



*Department of Agricultural, Forest and Food Sciences
(DISAFA), University of Turin*



Forest ecosystem services: civil society perception and awareness

Authors:

Stefano Bruzzese, Simone Blanc, Valentina Maria Merlino and Filippo Brun

THE CONTEXT

Forest ecosystem services (FES) are “*the multiple benefits that a forest provides to humans*”



Millennium Ecosystem Assessment classification



SUPPORTING



PROVISIONING

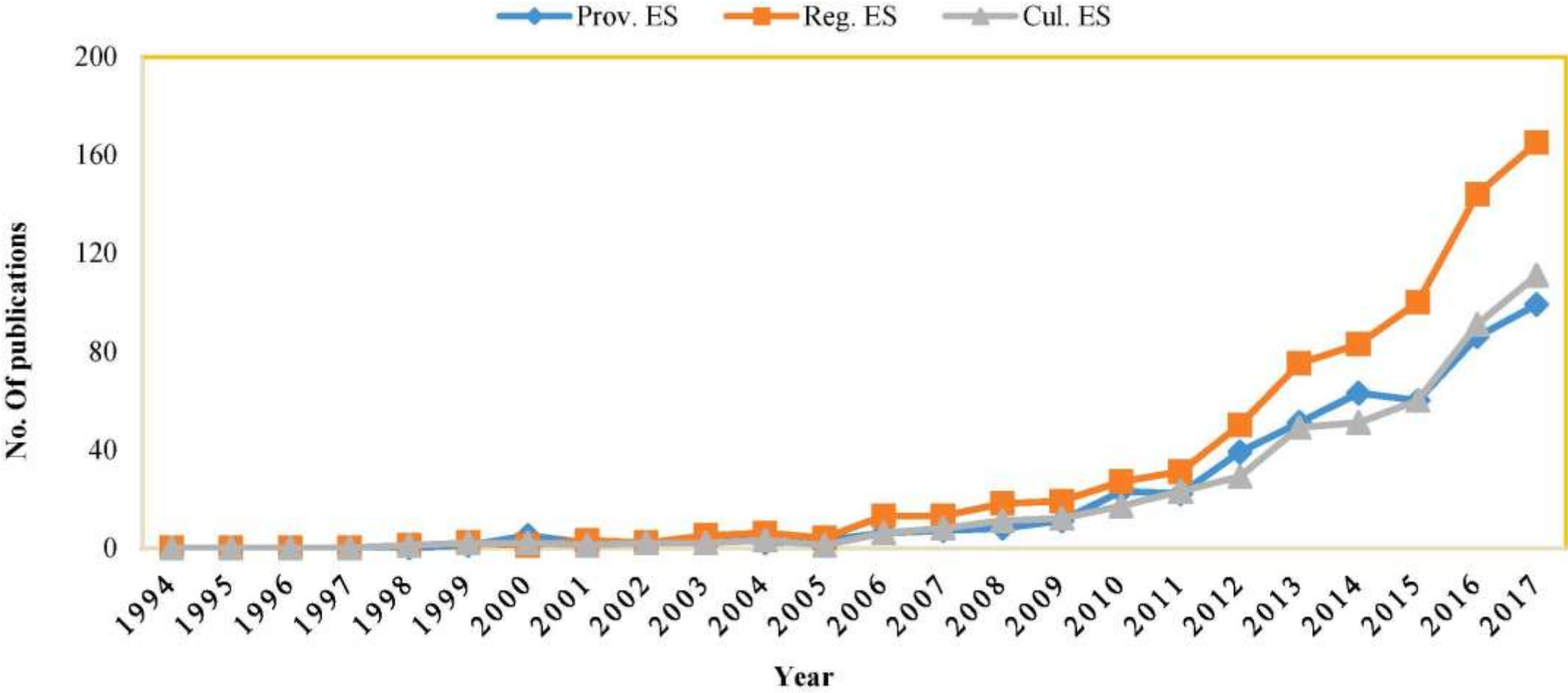


REGULATING



CULTURAL

GLOBAL TREND OF FOREST ECOSYSTEM SERVICES EVALUATION



Acharya *et al.* (2019)

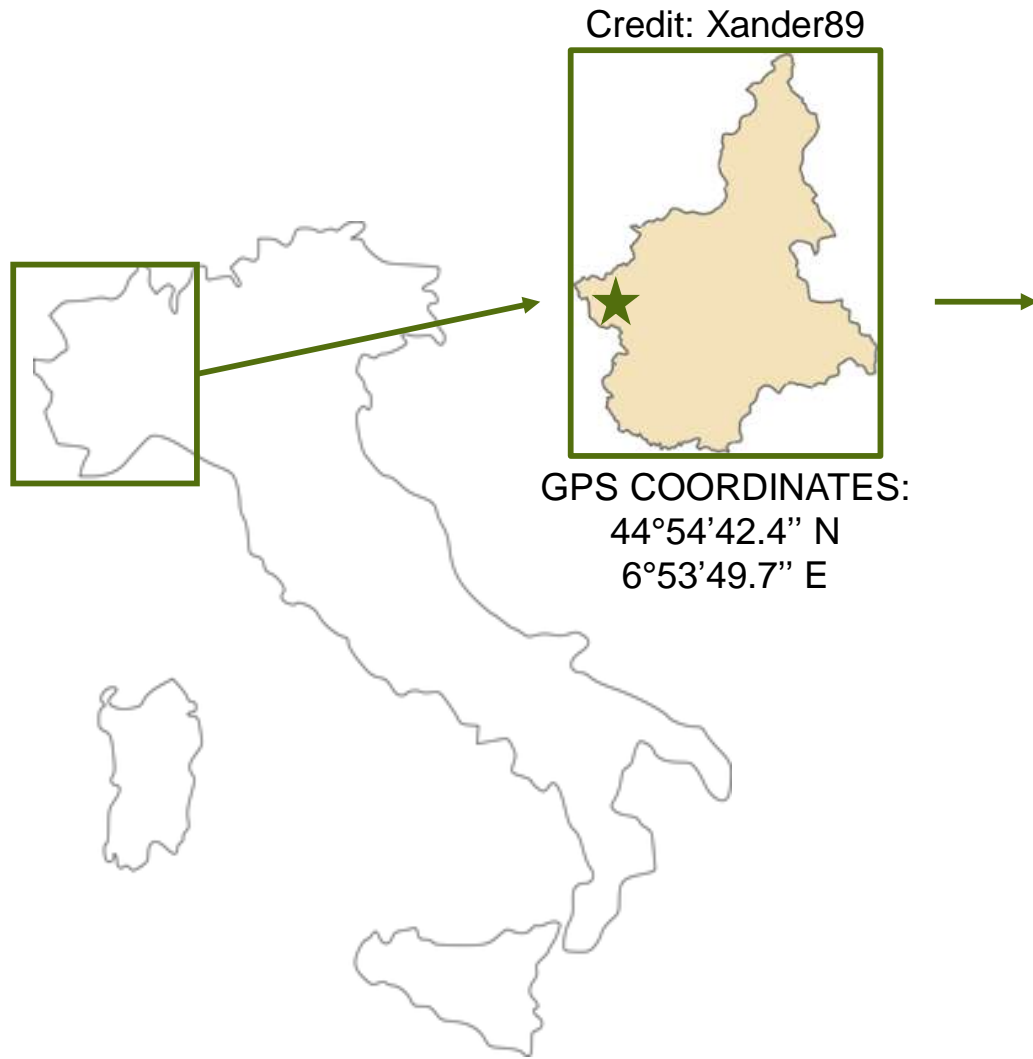
MAIN RESEARCH GOALS

- **RQ1:** How have civil society's awareness and perception of FES changed in the post-COVID era?
- **RQ2:** Are there different patterns of attitudes and behaviour in civil society, regarding preferences for forest ecosystem services?



Hypothesis: In recent years, partly due to the current pandemic, cultural services have become the most demanded FES by civil society

THE STUDY AREA



Credit: Hairless Heart



ARGENTERA VALLEY

340 hectares of surface area and Site of Community Importance (SCI)

MATERIALS

FOREST ECOSYSTEM SERVICES CONSIDERED

PROVISIONING

- Drinking water
- Food
- Fuel
- Raw material

REGULATING

- Biodiversity
- Climate change mitigation
- Disaster reduction
- Protection againsts natural hazards

CULTURAL

- Aesthetic quality of the landscape
- Psychophysical health
- Recreational tourism
- Spiritual and religious

August 2021 for data collection -> ~480 questionnaires collected

THE METHODOLOGY – FIRST STEP

BEST-WORST SCALING (BWS): choice-based approach used to detect individuals' preferences

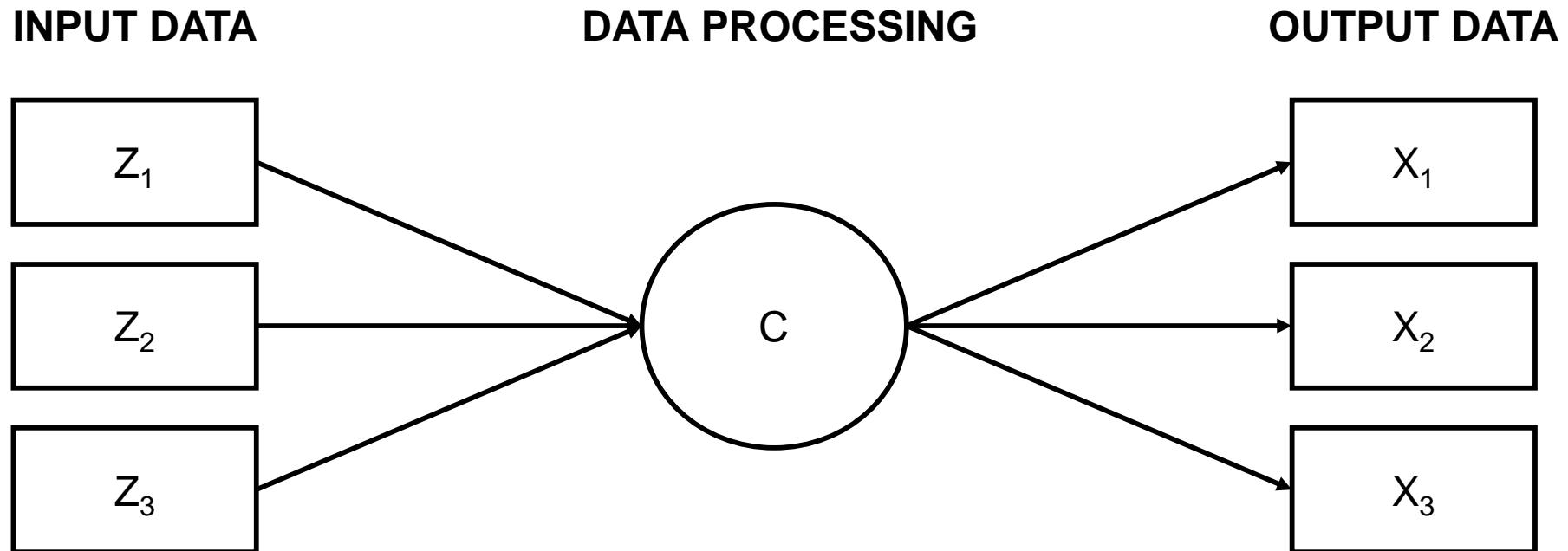
CHOICE SET

BEST THING	Which forest ecosystem service do you prefer?	WORST THING
<input type="radio"/>	Food	<input type="radio"/>
<input type="radio"/>	Protection against natural hazards	<input type="radio"/>
<input type="radio"/>	Biodiversity	<input type="radio"/>
<input type="radio"/>	Landscape	<input type="radio"/>

Questionnaire: 9 choice sets -> each containing different combinations of 4 forest ecosystem services

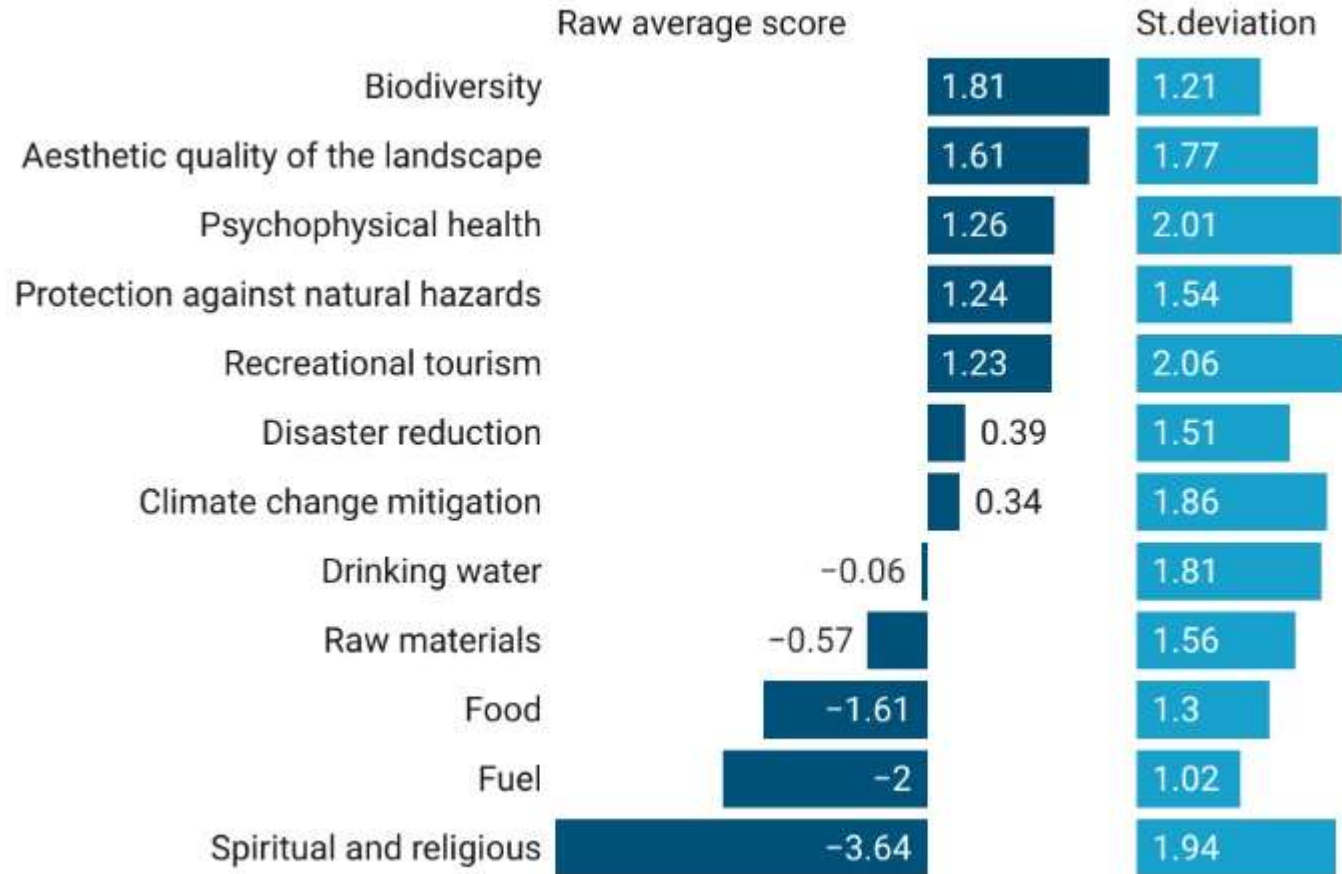
THE METHODOLOGY – SECOND STEP

LATENT CLASS ANALYSIS (LCA): measurement model used to find groups within populations sharing certain external characteristics



RESULTS – BEST-WORST SCORES

Main interest in livelihood,
cultural and well-being
attributes



RESULTS – LATENT CLASS ANALYSIS

Cluster name	Average Raw Score					
	<i>Hedonistic</i>	<i>Individualist with cultural and health interests</i>	<i>Sensitive to regulatory and utilitarian functions</i>	<i>Climate change sensitive</i>	<i>Livelihood and hedonistic wellbeing</i>	
Cluster size	25,8%	22,4%	19,8%	18,0%	14,1%	
Attribute						
Food	1.636	a 2.055	a,b 2.773	b 4.323	c 7.092	d
Drinking water	1.564	a 9.169	b 7.680	b 9.907	b,c <u>12.831</u>	d
Raw materials	4.645	b 8.071	d 1.146	a 5.780	b,c 9.628	c
Fuel	1.179	a 1.656	b 2.923	c 2.396	c 4.435	d
Climate change mitigation	6.663	b 2.914	a 11.900	c <u>16.758</u>	d 5.576	b
Disaster reduction	7.982	b 2.266	a 14.880	d 10.836	c 10.231	b
Protection against natural hazards	11.693	b 4.760	a <u>18.824</u>	d 13.482	c 11.203	b
Biodiversity	15.158	c 11.560	b 16.126	c 15.599	c 9.437	a
Aesthetic quality of the landscape	<u>17.684</u>	c 18.315	c 6.387	a 6.896	a 12.547	b
Recreational tourism	16.148	c 17.938	c 10.091	b 1.697	a 12.322	b
Spiritual and religious	0.530	a 1.761	b 0.768	a 0.744	a 1.996	b
Psychophysical health	15.117	d <u>19.535</u>	e 6.501	b 11.583	c 2.703	a

a–d: preference averages (rescaled scores) within a row with different superscripts differ ($P < 0.05$) for Tukey post-hoc test.

CONCLUSIONS

- Uniqueness of this type of study in the post-pandemic period
- Change in societal awareness and perception of the FES, accelerated in part by the current pandemic
- Identified 5 different civil society clusters related to FES preference. With the main clusters having a cultural service as their main service
- Laying the foundations for a better understanding of forest-society relationships -> better policies and governance



Stefano Bruzzese – PhD student in
forest policy and economics



stefano.bruzzese@unito.it



Stefano Bruzzese

My ResearchGate profile:



THANKS FOR THE ATTENTION!

REFERENCES AND CREDITS

- Acharya R.P., Maraseni T. and Cockfield G. (2019) - Global trend of forest ecosystem services valuation – An analysis of publications in *Ecosystem Services*, vol. 39. DOI: 10.1016/j.ecoser.2019.100979
- Hairless Heart – CC BY-SA 4.0 <<https://creativecommons.org/licenses/by-sa/4.0>>, via Wikimedia Commons. URL: https://commons.wikimedia.org/wiki/File:Valle_Argertera_in_livrea_autunnale.jpg
- Xander89 - CC BY-SA 3.0 <<https://creativecommons.org/licenses/by-sa/3.0>>. URL: https://commons.wikimedia.org/wiki/File:Regione_thumb_Piemonte.svg