

The IBS and some possibilities for expanding its outreach to the public

I have been mulling over the contents of this message, on and off, for some months. Perhaps my initial motivation came during travels in southern Africa and then in Peru where I saw the poor quality and quantity of information being made available to visitors of the parks and reserves of the regions. This was nothing new to me, but I began to think more seriously about how so many opportunities were being missed to make visitors aware of the biogeography of the places these tourists were visiting. Almost nothing was being spent on education of the visitors, yet the cost to the tourists was substantial...

I might have never composed the material below had I not recently read the comments and suggestions by Mark Lomolino (2018) and also of Roy Erkens (2018) in *Frontiers of Biogeography*. While their comments focus on improving biogeographical education, I will here focus here on *public outreach*. I do this as a seeming outsider to the mainstream biogeography community – I am a meteorologist by education and most of my research was in aspects of tropical meteorology. However, I taught earth science courses while in graduate school and I have had a long interest in botany and other topics in biology. Thus, as Lomolino noted, I am probably similar to many other biogeography researchers who entered the field without ever taking a formal course in the subject.

While the recently upgraded IBS website and the current IBS Facebook page contain much valuable information for IBS members, they don't really have much to offer the public. Like many scientific societies, the IBS is nearly invisible to the public. Whether that is good or bad I won't argue here, but it does limit the potential impact that our society has on activities in important areas. The current IBS website lacks anything resembling "outreach". What are the current hot topics in biogeography? Why are they important? Imagine some member of the public stumbling onto the IBS website. Can they get anything out of it?

The mission of the IBS is, from the IBS website:

- 1) Foster communication and collaboration between biogeographers in disparate academic fields – scientists who would otherwise have little opportunity for substantive interaction and collaboration.
- 2) Increase both the awareness and interests of the scientific community and the lay public in the contributions of biogeographers.
- 3) Promote the training and education of biogeographers so that they may develop sound strategies for studying and conserving the world's biota.

I would say that the IBS does the first and third items relatively well. I have enjoyed the three biennial conferences I've attended and enjoyed the communication among participants. Perhaps the first item is a bit weak since the IBS community is heavily biased

towards European and US participants (though their research is obviously global). This is not the fault of the IBS, but of global economic realities and the cost of international travel.

It is in the second mission statement where I see the main IBS problem. There appears to be very little effort for outreach to the public. Why do I say this? There are no educational materials on the IBS website, and no links to background material about biogeography. Shouldn't we try to improve this situation?

Improving IBS visibility: basic steps

1) *Establishing an education and outreach committee.* This group could entertain ideas and evaluate their practicality and potential impact.

The notion of needing an education committee might seem superfluous, given that so many IBS members are involved in teaching aspects of biogeography at their own institutions. But I suspect that most biogeographers are not reaching a *wide* audience. *If* you are teaching important biogeography (or allied) concepts to a non-science freshman college class every semester with 100 students – that is *real* outreach. But I suspect that most biogeographers residing at universities and colleges teach to small classes composed of biology majors (an outreach survey done by the IBS might be illuminating).

2) *Placing a greater emphasis on outreach* – not just to professional-level biogeographers (i.e. students and researchers already committed to the field) to encourage a much wider public interest in the subject. Why not consider establishing an IBS award for such outreach? This would focus more attention (within the biogeography community at least) on educational activities.

Many of the concepts in biogeography are not extremely complex or difficult to understand. And there is much good material scattered online about biogeography, including talks that introduce the subject. But are they in 15 languages? Are they conveniently available so they appear quickly in a Google search? Better yet, can you find all of them at one site that isn't password protected and requires a special membership or fees to access?

Some specific actions to improve IBS visibility and impact

The IBS should consider (collectively) developing online (and downloadable) talks related to biogeography. These need to be relevant to different regions of the globe. For example, a talk introducing biogeographical concepts to a secondary school in India might use as many examples from south Asia as possible. Such material might be developed by biogeographers elsewhere, but iteration with the Indian biogeographic community would result in a product that would be of interest to a much larger audience than otherwise might be the case with only European or North American examples. The same goes for almost every country. We shouldn't expect a Venezuelan geography class to be enthusiastic about biogeography if all the examples are drawn from Europe and the USA. A scientist will readily see the value of such international examples, but we should not expect the public to feel the same – at least initially.

As an aid in developing online materials, I would suggest that each IBS member submit one of their PowerPoint talks for consideration by an IBS Education committee. Excellent slides or examples could be culled from these to produce a subset of talks for varying education levels (from middle school level through college, and including “adult” (non-scientists) as an audience). These talks could be translated into the relevant languages for maximum outreach, since most non-scientists outside of Europe and North America don’t read English.

Another feasible task I suggest for the IBS is to put the IBS conference talks and posters *online*. This is already routinely done by many scientific societies and would serve to inform those that cannot travel to the IBS meetings because of limited travel funds or time constraints. Requiring online material for each accepted talk or poster would also likely improve the quality of the materials being prepared for the meetings, since the audience would (potentially) be larger than just a fraction of those attending the meeting itself. In particular, it would give poster presenters a much larger audience than they currently get at the IBS meetings.

An example of a recent workshop from my field that was put online is here: <https://usclivar.org/meetings/2018-amoc-rapid-meeting-agenda> It should be very feasible for the IBS to do something similar.

Putting conference talks online is not a substitute for educational outreach since most talks will be of interest to only a limited number of specialists... but this will be much more informative than a book or webpage of short abstracts.

The IBS needs to develop (or make more visible) a closer connection with the conservation biology community, and indeed conservation activities. Everyone in IBS has an interest in biodiversity and its conservation. Yet this obvious interest is, like in many professional societies, mildly discouraged or “hidden” because it appears “unprofessional”. (My field of meteorology has many researchers who are severe weather “chasers” but they won’t dare put this on their vita!)

There is no shortage of professional societies on all kinds of subjects today. What is the IBS doing to inform the body politic on important issues using the IBS’s intellectual resources? Many scientific societies have position papers that governmental institutions can use to help guide their policy development. This assumes of course that the IBS could obtain a consensus on a given topic and that those outside the society would value the IBS’s perspectives.

There is urgency in biogeography (and allied fields like conservation biology) that many academic fields do not have. In astronomy, high-energy physics or even meteorology, there is no real urgency to the research and advances can proceed as technology permits. If scientific questions aren’t answered in this decade, they eventually will be. But in the IBS areas of focus, there is a real danger that much of biogeography’s subject matter will be lost

or altered irreversibly during the coming decades. We all know this, but the IBS's public outreach to help change our current global path is missing.

Much of what I've suggested above should help improve the resources available to the public – should they be lucky enough to stumble upon a resource-rich IBS website in the future. However, in today's information-rich world, it is very unlikely that most people will stumble upon the IBS website. The real issue facing the IBS is: *How does one mainstream biogeography?* If formal biogeography education is restricted to a certain (small) fraction of college biology students there will be relatively little impact on society's appreciation of the subject.

I have one modest suggestion here to tackle the public outreach problem that the IBS faces. It is to *incorporate biogeography into Earth Science courses*. These courses are much more widely taught to university students than biogeography courses. I taught such earth science courses in a community college many years ago, and still believe that it is the most useful course *any* college student can take. Traditional earth science courses combine astronomy, geology, meteorology and physical oceanography, though hybrid subjects like geomorphology also are part of these courses. As Lomolino (2018) noted, knowledge of these abiotic subjects (e.g. climate, plate tectonics) is required (perhaps except for astronomy) to begin to understand the geography of life. A satisfactory conclusion to a conventional Earth Science course might be a section on the geography of life and how the course's previous subjects help to explain life's distribution and diversity on Earth. Of course, this material couldn't be nearly as comprehensive as a semester course on biogeography to biology majors – but this basic biogeography material would likely reach *several orders of magnitude more students*. And students taking Earth Science courses are usually non-science majors - precisely the audience that biogeographers need to be trying to reach. Given that earth science textbooks won't automatically add sections on biogeography supplemental material needs to be prepared for such courses. Who among us wants to write those last few lectures for an earth science course? Distilling the essence and importance of biogeography into a few lectures. What a challenge!

We should not be content with educating the students of the world. Students can be highly motivated, but generally have neither the financial means nor the seniority to impact conservation activities in the short term. To effect rapid change in global thinking we need to educate adults – who will be the decision makers for the next few decades at least. Returning to my original motivation for this essay, there are enormous opportunities to inform the public about biogeography in many of the world's nature parks, especially in Africa and Latin America. This is also true of many parks in Europe and North America, despite their relative wealth of information. Taking a proactive attitude and developing materials for plaques and low-cost brochures might reach countless nature-oriented tourists worldwide. Such tourists are also already interested in nature by their willingness to visit such parks; they also have (by global standards) the financial means to support nature conservation activities – should they be so motivated to do so.

In summary, the IBS has a myriad of opportunities to influence in a positive manner the public understanding and appreciation of biogeography. Collectively, we need to take advantage of this opportunity.

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