



# Spotting the first introduced wild bee, *Megachile sculpturalis* Smith, 1853 (Hymenoptera: Megachilidae) in European alpine countries



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## Background

Native to Eastern-Asia, *Megachile sculpturalis* or the Sculptured Resin Bee was first recorded in South-France in 2008. It is the first accidentally introduced wild bee in Europe and has been spreading across the continent colonizing many Central European countries since then. Before 2018 in Switzerland, Liechtenstein and Austria only single observations were recorded displaying major gaps between the findings.



Fig. 1: One of the posters published for call for reports in 2020 displaying the work flow of the citizen science program (CC4.0 Lanner, Bila Dubaić, Oommen).

## Citizen Science and the Sculptured Resin Bee

Most wild bees are a case for experts and are hardly identifiable on pictures or videos. But not so this species, with its unique size and characters it is relatively easy distinguishable from all other European wild bees. The cavity nesting wild bee is often found at artificial insect nests. At such trap nests the suspicious bee and its nests are quickly recognized by its owners. Pictures with its exact location were collected and verified.

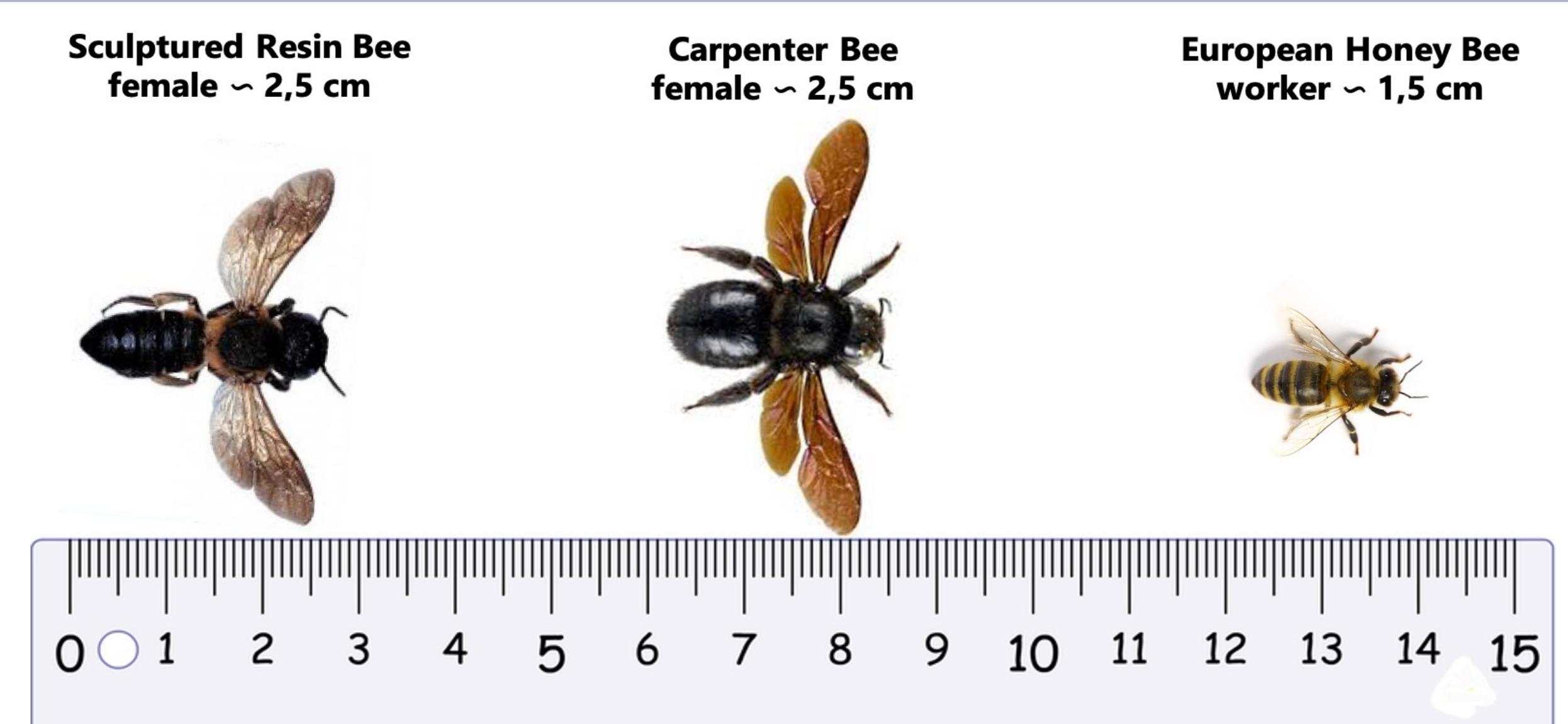


Fig. 2: Scheme illustrating body sizes of the study organism, a native wood bee and the honey bee often mistaken for the Sculptured Resin Bee by participants.

## WANTED – DATA of the Sculptured Resin Bee

### Abundance data

With a classical contributory study design, 143 new reports from Switzerland, Liechtenstein and Austria were recorded from 2018 until September 2020. The population progressed remarkably fast colonizing most regions in Switzerland. In Austria the occurrence pattern indicates an early invasion stage. Distribution gaps are best explained by human mediated jump-dispersal travelling long-distances on major European trading routes.

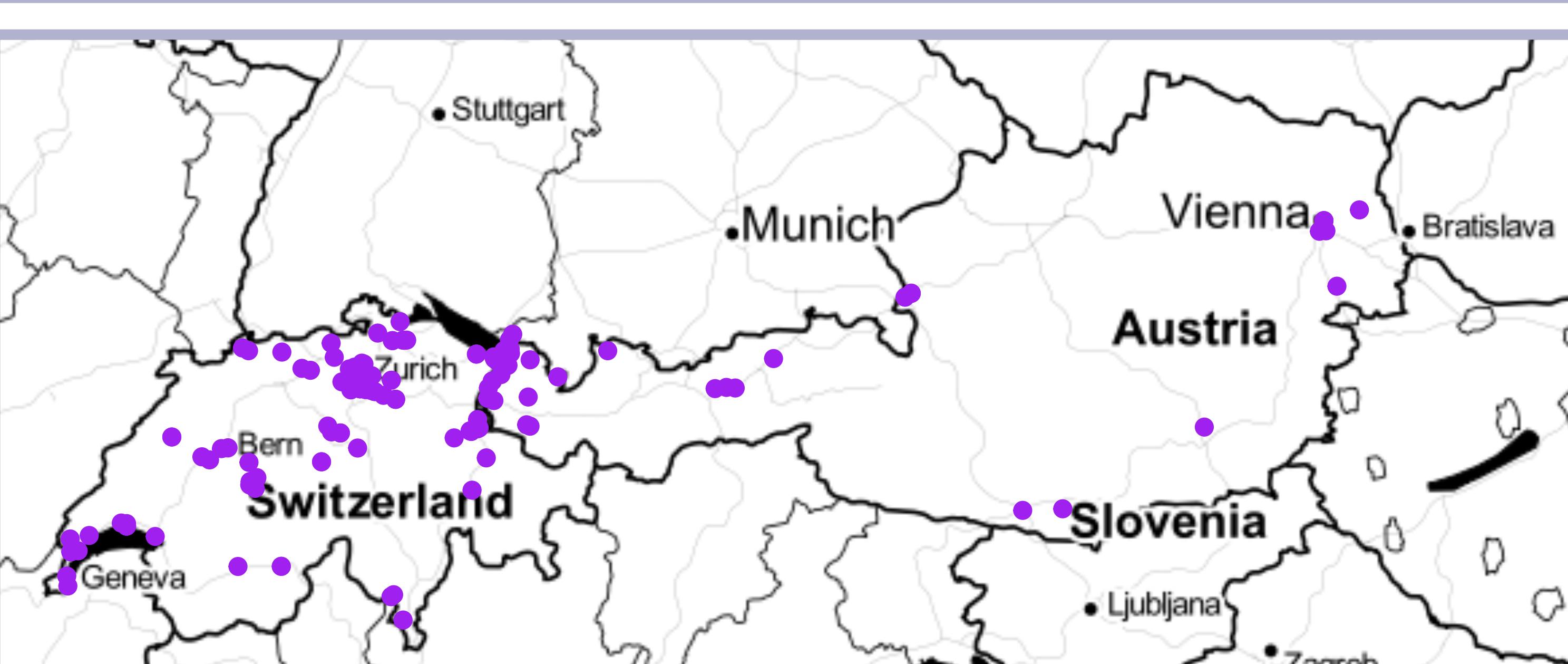


Fig. 3: Top-left: Map showing records published in literature and open platforms. Bottom-left: Same map showing records gathered by the CSP until September 2020.

### Ecological data

Participants are asked to complete a survey describing their encounter with the study organism, where bee-plant interactions were recorded. Some participants reported nest evacuations of native cavity nesting bees indicating a direct competition between the invasive and indigenous wild bees. Nest investigations also showed cases of blockades where the invasive bee built their cells in already occupied nests of mason bees obstructing them to exit the cavities.



Fig. 4: Left: Close to the entrance the invasive wild bee built three cells for its larvae blocking the nest of a mason bee. Middle: Female competitive behavior over empty cavities (CC4.0 Merz). Right: Nest evacuation of another mason bee by the Sculptured Resin Bee (CC4.0 Eggenberger).

