

Appendix A: Critical Habitats in the Churn Creek Protected Area

Method

Map Ten – CCPA Critical Habitats represents potentially critical habitats for red and blue listed vertebrate species known or suspected to occur in the Churn Creek Protected Area. Background information, objectives and strategies for California bighorn sheep, an important blue listed species in Churn Creek, can be found in *Section 4.4 – Wildlife and Fish*.

For the purposes of this map, a critical habitat is defined as “a habitat essential for a species to meet one or more of its life requisites, or a habitat in which the behavior of an animal makes it susceptible to disturbance.”

This map was generated from the following sources of information:

- ◆ wildlife inventory information and Terrestrial Ecosystem Mapping
- ◆ field observations of several biologists
- ◆ extrapolation from known distributions
- ◆ habitat use information from various studies

Detailed methodologies and sources of information can be obtained from BC Parks in the report *Churn Creek Protected Areas Critical Habitat Maps*.

Many of the habitats outlined on these maps, particularly riparian habitats, also represent important habitats for numerous other species and are significant centers of diversity within the grassland environment.

This map reflects current states of knowledge and will be updated regularly or as new inventory and observation information becomes available.

The categories of occurrence of red and blue listed species which were used are : known, suspected and possible. “Known” species are those which have been observed in the Churn Creek Protected Area. “Suspected” species are those which are likely to occur in the CCPA based on known distributions of the species. “Possible” species are those that could potentially occur in the CCPA but are less likely.

Areas that appeared to contain the appropriate elements to be a critical habitat for one or more red and blue listed species were delineated as polygons. Each polygon that was delineated was numbered and the following information was recorded for each polygon in a digital database: biogeoclimatic subzone, range unit, habitat type, each potential red or blue listed species that

may occur in the polygon, occurrence (known suspected or possible) habitat use for each species, management implications, present condition of the habitat (if known) and comments.

For presentation purposes, the habitat types were grouped into the following broad categories: riparian, grassland, forest and other¹⁷.

Red and Blue Listed Species and Management Objectives by Broad Habitat Type

Forest

Douglas-fir slopes and adjacent ridgelines above grasslands along the major valleys (Fraser, Churn, Lone Cabin) provide important nesting and foraging habitat for **Flammulated owls** and foraging habitat for **Townsend's Big-eared Bats**. The continuous areas of mature forest need to be conserved, particularly the large diameter trees and snags within them and will have to be carefully considered in prescribed burn plans.

Both aspen copses and aspen forest provide critical habitat for a wide range of red and blue listed species. Bats such as **Townsend's Big-eared Bats**, **Fringed Myotis**, **Western Small-footed Myotis** and **Spotted Bat** and snakes such as **Gopher Snakes**, **Racers** and **Rubber Boas** use these forests for foraging. Additionally, **Sharp-tailed Grouse** likely use many of these areas for nesting and for shelter and food in winter. In all cases, these forests need to be managed to maintain the deciduous cover and to maintain or restore the shrubby understories.

Grassland

Within the Lower Grasslands, areas with dense, tall sagebrush are likely used by **Western Small-footed Myotis** bats for feeding and by **Brewers' Sparrows** for nesting and foraging. If these sagebrush areas are considered for prescribed burns, they should only be burned in such a way that the sagebrush is not killed.

Also within the Lower Grasslands, areas of grasslands with scattered Douglas-fir and Ponderosa Pine trees are used by **Lewis' woodpeckers** for nesting and feeding. Prescribed burns should avoid consuming nest trees but may be used beneficially to create new nesting snags.

Within the Upper Grasslands, there are several large, level areas of continuous grassland that potentially are used or were used by **Long-billed Curlews** for nesting and feeding and provide

¹⁷ Riparian includes open water, open water (marsh), riparian, riparian (marsh), riparian + vernal ponds, shrubland + vernal ponds, and vernal ponds. Grasslands include grassland and very open forest. Forest includes aspen copses, aspen forests, Douglas-fir crest of hill, Douglas-fir slope, Douglas-fir slope and base of hill. Douglas-fir slope and crest of hill. Other includes buildings, cultivated fields, cliff or talus, rock, cliff or talus with scattered Douglas-fir.

foraging areas for **Rubber Boas** and **Short-eared owls**. If **Curlews** are found nesting, grazing should continue at other times of the year to maintain low-profile grass.

Riparian

Riparian areas, particularly those within the grasslands, provide some of the most critical habitats for a wide range of species.

Within the grasslands, riparian areas with vernal ponds potentially provide critical breeding habitat for **Great Basin Spadefoot toads**. Cattle need to be managed to minimize foreshore trampling on these ponds.

Shrubby and deciduous riparian areas within the grasslands are important foraging habitats for numerous bats (**Spotted Bat, Townsend's Big-eared Bat, Western Small-footed Myotis, Fringed Myotis**) snakes (**Rubber Boa, Racer, and Gopher Snake**) and birds (**Yellow-breasted Chat, Sharp-tailed Grouse** and **Lewis' Woodpecker**). Many of these areas also potentially provide nesting areas for **Yellow-breasted Chats** and **Sharp-tailed Grouse**. Those with large cottonwood trees are extremely important nesting areas for **Lewis' woodpeckers**. All of these riparian areas should be managed to maintain or enhance the shrubby vegetation and to maintain the deciduous overstorey (when present). If any **Yellow-breasted Chats** are found nesting, human and cattle disturbance should be avoided in that area.

Open water (lakes and permanent ponds) within the grassland environment provide important watering sites for bats (as listed above) and important hunting sites for raptors such as **Gyrfalcons, Prairie Falcons** and **Northern Goshawks** as well as snakes. Water quality, aquatic vegetation and emergent vegetation such as rushes and sedges should be maintained to provide duck nesting and foraging habitat (prey items for raptors).

Other

Cliffs provide potential nesting sites for **Prairie Falcons** and **White-throated Swifts** as well as roosts for bats (**Spotted Bat, Townsend's Big-eared Bat, Western Small-footed Myotis, and Fringed Myotis**). Talus and rock may be used by snakes (**Rubber Boa, Racer and Gopher Snakes**) for foraging, hibernating and denning. Generally, these sites have few management implications except to avoid disturbing **Prairie Falcon** nesting sites.

Old buildings in the grasslands are important roosting sites for many bats (**Spotted Bat, Townsend's Big-eared Bat, Western Small-footed Myotis, Fringed Myotis**) and should not be destroyed.

Cultivated fields may potentially provide nesting and foraging habitats for **Bobolinks** and early spring feeding sites for **Long-billed Curlews**. If any **Bobolinks** are found nesting, haying should be delayed in that area until mid-July (or longer if necessary) for that year to allow the young to fledge. The area should be watched the next year to see if any **Bobolinks** return to the site.

Map Ten:
Churn Creek Protected Area
Critical Habitats
Located in Appendix M: Map Folio

Appendix B: High Priority Encroached Areas

Introduction

Map Eleven – High Priority Encroached Areas represents recent encroachment in the Churn Creek Protected Area. For the purposes of this project, “recent encroachment” is defined as areas where trees are growing on what was formerly pure grassland vegetation but the area is still dominated by grassland vegetation.

Method

The encroachment map was prepared from Terrestrial Ecosystem Mapping (TEM) for the Dog Creek and Churn Creek Study areas. The TEM process indicated areas of recent encroachment. 1:15,000 scale airphotos (dated 1992 and 1993) were used to verify encroachment areas on the TEM maps. Acetate overlays were laid on the TEM base maps and the photo-verified encroachment areas were drawn in red pen on the acetate and later digitized. The results are shown on the accompanying map.

Summary and Uses

The map represents recent areas of encroachment that can be used as first priorities for areas needing encroachment management in the Protected Area. There are limitations to the map. The use of early 1990’s airphotos means that areas of the most recent encroachment may have been missed. Also, areas of very recent encroachment consisting of small, scattered trees are not visible on 1:15,000 colour airphotos.

The primary use of the map is to determine priorities for mechanical removal of encroachment. A more thorough study should be undertaken prior to the preparation of a comprehensive fire management plan for the Protected Area.

Map Eleven:
Churn Creek Protected Area
High Priority Encroached Areas
Located in Appendix M: Map Folio

Appendix C: Criteria for Fire Management Plan

Prescribed fire is a tool that will be used to meet the habitat and vegetation management objectives of the Protected Area Management Plan. Habitat and vegetation management objectives must be clearly identified and spatially located in order to develop and implement an effective fire management plan (FMP).

The first step in developing an FMP is to develop an understanding of historical fire and climate patterns within each biogeoclimatic subzone in the Protected Area. The following studies are needed to gather this information:

- ◆ analysis of fire-scarred trees to determine frequency, intensity, seasonality and extent of historic fires
- ◆ determine historic climate cycles (including drought cycles) using dendroclimatology techniques to help determine ecosystem structural and compositional change over time
- ◆ document the fire ecology and fire effects (including fire adaptations) of species of interest in the protected area

Fire can be used to meet a number of management objectives. These objectives are outlined below, along with the inventory work needed before a Fire Management Plan can be completed.

Objectives

1) Reduction of conifer encroachment and ingrowth

- ◆ Measure, document and explain the departure of current forest structure and extent from the historical pattern. Compare historic and contemporary aerial photography, and measure encroachment characteristics on the ground (age-class, stand density, diameter distribution). Map the current and historical extent of conifer forests and determine the objectives for forest extent and structure, and prioritize areas for encroachment and in-growth removal (by fire or other means i.e. mechanical removal)
- ◆ Map the major waves of encroachment based on current structure (i.e., age, height, diameter, crown characteristics, etc.)
- ◆ Determine historic cycles of growing season precipitation to help explain encroachment patterns (in conjunction with fire-frequency work noted above)
- ◆ Determine specific spatial and structure targets for the management of coniferous forest cover
- ◆ Determine a realistic schedule for meeting these targets
- ◆ Determine what other tools can be used in conjunction with fire to meet these targets
- ◆ Prioritize areas for encroachment and in-growth removal

2) Maintain/enhance red and blue listed species habitat

- ◆ Determine the effect of fire on critical habitats for red- and blue-listed species using the fire effects and fire ecology information gathered
- ◆ Indicate critical habitat areas that would be adversely affected by prescribed burning on the critical habitat map
- ◆ Indicate areas that could be positively affected by prescribed burning on the critical habitat map
- ◆ Determine the season, timing and type of fire that would be consistent with habitat maintenance/enhancement for each habitat type
- ◆ Habitat capability/suitability theme maps should be prepared for each species of interest using the critical habitat maps (with further ground-truthing where necessary). Develop maintenance prescriptions for appropriate areas taking into account species life histories, habitat requirements and habitat structure data. Prior to undertaking habitat enhancement, it must be determined what historical habitat structures existed to decide where enhancement is appropriate.
- ◆ Determine a realistic schedule for meeting the objective
- ◆ Prioritize areas for habitat maintenance and enhancement

3) Maintain/enhance habitat for California bighorn sheep, Mule deer and other wildlife habitat

- ◆ Determine the location, extent, and successional stage proportions of habitat required
- ◆ Determine management techniques to meet these targets
- ◆ Determine a realistic schedule to meet the targets
- ◆ Split out areas of habitat maintenance from habitat enhancement. Special attention should be given to ungulate/livestock grazing conflicts. Follow the same format as in #2.

4) Control of noxious weeds

- ◆ Map occurrences
- ◆ Prioritize occurrence sites for control
- ◆ Determine methods of controlling/removing weed infestations
- ◆ Determine a realistic schedule for meeting the objective
- ◆ Plant physiology data will provide the technical detail for writing control prescriptions, the scale of control is constrained by where it occurs and the need to mesh this objective with others

Once these data needs have been mapped and described, a prescribed fire management plan can be developed. All objectives will be overlapped and we will try to meet as many objectives as possible without adversely affecting any one objective, while also considering the implications for areas adjacent to the protected area. In this system prescribed fire is not an objective but a tool to meet one or more objectives.