



C.S.I. Pollen
Citizen Scientist Investigation on pollen diversity forage available to honey bees

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Note: this is unpublished, preliminary results!
Achtung: unpublizierte, vorläufige Ergebnisse!
www.Bienenstand.at

Importance of pollen diversity

- Schmidt et al., 1987
- Höcherl et al., 2013
- di Pasquale et al., 2013



Foto: Heilmann, from: Tautz 2009

Workplan

- 2 levels of investigation:
 - 1. Citizen scientists investigation
 - 2. Palynological analysis

Expected (first level) results

- Spatial and temporal characterization of pollen availability
 - Identification of pollen diversity in **habitats**
 - geographically
 - by habitat type (city, village, agriculture, forest,...)
 - Identification of pollen diversity in **season**
- Differences between colonies at same locations?
- Correlation with geographical data
 - land use
 - sea level

Expected (second level) results

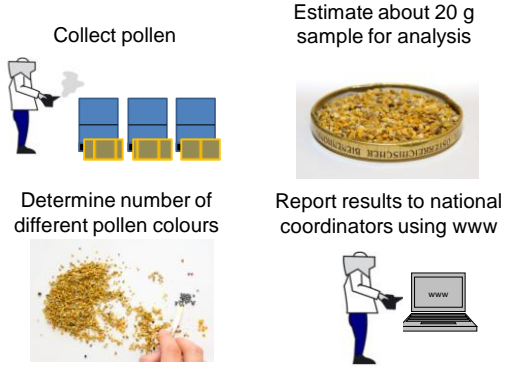
- Second level:



Selected citizen scientists are asked to provide pollen samples for **palynological analysis**.

- **Palynological analysis**
 - Validation of first level results
 - If needed: correction of first level results
 - Overestimation / Underestimation

Communication with citizen scientists



Communication with citizen scientists

- Picture manual

Communication with citizen scientists

- Picture manual
- Online tool (Limesurvey)
 - Language versions
 - Invitation to submit data 2 days before sampling date
 - Reminder to submit data 8 days after invitation

Communication with citizen scientists

- Picture manual
- Online tool (Limesurvey)
 - <https://survey.uni-graz.at/index.php?sid=76226&lang=en>

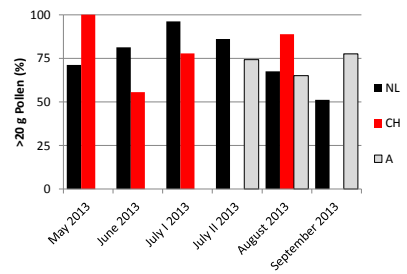
Pilot studies 2013

Country	Pilot started	# Sampling dates	Average # participants	Average # of colonies
Netherlands	5/2013	6	27.8	77.7
Switzerland	5/2013	5	3.0	9.0
Austria	8/2013	3	16.0	38.3



First results I

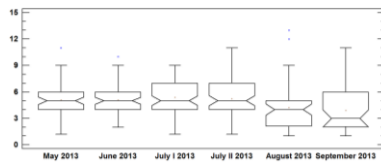
- % of colonies that have more than 20 g of pollen in pollen traps (after max. 3d)



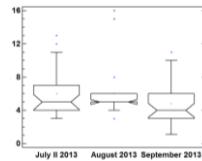
First results II

Different pollen colours collected by honey bees

In the Netherlands



In Austria



Plans / ideas for future

- Increase participation
 - Countries
 - Participants per country
- Sample during 2014 and 2015 season
- Workshop for national coordinators (standardisation, translation etc.)
- Seek funding