

Chrysanthemum leucanthemum
Oxeye Daisy

Nicholas T. Shannon, edited by Alison Foster
Public Lands History Center at Colorado State University, September 2014

History

Chrysanthemum leucanthemum, oxeye daisy, is a perennial forb native to Europe, Scandinavia, Lapland, the British Isles, Russia, and central Asia. This species was introduced to North America in the late 1890s both as hay/grain seed contaminant and as an ornamental “wildflower.” Very limited information is available about the history of oxeye daisy and its spread across the United States. This brief is based almost entirely on exotics treatment reports from Rocky Mountain National Park (ROMO). Oxeye daisy is on the List B noxious weed species in Colorado.¹



Figure 1. Oxeye daisy. Source: Colorado State University Extension, Fort Collins, CO. Available from: Colorado State University Extension, http://www.extension.colostate.edu/gilpin/natu/natu_docs/oxeye.shtml (accessed August 2014).

The first recorded observance of oxeye daisy in ROMO was in 1996 in the Kawuneeche Valley on the west side of the park, three miles from the Grand Lake entrance. In 2006 oxeye daisy was named one of the three worst weed species in the park and park managers recommended its treatment as a high priority invasive species. Oxeye daisy was found on the east side of the park for the first time in 2012 in the Endovalley picnic area.²

Biological Concerns

Oxeye daisy is a resilient species that is seemingly unresponsive to frost and remains healthy and reproductively successful during drought. In times of drought, species whose roots typically penetrate deeper into the soil wilt more quickly than oxeye daisy. In wet soil conditions the plant stabilizes with adventitious root growth, shooting new root stalks after the rosette is lifted by the plant’s rhizome. Oxeye daisy has no recognized allelopathic qualities but reproduction through both seed and its rhizomatous root structure causes it to be predisposed to site dominance. Each plant can produce 500 seeds that are viable for 2-3 years.³

Management Strategies

Treatment of this species in Rocky Mountain National Park began with manual control through hand pulling and digging of small populations on the west side of the park in 2000. Manual control continued somewhat sporadically, seemingly contingent on the availability and funding of herbicides. Funding was insufficient in some years, and other species, mainly Canada thistle, have been prioritized for treatment over oxeye daisy. Manual control involves digging out the plant including all its roots before the head is produced. Reports in ROMO have noted mixed success with this method due to the plant’s rhizomatous nature, and have indicated that manual removal aggravated the plant and stimulated growth.³

In 2003 a test plot using black plastic cover attempted to control oxeye daisy by blocking sunlight from reaching the plants and thereby prohibiting photosynthesis. After covering the plot with black plastic the area was seeded with a variety of native species. Monitoring showed the method to be effective in killing oxeye daisy plants, however, park staff were concerned about seeds that remained in the soil after the black plastic was removed. Seedling and young weedy species were observed in the test plot following treatment, but it was anticipated that with time they would be out competed by native species. If this method was to be replicated, past Exotic Crew Leaders recommend seeding at a higher rate to further prevent the invasion by other exotic species. Monitoring appears to have ceased in the late 2000s so the long term impacts of treatment are unknown.³

Chemical treatment was initiated in 2004 with “Escort” (metasulfuron) at a concentration of 1oz per acre. Park records do not reveal exactly when chemical control was used following 2004. Funding was an issue in obtaining sufficient herbicide. Escort can be applied at any time of the year when the ground is not frozen but it leaches through the soil (more deeply at pH >6) and is toxic to humans. There is no record of continued chemical treatment of oxeye daisy with Escort after 2004. 2,4-D, Banvel (dicamba), Tordon (picloram), Arsenal (imazapyr), and Oust (sulfometuron methyl) have also been noted to be effective on oxeye daisy. In 2009 ROMO began collaborating with the US Forest Service (USFS) on simultaneous chemical treatment of Canada thistle and oxeye daisy with Milestone on the western slope near Shadow Mountain Reservoir. ROMO and USFS collaborated near Grand Lake to treat their adjacent lands. These treatments have continued through 2014.³

Recommendations

The author’s recommendation for future management of oxeye daisy is to return to black plastic treatments, which have proven successful in the past. However, treatment should be modified by reseeded more heavily with natives and also adding plants sprouted in the ROMO greenhouse in an effort to further increase competition with invasive species. Greenhouse plants have already developed root networks and may be able to inhibit exotic establishment, giving the native seeds more time to germinate. While this treatment may have more initial collateral effects, results from past treatment in ROMO suggest that it is more successful and holds less ecological risk than chemical treatment with either Escort or Milestone.

Endnotes

¹Jim Jacobs, Ecology and Management of oxeye daisy (*Leucanthemum vulgare* Lam.) p. 5.

²Chris R. Rutledge and Terry McLendon, “An Assessment of Exotic Plant Species of Rocky Mountain National Park,” Colorado State University Department of Rangeland Ecosystem Science (1996); Julie Knudson, Matt Ounsworth, Michael Prowatzke, Jamie Dahlkemper, Jim Bromberg, and Brian Kolokowsky, “Rocky Mountain National Park Exotics Year-End Reports,” Rocky Mountain National Park: Division of Resource Stewardship, 2000-2013; S. E. Howarth, Biological Flora of the British Isles, p. 589-591; Jim Jacobs, Ecology and Management of oxeye daisy (*Leucanthemum vulgare* Lam.) p. 6.

³Julie Knudson, Matt Ounsworth, Michael Prowatzke, Jamie Dahlkemper, Jim Bromberg, and Brian Kolokowsky, “Rocky Mountain National Park Exotics Year-End Reports,” Rocky Mountain National Park: Division of Resource Stewardship, 2000-2013.