



Tracking Whitebark Pine Summer Season Field Manual

Your step-by-step guide to
completing an observation



TO DO BEFORE HEADING OUT

- 1. Complete the online training**
- 2. Download Survey 123 application and Tracking Whitebark Pine Survey**



- Use the QR code or [this link](#)

Note: if you do not already have Survey 123 loaded on your device, you will need to visit the QR code or link two times.

3. Plan your adventure

- Use the map on the volunteer homepage to plan your adventure.

What you need:

Adventure Scientists Provides:

1. Observation permit (this was emailed to you and also available on the volunteer homepage)
2. This Field Manual; be sure to download it to the device you will have with you in the field.
3. Trail and Project Boundary file; download this to your mapping application on your device.

Volunteers provide:

1. Smartphone with Survey 123 application downloaded and Tracking Whitebark Pine Survey loaded.
2. Adventure and safety equipment
3. GPS navigation application or device
4. Binoculars (or a camera with a good zoom)

Optional, but recommended:

1. Smartphone binocular attachment

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Observation Basics

Before you head out on your adventure, make sure to download the Tracking Whitebark Pine layer and add it to the navigation app of your choice.

This layer will clearly show where the outlines of the project area are (in national forests, non-wilderness zones above 5,000 ft).

When you begin your adventure and every time you log presence/absence, make sure to open your navigation app to ensure that the observation is inside the project area.

Remember that you are recording observations every mile and every time you see a potential whitebark pine tree above 5,000 feet in elevation.



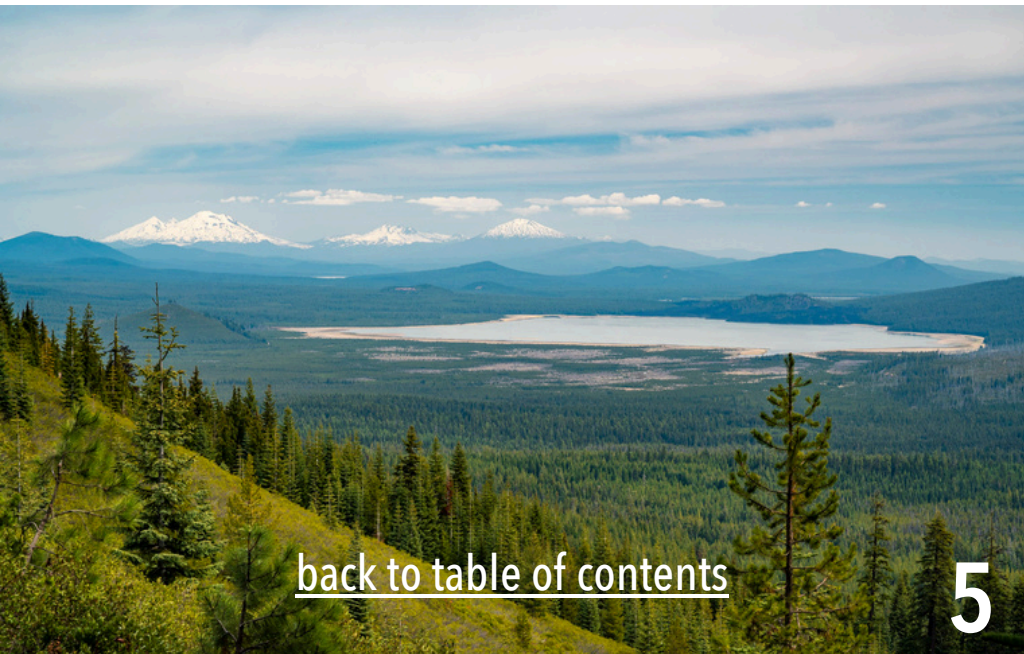
Searching for Whitebark Pine

Once you reach 5,000 feet in elevation, visually scan the proximity for potential whitebark pine trees.

As you adventure, keep an eye out (both on & off your route) for potential whitebark pine. Scan the surrounding area in all directions, especially in areas where the habitat changes.

Whitebark thrive in harsh, high-elevation environments, typically growing between 5,000ft - 11,000ft. They favor cold, windy, snowy areas with dry, coarse, well-drained soils. As a pioneer species, they're growing where other trees struggle including exposed ridges, talus slopes, and recently glaciated terrain.

If you spot a tree that could be a whitebark safely approach it to take a closer look. If you don't see whitebark as you move along, be sure to stop at least every mile to log absence data. Your navigation app of choice can help you keep track of mileage.

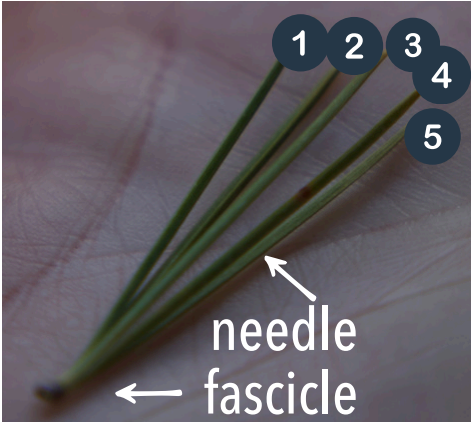


Whitebark pine tree ID

Basic Tree Shape



Needle Bundles



Whitebark pine tree ID

First year cones (conelets)



Second year cones



Entering Data in Survey 123

Once you reach 5,000 ft within the project boundary, stop at least every mile and anytime you see a potential whitebark pine.

At every mile, if you do not see potential whitebark pine, you will complete observation A.

If you spot a potential whitebark pine at any time, you will complete observation B.

A. No potential whitebark pine tree(s) sighted, begin on this page.

B. Potential whitebark pine tree(s) sighted, begin on page 10.

Entering Absence Data (no potential whitebark pine tree sighted)

1. Open the Survey 123 App.
2. Click "Continue without signing in"

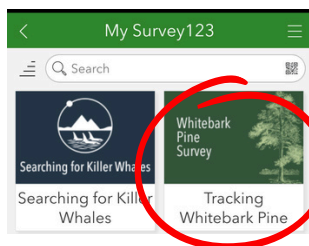
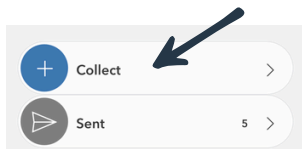


Entering Absence Data

(no potential whitebark pine tree sighted)

3. Click the "Tracking Whitebark Pine"

4. Click "Collect"



5. Begin entering observation data

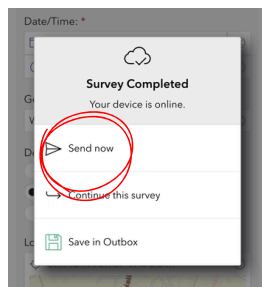
This was emailed to you when you signed up for the project. You can also retrieve it [here](#)

Enter the trail or name of the relative location where you made the observation.

If you still have more adventure ahead, select no and submit your data.

If this is the end of your adventure today, select yes and continue to the next page.

Click here to submit the observation.



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Entering Absence Data

(no potential whitebark pine tree sighted)

▼ Trip Report

Is this your last observation for this adventure? *

☒ Yes

☐ No

How many miles did you cover while searching for whitebark pine? *

Use your navigation app to report your mileage. This will help us count the number of miles surveyed, inform researchers on access, and help us know where you have surveyed.

How many miles did you travel within the project area (above 5,250 ft elevation and within the national forest project boundaries)? *

How many other Adventure Scientists Volunteers are with you? *

Even better, email whitebarkpine@adventurescientists.org your .gpx route!

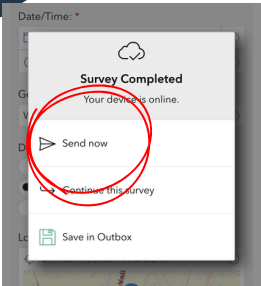
Add a photo of your adventure! This could be a scenic shot, a group selfie, or anything that can tell us more about your experience.



Would you like to share anything interesting about your adventure today?



Click here to submit the observation.

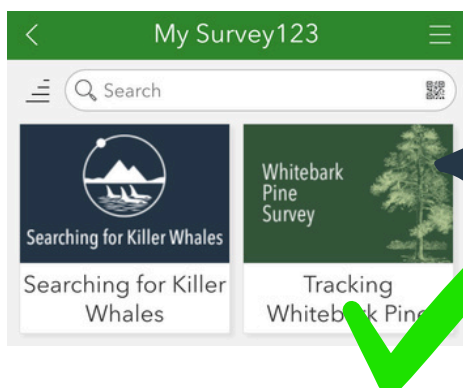


Entering Absence Data

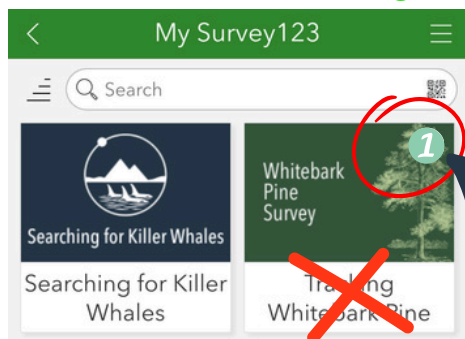
(no potential whitebark pine tree sighted)

6. Check that your data was submitted.

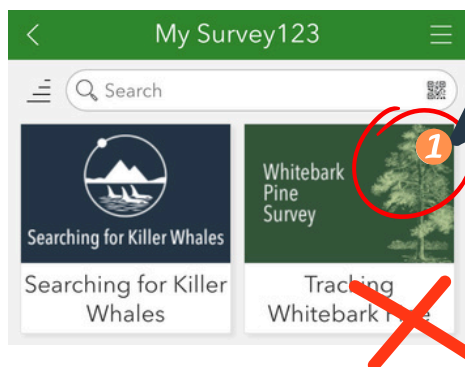
Close the application then reopen.



All data is submitted!



Data is not yet submitted.



Open the project and submit.

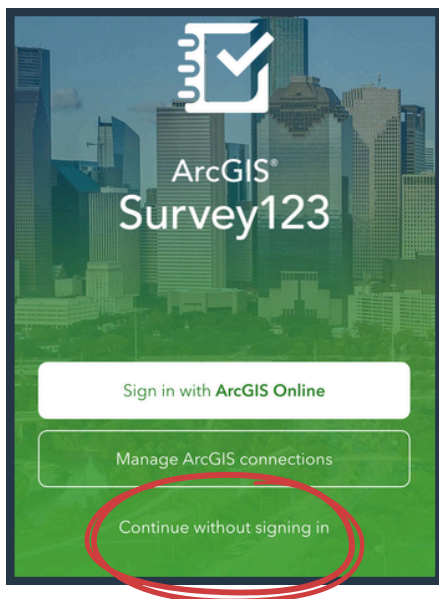
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Entering Potential Whitebark Pine Tree Sighting Data

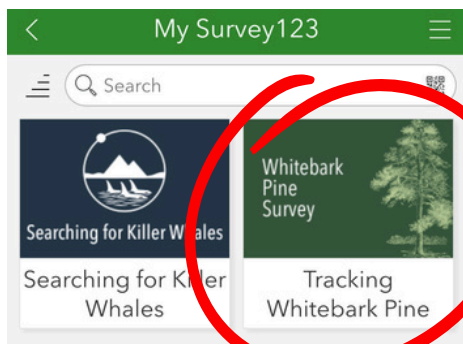
1. Open the Survey 123 App.



2. Click "Continue without signing in"

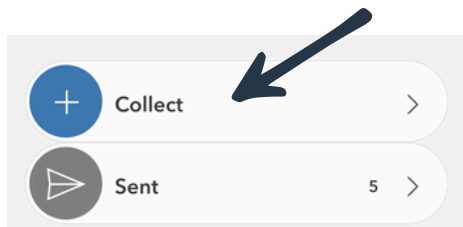


3. Click the "Tracking Whitebark Pine"



Entering Potential Whitebark Pine Tree Sighting Data

4. Click "Collect"



5. Begin filling in observation data.

This was emailed to you when you signed up for the project. You can also retrieve it [here](#)

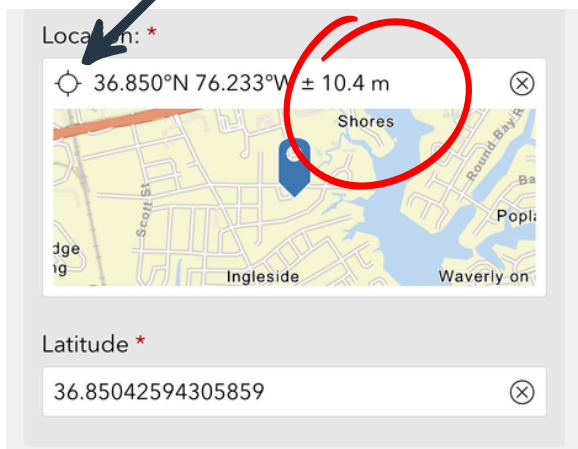
A screenshot of the 'Whitebark Pine Survey' form. The form has a green header with a close button (X), the title 'Whitebark Pine Survey', and a menu icon (three horizontal lines). Below the header is a section titled 'General Information' with a downward arrow. It contains several fields: 'Volunteer ID #' with a red asterisk and an empty text input field; 'Date/Time:' with a red asterisk, a date picker showing 'Monday, November 17, 2025', and a time picker showing '1:24 PM'; and 'Geographic Location/Site or Trail Name' with a red asterisk and an empty text input field. Below these fields is a question 'Do you see a potential whitebark pine tree?' with a red asterisk, followed by two radio button options: 'Yes' (selected) and 'No'. A black arrow points from the text 'retrieve it here' to the 'Volunteer ID #' field, and another black arrow points from the text 'Enter the trail or name of the relative location' to the 'Geographic Location/Site or Trail Name' field.

Enter the trail or name of the relative location where you made the observation.

Entering Potential Whitebark Pine Tree Sighting Data

6. Check the Location accuracy.

If the value is greater than 5m,
click the circular icon to refresh.



Troubleshooting GPS accuracy

If the GPS accuracy is greater than 5m

Wait a couple minutes to allow multiple satellites to pass and triangulate your position for more accuracy.

Do the best you can.

If you can't get it <5m, please continue the survey. We can still use the information about the tree.

NOTE: This accuracy is important for specific tree identification.

Entering Potential Whitebark Pine Tree Sighting Data

7. Whitebark Pine Report

Pro Tip: If there are more than one whitebark pine tree, select the healthiest looking one (with mature cones if possible) to complete the observational data.

Check all of the characteristics that match your observation

Note that a photo must be entered here to submit data.

▼ Whitebark Pine Report

How confident are you it is a whitebark pine? *

Western white pine can look very similar, check these photos to compare.

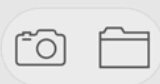
- ☐ Not very confident
- ☐ Somewhat confident
- ☐ Very confident

What characteristics help you feel confident that this is a whitebark pine tree?

- ☐ Five needles in a bundle
- ☐ Needles 3.5" or less
- ☐ Smooth needle margins
- ☐ Tree lacks distinct branch whorls
- ☐ Branches are upswept, crown broad and flat (not conical)
- ☐ If seed cones present egg-shaped, purplish & 4" or shorter in length, pollen cones scarlet to purplish
- ☐ Other

Take a photo of the study tree from ~20 feet away with the tree in the center *

If the full tree cannot be captured at 20' stand back further to capture the whole tree



Entering Potential Whitebark Pine Tree Sighting Data

This photo shows a whitebark pine with 2 stems.



Is it a single tree or multi-stemmed tree? *

- ☐ Single Tree
- ☐ 2-3 Stems
- ☐ 4+ Stems

Recording whether the tree is a single tree or a multistemmed tree is a helpful way to describe the tree to researchers.

A multi-stemmed tree splits/separates below 4.5ft of height

Multi-stemmed whitebark pine trees are very common because Clark's nutcrackers often cache seeds that grow into separate trees in a clump/group together.

A. Look at the tree and estimate about 4.5 feet from the base of the tree up the trunk (about counter height).

B. Compare the width of the trunk at 4.5 feet to these values and select the best option.

What is the estimated DBH of the tree? *

If your tree is multi-stemmed, select the DBH for the largest tree in the cluster.

- ☐ < 5 inches (smaller than a grapefruit)
- ☐ 5-10 inches (bigger than a grapefruit and smaller than a basketball)
- ☐ 11-15 inches (bigger than a basketball and smaller than a beachball)
- ☐ +16 inches (bigger than a beachball)

Entering Potential Whitebark Pine Tree Sighting Data

8. Enter additional observational data.

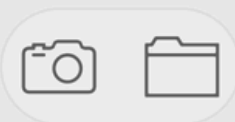
What is the estimated height of the tree?

Remember, in winter take into account snow depth!

- ☐ < 4.5 feet **about counter or bar top height**
- ☐ 4.5 - 10 feet **up to the height of a basketball hoop**
- ☐ 10 - 20 feet **about 1-2 basketball hoops tall**
- ☐ Over 20 feet **taller than a typical flagpole**

Make an estimate of the tree's height based on these options and guidance here.

Take a photo of a branch with needles as close up as possible, so that you can see the number of needles in a needle cluster. If the only branches with needles are near the top of the tree use binoculars to zoom in. *



Note: you must submit a photo here or you will be unable to complete the observation.

Entering Potential Whitebark Pine Tree Sighting Data

9. Location description

What direction is the slope facing? *

Use your navigation app or compass to determine the approximate downhill direction

- ☐ N
- ☐ NW
- ☐ NE
- ☐ S
- ☐ SW
- ☐ SE
- ☐ E
- ☐ W

Imagine a ball rolling straight down the slope. Align the compass's direction-of-travel arrow with this downhill path. This will be the slope.

If your navigation software has contour lines, you may also be able to discern slope from the map.

How close is the tree to the trail or road? *

- ☐ Tree is on or next to a road
- ☐ Within 100 yards (football field) of a trail or road
- ☐ More than 100 yards from a trail or road
- ☐ Unable to assess

Entering Potential Whitebark Pine Tree Sighting Data

If you select yes here, this will appear

Is snow covering the ground? *

- ☒ Yes
☐ No

What is the measured snow depth? *

What unit is your measurement in?

- ☐ Centimeters
☐ Inches

Note: This is a quick estimate to help researchers know the density of whitebark pine in the area.

Focus on potential whitebark pine trees >5 inches in diameter. (larger than a grapefruit)

Count the number of potential whitebark pine trees within 50 feet of the tree in any direction. *

- ☐ 1-10
☐ 11+
☐ Unable to assess

Describe the trees in the immediate area *

- ☐ Whitebark is the only tree species in this immediate area
☐ Whitebark is the dominant tree species in this immediate area
☐ Whitebark is a moderate tree species in this immediate area
☐ Whitebark is a minor tree species in this immediate area

Use your best judgment to determine if most of the trees are whitebark pine (dominant), there is a mix of species (moderate), or there are only a few whitebark pine trees among other tree species (minor).

Entering Potential Whitebark Pine Tree Sighting Data

▼ Tree Assessment

What percentage of the tree is dead? *



- ☐ Live, healthy tree, no flagged branches
- ☐ One or two flagged branches
- ☐ 1/3 of the tree dead
- ☐ 2/3 of the tree dead
- ☐ More than 2/3 dead
- ☐ 100% dead with red flagged needles still attached
- ☐ 100% dead with no needles remaining

Take a photo of the flagged branches: *



NOTE: Flagged branches are where the needles have turned orange or red, like a "flag"

Flagged branches are a sign that parts of the tree might be dead.

If the tree is 100% dead, please select a living tree to survey. The primary goal of this research is to collect data on living trees.

If there are flagged branches, you will be prompted to submit a photo here.

Entering Potential Whitebark Pine Tree Sighting Data

NOTE: For a refresher on evidence of these, see pages 21-23

Check all of the answers that apply.

If you see evidence of blister rust, you will submit a photo here

Do you see potential evidence of blister rust on the tree? *



e.g. sporulating cankers, red, flagged branches, rodent chewing, swollen zones of branches, roughened bark

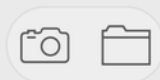
- ☐ Yes, swollen zone
- ☐ Yes, rodent/mammal chewing
- ☐ Yes, roughened bark
- ☐ Yes, old cankers
- ☐ Yes, sporulating cankers
- ☐ No evidence of blister rust
- ☐ Unable to assess

If you see potential cankers, how many do you see? (old or active)

If there is snow on the tree, select unable to assess

- ☐ 0
- ☐ 1-10
- ☐ Over 10
- ☐ Unable to assess

Take a photo of the potential signs of blister rust: *



Entering Potential Whitebark Pine Tree Sighting Data

NOTE: For a refresher on evidence of these, see pages 21-23

If you see evidence of mountain pine beetle, you will submit a photo here

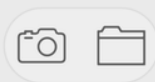
If you select yes here, this will appear

Do you observe any holes in the trunk of the tree likely caused by mountain pine beetles? *

If there is snow on the tree, select unable to assess

- ☐ Yes, pin holes in the tree trunk
- ☐ Yes, pitch tubes,
- ☐ Yes frass (reddish/brown sawdust)
- ☐ Yes, galleries under the bark
- ☐ No evidence of mountain pine beetle activity
- ☐ Unable to assess

Take a photo of the potential mountain pine beetle activity: *

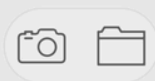


Do you see areas of excessive growth or limbs/needles on the tree that suggests it has been affected by dwarf mistletoe? *

If there is snow on the tree, select unable to assess

- ☒ Yes
- ☐ No
- ☐ Unable to assess

Take a photo of the area of excessive growth that could be associated with dwarf mistletoe *



Evidence of Blister Rust

Photos: Stauder

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Evidence of Pine Mountain Beetle

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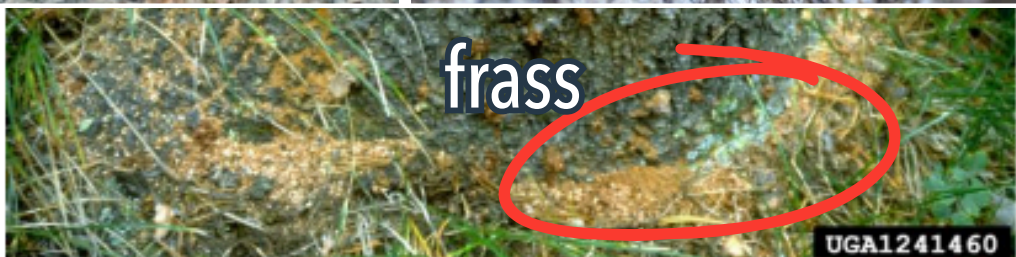


pin holes



photo credit: Staude

pitch tubes



frass

UGA1241460

photo credit: Belfield



galleries

Evidence of Dwarf Mistletoe

Photo: Stauder

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Entering Potential Whitebark Pine Tree Sighting Data

10. Regeneration Potential

▼ Regeneration Potential

Count the number of saplings in the area around your whitebark pine (roughly a 20ft radius in all directions).

- ☐ No regeneration (no saplings)
- ☐ 1-5 saplings under 4.5 feet in height
- ☐ Over 5 saplings under 4.5 feet in height

Do you see any cones or conelets on the tree you are observing? *



Remember that branch tips and conelets look different! If you don't have binoculars or a good zoom, please select "unable to assess"

- ☐ Cones
- ☐ Conelets
- ☐ I don't see any
- ☐ Unable to assess

If you select cones or conelets, additional fields will appear

How many cones do you see? *

Upload two different images for any cones observed.

- ☐ < 12
- ☐ 12-50
- ☐ 50+

Cone Image One *



Cone Image Two



How many conelets do you see? *

Upload two different images for any conelets observed.

- ☐ < 12
- ☐ 12-50
- ☐ 50+

Conelet Image One *



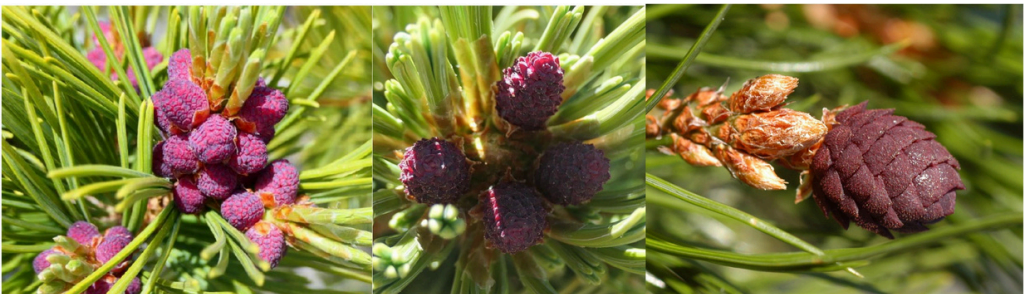
Conelet Image Two



[Cones, conelets, branch tips](#)
[jump to page 27-28](#)

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First year cones (conelets)



Second year cones



back to page 26

branch tip



conelet



conelet

counted in an observation

future conelets

not counted in an observation



Entering Potential Whitebark Pine Tree Sighting Data

Additional Notes
Please include any additional information that might help identify the tree or explain your observation.

You can add any additional observation details or other information that you think might be helpful about your observation here.

▼ **Trip Report**
Is this your last observation for this adventure? *

☐ Yes

☒ No

✓

If you still have more adventure ahead, select no and submit your data.

If this is the end of your adventure today, select yes and continue to the next page.

Click here to submit the observation.

Date/Time: *

☁

Survey Completed
Your device is online.

➤ Send now

⏮ Continue this survey

💾 Save in Outbox

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Entering Potential Whitebark Pine Tree Sighting Data

▼ Trip Report

Is this your last observation for this adventure? *

☒ Yes

☐ No

How many miles did you cover while searching for whitebark pine? *

Use your navigation app to report your mileage. This will help us count the number of miles surveyed, inform researchers on access, and help us know where you have surveyed.

How many miles did you travel within the project area (above 5,250 ft elevation and within the national forest project boundaries)? *

How many other Adventure Scientists Volunteers are with you? *

Even better, email whitebarkpine@adventurescientists.org your .gpx route!



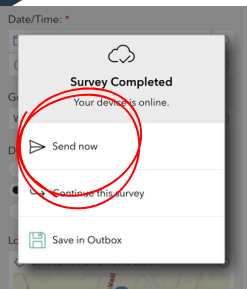
Add a photo of your adventure! This could be a scenic shot, a group selfie, or anything that can tell us more about your experience.



Would you like to share anything interesting about your adventure today?



Click here to submit the observation.



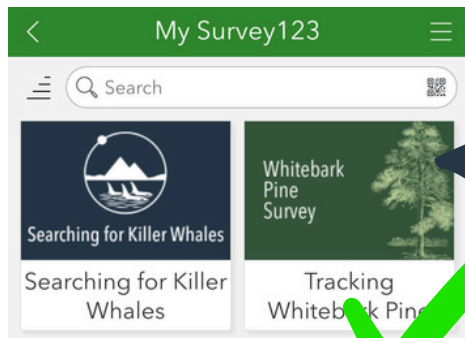
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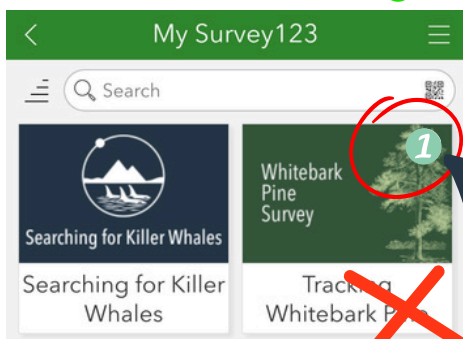
Entering Potential Whitebark Pine Tree Sighting Data

11. Check that your data was submitted.

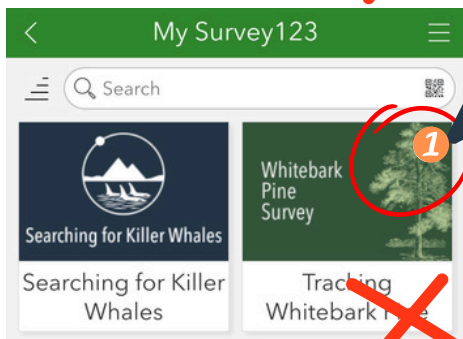
Close the application then reopen.



All data is submitted!



Data is not yet submitted.



Open the project and submit.

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Safety Considerations

As an Adventurer, you know that participating in outdoor activities such as hiking, snowshoeing, climbing, skiing, etc., has inherent risks.

Before you head out on your adventure, familiarize yourself with the weather, environmental conditions, and wildlife.

Complete any additional safety preparation you feel is necessary for your adventure! And of course, always adventure with a buddy!

IN CASE OF EMERGENCY FIRST, CALL 911

Once you are in a safe situation, after the emergency, alert Adventure Scientists staff about the incident by contacting: (406) 624-3320 extension 2

ONLY contact this number if you are reporting an incident.

Have project-related questions?

Email:

whitebarkpine@adventurescientists.org