

Nature Alberta

C E L E B R A T I N G O U R N A T U R A L H E R I T A G E



SEE THE STORY PAGE 20. LORNE FITCH

feature article

Hearts and Minds – Developing a Prairie Story



WOLVES AND WOODLAND CARIBOU: SCIENCE OR POLITICS? SEE STORY PAGE 4.

G. PROULX



A LEUCISTIC PILEATED WOODPECKER.

JANET MCGUIRE



*Nature Alberta:
Celebrating our natural heritage*

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- (a) To encourage among all Albertans, by all means possible, an increase in their knowledge of natural history and understanding of ecological processes;
- (b) To promote an increase in the exchange of information and views among natural history clubs and societies in Alberta;
- (c) To foster and assist in the formation of additional natural history clubs and societies in Alberta;
- (d) To promote the establishment of natural areas and nature reserves, to conserve and protect species, communities or other features of interest;
- (e) To organize, or coordinate symposia, conferences, field meetings, nature camps, research and other activities whether of a similar or dissimilar nature;
- (f) To provide the naturalists of Alberta with a forum in which questions relating to the conservation of the natural environment may be discussed, so that united positions can be developed on them, and to provide the means of translating these positions into appropriate actions.

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Editor's Page

BY BROOK SKAGEN (ASSISTANT EDITOR)

THE MIRACULOUS *MISUMENA VATIA*

As the flowers of spring reach from the thawing soil, so too awake most of Alberta's diverse invertebrates. Though these small and sometimes feared organisms are often scowled upon or overlooked, the extreme lengths to which many have adapted to their environments are truly striking and in need of commendation—even amongst the arachnids.

The Goldenrod Spider (*Misumena vatia*), one of many species of crab spiders in Alberta, is a medium-size arachnid (3-9mm) varying from white to brilliant yellow. The most vivid of crab spiders, the goldenrod is often found from spring through fall atop white and yellow flowers as it awaits its prey, as opposed to the bark of trees and shrubs like its more drab relatives. Remarkably, *M. vatia* is the province's only arachnid capable of changing its



THE PAIRED MARKINGS OF THE GOLDENROD SPIDER DISTINGUISH IT FROM OTHER ARACHNIDS.

JACEY FELLMAN 2016

pigmentation, a physiological phenomenon which is not yet understood. The Goldenrod Spider, through a series of reversible biochemical changes, can blend with the surrounding flora within a single day.

Though common and widespread throughout southern Canada, the United States and Mexico, the inconspicuous spider often inhabits the flowers of urban gardens, roadsides, meadows and prairie fields unnoticed. Like all crab spiders, the goldenrod does not form a web; rather it is a "sit and wait" predator, utilizing its

miraculous adaptability to acquire unsuspecting prey such as flies and Honeybees. The crab spider is also capable of moving backward, forward and sideways; this unique locomotion, as well as long grasping front legs and venomous fangs, make the Goldenrod Spider an efficient predator. The spider is harmless to humans, biting only when distressed, and may provide excellent pest-control for garden enthusiasts, and is therefore an "ornament" to be relished if discovered.



A FEMALE GOLDENROD SPIDER ON A COMMON YARROW PLANT.

LUC VIATOUR 2007

EDITOR'S PAGE cont'd...

The next time you stop to smell the flowers, you might want to take a closer look- you never know what might call the folds of fragile petals and sticky stamens home!

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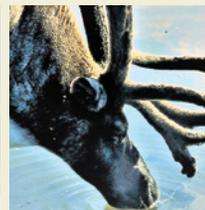


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FRONT COVER

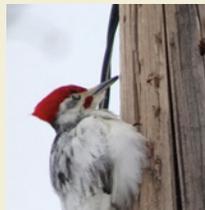
Lorne Fitch has told many important stories in *Nature Alberta*, but "Hearts and Minds – Developing a Prairie Story" might well be his finest. And it's illustrated with images that add immensely to the narrative. We hope you enjoy the story, which starts on page 20.



INSIDE FRONT COVER

A Wolf. A Woodland Caribou. A widespread controversy. Who is right? Gilbert Proulx and fifteen co-signers respond to Stan Boutin's letter in the Winter NA. Boutin was himself responding to

Proulx et al's letter in the Fall NA. Read the letters and make your own decision. Read the latest missive, page 4.



"I was just wondering if you could use a photo of a white/grey Pileated Woodpecker? He is beautiful! Finally got a few good photos of him on our power pole. We have normal Pileated here, but this one certainly stands out."

— Janet McGuire



INSIDE BACK COVER

This year, Nature Alberta's Edmonton Hypothermic Half Marathon attracted more volunteers than ever before and saw almost 900 people take part during two days

of winter's unkindest weather. Despite the bone-chilling temperature, spirits remained high. Volunteers hung in there to encourage racers, had fun and saw both races to the finish. We can't thank everyone enough for your commitment and support.



BACK COVER

A clear, cold stream and Westslope Cutthroat Trout – perfect! Except the trout is quickly heading for extinction in Alberta unless the federal government does what is legally required. The demand for action is on page 13.

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LETTER TO THE EDITOR

Killing Wolves and Farming Caribou Benefit Industry, Not Caribou: A Response to Stan Boutin

In *Nature Alberta* Fall 2016, we wrote an open letter to Premier Notley (Proulx et al. 2016), where we requested that the Alberta Government refrain from predator control and fencing caribou for recovering the Little Smoky caribou population. In addition, we argued that recovery can and should proceed by means of habitat conservation, restoration, and connectivity. In the Winter issue of *Nature Alberta*, University of Alberta biologist, Stan Boutin, responded to our Open Letter (Boutin 2017) and defended the Alberta Government's (2016) costly program to which he is an important contributor (Pascoe 2016).

Boutin contended that wolf control and caribou fencing should be the centerpieces of a plan for conserving the Little Smoky caribou herd. That contention seems to depend on a series of stated and implied claims, the most important of which are:

- 1) Wolves are too numerous and are the major cause of the Little Smoky caribou population decrease and failure to recover.
- 2) Wolves have greater access to caribou range due to seismic lines and roads.
- 3) Predator control is a more appropriate means of

protecting caribou than habitat protection because it is less expensive and more achievable technically and politically.

- 4) Wolf control over the past 12 years has stabilized caribou abundance.
- 5) Fencing is a critical element of any attempt to restore the caribou population.

Herein, we evaluate each of those claims. We show that each claim is questionable and that scientific evidence does not support Boutin's (2017) assertions. We also bolster evidence for our previous contention that habitat

conservation and recovery is the appropriate means of protecting caribou from extirpation.

ARE WOLVES TOO NUMEROUS AND THE MAJOR CAUSE OF CARIBOU DECREASE?

The ill-fated status of the Little Smoky caribou population in Alberta has been well known for decades. Nearly 30 years ago, Edmonds (1988) reported the decrease of the population caused by habitat loss and fragmentation. Notably, the number of wolves in Alberta is unknown, and current conjectures are largely qualitative and anecdotal. No rigorous quantitative wolf surveys have been conducted to assess wolf

"NO RIGOROUS QUANTITATIVE WOLF SURVEYS HAVE BEEN CONDUCTED TO ASSESS WOLF DENSITIES SINCE 1991" G. PROULX



densities since 1991 (P. Frame, Provincial Carnivore Specialist, 7 February 2017, personal communication).

In early winter of 2005, the density of wolves in the Little Smoky range was estimated at 25 wolves/1,000 km² (Hervieux et al. 2014). Late winter density was an estimated 14 wolves/1,000 km², assuming a 45% rate of mortality. The average winter pack size of wolves was similar to that recorded historically (Kuzyk et al. 2006). Potential prey for wolves included elk, mule deer, white-tailed deer, moose, bighorn sheep, mountain goats, caribou, beaver, and snowshoe hare. No studies have shown that wolf numbers are “too high” or that wolves are limiting the Little Smoky caribou population. In fact, no contemporary studies on food habits, rates of predation, and wolf densities have been carried out (M. Besko, Director, Wildlife Management, Alberta, 8 February 2017, personal communication).

Although caribou have co-existed with wolves and other predators for thousands of years, interactions between predation and habitat alteration (timber harvesting, linear corridors, alternate prey, etc.), human activity (recreation, road use, etc.), and weather are complex and confound the relationship between caribou and wolves. Undoubtedly, wolves kill and feed on caribou, but inferring from studies conducted elsewhere that wolf predation is the major cause of the Little Smoky caribou population decrease is inappropriate. No reliable “rule of thumb” can be used



to manage wolf numbers in landscapes with different prey and predator populations and distinct anthropogenic disturbances. Furthermore, throughout the caribou distribution range, black and grizzly bears have often been recognized as a threat for caribou (Adams et al. 1995; Pinard et al. 2012).

DO WOLVES HAVE GREATER ACCESS TO CARIBOU BECAUSE OF SEISMIC LINES AND ROADS?

In certain snow conditions, wolves will preferentially use seismic lines as travel routes, e.g., when snow on the lines has been compacted by snowmobiles and machinery (Paquet et al. 2010; Proulx, personal observations). Wolves also use seismic lines and forestry roads with shallow snow to scent-mark their territory, or to easily and quickly access specific areas of their home range. However, wolves do not rely on seismic lines to travel across landscapes.

For example, they often prefer travelling through the sheltered forest rather than along seismic lines when snow thickness on the lines exceeds 30 - 40 cm. In her study of spatial dynamics of wolves and caribou in the Little Smoky region, Neufeld (2006) found little evidence that seismic lines were key travel routes for wolves. Notably, proper management of human activities and access can reduce the influence of linear features on wolves and caribou.

In a recent study of habitat use by boreal caribou in northern Saskatchewan, Proulx (2017) surveyed 126 km of lowland and upland forests. Caribou used black spruce-tamarack muskegs and adjacent jack pine stands (similar to habitats of the Little Smoky range). Whereas muskegs and jack pine stands provide caribou with abundant food and cover, the muskeg's difficult terrain, deep snowdrifts and vertical cover impedes the pursuit of caribou by

wolves (Figure 1). Proulx (2017) found that, although wolf tracks were present on all forestry roads and seismic lines with shallow snow accumulations, wolves did not enter muskegs (Proulx 2017). For this reason, we recommended in our Open Letter that muskegs be conserved and properly connected to prevent caribou from having to move outside muskegs where they can encounter wolves.

IS PREDATOR CONTROL A PROPER STRATEGY TO PROTECT CARIBOU?

No, it is not. The decision to kill wolves to save the Little Smoky caribou population was based on economics and politics, not on scientific evidence. Using models with influential but untested assumptions, Schneider et al. (2010) suggested that protecting caribou ranges from the energy and forestry industries at the provincial level (i.e., eliminating all industrial activity) would cost upwards of 100 billion CAD dollars in lost resource revenue, and that restoring habitat on seismic lines (most of them are not within caribou habitat) would cost 100 million CAD dollars. Schneider et al. (2010) suggested that conducting a 50-year wolf control program, with the wildly unrealistic assumption that wolf control would result in an annual woodland caribou population increase of 10%, would only cost tens of millions of CAD dollars. They concluded that, given that wolf control costs are low and the cost of habitat protection is high, attempting to maintain caribou through wolf control alone would be desirable economically.

Consequently, culling wolf populations became the main instrument of the western Alberta caribou recovery program, despite the fact that no evidence confirmed that wolf predation was compromising the recovery of the Little Smoky caribou population.

Killing wolves in the Little Smoky range has been ongoing since 2005 (Hervieux et al. 2014). More than 800 wolves have been killed using ethically unacceptable methods of extermination (aerial shooting, strychnine, and strangling neck snares). These methods do not conform to the Canadian Council of Animal Care guidelines because they cause long and painful deaths of wolves and of the many non-target animals that are also killed (Brook et al. 2015). The program has been unsuccessful, as the number of caribou and the annual growth rate for adult females remained the same as before the wolf control program (Proulx and Brook 2017). Yet, Boutin (2017) and others claimed that wolf control “saved the caribou” despite the lack of scientific evidence to support this assertion.

Removing reproductive wolves can subdivide existing wolf territories and, thereby, increase wolf densities locally through compensatory reproduction and colonization (Ballard and Stephenson 1982; Brainerd et al. 2008; Hayes et al. 2003). Wolf packs with few members often produce more young than large packs, and need to hunt more often (Hayes et al. 2000). Therefore, the overall abundance of wolves does not decrease

even with intense killing, and at times may even increase. Notably, Hervieux et al. (2014) reported a 50% increase in the number of wolves captured by trappers in the culling area compared with pre-culling – a result that is consistent with an influx of new wolves replacing those shot and poisoned. Overall, the findings of Hervieux et al. (2014) contradicted Schneider et al.’s (2010) contention that wolf control would result in caribou population growth. Furthermore, Hervieux et al. (2014) confirmed that the Little Smoky caribou population was increasing slightly even before the killing of wolves began, with the largest rate of growth occurring in the year before the wolf cull started.

DID WOLF CONTROL OVER THE PAST 12 YEARS STABILIZE CARIBOU ABUNDANCE?

We contend that research findings do not support Boutin’s assertion that predator control is important to stabilize and maintain imperilled small subpopulations of caribou. His view seems at least partially based on the questionable and disputed conclusions of Hervieux et al. (2014), which we contend was a seriously flawed study with comparably questionable conclusions. Specifically, their ‘study’ had a sample size of 1 wolf-control treatment (the whole Little Smoky caribou range), and no area without wolf-control treatment within the Little Smoky range, making any inferences from their results dubious. To test if wolf culling stabilized the

population, Hervieux et al. (2014) should have used a systematic study design based on a set of treatments and controls involving small caribou groups, and on a comparison of areas with wolf-control treatments to areas without wolf-control treatments, all within the Little Smoky range. A proper scientific design would have been expensive to implement, but would allow conclusions to be based on statistically supportable evidence.

IS FENCING A CRITICAL SOLUTION TO RESTORE THE LITTLE SMOKY CARIBOU POPULATION?

No, fencing is not a critical solution. Boutin (2017) argued that the proposed caribou-farming program was designed to give the Little Smoky an added boost to achieve population growth. He also pointed out that such a program has not been tried before in Alberta. In fact, such a program has been tried before, and results indicated that farming naive caribou is not the solution to stimulate population growth (Proulx and Brook 2017). In 2006, Smith and Pittaway (2011) captured 10 pregnant females from the Little Smoky population, and held them in a 4-ha pen within the Little Smoky range. One farmed calf died in the enclosure. The other 9 calves were radio-collared and released when they were at least 3 weeks old. Their survival was compared with that of 7 free-ranging calves. Results were not clear, in part due to the small sample sizes and because wolf control was implemented in the study area at the same time.

Survival of the free-ranging calves was actually higher (71% survival) than that of the farmed calves (50% mortality due to bears and unknown causes). The cost at the time was high, being estimated to be \$40,000 /penned calf. The new proposed project will cost \$9 million (<http://www.metronews.ca/news/edmonton/2017/03/16/alberta-announces-caribou-rearing-project-.html>). Information on a similar caribou-penning project in Revelstoke, British Columbia, is difficult to access. Serrouya et al. (2015), however, reported that, after reducing the populations of moose and wolves by 83% and 50%, the survival of farmed caribou calves remained as low as that of wild calves, i.e., about 20%.

Boutin believes that the proposed caribou-farming program is unique because caribou yearlings will be released outside the enclosure. However, a similar program was conducted in Québec where 83 (30 adults, 37 yearlings, and 16 calves) wild caribou were released over a 3-year period in Charlevoix. Stable at the beginning, the population increased from 1978 to 1992, and then steadily declined to a minimum of 61 in 2001. The decline was likely the result of many factors, namely genetics, fecundity, forage quality and availability, habitat modification, and relationship with predator, namely with black bears (St-Laurent and Dussault 2010). Releasing yearlings is not a guarantee of success.

Experience with caribou farming raises many questions about how



WILL ELIMINATING ALL PREDATORS AND COMPETITIVE GRAZERS SAVE CARIBOU?

G. PROULX

the proposed caribou farming could actually work. Training yearling caribou to avoid predation is easier said than done. For an animal to acquire efficient predator avoidance behaviour, training would have to teach the cues that predict the appearance of key predators such as black and grizzly bears, wolves and cougars. Producing conditions in the training context that would adequately resemble those that predict the appearance of predators in a natural situation would be difficult. Likewise, the use of unpleasant stimuli would not properly replicate a predatory event (Griffin et al. 2000). Moreover, caribou-farming experiments do not justify causing pain and suffering to predator species inhabiting the enclosure to save caribou. Proponents of caribou farming provide no evidence that their project will increase caribou survival.

Boutin sees similarities between the proposed caribou farm and the larger Elk Island National Park



(Boutin and Boyce 2016; Boutin 2017). Elk Island National Park is, however, a largely intact natural ecosystem where the fence keeps two populations of plains and wood bison separated, and stops cattle from adjacent farms from entering the Park. Predators can, however, enter or leave the park without fear of being shot, poisoned with strychnine baits, or being neck-snared. Animals are not being farmed in Elk Island National Park; predation occurs, and gene flow exists between wildlife populations of the park and those of the surrounding natural reserves and grazing lands. Perhaps most importantly, the fenced area of the Park does not have widespread industrial activity such as that which will continue in the Little Smoky range during the proposed caribou-farming project. Boutin's suggested project ensures the continuation of unabated industrial activity by substituting the safeguarding of wild free-ranging woodland caribou with a small caribou zoo,

while simultaneously maintaining the illusion that wild caribou are still thriving.

HABITAT CONNECTIVITY AND CONSERVATION IS THE APPROPRIATE MEANS OF PROTECTING THE LITTLE SMOKY CARIBOU POPULATION

Our Open Letter emphasized habitat connectivity and conservation as the most rational and important components for saving the Little Smoky caribou population. We are not aware of any scientists or publications that actually refute this approach on ecological grounds. Concurring with biologists elsewhere (Servheen and Lyon 1989; Rettie et al. 1998), Edmonds (1988) argued that a recovery plan based primarily on habitat conservation and recovery was vital for the maintenance of a sustainable Little Smoky caribou population. Although food is usually not a major limiting factor for forest-dwelling caribou in the boreal forest (Bergerud and Mercer

1989), it may become more important or interact with other limiting factors in highly managed landscapes (Briand et al. 2009; Hins et al. 2009). Thomas et al. (1996) maintained that lichen-rich habitats must be a major component of management plans. Nevertheless, efforts to protect habitat have never materialized in Alberta, even after boreal woodland caribou were listed federally as "threatened" (Thomas and Gray 2002).

While no studies show that wolves critically suppress growth of the Little Smoky caribou population, only 20% of the caribou range meets the requirements for late-winter habitat (and calving habitat appears to overlap with winter habitat). Thus, the carrying capacity of the highly fragmented Little Smoky range is at present very low (Proulx 2015). Habitat conservation is the cornerstone of Environment Canada's (2012) recovery strategy for boreal woodland caribou. Boutin's suggestion that our proposed alternative plan runs counter to widely held scientific opinion is misleading and disregards contemporary conservation and management theory.

Caribou habitat corridors connecting functional muskegs can be re-established within a few years by modifying stands that separate them. Muskegs disturbed by industrial activity and currently unused by caribou because of inadequate vegetation, fragmentation, and disturbance can be restored immediately through thinning, planting of lichen-bearing tamarack and

**OIL AND GAS ACCESS ROAD WITH COMPACTED
SNOW THROUGH CARIBOU HABITAT IN THE
LITTLE SMOKY RANGE. G. PROULX**

black spruce trees, and improved management of industrial activities. Although such muskegs and corridors can increase habitat carrying capacity for caribou immediately, other forested areas that have been clearcut will continue to mature for the long-term re-establishment of the caribou range. Conserving and restoring habitat would increase carrying capacity in the short- and long-term, and is more appropriate than killing wolves that might not be preventing the recovery of caribou. Thus, no ecological barriers exist to restoring habitat for the Little Smoky caribou population. The only challenge is that it requires small concessions by industry to make it happen.

CONCLUSION

The decrease of the Little Smoky caribou population is a result of human activities that adversely altered the caribou's environment. In our Open Letter, we proposed an alternative ecological approach to conserve, restore, expand, and connect critical caribou habitats across landscapes, while maintaining industrial activities that would not compromise the long-term persistence of the caribou population. Our proposed plan would benefit caribou and people, resulting in the immediate integration of wildlife conservation with industrial activities to maintain biodiversity, functional caribou habitats, and the jobs of Albertans. Importantly, our approach favours a comprehensive ecosystem perspective, rather than the outdated and largely unsuccessful



single species management regimes of past decades.

Boutin's letter is very similar to other recurrent arguments advocating for lethal control of many wildlife species around the world (Wallach et al. 2015). What they all have in common is an unwillingness to hold human activities to account and, instead, fall back on the entrenched behaviour of scapegoating wild animals and continue to subject them to inhumane control techniques (Dubois et al. 2017). Such lethal control operations have no scientific or ethical justification. We maintain that any efforts to conserve caribou must be ethically sound and consistent with standards set forth by the Canadian Council on Animal Care. Our goal as wildlife professionals and conservationists is to accommodate human activity and occupancy, while protecting native biodiversity (individuals, species, populations, ecosystems) and the ecological functions and processes that maintain that

biodiversity (Paquet and Darimont 2010). The Alberta Government's projected program to recover the Little Smoky caribou population fails to make humans accountable in important ways, and runs counter to biodiversity conservation by killing many species in a vain attempt to save just one.

Timber and oil and gas activities have been, and continue to be, dominant in the Little Smoky caribou range. The Alberta Government's projected recovery plan does essentially nothing to manage industrial activities effectively within the range. As highlighted by Proulx and Powell (2016) in the journal *Science*, the creation of a predator-free enclosure may be the government's desperate attempt to stimulate (or rather simulate) caribou recovery without jeopardizing industrial activities. Rather than safeguarding caribou habitat, the Alberta Government has opted to cull wolf populations

since 2005 as a politically motivated, low cost attempt to avoid implementing the steps necessary to conserve sufficient critical habitat for caribou. Meanwhile, additional critical caribou habitat has been lost and degraded.

The alternative program that we presented in our Open Letter was based on current scientific evidence (e.g., Proulx 2015),

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assessments (Proulx and Brook 2017), and ethical values (Paquet and Darimont 2010; Dubois et al. 2017). An elementary principle of ecosystem-based conservation has always been the retention, protection, and restoration of key habitats. This principle applies more than ever to the conservation of the Little Smoky caribou population. If normalized, lethal wolf control sends a

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troubling signal to industry that status-quo habitat destruction can proceed as planned in the Little Smoky caribou range. Nonetheless, industry and its apologists prefer that wolves continue to pay the price.

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The original Open Letter that was published in Fall 2016 *Nature Alberta* was posted on Researchgate (a network of scientists from around the world) and more than 300 people reviewed the letter and sent Mr. Proulx supporting emails. I would expect this letter to receive as much (or more) attention.

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ALBERTA ISSUES IN BRIEF

About Whirling Disease

NEWS RELEASE, ALBERTA ENVIRONMENT AND PARKS (AEP)

On August 23, 2016, testing conducted in Alberta by the Canadian Food Inspection Agency (CFIA) confirmed the presence of whirling disease in Johnson Lake in Banff National Park.

On February 10, 2017, the CFIA declared the Bow River watershed infected with whirling disease and the remainder of the province of Alberta a buffer zone. And as of May 1 2017, the CFIA has declared the whole Oldman River watershed infected with whirling disease.

Whirling disease is caused by *Myxobolus cerebralis*, a microscopic parasite of salmonid fish, including trout, salmon and whitefish. The organism possesses a complex lifecycle that requires a salmonid fish and an aquatic-worm, *Tubifex tubifex*, as hosts.

Species such as Rainbow Trout, Cutthroat Trout and Whitefish are particularly susceptible to whirling disease, though impacts of the disease differ among salmonid fish species and in different waterbodies. The severity of whirling disease depends largely on the age and size of the salmonid host. Young fish are most vulnerable, with mortality rates reaching up to 90 per cent. Whirling disease is not harmful to humans or other mammals.

Fish infected with whirling disease may exhibit any of the following observed signs:

- A marked “whirling” swimming behaviour may be observed as

the parasite invades cartilage and impairs the nervous system

- Changes in physical appearance including: Skeletal deformities of the body or head. This occurs when the cartilage of the spine or head is infected at a young age; the tail may be crooked and head cartilage sunken to show a sloped head.
- Colour changes due to nerve compression, so that the tail may appear dark or even black.

AEP issued a Ministerial Order to quarantine all commercial fish culture operations until individual fish farms and hatcheries licensed for salmonids are tested for the presence of whirling disease. The precautionary quarantine of fish farms and hatcheries will help protect Alberta’s fish populations and world-renowned fishing industry by reducing the risk of whirling disease transmission from fish farms and hatcheries to wild populations. The precautionary quarantine will be in place until each facility has tested negative free of whirling disease. Fish farms may resume stocking once they are confirmed to be free of the disease.

If you participate in angling, boating or other water-based outdoor recreation, or you are employed in aquatic research or other work around waterbodies, you can help prevent the spread of whirling disease. Contact the Aquatic Invasive Species Hotline at: 1-855-336-BOAT(2628).

Alberta invests in land and water conservation

MARCH 27, 2017; ALBERTA GOVERNMENT NEWS RELEASE

The province is providing nearly \$9 million to three non-profit groups to protect ranchlands, river habitats and watersheds in southern Alberta. Funding from the Alberta Land Trust Grant Program will go towards six projects throughout southern Alberta, including three large ranches.

“It’s vital that we work together to prevent fragmentation and habitat loss on Alberta’s private land. Land trust organizations partner with landowners to safeguard Alberta’s unique landscape for future generations. By protecting wildlife corridors and biodiversity, we make life better for Albertans.” — *Shannon Phillips, Minister of Environment and Parks*

The Nature Conservancy of Canada will receive \$5.1 million to support the protection of one ranch in the Castle-Crowsnest watershed and another in the Bow area, conserving 6,000 acres (2,430 hectares) of working ranchland.

The Southern Alberta Land Trust Society will receive \$3.2 million for three projects, including the organization’s largest ever - a 3,995-acre (1,600 hectare) ranch in the Pekisko Valley near Longview. Other money will go to protect 907 acres (367 hectares) of wildlife habitat and watershed areas in the Porcupine Hills and near Waterton Lakes National Park.

The Foothills Land Trust, which focuses south and west of Calgary, will use its \$478,000 grant for a conservation easement on between 260 and 320 acres (105 to 130 hectares) of river

valley and riparian habitat along Fish Creek northeast of Priddis.

Five other land trust organizations will also receive funding this year from the program.

For every dollar the Alberta government provides to these projects, the applicant must provide two dollars in value. Over the previous six years of grants,

\$48 million worth of grants have been awarded to nine different land trusts to conserve more than 93,900 acres (38,000 hectares) of land.

Action Demanded on Long Overdue Action Plan

AWA NEWS RELEASE, APRIL 10

Alberta Wilderness Association (AWA) and Timberwolf Wilderness Society, with the Public Interest Law Clinic at the University of Calgary, have written to the federal Minister of Fisheries and Oceans demanding he publish what steps the federal government has taken to date towards completing an action plan for Alberta's threatened Westslope Cutthroat Trout. The deadline set out in the federal Species at Risk Act to complete the action plan, which outlines what the government intends to do to recover the species, was March 31 2015 - making this plan more than 2 years overdue.

"We believe that the federal government is failing to take meaningful steps to recover this threatened native Alberta trout. Protecting and recovering this species and its habitat cannot be done without an action plan," says Joanna Skrajny, AWA Conservation Specialist. "The delay in taking action to protect this species is unacceptable. Even though the government has recognized that Westslope Cutthroat Trout have been in trouble for over a decade, activities that damage their habitat continue."

At least one population is thought to have gone functionally extinct since the species was federally listed as "threatened" in 2013.

Most remaining populations are small, highly vulnerable, and exposed to ongoing habitat damage. Activities that contribute to degradation of their habitat include off-highway vehicle use, clear-cut logging, gas field development, grazing, and mining. In addition to habitat threats, invasive Rainbow Trout are also a major threat to their survival. Recovery requires immediate action.

"This is not the first time we have had to demand that the government fulfil its legal responsibilities under the Species at Risk Act for Westslope Cutthroat Trout," says Dave Mayhood, aquatic ecologist and director of Timberwolf. "In 2015 we had to retain legal counsel and follow a similar course of action to get the federal government to issue a critical habitat protection order when it was long overdue. There



THIS ILLEGAL OHV ROUTE IS LOCATED ON A PIPELINE RIGHT-OF-WAY AND GOES INTO SILVESTER CREEK, WHICH IS CRITICAL HABITAT FOR WESTSLOPE CUTTHROAT TROUT. THIS IS CLEARLY MARKED ON THE OFFICIAL TRAIL MAP AND WITH SIGNS SAYING "OHV USE PROHIBITED," YET IS HEAVILY USED AND ERODED UP TO 1M DEEP IN PLACES. THERE ARE DOZENS OF ERODING OHV CROSSINGS IN THIS DRAINAGE ALONE, AND HUNDREDS IN WESTSLOPE CUTTHROAT TROUT CRITICAL HABITAT THROUGHOUT THE BOW AND OLDMAN RIVER BASINS. D. W. MAYHOOD

is a pattern developing here. These fish cannot be recovered without an action plan, yet the remaining stocks continue to be threatened by ongoing resource extraction and off-road vehicle abuse."

FOR MORE INFORMATION:

Joanna Skrajny, Alberta Wilderness Association, 403-283-2025

Dave Mayhood, Timberwolf Wilderness Society, 403-283-8865

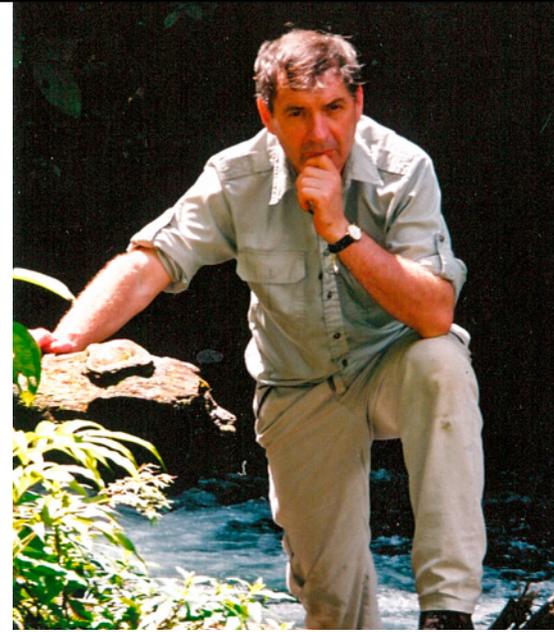


WESTSLOPE CUTTHROAT TROUT IN SPAWNING HABITAT; THESE FISH ARE PART OF A PURE POPULATION INTRODUCED INTO RAWSON LAKE, KANANASKIS COUNTRY D. W. MAYHOOD

FROM A PRESIDENT'S PERSPECTIVE

Bio-diversity— loss by default or protection by design?

BY LU CARBYN



Termed the EARTH SUMMIT, it was a conference held in Rio de Janeiro in 1992 and set out a list of principles for international co-operation and development in protecting the earth's bio-diversity. The convention was attended by most of the world's heads of state at the time and was signed by 152 nations - sounded promising. Much good came out of that conference, for Canada and for the world, but more needs to be done.

I hope the readers will tolerate some wish full thinking by an old timer. Anyone who has been in Alberta for fifty or so years will have experienced extensive declines in bio-diversity and abundance of wildlife in our province. There is not an Albertan, interested in nature, who does not have a long list of examples on how things have changed in the loss of bio-diversity all around us. Agricultural areas (white zone) have been particularly heavily impacted through large scale industrial farming. Now, let's not make the mistake of thinking that changes are un-natural. Ecosystems change without any tampering by mankind. Man's impacts however, have magnitudes of destruction /change in much higher dimensions often resulting in a rapid downward spiralling of bio-diversity.

Consider Sumatra - in 50 years or so, that country has lost more than 80 % of its forests – the culprits logging for hard wood products (you might check out some of your furniture) and palm oil production. Result - Orangutans have declined from about 100,000 to around 6,400 (one estimate I have read about). That calls for a massive intervention — we need strenuous efforts, worldwide, and we need leadership headed by governments, academics, science and research. All too often, NGO's are much more effective in providing leadership than are government or academic institutions. Let's look closer to home. Many academics, when I was a student, were leaders in conservation. Since those days there have been dramatic changes in wildlife abundance and variety.

For me, spring used to mean that every larger waterbody around Edmonton was teeming with waterfowl; Great-blue Herons were once nesting near the town of Toftield (no more), shorebirds filled the sky over Beaverhill Lake in May and then again in mid to late summer (no more). Beaverhill Lake itself is mostly gone; you rarely see a Long-tailed Weasel anymore, anywhere in agricultural areas. I remember every spring, marvelling at the courtship display of the colorful little Buff-breasted Sandpiper – no more, this species only makes a rare appearance in the Edmonton area while en route to its arctic breeding grounds. It is threatened worldwide, and could soon join the passenger pigeons on **the extinct list**.

Drive in any direction from Edmonton and you will likely not find the once ubiquitous and "pesky/delightful" Richardson's Ground Squirrel;

however, go into some (if not all) of the county administrative offices these days, and you will have a friendly person eagerly providing you with strychnine to get rid of these “nasty” gophers. To do so, you are asked to sign a paper, thus committing the person to being a “responsible” citizen for administering this chemical. After that - no more questions asked.

Certainly, ground squirrels can be a headache for rural residents, particularly at high densities. It is unreasonable to be protectionist at all times, and in all places. However, should there not be some privately-owned areas, outside of natural areas, where the large-scale use of poisons, shooting, drowning and habitat destruction of this important element in the ecosystem be disallowed?

“Why not kill them all,” is a question frequently asked by those who destroy the rodents? Just ask someone like Hardy Pletz, a longtime hawk specialist, what the consequences can be. He used to see dozens of nesting pairs of Red-tailed Hawks, while driving from Edmonton to Wetaskiwin; now he is lucky “if I see one or two individuals.” “Gophers” are at the base of the food chain for many other mammalian and avian predators, and that makes them an important element in “healthy” ecosystems.

What about Sharp-tailed Grouse? Once found throughout Alberta, they have become almost completely extirpated in vast areas of the province, thus resulting in recent hunting closures in some

regions. The distribution of the species has been relegated, by default, to largely undisturbed corners of the province, where it is able to thrive, well away from intensive industrial agricultural practices. Grouse, still existing on private lands, are generally more vulnerable to habitat losses than those on public lands. Traditional farming practices had been much more favorable to these birds. Small fields with cover along fence lines, hedges, copses of woodlands and wetlands, in times of “old fashioned farming” practices provided ideal habitat during earlier decades.

Use of agricultural chemicals, in its multitude of forms for many purposes, further impacts survival of these grouse, as it does other species. At some point in the future, we may well arrive at critically low levels for many more species than just Sharp-tailed Grouse and Red-tailed Hawks – to quote Lorne Fitch, “yesterday’s abundant species can become tomorrow’s imperiled ones,” at which time we will be spending money on the recovery of an endangered species. Some 44 % of migratory bird species breeding in the boreal forests, and wintering in South America, have experienced declines in numbers. The declines of some of the birds, nesting in the mixed grasslands of the Canadian prairies, have undergone even greater losses in the last 40 years. To be fair, in contrast, a smaller percentage of species, have actually increased in numbers, due to changing conditions created by man’s activities.

For people who have not experienced the abundance of those “yesteryears”, we, as a society generally, tend to be perfectly accepting of whatever we have now. If one does not know any better, one has no reason to “fret” over that which was. The NEW NORMAL is quite acceptable for younger generations. Not only the young folks, but also some veteran biologists are inclined that way. I have an ongoing discussion with Alberta’s very own John Acorn (The Nature Nut), who thinks Aldo Leopold was a bit off “track” at times when engaging himself about some philosophical musing about the perfect world. John Acorn is a great biologist, a good friend, but he has less tolerance for advocacy than I do – yeah, he says “it detracts from my enjoyment of the man-made grain elevators with its complement of falcons hunting pigeons”. John is not a shin-kicker, I am.

The consequences of industrial agriculture on the environment are widely accepted by society as a whole - that is all of us. Development, jobs, immigration and economic growth are all hailed in today’s world as being essential and important. There is an irony to this: once species face extinction, there will be a new set of rules and management actions will be introduced to prevent that from happening. There appears to be very little room for pro-active thinking or for that matter pro-active land use planning. It simply is not politically expedient. How could things be different?

Why not set aside a percentage of land, in each section/township within the “white zone,” for

conservation? It would increase bio-diversity and pass on a cultural heritage to future generations. Maybe, in some small ways, it might also contribute to reducing impacts caused by climate change. There are still patches of native wildlands left on private lands that could/should be safeguarded from destruction. Such actions cannot be taken at the expense of rural people - society at large should bear the costs. Tax incentives?

In essence, the future for protecting bio-diversity will lie in developing strategies for preserving ecological webs. We need to retain networks of habitat, over broad areas, that stay connected to allow gene flow (ecological hereditary units) to mold ecological webs, assuring evolutionary continuity in both time and space.

It might take time for new value systems to evolve - not likely in my time - but one needs to hope that it could happen. Education will be important. Much of our dilemma, as I see it, is that in our society not much is known about natural systems. We need enlightenment, that is a better understanding and appreciation of the natural world. This takes leadership and commitment. School curricula need revisions (there is, at this time, a review in place for Alberta), we need less bureaucracy in getting young people out on field trips, we need better training at university levels (who remembers Cy Hampson?) to promote qualified science teachers who are committed to outdoor education. We need to declare a



INTERPRETIVE CENTRE AT WEBB SK. LU CARBYN

war on “the nature deficit disorder syndrome”. That means at times, governments might have to go back to doing what they once did much better in the past.

National Parks had been in the forefront in environmental education with the extensive interpretive programs that existed in earlier decades. Their

programs initially were led by Park Naturalists, then by Park Interpreters and now by Visitor Experience Managers. Why not come full circle and place more emphasis on nature as was the case in earlier times?

I am reminded also, of the very extensive interpretive initiatives that once were carried out

by the Federal Government (Canadian Wildlife Service). These were ambitious and successful programs that lasted from 1970 to 1984, involving a series of interpretative centres right across the country. The first interpretative centre was in Ontario at Wye Marsh. I was particularly impressed with the interpretive centre that was located near Webb, Saskatchewan. The facility was operational from 1976 to 1984 and contacted around 20,000 visitors each year – people learned firsthand about “gophers.” A change in government at the federal level resulted in its demise. In 1988, the building was moved to serve as the Swift Current Golf Clubhouse. Thus ended a remarkably short lived, but highly successful interpretive effort, that took travelers off the Trans-

Canada highway and put them in touch with the natural world of the prairies. The facility had a faithful following within the local community, including ranchers, schools’ classes, and farmers.

We also know of many individuals, from many walks of life, that have shown dedication and commitment promoting nature appreciation. I am reminded of a recent trip to Wainwright, where my wife and I watched Sharp-tailed Grouse at a lek. Our grandchildren came along and experienced something that most modern kids are only exposed to in virtual reality. How was that possible?

A quiet, unassuming elderly gentleman, Laurence Hoover, took it upon himself for the better part of 25 years to develop an

interpretive project, showing people Sharp-tailed Grouse performing on their dancing grounds. Due to lack of government support, that program was cancelled this year. For generations, first Canadians (indigenous people) had witnessed seeing grouse at leks, likely many rural Albertans in the past as well. However, very a few people, living within urban environments, will ever have that privilege unless these opportunities are made available to them.

The Earth Summit of 1992 was a promising beginning, and did result in a higher awareness of biodiversity, yet it fell far short of its potential. We, as individuals and collectively as responsible citizens, should do our part to make this a better world for future generations. It will take a collective effort.

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Nature Alberta NEWS



New Club Joins Nature Alberta

Welcome to Kimiwan Lake Naturalists, the newest club to join Nature Alberta, We will tell you all about them in the Summer edition.

From the Desk of Brian Ilnicki

BRIAN ILNICKI IS NATURE ALBERTA'S EXECUTIVE DIRECTOR

Judging by the last few weeks, it seems that we are well into another Alberta spring. Temperature variations of more than 20 degrees C, and multiple sightings of migrant and resident species wondering why they are sitting on an ice covered pond or changing their camouflage for summer colours amidst snowy fields, have been common over these last few weeks. Nature Alberta is also changing with the onset of spring. Summer

staff are being hired and our program coordinators are busy putting the final touches on our work plans for the field season.

Our Living by Water (LBW) program is in its 16th season. Through LBW we continue to work with lakeside property owners who are interested in making changes to how they manage their individual property which results in improved lake stewardship and watershed health. Program staff will once again be focusing their activities at Wabamum Lake, completing our comprehensive property assessments with property owners and launching our shoreline restoration incentive program in partnership with the local municipalities, conservation organizations and lake stewardship group.

The Nature Kids program also continues to gain momentum. This year much of our focus will be to provide support to our volunteer chapters in Calgary, Red Deer, Edmonton, Morinville, Lakeland, Cold Lake and Grande Prairie. The success of Nature Kids is founded on the countless hours that each of our Chapter volunteers contribute to planning and hosting Explorer Days for our youth members. Nature Kids staff are excited to coordinate activities with the International Migratory

Bird Day event series being held across the province this spring. We will also be partnering with Nature Canada and the Canadian Wildlife Federation to host NatureHood and BioBlitz events (respectively) across Alberta this summer and fall. Be sure to watch our website and follow us on social media to receive updates and notices about these exciting new events.

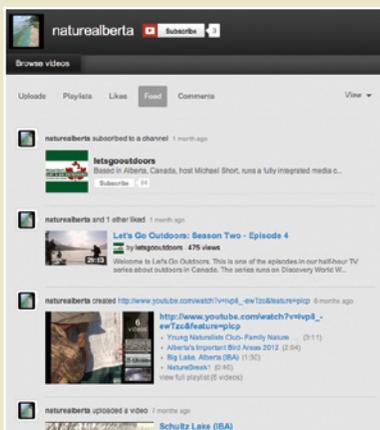
Through our Birds and Biodiversity program we continue to focus on supporting the Nature Canada led *Cats and Birds – Keep Cats Safe and Save Bird Lives* initiative, the Important Bird and Biodiversity Areas (IBA) program and the many volunteer IBA Caretakers who spend many, many hours helping to steward these sites across Alberta. One of our new planned initiatives, with the support of Wildlife Habitat Canada, is to host a series of interactive webinars over the coming year. This series is tentatively planned to launch later this spring and will provide another opportunity for our member clubs, IBA Caretakers and experts to connect and to share information that helps to support on-the-ground action at IBAs across Alberta.

In closing, I continue to be amazed by the countless hours and days that our Nature Alberta members contribute to the ongoing success of our organization. I remain excited about the future of Nature Alberta and for the opportunity to work alongside so many committed staff and volunteers as we continue to grow our community connected by a love of nature.

Nature Alberta & YouTube

Nature Alberta wants you to know that Nature Alberta has its own YouTube channel now. All kinds of “good stuff” is there for you to view. Visit:

youtube.com/naturealberta



Alberta Solar Eclipse 2017

BY JOHN MCFAUL



The most anticipated astronomical event of 2017 is the total solar eclipse that will occur on Monday, August 21st. Unfortunately, the path of totality does not pass through Alberta, but it does cross the mid-west states a long days drive from Alberta.



Albertans will see a partial eclipse. The closer you are to the U.S. border the greater the eclipse will be. Below is a table indicating the timing of the eclipse and how much of the sun will be obscured by the moon for major Alberta centres.

City	Obscuration	Start	Maximum	End
Cardston	83.4%	10:18:48 AM	11:33:30 AM	12:52:38 PM
Medicine Hat	79.2%	10:22:35 AM	11:37:26 AM	12:56:04 PM
Lethbridge	81.4%	10:19:49 AM	11:34:17 AM	12:52:59 PM
Calgary	77.2%	10:20:14 AM	11:37:14 AM	12:50:22 PM
Drumheller	75.2%	10:22:07 AM	11:35:09 AM	12:52:01 PM
Red Deer	72.8%	10:22:02 AM	11:34:03 AM	12:49:53 PM
Edmonton	68.5%	10:24:07 AM	11:35:03 AM	12:49:29 PM
Grande Prairie	64.7%	10:21:56 AM	11:30:00 AM	12:48:47 PM
Fort McMurray	57.5%	10:30:49 AM	11:38:53 AM	12:49:31 PM

Data from www.eclipse2017.org

The next total eclipse that Alberta will experience is on August 23rd, 2044.

The next total eclipse for Canada will be in southern Ontario and Quebec and the Maritimes on April 8, 2024.

FEATURE ARTICLE

Hearts and Minds — Developing a Prairie Story

BY LORNE FITCH, P. BIOL.

Two young fish meet an older fish swimming the opposite way. As they pass, the older fish remarks, “Morning boys, how’s the water?” After a time one of the younger fish turns to his companion and asks, “What’s water?”

For this forum, the question might just as easily be asked, “What’s prairie?” The point of the parable is: often the most obvious, important realities are the hardest to see and to talk about, like prairie.

That’s why stories are important - they help us navigate the world, make sense of it, see our place in it and understand the changes in terms of benefits and consequences. When it comes to prairie, we lack a single, cohesive, cogent story. What we have are myths - fanciful, flawed descriptions of frontiers, endless space and boundless opportunity.

Myths are things that never were, but always are. They lead us, inexorably, to decisions that further erode the size, integrity and biodiversity of the prairies. We can do better, we need to

do better at telling the story of prairie.

A prairie defender, Dawn Dickinson, told an anecdote about her mother. She had come from the green lushness of England to join her husband, a customs agent at Coutts, on the Alberta/Montana border, in the early years of the 20th century. Writing home, she described her new home this way: “It has more rivers, and less water; it has more cows, and less milk; and, you can see further and see less than any other place on earth.” I would submit our prevailing story of prairie hasn’t changed much.

So, I’d like to talk to you about the story we should be telling, to change the hearts and minds of people about this fragile, impressive and holy landscape.

Prairie isn’t just the space between the Canadian Shield and the Rockies. It is the glue that holds together most of the nation. In prairie is the essential space that defines us, helps us see ourselves, in Wallace Stegner’s terms, as single, separate and individual in the world, part of the natural world and competent to belong to it.



“Hearts and Minds” was the plenary presentation for the last Prairie Conservation and Endangered Species conference in Saskatoon in February 2016. Lorne Fitch is a Professional Biologist, a retired Fish and Wildlife Biologist and an Adjunct Professor with the University of Calgary. lfitch@sbaw.ca ; 403 328 1245

Both my sets of grandparents homesteaded in the aspen parkland of Alberta at the turning of the 20th century. Charitably, they didn't know where they were going; when they got there, they didn't know the place they had chosen to settle. For many, settlement on the prairies was the ultimate in social and ecological crap shoots.

Once there however, like so many others across the prairies my grandparents started a transformative process of changing the landscape and themselves. What originally seemed to be a benefit, the woods and the water, were alternately cleared and drained.

My mother recalled the walks to the country school a little less than a kilometer away, taking, in 1912, sometimes over an hour to dodge the wetlands, willow jungles and aspen thickets. I walked the route a few years ago; it took me 20 minutes and all that impeded me were two barbed wire fences. The former diverse landscape is now a blank perfection of fields.

In living history, the landscape produced a cornucopia of wild fruit, game and fish. In the photo archives of the Glenbow Museum is an image of six heavily armed men standing over the carcass of a somewhat deflated grizzly bear near Innisfail, Alberta. The image is from 1894, just five years before my grandparents settled in the same area. Yet, nowhere in the family stories are there references to bears, wolves or elk, all part of the landscape immediately prior to their arrival.

Fish and wildlife populations initially sustained many families but succumbed to intensive harvest pressures and habitat loss. Non-native plants and animals were introduced, purposefully and accidentally. The natural processes that drove and configured the landscape were modified. This has changed the character, integrity and how we interact with prairie.

That is not the story currently told. The one that is, mostly a single narrative, is based on a myth. The myth involves real estate, opportunity, growth, prosperity and transformation. It is of breaking a raw land, a land useless in its native state, an economic imperative, originally to rationalize the building of a transcontinental railroad and a political priority to keep the land out of the hands of the Americans.

What has driven us is a gardening myth, one of lining things up in a row and making them grow. We didn't see the land as a marvelously drought-adapted place, a finely tuned ecological mechanism and a place rich in biodiversity. We saw it as alternately a storehouse to be raided and, a place that needed squaring and replanting. A few early ranchers saw it otherwise,



1894: "SIX HEAVILY ARMED MEN STANDING OVER THE CARCASS OF A SOMEWHAT DEFLATED GRIZZLY." GLENBOW MUSEUM

but their goals did not align with the prevailing ones of political security and economic growth.

I can't discount that the transformation of the prairies, partly from my grandparent's efforts, has provided me and the rest of us a comfortable and relatively easy life. Comfort and ease breed complacency though, and add to the perverse narrative of the prairies. This impedes progress on prairie conservation.

We thought the prairie was an eternal frontier; some think it so today, in ways both cyclic and perpetual. The reality is the frontier was largely gone by the time my grandparents arrived on it. An additive, cumulative series of events has eroded the remainder, and continues to do so.



So, what is a new story? Let me tell you what I think might be included. We've been given the gift of a common problem, crafting a better, more compelling, inclusive story. That new story might ramble between pragmatism and poetry, with elements of both. It must appeal to our hearts, in a visceral sense and to our minds, in a cerebral way. We must talk of many things. Fundamentally the story must tell us how we fit in this place called prairie.

There is guidance from story tellers like Wallace Stegner, W. O. Mitchell, Guy Vanderhaeghe, Trevor Herriot and Candace Savage. From Ian Tyson, John Wort Hannam, Corb Lund and Connie Kaldor comes the poetry of song. From past conservationists like William Pearce come the anguish of seeing the transition of parts of the prairie and being largely helpless to change the trajectory.

Losses of wildlife led C. Gordon Hewitt to write, in 1921: "The conservation of our wildlife... can only be achieved when a wider

interest in the subject is created in the minds of the majority of our citizens."

Dr. Stan Rowe pointed out that if we want to live on the prairies for another hundred years, we better start thinking about what this landscape is and what, ecologically, that means. His point was, it is hubris to "put our faith in technology and the power of prayer."

We must talk of climate, of climate change, of the range of natural variation and most certainly of adaptation. Our story might be guided by the wise words of Einstein: "The world we have created today as a result of our thinking has problems which cannot be solved by thinking the way we thought when we created them." In other words, barreling forward with our eyes firmly fixed on the rearview mirror is untenable. Acknowledging there is a range of natural variation, understanding that droughts within recent history are really

part of a wet cycle when viewed over millennia is pivotal. That alone might convince us to consider other, sustainable land use trajectories.

History teaches lessons in limits. In the understanding of limits, as Wallace Stegner observed: "You may deny it for a while. Then you must try to engineer it out of existence or adapt to it." The long view says: "adapt to it."

Stegner also points out: "Instead of adapting...we have tried to make the countryside and the climate over to fit our existing habits and desires. Instead of listening to the silence we have shouted into the void." There is a strong sense of limits imposed by the prairie landscape on human aspirations. But, we routinely exceed these limits by ignoring them.

Just as prairie sage supports many creatures, the work of prairie sages - scientists, biologists, range managers, bureaucrats and ranchers - is foundational to prairie conservation. Our stories need to profile, absorb and remember the legacy provided us with their work. Trail blazers, include early ranchers, who asked of their industry and of government: "What can the prairie sustain?"

We owe a debt of gratitude to these folks who grappled with limits and motivated the research to be done to set the policy and practices that persist to conserve prairie. For prairie grasslands, forged in aridity, the wisdom of ranchers, long-term and profound,





is simply: “the best side is up - don’t plow grasslands under.”

We cannot forget the rich biological history of the prairie. The journals of Peter Fidler, David Thompson and others provide a rare glimpse of the living phenomenon that ranged across this landscape. Bison, elk, deer and antelope horizon to horizon. Beaver damming every creek. Flocks of wildfowl darkening the sky. Grizzlies and wolves.

Following these chroniclers, that miracle, in less than a human life span, has largely been erased. We created a new normal for much of the prairie. It’s called shifting the benchmark.

We believe we’re seeing the world just fine until it’s called to our attention we’re not. Declines in quality and quantity persist until some tipping point is reached. Before that wall is reached, we all think we have at our disposal a full pie worth of resources.

As our memory of the past dims, our perception of the present is we have lost nothing and, our vision of the future is we have kept it all. We end up satisfied with less and less, thinking we are achieving more and more. It’s the resource that shifts, but not our perception of the resource. Perception does not mirror reality. It’s a case of collective amnesia.

The past lives in memories. But memories must be kept warm - without rekindling they could turn to ash. If they do turn to ash we remember nothing, not the losses or the trajectory of future change. Churchill observed: “The further you can see back, the more you can see forward.”

Utah Phillips, folksinger, raconteur, and anarchist said: “Yes, the long memory is the most radical idea in this country. It is the loss of that long memory which deprives our people of that connective flow of thoughts and events that clarifies our vision, not of where we’re going, but where we want to go.” It is through story that we embrace the great breadth of memory.

We’ve traded the songs of meadowlarks and pipits for motor noise and traffic. We mined the new coal, the accumulated organic material formed under a cover of prairie grasses, in as little as a human life span. We did so without ever asking, at all the appropriate times in the accumulating number of decisions, is this the path on which we want to be. Not only has the landscape shifted under our feet, something of value went missing along the path.

So, our new story needs an embargo on the words “balance, trade-offs and compromise” related to further prairie losses, fragmentation and loss of integrity. Most of the native prairie, its wetlands, and its wealth of biodiversity has been lost, compromised and impaired. We have an imbalance, created over a century of development and that activity continues to nibble away at what’s left.

What our narrative requires is a rebalance of development with conservation to reimagine the prairie’s future. It will only happen with restoration, a recovery of lost space, integrity and diversity. This isn’t advocating for a return of the bison, at least not completely. What should be reflected in the pathway forward is a sense of size, scale and variety. Big trumps little in conservation. Big hangs onto nature

“MOST OF THE NATIVE PRAIRIE, ITS WETLANDS, AND ITS WEALTH OF BIODIVERSITY HAS BEEN LOST.” LORNE FITCH



better than small. We need to think big to save prairie.

Rosanne Cash sings: "A feather is not a bird, the rain is not the sea." Antelope, Sage Grouse, Swift Fox, Blue Gramma grass and fescue are all expressive of prairie, individual indicators of it and essential components of it, but not the entirety. Prairie is place, not just pieces.

It's not enough to preserve pieces of prairie, we need to reverse the trend in loss of this landscape and connect the remaining pieces together in a logical form. Ted Williams wisely said, "Conservation of what we have left is no longer enough; we need to start recovering what we've lost."

How can we convince people the prairie is important, a sustaining sphere, a thing of intrinsic beauty and an end in itself? This is the place for tough talk about our future as prairie residents. It is also the opportunity to paint a picture of prairie that conveys a willingness to engage with it, at its level.

This is what I would say to help our narrative:

The glaciers receded 80 km a century, 800 m a year. We spread over the prairies and populated them in less than a century. Our transformation of them is arguably almost as dramatic as the leavings from glaciation. In "The Promised Land: Settling the West 1896-1914" Pierre Berton wrote: "What we are dealing with here is a phenomenon rare, if not unique in history: the filling up of an empty realm, a thousand



"...THE WANTON SLAUGHTER OF WILDLIFE WAS CONSIDERED NORMAL BECAUSE THERE WAS SO MUCH." GLENBOW MUSEUM

miles broad, with more than one million people in less than one generation."

We live in the aftermath of the Pleistocene, on the dwindling rivulets left over from the ice age and are fed by the glacial grindings of old rock.

Life on the prairie is a delicate dance of life leading back, ultimately, inevitably to that intermittent trickle of water, that cloudburst, the melt of spring snow, the reservoir of fossil water beneath the grass. History in the dry prairie is the thin skin of hydrology. Most of us who live here are a pluvial accident, wedded to rainfall. In *Wolf Willow*, Stegner quipped that with another inch of rain or so, his sod-busting father would have succeeded at farming and the family would have remained Canadian.

Life on the prairies requires patience, cunning, understanding and nerve. Very few other places

on earth provide that sense of a razor's edge of existence. Strip away the delicate and often fleeting surplus of energy, and materials that pay for civilization and life becomes a matter of bare-bones survival again. On a frail mist of humidity ride all our dreams of prairie power and possessions.

Our power as prairie people isn't conferred from banks, doesn't emanate from politics, isn't based on cereal crops, potash or Bakken oil or derive from nationality. Our narrative needs to reflect that it grows out of the land, from an understanding we live in semi-arid circumstances and around us are arrayed plants and animals admirably suited to survive and thrive. We will too if we emulate them.

Given the march of time, the elements that have helped forge plants and animals, the crucible in which they have been tested and the variation to be encountered

in the future, we kid ourselves that our technology, engineering and big brains are in some way comparable, even superior to nature's ways.

People who raise bison have realized that the way to herd them is to figure out where they're going and go with them. That lesson might be valuable to us to figure out how to successfully inhabit the prairie for the long term.

Maybe, just possibly, rolling the dice with earth time is a better alternative. Learning to pace ourselves to earth rhythms, reinvesting in natural processes, not taking so much and doing without provides a more sustainable, survivable future.

W. H. Auden wrote: "A culture is no better than its woods." Maybe we are no better than our prairies, or at least what's left of them.

At one time, the wanton slaughter of wildlife was considered normal because there was so much. Now, it is the pervasive destruction of habitat, again, because we think it is limitless. Social approbation led to laws curtailing wildlife slaughter; when will recognition of habitat destruction lead to change?

Aldo Leopold answered that question with: "Our tools improve faster than we do. It is unlikely that economic motives alone, will ever teach us to use our new tools gently. We shall achieve conservation, when and only when, the destructive use of land becomes unethical - punishable by social ostracism. Any experience that stimulates this extension of

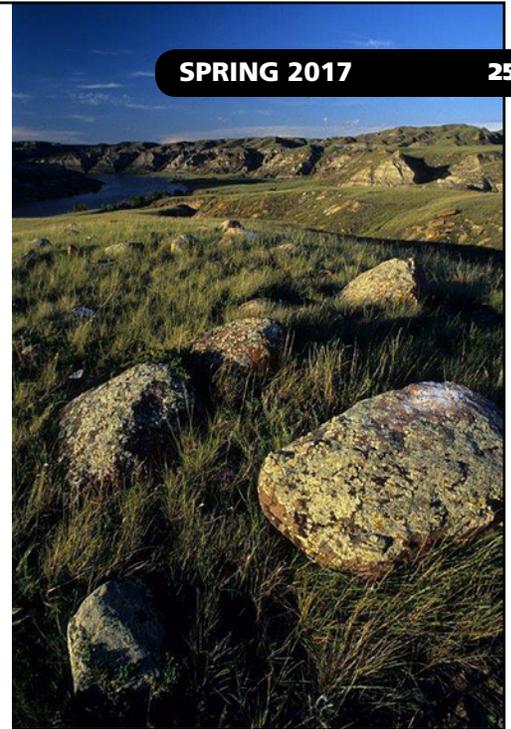
ethics is culturally valuable. Any that has the opposite effect is culturally damaging."

Random, but cumulative acts and decisions by governments, industry and landowners precipitated an ecological crisis in the prairie, of unprecedented dimensions. Sage Grouse are part of it, and as a result of their diminished and imperilled status we have begun to appreciate the consequences of our actions, many unintended. What is more disturbing, even perplexing is, it all could have been avoided.

Rachel Carson helps us understand why it wasn't avoided: "We still talk in terms of conquest - we still haven't become mature enough to think of ourselves as only a tiny part of a vast and incredible universe. ... I think we're challenged, as mankind has never been challenged before, to prove our maturity and our mastery, not of nature, but of ourselves."

If one could imagine the prairies before the fence, the road and the plow it would be so much sky sitting atop an endless horizon. Remoteness was abolished with roads, space was truncated with barbed wire and the long view was interrupted with grain elevators, soaring above the skyline. Most pass through the prairie en route to somewhere else. It is only if you linger that you will begin to appreciate the prairie. It is not a place in-between something else.

How do we know a place, unless we know the names of the things in a place and the stories they



"IT IS ONLY IF YOU LINGER THAT YOU WILL BEGIN TO APPRECIATE THE PRAIRIE." LORNE FITCH

have to tell? We can't be sustained without a knowledge of the land. Imbedded in the landscape are things beyond the surficial, the evident and the short-term economic value.

"We are formed by our surroundings, and our surroundings contain stories, that, if we learn them, form us too. The landscape of the northern prairie, which seems so passive, changeless, and lacking in surprise, is in fact a place of power and mystery to those who know its story and who carry that story on..." writes Kent Meyers.

To the uninitiated, the prairie has a colossal sameness. However, the sameness is not of monotony but of endlessly repeated yet constantly varied patterns and shapes. It is a prodigious repetition, without beginning and with no hint of an end. The prairie is an echoing reminder of time and space.

When you stand on the threshold of the huge natural museum that is

prairie you realize you shouldn't enter without preparation. It isn't just about knowledge because the prairies are less a place and more a state of humility. These are unmanaged landscapes cultivated by time.

We have done much to hold off the eternity, the infinity of distance and space on the prairie. We fenced it, broke the land, planted trees, created roads, incorporated cities and towns - anything to give the land some sort of human scale or distinction.

Yet, as Stan Rowe wrote: "The wide-open landscape, the big sky, the singing grass, the meadow lark's song, the wind-waves that roll through the fields, the indigo water of prairie ponds at spring breakup were imprinted on me at an early age." So, in spite of our efforts to form the land, it inevitably forms us.

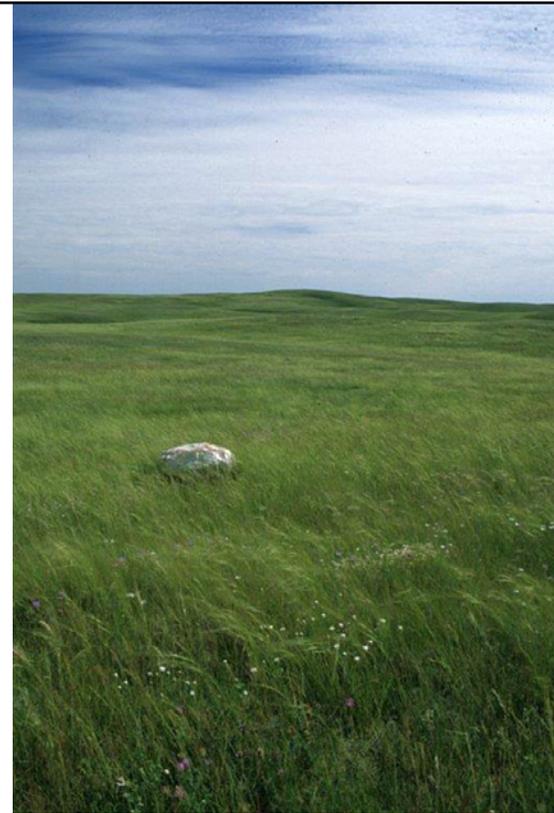
A stop, a walk or a sit to ponder these realities can be unnerving, maybe liberating, and surely enriching.

Kent Meyers writes lyrically about a place the uninitiated would write off as lacking in

appeal: "Classic in its simplicity, the prairies whole character is revealed in the visual tension between the arch of the sky and the plane of the earth and in their corresponding forces, the wind trying to sweep you away, gravity barely holding you down."

Although Colin Fletcher was speaking about the canyons of the desert southwest, his words also ring true about the prairie. He said: "We do not have to build a Parthenon. Nor to create any work of art. We face a greater and perhaps as difficult a task: to shield from the blind fury of material 'progress' a work of time that is unique on the face of the earth. And we shall be judged, you and I, by what we did or failed to do."

The mind has a way of making a detour around these uncomfortable truths unless it is forced to focus on them. To those that look at prairie as real estate temporarily encumbered by wetlands, native grassland, wildflowers and wildlife I have no message of support. It is as it was, and always should be.



"THE PRAIRIE IS AN ECHOING REMINDER OF TIME AND SPACE." CLASSIC PRAIRIE! LORNE FITCH

Edmund Burke observed that: "The only thing necessary for the triumph of evil is for good men to do nothing." I would paraphrase that to read: "The only thing necessary for prairie to go missing is for many of us to do nothing."

So, who writes the rules for prairie conservation? We all do. Prairie conservation will be enhanced with a better story.

Who should undertake that vital task? Who holds the science, the material, the experience, the passion and the motivation? You are all the new writers of the purple sage. Work with other writers, the poets, the singers, the photographers, the artists. Make prairie as popular as Prada, as endearing as penguins, as visually stunning as mountains and as engaging as dinosaurs.

I look forward to seeing, hearing and reading your narratives. Remember, the future isn't a place that we're going to, it's a place that you get to create.

A LAZY MEANDER. LORNE FITCH



BOOK REVIEW

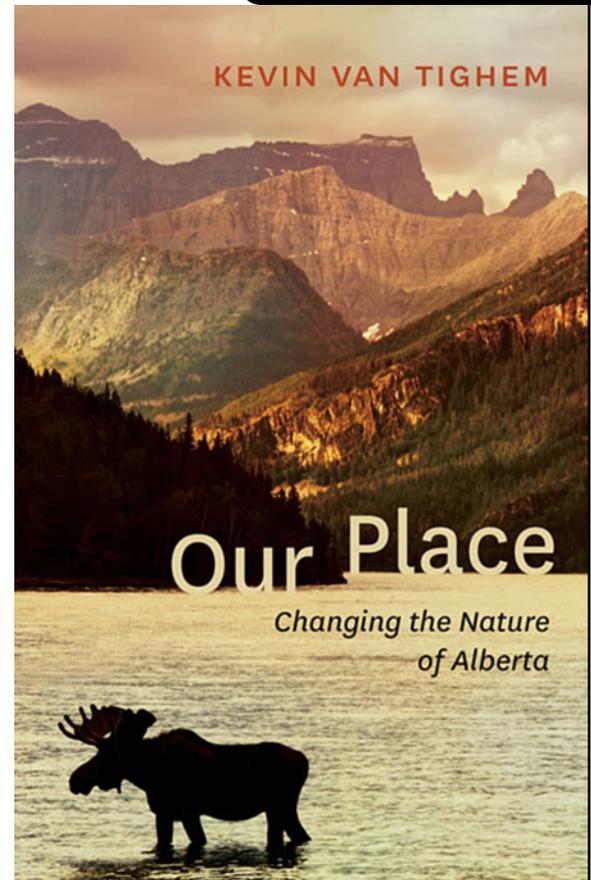
Our Place: Changing the Nature of Alberta

REVIEWED BY ROCKY MOUNTAIN BOOKS

Naturalist, hunter, conservation activist and recovering bureaucrat Kevin Van Tighem explores the landscapes and wildlife of one of Canada's most diverse and beautiful provinces and the ways in which Albertans have often failed – and sometimes succeeded – at the challenge of sustaining their home place.

Previously published writings are mixed with current reflections on the streams, forests, grasslands and mountains of a Canadian province whose ambivalence about the nature of place, the responsibilities of citizens and the temptations of resource-based prosperity continues to mar the landscape and raise questions about the future. Challenging, eye-opening, instructive and soul-searching, this collection nonetheless delivers an overriding message of hope and possibilities.

Alberta is our place now; we can still sustain the best of it, and bring out the best in ourselves, if we choose to know it well and care for it better.



Kevin Van Tighem

Soft Cover. C\$24.75, 376 Pages
ISBN 978-1771602037

First a howling blizzard
woke us,
Then the rain came down
to soak us,
And now before the eye
can focus -
Crocus.

LILJA ROGERS





Eyes on IBAs

The River of Rarities

BY BROOK SKAGEN

The cheery warbles of longspurs and meadowlarks dance across coulee ridges, carried with the scent of swaying sage and sweetgrass in the prairie wind.

Rising forbs reach for the sun's warmth across the unbroken horizon, as morning rays illuminate greening hillsides. The slumbering prairies are awakened as the charismatic choruses of courting passerines fill the springtime air. Perhaps no chorus is as rich with rarities as that heard amongst the valleys of the meandering Milk River.

Located in the extreme southeastern portion of the province, the Milk River Canyon and Area Important Bird Area encompasses 335 km² of native grassland, pasturelands, creeks, deciduous stands and sandstone cliffs along the Alberta-Montana border. Approximately 20% of the IBA overlaps the provincially-managed Milk River Natural Area, teeming with rich natural, geological and cultural history. The unique geology of the valley, the result of Late-Cretaceous beach sedimentary deposits and glacial

meltwater, was thought to contain powerful spirits; centuries of native petroglyphs and pictographs are found preserved within the soft sandstone grains. The Milk River Canyon is the only known site of breeding Mountain Plover in the province, and one of few locations in Canada, receiving IBA designation for its nationally-significant numbers of the endangered shorebird.

Alberta's rarest shorebird, the Mountain Plover is a globally-vulnerable species endemic to the North American grasslands, and an exceptionally rare sight in the Canadian prairies. Visiting from April through September, few birds have ever been observed in Canada, as southeastern Alberta and Saskatchewan represent the northernmost extent of its summer range. Fewer than 50 of the sand-coloured insectivores, approximately the size of a Killdeer, are speculated to occur in the region annually,

Contrary to its name, mountains are not found within the plover's winter



THE MILK RIVER CANYON IS SUBSTANTIALLY LARGER THAN THE PRESENT RIVER WHICH WINDS THROUGH, AS GLACIER MELT WATER WAS DIVERTED BY THE LAURENTIDE GLACIER AND INTO THE VALLEY. BROOK SKAGEN

or breeding ranges, rather the birds utilize heavily-grazed or recently-burned habitats of the Mixedgrass prairie. The Mountain Plover, unlike other prairie shorebirds, prefers flat, sparsely-vegetated upland areas with considerable bare ground, avoiding poorly-drained soils, tall grasses, shrubbery, and cultivated areas.

The inconspicuous shorebird, immensely challenging to find, has garnered an almost "mythical" status, highly revered amongst local and global birding communities alike. As a result of overhunting throughout the 1800s and early 1900s, reduced native herbivore populations, habitat conversion and fire suppression, the Canadian Mountain Plover population has experienced a 50-89% decline in distribution and size over the last century. Its narrow habitat requirements and critically low breeding pair numbers have led to the population's listing as federally-endangered for decades, and more-recently as provincially at-risk. However, with continued beneficial ranching practices in the area, particularly winter and early-spring grazing, the ecological needs



Brook Skagen
Nature Alberta IBA intern

of the Mountain Plover and other grassland species may be met, conserving what little habitat remains.

The Mountain Plover is one of many threatened species of flora and fauna residing within the Milk River area. Over 50% of Alberta's at-risk avian species may be found throughout the IBA and surrounding landscape, including the Burrowing Owl (*Athene cunicularia*), Greater Sage Grouse (*Centrocercus urophasianus*), Ferruginous Hawk (*Buteo regalis*), Prairie Falcon (*Falco mexicanus*), Loggerhead Shrike (*Lanius ludovicianus*), Sprague's Pipit (*Anthus spragueii*) and Long-billed Curlew (*Numenius americanus*). Nearly 80% of the province's at-risk grassland plant species, such as the federally-listed Western Spiderwort (*Tradescantia occidentalis*) and Soapweed (*Yucca glauca*) have also been documented, representing one of the largest concentrations of rare vascular plants in the Canadian prairies. The majority of provincially at-risk mammalian species, such as the Pronghorn (*Antilocapra americana*) and Swift Fox (*Vulpes velox*), also occur within the Milk River drainage, while half of Alberta's amphibian species and all native reptile species have also been observed



in or near the IBA, including the Northern Leopard Frog (*Lithobates pipiens*) and the Eastern Short-horned Lizard (*Phrynosoma douglassii brevirostre*).

The unique geology, rich cultural history, and biological diversity of the Milk River Canyon will fill all who venture into its sandstone cliffs and cottonwood forests with wonder, for the rolling hills of pristine prairie is a spectacle rarely matched. With such a high diversity of Alberta's sensitive species in the area, the Milk River is truly the south's river of rarities, and a natural portion of the prairies I have come to enjoy time and time again, always in hope of, but never successful, in catching a glimpse of the "mythical" Mountain Plover.

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THE SANDSTONE CREVICES OF THE MILK RIVER FORMATION SUPPORT NATIONALLY-SIGNIFICANT NUMBERS OF NESTING PRAIRIE FALCONS (*FALCO MEXICANUS*). COLIN STARKEVICH 2016



Foraging Distance of Bumblebees in Southwestern Alberta

BY DR. KEN RICHARDS

It is difficult to substantiate the assumption that bumblebees forage for food on flowers as close to the nest as possible.

Different experimental techniques are fraught with difficulty as are their results comparing agricultural landscapes versus natural habitats, different bee species' behaviours, and the difficulty to quantifying and understanding/interpreting the relationships of quantity and quality of forage/food availability.

Southwestern Alberta is a particularly good region for the study of bumblebees because habitats ranging from mixed prairie to alpine lie within 150 kilometers of one another, and because 21 species of bumblebee are found there. All bee species, be they solitary or social, provision their broods with pollen (mainly protein) and nectar (mainly

carbohydrates) from flowers found in the surrounding area and bring it back to the nest. Bumblebees store food in the nest in the form of a few honey pots for nectar, or pollen under the brood, or in cylinders for some species. Comparatively little food is stored, and hence bumblebees must forage frequently to feed their young or the colony would quickly be lost.

The foraging range of bee species is important for crops requiring cross pollination as the distance from the nest determines which fields are visited and the distance over which pollen might be transported to effect gene flow within and among fields. Flight ranges vary considerably among bee species, and also

among studies. Honey bees have a foraging range of 1-6 km, and very rarely up to 20 km when food supplies are exceedingly rare (Vissher and Seeley 1982, Schwartz and Hurst 1997). Solitary bee species are generally thought to travel only a few hundred metres, including the alfalfa leafcutter bee, *Megachile rotundata* (Richards 1984), but only a small number of species have been studied (Gathermann and Tschardtke 2002). Of the approximately 25,000 bee species worldwide, including the approximately 3,500 species in North America, Greenleaf et al (2007) reviewed the foraging range for 62 bee species, and found a positive relationship with body size. Too few have been studied.

Dr. Ken Richards has a PhD (insect ecology – Kansas), studied native bees during graduate school and worked with Agriculture Canada as a researcher developing management practises for native bees for forage crop pollination and later as a research manager for Canada's national genetic resources program. He has published about 120 peer reviewed papers and over 250 other articles. He has presented information at many science and producer meetings, participated in many international meetings including representing Canada at the Food and Agriculture Organization of the UN. He grows native plants for the seed for the national seed gene bank.



BOMBUS APPOSITUS VISITING TRIFOLIUM PRATENSE. K. RICHARDS

It has long been assumed that bumblebees, and likely all bee species, forage as close to their nest as possible (Free and Butler 1959) for energetic reasons. It is also assumed that bumblebees do not forage indiscriminately over the surrounding landscapes, but for some time at least, restrict their activities to comparatively small patches of flowers available to them. During foraging trips bumblebees exhibit a well-known behaviour called constancy to one flower type. However, despite the wealth of information on

bumblebee biology, few studies provide measures of foraging range, particularly in natural habitats, partly because of the difficulty to quantify those results, and the difficulties of understanding the relationships of quantity and quality of forage/food availability.

More recent European studies have employed a number of sophisticated technologies such as harmonic radar (Riley et al 1996, Osborne et al 1997), theoretical modelling (Stephens and Krebs 1986), molecular (microsatellite) markers (Darvill et al

2004, Knight et al 2005), or powdered dyes (Martin et al 2006) to determine aspects of bee foraging distances. These studies conducted on fragmented crop agricultural land suggest size of forager plays a part in distance foraged with some smaller-sized species (called 'doorstop foragers') mostly remaining within 500 m of their nests while larger-sized species foraging further afield (mostly less than 1500 m), and one species, *Bombus terrestris*, regularly foraging over 2 km away from their nests (Walter-Hellwig and Frankel 2000). Detailed studies on North

American bumblebees are generally lacking.

My bumblebee studies were located southwest of Pincher Creek, Alberta, at about 1740 meters elevation, in an aspen parkland-grassland ecotonal zone, sloping gently to the east from the foot of the mountains. Here, queen bumblebees established colonies in artificial domiciles (Hobbs et al 1960, Richards 1978). Colonies for eight species (*B. frigidus*, *B. bifarius*, *B. occidentalis*, *B. rufocinctus*, *B. californicus*, *B. appositus*, *B. mixtus*, *B. flavifrons*) were brought to a central location in a meadow. Queens and workers were marked with a small dab of airplane model paint between the wings for easy recognition. Over two summers we marked and observed individual bees as they visited flowers when we walked through the meadows. A detailed map of

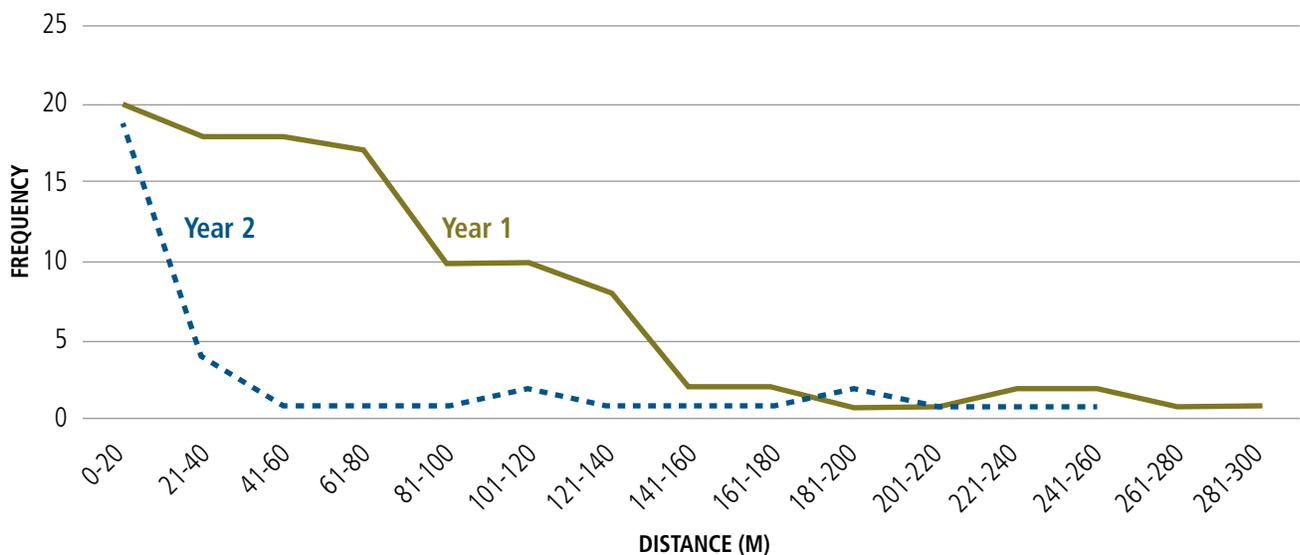
the area with concentric circles was generated allowing for ease and accurate estimation of distance to colonies.

In the first year of the study 96 marked bees were observed, and in the second year 45 bees were observed. The distance foraged from the nests approaches a Poisson distribution with more bees foraging closer to the nests (Fig. 1). The maximum distance bees foraged in year one was 290 m, and in year two was 240 m. More than 40 flower species were visited by queens, workers and males with the more commonly visited species being *Taraxacum officinale*, *Lupinus sericeus*, *Monarda fistulosa*, *Hedysarum sulfurescens*, *Geranium viscosissimum*, *Oxytropis campestris*, *Castilleja sulphurea*, *Cirsium arvense* and *C. vulgare*. These distances are significantly shorter than those

reported from Europe, probably due to the high diversity and density of naturally occurring and highly desired plant species visited by the bumblebees.

One suggestion from Europe is that a relatively small proportion of worker bees seem to forage close to the nest so as to minimize intracolony competition for the available food. The number of workers produced in European colonies tends to be much larger (up to 400) compared to colonies in southern Alberta (frequently less than 100 workers). Given that each individual bee may visit hundreds, perhaps even thousands, of flowers during a single foraging trip, one might expect only a very few bees to visit the nearest patch of flowers. Supposedly a large worker force could quickly deplete the available food close to colonies, and as a result the foraging range is larger.

Figure 1. Distance bumblebees foraged from nest in Southwestern Alberta





BOMBUS FRIGIDUS VISITING MELILOTUS ALBA. K. RICHARDS

Comparatively, southern Alberta colonies, with a smaller number of foragers, may not have the pressures of depleted food supply closer to nests, and hence have a much smaller foraging range.

The foraging range for only a few bumblebee species have been studied, and most of these studies are European based, predominantly with *B. terrestris*, and that variation exists among species possibly due to technique used, or differing floral resource density and diversity. The ecological/evolutionary/

physiological explanations for these differences remain unclear. Further comparative studies involving different bumblebee species in a range of landscapes from agricultural to natural habitats, possibly using different approaches, may be worthy of pursuit.

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BOMBUS BIFARIUS VISITING AGOSERIS GLAUCA. K. RICHARDS



BOMBUS HUNTII VISITING PHACELIA LINEARIS. K. RICHARDS

Up Close Naturally: Sounds of Summer, Buzzes and Trills

BY MARGOT HERVIEUX

Hot, summer days are often filled, not with the sound of bird song, but with the buzzes and trills of insects.

Cicadas and grasshoppers make sounds that many of us subconsciously associate with summers in the sun.

Cicadas are rather strange insects. They are rarely seen but their loud, rattling buzz is hard to miss in aspen woods or along river breaks on hot afternoons. The males find a perch and then produce their song by vibrating a membrane in a resonating chamber in their abdomen. These creatures belong to the family of sucking bugs and they live on plant sap. Their big eyes and large, transparent wings make these 2 cm long insects quite distinctive.

Cicadas spend most of their lives as larvae living on plants roots underground. In our part of the country, the insects don't have a synchronized life cycle but in eastern North America, periodical

cicadas emerge by the billions every 14 or 17 years, even making it onto the national television news.



Margot also writes a column for the Peace Country Sun, archived copies of which are available at www.peacecountrysun.com.

Cicadas can be found around the world and the tropical species are often brightly coloured. Their large size; loud, distinctive sounds; and unusual appearance have made them the subject of artwork, jewellery and even haiku poetry.

A more familiar summer musician is the grasshopper. Grasshoppers create their chirping calls by rubbing the inside of the hind leg against the body or by flexing their wings when in flight, while crickets rub their wings together. Like cicadas, the males produce sound to attract mates. Some species just sit and call while others take short flights on red, yellow or black wings and rattle as they go.

Baby grasshoppers look just like the adults but they don't have wings until they are mature. At all stages, they are plant eaters but they eat weeds as well as crops and most species do not cause damage. Grasshoppers are also important food for all kinds of birds, beetles and small mammals.



OF THE MANY GRASSHOPPER SPECIES IN ALBERTA, ONLY 3 CAN BE THOUGHT OF AS "PEST."
ROYALALBERTAMUSEUM.CA

Less obvious insect sounds are made by a variety of buzzing bees and flies. The buzz is created by the rapid vibration of the wings. Mosquito wings beat 300 times/second while Honeybee wings beat 250 times/second and fly wings only 190. If you have kids in your life, try putting a buzzing insect (mosquitoes are easy) into a paper cup with wax paper stretched across the top. Put the cup up to your ear and listen. Different insects make different sounds and they aren't so scary (or annoying) when safely in the cup.

We don't have nearly as many singing insects in our part of the world as they do in the tropics but our grasshoppers and cicadas are still worth a listen. Insects use a lot of different strategies to attract mates but when they use sound it can be interesting to eavesdrop.



CICADAS ARE FOUND IN WOODED AREAS THROUGHOUT ALBERTA BUT ARE SELDOM SEEN. ROYALALBERTAMUSEUM.CA



“Chatter! Chatter! Chatter!”

BY CHARLEY BIRD

RED SQUIRREL, BIRD EAST POPLAR QUARTER,
8 KM NW OF WINFIELD, AB. CHARLEY BIRD

One of our most characteristic mammals of coniferous forests here in Alberta is the Red Squirrel. These active, inquisitive creatures are common in many areas. They often let one know that you have been seen by their chattering calls, and they seem to delight in teasing dogs.

They are 30-40 cm long, have rust red hair in the summer and gray brown hair in the winter, long “bushy” tails which are often curved upwards, and white underparts and eye rings. They are very active and sure-footed climbers. A single litter of 1-8 pups is produced each

spring and they leave their mothers and nest when they are over 3 months old. They are territorial and defend their home ranges and middens. Their predators include owls, hawks, martens and a variety of other mammals that are lucky enough to catch them. They are found from Alaska

and British Columbia in the west to the east coast of Canada and from the tundra south along the Rocky Mountains to Arizona, wherever coniferous forests are found. They are well-known to visit bird-feeders that are supplied with seeds.

The European Red Squirrel, though similar, is a different

species. Eastern Grey Squirrels look rather similar but are darker in color, occur only in some of the larger urban centers in Alberta, Saskatchewan and Manitoba, and are primarily species of the eastern United States.

This squirrel is able to be active year-round, except for the coldest days, because its major food source is coniferous seeds. In the fall, as cones are maturing on spruce trees, individuals will climb up and bite them off, causing them to fall to the ground. After a while the squirrels will gather them up and store them in middens (see photo). During the

winter, they will visit the middens to retrieve the cones, remove the hard scaly bracts, and then eat the seeds. Red Squirrels are also known to consume various above ground fungi of the families Boletaceae, Russulaceae and Cortinariaceae and even some underground fungi (see, for example, the paper by Currah et al, 2000, Fungi in the winter diets of northern flying squirrels and red squirrels in the boreal mixedwood forest of northeastern Alberta, *Can. J. Bot.* 78:1514-1520). If you are out hiking and find a mushroom up on a branch, it has probably been put there to dry

by a squirrel and it will later be moved to a midden for winter food.

In my opinion, the best description of this squirrel and its life history is in Donna Naughton's 2012 "The Natural History of Canadian Mammals", Univ. Toronto Press. A good account can also be found at https://en.wikipedia.org/wiki/American_red_squirrel

This creature is another of nature's gems, enjoy!

RED SQUIRREL MIDDEN, BIRD EAST POPLAR QUARTER. CHARLEY BIRD



Cooper's Hawks

Nesting on Judah Hill

BY MITCHELL WARNE



Each spring I get more and more excited as the snow begins to disappear and the mud dries up because that means I can get outside to clean out wildlife boxes and hunt for antler sheds.

When I am hiking between the boxes I have ample opportunities to see a variety of wildlife species while I keep an eye out for Elk antler sheds that continue to elude me. Hiking during this time in spring I have had a wide range of experiences ranging from being covered in biting chiggers, watching Ruffed Grouse drumming, hearing Barred Owls asking, “who cooks for you,” to catching glimpses of forest raptors hunting in the trees.

This past spring I once again caught a glimpse of a Cooper's Hawk flying above the tree line in an area I was going into on Judah Hill. Because we have been seeing Cooper's Hawks in the area for years I didn't think much of it; besides, I wish it would come closer. So I continued into the trees to begin fighting through the prickly rose while packing my ladder and gear to check the various wildlife boxes.

As I continued into the trees I was listening for Northern Saw-whet Owls that typically are calling in the area but instead there was an unusually loud and quick paced call. As I continued to work my way between the boxes, the noise continued to get closer until I was able to clearly see the source.

A pair of Cooper's Hawks were making all of that noise where they were building a nest. As it

turned out I got what I hoped for and had a closer albeit quick look and managed to get a short audio recording of the Cooper's Hawks before they took off. I continued on my way to clean out some other wildlife boxes and before long I could hear the Cooper's Hawks back at their nest site but didn't think much of it. A week or so later I was talking to Mike Blom about what I had seen during my hikes and he was both surprised and excited I had found a Cooper's Hawk nest. I didn't think much of it until later when I checked the range maps for Cooper's Hawks and saw why the news of a nest was so exciting: the nest is 200-300 km north of the northern edge of all the range maps I could find.

We checked on the Cooper's Hawk nest site a couple of times during the season to ensure it was still active so that we could band the chicks when they were old enough. Once they were, Mike and I met up with Joel Pecotich and we went out to the nest site. I gladly stayed on the ground tucked in close to a tree since I didn't feel like being strafed by the Cooper's Hawk parents while Joel climbed the tree to bring the chicks down to us. Despite the parents showing up briefly in the tree canopy they were largely absent during the banding. There were

three chicks in the nest, all of which were healthy. Two males and one female were banding before being returned to their nest in a spruce tree without incident.

The next day we returned to the nest site just after dawn to try and band the parents using a mist net and stuffed owl. Once again the parents showed up in the treetops but wouldn't come to the nest or be bothered to protect their young from our fake owl. As a result, we left after giving the local mosquitoes an early morning feeding. Once we left I wasn't able to make it back to the area again that summer to see how the Cooper's Hawks were doing.

Although the fact was initially surprising that the Cooper's Hawks were nesting far outside of their range, it is the third bird species that we have found in the last few years well outside of their known range. All three of these species have been found around the Judah Hill area, two of which have been confirmed nesting. The second species that has been confirmed to be attempting to nest is the Gray Catbird. The Black-billed Cuckoo is the third species outside of its range and was heard singing but no confirmation on a nesting attempt. There are also strong indications there was a second location with Cooper's Hawks nesting this summer, which provides more evidence they have an established population on Judah Hill and potentially the Peace Region in general.

CELESTIAL HAPPENINGS

Starry Nights

Summer: June to August

BY JOHN MCFAUL

FEATURED CONSTELLATIONS: CAELUM, INDUS AND MUSCA

Obscurity is a common theme that these three constellations have in common. In fact, they were added to the celestial pantheon as fillers between much more prominent constellations of the southern hemisphere.

Caelum (The Chisel) was created by Nicolas Louis de La Caille. He was a French astronomer who led an expedition to South Africa in 1750. Although his primary goal was to try to ascertain the distances to the planets using long based trigonometry, he did catalogue 10,000 stars. This resulted in his designating 14 new constellations including Caelum which he depicted as an engraving tool.

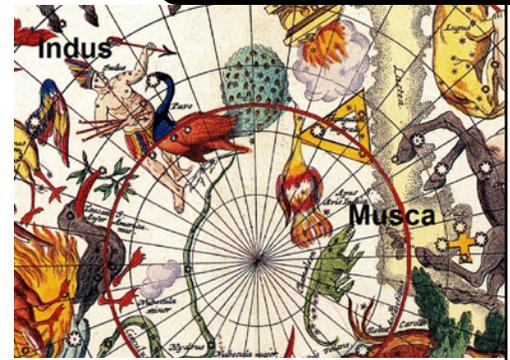
The northern portion of Caelum does poke above the southern horizon in Alberta during the evening hours of February and the early morning hours in October. It is located about 25 degrees below the great constellation of Orion.

The constellations Indus and Musca were first illustrated by the Dutch astronomer Petrus Plancius. These were part of 12 new constellations that he added to the celestial sphere in 1597. They were a result of the observations of Pieter Keyser and Frederick de Houtman who were part of the first Dutch expedition

to Indonesia and the fabled Spice Islands.

Musca (The Fly) was depicted as a bee by the German cartographer Johann Bayer in his star atlas of 1603, but later was changed to represent a fly by La Caille. There are three known planetary systems orbiting stars in this constellation.

Indus (the Indian) represents the indigenous people that the explorers encountered on their journeys to southern latitudes. There is some confusion as to



what groups it refers to. Whether they be those of the Indian Ocean area, such as Madagascar or those encountered by Magellan in Tierra del Fuego. In 2015 astronomers discovered a super luminous supernova in Indus which was estimated to be 50 times more luminous than the entire Milky Way Galaxy.

These three constellations are the last of the official 88 constellations that have been described in the Starry Nights column of *Nature Alberta* since 2007.

CELESTIAL HAPPENINGS

- Sun:** Rise – June 1 (5:11 MDT), July 1 (5:09 MDT), August 1 (5:50 MDT)
 Set – June 1 (21:53 MDT), July 1 (22:05 MDT), August 1 (21:29 MDT)
 Summer Solstice: Monday, June 20, 2017 at 10:24 PM in Edmonton.
SOLAR ECLIPSE: August 21, 2017 starts 10:24 AM, maximum 11:35 AM, ends 12:49 PM.
 At maximum about 77% of the sun will be blocked by the moon.
- Moon:** Full – June 9, July 8, August 7
 New – June 23, July 23, August 21
- Planets:** **Mercury** will be best seen very low in the western sky shortly after sunset the last week of July into early August. Afterwards it will be hidden in the solar glare until late August when it will reappear very low in the eastern sky a little before sunrise.
Venus is a morning object throughout this time period and will be shining brightly in the ENE sky. The crescent moon is close by on June 20th, July 20th and August 19th.
Mars may be seen very low in the western sky shortly after sunset in early June. It then passes behind the sun and will reappear at the end of August low in the ENE before sunrise.
Jupiter starts out high in the southern sky in early June. It will descend lower in the western sky as the summer progresses. The moon will be close by on June 3rd, July 28th and August 25th.
Saturn is a morning object located about 10 degrees above the SSW horizon in early June. By early July it can be seen in the SSE after sunset. The moon will pass close by on July 6th, August 2 & 29th.
- Meteor Shower:** Delta Aquirids (July 29th, 20/hour in a dark sky), Perseids (August 12th, 50/hour).
The rate of meteors observed is for dark skies well away from city lights and with no Moon.

Alberta BBS 2016

Data were submitted for 96 Breeding Bird Survey (BBS) routes in 2016! This is up from the 88 surveys received in 2015; fantastic work everyone! Compilers were Jack Park and Ian Halladay.

Special thanks to those who ran multiple routes! (Brenda Dale takes the lead in the Prairies by running five routes in Alberta and five in Saskatchewan.) New observers were welcomed in both years. In 2016, there was a new species for the province - a Northern Cardinal was detected on the Lindrook BBS route.



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NA'S HYPO-HALF MARATHON IS FUN! SEE PAGE 3. MYRNA PEARMAN



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WESTSLOPE CUTTHROAT TROUT; SEE THE STORY, PAGE 13. D. W. MAYHOOD



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