

from similar species by entire or simple cleft leaf stipules (leaflet structure at the base of the leaf stem) and densely long-silky hairs on the leaves and stems. It is the only alpine *Horkelia* in Oregon having dense silky, non-glandular (non-sticky) hairs.

*Horkelia hendersonii* is estimated to be approximately 32,307 individuals, occupying a total of 86.6 ha (214 ac), with four main population centers in Oregon and one small population in California. The two species co-occur on the top of Mount Ashland.

According to the petitions, the Mount Ashland populations of both species are threatened by the existing use and potential expansion of ski area facilities, roads, mountaintop facilities, and summer recreation. Additional threats identified in the *Horkelia hendersonii* petition included grazing, mining, firebreak construction, off-road vehicles, and logging.

Current recreational ski activities occur over about 3.4 ha (8.5 ac) or approximately 12 percent of the area where these species occur at Mount Ashland. These operations have occurred over this occupied habitat for about four decades with no observable changes in population distribution or numbers. A ski expansion proposed at Mount Ashland is expected to increase the number of skiers in occupied habitat. On the basis of information provided in the U.S. Forest Service's (Forest Service) (2000) draft environmental impact statement (DEIS), we believe that additional skier use as a result of the expansion of the ski area on Mount Ashland would not significantly destroy, modify, or curtail either species' habitat or range. We base this on the fact that the plants are dormant and insulated by a layer of snow during the winter period of use. Also, mitigation measures contained in a recently signed conservation agreement (CA) are expected to ameliorate impacts from the ski expansion.

The petitioners expressed concern that activities associated with the proposed ski expansion may increase the pressure of the snowpack on dormant *Lupinus lepidus* var. *ashlandensis* and *Horkelia hendersonii* root crowns, change the longevity of the snow pack, or otherwise affect the environment and habitat that currently support these two species in this area of impact. There have been no studies to date that we are aware of to determine if skiing activities affect *Lupinus lepidus* var. *ashlandensis* and *Horkelia hendersonii* or their habitat underneath the snowpack. Also, the petitioners did not present any information on

scientific studies that detailed effects to alpine vegetation by ski activities. Thus, these impacts are unknown. If changes in environmental conditions occurred in the past as a result of these activities, it is unknown whether the effects were detrimental, beneficial, or neutral to *Lupinus lepidus* var. *ashlandensis* and *Horkelia hendersonii* individuals (Forest Service 2000).

Although initial road developments constructed years ago resulted in some habitat and individual plant loss, no current proposals call for expansion of existing roads or new road construction. Cutbanks and new drainage patterns created by the summit road on Mount Ashland have started gullies, which may reduce soil moisture retention, thereby reducing habitat for both species (Kagan and Zika 1987a, b; Zika 1987). During October 2002, the Forest Service started actions to improve drainage patterns of the existing road on Mount Ashland to ameliorate these potential gully impacts (W. Rolle, Forest Service, *in litt.*, 2002). The threat of gully formation associated with roads is much less at the Dutchman Peak/Jackson Gap, and is unknown for the Dry Lake Lookout site. Forest Service personnel are to evaluate sites that contain or are adjacent to roads for this potential impact on an annual basis, with the intent to implementing actions to reduce road impacts (Service and Forest Service 2002). Since no new road construction or widening are presently planned in areas where *Lupinus lepidus* var. *ashlandensis* and *Horkelia hendersonii* occur, and because the Forest Service is currently working to ameliorate habitat threats as a result of the current road at Mount Ashland, we do not consider road construction and maintenance to be a significant current threat to these species.

An existing off-road vehicle track leading west from the Mount Ashland summit access road at the first switchback has been reported to be a potential avenue for the introduction of roadside weeds into the meadow and flat area that supports a sizeable population of *Horkelia hendersonii* and a small population of *Lupinus lepidus* var. *ashlandensis* (Kagan and Zika 1987a; Zika 1987). However, this potential impact is not yet evident. Though a few non-natives are present, they are either not expanding or are fairly ephemeral (transient) components of the plant communities. Unlike many other plant communities, non-native species are generally not increasing in areas inhabited by *Lupinus lepidus* var. *ashlandensis* or *Horkelia hendersonii*. The lack of establishment by these non-natives is likely due to the harsh alpine

conditions of these sites, and that non-native plants adapted for these conditions have not been introduced.

Although mountaintop developments constructed years ago resulted in some habitat and individual plant loss, there have been few other such developments since. Only one new mountaintop development is currently proposed, to replace an outdated underground power cable that supplies electricity to weather and telecommunications facilities at the summit of Mount Ashland (Forest Service 2002). The Forest Service proposes that, in order to reduce impacts to the populations, the cable installation should occur within the existing compacted roadbed, instead of where it presently occurs. With this alternative, the project would intersect only a small portion of habitat and result in the loss of just a few plants of both *Lupinus lepidus* var. *ashlandensis* and *Horkelia hendersonii*. No additional mountaintop developments are planned in the foreseeable future. Threats associated with the maintenance of these facilities are generally low in magnitude and are not thought to comprise a threat to either species or their habitat.

Relatively small areas (3 to 4 percent) of the total population areas are currently being impacted as a result of trampling and soil compaction from summer recreational activities. Actions currently being implemented by the Forest Service to reduce these impacts include the placement of barriers to delineate parking areas, enforcement of off-road vehicle restrictions, signing and environmental education, camping closures, and limitations on special use permits (limits on size and number of gatherings) (Service and Forest Service 2002). These efforts are expected to contain summer recreational impacts to these small areas occupied by *Lupinus lepidus* var. *ashlandensis* and *Horkelia hendersonii* (W. Rolle, *in litt.*, 2002). Since summer recreation threats are currently very limited in extent and overall magnitude, and the Forest Service is actively managing to reduce these threats, summer recreation is not currently thought to be a significant threat to the species or their habitat.

Cattle grazing is not permitted in the Ashland Watershed or on any part of Mount Ashland; thus, no legal grazing is affecting *Lupinus lepidus* var. *ashlandensis* or the Mount Ashland population of *Horkelia hendersonii*. There are no proposals to permit grazing in this area in the future. Although cattle occasionally wander into these species' population areas, their presence is transitory and does not appear to affect *Lupinus lepidus* var. *ashlandensis*