

State of California

Natural Resources Agency

Memorandum

To: External Foresters, Reforestation Entities, Research Professionals, and reforestation minded individuals

Date: 6/27/2023

Telephone: 530-753-2441

Website: www.fire.ca.gov

From: Denia Troxell, Seed Bank Manager
California Department of Forestry and Fire Protection (CAL FIRE)

DocuSigned by:
Denia Troxell
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Subject: 2023 Cone Crop Survey and new initiatives.

DUE DATE JULY 31, 2023

The CAL FIRE Lewis A. Moran Reforestation Center (LAMRC), located in Davis, houses the **sole** remaining state-run conifer Seed Bank, and is part of the greater Reforestation Services Program (RSP). The Seed Bank staff are responsible for the entire state and rely heavily on the expertise of External Foresters, Reforestation Entities, Research Professionals, and reforestation minded individuals to assist with cone crop surveys.

The objective of the yearly Cone Crop Survey is to identify potential conifer cone crops in California that can produce viable seeds for reforestation projects such as post-fire restoration and other reforestation demands throughout California. This indispensable information can ultimately translate to seeds available to benefit **your** region. This year, it is estimated that the Seed Bank would need to collect 76,304 bushels for the entire state to meet reforestation needs.

We are reaching out to external organizations to assist in distributing the contents of this MEMO throughout their programs, if possible.

Role of foresters, research professionals, and reforestation minded individuals - Cone Crop Surveys

There are many ways reforestation minded individuals can assist. The primary focus of this MEMO is submitting quality cone survey data that follows the "General Cone Collection Scope of Work and Standards," found in this MEMO.

Access:

Cone surveys can be done on public land and access roads. Before entering any area, ensure you have proper authorization.

Understanding the needs:

CAL FIRE will focus on primary species such as: Ponderosa pine, Douglas fir, Jeffrey

pine, Coast redwood, White fir, Red fir, BRR Sugar pine below 6000' feet.

Field guides:

- UCANR Reforestation Practices for Conifers in California
<https://ucanr.edu/sites/forestry/files/337246.pdf>

- Cone collection guides:
 - UCANR
<https://storymaps.arcgis.com/stories/4a589d022a284ae7a5050a7daf5f2d40>
 - Silva Seeds
<https://23185209.fs1.hubspotusercontent-na1.net/hubfs/23185209/Silvaseed/Cone-Scouting-Guide.pdf>

- Training videos: <https://ucanr.edu/sites/forestry/Reforestation/Webinar/>
 - Procuring Plant Materials
 - CALFIRE Cons Surveys and Collection Certifications

Submitting survey data:

CAL FIRE has entered a new partnership called [The Reforestation Pipeline Partnership](#), led by American Forests. This partnership between American Forests, USFS, and other entities has created a joint application (“Cone Observation Survey” via [Survey123](#)) where cone survey datasets can be shared between different entities. It has become increasingly clear that no singular organization can work alone to address depleting seed stock. This year is the kickoff, we ask that this be used when submitting survey data.

Anyone can enter information, but the data is filtered and select individuals from each entity can view the dataset. Any sensitive information will be kept private.

The application can be accessed two ways:

1. By using the web version: <https://arcg.is/vieqj>, no special sign-in required.
2. Download the Survey123 phone application directly onto your phone by going to your App Store>downloading Survey123. You will then need to be added to the “Cone Observation Survey” by scanning the QR code below.



New initiatives

- The Seed Bank has released the first iteration of an [Assessment of Needs](#) in an effort to determine areas to prioritize based on our inventory, seed

“The Department of Forestry and Fire Protection serves and safeguards the people and protects the property and resources of California.”

demands, nursery demands, and fire damaged areas. This is a preliminary approach towards a more directed, data driven allocation of resources. This analysis produced an extensive list which is the source of our total bushels needed.

- Reforestation because of YOU! This initiative is a pilot program launched by the Seed Bank as a proactive approach to obtaining landowner access earlier in the season in order to assess lands for surveys, monitoring, and collections. This is the first year of this initiative, but it aims to reduce the time needed to gain landowner access which often follows survey submittal.

Continuing partnerships

- MOU with USFS. In 2020, CAL FIRE entered a Non-Funded Challenge Cost Share Agreement with USDA, Forest Service Region 5, El Dorado NF, and Placerville Nursery to allow for CAL FIRE to do survey, monitoring, and collections on land owned by the stated entities. If you conduct surveys on the lands stated above CAL FIRE is able to follow-up.

Additional resources:

- Survey123:
<https://survey123.arcgis.com/share/d54c79e7c550409bb0611744feda1854>
- The Reforestation Pipeline Partnership:
<https://www.americanforests.org/coalition/reforestation-pipeline-partnership/>
- Assessment of Needs:
<https://34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/what-we-do/natural-resource-management/wildfire-resilience/reforestation-center/cal-fire-seed-bank-aon-2023.pdf?rev=5022c85ed0f1409ea9768e475dae3d7a&hash=B95121E11D309E88AB0978F94603ADF7>

Thank you in advance for your valuable assistance and support! Please contact the LAMRC Seed Bank Manager, Denia Troxell, denia.troxell@fire.ca.gov if you have any questions about the information contained in this packet. Please submit completed surveys via Cone Observation Survey (Survey123)

Enclosures: General Cone Collections Scope of Work and Standards
California Tree Seed Zones
Landowner Access Agreement
Cone Crop Survey Fact Sheet
Using Survey123 on your phone

General Cone Collections Scope of Work and Standards

Description of Work: Collect seed cones from general conifer populations. All collections must be approved PRIOR to collection by the CAL FIRE Seed Bank staff. Cone sacks, tags, and ties are provided by LAMRC.

All collected cones will be bagged, tagged, tied, and transported to LAMRC in Davis within 24 hours of collecting. If cones will not be delivered within 24 hours, they must be interim stored in a cool and ventilated environment and stand free from each other until they can be transported to LAMRC. During transport, cones must be protected and well ventilated.

Project Location: Statewide by seed zone and elevation band.

Cone Collection Standards:

Prior to any collections, CAL FIRE staff or other previously determined registered professional forester will assess the viability of a collection through cone cut tests and site assessment.

Crop rating and stand assessment.

- 1) Each seed lot should have a **minimum** of 10 trees represented. The aggregation of these ten trees, within a 500' elevation band, will be referred to as a "stand."
- 2) Crop ratings are to be given at the stand level. For example, if out of 10 trees there are 2 that have a heavy crop, but the rest are light. The average rating for that stand will be light.
- 3) The top 2/3^{rds} of a tree are to be assessed for crop rating.
- 4) Collectable trees shall be dominant or co-dominant, disease-free, of cone-bearing age, at least 12" DBH, with good stem and crown form, no split tops, fast growth rate, and other favorable phenotypic characteristics.
- 5) Seed trees shall be widely spaced and well distributed, generally not closer than 200' apart.
- 6) Stands are separated by at least 200 yards.

Viability

Cone cut tests are to be done to assess viability. This will be done by LAMRC Seed Bank staff.

- 1) Cones and seed must be relatively free of insects. Cones of *Pinus* shall have at least 75% sound, filled seeds per cut surface; for all other species the minimum is 50% per cut surface.
- 2) Embryo length shall be at least 90% of the embryonic cavity for all species.

- 3) Megagametophyte shall be opaque, not translucent, and with a firm, nut-like texture.
- 4) Seed wings shall be separate from the scale and slightly brittle (like parchment paper).

Collections

- 1) Sugar pine and Red fir cones shall be bagged in the tree so as not to incur impact damage to the cones and seeds from free falling to the ground.
- 2) The peduncle shall be removed from Sugar pine cones before bagging. This can be done with hand-held clippers.
- 3) Trees should be flagged or identified before collections occur.
- 4) Cone sacks shall be properly identified with one tag inside and one tag fastened to the outside with the species, lot number, seed zone & elevation, decimal degree coordinates (DD), location (T R Sec) and date of collection. Tags shall be marked with waterproof ink or sharpie and shall be legible.
- 5) Only one bushel of cones per sack allowed and secured at the top to allow for cone expansion. Fill line is clearly marked on CAL FIRE sacks.
- 6) Only current year cones are acceptable – cones must contain viable seed.
- 7) General collection trees may be climbed with ladders, spurs or other methods that are not damaging to the tree. Special collections and Sugar pine shall be climbed without spurs.
- 8) Collections shall contain at least 95% seed bearing cones by volume. Unacceptable material includes branches, large twigs and tufts of needles, rocks, cones of the wrong species, spent cones or other foreign matter.

Estimated Start Date: Varies by species, area, and elevation of the site.

Permission & Insurance: Collections on Federal, State, and private property require advance notice and completed and Landowner Access Form.

CALIFORNIA TREE SEED ZONES

The Numbers

The first digit in the seed zone designates the physiographic and climatic region.

The second digit in the seed zone designates the physiographic and climatic subregion. The 900 series is an exception - in that series the second digit designates the physiographic and climatic region.

The third digit in the seed zone designates the zone.

360

The Rules

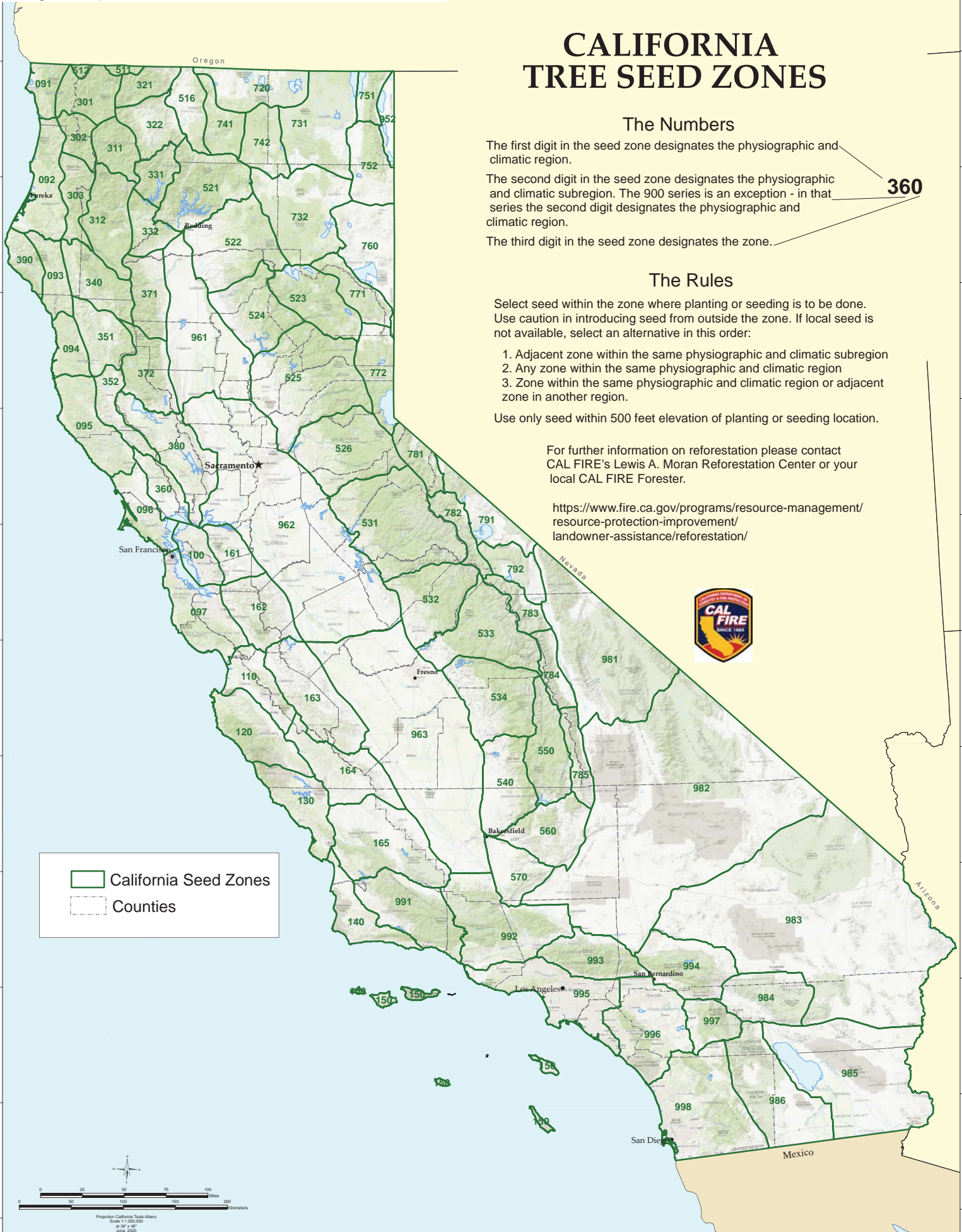
Select seed within the zone where planting or seeding is to be done. Use caution in introducing seed from outside the zone. If local seed is not available, select an alternative in this order:



1. Adjacent zone within the same physiographic and climatic subregion
2. Any zone within the same physiographic and climatic region
3. Zone within the same physiographic and climatic region or adjacent zone in another region.

Use only seed within 500 feet elevation of planting or seeding location.

For further information on reforestation please contact CAL FIRE's Lewis A. Moran Reforestation Center or your local CAL FIRE Forester.

<https://www.fire.ca.gov/programs/resource-management/resource-protection-improvement/landowner-assistance/reforestation/>



 California Seed Zones
 Counties



Projection: California State Albers
Scale: 1:1,000,000
48 38' x 48"
June 2003

The State of California and the Department of Forestry and Fire Protection make no representations or warranties regarding the accuracy of data or maps. Neither the State nor the Department shall be liable under any circumstances for any direct, special, incidental, or consequential damages with respect to any claim by any user or third party on account of, or arising from, the use of data or maps.

Obtain FRAP maps, data, metadata and publications on the Internet at <https://rap.fire.ca.gov/mapping>
For more information, contact CDF-FRAP, P.O. Box 944246, Sacramento, CA 94244-2460, (916) 327-3639.

Gavin Newsom, Governor, State of California
Wade Crowfoot, Secretary for Resources, The Natural Resources Agency
Thom Porter, Director, Department of Forestry and Fire Protection

DATA SOURCES:
CAL FIRE Seedzones (seedzones02_1)

Cone Survey Access Agreement

CAL FIRE	State of California Department of Forestry and Fire Protection 5800 Chiles Road, Davis, CA 95618 denia.troxell@fire.ca.gov	
Landowner	Name: Address: Email: Phone number:	
Land	Address of site: Or parcel number: Or coordinates of location: Or Legal description attached as Exhibit "A" Acres:	
Purpose	Facilitate CAL FIRE reforestation services seed collection program.	
Effective Date		
Termination Date		
Signatures	State of California Department of Forestry and Fire Protection By: _____ Name: _____ Title: _____	Landowner By: _____ Name: _____ Title: _____

This Cone Survey Access Agreement ("**Agreement**") is entered into as of the Effective Date between CAL FIRE and Landowner. CAL FIRE and Landowner may be referred to individually as a "**Party**" or collectively as the "**Parties**".

1. Term and Termination. The term of this Agreement starts on the Effective Date and ends on the Termination Date ("**Term**"). This Agreement may be terminated by a Party upon 30 days written notice to the other Party.
2. Use of Contractors. CAL FIRE contracts with professional, privately insured, individuals ("**Contractors**") to provide CAL FIRE additional resources and experience. These entities may work on the Landowner property as an agent of CAL FIRE and their presence will be communicated to the Landowner ahead of time.
3. Grant of Access. Landowner grants CAL FIRE and its Contractors (collectively "**CAL FIRE Parties**") permission to access the Land for seed collection as a part of the CAL FIRE reforestation services program during the Term. This program is limited to seed tree surveys and collection which includes the CAL FIRE Parties surveying the Land, flagging, and climbing trees, as well as harvesting cones and seeds from the trees as further described below.
 - 3.1. Survey. CAL FIRE Parties will conduct an initial site survey on the Land as a preliminary verification to

determine if the Land has the potential to be a source for viable seed crop collection.

3.2. Monitoring. If potential crops are identified during the initial survey, follow-up visits by CAL FIRE Parties will be needed to verify if the crop is viable and monitor with additional visits until ripe.

3.3. Collection. Upon crop ripening, CAL FIRE Parties will access the Land to climb trees and collect cones and seeds for processing at CAL FIRE's facilities.

3.4. Nonviable Seed. If at any time during a season the CAL FIRE Parties determine the crop is nonviable, CAL FIRE will notify Landowner that CAL FIRE Parties will not be returning to the Land for that season.

4. Seed Banking Benefit. If the landowner desires, CAL FIRE will reserve 10.00% the clean seed collected from the Land for the Landowner during the term. Any seed remaining after the termination of the Agreement will become the property of CAL FIRE unless other arrangements are made in writing by either party.

5. Indemnification. CAL FIRE will defend and indemnify Landowner pursuant to Government Code 14662.5 as follows:

5.1. Defense. CAL FIRE will defend Landowner against any claim, demand, government investigation, or legal proceeding made or brought by a third party made against Landowner to the extent arising out of or relating to the negligence or willful misconduct of CAL FIRE Parties.

5.2. Indemnification. CAL FIRE will indemnify Landowner against all amounts awarded to the third party making a claim, demand, government investigation, or legal proceeding against Landowner, and all penalties, fines, and third-party costs (including legal fees) paid by the Landowner arising out of or relating to any claim, demand, government investigation, or legal proceeding made or brought by a third party described in this section.

6. Amendment. No amendment or variation of this Agreement will be valid unless made in writing and signed by the Parties.

7. Severability. If any term of this Agreement is held by a court of competent jurisdiction to be invalid or unenforceable, then this Agreement, including all of the remaining terms, will remain in full force and effect as if such invalid or unenforceable term had never been included.

8. Notice. Any notice required to be provided in this Agreement must be given in writing and sent (a) by first-class certified United States mail, postage prepaid, return receipt requested or (b) by email to the addresses listed at the start of this Agreement. Notice is deemed received on the earliest of (i) 3 business days after being sent by physical mail; or (ii) when sent by email unless the message is rejected as undeliverable.



Cone Survey Fact Sheet

What is a Cone Survey?

A cone survey is a data collection effort to determine whether conifer trees in a particular area are producing an abundant, high quality cone crop. This varies greatly from year-to-year as well as based on the tree species and location. Cone surveys are conducted on behalf of CAL FIRE's L.A. Moran Reforestation Center (LAMRC), which houses the only State-run Seed Bank in California.

Why are Cone Surveys Needed?

Recent large and damaging wildfires and bark beetle outbreaks have resulted in an urgent need to increase the pace and scale of reforestation activities across the state. To achieve these goals, conifer seeds must be collected from cones and stored by the seed bank so they can be used to grow new seedlings when the need arises. The identification of viable seed crops through annual cone surveys is an essential step in prioritizing collection areas and replenishing seed supplies.

How are cone survey sites selected?

Forestry professionals from CAL FIRE and other collaborators work with the seed bank to prioritize cone survey locations. Survey locations are based on the species of conifer needed and where the potential for viable seed crops is high.

How are cone surveys conducted?

Trained resource professionals conduct cone surveys by viewing trees from public roads and from private properties where landowners have granted access. Surveyors use binoculars to assess the condition of cone crops. The abundance of cones is recorded and communicated to CAL FIRE to determine the viability of a physical collection.

How often are cone surveys conducted?

Initial surveys are typically completed from May to July, with monitoring surveys conducted at promising sites. CAL FIRE staff and collaborators may collect cone/seed samples to test for viability if a crop is promising.

What happens if there are viable cones on my property?

If a sufficient number of viable cones are found in a suitable location, CAL FIRE will coordinate with the property owner(s) regarding the timing and methods of collection. Typically cone collections can begin as early as mid-July and continue through December.

Professional tree climbers scale trees to hand harvest cones. This process does not damage the tree or affect its form or appearance.

How do landowners' benefit?

Landowners benefit by knowing that they are helping to preserve California's unique ecosystems and the services they provide, such as critical wildlife habitat, clean water, clean air, timber production, and carbon sequestration. Landowners may also request that CAL FIRE reserve a portion of the seeds collected from their property for future reforestation efforts on their land.



For More Information Please Contact:

L.A Moran Reforestation Center:
[Reforestation Services Program | CAL FIRE](#)

[For questions on your reforestation needs, please contact:](#)

Denia Troxell, Seed Bank Manager
denia.troxell@fire.ca.gov



Using Survey123 on your phone

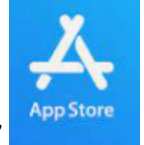
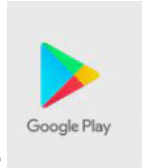
UCANR, AF, CAL FIRE, and USFS Reforestation Pipeline Cooperative

Survey 123 will work on either android or iPhone IOS.

INSTALLING THE SURVEY

If you have never used Survey 123 before, you will have to install it on your phone.

1. Go to your app store.



2. For android it will be your "Google Play" store and for iPhone IOS it will be "App Store"
3. Type "Survey123" in the search bar.

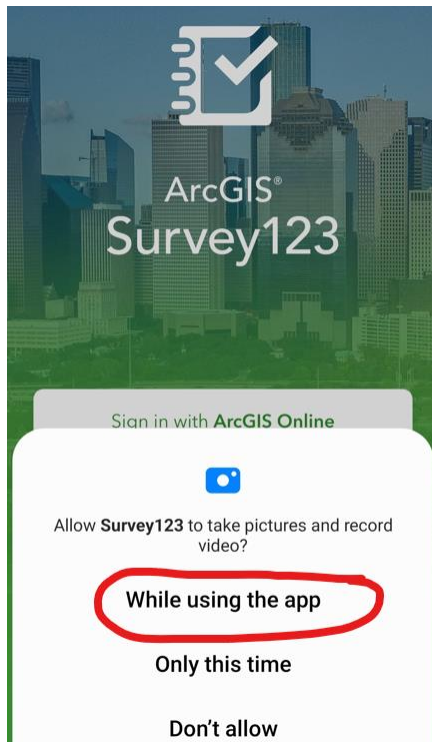


4. Install the Survey123 Application from your App store on to your phone.
5. Click open.

LOGIN & OBTAINING THE SURVEY

Once you have the Survey123 App installed:

1. The first time you login you will get this screen. Please select "While using the app" as you will need to take pictures. If asked to use location, select "Precise."



2. There **are TWO ways** to access the app. You do not need an ArcGIS account to use the app.

(A) If you have an ArcGIS account

Use your login information to sign-in. Please do so if you have an account as it automatically saves your information throughout devices.

(B) If you do NOT have an ArcGIS account

Click the “Continue without signing in.” You do not need an ArcGIS account to use the app.



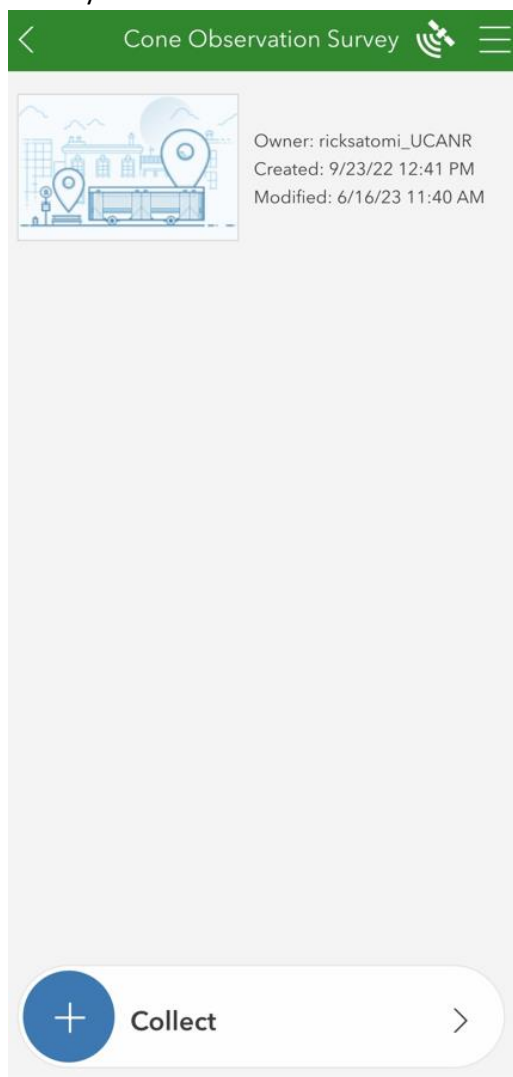
3. Regardless of how you sign-in you will get the following screen. Click on the QR code on the upper right-hand corner.



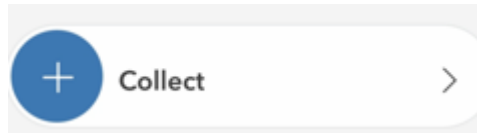
4. Scan the QR code below and the survey will download to your phone.



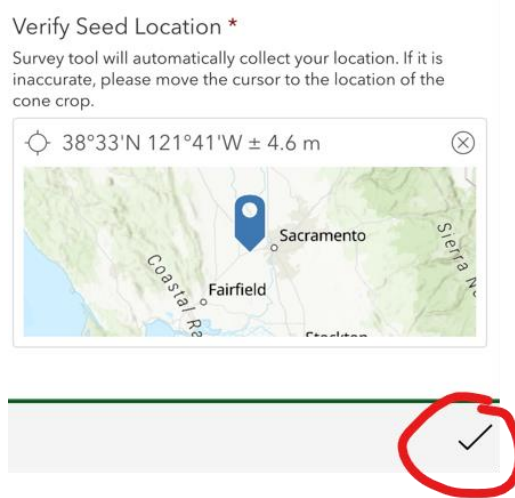
5. You will see the “Cone Observation Survey.”



SUBMITTING A SURVEY



1. Click on the "Collect" button.
2. Fill in the survey.
3. Submit by clicking on the check mark on the lower right hand of the screen.



4. All done! * if you have service

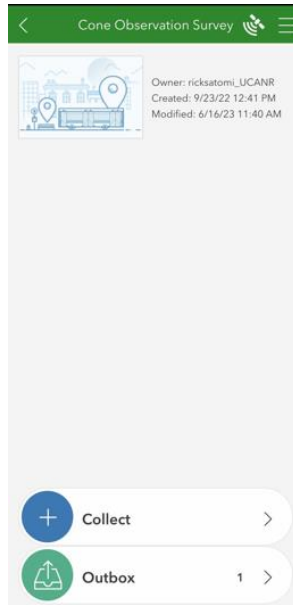
USING THE SURVEY OFFLINE

If you do not have reception/offline you can still do the following:

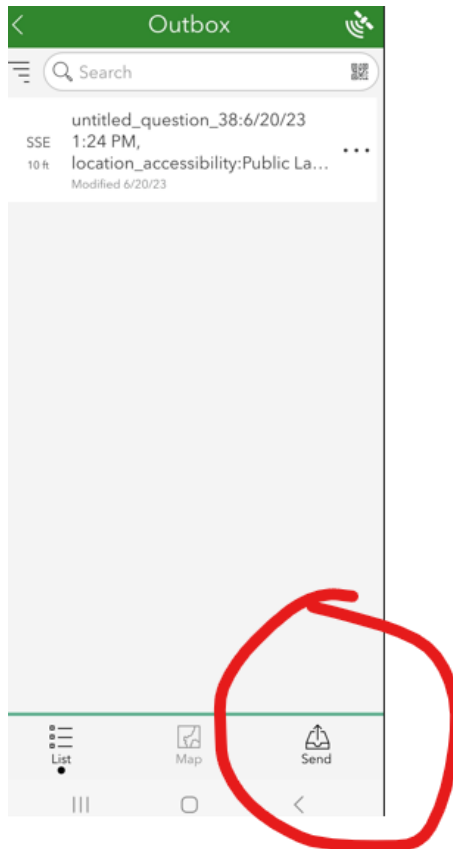
1. Follow sections above.
2. If you are offline, it will not submit. Instead, it will give you the option to "Save in Outbox."



3. When you are back online, go to your survey screen. Click on "Outbox."



4. Click on send.



5. Done!
6. Questions? Contact Denia Troxell at denia.troxell@fire.ca.gov or Ricky Satomi rpsatomi@Ucanr.edu