

Forum Phycologicum



www.bcb.uwc.ac.za/pssa/

Newsletter of the
**Phycological Society
of Southern Africa**

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From the Editor

It is with great sadness that I greet you all with this first edition of *Forum Phycologicum* for 2011. No doubt many of you have already heard of the passing of Klaus Rotmann (see page 8), a long standing member of the society and father-figure to many. A full obituary will follow in the next edition of the newsletter.

I missed this year's annual meeting, the first time in a very, very long time. I would be giving away my age if I told you just how long it has been since I've missed a meeting. From both the programme and the conference images sent to me, I could tell that it was a most rewarding experience for all those who attended. Special thanks should go to Stuart Sym, Graham Stansell and their team for all the efforts they put into this year's annual meeting.

Continuing with tradition, the first edition of the year is largely devoted to the annual conference and presented herein are the reports presented at the AGM (as well as those from council members not present), a summary of the congress itself, and of course, the list of prize winners. In addition to the congress reports, there is the usual *News and Reviews* segment bearing a wonderful discussion on the consequences of the perennial green blooms on the Hartbeespoort Dam, and information on two workshops (one already held) that students in particular should find quite interesting. As per usual, the list of upcoming conferences and symposia of phycological interest are also listed for your attention. While the congress for 2012 is being planned, we ask that you keep an eye on the next issues of the newsletter and the website.

Until the next issue.
Best wishes
Sincerely

Synarthrophyton patena
epiphytic on *Gelidium capense*

Gavin W. Maneveldt

Reports presented at the annual general meeting held at the Magaliesberg Conference Centre, Broederstroom, Gauteng, 25-28 January 2011

1. President's Report – Eileen Campbell

The Phycological Society of Southern Africa was once again very active in 2010.

International collaboration is still strong: Clarisse Odebrecht from Brazil visited NMMU to spend time with Eileen Campbell & Derek du Preez. Michael Borowitzka from Australia visited Akash Anandraj. Several PSSA members travelled abroad for collaboration - Wendy Stirk visited Vince Ordog in Hungary to further their collaboration and Eileen Campbell travelled to Brazil where she did surf diatom research with Clarisse Odebrecht and Paulo Abreu. While there, she was the plenary speaker at the IV Congresso Brasileiro de Oceanografia. Stuart Sym spent a sabbatical with M. Melkonian and B. Marin at the University of Köln working on phylogenetics. Others collaborated over distance: Stuart Sym with B. Edvardsen of Norway. A.J. Smit collaborated with Thomas Wernberg and Mat Vanderklift from the University of Western Australia. Wendy Stirk also collaborates with Mirek Strnad of the Czech Republic, Nair Yokoya of Brazil and Hernandez Gonzalez of Mexico. It is particularly rewarding that there are some local partnerships developing: Akash Anandraj (Centre for Algal Biotechnology, Mangosuthu University of Technology) collaborates with the Durban University of Technology and the CSIR, while Stuart Sym collaborates with Vince Grey on Biofuels and Pierre Durand on Programmed cell death (University of the Witwatersrand).

It was a quiet year for conferences. After the January PSSA25 in George, there was a SAEON summit (attended by A. Omarijee, M. Reddy and other students).

Members of the Society continue to be involved in all the major aquatic national initiatives:



- South African National Biodiversity Institute (**SANBI**) on Beach Biodiversity – Eileen Campbell, Derek du Preez.
- South African Biosystematics Initiative (**SABI**) on Seaweed Biosystematics – John Bolton, Rob Anderson.
- South African Biodiversity Information (**SABIF**) in digitizing Herbaria – Neil Griffin.
- South African Institute for Aquatic Biodiversity (**SAIAB**) – Tommy Bornman.
- International Barcode of Life (**iBOL**) by analyzing 500 samples – Seaweed Unit, DAFF.
- Agulhas Somali Currents Large Marine Ecosystem Project (**ASCLME**) in Biodiversity and Habitat research – Tommy Bornman, Tinus Sonnekus, Bevan O'Reilly.
- African Coelacanth Ecosystem Programme (**ACEP**) with Biodiversity and Habitat research – John Bolton, Rob Anderson, Chris Boothroyd, A.J. Smit, David Muir, Leanne Gersun, Catherine Browne, Aadila Omarijee.
- South Africa Environmental Observation Network (**SAEON**) with Algoa Bay Ecosystem Dynamics and Upwelling – Eileen Campbell, Tommy Bornman, Derek du Preez, Berny Snow.
- South African National Committee for the Scientific Committee on Oceanic Research (**SCOR**) - Gavin Maneveldt serves on the committee.
- David Muir participates in the **St Lucia Research Programme**.

Our VIPs are Derek du Preez as the Director of the School of Environmental Sciences at NMMU, Wendy Stirk is on the editorial board of the *Journal of Applied Phycology* and the *South African Journal of Botany*, John Bolton is the past president of the International Phycological Society and Stuart Sym is on the editorial board of *Phycologia*.

The emphasis in papers at PSSA26 being predominantly microalgal (70%) is evidence of a healthy relationship between PSSA and the Algal Biofuels group. This was also partially reflected in the attendance being dominated by UCT (almost 40% of the talks). A healthy representation from Wits covered this topic, but also the stimulating contribution by the Medical School formed part of

the 25% representation from that University. It was comforting that 60% of the participation comprised student talks and the society appears ensured of a good future.

It is evident that the PSSA is a healthy society with interactive, engaged and influential members, balanced by developing phycologists. The new and interesting directions for the society include Algal Biofuels, Seaweed in Estuaries, Long-term Datasets and Large Marine Ecosystems. The future for the society looks good as I hand over the Presidency to Wendy Stirk. I am confident that the society will go from strength to strength under her leadership. Thank you to each one of you that has made the past three years that I have been president interesting and exciting. As I am a life member, I know that this will not change, and I look forward to a rewarding phycological interaction with each of you and with the “phycos of the future” that will join.

I wish each one of you and the society everything of the best for the future.

2. Secretary-Treasurer's Report – Mark Rothman

The Society has a Money Market Account that is held at First National Bank. Money Market Accounts have a basic monthly charge, a cash handling fee and have higher interest rates than conventional current accounts. There is a cheque book linked to the account for convenient handling of the account. There are two signatories (currently John Bolton and Mark Rothman), although withdrawals or cheques only require one of the two's signature.

The following financial report is for the period 4 January 2010 till 24 January 2011. The Society had an opening balance of R 36,803.62. Although the 25th PSSA meeting in Saasveld made a profit of just over R700.00, once our expenses for this conference is covered we should break even. Bank statements are available for your perusal. This year, once again, society subscription fees have been included in the registration fees.



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PSSA BALANCE SHEET
04 February 2010 - 04 January 2011
Money Market Account (First National Bank)

| | Credit | Debit | Balance | |
|---|-------------|-------------|--------------------|-----------|
| Brought forward January 2010 | | | R 36,803.62 | |
| Bank fees | | R 670.00 | R 36,133.62 | see Note1 |
| Prize money | | R 3,000.00 | R 33,133.62 | |
| Payment received | R 74,949.00 | | R 108,082.62 | |
| Interes | R 1,755.44 | | R 109,838.06 | |
| Payments Made | | R 67,402.00 | R 42,436.06 | see Note2 |
| Total Assets | | | R 42,436.06 | |
| | | | | |
| Capital Gain for Period 4th February 2010 to 4th January 2011 | | | R 5,632.44 | see Note3 |
| | | | | |
| Note 1 | | | | |
| i) Monthly account fees | R 446.50 | | | |
| ii) Service Fees | R 190.50 | | | |
| iii) Cash deposit fees | R 33.00 | | | |
| | | | | |
| Note 2 | | | | |
| Accommodation: Wolnic CC - deposit | R 31,785.00 | | | |
| Accommodation: Wolnic CC - settlement | R 35,617.00 | | | |
| | | | | |
| Note 2 | | | | |
| This is not final and we still have to settle bills for this conference | | | | |
| | | | | |
| Profit from Saasveld Conference | R 2,445.00 | | | |

Best oral and poster presentations are again sponsored by the Seaweed Industry Association (SIA), and we thank them in their absence for their continued support of Phycology and the Association.

Two years ago, at Paternoster we discussed how to spend our money in the PSSA account. We should revisit this and the organizer of the next conference should keep this in mind.

As always it has been a pleasure serving as Secretary/Treasurer.

3. Membership Secretary's Report – Deborah Robertson-Andersson

I hope that the congress has been successful thus far. My apologies for not being able to attend this year's congress. The society is very strong in membership, particularly with the addition of members from the biofuels workshop. I have been

working on updating a database of members for the society and hope that you all have updated your details on the excel spreadsheet.

The membership currently stands at:

| | |
|-------------------|----|
| Students | 28 |
| Ordinary members | 39 |
| Life members | 14 |
| Corporate members | 2 |

Could supervisors please continue encouraging their students to join the PSSA. The students form an important part of the society.

4. Newsletter Editor's Report – Gavin W. Maneveldt

You will remember that due to a lack of support during 2010, we were only able to produce two issues (March and December) for that year. I am happy to report that thanks to our regular contributions and contributions from some of our



new members, we were fortunate to once again have sufficient information to go back to producing three newsletters for the year. Hopefully the trend will continue during 2011.

Having said this though, it is perhaps prudent to remind everyone that it is the same members that continue to keep the newsletter and its contents afloat. Far too few members are contributing to its contents and I fear that were it not for our regular contributors (you know who you are and I thank you for your time, efforts and energies) the same might have happened last year. Particularly worrying are the contributions from our student members. Last year again saw the inclusion of only one student article. Several calls have been made to both students and supervisors and I fear that the responsibility now rests with our senior members to get their students to submit articles for inclusion in the newsletter. So little effort really needs to be made! It would not take much time or effort to use thesis abstracts as a starting point for such articles. With a little bit of tweaking, and the inclusion and references to figures, this is perfectly possible in no time what-so-ever.

Once again, thank you to all who have contributed to the success of the newsletter.

The Annual Conference: Summary and Prize Winners

The 26th PSSA Congress was held from 25th – 28th January 2011 at the Magaliesberg Conference Centre near Broederstroom and the Hartbeespoort Dam. Some 32 delegates attended the conference, of which 17 were students and 2 were postdoctorates. We were also pleased to welcome Richard Pienaar who attended on the second day. The congress opened with an open bar and a dinner on the Tuesday evening and the formal programme on Wednesday morning.

The invited speaker was Dr Pierre Durand from the Evolutionary Medicine Unit, Department of Molecular Medicine and Haematology, Wits Medical School. Pierre has an interesting academic history, arriving in phycology from a medical background (he is a specialised molecular

pathologist) and having worked abroad in the UK and America. Pierre provided an interesting overview of the myriad of complexities involved in the evolution of a colonial way of life from a unicellular flagellate. The volvocine lineage was used as a model and his talk inspired many questions.

The programme of the congress this year was designed to more-comprehensively integrate the contributions of attendees of former Biofuels Workshops that ran prior to PSSA, and this worked very well. In this regard, it was great to welcome Sue Harrison (UCT) again and to see Vince Gray (Wits) and their students. The programme had five themes (Applied Phycology, Cell Biology/Physiology, Programmed Cell Death, Biogeography and Ecology) presented in nine sessions over two days. It was perhaps the first conference at which there were no poster presentations. The Society really appreciates this, particularly with regard to the student presentations, because it has long-regarded this forum as a non-threatening introduction to public speaking. In total, 30 oral presentations (17 student talks) were presented. We would like to encourage students to continue with this practice and supervisors to push any new-comers to present their work in this format.

The AGM was held after the scientific programme on Wednesday afternoon and the congress closed on Thursday evening with a prize-giving that preceded the braai 'banquet'. Personally, I found it great to interact with old acquaintances, to meet some new faces (both students and otherwise) that we hope will retain their links with PSSA in the future. We were particularly sorry not to see some students that were with us last year as well as two institutions in the Society, John Bolton and Gavin Maneveldt.

The success of the event was heavily-dependent on the contributions of our sponsors and we sincerely thank the University of the Witwatersrand, Taurus Chemicals (Cape Kelp) (Pty) Ltd and Kelp Products (Pty) Ltd. Their generosity helped to get people to the congress and to finance the prizes. The organisers are also grateful to Nicolette Wagner and her team,



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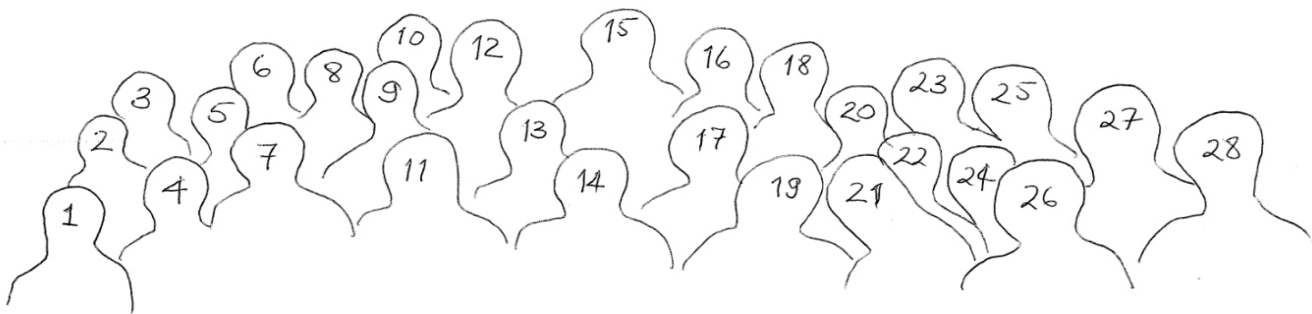
especially Anthony, at the Magaliesberg Conference Centre, who made the arrangements for the event so simple and who all made us feel so welcome.

This year we obviously had no poster presentations and because we had three really good oral presentations it was decided to present one Taurus

Chemical Award (best applied paper), one Kelp Products (Pty) Ltd Award (best student paper), and an extraordinary, second-best student paper award. While we honour these three contributions, the student body attending should note that the adjudicators were impressed by the general standard of all presentations.



The 2011 PSSA participants.



1) Ashira Roopnarain; 2) David Muir; 3) Sarah White; 4) Catherine Worsley; 5) Lydianne Mattio; 6) Siphon Mhlambi; 7) Eileen Campbell; 8) Akash Anandraj; 9) Rob Anderson; 10) Reay Dicks; 11) Wendy Stirk; 12) Graham Stansell; 13) Albertus (A J) Smit; 14) Courtney Padua; 15) Derek du Preez; 16) Rheinhardt Scholtz; 17) Melinda Griffiths; 18) Rajdeep Choudhury; 19) Caitlyne Francis; 20) Jonathan Featherston; 21) Leanne Gersun; 22) Mark Rothman; 23) Mark Cyrus; 24) Catherine Browne; 25) Pierre Durand; 26) Nisha Dhar; 27) Vincent Gray; 28) Sue Harrison.

Missing: Richard Pienaar; Maggie Reddy; Aadila Omarjee; Stuart Sym.

**Taurus Chemical Award (*Best applied paper*):**

Melinda Griffith (UCT)

Effect of initial medium nitrate concentration on lipid productivity in *Chlorella vulgaris* culture (co-authors: Robert P van Hille and Sue T L Harrison)

Kelp Products (Pty) Ltd Award (*Best student paper*):

Rheinhardt Scholtz (UCT)

The effect of different phytoplankton feeds on growth and development of larvae of the echinoid *Tripneustes gratilla* (L) under laboratory conditions (co-authors: John J Bolton and Brett M Macey)

Runner-up Best Student Paper:

Caitlynne Francis (UCT)

Molecular systematics of the red seaweed genus *Laurencia* in South Africa (co-authors: John J Bolton, T Mandiwana-Neudani and Robert J Anderson)

Congratulations to you all and we look forward to seeing you all again at PSSA2012 in the Transkei!

Graham Stansell
Ashira Roopnarain
Sipho Mhlambi
Stuart Sym

PSSA 2011 Guest Speaker and Prize Winners



Guest Speaker: Pierre Durand



Best student paper: Rheinhardt Scholtz (UCT)



Best applied paper: Melinda Griffith (UCT)



Runner-up Best Student Paper: Caitlynne Francis (UCT)



News and Reviews

1. Klaus Rotmann dies

Klaus Rotmann, CEO of the Taurus group of seaweed companies in South Africa and Namibia, died on 15 April 2011 after months of illness. Klaus was a real "father" to the small seaweed industries in SA and Namibia and had boundless enthusiasm for developing seaweed products and uses in southern Africa. Moreover, he was a great supporter of phycological research and researchers, and will be deeply missed by all who knew him. He died in Switzerland, where he had been undergoing treatment for cancer, with his family at his side.



A full obituary will follow in the next edition of *Forum Phycologicum*.

Rob Anderson
Seaweed Unit, Department of Agriculture,
Forestry and Fisheries

2. Hartbeespoort, Dam Evergreen

After the wonderful 2011 PSSA Conference in the Magaliesberg, we took a quick scenic trip around Hartbeespoort Dam. We could not resist collecting water samples and discussing the consequences of the perennial green blooms (Figure 1). Preliminary experiments at the Centre for Algal Biotechnology yielded some rather interesting results.



Figure 1: Hartbeespoort Dam (Google Earth image at centre) surrounded by images of the bloom and the dam architecture (Jan 2011).

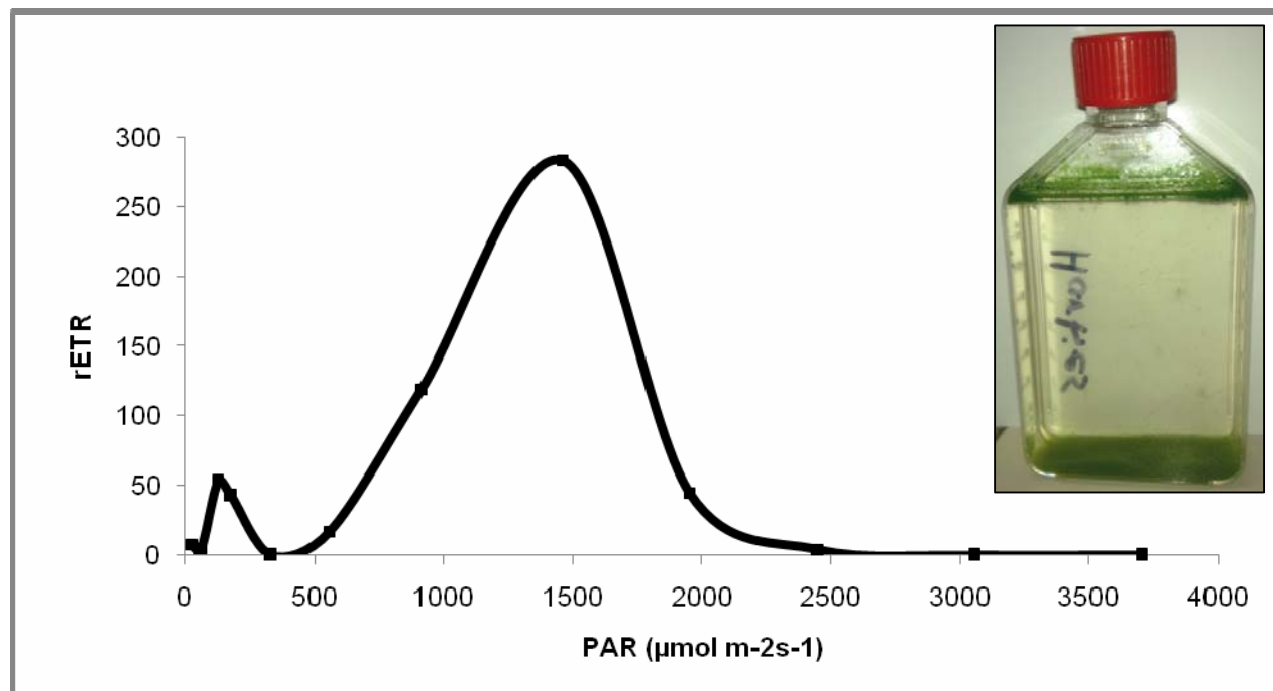


Figure 2: PAM Fluorometry was used to obtain photosynthetic light curve of phytoplankton at the water surface. The insert shows two distinct layers on the surface and settled biomass at the bottom.

This phytoplankton community was able to photosynthesize at extreme irradiance levels, ranging from 1000 to 1500 $\mu\text{mol m}^{-2}\text{s}^{-1}$. Inhabiting the upper 5-10 cm of the water column, this community was well acclimatized to high irradiance. The maximum relative electron transport rate (rETR), an indicator of the photosynthetic rate, was an order of magnitude higher (280 relative units) than most freshwater phytoplankton communities (Figure 2). Photoinhibition only sets in at intensities from 2000 $\mu\text{mol m}^{-2}\text{s}^{-1}$. These high photosynthetic rates would explain the rapid growth of the bloom. The chlorophyll-a concentrations at the water surface were found to average 235 mg/l. The settling rate was estimated between 0.5 to 1 cm/day. Most satellite images from Google earth (2002-2010) show the bloom covering more than 95 % of the water surface.

By extrapolating the preliminary biomass data to the dam volume (205 000 000 m^3), the biomass produced annually is estimated to be approximately 12 tons. It therefore seems that since the 1970's when the bloom first appeared, an average of 400 tons of biomass may have

Did you know?

- The Hartbeespoort dam is a 20 km^2 man-made reservoir in the North West province constructed in 1923.
- The dam has a capacity of 205 000 000 m^3 and a catchment area of 4112 km^2 .
- The main rivers entering the dam are the Crocodile, Magalies, Scheerpoort, Leeuspruit and Swartspruit.
- The Hartbeespoort dam supplies irrigation water through 544 km of canals.
- The phytoplankton bloom started in the 1970's.
- Since the 1970's the blooms may have produced almost 400 tons of biomass.
- 12 tons of biomass is produced annually from the blooms.



been produced. Considering the settling rate, approximately 7 m of biomass may have accumulated on the sediment surface (assuming a static hypothetical system). The volume capacity of the dam would have decreased by 76%, reducing the average depth from 9 m to 2 m if the settled decomposed biomass contributed to sedimentation. In about 45 - 50 years, Hart-beespoort Dam may reach the end of its life span, with negative repercussions to the agriculture sector that depend on the dam for irrigation. Further in-depth studies are required to support the hypotheses presented in the above scenario.

Akash Anandraj and Sarah White
 Centre for Algal Biotechnology
 Mangosuthu University of Technology
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Proposed Outcomes

It is hoped that that this workshop can address the following items:

1. The state of readiness and efficacy of tools for forecasting seasonal climate.
2. The respective approaches taken to produce / acquire seasonal weather forecasts.
3. Review of existing and planned dissemination platforms
4. User needs
5. Coordination of research, forecasting and dissemination activities.

Dr Neville Sweijd
 Applied Centre for Climate and Earth Systems
 Science
 Email: nsweijd@access.ac.za

3. Seasonal Forecasting Information Dissemination Workshop



ACCESS

Applied Center for Climate and Earth Systems Science

It is known that several South African agencies and intuitions, programmes and projects (and beyond) are conducting research on both the mechanisms and drivers of seasonal scale climate variability as well as producing or importing forecasts for the region and disseminating the outcomes. It is also clear that several channels and platforms for dissemination of this information have been developed and additional ones are currently being developed.

On the 5-6 April, a workshop was held in Pretoria, the aim of which was to set standards and protocols and to consolidate planning and activities around the dissemination of seasonal climate and weather forecasts to the public and specific users. To this end, the SAWS (South African Weather Service) CEO, Dr Linda Makuleni and Dr Jimmy Adegoke, in his capacity as ACCESS (Applied Centre for Climate and Earth System Science) Director, convened this important workshop that was open to all interested and affected parties (and students) subject to a limited number of places.

We hope to include a summary of the workshop in a future issue of the newsletter.

4. Phylogenetics, comparative methods and spatial ecology: A short course in R for MSc and PhD students

Although applications for attendance closed on 1 April, for further enquiries please see appendix I.

Conference Countdown

Conference 2012 is being hosted by the Seaweed Unit, under the chair of Robert Anderson and has been tentatively arranged for Qolorha in the old Transkei. Please keep an eye on the society's website (www.bcb.uwc.ac.za/pssa/) for information updates.

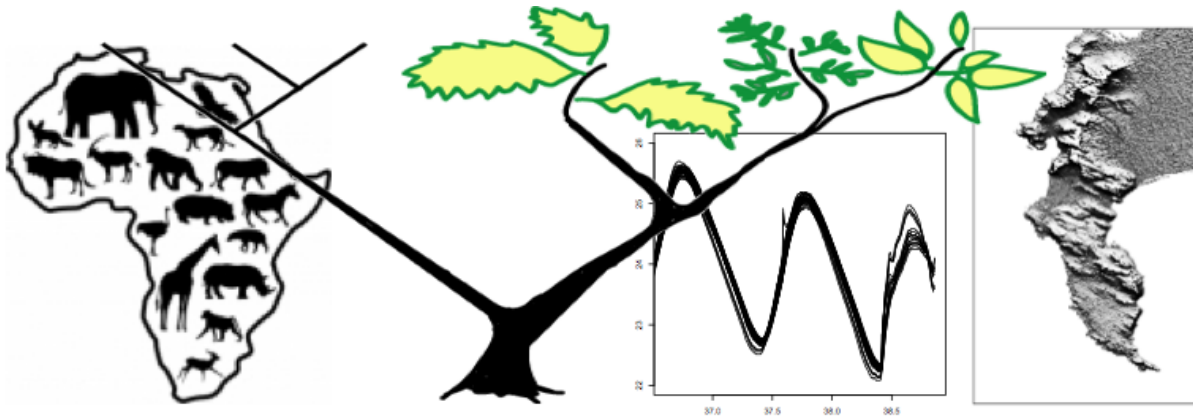


Calendar of Events

Upcoming Conferences

1. IV International Conference on Integrated Management of Coastal Zones. Santiago de Cuba, 11-13 May 2011.
<http://www.cemzoc.uo.edu.cu/>
2. 3rd Algae World Europe Conference. Madrid, Spain 16-17 May 2011.
<http://www.cmtevents.com/aboutevent.aspx?ev=110522&>
3. 2nd International Marine Conservation Congress: Making Marine Science Matter. Victoria, British Columbia, Canada, 14-18 May 2011.
<http://www.conbio.org/IMCC2011/>
4. 5th International Short Conference on Applied Coastal Research (SCACR). Aachen, Germany, 6-9 June 2011.
<http://www.iww.rwth-aachen.de/en/menue/scacr.html>
5. World Aquaculture 2011. Natal, Brazil, 6-10 June 2011.
<https://www.was.org/WasMeetings/meetings/Default.aspx?code=WA2011>
6. 34th IAHR World Congress. Brisbane, Australia, 26 June - 1 July 2011.
<http://www.iahr2011.org/>
7. International Student Conference: Climate Change and Indigenous Knowledge Systems. Johannesburg, South Africa, 15-17 August 2011.
<http://www.cees.uio.no:80/news/2011/climate-change-conference-sa.html>
8. 7th IAHR Symposium on River, Coastal and Estuarine Morphodynamics. Beijing, China, 6-8 September 2011.
http://www.irtces.org/isi/WebNews_View-en2.asp?WebNewsID=622
9. 12th International Conference on Estuarine and Coastal Modeling. Augustine, Florida, USA, 7-9 November 2011.
<http://www.oce.uri.edu/ecm12/>
10. 12th International Coral Reef Symposium (ICRS 2012). Cairns, Australia, 9-13 July 2012.
<http://www.coralcoe.org.au/icrs2012/>





Phylogenetics, comparative methods and spatial ecology

A short course in *R* for M.Sc. and Ph.D. students

Offered at Dept of Botany, Univ. of Cape Town

June 13-24, 2011

Instructor: David Ackerly, Dept. of Integrative Biology, Univ. of California Berkeley

This intensive, two-week short course, intended for M.Sc. and Ph.D. students, will provide an introduction to the *R* statistical language for new users, with in-depth coverage of phylogenetics, comparative methods, and handling of spatial, GIS data sets. *R* is an open source, freely available statistics program that is quickly becoming the package of choice in ecology and evolution. *R* combines a programming language with packaged statistical libraries to give users a powerful and broad set of methods for almost any quantitative data set. Topics to be covered include:

General *R* methods: data input/output, arrays and matrices, plotting, basic programming, writing custom functions

Comparative methods: independent contrasts, ancestral state reconstruction, phylogenetic GLS (generalized least squares), phylogenetic community ecology

Spatial methods: input/output of GIS raster and polygon data, plotting and querying, overlays, aggregation, analysis of topographic, climatic and climate change data

Each morning and afternoon will include a one hour lecture followed by 2-3 hours of practical applications. We will take a one day field trip to Silvermine Nature Reserve and gather a small, spatial data set for use in the course. The course is designed for new users with no experience in *R*. At least one advanced course in statistics is required, and prior programming experience is useful but not necessary. Students may use UCT PCs or bring their own PC or Mac laptops. Students are encouraged to bring data sets from their own research for analysis.

Fees: R800, incl. daily tea, course materials, field trip and braai; does not include lunches.

Advance application and registration required. Please apply by 1 April 2011, at:

<http://www.botany.uct.ac.za/ackerly/Rcourse-web.html>