



iNaturalist and City Nature Challenge – a guide to teaching



First of all:

why using a digital observation platform for teaching at all?

Here are a few pros:

- you get help with species identification and can even communicate with experts in your language (in German, English, ...)
- It is easy to develop educational objectives and generate your own projects.
- Simple handling, no advertising, free to use from 13 years old or with parents' consent if younger.
- collected data can be downloaded.
- every observation helps to improve distribution maps; scientists and land managers can use the freely accessible data for research and projects.

... and last but not least,

some people might enjoy using iNaturalist so much that it arouses or promotes an interest in nature and biodiversity over the long term!

Some ideas for the projects

- Census (recording of as many species as possible) for an observation area (school yard, school garden, park, district, excursion area, etc.)
- "Wanted": Find certain animal or plant species in your area.
- Documentation of non-native species.
- Recording and categorization of animal-plant interactions (pollination, herbivory, plant galls, ...).
- Phenological surveys (Time of flowering, stages of development of insects, ...).
- Assistance with real mapping or nature conservation projects.
- Evaluation of the 'Computer Vision': how reliable is the algorithm; for which groups does it work better or worse?
- Participation in a "Bioblitz" (e.g., the [City Nature Challenge](#)) or organize such an event yourself.



**TIPP: a macro Clip-on for the smartphone camera
for a few € and it can open up completely new worlds...**

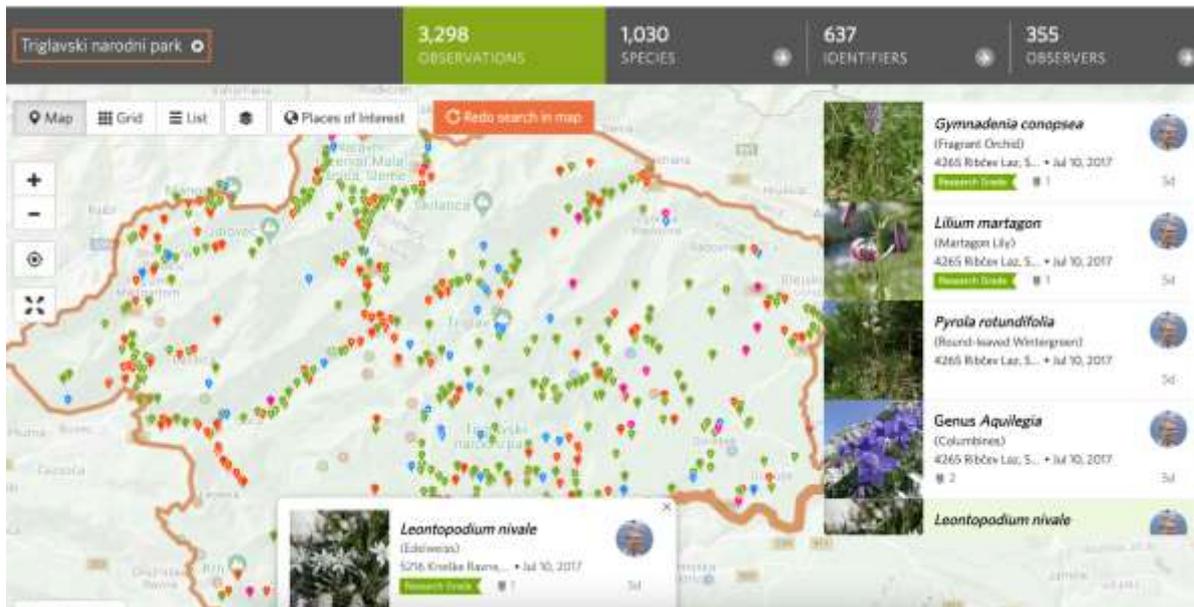
General overview

Nature observations can be reported and shared with other users via the observation platform www.iNaturalist.org. Observations can be uploaded via a website or an app (for Android and iPhone).



The observations of all users can be viewed and downloaded on *iNaturalist* - for example, they are available for scientific studies and are included in the global GBIF biodiversity database.

The platform is less suitable for observation without a photo (or sound recording).



Registration of an observation is very easy:



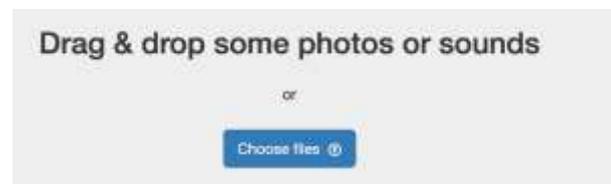
<< Smartphone:

Either take photos directly with the iNaturalist app or send the photos to iNaturalist with the camera app.

Computer/Website: >>

Drag & drop the image files into the upload window.

(even several files at the same time!)



The GPS function of smartphones and some cameras can replace the manual entry of the location, but the coordinates should always be checked!

iNaturalist offers many more options than can be presented in the context of this document. If you just want to go out with the school class, or if you want to enter your own observations and get help with identification, the basic functions are sufficient. For a more in-depth use, e.g. in the form of projects and the processing of (scientific) questions, the following pages are particularly relevant.

Help and Tips:

There are a lot of training material (text, graphics & videos) on iNaturalist:

<https://www.inaturalist.org/pages/video+tutorials>

<https://www.inaturalist.org/pages/getting+started>

<https://www.inaturalist.org/pages/teacher's+guide>

Many explanatory videos and tutorials can also be found on YouTube or Vimeo using search terms such as 'iNaturalist'. Like this one: <https://www.youtube.com/watch?v=xENz1xRu0wI>

iNaturalist-Forum (there is e.g. the section 'Educators'): <https://forum.inaturalist.org/>

>> the forum also offers the opportunity to ask questions, exchange ideas and learn about other, lesser-known functions and special applications of iNaturalist.<<

Data quality:

The user can classify species by himself, **however, do not be afraid making mistake – precise knowledge of the species is not required**. An essential feature of iNaturalist is 'crowdsourcing': that means, everyone can classify and comment not only on their own observations, but also on those from other contributors. Quality control therefore works through common efforts and the exchange of knowledge. The **data quality (= correct classification) is generally high**, but depends on the species group (better for birds and plants than for molds or aphids). Many experts are happy to help with IDs when asked. If an observation receives several votes (**at least 2**) at species level, it is given the status **'Research Grade'**. Observations without a date / place, or messages marked as 'not wild' (pets, potted plants, avenue trees ...) cannot achieve this status.

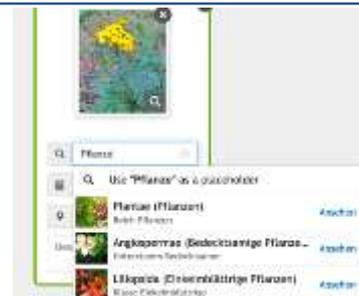
An observation can therefore be determined by community more or less precisely and receive the scientific (Latin) name, as well as English name and often a name in local language. The success of classification largely depends on if photo made close enough and if distinguishable parts (flowers, fruits, etc.) are recorded.

Here is an example:

The observation of a *tansy (Tanacetum vulgare)*

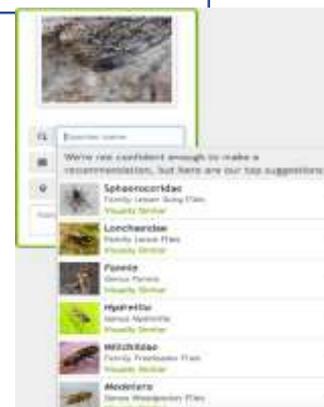
Can be reported as:

- > Plantae/Plants
 - > Angiospermae/ Flowering Plants
 - > Asteraceae/ daisy family
 - > *Tanacetum/ Tansies*
 - > *T. vulgare/ Tansy*



Give a name in case you are more or less sure about it. It can still be changed, refined or withdrawn after uploading.

Attention: The 'Computer Vision' suggests several names based on the uploaded photo(s). However, these should be considered with great caution: for rare or difficult to identify species (e.g. many insects), suggestions are often made by guessing – often the right option does not appear in the suggestion. *If unsure with an ID, a classification at a higher level is always better than a specific one, which is then probably wrong! Not everything has to be determined down to species level. In the example on the right, a catkin fly (genus Egle) is recognized at least as a fly, but none of the suggestions is even in the correct family.*



If nothing is entered in the species name field, the observation will be uploaded as 'Unknown', but it is better to give a general ID than leaving it empty (even if it is only 'Plant' or 'Insect').

After uploading, the ID can be specified, confirmed, or corrected by other users. A comment function enables the exchange about the observation. **The language of the user interface is freely adjustable**; Comments are mostly in English, but can also be in other languages (Google Translate enables a lot ...)

What can we see in an Observation? (Website, not App!)



at least 2 matching provisions at species level
→ Research grade

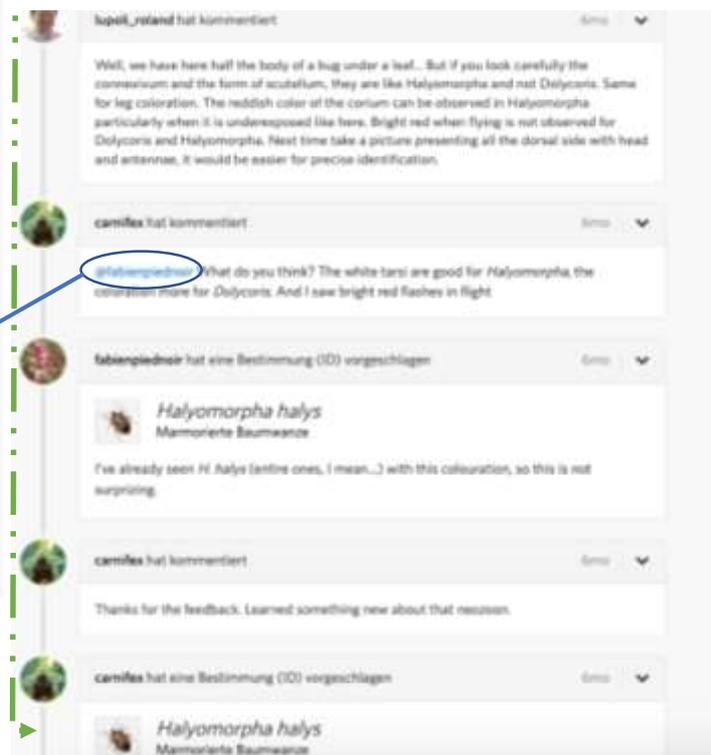
Neobiota symbol (introduced species)

Best to take several photos in one observation (increases the probability of determination). In the case of plants, e.g. entire habit, flower, underside of leaves ...

ID was changed (from *Dolycoris* to *Halyomorpha*)

The original ID has been contradicted

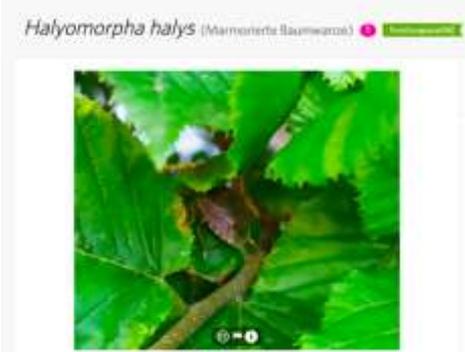
@username:
A user name starts with ,@'



Continuation: Examples of elements in an observation (website, not app!)

Additional information about an observation

Additional information can be added to an observation
(*this function is much advanced at the website compare to the App*)



THE ANNOTATION:
different options for different taxa, e.g.
for plants: flowering, fruiting,
for insects (adult, larva, egg) etc.
This information is shown in histograms on the Taxa page



Annotations (1)

Attribute	Value	Agree	Disagree
Alive or Dead	Select ▾		
Life Stage	Adult 🐛	👍	👎
Sex	Select ▾		

Projects (1)

Add to a Project

European Insects with Life Stage Annotations

Tags

Add Tag

Observation Fields

Choose a field

PROJECTS: Observation can be added to projects automatically (as here), or manually, if you are a project member and the observation meets the criteria (see next page)

KEY WORDS: an observation can be provided with any number of tags, which can also be filtered

OBSERVATION FIELDS: there are thousands of user-generated fields that describe, for example, interactions, require the entry of certain values or provide links to other pages

Filter and download data

On the 'Explore' page or under 'Your observations', filters can be used to show a specific selection of observations.

The options are expanded by clicking on 'Filters'.

Even more search and filter options are described in a forum post:

<https://forum.inaturalist.org/t/how-to-use-inaturalists-search-urls-wiki/63>

The screenshot shows the Inaturalist search filters interface. At the top, there are search bars for 'Species' and 'Location', a 'Go' button, and a 'Filters' button. The filters are organized into several sections:

- Show:** A list of checkboxes for various observation types: Wild, Captive, Verifiable (checked), Research Grade, Needs ID, Threatened, Introduced, Popular, Has Sounds, Has Photos, and Your Observations.
- Description / Tags:** A text input field containing 'blue, butterfly, etc.'
- Categories:** A grid of icons representing different biological groups.
- Rank:** Two dropdown menus for 'High' and 'Low'.
- Sort By:** Two dropdown menus for 'Date Added' and 'Desc'.
- Date Observed:** Radio buttons for 'Any', 'Exact Date' (YYYY-MM-DD), 'Range' (Start/End), and 'Months' (Select Options).
- Person:** A text input field for 'Username or User ID'.
- Photo Licensing:** A dropdown menu set to 'All'.
- Date Added:** Radio buttons for 'Any', 'Exact Date' (YYYY-MM-DD), and 'Range' (Start/End).
- Project:** A text input field for 'Name or URL slug, e.g. my-project'.
- Reviewed:** Radio buttons for 'Any' (checked), 'Yes', and 'No'.
- Place:** A dropdown menu set to 'Europe'.

At the bottom of the interface, there are buttons for 'Update Search', 'Reset Search Filters', and 'Download' (circled in red). There are also icons for 'Identify' and 'Atom'.

Selected observations can also be downloaded here as .csv and displayed / further processed in an Excel table

Opportunities for school projects



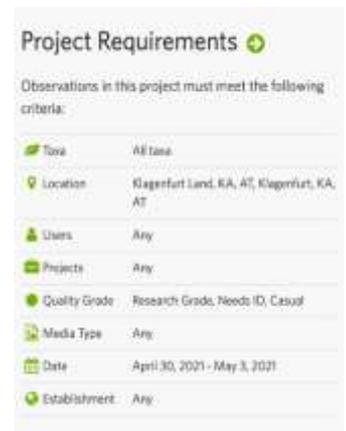
In iNaturalist you can create your own projects or participate in existing projects

There are two types of projects:

Collection Projects and Traditional Project

1) COLLECTION PROJECT: Observations are automatically added to the project if they meet the correct criteria (= filter settings). These can be, for example:

- *observations made in a specified area*
- *only certain taxa (e.g. insects)*
- *only certain users (e.g. only course participants contribute to a project)*
- *introduced species, protected species, etc.*



2) TRADITIONAL PROJECTS: Observations must be added to a project **by hand**. Depending on the settings, only owner of the project, only observers, or both can do this. On the one hand, this ensures better control, and on the other hand, project topics can be edited for which there are no filters (e.g. only flower-visiting insects; roadkill; plant galls ...). To be able to add observations you have to become a member.



Each user can also create their own areas (e.g. a school campus) from which observations are automatically integrated into projects.

The prerequisite for this is that at least 50 verifiable observations have been uploaded to iNaturalist.



It is not always necessary to create your own project. In many cases, the appropriate observations can also be found using the search function in iNaturalist, if the filter settings are selected accordingly.

See also here: <https://www.inaturalist.org/pages/managing-projects>

One advantage of making a project: you can write your own journal articles in that project and thus communicate with the participants, discuss tasks, send updates, etc.

Important information for teachers

The teacher should familiarize him-/herself with the functionality of iNaturalist and upload some observations himself before starting a project.

A school project often generates a lot of observations. A certain **data quality** should be guaranteed. This includes:

- no (intentionally) false determinations by students
- ,not wild' life forms (potted plants, pets ...) should be labeled accordingly → → → →
- the participants should correct incorrect determinations



Definitely to be avoided:

- Photos of other people
- Upload of non-own pictures (Copyright!)
- Uploading offensive pictures

Ways of control:

- **Switch off the 'automatic upload'** in the app (observations are not uploaded directly 'in the field', but at a time of your choice (e.g. after they have been jointly determined)).
- Regular **control of the observations** by the teacher(s)
- For small groups: shared use of **student accounts** (only for the duration of the course!):

Student accounts are created by the teacher (preferably without real names of the participants) and assigned (= email address of the participants)

→ This means that the teacher knows the passwords and regulatory action can be taken if necessary. After the end of the project, the account can then pass into the 'possession' of the participants by changing the password

Notes on data protection

There are various ways to ensure better protection, especially for underage users:

- Registration (user name) not under real names, but as a **pseudonym**
- Increase the radius around the observation point → (any size can be selected), so that the exact position cannot be identified. As a result, however, the observation loses its 'value'.
- Change the privacy of the observations (obscured or private)
→ Trusted persons can be given access to the coordinates (e.g. in the context of school projects)
<https://www.inaturalist.org/relationships>
(However, this limits the ability of the global community to determine)



iNaturalist Policy

People under the age of 13 are only allowed to open an account with the permission of their legal guardian (https://www.inaturalist.org/user_parents/new)

iNaturalist follows the rules of the European GDPR (for example, all data can be deleted upon request)

Here is the full explanation: <https://www.inaturalist.org/pages/privacy>

Finally, it should be mentioned again that iNaturalist offers far more possibilities than can be shown here.

An intensive examination of the platform, rummaging in the iNat forum, through discussions with experienced users or asking questions in the forum can certainly help you to find further application possibilities and ideas.