Metadata

Welsh catchments (Wales, UK)

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General information

name of the dataset:

full name of the dataset: *Welsh catchments (Wales, UK)*

dataset short name: *Wales*

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

short description of the dataset/summary:

This dataset contains information about 128 river catchments placed in Wales, compiled over 30 years through different research projects. The majority of these catchments were surveyed at three time points over this period (one spring sample per year at 1984, 1995, 2012/13). A small subset of 14 streams (Brianne streams) have been surveyed continously from 1981-82 to 2014 (one spring sample per year). This dataset contains biological information about aquatic macroinvertebrates (genus and species level), water birds (European dipper) and fish (species level, commercial and non-commercial). As environmental descriptors, GIS catchment information (elevation, geomorphology, lithology), water chemistry (pH, nutrients, suspended solids, etc.) and climatic information are available.

science keywords according to GCMD:

topic: *Agriculture, Biosphere, Biological Classification, Climate Indicators, Terrestrial Hydrosphere*

keywords: *Wales, upland streams, macroinvertebrates, dipper, fish, acidification, climate change, land use intensification, intensive farming, ecosystem services*

ISO topic category according to ISO 19115:

Biota, Environment, Inland Waters

Technical and administrative specifications

data format:	*Excel*
operating system:	*all operating systems*
others/details:	*widely accesible using both MS Excel or Open/Libre Office*
data language:	*English*
current access level:	*restricted access*
currently available through GBIF:	*no*
exchange planned:	*no*
data in data repository:	*no*
Do you plan to publish the data on the Freshwater Biodiversity Data Portal:	*no*
update level:	*continuously updated*
documentation:	
type:	*scientific paper, internal description*
language:	*English*
contact details:	

metadata contact person:	
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Intellectual property rights and citation

(if the dataset is already published):

dataset creator (data compiler):

contact name:	*Cayetano Gutiérrez Cánovas*
contact email:	*tano.gc@gmail.com*
contact institution:	*Cardiff University*

data contributors to/owners of this dataset:

single

criteria for using the data in a publication/scientific analysis:

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

citation of this dataset:

author(s):	*Ormerod, SJ, Durance, I.*
title:	*Biological and environmental database of Welsh stream catchments, UK.*
year:	*2015*

citation of the metadata:

author(s):	*Gutiérrez-Cánovas, C., Ormerod, SJ, Durance, I.*
title and journal (name, number, pages):	*Metadata to the biological and environmental database of Welsh stream catchments, UK.*
year:	*2016*
comments:	*Bird data is co-ownwed with British Trust of Ornithology (BTO)*

General data specifications

regional coverage of the dataset:

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

spatial extent (bounding coordinates):

southernmost latitude [°]:	*51.76*
northernmost latitude [°]:	*53.20*
westernmost longitude [°]:	*-4.45*
easternmost longitude [°]:	*-2.45*
minimum altitude:	*40 metres*
maximum altitude:	*450 metres*
countries:	*Europe: United Kingdom*

Site specifications

coordinate system/grid data:	*latitude/longitude*
	projected
datum (e.g. WGS84):	*WGS84*
grid data available:	*yes*
resolution:	*25*
unit:	*m*
site coding:	
site coding available:	*yes*
	alphanumerical
number of digits:	*7*
example:	*DW89206*
number of sites:	*100 - 1000*
exact number of sites:	*128*
comments:	*The site coding varies from 5 to 7 digits:*
	- DLBL1
	- DSJO07
	- DW89206

Climate and environmental data

climate related data:

available per: *per site*

spatial resolution of the data (if not catchment/site related):
1 km

available parameters:
mean annual temperature January, July
worldclim data source:
mean annual temperature for each month
worldclim data source:
minimal, maximal and mean winter and summer temperatures
worldclim data source:
mean annual precipitation
worldclim data source:
winter and summer precipitation
worldclim data source:
mean discharge
Environment Agency (UK) data source:

environmental data:

available parameters per catchment: *catchment size*
GIS layers data source:
available parameters per catchment: *catchment geology*
GIS layers data source:
available parameters per catchment: *catchment land cover/land use*
CorineLC / Welsh LC maps data source:
available parameters per catchment: *population density*
available parameters per catchment: *presence of barriers/dams/reservoirs (fragmentation)*
Google Earth satellite pictures data source:
available parameters per catchment: *hydrological regime/flow regime*
Environment Agency (UK) data source:
available parameters per site: *catchment land use upstream of sampling site*
CorineLC / Welsh LC maps data source:
available parameters per site: *information on water uses (e.g., irrigation, fish ponds)*
CorineLC / Welsh LC maps data source:
available parameters per site: *slope*
GIS layers (DEM) data source:
available parameters per site: *altitude*
GIS layers (DEM) data source:
available parameters per site: *hydrological regime/flow regime*
Environment Agency (UK) data source:
available parameters per site: *discharge*
Environment Agency (UK) data source:
available parameters per site: *substrate composition*
surveys data source:

physico-chemistry data: *total P, ortho P, nitrate, total N, sulphate, chloride, sodium, magnesium, calcium, hardness, alkalinity, pH, conductivity*

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: *yes*

stressor	restored sites available	data before/after restoration available	stressor gradient available	comments
acidification	yes	yes	yes	
socio-economic stress	yes	yes	yes	

Biological data

biological data origin:	*from sampling*
specify project:	*WAWS, DURESS and others*
organism group addressed:	*water birds, fish, macro-invertebrates (Mollusca, Ephemeroptera, Odonata, Plecoptera, Coleoptera, Trichoptera, Chironomidae)*

Sample specifications/sample resolution

water birds:

sample information:

covered timeframe:

year from - to: *2013 - 2013*

historical data: *no*

season: *spring*

temporal resolution/frequency of sampling: *per year*

time series data: *no*

taxonomic resolution:

percentage of species level data: *100*

comments: *Only the occurrence of the European dipper (Cinclus cinclus) was surveyed.*

taxonomic coding:

taxalist according to: *National Biodiversity Network*

citation: *https://data.nbn.org.uk/*

coding system: *scientific latin name*

example: *Cinclus cinclus*

sample specifications:

number of samples: *88*

specification of method(s) used for sampling and sorting: *Visual and auditive detection of dipper territories along a 2km transect (1km upstream and downstream respect to the point where the invertebrate and chemical samples were collected).*

citation: *Buckton, S.T., Brewin, P.A., Lewis, A., Stevens, P. & Ormerod, S.J. (1998) The distribution of dippers, Cinclus cinclus (L.), in the acid-sensitive region of Wales, 1984?95. Freshwater Biology, 39, 387?396.*

Ormerod, S.J., Allinson, N., Hudson, D., Tyler, S.J. 1986 The distribution of breeding dippers (Cinclus cinclus (L.) ; Aves) in relation to stream acidity in upland Wales. Freshwater Biology, 16, 501 507.

sample type (e.g. habitat specific samples, composite samples etc.): *Composite sample (all territories detected in one transect). Sites were visited 3 times from April to June to confirm dipper presences.*

specific sample location (e.g. littoral, profundal, transect, shoreline, hyporheic zone, etc.): *Sites were selected if they were considered physiographically suitable dipper habitat (e.g. > 1 m wide; slope 10?150 m km?1, > 25% cover by riffle) and had road access.*

fish:

sample information:

covered timeframe:

year from - to: *2012 - 2013*

historical data: *no*

palaeo data: *no*

season: *summer, autumn*

temporal resolution/frequency of sampling: *Two samples were collected per year. One in spring and other during autumn.*

time series data: *no*

taxonomic resolution:

percentage of species level data: *100*

comments: *Individuals were identified to species (using Maitland, 1972).*

Maitland P.S. (1972) A key to the freshwater fishes of the British Isles. Scientific Publication of the Freshwater Biological Association, 27, 1?137.

taxonomic coding:

taxalist according to: *Maitland*

citation: *Maitland P.S. (1972) A key to the freshwater fishes of the British Isles. Scientific Publication of the Freshwater Biological Association, 27, 1?137.*

coding system: *scientific latin name*

example: *Salmo trutta*

sample specifications:

replicate samples: *no*

number of samples: *187*

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

Fish populations at the study sites were surveyed during a stable base-flow period from July to September 2012 and in July and September 2013, via quantitative electrofishing in representative 30 m reaches that were enclosed with stop nets (mesh size: 10 mm2). At all sites, resident fish were captured in a three-pass depletion procedure using a battery-powered Pulsed DC Electracatch bankside set-up (Smith-Root Europe Ltd. Killney, Ireland.) at a frequency of 50 Hz ? considered to optimise salmonid catches (Beaumont, 2011) ? with applied voltage determined based upon site-specific conductivity. This three-pass method generally captures a large pool of all individuals present and produces data representative of total abundance in upland streams (Kruse, Hubert & Rahel, 1998). Fish caught during each pass were transferred immediately to a holding container containing stream water. After each pass, individuals were identified to species (using Maitland, 1972), weighed to the nearest gram and had fork length (FL) measured to the nearest millimetre.

citation: *Beaumont W.R.C. (2011) Electric Fishing: A Complete Guide to Theory and Practice. Game & Wildlife Conservation Trust, Fordingbridge, Hampshire.*

Kruse C.G., Hubert W.A. & Rahel F.J. (1998) Single-pass electrofishing predicts trout abundance in mountain streams with sparse habitat. North American Journal of Fisheries Management, 18, 940?946.

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

multi-habitat sample to generate a composite sample

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

instream samples: riffles and pools

macro-invertebrates:

sample information:

covered timeframe:

year from - to: *1981 - 2014*

historical data: *yes*

palaeo data: *no*

season: *spring*

temporal resolution/frequency of sampling:
per month
time series data: *yes*
comments: *The majority of these catchments (Welsh Acid Water Survey - WAWS and Wye datasets) were surveyed for macroinvertebrates at three time points over this period. One spring sample per year at 1984, 1995 and 2012 (WAWS) or 2013 (Wye) was collected.*

A small subset of 14 streams (Brianne dataset) have been surveyed continously from 1981-82 to 2014 (one spring sample per year).

taxonomic resolution:
percentage of species level data: *60*
taxonomic coding:
taxalist according to: *Tachet et al. (2002)*
citation: *Tachet, H., P. Richoux, M. Bournaud, and P. Usseglio-Polatera. (2002) Invertébrés d?eau douce. Systematique, biologie, écologie (2nd corrected impression). CNRS éditions, Paris, France.*
coding system: *scientific latin name*
example: *Isoperla grammatica*
sample specifications:
replicate samples: *no*
specification of method(s) used for sampling and sorting:
Invertebrates were collected once a year during spring using semiquantitative kick samples (standard net with 1 mm mesh size) from all sites, as follows:
- WAWS (1984, 1995), Wye (1984, 1995) and Brianne (1984, 1995)

Standardised kick-samples of 3 min total duration aggregated between riffles (2 min) and marginal habitats (1 min):
- Wye (2013), WAWS (2012)

Standardized kick-samples of 2 min total duration in riffles.

Samples were preserved on-site by adding 100% industrial methylated spirit (IMS) to the sample volume. In the laboratory, samples were hand sorted, preserved in 70% IMS and major groups were identified and count to species or genus for most taxa or to family in cases where taxonomy was difficult or larvae were insufficiently well developed (e.g. Diptera).
citation: *Bradley DC, Ormerod SJ (2002) Evaluating the precision of kick-sampling in upland streams: the effects of sampling effort, habitat and rarity. Archiv fu ?r Hydrobiologie, 155, 199?221.*

Weatherley NS, Ormerod SJ (1987) The impact of acidification on macroinvertebrate assemblages in Welsh streams: towards an empirical model. Environmental Pollution, 42, 223?240.

sample type (e.g. habitat specific samples, composite samples etc.):
riffle samples (WAWS 2012 / Wye 2013) or aggreagated samples, including riffle + margin samples (WAWS 1984 and 1995, Wye 1984 and

1995, and Brianne)

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

stream reach (about 100 m length)

Other specifications

GIS layers, shapes related to the dataset:

catchments, river-sub-basins
land use
protected areas
population density
environmental variables (freshwater or terrestrial)
climatic variables (current and predictions)

availability of photos: *yes*

availability of maps: *yes*

quality control procedures:

Were any quality control procedures applied to your dataset?

yes

quality control protocols and comments:

Most environmental data were provided by the Environment Agency (UK), Natural Resources Wales or their predecessor bodies - and subject to quality control in nationally accredited laboratories.

For biological samples, consistent quality controls were applied to data collected by regulatory agencies or Cardiff University and involved quality checks of sample processing and specimen identification.

reference: *Buckton, S.T., Brewin, P.A., Lewis, A., Stevens, P. & Ormerod, S.J. (1998) The distribution of dippers, Cinclus cinclus (L.), in the acid-sensitive region of Wales, 1984?95. Freshwater Biology, 39, 387?396.*