

GBIF Data in Service to the 2010 Target

CBD COP Decision VI/26: ... achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level.

CBD COP Decision VIII/15.11: ... **develop national and/or regional goals and targets and related indicators**

CBD COP Decision VIII/15.12: ... enable [countries] to develop knowledge, including taxonomic knowledge, to gain access to their biodiversity, and **to better implement activities to achieve and monitor progress towards the goals and targets ...**



GBIF and the 2010 target
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GBIF and the 2010 Target

For an in-depth explanation of the use of GBIF-mediated data with Ecological Niche Modelling as an indicator of biodiversity change, see

Peterson, A. T. and J. Soberón. 2007. Development of indicators of compliance with the 2010 Target of the Convention on Biological Diversity using primary biodiversity data provided by GBIF. 32 pp.

PDF available at

www.gbif.org/GBIF/zdepot/ReportonTarget2010Oct27.pdf

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Using GBIF data to develop indicators of biodiversity change

Monitoring progress toward the 2010 Target of reducing the rate of biodiversity loss at the global, regional and national levels requires scientifically based, measurable indices of progress.

Indices of “trends in the abundance and distribution of selected species” (UNEP/CBD/COP/8/31/VIII/15.12) that are based on good science can be derived from primary biodiversity data such as that served through the GBIF data portal.

Primary biodiversity data (occurrence data) place a particular species in a particular place at a particular point in time. All other sorts of biodiversity data—names, conservation status estimates, range maps, etc.—are secondary (derivative) in nature. The best scientific analyses rely on primary data.

The Living Planet and Red List indices have yielded interesting insights into the global status and broad-scale trends of biodiversity through time. However, they depend on aggregations of disparate data and numerous assumptions, and are based on secondary sources. They are also not easily used at regional or national levels.

Primary biodiversity data can be the basis for detailed summaries of species’ geographic and ecological distributions. These data can be integrated with information on land use and other environmental change to derive scientifically sound, species-specific assessments of range loss or gain.

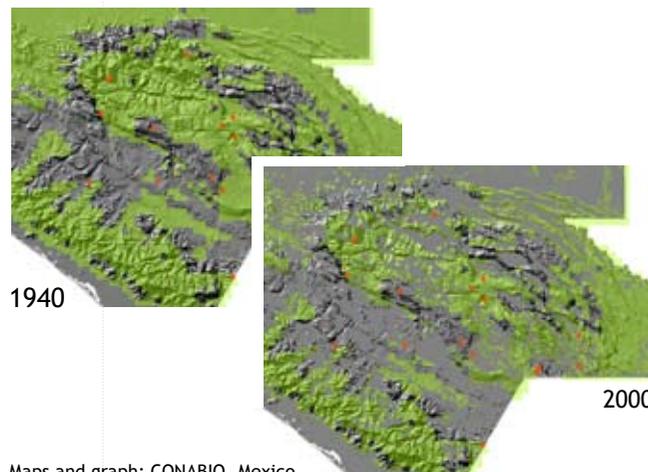
Indices based on primary data, developed for sets of species that countries define and produced by their own experts, are an indispensable complement to global, agency-defined indices, and are fully in accord with CBD guidance and decisions.

Predicting geographic distributions of species

The technique of ecological niche modeling (ENM) is a suite of quantitative tools that can be used to reconstruct the ecological requirements of species—the “ecological niche.” A growing body of scientific literature provides robust methods for ENM.

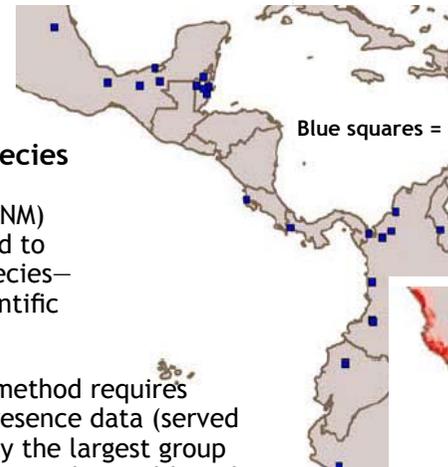
Calculating indices of biodiversity loss

Characterised niches can be plotted against maps of known changes (such as land-use change).

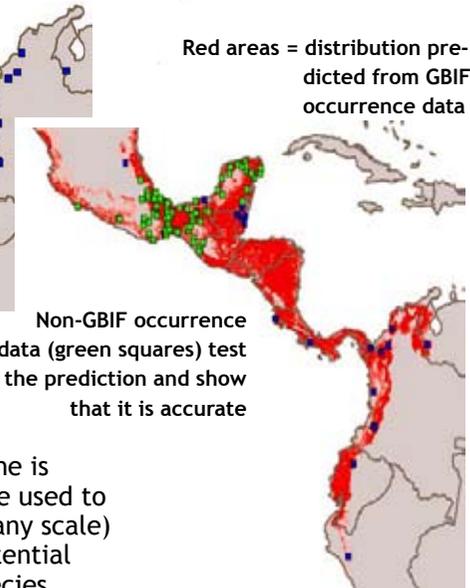


Maps and graph: CONABIO, Mexico

Tamandua mexicana



Blue squares = GBIF occurrence data



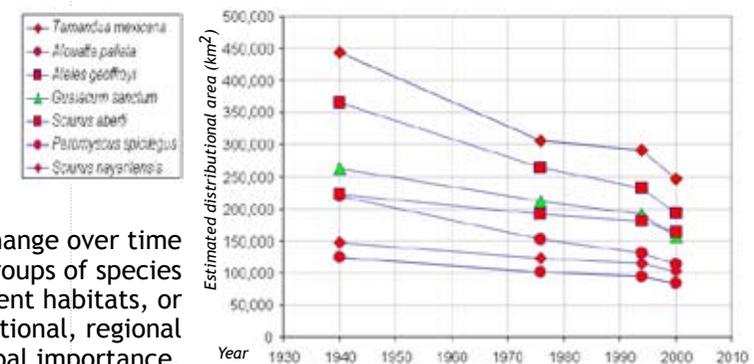
Red areas = distribution predicted from GBIF occurrence data

Non-GBIF occurrence data (green squares) test the prediction and show that it is accurate

The ENM method requires species presence data (served via GBIF by the largest group of providers in the world) and climatic and topographic GIS layers, which are available for most countries in the world.

Once an ecological niche is characterised, it can be used to query a landscape (at any scale) to identify areas of potential distribution for the species.

When primary biodiversity data are used, hypotheses of distributions of species under different scenarios can be tested using quantitative, repeatable and testable methods.



In this way, indices of change over time can be developed for groups of species from the same or different habitats, or of economic or other national, regional or global importance.

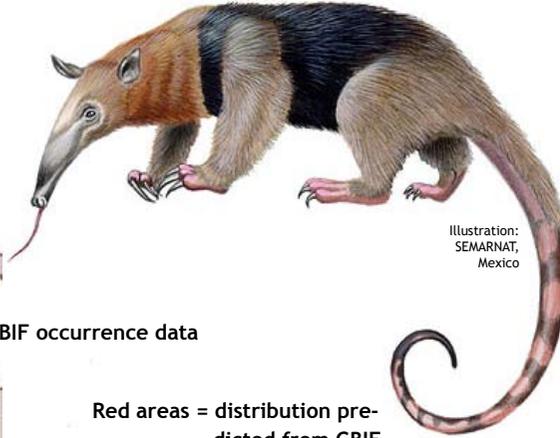


Illustration: SEMARNAT, Mexico