Regional Forester Sensitive Species (RFSS) Plants

Introduction

This chapter is divided into two subsections: Population trends and habitat improvement. Population trend examines abundance of RFSS plants over time using both a coarse filter and fine filter approach. Habitat improvement examines progress in meeting RFSS plant habitat improvement objectives over time.

Population Trend

Monitoring Question

> To what extent is Forest management contributing to the conservation of sensitive species and moving toward short- term (10-20 years) and long-term (100 years) objectives for their habitat conditions?

Forest Plan direction comes from O-WL-18: Maintain, protect, or improve habitat for all sensitive species.

This monitoring question and driver are appropriate because they help assess whether Forest management is maintaining the viability of the 60 RFSS plants found on the Superior National Forest. By considering RFSS plant population trends, we have a somewhat independent check of how well O-WL-18 is being integrated into implementation of the Forest Plan as a whole.

The units of measure include a coarse filter -- acres of habitat, and a fine filter -- numbers of populations. The unit of comparison selected is trends in acres of habitat and numbers of populations

The two units of measure are appropriate because they are relatively easy to measure and cover two different but meaningful biological scales. Coarse filter measurements of habitat use Management Indicator Habitats (MIH) to represent the amount of habitat for the RFSS plants that are habitat generalists. Fine filter measurements use the MN DNR's Rare Feature Database to track number of populations of RFSS plants that are habitat specialists. Measuring acres of habitat or numbers of populations over time can help managers identify vulnerable species that may require special management to maintain long-term viability.

Monitoring Methods

Coarse filter monitoring is appropriate for the following RFSS plants, which use either forested wetlands or upland forests as their habitat: western Jacob's ladder, small shinleaf, cloudberry, fairy slipper, ram's head lady's slipper, moschatel, triangle grapefern, goblin fern, New England sedge, Chilean sweet cicely, Braun's holly fern, rough-fruited fairy bells, Canada ricegrass, Canada yew, barren strawberry, and nine different lichens or liverworts. These species use types of forested habitats that are measured in the forest vegetation

inventory process and which can be summarized by MIH. MIH data is derived from the FS Vegetation database which is updated continuously so that Forest Plan implementation projects are using current information for planning and analysis. Specific forest type and forest age class indicators for these RFSS plants can be found in the project file (USDA Forest Service 2010). See the MIH section of this report for more detailed methods.

Fine filter monitoring is most appropriate for the RFSS plants that do not have forest type indicators that allow for meaningful monitoring. These species use habitats such as cliffs or rock outcrops, marshes, fens, fluctuating shorelines and other specialized habitats that are not readily captured in forest inventory data and which do not change much over time. Because RFSS plant populations are spatially fairly discrete, fine filter monitoring is performed for all RFSS plants. The Superior National Forest receives annual updates of the Rare Feature Database from the MN DNR. The number of different RFSS plant population occurrences is summarized from this data (USDA Forest Service 2010).

Results

Coarse Filter

For the suite of RFSS plants that rely on mature lowland forest habitats, MIH analysis shows that suitable habitat for these species is abundant on the Forest – the majority of the lowland conifer MIH is mature or older. For the suite of RFSS plants that rely on mature northern hardwood forests, MIH analysis shows that suitable habitat for these species is abundant within the Sugar Maple Landscape Ecosystem – the majority of the northern hardwood MIH is mature or older. A few RFSS plants, like barren strawberry and ram's head lady's slipper, use a variety of young to mature forested habitats and seem to be habitat generalists; the abundance and distribution of habitat for these species appears to be adequate.

Fine Filter

Analysis of RFSS plant occurrence data from the MN DNR Rare Feature Database shows the numbers of separate populations tend to be stable, or in some cases increasing, relative to 2004. This is primarily due to increased search effort that has detected new occurrences of these species over time. This analysis assumes that the populations of these RFSS still exist, and this assumption is tested during midlevel analysis when existing populations of RFSS plants are visited to see if they are present or absent. Mid-levels over the last five years have demonstrated that half to three-quarters of known RFSS plant populations still exist. Thus, using the MN DNR Rare Feature Database as a tool for fine filter analysis of RFSS plant abundance is valid.

Implications

The results suggest that five years into the Forest Plan, forest management is contributing to the conservation of RFSS plants, at least in the short term. In the time frame of the Forest Plan, the expected conditions being analyzed in the Forest Plan Biological Evaluation (BE) are consistent with the current conditions, while viability conclusions made in the Forest Plan BE are still valid.

Observations made about deer browsing during RFSS plant monitoring could have both coarse and fine filter impacts on RFSS plants. Northern white cedar and Canada yew (an RFSS plant) are known to be heavily browsed by white-tailed deer; this was considered in the Forest Plan BE. Judging by the presence of cedar regeneration and absence of browse on Canada yew, the eastern half of the BWCAW and parts of the Gunflint Ranger District are still not being heavily impacted by high deer numbers. However, in many areas of the Superior there is no cedar or yew regeneration occurring because deer eat the young plants. In the long term this could reduce the abundance of lowland cedar habitats and cause a downward trend for Canada yew.

Recommendations

1. Based on the RFSS plant monitoring results, I recommend continuing the presence/absence monitoring of known RFSS plant populations conducted during midlevel analyses. I also recommend that some systematic monitoring of Canada yew and cedar regeneration be started Forest-wide to better document deer browse effects.

Habitat Improvement

Monitoring Question

To what extent is Forest management contributing to the conservation of sensitive species and moving toward short- term (10-20 years) and long-term (100 years) objectives for their habitat conditions?

Forest Plan direction comes from O-WL-30: Enhance or restore high quality habitat on a minimum of 20 (average 2 sites per year) known sites of sensitive plants.

This monitoring question and driver are appropriate because they help assess whether Forest management is maintaining the viability of the 60 RFSS plants found on the Superior National Forest. Not every sensitive plant population is amenable to habitat improvement projects, but for the ones that are, habitat improvement projects can make a meaningful contribution to that species' viability on the Forest.

The unit of measure chosen is the number of sensitive plant populations enhanced or restored. This is compared to Forest Plan direction to enhance or restore high quality habitat for sensitive plants on two sites per year, on average.

This unit of measure is appropriate because it is a meaningful biological entity (i.e. a population), and because it is the same unit of measure used in the Forest Plan. This unit of comparison is the same as that recommended in the Forest Plan.

Monitoring Methods

Monitoring of two RFSS plant habitat improvement projects were conducted in 2008. In 2008, duff and downed trees were removed at the Fish fry Lakes auricled twayblade site and brush and dead trees were removed from the large-leaved sandwort population along the

Spruce Road on the Kawishiwi Ranger District.
A pre treatment population census was done at the auricled twayblade site in 2008 and a follow-up post treatment census done in 2009 to assess response to treatment. No pretreatment or post treatment census was conducted at the large-leaved sandwort population; qualitative observations on population response were made.

In 2009, one new RFSS plant habitat improvement project was conducted. The project involved transplanting male cloudberry plants from an all male cloudberry population north of Devil Track Lake on Gunflint Ranger District to an all female cloudberry population located west of Wolf Lake on Laurentian Ranger District. The intent of this project is to increase the genetic diversity of cloudberry by encouraging sexual reproduction by getting some males and females in the same population. This would potentially allow this boreal plant species to better respond to future environmental changes such as a warming climate.

Results

For the auricled twayblade, there seemed to be a positive response to the brush and debris removal. Prior to treatment, 76 plants were observed in the population and three were flowering (Figures 9c.1 and 9c.2). One year after the treatment, 84 plants were observed in the population and over half were flowering (USDA Forest Service 2009a).

Figure 9c.1. Fishfry Lake habitat improvement project designed to increase the population of auricled twayblade. Before (left) and after (right)

For the large-leaved sandwort, the population seemed to be doing very well one year after brush and dead tree removal. Hundreds of plants were observed, with many small plants present (which could have been seedlings). Many plants had successfully reproduced and were producing seed (USDA Forest Service 2009b).

Implications

The results suggest that five years into the Forest Plan, forest management is contributing to the conservation of RFSS plants, at least in the short term. Seven habitat improvement projects for RFSS plants have been implemented so far, which contribute to the accomplishment of O-WL-30.

The habitat improvement projects completed in 2008 and monitored in 2009 appear to have been successful.

O-WL-30 sets the goal of 20 habitat improvement projects for RFSS plants during the life of the Forest Plan, which averages to two per year. With only 7 completed to date, we are not on track to complete the desired number by 2014. Increased effort at habitat improvement projects would be needed in the next 5 years of the plan to accomplish this goal.

Recommendations

1. Continue looking for habitat improvement opportunities for RFSS plants during midlevel analyses, and try to complete two per year over the next five years. Follow up each project with effectiveness monitoring to determine whether it was successful or not.

References

USDA Forest Service. 2010. Superior National Forest RFSS plants – 2010. Unpublished report. Duluth, MN. 5 pp.
USDA Forest Service. 2009a. FishFry Lake Listera monitoring. Unpublished. Duluth, MN.1 pp.
USDA Forest Service. 2009b. Spruce Road Moehringia monitoring. Unpublished report. Duluth, MN. 3 pp.