

## COMMON MULLEIN *Verbascum thapsus*

### Life History/Identification:

Common mullein is native to Europe and Asia, and has established itself throughout the United States. Of the 250 species of *Verbascum*, eight have been introduced into North America, of which, *Verbascum thapsus* is the most widespread. First year mullein plants are low-growing rosettes that have bluish, gray-green leaves and a felt-like texture. As the plant ages, the hairs on the leaves are mechanically worn away, but not completely. Leaves range from 4-12 inches in length and 1-5 inches in width in the rosette stage. Mature flowering plants are produced the second year, and can grow from five to ten feet in height, including the conspicuous flowering stalk. Leaves alternate along the flowering stalk and are much larger towards the base of the plant. Mullein typically begins to flower in late June and peaks in early August. The flowers are yellow and have five petals. The flowers are also autogamous, meaning that they can self-pollinate if pollination by short or long-tongued bees does not occur. The weed will bear fruit only once and then will die. Mullein seeds are tiny, pitted, and rough with wavy edges and deep grooves, and they usually do not fall far from the parent plant. An adult mullein can produce as many as 100,000-180,000 seeds. Since

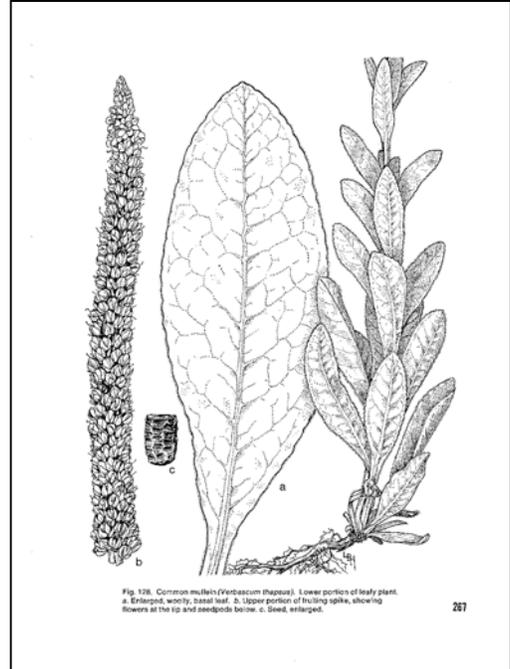


Fig. 128. Common mullein (*Verbascum thapsus*). Lower portion of leafy plant. a. Enlarged, woolly, basal leaf. b. Upper portion of fruiting spike, showing flowers at the top and seedpods below. c. Seed, enlarged.

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vegetative reproduction does not occur in mullein, the weed depends on its seeds to produce offspring. The seeds remain viable for an extremely long time, having a life expectancy that ranges from 35 years to more than 100 years, but they will remain dormant if they are buried too deeply in the soil. If a viable seed is brought to the surface of the soil through a disturbance of some kind, it will be able to germinate the following year. Moisture and light are required for the germination of mullein, and competition with other plants decreases the amount of seeds that successfully germinate. Once established, however, mullein grows more vigorously than many native herbs and shrubs, and its growth can overtake a site in fairly short order.

### Flagstaff Localities:

Mullein is considered a noxious weed by the Arizona Interagency Noxious Weed Coordinating Committee, although it is commonly not considered a serious threat due to the fact that local populations are not able to persist in an area unless it is continuously disturbed and individuals which flower and die are replaced. In the vicinity of Flagstaff, mullein can be found along roadsides, in neglected pastures, within natural meadows and forest openings, and in industrial areas. Common mullein prefers, but is not limited to, dry sandy soils.

### Economic Impact:

It was Aristotle who first recorded common mullein as a piscicide, or fish poison, and the plant has been commonly used as such since antiquity. In the mid-1700's, the plant was introduced in Virginia as a piscicide, and from there it quickly spread throughout the United States. Records show that it was first described in Michigan in 1839 and by 1876 it was found on the Pacific coast. Mullein was also introduced into the United States for its impressive medicinal properties. It has long been used as a remedy for bronchitis and as a cough suppressant. An antispasmodic, mullein can also relieve stomach cramps and help control diarrhea. Traditional uses for mullein also include protection for scraped tissues, and as relief for minor abrasions. A methanol extract from the plant has been

effective in the control of mosquito larvae. On a lighter note, somewhere down the line common mullein has earned the nickname, "Nature's toilet paper," although that term requires a bit of faith and desperation from the user. Despite its medicinal properties and usefulness, however, it must be remembered that common mullein is an invasive non-native weed that competes with native flora. Unless current infestations are kept in check, the plant does have the potential to create unhealthy dynamics in an ecosystem by inhibiting natural processes and stifling native plant spread. In rangelands, mullein is unpalatable to cattle and sheep, and its presence in overgrazed or poor pastures represents a further degradation of the pasture.

### **Control:**

The most desirable approach is that of an integrated pest management plan. This involves the optimum use of all control strategies to control non-native weeds. The manual removal of mullein plants before flowering, the establishment of dense vegetative cover, and minimizing the availability of disturbed, bare soil have been shown to be useful and adequate control methods for mullein.

#### **Cultural Control:**

The prevention of further infestations of common mullein is the most effective and least expensive method of control. The use of competitive native species is an important control for mullein, but it is most effective when used in conjunction with another control method.

#### **Mechanical Control:**

Mullein plants are easily hand pulled on loose soils due to relatively shallow taproots. This is an extremely effective method of reducing populations and seed productivity, especially if the weed is pulled before the seeds are formed. If blooms or seed capsules are present, reproductive structures should be removed, bagged, and properly disposed of in a sanitary landfill. Care should be taken to minimize soil disturbance since loose soil will facilitate mullein seed germination. Mullein may be trimmed back by mowers, and repeated mowing will prevent the flower stalk from bolting. However, mowing will increase the size of the basal rosette, and if mowing is discontinued, a much larger plant, often with additional branching, will proceed to bolt and produce higher quantities of flowers and seeds.

**Chemical Control** *(Noted here are chemical control methods that have been used in other areas. Always check with weed specialists or chemical suppliers before treatment to ensure correct dosage and application. Mention of these products does not imply endorsement by the Northern Arizona Weed Council or The Nature Conservancy.):*

For situations where hand pulling of plants is not practical or safe, herbicidal control is an effective option. Apply a 2% solution of Roundup™ (chemical name: glyphosate) or Garlon™ (chemical name: triclopyr) and water plus a non-ionic surfactant, using a tank or backpack sprayer to thoroughly cover the leaves of mullein. Do not apply so heavily that the herbicide drips off the leaf surface. Use caution, as Roundup™ is a non-selective herbicide that can kill desirable plants. Garlon™ is selective to broadleaf plants and is a better choice if native or other desirable grasses are present. Applications can be made during the early spring when most other non-target vegetation is dormant.

**Biological Control** *(No exotic species should be introduced into an ecosystem without extensive research into the long-term effects. Mention of the species below does not imply appropriateness for use in Northern Arizona.):*

There are currently no approved biological control agents used on common mullein. However, there are two insects that have possible control implications for mullein, a weevil and a moth. These insects feed on the seed capsules of the weed and, in the case of the weevil, can destroy up to 50% of the seeds. Pathogens that have been shown to cause disease in mullein are also destructive to economically important plants such as vegetables and cotton.

**Note: No single control method, or any one-year treatment plan, will ever achieve effective control of an area contaminated with common mullein. The fast growth and high seed production of this plant require long-term cooperative integrated management programs and planning to prevent, contain, and reduce mullein infestations.**

Moser, L; D. Crisp. San Francisco Peaks Weed Management Area fact sheet on *Verbascum thapsus*.  
Coconino National Forest.