



Species at Risk
Voluntary Stewardship Practices for:

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STEWARDSHIP CENTRE
FOR BRITISH COLUMBIA

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The Stewardship Centre for BC

The Stewardship Centre for BC (SCBC) was created to assist governments, businesses, conservation and environmental organizations, and citizens carry out stewardship activities in the most efficient, effective, and rewarding ways. A leader in promoting stewardship values as the foundation for sustainability, the SCBC wants to help make “shared stewardship” – the voluntary adoption of environmentally sustainable practices by all sectors of society – a reality in British Columbia.

We are committed to champion science-based best stewardship so that British Columbians understand, enjoy, and sustain healthy ecosystems through stewardship. As good stewardship relies on good decision-making, we work closely with our partners to develop innovative technical, educational, and capacity building resources. For more information about the Stewardship Centre, go to www.stewardshipcentrebc.ca.

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Preface

This Stewardship Practices guide for species at risk and other wildlife affected by climbing activities presents options and examples of good stewardship practices to reduce impacts to these species. The guide describes different activities people can undertake to help conserve wildlife and their habitat and also provides links to resources to take action. This guide is one of a series of guides developed by the Stewardship Centre to address threats to wildlife and species at risk. Other guides in this series include:

- Species at Risk Voluntary Stewardship Practices for: ***Drainage Maintenance in Agricultural Waterways***
- Species at Risk Voluntary Stewardship Practices for: ***Reducing Domestic and Feral Cat Predation***
- Species at Risk Voluntary Stewardship Practices for: ***Riparian Areas in Settled Landscapes***
- Species at Risk Voluntary Stewardship Practices for: ***Guidance for Restoration Activities in Riparian Areas***
- Species at Risk Voluntary Stewardship Practices for: ***Reducing Small Animal Road-kill.***

About this Document

This guide was designed to provide:

- Climbers and those who work with climbers, with information they can use to inform their actions to conserve wildlife and species at risk
- Specific stewardship practices that land owners and managers can consider when making land use decisions and developing land management plans
- Information for local governments to assist in developing mechanisms, such as bylaws and community plans, that help protect wildlife and species at risk
- Information for conservation and stewardship organizations that can facilitate their work.

This guide encourages people to take **voluntary stewardship actions**, called stewardship practices, to safeguard wildlife and species at risk. Stewardship can be broadly defined as an ethic that promotes the responsible use, protection, and management of the natural environment through conservation and sustainable best practices.

This guide describes stewardship practices for wildlife and species at risk that addresses the common threats they face from climbing activities. Following an overview of this threat, various actions are described to conserve, enhance, and restore habitat that is impacted by climbing. To help implement these stewardship practices additional information resources are provided at the end of the guide.

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The Current Situation

Cliffs support ancient ecosystems with many rare species that are poorly adapted to disturbance. In recent decades, the number of people rock climbing and practicing other adventure sports in natural areas has increased rapidly, often presenting challenges for land managers and impacting wildlife and species at risk. Peak climbing season corresponds with the flowering and fruiting season of plants and the breeding season of birds - times of increased vulnerability for these species. A large proportion of plants and animals on a cliff face are found in cracks and crevices, but these features are also used as hand and footholds for climbers, which often clears them of soil and vegetation. Rope abrasion will damage plants and lichens on or near climbing routes.

Rock climbing impacts extend well beyond the cliff face. They may also include access trails and staging areas, the summit area, the descent area, and the campsite. Even a low level of traffic eliminates most vegetation on trails. Introduced— sometimes invasive species - plant species abundance is also typically higher in these areas. Climbers usually have high levels of concern about impacts, but are often unaware that their own activities are contributing to them.

Which wildlife and species at risk are most vulnerable and why?

Plants

Plants growing on cliffs are often habitat specialists, that is, they are found only on cliffs or rock outcrops. These areas also include a relatively high proportion of species at risk. Climbing has caused the decrease in numbers, size, vigor, and genetic diversity of rare plants on cliffs, a change to plant community composition, and loss of species diversity. Cliff plants are vulnerable to soil compaction and erosion as well as direct physical damage, to which they are usually poorly adapted.

Lichens and Mosses

Lichens and mosses are long lived, slow growing and recover very slowly from damage. Their species diversity, and sometimes their overall abundance, is dramatically lower in areas frequented by climbers.

Snails

Snails are especially abundant on limestone cliffs which provide calcium for their shells. Many species are tiny (<5 mm) and reside in the soil of cracks and ledges where they are rarely noticed. Five times more individuals and twice as many species were found on unclimbed cliffs than climbed cliffs in southern Ontario. Other species feed on lichens and are also reduced in number and diversity by on climbed cliffs.

Birds

Many species of birds nest on cliffs frequented by climbers during the breeding season. Adults are flushed from the nest which often results in predation (e.g. by ravens), missed feedings, exposure of eggs or young to the elements and lower numbers of fledged young. Repeated disturbance may cause nest abandonment. Peregrines may refuse to breed if humans have approached their nests, and ferruginous hawks often desert their nests if adults are disturbed by humans during incubation. Native species may be displaced by introduced starlings and brown-headed cowbirds, which are more tolerant

of human activity. Outside the breeding season, roosting birds may be disturbed repeatedly, costing them considerable amounts of valuable energy.

Stewardship Practices for the Climbing Community

Following are various actions, called Stewardship Practices, which help to conserve, enhance, and restore species at risk and wildlife habitats that are impacted by climbing. These actions are intended to reduce the impacts of climbing but will only be effective if practiced by all participants in the BC climbing community.

Stewardship Practices for Climbers

Climbers should carefully consider the potential for ecological and cultural damage during their climbs and also minimize their impact on other user groups such as hikers.

Stewardship Practices for climbers include:

- Stay on designated access trails and routes
- Do not pick plants
- Do not develop climbs during bird and bat breeding season
- Stay away from climbs while birds are actively nesting nearby
- Avoid artificial manufacturing (e.g., chipping of holds) and artificially reinforcing (e.g., gluing) of holds
- Do not use bleach or any other cleaning materials that are damaging to the area's natural resources and ecology.

Stewardship Practices for Land Use Managers

The following are options for land use managers and those who work with the climbing public.

Inventory Species at risk

Land managers should arrange for inventories of species at risk by qualified professionals at cliffs that are used for recreational climbing. Consult with provincial universities or the BC Association of Professional Biologists (<https://www.professionalbiology.com/>) to find qualified experts.

Educate Site Users

Most people engaged in sports like rock climbing have high levels of concern for the environment and species at risk, but are not aware of the impacts that their own activities are having. Educational programs targeting these groups have been successful in reducing (but not eliminating) impacts. Such program also tends to increase compliance with closures of sensitive areas. Enlisting the assistance of caving and climbing groups and associations is likely to improve the effectiveness of educational programs. See Web Resources below.

Reduce Access to Sensitive Areas

Site use can be reduced considerably without banning access entirely by several measures. These include:

- Increasing walking distance to cliffs by road closures and/or changes in parking area location.
- Limiting the number of climbers per day can be effective in parks or other areas with controlled access points
- Ban the establishment of new climbing routes in protected areas or limit new routes to difficulty levels above 5.10, as more difficult climbing routes tend to have less vegetation
- Close some routes in areas with multiple climbing routes. This will usually result in reduced overall use of the area. Closure of the most heavily used routes, however, is not recommended as this can increase use of more isolated and undisturbed habitats.

Highly sensitive areas may need to be closed seasonally or permanently:

- Close climbing areas near raptor or other nest sites during breeding season in consultation with a qualified biologist
- Close some cliff faces completely to preserve native vegetation especially areas supporting rare plant species

Mitigate Impacts

- Fence areas or install boardwalks to limit impacted area in summit or base areas or to protect rare plants
- Install rappelling stations with fixed anchors to reduce use of descent trails, which are often steep and very vulnerable to erosion
- Limit the establishment of new trails and establish a no-top roping policy in areas of new route establishment
- Place fixed bolts to direct climbers away from sensitive features.

Restore Damaged Features

Cliff edges and ledges typically have thin soils with low moisture retention that are more susceptible to damage and erosion than other areas. Revegetating is best accomplished with locally obtained, native, species. Choose species that typically grow in disturbed or open areas (e.g. willow, birch, alder or pine) and implement measures to reduce trampling such as fencing, boardwalks or signage.

Removal or even displacement of rocks, boulders or logs can reduce cover available for reptiles and other animals. Replacement or addition of these cover structures can reduce the effects of disturbance.

Web Resources

Climbers Access Society of BC

<http://www.access-society.ca/>

BC Mountaineering Club

<https://bcmc.ca/>

BC Parks

Best Practices Guide For Rock Climbing Route Development in the Squamish Area
Provincial Parks

<http://www.env.gov.bc.ca/bcparks/explore/parkpgs/stawamus/bp-guide-rock-route-dev.pdf>

P R I L O T

Species at Risk Potentially Impacted by Climbing in BC

(Note that Lichens and Mosses are not included as data is unavailable)

English Name	Scientific Name	BC List	COSEWIC	SARA Schedule
Pallid Bat	<i>Antrozous pallidus</i>	Red	T	1
Spotted Bat	<i>Euderma maculatum</i>	Blue	S	1
Western Small-Footed Myotis	<i>Myotis ciliolabrum</i>	Blue		
Keen's Myotis	<i>Myotis keenii</i>	Red	D	3
Northern Myotis	<i>Myotis septentrionalis</i>	Blue	E	
Fringed Myotis	<i>Myotis thysanodes</i>	Blue	D	3
Little Brown Myotis	<i>Myotis lucifiger</i>	Yellow	E	
Townsend's Big-Eared Bat	<i>Corynorhinus townsendii</i>	Blue		
Bighorn Sheep	<i>Ovis canadensis</i>	Blue		
Dall's Sheep	<i>Ovis dalli dalli</i>	Blue		
Canyon Wren	<i>Catherpes mexicanus</i>	Blue	N	
Prairie Falcon	<i>Falco mexicanus</i>	Red	N	
Peregrine Falcon, <i>Anatum</i> Subspecies	<i>Falco peregrinus anatum</i>	Red	S	1
Peregrine Falcon, <i>Pealei</i> Subspecies	<i>Falco peregrinus pealei</i>	Blue	S	1
Gyrfalcon	<i>Falco rusticolus</i>	Blue	N	
Tufted Puffin	<i>Fratercula cirrhata</i>	Blue		
Horned Puffin	<i>Fratercula corniculata</i>	Red		
Northern Fulmar	<i>Fulmarus glacialis</i>	Red		
Double-Crested Cormorant	<i>Phalacrocorax auritus</i>	Blue	N	
Pelagic Cormorant, <i>Pelagicus</i> Subspecies	<i>Phalacrocorax pelagicus pelagicus</i>	Red		
Cassin's Auklet	<i>Ptychoramphus aleuticus</i>	Blue	C	
Common Murre	<i>Uria aalge</i>	Red		
Thick-Billed Murre	<i>Uria lomvia</i>	Red		
North American Racer	<i>Coluber constrictor</i>	Blue	S	1
Western Rattlesnake	<i>Crotalus oreganus</i>	Blue	T	1
Northern Rubber Boa	<i>Charina bottae</i>	Yellow	s	1
Sharp-Tailed Snake	<i>Contia tenuis</i>	Red	E	1
Desert Night Snake	<i>Hypsiglena chlorophaea</i>	Red	E	1
Gopher Snake, <i>Deserticola</i> Subspecies	<i>Pituophis catenifer deserticola</i>	Blue	T	1
Coeur D'alene Salamander	<i>Plethodon idahoensis</i>	Yellow	S	1
Moss' Elfin, <i>Mossii</i> Subspecies	<i>Callophrys mossii mossii</i>	Blue		
Whitebark Pine	<i>Pinus albicaulis</i>	Blue	E	1
Eschscholtz's Little Nightmare	<i>Aphragmus eschscholtzianus</i>	Blue		
Douglas' Sagewort	<i>Artemisia douglasiana</i>	Red		
Three-Forked Mugwort	<i>Artemisia furcata</i>	Blue		
Crevice Sunscress	<i>Boechera microphylla</i>	Red		

Large-Flowered Brickellia	<i>Brickellia grandiflora</i>	Red	N	
Narrow-Leaved Brickellia	<i>Brickellia oblongifolia</i> ssp. <i>oblongifolia</i>	Blue		
Small-Flowered Bittercress	<i>Cardamine parviflora</i>	Blue		
Cliff Paintbrush	<i>Castilleja rupicola</i>	Blue	T	1
American Chamaerhodos	<i>Chamaerhodos erecta</i> ssp. <i>nuttallii</i>	Blue		
Wright's Golden-Saxifrage	<i>Chrysosplenium wrightii</i>	Red		
Washington Springbeauty	<i>Claytonia</i> <i>washingtoniana</i>	Red		
Erect Pygmyweed	<i>Crassula connata</i> var. <i>connata</i>	Red	C	
Obscure Cryptantha	<i>Cryptantha ambigua</i>	Blue		
Rockslide Larkspur	<i>Delphinium glareosum</i>	Red		
Diapensia	<i>Diapensia obovata</i>	Blue		
Smooth Douglasia	<i>Douglasia laevigata</i>	Blue		
Gray-Leaved Draba	<i>Draba cinerea</i>	Blue		
Baffin Bay Draba	<i>Draba corymbosa</i>	Blue		
Nuttall's Draba	<i>Draba densifolia</i>	Blue		
Austrian Draba	<i>Draba fladnizensis</i>	Blue		
Smooth Draba	<i>Draba glabella</i> var. <i>glabella</i>	Blue		
Milky Draba	<i>Draba lactea</i>	Blue		
Lance-Fruited Draba	<i>Draba lonchocarpa</i> var. <i>thompsonii</i>	Blue		
Lance-Fruited Draba	<i>Draba lonchocarpa</i> var. <i>vestita</i>	Blue		
Palander's Draba	<i>Draba palanderiana</i>	Red		
Porsild's Draba	<i>Draba porsildii</i>	Blue		
Carolina Draba	<i>Draba reptans</i>	Red		
Coast Mountain Draba	<i>Draba ruaxes</i>	Blue		
Star-Flowered Draba	<i>Draba stenopetala</i>	Red		
Wind River Draba	<i>Draba ventosa</i>	Blue		
Elmera	<i>Elmera racemosa</i> var. <i>racemosa</i>	Blue		
Smooth Willowherb	<i>Epilobium glaberrimum</i> ssp. <i>fastigiatum</i>	Blue		
Leiberg's Fleabane	<i>Erigeron leibergii</i>	Red		
Queen Charlotte Avens	<i>Geum schofieldii</i>	Red		
Hairy Goldfields	<i>Lasthenia maritima</i>	Blue		
Columbia Lewisia	<i>Lewisia columbiana</i> var. <i>columbiana</i>	Blue		
Tweedy's Lewisia	<i>Lewisiopsis tweedyi</i>	Red	C	
Gray's Desert-Parsley	<i>Lomatium grayi</i>	Red	T	1
Dotted Saxifrage	<i>Micranthes nelsoniana</i> var. <i>carlottae</i>	Blue		

Tisch's Saxifrage	<i>Micranthes tischii</i>	Red		
Northern Sandwort	<i>Minuartia elegans</i>	Blue		
Nuttall's Sandwort	<i>Minuartia nuttallii</i> ssp. <i>nuttallii</i>	Blue		
Leafy Mitrewort	<i>Mitella caulescens</i>	Blue		
Wild Tobacco	<i>Nicotiana attenuata</i>	Red		
Texas Toadflax	<i>Nuttallanthus texanus</i>	Blue		
Mountain Owl-Clover	<i>Orthocarpus imbricatus</i>	Red		
Jordal's Locoweed	<i>Oxytropis campestris</i> var. <i>jordalii</i>	Blue		
Maydell's Locoweed	<i>Oxytropis maydelliana</i>	Blue		
Ogotoruk Creek Butterweed	<i>Packera ogotorukensis</i>	Red		
Pale Poppy	<i>Papaver alboroseum</i>	Blue		
Whorled Lousewort	<i>Pedicularis verticillata</i>	Blue		
Gorman's Penstemon	<i>Penstemon gormanii</i>	Blue		
Branched Phacelia	<i>Phacelia ramosissima</i> var. <i>ramosissima</i>	Red	E	1
Arctic Bladderpod	<i>Physaria arctica</i>	Blue		
Northern Jacob's-Ladder	<i>Polemonium boreale</i>	Blue		
Elegant Jacob's-Ladder	<i>Polemonium elegans</i>	Blue		
Arrow-Leaved Rattlesnake-Root	<i>Prenanthes sagittata</i>	Red		
Net-Veined Willow	<i>Salix reticulata</i> ssp. <i>glabellcarpa</i>	Red		
Thyme-Leaved Saxifrage	<i>Saxifraga serpyllifolia</i>	Blue		
Arctic Campion	<i>Silene involucrata</i> ssp. <i>involucrata</i>	Blue		
Taimyr Campion	<i>Silene ostenfeldii</i>	Blue		
Short-Fruited Smelowskia	<i>Smelowskia ovalis</i>	Blue		
Thick-Leaved Thelypody	<i>Thelypodium laciniatum</i> var. <i>laciniatum</i>	Blue		
Poison Oak	<i>Toxicodendron</i> <i>diversilobum</i>	Blue		
Macrae's Clover	<i>Trifolium dichotomum</i>	Blue		
Lindley's Microseris	<i>Uropappus lindleyi</i>	Red	E	1
Queen Charlotte Twinflower Violet	<i>Viola biflora</i> ssp. <i>carlottae</i>	Blue		
Linear-Leaf Moonwort	<i>Botrychium lineare</i>	Red		
Cascade Parsley Fern	<i>Cryptogramma</i> <i>cascadensis</i>	Blue		
Coastal Wood Fern	<i>Dryopteris arguta</i>	Blue	S	1
Nahanni Oak Fern	<i>Gymnocarpium jessoense</i> ssp. <i>parvulum</i>	Blue		
Gastony's Cliff-Brake	<i>Pellaea gastonyi</i>	Blue		
Western Dwarf Cliffbrake	<i>Pellaea glabella</i> ssp. <i>occidentalis</i>	Red		
Kruckeberg's Holly Fern	<i>Polystichum kruckebergii</i>	Blue		

Mountain Holly Fern	<i>Polystichum scopulinum</i>	Red	T	1
Alpine Cliff Fern	<i>Woodsia alpina</i>	Blue		
Olympic Onion	<i>Allium crenulatum</i>	Red		
Hoary Brome	<i>Bromus subvelutinus</i>	Red		
Gmelin's Sedge	<i>Carex gmelinii</i>	Blue		
Curved-Spiked Sedge	<i>Carex incurviformis</i> var. <i>incurviformis</i>	Blue		
Curly Sedge	<i>Carex rupestris</i> ssp. <i>drummondiana</i>	Blue		
Curly Sedge	<i>Carex rupestris</i> ssp. <i>rupestris</i>	Blue		
Lake Tahoe Sedge	<i>Carex tahoensis</i>	Blue		
Little Fescue	<i>Festuca minutiflora</i>	Blue		
Alp Lily	<i>Lloydia serotina</i> var. <i>flava</i>	Blue		
Polar Bluegrass	<i>Poa pseudoabbreviata</i>	Blue		
Dwarf Trillium	<i>Trillium ovatum</i> var. <i>hibbersonii</i>	Red		

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