Data papers: objetivo y estructura de un artículo de datos

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Universidad de Navarra

Taller online GBIF.ES: Estandarización y publicación de datos de biodiversidad de regiones polares. Mayo 2021.

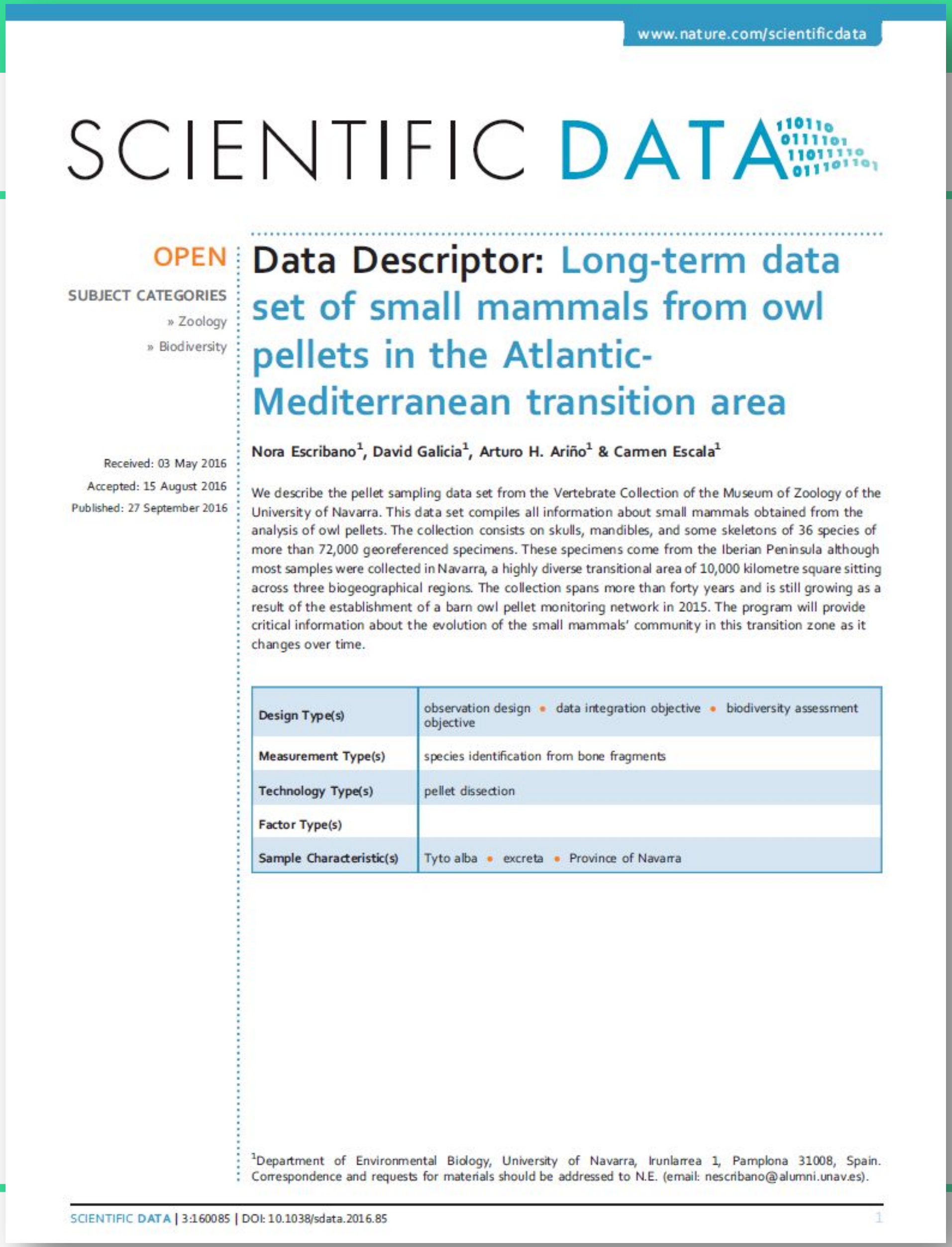
Contenidos

- Definiciones y objetivos.
- Decisiones importantes antes de redactar un data paper.
- Estructura interna y contenidos más importantes.
- Un ejercicio de responsabilidad.

¿Qué es un data paper?

"[...] artículo académico que describe un conjunto de datos de biodiversidad y se publica en una revista científica al uso."

- Una herramienta para favorecer la inversión de esfuerzos en la publicación de datos de biodiversidad.
- Una publicación académica que se ajusta a las prácticas académicas estándar sobre un documento que contiene los metadatos de uno o varios *datasets accesibles*.
- Un *artículo científico* cuyo propósito es describir datos, no realizar una investigación.



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SCIENTIFIC DATA

OPEN

SUBJECT CATEGORIES
» Zoology
» Biodiversity

Received: 03 May 2016
Accepted: 15 August 2016
Published: 27 September 2016

Data Descriptor: Long-term data set of small mammals from owl pellets in the Atlantic-Mediterranean transition area

Nora Escribano[1], David Galicia[1], Arturo H. Ariño[1] & Carmen Escala[1]

We describe the pellet sampling data set from the Vertebrate Collection of the Museum of Zoology of the University of Navarra. This data set compiles all information about small mammals obtained from the analysis of owl pellets. The collection consists on skulls, mandibles, and some skeletons of 36 species of more than 72,000 georeferenced specimens. These specimens come from the Iberian Peninsula although most samples were collected in Navarra, a highly diverse transitional area of 10,000 kilometre square sitting across three biogeographical regions. The collection spans more than forty years and is still growing as a result of the establishment of a barn owl pellet monitoring network in 2015. The program will provide critical information about the evolution of the small mammals' community in this transition zone as it changes over time.

Design Type(s)	observation design • data integration objective • biodiversity assessment objective
Measurement Type(s)	species identification from bone fragments
Technology Type(s)	pellet dissection
Factor Type(s)	
Sample Characteristic(s)	Tyto alba • excreta • Province of Navarra

[1]Department of Environmental Biology, University of Navarra, Irunlarrea 1, Pamplona 31008, Spain. Correspondence and requests for materials should be addressed to N.E. (email: nescribano@alumni.unav.es).

SCIENTIFIC DATA | 3:160085 | DOI: 10.1038/sdata.2016.85 1

¿Qué es un data paper?

"[...] artículo académico que describe un conjunto de datos de biodiversidad y se publica en una revista científica al uso."

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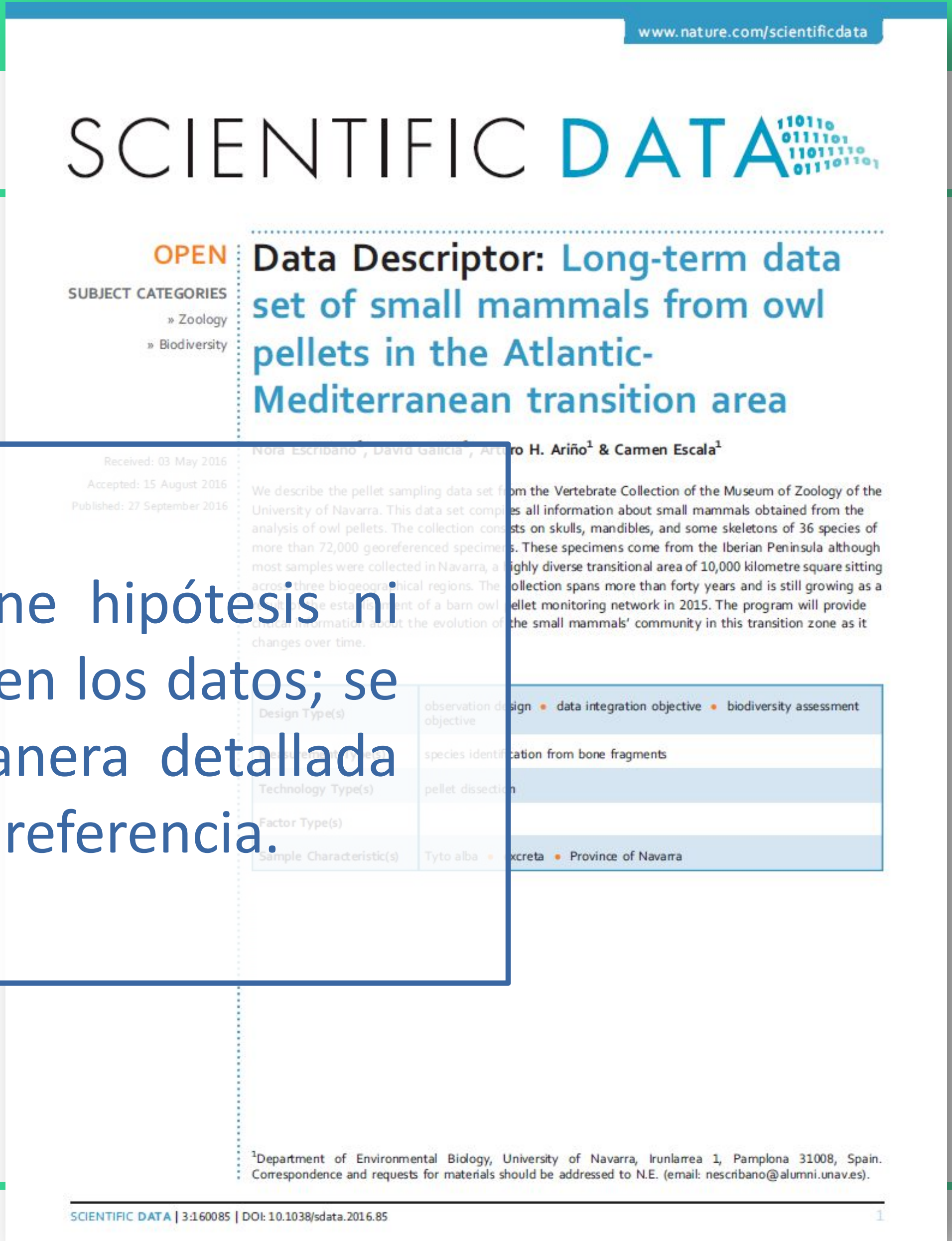
- Un *artículo científico* cuyo propósito es describir datos, no realizar una investigación.

Un data paper no contiene hipótesis ni argumentaciones basadas en los datos; se centra en describir de manera detallada los datasets a los que hace referencia.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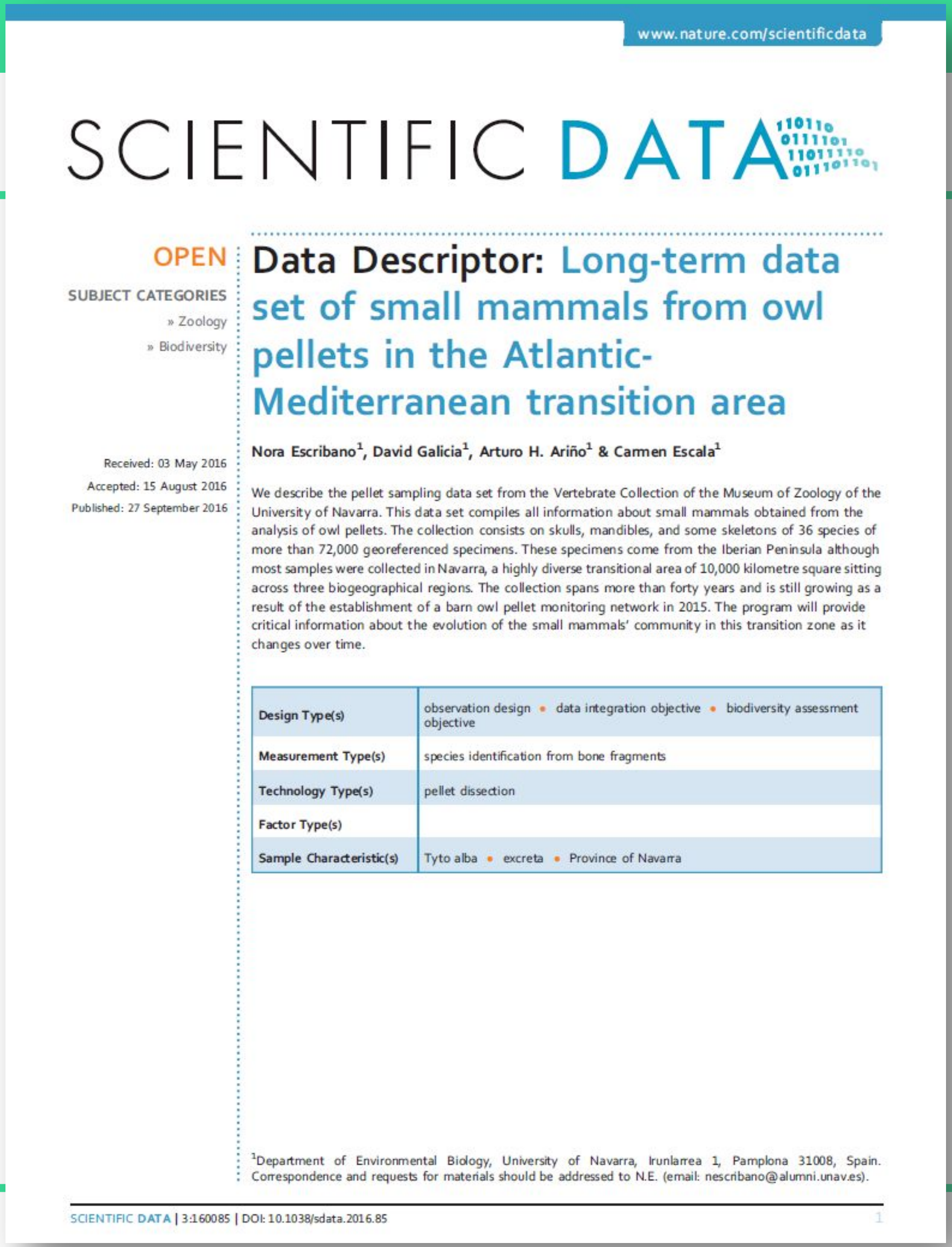
Objetivos:

- Proporcionar una publicación científica citable que dé reconocimiento académico (beneficio) a los proveedores de datos.
- Describir los datos de una forma entendible y estructurada.
- Facilitar la visibilidad de los datos de biodiversidad entre la comunidad científica.



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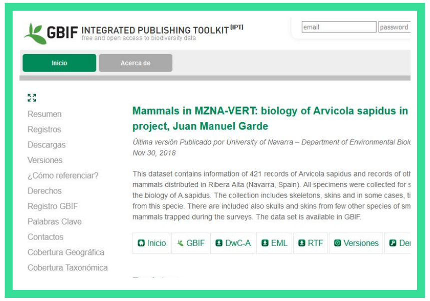
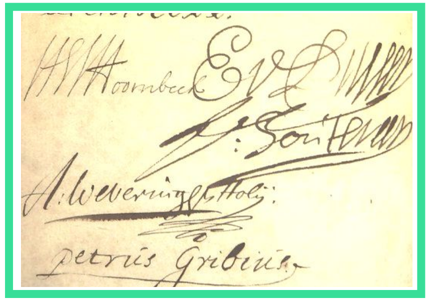
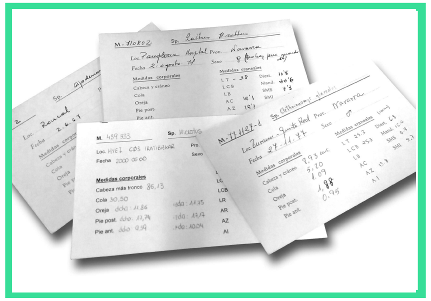
Decisiones a tomar

Publicar un data paper requiere saber previamente qué se quiere contar, quiénes van a participar y dónde se va a hacer la publicación.







ARTÍCULO

1. ¿Qué datasets van a entrar en el data paper?

No hay límite superior al número de datasets que puede describir un datapaper: *estrategia*.

2. ¿Quiénes van a ser los autores del artículo?

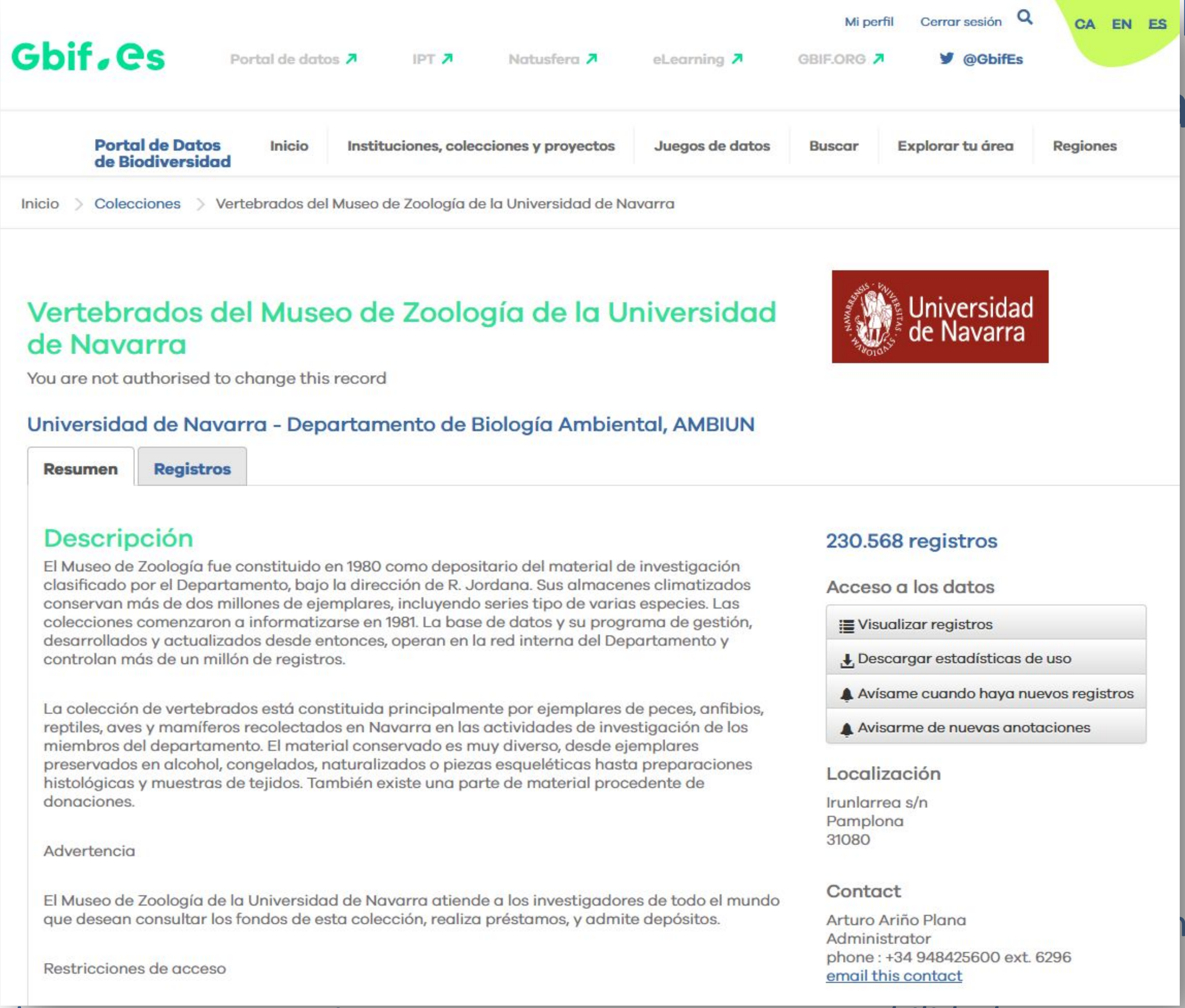
Los creadores del recurso no tienen por qué ser los autores del artículo: *responsabilidad*.

3. ¿En qué revista podemos publicar el trabajo?

Condicionado al presupuesto disponible, buscar la revista con mayor impacto que mejor encaje con el tipo de datos que estamos proporcionando: *habilidad*.

Decisiones a tomar

previa ... a hac



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Portal de Datos de Biodiversidad | Inicio | Instituciones, colecciones y proyectos | Juegos de datos | Buscar | Explorar tu área | Regiones

Inicio > Colecciones > Vertebrados del Museo de Zoología de la Universidad de Navarra

Vertebrados del Museo de Zoología de la Universidad de Navarra

You are not authorised to change this record

Universidad de Navarra - Departamento de Biología Ambiental, AMBIUN

Resumen | Registros

Descripción

El Museo de Zoología fue constituido en 1980 como depositario del material de investigación clasificado por el Departamento, bajo la dirección de R. Jordana. Sus almacenes climatizados conservan más de dos millones de ejemplares, incluyendo series tipo de varias especies. Las colecciones comenzaron a informatizarse en 1981. La base de datos y su programa de gestión, desarrollados y actualizados desde entonces, operan en la red interna del Departamento y controlan más de un millón de registros.

La colección de vertebrados está constituida principalmente por ejemplares de peces, anfibios, reptiles, aves y mamíferos recolectados en Navarra en las actividades de investigación de los miembros del departamento. El material conservado es muy diverso, desde ejemplares preservados en alcohol, congelados, naturalizados o piezas esqueléticas hasta preparaciones histológicas y muestras de tejidos. También existe una parte de material procedente de donaciones.

Advertencia

El Museo de Zoología de la Universidad de Navarra atiende a los investigadores de todo el mundo que desean consultar los fondos de esta colección, realiza préstamos, y admite depósitos.

Restricciones de acceso

230.568 registros

Acceso a los datos

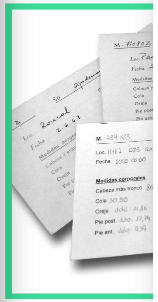
- Visualizar registros
- Descargar estadísticas de uso
- Avísame cuando haya nuevos registros
- Avisarme de nuevas anotaciones

Localización

Irunlarrea s/n
Pamplona
31080

Contact

Arturo Ariño Plana
Administrator
phone : +34 948425600 ext. 6296
email this contact

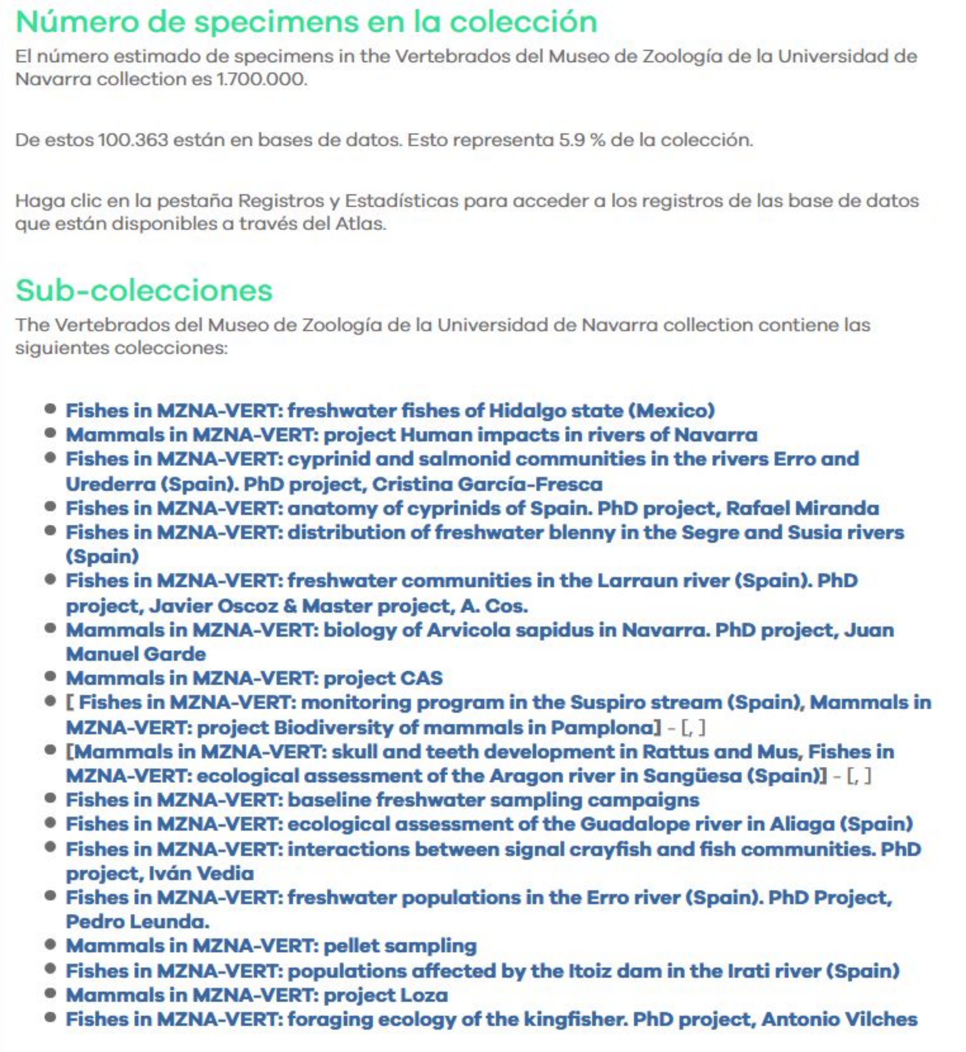


3. ¿l p p tr

no tienen artículo:

datapaper: *estrategia*.

responsabilidad.



Número de specimens en la colección

El número estimado de specimens in the Vertebrados del Museo de Zoología de la Universidad de Navarra collection es 1.700.000.

De estos 100.363 están en bases de datos. Esto representa 5.9 % de la colección.

Haga clic en la pestaña Registros y Estadísticas para acceder a los registros de las base de datos que están disponibles a través del Atlas.

Sub-colecciones

The Vertebrados del Museo de Zoología de la Universidad de Navarra collection contiene las siguientes colecciones:

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- **Mammals in MZNA-VERT: project Human impacts in rivers of Navarra**
- **Fishes in MZNA-VERT: cyprinid and salmonid communities in the rivers Erro and Urederra (Spain). PhD project, Cristina García-Fresca**
- **Fishes in MZNA-VERT: anatomy of cyprinids of Spain. PhD project, Rafael Miranda**
- **Fishes in MZNA-VERT: distribution of freshwater blenny in the Segre and Susia rivers (Spain)**
- **Fishes in MZNA-VERT: freshwater communities in the Larraun river (Spain). PhD project, Javier Oscoz & Master project, A. Cos.**
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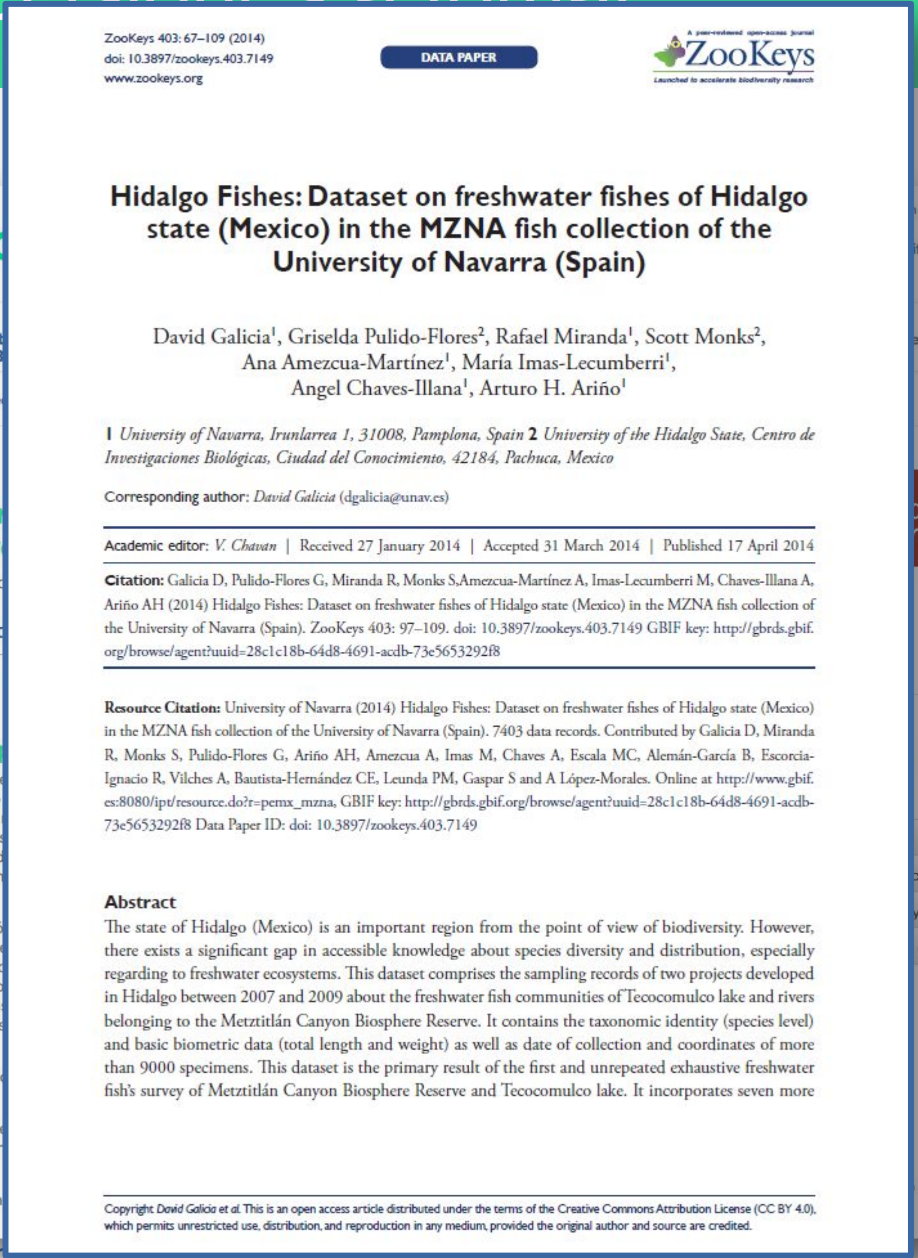
Decisiones a tomar



ZooKeys 403: 67–109 (2014)
doi: 10.3897/zookeys.403.7149
www.zookeys.org
DATA PAPER
A peer-reviewed open-access journal
ZooKeys
Launched to accelerate biodiversity research

Hidalgo Fishes: Dataset on freshwater fishes of Hidalgo state (Mexico) in the MZNA fish collection of the University of Navarra (Spain)

David Galicia[1], Griselda Pulido-Flores[2], Rafael Miranda[1], Scott Monks[2], Ana Amezcua-Martínez[1], María Imas-Lecumberri[1], Angel Chaves-Illana[1], Arturo H. Ariño[1]

1 *University of Navarra, Irunlarrea 1, 31008, Pamplona, Spain* 2 *University of the Hidalgo State, Centro de Investigaciones Biológicas, Ciudad del Conocimiento, 42184, Pachuca, Mexico*

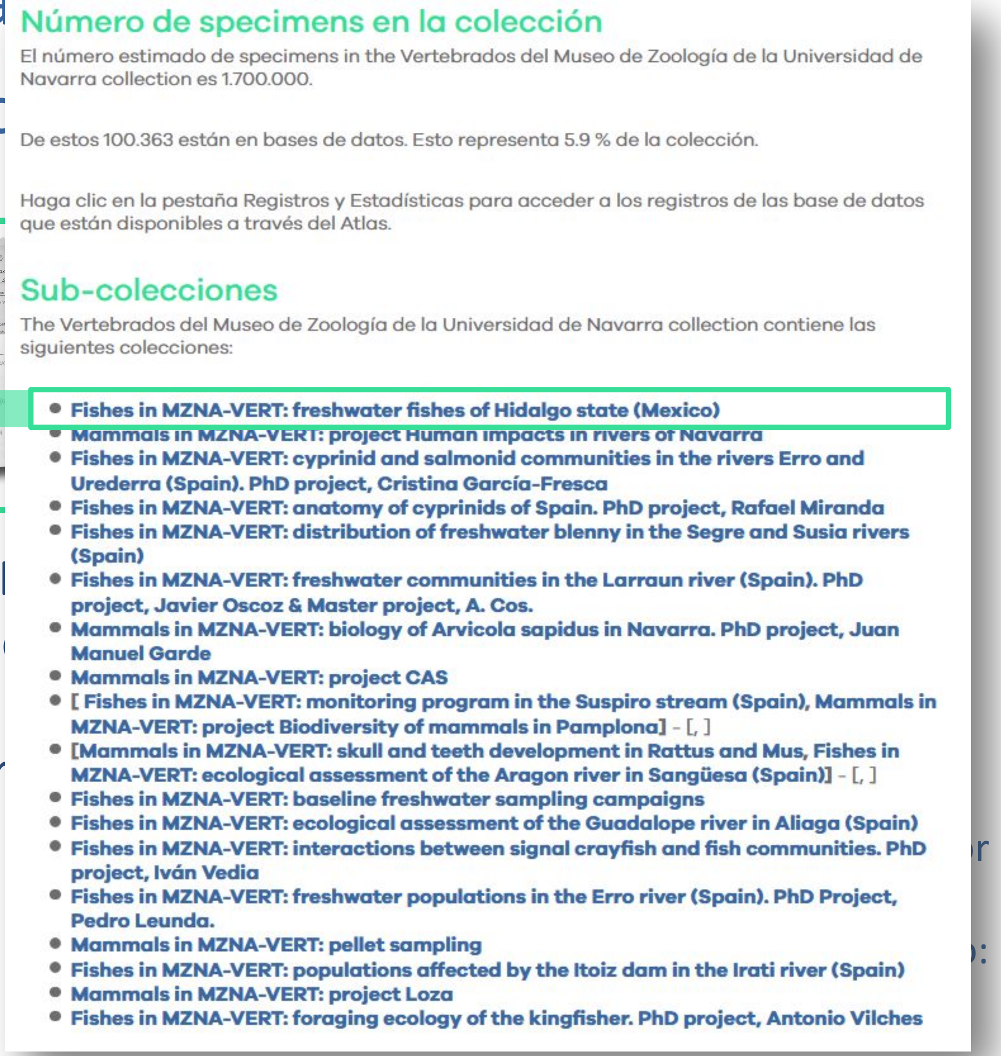
Corresponding author: *David Galicia* (dgalicia@unav.es)

Academic editor: *V. Chavan* | Received 27 January 2014 | Accepted 31 March 2014 | Published 17 April 2014

Citation: Galicia D, Pulido-Flores G, Miranda R, Monks S,Amezcua-Martínez A, Imas-Lecumberri M, Chaves-Illana A, Ariño AH (2014) Hidalgo Fishes: Dataset on freshwater fishes of Hidalgo state (Mexico) in the MZNA fish collection of the University of Navarra (Spain). ZooKeys 403: 97–109. doi: 10.3897/zookeys.403.7149 GBIF key: http://gbrds.gbif.org/browse/agent?uuid=28c1c18b-64d8-4691-acdb-73e5653292f8

Resource Citation: University of Navarra (2014) Hidalgo Fishes: Dataset on freshwater fishes of Hidalgo state (Mexico) in the MZNA fish collection of the University of Navarra (Spain). 7403 data records. Contributed by Galicia D, Miranda R, Monks S, Pulido-Flores G, Ariño AH, Amezcua A, Imas M, Chaves A, Escala MC, Alemán-García B, Escorcia-Ignacio R, Vilches A, Bautista-Hernández CE, Leunda PM, Gaspar S and A López-Morales. Online at http://www.gbif.es:8080/ipt/resource.do?r=pemx_mzna, GBIF key: http://gbrds.gbif.org/browse/agent?uuid=28c1c18b-64d8-4691-acdb-73e5653292f8 Data Paper ID: doi: 10.3897/zookeys.403.7149

Abstract
The state of Hidalgo (Mexico) is an important region from the point of view of biodiversity. However, there exists a significant gap in accessible knowledge about species diversity and distribution, especially regarding to freshwater ecosystems. This dataset comprises the sampling records of two projects developed in Hidalgo between 2007 and 2009 about the freshwater fish communities of Tecocomulco lake and rivers belonging to the Metztitlán Canyon Biosphere Reserve. It contains the taxonomic identity (species level) and basic biometric data (total length and weight) as well as date of collection and coordinates of more than 9000 specimens. This dataset is the primary result of the first and unrepeated exhaustive freshwater fish's survey of Metztitlán Canyon Biosphere Reserve and Tecocomulco lake. It incorporates seven more



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saber previamente qué se quiere contar

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datapaper: estrategia.

responsabilidad.

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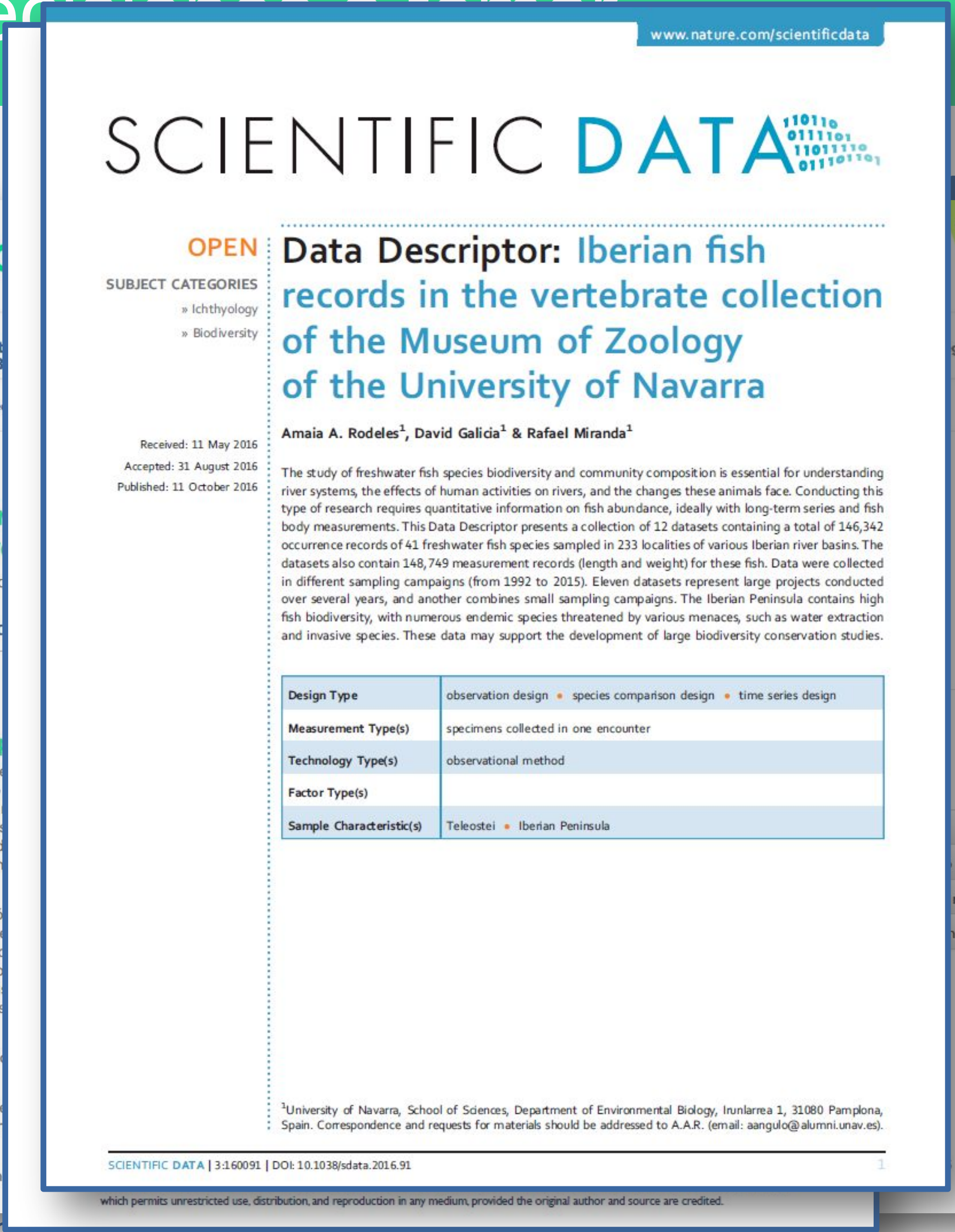


SCIENTIFIC DATA

OPEN

SUBJECT CATEGORIES
» Ichthyology
» Biodiversity

Data Descriptor: Iberian fish records in the vertebrate collection of the Museum of Zoology of the University of Navarra

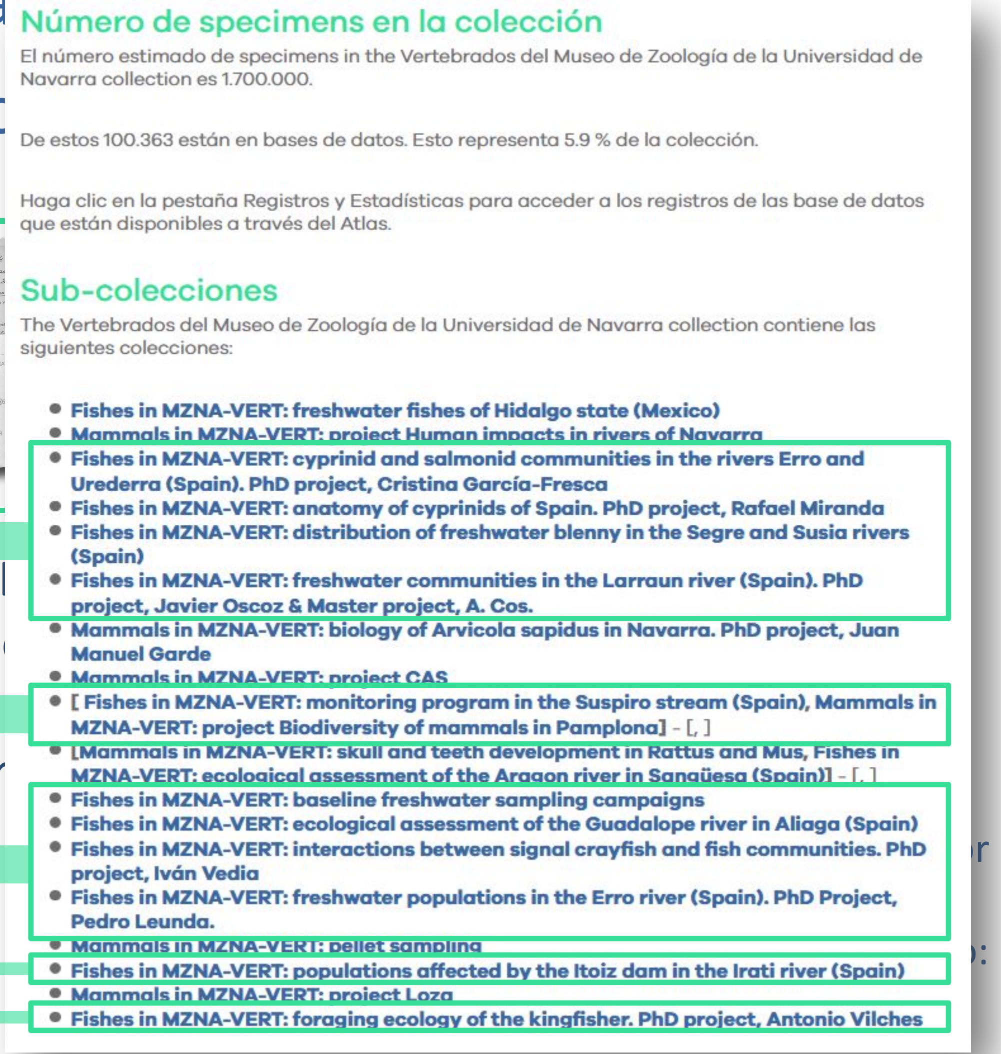
Amaia A. Rodeles[1], David Galicia[1] & Rafael Miranda[1]

Received: 11 May 2016
Accepted: 31 August 2016
Published: 11 October 2016

The study of freshwater fish species biodiversity and community composition is essential for understanding river systems, the effects of human activities on rivers, and the changes these animals face. Conducting this type of research requires quantitative information on fish abundance, ideally with long-term series and fish body measurements. This Data Descriptor presents a collection of 12 datasets containing a total of 146,342 occurrence records of 41 freshwater fish species sampled in 233 localities of various Iberian river basins. The datasets also contain 148,749 measurement records (length and weight) for these fish. Data were collected in different sampling campaigns (from 1992 to 2015). Eleven datasets represent large projects conducted over several years, and another combines small sampling campaigns. The Iberian Peninsula contains high fish biodiversity, with numerous endemic species threatened by various menaces, such as water extraction and invasive species. These data may support the development of large biodiversity conservation studies.

Design Type	observation design • species comparison design • time series design
Measurement Type(s)	specimens collected in one encounter
Technology Type(s)	observational method
Factor Type(s)	
Sample Characteristic(s)	Teleostei • Iberian Peninsula

[1]University of Navarra, School of Sciences, Department of Environmental Biology, Irunlarrea 1, 31080 Pamplona, Spain. Correspondence and requests for materials should be addressed to A.A.R. (email: aangulo@alumni.unav.es).



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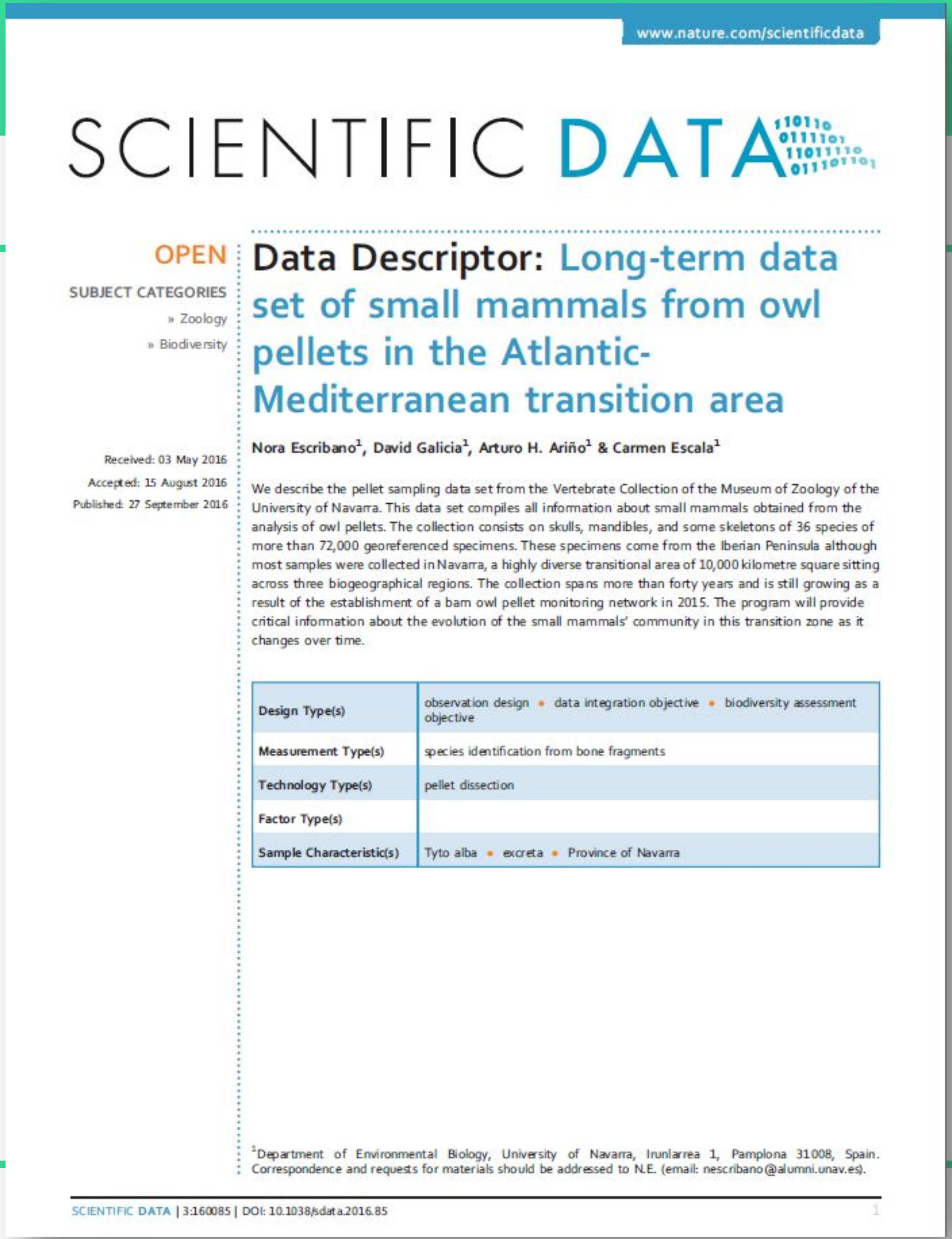
- Fishes in MZNA-VERT: foraging ecology of the kingfisher. PhD project, Antonio Vilches

¿Cómo se estructura?

Apartados flexibles en función de la revista pero típicamente:

- Introducción: contexto de los datos.



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Factor Type(s)	
Sample Characteristic(s)	Tyto alba • excreta • Province of Navarra

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SCIENTIFIC DATA | 3:160085 | DOI: 10.1038/sdata.2016.85 1

¿Cómo se estructura?

Apartados flexibles en función de la revista pero típicamente:

- Introducción: contexto de los datos.
- Ámbito taxonómico, espacial y temporal.

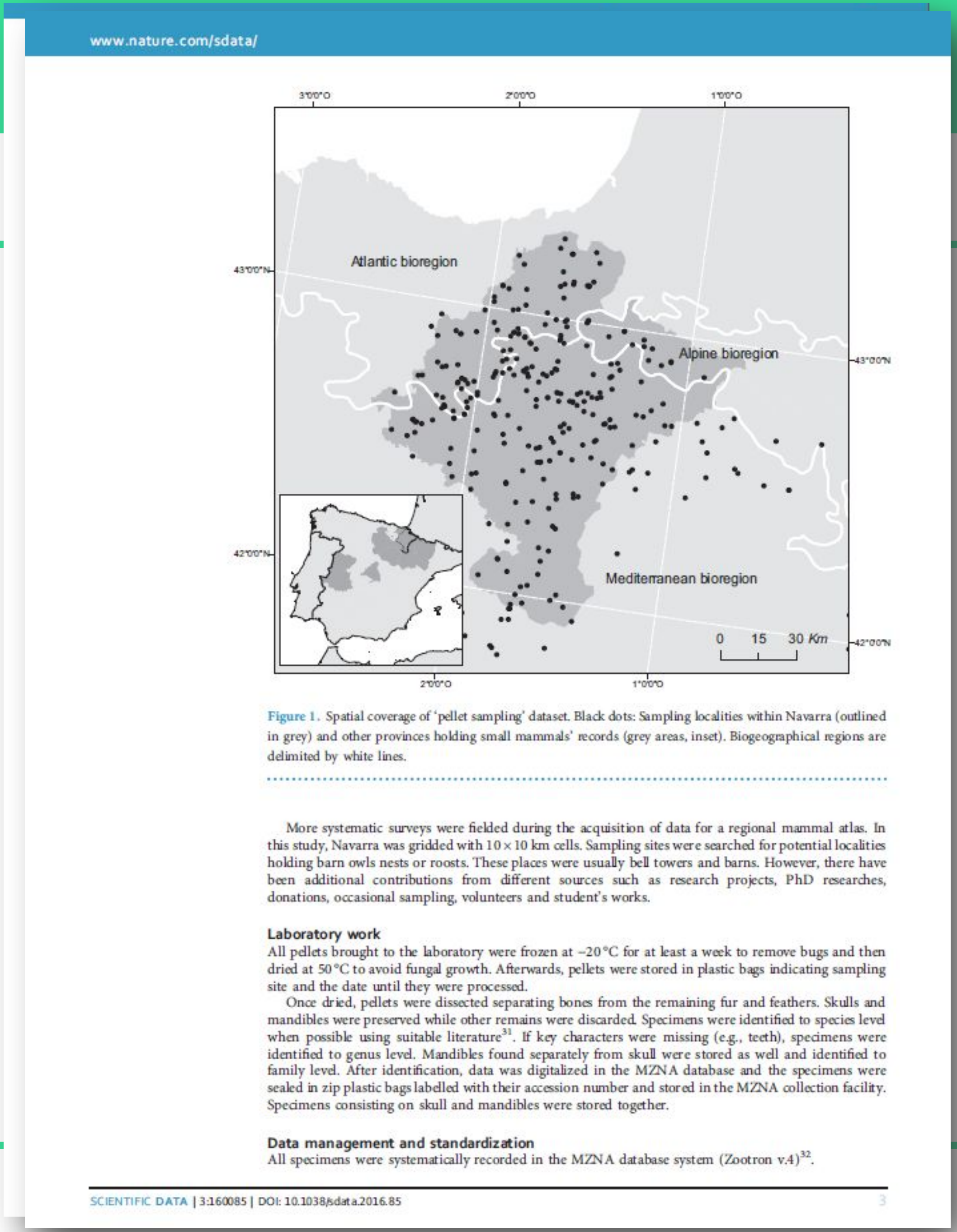

Figure 1. Spatial coverage of 'pellet sampling' dataset. Black dots: Sampling localities within Navarra (outlined in grey) and other provinces holding small mammals' records (grey areas, inset). Biogeographical regions are delimited by white lines.

More systematic surveys were fielded during the acquisition of data for a regional mammal atlas. In this study, Navarra was gridded with 10 × 10 km cells. Sampling sites were searched for potential localities holding barn owls nests or roosts. These places were usually bell towers and barns. However, there have been additional contributions from different sources such as research projects, PhD researches, donations, occasional sampling, volunteers and student's works.

Laboratory work

All pellets brought to the laboratory were frozen at −20 °C for at least a week to remove bugs and then dried at 50 °C to avoid fungal growth. Afterwards, pellets were stored in plastic bags indicating sampling site and the date until they were processed.

Once dried, pellets were dissected separating bones from the remaining fur and feathers. Skulls and mandibles were preserved while other remains were discarded. Specimens were identified to species level when possible using suitable literature[31]. If key characters were missing (e.g., teeth), specimens were identified to genus level. Mandibles found separately from skull were stored as well and identified to family level. After identification, data was digitalized in the MZNA database and the specimens were sealed in zip plastic bags labelled with their accession number and stored in the MZNA collection facility. Specimens consisting on skull and mandibles were stored together.

Data management and standardization

All specimens were systematically recorded in the MZNA database system (Zootron v.4)[32].

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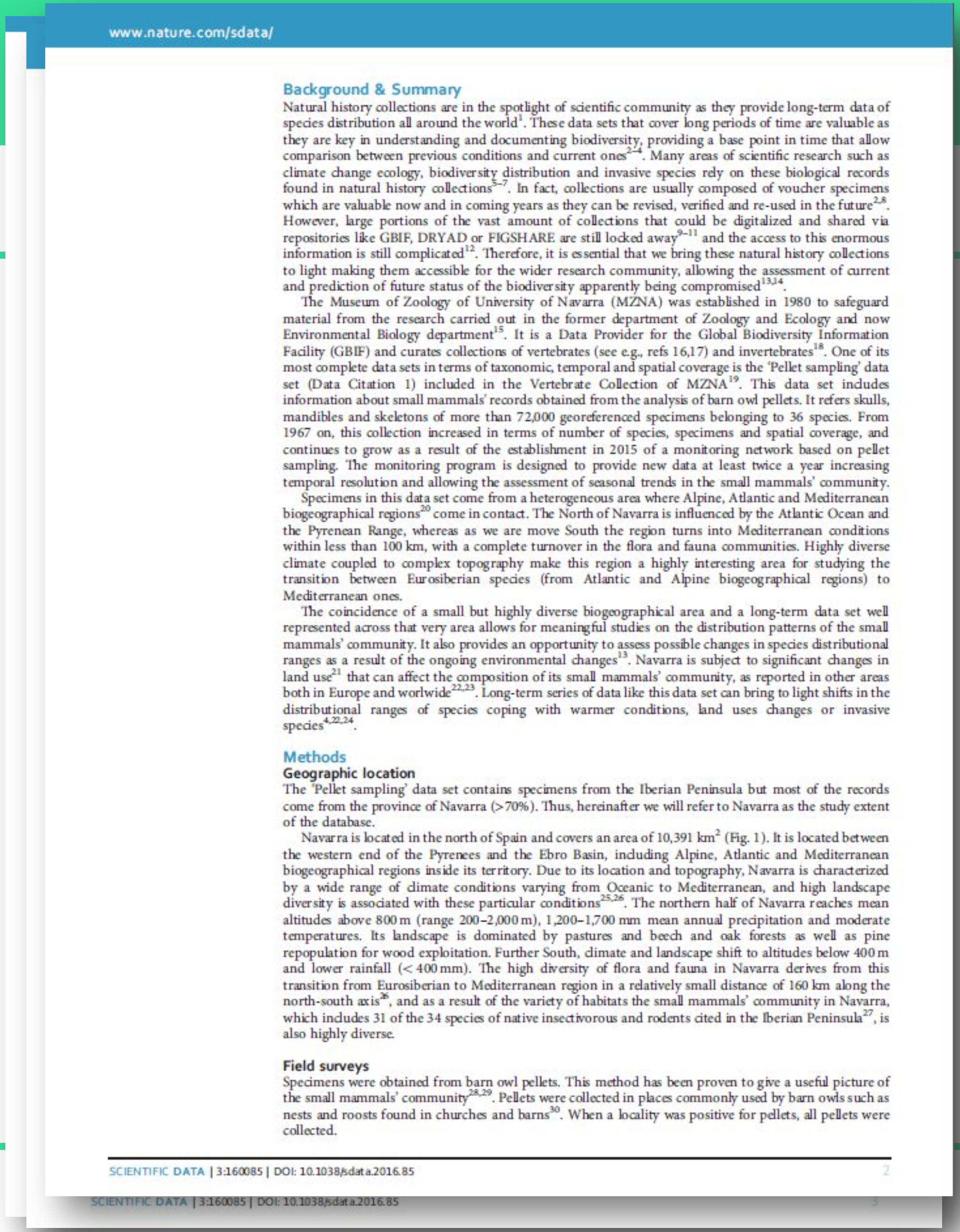

Background & Summary

Natural history collections are in the spotlight of scientific community as they provide long-term data of species distribution all around the world[1]. These data sets that cover long periods of time are valuable as they are key in understanding and documenting biodiversity, providing a base point in time that allow comparison between previous conditions and current ones[2–4]. Many areas of scientific research such as climate change ecology, biodiversity distribution and invasive species rely on these biological records found in natural history collections[5–7]. In fact, collections are usually composed of voucher specimens which are valuable now and in coming years as they can be revised, verified and re-used in the future[2,8]. However, large portions of the vast amount of collections that could be digitalized and shared via repositories like GBIF, DRYAD or FIGSHARE are still locked away[9–11] and the access to this enormous information is still complicated[12]. Therefore, it is essential that we bring these natural history collections to light making them accessible for the wider research community, allowing the assessment of current and prediction of future status of the biodiversity apparently being compromised[13,14].

The Museum of Zoology of University of Navarra (MZNA) was established in 1980 to safeguard material from the research carried out in the former department of Zoology and Ecology and now Environmental Biology department[15]. It is a Data Provider for the Global Biodiversity Information Facility (GBIF) and curates collections of vertebrates (see e.g., refs 16,17) and invertebrates[18]. One of its most complete data sets in terms of taxonomic, temporal and spatial coverage is the 'Pellet sampling' data set (Data Citation 1) included in the Vertebrate Collection of MZNA[19]. This data set includes information about small mammals' records obtained from the analysis of barn owl pellets. It refers skulls, mandibles and skeletons of more than 72,000 georeferenced specimens belonging to 36 species. From 1967 on, this collection increased in terms of number of species, specimens and spatial coverage, and continues to grow as a result of the establishment in 2015 of a monitoring network based on pellet sampling. The monitoring program is designed to provide new data at least twice a year increasing temporal resolution and allowing the assessment of seasonal trends in the small mammals' community.

Specimens in this data set come from a heterogeneous area where Alpine, Atlantic and Mediterranean biogeographical regions[20] come in contact. The North of Navarra is influenced by the Atlantic Ocean and the Pyrenean Range, whereas as we are move South the region turns into Mediterranean conditions within less than 100 km, with a complete turnover in the flora and fauna communities. Highly diverse climate coupled to complex topography make this region a highly interesting area for studying the transition between Eurosiberian species (from Atlantic and Alpine biogeographical regions) to Mediterranean ones.

The coincidence of a small but highly diverse biogeographical area and a long-term data set well represented across that very area allows for meaningful studies on the distribution patterns of the small mammals' community. It also provides an opportunity to assess possible changes in species distributional ranges as a result of the ongoing environmental changes[13]. Navarra is subject to significant changes in land use[21] that can affect the composition of its small mammals' community, as reported in other areas both in Europe and worlwide[22,23]. Long-term series of data like this data set can bring to light shifts in the distributional ranges of species coping with warmer conditions, land uses changes or invasive species[4,22,24].

Methods

Geographic location

The 'Pellet sampling' data set contains specimens from the Iberian Peninsula but most of the records come from the province of Navarra (>70%). Thus, hereinafter we will refer to Navarra as the study extent of the database.

Navarra is located in the north of Spain and covers an area of 10,391 km^2 (Fig. 1). It is located between the western end of the Pyrenees and the Ebro Basin, including Alpine, Atlantic and Mediterranean biogeographical regions inside its territory. Due to its location and topography, Navarra is characterized by a wide range of climate conditions varying from Oceanic to Mediterranean, and high landscape diversity is associated with these particular conditions[25,26]. The northern half of Navarra reaches mean altitudes above 800 m (range 200–2,000 m), 1,200–1,700 mm mean annual precipitation and moderate temperatures. Its landscape is dominated by pastures and beech and oak forests as well as pine repopulation for wood exploitation. Further South, climate and landscape shift to altitudes below 400 m and lower rainfall (<400 mm). The high diversity of flora and fauna in Navarra derives from this transition from Eurosiberian to Mediterranean region in a relatively small distance of 160 km along the north-south axis[26], and as a result of the variety of habitats the small mammals' community in Navarra, which includes 31 of the 34 species of native insectivorous and rodents cited in the Iberian Peninsula[27], is also highly diverse.

Field surveys

Specimens were obtained from barn owl pellets. This method has been proven to give a useful picture of the small mammals' community[28,29]. Pellets were collected in places commonly used by barn owls such as nests and roosts found in churches and barns[30]. When a locality was positive for pellets, all pellets were collected.

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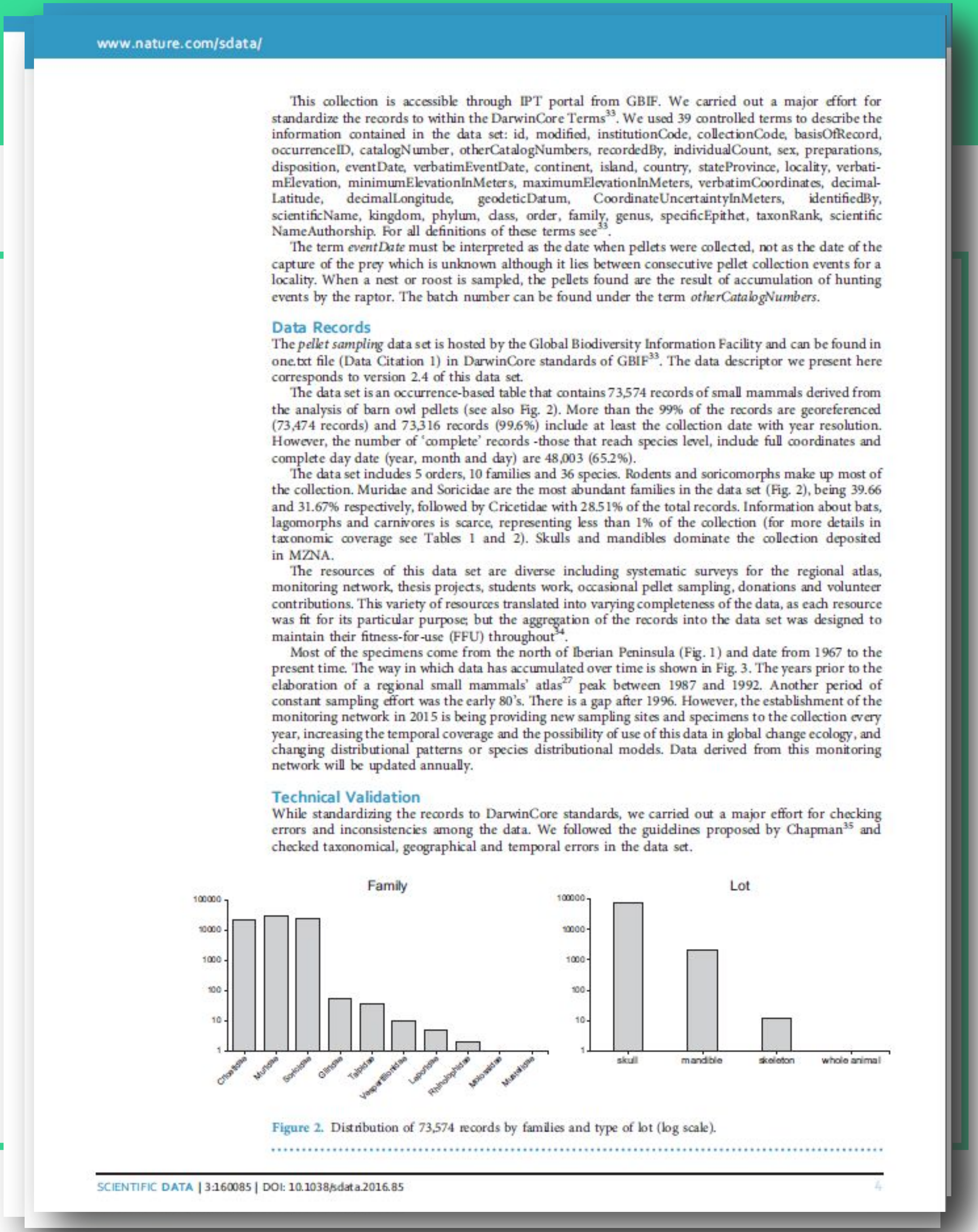

This collection is accessible through IPT portal from GBIF. We carried out a major effort for standardize the records to within the DarwinCore Terms[33]. We used 39 controlled terms to describe the information contained in the data set: id, modified, institutionCode, collectionCode, basisOfRecord, occurrenceID, catalogNumber, otherCatalogNumbers, recordedBy, individualCount, sex, preparations, disposition, eventDate, verbatimEventDate, continent, island, country, stateProvince, locality, verbatimElevation, minimumElevationInMeters, maximumElevationInMeters, verbatimCoordinates, decimalLatitude, decimalLongitude, geodeticDatum, CoordinateUncertaintyInMeters, identifiedBy, scientificName, kingdom, phylum, class, order, family, genus, specificEpithet, taxonRank, scientificNameAuthorship. For all definitions of these terms see[33].

The term *eventDate* must be interpreted as the date when pellets were collected, not as the date of the capture of the prey which is unknown although it lies between consecutive pellet collection events for a locality. When a nest or roost is sampled, the pellets found are the result of accumulation of hunting events by the raptor. The batch number can be found under the term *otherCatalogNumbers*.

Data Records

The *pellet sampling* data set is hosted by the Global Biodiversity Information Facility and can be found in one.txt file (Data Citation 1) in DarwinCore standards of GBIF[33]. The data descriptor we present here corresponds to version 2.4 of this data set.

The data set is an occurrence-based table that contains 73,574 records of small mammals derived from the analysis of barn owl pellets (see also Fig. 2). More than the 99% of the records are georeferenced (73,474 records) and 73,316 records (99.6%) include at least the collection date with year resolution. However, the number of 'complete' records -those that reach species level, include full coordinates and complete day date (year, month and day) are 48,003 (65.2%).

The data set includes 5 orders, 10 families and 36 species. Rodents and soricomorphs make up most of the collection. Muridae and Soricidae are the most abundant families in the data set (Fig. 2), being 39.66 and 31.67% respectively, followed by Cricetidae with 28.51% of the total records. Information about bats, lagomorphs and carnivores is scarce, representing less than 1% of the collection (for more details in taxonomic coverage see Tables 1 and 2). Skulls and mandibles dominate the collection deposited in MZNA.

The resources of this data set are diverse including systematic surveys for the regional atlas, monitoring network, thesis projects, students work, occasional pellet sampling, donations and volunteer contributions. This variety of resources translated into varying completeness of the data, as each resource was fit for its particular purpose, but the aggregation of the records into the data set was designed to maintain their fitness-for-use (FFU) throughout[34].

Most of the specimens come from the north of Iberian Peninsula (Fig. 1) and date from 1967 to the present time. The way in which data has accumulated over time is shown in Fig. 3. The years prior to the elaboration of a regional small mammals' atlas[27] peak between 1987 and 1992. Another period of constant sampling effort was the early 80's. There is a gap after 1996. However, the establishment of the monitoring network in 2015 is being providing new sampling sites and specimens to the collection every year, increasing the temporal coverage and the possibility of use of this data in global change ecology, and changing distributional patterns or species distributional models. Data derived from this monitoring network will be updated annually.

Technical Validation

While standardizing the records to DarwinCore standards, we carried out a major effort for checking errors and inconsistencies among the data. We followed the guidelines proposed by Chapman[35] and checked taxonomical, geographical and temporal errors in the data set.

Figure 2. Distribution of 73,574 records by families and type of lot (log scale).

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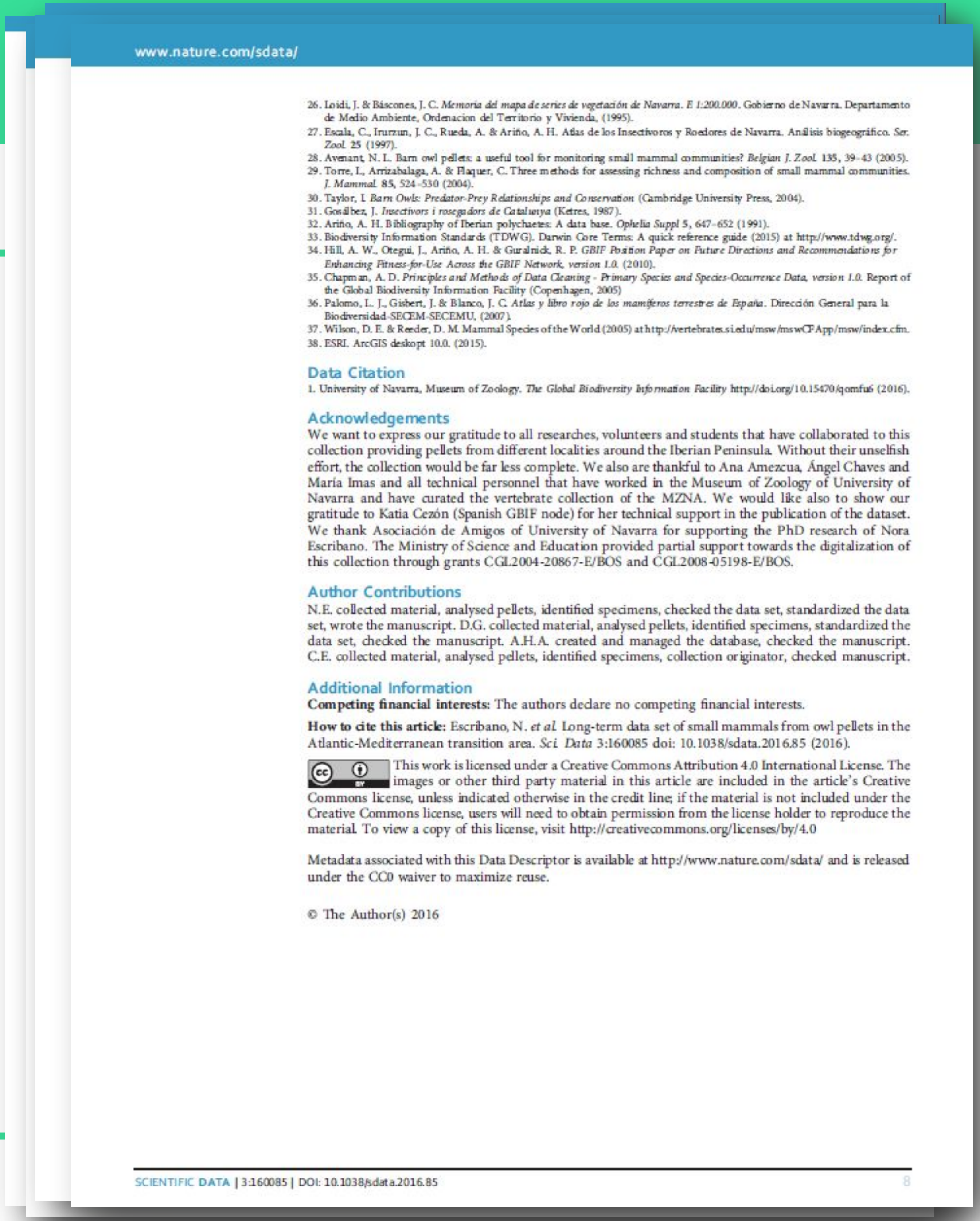

www.nature.com/sdata/

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38. ESRI. ArcGIS deskopt 10.0. (2015).

Data Citation

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Author Contributions

N.E. collected material, analysed pellets, identified specimens, checked the data set, standardized the data set, wrote the manuscript. D.G. collected material, analysed pellets, identified specimens, standardized the data set, checked the manuscript. A.H.A. created and managed the database, checked the manuscript. C.E. collected material, analysed pellets, identified specimens, collection originator, checked manuscript.

Additional Information

Competing financial interests: The authors declare no competing financial interests.

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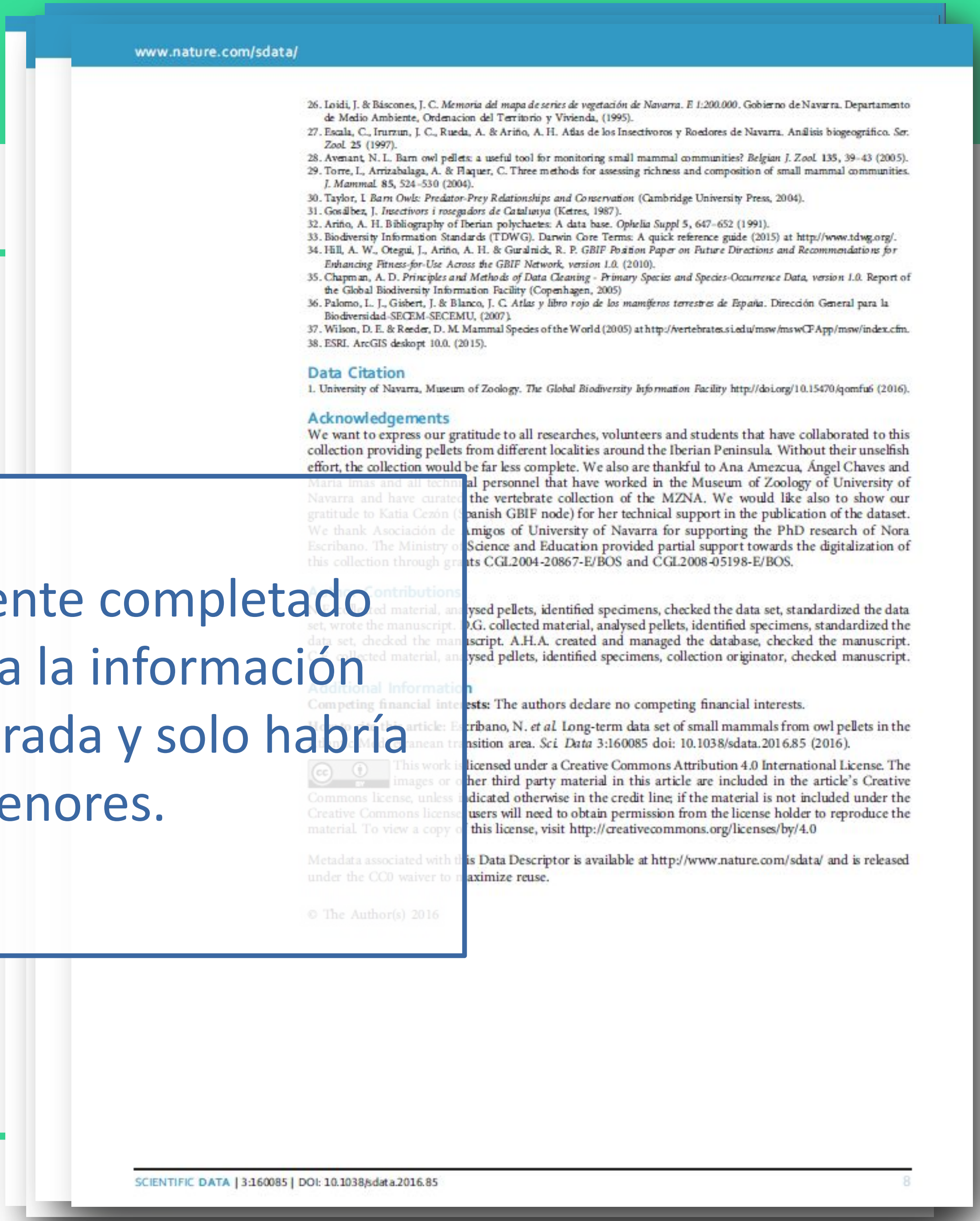
Si el dataset está correctamente completado en el **IPT**, prácticamente toda la información del data paper ya está preparada y solo habría que hacer modificaciones menores.



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Consejos vendo ...

A día de hoy no hay excusa para no reconocer el trabajo de los proveedores de datos:

- El portal de descarga de datos de GBIF proporciona la relación de datasets que aportan datos a la consulta.
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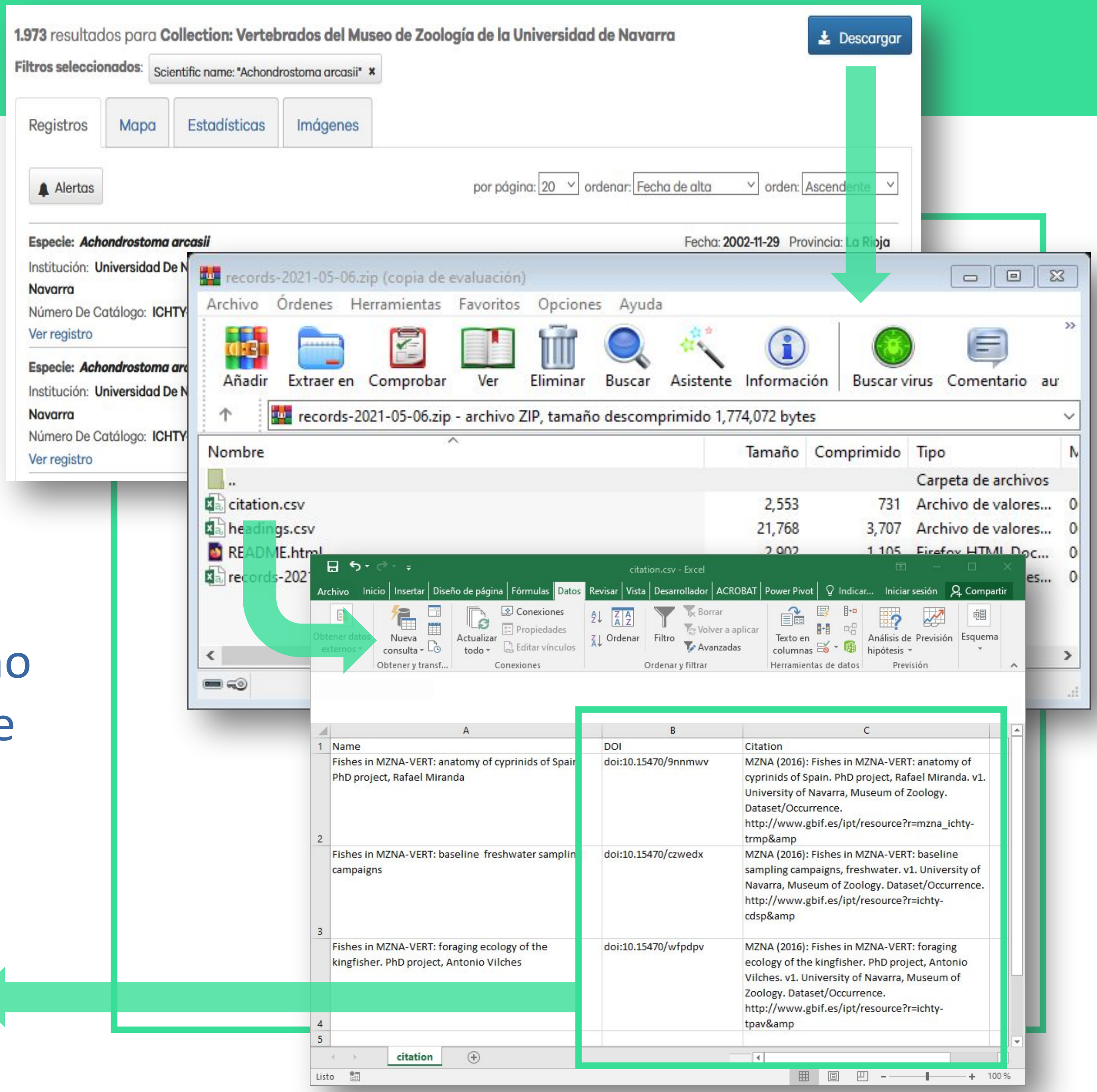

Información a meter en el artículo de investigación en la sección de **bibliografía**

doi:10.15470/9nnmwv
doi:10.15470/czwedx
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... que para mí no tengo

Pero todo esto no sirve de nada si no ponemos de nuestra parte:

- Hacer el esfuerzo de identificar a todos los proveedores de datos.
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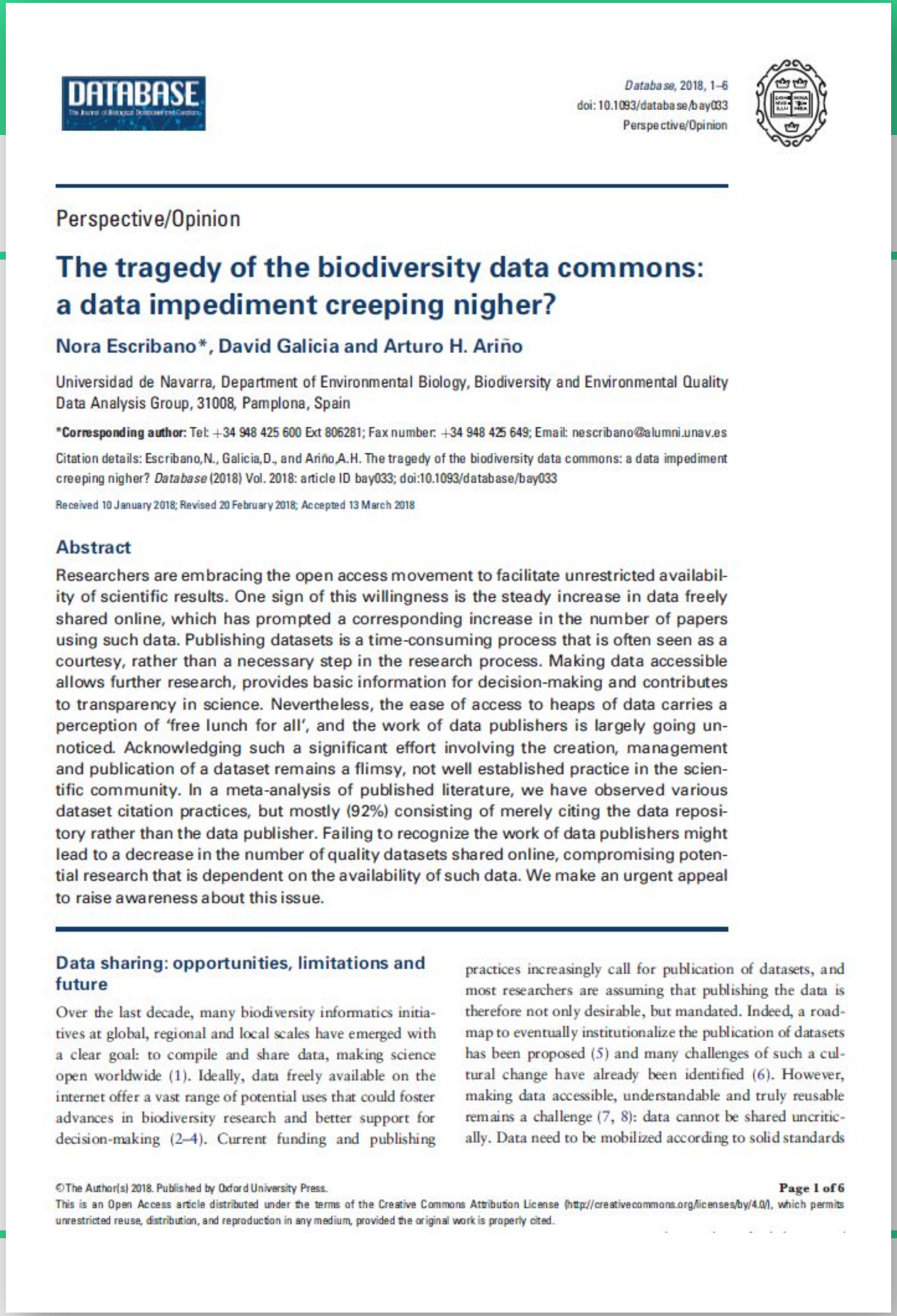

DATABASE
The Journal of Biological Databases and Curation
Database, 2018, 1–6
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Perspective/Opinion

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The tragedy of the biodiversity data commons: a data impediment creeping nigher?

Nora Escribano*, David Galicia and Arturo H. Ariño

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Received 10 January 2018; Revised 20 February 2018; Accepted 13 March 2018

Abstract

Researchers are embracing the open access movement to facilitate unrestricted availability of scientific results. One sign of this willingness is the steady increase in data freely shared online, which has prompted a corresponding increase in the number of papers using such data. Publishing datasets is a time-consuming process that is often seen as a courtesy, rather than a necessary step in the research process. Making data accessible allows further research, provides basic information for decision-making and contributes to transparency in science. Nevertheless, the ease of access to heaps of data carries a perception of 'free lunch for all', and the work of data publishers is largely going unnoticed. Acknowledging such a significant effort involving the creation, management and publication of a dataset remains a flimsy, not well established practice in the scientific community. In a meta-analysis of published literature, we have observed various dataset citation practices, but mostly (92%) consisting of merely citing the data repository rather than the data publisher. Failing to recognize the work of data publishers might lead to a decrease in the number of quality datasets shared online, compromising potential research that is dependent on the availability of such data. We make an urgent appeal to raise awareness about this issue.

Data sharing: opportunities, limitations and future

Over the last decade, many biodiversity informatics initiatives at global, regional and local scales have emerged with a clear goal: to compile and share data, making science open worldwide (1). Ideally, data freely available on the internet offer a vast range of potential uses that could foster advances in biodiversity research and better support for decision-making (2–4). Current funding and publishing practices increasingly call for publication of datasets, and most researchers are assuming that publishing the data is therefore not only desirable, but mandated. Indeed, a roadmap to eventually institutionalize the publication of datasets has been proposed (5) and many challenges of such a cultural change have already been identified (6). However, making data accessible, understandable and truly reusable remains a challenge (7, 8): data cannot be shared uncritically. Data need to be mobilized according to solid standards

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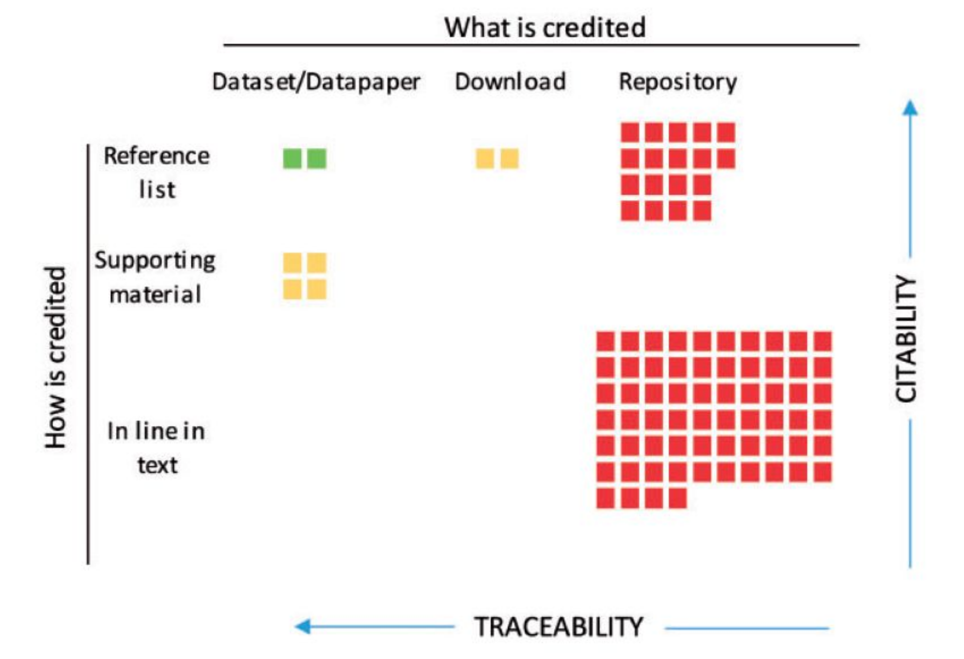

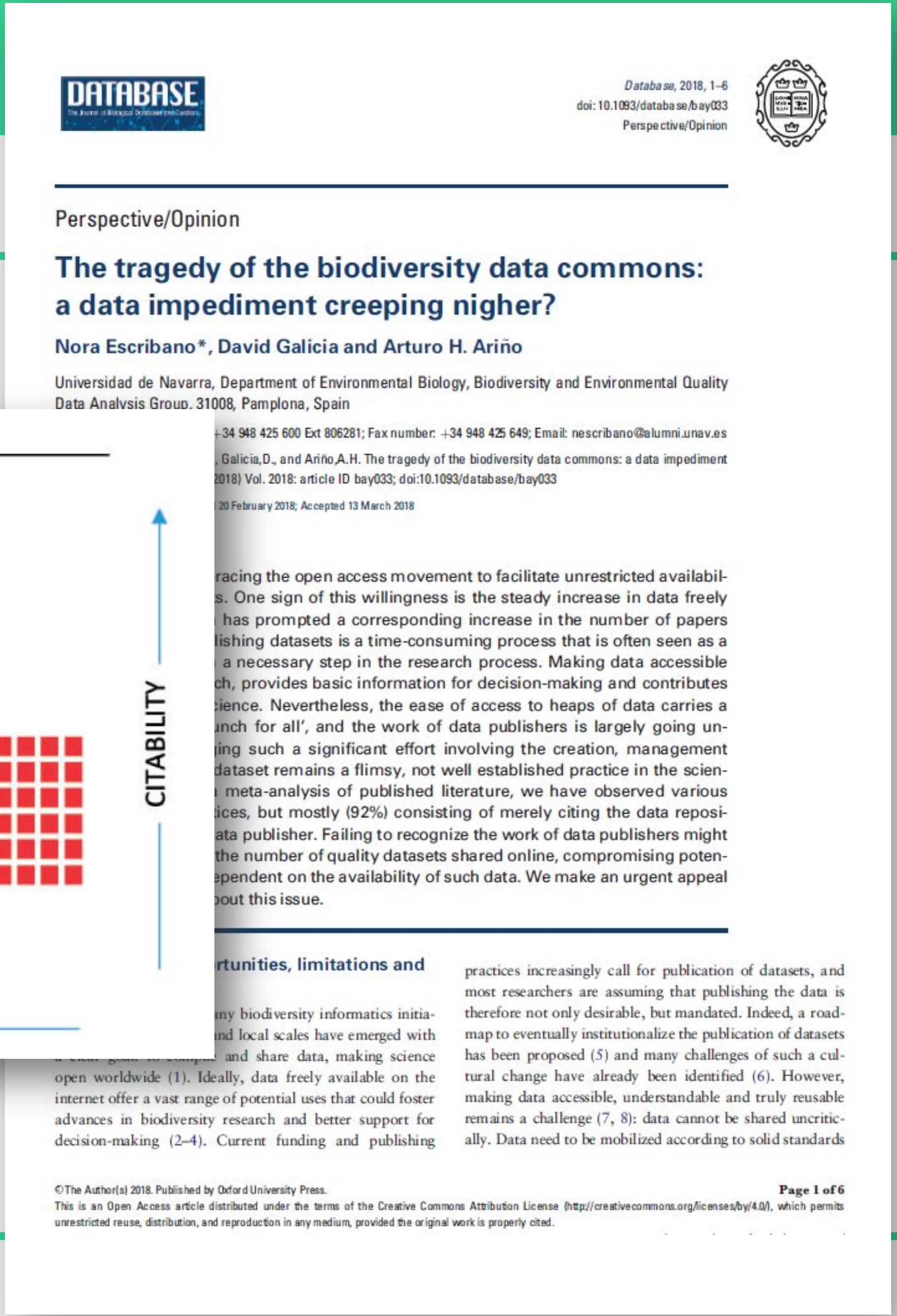

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Taller online GBIF.ES: Estandarización y publicación de datos de biodiversidad de regiones polares

¡Gracias!

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