

Citizen science in the mosquito monitoring educational project

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Introduction

Citizen science is the active participation of citizens in scientific research by collaborating with scientists. Individuals engage in scientific research voluntarily driven by their enthusiasm for science and the betterment of their community (Shah & Martinez, 2016). Ivanjko, Zlodi, and Horvat (2024) assert that citizen science facilitates the democratisation of scientific endeavours, enhances the process of gathering data, fosters public involvement and education in the realm of science, advances the resolution of societal issues, and encourages the adoption of novel technologies. The promise of citizen science in bridging the gap between science and learning is widely acknowledged (Bonney et al., 2009). The significance of promoting student engagement in citizen science is evident in their practical application of scientific principles in their everyday lives. This involvement has the potential to inspire them to pursue scientific research even in their adult years (Jenkins, 2011). Prior citizen science initiatives focused on mosquito monitoring (Cho et al., 2021; Tsecouras et al., 2022) demonstrated that participants not only contribute to the research aspect of the project but also enhance their competencies in the designated field through engagement in educational activities and mosquito monitoring.

Methodology

Primary school Juraj Dobrila Rovinj (Croatia) collaborated with the Institute of Public Health of the Istrian County (NZZJZIŽ) to participate in a mosquito monitoring educational project. The project took place from May to October 2023. The pupils of the school received education from the experts of the NZZJZIŽ regarding mosquitoes and the diseases they carry, as well as strategies to decrease their population in the environment. Throughout the project's execution, the pupils placed oviposition traps for mosquitoes at designated sites, which were then sent bi-monthly to NZZJZIŽ for analysis. As shown on image 1. oviposition traps was placed in Rovinj (locations 3 and 4) and its suburban area (location 1 and 5), but also in Rovinjsko Selo (location 2) and Bale (location 6).

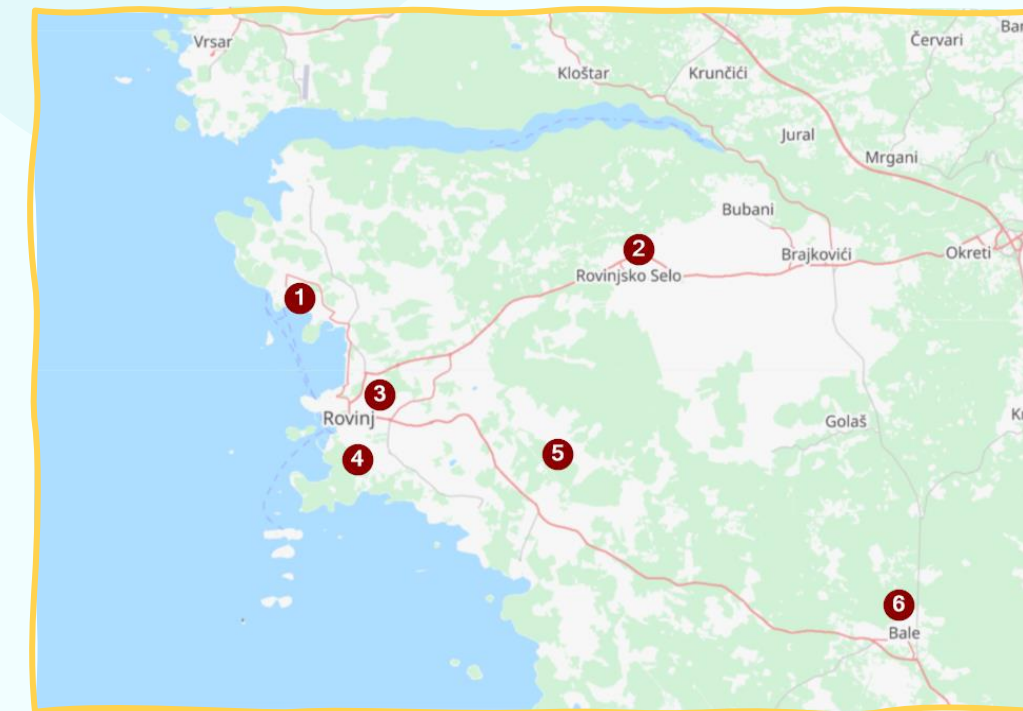


Image 1. Locations of placement of oviposition traps (Map by OpenStreetMap)

Results

According to the reported data prepared by NZZJZIŽ (Cvek, 2023), the highest number of mosquito eggs were found in Bale, followed by Rovinj, and the lowest number in the suburban region of Rovinj and Rovinjsko Selo. In September, the largest quantity of mosquito eggs was gathered, with somewhat smaller amounts in August and October, while the smallest quantity was seen in July and June. While both the invasive species *Aedes japonicus* and *Aedes albopictus* were found in the Istria region, only the presence of *Aedes albopictus* was confirmed throughout the project's execution.

Conclusion

By implementing the educational project, the students gained knowledge about the early detection of invasive mosquitoes and the potential for their involvement in mosquito control initiatives as part of citizen science. The educational project's significance is evident in NZZJZIŽ's activities, which have facilitated students' engagement with scientific methods and, through collaborative efforts, have enhanced their skills and facilitated the implementation of the citizen science project. In next endeavours, it would be advantageous to engage a greater number of pupils in comparable initiatives, utilise the gathered data in educational settings, and disseminate it publically, thereby fostering the local community's efforts to address potential societal issues.

References

1. Bonney, R., Ballard, H., Jordan, R., McCallie, E., Phillips, T., Shirk, J., et al. (2009). Public Participation in Scientific Research: Defining the Field and Assessing Its Potential for Informal Science Education. A CAISE Inquiry Group ReportAQ publisher.
2. Cho, H., Low, R. D., Fischer, H. A., & Storksdieck, M. (2021). The STEM enhancement in Earth Science "Mosquito Mappers" Virtual Internship: Outcomes of place-based engagement with citizen science. *Frontiers in Environmental Science*, 9. doi:10.3389/fenvs.2021.682669
3. Cvek, M. (2023). Izvješće o izvršenju Sporazuma o suradnji na edukativnom pilot projektu „Monitoring komaraca” s rezultatima projekta. Pula: Nastavni zavod za javno zdravstvo Istarske županije.
4. Ivanjko, T., Zlodi, G., & Horvat, Z. (2024). Građanska znanost. Zagreb: FF Open Press. doi:10.17234/9789533791333
5. Jenkins, L. L. (2011). Using citizen science beyond teaching science content: a strategy for making science relevant to students' lives. *Cultural Studies of Science Education*, 6(2), 501–508. doi:10.1007/s11422-010-9304-4
6. Shah, H. R., & Martinez, L. R. (2016). Current approaches in implementing citizen science in the classroom. *Journal of Microbiology & Biology Education: JMBE*, 17(1), 17–22. doi:10.1128/jmbe.v17i1.1032
7. Tsecouras, J., Walton, W., Schimerlik, R., & Cohnstaedt, L. W. (2022). Continuing the role of the citizen scientist. *The American Biology Teacher*, 84(4), 195–201. doi:10.1525/abt.2022.84.4.195

