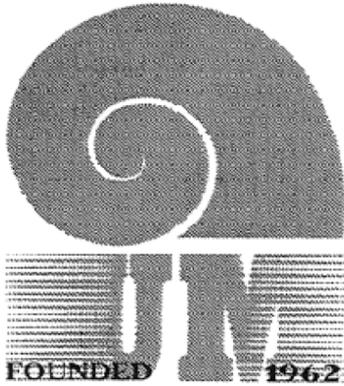


UNITAS MALACOLOGICA



Newsletter

Number 24
January 2007

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Dear Members,

This issue of UMN was delayed a short time at the request of the Unitas Council. But I hope that you will appreciate that, this way, we are able to give you up-to-the-minute details about the next World Congress of Malacology. In the first section of the Newsletter, you will find comprehensive information on the Congress next July in Antwerp, Belgium. More information on the special symposia planned for the Congress is available on the UM website. All of the Congress information is also now available on the dedicated WCM website, which we will continue to update as July approaches.

I would also like to draw your attention to the **Council Election Ballot**, attached as the last page of this newsletter. I would like to extend our congratulations and appreciation for the new council candidates. Can you please return your votes to the secretary, Dai Herbert, as soon as possible.

This issue also includes the reports from our four outstanding student award winners. These students received their grants in 2005 and have completed the work on the specific projects outlined in their UM Student Award. We are

also happy to announce the 2006 Award winners. Once again, we have four student winners (instead of the usual two). We will all look forward to hearing more about the work of these young malacologists in future, and hopefully also in contributions at the WCM.

Finally, can you please note that UM will be publishing a membership directory, to coincide with the Congress next summer. More details are included here on page 10.

The next issue of the UM Newsletter will be distributed in early June (sooner than the typical 8-monthly interval). If you have any announcements or newsworthy notes to include prior to the Congress, please let me know as soon as possible to make sure they are included.

I wish you all the best and success for 2007. In the Chinese or Lunar calendar, 2007 is the year of the Fire Pig. Although the lunar zodiac is unfortunately devoid of molluscan influence, I do hope this will prove to be an auspicious year for all.

Happy New Year!

JDS

Our aim is to further the study of Mollusca by individuals, societies and institutions world-wide

Affiliated Organisations

American Malacological Society | Belgische Vereniging voor Conchylologie | Deutsche Malakozoologische Gesellschaft | Friedrich Held Gesellschaft | Instituto Português de Malacologia | King Leopold III Foundation | Latvian Malacological Society | Malacological Society of Australasia Ltd | The Malacological Society of Japan | The Malacological Society of London | Malacological Society of the Philippines | Malacozoological Association of Yamaguchi | Nederlandse Malacologische Vereniging | Naturmuseum Senckenberg | Sociedade Brasileira de Malacologia | Sociedad Española de Malacología | Sociedad Malacológica de Chile | Società Italiana di Malacologia | Société belge de Malacologie | Society for Experimental and Descriptive Malacology | Société française de Malacologie | The Western Society of Malacologists

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World Congress Of Malacology
Antwerp, Belgium
15-20 July 2007

Travel grant applications: 15 March 2007
Reduced registration fees: 30 April 2007
Abstract submission: 31 May 2007
Congress begins: 15 July 2007

For the President's column, I present you with some excerpts from the 2nd circular of the World Congress of Malacology, Antwerp 2007. The complete circular and registration forms can be downloaded from the UM website <http://www.ucd.ie/zoology/unitas>

and at the WCM website <http://www.naturalsciences.be/wcm2007>

It can also be requested by mailing to wcm@naturalsciences.be, faxing to +32 2 627 41 41 or sending an SMS to +32 496 40 50 34 mentioning "2C to <your email address>". Printed copies are only sent (by classical post) upon explicit request.

The congress will be held in building T on campus "Groenenborger" of the University of Antwerp. It is the 16th International Congress of UNITAS MALACOLOGICA (UM). The congress will also host the 73rd annual meeting of the AMERICAN MALACOLOGICAL SOCIETY (AMS), as well as extra meetings of the CONCHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND and EQMal (European Quaternary Malacologists).

Please keep an eye on the UM and WCM-websites for updates and the latest news! All (pre)-registered attendants will receive the updates and news automatically by Email. So please provide us with your correct Email address and notify us if your Email address changes.

The Congress Schedule

The WCM will start with an icebreaker on Sunday, July 15th (17:30–19:30) in the reception hall of the Zoo of Antwerp (Astridplein, near «Antwerpen Centraal» railway station). Conference sessions will be organised in four parallel sessions on Monday, Tuesday, Thursday and Friday. All sessions will be held in the T-Building of campus «Groenenborger» of the University of Antwerp. Lunches will be served in the cafeteria of the same building. The poster session will be held on Tuesday late afternoon/evening and will include a reception with wine, typical Belgian degustations, cheese and of course... a selection of Belgian beers. Wednesday is a free day during which participants can discover the many historical and beautiful places in Antwerp. They can also join one of the optional congress trips or do whatever they want, of course! On Thursday evening AMS will host its annual auction of molluscan books and paraphernalia (no specimens) to benefit its student programs. The conference dinner will be on Friday evening.

The Science

Thirteen thematic symposia are planned, (details are provided in the 2nd circular):

- Sexual selection in molluscs
Dr. Ronald Chase & Dr. Joris Koene
ronald.chase@mcgill.ca
joris.koene@falw.vu.nl
- Inventorying the molluscan fauna of the world: frontiers and perspectives
Dr. Philippe Bouchet & Dr. Somsak Panha
pbouchet@mnhn.fr
somsak_panha@yahoo.com
- Micromolluscs: methodological challenges, exciting results
Dr. Daniel L. Geiger
geiger@vetigastropoda.com
- Molluscs as models in evolutionary biology: from local speciation to global radiation
Dr. Matthias Glaubrecht & Dr. Thomas von Rintelen
matthias.glaubrecht@museum.hu-berlin
thomas.rintelen@rz.hu-berlin.de



- Molluscs in ecotoxicological research
Dr. Kurt Jordaens & Dr. Rita Triebkorn
kurt.jordaens@ua.ac.be
stz.oekotox@gmx.de
- Molluscs and pest control
Dr. Rita Triebkorn & Dr. Bill Bailey
stz.oekotox@gmx.de
member@m336wy.freereserve.co.uk
- Molluscan models: advancing our understanding of the eye
Dr. Jeanne Serb & Dr. Laura Robles
serb@iastate.edu
lrobles@csudh.edu
- Zoogeography of the non-marine molluscs of the eastern Mediterranean
Dr. Aydin Örsan
zoogeography@earthlink.net
- Biodiversity at crossroads: freshwater bivalves from mass extinction to global invasion
Dr. Cristian R. Altaba
cristianr.ataba@uib.es
- Neogastropod origins, phylogeny, evolutionary pathways and mechanisms
Dr. M.G. Harasewych & Dr. Ellen E. Strong
Harasewych@si.edu
stronge@si.edu
- Diversity and ecological adaptations in intertidal molluscs
Dr. B.G.Kulkarni
balasaheb@yahoo.com
- Heart and circulation in molluscs
Dr. Robert B. Hill
bob@uri.edu
- Quaternary malacology
Dr. Tom Meijer
meijert@naturalis.nl

Travel Grants

UM will provide Travel Grants. Applicants must be a member of UM or of an affiliated organisation. If not, a three-year UM membership will be deduced from the grant. The maximum amount of any Travel Grant will

be €800 for applicants from outside Europe and €400 for residents in Europe. Application forms are available from the WCM 2007 website and the UM website. They can also be requested at wcm@naturalsciences.be; Please note that successful applicants will receive the grant in cash at the congress, not before.

Closing date for submission of travel grant applications: March 15th, 2007

AMS will also be offering travel grants to its student members - please check the AMS website (see "Useful websites" below).

Accommodation

Convenient, though modest accommodation will be available at the university campus (198 single and 22 double rooms with lavabo, but toilets and showers are shared [even though rooms are individual of course]; prices: €20 or €27 per person per night; breakfast included) (photographs of the campus accommodation will be posted on the WCM website). Hotel accommodation will be provided in the city centre of Antwerp, near «Antwerpen Centraal» railway station, the main bus terminals and the shuttle bus from/to Brussels international airport. Prices range from €59 (singles) to €94 (doubles) per room per night; breakfast included. Special arrangements for >2 persons and/or children are possible.

Please note that the campus accommodation is only available from Saturday 14 July till Sunday 22 July. Attendants using the campus accommodation are advised to provide their estimated arrival time to the Congress Organiser, particularly if they arrive late in the evening or during the night. Accommodation will be provided on a first booked first served basis.

Hotel accommodation cancellations may be subject to charges levied by the hotels. The same applies to failures to occupy the booked room at the requested check in date. Such charges will be processed directly by the hotels using your credit card guarantee. Cancellations of campus accommodation will only be refunded if the booking is taken over by another delegate. Changes to accommodation requirements must be advised in writing to the Congress Organiser at wcm@naturalsciences.be.

Registration

Congress registration will be open on Saturday July 14th in the Student Campus accommodation facility (Middelheimcampus = MHC) «Building D, Middelheimlaan 1, 2020 Antwerp» from 14:00 to 18:00. On Sunday July 15th, 2007 registration will be open again at the same site from 12:00 to 16:00. Registration will also be possible during the icebreaker on the same day from 17:30 to 19:30. During the week a registration and congress secretariat desk will be open in Building T at campus «Groenenborger».

At registration check-in, delegates will receive their personalised satchel, containing the abstract book and other relevant materials. Please wear your WCM badge to all WCM events! Separate tickets will be provided for the optional Wednesday activities and the congress dinner.

Registration fees are in EUROS €
(until 30 April 2007 / after 30 April 2007):

Full registration, UM-members	220 / 270
Full registration, non-members	280 / 330
Student, UM-member	110 / 150
Student, non-member	160 / 200

Day registrations for non-students cost €90 and for students €50. Fees include registration, abstract book, icebreaker, lunches + drinks on Monday, Tuesday, Thursday and Friday, and the wine/beer/degustation poster reception. The congress dinner is not included.

Social activities included in the congress fee

Icebreaker: Will be organised on Sunday evening, July 15th (17:30 - 19:30) in the reception halls of the Zoo of Antwerp at the “Koningin Astridplein”, adjacent to “Antwerpen Centraal” railway station.

Poster reception: Will be organised at the congress site on Tuesday evening. Details will follow later.

AMS auction: Will be organised at the TPC, adjacent to the congress site. Details will follow later.

Extra social activities

These include the optional Wednesday leisure activities and the congress dinner. Neither of these activities are included in the registration fee.

The congress dinner will be at the «Grand Cafe Horta», Hopland 2, 2000 Antwerp, in the city centre of Antwerp, close to the house of the famous painter Pieter Paul Rubens. It will include an apéritif reception, dinner and dancing (DJ). By its location, «Grand Cafe Horta», allows you to explore the Antwerp nightlife after the dinner as well... it is close to the hotels and with the public transport (night busses) it is easy to return to the campus accommodation. The apéritif reception will start at 20:00, the dinner at 21:00 and then it is up to you...!

Price: €50/person (delegates and non-delegates)

There are four optional leisure activities on Wednesday (price: €25/person, delegates or non-delegates; meals and consumptions not included, unless indicated otherwise):

(1) A guided walk in the nature reserve “Verdrongen Land van Seaftinghe”, one of the largest tidal saltmarshes in Europe, followed by a walk in dunes and on a beach in Zeeuws-Vlaanderen (The Netherlands). You will need waterproof shoes or even better, boots, for this one, while spare clothes may be useful as well... yet the sceneries are breathtaking!

(2) A bicycle tour in and around the harbour of Antwerp, during which you will witness the confrontation between high-tech petrochemical industries and lovely, historical, rural and natural landscapes... producing sometimes very weird, nostalgic and hallucinating sceneries and contrasts... the biking distance is 40-50 km, but of course there will be several stops in local pubs... if you are a bit sportive, this is the trip to choose!

(3) A guided visit to the “Castle of Bouillon”, a large, well-preserved castle from the medieval “dark ages” (8th century), where you will attend a falconry with a variety of predatory birds. Afterwards you will visit the ruins and botanical garden of the Cistercian abbey of “Notre-Dame d’Orval”, which was founded in 1132 and which is famous for its



excellent “Trappist” beer... as you will taste!

(4) A guided visit to the town of Bruges (also called “Venice of the North”) with its architecturally well-preserved medieval city centre and its variety of museums (paintings of Flemish Primitives, archaeology, history, folklore, etc). At the end you will visit a local brewery for a beer degustation.

More information on these trips is provided in the 2nd circular, while practical details and photographs will be posted on the WCM-website.

Cancellation policy

(1) All cancellations of attendance and bookings must be made in writing to the Congress Organiser.

(2) A full refund, minus a cancellation fee of €40 will be made on registration cancellations received before 30 April 2007.

(3) A refund of 50% of the registration fee will be made on registration cancellations received between 1 May and 30 June 2007.

(4) No refund of registration fees will be made for registration cancellations made after 1 July 2007.

(5) Campus accommodation will only be refunded if the booking is taken over by another delegate.

(6) A charge of 20% is levied on refunds of cancellations of (extra) social activities, unless the activity is cancelled by the congress organisation itself.

(7) All refunds will be paid after the conclusion of the WCM.

Student prizes

There will be several student awards for oral and poster presentations, including six awards presented by UM and the Constance Boone Award presented by AMS. All delegates with a student registration will be considered for these prizes.

Travel information

Reaching Antwerp is easy. The main point

for orientation is «Antwerpen Centraal» railway station in the city centre. All trains and busses from the airports converge there and at the same time it is the main point of departure to the campus. So when you get lost... ask for «Antwerpen Centraal»!!

Please note that the Congress organisers will neither provide transportation, nor will pick up people at airports or railway stations. We rely on your scouting talents!

Detailed travel information is provided in the 2nd circular and updates on the local transport in Antwerp will be posted on the UM and WCM websites. All registered attendants will receive this information automatically by Email. So what follows here is just a short overview of the possibilities.

(1) Reaching Antwerp by airplane:

Airports with good connections to Antwerp:

Antwerp airport:
<http://www.antwerpairport.be>

Brussels airport:
<http://www.brusselsairport.be>

Charleroi airport:
<http://www.charleroi-airport.com>

Amsterdam airport (Schiphol):
<http://www.schiphol.nl>

Antwerp airport is a very small (and cosy) one and is served by only very few companies. Yet, people coming from (or via) the UK might find it a convenient solution as there are daily flights to Antwerp from London, Liverpool and Manchester.

Brussels (Zaventem) is the main international airport in Belgium, with a shuttle bus to the city centre of Antwerp, i.e. «Antwerpen Centraal» railway station (1 bus/hour; trip takes 45min; €8). You can also take the train in Brussels Airport and switch trains in «Brussel Noord» railway station (5 trains/hour; 60-80min; €6.70).

Charleroi (Brussels South) is a major hub for a number of low cost airlines. From Charleroi you can reach «Antwerpen Centraal» railway station by direct train (2 trains/hour;

90-100min; €12.40) (see further at the website of the Belgian railways here below).

Another convenient possibility is to fly to Amsterdam (Schiphol) and take the train from Schiphol Airport to Antwerp. You can take either the fast trains (Thalys; you have to book in advance and it is more expensive) or the «normal» direct trains (one train/hour; 120min; €26) (see further at the website of the Belgian railways here below). Please keep in mind that this possibility may require a «Schengen visa» (see under Travel documents, below)!

(2) Reaching Antwerp by train:

Antwerp is well-served by railways, with international connections to Amsterdam (each hour), Paris, London and many other major cities in Europe. More information can be found at the website of the Belgian railways, where you can also purchase your tickets online (by credit and bank cards). The prices indicated here or on the website of the Belgian railways are for tickets bought online or in the railway stations.

Belgian railways:
<http://www.b-rail.be/main/E/index.php>

(3) Reaching Antwerp by bus:

There are convenient and cheap bus connections between many major European cities and Antwerp via «Eurolines» (see website here below). The Eurolines bus terminus in Antwerp is in the city centre near the «Rooseveltplaats», close to «Antwerpen Centraal» railway station (few min walking) and the congress hotels.

International bus connections to Antwerp («Eurolines»): <http://www.eurolines.com>

(4) Reaching Antwerp by car:

Please help Belgium to fulfil its Kyoto norm.... and do not come by car. However, if you still prefer to come by car, then these are the places to reach (all in Antwerp):

Congress site:
University of Antwerp
Campus Groenenborger
Groenenborgerlaan 171

Campus accommodation MHC:
University of Antwerp, Campus Middelheim,
Middelheimlaan 1

Campus accommodation TPC («Theologisch
Pastoraal Centrum»):
Groenenborgerlaan 149

A route planner:
<http://www.viamichelin.com/viamichelin/gbr/tpl/hme/MaHomePage.htm>

A personalised route description will be provided by the Congress Organiser if asked for.

What else to know and/or to remember...

Travel documents:

Please check that you have a valid PASSPORT and that you obtain a VISA if necessary. In case of doubt check with the Belgian embassy, consulate or representation in your area. You can also find all information about VISA for Belgium at: <http://www.diplomatie.be/en/travel/visa/default.asp>; According to Belgian law you must always have your passport or identity card with you; other documents are NOT VALID to legitimate yourself. If you plan to come via Amsterdam and/or if you intend to join the «Saeftinghe» trip you should apply for a «SCHENGEN VISA»; more info at:

<http://www.eurovisa.info/SchengenVisa.htm>

Bank services:

There are no bank facilities at the campus, yet there are several banks close to the campus. Note that these banks do not provide exchange services. You can, however, withdraw money (€) from bank automates using credit cards and bank cards at all times (24/24). Banks are open on week days from 9:00 to 16:00. Although paying by credit cards is very common in Belgium, it is not customary to do so for small amounts (e.g. for a beer in a pub or a ticket on a bus). Hence it would be good to have some cash € in the pocket (small bills and/or coins!). Money exchange facilities are available at the airports and in «Antwerpen Centraal» railway station (also in the major railway stations in Brussels of course). Yet, these facilities are not open 24/7. So it may be a good idea to change



some money in your country of departure. Please note that in Belgium only € is accepted for cash payments.

Useful websites:

Website of the WCM 2007:
<http://www.naturalsciences.be/wcm2007>

Website of UNITAS MALACOLOGICA
<http://www.ucd.ie/zoology/unitas>

Website of the AMERICAN
MALACOLOGICAL SOCIETY (AMS):
<http://www.malacological.org>

Website of the UNIVERSITY OF ANTWERP
<http://www.ua.ac.be>

Useful phone numbers and contacts:

Police (emergency):	101
Ambulance (emergency):	100
Fire Department (emergency):	100
General Emergency (Europe):	112

For practical problems during the congress you can contact:

Thierry Backeljau at:
+32.496.40.50.34 (mobile)

Kurt Jordaens at:
+32.478.33.88.21 (mobile)

Claudine Claes at:
+ 32.499.20.73.12 (mobile)

Karin Breugelmans at:
+32.494.24.92.52 (mobile)

Climate:

Belgium has a temperate climate, but last years the weather in July has been dry and hot (to our standards), with temperatures often in the range of 25-35°C, yet for the same price temperatures can drop to 15°C. Rain and showers are not excluded. So, weather may be quite unpredictable and variable, but on average July is a very nice month... with usually excellent weather for enjoying a drink (and malacological discussions of course...) on one of the many terraces in the city centre...

Dress standards:

Yes, be dressed.... Casual clothing will be perfect for all congress activities.

Smoking:

According to Belgian law, it is forbidden to smoke in public places. Hence ALL congress facilities are non smoking areas. From January 1st 2007, smoking will also be forbidden in restaurants and restricted in pubs.

Tourism in Antwerp:

Tourist information can be found at the following websites:

<http://www.antwerpen.be/eCache/BEN/52.html>

<http://www.aviewoncities.com/antwerp.html>

<http://www.trabel.com/antwerp.htm>

Insurance and disclaimer:

Registration fees do not include insurance of any kind. All delegates must make their own individual arrangements with respect to travel, medical and other insurances.

The Congress organisation will not take any responsibility for any participant failing to insure. Similarly, the congress organisation will not accept liability for damages of any nature sustained by participants or their accompanying persons or loss or damage to their personal property as a result of the World Congress of Malacology 2007 or related events.

SEE YOU IN ANTWERP !

Thierry Backeljau
President of Unitas Malacologica
wcm@naturalsciences.be

Secretary's Column

Belgium was again the venue for this year's UM Council meeting in August, but this time we met in Brussels rather than Antwerp (though the beer was equally good). We were hosted by the Royal Belgian Institute for Natural Sciences, the home institution of both our President and Treasurer.

Apart from issues relating to finances and the WCM 2007, the main topic for consideration was the evaluation of the applications for the 2006 UM Student Research Awards. The results are presented below under a separate heading, but our deliberations on this matter got us thinking about a number of broader issues, not the least of which concerned the need to focus on the malacologists of tomorrow. Although not all Council members were in attendance, all present strongly believed that Council could best serve the interests of UM, its members and malacology by investing our resources in the future of our discipline. It was with this in mind therefore that we opted, like last year, to make four Student Research Awards for 2006, rather than the usual two. The UM Trust Fund already constitutes a substantial reserve and there is little need to augment it at the expense of other priorities. We should rather use further income to support younger scientists and enhance their capacity.

In the same vein, Council re-affirmed its commitment to supporting student attendance at WCM meetings, and has accordingly set aside the sum of Euro 20,000 for Student Travel Awards for the WCM 2007. This represents the normal Euro 10,000, plus an additional Euro 10,000 from the WCM 2004 surplus (thank you Fred). WCM meetings represent a great opportunity for students to interact with the broader malacological community and to make valuable contacts with established malacologists and fellow students from around the world. In addition, our congresses are greatly enhanced by the attendance and contribution of students. Council therefore decided that in WCM years, we would focus our student support on travel awards and would not make research awards in those years. Travel awards are smaller than research awards and we can therefore support a greater number of students using this approach.

Election of Office bearers and venue for WCM 2010

Another important topic for discussion concerned the matter of a new UM President and a venue for the WCM 2010. With the forthcoming congress due to be held in Antwerp, and in line with our tradition of holding congresses alternately within and outside Europe, we were looking for a non-European option. Council is happy to propose Dr Somsak Panha from Chulalongkorn University, Bangkok as President for 2007-2010. This means that the WCM 2010 will be held in Thailand and will be our first meeting in Asia. As Somsak is also an existing UM Council member, we will need to replace him, as well as the two Council members whose terms of office end in 2007, Dr Paula Mikkelsen and Dr Marco Oliverio (a thank you to them for their contribution as councillors). Since no nominations for office bearers were received in response to the call issued in the last newsletter, Council would like to propose the following names for election as the new Council members:

- Dr Mary Seddon, National Museum of Wales
- Dr Ellen Strong, Smithsonian Institution
- Dr Aileen Tan Shau-Hwai, Universiti Sains Malaysia

Short biographical sketches for these three new candidates are included on the ballot page (see page 17).

Council would also like to propose Dr Jackie van Goethem who has offered to stand as UM Treasurer for a further three years.

Please complete the voting form on the last page of this newsletter and post, fax or e-mail it back to me.

Dai Herbert
Secretary



New Member Directory

UM will be publishing a directory with contact details for all our current members later in 2007. The new directory will be distributed electronically to all members in PDF format, or in print version for those who specifically request it. We will not, however, post the directory on the UM website, to protect members' privacy (and prevent extra unwanted email spam). All of the information for the directory - postal address, email address, telephone and fax numbers - will be taken from the existing membership database maintained by UM. If you think we may have out-of-date information from you (e.g. if you have recently moved), please contact us with an update! Also, if you would prefer not to be included in this directory, please contact Thierry Backeljau. The final deadline for updating the directory, including adding new members, will be 30 April 2007. (The same deadline as early registration rates for the 2007 Congress.) We hope to update the directory

This directory has been suggested independently by several of our members, so we hope it will be a useful contribution for you!

Details to be included:

Name
Postal Address
E-mail address
Telephone
Fax

The membership form for new members has been updated to reflect the new membership directory.

Contact for changes, or requests for omission:
thierry.backeljau@naturalsciences.be

Student Research Awards 2006

The initial call for applications for the 2006 UM Student Research Awards elicited no submissions by the deadline, but a re-advertised call resulted in a record total of 24 applications. If the applicants thought that the initially poor response meant that competition would be less intense this year, they were clearly wrong. There was surprising consensus amongst the panel members regarding the applications of highest quality, but again Council was faced with the difficult decision of deciding whether to make two or four awards, since the four top-scoring applications were all deserving. After considerable discussion it was resolved that we would again make four awards in 2006, on the understanding that there would be no awards made in 2007, the congress year, and that student support for 2007 would focus on travel awards to attend the congress.

And the winners, in alphabetical order, are . . .

Rueben CLEMENTS
National University of Singapore
Effects of karst area and isolation on land snail richness and endemism in Peninsular Malaysia

Kevin HALL
University of Hawaii at Manoa
Integrating empirical observation and genetic inference to guide translocation: Hawaii's endangered Achatinella tree snails as a model system

Alissa KOYSAN
Severtsov Institute of Ecology and Evolution, Moscow
Anatomy and relationships of subfamily Colinae Gray, 1857 (Gastropoda: Neogastropoda: Buccinidae)

Ben ROWSON
BioSyB, National Museum of Wales
Persistence and diversity in putative rainforest refugia: carnivorous land snails (Stylommatophora: Streptaxidae) across southern Uganda.

Congratulations to all and good luck with your research – we look forward to receiving your project reports for publication in our newsletter.

Student Award Reports

This section includes reports from our four 2005 student award winners (in reverse alphabetical order).

ANALYTICAL BIOGEOGRAPHY OF LAND SNAIL ON BORNEAN TROPICAL MOUNTAINS

Mountains are the one of the ecosystems that provide a “natural laboratory” for biogeography studies and might act as a model for biogeography from global scale until local scale. Mountains have their distinguished historical position in the development of ecological biogeography, historical biogeography, and conservation biogeography.

In view of such an invaluable opportunity of using mountains in biogeographical studies, two adjacent tropical mountains have been chosen in this study. Mount Kinabalu (4095 m) and Mount Tambuyokon (2588 m) is the highest and 4th highest mountain in Borneo, respectively. The former mountain is the highest mountain between the Himalayas and New Guinea. There is a wide range of elevations in the Park (from 152 m to 4095 m), but there are also different vegetation zones (lowland tropical rain forest, hill rain forest, lower montane forest, upper montane forest and subalpine scrub) and geological substrata (metamorphic, ultramafic, ultrabasic, and sedimentary rocks, granite and gravels).

This study focuses on the biogeography of land snails. Mainly because of their low powers of dispersal, land snails serve as good candidate organisms for biogeographical and evolutionary studies. In order to understand the distribution of land snails on Mount Kinabalu and Mount Tambuyokon, this study is designed to answer several questions from different perspectives of biogeography.

1) How many species of land snails are there and where do they occur in Kinabalu Park (Mount Kinabalu and Mount Tambuyokon)?

2) What are the environmental and spatial factors that influence the land snail distribution?

3) Do the distribution patterns of land snails on these two tropical mountains support the general biogeographic theories that explain global variations in the diversity of organism?

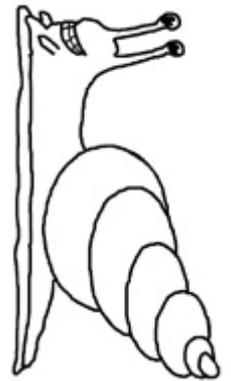
Kinabalu Park is located in the state of Sabah, in the northern part of Borneo. Two tall mountains lie here: Mount Kinabalu (4095 m) and Mount Tambuyokon (2588 m). The present size of the park is 75370 hectares, which mostly consist of the slopes of these two mountains. Due to its uniqueness in flora and fauna, Kinabalu Park was gazetted in 1964 and given World Heritage status in 2000.

This study focuses on Mount Kinabalu and Mount Tambuyokon. Mount Tambuyokon is the highest mountain (> 2000 m), adjacent to Mount Kinabalu. Hence, sampling plots along the slopes of Mount Tambuyokon can provide an altitudinal comparison with Mount Kinabalu. A total of 142 plots were set up along seven sampling transects (access routes). Plots of 20 m x 20 m were searched for both dead and living land snails for two person hours ensuring that all accessible potential snail microhabitats, such as dead wood, rocks, tree trunks, leaf litter and living vegetation were examined.

A classification of similarities in land snail species composition was done on a matrix of 129 plots X 109 species; 13 empty plots (no recorded snails) were excluded from the analysis. The data matrix consisted of absence (0) and presence (1) of each species for each plot. The patterns for species density, richness, diversity, snail's size and distribution range on elevation gradient were examined and tested with correlation and regression analysis.

A total of 2835 individuals belonging to 109 species were found in the standard plots of this study. These 109 species belong to 44 genera. The species richness for Mount Kinabalu is 86; and 70 for Mount Tambuyokon. The total number of species in this study exceeded the total recorded species (ca. 80 species) over the past one hundred years. In fact, over one-third of the species that have been recorded for the whole of Sabah can be found inside Kinabalu Park

Principal structural differences in land snail composition across elevational gradient were shown by the dendrogram from the



cluster analysis, where almost all the plots were grouped into five distinct clusters. These five clusters were well defined by respective elevation zone, namely 3500 to 4095 m; 500 to 1600 m; 2600 to 3500 m; and 1500 – 2600 m (which comprise two groups: Mount Kinabalu and Mount Tambuyokon). MRPP showed that all clusters were significantly differed from each other in land snail composition ($A = 0.095$; $p = 0.000$). The segregation (clusters) of land snail community with elevational zone was correlated to the forest ecotome, namely lowland forest c.a. below 1500 m, montane forest between c.a. 1500 to 2600 m, sub-alpine and alpine forest between c.a. 2700 – 3500 m, and alpine rock desert above 3500 m.

The species density ($r_s = -0.360$, $p = 0.000$) and Shannon Weiner diversity index ($r_s = -0.465$, $p = 0.000$) for each plot on both mountains decreased significantly with increasing elevation. However, a cubic model was best to describe the relationship between both diversity measurement and elevation (Species density: $R^2 = 0.251$, $y = -3E-10x^3 + 2E-06x^2 - 0.004x + 4.3451$, d.f. = 138, $p = 0.000$; Shannon index: $R^2 = 0.293$, $y = -3E-10x^3 + 2E-06x^2 - 0.004x + 4.3451$, d.f. = 138, $p = 0.000$). No mid-domain effect (MDE) was observed for species density. However, wide range of species density and diversity (from the poorest site to richness site) appear at mid elevation zone (between 1500 – 3000 m). This particular zone consists of montane and sub-alpine forest with more than ten different types of intrazonal vegetation mosaic. The heterogeneity of this environment has provided a wider range of habitats, which is usually positive correlated high species diversity. Beside the habitat diversity hypothesis, environmental stability along the elevation might also explain why the species diversity and density decline with increasing elevation, but not in mid elevation zone. A cloud belt that always occurs in between 2000 – 3200 m might has cushioned the changing of climatic parameter along elevational gradient by providing constant moisture and shade. Also, the temperature difference between daily maxima and minima is smaller in the cloud zone than in lowland.

For Mount Kinabalu, the species richness curves demonstrated mid-domain effect between 2000 – 3200 m. The regression

analysis showed that relationship between species richness and elevation classes (both interval) was best described by the quadratic model ($y = -2E-05x^2 + 0.0944x - 78.911$), where R^2 value = 0.91, $p = 0.001$. However, for Mount Tambuyokon, linear model was significant to describe the relationship between species richness and elevation ($y = -0.0104x + 47.6$, $R^2 = 0.926$, $p = 0.038$)

The difference of species richness pattern along elevation on these two mountains might caused by the different of geological processes. The Mount Kinabalu area that located below 2500 m was shaped by the same geological processes that had shaped the Mount Tambuyokon but the uplifted pluton had changed the landscape and habitat of Mount Kinabalu above 2500 m. The species elevational range profile for two mountains showed similar pattern below 2500 m. Thus, MDE effect cannot simply caused by environmental factor, but historical factors (e.g. geological events, evolutionary biology) might contribute more to the MDE or species richness along elevation.

The Pulmonata and Prosobranchia shell size did not correlate significantly with elevation ($p < 0.5$). Even though the monotonic relationship of both subclasses was not found, the cut-off points (elevation), where the shell size starts to decrease dramatically, were identical. The first cut-off point was at the elevation of 2700 m, where no species that larger than 25 mm and 15 mm have been found for the subclasses Pulmonata and Prosobranchia, respectively. The second cut-off point was located at 3400 m, where the largest Pulmonata species is 10 mm. No Prosobranchia have been found above 3400 m. From the field observation at Kinabalu, these high-elevation snails were found in the soil that accumulated in the cracks between the rocks, so being small in size would be an advantage for burrowing and moving in cracks. Also, elevational range for the land snail species on these two tropical mountains were not significantly correlated with the animal size (Kinabalu: $r_s = -0.101$, $p = 0.439$, Tambuyokon: $r_s = -0.107$, $p = 0.535$). The distribution range of land snails of Mount Kinabalu and Mount Tambuyokon did not abide by Rapoport's rule.

The trends of changing for the diversity, and richness along the elevation gradient were found

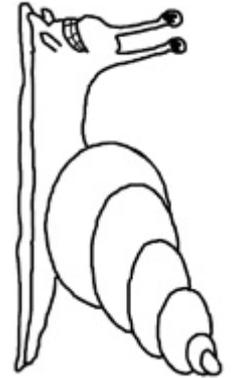
in Mount Kinabalu and Mount Tambuyokon. Several biogeographical theories were also tested on the land snail of Kinabalu Park. The distribution ranges (elevation ranges) of land snails were not tallied with the Rapoport's rule. Snail's size was also against the Bergmann's rule. Past historical events (geological and evolutionary) and present-day environment have been maintaining the zonation of land snail communities according to the elevation. The detailed and effort controlled sampling provided the good quality of baseline data about the land snail distribution on Mount Kinabalu and Mount Tambuyokon, which will be used in the future to modelling the effects of global warming.

Liew Thor-Seng

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NEOTROPICAL SPECIES DIVERSITY:
APPLE SNAILS AS AN INFORMATIVE
SYSTEM

The Neotropics support some of the highest concentrations of biodiversity on Earth, and the largest country in South America, Brazil, may contain as many as 20% of the world's known species. Why is there so much biodiversity in the Neotropics? This is a question that has elicited a plethora of hypotheses starting with Alfred Russel Wallace's proposal that rivers act as barriers, explaining the diversity of Amazonian monkeys (Wallace 1852), to the explanation of bird diversity by the so-called "Refuge hypothesis", and more recently the "Hydrogeological hypothesis" explaining freshwater ichthyofaunal diversity (e.g. Lundberg et al. 1998). Like these, the majority of explanations for high levels of Neotropical diversity have been derived from patterns exhibited by vertebrates, and to a lesser extent plants. Conspicuously lacking are studies of the diverse array of invertebrates, particularly Neotropical freshwater molluscs. My hope is to help fill this large gap in understanding of Neotropical diversification by focusing on a large group of freshwater snails in the family Ampullariidae, the apple snails.



The nine extant genera of apple snails are distributed throughout the humid tropics and subtropics, reaching their highest diversity in the Neotropics. *Pomacea*, with 117 nominally valid species (Cowie and Thiengo 2003), is the largest genus in the family and is distributed from the Buenos Aires region of Argentina north to Central America, the Caribbean, and the southeastern USA. Because of its high diversity and large geographic range the group is potentially a highly informative system for understanding diversification of the Neotropical biota. A portion of my 2005 Unitas Malacologica Student Grant Award was used to support field collections of *Pomacea* spp. from several regions in Brazil during 2005, which when combined with the efforts of a previous collecting trip, have yielded more than 1600 snails of 26+ *Pomacea* spp. The remainder of the grant was used to pay for generating partial sequences of the COI gene.

Preliminary phylogenetic analyses of more than 1200 snails reveal that *Pomacea* may not be a monophyletic group with respect to the other

Neotropical genera, as currently defined (Cowie and Thiengo 2003). Additionally, analyses that I have undertaken to date indicate that there may be far fewer *Pomacea* species than have been described, and that much of the morphological diversity is not reflective of genetic diversity in the genus. Preliminary phylogeographic patterns uncovered through analyses of COI indicate that speciation in the genus may have been heavily influenced by isolation in river drainages as a result of past hydrogeological events, conforming in general to the hypothesis of Lundberg et al. (1998). Data generated from support provided by Unitas Malacologica have resulted in two publications that will be submitted for review in early 2007, as well as, a book chapter that will be published in late 2006 (Cowie et al. in press).

Kenneth A. Hayes

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UM Student Award Winner 2005

Cowie, R.H. and S.C. Thiengo. 2003. The apple snails of the Americas (Mollusca: Gastropoda: Ampullariidae: *Asolene*, *Felipponea*, *Marisa*, *Pomacea*, *Pomella*): a nomenclatural and type catalog. *Malacologia* 45(1): 41-100.

Cowie, R.H., Hayes, K.A. and S.C. Thiengo. In press. What are apple snails? Confused taxonomy and some preliminary resolution. In: Ecology and management of golden apple snails: a global scenario (ed. R.C. Joshi), Philippine Rice Research Institute, Muñoz, Nueva Ecija.

Lundberg, J.G.L.G. Marshall, J. Guerrero, B. Horton, M.C.S.L. Malabarba, and F. Wesselingh. 1998. The stage for Neotropical fish diversification: a history of Tropical South American rivers. *In: Phylogeny and Classification of Neotropical Fishes* (L.R. Malabarba et al, eds.), pp. 13-48. Edipucrs, Porto Alegre, Brazil.

Wallace, A. R. 1852. On the monkeys of the Amazon. *Proceedings of the Zoological Society of London* 20: 107-110.

POPULATION STRUCTURE AND DISPERSAL IN TWO COMMERCIAL OCTOPUS SPECIES: A COMPARISON BETWEEN BENTHIC AND PLANKTONIC EARLY LIFE HISTORIES

The pale and maori octopuses, *Octopus pallidus* and *Octopus maorum*, are common species found throughout southeast inshore Australian waters. *Octopus maorum* is also found in temperate and sub-Antarctic New Zealand waters. Both species constitute two small but intensive fisheries in Tasmania, however, sustainable catch levels are currently uncertain. As with the vast majority of octopus species, virtually nothing is known about the population structure and movement patterns of these two ecologically and economically important endemic octopuses. A particular mystery is the occurrence of a large aggregation of *O. maorum* in Eaglehawk Bay, southeast Tasmania – the only known location of this phenomenon. The reason for the aggregation, or importantly, the source of the animals remains unknown.

Early life history strategies, which have important implications for a population's structure and dispersal capabilities, are markedly different between the two species. *Octopus pallidus* produce up to 200 large eggs in one spawning event, which hatch into fully developed benthic young. In contrast, *O. maorum* produce up to 100,000 eggs in one spawning event, which hatch into small planktonic larvae before settlement and the adoption of a benthic lifestyle. These differing strategies will have a profound impact on the way the stocks will respond to fishing pressure and stock depletion.

This project aims to examine and compare the population structure and dispersal of these two species and assess their differing vulnerabilities to fishing pressure, using a combination of innovative and established methods. On project completion I hope to address the following key questions:

- What is the apparent population structure and dispersal pattern of both species, and do they reflect their differing life histories?
- Are the molecular, trace element and morphometric analyses corroborative and/or complementary?

- On what scale should *O. maorum* and *O. pallidus* populations ought to be managed?

To achieve these aims I will be using two main techniques, namely molecular markers and elemental signatures of stylets, and also some basic morphometrics.

Species-specific microsatellite markers are currently being isolated from both species. Once isolated, these highly polymorphic DNA markers will be used to investigate the degree of genetic differentiation and gene flow between geographically-isolated populations. In other words, is the population divided into genetically distinct sub-populations or is it a single freely interbreeding population?

Trace elements incorporated within the calcified structures of marine species have proven to be valuable tools for tracing the past environmental histories and movement patterns of individuals and populations. In this study, the unique elemental signatures of stylets (tiny internal shells found within the mantle) from both adults and hatchlings will be investigated using a targeted microprobe technique called laser ablation inductively-coupled plasma-mass spectrometry (LA ICPMS). This technique will allow the pre-hatch region within the adult stylet to be specifically targeted. Elemental signatures obtained from adult pre-hatch regions will be compared to the signatures of stylets from day-old hatchlings, potentially providing information on juvenile movement and natal origins. To determine the composition of the stylets and their suitability for laser ablation analysis, several preliminary analyses have been conducted on the structure, including proton-induced x-ray emission (PIXE), x-ray diffraction and infrared spectrometry.

To provide a more holistic picture of population differentiation morphometric measurements are being collected from the beaks, stylets and body. To determine the presence of phenotypic variation, the measurements will be compared between sampling sites.

Animals are currently being collected from rock lobster fishers as bycatch, commercial octopus fishers and our own octopus pots. Sampling sites, for both species, are located throughout Tasmanian coastal waters. Additionally, *O. maorum* samples have been

collected from South Australia, and Unitas Malacologica's funds are currently being used to collect samples from New Zealand.

In summary, this project will provide essential information on the biology and ecology of two important marine species, and will ensure their continued protection through the development of sustainable fishing practises. Furthermore, through the establishment of novel and effective methods for studying octopus populations, this project will also have major applications for other commercial octopus species worldwide, the majority of which are very poorly understood.



Zoë Doubleday

University of Tasmania

UM Student Award Winner 2005

THE RECIPROCAL EFFECTS OF PLASTICITY IN DEFENSIVE AND MATING-SYSTEM PHENOTYPES IN FRESHWATER SNAILS

Most organisms experience variation in biotic and abiotic environmental factors during ontogeny. To persist, organisms must survive and reproduce despite such environmental variability. To understand the evolution of phenotypes in natural populations we have to understand the context in which phenotypes are expressed and how environmental factors interact to affect the expression and evolution of the phenotype.

In my dissertation, I am examining the effects and consequences of environmental variation on phenotypes by examining two representative and well-studied kinds of environmental factors that interact to affect the phenotype: predation risk and mate availability. These environmental factors directly affect survival and reproduction and are therefore closely tied to fitness, making them excellent candidate factors for a study of how interacting environmental factors affect a species' ecology and evolution. Variation in predation risk leads to the expression of inducible defences that increase survival in the presence of a predator. However, inducible defences frequently incur a cost of slower growth or decreased reproduction compared with the "no-predator" phenotype, thus favouring inducible expression over constitutive expression. Variation in mate availability plays a crucial role in determining mating systems and is a product of population size and structure. Responding to variation in mate availability can lead to patterns of inbreeding and outbreeding that deviate from random breeding. In nature, organisms will experience variation in predation risk and mate availability simultaneously.

Inducible defences and mating systems are intimately linked because inducible defences frequently involve adjustment of traits that also determine mating and reproductive success (e.g. activity). Simultaneously, changes in the mating system can lead to inbreeding or outbreeding depression and therefore influence the development of an organism and the production of an inducible defense. Responding to variation in predation risk and mate availability frequently involves plastic adjustment of the same traits

(e.g. age or size at first reproduction). Therefore, to understand the expression and evolution of defensive and mating-system phenotypes in nature we must examine their interaction. To explore how organisms respond to two independent sources of environmental variation, I am examining the effects of predator-induced plasticity on mating system expression and the implications of changes in the mating system on the production of an inducible defense.

In my grant application, I proposed research to address how the effects of plasticity in defensive and mating-system phenotypes interact in the hermaphroditic freshwater snail *Physa acuta*. Using a combination of laboratory and outdoor mesocosm experiments to decompose these reciprocal effects, I have made progress towards addressing two major hypotheses.

Hypothesis 1: Predator environments affect the mating system of a prey population by increasing the proportion of selfed progeny produced. Predators can reduce prey density by thinning the prey population and induce changes in prey traits that affect the pool of available mates. If mates are available and inbreeding depression is high, individuals should mate and reproduce shortly after reaching sexual maturity. However, if mates are not available, individuals should wait a set amount of time before inbreeding to avoid the costs of inbreeding depression (Tsitrone et al. 2003). Concurrently, size-selective predation on small prey favours rapid growth and delayed reproduction whereas predation on large individuals favours slow growth and early reproduction (Stearns and Koella 1986). The combination of decreased mate availability due to predator thinning and delayed maturity (which should truncate the time delay before self-fertilization) induced by predators may result in an increase in the proportion of progeny produced by self-fertilization.

Hypothesis 2: Inbreeding impairs the production of prey defences. I expect that with subsequent inbreeding, individual growth rate will decrease. Thus, the development of morphological and life-history defensive phenotypes will be retarded in inbred individuals relative to outbred individuals due to their reduced growth potential. This decrease in plasticity should increase with subsequent

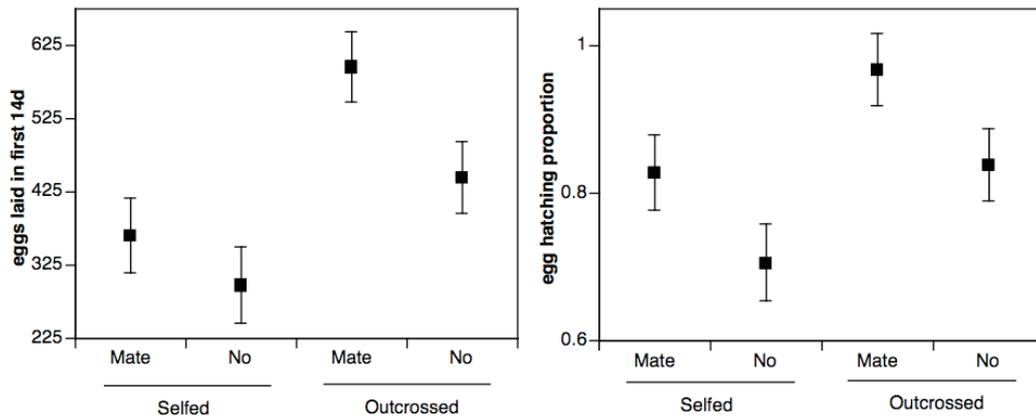


Figure 1. The effects of sexual partner availability (mate available = “Mate”; no mate available = “No”) and mating system (Selfed / Outcrossed) on the number of eggs laid in the first 14d of egg production and the egg hatching proportion (number of eggs that hatch / number of eggs laid). These data are averaged across predator treatment. All data are means + S.E.M.

inbreeding.

Predators induce changes in the life-history traits of snails that likely affect the mating system. To examine how predators influence the mating system by 1) inducing changes in the timing of reproduction and 2) changing how individuals respond to mate availability, I experimentally examined how snails alter their life histories under combinations of predator presence and mate availability. I collected ten adult snails from a single, high-density (outcrossed) population and placed them in the lab for oviposition. Progeny from ten clutches were used in a full-factorial experimental combination of two predator treatments (no predator and nonlethal crayfish chemical cues) crossed with two mate-availability treatments (isolation and mate available three times a week for three hours at a time). These four treatments were replicated ten times for a total of 40 experimental units (1-L plastic tubs with weekly water changes and constant ad libitum food rations). I quantified growth rate, shell shape, age / size at first reproduction, progeny success (survival and growth rate), and fecundity.

In the absence of predators, snails that were isolated delayed reproduction compared to snails with partners. However, in the presence of predators, snails with and without mates delayed reproduction. With crayfish, there was no additional waiting time prior to self-fertilizing. Thus, when predators are present, there is a reduced probability of locating a mate prior to initiating reproduction. Hence, individuals are more likely to self-fertilize prior to finding a mate in the presence of a predator than in the absence of a predator. I am currently testing this hypothesis further by using microsatellite

allele frequency data to evaluate how the genetic mating system changes in the presence / absence of predators.

To evaluate the prediction that inbreeding impairs the production of prey defences, I am conducting the same experiment after several generations of self-fertilization or outcrossing in the lab. I expect that with subsequent inbreeding, growth rate and fecundity will decrease. Also, I am measuring the same morphological and life-history traits for inbred and outbred progeny to determine if inbreeding affects the plasticity of snail traits.

It is important to be able to compare snails produced through self-fertilization to an “outcrossed” control line of snails in order to control for any inadvertent selection that occurs under lab conditions and to control for any general environmental effects that differ between generations. In my original attempt at this (August – December 2005), I obtained snails for the second-generation experiment from my first-generation-experiment snails. It was obvious that one generation of self-fertilization had detrimental consequences on fitness (Fig. 1). Selfed snails laid 36% fewer eggs than outcrossed snails and that 15% more of their eggs did not hatch. Thus, self-fertilization impairs fitness and also impairs the production of predator-induced shell morphology (data not shown). However, despite these obvious differences between the first-generation traits and the drastic reduction in fitness associated with self-fertilization, my outcrossing control lines were intermediate in many measures between the generation-one snails and the generation-two snails produced through self-fertilization. This suggests that my outcrossing treatments were occasionally

self-fertilizing. To correct for this and obtain higher-quality results, I have implemented a new protocol for outcrossing snails. This new protocol is having the desired effect of more accurately mimicking an outcrossing-selfing comparison. I am currently completing the generation-1 experiment and approximately two months into the generation-two experiment.

Josh Auld

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Stearns, SC and JC Koella. 1986. The evolution of phenotypic plasticity in life-history traits: predictions of reaction norms for age and size at maturity. *Evolution* 40:893-913.

Tsitrone, A, S Duperron, and P David. 2003. Delayed selfing as an optimal mating strategy in preferentially outcrossing species: theoretical analysis of the optimal age at first reproduction in relation to mate availability. *American Naturalist* 162:318-331.

Books!

SCHULTZ, O., 2005. *Bivalvia neogenica (Solenioidea-Clavagelloidea)*. *Catalogus Fossilium Austriae* 1(3), pp. i-v , 691-1212, figs. 9-60, 2 maps, pls 96-152. Verlag der Österreichischen Akademie der Wissenschaften, Wien (ISBN 3-7001-3499-1). Price € 248.

Tables of contents and reading examples of all three volumes are freely accessible on the World Wide Web: <http://hw.oeaw.ac.at/3499-1>

With this third volume, Dr Ortwin Schultz concludes his 'masterpiece' on Austrian Neogene bivalves. In sheer size and weight, this part equals the two earlier parts taken together.

There is just one page (p. v) with corrections and additional references. The systematic part, started in volume 1, continues and deals with the superfamilies Solenioidea, Tellinoidea, Dreissenioidea, Arcticoidea, Corbiculoidea, Veneroidea, Myoidea, Gastrochaenoidea, Hiatelloidea, Pholadoidea, Pholadomyoidea, Pandoroidea, Poromyoidea and Clavagelloidea. It concludes with an appendix of various unidentifiable bivalves.

The 56 plates of black-and-white photographs (taken by Mrs Alice Schuhmacher, of the Naturhistorisches Museum Wien) are of the same excellent quality as in the first two volumes. In particular, the numerous photographs of all type and illustrated specimens of Dreissena, Mytilopsis and Congeria, so typical of central Paratethys assemblages, are really a great help and a prerequisite for anyone working in that area, both at the present day and for many years to come!

An extensive locality register is given. For more than 2,000 names of sites in sedimentary basins within Austria, Greenwich co-ordinates (in italics wherever known in detail) and chronostratigraphic age are given, as well as page numbers where these localities are referred to in the systematic part, inclusive of frequent cross references. Page numbers are underlined in the case of type localities. This makes this register into a never-ending source of information. Two

maps of Austrian sedimentary basins and some of the most important localities are given.

This volume concludes with a comprehensive listing of all taxa referred to in the systematic part, as well as all synonyms. A taxon such as *Glans (Centrocardita) aculeata rhomboidea* can be found under both species group names *aculeata* and *rhomboidea*, but not under the genus group names. For valid taxa and names in headings, the page numbers are given in bold. I checked out a number of names and found no omissions. An indication for the accuracy with which these indices were composed is that in each case not only the page number is given, but even the column (left or right, indicated with /1 or /2) on that page.

Over six kilograms of data are available now to the scientific world! My two earlier reviews of parts 1 and 2 ended with an expression of my admiration – here I shall refrain from repeating myself, but I can hear him breathe a sigh of relief ... it's done!

So, all I wish to say now is 'Dr Ortwin Schultz: *chapeau* !'

Arie W. Janssen

C. Sturm, T. A. Pearce, and A. Valdés, editors. 2006. *The Mollusks: A Guide to Their Study, Collection, and Preservation*

A new publication from the American Malacological Society. 445 pp. Soft covered. Price: USD \$35.95.

For more information and where to order see <http://www.malacological.org/publications/molluskguide.html>

Have you ever wondered about collecting snails with a leaf blower? How about the ins and outs of preserving a giant squid? Do you know what a bail, grab, or box corer are? Maybe you have pondered what types of plastics are safe to use for storing specimens or how to use an optical scanner to image shells. If questions like these arise from time to time, you want a copy of the American Malacological Society's latest publication, *The Mollusks: A Guide to Their*

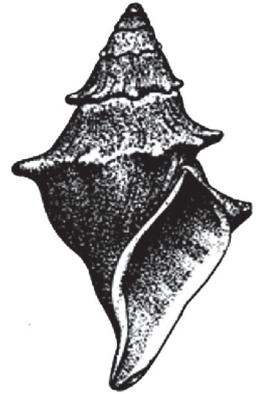
Study, Collection, and Preservation.

The American Malacological Society, founded in 1931 as the American Malacological Union, is an organization that brings together folks interested in molluscs. In 1942, papers presented at the annual meeting in Maine dealt with studying and collecting shells. These papers were published in the Annual Report of 1942 and were reprinted in 1955, 1966, and 1974. With each reprinting, a few more papers from other publications were added. The 1974 booklet, entitled *How to Study and Collect Shells*, was 107 pages in length and had two illustrations. Now, *The Mollusks: A Guide to Their Study, Collection, and Preservations* is the first update of the 1974 booklet in 32 years. If you are looking for a book full of glossy photos, this book is not for you. If you want a book giving the latest information on all modern classes of molluscs and the best methods to study, collect, and preserve them, look no further.

The Mollusks, 445 pages long, with 31 chapters, 101 figures, and 28 tables, is a completely new book. The book was edited by Charlie Sturm, Tim Pearce, and Ángel Valdés. An international team of 29 individuals contributed to these chapters. *The Mollusks* differs in several significant ways from its predecessors.

While the former books were compendia of articles, *The Mollusks* consists of chapters, each covering a specific topic. Some chapters deal with collecting and preserving molluscs, both the shells and soft parts, remote bottom collecting, and SCUBA diving. Other chapters cover archival practices, writing taxonomic papers, the International Code of Zoological Nomenclature, constructing databases, digital imaging, and film photography. Chapter 9 lists over 750 books, monographs, and papers on molluscs indexed by biogeographic region and taxonomic group. If you collected land snails in southern Africa, go to the "Ethiopian (Afrotropic) – terrestrial" listing and you will find a list of 20 books to help you with your material.

All modern classes of molluscs are treated in *The Mollusks*. The Aplacophora, Monoplacophora, Polyplacophora, Scaphopoda, and Cephalopoda have their own chapters. The Bivalvia are covered in three chapters while the Gastropoda are covered in four chapters. There is even a chapter on fossil molluscs. These



chapters cover the biology and ecology of these groups, where to find these organisms, and how to collect them. Each chapter has a list of cited references for further information.

The last four chapters of the book cover a variety of topics. Two chapters deal with conservation, one with freshwater molluscs, and the other with marine molluscs. One chapter discusses maintaining a marine aquarium. The fourth chapter is on non-molluscan marine organisms that have calcareous structures and might be mistaken for molluscs.

At the website you will find a link to the publisher's website, here you can read the first chapter of *The Mollusks*. This chapter is a detailed introduction to the rest of the book. Questions about the book can be sent to the editors at doc.fossil@gmail.com.

Charlie Strum

Treasurer's Column

Dear members,

I am at present trying to collect as much as possible membership dues that are in arrear.

Since 2007 is a congress year, it is important that members contribute to the healthy financial situation of our Society. *Unitas Malacologica* will once again offer 20,000 euros to enable young researchers and PhD students to join the next congress. I warmly thank all members who pay their dues on a regular scheme, in particular those members who even pay several years in advance.

In the period February-December 2006, donations to the Trust Fund were received by various members: three generous donations from

George I. CRAWFORD
Georges B.J. DUSSART and
Johannes G.J. KUIPER,
smaller ones by Robert A.D. CAMERON,
Ayolani V. DE LARA, Klaus-Jürgen
GÖTTING, Karen Lee GOWLETT-
HOLMES, Joos JOOSSE, Yolanda MANGA-
GONZALES, Peter NORTON, Richard PETIT,
Günter SCHMID, Jesus S. TRONCOSO, Marc
VIANEY-LIAUD and Janice VOLTZOW,
and round-ups by Leslie J. ELMSLIE, Klaus
GROH, Sadao KOSUGE, Bernhard LIEB and
Andrea TAPPERT.

In 2006 not less than 40 new members joined *Unitas Malacologica* which implies that for the first time in many years our member's balance at the end of the year is significantly positive. Among the new members we welcome an affiliated society through the courtesy of its president Prof. Dr Nathal SEVERIJNS: 'Belgische Vereniging voor Conchyliologie', Antwerp.

Thank you very much. Hope to see most of you in Antwerp.

Best wishes,

Jackie Van Goethem
Treasurer

News From Brazil

BIOGEOGRAPHY OF THE TRANSMISSIBLE DISEASES FOR INTERMEDIATE HOST MOLLUSKS IN THE SANTA CATARINA STATE, SOUTHERN BRAZIL REGION*

The State of Santa Catarina (SC) is part of Brazil's southernmost region, situated between the State of Paraná (PR) to the north, and the State of Rio Grande do Sul (RS) along its southern border; its western neighbour is Argentina, and along the entire eastern border lies the Atlantic Ocean. Lying between 25° and 30° South latitude and between 48° and 54° West Longitude, Santa Catarina measures 377 km in the north-south direction, and 547 km in the east-west direction at its farthest points; its total area of 95,985 km² includes 502 km² of rivers and lakes. The state territory represents no more than 1.13% of the area of Brazil, geographically divided into two large parts: the Atlantic coastal plains and the western Highlands. The dominant climate is of the damp, sub-tropical kind, with average temperatures varying between 17° and 21° C, and the vegetation is damp coastal forest (mainly tropical Atlantic woodland) covering 29,622 km². Two independent river basin systems irrigate the land: the basins of the Uruguay and Iguazu Rivers form one of these systems, and several basins that discharge into the Atlantic Ocean form the other.

Historically, continental malaco-fauna in this southern Brazilian's portion has been poorly documented, with only few known species cited in historical records, summarised in recent studies by the author.

An unpublished study on the biogeographical incidence and potential occurrence and / or territorial expansion of diseases specifically transmissible by molluscan vectors in the Santa Catarina State territory, recently confirmed three tropical zoonoses of parasitic nature (helminthoses / verminoses) with immediate interest for medical and sanitation applications. We identified 13 species of vectorial pulmonate gastropod mollusks and the human, whose regional geographical-space distribution was mapped previously for the author between 1996 and 2005.

Esquistossomose is transmitted by the aquatic parasitic worm *Schistosoma mansoni* Sambon, 1907, with four limnic snail species of the family Planorbidae involved as confirmed intermediate hosts. The principal region is limited to 3 municipal districts of the North area of the State (São Francisco do Sul, Guaramirim e Jaraguá do Sul).



Angiostrongilíase Abdominal is transmitted by the terrestrial parasitic worm *Angiostrongylus costaricensis* Morera & Céspedes, 1971, with seven terrestrial species involved as confirmed intermediate hosts (one snail, three slugs and three semi-slugs) in the region limited to the Municipal district of “Nova Itaberaba”, which is also associated with the African giant-snail *Achatina fulica* (Bowdich, 1822) another effective spontaneous and natural intermediate host of that disease (SC and Brazil in general).

Fasciolose or Fasciolíase is transmitted by the aquatic parasitic worm *Fasciola hepatica* (Linnaeus, 1758), with two limnic snail species of the family Lymnaeidae involved as confirmed intermediate hosts, with distribution limited along to the entire eastern Atlantic coastal plains.

In spite of being of having recognized problems of public health, directly related denominated “Saneamento Ambiental Inadequado” (Inadequate Environmental Sanity), these diseases are all broadly neglected in the State.

For references to studies completed in progress, and for taxonomic details of host species, please contact the author.

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* Geography dissertation thesis of the author (University of Santa Catarina State – UDESC, Florianópolis - SC, Brasil), in Preparation.

UNITAS MALACOLOGICA
Election of office bearers – 2007

Ballot Sheet

Office	Candidate	For	Against
President	Dr Somsak Panha		
Treasurer	Dr Jackie Van Goethem		
Council Member	Dr Mary Seddon		
Council Member	Dr Ellen Strong		
Council Member	Dr Aileen Tan Shau-Hwai		

The terms of office are 2007-2010 for President and Treasurer, and 2007-2013 for Council Members. There are three (3) vacant places for Council Members. Please insert a cross, for or against, next to each candidate.

Please detach this page and return it by post or by fax to:

Dr Dai Herbert
Secretary: Unitas Malacologica
Natal Museum
P. Bag 9070
Pietermaritzburg
3200
South Africa

Fax +27 (0)33 3450561.

Or you may e-mail your vote to: dherbert@nmsa.org.za

Dr Somsak Panha currently serves as a Unitas Malacologica Council Member.

Dr Jackie Van Goethem currently serves as Unitas Malacologica Treasurer.

Dr Aileen Tan Shau-Hwai is a senior lecturer at the University Sains Malaysia and has been studying molluscs since 1989. Her research interests focus on mariculture and reproductive biology, particularly of oysters, but she has also been involved with broader issues relating to conservation in Malaysian reef systems. She has won numerous industry-related awards for her mariculture research and has published more than 45 papers in national and international journals.

Dr Ellen Strong is a curator of molluscs in the Department of Invertebrate Zoology, National Museum of Natural History in Washington DC (since 2004). She has a Ph.D. from George Washington University, and her research interests include: phylogeny of caenogastropods based on morphological and molecular data; anatomy, phylogeny and systematics of a number of groups including Cerithioidea, Ptenoglossa, Neogastropoda; evolution in ancient lakes; morphological basis for the invasion of freshwater.

Dr Mary Seddon is head of the Molluscan Section at the National Museum of Wales. Her research has focused on land snails, both Modern and Quaternary, particularly in North and East Africa. Together with Peter Tattersfield, and colleagues in the National Museums of Kenya and National Museums of Tanzania, Mary is currently studying forest mollusc diversity patterns in the Eastern Arc and Albertine Rift. She is also Chair of the IUCN Species Survival Commission's Mollusc Specialist Group and is busy with a major project assessing the global status of freshwater molluscs.