The need for seed is dire and CAL FIRE will be continuing to collaborate with the USDA Forest Service (USFS) on a cooperative cone survey and collection this year. We will be actively collecting cones from USFS lands if crop production allows, so please do not hesitate to include cone crop information from USFS lands if you know of developing crops.

The CAL FIRE Lewis A. Moran Reforestation Center (LAMRC) is requesting assistance from Unit Forester’s and their staff to complete the Cone Crop Survey, participate in monitoring, and Cone Collection Certification. If your Unit is not able to complete the cone surveys by the date indicated, please contact the Reforestation Center as soon as possible so other arrangements can be made. Please use your best judgment when scheduling cone survey work as ripeness can vary considerably by location.

This request supports the sole remaining state-run conifer Seed Bank located at LAMRC. The Seed Bank attempts to maintain adequate, reliable and continuous supply of high-quality site adapted seed for reforestation after wildfires, tree mortality, drought, as well as other biotic and abiotic factors.

Cone collections cannot occur without your indispensable surveys. Information provided will directly impact seed availability for your region. This year it is estimated that the Seed Bank would need to collect 76,304 bushels for entire state to meet reforestation needs. This is equivalent to 38.2 tons of seed.

Attached is a brief description of cone collection guidelines, a cone crop survey form, and seed zone map.

The Cone Survey and Collection Certification webinar is available for viewing online at: http://ucanr.edu/sites/forestry/webinars/reforestation (Part 1- Jan 15 and Part 2- Jan 22).

Role of CAL FIRE Forester - Cone Crop Surveys
Foresters should survey routes using the standard survey form (copy attached) and provide enough comments to give overview of the cone crops in the area. For those Foresters who have obtained the Cone Survey App, this may be used in lieu of the standard paper form. Use of GPS way points is encouraged but official record must also maintain location using the public land survey system.
Cone Collection Needs
A list of cone collection needs based on spatial analysis is attached as a separate document for species, seed zone, elevation combinations, and priorities.

Role of CAL FIRE Forester - Cone Collection Certification
Another critical role of the CAL FIRE Forester is monitoring and site certification during collections using the Report of Cone Collection form (FM-44) during the certification visit. If you need FM-44’s, please contact the Reforestation Center.

Thank you in advance for your valuable assistance and support! Please contact the LAMRC Manager, Division Chief James Scheid, if you have any questions about the information contained in this packet. Please submit completed surveys via the Field Maps App or email to James.Scheid@fire.ca.gov

Enclosures: General Cone Collections Description/Scope of Work
Cone Crop Survey Form
California Tree Seed Zones
Separate attachment--Cone needs list "2022 Seed Bank AON" please look at yellow "Filter by Units" tab.
Description of Work: Collect seed cones from general conifer populations as identified on the California Department of Forestry & Fire Protection’s (CAL FIRE) Cone Needs list (current year).

All collections must be approved PRIOR to collection by the CAL FIRE Seed Bank Manager. Cone sacks, tags and ties are provided by LAMRC.

All collected cones will be bagged, tagged and 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 – Actual collection assignments are based on species availability, bid price and collector preference.

Cone Collection Standards:

1) The source of each collection **must** be certified. Collector shall arrange for a site visit during collection by a registered professional forester (CAL FIRE or other RPF) for cone lot certification.

2) Collectable trees shall be dominant or co-dominant, disease-free, of cone-bearing age, at least 12” DBH, with good stem and crown form, fast growth rate, and other favorable phenotypic characteristics.

3) Seed trees shall be widely spaced and well distributed, generally not closer than 200’ apart.

4) Stands are separated by at least 200 yards.

5) The top 1/3 of the tree will be collected. Each seed lot should have a minimum of 10 trees represented.

6) 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.

7) The peduncle shall be removed from Sugar pine cones before bagging. This can be done with hand-held clippers.

8) Flagging shall be left in an upper branch of all trees collected from to serve as a check on genetic base.
10) 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.

11) Embryo length shall be at least 90% of the embryonic cavity for all species.

12) Megagametophyte shall be opaque, not translucent, and with a firm, nut-like texture.

13) Seed wings shall be separate from the scale and slightly brittle (like parchment paper).

14) 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, location (T R Sec) and date of collection. Tags shall be marked with waterproof ink or sharpie and shall be legible.

15) Only one bushel of cones per sack allowed and secured at the top to allow for cone expansion. Fill line is clearly marked on all CAL FIRE sacks.

16) Only current year cones are acceptable – cones must contain viable seed.

17) 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.

18) 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 of the state and elevation of the site.

**Permission & Insurance:** Collections on Federal, State and private property require advance notice and completed and approved Release of Liability and Indemnity forms. Vehicle identification, proof of auto insurance and certificate of Liability Insurance is required.

**Delivery & Payment:** A sample of cones will be assessed upon delivery. Please note: The minimum standards for cone and seed maturity and quality must be met for processing payment.

If collection is approved for payment, collector shall submit an invoice that includes at least the following: collector name, address and phone, CAL FIRE name and address, invoice number and date, items (species, zone & elevation, lot #) and quantity of bushels, price per bushel and total cost.

Payment is generally made 45-60 days after receipt of invoice, but may take longer (up to 75 days) during Fire Season.
Date: ____________________ Rating By: __________________________

Seed Zone: _______________ Elevation: ________________________

T: _____ R: _____ Sec: _____ Lat: ________ Long: _______

Stand Observed From: within stand ________ road ________

Motor Log:
_________________________________________________________
_________________________________________________________

Land ownership_____________________________________________

Comments on Stand Condition: (form, density, access, safety for collection)
_________________________________________________________
_________________________________________________________

<table>
<thead>
<tr>
<th>Species</th>
<th>PP</th>
<th>JP (Check number if applicable)</th>
<th>RF</th>
<th>IC</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. None</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Very Light</td>
<td></td>
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</tr>
<tr>
<td>3. Light</td>
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</tr>
<tr>
<td>4. Medium</td>
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<tr>
<td>5. Heavy</td>
<td></td>
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</tr>
</tbody>
</table>

The cone crop rating is based on ocular estimates of cone quantities on dominant and co-dominant trees, 12 inches d.b.h. or greater. Five classes are used as follows:

<table>
<thead>
<tr>
<th>Rating</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. None</td>
<td>No cones on any seed trees.</td>
</tr>
<tr>
<td>2. Very Light</td>
<td>Few cones on less than ¼ of the seed trees.</td>
</tr>
<tr>
<td>3. Light</td>
<td>Few cones on more than ¼ of the seed trees.</td>
</tr>
<tr>
<td>4. Medium</td>
<td>Many cones on ¼ to ½ of the seed trees.</td>
</tr>
<tr>
<td>5. Heavy</td>
<td>Many cones on more than ½ of the seed trees.</td>
</tr>
</tbody>
</table>
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.

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/