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conservation biogeography forum

Neil D. Burgess

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Conservation Science Group, Department of Zoology, University of Cambridge

<http://www.zoo.cam.ac.uk/zoostaff/csg/nburgess.html>

Interviewed by Antje Ahrends

Neil Burgess obtained a PhD in the evolution of plants in 1987. Since then he worked for the Royal Society for the Protection of Birds, WWF (USA), The Natural History Museum of the University of Copenhagen, The Danish Ornithological Society, the Danish Development Assistance Agency (DANIDA), the United Nations Development Programme (UNDP), the Critical Ecosystem Partnership Fund and Cambridge University. Neil Burgess worked as a conservation scientist and conservation manager specialising in projects in the developing countries, especially in East Africa. These have included forest and marine conservation, conservation planning, capacity building, biodiversity inventory, costing conservation, improving protected area databases and measuring the management effectiveness and the costs and benefits of protected areas.

Relevance of biogeography to your work

Antje Ahrends: Is biogeography – “the study of the geography of life” – a relevant discipline to your work?

Neil Burgess: Yes, biogeography is relevant to my work. It is particularly important to my work for WWF. We devised a system of Ecoregions that are used to prioritise where WWF should focus conservation efforts at a global and at continental scales - Africa being the area where I work. This prioritisation scheme (called “Global 200”) identifies the most important areas for endemic species within major taxonomic groups - mammals, birds, reptiles, amphibians and other taxa. However, Global200 is not only driven by endemics but also considers ecological processes. African savannahs are a good example for that – they are not high in endemism but have the largest concentration of large mammals on earth, and some of the last remaining large mammal migrations. A conservation prioritisation scheme that does not include such ecological process values would leave out important areas. So yes, from a practical point of view biogeography is very relevant to my work as it defines the areas where WWF works on the ground.

AA: Do you think biogeography is relevant to practical conservation planning in general?

NB: Yes, biogeography, or rather conservation biogeography, is important to all conservation organisations, whether they are Conservation International, WWF or BirdLife International. All of these organisations developed their own conservation prioritisation scheme underpinned by biogeographic information, and in many regions these systems agree. These schemes have been developed at a global scale, but also at finer scales – for example the Congo Basin – people use biogeographic information in order to define where to work on the ground, which landscapes, ecological processes and species to conserve and how to design the protected area network. I think that the application of biogeographical data and some of the fundamental principals of that discipline becomes more tangible and relevant to practical conservation as you go down in scale.

AA: Do you read biogeographic journals, or otherwise receive information on new findings in the field of biogeography? What are your main sources for this?

NB: I do not read academic literature on a regular basis. However, working at a university I have access to biogeographic journals, and I read articles relevant to my work when I find out about them. I also published in and review for biogeographic journals, for example *Diversity and Distributions*. However, I don't read these journals systemati-

cally as most published articles are not really relevant to my work. From my point of view, it would be very useful if there was a way for scientific journals to automatically send the details of potentially interesting articles if they knew about one's interests – in my case articles on conservation biogeography, Africa, and landscape and conservation planning. Regarding sources other than journals, I regularly go to Society for Conservation Biology meetings and attend conservation biogeography forums and symposia at that meeting, if there are any. I also find historical biogeography interesting (evolutionary biogeography and palaeo biogeography) as the pattern of ancient and newly evolved species has relevance to conservation planning. I would not go to pure biogeography meetings, unless they had sessions on conservation biogeography, purely through a lack of time in the working year.

AA: Do you collaborate with biogeographic research institutions?

NB: I collaborate to some extent with Carsten Rahbek and Jon Fjeldså from the University of Copenhagen and Peter Linder in Switzerland. We are trying to see whether we can use existing species distribution data to define ecological areas in Africa, i.e. to give the Ecoregions in Africa a more rigorous scientific basis. We are also interested in the patterns of genetic age of species to assess past and present evolution within major taxonomic groups – for example birds.

The general practicality of incorporating new biogeographic findings in conservation work

AA: Most species are difficult to monitor due to the lack of data. Do you believe that quantitative biogeographic methods (e.g. species distribution modelling) are useful to fill in these gaps, for example for the design of reserve networks or to establish the vulnerability of species to environmental change? Or do you think that given that these methods are inherently uncertain, it is difficult, if not risky, to allow them to guide conservation planning?

NB: At this point in time it remains primarily of academic interest to see how well species distributions can be modelled. If it can be proven that it can be done well, i.e. that it can tell you things

that the original data did not show, and that it is reliable and affordable, it could become extremely useful for conservation planning. At the moment most of the species modelling work seems most useful at an indicative level - in that it gives you some new ideas on places that might be biologically important, but where you do not have field data. This prediction can then be tested on the ground. In my view, it would not yet be recommended to define a conservation plan for a country or region based on the outcomes of species distribution models.

AA: The nature of scientific research is to continuously challenge existing wisdom, and as a consequence there frequently is a lot of disagreement and a rapid-turnover in what is regarded state-of-the-art. For instance, a predictive model for species distributions praised a few years ago might already be regarded as flawed today! Does this scientific rationale make it difficult to include biogeographic findings in conservation practice given that conservation generally needs longer term strategies and commitments?

NB: It can make it difficult. If there is strong disagreement and all the leading scientists claim they are right, decision makers and those developing policy have a tendency to ignore the issue as being 'too controversial'. The easiest thing is for them to assume that everybody is wrong. If on the other hand there is some consensus on at least the most important issues, the scientific contribution to policy can be extremely useful, even if some disagreements on specific issues remain. The IPCC is a good example of broad scientific consensus leading to major policy change and the global scale. In our particular case, the WWF Eco-regions, there might be disagreements and the scheme is certainly not perfect. However, as the scheme is broadly accepted, and has been internalised by WWF, it is good enough for the organisation to make strategic plans on the allocation of resources for conservation on the ground.

AA: Existing prioritisation schemes such biodiversity hotspots, Global 200, or Endemic and Important Bird Areas necessarily suffer from data inadequacies, and also reflect the interests and values of the NGOs that generated them. Is there a need for objective reviews of the merits of these schemes, and alternative scenarios? Or do you think these schemes are so institutionalised that

reviews would confuse decision makers, compromise public and financial support for conservation and therefore ultimately be counter-productive?

NB: It is certainly the job of academic biogeographers to challenge those schemes and come up with something better. These schemes do reflect to some extent the values of those NGOs that generated them. WWF focuses on priorities based on ecological representation and broader landscape conservation, BirdLife International focuses on birds, Conservation International on threatened species, etc. Thus, at the moment it is right to say that all these organisations have their own philosophies reflected within the conservation schemes they developed. They have also spent so much time and effort on developing their schemes that it is difficult for them to leave them aside. In addition these prioritisation schemes become a part of NGO branding and fundraising strategies. However, it would still be useful if all conservation organisations could bring together their schemes and develop a joint set of priority areas, and if academic biogeographers were able to engage in this discussion to ensure scientific rigour.

AA: Do you think that there is some confusion about the goals of the conservation priority schemes? For conservation organisations, these schemes are part of their institutional branding, fund raising strategies and strategic planning, and not an attempt to devise a totally scientifically robust globally valid set of conservation priority areas valid for all taxonomic groups. Biogeographers on the other hand criticise the schemes on these grounds.

NB: I expect that there is some confusion. Organisations develop their own set of priorities, which are based on their conservation goals and becomes a part of their institutional branding. In fact, the schemes may determine to a large degree what the organisation is about. BirdLife International, for example, invests considerable resources on collecting data on Important Bird Areas, and on conserving these sites in the field.

AA: In your view, do existing conservation priorities such biodiversity hotspots, Global 200, or Endemic and Important and Endemic Bird Areas concord with the state-of-the-art biogeographic research? Where would you place each of them on a continuum from “minimally scientifically robust” (1) to “extremely scientifically robust” (10)?

NB: I would put all these schemes on the same level. They are equally good and valid in their own ways. They are also not perfect and have not been developed to be fully scientifically robust. Nevertheless, they are useful frameworks for setting out conservation plans for institutions using the best available data. In terms of a fully scientific approach, the conservation biogeographical schemes are not fully hierarchical, and do not provide statistics on their confidence limits or degree of ‘difference’ between the various zones. They primarily exist at the same level of importance above a minimum threshold that has been pre-defined using expert opinions. As an example, WWF’s Ecoregions could be developed in statistical way, using the available global species distribution data. This is an area where the biogeography community could provide a valuable contribution and might work together with conservation scientists.

AA: Do you think that idealistic prioritisation schemes have much relevance on the ground (other than attracting funding)? I.e. is it useful to have these benchmarks although they are (1) necessarily based on incomplete data and (2) generally do not take into account political or socio-economic constraints?

NB: Yes, I think they are useful. They are for example institutionally helpful in that they help an organisation to define where it wants to work. BirdLife International works with its partners to identify and protect Important and Endemic Bird Areas, and within the WWF network all the national WWF organisations undertake much of their conservation work on the ground within Global200 areas. This is really helpful in setting the regions for action. The prioritisation schemes also help to bring countries together. If an Ecoregion covers three countries there is need for transnational collaboration, thus, these schemes partly also get people to think across the border. In the actual implementation of projects a whole new process starts where political and socio-economic issues are often also addressed.

Communication between biogeographers and conservation practitioners

AA: Do you think that biogeographers communicate the applicability of their research findings to conservationists adequately? And *vice versa*, do

conservationists adequately communicate their information needs to biogeographers?

NB: I think that there is a general lack collaboration, understanding and acceptance. This might be because the agendas are different: the academic agenda is to try and publish papers in the best scientific Journals whereas the NGO agenda is to identify areas where they can work on practical conservation on the ground. Often their approaches are simple and quite rapidly undertaken, so that they are easy to explain, can become part of the agencies 'brand', and help direct the work of the NGO. Once the work is finished, the NGO is then likely to stick to what they developed as it becomes a part of the institutional structure and public face of that organisation.

AA: Is an intensified exchange between conservationists and biogeographers necessary, and if so, where do you see potential platforms for this?

NB: One of the problems is that most conservation organisations have already defined their conservation biogeographical frameworks of the world. In order to develop a meaningful interaction between academic and conservation biogeographers, one or more of the NGOs would

need to decide they wanted to look again at the conservation prioritisations that had developed. At this point there could be extensive opportunities for collaborations and to use the latest scientific findings and techniques for the development of such schemes. Another option for extensive collaboration between biogeographers and conservationists would arise if the conservation organisations all decided to sit together and to develop a joint set of conservation priorities.

AA: Thanks very much for this interesting interview! Are there any further thoughts you would like to share?

NB: I think that an extremely valuable contribution academic biogeographers could make would be to develop a statistically defined hierarchical model of conservation prioritisation areas that would include aspects relevant to conservation, such as endemic species, species richness, threatened species and important ecological processes.

obituary

Professor Chris Humphries (1947—2009)

Botanist and biogeographer, Natural History Museum, London

Chris Humphries, a major player in the cladistic revolution in systematic biology, a revolution that changed the way biologists established evolutionary relationships among plants and animals and interpreted their geographical distribution, died Friday 31st July, 2009.

Chris was trained as a botanist specialising in Asteraceae, a group of daisies, but would eventually publish on a wide range of scientific issues. Aside from botanical taxonomy, Chris published on general issues in systematic biology, botanical art and its relation to 19th century scientific exploration, and conservation biology. He was a talented lecturer, held in high esteem by his many students. His infectious enthusiasm and considered knowledge meant he was sought out by many, none would he refuse to talk to, from undergraduate student to minister of state.

Chris spent his entire career as a research scientist in the Botany Department of the Natural History Museum, London, starting in 1972 as Assistant Curator of the European Herbarium, becoming its Head Curator in 1979 and, after some departmental restructuring, Division Head of Flowering Plants Research in 1997 until his retirement in 2007. During that period Chris had three sabbaticals, the first as a Research Fellow at the University of Melbourne, Australia (1979—1980), the second as a Senior Research Fellow at Melbourne (1986), and third as a Fellow of the Wissenschaftskolleg zu Berlin (Institute for Advanced Study, Berlin) (1994).

Chris's gained his PhD from Reading University in 1974 working on the endemic genus *Argyranthemum* from Macaronesia. This study was Chris's entry into systematics and biogeography, a