



BID-REX
Interreg Europe



European Union
European Regional
Development Fund

Biodiversity Monitoring Global Program of Catalonia SISEBIO

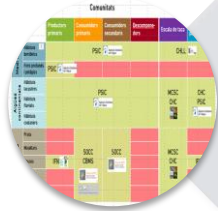
Pau Sainz de la Maza Marsal

Government of Catalonia

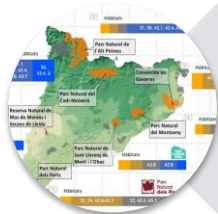
psainz@gencat.cat

June 2017 | Workshop: Matching information to needs

Presentation index



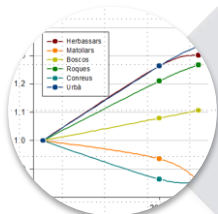
SISEBIO definition



Terrestrial system monitoring progress



Next tasks to developer



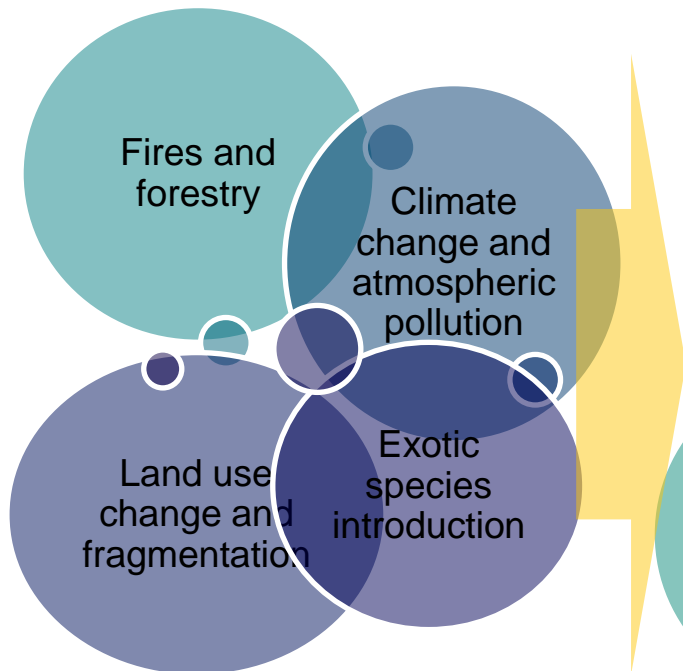
Firsts indicators

SISEBIO Definition

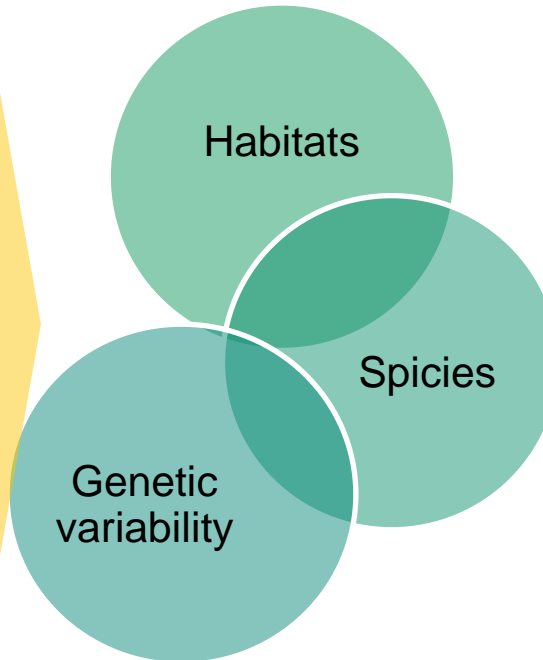


Global change

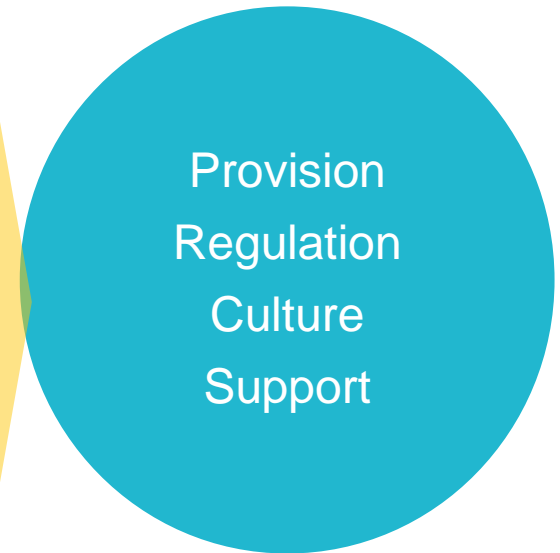
Change factors



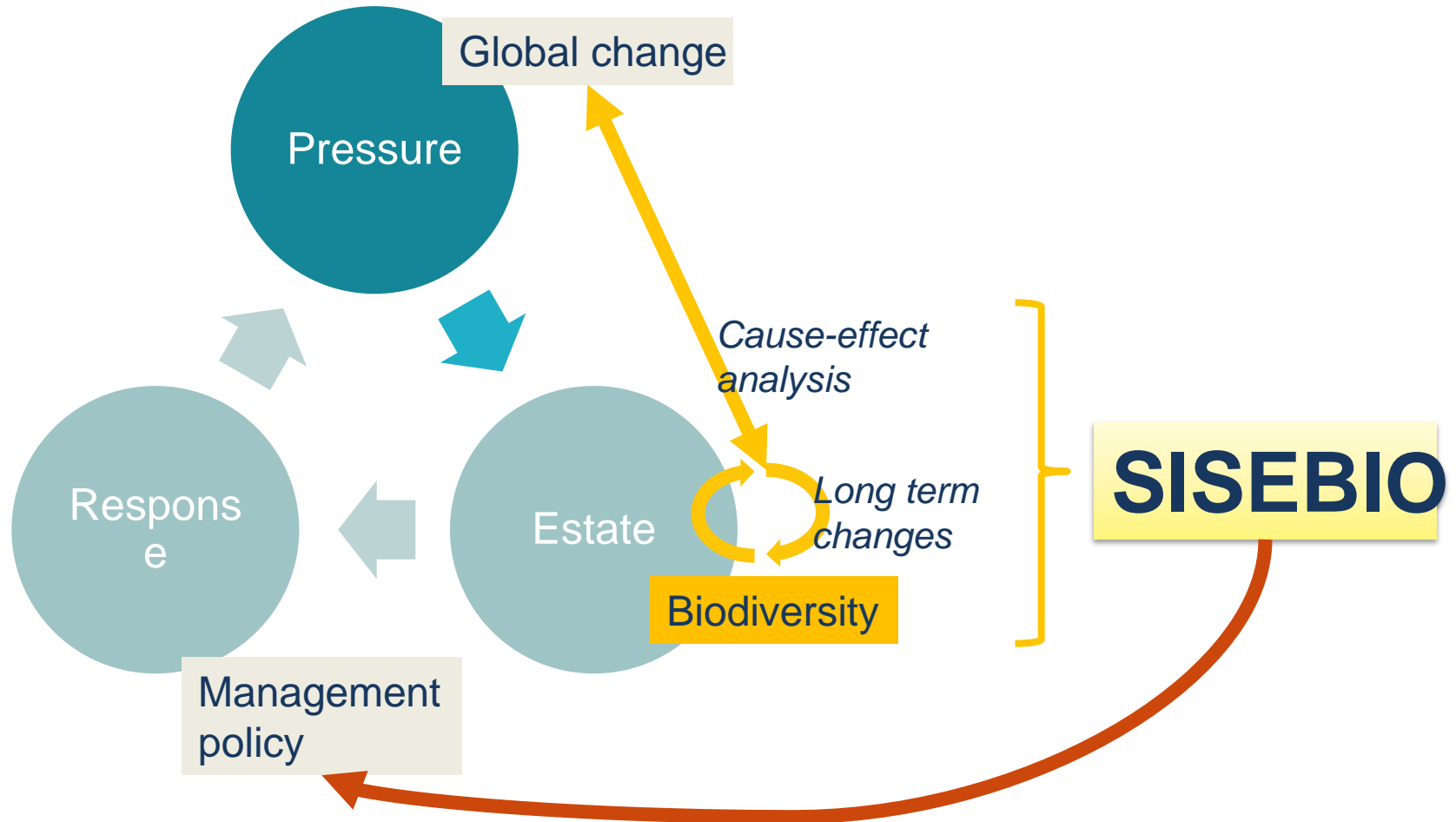
Biodiversity loss



Ecosystem services loss



What is SISEBIO?



It's a tool to improve the environment management against global climate change

SISEBIO Definition

Structure based on the selection of:

Levels

- What biodiversity to monitor?

Components

- Which groups for each level?

Elements

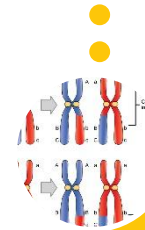
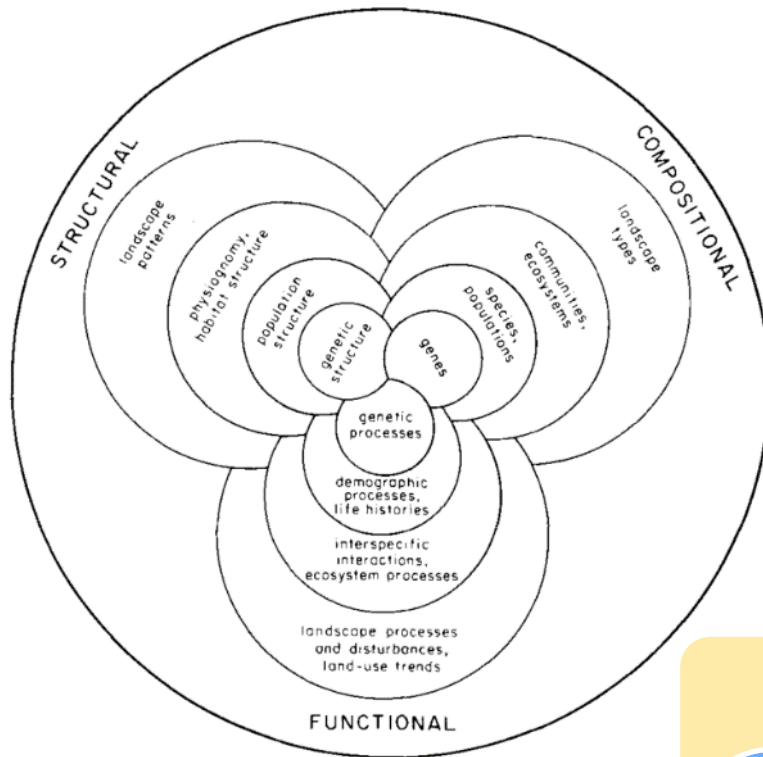
- What are the current monitoring projects?

Indicators

- What information we obtain?

Biodiversity?

Organizational levels of biodiversity



Gens



Species



Communities



Habitats



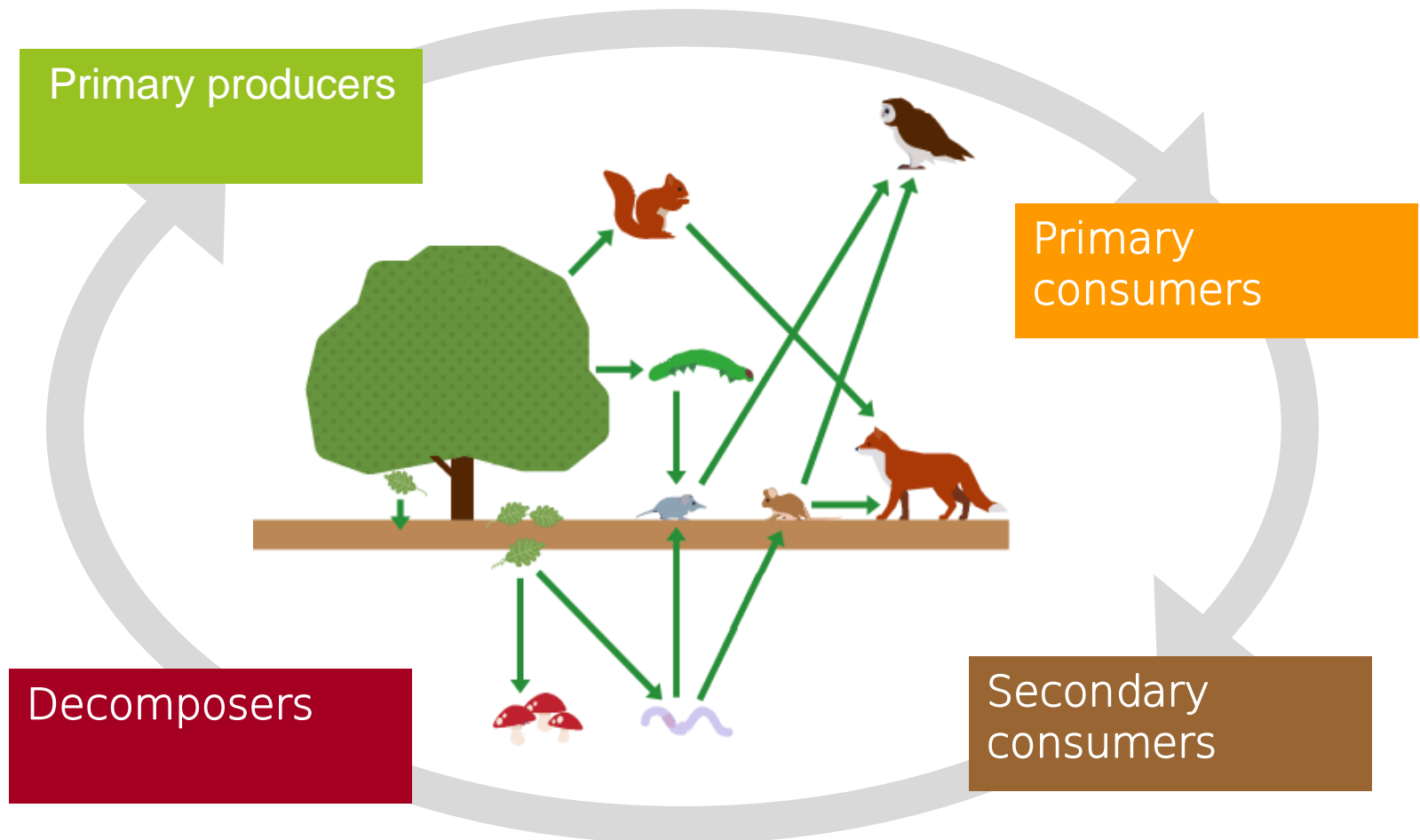
Landscape

Indicators for Monitoring Biodiversity: A Hierarchical Approach

REED F. NOSS*
U.S. Environmental Protection Agency
Environmental Research Laboratory
Corvallis, OR 97333, U.S.A.

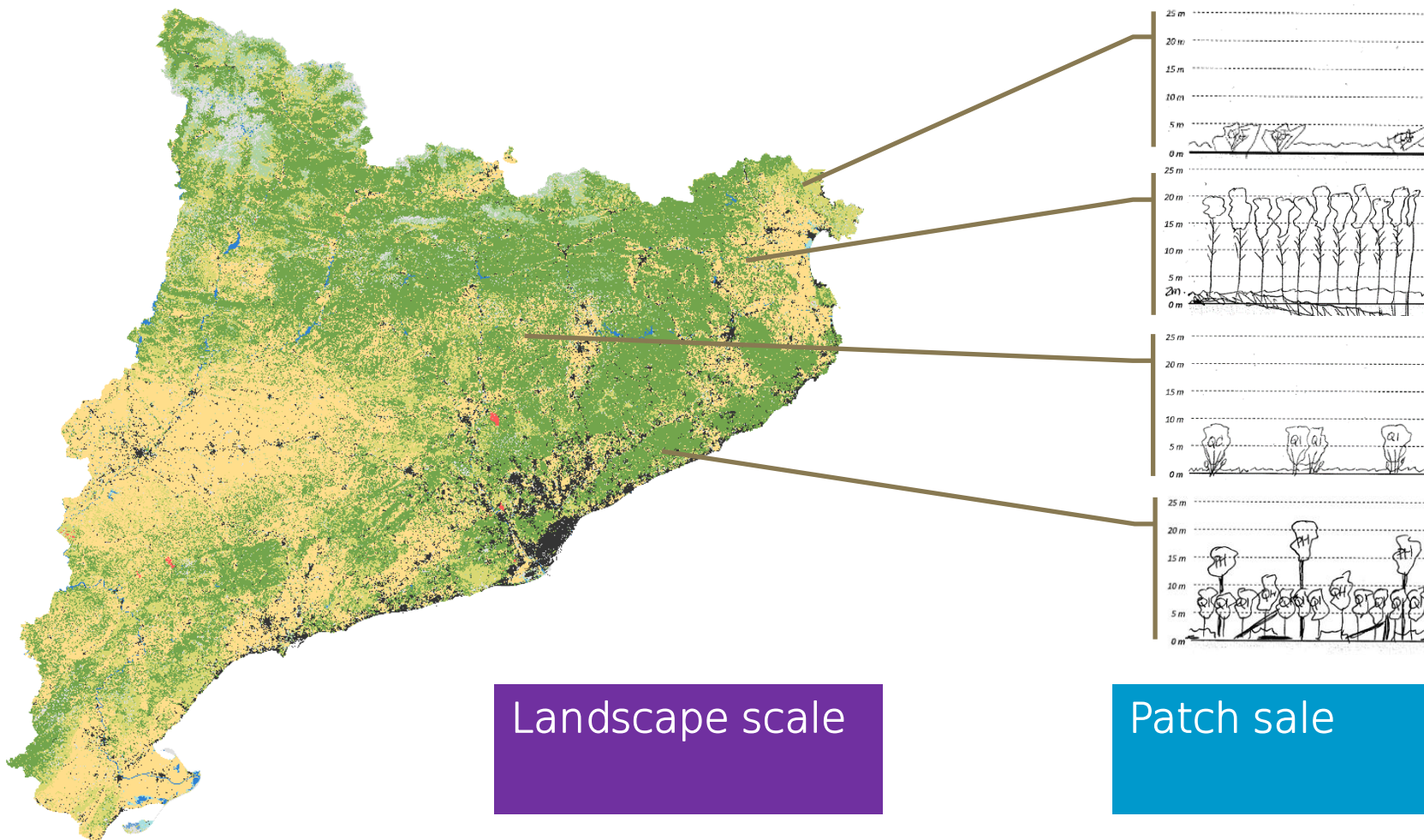
Representation?

Communities: depend on ecosystem function



Representation?

Habitats: depend on work scale



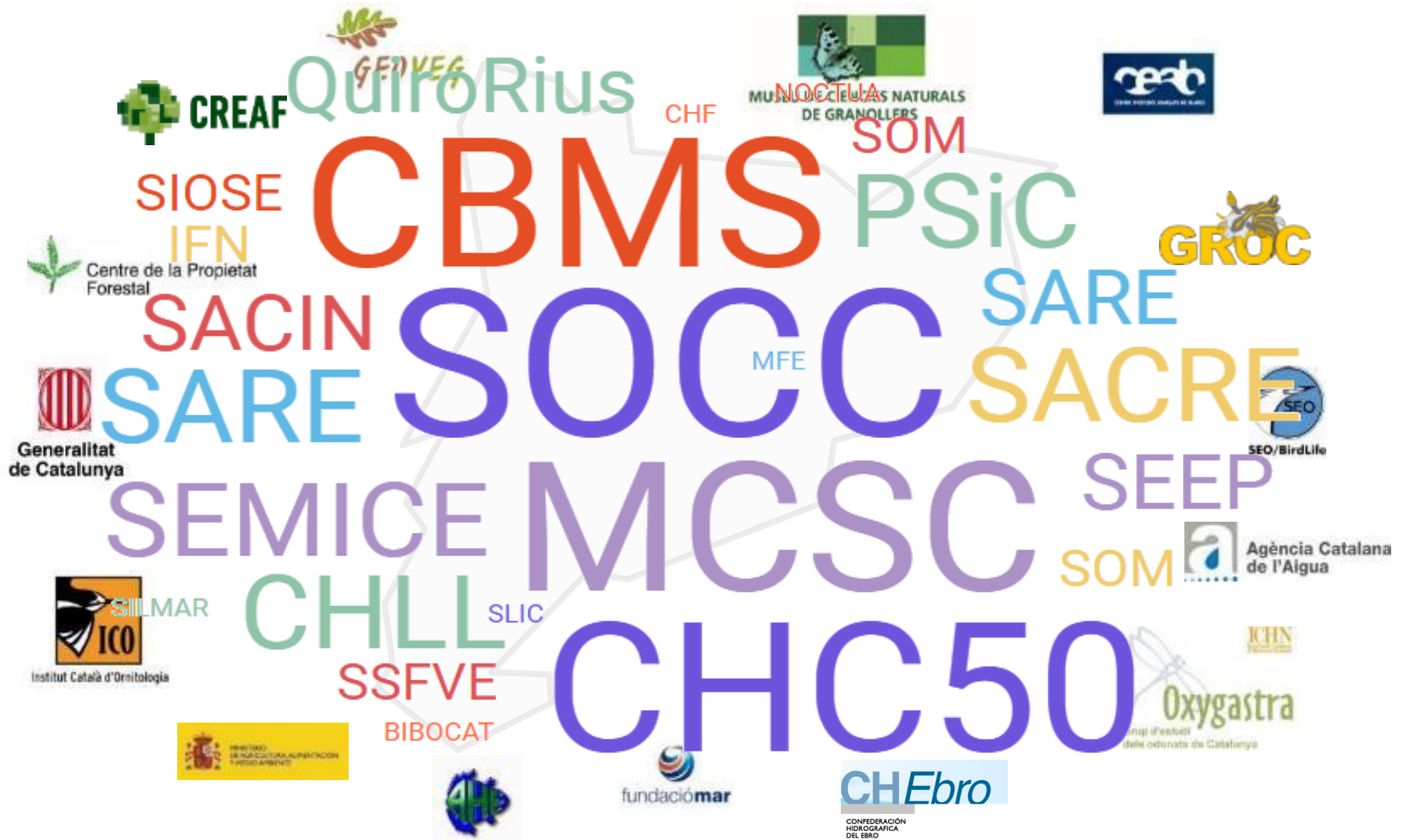
Current projects

Biodiversity components

| | Communities | | | | Habitats | |
|---------------------|--|-------------------|---------------------|-------------|-------------|-----------------|
| | Primary producers | Primary consumers | Secondary consumers | Decomposers | Patch scale | Landscape scale |
| Marine systems | Current monitoring projects ? | | | | | |
| Fresh water systems | | | | | | |
| Terrestrial systems | | | | | | |

Current projects

Current biodiversity monitoring initiatives



Projects

Adjusting the current monitoring initiatives

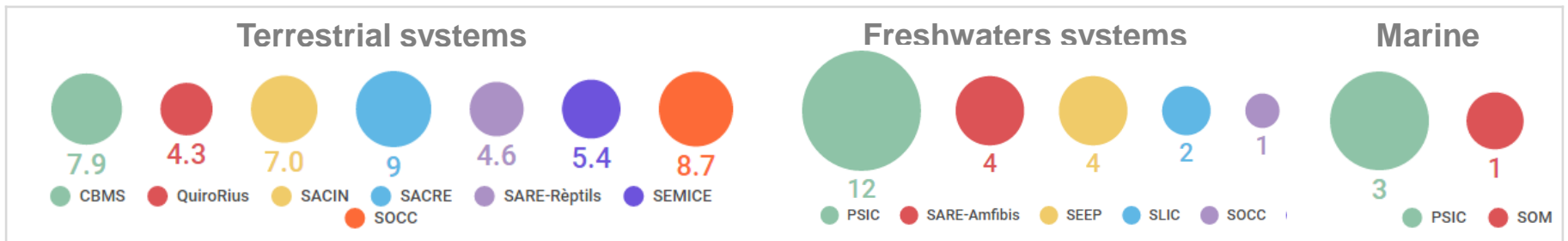
Communities and habitats monitoring

Regional scale

Wider representation of components: functional groups/habitats

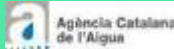

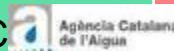


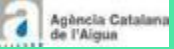






Prioritization criteria :

- **Indicator:** number of publications as indicators
- **Common:** number of taxa
- **Expertise:** number of publications in Spain
- **Easy:** field/laboratory effort relation
- **Standard:** Is an European project?
- **Social:** number of projects in Europe



Projects

Components with current projects and monitoring deficits

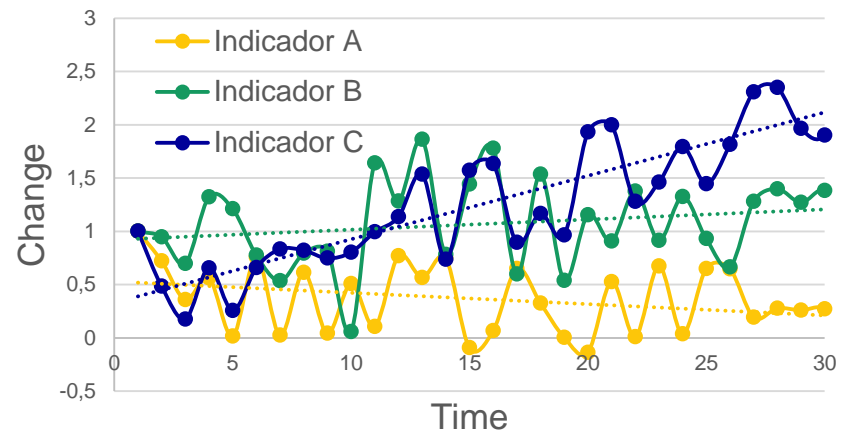
| | | Communities | | | | Habitats | |
|---------------------|-------------------------|---|---|--|-------------|--|--|
| | | Primary producers | Primary consumers | Secondary consumers | Decomposers | Patch scale | Landscape scale |
| Marine systems | Bentonic habitats | PSIC  | | | | CHLL  | |
| | Pelagic column | PSIC  | | | | | |
| Freshwater systems | Surface standing waters | PSIC | | | | MCSC CHC  | CHC PSIC  |
| | Surface running waters |  | | | | | |
| | Coastal habitats | | | | | | |
| Terrestrial systems | Grasslands | | | | | | |
| | Scrub | | | | | MCSC CHC  | |
| | Forests | IFN  | SOCC CBMS | SOCC  | | | IFN  |
| | Cultivated habitats | |  | | | | |
| | Artificial habitats | | CBMS  | | | | |
| | | | | | | | |

Information?



Change indicators

- For every biodiversity component
- Representative habitats
- All ecologic systems
- Periodic and at long term



TERRESTRIAL SYSTEMS MONITORING PROGRESS



Terrestrial monitoring progress

Complete the monitoring deficit:

Development of new projects

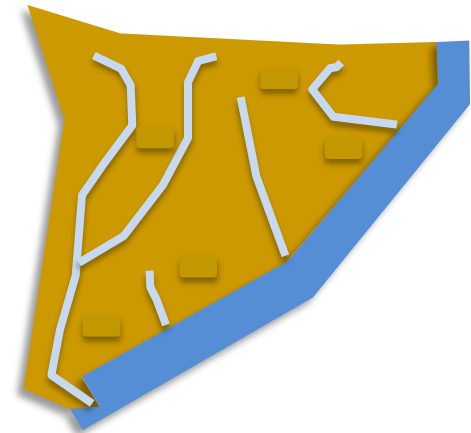
- Monitoring of primary producer communities
- Monitoring of habitats at patch scale
- Monitoring of decomposers communities

Development of a intensive monitoring sites network

Survey at permanent plots

| | Communities | | | | Habitats | |
|------------------------------|------------------------------|-------------------------|-------------------------|------------|--------------|--------------|
| | Primary producer communities | Habitats at patch scale | Decomposers communities | BID-REX-01 | Local Action | Local Action |
| Primary producer communities | PEC | | | | CHL | CHL |
| Habitats at patch scale | PEC | ISK | | | NDIC | CHL |
| Decomposers communities | | | ISK | | NDIC | CHL |
| BID-REX-01 | | | | | | |
| Local Action | | | | | | |

Vegetation monitoring



Representative habitats

Climes



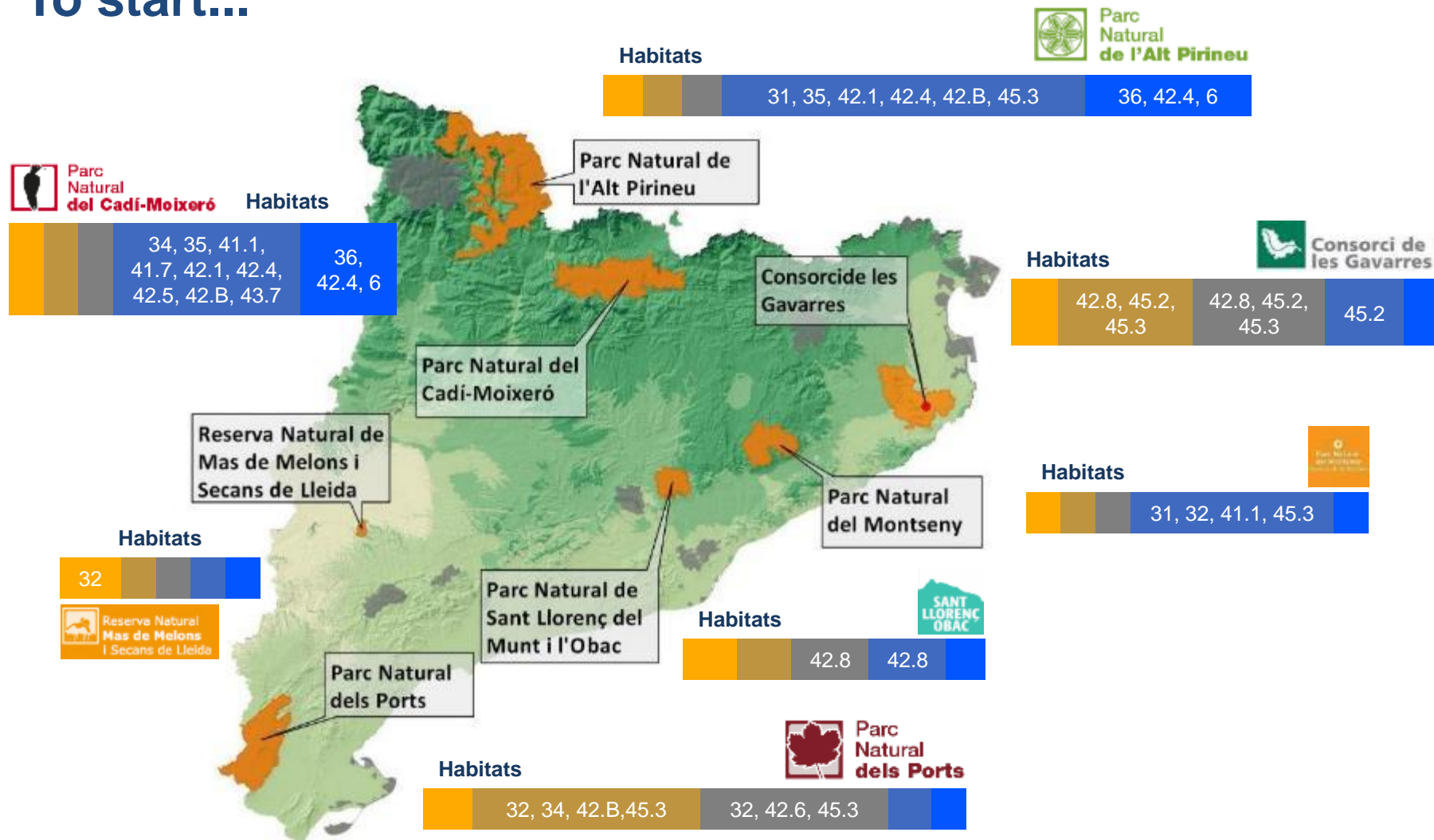
Habitats

| CORINE | | Codi | 1 | 2 | 3 | 4 | 5 |
|--|--|------|---|---|---|---|---|
| Vegetació arbustiva | Matollars de muntanya i terra baixa | 31 | | | | x | |
| | Matollars mediterranis i submediterranis | 32 | x | x | x | x | |
| Vegetació herbàcia | Prats basòfils | 34 | | x | | x | |
| | Prats acidòfils | 35 | | | | x | |
| | Prats d'alta muntanya | 36 | | | | | x |
| Bosc caducifolis, planifolis | Fagedes | 41.1 | | | | x | |
| | Rouredes submediterrànies | 41.7 | | | | x | |
| | Castanyedes | 41.9 | | | | x | |
| Bosc aciculifolis | Avetoses | 42.1 | | | | x | |
| | Bosc de pi negre | 42.4 | | | | x | x |
| | Bosc de pi roig | 42.5 | | | | x | |
| | Bosc de pinassa | 42.6 | | | x | x | |
| | Pinedes mediterrànies | 42.8 | | x | x | x | |
| | Bosc mixtos de coníferes | 42.B | | | | x | |
| Bosc mixts de caducifolis i coníferes | Bosc mixtos de i coníferes | 43.7 | | | | x | |
| Bosc esclerofil·les i laurifolis | Suredes | 45.2 | | x | x | x | |
| | Alzinars i carrascars | 45.3 | | x | x | x | |
| Roques, tarteres no litorals | | 6 | | | | | x |

Natural and seminatural habitats stratified by climate and representatives in Catalonia (area $\geq 1\%$)

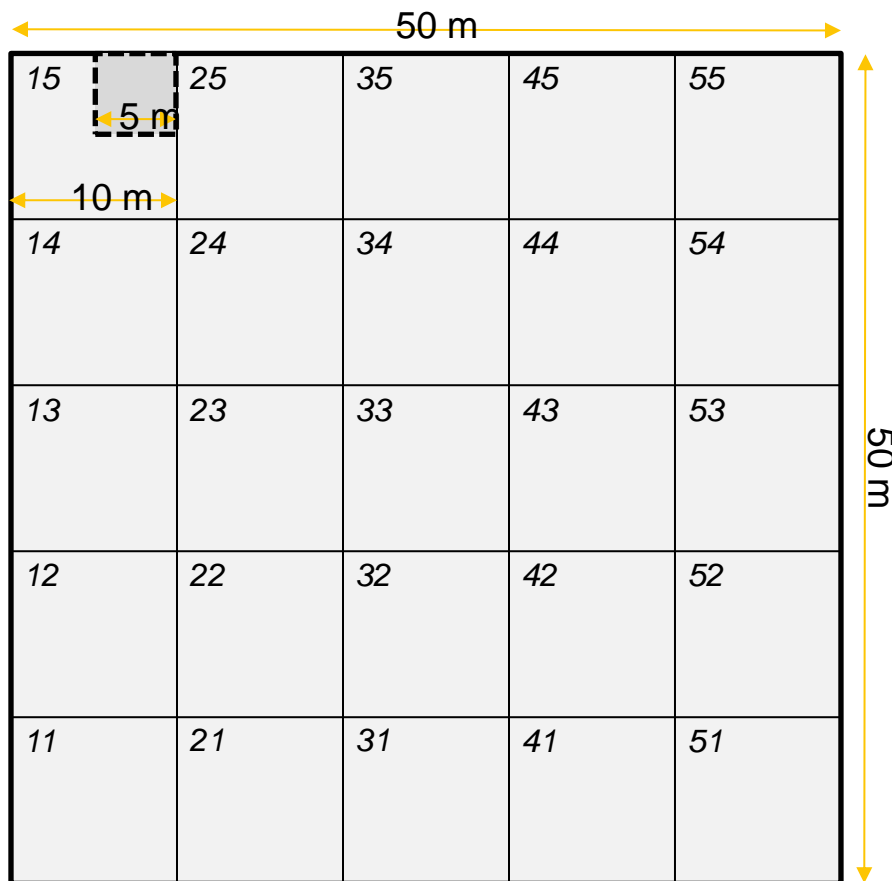
Intensive Monitoring Sites (ESI)

To start...



Permanent plots

Basic structure survey



4 plots/estrata (habitat-clime)

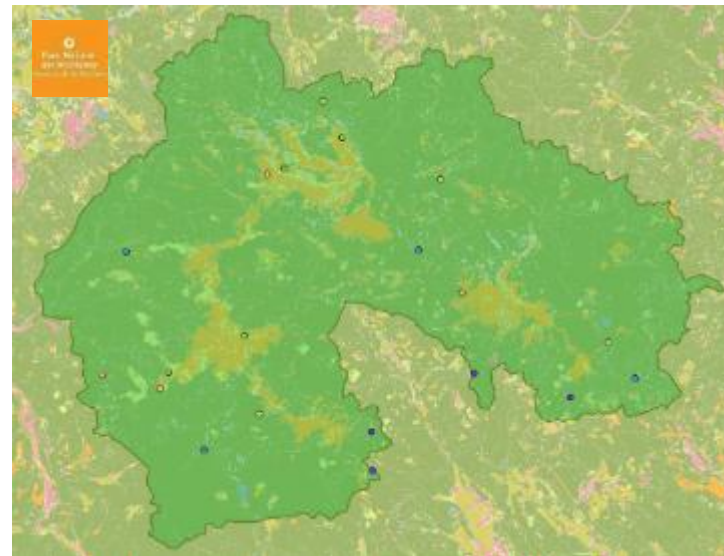
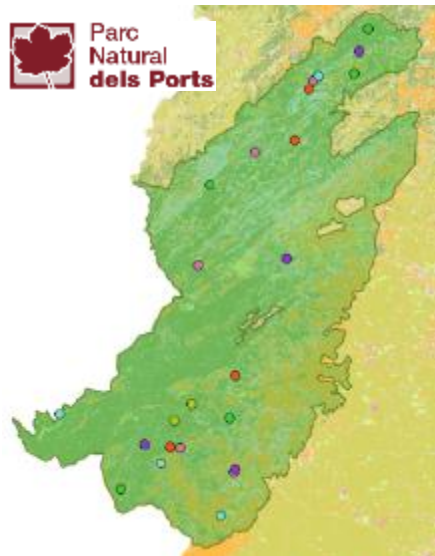
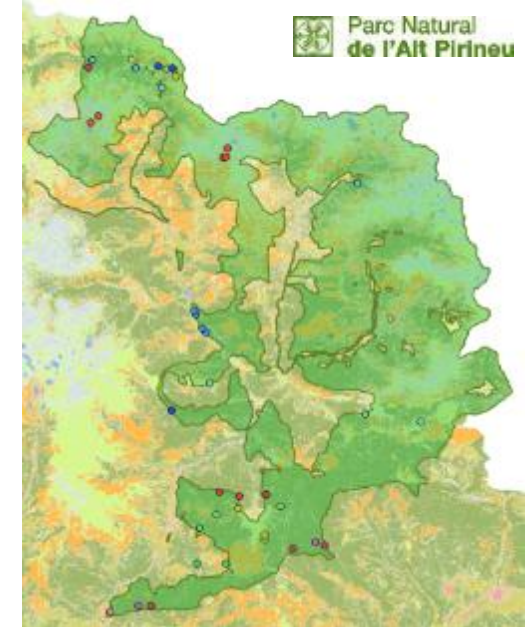
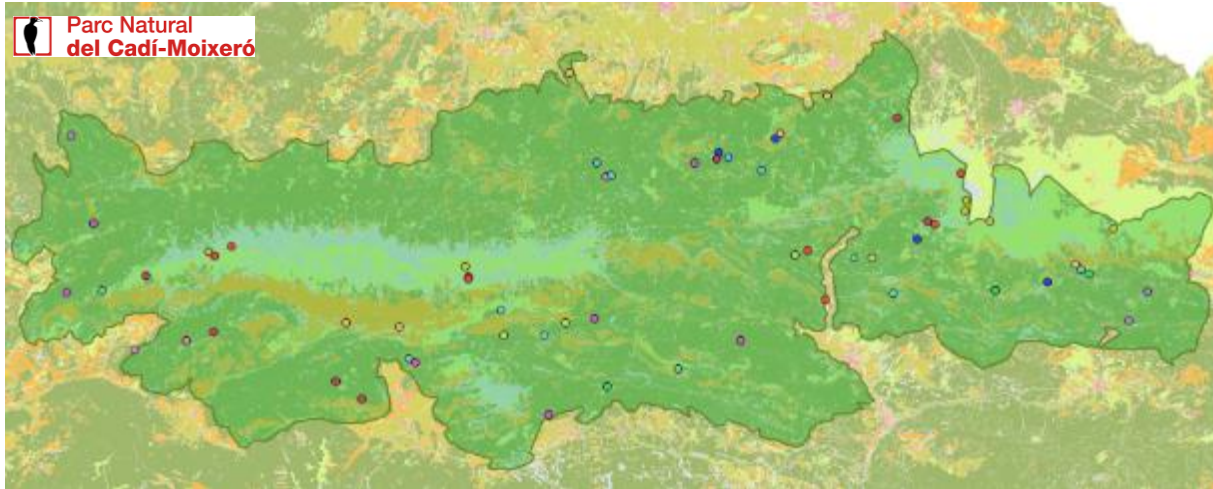
2 plots per site minimum

50 x 50 m (2.500 m²)

25 subplots

Survey cycle of 5 years

Plot selection



Vegetation monitoring

Survey protocols



| | Component | Criterion | Indicators | Specifics indicators |
|---------------------------|-------------------|-----------------|--|----------------------|
| Communitats | Primary producers | Community state | Community structure | 8 indicators |
| | Habitats | Patch scale | Biotic state at patch scale of habitat | Biotic composition |
| Spatial and age structure | | | | 22 indicators |
| Microhabitats | | | | 2 indicators |

Vegetation composition

Vegetation structure

NEXT TASKS TO DEVELOPER



Marine and freshwaters systems

Monitoring indicators development

- Control and monitoring of coastal waters program (PSiC)
- Littoral habitats cartography of Catalonia (CHL)
- Control and monitoring of standing waters program (PSiC)



Agència Catalana
de l'Aigua



Departament d'Agricultura, Ramaderia i Pesca

Monitoring progress

- New projects with null or poor biodiversity monitoring

?



Terrestrial systems

Monitoring indicators development

- Catalan common birds monitoring program (SOCC)
- Catalan butterfly monitoring schema (CBMS)
- National forest Inventory (IFN)
- Catalan habitats cartography (CHC)
- Catalan land cover map (MCSC)



MUSEU DE CIÈNCIES NATURALS
DE GRANOLLERS



Monitoring progress

- **Vegetation monitoring**
- **Decomposers monitoring**

?



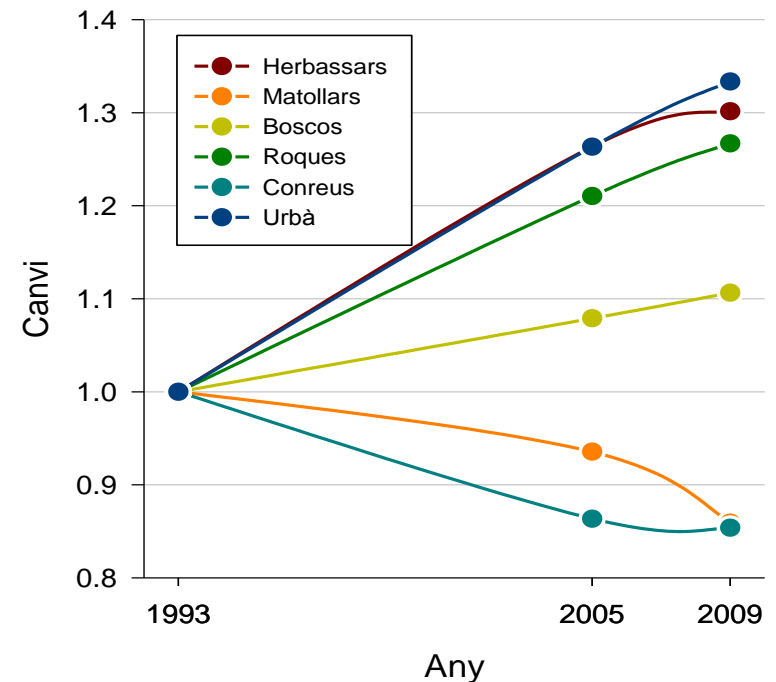
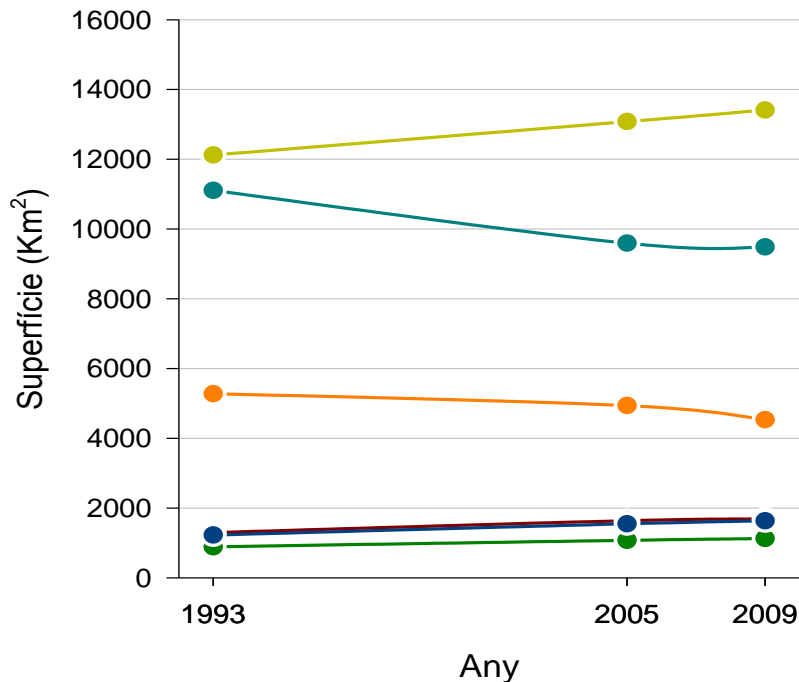
FIRSTS INDICATORS AS EXAMPLE



First indicators

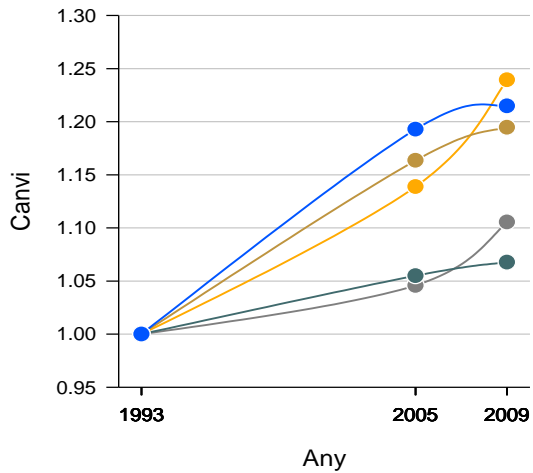
Habitats changes at landscape scale

- Catalan land cover maps (MCSC, v1, v3 & v4)

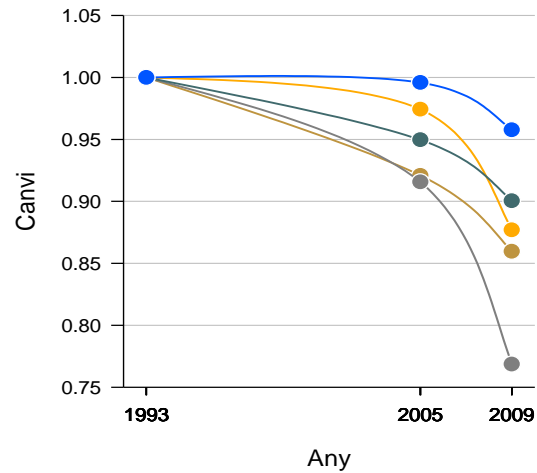


First indicators

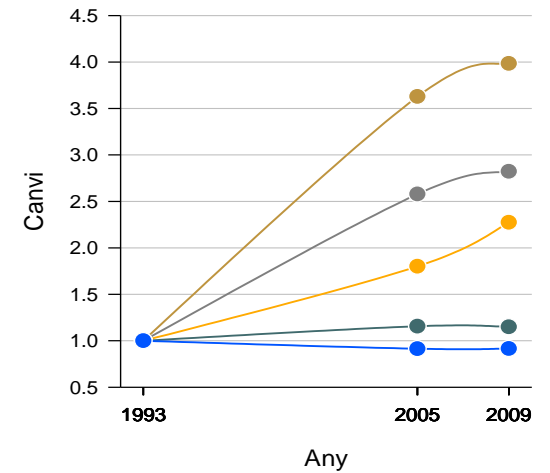
Bosc



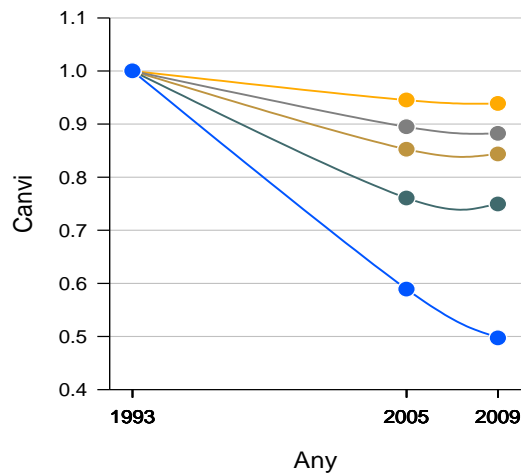
Matollars



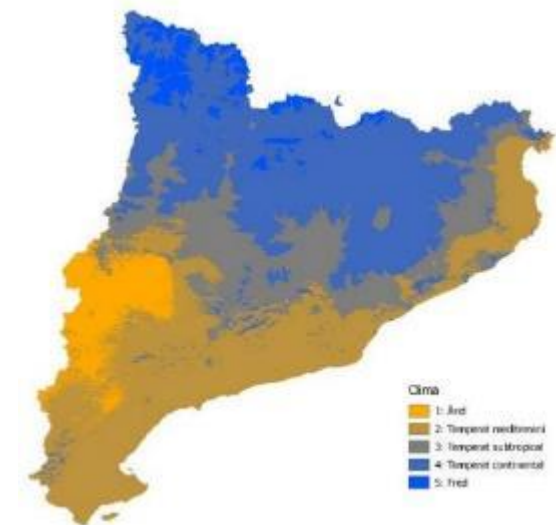
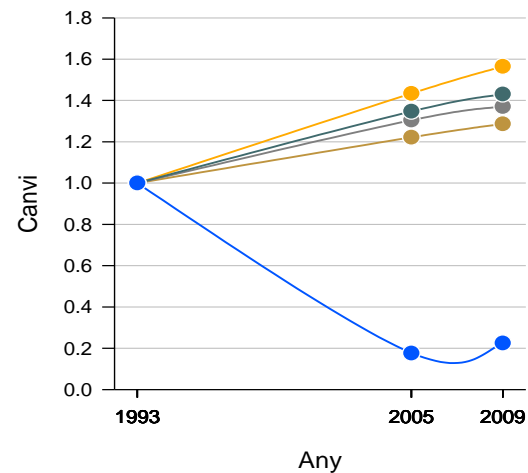
Herbassars



Conreus



Urbà



Acknowledgment



Programa Global de Seguiment de la Biodiversitat
PROJECTE SISEBIO





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Thank you!

Questions welcome



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