

PREDICTS Newsletter



Projecting Responses of Ecological Diversity In Changing Terrestrial Systems

GEO BON and PREDICTS

We're delighted to announce that the PREDICTS project has received a letter of endorsement from the Group on Earth Observations Biodiversity Observation Network (GEO BON). GEO BON's primary goal is to build an integrated global biodiversity observation system, increasing the ability of others to access, share and analyse biodiversity data. As PREDICTS aims to collate records of species' abundances and the composition and diversity of communities in order to model – at a global scale – the local response of biodiversity to human threats, and because we've said we'll make the data publicly available at the end of the project in 2015, PREDICTS now has GEO BON's full support.

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Biodiversity and land cover – a first look

PREDICTS started asking researchers for their biodiversity data a year ago – and we have been delighted by the response! Over 100 of you have now shared your data with us. It's still early days – coverage is still patchy – but we've run some preliminary models of how land cover change affects species-richness at sites in our first 63 data sets (over 2500 sites), to give you a first look.

We used your papers to classify each site's land cover/land use (primary vegetation, secondary vegetation, wood plantation, pasture, cropland or urban); later, we'll add data on other threats like habitat quality and intensity of land use.

We modelled site species-richness as a function of land cover, allowing richness to vary – and respond differently to land cover – among datasets.

As the Figure shows, land cover has a strong impact on diversity. The red line shows the richness expected in primary vegetation, and the points are the estimates (with 95% confidence intervals) of relative species numbers in other land cover classes. So secondary vegetation has about 73% as many species as primary vegetation on average, whereas cropland has only around 60%.

These effects aren't surprising of course, but PREDICTS is trying to quantify them as accurately as possible. Adding more data sets will narrow the confidence intervals still further, and will let us model each biome separately. We'll also gather data on the intensity of land use and many other threats, and produce separate models for different major taxonomic groups and for other aspects of diversity (e.g., abundance). Once again, we'd all like to thank you for sharing your data with us – we hope you like this first taste of our results.

Prof. Andy Purvis, Imperial College London

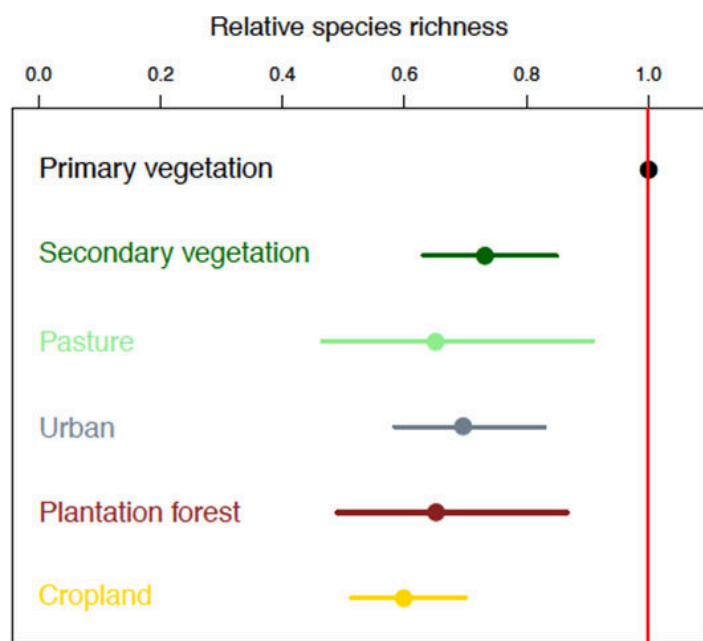


Figure: Relative species richness (and 95% confidence intervals) in each land cover class, from the first 63 data sets in the PREDICTS database.

Attention all PREDICTS data providers..

We would love to say who you are on our website (www.predicts.org.uk), and we'd also love to add a link to your own webpage. If you've a webpage you'd like us to link to, please e-mail the URL to us at enquiries@predicts.org.uk. If you would rather we did **not** publish your name then again please e-mail (enquiries@predicts.org.uk). Thanks!

STOP PRESS

After Easter, some more Masters students will be joining PREDICTS – so welcome to Daniel Ingram, Callum Martin, Morgan Garon and Sylvester Choimes. Also, we're delighted to hear that all of the students who did their Masters projects with us last year have now secured PhD places – congratulations to them all!

PREDICTS publishes a call for data in *Frontiers of Biogeography* : <http://escholarship.org/uc/item/3pm6c22d>

New PREDICTS MRes students

Welcome to Dominic Bennett, Susy Echeverría-Londoño and Victoria Kemp, who have all just started MRes projects at Imperial College London and will be working within the PREDICTS framework. Here's what the students have to say about their ongoing project work:

Dominic Bennett, MRes in Biodiversity Informatics & Genomics.

"For my project I will examine the impacts of human-induced land use changes on phylogenetic diversity by using and adapting Will Pearse's new phyloGenerator pipeline for phylogenetics (<http://willpearse.github.com/phyloGenerator/index.html>) to estimate phylogenies for studies collated by the PREDICTS project. I will then analyse how these phylogenies respond to differing land use types with the aim of investigating if phylogenetic diversity is lower in more impacted sites, and whether some parts of the tree of life are more prone to local extinction than others. I will be focusing on urban ecosystems as these areas are under-collected by PREDICTS so far and they are likely to be interesting phylogenetically given the high incidence of alien species (maybe phylogenetic diversity increases as a result of human impact). This study may help us to further our understanding of the key life history characteristics that make some species prone to extinction over others."

Susy Echeverría-Londoño, MRes in Biodiversity Informatics & Genomics.

"Colombia is one of the most biodiverse places on earth and is therefore one of the most vulnerable to degradation. Differences in elevation and latitude make Colombia a country of climatic and ecological contrasts, producing a wide range of socioeconomic variation in land transformation among its regions.

Given these characteristics, Colombia makes for an interesting case study for the PREDICTS project. I am in the process of contacting authors to ask for their contribution to the Colombian diversity database. These data will be used to model empirically how Colombian biodiversity responds to human threats and to project future trends such as those developed by the Millennium Ecosystem Assessment."



Andean wax palm (*Ceroxylon quindiuense*), native palm tree from Valle de Cocora, Colombia.

Victoria Kemp, MRes in Ecology, Evolution and Conservation.

"I am very grateful for responses and contributions from authors thus far regarding sources of data that measure abundance across a gradient of threat intensity (intactness) in Boreal forest. I am amalgamating the data into a database which will be used to model the response of Boreal biodiversity to a variety of human threats including habitat fragmentation and loss. This model will be used to project the condition of biodiversity under different future threat scenarios. In terms of application, projections will be possible for whichever spatial or taxonomic scale is of interest."