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BIODIVERSITÀ, RICCHEZZA DELLA LOMBARDIA

CROSSROADS BIODIVERSITY
From a LIFE Integrated Project to a pan-Alpine biodiversity agenda
Milan, Oct 10-11th 2023

The Regional Biodiversity Observatory of Lombardy

A multi-purpose repository for monitoring data from different sources

Sergio Canobbio

(Fondazione Lombardia per l'Ambiente & ERSAF)

Gestire2020 Partners

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Con il contributo dello strumento Life della Commissione Europea · Sostenuto da Fondazione Cariplo

LIFE GESTIRE 2020 - Nature Integrated Management to 2020.
La strategia integrata per Rete Natura 2000 e la biodiversità in Lombardia

Collaboration with

Alpenkonvention Convention Alpine Alpska Konvencija Convenzione delle Alpi · Italian delegation alpine convention · BfN Federal Agency for Nature Conservation · EUSALP

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Wildlife in Lombardy












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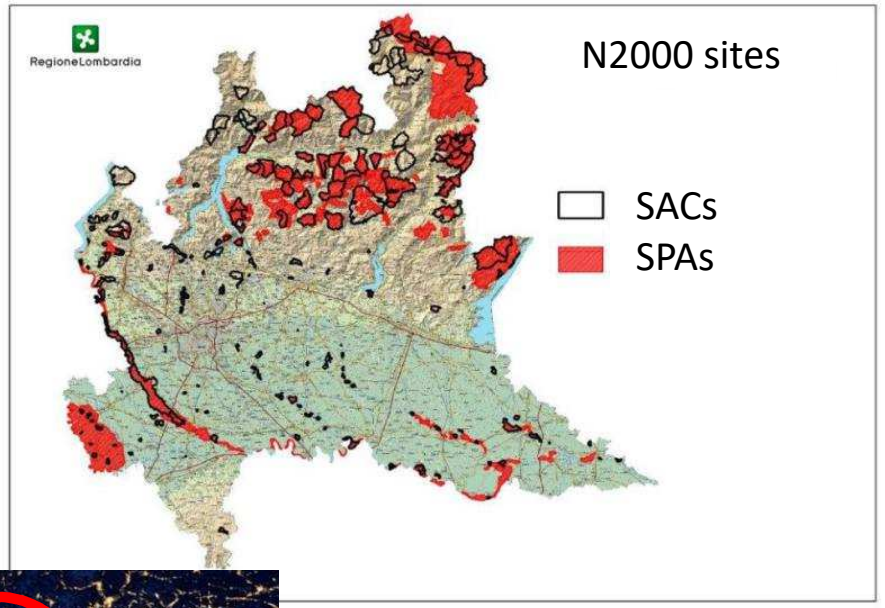
Wildlife in Lombardy









246 Natura 2000 Sites

15.6% Regional Area

Not bad given the anthropogenic pressure…

Anthropogenic pressure

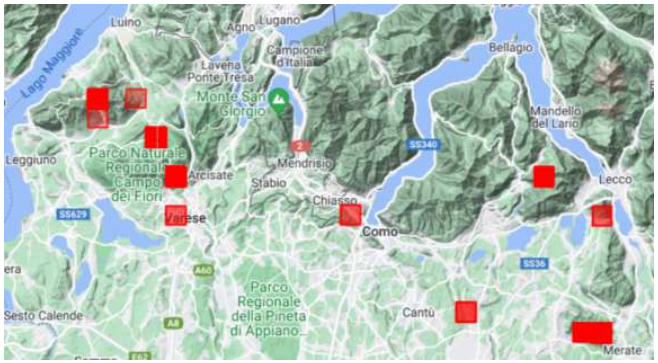
- Habitat Fragmentation and Loss
- Isolation of Populations
- Pressure on Segregated Populations (e.g. Genetic Bottlenecks, IAS Invasions, Climate Change…)
- Increased Risk of Local Extinctions
- Increased Risk of Global Extinction

MONITORING!!!

The Regional Biodiversity Observatory of Lombardy

- Initially thought as a tool for describing the Conservation Status of DH species and to update standard forms
- **Collects and integrates** all data relating to wildlife monitoring
- Evaluate the distribution of species, the trend of Conservation Status and threats
- **Directly promotes and finances monitoring projects** for the collection of new observations
- Makes **distribution data** available to the Public, produces **data analysis** for the Managing Bodies of Protected Areas

Lombardia
Osservatorio Regionale della Biodiversità



The Regional Biodiversity Observatory of Lombardy

Data Sources:

Experts
- Istitutional monitoring (e.g. ARPA – Environmental Agency)
- Projects (usually in specific territories)
- Datasets from Research centers, Museums, Wildlife recovery centers

Data harmonization, Intercalibration

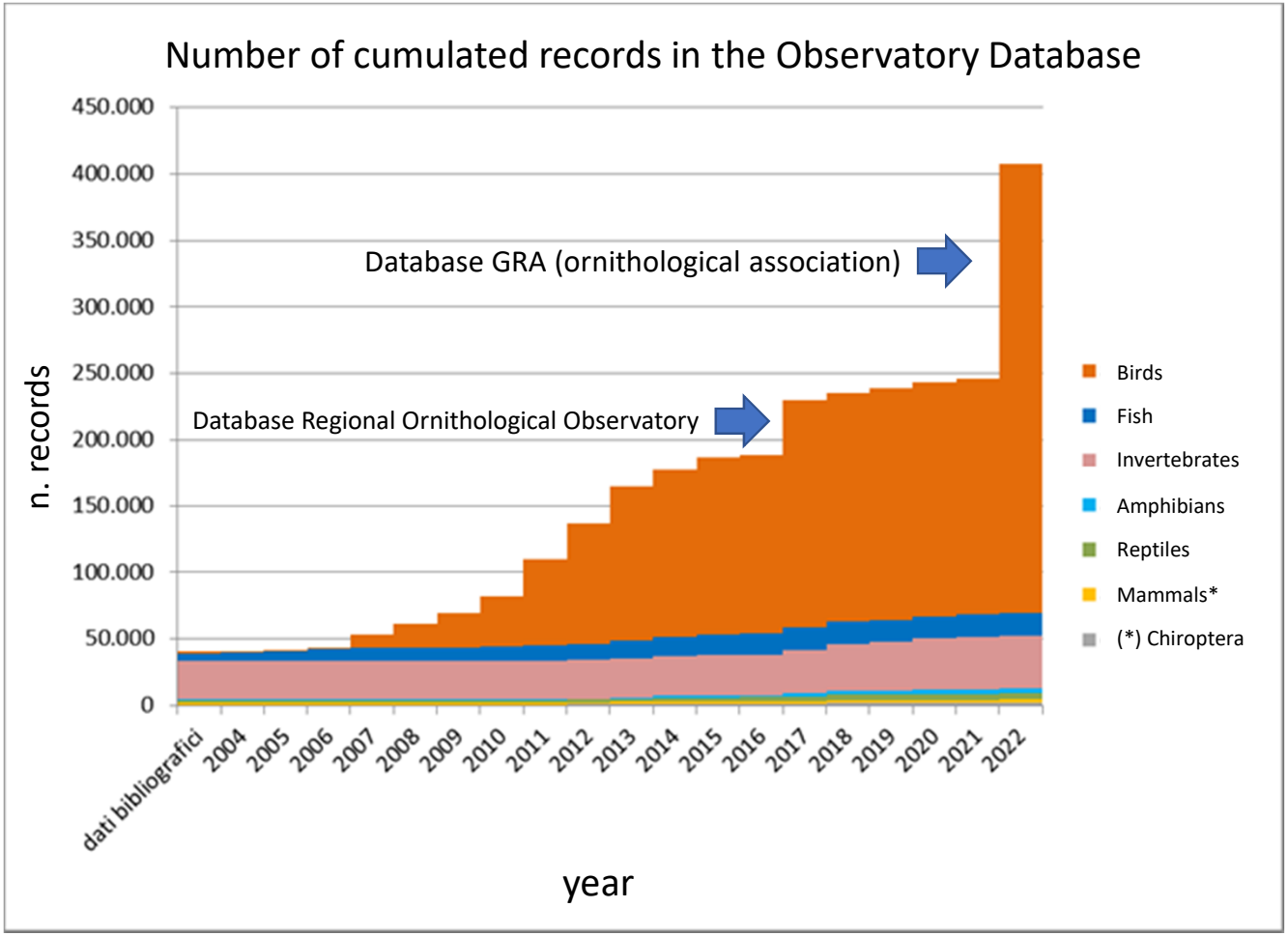
Territorial Network
- Associations
- Technical staff of Parks
- Groups of volunteers (with specific training)

Training, Validation

Citizen Science
- Registration on the Observatory site
- Biodiversity App
- Online databasese, «Social» observations (e.g. iNaturalist.org)

Validation, Interpretation

The Regional Biodiversity Observatory of Lombardy



https://www.inaturalist.org/projects/la-biodiversita-della-lombardia

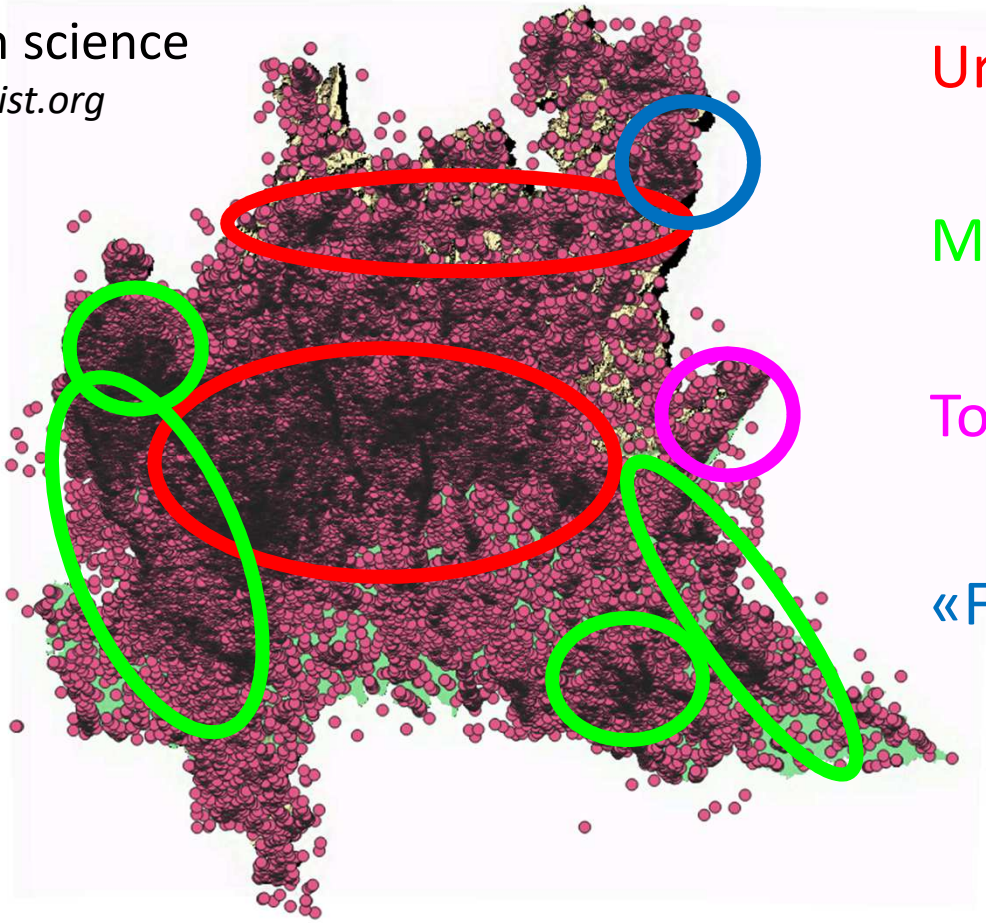
200.000+ records validated by the community

The Observatory has a «project» in which people can share the exact coordinates of observations of endangered species

The Regional Biodiversity Observatory of Lombardy

Citizen science

iNaturalist.org



Urban and semi-urban areas

Most accessible Parks and natural areas

Tourist areas

«Flag» areas (and species)

The Regional Biodiversity Observatory of Lombardy

How to harmonize data?

How to go beyond a simple distribution map based on presence reports?

Famiglia	Id Taxon	Latitudine UTM	Dato Riservato
Ordine	ID	Longitudine UTM	Validato
Classe	Fonte	Area Campionamento	Quota
Nome volgare	Data di osservazione	Lunghezza Transetto	Pendenza
Struttura della popolazione	Osservatore	Tempo Campionamento	Portata Media Anno
Lunghezza Totale Media	Note Osservatore	Precisione	Toponimo
Lunghezza (Dev Std)	Specie	Tipo di fonte	Provincia
Lunghezza Minima	Stima	Validatore	Comune
Lunghezza Massima	Numero	Note Validatore	Immagine Campione
Peso Medio	Metodo di Censimento	Data Validazione	
Peso (Dev Std)	Latitudine		
Peso Complessivo	Longitudine		

METADATA

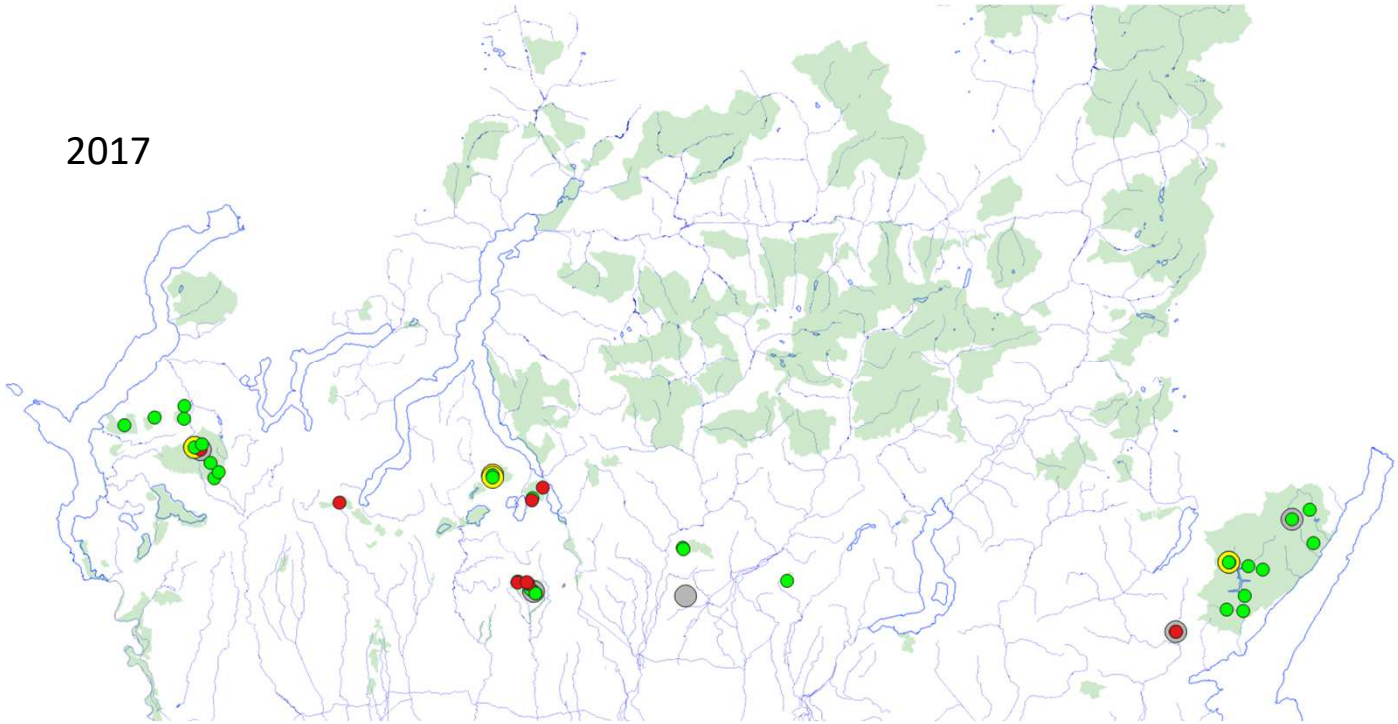
Availability of «Searched, but not Found» records

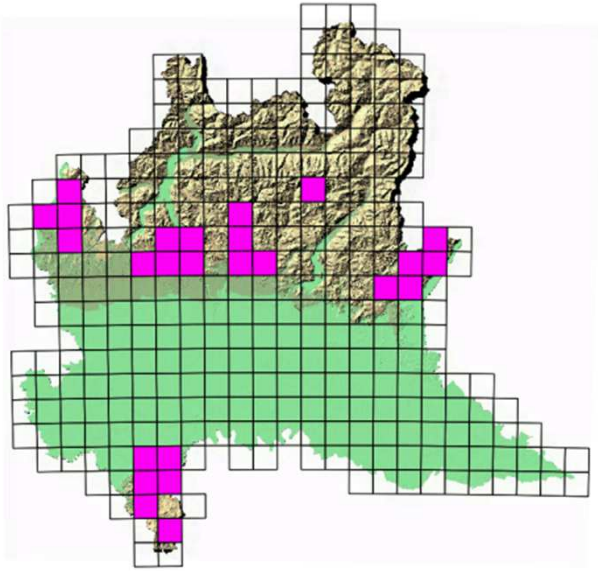
Freshwater Crayfish (*Austropotamobius pallipes*)

Only expert monitoring (LIFE projects and academic research):

- Standardization of sampling for future comparisons (CPUE)
- Caution to avoid harm to populations

2017





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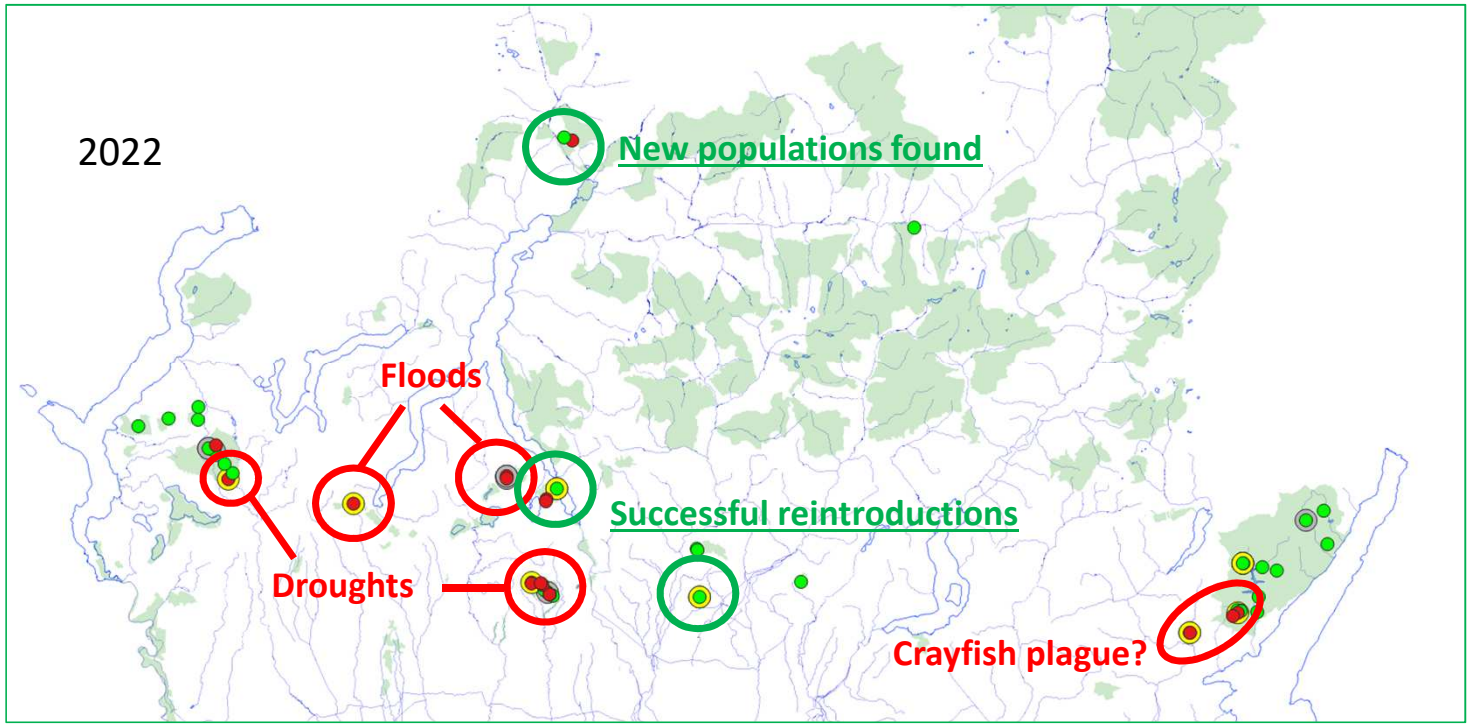
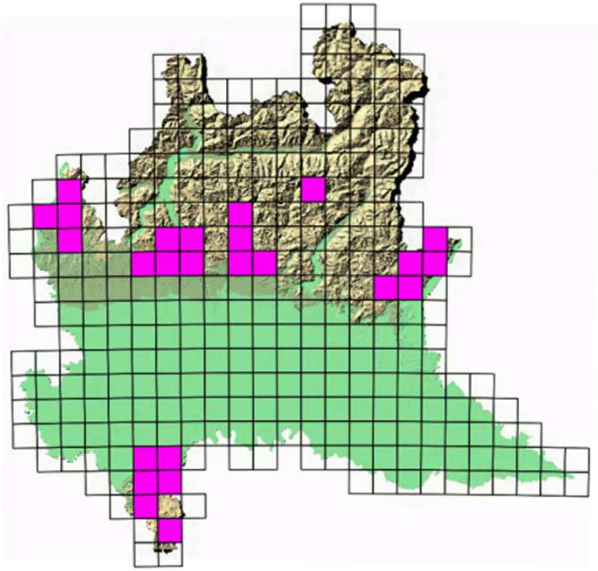
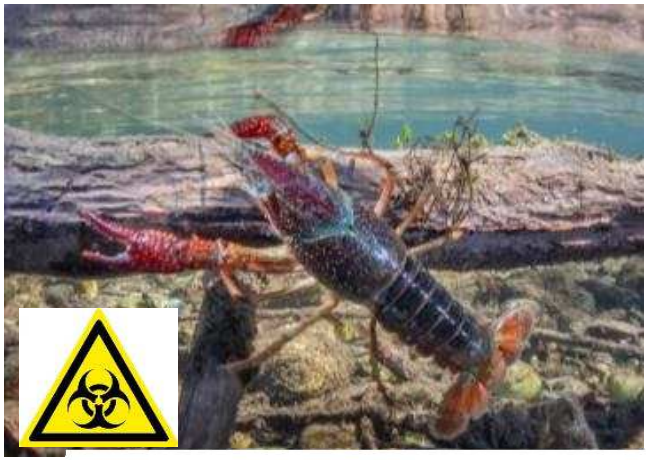




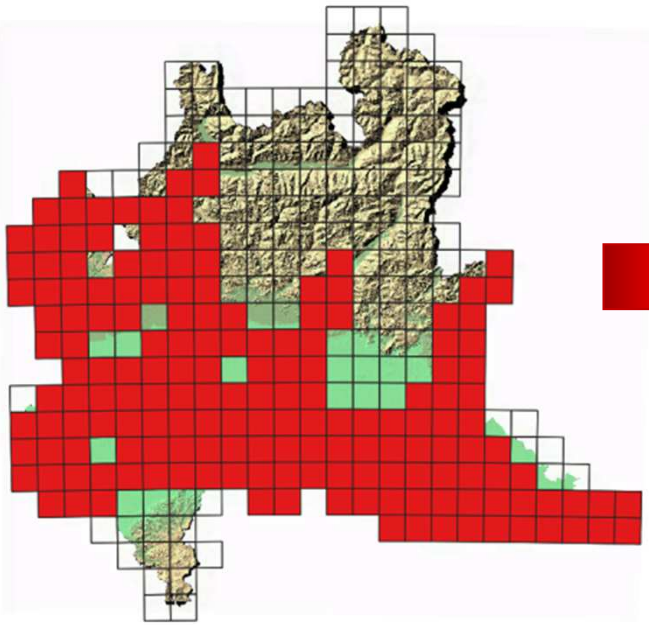
Red Swamp Crayfish (*Procambarus clarkii*)

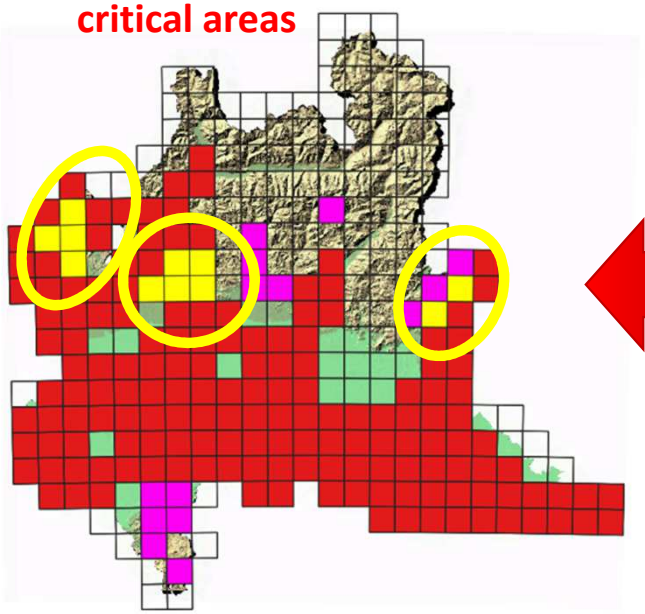


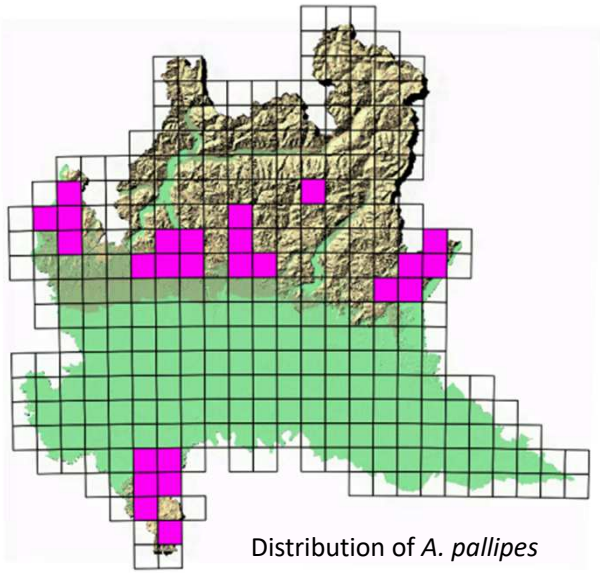
Citizen science proved very useful:

- Presence reports, which can then be investigated further
- Tracking the spread of the IAS
- Early warning

Identification of critical areas



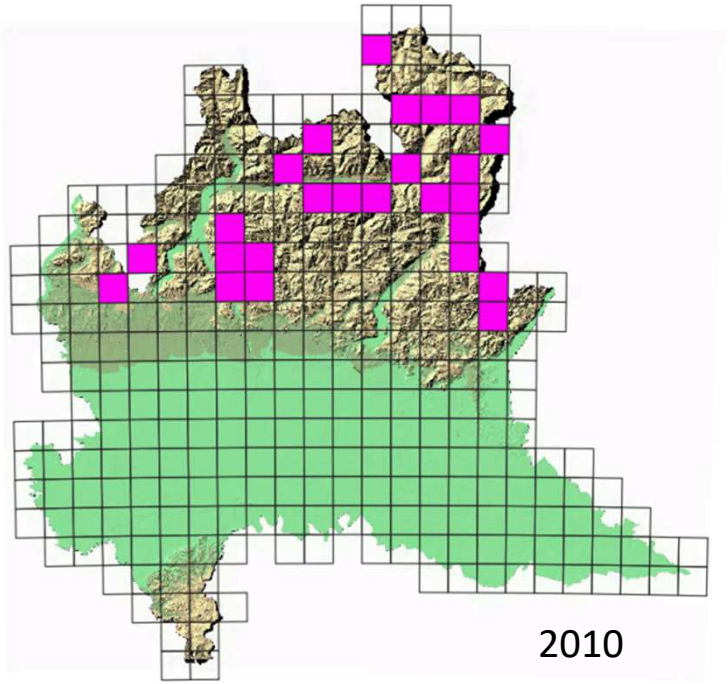




Distribution of *A. pallipes*

Black Woodpecker (*Dryocopus martius*)

Population recovery due to "reforestation“ – analysis of distribution over time



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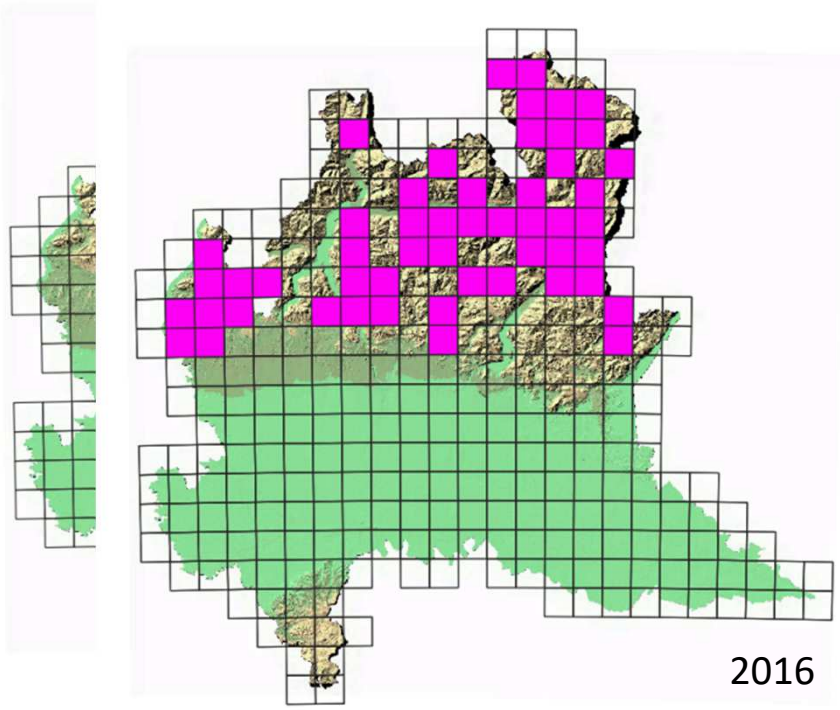

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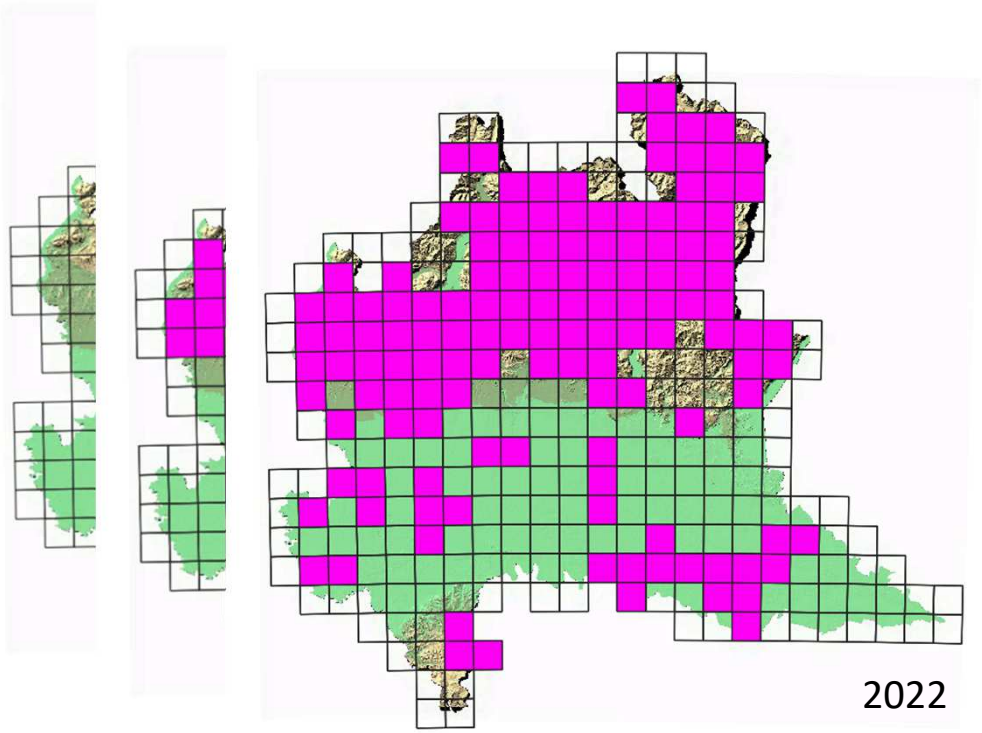
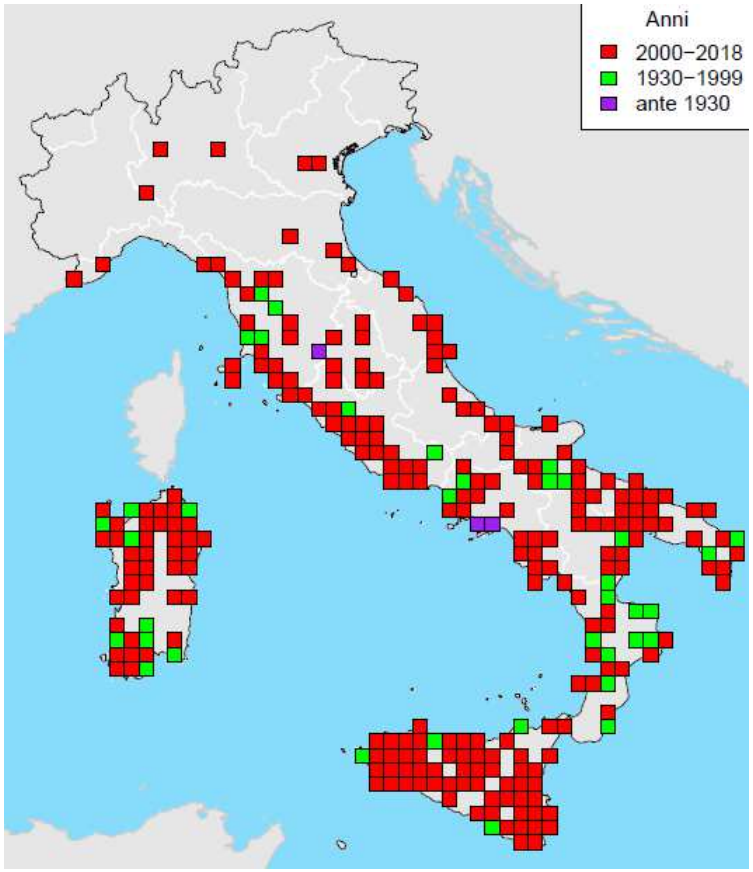
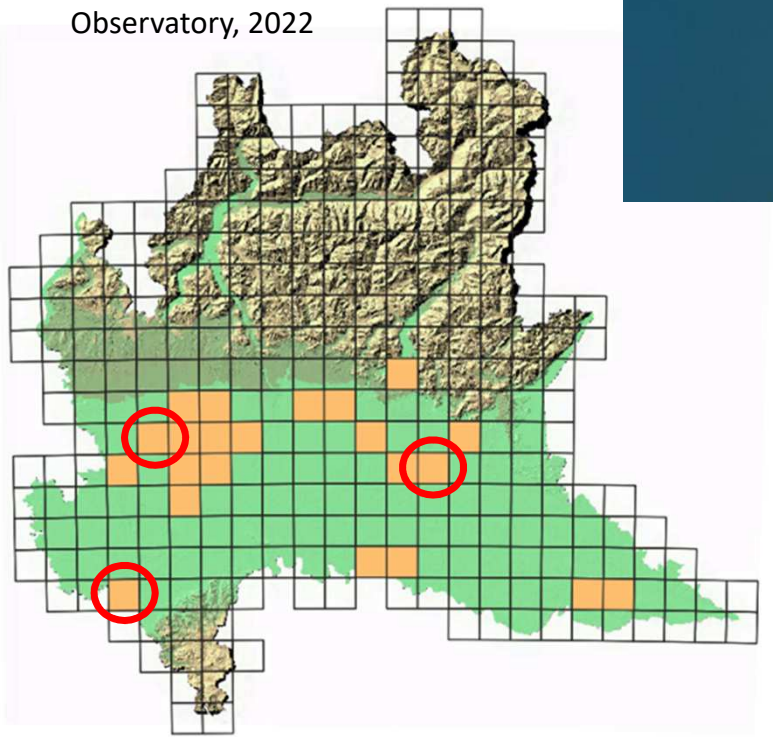


Is there also a
“citizen science” bias?
In the last few years reports increased greatly due to web sharing and mobile phones.

Violet Darter (*Trithemis annulata*)

Tracking how Climate Change influences the distribution of species





- Mediterranean and Middle Eastern species
- Natural expansion of the range
- striking acceleration of this expansion

Bottom Line

- A centralized data repository allows you to **take advantage** of monitoring coming from **very different sources** and make them much more **easily available**.
  - The “local” (regional) scale allows for greater efficiency in administration of data, but somehow limits the possibility of cross-border exchange.
- The use of a **broad range of metadata** increases the possibility of harmonization and intercalibration, allows filtering, allows more complex processing and analyses.
  - The database do not register metadata about community structure or functions. Complex relationships among species must be recreated from raw data.
- The “**searched, but not found**” kind of record was among the most important in our data analyses and strategy development for some key species.

Bottom Line

- Expert and professional monitoring **cannot be replaced**, especially for certain species and environments. Full stop.
- Citizen science can be a good **complement**, e.g. in order to **survey** broad areas (i.e. against IAS), understand distributions and point out reports that need to be further investigated.

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- Citizen science can be a good **complement**, e.g. in order to **survey** broad areas (i.e. against IAS), understand distributions and point out reports that need to be further investigated.
- **Territorial Network** proved to be the most powerful tool to acquire big and accurate data sets, with the **greater cost/effectiveness ratio**. It is also both a pool of available experts and a source of training for citizens
- The use of all potential sources allows for the **best allocation of limited funds**.

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Any question?

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