



# Biodiversity data nodes

## - digitization and integration of biodiversity data -

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# Outline

- Context
- Situation & products
- Perspectives

# Context

- Many data gathered in the last decades (BIOTA & other research programs) for few purposes (thesis, report, publications, etc.)
- Data collected were partially analysed and then forgotten: waste of energy, time and money!!
- No easy access to these data for better analysis (vegetation and species dynamique, impact of human activities or global change)

# Context

- Difficulties for comparison between regions and for a broad view of problems and solutions
- Loss of many opportunities for better understanding of processes due to lack or reduced accessibility to biodiversity data

## Solution = Data nodes

- Digitization and keeping biodiversity data for sustainable use



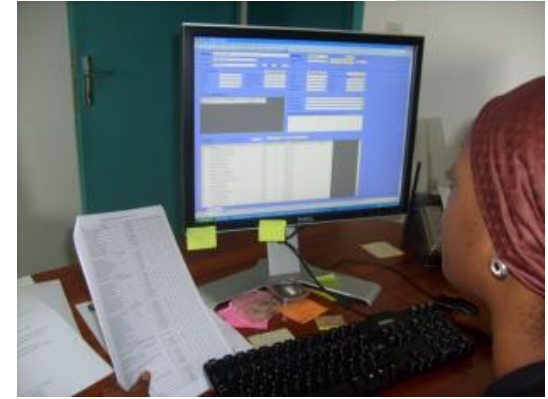
# Solution = Data nodes (following)

- Organization of data for easy online access and extraction for stakeholders, decision makers...
- Creation of a tool for development and conservation plans
- Creation of a tool for teaching and sensitizing (awareness)

# Where are we in this process?

- BIOTA West
- BIOTA East
- BIOTA South & Morocco

# West African local Data nodes



Frankfurt

## Implementation

- Common standards for database solutions
- Training and workshops

# Capacity building (workshops)



**BIOTA teams (Benin, Burkina Faso, Cote d'Ivoire) + Niger & Senegal**

Frankfurt (2007)

Ouagadougou (2008)

Cotonou (2009)

**What was learnt?**





# Digitization and Storage of biodiversity data



**senckenberg**  
Biodiversität und Biota

**SESAM**

**Edit**

Taxonomy & specimen data | Locality Data | Stratigraphy & suppl. fields | Publications | General Data | Metadata | Links | Summary

Management | Search | Capture/correct | Capture object data | Localities/Dates | Persons | Publications | Administration | Hierarchies | Collections

**Collection** Botanik - Herbarium Senckenberg  
**Catalogue number** 17395  
**Species name** *Cyperus karlschumannii* C.B.  
**Taxonomic hierarchy** Plantae: Spermatophyta: Angiosperms  
**Identification date** 01.10.2006 - 31.10.2006

**Locality information**  
**Continent/Ocean** Africa: Burkina Faso  
**Locality specification** Chaîne de Banfara, Route Banfara  
**Coordinates** 10° 47' 220" N 4° 39' 662" W - ;  
**Collection date** 14.10.2006  
**Collector** A. Thiombiano, L. Aké Assi, A. Thiombiano  
**Expedition** BIOTA-Expedition 2006, Adjim

**Relevés** [Dichterbore (10x10) Laufenflache] Seite 10/10/2006 [Relevés] [Select Macro] [Herkunft: 2006]

**GEOGRAPHY**

Locality: [Country] [M] [Long] [Elev] [Alt] [W] [WZ]  
 River data: [Name] [Flow] [Flow Type] [Water] [Depth]  
 Climate: [Type] [Wind] [Humidity] [Exp] [Wind]

**FIELD PARAMETERS**

ID	Parameter	Stratum	Value	Units
2480	Fl. Rank soil (%)	Total	0.0	
40	Herb (%)	0.5m	40	
40	Herb (%)	0.5-1m	10	
40	Herb (%)	Herb type	0	

**SPECIES**

ID	Species	Stratum	Value	Date_Count
2480	Ustilago karlschumannii	0.5-1m	0.0	Original data
2481	Ustilago karlschumannii	Total	0.0	Original data
2482	Cyperus villosus	0.5-1m	0.1	Original data
2483	Cyperus villosus	1.0m	0.1	Original data
2484	Cyperus villosus	Total	0.2	Original data
2485	msd (f) (Andropogon class)	0.5-1m	0.1	Original data
2486	msd (f) (Andropogon class)	Total	0.4	Original data
2487	msd (f) (Andropogon sp.)	0.5-1m	0.1	Original data
2488	msd (f) (Andropogon sp.)	Total	0.1	Original data
2489	msd (f) (Andropogon sp.)	Total	0.1	Original data
2490	Hyparrhenia subulmacea	1.0m	0.3	Original data
2491	Hyparrhenia subulmacea	Total	0.3	Original data
2492	Andropogon chlorostachyus	0.5-1m	0.3	Original data
2493	Andropogon chlorostachyus	Total	0.3	Original data
2494	Andropogon chlorostachyus	1.0m	0.1	Original data
2495	Loudia arundinacea	Total	0.1	Original data
2496	Loudia arundinacea	Total	0.1	Original data
2000	msd (Cyperus sp.)	0.5-1m	0.1	Original data
2001	msd (Cyperus sp.)	Total	0.1	Original data

Presently digitised  
 Collection data: >20,000  
 Observation data: >110,000

- Digitization of current fieldwork and “revive“ old published data sets (theses, reports, etc.)
- Data security, sustainability
- Facilitate data exchange
- Facilitate analyses covering several datasets and disciplines

# First products

➤ Publications improvement (quantity and quality)

➤ Checklist of Burkina Faso (→ Poster Dressler et al.)

➤ Biodiversity Atlas of West Africa (→ Presentation Kampmann et al.)

➤ Plant determination tool

Check List 4(3): 251–266, 2008.  
ISSN: 1809-127X

**LISTS OF SPECIES**

**Magnoliophyta of the partial faunal reserve of Pama, Burkina Faso.**

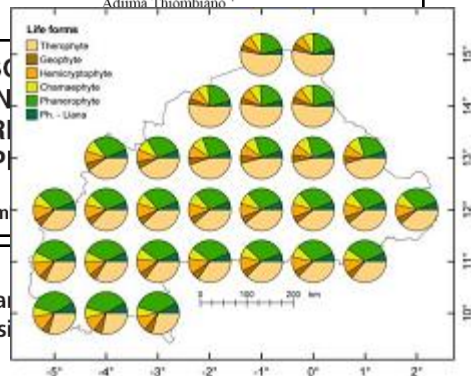
Elisée Mbayngone<sup>1</sup>  
Marco Schmidt<sup>2,3</sup>  
Karen Hahn-Hadjali<sup>3</sup>  
Adjima Thiombiano<sup>4</sup>

ECOTROPICA 13: 135–142, 2007  
© Society for Tropical Ecology

**INDICATOR VALUE OF DIFFERENT VASCULAR PLANT LIFE FORMS FOR OVERALL PLANT DIVERSITY IN WESTERN AFRICA (ABRIGES)**

**GRASSES AS INDICATORS OF PLANT DIVERSITY**

Marco Schmidt<sup>1,4</sup>, Holger KrefT<sup>2</sup>, Adjima Thiombiano<sup>1</sup>



Diversity and Distributions, (Diversity Distrib.) (2005) 11, 509–516

**BIODIVERSITY RESEARCH**

**Herbarium collections and data-based plant diversity in Burkina Faso**

Marco Schmidt<sup>1,4</sup>, Holger KrefT<sup>2</sup>, Adjima Thiombiano<sup>1</sup> and Georg Zizka<sup>1</sup>

Candollea 61(1): 189-213 (2006)

**Influence du gradient climatique sur la distribution des espèces de Combretaceae au Burkina Faso (Afrique de l'Ouest)**

ADJIMA THIOMBIANO, MARCO SCHMIDT, HOLGER KREFT & SITA GUINKO

ELSEVIER

Journal of Arid Environments 72 (2008) 1506–1517  
www.elsevier.com/locate/jaridenv

**Journal of Arid Environments**

**Modelling species richness and life form composition in Sahelian Burkina Faso with remote sensing data**

M. Schmidt<sup>a,b,\*</sup>, K. König<sup>b</sup>, J.V. Müller<sup>c</sup>

**West African Plants**  
A PHOTO GUIDE

# www.westafricanplants.senckenberg.de

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## West African Plants A PHOTO GUIDE



What are you looking for?

[Browse & Search](#)  
[Help & User's Guide](#)  
[Project & Partners](#)

### WEST AFRICAN PLANTS - A PHOTO GUIDE

This interactive photographic guide shall help you to identify higher plants from West African ecosystems. It contains images of ferns and seed plants taken in the field. You can browse through a taxonomic hierarchy and / or search according to selected characters you observe on your plant.

Please cite this site as follows:

Brunken, U., Schmidt, M., Dressler, S., Janssen, T., Thiombiano, A. & Zizka, G. 2008. West African plants - A Photo Guide. www.westafricanplants.senckenberg.de. - Forschungsinstitut Senckenberg, Frankfurt/Main, Germany.



**Data base currently contains**

Photos 3973

Illustrated species 788



BIOLOG



NATIONAL MUSEUMS OF KENYA  
WHERE HERITAGE LIVES ON



Projektträger im DLR



Federal Ministry  
of Education  
and Research



# Biodiversity data node in EAST Africa

## Kenya's GBIF country node: National Museums of Kenya (NMK)

### ➤ Set up of an improved IT infrastructure

- structured cabling of NMK Nat Hist Depts
  - technical network equipment (servers, software, client licenses etc.)
- ➔ Improved NMK intranet



BIOTA E15 servers & IT staff



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# Biodiversity data node in EAST Africa

## Kenya's GBIF country node: National Museums of Kenya (NMK)

### ➤ Data harmonization

- **SPECIFY** for zoological files such as Access, FileMaker, Excel or Word
- **Visual Plants** for botanical files such as BRAHMS, LEAP, API or Access (NMK, Makerere Univ).

# Biodiversity data node in EAST Africa

## Kenya's GBIF country node: National Museums of Kenya (NMK)

➤ Integration of digitization process into daily curatorial workflow of permanent staff at all Nat Hist Depts



- Pro-active data capture of BIOTA voucher specimens
  - Retro-active data capture of NMK collections
- ➔ Improved and accelerated data acquisition at a high quality level



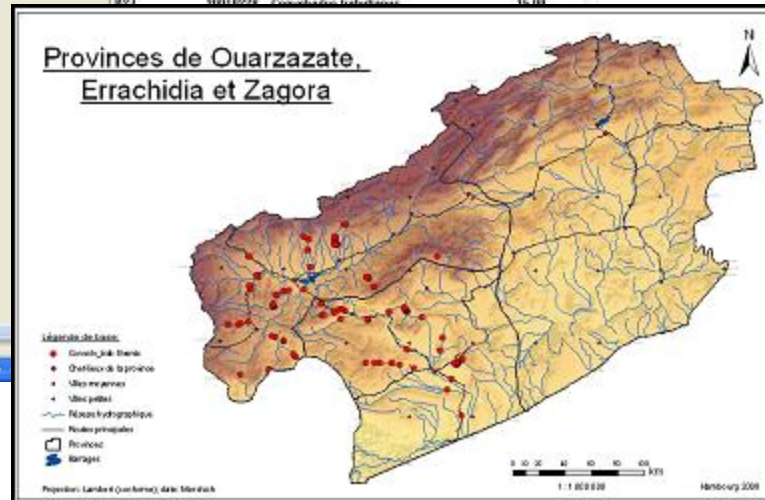
# Biodiversity data in BIOTA-South and Morocco

➤ Queries for multipurposes

➤ Thematic maps

The screenshot shows the BIOTA database interface. At the top, it displays 'BIOTA\_Moroc\_20080317' and 'BIOTADbase [Species (single date species records) A157 20020314]'. Below this is a menu bar and a toolbar. The main window is divided into several sections:

- Navigation and Search:** Includes buttons for 'Plots', 'Habitats', 'Landuses', 'Reliefs', 'Species', 'Individuals', and 'Numeric order'. There are also input fields for 'Plot number', 'Date', 'Relieve number', 'Responsible Person', and 'Fieldbook'.
- Table:** A table with columns 'Plot number', 'Date', 'Species name', and 'Cover'. It lists various records for *Convolvulus trachelium* across different plots and dates.
- Specimen Information:** A section for 'Cover [1]' with a 'Total' row and a 'Cover [1]' row. Below it are 'Collection number', 'Field case', and 'Abundance' fields.
- Photo:** A small image of a specimen, likely a plant, with a caption: 'Convolvulus trachelium Festsitz'.



# Where do we want to go?

- Scientist responsibility: inform and give better tools to decision makers for better management of our planet!
  
- We have to collect, analyse & stock securely data for sustainable use by future generations

# Where do we want to go?

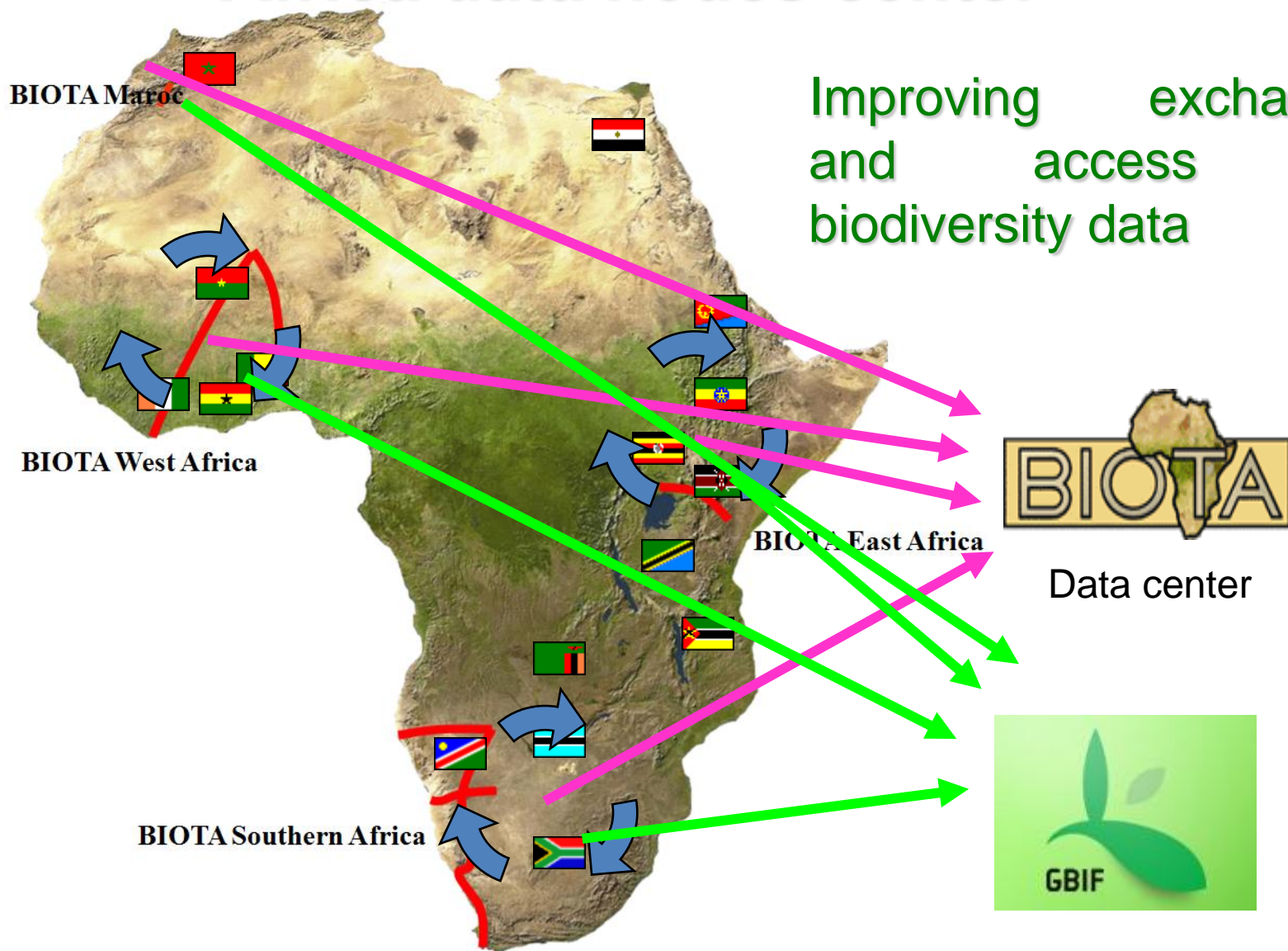
- Strengthen capacity building for more management and analysis of data
- Data harmonisation between regions (workshops, training courses, etc)
- Exchange, joint analyses for better comparison between regions
- Products for stakeholders: local checklists, land use maps

# Our vision...

- National level: capacity building for more qualified staff
- Regional level: effective establishment of an active data nodes network (West, East, South)
- Continental level: Africa data nodes provide data to BIOTA data centre and GBIF



# Africa data nodes center



Improving exchange and access to biodiversity data



Data center



Thank you for  
your attention,  
And BMBF for  
funding