Metadata for macrophyte data from the Boro-Xudum seasonal floodplains of the Okavango Delta

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Keywords
herbaceous macrophytes, seasonal floodplains, Okavango Delta, hydroperiod, tropical wetlands, flood pulse, occurrence, relative abundance

Short description of the dataset/summary
This study covered the southern parts of the Okavango Delta - the seasonally flooded Xudum and Boro distributary systems. It was a single campaign aimed at collecting and analysing floodplain vegetation species and abundance data, to establish relationships with hydroperiod for exploratory scenario modelling. A stratified random sample of 30 sites was surveyed for species composition and abundance between mid-March and mid-July 2007, using multiple 1 sq m quadrats along transects orthogonal to the floodplain long axis. Minimum sampled area at each site was 30 sq m. Hydroperiod was established based on three sets of remote sensing data: 1:50,000 analogue aerial photography from 2001, Landsat (annual) and MODIS (monthly) data from 2000-2007, and ground truthing from 2007.

General information

dataset entry ID: FWM_24
name of the dataset: Seasonal floodplain herbaceous plant species in the Okavango Delta, Botswana
full name of the dataset: Boro and Xudum Floodplain Vegetation Data 2007
dataset short name: species (taxonomic group) per site database including environmental information
type of dataset: point data/observation data

science keywords according to GCMD:
topic: Biosphere, Terrestrial Hydrosphere
ISO topic category according to ISO 19115: Biota, Inland Waters

INSPIRE keywords according to GEMET:
Habitats and biotopes, Hydrography, Species distribution

own science keywords: herbaceous macrophytes, seasonal floodplains, Okavango Delta, hydroperiod, tropical wetlands, flood pulse, occurrence, relative abundance

funding: University of Botswana (Funds for Fieldwork and Travel), University of Florida (Adaptive Management: Water, Wetlands and Watersheds program funded by the National Science Foundation), Biokavango Project (Global Environment Facility), JRS Biodiversity Foundation (Reformatting database to DC standards)

Technical and administrative specifications

data format: txt
operating system: Linux
data language: English
current access level: web (public)

currently available through GBIF: yes
exchange planned: no
data in data repository: yes
specify repository: http://www.monitoringdata.ub.bw/ipt

Do you plan to publish the data on the Freshwater Biodiversity Data Portal: no

update level: completed
documentation:
type: internal description
language: English

contact details:
metadata contact person:
first, last name: Michael Murray-Hudson
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email: mmurray-hudson@ub.ac.bw
institution: University of Botswana Okavango Research Institute
address: Private Bag 285
postal code, city: 00000 Maun
province, state: North-West District
country: Botswana
web address: https://www.ori.ub.bw/
technical contact person:
first, last name: Kaelo Makati
phone: +267 6817256
email: makatik@ub.ac.bw
scientific contact person:
first, last name: Michael Murray-Hudson
phone: +267 6817232
email: mmurray-hudson@ub.ac.bw

Intellectual property rights and citation

dataset publisher: Okavango Research Institute
dataset creator (data compiler):
contact name: Michael Murray-Hudson
contact email: mmurray-hudson@ub.ac.bw
contact institution: University of Botswana Okavango Research Institute
data contributors to/owners of this dataset:
multiple
number: 3
data contributor/owner 1:
contact name: Michael Murray-Hudson
contact email: mmurray-hudson@ub.ac.bw
contact institute: University of Botswana Okavango Research Institute
criteria for using this part of the dataset:
The dataset is publicly available (data portal, data archive) and can be used without restrictions, but dataset creator/data contributors must be informed prior to publication. Data must be acknowledged and cited correctly.
data contributor/owner 2:
contact name: Frances Murray-Hudson
contact email: fmurray-hudson@ub.ac.bw
contact institute: Peter Smith Herbarium, Okavango Research Institute
criteria for using this part of the dataset:
The dataset is publicly available (data portal, data archive) and can be used without restrictions, but dataset creator/data contributors must be informed prior to publication. Data must be acknowledged and cited correctly.
data contributor/owner 3:
contact name: Wilfred Khaneguba
contact email: wkhaneguba@ub.ac.bw
contact institute: University of Botswana Okavango Research Institute
criteria for using this part of the dataset:
The dataset is publicly available (data portal, data archive) and can be used without restrictions, but dataset creator/data contributors must be informed prior to publication. Data must be acknowledged and cited correctly.
citation of this dataset:
author(s): Makati, K., Murray-Hudson, M.
title and journal (name, number, pages):
year: 2019
version: 1
doi: https://doi.org/10.15468/fooskp
citation of the metadata:

author(s): Murray-Hudson, M., Makati, K., Mosie, I. & Wolski, P.
year: 2019
doi: https://doi.org/10.15504/fmj.2019.45

dataset related references:

reference 1:
author(s): Murray-Hudson, M.
title: Floodplain Vegetation Responses to Flood Regime in the Seasonal Okavango Delta, Botswana. PhD Dissertation, University of Florida, Gainesville
year: 2009

doi: https://doi.org/10.2989/16085914.2011.636904

reference 2:
author(s): Murray-Hudson, M., Combs, F., Wolski, P., Brown, M.T.
year: 2011
doi: https://doi.org/10.1007/s11273-014-9340-z

reference 3:
author(s): Murray-Hudson, M., Wolski, P., Cassidy, L., Brown, M., Thito, K., Kashe, K., Mosimanyana, E.
year: 2015
doi: https://doi.org/10.1007/s11273-014-9340-z

reference 4:
title: Disaggregating Hydroperiod: Components of the Seasonal Flood Pulse as Drivers of Plant Species Distribution in Floodplains of a Tropical Wetland. Wetlands 34:5, 927-942.
year: 2014
doi: https://doi.org/10.1007/s13157-014-0554-x

reference 5:
author(s): Murray-Hudson, M., Wolski, P., Brown, M.T., Davidson, T.
year: 2019
doi: https://doi.org/10.1080/03736245.2018.1541021

reference 6:
author(s): Arias, M.E., Wittmann, F., Parolin, P., Murray-Hudson, M., Cochrane, T.A.
year: 2018
doi: https://doi.org/10.1007/s10750-016-2664-3
Metadata for macrophyte data from the Boro-Xudum seasonal floodplains of the Okavango Delta

General data specifications

regional coverage of the dataset:
- spatial extent of the dataset: regional
- continents: Africa

spatial extent (bounding coordinates):
- southernmost latitude [°]: -19.979
- northernmost latitude [°]: -19.067
- westernmost longitude [°]: 22.302
- easternmost longitude [°]: 23.236
- minimum altitude: 940 metres
- maximum altitude: 970 metres
- countries: Africa: Botswana
- comments: Okavango Delta seasonal floodplains

world climatic regions according to Köppen:
- Group B: dry (arid and semiarid) climates

freshwater ecoregions of the world (FEOW) according to WWF:
- Africa: Okavango

ecosystem type: wetlands


Site specifications

coordinate system/grid data:
- coordinate system/grid data: latitude/longitude, format: DD
- grid data available: no
- comments: GPS coordinates for each quadrat. Accuracy +/- 3m.

ecosystem type classification:
- wetlands (classification according to GLWD):
  - wetland type: freshwater marsh, floodplain
  - wetland size: 50 - 100 % wetland

site coding:
- site coding available: yes, alphanumerical
- number of digits: 25
- example: MMH_BOB-1-01_20070417-01

number of sites:
- exact number of sites: 30
- comments: Samples are 1 sq m quadrats. Sites had 1-5 transects; a minimum of 30 quadrats 20 m apart along transects at each site.

Climate and environmental data

climate related data: no climate data available

environmental data: no environmental data per catchment available

available parameters per site:
- information on floodplain inundation duration
  - data source: remote sensing-derived hydroperiod
### Physical Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Altitude</td>
<td>from GPS</td>
</tr>
<tr>
<td>Hydrological regime/flow</td>
<td>remote sensing</td>
</tr>
<tr>
<td>Depth</td>
<td>measured at site on date of survey</td>
</tr>
</tbody>
</table>

**Comments:** Shallow, elongate floodplains, which are seasonally pulsed and carry very slow flow. Highly permeable sandy organic soils.

### Physico-Chemical Data

- No physico-chemical data available.

### Stressors Influencing the Sites

- No stressor data available.

### Reference Sites

- No reference sites available.

### Biological Data

**Biological data origin:**

Floodplain vegetation responses to flood regime in the seasonal Okavango Delta, Botswana.

**Comments:** Data collected as part of research for a PhD.

**Organism group addressed:**

- Macrophytes

### Sample Specifications/Sample Resolution

**Macrophytes**

<table>
<thead>
<tr>
<th>Sample information:</th>
<th>2007 - 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covered timeframe:</td>
<td>2007 - 2007</td>
</tr>
<tr>
<td>Historical data:</td>
<td>no</td>
</tr>
<tr>
<td>Palaeo data:</td>
<td>no</td>
</tr>
<tr>
<td>Season:</td>
<td>Winter</td>
</tr>
<tr>
<td>Temporal resolution/frequency of sampling:</td>
<td>a single survey campaign from mid-March to mid-July 2007</td>
</tr>
<tr>
<td>Time series data:</td>
<td>no</td>
</tr>
<tr>
<td>Comments:</td>
<td>Field survey work was carried out over the rising flood, for four months between mid-March and mid-July 2007.</td>
</tr>
</tbody>
</table>

**Taxonomic resolution:**

- Level: species
- Percentage of species level data: 99%

**Comments:** Individuals were identified to species level in the field as far as possible. Where not possible they were pressed as herbarium specimens and submitted to the Peter Smith Herbarium (PSUB) at the University of Botswana Okavango Research Institute for identification. Specific unidentified grass specimens of the sub-family Panicoideae were sent to the Royal Botanical Gardens, Kew, United Kingdom for identification.

**Taxonomic coding:**

Cook, C.D.K., 2004. Aquatic and wetland plants of southern Africa: An identification manual for the stoneworts (Charophytina), liverworts (Marchantiopsida), mosses (Bryopsida), quillworts (Lycopodiopsida), ferns (Polypodiopsida) and flowering plants (Magnoliopsida) which grow in water and wetlands of Namibia, Botswana, Swaziland, Lesotho and Republic of South Africa. Leiden: Backhuys.


coding system:
example: first three letters of genus, first three letters of species, no separator
Abihis: Abildgaardia hispidula

sample specifications:
type: quantitative (abundance data)
replicate samples: no
number of samples: 1080

specification of method(s) used for sampling and sorting:
- Step 1 involved the selection of random sites for vegetation sampling. This was based on historic hydroperiod - a flood frequency map derived from remote sensing which assigned a frequency to each pixel. The frequency map was stratified into 5 strata of approximately equal area, and in each stratum 6 sites were selected by randomising the pixel numbers.
- Step 2 involved doing surveys of the vegetation at each site by laying out transects orthogonal to the long axis of each floodplain, and enumerating plant species within 1 square metre quadrats at 20 metre intervals along these transects. Species-area plots from sampling carried out beforehand indicated that a minimum of 25 square metres should be sampled. A minimum of 30 quadrats was thus surveyed at each site. All species in each quadrat were recorded and their relative abundance estimated according to a modified Braun-Blanquet classification.

reference(s):

sample type (e.g. habitat specific samples, composite samples etc.):
Quadrats were sampled along transects which crossed the topographic gradients of each floodplain site. That is, they were designed to sample all microhabitats within each floodplain site.

specific sample location (e.g. littoral, profundal, transect, shoreline, hyporheic zone, etc.):
Multiple transects per site.
Other specifications

GIS layers, shape files related to the dataset: no data available
availability of photos: no
availability of maps: no
quality control procedures:
Were any quality control procedures applied to your dataset? yes

quality control protocols and comments:
Relative abundance estimates were made by consensus of at least two field surveyors, and a one-day calibration exercise was carried out at the beginning of the field work to ensure consistency. Data entry was done by M. Murray-Hudson, and F. Murray-Hudson into a custom-designed Microsoft Access relational database; reading of field sheets and typing was done alternately, and data were cross-checked with field sheets after all had been transcribed.

Acknowledgements
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References


