Citizen science and biodiversity

Biodiversa+ workshop

REC — The plenary sessions of this workshop are recorded and will be shared on the Biodiversa+ website and Youtube channel
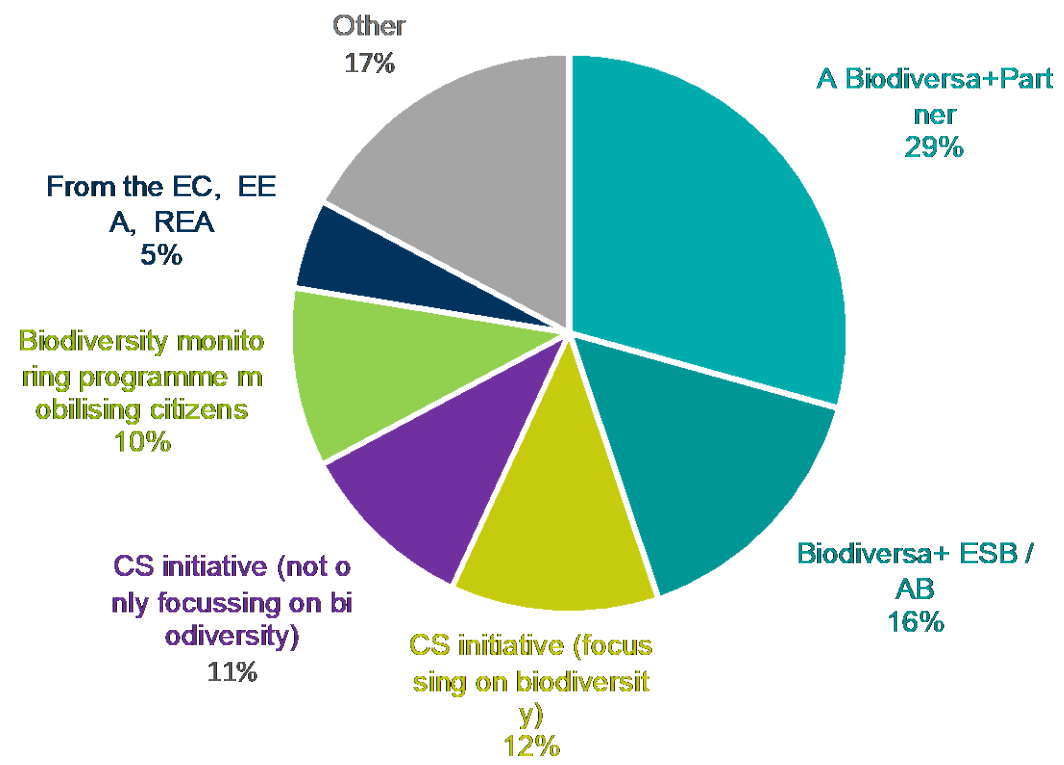
16th of February – 1pm to 4pm CET

Welcome words and introduction of the workshop

By Frédéric Lemaître, FRB and Anna Rosenberg, GSRI
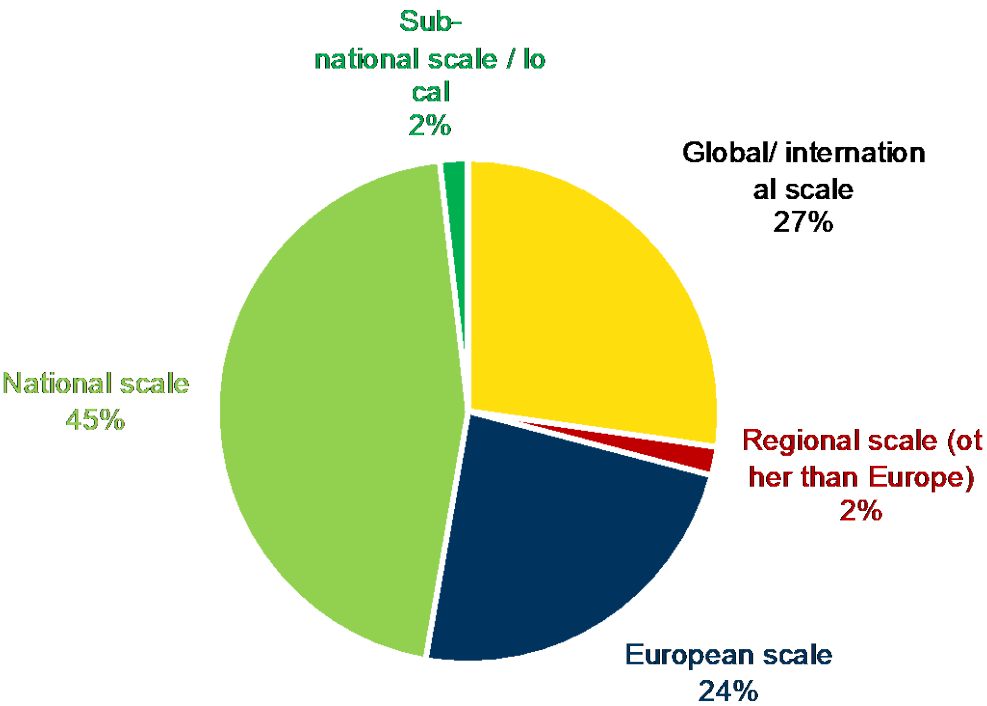
Registered participants

55
Registered participants

WS participants

- A Biodiversa+Partner 29%
- Biodiversa+ ESB / AB 16%
- CS initiative (focussing on biodiversity) 12%
- CS initiative (not only focussing on biodiversity) 11%
- Biodiversity monitoring programme mobilising citizens 10%
- From the EC, EEA, REA 5%
- Other 17%

Registered participants

55
Registered participants

Scale of action of the organisations of the workshop participants

Sub-national scale / local 2%

Global/ international scale 27%

National scale 45%

Regional scale (other than Europe) 2%

European scale 24%

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Agenda of the workshop

13.00 – 13.10: Welcome words and aims of the workshop, Frédéric Lemaître (FRB) and Anna Rosenberg (GSRI)

13.10 – 13.35: Biodiversa+ introduction and outcomes of previous work on citizen science, Hilde Eggermont, Biodiversa+ Chair & Coordinator (BelSPO)

13.35 – 14.20: Keynote speeches by Carrie Seltzer, iNaturalist and David Roy, SPRING project followed by a Q&A session

Break

14.35 – 15.40: Discussions in sub-groups

15.40 - 16.00: Plenary wrap-up and conclusion of the workshop
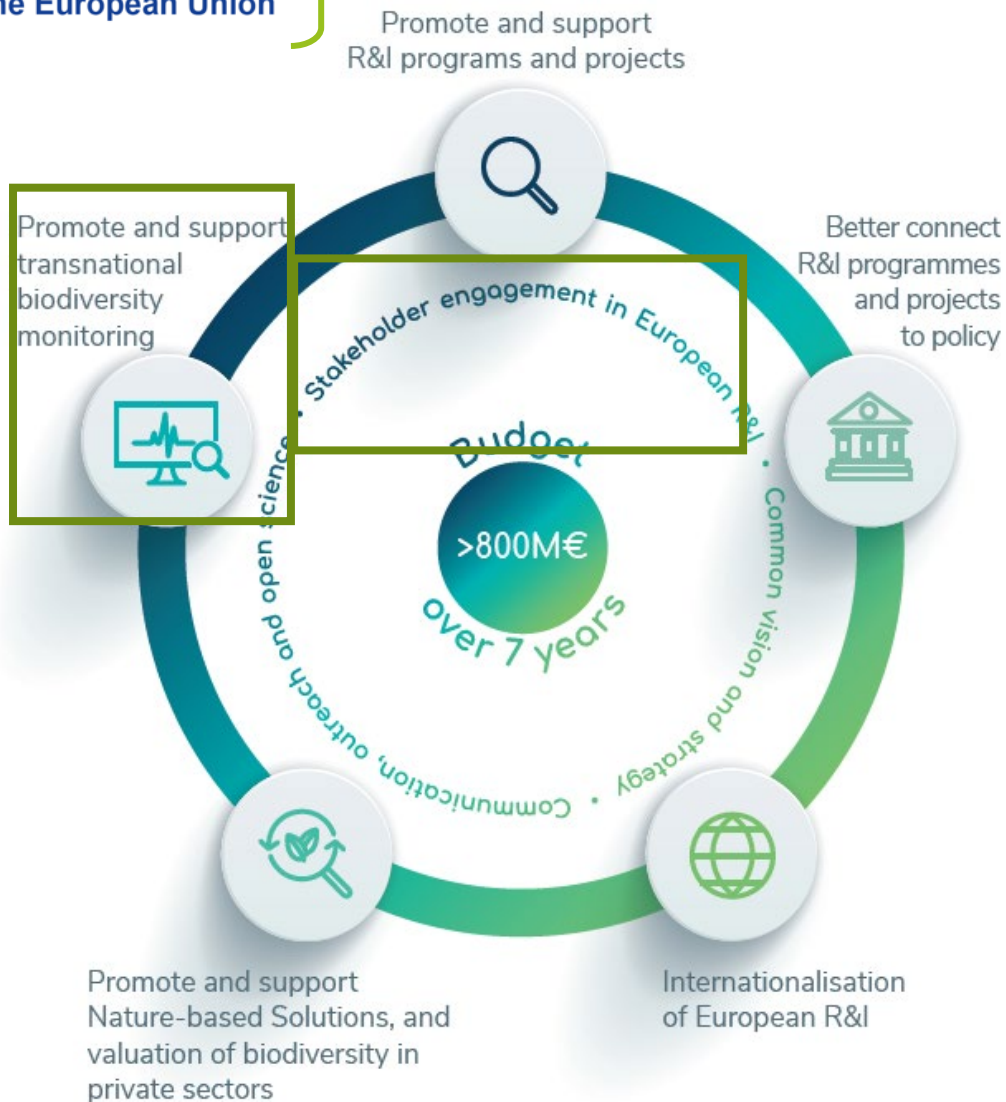
Aims of the workshop

- Identify how Biodiversa+ can better support citizen science approaches in biodiversity monitoring.

- Identify and explore potential future collaboration with citizen science initiatives & co-development of activities around education and citizen science

- Identify needs around citizen science for capacity building

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Biodiversa+ introduction

By Hilde Eggermont, BelSPO, Biodiversa+ Chair & Coordinator
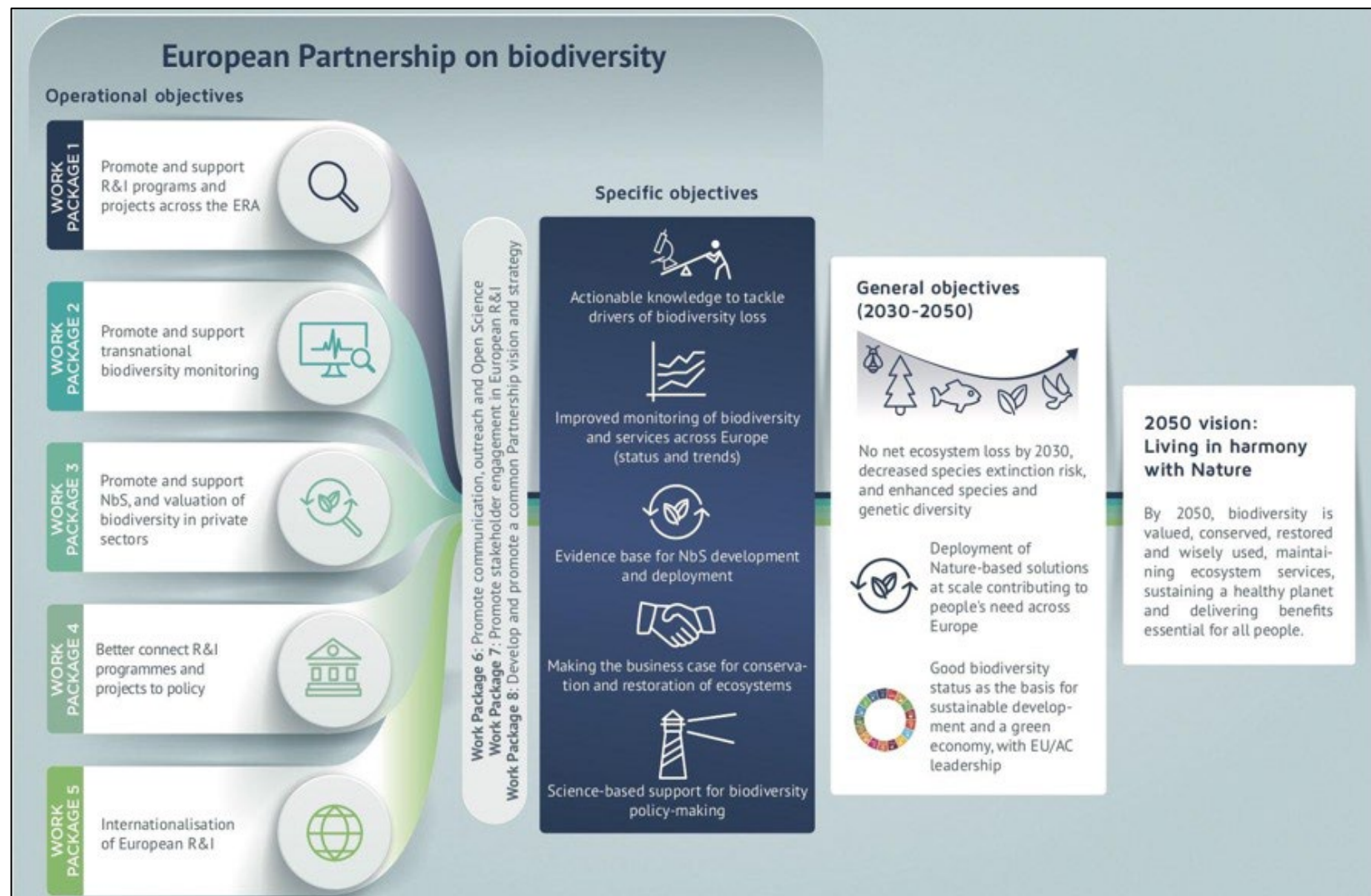
The European Biodiversity Partnership, Biodiversa+

Supports excellent research on biodiversity with an impact for policy & society

biodiversa

Co-funded by the European Union

Promote and support R&I programs and projects

Promote and support transnational biodiversity monitoring

Better connect R&I programmes and projects to policy

Stakeholder engagement in European R&I · Common vision and strategy · Communication, outreach and open science

Budget >800M€ over 7 years

Promote and support Nature-based Solutions, and valuation of biodiversity in private sectors

Internationalisation of European R&I

37 Countries

74 Partners

23 EU-13

17 from associated countries

Biodiversa+ Partners
Collaborations
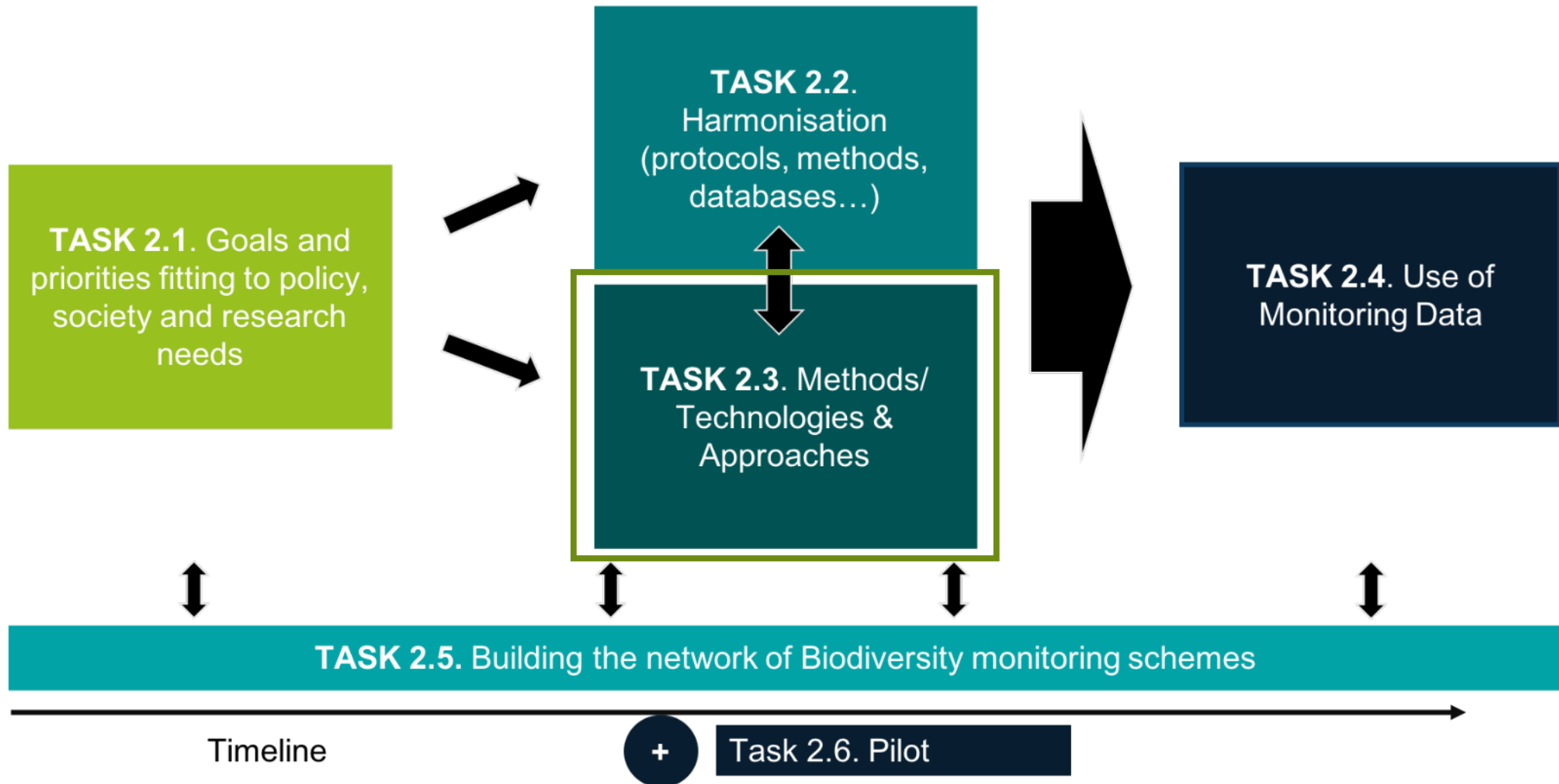
www.biodiversa.eu

Develop and promote a common vision & strategy

74 Partners gathered around a joint vision aligned with the Kunming-Montreal Global Biodiversity Framework & the EU Biodiversity Strategy 2030:
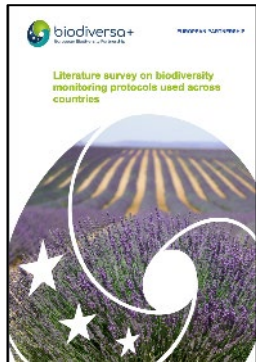
"… making the bridge between science, policy & practice…"

Biodiversa+ biodiversity monitoring activities

TASK 2.1. Goals and priorities fitting to policy, society and research needs

TASK 2.2. Harmonisation (protocols, methods, databases…)

TASK 2.3. Methods/ Technologies & Approaches

TASK 2.4. Use of Monitoring Data

TASK 2.5. Building the network of Biodiversity monitoring schemes

Timeline

+ Task 2.6. Pilot

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EUROPABON

Biodiversity Monitoring Coordination Center

- Understand national and subnational biodiversity monitoring governance structures, and priorities
- Enriching and testing the EuropaBON outcomes in different countries/ contexts
- Co-developing solutions to overcome the challenges and bottlenecks identified by EuropaBON (incl governance aspects)
- Increase ownership by environmental policy actors
- Capacity building + Sustainability
- Monitoring pilots: Soil biodiversity, IAS, Governance – and more!

https://www.biodiversa.eu/biodiversity-monitoring/

Collaborating with existing and new initiatives – including other Partnerships & Missions

... and many more!

Previous Biodiversa work on citizen science

By Hilde Eggermont, BelSPO, Biodiversa+ Chair & Coordinator

Biodiversa Citizen Science Toolkit
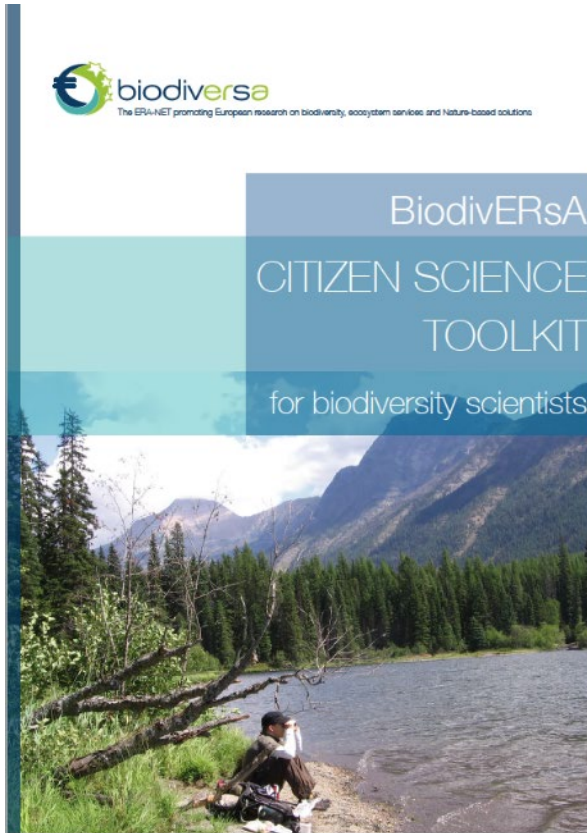
Goudeseune, L., Eggermont, H., Groom, Q., Le Roux, X., Paleco, C., Roy, H.E., van Noordwijk, C.G.E. (2020). BiodivERsA Citizen Science Toolkit For Biodiversity Scientists. BiodivERsA report, 44 pp. DOI: https://doi.org/10.5281/zenodo.3979343

✓ Introducing methods, examples and recommendations for scientists interested to mobilise citizen science in their research projects (2020)

✓ Online directory of further resources on citizen sciences:

> **Information hubs & Network Organisations**

> **Tools / Support**
(for setting up and managing citizen science projects; Data platforms & repositories; Inventories and databases of projects

> **Publications**
(Guidance documents; Scientific papers: theory and methodology; Publications produced by CS projects; Policy-related documents; News & blog articles

https://www.biodiversa.org/1810/download

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www.biodiversa.eu

Biodiversa Citizen Science Toolkit
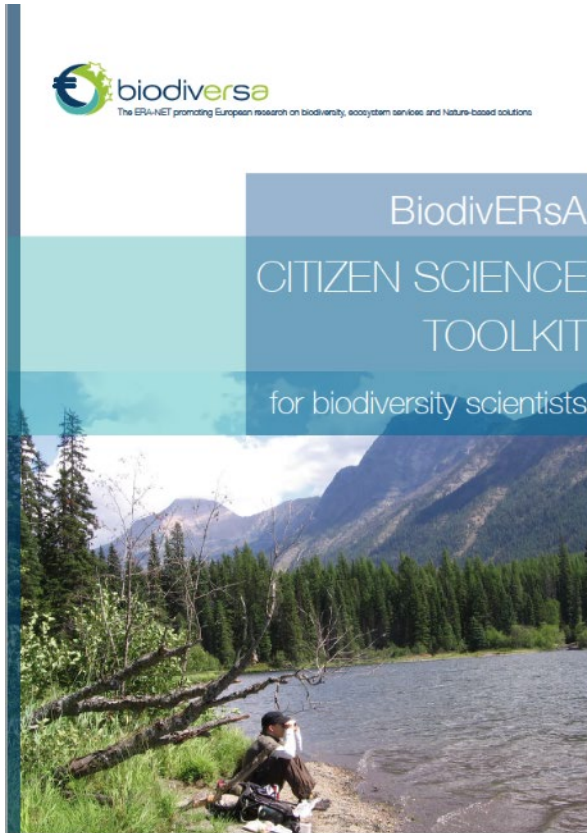
Potential challenges for engaging citizens or when engaging with them (from a scientific perspective)

1. Citizen Science approaches are **not always relevant nor useful** for the research
2. Citizen Science can lead to **poor data quality/ reliability** & scientific bias
3. The skills or **training of the volunteers** might be insufficient
4. It can be difficult to **find volunteers**
5. It is difficult to **sustain volunteers** in the long-term
6. **Resources**, money, time, and skills (for Citizen Science) are often lacking in research projects
7. Citizen Science is not always **acknowledged** as good science
8. Problems of **tools or language** can act as barriers
9. The Citizen Science landscape is too **fragmented**
10. Funders are having **different expectations** towards Citizen Science projects
11. **Conflicts** might arise between groups of citizens
12. The outcomes of Citizen Science **beyond production of data/information** should be given **increased recognition**
13. There might be concerns about **data privacy and safety**

Biodiversa+ report on biodiversity monitoring knowledge gaps and research & innovation priorities

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EUROPEAN PARTNERSHIP

Biodiversity monitoring knowledge gaps and research & innovation priorities

Co-funded by the European Union

https://www.biodiversa.eu/wp-content/uploads/2022/12/D2.1-Report-on-biodiversity-knowledge-gaps-VF.pdf

- Produced in 2022 based on the outcomes of a expert workshop to feed the BiodivMon call

- Focus on three biodiversity monitoring aspects:

    1. Testing and application of new tools, technologies and approaches for biodiversity monitoring

    2. Involvement of citizens in biodiversity monitoring activities

    3. Use of monitoring data by research & innovation

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Biodiversa+ report on biodiversity monitoring knowledge gaps and research & innovation priorities

Additional challenges for engaging citizens in **biodiversity monitoring**:

- Data are not standardised which doesn't help to scale-up citizen science data
- Methods for citizen science need to be improved to get more standardised data
- Issue of data quality and possible bias
- Lack a stronger culture of recognising citizen scientists contributions within projects
- Lack of ethical and legal guidelines for citizen science

Biodiversa+ report on biodiversity monitoring knowledge gaps and research & innovation priorities

Possible ways forward for engaging citizens in **biodiversity monitoring**:

- Support the involvement of more citizens with broader profiles, involve more practitioners, when possible match people's motivations and data needs
- Online platform should reinforce data quality, facilitate data management, open access and create a sense of community
- Assess the added-value of citizen science for biodiversity monitoring to be able to know when citizen science should be promoted and when citizen science should be combined with other approaches.
- Promote novel technologies such as artificial intelligence, deep learning and applications in citizen science
- Assess when, how and where novel technologies would be beneficial for citizen science

Any questions?

?

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Setting the scene

Facilitation by Frédéric Lemaître, FRB and Anna Rosenberg, GSRI

Upcoming key presentations

13.35 - 13.50 Carrie Seltzer, iNaturalist – Challenges related to biodiversity and citizen science

13.50 - 14.05 David Roy, SPRING project – Involvement of citizens in a biodiversity monitoring programmes, challenges and ways to overcome them

14.05 – 14.15 Q&A

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Keynote speech

By Carrie Seltzer, iNaturalist

People

Data

iNaturalist

Observe → Identify → Discover
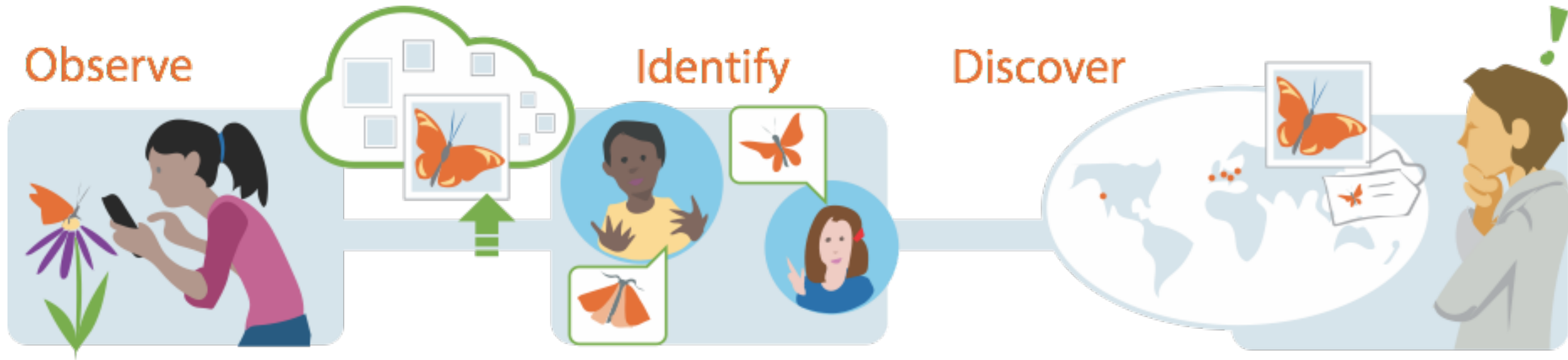
A platform for sharing biodiversity encounters & crowdsourcing identifications

Sharing Occurrence Records
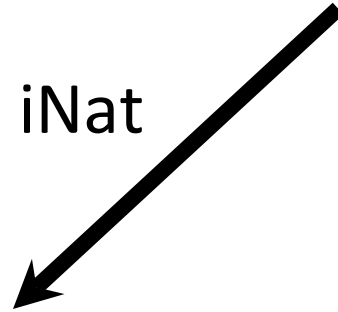
Who you are

What you saw

Where you saw it

When you saw it

Evidence of what you saw

SangyaPundir [CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0)]
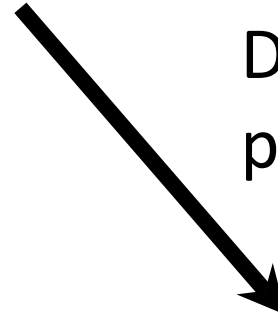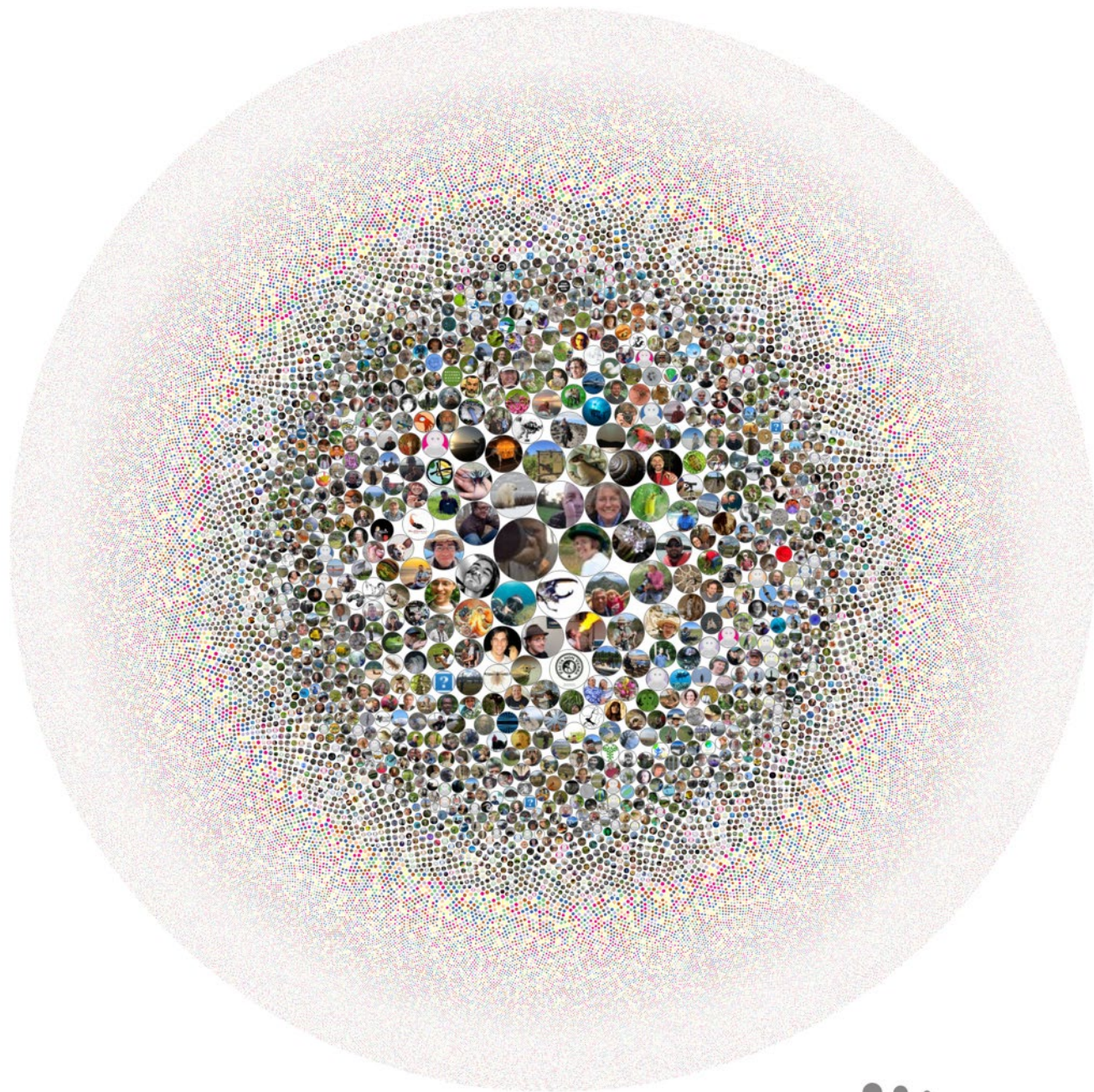
iNaturalist
Community—
Thank you!

150,000 observers generated 6,000,000 observations

5k   2.5k   1k   observations per observer

Bottlenecks

Photo by Carrie Seltzer, CC BY-NC

Expertise

Observation

and

Identification

can be done by different people

Activity

pdfuenteb suggested an ID   🏆 Improving   4y   ⌄

Mosses
Phylum Bryophyta   ⇄ Compare   ✔ Agree

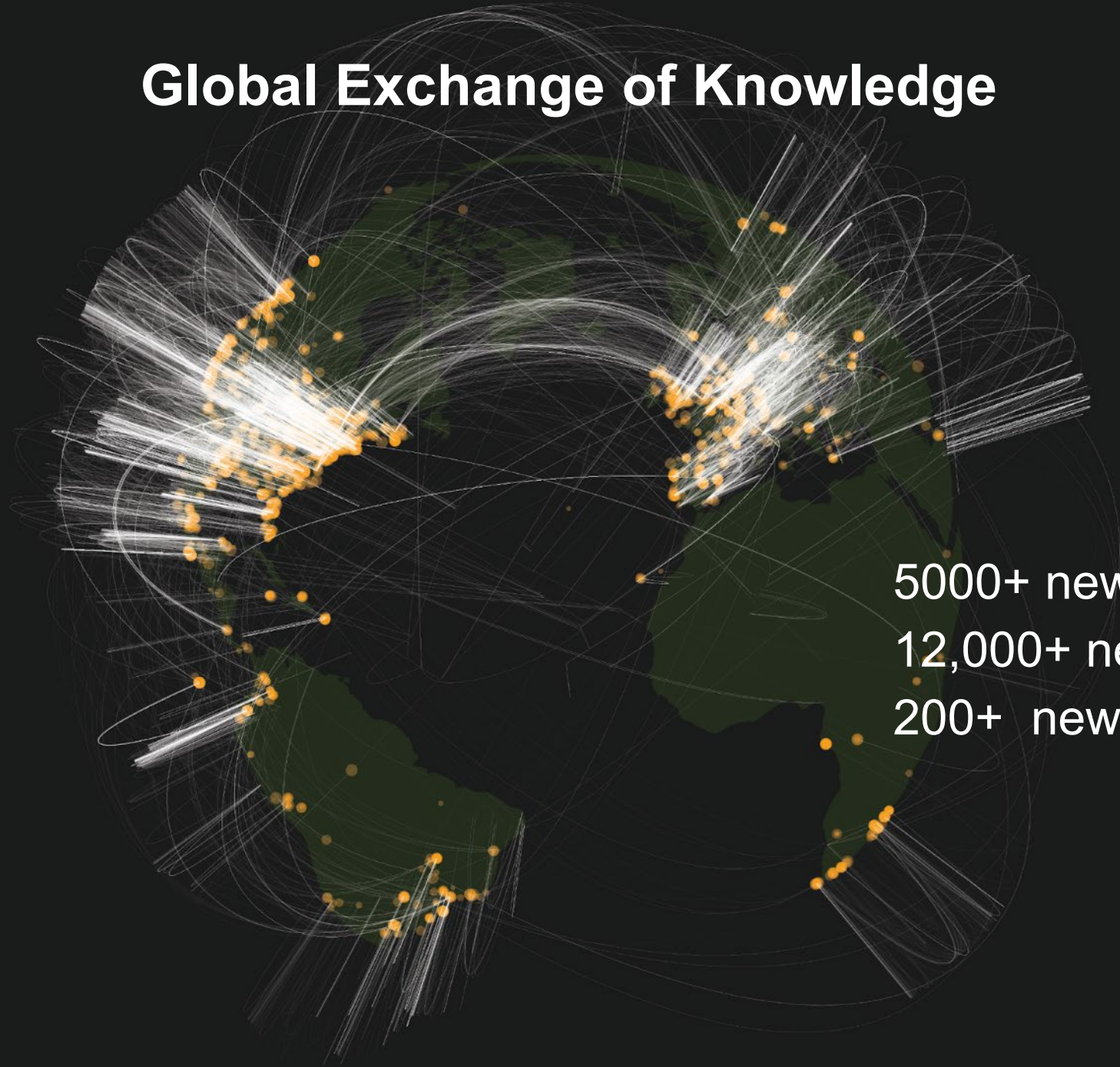graysquirrel suggested an ID   🏃 Leading   4y   ⌄

Dendroalsia Moss
Dendroalsia abietina   ⇄ Compare   ✔ Agree

Photo by Abhas Misraraj, iNaturalist

Global Exchange of Knowledge

One Hour of
Activity on
iNaturalist

5000+ new observations
12,000+ new identifications
200+ new people

WE'RE PRETTY SURE THIS IS IN THE GENUS VIOLA.

violets
Viola

HERE ARE OUR TOP TEN SPECIES SUGGESTIONS:

common blue violet
Viola sororia
Visually Similar / Seen Nearby

marsh blue violet
Viola cucullata
Visually Similar / Seen Nearby

Sweet violet
Viola odorata
Visually Similar / Seen Nearby

common dog-violet
Viola riviniana
Visually Similar / Seen Nearby

Visually similar suggestions in the iOS app

Need more bridging museum & field characters

Identifying Australian Ghost Crabs

According to Sakai & Türkay, 2013, Australia has 5 sp. of Ghost Crab:

I've annotated the images below with arrows pointing at the exorbital angles

O. convexa

O. fabricii

More
People

More
Places

More
Species

Community Guidelines

Welcome to iNaturalist! iNaturalist is a global community of people who record observations of other organisms and share them with each other so all of us can learn more about the natural world. We all want iNat to be a fun, helpful, and relaxed place to be, so we (Ken-ichi and the other site staff) have written these guidelines with extensive input from the community to describe what we consider good and bad behavior. These are not a replacement for our Terms of Service, and with the exception of a few items marked with a (!), these are not hard and fast rules. They are guidelines and heuristics for how we should conduct ourselves on iNaturalist. These guidelines do not address our behavior beyond iNaturalist.

Suspendable Offenses

Let's just get these out of the way at the start. Any of these behaviors are grounds for immediate suspension without warning.

- **(!) Hate speech.** Hate speech is content consciously designed to attack people based on age, race, gender, sexual orientation, income, physical ability, country of origin, religion, educational background, or any other attribute that people are unable to control.

- **(!) Insults or threats.** Insults are attacks meant purely to belittle or offend people. A threat is any content that indicates an intent to harm another person. Note that warnings about suspension or other regulatory actions on the part of site staff or site curators on iNaturalist are not threats.

- **(!) Sexually explicit content.** Observations of mating non-human species are fine, but common sense should still be used.

- **(!) Sockpuppet accounts.** A sockpuppet account is an additional account set up to evade suspension or to engage in other forms of bad behavior, like confirming your own identifications. This does not include multiple accounts set up for multiple roles, e.g. a personal account and a professional account.

Things That Are OK

Occasionally contentious behaviors that are actually encouraged or, at worst, forgivable.

- **Civil disagreement.** If you see a problem, use our curation tools or politely engage the person who

iNaturalist.Se
SWEDEN

iNaturalistFi
FINLAND

iNaturalistUK
UNITED KINGDOM

iNaturalist.ca
CANADA

iNaturalist.LU
LUXEMBOURG

BioDiversity4All
INATURALIST PORTUGAL

iNaturalistGR
GREECE

iNaturalistGT
GUATEMALA

iNaturalista
INATURALIST MEXICO

iNaturalistil
ISRAEL

iNaturalistTW
TAIWAN

NaturalistaCR
INATURALIST COSTA RICA

NaturalistaCO
INATURALIST COLOMBIA

iNaturalistPa
PANAMA

iNaturalistEc
ECUADOR

NaturalistaUY
INATURALIST URUGUAY

iNaturalistAU
AUSTRALIA

iNaturalistCL
CHILE

ArgentiNat
INATURALIST ARGENTINA

iNaturalist.NZ
NEW ZEALAND

iNaturalist
GLOBAL NETWORK

Single underlying taxonomy

iNaturalist is a home for both specialists and generalists
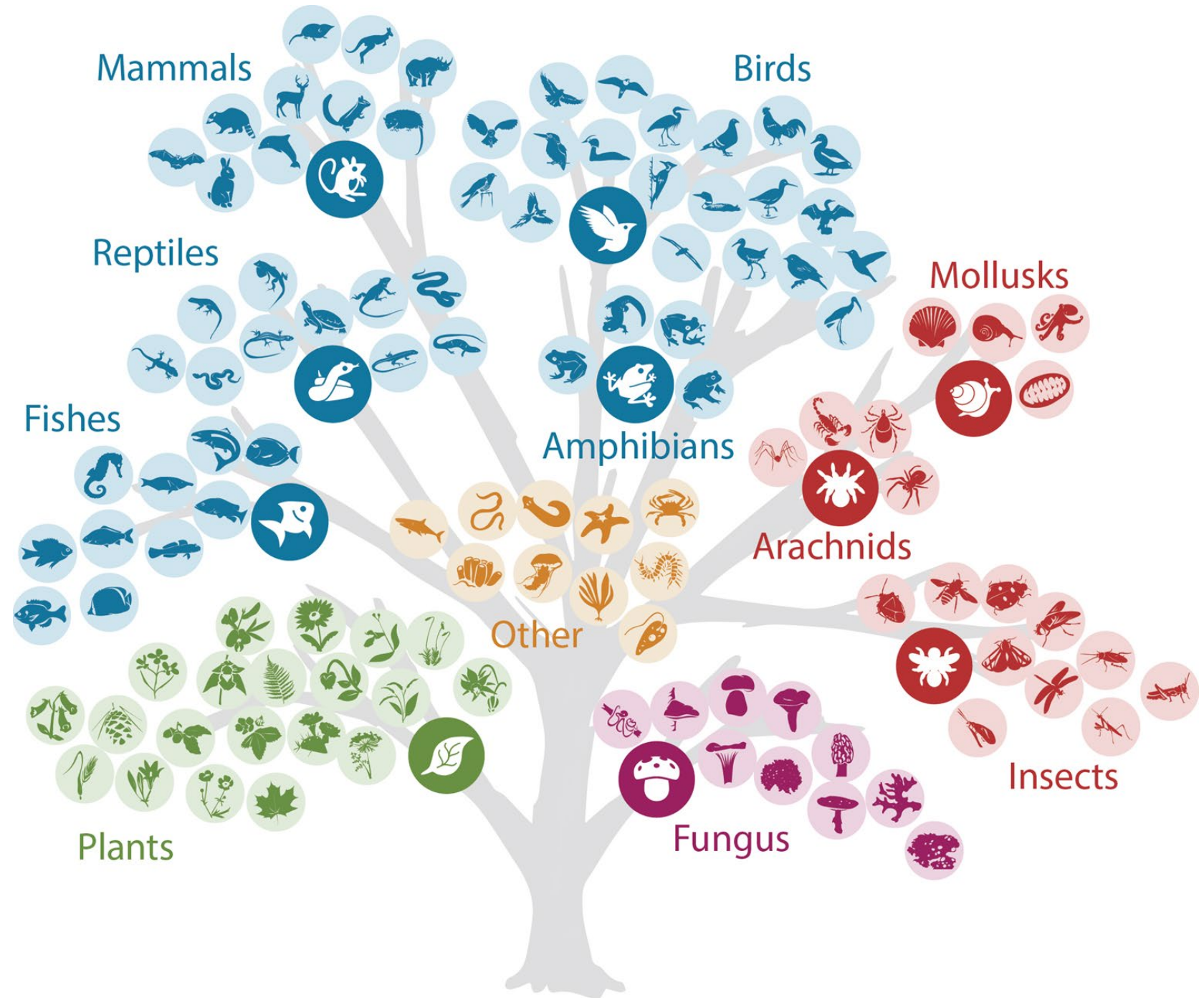
Need more global taxonomic authorities

People need biodiversity

Biodiversity needs people

Why monitor?

- Monitoring is central to the study of the environment and management of resources

- Understanding the causes of change and make predictions based on scenarios of likely interventions

- Has the potential to detect unexpected patterns of change, the 'unknown unknowns' or 'surprises'

- Wider benefits such as educating and engaging the public, particularly when through *Citizen Science*

- Clear economic benefits to research and society

Breeze et al. (2021). Pollinator monitoring more than pays for itself. *Journal of Applied Ecology* 58(1): 44-57.

The UK experience

Partnership approach
- NGOs
- Research organisations
- Other environmental public bodies
- Citizen scientists
- ~5 year funding agreements

Scientifically robust
- Peer reviewed protocols
- Participant support and training
- Massive sample size

https://www.youtube.com/watch?v=Cvp-F9uopi0

Citizen science can be cost-effective

£ millions per year
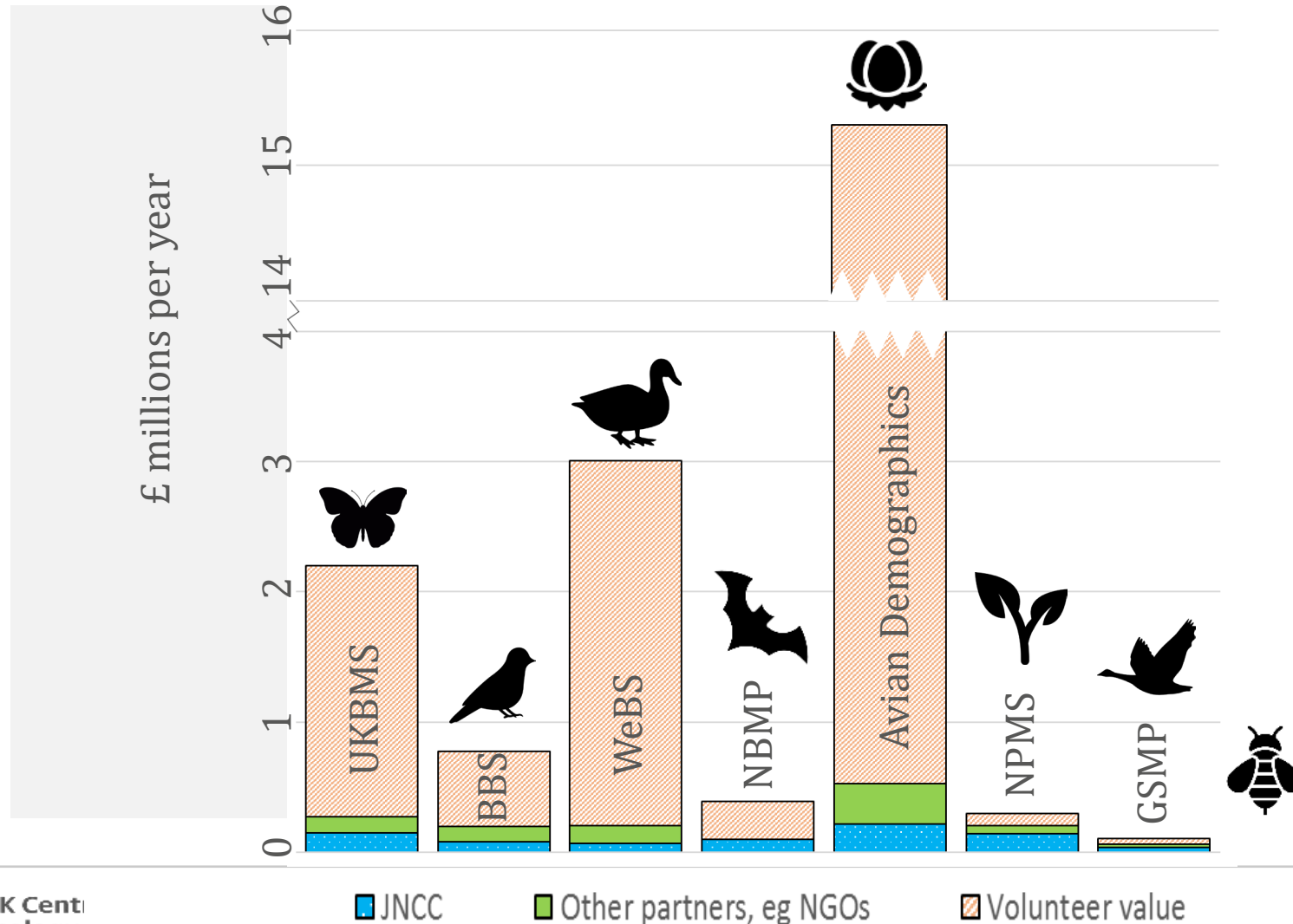
Citizen science is not free (~£150 - £250k per annum)…

but there is a high return on investment

Legend: JNCC | Other partners, eg NGOs | Volunteer value

Bars: UKBMS, BBS, WeBS, NBMP, Avian Demographics, NPMS, GSMP

UK Cent... Ecology

Statistics and indicators

- Official Statistics
- Trends at UK and country level where possible
- UK biodiversity indicators
- Research use

154 wild bee and 235 hoverfly species

(389 species)

UK Centre for Ecology & Hydrology
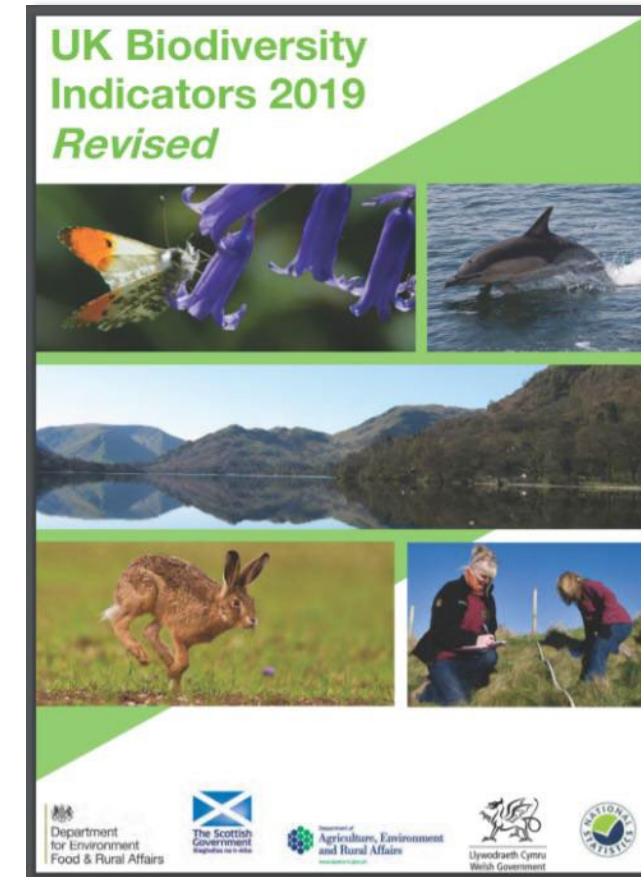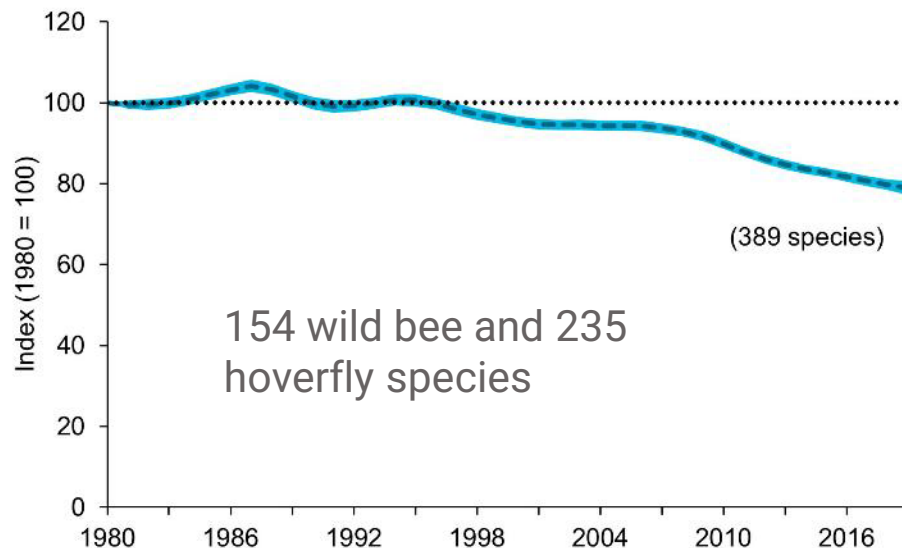
Strengthening Pollinator Recovery through INdicators and monitorinG

Parliamentary Preparatory Action contract, co-ordinated by DG Environment, €5m. May 2021 to November 2023. 19 partners, UFZ lead

EU POLLINATOR MONITORING SCHEME

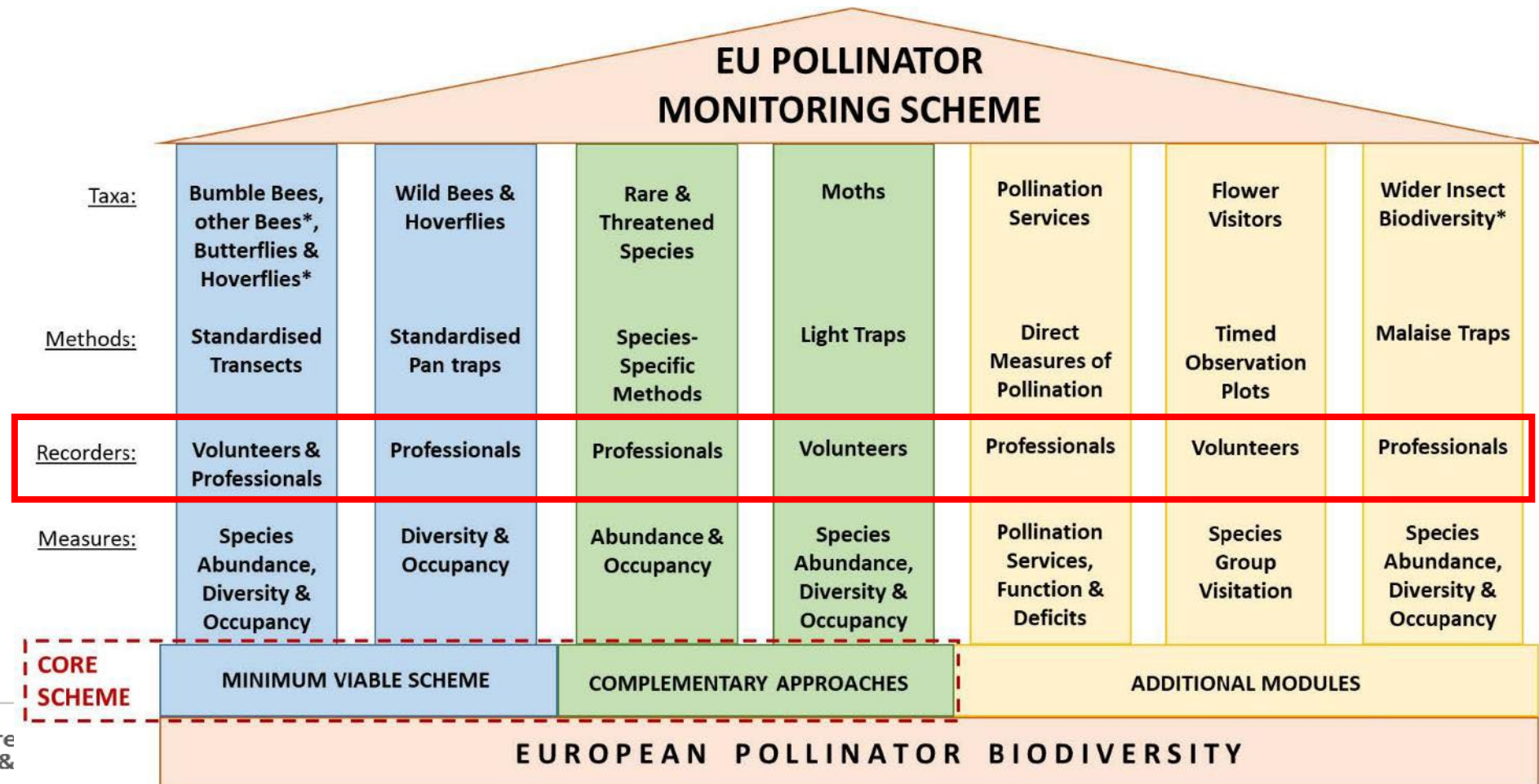|	Bumble Bees, other Bees*, Butterflies & Hoverflies*	Wild Bees & Hoverflies	Rare & Threatened Species	Moths	Pollination Services	Flower Visitors	Wider Insect Biodiversity*
Taxa:	Bumble Bees, other Bees*, Butterflies & Hoverflies*	Wild Bees & Hoverflies	Rare & Threatened Species	Moths	Pollination Services	Flower Visitors	Wider Insect Biodiversity*
Methods:	Standardised Transects	Standardised Pan traps	Species-Specific Methods	Light Traps	Direct Measures of Pollination	Timed Observation Plots	Malaise Traps
Recorders:	Volunteers & Professionals	Professionals	Professionals	Volunteers	Professionals	Volunteers	Professionals
Measures:	Species Abundance, Diversity & Occupancy	Diversity & Occupancy	Abundance & Occupancy	Species Abundance, Diversity & Occupancy	Pollination Services, Function & Deficits	Species Group Visitation	Species Abundance, Diversity & Occupancy

CORE SCHEME

MINIMUM VIABLE SCHEME	COMPLEMENTARY APPROACHES	ADDITIONAL MODULES

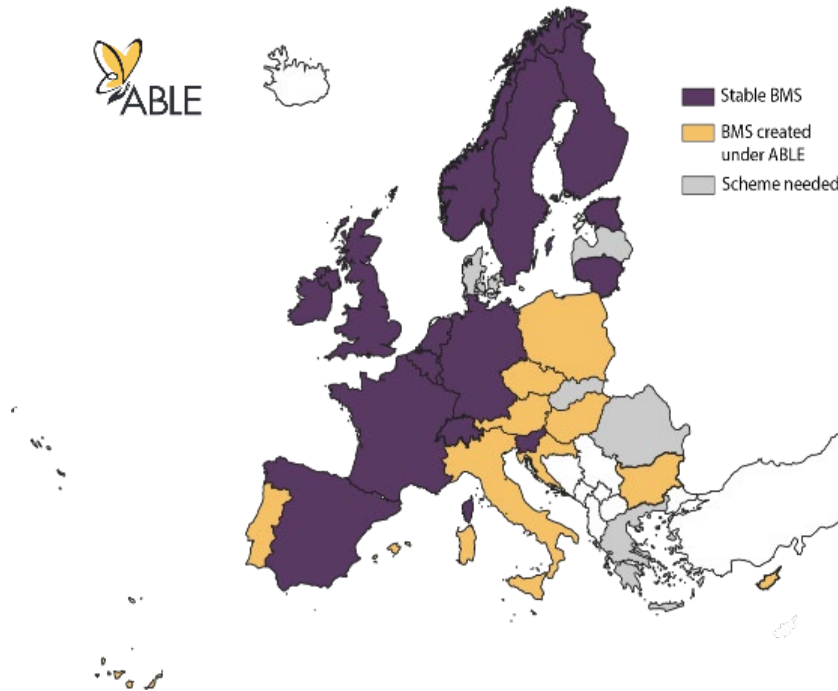**EUROPEAN POLLINATOR BIODIVERSITY**

UK Centre Ecology &

SPRING: Expansion of butterfly monitoring
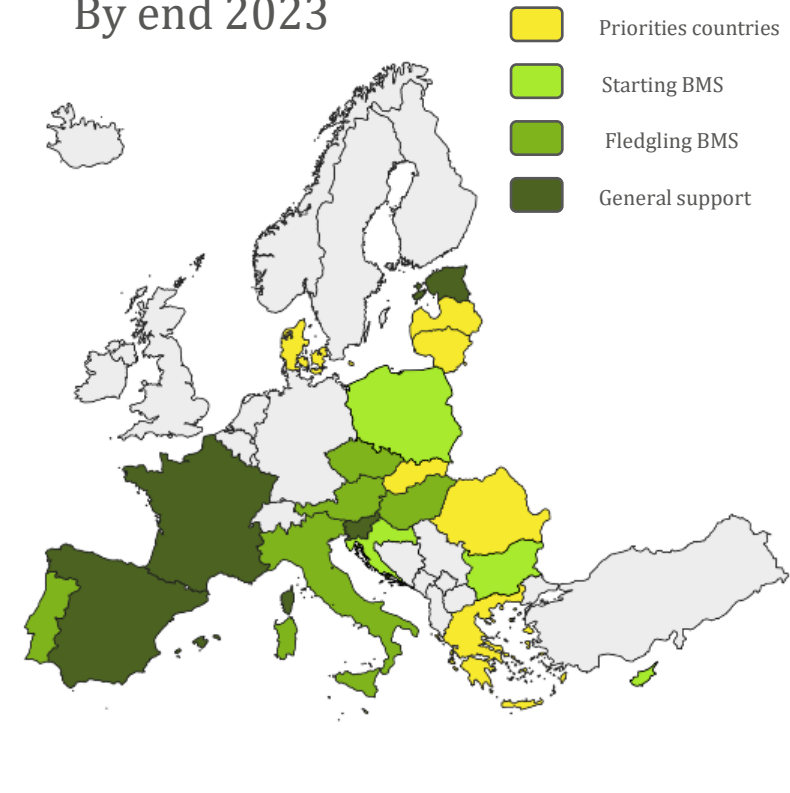
Aim: Complete coverage of European Butterfly Monitoring
Schemes as an **eBMS partnership in all EU MS**

Butterfly Transects – growing in popularity

Schemes

Dark colours = EU27

Transects

Figure from Reto Schmucki
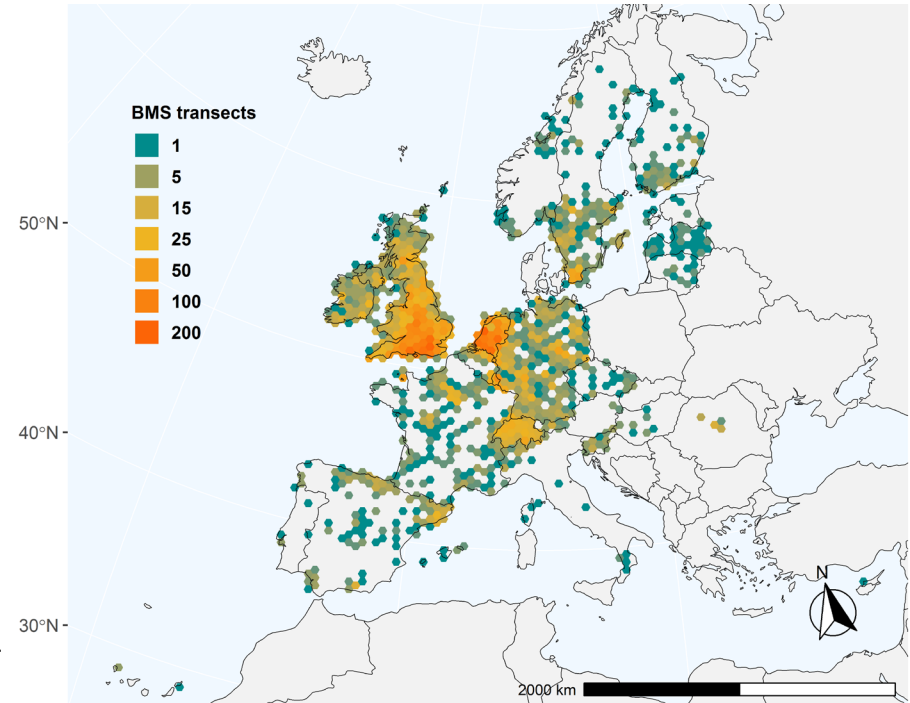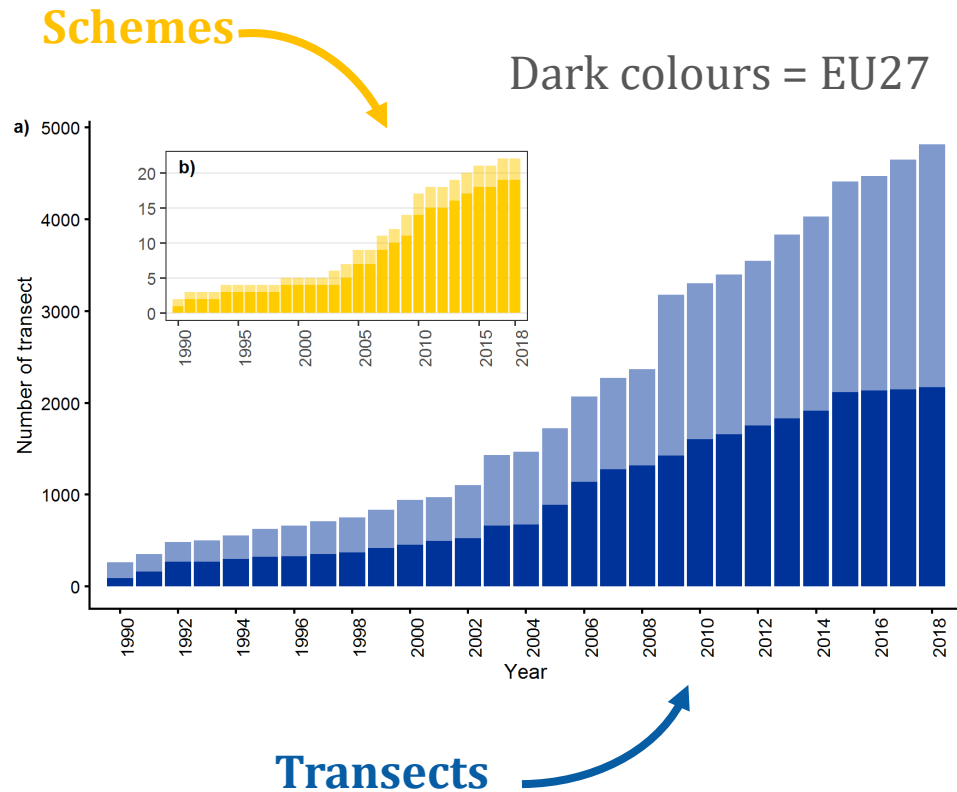
eBMS: ~5m counts; ~1m visits; ~11k transects; 312 (out of 496) species monitored

ButterflyCount – mobile application

- Smart use of technology to lower the barriers to collection of count data with a measure of sampling effort
- Potential to fill gaps in under-represented areas (e.g. urban/farmland and remote areas) and under-sampled species (rare species)
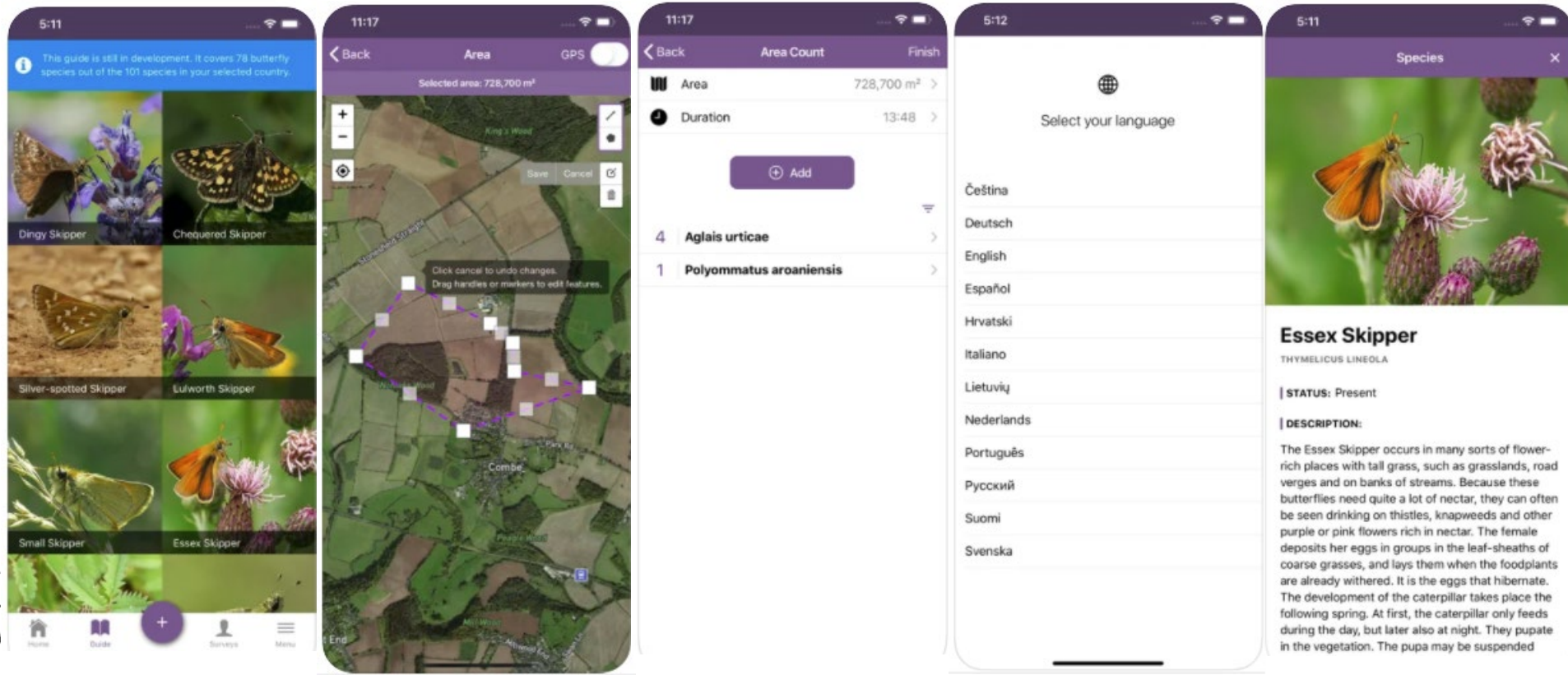
Lessons learnt

▶ Paid co-ordinator

▶ Dissemination

▶ Supporting materials

▶ Training volunteers
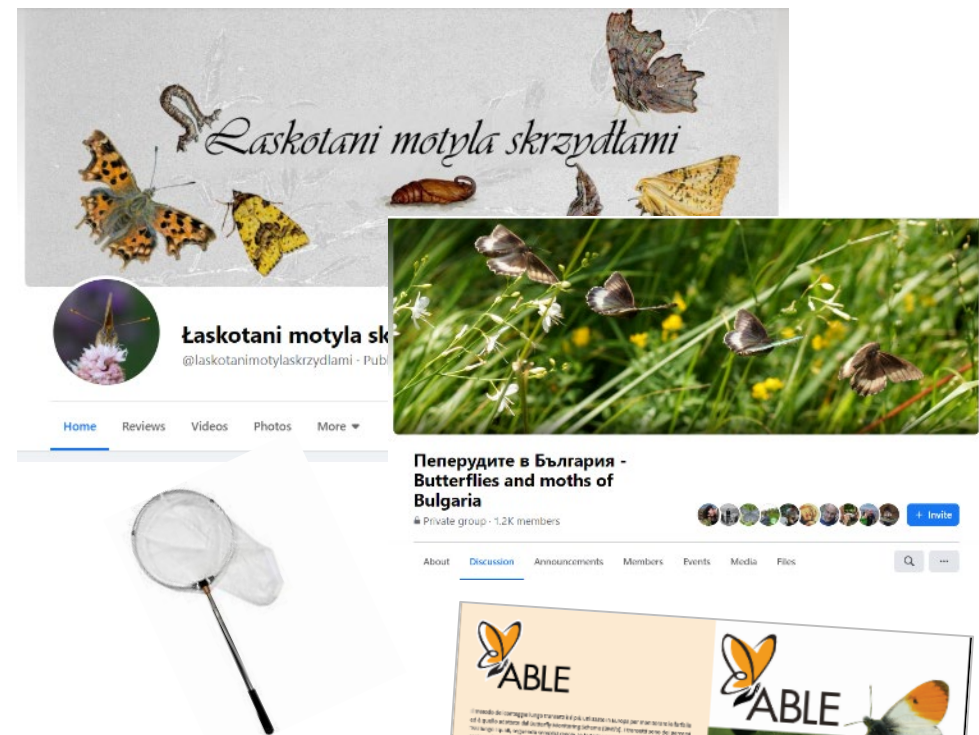
SPRING: Pollinator citizen science
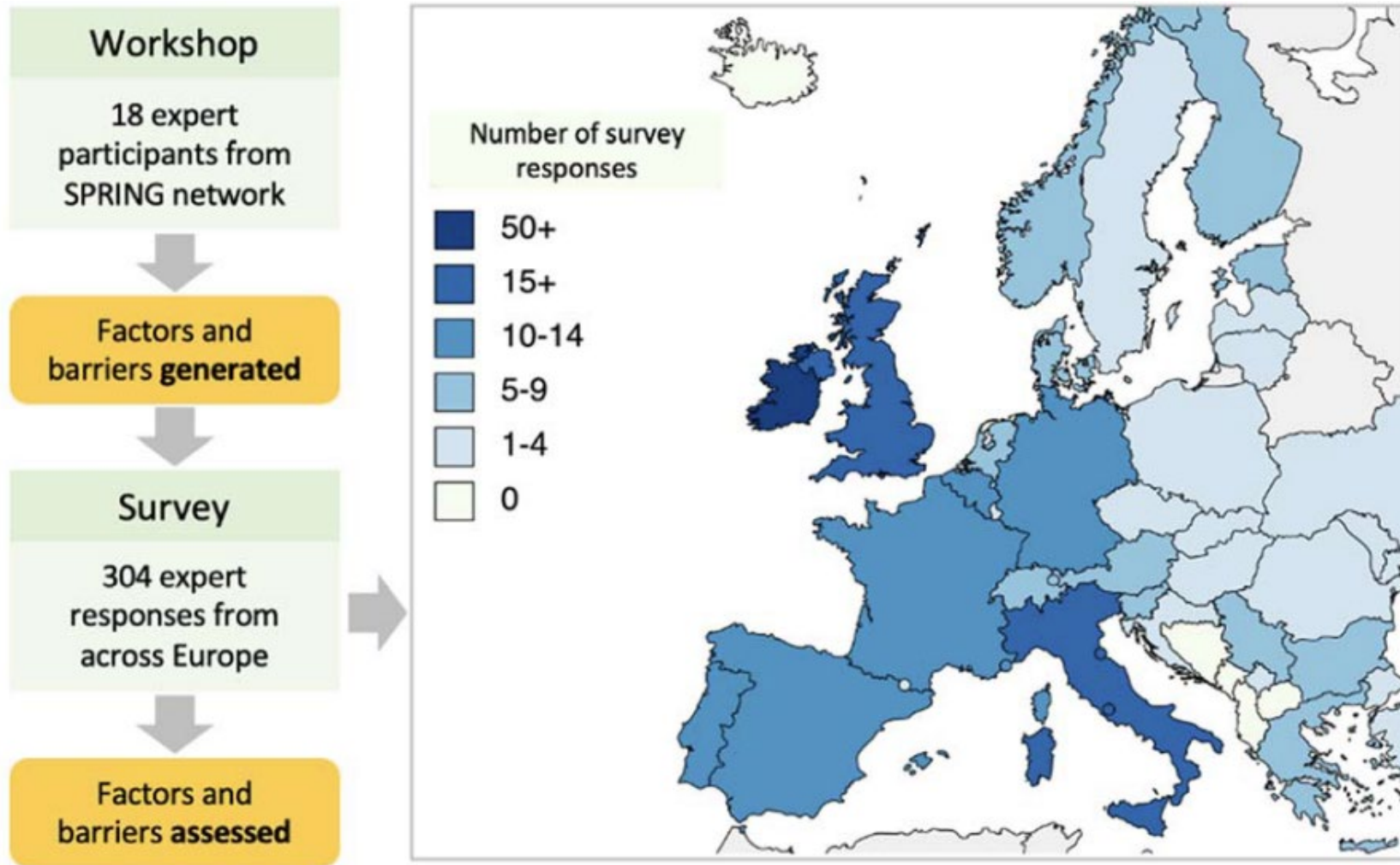
SPRING: Pollinator citizen science survey
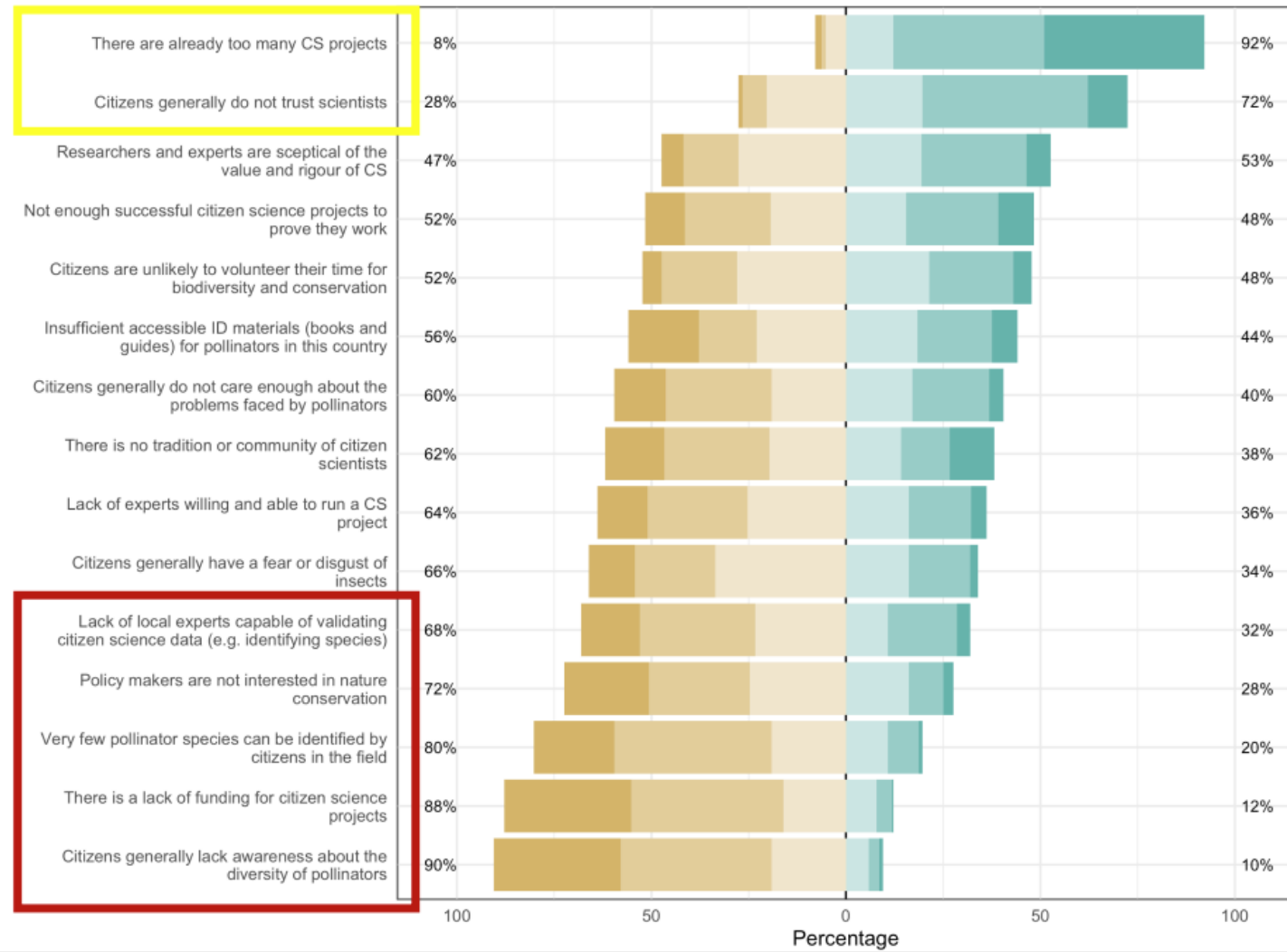
SPRING: Flower Insect Timed (FIT) Count

Extending the FIT Count mobile application

- Ireland
- Sweden
- Germany
- Cyprus
- Croatia
- Luxembourg
- UK

- +Chile, Brazil, Argentina

Summary

- Biodiversity monitoring is hugely valuable for research and conservation
  - ➢ Needed to address growing concerns of insect declines
  - ➢ Butterflies have well-developed, proven methods
  - ➢ Robust methods needed for other pollinators (bees, hoverflies, moths, and other insects)
  - ➢ Important for delivering the EU Pollinator Initiative and Nature Restoration Law targets
- Citizen science is hugely cost-effective, with the added benefit of engaging volunteers
- The future is a hybrid-approach of professionals and volunteers, a blend of methods and models, and efficient use of technology

UK Centre for
Ecology & Hydrology

BMS Coordinators
EBMS and SPRING partners
Volunteers

EU Parliamentary Pilot project
via a service contract
with DG Environment
Contract no. 07.027742/2018/790285/SER/ENV.D.W

The EU and MEPs for funding and support for the Assessing Butterflies in Europe
(ABLE) project (2018-2020)
and the Strengthening Pollinator Recovery through INdicators and monitorinG
(SPRING) project

UK Centre for
Ecology & Hydrology

www.spring-pollination.eu

Any questions?

?

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Split in sub-groups

By Lars Dinesen, IFD and Cécile Mandon, FRB

3 sub-groups

GROUP 1A: Biodiversity monitoring & citizen science

GROUP 1B: Biodiversity monitoring & citizen science

GROUP 2: Strategic involvement of citizen science in Biodiversa+

Facilitator: Anna Rosenberg
Support: Cécile Mandon

Facilitator: Hilde Eggermont
Support: Lars Dinesen

Facilitator: Frédéric Lemaître
Support: Julia Bethe

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How to join your sub-group?

You will automatically join your sub-group and be invited to click on join

Join Breakout Room

Biodiversa+ is inviting you to join Salle 1

Not Now   **Join**

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At the end of the sub-group discussions

You will either be automatically brought back in plenary or you will have the possibility to click on leave room
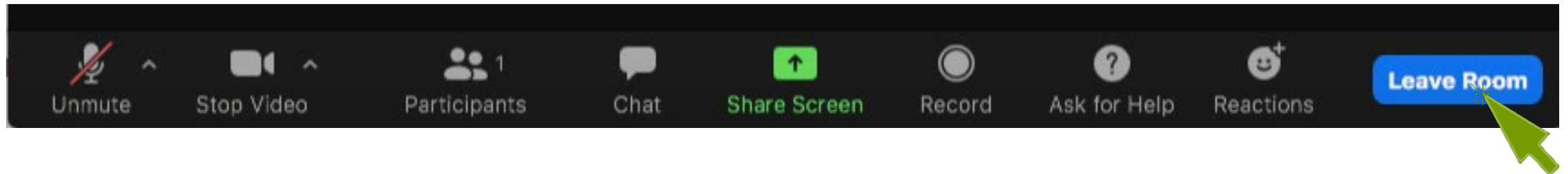
Let's take a break!

Be back at 14.35pm
in sub-groups

Welcome back!

In Group 1

Ice breaker

- Do you contribute to citizen science campaigns (as citizen)?

    ↳ If yes, raise your hand! ✋

- On mentimeter: describe in one word how you see citizen science data?

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Rapporteur

- Our group need a rapporteur to summarise our main ideas.

Do someone volunteer?

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Objectives of our discussion

- On Jamboard, use yellow post-its to *complete the pre-identified bottlenecks and challenges faced in biodiversity monitoring for citizen science* >> free discussions to rephrase, add new challenges, remove some challenges as needed.

- Second part of the discussion: *Identify concrete activities to overcome the main challenges, what role should Biodiversa+ has, who should be involved, with what timeline?*

First step: on Jamboard, how does it work?

1. Click on the link: https://jamboard.google.com/d/1t8csmacWTilmY4gZL4KtUQvrnc5OE4vRuxD9e2kXK6g/edit?usp=sharing

Citizen science WS

1 / 5

2. Group 1A: go to page 1, group 1B go to page 2, group 2 go to page 3

Définir l'arrière-plan   Effacer le cadre

Challenges

Solutions

Group 1A: Citizen science in biodiversity monitoring

Poor CS data quality/ reliability and bias

3. Add your post-its

Governance global/European level: difficult to launch common CS campaigns to feed policy targets due to fragmentation of CS landscape

Governance, difficult to transfer local citizen science data to global datasets

CS methods should be improved

Governance: Difficult to sustain long-term involvement of citizens

Lack of data standardisation

Hard to economically valorise CS in biodiversity monitoring programmes

Cultural perception: lack CS recognition

CS approaches are not always relevant nor useful

Lack of ethical and legal guidelines for CS / concerns about data privacy and safety

bioc

European Bi

Welcome back – Group 2

Strategic involvement of citizen science in Biodiversa+

Facilitator: Frédéric Lemaître

Support: Julia Bethe

Let's get to know each other!

Go to www.menti.com and use the code 2884 8204

Mentimeter

Instructions

Go to

www.menti.com

Enter the code

2884 8204

Or use QR code

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Short introduction: *Identification of challenges related to citizen science and Biodiversa+ role*

« Advancing participation of civil society and co-production of knowledge with citizens »

1. Reinforcing the capacities of scientists to engage with citizens
2. Advancing the understanding and evaluation of citizen science in research & innovation
3. Supporting other Biodiversa+ workstreams with regards to engagement with civil society/citizens

- Publication of BiodivERsA citizen science toolkit in 2020
  - Introducing methods, examples and recommendations for scientists interested to mobilise citizen science in their research projects
  - Online directory of further resources on citizen sciences: information hubs and network organisations; tools/support; publications
  - Identification of challenges related to citizen science

Issues and entry points identified

- **Long-term sustainability of CS**
  - ➢ It is difficult to sustain volunteers in the long-term
  - ➢ The CS landscape is too fragmented
  - ➢ The outcomes of CS beyond production of data/information should be given increased recognition

- **Perception of CS**
  - ➢ It can be difficult to find volunteers
  - ➢ CS is not always acknowledged as good science
  - ➢ Funders are having different expectations towards CS projects
  - ➢ Conflicts might arise between groups of citizens

- **Capacity, skills and trainings**
  - ➢ Resources, money, time, and skills (for CS) are often lacking in research projects
  - ➢ CS can lead to poor data quality/reliability and scientific bias
  - ➢ The skill or training of the volunteers might be insufficient
  - ➢ Problems of tools or language can act as barriers

- **Other**
  - ➢ CS approaches are not always relevant nor useful for the research
  - ➢ There might be concerns about data privacy and safety

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> ➢ *Additional barriers and/or entry points? Comments/further thoughts on identified ones?*
>
> ➢ *Where Biodiversa+ can have the most added value in your view? Would there be key initiatives/organisations to engage with?*

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Collaborative exercise on Jamboard: part 1 – 25 minutes

Group 2: Identified challenges (1/2)

Based on the potential challenges associated with citizen science previously identified, do you see any new barriers and/or entry points?
Are there any details to the currently identified challenges that must be added to better scope the avenues of work for Biodiversa+?

Long-term sustainability of citizen science

- It is difficult to sustain volunteers in the long-term
- The CS landscape is too fragmented
- The outcomes of CS beyond production of data/information should be given increased recognition

Perception of CS

- Funders are having different expectations towards CS projects
- Conflicts might arise between groups of citizens
- CS is not always acknowledged as good science
- It can be difficult to find volunteers

On which avenues/solutions do you think Biodiversa+ can have the best/most added value or long-term impact? 👍

(1)
Grab a green post-it
Write down your response to the green questions
Place it under the related challenge

Use the arrow at the top of the slide to go to the next one

You can raise your hand to take the floor to share why you agree/disagree with the identified challenges and detail your responses

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Collaborative exercise on Jamboard: part 1 – 25 minutes

Use the arrow at the top of the slide
to go to the next one

Group 2: Identified challenges (2/2)

Based on the potential challenges associated with citizen science previously identified, do you see any new barriers and/or entry points?
Are there any details to the currently identified challenges that must be added to better scope the avenues of work for Biodiversa+?

Capacity, skills and trainings

- CS can lead to poor data quality/reliability and scientific bias
- Resources, money, time, and skills (for CS) are often lacking in research projects
- Problems of tools or language can act as barriers
- The skill or training of the volunteers might be insufficient

Other

- CS approaches are not always relevant nor useful for the research
- There might be concerns about data privacy and safety

On which avenues/solutions do you think Biodiversa+ can have the best/most added value or long-term impact? 👍

(1)
Grab a green post-it
Write down your response to the green questions
Place it under the related challenge

(2)
Once everyone has put their green post it, grab a thumb up and place it on where you think Biodiversa+ can have the best/most added value

You can raise your hand to take the floor detail your responses

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# Collaborative exercise on Jamboard: part 2 – 15 minutes

Group 2: Biodiversa+ levers of actions

Long-term sustainability of citizen science

Perception of CS

Capacity, skills and trainings

Other

Fill in the post-it with your response to the related question and place it in the right box

Based on the identified avenues and challenges associated with citizen science, what are the relevant leverage points for action that Biodiversa+ can use to respond to these challenges?

What are the relevant initiatives (either at local or global scale) to support and collaborate with?
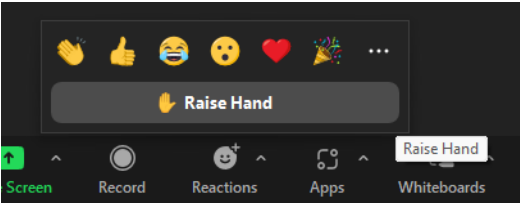
You can raise your hand to take the floor and detail your responses

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Plenary wrap-up

Conclusion of the workshop and next steps

Follow-up of the workshop

✓Transfer outcomes to

- Design of the European biodiversity monitoring coordination centre
- Biodiversa+ strategy on citizen sicence and activities' design

✓ Use outcomes to guide the further development of the Citizen Science toolkit for biodiversity researchers (new concepts, what to dig deeper, case-studies)

✓Identify and set up synergies and win-win collaborations with key citizen science initiatives towards shared objectives

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Thank you for your participation!

🌐 www.biodiversa.eu

✉ contact@biodiversa.eu

🐦 BiodiversaPlus