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PREDICTS Newsletter

Projecting Responses of Ecological Diversity In Changing Terrestrial Systems

Since its start in 2012 the PREDICTS project has collated over 1.8 million biodiversity measurements of over 32,000 species, sampled from nearly 15,000 sites in 80 countries. Huge thanks go to everyone who has contributed their data and to all of the PREDICTS team who have worked so hard to collate them!

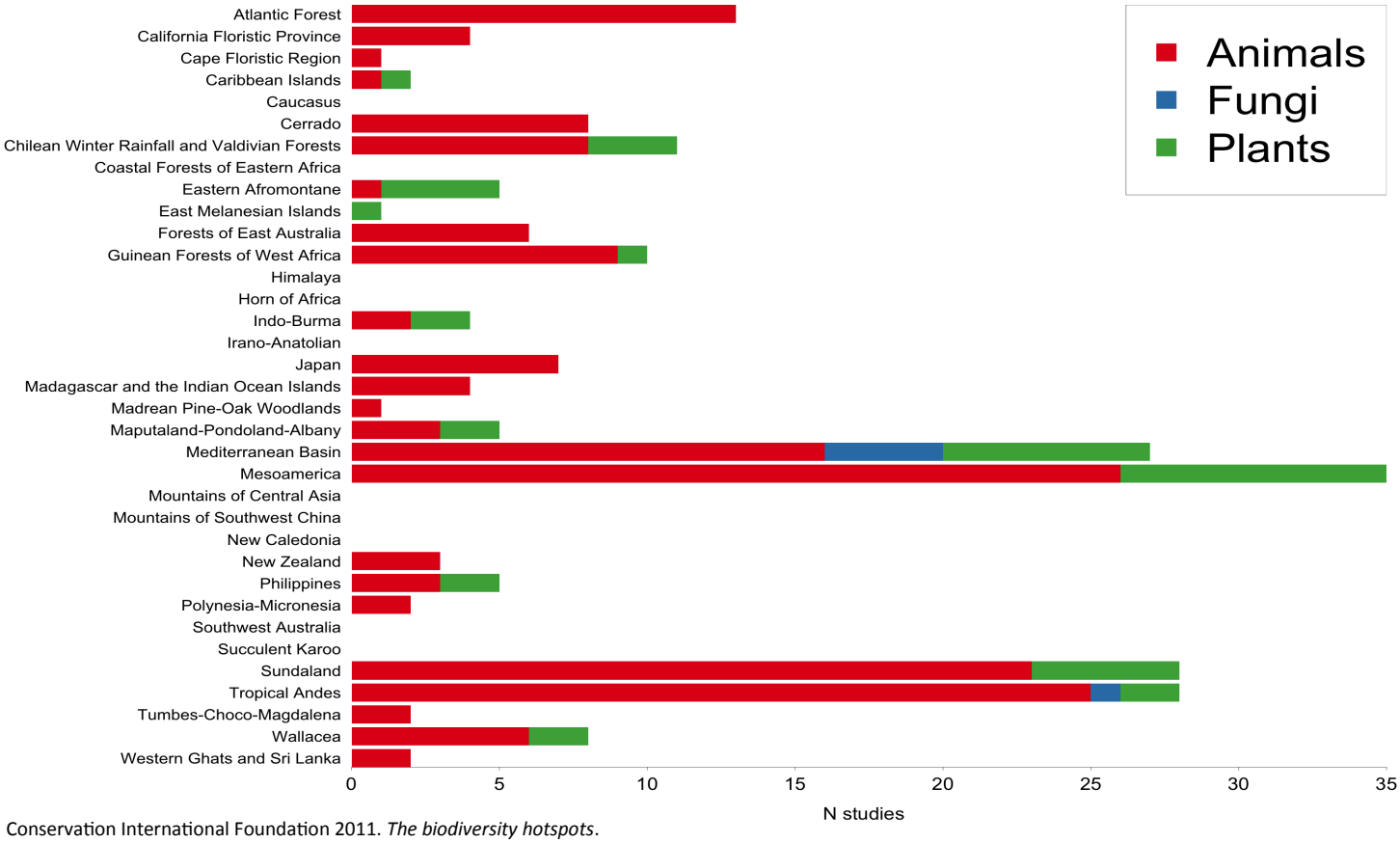
We are aiming to make the database as representative as possible. There are many ways to assess the data's coverage - temporal, geographic, biogeographic and taxonomic. One important aspect is the representativeness of biodiversity "hotspots" - areas that contain high numbers of endemic species relative to their terrestrial area, and which are facing extensive loss of natural habitat. Of the 453 studies in the PREDICTS database, 222 (49%) have one or more sampling locations within one of the 35 biodiversity hotspots defined by Conservation International (www.conservation.org/hotspots). The figure below shows a breakdown of studies by hotspot and taxonomic kingdom. We are encouraged that the majority of hotspots are represented and we hope to get data from the remaining ten before the project is finished. Plants are relatively underrepresented compared to animals, and fungi - a frequently overlooked group - have been sampled in just two hotspots.

More than 47% of our 1.8 million measurements were taken within hotspots. The vast majority of samples in hotspots are in the Sundaland hotspot - these data come from two studies of higher plants from Indonesia that between them contribute over 320,000 samples (Sheil *et al.* 2002).

The data we have collated will be made public in 2015, before which we will attempt to improve all aspects of its coverage by targeting underrepresented hotspots, as well as realms, biomes, taxonomic groups and countries. If you have data sampled within a hotspots, particularly from one of the ten unrepresented hotspots, that you would be willing to contribute, we would love to hear from you!

To the data contributors: The database paper has been slightly delayed, but we will be in touch soon!

Lawrence Hudson, Post-doctoral Research Associate at the Natural History Museum



Conservation International Foundation 2011. *The biodiversity hotspots*.

Sheil *et al.* 2002. *Exploring biological diversity, environment and local people's perspectives in forest landscapes: Methods for a multidisciplinary landscape assessment*. Jakarta: Center for International Forestry Research (CIFOR).

NEWS

Welcome to Claudia Gray

Claudia has just started as a post-doc in Jorn Scharlemann's lab at the University of Sussex. She will be helping the PREDICTS project with the global analysis of how biodiversity in protected areas responds to human impacts. Claudia recently finished her PhD at Oxford University, during which she focussed on the impact of riparian zone management on biodiversity and ecosystem services in oil palm plantations. She is also very pleased that some of this data can now also contribute to the PREDICTS database!

Welcome to this summer's Masters project students

PREDICTS is hosting nine MSc and MRes project students this summer, from Imperial College, the Natural History Museum, UCL and the University of Copenhagen. Two are taking a regional *focus* - *John Hughes* is concentrating on New Zealand and *Di Gao* on his native China. *Katia Sanchez Ortiz* will be contrasting responses of island and mainland biodiversity to human impacts, while *Susan Emerson* will similarly be comparing biodiversity hotspots with 'notspots' - less diverse locations within the same broad regions as the hotspots. *Gwilym Pask-Hale* will focus on African savanna ecosystems, while *Martin Jung* - whose project started a few months ago - continues to gather data from a range of African ecosystems, and is conducting fieldwork to test his models. *Hanbin Zhang* will concentrate on how large mammals respond to human impacts: these species are important ecosystem engineers but not currently well represented in the database. The remaining two students will be collating data on functional traits, and then conducting analyses to see if the traits influence species' responses - *Joe Middleton* will focus on Lepidoptera and *William Chan* on a range of invertebrate taxa. You can read more about our new students on the Team page of the PREDICTS website (www.predicts.org.uk).

Human impact on biodiversity in Colombia

Colombia is a mega - diverse country with two global hotspots. Its rapid economic development based on extraction of natural resources makes the biodiversity of this country vulnerable to rapid landscape transformation, especially in to those regions that are in an early stage of colonization and which represent one of the most pristine areas of the world. The socioeconomic and biophysical heterogeneity of Colombia present a fascinating opportunity to explore the impacts of human activities on biodiversity.

Having compiled 26 studies comprising of 284 sites and nearly 8,800 species, we have modelled the response of biodiversity to human land-use activities. In terms of species richness and abundance, we have found that cropland and pasture have an impact on the biodiversity in Colombia, with the conversion to cropland being particularly significant. There were no significant differences in biodiversity between primary and secondary vegetation. We then projected the change of biodiversity into the future using the Integrated Assessment Models (IAMs) endorsed by the IPCC. The projections show contrasting patterns of biodiversity change depending on assumptions of population density, energy and technology. We are close to completing the first draft of the manuscript of this study and will soon be contacting everyone who contributed data for their comments.

Susy Echeverria-Londono, PhD student NHM & Imperial College London

Attitudes to data sharing

Thanks to all of you who took the time to participate in our recent 'Attitude to data sharing survey' that was designed by Helen Phillips and Tracy Che and sent out to those who contributed data to PREDICTS. We have had a wonderful response from our contributors and our initial results have been very interesting. Authors discussed why they share data, why they thought others do not share, and the future of data sharing. Many contributors have expressed the view that data providers must be able to retain control of their data to ensure appropriate use; however, many also believe that data sharing should be made compulsory by journals and/or funding agencies. The issues surrounding co-authorship and how data providers should be credited were common themes. We are still in the early stages of the analysis of this work, and results are still coming in, but the quotations below will give you a flavour of the discussion..

"Follow up with people who have shared data. Let them know what is being done with the data and how it is being stored."
"Data-sharing culture can be encouraged by training of graduate students in this way, encouraging them to discuss and share data."
"Make it a compulsory stage in Research Council grants"
"If co-authorship was not offered, I probably would have not shared my data."

If you would like to participate in our survey or contribute your own views on the subject, please contact Helen Phillips at helen.phillips11@imperial.ac.uk