

Strengthening Zimbabwe's GBIF node through collaboration with GBIF Spain

CESP PROJECT. 24-27 SEPTEMBER 2019. MADRID SPAIN



REAL JARDÍN
BOTÁNICO

Gbif.es

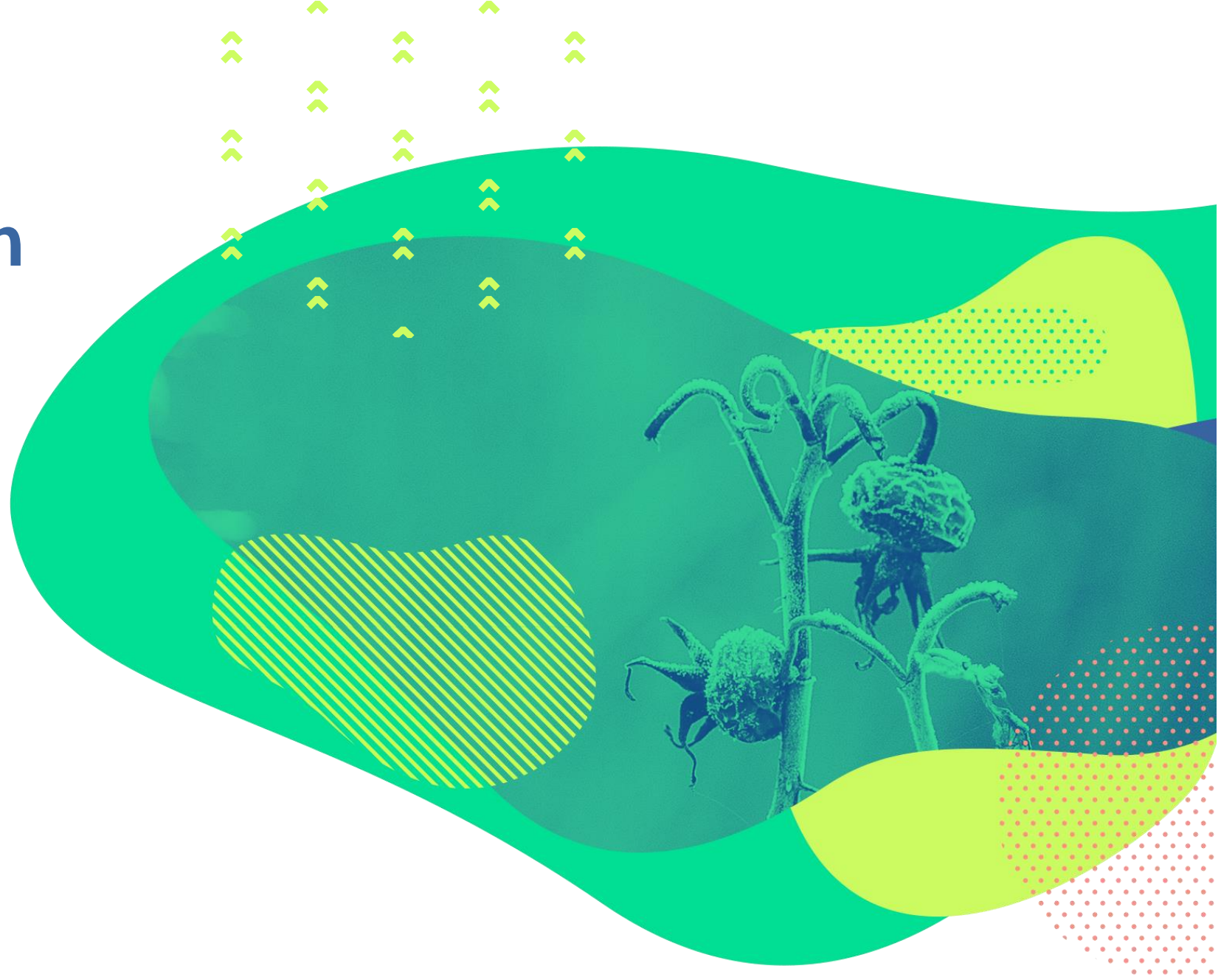


GBIF Spain: Our approach on citizen science

Strengthening Zimbabwe's GBIF node
through collaboration with GBIF Spain

Felipe Castilla
felipe.castilla@gbif.es
felipe.castilla@rjb.csic.es

Gbif,Es



CONTENTS

- **Citizen Science & GBIF**
 - ✓ The contribution of Citizen Science to GBIF
 - ✓ Spanish citizen science datasets in GBIF.ES
- **Natusfera, a platform of Citizen Science to know the biodiversity**
 - ✓ From the field to the web
 - ✓ Tutorial on app
 - ✓ Do all observations end in GBIF?
 - ✓ Tracking data from Natusfera



REMEMBER!

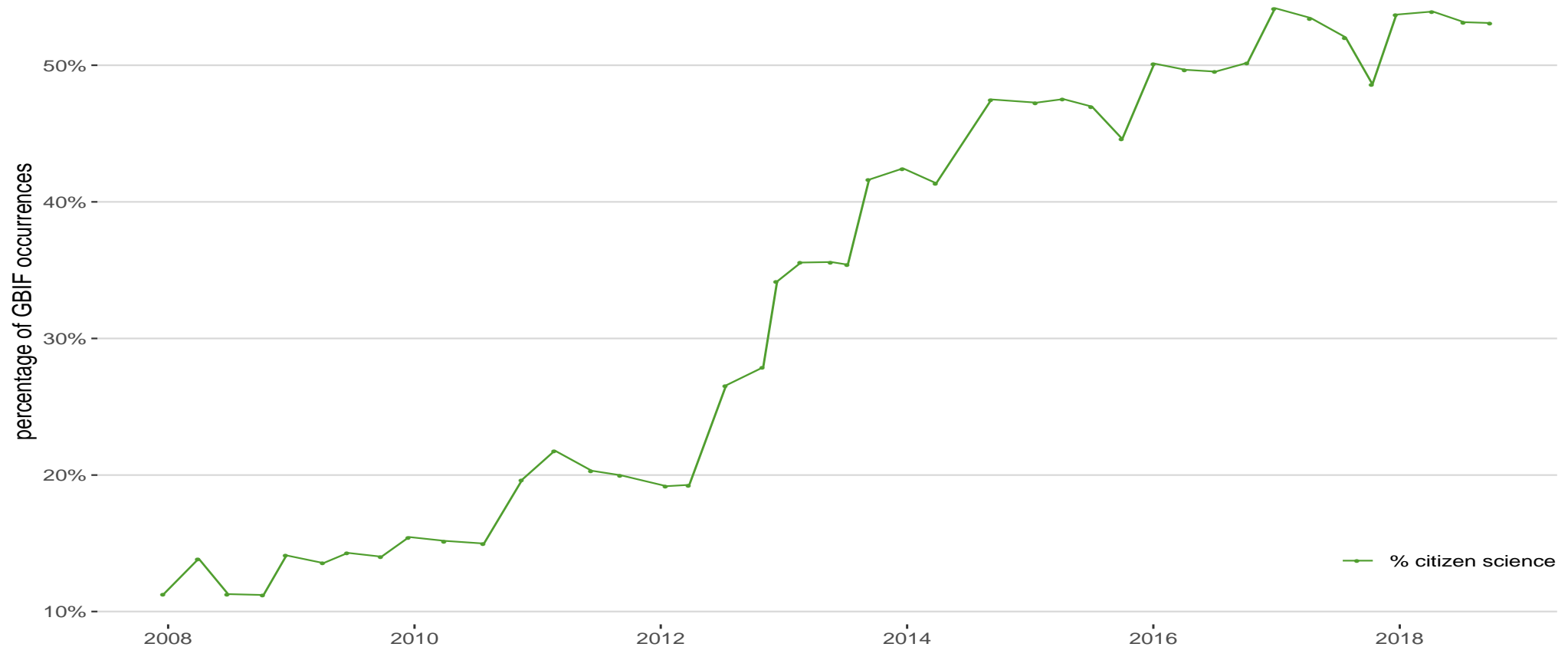
Services provided by GBIF.ES

Our main goal is to support the engagement of the Spanish community in the GBIF network by providing the following services



The contribution of Citizen Science to GBIF.ORG

The rise of Citizen Science on GBIF
The percentage of GBIF occurrences that are Citizen Science



Based on data from 43 saved GBIF snapshots since 2007 and 408 automatically identified citizen science datasets.

The contribution of Citizen Science to GBIF.ORG

Mark Chandler, Linda See, Kyle Copas, Astrid M.Z. Bonde, Bernat Claramunt, Finn Danielsen, Jan Kristoffer Legind, Siro Masinde, Abraham J. Miller-Rushing, Greg Newman, Alyssa Rosemartin & Eren Turak (2016) Contribution of citizen science towards international biodiversity monitoring. Biological Conservation doi:10.1016/j.biocon.2016.09.004

Data from March, 2016

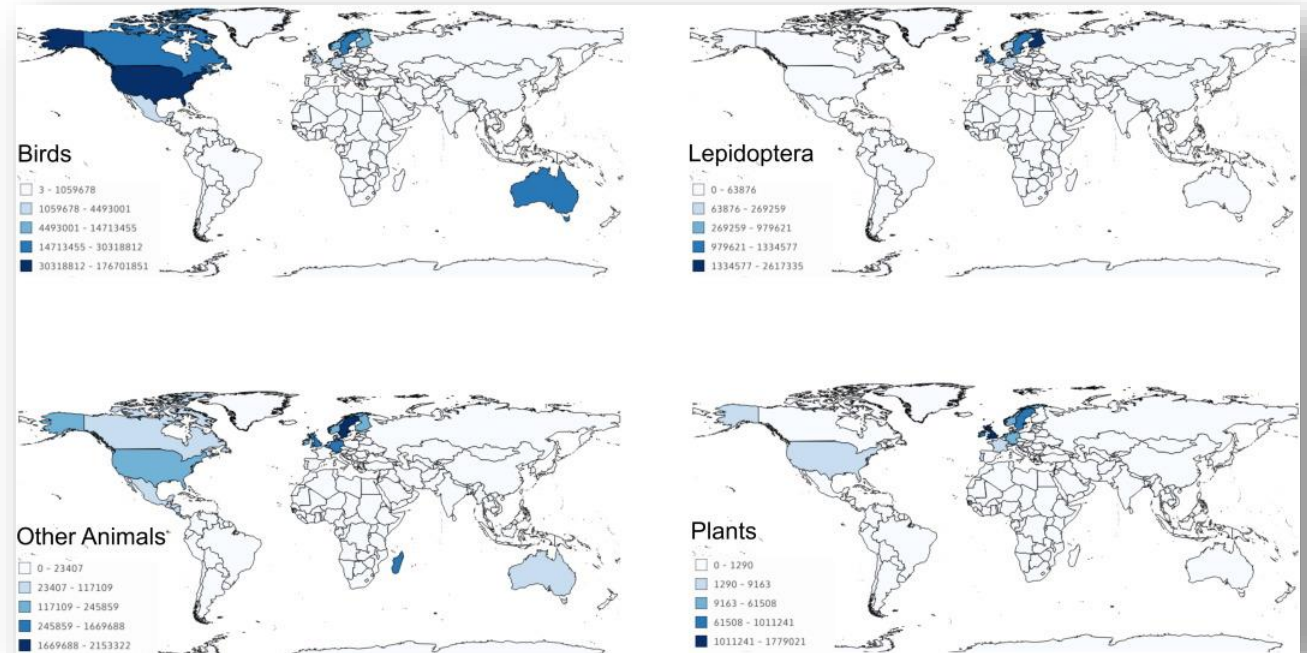
- Unequal distribution.
- More data in Europe, USA & Australia.
- Less represented regions: Africa, Asia & South America.
- Help fill in information gaps.



The contribution of Citizen Science to GBIF.ORG

Mark Chandler, Linda See, Kyle Copas, Astrid M.Z. Bonde, Bernat Claramunt, Finn Danielsen, Jan Kristoffer Legind, Siro Masinde, Abraham J. Miller-Rushing, Greg Newman, Alyssa Rosemartin & Eren Turak (2016) Contribution of citizen science towards international biodiversity monitoring. *Biological Conservation* doi:10.1016/j.biocon.2016.09.004

- Most citizen science initiatives focus on animals.
- Some taxonomic groups are better represented than others: lepidoptera, birds, plants...

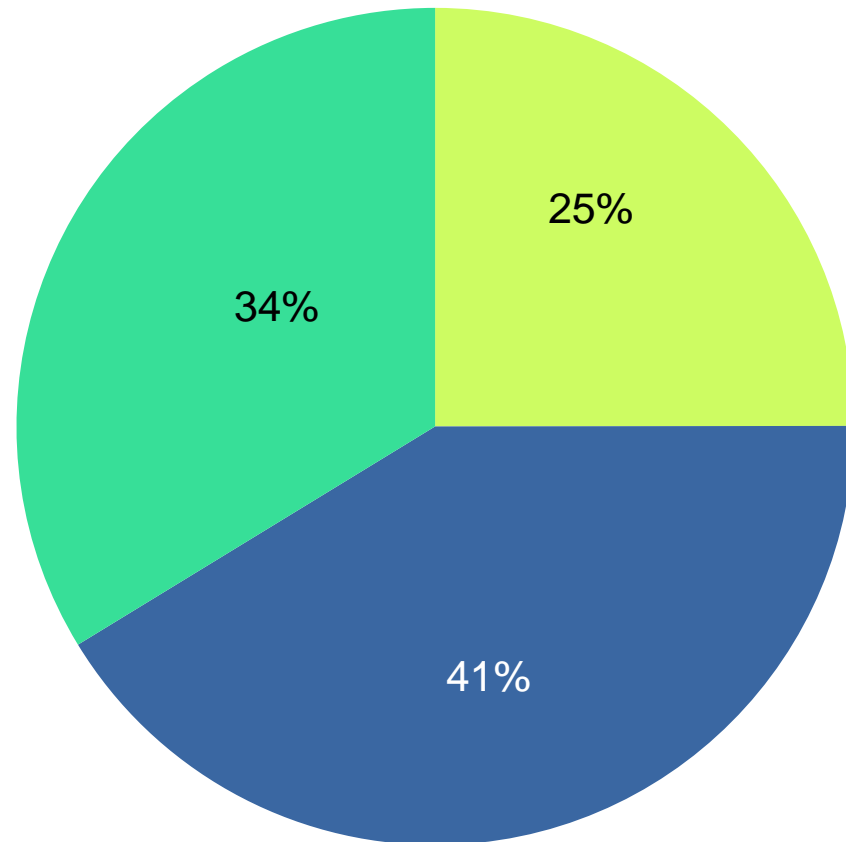


REMEMBER!

The contribution of Citizen Science to GBIF.ES

The situation of Citizen Science in Spain

AVAILABLE RECORDS IN GBIF.ES:
32,217,495



CITIZEN SCIENCE
10,866,973 records

ACADEMIA
(Universities, research
centers, projects...)
8,047,664 records

PUBLIC ADMINISTRATIONS
13,302,858 records

Data from July 2019

The contribution of Citizen Science to GBIF.ES

Spanish datasets with the highest number of records in GBIF.ES

| | |
|-------------------------------------------------------------------------------|-----------|
| 1. Anillamiento SEO_Bird ringing – SEO/BirdLife | 8,957,407 |
| 2. Catalog of Andalusian Flora, REDIAM – Junta de Andalucía | 6,468,324 |
| 3. Biodiversity Data Bank – Generalitat Valenciana | 1,954,698 |
| 4. Information System of the Iberian and Macaronesian Vegetation | 1,709,819 |
| 5. FloraCAT – Data Bank of the Cormophytes of Catalonia | 1,703,418 |
| 6. Anthos. Information System Plants of Spain – Royal Botanical Garden (CSIC) | 1,667,138 |
| 7. Aranzadi Science Society – bird ring-recovery data | 956,847 |
| 8. Herbarium of Vascular Plants – Royal Botanical Garden (CSIC) | 761,311 |
| 9. Spanish Terrestrial Species Inventory (IEET) – MAPAMA | 634,257 |
| 10. 3 rd National Forest Inventory – MAPAMA | 540,150 |

Data from July 2019

The contribution of Citizen Science to GBIF.ES

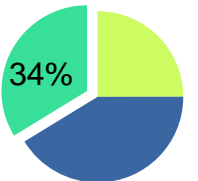
Spanish citizen science datasets in GBIF.ES

| | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| 1. Anillamiento SEO_Bird ringing – SEO/BirdLife | 8,957,407 |
| 2. Aranzadi Science Society – bird ring-recovery data | 956,847 |
| 3. Data collected on citizen science web portal www.ornitho.cat | 462,986 |
| 4. Waterbird census in Spain | 246,253 |
| 5. BV Insectarium Virtual | 119,024 |
| 6. Ornitho.eus. Gobierno Vasco | 89,762 |
| 7. Natusfera Citizen Science Observation Dataset | 19,973 |
| 8. Egrell, Lleida – Hymenoptera | 10,877 |
| 9. BioBlitz Barcelona 2010-14 | 2,099 |
| 10. EEIKO Database on invasive plants | 1,026 |
| 11. IASTracker. Invasive Alien Species database | 459 |
| 12. Proposal of common names in Spanish for the butterflies of the Iberian Peninsula, Balearic and Canary Islands (<i>Lepidoptera: Papilionoidea</i>) – Zerynthia | 260 |

TOTAL

10.866.973

Data from April 2019



The contribution of Citizen Science to GBIF.ES

Spanish citizen science datasets in GBIF.ES



| | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 1. Anillamiento SEO_Bird ringing – SEO/BirdLife | 8,957,407 |
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| TOTAL | 10.866.973 |

How do we support Citizen Science?

We try to mobilize data from citizen initiatives through GBIF, performing the following tasks:

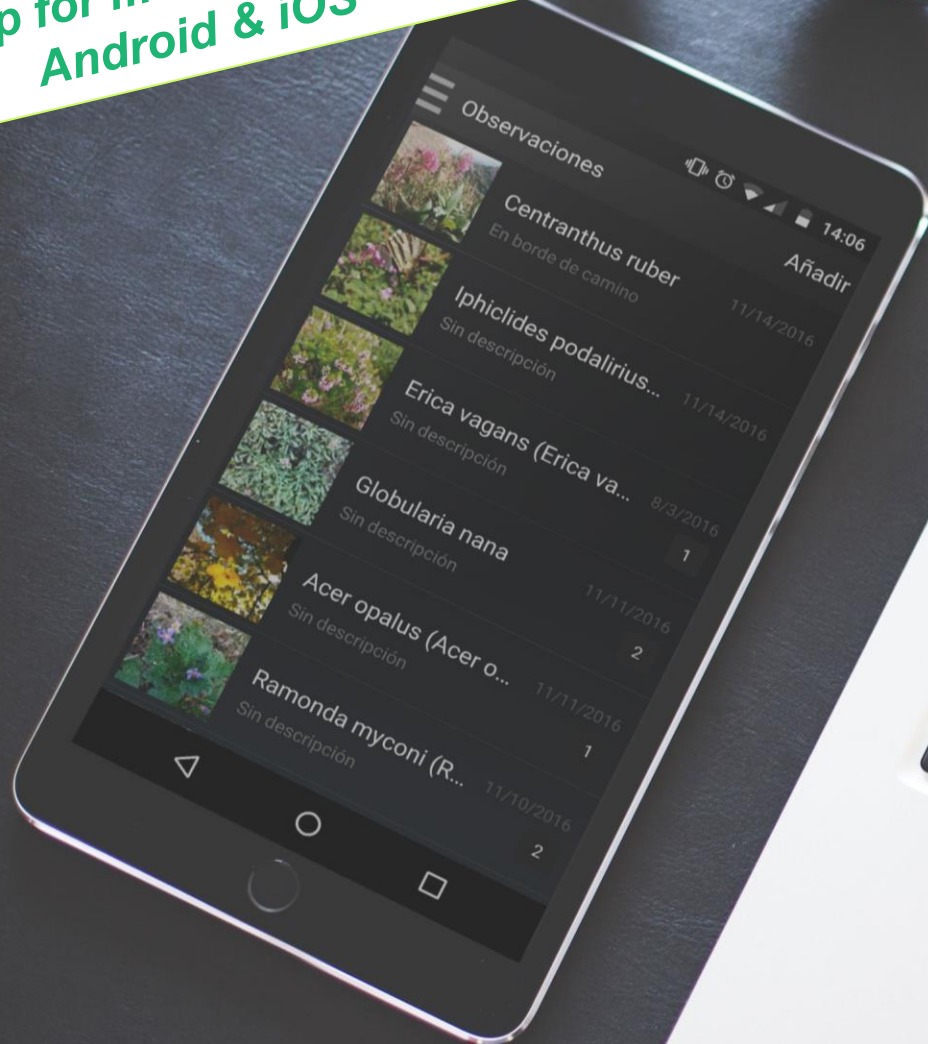
- Communication and outreach activities that we carry out to engage citizens or natural associations (participation in meetings of societies, etc.).
- Promoting the use of the citizen science app/platform Natusfera (workshops, talks, citizen associations initiatives, City Nature Challenge, LiquenCity, etc.).



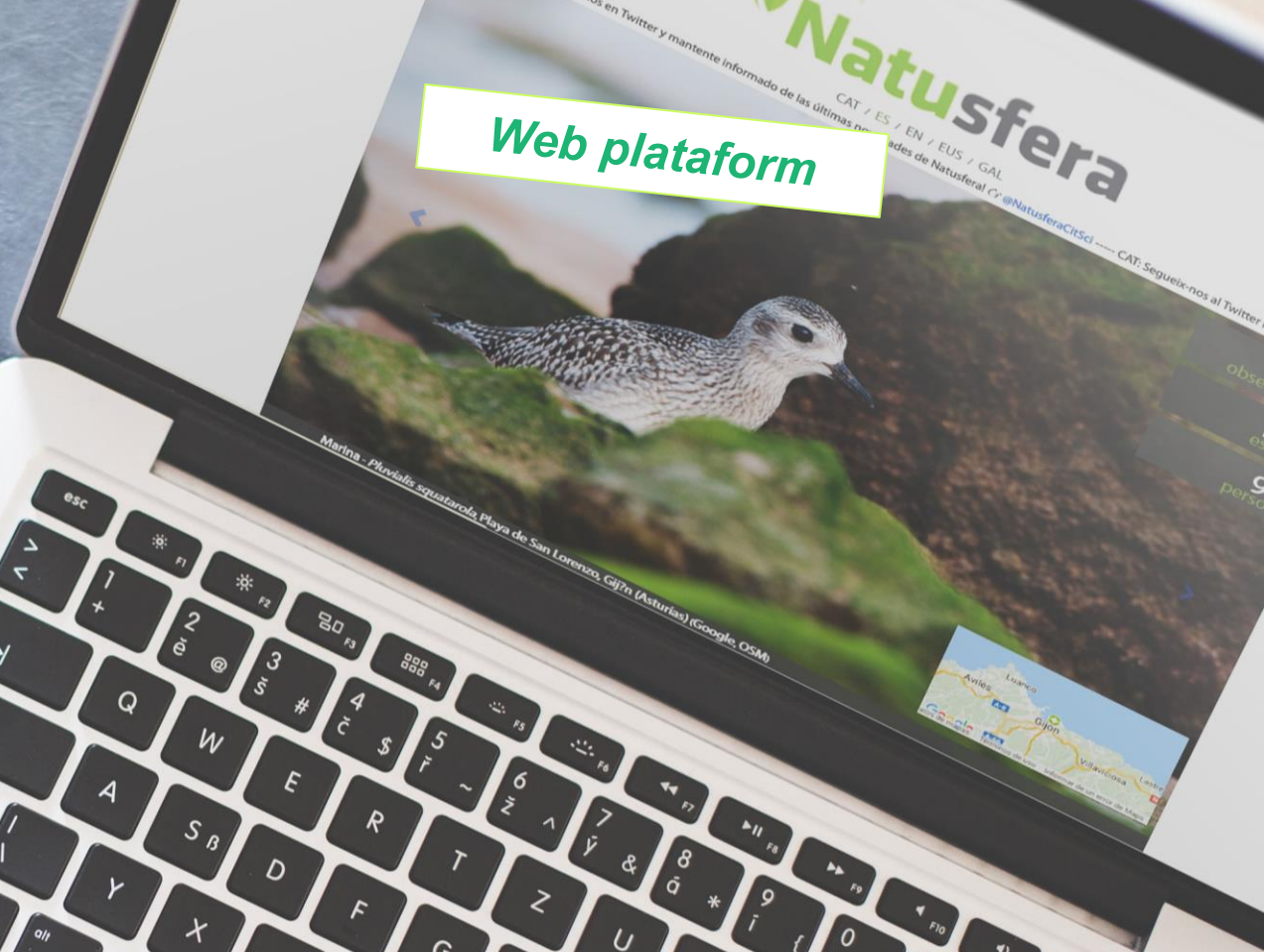


<http://natusfera.gbif.es>

App for mobile phones
Android & iOS



Web plataforma





What's Natusfera?

A technology applied to citizen science
to know the biodiversity

A social and collaborative tool in
which you learn about biodiversity
among the entire community, with
help and interaction
between users

With projects that can be
customized and created
by the users

What is it for Natusfera?

To record and organize observations of nature,
meet other enthusiasts and learn about the natural world.

Hikers, nature guides,
hunters, fishermen,
mushroom and fruit pickers,
bird enthusiasts, natural
space technicians,
ecologists, biologists,
environmentalists, forest
engineers, foresters,
agronomists, students,
teachers, nature
associations ...

TO LEARN

TO SHARE

TO MANAGE

**Where does
Natusfera
come from?**



Natusfera is an adaptation of

iNaturalist.org



Presented in June 2016 at the


**REAL JARDÍN
BOTÁNICO**

**Developed
under open
source and
free**

**Adapted to the biodiversity
of Spain, but with a view to
extending to the Spanish-
speaking community and
other surrounding countries**

Who coordinates Natusfera?

Content management, administration and maintenance

 **CREAF** Center for Ecological Research and Forest Applications. www.creaf.cat/es



REAL JARDÍN
BOTÁNICO
Gbif.es

Spanish Node of Global
Biodiversity Information Facility.
www.gbif.es



icm

Institute of Marine Sciences.
www.icm.csic.es



What do we include in Natusfera ?

Metadata

Natusfera is not a catalog of
photos and sounds

Multimedia content of images and sounds

From the natural environment to the web



1 Capture

Take a picture or record a sound of a living being with your mobile or camera



2 Complete the information from the web

Possibility of putting the observation in a project, bioblitz ...



3 The community helps you identify

You can ask for help if you don't know what species it is



4 Quality control

Only observations with a certain degree of quality are returned to GBIF

Gbif.es

5 GBIF publication

Increased visibility.
Download of scientific projects
Management / Conservation

¡Crea una cuenta!

¡Explora!

Web plataform

Natusfera

CAT / ES / EN / EUS / GAL / IT

Android & iOS



222530
observaciones

11334
especies

11305
personas



felipecastilla - *Thomisus onustus*, PORTUGAL: Baixo Alentejo, Santiago do Cacém, murallas del castillo (Google, OSM)

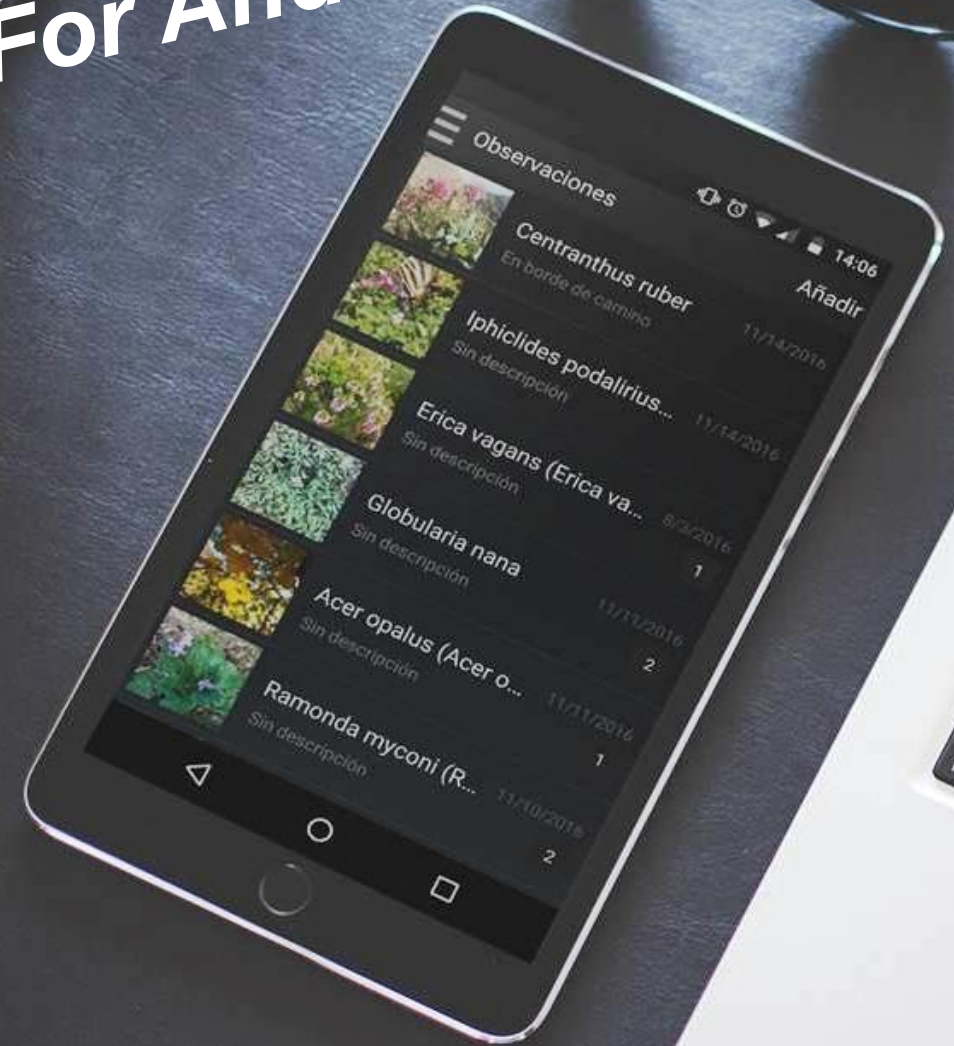
App for mobile phones
Android & iOS



Biodiversity available to citizens

How to create an account,
upload observations and join
projects

For Android!



For Android!

FIRST STEPS

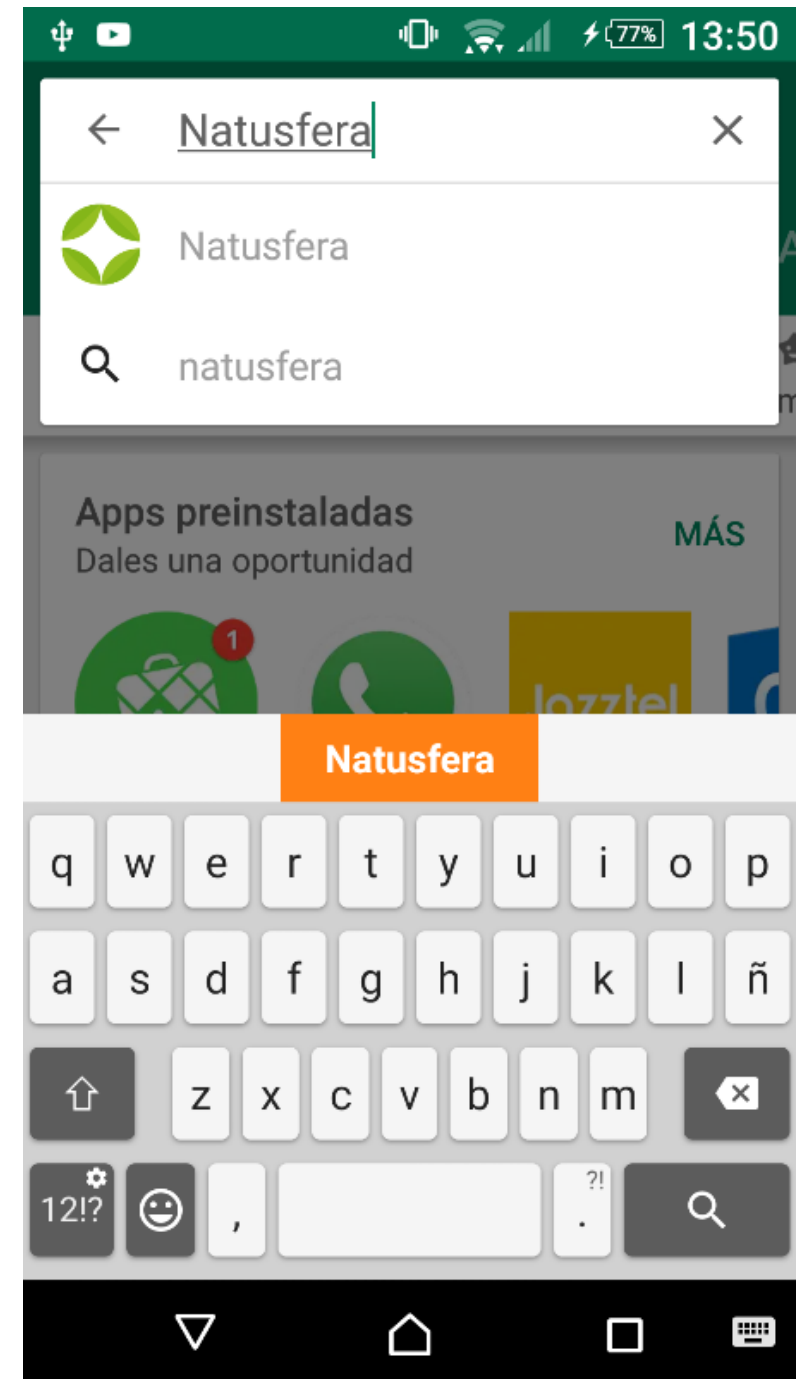
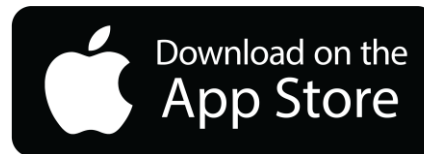


Download app Natusfera

For Android you must
download the app from
Google Play

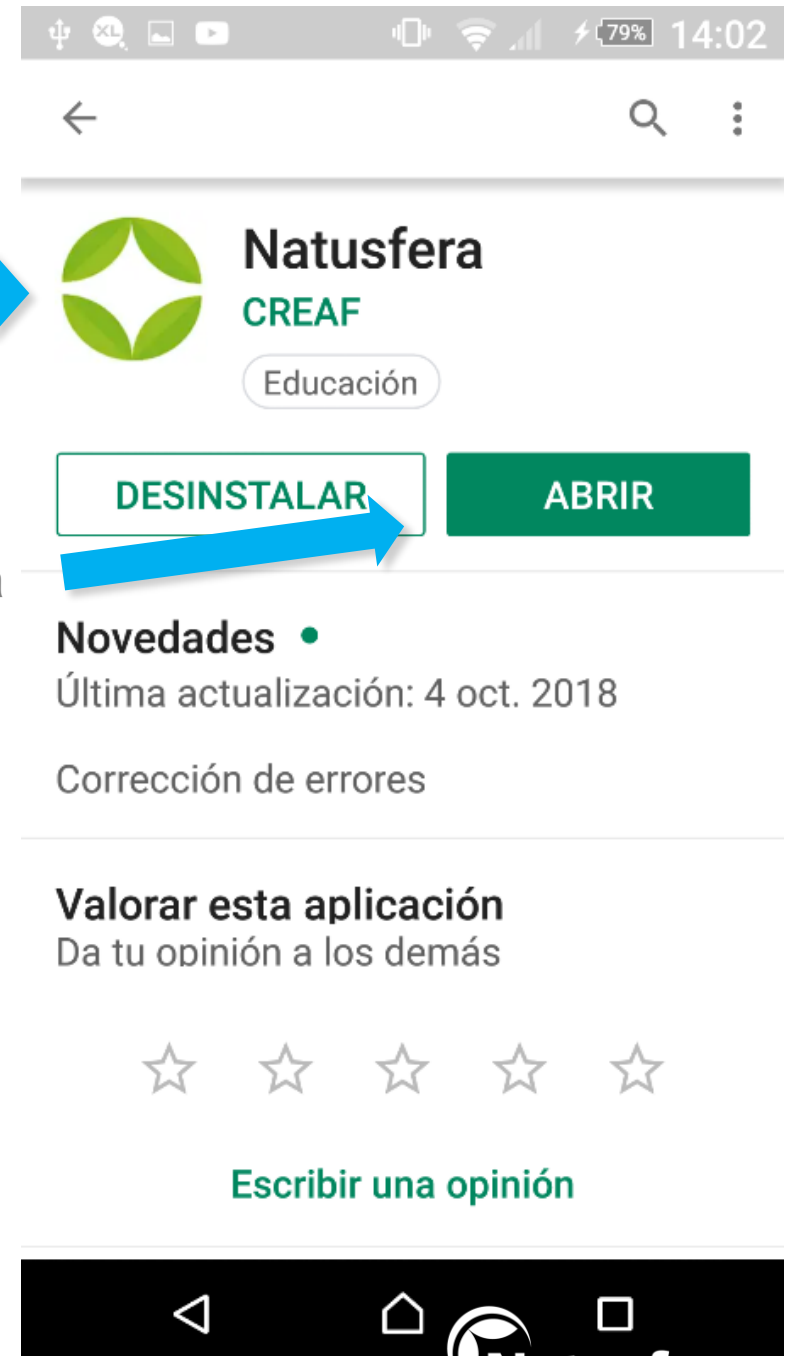


If your mobile is iPhone
you must download Natusfera
from the App Store



Download app Natusfera

Once downloaded, this icon should appear on the desktop of your Android mobile



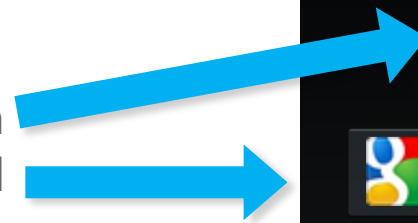
Now you can open Natusfera

A person with long, wavy brown hair is standing in a forest. They are holding a large green fern frond in front of their face, completely obscuring it. They are wearing a white t-shirt under a light-colored, open cardigan or jacket. A patterned scarf is draped around their neck. On their left wrist, a silver chain bracelet is visible. The background is a dense forest with tall, thin trees and some autumn-colored foliage. The overall lighting is soft and natural.

HOW TO CREATE AN ACCOUNT

Create an account or profile

You can log in from Facebook or Google, from an email you already have from gmail



If you already have your profile created beforehand from the web, you just have to enter your username and password



You can also **create a new account** instead of the one you usually use. In this case, enter the username you want and an email with your password

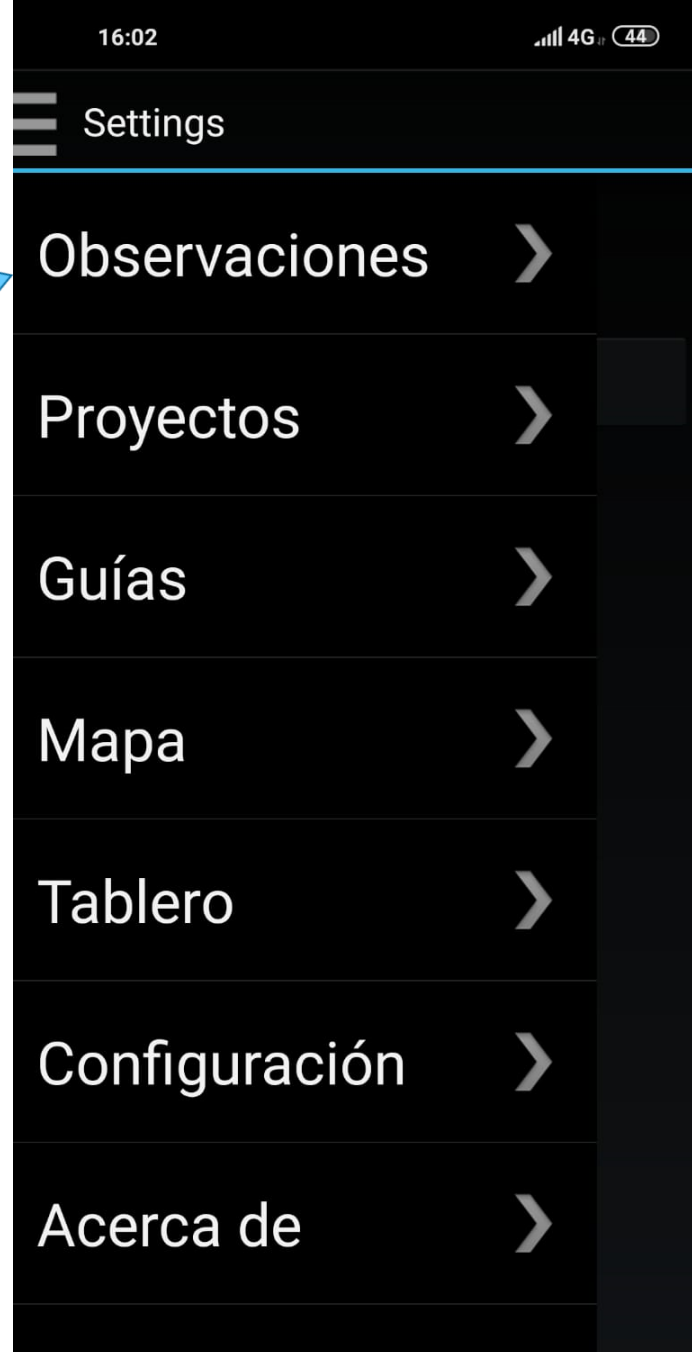
The screenshot shows the 'Configuración' (Settings) screen of the Natusfera app. At the top, there's a status bar with icons for signal, 4G, battery at 72%, and time 11:46. Below the title 'Configuración', there are two large buttons: 'iniciar sesión' with a Facebook logo and 'Iniciar sesión con Google' with the Google logo. A horizontal line separates these from the next section, 'Inicie sesión en su cuenta de Natusfera'. This section contains two text input fields: 'Nombre de usuario' and 'Contraseña'. Below these is a dark button labeled 'Inicie sesión'. Underneath is a small 'o' character, followed by another dark button labeled 'Cree una cuenta nueva'. At the bottom of this section is 'Opciones de idioma' with a dropdown menu showing 'inglés'. The app's logo 'Natusfera' is visible in the bottom right corner of the screen.

HOW TO UPLOAD OBSERVATIONS

A person with long, wavy brown hair is standing in a forest. They are holding a large green fern frond in front of their face, completely obscuring it. They are wearing a light-colored, possibly beige or cream, cardigan over a white t-shirt. A patterned scarf is visible around their neck. The background is a dense forest with tall, thin trees and some foliage showing autumnal colors. The overall lighting is soft and natural.

Upload observations

Select "Observaciones"
(= observations)



Upload observations

Select “Añadir” (= Add) to record an observation

After adding observations, select “Sincronización” (= Synchronization) to send them to Natusfera. You will need Internet connection, preferably Wifi



Upload observations



Selecciona la cámara para añadir fotos.

Escribe el nombre de la especie.

Puedes editar la ubicación.

Solicita ayuda de la comunidad para identificar la especie.

Si lo deseas, puedes ocultar las coordenadas.

Recommendations and advice

To facilitate identification or verification by the user community, it is convenient that you take more than one photo per observation, when you see it necessary. For example, for a plant of general bearing, and of the leaves, flowers and fruits (if any). To an animal, general and detailed photos of its anatomy, etc.

If you don't know what species you have photographed, nothing happens. Leave the field empty and ask the user community for help in “Do you need ID help?”.

If you want to preserve the location because you consider it to be a protected or vulnerable species, or you think it is not necessary, select the type of “Geoprivacidad” (= Geoprivacy).

You have three options: “Open”, “Obscured” (diffuse) & “Private”.

Always remember to save the observation, as long as you edit or modify it.

The screenshot shows the 'Edita la Observación' (Edit the Observation) screen of a mobile application. The interface is in Spanish. At the top, there's a status bar with icons for signal, battery (71%), and time (11:53). Below the title bar, there's a date field showing '10 Sept. 2018' and a time field labeled 'hora'. The location fields show 'Lat 43.186243', 'Lon -4.903343', and 'Prec443'. A 'GPS' button is next to the location fields. The main text area contains the observation: 'Actualmente es Rubroboletus satanas según Index fungorum. Sobre humus de Quercus sp. pl.' Below this is a section titled 'Selecciona Proyectos'. At the bottom, there's a section for '¿Necesitas ayuda ID?' with a 'NO' button, and a 'Geoprivacidad' (Geoprivacy) section with three options: 'Open', 'Obscured', and 'Private'. A 'Guarda observación' (Save observation) button is at the bottom right, with a green badge showing the number '2'. Blue arrows point from the text blocks to specific UI elements: one to the '¿Necesitas ayuda ID?' section, one to the 'Geoprivacidad' section, and one to the 'Guarda observación' button.

Edita la Observación

10 Sept. 2018 hora

Lat 43.186243
Lon -4.903343
Prec443

GPS

Actualmente es Rubroboletus satanas según Index fungorum.
Sobre humus de Quercus sp. pl.

Selecciona Proyectos

¿Necesitas ayuda ID? NO

Geoprivacidad Open Obscured Private

Guarda observación 2

A person with long, wavy brown hair is standing in a forest. They are holding a large, green fern frond in front of their face, completely obscuring it. They are wearing a light-colored, possibly beige or cream, cardigan over a white t-shirt. A patterned scarf is visible around their neck. The background is a dense forest with tall, thin trees and some autumn-colored foliage. The lighting is soft and natural, suggesting an overcast day or a shaded forest area.

HOW TO JOIN A PROJECT

Join a project

Projects tab

On Friday we will go to Aranjuez village and take some observations with Natusfera app to include in the project "**Aranjuez gardens and biodiversity**" (<https://natusfera.gbif.es/projects/aranjuez-gardens-and-biodiversity>): *Biodiversity of the gardens of Aranjuez, Tagus river and its surroundings. A preliminary list of native, exotic, wild, feral, cultivated or captive species.*

In the projects tab, look for this project

IMPORTANT NOTE: Observations may or may not be associated with projects.

Projects

INSCRITO CER-CANOS DESTACA-DOS

Busca proyectos...

Este espacio, propiedad (a fecha de creación del proyecto, octubre 2018) del ...

Aranjuez gardens and biodiversity
Biodiversity of the gardens of Aranjuez, Tagus river and its surroundings. A preliminary l...

Atlas de las mariposas diurnas de España (Península, Baleares, Canarias, Ceuta y Melilla)
ZERYNTHIA y Natusfera po-
nen en marcha el primer atlas nacional para la obtención si...

Join a project

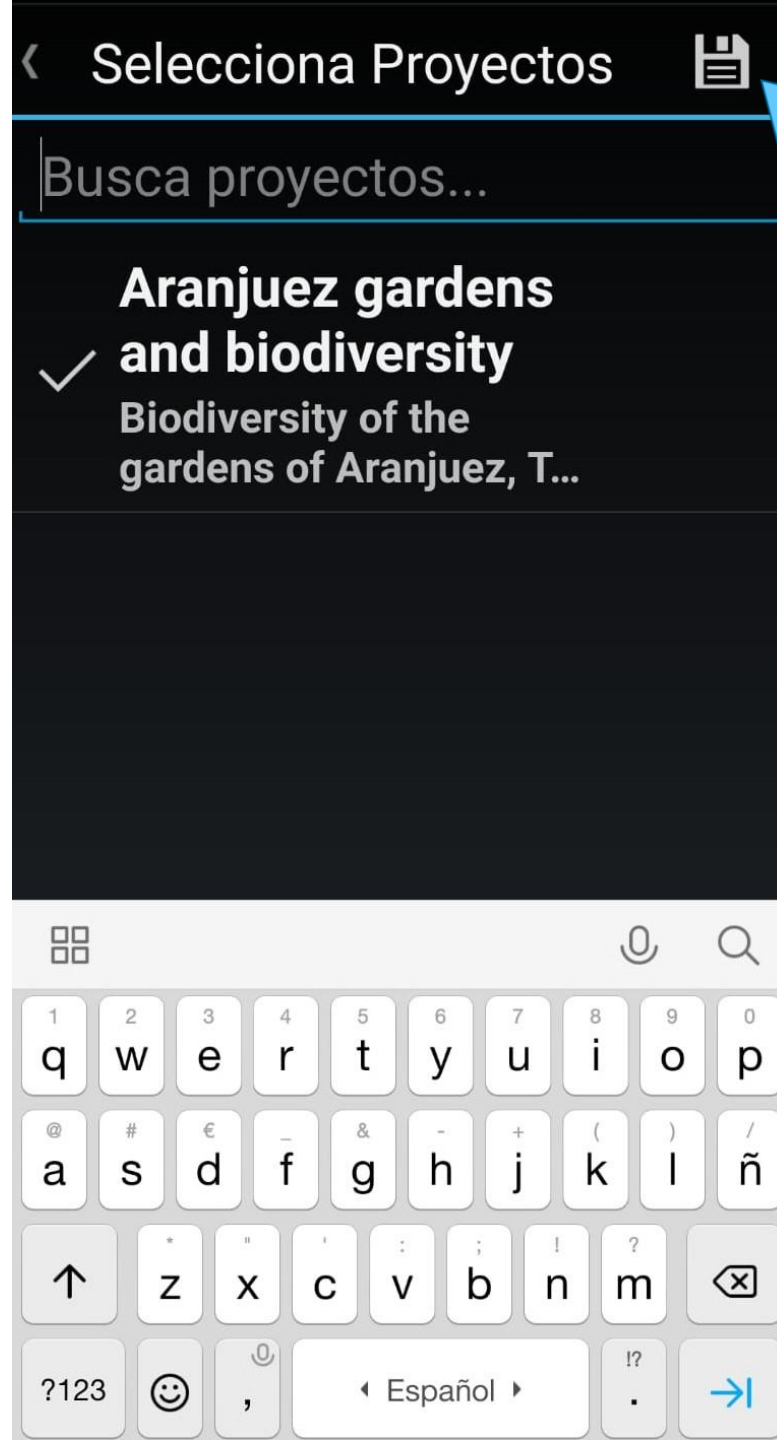
To have all the observations of a project grouped, it is necessary to register previously in the project



Sign up for this project by clicking here

Join a project

Click the project



And save the associated project



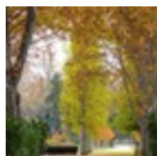
Proyectos

[Crear proyecto nuevo](#)[Buscar](#)

How it looks on the web platform

Los proyectos son una forma de agrupar en Natusfera tus observaciones con las de otras personas. Si te interesa comenzar un proyecto como ciudadano o quieres utilizar Natusfera en tu centro educativo, ¡los proyectos son lo que estabas buscando! Para aprender a utilizarlos, consulta el tutorial de ayuda para proyectos.

Proyectos que administras



Aranjuez gardens and biodiversity

Biodiversity of the gardens of Aranjuez, Tagus river and its surroundings. A preliminary list of native, ex...



Biomaratón Madrid (CNC 2019)

El City Nature Challenge, es un bioblitz a nivel mundial que se va a celebrar del 26 al 29 de abril de 2019...



El Forestal de Villaviciosa de Odón

Este proyecto alberga la biodiversidad de El Forestal, un parque forestal histórico de Villaviciosa de Odón



Biodiversidad en el río Guadalix en torno al Azud de El Mesto

Biodiversidad en el río Guadalix en torno al Azud de El Mesto. Actividad de la SARJB para la promoción de l...
Subproyecto de Excursiones de la Sociedad de Amigos del Real Jardín Botánico (SARJB)



Árboles singulares de la Casa de Campo

Aquí figuran las especies arbóreas consideradas singulares por su vinculación a la historia de la Casa d...



Casa de Campo de Madrid

Especies observadas en la Casa de Campo de Madrid. Incluye todas las especies – tanto autóctonas como alócto...



20171125 Excursión por Bustarviejo

Especies observadas en la actividad de Natusfera para la Sociedad de Amigos del Real Jardín Botánico (SARJB...



Excursiones de la Sociedad de Amigos del Real Jardín Botánico (SARJB)

Especies incluidas en las excursiones de la



Biodiversidad en los Montes de Valsaín

Catálogo de las especies de los Montes de Valsaín. Este proyecto incluye a las

How it looks on
the web plataform



Aranjuez gardens and biodiversity



» Observaciones / Mapa 12 observaciones

Atom / KML / CSV / Todos los CSV

» Lista de verificación 10 especies o grupos observados

» Diario

» Miembros 3 miembros



Ver todos los miembros »

» Estadísticas

» Invita a observaciones para tu proyecto

Proyectos

[Crear proyecto nuevo](#)
[Buscar](#)

Los proyectos son una forma de agrupar en Natusfera tus observaciones con las de otras personas. Si te interesa comenzar un proyecto científico ciudadano o quieres utilizar Natusfera en tu centro educativo, ¡los proyectos son lo que estabas buscando! Para aprender a usarlos, consulta el tutorial de ayuda para proyectos.

Any user can create a project!

Proyectos que administras



Salida Taller Natusfera Oct2017

Subproyecto de Real Jardín Botánico - CSIC



Real Jardín Botánico - CSIC

► Subproyectos

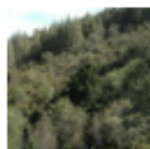
[Ver todos sus proyectos »](#)

Proyectos a los que te has unido



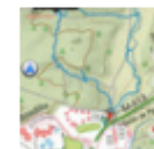
Salida Taller Natusfera Oct2017

Subproyecto de Real Jardín Botánico - CSIC



Fuentes del Jarama

Documentar la vegetación existente en el área como apoyo al proyecto "inventario de las tejedas del Mosquit...



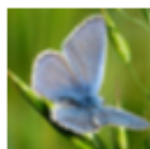
Bioblitz Monte de Boadilla, 20 de abril de 2017

Identificación de especies en el Monte de Boadilla (Bioblitz), creado por el IES Isaac Albéniz de Leganés, ...



SOS Polinizadores

Nuestro objetivo es fomentar la observación y el estudio de los insectos polinizadores y su relación con la...



PAPILIO - Mariposas diurnas de España / Day butterflies of Spain (Papilionidea)

A través del proyecto PAPILIO, la Asociación Española para la Protección de las Mariposas y su Medio (ZERYN...

Subproyecto de Lepidópteros de España



VIII Jornadas sobre información de biodiversidad y administraciones ambientales

Proyecto para introducir observaciones durante la visita a Montserrat

Editando Aranjuez gardens and biodiversity

Título *

Aranjuez gardens and biodiversity

Tipo de proyecto

You can always edit
it and modify it

Los proyectos "Concurso de observaciones" mostrarás una tabla que organiza a los colaboradores por el número de observaciones, mientras que los proyectos "Concurso de especies" mostrarán una tabla que organiza a los colaboradores por el número de especies.

normal ▼

Preferred membership model

¿Está tu proyecto abierto a todo el mundo o solo a la gente que invites?

☒ Pública ☐ por invitación solamente

Padre Proyecto

Select the parent from the drop down below...

Proyecto padre

▼

Preferencia del conteo

¿Quieres que el número total de taxones del proyecto sea contando las especies, cualquier taxón o simplemente las categorías taxonómicas que figuran?

especies ▼

Descripción

Describe el propósito de este proyecto.

Biodiversity of the gardens of Aranjuez, Tagus river and its surroundings. A preliminary list of native, exotic, wild, feral, cultivated or captive species

Ícono de proyecto (PNG, JPG, or GIF)

Se recortará a un cuadrado.



☐ ¿Eliminar ícono?

► [Cambiar ícono](#)

Portada del proyecto (PNG, JPG, or GIF)

Imagen opcional que aparecerá en la parte superior de la página del proyecto. Debe ser de 950px de ancho y menor de 400 de alto.



☐ ¿elimina la cubierta?

► [cambio de cubierta](#)

Términos

Términos que los nuevos usuarios deben aceptar antes de unirse a este proyecto.

Some Natusfera use cases

- **Natusfera projects.** For example “Ecosystem Arganzuela” aims to know and understand biodiversity of Arganzuela neighborhood (Madrid) using the Natusfera app <https://natusfera.gbif.es/projects/ecosistema-arganzuela>.
- **Lichens as bioindicators of air quality in cities.** If we know what lichens are in each neighborhood we can know the degree of pollution to which we are exposed <http://liquencity.org/>.
- **Participation in City Nature Challenge 2018, 2019 & more...** (in Spain called Biomaratón). Cities around the world will be competing to see who can make the most observations of nature, find the most species, and engage the most people in City Nature Challenge <http://citynaturechallenge.org/>.



Communication and outreach of Natusfera

➤ **Participation in conferences and meetings** of societies and associations that do Citizen Science activities:

- **ECSA.** The European Citizen Science Association
<https://ecsa.citizen-science.net/>
- **CSA.** Citizen Science Association
<https://www.citizenscience.org>
- **RICAP.** Red Iberoamericana de Ciencia Participativa
“Iberoamerican Network of Participatory Science”
<http://cienciaparticipativa.net/>
- Town halls, public administrations, associations and environmental information centers...



Do all observations end in GBIF?

Quality Control

The observations
have to meet
several
requirements

Degree of research
2/3 of the identifiers,
must "agree",
supervised by
specialists


Compatible with
GBIF licenses

CC0
CC BY
CC BY-NC




Why do we publish data from Natusfera through GBIF?


In June 2018, we published Natusfera data in GBIF, which included the observations of the City Nature Challenge




Give **visibility and access** to data in a standardized format: access channel for publishing citizen science data in GBIF.



Increase the possibilities of its **use and reuse** for research and decision making.



Feedback to the data by the global community, which helps improve its quality.



Greater possibilities to track the use of data through **DOIs**.

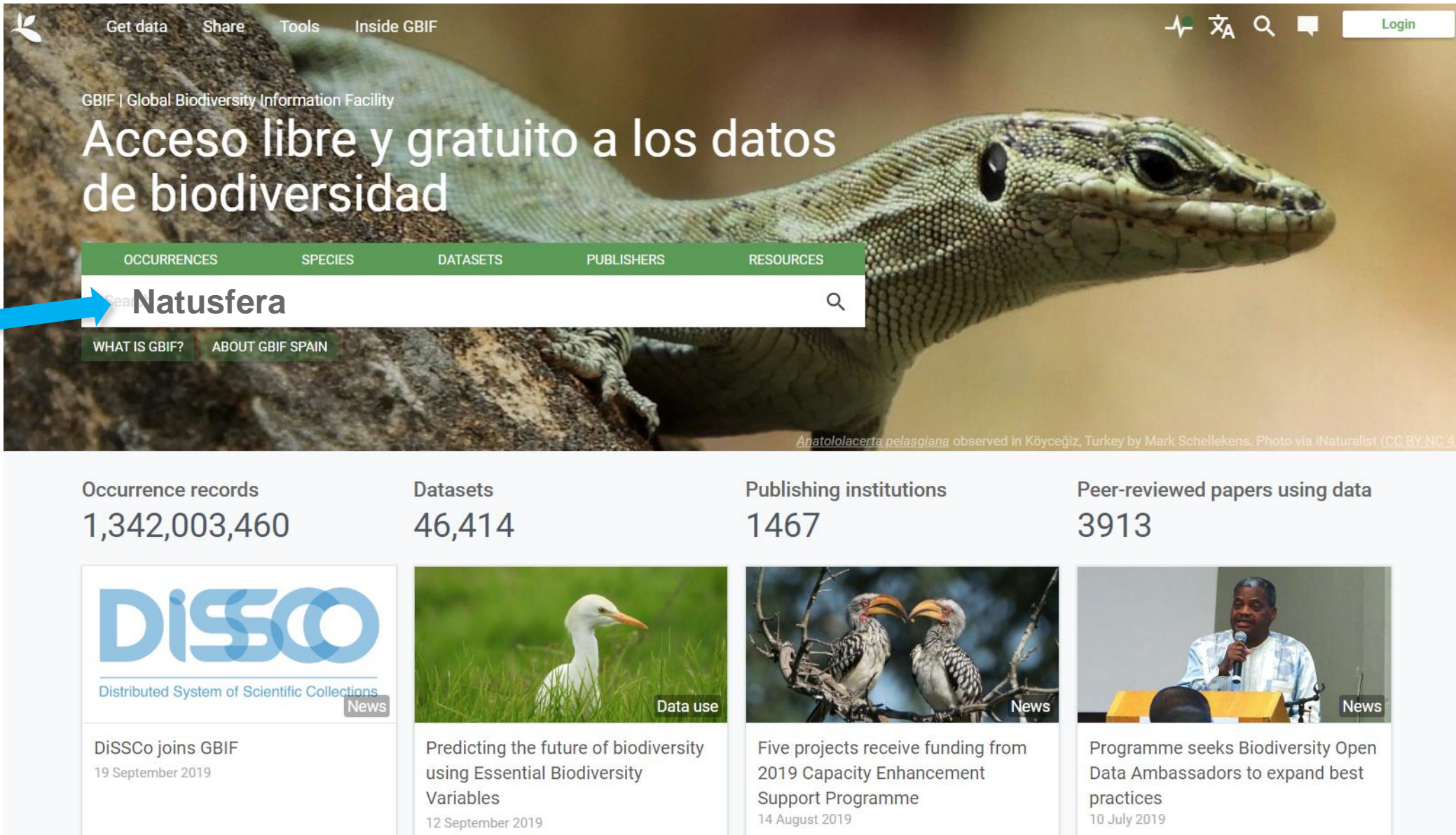
Are all data published in GBIF?

Quality Control



(Data downloaded and published: May 2018)

Tracking data from Natusfera



The screenshot shows the GBIF (Global Biodiversity Information Facility) homepage. The background features a close-up of a green lizard. The top navigation bar includes links for 'Get data', 'Share', 'Tools', and 'Inside GBIF', along with a 'Login' button. The main heading reads 'Acceso libre y gratuito a los datos de biodiversidad'. Below this is a green navigation bar with categories: 'OCCURRENCES', 'SPECIES', 'DATASETS', 'PUBLISHERS', and 'RESOURCES'. A search bar is positioned below the navigation bar, containing the text 'Natusfera' and a magnifying glass icon. A blue arrow points to the search bar. Below the search bar are two links: 'WHAT IS GBIF?' and 'ABOUT GBIF SPAIN'. The main content area displays four statistics: 'Occurrence records 1,342,003,460', 'Datasets 46,414', 'Publishing institutions 1467', and 'Peer-reviewed papers using data 3913'. Below these statistics are four news items, each with a thumbnail image and a 'News' tag. The first news item is about DiSSCo joining GBIF. The second is about predicting the future of biodiversity using Essential Biodiversity Variables. The third is about five projects receiving funding from the 2019 Capacity Enhancement Support Programme. The fourth is about a programme seeking Biodiversity Open Data Ambassadors to expand best practices.

GBIF | Global Biodiversity Information Facility

Acceso libre y gratuito a los datos de biodiversidad


OCCURRENCES SPECIES DATASETS PUBLISHERS RESOURCES

Search **Natusfera**

WHAT IS GBIF? ABOUT GBIF SPAIN

Anatololacerta pelasgiana observed in Köyceğiz, Turkey by Mark Schellekens. Photo via iNaturalist (CC BY-NC 4.0)

| Occurrence records | Datasets | Publishing institutions | Peer-reviewed papers using data |
|--------------------|----------|-------------------------|---------------------------------|
| 1,342,003,460 | 46,414 | 1467 | 3913 |




Distributed System of Scientific Collections

News

DiSSCo joins GBIF


19 September 2019



Data use

Predicting the future of biodiversity using Essential Biodiversity Variables


12 September 2019



News

Five projects receive funding from 2019 Capacity Enhancement Support Programme

14 August 2019



News

Programme seeks Biodiversity Open Data Ambassadors to expand best practices

10 July 2019

Tracking data from Natusfera

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Login

OCCURRENCE DATASET | REGISTERED MAY 24, 2018

Natusfera Citizen Science Observation Dataset

Published by [GBIF-Spain](#)

✉ Felipe Castilla • Katia Cezón

[ATASET](#) [PROJECT](#) [METRICS](#) [ACTIVITY](#) [DOWNLOAD](#) [HOME PAGE](#)

19,973 OCCURRENCES

32 CITATIONS

Este juego de datos recoge las observaciones compartidas en la aplicación de ciencia ciudadana Natusfera (<http://natusfera.gbif.es/>) que han adquirido "grado de investigación", es decir, cuya identificación ha sido corroborada por la comunidad de usuarios y expertos de Natusfera. Incluye observaciones de cualquier taxón —preferentemente a nivel de especie— de cualquier grupo biológico en cualquier lugar del mundo, si bien la gran mayoría corresponden al territorio español. Aunque Natusfera fue l... [More](#)



Metadata last modified: November 30, 2018

Data last changed: May 30, 2018

Hosted by: [GBIF-Spain](#)

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[How to cite](#) [DOI](#) 10.15470/lex4ip



19,973
Occurrences



99.9%
With taxon match



99.4%
With coordinates



99.9%
With year

LITERATURE

Read more about literature, how it's discovered and linked to GBIF-mediated data.

GIS-modeling of the Range Shifts of the Sub-fossil and Extant European Pond Turtle (*Emys orbicularis*) in Eastern Europe in Holocene [↗](#) LiteratureNekrasova, O. Yanish, Y. Tytar, V. Pupins, M. (2019) [Diversity](#)

The study of the dynamics of the European pond turtle's *Emys orbicularis* range and distribution as an indicator of climate change in the past, present, and future is most relevant in connection with the protected status of this species in Europe. Based on our original finds, 25 archaeological sites ...

[Emys orbicularis](#) • [European pond turtle](#) • [GIS-modeling](#) • [Holocene](#) • [glacial refugia](#)

[Journal article](#) [Open access](#) [Peer-reviewed](#)

Data referenced in study [DOI](#) [10.15468/dl.62qcmk](#)

Evaluation of the rust fungus *Puccinia rapipes* for biological control of *Lycium ferocissimum* (African boxthorn) in Australia: Life cycle, taxonomy and... [↗](#) LiteratureIreland, K. Hunter, G. Wood, A. Delaisse, C. Morin, L. (2019) [Fungal Biology](#)

Fungal plant pathogens are increasingly recognised as being among the most effective and safe agents in classical weed biological control programs worldwide. Suitability of the rust fungus *P. rapipes* as a classical biological control agent for *Lycium ferocissimum* (African boxthorn) in Australia was ...

[Classical biocontrol](#) • [Host specificity](#) • [Lycieae](#) • [Plant pathogen](#)

[Journal article](#) [Peer-reviewed](#)

Data referenced in study [DOI](#) [10.15468/dl.yhrfoy](#)

***Velella velella* (Cnidaria: Hydrozoa) in the Bay of Ranobe, south-west Madagascar** [↗](#) LiteratureGhilardi, M. (2019) [Plankton and Benthos Research](#)

Velella velella widely occurs in the tropical and temperate oceans of the world and the number of mass strandings of colonies is increasing. Although its historical presence in the south-western Indian Ocean is known, recent observations are limited to Tanzania, Mauritius and South Africa. This is t...

[Madagascar](#) • [Porpitidae](#) • [Velella velella](#) • [pleustonic](#) • [zooplankton](#)

[Journal article](#) [Peer-reviewed](#)

Data referenced in study [DOI](#) [10.15468/dl.g1spyf](#)

New records of alien vascular plants in Catalonia (NE Iberian Peninsula) [↗](#) Literature

Citizen science data is used for research and policy formulation to better conserve our nature.

Somehow users become Scientific citizens!

Thanks for your attention!

www.gbif.es

felipe.castilla@gbif.es

felipe.castilla@rjb.csic.es



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