Introduction of the Danube Delta Database

Jenica Hanganu, Ion Navodaru, Iuliana Mihaela Tudor, Orhan Ibram, Mihai Doroftei & Aurel Nastase
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Keywords
Danube delta, aquatic macrophytes, fish, zoo-plankton, macro-invertebrates

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.

General information

dataset entry ID: MARS_12
name of the dataset: Metadata of the Danube Delta Database
full name of the dataset: Metadata of the Danube Delta Database
short name: DELTA
type of dataset: species (taxonomic group) per site database including environmental information
data type: point data/observation data

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
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
  postal code, city: 820112
  province, state: Tulcea
  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

Intellectual property rights and citation

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

  data contributor/owner 1:
    contact name: Ion Navodaru, Aurel Nastase
    contact email: ion.navodaru@ddni.ro
    contact institution: Danube Delta National Institute for Research and Development
    criteria for using this part of the dataset: The dataset needs to be requested from dataset creator with specific conditions of use.
    comments: Fish database

  data contributor/owner 2:
    contact name: Iuliana Mihaela Tudor
    contact email: mihaela.tudor@ddni.ro
Introduction of the Danube Delta Database

contact institute: Danube Delta National Institute for Research and Development

criteria for using this part of the dataset:
The dataset needs to be requested from dataset creator with specific conditions of use.

comments: Zoo-plankton database

data contributor/owner 3:
contact name: Orhan Ibram
contact email: orhan.ibram@ddni.ro
contact institute: Danube Delta National Institute for Research and Development

criteria for using this part of the dataset:
The dataset needs to be requested from dataset creator with specific conditions of use.

comments: Macro-invertebrates database

data contributor/owner 4:
contact name: Jenica Hanganu, Mihai Doroftei
contact email: jenica.hanganu@ddni.ro, mihai.doroftei@ddni.ro
contact institute: Danube Delta National Institute for Research and Development

criteria for using this part of the dataset:
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
year: 2015
doi: http://dx.doi.org/10.15504/fmj.2015.8

General data specifications

regional coverage of the dataset:
scale of the dataset: regional

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

world climatic regions according to Köppen:
Group D: continental/microthermal climate

freshwater ecoregions of the world (FEOW) according to WWF:
Europe: Dniester - Lower Danube
European ecoregions according to Illies (WFD):

Pontic Province (ER12)

ecosystem type: rivers, lakes/ponds, wetlands, coastal areas
covered timeframe: 2000 - 2014

Site specifications

coordinate system/grid data: latitude/longitude, format: DMS
projected, local
datum (e.g. WGS84): EPSG 31700
grid data available: no
resolution: 1/25000

ecosystem type classification:

rivers (classification according to WFD):
altitude typology
lowland: <200 m
exact altitudinal data available

lakes (classification mainly according to WFD):
altitude typology
lowland: <200 m
depth typology based on mean depth
< 3m
exact depth data available
size typology based on surface area
0.5 to 1 km², 1 to 10 km², 10 to 100 km², > 100 km²
exact surface area data available
geology
calcareous
exact geological data available
trophic state

wetlands (classification according to GLWD):
wetland type
coastal wetland (including mangrove, estuary, delta, lagoon)
wetland size
50-100% wetland
exact wetland size data available

site coding available: yes, alphanumerical
example: ROSCI 0065 Danube Delta

number of sites:
<100
exact number of sites: 15

Climate and environmental data

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

environmental data:
  available parameters per catchment:
catchment size
  data source: http://www.icpdr.org/main/danube-basin
catchment land cover/land use
hydrological regime/flow regime
  data source: Sobek rural 1D/2D for the lower Danube and Danube delta

available parameters per site:
catchment land use upstream of sampling site
catchment land use along a buffer strip (100m width on both sides) upstream (10km) of the sampling site
information on floodplain inundation duration
  data source: Sobek rural 1D/2D for the lower Danube and Danube delta
information on riparian vegetation (incl. information on modification)
  data source: Hanganu J. et. al., 2002
information on embankment (incl. information on modification)
  data source: DTM of the Danube delta and Danube river
information on channel form (incl. information on modification)
  data source: DTM of the Danube delta and Danube river
information on cross section (incl. information on modification)
  data source: DTM of the Danube delta and Danube river
distance to next migration barrier upstream
  data source: DTM of the Danube delta and Danube river
distance to the next lake upstream
  data source: DTM of the Danube delta and Danube river
distance to the next main village/town upstream
  data source: DTM of the Danube delta and Danube river
river length
  data source: http://www.icpdr.org/main/danube-basin
distance to source
  data source: http://www.icpdr.org/main/danube-basin
distance to mouth


**data source:**  http://www.icpdr.org/main/danube-basin

stream order (according to Strahler)

**data source:**  DTM of the Danube delta and Danube river

slope

**data source:**  DTM of the Danube delta and Danube river

hydrological regime/flow regime

**data source:**  Sobek rural 1D/2D for the lower Danube and Danube delta

discharge

**data source:**  Sobek rural 1D/2D for the lower Danube and Danube delta

current velocity

**data source:**  Sobek rural 1D/2D for the lower Danube and Danube delta

maximum depth

**data source:**  Sobek rural 1D/2D for the lower Danube and Danube delta

mean depth

**data source:**  Sobek rural 1D/2D for the lower Danube and Danube delta

information on instream habitat (incl. information on modification)


**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, Secchi 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
### Introduction of the Danube Delta Database

<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 Degradation</td>
<td>yes</td>
<td>yes</td>
<td>no</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**

**Biological data origin:** from sampling  
**Specify project:** Danube delta monitoring programme and other national and international collaboratives projects  
**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:**  
- Level: 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:**  
- Type: 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

reference(s):

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

taxonomic coding:
taxalist according to: Fauna Europaea
taxonomic coding:

**sample specifications:**
type: 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.

reference(s):
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: 2000 - 2014
historical data: no
palaeo data: no
season: spring, summer, autumn
temporal resolution/frequency of sampling:
minimum 3/year
Introduction of the Danube Delta Database

time series data: no

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

taxonomic coding:
  taxalist according to: Fauna Europaea

sample specifications:
  type: 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 rotifers 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.


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

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

macrophytes:

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

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

taxonomic coding:
  taxalist according to: Flora Europaea
sample specifications:

- type: quantitative (abundance data), qualitative, presence/absence
- 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 relevees per lake was sampled, depending on lake size, allocated time, observed variation in the vegetation.
  
  Each relevee 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.

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
References


