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Artemisia vulgaris (Mugwort): Overlooked Infiltrator of Meadow Habitats

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Repellant chemicals in leaves

Mugwort (*Artemisia vulgaris)* is a perennial weed with a strong medicinal smell that repels herbivores, from chrysomelid beetles to woodchucks. Nectaring insects are also lacking because mugwort is wind-pollinated. The food web is very inactive in dense, established mugwort populations, in sharp contrast to a goldenrod-dominated field or roadside.

Humans tend to overlook this species, unware that copious mugwort pollen contributes to hay fever. Mugwort foliage is gray-green, silvery beneath; the lower leaves are intricately dissected like those of *Chrysanthemum*, becoming simpler near the top. The plants can reach five or six feet tall. Each forms a spire of tiny, off-white flowers, which develop into dull brown seed capsules.

Mugwort forms large, fast-spreading patches along unvegetated roadsides and in bare, idle soil on construction sites and clear-cuts. Its root/ rhizome system is daunting for those trying to pull it out. Dense stands are not colonized by other species.

Dense mugwort monocultures produce flowers without nectar

Above: Blooming mugwort with false bindweed. Below: Early summer monoculture of mugwort (*Artemisia vulgaris)* on fallow Regional Water Authority land, New Haven,CT. Photos by S. Gadwa & Penelope Sharp.

For decades mugwort received little attention. It was generally assumed to intrude only rarely into natural ecosystems, and to spread only by vegetative means, with new patches starting from rhizome fragments transported along with soil.

Late September, 2013, as seeds are ripening. A thick., extensive mugwort patch colonized exposed soil on abandoned former crop-land. Oleski Farm, Rocky Hill., CT. Photo by Sigrun Gadwa.

Research on Allelopathy & Germination

In 1999 one study (Inderjit & Foy) showed that decomposing mugwort foliage inhibits growth of red clover. Another study found terpenoid allelopathic chemicals in mugwort foliage. Concerns were raised that mugwort inhibits natural succession to “old field” with nectar-rich flowers, large seeds, and wild fruits. Imagine a September landscape where mugwort dominates open areas instead of goldenrod, grasses, asters, and many kinds of bees and other insects!

In 2014 a pilot germination study was conducted by Dr. Jeffrey Ward at The Connecticut Agricultural Experiment Station, using seed collected from seven parts of Connecticut. Dr. Ward had repeatedly noticed isolated young mugwort plants and was skeptical that the species was entirely clonal. His study showed unequivocally that mugwort seeds from all the sites sprouted readily, so long as the seed was mature, collected in mid to late fall. The experiment was presented to the CT Invasive Plant Council. Questionnaires were distributed to CIPWG members. Responses made clear that this plant now occurs in many habitats and localities, not just on disturbed roadsides. Based on this evidence, *Artemisia vulgaris* was added to the official CT Invasive Plant list.

Seed dispersal

First-year rosette growing on crushed stone. Mugwort tolerates dry, infertile, mineral soils, and threatens sand-barren habitats.

The small pale flowers ripen into dull brown capsules, releasing minuscule (<1mm diameter) seeds through the winter months, up to 200,000 seeds from one plant. Seeds are wind-borne but also carried in mud on tires, hooves, and shoes, and in stream waters, dropped by overhanging seed heads (right).

Land use & Funding Practices

A less than 20-ft buffer to the linear trail allows mugwort to disperse seed into adjacent Sodom Brook. **Lack of prompt soil stabilization** by hay or seeding allowed mugwort to colonize the edges of the linear trail. Enforce-ment of sound practices by regulators prevents infestation.

A key research question: is the species self-fertile? Would isolated plants germinating downstream on the shore of Hanover pond set viable seed? Funded experiments to **better understand invasive species’ ecology and basic reproductive biology** would allow more cost-effective control.

Mow to Delay Loss of Natives

Above: Dissected young mugwort foliage, with violets and red clover, in recently colonized moist soil along the new Meriden linear trail. Violets will be shaded out by 2017, if mugwort is not mowed or treated.

Below: September photo shows the benefits of **early summer mowing.** Instead of growing to 5 or 6 feet, the mugwort plants are only a few feet tall, coexisting with desirable black-berry & tall golden-rod plants pending long-term control. Mow in fall, as well, to stop seed set.

Management Techniques

Dr. Ward’s germination experiment also made clear that **mowing immature seed heads in early fall** was an excellent way to prevent further seed dispersal and formation of new patches. Cut immature seeds would not simply mature into viable seed.

By contrast, **mowing from mid-fall through winter is not recommended** as it would further disperse the seed. If early summer and early fall mowing are combined, a mugwort monoculture can be averted.

As for herbicide options, glyphosate applied in late summer or early fall will suppress mugwort the following year but generally not eradicate it. Triclopyr and clopyralid are more selective herbicides (don’t kill grasses or other monocots) that effectively control mugwort. Clopyralid is applied at very low doses, so it may be the best option from an ecological view.

Town public works departments could be educated to mow mugwort infested roadsides at the correct times, of year, to promptly stabilize soils, and not to reuse mugwort-infested soil.