Introduction of the Danube Delta Database

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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:	
full name of the dataset:	Metadata of the Danube Delta Database
dataset 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: continously 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:
multiple
number: 4
data contributor/owner 1:
contact name: Ion Navodaru, Aurel Nastase
contact email: ion.navodaru@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: Fish database
data contributor/owner 2:
contact name: Iuliana Mihaela Tudor
contact email: mihaela.tudor@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: 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 surfcae 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
data source: GIO Land Monitoring 2011-2013 in the framework of regulation (EU) No 911/2010
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
data source: GIO Land Monitoring 2011-2013 in the framework of regulation (EU) No 911/2010
catchment land use along a buffer strip (100m width on both sides) upstream (10km) of the sampling site
data source: GIO Land Monitoring 2011-2013 in the framework of regulation (EU) No 911/2010
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: Sobek rural 1D/2D for the lower Danube and Danube delta
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)

comments: Hanganu, J., Dubyna, D., Zhmud, E., Grigoras, I., Menke, U., Drost, H., Stefan, N., & Sârbu, I. (2002). Vegetation of the Biosphere Reserve "Danube Delta" with Transboundary Vegetation Map on a 1: 150000 scale. Danube Delta National Institute, Romania; M.C. Kholodny - Institute of Botany & Danube Delta
Biosphere Reserve, Ukraine and RIZA The Netherlands. RIZA Rapport 2002049, Lelystadt.

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 oyxgen 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

stressor	restored sites available	data before/after restoration available	stressor gradient available	comments
eutrophication	yes	yes	no	
hydromorphological degradation	yes	yes	no	
hydrologic stress (e.g. impoundment, flow velocity reduction, hydropeaking, water abstraction, flow velocity increase)	yes	yes	yes	

Biological data

biological data origin: from sampling
- specify project: Danube delta monitoring programm 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: Kotelat & Freyhof 2007
- reference(s): Kottelat M. and J. Freyhof 2007. European Freshwater Fishes. Kottelat, Cornol, Switzerland and Freyhof, Berlin, Germany. 646p. ISBN 978-2-8399-0298-4.
  Banarescu P., 1964. Pisces Osteichthyes. Fauna Republicii Populare Romane. Bucuresti, 963p.
  Froese, R. and D. Pauly. Editors. 2015. FishBase. World Wide Web electronic publication. www.fishbase.org, version (04/2015).
- 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): CEN, 2005. Water quality - Sampling of Fish with multi-mesh gillnets. EN 14757:2005:E.
CEN, 2003. Water quality - Sampling of fish with electricity. EN 14011:2003:E.
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
reference(s): de Jong, Y.S.D.M. (ed.) (2013) Fauna Europaea version 2.6. Web Service available online at http://www.faunaeur.org

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

time series data: no

taxonomic resolution:

level: family, genus, species

percentage of species level data: 100

taxonomic coding:

taxalist according to: Fauna Europaea

reference(s): de Jong, Y.S.D.M. (ed.) (2013) Fauna Europaea version 2.6. Web Service available online at http://www.faunaeur.org

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 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.

reference(s): Clesceri L. S., Greenberg A. E., Trussell R. R., (ed.) Crumpton W. G., Murray A. P., Paterson R. A., Sellner K. G., Suidan M. T., Sullivan B. F., Swartz R., Sweeney R. A. & Walsh G. E. (1989) Biological examination of water. Part 10000, Standard Methods for the examination of water and waste water 17th Edition. Washington American Public Health Association: 10-194

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

reference(s): http://en.wikipedia.org/wiki/Flora_Europaea
coding system: Natura 2000; EU-code
example: 1428, Marsilea quadrifolia

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.

reference(s): Kohler, A. (1978): Methoden der Kartierung von Flora und Vegetation von Süßwasserbiotopen. Landschaft + Stadt 10 (2): 73-85.
sample type (e.g. habitat specific samples, composite samples etc.):

habitat specific samples

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

transect

other important sample related informations:

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

References

Banarescu, P., 1964. Pisces Osteichthyes. Fauna Republicii Populare Romane. Bucuresti, 963p.

Clesceri, L. S., Greenberg, A. E., Trussell, R. R., (ed.) Crumpton, W. G., Murray, A. P., Paterson, R. A., Sellner, K. G., Suidan, M. T., Sullivan, B. F., Swartz, R., Sweeney, R. A. & Walsh, G. E. , 1989. Biological examination of water. Part 10000, Standard Methods for the examination of water and waste water 17th Edition. Washington American Public Health Association: 10-194

de Jong, Y. et al. , 2014. Fauna Europaea - all European animal species on the web. Biodiversity Data Journal 2: e4034. http://dx.doi.org/10.3897/BDJ.2.e4034

Froese, R. and Pauly, D. (eds.), 2015. FishBase. World Wide Web electronic publication. www.fishbase.org, version (04/2015).

Hanganu, J., Dubyna, D., Zhmud, E., Grigoras, I., Menke, U., Drost, H., Stefan, N. & Sârbu, I. , 2002. Vegetation of the Biosphere Reserve "Danube Delta" with Transboundary Vegetation Map on a 1: 150000 scale. Danube Delta National Institute, Romania; M.C. Kholodny - Institute of Botany & Danube Delta Biosphere Reserve, Ukraine and RIZA The Netherlands. RIZA Rapport 2002049, Lelystadt.

Kohler, A. , 1978. Methoden der Kartierung von Flora und Vegetation von Süßwasserbiotopen. Landschaft + Stadt 10 (2): 73-85.

Kottelat, M. and Freyhof, J., 2007. European Freshwater Fishes. Kottelat, Cornol, Switzerland and Freyhof, Berlin, Germany. 646p. ISBN 978-2-8399-0298-4.