

Forschungsdatenmanagement im
interdisziplinären Biodiversität und Klima
Forschungszentrum BiK-F

Claus Weiland und Thomas Hickler

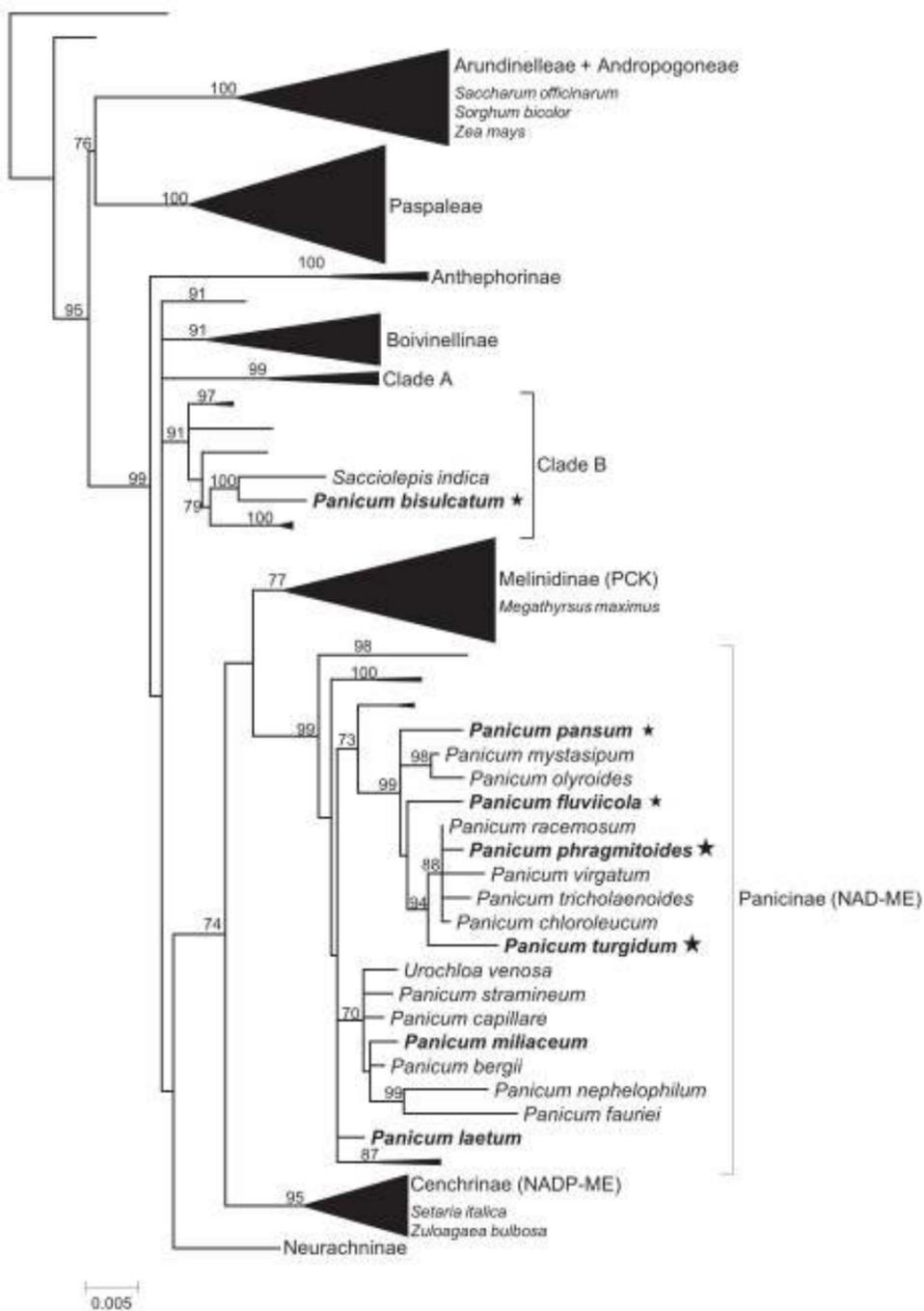
Workshop des AK Forschungsdaten in der WGL
19. Juni 2013

Outline

- Intro
- Case studies: Primär- und Metadaten in Forschungsfeldern von BIK-F:
 - Molecular Taxonomy (FASTA-Format)
 - Niche Modelling (Raw Data Format)
 - Dynamic Global Vegetation Models (netCDF)
 - Biodiversity Databases (Mapping to Darwin Core, ABCD Schema)
- BIK-F Data Policy
- Zentrales Metadaten-Repository Metacat
- Ausblick auf Projekt GFBio

Intro: LOEWE Biodiversität und Klima Forschungszentrum (BiK-F)

- Gegründet 2008 als Joint Venture der Senckenberg Gesellschaft für Naturforschung (SGN) und der Goethe-Universität Frankfurt (GU).
- Finanziert durch die Landes-Offensive zur Entwicklung Wissenschaftlich-ökonomischer Exzellenz (LOEWE) des Landes Hessen.
- Kooperationspartner neben der SGN und GU sind der Deutsche Wetterdienst (DWD) sowie das Institut für sozial-ökologische Forschung (ISOE).
- Ca. 150 WissenschaftlerInnen erforschen in sechs Projektbereichen die Wechselwirkungen zwischen organischer Biodiversität und Klima.
- Interdisziplinärer Ansatz von BiK-F: Beteiligte WissenschaftlerInnen sind in unterschiedlichen wissenschaftlichen Communities von Geowissenschaften bis Taxonomie engagiert. Heterogen sowohl in Methodik (Genomics, Observation, Modeling) sowie im Datenaufkommen.



NCBI Resources How To

Nucleotide Nucleotide Limits Advanced

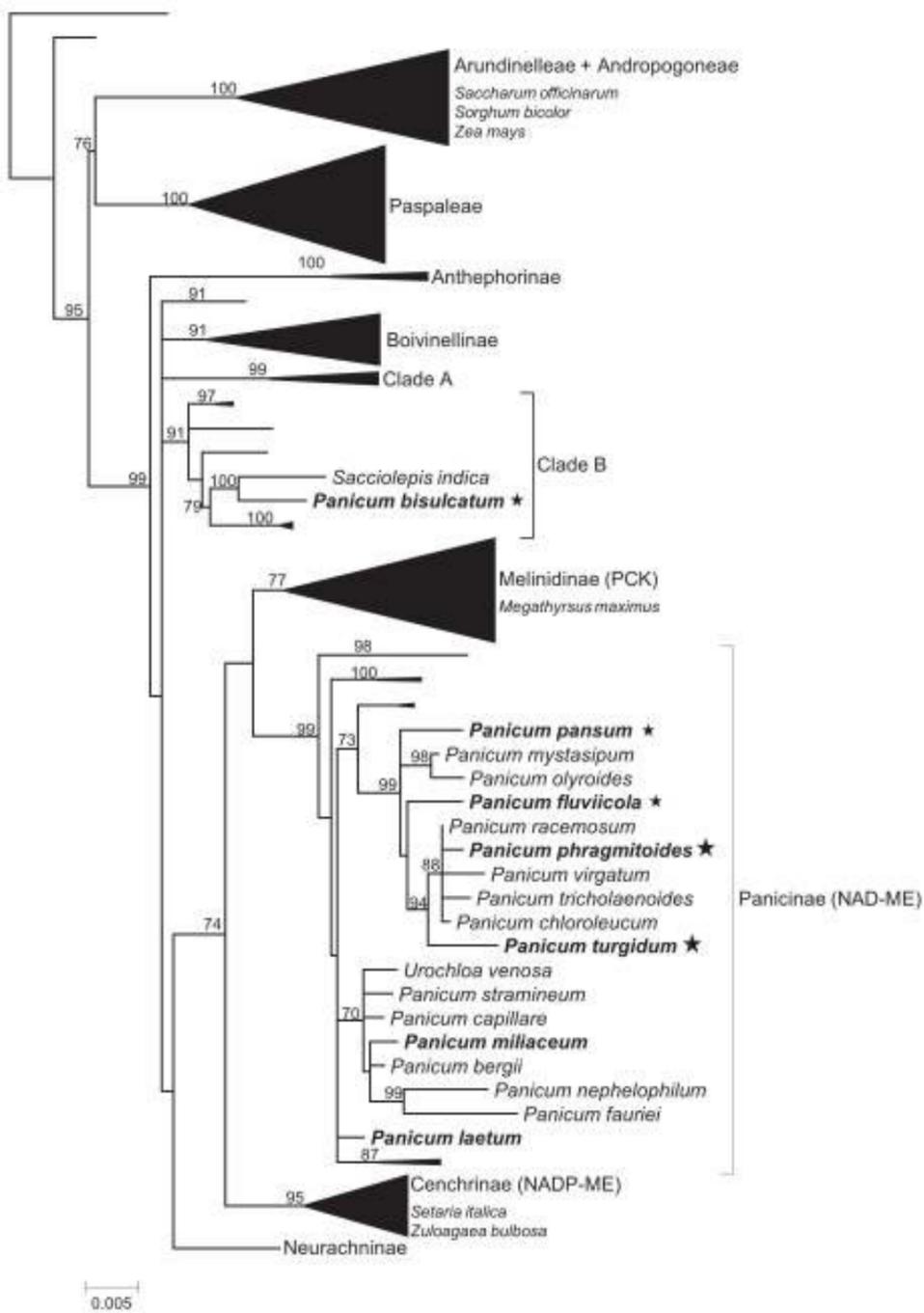
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Panicum phragmitoides chloroplast partial rbcL gene for RuBisCO, specimen voucher FR:0004790

GenBank: FR667679.1
[GenBank](#) [Graphics](#)

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gene for RuBisCO, specimen voucher FR:0004790
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NCBI Resources How To

Nucleotide Nucleotide

Limits Advanced

Display Settings: FASTA

Panicum phragmitoides specimen voucher FR:

GenBank: FR667679.1

[GenBank](#) [Graphics](#)

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NCBI Resources How To

Nucleotide Nucleotide

Limits Advanced

Display Settings: GenBank

Panicum phragmitoides chloroplast partial rbcL gene for RuBisCO, specimen voucher FR:0004790

GenBank: FR667679.1

[FASTA](#) [Graphics](#)

Go to:

LOCUS FR667679 1027 bp DNA linear PLN 20-SEP-2010

DEFINITION Panicum phragmitoides chloroplast partial rbcL gene for RuBisCO, specimen voucher FR:0004790.

ACCESSION FR667679

VERSION FR667679.1 GI:307343220

KEYWORDS .

SOURCE chloroplast Panicum phragmitoides

ORGANISM [Panicum phragmitoides](#)
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; Liliopsida; Poales; Poaceae; PACMAD clade; Panicoideae; Paniceae; Panicum.

REFERENCE 1
AUTHORS Zimmermann,T., Brueggemann,W. and Berberich,T.
TITLE Phylogenetic relationship of ten selected species of Panicum inferred from four chloroplast DNA-barcode sequences
JOURNAL Unpublished

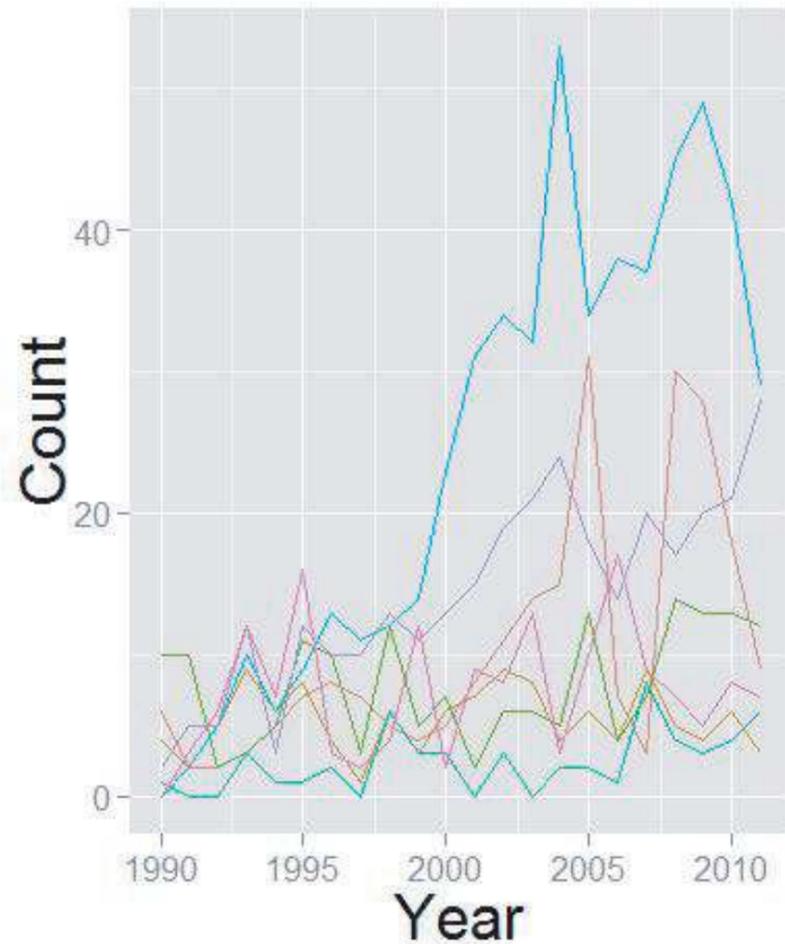
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AUTHORS Berberich,T.
TITLE Direct Submission
JOURNAL Submitted (19-JUL-2010) Berberich T., Biodiversity and Climate Research Centre, Goethe-University, Siesmayerstrasse 70, Frankfurt am Main, D-60323, GERMANY

- Change region
- Customize view
- Analyze this sequence
- Run BLAST
- Pick Primers
- Highlight Sequences
- Find in this Sequence
- Related information
- Related Sequences
- Protein
- Taxonomy
- Recent activity
- Panicum phragmitoides
- Panicum phragmitoides chloroplast partial rbcL gene for RuBisCO
- Bootstrap phylogenetic tree



Species

- *Barbastella barbastellus*
- *Eptesicus nilssonii*
- *Eptesicus serotinus*
- *Myotis bechsteinii*
- *Myotis daubentonii*
- *Myotis myotis*
- *Myotis nattereri*



**Data Repository
for
Long-Term Ecological Timeseries**



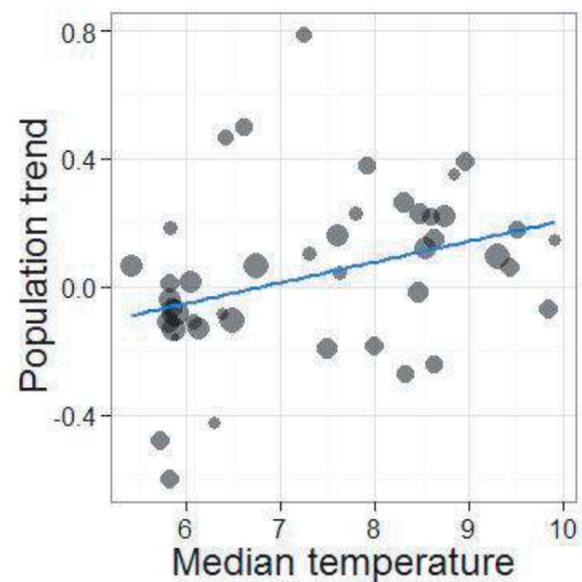
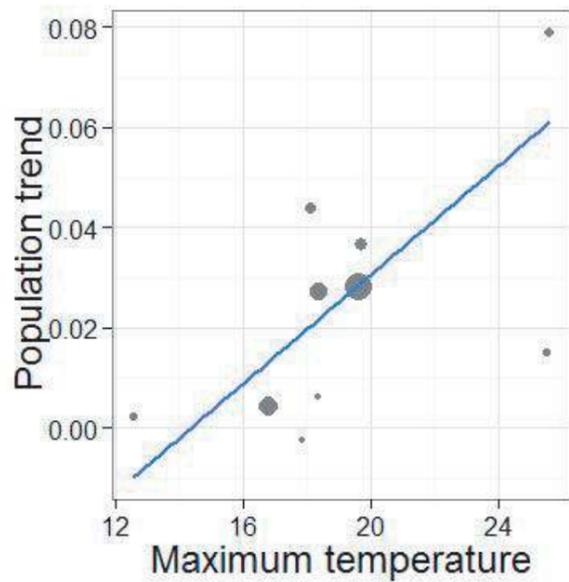
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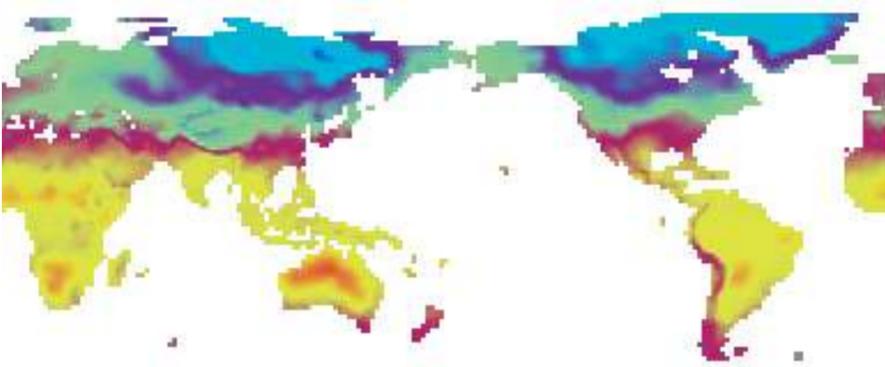
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ID: longterm.106.5				
» AWI North Sea benthos time series	Brey	Alfred Wegener Institute for Polar and Marine Research		View Edit Delete
ID: longterm.98.2				
» Bat monitoring in Bavaria since 1985	Rudolph	Bayerisches Landesamt fuer Umwelt	Bats	View Edit Delete
ID: longterm.109.7				

Metadata, Data Table and Publications

- Metadata:** [Ecological Metadata Language \(EML\) File](#)
- Other Data:** [winter_data_from1990-91_all_specs\(DianaBowler\).xls](#) ([View Metadata](#) | [Download File](#))
- Other Data:** [stmug_app000006.pdf](#) ([View Metadata](#) | [Download File](#))
- Other Data:** [stmug_app000002.pdf](#) ([View Metadata](#) | [Download File](#))





Netview 2.1.1 David W. Pierce 1 Aug 2011

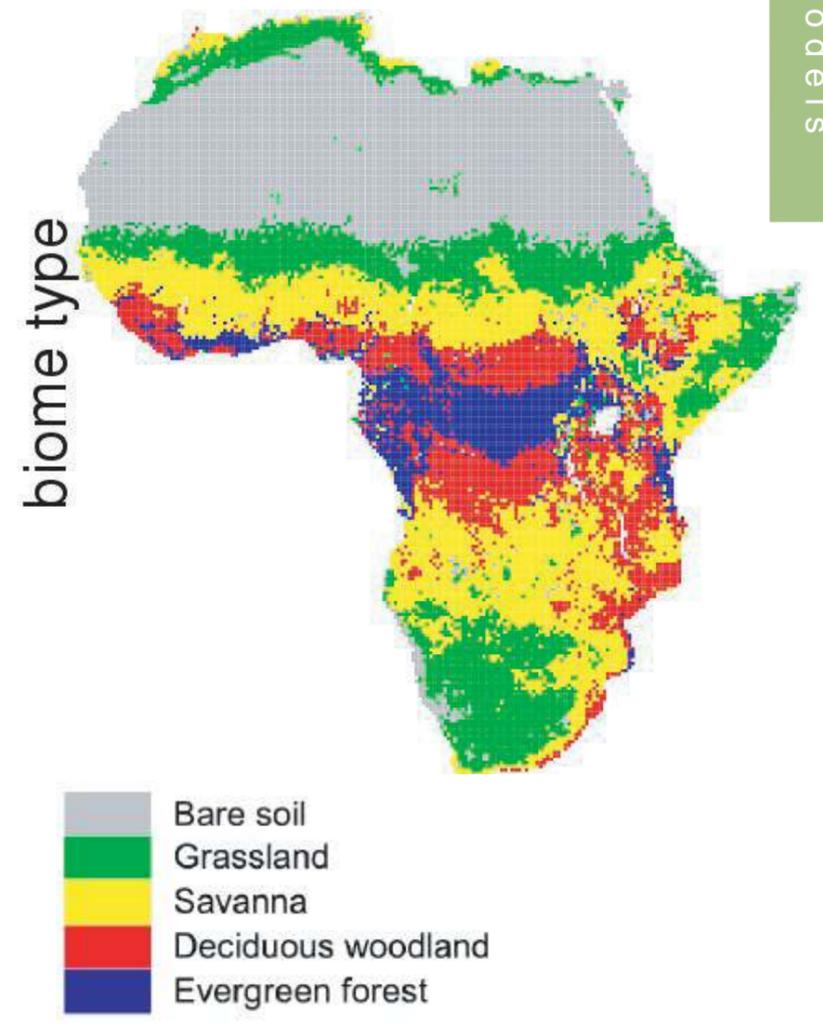
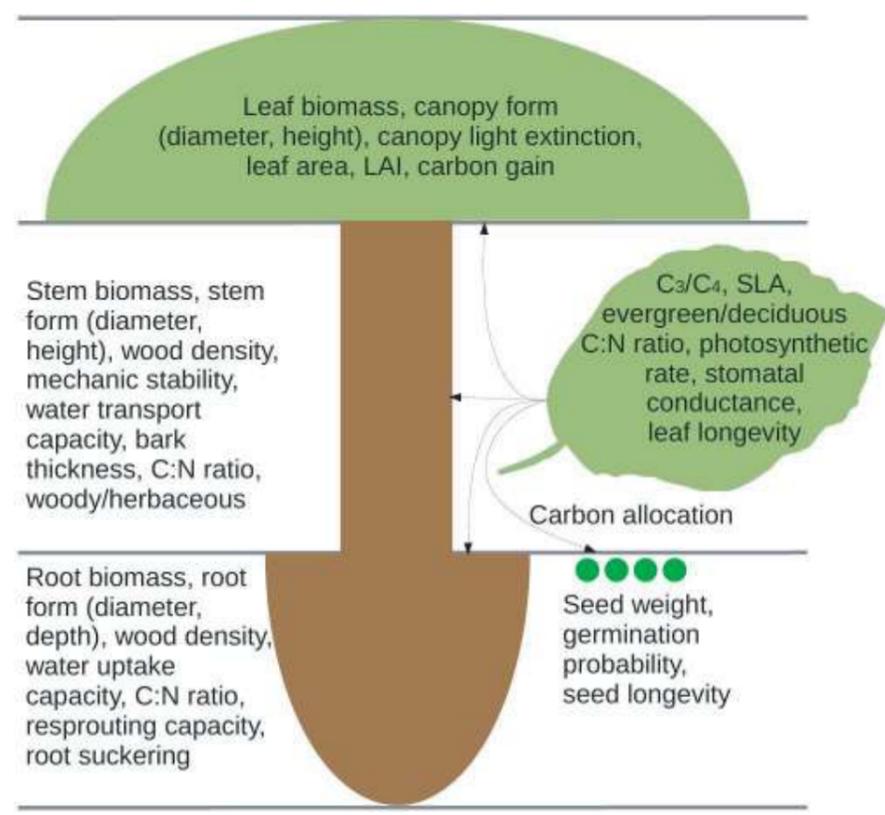
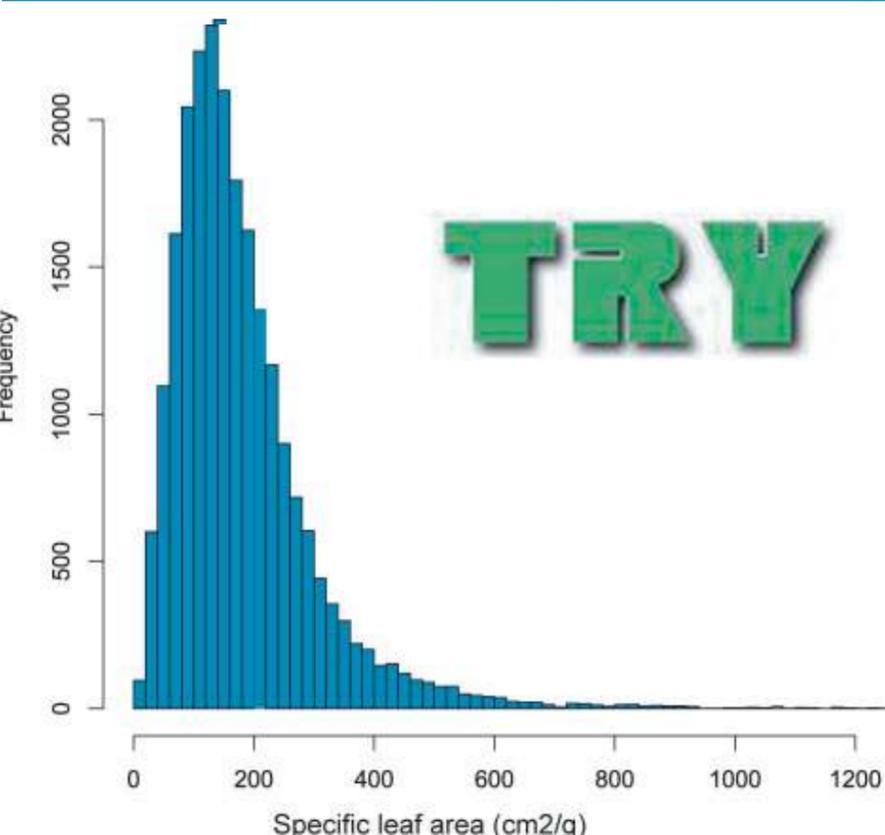
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Quit <->1 << < || > >> Edit ? Delay: [] Opts

3gauss Inv P Inv C M X2 Linear Axes Range Bi-lin Print

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shortwave tmax tmin wspeed

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BIK-F Data Policy

- Ausgangssituation für Daten-Management am BIK-F: Koexistenz unterschiedlicher Strategien zur Speicherung der Primärdaten: Entsprechend der jeweiligen Community erfolgt Nutzung zentraler Daten-Repositoryn (z.B. Pangeae, GenBank) oder - insbesondere für taxonomische Daten - lokaler Repositoryn (SeSAM).
- Strategie: Datensätze, die als Grundlage von Publikationen oder direkt veröffentlicht werden, sollen im zentralen BiK-F Metadatenkatalog verzeichnet werden.
Datenbanksystem: Metacat (<http://metacat.senckenberg.de>); Erstellung von Metadatensätzen mit dem Client morpho.
- Einheit der Meta- und Primärdatenspeicherung ist Entscheidung der Urheber, z.B. ein Datenbankeintrag pro BiK-F Projekt oder pro Publikation (Minimum: Datenbankeintrag pro Projekt).
- Jedes BiK-F Projekt muss über langfristige Strategie zur Datenspeicherung verfügen.

Metacat@BIK-F

- Metacat: Repository für Metadaten und Primärdaten, entwickelt vom KnowledgeNetwork for Biocomplexity (KNB). Data Federation über das Data Observation Network for Earth (DataOne).
- Speicherung von Metadaten in der Ecological Metadata Language (EML).
- Management von Authentifizierung und Autorisierung (LDAP, Shibboleth).
- Archivierung: Umsetzung der entsprechend DFG Empfehlungen zur Sicherung guter wissenschaftlicher Praxis, den Regeln zur Sicherung guter wissenschaftlicher Praxis an den Senckenberg Forschungsinstituten sowie der Kooperationsvereinbarung Senckenberg-Goethe Uni – DWD- ISOE.
- Backup und Archivierung zur Zeit über die Infrastruktur der GU (IBM-Tivoli Storage Manager).

File Edit Search Documentation Data Window Help

Dr. Kathrin Theissen, Dr. Steffen Pauls: Sequence and microsatellite genotype data for the stonefly *Arcynoptera dichroa* (Plecoptera...
 Accession Number: [biKf.288.2](#) Keywords: Plecoptera, Perlodidae, stonefly, Europe, microsatellite, mtDNA, mitochondrial cytochrome c oxidase I...
[more](#)

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Number Of Records: 101

Online Distribution
 Info: [http://www.knbiol.de/biKf/2871](#)



[Home](#) [Data Entry](#) [Login](#) [Map](#) [Help](#)

BiK-F Metacat Repository

Welcome to the BiK-F Metacat Repository. It is based on software developed by the Knowledge Network for Biocomplexity (KNB), and houses metadata that are compliant with Ecological Metadata Language (EML).

Entering data requires an account (see [Login](#)). Data can be entered via [Webform](#). This is a quick way to provide BiK-F researchers with information about the existence of your data and to upload this information (together with the data) to our repository. Alternatively, you can create more elaborately described data packages by using the desktop application [Morpho](#) (recommended).

If you do not wish to share your data with others, you can simply use this repository as a safe storage container by selecting the category "not public" (see [FAQ](#)). Then your data are not visible (except by you and the administrator).

You may search the data catalog without being logged into your account, but will have access only to "public" data.

Enter a search phrase to search for data sets in the data catalog, or simply browse by category using the links below. You can use the '%' character as a wildcard in your searches.

[Advanced Search](#)

Search Title, Abstract, Keywords, Personnel (Quicker)
 Search all fields (Slower)

<p>Taxonomy</p> <p>Plant, Invertebrate, Mammal, Bird, Reptile, Amphibian, Fungi, Microbe, Virus</p>	<p>Biomass</p> <p>Biomass, Carbon, Chlorophyll, GIS, Nitrate, Nutrients, Precipitation, Temperature, Radiation, Weather</p>
<p>Habitat</p> <p>Alpine, Aquatic, Beach, Benthic, Desert, Estuary, Forest, Grassland, Marine, Montane, Oceanic, Savanna, Shrubland, Terrestrial, Tundra, Urban, Wetland</p>	<p>Ecology</p> <p>Competition, Endangered Species, Herbivory, Invasive Species, Parasitism, Population Dynamics, Predation, Productivity</p>

Individual's Last Name:

Organization:

Spatial Criteria

Geographic Place Name:

Organization: University of Cape Town
 Address: Private Bag,
 Rondebosch, Cape Town, 7701 South Africa

Abstract:

File Edit Search Documentation Data Window Help

Dr. Kathrin Theissinger, Dr. Steffen Pauls Sequence and microsatellite genotype data for the stonefly *Arcynoptera dichroa* (Plecoptera, Perlodidae, stonefly, Europe, microsatellite, mtDNA, mitochondrial cytochrome c oxidase I, ...
 Accession Number: [bioRxiv:288.2](#) Keywords: Plecoptera, Perlodidae, stonefly, Europe, microsatellite, mtDNA, mitochondrial cytochrome c oxidase I, ...
[More](#)

Accession	Accession	Accession	Accession	Accession	Accession	Accession	Accession
EMF	IRNA-code	sample-code	haplotype	Genbank-access	Arco_8	Arco_79	Arco_123
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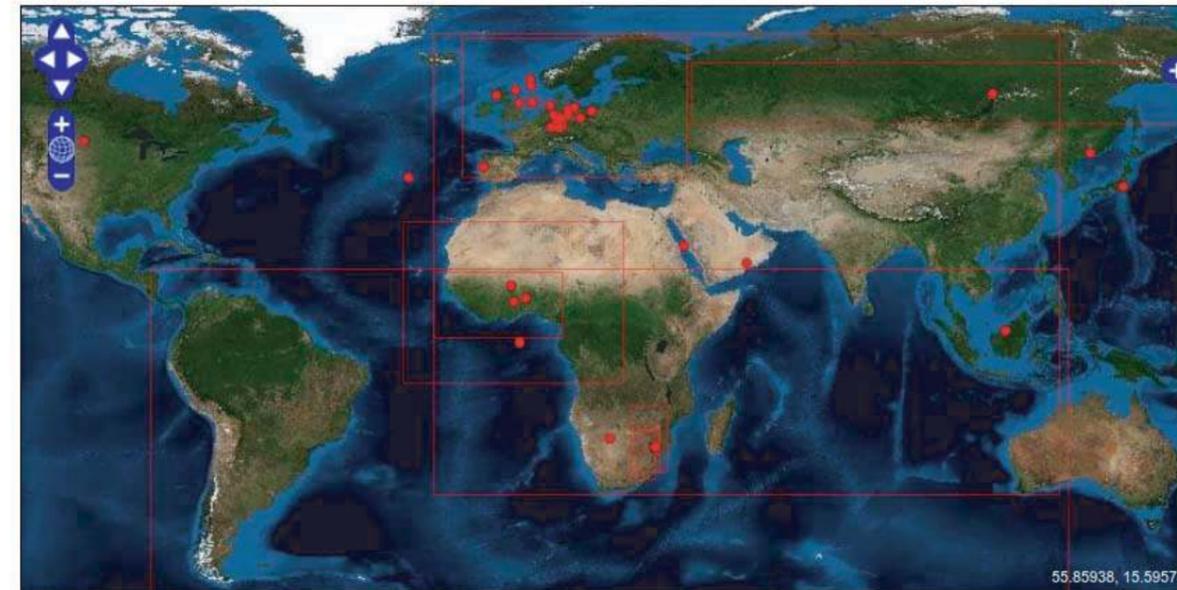
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Number of Records: 197

Online Distribution
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Interactive Map

Click on the red data points on the map below to access the records in the data catalogue.
 By pressing SHIFT, you can draw a bounding box (with left mouse button) to select a region of special interest.



Select a region

Advanced Search

Subject
 Subject: [dropdown] contains [input] All Terms Any Term

Author
 Individual's Last Name: [dropdown] [input]
 Organization: [dropdown] [input]

Spatial Criteria
 Geographic Place Name: [input]

Plant, Invertebrate, Mammal, Bird, Reptile, Amphibian, Fungi, Microbe, Virus

Habitat
 Alpine, Aquatic, Beach, Benthic, Desert, Estuary, Forest, Grassland, Marine, Montane, Oceanic, Savanna, Shrubland, Terrestrial, Tundra, Urban, Wetland

Biomass, Carbon, Chlorophyll, GIS, Nitrate, Nutrients, Precipitation, Temperature, Radiation, Weather

Ecology
 Competition, Endangered Species, Herbivory, Invasive Species, Parasitism, Population Dynamics, Predation, Productivity

Individual: [Prof. Dr. Ed Feulner](#)
 Organization: University of Cape Town
 Address: Private Bag, Rondebosch, Cape Town, 7701 South Africa

Abstract:

File Edit Search Documentation Data Window Help

Dr. Kathrin Theissinger, Dr. Steffen Pauls **Sequence and microsatellite genotype data for the stonefly *Arcynoptera dichroa* (Plecoptera...**
 Accession Number: [bikf.288.2](#) Keywords: Plecoptera, Perlodidae, stonefly, Europe, microsatellite, mtDNA, mitochondrial cytochrome c oxidase 1...
[more](#)

SNP	DNA_code	sample_code	haplotype	genbank_code	Arco_8	Arco_79	Arco_123
2103	Arco010	AL_1_1	80	JF312864	na	na	na
1970	Arco009	BF_1_1	05	JF312788	188188	214217	259259
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Number Of Records: 191

Online Distribution
[url: <http://www.ncbi.nlm.nih.gov/Genbank/288.2>](#)



Home Data Entry Login Map Help

Data Set Citation

Higgins S of Goethe University Frankfurt, Zizka A of Goethe University Frankfurt, and February E of University of Cape Town.
Foliar Nitrogen and Carbon composition of 26 woody savanna species, from Kruger National Park, South Africa..
 AZ.149.2 (<http://metacat.senckenberg.de/knb/metacat/AZ.149.2/bikf>).

Data Tables, Images, and Other Entities:

- Metadata: [Ecological Metadata Language \(EML\) File](#)
- Data Table: [Isotopes_species_mean.csv](#) (View Metadata | Download File)
- Data Table: [Isotopes_replicates.csv](#) (View Metadata | Download File)

Data Set Owner(s):

- Individual: **Prof. Dr. Steven Higgins**
- Organization: Goethe University Frankfurt
- Position: Professor
- Address: Altenhöferallee 1,
Frankfurt, Hessen 60438 GERMANY
- Email Address: higgins@em.uni-frankfurt.de
- Individual: **Alexander Zizka**
- Organization: Goethe University Frankfurt
- Position: Researcher
- Email Address: alexanderzizka@gmx.net
- Individual: **Prof. Dr Ed February**
- Organization: University of Cape Town
- Address: Private Bag,
Rondebosch, Cape Town, 7701 South Africa

Abstract:

Plant, Invertebrate, Mammal, Bird, Reptile, Amphibian, Fungi, Microbe, Virus

Habitat
 Alpine, Aquatic, Beach, Benthic, Desert, Estuary, Forest, Grassland, Marine, Montane, Oceanic, Savanna, Shrubland, Terrestrial, Tundra, Urban, Wetland

Biomass, Carbon, Chlorophyll, GIS, Nitrate, Nutrients, Precipitation, Temperature, Radiation, Weather

Ecology
 Competition, Endangered Species, Herbivory, Invasive Species, Parasitism, Population Dynamics, Predation, Productivity

Individual's Last Name:

Organization:

Spatial Criteria

Geographic Place Name:

Open Issues / GFBio

- Problem der Interoperabilität von Daten und Metadaten in der Biodiversitätsforschung zwischen den unterschiedlichen Wissensressourcen. Erfordert umfangreiche Kooperation der Provider von Umweltdaten: Naturhistorische Sammlungen, Fachrepositorien (e.g. Pangaea), Datenzentren für Genomics (e.g. EMBL-EBI) sowie Publisher.
- BIK-F/SGN Co-Antragsteller der 'German Federation for the Curation of Biological Data'. Ziel: Nachhaltige, service-orientierte, föderale Dateninfrastruktur für WissenschaftlerInnen als Grundlage für datenintensive Anwendungen im Bereich der Biodiversitäts- und Umweltwissenschaften.
- Data Publishing und Data Management integraler Bestandteil des Projekts; Entwicklung eines Single Point of Access zu allen Daten-Ressourcen.
- Förderung der Motivation von WissenschaftlerInnen, Forschungsdatensätze als eigenständige Publikation bereitzustellen. Validation System analog Impact Factor (Citation-based oder Usage-based, Standards für Nutzungsstatistiken)?

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