AilantItaly: Citizen Science in Action Against a Species of European Union Concern, *Ailanthus altissima* (Mill.) Swingle

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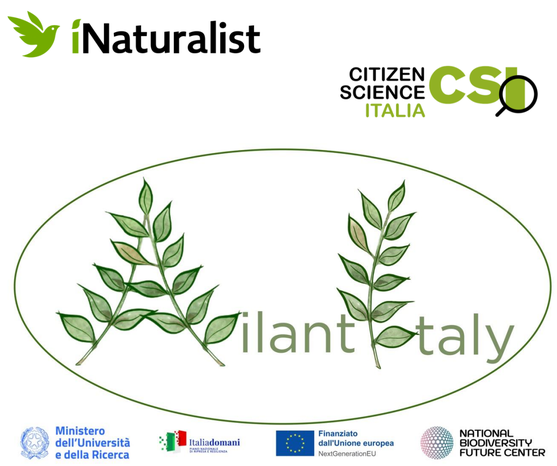
Introduction

Ailanthus altissima, a tree species of **Union concern** and one of the most widespread invasive plants in Europe, poses a serious threat to native biodiversity by altering plant community structure and competing with native species.
In this context, the **Citizen Science project AilantItaly** was launched by the **University of Molise** within the **National Biodiversity Future Center (NBFC)** and coordinated through the **ESOtics Table (TESO)**, to monitor its national spread and ecological impacts.

Citizen Science as a research tool

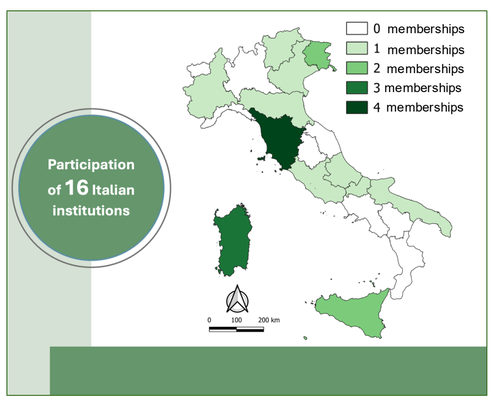
Through citizen involvement (**Citizen Science**), AilantItaly collects widespread and timely records across Italy, creating a unique national dataset that is valuable for research, management, and environmental policy.



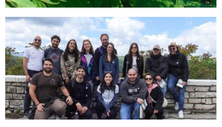
Aims

The AilantItaly project engages citizens, schools, associations, and researchers in mapping and monitoring the national spread of *Ailanthus altissima* through georeferenced observations, data validation, and analysis, creating a collaborative network that supports management and conservation actions.

Matrial and Methods



Dissemination materials and campaigns



1. Profile citizen scientists' form responses.

2. Examining the increase in the number of observations before and after AilantItaly. Species distribution analysis by data standardization within 1x1 km grid and assessment of invaded area cover increase (by regions).

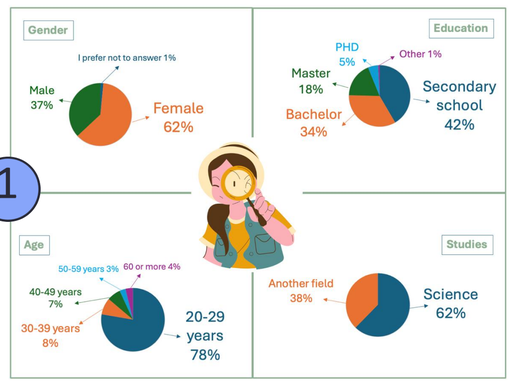
3. Analysis of new invasions within Natura 2000 sites and Protected Areas.

4. Comparison with ISPRA national presence grid (2024 - compiled by experts every 6 years) to detect new invaded areas.

5. Ecological niche model (ENM - based on cell of occurrence and environmental variables thematic mapping on GIS context) to assess species' realized niche. Comparison of realized niche before and after AI to assess the contribution of AilantItaly.

Results

1



2

6690 overall observations, **6092 Research Grade** (up to July 2025)
AilantItaly → increase in the number of observations (over **50%**) and cells (over **30%**)

Pre-AilantItaly		**Post-AilantItaly**
Up to March 14, 2025	⟹	Up to July 15, 2025,
observations **3875**		observations **6092** (**Increase 2217**)
cells **2307**		cells **3077** (**Increase 770**)

3

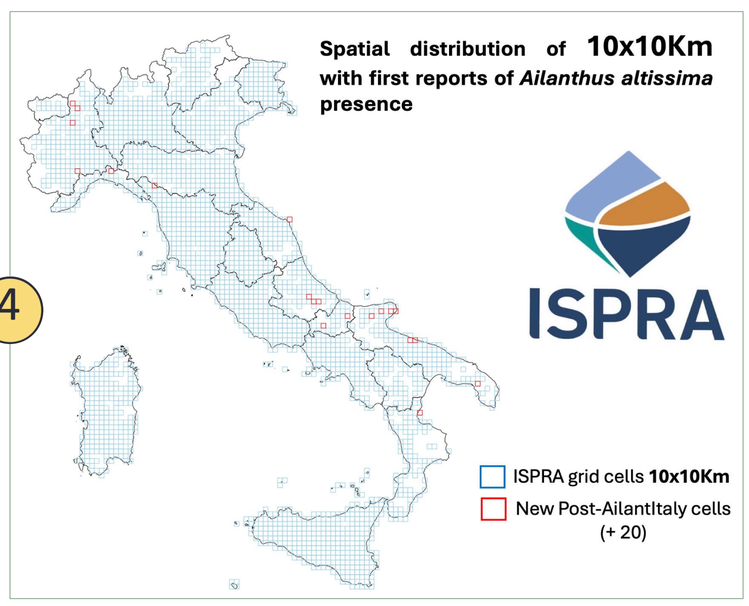
Pre-AilantItaly observations in N2000 sites
228
Post-AilantItaly observations
309
(INCREASE 81)

Natura 2000 sites reported as invaded for the first time **28**

Pre-AilantItaly observations in New Parks and Protected Areas
74
Post-AilantItaly observations
105
(INCREASE 31)

Protected Areas reported as invaded for the first time **4**

4



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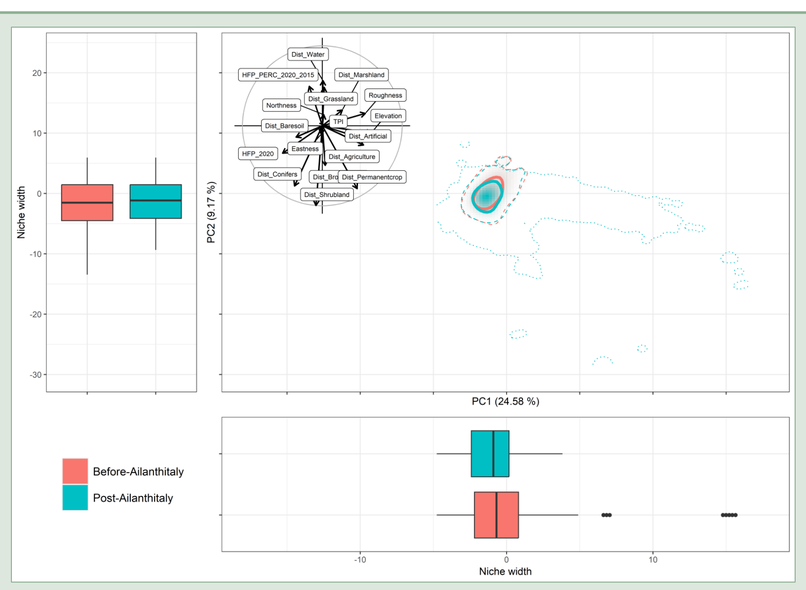

Niche overlap analyses (iNaturalist records: PRE- and POST- AilantItaly project)

The niche models indicate that *Ailanthus altissima* also occurs under environmental conditions not highlighted by previous data—specifically in areas distant from farmland and in proximity to water bodies.

Conclusion

Citizen Science through AilantItaly has proven to be an effective tool for enhancing knowledge on *Ailanthus altissima*, increasing observations across Italy, detecting its presence in previously unreported areas — including N2K and Protected Areas — and supporting early-warning procedures for Union-listed invasive species. This successful model offers a scalable approach for monitoring other easily identifiable alien species.

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