General information

**name of the dataset:**
- full name of the dataset: Metadata of the Danube Delta Database
- dataset short name: DELTA

**type of dataset** (more information):
- species (taxonomic group) per site database including environmental information
- specify: aquatic macrophytes, fish, macro-invertebrate
- data type: point data/observation data, shape files

**short description of the dataset/summary:**
- A description of biological and ecological data of the Danube delta lakes and channels is presented. The biological indicators refer to aquatic macrophytes, fish, zoo-plankton, and macro-invertebrates. Environmental data include physio-chemical data as well as hydrological parameters.

**science keywords according to GCMD:**
- topic: Biosphere, Biological Classification, Terrestrial Hydrosphere
- keywords: Danube delta, aquatic macrophytes, fish, zoo-plankton, macro-invertebrate

**ISO topic category according to ISO 19115:**
- Biota, Environment, Inland Waters
Dataset: Metadata of the Danube Delta Database

Technical and administrative specifications

data format: Excel
operating system: all Windows systems
data language: English
current access level: restricted access, internal
currently available through GBIF: no
exchange planned: no
update level: continuously updated
documentation:
  type: internal description
  language: English
Do you plan to publish the data on the BioFresh data portal: no

contact details:

  metadata contact person:
  first, last name: Jenica Hanganu
  email: jenica.hanganu@ddni.ro
  institution: Danube Delta National Institute for Research and Development
  address: Babadag 165
  position, status: TBD
  country: Romania

  technical contact person:
  first, last name: Ion Grigoras
  email: ion.grigoras@ddni.ro

  scientific contact person:
  first, last name: Ion Navodaru
  email: ion.navodaru@ddni.ro
Dataset: Metadata of the Danube Delta Database

Intellectual property rights and citation

(if the database is already published):

**dataset creator (data compiler):**

- **contact name:** Jenica Hanganu
- **contact email:** jenica.hanganu@ddni.ro
- **contact institution:** Danube Delta National Institute for Research and Development

**data contributors to/owners of this dataset:**

- **number:** multiple

**provider 1:**

- **provider institute:** Danube Delta National Institute for Research and Development
- **contact name:** Ion Navodaru, Aurel Nastase
- **contact email:** ion.navodaru@ddni.ro
- **criteria for using the data in a publication/scientific analysis:**
  - The dataset needs to be requested from dataset creator with specific conditions of use.
- **comments:** Fish database

**provider 2:**

- **provider institute:** Danube Delta National Institute for Research and Development
- **contact name:** Iuliana Mihaela Tudor
- **contact email:** mihaela.tudor@ddni.ro
- **criteria for using the data in a publication/scientific analysis:**
  - The dataset needs to be requested from dataset creator with specific conditions of use.
- **comments:** Zoo-plankton database

**provider 3:**

- **provider institute:** Danube Delta National Institute for Research and Development
- **contact name:** Orhan Ibram
- **contact email:** orhan.ibram@ddni.ro
- **criteria for using the data in a publication/scientific analysis:**
  - The dataset needs to be requested from dataset creator with specific conditions of use.
- **comments:** Macro-invertebrates database

**provider 4:**

- **provider institute:** Danube Delta National Institute for Research and Development
- **contact name:** Jenica Hanganu, Mihai Doroftei
- **contact email:** jenica.hanganu@ddni.ro, mihai.doroftei@ddni.ro
- **criteria for using the data in a publication/scientific analysis:**
  - The dataset needs to be requested from dataset creator with specific conditions of use.
- **comments:** Aquatic macrophytes database

**citation of this dataset:**

- **author(s):** Hanganu J., Navodaru I., Tudor I. M., Ibram O., Doroftei M., & Nastase A.
- **title:** Danube Delta database
- **year:** 2014

**citation of the metadata:**

- **author(s):** Hanganu J., Navodaru I., Tudor I. M., Ibram O., Doroftei M., & Nastase A.
- **title and journal (name, number, pages):** Introduction of the Danube Delta Database. Freshwater Metadata Journal 8: 1-11
General data specifications

regional coverage of the dataset:
  scale of the dataset: regional
  continents: Europe

spatial extend (bounding coordinates):
  southernmost latitude [°]: 44°20'56.16''
  northernmost latitude [°]: 45°26'57.30''
  westernmost longitude [°]: 28°28'51.10''
  easternmost longitude [°]: 29°49'37.16''
  minimum altitude: 0.0 metres
  maximum altitude: 47 metres
  countries: Europe: Romania
  comments: Danube Delta Biosphere Reserve - Romania
### Site specifications

<table>
<thead>
<tr>
<th>coordinate system/grid data:</th>
<th>latitude/longitude projected</th>
</tr>
</thead>
<tbody>
<tr>
<td>datum (e.g. WGS84):</td>
<td>EPSG 31700</td>
</tr>
<tr>
<td>grid data available:</td>
<td>no</td>
</tr>
<tr>
<td>resolution:</td>
<td>1/25000</td>
</tr>
<tr>
<td>site coding available:</td>
<td>yes</td>
</tr>
<tr>
<td>example:</td>
<td>Rosci 0065 Danube Delta</td>
</tr>
</tbody>
</table>

**number of sites:**
- less than 100
- exact number of sites: 15
Climate and environmental data

climaterelated data:
available per: per catchment
spatial resolution of the data (if not catchment/site related):
50 km
available parameters:
  mean annual temperature January, July
  http://www.meteoromania.ro/anm/?page_id=138
  mean annual temperature for each month
  http://www.meteoromania.ro/anm/?page_id=138
  minimal, maximal and mean winter and summer temperatures
  http://www.meteoromania.ro/anm/?page_id=138
  daily air temperatures
  http://www.meteoromania.ro/anm/?page_id=138
  mean annual precipitation
  http://www.meteoromania.ro/anm/?page_id=138
  winter and summer precipitation
  http://www.meteoromania.ro/anm/?page_id=138
  evaporation
  http://www.meteoromania.ro/anm/?page_id=138
  mean discharge
  http://www.meteoromania.ro/anm/?page_id=138

environmental data:
available parameters per catchment: catchment size
  http://icpdr.org/main/danube-basin
available parameters per catchment: catchment land cover/land use
  GIEMonitoring 2011-2013 in the framework of regulation (EU) No 911/2010
available parameters per catchment: hydrological regime/flow regime
  Sobek rural 1D/2D for the lower Danube and Danube delta
available parameters per site: catchment land use upstream of sampling site
  GIEMonitoring 2011-2013 in the framework of regulation (EU) No 911/2010
available parameters per site: catchment land use along a buffer strip (100m width on both sides)
upstream (10km) of the sampling site
  GIEMonitoring 2011-2013 in the framework of regulation (EU) No 911/2010
available parameters per site: information on floodplain inundation duration
  Sobek rural 1D/2D for the lower Danube and Danube delta
available parameters per site: information on riparian vegetation (incl. information on modification)
  Hanganu et al., 2002
available parameters per site: information on embankment (incl. information on modification)
  DTMB for the Danube delta and Danube river
available parameters per site: information on channel form (incl. information on modification)
  DTMB for the Danube delta and Danube river
available parameters per site: information on cross section (incl. information on modification)
  Sobek rural 1D/2D for the lower Danube and Danube delta
available parameters per site: distance to next migration barrier upstream
  DTMB for the Danube delta and Danube river
available parameters per site: distance to the next lake upstream
available parameters per site: distance to the next main village/town upstream
available parameters per site: river length
available parameters per site: distance to source
available parameters per site: distance to mouth
available parameters per site: stream order (according to Strahler)
available parameters per site: slope
available parameters per site: hydrological regime/flow regime
available parameters per site: discharge
available parameters per site: current velocity
available parameters per site: maximum depth
available parameters per site: mean depth
available parameters per site: information on instream habitat (incl. information on modification)

comments:

physico-chemistry data:
total P, ortho P, total dissolved P, nitrate, nitrite, total N, ammonium, sulphate, chloride, sodium, magnesium, calcium, alkalinity, TOC (total organic carbon), oxygen content, BOD5 (biochemical oxygen demand), water temperature, pH, conductivity, chlorophyll, Secci disc depth, suspended solids, substrate, sediment/soil parameters

availability of physico-chemical data, if there is more than one sample per site: mean values per site

comments:

stressors influencing the sites:
reference sites available: yes

<table>
<thead>
<tr>
<th>stressor</th>
<th>restored sites available</th>
<th>data before/after restoration available</th>
<th>stressor gradient available</th>
<th>comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>eutrophication</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>hydromorphological</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>degradation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydrologic stress (e.g. impoundment, flow velocity reduction, hydropeaking, water abstraction, flow velocity increase)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>
### Biological data

<table>
<thead>
<tr>
<th><strong>biological data origin:</strong></th>
<th>from sampling</th>
</tr>
</thead>
<tbody>
<tr>
<td>specify project:</td>
<td>Danube delta monitoring programm and other national and international collaboratives projects</td>
</tr>
</tbody>
</table>

| **organism group addressed:** | fish, macro-invertebrates (Mollusca, Ephemeroptera, Odonata, Coleoptera, Trichoptera, Chironomidae), zooplankton, macrophytes |
Sample specifications/sample resolution

**fish:**

**sample information:**
- covered timeframe: 1996 - 2014
- historical data: no
- palaeo data: no
- season: spring, summer, autumn
- temporal resolution/frequency of sampling: per season and/or per year
- time series data: no

**taxonomic resolution:**
- family, genus, species
- percentage of species level data: 100

**taxonomic coding:**
- taxalist according to: Kottelat & Freyhof 2007
- coding system: no number coding system for taxa
- example: genus & species: Esox lucius

**sample specifications:**
- quantitative (abundance data)
- number of samples: 500
- specification of method(s) used for sampling and sorting: scientific fishing with: research seine, commercial gillnets, nordic gillnets, electric fishing
- sample type (e.g. habitat specific samples, composite samples etc.): composite samples
- specific sample location (e.g. littoral, profundal, transect, shoreline, hyporheic zone, etc.): large rivers, canals, shallow lakes, littoral sea
- other important sample related informations: relative abundance and biomass data (Catch per Unit Fishing Effort - CPUE)

**macro-invertebrates:**

**sample information:**
- covered timeframe: 2000 - 2014
- historical data: no
- palaeo data: no
- season: spring, summer, autumn
- temporal resolution/frequency of sampling: minimum 3/year
time series data: no

taxonomic resolution: family, genus, species
percentage of species level data: 100

taxonomic coding:
taxalist according to: Fauna Europaea

sample specifications: quantitative (abundance data), semi-quantitative
replicate samples: no
number of samples: 700

specification of method(s) used for sampling and sorting:
Sampling with Ekman-Birge grab and hand-net; samples sieved with 500 micrometer mesh size; samples preserved in 70% ethanol.
citation: ISO 10870: 2012-10 Water quality - Guidelines for the selection of sampling methods and devices for benthic macroinvertebrates in fresh waters

sample type (e.g. habitat specific samples, composite samples etc.):
composite sample

specific sample location (e.g. littoral, profundal, transect, shoreline, hyporheic zone, etc.):
shallow lakes and channels

zooplankton:
sample information:
covered timeframe:
year from - to: 2000 - 2014
historical data: no
paleo data: no
season: spring, summer, autumn
temporal resolution/frequency of sampling:
minimum 3/year
time series data: no
taxonomic resolution: family, genus, species
percentage of species level data: 100
taxonomic coding:
taxalist according to: Fauna Europaea

sample specifications: quantitative (abundance data), qualitative
number of samples: 1000

specification of method(s) used for sampling and sorting:
The frequency and location of zooplankton sampling is dictated by the purpose of the study. Locate sampling stations as near as possible to those selected for phytoplankton, benthic organisms and physical-chemical sampling. Surface water samples were collected from the lakes in five stations per lake and three stations per Danube branch stations. Zooplankton is collected by filtering 30 liters of water from the surface of the water body through plankton net (55 µm mesh size) and fixed immediately with absolute ethanol, into plastic container. Sedimentation is the preferred method of concentration because it is non-selective and non-destructive (unlike filtration or centrifugation which can damage many of the rotiferans and cladocera species).
From each sample 1 ml sub-sample is placed in a Sedgwick-Rafter counting cell for identification and enumeration under optical microscope at 20X to 40X magnification. From each sample, depending on sample location and concentration 1-4 ml sub-samples were analyzed.


dataset: Metadata of the Danube Delta Database

<table>
<thead>
<tr>
<th>sample type (e.g. habitat specific samples, composite samples etc.):</th>
<th>composite samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>specific sample location (e.g. littoral, profundal, transect, shoreline, hyporheic zone, etc.):</td>
<td>transect</td>
</tr>
</tbody>
</table>

**Macrophytes:**

**Sample Information:**

<table>
<thead>
<tr>
<th>Covered Timeframe:</th>
<th>1996 - 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Historical Data:</td>
<td>no</td>
</tr>
<tr>
<td>Palæo Data:</td>
<td>no</td>
</tr>
<tr>
<td>Season:</td>
<td>spring, summer, autumn</td>
</tr>
<tr>
<td>Temporal Resolution/Frequency of Sampling:</td>
<td>per year</td>
</tr>
<tr>
<td>Time Series Data:</td>
<td>no</td>
</tr>
</tbody>
</table>

**Taxonomic Resolution:** order, family, sub-family, genus, species

**Percentage of Species Level Data:** 100%

**Taxonomic Coding:**

- Taxalist according to: Flora Europaea
- Citation: [http://en.wikipedia.org/wiki/Flora_Europaea](http://en.wikipedia.org/wiki/Flora_Europaea)
- Coding System: Natura 2000; EU-code
- Example: 1428, Marsilea quadrifolia

**Sample Specifications:**

- Replicate Samples: no
- Number of Samples: 700

**Specification of Method(s) used for Sampling and Sorting:**

The Kohler survey method. During visits of the lakes by canoe a varying number of relevées per lake was sampled, depending on lake size, allocated time, observed variation in the vegetation. Each relevée had a diameter of c. 5 m; total plant cover, and cover of individual plant species and filamentous algae were established using both visual observation and by rake operation. For each species the percentage cover projected at the bottom was estimated using a 5-point scale.

Environmental factors considered were: depth (m), lake size (ha), amplitude (m) cumulative residence time (days), soil organic matter content (%), and soil clay fraction (%).

The lakes were ordinated along Principal Component axes (PCA, in CANOCO, Ter Braak, 1991).

The main ordination shows three directions: 1) clear mineral lakes with a dense vegetation; 2) turbid mineral lakes with a sparse vegetation; 3) isolated plaur lakes.
Other specifications

GIS layers, shapes related to the dataset:
- species distribution
- hydrological information (as HydroSHEDS)
- catchments, river-sub-basins
- land use
- dams/reservoirs/barriers
- protected areas
- environmental variables (freshwater or terrestrial)

availability of photos: no
availability of maps: no

quality control procedures:
Were any quality control procedures applied to your dataset?
no