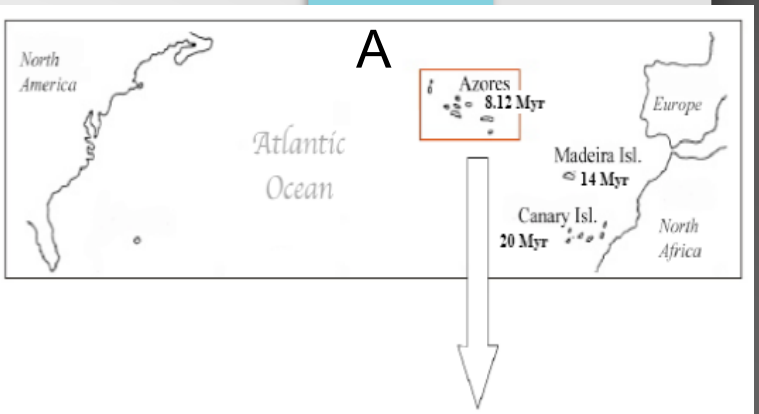
PORBIOTA

Portuguese E-Infraestruture for Biodiversity

iDigBio- Missouri Botanical Garden, St. Louis, 2 to 3 December 2015

B - AZORES



Corvo
0.71 Myr

Flores
2.16 Myr

Western Group

Graciosa
2.50 Myr

Terceira
3.52 Myr

S. Jorge
0.55 Myr

Faial
0.73 Myr

Pico
0.25 Myr

Central Group

S. Miguel
4.01 Myr

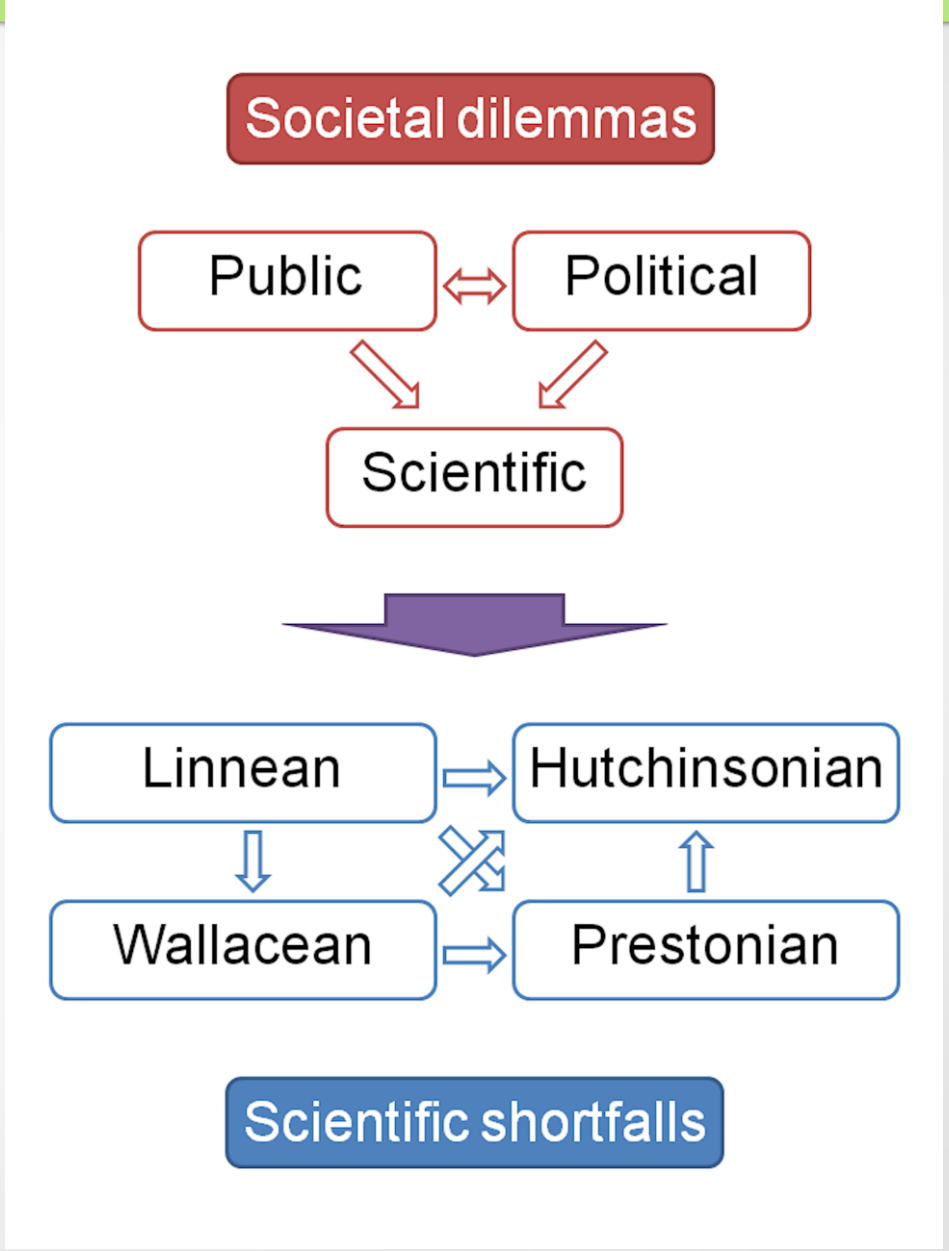
Eastern Group

S. Maria
8.12 Myr

The seven impediments in invertebrate conservation and how to overcome them

Pedro Cardoso, Terry L. Erwin, Paulo A.V. Borges and Tim R. New

Biological Conservation (2012)

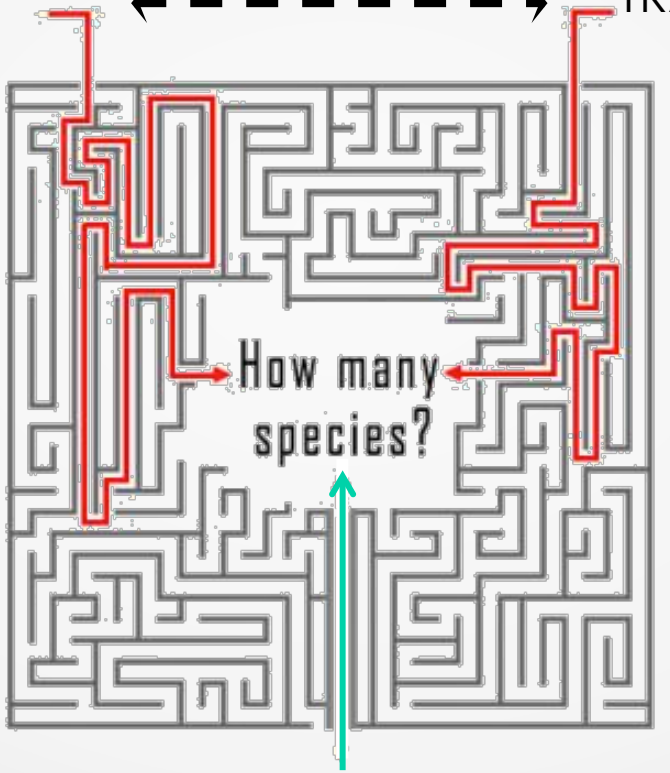


1. Compiling diversity data

HOW?

CLASSIC TAXONOMY

TRADITIONAL ECOLOGY



COLLECTIONS

(biased towards **rare** species)

IS THERE A SHORTCUT?

SAMPLING

(biased towards **common** species)

USE OF SPECIES MODELLING

Azorean Biodiversity Portal

Systematics and Biodiversity (2010), **8(4)**: 423–434

Taylor & Francis
Taylor & Francis Group

Perspective

The Azorean Biodiversity Portal: An internet database for regional biodiversity outreach

PAULO A.V. BORGES[1†], ROSALINA GABRIEL[1†], ANA M. ARROZ[1†], ANA COSTA[2], REGINA T. CUNHA[2], LUÍS SILVA[2], ENÉSIMA MENDONÇA[1], ANTÓNIO M. F. MARTINS[2], FRANCISCO REIS[3] & PEDRO CARDOSO[1,4]

[1]Azorean Biodiversity Group – CITAA, Departmento de Ciências Agrárias, Universidade dos Açores, 9701-851 Angra do Heroísmo, Terceira, Açores, Portugal
[2]CIBIO (Research Center in Biodiversity and Genetic Resources) – Pólo Açores, Departmento de Biologia, Universidade dos Açores, 9501-801 Ponta Delgada, Portugal
[3]Centro de Estudos do Clima, Meteorologia e Mudanças Globais (C_CMMG), Dep. Ciências Agrárias, Universidade dos Açores, 9701-851 Angra do Heroísmo, Portugal
[4]Smithsonian Institution, National Museum of Natural History, 10th & Constitution NW, MRC 105, Room E-509, Washington, DC 20560-0105, USA

(Received 15 September 2009; revised 31 May 2010; accepted 3 August 2010)

December 2010

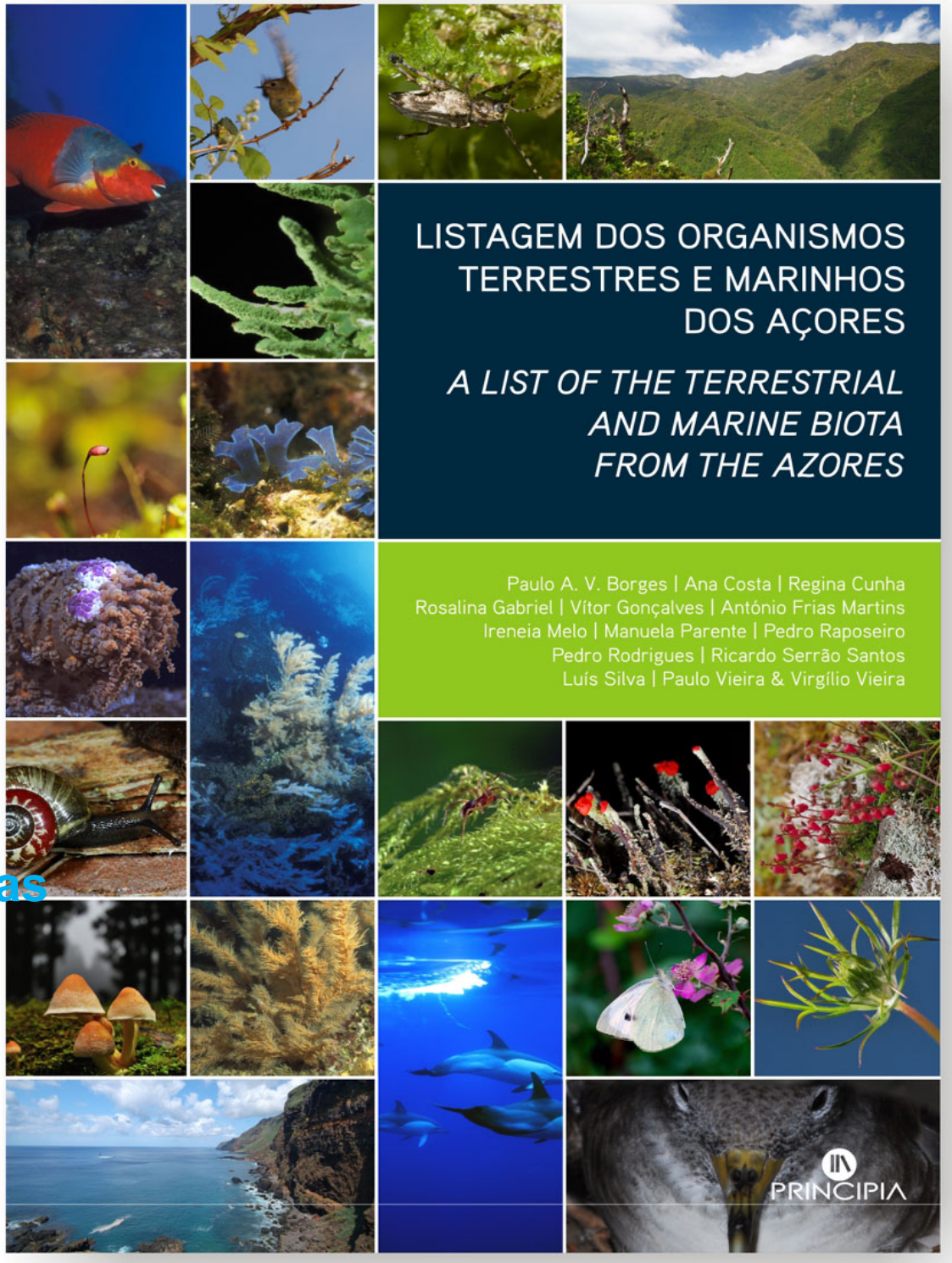
	GATHERING DATA	FEEDING a DATABASE	SHARING DATA
goal	- to obtain all the records available for each species	- to evaluate and validate taxonomical information and the quality of the data	- to provide: - taxonomical information - biodiversity accounts, such as richness or endemism - distribution maps - links and news - detailed identification of taxa upon request by users
source	- published: - papers, - books - unpublished: - Field reports, - Project reports, - Specialist documents, - Herbaria and animal collections	- documents - pictures to illustrate each species - Nature photographs - Syncroscopy images - Microscopy photos	- team identification and contacts - team publications - images - free pdf documents
location	- Azorean islands	- transforming alpha-numeric information into a georreferenced grid map (500 x 500 m)	- provide detailed distribution data (tabulated or GIS format) upon request by users
time	- through historical time	- register or estimate the historical year of the observations	- detailed temporal data upon request by users
	compile and strengthens data	interpret and validate information	collaboratively using and enjoying information
	DATA OVERLAPPING	ATLANTIS DATA BASE	AZOREAN BIODIVERSITY PORTAL

Autores (Authors)

Paulo A. V. Borges, Ana Costa, Regina Cunha, Rosalina Gabriel, Vítor Gonçalves, António Frias Martins, Ireneia Melo, Manuela Parente, Pedro Raposeiro, Pedro Rodrigues, Ricardo Serrão Santos, Luís Silva, Paulo Vieira & Virgílio Vieira

Objective:

The main goal of this book was to list, as rigorously as possible, all the known terrestrial, freshwater and marine fungi, plants and animals of the Azores.



ATLANTIS 3.1

www.atlantis.angra.uac.pt/atlantis/common/index.jsf

Início | Contacto | Ajuda | Aviso legal | Base de dados | Mendonça, Enésima [ENESIMA] | Sair

Base de Dados da Biodiversidade dos Açores

Banco de Datos

União Europeia
FEDER

PROCONVERGENCIA AÇORES
CONSTRUIR O FUTURO

SRCTE
SECRETARIA REGIONAL DA CIÊNCIA, TECNOLOGIA E EQUIPAMENTOS

www.atlantis.angra.uac.pt/atlantis/common/index.jsf#

BASE DE DADOS DA

Biodiversidade DOS AÇORES

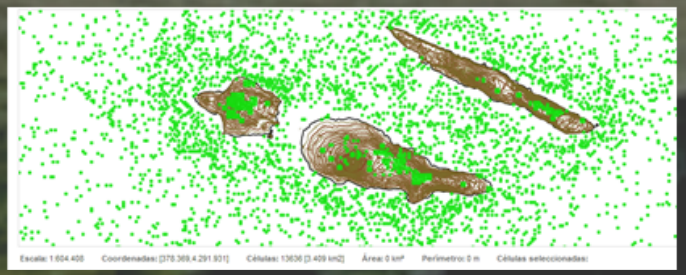
bio Natura

INTERREG IIIB
MAC/2-3/A3 03/MAC/2.3/A5

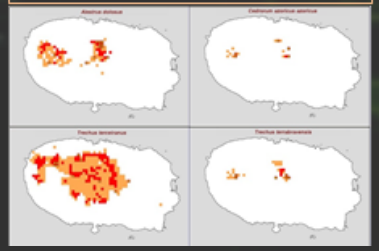
Data

- Online/upon request distribution data for all species - Azores (500x500 m; 1850 -2014).
- Available in Shape-file & Excel files.
- Queries performed at different scales (e.g. island; place on an island).

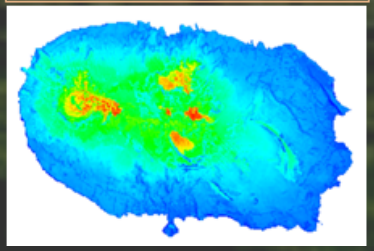
Distribution map of terrestrial & marine species



Predicting realized species distributions

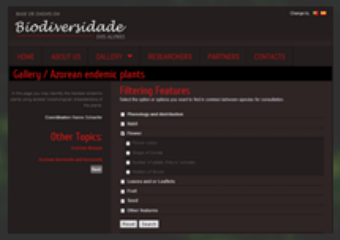


Reserve selection Complementarity Tool

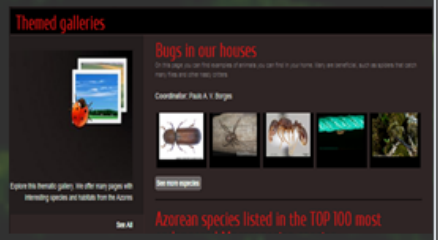


ID keys & Thematic pages

- Online ID keys using different traits and morphological characteristics of the species. (a)
- Themes: urban insects; invasive species, etc. (b)



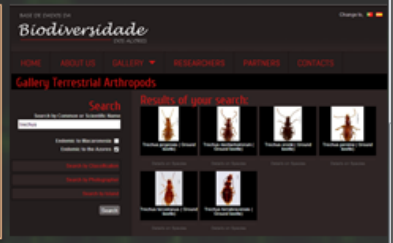
(a)



(b)

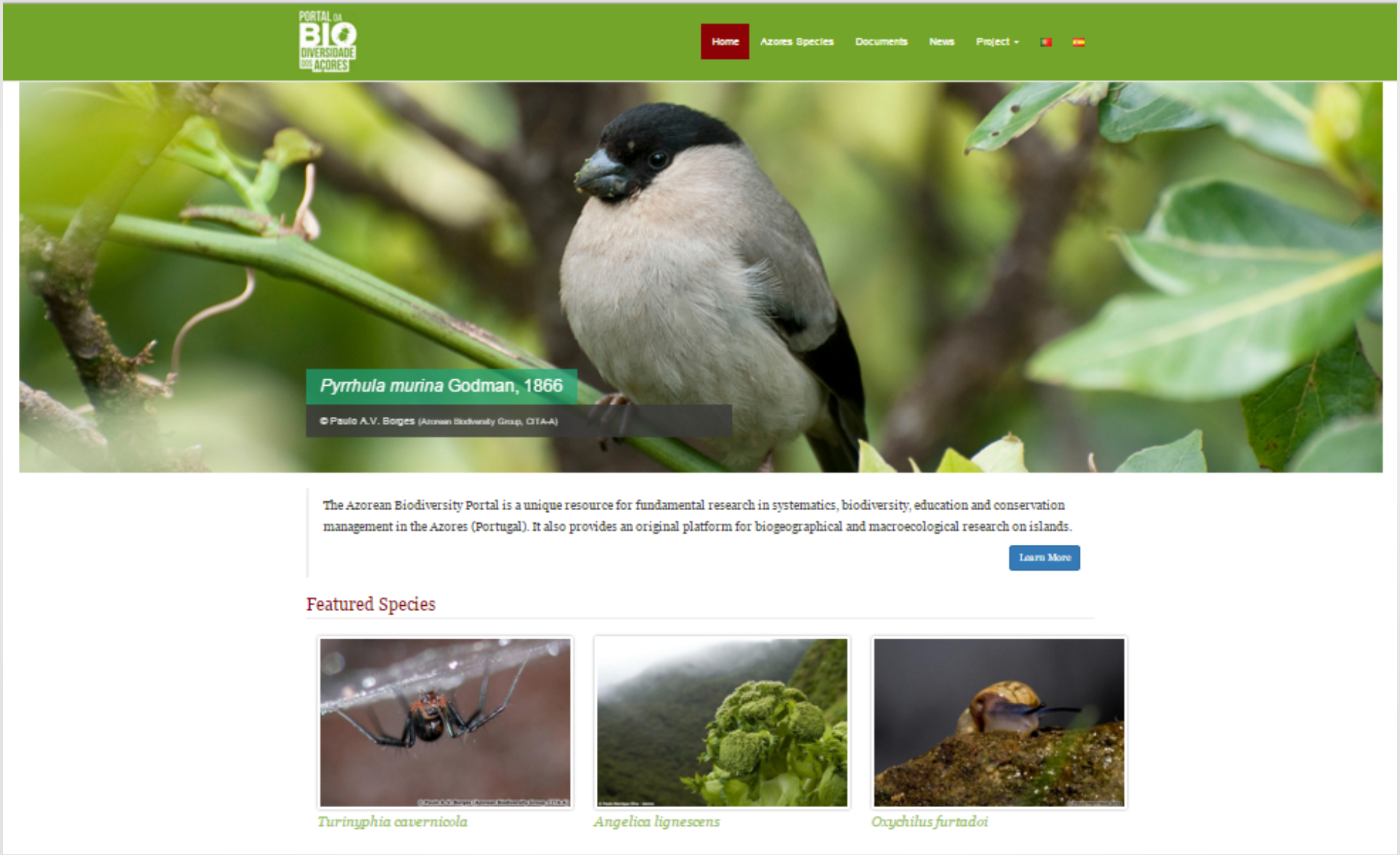
Images

- Free access images of all biota from multiple photographers.
- We have at least one image to *ca.* 60% of the species.
- We aim to include living & macro pictures of every Azorean species.



Governo dos Açores · União Europeia · PROCONVERGÊNCIA AÇORES · FCT Fundação para a Ciência e a Tecnologia · CE3C Centre for Ecology, Evolution and Environmental Changes · azorean biodiversity group

Azores Bioportal (new version since October 2015: http://azoresbioportal.uac.pt/



Species File

Gibbaranea occidentalis Wunderlich, 1989

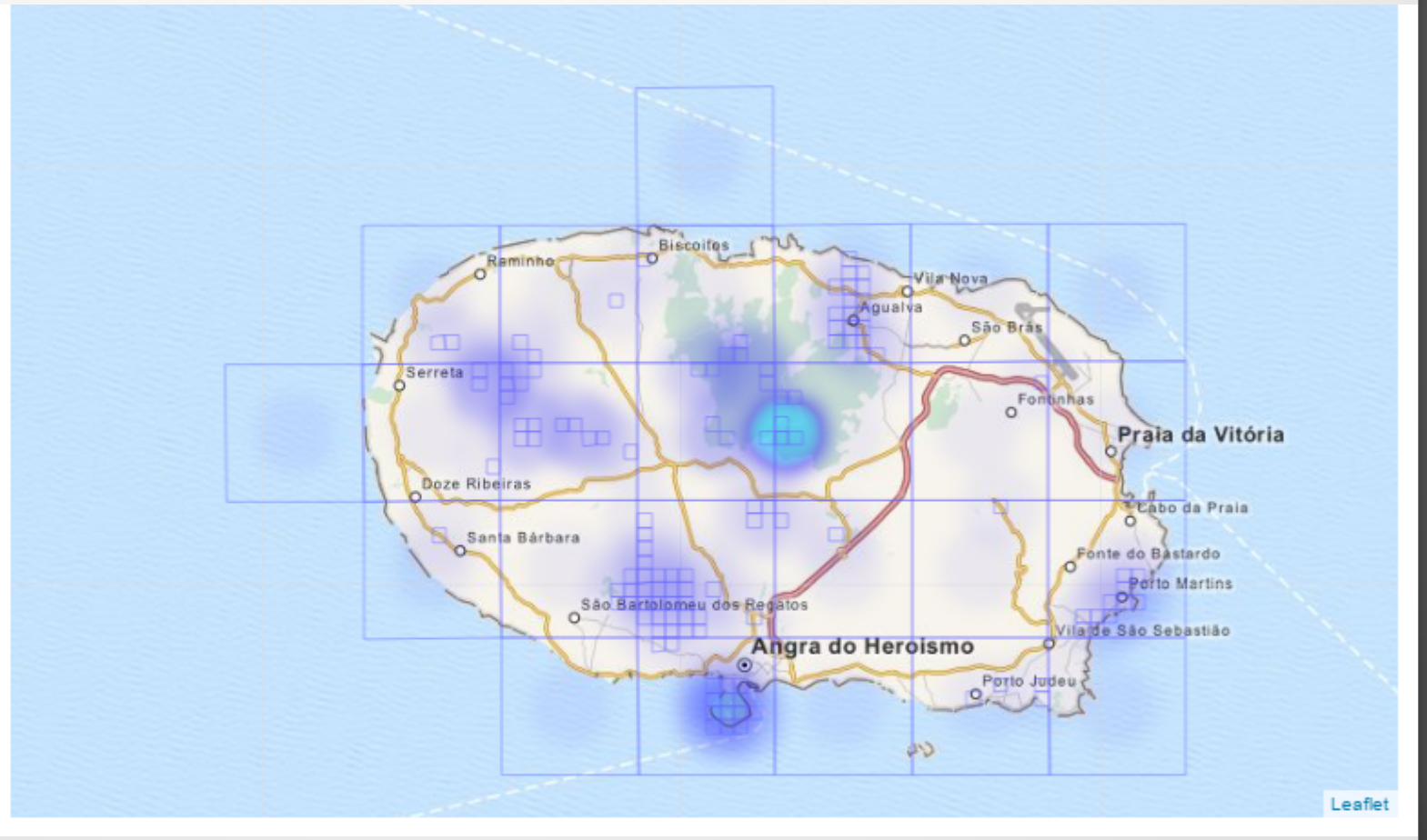
Orbweavers, Orb weavers

Description | Synonymies 4 | Gallery 5 | Citations 108 | Records 935

Taxonomy	
Reino	Animalia
Filo	Arthropoda
Classe	Arachnida
Ordem	Araneae
Família	Araneidae
Género	Gibbaranea
Espécie	*Gibbaranea occidentalis*

Taxon validated by the document
ISLAND-BIODIV: Listagem dos Artrópodes capturados com armadilha SLAM - Outono 2013

Detailed distribution maps



A Marine species

Physeter macrocephalus Linnaeus, 1758

Scientific Name

Sperm whale

Description | Synonymies | Gallery 6 | Citations 3 | Records 1349

Taxonomy	
Reino	Animalia
Filo	Chordata
Classe	Mammalia
Ordem	Cetacea
Família	Physeteridae
Género	Physeter
Espécie	*Physeter macrocephalus*

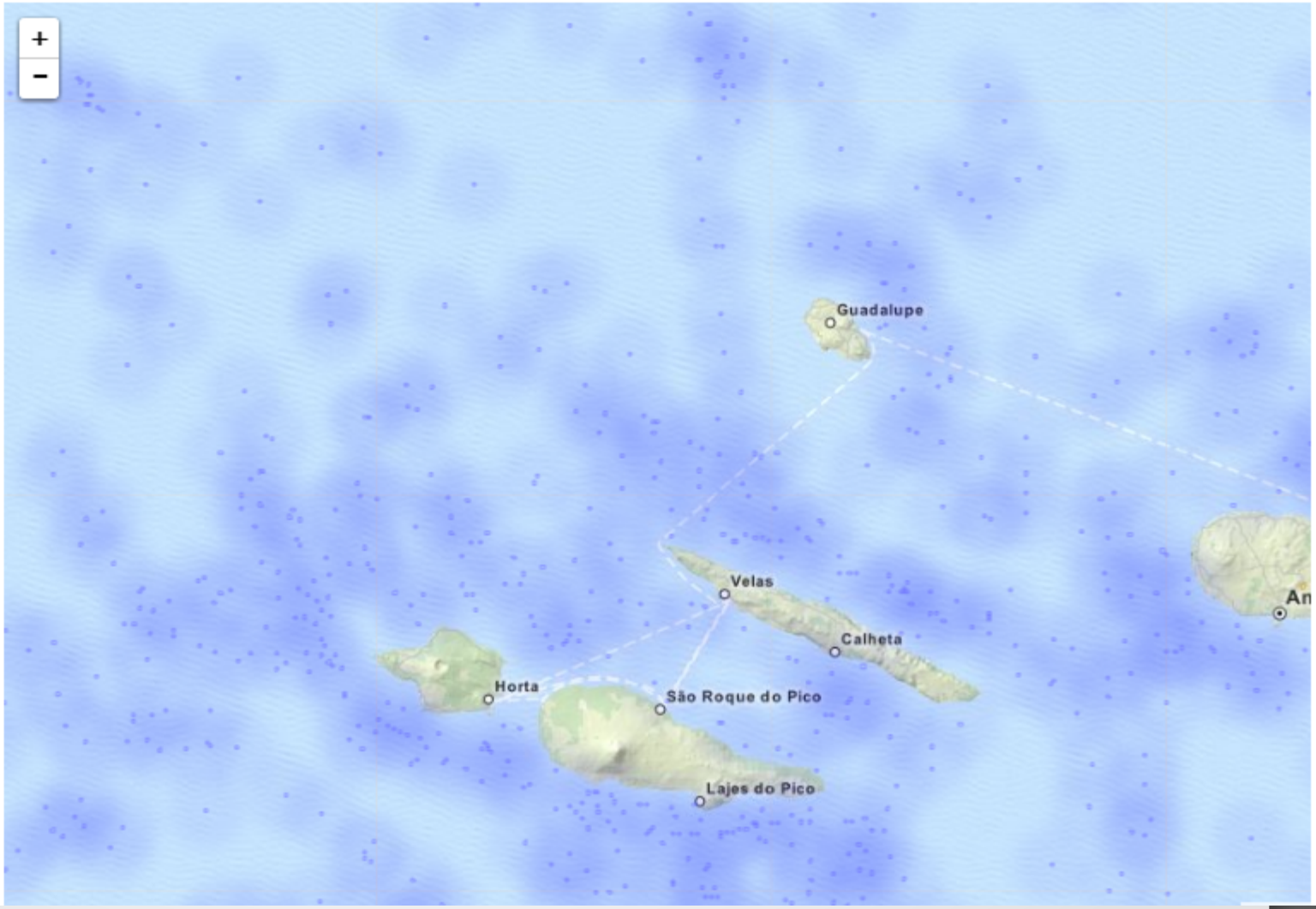
Taxon validated by the document

Lista dos mamíferos marinhos dos Açores 2010

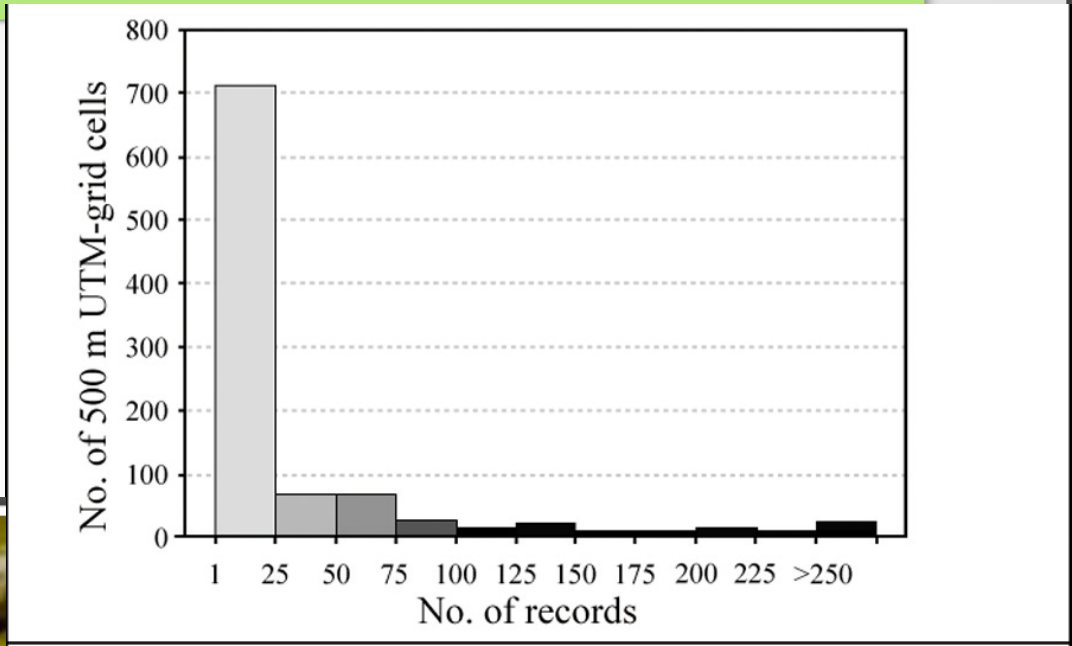
A large cloud of distribution points

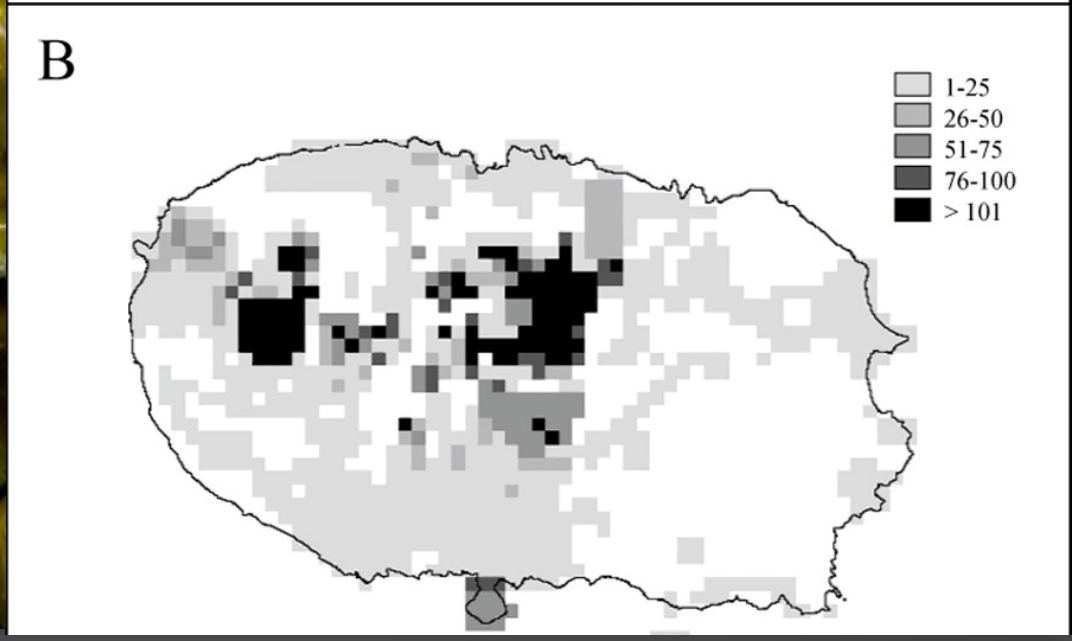
Layers

∑ 1349 Physeter macrocephalus



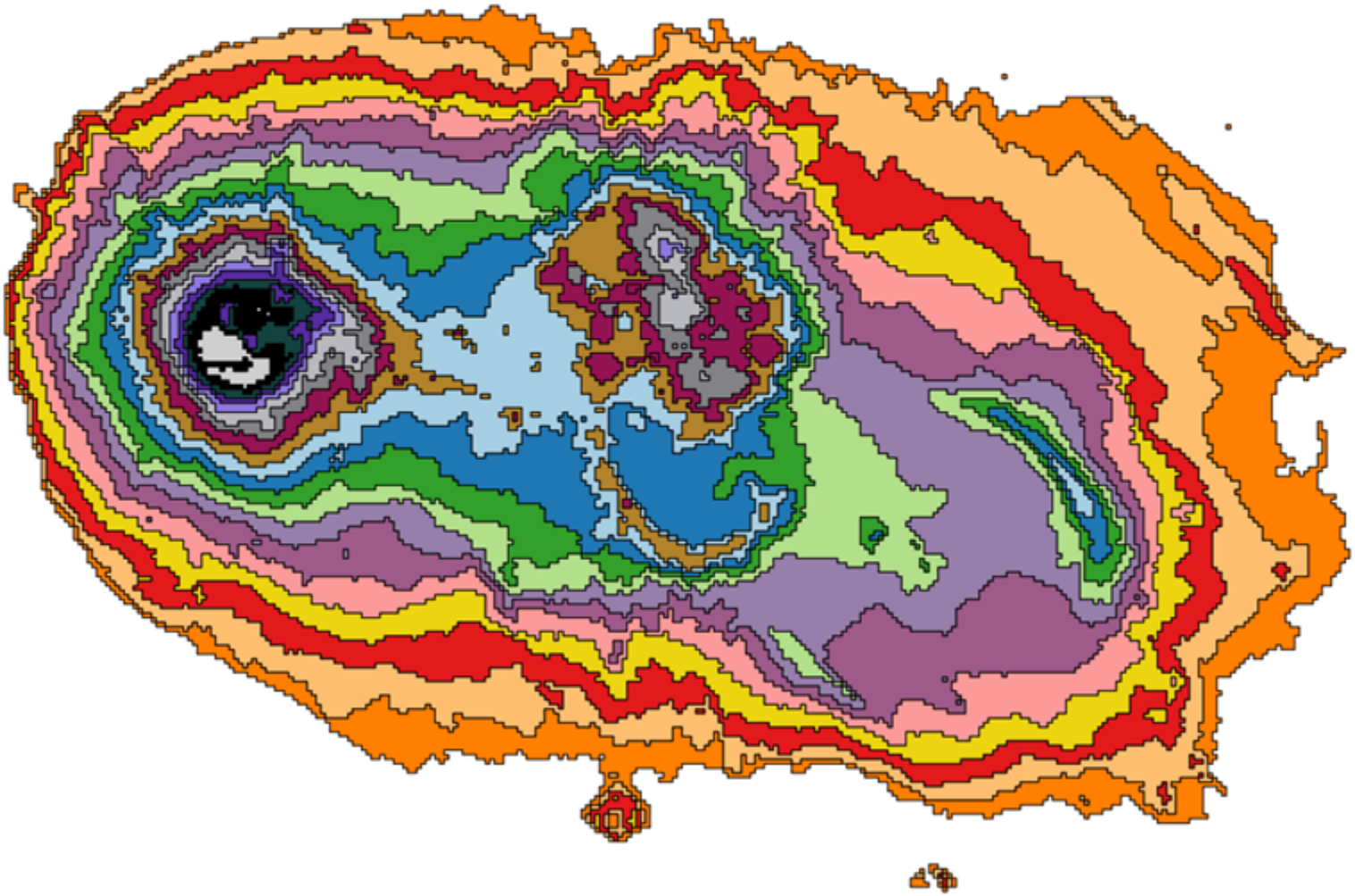
Few cells well sampled





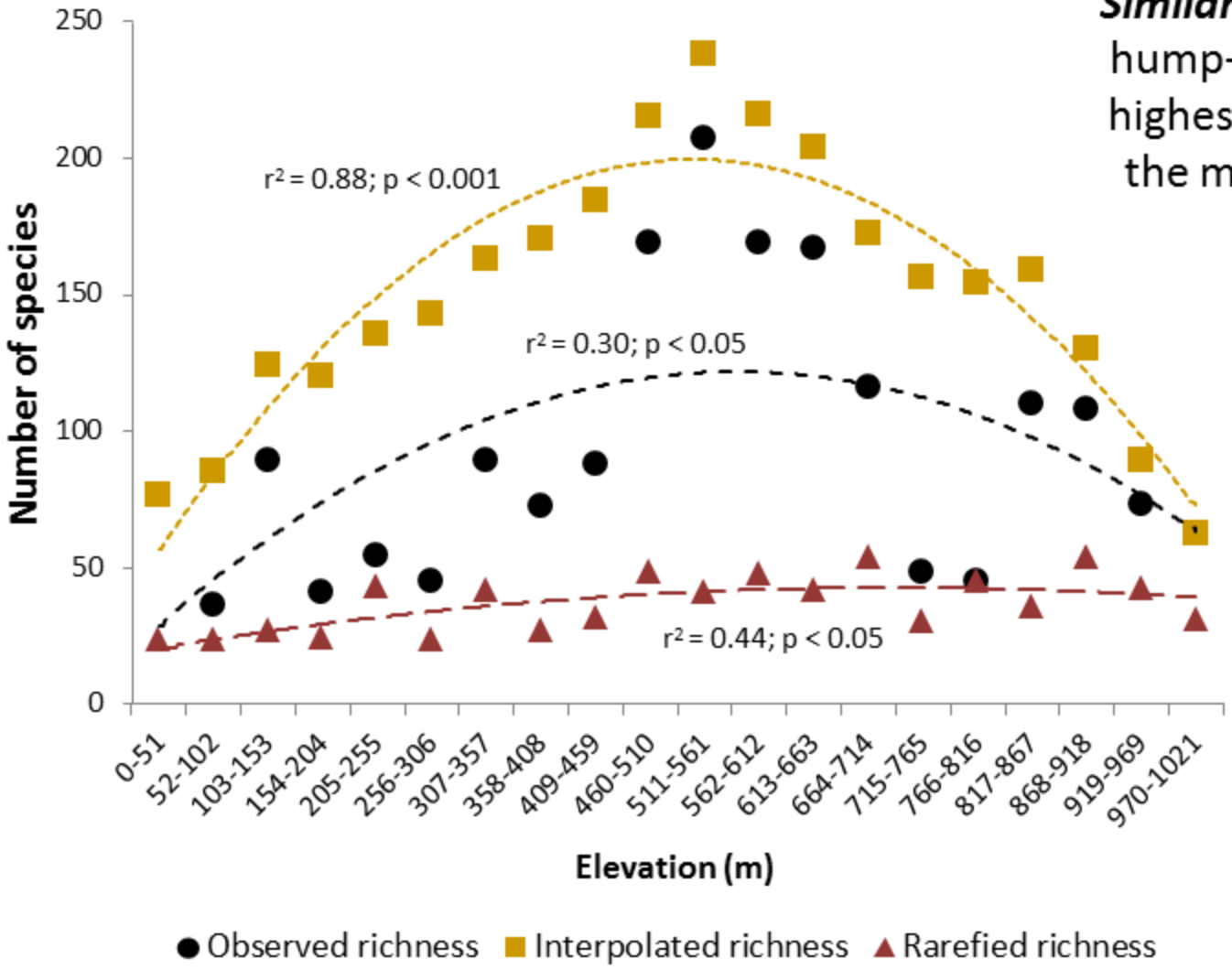
Defining elevational bands

Elevational gradient (0 – 1021 m) divided in 20 adjacent 51 m bands



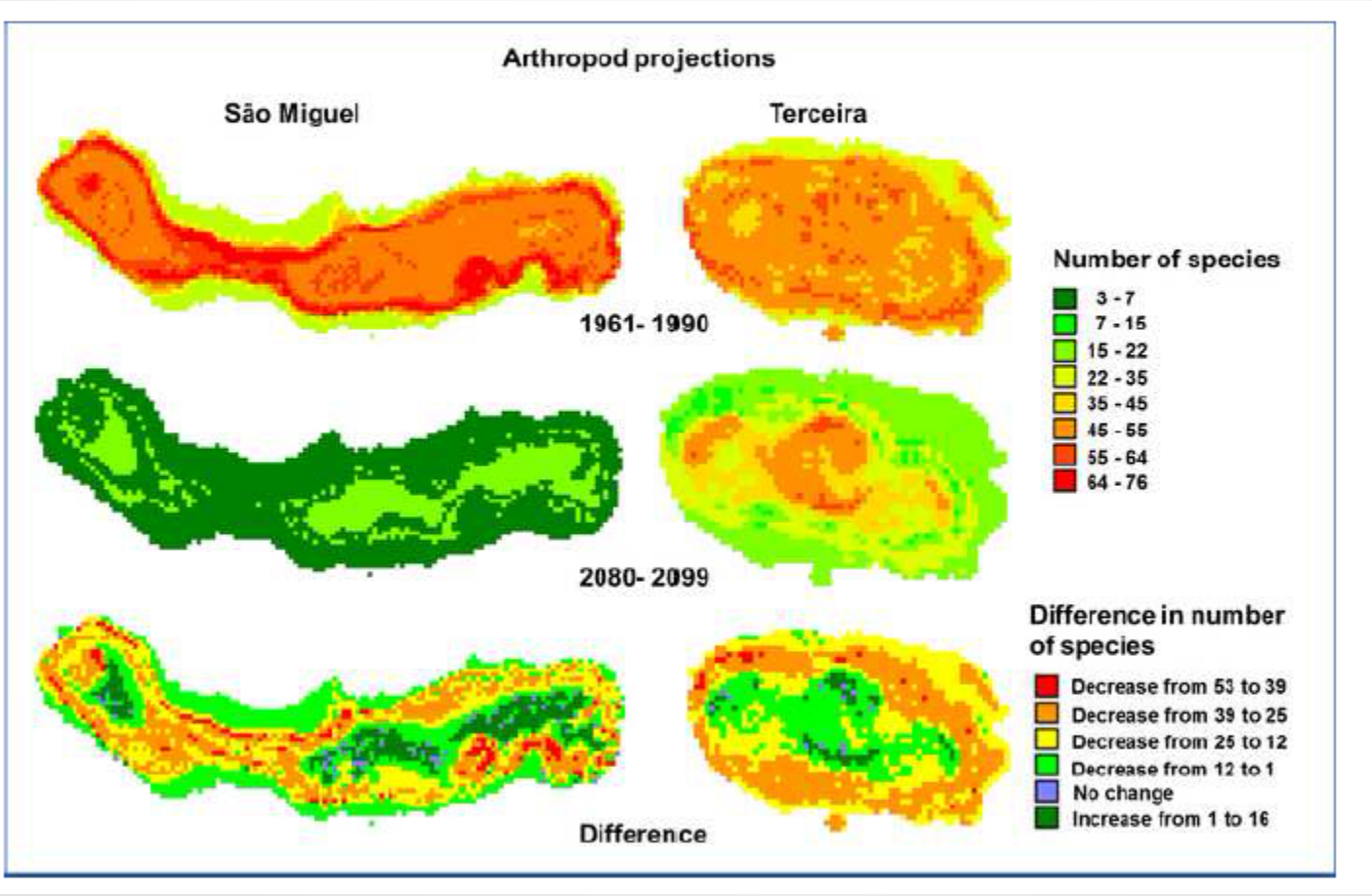
Richness and elevation

Similar pattern: unimodal hump-shaped curve with highest richness values in the mid-high elevations



Effects of climate change on the distribution of indigenous species in oceanic islands (Azores)

Maria Teresa Ferreira[1,2], Pedro Cardoso[1,2,3], Paulo A.V. Borges[1,2], Rosalina Gabriel[1,2], Eduardo Brito de Azevedo[4], Francisco Reis[4], Miguel B. Araújo[5,6,7] & Rui Bento Elias[1,2]



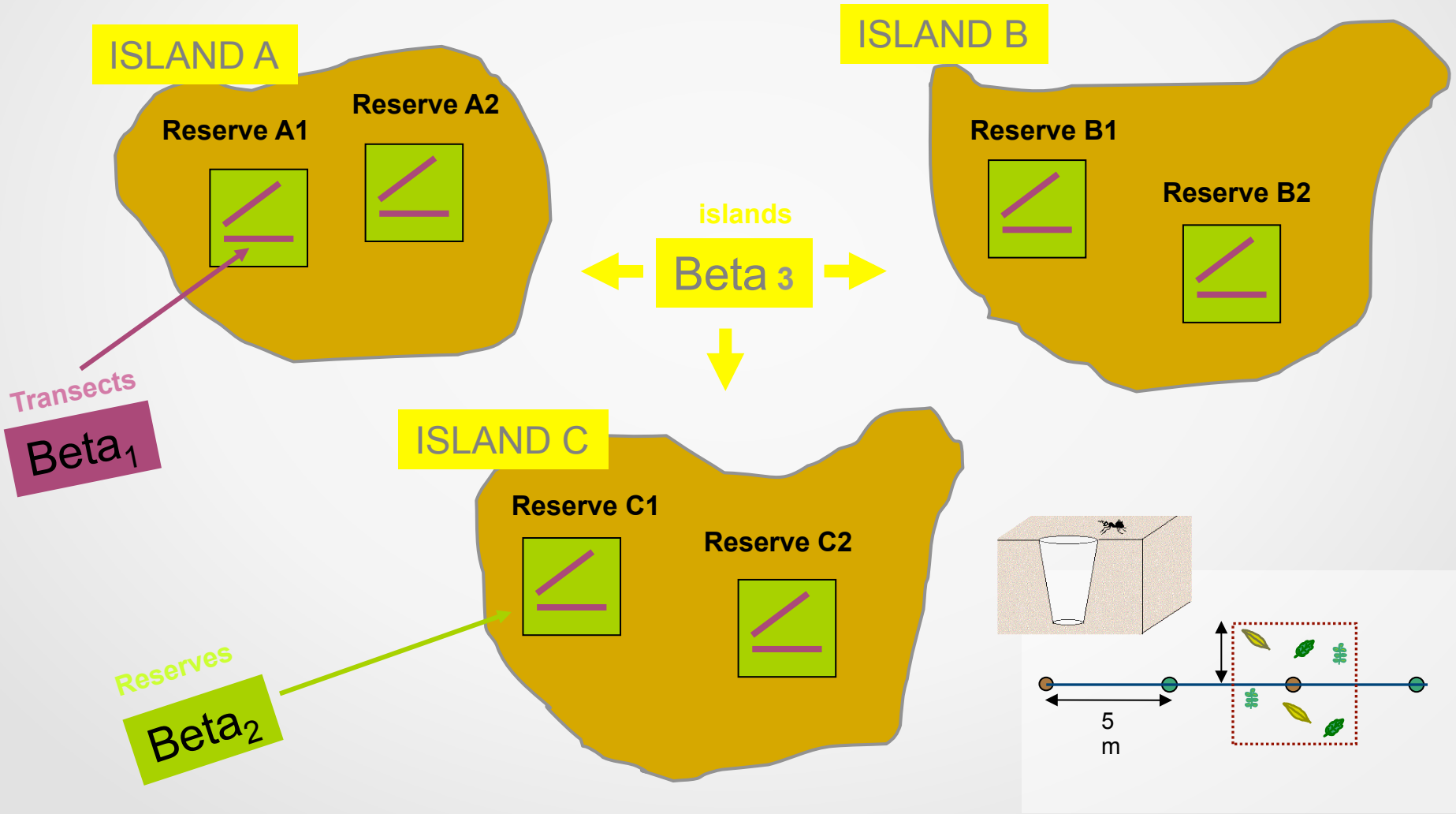
BALA

Biodiversity of the Arthropods of the Laurisilva of the Azores

Experimental design

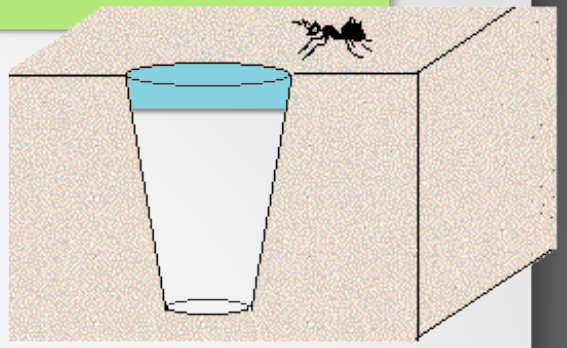
Archipelago

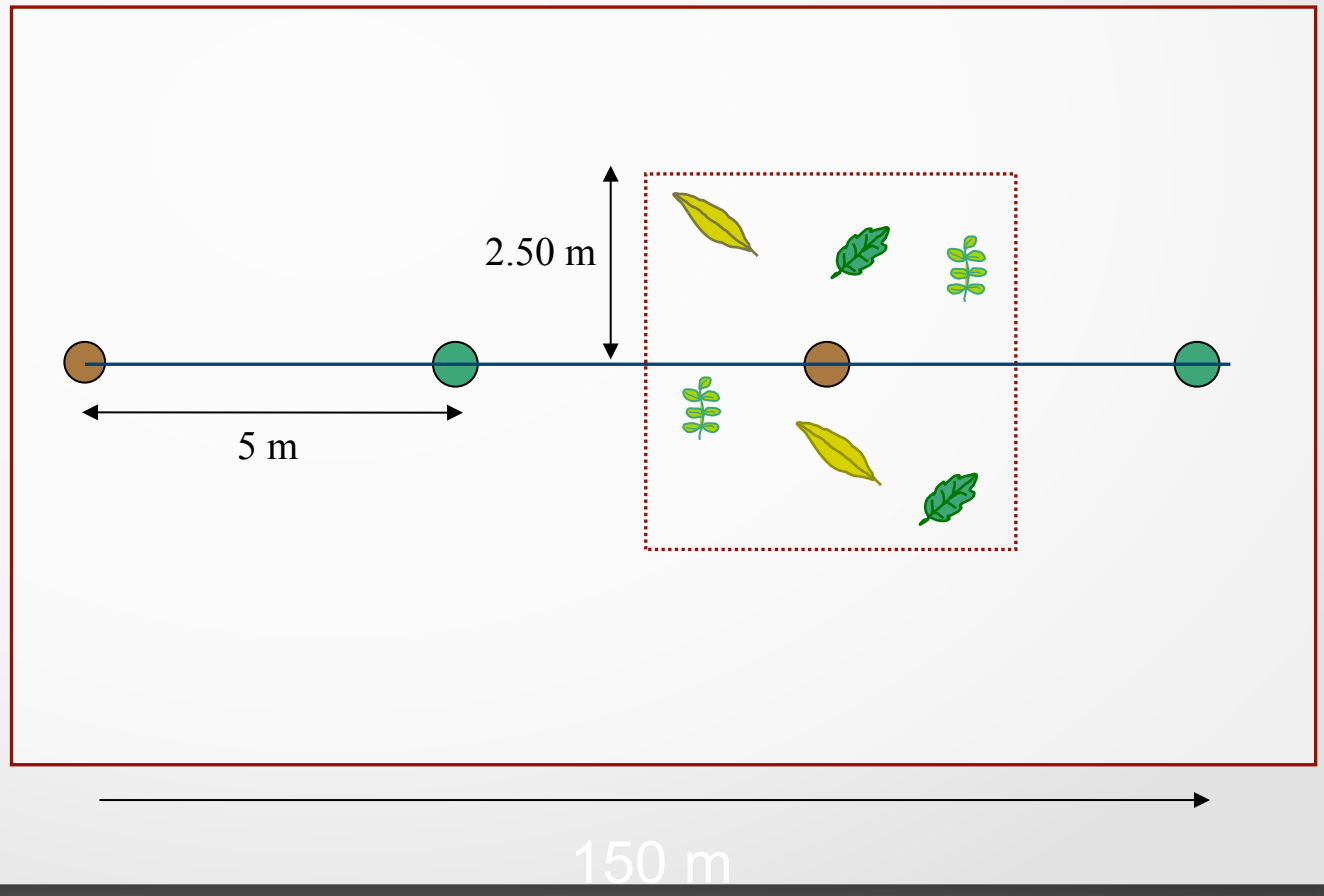
Gamma3 = $alpha_1$ + $beta_1$ + $beta_2$ + $beta_3$



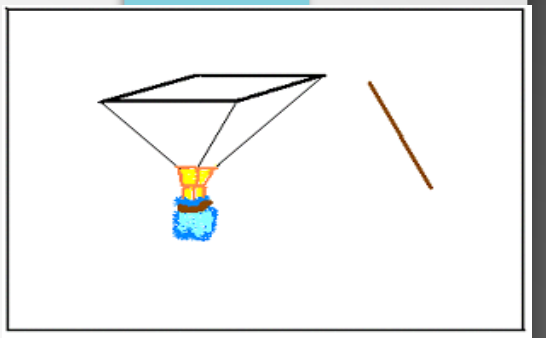
β = γ – α; Lande, R. (1996). Statistics and partitioning of species diversity, and similarity among multiple communities. *Oikos* 76: 5-13

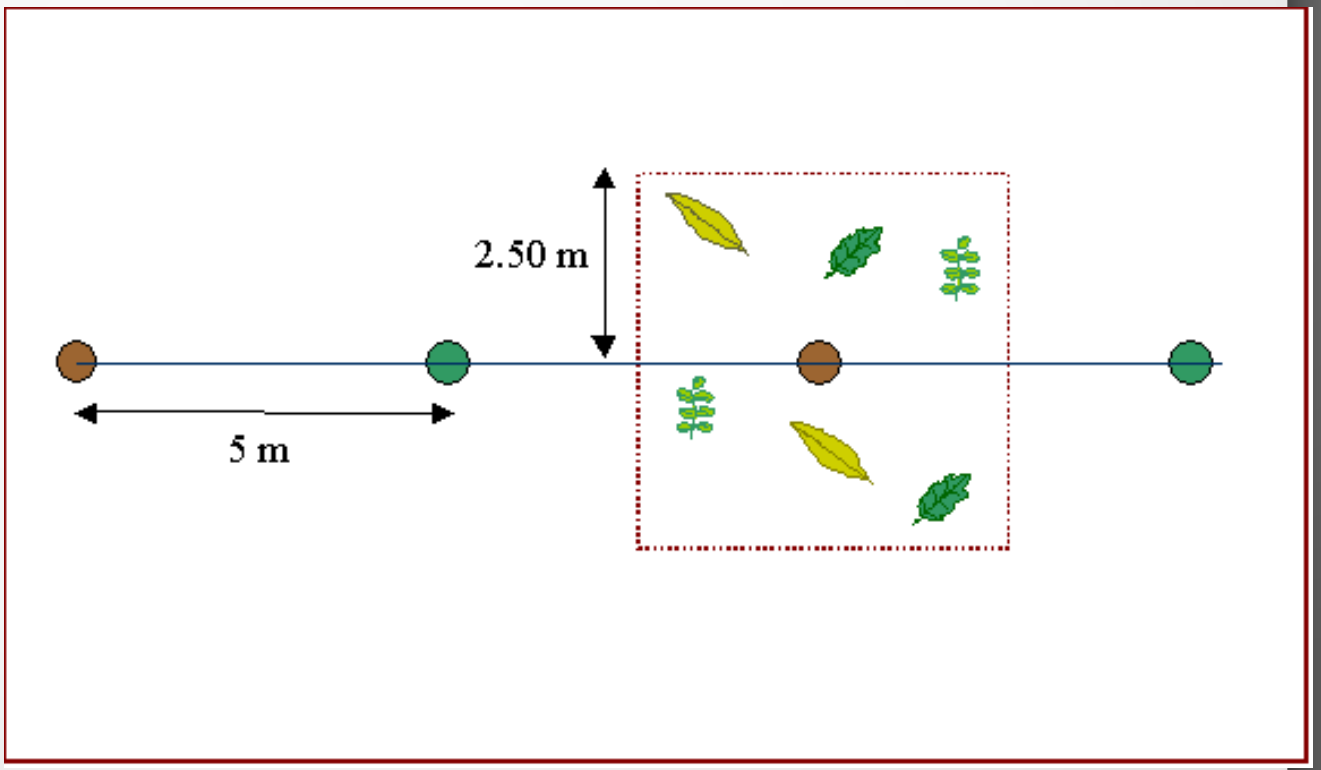
Sampling of epigean soil arthropds





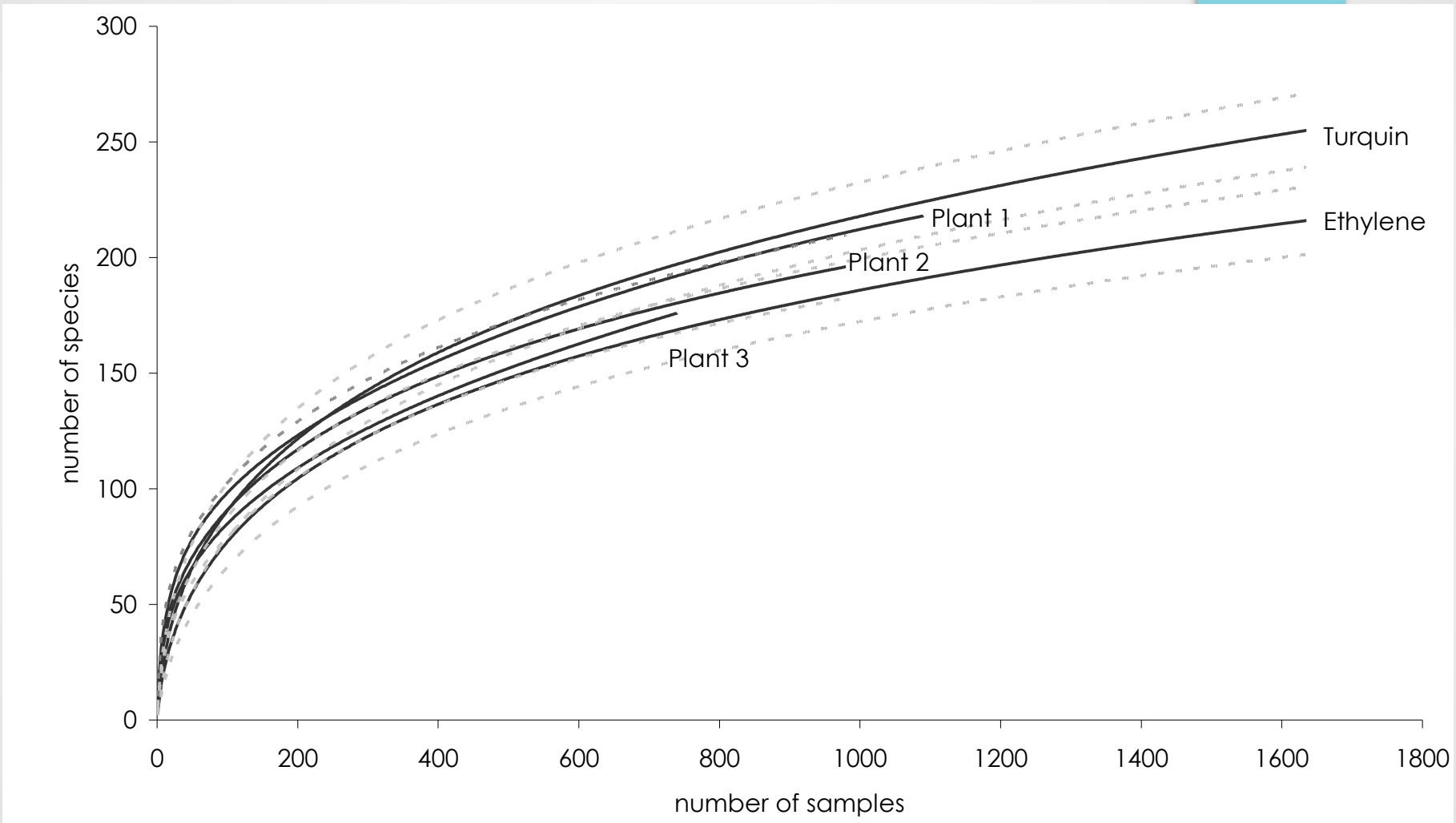
Sampling of canopy arthropods





Canopy sample

An optimization exercise was performed and we found that the protocol applied during recent years is very close to optimal, allowing its future replication with confidence



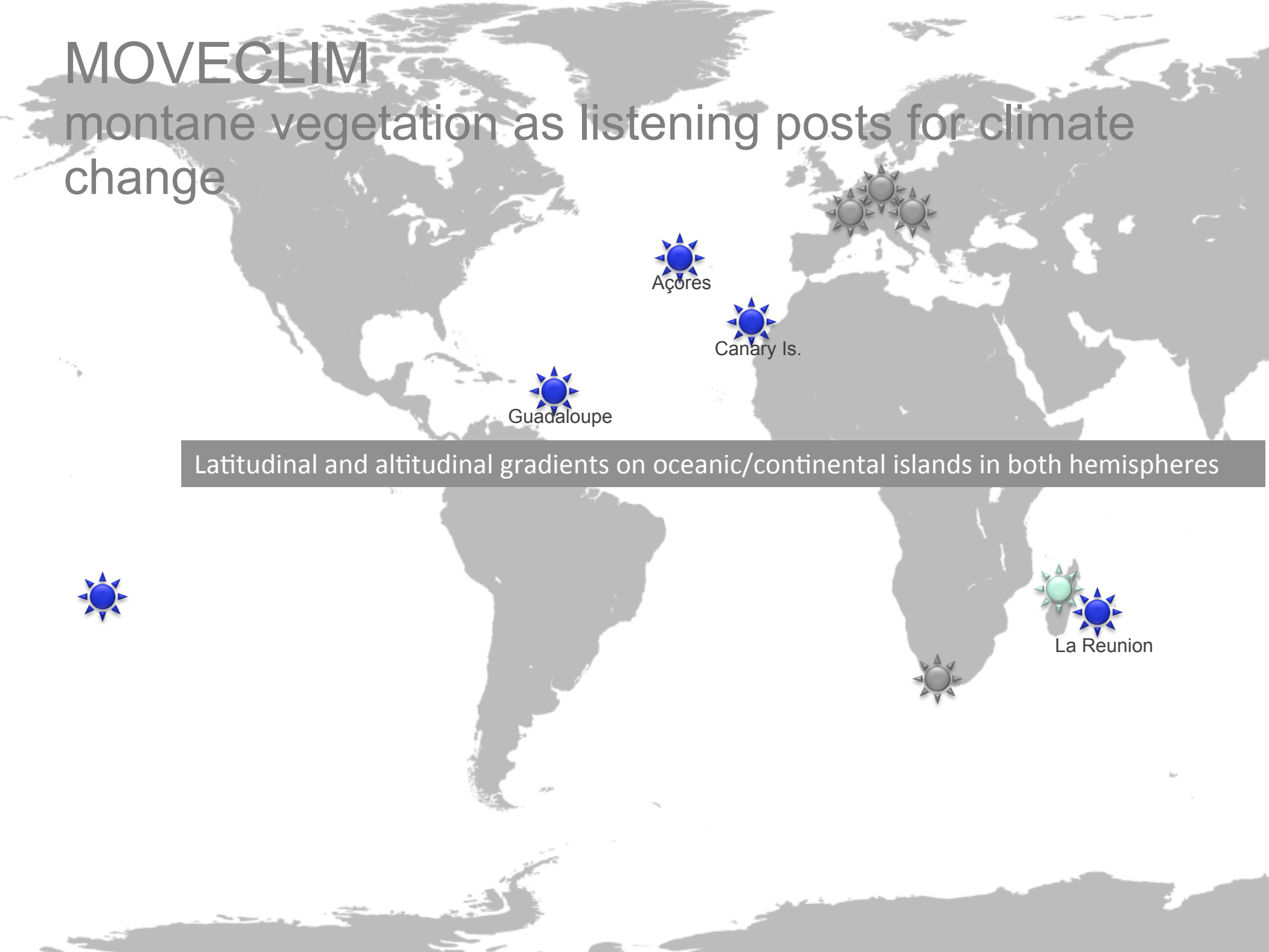
EFFICIENCY OF SAMPLING METHODS AND EFFORT TO ASSESS ARTHROPOD DIVERSITY IN AZOREAN NATIVE FORESTS (Subm.) Clara GASPAR[1,2], Pedro CARDOSO[1], Paulo A.V. BORGES[1] and Kevin J. GASTON[2,3]

MOVECLIM

BRYOLAT PROTOCOL

MOVECLIM

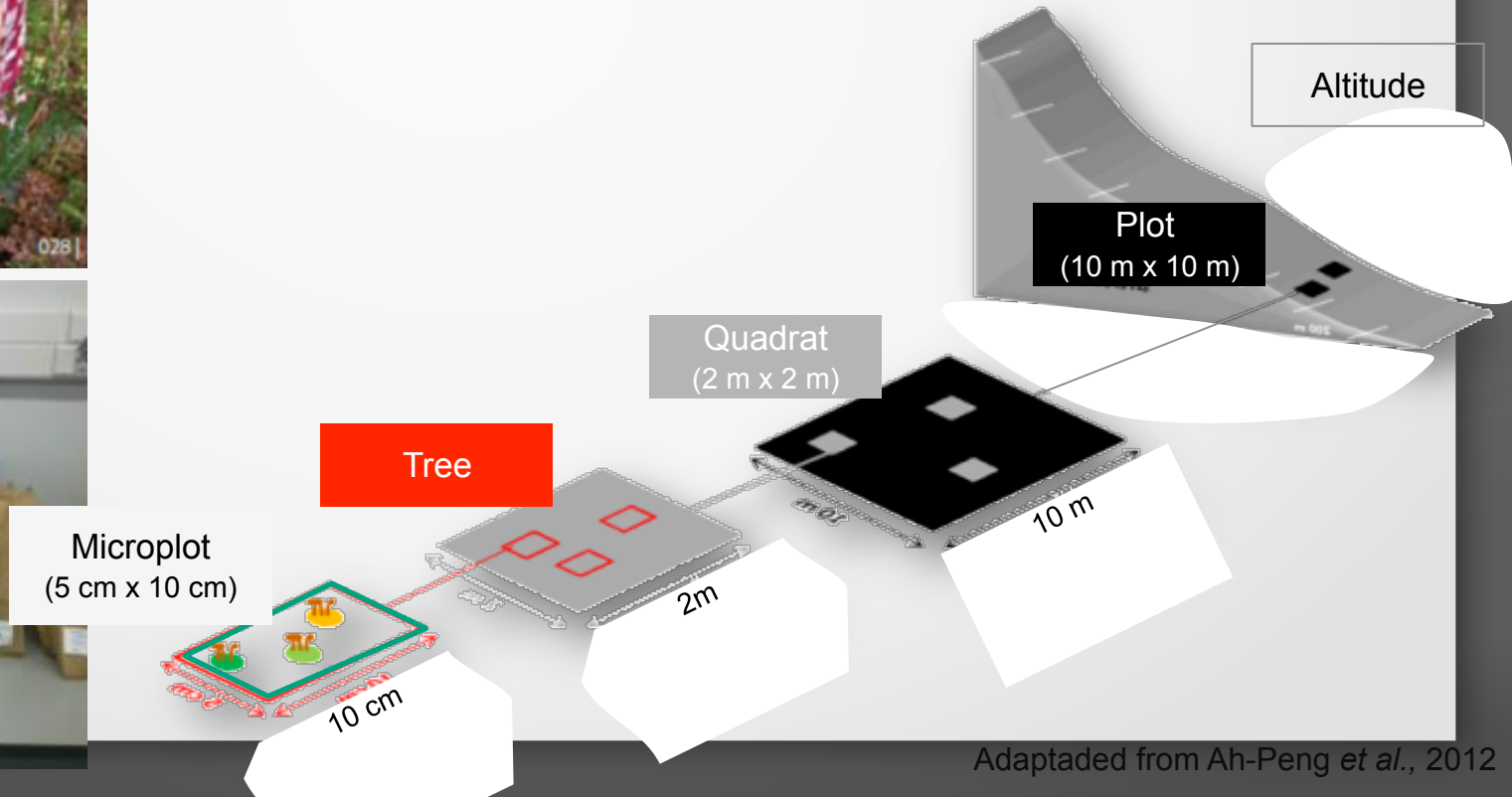
montane vegetation as listening posts for climate change



Latitudinal and altitudinal gradients on oceanic/continental islands in both hemispheres

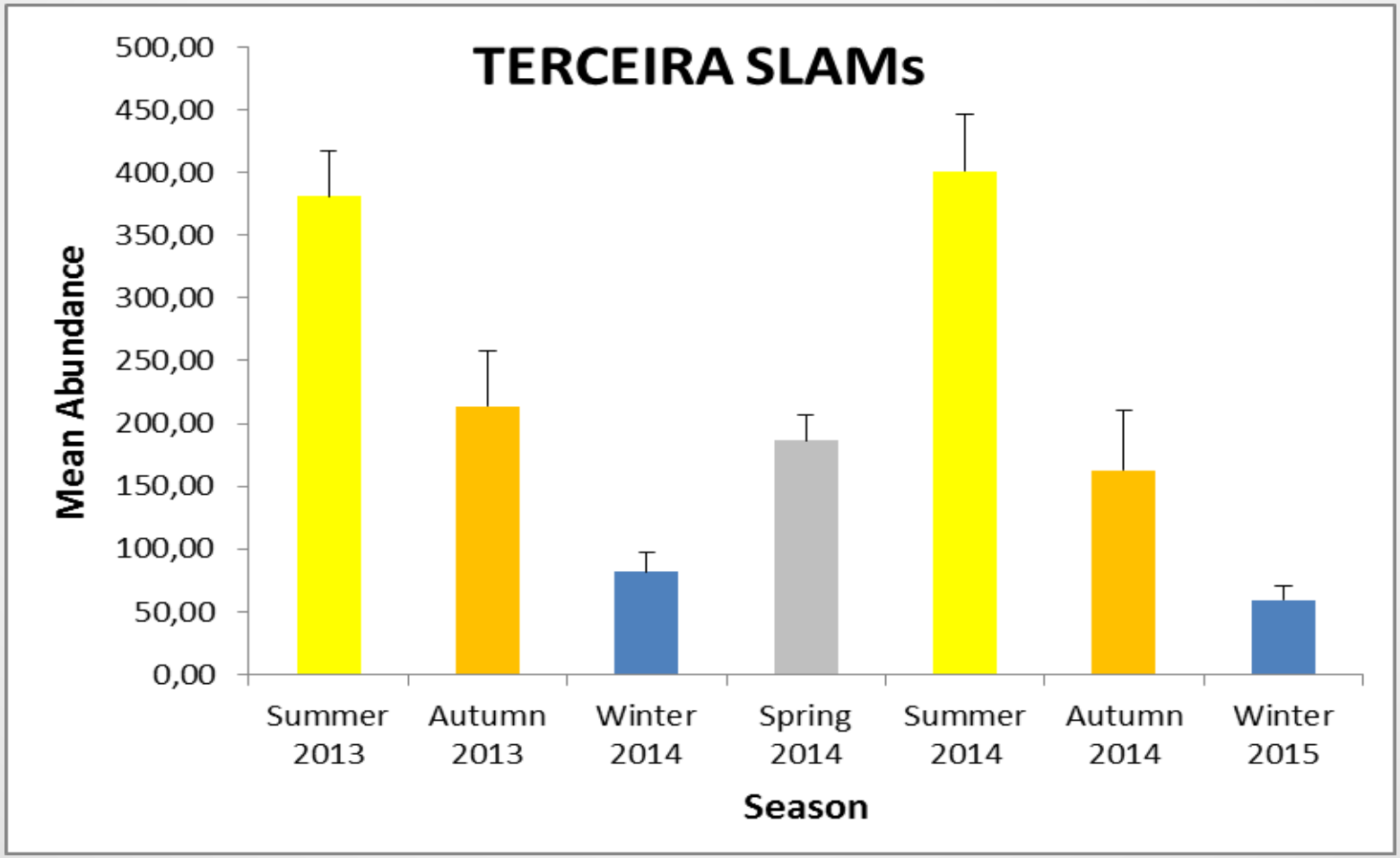
MOVECLIM – Stratified protocol

- 1 **STATION** at each 200 m elevation
- 2 **PLOTS** of 10 m x 10 m per station
- 3 **QUADRATS** of 2 m x 2 m per plot
- 3 **SAMPLES FOR EACH MICROHABITAT** [max 6] per quadrat
- 3 **MICROPLOTS** of 10 cm x 5 cm per microhabitat

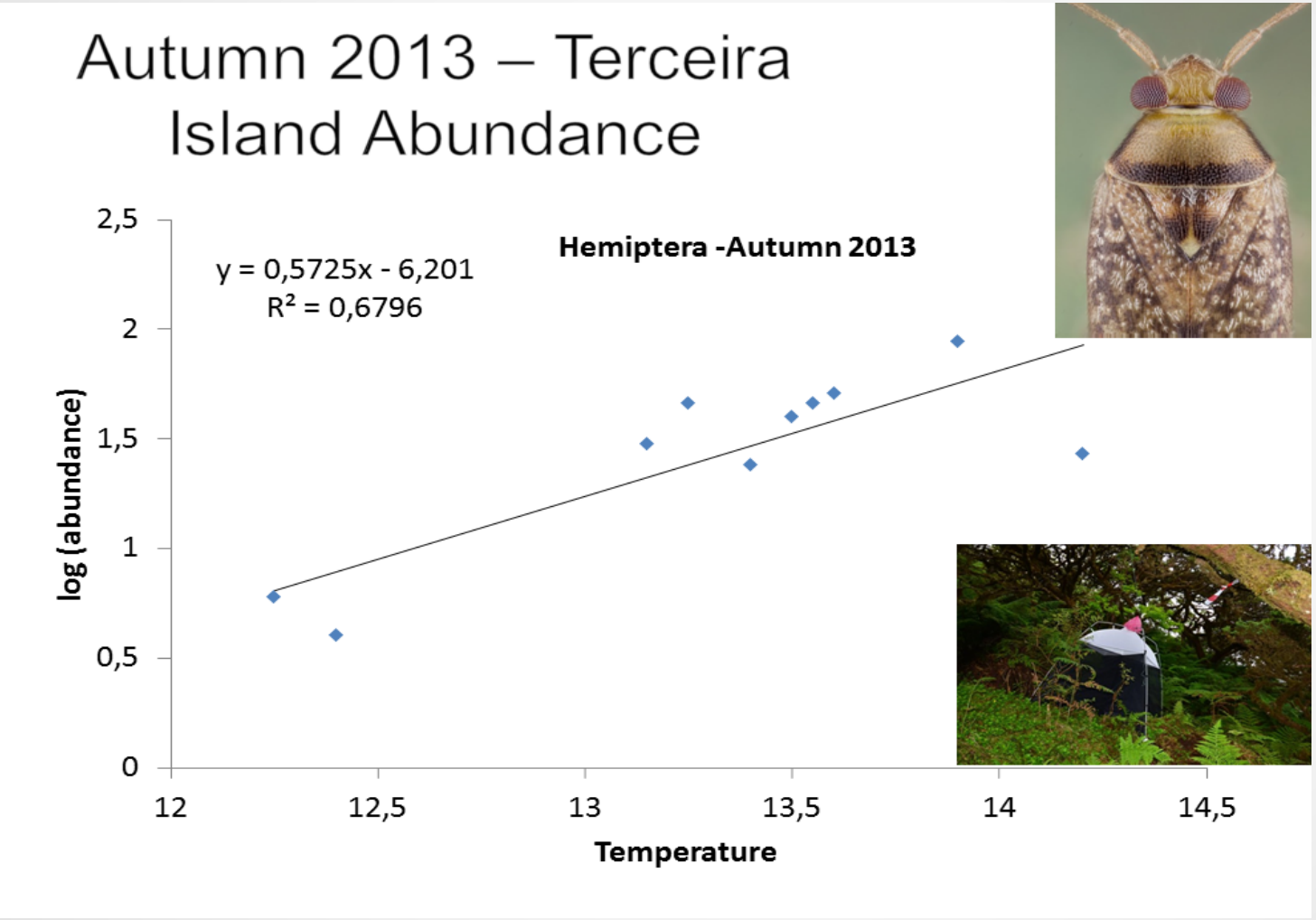


Adaptaded from Ah-Peng *et al.*, 2012

SLAM data LTER - Azores



SLAM data LTER - Azores



National RI Roadmap

PORBIOTA

One of the 40 RI included in the national roadmap, presented in December 2014

FCT
Fundação para a Ciência e a Tecnologia
MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E ENSINO SUPERIOR

Scientific and strategic assessment

PORBIOTA

Rated as high scientific merit and strategic interest

Aligned with LifeWatch

Integrates three other projects

- LTER Portugal
- ICOS-PT
- AZORESBIOPORTAL

Contribution to LifeWatch

PORBIOTA (in-kind)

~14.2 M€ (2015-2020), 2.8M€/year

funded by H2020 and structural funds

FCT
Fundação para a Ciência e a Tecnologia
MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E ENSINO SUPERIOR

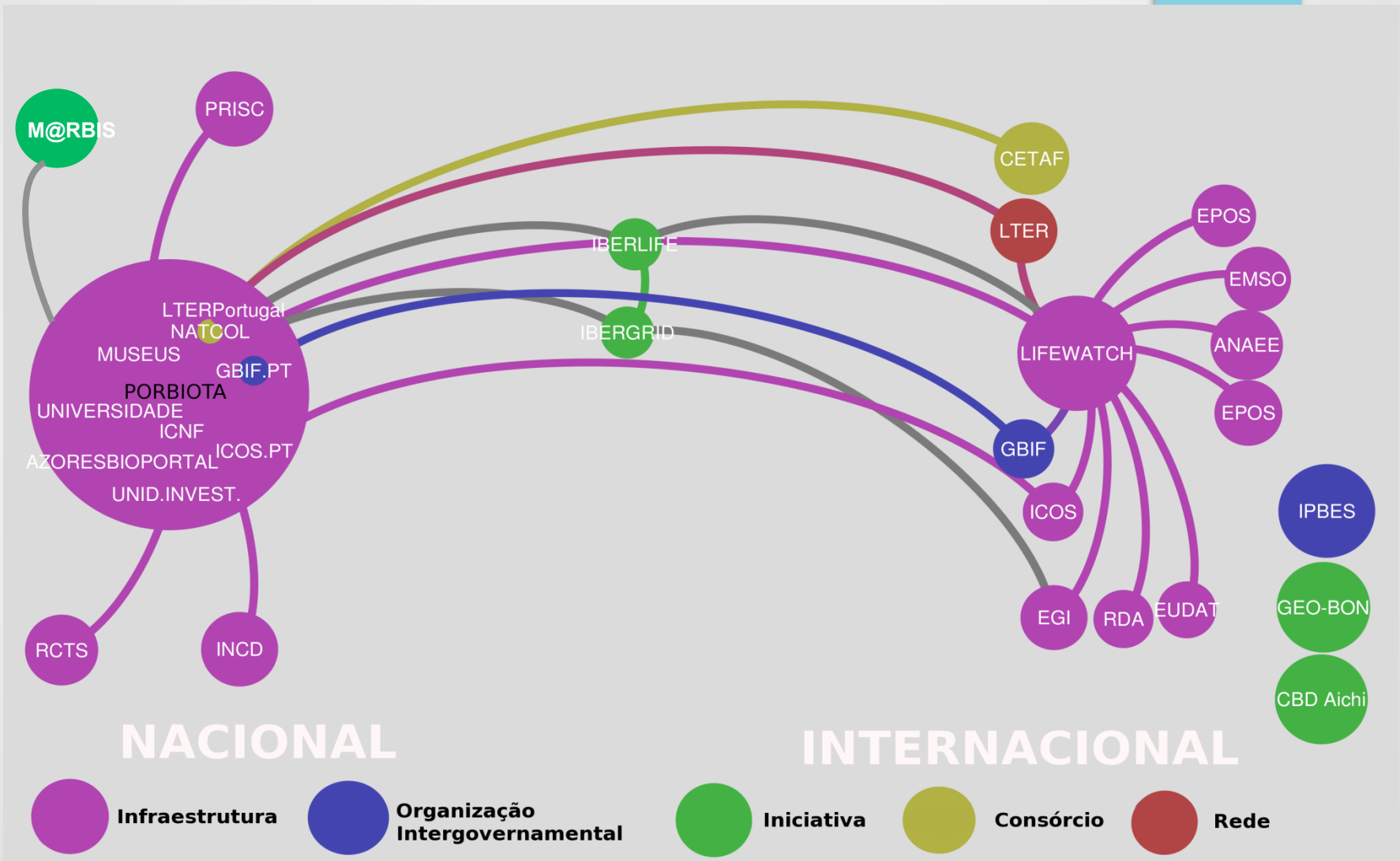
in-cash
443,274 € (2015-2019), 88,654 €/year

Work Packages by PORBIOTA

Nine WP to contribute to all LifeWatch layers

- PT_WP1: Inventory/registration of data sources and providers and gap analysis
- PT_WP2: Development of a National Species List
- PT_WP3: Mobilization of biodiversity databases
- PT_WP4: Development of web portals and services for societal uses
- PT_WP5: Building the Network of Life
- PT_WP6: Support Environmental Metagenomic applications
- PT_WP7: Promoting LTER integration at Iberian and European level
- PT_WP8: Digital Infrastructures
- PT_WP9: Dissemination, training and outreach

Context


M@RBIS
PRISC
LTERPortugal
NATCOL
MUSEUS
GBIF.PT
PORBIOTA
UNIVERSIDADE
ICNF
ICOS.PT
AZORESBIOPORTAL
UNID.INVEST.
RCTS
INCD
IBERLIFE
IBERGRID
CETAF
LTER
EPOS
EMSO
ANAEE
EPOS
LIFEWATCH
GBIF
ICOS
EGI
RDA
EUDAT
IPBES
GEO-BON
CBD Aichi
NACIONAL
INTERNACIONAL
Infraestrutura
Organização Intergovernamental
Iniciativa
Consórcio
Rede

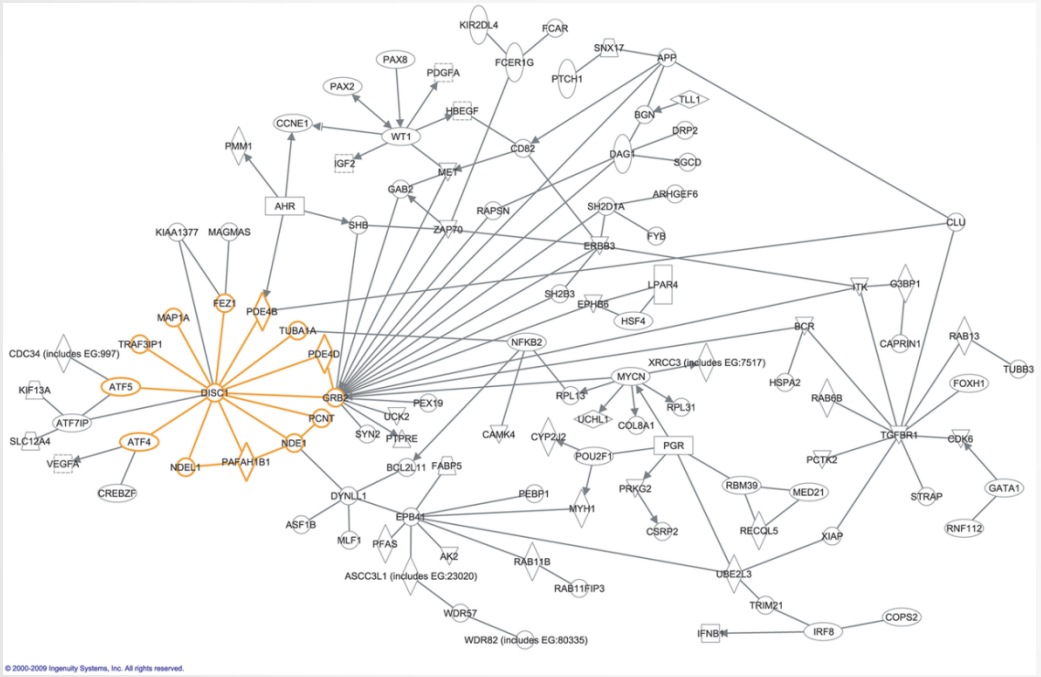
Building the Network of Life

Can we map **all relationships** and interdependency that **each species establishes with every other species** that coexist in the same place within the same time frame?

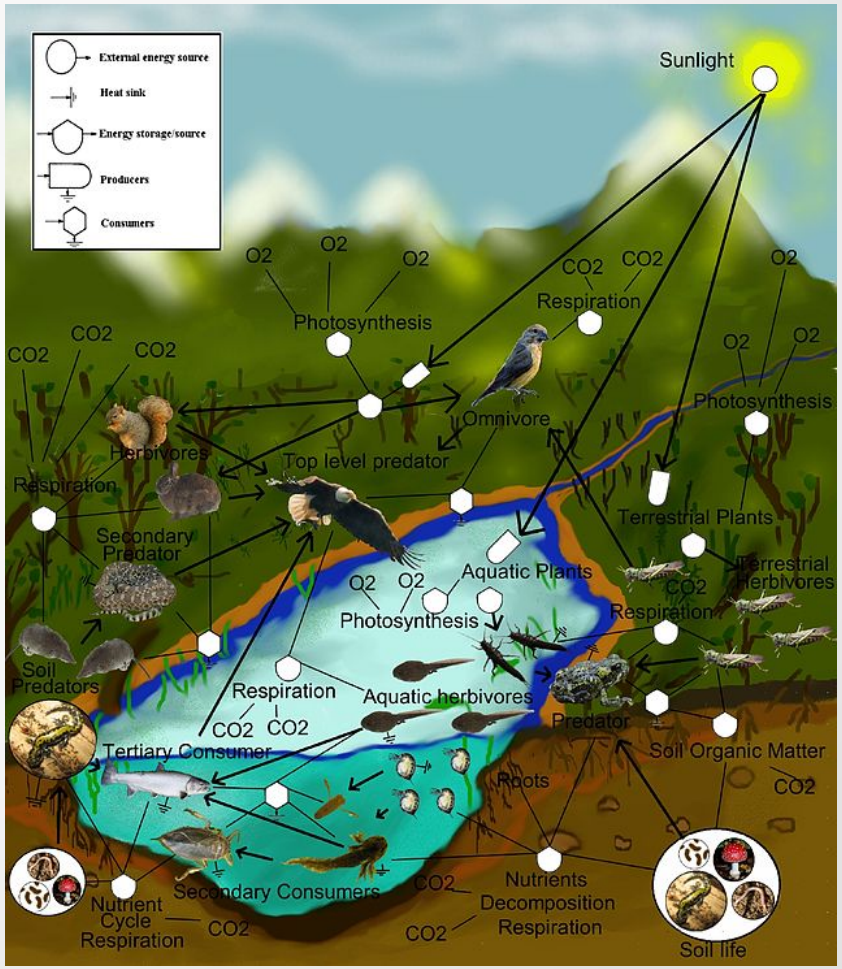
- Analysis of existing biodiversity informatics tools and standards on biodiversity informatics;
- Document species relationship;
- Integration with biodiversity occurrence data platforms (e.g. ALA);
- Implementation of algorithms and services for relationship identification and building the Network of Life – ECONECTOME VRE;

Building the Network of Life

Interactome

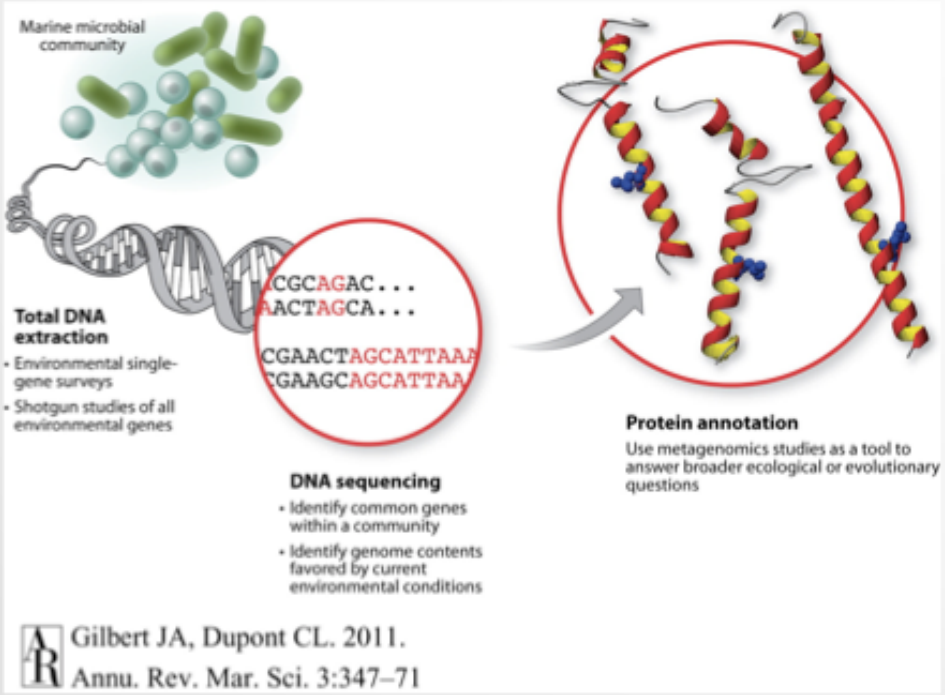


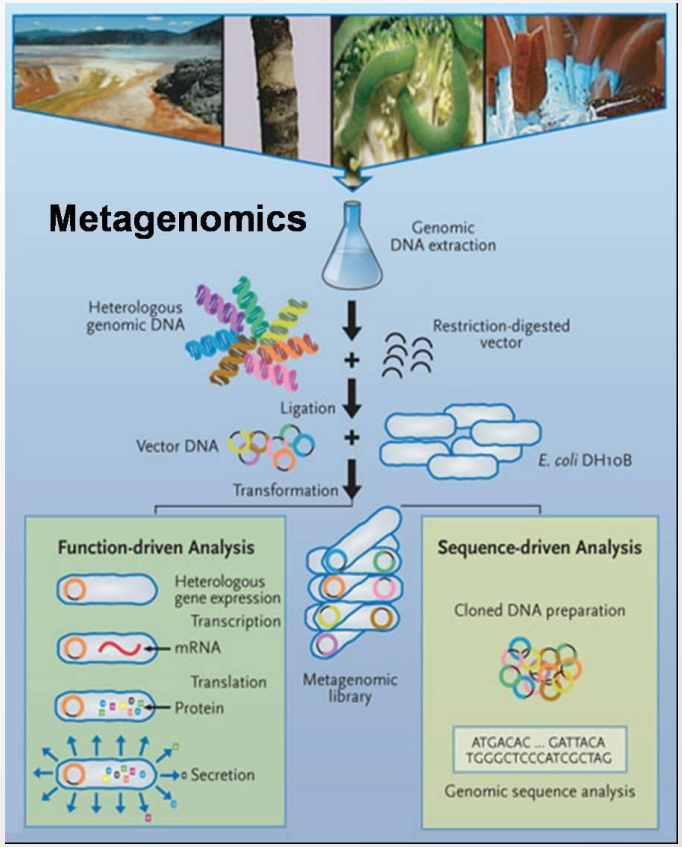
Food web



Support Environmental Metagenomic applications

Develop an interface to the InBIO eDNA reference database for support of environmental metagenomic applications





Support Environmental Metagenomic applications

cibio new-gen

NGS facility

ERA Chair

H2020-WIDESPREAD 2014

Capacity Building at InBIO for Research and Innovation Using Environmental Metagenomics

Support Environmental Metagenomic applications

Potential benefits

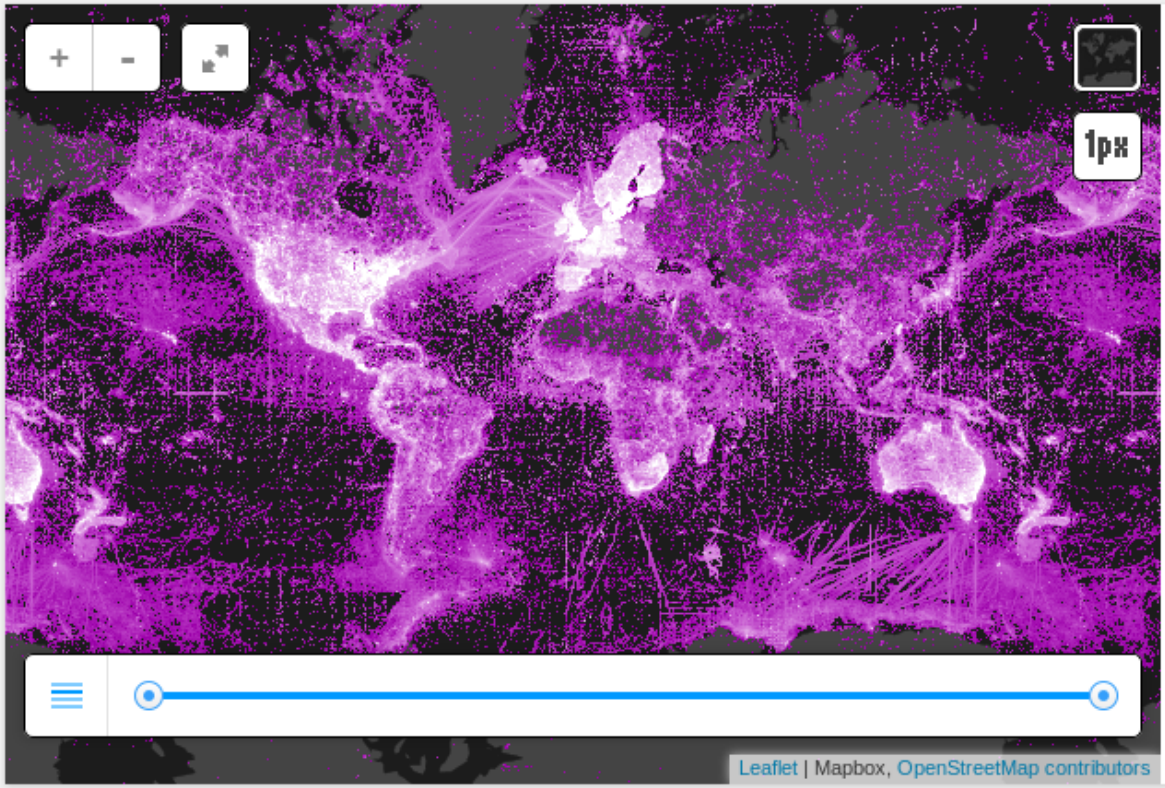
- reduces costs of obtaining species occurrence data from a large number of biological samples;
- valuable for groups of species that are difficult to identify (microbiological species);
- species identity for samples of larval or juvenile stages;
- species composition from DNA fragments in water/soil;
- information on the prey ingested by animals, through the metabarcoding of DNA fragments from guts or faeces.

Environmental metagenomics is yet in its infancy!

Explore 527,909,781 occurrences

Occurrence records document evidence of a named organism in nature. Through this portal, you can search, view and download records that are published through the GBIF network.

527,909,781	462,068,112
occurrences records	georeferenced records



Georeferenced data

VIEW RECORDS

All records | In viewable area

ABOUT

This map shows the density of all 462,068,112 georeferenced occurrence records published through the GBIF network.

To explore the records, zoom into the map or click on the links above and add further filters to customize search results.

Cooperation within the GBIF network

CoopBioPlat – ERANET LAC Pilot Coordination Action project – GBIF Nodes of AR, BR, CR, ES, FR, PT

- establish a cooperation framework on biodiversity information

Encounter Bay – GBIF Capacity Enhancement support project 2015

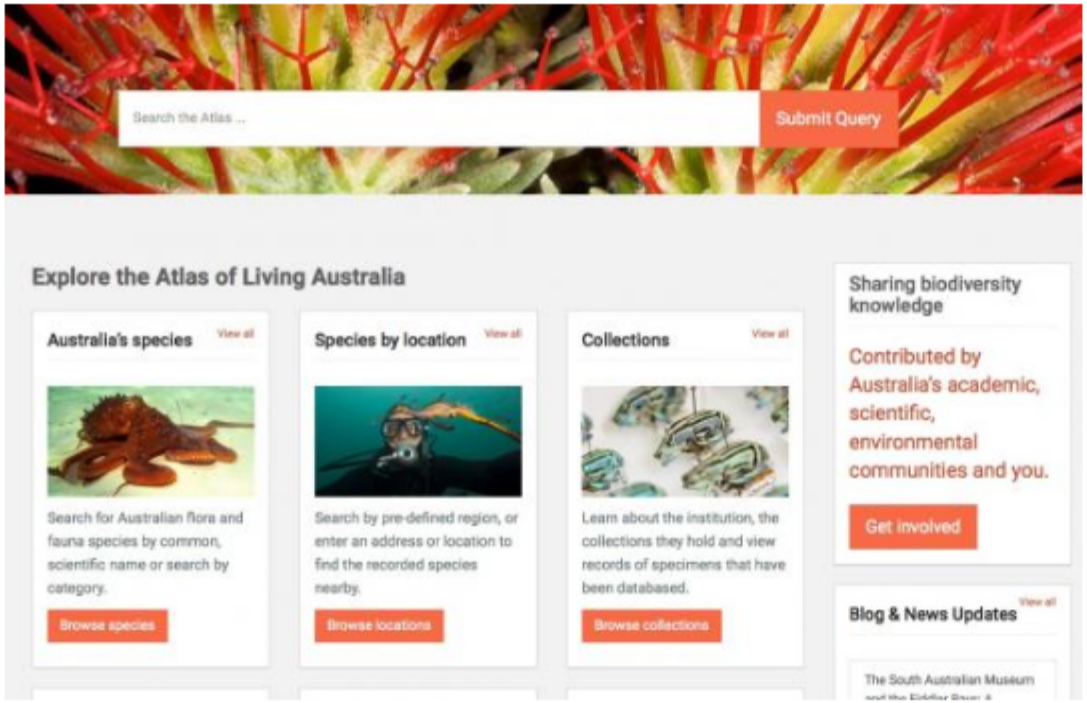
- translate the platform to ES, FR, PT

- document and translate documentation

Capacity enhancement support programme

Sharing expertise, experience and technology around the GBIF community

Encounter Bay (ALA Node Portal Internationalization)



The Atlas of Living Australia has been working to enable the software it developed to be

PROGRAMME
- CESP

CALL
- CESP2015

STATUS
- In progress

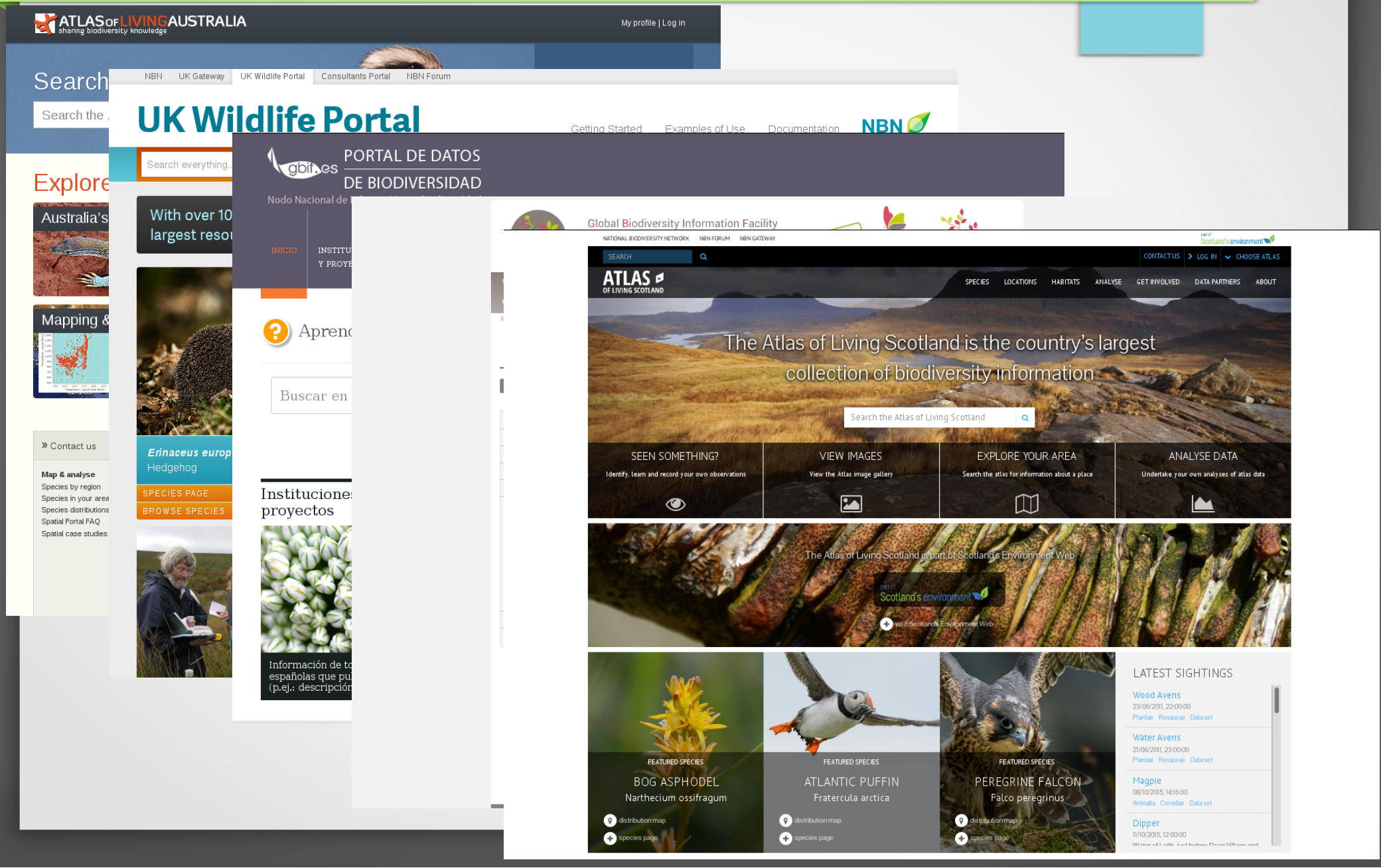
DURATION
- May 2015 to Jun 2016

GBIF FUNDING ALLOCATED
- 4,000 EUR

ESTIMATED CO-FUNDING
- 8,000 EUR

CO-FUNDER(S)

One platform, many facets (thematic, regional, national), different user communities



Advantages of cloud solutions

Cloud Infrastructure based on Openstacks provided by the Research Infrastrucure INCD (member of IBERGRID and EGI):

Provides:

- Scalability of the allocation of resources;
- Sharing infrastructure and capacity between members of GBIF network
- Persistence and availability of big volumes of data

openstack
DASHBOARD

Project

CURRENT PROJECT
porbiota

Manage Compute
- Overview
- Instances
- Volumes
- Images & Snapshots
- Access & Security

Manage Network
- Network Topology
- Networks
- Routers

Object Store
- Containers

Overview

Logged in as: rui.figueira@iict.pt Settings Help Sign Out

Limit Summary

Instances
Used 1 of 10

VCPUs
Used 8 of 20

RAM
Used 16.0 GB of 50.0 GB

Floating IPs
Used 1 of 50

Security Groups
Used 1 of 10

Select a period of time to query its usage:

From: 2015-10-01 To: 2015-10-19 Submit The date should be in YYYY-mm-dd format.

Active Instances: 1 **Active RAM:** 16GB **This Period's VCPU-Hours:** 11.11 **This Period's GB-Hours:** 1778.37

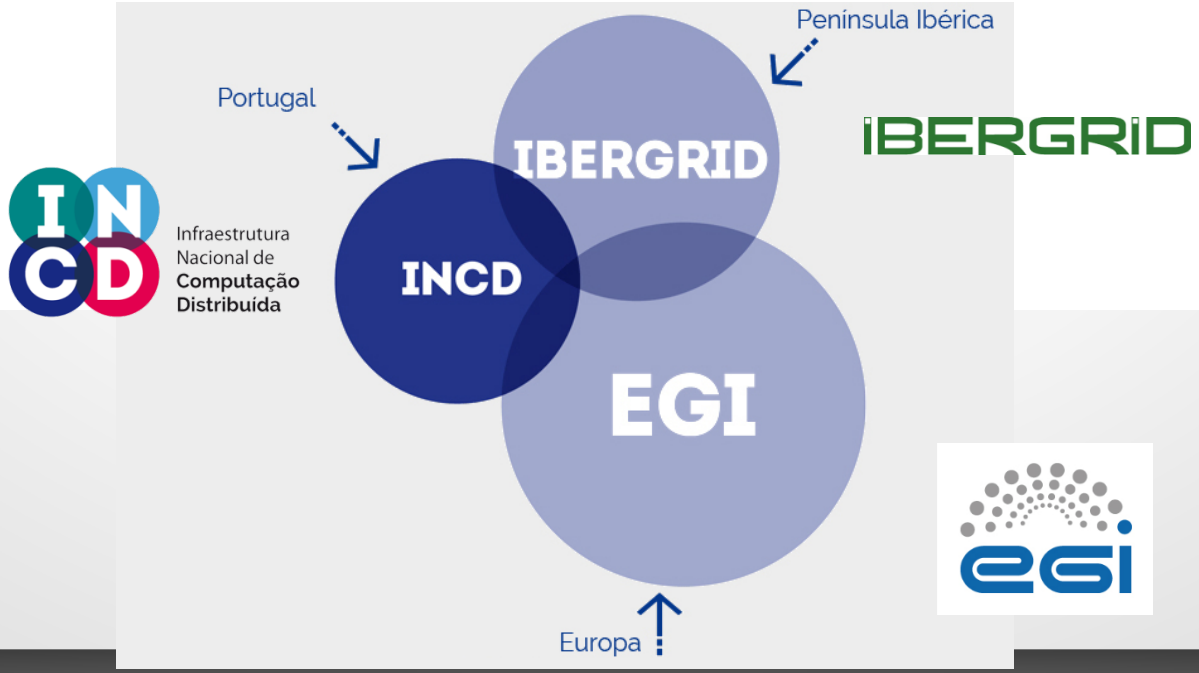
Usage Summary

Download CSV Summary

Instance Name	VCPUs	Disk	RAM	Uptime
ALA-pilot1	8	160	16GB	4 months

Displaying 1 item

Cloud resources provided by:



Promoting LTER integration at Iberian and European level

IBERLIFE action!

Sabor

Ria de Aveiro

Montado

Estuaries

http://www.lterportugal.net/

Other WP by PORBIOTA

- Inventory/registration of data sources and providers and gap analysis
- Development of a National Species List **IBERLIFE action!**
- Mobilization of biodiversity databases, including citizen science platforms **IBERLIFE action!**
- Digital Infrastructures **IBERGRID action!**
- Dissemination, training and outreach **IBERLIFE action!**

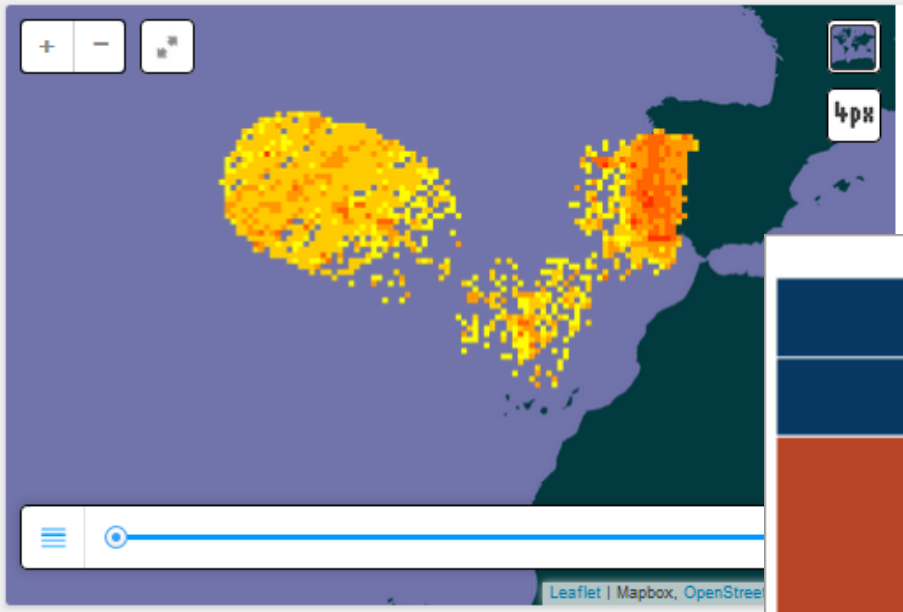
GBIF.ORG
Free and Open Access to Biodiversity Data

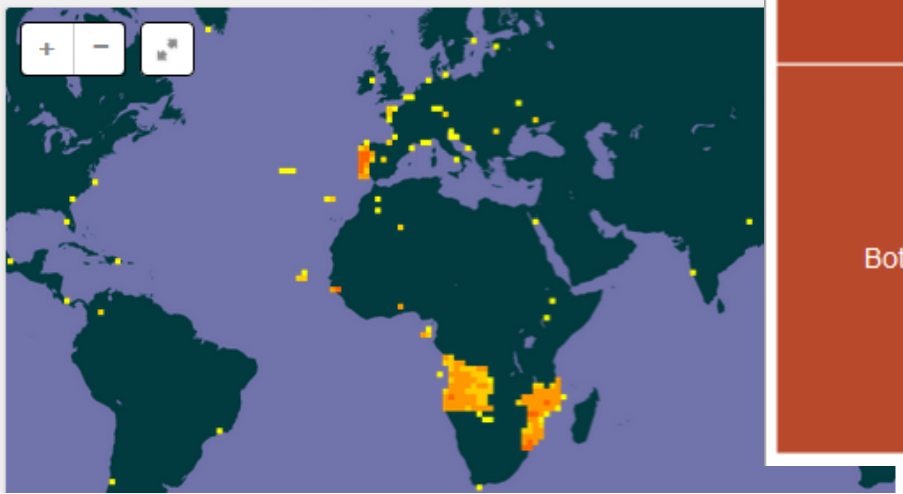
Data News Community

Portugal

A GBIF Voting Participant from Europe
Names of countries, territories and islands are based on the ISO 3166-1 standard.

Summary | Data About | Data Publishing | Participation | News and Events





Global Biodiversity Information Facility
GBIF.PT

nó português do GBIF

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Missão do GBIF

O Sistema Global de Informação sobre a Biodiversidade (GBIF) é uma organização intergovernamental criada em 2001 para facilitar a partilha e acesso, de forma livre e gratuita, de dados de biodiversidade.

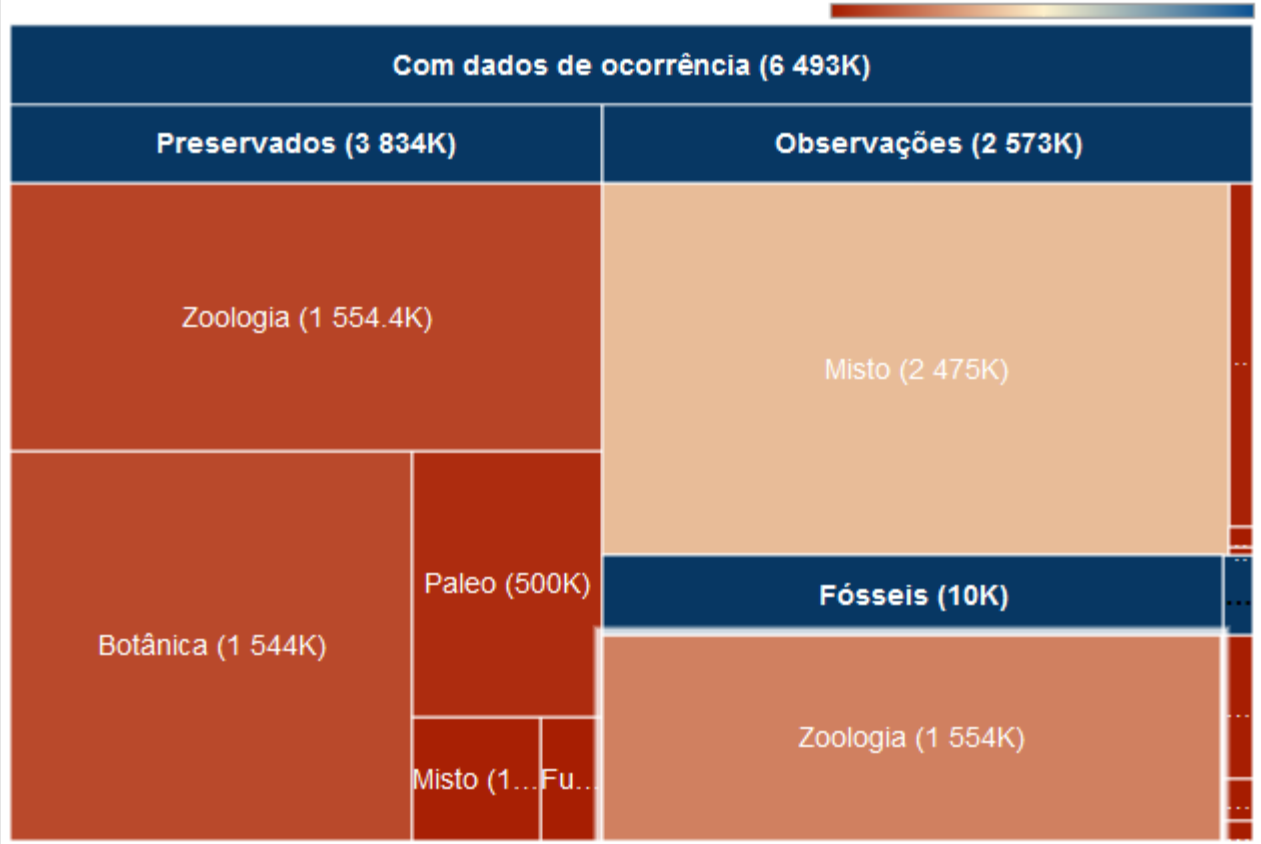
IICT Instituto de Investigação Científica Tropical
O IICT acolhe o Nó Português do GBIF com o apoio da:
FCT Fundação para a Ciência e a Tecnologia
MINISTÉRIO DA EDUCAÇÃO E CIÊNCIA

The New Ebbe Nielsen Challenge 2015 was launched

Submitted by inês.paulino on December 3, 2014 - 12:33

Tweets Follow

GBIF @GBIF 27 Mar



PORBIOTA Partners

Instituto Politécnico de Viana do Castelo

Thank You!

Paulo Borges , Rui Figueira, Pedro Beja, Margarida Santos Reis, Sofia Cerasoli,
PORBIOTA - Portuguese E-Infrastructure for Information and Research on Biodiversity

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Azorean Biodiversity Group (CE3C)