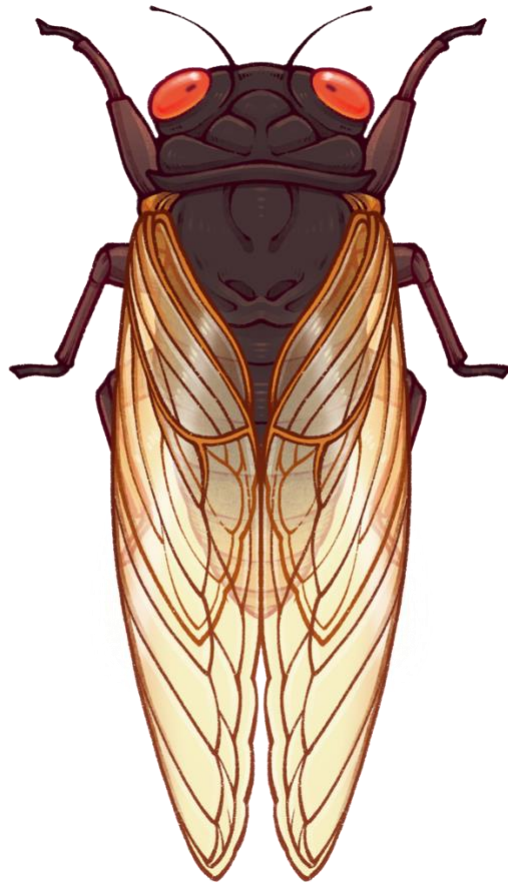


Indiana Cicada Emergence Trackers



Questions? Contact Elizabeth Barnes at barne175@purdue.edu

Indiana Cicada Emergence Trackers

Background

As the weather warms up, expect up to 1.5 million cicadas per acre to begin climbing up out of the ground. This spring Indiana will see the emergence of the 17-year cicadas (Brood X). Once every 17 years they emerge *en masse*, climb up trees, sing (though it sounds more like screaming), mate, and lay their eggs on the tips of tree branches. Scientists have lots of questions about these insects but only a short time to study them! You can help us (researchers at Purdue University's Department of Entomology) answer some of these questions and expand the body of knowledge about these loud little insects!

Goals

1. *Where are they?*

The distribution of 17-year cicadas has changed a lot in the last 200 years! We aim to learn where these insects can still be found in Indiana.

2. *When do they emerge?*

Cicadas will emerge at different times throughout the state. The data YOU collect will help us better predict cicada emergence in the future.

3. *How does the landscape impact them?*

Different types of surfaces can warm or cool the surrounding area. For example, standing on dark asphalt on a sunny day is a lot hotter than standing in a grassy field on the same day. In this case, the dark color of the asphalt absorbs the heat from the sun, whereas the lighter colored grass reflects it. This can lead to localized variation in insect emergence times and has been shown in several other species of insects. We hope to learn, with your help, if landscape features impact cicada emergence timing.

Why we need YOUR help

The simple answer? Time! There are only a few of us working behind the scenes on this project and we can't be everywhere in Indiana all at once. By helping us collect data on cicada emergences, you will dramatically expand the number of data points we have and will let us draw conclusions with more certainty. Your contribution will let us better understand 17-year cicada biology, management, and ecology.

Materials

A camera (a smart phone will work best, but any camera will do!)

Instructions

Register

1. Sign up for iNaturalist. This program is an app and a website that collects biodiversity data. We're using it to collect cicada data for our project, but by adding your observations to their database you will also potentially contribute to many other research projects! You can learn [how to use iNaturalist here](#) or watch one of [their video tutorials here](#). If you get stuck, you can also contact the project coordinator, Elizabeth Barnes (barne175@purdue.edu), for help!

2. Join our [Indiana Cicada Emergence Trackers](#) project on iNaturalist. On the website, you can find the “Join this project” in the top right hand corner of the screen. In the app, you can find the project by clicking “more” in the bottom right hand corner, searching for “Indiana cicada Emergence Trackers”, tapping on the title, and tapping “join”. Note: this may be in a different location based on your browser and operating system. You can find a walk-through of how to join a project on a phone or on a desktop at the end of this document or you can [watch a video](#) on how to join via phone here.

Pick your trees

3. Choose an area to monitor that has had trees present for the last 17 years (please make sure you have permission to enter the property!). Cicadas need to constantly drink from trees to survive, so if trees were only recently planted there won't be any cicadas there. The trees can be as close or as far apart as you'd like. For example, you could choose three trees in your backyard or two trees in your backyard and one tree across the street.
 - Suggestions for places to monitor: your yard, the local park, the local nature sanctuary, your campus or school, anywhere else you think the trees are at least 17 years old!
4. Choose at least 3 trees to monitor. Try to choose some trees to monitor that are near hard surfaces (e.g. buildings, concrete, sidewalks, etc.) and some that are not (e.g. grass, dirt, etc.) AND/OR some trees that are in shady areas and some trees in sunny areas.
5. Assign each tree a number.
6. Photograph each tree. When you photograph the trees, try to include: an image of the full tree, a close up of a twig, and a clear image of several full leaves. Note: we need to know the exact location of each tree. Most people's phones will attach this information to photos. If yours does not or if you're using another type of camera, make as precise a note of your location as you can on a map and use that location when you enter your data onto iNaturalist.
7. Add your trees to the [Indiana Cicada Emergence Trackers](#) project on iNaturalist. We'll take care of identifying them for you! Make sure to add them to the Indiana Cicada Emergence Trackers project! If you are using the app you can do this by hitting the projects button and toggling the button next to the Indiana Cicada Emergence Trackers project so that it turns green. See pages 5-7 to see what this looks like. If you are on a computer, you can do this by navigating to the project page, clicking the Red “Add observations to this project” button on the project banner, and filling out the questions on the data entry form. Check out the images on page 5-7 to see what this process looks like.

Watch for cicadas!

8. Review what cicadas look like. You can find great images of the [cicada lifecycle here](#), images and information about [cicadas of Indiana here](#), and some great pictures of [signs of cicada emergences here](#).
9. Start checking for [cicada shells](#) between April 1st to 30th (but the sooner the better!). Double check that there are no cicada shells on your trees or in your area before you

begin. If the cicadas have already emerged it's too late to start this project but don't worry! There are [other ways you can help collect cicada data!](#)

10. Record the temperature at the base of each tree. Get as close to the bottom of the trunk as possible without touching the ground. Make sure to wait a few minutes between trees to allow your thermometer time to adjust. Try to use the same thermometer for each visit so that we can more easily compare between days and trees.
11. Check each of your trees for cicada shells every 3 days. If you miss a day, don't worry! Just visit the trees the next day instead. If you DON'T find cicada shells, go to step 12. If you DO find cicada shells, move to step 13.
12. Note down on the data sheet provided on page 8 that you did not find any signs of cicada emergence. Repeat step 11 until you find cicada shells or until May 31st.
13. Once you find cicada shells:
 - Photograph them, preferably with your cellphone
 - Upload them on iNaturalist
 - Make sure to add them to the [Indiana Cicada Emergence Trackers](#) project! If you are using the app you can do this by hitting the projects button and toggling the button next to the Indiana Cicada Emergence Trackers project so that it turns green. See pages 5-7 to see what this looks like. If you are on a computer, you can do this by navigating to [the project page](#), clicking the Red "Add observations to this project" button on the project banner, and filling out the questions on the data entry form. Check out the images on page 5-7 to see what this process looks like.
 - Add the tree number for the tree where you found the cicadas in the "Notes" section of the data entry form. The notes section is on the bottom left of the web version of the submission form and the third box from the top on the app version of the submission form.
 - Make a note on your datasheet of the day that you found cicada shells on each tree.
14. Look around for any fully emerged cicadas. If you find any, repeat step 11 for the adult cicadas.
15. Repeat steps 9-12 either until you have found cicada shells on all of the trees you're monitoring OR until two weeks after you found the first cicada shell. If you never find any cicada shells, you can stop looking on May 31st. Make a note of this on your datasheet. Not finding cicadas is just as interesting a result as finding cicadas!
16. Send us your datasheet (page 8) at barne175@purdue.edu or mail it to us at:
Elizabeth Barnes
Department of Entomology
901 W State St
West Lafayette, IN 47907

Future Projects

Want to be involved in more cicada fun? Check out our:

- Cicada Day at [Virtual Bug Bowl](#): Join us on Monday April 12th for a virtual celebration of all things cicada! We'll have a question and answer session, crafts, and even tips on how to make your own cookies with cicada decorations!
- [Cicada themed BioBlitz](#): Looking for more reasons to get outside and enjoy the cicada emergence? Join us for Indiana Cicada Fest, May 1st-9th! On these days, we're encouraging people all around the state to pick a spot with cicadas, photograph as many plants or animals as they can find, and add them to our Cicada Fest Project on iNaturalist!
- Learn more about 17-year cicadas on the [Purdue Cicada Website](#).
- Coming soon: Cicada Damage Detectives. We are working with the Indiana Department of Natural Resources to collect data on damage caused by cicadas. If you'd like to be notified when we launch this program, [sign up for our cicada newsletter](#).

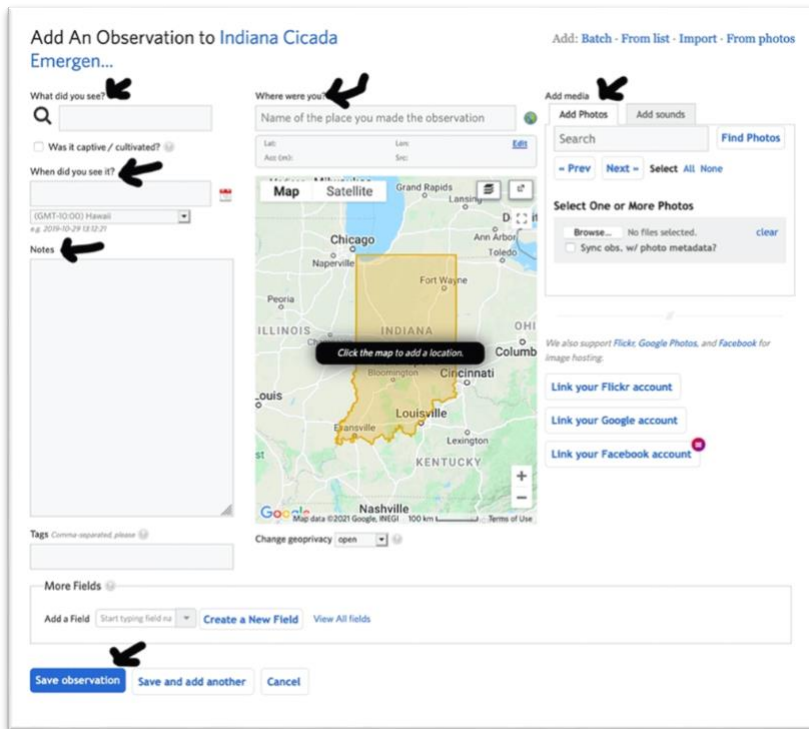
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How to add an observation to the [Indiana Cicada Emergence Trackers](#) project

On the website:



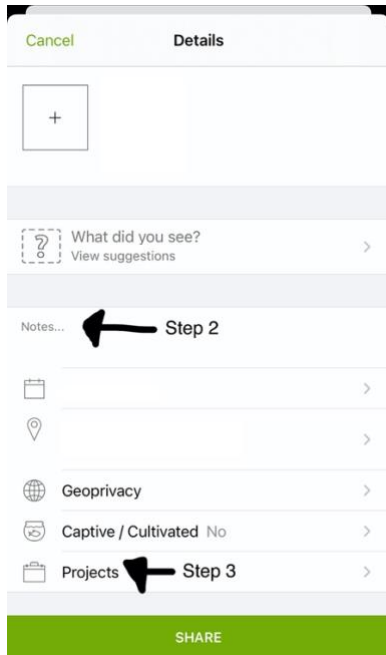
Step 1-Click on the red add observations button on the [Indiana Cicada Emergence Trackers](#) project page.



Step 2: Fill out all the fields with arrows pointing to them in the image above. Some of the information may automatically populate when you upload your photos so we recommend doing that first.

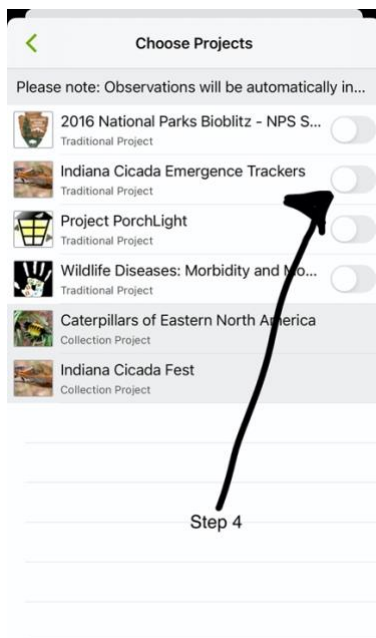
On the app:

Step 1: Open the iNaturalist app and click on the “observe” button at the bottom of the screen. Add your photos when prompted.

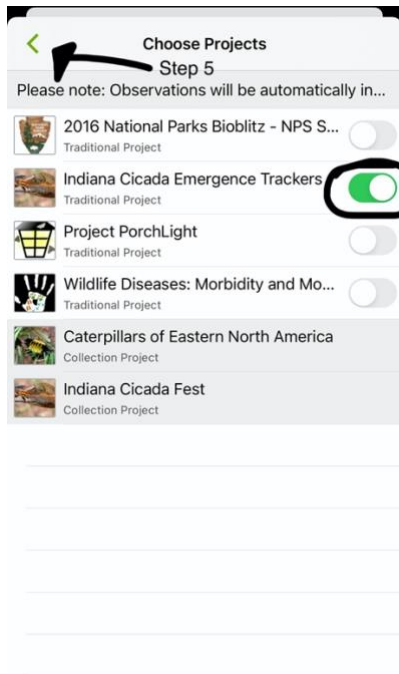


Step 2: If you are adding a photo of a tree, record the tree number in the notes. If you are adding a cicada photo, record the number of the tree where you found the cicada in the notes.

Step 3: Click on “Projects”



Step 4: Toggle the button next to Indiana Cicada Emergence Tracks over.



Step 5: The button next to Indiana Cicada Emergence Trackers should now be green. Hit the green arrow at the top of the screen and submit your observation.

