The Department of **Computational Landscape Ecology** at the **Helmholtz Centre for Environmental Research – UFZ** offers

Opportunities for B.Sc./M.Sc./diploma theses and internships

on the following topics

1) Interregional flows of ecosystem services through service-providing species

Ecosystem services can flow across large distances between providing and benefitting regions. Such flows happen through trade, species migration, biophysical flows and information flows. The quantification of such flows is important to account for land consumption embedded in ecosystem service provisioning, threats to distant ecosystems and opportunity costs of conservation. This project aims to i) establish functional links between service-providing species and different provisioning, regulating and cultural ecosystem services based on short systematic literature reviews and ii) spatially quantify global ecosystem service flows through GIS-based analyses of species range maps (IUCN and BirdLife International). In addition, trade databases and data on migratory species will be used. Results will ultimately contribute to an international peer-reviewed publication on which the applicant will be a co-author. Candidates should have basic, but solid knowledge of GIS and be familiar with the ecosystem service concept.

2) Spatial assessments of cultural ecosystem services

Social media data are increasingly used to spatially quantify the use of ecosystem services. The analysis of geo-referenced photos uploaded on social media platforms offers opportunities to better understand spatial patterns of cultural ecosystem services (e.g. recreational hiking, aesthetic appreciation). This project will use geo-referenced photos for selected areas of interest at different scales (e.g. protected areas or countries). Photos will be interpreted and used to train suitability models (i.e. species distribution modeling algorithms such as MaxEnt). Candidates should have experience with GIS and statistics. Experience with Application programming interfaces (APIs) to extract the data would be an advantage, but is not necessary. Results will ultimately contribute to an international peer-reviewed publication on which the applicant will be a co-author. This project needs to be planned ahead about three months before the start of the candidate to ensure sufficient data availability.

Topics are suitable for students of environmental sciences, geography and related fields. Start is possible at any time according to prior agreement.

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