Climate change and Protected Areas: a broad outline of what is known?

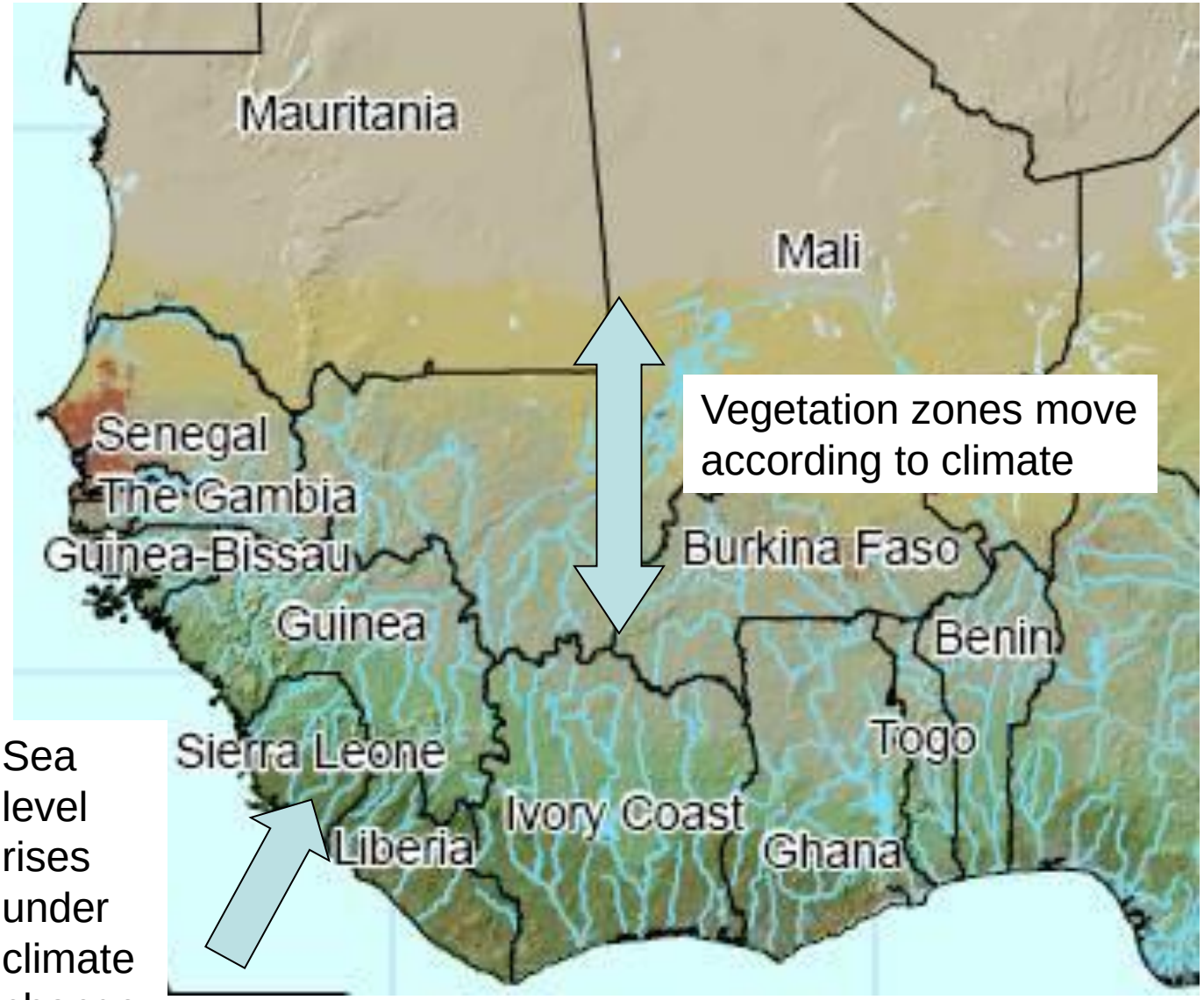
Neil Burgess

Scientific Advisor

Part I

- Background on the region and existing data on climate change, demographics etc

Vegetation zones in West Africa



Sahara desert

Sahelian savanna

Sudanian savanna

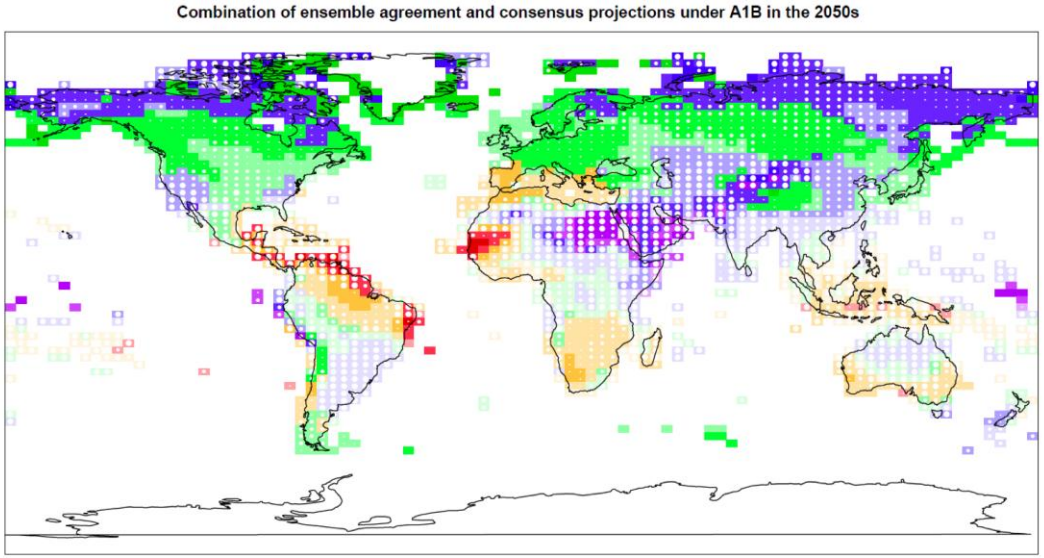
Guinea savanna

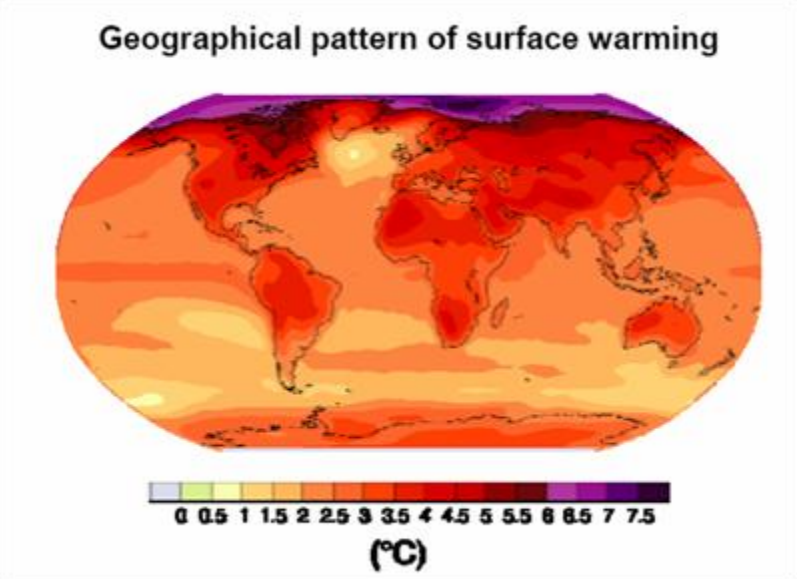
Rainforest

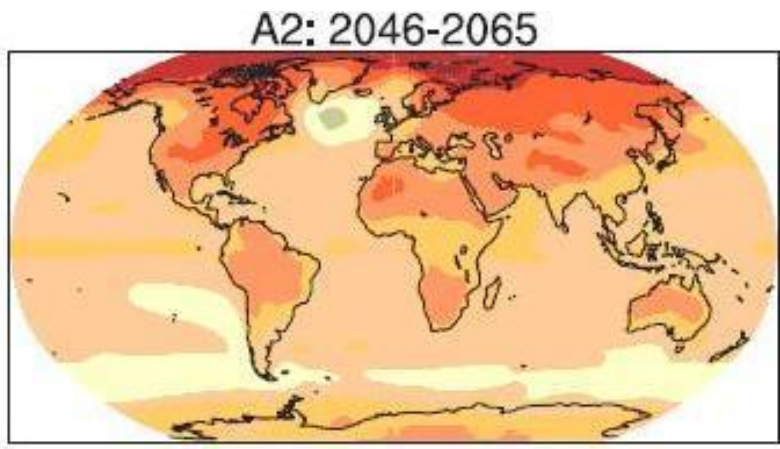
Mangroves

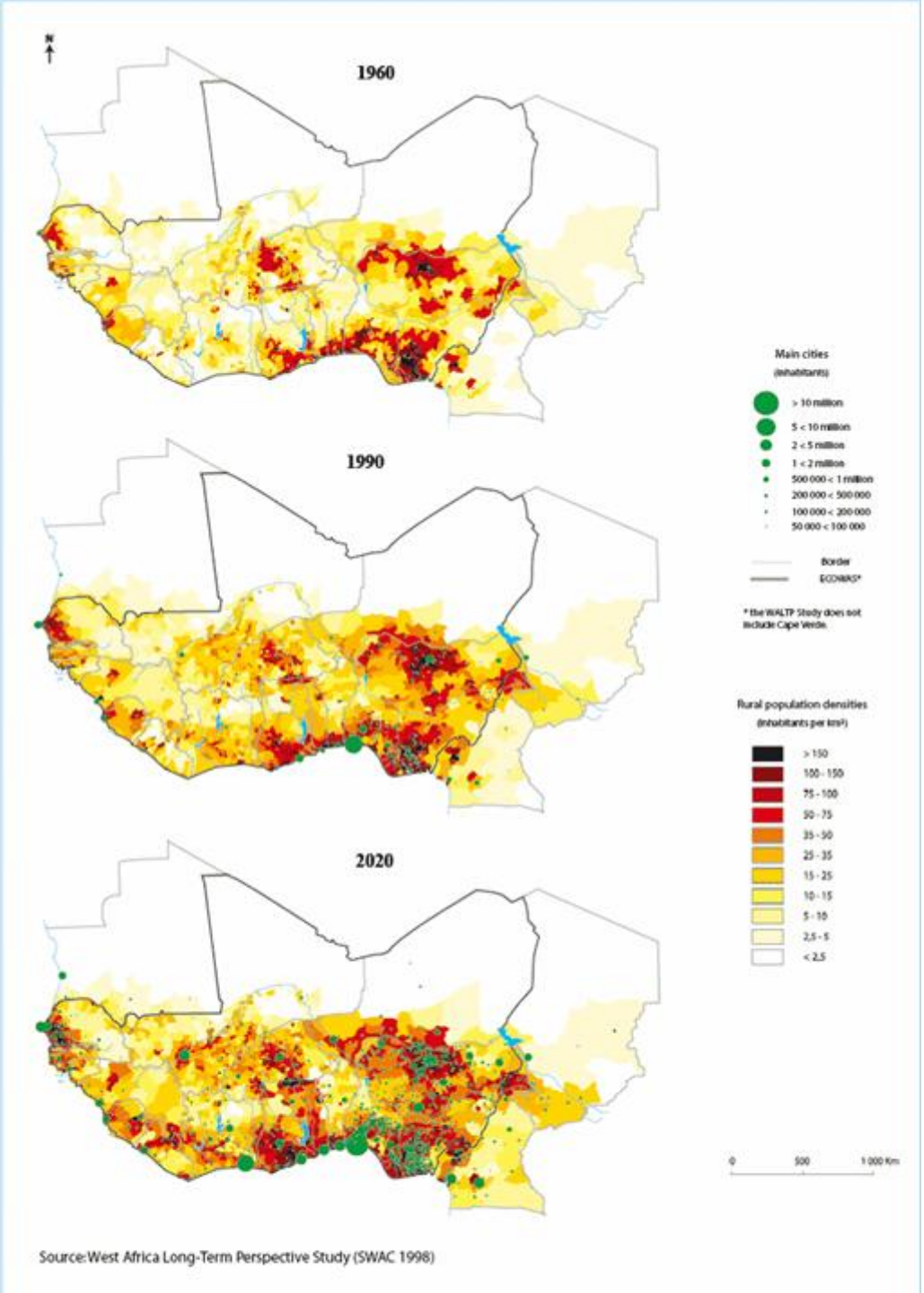
What do the climate change models say?

- Quite a variable story of change
- Things might get worse
  - Quite a lot
  - Or not so much
  - Or we are not very sure









Source: West Africa Long-Term Perspective Study (SWAC 1998)

Demographic change in West Africa 1960 and predicted to 2020

Climate Change impacts – general considerations

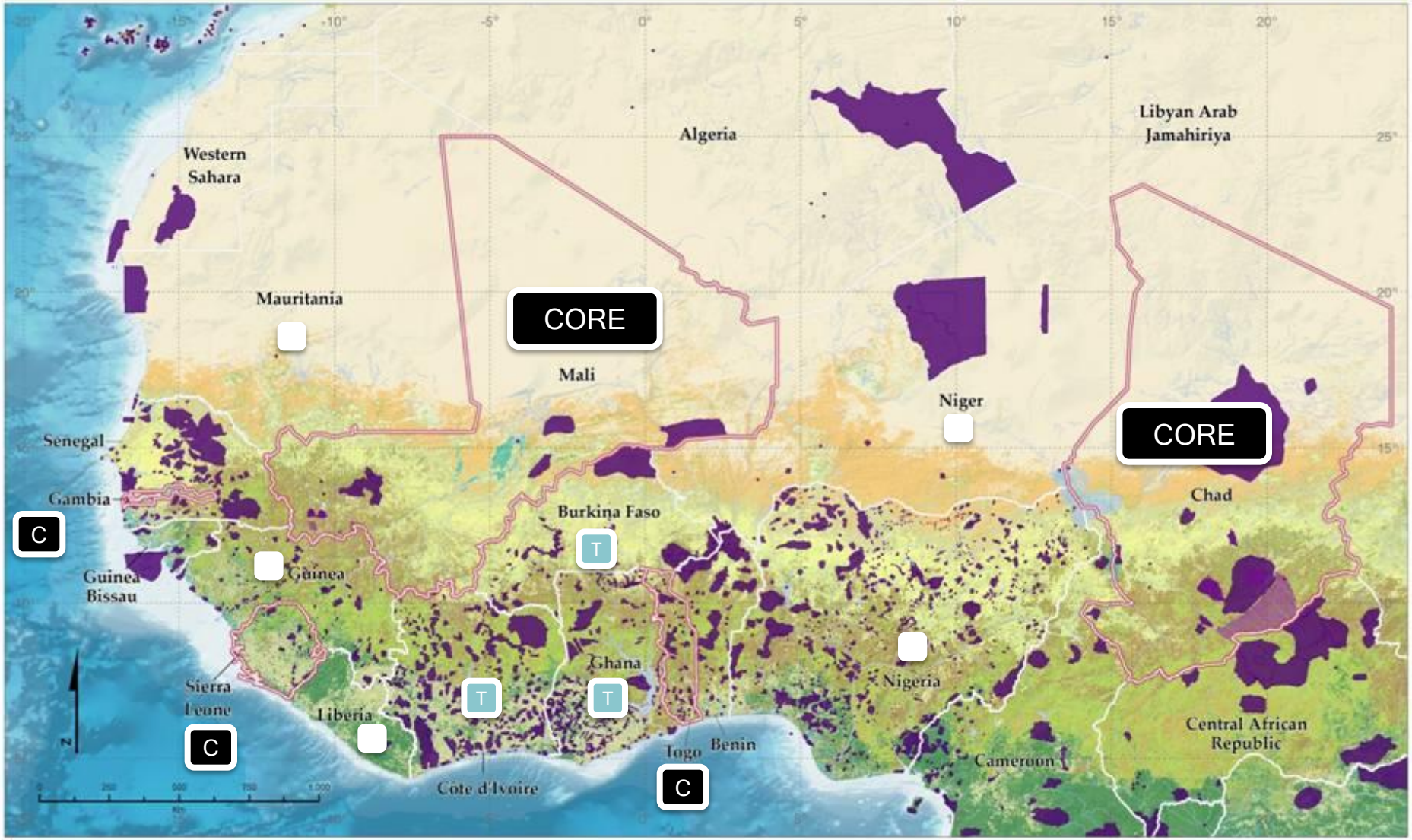
- West Africa climate change predictions very variable. All agree it will get hotter.
- Predictions for rainfall vary from 0% to +40% for Dec-Feb and from -20% to +20% for the June to August season.
- Vegetation zones (Sahara, Sahel, Sudanian, Guinea, Forest) will expand north if the climate gets wetter, and contract south if it gets drier
- Forest species and protected areas may suffer, especially on northern margins and in Guinea savanna / forest mosaic
- People will be moving in the landscape

How will this impact protected areas?

And the species that live in them?

Protected Areas within West Africa

Climate Change and Protected Areas in West Africa (CCPAWA)



Protected Areas

WDPA 2010

New data 2010

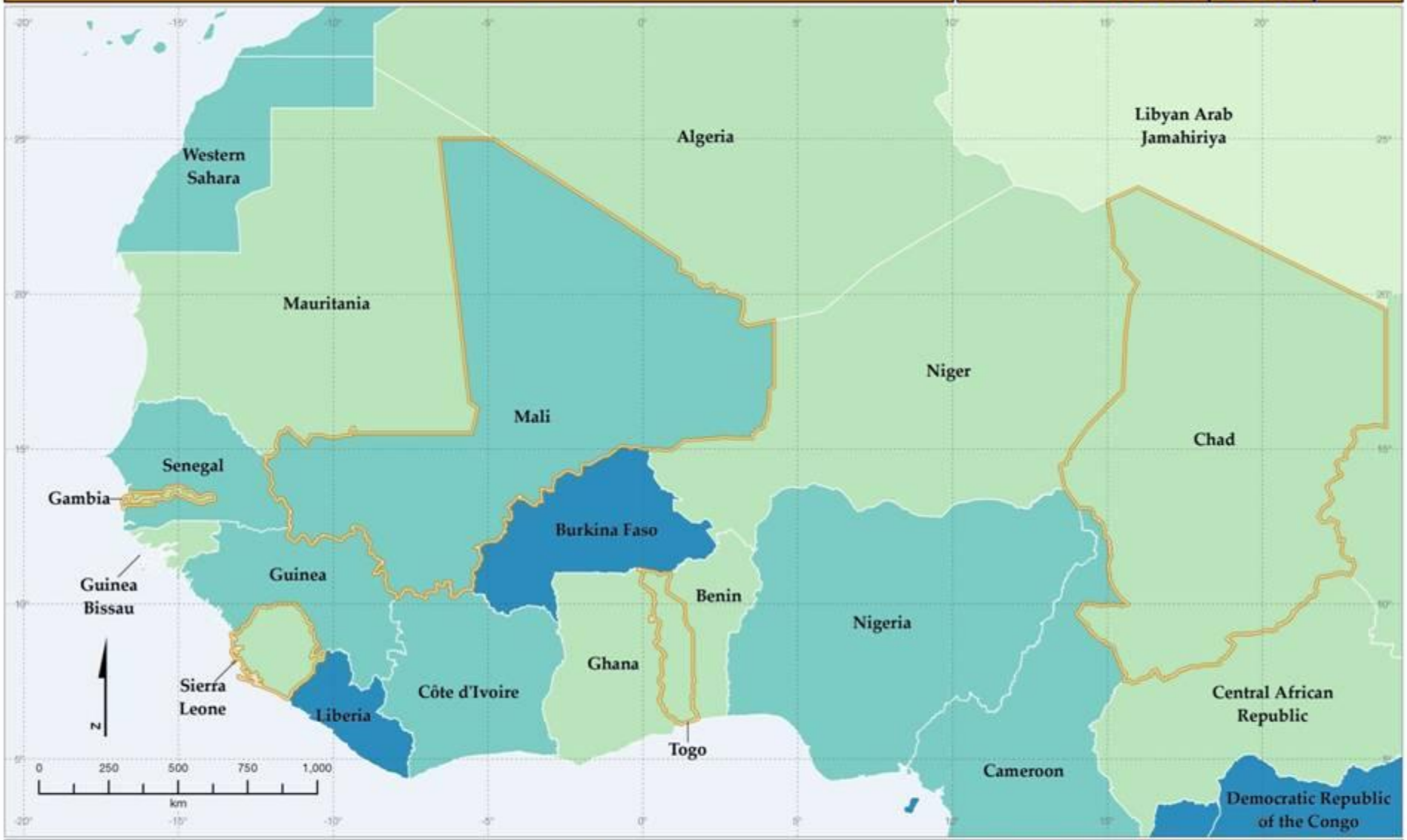
UNEP WCMC IUCN gef

Sources: World Database on Protected Areas (WDPA), UNEP-WCMC, December 2010
Coordinate System: Geographic (WGS84)
Map compiled by: UNEP-WCMC
Date printed: January 2011
Map code: REG_PA-2

Contact email: protectedareas@unep-wcmc.org
Map produced using ESRI ArcGIS Software
The boundaries and names shown and the designations used on maps do not imply official endorsement or acceptance by the United Nation Environment Programme or contributory organisations

Protected Areas Data Quality Assessment

Climate Change and Protected Areas in West Africa (CCPAWA)



Quality of protected areas data

- Very good
- Good
- Poor
- Very poor

UNEP WCMC gef IUCN

Sources: World Database on Protected Areas (WDPA)
UNEP-WCMC, December 2010
Coordinate System: Geographic (WGS84)
Map compiled by: UNEP-WCMC
Date printed: January 2011
Map code: REG_Q-1

Contact email: protectedareas@unep-wcmc.org
Map produced using ESRI ArcGIS Software.
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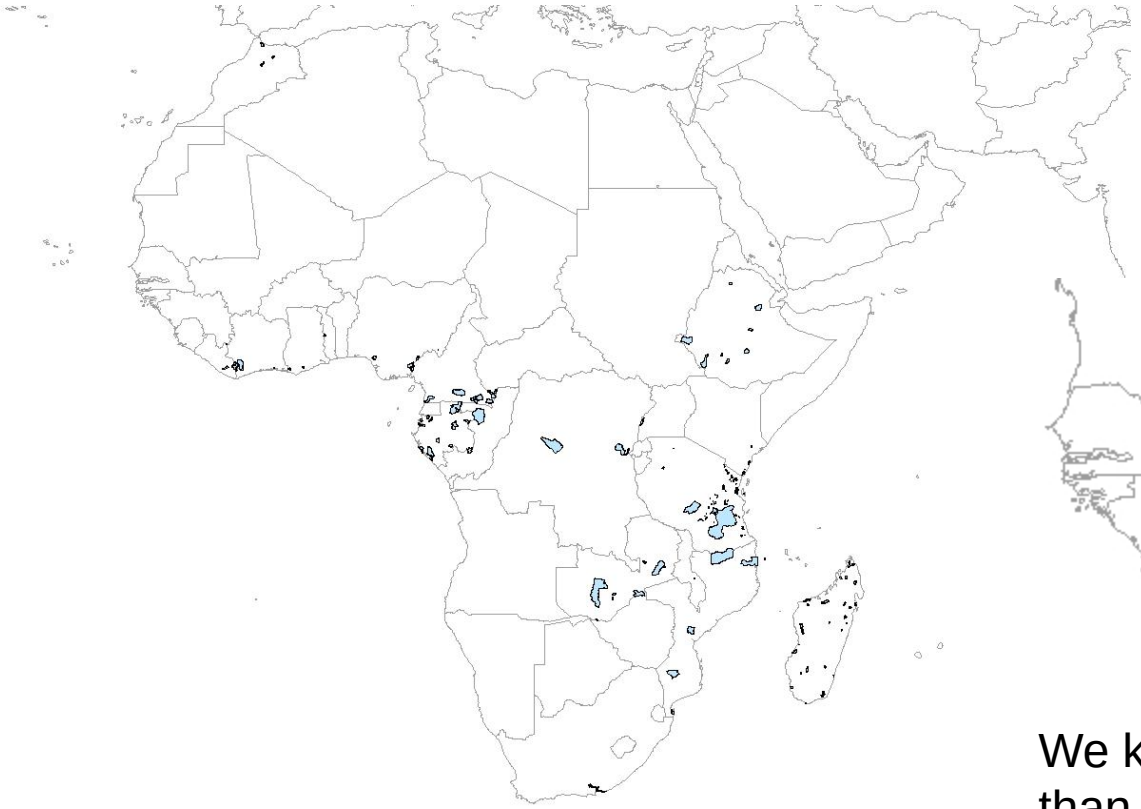
Effective management of reserves (Management Effectiveness Tool)

Reserves with management effectiveness assessed (2009)

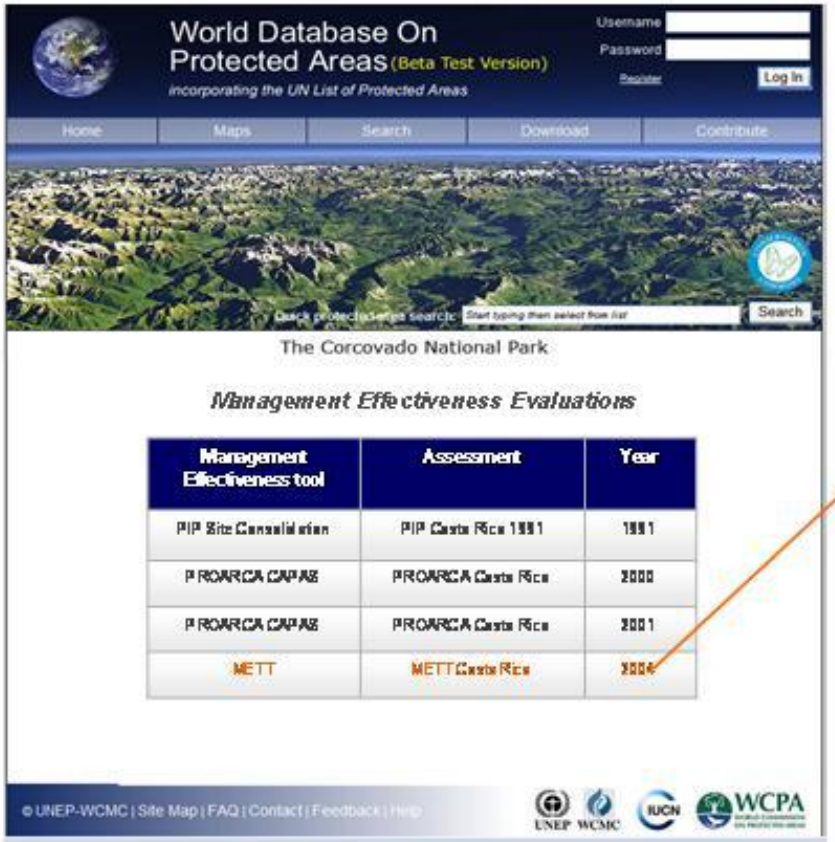


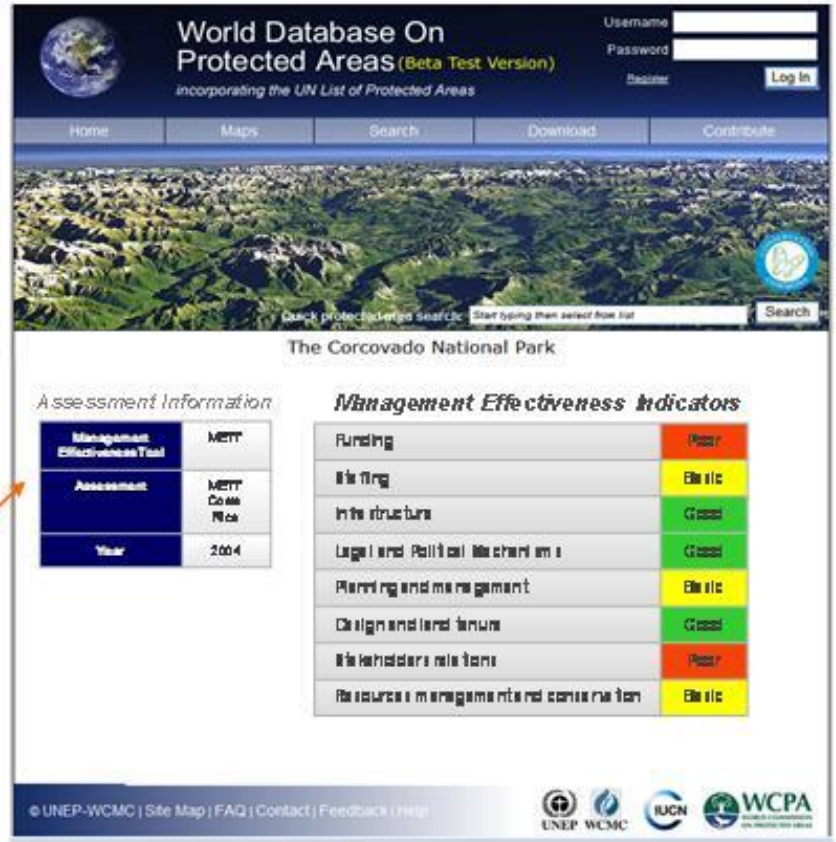
In West Africa

We know there are more than this

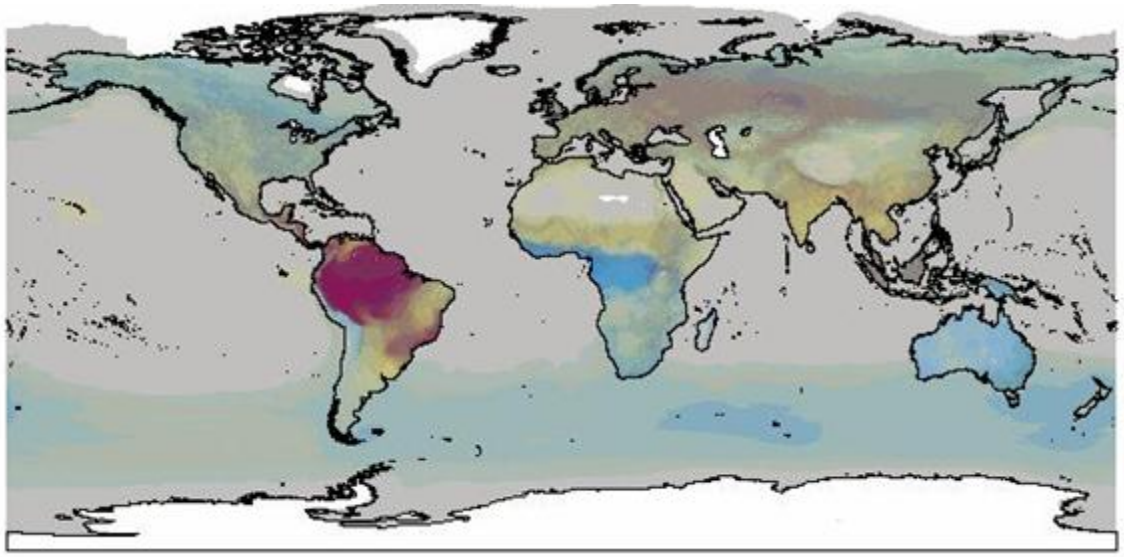
Protected Area data and management effectiveness data are contained within the UNEP-WCMC World Database of Protected Areas – a freely available resource for the world

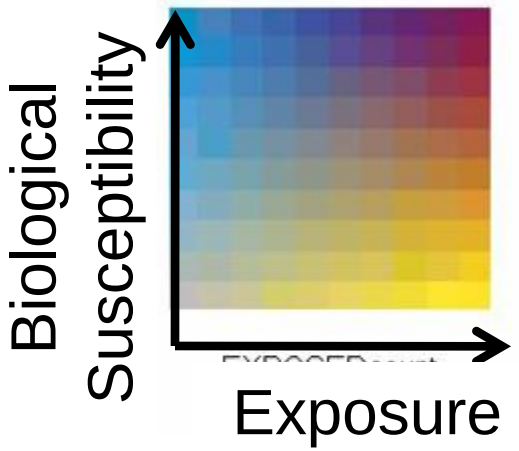
By clicking on an assessment, user is redirected to another page, which contains information on that specific management effectiveness evaluation as well as the condition of each management effectiveness indicator.





Climate Change Susceptibility of species - Birds



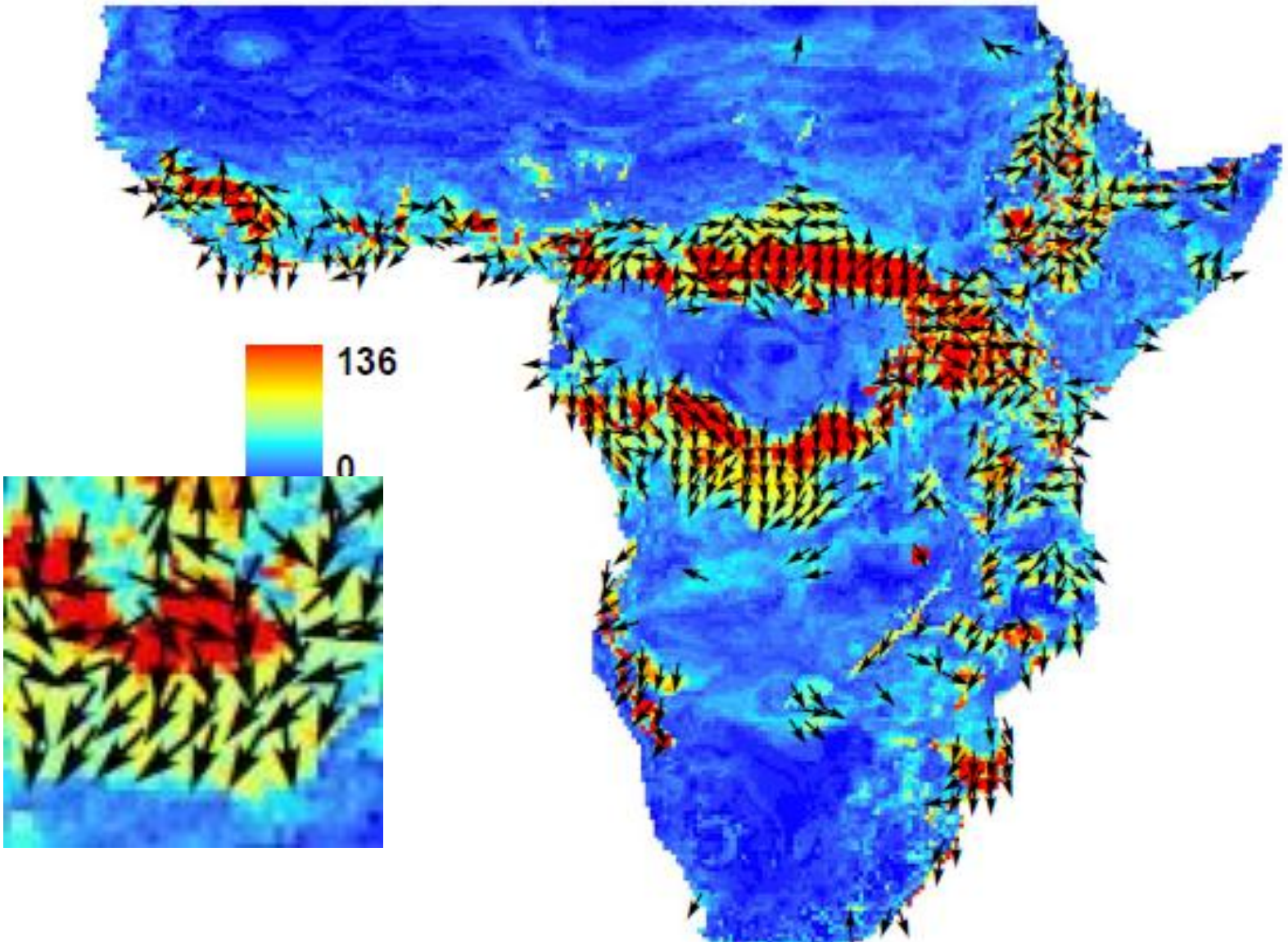


IUCN

BirdLife INTERNATIONAL

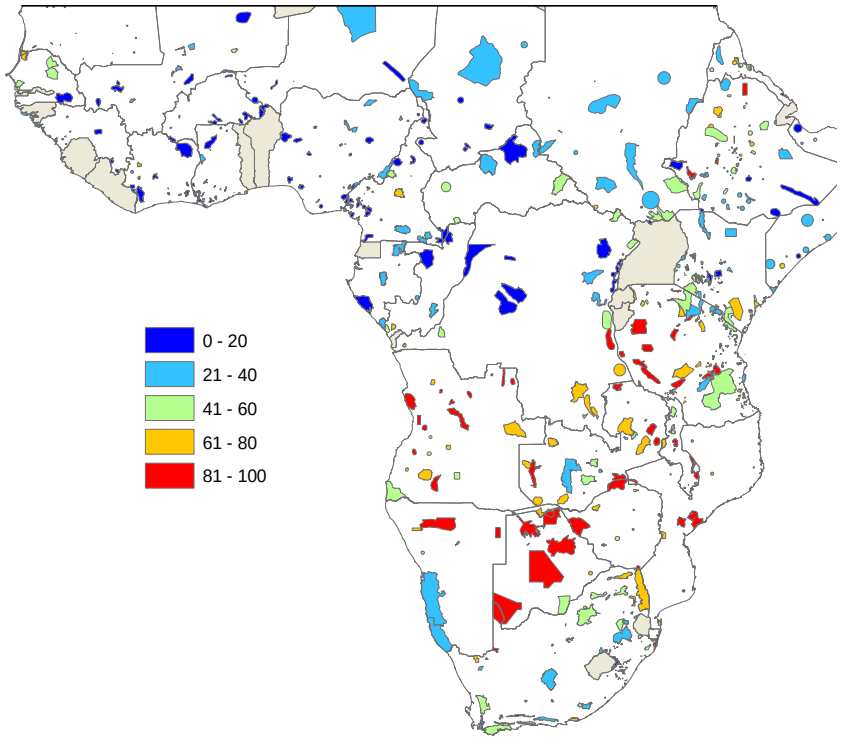
SSC Species Survival Commission

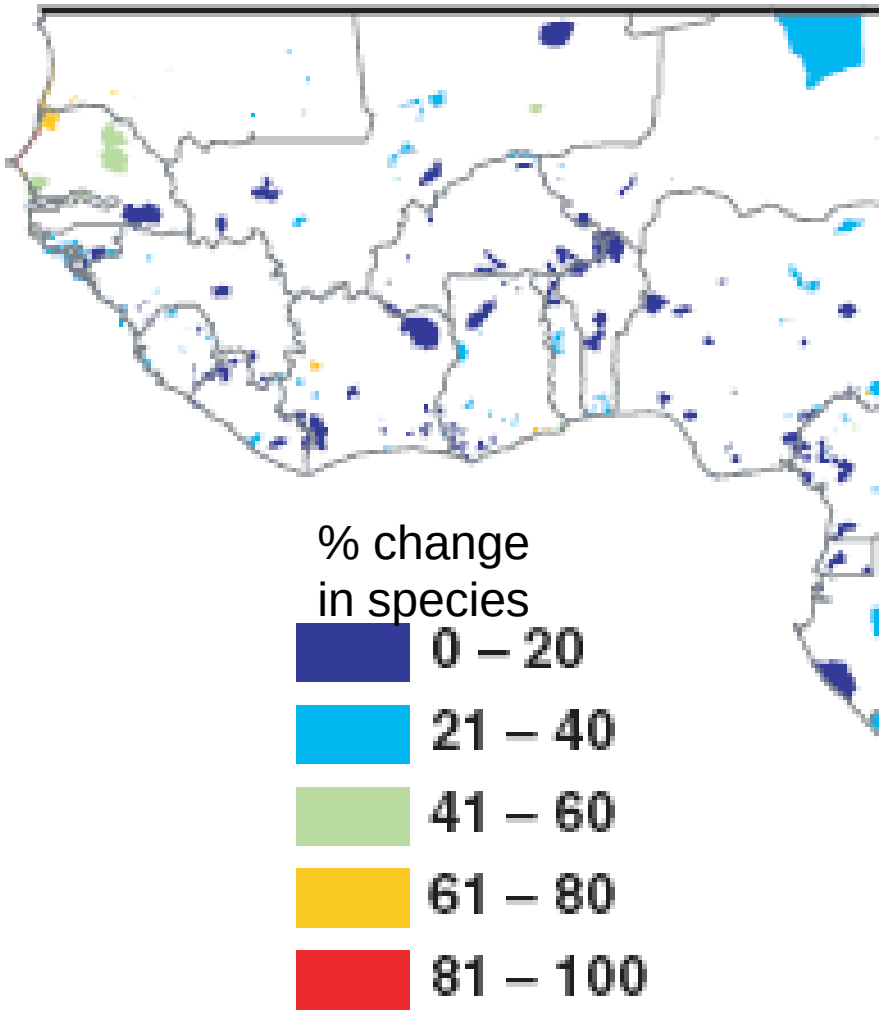
Estimating direction of movement due to climate change- birds



Predictions on bird assemblage change in protected across Africa

Turnover of species - blue is low
Little change predicted in West Africa





What is the project going to do?

1) Build links between National Government and partners and international expertise:
   - Climate change agencies (UK Hadley Center)
   - Science NGOs (IUCN, BirdLife)
   - Biodiversity impact modeling agencies (Durham University)

The project needs to identify the key national / regional experts / agencies

To do the following

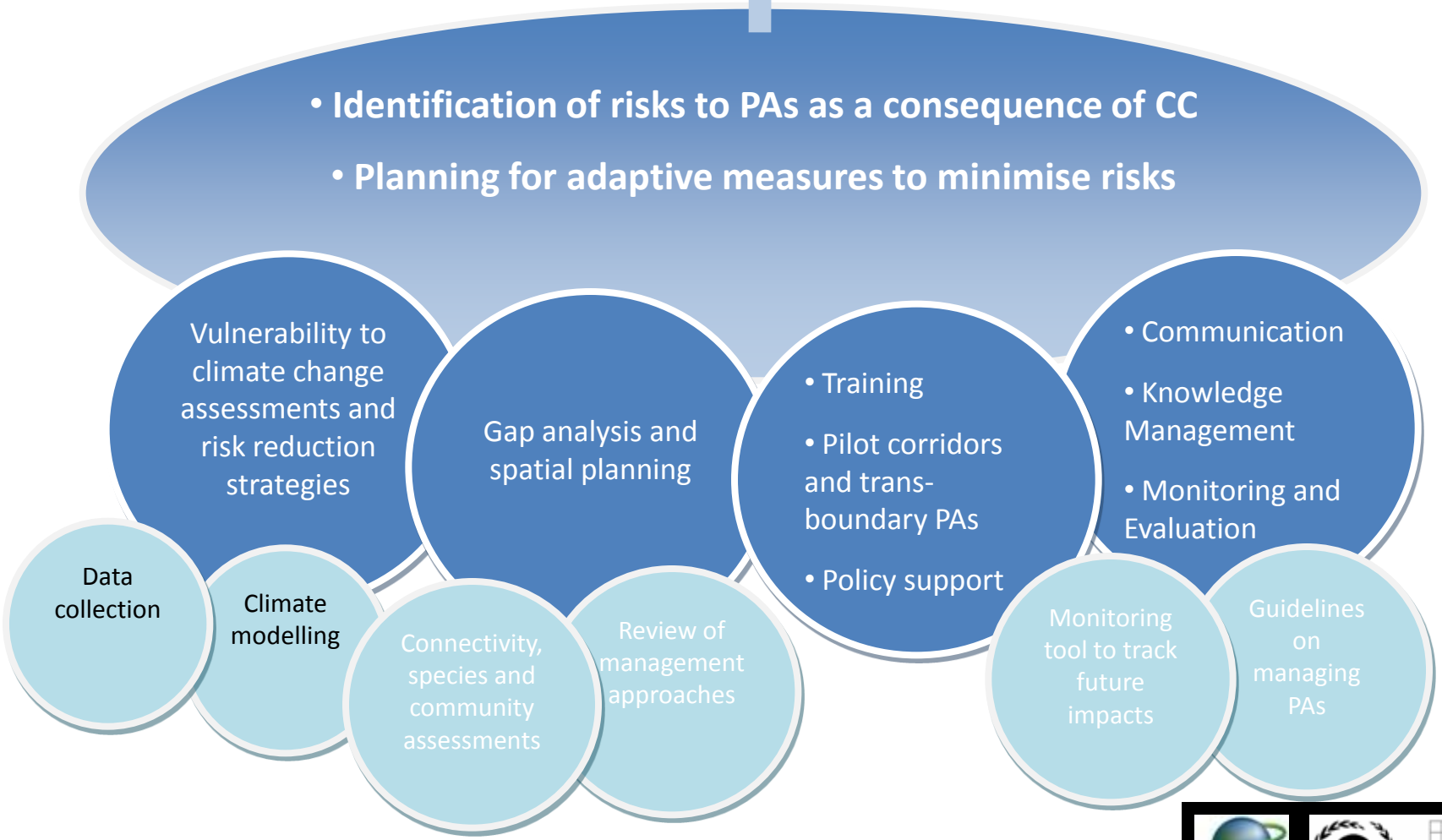
- Improve knowledge of distribution ranges of species
- Improve IUCN red list for species in the region
- Improve protected areas data for the region
- Model impacts of climate change on species, and protected areas
- Build capacity nationally and regionally

Which will involve a lot of Capacity Building, Collaboration and Partnerships

Example - Climate Change Vulnerability Traits for species: collaborative workshops

THE PROJECT

BETTER UNDERSTANDING AND MANAGEMENT OF PROTECTED AREAS IN THE CONTEXT OF CLIMATE CHANGE



Part II : Development and Application of Climate Change Adaptation Tools for Protected Areas

- Modified “Management Effectiveness Tracking Tool”
- Modified “Threat Reduction Tool”

GEF projects use the management effectiveness tracking tool

WWF

The World Bank

Management Effectiveness Tracking Tool

Reporting Progress at Protected Area Sites: *Second Edition*

July 2007

Protected Areas Threats: Data Sheet 2

Please tick all relevant existing threats as either of high, medium or low significance. Threats ranked as of **high** significance are those which are seriously degrading values; **medium** are those threats having some negative impact and those characterised as **low** are threats which are present but not seriously impacting values or N/A where the threat is not present or not applicable in the protected area.

1. Residential and commercial development within a protected area
Threats from human settlements or other non-agricultural land uses with a substantial footprint

High	Medium	Low	N/A	
				1.1 Housing and settlement
				1.2 Commercial and industrial areas
				1.3 Tourism and recreation infrastructure

2. Agriculture and aquaculture within a protected area
Threats from farming and grazing as a result of agricultural expansion and intensification, including silviculture, mariculture and aquaculture

High	Medium	Low	N/A	
				2.1 Annual and perennial non-timber crop cultivation
				2.1a Drug cultivation
				2.2 Wood and pulp plantations
				2.3 Livestock farming and grazing
				2.4 Marine and freshwater aquaculture

3. Energy production and mining within a protected area
Threats from production of non-biological resources

High	Medium	Low	N/A	
				3.1 Oil and gas drilling
				3.2 Mining and quarrying
				3.3 Energy generation, including from hydropower dams

4. Transportation and service corridors within a protected area
Threats from long narrow transport corridors and the vehicles that use them including associated wildlife mortality

High	Medium	Low	N/A	
				4.1 Roads and railroads (include road-killed animals)
				4.2 Utility and service lines (e.g. electricity cables, telephone lines,)
				4.3 Shipping lanes and canals
				4.4 Flight paths

5. Biological resource use and harm within a protected area
Threats from consumptive use of "wild" biological resources including both deliberate and unintentional harvesting effects; also persecution or control of specific species (note this includes hunting and killing of animals)

High	Medium	Low	N/A	
				5.1 Hunting, killing and collecting terrestrial animals (including killing of animals as a result of human/wildlife conflict)
				5.2 Gathering terrestrial plants or plant products (non-timber)
				5.3 Logging and wood harvesting
				5.4 Fishing, killing and harvesting aquatic resources

6. Human intrusions and disturbance within a protected area
Threats from human activities that alter, destroy or disturb habitats and species associated with non-consumptive uses of biological resources

High	Medium	Low	N/A	
				6.1 Recreational activities and tourism
				6.2 War, civil unrest and military exercises
				6.3 Research, education and other work-related activities in protected areas
				6.4 Activities of protected area managers (e.g. construction or

Scoring

- The METT tool provides scores for various elements of protected area threats, management, outcomes
- The METT tool has been modified to include Climate Change impacts
- These scores can be used to assess the effectiveness of management and track changes over time, INCLUDING climate change issues

Threat Reduction Assessment Tool

- A score card that aims to rank threats and then assess the degree to which the threat has been reduced by a project intervention

- Might be modified to assess the threat posed by climate change and how this has been reduced by interventions

TRA Worksheet/Side A

SITE NAME:	Crater Mountain Wildlife Management Area Project, Papua New Guinea
SITE DESCRIPTION:	Haia: forest area owned by the traditional clans in the village of Haia
ASSESSMENT PERIOD:	June 1994 **TO** July 1997
COMPLETED ON:	July 10, 1997
COMPLETED BY:	Paul, Arlene and Nick

	THREATS	CRITERIA RANKINGS: AREA	INTENSITY	URGENCY	TOTAL RANKING	% THREAT REDUCED	RAW SCORE
A							
B							
C							
D							
E							
F							
G							
	TOTAL						

TRA INDEX FORMULA	TOTAL RAW SCORE		TOTAL RANKING		CONVERT TO PERCENTAGE				TRA INDEX
TRA INDEX CALCULATION		÷		=		x	100	=	%

SITE MAP

Example of the TRA score card