

**Environmental education  
and citizen science projects  
for plant conservation:  
are we effective in  
communicating?**

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**4th MPCW**

VALENCIA | 23-27 OCTOBER | 2023



**UNIVERSITÀ DEGLI STUDI  
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# Education for Environment and Sustainability

## UNECE Ministers of the Environment (2003)



It is a cross-sectoral issue, encompassing economic, environmental and social dimensions, and demands a participatory and holistic approach



Learners at all levels should be encouraged to use critical thinking as a prerequisite for concrete action for sustainable development and biodiversity conservation



The overall aim is to empower citizens to act for positive environmental change

# Mediterranean Strategy for Sustainable Development (2005)

## Mediterranean Strategy on Education for Sustainable Development (2014)

### COMMON VISION

Characterized by:

- sustainable development
- green economy
- justice and social cohesion
- biodiversity conservation
- sustainable management of natural resources

### HOW MAKE IT REAL?

By strengthening education, **introducing sustainable development** into educational curricula in all education levels



OUR MEDITERRANEAN  
WORLD

### WHY?

Because **environmental and sustainability education strengthens the capacity of individuals, groups, communities, organizations and countries to make choices in favor of biodiversity conservation.**

It can promote a shift in people's mindsets and behavior enabling them to make our Mediterranean world better, safer, healthier, improving the quality of life and equity among countries and generations

## 30 YEARS OF EXPERIENCE IN:

- communication, education and public awareness activities,
- design and management of environmental education and communication services and tools



An interesting story...



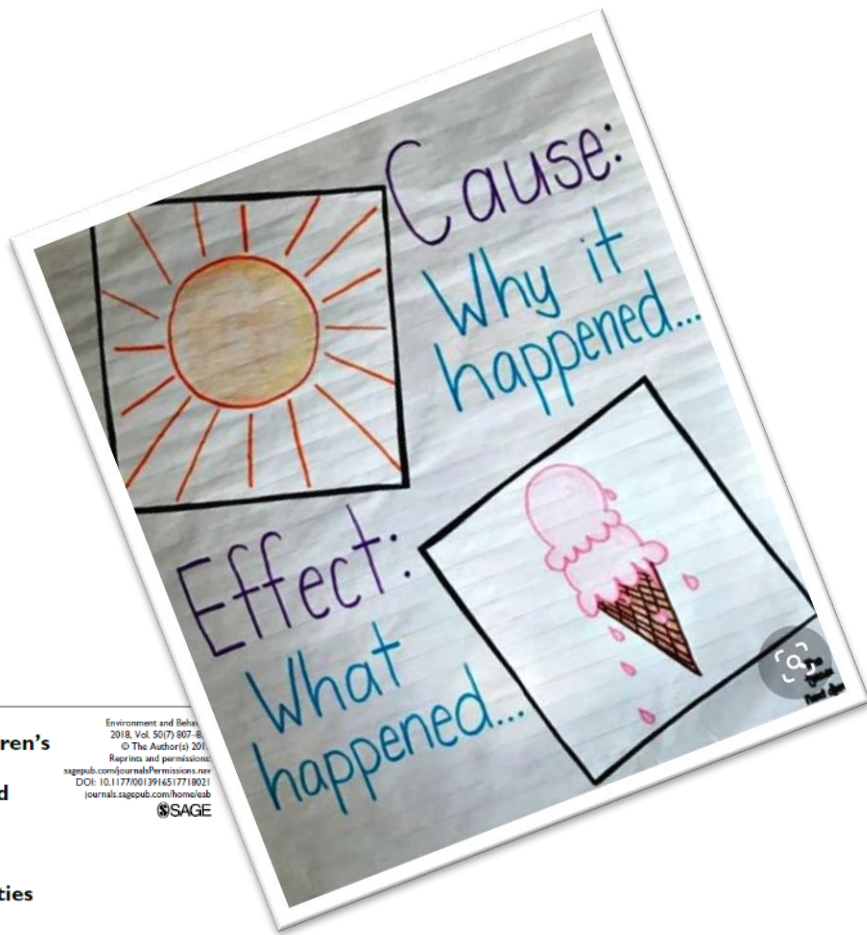


**... the worst  
experience  
in our  
professional  
life**





TAKE A  
*deep breath*  
AND RELAX



Mechanisms through which children and youth are exposed to nature

Environmental citizenship behaviors and commitment to nature-based activities in adult life

Article

**Mechanisms of Children's Exposure to Nature: Predicting Adulthood Environmental Citizenship and Commitment to Nature-Based Activities**

Environment and Behavior  
2018, Vol. 50(7) 907–918  
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DOI: 10.1177/0013916517718021  
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SAGE

Stanley T. Asah<sup>1</sup>, David N. Bengtson<sup>2</sup>,  
Lynne M. Westphal<sup>3</sup>, and Catherine H. Gowan<sup>1</sup>





**School-related exposure to nature during childhood** did not predict environmental knowledge/awareness or any aspect of adulthood commitment to nature-based activities or pro-conservation behaviors



**Self-exposure to nature during childhood** was associated with adulthood commitment to nature-based activities, enhanced environmental knowledge/awareness and political-ecological citizenship behaviors



Different exposure mechanisms of **adult citizenship** and **commitment to nature-based activities**



✓ Self-exposure to nature on one's own, with friends and mostly with family, significantly predicts adults' tendency to continue to participate in nature-based activities and pro-conservation behaviors

# Transforming our world: the 2030 Agenda for Sustainable Development



The Sustainable Development Goal 15 is devoted to “protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss”



# Transforming our world: the 2030 Agenda for Sustainable Development

Among the many **barriers** to achieving the objectives of the Convention on Biological Diversity, **the lack of awareness ranks as one of the most serious.**

Without an awareness of the importance of biodiversity, **citizens and stakeholders are not likely to take the steps needed to mainstream biodiversity considerations into their daily lives and practices.**



So, our  
assumption is:

**“If we, through  
our work, make  
people aware  
about the  
importance of  
biodiversity,  
they will have a  
responsible  
behavior or  
they will take  
actions and  
measures pro-  
biodiversity  
conservation”**





According to this idea, it sounds rather arrogant of us to suppose that we can transmit to someone a new value.

**“Awareness does not make people change their behavior. Instead of focusing on awareness or introducing *new* values for biodiversity, rather align your messages with people’s existing values,,  
*Stanley Asah, University of Washington***





**The happy ending  
of my story....**

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# Understanding behavior to design conservation interventions

Behavioral sciences can advance conservation by systematically identifying behavioral barriers to conservation and how to best overcome them.

## Conservation Letters

A journal of the Society for Conservation Biology

Open Access

### POLICY PERSPECTIVE

#### Advancing Conservation by Understanding and Influencing Human Behavior|

Sheila M.W. Reddy<sup>1</sup>, Jensen Montambault<sup>1</sup>, Yuta J. Masuda<sup>1</sup>, Elizabeth Keenan<sup>2</sup>, William Butler<sup>3</sup>, Jonathan R.B. Fisher<sup>4</sup>, Stanley T. Asah<sup>4</sup>, & Ayelet Gneezy<sup>5</sup>

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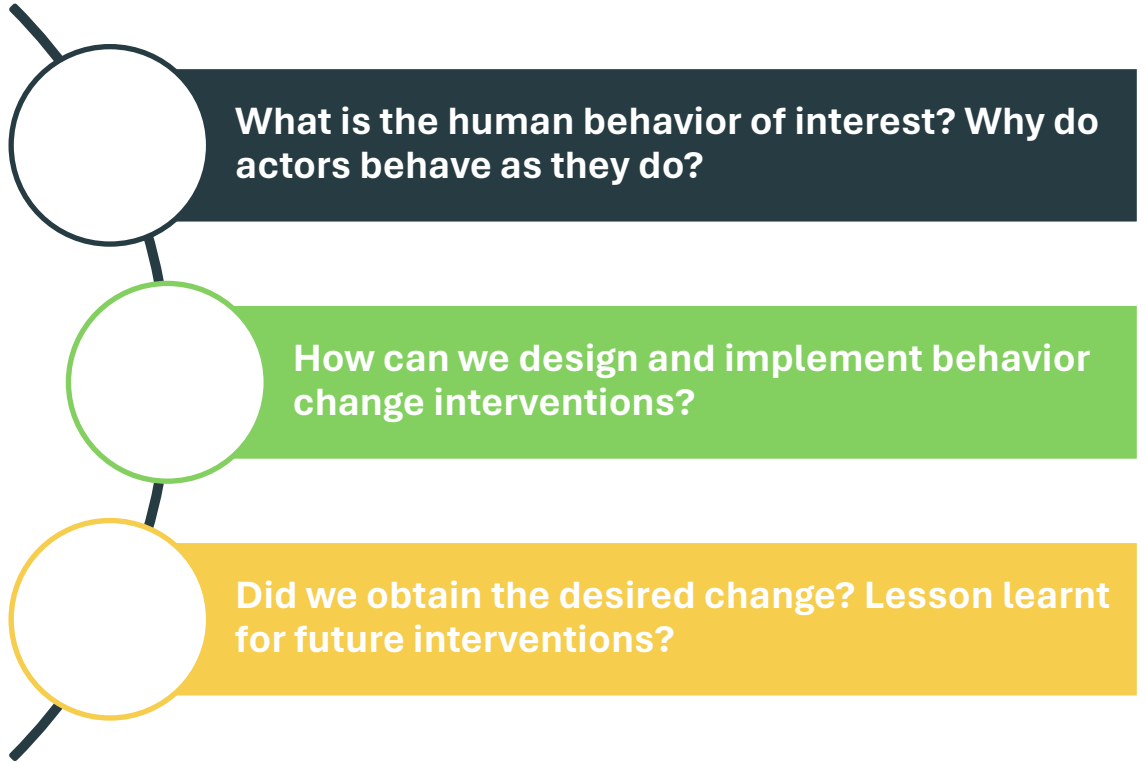




# Set of questions

Aimed to:

1. Defining the behavior change problem
2. Understanding behavior to design conservation interventions
3. Evaluating and adapting behavioral interventions



# Three approaches to behavior change



Approach 1  
promoting awareness



Approach 2  
incentivizing behavior



Approach 3  
nudging behavior

## Approach 1 **promoting awareness**

Numerous environmental education programs have been guided by the rationale that new knowledge/beliefs lead to increased awareness, followed by changes in attitude, which then increases proconservation behavior.

### **Barriers**

Lack of responsibility, conflicting attitudes and incentives, practical constraints.

Many studies suggest that the assumed direct link between awareness, attitudes, and proconservation behavior, is weak.



## Approach 2 **incentivizing behavior**

The underlying assumption for incentivizing behavior is simple—people are most likely to respond if there is something to be gained (or a loss to avoid).

The factors that create incentives can be extrinsic or intrinsic to the actor.

Incentives for conservation do not necessarily require awareness or concern for conservation in order to change behavior. Social norms, identities, personal values matter.

### **Barriers**

Incentive programs designed without a thorough understanding of the target actors may have a limited impact and could sometimes even backfire.





## Approach 3

### nudging behavior

Nudges make small changes to the decision context that target intuitive thinking. They work by making the desired behavior easier, simpler, more engaging.

### Barriers

Despite their attractiveness and increased popularity, nudges may only result in small changes, and they could fail if the decision maker has strong preferences for a particular option.



# Two project as case studies





# LIFE projects: RESMARIS

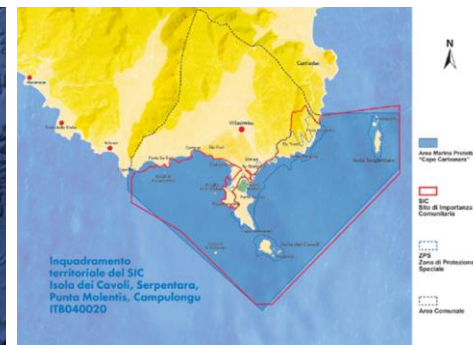
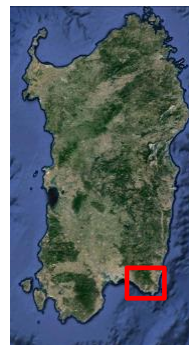
## “Recovering Endangered Habitats in the Capo Carbonara MARine Area, Sardinia”

RES MARIS (2014-2018) aims at conservation and recovery of marine and terrestrial ecosystems of the emerged and submerged beach system, in particular of priority habitats (DIR. 92/43/EEC):

1120\* "Posidonia beds (*Posidonium oceanicae*)"

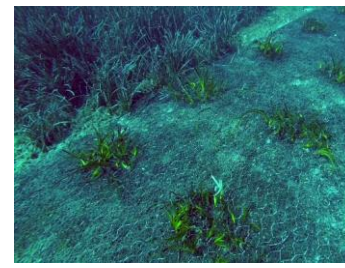
2250\* "Coastal dunes with *Juniperus* spp."

2270\* "Wooded dunes with *Pinus pinea* and/or *Pinus pinaster*"





1. Collection, testing and multiplication of germplasm of species characteristic of the habitats \*2250 and \*2270;
2. Implementation of interventions to control and/or eradicate of invasive alien species, restoration and renaturation of the dunal vegetation relative to the habitat \*2250 and \*2270;
3. Installation of mooring facilities and interventions of recovery and restocking in sensitive areas habitat of the habitat \*1120.





# Communication, Environment and sustainability education actions

## Targeting all stakeholders:

Local authorities

Citizens

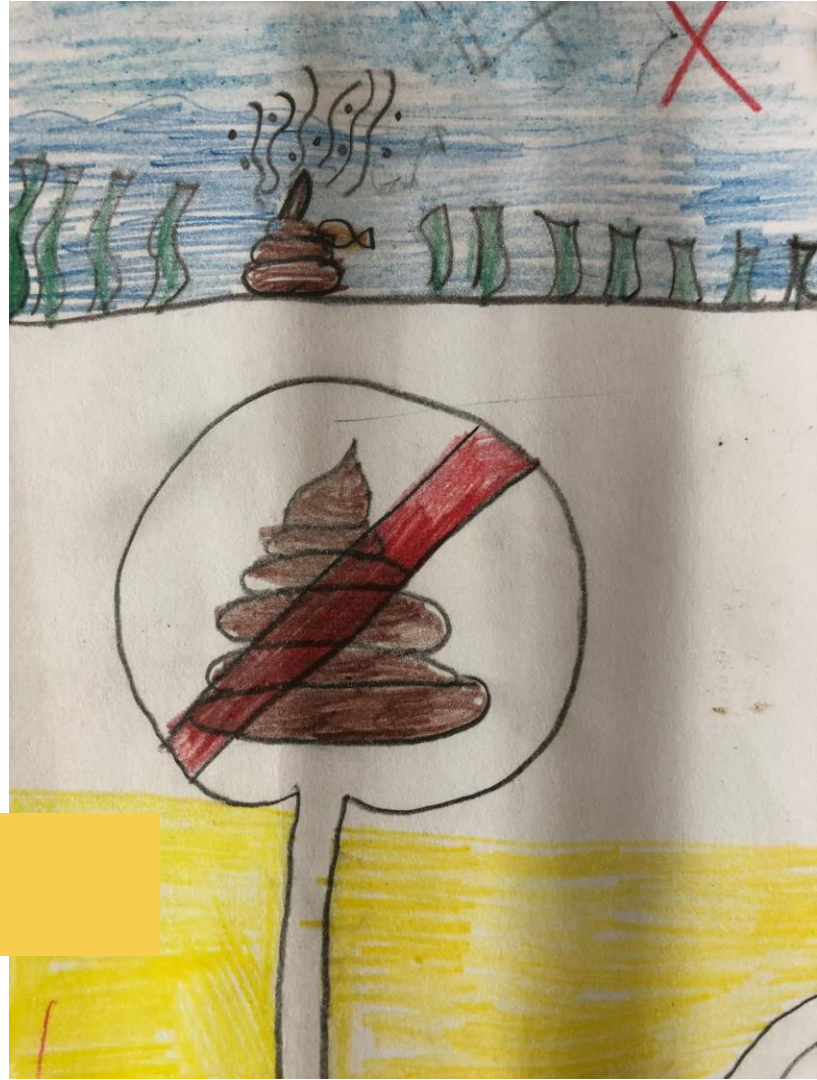
Tourists

Students



Private subjects and economic operators:

**CLUB RES MARIS**



What is the human behavior of interest?  
Why do actors behave as they do?

How can we design and implement  
behavior change interventions?

Did we obtain the desired change? Lesson  
learnt for future interventions?





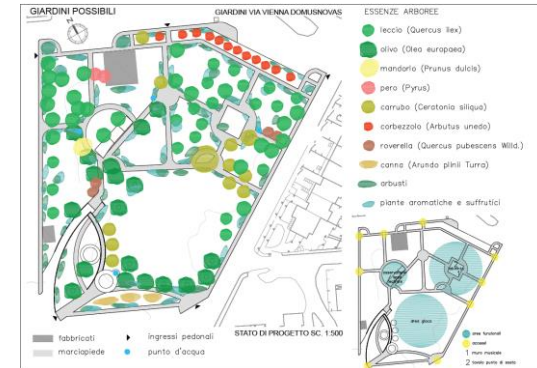


## The «Possible Gardens» project

Aim: combating educational poverty by acting on the overall well-being and harmonious development of people living in the poorest area of Sardinia.

It was made through the **regeneration of four peripheral areas**, transforming them into shared gardens, open and suitable for hosting activities such as theatrical and musical performances, film clubs, laboratories and environmental awareness activities.

Our tasks: analysis of the existing vegetation, eradication of IAS, replacement with native species, educational and training actions.



Target groups: students, families, users of social services and rehab communities, citizens in general.

Provided with knowledge, tools and methodologies for understanding plant diversity, with reference to the spontaneous flora of Sardinia, in order to create a link between the gardens' users and the surrounding territory.







What is the human behavior of interest? Why do actors behave as they do?

How can we design and implement behavior change interventions?

Did we obtain the desired change? Lesson learnt for future interventions?



# Concluding...

- **Children's self-exposure to nature** and less structure, freer and much deeper interactions with nature cultivate stronger and more enduring connections with nature, to obtain pro conservation behaviors.
- Design our educational programs so that we can evaluate the desired behavior change.
- Behavior change approaches can allow conservation practitioners to consider ways to remove barriers between awareness and action.
- Evaluating the studies (few available!), we deduce that economic incentives may be most successful for change in behavior, when combined with awareness and social incentives.



Thank you  
for your attention  
(and patience!)

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