Phycological Society of Southern Africa

Newsletter
No. 62
June/July 2006

Past President

Grant C. Pitcher (gpitcher@deat.gov.za)
Marine and Coastal Management
Private Bag X2
Rogge Bay
8012

President

John J. Bolton (bolton@botzoo.uct.ac.za)
Department of Botany
University of Cape Town
Private Bag
Rondebosch
7700

Secretary-Treasurer

Wendy Stirk (Burnett) (stirk@kzn.ac.za)
Research Centre for Plant Growth and Development
University of KwaZulu-Natal Pietermartizburg
Private Bag X01
Scottsville
3209

Membership Secretary

Claudio Marangoni
(claudio@biology.biol.wits.ac.za)
School of Animal, Plant & Environmental Sciences
University of the Witwatersrand
Private Bag 3, P.O. Wits
Johannesburg
2050

Newsletter Editor

Gavin W. Maneveldt (gmaneveldt@uwc.ac.za)
Dept. of Biodiversity and Conservation Biology
University of the Western Cape
Private Bag X17
Bellville
7535

Table of Contents

From the Editor

Welcome to another edition of the PSSA newsletter. Like the many before, this edition is also filled with exciting information from within and beyond the Society.

In this edition you are reminded of just some of the many conferences and symposia of interest to the broader phycological community. Please note that the deadlines for many of these are quickly approaching. Keeping in line with the focus of upcoming conferences and symposia, the featured article in this edition summarizes the recently held 4th Annual GBIF Science Symposium held in Cape Town earlier this year. This year's science symposium focused on the role of GBIF and other new technologies in conservation and monitoring of biodiversity change, with a special focus on Africa.

As of this edition, it is my hope to include a number of current and relevant *World Science* articles just to keep you all abreast of the general happenings in the global community. Once again, there is lots of variety in this issue and a special thank you goes to all of you who have contributed so generously. Your efforts are most appreciated. Please remember to send any and all information you think may be of interest to the society on to your regional collators (details below).

Northern Areas
Stuart Sym
stuart@biology.biol.wits.ac.za

Southern Areas
Enrico Tronchin
tronchin@botzoo.uct.ac.za

Best wishes
Sincerely
Gavin

Synarthrophyton patena
epiphytic on *Gelidium capense*

News and Reviews

1. 12th International Conference on Harmful Algae

4-8 September 2006 in Copenhagen, Denmark.

The local host is a joint Danish-Swedish Organizing Committee.

The occurrence of harmful algae is a worldwide problem that affects the environment, fisheries and aquaculture, public health, tourism and the quality of drinking water. The impact of harmful algae has grown with the increasing use of coastal waters for commercial and recreational purposes and the increased need for clean drinking water caused by the world's growing population.

The conference aims at addressing all aspects related to causes and effects of marine and freshwater harmful microalgae, and to serve as a forum for exchange of new research results and ideas among researchers, industry, government and local users, and other interested parties.

Deadlines

Early registration:	1 June 2006
Late registration:	31 July 2006
Abstracts:	1 May 2006

Website http://www.bi.ku.dk/hab/

2. The XIX International Seaweed Symposium

26-31 March 2007 at Kobe International Conference Center in Kobe, Japan.

Hosted jointly by the Japan Seaweed Association (JSA), the Japanese Society of Phycology (JSP) and the Japanese Society of Marine Biotechnology (JSMB), this is the second ISS meeting to be held in Japan (the first took place at Sapporo in 1971).

Contributions will be invited on all aspects of algal research and utilization. All relevant details are already available in the Second Circular.

Accepted papers may be eligible for publication in the Proceedings.

Deadlines
Expression of interest: 15 February 2006
Early registration: 15 August 2006
Abstracts: 15 September 2006

Websites http://www.seaweed.ie/isa/kobe.lasso
http://www.h4.dion.ne.jp/~jsaweb/

3. 4th European Phycological Congress

23 - 28 July 2007 in the Palace of Congresses - Audience "Prince Felipe" of Oviedo, Spain.

Deadlines
Pre-registration is now open!

Website http://www.ivepc.es/
Contact Person - Verónica Menéndez (veronica@congresosasturias.com)

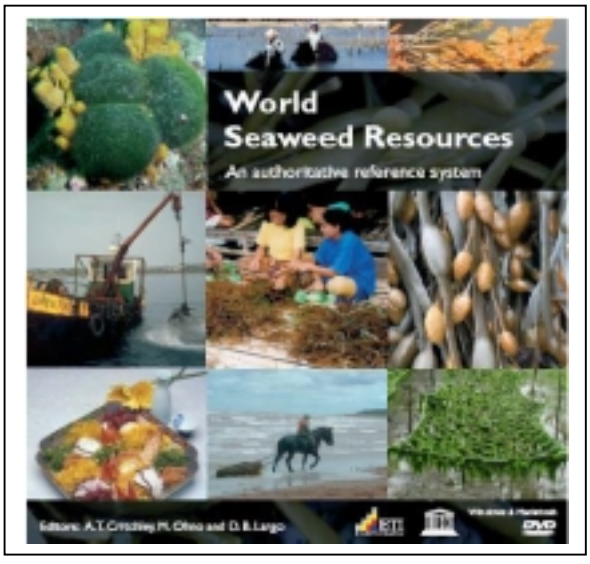
4. World Seaweed Resources

An authoritative reference system on DVD-ROM
By Alan T. Critchley, Masao Ohno and Danilo B Largo (Editors)

Compiled over a three-year period, this interactive multimedia DVD-ROM incorporates the expertise of almost 150 authorities from all over the world and provides a wealth of information to those interested in the varied aspects of the wonderful world of seaweeds, their ecology, aesthetics, uses and applications. The extensive information is organised into a number of categories covering cultivation, farming, utilisation, worldwide resources, socio-economics, recent developments in ecology, and applied phycology. Subjects are covered in detail and include vivid examples ranging from food and cosmetics to medicine, with examples from major production centers worldwide, including practical aspects of modern farming. Numerous high quality pictures and exclusive video footage supplement and enrich the information. Extensive web reference links are also provided to help locate additional information.

This unique electronic reference system is the first in its field and holds more information than could ever be published in a book. The user-friendly nature of the DVD-ROM makes it ideal for teaching and/or self-study and can be used as a stand-alone resource or to complement textbooks. The information provided in *World Seaweed Resources* is intended to be of interest to the broadest possible audience from those studying biology and marine ecology, students of Phycology, managers of marine resources, commercial and industrial users of seaweeds as raw materials for processing, and to those in the seaweed farming community.

The DVD-ROM can be ordered online or with an order form that can be downloaded and then faxed, emailed or posted to ETI Information Services (www.etiis.org.uk).



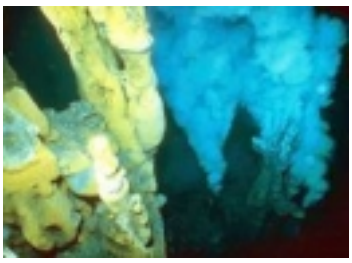
World Science
(http://www.world-science.net/)

1. Redrawn "tree of life" favours hot-origins theory

March 2, 2006
Courtesy: European Molecular Biology Laboratory and World Science

The most detailed "tree of life" map yet devised boosts a theory that the single-celled ancestor of all life forms dwelt somewhere very hot, researchers say.

In 1870 the German scientist Ernst Haeckel mapped the evolutionary relationships of plants and animals in the first "tree of life." Since then scientists have continuously redrawn and expanded the tree, yet many parts have remained unclear. Now researchers at the European Molecular Biology Laboratory in Heidelberg, Germany, have developed a computer-aided technique that they say resolves many of the open questions and produced probably the most accurate tree yet. The study was published in the March 3 issue of the research journal *Science*.



A hydrothermal vent system in the Lau Basin, in the South Pacific Ocean. (Credit: Daniel Desbruyeres, IFREMER)

"DNA sequences of complete genomes provide us with a direct record of evolution," said the laboratory's Peer Bork. He said that for a long time, overwhelming amounts of data – the human genome alone contains enough information to fill 200 telephone books – thwarted efforts to make a detailed tree of life. Another problem has been the discovery that some microbes exchange genes rampantly, blurring evolutionary lines. That, some researchers say, could make it nearly impossible to map the bottom of the tree. But these problems "can be tackled by combining different computational methods in an automated process," Bork said. Researchers in his group identified 31 genes that exist in various versions in 191 organisms, ranging from bacteria to humans. The scientists reconstructed the relationships among these genes by analyzing their similarities, and trying to exclude cases affected by the gene swapping, called horizontal gene transfer.

Some theories hold that life arose in a hot environment such as scorching springs at the ocean bottom, called hydrothermal vents. Researchers said these theories might now get a boost. The new computational procedure "drastically reduced the 'noise' in the data, making it possible to identify as yet unknown details of early evolution," said the laboratory's Tobias Doerks. "For example, we now know that the first bacterium was probably a type called gram-positive and likely lived at high temperatures – suggesting that all life arose in hot environments."

2. Light's most exotic trick yet: so fast it goes backwards?

May 12, 2006
Courtesy: University of Rochester and World Science

In the past few years, physicists have found ways to make light go both faster and slower than its usual speed limit. Now researchers say they've gone a step further: pushing light into reverse.

As if to defy common sense, they say, the backward-moving pulse of light travels faster than light. Confused? You're not alone. "I've had some of the world's experts scratching their heads over this one," said Robert Boyd of the University of Rochester in Rochester, N.Y., one of the researchers. "It's weird stuff. Theory predicted that we could send light backwards, but nobody knew if the theory would hold up or even if it could be observed in laboratory conditions" … says Boyd.

Einstein determined that nothing could be accelerated to a speed greater than that of light in a vacuum. That's about 300,000 kilometers (190,000 miles) per second. If something broke that limit, then some observers could see it reach its destination before it left, violating a universal

law of causality. But physicists in recent years have reported finding tricks to slow light to a near-standstill, or even speed it up in apparent violation of Einstein's rule. Now, Boyd said, he's taken what was once just a mathematical oddity – negative speed – and shown it working in the real world. The findings are published in the May 12 issue of the research journal *Science*.

A cable of optical fibers (Courtesy New York State Office of Science, Technology and Academic Research).

Robert Boyd, professor of optics (Courtesy University of Rochester).

Boyd and colleagues sent bursts of laser light through an optical fiber laced with the element erbium. An optical fiber is a thin, transparent tube that transmits light by letting it bounce along its interior. "The pulse of light is shaped like a hump with a peak," Boyd explained. "We sent a pulse through an optical fiber, and before its peak even entered the fiber, it was exiting the other end. Through experiments we were able to see that the pulse inside the fiber was actually moving backward."

To understand how light's speed can be manipulated, think of a funhouse mirror that makes you look fatter. As you first walk by the mirror, you look normal. But as you pass the curved portion in the center, your reflection stretches. The far edge seems to leap ahead of you momentarily. In the same way, a pulse of light fired through a special material may move at normal speed until it hits the substance, where it is stretched out to reach and exit the material's other side (*See website for "fast light" animation*). Conversely, if the funhouse mirror were the type that made you look skinny, your reflection would appear to suddenly squish together, with the leading edge of your reflection slowing as you passed the curved section. Similarly, a light pulse can be made to contract and slow inside a material, exiting the other side later than it naturally would (*See website for "slow light" animation*).

To visualize the backward-moving light pulse reported by Boyd, replace the mirror with a TV and video camera. As you may have noticed when passing such a display in an electronics store window, as you walk past the camera, your on-screen image appears on the opposite side of the TV. The image walks in the direction opposite to yours, and thus toward you. It passes you in the middle, and continues until it exits the other side of the screen.

A negative-speed pulse of light would act similarly (*See website for "backward light" animation*). As the pulse enters the material, a second pulse appears on the far end of the fiber and flows backward. The reversed pulse not only propagates backward, but releases a forward pulse out the far end of the fiber. In this way, the pulse that enters the front of the fiber appears out the end almost instantly, apparently beating light's regular speed. It's as if you walked by the shop window, saw your image stepping toward you from the opposite edge of the TV screen, and that TV image of you created a clone at that far edge, walking in the same direction as you, several paces ahead.

Wouldn't Einstein shake a finger at all these strange goings-on? Not necessarily, Boyd said, because Einstein's speed limit applies only to effects that carry some sort of information. "In this case, as with all fast-light experiments, no information is truly moving faster than light," said Boyd. The hump-like pulse has long leading and trailing edges, Boyd explained. "The leading edge carries with it all the information about the pulse and enters the fiber first. By the time the peak enters the fiber, the leading edge is already well ahead, exiting. From the information in that leading edge, the fiber essentially 'reconstructs' the pulse at the far end, sending one version out the fiber, and another backward toward the beginning of the fiber."

Boyd said he's working on ways to see what will happen if he can design a pulse without a leading edge. Einstein says the entire faster-than-light and reverse-light phenomena should disappear. Boyd is eager to put Einstein to the test.

3. Earth hottest in 400 years

June 22, 2006
Special to World Science

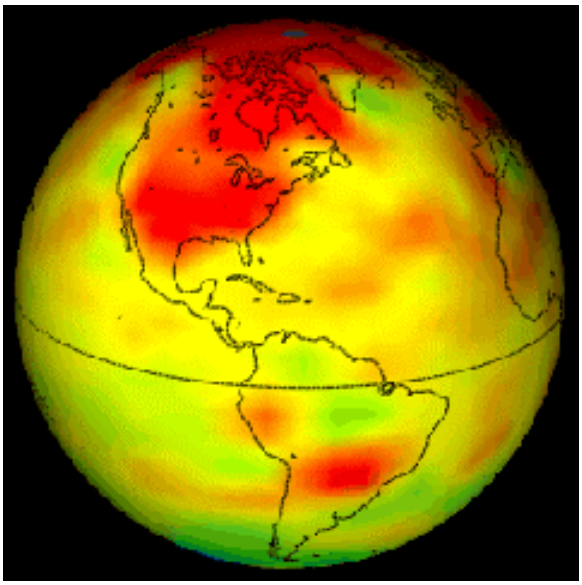
The last few decades of the 20th century were warmer than any comparable time in at least the past four centuries, a new report says.

The report from the U.S. National Academy of Sciences was requested by the US Congress after a controversy last year over climate reconstructions published in the late 1990s. That work, by University of Virginia climatologist Michael Mann and others, found the warming of the Northern Hemisphere in the last decades of the 20th century was unprecedented in the past thousand years. They concluded that the 1990s were the warmest decade, and 1998 the warmest year.

Scientists believe they can glean evidence of past temperatures from tree rings, boreholes, retreating glaciers, corals, cave deposits and other sources, although the evidence becomes weaker further back in time. Such evidence agrees with the globally averaged warming of about 1 degree Fahrenheit (0.6 degrees Celsius) that instruments have recorded during the last century, according to members of a committee that drafted the new report. The committee of the National Research Council, part of the National Academy of Sciences, called "plausible" the Mann team's conclusion that warming in the last few decades of the 20th century was unprecedented over the last millennium. But the panel said it had less confidence that the warming was unprecedented before 1600, and in the Mann team's conclusions about the 1990s and 1998 in particular.

Scientists' reconstructions of Northern Hemisphere surface temperatures for the past thousand years are generally consistent, the dozen-member committee reported. These reconstructions, members added, show relatively warm conditions centered around the year 1000, and a relatively cold period, or "Little Ice Age," from roughly 1500 to 1850. None of the reconstructions show temperatures were warmer during medieval times than during the past few decades, the committee added.

Most scientists blame global warming on greenhouse gases, substances such as carbon dioxide emitted as a result of human activities and that collect in the atmosphere. Scientists are predicting a host of evils for human health and the environment as a result of global warming. Among many other problems, they have reported that polar bears are being driven to cannibalism as their icy habitat melts away, and baby walruses are possibly being orphaned for similar reasons. The committee wrote that surface temperature reconstructions for periods before the Industrial Revolution – when levels of atmospheric greenhouse gases were much lower – are one of many lines of evidence suggesting human activities are responsible for the warming.



"Our climate is warming at a faster rate than ever before recorded. Ignoring climate change and the most recent warming patterns could be costly to the world's nations.

http://www.noaa.gov/

Featured Article

GBIF's Role in Conservation and Monitoring of Biodiversity

This year's Global Biodiversity Information Facility (GBIF) Science Symposium (5-6 April 2006), the fourth in the series, covered the role of GBIF and other new technologies in conservation and monitoring of biodiversity change, with a focus on Africa.

The Fourth Annual GBIF Science Symposium included presentations by invited speakers, who addressed issues of monitoring of biodiversity change, particularly in Africa. Conservation was a strong theme running throughout all of the talks. Biographies of the speakers, their abstracts and their PowerPoint presentations can all be accessed through the link given at the end of this article.

The symposium included considerations of both terrestrial (Simon Mduma: *Ecological baselines and monitoring ecological change*) and marine (David Obura: *Applying new technologies to the monitoring of coral reefs*) environments. It included consideration of the interaction of conservation policies with human livelihoods (Emma Archer: *Biodiversity conservation and sustainable livelihoods in a marginal environment*) and the current status of conservation efforts (Gavin Maneveldt & Richard Knight: *Biodiversity conservation: Its current status in South Africa and the way forward*).

In addition to these studies, consideration was given to international and global concerns by Stella Simiyu (*Implementing the Global Strategy for Plant Conservation in Africa*), Martin Sharman (*Biodiversity data acquisition and assessment after the Millenium Ecosystem Assessment*), and Guy Midgley (*Projecting and monitoring climate change impacts on terrestrial biodiversity*).

All of the presentations pointed out reasons that the data that GBIF works to make available are critical to humanity's potential for gaining an understanding of the impacts that it is having on the Earth and for mitigating and managing these impacts.

Invited Speakers & and their abstracts

Simon Mduma (Tanzania Wildlife Research Institute)

Ecological baselines and monitoring ecological change

Long-term studies in the Serengeti ecosystem highlight their value in understanding ecosystem dynamics. In the Serengeti, we used both natural and anthropogenic disturbances as experiments to understand how the system functioned. The main perturbation that provided insight to the system dynamics was the change in the wildebeest population. The complex ecosystem behavior involving slow and rapid change, and multiple states only became apparent over a period of several decades.

1. Ecosystems involve events at different spatial scales, from large-scale migrations to small-scale mosaics of burns, and both need to be

maintained. Conservation needs to take into account infrequent and unpredictable events, such as floods, fire and droughts, long-term trends and oscillations. Management should plan on the time scale of those events (30-80 years in this system). In particular, management should not be aimed at maintaining the *status quo*.

2. Both natural and anthropogenic disturbances were invaluable in providing insight into mechanisms of ecosystem regulation and stability. Systems can be self-regulating by either food or predation, and culling is not necessarily required for this reason.
3. The ecosystem can occur in multiple states. Some of these can be natural but others can be artifacts of anthropogenic disturbances. There is no *a priori* need to control and maintain only one natural state.
4. Conservation outside protected areas must be able to distinguish between natural change and direct human-induced change. To do this protected areas are useful because they act as the ecological baseline where human-induced change is kept to a minimum.

Guy Midgley (South African National Biodiversity Institute)

Projecting and monitoring climate change impacts on terrestrial biodiversity: Roles for GBIF

Species responses to regional and local climatic changes have provided rich information to begin assessing the vulnerability of natural ecosystems to this emerging global threat. Continuous collection of historical records of plant phenologies, for example, provided some of the earliest evidence of directional responses of the natural world to apparent anthropogenic impacts of regional temperatures. More recently, recorded shifts in species' geographic ranges have further supported inferences of significant change based on records of air temperature and other physical environmental characteristics. A small number of extinctions attributable to climate change have raised the relevance of long term monitoring and observation even further, and developments in "joint attribution" (the observation of a species response statistically attributable to an observed or modelled climate shift) have placed such monitoring on a stronger footing. None of these critical insights would have been possible without systematic observation – but even more might have been possible, especially in the southern Hemisphere and specifically in Africa, if the appropriate framework for repeated species observations had been in place. Nonetheless, the wealth of information on species distributions currently dormant in herbaria and other types of species geographical records could unlock significant understanding of biodiversity trends in response to recent and ongoing climate change. Furthermore, enhancement of species geographic information is sorely needed to improve bioclimatic niche-based models of species response to climate change. In this paper I will discuss the value and some potential uses of species and community-level information for vulnerability analyses of terrestrial biodiversity under anthropogenic climate change.

David Obura (Coral Reef Degradation in the Indian Ocean [CORDIO])

Applying new technologies to the monitoring of coral reefs

Biodiversity change in the tropical marine ecosystems of East Africa is accelerating with the increasing complexity and interactions between natural and anthropogenic environmental changes, and their cross-scale interactions from local to global levels. Monitoring and documenting impacts to biodiversity now requires accessing a range of datasets and tools, which are increasingly being driven through internet and digital technology media. This presentation will illustrate how understanding the impacts of global warming on coral reefs relies on a range of old and new technologies, including remotely sensed information on the atmosphere and oceans, *in situ* field based monitoring and local to regional biodiversity and biogeographic data. The growth of multi-disciplinary networks of researchers and managers interested in specific issues, such as coral reef management, is highlighting the increasing integration that is possible with new communication technologies and that can be

supported by new biodiversity resources. Gaps in accessibility to and use of information that affects African scientists and policy development will be highlighted, and recommendations made for improving these. Finally, the need to orient products to facilitating specific outcomes in research and/or management-related areas is highlighted, to contribute positively to halting negative changes in the distribution and abundance of species.

Why is GBIF needed?

Good managers of natural resources and policy-makers know that their best decisions are based on results from the most accurate scientific analyses. Such analyses are based on solid, documentable data that have been recorded directly from the observation of nature. Such records are called 'primary' data.

Biodiversity is a handy, one-word name for all the species on the Earth, the genetic variety they possess, and the ecological systems in which they participate. Another way of thinking about biodiversity is as the 'living resources' portion of 'natural resources'. A large part of the primary data on biodiversity are the 1.5 - 2.0 billion specimens held in natural history collections, as well as many geographical and ecological observations recorded by various means and stored in various media.

In making living resource policy and management choices, decision-makers are often forced to rely on analyses that are not based on primary data. This is because the world's store of primary data about biodiversity is not at present readily and easily accessible.

Future generations depend on the efforts made today to develop methods for sustainably using biodiversity. One very important part of the solution is rapidly, openly and freely delivering primary data about biodiversity to everyone in the global community, using digital technologies. Another part is ensuring that the primary data being collected today are stored in such a way that they will remain accessible to future generations.

Emma Archer (University of Witwatersrand)

Biodiversity conservation and sustainable rural livelihoods in a marginal environment: A case study from dryland South Africa

Ninety-one percent of South Africa can be categorized as drylands under the United Nations Convention to Combat Desertification (UNCCD) classification, including arid, semi-arid and dry sub-humid zones. These areas include biodiversity hotspots, with high numbers of endemic species - identified as conservation priorities by the South African national government and key conservation institutions such as Conservation International. Such areas are, in addition, frequently the home of individuals and communities seeking to pursue sustainable rural livelihoods under harsh (and changing) conditions. While broad conservation initiatives have, in the past, tended to regard biodiversity conservation and sustainable rural livelihoods as mutually exclusive within the same geographic area; farmers, scientists and conservation practitioners are increasingly realizing that the two efforts may, in fact, complement and support one another. A case study from western semi-arid South Africa demonstrates how farmers, scientists and conservation practitioners may work together to collect data and share information around biodiversity conservation and the pursuit of livelihoods in a harsh and marginal environment. Ideally, ground surveyed data and local knowledge collected through these partnerships should be integrated with globally available biodiversity information (such as that obtained via GBIF) to simultaneously support both activities as it improves our understanding of the importance of agricultural biodiversity in building resilient livelihoods and farming systems under conditions of climate risk.

Stella Simiyu (Secretariat, Convention on Biological Diversity)

Implementing the Global Strategy for Plant Conservation in Africa: The role of GBIF

The Convention on Biological Diversity has adopted the 2010 target "*significantly reduce the rate of loss of biodiversity by 2010*" to which the Global Strategy for Plant Conservation (GSPC) with sixteen outcome targets to be met by 2010 is closely linked. The first three targets of the strategy focus on understanding and documenting plant diversity. They aim to generate a widely accessible working list of all known plant species; develop a preliminary assessment of the conservation status of all known plant species at national, regional and international level and also develop models with protocols for plant

conservation and sustainable use, based on research and practical experience. The baseline data generated is essential for achieving the other targets related to *in situ* conservation (targets 4-5), sustainable use (targets 6,12), *ex situ* conservation (targets 7-9), trade (target 11), invasive species management planning (target 10) indigenous knowledge (target 13) education, capacity building and networking (target 14,15, 16). GBIF, through its programmes, has provided strategic support to facilitate the implementation of the GSPC especially through its seed funding. However, in Africa, GSPC implementation has been severely constrained by lack of baseline data at national level since the bulk of taxonomic resources and data are held outside the continent. The countries are often constrained in accessing these datasets due to lack of technological capability and skilled manpower. The GBIF portal therefore offers an excellent platform for the fast tracking data access, yet, to date, there has been only limited engagement with GBIF within Africa. This presentation seeks to highlight potential opportunities, review some of the challenges and recommend some possible actions to enhance uptake of new technologies in Africa.

Martin Sharman (European Commission Directorate General for Research)

Biodiversity data acquisition and assessment after the MEA: How GBIF and GEOSS will benefit Africa

Slowing and finally stopping biodiversity loss is the greatest intellectual, social, economic and behavioural challenge that humanity has ever faced. The survival of our cultures, if not our species, depends on finding ways to slow and stop the loss. The issue is urgent – we must draw on lessons learned to move rapidly forward. In some cases, rapid and effective action in the field and in implementing or developing workable legislation can be based on what is already known and understood. In too many cases, however, our knowledge is fragmentary or even absent. The Group on Earth Observations is a worldwide effort to provide a framework within which to assemble environmental data that can be used to underpin planet-wide sustainability – the Global Earth Observation System of Systems (GEOSS). How might GEOSS draw on GBIF to benefit Africa and other regions? To make use of environmental and biodiversity data, the users of both GBIF and GEOSS need access to huge datasets, which implies major advances in biodiversity informatics to discover and exploit links between taxonomic, ecological, species, genetic, molecular, economic and social data. In parallel, significant effort will be needed in one of GBIF's key tasks – the digitisation and validation of existing data, including taxonomic synonyms and geo-referencing of observations and specimens. GEOSS might learn lessons from GBIF concerning the problem of developing and implementing common protocols and agreed standards for the construction of and access to biodiversity-related databases, to issues of confidentiality and property rights to data, and protocols for data access and use. Advances made in all these fields will depend on collaboration between scientists, software engineers and practitioners all over the world. African institutions should be both major contributors to and beneficiaries of the developments.

Gavin Maneveldt & Richard Knight (University of the Western Cape)

Biodiversity conservation: Its current status in South Africa and the way forward

Just over a year ago, toward the end of January 2005, the world's scientists and government representatives met collectively and officially at the first Conference on Biodiversity, Science and Governance. This gathering formed part of the ongoing global effort to curb the loss of biodiversity by 2010 and ensure the long-term conservation and sustainable use of our biological diversity. Moreover, the conference was intended as an intervention to sensitise public opinion about scientific and social issues connected to biodiversity. The greatest concern expressed at this conference, was the fact that we are still losing species at an unprecedented rate: the current species extinction rate is estimated to exceed the 'natural' rate by 100 to 1,000 times. Yet, most global citizens are only vaguely aware of the

problem. The *Convention on Biological Diversity* states that we should be conserving 10% of our land surfaces, and 20% of our coastlines. Despite being a relatively young democracy, South Africa is well on its way to achieving the millennium goals set at the Johannesburg Summit, currently conserving ~6% of it terrestrial surfaces and ~18% of its coastline in formal protected areas. While this appears impressive, a number of shortcomings exist, particularly with regard to the protection of sensitive and coastal ecosystems, and more importantly, how to conserve, or provide conservation status to the remaining 90% and 80% of our terrestrial surfaces and coastlines respectively. One of the methods to obtain and understand biodiversity issues, and to convey their importance to society, is though the use of biodiversity Web Map Services. This provides for the distribution of current biodiversity information and an ability to integrate local or desktop information as well as to distribute combinations of these information layers to third parties through map views.

Ed February (University of Cape Town)

The potential role for GBIF in developing management policies in African national parks

The classical paradigm in ecology is the "equilibrium paradigm" consonant with the cultural metaphor "balance of nature". This paradigm suggests that if a system is conserved and isolated from direct human interference such a system will maintain itself in the desirable state (climax state) for which it was conserved. More recently, conservation biologists have shifted their way of thinking to emphasise process rather than a single point. Along with this understanding of succession in vegetation change is an understanding of the biodiversity of the region under consideration. GBIF allows for a better understanding of biodiversity with limited resources. The developing world can thus embrace this new understanding for biodiversity conservation, which includes humans as agents for disturbance in ecological systems. This talk will focus on the changes in philosophy of conservation in South Africa and the potential role for GBIF in conservation management in South Africa.

What is GBIF Doing?

Global communication has expanded remarkably since the inception of the Internet. Technical advances have made distribution of data from major centres to remote parts of the world possible, if those data are in digital form.

Biodiversity is found around the world - there are micro-organisms between granules of rock 3 km below the Earth's surface, rootless plants in the Atacama Desert, thousands of species of beetles in a single rainforest tree. However, biodiversity is not distributed evenly across the face of the planet. An estimated 75% of all species are found in the developing world.

Information about biodiversity (natural history collections, library materials, databases) likewise is not distributed evenly around the globe. Three-quarters or more of data about biodiversity are stored in the developed world. However, most of the data that may be needed can't be transferred because either they are not digitised, or capacity to handle digital information is lacking, or both.

Facilitating digitisation and global dissemination of primary biodiversity data, so that people from all countries can benefit from the use of the information, is the mission of the Global Biodiversity Information Facility (**GBIF**).

Daniel Brooks (University of Toronto)

Monitoring emerging infectious diseases: Solution vs. management

The crisis of emerging infectious disease stems from the absence of comprehensive taxonomic inventories of the world's parasites, which includes the world's pathogens. Recent technological developments, particularly in the area of genetic bar coding, raise hopes that the global inventory of species, including potential pathogens, can be accomplished in a timely and cost-effective manner. Only then can proactive monitoring be achieved, and the threat of future EIDs be anticipated rather than simply feared. The phylogenetics revolution initiated by systematists provides a means by which information about pathogen transmission dynamics can be placed in a predictive framework, saving time and money. All such information must be readily available in electronic form, and increasingly, this is the case. Since we know what to do, we know the value of doing it, and we have the technology to achieve it,

why is this not being done globally and extensively? Answering this question requires that all stakeholders examine their own priorities and ask not what the biodiversity, and EIDs, crisis can do to further their goals, a question of management, but rather what they can do to share information and support each others' agendas, which is necessary if we are to actually provide solutions.

Courtesy: *GBIF Secretariat*
http://www.gbif.org/GBIF_org/gbif_symposia

Getting to Know your New Members

New Members for 2005/6

Jabulani R. Gumbo
(Jabulani_gumbo@yahoo.co.uk)


Jabulani Gumbo

Jabulani is currently registered for a PhD degree in Water Resources Management at the University of Pretoria under the supervision of Prof T.E. Cloete, Head of Micro-biology & Plant Pathology.

Jabulani's research focus is on the biological control of *Microcystis aeruginosa* (cyanobacteria) blooms. His personal interests include reading, fishing and playing chess.

Philippa Joy Wing
(wingnet@mweb.co.za)


Philippa Wing

Pippa, as she is affectionately known, is currently a final year BSc Biological Sciences student at the University of the Witwatersrand. Next year she intends registering for an Honours degree under the supervision of Dr. Stuart Sym from the same university.

Philippa hopes to focus her postgraduate research in the field of Microbiology with an emphasis on microalgae, particularly dinoflagellates and their cell processes.

Carlos Ruiz Sebastián
(cruiz@botzoo.uct.ac.za)


Carlos Ruiz Sebastián

Carlos is currently engaged in post-doctoral research in the Advanced Research Centre for Applied Microbiology at the University of the Western Cape.

Carlos' doctoral dissertation focused on the genetic diversity of planktonic dinoflagellates, with emphasis on species producing harmful algal blooms. He has also researched the diversity of picoplanktonic algae in southern and eastern African coastal waters. His current research involves the genetic diversity of symbiotic dinoflagellates (zooxanthellae) in coral reefs in the southwestern Indian Ocean and their relationship with susceptibility to coral bleaching events.

Carlos' personal interests include traveling, outdoor activities, diving and photography.

Conference Countdown

The 22nd PSSA conference will be held in January 2008 and hosted by Wendy Stirk (Burnett) from the Research Centre for Plant Growth and Development at the University of KwaZulu-Natal Pietermartizburg. Please keep an eye on the website for regular updates on the Society's conferences.

Calendar of Events

Upcoming Conferences

1. 12th International Conference on Harmful Algae. Copenhagen, Denmark, 4-8 September 2006. http://www.bi.ku.dk/hab/
2. 6th European Coral Reef Conference. Bremen, Germany, 19-22 September 2006. http://isrs2006.zmt.uni-bremen.de/
3. 6th Asia-Pacific Conference on Algal Biotechnology. Makati City, Philippines, 12-16 October 2006. http://www.bio-edge.cn
4. 8th International Marine Biotechnology Conference. Eilat, Israel, 11-16 March 2007. http://imbc2007.ocean.org.il
5. The XIX International Seaweed Symposium (ISS). Kobe, Japan, 26-31 March 2007. http://www.h4.dion.ne.jp/~jsaweb/
6. 4th European Phycological Congress (EPC4). Asturias, Spain, 23-28 July 2007. http://www.ivepc.es/