RIPARIAN VEGETATION IN CITIZEN SCIENCE MONITORING

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DEFINING CITIZEN SCIENCE

It is an ecotone between researchers and citizens

Training

Data collection

Sharing knowledge

DEFINING CITIZEN SCIENCE

Active integration process self sustaining

AIM OF C.S.

Conservation and restoration of local territory

Science: large number of data for warning monitoring

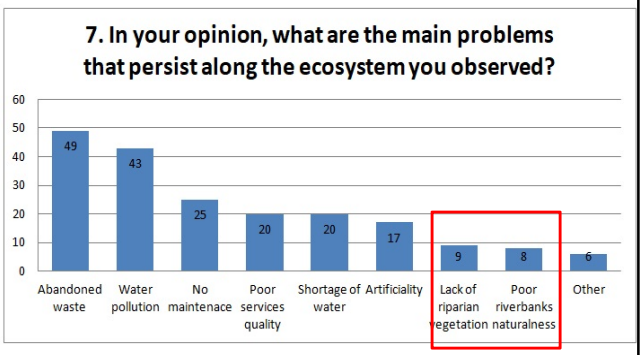
Society: more knowledge increases the correct perception of the environment and increase sustainable behavior.

Moreover: Opportunity to carry out long-term monitoring

SOCIETY PERCEPTION

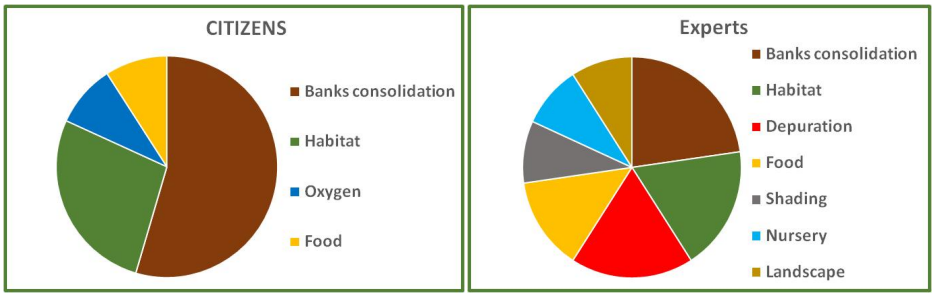
From previous experiences of Citizen Science (CS) in Italy, citizens' observations make it clear that absence of riparian vegetation and poor bank naturalness are not feel as a problem. Citizens ignore the importance of riparian vegetation and often they perceive natural vegetation near the river as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

Di Grazia 2018



SOCIETY PERCEPTION

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



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

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

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 developped by Cristian di Stefano (ISPRA)

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.

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		FEW		FEW		FEW	

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	FEW

3 SITE

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

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CITIZENS	COMMON	PREDOMINANT		FEW		FEW		FEW	

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seedling

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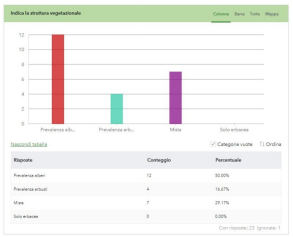
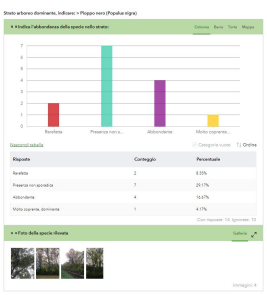
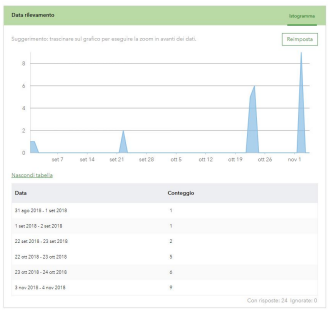
CITIZENS		PREDOMINANT		PREDOMINANT	ABUNDANT

DATA ELABORATION OUTPUT

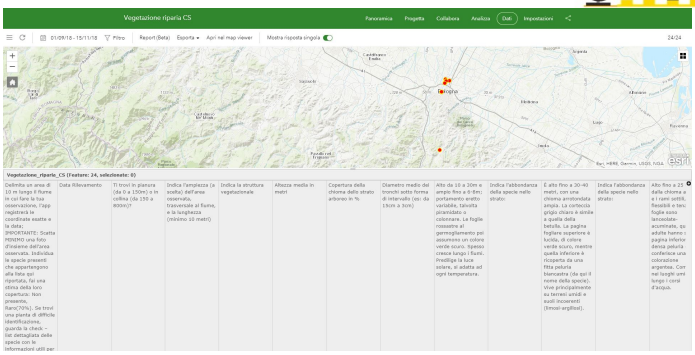






Data analyses will be available online on the ISPRA infrastructure

DATA ELABORATION OUTPUT

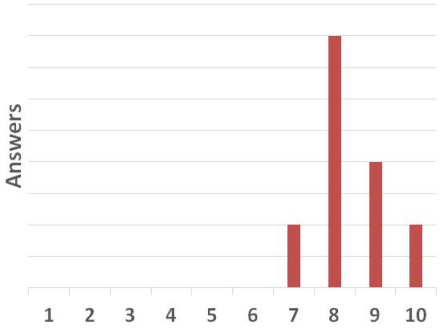


After the testing phase, collected data will be available on the National Network on Biodiversity managed by ISPRA (www.nnb.isprambiente.it).

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

From Questionnaire

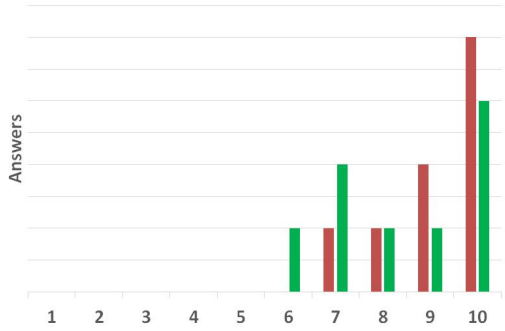
On a scale of 1 to 10, how easy is the smartphone app?

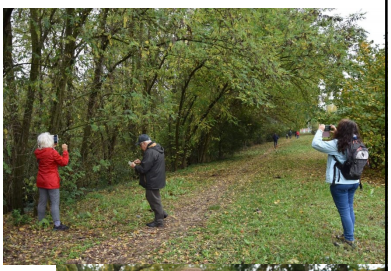


Francesca Tassi

From questionnaire

What's best for species identification: photos or explanatory notes?





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.

MICS Measuring Impact of Citizen Science

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

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