IBERGRID 2019

Improving access and use of GBIF through infrastructure cooperation at the Iberian level

Rui Figueira, Cristina Villaverde, Vicente Ruiz Jurado, Tainan Messina

nó português do GBIF

Gbif.es

Living Atlases

POWERED BY ATLAS OF LIVING AUSTRALIA

INSTITUTO SUPERIOR DE AGRONOMIA Universidade de Lisboa

FCT Fundação para a Ciência e a Tecnologia

MINISTERIO DE CIENCIA, INNOVACIÓN Y UNIVERSIDADES

CSIC

REAL JARDÍN BOTÁNICO

May 6, 2019 - News headlines - **IPBES Global Assessment Preview**

CNN World » US | Africa | Americas | Asia | Australia | China | Europe | Middle East | India | UK

Is nature over? Maybe

Analysis by John D. Sutter, CNN

Updated 1625 GMT (0025 HKT) May 6, 2019

Source: CNN

1 million species threatened with extinction by humans 02:05

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Science & Environment

Nature loss: Report to show scale of 'silent crisis'

By Matt McGrath
Environment correspondent, Paris

6 May 2019 | Share

The world's most comprehensive, and damning, report on the state of nature will be released on Monday in Paris.

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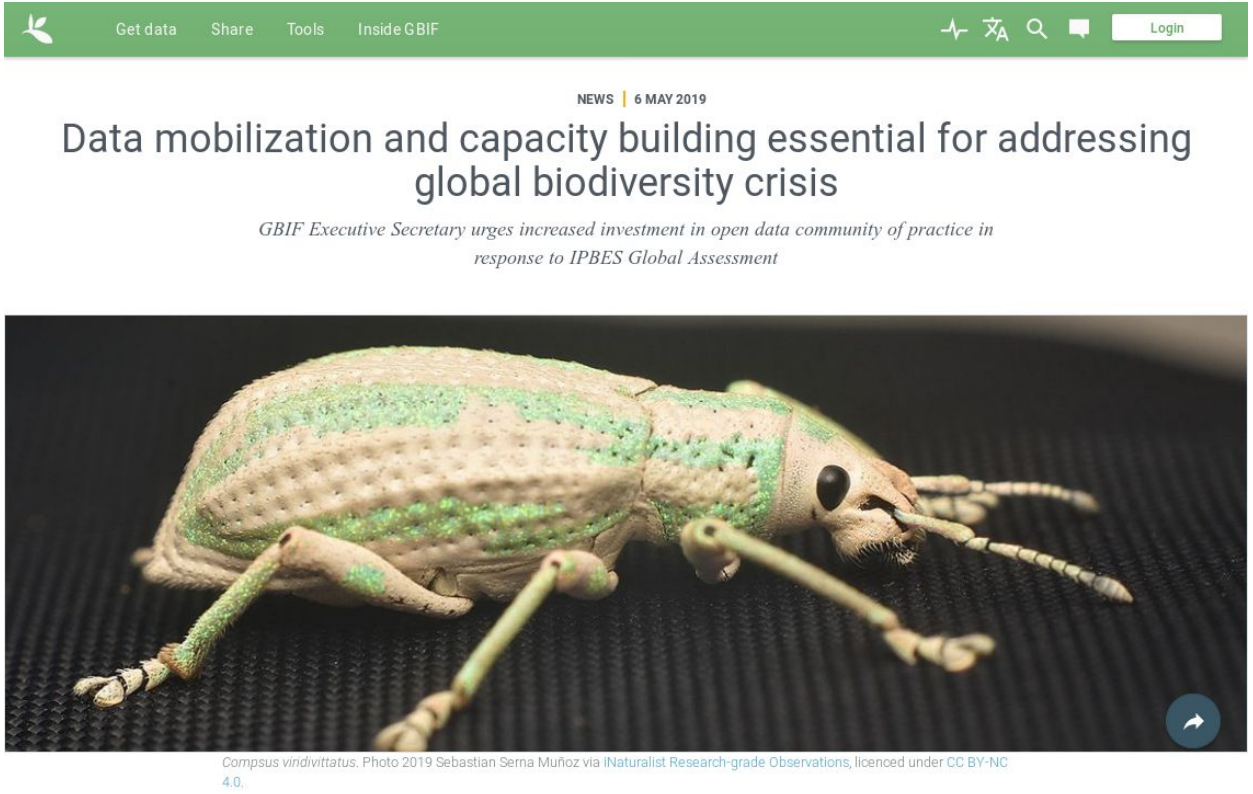
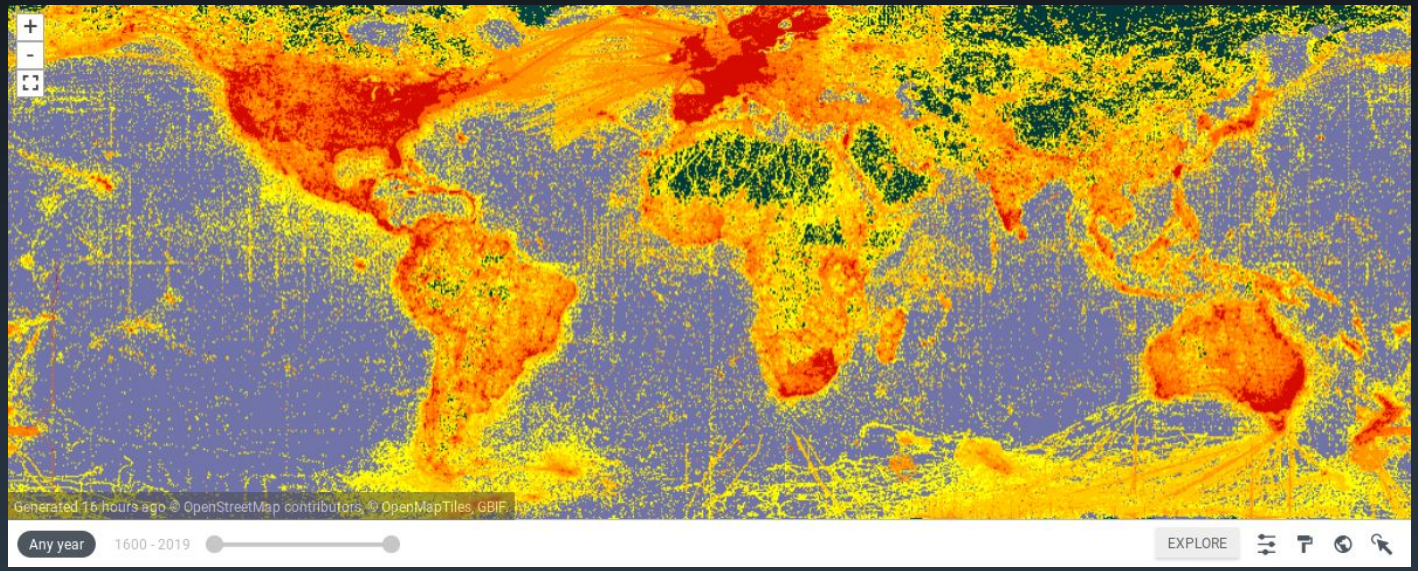
May 6, 2019 - News headlines - **IPBES Global Assessment Preview**

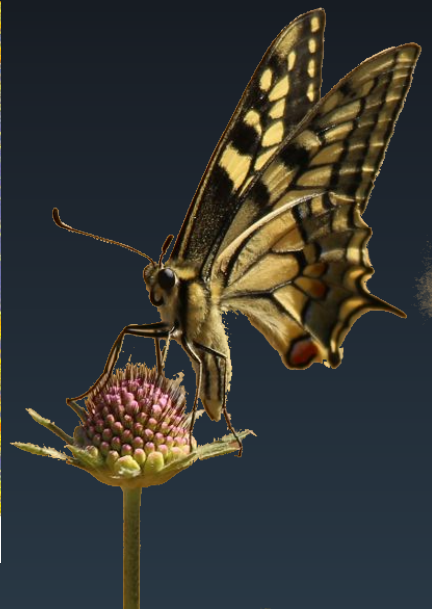


GBIF mediated data essential to many of the scientific papers and indicators cited in the IPBES

Global Biodiversity Information Facility (GBIF)

GBIF—the Global Biodiversity Information Facility—is an international network and research infrastructure funded by the world's governments and aimed at providing anyone, anywhere, open access to data about all types of life on Earth.





BY THE NUMBERS

19 Sept 2019

Species occurrence records

1,352,869,981

Datasets

46,400

Country participants

59

Organizational participants

39

Publishers

1,467

Average records served per month (Jan-May 2019)

32.7 billion

Average monthly user session (Jan-Jun 2019)

187,547

GBIF

Data classes

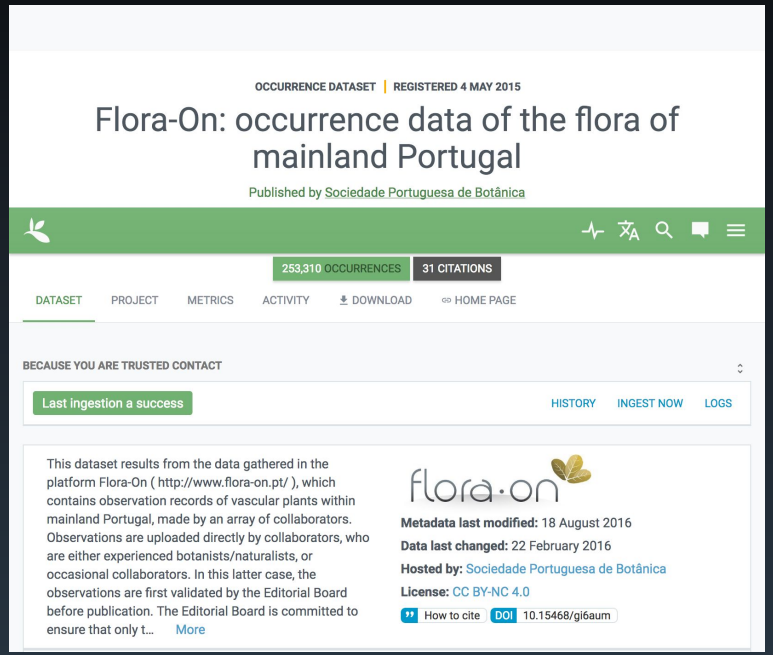
- Occurrence
- Sampling event
- Checklists
- Metadata

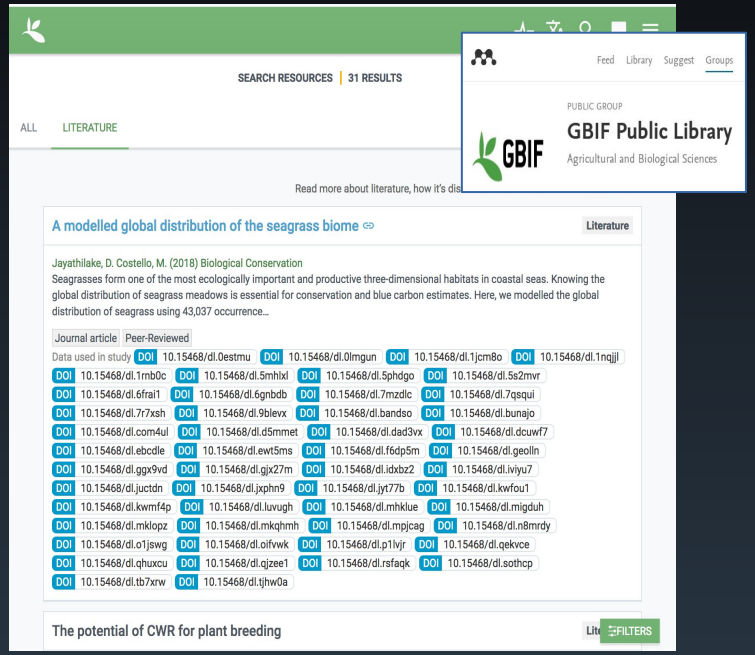
Data access and use (FAIR data)

- Persistent identifiers
- Rich metadata
- Standard data format
- Machine readable licenses
- Citable (DOI)
- QC issues annotations
- API services

Attribution and tracking use of data

GBIF reports data usage to publishers





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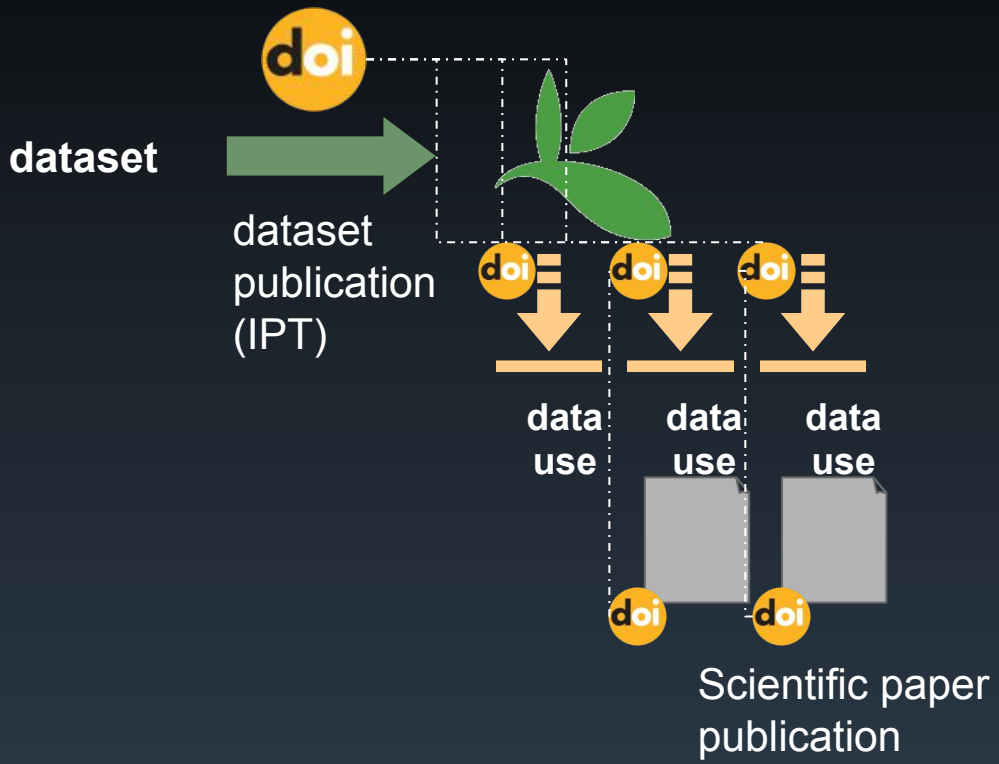
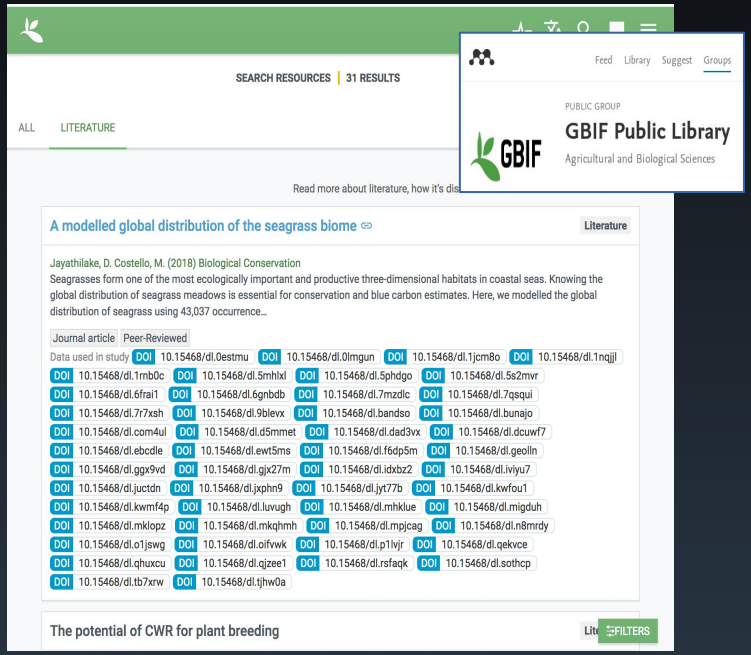




GBIF mediated data:

All environments

All ecologies

Many uses

CHALLENGE:
Biodiversity Research - ranges from global to local

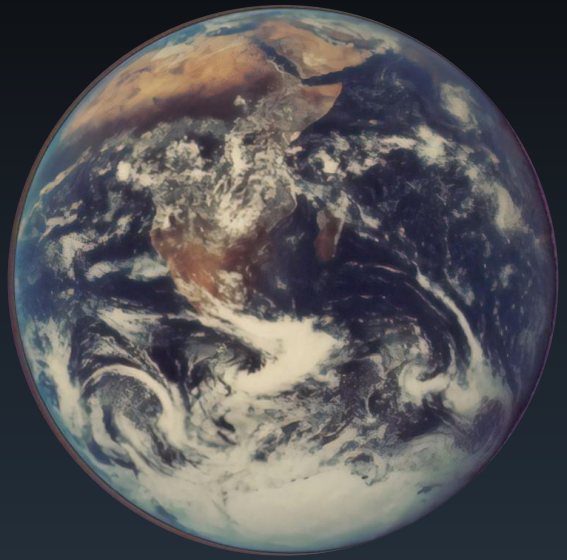
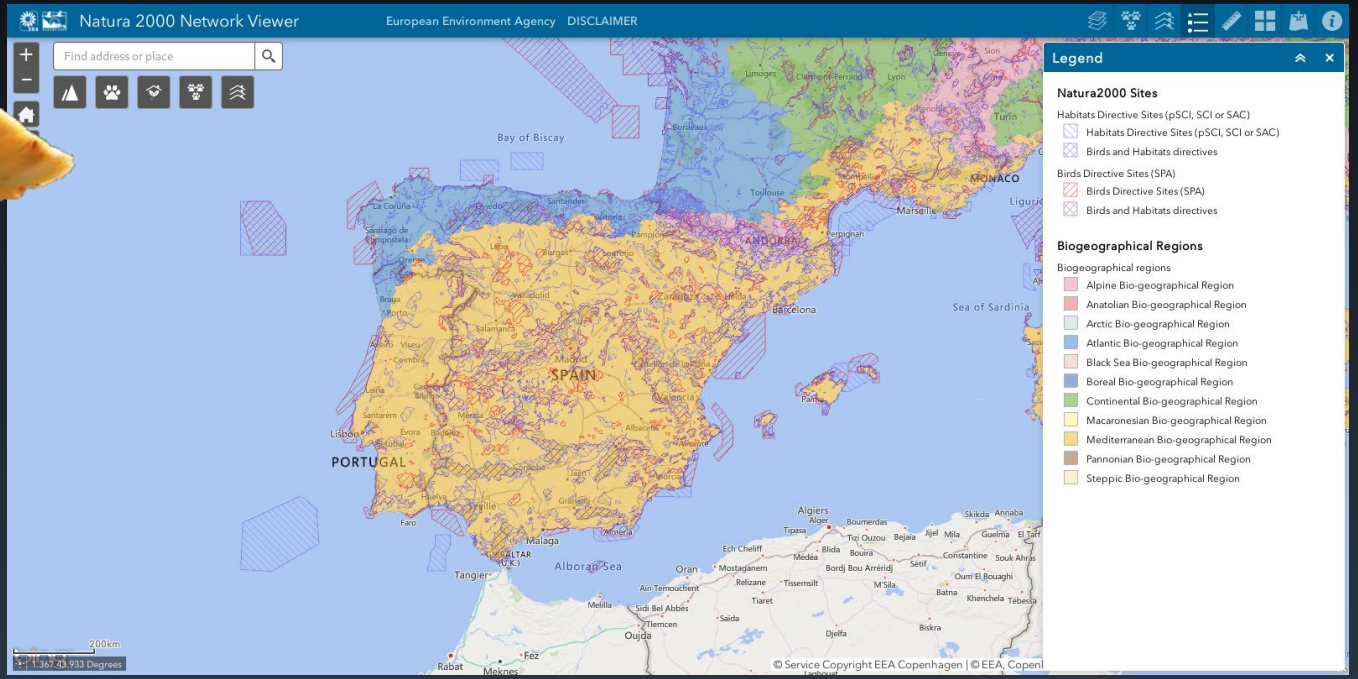


Photo by The New York Public Library on Unsplash

Photo by Daria Nepriakhina on Unsplash

Conservation in Europe - directives

Habitat and Bird directive reports, while done nationally, require regional approaches



Invasive species

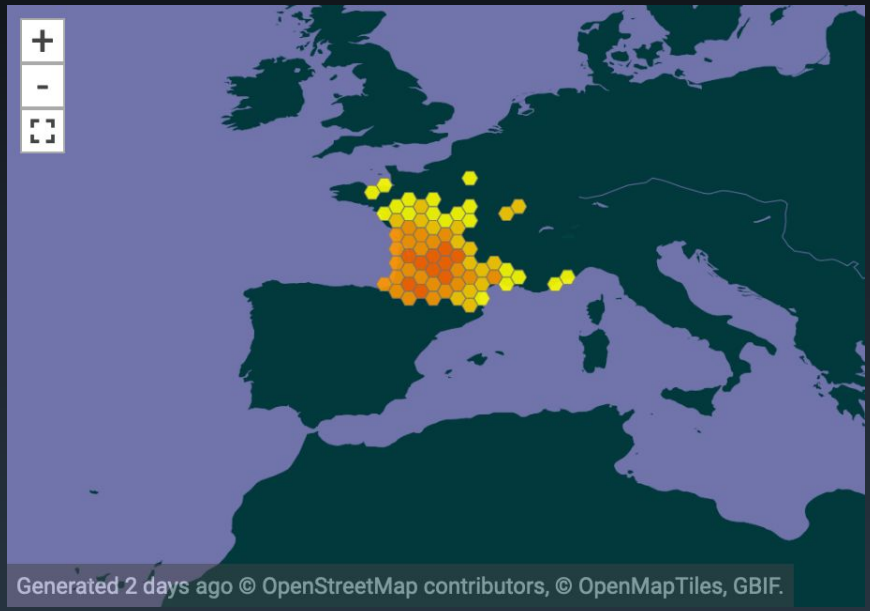
Yellow-legged Asian hornet (*Vespa velutina*) expansion in Europe

2005

Invasive species

Yellow-legged Asian hornet (*Vespa velutina*) expansion in Europe

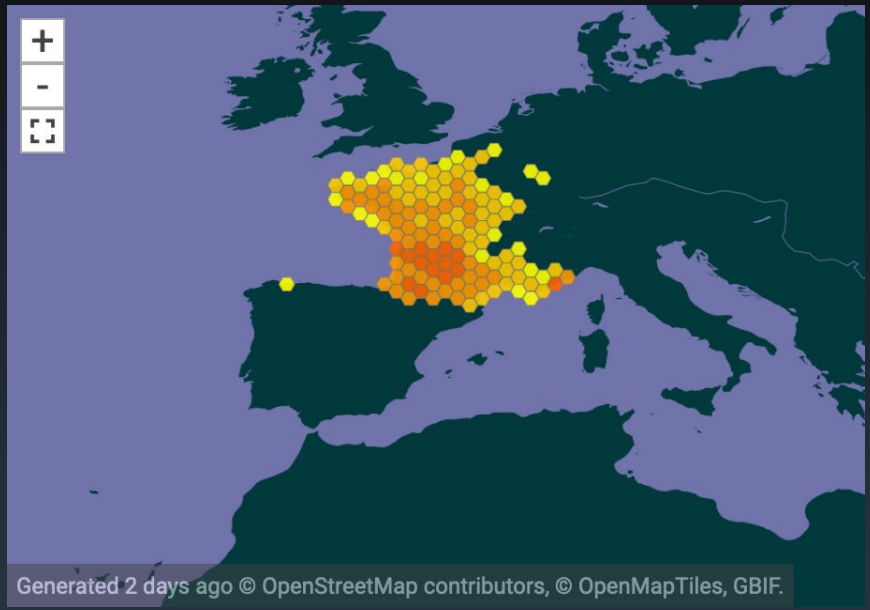
2010



Invasive species

Yellow-legged Asian hornet (*Vespa velutina*) expansion in Europe

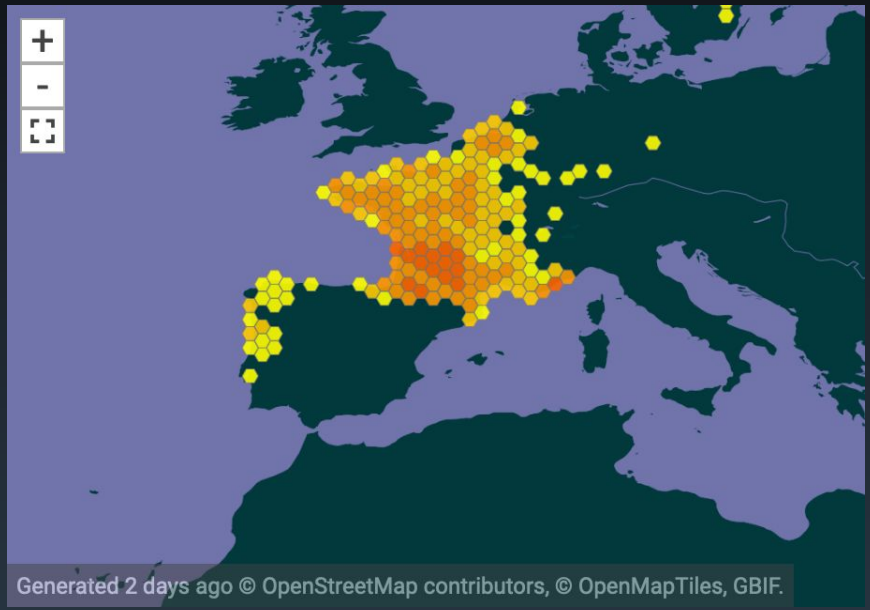
2015



Invasive species

Yellow-legged Asian hornet (*Vespa velutina*) expansion in Europe

2019



Challenges: biodiversity research community

Data requirements / biogeographic levels / conservation / legislation

Global ⟷ Regional ⟷ National ⟷ Local

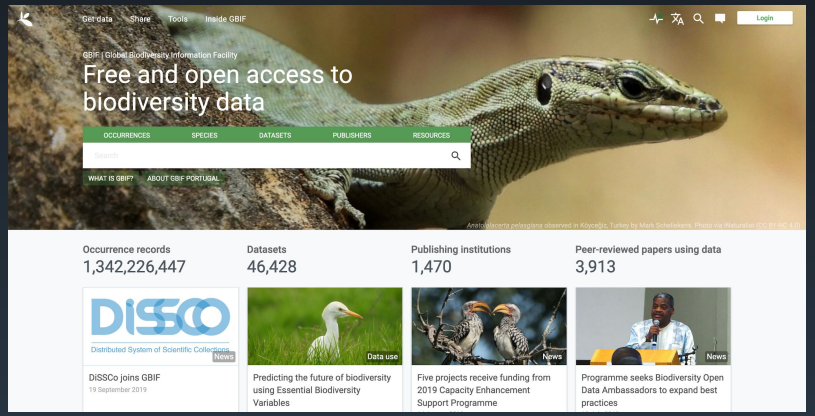
Community challenges

Need for front-office easy to use applications that unleash power of data and computational resources

GBIF data for global to local analysis

GBIF.org - global portal

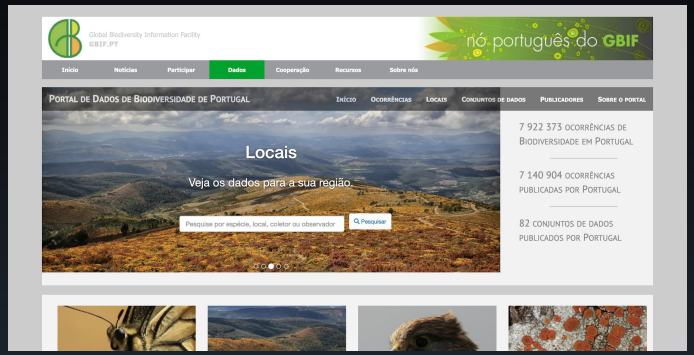
- services designed for the global community



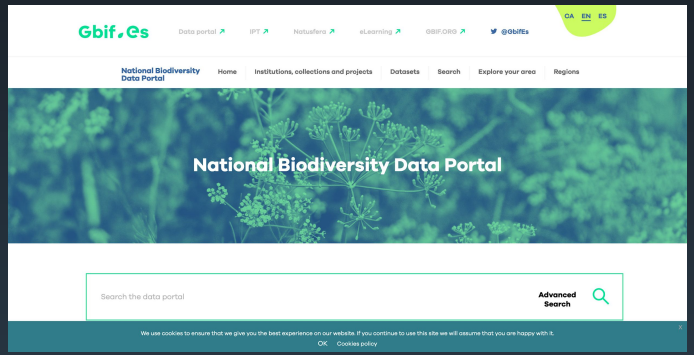
National portals

- customised services to support national priorities

GBIF National biodiversity portals



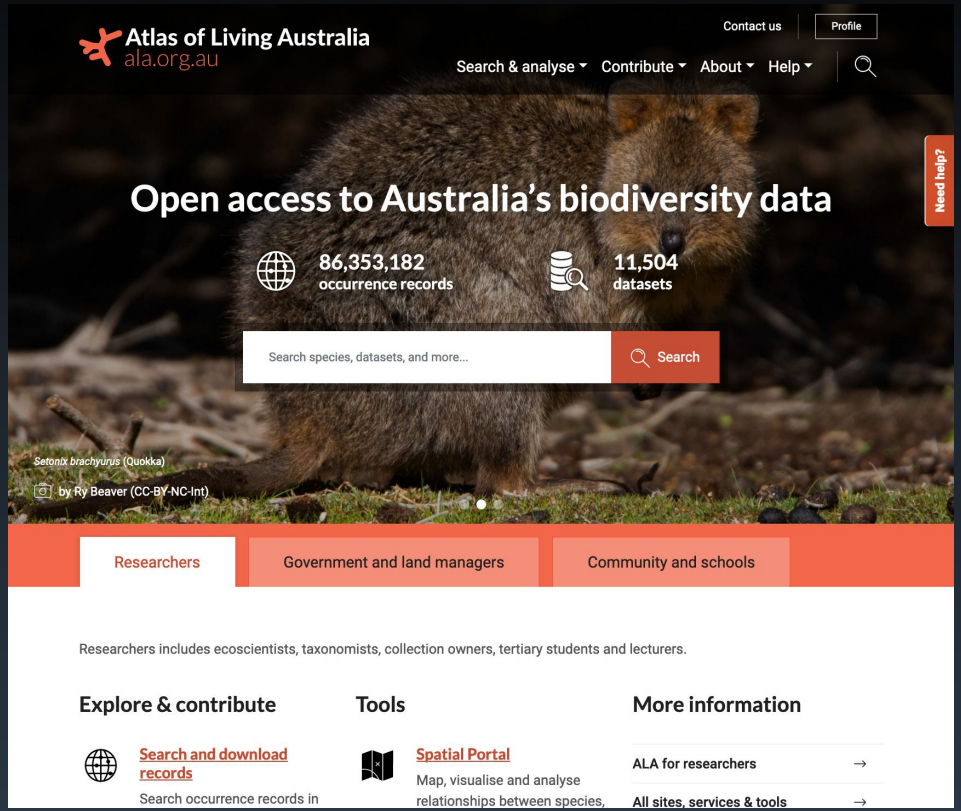
GBIF Portugal - http://dados.gbif.pt



GBIF Spain - http://datos.gbif.es

- national species list
- endemic species
- invasive species
- national protected areas
- national reports to international conventions
- national legislation (EIA)
- national / local initiatives (local administration / citizen science / ONGAs)

Atlas of Living Australia (ALA)



Free and open source IT infrastructure for the aggregation and delivery of biodiversity data.

https://www.ala.org.au/

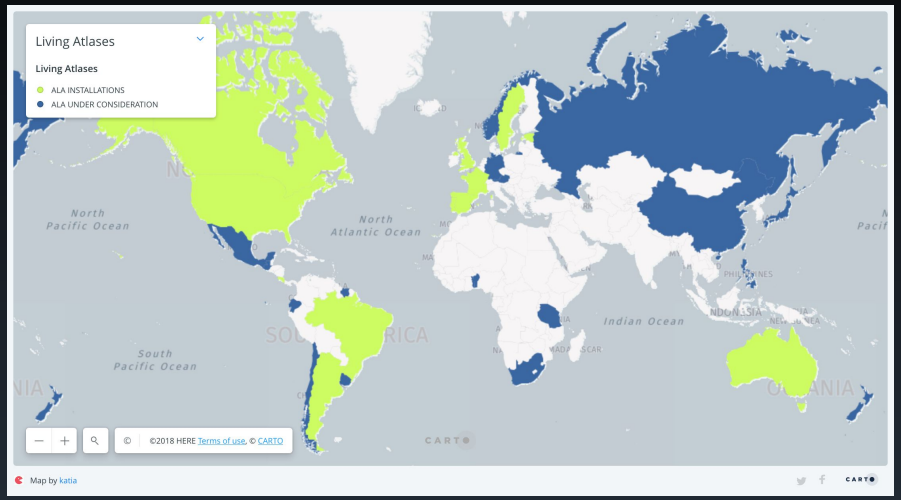
https://github.com/AtlasOfLivingAustralia

Living Atlases community

A community of practice formed by GBIF countries and organizations that adopted ALA platform to implement the national portal.

With support from the GBIF core work programme and members, is developing governance and technical support.

Living Atlases community



Youtube tutorials:

How to search and download biodiversity data in an Atlas

How to use regions/spatial module in an Atlas

More than 20 portals currently implemented, and 13 under consideration

Collective effort in support and collaboration (Slack), documentation and dissemination

https://living-atlases.gbif.org/

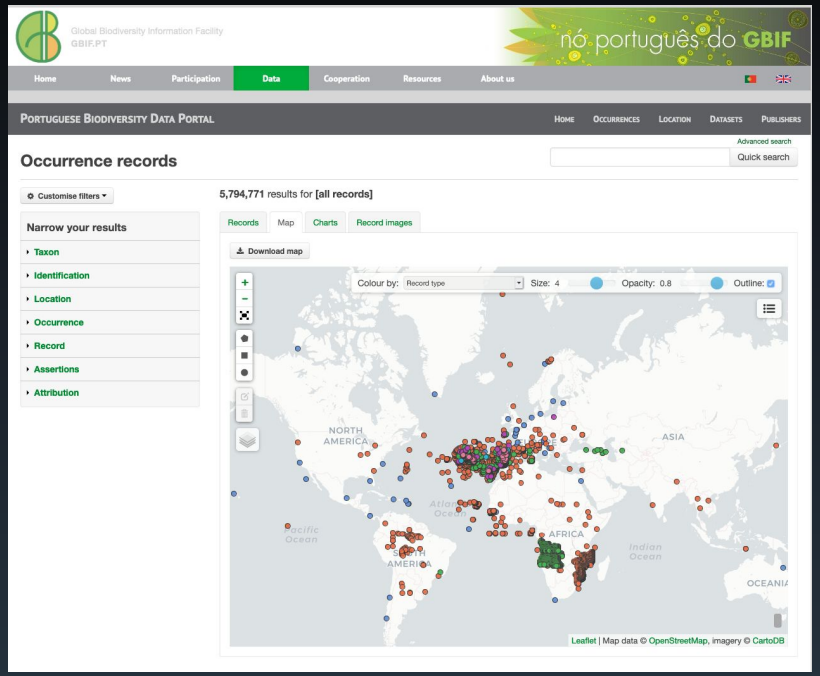
ALA platform

Atlas of Living Australia
ala.org.au

Modules for

- species information
- occurrence (table, maps, advanced search), images
- datasets, collections and institution information
- logger (usage metrics)
- species lists
- regions (webGIS)
- spatial portal (spatial analysis)
- phylogenies (PhyloLink)
- biodiversity citizen science sighting (BioCollect)
- volunteer NH specimen label transcription (DigiVol)

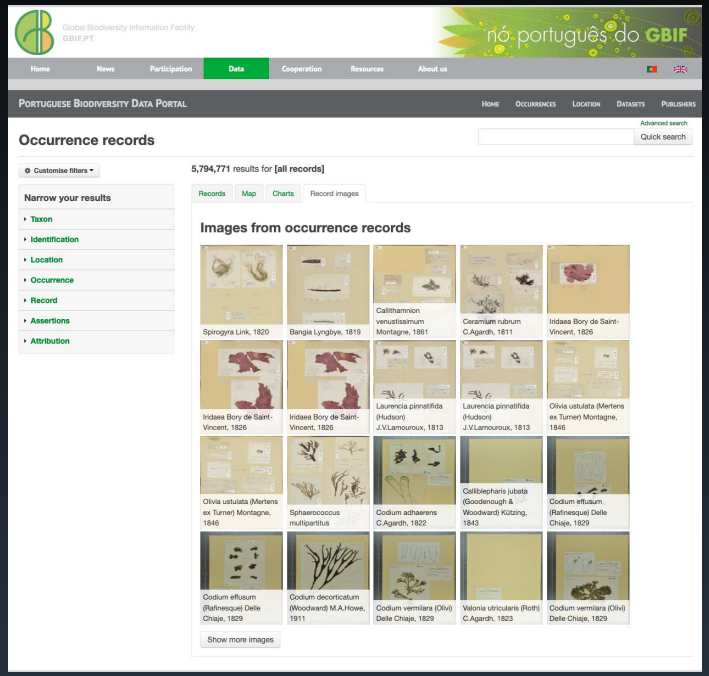
Living Atlases modules/services



Occurrences

- occurrence data (list, map)
- specimen image (image module)
- data QC annotations (±100 tests)
- preserves the original version of records
- large indexing field list
- extensive (customisable) filters
- occurrences “in your location”

Living Atlases modules/services



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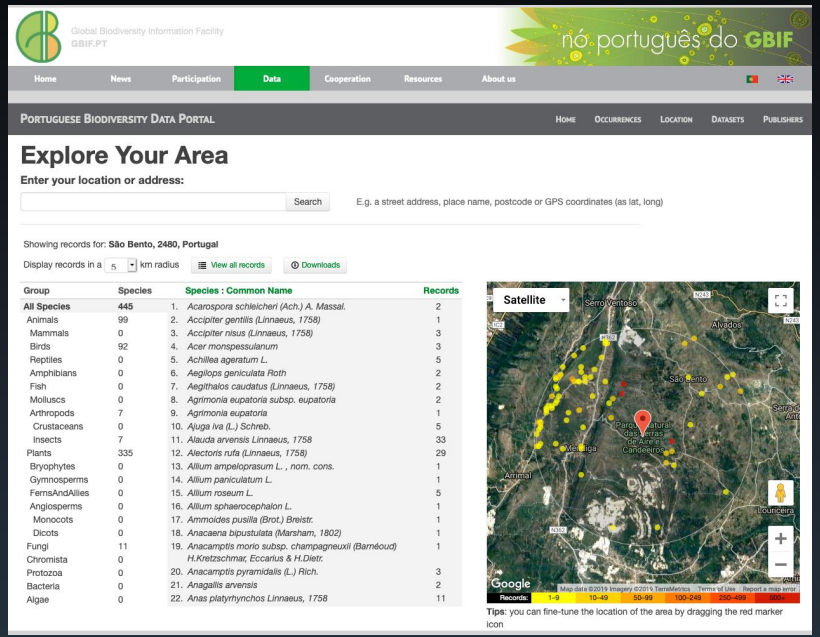

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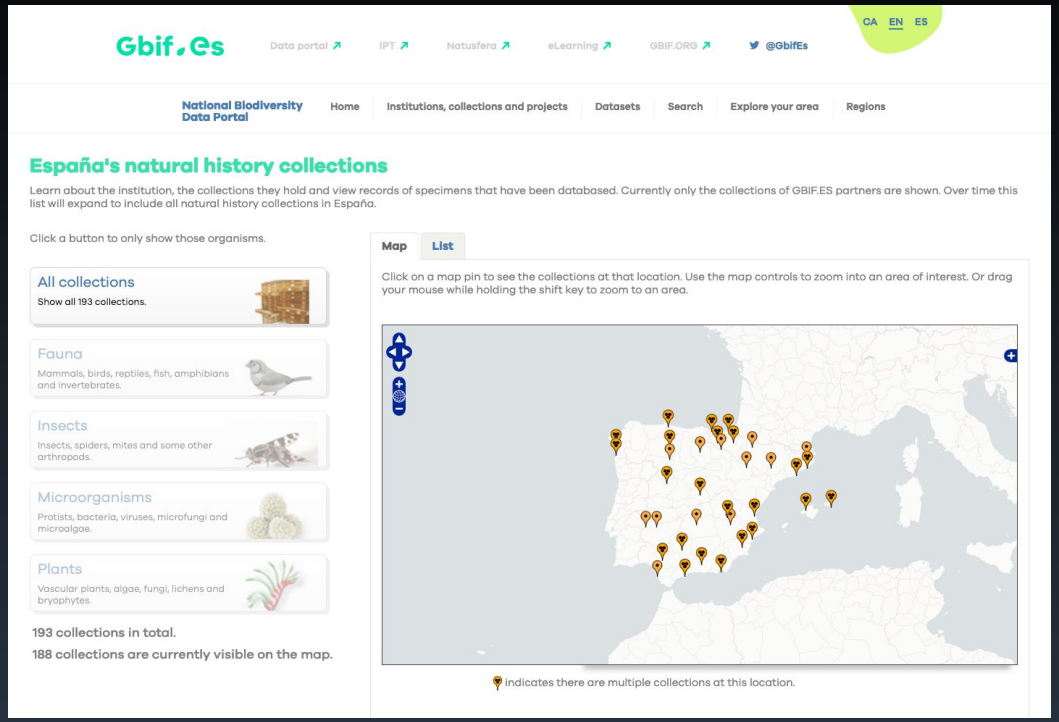
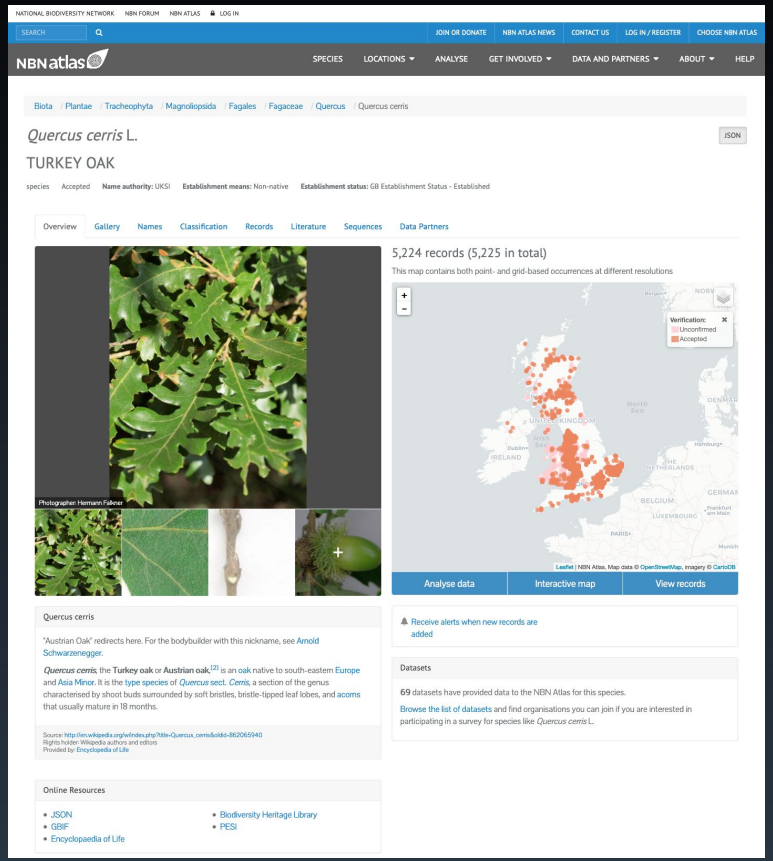


Collections

- institution list and description
- dataset list, description and dashboard
- usage statistics
- linked to occurrences

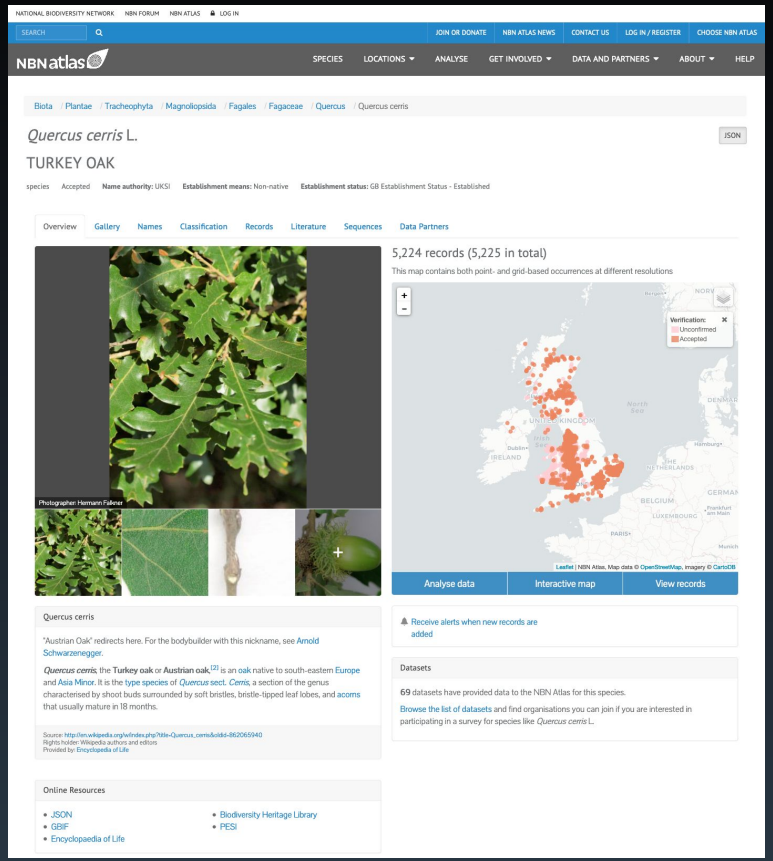
Living Atlases modules/services



Species pages

- aggregates data on
  - species description
  - common names
  - taxonomy
  - image gallery
  - sequence data
  - bibliography
- provides access to occurrence records, spatial analysis

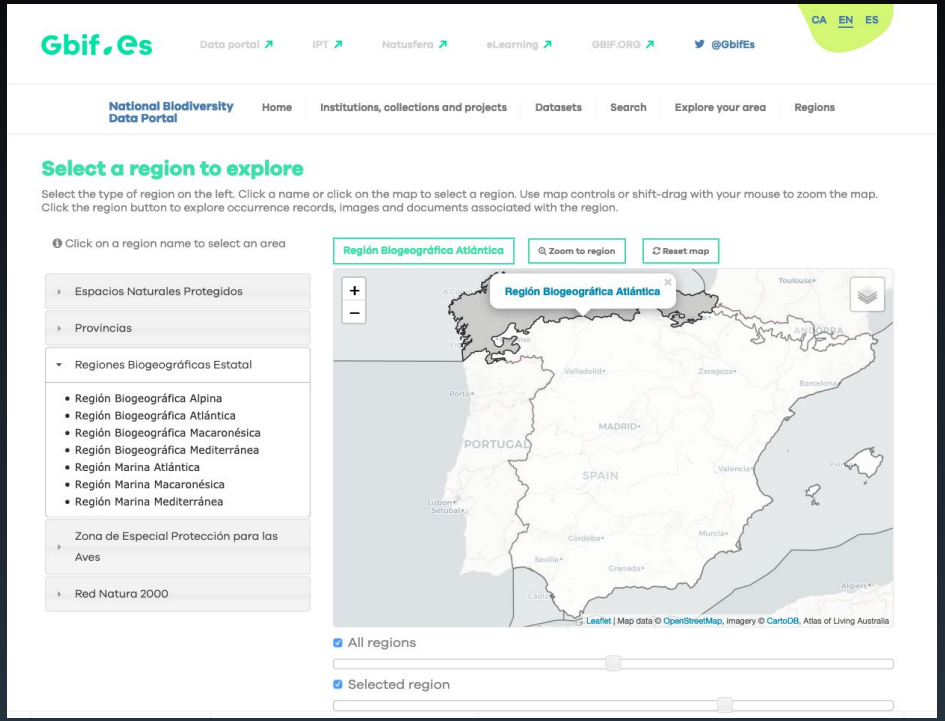
Living Atlases modules/services



Species lists

- Support to species lists for detailed data analysis
  - different taxonomic criteria
  - endangered species
  - invasive species
  - thematic lists
  - national lists

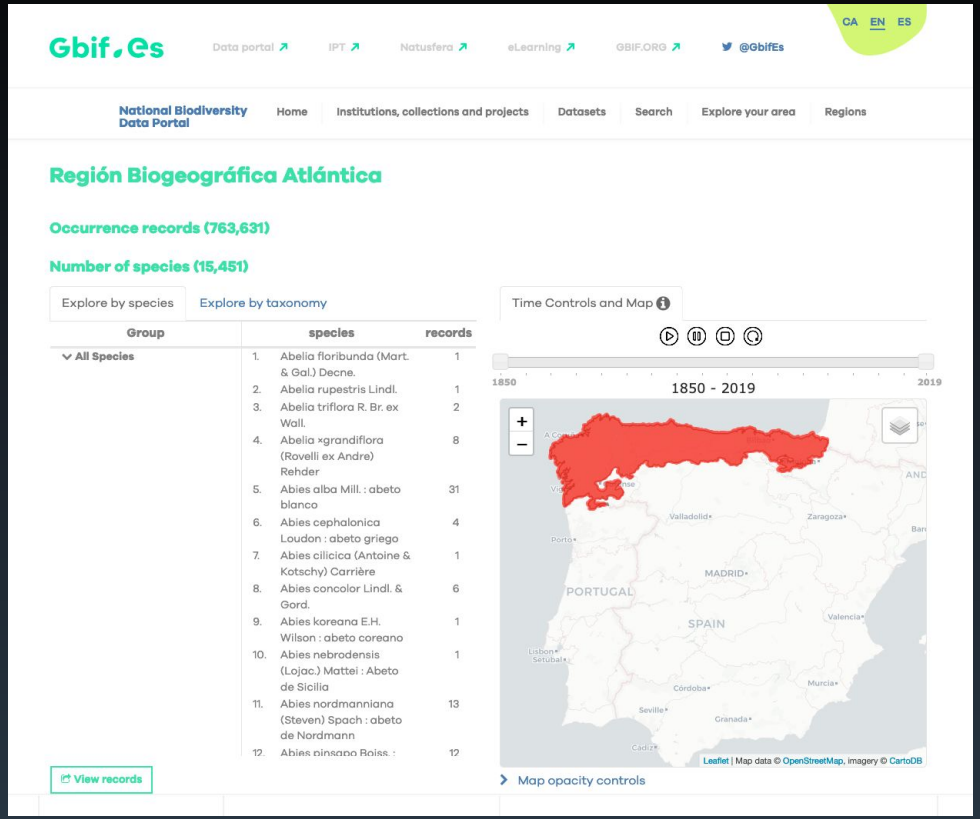
Living Atlases modules/services



Regions

- spatial layers
- summary reports per geographic area
- list of species with number of occurrences
- explore taxonomy

Living Atlases modules/services



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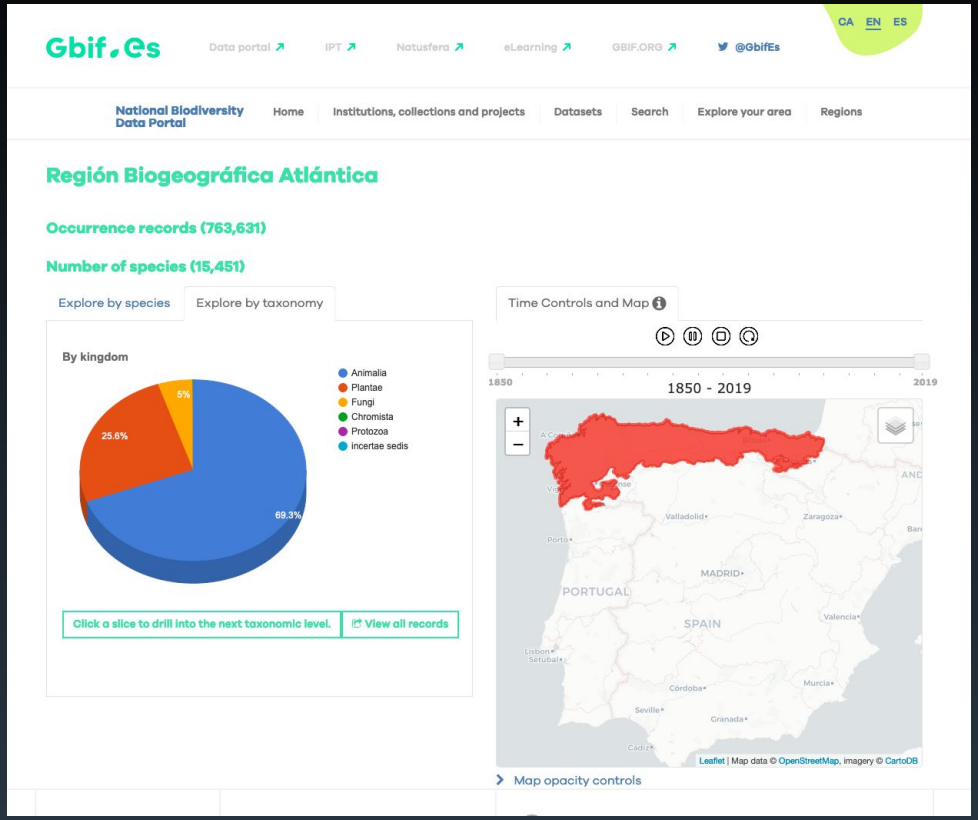
Living Atlases modules/services



Regions

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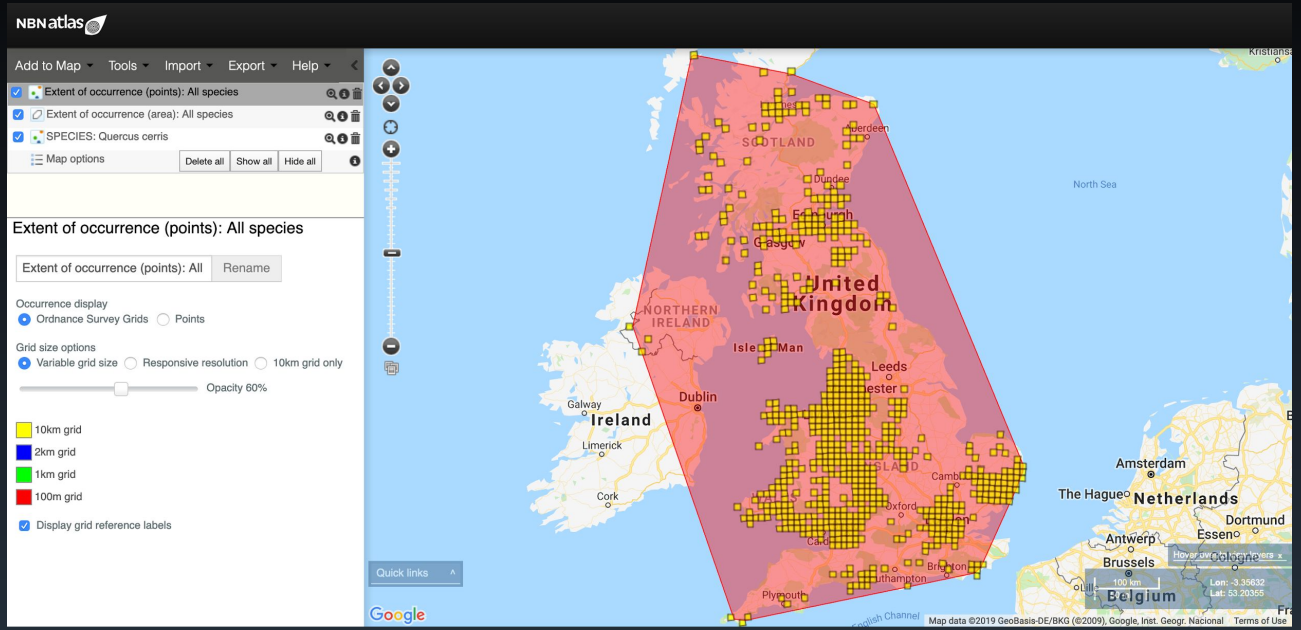
Living Atlases modules/services



Spatial Portal

- webGIS
- allows to define area for analysis
- import spatial layers
- several analysis

Living Atlases modules/services

Application support

- ALA API web services
- ALA4R available at CRAN

Other components

- Sightings (citizen science)
- DigiVol (crowdsourcing for label transcription by volunteers)
- Phyloking (analysis of phylogenies)
- BioCollect (field book for biologists, ecologists and natural resource managers)
- User authentication (CAS)

ALA architecture

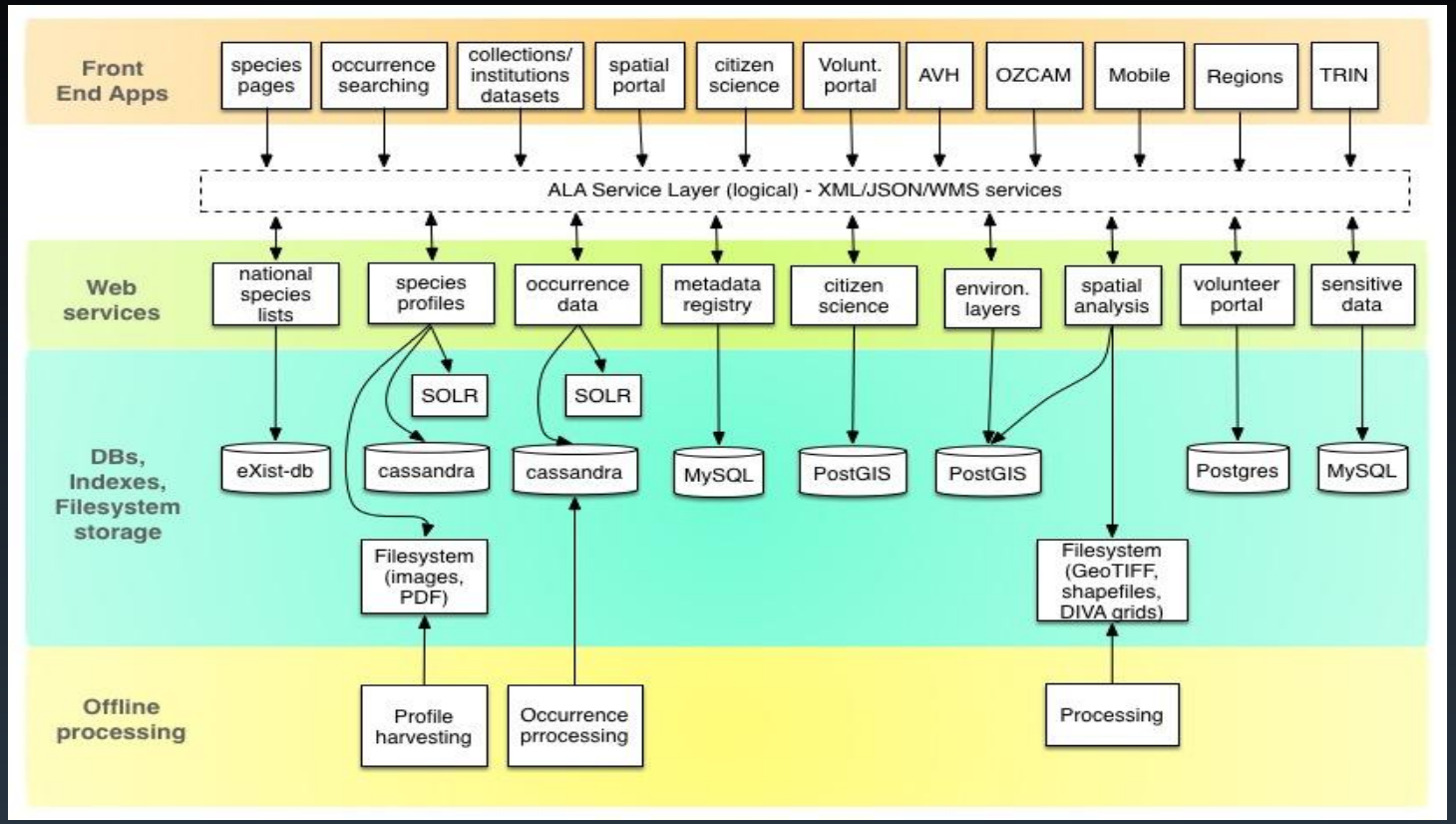


image by David Martin (ALA)

Living Atlases technologies

Languages

Web applications

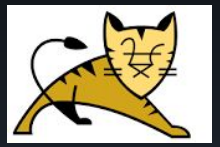
WAR

Databases

PostgreSQL

Indexing

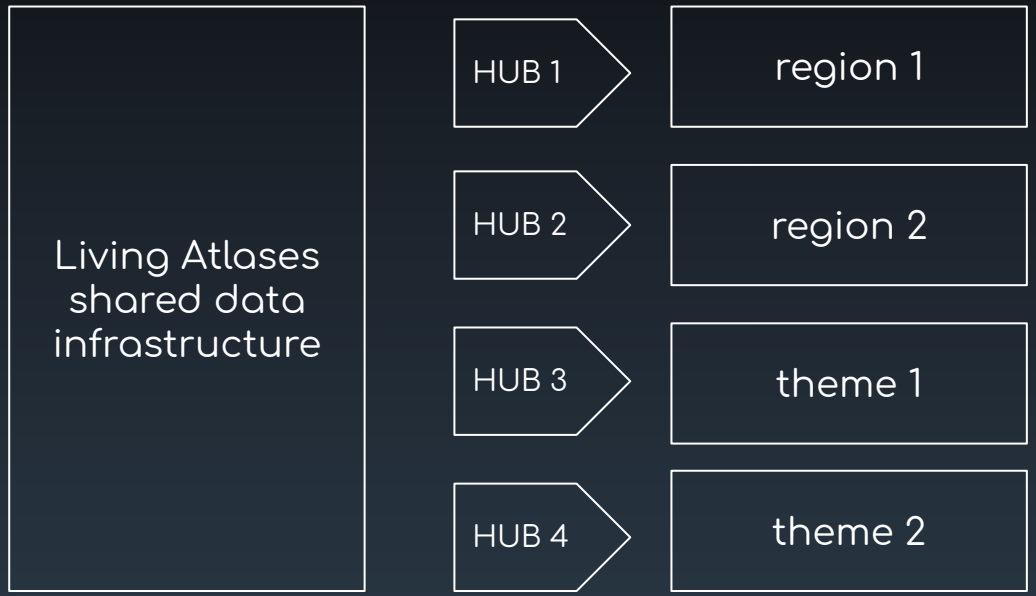
Web server



Implementation

Living Atlases - Data HUBs - sharing infrastructure

Build different front-office web applications using the same shared infrastructure - faceting data



Example:

Living Atlases - sharing infrastructure at Iberian level

Living Atlases shared data infrastructure

HUB 1 → PT

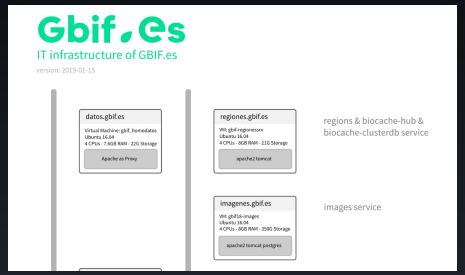
HUB 2 → ES

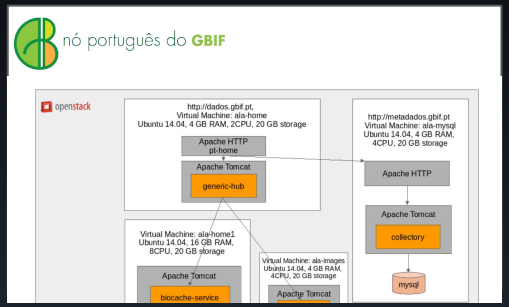
... → region 1

HUB x → theme 1

invasive species, endangered species, Iberian floras and faunas...

Living Atlases - vision - sharing infrastructure at Iberian level





- improve analysis
- improve availability
- improve biodiversity management
- help sound and better science

IFCA Instituto de Física de Cantabria

INCD Infraestrutura Nacional de Computação Distribuída

in the scope of LifeWatch SPAIN and PORBIOTA

GBIF IN IBERIA

BY THE NUMBERS

Species occurrence records

27.7 + 7.1 = 34.8 M

Datasets

309 + 82 = 391

Publishers

102 + 21 = 123

Thank you!

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