

Monitoring Biological Control Agents and Leafy Spurge Populations along the Smith River in Montana, USA

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Abstract

The Smith River originates in west central Montana and flows north approximately 100 miles before joining the Missouri River. The central 60 miles of the river flows through a relatively inaccessible, forested, scenic limestone canyon famous for its trout fishing. Because of its popularity, the area was designated Montana's first and only controlled river, with access by a permit system. By 1995, leafy spurge (*Euphorbia esula* L.) infested roughly 639 acres of the canyon, threatening riparian ecosystems and the natural, cultural, agricultural, and recreational resources along the river corridor. Because the riparian environment and mixed ownership make weed control difficult, a cooperative weed management group consisting of multiple agencies along with private landowners was formed and the river corridor was designated a Cooperative Weed Management Area (CWMA). The group selected integrated management with an emphasis on biological control as the only practical long-term management option for leafy spurge. Between 1991 and 2002, over 250 releases of eight biological control agents were made, totaling more than 370,000 insects released. Between 2007 and 2010, the USFS Rocky Mountain Research station monitored 79 of these release sites plus 20 sites with no record of release to determine the status of the biological control agents. We also monitored 62 of the release sites for changes in leafy spurge populations and in vegetative community characteristics. We discuss the status of the biological control agents and the results of integrated management on leafy spurge control along the river corridor.