Spring 2019 Issue 14

PREDICTS Newsletter

Projecting Responses of Ecological Diversity In Changing Terrestrial Systems

PREDICTS in the IPBES Global Assessment!

IPBES (the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services) – the new biodiversity and ecosystem services analogue of the IPCC (Intergovernmental Panel on Climate Change) – has spent three years on its first Global Assessment, and May 6th saw the press launch of the summary for policymakers. Results from PREDICTS feature in key messages from all four sections! As well as providing part of the evidence for the decline in average abundance of native species in terrestrial ecosystems worldwide, our latest estimates of the Biodiversity Intactness Index worldwide and in tropical forest biomes were used to show that declines are less rapid in Indigenous lands than elsewhere. The global projections of future BII also helped show that the declines might be reversible, but only with a transformative change of the global economy; while our 2015 paper in *Nature* helped highlight the biodiversity downsides of extensive biofuel plantations.

Andy Purvis, Coordinating Lead Author, in the hot seat at the IPBES-7 Plenary, May 2019 , Paris, France.

Andy Purvis was at the Plenary in Paris, where the summary was negotiated with representatives of 132 governments. He writes, "I was pleasantly surprised by how constructive the governments were. I guess I'd expected they would try to water down the conclusions, but actually they made the summary stronger and much more useful. It was amazing seeing how the science from PREDICTS really has helped to shape the policy agenda and identify possible pathways out of the biodiversity crisis. Thanks so much to everyone who shared their data with PREDICTS – they really are having an ongoing impact!"

While he was in Paris, Andy recorded the key messages, as both a short version (12 minutes of the headlines) and a long version (nearly an hour – all the key messages). And you can see the moment when agreement was reached on the Global Assessment here.

If your field data went into version 1 of the PREDICTS database (as published by Hudson et al. 2017 Ecology and Evolution), you can tweet that they were used in the IPBES Global Assessment using this button.

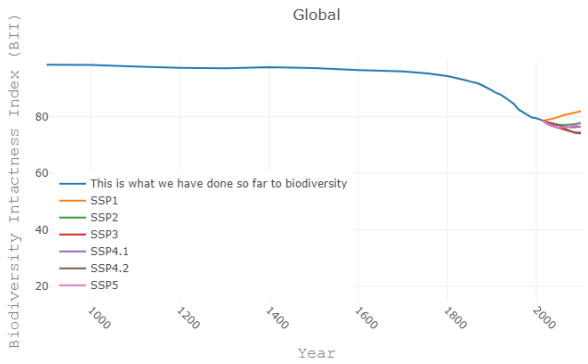
Tweet

PREDICTS2 database update

Our Informatics team have been working hard to develop the database, which has now been fully validated. This has involved a lot of hard work to match the species names in the database to the GBIF taxonomy as much as possible. Hopefully, this will mean that once the database is released, other researchers will be able to more easily match data to other resources, and we're also hoping to share the tool that was developed to match the taxonomy so it can be used by others developing large databases. We're now working on a manuscript describing the database, so we hope to send that to all contributors within the next few months along with an offer of authorship on the paper. We've also got some analyses in the pipeline – we'll keep you all updated as these move forward!

Biodiversity Intactness Index (BII)

Projections of changes in the Biodiversity Intactness Index (BII) into the future under different socio– economic scenarios are now easily accessible through the shiny app our fantastic Adriana De Palma has built, to accompany the preprint of "Worldwide impacts of past and projected future land-use change on local species richness and the Biodiversity Intactness Index", Hill et al., available at bioRxiv.



Plants Under Pressure II

Even though botanists have been exploring the Earth and studying the diversity of plant life for over 300 years, it is still difficult to say with confidence how many plant species are threatened across the world, where and why.

Plants Under Pressure II addresses this progressive loss of plant diversity by monitoring the IUCN Red List status of a random sample of plant species. Estimates quote over 380,000 plant species worldwide but every year almost 2,000 new plant species are described, so although it would not be feasible to assess the IUCN Red List status of every plant species, we are assessing a representative sample of species from major taxonomic groups around the world. This forms the plant component of the IUCN Sampled Red List Index. (SRLI) The SRLI was an official indicator of the Convention on Biological Diversity (CBD) 2010 Biodiversity Target of achieving "a significant reduction of the rate of loss of biodiversity" and under the CDB Strategic Plan 2011-2020 helps measure Aichi Target 12. As detailed knowledge for assessing the Red List status of plant species is generally lacking, plant assessments are often based on geographic ranges determined from georeferenced herbarium specimen data.

Easter Arc Mountains, Tanzania © Ana Claudia Araujo

By feeding results to the CBD and the IPBES Global Assessment we thus link the historical Natural History Museum (NHM) specimen collections directly to the international biodiversity policy arena. With funding from the Prince Albert II of Monaco Foundation we are working with PREDICTS to model these species' distributions and are incorporating phylogenies and functional trait information to determine whether species richness patterns match those of phytogenic diversity (PD) and functional diversity (FD). By targeting hotspots of threatened plant species and by working with in-country counterparts and local communities this help to conserve many more plant species and the animal life which depends upon them.

Dr Neil Brummit

Bryophyte status

A representative sample of vascular plants have had their conservation status assessed under the IUCN criteria. However, for non-vascular plants, in particular Bryophytes, the number of species assessed is still very small. But this is about to change! Unpublished results from Plants Under Pressure of bryophyte species assessed at the Natural History Museum for the IUCN Red List, shows that Africa, including Indian Ocean islands such as Madagascar, has the highest proportion of threatened or Near Threatened bryophytes, while species from the Neotropical region and Pacific islands come in joint second place. These results are an important contribution to the overall knowledge of threatened bryophytes, with an increase from 100 to over 1,000 species assessed for the IUCN Red List.

© Ana Claudia Araujo

Current Students

Welcome to Rachel, Yujun, Patrick, Morgan, Chloe, Ruben and Emily who have all started on MRes project at Imperial College London or UCL and will be working within the PREDICTS or PUP2 framework. Here is what the students have to say about their ongoing projects:

Patrick Walden
I am looking to model bee species sensitivity to land-use and climate change, implementing an additive approach using species distribution models and generalised linear mixed effects models.

Rachel Bates
My project involves working with both PREDICTS and Plants Under Pressure in order to assess the impacts of land-use change on plants both now and in the future.

Ruben Douglas
My current project is looking at techniques to improve assessments of insect biodiversity threats from survey data.

Yujun Yao
My current research project with PREDICTS team is working on Plants Under Pressure to assess how biodiversity in plant assemblages responds to land-use changes in India.

Chloe Roberts
I am investigating the extinction risk of South American angiosperms using online data repositories, with an interest as to how this can be applied predicting extinction risk in data deficient species.

Morgan Peas
My research interest for this project lays on predicting the extinction risk of plants in North America using trait data and phylogenies.

Emily Hay
I am working with the PREDICTS database to assess how environmental stability underpins heterogeneity in land-use effects on local biodiversity.

The Newsletter will take a bit of a longer break as Sara Contu is soon going on maternity leave. We will keep the news section of the website updated so you can see our progress there.

PREDICTS new look!
We are soon launching a new website where you can follow the projects' progress, publications, students opportunities, and more.

#Predictsproject

Contact email: enquiries@predicts.org.uk

Thanks to Domenico Tozzi for producing the PREDICTS logo.