



RIPARIAN VEGETATION IN CITIZEN SCIENCE MONITORING

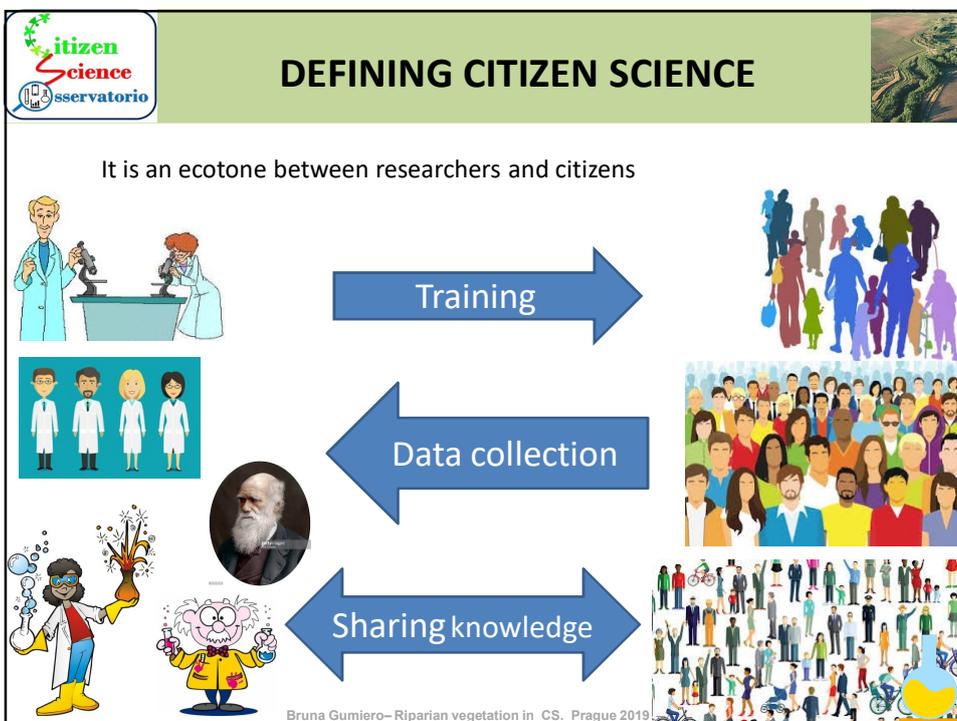
CONVERGES
European Riparian Ecosystems

MICS
Measuring Impact of Citizen Science

Bruna Gumiero
F. Tassi, F. Di Grazia and C. di Stefano

citizen science
laboratorio

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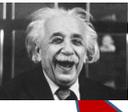




DEFINING CITIZEN SCIENCE



Active integration process self sustaining











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AIM OF C.S.





Conservation and restoration of local territory



Science: large number of data for warning monitoring

Society: more knowledge increases the correct perception of the environment and increase sustainable behavior.

Moreover: Opportunity to carry out long-term monitoring






CITTADINI ATTIVI



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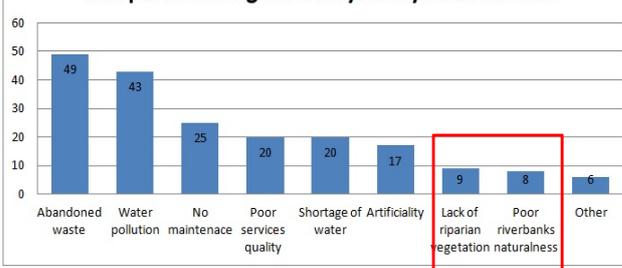


SOCIETY PERCEPTION



From previous experiences of Citizen Science (CS) in Italy, citizens' observations make it clear that absence of riparian vegetation and poor bank naturalness are not felt as a problem. Citizens ignore the importance of riparian vegetation and often they perceive natural vegetation near the river as dangerous and dirty. *Di Grazia 2018*

7. In your opinion, what are the main problems that persist along the ecosystem you observed?



Problem	Percentage
Abandoned waste	49
Water pollution	43
No maintenance	25
Poor services quality	20
Shortage of water	20
Artificiality	17
Lack of riparian vegetation naturalness	9
Poor riverbanks	8
Other	6

walking paths



Cycle paths



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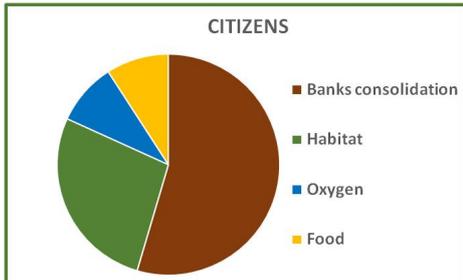


SOCIETY PERCEPTION



Which are, in your opinion, the main functions of riparian vegetation?

CITIZENS



- Banks consolidation
- Habitat
- Oxygen
- Food

Experts



- Banks consolidation
- Habitat
- Depuration
- Food
- Nursery
- Shading
- Landscape

Sustainable riparian vegetation management is crucial to integrate FD (2007/60/CE) and WFD (2000/60/CE)

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OBJECTIVES



- 1 - Disseminate knowledge and awareness about Riparian Vegetation value in human society.
- 2 - From the scientific point of view, this monitoring can be integrated with remote sensing surveys by the identification of target species: not only hygrophylous but also invasive, nitrophilous, mesophilous species.
- 3 - Improve our knowledge on the “*riparian land drying*” process that riparian vegetation are suffering all over the world



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SMARTPHONE APPLICATION CONTENTS



- **MINITORING SITE** is about 10x10 m
but it is possible to change it
- **GEOGRAPHIC AREAS:**
 - Plain from 0 to 150m
 - Hill from 150 to 800m
- **STRUCTURE:**
 - trees, shrubs, herbaceous or mix
- **FOUR LAYERS:**
 - High trees,
 - trees,
 - Shurbs from 1 to 3 m
 - Herbaceous lower than 1 m

App created using Survey123 for Arcgis using standard XLS forms

The APP was developed by Cristian di Stefano (ISPRA)





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SMARTPHONE APPLICATION CONTENTS



- **EACH LAYER:**
average tree height, coverage, average diameter of the logs
- **SPECIES TARGET EASY TO IDENTIFY** and 4 class of coverage
 - hygrophilous, (Populus nigra, Populus alba, salix alba, alnus glutinosa,
 - invasive species (Robinia pseudoacacia, Ailanthus altissima, Amorpha fruticosa, rubus sp.)
 - good indicators (ex. Nitrophilus or mesophilus): Urtica sp., Fraxinus ornus, Quercus sp.
- **Confidence:** yes, not more or less.

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FIRST RESULTS 1



1 SITE

	TALL TREES			TREES	SHRUBS		HERBACEOUS		
SPECIES	BLACK POPLAR	ROBINIA	AILANTHUS	ASH sp.	BRAMBLE	ASH sp.	ROBINIA	AILANTHUS	BRAMBLE
EXPERTS	ABUNDANT	PREDOMINANT	COMMON	FEW	ABUNDANT	FEW	FEW	FEW	COMMON
CITIZENS	COMMON	PREDOMINANT	COMMON	FEW	FEW	FEW	FEW	FEW	COMMON

2 SITE

	TALL TREES			TREES	SHRUB	HERBACEOUS				
SPECIES	BLACK POPLAR	ROBINIA	ROBINIA	AILANTHUS	ROBINIA	BRAMBLE	ROBINIA	AILANTHUS	BRAMBLE	OAK
EXPERTS	PREDOMINANT	ABUNDANT	PREDOMINANT	COMMON	ABUNDANT	ABUNDANT	FEW	COMMON	COMMON	FEW
CITIZENS	ABUNDANT	ABUNDANT	ABUNDANT	COMMON	COMMON	COMMON	COMMON	COMMON	COMMON	FEW

3 SITE

	TALL TREES		TREES	SHRUBS	
SPECIES	BLACK POPLAR	ROBINIA	ROBINIA	AILANTHUS	BRAMBLE
EXPERTS	ABUNDANT	COMMON	PREDOMINANT	COMMON	ABUNDANT
CITIZENS	COMMON	COMMON	ABUNDANT	COMMON	ABUNDANT

4 SITE

	TALL TREES		TREES	SHRUBS		
SPECIES	BLACK POPLAR	ROBINIA	ROBINIA	ROBINIA	AILANTHUS	BRAMBLE
EXPERTS	COMMON	ABUNDANT	PREDOMINANT	PREDOMINANT	COMMON	COMMON
CITIZENS	COMMON	ABUNDANT	PREDOMINANT	ABUNDANT	COMMON	COMMON

5 SITE

	TALL TREES		TREES	SHRUBS		
SPECIES	BLACK POPLAR	ROBINIA	ROBINIA	ROBINIA	BRAMBLE	
EXPERTS		PREDOMINANT	PREDOMINANT	ABUNDANT	PREDOMINANT	
CITIZENS		PREDOMINANT	PREDOMINANT	PREDOMINANT	ABUNDANT	

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5



FIRST RESULTS 1



1 SITE

	TALL TREES			TREES	SHRUBS		HERBACEOUS		
SPECIES	BLACK POPLAR	ROBINIA	AILANTHUS	ASH sp.	BRAMBLE	ASH sp.	ROBINIA	AILANTHUS	BRAMBLE
EXPERTS	ABUNDANT	PREDOMINANT	COMMON		ABUNDANT		FEW		COMMON
CITIZENS	COMMON	PREDOMINANT	COMMON	FEW	ABUNDANT	FEW		FEW	COMMON

2 SITE

	TALL TREES			TREES	SHRUB	HERBACEOUS				
SPECIES	BLACK POPLAR	ROBINIA	ROBINIA	AILANTHUS	ROBINIA	BRAMBLE	ROBINIA	AILANTHUS	BRAMBLE	OAK
EXPERTS	PREDOMINANT	ABUNDANT	PREDOMINANT	COMMON	ABUNDANT	ABUNDANT	FEW	COMMON	COMMON	FEW
CITIZENS	ABUNDANT	ABUNDANT	ABUNDANT	COMMON	COMMON	COMMON	COMMON	COMMON	COMMON	FEW

3 SITE

	TALL TREES			TREES	SHRUBS
SPECIES	BLACK POPLAR	ROBINIA	ROBINIA	AILANTHUS	BRAMBLE
EXPERTS	ABUNDANT	COMMON	PREDOMINANT	COMMON	ABUNDANT
CITIZENS	COMMON	COMMON	ABUNDANT	COMMON	ABUNDANT

4 SITE

	TALL TREES		TREES	SHRUBS		
SPECIES	BLACK POPLAR	ROBINIA	ROBINIA	ROBINIA	AILANTHUS	BRAMBLE
EXPERTS	COMMON		PREDOMINANT	PREDOMINANT	COMMON	
CITIZENS		ABUNDANT		ABUNDANT		

5 SITE

	TALL TREES		TREES	SHRUBS	
SPECIES	BLACK POPLAR	ROBINIA	ROBINIA	ROBINIA	BRAMBLE
EXPERTS		PREDOMINANT	PREDOMINANT	ABUNDANT	PREDOMINANT
CITIZENS		PREDOMINANT		PREDOMINANT	ABUNDANT

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FIRST RESULTS 1



1 SITE

	TALL TREES			TREES	SHRUBS		HERBACEOUS		
SPECIES	BLACK POPLAR	ROBINIA	AILANTHUS	ASH sp.	BRAMBLE	ASH sp.	ROBINIA	AILANTHUS	BRAMBLE
EXPERTS	ABUNDANT	PREDOMINANT	COMMON		ABUNDANT		FEW		COMMON
CITIZENS	COMMON	PREDOMINANT	COMMON	FEW	ABUNDANT	FEW		FEW	COMMON

2 SITE

	TALL TREES			TREES	SHRUB	HERBACEOUS				
SPECIES	BLACK POPLAR	ROBINIA	ROBINIA	AILANTHUS	ROBINIA	BRAMBLE	ROBINIA	AILANTHUS	BRAMBLE	OAK
EXPERTS	PREDOMINANT	ABUNDANT	PREDOMINANT	COMMON	ABUNDANT	ABUNDANT	FEW	COMMON	COMMON	FEW
CITIZENS	ABUNDANT	ABUNDANT	ABUNDANT	COMMON	COMMON	COMMON	COMMON	COMMON	COMMON	FEW

3 SITE

	TALL TREES			TREES	SHRUBS
SPECIES	BLACK POPLAR	ROBINIA	ROBINIA	AILANTHUS	BRAMBLE
EXPERTS	ABUNDANT	COMMON	PREDOMINANT	COMMON	ABUNDANT
CITIZENS	COMMON	COMMON	ABUNDANT	COMMON	ABUNDANT

4 SITE

	TALL TREES		TREES	SHRUBS		
SPECIES	BLACK POPLAR	ROBINIA	ROBINIA	ROBINIA	AILANTHUS	BRAMBLE
EXPERTS	COMMON		PREDOMINANT	PREDOMINANT	COMMON	
CITIZENS		ABUNDANT		ABUNDANT		

5 SITE

	TALL TREES		TREES	SHRUBS	
SPECIES	BLACK POPLAR	ROBINIA	ROBINIA	ROBINIA	BRAMBLE
EXPERTS		PREDOMINANT	PREDOMINANT	ABUNDANT	PREDOMINANT
CITIZENS		PREDOMINANT		PREDOMINANT	ABUNDANT

seedling ↗

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DATA ELABORATION OUTPUT

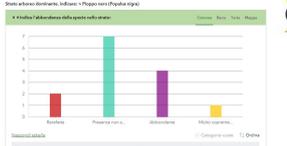


Indice di struttura vegetazionale



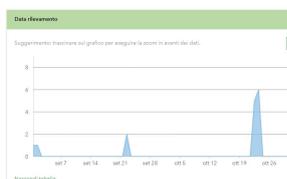
Risposte	Conteggio	Percentuale
Piantagione	10	50.0%
Piantagione+P	4	16.7%
Mista	7	28.3%
Solo erbacea	0	0.0%

Stato storico floristico. Indice di Pappo non (Popula nigra)



Risposte	Conteggio	Percentuale
Mista	2	8.0%
Piantagione+P	7	28.3%
Piantagione	4	16.7%
Non censurata	1	4.2%

Data rilevamento



Data	Conteggio
11 ago 2018 - 1 set 2018	1
1 set 2018 - 2 set 2018	1
22 set 2018 - 23 set 2018	2
22 set 2018 - 23 set 2018	3
23 set 2018 - 24 set 2018	6
3 set 2018 - 4 nov 2018	9

Foto della zona presa in esame



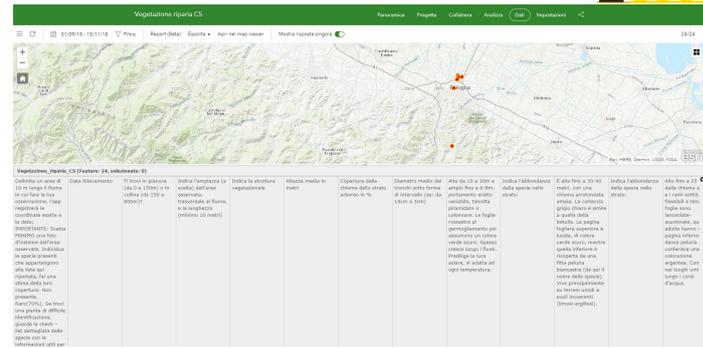
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Data analyses will be available online on the ISPRA infrastructure



DATA ELABORATION OUTPUT

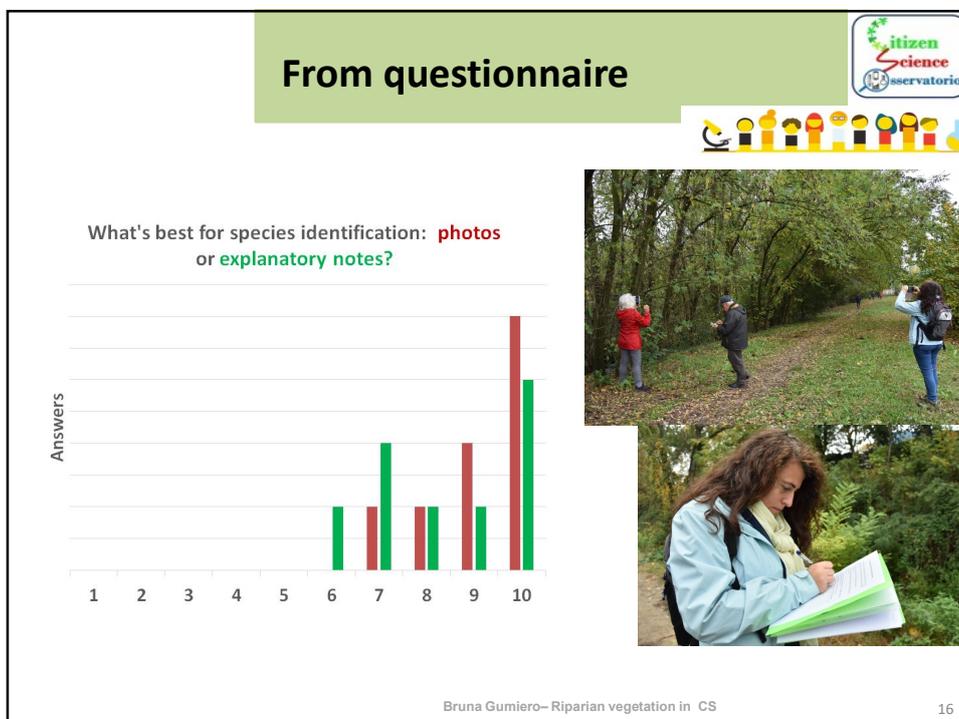
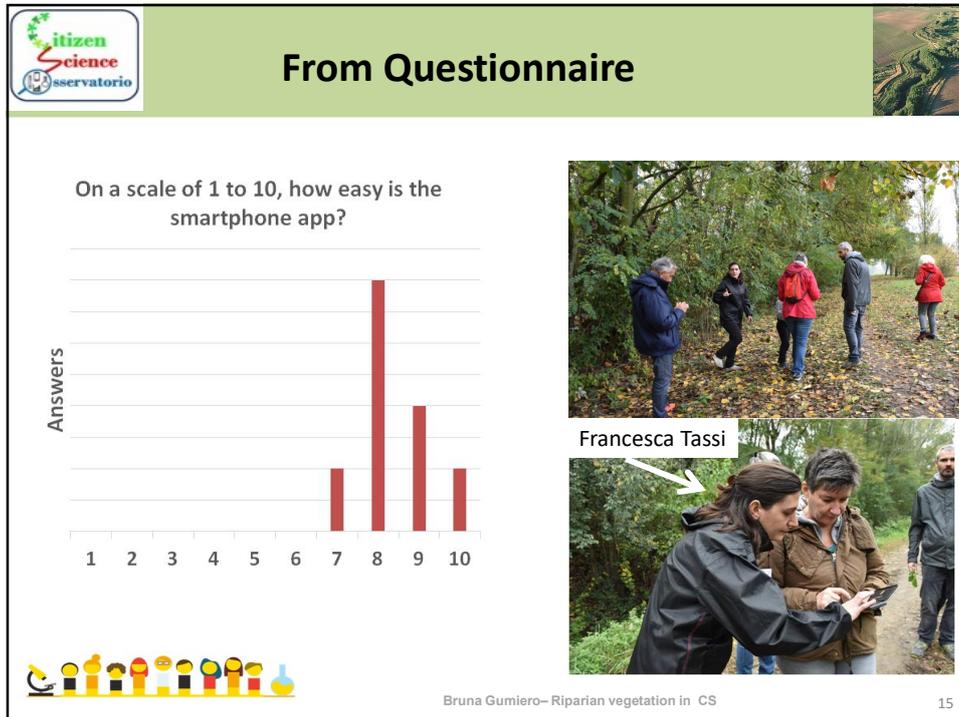




After the testing phase, collected data will be available on the National Network on Biodiversity managed by ISPRA (www.nnb.isprambiente.it).

Data will be downloadable in various formats (CSV, Shapefile, geodatabase, kml, ...)

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CONCLUSIONS



Though there are still improvements to be made, the Citizens' response was positive and they stated they will be able to use it independently after a short training

Are you willing to do this kind of activity during recreational activities such as a walk?

The answer was an enthusiastic YES!

The big challenge is that this CS activity can play a role in the riparian vegetation monitoring program on a European scale.

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Measuring Impact of Citizen Science

MICS FUTURE APPLICATION



Developing metrics and instruments to evaluate citizen science impacts on the environment and society

Test and validation sites Nature-based solutions as context



**WE LOVE RIPARIAN
VEGETATION!!!
THANKS**



CONTACTS

Bruna Gumiero
bruna.gumiero@unibo.it