City Nature Challenge 2018

Educator Guide

APRIL 27-30, 2018 ST. LOUIS, MISSOURI

Missouri Botanical Garden

biodiverseCity st. louis

Conservation Department Missouri

The Common Seal of The City of St. Louis

St Louis Historically & Dynamically Sustainable

Saint Louis Zoo Animals Always

Connecting Science & the Community

iNaturalist is based at the California Academy of Sciences

55 Music Concourse Dr.
Golden Gate Park
San Francisco, CA
94118

Email: help@inaturalist.org.

iNaturalist. Available from http://www.inaturalist.org. Accessed 2017.

Cover photo: Catherine Werner, City of St. Louis Mayor's Office of Sustainability
All other photos: Missouri Botanical Garden

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Taking Part is Easy

Find Wildlife

It can be any plant, animal, fungi, slime mold, or any other evidence of life (scat, fur, tracks, shells, carcasses!) found in your participating city.

Take a Picture of What you Find

Be sure to note the location of the critter or plant.

Share Your Observations

By uploading your findings through iNaturalist or your city's chosen platform.

Welcome!

In 2013, in response to emerging research supporting the notion that urban nature conveys many social, economic and environmental benefits to residents, the City of St. Louis launched the 'Urban Vitality and Ecology (UVE)' initiative. This multifaceted project promotes city-wide programs and practices that advance eco-literacy among residents and strives to ensure all have access to quality natural spaces. In the years since, St. Louis has partnered with local businesses, schools, organizations and residents to improve local parks, create native and pollinator-friendly city gardens, and promote understanding and awareness of environmental concerns that affect our region.

One of the objectives of the UVE initiative is to create a biodiversity inventory of our region that can inform policy and planning decisions. If we have a sense of what plants, insects and wildlife are relying on our natural spaces (and which should be, but currently are not), we can take the welfare of these species into consideration when making decisions that affect those spaces.

Such an inventory is a huge undertaking! While St. Louis is home to many experts in natural fields, they cannot do it alone! For this reason, we need the help of residents, teachers and students who can document the plants and wildlife they encounter in their neighborhoods.

Thanks to iNaturalist, you and your students can significantly contribute to this project! Take a walk in your neighborhood, snap photographs of plants and animals you encounter, record some simple observation data, and submit them to the iNaturalist site. This manual will provide you with key guidelines to keep in mind, tips for success, and resources that you may find helpful.

By helping us in this effort, your students will be making a very real, very important contribution to the UVE and to our region! Thank you!

Project Background

What is a Biodiversity Inventory?

A '**biodiversity inventory**' is simply a listing of species found living in a given region. As the name implies, the goal is to document the diversity – the variety – of species present, as opposed to counting how many individual organisms might be living there.

These inventories are created by a variety of professionals and used for a variety of purposes. Scientists and conservation agencies create biodiversity inventories to evaluate the 'health' of a given ecosystem: ecosystems in which many different species are contributing are said to have 'rich' biodiversity and tend to be healthier overall, while ecosystems with poor biodiversity less healthy and less fuctional. These inventories help identify areas that might be good candidates for study, or where ecological restoration efforts should be focused. Similarly, agricultural professionals and city planners may reference a biodiversity inventory in an area targeted for development or cultivation. This information identifies what organisms will be affected by changes to the landscape that result from human activities.

Depending on the purpose of the inventory, the list may be focused narrowly on one group of organisms (i.e. – all of the plants growing in a given lot or field, or fish species living in a given body of water), or it may attempt to include all living things in the area. The latter is called an **All Taxa Biodiversity Inventory (ATBI)**. A truly complete ATBI takes a lot of work and time to compile, but even a partial inventory can tell us a great deal about the natural world around us.

What is Citizen Science?

The larger the area being studied, the more challenging it can be to inventory the biodiversity it supports. Computerized simulations and technological tools have made the going easier in some ways, but ultimately the best way to inventory biodiversity is to be out in the field, observing and documenting it firsthand. As our interest in ecosystem functioning becomes increasingly more global, scientists have begun inviting everyday citizens to assist with observing and cataloging the living things around them.

These 'citizen science' efforts are a great way to introduce students and communities to the importance of and practices inherent to science work, notably careful observation and data collection. In most cases, this is accomplished by providing simple guidelines for collecting data, and inviting the public to submit this data using "smart" device applications (apps) and/or websites. Scientists review the submitted data, check it over for accuracy, and include it in their study for analysis.

A wide variety of citizen science opportunities are available today. Some, like iNaturalist, are broadly focused to create an ATBI for a given region. Others are more narrowly focused to document the range of specific species or groups. There are also citizen science projects in which observations are made concerning how living things move and change over time (phenology). For a list of citizen science opportunities that may be of interest to you or your students, see the Resources page at the back of this guide.

What is a 'City Nature Challenge'?

The City Nature Challenge is a fun, competitive effort to enlist the public's help to create a "snapshot" ATBI for cities around the globe using the iNaturalist citizen science platform.

The **City Nature Challenge** was organized in 2016 by Lila Higgins at the Natural History Museum of Los Angeles County and Alison Young at the California Academy of Sciences. They challenged the citizens living in and near Los Angeles to submit iNaturalist observation reports describing the living things they found in their parks, lawns, schoolyards and public spaces. Over that first eight-day event, more than 1,000 residents submitted observations and documented more than 1600 species.

In 2017, the challenge was taken up by 15 more cities in the United States, and the event became a competition to see which cities could document the most biodiversity in their region. The 'winner' in 2017 was Houston, Texas, where 2,419 species were documented.

In 2018, the total number of cities participating – including St. Louis – grew to 65. Our region's participation will, we hope, inspire local residents to try iNaturalist and practice documenting local biodiversity, while helping the city create a foundational ATBI that we can continue to grow in the years to come.

About the St. Louis City Nature Challenge

Schedule

The 2018 City Nature Challenge is a 7-day event running from **April 27-March 3, 2018.** All 65 participating cities will be taking part on these dates.

The schedule for the event will run as follows:

Collecting: April 27–30, 2018

Residents are welcome to submit valid observations that observe the event guidelines (see page 6) taken anywhere within the designated area on any day of the event. However, special attention will be paid to certain areas on certain days:

- **FRIDAY, APRIL 27** - ***Science at School***: Local students and teachers throughout the City of St. Louis and surrounding counties will be encouraged to make observations on or near their campuses.
- **SATURDAY, APRIL 28 - *Neighborhood Naturalist*:** Make observations of nature and wildlife found in local residential areas—backyards, nearby paths, local neighborhood parks.
- **SUNDAY, APRIL 29 - *National Park Rx Day*:** Celebrate National Park Prescription "Rx" Day with the National Park Service at the Gateway Arch, in Forest Park, Tower Grove Park, or other selected parks.
- **MONDAY, APRIL 30 - *Wildlife at Work*:** Check for biological species outside places of work and in business areas of the City and region

Verifying: May 1-3, 2018

During these days, all observations will be reviewed to check and correct identifications. As a teacher, you and your class may want to review your submitted observations together and make corrections based on feedback from reviewers.

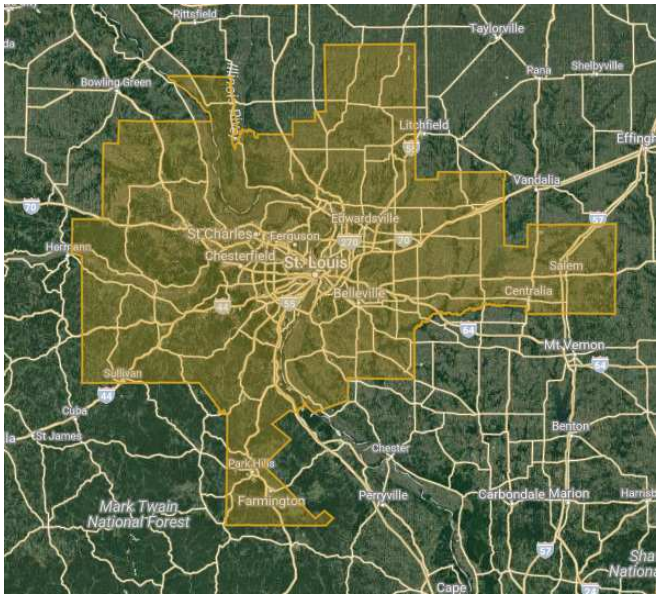
2018 Event Guidelines

For your students' observations to be included in the challenge, the following guidelines MUST be observed:

- **All observations must be made during the collection period: April 27-30, 2018**
  No observations should be submitted using photographs taken or observations made before April 27 or after April 30.

- **All observations must be made within the region designated.** The St. Louis project will include the following counties in Missouri: St. Louis, St. Louis City, St. Charles, Jefferson, Lincoln, Franklin, Warren, Washington, and St. Francois.

  The region also includes the following counties in Illinois: Calhoun, Jersey, Madison, St. Clair, Monroe, Clinton, Macoupin, and Bond.



- **All observations must be added to the St. Louis City Nature Challenge project within iNaturalist.** More information about how to add observations to the project can be found later in this document.

- **Organisms observed should be 'wild'.** Pets, livestock, houseplants and food plants/crops should not be subjects of observations. Landscape plants, trees and shrubs that were planted more than six months ago (before September 2017) are acceptable.

- **Media files must be included.** All project observations must include at least one photo (preferably more) or an audio file of calls to be included.

Using iNaturalist

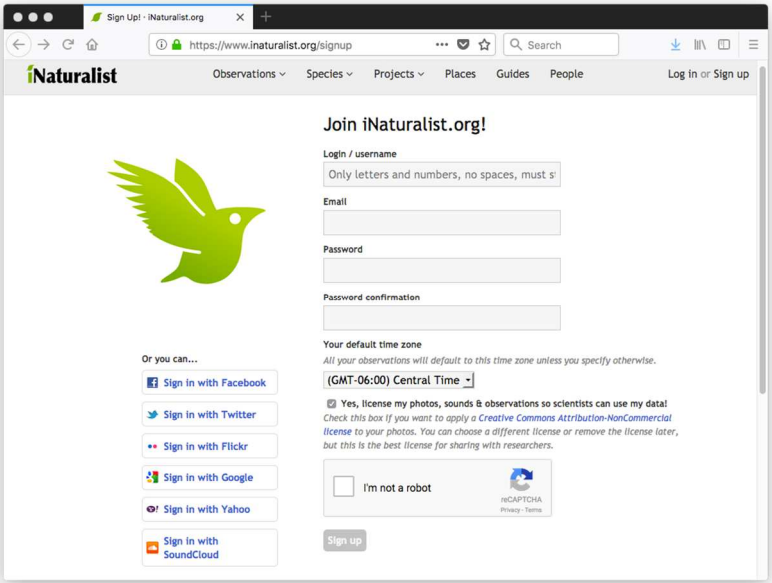
iNaturalist began in 2008 as a Masters' project designed by students at the University of California – Berkeley. Ten years later, the community comprises a population of more than 500,000 users worldwide and has recorded more than 7 million observations. The platform has become the go-to citizen science application for biodiversity study. It is a fun, easy tool to use, and is largely what makes the City Nature Challenge possible!

What You Need

To use iNaturalist effectively, you need the following:

- A digital camera
- A digital audio/MP3 recorder (optional, but handy if you are observing birds, frogs or insects with distinctive calls)
- A means of documenting data
- An internet connection

If you have a tablet or smartphone, you probably have all of these requirements in one device. Otherwise, a digital camera/recorder and a notebook are fine for making observations in the field, and you can upload observations through the iNaturalist.org website when you're done. A sample Observation Data sheet has been provided at the end of this guide that you are welcome to use with students if desired.



Getting Started

Visit *www.inaturalist.com* and click on 'Sign Up' to create an account. Creating an account is free, and there is no charge to use the site or the app.

You can create login credentials specific to iNaturalist, or you can log in using Facebook, Twitter, Google, Flickr or Yahoo.

Class accounts vs. Student accounts

As a teacher, one of the first questions you'll need to answer for yourself is whether you want to upload your students' observations to one class-wide account, or have your students create their own accounts and upload their observations themselves.

The 'class account' approach is advised if:

- **Any of your students are age 13 or younger**
- **You have concerns over student safety or deportment**.

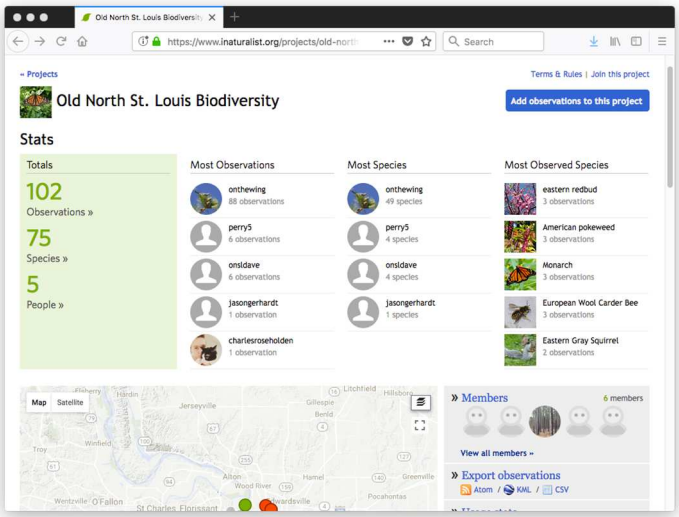
iNaturalist is a social platform as well as a data-gathering tool. Users are expected to comment on each other's observations, ask questions and offer suggestions. The community guidelines emphasize respectful and courteous treatment of other users, but students who may not be ready to exercise good judgment in their online interactions should be monitored in their use of the iNaturalist site. Children 13 and younger may be in violation of COPPA (Children's Online Privacy Protection Act) guidelines if permitted to have private accounts, so this should be avoided as well.

If neither case above applies to your students, then encouraging them to create private accounts is a great way to get the acquainted with the system. Creating iNaturalist observations is a wonderful way for students to learn from and participate in ecological biodiversity inventories during your class and beyond.

Observations vs Projects

An 'Observation' is a record of an encounter with an organism. A given observation may be included in one or more projects.

A 'Project' is a collection of observations that fit criteria established by project's creator. Examples of common project criteria are: location, timeframe, taxa, and participating users. One might create a long-term project documenting the biodiversity in their schoolyard, for example, or create a project for a Bioblitz event in which participants submit observations made in a given day. You might create a project that invites observations of frogs around the world, or a project to which only members of your class can contribute.



Users wishing to submit observations to the project must first visit the project page and click 'Join this project' in the upper right-hand corner of the landing page. Once joined, users have the option to add any observation they make to the project as long as it fits the criteria set by the project's organizers.

The **St. Louis City Nature Challenge** is a project:

www.inaturalist.org/projects/city-nature-challenge-2018-st-louis-mo

Observations of any living thing may be added to the project as long as the observation was made:

- between April 27 and April 30
- in the Missouri and Illinois counties designated as the 'St. Louis region' for the project
- Includes photos and/or sound files

Creating Observations

The event spans two school days and two weekend days. While Friday, April 27th has been locally designated as *Science at School* day, you and your students are welcome to collect observations throughout the event. As you take students out

- B**e respectful of private property and avoid trespassing**. Plants and animals on private property should be photographed from the street or sidewalk if possible. Otherwise, request permission from the property owner before coming onto the property.
- **Also, please be respectful of the organisms you observe.** Do not pick leaves, flowers or fruits. Small organisms that are safe to handle may be carefully placed in a small container while taking photos, but they should be released immediately and as close to where they were found as possible.

Photography Guidelines

Taking photos in the iNaturalist app on a tablet or smartphone is convenient, but you can also use a standard digital camera in the field and upload photos to the website later. If you are observing in an area where internet access is likely to be unreliable, a digital camera may be preferred.

Please ensure that:

- **Photographs are identifiable.** Encourage students to hold the camera still to avoid blurry photos, and to try to get close enough that the organism's markings and distinctive features can be seen. If your camera has a zoom function, use it to get close to organisms.

- **The photos you upload were taken by you or your students.** Students may be tempted to upload a photo from the Internet, especially if they were unable to take a clear photo of what they observed. This a violation of copyright law, and because the

organism pictured is not the specific organism observed, the observation will not be accepted.

- **The subject of photographs is obvious.** Make sure the organism you are observing is central and clear. Try to avoid including other species in the photo if possible.
- **There are no faces in any photographs.** Hands and feet in photographs are fine.
- **Where possible, several photos are included.** A single photo may not provide enough information for a solid identification. Try to include photos taken at different angles to showcase any features that might aid in identification. When observing trees, try to include close-up photos of leaves, branches and bark. Flowers and fruits are also helpful, if available.

Please avoid duplicate observations! Remember, the point is to document as many different species as possible. If many students observe the same organism or many individuals of the same species within a 100-ft radius, consider combining their photos and data into a single observation.

Recording Data

Observations include four key pieces of information in addition to photographs and/or audio files:

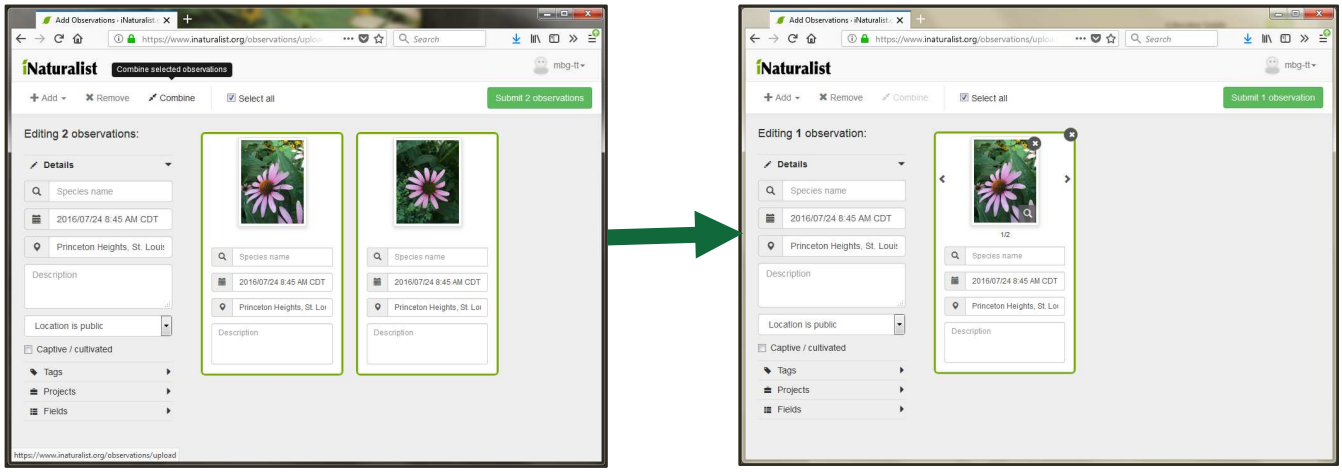
1. **Where the organism was seen or heard** (GPS coordinates)
2. **When the organism encounter took place** (time and date)
3. **Whether the organism is captive/cultivated** (cared for by humans)

If you are working in the iNaturalist app on a device that is connected to the internet, the app will automatically populate the location and time based if this information is provided by the photo's EXIF data.

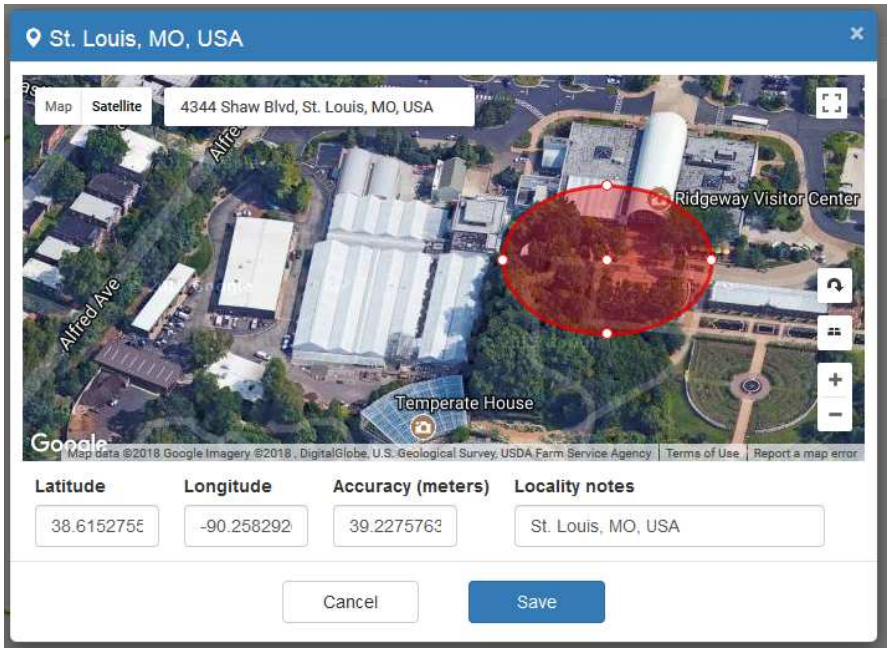
If you are using a digital camera, you will need to record your data in the field. An observation data sheet has been provided in the back of this guide that may help! When back at a computer, simply upload your photos and data to the iNaturalist website:

1. Click on your username in the upper right-hand corner of the screen and select Observations→Add.
2. On the observations page, click 'Add' in the upper left and select 'Upload photos or sound files'. Click 'Photos or sounds' to open a dialog box and navigate to and select the file you want to upload. *(Note that 'Observations without media' is an option in iNaturalist, but observations without media cannot be submitted to the City Nature Challenge.)*
3. If you want to include more than one photo or media file in a given observation (highly recommended), repeat step 2 to add the additional files. Hold down the shift key and click on all photos to highlight them in green as shown in the following

screenshot. The option to 'Combine' will appear in the top menu; click this to merge the records into a single observation.



Complete the 'Details' fields on the left-side of the page that are not automatically filled with data from your photos or sound files.



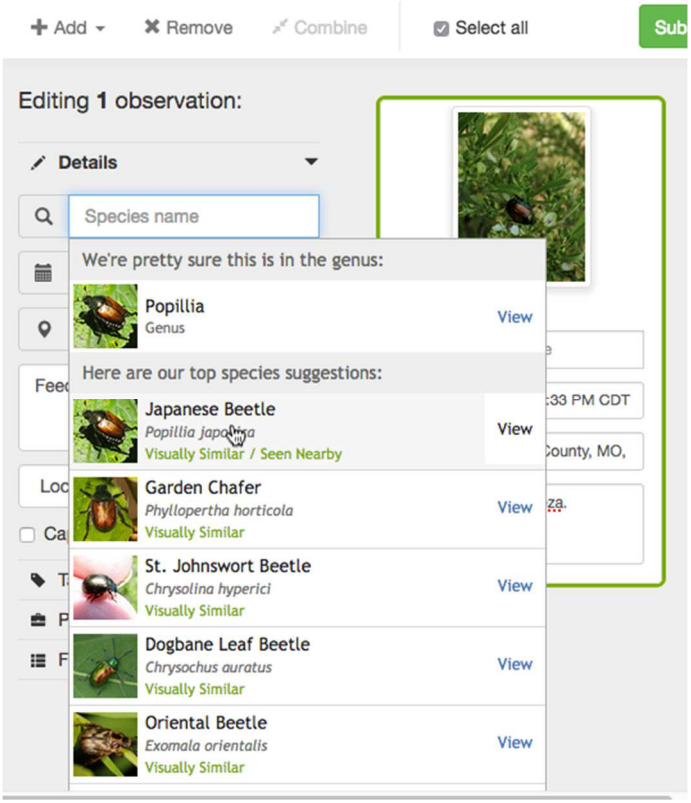
If your media files do not include GPS coordinates, click the 'Location' field to call up a map. Enter the nearest address in the search bar to zoom in on the area. Then switch to 'Satellite' view and click-drag the red circle to reposition it so that the center rests as close to where the observation was taken as possible. Click 'Save'. The GPS coordinates will be added to your observation.

Observation locations can be set 'Open', 'Obscured', or 'Private'. These settings describe what other iNaturalist users can see when they view this observation. 'Obscured' locations will show the general area in which the organism was observed, which is appropriate for any

organism that is threatened or endangered. Observations marked 'Private' will not show the location to other users at all.

Identification of Observed Species

Identifying what you observed can be daunting, especially for students (and teachers) who are not well acquainted with the plant and animal species common to their area.



This is not unusual; so if you fall into this category, **don't worry**! Provided your photos met the criteria listed above, the iNaturalist website will attempt to analyze the photo and offer suggestions.

Click 'Species Name' under 'Details'. If the iNaturalist AI is able to decipher enough information from your photo to suggest possible IDs, a menu of suggestions for you to consider will appear. Click 'view' to get a closer look at the suggested organisms, and then select the entry that best matches what you observed.

There will be times when iNaturalist cannot identify the organism in the photos or produces matches that are clearly in error. When this happens, you may need to resort to other references for help. This is an excellent opportunity to engage students in the references used by professionals to identify organisms, including field guides and dichotomous keys.

You might find these web-based resources helpful:

Missouri Department of Conservation – Field Guide

nature.mdc.mo.gov/discover-nature/field-guide/search

A great starting place for all major organism groups that can be found in our area, including: trees, wildflowers, grasses, mushrooms, insects, birds, reptiles, amphibians, mammals and fish.

University of Missouri Extension – Weed ID
weedid.missouri.edu

Another great resource for identifying common yard, field and roadside weeds found growing in Missouri.

The Cornell Lab - Merlin Bird ID
merlin.allaboutbirds.org

The Cornell Lab offers a variety of resources for observing and identifying birds, including several citizen science opportunities. The Merlin site and app are great tools to aid in identification.

The Arbor Day Foundation – What Tree is That?
www.arborday.org/trees/index-identification.cfm

The Arbor Day Foundation offers this beautifully illustrated dichotomous key to aid in identifying trees. Not all Missouri trees are represented here, but enough are to bring you close to an accurate ID.

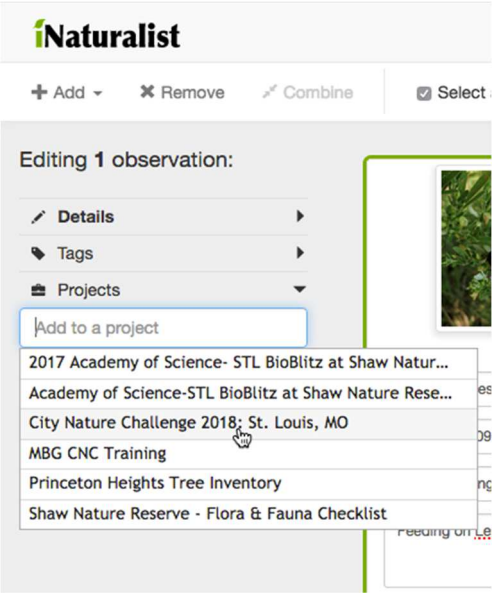
Insect Identification for the Casual Observer
www.insectidentification.org

This site offers some solid help in identifying insects, as well as spiders and other arachnids.

Remember - it's okay to get it 'wrong'. Identifying species seen in the wild is challenging even for experts! The iNaturalist community was set up to enable users to cross-check identifications, so don't let anxiety over misidentification concern you or your students.

Submitting Observations to the St. Louis City Nature Challenge

Once you have your observation details entered and your organism identified, you can add your observation to the St. Louis City Nature Challenge project.



Click on 'Projects' in the sidebar and a field will appear. If you have previously joined projects, they may appear below the field automatically. (Your list will look different from the one shown here.)

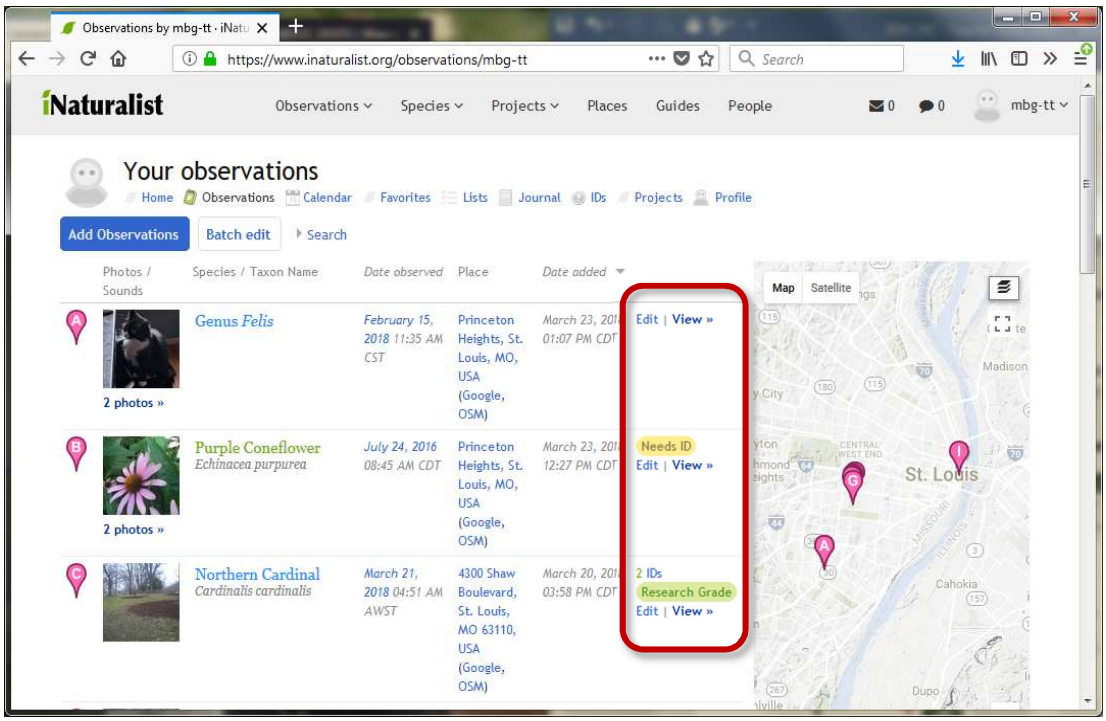
Select 'City Nature Challenge 2018: St. Louis, MO'. If you want to add the observation to other projects, just click the field again and click the name of that project as well. One observation can be added to many projects.

And that's it! Click 'submit' and your observation will be saved and added to the City Nature Challenge project.

Next Steps…

By May 3, 2018, you will want to make sure any and all observations submitted by your students are identified and added to the City Nature Challenge project. Once complete, the following may happen:

1. **A data quality 'grade' will be assigned to the observation.**



The grade will be one of the following:

a. **Casual** – All observations are assigned the 'Casual' grade when they are first created. This grade does not appear in the observation list, but can be seen on the observation itself as a gray flag. A 'casual' grade means one of the following:

   i. The observation is new.

   ii. The observation lacks media files or other important information.

   iii. The observation describes an inappropriate organism (i.e. a pet or a houseplant), or the photos of the organism are in some way inappropriate (i.e. subject isn't obvious, too blurry for ID, etc.)

b. Needs ID - An observation is bumped up to 'Needs ID' grade when all needed information is present and photos/media files are approved. Other users and iNaturalist experts will be able review your proposed identification and supply their own.

c. Research Grade – When 2/3rds of the users who review an observation agree on its ID down to the species level, the observation is assigned a 'Research Grade' status. The observation will then be eligible for referencing for scientific purposes, including creating range maps, generating ATBI lists, etc.

2. **Other iNaturalist users and experts may 'follow' you and/or comment on your observation.** As previously noted, iNaturalist is both a recording tool and a social network designed to facilitate cooperation between users in the effort to identify and catalog species observed in the wild. Other users may post comments to or ask questions about your observations in addition to providing their own identification suggestions. Users may also 'follow' your account so they can be notified when you add more observations that might be of interest to them.

3. **We'll keep you posted!** When we hear how St. Louis' CNC contributions compared with those of other cities, we'll contact you to let you know! Wherever we rank in the final standings, though, your students' contributions to the City Nature Challenge and to iNaturalist itself will help local scientists and policymakers learn more about the wildlife that lives around us!

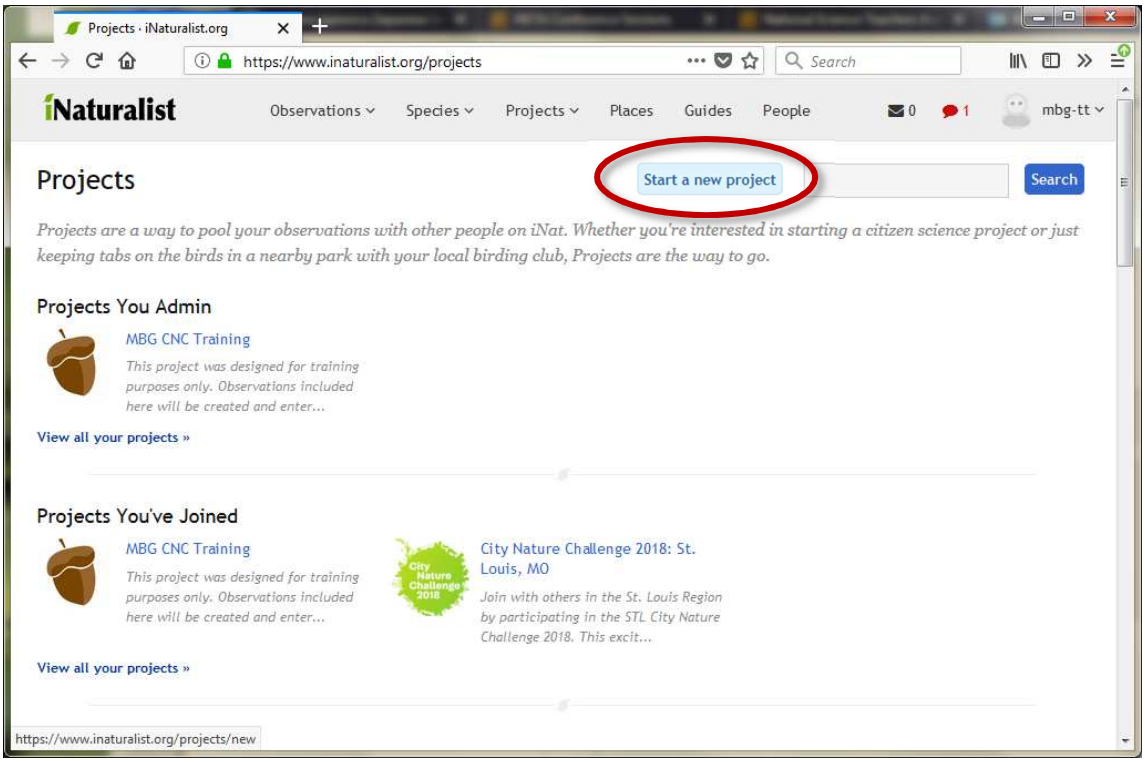
iNaturalist in the Classroom

While the City Nature Challenge is a great opportunity to introduce students to iNaturalist and citizen science, we hope you'll consider incorporating the app and website into your work with students throughout the year.

The iNaturalist Guide for Teachers (*www.inaturalist.org/pages/teacher's+guide*) includes a list of lesson plans and instruction suggestion that can help you get started. We also suggest the following:

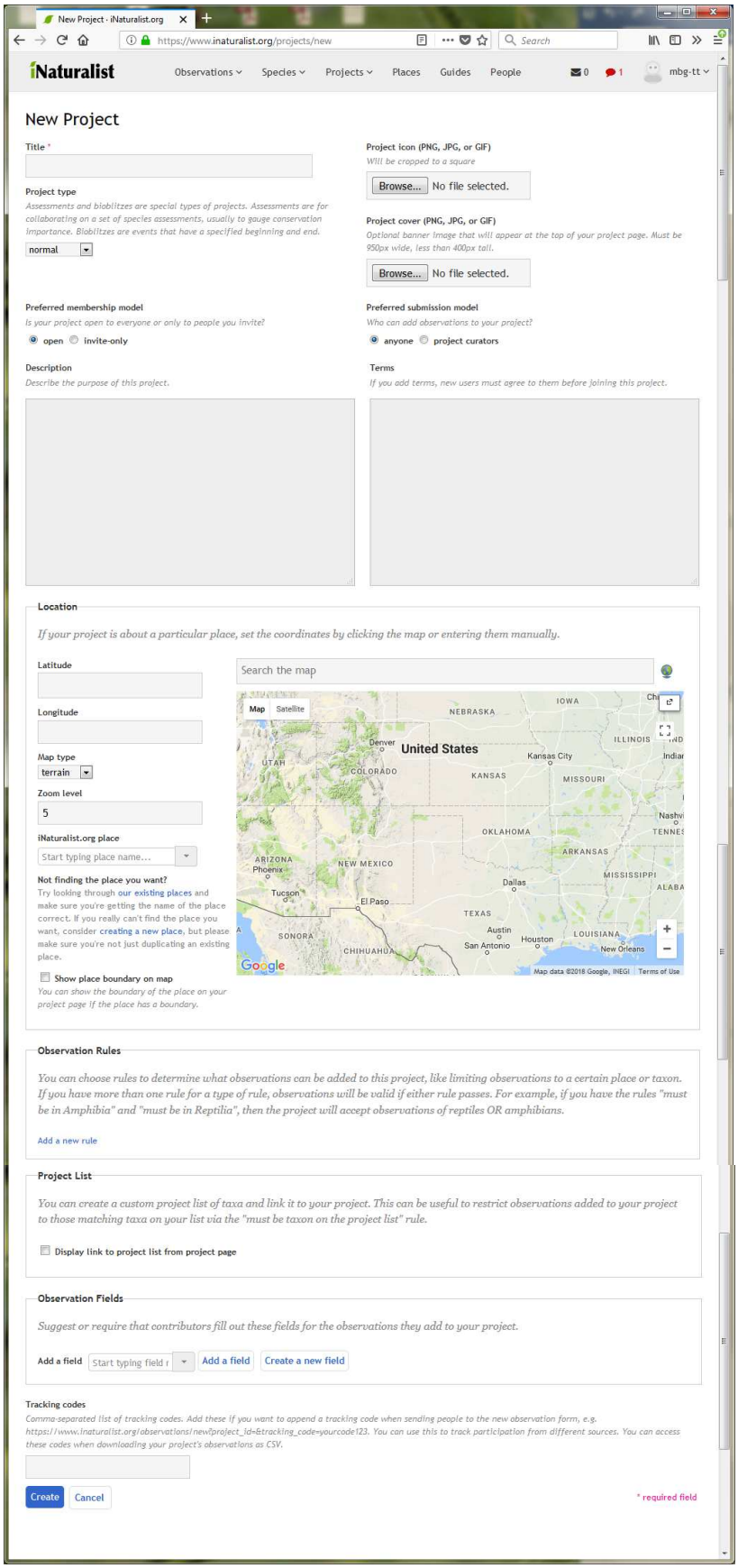
Create a Schoolyard-based Project

Any iNaturalist user can create a project in iNaturalist. Click on 'Projects' in the top menu, and then on 'Start a New Project' as shown:



The only required field on the New Project screen is the title. However, every aspect of your project can be customized to suit your goals for your students.

The first question you'll be asked after the title is the 'type' of project. In most cases, you can leave this field set at 'normal', which suggests your project does not have a specified beginning and ending date, and is not a targeted assessment for conservation purposes. If you do want to limit your project to a given time period (say, a given school year), then select 'bioblitz'. This will cause fields prompting for start and end dates/times to appear.



You have the option to customize the look of your project with a cover image and an icon image to be shown on your project list.

Select 'invite-only' to limit submissions to only student accounts. (If you have a class account, you can limit observations to only that account, or only class accounts at your school.)

Your project should include a description. This can be simple, but should explain its focus and purpose to other iNaturalist users.

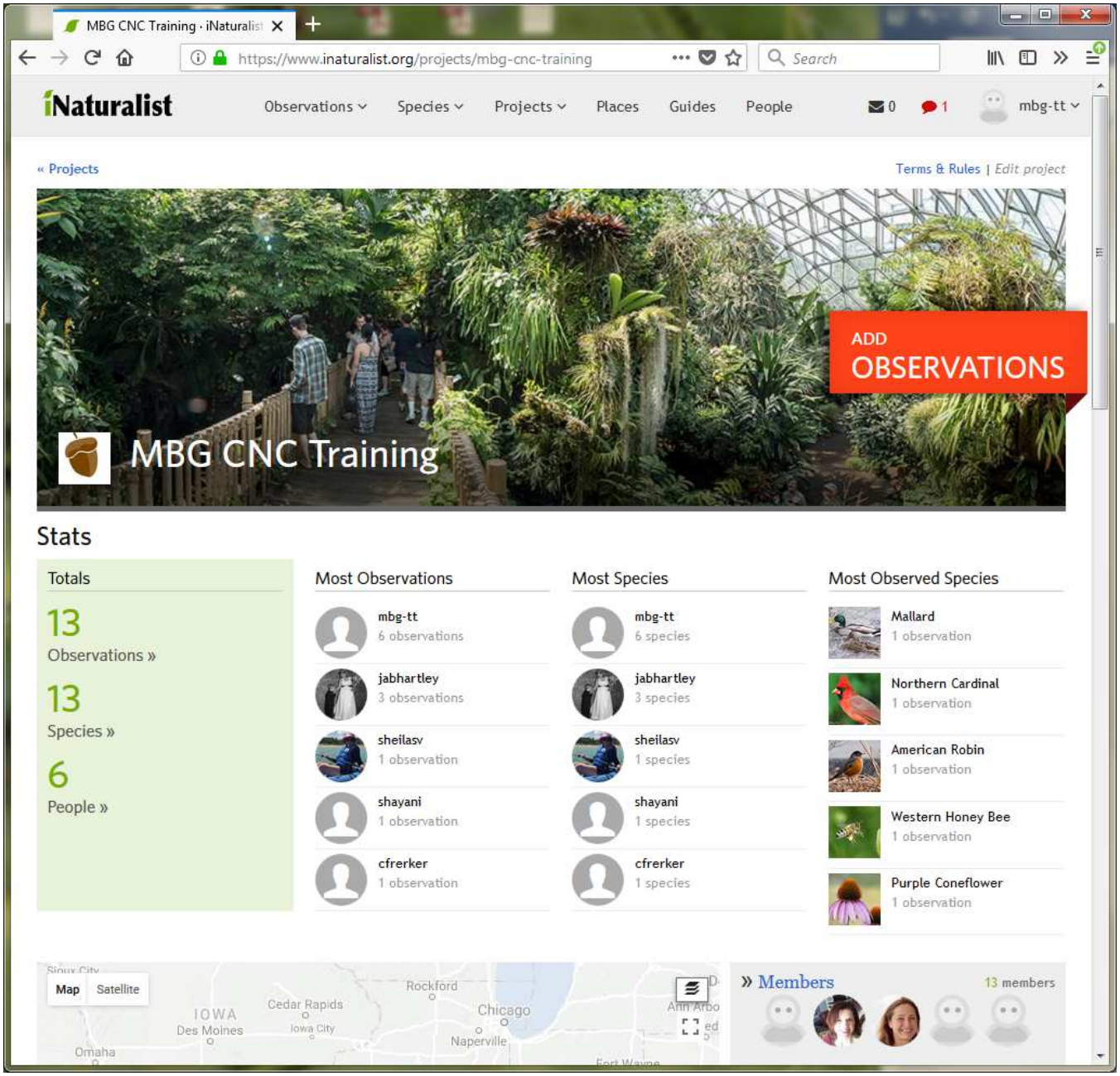
Terms are not required, but can be handy if you have requirements to which you want your students to agree before they are permitted to take part.

You can set the location of your project by zooming in on your schoolyard and clicking it on the map. If you want to limit your project to your schoolyard, click on 'creating a new place' and then define the boundaries of your grounds using the map polygon tool. Then enter the name you gave your schoolyard under 'iNaturalist.org place'

Under Observation rules, you can specify that observations can only come from a given place. You can also set other limitations, such as what kinds of organisms you want to include.

You can also create your own additional data fields if you have other information you want students to record.

Click 'Create' to create your project, then invite your students to 'join' it. You can go back and edit any of the fields using the 'Edit Project' link in the upper right-hand corner of the Project landing page.



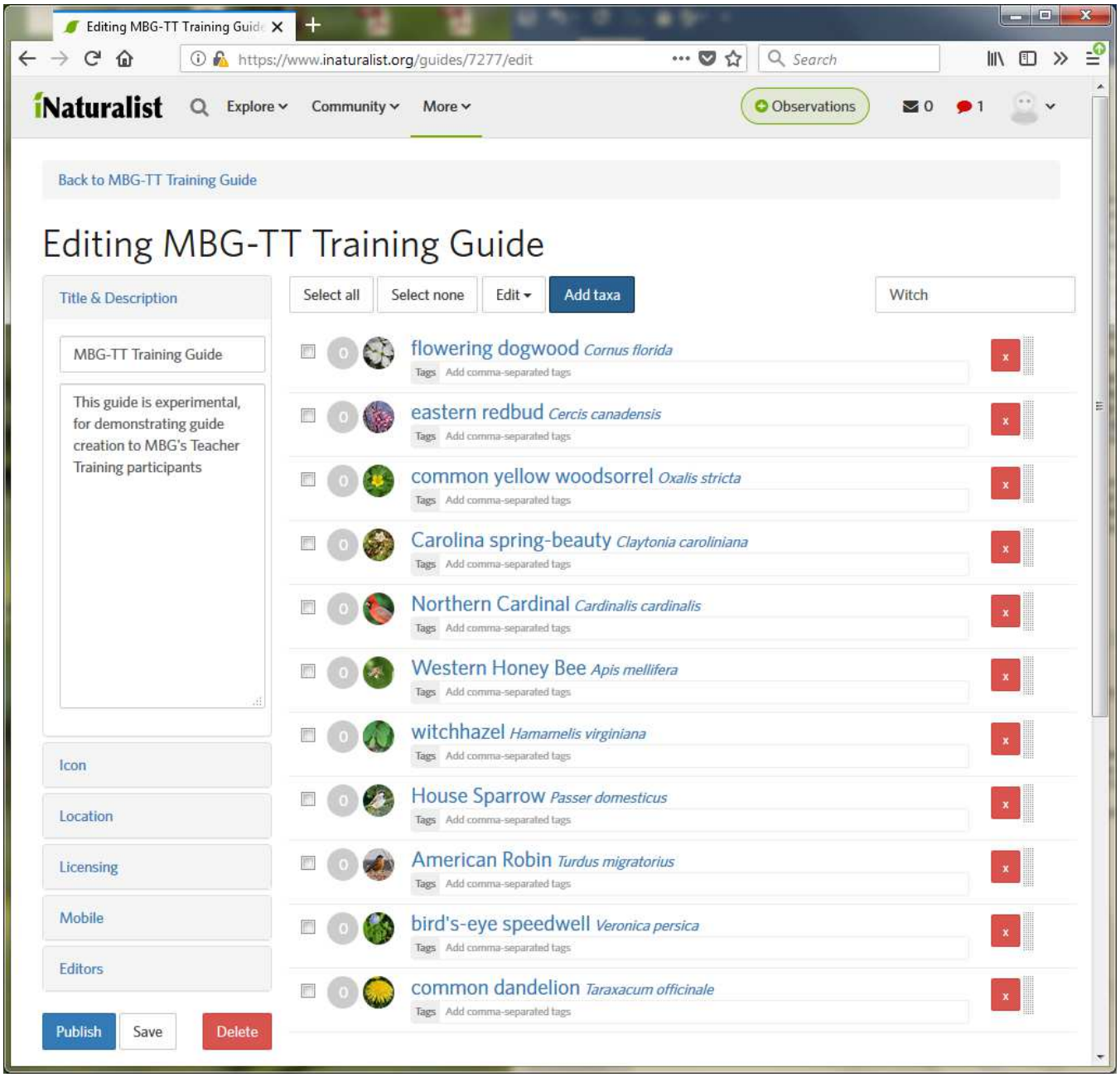
Your project can include a 'journal', comprising blog entries and announcements sent out through the project to its participants.

You can also assign members different 'roles' – curators, who can edit the observation list to remove any that are inappropriate, and managers, who can edit the settings of the project itself. Only you, as the Admin, can delete the project entirely.

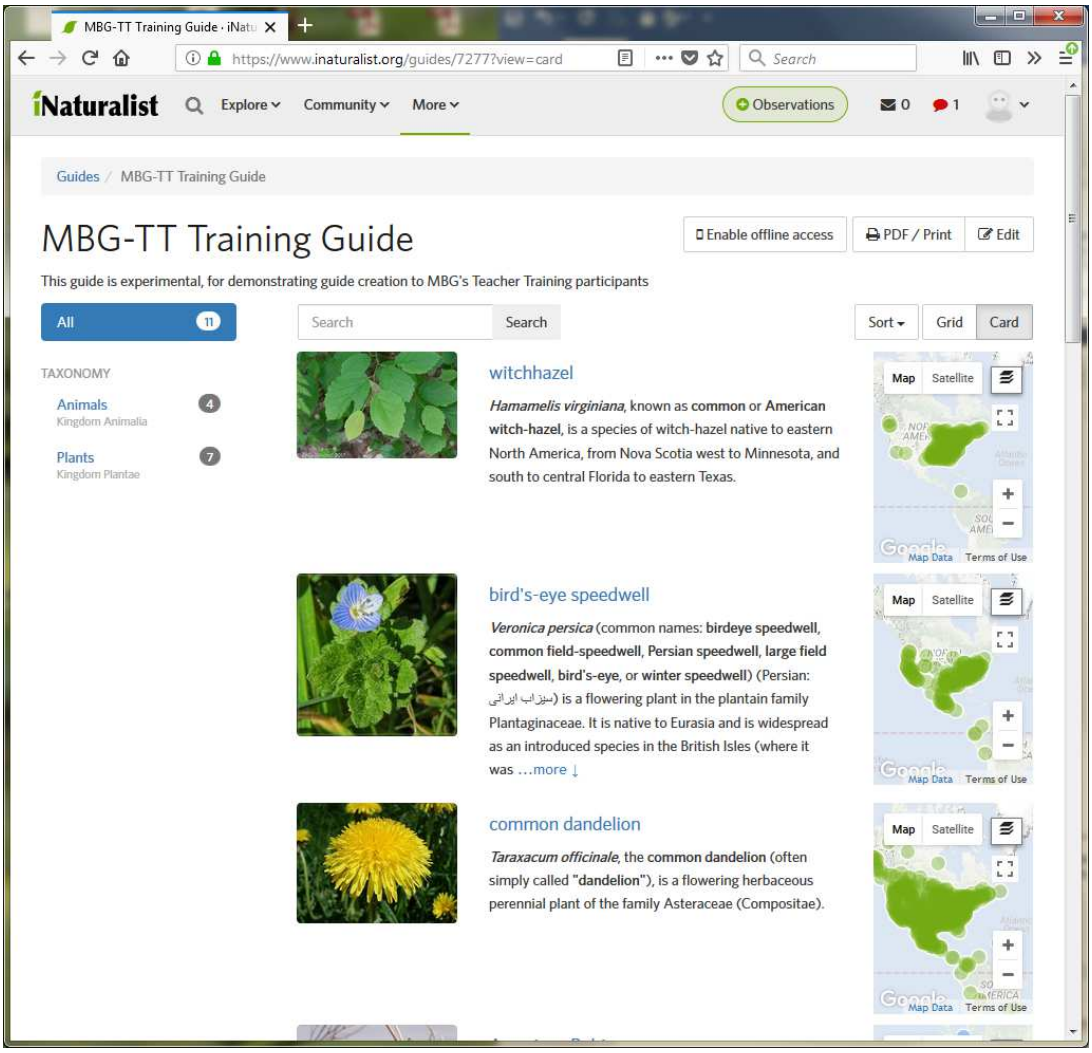
Create a Schoolyard Field Guide

You can also create a field guide of the species you find in your schoolyard for future reference! Click on 'Guides' in the top menu and then 'Create a guide'.

Once students have identified a number of organisms in your schoolyard, click 'Add Taxa' and search for those organisms to add them to your guide.

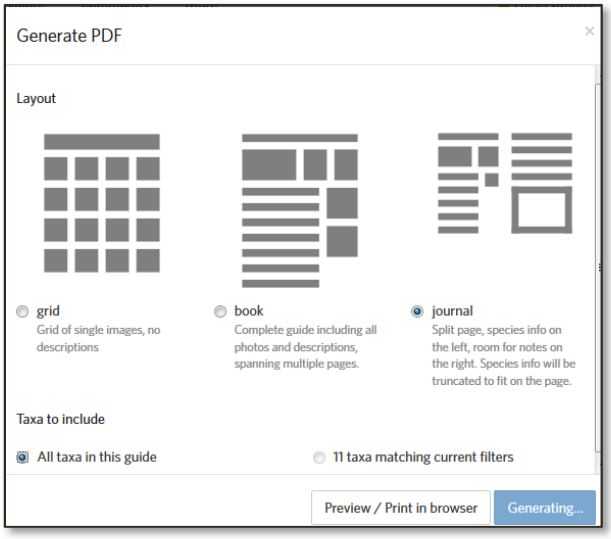


Once they are added, click 'Publish' to create populate your guide. Note that you can go back in and edit the guide to add, delete or edit species as your students encounter them or you refine identifications.



Once published, your guide will include photos, descriptions and distribution maps for each species you included.

In subsequent work with students, you can print off guides for students to take 'into the field' with them to assist with identification as they create observations in your schoolyard. The site offers different layouts that may be appropriate depending on your needs.



Resources

Outdoor Learning Strategies

- CNC – Tips for Teaching Outside
  education.eol.org/cnc_materials/TipsForTeachingOutside.pdf

- Pacific Education Institute – Fostering Outdoor Observation Skills
  pacificeducationinstitute.org/wp-content/uploads/2017/03/Fostering-Outdoor-Observation_Guide.pdf

CNC Age/Grade Level 'Base Camps' for Teachers

The following documents were curated to include NGSS-aligned activities for each age/grade level.

- Educator Basecamp for Ages 5-8 (Grades K-2)
  https://education.eol.org/cnc_materials/EducatorBasecamp_5-8.pdf

- Educator Basecamp for Ages 8-11 (Grades 3-5)
  https://education.eol.org/cnc_materials/EducatorBasecamp_8-11.pdf

- Educator Basecamp for Ages 11-14 (Grades 6-8)
  https://education.eol.org/cnc_materials/EducatorBasecamp_11-14.pdf

- Educator Basecamp for Ages 14-18 (Grades 9-12)
  https://education.eol.org/cnc_materials/EducatorBasecamp_14-18.pdf

- Educator Basecamp for Higher Education
  https://education.eol.org/cnc_materials/EducatorBasecamp_Undergrad.pdf

- Educator Basecamp for the General Public
  https://education.eol.org/cnc_materials/EducatorBasecamp_generalpublic.pdf

Local institutions

- **City of St. Louis**
  - City Website - *www.stlouis-mo.gov*
  - Sustainability in the City - *www.stlouis-mo.gov/sustainability/*

- **Missouri Botanical Garden**
  - General – *www.missouribotanicalgarden.org*, 314-577-5100
  - Education/Teacher Programs – *www.mobot.org/schoolprograms*, 314-577-0185
  - BiodiverseCity St. Louis – *www.mobot.org/biodiversecitySTL*

- **Saint Louis Zoo**
  - General – *www.stlzoo.org*, (314) 781-0900
  - Education - *www.stlzoo.org/education/forteachers/*, (314) 646-4544
- **Academy of Science – STL**
  - General - *www.academyofsciencestl.org*, (314) 533-8083
  - For Educators - *www.academyofsciencestl.org/educators/*
- **Missouri Department of Conservation**
  - General - *mdc.mo.gov*
  - Discover Nature Schools - *nature.mdc.mo.gov/discover-nature/teacher-portal*

Field Guides

- **Golden Guides, St. Martin's Press**
  us.macmillan.com/series/agoldenguidefromstmartinspress/
- **Peterson Field Guides**
  www.houghtonmifflinbooks.com/peterson/
- **Sibley Guides**
  www.sibleyguides.com
- **Audubon Society Field Guides**
  www.audubon.org/national-audubon-society-field-guides
- **Missouri Department of Conservation**
  www.mdcnatureshop.com

Species Identification

- **Missouri Department of Conservation – Field Guide**
  nature.mdc.mo.gov/discover-nature/field-guide/search
- **University of Missouri Extension – Weed ID**
  weedid.missouri.edu
- **The Cornell Lab - Merlin Bird ID**
  merlin.allaboutbirds.org
- **The Arbor Day Foundation – What Tree is That?**
  www.arborday.org/trees/index-identification.cfm
- **Insect Identification for the Casual Observer**
  www.insectidentification.org

Citizen Science Opportunities

ATBI

- iNaturalist – *www.inaturalist.org*
- Project Noah – *www.projectnoah.org*

Population Tracking

- Frogwatch (AZA) -- *www.aza.org/frogwatch*
- Feederwatch (Cornell) -- *feederwatch.org*
- Lost Ladybug Project -- *www.lostladybug.org*
- MonarchWatch -- *www.monarchwatch.org*
- Firefly Watch (MOS) -- *legacy.mos.org/fireflywatch*

Phenology

- Nature's Notebook (USAPN) -- *www.usanpn.org/natures_notebook*
- Project Budburst (Chicago Botanic) -- *budburst.org*
- Journey North -- *www.learner.org/jnorth/*
- Picture Post (UNH) -- *picturepost.unh.edu*

Miscellaneous/Other

- CoCoRaHS (Weather Tracking) -- *www.cocorahs.org*
- Globe at Night (Ambient Light Tracking) -- *www.globeatnight.org*

Observation Data Sheet

St. Louis City Nature Challenge - 2018

Observer

Name _____ Date _____ Class _____

Location

Address _____ City: _____ State _____ ZIP _____

Sketch the general layout of the site below, including landmarks such as buildings, surrounding streets, utility poles, etc.

Name _____ Date _____ PAGE _____of _____

Organisms Observed

Record your observations in the table below. Mark the number of each observation on the diagram above to indicate where it was located.

#	Time	Type (i.e. -Tree, Bird, Mammal, etc.)	Description	# of Photos

EXAMPLE

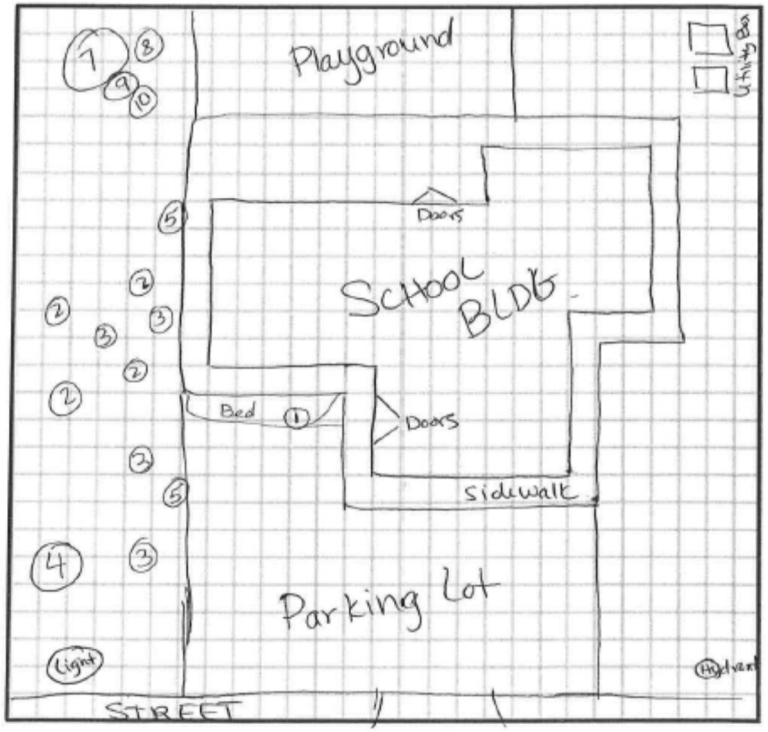
Observation Data Sheet

St. Louis City Nature Challenge - 2018

Observer Name Joe Student Date 4/27/18 Class Mrs. Smith

Location Address 1234 School St. City: St. Louis State MO ZIP 63110

Sketch the general layout of the site below, including landmarks such as buildings, surrounding streets, utility poles, etc.



Name Joe Student Date 4/27/18 PAGE 1 OF 1

EXAMPLE

Organisms Observed

Record your observations in the table below. Mark the number of each observation on the diagram above to indicate where it was located.

#	Time	Type (i.e. -Tree, Bird, Mammal, etc.)	Description	# of Photos
1	9:35am	Robin (Bird)	Feeding by Front doors	2
2	9:35	~~Bi~~ Plant	Dandelion (many)	4
3	9:40	Plant	Clover (many)	4
4	9:42	Plant (Tree)	Maple	4
5	9:45	Plant	Woodsorrel (Yellow Flowers?)	3
6	9:50	Plant	Not sure - Flat plant, blue flowers (small)	3
7	9:52	Plant (Tree)	Pine?	4
8	9:53	Bird	Cardinal	1
9	9:55	Insect	Cricket (Under Rock)	2
10	9:58	Insect?	Millipede (Under Rock)	2

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