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The International Biogeography Society

Spring 2005 Newsletter: Vol. 3, No. 1

Produced by the Committee for Publications Chair: Katherine F. Smith North American Editor: Karen H. Gaines European Editor: Richard Field

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LETTER FROM THE PRESIDENT

Welcome, members and prospective members of the International Biogeography Society, to the first newsletter of 2005. I am delighted to report that your Society—unique in being devoted entirely to the science of biogeography—is alive and well. IBS continues to be an important resource and intellectual crossroads for biogeographers from around the world.

Most of you know that the IBS is a very young scientific society. I only needed to search the files from 2001 to find emails reminding me of the many challenges in establishing a new scientific society that have only recently been overcome. "Who would write the constitution and bylaws?" "How often should we have meetings, where should the first one be held, and how large should it be?" "Should we try to start a brand new journal, and what other sorts of publications should we support?"

We have made some tremendous progress since then, beginning with our official incorporation as a non-profit organization in June of 2002. The first phase in the development of the IBS ended with the 2003 meeting in Mesquite, Nevada—considered by all attendees to be a great success. Most of the symposia talks of that meeting have just recently been published in the book *Frontiers of Biogeography: New Directions in the Geography of Nature* (Sinauer Associates, Inc.).

The 2003 meeting also marked the beginning of the first full two-year term of elected officers, under the guidance of the second IBS President, Mark Lomolino. Thanks to Mark, the past Board of Directors, and all members who participated on committees we hosted a successful second international conference in January 2005 at Shepherdstown, West Virginia.

Bolstered by the enthusiasm of the membership shown to us at this meeting your new Board of Directors has applied new energy, at an impressive level, to the challenges that are ahead. Even before the meeting ended, we were brainstorming and making lists of priorities for the next two years.

Here is a short list of what you can expect from the IBS over the next two years. We will make very clear to biogeographers around the world—including those not currently members of IBS—that the Society is an important and genuinely international effort. We seek to become a focus for the future development of all aspects of the science of biogeography. We will establish a diverse array of funding sources to ensure fiscal health of the IBS. With respect to journal affiliations, we will engage in formal discussions and perhaps soon be able to make an official announcement. We are already at work developing the third international meeting for 2007, and this time around it will be held outside of the USA, marking the growing international flavor of the society.

Finally, we are newly committed to keeping members updated and informed on a regular basis. So welcome—or welcome back—to the IBS and to volume three of the IBS newsletter. I am looking forward to serving as the President of your society for the next two years.

Sincerely, Brett R. Riddle

2005 CONFERENCE SYMPOSIA

Five symposia covering a variety of topics were presented during the 2005 meeting.

Biogeographic Responses to Global Change Presenters: Jim Clark, David Currie, Lesley Hughes, Camille Parmesan, and Felisa Smith

"The last decade of the 20th Century was the warmest in the entire global instrumental temperature record. All 10 years rank among the 15 warmest, and include the 6 warmest years on record (IPCC 2001)." Anthropogenic climate change is arguably one of the most pressing environmental problems that humans currently face. The different responses that species may exhibit (adaptive, distributional, phenological, or changes in abundance that may lead to extinction or population eruption) will likely lead to changes in the structure and composition of biotic communities. The talks in this symposium blended research on different continents, across disparate taxa, and at different time scales to examine the various ways that organisms respond to climate change. The speakers included Lesley Hughes, who discussed the trends and impacts of climate change and biodiversity on the flora and fauna of Australia; Felisa Smith, who discussed the different types of adaptive responses that mammals have exhibited to late Quaternary climate change; David Currie, who challenged the notion of global change being a major force while discussing the scaledependence of habitat factors in the relationship between richness and climate for North American birds: Jim Clark, who discussed ways to model migratory and/or adaptive responses to climate change as well as the implications of such responses; and Camille Parmesan, who summed up by presenting patterns of species responses to climate change using IPCC data. (Felisa Smith)

Geography of Parasites and Infectious Diseases Presenters: Dan Brooks, Eric Hoberg, Jean-François Guégan, Uriel Kitron, and Leslie Real

Recently, it has been argued that infectious diseases in both human and wildlife populations are emerging at unprecedented rates. This has raised widespread concern for biodiversity and has kick-started a growing interest in the ecology and biogeography of parasites and infectious pathogens. This symposium provided a colorful palate of contemporary research in these fields, ranging from the phylogeography of parasites to the macroecology of human infectious diseases. Dan Brooks opened the symposium with a presentation of the historical biogeography of parasite-host systems. Eric Hoberg discussed host switching, geographic colonization and diversification of host-parasite systems. Jean-François Guégan spoke on the macroecology of population dynamics of parasitic and infectious diseases, with particular focus on the link between geographic distributions and the processes of population dynamics.

Uriel Kitron discussed his research on the geographic and spatial dynamics of vector-borne diseases in the Americas. Finally, Leslie Real described the spatial dynamics and molecular biogeography of rabies using animated range maps, making comparisons between North America and Europe. (Kate Smith)

Biogeography of Exotic Species

Presenters: George Gilchrist, Matt McGlone, Julian Olden, Petr Pyšek, and Dov Sax

Exotic species have long been recognized as a considerable threat to native biota (as evidenced by their role in species extinction), but also as a window into the functioning of the natural world – particularly for biogeographic processes. Darwin, for example, used rates of spread of exotic species to infer that native species would have had ample time to shift their geographic ranges during glacial cycles: "The Glacial period, as measured by years, must have been very long; and when we remember over what vast spaces some naturalized plants and animals have spread within a few centuries, this period will have been ample for any amount of migration" (Origin of Species, 1859). The potential insights gained from exotic species as well as the conservation challenges those same species pose was the theme of this symposium. Dov Sax discussed the evidence for change in species richness on oceanic islands, with the addition of exotic species and the loss of natives – challenging preconceived conceptions of change in diversity and outlining the difficulties in forecasting future changes in diversity. Matt McGlone compared modern and paleo-invasions in New Zealand, demonstrating how the very nature and rules of invasion have changed in the modern era. Petr Pyšek discussed the biogeographic distribution of exotic species, convincingly demonstrating that most exotic species (even those that have been naturalized for hundreds of years) are still dramatically expanding their geographical ranges. Julian Olden demonstrated cutting-edge approaches for studying biotic homogenization, illustrating the enormity of threat that homogenization poses to conservation. Finally, George Gilchrist reported breaking discoveries on the rapid evolutionary changes occurring across naturalized species geographic ranges. Undoubtedly, continued biogeographic study of exotic species will continue to inform our understanding of the natural world and continue to set the context for understanding the challenges that conservation biologists face today. (Dov Sax)



2005 CONFERENCE SYMPOSIA, continued

Geography of Extinction: From Paleo to Recent Periods

Presenters: Gerardo Ceballos, Rob Channell, Sandy Harcourt, David Jablonski, and Hartmut Walter

Biogeographers have contributed in many different ways to the conservation of biodiversity. The identification of biodiversity hotspots has guided the establishment of conservation management priorities and public policy. However, understanding the geographic factors that contribute to extinction can also guide our management of biodiversity. Understanding the geography of extinction also improves our understanding of the some the most basic issues of biogeography and the evolution and maintenance of biodiversity. This symposium was organized to display the contribution that research on the geography of extinction can make to biodiversity conservation and the illumination that it can provide on basic biogeographic questions. Rob Channell discussed patterns in the range contraction of recent species and how the factors that contribute to the decline of the species may interact with the environment to determine which populations persist. Gerardo Ceballos examined the extinction of populations within mammals and discussed the conservation implications of population extinctions across the globe. Sandy Harcourt discussed the distribution and abundance relationship in primates and how the patterns differed between taxonomic levels and regions. Hartmut Walter presented information on how the geography and culture of humans influences our perception of species in need of conservation, and the conservation of those species. David Jablonski reported on extinction in the paleontological record and the role of geography in determining which groups of organisms persist after a mass extinction event. (Rob Channell)

Biogeography and Ecological Impacts of Human Civilizations

Presenters: Rob Whittaker, Stuart Pimm, Terry Root, Mark Ritchie, John Terrell

The ecological impacts of humans constitute one of the main themes of modern ecological research. Understanding them is seen by most ecologists as critical to the development of effective conservation strategies and initiatives. This symposium included talks that were perhaps the most directly focused on the meeting's theme of Conservation Biogeography. Rob Whittaker talked about the role that this emerging subdiscipline might play in the conservation of biodiversity, stressing the issues of scale, social value systems and uncertainties (see also Spotlight Article). Stuart Pimm discussed a case study of Brazilian Atlantic forest conservation suggesting that the conservation of critical habitat is essential – especially those habitats that have been most threatened – and that biogeography can often add only a little to this primary principle. In contrast,

Terry Root provided evidence that climate change is the most important environmental issue today. She argued that scientists should give policymakers information about probability and likely costs and consequences of environmental problems. Mark Ritchie considered large mammals and their interactions with plants, using a constraint-envelope approach that includes food quality. He stressed the importance of large mammals for capturing public interest, and the differences between conservation priorities for different taxonomic groups. Finally, John Terrell presented a PowerPoint 'silent film' (with occasional verbal comments) that introduced 'human biogeography' - the study of the biological distribution of people today and in the past - and included a case study of human communities in New Guinea. (Richard Field)

MARK LOMOLINO, PAST PRESIDENT

On behalf of the Society, I take this opportunity to thank our outgoing President, Mark Lomolino, for his role in getting the IBS founded and running smoothly.

I hope that you saw and can see here the fruits of Mark's tireless devotion in the enormously successful second meeting of the Society in West Virginia last January. There have also been other important but perhaps less visible accomplishments: 1) building an increasingly strong relationship with Blackwell Publishing, the *Journal of Biogeography*, and its two sister journals, *Global Ecology and Biogeography: A Journal of Macroecology* and *Diversity and Distributions: A Journal of Conservation Biogeography*; 2) establishing a set of working procedures for conducting Society business; and 3) initiating many of the current activities of new officers that will carry the Society forward, building on our recent successes.

What most of you may not know is that Mark played at least as important a role before the IBS was officially founded and during its first critical year. Yes, I was officially the President, but I was really just a figurehead. It was Mark who supplied most of the energy, leadership, and activity. [Here I must also give special thanks to Brett Riddle and his able assistants for organizing our memorable first meeting in Mesquite, Nevada.]

Perhaps 15 years ago, some of us including Mark Lomolino, Larry Heaney, and Rob Whittaker, began scheming about founding a new society to bring the diverse kinds of biogeographers together and to serve as a vehicle for unifying this venerable discipline that has recently seen such renewed accomplishment and promise. IBS is now established and successfully fulfilling this role. This is due in large measure to Mark's inspired leadership and dedicated effort. We owe him our deep gratitude and best wishes.

James H. Brown
Department of Biology
University of New Mexico

2005 CONFERENCE WORKSHOP ON HISTORICAL BIOGEOGRAPHY

Presenters: Dan Brooks, Brett Riddle, Bruce Lieberman, Maggie Wojcicki

Organized by Dan Brooks, the goal of this day-long workshop was to provide participants with an "overview of recent developments in phylogenetic biogeography." Dan opened the workshop by reviewing several theories that attempt to explain broad biogeographic patterns (including the equilibrium theory of island biogeography and the maximum vicariance hypothesis), and the mechanisms that drive them (including dispersal, vicariance, extinction, and speciation). He went on to discuss area cladograms, suggesting that the incorporation of more complex data in their construction can only enhance our understanding of such broad biogeographic patterns. Emphasizing the need for more interdisciplinary collaboration, Brett Riddle called for a bridge between the fields of historical (or cladistic) biogeography and phylogeography. Bruce Lieberman discussed evolution in the fossil record, stressing the influences of climate and geology on the concept of "geo-dispersal": species range expansions made possible by the disappearance of geographic and climatic boundaries that maintained historic ranges. In his second appearance. Dan Brooks discussed the Taxon Pulse Hypothesis and the tools required to unveil the historical signal apparent in contemporary speciesarea relationships and distributions. Finally, Maggie Wojcicki introduced a new software program -- PACT (Phylogenetic Analysis for Comparing Trees) -- that she is developing. When completed, PACT will enable the user to incorporate ecological and other types of complex data into the generation of area cladograms. (Karen Gaines)

A PERSONAL PERSPECTIVE ON THE SHEPHERDSTOWN MEETING

Contributed by Richard Field

I found the first IBS meeting (in Mesquite, Nevada, in 2003) stimulating and very enjoyable, though unusual given its unlikely setting in a casino! So, I was looking forward to the second meeting in Shepherdstown, West Virginia. But, being British, I was a little pessimistic (we prefer to call it 'realistic'), thinking that things don't tend to be as enjoyable if you build them up too much. I enjoyed this meeting even more than the first; in fact I would go as far as to say that it was the best conference/meeting I've ever been to. Talking to other attendees, I got the strong impression that they felt similarly.

So what was so good? While North Americans dominated the numbers as expected, there was a distinctly international feel to the meeting. There was a bigger British contingent this time and representations from continental Europe, Mexico, New Zealand,

Australia, and other parts of the world. There was a good mix of people, with quite a lot of graduate students and people in all stages of their academic careers.

Almost all of the talks were excellent. David Currie kick-started proceedings in the first session, riling the crowd with a controversial conclusion from the work of one of his students (Tanya Sendel). He suggested that, on evidence to date at least, conservation threats from climate change are considerably less important than threats from other causes, such as habitat loss. This sparked the expected reaction from those who work on climate change impacts, but all in a good spirit of intellectual discussion. I also particularly enjoyed the talks by Matt McGlone, Sandy Harcourt and Hartmut Walter, but it is a bit unfair to pick out just these from the abundance of interesting and informative oral presentations. The theme of the meeting was 'Conservation Biogeography' and the timing fit will with the rebranding of the journal Diversity and Distributions, whose subtitle as of January 2005 is "a journal of conservation biogeography." Accordingly, Rob Whittaker, in his talk, précised his paper in the January issue of *Diversity and Distributions* (see Spotlight Article) in which he and his group have tried to set out the agenda for the new sub-field of biogeography.

I thought the poster sessions were particularly well organised, and were in line with the inclusive nature of the IBS. We had time (and space!) to read them all, and were able to discuss most of them with their authors if we so desired. The relatively small number of people at the meeting helped here, but so did the fact that each day saw a different set of posters, and several hours of time were devoted to their viewing. The only concern here is that European graduate students (and even academic staff) can find it very hard to get funding to go to conferences if they are not giving an oral presentation. The IBS has so far given a heavy weighting to posters, and unfortunately our funders don't appreciate this.

But the best thing in my opinion was the 'down time.' As in Mesquite, but even more so, there really wasn't anywhere else to go, so people got together and chatted over a glass or three. And the smallish numbers there meant that people could get to know each other quite well. You could actually find someone again if you wanted to carry on a discussion you'd been having the day before! Most people probably talked to most other people at some point during the proceedings.

This was the first academic meeting for my research assistant, Lindsay Banin. She thoroughly enjoyed it (though again, being British, I am concerned that all future academic meetings will now fail to live up to her expectations). If the IBS and its meetings can inspire the next generation of biogeographers in this way then it can only be a good thing.

IBS on the WEB

Minutes from board and business meetings, as well as reports from the officers may be found at http://www.biogeography.org/newsletter.htm

Membership information may be found at http://www.biogeography.org/Membership.htm

Information about past meetings may be found at http://www.biogeography.org/meetings.htm

Look for our upcoming *Member Publications* site on the IBS webpage.

Joshua Drew of Boston University will be compiling representative publications from members to post on the IBS website. We are creating this site with the intention of facilitating collaboration, communication, and networking between our members and the greater scientific community. If you are interested in posting select publications on this site, please contact Joshua at jdrew@bu.edu. Be sure to include your contact information and a link to your personal webpage address if you would like it to be posted alongside your publications.

2005 ALFRED RUSSEL WALLACE AWARD RECIPIENT: JOHN C. BRIGGS

Contributed by Brian Bowen

There are special intervals in the history of science when new vistas open through advances in exploration, communication, and technology. If we are fortunate, a few gifted individuals are able to absorb, reflect, and synthesize the new information. Alfred Russel Wallace, using insights based on his studies in Brazil and Indonesia/Malaysia, was one such individual.

Hence it is especially fitting that the International Biogeography Society bestowed the first Alfred Russel Wallace award for lifetime contributions to biogeography on Dr. John C. Briggs. He is the founding father of the field of marine biogeography. Approaching the seventh decade of his career, Jack Briggs continues to lead the field with insight and provocative theories.

In the early 20th century, the biogeography of marine species was a fragmented field, and many species were given multiple names in different parts of their range. Advances in zoology, especially the modern museum collections, held the promise of clarification, and Sven Ekman's *Zoogeography of the Sea* (1935; translated into English and updated in 1953) provided the first synthesis. However, Ekman did not have the benefit of plate tectonic theory.

The premier modern synthesis of marine species distributions arrived with Brigg's 1974 classic *Marine Zoogeography*. This triumph began three decades earlier, when a young Jack Briggs was serving a tour of military duty in post-war Europe. There he found the

museum infrastructure near collapse. Venerable zoology books were being sold out of desperation, sometimes at yard-sale prices. On at least one occasion, Jack spent several months' salary on a single volume, and eventually accumulated one of the best private libraries of fish literature. Notably, the owner of this auspicious collection had not yet completed his first graduate degree at Stanford (M.S. in 1947, Ph.D. in 1952).

Following the publication of *Marine Zoogeography*, a cadre of young investigators began to test Brigg's hypotheses about marine biogeographic provinces, using new molecular methods:

- How old are the separations between temperate faunas in the Gulf of Mexico and West Atlantic Ocean? Avise (1992) demonstrated a pattern of Pleistocene divergences.
- How distinct are the Caribbean and West Indian provinces of the West Atlantic? Shulman and Bermingham (1995) found considerable mixing via larval dispersal, and these two provinces are now regarded as a single biogeographic region.
- How strong is the Amazon Barrier, a freshwater plume that separates the Caribbean and Brazilian reefs? Rocha et al. (2002) demonstrated evolutionary separations in reef specialists, but found that generalist species (which can live in sponge habitat below the Amazon plume) are not affected by the barrier.
- Is Ascension Island on the mid-Atlantic ridge affiliated with the eastern or western Atlantic? Studies by Bernardi et al. (2000) and Muss et al. (2001) indicate colonization from the western Atlantic.
- How deep are the evolutionary partitions between Pacific and Indian Ocean fauna? Strong genetic separation in fish and invertebrates are apparent in studies by McMillan and Palumbi (1995), Barber et al. (2002), and Benzie et al. (2002).
- Does the eastern Pacific, the largest oceanic expanse in the world, constitute an impenetrable barrier to dispersal (Briggs 1961)? Surprisingly, this barrier is surmounted by some species (Lessios et al. 1998).

Most of the issues addressed in these studies are explicitly formulated in *Marine Zoogeography*, and the number of phylogeographic studies that cite Briggs (1974) is beyond counting. The biogeographic partitions that Jack Briggs described based on species distributions are generally supported by genetic surveys. This book continues to guide researchers who want to explore geographic partitions in marine species.

Throughout the 1970s and 1980s, Briggs declined to support the prevalent school of cladistic biogeography, with its extreme emphasis on vicariance. His more balanced view, including both vicariance and dispersal, is now accepted in the mainstream (De Queiroz 2005).

The amazing synthesis in Briggs (1974) is sufficient justification for the Wallace Award, but Jack's contributions extend beyond this, from an early paper on

globally distributed shore fishes (Briggs 1960) to a modern synthesis of global biogeography (Briggs 1995). Jack has been a leading proponent of centers of speciation (Briggs 1984) and he continues to develop this concept, especially with regard to the central Indo-West Pacific (Briggs 1999, 2000, 2003). Two decades after the initial synthesis (Briggs 1984), several research groups are testing the center of speciation concept with field studies (Mora et al. 2003) and molecular technologies (Meyer 2003; Barber and Bellwood 2005). Jack Briggs continues to lead and inspire the next generation of biogeographers.

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JARED DIAMOND will attend the 2007 IBS Conference to personally receive the next Alfred Russel Wallace Award.

SPOTLIGHT ARTICLE

Robert J. Whittaker*, Miguel B. Araújo, Paul Jepson, Richard J. Ladle, James E. M. Watson and Katherine J. Willis. 2005. Conservation Biogeography: assessment and prospect. *Diversity and Distributions* 11:3–23.

Contributed by Richard Field

While biogeographic theory has been applied to conservation practice for several decades (most notably in the form of MacArthur and Wilson's classic model), the term 'conservation biogeography' is quite a new one. A Google search produces over 400 entries, which show that people have been using the term quite widely in their lectures and descriptions of their research interests. However, it has only recently entered the scientific literature. At the time of writing, a Google Scholar search suggests that the first paper to use the term "conservation biogeography" was one by John Grehan in 1993 (Biodiversity Letters 1:134-140), but that otherwise the term has only been used in the Journal of Biogeography in relation to the activities of the IBS. A Web of Science search produces just two entries: this spotlight article and the short editorial preceding it (Biodiversity Letters was not ISI listed). We can add to the list Part V of the IBS publication Frontiers of Biogeography, which is called 'Conservation Biogeography' – though it is worth noting that the symposium from the first IBS meeting on which it is based was actually called 'Biogeography theory and conservation practice.' Mark Lomolino briefly introduces

and defines the sub-discipline in his introduction to that section.

Our spotlight article (Whittaker et al, 2005) is a fuller and slightly different take on the subject, and is an attempt to define and set the agenda for conservation biogeography for the next few years. It focuses on scale dependency and sensitivity to assumptions / model parameters in the application of biogeographic principles and methods to conservation practice, as well as issues of inadequacy of information (Linnaean and Wallacean shortfalls) and of theory.

Conservation biogeography has emerged in response to the urgency of incorporating good and appropriate science into conservation practice.

Conservation biology has taken us forward, but many of the problems faced are more than local in scale; biogeography is particularly relevant at the coarser scales. I hope that IBS members will be at the forefront of the new sub-discipline, and would urge you all to read, consider and, if appropriate, criticize the spotlight article.

MEETINGS of INTEREST in 2005

12 - 16 March

International Association of Landscape Ecology North American meeting Syracuse, New York, USA Info: http://iale.esf.edu/

30 March - 1 April

"Ecological Consequences of Extreme Events" British Ecological Society annual symposium Manchester, England Info: www.britishecologicalsociety.org/

5 - 9 April

Association of American Geographers annual meeting Denver, Colorado, USA Info: www.aaq.org/annualmeetings/index.cfm

23 - 27 May

North American Benthological Society / American Geophysical Union joint meeting New Orleans, Louisiana, USA Info: www.benthos.org/Meeting/index.htm

13 - 15 July

"Wallace In Sarawak: 150 Years Later"

Sarawak, Malaysia

Info: www.unimas.my/Wallace/intro.html

15 - 19 July

Society for Conservation Biology annual meeting Brasilia, Brazil

Info: www.scb2005.unb.br/index.htm

7 - 12 August

Ecological Society of America / International Congress of Ecology joint meeting Montreal, Quebec, Canada Info: www.esa.org/montreal/

15 - 20 August

European Society for Evolutionary Biology Krakow, Poland

Info: www.eko.uj.edu.pl/eseb/index.html

22 - 26 August

Symposium for European Freshwater Sciences Krakow, Poland (same location as above) Info: www.sefs4.pan.krakow.pl

19 - 22 October

Society of Vertebrate Paleontology annual meeting Mesa, Arizona, USA

Info: www.vertpaleo.org/meetings/index.html

2007 IBS CONFERENCE

Look for an electronic announcement of the 2007 conference in upcoming weeks.

DO *YOU* HAVE NEWS TO SHARE? SHARE IT WITH US!

Please forward news items for inclusion in the next IBS membership newsletter to:

Karen Gaines: kgaines@unm.edu

Richard Field: richard.field@nottingham.ac.uk Katherine Smith: k_smith@lifesci.ucsb.edu



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