

Trifolium dubium

SMALL HOP-CLOVER

ENGLISH NAMES Small Hop-clover, Suckling Clover, Yellow Suckling Clover
SCIENTIFIC NAME *Trifolium dubium*
FAMILY Fabaceae



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RANGE/KNOWN DISTRIBUTION

Small Hop-clover is widely recognized as an alien lawn and turf weed in the United States and in both eastern and western Canada. Small Hop-clover is native to Europe and to temperate Africa and Asia.

IMPACTS ON GARRY OAK AND ASSOCIATED ECOSYSTEMS

Small Hop-clover is becoming increasingly present in Garry Oak and associated ecosystems on southern Vancouver Island. It is widespread in Victoria and is found in Saanich. Like other clovers, Small Hop-clover fixes nitrogen and has the potential to change soil nitrogen content.

Small Hop-clover has been observed spreading into Garry Oak and associated ecosystems with known occurrences of species at risk. In particular, Small Hop-clover has been identified to pose a risk to the BC Red-listed, federally Endangered herb, Coast Microseris (*Microseris bigelovii*) and Blue-listed Poverty Clover (*T. depauperatum*). Small Hop-clover has similar ecological requirements to Coast Microseris, a vernal seep and vernal pool inhabitant. Small Hop-clover is a drought-resistant species and also a strong competitor. It out-competes Coast Microseris for moisture where they both occur in vernal pool and seep habitats, and reduces available suitable habitat for Coast Microseris.

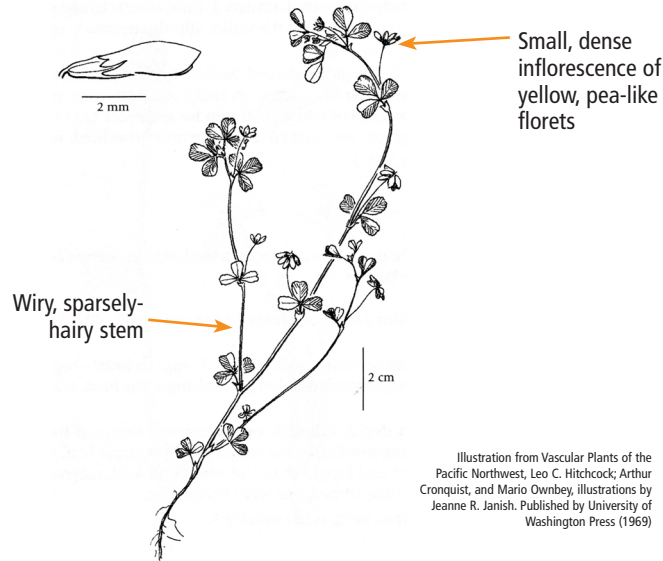
FIELD DESCRIPTION

Small Hop-clover is a slightly hairy, annual member of the Pea (Fabaceae) family that grows in roughly round mats. Individuals bear one or many wiry, sparsely-haired stems. Small Hop-clover grows from a taproot, as well as from a mass of fibrous roots in the upper soil layer. The stems grow prostrate, curving, or erect, and individuals are generally 10 to 50 cm in height. The leaves consist of three small (3-5 mm in length), egg or heart-shaped leaflets on short stalks. Small Hop-clover produces small, dense inflorescences of 3-20 yellow, pea-like florets (small flowers in a floral cluster), from axillary stems (attached at the juncture of stem and leaf stalks). Oval seed pods, 3 mm in length, are enclosed within the corollas of the florets. A single hard-coated seed is produced per pod.

Small Hop-clover is easily confused with another common weed of the Fabaceae family, Black Medic (*Medicago lupulina*). Distinguishing

INVASIVE SPECIES IN GARRY OAK AND ASSOCIATED ECOSYSTEMS IN BRITISH COLUMBIA

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characteristics are few. The seed is perhaps the most distinguishing characteristic, but the seeds are extremely small and a hand lens may be required for inspection. The seeds of Black Medic are hairy, black, and kidney-shaped. In contrast, the seeds of Small Hop-clover are smooth, 2 mm-long egg-shaped pods.

Small Hop-clover may also be confused with a number of other *Trifolium* species. Characteristics that may aid in identifying Small Hop-clover are its small size and yellow flowers.

LIFE HISTORY

Small Hop-clover flowers have both male and female structures and are self-pollinating. This winter annual germinates in autumn. Small Hop-clover flowers in the spring and dies in the summer after setting seed.

HABITAT

Small Hop-clover prefers cool temperate or mesothermal climates. It grows in dry areas with light soils that are dry in summer, and in rocky areas. It also grows well in poor soils as it is able to fix nitrogen. Small Hop-clover is drought-resistant and is frost-tolerant compared to other clover species.

In coastal British Columbia, Small Hop-clover is a recognized lawn weed. It also grows in clearings and in wastelands at lowland elevations along roadsides. It prefers southwest to western aspects.

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MANAGEMENT

Develop a long-term, realistic program for invasive species removal before undertaking any work. Before taking action, obtain expert advice. Please refer to the introductory section of this manual.

The control of Small Hop-clover will require long-term commitment. Management plans should place high priority on removing Small Hop-clover from areas where it poses significant threat to species at risk. Management should also involve actions of broader scope, such as reducing the prevalence of Small Hop-clover in lawns, clearings, and wastelands, thereby reducing its capacity to invade sensitive ecosystems.

PHYSICAL CONTROL: Small Hop-clover can be hand-pulled where individuals are relatively isolated. Because the plant grows from a deep taproot, care should be taken to remove the entire root using a weed fork if required. Always practice careful and deliberate hand-pulling to minimize soil disturbance, especially shortly after watering or rainfall when the soil is soft and the roots of Small Hop-clover are loose. Hand-pulling should be practiced with extreme care in sensitive ecosystems, particularly prior to native plant flowering and seed setting. In areas with species at risk, experts with knowledge of the species at risk should be consulted prior to undertaking any management actions.

BIOLOGICAL CONTROL: No biological controls are known for the control of Small Hop-clover.

CHEMICAL CONTROL: *Herbicides should only be used under expert advice and with extreme caution in Garry Oak ecosystems.* Small Hop-clover in its mature form is difficult to control by chemical means. Herbicides containing fluroxypyr, clopyralid, dicamba, and triclopyr have been found to be most effective in other parts of the world. Generally, herbicides must be applied to Small Hop-clover more than once, at six weeks intervals, for effective control. Herbicides may cause substantial damage to flora and fauna in Garry Oak ecosystems and run-off may affect wider ecological communities.

Check local bylaws and pesticide listings and seek expert advice before using chemical means to control infestations of Small Hop-clover.

OTHER TECHNIQUES: The application of corn gluten meal is an alternative, non-chemical weed suppressant that is used to control lawn weeds, including clovers. Corn gluten meal inhibits root growth of germinating weed seeds. Corn gluten meal also acts as a feed for mature plants. This technique is not appropriate for natural areas but may be effective in city gardens and yards to suppress the spread of Small Hop-clover into natural areas.

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PREVENTATIVE MEASURES: Dense ground-cover inhibits the establishment of Small Hop-clover seedlings. In urban areas and wastelands, maintaining dense turf or other forms of ground cover may help to decrease the abundance and invasive capacity of Small Hop-clover.

PERSISTENCE: The hard seed coat of Small Hop-clover, as in other Fabaceae, allows the seeds to persist in the seed bank for up to five years. Small Hop-clover may form large, persistent seed banks at sites where individuals have set seed, even where Small Hop-clover is not the dominant vegetation.

SELECT REFERENCES

Alaback, P., J. Antos, T. Goward, K. Lertzman, A. Mackinnon, J. Pojar, R. Pojar, A. Reed, N. Turner, and D. Vitt. 2006. Plants of Coastal British Columbia. Pojar, J. and A. Mackinnon (Eds.) B.C. Ministry of Forests and Lone Pine Publishing. Vancouver, BC.

Baskin, C.C. and J.M. Baskin. 1998. Seeds Ecology, Biogeography, and Evolution of Dormancy and Germination. Academic Press. San Diego, CA.

COSEWIC. 2006. COSEWIC Assessment and Status Report on the Coast Microseris (*Microseris bigelovii*). Prepared by M. Fairbarns, A. MacDougall, A. Ceska and O. Ceska. Committee on the Status of Endangered Wildlife in Canada. Ottawa.

Douglas, G.W., D. Meidinger and J. Pojar. 1999. Illustrated Flora of British Columbia Volume 3 Dicotyledons (Diapensiaceae through Onagraceae). BC Ministry of Environment, Lands and Parks and BC Ministry of Forests. Victoria, BC.

Lawn Weeds. 2009. Lesser Trefoil *Trifolium dubium*. In: Lawn Weed Identification. www.lawnweeds.co.uk.

Texas Invaders. May 12, 2008. *Trifolium dubium* Suckling Clover. In: Invasive Plants. In: Invasives Database. www.texasinvasives.org. Texas Invasive Plant and Pest Council.

The Royal Horticultural Society. April 22, 2010. Clover in Lawns. In: Gardening. www.rhs.org.uk. London, UK.

A comprehensive bibliography of literature specific to Small Hop-clover is available at www.goert.ca

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