



# Meadow Deathcamas in the Pacific Northwest

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## Introduction

Meadow deathcamas (*Toxicoscordion venenosum*) is also known as deathcamas, soap plant, and poison-sego. This plant, previously known as *Zigadenus venenosus*, is in the family Melanthiaceae. It is native to North America and can be found throughout much of western Canada, south to Baja, California (Figure 1). In the Pacific Northwest, this shade-intolerant plant is a frequent inhabitant of coastal prairies, wet and drying meadows, pastures (Figure 2), stream banks, roadsides, open forests, grassy hillsides, and rocky bluffs at elevations ranging from 1400 to 8000 feet (420–2400 m).

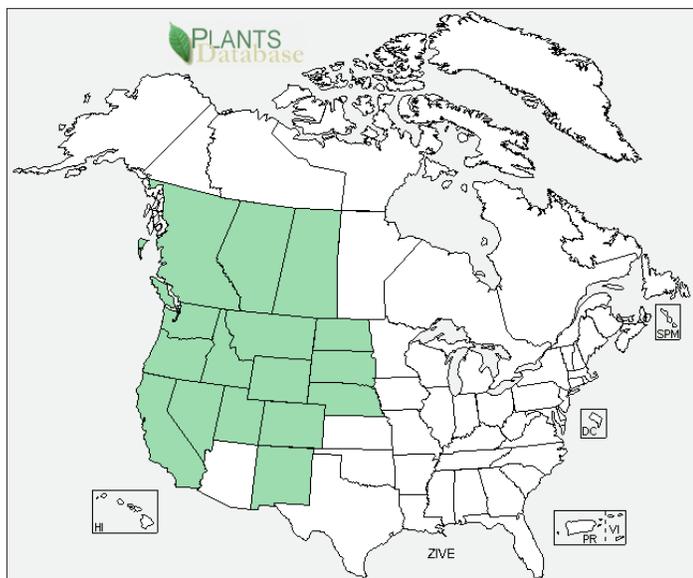


Figure 1. Meadow deathcamas distribution in North America. Map courtesy of the USDA Natural Resources Conservation Service.

Meadow deathcamas is occasionally grown as an ornamental plant because of its showy flowers. As its common name implies, the plant is poisonous to livestock and humans. It ranks as one of the most toxic plants in the western United States.



Figure 2. Pasture infested with meadow deathcamas.

## Identification

Meadow deathcamas is a perennial that develops from a 1–1.5 inch (2.5–3.8 cm) long, ovular, onion-like bulb covered with blackish scales buried 4–6 inches (10–15 cm) beneath the soil surface. The bulb gives rise to basal, grass-like, V-shaped leaves edged with stiff hairs. The leaves are 4–15 inches (10–38 cm) long, 1/8–1/4 inch (3–7 mm) wide, and gathered around the base of the stem (Figure 3). The leaf veins run parallel along the length of the leaf blade. The erect, non-branching stem of mature meadow deathcamas is 6–18 inches (15–46 cm) high, and supports 3–10 inch (8–25 cm) long, pointed clusters of greenish to yellowish-white, six-petaled flowers at its tip (Figure 4). The fruit consists of a dry capsule with three inner compartments, each producing several seeds. Each light brown seed is approximately 3/16 inch (5–6 mm) long, flat, and oval-shaped with a wrinkled surface texture.

## Dispersal

Meadow deathcamas regenerates from seeds, bulbs, and bulb offsets. It is one of the first plants to appear in the spring as early as March. Flowering occurs from April to



**Figure 3.**  
*Meadow deathcamas leaves and flowering stem.*



**Figure 4.**  
*Meadow deathcamas flower cluster.*

May at low elevations (1400 feet), and from late June to July at higher elevations (8000 feet). The plant enters dormancy in response to declining soil moisture.

## **Toxicity**

The bulbs, leaves, stems, flowers, and seeds of meadow deathcamas are always poisonous to humans and livestock. Poisoning results from the ingestion of several neuronal, steroidal alkaloids produced in the plant tissues. These chemical compounds are known to disrupt the impulse-conducting cells found within the nervous system. Of these chemicals, zygacine is the most abundant and believed to be the most toxic (Wagstaff and Case 1987).

Poisonings generally occur during the spring when meadow deathcamas populations are most prevalent and many desirable forage plant species have yet to appear. Animal poisonings occur on overgrazed sites where better quality forage has been depleted or when animals are moved and allowed to forage in areas infested with meadow deathcamas. If there is a paucity of better quality forage plants in the early spring, animals such as sheep, and to a lesser extent, cattle, horses, fowl, and swine, will often consume significant amounts of meadow deathcamas; consequently, there may be a higher incidence of mortality during this time. Sheep are at higher risk of being poisoned because of their greater tendency to select this toxic plant in early spring when more palatable forage species are limited or grasses are dormant.

Severely poisoned animals will usually die, but animals less severely affected may fully recover. A 100-pound (45 kg) sheep may die if it consumes 0.5–2 pounds (0.2–0.9 kg) of green meadow deathcamas foliage. It is also important to note that hay contaminated with the dry matter of meadow deathcamas can be fatal when fed to livestock. Human poisonings caused by this plant are rare, but occasionally occur when people mistake the plant's bulbs for those of edible species, such as blue camas (*Camassia quamash*) or wild onions (*Allium* spp.).

A potentially life-saving way to distinguish between the bulbs of these edible species and those of meadow deathcamas is to smell them: meadow deathcamas bulbs do not give off an onion-like odor. If the bulbs are consumed, immediately induce vomiting to eliminate as much of the poison as possible, and seek medical assistance.

Clinical symptoms associated with poisoning are similar for both domestic animals and humans. These symptoms include excessive salivation, mouth numbness, headache, dizziness, nausea, abdominal pain, persistent vomiting, diarrhea, muscular weakness, confusion, low blood pressure, subnormal temperature, irregular heartbeat, respiratory distress, convulsions, and coma. The symptoms generally occur 1–8 hours after plant ingestion.

## **Management**

In habitats occupied by meadow deathcamas, its abundance tends to increase with the overconsumption of forage plants. To reduce possible poisonings, keep livestock (especially sheep) off infested lands until desirable forage becomes available. In addition, bed sheep as far away as possible from meadow deathcamas infestations so this vegetation is not the first forage available as they begin to graze in the morning. Never cut weed-infested sites for hay.

Meadow deathcamas may be reduced or eventually eliminated in pastures and meadows by annual burning around mid-spring for at least three consecutive years. This method of control works by destroying the foliage required for new carbohydrate synthesis, which prevents plants from photosynthesizing enough of the sugars required for regrowth the following year. The result is plant death or the inability to reproduce for more than a single season. Since the spread of meadow deathcamas is slow, areas cleared of the plant will remain free of it for many years. Fire-managed lands can then be improved by seeding competitive, site-appropriate forage grass species to deter potential meadow deathcamas reoccupation. Burning, however,

requires taking the proper precautions, including checking with local and/or state officials for burn bans.

Hand extraction of meadow deathcamas is feasible in wet soils but not advisable when soils begin to dry because increased soil resistance and pulling pressure will cause the stems to separate from the bulbs. There are no approved biological control agents available for the suppression of meadow deathcamas. However, effective herbicidal suppression can be achieved early in the season (during the 3–6-leaf stage) if plants are sprayed with 2, 4-D at a rate of 1.5–3.0 pounds of active ingredient per acre (ai/acre). Once flowering stems appear, application of an herbicide will be ineffective. Meadow deathcamas is known to be resistant to clopyralid, picloram, clopyralid + picloram, and metsulfuron methyl (Carpenter 1986). Always consult the product label for specific usage directions before applying an herbicide, and afterwards for any grazing and haying restrictions.

Refer to the *Pacific Northwest Weed Management Handbook* for current information regarding pesticides. This handbook is available from Extension offices in Washington, Oregon, and Idaho; the companion website is at <http://pnwhandbooks.org/weed>.

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All photos by **Rich Old**, XID Services, unless otherwise noted.

Use pesticides with care. Apply them only to plants, animals, or sites as listed on the label. When mixing and applying pesticides, follow all label precautions to protect yourself and others around you. It is a violation of the law to disregard label directions. If pesticides are spilled on skin or clothing, remove clothing and wash skin thoroughly. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.

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