TOOLKIT: HOW TO CREATE A CITIZEN SCIENCE FIELD SITE

NATURAL
HISTORY
MUSEUM
LOS ANGELES COUNTY

WHAT IS CITIZEN SCIENCE?

Citizen Science, as defined by the Cornell Lab of Ornithology, is any project in which volunteers partner with scientists to answer real-world questions.

WHY SHOULD MY STUDENTS AND I PARTICIPATE?

1. Citizen Science gets your students outdoors and teaches them about their neighborhood ecosystem

2. Citizen Science takes advantage of technology like smartphones, iPads, social media and digital photography to help them learn

3. Citizen Science is flexible: it can be as simple as taking a photo with an app, or it can turn into a long-term project that your students design themselves.

4. Citizen Science helps students learn without relying on you as a knowledge source. It's inquiry-based, hands-on, and exploratory.

HOW WILL CITIZEN SCIENCE CONNECT MY STUDENTS WITH SCIENTIFIC RESEARCHERS?

Researchers create experimental questions that they can't answer without help from everyday citizens. Your students can help answer those questions simply by taking photos and tagging those photos to those researchers' projects. But students can also develop their *own* research questions and get their school community to help answer them, which means your students can become the researchers.

HOW CAN I CONNECT THIS TO THE STANDARDS?

The Next Generation Science and Common Core Standards leave a lot of flexibility for integrating Citizen Science in any grade level. In particular we recommend integrating Citizen Science into project– or inquiry-based lessons over longer time periods.

A standards-integrated Citizen Science project *might* look like:

• Breaking students into groups to create their own iNaturalist project, collect data, compile and analyze the results, and write a report

• Asking students of any age to use free data from iNaturalist to create graphs, solve word problems, or do statistical analyses on real-world information

• Teaching younger students to observe the outdoors and slowly build up to taking good data for a researcher-run project on iNaturalist

• Encouraging students to become observers of nature using the iNaturalist app, then recording their experiences in nature journals through drawing, writing, filming, and photography

The Next Generation Science Standards are flexible and skills-based rather than content-based, so any of the above projects will have *some* connection to the standards. We recommend brainstorming your project first, then looking through the standards for connections and refining your project based on the standards you find.

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1. GOAL: what do you hope to accomplish with your Citizen Science Field Site?

2. SITE PLANNING

List up to 3 POTENTIAL SITES like a schoolyard or nearby park

_____

_____

_____

What is the approximate SIZE of each site (small garden, schoolyard, large park)

_____

_____

_____

What type of HABITAT is the site (native garden, edible garden, lawn and trees)**?**

_____

_____

_____

3. RESOURCES

How much TIME could you dedicate to a project like this in your classroom (per day, per week, per school year)?

How many PEOPLE could you include (students, classrooms, classroom volunteers, families)?

What kind of TOOLS might you need to do your project (internet access, digital cameras, iPods/iPads, pencils/paper)?

4. DAY-TO-DAY PLANNING

It's important to be consistent when collecting data. **What TIME OF DAY could you participate?** Using class periods or bell schedules might be helpful for planning.

_____

_____

_____

Data collected over many months can provide seasonal information, but short-term projects create a narrower focus. For **HOW LONG could you participate?**

_____

_____

_____

Are there any rules for your location you'll need to be aware of? How might you share that information?

5. iNATURALIST MANAGEMENT

iNaturalist is a social media site, so it's important to think about how you will manage your online presence.

WHO might be submitting observations (i.e. elementary students? High school students? Family groups?)

With those things in mind, would it be best to create

- ☐ A class account
- ☐ Individual accounts for each student
- ☐ A school account
- ☐ Other: _____

WHAT are some barriers you might encounter to their participation (i.e. permission slips, internet access, etc.) ?

WHO might be able to manage and monitor the account(s)?

_____

If needed, **HOW** could you get permission to create and use the account(s)?

_____

6. CREATE YOUR iNATURALIST ACCOUNT

1. Head to iNaturalist.org on a laptop or desktop and click the sign-up button in the upper right of the screen.

2. Fill in the fields

3. If you want to participate in other scientists' projects and make your data usable for multiple people, be sure leave the box at the bottom checked (the one that says "Yes, license my photos, sounds & observations so scientists can use my data!") You can always change these licenses later.

4. Press the sign up button.

5. Download the iNaturalist app for your mobile device and log in with your new account.

For step-by-step instructions with screenshots on creating an account, visit http://www.nhm.org/site/sites/default/files/for_teachers/pdf/Creating%20an%20iNaturalist%20Account.pdf. Some things may have changed on iNaturalist.org since we created this document, but it should still be a fairly accurate guide!

7. CHOOSING iNATURALIST PROJECTS

What **PLANTS OR ANIMALS** do you hope to track? Which ones are most likely to be found in your prospective sites? What do you see most often from your classroom window? List 6 below.

_____   _____

_____   _____

_____   _____

Some NHM-sponsored projects include: L.A. Nature Map, Monarchs and Milkweed of Los Angeles, RASCals, SLIME, Southern California Squirrel Survey, and GeckoWatch. Keep an eye out for new projects by looking at our iNaturalist profile, natureinla.

Click on **PROJECTS** from the iNaturalist home page and do some searches using the plants or animals you listed at left. Which look like good ones to join based on your potential sites and goal? List 3 potential projects below.

1 _____

2 _____

3 _____

Look at the RULES of each project you listed.

How much TIME does each project require?	What TOOLS will each project require?	How many PEOPLE does each project require?
1	1	1
2	2	2
3	3	3

Based on all the information you've put together, choose the best project for meeting your goal, or decide to create your own:

☐ _____   ☐ **Create our own (continue to box 7b)**

What kind of METHODS does this project require, and how can you implement them on your site?

If you choose to create your own project, skip to section 9.

7B. CREATE A PROJECT

Creating your own project means your observations won't be used in a researcher's project or contribute to an official study, but you'll also have more creative and maintenance control. Creating a project is ideal for those teachers with very young students (Pre-K through Grade 2) or teachers who want students to develop their own research question and engage with multiple parts of scientific inquiry.

TO CREATE A PROJECT:

- Head to the PROJECTS page on iNaturalist (use the full site rather than the mobile app).

- Then, click the "Start a New Project" button at the top and fill out the required information.

For step-by-step instructions with screenshots, visit http://www.nhm.org/site/sites/default/files/for_teachers/pdf/Creating%20a%20New%20iNaturalist%20Project.pdf

8. START TRACKING WILDLIFE

Before you begin collecting any official data, you may need to use a session or two to explore your nature space, practice being outside, and find an optimal time or approach to locate wildlife. Check out our tips below.

FINDING WILDLIFE

Find hiding places

- Locate food and water sources

- Look up and look down

- Stay quiet

- Sunny and shady places

PHOTOGRAPHING WILDLIFE

- Capture the moment

- Multiple Angles

- What is the lighting?

- Know your camera

9. CREATING A PROTOCOL FOR YOUR OWN PROJECT

The OPPORTUNISTIC PROTOCOL is a good choice for younger students, studies on biodiversity, or for those projects that hope to familiarize students with a neighborhood. The ESTABLISHED GUIDELEINES PROTOCOL is better for those classrooms that have a specific question to answer or are studying just one type of animal or plant.

OPPORTUNISTIC PROTOCOL

- What are the boundaries of your survey area?

- Do you need to take any steps to prevent replication of data (e.g., every student counting the same butterfly), or is that okay for this project?

ESTABLISHED GUIDELINES PROTOCOL

- What are the boundaries of your survey area?

- What type of transect will you walk?

- What time of day will you survey?

- How long are your survey time lengths?

- How long will you participate in the project?

- Will you need additional information besides photo-graphs, such as temperature, weather, etc?

CREATING A PROTOCOL FOR YOUR PROJECT, cont'd

Using the questions from the previous page, use this space to brainstorm your project protocol. Some tools you might need to consider using include:

- Photographic data tools like digital cameras, disposable cameras, smartphones or iPads

- Sound data tools like digital recorders or smartphones

- Observational tools like journals, data sheets, binoculars

- Measurement tools like rulers, thermometers, or transect materials

- Physical specimen collection tools like plastic bags, vials, beating sheets, shovels, etc.

10. SUBMITTING YOUR DATA

iNaturalist requires the following pieces of data in order to validate your observations. With every photo, you will need to list :

• **Time**

• **Date**

• **Exact location (using google maps or GPS coordinates are helpful)**

• **A general identification (for example, label your observation "butterfly" or "mammal" even if you don't know which species it is)**

TRADITIONAL CAMERA	DIGITAL CAMERA	PHONE OR iPAD
With cameras such as disposable cameras, teachers will need to find a way to accurately connect other data to each photo. That might mean asking students to write down details every time they take a photo, or only taking one photo per day. **Then, photos will need to be scanned and submitted to iNaturalist.**	**Digital cameras usually have a date and timestamp for each photo, but this still might require students to create a list of locations in the order they were visited that can be matched up with the photos.** **Photos will need to be uploaded onto a computer or other device with internet connectivity and submitted to iNaturalist.**	**This is the easiest method, since each photo can be uploaded to iNaturalist immediately along with the data using the iNaturalist app.** **While you can take photos within the app, you can also take photos with your device's regular camera app and add them to iNaturalist later.**

TO UPLOAD A PHOTO TO iNATURALIST'S WEBSITE:

1. **Sign in at www.inaturalist.org**

2. **Click on OBSERVATIONS at the top of the page**

3. **Click the ADD OBSERVATIONS button**

4. **Type in a general identification or the species ID if you know it in the box that asks, What did you see? Check the ID Please? box above the field if you need help identifying your observation**

5. **Make sure to check the captive/cultivated box if the animal was at the zoo or belonged to someone, or if the plant is maintained by humans.**

6. **Select the date and time of your observation—please be as accurate as possible! iNaturalist recommends the following format: April 29 2016 10:56:33, but any date followed by time of day will do.**

7. **Type in the name of the place where you made the observation, or locate it on the map or using coordinates. For example, if you were in the Natural History Museum's Nature Gardens, type in "Los Angeles Natural History Museum," locate the Museum on the map, and then move the red marker to the place you made the observation (as close as possible).**

8. **In the description box, you can type a general statement or additional information about your observation, such as where you found it, what else was near it, or any behaviors you noticed.**

9. **In the ADD MEDIA box on the right, choose the file you want to upload.**

10. **Press SAVE OBSERVATION at the bottom**

11. **To add this observation to a specific project, click + Add to project at the top of the screen. If you don't see the project you want, it means you still have to join the project through your account.**