Spatial analysis to identify important areas to achieve biodiversity benefits through REDD+: *biodiversity*

UN Environment World Conservation Monitoring Centre (UNEP-WCMC)

Monrovia, Liberia
February 2018

UN-REDD PROGRAMME

Food and Agriculture Organization of the United Nations

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AGENDA

1. IUCN Red List and mapping species ranges

2. Exercise: species mapping

- Downloading data
- Formatting data
- Selecting ranges of interest
- Splitting ranges into separate vector files
- Converting ranges into rasters
- Summing species rasters

The IUCN Red List – what is it?

The IUCN Red List of Threatened Species™ 2017-1

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RED LIST Guiding Conservation for 50 Years

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Home » Paradisaea raggiana (Raggiana Bird-of-paradise, Raggiana Bird-of-Paradise)

VIEW MAP

TAKE ACTION NOW

Paradisaea raggiana

http://dx.doi.org/10.2305/IUCN.UK.2016-3.RLTS.T22706253A94058374.en

Scope: Global
Language: English
Download assessment

NOT EVALUATED	DATA DEFICIENT	LEAST CONCERN	NEAR THREATENED	VULNERABLE	ENDANGERED	CRITICALLY ENDANGERED	EXTINCT IN THE WILD	EXTINCT
NE	DD	LC	NT	VU	EN	CR	EW	EX

Summary | Classification Schemes | Images & External Links | Bibliography | Full Account

Taxonomy
Assessment Information
Geographic Range
Population
Habitat and Ecology

Translate page into:
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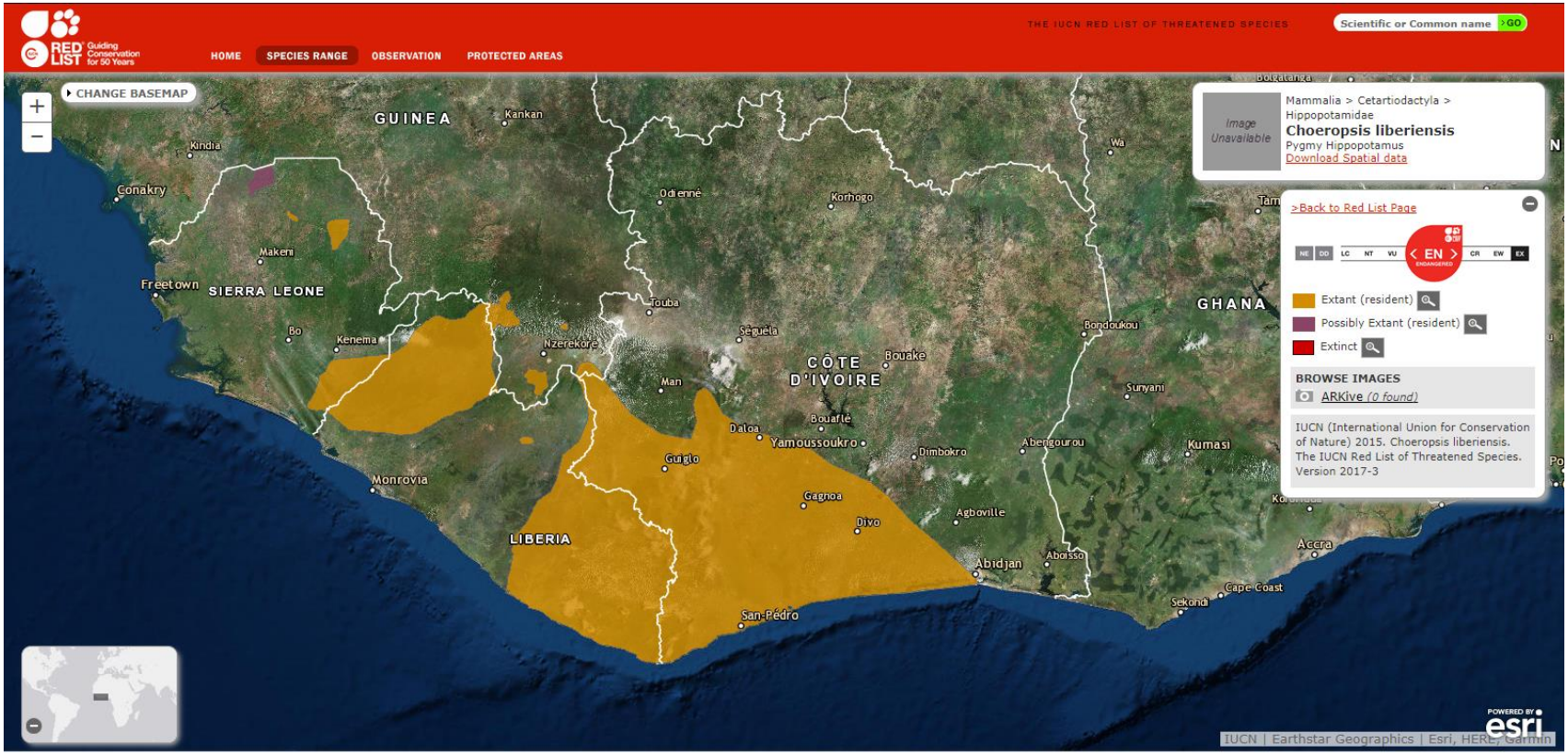
Taxonomy [top]

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Aves	Passeriformes	Paradisaeidae

Scientific Name:	*Paradisaea raggiana*
Species Authority:	Sclater, 1873
Common Name(s): English – Raggiana Bird-of-paradise, Raggiana Bird-of-Paradise	
Taxonomic Source(s):	del Hoyo, J., Collar, N.J., Christie, D.A., Elliott, A., Fishpool, L.D.C., Boesman, P. and Kirwan, G.M. 2016. *HBW and BirdLife International Illustrated Checklist of the Birds of the World. Volume 2: Passerines*. Lynx Edicions and BirdLife International, Barcelona, Spain

IUCN Spatial Data



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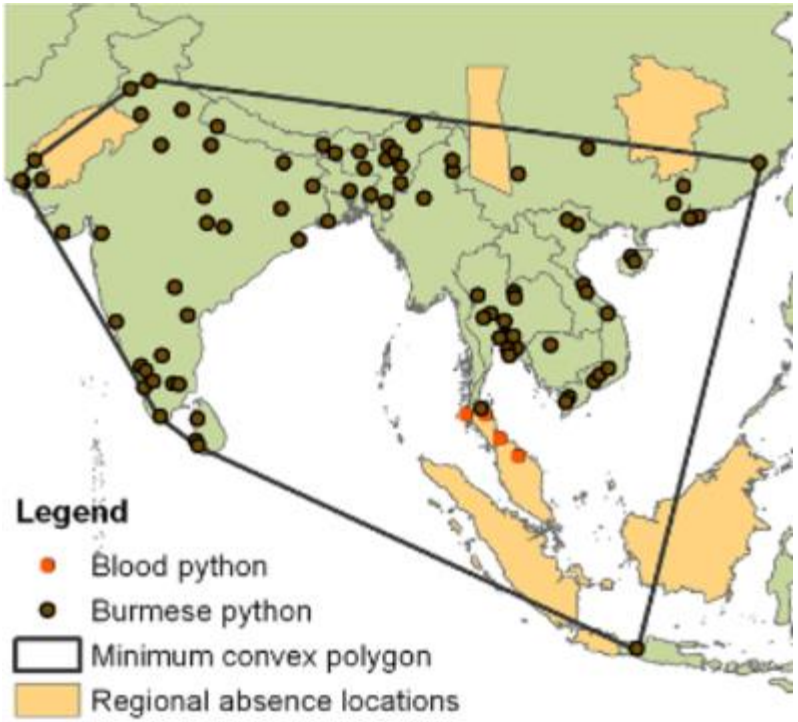
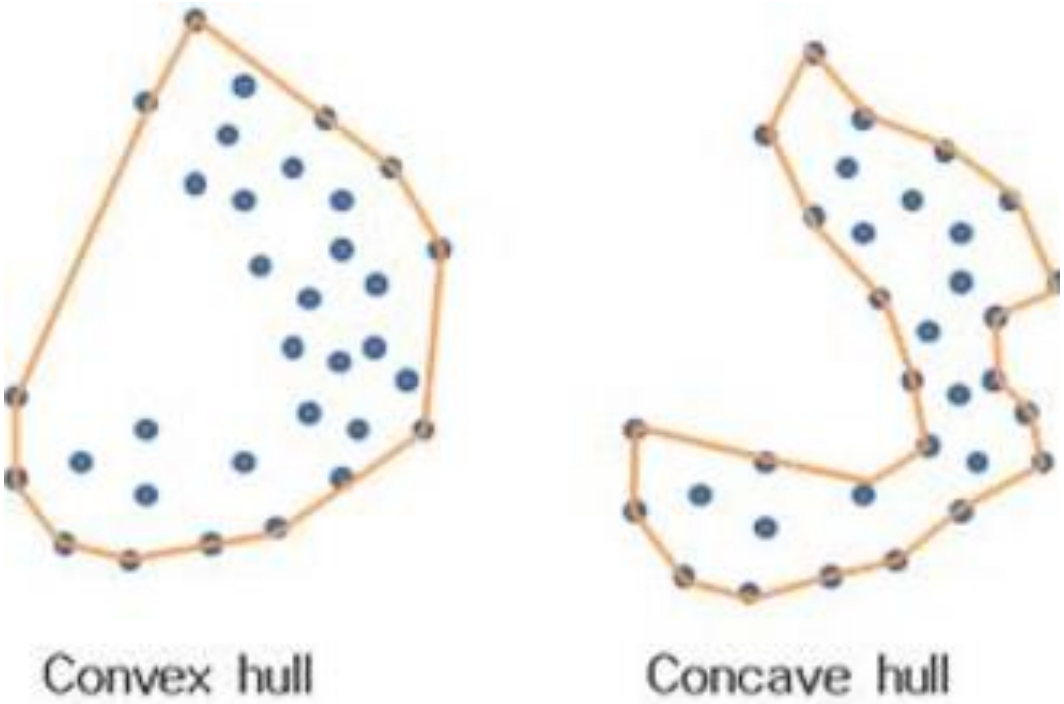
Mapping species data

Minimum convex polygon (MCP)



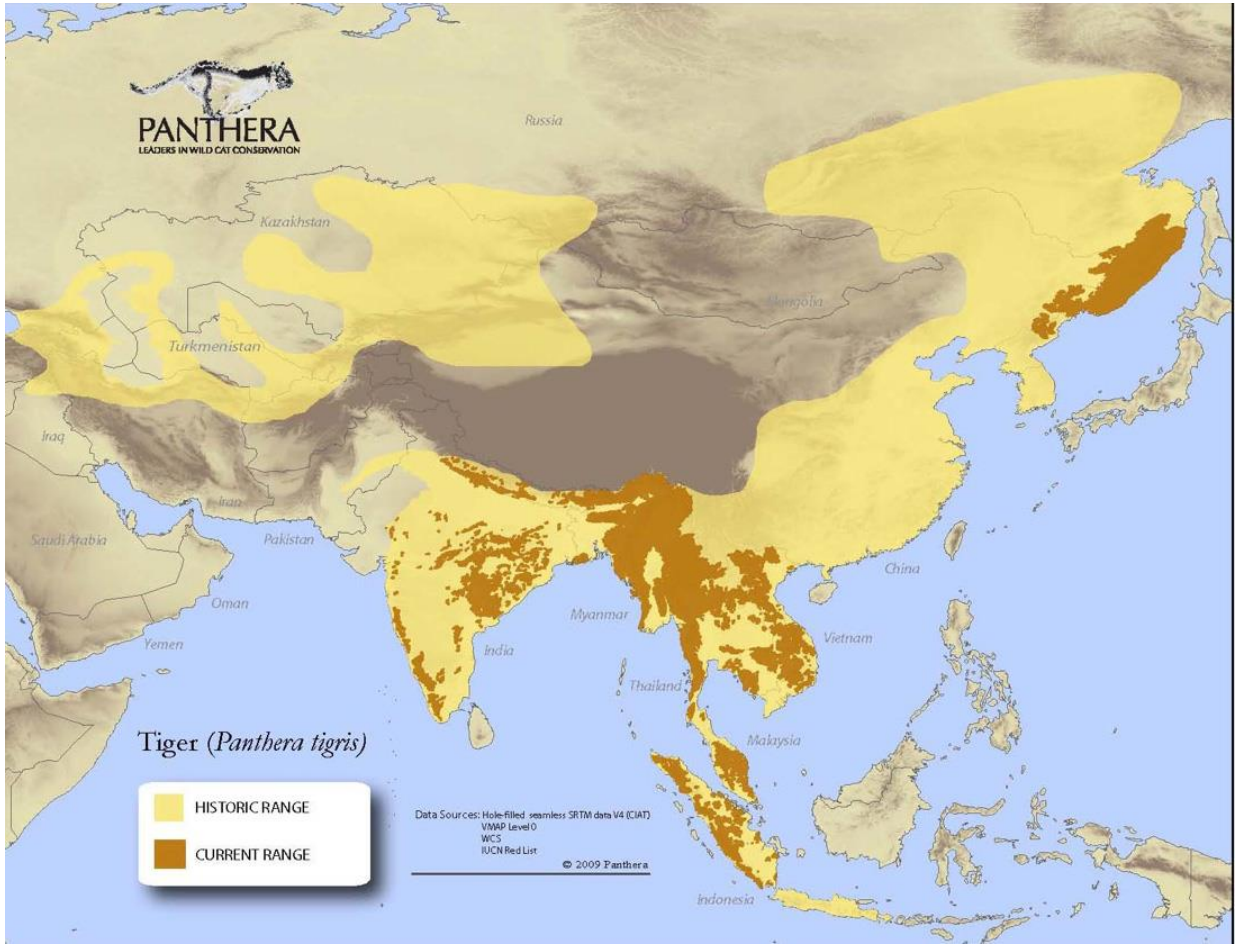
Mapping species data

Variations on MCP



Approaches to mapping species data

Range maps



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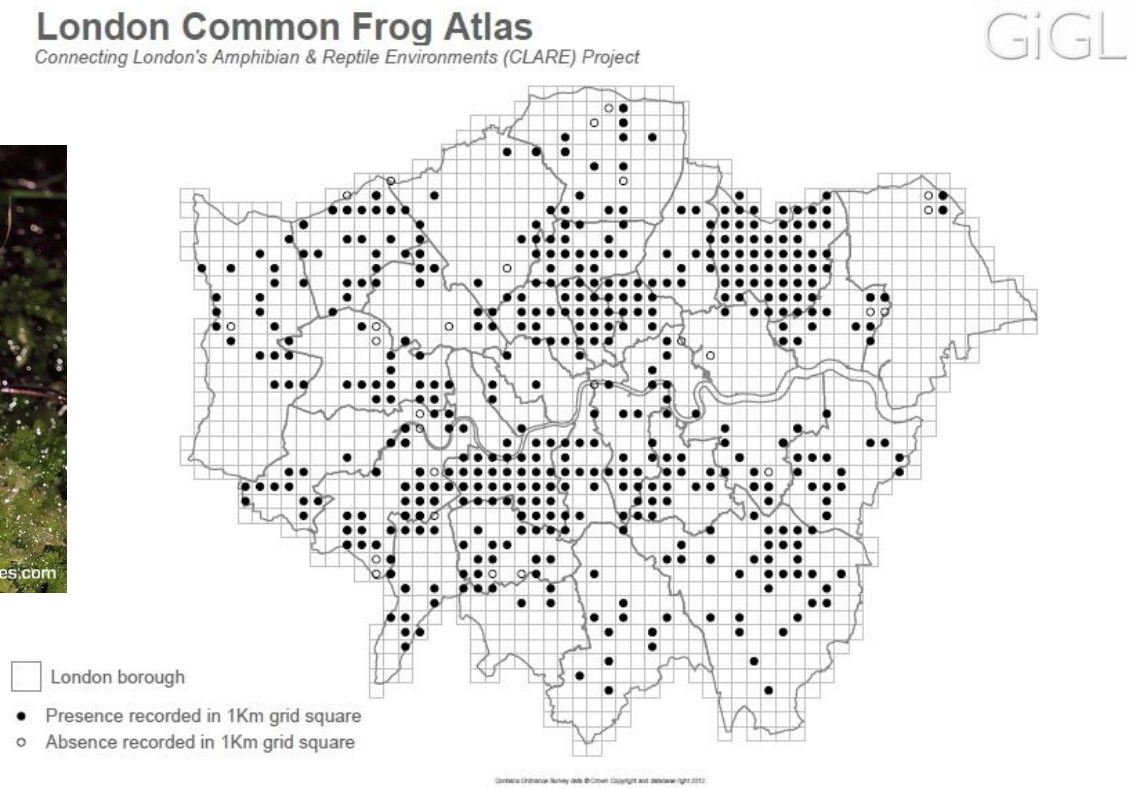
Approaches to mapping species data

Species atlas



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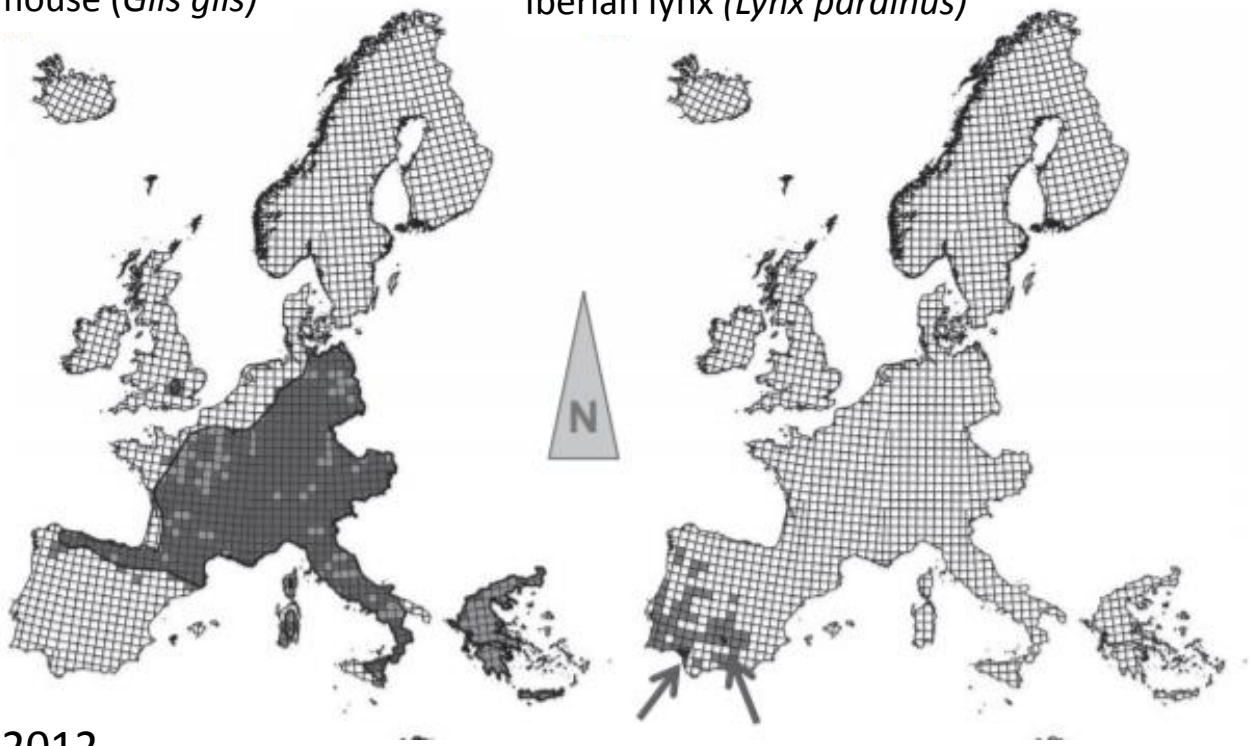
Atlas vs range maps

Example differences for specific species

Edible dormouse (*Glis glis)*

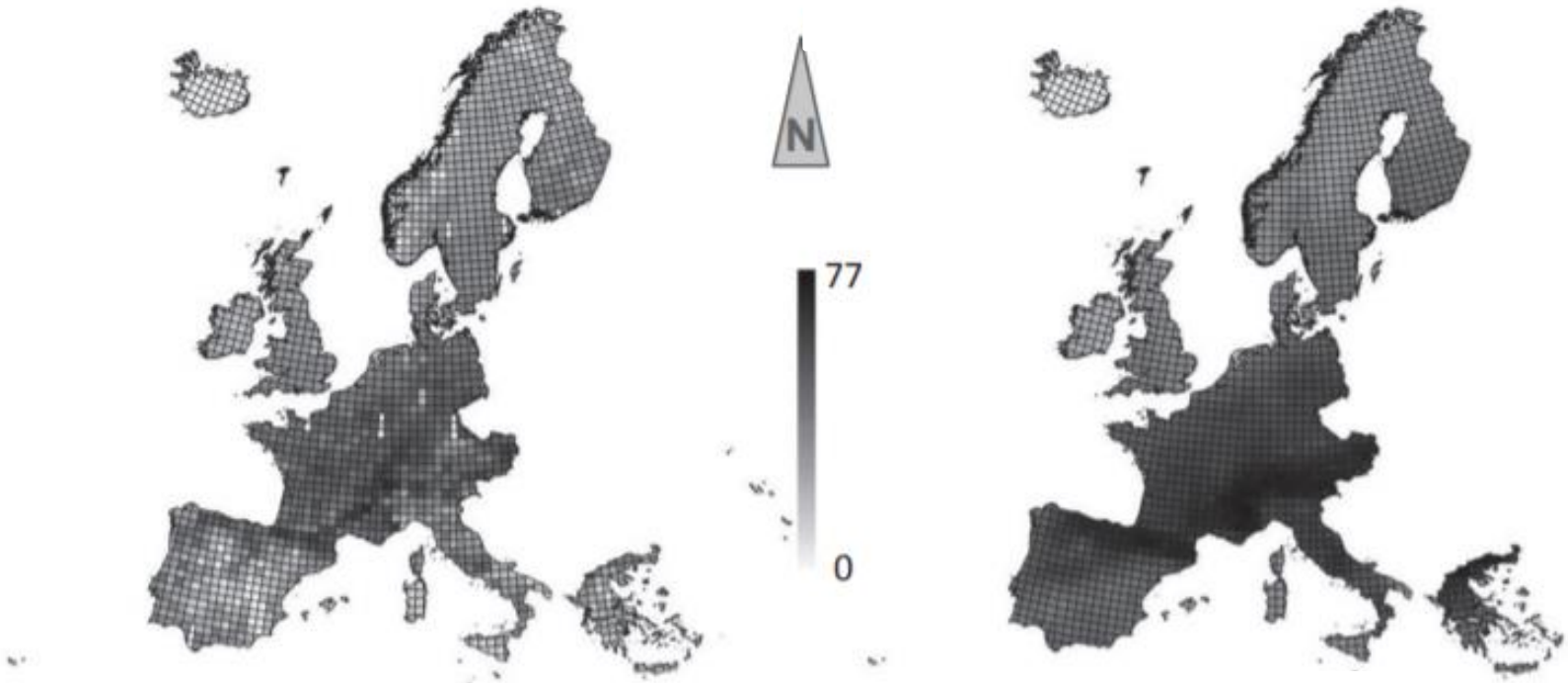
Iberian lynx *(Lynx pardinus)*



Barbosa *et al.*, 2012

Species richness comparison

Typically higher richness using range maps



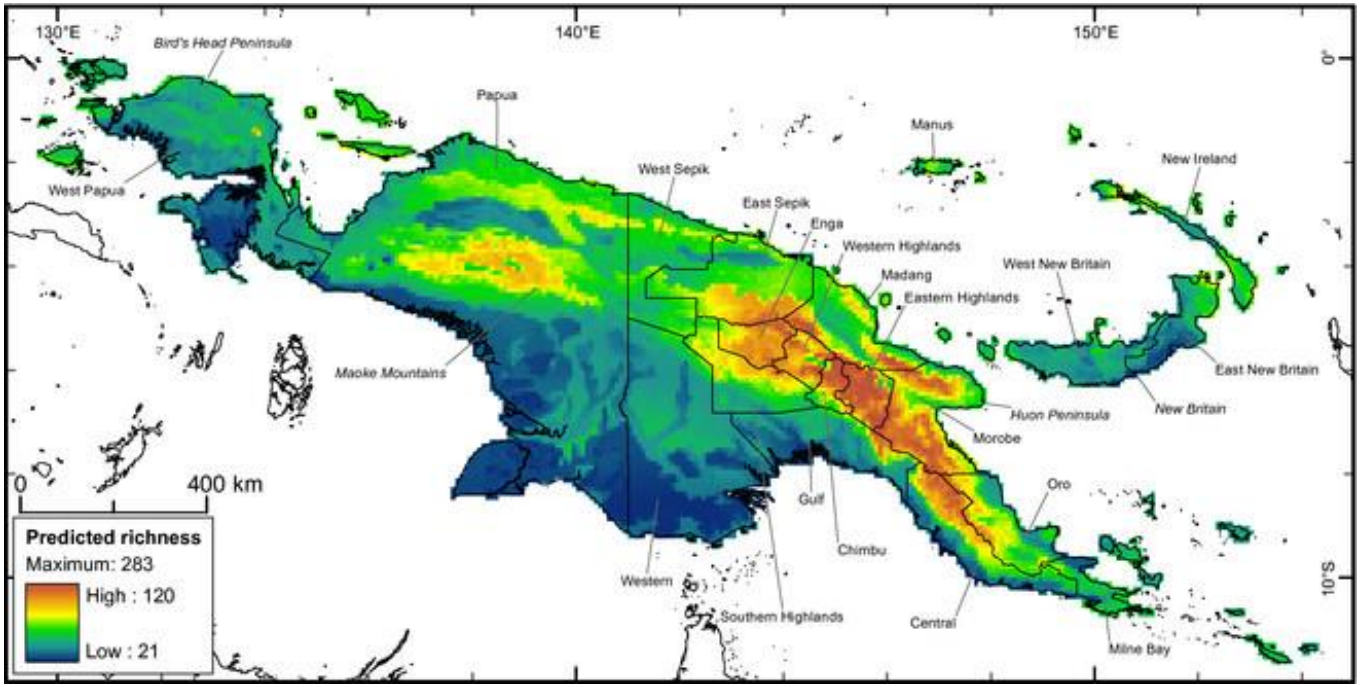
Atlas richness

Range map richness

Barbosa *et al.*, 2012

Other approaches

Species distribution modelling



Vollering *et al.*, 2015.

Other approaches

Species distribution modelling

Example variables included in modelling

Predictor	Description
BIO03	Isothermality (ratio of mean diurnal temperature range to annual temperature range)
BIO07	Annual temperature range
BIO09	Mean temperature of driest quarter
BIO16	Precipitation of wettest quarter
BIO17	Precipitation of driest quarter
BIO18	Precipitation of warmest quarter
PET	Potential evapotranspiration (ratio of mean annual temperature to mean annual precipitation)
AWC	Available water storage capacity
BULK DENSITY	Topsoil bulk density (ratio of soil mass to soil volume)
CEC	Topsoil cation exchange capacity
DRAINAGE	Soil drainage capacity assuming flat terrain
ESP	Topsoil exchangeable sodium percentage
GRAVEL	Topsoil gravel content by volume
PH	Topsoil pH
SILT	Topsoil silt fraction by weight
TEXTURE	Topsoil textural class

Vollering *et al.*, 2015.

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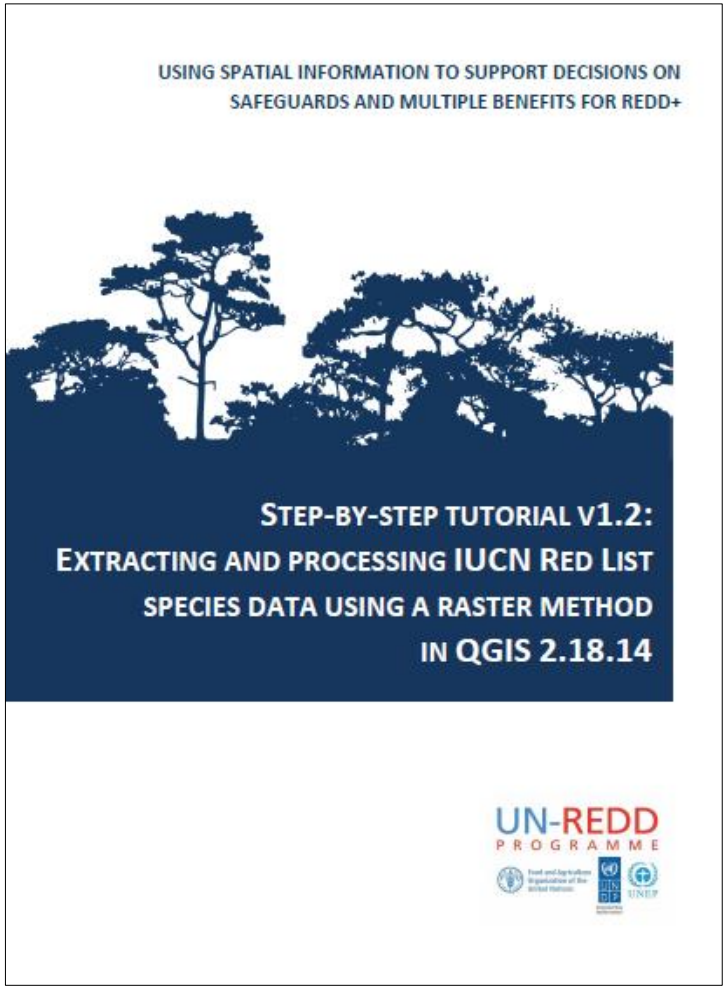
Exercise: Species richness map from IUCN Red List data

Main steps:

- Downloading data
- Formatting data
- Selecting ranges of interest
- Splitting ranges into separate vector files
- Converting ranges into rasters
- Summing species rasters



Exercise: Species richness map from IUCN Red List data

Downloading data

Formatting data

Selecting ranges of interest

Splitting into separate vector files

Converting ranges into raster

Summing species rasters

Conclusions

- REDD+ can be powerful tool for climate change mitigation and conservation
- There are various approaches to mapping species data - the choice of which depends how the results will be used

References

Barbosa *et al.*, 2012. Atlas versus range maps: robustness of chorological relationships to distribution data types in European mammals. *Journal of Biogeography*

Vollering *et al.*, 2015. Phytogeography of New Guinean orchids: patterns of species richness and turnover. *Journal of Biogeography*