Water-Hemlock vs. Water Parsnip

**Western Water-Hemlock**

- Water Parsnip (*Sium suave*) has a very similar ecology to Western Water-Hemlock, in that it too is found in wet meadows and thickets, as well as along muddy shores. Both are native, indige- nous peripherals from the Apiaceae (parsley/carrot) family.
- Europeans brought the parsnip to the United States in the early 1600s, but this creamy-white root has never become an Ameri- can culinary favorite. Parsnips are suitable for almost any method of cooking including baking, boiling, sautéing and steaming. They are often boiled, then mashed like potatoes.
- The first frost of the year converts the parsnip's starch to sugar and gives it a pleasantly sweet flavor.
- Due to the difficulty in clearly identifying similar plants from the Apiaceae family, it is best to use caution and due diligence.

**Water Parsnip**

- Water Parsnip has a sym- metrical root with large chambers containing no oil, and it has fibrous roots which anchor the bulb into the soil.
- Water Parsnip has simple, opposite leaves with the veins ending at the leaf tips.
- Water Parsnip has white- colored flowers formed in an umbrel. It has bracts (leaves at the base of large umbrel and at the base of small umbrels making up the flower head).

Comparing Western Water-Hemlock with Water Parsnip

- Western Water-Hemlock has an asymmetrical bulb with narrow chambers containing a clear oil (cicutoxin) which turns bright orange when it is ex- posed to the air. The bulb has fleshy side roots that allow the bulb to float in times of high water.
- Western Water-Hemlock has compound leaves with the veins usually ending in the notches along the leaf margins. The arrow in the second photo shows the vein ending at the notches of the leaf margin.
- Western Water-Hemlock has white-to-greenish- colored flowers formed in a compound umbrel (umbrella-shaped flower head). It is bractless (no leaves at the base of the flower head).

Water-Hemlock, the most poisonous plant in North Amer- ica, is found in all parts of Lincoln County, along streams, ponds, irrigation ditches, wet pastures, and marshy areas. It is a threat to humans, livestock and animals that eat any part of the plant or drink water from a standing pool of water near the plant.

Water-Hemlock contains the unsaturated alcohol cicutoxin that is found in all parts of the plant, but especially in the roots and base of the stem. All animals, in- cluding humans, are highly susceptible to the potent cicutoxin, one of the most poi- sonous plant toxins known. The poison causes severe stimulation and finally pa- ralysis of the nervous sys- tem. Fatal poisoning and death occurs quickly and with rela- tively small quantities of the plant. A piece of root the size of a walnut can kill a cow. Some 30-60 grams of the root are enough to kill a horse. Human deaths have occurred from people mistaking Water-Hemlock for edible members of the carrot family and from children putting the hollow stems into their mouths. Death can occur in as short as 15 minutes, although 3 to 4 hours is more common.

There are two forms of Water-Hemlock in Lincoln County: the more- prevalent Western Water-Hemlock, *Cicuta douglasii*; and Spotted Water-Hemlock, *Cicuta maculata*, scaled to purple spots along the stems and leaf nodes. Both are native, perennial forbs and are not on the state noxious weed list.

**Poison Hemlock, *Conium maculatum*, another poisonous perennial also common in Lincoln County, is on the state weed list, and so control is mandated. Please refer to “Poison Hemlock: Opi- tions for Cont- rol” for more information on this noxious weed.**

**Western Water-Hemlock**

- Western Water-Hemlock is a problem on rangelands be- cause of its toxicity.
- The forb is one of the first plants to emerge in the spring, making it attractive to grazing animals. The plant is likely to be ignored because of its green growth, and attrac- tive smell (unlike Poison Hemlock which has a musty smell).
- Western Water-Hemlock grows where water is abun- dant, and such areas usually receive heavy grazing pres- sure. Increased grazing pres- sure leads to livestock con- suming much of the available forage.
- Western Water-Hemlock is easily pulled out of the ground in moist areas where the ground is soft, and grazers may consume the whole plant.
- Control and avoidance of Western Water-Hemlock are the only methods to prevent live- stock loss from poisoning. Grazi- ing of these areas should be de- layed until the ground has dried, so whole plants are not easily pulled out of the ground by live- stock.
- Controlling access of animals to habitats where the herb grows may reduce the risk of poison- ing.
- Hand grubbing and chemical application are the most effec- tive methods of removing the plant. Roots must be completely removed from the site if grub- bing or cultivation are used for control, as roots are attractive to grazing livestock.
- Chemical application is best done in late spring or early sum- mer when the herb is growing. Application of 2,4D or gly- phosate at 2 pounds an acre, or picloram at 1 pound an acre will give good control of West- ern Water-Hemlock.

**Managing Western Water-Hemlock**

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Western and Spotted Water-Hemlock

- Western Water-Hemlock, *Cicuta douglasii*; and Spotted Water-Hemlock are not mandated by the weed board, landowners are en- couraged to avoid inadvertent poisonings and deaths due to in- gestion of either plant.

**Distribution of Western Water-Hemlock, *Cicuta douglasii***

**Western Water-Hemlock in bloom**

**Western Water-Hemlock**

- Western Water-Hemlock has a bulb with a fibrous root containing no oil and it has fibrous roots which anchor the bulb into the soil.
- Western Water-Hemlock has compound leaves with the veins usually ending in the notches along the leaf margins.
- Western Water-Hemlock has white-to-greenish-colored flowers formed in a compound umbrel (umbrella-shaped flower head). It is bractless (no leaves at the base of the flower head).

**Western Water-Hemlock’s asymmetrical bulb and hollow or- buses roots**

**Distinctive leaves**

**Distinctive veins on leaves**

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Poison Hemlock

**Biology of Water-Hemlock**

- **Scientific Name:** Western Water-Hemlock *Cicuta douglasii*; Spotted Water-Hemlock *Cicuta maculata*.
- **Origin:** North American USA, Canada. See maps.
- **Where Found:** Only in wet places, marshes, stream banks, slough margins, ditches, wet pastures.
- **Identification:** Often called "Cowbane." A perennial forb in the carrot-parsley (Apiaceae) family that grows 2 to 8 feet tall with hollow, smooth, pale green stems (purple spots on Spotted Water-Hemlock), enlarged at the base. Very appealing odor.
- **Leaves:** Leaf veins usually ending in the notches along the leaf margin, or the bottom of leaf serrations, and not at the tips. Several lance-shaped to oblong, sharply-pointed, toothed leaves.
- **Flowers & Seeds:** Greenish-white umbrell-shaped clusters. Each flower is tube-shaped, with narrow chambers containing a clear oil (cicutoxin) which turns bright orange when it is exposed to the air. The second photo shows its tuberous roots.
- **Roots:** Thick, tuberous rootstalk that contains many small chambers. The hollow chambers allow the plant to float in times of flooding. These chambers hold a highly-poisonous clear, brown or straw-colored liquid called cicutoxin, that is released when the stem is broken or cut. Cicutoxin has a strong carrot-like odor. Thick, fleshy tubers and slender individual roots grow from the bottom of the main rootstalk.
- **Distribution of Cicuta maculata form of Spotted Water-Hemlock.**

**Toxicity of Water-Hemlock**

- **Water-Hemlock roots contain 0.75 mg of cicutoxin per gram of root material.**
- **Lethal doses of cicutoxin by per-cent of body weight are:**
  - Cattle: 0.1%
  - Horses: 0.3%
  - Swine: 0.3%
- **Effects of cicutoxin are rapid, with death occurring 15 minutes after ingestion, leaving little time for treatment. Treatments used with some success are intravenous injection of pentobarbital and morphine to control convulsions.**
- **Symptoms of cicutoxin poisoning in humans are similar to those reported for livestock. From 1900-1988, 80 people died in North America from cicutoxin poisoning.**
- **A single bite of the root or 2.8 mcg cicutoxin/kg of body weight is a lethal dose for humans.**

**Comparing Western Water-Hemlock with Poison Hemlock**

**Western Water-Hemlock**

- **Bulbs:** Poison Hemlock has smooth, branching stems that are hollow, with purple spots or blotches especially near the base. There are no hairs on the stem. The root is a simple carrot-like tap root.
- **Leaves:** Poison Hemlock has an asymmetrical bulb with narrow chambers containing a clear oil (cicutoxin) which turns bright orange when it is exposed to the air. The second photo shows its tuberous roots.
- **Western Water-Hemlock:** has compound leaves with the veins usually ending in the notches along the leaf margins.

**Poison Hemlock**

- **Western Water-Hemlock on the left and Poison Hemlock on the right.**
- **Flower Head:** Poison Hemlock has a coarse, erect, 4-6 feet tall, biennial or perennial plant. Its leaves are 3-4 times pinnately dissected, coarsely toothed with a fern-like appearance.
- **Bulbs:** Poison Hemlock has a compound flat-topped, loose, umbel with multiple, small, white 5-petaled flowers. Fruits are green-brown ovoid, ridged and easily separated into two parts.