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## Best Practices for Invasive Species Management in Garry Oak and Associated Ecosystems: Evergreen Blackberry (*Rubus laciniatus*) and Himalayan Blackberry (*Rubus armeniacus/dicolor/procerus*)

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Assess the site characteristics and your available resources to help you decide where to take management action, what action to take, and when. These decisions should be made within the context of the overall restoration objectives (and restoration plan, if one exists).

Before proceeding, be aware that it is very important to not confuse Evergreen blackberry (*R. laciniatus*) with the native *Rubus ursinus*. Evergreen blackberry is often found in association with Himalayan blackberry. If Evergreen blackberry is found alone and you are uncertain you have identified it correctly, leave it alone. Also leave it alone if it is in trailing form (rather than upright); you may damage understory vegetation by trying to remove it.

### a) Deciding where to take action

#### Factor 1: Blackberry density

Survey the areas in the GOE where blackberry occurs. Sketch-out and label these areas "zone 1", "zone 2" or "zone 3" on your sketch map. Use the following descriptions:

- Zone 1 satellite patches (from a few canes, to a 5 foot by 5 foot patch)
- Zone 2 edges around larger patches
- Zone 3 larger patches (larger than 5' by 5')

Where to focus your effort? Follow the **Priority Principle: contain the invasive species first, then reduce its amount!** The highest priority is to prevent further spread of blackberry. Only take action to reduce the "footprint" of the blackberry invasion after it is contained. Therefore Zones 1 and 2 should be your first priority, and you should only move into Zones 3 areas when blackberry has been successfully removed from Zones 1 and 2. (Sometimes concerns about species at risk should override this. For example if a population of a species at risk is directly and imminently threatened by blackberry this should be a top priority. Such decisions should be made in consultation with species at risk experts.)

#### Factor 2: Ecological quality

To help you prioritize areas *within* Zones, consider GOE quality, presence of species of concern, and blackberry vulnerability. First priority areas should be those of highest ecosystem quality, where species at risk are threatened by a blackberry invasion. Within such areas, start in the more open, vigorous fruited blackberry patches, which are likely to be in dry areas where the plants are stressed and often not the most robust.

#### Factor 3: Accessibility

Blackberry management will require repeated efforts. Focus first in areas that can be accessed more easily for repeat treatments before moving into hard-to-access spots. On some areas where further spread is unlikely, you may actually wish to leave blackberry as an access barrier, if that fits the overall management objectives for the GOE.

**b) Deciding what action to take, and when**

Circumstances	Method	When	Caveats
Any size of patch	Manual control: loppers (can also be used as tongs to pull the cut cane out), hand clippers, brush saw	August - October before roots form from draping shoots	<ul style="list-style-type: none"> <li>If patch is used as a nesting site for native passerine birds, remove the patch gradually and avoid nesting season</li> <li>Also remove the root crowns or burls, as they can remain viable for a long time (use pick axe, mattock or Pulaski)</li> </ul>
Large, thick, patch of just blackberry, with no native species	Back hoe to remove biomass, and scrape down to the soil surface	When risk of damage to GOE (e.g. soil compaction, physical site damage) from machine access is lowest	<ul style="list-style-type: none"> <li>Should only be used on extreme invasions where manual control seems hopeless</li> <li>Be sure hoe will not destroy sensitive areas on its way to the blackberry patch it is targeting</li> </ul>
Areas too expansive for manual control <b>AND</b> not concerned about species at risk	Mowing	In the winter, when most native plant species are dormant	<ul style="list-style-type: none"> <li>Is more of a maintenance regime for control rather than eradication, though mowing may sometimes also encourage native species growth</li> <li>Will only work on relatively flat areas where mowers can be operated</li> </ul>
Draping tips starting to root	Hand extraction: paring knife	As soon as tips form roots (late October - November)	<ul style="list-style-type: none"> <li>This is a mitigation, not a recommended control method; try to get to the canes before the drooping tips form roots</li> <li>Don't just pull! You'll leave the roots, and have lots of new shoots to deal with later</li> </ul>
New growth from root fragments or root crown	Manual control: loppers, hand clippers	2-3 times per year, for 2-3 years following initial control	<ul style="list-style-type: none"> <li>May take 5 years to fully eradicate it</li> </ul>
New growth from root fragments or root crown	Herbicide	As soon as new growth appears	<ul style="list-style-type: none"> <li>Only with extreme caution, and by (or advised by) experts</li> <li>May be restricted (legally) in some jurisdictions</li> <li>Only use herbicides such as Glyphosate that do not remain active in the soil</li> <li>2 treatments will likely be necessary for root fragments on the soil surface</li> <li>3 treatments will likely be necessary for root crowns or root fragments underground</li> </ul>

If unsure which end of a vine is the tip (can be tricky if the tip has drooped and rooted), look at the barbs - they point back to the original root end.

In deciding which method(s) to choose, also consider:

- Your budget to acquire the necessary tools and equipment for the methods chosen (e.g. pick axes, pitch forks, loppers, hand clippers, brush cutters, back hoe and operator),

- Your budget to acquire the necessary protective clothing and equipment (e.g. gloves, hats, thick- and hard-soled boots),
- The need to comply with Workers Compensation Board regulations, and
- The number and skill level of the people that will be assisting you.

Consider following up on any of these control methods with a planting or seeding treatment in order to speed up re-establishment of native species. The need for this will depend on what bulbs and seeds already exist in the soil, vegetation immediately adjacent to the area, light conditions, and how well seeds or bulbs germinate and sprout when the blackberry is removed. You may wish to first monitor the site after the control methods have been implemented, and then plant or seed later if the desired native plants do not appear or are sparse. If you are going to plant native species, consult with someone knowledgeable about this first, ensure that your plant and seed stock originate from sources that follow ethical guidelines, and take genetic issues into consideration.

***c) Deciding how to dispose of dead plant material***

If you choose any mechanical removal method, you must think about what to do with the plant material that you have cut or pulled. Consider the following options, based on the amount of dead blackberry you expect to remove from the areas you plan to target:

Material	Removal from site	Disposal
Large amount of dead blackberry	Necessary only if being chipped or burned off site; cut canes to manageable length and move on tarps or makeshift "stretchers" Pitch forks can be useful for moving quantities of blackberry on site	<ul style="list-style-type: none"> <li>• Pile on site in area where smothering native vegetation underneath is not a concern <b>OR</b> chip and mulch on site <b>OR</b> burn safely, either at the time of removal or the following spring (Consult BC government's <i>Open Burning Smoke Control Regulation</i>)</li> <li>• Do <i>not</i> pile on blackberry root crowns; you will want access to these for re-treatment</li> <li>• If piling on site, revisit the piles and re-flatten as they break down; do not flatten right away as cut material may root if pressed into soil</li> </ul>
Small amount of dead blackberry shoots	Not necessary	<ul style="list-style-type: none"> <li>• Leave on site in small piles; can be used to block "bandit trails"</li> </ul>
Blackberry root crowns	Necessary only if being burned off site; no special techniques required	<ul style="list-style-type: none"> <li>• Leave them on a rock or paved surface to dry out <b>OR</b> burn safely (Consult BC government's <i>Open Burning Smoke Control Regulation</i>)</li> </ul>

***d) Recognizing uncertainty***

In making these decisions, there will be things you are unsure about. This is normal, and should not cause undue concern. The important thing is to be *aware* of the things you are most uncertain about, document them, and plan your actions in a manner that will help you learn and reduce this uncertainty.

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