tumbling mustard

Sisymbrium altissimum L.

Synonyms: *Norta altissima* (L.) Britton
Other common name(s): tall hedgemustard, tumble mustard, Jim Hill mustard, tall mustard, tumble mustard, tumbleweed mustard, tall tumble mustard
Family: Brassicaceae

Invasiveness Rank: **Not Ranked -** The invasiveness rank is calculated based on a species' ecological impacts, biological attributes, distribution, and response to control measures. The ranks are scaled from 0 to 100, with 0 representing a plant that poses no threat to native ecosystems and 100 representing a plant that poses a major threat to native ecosystems.

Description

Tumbling mustard is a tall annual plant that generally grows from 40 to 120 cm tall. Stems erect, branched above, glabrous basally, and densely to sparsley hirsute distally. Basal leaves are broadly oblanceolate to lanceolate in outline and are arranged in rosettes, with petioles usually 1 to 10 cm long. Basal leaf margins are pinnatisect, pinnatifid, or runcinate, and with usually 4 to 6 lobes on each side. Stem leaves are similar to the basal leaves, but with the distalmost blade having linear to filiform lobes. Fruiting pedicels are usually widely diverging and rarely ascending, stout, and nearly as wide as fruit, with the average length ranging from 6 to 10 mm. Flowers of tumbling mustard have sepals that are ascending or spreading, oblong, and 4 to 6 mm long by 1 to 2 mm wide. Petals are spatulate, and usually 6 to 8 mm long by 2.5 to 4 mm wide with claws 3.5 to 6 mm. filaments 2-6 mm. Anthers are oblong and 1.5 to 2.2 mm long. Fruits are narrowly linear, generally straight, smooth, stout, usually 6 to 9 cm long by 1-2 mm wide, with glabrous valves, and ovules 90 to 120 per ovary. Style is 0.5 to 2 mm long, with stigma 2 lobed. The seeds are 0.8 to 1 mm by 0.5 to 0.6 mm in size (Al-Shehbaz 2020).

Figure 1 Tumbling mustard (Sisymbrium altissimum). Photo by Louise M. Landry

Similar Species: Tumbling mustard can be confused for the non-native species herb sophia (*Descurainia sophia*), charlock

mustard (*Sinapis arvensis*), and hedgemustard (*Sisymbrium officinale*) which all also occur in Alaska. Tumbling mustard can be distinguished from all of the listed species by a comprehensive combination of the following attributes: Fruit a silique with length more than 3x the width, all hairs simple (without forked or star-shaped hairs), lower leaves not divided 2 to 3 times, siliques beakless, siliques not awl-shaped or appressed to stem while also being 6.6 to 10.2 cm long, and leaves with long linear segments.

Figure 2 Tumbling mustard (Sisymbrium altissimum). Photo by Steve Matson.

There are also native look-alikes to tumbling mustard such as northern tansymustard (*Descurainia sophioides*) and yellowcress (*Rorripa spp.*). Tumbling mustard can be distinguished from tansymustard by its basal leaves which are not divided 2 to 3 times into narrow segments. The yellowcress species present in Alaska bear a fruit that is wider than it is long (silicle) unlike tumbling mustard which bears a long silique (Hultén 1968).

Figure 3 Tumbling mustard (Sisymbrium altissimum). Photo by Steve Matson

Ecological Impact

Impact on community composition, structure, and interactions:

Tumbling mustard is one of the most successfully introduced rangeland species in the western US (Young et al. 1970). It has been shown to temporarily decrease the cover of native annual and perennial plants (Allen 1994). Attributes that contribute to the success of tumbling mustard include effective dispersal, high phenotypic plasticity, and high interspecific competitive ability (Lewontin 1965). Tumbling mustard has high germination rates in the spring which decreases competition with native plants that are slow to emerge in the spring (Allen 1994).

Impact on ecosystem processes:

Tumbling mustard is a successful species of primary succession under post-disturbance

conditions (Diamond et al. 2012). It has also been known to decrease the rate of secondary succession in dry, sagebrush grasslands by impacting the speed of establishment of native perennials (Allen 1994). After the first several years of tumbling mustard establishment in dense quantities, the contributed litter may influence temperature and moisture conditions. Tumbling mustard may persist beyond seemingly successful control efforts due to a persistent seedbank (Diamond et al. 2012).

Biology and Invasive Potential

Reproductive Potential: Spreads by seed and contributes large quantities of seed to the local seedbank (Diamond et al. 2012).

Role of disturbance in establishment: Tumbling mustard commonly establishes in open, disturbed habitats where it readily exploits the lack of litter presence on the soil surface (Diamond et al. 2012, Al-Shebaz 2020).

Potential for long-distance dispersal: Tumbling mustard can disperse long distances via attachment to transportation vectors such as birds, mammals, or human devices due to its sticky, mucilaginous seed coat (Young et al. 1970).

Potential to be spread by human activity: The sticky, mucilaginous seed coat aids in the attachment to anthropogenic dispersal units (e.g. machinery, clothes, boots, etc.) (Young et al. 1970).

Germination requirements: Tumbling mustard prefers germination on bare soils, or soil with low litter content on the surface (Diamond et al. 2012). It has high germination rates with cooler spring temperatures but may also exhibit irregular germination during this period (Allen 1994). It has no temperature-dependent requirement for after-ripening (Young et al. 1970).

Growth requirements: Tumbling mustard is known to flower in the cool conditions of early spring (Allen 1994) and prefers to grow in disturbed soils (Rebele 1992). This species establishes best in pits and furrows is disturbed sites with uneven microtopography (Howard 2003).

Legal Listings

- Has not been declared noxious in AK, Canada or other states.

Distribution and Abundance

Native and current distribution: Tumbling mustard is native to temperate Asia, tropical Asia, and Europe (USDA, ARS 2017). Outside its native range, tumbling mustard is most successful in disturbed habitats with low litter presence on the soil surface. Tumbling mustard grows as a weed in all US states apart from Alabama, and in all Canadian provinces with the exception of Nuvavut and Labrador (USDA, NRCS 2017, Brouillet et al. 2010+). Tumbling mustard has been reported primarily in the Matanuska-Susitna Valley and Anchorage, Juneau, and the Haines Hwy. This species has not been observed in undisturbed habitats in Alaska. (AKEPIC 2026, CPNWH 2026, Densmore et all. 2001).
For the most up-to-date distribution information for Alaska, please visit the AKEPIC Database.

Management

Hand pulling before seed production is effective for small patches. Mowing and tilling may also be effective if timed before seeds are viable (Orloff 2023). Tumbling mustard can be controlled most effectively with early spring application of phenoxy herbicides after germination (Young et al. 1970).

Last Updated: 2026-01-14 Colette Martinez

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