

Are We Willing to Introduce More insects in Our Urban Areas?

A Design and Sociological Approach to Attitudes and Preferences Toward Biodiversity

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INTRODUCTION

Biodiversity, defined as the number and type of plants and animals present in a specific environment (Cambridge dictionary), proved to play a crucial role in ecosystem services provision and in guaranteeing the persistence of humans on Earth. Anthropogenic activities are however causing worldwide the **decline of biodiversity** with **negative consequences on ecosystems**, species survival and human wellbeing (Cardinale et al. 2012).

Although strategies for biodiversity loss reduction are extremely urgent, little is known about **citizens' reactions to biodiversity issues**, in particular in relation to the presence of animals, and to actions aimed at containing the damage of declining biodiversity. By relying on both a **sociological and design perspective**, this research aims at reaching a clearer understanding of **what Italians think about this issue**.

MAIN AIMS

Using original Italian data collected in September 2022 the study explores:

- respondents' **attitudes toward biodiversity**
- their preferences in terms of different insects species** and the extent to which these preferences are associated to the perceived importance of biodiversity
- the extent to which living in a **green area affects wellbeing**
- the association between the perceived importance of biodiversity and some **climate change related attitudes and behaviors**

DATA AND METHODS

Multivariate logistic and linear regression models on data from the **5th wave of the ResPonse COVID-19** collected in Italy in **September 2022**.

1962 individuals.



QR Code ResPonse COVID-19:

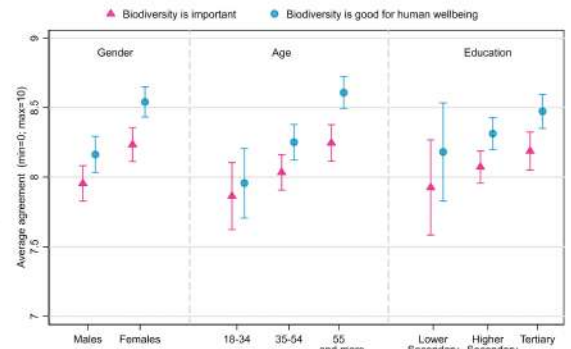
Variables	Mean	Min	Max
Perceived importance of biodiversity	8.3	0 Not at all important	10 Very important
Agreement: biodiversity good for human wellbeing	8.3	0 Strongly disagree	10 Strongly agree
Firefly Liking	4.1	1 Not at all	5 A great deal
Bumblebee Liking	2.5	1 Not at all	5 A great deal
Satisfaction for the area of living	6.2	0 Not at all	10 Very satisfied
Life Satisfaction	6.2	0 Not at all	10 Very satisfied
Psycho-physical distress	3.7	1 No distress	10 High level of distress

Variables	Proportions
Concerned about climate change (versus not concerned)	0.51
Willing to limit standard of life to mitigate climate change (versus unwilling)	0.65
Red meat consumption <4 days per week (versus >4 days per week)	0.83

ResPonse COVID-19 data show that overall **sensitivity towards biodiversity is quite high in Italy**, both in terms of the importance of biodiversity (8 on average) and in terms of the beneficial effects it has on people (8.3 on average).

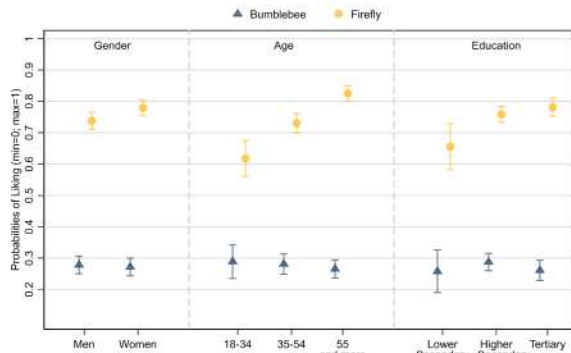
Figure 1 shows **little socio-demographic differences**: women, older individuals and those with higher levels of education tend to attribute greater importance to biodiversity and show a higher level of agreement regarding its positive effects on wellbeing.

Figure 1. Predicted mean values with 95% confidence interval of level of biodiversity's importance and the agreement degree about its positive effects on wellbeing by gender, age and education.



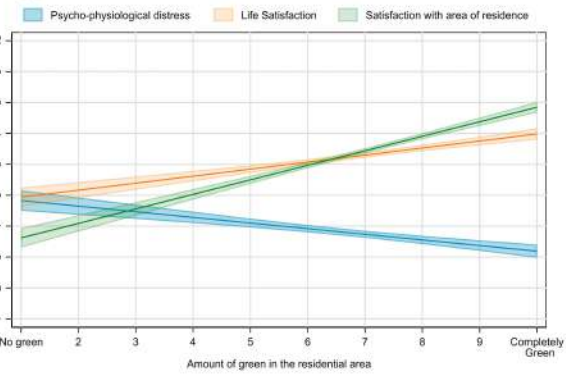
RESULTS

Figure 2a. Probabilities of liking bumblebees and fireflies with 95% confidence intervals by gender, age and education.



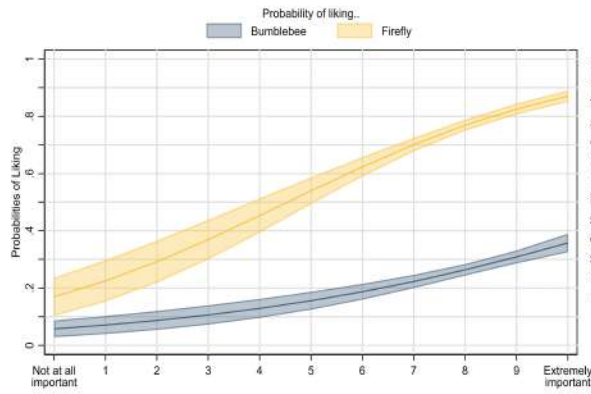
Not every insect is disliked. Some species are poorly liked by everyone (no differences according to gender, age or education), while other insects, such as the **fireflies**, are **generally highly appreciated**. In particular, older and higher educated individuals tend to like fireflies more in comparison to the young and lower educated ones.

Figure 2b. The effect of the amount of green in urban area on psycho-physiological distress, life satisfaction, and satisfaction with the area of residence. 95% confidence intervals.



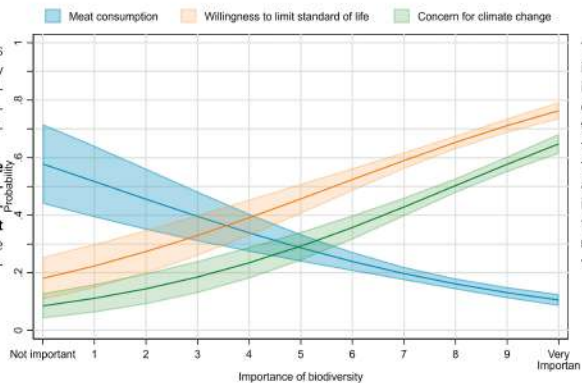
The positive effect of **living in green spaces on wellbeing** is supported by figure 2b. As the amount of green in the residential area increases, both the life satisfaction and the satisfaction with the residential area rises, while **psycho-physiological distress decreases**.

Figure 3a. The effect of perceived importance of biodiversity on the probability of liking bumblebee and firefly with 95% confidence intervals.



Every species of insects is really low appreciated by those who think biodiversity is not important, including the highly liked fireflies. However, **emphasizing the importance of biodiversity may increase the acceptance of various insect species**, even those like bumblebees that are generally less appreciated.

Figure 3b. The effect of perceived importance of biodiversity on meat consumption, concern for climate change and on the willingness to limit standard of life to mitigate climate change. 95% confidence intervals.



The higher is the perceived importance of biodiversity, i) the higher the probability of being **concern for climate change** and being willing to limit the standard of life to mitigate climate change, and ii) the lower the probability of frequently **eating red meat** (more than 3 times a week).

CONCLUSIONS

High sensitivity toward biodiversity in Italy. Living in green areas, where biodiversity is higher, has **positive effect on psychophysical wellbeing and on life satisfaction**.

The higher is the perceived importance of biodiversity:

- the higher the probability of **liking insects**;
- the higher the probability of being **concern for climate change** as well as the probability of **being willing to limit standard of life to mitigate climate change**;
- the lower is the probability of **consuming red meat**.

IMPLICATIONS

Highlighting the value of biodiversity and emphasizing its positive outcomes may serve as an effective approach to promote acceptance of biodiversity's implementation consequences (increase of insects in urban areas) and **climate change mitigation policies**.

From a **design perspective**, knowing citizens preferences toward insects and green areas help in planning **sustainable design solutions aimed at increasing biodiversity in urban areas**.

REFERENCES

Cardinale, B. J., Duffy, J. E., Gonzalez, A., Hooper, D. U., Perrings, C., Venail, P., ... & Naeem, S. (2012). Biodiversity loss and its impact on humanity. *Nature*, 486(7401), 59-67.