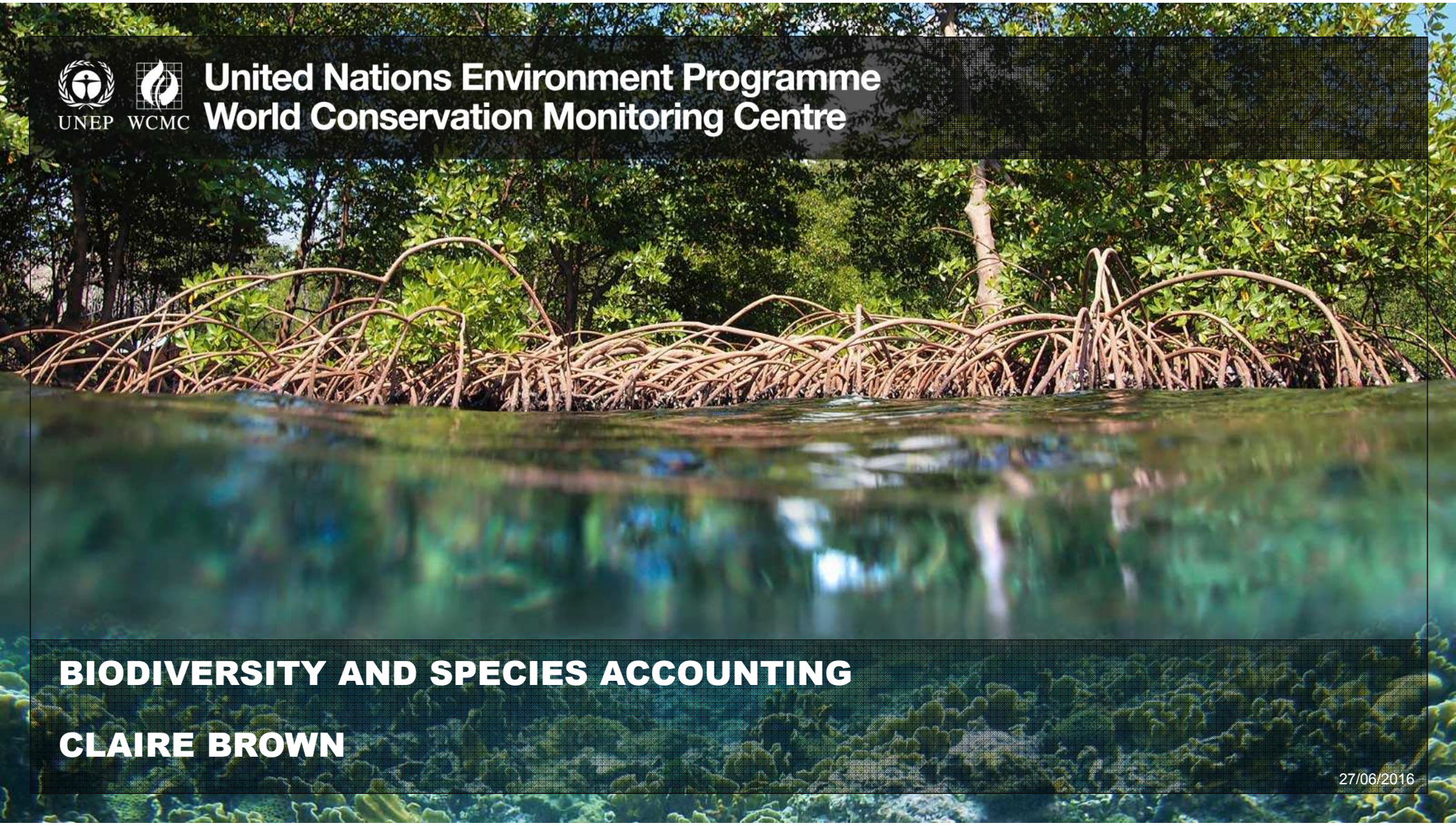


UNEP WCMC

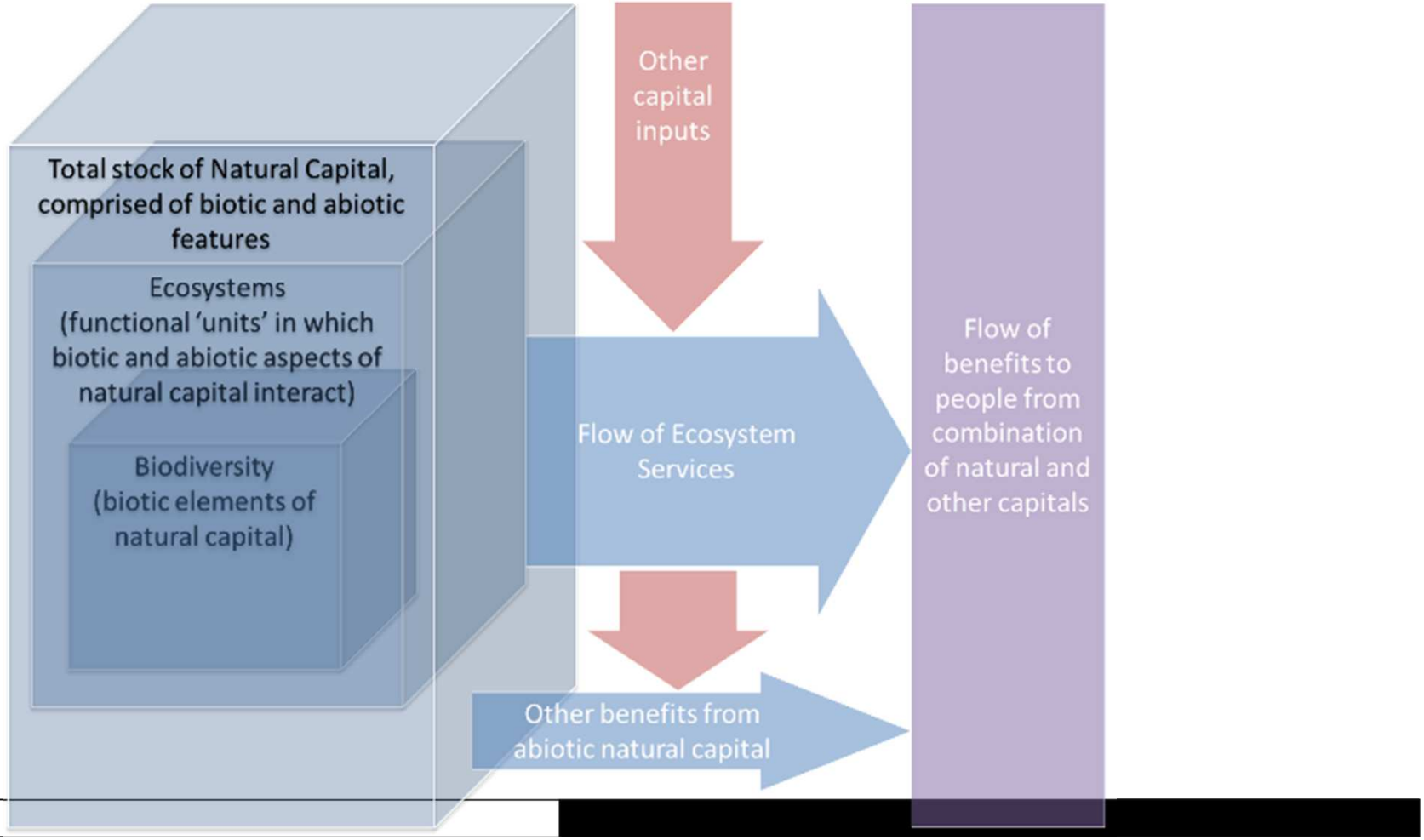
United Nations Environment Programme
World Conservation Monitoring Centre

BIODIVERSITY AND SPECIES ACCOUNTING

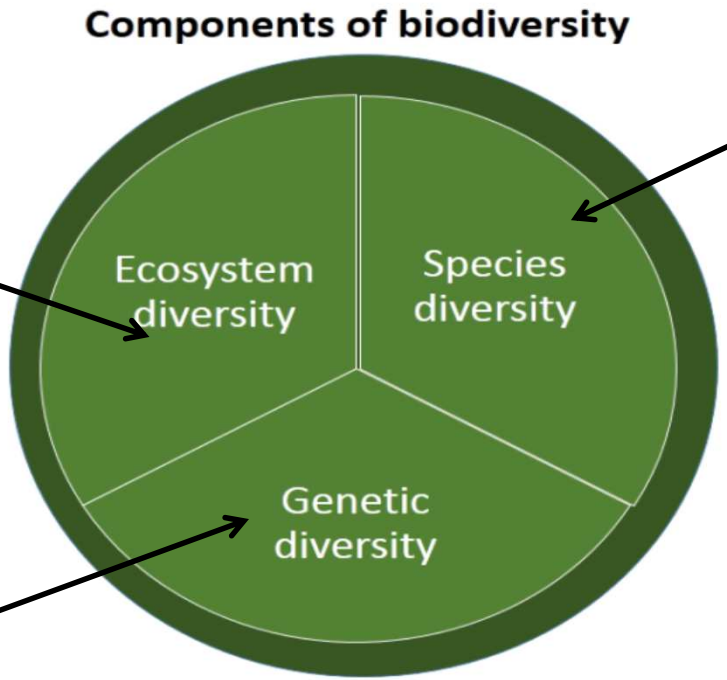
CLAIRE BROWN

27/06/2016

IMPORTANT PART OF NATURAL CAPITAL STOCK



WHY SPECIES ACCOUNTS



INFORMATION IN WIDER ECOSYSTEM ACCOUNTS

IMPORTANT BUT FOR THE FUTURE!

SPECIES PROVIDE A PROXY FOR BIODIVERSITY AND INDICATOR OF ECOSYSTEM CONDITION

SPECIES PROVIDE MANY BENEFITS TO HUMAN WELL-BEING

SPECIES ARE VITALLY IMPORTANT FOR ECOSYSTEM FUNCTION

SPATIAL PLANNING FOR SPECIES-LEVEL BIODIVERSITY CAN DIFFER FROM PLANNING FOR ECOSYSTEMS AND THEIR SERVICES

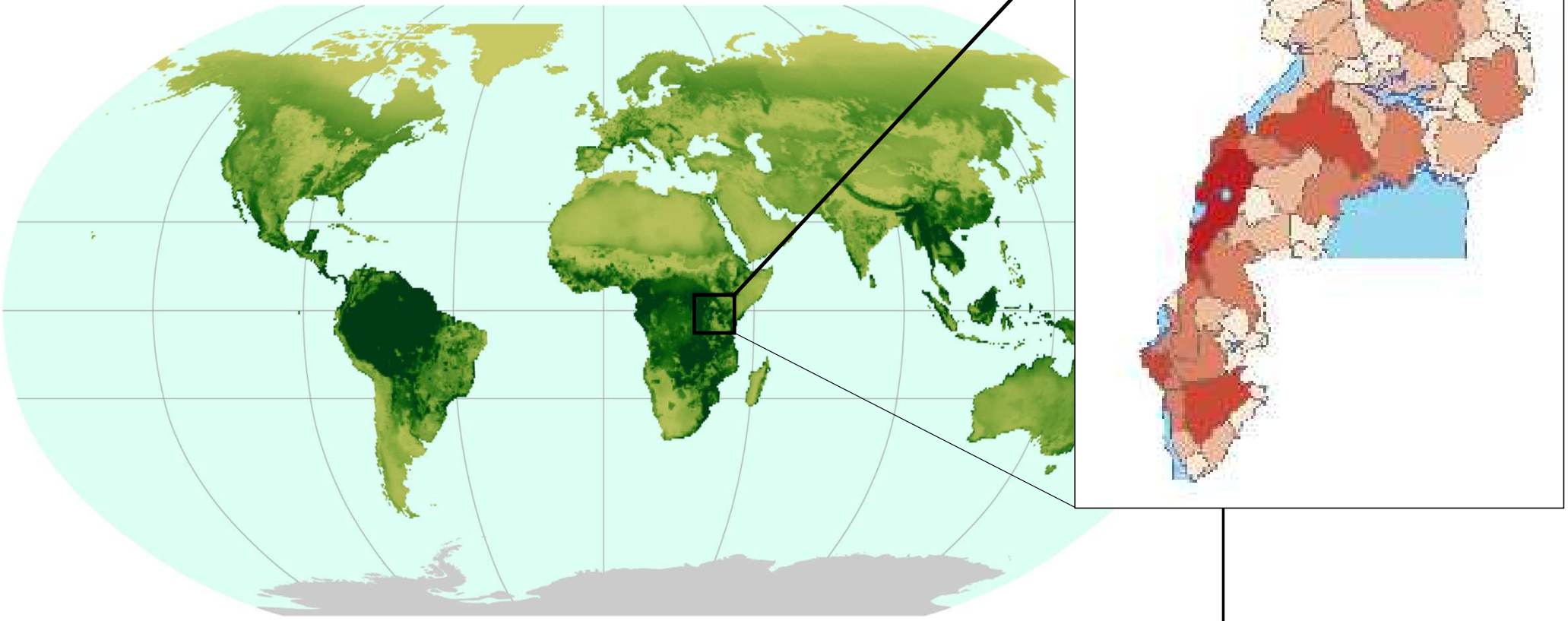
THERE IS CONSIDERABLE RESEARCH AND DATA ON SPECIES

BENEFITS

FUNCTIONAL ROLES

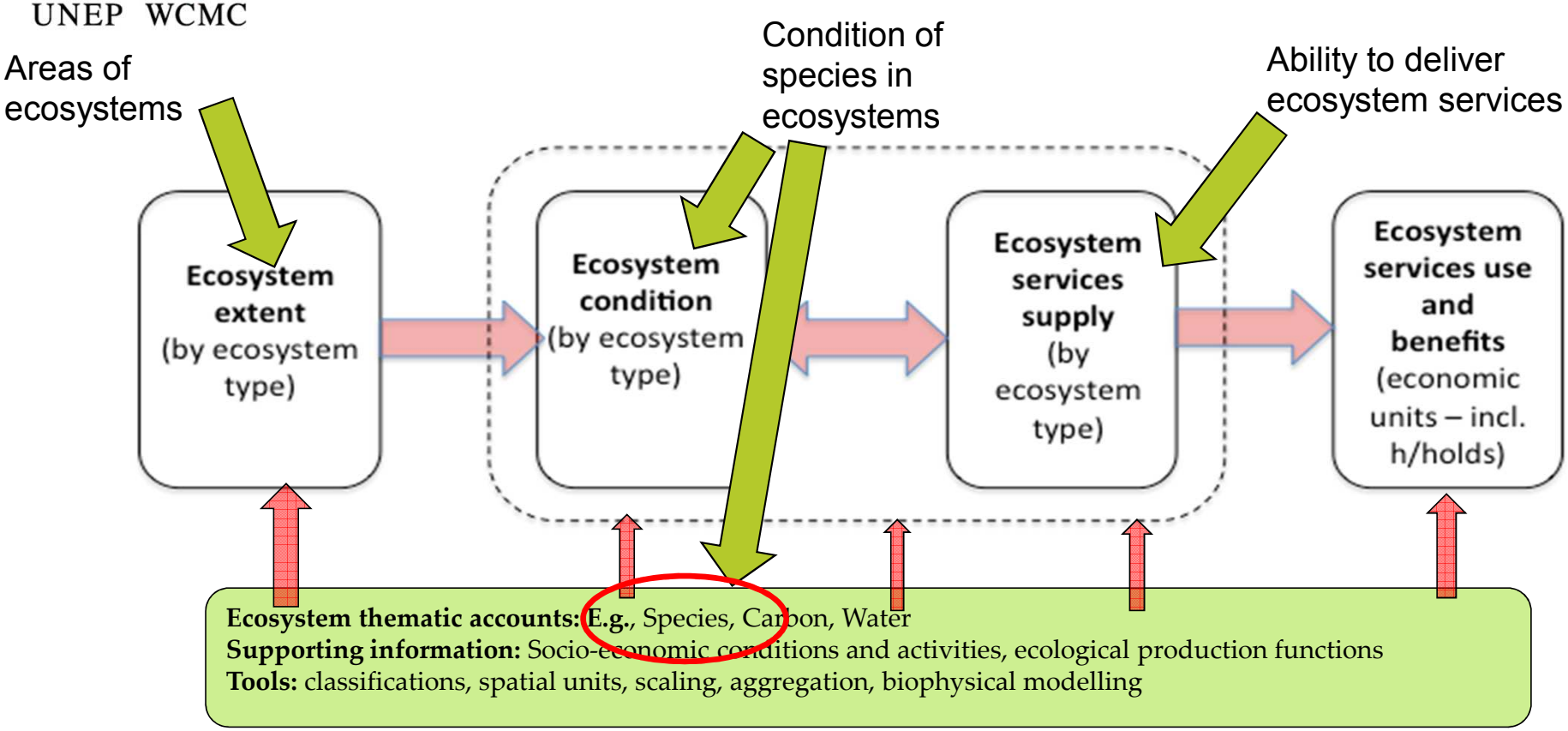
UNEP WCMC

DATA ON SPECIES STATUS



SPECIES ACCOUNTS CAN HELP INTEGRATE EXISTING SPECIES DATA IN TO DECISION MAKING

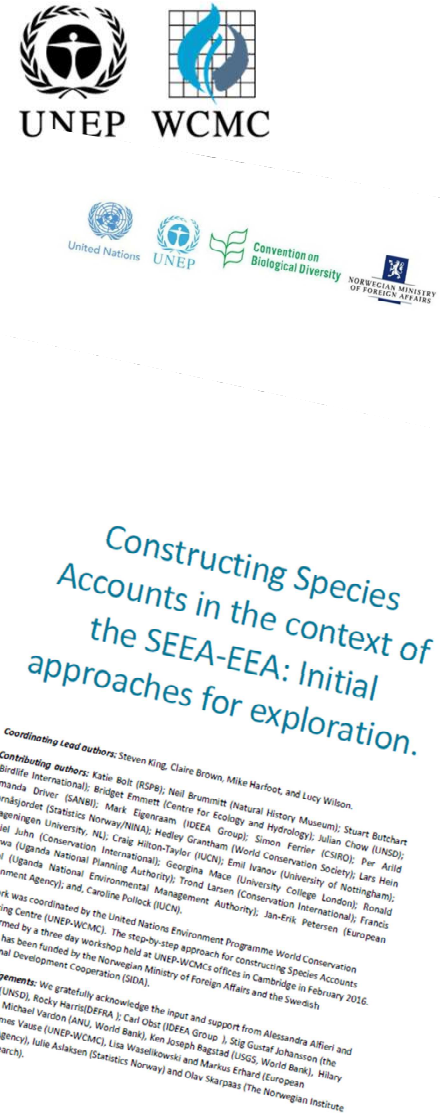
SPECIES ACCOUNTS IN SEEA-EEA.



BIOPHYSICAL SPATIAL ACCOUNTS

i. **BASED ON SELECTING PRIORITY SPECIES AND SPECIES GROUPS (E.G., MAMMALS)**

ii. **CONSTRUCT SPATIAL ACCOUNTS USING CHANGES IN DIRECT OR HABITAT BASED OBSERVATIONS**


Constructing Species Accounts in the context of the SEEA-EEA: Initial approaches for exploration.

Coordinating Lead Authors: Steven King, Claire Brown, Mike Harfoot, and Lucy Wilson.

Contributing authors: Katie Bolt (RSPB); Neil Brummitt (Natural History Museum); Stuart Butchart (Birdlife International); Bridget Emmett (Centre for Ecology and Hydrology); Julian Chow (UNSD); Amanda Driver (SANBI); Mark Eigenraam (IDEEA Group); Simon Ferrier (CSIRO); Per Arild Garnåsjordet (Statistics Norway/NINA); Hedley Grantham (World conservation Society); Lars Hein (Wageningen University, NL); Craig Hilton-Taylor (IUCN); Emil Ivanov (University of Nottingham); Daniel Juhn (Conservation International); Georgina Mace (University College London); Ronald Kaggwa (Uganda National Planning Authority); Trond Larsen (Conservation International); Francis Ogwal (Uganda National Environmental Management Authority); Jan-Erik Petersen (European Environment Agency); and, Caroline Pollock (IUCN).

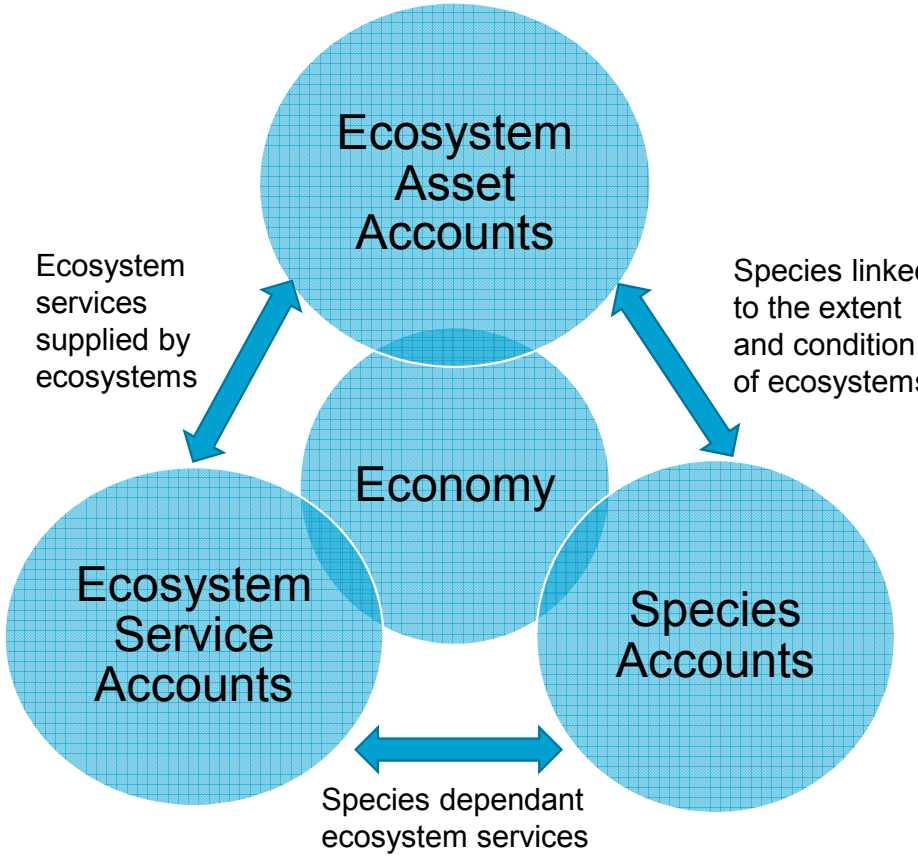
This work was coordinated by the United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC). The step-by-step approach for constructing Species Accounts was informed by a three day workshop held at UNEP-WCMC's offices in Cambridge in February 2016. The work has been funded by the Norwegian Ministry of Foreign Affairs and the Swedish International Development Cooperation (SIDA).

Acknowledgements: We gratefully acknowledge the input and support from Alessandra Alfieri and Ivo Havinga (UNSD), Rocky Harris(DEFRA); Carl Obst (IDEEA Group), Stig Gustaf Johansson (the World Bank), Michael Vardon (ANU, World Bank), Ken Joseph Bagstad (USGS, World Bank), Hilary Allison and James Vause (UNEP-WCMC), Lisa Waselkowski and Markus Erhard (European Environment Agency), Julie Aslaksen (Statistics Norway) and Olav Skarpaas (The Norwegian Institute for Nature Research).

	Direct Observations	Habitat Based Observations
Methods	Population census (e.g., mammal surveys); Population estimates (e.g., transects, nest counts); Cover (e.g., canopy cover)	Changes in the habitat required by species
Pros	Locally accurate data	Limit resources required
Cons	Depends on significant investments in monitoring	Assumptions add an element of uncertainty. Expertise to implement

http://www.unep-wcmc.org/news/guidance-on-experimental-biodiversity-accounting-using-the-seea-eea-framework

A COHERENT PICTURE



Different Planning Approaches

Different Planning Approaches

UNEP WCMC

Reference measure for a common year

Abundance measure at start of accounting period

Additions and reductions Should be stated if known

Abundance measure at End of accounting period

Net change in abundance over accounting period

Relative Abundance measure at start of accounting period

Relative Abundance measure at end of accounting period

Net change in relative abundance over accounting period

Change as % of the opening relative abundance

Table A: Example Account of Species and Species Groups of Special Concern (2005 – 2010)						
	Species or Species Group 1	Species or Species Group 2	Species or Species Group 3	Species or Species Group 4	Species or Species Group 5	Composite indicator
Example Species	Panda	Cuckoo	Tree sparrow	Orangutan	Vertebrates	
Unit of measurement	No. of individuals	No. of individuals	Relative abundance based on population density	Hectares of suitable habitat	Proportion of original species complement	N/A
Reference (1995)	2,000	100,000	Set to 1.0	1,000,000	85%	100%
Opening (2005)	1,500	60,000	0.70	100,000	80%	N/A
Additions	100	N/A	N/A	10,000	N/A	N/A
Reductions	200	N/A	N/A	30,000	N/A	N/A
Closing (2010)	1,400	65,000	0.50	80,000	70%	N/A
Net Change	-100	+5,000	-0.20	-2,000	-10%	N/A
Opening (% of reference, 2005)	75%	60%	70%	10%	94%	TBC
Closing (% of reference, 2010)	70%	65%	50%	8%	82%	TBC
Net change (% of reference)	-5%	-5%	-20%	-2%	-12%	TBC
Change (% of opening)	-6.7%	+8.3%	-29%	-20%	-13%	TBC

UNEP WCMC

POTENTIAL USES

i. IDENTIFYING IF SPECIES ARE BEING EXPLOITED SUSTAINABLY (E.G., SETTING QUOTAS)

ii. IDENTIFYING WHICH ECOSYSTEMS ARE BEING DEGRADED AND THEIR RESILIENCE COMPROMISED

iii. IDENTIFYING WHAT IS HAPPENING TO LOCALLY PRODUCED ECOSYSTEM SERVICES

iv. IDENTIFYING WHAT IS HAPPENING TO THE SPECIES ASSET BASE AND IMPLICATIONS FOR FUTURE BENEFITS

v. COMMUNICATING THE ECONOMIC ARGUMENTS FOR INVESTING IN SPECIES AND ECOSYSTEM SERVICES (E.G., IDENTIFYING RETURNS ON INVESTMENT)

vi. SPATIALLY ANALYSING ALTERNATIVE LAND USE SCENARIOS AND OTHER TRADE-OFFS WITH SPECIES STATUS

vii. INFORMING POLICY OBJECTIVES (E.G., 'NO NET LOSS' OF BIODIVERSITY AND OFFSET PROGRAMMES)

viii. IDENTIFYING IF AGGREGATED TRENDS IN SPECIES ARE A CONCERN AT A NATIONAL AND SUB-NATIONAL LEVELS

ix. TRACKING PROGRESS TOWARDS SDG'S AND OTHER COMMITMENTS

INTEGRATED DECISION MAKING

The drivers of biodiversity / species loss arise throughout the economy

Agriculture | Pollution | Climate Change | Forestry | Biofuel | Infrastructure

Biodiversity Protection / Enhancement Targets

Natural Hazard Protection | Food Security

Climate Adaptation | Water Quality & Supply | **Sustainable Development** | Human Health | Rural Livelihoods

Maintaining and investing in biodiversity will have benefits far beyond biodiversity and contribute to goals across our economies and societies

HEALTHY AND PRODUCTIVE ECOSYSTEMS

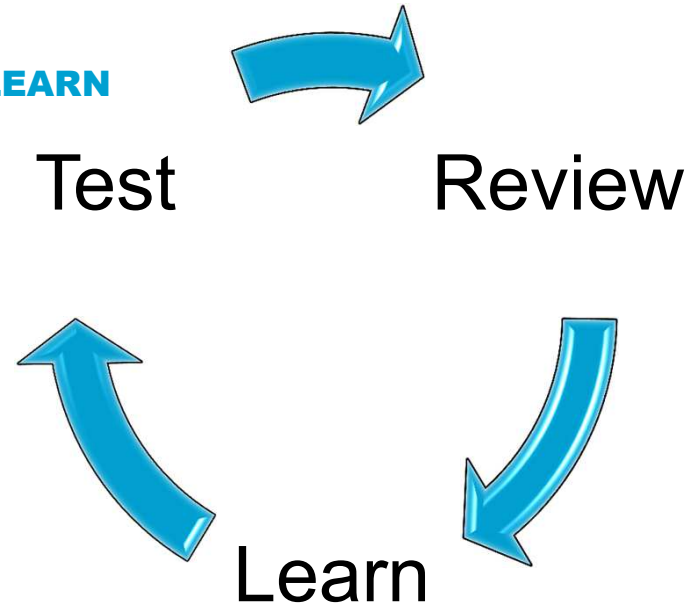
Targets: 1.b, 2.1, 2.4, 3.3, 6.3, 6.5, 6.6, 7.2, 11.4, 11.6, 11.a, 12.6, 12.7 12.8, 13.3, 14.1, 14.2, 14.3, 14.4, 14.5, 14.6, 14.c, 15.1, 15.2, 15.3, 15.4, 15.5, 15.6, 15.7, 15.8, 15.9, 15.a, 17.5, 17.14, 17.19

WHAT NEXT?

i. **BROADER APPLICATIONS - FOR DECISION MAKERS AND USERS (E.G., PROGRESS TOWARDS SDGS)**

ii. **PILOTING**

iii. **TEST - REVIEW - LEARN**



UNEP WCMC

THANK YOU!

Images: Down to earth, Peter Hartl,; The production of Shea Butter, Carsten ten Brink, CC courtesy of Flickr ; Prunus Africana (Hook.f.) Kalkman (ROSACEAE), Scamperdale; Cabrero (Spindalis zena, Thraupidae), Rodrigo Medel, all CC courtesy of Flickr. Remainder reproduced under license from Shuttershock.

claire.brown@unep-wcmc.org

27/06/2016