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Keywords

farmland ponds, occurences, environmental coditions, organic agriculture, Belgium

Short description of the dataset/summary

The database of the ORCA project (A comparative analysis of ORganic and Conventional Agriculture's impact on aquatic biodiversity) comprises species occurrence data of different organism groups (zooplankton, macro-invertebrates, macrophytes, amphibians (eDNA) and fish (eDNA)) and data on physical, chemical and morphometric variables of 48 small farmland ponds distributed over Flanders, Belgium.

Short description of the dataset/summary (original/national language)

De database van het ORCA project (een vergelijkende studie naar de impact van biologische en conventionele landbouw op aquatische biodiversiteit) omvat gegevens over het voorkomen van soorten in verschillende groepen organismen (zoöplankton, macro-invertebraten, macrofyten, amfibieën (eDNA) en vissen (eDNA)) en gegevens over fysische, chemische en morfometrische variabelen van 48 kleine in het landbouwareaal gesitueerde vijvers verspreid over Vlaanderen, België.

General information

dataset entry ID: FWM_32

name of the dataset:

full name of the dataset: ORganic and Conventional Agriculture's impact on aquatic biodiversity

full name of the datast (original/national language): Impact van biologische en conventionele landbouw op aquatische biodiversiteit

dataset short name: ORCA

type of dataset: species (taxonomic group) per site database including environmental information

data type: point data/observation data

science keywords according to GCMD:

topic: Agriculture, Biosphere, Biological Classification, Land Surface, Terrestrial Hydrosphere

ISO topic category according to ISO 19115:

Farming, Biota, Environment, Geoscientific Information, Inland Waters

INSPIRE keywords according to GEMET:

Agricultural and aquaculture facilities, Bio-geographical regions, Land use

own science keywords: farmland ponds, occurrences, environmental conditions,Belgium, organic farming, conventional farming, eDNA

related project: ORCA

funding: BELSPO research project BR/175/A1/ORCA and BR/175/A1/ORCA-2

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

update level: completed

documentation:

type: manual

language: English

contact details:

metadata contact person:

first, last name: Luc De Meester

phone: +3216323708

email: luc.demeester@kuleuven.be

institution: KU Leuven

address: Charles Deberiotstraat 32 - box 2439

postal code, city: 3000 Leuven

country: Belgium

web address: https://bio.kuleuven.be/eeb/ldm

technical contact person:

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phone:	+3216373691
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scientific contact person:

first, last name:	Pieter Lemmens
phone:	+3216373691
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Intellectual property rights and citation

dataset creator (data compiler):

contact name:	Marie Cours
contact email:	marie.cours@naturalsciences.be
contact institution:	Royal Belgian Institute of Natural Sciences

data contributors to/owners of this dataset:

multiple

number: 17

data contributor/owner 1:

contact name:	
contact email:	luc.demeester@kuleuven.be
contact institute:	KU Leuven

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:	
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contact institute:	Royal Belgian Institute of Natural Sciences

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:	Research Institute for Nature and Forest (INBO)

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 4:

contact name:	
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contact institute:	KU Leuven

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 5:

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contact institute: Royal Belgian Institute of Natural Sciences
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 6:

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contact email: luc.denys@inbo.be
contact institute: Research Institute for Nature and Forest
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 7:

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contact institute: KU Leuven
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 8:

contact name:
contact email: marie.cours@naturalsciences.be
contact institute: Royal Belgian Institute of Natural Sciences
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 9:

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contact institute: Research Institute for Nature and Forest
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 10:

contact name:
contact email: jo.packet@inbo.be
contact institute: Research Institute for Nature and Forest
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 11:

contact name:

contact email: joachim.mergeay@inbo.be
contact institute: Research Institute for Nature and Forest
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 12:
contact name:
contact email: marc.knockaert@naturalsciences.be
contact institute: Royal Belgian Institute of Natural Sciences
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 13:
contact name:
contact email: koen.parmentier@naturalsciences.be
contact institute: Royal Belgian Institute of Natural Sciences
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 14:
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contact institute: Research Institute for Nature and Forest
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 15:
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contact institute: Research Institute for Nature and Forest
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 16:
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contact email: ischoen@naturalsciences.be
contact institute: Royal Belgian Institute of Natural Sciences
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 17:
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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): Cours, M., Lemmens, P., Almeida, R., Brys, R., Denys, L., De Wever, A., Knockaert, M., Leyssen, A., Mergeay, J., Packet, J., Parmentier, K., Schön, I., Venderickx, J., Vercauteren, T., Adriaens, D., Martens, K. & De Meester, L.

title and journal (name, number, pages):
Database of the ORCA project (A comparative analysis of ORganic and Conventional Agriculture's impact on aquatic biodiversity).

year: 2021

citation of the metadata:

author(s): Cours M., Lemmens P., Almeida R., Brys R., Denys L., De Wever A., Knockaert M., Leyssen A., Mergeay J., Packet J., Parmentier K., Schön I., Venderickx J., Vercauteren T., Adriaens D., Martens K. & De Meester L.

title and journal (name, number, pages):
Metadata description of the ORCA database (ORganic and Conventional Agriculture's impact on aquatic biodiversity). Freshwater Metadata Journal 52: 1-11

year: 2021

doi: https://doi.org/10.15504/fmj.2021.52

General data specifications

regional coverage of the dataset:

spatial extent of the dataset: national

continents: Europe

spatial extent (bounding coordinates):

southernmost latitude [°]: 50.721357

northernmost latitude [°]: 51.425765

westernmost longitude [°]: 2.645698

easternmost longitude [°]: 5.856698

countries: Europe: Belgium

world climatic regions according to Köppen:
Group C: temperate/mesothermal climates

freshwater ecoregions of the world (FEOW) according to WWF:
Europe: Central & Western Europe

European ecoregions according to Illies (WFD):
Western Plains (ER13)

ecosystem type: lakes/ponds

covered timeframe: 2017 - 2018

Site specifications

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

datum (e.g. WGS84): WGS84

grid data available: no

site coding available: yes, alphanumerical

example: WVLPOP0713

number of sites: <100

exact number of sites: 48

comments: Reference:
Leyssen, A., Scheers, K., Smeekens, V., Wils, C., Packet, J., De Knijf, G. & Denys, L. (2020). Watervlakken versie 1.1: polygonenkaart van stilstaand water in Vlaanderen. Uitgave 2020. Rapporten van het Instituut voor Natuur- en Bosonderzoek 2020 (40). Instituut voor Natuur- en Bosonderzoek, Brussel. DOI: doi.org/10.21436/inbor.19088385
http://www.geopunt.be/catalogus/datasetfolder/61c4245b-a177-4fe8-a5cc-455475d7b40f

Climate and environmental data

climate related data: no climate data available

environmental data:

no environmental data per catchment available

available parameters per site: maximum depth

data source: field measurement

proportion of land use types within several fixed perimeters around ponds

data source: Poelmans, L. & Van Daele, T. (2014). Landgebruikskaart NARA-T 2014: Studie uitge

comments: distance statistics between pond, buffer area and nearest crop/grassland land use reference:
Departement Landbouw & Visserij (2016). Landbouwgebruikspercelen ALV, 2016. Verdeeld door Agentschap Informatie Vlaanderen, http://www.geopunt.be/catalogus/datasetfolder/68621fdf-7948-48eb-b141-3f85751c44cb

physico-chemical data: total P, nitrate, nitrite, total N, ammonium, sulphate, chloride, hardness, alkalinity, oxygen content, water temperature, pH, conductivity, chlorophyll, Secci disc depth, suspended solids, sediment/soil parameters

other physico-chemical parameters:

phycocyanine, DOC, Silicate, phosphate

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

mean values per site

stressors influencing the sites:

reference sites available: no

stressor	restored sites available	data before/after restoration available	stressor gradient available	comments
other stressors	no	no	no	organic vs conventional agricultural land use

Biological data

biological data origin: from sampling, ORCA

organism group addressed: amphibians, fish, macro-invertebrates (Mollusca, Coleoptera), zooplankton (Cladocera), macrophytes

comments: Three macroinvertebrate groups were addressed: Coleoptera, Heteroptera, Gastropoda.

Sample specifications/sample resolution

amphibians:

sample information:

covered timeframe: 2018 - 2018

historical data: no

season: spring

temporal resolution/frequency of sampling: per year

time series data: no

taxonomic resolution:

level: genus, species

percentage of species level data: 90

taxonomic coding:

taxalist according to: INBO reference database and De Bie et al. (2012)

reference(s): De Bie, T., De Meester, L., Brendonck, L., Martens, K., Goddeeris, B., Ercken, D., Hampel, H., Denys, L., Vanhecke, L., Van der Gucht, K., Van Wichelen, J., Vyverman, W. & Declerck, S.A. (2012). Body size and dispersal mode as key traits determining metacommunity structure of aquatic organisms. Ecology Letters 15(7): 740-747.

sample specifications:

type: presence/absence

replicate samples: no

number of samples: 48

specification of method(s) used for sampling and sorting: eDNA data

fish:

sample information:

covered timeframe: 2018 - 2018

historical data: no

palaeo data: no

season: spring

temporal resolution/frequency of sampling:

per year
time series data: no
taxonomic resolution:
level: species
percentage of species level data: 100
taxonomic coding:
taxalist according to: INBO reference database and De Bie et al. (2012)
reference(s): De Bie, T., De Meester, L., Brendonck, L., Martens, K., Goddeeris, B., Ercken, D., Hampel, H., Denys, L., Vanhecke, L., Van der Gucht, K., Van Wichelen, J., Vyverman, W. & Declerck, S.A. (2012). Body size and dispersal mode as key traits determining metacommunity structure of aquatic organisms. Ecology Letters 15(7): 740-747.
sample specifications:
type: presence/absence
replicate samples: no
number of samples: 48
specification of method(s) used for sampling and sorting:
eDNA data

macro-invertebrates:

sample information:
covered timeframe: 2017 - 2017
historical data: no
palaeo data: no
season: summer
temporal resolution/frequency of sampling:
per year
time series data: no
comments: data of Coleoptera, Heteroptera and Gastropoda
taxonomic resolution:
level: family, sub-family, genus, species
percentage of species level data: 90
taxonomic coding:
taxalist according to: see De Bie et al. (2012)
reference(s): De Bie, T., De Meester, L., Brendonck, L., Martens, K., Goddeeris, B., Ercken, D., Hampel, H., Denys, L., Vanhecke, L., Van der Gucht, K., Van Wichelen, J., Vyverman, W. & Declerck, S.A. (2012). Body size and dispersal mode as key traits determining metacommunity structure of aquatic organisms. Ecology Letters 15(7): 740-747.
sample specifications:
type: semi-quantitative
replicate samples: no
number of samples: 48
specification of method(s) used for sampling and sorting:
net sampling

zooplankton:

sample information:
covered timeframe: 2017 - 2017
historical data: no
palaeo data: no
season: summer

temporal resolution/frequency of sampling:
per year
time series data: no

taxonomic resolution:

level: species
percentage of species level data: 95

taxonomic coding:

taxalist according to: see De Bie et al. (2012)
reference(s): De Bie, T., De Meester, L., Brendonck, L., Martens, K., Goddeeris, B., Ercken, D., Hampel, H., Denys, L., Vanhecke, L., Van der Gucht, K., Van Wichelen, J., Vyverman, W. & Declerck, S.A. (2012). Body size and dispersal mode as key traits determining metacommunity structure of aquatic organisms. Ecology Letters 15(7): 740-747.

sample specifications:

type: semi-quantitative
replicate samples: no
number of samples: 48
specification of method(s) used for sampling and sorting:
densities (number of individuals per liter)

macrophytes:

sample information:

covered timeframe: 2017 - 2018
historical data: no
palaeo data: no
season: summer
temporal resolution/frequency of sampling:
per year
time series data: no
comments: 47 samples in 2017
1 sample in 2018

taxonomic resolution:

level: genus, species
percentage of species level data: 95

taxonomic coding:

taxalist according to: see De Bie et al. (2012)
reference(s): De Bie, T., De Meester, L., Brendonck, L., Martens, K., Goddeeris, B., Ercken, D., Hampel, H., Denys, L., Vanhecke, L., Van der Gucht, K., Van Wichelen, J., Vyverman, W. & Declerck, S.A. (2012). Body size and dispersal mode as key traits determining metacommunity structure of aquatic organisms. Ecology Letters 15(7): 740-747.

sample specifications:

type: semi-quantitative
replicate samples: no
number of samples: 48
specification of method(s) used for sampling and sorting:
estimated using Tansley scale

Other specifications

GIS layers, shape files related to the dataset: land use

availability of photos: yes

availability of maps: no

quality control procedures:

Were any quality control procedures applied to your dataset? yes

quality control protocols and comments: Species, difficult to identify, were checked by taxonomic experts.

Acknowledgements

The authors acknowledge the Belgian Science Policy (BELSPO) for funding the original BRAIN project ORCA (A comparative analysis of ORganic and Conventional Agriculture's impact on aquatic biodiversity - 2017-2021), as well as for funding the SAFRED project (Saving freshwater biodiversity research data - 2015-2018) that facilitated access to previous databases. We thank the pond owners for granting us access to their land and the ORCA Follow-up Committee for their much appreciated input.

References

De Bie, T., De Meester, L., Brendonck, L., Martens, K., Goddeeris, B., Ercken, D., Hampel, H., Denys, L., Vanhecke, L., Van der Gucht, K., Van Wichelen, J., Vyverman, W. & Declerck, S.A., 2012. Body size and dispersal mode as key traits determining metacommunity structure of aquatic organisms. Ecology Letters 15(7): 740-747. https://doi.org/10.1111/j.1461-0248.2012.01794.x

Departement Landbouw & Visserij, 2016. Landbouwgebruikspercelen ALV, 2016. Verdeeld door Agentschap Informatie Vlaanderen. https://doi.org/https://www.geopunt.be/catalogus/datasetfolder/68621fdf-7948-48eb-b141-3f85751c44cb

Leyssen, A., Scheers, K., Smeekens, V., Wils, C., Packet, J., De Knijf, G. & Denys, L., 2020. Watervlakken versie 1.1: polygonenkaart van stilstaand water in Vlaanderen: uitgave 2020. Rapporten van het Instituut voor Natuur- en Bosonderzoek 2020 (nr. 40, pg 19). Instituut voor Natuur- en Bosonderzoek, Brussel. https://doi.org/10.21436/inbor.19088385

Poelmans, L. & Van Daele, T., 2014. Landgebruikskaart NARA-T 2014: Studie uitgevoerd in opdracht van: INBO (in het kader van de Referentietaak Natuurrapportering Vlaanderen) - 2014/RMA /R /45 (55pg) https://doi.org/https://www.vlaanderen.be/inbo/publicaties/landgebruikskaart-nara-t-2014