

OP-276 [Pollination and Bee Flora] Monitoring Bumblebee Queens through Citizen Science in Slovenia

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Bumblebees are important pollinators. However, their populations have been declining over recent decades, a trend that remains poorly documented. Additionally, little is known about the activity of bumblebee queens in spring and the impact of climate change on their emergence from hibernation. To address this, we launched a citizen science initiative in Slovenia in 2024, collecting data on bumblebee queen activity until the end of April. We collect this data annually. Participants photograph bumblebees and enter observation data directly at the sighting location using a mobile application, recording species, activity, a photograph, and location. The initiative focuses on gathering data for the ten most common color variations of bumblebees. Experts review and, if necessary, correct the collected data. In the first year, we gathered 1479 data entries contributed by at least 75 participants. Photos were included in 80% of entries, with 92% of these being suitable for analysis. Among entries with suitable photos, the color group was correctly identified in 89% of cases. The majority of queens were observed feeding on flowers (79%), using 70 different plant genera as food sources. More than half of the recorded observations were on *Lamium*, a known crucial food source. Other commonly recorded plants included *Symphytum*, *Vaccinium*, *Pulmonaria*, *Ajuga*, and *Prunus* spp. *Crocus*, an important early food source for bumblebee queens, accounted for a quarter of February observations. The citizen science approach has proven to be a suitable method for monitoring bumblebee queens, particularly for tracking their activity, though it is less effective in assessing bumblebee community structure. Ensuring data quality is crucial, and participant-provided photographs allow for accurate verification of identification. Beyond its scientific value, the initiative also plays an important role in raising awareness among participants about bumblebees, their dietary needs, and the effects of climate change on their activity.

MONITORING BUMBLEBEE QUEENS THROUGH CITIZEN SCIENCE IN SLOVENIA

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Photo: Luka Rifelj



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Bumblebees

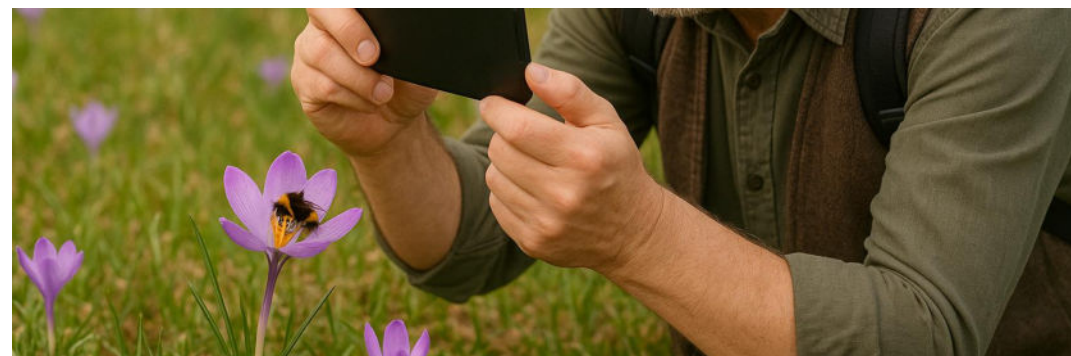
- Important pollinators
- 35 species in Slovenia
- Population decline over recent decades
- Trend remains poorly documented
- Limited knowledge about spring activity of queens and climate change impacts on emergence from hibernation



Photo: Blaž Koderman

Citizen science initiative in Slovenia (2024)

- Coordinated by the SloBees – Pollinator Conservation Society of Slovenia
- Focus: bumblebee queens activity
- Participants:
 - photographed a bumblebee,
 - uploaded the photo to a mobile app,
 - entered the location,
 - entered the data on the activity of the bumblebee queen.
- The purpose of the campaign is not only to collect data, but also to popularize bumblebees.



10 most common color variations of bumblebees



B. terrestris/lucorum



B. hortorum



B. argillaceus



B. pratorum



B. lapidarius



B. haematurus



B. Pascuorum



B. sylvarum



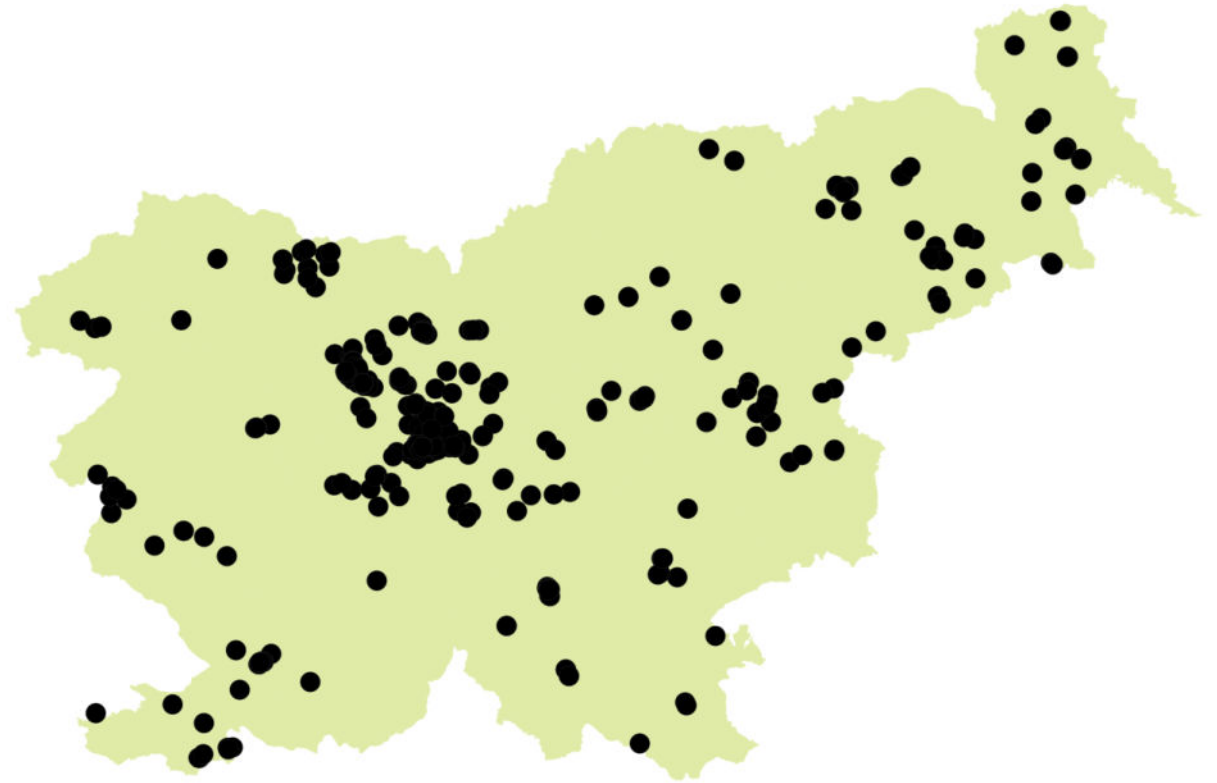
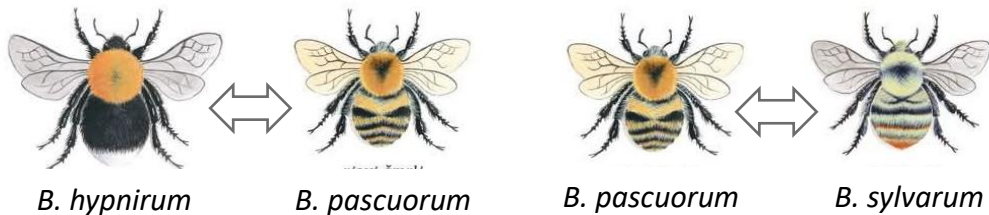
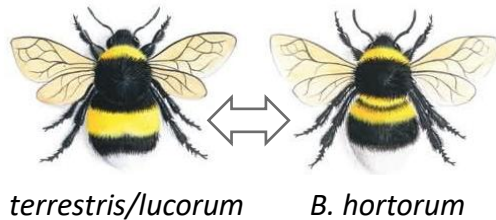
B. hypnorum



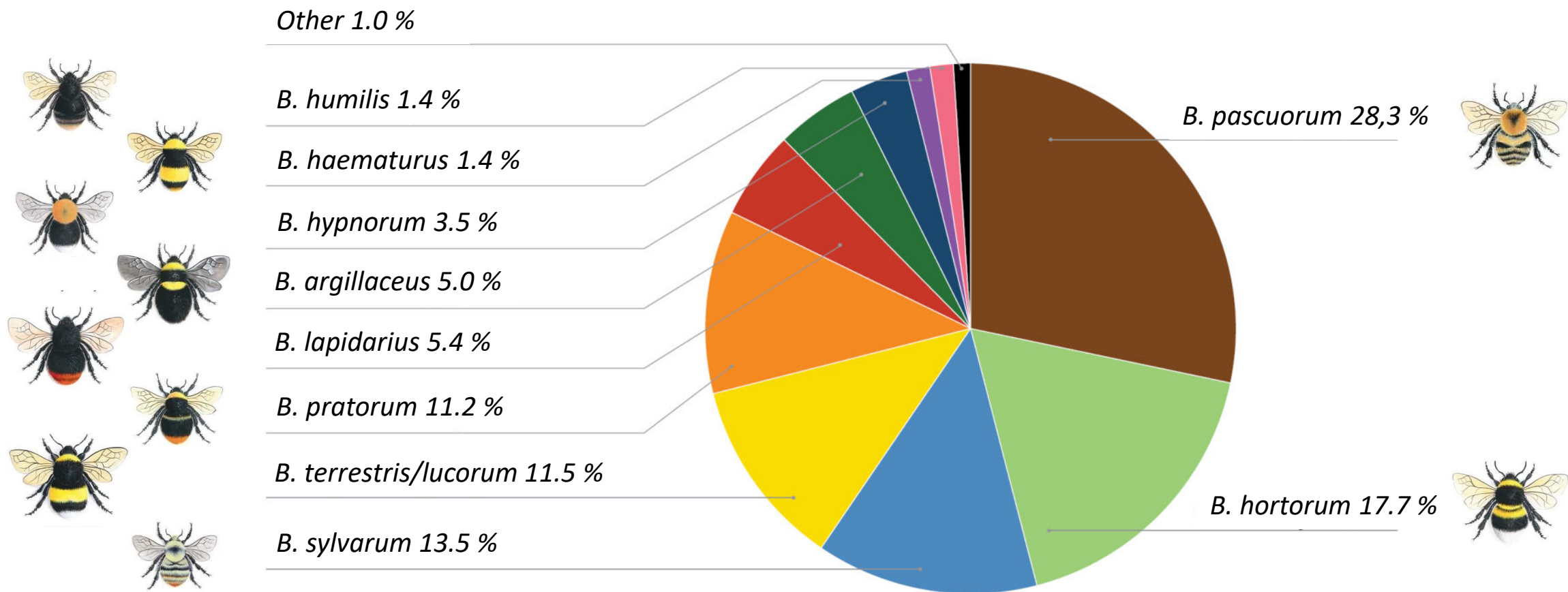
B. humilis

Results 2024

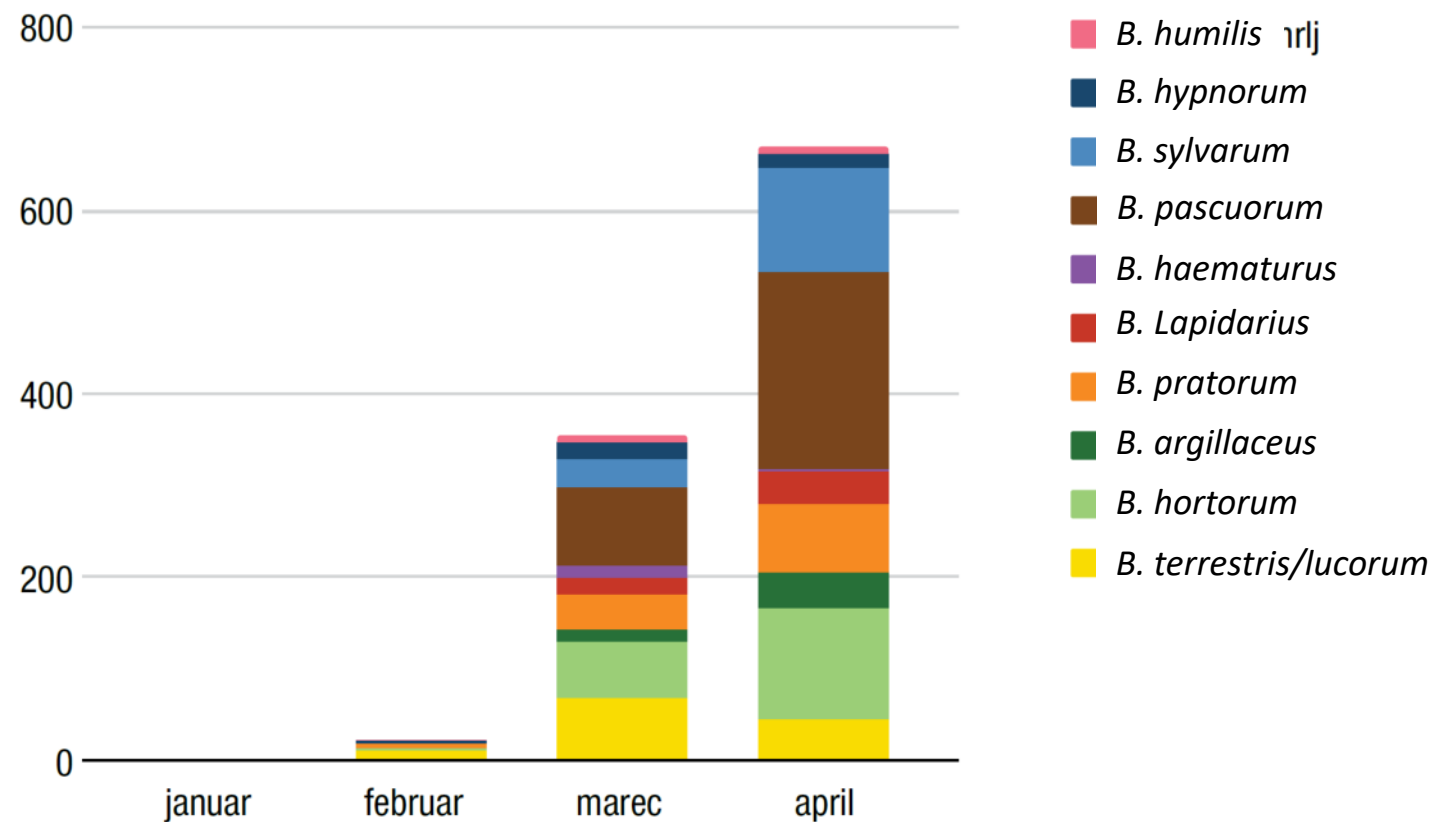
- 1479 data entries
- 75 participants
- Photos were included in 80 % of entries
 - 92 % of these being suitable for analysis
 - colour group was correctly identified in 89 % of cases



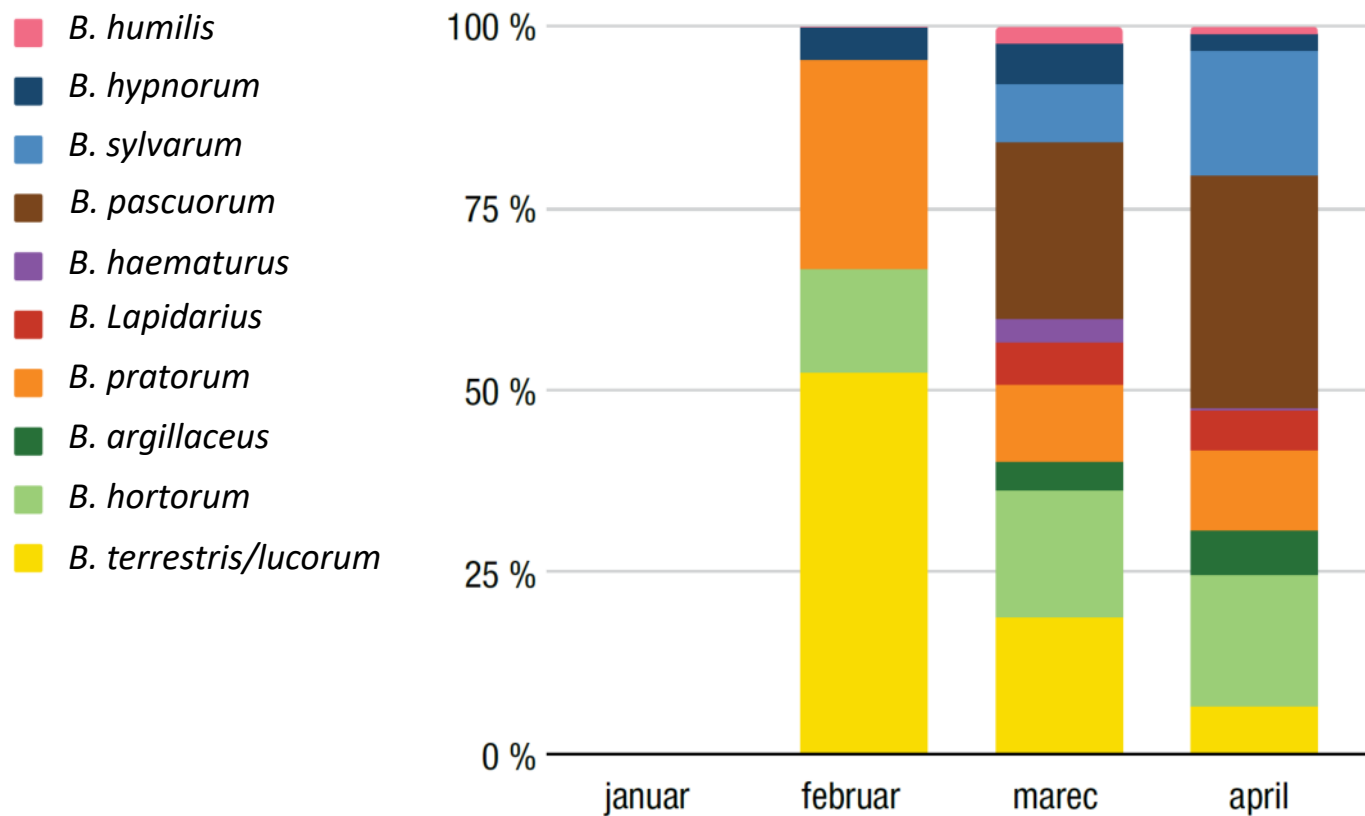
Results 2024: The most common colour groups



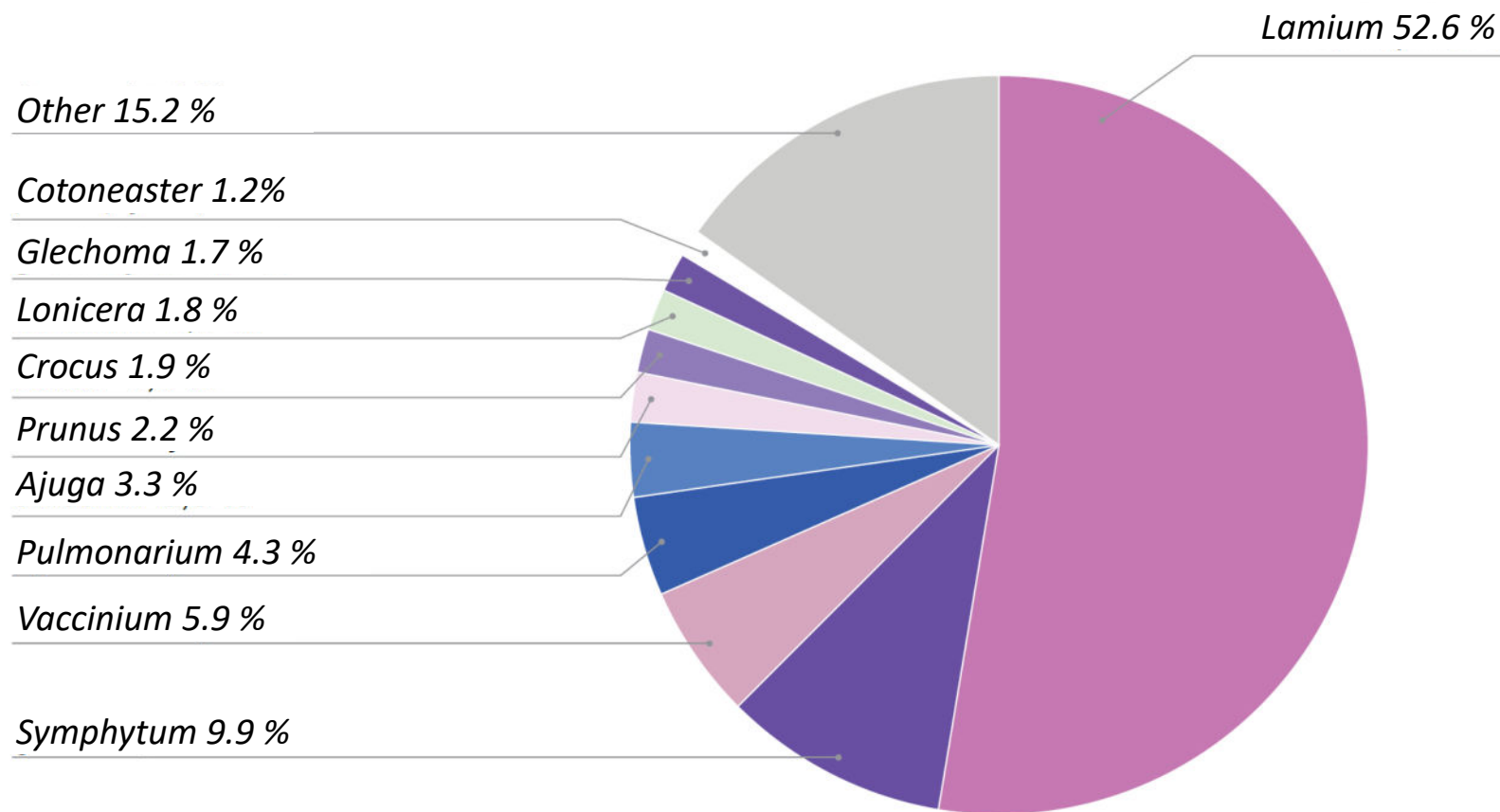
Results 2024: Collected data by month



Results 2024: Relative abundance by month



Results 2024: Genera of plants on which bumblebees were observed



Conclusions

- Citizen science is effective for monitoring bumblebee queens and their activity.
- Less suitable for assessing overall bumblebee community structure.
- Data quality depends on verification through photographs.
- Project also raises awareness about:
 - Bumblebees and their diet
 - Impacts of climate change on their activity

SODELUJ V AKCIJI
PRU ČMRU
2025



- 1** Naloži aplikacijo.
- 2** Fotografiraj čmrlja.
- 3** Vnesi podatke in naloži fotografijo.



Podrobnosti na
www.oprasevalci.si/pru-cmru/

Akcija poteka do konca aprila.

