# High Fire Danger Plants

## Best Management Practices and Removal Techniques

### Required Tools

- [ ] shovel
- [ ] Pulaski
- [ ] loppers
- [ ] folding handsaw
- [ ] steel rake

### Required PPE*

- [ ] gloves
- [ ] eye protection
- [ ] long pants & sleeves
- [ ] sturdy shoes
- [ ] hard hat

*Always use proper PPE (Personal Protective Equipment) when operating hand tools or attempting brush removal. Long pants and sleeves, closed-toe shoes, eye protection, work gloves, and hard hat are recommended. Do not attempt activities which are beyond your physical limitations or skill level. Some people experience allergy symptoms from plants or soil. Please wear an N95 mask if you are susceptible to allergic reactions.

*Information provided in this guide is meant to be paired with the resource (QR Code) below.*

# Mountain Whitethorn

*Ceanothus cordulatus*

pg. 17

# Tobacco Brush or Snowbrush

*Ceanothus velutinus*

pg. 18

- Fire dependent. Rapid regeneration after fire or being cut to ground level.
- Young plant sends one tap root straight down which eventually forms burl once fully established.
- Best removed within 2-3 years of germination before burl forms. If possible, pull out to remove tap root. Next option is to clear around root and use shovel, loppers, or Pulaski to cut or pry root as far below ground level as possible.
- Once established the entire burl must be removed using a Pulaski. Prune branches first and remove dirt around the plant and burl to provide access. Chop at and under burl with the axe end of the Pulaski, or hit with a sledge hammer, to break apart and remove. Roots under burl will not regenerate.
- New plants become a high fire danger after 5-10 years of unmanaged growth. They will die on their own after 25-30 years of no pruning. Any pruning or fire triggers 25-30 more years of growth.
- Plant will regenerate and remain healthy if all branches are pruned to ground level above burl. Pruning mid branch is not recommended as it causes irregular growth of the plant.
- Burls and seeds remain dormant until fire triggers seed germination or burl regeneration.

# Bitterbrush

*Purshia tridentata*



- Not fire dependent.
- Sprouts in clumps of about a dozen plants in a 2" square area. Each of the dozen plants produce their own tap root.
- Slow initial growth allows for easy removal during the first 4-5 years. Pull straight up to remove all tap roots or use shovel, loppers, Pulaski to cut well below ground level. Moist soil makes pulling easier.
- Plants can be maintained as wildlife habitat and a food source with low fire danger through good management practices. To achieve this prune overgrown bushes down to no less than a couple feet above ground level leaving a nice shape with many 1” diameter cut branches. Pruning at any place higher on the bush encourages new growth and does not jeopardize plant health. If pruned lower, it may kill the plant leaving a stump which is difficult to remove.
- Large established plants can be removed using a couple methods.
  a. First method (easy if it works) — Large branches on older bushes can often be broken off below ground level by pushing and pulling a branch in all directions. Try this first but if it doesn’t snap off below ground level move to the second method.
  b. Second method — Prune or cut enough to access base, then use a Pulaski to hack between branches that make up the stump, breaking individual branches apart. Then pry at individual branches pulling them away from the center of the bush. Remember, due to the way they grow with individual tap roots each branch has its own root system going down and out from the center of the bush. Therefore, pulling one branch at a time increases your chance of success.
  c. Last resort for older plants — After cutting all the branches low with a saw, use a shovel and dig around base to reveal roots. Then chop at the root system under the stump using a Pulaski. If the stump is not removed completely, they take decades to rot.
  d. Healthy plants in early to the middle of their life cycle can be removed by straddling and using the mattock end of the Pulaski to chop under the center of the plant and pulling up.

# Greenleaf Manzanita

*Arctostaphylos patula*



- Moderately fire dependent. Will regrow from burl after a fire but can also propagate without fire by seed or by rooting branches.
- Plants rapidly establish a burl, making them difficult to remove after a few years of growth.
- They are loved by homeowners for their evergreen foliage and pleasing shape, but they create high fire danger if not managed. They need full sun to create their classic dome shape but become thin and lanky in shaded areas.
- Use a shovel or Pulaski for removal during the first few years.
- Maintain by breaking completely dead branches or cut live branches only at ground level. Pruning live branches at mid-height may invite disease which can kill the entire plant. Dead branches are extremely hard to cut with a lopper or saw.
- Don't be afraid to cut live growth to ground level with saw or break below ground level by pulling in opposite direction of growth. Plants will come back strong and healthy after all branches are removed as long as the burl is preserved.
- Eradication of mature plants takes removal of branches to ground level by breaking, sawing, or pulling in opposite direction of growth, then using the axe end of a Pulaski or a sledge hammer to remove the burl. Same process as Tobacco Brush.
- If you wish to propagate new plants find a mature bush. Pull up lowest branches laying in duff. You should find some that have root growth. Cut behind root growth and transplant in desired location. Water as needed until established.

# Big Sagebrush

*Artemisia tridentata*



- Propagates anytime, anywhere in abundance. Produces allergic reactions for many people. Using a mask may be a good idea.
- The best method of control is to pull by hand or use hoe or shovel in the first year of growth. Can usually be pulled by hand for the first 3-5 years until they are 12"-18" tall (maybe more). Pulling in late winter or early spring when soil is moist makes removal easier. Rotating the entire plant in a counterclockwise direction (when looking down from above plant) can help break radial root system on any age plant.
- Young plants that don't pull out can be removed by reaching over the plant and using the mattock end of a Pulaski to chop under the plant and pulling up.
- Older bushes can be sawn off above ground level and will not regenerate but they leave a stump that takes decades to rot, so full removal is recommended.
- Older mature plants can be removed in a couple of ways.
  a. First try gathering one or more branches and pull them up and over the plant. Many older bushes will pull out of the ground easily regardless of size. Note that roots radiate out just below the soil surface. These will break off in many circumstances. If pulling in one direction doesn't work, try gathering several branches on another side and try the same technique again. You'll find that many plants will pull out easily in one direction but not another. Once it comes loose, continue to pull at the roots to remove, or trim roots at ground level. They will not regenerate.
  b. If the whole bush doesn't pull out easily, try pulling individual branches in multiple directions until you feel it break loose. A little encouragement by using a Pulaski to split the branches at the base of the bush can help. Continue to pull individual branches away from the plant to remove radial root which may extend out 10' or more. Again, if you need to trim the root they will not regenerate.
  c. If none of these easier techniques work, it's time to break out a shovel or Pulaski. Identify where radial roots are located, cut using any tool until plant becomes loose enough to pry and pull out of the ground. Using a shovel to cut a wide circle around the plant will usually help you identify and cut the roots.

# Rubber Rabbitbrush

*Chrysothamnus nauseosus*

pg. 24

- Thrives after fire but not dependent on it.
- Difficult to identify when young. Silvery green leaves and bright yellow flower clusters in late summer help with identification.
- Full removal of multiple tap roots required to prevent regrowth.
- If left to itself, it becomes a high fire danger because the previous year's growth dies and becomes entangled in the plant. This can easily be removed by gathering it in your gloved hands and pulling out or using a steel rake to pull the dead material away from live sections of the plant.
- To remove the entire plant, dig deep with a shovel loosening soil, then use your hands to grab roots well below ground level. Pull straight up on each tap root, one at a time, to eventually pull all of the dozens of tap roots out. Expect to return later to pull ones missed the first time.

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# Bush/Sierra Chinquapin

*Chrysolepis sempervirens*

pg. 20

# Huckleberry Oak

*Quercus vaccinifolia*

pg. 22

# Curlleaf Mountain Mahogany

*Cercocarpus ledifolius*

pg. 25

- Manage fire danger through pruning or removal.
- For removal use saws and Pulaski. For larger specimens you may need to seek professional help.

# Low Fire Danger Alternatives

1. **Blue Elderberry** (*Sambucus cerulea*)
2. **Pink Sierra Currant** (*Ribes nevadense*)
3. **Mountain Rose** (*Rosa woodsii*)
4. **Bitter Cherry** (*Prunus emarginata*)
5. **Western Serviceberry** (*Amelanchier alnifolia*)
6. **Mountain Snowberry** (*Symphoricarpos oreophilus*)
7. **Mahala Mat** (*Ceanothus prostratus*)
8. **Chokecherry** (*Prunus virginiana*)
9. **California Coffeeberry** (*Frangula californica*)

## Forest Health Community Working Group

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