



Citizen Science for obtaining faunistic and ecological data on bumblebees – first experiences and evaluation

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Fig. 1: *Bombus argillaceus*



Fig. 2: *Bombus wulfenii*



Fig. 3: *Bombus lucorum-Gr.*



Fig. 4: *Bombus pratorum*

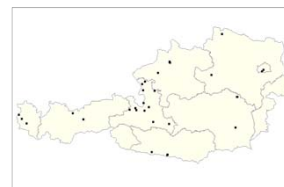


Fig. 5: *Bombus humilis* records

Background

Within the last decades, many bee species have been in decline in Middle Europe. In some areas, pollination is no longer a free ecological service. In contrast to honeybees, there is a lack of data concerning the abundance of wild bee species. These wild bees include bumblebees (*Bombus* sp.), which are important pollinators of many wild and cultivated plants. As opposed to most other bee groups, bumblebees are well-known to the general public. Furthermore, most of the 43 bumblebee species that occur in Austria can be identified in the field. In 2014, an Austrian citizen science project started on www.naturbeobachtung.at, focusing on bumblebees.

Material and Methods

In order to obtain high quality data, a field guide to the bumblebees, determination courses, advice in identifying difficult species by means of photo determination and quality control of data by experts have been integrated into this project. People were invited to photograph bumblebees and upload data either to www.naturbeobachtung.at, or to discuss determination with experts in the forum incorporated in this platform. Moreover, additional information about bees and pollination was given in the forum.

Results

In the first year, 824 bumblebee observations were reported; thereof 367 included photographs and were georeferenced. In the Forum 325 threads with 1027 postings including 543 bumblebee photographs from 161 different persons were discussed. In total, 25 bumblebee species could be documented (Fig. 6). First results for 2015 show considerably increasing numbers of observations and additional detected species.

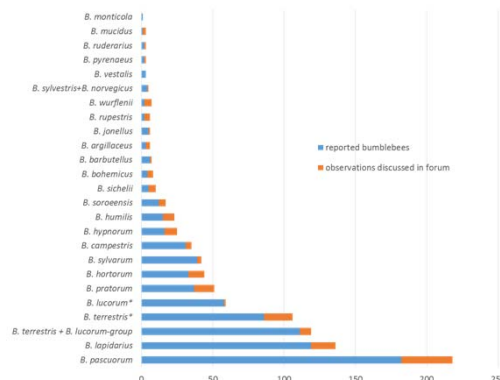


Fig. 6: Bumblebee observations in 2014

In 2015, citizen science for bumblebees was linked to "Nature in your backyard – citizen science for schools", a project also presented at this conference. Thereby, particular attention was given to the question, if bumblebee data collected via citizen science can be used for applied ecological questions. Using the available facilities and guidance of the platform, students recorded bumblebee data in 20 private gardens and addressed the following questions:

Which bumblebee species are most frequent in private gardens?

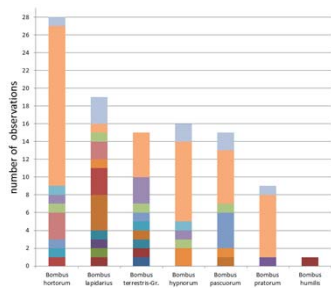


Fig. 7: Number of observations of different bumblebee species in private gardens (different colors match different gardens)

Which plants attract most bumblebees in private gardens?

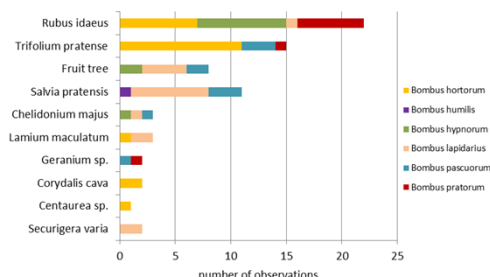


Fig. 8: Number of observations of different bumblebee species visiting different plants

Does flower richness affect the number of bumblebees?

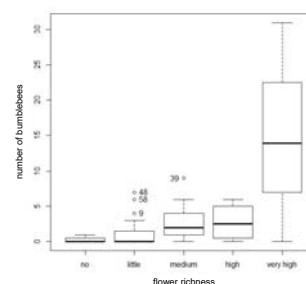


Fig. 9: Number of bumblebees according to flower richness categories

Conclusions

In conclusion, first experiences show that citizen science can be a valuable opportunity to gain faunistic and ecological data on bumblebees. However, data control (regarding bumblebees and explanatory variables) represents a crucial and time consuming part of this approach, since it is indispensable for obtaining reliable data.

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ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

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