Winter 2012 Issue 1

PREDICTS Newsletter

Projecting Responses of Ecological Diversity In Changing Terrestrial Systems

Welcome to our newsletter!

Welcome to the PREDICTS quarterly newsletter! We are sending you this newsletter if you have contributed data to our project, or have expressed an interest in our work. So we would like to take this opportunity to thank you for your help and to provide you with an update on progress so far.

The PREDICTS (Projecting Responses of Ecological Diversity In Changing Terrestrial Systems) project (formerly the REACT Project) aims to investigate local responses of biodiversity to global human pressures through the use of meta-analytical modelling techniques. The main challenges facing biodiversity are destruction, degradation and fragmentation of habitats, and reduction of individual survival and fecundity through exploitation, pollution and introduction of alien species. Species do not all respond equally to these changes: rather, the declines often show strong phylogenetic and ecological patterns. PREDICTS will therefore model how biodiversity responds as a function not only of intensities of environmental change but also of species' ecological attributes, in order to more fully understand declines and make projections that can inform policy. If you would like to learn more about our project then please have a look at our new website www.predicts.org.uk.

We already have more than ¼ million records in our database!

Thanks to generous contributions from researchers and a great deal of hard work by students and staff at Imperial College London and UNEP-WCMC, PREDICTS now has over 1/4 million biodiversity records from over 1,500 sites, covering more than 5,500 species.

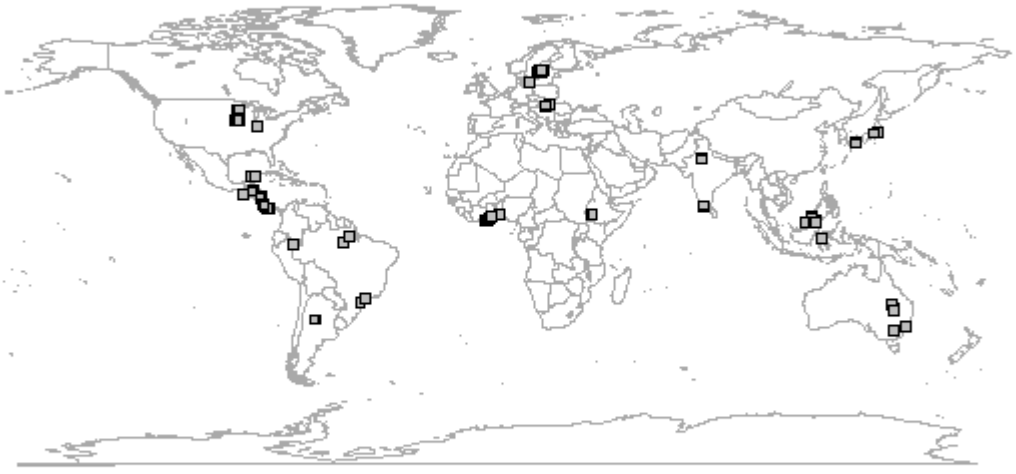
The map shows the sites for which we already have data that the providers have said we can share at the end of the project. The aim is to get as close as possible to a worldwide geographical distribution and a taxonomically comprehensive coverage.

We still need more data! In particular we are interested in studies which have collected data in high latitudes, tropical forests, urban habitats or deserts. We would also be especially grateful for any data which focuses on plant or microbial communities.

New publication

Congratulations to Tim Newbold, Jörn Scharlemann and Drew Purves of the PREDICTS project for their paper in Proc. R. Soc. Lond. B. The publication explores the affects of ecological traits on the responses of tropical birds to land-use intensity.

http://rspb.royalsocietypublishing.org/content/280/1750/20122131.abstract



Spatial distribution of the studies currently available for PREDICTS; the data comes from over 1,500 sites, covering more than 5,500 species.

Responses of biodiversity to land-use change: Is the biota of one continent more sensitive than others?

I investigated the response of biodiversity at a continent level as very little work has been done at a large scale. Using data provided by 28 authors, I modelled the changes in abundances due to land-use. Land use was classified in both discrete categories (primary forest, secondary forest and plantation forest) and a continuous variable, enhanced vegetation index (EVI), from remotely sensed MODIS data. The decline in abundance when primary forests were compared with plantation forests was greatest in South America. When secondary forests were compared with plantation forests, Asia and Africa had a decline, but South America had an increase. When using the continuous predictor of habitat quality, EVI, South America showed the greatest decline in abundance with declining quality. Thus this study suggests that it is South America's biota that is most sensitive to habitat disturbance and land-use change.

Helen Phillips

PhD student at Imperial College London

Nahuelbuta National Park, Chile

Modelling and projecting provision of ecosystem services in agricultural systems under change

Over the last year, I have compiled a database of bee diversity in agricultural landscapes. At present, 31 authors have contributed to this database, which now amounts to ~85,000 records, from 2050 sites and 758 species. Most of these data are from Europe and North America so further data collation is now being targeted towards other geographic regions. The database (which is kept separately from PREDICTS' data) is being used to model the responses of pollinator diversity to a variety of human threats including habitat degradation and loss at local and landscape scales. I will then look at how ecosystem service provision, namely agricultural yield, depends upon levels of biodiversity. These models will form the basis for projecting levels of service provision under different threat scenarios.

Adriana De Palma

PhD student at Imperial College London

News

1st October 2012

Congratulations to PREDICTS Masters students!
Congratulations to the Masters students at Imperial College who worked on PREDICTS this summer, all of whom have done superbly. For more information on the students' awards and research please visit our website at http://www.predicts.org.uk/outputs.html

8th October 2012

New PhD student starting
Welcome to Helen Phillips, who starts her PhD today funded by a Hans Rausing PhD Scholarship. She was awarded a Distinction for her MSc in Ecology, Evolution and Conservation at Imperial College this year. Prior to her MSc, she did a BSc in Zoology at the University of Liverpool. Part of her PhD research, on modelling biodiversity responses to human impacts, will be within the PREDICTS project.

8th November 2012

New MSc Res student starting
Welcome also to Yuan Pan who starts her MRes in Ecology, Evolution and Conservation at Imperial College today.

We will be presenting the following papers at the British Ecological Society's annual conference (17-20th December 2012):

- *Towards a global model of local biodiversity responses to human impacts.* Prof. Andy Purvis, Imperial College.
- *Taxonomic and functional patterns in the response of species to land-use change.* Dr. Tim Newbold, Microsoft Research and UNEP WCMC.
- *Modelling the responses of pollinators to anthropogenic threats in agricultural landscapes.* Adriana De Palma, Imperial College.
- *Responses of biodiversity to land-use change: Is the biota of Asia more sensitive than other continents?* Helen Phillips, Imperial College.