



**Clearwater Basin Collaborative
Selway-Middle Fork CFLRA Project**

**Weed Management Assessment
Executive Summary**

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Executive Summary

In 2010, a comprehensive restoration strategy submitted by the Clearwater Basin Collaborative, the Nez Perce-Clearwater National Forest, and other partners was selected for inclusion in the Collaborative Forest Landscape Restoration Program (CFLRP). The approved restoration strategy targets the 1.4 million acres of the Selway-Middle Fork ecosystem in Idaho. As part of the CFLRP, the Selway-Middle Fork project area receives federal funding (through 2019) to conduct science-based restoration projects. In 2011, a multi-party Monitoring Advisory Committee (MAC) was established in the CFLRP project area per the requirements of the CFLRP legislation. The MAC's effectiveness monitoring priorities include a weeds assessment, or gathering of baseline information, from which they will assist stakeholders in the development of recommendations for continued weed identification, treatment and monitoring as well as overall weed management efficiency and effectiveness improvements. This report was requested by the MAC and will serve as the baseline documentation for weeds-related adaptive management within the Selway-Middle Fork CFLRP project area.

Stakeholders

Weed management in the area has been part of a collaborative effort since 1995 and continues as such today under the auspices of the Upper Clearwater Cooperative Weed Management Area and the Frank Church-River of No Return CWMA. The US Forest Service (USFS) is the largest weed management stakeholder in the CFLRP project area, managing 95% of the total land. The project area spans two National Forests, two federally designated wilderness areas and four ranger districts. Weed management differs according to these boundaries and also differs according to the four general management categories most affiliated with weed treatment and monitoring in the USFS: designated weed crews, timber harvest, road decommissioning/restoration, and fire management. Additional stakeholders include Idaho County Weed Control (ICWC), the Nez Perce Tribe (NPT), private contractors, the Back Country Horsemen of North Central Idaho (BCHI or NCI), the Montana Conservation Corps (MCC), outfitters and guides, the Selway-Bitterroot Frank Church Foundation (SBFC), and private landowners and volunteers. Despite most stakeholders being member of the two CWMAs mentioned above, the goals, activities, and accomplishments of individual stakeholders can vary tremendously from each other, as well as from those of the CWMAs in which they operate.

Inventory Efforts

Weed inventory has been conducted largely by USFS designated weed crews, ICWC employees and contractors, the NPT and SBFC. Data collection varies from electronic with GPS/GIS to simplified hard copy. Most but not all information is entered in the USFS Natural Resources Manager Threatened Endangered and Sensitive Plants-Invasive Species Integrated Application and tracked with the Forest Service ACTivity Tracking System (hereafter both applications are simplified to FACTS). From 1980-2013, 48 weed species were documented in the project area. The majority of inventory data only indicates the presence of infestations encountered; areas with no infestations documented could be free of weeds, or could simply not have been checked for weeds to date. The NPT Biocontrol Center (NPBC) inventory crew is the one stakeholder which documents all locations covered during inventory efforts. It is unknown what proportion of the project area has been fully inventoried for weeds to date. Most inventory efforts target new areas rather than revisiting and documenting change in previously mapped

infestations. Consequently, existing weed inventory data is useful as baseline information but cannot be used to track either treatment efficacy or natural weed spread over time across the project area.

Treatment Efforts and Trends

Biological Control

Biological control agents have been released by USFS personnel, ICWC employees, the NPT, the MCC, and private contractors. 399 releases have been made in the CFLRP project area since 1983; 391 have targeted spotted knapweed. Limited monitoring has been conducted by the NPBC and private contractors. Ten species are established; eight attack spotted knapweed and two *Chrysolina* beetles attack St. Johnswort. *Chrysolina* spp. and their host have followed a boom/bust cycle and continue to fluctuate today, though the overall weed population is much smaller than pre-release. Redistributions of *Chrysolina* are recommended to open, sunny areas in order to maintain fluctuating control at the local scale. At one spotted knapweed monitoring site, the weed decreased from one year to the next, but this was not likely due to biocontrol as agent populations also decreased between years. At the remaining sites, spotted knapweed cover did not change between years. Many stakeholders believe biocontrol of spotted knapweed is promising, and releases of *Cyphocleonus achates* have increased dramatically since 2008. 31,095 *C. achates* have been released in the project area since 1994, while 36,460 *Larinus* spp. have been released since 1996. Despite the similar amounts and time frame, *Larinus* spp. have been recovered at 106 sites, while *C. achates* has only been recovered from 7. Many *C. achates* release locations do not exhibit characteristics favorable to the agent. Consequently, population growth at most of the unsuitable sites would not be expected to reach the high levels observed elsewhere in North America where the agent has had measurable impacts. Additional time and consistent monitoring efforts are needed to fully understand the impact of biocontrol on spotted knapweed in the CFLRP project area. Any future releases should only be made in large patches growing under conditions conducive to high agent population growth (long/hot summer temperatures, mid elevation, sandy soil).

Chemical Control

Chemical treatments have been applied by USFS designated weed crews, ICWC employees and contractors, the NPT, private contractors, the BCHI of NCI, the MCC, and private landowners and volunteers. Application information has been recorded in FACTS since ~2006. Data collection varies from electronic with GPS/GIS to simplified hard copy. There is considerable flexibility in the interpretation of required data fields in the FACTS system such that possible data analyses differ between forests. In both the Bitterroot and Nez Perce-Clearwater National Forests, it is a requirement that 50% of acres treated be monitored in order to receive credit for treatments. This usually entails simple ocular measurements of the percent control for the treated weed (i.e. the percentage of treated plants killed). Percent control can be a very subjective measurement because it requires knowledge of the infestation prior to the original treatment. However, many individuals conducting monitoring (typically USFS designated weed crews or ICWC employees) were not present at the infestation originally.

In the UCWMA (including the Nez Perce-Clearwater National Forest), 28 weed species have been chemically treated since 2000. The number of infestations treated has increased regularly from 2000-2013, but dramatically so from 2009 onwards. The majority of infestations treated to date have been assigned a priority 3 by the UCWMA. 496, 3,355, 15,757, and 982 acres have been treated and were assigned to priority 1, 2, 3, and 5, respectively. Of the 425 unique weed infestations that have been treated chemically since 2000, 113 have been monitored at least once since 2009 (571 monitoring visits total). Despite the UCWMA strategic plan calling for the monitoring of 1 and 2 priority sites three times each year, this does not often occur. Of all high priority sites treated since 2000 (100 total), only 10 sites

received 3 or more visits during the 2013 growing season. Eight of these 10 sites occurred on non-forestland, indicating the Nez Perce-Clearwater National Forest is not actively following the strategic plan guidelines for the UCWMA. 31 and 13 sites received 1 and 2 visits, respectively. 48 high priority sites did not receive any monitoring visits in 2013. Anecdotal observations of percent control average 82%. Readings of 100% control are the only non-subjective measurements and can be used to track treatment progress at the site level. Infestations with 100% control reported for one or more monitoring visits were queried from the treatment dataset in order to track changes in chemicals applied over time. At 36 sites, chemicals applied continually decreased over time, eventually reaching zero for the most recent monitoring events. Weed infestations at these sites appear to be in control. At 21 sites, herbicides applied have fluctuated over time, but are decreasing overall compared to initial treatment records. Control appears possible at these sites. At 13 sites, applied herbicides appear to fluctuate regularly, with no obvious indication of increasing or decreasing. At a final 13 sites, most recent records indicate the chemicals needed are increasing overall. Sites with no control are typically: not visited as frequently as they should be; receive incorrect herbicides, rates, or application dates; or recent inventory efforts have increased in quality to reveal infestations were all along larger than expected and now require more herbicides.

In the Bitterroot National Forest, 16 weed species have been chemically treated since 2007. Records do not break down the acreage, priority, herbicide applied, and spatial location of individual weed species; all information is lumped by treatment location. The manner in which the Bitterroot National Forest records treatment information allows for the tabular tracking of total acres surveyed, rather than just acres actually treated with herbicides (wetted acres). Survey efforts have increased dramatically since 2010, though wetted acres have decreased since 2011, indicating that while more area is covered during weed surveys, fewer infestations are encountered and treated. 5,363 acres have been surveyed since 2007, while 727.2 acres have been wetted. Anecdotal observations of percent control average 94%. 80 out of 279 monitoring visits indicated 100% control, though some populations later recovered from the soil seedbank. Since 2010 the Bitterroot National Forest has been involved in quantitative vegetation monitoring in the CFLRP project area to determine the efficacy of past treatment efforts. Results are not currently available for analysis as this is an ongoing multi-year effort.

Physical Control

1855 acres have been treated with physical control methods since 2008, all within the UCWMA but on non-forestland. Though seven species have been physically treated, the vast majority were priority 1 infestations of garden yellowrocket (*Barbarea vulgaris*). Nine of the total 12 sites have been anecdotally monitored by ICWC employees each year since 2009. All sites on average received three visits during each growing season, in line with the UCWMA strategic plan. Four sites have maintained 100 percent control since 2010. These sites had been treated with a combination of herbicides and physical control. The remaining five sites have had fluctuating efficacy measurements since 2011, indicating additional monitoring and follow-up treatments are warranted to ensure full infestation eradication.

Rehabilitation Efforts and Trends

Restoration is not a primary objective of weed management programs in the CFLRP project area. Weed treatment is the primary avenue whereby the majority of stakeholders contribute to site rehabilitation. Weed treatment, itself, is an important component of restoration. When native or more desirable species make up more than 30% of the overall plant cover, the simple act of removing the competing weeds may be sufficient to tip the balance back in favor of the native/desirable species. Measuring native/desirable species cover is not currently a requirement in weed treatment records, so no rehabilitation data is

available for the majority of weed treatment records queried from FACTS and other sources in this assessment.

Rehabilitation is a key component to restoration activities carried out by USFS road decommissioning crews and the NPT Watershed Division. Revegetation is included in all decommissioning projects for roads not assigned to simple abandonment. Native species already growing in the project area are preferentially used in re-plantings, followed by nursery-grown stock and seed mixes containing native and desirable exotic species. Monitoring is conducted at a subset of all restoration sites to track the effectiveness of the program. For every 10 miles of road decommissioned, a ¼ mile-segment of decommissioned road is selected for monitoring vegetation and ground cover. Though not representative of the entire CFLRP project area, monitoring results indicate rehabilitation efforts are successful at *some* road decommissioning sites as the amount of overall vegetation is increasing for recent projects compared to previous efforts. This correlates to improving methods in revegetation on decommissioned roads. Weeds account for ~10% of the plant community at monitored decommissioned sites, indicating continued treatment is warranted.

Education/Prevention Efforts

ICWC, NPT Watershed Division, NPBC, and the BCHI of NCI all conduct workshops and/or give presentations to land managers, schools, and the interested public which provide training on weed identification and control methods and the importance of weeds in the environment. ICWC, NPT Watershed Division, and NPBC also distribute weed identification and control material to land managers and the public. USFS personnel, ICWC and the NPT all post signs informing the public about the importance of preventing the introduction and spread of weeds into natural areas. Signs are posted at trailheads, wilderness portals, and many campgrounds. Certified noxious weed-free hay is required throughout forestland in the project area. Maintaining signs and checking hay are not activities formally recorded in FACTS or other USFS databases, but are done regularly on an as-needed basis by USFS personnel, ICWC and volunteers with the BCHI of NCI. Consequently no data is available regarding the amount, frequency, or trends of education and prevention activities.

Recommendations

The baseline data gathered in this weeds assessment highlights the *immense* effort put into weed management by numerous stakeholders and lays the groundwork for measuring treatment efficacy in the future. The data also (along with stakeholder observations) highlights numerous gaps and limitations in current weed management activities. Because the CFLR program will continue through 2019, it is crucial that these gaps and limitations be addressed now in order to maximize the use of remaining CFLRP resources. Listed below are key recommendations for improving weed management in the project area in order to increase the efficiency and long-term efficacy of weed control programs.

Organization Structure

Re-structuring or appointing a new forest-wide leader or team is crucial for the success of weed control efforts in the project area. A strong leader or team is: accountable, persuasive, supported by Forest leadership, committed to a long-term weed control program, and highly skilled in communication, organization, technological application, and integrated weed management on a large scale.

Accountability

Once an effective leader is in place, it is necessary that leader has sufficient authority so that weed management decisions can be implemented. Accountability for implementation is necessary to ensure all essential weed control activities are completed and in the timeframe and manner determined to be most effective by the CWMA.

Funding

Invasive plants must be recognized as a significant and persistent issue in land management, and dedicated (sufficient) funding must be allocated annually and consistently in order to develop the most effective long-term weed management programs.

Inventory

Inventory efforts should be conducted throughout the entire project area, including re-visits to infestation boundaries known to be inaccurate. Inventory data collection should also be changed to require documentation of areas surveyed and found to be free of weeds. The term “weed free” should be more rigorously defined to be implemented more usefully and reliably.

Treatment Data Collection and Entry

All stakeholders collecting weed management data should record the same categories of information in the same manner and be in agreement on the interpretation of fields and values. All information should be entered into FACTS in the same manner across all forests and users. The FACTS system itself has proven cumbersome for many USFS personnel and incompatible or inaccessible for non-USFS stakeholders. If these issues cannot be addressed by FACTS developers and managers, it is recommended an alternative and simpler spatial database be developed that would allow sharing of data and seamless data entry for all stakeholders.

Monitoring

It should be a requirement of both employees and contractors that all infestations be monitored for past treatment efficacy prior to any new applications. Monitoring data collected should be altered to include less subjective measurements of control (e.g. quantitative measurements) and include native/more desirable species in order to track progress on the landscape. The same monitoring protocol and interpretation should be agreed upon and utilized by all stakeholders.

Training and Coordination

Once inventory, treatment, and monitoring data collection protocols are agreed upon by stakeholders, workshops should be held to ensure that all individuals (and interested public) are trained in: the new methodology, in weed identification (especially new invaders), and in the most effective methods/timings/rates for treating each weed species.