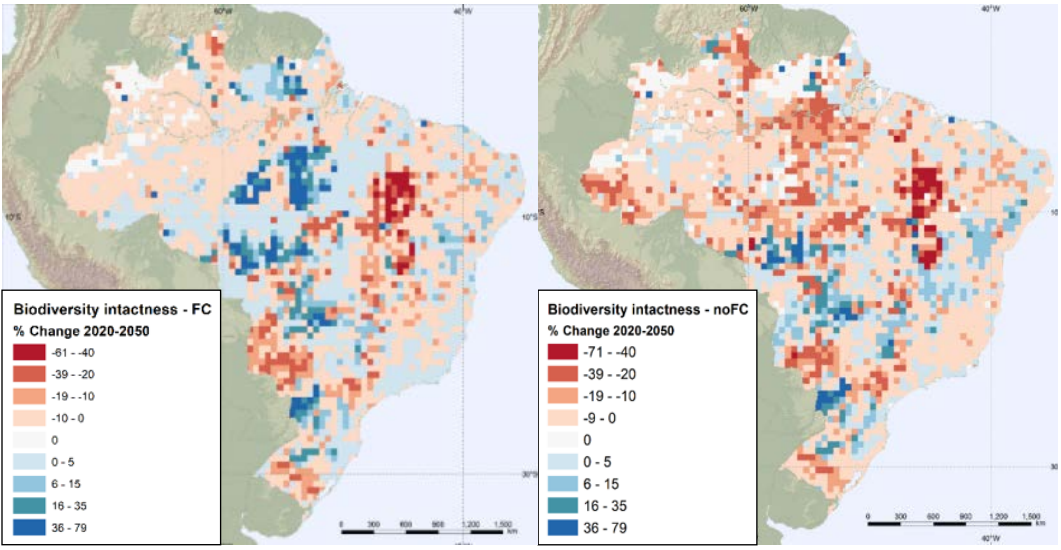
Biodiversity intactness modelling in Brazil

Figure 1) Forest Code Scenario

Figure 2) no Forest Code



Source: UNEP-WCMC - United Nations Environment Programme World Conservation Monitoring Centre

Figure: This map shows preliminary and illustrative results for 'biodiversity intactness index' (BII) change in the period 2020-2050 across Brazil. The red and blue shading reveal negative and positive impact on biodiversity respectively, associated with full implementation of the Brazilian Forest Code (FC) legislation 1) and the 'no FC' scenario 2) for comparison.

RESTORE+ Brief

- Ecosystem restoration is key to achieving global biodiversity goals, as recognised by Aichi target 15.
- But what is restored where, can have profoundly different impacts on biodiversity.
- Within the RESTORE+ project, the biodiversity impacts of different policy options related to Brazil's Forest Code legislation is being modelled and compared.
- Interim results on species habitat change and biodiversity intactness can also be scrutinised in relation to where climatic conditions will be most suitable for species in the future.

Background and objective

Deforestation and other ecosystem degradation drives biodiversity loss, and so restoration is targeted by many international processes aiming to tackle this. Hence, Aichi target 15 of the Global Biodiversity Strategy aims at the restoration of at least 15% of globally degraded ecosystems. This target also makes the link between restoration and climate change mitigation, underlining the importance of biodiversity for the health of ecosystems, their carbon sequestration and storage.

However, different restoration policy options vary significantly in their biodiversity outcomes, depending on what is restored and where. The RESTORE+ project is modelling and comparing the biodiversity impacts of different policy options for implementing Brazil's Native Vegetation Protection Act – the Forest Code (FC).

Approach

This investigation takes as its input the land cover change projections 2020-2050 developed by RESTORE+, using the GLOBIOM-Brazil model (see RESTORE+ Brief on *Brazil's NDC and forest restoration targets: future land-use and agriculture implications*). National maps, at 50 km resolution, show the whereabouts and areas of different ecosystem types such as forest, plantations, cropland and pasture. There are two ways in which this information is then used to deduce the biodiversity outcomes of restoration scenarios.

The first focusses on the IUCN Red List mammal, amphibian and bird species. Combining information on their ranges and habitat preferences, the 'extent of suitable habitat' is mapped for each species. Assumptions are made about how these habitat preferences match the GLOBIOM land cover types, so that the 2020-2050 projections can be interpreted in terms of gain and loss of habitat for each species. By aggregating all these results, and weighting them by how rare each species is, a combined index of species habitat is produced.

In the second approach, RESTORE+ draws upon the Predicts database of thousands of studies worldwide that gives the statistical relationship between the diversity and abundance of species on the one hand (across many different taxonomic groups) and land use intensity on the other. This allows for an 'biodiversity intactness index' (BII) to be calculated for any configuration of different land uses. The BII is derived from the statistical relationship between the diversity and abundance of species and land use intensity. Hence, maps of change in BII 2020-2050 can be produced across Brazil.

Interim results and next steps

The first maps of species habitat change and BII change have been produced for three different policy scenarios. First results revealing the different biodiversity outcomes for the 'FC' and 'noFC' scenario are shown in the figures above. These are being further refined and interrogated to derive some first conclusions on biodiversity impact. In a collaboration with the Tyndall Centre for Climate Change, RESTORE+ is also comparing the results with models of future climate change refugia for species, to understand how climate change will affect biodiversity outcomes of restoration.

More information and contacts:

Will Simonson – UNEP-WCMC
(will.simonson@unep-wcmc.org)
www.restoreplus.org

Supported by:

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

based on a decision of the German Bundestag