BC Grasslands

"The voice for grasslands in British Columbia"

FEBRUARY 2003

Species and Spaces at Risk
Ecology of Species and Grassland Stewardship

Special Feature
Garry Oak Meadow Grasslands

Profile of a Grasslands Aficionado
Dr. Geoff Scudder

MAGAZINE OF THE GRASSLANDS CONSERVATION COUNCIL OF BRITISH COLUMBIA

The GCC

Established as a society in August 1999, the GCC is a strategic alliance of organizations and individuals, including government, range management specialists, ranchers, agrologists, grassland ecologists, First Nations, environmental groups, recreationists and grassland enthusiasts. This diverse group shares a common commitment to education, conservation and stewardship of British Columbia's grasslands.

The GCC Mission is to:

- foster greater understanding and appreciation for the ecological, social, economic and cultural importance of grasslands throughout BC;
- promote stewardship and sustainable management practices that will ensure the long-term health of BC's grasslands;
- promote the conservation of representative grassland ecosystems, and species at risk and their habitats.

COVER PHOTO: Jared Hobbs

Message from the Chair

Kristi Iverson

Below my window, I watch a short-eared owl swoop low across the grasslands on its regular dusk hunting rounds. I look forward to seeing this regular visitor, usually as a sign of fall and also as a reminder that even small patches of grasslands like the one I live above are important to many species. British Columbia's grasslands provide habitat to a disproportionately large number of rare and endangered species. Many of our grasslands are also at the edge of their range, as are the species that occupy them. Scientists are finding that patterns of extinction more often start by declines at the center of a species' range and work outwards. This has caused them to realize that peripheral populations are extremely important in conservation efforts and can be sources for recolonization. This highlights the extreme importance of BC's grassland ecosystems and the species that inhabit them.

More and more we are faced with the reality that no species can survive without the habitats they are reliant on. Unfortunately, our grasslands and the species that rely on them continue to face increasing pressures of development, agricultural conversion, weeds and abusive recreation. The role of the GCC continues to become more and more vital in informing the public about the importance of grasslands and working to conserve grassland ecosystems. I think that many people have increasingly lost a connection with the land and a respect for the other species (besides ourselves!) that rely on the ecosystems around us. We need to rebuild that connection and help people develop an emotional connection to grasslands. Species at risk are inherently important to conserve, and can also provide a tool to connect people with grasslands. I know I am moved by an image of the seemingly disgruntled stare of a burrowing owl and am continually reminded of the importance of grasslands by our logo's grassland bird—the long-billed curlew.

Now that the first phases of the GCC's Grasslands Mapping Project are complete and we have a picture of where our grasslands are and under what ownership or range tenures they are held, we can begin to use this information to understand what grasslands have been lost and where the greatest pressures on grasslands are. This will allow us to focus our efforts as a Council on where we are needed the most to preserve grasslands and the species that rely on them. Our efforts of working towards a provincial weed management strategy as part of a coalition led by the Fraser Basin Council are also gaining momentum and support.

As always, you—our members and supporters—are what keep the GCC alive and working towards our goals. Please help us spread the word by encouraging others to join and to donate time or financially to the GCC.
I would also like to take a moment to thank the many people who have donated their time, energy and money thereby helping to build and sustain the GCC.

Message from the Executive Director

Bruno Delesalle

**Changing times…
will the diversity of BC's grasslands survive?**

British Columbia's grasslands are as diverse as the species they support. At least 25 of BC's 53 eco-regions contain grassland ecosystems, albeit some that are relatively small. Ecologically speaking, many of our grasslands are poorly understood. The staggering array of birds, mammals, amphibians, reptiles, insects, plants, mosses, lichens and cyanobacteria that depend on grasslands are all contributors, in their own way, to the health and function of grassland ecosystems and the health of our beautiful province.

Grassland habitats and the many species that depend on them are in peril. Population growth, development, fragmentation and slow degradation will be the demise of these special ecosystems.

> Grasslands are in trouble. We need to focus on them. We can be depressed or hopeful, hope is with us, so how are we going to engage as citizens? Crown land is our land. It is really important for government to focus on both inter and intra communication. There isn't enough of that, especially in policy and legislation. We must co-operate, build trust and respect, and work together. It's time to get past the green versus brown thing, it's getting really old. We're talking about sustainability—trying to find balance in economy, environment and society. "Conservation Economy" is the direction to move in.
> —Bob Peart, June Symposium, 2002

How then, are we going to ensure that our valued grasslands and the species that depend on these grasslands survive increasing pressures imposed upon them?

The provincial government is reducing the number of regulations to "clear the deck" for people and industry to act more freely. Broad support for a results-based approach to resource management rather than a prescriptive top-down approach, has resulted in legislation and policies that are less prescriptive, that set out achievable targets while giving resource managers more leeway in how they achieve these targets. The government's intent is for a more efficient approach to resource management that will yield sustainable results.

The results-based approach is based on the fact that government will maintain an important role in monitoring, compliance and enforcement. There remains great uncertainty, however, with the ability of government to effectively monitor and enforce the results-based code in the wake of drastic staff cuts provincially. To compound this problem, the provincial government has essentially eliminated all of its range extension programs, a mainstay of past agricultural and range programs.

Another concern with our changing regimes for resource and land management is that the provincial government is shifting some of its responsibilities for land use planning and decision making to regional governments. Although regional governments function within the scope of authority delegated to them by the province, they will have an increasing ability to exercise control over developments, mainly through the implementation of growth strategies and through land use zoning process. In general terms, the provincial government will play a more limited role in the management and conservation of grasslands in the future while industry, regional governments and municipalities will have a much stronger role to play in shaping their future.

There are several key themes emerging as we attempt to grapple with the significance of this new era in land and resource management, stewardship and conservation.

Monitoring is a keystone to range science and management

To achieve ecologically sustainable management of grasslands on a broad scale, monitoring must become a priority at all levels of resource management. Grassland and range monitoring is a process of collecting physical and biological information that will assist in detecting change, or conditions, over time, and provides a basis for informed planning and decision making. Sustainable management requires planning, monitoring and a feedback loop into the management process. In British Columbia there is currently insufficient monitoring to document current ecological condition and the successional trends of grasslands. A key provincial monitoring program was the Range Reference Program. Although the program was cut, Range Reference Areas should be maintained, as they are important ecological indicators and tools for measuring and determining Potential Natural Communities (PNC) of grasslands. Somehow, funding for the Range Reference Program must be re-established.

Managing for healthy grasslands is more than science…it requires relationship building and good communication

It seems we are going in the opposite direction of facilitating better management of BC's grasslands. We need less time in the boardroom and more time out there with land managers achieving results. British Columbia needs some form of grassland and range extension program where respected agrologists and ecologists can work proactively with the ranching community on range management, conservation and stewardship issues on the ground. We need to assist in demonstrating ecologically and economically sustainable ranching, while developing practical range management and monitoring tools and strategies for ranchers. We need to assist the ranching community in applying these tools so as to achieve desired management objectives. It is not realistic to expect that we will achieve this without an effective extension program.

Unrelenting subdivision and development

As many regions in British Columbia are experiencing rapid growth and increasing pressure from economic development, there

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A meditation on the nature of rarity

Don Gayton, Ecosystem Management Specialist, Forest Research Extension Partnership

A chance encounter with a rare grass leads to speculation about what rarity is really all about.

In 1995 I was doing reconnaissance near Horsethief Creek, north of Invermere. Scattered through the dry Douglas fir forest were small openings, where sun and soil had conspired to create pockets of grassland. As I walked, I scanned these heavily grazed grassy openings, doing an almost subconscious botanical inventory.

Canada bluegrass. Richardson's needlegrass. Black medic. Species' names flitted through my head in a comforting rhythm, almost like the methodical click of rosary beads. Sulfur cinquefoil. Bluebunch wheatgrass. Thread-leaved fleabane. Everything was common, everything was expected, until the needle on my botanical scanner jumped right off the page; here was a patch of the rare blue grama grass *(Bouteloua gracilis),* with its unmistakable caterpillar-like seedheads.

Excited, I dropped to hands and knees to marvel at the presence of this exotic inhabitant that belongs to the high plains and shortgrass prairies of the US and southern Alberta. The plant was a clonal patch about a foot across, and a methodical inspection of the entire opening revealed it to be the only one. I didn't dare collect a specimen, but I found an old aspen log and dragged it over so it was adjacent to the blue grama patch, to help me find it again and to give it a bit of protection from grazing.

I didn't get back to Horsethief Creek again for five years. When I did, the blue grama was gone without a trace. At first I felt cheated, robbed of the opportunity to mark and celebrate one of the province's red-listed plant species. But upon reflection, I began to see the Horsethief blue grama's fleeting, evanescent life as part of the nature of rarity. It was on the bubble, and in this case, the bubble burst.

East Kootenay grasslands at Wycliffe wildlife corridor. PHOTO BY KATHRYN MARTELL, COURTESY OF THE LAND CONSERVANCY OF BC

What makes an organism rare? It could be that it is the advance guard of a species that is slowly expanding into new territories. Or it could be the last holdout of a contracting range, or an eviscerated habitat. It could be on the very outer edge of a stable range. It could be an accidental tourist, arriving and establishing by some quirk of ecological fate. It could be an endemic, suited only to a very specific habitat. Or, it could be just plain rare. The reason for the blue grama's rarity, as with most rare species, is simply not known. Few biologists work on rare species, and for those who do, much of their work is unpaid. Thus the conundrum: the more rare the species, (in general) the less we know about it. Rare species research is also beset with practical problems. None of the standard measures of population dynamics work when your entire database consists of six pinpricks on a map, three of them doubtful. And yet there they are, an exotic bestiary that looms in our collective biological consciousness: the blue grama, the sage thrasher, the badger, the praying mantis.

A few of the more engaging species, like the Vancouver Island marmot, achieve fashionable status and, by dint of sheer cuteness, get a measure of protection. I doubt that will ever happen to the western diamondback rattlesnake. If we as a society are to get serious about protecting rare and endangered species, at some point we must drop cuddliness as a criterion for protection.

My personal devastation over losing the blue grama plant was offset by finding another rare species, a grass known as little bluestem *(Schizachyrium scoparium),* a component of the tallgrass prairies of Manitoba's Red River Valley and southward into the wetter part of the US Great Plains. Like the blue grama, this grass possesses the unique "C4" metabolism that adapts it to hot summer weather. The bluestem population is quite a healthy one, on a gravelly, beat up, cutslope south of Cranbrook. Like blue grama, there are only a handful of BC records for this plant. Nobody knows why the little bluestem is growing on that cutslope. Conversely, nobody knows why it isn't common, why it isn't encountered routinely.

In the end, I am pleased to be witness to a small part of the buzzing and almost unimaginable complexity that is the grasslands, a complexity that decreed the little bluestem could stay but the blue grama could not. This bit of knowledge, and others like it, adds dimension to the landscape and humility to my outlook.

In any economic analysis, even when using New Age ecological economics, investing money in protecting endangered species is simply irrational. There is little or no financial payback. To me, this is not a failing of rare and endangered species. This is simply a limitation of economics, and of rationality. If those two forces held complete sway, we would also get rid of painting, dance, history and architecture. Rare species need to become part of our culture, valued not for their financial benefit, but like art, for how they enrich and add dimension to our lives. I can think of no better place to start that process than the grasslands of British Columbia.

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SARA: Species at Risk Act and its effect on grassland conservation

Pam Krannitz, Plant Community Ecologist, Environment Canada

The *Species at Risk Act (SARA)* aims to protect wildlife at risk from becoming extinct or lost from the wild, with the ultimate objective of helping their numbers to recover to the point where they are no longer at risk. The proposed *Act* will cover all wildlife species listed as being at-risk nationally, from Behr's hairstreak to the American badger. It also will immediately protect the residence of a species at risk, and will work towards the protection of critical habitats for listed species. *SARA* will be a cornerstone in species protection and recovery, and emphasizes a co-operative approach through conservation actions, incentives and stewardship.

SARA builds upon existing laws and agreements, and complements the efforts of provincial and territorial governments under the Accord for the Protection of Species at Risk in Canada. The Accord recognizes that species protection is a shared responsibility. The *Act* will fulfill the Government of Canada's responsibility to the Rio Convention as it relates to the conservation of biodiversity.

The *Species at Risk Act (SARA)* received Royal Assent on December 12, 2002, bringing to a close a nine-year legislative process to protect Canada's species at risk and their critical habitat. The new legislation will come into force in 2003.

Most of the Interior population of the western screech owl can be found in cottonwood-riparian grassland associated habitats in the Okanagan Valley. Rough population estimates of this federally Endangered species suggest there are now as few as 50 of these birds in the Interior. PHOTO BY JARED HOBBS

The first step in protecting a species at risk is to have it designated as at-risk nationally. The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) is given legal status under *SARA* and will continue to operate at arm's length from government. It will assess and classify the status of wildlife species using the best available scientific, community and Aboriginal traditional knowledge. These assessments will be published and will form the basis for the Minister's recommendations to the Governor-in-Council for the List of Wildlife Species at Risk to be protected by *SARA*.

Once *SARA* is proclaimed, it will prohibit the killing, harming, harassing, capturing or taking of species officially listed as threatened, endangered or extirpated, and it will prohibit the destruction of the residences of those species. In addition, *SARA* gives the responsible Minister emergency authority to have species listed and to take action to prohibit the destruction of critical habitat if in imminent danger of extinction.

Under *SARA*, there will be a mandatory requirement for developing recovery strategies and action plans for endangered or threatened species, and management plans for species of special concern. These will be developed by recovery teams and in partnership with the provinces, territories, wildlife management boards, Aboriginal organizations, and other stakeholders, including landowners. Some current examples of grassland species for which there are recovery teams are: night snake, sage thrasher, badger, burrowing owl, pygmy short-horned lizard, Behr's hairstreak, Lyall's mariposa lily, pallid bat and gopher snake.

Recovery strategies or action plans will identify the critical habitat of a threatened or endangered species needing protection, where possible, or will devise studies to identify such habitat. Once identified, critical habitat will be protected by conservation agreements with landowners, provincial or territorial legislation or other processes, or federal prohibitions. *SARA* will promote and enable funding for stewardship activities and conservation agreements by individuals, organizations, communities, businesses or governments to protect species and habitats.

SARA also allows for the provision of compensation for losses suffered as a result of any extraordinary impact related to the use of prohibitions against the destruction of critical habitat, but this will only be a last resort.

SARA complements provincial and territorial legislation on species at risk. Responsibility for most wildlife species lies with the provinces and territories. Under the Accord, all jurisdictions will continue to work co-operatively to ensure the conservation of all species. Nevertheless, once *SARA* is proclaimed, if a species of provincial responsibility (raptors, mammals, plants, etc.) is in danger of extirpation, and the province is unable to act, the "safety net" of *SARA* may be invoked, resulting in the enactment of federal prohibitions.

SARA is the result of nearly nine years of discussion involving provincial, territorial and municipal governments, Aboriginal peoples, non-

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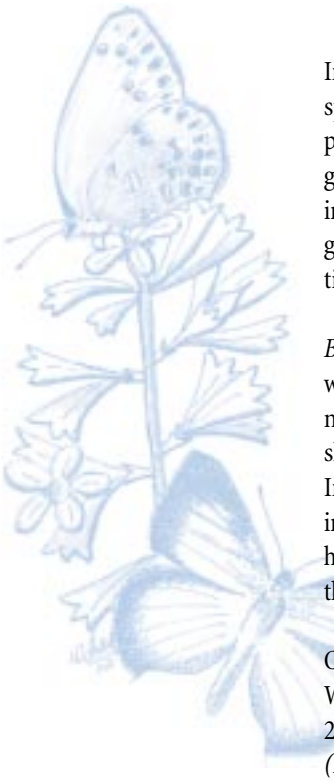
BC Grasslands: Rarity hotspots for insects

G.G.E. Scudder, Centre for Biodiversity Research and Department of Zoology, University of British Columbia



Behr's hairstreak at home on antelope brush.
ILLUSTRATION BY DONNA FALAT

In Canada, it is estimated that only 50% of the arthropod species have been described to date. It is thus not too surprising to find that new species are being discovered in our grasslands every year. Until recently, there have been few intensive studies on the arthropods of the inter-montane grasslands, but there is little likelihood that these will continue with the current curtailment of resources.

Dick and Syd Cannings in their magnificent 1996 book *British Columbia: A Natural History*, estimated that there were some 35,000 insect species in British Columbia, and my recent mapping of richness hotspots for several groups, shows that these richness hotspots occur in the grasslands. In the butterflies, dragonflies, true bugs, neuropteroid insects, and probably several other groups, the rarity hotspots also occur in the grasslands, especially those in the South Okanagan.

To date, only rare butterflies have been assessed by COSEWIC (Committee on the Status of Endangered Wildlife in Canada), but of the 11 species listed to May 2002, six occur in British Columbia. One, the island marble *(Euchloe ausonides insularus),* whose larvae probably fed on Brassicaceae, is listed as having been extirpated before 1910 from its habitat on southern Vancouver Island. Two others that still occur on southeastern Vancouver Island or adjacent islands are the island blue *(Plebejus saepiolus insularus),* whose larvae feed on clover *(Trifolium),* and Taylor's checkerspot *(Euphydryas editha taylori),* with plantago-feeding larvae. Both are listed as Endangered by COSEWIC.

In the Threatened category, COSEWIC lists two BC butterflies, Behr's hairstreak *(Satyrium behri columbia)* and the western population of the dun skipper *(Euphyes vestris).* Behr's hairstreak is confined to the South Okanagan, where the larval foodplant is antelope brush *(Purshia tridentata).* The dun skipper, with sedge *(Carex)* feeding larvae, is confined to southwestern British Columbia.

The monarch butterfly *(Danaus plexippus),* whose larvae in the BC Interior feed on the cardinolide-containing showy milkweed *(Asclepias speciosa),* is listed by COSEWIC in the Special Concern category. Adults migrate to California to overwinter. They are of special concern, not only because of this migratory habit and limited overwintering habitat in California, but also because the larval foodplant in BC is regarded as a noxious weed, somewhat poisonous to cattle, and thus subject to eradication. Although some migratory monarchs are reported from Vancouver Island, and elsewhere in BC, these are strays that are unable to breed because of the absence of the food plant in these areas.

Chris Guppy, John Shepard and Norbert Kondla in 1994 considered the Butterflies of Conservation Concern in British Columbia, listed 52 species and subspecies, and noted that these constituted 20% of the total of 266 species and subspecies known from the province at that time. They reported that these butterflies of conservation concern occur in four areas of the province, namely:

1. the south coast, especially southeastern Vancouver Island;
2. the Southern Interior, especially the southern Okanagan Valley and the adjacent Similkameen Valley;
3. the southeast Kootenays; and
4. the Peace River Lowlands, especially the Peace River Canyon. These are of course, our main grassland areas. These lepidopterists noted that in all four areas, increasing urbanization, industrialization, resource extraction, grazing, and agriculture are resulting in rapid degradation and destruction of the natural habitats.

In 1994 I produced a systematic list of 819 potentially rare and endangered freshwater and terrestrial invertebrates in British Columbia, listing 168 as endemic, 448 as rare and occurring only in BC in Canada, and 203 rare in BC, but occurring elsewhere in the country. I included all the butterfly species listed by Guppy, Shepard and Kondla in their 1994 publication, and many of these are now red-listed as endangered or threatened by the provincial government.

In a subsequent publication in 1996, setting out priorities for inventory and descriptive research, I reorganized my list of 819 species according to ecoprovinces and ecoregions. I listed 333 endemic, rare and endangered species from the Southern Interior, 196 from the Georgia Depression (Eastern Vancouver Island and Georgia Puget Basin), 102 from the Southern Interior mountains (including the Rocky Mountain Trench) and 20 from the Boreal Plains (Alberta Plateau), mostly the Peace River Canyon.

With new discoveries, I can now increase the 333 rare species in the Southern Interior (Thompson–Okanagan Plateau, Okanagan Range, Okanogan Highlands, and Interior Transition Ranges [Pavilion Ranges ecosection]) to over 360 species. Most are confined to the grasslands and shrub-steppe of the South Okanagan.

Included in these are the wind scorpions (Eremobatidae), the northern scorpion *(Paruroctonus boreus)*, some 54 spider species, four mayflies (Ephemeroptera) and four Odonata (damselflies and dragonflies). Of particular interest in the latter group is the red-listed vivid dancer *(Argia vivida)*, which is a very local damselfly whose larvae are confined to warm spring fed streams.

The ground dwelling native mantid *(Litauertria minor)* is confined to dry open grassland habitats in the Oliver and Osoyoos area, and prefers places where there is considerable bare ground. In the South Okanagan there are also two rare tree crickets *(Oecanthus spp.)*, at least one rare camel cricket *(Ceuthophilus sp.)*, and six rare short-horned grasshoppers (Acrididae). Although the latter Acrididae are mainly day-active grass feeders, the tree crickets occur mainly on shrubs in the day, especially on roses, sagebrush, antelope brush and rabbitbrush, there being few trees. The rare camel crickets are ground dwellers, and most active at night.

To date, over 50 rare true bug species have been found in the grassland and shrub-steppe habitats in the South Okanagan. These include four species of black coloured burrowing bugs (Cydnidae), 10 species of seed bugs *(Lygaeidae sensu lat.)*, over 20 species of plant bugs (Miridae), two water bugs or backswimmers (Notonectidae), as well as one shield bug (Scutelleridae), one stink bug (Pentatomidae), one lace bug (Tingidae), one minute flower bug (Anthocoridae), and at least one shore bug (Saldidae).

While most of the seed bugs are ground dwellers in the grassland and shrub-steppe habitats, the two species of *Eremocoris* occur on conifers, and there is one endemic seed bug that is confined to ponderosa pine, namely the rare, uniform rust coloured, flattened *Gastrodes intermedius.* The rare stinkbug *Dendrocoris pini* is also confined to *Pinus ponderosa.*

A number of rare plant bugs are tied to either antelope brush *(Purshia tridentata)* or Great Basin Sage *(Artemisia tridentata).* The species of *Phytocoris* occur mostly on old woody *Purshia* plants. The lacebug *Gargaphia opacula,* and the flower bug *Anthocoris bakeri,* are also both confined to antelope brush.

There are three rare plant bug species in the genus *Trigonotylus* that occur only on the grasses around alkaline ponds and lakes, and the shorelines of such water bodies are also the only known habitat for the rare, predatory, brilliant red and black, shiny shore bug *Iocytus politus.* With few such saline habitats around, these bugs are only reported from three localities.

There are at least 20 species of rare leafhoppers confined to the South Okanagan grasslands, with several new species still to be described. As well, there are three rare snake flies (Raphidioptera), two rare scorpionflies (Mantispidae), three rare green lacewings (Chrysopidae), and four rare brown lacewings (Hemerobiidae). To this list of rarities can be added over 25 rare species of beetles (Coleoptera), over 25 rare species of flies (Diptera), and over 65 rare species of Hymenoptera (bees, wasps and allied insects).

The beetles include a brilliant iridescent green, fast moving predacious tiger beetle, *(Cicindella parowana wallisi)*, and two omnivorous, desert-adapted darkling beetles *(Eleodes extricatus* and *E. nigrinus)*. The flies include several rare robber flies (Asilidae), two biting horse flies (Tabanidae), a blackfly *(Prosimulium contrictistylum)*, and a mydid *(Nemomydas pantherinus)*. The latter can occasionally be found feeding on the introduced sweet clover.

Among the Hymenoptera are two rare iridescent cuckoo wasps (Chrysididae), nine stinging velvet ant (Mutillidae) species, several solitary wasps and solitary bee species, plus three rare bumblebees (Apidae). To the nine rare butterfly species in the South Okanagan, can be added at least 10 rare moth species.

As well as the COSEWIC-listed, antelope-brush feeding Behr's hairstreak, among the butterflies there are two grass feeding skippers (Hesperidae), the Nevada skipper *(Hesperia nevada)*, with larvae feeding on *Stipa* and *Festuca,* and the Sonora skipper *(Polites sonora)* with larvae on *Festuca idahoensis.* The very rare Morman metalmark *(Apodemia mormo)* is now only known from a small population near Keremeos. Here larvae feed on *Eriogonum niveum,* but adults depend on adjacent flowering rabbitbrush for nectar. The Keremeos localities are now threatened by gas pipeline construction.

Throughout the world, the main threat to biodiversity is loss and fragmentation of habitat. The grasslands in British Columbia, be they on southern Vancouver Island, in the South Okanagan, Kootenays or Peace River area, are no exception. Without critical habitat, species cannot exist.

For example, with over 60% of the antelope brush habitat in the South Okanagan now lost forever, and the remaining stands degraded and fragmented, and often quite isolated, species confined to this habitat are in jeopardy. In contrast to vertebrate species, which tend to be ecological generalists, most insects are ecological specialists, with precise habitat and food requirements. Just as many vascular plants depend on specific insects for pollination, many insects depend on specific plants for nutrition and shelter.

Although most insects may not be obvious in our grassland ecosystems, these grasslands depend on these animals for their survival. They are major components of most food chains, and play influential roles in processing organic matter as decomposers, herbivores and carnivores up to at least the quaternary consumer level. If one accepts that over the long term, there is no species redundancy in ecosystems, then all insects species, both rare and common ones, are essential for ecosystem function, and the provision of nature's services on which we depend.

Dr. Scudder is a Professor Emeritus at UBC, having served as Head of the Department of Zoology (1976–1991) and Interim Director of the Centre for Biodiversity Research (1993–1995). Dr. Scudder is a zoologist, with special interest and experience in entomology, biosystematics, biogeography, biodiversity, conservation biology and evolution. He is a world expert in the systematics of seed bugs. He has published over 250 scientific papers, and has edited two books. He currently serves on the Board of Directors of the Nature Trust of British Columbia, and advisory committees of Environment Canada, the Entomological Society of Canada, and the BC Ministry of Water, Land and Air Protection. He is a fellow of the Royal Society of Canada, and a member of the Order of Canada, and is still actively involved in research and public education.

Antelope brush in bloom.
PHOTO BY STEVE CANNINGS

BC's badgers: Living on burrow'd time?

Ian Adams, Chair, National Recovery Team for *jeffersonii* Badgers

The sun sinks into the South Thompson plateau on a hot July evening as University of Victoria graduate student Corinna Hoodicoff heads to work. For two summers she has explored the hills around her native Kamloops area listening intently for a radio telemetry signal in the hopes that maybe, just maybe, one of a handful of badgers fitted with a transmitter might be within reach. Some nights, it feels like she's looking for a ghost.

It's an analogy that hits a bit too close to home. Of the four subspecies of North American badger *(Taxidea taxus)* only one, *T. t. jeffersonii,* is found in British Columbia. And it is becoming even more scarce.

In 2000, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) listed the *jeffersonii* subspecies as federally endangered, COSEWIC's highest level of conservation concern. Today, biologists estimate that fewer than 200 badgers continue to dig their way through British Columbia soil.

Badger habitat needs are fairly simple. They require soil to dig in and food to eat. However, when either of these becomes hard to find, they move. A lot.

Corinna's work has found male badgers to range over an average of 87 square kilometres. In the East Kootenay, the average is an astonishing 450 square kilometres! Badgers to the south in Idaho, Wyoming and Utah are homebodies by comparison, covering no more than 5 square kilometres. So far, there's no real explanation for the discrepancy.

ABOVE: **A badger comes out for a quick look near Wolf Creek.** PHOTO BY TIM MCCALLISTER

"It's likely food based," notes Corinna. "Badgers here have a varied diet but seem to prefer Columbian ground squirrels, which also have a fairly scattered distribution. In the States, they have huge ground squirrel and prairie dog colonies where badgers barely have to move for a meal."

As a result, badgers in BC are turning up in the most unlikely places. Previously thought of as strictly a grassland animal, researchers in the Thompson and East Kootenay regions have found badgers from valley bottom to alpine tundra. At the Sun Peaks ski resort, a badger lives year-round in one of the highest bowls in the alpine. Another badger north of Kamloops lives in a series of logging cut blocks between dense stands of montane spruce. Not surprisingly, both areas are rich with ground squirrels.

However, their core habitat remains the grasslands. These are the areas where prey is plentiful and readily available. Their rich, friable soils mean digging is easy, unencumbered by the coarse, morainal debris left behind by retreating glaciers. Here, in generally mountainous British Columbia, such conditions can be difficult to find.

Unfortunately for badgers, their preferred habitats are also our preferred habitats. We too tend to habituate in the warmer, more productive valley bottoms. Here we have built our towns and cities, strung roads and railways between them and developed much of what's left into wineries, golf courses and hobby farms.

It's a story too common with other grassland species. Badgers are a top level carnivore in grassland ecosystems. Even cougars and coyotes generally leave them alone. Many scientists feel that carnivores are a bellweather for our environment. If we have healthy predator populations, then the various levels of prey which sustain them are also likely in good shape. Badgers declining in BC likely means grasslands in general, and the host of species they support, are equally in trouble.

Late June finds Richard Klafki roaming the fertile Flathead Valley in northwestern Montana. Here the land between the Rocky Mountains and the Kootenay River expands into a broad swath of ranches, grasslands and badgers. A lot of badgers. Richard is here to live-trap a few and bring them north across the border to release into the East Kootenay Trench.

Up in the Columbia Valley, a research program led by Nancy Newhouse of Invermere has witnessed the badger population in the upper Columbia valley dwindle to pretty much zero. "We get scattered reports of a badgers north of Skookumchuk, but since the mid- to late-1990s it's been pretty quiet," she says.

The translocation project was initiated to help jumpstart a recovery of the local badger population. Montana's Department of Fish, Wildlife and Parks has been very supportive. "Usually it works the other way," says state biologist Jim Williams of Kalispell. "We are reliant on Canada for many wildlife species, so it's good to be able to give something back."

"There are still a lot of badger burrows in the Columbia Valley," notes Nancy, "but there are no badgers to use them. We think it's key to bring badgers back—by truck if we have to—while their habitat is still here, while their burrows are still here and, perhaps most importantly, while they're still a part of the cultural landscape."

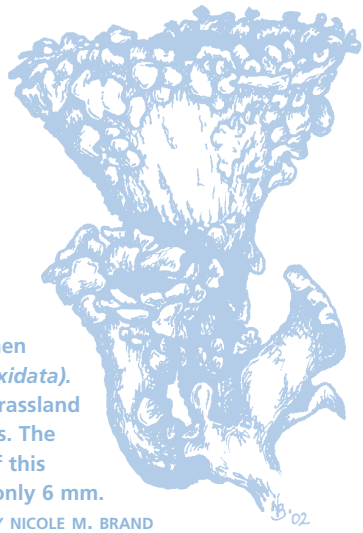
Many ranchers have memories of badgers. They may never have been common, but they were seen on occasion, but seldom any more. Even in the US where they're thought to be common, wildlife officials note that they are rarely observed. When they are, they're usually dead on the side of the road.

It's a story biologists like Corinna, Nancy and Richard would like to see reversed. Maintaining badgers with their large home ranges requires a lot of habitat. For all their wanderings, grasslands remain their core home and are the focus of efforts to ensure badgers keep digging in British Columbia for a long time.

Ian Adams chairs the National Recovery Team for jeffersonii *Badgers. Based in Cranbrook, he runs Corvus Communications as a contracting wildlife ecologist and freelance writer. The Badger Recovery Team has been in operation since April 2001. It includes provincial and federal governments, ranchers and researchers. Their objective is to reverse the decline in BC's badger population through public education and habitat conservation.*

Biological soil crusts of the BC grasslands and shrub-steppe

Terry McIntosh, Professional Biologist and Ecologist, Biospherics Environmental Inc.



Pebbled pixie-cup lichen *(Cladonia pyxidata).* A common grassland lichen species. The actual size of this specimen is only 6 mm.
ILLUSTRATION BY NICOLE M. BRAND

In many arid areas of the world, the visually dominant flowering plants, including the grasses, forbs, and shrubs, do not often form a complete cover across the landscape. In these areas, such as in our Interior grasslands and shrub-steppe habitats, the spaces between the vascular plants are often covered by a complex mixture of smaller, and often overlooked, organisms. These include mosses, lichens and cyanobacteria (formerly called blue-green algae). These organisms are intermixed with fungal hyphae, plant roots and soil, and are often very thin, compact and fragile. These features of the arid landscape are referred to as biological soil crusts. Other names that have been used to describe them include cryptogamic and microphytic crusts.

Crusts are incredibly diverse, depending on where they are geographically and on soil composition. A greater silt content usually means more lichens will be present in the crust, whereas an increase in sands usually means a greater cover of mosses. In British Columbia, some 43 mosses and over 50 lichen species, along with probably dozens of fungal and cyanobacterial species, have been reported from crusts. Some species are only found on silt- and clay-rich soils, others are prominent on sandy soils, and others prefer decomposed litter or small stones.

There appears to be a gradual succession over bare soil, which would be present in pristine sites due to gopher or other animal disturbance. In general terms, this succession would probably start with the cyanobacteria binding soil particles, which would stabilize the soil somewhat, and lead to a more stable site for early moss and lichen colonizers. These, in turn, stabilize the soil further, until, finally an 'old growth' crust develops, comprised of both some of the early species as well as others that do not tolerate disturbance or unstable conditions.

Crusts have a number of ecological functions. For example, they increase soil stability and help to prevent soil erosion. Also, they capture air borne particles and add them to the crust and soil base. Various components of the biological crusts, in particular cyanobacteria and many lichens, are capable of fixing atmospheric nitrogen, which is subsequently released into the soil and readily used by the associated vascular plants and fungi, enhancing the ecosystem. Also, although restricted to times when they are wet, photosynthetic crust species fix atmospheric carbon, which in turn is made available to other species on site. Further, in some cases, vascular plants that grow in areas of well developed crust have higher accumulations of phosphorus, potassium, iron, calcium, magnesium, and manganese than in sites that lack a crust.

Biological crusts are easily disturbed. In a pristine ecosystem, disturbances were probably minimal and localized, and crusts were probably mostly 'old growth' crusts, complex and rich in species diversity. However, over the past century, most of our crusts, except for some long term protected sites and places where cattle are less likely to gather, have been heavily altered by the trampling of livestock, and sometimes the use of vehicles.

Like so many aspects of biological crusts in the province, little is known about how long it takes the crusts to recover after being disturbed. I have had the opportunity to visit many of the exclosures that have been built across our grasslands. These structures were designed in most cases to eliminate cattle from large areas and to observe and document changes. In some exclosures, like the Eagle Tree Exclosure in the Churn Creek area, a crust developed quite rapidly, nearly covering a former cattle trail after only one year. In other sites, the crust development appears to be much slower.

Crusts, like so many aspects of our grassland and shrub-steppe environments, are important contributors to a healthy and vigorous ecosystem. Even though our understanding of the species makeup of the crusts is limited, we can only benefit from examining these crusts further. It may help land managers to try to understand how these crusts change under different management practices, and possibly attempt to use the presence of a crust to assign a condition status ranking to the site. It isn't necessary, in most cases, to know what species are there, but to make general conclusions based on the amount of bare mineral material as related to crust cover.

Biological crusts and their grassland environment are home to many species of rare plants. There are at least five federally-listed rare species of mosses that inhabit the crust, of which one may be extirpated because of the loss of habitat to urban development. Many rare vascular plants also depend on a stable grassland ecosystem for their success and survival.

For those who want to explore biological crusts further, the following web links are some of the more useful ones, although there are a lot more out there (as you can tell from this list, researchers in the United States are way out in front of us in crust research). I have referred to many of these sites while building this article:

1. www.blm.gov/nstc/soil/crusts/: If you follow this site through to http://www.blm.gov/nstc/library/techref.htm, you will find the best North American biological crust reference available (Reference #1730-2)
2. geochange.er.usgs.gov/sw/impacts/biology/crypto/
3. eduscapes.com/nature/cryptsoil/index1.htm
4. www.soilcrust.org/: If you hit the 'Advanced' heading on this page, it will lead you to a great downloadable reference on crusts, the most useful reference available, I believe.

Terry McIntosh, from Vancouver, completed a detailed study of provincial arid land bryophytes for his doctorate, and is presently undertaking a number of other grassland projects including COSEWIC status reports on rare mosses, and a study of the biological crusts in Washington State.

Tiny golden bats

Anna Roberts, Botanist

At dusk, if you happen to see small, light coloured bats flying low over big sage slowly and erratically, you are quite likely watching western small-footed myotis *(Myotis ciliolabrum).*

This bat species is known to inhabit the arid regions of Western Canada. In British Columbia it has been found foraging for insects in warm, Interior grassland areas from the Okanagan and Similkameen to the Thompson, Fraser and Chilcotin river valleys. The present known northern limit of the bat's occurrence is the steep grassland slope of the Williams Lake River valley. In BC, this myotis appears to be restricted to native grasslands and rock outcrops below 850 metres.

The western small-footed myotis is the smallest bat in BC, weighing no more than a nickel. This delightful little mammal has dense golden fur with a black face and ears.

In summer, these bats roost in abandoned buildings in grassland areas as well as in crevices in rock faces and talus slopes. Groups of all males have been found night roosting in old cabins, while the females are at some dark, warm nursery site, which we know little about.

In winter, single western small-footed myotis have been found in torpor, hibernating in narrow crevices in limestone caves near the Fraser River. A temperature reading of –3°C was recorded from beside one bat that was hibernating in a crevice. Despite this discovery, very little is known about where the majority of this species spend the winter.

Bats are British Columbia's most important natural predator of night-flying insects, and although each bat species has different habitat and insect preferences, the western small-footed myotis is a grassland specialist foraging on small flies, beetles and moths. Observations in the Cariboo–Chilcotin indicate that myotis is the dominant mammal foraging on insects at night over the lower and middle grasslands and, therefore, a vital link in the balance of nature in these arid regions.

In BC, this species is blue-listed because of the relatively small amount of suitable habitat available, and because so little is known about the basic biology of this bat. But one thing is certain: the future of our populations of western small-footed myotis depends greatly on the protection of BC's grassland environments.

Western small-footed myotis. PHOTO BY ANNA ROBERTS

Anna Roberts is a naturalist and semi-retired botanist who has studied many aspects of the Cariboo–Chilcotin grasslands for over 40 years. She and daughter Gina carried out the first inventory, in that region, of grassland bat species for the then Ministry of Environment.

An ethnobotanical perspective on grassland management

Michael Keefer, Ethnobotanist, Ktunaxa–Kinbasket Treaty Council

Grassland ecosystems are among the most important of ecosystems for the Ktunaxa Nation for a variety of reasons. Perhaps the single greatest grassland value to aboriginal cultures, and indeed all cultures, is the climate. The climate of grassland ecosystems provides easier winters, earlier springs and a great diversity of plants, which in turn support traditional root crops and healthy populations of ungulates. Plants such as bitterroot *(Lewisii rediviva)* that are considered important to aboriginal cultures are generally not recognized as being important by today's resource managers; except in the case of keystone species such as the balsamroot *(Balsamhoriza saggitata).* When considering ecosystem restoration projects, one should factor in archaeological inventory as well as ethnobotanical inventories along with the other resources available such as biogeoclimatic mapping. It is not only historical nostalgia that makes protecting these cultural values worthwhile; archaeology provides one of the best tools for examining past climates, landscapes and people; the ethnobotanical resources may help society in the future, and also there are fantastic educational opportunities.

Bitterroot in full flower on a hot, dry south-facing slope. PHOTO BY MICHAEL KEEFER

The desirable climate of grassland ecosystems poses many challenges to resource managers. Given that these ecosystems are desirable for modern man, it is only logical to assume that these areas were of critical importance to traditional people. In fact, when one examines the archaeological site maps of the Cranbrook Forest District, an area of just under 1.5 million hectares, there is a total of 598 recorded archaeological sites. Within the forest district there are two main biogeoclimatic units that are known to contain grasslands: Interior Douglas Fir (IDF) and Ponderosa Pine (PP). These two ecosystems occupy just 228,345 hectares (15% of the district) and contain 323 recorded archaeological sites (54% of those known in the district). When considering the above statistic it is critical to remember that archaeological sites are physical evidence and that they

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Columbian sharp-tailed grouse

Ernest Leupin, MSc. RPBio, Ecoscape Biological Consulting

Imagine a crisp, cool, spring dawn in the Southern Interior's grasslands. The air is filled with the songs of migratory birds advertising their arrival and breeding intentions. Among these songs, a soft cooing accompanied by foot stomping can be heard in the distance. These sounds are part of an amazing breeding display that male sharp-tailed grouse engage in during the breeding season. The breeding ground, or lek, is often a small knoll with sparse vegetation that is visited by males year after year. On these, males display to each other and to receptive females in an effort to pass on their genes. Sharp-tailed grouse is the only remaining species in British Columbia that exhibits this amazing behaviour (sage grouse, another lekking species, was extirpated from BC at the turn of the century).

The Columbian sharp-tailed grouse, one of three subspecies of sharptails found in BC, is a medium sized (40 to 48 cm long, 500 to 1000 grams) game bird. The sexes are difficult to distinguish except during the breeding season when males expose a pale violet airsac and yellow orange combs over the eyes. The Columbian sharp-tailed grouse is mostly associated with grasslands although in British Columbia they are also found in large forest openings and meadow complexes. Home ranges of the sharp-tailed grouse are relatively small. Despite their ability to fly for long distances, they seldom move further than 2 km from the lek. Within this area, they use a variety of habitats for various stages of their life history. During the nesting season (April to June), females require open grasslands with dense bunchgrasses and herbs. Nests are usually located under large bunchgrasses with abundant residual cover. The nest consists of a shallow depression lined with grasses and moss. The female lays on average 9 to 12 eggs that hatch after 22 to 24 days. During the brood rearing period, sharptails use seepage areas with dense cover where chicks can find abundant insects. In the winter, birds use riparian and upland shrubs for cover, feeding and roosting.

Columbian sharp-tailed grouse were once thought to be the most abundant grouse in the continental Northwest. Today, they occupy less than 10% of their former range. British Columbia's populations in forested areas appear to be stable, while grassland populations have experienced dramatic declines. In BC's grasslands, the sharp-tailed grouse has been extirpated from the Okanagan and is virtually gone from the East Kootenays. The disappearance of this subspecies from southern portions of our province has effectively isolated our population from those in the United States. In the remaining grassland areas, the populations continue to decline. In 1991, the Columbian sharp-tailed grouse was provincially designated a blue-listed (at-risk) species.

Numerous factors have been implicated in the decline of the Columbian sharp-tailed grouse. Foremost is the loss and degradation of their grassland habitat due to conversion of native grasslands to croplands, certain grazing practices, land development, invasion of non-native plants, forest encroachment, and damage to upland shrub and riparian areas. In most areas, the cumulative impact of these factors has been attributed to local extinctions and declines. Despite the declining trends in our grassland populations, BC still supports over 60% of the North American breeding range for sharp-tailed grouse. Therefore, British Columbians have an important global responsibility to ensure the continued existence of this intriguing bird.

The road to recovery of BC's populations, however, is not easy. We need to implement realistic approaches that address the current relationship between sharp-tailed grouse and land use practices. This in turn must be incorporated into long term plans and activities geared towards conservation and recovery at the landscape level. To achieve this requires the co-operative efforts of provincial governments, ranchers, First Nations and the range management community. Together, we must develop and implement ecologically and economically sustainable range management practices that incorporate the needs of this and other grassland species regardless of political and demographic boundaries.

In April of 2002, the Sharp-tailed Grouse Stewardship Program was initiated to do just that. The individuals involved in this project represent a wide range of organizations with vested interests in grassland integrity. By working together and using research, education, stewardship and habitat enhancement, and restoration techniques as recovery tools, we aim to restore the viability of sharptails in grassland habitats. Although the project is still in the initial stages of delivering the program, the collective concern and willingness to act towards wildlife conservation by all involved will ensure the success of this program. We also urge others to become actively involved in our vision to restore grassland habitats for sharptails and other species of conservation concern.

The lords of the dance. Sharptails squaring off.
PHOTO BY ERNEST LEUPIN

Ernest completed his MSc (UBC) on songbirds and their responses to alternative harvesting methods and has run a biological consulting business in Kamloops, BC since 1997. He is currently a lead biologist in the Sharp-tailed Grouse Stewardship Program.

The Sharp-tailed Grouse Stewardship Program is funded by the Habitat Conservation Trust Fund.

Partners of the project are: Ministry of Water, Land, and Air Protection (Regions 3 and 5), BC Parks, Upland Bird Society, Grasslands Conservation Council, Agriculture Canada, Guichon Catttle Company, Palmer Cattle Company, OK Cattle Company, Washington Department of Fish and Wildlife, and BC Conservation Foundation.

You can learn more about this program by contacting Ernest at ecoscape@shaw.ca or visit us at www.bcgrasslands.org under "Grassland Species at Risk."

Grassland disturbance and at-risk plants

Peggy Broad, University College of the Cariboo

A porcupine grass *(Stipa spartea)* seed. This dry seed is topped by a long, bent and twisted awn. A light rainfall dampens the awn causing it to untwist. This motion drills the base of the seed into the ground, helping the seed successfully colonize an area.

ILLUSTRATION BY NICOLE M. BRAND

Disturbance is an interesting and often controversial issue within grassland ecosystems. Natural disturbances such as wildfires are often suppressed, while unnatural or man-related disturbances continue to occur. Could natural wildfire suppression be considered a human-caused disturbance? Hmmm… From a plant's perspective it might be.

The term "disturbance" is often perceived as a negative event but we must remember that this term also encompasses natural events that are simply a part of the circle of life. Mechanical and other human-related disturbances are, however, the largest threat to many rare plant species within British Columbia.

If we take a close look at the list for rare and endangered plant species in BC most of these species occur within our smallest biogeoclimatic zones. These zones contain some of the most fragile ecosystems within BC, and are also often under heavy pressure due to urbanization and mechanical or human-caused disturbance. Unfortunately, much of BC's grasslands are found within one such zone—the Bunchgrass zone.

Munroe's globe-mallow *(Sphaeralcea munroana)* is an endangered plant species that is very rare in south central BC but has been noted in the grasslands between Oliver and Osoyoos. This beautiful and unique flower is also known by the common name orange globe-mallow. Munroe's globe-mallow can be distinguished by its five brightly colored petals and grayish leaves. Grayish leaves are common for many grassland flowers with the color being a function of the hairs across the leaf surface designed to reduce moisture loss through evapotranspiration during the hot summer months. The leaves of this particular species remind me of the basal leaves of round-leaved alumroot *(Heuchera cylindrica),* a far more common grassland species.

Showy phlox *(Phlox speciosa)* is another endangered grassland species. This species has been noted on the Thompson Plateau and puts on a display of white to pinkish coloured flowers with heart-shaped petals. The sepals appear striped in appearance and if touched you will quickly realize that they are very glandular and sticky. If you are fortunate enough to come across this plant, make a point of visiting it in the evening when the air carries a sweet scent from its faint perfume.

You may not think of a grass species as being endangered, but porcupine grass *(Stipa spartea)* is actually a red-listed species in British Columbia. This perennial bunchgrass can achieve a height of up to 120 cm tall with leaves 30 cm long. When observing this grass, as well as some of the more common *Stipa* species, you will notice that one seed is produced within each set of the papery bracts known as glumes. The sharp point of a porcupine grass seed is known as a callus and can reach a length of 7 mm while the "tail" or awn can be as long as 20 cm! You would think that with seeds like this porcupine grass would be armed for good seed dispersal and able to easily perpetuate itself. Sadly, features meant to aid in good reproduction can't necessarily cope with habitat loss.

The three species mentioned here represent the "tip of the iceberg" of endangered and rare plants within British Columbia's grasslands, and all are endangered as a result of disturbance by humans within grasslands. Unnatural disturbance results in habitat loss where space for existence is already limited.

Enjoy our grassland spaces and protect these delicate ecosystems from preventable disturbances that lead to the loss of grassland species. Take a second look at natural disturbances like wildfires that can, in some cases, rejuvenate "old growth" grassland spaces, and accept these disturbances rather than suppress them. Become familiar with endangered grassland plants and cherish their unique beauty if you are fortunate enough to come upon them. And most of all, share your new-found knowledge with others. The more awareness and respect that we develop for grasslands in BC, the more assurance we will have that these spaces and the plants within them will remain for future generations to discover and enjoy.

Peggy graduated from UBC in Forest Sciences, becoming interested in grasslands through her overall infatuation with plants and ecology. She now teaches range and forestry classes at the University College of the Cariboo in Kamloops. You can reach Peggy at pbroad@cariboo.bc.ca

Dr. Geoff Scudder

Kathy McCauley, BA, BEd, Freelance Journalist

Dr. Scudder busy at work in the grasslands. PHOTO COURTESY OF MINISTRY OF WATER, LAND AND AIR PROTECTION

When Geoff Scudder speaks about grasslands, or on any other topic for that matter, people listen. No wonder, for Dr. Scudder is one of the world's best known and respected entomologists. He speaks with authority about conservation issues and supports every statement with facts pulled from his prodigious memory and experience. His curriculum vitae—twenty-two pages long—lists research projects from Canada, South America, Australia, West Africa, and the Pacific Islands. A world expert on seed bugs *(Lygaeidae),* his research in BC has been mostly on grassland insects, and the life cycle and insect physiology of inland saline lakes. The driving force behind the establishment of the Biological Survey of Canada, the Canadian flora and fauna database, he continues to add to the collection. Although the compact, vigorous sixty-eight-year-old professor is formally retired, his life is still packed with world travel, political lobbying, public speaking engagements and ongoing research projects. Although entomology is his foremost passion, much of his recent work is connected to the preservation of BC grasslands, particularly in the Okanagan–Similkameen.

A UBC instructor since 1958, and head of its renowned Zoology department for fifteen years, Geoff and his students worked on critical research projects in the Cariboo–Chilcotin grasslands and saline lakes, the Yukon and the Okanagan–Similkameen. His love for science was infectious and an inspiration to the new generation of UBC graduates.

Former student, Syd Cannings, a Victoria consultant who specializes in endangered species and co-authored *British Columbia: A Natural History,* remembers that although Geoff's classes were difficult, they were popular. "Dr Scudder never let you slack off," says Syd. "Students were writing notes like crazy during lectures because he delivered a ton of information. He was a good storyteller, an enthusiastic lecturer, and backed everything up with examples drawn from the real world, a real detail guy. By the end of the lesson, you were convinced of the point he was trying to make."

Syd's brother Rob, Curator of Entomology at the Royal British Columbia Museum and Scudder's student in the 1960s, concurs. "He was a dynamic and popular teacher, with an enormous grasp of detail over a wide subject area. He had complete respect for his students and encouraged them to work independently on projects. He wouldn't try to steal the spotlight from students; even when he did more than his share he always put his name last on publications."

Don Gayton, Scudder's colleague and well known BC conservationist, comments, "The mark of a true naturalist is the ability to convey enthusiasm for the subject to others, and Geoff is a master at that, particularly with young people. I often wonder what it would be like to spy on the man's thought processes as he collects in the field," muses Don, "as little bits of new taxonomic and habitat information are received, sorted and stored in the vast entomological library of Geoff Scudder's brain."

Scudder never confined his talent and influence to just teaching and research. "Geoff is a political guy, involved in almost everything," says Syd Cannings. Advisor to Agriculture Canada, Ministry of Environment, and other government bodies, Dr. Scudder has been involved in more steering committees and organizations than anyone would believe was possible in one lifetime: American Association for the Advancement of Science, Canadian Museum of Nature, Canadian Space Agency, and the National Research Council of Canada are just a few. He has won many awards, including the Order of Canada and the Queen's Golden Jubilee Medal in 2002.

One undertaking that Scudder has worked on relentlessly for years is pressuring the federal government to tighten up the *Species at Risk Act*, which received Royal Assent on December 12 and is expected to become law later this year. Fortunately, he has solid credibility with those in political power. "People do listen to him. He has the ear of government," Rob Cannings confirms.

The legislation, which focuses on habitat conservation and cross-border protection, insists that an independent, science-based process be used to assess species at risk, a concept that is not currently government policy. "It's been a tough battle," says Dr. Geoff Scudder, "and fifteen years in the works. We needed to make sure the legislation had some teeth in it. We weren't totally satisfied but we did force some changes."

Although Geoff works on grassland projects around the globe, his current focus is in the South Okanagan–Similakameen. "The greatest threat to grasslands today is loss to agricultural and urban development," says Dr. Scudder. "And the South Okanagan–Similkameen is the most seriously endangered in the province. The population in the Okanagan is predicted to double in the next 25 years so there needs to be a strategy for the whole valley, a long term regional plan that takes into account that water sources are declining not only in the valley, but throughout the world. The regional districts should be planning for the next 50 to 100 years—but

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NEAR RIGHT: Balsam root in the Garry oak meadows.

FAR RIGHT: Silvery blue on camas.

PHOTOS BY MICHAEL WHEATLY

Garry oak pocket grasslands: Among the most endangered landscapes

Wayne Erickson, Wildlife Conservation Ecologist, Ministry of Forests

Garry oak grasslands come as an amazement for anyone used to Interior rangelands. In this coastal land of ancient, giant trees and ecotourism, pocket grassland landscapes are nestled in the rainshadow of the Olympic and Vancouver Island Mountains. The featured tree, Garry oak *(Quercus garryana),* like many companion species, has a north–south distribution, extending to California along the coast. Coming from a research background, I wondered why they had been so little studied, for there has historically been a large body of expertise in Victoria, with government headquarters, the university and the museum.

Garry oak grasslands might be the most endangered landscape in Canada. Like a Ukrainian matryoshka (the nested doll-within-a-doll), these areas are only a small part of the endangered Garry oak ecosystem, which in turn is only a small part of what has been mapped as Douglas fir zone and called endangered. Exurbanization is the latest pressure: blasted hilltop mega-house intrusions—no chance for re-establishing landscape-level fire on these slopes.

A grassland named for a tree, Garry oak, and a deciduous one at that, seems unusual, especially with a BC perspective. However, world wide there are extensive savannahs, with a landscape of grasslands, tree patches and open stands. Just across the border there are "oak prairies," and indeed in central BC there is the Aspen Parkland zone. This summer I discovered a similar physiognomic type with bur oak *(Quercus macrocarpa),* the closest Canadian neighbour, in Saskatchewan and Manitoba. The Garry oak landscape is comprised of various combinations of these same savannah components, plus mossy bluffs as a feature. In spring, "forb land" better describes the showy cover of camas (early and great camas) and other flowers on meadow portions this landscape. However, later in the year these areas become decidedly grassy, and the steeper, rockier areas remain so throughout the year. Most of these areas are shallow to bedrock and have grey, frayed cap moss. Considering these areas as grassland therefore also requires a tolerance for substantial moss cover in the definition.

Here are some of the Garry oak grass and forb communities from my studies. For those familiar with Interior rangelands they show a unique sequence.

- Oak–early camas and subcommunities: Typical, Easter lily, Henderson's shooting star, and western buttercup; and Oak–great camas.
- Oak–Idaho fescue and subcommunities: Typical, field

A grassland named for a tree, Garry oak, and a deciduous one at that, seems unusual, especially with a BC perspective. However, world wide there are extensive savannahs, with a landscape of grasslands, tree patches and open stands.

chickweed and woolly clover.

- Oak–blue wildrye, Oak–peavine, and Oak–California bromegrass in open stands.

Outside the Garry oak canopy zone, a distance of greater than 30 m, there are grassy openings dominated by some of the understorey communities above, plus:

- California oatgrass–harvest brodiaea; Idaho fescue–California oatgrass; and, rarely, a Lemmon's needlegrass community.

The understorey of the stands and openings has been replaced by Scotch broom and invasive grasses, forming introduced communities on many sites.

There are many examples of the way these grasslands need help. Urbanization, tree encroachment and invasive species are primary impacts, but at this moment a rare Garry oak grassland is imminently threatened by logging disturbance.

The ecological merits of Eagle Ridge west of Duncan were discovered in 1996, but despite many submissions, logging has proceeded and is expected to disrupt this valuable area. Particularly vulnerable are the purity of its composition of native species and the presence of plant species at risk.

A recovery team has been formed for Garry oak ecosystems and it has included the grasslands in its scope. This habitat primarily occurs on private land, consequently The Land Conservancy of BC (TLC) has pursued a special focus of securement, restoration and conservation covenants, protecting approximately 1075 hectares to date. Some outstanding areas purchased are at South Winchelsea Island, Salt Spring Island, Brooke's Point on Pender Island, and Christmas Hill in Saanich.

Land acquisition to ensure conservation is desirable, but land values are very high on the coast and funds are limited. This stresses the future importance of private land stewardship measures in preserving and maintaining the Garry oak grasslands as a valuable ecological treasure.

Websites with additional information

Garry oak ecosystems at risk:
wlapwww.gov.bc.ca/wld/documents/garryoak.pdf
Plant communities:
http://www.for.gov.bc.ca/research/becweb/publications-garryoak.htm
Meadow preservation:
http://www.garryoak.bc.ca/
Ecosystem recovery:
http://www.goert.ca/reference/main.html
The Land Conservancy of BC (TLC):
http://www.conservancy.bc.ca/

Wayne Erickson is a Wildlife Conservation Ecologist with BC Ministry of Forests in Victoria. He studied the Garry oak ecosystems in his M.Sc. thesis at the University of Victoria, and has remained involved in their ecology and conservation since. Wayne feels this involvement was a logical extension of his earlier passion for the Interior grassland landscapes. He also urges readers to consider the work of TLC, which can also be reached by phone at (250) 479-8053 or in writing at 5793 Old West Saanich Road, Victoria, BC V9E 2H2.

Endangered species protection: The BC Cattlemen's perspective

By David Borth, P.Ag. and Elaine Stovin, P.Ag., British Columbia Cattlemen's Association

No one would argue that in order for at-risk species to thrive, their habitat needs protecting. Cattlemen, however, would argue that heavy-handed government legislation is not the answer to accomplishing species conservation.

Red Hereford takes a break in the grasslands.

The Canadian Cattlemen's Association has been supportive of Environment Minister David Anderson's initiative to create legislation that supports a voluntary and co-operative approach. Cattle producers own and manage close to one-third of the agricultural grasslands in Canada—that is over five million acres of land that supports both wildlife and rural families—so to be effective, legislation must co-operate with and have the support of the landowners and land managers who coexist with at-risk species.

The beef industry clearly supports having the Minister oversee the designation of species as endangered; this will ensure that protection of species will be balanced with social and economic objectives.

While we support the principles and basic approach of the *Species at Risk Act (SARA),* a number of concerns are apparent.

SARA places a great deal of emphasis on individual species recovery plans and seeks landowner involvement. As grasslands are home to many of the potential threatened species, the potential exists for an individual landowner to be besieged with multiple recovery teams. The capacity of a ranch to host multiple recovery plans and sort out the potential conflicting objectives for each of the species will be limited. It would be difficult for BC ranchers to manage their land for individual species. Species recovery teams need to work with industry on a co-ordinated effort rather than trying to implement individual species plans.

Species recovery plans that propose augmentation of wildlife populations pose some concern for ranchers. Reintroduction or translocation of wildlife has far reaching effects on people living and working in those communities. As cattlemen, we favour gradual increases in population through habitat management, not reintroduction.

The beef industry is pleased to see that *SARA* "enables" the Minister to pay compensation where species recovery plans preclude use of private land, however, we clearly need a commitment that this will also apply to land leased or licensed from the provincial government. In areas where species management plans deem private or public lands important for at-risk species conservation, full compensation for loss of use of this land is necessary. This is especially important in British Columbia where a lot of Crown land is under some form of industry tenure. Regulations under *SARA* should clearly spell out the circumstances where funds need to be set aside to mitigate endangered species legislation on all agricultural land users, whether that land is private or public.

There has been some suggestion that compensation, where paid on loss of use for Crown land tenures, would only be applicable to the remaining term on existing leases or licenses. New leases and licenses would be issued with no requirement to pay compensation. Cattlemen believe it is only fair that compensation be paid on any piece of private or public land where loss of use is experienced.

Of concern to cattlemen as well, is how the federal *Species at Risk Act* will be recognized and co-ordinated with the Identified Wildlife Management Strategy under the *Forest Practices Code of British Columbia Act* (or its successor). *SARA* gives the federal Environment Minister authority to impose a species protection "safety net" on the provinces if species protection is not seen to be sufficient. Ranchers do not want to be caught in the uncertainty of a bureaucratic tug of war. A clearly defined agreement as to the acceptability of provincial species protection requirements, such as Wildlife Habitat Areas, under the Identified Wildlife Management Strategy needs to be negotiated.

Communication is key to successful species recovery. The cattle industry has argued for a requirement of notification to landowners as to the presence of an endangered species on their lands. The process of identifying a designated protected species should be the responsibility of government, not landowners.

Cattlemen strongly believe that creating a regulatory climate that maintains economically viable ranches is the best way to protect species. Both cattle and wildlife use the same habitat.

As stated earlier, no one will argue that habitat protection is essential in regards to at-risk species. To find a workable solution, groups need to agree that endangered species legislation must balance species conservation with human, economic and social needs. Our livelihoods depend on it.

What do parks have to do with endangered species?

Corrie Leung, Canadian Parks and Wilderness Society – BC Chapter

A group of juvenile burrowing owls.
PHOTO BY RICHARD CANNINGS

Almost one third of British Columbia's endangered and threatened species occur in grassland ecosystems. Grasslands are under constant pressure from urbanization, agriculture, livestock grazing, forest encroachment due to fire suppression, recreation and invasive weeds. With habitat destruction and fragmentation being the number one cause of species loss, it is not surprising that a number of grassland dependent species continue to be added to the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) list each year.

Parks and protected areas are a partial solution to ensuring healthy, viable populations of plants and animals. On their own, parks are only islands of habitat and are often not large enough to support species in the long term. To enhance protection, lands surrounding parks also need to be stewarded to ensure that species are maintained. Without this type of approach, the number of species at risk will only increase.

In the last decade, with the completion of the Okanagan–Shuswap and Kamloops Land and Resource Management Plans, significant gains were made to protect grassland areas.However they continue to be under-represented in BC's protected areas system. Less than 7% of BC's grassland ecosystems are protected. As a result, the parks and protected areas system cannot provide adequate protection for those species at risk whose range lies outside of a protected area.

However, the Prime Minister's recent announcement to create ten new national parks may help to protect more grassland areas in BC. The Interior dry plateau region was identified as a candidate site for a national park. Many species at risk are restricted to this area and do not occur anywhere else in the country. This region represents some of the most biologically diverse areas in Canada containing rare and endangered ecosystems that are under-represented in both the provincial and federal parks system.

In addition, Bill C–5, the *Species at Risk Act,* which passed through the House of Commons in June 2002, may also provide some hope for endangered species. *SARA* subsequently received Royal Assent on December 12 and is expected to become law later this year. In order for this Act to be successful, effective on-the-ground partnerships with government, First Nations, private landowners, local groups and industry must be developed. Also, initiatives that include stewardship, habitat restoration and enhancement are other alternatives to protecting endangered and threatened species. Parks and protected areas are not the only solution to saving wildlife, but they are a small part in ensuring that we have wildlife as part of our children's future.

Species at Risk Act
from page 5

governmental organizations, farmers, ranchers, fishermen, representatives of industry, and other interested Canadians. The recovery process encourages continued discussion and partnership development to ensure no species go extinct in Canada.

For the last ten years, Dr. Pam Krannitz has been a research scientist with the Canadian Wildlife Service of Environment Canada. Since 1993 she has been researching plant and bird communities of shrub-steppe and grassland habitats of the south Okanagan and Similkameen valleys. She is an adjunct professor at Department of Forest Sciences, UBC: http://faculty.forestry.ubc.ca/krannitz/

South Okanagan–Similkameen Region: Canada's biodiversity "hotspot"

South Okanagan Similkameen Conservation Program

Behr's hairstreak in the antelope brush.
PHOTO BY BOB LINCOLN

The South Okanagan and Similkameen Valleys are a special area of Canada. A corridor connecting the grasslands of BC to the Great Basin Desert systems in the United States, these deep valleys offer plant and animal species a migratory route between the south and the north.

From the dry desert-like benchlands to the shady riparian woodlands, the region has a variety of habitat types. Due to habitat diversity and the fact that these ecosystems are in such close proximity, the region supports an amazing diversity of plants and animals. Some of these species are found no where else in Canada or the world. South Okanagan–Similkameen is known as Canada's "hotspot," not only for its scorching summer temperatures, but also for species richness and rarity.

Wildlife such as the white-headed woodpecker, pallid bat, badger, night snake, pigmy short-horned lizard and tiger salamander are among 38 COSEWIC-listed species at risk (Federal) and 256 provincially-listed species at risk in this region. Increasing human pressures within this small geographic area mean that some species are now facing local extinction, while others have already disappeared from the region.

There are four main habitat types in the South Okanagan–Similkameen that are of special importance to species at risk.

Wetland and riparian habitats

These moist habitats are the most biologically productive. Providing shelter and food for animals such as the western screech owl and the Great Basin spadefoot, wetland/riparian areas are the most imperiled in the South Okanagan–Similkameen. At least 85% of the historical wetland and riparian habitats in this region have been lost. Many projects are aimed towards conservation and restoration of these habitats.

Grassland and shrub-steppe

Home to badgers, burrowing owls and the rare Behr's hairstreak butterfly, these habitats are extremely dry. Being an extension of the American deserts to the south, these grasslands are corridors for the migration of desert-adapted wildlife. With sandy soils and lack of precipitation, these habitats are easily damaged and slow to heal. Conservation efforts attempt to reduce damage or destruction of these areas while maintaining connectivity.

Coniferous forests

Defined by large and stately conifers such as ponderosa pine, Douglas fir and western larch, these forests have often evolved with and been maintained by fire. Veteran trees provide habitat for white-headed woodpeckers and a variety of other cavity-nesting animals. Habitat restoration in these areas often entails forest thinning and prescribed fire to prevent forest encroachment.

Rugged terrain

Rock outcrops, cliffs and jumbled talus slopes provide shade and shelter for many plants and animals. Snake dens, bat roosts, bird nests and bighorn sheep lambing areas are frequently located in these rocky habitats. Rugged terrain is threatened by recreation activities and urban development. Conservation activities in these areas focus on co-operative communication with land and resource users.

The South Okanagan–Similkameen is a highlight area for remarkable efforts to conserve biodiversity. On July 2, 2000, nineteen government and non-government organizations partnered together in a mutual effort to create the South Okanagan Similkameen Conservation Program (SOSCP). In just two short years the program has grown to include 32 partners. This type of partnership between government and non-government organizations is unprecedented.

The purpose of the program is to focus conservation efforts to maintain the rich biodiversity of the area, including species at risk and a viable ecological corridor between the deserts of the south and the grasslands to the north. It promotes a conservation-based philosophy that, unlike preservation, supports the integration of human needs for natural resources.

To find out more about the South Okanagan Similkameen Conservation Program, please visit the website at www.soscp.org or contact us at (250) 490-8225.

Message from the Executive Director
from page 3

is a growing sense of urgency to better understand the underlying cultural, socio-economic, jurisdictional, policy and political forces at work resulting in the devastating loss and fragmentation of grasslands and the break up of large ranches for development. Understanding the problem, solutions and potential barriers to achieving these solutions is vitally important to the future of BC's grasslands, to species at risk and to the ranching industry that depends on grasslands for people's livelihoods.

Growing responsibilities for non-government organizations

Non-government organizations (NGOs) have an important and growing responsibility to provide information and knowledge to governments, resource managers, land use planners and decision makers, and to ensure that planning and decision making processes are not solely driven by short term economic benefits. We must ensure that priority grassland areas are not lost forever to development or degraded to an undesirable state. A lot of important work is currently being carried out by organizations such as the South Okanagan Similkameen Conservation Program and the East Kootenay Conservation Program, and we must continue to work together to mitigate the threats to grasslands and the species that depend on them for survival. As Bob Peart eloquently states, "we must co-operate, build trust and respect, and work together. It's time to get past this really simple green versus brown thing. We're talking about sustainability—trying to find balance on economy, environment and society."

Grasslands and species at risk depend on our role as NGOs to deliver: to be proactive, facilitate discussion on hard issues, build solutions, take on tasks that need doing, stimulate positive change, drive the experiential learning process, and lastly but not least, educate and raise awareness about our grassland heritage.

Grasslands need to become part of our culture and our heritage in British Columbia…we need to better understand how they enrich our lives." — Don Gayton

BCID Fund
Beef Cattle Industry Development Fund

Conservation partner profile: Beef Cattle Industry Development Fund

Hallie MacDonald, Cattle Industry Development Council

The Beef Cattle Industry Development Fund has been in place since 1994 when the Ministry of Agriculture, Food and Fisheries invested over $9.3 million in a 20-year trust fund. The earnings of that fund are accessible when matching dollars are put forward to work on projects for the betterment of the beef cattle industry in British Columbia. During that time, 191 projects have been approved for work in the priorities of forage and feedstuffs, promotion, environment, animal care, education and beef industry services. $5.2 million has been triggered from the Trust earnings to contribute to the work of those projects.

The Cattle Industry Development Council, a group of eight cattle producers nominated by provincial beef and dairy organizations, administers the BCID Fund. The Ministry of Agriculture, Food and Fisheries is also represented on the Council.

The Grasslands Conservation Council of British Columbia (GCC) first came to the CIDC in 1999 with an application for assistance to develop the Grasslands Educational Display and to hold the Sustaining Healthy Grasslands Symposium. CIDC looked favourably on this application, granting matching funds for a total project of $20,000. Both projects went ahead on schedule, with the Sustaining Healthy Grasslands Symposium held in June 2000 in the South Okanagan, and the display completed and providing the GCC with a useful communications/ education tool.

The second project for the GCC was for communications and extension work, including the development of the BC Grasslands Website and *BC Grasslands* magazine, to which the BCID Fund contributed $10,000 of the $41,000 total. The website is now on line, two issues of the magazine were covered by this project, as well as the costs of a variety of presentations and utilization of the display.

The CIDC noted that these projects fit the priorities of the BCID Fund in being educational and of concern to the environment. As healthy grasslands are an important part of the British Columbia beef cattle industry, the projects were eligible for funding.

The funding partners involved in these projects saw the need to relay the message of the GCC, hoping that this work will lead to greater understanding of the importance of grasslands to BC.

The Beef Cattle Industry Development Fund invites applications for matching funds for projects that benefit the beef cattle industry of BC. Applications may be submitted at any time, and are considered quarterly. For an application form and more information, visit the website www.cattlefund.net

A tribute to Dr. Albert van Ryswyk, 1928–2002

Albert van Ryswyk in the field with some students.
PHOTO BY KLAAS BROERSMA

The grassland community lost a great friend this November with the passing of Albert van Ryswyk. Dr. van Ryswyk, a 40 year resident of Kamloops, died peacefully on Tuesday, November 19, 2002.

Born in Castor, Alberta in 1928, Albert rode horseback to school five miles each day and graduated from high school in his hometown. He then went on to attend the University of British Columbia, earning a Bachelor of Science in Agriculture.

Reflecting on those years, van Ryswyk said, "upon graduation I took a summer job with the BC Soil Survey (BCSS) in Kelowna, BC. Fortunately by fall, an appointment to do soil survey work with the UBC Dukabour study group, directly under Dr. C.A. Rowles, was appreciated and led to my Master of Science Agriculture in Soils. Then a permanent job, again with BCSS, began four happy, experience-filled years. The spring of 1958 was a banner one for me, with a permanent appointment to Agriculture Canada, Kamloops (then the Experimental Farms Service) and marriage to Alwilda Audrey Minette."

Always eager to learn, Albert started his doctorate in 1963 at Washington State University. He spent from September to June in Pullman, Washington and the summers at the Research Station in Kamloops, working on his thesis project on Lakeview Mountain, outside of Keremeos. A packer would pack a technician and himself ten miles up Lakeview Mountain and pick them up two weeks later. He did several of these trips gathering information for his thesis. He graduated with a Doctor of Philosophy in 1969 from Washington State University.

If there was an organization related to soils, botany, cattle or grasslands, Dr. van Ryswyk was involved with it. Albert was a member of the BC Institute of Agrologists and recipient of a Recognition Award in 1998 for his outstanding leadership and professionalism within the agricultural industry. He was a life-member of the Society for Range Management and president of the BC Chapter in 1983–84. In September 2002, he was honoured with the prestigious Trail Boss Award by the Society for Range Management–Pacific Northwest Section for his lifetime contribution to range management.

"He was a real gentlemen and very well respected," said Don Blumenauer, Provincial Range Specialist for 26 years and long-time friend of van Ryswyk.

"One thing about Al, when he retired he continued to do a lot of work," added Blumenauer. "He would never turn down anyone's request for help—he'd come out and do workshops and help students by sharing his knowledge. He was always a wealth of information."

"Van," as his friends referred to him, led four or five groups on tours of the grasslands (especially Lac du Bois) each year, relaying good, accurate stories about the grasslands' history and ecology, much to the enjoyment of all those that attended the outings.

Albert will be missed by the entire grassland community.

On November 26, 2002, the Royal Bank generously presented the GCC with a cheque for $1,000. Presenting the award are (left to right) Gillian Brown-John, Bill Schmietenknop and Glenda Gesy.

Range Club to compete

by Shawna Sangster

Students of the Bachelor of Natural Resource Science program at The University College of the Cariboo in Kamloops, BC have initiated a range club on campus. The focus of this club is to educate these students and provide them with the skills required to make sound management and conservation decisions as the range managers, foresters, and research ecologists of the future.

Club mentors Peggy-Jo Broad, Darren Bruhjell, and Wendy Gardner have been busy promoting the club and trying to secure funding to aid in the development of club activities at the local and international level. The club has been busy in preparation for the 56th Annual meeting for the Society of Range Management in Casper, Wyoming (Feb 2 to 6) and is looking forward to representing Kamloops and British Columbia at the international level. The current focus in the club is to learn how to properly identify more than 300 species of grasses, forbs and shrubs whose presence or absence in grasslands across North America have management

Call for Members

Last month the GCC sent letters to everyone whose membership had expired. This is just a reminder that if you have not renewed yet, we urge you to fill out that renewal/membership form as soon as possible. As a young charity, the GCC needs your help in order to continue providing a strong voice for grasslands in British Columbia. Currently, the GCC has 115 individual members and 12 corporate members. This year we are aiming for 300 individual and 30 corporate members by the end of 2003!

Join in the effort to conserve BC's precious grasslands by joining the GCC today or, if you are already a member, please forward the membership coupon to a friend.

Please Note: Your membership is no longer based on the calendar year. As of January 1, 2003, membership is valid for a 12-month period from the month you join or renew.

internationally

implications. The club will also focus on the development of strong knowledge-based writing skills so students can participate in the Undergraduate Range Management Exam at the SRM annual meeting.

The club is in its infancy and the majority of students currently involved are in their senior year, however, it is actively encouraging those who are new to the program at UCC to become involved now to strengthen the club for the future. UCC Range Club members would like to take this opportunity to express their willingness to participate in conservation and research projects as volunteers and stewards to the land. If you have any questions or comments please contact us at: UCCrangeclub@hotmail.com

Shawna Sangster is a fourth year Bachelor of Natural Resource Science student at The University College of the Cariboo in Kamloops, BC. She can be reached at (250) 372-7171.

Judy Guichon, seventh from left, at the Canadian Cattlemen's Association (CCA) Semi-Annual Meeting and Convention in Winnipeg. PHOTO COURTESY OF THE CANADIAN CATTLEMEN'S ASSOCIATION

Guichon family wins National Environmental Stewardship Award

The philosophy of leaving the land in better condition for the next generation takes on new meaning when the family has been ranching that land for over 130 years. The winner of the eighth annual National Environmental Stewardship Award for cow-calf producers is the Guichon family of Gerard Guichon Ranch Ltd., Quilchena BC. The award was presented on August 8, 2002 at the Canadian Cattlemen's Association (CCA) Semi-Annual Meeting and Convention in Winnipeg, MB. The Environmental Stewardship Award is presented each year to a Canadian cattle producer doing a particularly outstanding job of protecting and enhancing the environment.

The original Guichon ranch in the Nicola Valley of southern British Columbia was started in the late 1860s by Lawrence Guichon. In 1979 Laurie and Judy Guichon became the fourth generation to manage the farm. The Guichons adopted holistic resource management principles, which the family carried on following Laurie's untimely death in 1999.

Water developments and the establishment of electric fencing have allowed the division of extensive grasslands into manageable pastures. This enables the use of a successful short duration grazing system. Each spring they plan the movements of cattle between pastures. Included in this plan are needs of nesting ducks and sharp-tailed grouse. Re-routing the cattle to another pasture in a timely fashion to protect wildlife habitat is an important consideration.

The herd size is adjusted based on the weather and the amount of grass available. By doing this, the ranch is able to graze the cattle from 290 to 300 days a year rather than relying on hay or other feed. Each pasture is given a rest period to allow the grasslands proper recovery time.

Gerard Guichon Ranch supports efforts to preserve the burrowing owl, a species at risk. Their ranch is one of the sites where artificial burrows were established to hatch young burrowing owls that were later banded and released. Owls reared on the ranch have been re-introduced to grasslands throughout British Columbia.

Judy has been an active member of the Grasslands Conservation Council since its inception and is now Treasurer on the GCC Board of Directors.

BC Grasslands Mapping Project: A Conservation Risk Assessment update

Species citing and map modelling

Ryan Holmes, GIS Analyst, Grasslands Conservation Council of BC

A racer snake enjoying the view in the south Okanagan.
PHOTO BY BOB LINCOLN

It seems BC's Southern Interior valley bottoms are a hot ticket. These are popular sites for many species, some preferring the warmth, others the water, and still others the water-skiing. These areas may seem open and extensive at a glance, but as *Homo sapiens* continue to flood the valleys, there is less and less elbow room available for all creatures. With a sizeable human population and approximately 33% of BC's rare and endangered species living within the grassland valley bottoms, it's plain to see that we're in a bit of a pickle.

Nearing its fourth and final year, the BC Grasslands Mapping Project: A Conservation Risk Assessment has begun to focus on identifying these hot spots in more detail and prioritizing where efforts should be focussed to maintain and enhance critical grassland habitat for species at risk. With the land status/range tenure overlays complete, historical maps in the valley bottoms well on their way, and species-at-risk locations to come, the GCC will soon be in a position to fully realize the power and potential of the grasslands Geographic Information System (GIS). The multi-variable modelling arising from the compilation of numerous information layers (land status, forest encroachment, weed distribution, species at risk, etc.) will help the GCC to focus on key grassland habitats and provide recommendations to partners regarding urgent conservation, stewardship and restoration needs. The link between grasslands and species at risk is getting stronger. Whether it is identifying good long-billed curlew habitat on crown grazing tenures, gopher and rattlesnake hibernacula on Indian Reserves, or badger holes on private land, the grasslands GIS will be a useful tool for all.

These are challenging times for the Mapping Project and the GCC as we work towards balancing the need for the communication and extension of mapping work with the need to deliver end products. The response from partners and other organizations has been overwhelming, indicating that the project has already been a major success. I look forward to the final year of this important project with much enthusiasm, spurred on by the grasslands desire.

If you require additional information on the BC Grasslands Mapping Project, contact Ryan Holmes, GIS Analyst, at (250) 371-6209 or ryan.holmes@bcgrasslands.org

The GCC would like to thank its partners for their generous contributions to the BC Grasslands Mapping Project and the Characterization of BC's Grasslands:

- Ministry of Water, Land and Air Protection
- Ministry of Sustainable Resource Management
- Ministry of Forests
- Habitat Conservation Trust Fund
- Vancouver Foundation
- The Real Estate Foundation of BC
- Wildlife Habitat Canada
- The Nature Trust of BC
- Columbia Basin Trust

Characterization of BC's grasslands

The GCC has recognized that a consolidated ecological description for all the grasslands and grassland communities in BC is not currently available. Furthermore, information about species at risk and other wildlife that depend on these grasslands is not readily available or integrated in one document. To fill this critical need, the GCC has recently hired a contractor to compile and consolidate this grassland information for all the grasslands in each region of the province. The contractor is just finishing up a draft characterization report for GCC review and comment, and will then produce the final document by the end of March, 2003.

Once completed, this project will enable the GCC to inform people and organizations about the different types of grasslands around the province, their values, uniqueness and biodiversity. Once again, the GCC is setting out to do what has not yet been done, so we are very excited to have begun this important conservation initiative.

Once complete, "the Characterization of BC's Grasslands" will be integrated into the other major components on the GCC website, namely "Understanding Grasslands," an ecological overview of a typical grassland cross-section; and "Where are BC's Grasslands?," the up-to-date results, statistics and associated maps of the four-year BC Grasslands Mapping Project.

(See "BC Grasslands Website" on page 23 and "BC Grasslands Mapping Project: A Conservation Risk Assessment" above)

Off road vehicle (ORV) licensing and registration issue

In the wake of the August 2002 issue of *BC Grasslands* magazine there has been a great deal of exciting progress on the ORV licensing and registration issue. The GCC has teamed up with the following groups to address the need for improved management for all off-road vehicles in BC:

- Quad Riders Association of British Columbia (ATV/BC)
- Ministry of Sustainable Resource Management
- Ministry of Water, Land and Air Protection
- Ministry of Forests
- Federation of British Columbia Naturalists
- Canadian Parks and Wilderness Society–BC
- British Columbia Cattlemen's Association
- Greater Kamloops Motorcycle Association
- Royal Canadian Mounted Police

Together, these groups have created the Coalition for the Licensing and Registration of Off Road Vehicles (ORVs) and selected Bruno Delesalle (GCC) and Beverly Felske (ATV/BC) as co-chairs. The Coalition's mandate is to achieve provincial licensing and registration of ORVs and improved management of all off-road vehicles in British Columbia. Within the next few months, the committee will be:

- working closely to secure support from MLAs, Ministers and other grassland user-groups;
- hiring a consultant who will produce a document to assist government in developing an off-road vehicle management strategy, including legislation and various delivery mechanisms for licensing and registration of off-road vehicles in BC; and
- strategizing on the implementation of an off road vehicle strategy.

While this process in underway, the GCC will continue to inform government and other interest groups about the urgent need for a system of licensing and registration as well as the need for an effective educational process as a means to achieve environmentally responsible use of off-road vehicles.

Back to our GRASSroots
Heathy Grasslands Workshop

Big Bar Guest Ranch, June 19 to 22, 2003

Mark your calendars and shine up yer' boots, because the Grasslands Conservation Council of British Columbia has set the dates for its annual gathering. For this year's event, we're heading back to the Cariboo region, where the GCC was first conceived back in 1996. We want to get everyone out on some healthy Cariboo grasslands, visit an example of a well-managed ranching operation, and spend some time out on the land for which we all care so much about.

***Back to our GRASSroots* is going to be a lot of fun and a great opportunity to learn more about grasslands and get together with ranchers, grassland enthusiasts and experts from around the province.**

Keep your ear to the ground for more details about this year's event—a detailed agenda will be available in March and posted on the GCC website (www.bcgrasslands.org). For more information, contact Taylor Zeeg, Communications and Extension Co-ordinator at taylor.zeeg@bcgrasslands.org or (250) 374-5787.

We look forward to seeing you there!

Note: The June 2004 Symposium will focus on the findings of the Subdivision and Development problem analysis currently being developed by the GCC. The 2004 event will target regional and district-level planners and critically examine the issues surrounding urban and rural development and its effect on grasslands. Stay tuned to the GCC website for updates on this issue.

BC Grasslands website

www.bcgrasslands.org is on the verge of becoming the most comprehensive source of grassland-related information available to the public. Within the next two months, the GCC website will house a fully interactive map network of BC's grasslands and the statistical results of the BC Grasslands Mapping Project to date.

In addition to the mapping component, there will be a fully interactive "Understanding Grasslands" educational component. The GCC has just contracted Mariposa Trails to produce the interpretive/educational text and images for this component and it should be on www.bcgrasslands.org by the end of March. This is an exciting step, because there will finally be a one-stop website where users can access an ecological overview of grasslands in British Columbia.

"Understanding Grasslands" will offer visitors a virtual experience of the nine grassland plant communities in a typical grassland cross-section and their associated features. A key part of the "Understanding Grasslands" component will be the "Species-at-risk Resource Room." This virtual library will contain profiles and images of nearly 100 species at risk, both provincially and federally, that depend on grasslands for survival.

For users who want more in-depth information about our grasslands, there will be links and portals to the characterization data that is currently being compiled (see "Characterization of BC's grasslands"). Detailed maps and the statistics generated by the BC Grasslands Mapping Project: A Conservation Risk Assessment will also be featured and linked throughout our website.

To follow these new additions will be a "Sustainable Range Management" component. In this section, range managers will be able to access information on sustainable ranching and the information generated by the Hamilton Commonage Grassland Monitoring Project.

The GCC would like to acknowledge the following partners for their generous contributions to the website:

- **Beef Cattle Industry Development Fund**
- **Ministry of Forests**
- **Ministry of Water, Land and Air Protection**
- **Conservation Data Centre.**

Subdivision and development campaign

Subdivision and development of our grassland land base is an increasingly significant threat to grasslands and a priority issue for the GCC. We are in the process of initiating a problem analysis of this complex issue by working with key stakeholders and conservation interests to define the problem, solutions and potential conservation tools that will assist NGOs and governments in responding to this growing threat to grasslands.

The problem analysis will form the basis for the June 2004 Sustaining Healthy Grasslands Symposium and will focus on the role of regional and local government in grassland conservation and stewardship.

GCC Forges New Vision for 2003–2005

The GCC Board of Directors and staff gathered in Kamloops on October 29–30, 2002 to review GCC progress over the past three years and give consideration to where we are going in the next three to five years. Sandra Bicego, from Dovetail Consulting facilitated the two-day event and is now working with the GCC Board of Directors and staff to develop a new strategic plan that will give direction for our programs for the next three to five years. We are all working very hard to have the strategy complete by March 2003.

A very big thank you to all Board members for the significant amount of time and effort devoted to developing the vision behind the strategy and the document. As well, a sincere thank you to Sandra Bicego for a tremendous job in pulling all this together; we could not have done this without your help! The strategic planning effort was made possible by a very generous anonymous donor…many sincere thanks!

Strategic planning, although difficult, is an important process that will benefit us in many ways for the next three years and beyond.

Developing an invasive weed strategy for BC

The GCC believes that a province-wide invasive weed management strategy is key to effectively addressing the looming and increasingly serious weed problem in BC.

The GCC, along with several government agencies and non-government groups, is actively participating in a new initiative led by the Fraser Basin Council to initiate the development of a province-wide invasive weed management strategy. Based on input from over 100 interest groups, First Nations, industry, and government agencies, a proposal for the development of a province-wide strategy was initiated in fall 2002. Progress is being made. A meeting being held in mid-February will establish a broad-based advisory committee and a technical working group that will guide the development of the strategy. The goal is to complete the invasive weed strategy by the end of 2003 and begin implementation in spring 2004.

The GCC will continue to play an active role in this initiative. For more information contact Gail Wallin, Fraser Basin Council.
#4 – 72A South Second Avenue
Williams Lake, BC V2G 1H6
Tel: (250) 392-1400
Fax: (250) 305-1004

A grassland monitoring plan in the works

The GCC hired a consultant to compile and evaluate existing monitoring information and methodologies for the northwest quarter of the Hamilton Commonage grasslands. A technical committee, including the Guichon Ranch, have worked very hard to develop clear monitoring objectives and are currently completing the Phase One Monitoring Plan. Base-line monitoring will begin this spring. Utilizing the baseline monitoring at Hamilton Commonage, the GCC proposes to test a more intensive monitoring method or approach with a less intensive approach that can be applied by the ranching community. Our goal is to provide a scientifically tested method for monitoring grasslands that is suitable and practical for ranchers and range managers—a more qualitative approach to range monitoring.

Base-line and long-term grassland monitoring will assist the GCC and partners to gain knowledge about grassland ecosystems, their ecological succession, long-term successional trends, and the effects of specific management practices on grasslands and associated ecological systems. For more information contact Bruno Delesalle at(250) 374-5787 or bruno.delesalle@bcgrasslands.org.

The following documents will be available on the GCC website in March 2003:

- Hamilton Commonage Grassland Monitoring Proposal
- Final Report: Working Towards a Long-term Monitoring Strategy for the NW Quarter of the Hamilton Commonage
- Monitoring Plan (Phase One) for Hamilton Commonage Grasslands: selected sites (2003–2004)

The Hamilton Commonage Monitoring Project is funded by:

- The McLean Foundation
- Ministry of Water, Land and Air Protection
- Grazing Enhancement Program
- The Brink/McLean Grassland Conservation Fund

Classification of BC's grasslands

Despite the significance of BC's grasslands as an endangered ecosystem, the province lacks a comprehensive classification system for grasslands and grassland-associated habitats. Site-specific grassland classification initiatives have been undertaken across the province for the dominant valley grasslands, yet many gaps still remain in sizable grassland areas. These classifications have focussed primarily on late-successional grasslands while the large proportion of seral or disturbed grasslands have not been adequately classified.

In response to this need, the GCC is developing a proposal to work with government and other groups to undertake this initiative, which includes a complete site- and vegetation-based classification of BC's late seral grasslands with an accompanying seral stage classification.

Grassland classification is crucial for government (provincial, national and international), ranchers, non-government organizations and conservation groups involved in the management of grasslands. Baseline information on the distinct grassland zones and communities that exist across the province is vital if these groups are to effectively plan for sustainable land management practices and manage for grasslands conservation.

GCC fund raising update: Building blocks for our future

We have wrapped up the 2002 fund raising campaign, raising about $10,000. During the campaign, we contacted over 30 individuals and businesses. This is a great achievement for a first attempt. An individual and corporate gift program takes a great deal of time and effort to build, but can be extremely rewarding.

The GCC Board of Directors and staff thank all the volunteers for their generous help during this campaign. Through volunteering, they demonstrated their concern for BC's grasslands in a very positive way.

We are now in the last quarter of the GCC's fiscal year and our fund raising efforts at this point are geared toward identifying and soliciting foundations to secure grants that will allow us to continue funding our projects for the next fiscal year.

In April, we will also begin the second annual fund raising campaign. Our goal is to continue to identify, cultivate and solicit financial support from individuals, organizations and businesses and to increase our membership base. This annual program will ensure that the GCC becomes less dependent on government and foundation grants by establishing a diversified funding base, and enable the GCC to effectively address grassland issues, build a strong awareness about BC's most endangered ecosystem, and continue to deliver on key grassland conservation and stewardship initiatives on the ground. The future of BC's grasslands depend on a strong alliance of organizations and individuals willing to collaborate for stewardship and conservation.

Sylvie Veilleux, new GCC Development Officer

Sylvie Veilleux was hired in fall 2002 as the new GCC Development Officer to develop and implement fund raising strategies and help the GCC increase its membership base. With over five years of fund raising experience, Sylvie has worked extensively with NGO boards and executive directors and developed a strong knowledge of membership and donor programs, and corporate funding. Sylvie is formally trained in fund raising and has completed a course with the National Society of Fund Raising Executives. We anticipate Sylvie's experience and professionalism will greatly increase the GCC's ability to deliver its many conservation initiatives and programs. Welcome Sylvie!

Websites

Endangered Species in British Columbia

http://srmwww.gov.bc.ca/atrisk/

Provided by the Ministry of Sustainable Resource Management and the Ministry of Water, Land and Air Protection, this site is a gateway to:

- get detailed information on rare and endangered species in BC through the BC Species Explorer
- generate lists of BC plant and animal species and link to related documents
- find out how it is decided that a species or plant community is endangered
- find national and global information about species in BC and beyond
- link to provincial agencies working with endangered species
- link to other agencies working with endangered species
- locate relevant reports and publications
- read legislation pertinent to endangered species in BC

The Grasslands Conservation Council of British Columbia

www.bcgrasslands.org

Visit this website to view the synopsis of a panel discussion about species at risk held at GCC's Sustaining Healthy Grasslands Symposium: Species and Spaces at Risk in Cranbrook, June 13 to 15, 2002. Once at the homepage, click "Projects" then "June 2002 Symposium" to download the synopsis.

Coming soon is a new "Understanding Grasslands" website component, a broad ecological overview of the ten plant communities in a typical grassland cross-section, as well as a grassland "Species-at-risk Resource Room." The virtual library will feature nearly 100 profiles of red-listed and COSEWIC-listed species downloadable as PDF files.

South Okanagan Similkameen Conservation Program

www.soscp.org

This area, with some of the greatest concentrations of species at risk in Canada, is recognized as one of the country's three most endangered natural systems. The South Okanagan Similkameen Conservation Program was developed to focus conservation efforts to maintain this natural system and the great variety of plant and animal species that exist within it.

The SOSCP website has an excellent component entitled "Species Information," with links to everything concerning species at risk in this fragile region of BC.

COSEWIC

www.cosewic.gc.ca

COSEWIC (Committee on the Status of Endangered Wildlife in Canada) is a committee of experts that assesses and designates which wild species are in some danger of disappearing from Canada. From this site, you can access an Endangered species listing, database, status reports and candidate list.

Environment Canada Environnement Canada

Environment Canada

http://www.speciesatrisk.gc.ca/species/index_e.cfm.

Visit Environment Canada's Species at Risk website for everything you want to know about species at risk at the national and even international level. Some of the information available includes:

- Canada's strategy
- search tools
- program
- international efforts,
- news releases, publications and newsletters

Help needed to save critical grassland habitat

The Land Conservancy of BC
The Land Conservancy of BC is raising funds to complete the purchase of key grassland habitats on St. Mary's Prairie between Kimberley and Wycliffe. The purchase, which is taking place in six phases over three years, will protect 1999 acres of ponderosa pine grassland.

"We have a tight timeline here and we must raise cash donations as soon as possible to avoid losing this important habitat," says Kathleen Sheppard, TLC's Kootenay Region Manager. "This is a great opportunity for British Columbians to contribute to protecting habitat in their own backyard."

The Land Conservancy is appealing to all agencies and members of the public who care about protecting grassland habitats to help raise the funds needed to purchase this critical property.

"This property contains key habitat for a number of endangered species in the area, such as badgers and Lewis' woodpecker," says Sheppard. "It stretches from the St. Mary River to upland grasslands and is an important wildlife corridor." This purchase is a significant step for The Land Conservancy in protecting key holdings that represent the diversity of species and habitats in the Trench.

To date, support for this purchase has come from the Donner Canadian Foundation, the Habitat Conservation Trust Fund, the Kootenay Wildlife Heritage Fund, Mountain Equipment Co-op, British Columbia Conservation Foundation, Columbia Basin Trust, Columbia Basin Fish and Wildlife Compensation Program, The Land Conservancy of BC and numerous private donors.

The Land Conservancy of British Columbia is a member-based charity working to protect the special places of BC. Tax-deductible donations towards the purchase of this East Kootenay grassland property can be sent to The Land Conservancy of BC at:
251 Spokane Street
Kimberley, BC V1A 2E6
or phone (250) 427-4711 for more information.

Kathleen Sheppard, Kootenay Region Manager for The Land Conservancy of BC, accepts a cheque from Carmen Purdy of the Kootenay Wildlife Heritage Fund.
PHOTO BY ROB MILLER

East Kootenay Conservation Program

The EKCP was created in response to the need for having better co-ordination and unison on the issues that face the East Kootenay's in regard to private land stewardship and conservation.

It is the EKCP's vision to have landscapes that sustain biological diversity and ecological process, support economic and social well being, and have communities that demonstrate the principles of environmental stewardship for future generations in the East Kootenay.

For more information, contact EKCP Program Manager, Darrell Smith at (250) 342-3655 or ekcp@cyberlink.bc.ca

200 grasses

Don Gayton recently updated the Nelson Forest Region's Range program herbarium, and it is now available for consultation or study. The herbarium contains roughly 700 accessions, of which about 200 are grasses. The specimens are primarily from the grassland and associated riparian areas of the Rocky Mountain Trench and the Boundary (Kettle, Christian and Granby River valleys), with incidental specimens from farther afield. The earliest accession is dated 1937, and there are a number from the late 1940s. Some notable items are a *Cannabis sativa* from Rock Creek, and *Schizachyrium scoparium* from the Bull River. Contributors include Alf Bawtree, David Blundon, A. & O. Ceska, W.L. Eastham, Jim Milroy, Leon Pavlick, Bill Pringle, E.R. Smith, P.D. Warrington, and others.
Contact information:
Don Gayton, M.Sc, P.Ag.
Ecosystem Management Specialist,
Forest Research Extension Partnership
518 Lake Street
Nelson, BC V1L 5A9
Tel: (250) 354-6244
Fax: (250) 354-6250

News & Upcoming Events

Antelope brush Habitat Restoration Conference
March 28 to 30, 2003, Osoyoos
Hosted by the Osoyoos Desert Society Focus will be on ecology and restoration of the antelope brush ecosystem. Contact Joanne for more information.
1-877-899-0897 or
mail@desert.org

BC Cattlemen's Association Convention 2003
May 22, 23 & 24, Kamloops
Kamloops Stockmen's Association has been chosen to host the 75th Annual General Meeting and Trade Show to be held at the Best Western Hotel in Kamloops, BC, May 22 to 24, 2003. For more information, contact Deborah Ponto.
(250) 672-0158 or
d_dponto@telus.net

International Okanagan Ecosystem Conference
June 22 to 25, 2003, Penticton
Making Ecosystem Connections: Partnerships for a Re-stored Okanagan Basin
Building on the 2001 conference "Aquatic Ecosystem Health and Fisheries in the Okanagan–Similkameen Basin," and the 2002 "Ecosystem Based Management of Natural Resources in the Columbia River Basin," the COBTWG welcomes you to participate in this upcoming transboundary conference which will encompass local and transboundary aquatic and riparian issues, and land-based issues affecting aquatic habitat and species in the Okanagan Basin.
Contact Jillian.
(250)707-0095 or
jtamblyn@syilx.org

The Leading Edge
Stewardship and Conservation in Canada National Conference
July 3 – 6, 2003, University of Victoria
Following the success of Canada's first national stewardship conference, "Caring for our Land and Water" held June, 2000 in Guelph, Ontario, a second national gathering of Canada's stewardship and conservation communities is now being planned for July 3 to 6, 2003 at the University of Victoria, Victoria, BC. For more information about the conference, please contact Sheila Harrington at the Land Trust Alliance of British Columbia.
(250) 538-0112 or
info@landtrustalliance.bc.ca

An ethnobotanical perspective

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indicate use of a greater surrounding area.

Perhaps the most important single species of plant to the Ktunaxa in traditional times was the bitterroot. In the East Kootenay, the bitterroot is found entirely within grassland ecosystems (Interior Douglas fir [IDF] and Ponderosa Pine [PP] biogeoclimatic units) in the Rocky Mountain Trench south of Canal Flats. In the past there were many different sites for harvesting the bitterroot; now there are few sites left for those who continue the tradition—this is because of conifer ingrowth, private lands, agricultural tillage, as well as grazing practices and the resultant displacement of the native species, and concerns over environmental contamination from the industrial developments. Most people who recognize the bitterroot know it for its beautiful flower, relatively few know bitterroot as having been a staple food for aboriginal people virtually wherever it grew. In season, the women used to gather large quantities of bitterroot to be stored for the winter. To prepare it, the root is first peeled and then split to remove the bitter "heart." When the root is allowed to dry until the point that it crumbles when squished, it is then ready for storage. To use the dry product, it is added to stews, soups and the like, or prepared as a dessert by cooking in water with lots of sweetener and/or saskatoon berries.

Despite the importance of bitterroot to First Nations' cultures, the species is given little attention by most resource managers. Bitterroot is not considered to be an important food for wildlife, thus wildlife managers don't have a voice for bitterroot. From a habitat standpoint, bitterroot is not considered to be an indicator species in habitat typings—presumably this is due to First Nations' traditional knowledge not being incorporated into such typing. Within the US Forest Service Fire Effects database there is the following statement: "Bitterroot is a colonizer in primary succession." While this statement is undoubtedly true, there is no mention that people likely manipulated the habitat for the bitterroot resource in the past.

In the case of bitterroot, it is obvious from the examples above that there is a real need to link resource managers, such as foresters and agrologists, together with knowledgeable First Nations' members, or their representatives, to share information and perspectives. Such a sharing of information (education) need not necessarily involve the detailed disclosure of First Nations' cultural information. In most cases sharing information at the most fundamental level provides a new context of understanding of the land for those involved. Although bitterroot is a critical cultural resource, it is one example of over 200 different plants used and recognised by the Ktunaxa Nation. There are rationale such as the above examples of why First Nations must be involved in the restoration of the grasslands, and also of significance are the recent court cases that rule that there is the legal obligation to consult First Nations.

Michael has been working with the Ktunaxa Nation for almost six years as an ethnobotanist. Since then, he has expanded the study to include place-name mapping, the recording of legends, as well as the opening of the Aqam Native Plant Nursery, the region's first such business.

Dr. Scudder

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instead they're planning for the next election."

The solution lies, Dr. Scudder believes, in education and stewardship programs. "We have to make a bunch of noise," he says. "We have talk to land owners because the most endangered land is private. I don't think many realize how important the lower elevation grasslands are. But the real secret is to get to the schools, especially the younger kids."

Scudder believes that a viable ranching industry is the other key. "We have to make sure that grasslands don't disappear in the meantime," he says. "Ranchers are our best hope for that. Ranchers are well aware of grazing systems and grassland issues. We need to maintain a vigorous ranching industry, and no more 'ranchettes'."

Despite the obstacles, Dr. Scudder remains optimistic about the future, and is still as excited as ever when he discovers a new bug. "Geoff has lots of energy, always flying off somewhere to a new project. His colleagues just shake their heads," laughs Rob Cannings. "Everybody wonders: where does he get the energy!"

Kathy McCauley is a writer and teacher who lives in the East Kootenay grasslands. You can reach her at mccpress@cintek.com

BC Grasslands Magazine

ISSN 1496-7839

BC Grasslands is a bi-annual publication of the Grasslands Conservation Council of British Columbia (GCC). *BC Grasslands* is intended to serve as a platform for informing readers about GCC activities and other grassland programs across BC and Canada, as well as providing a forum on grassland ecology, range management, grassland conservation and stewardship.

BC Grasslands and the GCC welcome submissions of letters, articles, story ideas, artwork and photographs for each issue. Articles should be no longer than 600 words (300 words for letters to the editor) and submitted as electronic files (preferably MS Word 95 or newer).

BC Grasslands reserves the right to edit submissions for clarity and length. However, every effort will be made to work with contributors to ensure content remains unchanged. Deadline for submissions for the next issue of *BC Grasslands* is May 31, 2003.

Contributions, comments and inquiries can be made to:
BC Grasslands,
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- CPAWS–BC
- Environment Canada
- Columbian Sharp-tailed Grouse Stewardship Program
- Friends of Ecological Reserves
- Conservation Data Centre
- East Kootenay Wildlife Association
- Federation of BC Naturalists

Artists' Corner

Nicole M. Brand

Nicole M. Brand is a local ecologist who has been working in the Kamloops area since 1994. She has been a part of numerous projects involving ecosystem classification, silviculture research, and various wildlife studies. In her spare time she enjoys dabbling in the arts. "I love to mix the natural world with drawing, painting and pottery. A close look always reveals the incredible detail, diversity and unique beauty that nature has to offer."

Donna Falat

Donna Falat lives in Kamloops and works as a professional biologist. Drawing is something she has always loved to do. Over the past ten years she has produced plant and wildlife drawings and landscape cross-sections for Ducks Unlimited, the British Columbia Forest Service, and the Ministry of Water, Land and Air Protection. Donna can be reached at (250) 579-1837.

Call for Artists

After a successful and inspiring art show at the Sustaining Healthy Grasslands Symposium in June 2002, it's obvious that the grasslands community has its share of gifted artists! As the GCC continues to grow by leaps and bounds, there is an ever-present need for grassland artwork for our publications and other communications projects. Images can be drawings, photos or paintings of your favourite grassland landscapes or species.

For all you ranchers out there, we'd love to see some of your artwork portraying working grassland landscapes. Please contact our Communications and Extension Co-ordinator, Taylor Zeeg, with your offerings, ideas and inspiration. (250) 374-5787 or taylor.zeeg@bcgrasslands.org

In the next issue of BC Grasslands...

Range Management and BC's Ranching Legacy

Working together for the conservation of BC's grasslands

The August 2003 issue of BC Grasslands magazine will focus on past, current and future challenges as they pertain to range management and ranching in British Columbia. This issue will focus on sustainable range management; the ranching legacy in BC, including the importance of ranching to the economic, social and ecological fabric of British Columbia; land stewardship; and the importance of keeping working ranches working.

We encourage submissions of both articles and photos. The submission deadline is May 31, 2003. For more information, please contact Taylor Zeeg at taylor.zeeg@bcgrasslands.org

Please send your submissions to: *BC Grasslands*, 954 A Laval Crescent, Kamloops, BC V2C 5P5
Tel: 250 374-5787
Fax: 250 374-6287
E-mail: gcc@bcgrasslands.org

Thank You

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The Real Estate Foundation of British Columbia
Friends of Ecological Reserves
Forest Service British Columbia
BCWF B.C. Wildlife Federation – East Kootenay Wildlife Association
Columbian Sharp-tailed Grouse Stewardship Progrm