The Nature Conservancy
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February 10, 2009

Oregon State Weed Board
Attn: Tim Butler
635 Capital St, NE
Salem, OR 97301

Dear Tim,

Thank you for soliciting comments on the invasiveness of *Alyssum murale* and *A. corsicum* for the Oregon Department of Agriculture's risk assessment process. Based on the experience that The Nature Conservancy has gained attempting control of these species at our Rough and Ready Ck Preserve in O'Brien, OR, we believe that they pose a substantial threat to the native serpentine flora of the Illinois Valley.

Background: From 1997 – 2005 *Alyssum murale* and *Alyssum corsicum* were grown in a 4 acre field on Rough and Ready Ck Rd in O'Brien by the Southern Oregon Research and Experiment Station and the private company Viridian. The Nature Conservancy purchased the 50 acre Feheely property including this field in 2003 to protect its endemic serpentine flora and a portion of Rough and Ready Ck. We terminated the lease with Viridian for *Alyssum* production in the agricultural field in 2005 and began *Alyssum* eradication efforts in 2006.

Observations of Invasiveness: In May 2006 we found 40-50 *Alyssum* plants growing outside the cultivated field perimeter in areas of undisturbed, shaded native vegetation. Most plants were within a meter of the fence line though some were located as far as 3 meters away. The escaped plants were concentrated on the field edges where *Alyssum* tumbleweeds were deposited against the fence by the prevailing winds. We also pulled two plants on Rough and Ready Creek at an irrigation pump site, and several plants on the road edge near the entry to the field.

In May 2007 we discovered one plant at approximately 50 meters from the field, again in an area of shaded, undisturbed native vegetation. Ten plants were pulled between 5-50 meters from the field fence line in 2008. There is the potential that Conservancy staff and volunteers carried seed on our shoes from the field area to these outlying sites, or that the seed was carried by wind or wildlife.

Since 2006 we have patrolled the field perimeter several times each year and continue to find and pull *Alyssum* seedlings. In May 2008 we pulled 24 plants from the field perimeter.

Control Observations: The Nature Conservancy has experimented with hand-pulling, disking, mowing, cutting, and herbicide applications to eradicate *A. murale* and *A. corsicum* from its Rough and Ready Ck Preserve. Below is a summary of our observations.

1) *Hand Pulling*: Careful hand-pulling in the spring when the soil is moist can reduce alyssum density but not eliminate it in one season. Hand pulling is harder when the soil dries out and may be less successful because of the tendency to break plants and leave roots in the ground. Hand-pulling is time and labor intensive.
2) *Mechanical Disturbance:* Disking and ripping alone is not an effective method to control *Alyssum* spp. A year after this treatment, the cover of *Alyssum* in three plots was 24% (pre-disking data not available).
3) *Mowing and Weed-eating:* May, June or August mowing reduced but did not eliminate flowering and seed production. Cut plants were able to re-flower and set seed even in the dry months of August and September.
4) *Herbicide:* Glyphosate applied once at the rate of 1.5% in May during bolting, and with moist soils can reduce *Alyssum* density but not eliminate it in one season. Early Sept may also be a window of opportunity for effective glyphosate application. Garlon 3A applied at a rate of 1.5% with Activator 90 sticker in May 2008 at flowering resulted in approximately 25% mortality, 25% damaged and 50% unaffected *Alyssum* plants within one month of application. *A. corsicum* appears to be least affected by herbicide treatments. *Note – the Garlon application was followed by an unexpected cold rain storm which may have reduced effectiveness.
5) *Herbicide plus Cutting:* The 2008 Garlon treatment was followed by mowing in June 2008, and weed-eating in August 2008 to prevent seed production. This approach appeared to reduce the vigor of remaining plants.
6) *Conclusion:* Our treatment trials and observations indicate that *Alyssum* spp was not eradicated in one season using either hand pulling, disking, mowing, cutting or herbicide or reasonable combinations, and control methods must also target the abundant seedlings produced from the seed bank. Eradication may take several growing seasons and require a combination of methods.

Our experience with *Alyssum murale* and *corsicum* at Rough and Ready CK Preserve has convinced us of the potential for these species to escape from production fields and establish in undisturbed areas of native vegetation. While there are very few non-native plants capable of establishing on serpentine-peridotite soils, *Alyssum* thrives there, and thus poses a significant threat to the unique serpentine ecosystem, and the associated rare native plants. The growth and structure of *Alyssum* make it difficult to eradicate as well. It can resprout from its strong root system after disking and cutting, and the small leaves that also may have a thick cuticle or pubescence may reduce the efficacy of herbicide application. The seeds are abundant and tiny and may disperse easily via tumbleweeds, wind or soil movement. We have found that eradication of these perennial plants is costly as well.

For the above reasons, we urge the Oregon Weed Board to consider adding *A. murale* and *corsicum* to the A and T list in order to protect the world renown serpentine habitats of the Illinois Valley, and to consider risk assessments for other new crop plants that are well-adapted to Oregon's climate and soils.

Sincerely,

Molly Sullivan
SW Oregon Stewardship Coordinator