BIOMAPPERS

biodiversity mapping in community gardens

gartenpolylog
GärtnerInnen der Welt kooperieren

CONTEMPORARY ARCHITECTURE CENTRE-KÉK

RELAY NETWORK

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What is biodiversity?

Biodiversity is the variety of life forms on Earth and encompasses:

- Genetic diversity (differences within the same species)
- Species diversity (the number and variety of species in an area)
- Ecosystem diversity (forests, oceans, deserts, etc.)

Why is biodiversity important?

- a value in itself
- How the ecosystem works – interdependence
- Adaptability to climate change and other challenges

Why is biodiversity important for humans?

- a varied diet
- the basis for medicines
- pollination
- protection against natural disasters
- recreation and health

and much more…

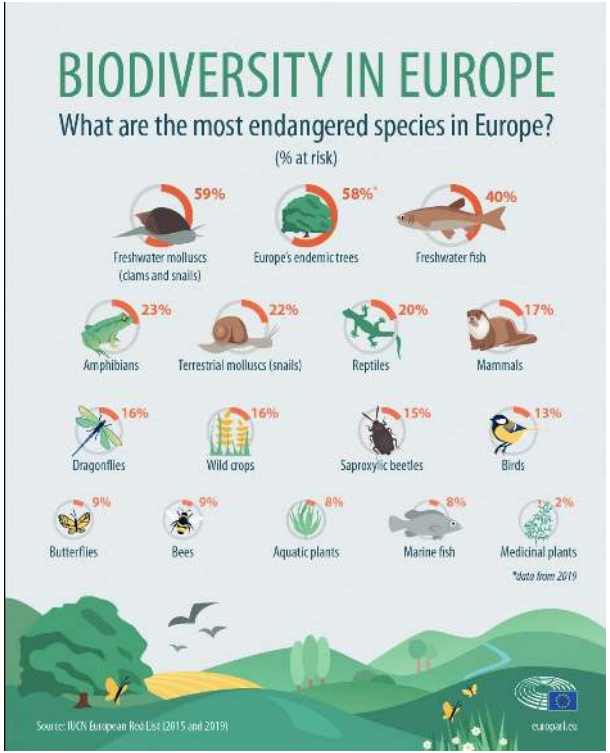
Why is biodiversity under threat?

- Industrial agriculture,
- Land use and resource consumption
- Air pollution
- Loss of habitats
- Climate change

Globally, biodiversity has declined by 68 per cent over the last 50 years

Living Planet Report 2020

Which species are particularly at risk in Europe?

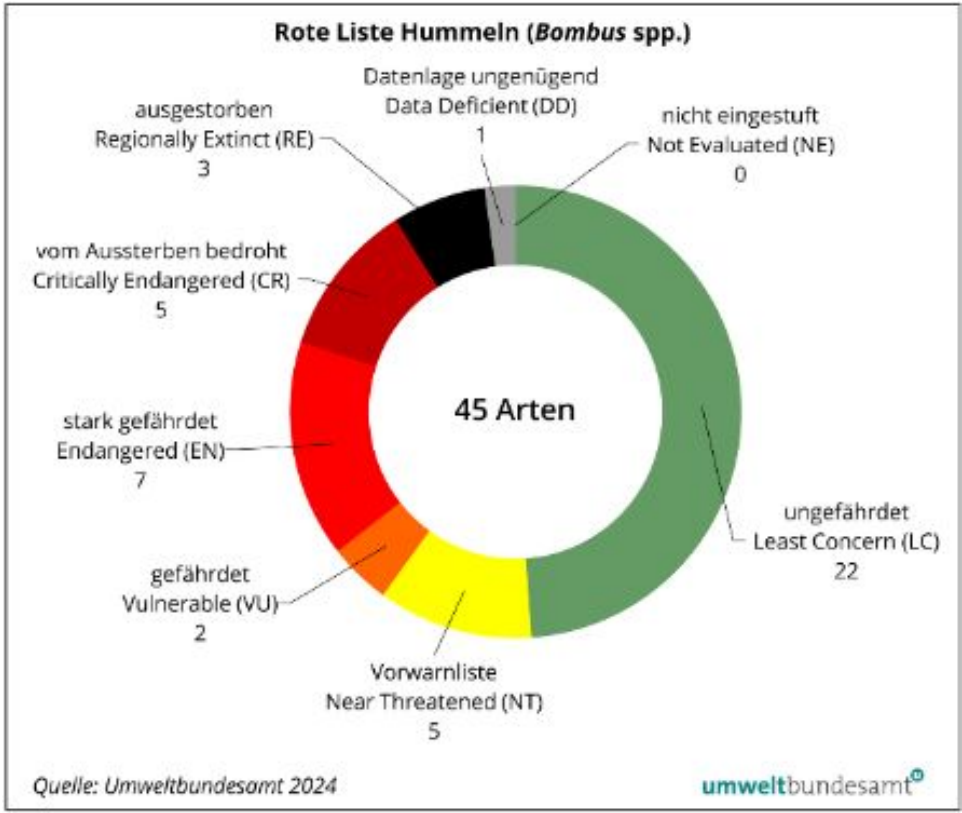


In Austria, for example:

10 percent of bumblebees and 5 percent of beetles in Austria are threatened with extinction

but not all 45 species of bumblebees are equally threatened

Since 2025, the hedgehog has also been on the Red List



Policy measures to promote biodiversity

LOCAL

GLOBAL

Legal framework

Vienna Forest and Meadow Charter
Austria's Biodiversity Strategy 2030+
EU Renaturation Act
UN Convention on Biological Diversity

Objectives

- Creating and preserving habitats
- Placing 30 per cent of land and water areas under protection
- Reducing land take and fragmentation

- Networking
- Fostering education and awareness
- Participation

Biodiversity & Community Gardens

Community gardens promote biodiversity through:

- Diverse planting and structures
- Ecological management
- Extensive garden maintenance
- Gardeners with an interest in ecology
- Stepping-stone habitats in urban and rural ‘monocultures’

There are currently also many research projects on the topic of biodiversity and community gardens

Article from the book 'Journey to the City of the Future'. Free download from transcript

Research findings from Berlin – Community gardens as urban biodiversity hotspots

Highlights:

- 404 plant species were recorded in 18 gardens (194 cultivated, 184 wild)
- Support is also provided for endangered and regionally extinct species
- Refuge for threatened arable vegetation
- High diversity of varieties → contribution to the conservation of genetic resources
- 102 wild bee species, including Red List species and those with specialised nesting strategies
- Biodiversity arises from the interplay between planned maintenance and natural growth

Wild bees in Vienna's community gardens – biodiversity in the heart of the city

Highlights:

- Over 110 species of wild bees documented in community gardens → ~1/3 of Vienna's species
- These include rare and endangered species such as the golden furrow bee, the woolly bee and the fur bee
- Regardless of size or location: any garden can be a paradise for bees

Poster on Wildbees in Community Gardens -From the research project by Felix Gaulhofer & Julia Lanner – poster available for download (links at the end)

Why map?

- Learning about organisms (plants, animals, diseases)
- Sharing knowledge
- Raising awareness of biodiversity (gardeners, neighbours, politicians, etc.)
- Raising awareness as the basis for biodiversity conservation

Digital tools for mapping biodiversity

- Faster & easier: Data can be recorded and uploaded directly on site.
- Automatic identification: AI helps to identify species.
- Networking: Observations can be shared with others immediately.
- Data storage & analysis: Large volumes of data are available in the long term and can be easily analysed.
- Scientific benefits: Data is fed directly into global research databases.

iNaturalist

eBird

Marine Debris Tracker

Pl@ntNet

ObsIdentify

GLOBE Observer

What is iNaturalist?

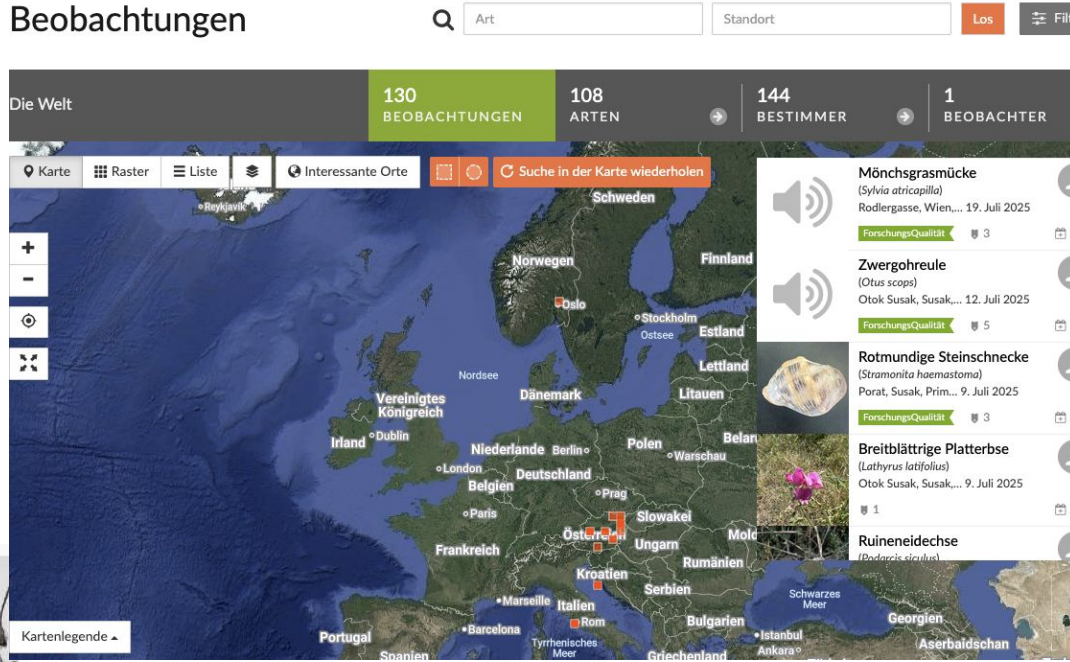
- Free app
- Identification using AI, scientists and dedicated members
- Building a global database

Who's behind it?

- Student project (2008) / California Academy of Sciences / National Geographic Institute
- Open-source platform – accessible to developers

What can you map using iNaturalist?

- Plants
- Animals
- Fungi
- Various stages
- Traces
- Sound recordings

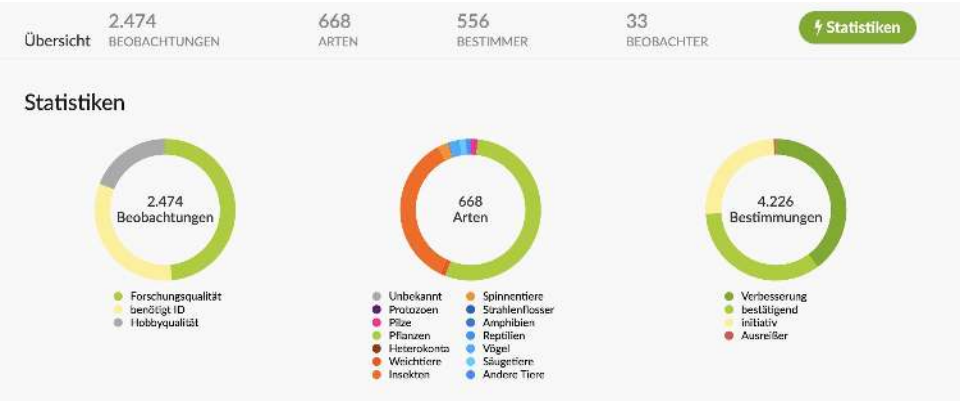


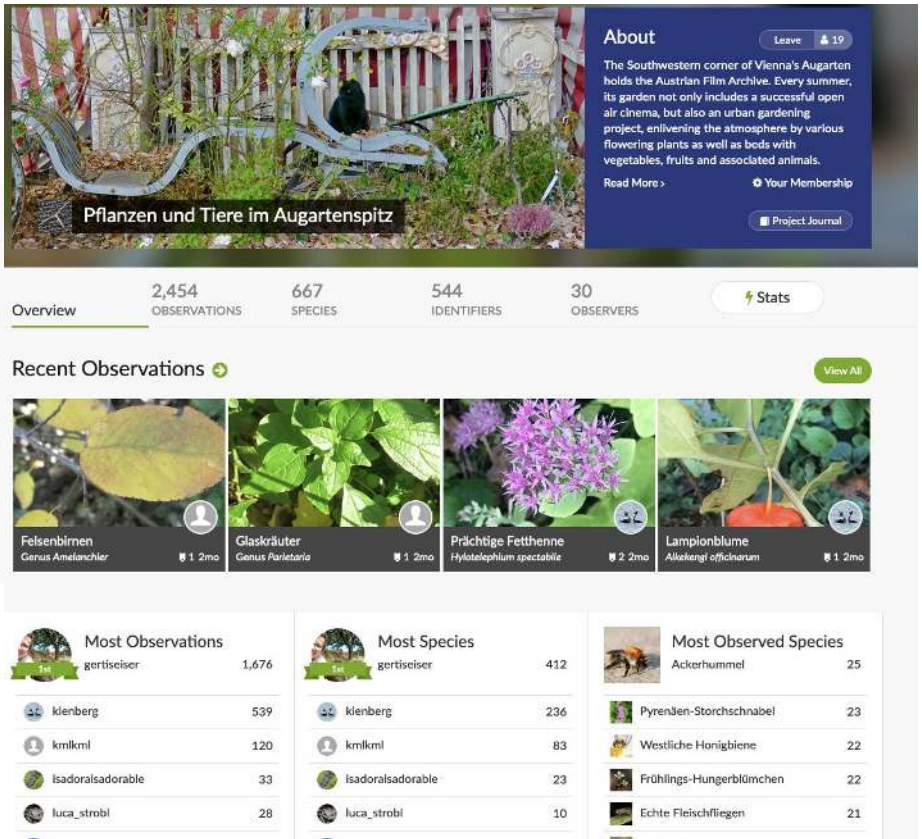
Mapping community gardens (iNaturalist projects)

Option to define areas.

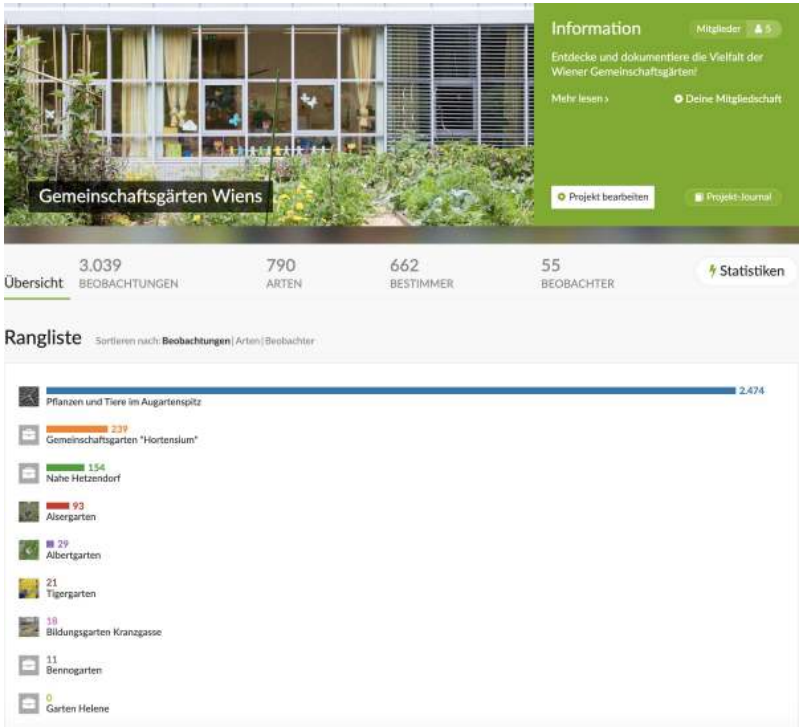
All observations within the area
are assigned to the project.

Mapping community gardens (iNaturalist projects)





Vienna’s Community Gardens (an iNaturalist umbrella project)



Inaturalist Smartphone / Computer

SMARTPHONE

Record observations straight away

Receive species suggestions (AI)

Offline use

Quick identification + sharing

COMPUTER

Edit observations (e.g. location accuracy)

Create or manage projects

Export data (CSV)

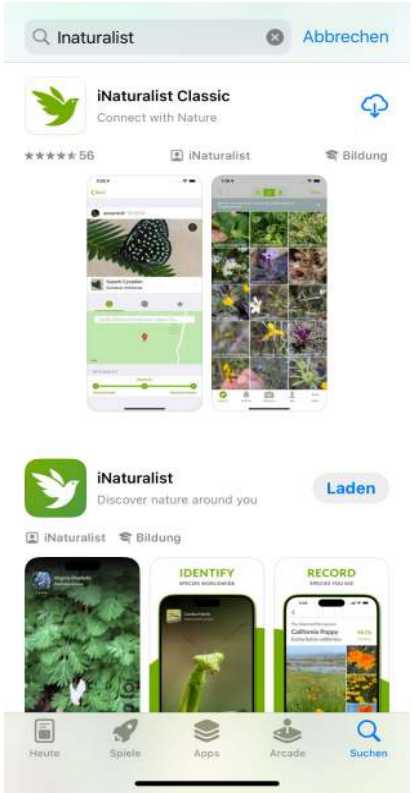
View species lists & statistics

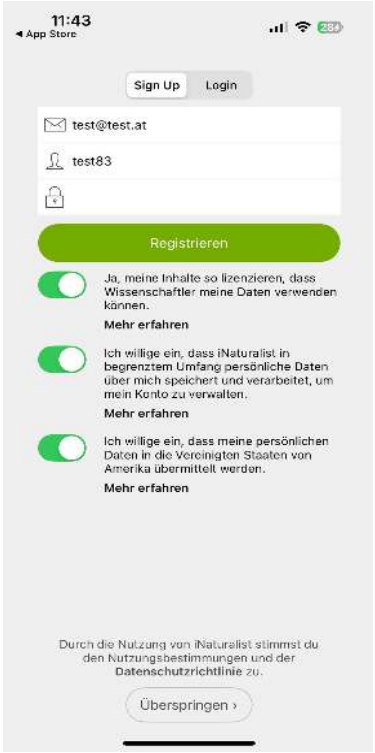
Interact with the community

Use taxonomic filters: e.g. display all wild bees in Vienna or in a particular garden.

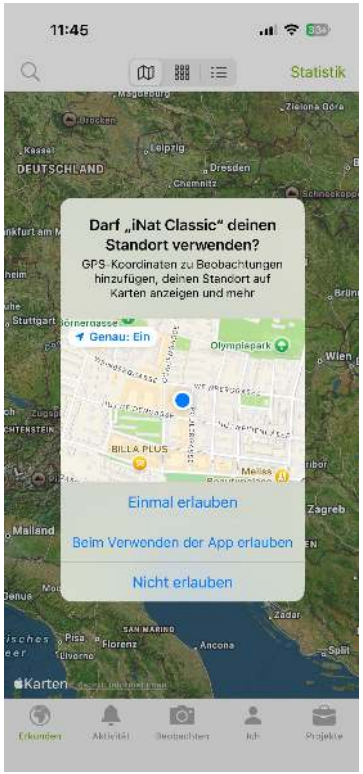
Edit or upload multiple observations at once

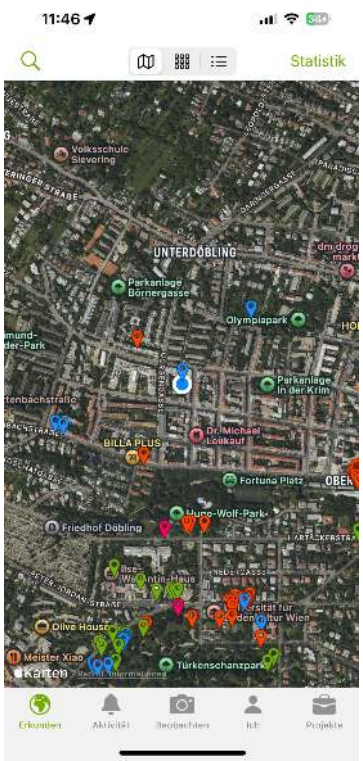
Inaturalist – Download / Registration



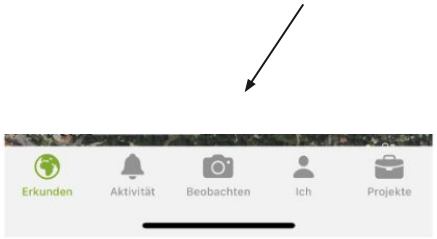


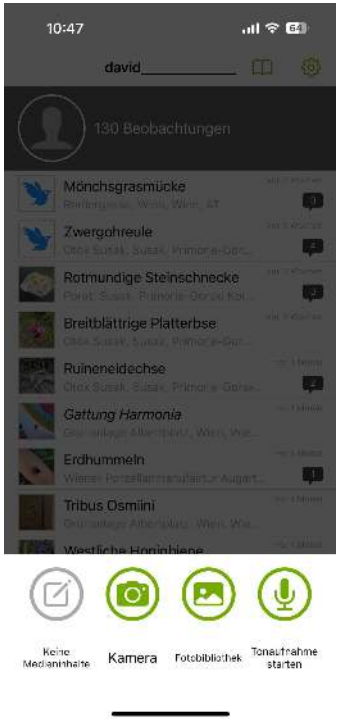
Getting started with the app

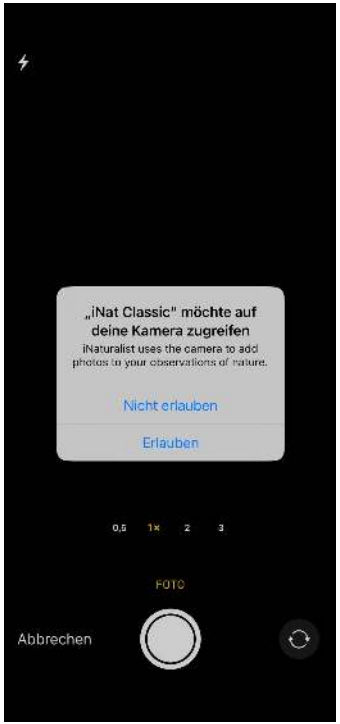




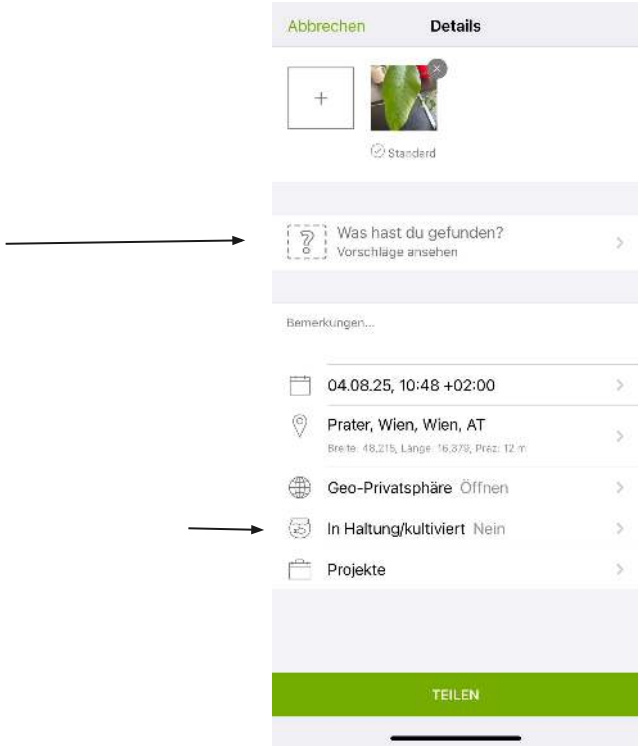
Monitoring / Mapping

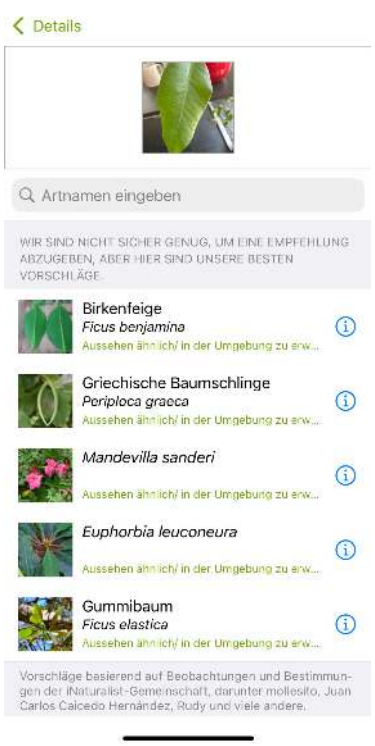


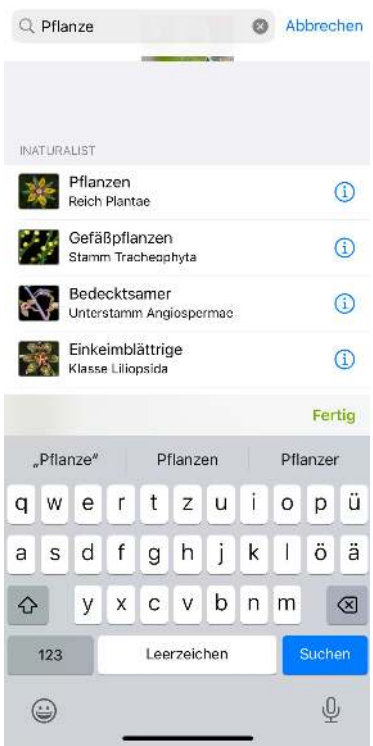




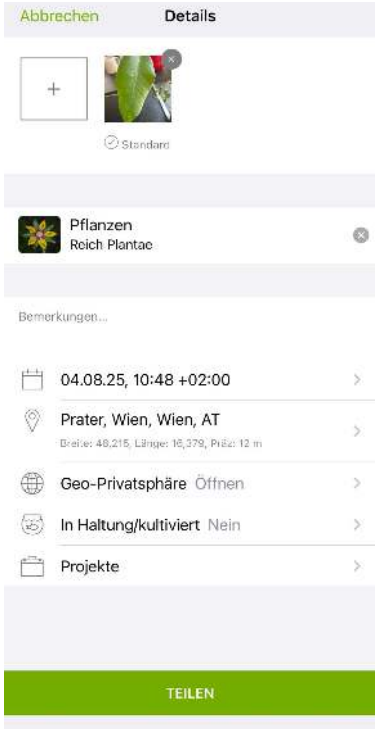
Initial determination / classification

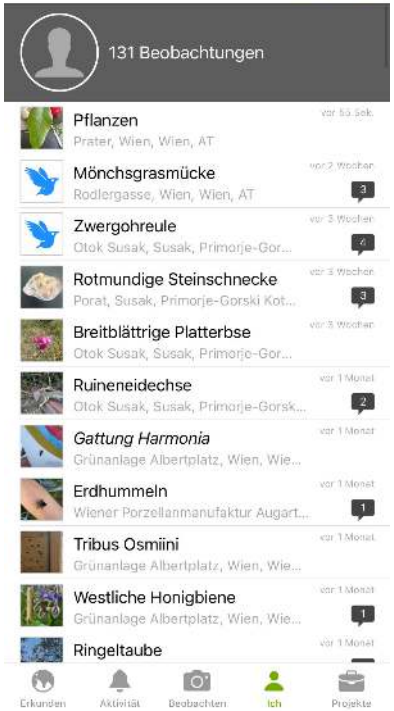


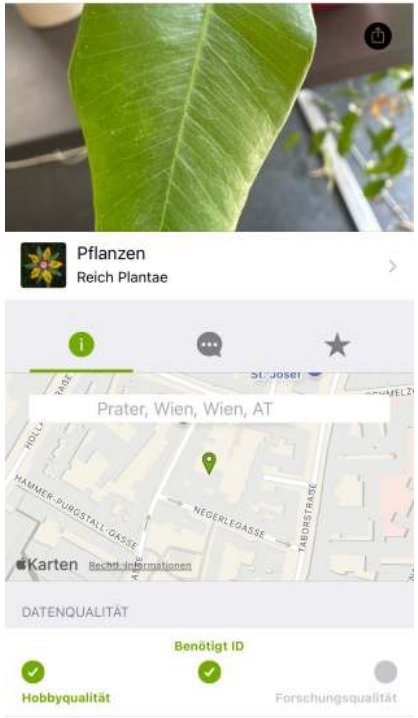




Sharing / Determination by experts







Learning

Dunkle Erdhummel
Bombus terrestris

ID von david_____ vor 2 Jahren

Hummeln
Gattung Bombus

ID von makarii_loskutov vor 2 Jahren

Bombus terrestris terrestris

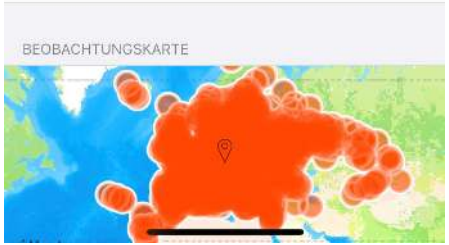
Hello. It is a female.

Zustimmen

Dunkle Erdhummel

Bombus terrestris

Die Dunkle Erdhummel (Bombus terrestris) ist eine der in Europa am häufigsten vorkommenden und auch größten Arten der Hummeln. Sie ist ein schwarzes Tier mit zwei gelben Querbinden und einer weißen Hinterleibspitze. Die begatteten Jungköniginnen der Dunklen Erdhummeln zählen zu den frühesten, die in einem Kalenderjahr beobachtet werden können. Sie sind in der Regel bereits im Februar und März dabei zu beobachten, wie sie nach einer geeigneten Stelle für die Anlage des Hummelnestes suchen. Die Färbung... (Quelle: Wikipedia, Dunkle_Erdhummel, CC BY-SA 3.0)



Trying out the app

- Download the app (iNaturalist Classic!)
- Create an account
- Collect 2–3 observations

Exchange

- How did you get on using the app?
-
- What role does promoting biodiversity play in your community gardens?
-
- Could you imagine using, for example, iNaturalist to carry out mapping in your projects?

Other possible applications

Involving neighbours through biodiversity mapping

How to include:

- Organise open workshops to raise awareness of iNaturalist and its purpose
- Invite neighbours to record what they see during visits or walks.
- Working together to look after local biodiversity through participation
- Publish the results (on the garden noticeboard, via the newsletter, on social media)

Key points:

- Focus on accessibility and inclusion
- the garden as a shared research space
- the value of local knowledge and collaboration

Observing and documenting through visitors

How to include:

- Invite visitors to explore the garden and document their discoveries
- Clear signs and instructions
- Offer introductory sessions
- Show how their observations contribute to the project

Key points:

- enable interactive experiences
- provide clear instructions
- highlight the contribution to a larger project

Documenting biodiversity with children

how to include:

- Encourage curiosity through joint garden exploration trips
- Use iNaturalist together to photograph insects or plants
- Help them to describe and document their discoveries
- Turn it into a game

Key points:

- keep it playful and make it visually appealing
- provide good guidance
- The focus is on discovery, not precision
- also possible with digital cameras without a smartphone

Working with school classes

how to include:

- Introduce iNaturalist into school projects on research or digital learning
- Organise regular observation sessions in the garden
- Compare data over time and across different locations
- Facilitate reflection on biodiversity
-

key points:

- link to educational objectives
- use iNaturalist as a learning tool
- foster observational skills and analytical thinking

Links & Downloads

Poster on Wildbees in Community Gardens (Julia Lanner & Felix Gaulhofer)
Guide on Co Creating Biodiversity
Inaturalist - First Steps
Inaturalist - Video Tutorials
Inaturalist - Create Project & Umbrella Project
Inaturalist -How to create a space
Link to all BIOmapper-Materials in all languages

Thank You!

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