United States Department of Agriculture

Natural Resources Conservation Service Plant Guide

COW PARSNIP

Heracleum maximum W. Bartram

Plant Symbol = HEMA80

Cow Parsnip inflorescence and leaves. Photo by Victoria Paul, USDA-NRCS

Alternative Names
Common Names: common cow parsnip; American cow-parsnip; American hogweed; Indian celery; Indian rhubarb, pushki

Scientific Names: *Heracleum lanatum; Heracleum sphondylium*; *Heracleum sphondylium* ssp. *lanatum*; *Heracleum sphondylium* ssp. *montanum*

Description
General: *Heracleum maximum*, commonly known as cow parsnip or hogweed, is a member of the carrot family (*Apiaceae*). Cow parsnip is a large, biennial or short-lived perennial, herbaceous plant native to North America. During the first year of growth, large palmate trifoliate basal leaves form a low-growing rosette from a fleshy taproot or thick cluster of fibrous roots (Whitson & Burrill, 2000*).* The 8–20-inch clasping basal leaves are as wide as they are long. Leaves are alternately arranged around a light green, deeply ridged, hollow stem. The leaves gradually get smaller toward the top of the stem (Esser, 1995; Hilty, 2020). Within each group of leaflets, the terminal leaf has three or more lobes and is larger than the other two leaflets. The smaller leaflets may also produce lobes and are generally more ovate in shape. Leaf margins are serrate to double-serrated. Stems and leaves can be moderately to very pubescent (lanate or woolly) with spreading white hairs (trichomes). The leaves are aromatic when crushed (St-Gelais et al., 2017; Hilty, 2020).

Second-year specimens produce a flowering stalk that can be 3–10 feet tall. The thick, hollow stalk terminates with flat-topped compound umbels of white florets. Additional compound umbels may form from peduncles protruding from axils of the upper leaves (Hilty, 2020). Primary umbels can be 8–12 inches wide, with secondary and tertiary umbels measuring 4–6 inches (Spellenberg, 2001). Each compound umbel is comprised of 8–30 umbellets. Each umbellet has 8–30 small white flowers (Hilty, 2020). On each umbellet, outer blooms open before inner ones. Each flower has five white petals, five stamens, and two styles (Hilty, 2020). The petals are often smaller than 1/4 inch and uniform in the center of the umbel but are slightly larger and irregular along the outer edges. Flower buds are light green and compact. Flowers bloom from late spring to mid-summer.

Each floret produces a fruit (schizocarp) that when mature, splits into two seeds (mericarps). Seeds are flat and vary from oval to heart-shaped, with three to four vertical, dark green lines (MN Wildflowers, 2023). Seed size ranges from ¼–½ inch (MN Wildflowers, 2023). The surface of the seed is covered in fine hairs and the edges are ribbed (MN Wildflowers, 2023). As seeds mature, they turn from light green to brown (Hilty, 2020). Plants primarily reproduce via seeds that are dispersed by wind (Hilty, 2020).

The sap of cow parsnip contains furanocoumarins that can cause moderate to severe dermatological reactions and photosensitivity in some people (NYDEC, n.d.). When affected skin is exposed to sunlight, a rash with burn-like blisters can develop. Furanocoumarins are found in many species in the carrot (*Apiacea*) and citrus or rue family (*Rutaceae*). Care should be taken when identifying this plant as cow parsnip looks like the invasive giant hogweed (*Heracleum mantegazzianum*). Giant hogweed can grow much larger than cow parsnip (15 ft tall or more with 3–4 ft wide leaves), has purple or red spots on the stem, and causes more severe dermatological reactions.

Distribution: Cow parsnip is widely distributed across North America. It has been recorded in all states except Alabama, Arkansas, Florida, Hawaii, Louisiana, Mississippi, Oklahoma, South Carolina, and Texas (USDA-NRCS, 2024). For current distribution, please consult the Plant Profile page for this species on the PLANTS Web site.

Habitat: Cow parsnip grows in partially shaded, wet to somewhat moist areas. This includes forest edges, openings, floodplains, wet meadows, thickets, and streambanks (Reznicek et al., 2011; MN Wildflowers, 2023). In drier environments, it can be an understory plant in shaded areas. The plant is often associated with willows (*Salix*), red-osier dogwood (*Cornus sericea*), quaking aspen (*Populus tremuloides*), and coniferous forests of the Pacific Northwest and the Intermountain West (Esser, 1995). Commonly associated herbaceous plant species include western coneflower (*Rudbeckia occidentalis*), false hellebore (*Veratrum californicum*), Richardson's geranium (*Geranium richardsonii*), and larkspur (*Delphinium occidentale*) (Esser, 1995).

Adaptation

Cow parsnip is found in a variety of moist soils. It often grows in loamy to sandy loam soils but also occurs in clay and gravelly soil. It grows best in partly shady locations but can withstand full sun provided soil conditions are moist and loamy. The plant grows in soils ranging from moderately acidic to neutral (5.4–7.3 pH) (USDA-NRCS, 2024). Cow parsnip grows from sea level to 9,000 feet. It is adapted to USDA plant hardiness zones 3–10 (NPIN, 2013). Cow parsnip is grown outside of North America and can be found in Northern Europe, Siberia, East Asia, and the UK (GBIF, 2023).

Warning: Cow parsnip may cause a moderate to severe dermatological reaction when sap from the plant contacts the skin and is then exposed to sunlight (phytophotodermatitis).

Uses

Pollinators: The flowers of cow parsnip produce easily accessible pollen and nectar that attracts many bees, wasps, flies, butterflies, and other nectar or pollen feeding insects (Gosling, 1986). The foliage and stem are important food sources for some insects during their larval stage, including leaf miners, moths, and flies (Hilty, 2020). It is a larval host plant for swallowtail butterflies (*Papilio* spp.) and several species of moths (NPIN, 2013; Robinson et al., 2023). Cow parsnip can be used in biological pest control by attracting beneficial predatory or parasitoid insects that prey on insect pests (Xerces Society, 2023).

Livestock and Wildlife: Large game animals such as deer, elk, moose, and bear consume cow parsnip as a regular part of their diet (Esser, 1995). It is also a food source, habitat, and cover for small mammals and birds (Esser, 1995). Cow parsnip is a valuable component of western rangeland forage systems (Mueggler, 1985). However, it can be eliminated in these systems by overgrazing and soil compaction (Esser, 1995).

Erosion Control: The fleshy roots of cow parsnip can be used for erosion control in areas that are gently sloped (Dittberner & Olson, 1983). It establishes quickly by seed and readily reseeds, making it a good choice for short and long-term revegetation projects (Esser, 1995; Dittberner & Olson, 1983).

Ornamental: Cow parsnip is an attractive plant for ornamental gardens and is easy to care for. It grows best in moist loamy soils under part shade but is adaptable to many soil types and light conditions. The plant adds height and texture to perennial beds. Despite its short lifespan, cow parsnip will readily reseed and naturalize areas. Because of its size and potential as an irritant, it should not be planted near areas with pedestrian traffic.

Ethnobotany

Americans Indians used cow parsnip for food, medicine, and tools. Emerging leaf and flower buds were cooked and used in stews. The young stems were peeled, dipped in animal fat, and eaten raw like celery stalks (NAEDB, 2003). Leaves, stems, and roots were used in teas, poultices, and powders to treat boils, warts, swelling, and bruising (NAEDB, 2003). Nuxalk (Bella Coola) and Shoshone people used an infusion of cow parsnip roots to treat respiratory ailments (Moerman, 1998). The flowers were used to make an infusion to repel biting insects and mosquitoes. Dried seeds were used to season food. The hollow stem was used to make a straw for the young and infirm, as a whistle, or as a toy for children. The roots were used to dye fibers yellow. Many reported medicinal uses of cow parsnip have been validated by pharmaceutical research (O'Neil et al., 2013). Cow parsnip is still used for food and traditional medicine by American Indians (NAEDB, 2003).

Status

Threatened or Endangered: Cow parsnip is listed as a Plant of Special Concern in Tennessee (TDEC, 2021).

Wetland Indicator: According to the National Wetlands Plant List, cow parsnip is most often found in moist soils but is adapted to a range of soils from wetland to non-wetland depending on the region it is found. Cow parsnip is rated as FAC –

Facultative (hydrophyte) in the Atlantic and Gulf Coastal Plain (AGCP), Eastern Mountains and Piedmont (EMP), Great Plains (GP), and the Western Mountains, Valleys, and Coasts (WMVE) regions. In the Arid West (AW), Midwest (MW), and Northcentral and Northeast (NCNE) regions, the plant is rated as FACW – Facultative Wetland (hydrophyte). In the Alaska region (AK), cow parsnip is rated as FACU – Facultative Upland (nonhydrophyte) (USACE, 2022).

Weedy or Invasive: Cow parsnip is not considered a weedy plant. Because of its potential as a skin irritant, it may require additional management in areas with sensitive populations.

Please consult the PLANTS Web site (http://plants.usda.gov/) and your state's Department of Natural Resources for this plant's status (e.g., threatened or endangered species, state noxious status, and wetland indicator values).

Planting Guidelines
Cow parsnip can be broadcast or drilled at 1–2 pounds per acre in the fall (Esser, 1995; Horton, 1994).

Management
Cow parsnip needs little care. If plants begin to grow in areas where it is not wanted, it is removable by hand. Care should be taken when handling any part of the plant. If skin is exposed to the sap of cow parsnip, wash the area with soap and water immediately (NYDEC, n.d.).

Pests and Potential Problem
There are no serious insect pests or diseases that affect cow parsnip. Parsnip webworm (*Depressaria radiella*) has been introduced to the US from Europe and can reduce seed production rates (Esser, 1995).

Environmental Concerns
There are no known environmental concerns associated with cow parsnip.

Seeds and Plant Production
Cow parsnip seed is hand-collected when the fruit turns brown. Dried seed is estimated to be viable for up to three years when stored at 34–38˚F (1–3˚C) (Luna et al., 2008). Cow parsnip will not germinate unless its double dormancy is broken. To break dormancy, broadcast or drill the seed in fall. Dormancy will be broken naturally in 1–2 years. If grown in a controlled setting, the seed should be soaked in water for 3 days. The water should be changed daily and followed by a 100-day cold-moist stratification period (Luna et al., 2008). Seeds can then be planted in the desired substrate and kept at warmer temperatures (the temperature range is unknown, but good soil moisture should be maintained), before undergoing a second 100-day cold-moist stratification. Germination will not take place between the first and second cold moist stratification period. Germination rates are approximately 90 percent (Luna et al., 2008).

Cultivars, Improved, and Selected Materials (and area of origin)
Cow parsnip seed is available for purchase through many native seed companies. There are currently no named or improved cultivars.

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