ITCER Workshop, Oct 27th to 28th 2022

Expert Workshop on GBIF Data







KENYA Forest Service









October, 28th 2022

- 10.00 SNSB as GBIF data publisher with DWB-BioCASe data publication pipelines
- 10.30 National Museums of Kenya as GBIF data publisher
- 11.00 Discussion board: GBIF distributed infrastructure for publishing biodiversity data: IPT, Darwin Core, ABCD, technical interoperability
- 11.30 ITCER research, teaching and data
- 12.30 Lunch break
- 14.00 Discussion board: Regional data capture and data mobilization at ITCER Training Centre
- 14.30 Discussion board (with 3 min introduction): GBIF data model, GBIF dataset classes, data publishing and data papers, datasets from universities, agencies and business sector for ecological and environmental analyses
- 15.00 General discussion (with 3 min introduction): "how to proceed..."
- 15.30 Results of the meeting (minutes)
- 16.00 End of day 2
- 18.30 Dinner



International Training Centre for Environmental Research



- Biodiversity Site
- Laboratory for Analyses





International Training Centre for Environmental Research



ITCER:

- Biodiversity Site
- Laboratory for Analyses
- Data Node



 Outreach Center and Communication Platform

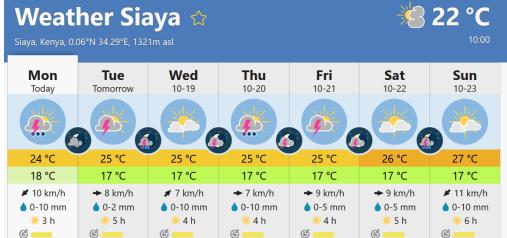
\rightarrow Research and Teaching



- Gathering Contextual Data
- Monitoring
 - \circ Vegetation
 - o Insects
 - \circ Mycobiomes
- Grassland Maintenance Experiments

 Gathering Contextual Data (Weather Station)





- Monitoring
 - Vegetation
 - Images
 - Logging and streaming
 - Species barcoding
 - Metabarcoding
 - \circ Insects
 - Images
 - Species barcoding
 - Metabarcoding
 - Microbes
 - Images
 - Species barcoding
 - Metabarcoding
 - Secondary metabolite screening

- Monitoring on defined vegetation plots
 - Alpha diversity of organisms 0















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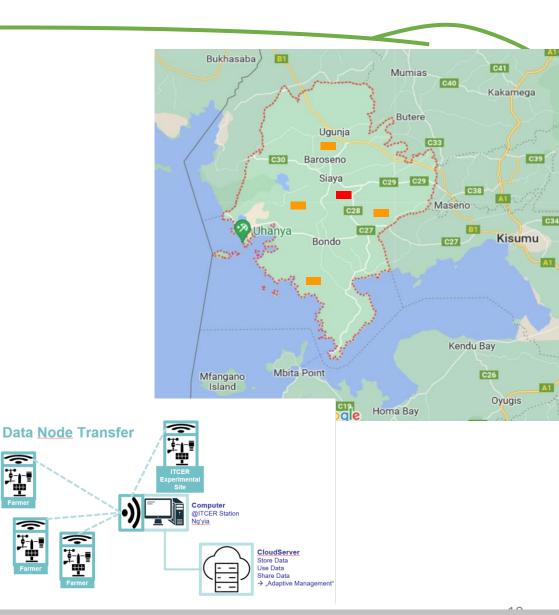
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- Monitoring of aquatic habitat
 - o Alpha diversity of organisms



- Location and size
 - \circ Siaya County
 - o Siaya township
- Scaling up
 - Comparative studies on grassland biomass production and biodiversity
- Rental
 - Plots of ½ to 1 ha
 - Alternatively: for free from government



 Universal Unique IDentifier (UUID) and Operation design code (ODC)

for determination of sample identity and origin

 Labels attached to containers of environmental samples



QR code

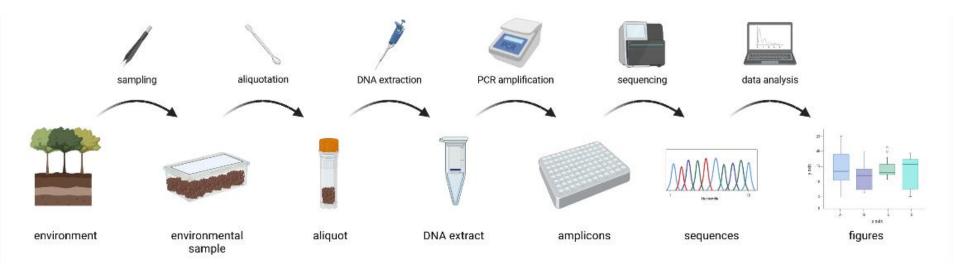
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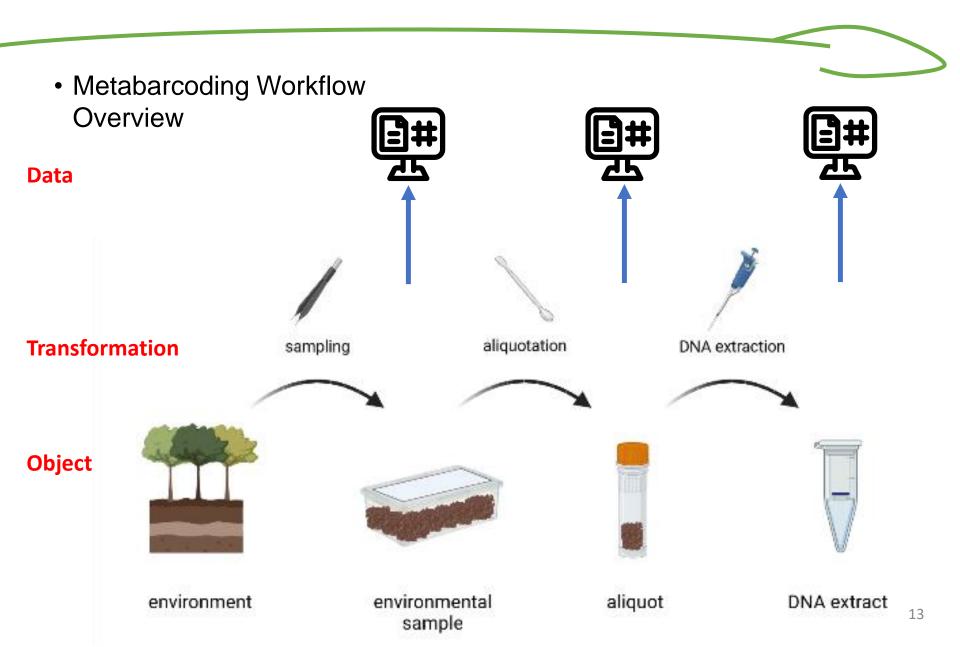
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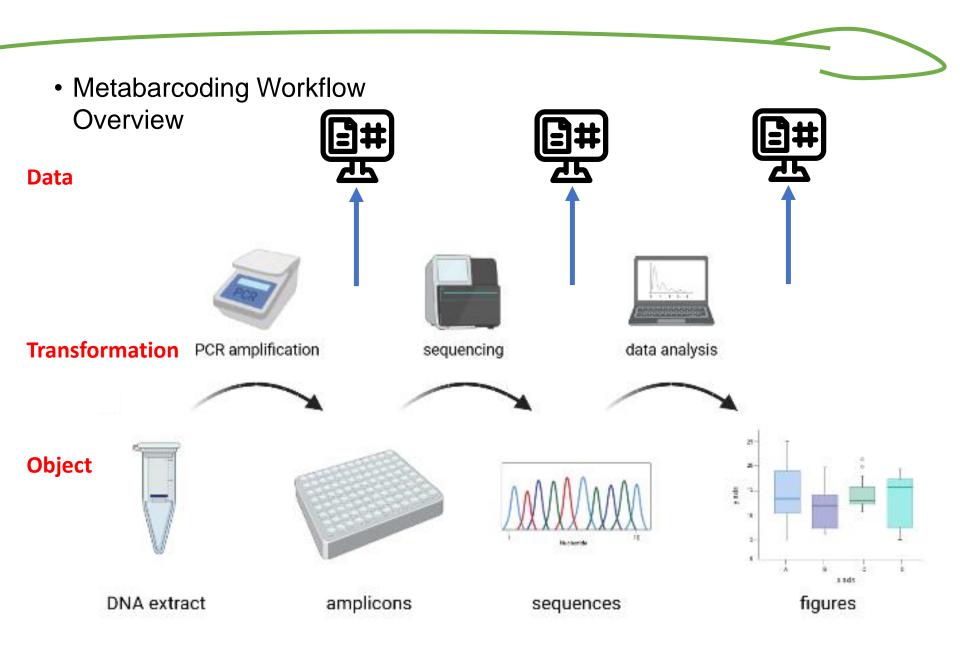
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 Metabarcoding Workflow Overview



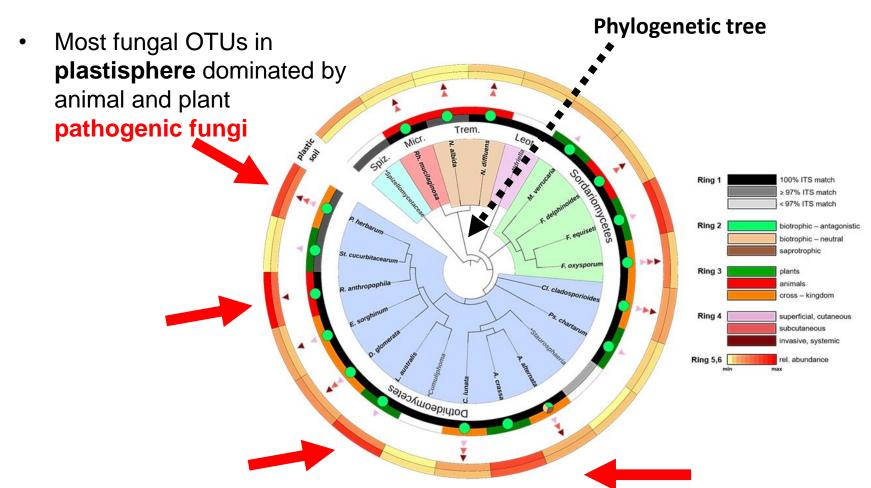




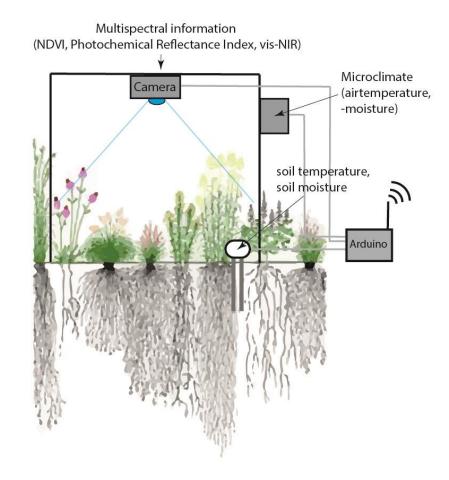
- Research objects
 - o Siaya township
 - altitude 1200–1300 m ASL
 - dump sites
 - different types of plastic
 - o Mycobiomes on/in
 - plastic particles
 - surrounding soil



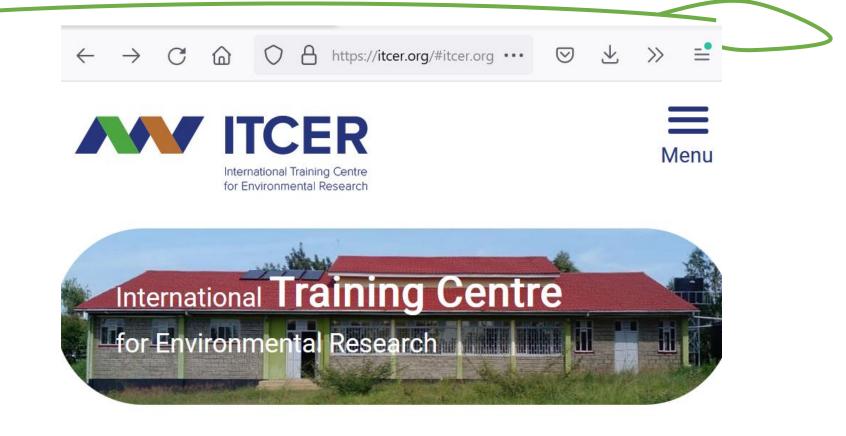
- Mycobiomes
 - \circ Findings



- Grassland Maintenance Experiments
 - o Monitoring Station
 - Environmental conditions (soil and atmosphere)
 - Vegetation productivity
 - Alpha diversity of plant and animal species



ITCER as Data Producer





- Environmental samples
- o DNA extracts, amplicons
- o DNA libraries
- Sec. metabolite extracts

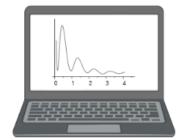


- o Streaming data
- o Images
- Analysis data (matrices, diagrams)
- o DNA libraries (digital)
- o Parametrisation data





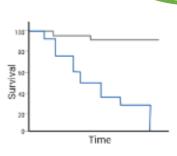




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Measurement and Contextual data



- Invariables
 - Design and measurement parametrisation



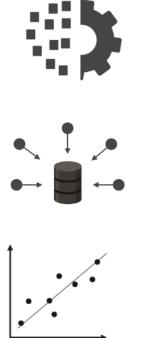
Analysis data

 From measurement data ('variables') and contextual data ('metadata')

o Transformation

o Aggregation

• Correlation



Measurement data (variables)
 Digital photo of specimen

Contextual data (variables)
 Lat / Ion coordinates + Date / time

- Analysis data
 - E.g. Measurement data × Contextual data



Time

Survival å 8



	A	0	c	
Conicide	200	233	177	
Hyphae	34	23	14	
Conidisphores	7	2	9	

• Abiotic factor data

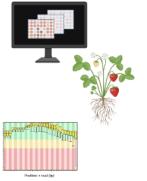
- Meteorological streaming data
- Soil streaming data
- Volatile compound data





• Biotic factor data

- Photographical data
- Vegetation analysis (traditional) data
- Community (meta)barcoding data









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\rightarrow Research and Teaching

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 - \circ Vegetation
 - o Insects
 - Mycobiomes
- Grassland Maintenance Experiments



International Training Centre for Environmental Research

• Monitoring

• Vegetation data

- Image
- Logging and streaming
- Species barcoding
- Metabarcoding

o Insect data

- Images
- Species barcoding
- Metabarcoding

• Microbes and metabolite data

- Images
- Species barcoding
- Metabarcoding
- Secondary metabolite screening

- Alpha diversity of organisms on standardised plots
- Storage and transfer of image data











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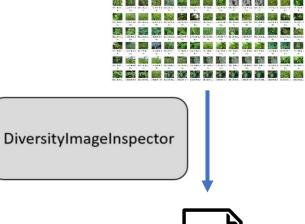




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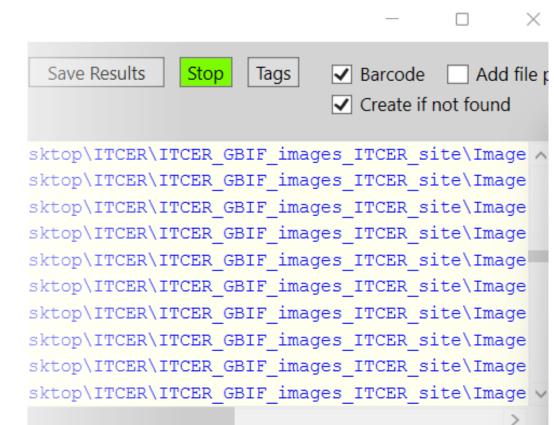
- Organism images
- Image data transfer
 - Diversity Image Inspector
 - EXIF data extraction
 - o Diversity Collection
 - EXIF data import
 - Links to images





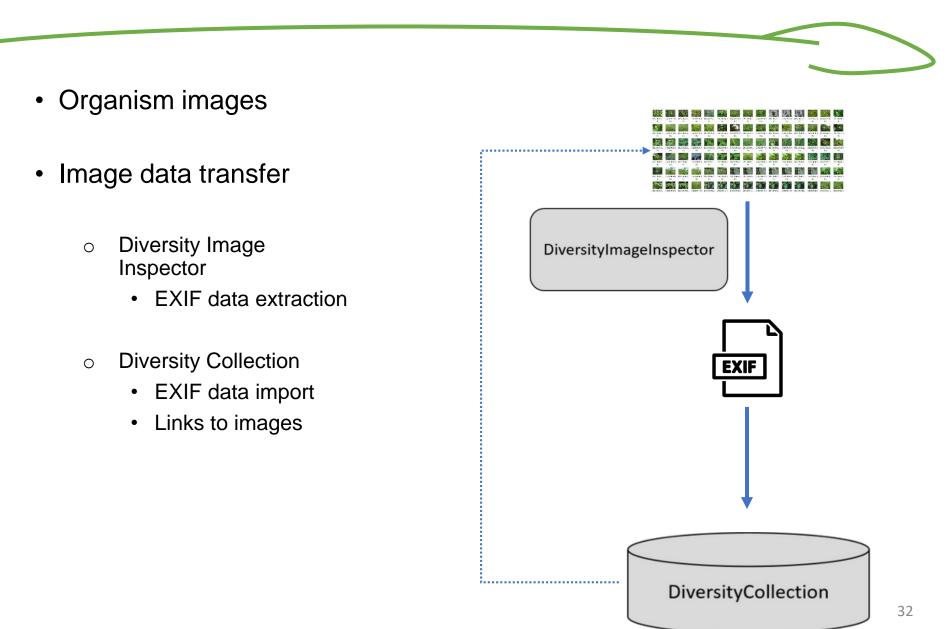


- Insect images
 - Diversity Image Inspector
 - EXIF data extraction



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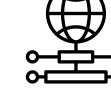
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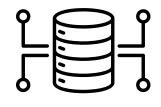
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- Legal issues
 - o Copyright
 - o Author's rights or intellectual property
 - \circ Permits

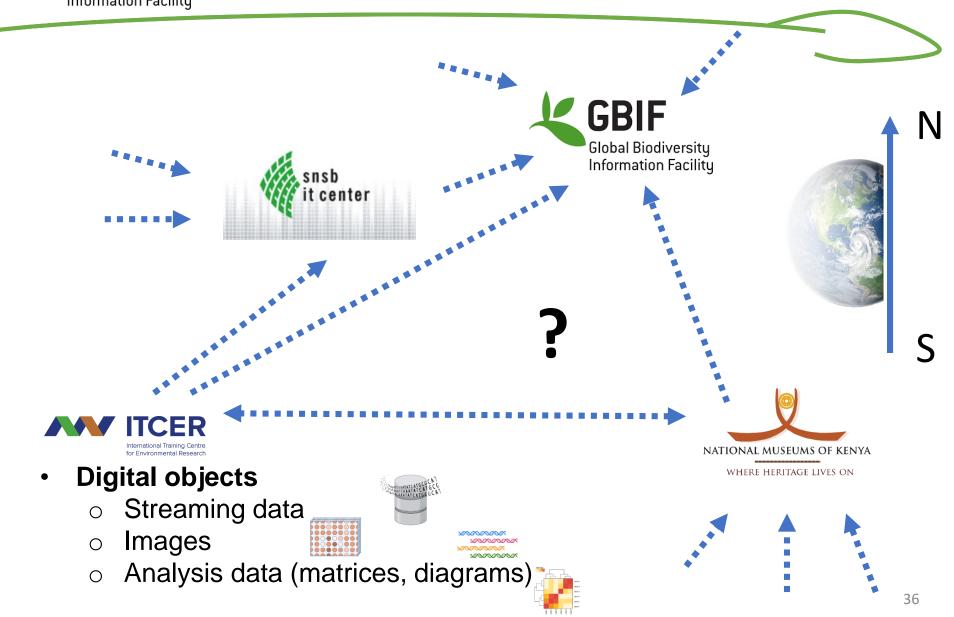


- Data flow
 - \circ Schema
 - Protocol
 - Physical and digital objects location
 - Plots
 - Databases
 - Image repositories

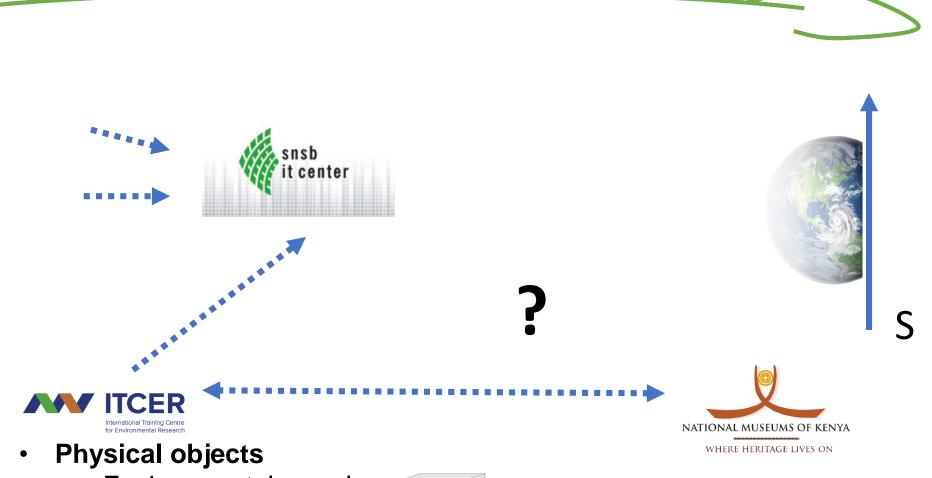












- Environmental samples
- o DNA extracts, amplicons
- o DNA libraries
- Sec. metabolite extracts

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K E N Y A Forest Service

