleum Geology
Changsha, Dongjingpu,
Hunan 410117
P. R. China

ZHANG Guo-zhi
Department of Biology
Sichuan University
Wangjiang Road, 29
CHENGDU 610064,
Sichuan
P. R. China

Dr ZHANG Ze-run
Petroleum Geology
Ministry of Geology
& Mineral resources
Funiu Road, ZHENGZHOU
Henan 450007
P. R. China

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