

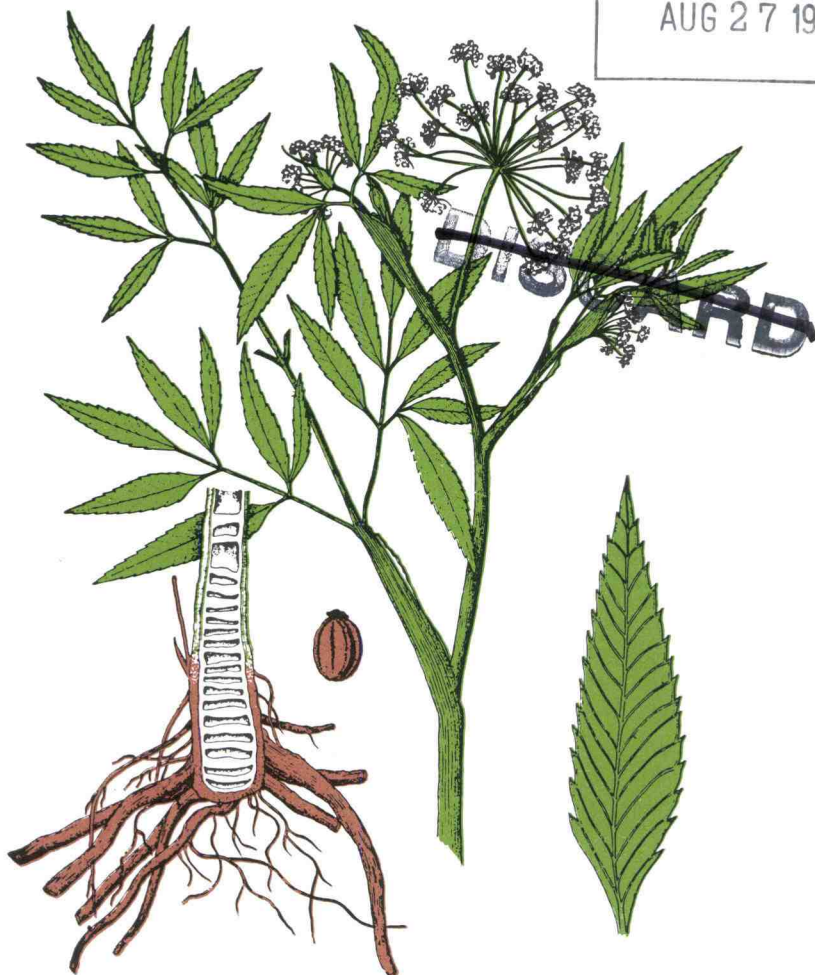
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Water Hemlock

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WATER HEMLOCK—*Cicuta Douglasii*—Showing stem with leaves and flowers, leaflet enlarged (note veins terminating in notches along leaf margins), root sectioned to show divisions, and "seed." "Seed" magnified 4 diameters.

PNW 109

March 1974

A Pacific Northwest Extension Publication
Oregon Washington Idaho

Water Hemlock

(*Cicuta Douglasii*)

Other names: Wild parsnip, Poison parsnip, Cowbane, Cicuta

Seven genera of plants, all members of the carrot or parsley family (*Umbelliferae*), are somewhat similar in appearance. They are: (1) *Cicuta* or water hemlock, (2) *Conium* or poison hemlock, (3) *Sium cicutaefolium* or water parsnip, (4) *Angelica*, (5) *Osmorhiza* or sweet cicely, (6) *Oenanthe sarmentosa* or water parsley, and (7) *Pastinaca sativa* or parsnip.

The first two are poisonous and the third has been reported to be poisonous. The other four are not, and in some cases they are useful forage plants. The poisonous water hemlock, the poison hemlock, and *Sium species* are commonly confused with the others. An attempt is made here to give the reader enough detail in description and illustrations to enable him to avoid some of the poisonous plants and recognize the other kinds.

Water hemlock, poisonous to both man and animal, has been known for centuries and is reported to be the most poisonous plant in the temperate zone. It is a perennial found throughout the Pacific Northwest in wet places along streams, irrigation ditches, and sloughs. The roots are the most poisonous parts, young shoots next, followed by stems and leaves. A piece of root no larger than a walnut has been known to kill a mature cow.

The plant ranges from 2 to 8 feet tall and produces fleshy rootstocks that may be nearly vertical or horizontal, depending on location. Stems are hollow, smooth, and pale green. Unlike other members of this family, the mature plant immediately below the ground surface has a crown with many finger-like rootstocks from a few inches long to 8 or 10 inches. These fingers branch from the crown and somewhat resemble artichoke tubers or poorly shaped sweet potatoes. They are hollow and on cutting lengthwise, one finds several partitions form-

ing distinct chambers that give a corrugated or ribbed appearance to the cut stem and rootstock. Distance between partitions varies from practically nothing to about 1/4 of an inch, depending on age of plant and stage of growth.

The cut root exudes a yellow, oily, sweet-smelling substance. If immersed in water, this yellow juice forms an oily, soapy film on the surface.

Small white flowers are produced in double umbrella-like arrangements from 2 to 5 inches in diameter, giving an attractive lace-like appearance to the cluster. Seed is about 1/12 inch long, egg shaped, nearly smooth, longitudinally striped, and somewhat flattened on the sides. Water hemlock reproduces both by seed and rootstocks, but because of the locations where the plant grows, seeds of it are practically never found in agricultural seeds.

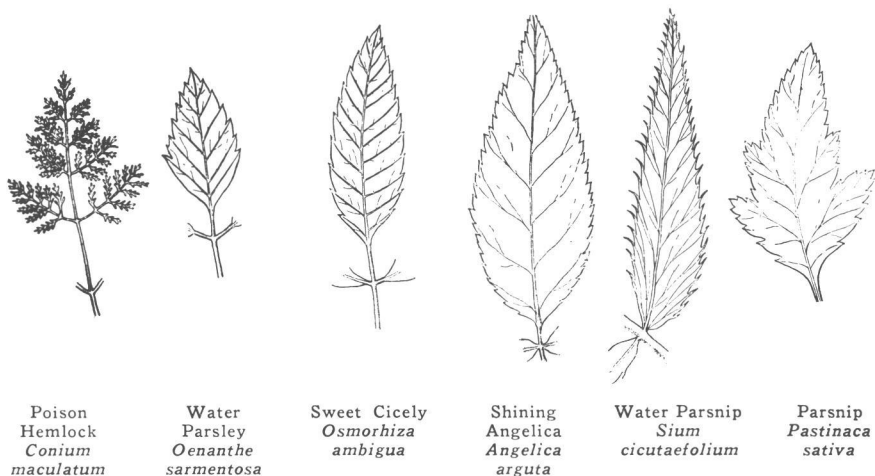
Leaflets are lance-shaped with pointed ends and saw-toothed margins. The veins of the leaves run from the midrib to the notches along the leaf edges and then branch to teeth tips. Practically all other plants with similar leaves have small veins running from the large central vein directly to the ends of the saw-teeth on the leaf margins. This is important and is the quickest way to distinguish this plant from others. (See illustration.) The fact that water hemlock grows only in wet places is helpful in identifying it. This characteristic also increases the hazard of livestock poisoning because the roots pull easily from wet ground, and root sections are sometimes scattered by leveling and ditching. Such roots are sometimes picked up by livestock. Ordinarily livestock will not feed upon water hemlock when there is an abundance of other forage. The plant appears early in the spring before much of the grass has started, and most of the losses occur then.

Damage

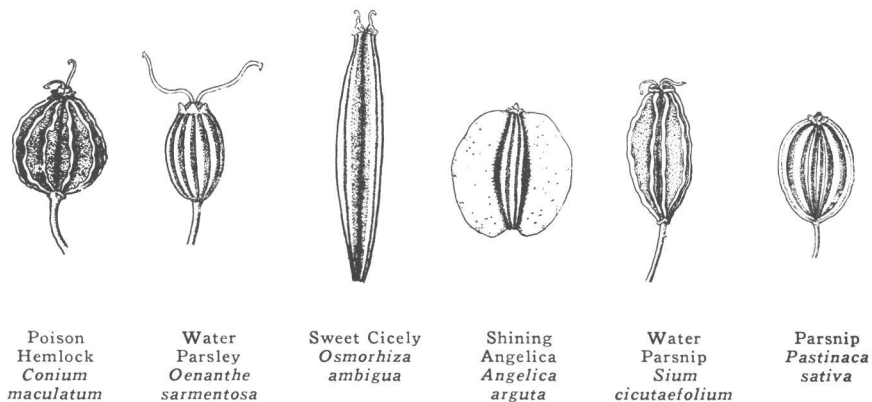
The plant is always a threat if present in a community, because sooner or later a child will mistake the sweet-smelling roots for edible roots. In one county three children on a camping trip were killed in that way. Livestock losses are rather frequent, but ordinarily only one animal will be killed at a time, and death is often blamed upon fate or something else than the water hemlock.

Another common poisonous plant often confused with water hemlock is poison hemlock (*Conium maculatum*).

This plant is more vicious than water hemlock in name only. It finds its way into history through such episodes as the death of Socrates in 399 B. C. after he was given the "cup of the deadly hemlock." The foliage has a distinct, strong, and disagreeable taste and odor, and stock will not eat the plant unless starved to it. Leaves of poison hemlock are more finely divided than those of water hemlock. Unlike the water hemlock, it has a solid taproot. It can be identified readily by the presence of purplish spotting along its stems. It



Reduced drawing of leaves or leaflets of six plants that are sometimes confused with water hemlock.



Enlarged drawing of fruit or "seeds" of six plants that are sometimes confused with water hemlock.

grows very rank, often reaching a height of 8 to 10 feet. The weed is only a biennial and therefore not difficult to eradicate.

The drawings on page 3 illustrate the leaves and seeds of this weed and others closely related.

Symptoms of Hemlock Poisoning

The first symptom of hemlock poisoning is the loss of control of muscular action. Affected animals walk stiffly, sway, and may fall down. They often froth at the mouth, and nose and mouth quiver. Violent convulsions, clamping of the jaws, grating of the teeth, rapid kicking, and sometimes stiffening out of the legs follow. The pulse is weak and rapid, and breathing is labored and irregular. Convulsions are intermittent and increase in violence in fatal cases. Sometimes stock will die within 15 minutes after eating the weed, but they ordinarily live 3 or 4 hours. Occasionally animals may get only a taste and may show symptoms of poisoning for several days and then recover. Even small amounts of the root are fatal, however, and death follows more frequently than not.

Preventive Measures

Obviously the best way to avoid loss from hemlock is to keep grazing or pasture land covered with sufficient desirable forage. Barn lots, lanes, and other closely pastured places should be kept free of the weed. If possible, livestock in the early spring should not be turned into an area known to be infested with the weed. Be careful when blasting ditches or clearing land where hemlock is growing. Roots can be exposed to livestock by such activities.

Control

Hemlock can be controlled with 2,4-D sprays. Use 2 pounds acid equivalent of 2,4-D in 100 gallons of water (2 tablespoons of 3 to 4 pounds per gallon of 2,4-D in 1 gallon of water). Plants should be sprayed before buds are visible. Consult the label for grazing restrictions.

Scattered plants can be eradicated by pulling or digging. Pulled or dug plants should be burned. Livestock have been poisoned from eating the roots of hemlock which have been pulled for as many as 3 years.



Published and distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914, by the Oregon State University Extension Service, Joseph R. Cox, director; the Washington State University Extension Service, Arthur W. Peterson, acting director; the University of Idaho Agricultural Service, James L. Graves, director; and the United States Department of Agriculture, cooperating. OSU—4M; WSU—5M; I—1M.