

## **APPENDIX A – SPECIES CONSERVATION PLAN**

Additional information is available in the Mt. Rose Ski Tahoe Sensitive Species Management Plan,<sup>1</sup> contained in the project file.

### **GALENA CREEK ROCKCRESS**

#### **Mitigation Ensuring Avoidance of Impacts**

1. No heavy equipment would be used for construction activities in areas where Galena Creek rockcress were identified in the 2000 survey.
2. Prior to commencing ground disturbing activities in the East Bowl and selective hand vegetation removal in The Chutes, Galena Creek Rockcress surveys would be conducted and individuals/aggregations flagged in order to avoid unintentional disturbance. Hand removal of overstory vegetation would be utilized to construct terrain in The Chutes.
3. Prior to the initiation of construction activities, Mt. Rose will provide species recognition training for all construction personnel.

### **TAHOE DRABA**

Recent studies have shown that Tahoe draba is more locally common than previously thought and that the known population of Tahoe draba greatly exceeds recent estimates.<sup>2</sup> Given this information, disturbance of a portion of the Mt. Rose ski area Tahoe draba population should not lead toward federal listing for this species. It appears that this species can recover from grading, excavation, and stump/boulder removal if key habitat characteristics, such as aspect and vegetative cover, are preserved on the disturbance site. It is also evident that the species grows slowly and that disturbed areas should be monitored for a minimum of five years in order to obtain meaningful results and to establish trends.<sup>3</sup>

This Species Conservation Plan was developed to provide the most viable scenario for the success of Tahoe draba at Mt. Rose while implementing the proposed project. The following recommendations, mitigation, and monitoring protocol have been established to formulate the success criteria for this species, which entails having the density of plants (ramets) on reclaimed areas be at least equal to the baseline density after five years. Also, annual monitoring should indicate a trend toward increasing density.

If after five years of monitoring, the reestablishment of Tahoe draba within the test areas is not found to equal the baseline density, Mt. Rose will continue reintroduction efforts in

---

<sup>1</sup> JBR Environmental Consultants, 2002c

<sup>2</sup> JBR Environmental Consultants, 2002

<sup>3</sup> On the Heavenly Ski Area site, new plants are just now being observed after four years of monitoring. Parsons, 2001

consultation with the Forest Service. The success of the reintroduction program will continue to be monitored annually. If plant reintroduction equal to the baseline is achieved in years subsequent to the initial five year monitoring period, portions or all of the “contingent” projects would be released for implementation at the discretion of the Forest Service. If the continuance of the reintroduction efforts appears to have a low probability of success, at the discretion of the Forest Service, the effort may be discontinued with the understanding that the “contingent” grading projects would not be released for implementation or the Forest Service may require continuation of the reintroduction effort with alternate, more aggressive strategies. If, in the future, the Forest Service chooses to pursue a conservation strategy for the Tahoe draba, Mt. Rose will be an active participant.

This document is intended to provide guidance for development of a site-specific Tahoe draba monitoring plan, which would be developed in consultation with the USFS. Approval of the plan by the USFS would be necessary before it could be implemented. Mt. Rose would retain the services of a professional ecologist/botanist in implementing the plan. The plan should also be scientifically sound in order to provide adequate information to evaluate the response of Tahoe draba.

### **Recommendations**

1. Where possible, minimize impacts to existing Tahoe draba populations or potential habitat by selecting the disturbance with least impact. Tree thinning and stump removal appear to be rather benign activities because negative effects on individual plants may be offset by an improvement in habitat. This improvement results from creating a more open canopy with less litter. Impacts will also be minimized by identifying and avoiding locations with Tahoe draba.
2. Applying mulch or seeding ground cover species should not be done in Tahoe draba habitat because the plants appear to do best in nearly bare substrate. Grading and erosion control have potential for lasting harm because they may alter habitat. Phase this type of work to determine its affect on Tahoe draba habitat.
3. Because Tahoe draba is capable of sprouting from root and rhizome fragments in the substrate, it is very important that the surface layer (one to two feet) of disturbed areas should be stockpiled and then applied over the new surface as soon as possible. This will ensure that viable root and rhizome fragments remain close enough to the surface to sprout and produce new plants.
4. Terrain grading and smoothing will be conducted to ensure that general habitat affinities (soil type, slope angle and surface cobble) are not altered to the extent of rendering the habitat unsuitable to Tahoe draba.

## **Mitigation for Impacts**

1. Transplanting of Tahoe draba plants prior to ground disturbance has been shown to be fairly successful. This approach may be attempted in areas where Tahoe draba plants would be destroyed by grading or excavation. Plants may be transplanted to suitable unoccupied habitat in secure areas, or may be stockpiled in containers and then transplanted back to disturbed areas to augment regeneration from roots and rhizomes. Transplants should not be placed over snowmaking lines because of the possibility of future disturbance from maintenance. The best time to transplant would be in late fall so that flowering is completed and transplants can take advantage of the spring snow melt. Transplanting should be done as soon as possible after plants are removed in order to prevent desiccation. If plants are to be removed for greater than three days, plans will be made for storage and care of the plants. Taking as much of the root and rhizome mass as possible with transplants should increase the chance of success. Individual mats will not be divided.
2. Because little quantitative data are available on the response of Tahoe draba to disturbance, monitoring of existing populations (as controls), as well as disturbed and mitigation areas, has potential to benefit the species in the long term and lead to more informed management decisions.
3. Additional off-site surveys in potential Tahoe draba habitat will be performed in consultation with the Forest Service to continue to establish the local population size.
4. Prior to the initiation of construction activities, Mt. Rose will provide species recognition training for all construction personnel.
5. Collection and banking of seed from Tahoe draba plants in the project area will be pursued as a contingency for unsuccessful plant reestablishment. The banked seeds would preserve the existing genetic diversity of the population. This task would be completed in cooperation with the Center for Plant Conservation.
6. The use of collected seed would not be employed as a reintroduction strategy within the initial five year period but would rather be reserved as an alternate tactic should the initial reintroduction effort be deemed not fully successful. Additionally, the planting of nursery propagated stock from seed may be required.

## **Monitoring Guidelines**

1. It is very difficult to distinguish between genets and ramets in the field because rhizomes are normally under the surface and excavating them could harm the plants by exposing the roots and rhizomes to the air. For this reason, it is more practical to assess the health of the population as a whole by counting individual ramets without regard to origin. Both the density of ramets and percent cover in a

- plot would be meaningful parameters to record and monitor over time. Frequency of rhizome branching is also noted as a good indication of reproductive vigor in clonal populations.<sup>4</sup> This parameter is expressed as the number of ramets present each year compared to the number of ramets present in the first year of sampling.
2. Control plots must be established for comparison with trends in disturbed and mitigation areas. Off-site control plots may be necessary if enough suitable on-site locations cannot be identified.
  3. Areas of proposed disturbance should be re-inventoried immediately prior to disturbance to obtain an accurate baseline. In order to accurately assess project impacts, it may be necessary to identify different categories of disturbance such as blasting/stump removal, excavation, and grading.
  4. The elevation, aspect, slope, plant community, and substrate must be recorded for all control, disturbance, and mitigation plots.
  5. All areas to be monitored, including control areas and disturbed areas, must be permanently marked in a way that will not create a hazard to skiers. The total area should be surveyed with a GPS unit with sub-meter accuracy. At least four boundary points of each area (sample polygon) should be marked with permanent rebar or metal stakes. The markers will be colored, numbered, flagged, and the location recorded on GPS receivers.
  6. All areas to be monitored, including control and disturbed areas, will have permanent one square meter sample plots located in random locations. The number of sample plots will be adequate to sample the area to be monitored, but not less than five percent of the total area to be disturbed. Plot sampling frames will be placed such that the permanent metal nail marker is always in the center of the plot. A map will be made, which shows the polygon boundaries and the location of all sample plots.
  7. Tahoe draba management activities and monitoring results should be summarized in annual reports, which would be submitted to the USFS.

### **Success Criteria**

Re-establishment of Tahoe draba on disturbed or mitigation sites will be considered successful if, after five years, the density of plants (ramets) is at least equal to the baseline density, and annual monitoring indicates a trend toward increasing density. Control plot monitoring will provide additional data that will be helpful in interpreting whether success criteria have been met by showing how well disturbed and mitigation plots are performing in comparison to control plots.

---

<sup>4</sup> Kull, 1995 and Tamm, 2001