Estructura del Data Paper

Estandarización, documentación y publicación de datos de seguimientos de biodiversidad

Taller GBIF.ES - Sevilla

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¿Qué estructura tiene un Data Paper?

Análisis de la estructura de los Data Papers

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Original Article

An analysis of data paper templates and guidelines: types of contextual information described by data journals

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Chen (2017) Kim (2020) Candela et al. (2015)

Componentes del Data Paper

Table 1. Mapping between types of contextual information and data paper components

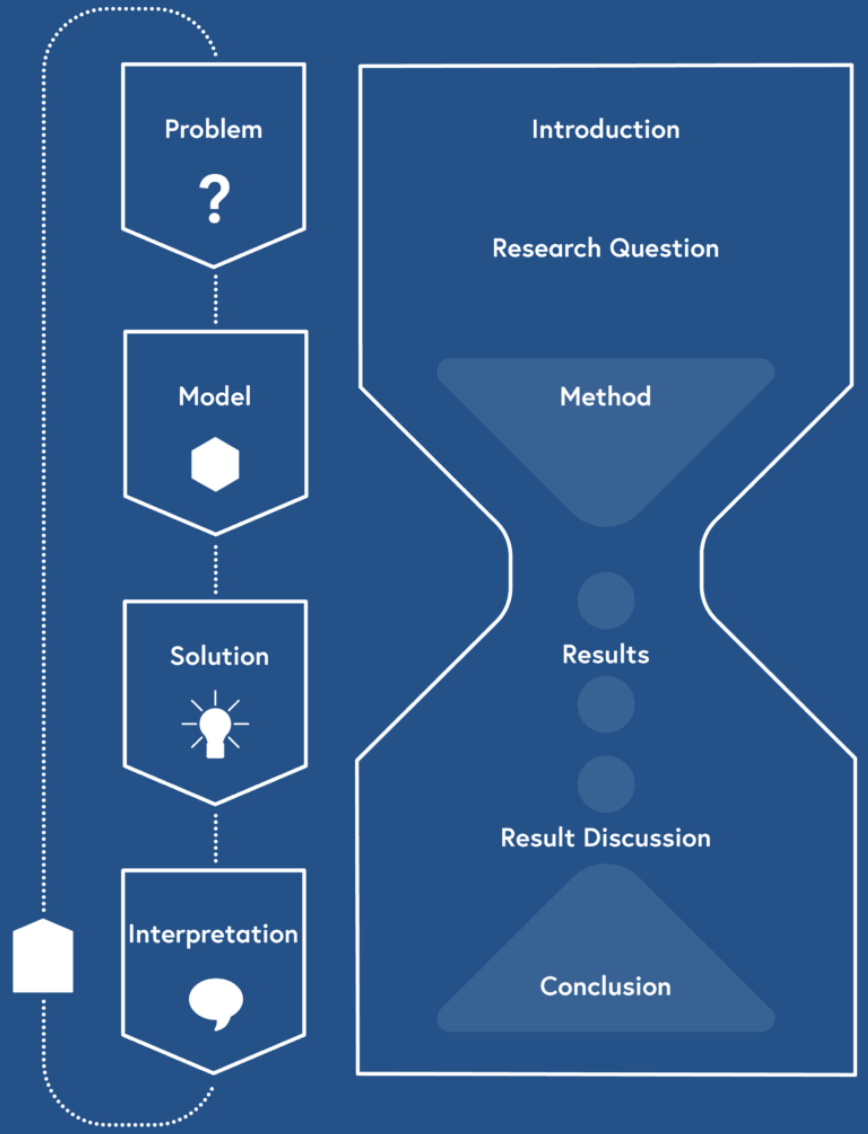
	Types of contextual information		Data paper components	
	Faniel et al. [15]	Chin and Lansing [16]	Candela et al. [8]	Chen [9]
Data production information	Data collection	Experimental properties	Quality, provenance	Collection
	Specimen and artifact	-	Coverage	Coverage
	Data producer	-	Microattribution	Description (file creators), author's contribution
	Data analysis	Analysis and interpretation	-	-
	Missing data	-	-	-
	Research objectives	-	-	-
Repository information	Provenance	Data provenance	Availability	Identifier, relationship
	Repository reputation and history	-	-	-
	Curation and digitization	-	-	-
Data reuse information	Prior reuse	-	Reuse	
	Advice on reuse	-	Reuse	-
	Terms of use	-	License, competing interests	Copyright, ethical approval, consent to publication, competing interests
-	-	General data set properties	Format	Description (file format, version, creation date)
-	-	-	Project	Funding statement

Kim (2020)

Análisis de la estructura de los Data Papers

- **Heterogeneidad** de plantillas/guías
  - Ausencia de estandarización
- **Granularidad**
  - ¿Cuántos datasets incluir?
  - Mayoría de guidelines centrados en 1 solo conjunto de datos
- ¿Reputación del **repositorio**?

¿Qué estructura se recomienda para un Data Paper?



Fuente: University of Basel

¿Qué estructura se recomienda para un Data Paper?

Una visión a través de los diferentes *journals*

1. Availability
2. Competing interest
3. Coverage
4. Format
5. License
6. Microattribution
7. Project
8. Provenance
9. Quality
10. Reuse

Candela et al. 2015

¿Qué estructura se recomienda para un Data Paper?

Una visión a través de los diferentes *journals*

Información en común Chen (2017)

- Métodos de colecta de datos
- Origen de los datos (data provenance)

¿Qué estructura se recomienda para un Data Paper?

No existe estándar/guía de la estructura de un DP

- Depende de la **revista**
- Depende de la **temática**
- Depende de la **tipología de datos**
- …

dependiente de la temática

Kasmi *et al. BMC Genomic Data* (2023) 24:18
https://doi.org/10.1186/s12863-023-01119-4

BMC Genomic Data

DATABASE Open Access

Mare-MAGE curated reference database of fish mitochondrial genes

Yassine Kasmi*, Erik Eschbach and Reinhold Hanel

Abstract

Biodiversity assessment approaches based on molecular biology techniques such as metabarcoding, RAD-seq, or SnaPshot sequencing are increasingly applied in assessing marine and aquatic ecosystems. Here we present a new reference database for fish meta-barcoding based on mitochondrial genes. The ***Mare-MAGE*** database contains quality-checked sequences of the mitochondrial 12S ribosomal RNA and Cytochrome c Oxidase I gene. All sequences were obtained from the National Center for Biotechnology Information- GenBank (NBCI-GenBank), the European Nucleotide Archive (ENA), AquaGene Database and BOLD database, and have undergone intensive processing. They were checked for false annotations and non-target anomalies, according to the Integrated Taxonomic Information System (ITIS) and FishBase. The dataset is compiled in ARB-Home, FASTA and Qiime2 formats, and is publicly available from the ***Mare-MAGE*** database website (http://mare-mage.weebly.com/). It includes altogether 231,333 COI and 12S rRNA gene sequences of fish, covering 19,506 species of 4,058 genera and 586 families.

Keywords Mare-MAGE, Mitochondrial database, Fish, Metabarcoding, eDNA

Kasmi et al. 2023

dependiente de la temática

Earth Syst. Sci. Data, 11, 393–407, 2019
https://doi.org/10.5194/essd-11-393-2019

Open Access Earth System Science Data

The Guadalfeo Monitoring Network (Sierra Nevada, Spain): 14 years of measurements to understand the complexity of snow dynamics in semiarid regions

María J. Polo, Javier Herrero, Rafael Pimentel, and María J. Pérez-Palazón

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Received: 30 September 2018 – Discussion started: 12 November 2018
Revised: 25 February 2019 – Accepted: 4 March 2019 – Published: 19 March 2019

Abstract. This work presents the Guadalfeo Monitoring Network in Sierra Nevada (Spain), a snow monitoring network in the Guadalfeo Experimental Catchment, a semiarid area in southern Europe representative of snowpacks with highly variable dynamics on both annual and seasonal scales and significant topographic gradients. The network includes weather stations that cover the high mountain area in the catchment and time-lapse cameras to capture the variability of the ablation phases on different spatial scales. The data sets consist of continuous meteorological high-frequency records at five automatic weather stations located at different altitudes ranging from 1300 to 2600 m a.s.l. that include precipitation, air temperature, wind speed, air relative humidity and the short- and longwave components of the incoming radiation, dating from 2004 for the oldest station (2510 m a.s.l.) (https://doi.org/10.1594/PANGAEA.895236); additionally, daily data sets of the imagery from two time-lapse cameras are presented, with different scene area (30 m × 30 m, and 2 km^2, respectively) and spatial resolution, that consist of fractional snow cover area and snow depth from 2009 (https://doi.org/10.1594/PANGAEA.871706) and snow cover maps for selected dates from 2011 (https://doi.org/10.1594/PANGAEA.898374). Some research applications of these data sets are also included to highlight the value of high-resolution data sources to improve the understanding of snow processes and distribution in highly variable environments. The data sets are available from different open-source sites and provide both the snow hydrology scientific community and other research fields, such as terrestrial ecology, riverine ecosystems or water quality in high mountains, with valuable information of high potential in snow-dominated areas in semiarid regions.

Polo et al. 2019

dependiente de la revista

PhytoKeys 46: 89–107 (2015)
doi: 10.3897/phytokeys.46.9116
http://phytokeys.pensoft.net

DATA PAPER

A peer-reviewed open-access journal
PhytoKeys
Launched to accelerate biodiversity research

Dataset of Phenology of Mediterranean high-mountain meadows flora (Sierra Nevada, Spain)

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Pérez-Luque et al. 2015

dependiente de la revista

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Ecosistemas 31(2):2356 [Mayo-Agosto 2022]
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ARTÍCULO DE DATOS

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Listado de la artropodofauna del macizo de Sierra Nevada (Almería y Granada, España)

Alberto Tinaut[1], Pedro Sandoval[1,*], Daniel Aguayo[1], J. Manuel Tierno de Figueroa[1], Francisca Ruano[1]

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Listado de la artropodofauna del macizo de Sierra Nevada (Almería y Granada, España)

Resumen: Presentamos un listado de la artropodofauna de Sierra Nevada (latitud 36.927 y 37.23; longitud -3.571 y -2.646) en el que se incluyen 3953 registros representados como 6 clases, 33 órdenes, 268 familias, 1884 géneros y 3940 especies (de las cuales 169 son endemismos), indicando la referencia bibliográfica de la cita y la información taxonómica correspondiente. La elaboración de este listado, y sus futuras actualizaciones, intentan paliar el desconocimiento que todavía existe sobre los artrópodos presentes en Sierra Nevada ofreciendo un recurso imprescindible para generar conocimiento sobre la biodiversidad entomológica de este macizo, así como para plantear estrategias de conservación adecuadas. La obra "Los Insectos de Sierra Nevada. 200 años de historia" (Ruano et al. 2013) ha sido la fuente primaria de citas y la hemos completado con aquellos taxones no incluidos en ella o aparecidos en la bibliografía científica con posterioridad. Los nombres científicos han sido validados en base a diferentes catálogos taxonómicos y el conocimiento de expertos y bajo criterios de coherencia, relevancia y actualidad. El listado está disponible en GBIF en formato Darwin Core (https://doi.org/10.15470/nt5nsx) y parte del material citado se encuentra depositado en las colecciones del Departamento de Zoología de la Universidad de Granada (https://ccz.ugr.es).

Palabras clave: Andalucía; artrópodos; biodiversidad; colecciones científicas; fauna; GBIF; listado; montaña

Checklist of the arthropod fauna of the Sierra Nevada Mountain range (Almería and Granada, Spain)

Tinaut et al. 2022

dependiente de la tipología de Datos

Nature Conservation 38: 1–12 (2020)
doi: 10.3897/natureconservation.38.38325
http://natureconservation.pensoft.net

DATA PAPER

A peer-reviewed open-access journal
Nature Conservation
Launched to accelerate biodiversity conservation

Social media photo content for Sierra Nevada: a dataset to support the assessment of cultural ecosystem services in protected areas

Andrea Ros-Candeira[1,2], Ricardo Moreno-Llorca[1,2], Domingo Alcaraz-Segura[1,3], Francisco Javier Bonet-García[4], Ana Sofia Vaz[1,3,5]

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Corresponding author: Andrea Ros-Candeira (a.roscandeira@gmail.com)

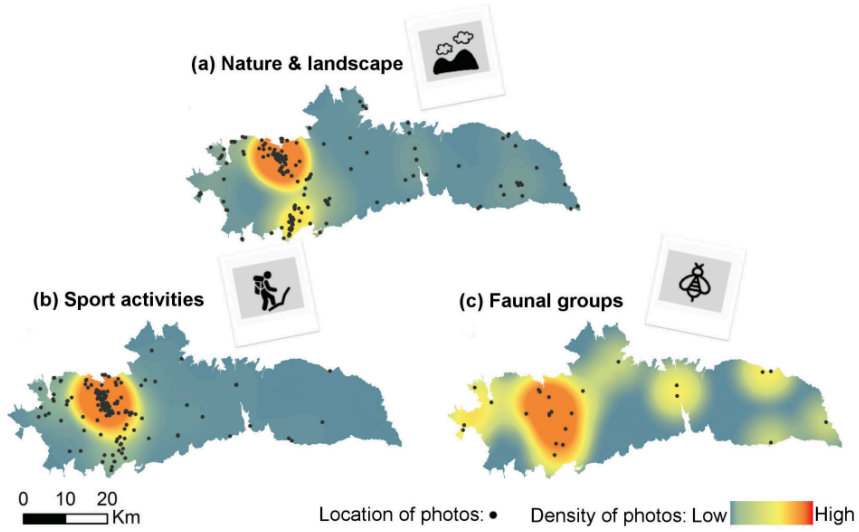


Figure 2. Illustration of Flickr photos showing: (**a**) nature & landscape as the main content, (**b**) sports activities and (**c**) faunal groups. The location of each photo is represented by a dark circle. The density of photos (kernel density) is also shown.

Ros-Candeira et al. 2020

Estructura flexible

- **Introducción**
  - contexto de los datos
  - proyecto
- **Cobertura** de los datos: taxonómica, espacial, temporal
- **Protocolos**
  - Diseño experimental
  - Procedimientos, técnicas de conservación, variables

Estructura flexible

- **Procesamiento** de los datos
  - Control de calidad
- Descripción y **citación** de los datasets
- Proyectos asociados
- **Licencias de uso**
- **Referencias**

Sugerencias: Descripción del Proyecto

Project details

Project title

Sierra Nevada Global-Change Observatory (OBSNEV)

Personnel

Regino Jesús Zamora Rodríguez (Scientific Coordinator, Principal Investigator, University of Granada); Francisco Javier Sánchez Gutiérrez (Director of the Sierra Nevada National Park and Natural Park).

Funding

Sierra Nevada Global Change Observatory is funded by Andalusian Regional Government (via Environmental Protection Agency) and by the Spanish Government (via "Fundación Biodiversidad", which is a Public Foundation).

Pérez-Luque et al. 2015

Sugerencias: Cobertura taxonómica

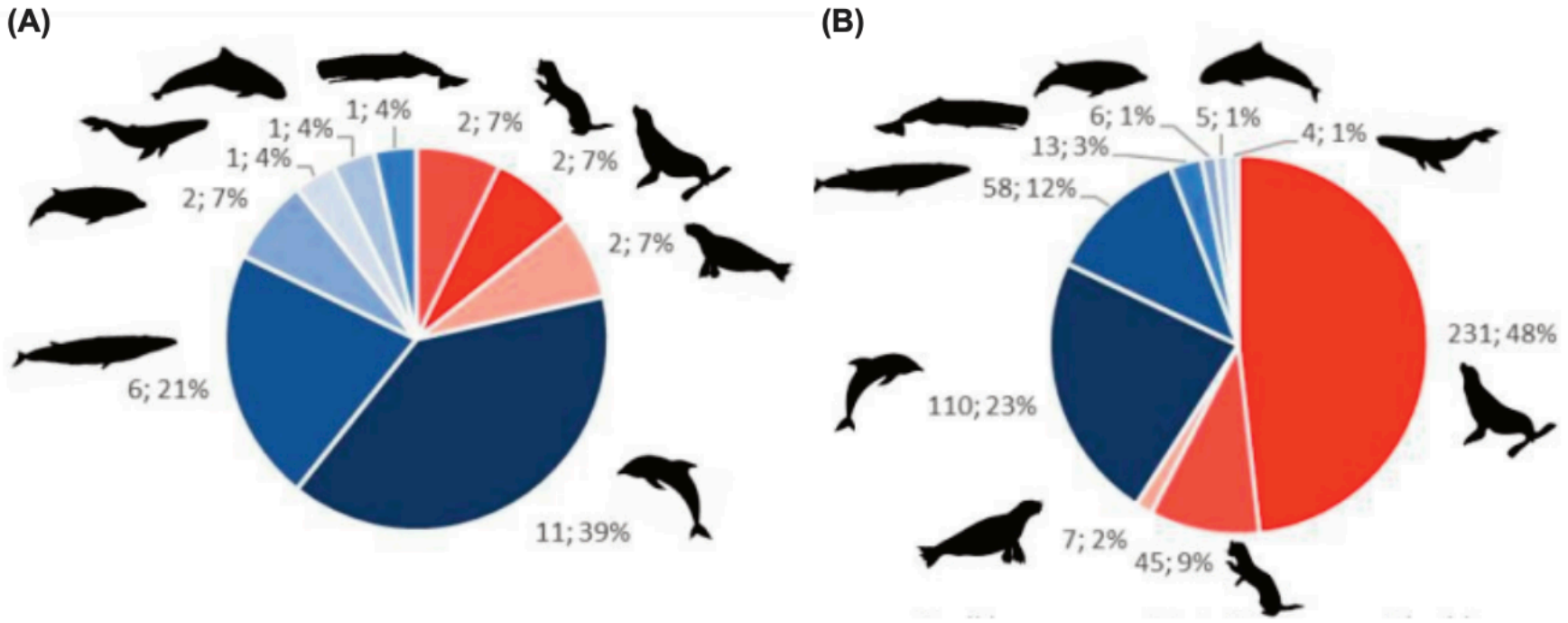
Taxonomic coverage

This dataset includes records of the phylum Magnoliophyta (10939 records, 99.43%) and marginally Pteridophyta (63 records, below 1% of total records). Most of the records included in this dataset belong to both the class Magnoliopsida (6057 records; 55.04%) and Liliopsida (4883 records; 44.37%). The class Psilotopsida is represented by 63 records. There are 19 orders represented in the dataset, Poales (44.25%) and Lamiales (12.52%) being the most important order from classes Liliopsida and Magnoliopsida, respectively (Figure 2). The class Psilotopsida is represented only by order Ophioglossales. In this collection, 28 families are represented, with Cyperaceae, Poaceae and Fabaceae being the families with highest number of records (Figure 3). The dataset contains 72 taxa belonging to 51 genera. *Carex*, *Nardus*, and *Scorzoneroides* are the most represented genera in the database. There are 29 threatened taxa (Table 1).

Table 1. Threatened and/or endemic species of the dataset

Scientific name	Bern [a]	Habitat Directive [b]	Spanish Red List [c]	Andalusian Red List [d]	IUCN Global [e]	IUCN SN [f]	Endemic [g]
Agrostis canina L. subsp. *granatensis* Romero García, Blanca & C. Morales			VU	VU	VU	VU	SN
Agrostis nevadensis Boiss.							SN
Arenaria tetraqueta L.							SN
Botrychium lunaria (L.) Sw.				VU		VU	
Carex capillaris L.				DD			
Carex nevadensis Boiss. & Reut.				NT			
Cerastium alpinum L. subsp. *aquaticum* (Boiss.) Mart. Parras & Molero Mesa							SN
Draba lutescens Coss.				VU	LR-nt	VU	
Eleocharis quinqueflora (Hartmann) O. Schwarz				VU			
Eryngium glaciale Boiss.				NT			SN
Euphrasia willkommii Freyn				NT			
Festuca frigida Hack.			VU	VU	VU	VU	SN
Galium nevadense Boiss. & Reut.				NT			
Gentiana alpina Vill.				VU	VU	VU	
Gentiana boryi Boiss.			VU	VU	VU	VU	
Gentiana pneumonanthe L. subsp. *depressa* (Boiss.) Rivas Mart., A. Asensi, Molero Mesa & F.Valle			VU	VU	VU	VU	SN
Gentiana sierrae Briq.			VU	VU	VU	VU	SN
Gentianella tenella (Rottb.) Harry Sm.				DD		VU	
Herniaria boissieri J.Gay				NT			SN
Linaria aeruginea (Gouan) Cav. subsp. *nevadensis* (Boiss.) Rivas Mart., A. Asensi, Molero Mesa & F.Valle							SN
Lotus corniculatus L. subsp. *glacialis* (Boiss.) Valdés				NT			
Luzula spicata (L.) DC. in Lam. & DC				NT		LR-lc	
Parnassia palustris L.				NT			
Phleum brachystachyum (Salis) Gamisans, Romero García & C.Morales subsp. *abbreviatum* (Boiss.) Gamisans, Romero García & C.Morales			VU	VU	VU	VU	
Pinguicula nevadensis (H.Lindb.) Casper	Appendix I	Annex II	EN	VU	VU	VU	SN

Sugerencias: Cobertura taxonómica



Sugerencias: Cobertura espacial

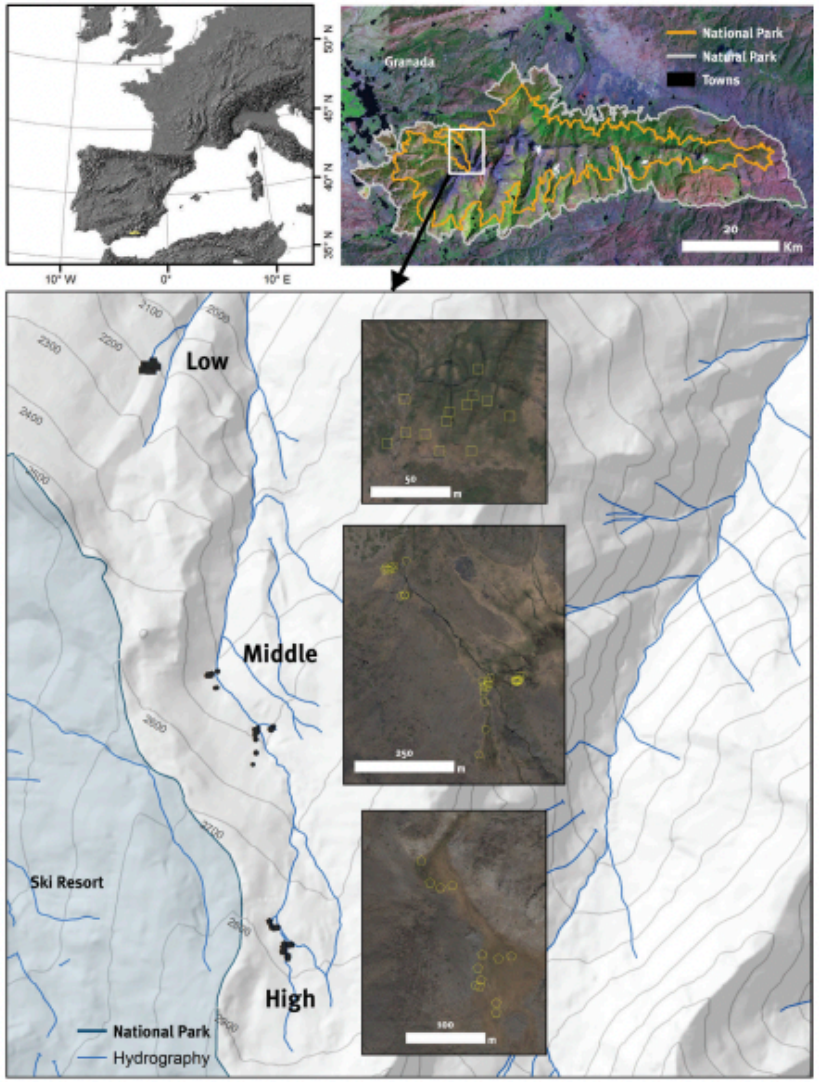


Figure 1. Location of Sierra Nevada (southern Spain) and boundaries of the National and Natural Parks (top panels). The bottom panel shows the location of the borreguiles in the San Juan river basin with the sampling plots along an altitudinal gradient.

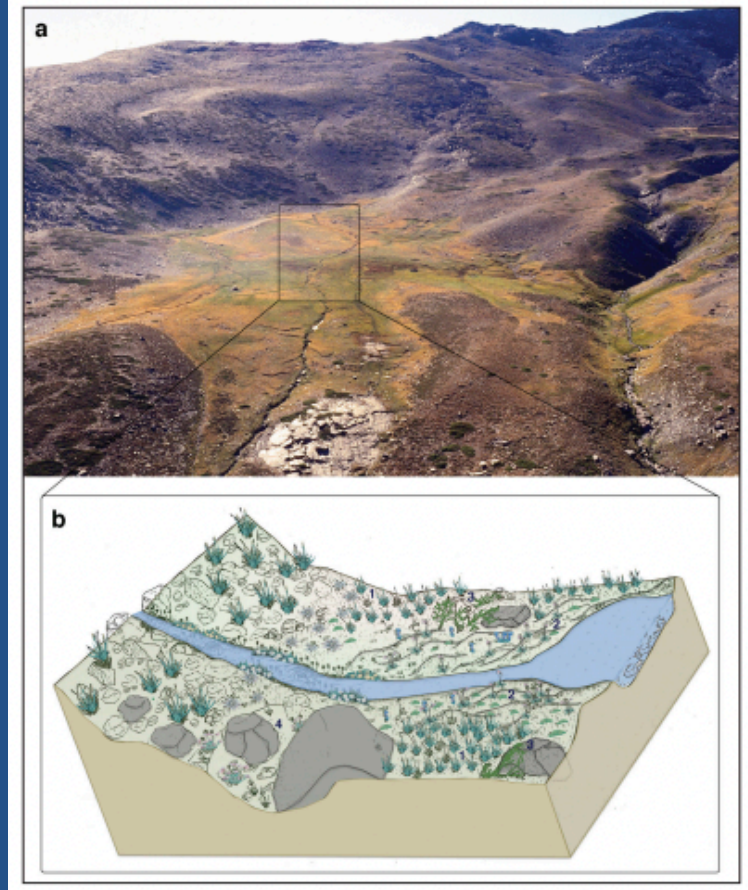


Figure 4. (**a**) Panoramic view of the borreguil of San Juan valley. The particular zonation of this ecosystem depending on soil moisture is reflected in the different colours of the borreguil. (**b**) Schematic representation of the vegetal communities forming the borreguiles, including dry borreguil (**4** *Armerio-Agrostietum nevadensis*), dense grassland (**1** *Nardo-Festucetum ibericae*), incipient peat formations (**2** *Ranunculo-Caricetum intrincatae*) and variants of borreguil in promontory areas (**3** *Ranunculo-Vaccinietum uliginosi*). Modified from Losa-Quintana et al. (1986). Picture: JM Martín-Martín.

Sugerencias: Métodos

Methods

Study extent description

We selected one of the most representative borreguiles of Sierra Nevada (for more info about borreguiles ecosystems see "General spatial coverage" section), located at San Juan river basin (Guejar-Sierra; Granada, Spain) (Figure 1c). The catchment area is nearly 1325 ha. and the basin was formed by glacial erosion of the bedrock (mica schists) and presents a valley with U-shaped (Martín-Martín et al. 2010). This meadow, which originated about 2000 years ago (Esteban 1996), occupies an area of approximately 100 ha.

Sampling description

We sampled at three localities along an altitudinal gradient (Figure 5a): one at Prado de la Mojonera (Low Altitude; around 2200 m a.s.l.) and two at Hoya del Moro (middle and high altitude; 2430–2550 m a.s.l. and around 2775 m a.s.l., respectively). For each locality, the sampling was performed every 15 days during the free-snow period once a year from 1988–1990 and from 2009 to 2013. For the middle altitude locality, we have data from two periods: 1988–1990 and 2009–2013. For low- and high-altitude locations, we have data from 2009–2013 period.

At each locality, permanent plots of 1 × 1 m were distributed to cover the different types of borreguiles. In each plot, a floristic inventory was made. The presence/absence and an estimation of abundance-coverage using the Braun-Blanquet cover-abundance scale (Braun-Blanquet 1964) were recorded for each taxa (Figure 5b). We also counted the number of individuals belonging to the three main phenological phases (phenophase) established: vegetative phenophase, reproductive phenophase (flowering) and seed phenophase. The plots were divided into quadrats of 25 × 25 cm to facilitate counting (Figure 5c) (Sánchez-Rojas 2012).

Method step description

All data were stored in a normalized database and incorporated into the Information System of Sierra Nevada Global-Change Observatory. Taxonomic and spatial validations were made on this database (see Quality-control description). A custom-made SQL view of the database was performed to gather occurrence data and other variables associated with some occurrence data, specifically:

- Flowering abundance: number of flowering individuals per square meter
- Fruit abundance: number of individuals in fruiting period per square meter
- Cover: the percentage of cover per taxon. The value represents a transformation of Braun-Blanquet cover-abundance scale (van der Maarel 1979, 2007)

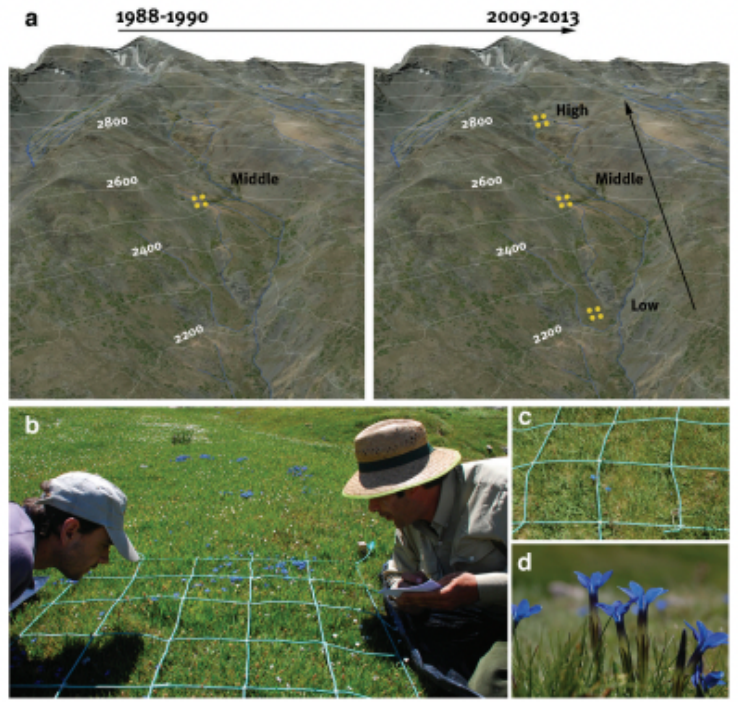


Figure 5. Schema of the sampling design. **a** Different sampling plots were distributed along an altitudinal gradient. For the middle-altitude locality the plots were sampled in two periods: 1988–1990 and 2009–2013. View of a sampling plot of 1 × 1 m (**b**) that was divided into quadrats of 25 × 25 cm to facilitate counting (**c**) and to record the cover-abundance and the number of individuals in flowering (**d**) or in fruit phenophase.

Sugerencias: Preparación de los datos; Quality Control

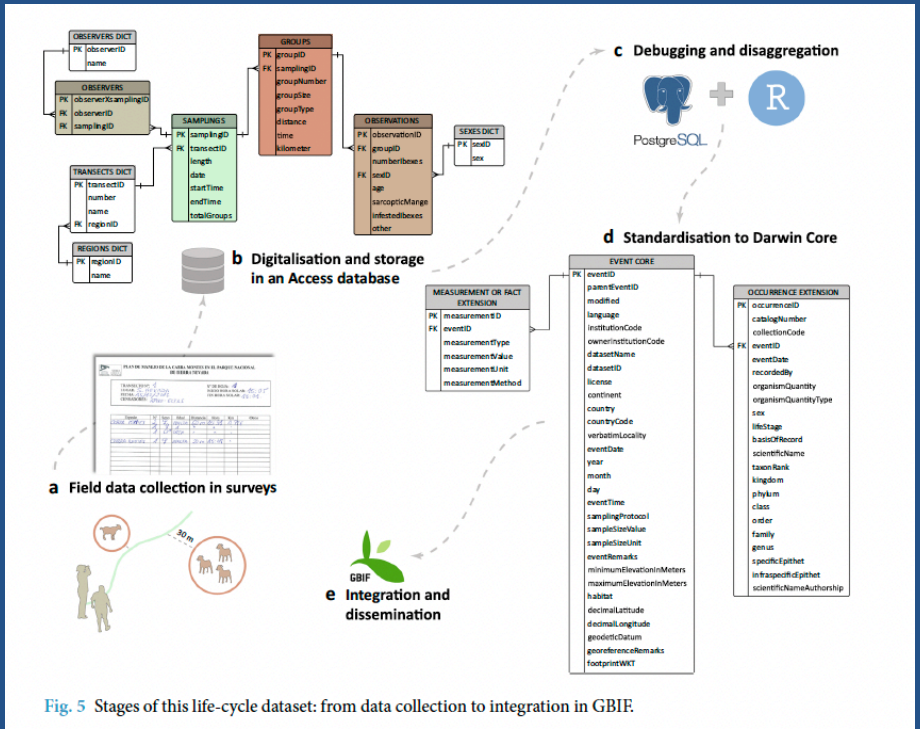


Fig. 5 Stages of this life-cycle dataset: from data collection to integration in GBIF.

Technical Validation

Different validation processes were applied in the data cycle stages described in Fig. 5:

(a) During the sampling, the observers fundamentally cross-checked the sightings *in situ*.
(b) In the second step, due to the large volume of data, we implemented some controls and validation rules in the Access form in order to reduce human errors and facilitate the digitalisation:

- Input masks control-data entry formats (especially date/time data type).
- We defined required fields (e.g. transect number and sampling date).
- We made lists of predefined values (e.g. group types: male alone, female alone, males, females, females with kids, and mixed groups).
- We established some "control fields", i.e. variables that the person digitalising the data calculated manually to facilitate the information identification. For instance, before introducing the sightings, the person had to indicate the total number of groups identified in each survey; the size of each group; the type of group categorized by sex and age; etc.

As for transects, a more accurate digitalisation was carried out at a scale of 1:1000 in ArcGIS 10.2[62], using as cartographic base the orthophotos from PNOA (Spanish National Program for Aerial Orthophoto).

(c) The data were processed through the PostgreSQL relational database management system (RDBMS) version 11.3[63] together with R version 3.6.0[64] using the package Rpostgres[65] and the spatial extension PostGIS version 2.5.2[66], in addition to other packages: DBI[67], knitr[68], dplyr[69] and splitstackshape[70]. In this way, we created a validation process in R and SQL code to check specific errors derived from digitalisation and corrected them. When necessary, the surveys were re-checked and several validation rounds were run. Specific examples are given below:

Granados et al. 2020

Sugerencias: Cómo usar los datos

Supplementary Information File 1

Long-term monitoring of the Iberian ibex population in the Sierra Nevada of the southeast Iberian Peninsula

R code used in the Usage Notes section

We provided a reproducible example using the data stored at GBIF.

Load packages

We used the packages `finch` [@finch], `tidyverse` [@tidyverse], `knitr` [@knitr] and `here` [@here]

```
library("tidyverse")
library("here")
library("finch")
library("knitr")
```

Read the data from DwCA

The first step was to download the Darwin Core Archive (`.zip` file) of the dataset from the IPT doi: 10.15470/3ucqfm. Then, using the `finch` package [@finch] we processed the Darwin Core Archive (DwC-A) and load the datasets.

```
# https://ipt.gbif.es/resource?r=iberianibex

f <- finch::dwca_read("https://ipt.gbif.es/archive.do?r=iberianibex&v=1.4")

# To see the files included in the DwC, type:
# f$files

# Read the data files
eventRaw <- read_delim(f$data[1], delim = "\t") # event.txt
occRaw <- read_delim(f$data[2], delim = "\t") # occurrence.txt
mofRaw <- read_delim(f$data[3], delim = "\t") # extendedmeasurementorfact.txt

# Or download the DwCore Archive and unzip. Specify the folder in the next lines

# occRaw <- read_delim(here::here("UNZIPFOLDER/occurrence.txt"), delim = "\t")
# eventRaw <- read_delim(here::here("UNZIPFOLDER/event.txt"),  delim = "\t")
# mofRaw <- read_delim(here::here("UNZIPFOLDER/extendedmeasurementorfact.txt"), delim = "\t")
```

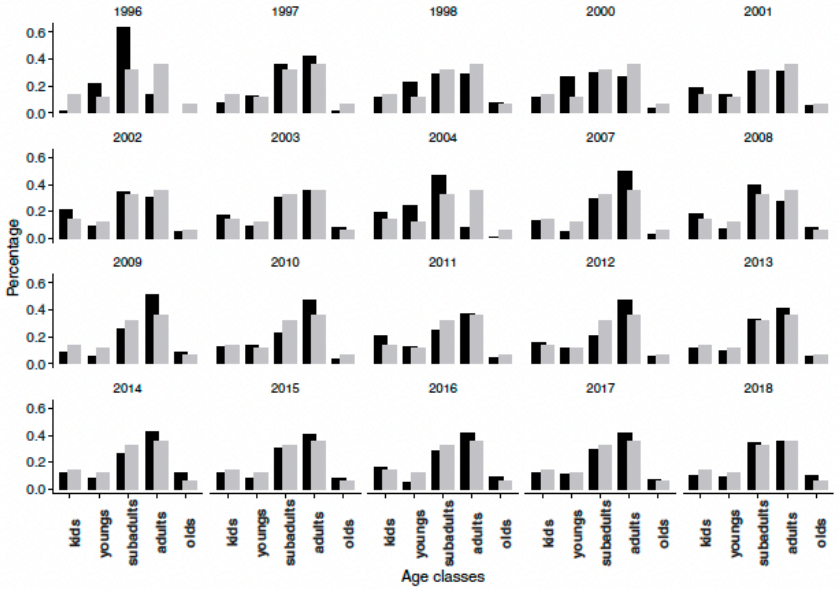


Fig. 6 Annual population structure (age classes) of Iberian ibex males on Sierra Nevada. Black bars indicate individual frequency for each age class: kids (0), young (1-2), subadults (3-4), adults (5-8) and old individuals (>8). Grey bars indicate the average frequency for each age class during the period 1995-2018. For visualization, we averaged the age-class frequency over the period of the data set.

Granados et al. 2020

Sugerencias: Localización del dataset

Dataset description

Object name

Darwin Core Archive Phenology of Mediterranean high-mountain meadows flora (Sierra Nevada, Spain).

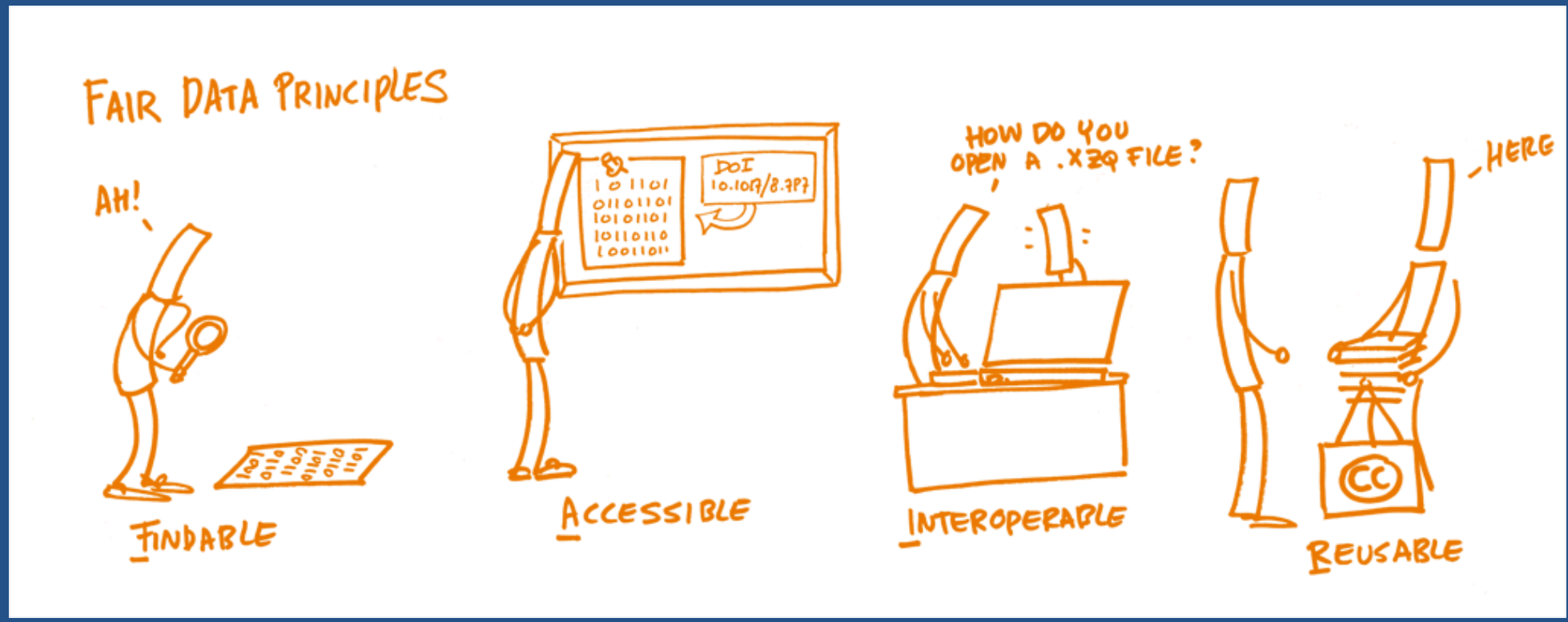
Character encoding: UTF-8
Format name: Darwin Core Archive format
Format version: 1.0
Distribution: http://www.gbif.es:8080/ipt/resource.do?r=borreguiles
Publication date of data: 2014-12-03

Language: English
Licenses of use: This *Dataset of Phenology of Mediterranean high-mountain meadows flora (Sierra Nevada, Spain)* is made available under the Open Data Commons Attribution License: http://www.opendatacommons.org/licenses/by/1.0
Metadata language: English
Date of metadata creation: 2014-11-18
Hierarchy level: Dataset

Otras consideraciones

- Un DP no es una copia de los metadatos que un dataset tiene en un repositorio
- Es importante describir bien los métodos
- Uso de diccionarios controlados en la medida de los posible
- …
- En definitiva se trata de hacer **atractivo** nuestro conjunto de datos para que aumente sus posibilidads de uso

Principios FAIR



Muchas Gracias

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