

P o i s o n H e m l o c k

Conium maculatum
Apiaceae

Class B Noxious Weed
Required for Control only in Select Areas

Legal Status in King County: Poison hemlock is a Class B noxious weed according to Washington State Noxious Weed Law RCW 17.10 (non-native species harmful to environmental and economic resources that landowners may be required to control based on distribution in the county and local priorities). In accordance with state law, the King County Noxious Weed Control Board requires property owners to control poison hemlock on high priority private lands, public lands and public and railroad rights-of-way throughout the county. Control means to prevent all seed production and to prevent the dispersal of all propagative parts capable of forming new plants. In addition, state quarantine laws prohibit transporting, buying, selling, or distributing plants, plant parts or seeds of poison hemlock.

BACKGROUND INFORMATION

Impacts and History

- Native to Eurasia and North Africa. Has been introduced throughout North and South America, Australia and New Zealand (Weber, 2003)
- Believed to have been introduced as an ornamental species by European settlers in the 1800s – has been recorded in every US state except Hawaii (EDDmapS, 2023)
- First herbarium specimen in Washington collected in 1908 from San Juan County (Orcas Island) (WTU, 2025)
- All parts of plant are poisonous to humans and livestock. Consumption of plant material can result in illness, fetal deformity, and death (Vetter, 2004)



- Plant tissue contains irritating phototoxic compounds (furanocoumarins) that may cause contact dermatitis, sensitivity to UV rays and blistering (Chizzola & Lohwasser, 2020)
- Readily invades fields and open pastures, forming dense monocultures that outcompete native and desirable vegetation
- Loss of livestock and/or contamination of croplands and grazing pastures contribute to significant economic losses to farmers
- Allelopathic compounds in plant tissue can suppress the germination of native and desirable plant species near infestations (Andrew, 2001)
- Poison hemlock is a natural reservoir of carrot thin leaf virus, celery mosaic virus and alfalfa mosaic virus. These viruses can all be harmful to regional crop production (Howell & Mink, 1981)

Description

- Typically a biennial, may grow as a short-lived perennial or winter annual depending on germination time and environmental conditions (Weber, 2003)
- First year plants grow as basal rosettes, second year plants develop flowering stalks



Top Left: Poison hemlock flowers. Bottom Left: 1st year poison hemlock rosettes. Right: Reddish-purple mottling on 2nd year poison hemlock stalks



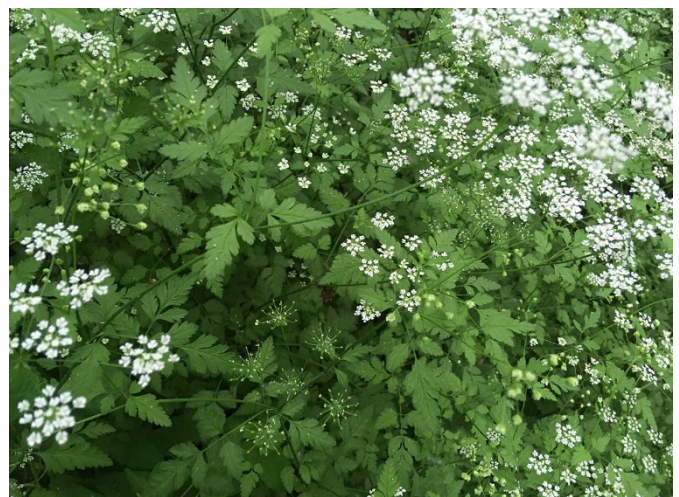
Left: Manually removed hemlock rosettes that display their primary taproots and secondary branching. Right: Hemlock stalks remain standing through the winter after the plant has senesced and died

- Stems are light green and hairless, rigid, hollow except at nodes, and have shallow longitudinal ridges. They are marked with distinctive red/purple mottling, particularly near the base (DiTomaso, 1999)
- Bolting plants typically grow 4-6 feet tall, and may reach heights up to 10 ft in fertile soils (DiTomaso, 1999)
- Leaves are alternate, 3 to 4 times pinnately compound, hairless, pointed and fern-like. Leaves often appear shiny or glossy, especially as rosettes. May reach lengths up to 2 feet (Weber, 2003)
- Flowers from early spring to summer (April – August in WA). Seeds appear shortly after flowering and are dispersed September to February (Baskin & Baskin, 1990; WTU, 2020)
- Flowers are white, have five notched petals, and are grouped in compound umbels (López et al., 1999)
- Fruits are light green and ovular, 2-3 mm in length. Each contain two gray/brown seeds with five distinct wavy ridges (Weber, 2003)
- Long white taproot with secondary fibrous root branching
- Has a distinct and pungent musty or ‘mousy’ odor when crushed

- Hemlock stalks remain standing through the winter after senescence
Poison hemlock [resembles other plants](#) in the carrot/parsley family including other nonnative weeds such as bur chervil (*Anthriscus caucalis*), rough chervil (*Chaerophyllum temulum*), wild chervil (*Anthriscus sylvestris*) and wild carrot (*Daucus carota*), as well as native species such as western water hemlock (*Cicuta douglasii*) and water parsley (*Oenanthe sarmentosa*).

Distinguishing from Lookalikes

- Rough chervil (*Chaerophyllum temulum*): plant is smaller than poison hemlock, stems have rough hairs, leaf segments are more rounded like cilantro, compared with the more elongated segments on poison hemlock.



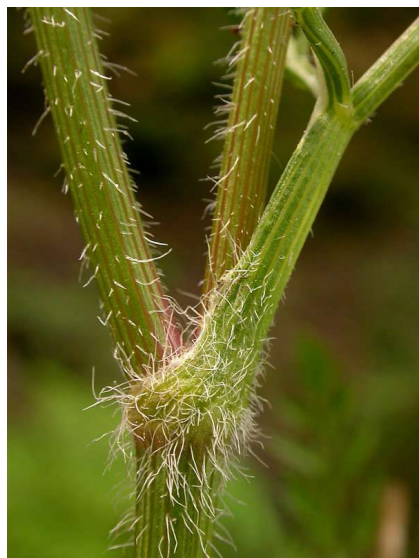
- Bur chervil (*Anthriscus caucalis*): plant is smaller than poison hemlock, stems and leaf undersides are often loose-hairy with short white hairs, stem nodes have a fringe of soft white hairs, and seeds are covered with burs.



- Wild chervil (*Anthriscus sylvestris*): plant is smaller than poison hemlock, stems and leaves are short-hairy, fringe of white hairs at the nodes, stems do not have reddish-purple mottling, varying pointed to rounded leaves.



- Wild carrot (*Daucus carota*): plant is smaller than poison hemlock, flowers are larger, more densely packed, stems hairy, leaf segments less triangular and pointed.



- Western water hemlock (*Cicuta douglasii*): native plant, smaller than poison hemlock, leaflets are broader, less pinnately compounded, lancelet shaped and have serrated margins. Roots are also thick and tuberous, growing exclusively in wet environments. This plant is also very toxic.



Photo Credits Left: (Althen, 2012) Right: (Carr, 2006)

- Water parsley (*Oenanthe sarmentosa*): native plant, generally not as upright, grows exclusively in damp areas, flowers larger than poison hemlock, stems entirely green.



Toxicity

- Poison hemlock contains several piperidine alkaloids, including coniine and γ -coniceine, both of which are highly toxic to humans and livestock when consumed. These alkaloids act on the central nervous and reproductive systems - consumption can result in illness and death (López et al., 1999).
- Coniine and γ -coniceine are teratogenic, capable of causing fetal deformity or pregnancy loss in livestock that consume poison hemlock during certain stages of gestation. Cattle and pigs are the most susceptible (Panter et al, 1992)
- Toxic compounds can enter the body through ingestion, inhalation, contact with the eyes, and through open cuts/wounds (Anthony, 2018)
- Some alkaloids of poison hemlock can be passed from lactating cows into milk, affecting quality and safety for consumption (Jeffrey & Robinson, 1990)
- Alkaloids in poison hemlock volatilize quickly. Dried poison hemlock tissue is less toxic than fresh tissue, but may still cause harm if consumed and should not be fed to livestock including as silage (Cromwell 1956; Galey et al., 1992, Bouska & Peters, 2006)
- Climate conditions can impact the toxicity of plants. Dry conditions and full sun conditions correlate with higher concentrations of toxic alkaloids (Fairbairn & Challen, 1959)
- Symptoms of poison hemlock poisoning in humans include: trembling, muscle weakness, muscle paralysis, burning sensation in digestive tract, dilated pupils, rapid then depressed heartbeat, increased salivation and lacrimation, respiratory distress, loss of speech, convulsions, renal failure, decreased body temperature, and unconsciousness. Symptoms can appear as soon as 30 minutes after consumption (Anthony, 2018; Vetter, 2004).
- Additional symptoms of poison hemlock poisoning observed in livestock include frequent urination/defecation and temporary blindness (Panter et al., 1992; Pfister et al., 2001)



Poison hemlock will readily invade fields and pastures where it can endanger livestock and feed production

Habitat

- Often found at low elevations along the edges of pastures and woodlands, in trail and road rights-of-way, in drainage ditches and streambanks, and along railways. (DiTomaso, 1999)
- Poison hemlock readily invades open spaces and frequently disturbed areas. Silvertown & Tremelett (1989) found that sites with repeated disturbance have a higher recruitment of seedlings and greater likelihood of establishment.
- Prefers moist sites with high nitrogen levels. Will grow in drier sites and poor soils, including those with high heavy metal concentrations. (Gulezian et al, 2012)



Poison hemlock is a common weed in urban areas throughout King County, often found along roadways and in vacant open spaces



Reproduction and Spread

- Poison hemlock reproduces solely by seed.
- A single flowering plant can produce up to 40,000 seeds, though seed output varies widely depending on the size of the parent plant. (Vetter, 2004)
- Stage of development of flowers/seeds on separate umbels often vary on a single plant, even on the same branch. (Fairbairn & Challen, 1959)
- Seeds typically remain viable for 2-3 years, but viability has been observed up to 6 years. (USDA, 2015)
- Seeds may germinate any time of the year; typically germinate late summer to early spring. (Baskin & Baskin, 1990)

- Seeds have an extended dispersal period from September to February; will continue dropping from parent stalks after they have senesced and died. (Baskin & Baskin, 1990)
- Poison hemlock seeds lack an obvious dispersal mechanism and will typically fall near parent plants, forming dense stands. Dispersal may be aided by birds, rodents, water and human activities. (DiTomaso et al., 2013)
- Seeds are easily spread through contaminated mowing equipment and the movement of contaminated soil.

Local Distribution

- Found throughout King County in trail and road rights-of way, disturbed sites, open spaces and pastures, drainage ditches, stream banks and railways.

CONTROL INFORMATION

Integrated Pest Management

- The preferred approach for weed control is Integrated Pest Management (IPM). IPM involves selecting from a range of possible control methods to match the management requirements of each specific site. The goal is to maximize effective control and to minimize negative environmental, economic and social impacts.
- Use a multifaceted and adaptive approach. Select control methods which reflect the available time, funding, and labor of the participants, the land use goals, and the values of the community and landowners. Management will require dedication over a number of years and should allow for flexibility in method as appropriate.

Planning Considerations

- Survey area for weeds, set priorities and select best control method(s) for the site conditions and regulatory compliance issues. See the [King County Noxious Weed Regulatory Guidelines](#) for more information.
- Control practices in critical areas should be selected to minimize soil disturbance or efforts should be taken to mitigate or reduce impacts of disturbance. Any disturbed areas need to be stabilized for erosion and sediment control.
- Erosion and sediment control (ESC) means any temporary or permanent measures taken to reduce erosion, control siltation and sedimentation, and ensure that sediment-laden water does not leave the site or enter into wetlands or aquatic areas. Refer to the [King County Surface Water Design Manual](#), Appendix D for ESC Standards.

- Minimizing soil disturbance also reduces germination of weed seeds (poison hemlock seeds remain viable for 2-3 years, but viability has been observed up to 6 years).
- Work first in least infested areas, moving towards more heavily infested areas. This allows for natural re-vegetation to occur, which helps suppress regrowth of noxious weeds. Also, controlling small, satellite populations have a bigger impact on reducing the spread to new areas.
- Properly dispose of all parts of the plant (see Disposal Methods section below).
- Whenever possible, control should be complete before plants are flowering to prevent seed production. If flowering has already begun, remove flowers before controlling if feasible.

Early Detection and Prevention

- Be sure to obtain a positive identification of poison hemlock since it has several look-alikes that grow in King County (see list of similar species and photos in Description section above).
- Easiest to identify after plants have begun bolting/flowering in the spring.
- Avoid introducing poison hemlock to new sites by purchasing certified weed free soil, gravel, and hay when possible.
- Prevent spread by cleaning equipment, clothing, and boots after use in areas infested with poison hemlock.



An example of proper PPE for the manual control of poison hemlock

Manual Control

- It is important to wear proper PPE when manually controlling poison hemlock to protect skin from exposure to toxic compounds present in the plant tissue. Recommended PPE includes gloves, long sleeve shirts, pants and closed-toed shoes.
- For small populations pulling is appropriate, especially in areas with soft soil.
- Remove as much of the taproot as possible to prevent re-growth.

- If plants are in seed, cut and bag seed heads first before digging up the remaining plant.
- Plants that are forming seeds can also be controlled by cutting the plant at the base as close to the ground as possible. This method is not effective on plants in any earlier growth stages, they will regrow.
- Bag and dispose of all plant materials to prevent the release of biochemicals from plant tissues that can suppress the germination of desirable plants.
- Plant material should NOT be burned as a disposal technique. Toxic compounds in plant tissue rapidly volatilize and can cause harm if inhaled. (DiTomaso et al., 2013)

Mechanical Control

- Consider using hedge shears or other non-automated cutting tools to reduce incidental skin contact with irritating phototoxic plant tissues.
- If mowing poison hemlock, use appropriate personal protective equipment to reduce contact and avoid inhaling toxic compounds as they volatilize. Eye protection is also recommended to avoid absorption of toxins through the eyes. (Anderson et al., 2020)
- Repeated mowing of poison hemlock can reduce seed production in 2nd year plants and prevent further spread. Mowing is most effective after plants have bolted, but before they have begun producing flowers or seeds. (DiTomaso, 1999; Panke & Renz, 2012; USDA 2015)
- Regrowth from mowed plants can produce viable seeds; repeated mowing in a season is necessary for good control.
- Avoid mowing plants that have already begun producing seeds to avoid spreading the infestation further.
- Plowing and repeated cultivation of sites can prevent poison hemlock from becoming established. (DiTomaso, 1999)

Chemical Control

- For control of large infestations, herbicide use may be necessary.
- Apply herbicide on warm, dry days when winds are low. Check label for specific information on wind and rain guidelines.
- Chemical control is most effective on seedlings and rosettes, less so on fully mature plants. Rosettes can be effectively controlled in the spring and fall (DiTomaso et al., 2013; Nice et al., 2005) Herbicide is not effective once plants have started to form seeds.
- Both selective and non-selective herbicides are effective. However, if there is grass present on site, using a selective broadleaf herbicide will improve long-

term control because competitive grass cover will reduce weed seed germination and re-growth.

- **Precautions:**
 - Herbicides should only be applied at the rates and for the site conditions and/or land usage specified on the label of the product being used. **Follow all label directions.**
 - Use extra caution where people, animals, bees, native plants or open water are present. Be careful to avoid drift and off-target exposure.
 - For herbicide use in critical areas and their buffers, certain restrictions apply depending on the site and jurisdiction. In unincorporated King County, refer to the [King County Noxious Weed Regulatory Guidelines](#) for a summary of current restrictions and regulatory compliance issues. Elsewhere, check with the local jurisdiction.
 - For your personal safety, wear waterproof chemical resistant gloves, long sleeves, long pants, closed toe shoes, socks, hat and appropriate eye protection. Follow label directions for any additional personal protection equipment needed.

Specific Herbicide Information

- Both glyphosate and imazapyr offer effective control of poison hemlock. Both herbicides are non-selective, so care must be taken to prevent injury to off target plants. Both herbicides will kill most grass species as well as broadleaf plants so re-seeding or planting with suitable species may be necessary after treatment.
- Triclopyr products have been used to treat poison hemlock by the King County Noxious Weed Control Program with a high degree of success, especially in areas where herbicide options are limited. Garlon 3A at 1.5% and Garlon 4 at 1% have been used (in combination with a crop oil surfactant at 1%) up until the plant is in flower (prior to seed development), and while there is still adequate green leaf surface area to spray. (Allison Bachner, Noxious Weed Specialist, personal communication, 9/24/2025) Vastlan can also be used at 1% (also in combination with a crop oil surfactant at 1%), but is most effective while the plant is still in rosette form and prior to its bolting to flower. (Maria Winkler, Noxious Weed Specialist, personal communication 9/24/2025)
- Pacific Northwest Weed Management Handbook recommends foliar applications of 2,4-D or MPCA, aminocyclopyrachlor + chlorosulfuron, glyphosate, and metsulfuron. (Prather et al., 2019)

- Jeffrey & Robinson (1990) found that spot treatments of both 2,4-D and glyphosate controlled poison hemlock at rates of 95% or higher. Pre-emergent herbicides terbacil, hexazinone and metribuzin controlled poison hemlock at rates of 90% or higher.
- Panke & Renz (2012) report that 2,4-D, clopyralid, dicamba + 2,4-D, glyphosate, metsulfuron, picloram + 2,4-D, sulfometuron and triclopyr offer control of 90% or higher for in-season control.
- Woodward (2008) found that chlorsulfuron and metsulfuron offered effective and consistent control of poison hemlock. Results suggested that ALS-inhibiting herbicides were more consistently effective than growth regulating herbicides.
- Gawn et al. (2012) found that flumetsulam, bentazone and paraquat/diquat controlled poison hemlock very effectively over a span of 32 weeks.
- Nice et al. (2005) describe dicamba, 2,4-D + triclopyr, and spot treatments of glyphosate as viable control options in soybean crops.
- Round Up Pro Concentrate (glyphosate) can be injected into poison hemlock canes 10-12 inches above the root grown at a rate of 5 mL of 5% v/v solution per plant. (Prather et al., 2019)

The mention of a specific product brand name in this document is not, and should not be construed as an endorsement or as a recommendation for the use of that product. Chemical control options may differ for private, commercial and government agency users. **For questions about herbicide use, contact the King County Noxious Weed Control Program.**

Biological Control

- The unintentionally introduced poison hemlock moth (*Agonopterix alstroemeriana*) is widely established throughout the United States, [including in King County](#) and has been utilized as a biocontrol agent with varying degrees of success. (DiTomaso et al., 2013)
- To assess moth presence, survey foliage on bolting plants from late spring to early summer. Larvae curl leaves creating tubes of foliage and occasionally flower material. Using gloves to avoid plant toxins, open tubes to reveal larvae that are yellow to light green with dark green stripes. When exposed, larvae writhe and twist around on the surface as a defense mechanism. Adult moths

and eggs are more difficult to locate. Plant toxins deter other insects from feedings.

- In the Pacific Northwest, poison hemlock moth larvae have been observed reducing seed production and causing severe defoliation. However, plants often recover once larvae stop feeding and pupate in midsummer. (Randall et al., 2024)
- Even at high insect densities, the poison hemlock moth is unlikely to provide adequate control of poison hemlock in the Pacific Northwest and long-term reductions in plant populations have rarely been observed (Andreas et al., 2024)

SUMMARY OF BEST MANAGEMENT PRACTICES

Small Infestations in Native and/or Desirable Vegetation

- Properly identify poison hemlock and distinguish from look-alike plants.
- Pull or dig up plants at any growth stage.
- Try to remove the entire root.
- Cut and bag all flower and seed heads and dispose as garbage.
- Monitor site throughout growing season and remove any new plants.
- Apply a 4-6" layer of mulch to help prevent new seeds from sprouting.

Large Infestations/Monocultures

- Properly identify poison hemlock and distinguish from look-alike plants.
- For large areas it may be more cost effective to apply herbicide
- Infested areas will require follow-up management lasting for several years to control plants re-growing from the seed bank.

Control in Riparian Areas

- Additional permits may be required for control of infestations in riparian areas. See the [Noxious Weed Regulatory Guidelines](#) for more information or contact your local jurisdiction.
- In some cases, the cleared area will need to be replanted with native or non-invasive vegetation and stabilized against erosion. See the [Appendix D for Erosion and Sediment Control Standards](#).
- Focus on manual removal for small infestations if possible.
- For larger areas where herbicide use is warranted, spray using low pressure and large droplet size to reduce drift. If herbicide could potentially drift into the water or a wetland area, use only approved aquatic herbicides and surfactants after obtaining the necessary permits.

Control along Road Rights-of-Way

- Manually remove infestations if possible.
- If plants are in grassy areas, use a selective broadleaf herbicide; if controlled with a non-selective herbicide, re-seed after control is completed.

Disposal Methods

- Bag all plant parts with potential to seed. If the plants are in seed, carefully cut off the seed head and place it in a bag without dispersing the seeds.
- Dispose of potential seed producing plant parts in household garbage or take to a transfer station for disposal. Do not compost or put plant parts with potential to seed or put in yard waste.
- If composting onsite is an option, do so only where there is no health risk to people, livestock, pets, or wildlife while continuing to appropriately dispose of seeds or plant parts with the potential to seed.
- Never disperse or dump any plant material on public or private property without express permission from the land manager. Weeds often spread from yard waste piles.

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