Enhancing the resilience of PAs and natural WH sites to the impacts of climate change (and other projects)

Elise Belle, Protected Areas Programme, UNEP-WCMC

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PARCC WEST AFRICA

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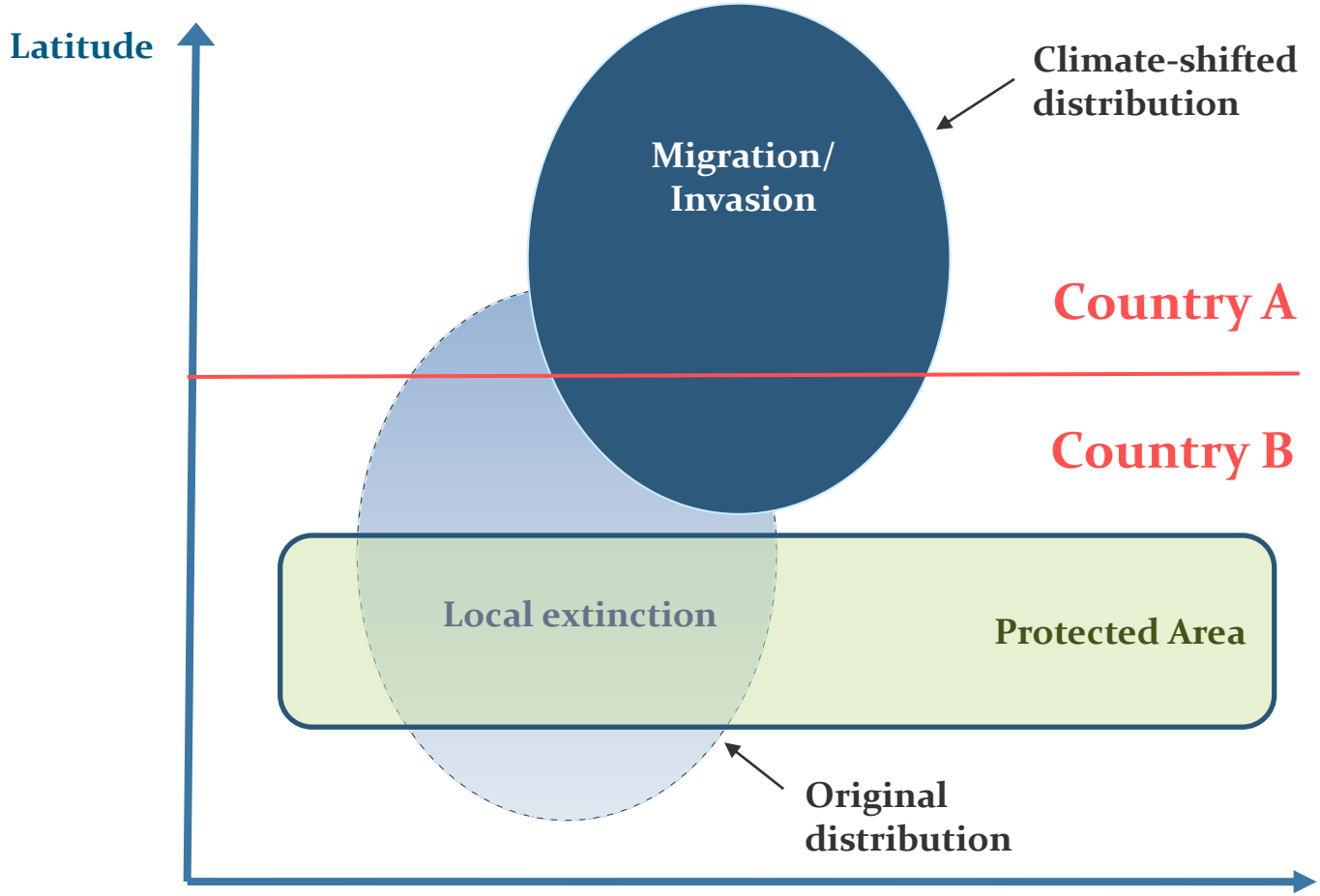
- **UNEP's specialist Biodiversity Assessment Centre**

- Strategic objectives
  - Provide the data and information that supports decision-making
  - Strengthen capacity for biodiversity decision-making

Protected Area Resilient to Climate Change (PARCC) project



Adapted from Cheung, 2009

PARCC Project objectives

Help countries design **PROTECTED AREA SYSTEMS RESILIENT TO CLIMATE CHANGE**, by:

- Developing innovative **tools** for assessing the vulnerability of PAs to climate change
- Designing adaptation **strategies** to strengthen the resilience of PAs
- **Building capacity** in the region for applying the tools and implement the strategies

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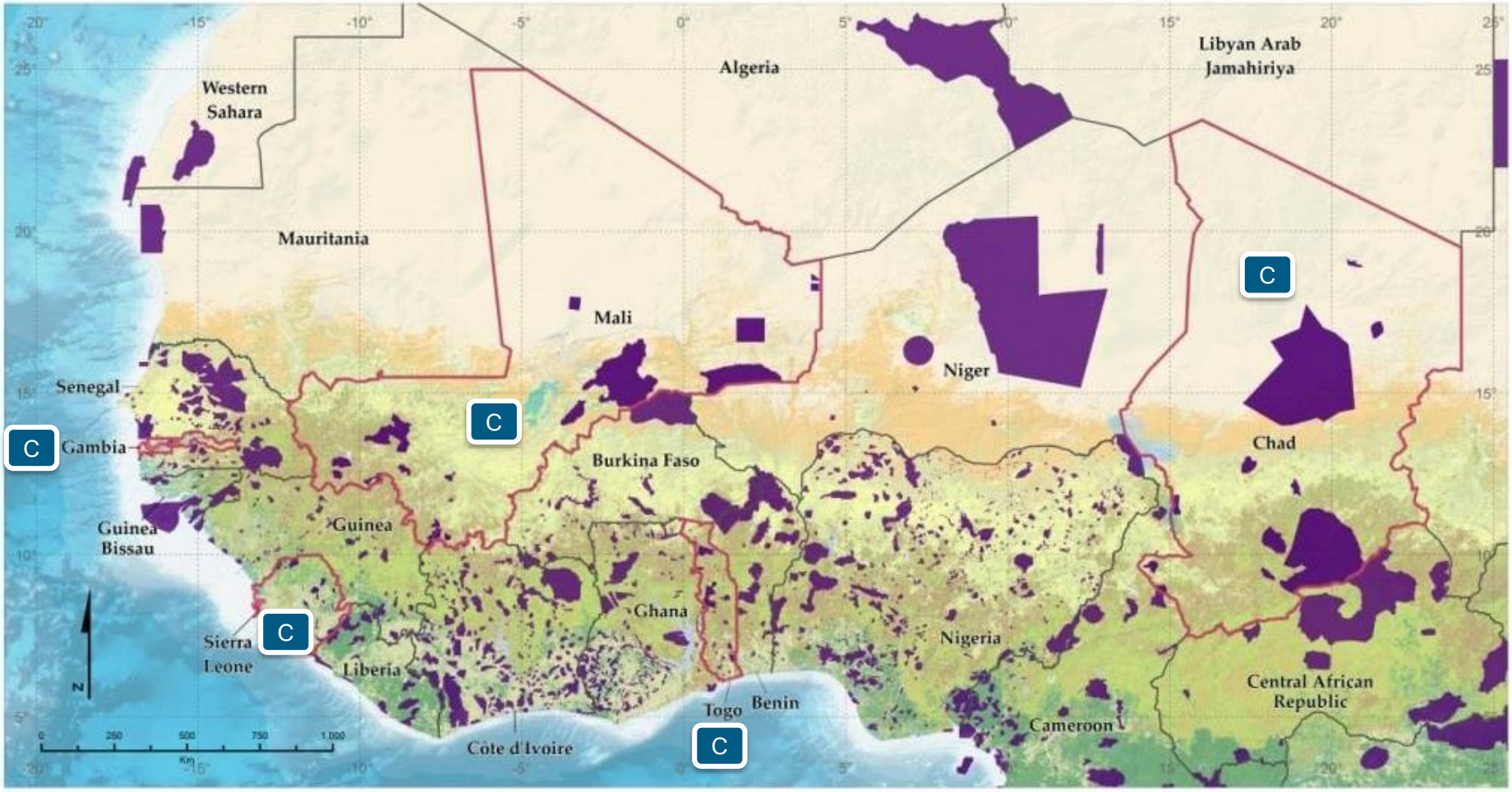
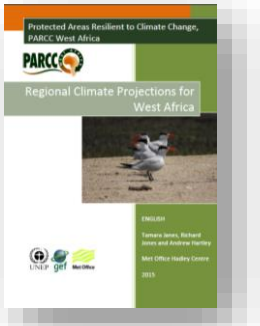
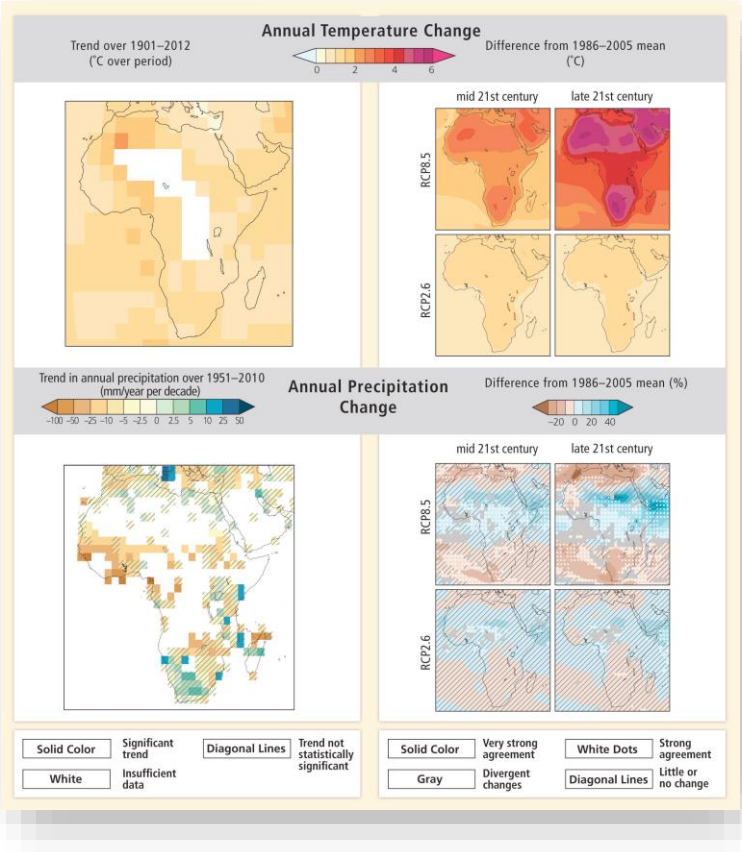
PARCC Project countries





Regional climate projections
Met Office Hadley Centre



- 5 high resolution regional climate models
- A high level of confidence that **temperatures will increase** in the West Africa
- **Little consensus** on the direction and magnitude of potential changes **in rainfall**
- Projection of **changes in ecosystem services** under different scenarios of land use change (carbon storage, water provision and vegetation productivity)

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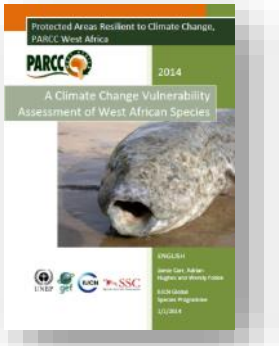
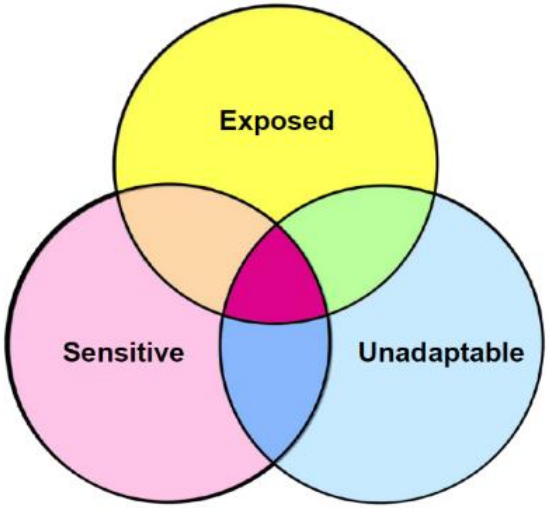


Species vulnerability according to their biological traits

IUCN Global Species Programme



Vulnerability assessments of amphibians, birds, mammals, freshwater fish, and reptiles based on traits (TVAs):

- **Extinction risk** for all reptiles (317 species)
- **Vulnerability to climate change** of all reptiles, mammals (417 species) and freshwater fish (550 species)

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Species vulnerability assessments for World Heritage sites

Yichuan Shi (IUCN and UNEP-WCMC)

Online prototype: Vulnerability to climate change of all globally assessed species of **amphibians, birds, and corals**, for all WH sites:

- Number of species with High/Low/Unknown:
  - *Exposure*
  - *Sensitivity* → **Species vulnerability to climate change**
  - *Adaptability*
- Trait (sensitivity and adaptability) and exposure detail

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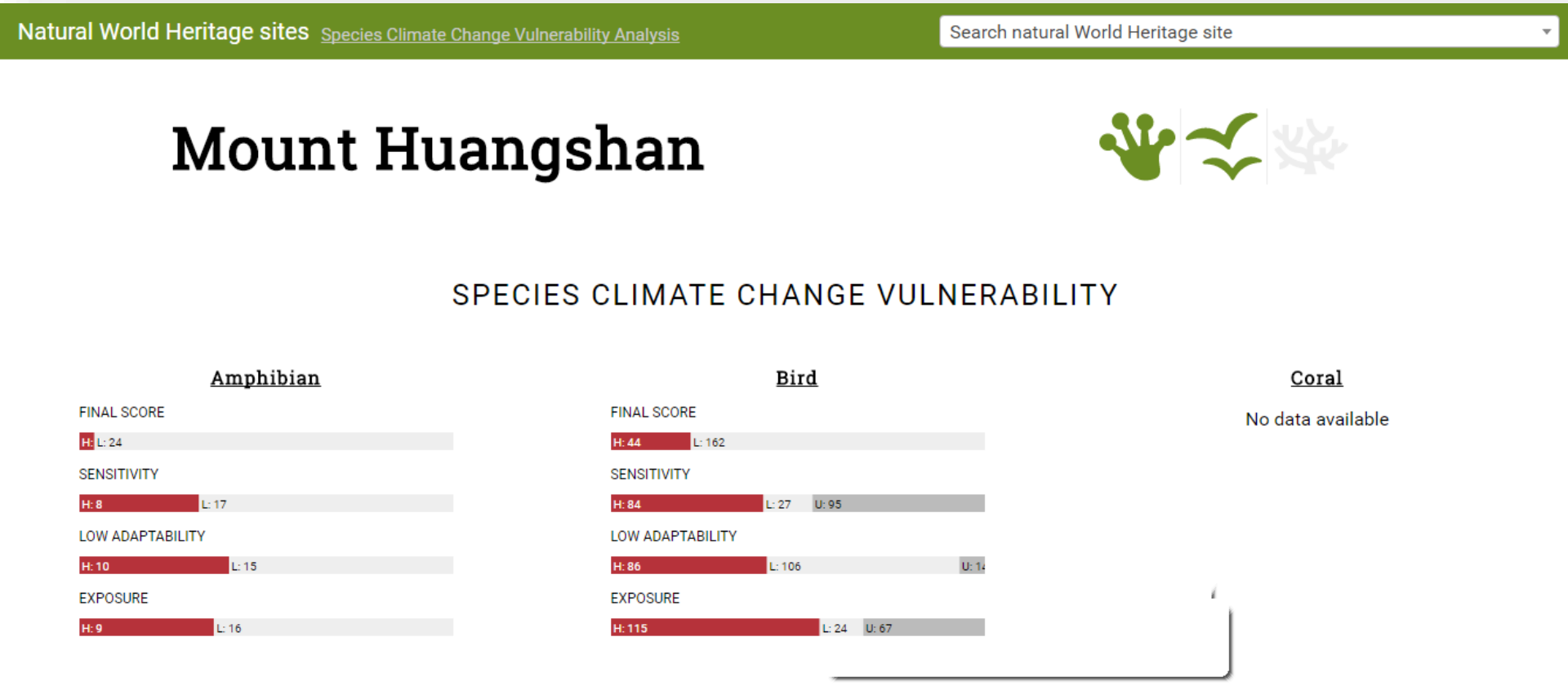
Prototype: Species vulnerability assessments for WH sites (1)



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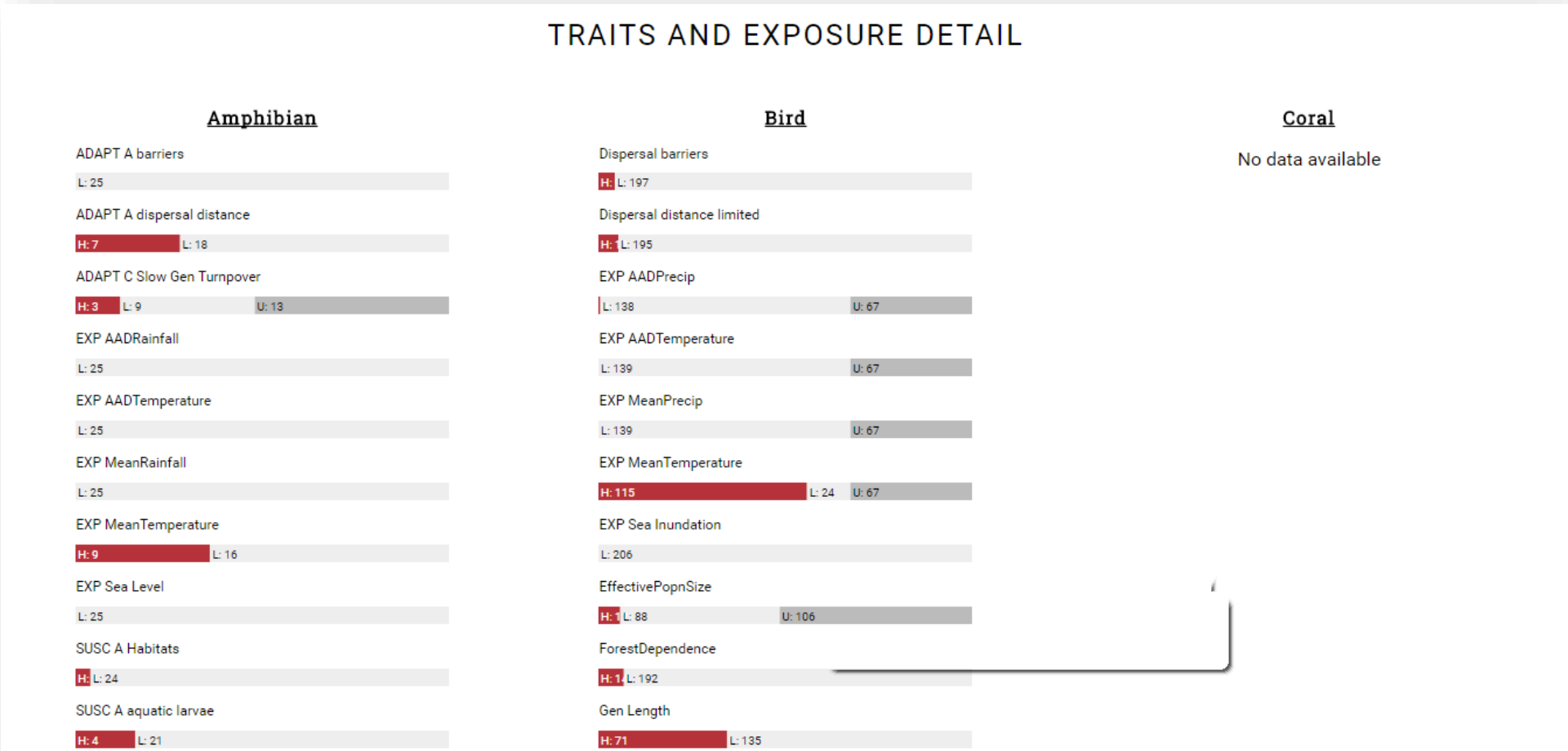
Prototype: Species vulnerability assessments for WH sites (2)



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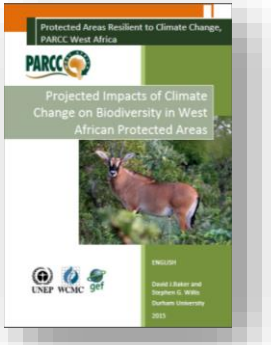

Future species distribution in the face of climate change

Durham University

- Assessment of the potential impacts of climate change on PAs using Species Distribution Models (SDMs)
- PA network projected to decline in mean climate suitability for most species by 2060-2099
- Proportion of species projected as 'highly likely' to experience declining climate suitability:
  - 44% of amphibians
  - 52% of birds
  - 47% of mammals

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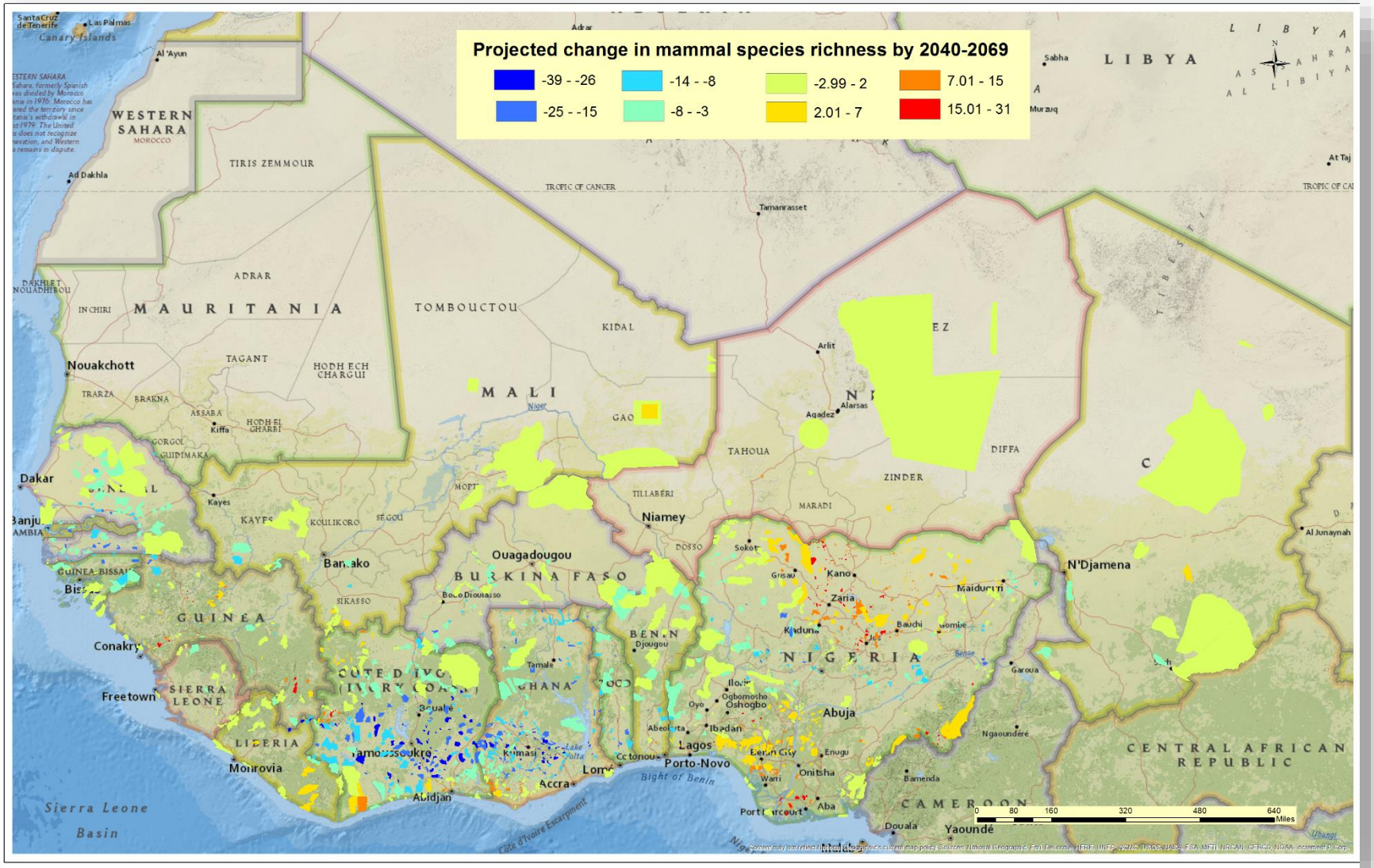
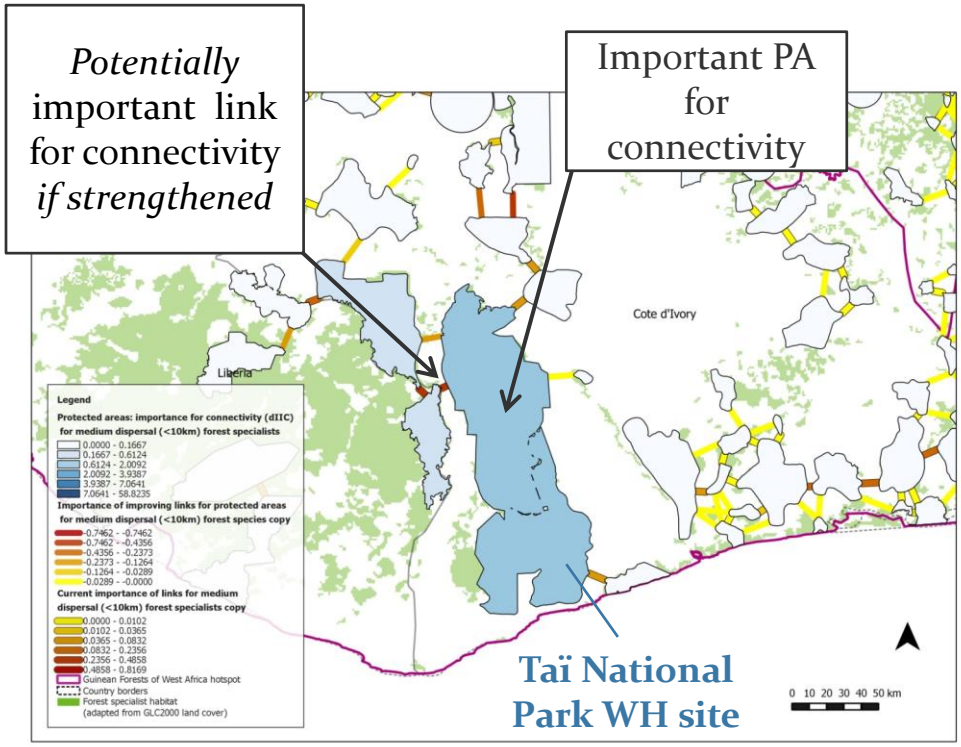
Projected mammal species turnover by 2040-2069



Assessment of the connectivity of the regional PA network

UNEP-WCMC Science Programme



- A model of PA connectivity for a combination of:
  - **Species habitat preferences:** forest specialists, grassland specialists and generalists
  - **Species dispersal abilities:** short (≤1km), medium (≤10km), and long (≤100km)
- Most important **PAs** for connectivity and **transboundary links**

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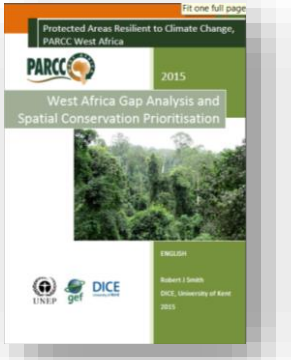

Identification of priority areas for biodiversity conservation *DICE University of Kent*

- **Systematic conservation planning**
- Gap analysis and spatial conservation prioritisation for West Africa:
  - Network of PAs & IBAs **meets conservation targets for >50% of ecoregions**, but does not conserve important ecoregions
  - Conservation targets met for majority of species, but **some features completely unprotected**, esp. threatened species
  - To meet all the conservation targets, **>20% of the West Africa region needs to be protected**

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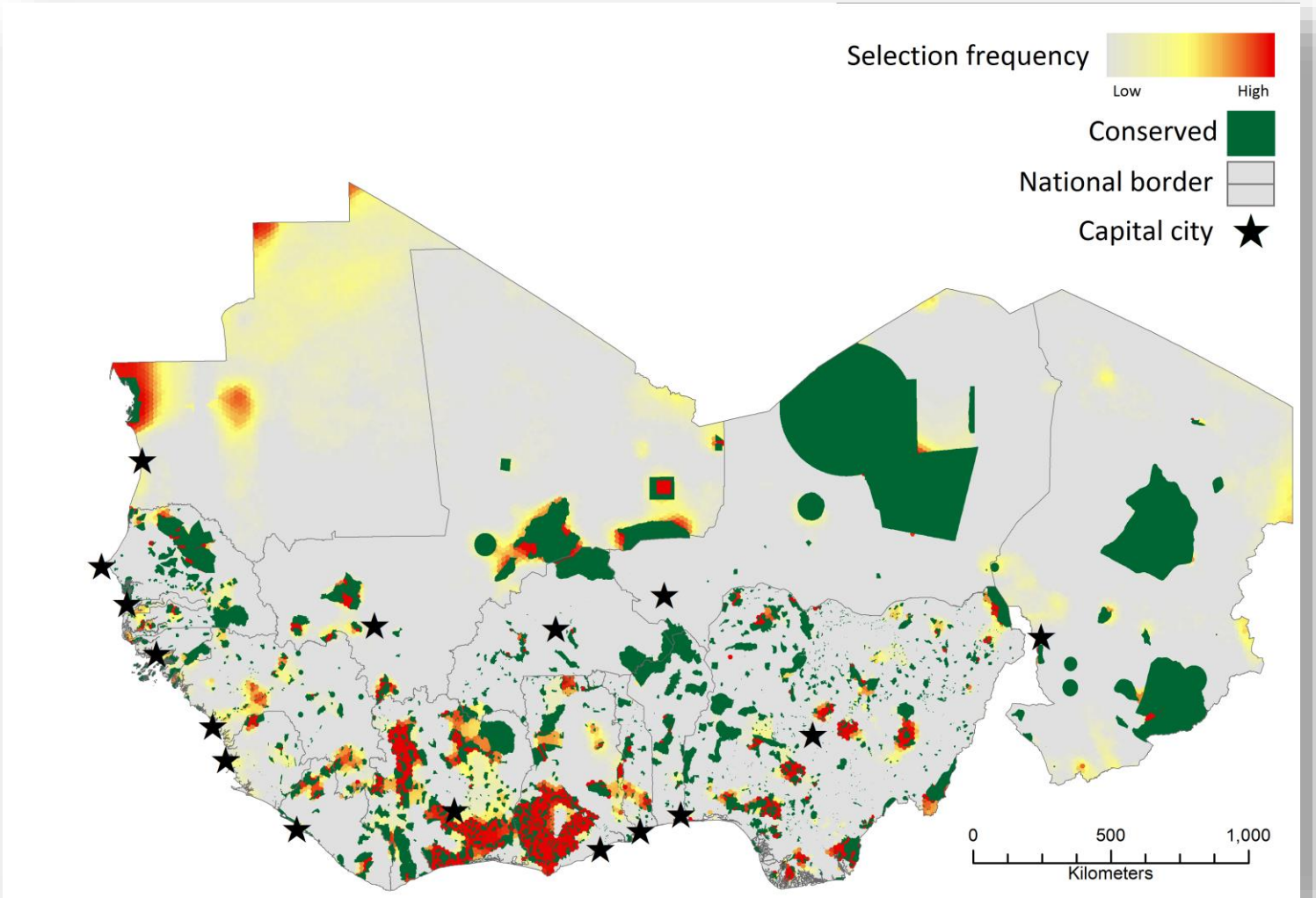
Identification of priority areas for the West Africa region



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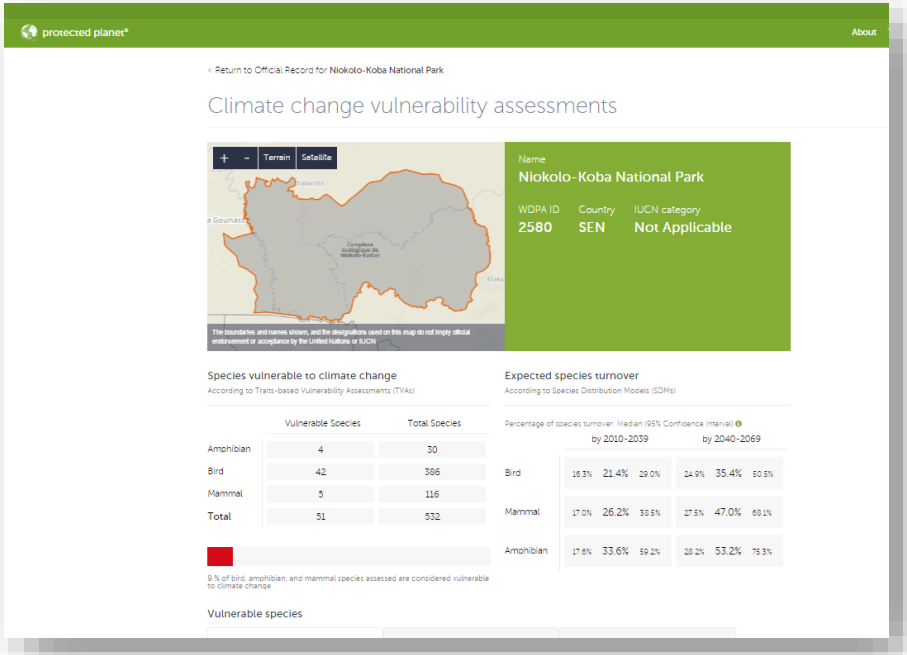
Other PARCC outputs

- **Adaptation strategies and policy recommendations** at the regional and national level and Guidelines for PA managers in the face of climate change
- Study of the links between PAs, climate change and communities
- Activities at transboundary pilot sites
- **Website with mapping links** to vulnerability assessment per PA: http://parcc.protectedplanet.net



Applying PARCC methodologies to World Heritage and other UNESCO sites

- Regional climate models
- **Traits-based Vulnerability Assessments** (TVAs, presented earlier)
- **Species Distribution Models** (SDMs) (e.g., in China or East Asia)
- Integrating TVA and SDMs to **identify sites more likely to be vulnerable to climate change**
- Systematic conservation planning to identify other natural sites

→ Strategies, policy recommendations and management guidelines

Other work of UNEP-WCMC on the World Heritage Convention

Yichuan Shi and Elise Belle, Protected Areas Programme, UNEP-WCMC and IUCN

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UNEP-WCMC's work with IUCN WHP

- Update and review how WH information is presented on the Protected Planet website (http://protectedplanet.net)
- Annual comparative analysis of sites nominated under biodiversity criteria (ix) and (x)
- **Online prototype for spatial comparative analysis**
- **Scoping study of land cover change within WH sites**
- Development of a web platform for WH datasheets

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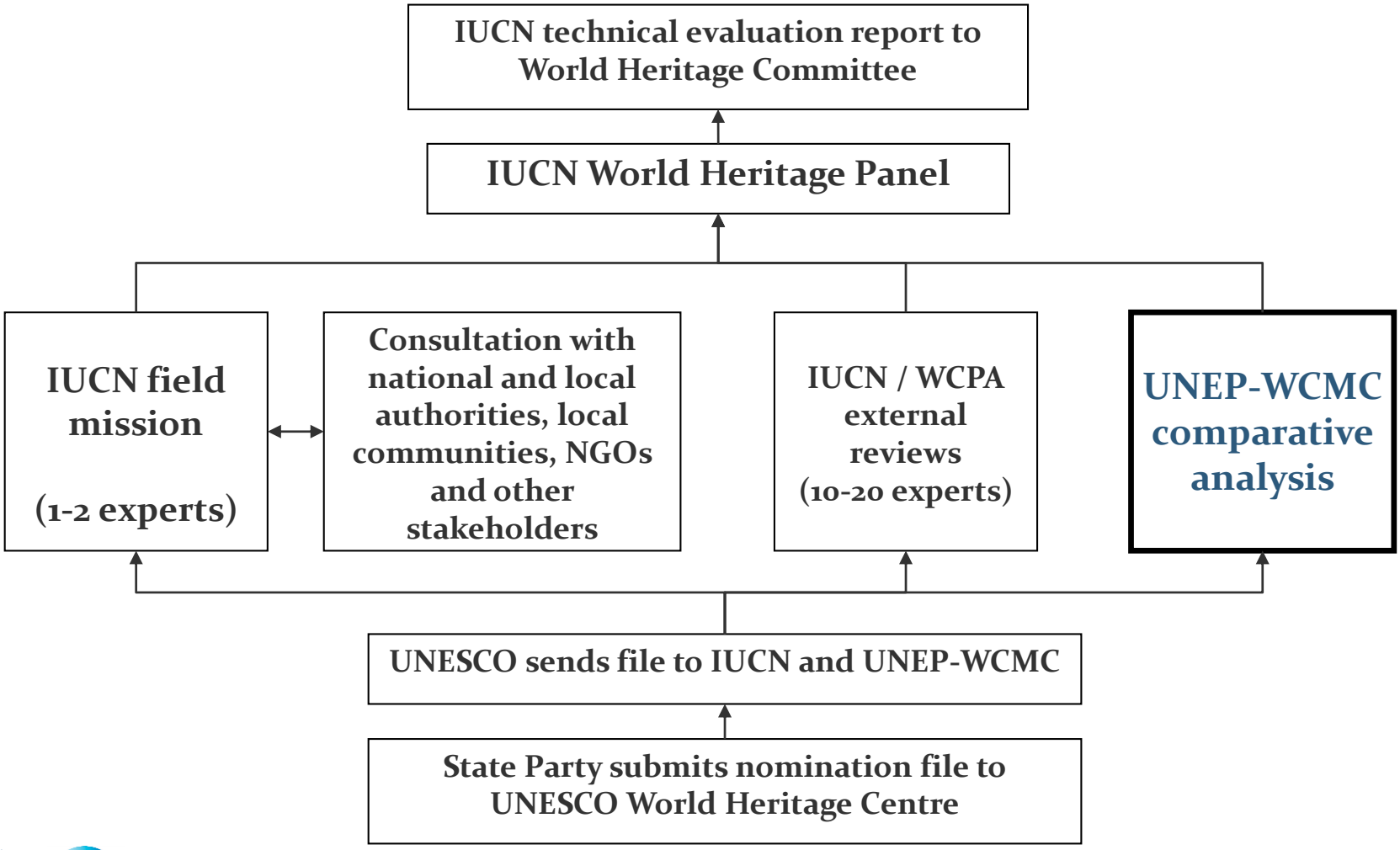
COMPARATIVE ANALYSIS



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PROTOTYPE FOR ONLINE SPATIAL COMPARATIVE ANALYSIS

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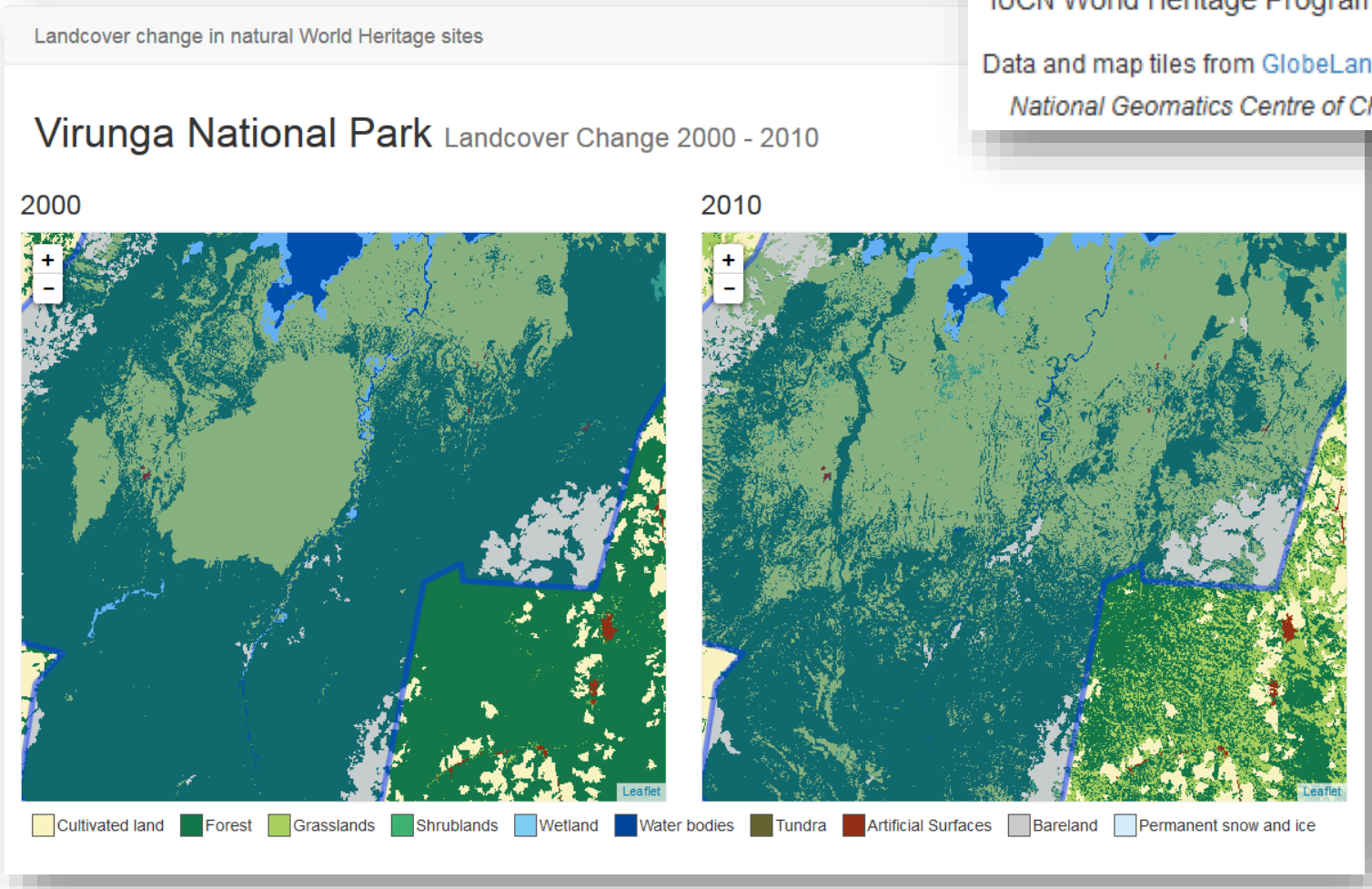
Scoping study of land cover change in WH sites (1)

IUCN World Heritage Programme

Data and map tiles from GlobeLand30

National Geomatics Centre of China



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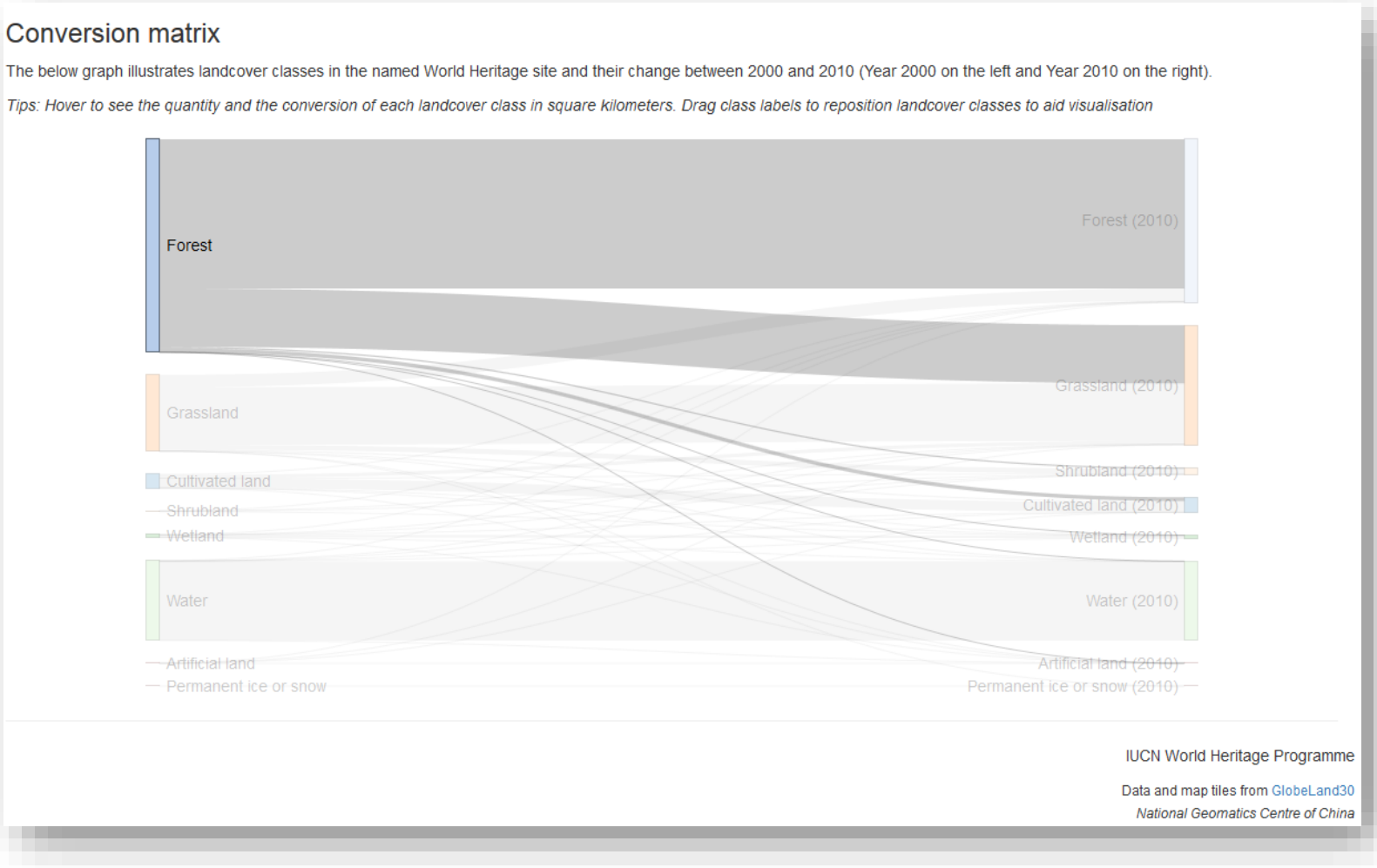
Scoping study of land cover change in WH sites (2)



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Enhancing monitoring for natural WH sites in China

- China has a number of **natural WH sites** and some are facing significant threats
- Monitoring the management effectiveness from site studies is expensive
- **Remote sensing monitoring** based on land cover change: low cost and increasingly reliable
- Developed a l**and cover change prototype** using a global dataset
- At site level, global data cannot capture every details and **validations of the land cover change** data are required
- Aim of the project: **Design an integrated tool to validate and analyse land cover change**

Talk to us if you are interested !

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Thank you for your attention!

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