

Metadata of European Lake Fishes Dataset

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Metadata of European Lake Fishes Dataset

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Keywords

fish assemblage, species list, Palearctic lakes, multi-mesh gillnet fishing, EU Water Framework Directive

Short description of the dataset/summary

Here we provide the metadata for an overview on fish species presence/absence in 1943 Palearctic (Europe + Turkey) lakes and reservoirs. The data have been obtained by standardized multi-mesh gillnet fishing, primarily to fulfill the requirements of the European Water Framework Directive (WFD). The species list encompasses about 100 species, a few of them split into subspecies. The database has been accumulated for the purpose of intercalibration of the evaluation systems for the WFD, and has systematically been used for research in the EU project WISER.

General information

dataset entry ID: FWM_11

name of the dataset:

full name of the dataset: Metadata of European Lake Fishes Dataset
dataset short name: Lake Fish Metadata

type of dataset:

species distribution data
data type: point data/observation data

science keywords according to [GCMD](#):

topic: Biosphere, Biological Classification, Climate Indicators
keywords: fish assemblage, lakes and reservoirs, local records, Pan-European coverage

ISO topic category according to [ISO 19115](#):

Biota, Inland Waters

Technical and administrative specifications

data format: Excel
operating system: all Windows systems
data language: English
current access level: internal
currently available through [GBIF](#): no
exchange planned: yes
data in data repository: no

Do you plan to publish the data on the Freshwater Biodiversity Data Portal:

yes
media for data delivery: e-mail

update level: completed

documentation:

type: scientific paper
language: English
others/details: see dataset related references below

contact details:

metadata contact person:

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scientific contact person:

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Intellectual property rights and citation

dataset creator (data compiler):

contact name: Thomas Mehner
 contact email: mehner@igb-berlin.de
 contact institution: Leibniz-Institute of Freshwater Ecology and Inland Fisheries Berlin

data contributors to/owners of this dataset:

multiple
 number: 14

data contributor/owner 1:

contact name: Thomas Mehner
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 contact institute: Leibniz Institute of Freshwater Ecology and Inland Fisheries
 criteria for using this part of the dataset:
 The dataset needs to be requested from dataset creator with specific conditions of use.

data contributor/owner 2:

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 contact institute: ICREA, Catalan Institution for Research and Advanced Studies, Spain
 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:

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 contact institute: Irstea, UR RECOVER, Aix en Provence, France
 criteria for using this part of the dataset:
 The dataset needs to be requested from dataset creator with specific conditions of use.

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

data contributor/owner 5:

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

data contributor/owner 6:

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 contact institute: Norwegian Institute for Nature Research, Trondheim, Norway
 criteria for using this part of the dataset:
 The dataset is publicly available (data portal, data archive) and can be used

without restrictions, but must be acknowledged and cited correctly.

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criteria for using this part of the dataset:

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data contributor/owner 8:

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contact institute: Department of Bioscience and Arctic Research Centre (ARC), Aarhus University

criteria for using this part of the dataset:

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The dataset needs to be requested from dataset creator with specific conditions of use.

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criteria for using this part of the dataset:

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criteria for using this part of the dataset:

The dataset needs to be requested from dataset creator with specific conditions of use.

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contact institute: National Research Council, Institute of Ecosystem Study, Verbania Pallanza

criteria for using this part of the dataset:

The dataset needs to be requested from dataset creator with specific conditions of use.

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criteria for using this part of the dataset:

The dataset needs to be requested from dataset creator with specific conditions of use.

data contributor/owner 14:

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 contact email: Samo.Podgornik@zzrs.si
 contact institute: Fisheries Research Institute of Slovenia
 criteria for using this part of the dataset:
 The dataset needs to be requested from dataset creator with specific conditions of use.

citation of this dataset:

author(s): Mehner T., Brucet S., Argillier C., Beklioglu M., Ferreira T., Hesthagen T., Holmgren K., Jeppesen E., Kelly F., Krause T., Rask M., Volta P., Winfield I.J. & Podgornik S.
 title: European Lake Fish Dataset.
 year: 2017

citation of the metadata:

author(s): Mehner T., Brucet S., Argillier C., Beklioglu M., Ferreira T., Hesthagen T., Holmgren K., Jeppesen E., Kelly F., Krause T., Rask M., Volta P., Winfield I.J. & Podgornik S.
 title and journal (name, number, pages): Metadata of European Lake Fishes Dataset. Freshwater Metadata Journal 23: 1-8
 year: 2017
 doi: <https://doi.org/10.15504/fmj.2017.23>

dataset related references:

reference 1:

author(s): Brucet, S., Pedron, S., Mehner, T., Lauridsen, T.L., Argillier, C., Winfield, I.J., Volta, P., Emmrich, M., Hesthagen, T., Holmgren, K., Benejam, L., Kelly, F., Krause, T., Palm, A., Rask, M., Jeppesen, E.
 title: Fish diversity in European lakes: geographical predictors dominate over anthropogenic pressures?
 year: 2013
 doi: <https://doi.org/10.1111/fwb.12167>

reference 2:

author(s): Argillier, C., Caussé, S., Gevrey, M., Pédrón, S., De Bortoli, J., Brucet, S., Emmrich, M., Jeppesen, E., Lauridsen, T., Mehner, T., Olin, M., Rask, M., Volta, P., Winfield, I. J., Kelly, F., Krause, T., Palm, A. & Holmgren, K.
 title: Development of a fish-based index to assess the eutrophication status of European lakes
 year: 2013
 doi: <https://doi.org/10.1007/s10750-012-1282-y>

reference 3:

author(s): Emmrich, M., Pédrón, S., Brucet, S., Winfield, I.J., Jeppesen, E., Volta, P., Argillier, C., Lauridsen, T.L., Holmgren, K., Hesthagen, T. & Mehner, T.
 title: Geographical patterns in the size structure of European lake fish communities along abiotic and biotic gradients
 year: 2014
 doi: <https://doi.org/10.1111/jbi.12366>

reference 4:

author(s): Mehner, T., Keeling, C., Emmrich, M., Holmgren, K., Argillier, C., Volta, P., Winfield, I.J. & Brucet, S.
 title: Effects of fish predation on density and size spectra of prey fish communities in lakes

year: 2016
 doi: <https://doi.org/10.1139/cjfas-2015-0034>
 reference 5:
 author(s): Arranz, I., Mehner, T., Benejam, L., Argillier, C., Holmgren, M., Jeppesen, E., Lauridsen, T.L., Volta, P., Winfield, I.J. & Brucet, S.
 title: Density-dependent effects as key drivers of intraspecific size structure of six abundant fish species in lakes across Europe
 year: 2016
 doi: <https://doi.org/10.1139/cjfas-2014-0508>
 comments: Note that the dataset is not publicly available as such.

General data specifications

regional coverage of the dataset:

continents: Asia, Europe

spatial extent (bounding coordinates):

southernmost latitude [°]: 36

northernmost latitude [°]: 69

westernmost longitude [°]: -10

easternmost longitude [°]: 36

minimum altitude: 0 metres

maximum altitude: 900 metres

countries: Asia: Turkey

Europe: Denmark, Estonia, Finland, France, Germany, Ireland, Italy, Norway, Portugal, Slovenia, Spain, Sweden, United Kingdom

world climatic regions according to [Köppen](#):

Group C: temperate/mesothermal climates

Group D: continental/microthermal climate

freshwater ecoregions of the world (FEOW) according to [WWF](#):

Europe: Cantabric Coast - Languedoc, Central & Western Europe, Central Anatolia, Eastern Iberia, Italian Peninsula & Islands, Northern Anatolia, Northern Baltic Drainages, Northern British Isles, Norwegian Sea Drainages, Southern Baltic Lowlands, Southern Iberia, Upper Danube, Western Anatolia, Western Caspian Drainages, Western Iberia

European ecoregions according to [Illies \(WFD\)](#):

Italy, Corsica and Malta (ER3), Alps (ER4), Western Highlands (ER8), Central Highlands (ER9), Western Plains (ER13), Central Plains (ER14), Baltic Province (ER15), Eastern Plains (ER16), Ireland and Northern Ireland (ER17), Great Britain (ER18), Boreal Uplands (ER20), Fenno-Scandian Shield (ER22)

ecosystem type: lakes/ponds

covered timeframe: 1995 - 2015

comments: Single survey per lake, no temporal replicates.

Site specifications

coordinate system/grid data: latitude/longitude, format: DD

grid data available: no

site coding available: no

number of sites: >1000
 exact number of sites: 1943

Biological data

biological data origin: from sampling
 specify project: standardized multi-mesh gillnet fishing
 general compilation
 specify method: Intercalibration for European Water Framework Directive, EU project WISER
 organism group addressed: fish

Sample resolution

fish:

taxonomic resolution:

level: species
 other taxonomic levels: sub-species
 percentage of species level data: 100
 comments: Resolution primarily on species level; in few cases (e.g., trout), sub-species records are available.

taxonomic coding:

taxalist according to: Kottelat & Freyhof
 reference(s): Kottelat, M & Freyhof, J. 2007: Handbook of European Freshwater Fishes. ISBN-13: 9782839902984
 coding system: none
 comments: Nomenclature follows primarily Kottelat & Freyhof.
 Fish sampling in lakes followed the European Standard (CEN 2015: Water quality. Sampling of fish with multi-mesh gillnets. EN 14757. European Committee for Standardization). In short, lakes were fished with benthic multi-mesh gillnets (30 m long, 1.5 m high, 12 mesh sizes between 5 and 55 mm in geometric row), the number per lake standardized by lake area and lake depth. Fishing has occurred normally in August or September.

Other specifications

GIS layers, shapes 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:

Check of correct coordinates by country-specific data owners;
 local species lists checked for plausibility by country-specific data owners.

Acknowledgements

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References

- Argillier, C., Caussé, S., Gevrey, M., Pédrón, S., De Bortoli, J., Brucet, S., Emmrich, M., Jeppesen, E., Lauridsen, T., Mehner, T., Olin, M., Rask, M., Volta, P., Winfield, I. J., Kelly, F., Krause, T., Palm, A. & Holmgren, K. , 2013. Development of a fish-based index to assess the eutrophication status of European lakes <https://doi.org/10.1007/s10750-012-1282-y>
- Arranz, I., Mehner, T., Benejam, L., Argillier, C., Holmgren, M., Jeppesen, E., Lauridsen, T.L., Volta, P., Winfield, I.J. & Brucet, S. , 2016. Density-dependent effects as key drivers of intraspecific size structure of six abundant fish species in lakes across Europe <https://doi.org/10.1139/cjfas-2014-0508>
- Brucet, S., Pedron, S., Mehner, T., Lauridsen, T.L., Argillier, C., Winfield, I.J., Volta, P., Emmrich, M., Hesthagen, T., Holmgren, K., Benejam, L., Kelly, F., Krause, T., Palm, A., Rask, M., Jeppesen, E., 2013. Fish diversity in European lakes: geographical predictors dominate over anthropogenic pressures? <https://doi.org/10.1111/fwb.12167>
- Emmrich, M., Pédrón, S., Brucet, S., Winfield, I.J., Jeppesen, E., Volta, P., Argillier, C., Lauridsen, T.L., Holmgren, K., Hesthagen, T. & Mehner, T. , 2014. Geographical patterns in the size structure of European lake fish communities along abiotic and biotic gradients <https://doi.org/10.1111/jbi.12366>
- European Committee for Standardization (CEN), 2015. Water quality. Sampling of fish with multi-mesh gillnets. EN 14757.
- Kottelat, M. & Freyhof, J., 2007. Handbook of European Freshwater Fishes. Publications Kottelat, Cornol and Freyhof, Berlin. ISBN 978-2-8399-0298-4.
- Mehner, T., Keeling, C., Emmrich, M., Holmgren, K., Argillier, C., Volta, P., Winfield, I.J. & Brucet, S. , 2016. Effects of fish predation on density and size spectra of prey fish communities in lakes <https://doi.org/10.1139/cjfas-2015-0034>

Appendix

European lakes with fish data (CCM2, basin level)

