Mission GeoNamec #1

Corcovado national park, Costa Rica
October 16th to 19th, 2025

France (OFB-PNE) meets Costa Rica (SINAC) to work together on information systems, data management and camera traps.

Context

The High Ambition Coalition for Nature and People (HAC N&P):

- The HAC N&P is an intergovernmental coalition launched at the Biodiversity COP15 at the initiative of France and Costa Rica, and is now co-chaired by France, Costa Rica, and the United Kingdom.
- It brings together more than 120 countries committed to achieving the global “30x30” target — protecting 30% of land and sea areas by 2030 — as established in the Kunming-Montreal Global Biodiversity Framework (CBD, 2022).
The coalition aims to build concrete and operational alliances for implementing this target, notably through experience-sharing and technical support among member countries.

The HAC N&P “Matchmaking” Mechanism:

- The “matchmaking” mechanism was designed to connect a country expressing a need (for technical assistance, expertise, or methodological support) with a country or partner capable of providing a response.
- It is therefore a pragmatic, targeted, and bilateral form of cooperation, facilitated by the HAC N&P Secretariat and national HAC N&P focal points.
- Each “match” project must address a specific request from a partner country and be structured around clear objectives, targeted funding, and practical deliverables.

The Role of France and the French HAC N&P Working Group:

- In France, the “French HAC N&P Working Group” (GT HAC N&P France) is coordinated by NatureXpairs, in collaboration with the French Biodiversity Office (OFB) and the relevant ministries (MTE/MEAE). It brings together all French stakeholders involved with protected areas.
- Its role is to coordinate the identification of French expertise, facilitate its mobilization, and support cooperation projects (such as this one).
Within this framework, the French National Parks Federation (here represented by the Écrins National Park), the OFB (here its PACA–Corse Regional Directorate), and other networks may be mobilized.

Context

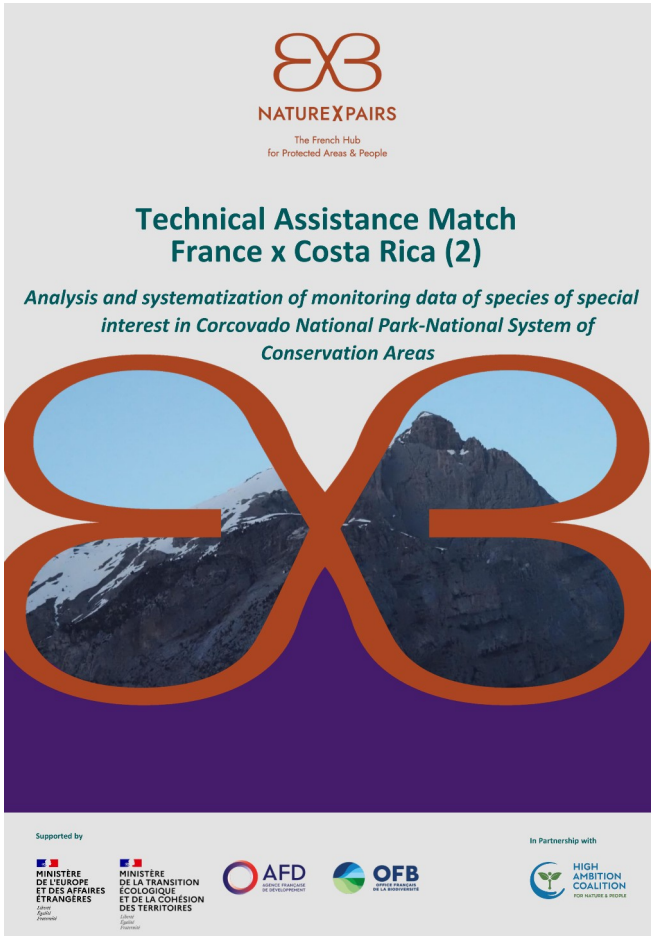
The Costa Rica – France "Match": PRONAMEC & Corcovado:

- Requesting country: Costa Rica, through SINAC
- Identified needs:
  - Improve the management and analysis of wildlife monitoring data from Corcovado National Park (in particular through camera traps and national monitoring protocols).
  - Support the development of the PRONAMEC national platform to strengthen its integration of data collected from protected areas.
- French response: mobilization of experts from the Écrins National Park and the OFB, drawing on their experience in developing and using the GeoNature platform in France, as well as their expertise in digital biodiversity monitoring tools and protocols (including artificial intelligence applications).

Overall Objective of the Match:

- To contribute, through bilateral technical exchange, to strengthening Costa Rica's capacity to implement a robust and operational national biodiversity monitoring system.
- To showcase French know-how (particularly regarding GeoNature) and share the lessons learned from its development.

Context



Objective of the Assistance

The technical assistance aims to support Costa Rica's National System of Conservation Areas (SINAC) in addressing key challenges related to:

1) Strengthening methodologies for data collection, processing, and analysis related to the monitoring of ecosystems and key species of conservation interest in Corcovado National Park as a pilot site, with an interest on Artificial Intelligence process.
2) Providing an expert assessment of potential technological solutions, ensuring their compatibility with Corcovado's operational context, while respecting national protocols and existing monitoring frameworks.
3) Sharing France's experience with biodiversity monitoring platforms, including GeoNature, as a case study illustrating the challenges and lessons learned in implementing an open-source system for protected area

Description of Activities

The assistance will be structured as an advisory mission, emphasizing technical exchange and capacity-building. The engagement will involve direct interactions with Corcovado National Park staff, fostering collaborative learning and co-development of adapted solutions. The general lay-out would be as follows:

On-Site Assistance:

• Duration: 3-4 days
• Format: Two French experts will be deployed to Costa Rica to work closely with Corcovado National Park staff and stakeholders.
• Focus Areas:
  o Presentation of methodologies and digital tools used in France for ecosystem and species monitoring, highlighting their functionalities and potential relevance to Corcovado's needs.
  o Case study: GeoNature, an open-source biodiversity monitoring platform used in French protected areas. The discussion will focus on its functionalities, its benefits and challenges, and lessons learned that could inform Costa Rica's approach.
  o Technical discussions on data management, analysis, Artificial Intelligence and integration into broader ecological monitoring frameworks.
  o Assessment of potential solutions, taking into account operational feasibility, existing SINAC protocols, and national conservation strategies.
  o Participatory workshops to co-design recommendations tailored to Corcovado's specific challenges and priorities.

Participants

- Alejandro
- Eugenia
- Mauricio
- Marvin
- Ivan
- Camille
- Ilsia
- Roberto
- Daniela
- Yocelin
- Marylin
- Désirée
- Concha
- Harold
- Luis
- Jason
- Vindas

Participants

- Eugenia Arguedas Montezuma, Yocelín Ríos Montero (PRONAMEC - Secretaria Ejecutiva - SINAC)
- Mauricio Arias Zumbado (CUSBSE - Secretaria Ejecutiva - SINAC)
- Luis Fonseca (Asociación Costa Rica por Siempre)
- Alejandro Azofeifa, Ilsia Olivares, Jason Céspedes Vindas (Area de Conservación Osa – Parque Nacional Corcovado)
- Ivan Leiton-Harold Madrigal (Area de Conservación La Amistad Pacífico - Parque Internacional La Amistad - Parque Nacional Chirripó)
- Marylin Rodrigez Aria (Area de Conservación La Amistad Pacífico - Monitoring brigades)
- Roberto Fernández (Area de Conservación Guanacaste - Parque Nacional Sta. Rosa)
- Marvin Aguilar (Area de Conservación Central - Parque Nacional Braulio Carrillo)
- José Alonso Vindas (Area de Conservación Central - Reserva Jorge Manuel Dengo)
- Daniela Sánchez Araya (Reserva Biologica Lomas Barbudal)
- Concha Agero (OFB PACA-Corse – France)
- Camille Monchicourt (Parc national des Écrins – France)
- Désirée Segovia (Interpreter - Costa Rica)

+ Aurélie Chane-Yook, Emmanuelle Sarat, Camille Soupin (NatureXpairs – France – Meeting organisation)

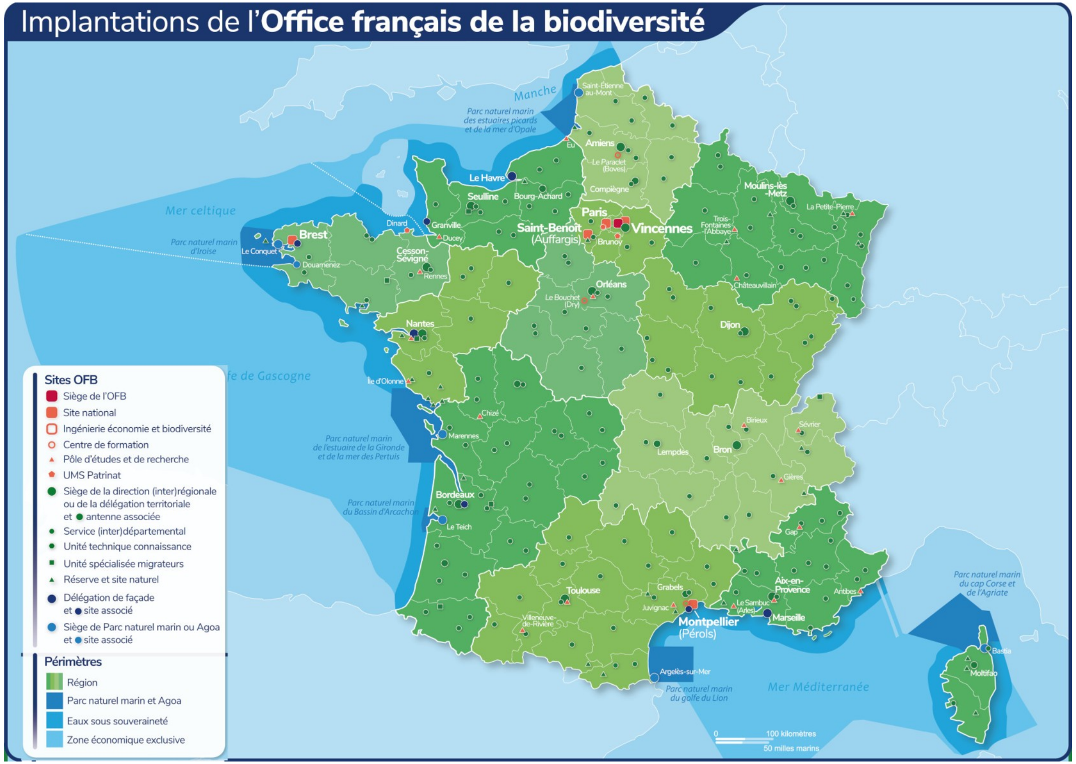
Travel

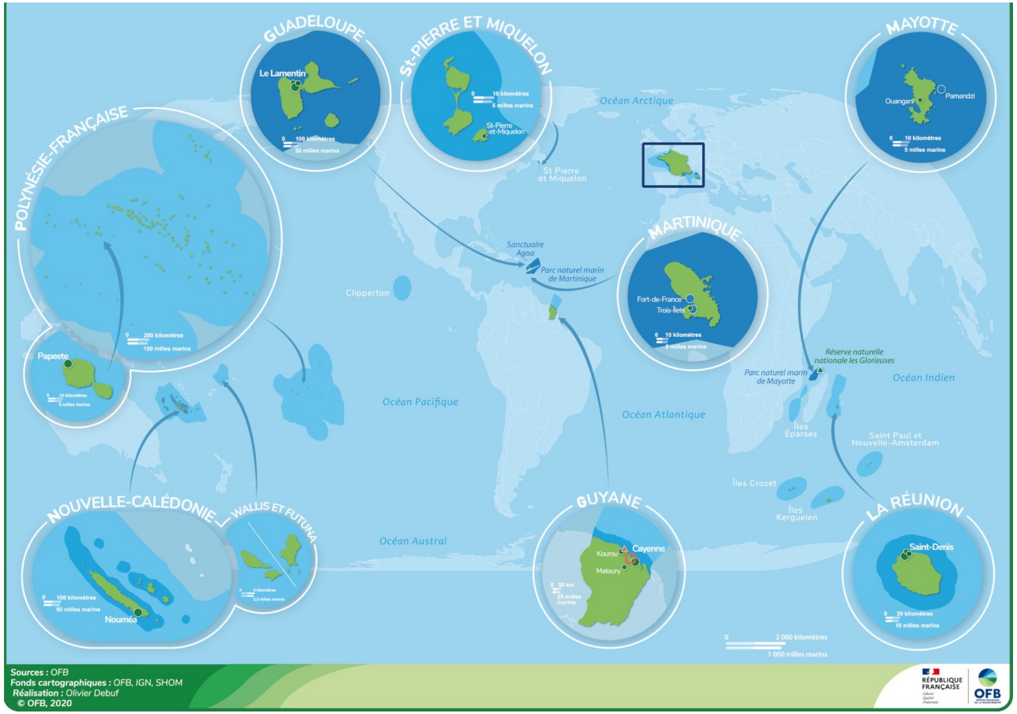

Poas volcan
San José
Dominical
Corcovado
national
park
OSA
conservation
LIMÓN
CARTAGO
COSTA RICA
SAN JOSÉ
Golfo de
Nicoya
Bahía de
Coronado


NORTH
ATLANTIC
OCEAN
UNITED
STATES
GREAT
PLAINS
MEXICO
Gulf of
Mexico
Caribbean Sea
Mid-Atlantic Ridge
North
American
Basin
ALGERIA
MOROCCO
LIBYA
EGYPT
TROPIC OF CANCER
EQUATOR

SINAC - Costa Rica protected areas

OFB


Implantations de l'Office français de la biodiversité
Manche
Mer celtique
Parc naturel marin des estuaires picards et de la mer d'Opale
Parc naturel marin d'Iroise
Brest
Le Conquet
Douarnenez
Dinard
Granville
Ducey
Cesson-Sévigné
Rennes
Le Havre
Seuline
Bourg-Achard
Saint-Etienne-au-Mont
Eu
Amiens
Le Paraclet (Boves)
Compiègne
Saint-Benoît (Auffargis)
Paris
Vincennes
Brunoy
Moulins-lès-Metz
La Petite-Pierre
Trois-Fontaines-l'Abbaye
Orléans
Le Bouchet (Dry)
Châteauvillain
Nantes
Dijon
Île d'Olonne
Chizé
Marennes
Parc naturel marin de l'estuaire de la Gironde et de la mer des Pertuis
Parc naturel marin du Bassin d'Arcachon
Bordeaux
Le Teich
Lempdes
Bron
Birieux
Sévrier
Gières
Gap
Toulouse
Villeneuve-de-Rivière
Grabels
Juvignac
Montpellier (Pérols)
Le Sambuc (Arles)
Aix-en-Provence
Marseille
Antibes
Argelès-sur-Mer
Parc naturel marin du golfe du Lion
Mer Méditerranée
Parc naturel marin du cap Corse et de l'Agriate
Bastia
Moltifao
Sites OFB
Siège de l'OFB
Site national
Ingénierie économie et biodiversité
Centre de formation
Pôle d'études et de recherche
UMS Patrinat
Siège de la direction (inter)régionale ou de la délégation territoriale et antenne associée
Service (inter)départemental
Unité technique connaissance
Unité spécialisée migrateurs
Réserve et site naturel
Délégation de façade et site associé
Siège de Parc naturel marin ou Agoa et site associé
Périmètres
Région
Parc naturel marin et Agoa
Eaux sous souveraineté
Zone économique exclusive
0 100 kilomètres
50 milles marins


GUADELOUPE
Le Lamentin
St-PIERRE ET MIQUELON
St-Pierre-et-Miquelon
MAYOTTE
Ouangani
Pamandzi
POLYNÉSIE-FRANÇAISE
Papeete
Océan Arctique
St Pierre et Miquelon
Sanctuaire Agoa
Parc naturel marin de Martinique
MARTINIQUE
Fort-de-France
Trois-Îlets
Clipperton
Océan Pacifique
Océan Atlantique
Océan Indien
Réserve naturelle nationale les Glorieuses
Parc naturel marin de Mayotte
Îles Éparses
Saint Paul et Nouvelle-Amsterdam
Îles Crozet
Îles Kerguelen
Océan Austral
NOUVELLE-CALÉDONIE
Nouméa
WALLIS ET FUTUNA
GUYANE
Kourou
Cayenne
Matoury
LA RÉUNION
Saint-Denis
0 2 000 kilomètres
1 000 milles marins
Sources : OFB
Fonds cartographiques : OFB, IGN, SHOM
Réalisation : Olivier Debuf
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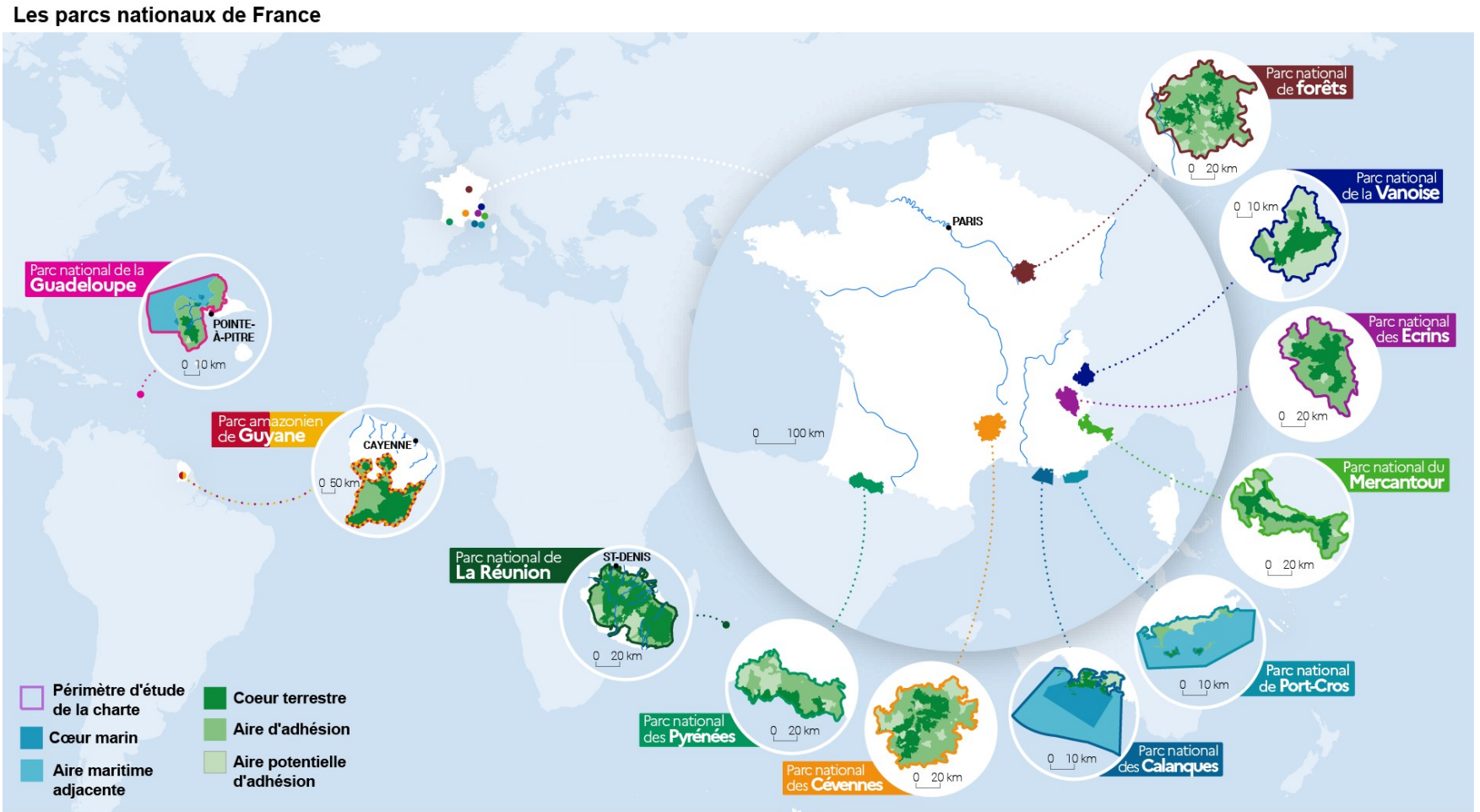
RÉPUBLIQUE FRANÇAISE
OFB

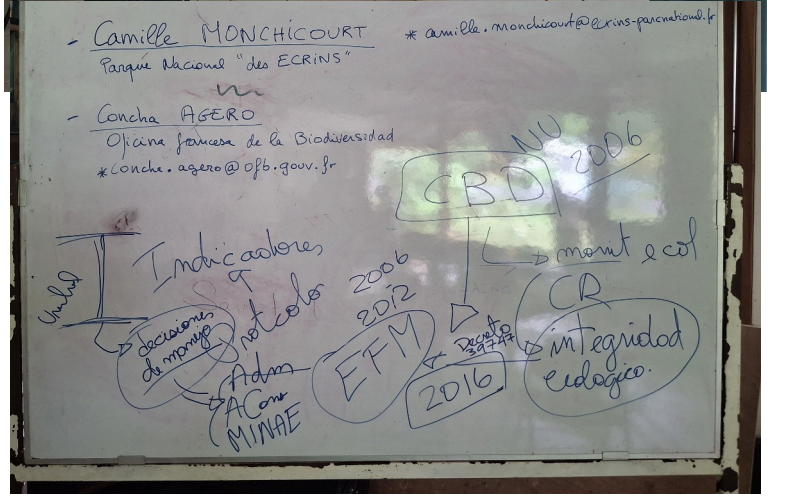
French national parks



Source : *IGN, Les parcs nationaux de France.Traitements : SDES - OFB, 2021*

Day 1 - Classroom

Day 1 - Presentations



Day 1

Thirsday October 16th

- Presentation and roundtable introduction
- Presentation of the Corcovado park and PRONAMEC project (Eugenia)
- OFB general presentation
- National parks and PNE general presentation
- PNE SI general presentation
- GeoNature presentation and demo
- PRONAMEC demonstration

Presentation by SINAC of its monitoring and conservation indicators platform, PRONAMEC.
Presentation by the Ecrins National Park and the French Biodiversity Office (OFB) about their institutions.
Presentation on open data access and the GeoNature tool developed by the French national parks. The Costa Rican rangers representing the national parks showed great interest in the GeoNature platform.
Finally, discussions addressed the issues of poaching and visitor management within the national parks.

Evening (7:00–11:00 p.m.) – Participation in the monitoring of sea turtle nesting.

After a presentation of our institutions (OFB and Ecrins National Park) by Camille and myself, SINAC introduced its monitoring and conservation indicators platform, PRONAMEC, and explained its main objectives.
The discussions also covered open access to SINAC's scientific data, as well as the standardization of data management protocols and tools.
The Costa Rican rangers representing the national parks were particularly interested in the GeoNature tool developed by the French national parks.
Finally, the group discussed poaching challenges and the management of visitor flow within the parks.

In the evening, we had the privilege of taking part in the scientific monitoring of sea turtle nesting, and the next morning we will head into the field to retrieve camera traps and then test AI-based photo analysis tools.

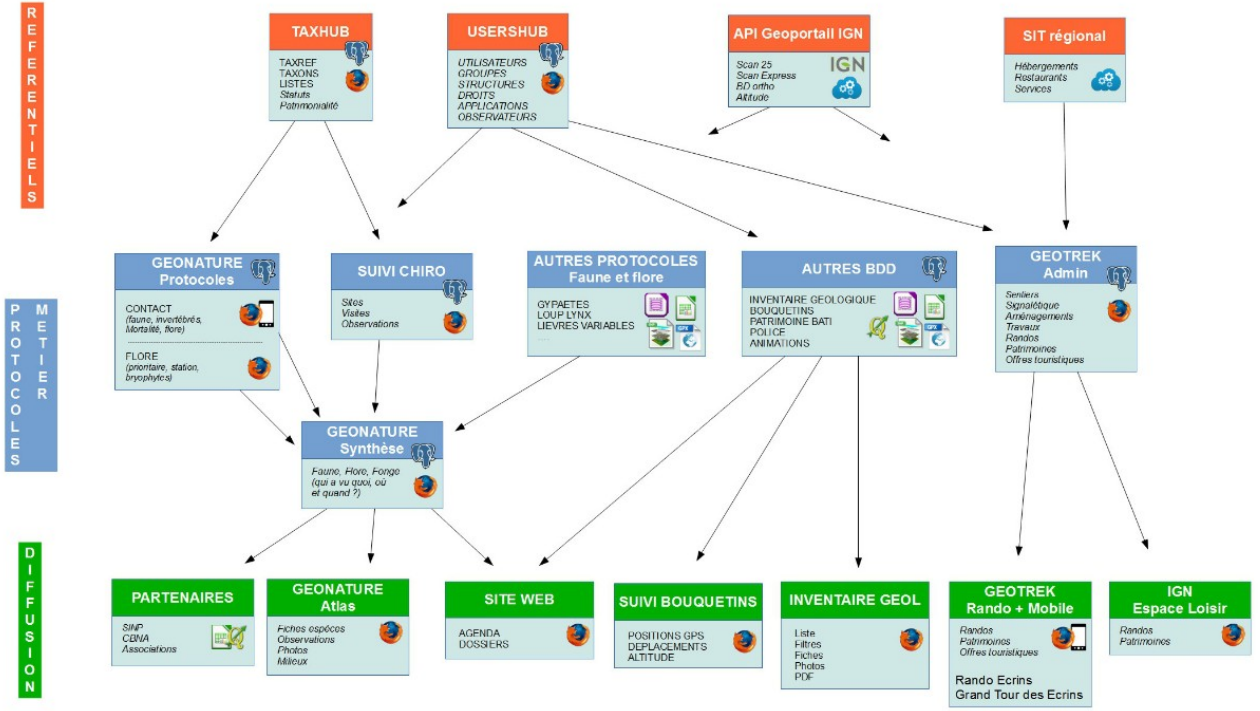
Day 1 - Presentations

Day 1 - Presentations

https://geonature.fr/documents/autres/2025-Costa-Rica/2025-10-SINAC-PRONAMEC.pdf
https://geonature.fr/documents/autres/2025-Costa-Rica/2025-10-OFB-general-presentation-Spanish.pdf
https://geonature.fr/documents/autres/2025-Costa-Rica/PNE-general-presentation.pdf
https://geonature.fr/documents/2017-12-SIGMA.pdf
https://geonature.fr/documents/2024-07-GeoNature-SINAC.pdf

Day 1 - Presentations

Architecture du SI



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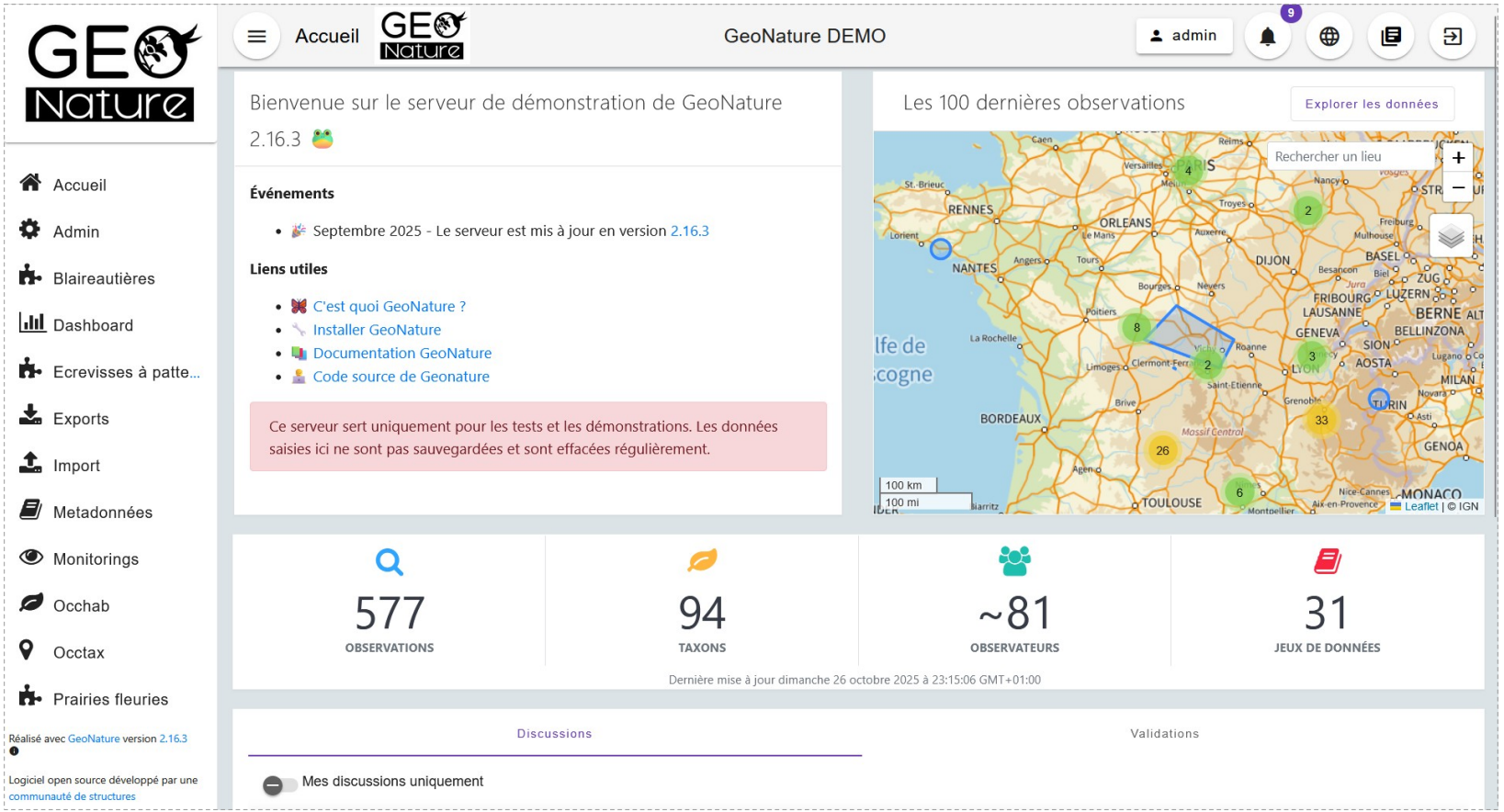
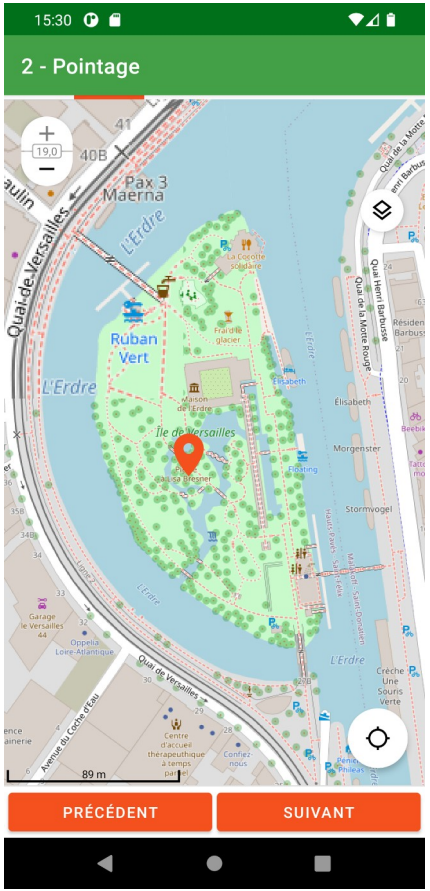
Day 1 - Presentations



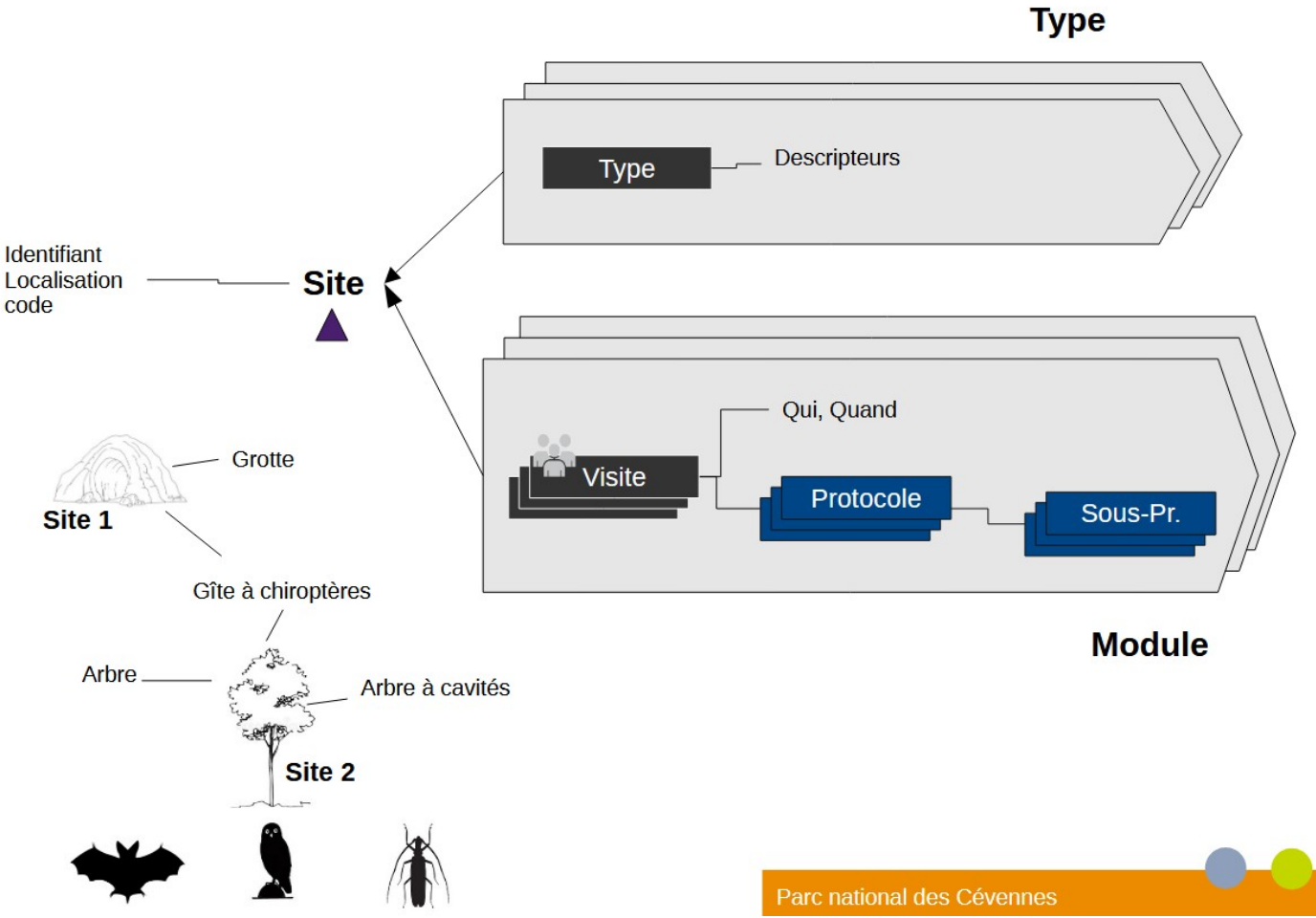


https://demo.geonature.fr/geonature/ (admin / admin)

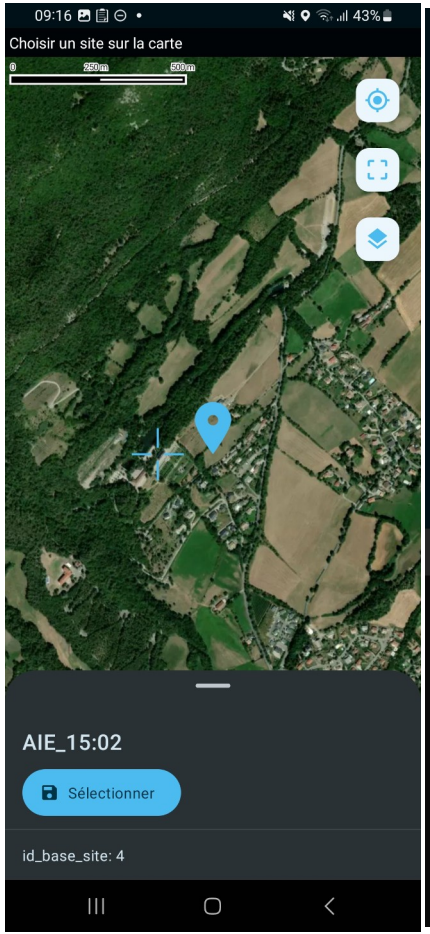
Day 1 - Presentations

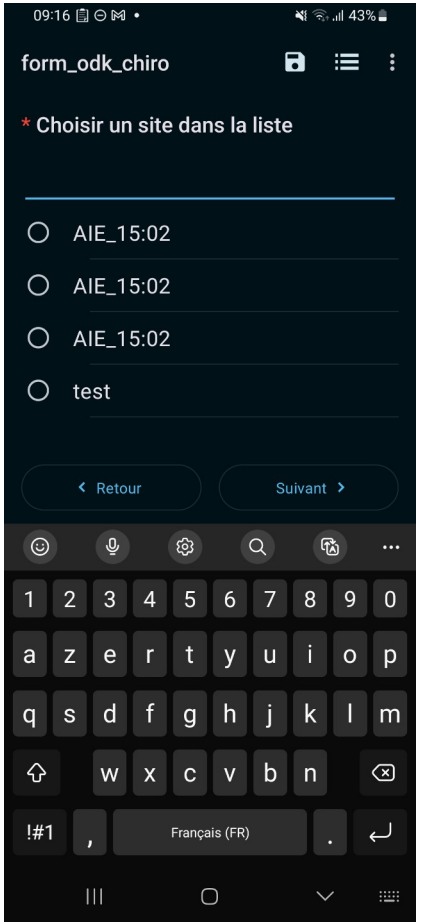
GeoNature-monitoring :

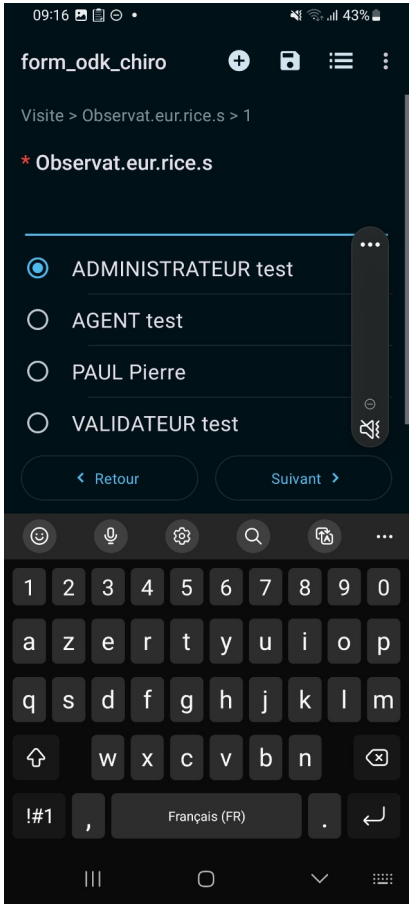
- Sites
  - Visits
    - Observations
      - *Individuals*

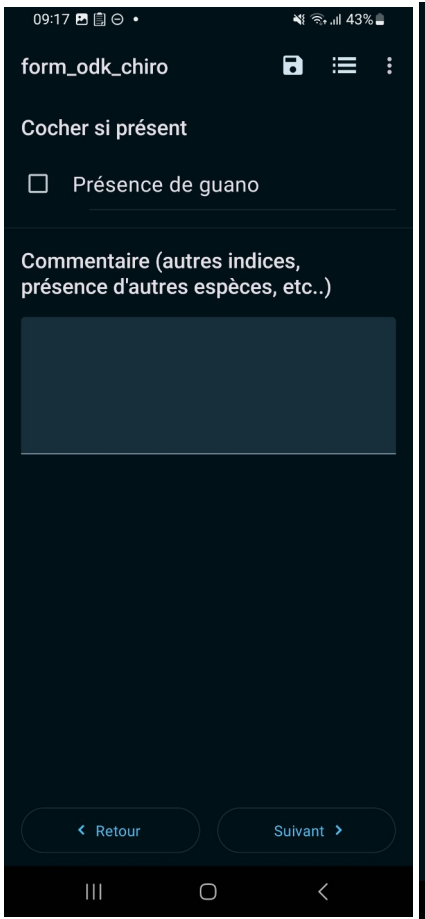


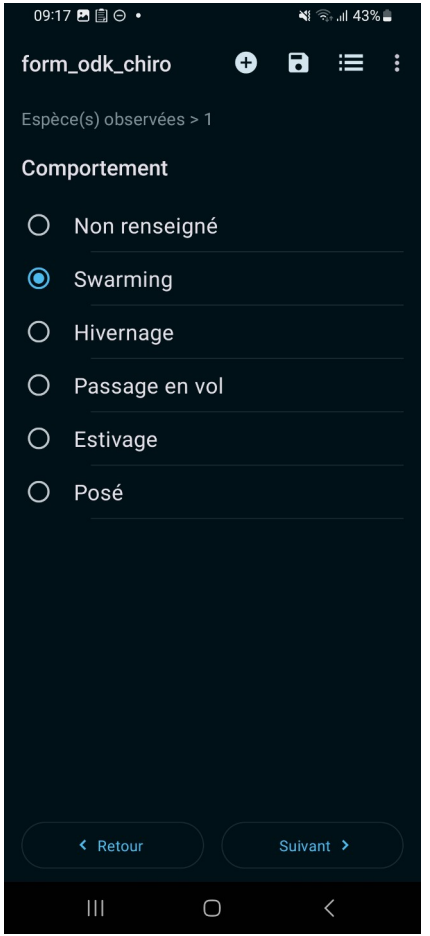
Day 1 - Presentations



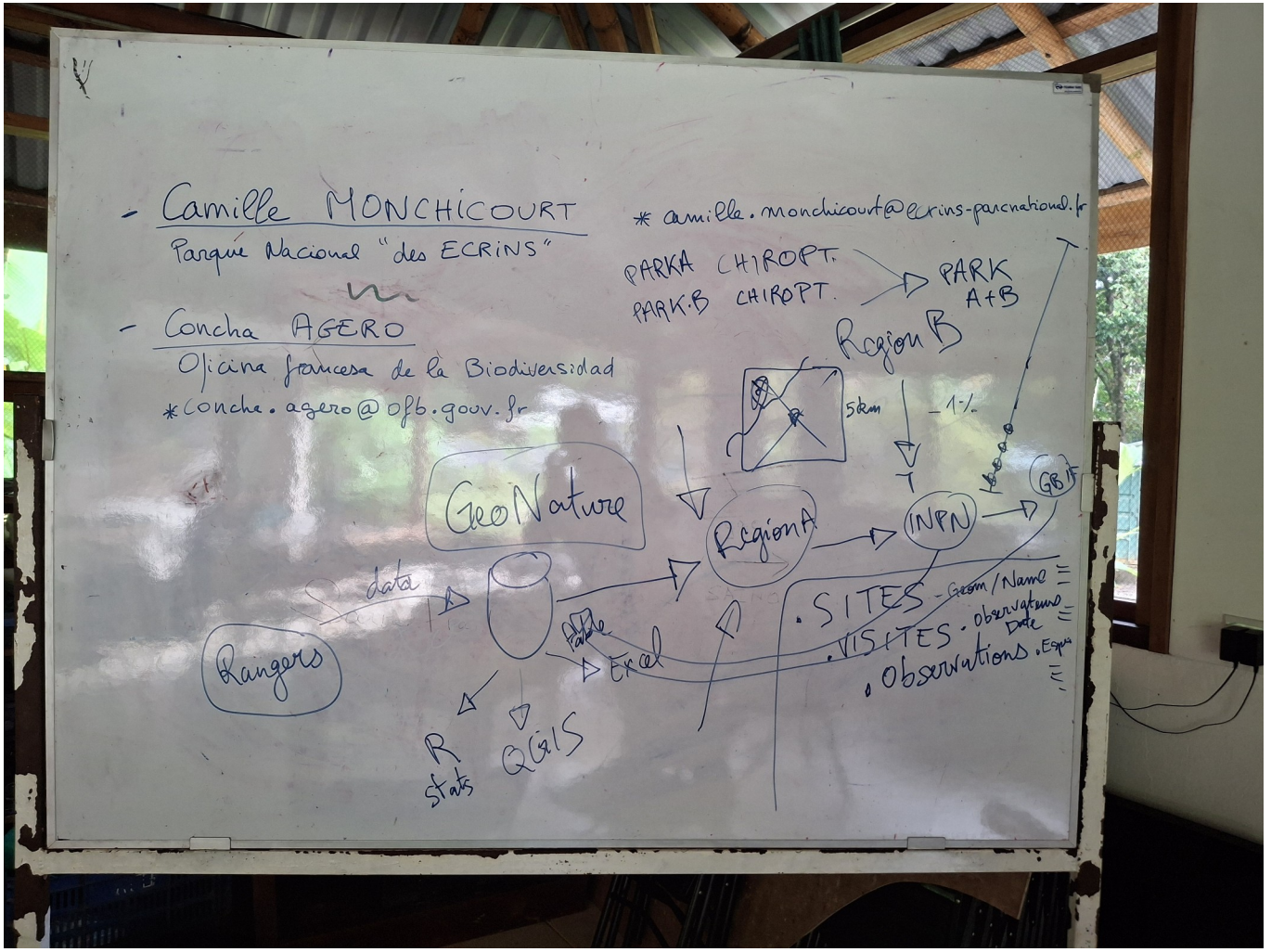








Day 1 - Presentations

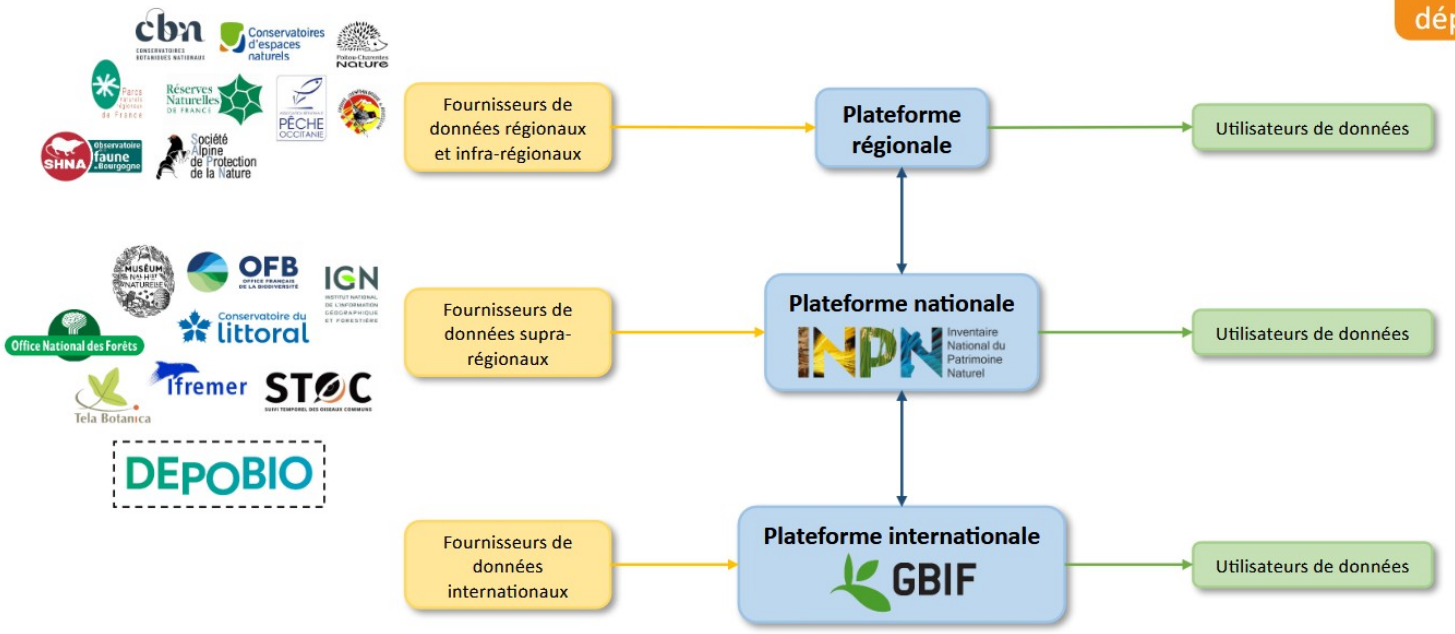


Day 1 - Presentations

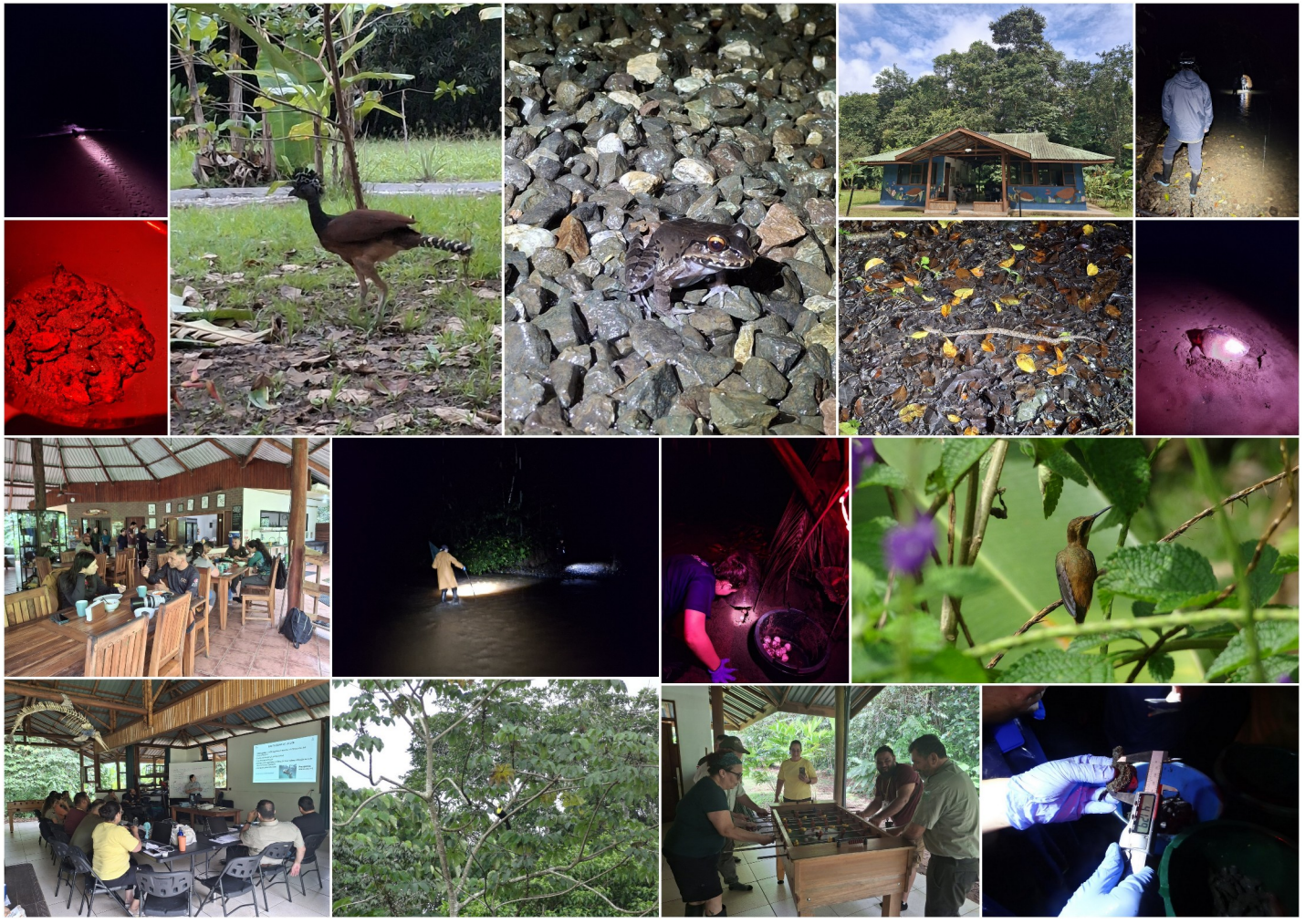
Le SINP, dispositif décentralisé

L'architecture du SINP et la circulation des données partagées

Principe de dépôt unique !



Day 1



Day 2

Friday October 17th

- Excursion to visit Corcovado national park (La Leona sector)
- Mapping challenge (QGIS and open data training and challenging) - GBIF, OSM, SNIT, …

Learn and train QGIS in 2 hours
Manipulate and discuss the power of open source tools and open data
Each one has to generate and present a map of his choice.

Meeting and exchange with rangers on-site, gaining a better understanding of the scientific monitoring activities conducted in the field, along with their constraints and challenges.

Back at the Osa station (4:00–6:00 p.m.)
“QGIS Mapping Challenge” – creation of maps in QGIS, with participants practicing the use of open data sources such as GBIF, OSM (OpenStreetMap), and SNIT (Costa Rica’s national open data reference platform, similar to France’s IGN).

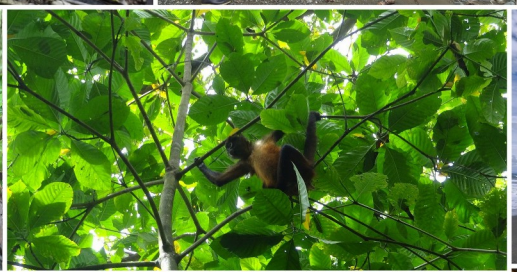
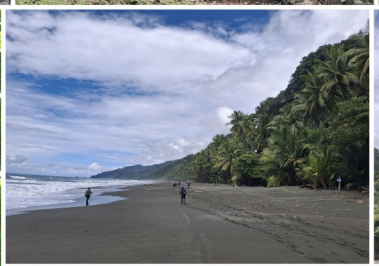
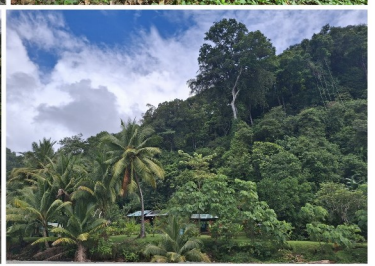
Day 2

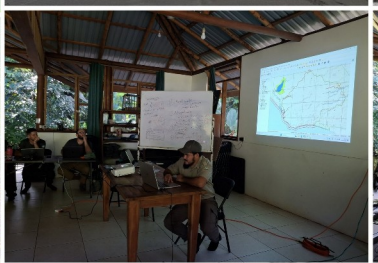






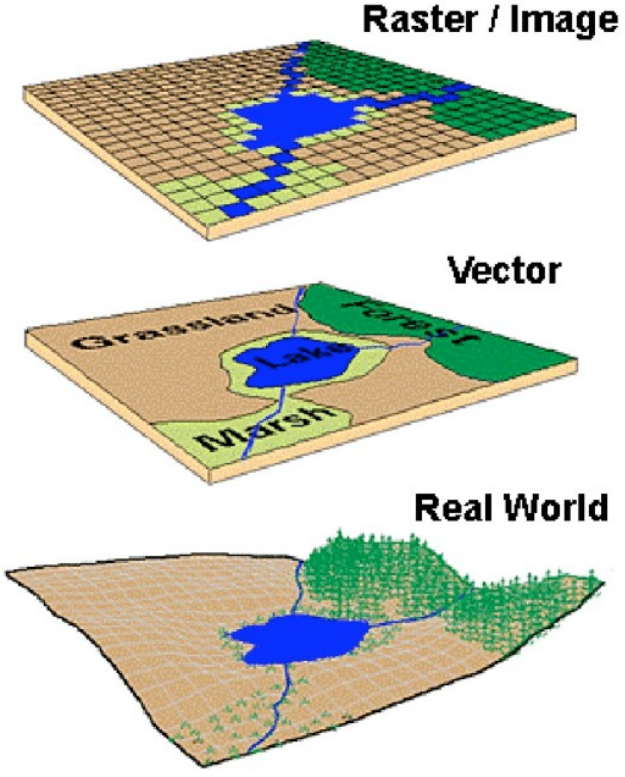


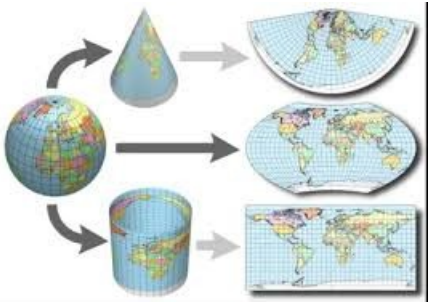



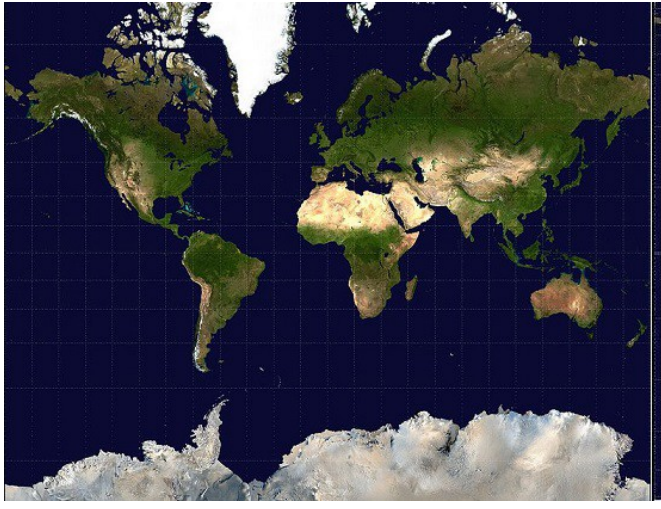

Day 2

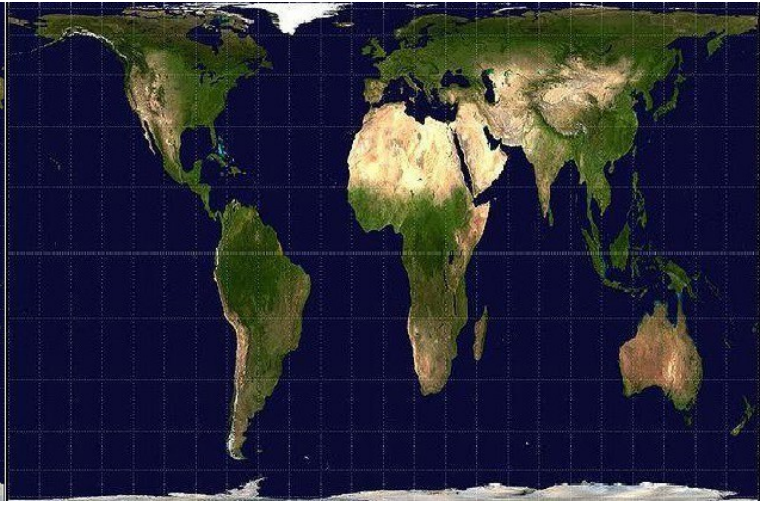
Day 2 - QGIS Mapping challenge



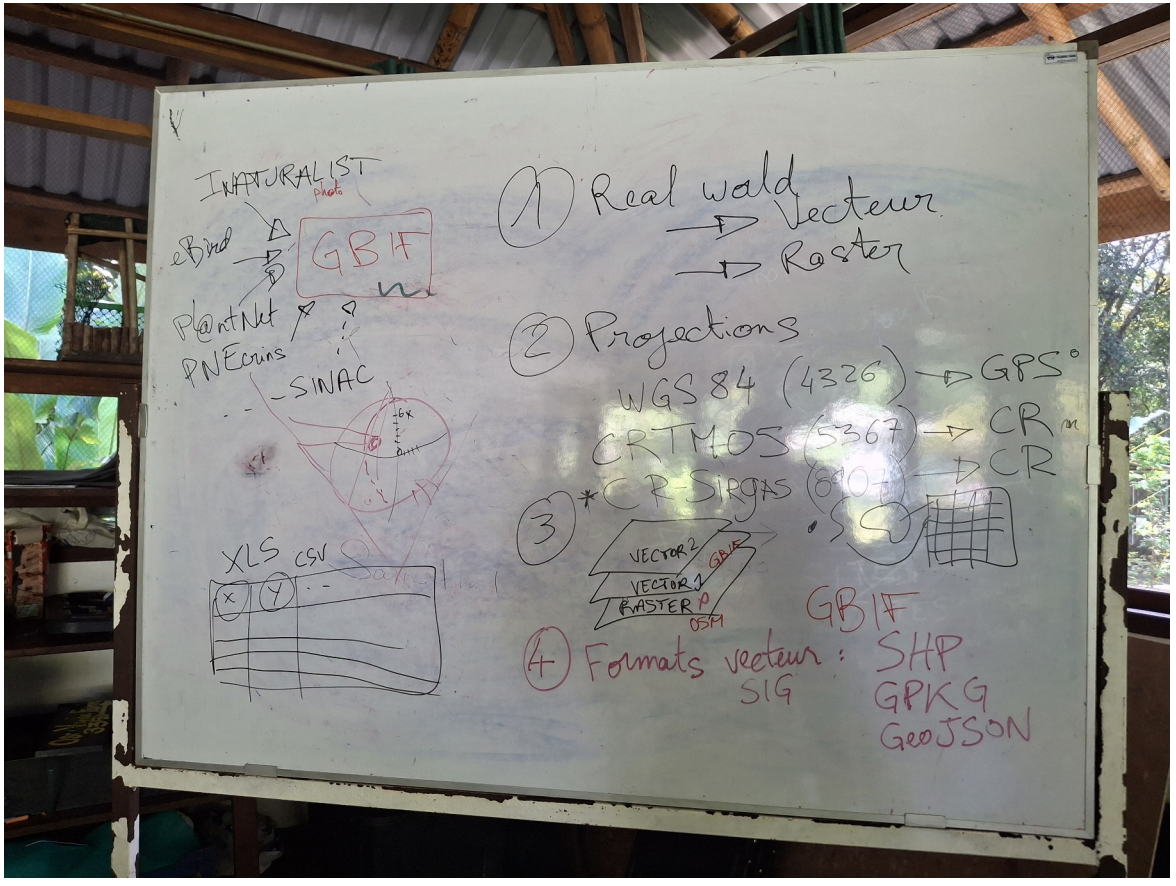
2 concepts :
- Raster / Vector
- Projections



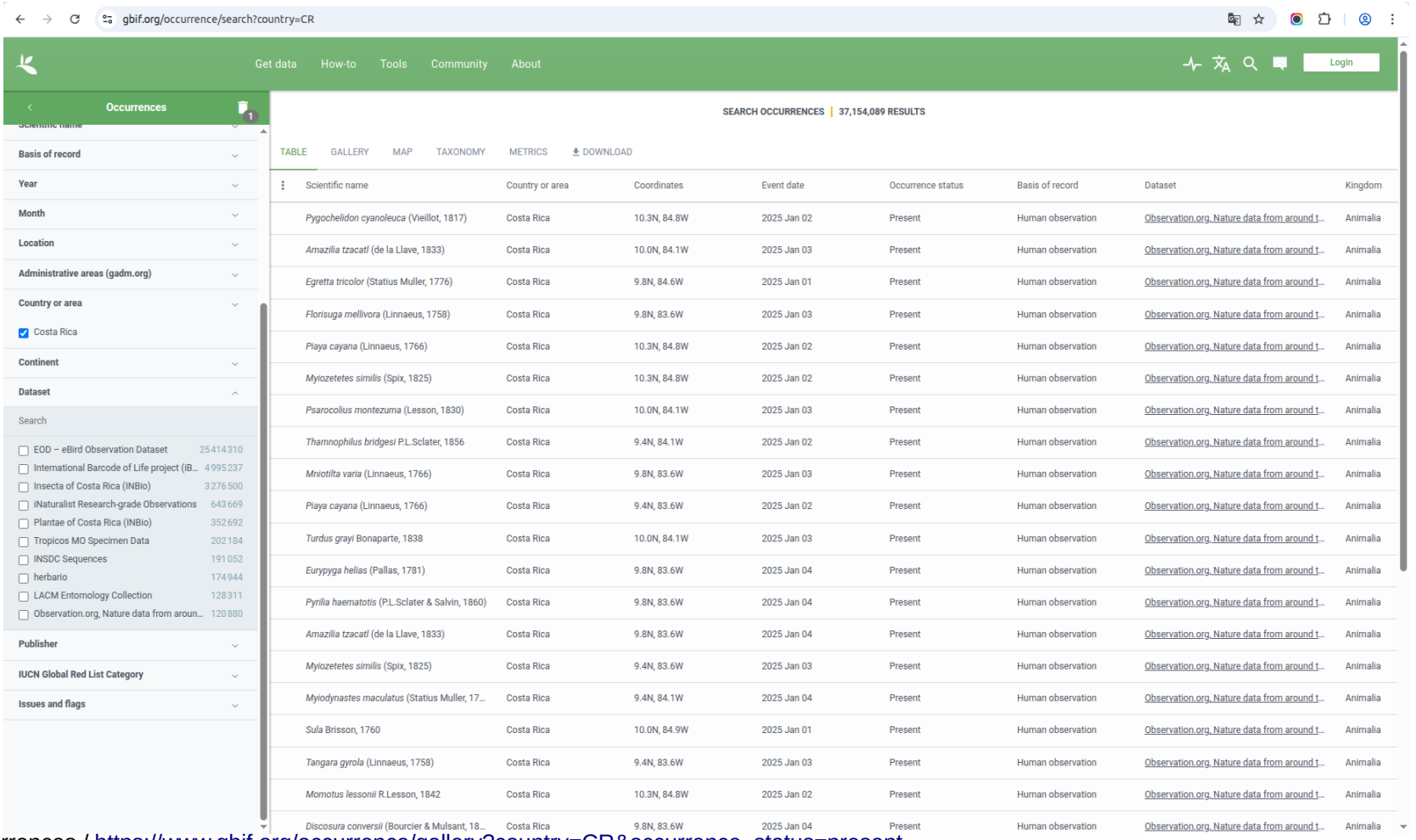




Day 2 - QGIS Mapping challenge

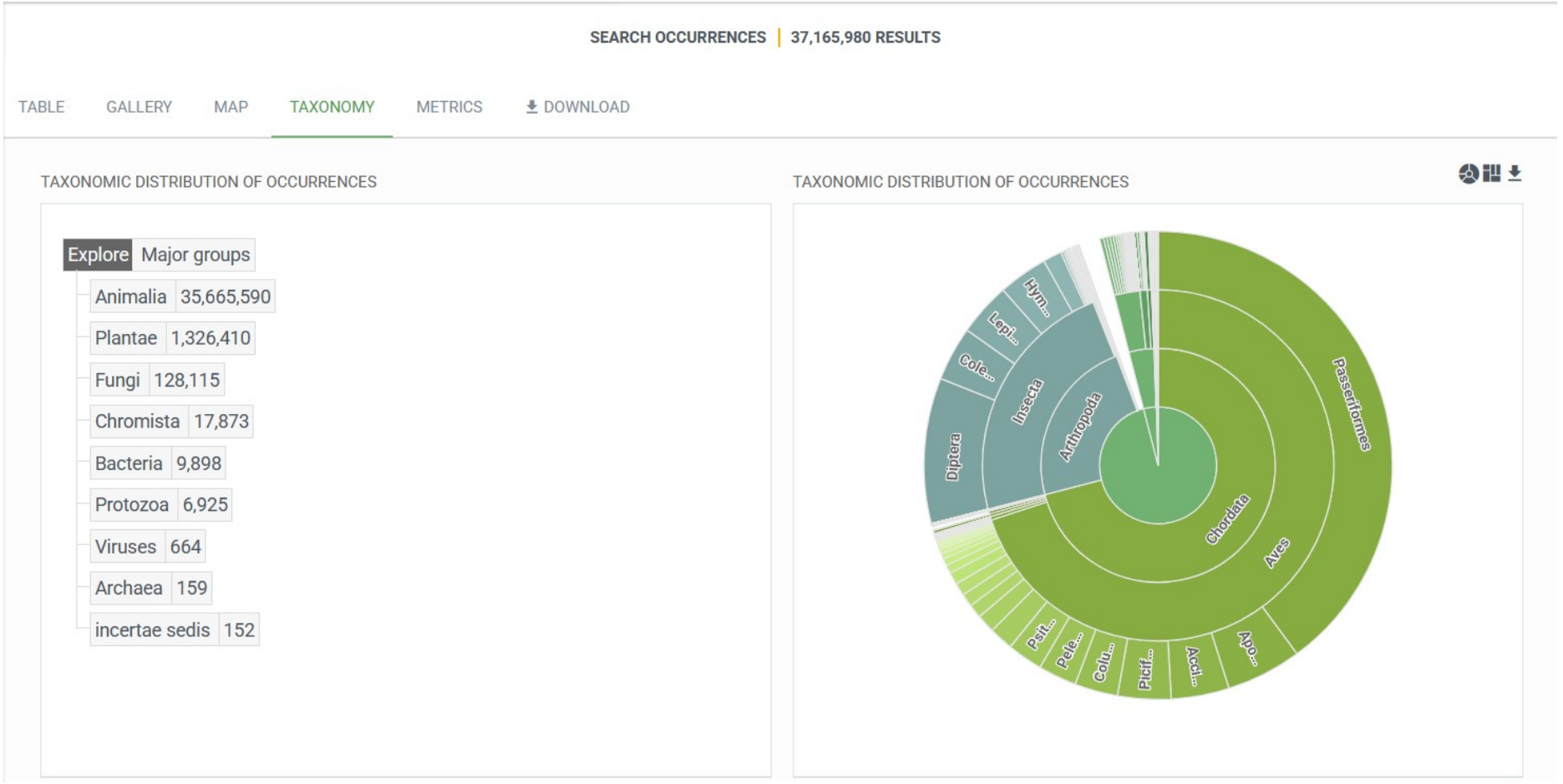


Day 2 - GBIF in Costa Rica



37,165,980 occurrences / https://www.gbif.org/occurrence/gallery?country=CR&occurrence_status=present

Day 2 - GBIF in Costa Rica



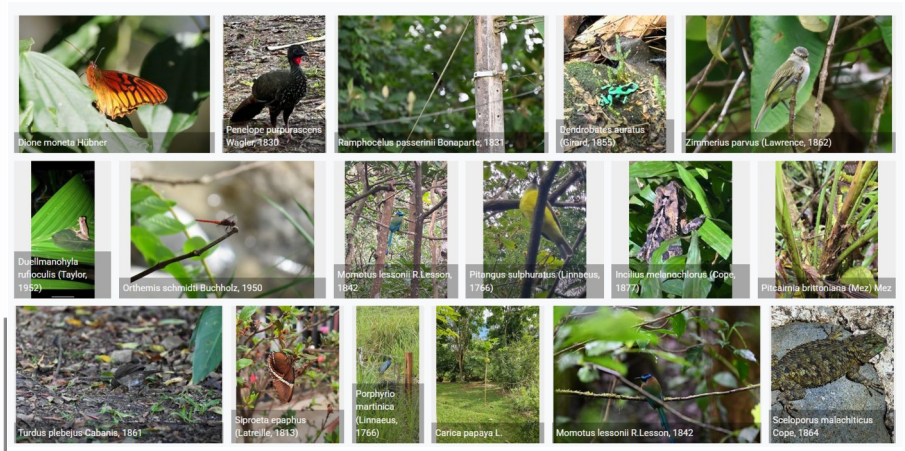
37,165,980 occurrences / https://www.gbif.org/occurrence/gallery?country=CR&occurrence_status=present

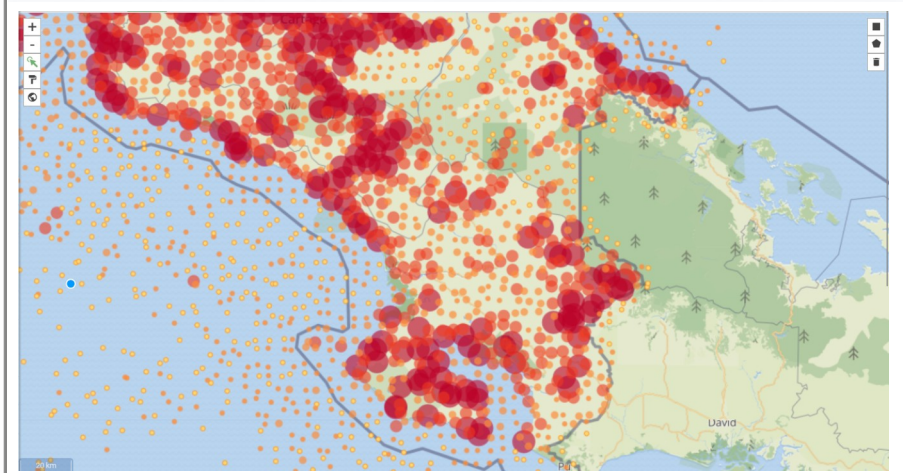
Day 2 - GBIF in Costa Rica

OCCURRENCES PER DATASET

Dataset	Count
EOD – eBird Observation Dataset	25,414,310
International Barcode of Life project (iBOL)	4,995,237
Insecta of Costa Rica (INBio)	3,276,500
iNaturalist Research-grade Observations	649,163
Plantae of Costa Rica (INBio)	352,692
Tropicos MO Specimen Data	202,222
INSDC Sequences	191,052
herbario	174,944
LACM Entomology Collection	128,311
Observation.org, Nature data from around the World	120,791

NEXT





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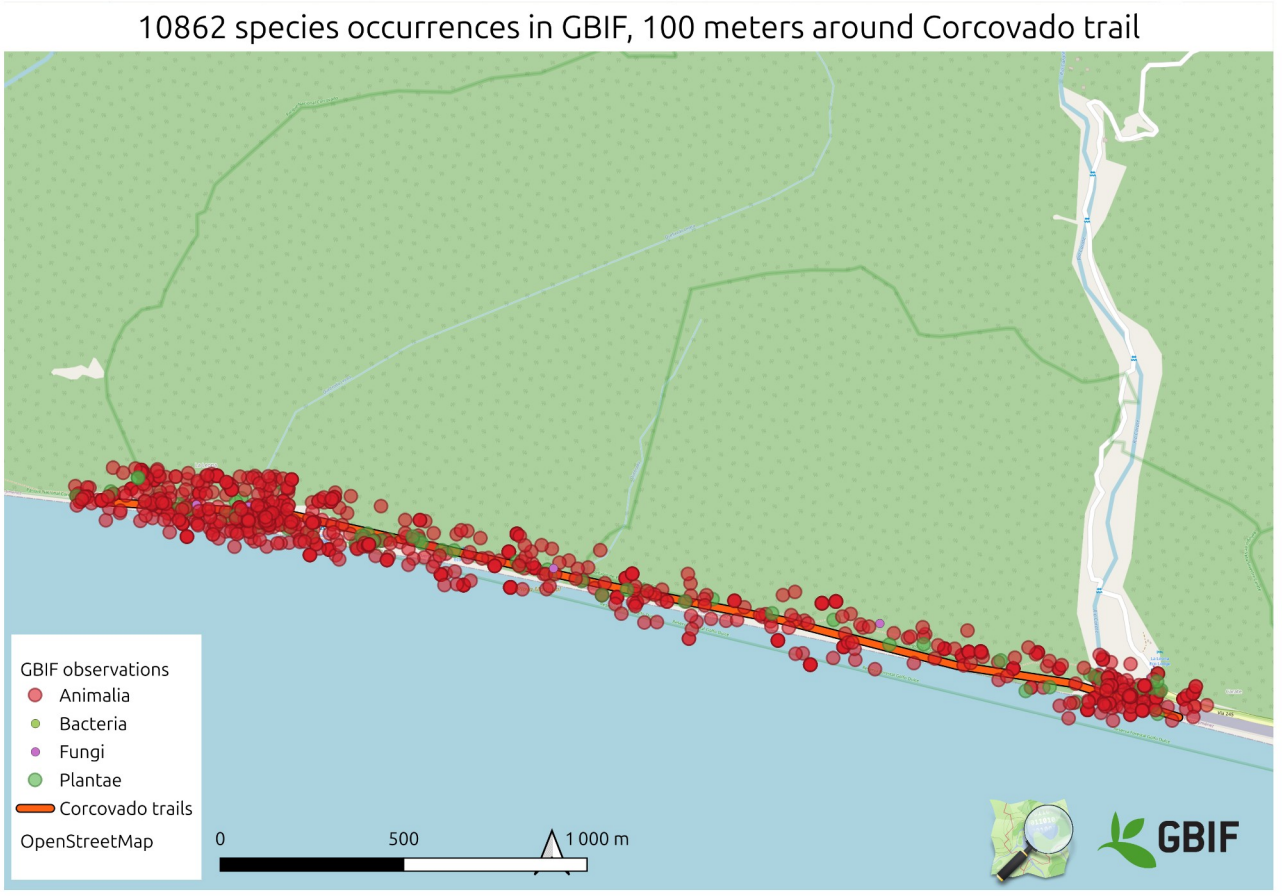
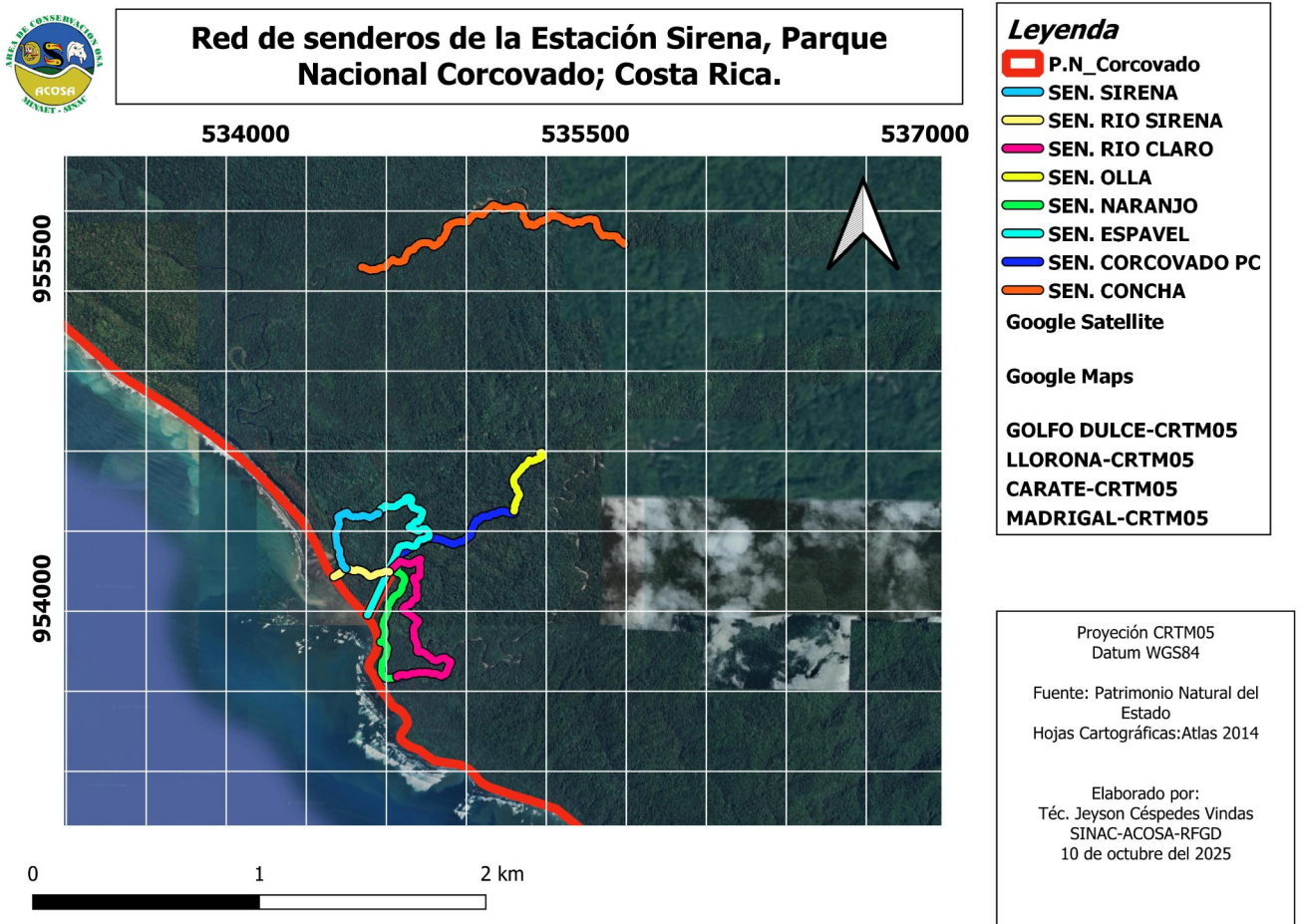
Day 2 - QGIS Mapping challenge



Day 2 - QGIS Mapping challenge



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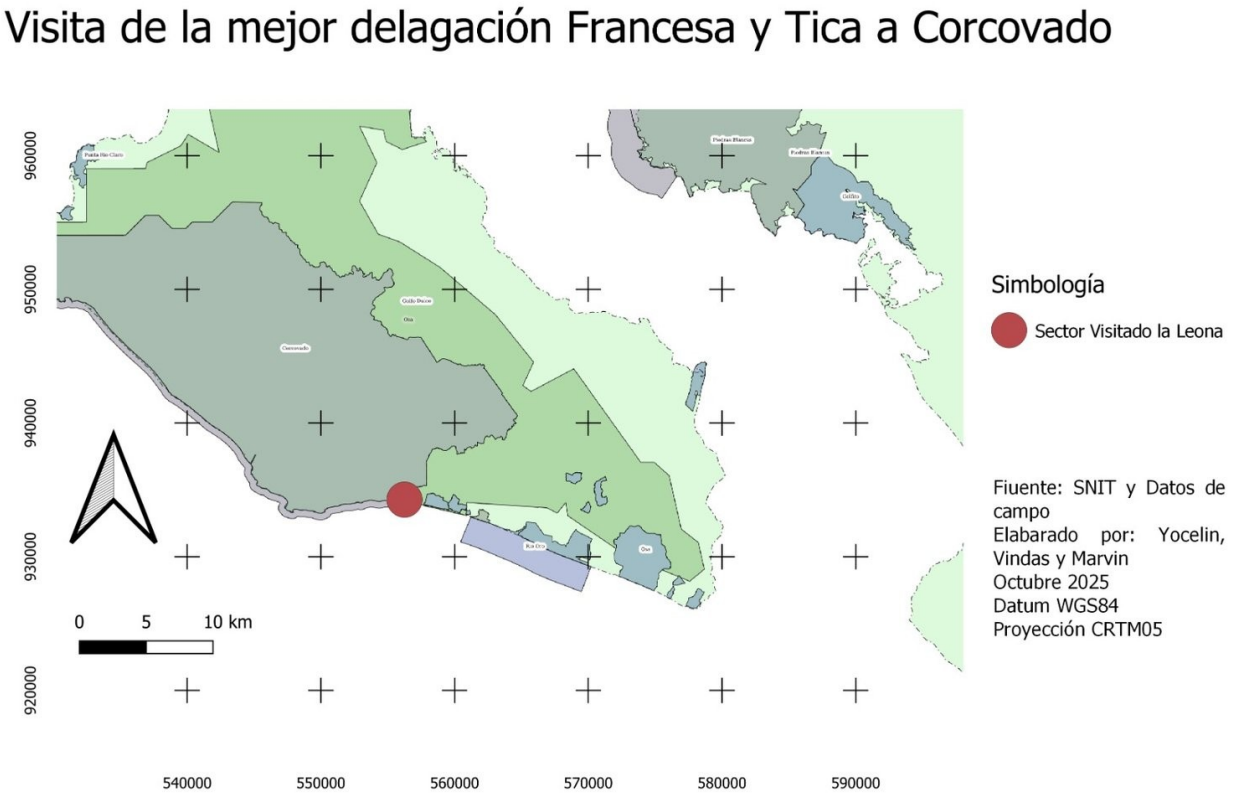

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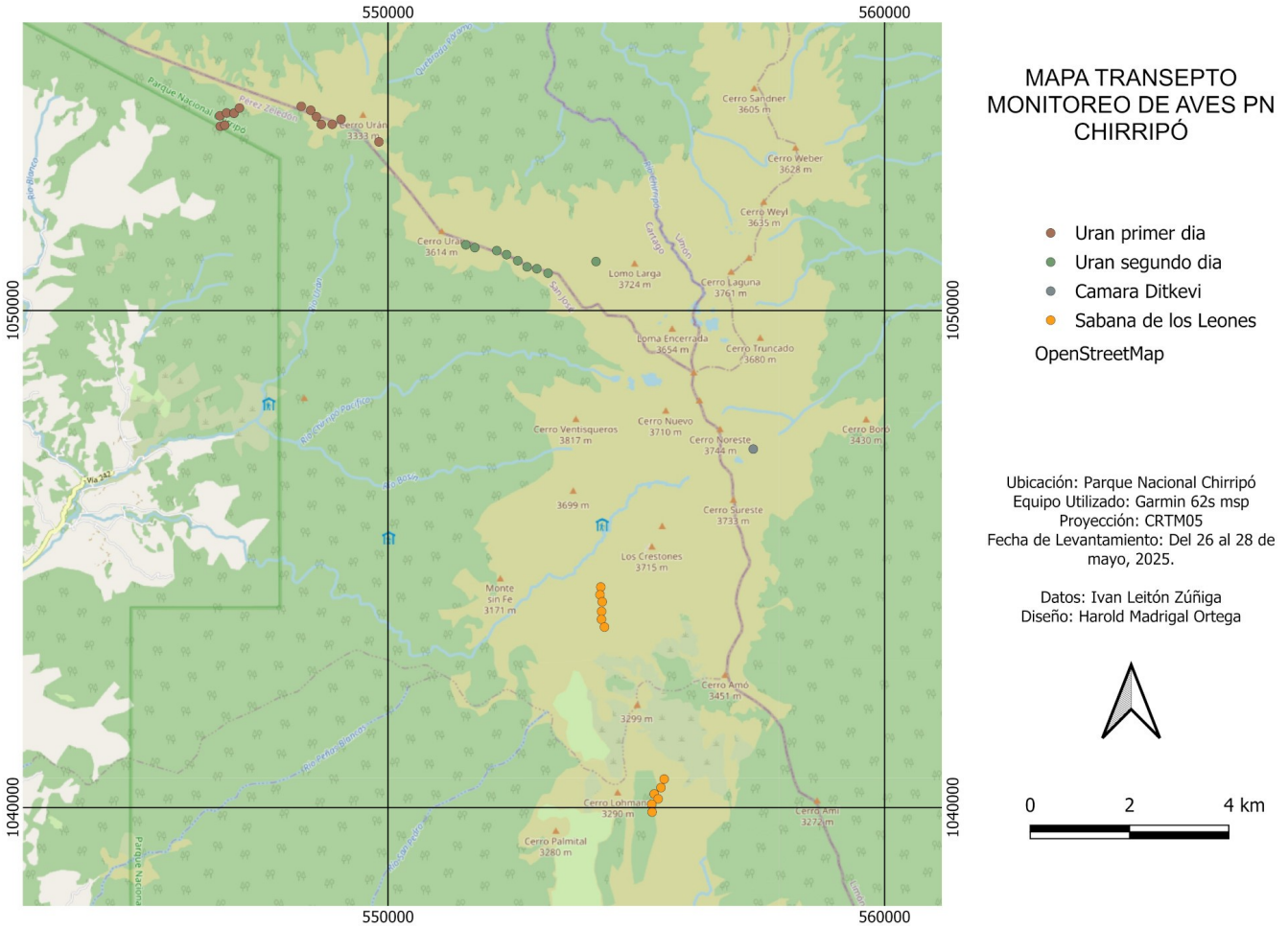

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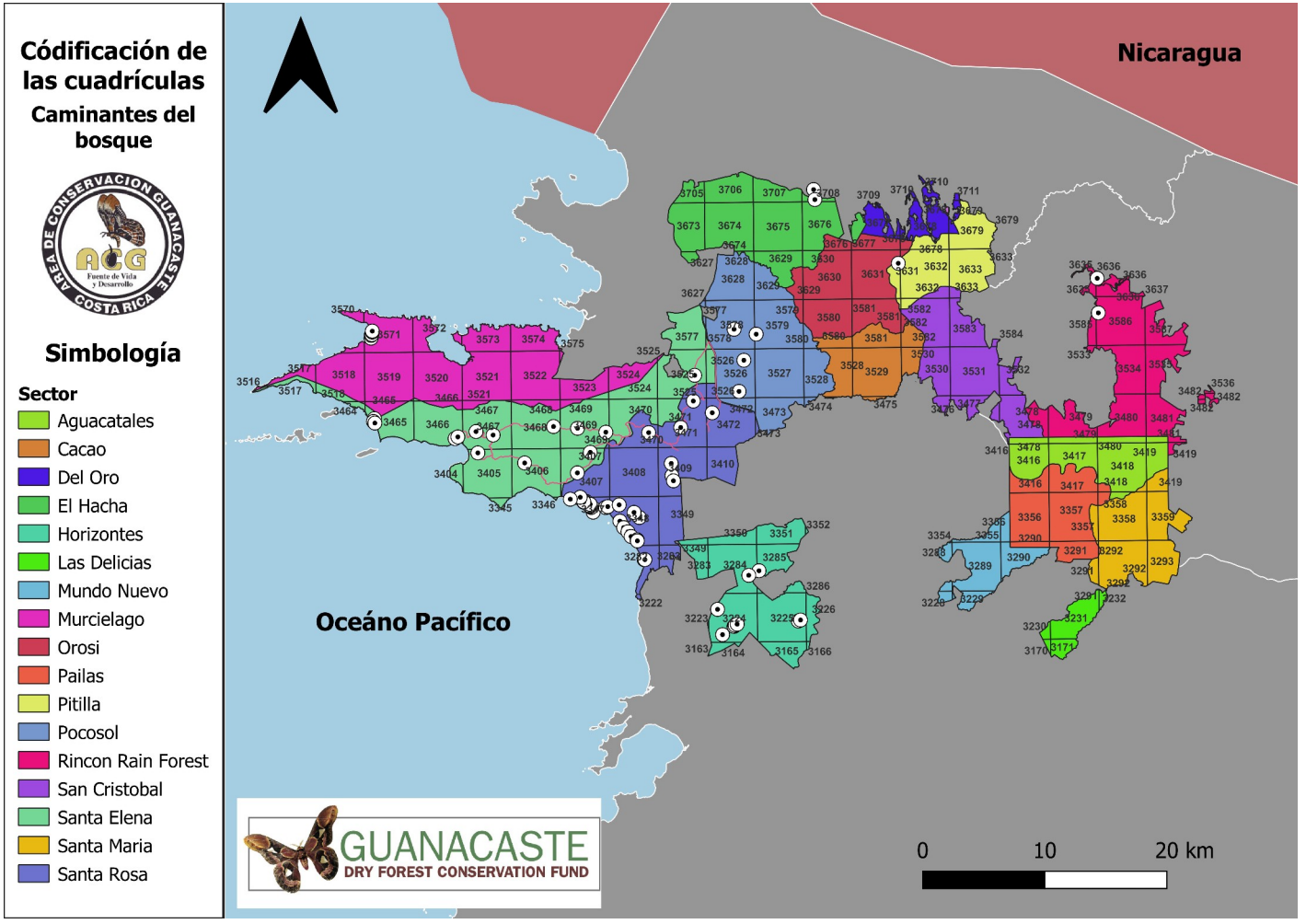

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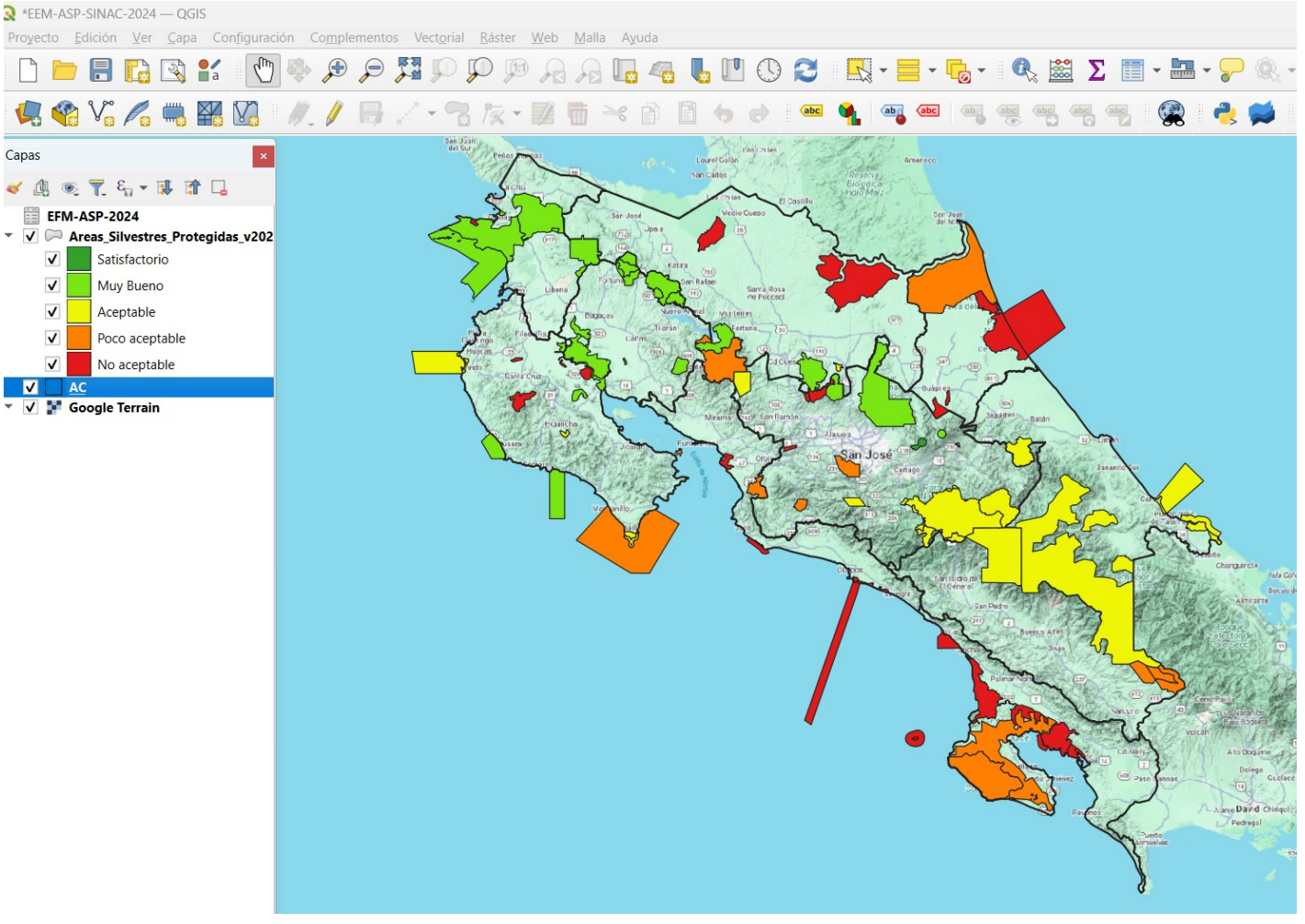

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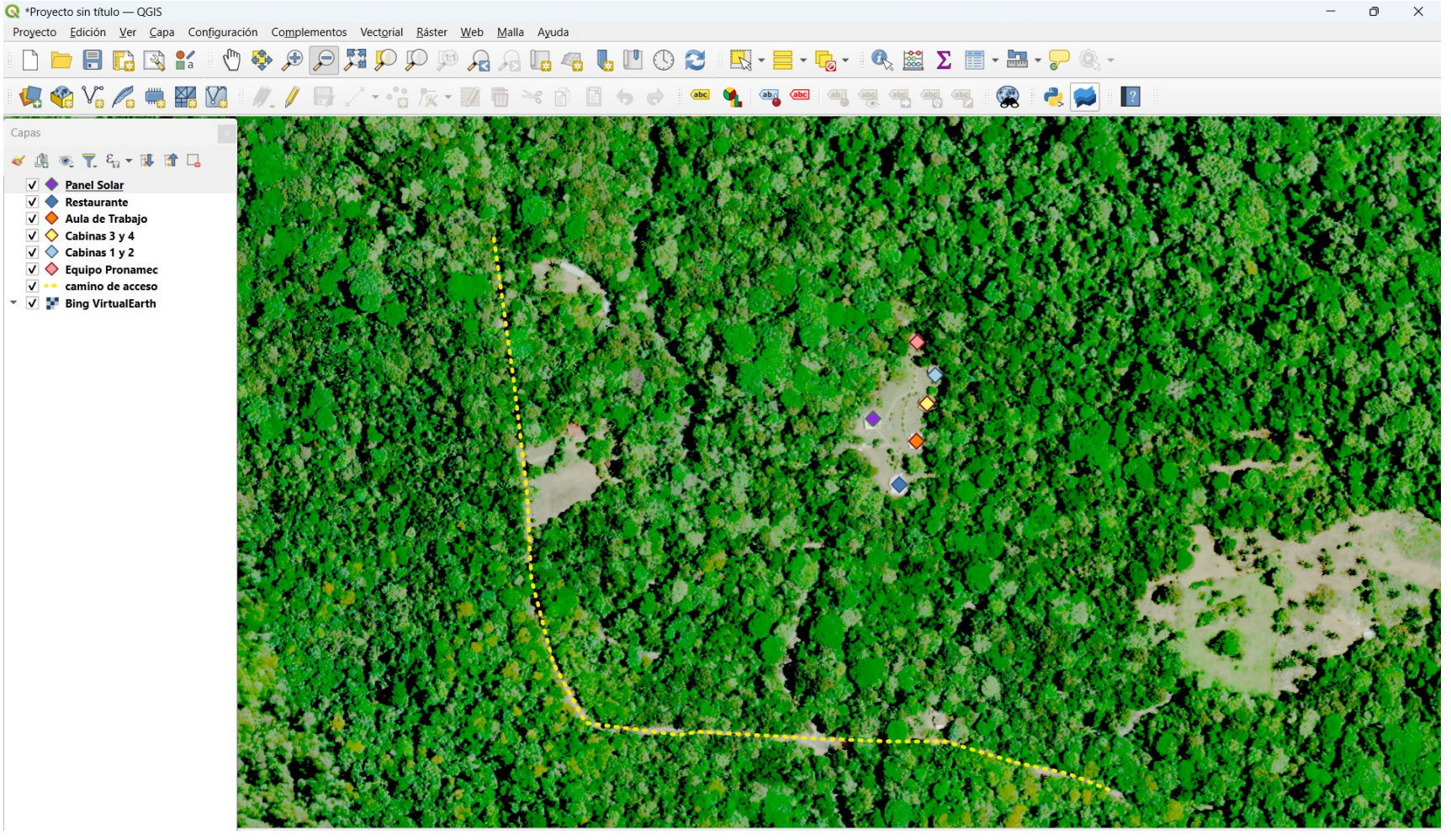

Day 2 - QGIS Mapping challenge

Day 2 - QGIS Mapping challenge

Day 2 - QGIS Mapping challenge

Jorge Alonso Vindas Angul

Jorge Alonso Vindas Angul

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File | Discussion | Read | Edit | View history

Download | Use this file | Use this file | Email a link | Information

Size of this preview: 450 × 600 pixels. Other resolutions: 180 × 240 pixels | 360 × 480 pixels | 576 × 768 pixels | 1,200 × 1,600 pixels.

Add a note

Original file (1,200 × 1,600 pixels, file size: 370 KB, MIME type: image/jpeg); (request rotation) Open in Media Viewer

Main menu hide
- Main page
- Welcome
- Community portal
- Village pump
- Help center

Participate
- Upload file
- Recent changes
- Latest files
- Random file
- Contact us
- Special pages

Contents hide
- Beginning
- Summary
- Licensing

Tools hide

Actions
- Move

General
- What links here
- Related changes
- Permanent link
- Page information
- Cite this page
- Get shortened URL
- Download QR code
- Concept URI
- Nominate for deletion

Print/export
- Download as PDF
- Printable version

Appearance hide

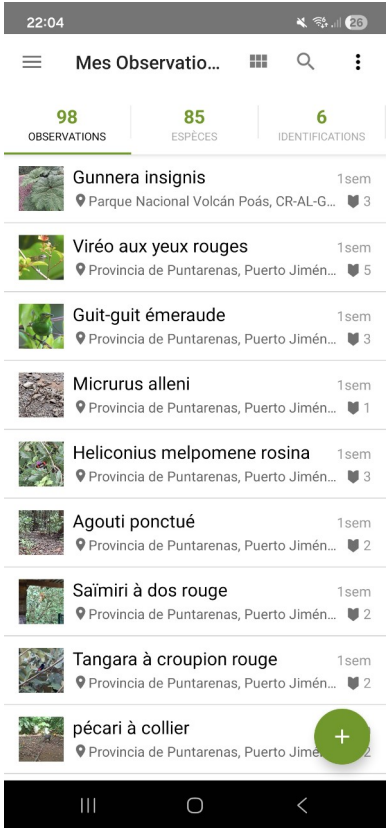
Text
- Small
- Standard
- Large

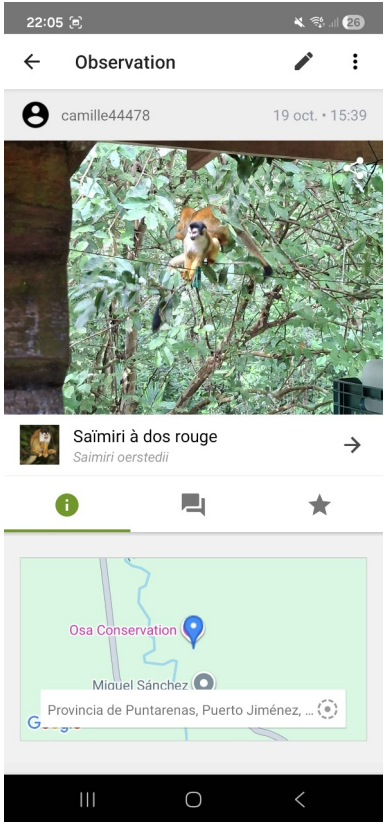
This page always uses small font size

Width
- Standard

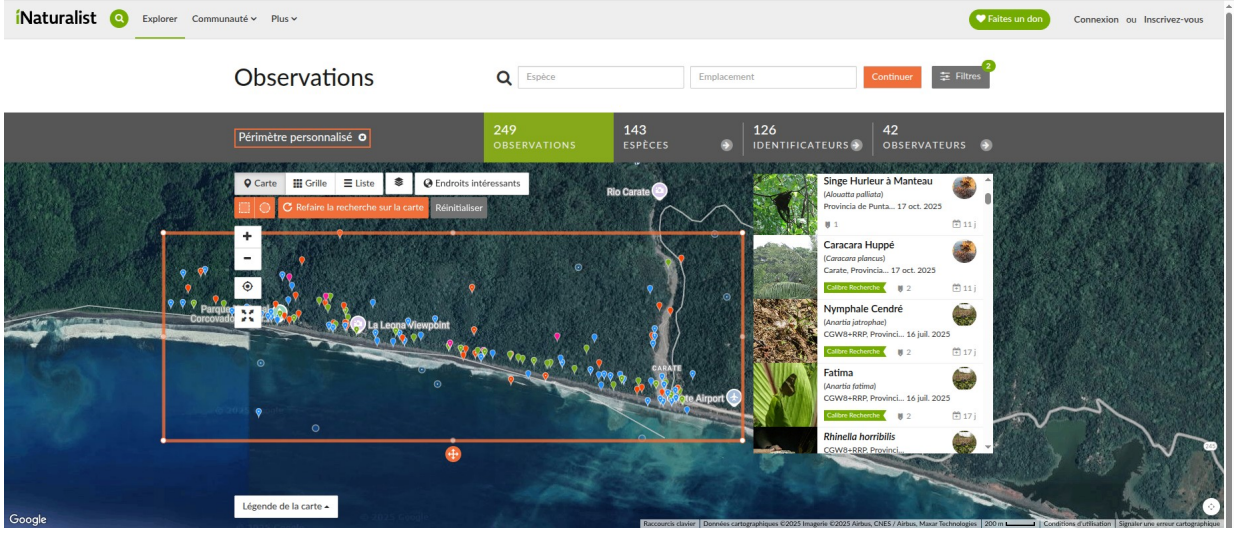
https://commons.wikimedia.org/wiki/File:Saimiri-oerstedii-OSA-Costa-Rica-2025-10-Jorge-Alonso-Vindas-Angul.jpg

iNaturalist





« iNaturalist is an online social network of people sharing biodiversity information to help each other learn about nature »
iNaturalist is an international database, open source web and mobile application and community. It is managed by an independent nonprofit organization.



https://www.inaturalist.org/

iNaturalist / GBIF

Observation.org

Pl@ntNet

eBird

iNaturalist

INPN Inventaire National du Patrimoine Naturel

...

AGREGATION

GBIF

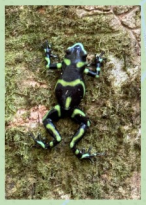
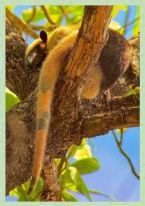
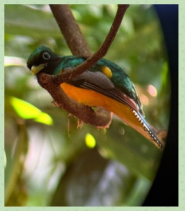
Along with several other data sources, iNaturalist feeds the GBIF database.

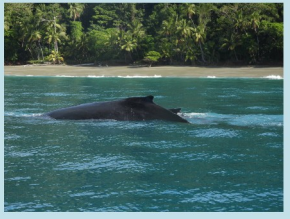
« GBIF—the Global Biodiversity Information Facility—is an international network and data infrastructure funded by the world's governments and aimed at providing anyone, anywhere, open access to data about all types of life on Earth. »

https://www.gbif.org

iNaturalist contribution

249 observations from 143 species, by 42 observers in iNaturalist / GBIF since 2025-01-01

Trichonephila clavipes
Pterygota
Caligo atreus
Tamandua mexicana
Rupornis magnirostris
Mimetica incisa
Pezizaceae
Gonyleptoidea
Macrobrachium americanum
Caligo brasiliensis
Dendrobates auratus
Rothschildia orizaba
Trichonephila clavipes
Begonia
Paraphrynus laevifrons
Sterculia apetala
Pristimantis
Kiekie
Posoqueria
Earliella
Saccopteryx bilineata
Trogon tenellus
Hylesia
Pochota fendleri
Camponotus
Syzygium malaccense
Iguana iguana
Alpinia
Plantae
Terminalia catappa
Automeris phrynon
Paraphrynus
Lontra
Ocypode gaudichaudii
Hibiscus
Platydesmus
Caracara plancus
Tamandua mexicana
Apinae
Cupiennius coccineus
Coenobita compressus
Terminalia catappa
Heliconia stilesii
Erythrodiplax funerea
Alpinia purpurata
Mellitidae
Hibiscus
Ficus
Ara macao
Crocodylus acutus
Platyphora panamensis
Acanthomorpha
Tapirus bairdii
Pezizomycotina
Opsiphanes
Cocos nucifera
Penelope purpurascens
Atelidae
Steirastoma histrionicum
Actitis macularius
Symphonia globulifera
Cebus
Cebus imitator
Bactris major
Musa
Sciurus granatensis
Mellita quinquiesperforata
Ficus citrifolia
Ateles geoffroyi
Siphonaria gigas
Aves
Ficus
Ateles geoffroyi
Buteogallus anthracinus
Costus laevis
Hydrobates
Tetrapteryx
Nasutitermes corniger
Ctenosaura similis
Phoebis
Rupornis magnirostris
Vitex
Coenobita compressus
Ipomoea pes-caprae
Pelecanus occidentalis
Caracara plancus
Actinopterygii
Megaptera novaeangliae
Morpho amathonte
Saccopteryx
Russelia sarmentosa
Biolleyana pictifrons
Cynea cannae
Schistocerca
Basiliscus basiliscus
Chioides catillus
Daptrius chimachima
Anartia fatima
Passalus
Anolis osa
Alouatta palliata
Astrocaryum standleyanum
Cotinga ridgwayi
Buteogallus anthracinus
Phoebis
Rupornis magnirostris
Vitex
Ipomoea pes-caprae
Caracara plancus
Actinopterygii

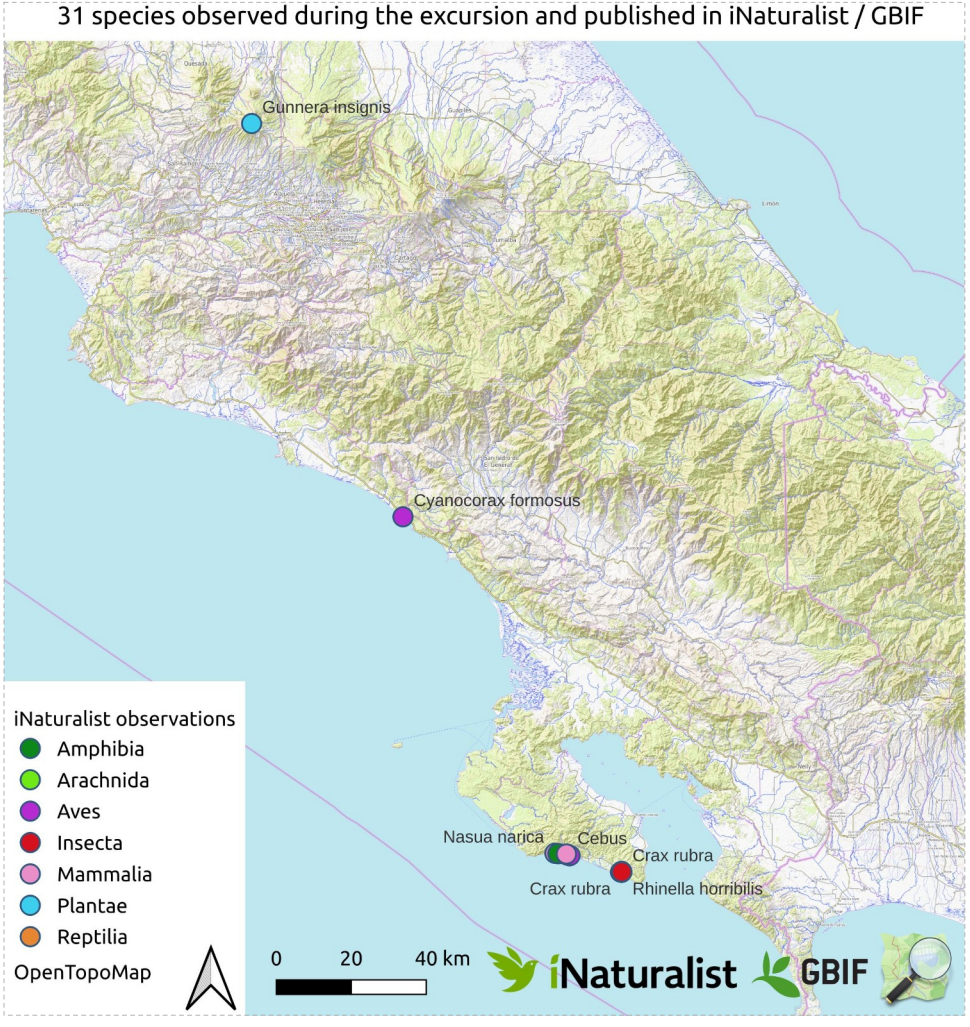
iNaturalist (since 2025-01-01)
- Actinopterygii
- Amphibia
- Animalia
- Arachnida
- Aves
- Fungi
- Insecta
- Mammalia
- Mollusca
- Plantae
- Reptilia

OpenStreetMap

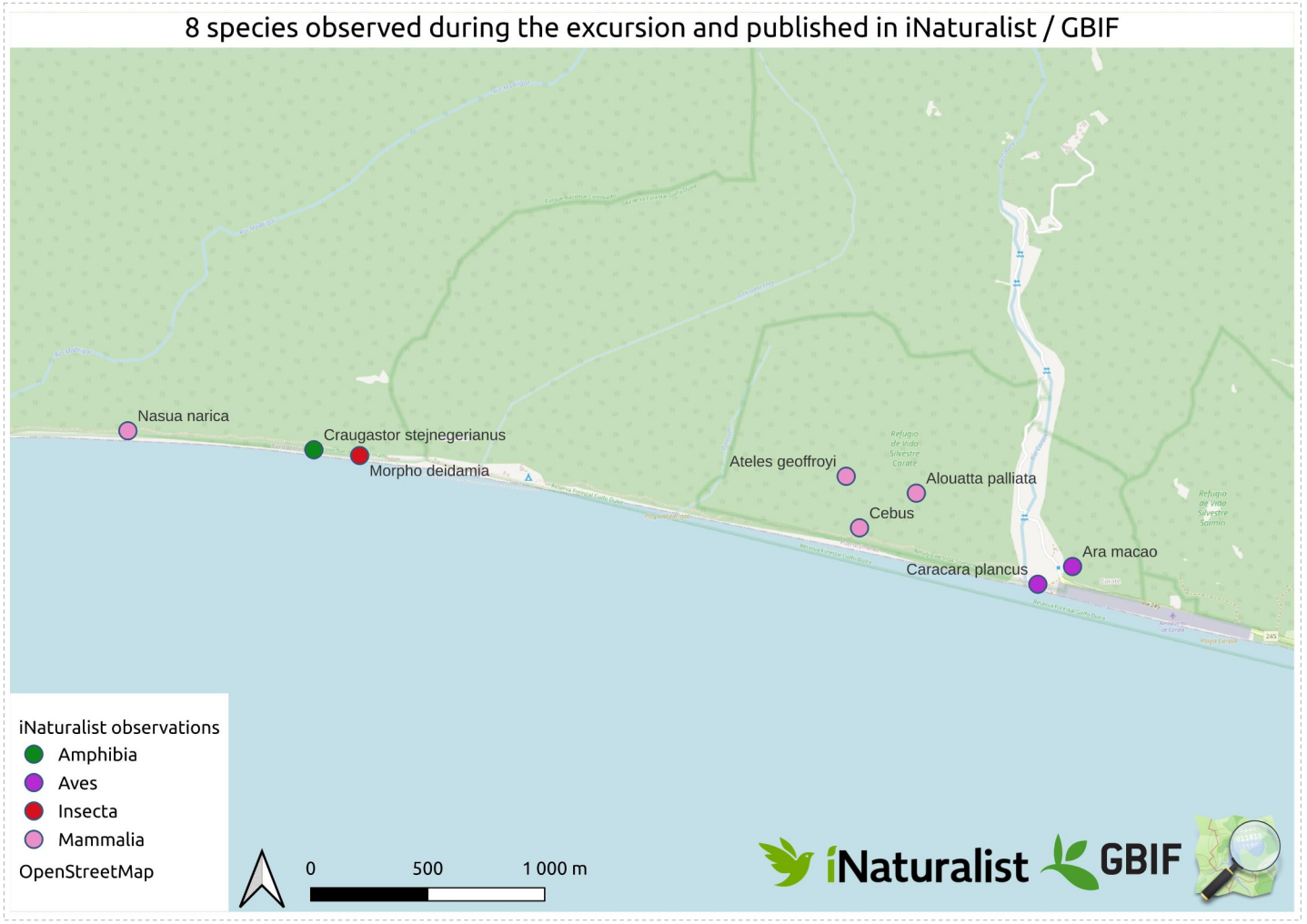
0 0,25 0,5 km

iNaturalist GBIF

iNaturalist contribution



iNaturalist contribution



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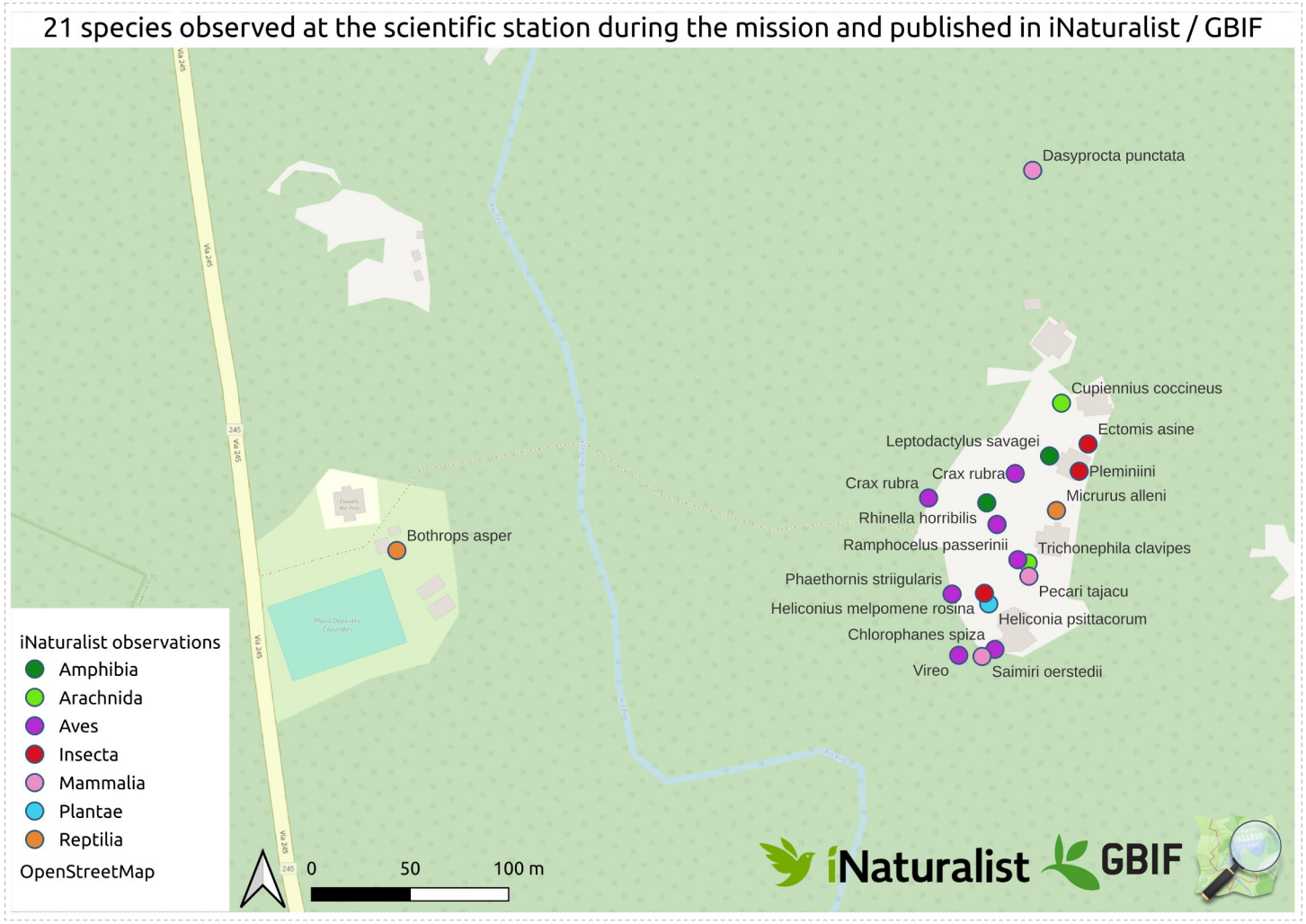

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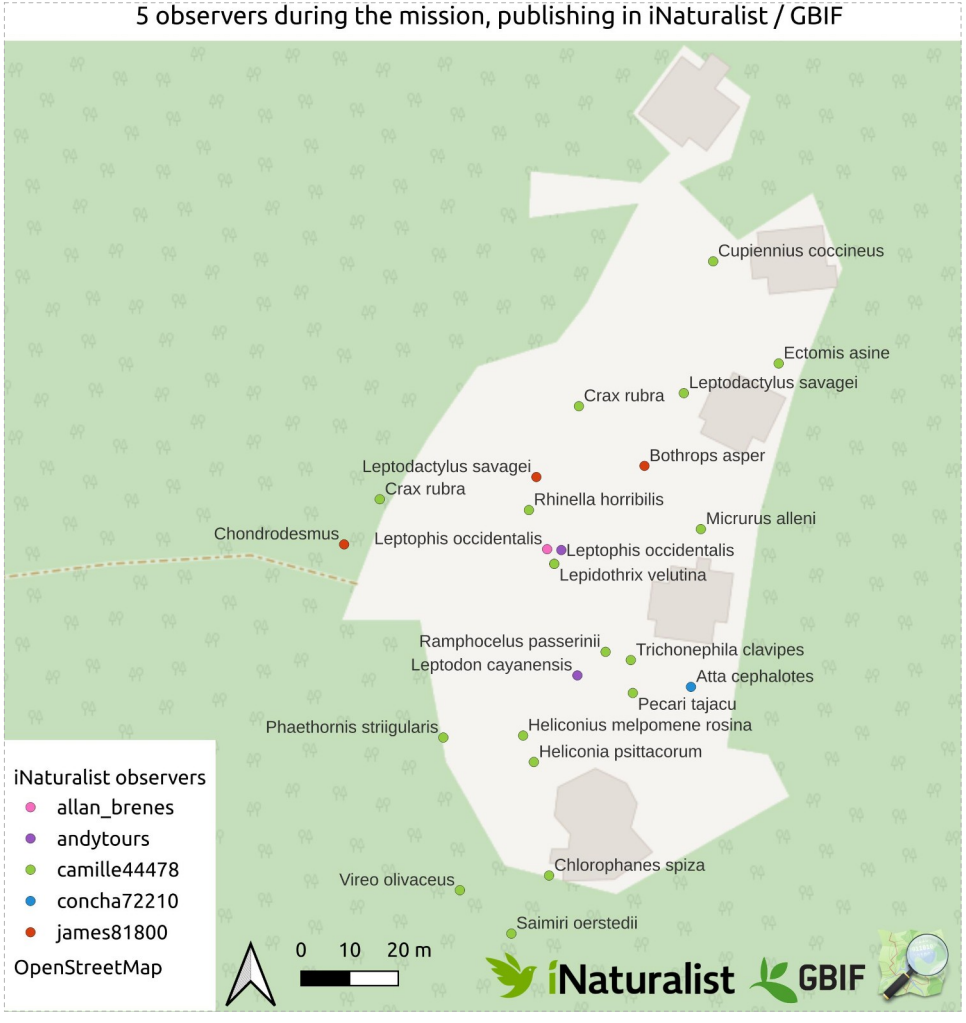


Day 3 – Camera traps

Day 3 – Camera traps

Saturday October 18th

- QGIS Mapping challenge latest restitutions
Camera traps :
- Wolf and camera traps in PNE
- Automatic analysis of camera traps data in France (DeepFaune + ecoSecrets)
- Concepts and tools for automatic analysis
- Testing tools together on Costa Rica data
- Pronamec ecoMonitoreo (Luis)
- Corcovado monitoring of jaguar with camera traps (Alejandro)
- Camera traps masking in France (ONF – OFB)
- OFB jaguar monitoring in French Guyana with genetic
- Late start of Pronamec vision workshop with those leaving the day after Morning
- Launch automatic analysis of 6012 camera trap images of Alejandro

Third day at the scientific station.

It began with presentations of each participant's work as part of the mapping challenge held the previous day, aimed at raising awareness of open-source software and open data.

Discussions then focused on camera traps, as well as the management and analysis of the data they produce — whether for wolf monitoring in France or jaguar monitoring in Costa Rica.

The day concluded late in the evening with small-group discussions to jointly identify desired developments for Costa Rica's biodiversity data platform, as well as to reflect on the ranger profession and the shared challenges faced by protected areas in both countries.

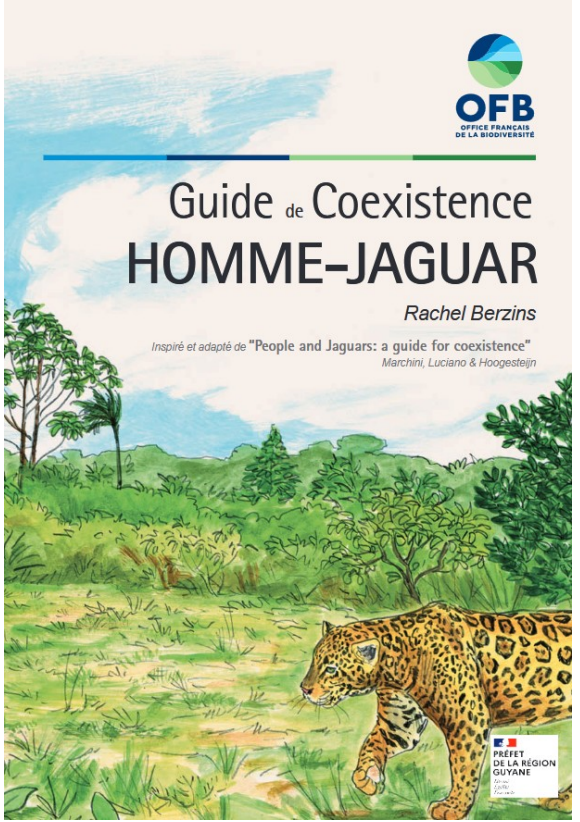
All of this took place, as always, surrounded by the vibrant and generous nature.

Day 3 – Camera traps

Day 3 – Camera traps

Day 3 – Camera traps

Day 3 – Camera traps



- Conflictos jaguar/hombre en Guyana francesa :
https://guyane.ofb.fr/wp-content/uploads/2021/04/OFB_LivretJaguar_MAJ_032020.pdf

- Monitoreo de los jaguars y pumas en Guyana francesa:
https://guyane.ofb.fr/decouvrir-les-etudes-de-la-faune-sauvage-et-de-la-chasse/les-etudes-realisees-et-en-cours/le-programme-de-resolution-des-conflits-homme-jaguar/#amlioration-des-connaissancesfinancement-cnes

Day 3 – Camera traps

Full presentation : https://geonature.fr/documents/autres/2025-Costa-Rica/2025-10-Camera-Traps-PNE.pdf

Day 3 – Camera traps

Parc national des Ecrins

Découvrir | Le Parc national | Les patrimoines | Parc en actions | Le journal du parc | Boutique | FAQ

Accueil » Le journal du parc » Dossiers

Loup, qui es-tu ? D'où viens-tu ? Où vas-tu ?

Mardi 09 Juillet 2024

Corentin Esmieu

Il fascine, intrigue ou effraie, mais reste encore très mystérieux du fait de sa grande discrétion. Depuis le retour du loup dans le massif des Écrins, les agents du Parc national via le réseau Loup-Lynx collectent patiemment les indices de sa présence. Grâce au projet LIENS mené sur deux ans, toutes les données accumulées ont parlé et ont permis d'esquisser un scénario de la recolonisation des Écrins par le grand canidé.

Articles liés

15/10/2025
Retour en Champsaur, épisode 8

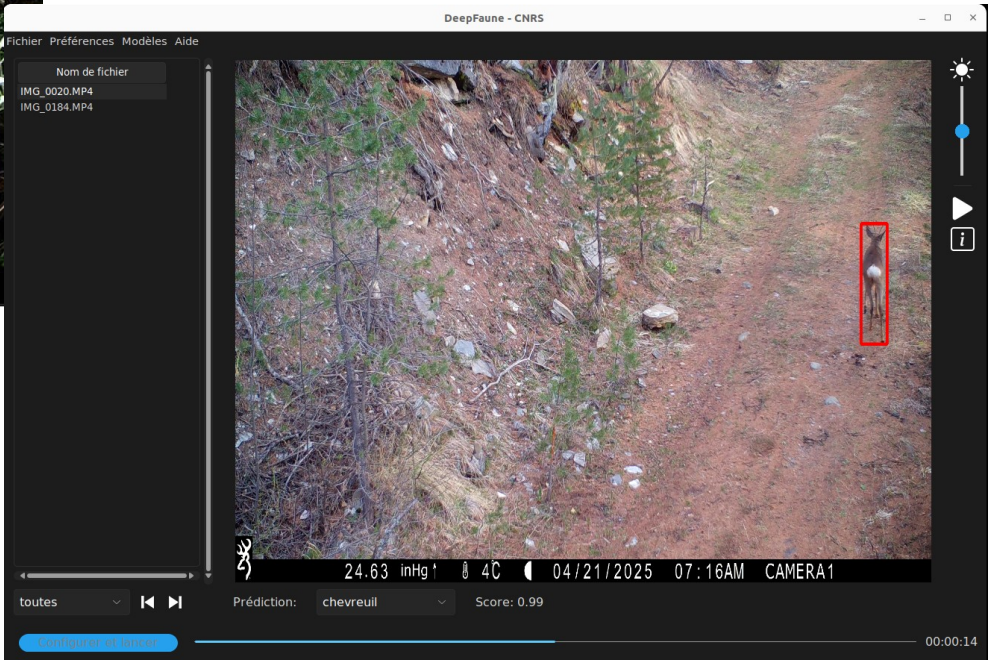
30/09/2025
Gypaètes barbus : aidez-nous à les...

30/09/2025
Retour en Champsaur, épisode 7

09/09/2025
Quand les aigles laissent des plumes

https://www.ecrins-parcnational.fr/dossier/loup-es-viens-vas
Spanish translation : https://geonature.fr/documents/autres/2025-Costa-Rica/Wolves-Genetic-PNE-Spanish.pdf

Day 3 – Camera traps



Day 3 – Camera traps

(A)

Project / Study

Deployment
29b7d356
from T1 to T1000

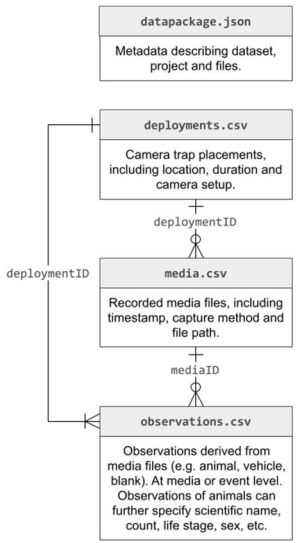
Media file
59b38bc6 at T200

Media file
cc50edaa at T201

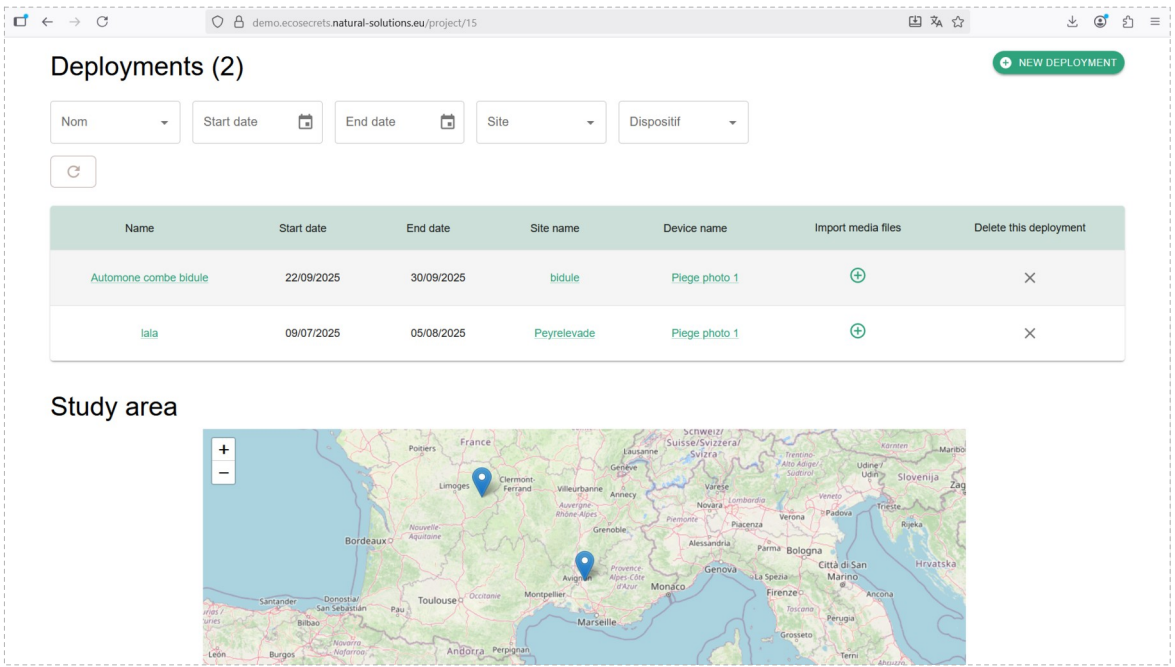
Media file
0966e552 at T202

observation ID	observation Level	media ID	event Start	event End	scientificName	count
obs1	media	59b38bc6	T200	T200	Anas platyrhynchos	3
obs2	media	cc50edaa	T201	T201	Anas platyrhynchos	4
obs3	media	0966e552	T202	T202	Anas platyrhynchos	4
obs4	event		T200	T202	Anas platyrhynchos	5

(B)



Camtrap DP - Data exchange standard for camera trap data



ecoSecrets

Day 3 – Camera traps

Everything I know about ML and camera traps

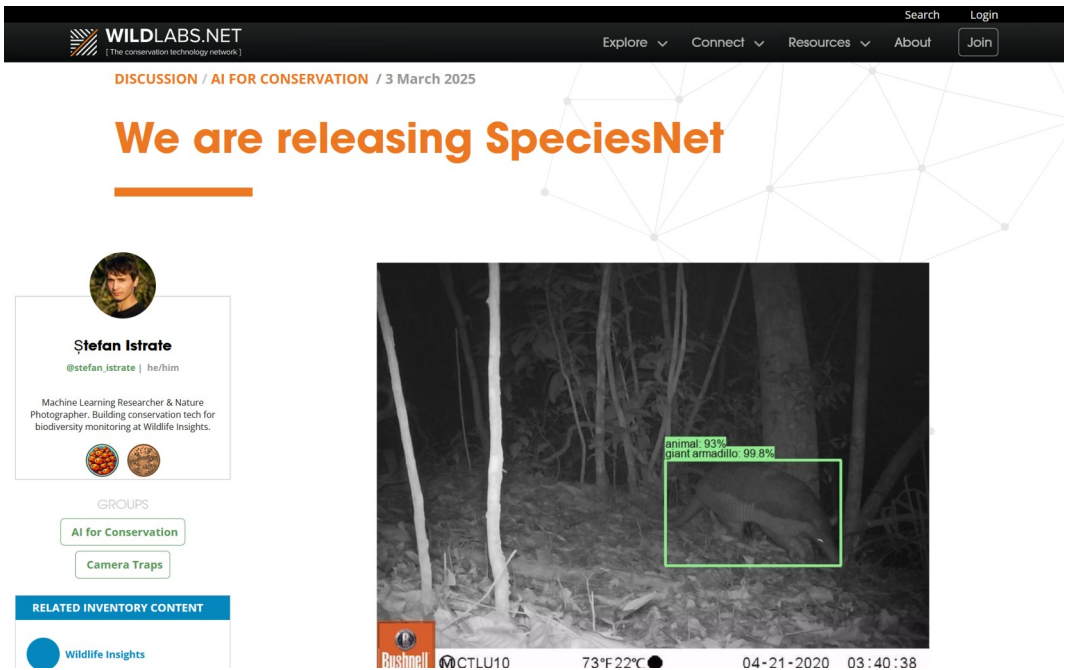
View on GitHub

Overview

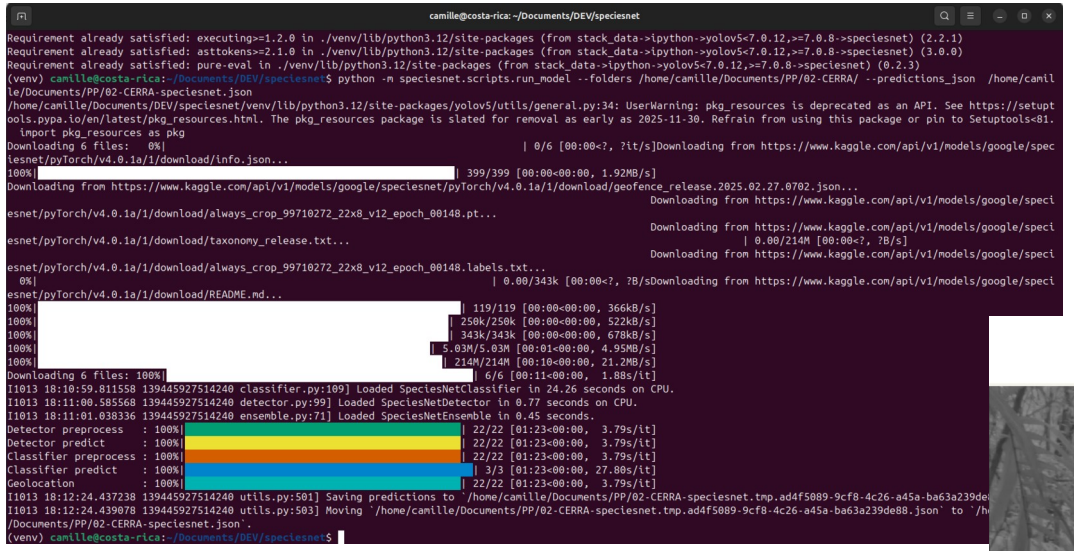
This is a list of everything I know about machine learning and camera traps, which is presumably just a subset of what's out there... email me with updates, or submit pull requests. Help me keep this page up to date! And tell me what I got wrong about your software and your papers!

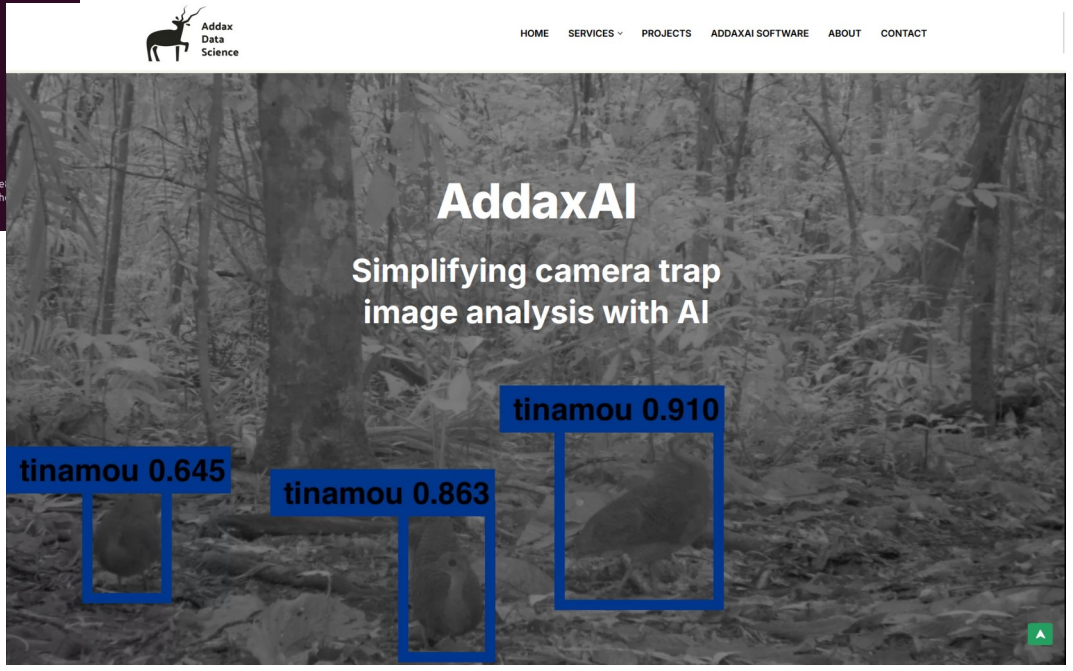
Maintained by Dan Morris. Disclosure of what I work on: I contribute to several projects on ML for camera traps (particularly, MegaDetector, SpeciesNet, and Wildlife Insights) and an open repository for conservation data (lila.science). And since I've disclosed that, I can say that although I don't filter papers for this list based on whether they use stuff I've worked on, I *do* use this list as a way of tracking how those systems are being used, so in the "papers" sections, you will see tags for a few things I want to track.

Table of Contents



Day 3 – Camera traps





Day 3 – Camera traps

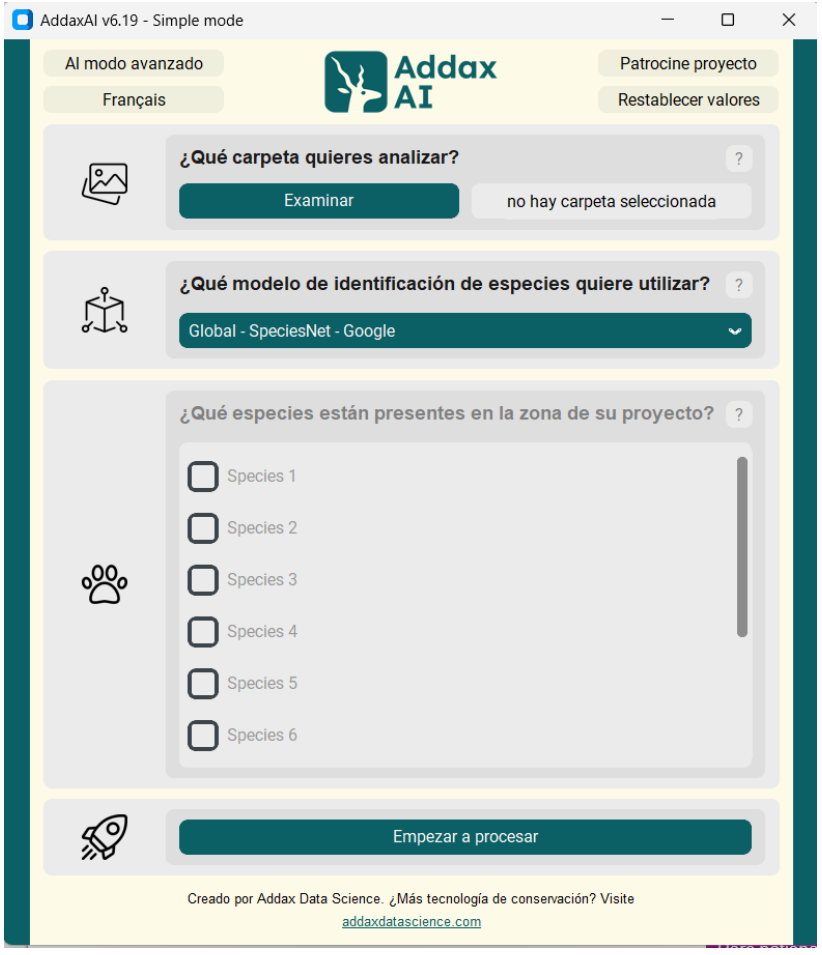
Peter van Lunteren, Founder of Addax Data Science

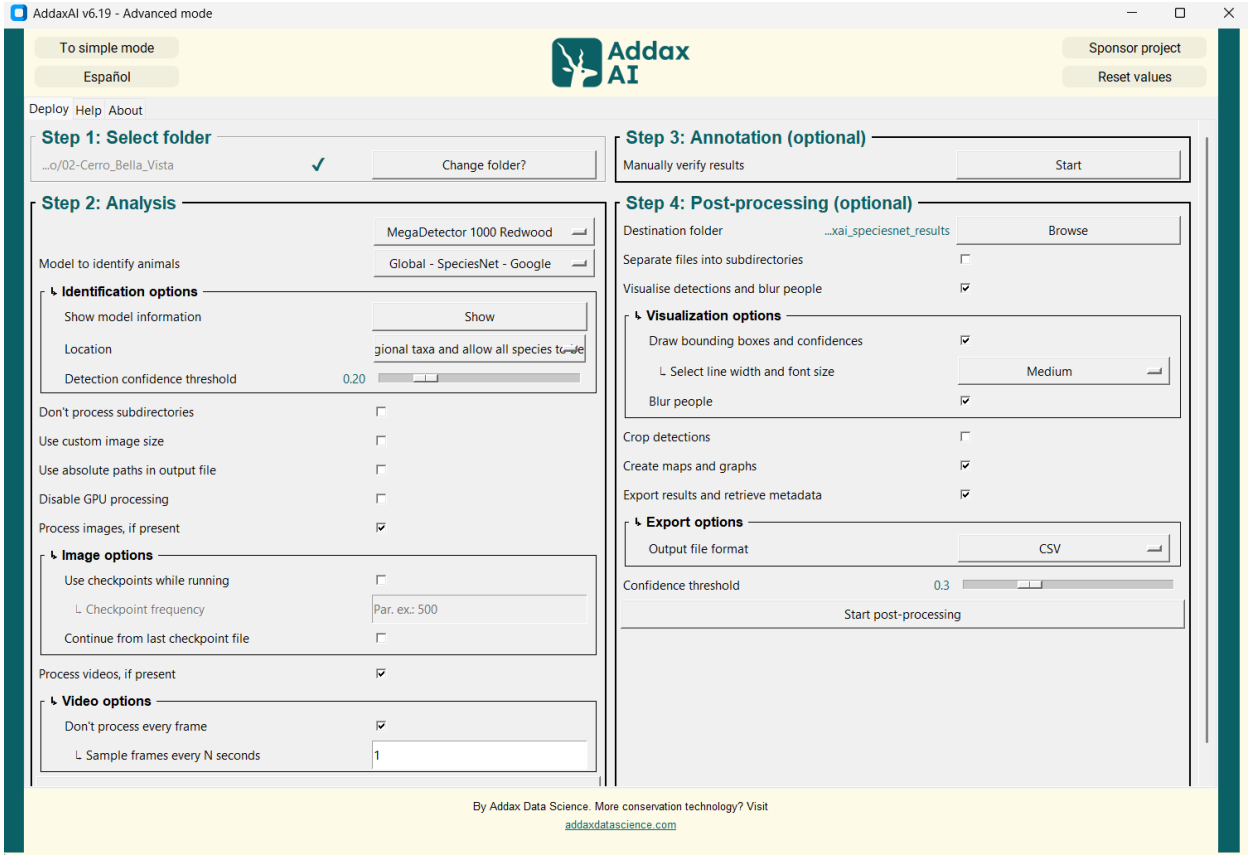
How would I describe myself? I'm an optimistic, methodical, results-oriented, tech-savvy ecologist with a passion for developing data-driven solutions that improve the quality of ecological research. In addition to founding Addax, I have worked for several conservation initiatives over the past ten years and currently serve with four: Smart Parks, conserving endangered wildlife through cutting-edge technologies, Sensing Clues, providing nature conservation organisations with data-driven tools, Inclusion Foundation, supporting village communities in Uganda with a basic income, and CV4Ecology, where I teach ecologists to analyse large image, audio, or video datasets using computer vision.

I've also created the open-source AI platform AddaxAI, which enables annotation, training, and deployment of custom models for automated species detection. The goal is for ecologists to be able to focus more of their time on conservation efforts and less time reviewing camera trap images. I am also a reviewer for the Journal of Open Source Software (JOSS), contributing to the peer review of open-source projects. My hope is that AddaxAI will make a significant contribution to open sourcing, open access, and open science.

See my LinkedIN and ResearchGate for more information about me and my GitHub for information on my software projects.

Day 3 – Camera traps





Day 3 – Camera traps

Day 3 – Camera traps

results_detections.csv — LibreOffice Calc

Fichier Édition Affichage Insertion Format Styles Feuille Données Outils Fenêtre Aide

Liberation Sans 10 pt

A1 absolute_path

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
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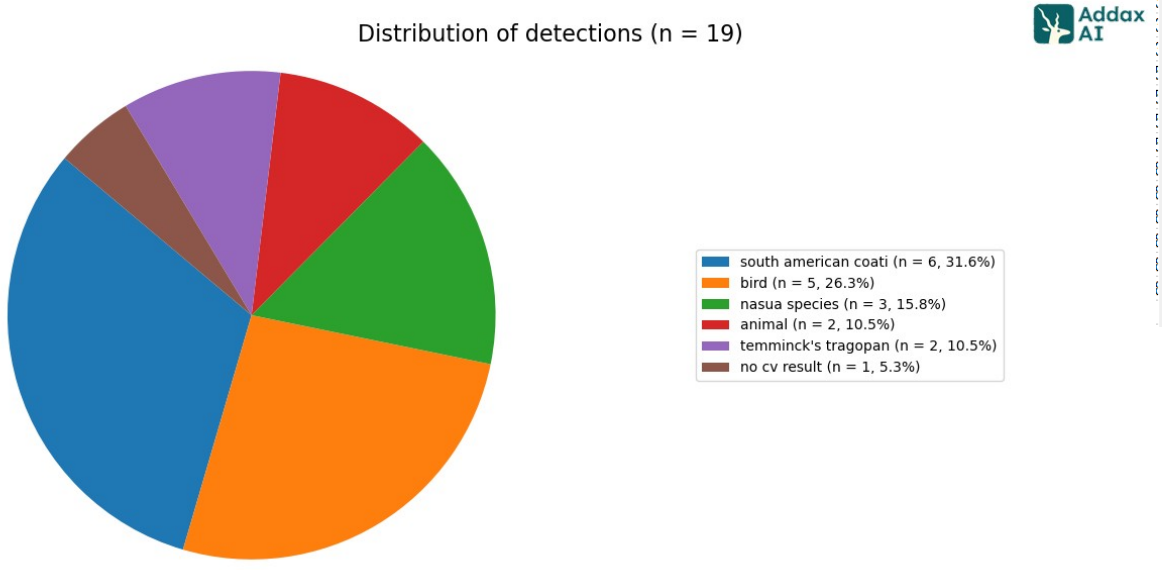
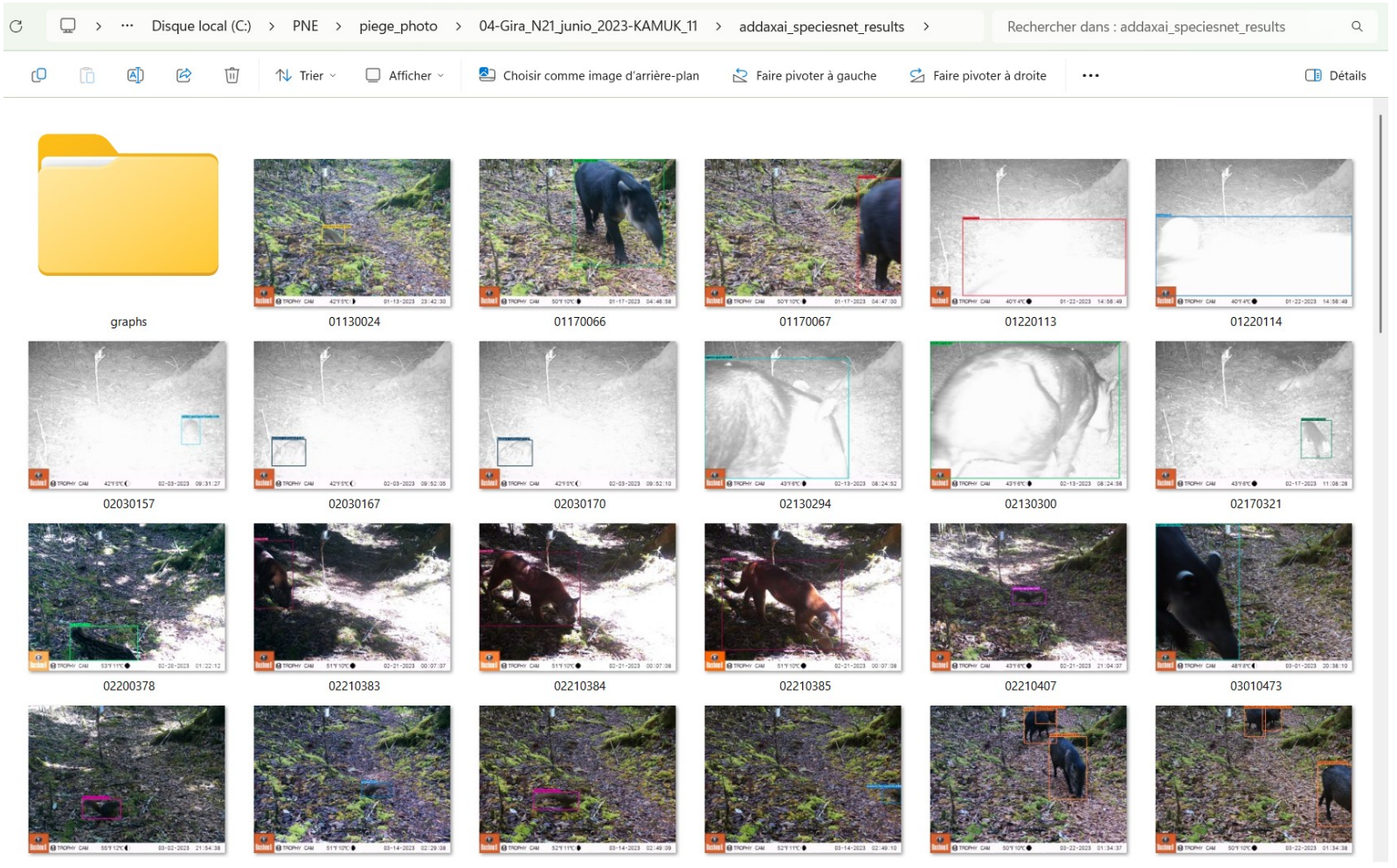
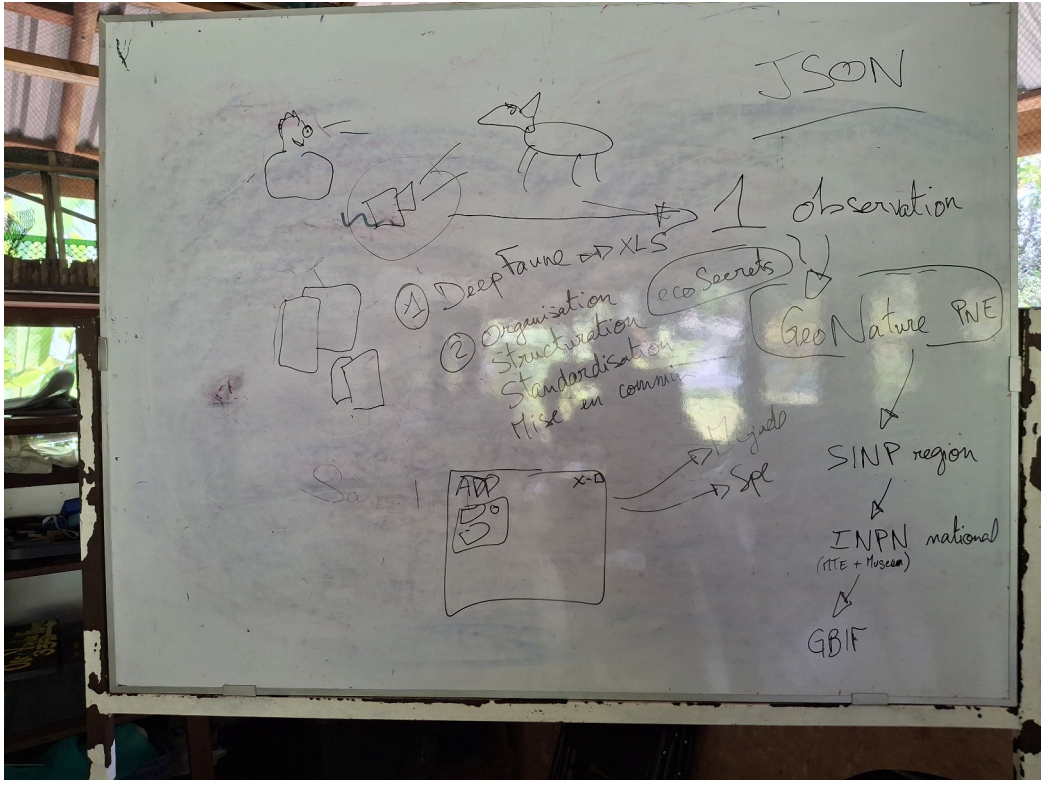
21														

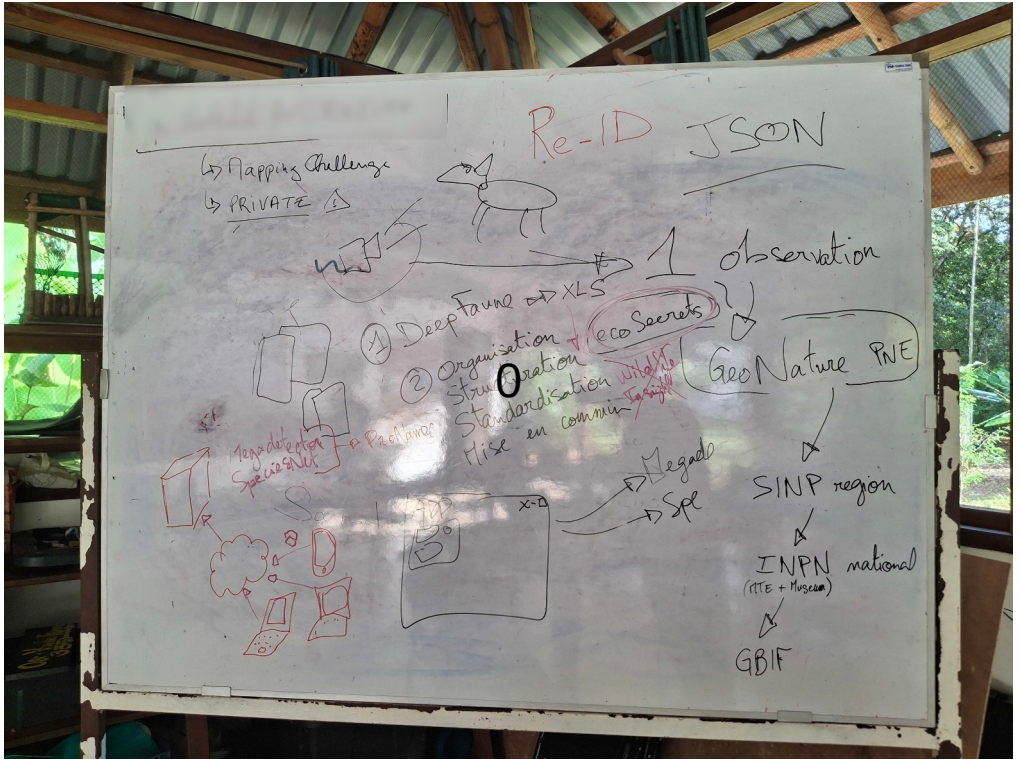


Day 3 – Camera traps



Day 3 – Camera traps





Day 3 – Camera traps

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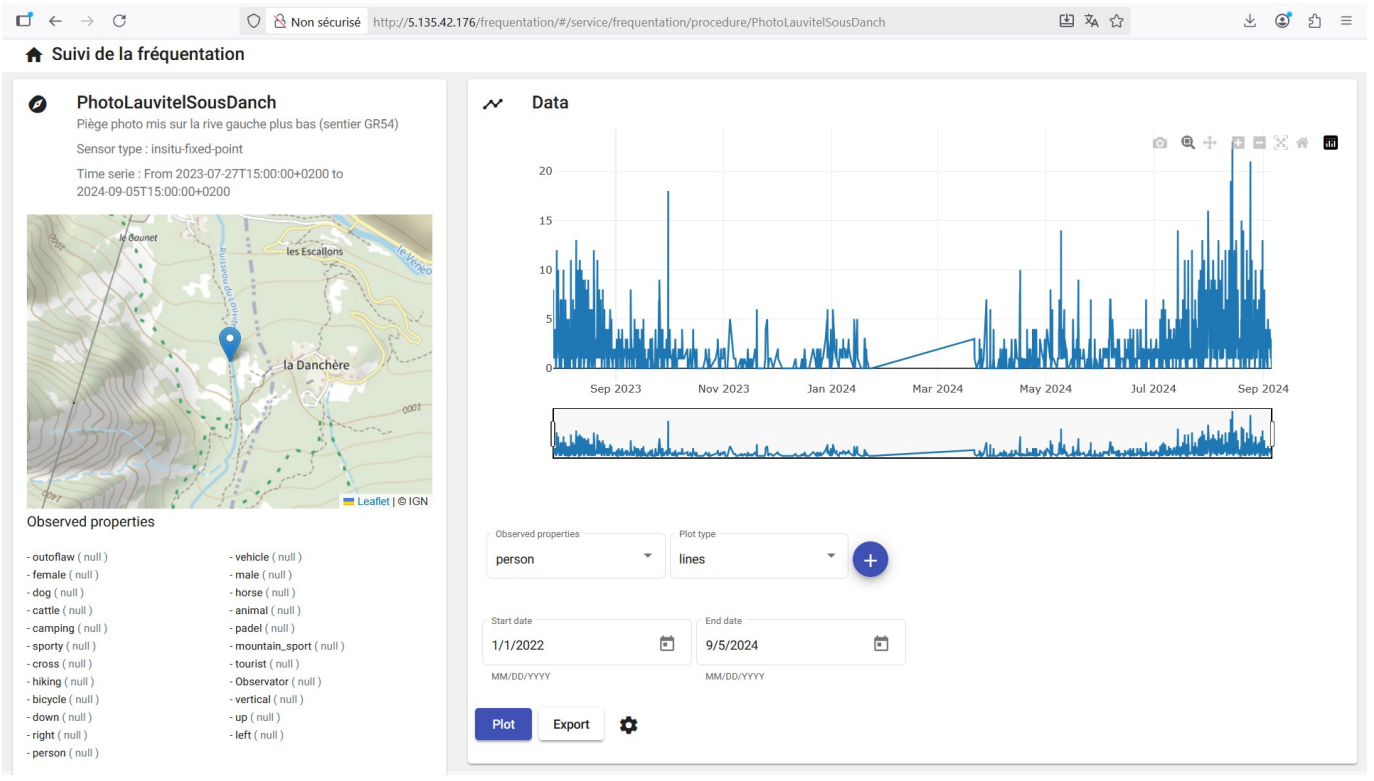

Day 3 – Camera traps

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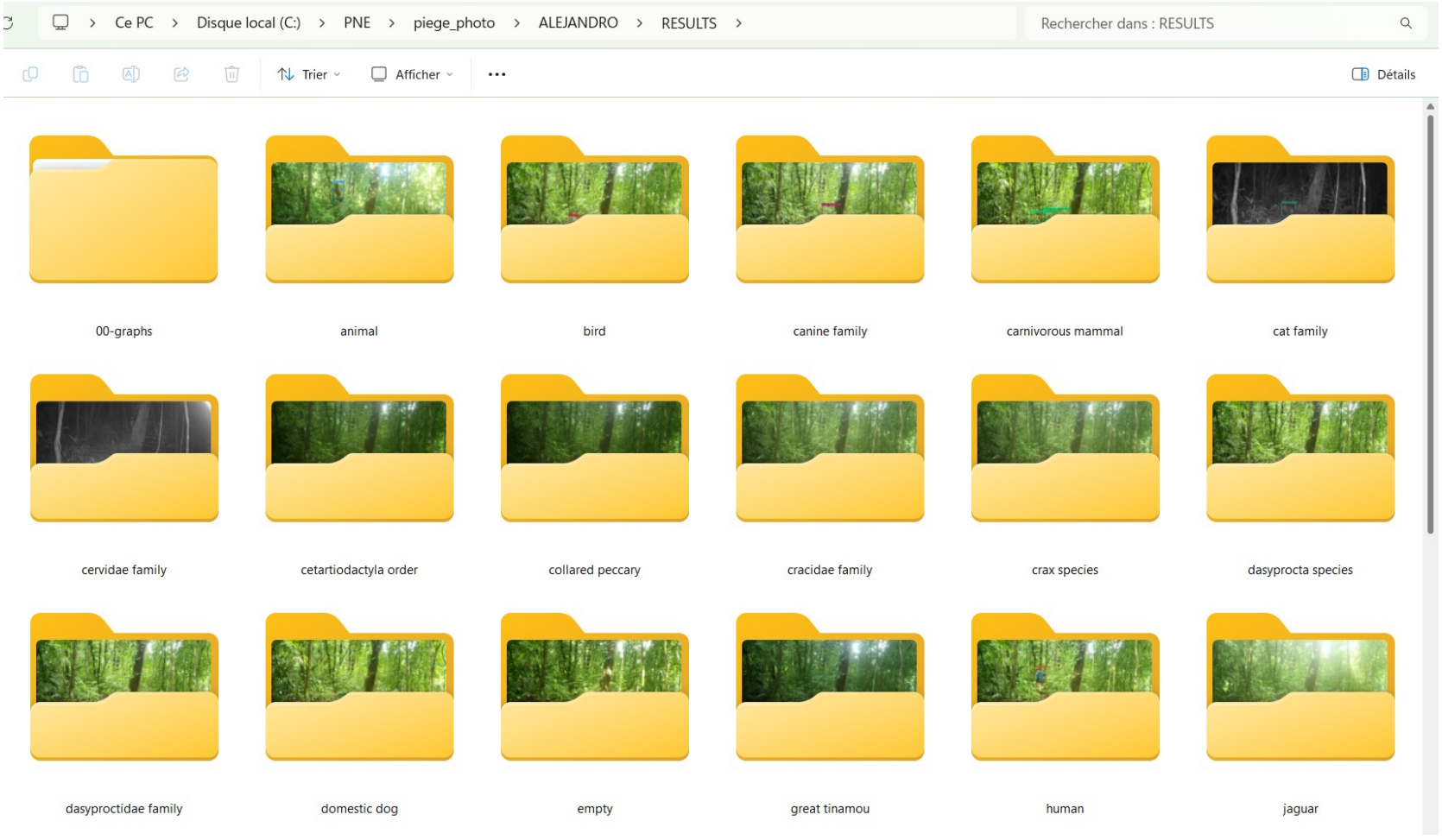
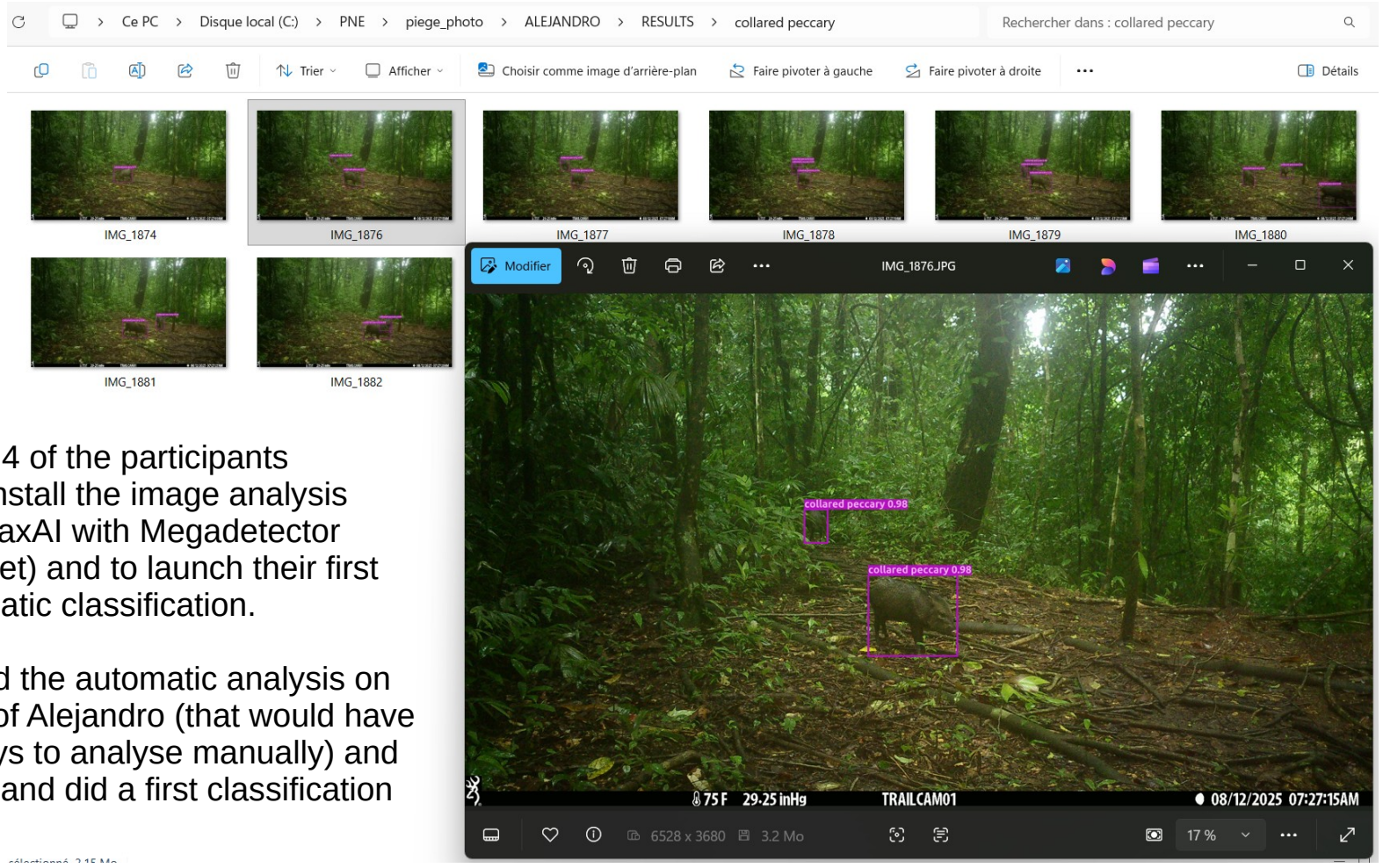


Day 3 – Camera traps



After this day, 4 of the participants were able to install the image analysis software (AddaxAI with Megadetector and SpeciesNet) and to launch their first images automatic classification.

We also tested the automatic analysis on 6012 images of Alejandro (that would have took him 4 days to analyse manually) and it worked well and did a first classification in 4 hours)

Day 3 – PRONAMEC vision

Day 4 – PRONAMEC vision

Sunday October 19th

- Review of AddaxAI analysis of Alejandro 6012 camera traps images
- PRONAMEC vision workshop (actual and future)
- EarthRanger to QGIS
- XnView metadata management, GPS coordinates and table export
- AddaxAI step 3 (manual validation or correction) : seems to have problems
- ONB, Geotrek

Note done, for later :

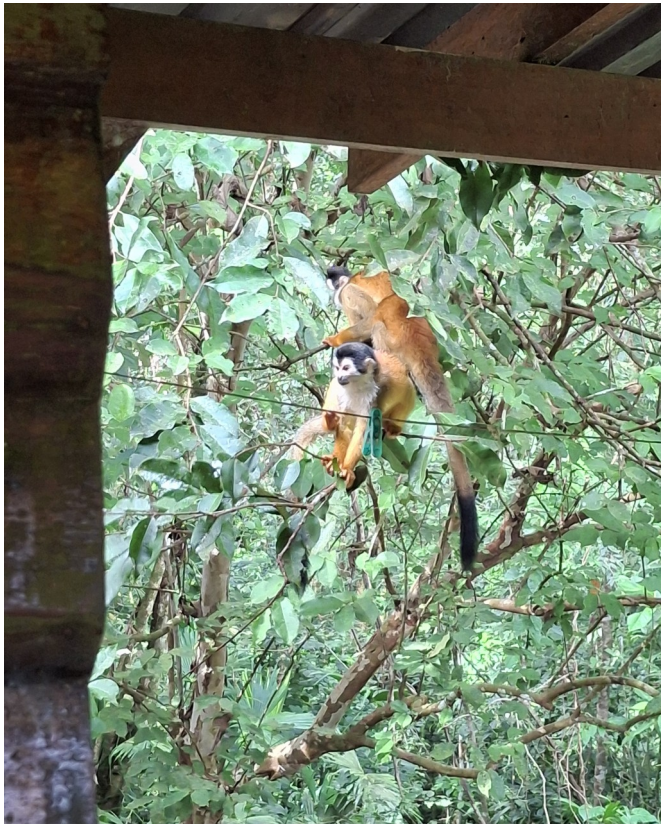
- Re-IDentification
- Training models
- Attendance camera traps
- PRONAMEC schemas

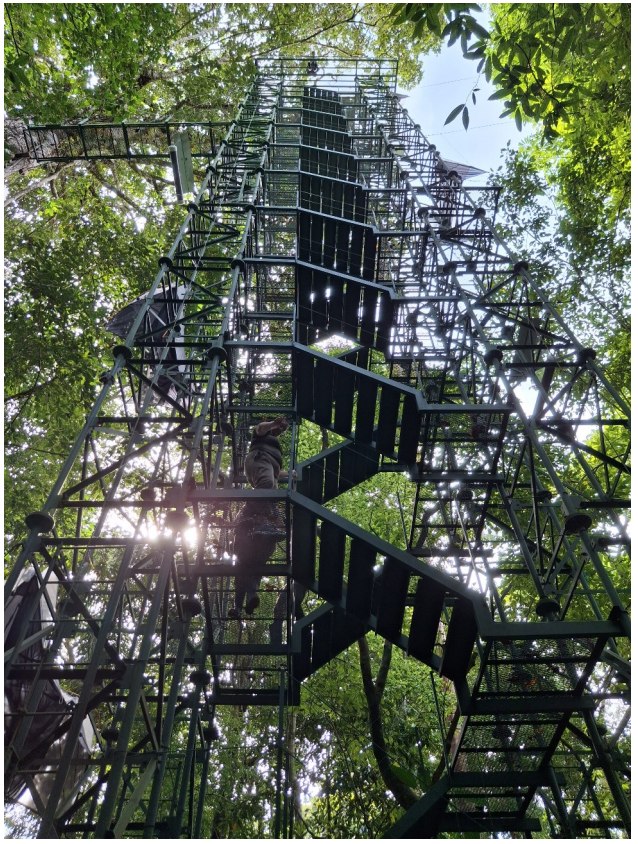
PRONAMEC :
- What is good in actual plateform/project ?
- What would be good for the future of the plateform/project ?

The day began with a roundtable discussion among participants about the Costa Rican platform PRONAMEC, focusing on what currently works well and is useful for them, as well as potential improvements for the future.

This was followed by hands-on support in using various tools (EarthRanger, QGIS, XnView, AddaxAI), along with some short “flash” presentations, introducing additional opportunities and developments.

Day 4 – PRONAMEC vision





Universal rangers

Day 4 – PRONAMEC vision

Day 4 – PRONAMEC vision

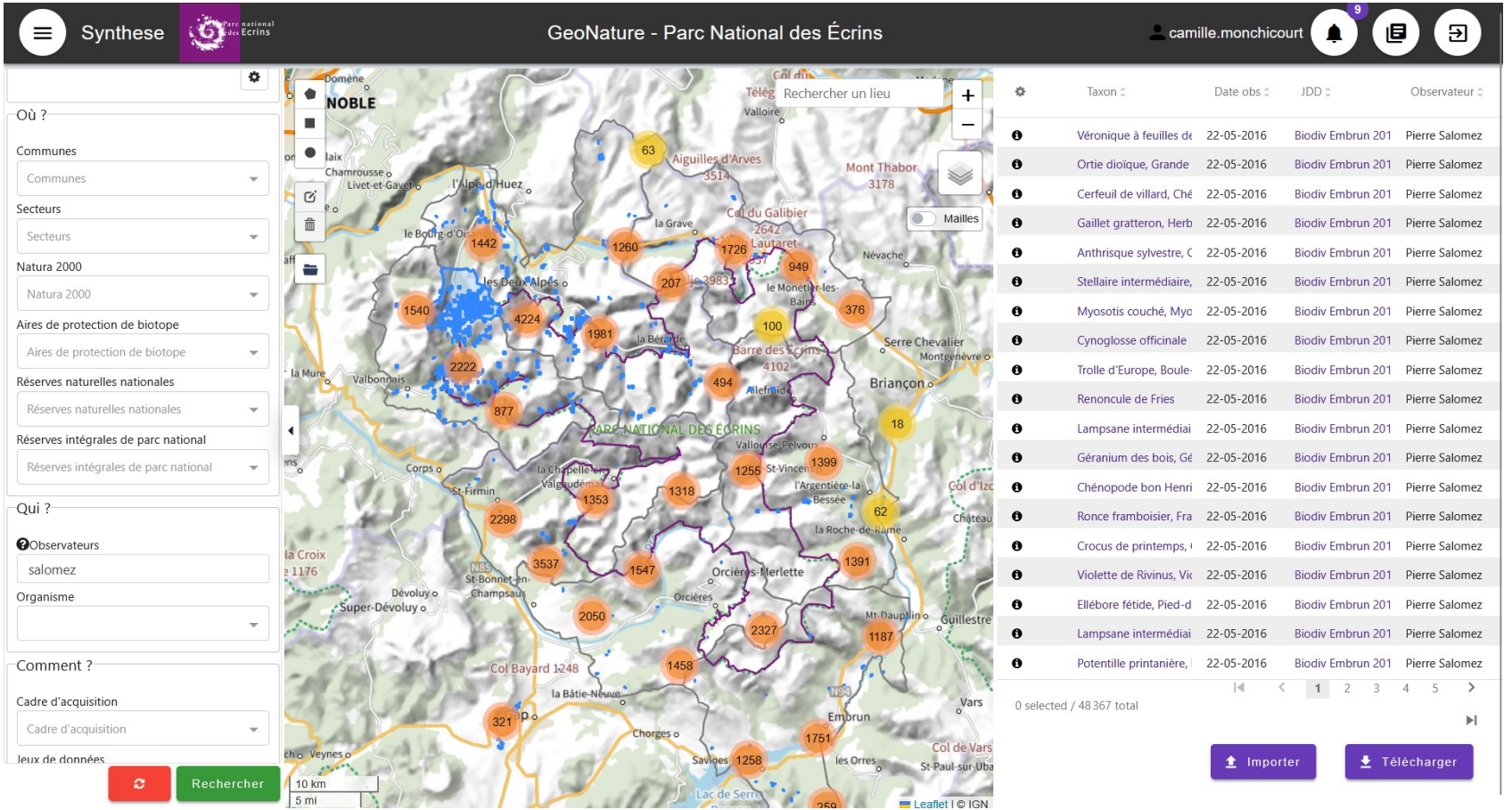
The rangers' trail

Pierre Salomez
Retired

Day 4 – PRONAMEC vision

The rangers' trail

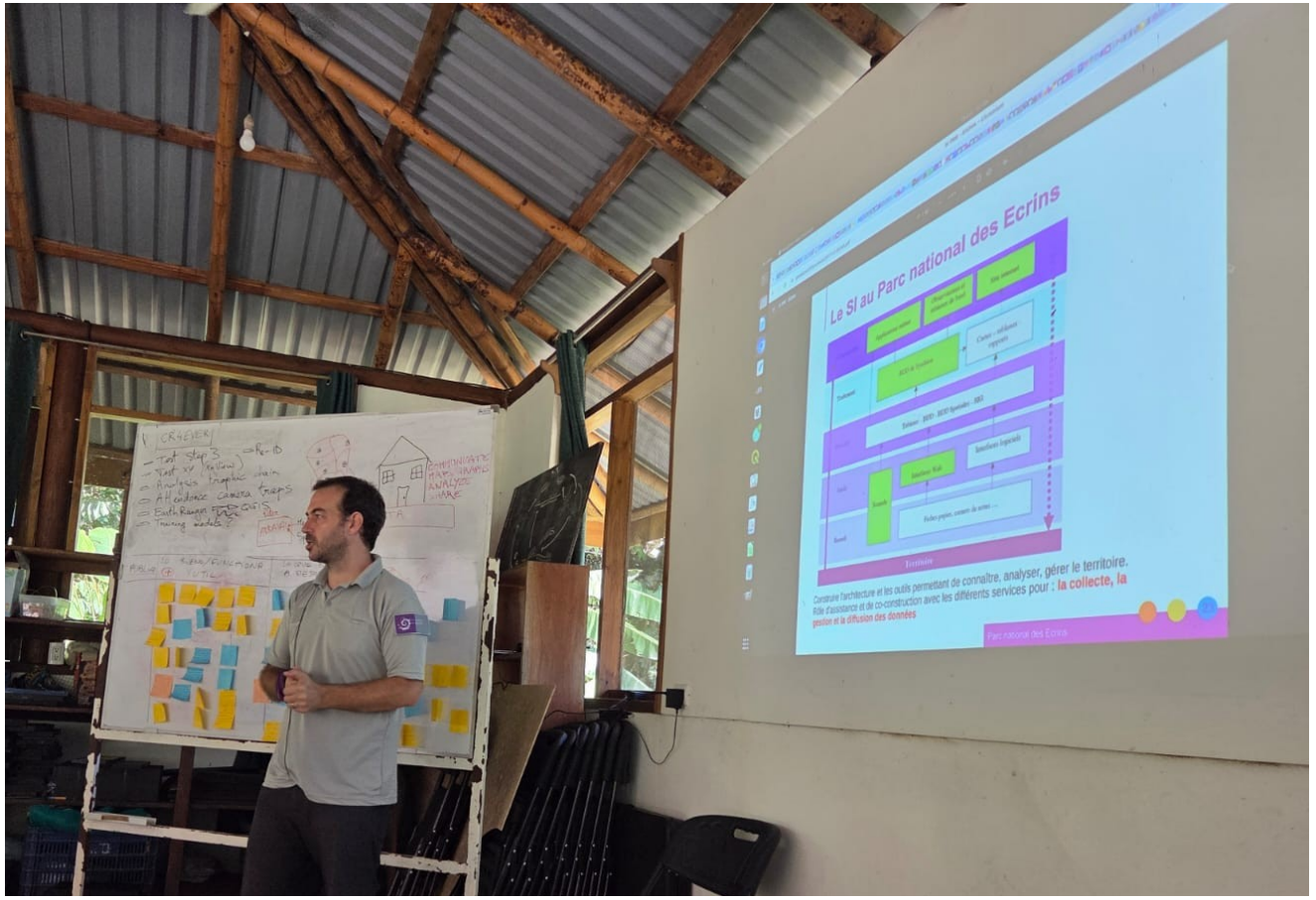
48000 observations of Pierre Salomez in PNE GeoNature



Day 4 – PRONAMEC vision

Day 4 – PRONAMEC vision

Day 4 – PRONAMEC vision

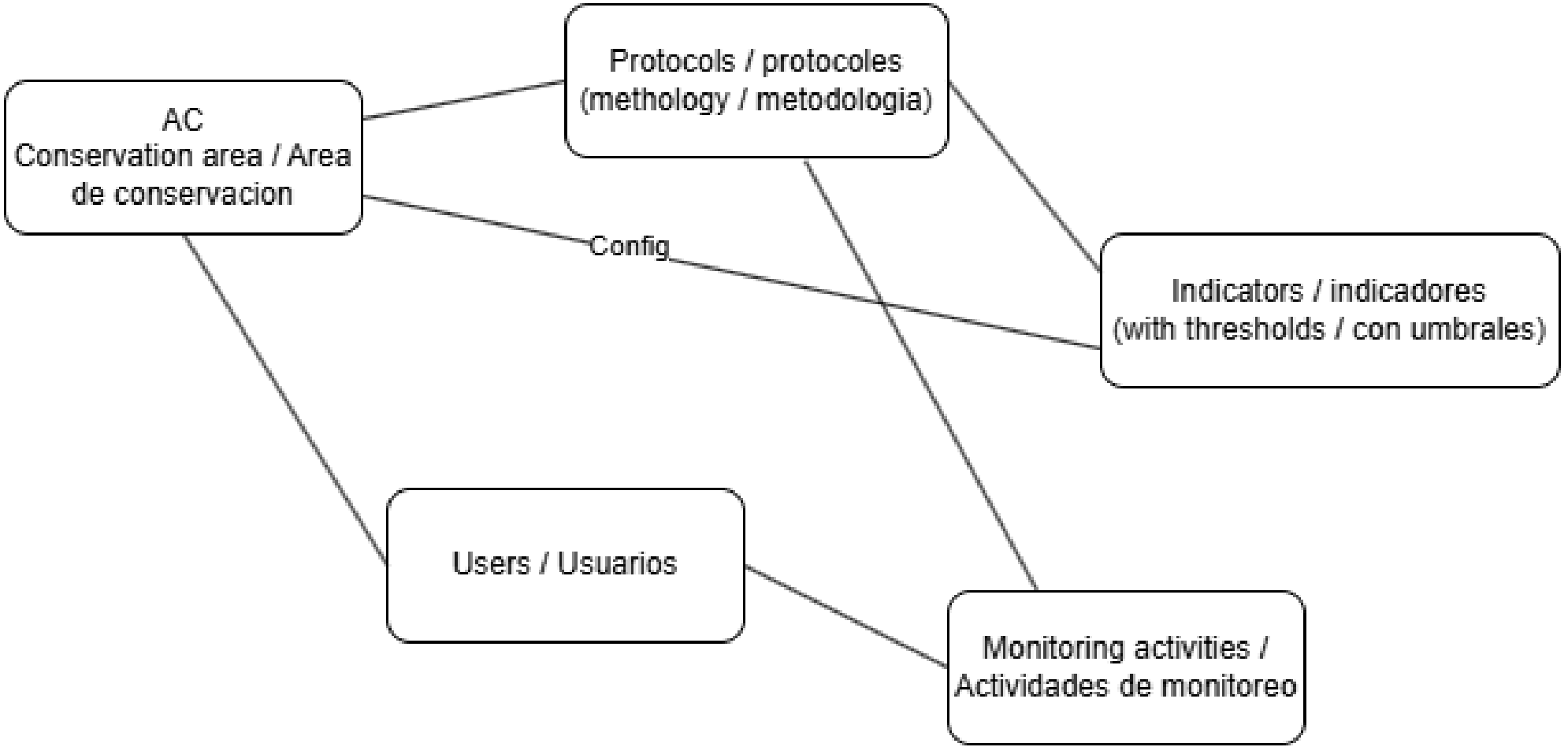


Day 4 – PRONAMEC vision

PRONAMEC - What is working well

- The PRONAMEC project has enabled the standardization of monitoring protocols and associated data, promoting national harmonization and improving the quality of scientific information.
- Staff training within protected areas has provided a solid foundation of comparable baseline data for long-term monitoring.
- The platform supports decision-making within SINAC, centralizing national biodiversity data for better use and sharing.
- PRONAMEC contributes to the planning and management of protected areas.
- It can also help expand monitoring efforts in conservation areas where few currently exist.
- The project has boosted scientific motivation and strengthened international collaboration.
- It provides new opportunities for analysis, data sharing, discovery, and partnerships.

Day 4 – PRONAMEC vision



Day 4 – PRONAMEC vision

PRONAMEC - Improvement propositions

- Additional human and financial resources are needed for both monitoring and technical development.
- The standardization of analyses and reports should complement the already standardized data collection.
- The platform and its data should be opened to external users, with clear distinctions in data types and access levels depending on the audience.
- Improve data dissemination and visibility for visitors and the general public, using simple maps and summary graphics.
- Facilitate access for scientists and students, and create partnerships allowing them to contribute data and analyses.
- Open the platform internationally to share research programs with other countries.
- Establish a data validation process (for both sensitive and non-sensitive data).
- Develop a dashboard with clear, graphical indicators showing the ecological health of each protected area, supporting better decision-making.
- Ensure interoperability between PRONAMEC and other tools (API, QGIS, Lizmap, Superset, etc.).
- The AddaxAI tool is perceived as a major technological advance, highly useful for saving time and improving efficiency.
- Integrate automated image analysis models such as Megadetector and SpeciesNet into PRONAMEC.
- Incorporate international data standards (Darwin Core, Camtrap DP).
- Make better use of the potential of existing open-source tools.
- Transition PRONAMEC to open-source, to showcase Costa Rica’s innovation, allow use by other countries, and benefit from external contributions.
- Improve internal communication (forums, coordination between GIS and Conservation departments) and strengthen the shared vision of the project within SINAC.
- Clarify individual roles and communication channels within the conservation areas.
- Expand training for staff, scientists, and students on monitoring protocols.

Day 4 – PRONAMEC vision

PRONAMEC - Reactions and proposals

- Create an exchange space (forums, chat, or contact email).
- Conduct a consultation of external audiences to assess their needs and expectations regarding a platform like PRONAMEC.
- Evaluate the financial and time cost of PRONAMEC to anticipate future resource needs and equipment renewal.
- Gather field staff feedback before finalizing the platform to incorporate lessons learned.
- Establish a Technical Committee (CT) for the conservation areas, responsible for monitoring, reporting, and training.
- Organize biannual meetings with rangers for technology updates and experience sharing.
- Develop a dedicated French support mechanism for Costa Rica (e.g., a technical assistance team).
- Encourage SINAC leadership to give greater recognition and priority to scientific monitoring activities.

PRONAMEC - Additional Suggestions

- Hold two annual meetings focused on technology updates and monitoring protocols.
- Conduct internal SINAC meetings to track staff time availability within protected areas.
- Improve management of sampling point (PP) locations.
- Create a visual workflow diagram to clarify PRONAMEC’s operational steps.

Day 4 – PRONAMEC vision

PRONAMEC - Strategic Vision

- PRONAMEC should become a national reference platform, supporting the sustainable management of natural resources through reliable scientific data.
- It must remain dynamic and adaptable, evolving alongside new technologies and user needs.
- Ultimate goal: to foster informed decision-making, transparency, cooperation, and the promotion of science in service of conservation.

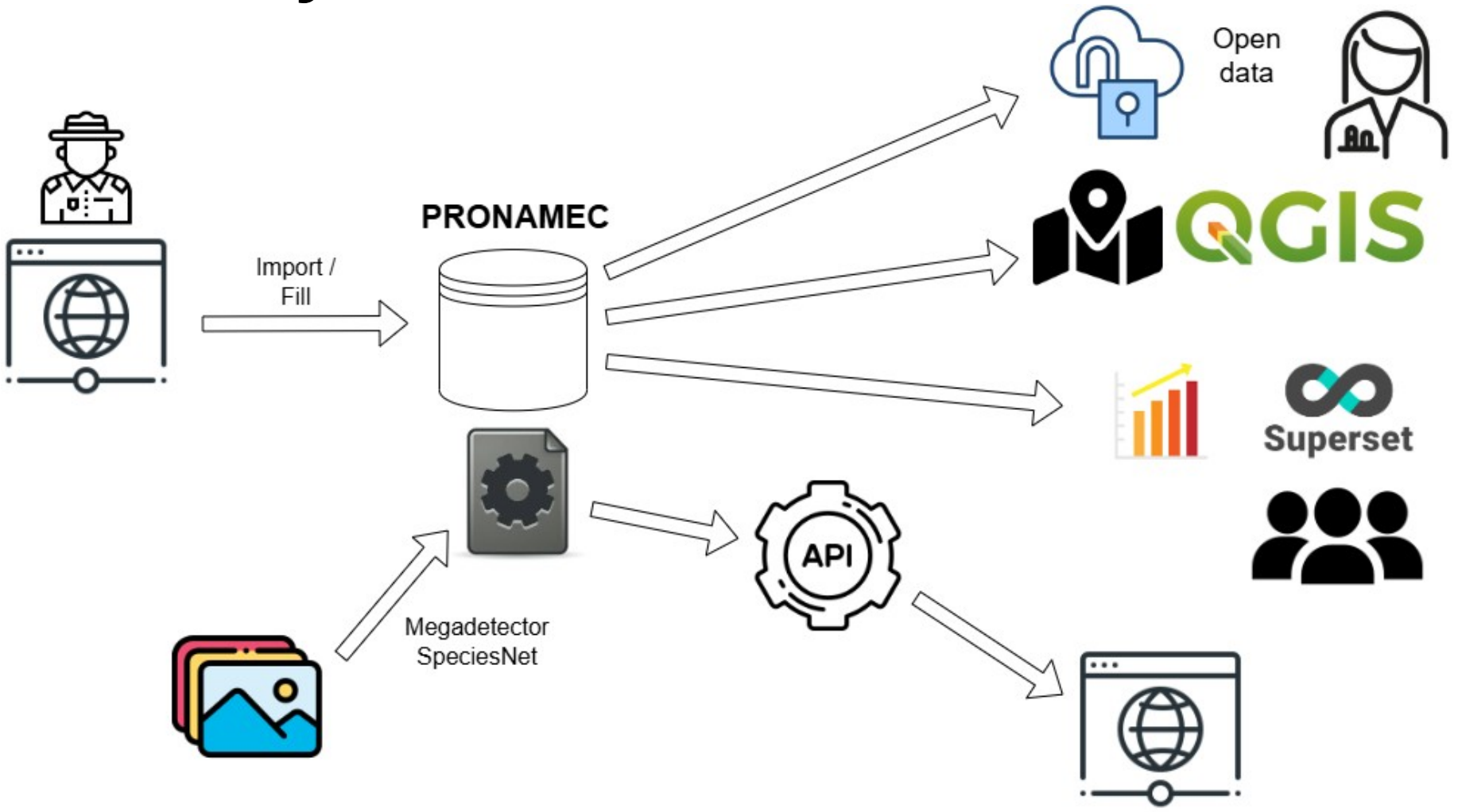
The PRONAMEC project represents a major step forward for Costa Rica's biodiversity management, enabling national standardization of monitoring protocols, better data quality, and more informed decision-making within SINAC. The platform fosters scientific motivation, innovation, and international collaboration.

However, its long-term success depends on strengthening human and financial resources, standardizing analyses and reporting, improving interoperability and open access, and developing user-friendly tools such as dashboards and APIs.

Opening PRONAMEC to researchers, students, and the public -while ensuring data validation and communication- will enhance its impact and visibility.

The strategic vision is for PRONAMEC to evolve as an open-source, nationally recognized, and internationally connected platform supporting sustainable resource management through reliable scientific data and technological innovation.

Day 4 – PRONAMEC vision

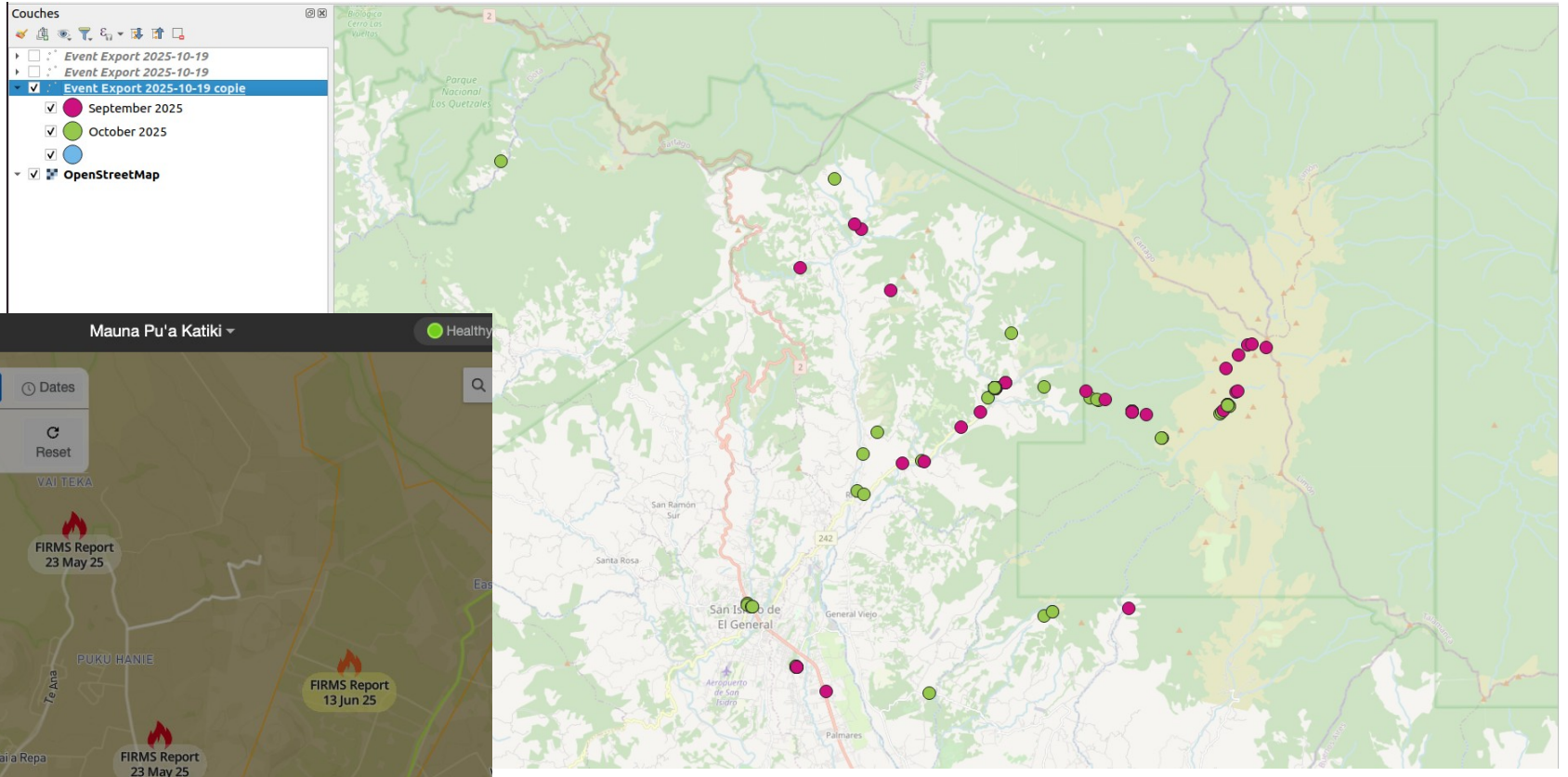


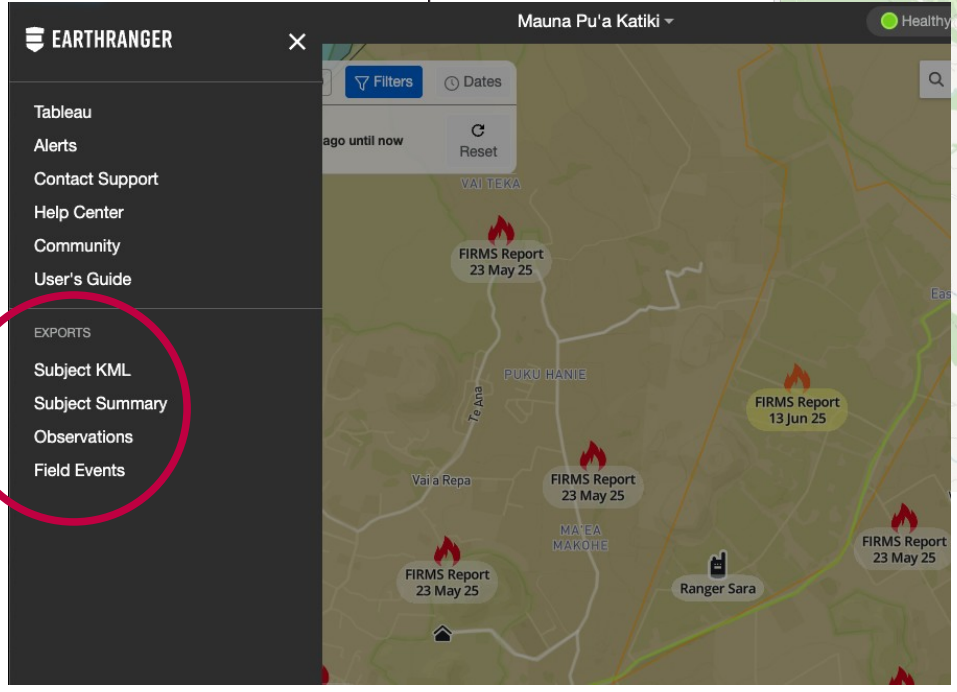
Day 4 – PRONAMEC vision

Day 4 - Thanks Peter (AddaxAI)

https://addaxdatascience.com/about/

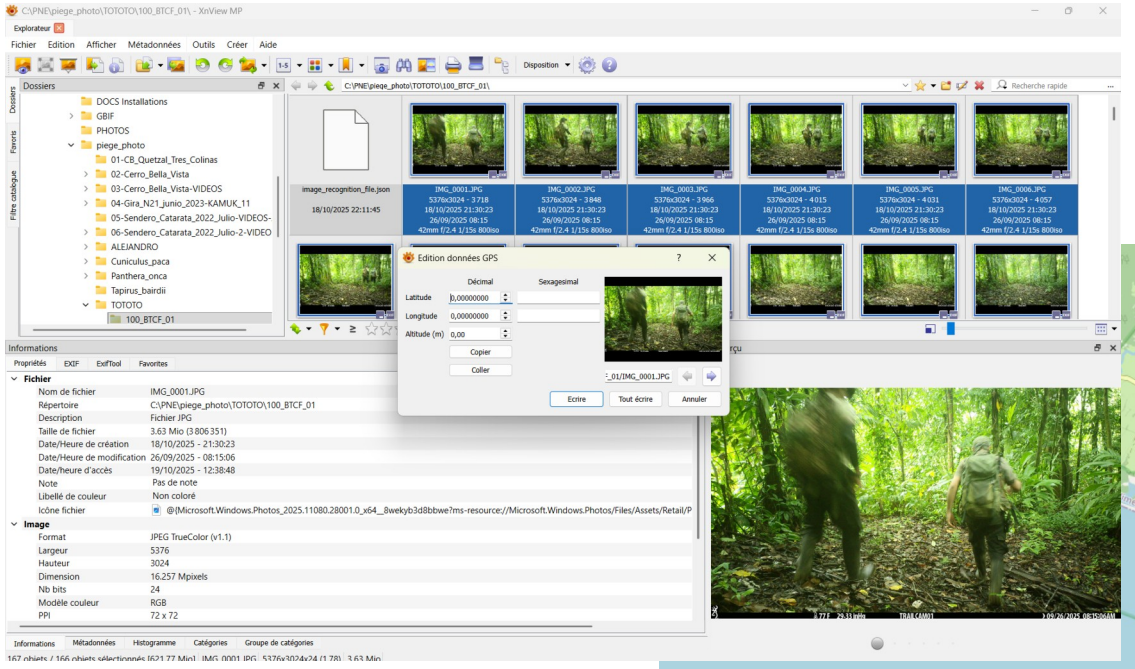
Day 4 – EarthRanger to QGIS

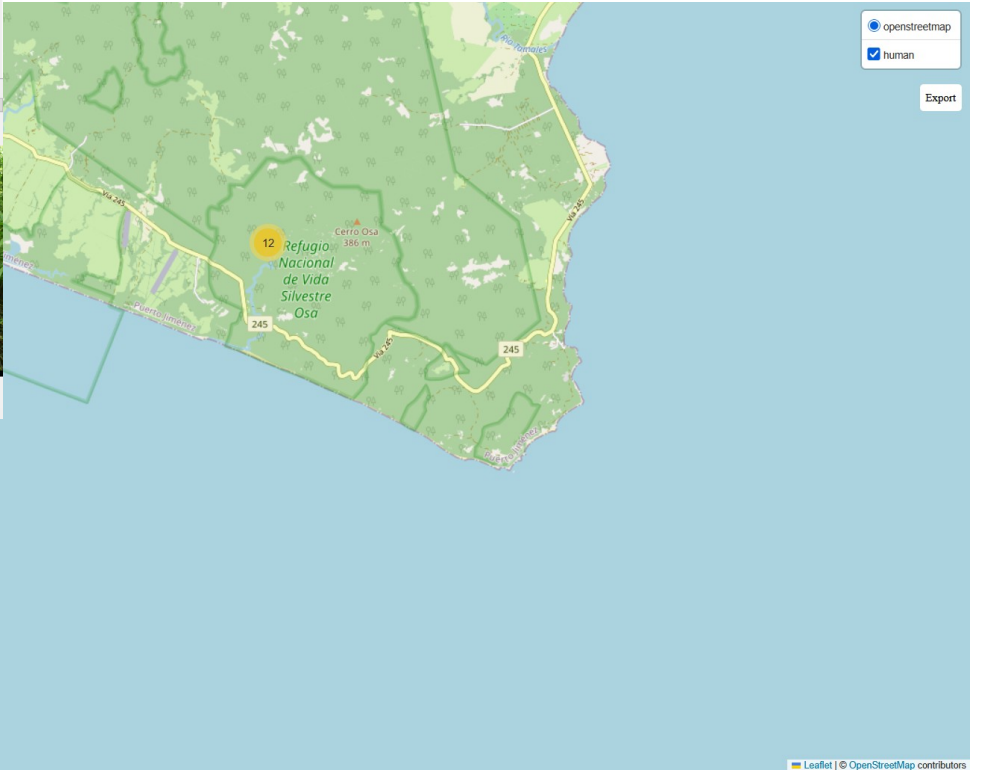




https://support.earthranger.com/en_US/data-export-options
Download CSV file / Load it in QGIS as « Delimited text » / Projection WGS 84 (4326)

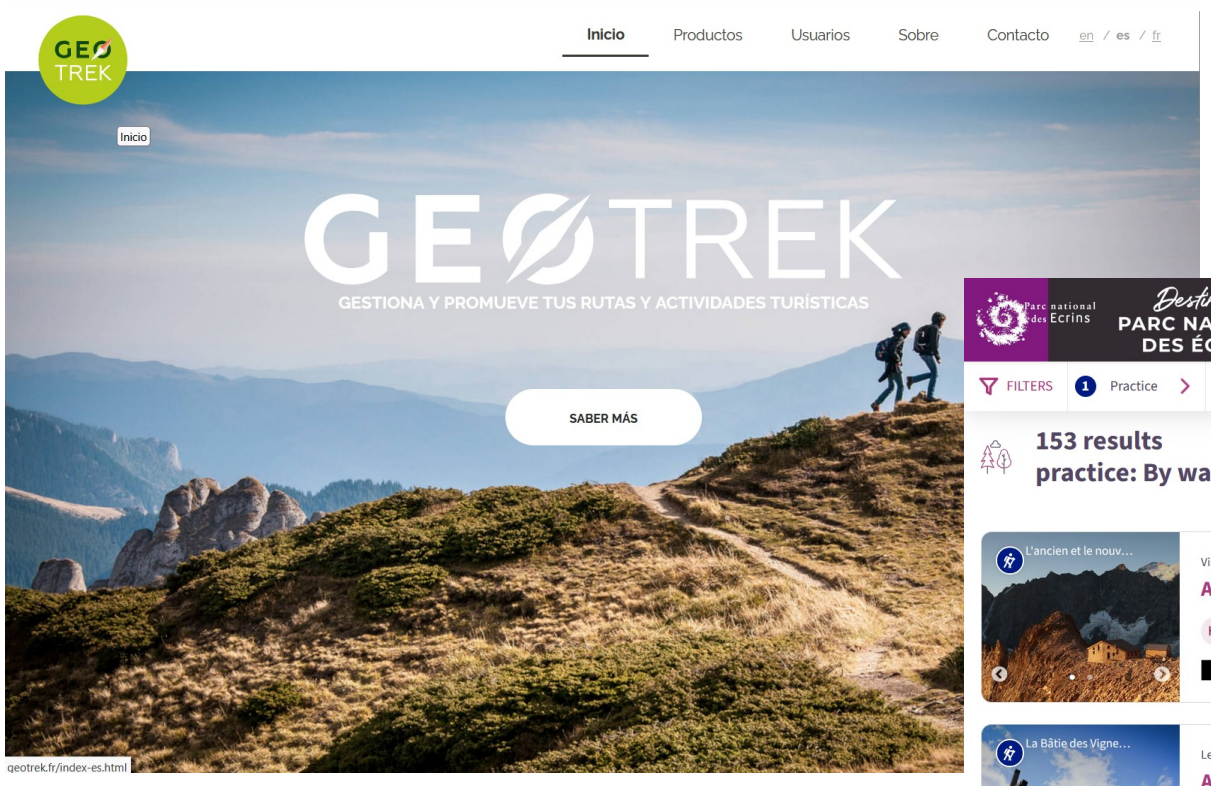
Day 4 - XnView and images metdata

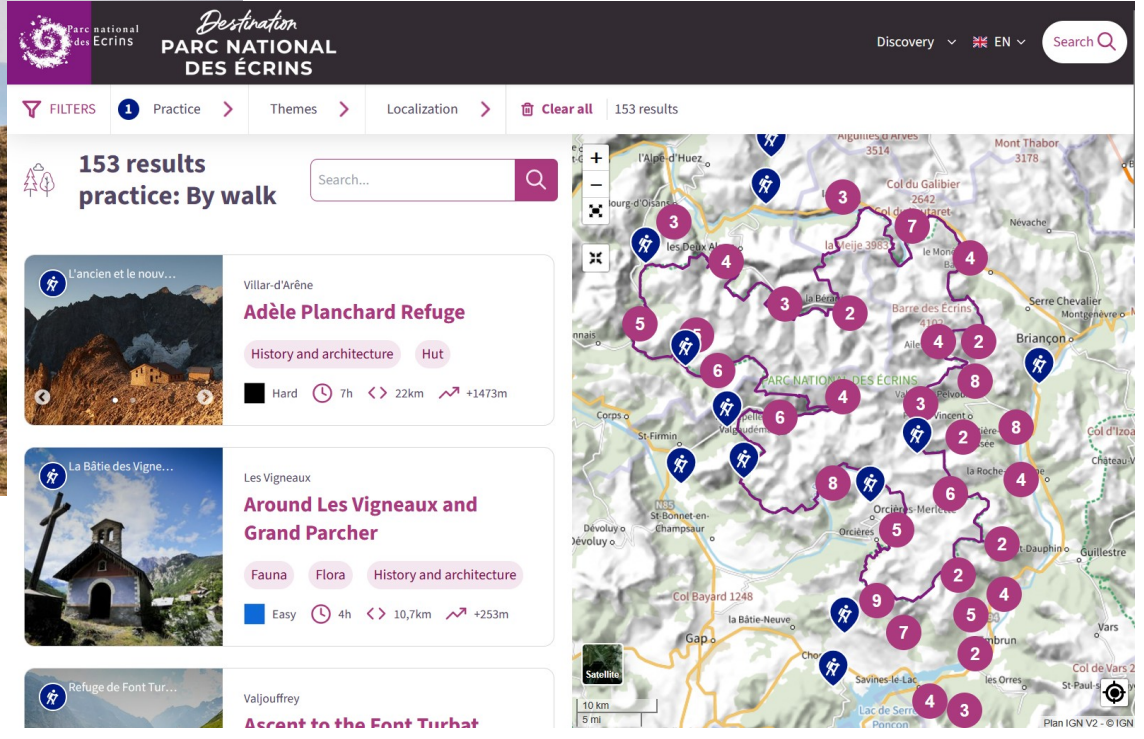




https://www.xnview.com

Day 4 - Geotrek



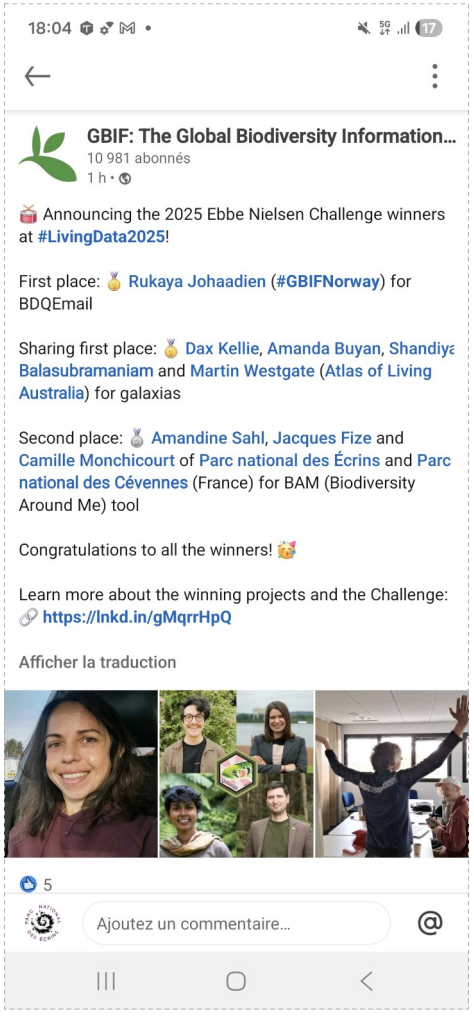


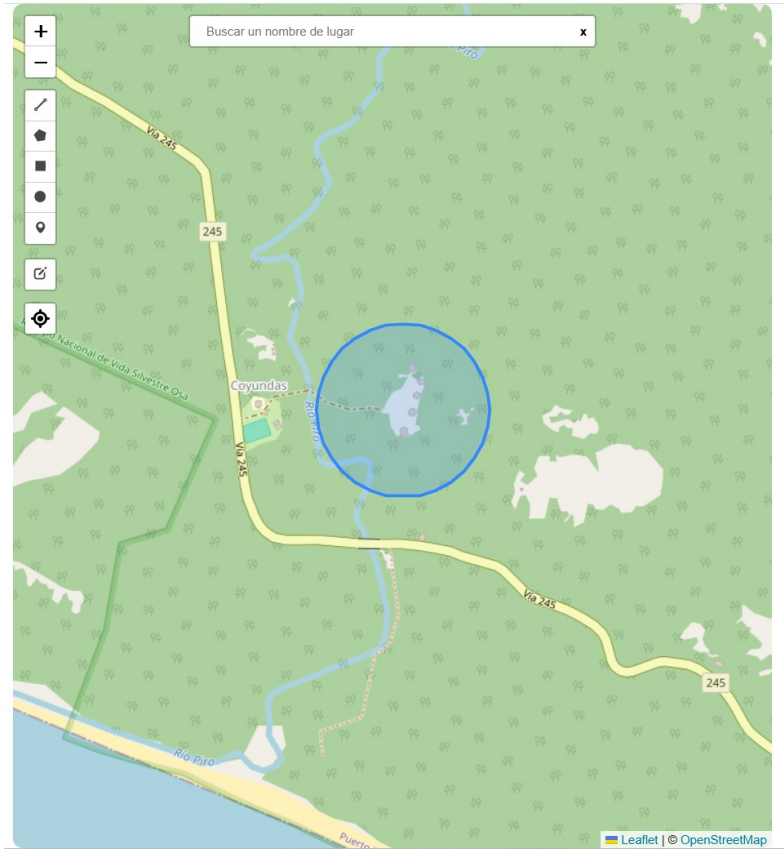
https://geotrek.fr
https://destination.ecrins-parcnational.fr/en

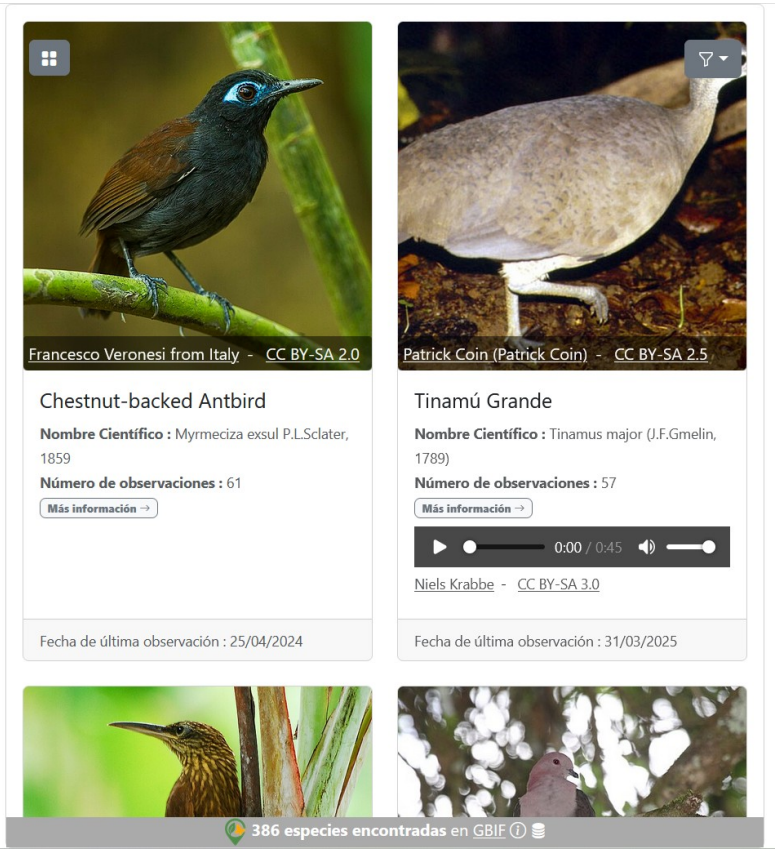
Day 4 - ONB

https://www.ofb.gouv.fr/actualites/lobservatoire-national-de-la-biodiversite-producteur-dindicateurs-sur-la-biodiversite

Day 4 – BAM



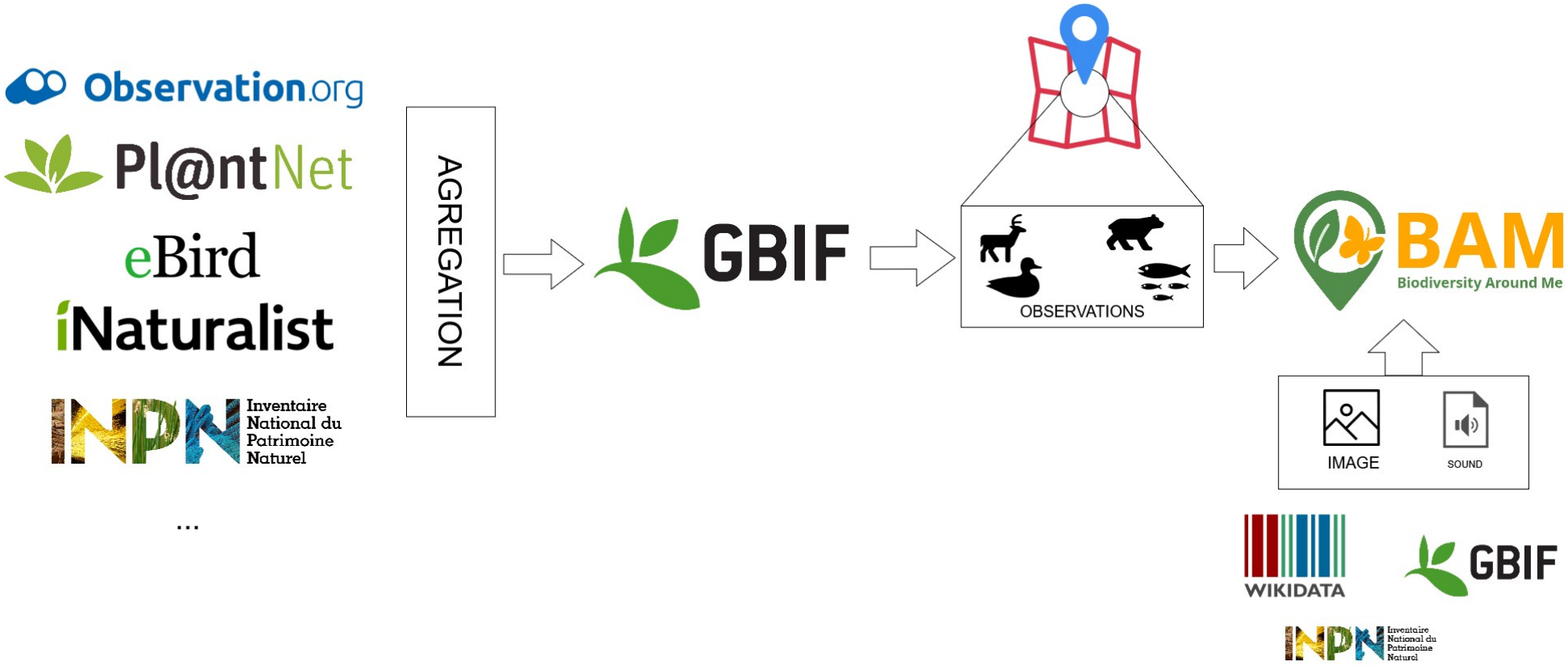




https://pnx-si.github.io/BAM-widget/#/?buffer=200&connector=GBIF&nbTaxonPerLine=2&showFilters=false&mapEditable=true&lang=es&mode=detailedList&widgetType=mapList&hybridTaxonList=true&x=-83.3366632461548&y=8.403954350654981&GBIF_ENDPOINT=https://api.gbif.org/v1&LIMIT=300&NB_PAGES=10&soundSource=wikidata&imageSource=wikidata

https://si.ecrins-parcnational.com/blog/2025-08-BAM-widget-en.html

Day 4 – BAM



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https://si.ecrins-parcnational.com/blog/2025-08-BAM-widget-en.html

Day 4 – Individual debrief

The exchange mission between the French and Costa Rican national parks was unanimously praised for the richness of discussions, the quality of workshops, and the strong human connection it fostered. Participants discovered new solutions, particularly in data management and analysis through GeoNature, PRONAMEC and AddaxAI, recognized as powerful tools offering time savings, reliability, and efficiency. Participants also expressed a willingness to open up their tools and share their data with a wider audience.

The collaboration strengthened ties between teams, encouraged experience sharing, and laid the groundwork for continued cooperation to support technological and operational advancements in protected areas.

🌍 General Impressions

- Strong overall satisfaction: all participants highlighted the richness of the exchanges, the relevance of the themes discussed, and the quality of the practical exercises.
- Mutual discovery: Costa Rican participants expressed that they discovered “a new world” and new perspectives for their work, particularly in data management and analysis.
- Strengthened human connections: the human and fraternal dimension of the exchanges (workshops and field outings, especially at La Leona) was considered essential for reinforcing cooperation and joint projects.

🧭 Technical and Thematic Insights

- PRONAMEC:
  - Seen as a promising and powerful tool for managing and monitoring environmental data.
  - High potential for saving time, improving reliability, and supporting decision-making.
  - Need for ongoing support and follow-up to ensure proper adoption.
  - Recommendation to align Pronamec positively with other existing tools and internal processes.
- Technologies and AI:
  - Gradual but enthusiastic adoption: initially skeptical participants acknowledged the reliability and effectiveness of the tools presented.
  - Highlighted time savings, reduced fatigue, and greater reliability thanks to AI and digital tools (PRONAMEC, AddaxAI, etc.).
  - The AddaxAI tool was particularly appreciated for its power and potential applications.

Day 4 – Individual debrief

👥 **Collective Learning and Engagement**

• Collaborative learning: the diversity of profiles enriched the exchanges. Sharing experiences (strengths and weaknesses) fosters collective growth and process agility.
• Hands-on learning: practical workshops were considered essential for understanding and retention.
• Knowledge sharing: several participants plan to share what they learned with colleagues from other protected areas.
• Continuing momentum: there is a strong desire to organize future collective sessions to monitor technological progress and strengthen France–Costa Rica cooperation.

💬 **Highlighted Quotes**

• *“A new world discovered that validates our work on management plans.”*
• *“Pronamec can become a powerful tool.”*
• *“Time-saving and more reliability thanks to AI.”*
• *“AddaxAI is very powerful.”*
• *“These tools really work — and work well.”*
• *“Fraternity, passionate learning, and collective construction.”*

✅ Summary

A mission unanimously praised for its human impact, concrete technical contributions, and collaborative dynamic.

The exchanges between France and Costa Rica open new perspectives for cooperation in data management, AI use, and capacity building for field teams.

Day 4





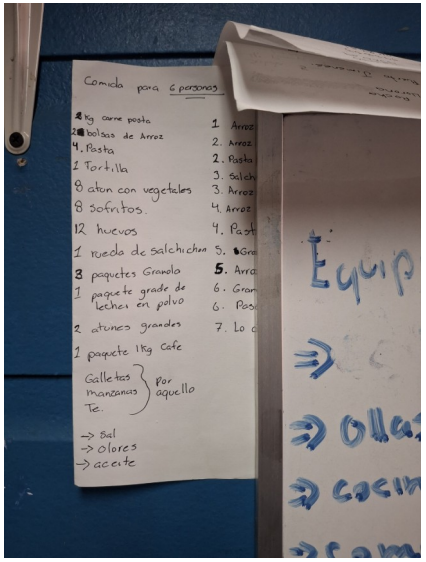


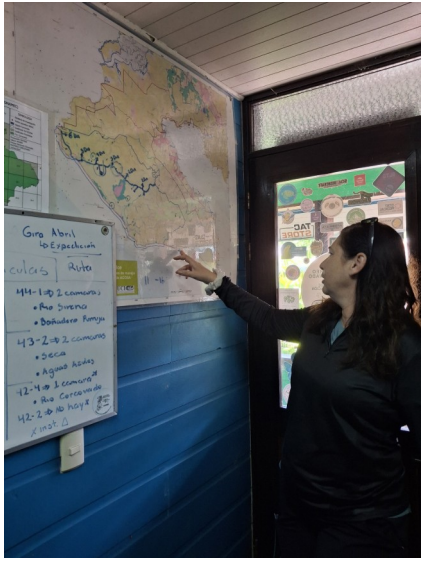




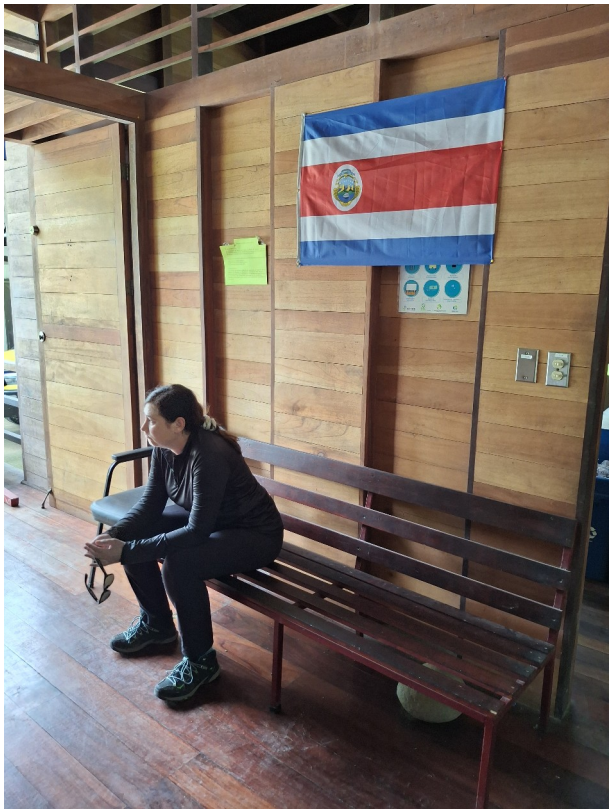



Day 5 – SINAC offices





Day 5 – SINAC offices



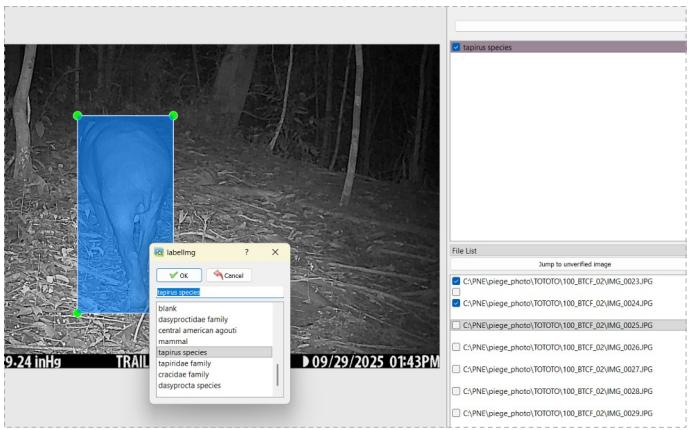
7:30 AM – 6:00 PM: Drive back to the capital, San José
- Stop at the Osa Conservation Area station in Puerto Jiménez and meeting with manager Juan José.
- Stop at the Humedales Nacionales de Sierpe protected area ranger station (Sierpe national wetlands) to speak with the park rangers.

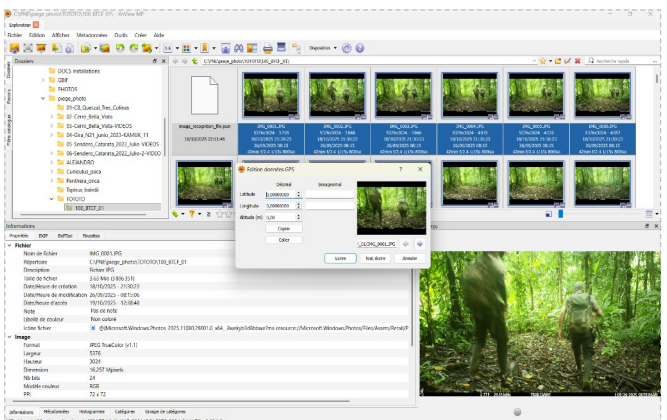
Day 6 – Poas volcan & follow-ups

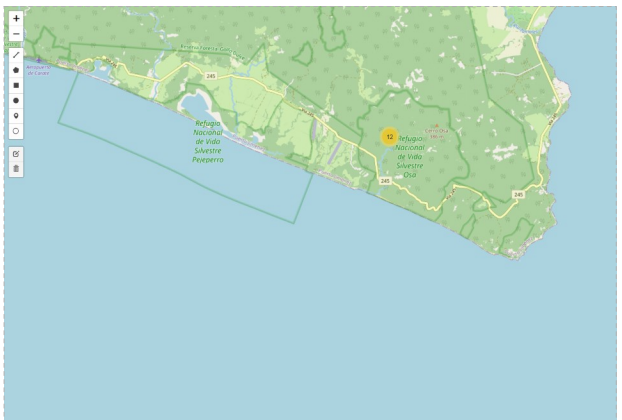
From 8h30 to 16h : Visit of Poás Volcano National Park
Discussion with the park rangers and the local mission leader regarding objectives and next steps.
Meeting with a French volcanologist based in Costa Rica.

First follow-ups

- XnView metadata table generation / Tests & documentation - https://cloud.ecrins-parcnational.fr/index.php/s/CJAtExHP99WQ5cQ
- XnView add GPS coordinates / Tests & documentation - https://cloud.ecrins-parcnational.fr/index.php/s/CJAtExHP99WQ5cQ
- iNaturalist contributions analysis / Export & mapping - https://cloud.ecrins-parcnational.fr/index.php/s/XJiQMW4NmXnDWms
- AddaxAI step 3 (manual images verification and validation) / Tests & documentation - https://cloud.ecrins-parcnational.fr/index.php/s/pL7qiY97wk6LYzy
- PRONAMEC vision synthesis
- November 3rd, 2025 : online meeting with all participants







Potential follow-ups

Immediate and Anticipated Follow-ups

- Remote cold debrief of the mission: November 3.
- Drafting technical documentation (AddaxAI, EarthRanger/QGIS, etc.).
- Searching for technical solutions for re-identifying jaguars captured by camera traps.
- Technical study of AI-based image analysis training solutions to contribute to building a more efficient model for Costa Rica.

Perspectives for actions and collaborations

- Support SINAC in transitioning their PRONAMEC platform to an open-source license.
- Contribute to the development of the PRONAMEC platform once it becomes open source.
- Support one of the protected areas in concepting a pilot project to digitally showcase the scientific knowledge of their territory.
- Analyze possibilities to align PRONAMEC data structuring with international standards (GBIF sampling-event – https://www.gbif.org/sampling-event-data for monitoring & Camtrap DP for camera trap deployments and media – https://camtrap-dp.tdwg.org/).
- Establish contact with tourism teams to present Geotrek and “Esprit Parc” tools, helping develop an ecotourism strategy and highlight tourism providers with best practices, as opposed to illegal practices.
- Prepare and fund the next mission in the form of a technical development workshop with experts from Costa Rica and France.
- Participate remotely in the new Costa Rican biannual meetings of the working group on new technologies, established following the mission.
- Assist in designing the opening and expansion of the PRONAMEC platform to other tools (camera trap analysis models, QGIS, etc.) and other audiences (scientists, students and universities, tourists and visitors, etc.).
- Support the use and valorization of PRONAMEC scientific data for other work areas: law enforcement (procedures, investigation techniques, satellite imagery, etc.), citizen mobilization (ABC, etc.), and more.
- Share the management of field agents’ time programming for OFB personnel.

Gracias