

# 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



**THE MAGNIFICENT TRUMPETER SWAN. SEE THE FEATURE STORY, PAGE 24.**  
LEN HILLS

*feature article*

Trumpeter Swans (*Cygnus buccinator*) in  
Southern Alberta: A Personal Perspective



**EVEN A LADYBUG CAN BE EXCITING!** LEANNE STANDING



**A BROWN CREEPER;  
SEE THE STORY ON  
"COLOUR" PAGE 11.**  
SANDRA HAWKINS

*Nature Alberta:  
Celebrating our natural heritage*

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SUMMER ISSUE.**MAY 31**  
FALL ISSUE.**AUGUST 31**  
WINTER ISSUE.**NOVEMBER 30**

Nature Alberta is composed of natural history clubs from across the province. The aims of the Federation are:

- (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 DENNIS BARESCO

## OVERHEARD

A couple of comments from the *Nature Alberta* Archives, under the heading "Overheard" which were printed in the *Nature Alberta* Newsletter of Sept-Dec 1971 (Vol.1, No. 4):

Said a local Council candidate: *"Everyone knows that mosquitoes breed in long grass, and that's why we've got so many of them."*

Meanwhile, a New Zealand politician stated in all seriousness: *"This bird must never be allowed to become extinct again."*

## INSIDE NATURE ALBERTA

This edition's cover story about Trumpeter Swans (starting on page 24) shows what can be done with a good idea accompanied by patience, dedication and superb observational skills. The late Dr. Len Hills has written a valuable – and equally interesting – paper about the activities of Trumpeters as they stop on their migration route. About two years ago, Charley Bird originally put me in touch with Dr. Hills about the paper, and I was excited about the possibility of publishing it – even more excited when I

read it! Unfortunately, Dr. Hills became very ill and passed away when the paper was almost done (an "In Memoriam" article is printed in the Winter 2014 edition of *Nature Alberta*). So I was so very grateful when Marian Hills, Len's wife, contacted me in early March of this year, saying that she had finished the paper as Len had requested, and would send it along with photos to me. Added Marian: "I am very excited at the prospect of having this paper published in *Nature Alberta* as that is what Len had wished." I have

a hunch when you read of some of the unique habits of these magnificent birds that you, too, will be excited – and thankful of Marian's involvement.

Another bird article on a very different subject is Sandra Hawkins' "Colour: Sleight of Hand in the Avian World" (page 11). As Sandra says in opening her article: "The greatest variation of colour found amongst the earth's terrestrial vertebrates is exhibited by birds." From there, she goes on to explain what is arguably one of the more interesting subjects in zoology: bird colour.

## Shetland Trip

Last summer, Jim Brohman and his wife took a trip to the Shetland Islands – a "nature photographer's dream come true" as Jim put it. "If you love history and unspoiled, protected, and accessible wilderness teaming with wildlife then Shetland comes highly recommended!"

Jim thought that our readers might find pleasure in his article about the trip – for something a bit different; your Editor agrees. To view Jim's article: [www.photonews.ca/index.php/shetland/](http://www.photonews.ca/index.php/shetland/).



In the Issues section, it is gratifying to see the Alberta Fish and Game Association (AFGA) asking the “Alberta Government to stop the use of poison in culling wolves in an attempt to save the woodland caribou.” AFGA has good reason for the request, as the article points out. Nature Alberta has a policy against the use of poisons like strychnine for any purpose. Yes, strychnine is easy: just kill a nice big ungulate, lace it with poison and let happen whatever happens next – which is usually the often excruciating death of the target species along with numerous other non-target animals. As for the ethics of poisoning...well, that’s another hideous story.

Meanwhile, your Editor has written about one of our most admired insects – the Tent Caterpillar (see page 39). Okay, maybe the word “admired” is not the correct term; would “loathed” be closer to the truth?

There’s lots more pleasurable reading, including Kevin Gedling’s Jasper National Park articles (pages 14 and 37), Lorne Fitch’s Bull Trout essay (page 42) and the always interesting regular columns like Margot Hervieux’s “Little Fishes” (page 41) and John Warden’s “Leonardo’s Smoke” (page 16).

## On the Covers:



### FRONT COVER

Though Trumpeter Swans are still listed as Threatened in Alberta, their population has increased in abundance and the species has been using new lakes for breeding. Certainly, part of this is because of excellent data gathered by scientists like Dr. Len Hills. He has been acknowledged in the 2013 Trumpeter Swan status update by the Alberta government and Alberta Conservation

Association for his observations and contributions. See the Feature Story on his observations, page 24.



### INSIDE FRONT COVER

Education and volunteer programs in Jasper National Park are among the finest in Alberta. They are vital in instilling respect and admiration for nature...but they’re also fun, as testified to by the look on this youngster’s face!

See Jasper Promotions Officer Kevin Gedling’s articles starting on pages 14 and 37.

Great camouflage coupled with very small size – just over five inches long – means Brown Creepers can essentially become invisible when creeping up a tree trunk. From the side, though, as in Sandra Hawkins’ lovely photo, they are quite beautiful. See Sandra’s story, “Colour: Sleight of Hand in the Avian World” on page 11.



### INSIDE BACK COVER

If you’ve followed Debbie and Alan Godkin’s columns in Nature Alberta, you know that they are good observers and chroniclers of the wildlife in their farmyard. This time, it is Eastern Phoebes that found their way to the

Godkin residence. It is a lovely photo of the three nestlings, which have almost outgrown the nest. See the story on page 9.

When you see a Western Meadowlark open its mouth and let loose with its bubbly melody, you know spring is here. It was April 12th of this year that Rick Price captured this perfect image. It is understandable why they were named larks, considering their song and looks. Nevertheless, they are actually blackbirds.



### BACK COVER

“This is one of my best photographs and it took me three hours to capture it, waiting for the right light and moment. It was a moment that I have never seen in any owlets photo before and has a story in addition to a lot of effort behind it.” See Sharif Galal’s story on page 35.

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## ALBERTA ISSUES IN BRIEF

## AFGA Asks Alberta to Stop Use of Poison in Wolf Cull

FROM AN AFGA PRESS RELEASE, APRIL 8, 2015

The Alberta Fish and Game Association (AFGA) has asked the Alberta Government to stop the use of poison in culling wolves in an attempt to save the woodland caribou. The AFGA realizes this is a complicated situation; however the indiscriminate effects of poison has wide-ranging impacts which will directly affect other vulnerable species such as grizzly bears and wolverines that may come across poison-laced carcasses. Other non-

targeted scavenger species such as eagles and hawks will also suffer. Notwithstanding this, the carcasses that are being poisoned are generally, and otherwise healthy, big game animals which in itself is a travesty.

“The AFGA supports the culling of wolves in areas where there are species at risk of extirpation due to high populations of wolves” said AFGA President Wayne

Lowry, “however the Association does not support the use of poisons nor the killing of healthy ungulates as part of the program.”

“We are already receiving reports from hunters familiar with the area that they have noticed a lack of blue jays, ravens, and coyotes as well as finding carcasses of weasels and bear at or near wolf-baiting stations”, he continued.

## Grizzly Death Toll Climbs

FROM AN ALBERTA WILDERNESS ASSOCIATION PRESS RELEASE, APRIL 9, 2015

In what has become a sad annual tradition, Alberta’s ministry of Environment and Sustainable Resource Development has released their count of the number of Grizzly Bears known to have met their end in 2014. All of this year’s 19 deaths were caused by humans, underscoring the grave need for habitat protection for this threatened species.

That number also includes eight bears that died due to accidental causes, such as on roads and railroads. The access (including roads and trails) density in most Grizzly habitat is well above maximums recommended in the provincial government’s Grizzly Bear Recovery Plan 2008-2013, written when a population count estimated that fewer than 700 Grizzlies were left in the province.

Another 31 Grizzlies also died in 2013, the highest number since the hunt was stopped in 2006. Altogether, 168 Grizzlies have died since 2006, 150 of them from human causes. The biggest causes of death in that time were illegal kills (i.e.: poaching) with 40, and accidental deaths (e.g.: road-related) with 36.

The province is currently working on a long-delayed update to the 2008-2013 recovery plan, with a draft expected later this year. It is anticipated that the recommended access thresholds will be updated into hard limits with regulatory teeth and enforcement provisions, integrated with an access management plan developed for the South Saskatchewan Regional Plan (SSRP).

“The proliferation of roads, trails, pipelines and other forms of access into our backcountry is one of the greatest threats to Grizzlies and other threatened species,” concludes Sean Nichols, AWA Conservation Specialist, referring to research showing that most Grizzly deaths occur in proximity to roads. “Seeing this glut of human footprint being addressed would go a long way toward making up for the failure of the SSRP to include fully-protected status for the Castle and other vital wilderness habitat.”

FOR MORE INFORMATION CONTACT:  
SEAN NICHOLS, (403) 283-2025  
[CELL: (403) 397-7669]

## Mattheis Ranch Protected

INFORMATION FROM: THE CALGARY HERALD, MARCH 9, 2015; AND THE U OF A WEBSITE

The Mattheis Ranch north of Brooks and Duchess AB, along Highway 36, is an impressive 4,856 hectares (12,000 acres). Now, it has been protected by a conservation easement between the University of Alberta (U of A) and the Western Sky Land Trust. The ranch was donated to the U of A in 2010 by alumni Edwin and Ruth Mattheis.

The ranch harbours a who's who of prairie habitat and wildlife, including native grasslands, over 100 bird species and about thirty species at risk.

The agreement "ensures the ranch will maintain its exceptional natural value, while maintaining its high-priority activity as grazing land and significant oil and gas activity," said Jerry Brunen, executive director of the Western Sky Land Trust, in an article in the *Calgary Herald*.

The U of A will continue to do research on what Edward Bork, director of the Rangeland Research Institute, described as a "living laboratory." Rangeland research



U OF A

was the U of A Institute's original intent when it received the donation.

The site is a working cattle ranch and includes all the developments one might expect in a grassland area in Alberta. As the U of A website describes it:

"Irrigation-fed wetlands cover approximately 400 ha of the ranch. The water that circulates through these wetlands, most of which were created by Ducks Unlimited Canada in 1952, is delivered to 250 ha of cultivated land that is used to grow winter cattle feed, spring grazing

pasture and annual crops. Irrigation water also augments several of the property's natural wetlands. Other anthropogenic features on the ranch include high voltage transmission lines, two provincial highways and an extensive network of oil and gas infrastructure" [1,324 active well leases].

Alberta Environment and Sustainable Resource Development granted almost four million dollars, through its Land Trust Grant Program, as a research endowment fund.

## Advertising in *Nature Alberta*

*Nature Alberta* is now accepting a limited number of advertisements for future issues. Ad rates vary from \$35 (business card size) to \$249 (full page), X2 for colour.

Full details, including rates and sizes, are available at:

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# Nature Alberta NEWS



## Young Naturalists in Morinville

INFORMATION FROM: FREE PRESS, MORINVILLE-GIBBONS AB, VOL 18, NO. 11T, JAN 27, 2015

Founded by Leanne Boissonnault in 2013, the Morinville and Area Young Naturalists Club started with eight families and has now tripled their membership. They've taken part in a wide variety of activities, such as pond dipping, ice fishing, hiking, bird house building, and animal

presentations. Nature Alberta also provides weekly free workshops.

The Club is focussed on youth to allow them, as Ms. Boissonnault says in the *Free Press* article, "to learn the love of nature, that nature's still there because the world's become so electronic and

computer [focussed] and this is just getting them back to nature." Nevertheless, Boissonnault points out that the club is for all ages; the activities are family-based. The club meets one Saturday or Sunday a month, with annual membership fees of only \$30 per family.

## Hypo-half Marathon

Nature Alberta once again sponsored the Hypo-Half Marathon in Edmonton. Congratulations to all the runners – and to all the volunteers!

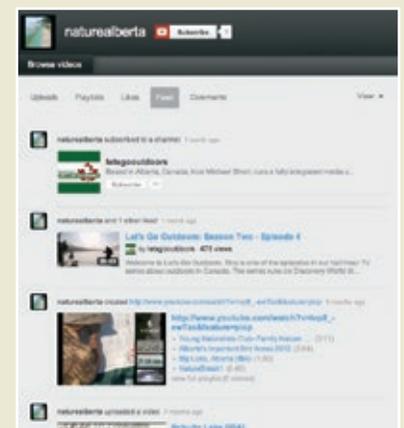
**OFF AND RUNNING!** SEAN GORDON



## Nature Alberta & YouTube

Cheyenne Lemery, Nature Alberta's Communications Specialist, 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](http://youtube.com/naturealberta)



## OOOPS!

A name change of one of Nature Alberta's Clubs was announced in the Winter magazine (page 15). Unfortunately, the wrong club was identified! It was NOT the Alberta Native Plant Council (ANPC) that changed its name; it was the Edmonton Naturalization Group that has changed to the Edmonton Native Plant Group. Our apologies to ANPC; nothing has changed for them. For the Edmonton Naturalization Group, the name and the website has changed to Edmonton Native Plant Group, and: [www.edmontonnativeplantgroup.org](http://www.edmontonnativeplantgroup.org); their email remains the same: [engedmonton@gmail.com](mailto:engedmonton@gmail.com).

## Kudos to Living by Water!

Since 1992, the Emerald Awards have recognized and celebrated over 450 finalists and 250 recipients who have made a significant contribution to preserve, protect and enhance the environment locally, provincially, nationally and internationally. This year, Nature Alberta's Living by Water project, was selected as a recipient of the Emerald Challenge: Water award, presented by Encana.

Greg Boorman, who has done a great job as Coordinator of Living by Water, will attend the 24th Annual Emerald Awards to be held June 4, 2015 at the Citadel Theatre. The Emerald Awards will create a short documentary-style video to showcase the project at the Awards ceremony and on social media. Living by Water may also be selected to be included in a feature article series that will appear in various newspapers around Alberta.

## Sandra Foss and ACA

Sandra Foss is the Nature Alberta rep on the Alberta Conservation Association (ACA) Board. She attended the ACA Board meetings on March 25th and 26th, 2015 and took part in Committee meetings: Finance & Audit, Communications, Operation Standards review (OSR), and Recruitment committees; she also chaired the Grant Committee meeting.

As you can see, Sandra has been very busy and done a tremendous job for Nature Alberta on the ACA Board. Sandra is the latest recipient of Nature Alberta's Honourary Life Membership Award (2014).

## Anniversary Event

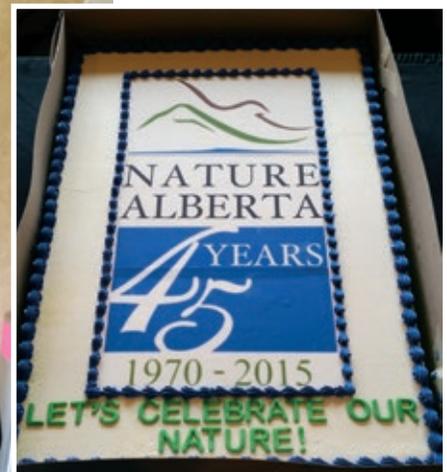
On April 4th, Nature Alberta celebrated its 45th Anniversary with an event at the Royal Alberta Museum from 11:00 am to 3:00 pm. Cake, kids' activities and celebratory socializing was the order of the day and from all reports a great time was had by all. April 4th was chosen because that was the exact date of Nature Alberta's founding in 1970, known then as Federation of Alberta Naturalists.

Buffalo Lake Naturalists, a Nature Alberta Corporate Club, also held a celebration the same day in Stettler. Judy Boyd from the Medicine River Wildlife Centre brought Otis the owl. Biologist Tim Schowalter displayed and talked about regurgitated pellets – not much excites kids as much as dissecting a real owl pellet – plus there was cake and items like checklists to take home. The weather was uncooperative but everyone still had fun!



FORMER NATURE ALBERTA DIRECTOR IRIS DAVIES ENJOYS COFFEE AND CAKE! CHRISTINE BROWN

BIRTHDAY CAKE!



JUDY AND OTIS IN STETTLER.

## Changes

Martha Munz Gue is stepping down as Grasslands Naturalists representative on the Nature Alberta Board. Said Martha: "It's been an interesting three years. I appreciated the attention Petra showed to SE Alberta by coming and sharing the info about the NA projects. I will continue to promote those projects at the local level." Nature Alberta certainly appreciates Martha's dedication in her role as a Board member. And a big "Welcome!" to the new rep, Michael O'Shea, a long-time Grasslands Naturalists member.

Also resigning from the Board is Director Geoff Holroyd. Geoff has become the Chair of the Beaverhill Bird Observatory and, combined with the many other areas he's involved with, he simply does not have enough time available. Nature Alberta President Ted Hindmarch stated: "You will be greatly missed. We thank you very much for your advice and contributions over the past two years."

Cheyenne Lemery's contract with Nature Alberta as Communications Coordinator has expired as of March 31st and will not be renewed. This has nothing to do with her work, as Cheyenne did an absolutely superb job in her Communications role. The problem is simply one of financial resources – or rather, the lack thereof. Everyone at Nature Alberta is very grateful to Cheyenne for her creative approach to communications, and she will be missed. In her last message to the Board, she stated: "I'm also happy to report that today [March 26th] Nature Alberta got its 1,500th twitter follower!"

At this point, following the resignation of Petra Rowell, the Executive Director position has not yet been filled. Again because of financial constraints, other options are being examined by the Board.



NATURE TOURS

# DISCOVER OUR NATURAL WORLD

## FEATURED TRIPS:

### GREAT BEAR RAINFOREST & KHUTZEYMATEEN GRIZZLY SANCTUARY

August, 2015

### HIGHLIGHTS OF SOUTHERN PERU: THE COAST, THE ANDES & THE AMAZON

October, 2015

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*Spirit Bear, Great Bear Rainforest*



DEBBIE AND ALAN GODKIN

## Nature Diary: Eastern Phoebe

BY DEBBIE AND ALAN GODKIN

The dull gray Eastern Phoebe, with whitish underparts, is decidedly a visible, vocal, and vigorous bird:

Visible because they often build nests on houses in the suburbs and on farm buildings, and because they perch conspicuously on power lines or fence posts while watching for food.

Vocal because the male frequently, and beautifully, sings the distinctive, but raspy two-note 'fee-bee' from which it gets its name.

And vigorous because these birds are in constant motion, making short flights to catch insects, and when perched, they habitually sit upright and pump their tail.

The first time a pair of Eastern Phoebes nested here several years ago, they appeared as two young love birds with lots of ambition, but with little knowledge on how to set up house, so to speak. The pair arrived on May 1st and chose a

nesting site under the eaves on a storage shed. To build her open cup nest, the female packed mud and grass, and then lined it with moss, which she gathered from a low spot in the pasture.

Over three days the female built four nests under the eaves of the shed, but only completed one. After all that work, she didn't use the nest site. The pair spent the next week perched on the power line catching insects, before choosing a second nesting site

*Like many naturalists, Debbie and Alan Godkin, from Westlock AB, have numerous stories of their experiences with nature – stories they love to share with other naturalists in this "NATURE DIARY" series!*

under the eaves of the hip-roof barn. Two half-finished nests later, she abandoned the new site also.

The third week of June she resumed nest building, this time inside the hip-roof barn. But her third attempt was short lived. A pair of Barn Swallows appeared in the yard, and chased the Phoebes out. The Phoebes retreated to the power line, their favorite perch. The Barn Swallows built two nests, neither of which were finished before they left the yard for good.

One day early in July, just after we pumped out the cistern by the barn, the female Phoebe fluttered down the shaft and seconds later, exited with a mouth full of mud. She repeated this process several times, then switched to collecting moss, which was growing near the top of the cribbing. We decided to leave the lid off the cistern for a few days. It hadn't rained in weeks and the wet spot in the pasture had dried up, leaving the Phoebes without nesting materials.

A few days later, I noticed that only one bird was perched on the power line. The female had finished building her nest on a horizontal wooden beam, and was sitting on eggs. While the female incubated the eggs, the male took to perching on a poplar branch by my bedroom window and singing a repetitive 'fee-bee' well before the first hint of dawn. He kept this up every morning until the young



**IMMATURE EASTERN PHOEBES  
IN HIP-ROOF BARN.** DEBBIE AND  
ALAN GODKIN

hatched. Alas, there was no more time for singing, as both parents attended to feeding the young.

On July 23, the Phoebes were flying in and out of the barn every few minutes. Two heads were barely visible in the nest. I waited over a week before returning to the barn. By then, four young were bulging from the nest.

On August 6, two immature Eastern Phoebes flew out of the barn and onto the power line, where the adults fed them until evening. The young returned to the nest for the night. The following morning, all four young were sitting on the power line and by midday had dispersed around the yard. Two days later they moved into the poplar stand at the edge of the yard.



**NEST BUILDING IN HIP-ROOF BARN.**  
DEBBIE AND ALAN GODKIN

The Eastern Phoebes' conspicuous nature, song, and aerial antics made them a pleasure to have around. We were happy to have these early migrants return to the same nesting site in our yard for three years straight.

Note: This story occurred in 2006. Eastern Phoebes have nested here each year from 2006 - 2010. Barn Swallows started nesting here in 2011 through to 2014, which leads me to wonder if the two species are incompatible in the same area.

# Colour: Sleight of Hand in the Avian World

BY SANDRA C. HAWKINS

*“There are only 3 colors, 10 digits, and 7 notes; it’s what we do with them that’s important”. – JIM ROHN*

## COLOURATION IN BIRDS

The greatest variation of colour found amongst the earth’s terrestrial vertebrates is exhibited by birds. From the onset of the reproductive cycle through a restorative moult and winter’s rest, their colours may range from shimmering reds, blues, and greens to drab brown. Who has not been impressed with the dazzle of colour flashed from the gorget of a hummingbird in flight? Who has not walked past a female mallard on her nest totally unaware of her presence?

Winston Churchill once said: *“I cannot pretend to be impartial about the colours. I rejoice with the brilliant ones, and am genuinely sorry for the poor browns.”*

Although we humans rejoice about colour, it is the “poor browns” that provide a greater assurance of nesting success. In nature, colour is often a game of sleight of hand, or, in other words, the secret manipulation of what selectively is or is not seen. An animal’s colouration may be a key factor when seeking a mate or in surviving the prying eyes of a predator.

## LIGHT

When we glance at a light bulb or toward the sun, the light we see may appear colourless, but it is actually white. That light is the result of the combination of several colours. The breakdown of colours becomes apparent

when white light is refracted (slowed down and bent) by shining it through a prism and separating it into varying wavelengths and energy levels.

The well-known rainbow effect of violet, indigo, blue,

**A “LEUCISTIC” AMERICAN ROBIN.** SANDRA HAWKINS

IRIDESCENCE IN A TREE SWALLOW. SANDRA HAWKINS



green, yellow, orange and red is called the *electromagnetic spectrum*. All colours result from red, blue, and green – also known as the *primary colours*. Although “white” light does not actually exist in the electromagnetic spectrum, we humans “see” it due to the special cone cells in our eyes. These cells contain special pigments that are sensitive to red, blue and green light. When equal amounts of red, blue and green light are absorbed, the cone cells signal (trick) the brain and tell it we are seeing white light. On the other hand, when all wavelengths except red, for example, are absorbed, the eye will see only red. When we contemplate a bird’s feathers, the colour we see is dependent upon which wavelength or, combination of wavelengths, is reflected and reaches the eye. When no light is reflected we see black. The resultant colours may be attributed to multiple factors such as pigments,



structure (how the physical makeup of the feather reacts with light), and *colour abnormalities*.

### PIGMENTS

*Melanin* is the most common pigment in feathers. It is a chemical compound that is actually synthesized by birds and is found in the form of minute granules in both their skin and feathers. Depending upon its concentration, it not only results in a variation of colours ranging from black, brown, buff, reddish and yellowish brown, but it is also strong and comprises an integral component of a bird's flight feathers. Birds that are all or mostly white lack melanin, but often have dark (strengthening) feathers on their wings and/or wing tips.

*Carotenoid*, the second most common pigment, is not produced by birds; it is made by plants that are ingested directly or indirectly as part of a bird's prey. They are not granular in form; rather, they are distributed more diffusely throughout feathers and skin.

Reds, oranges and some yellows are attributed to the presence of these pigments.

Although *porphyrin* pigments may brightly colour feathers, they are also commonly found in egg shells and are synthesized from amino acids in the ovi-ducts of female birds. They can produce pinks, reds, browns and, very rarely, greens. At times, these colours may be obscured by high melanin levels and may not be visible without exposure to ultra violet light.

Depending upon the type(s) and concentration of pigments in a bird's feathers, the absorption of some wavelengths of light and reflection of others will determine how our brain, in conjunction with the cone cells, interprets what colours we actually "see".



**A MATED MALE AND FEMALE MALLARD: CLASSIC EXAMPLE OF IRIDESCENCE AND CAMOUFLAGE.** SANDRA HAWKINS

### STRUCTURAL COLOURS

As with pigments, the actual structural make-up of feathers allows the selective absorption of some wave lengths and the reflection of others.

*Iridescence (interference colours)* is the effect commonly seen in the array of colours found when one observes an oil slick on water or the flash of colour from a mallard drake's green head. The colours emitted may also vary with the angle of observation. The effect is sometimes called "the interference of light at thin films". The speed of light varies with the density of the medium through which it passes. The denser the medium, the more the light is slowed and bent (refracted). When light from a single source is split and then re-combined, such as happens when some rays are directly reflected from the surface and others briefly enter the denser medium (oil on water or a multi-layered feather), the wave lengths are said to be out of phase and the iridescence effect becomes apparent. The presence of melanin granules contributes to the iridescence in a hummingbird's feathers, while, at other times, the oil birds apply to their feathers during the preening process may also augment this effect.

The colour blue (not always iridescent), exhibited by some of Alberta's most beautiful birds such as the Mountain

**STELLER'S JAYS ARE NOT BLUE; THEY JUST APPEAR THAT WAY IN OUR EYES.** SANDRA HAWKINS



Bluebird or the more rare Steller's Jay, is mostly attributed to the structure of a bird's feathers. Feather barbs contain tiny air pockets which can scatter incoming light that is perceived as "blue" when reflected back to the eye; while light transmitted up through the back of the feather will appear brown. The more drab brown shade is a product of the feather's melanin content.



### ABNORMALITIES

Although some white (a non-iridescent colour) feathers may be due to conditions known as albinism or leucism (the complete or partial absence of any pigmentation), most white feathers result when no wave lengths of light in the visible spectrum are absorbed and all are equally reflected.

### THE IMPORTANCE OF COLOUR

Human beings are fascinated with the vast spectrum of colours and patterns found in the avian world; however, such marvels are truly not for our benefit. Instead, they play an integral role in a bird's life cycle. From its survival as a nestling or fledgling to seeking a mate to successfully raising the next generation, colour (or lack of it) holds the key.

### Cryptic Colouration

Movie plots often make much about the advantages of becoming invisible. From 1933's "The Invisible Man" to today's Harry Potter and his "cloak of invisibility", humans have

speculated about the virtues of hiding from prying eyes. Stealth technology is now a reality, but it is very costly and, at present, available solely for military purposes.

Although it will most likely be many years before the average human is directly affected by such technology, the world of nature has enjoyed its benefits for aeons. In that world, it is called *cryptic colouration or camouflage*. The ability to blend and become one with the environment is a ruse most commonly used by young birds and females on the nest. During moult periods, male birds, especially ducks, also borrow this tactic when they don their *eclipse plumage*. In these circumstances the brown and buff shades produced by the pigment melanin are most commonly on display. The ultimate example of cryptic colouration is exemplified by birds that are of the same colour as their environment such as a male Snowy Owl in the high arctic.

*Countershading (also called obliterative shading or Thayer's Law)* is a form of camouflage that occurs when a bird's colouration is darker on the upper side (dorsal) of its body and lighter on the underside (ventral). A darker colour on the back makes a bird less visible by predators that strike from above. The lighter belly colour causes the bird to blend in with the brighter sky above and makes it harder to be seen from below. Shorebirds and loons share this trait. Stripes added to this dark/light mix, such as on the necks and bellies of birds (e.g. killdeer), make them even more difficult to see against a variety of natural backgrounds. The latter effect is called *disruptive colouration*.

### Epigamic Colouration

The term epigamic describes features that attract and/or differentiate the opposite sex. In the avian realm,

**COUNTERSHADING IN A SANDERLING; NOTE  
THE MINNOW IN ITS BEAK.** SANDRA HAWKINS



colour is paramount. During the reproductive cycle, recognition of potential mates of the same species, courtship displays, territorial displays with rival birds, and recognition of non-threatening and/or dependent young birds are greatly dependent upon colour cues. At this time, feather colour is at its peak. Afterward, it is not uncommon for male birds of many species to moult and lose their most dazzling colours in exchange for a mantle of drab brown or gray.

### IN SUMMARY

No matter where a bird is in its annual reproductive cycle, colour plays a starring role in its ability to survive, find a mate and to produce the next generation. In the words of playwright Oscar Wilde:

*“Mere colour, unspoiled by meaning, and unallied with a definite form, can speak to the soul in a thousand different ways.”*

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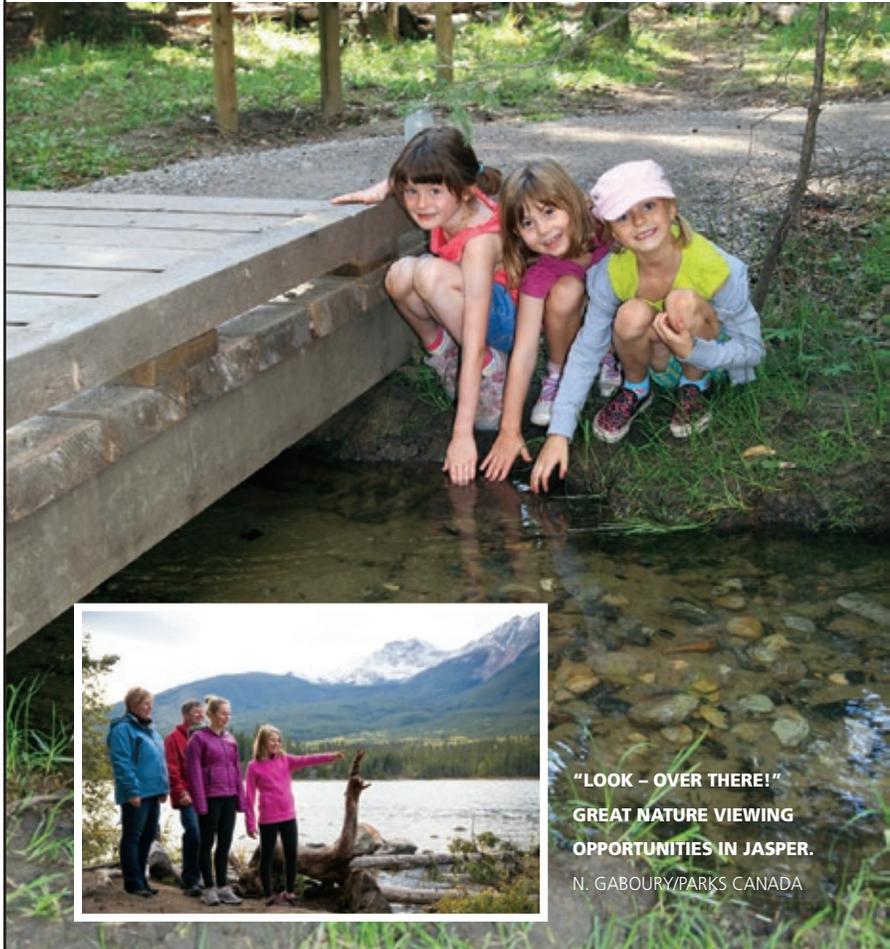
# Top 5 Beginner...

BY KEVIN GEDLING, PROMOTIONS OFFICER, JASPER NATIONAL PARK

*Jasper National Park is one of Alberta's classic places to experience nature for the first time. Big mountains, incredible rushing rivers and wildlife at every turn. It really couldn't get much better!*

*There are a few good tips that beginner nature buffs might want to think about when they come to visit a park for the first nature watching excursion. Here's a couple tips and recommended places to visit to help you get set for that first trip out!*

**DIPPING FINGERS INTO A COLD CREEK IS A GREAT NATURE EXPERIENCE.** CHRIS WHITTY



**“LOOK – OVER THERE!”  
GREAT NATURE VIEWING  
OPPORTUNITIES IN JASPER.**  
N. GABOURY/PARKS CANADA

# ...Nature Watching Tips from Jasper National Park

## 1 Bring binoculars and a camera!

Nature observation begins with having a good set of eyes to extend the reach of the naked eye. Rocky Mountain landscapes are craggy, brushy, detailed and intricate. You need a great eyesight booster like this to sift through the details and pick out your prize wildlife scene.

*PLACE TO GO: Try visiting Talbot Lake on Highway 16 to practice. Especially waterfowl, muskrats and beavers: you'll find them all here!*



**A WILDLIFE JAM...AND A RISKY, DANGEROUS WAY TO GET A PHOTOGRAPH OF A BULL ELK.** PARKS CANADA

## 2 Go High! Go Low.

Different species like to use different places. Some like it high where it's cold and pristine. Some like it low, where it's warm and there's lots of sources for food. When visiting a park as big as Jasper, be sure to round out your visit by going to different samples of places that offer different kinds of habitat for a varied experience. And remember, even the smaller stuff counts for some great nature viewing opportunities!

*PLACE TO GO: Cavell Lake or Cavell Meadows. In summer, this is the easiest way to get into the subalpine. A special interface between life in the valley and life on the summits, the drive up often includes deer and elk, but also sometimes bears and lynx. Cavell Lake offers a charming place to view birds. The trail to the meadows is a good place to see Pikas!*

## 3 Keep It Easy- it's all in the Name!

For a first time out, it's good to take it easy and explore simple places that are easy to get to. Sometimes the trail's name says it all. Try the Woodpecker Trail to find... woodpeckers; Bighorn Alley to find...Bighorns. And in some cases, nature's best can be found right in your own

campground! Pick up a trails map from the website or the visitor information centre and pick out some fun places based on their names. It's a bit like judging a book by its cover, except in this case, it works!

*PLACE TO GO: Jasper's Easy Trail system is simple and easy to connect with. Camp at Whistlers and go for a walk on the Whistlers Campground Trail for close up at nature in your own temporary backyard.*

## 4 Keep Your Distance

When you're looking for wildlife, the best views are often unexpected, sudden and right under your nose. Whatever you do – keep your distance and give wildlife space. Wildlife are a little bit like people. They have a personal comfort zone and will display behavioral “clues” if you get too close. We recommend three bus lengths from anything like an elk or a deer and at least ten bus lengths from a bear or a wolf.

*PLACE TO GO: Close-up roadside views can often be had from most of Jasper's highways and parkways. Stay in your car, take a good look and do your best to keep on going. Keep it safe for other drivers around you and wildlife as well.*

## 5 Preparation and Patience

Be sure to invest in a very simple and affordable kit of outdoor gear. A jacket, some bug spray, a first aid kit, nature guidebook, food, water and bear deterrent. Get into the habit of bringing it along. Weather conditions in the mountains are often changeable with almost no notice. Make it so you can stay outdoors in almost any weather condition. And remember: the secret to seeing more wildlife out on the trail is to spend more time on the trail (in any kind of weather!).

*PLACE TO GO: Try the Flower Loop (in Jasper, it is trail 10 and 10a) for a 2km walk by riversides, marshlands, grasslands and wildlife corridors aplenty. And an incredible array of flowers late May-August!*

FOR MORE INFO ABOUT JASPER NATIONAL PARK AND PREPARING YOUR VISIT, GO TO: [WWW.PARKSCANADA.GC.CA/JASPER](http://WWW.PARKSCANADA.GC.CA/JASPER). GOT GREAT PHOTOS? TAG THEM! @JASPER NP OR @NATUREALBERTA.



JOHN WARDEN

## Close to Home: Nature Photography in Alberta

# Leonardo's Smoke

BY JOHN WARDEN

*A polymath is simply a person who knows a lot, about a lot. This pretty accurately describes the Renaissance Man, Leonardo da Vinci (1452 - 1519).*

His wide ranging interests and expertise included mathematics, science, engineering, aviation, anatomy. And he is thought by many to be one of the greatest painters of all time.

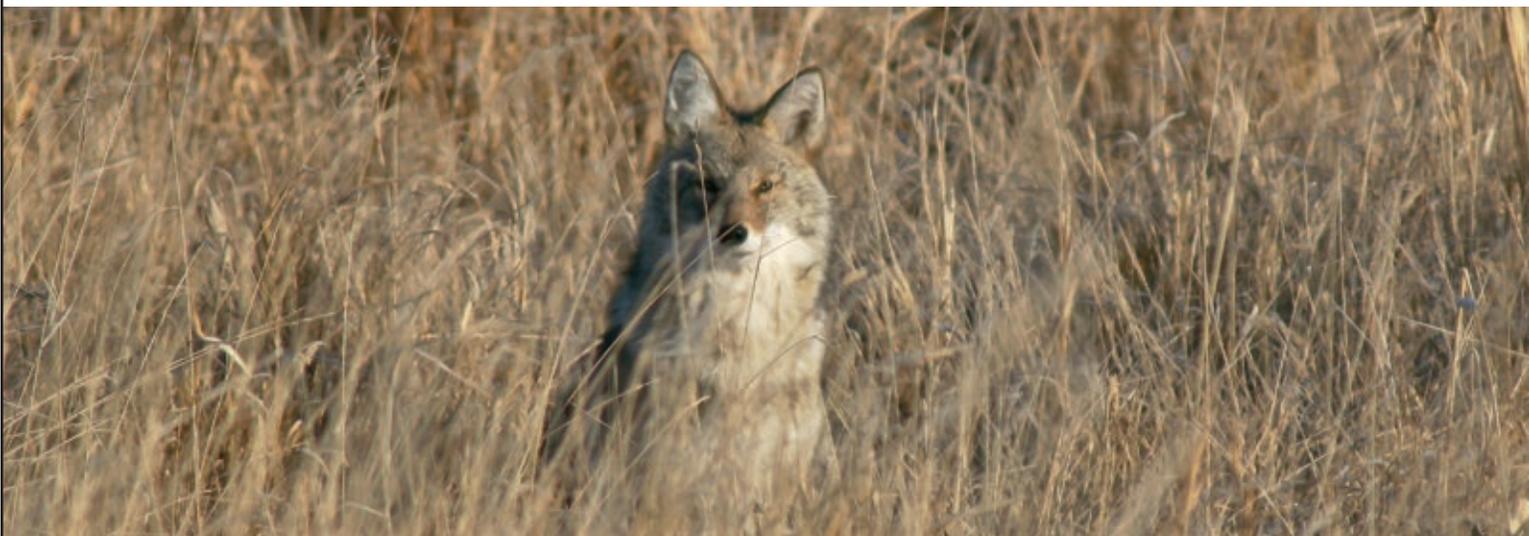
In 1503, da Vinci began painting the iconic *Mona Lisa*. Over the 4 years it took to complete the piece, he introduced a brush technique that has become

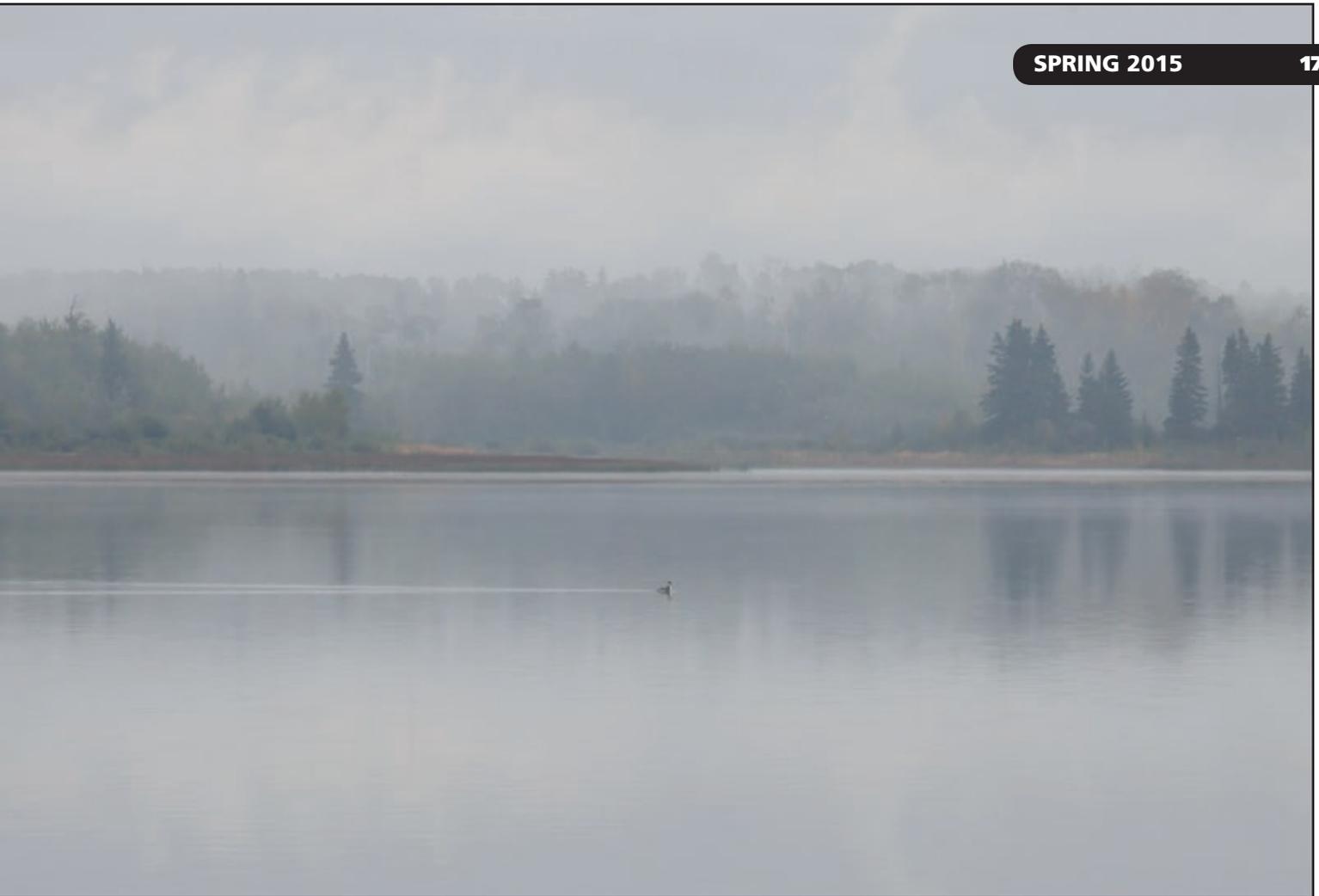
known as Leonardo's Smoke. Da Vinci himself explains:

"It is as if a veil of smoke has been placed between the painting and the viewer, toning down the bright areas and lightening the dark ones, so as to produce a soft, imperceptible transition between the differing tones."

Leonardo's Smoke is better known as *sfumato*, an Italian word that comes from *sfumare*, meaning "to tone down or to evaporate like smoke." The Visual Arts Encyclopedia explains that with the sfumato technique, "colours or tones are blended by the artist in such a subtle manner that they appear to melt, one into another, without perceptible transitions, lines or edges."

**A WHIFF OF SMOKE IN THE TALL GRASS.** JOHN WARDEN





**A WONDROUS WATERCOLOUR WORLD.** JOHN WARDEN

For da Vinci, sfumato was not a special effect. Rather, it was his attempt as an artist to portray more realistically what he saw as the infinitely subtle continuities of light and shadow that he observed in nature (Nagel, 1993).

As we have seen from da Vinci's own definition, sfumato is about toning down and blending. Learning then how tints, tones and shades communicate with us artistically is an important aspect of heightened awareness and how we look at and photograph nature.

In trying to emulate colours found in nature, painters mix pigments together to create blends. Add white to another colour and you

get a pastel – or more properly, a tint. The resulting combination is a lighter, softer, less intense version of the original. Less saturated, tints are often thought of as warm and inviting and warm colours elicit warm feelings. This is as important in photography as painting. Pastels take the edge off the particular color hue from which they originated and as a result, evoke a more thoughtful mood. Da Vinci's *Mona Lisa* is one of the best painting examples of a thoughtful mood and Steve McCurry's famous *Afghan Girl*, is a similar example from photography.

By adding gray to another colour however, painters create a tone.

Tones retain a pastel look and feel, but are a greyed down or muddied version. Many people find tones pleasing to the eye and painters will often mix a little grey with every color on their pallet to improve the value and intensity of their pigment. Tones are more complex than tints, their message subtle and their feel, very sophisticated. The yellow tones in da Vinci's *Mona Lisa* are a study in subtle sophistication as are the grey tones of Ansel Adams' renowned landscape photographs.

A shade is created by adding black to another colour. By varying the amount of black that's added, the resulting shade can be anywhere from a barely



**ONE MOMENT MOOSE, THE NEXT MOMENT GONE.** JOHN WARDEN

shaded colour to extremely dark, nearly black. Darker than the original colour, shades evoke depth, power and mystery. The Mona Lisa's mysterious smile is da Vinci's very subtle example of shading. For an example from nature though, I turn to the naturalist and philosopher Henry David Thoreau. A keen observer of nature, Thoreau spoke of the forests around Walden Pond, commenting on "the shade that lurks amid the foliage of trees".

"If you want [to see] a different shade or tint of a particular

color, you have only to look farther within [the foliage of] the tree or [deeper into] the woods."

Thoreau took his lessons, not from artists, but from nature herself, who was for him the best of all teachers:

"Where else will [we] study color under greater advantages? What School of Design can vie with this?"

Following Thoreau's advice, I enrolled in Mother Nature's school of design and early one September morning, found myself at Elk Island National Park, a

magical classroom that is close to home. Fall is my favourite time of year and, that morning, the air was cool and fog lay heavy along the shoreline of Astotin Lake. Having walked out to The Point through tall, wet grass, I set up my tripod, attached my camera, connected the remote shutter release and prepared to learn. I was not disappointed.

Oh, what a lesson that day. As described by da Vinci, the grey tones of fog and the few autumn colours were subtle blends, as if melting, one into another. Aspen trees on the far shore wore shrouds of mystery and slowly the fog began to dissipate.

In the silence, a wondrous, watercolour world was revealed in soft light and softer lines.

The soft skills of sfumato are not limited to portraits and landscapes. They also play an important role in the art of camouflage. Practiced in nature by both predators and prey, camouflage is one of the most common approaches to survival of the species and like sfumato it's all about blending.

Late one afternoon near St. Albert as the evening mists began to crawl across the land, I saw a coyote crossing a farmer's field. Hay bales were hazy squares in the background, but I'd caught the coyote out in the open. He paused to look at me. The highlights, tones and shading of his coat were a blend of the field

and hay bales that surrounded him. He was perfectly coloured for his environment. Seeing him there in that moment, I wasn't surprised to later learn that the word camouflage comes from the French camoufler, meaning 'a whiff of smoke in the face.'

Another day, north of St. Albert and closer to Morinville, another coyote caught my eye. He sat down, waiting to see if I would leave, his coat blending into the tall grass. There was a soft, imperceptible transition between coyote and habitat, until it was no longer discernable where one stopped and the other began. We had eye contact, that coyote and I, and a connection that was so strong that, had I blinked, he would have been gone, a whiff of smoke in the tall grass.

My young moose portrait is even softer. The ears and eyes stand out. The rest of the moose though, blends into the bark of the tree behind him. Moose, tree and background all flow together, one moment moose, the next moment gone. To over-sharpen or over-saturate this photograph in order to achieve 'tack sharp' clarity would ruin the image. Camouflage is a whisper of smoke, not a forest fire.

Da Vinci's study of light and shadow revealed soft edges and subtle transitions. Using fine shading and small, miniscule brush strokes, he spent years on his paintings, trying to recreate the natural blending that he observed in reality. We, on the other hand, have only the present moment. It's a moment though

**THE COYOTE WAS PERFECTLY COLOURED FOR HIS ENVIRONMENT.** JOHN WARDEN





**TONES OF SUBTLE SOPHISTICATION.** JOHN WARDEN

of opportunities: to practice our long slow look and appreciate the soft side feelings of tints, tones and shades and to explore the aesthetics of tranquility and the mysterious. And in slowing down, we can take the time to watch the woods for a whiff of smoke.

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Check out John Warden's updated website: [www.jwardenphotography.com](http://www.jwardenphotography.com), with a new look and many photographs. Plus, also on the site are his past *Nature Alberta* articles.

**[www.jwardenphotography.com](http://www.jwardenphotography.com)**



# Eyes on IBAs

## Protecting a Spring Phenomena

BY BROOK SKAGEN, NATURE ALBERTA IBA INTERN

*Sunny skies chase Chinooks through chilled crisp air, frost freezes the fresh-waking grass, and the morning rhymes of rested Robins dance across the landscape.*

Spring has arrived in Alberta, warding off the winter snows, bringing with it a land of contrast. Perhaps the most notable of all are the thousands of wetlands that come to life and replenish the otherwise thirsty southern prairies. It was during my latest venture to Travers Reservoir and the rolling hills that surround the Important Bird Area (IBA) that I realized just how critical Spring's arrival could be.

Located just 30km east of Vulcan, the IBA includes Travers Reservoir, McGregor Lake, Little Bow Reservoir, and a narrow portion of the upland areas that surround them. The northern shore of Travers Reservoir (the portion of the IBA I have been able to survey thus far) is easily accessible from two primary locations: Little Bow Provincial Park and the Travers Dam Recreational Area, both of which provide a wide diversity of avian and mammalian species.

Native grassland, eroding coulee slopes, and undulating glacial topography surround the extensive water body, which hosts water birds and staging waterfowl such as Northern Pintail, American Wigeon, and Common Goldeneye on a locally significant scale. Vagrant Eurasian Wigeon, Slate-colored Dark-eyed Junco, and flocks of Tundra Swans highlight the many species encountered during my latest morning visit. If it weren't for Spring's timely arrival, many of the thousands of migrants which

frequent the area could no longer be supported.

Alberta's wetlands are crucial to the breeding and migratory success of our waterfowl species. The uplands of the Travers Reservoir IBA contain a network of prairie sloughs, dugouts, and marshlands retaining winter melt and spring showers, where hundreds of ducks, swans, and other early arrivals can be found. Dabblers are able to easily access roots, invertebrates and other

**AN APRIL MORNING FROST AT TRAVERS DAM RECREATIONAL AREA.** BROOK SKAGEN



*Brook Skagen*  
Nature Alberta IBA intern



LITTLE BOW PROVINCIAL PARK (TRAVERS RESERVOIR). BROOK SKAGEN

forage within the shallow waters, while remaining stubble and reeds provide critical ground cover for nesting species that the abrupt reservoir shores simply cannot provide. Diving ducks, loons, and other piscivores utilize the deep fish-bearing waters of the reservoir for both food and protection, as the lack of developed shoreline inhibits predation. Alone these ecosystems would likely not support such a rich biodiversity; together they form an Alberta Important Bird Area.

The inclusion of temporary wetlands is not unique to

the Travers Reservoir IBA, or even the IBA program. Across the province, IBAs such as Pakowki Lake, Lakeland, and the Peace-Athabasca Delta have encompassed these and other crucial temporary water bodies within their borders that promote their ecosystem health. But despite their inclusion in the IBA program, provincial parks, and other protected areas, our wetlands continue to vanish. With an estimated 65% of the province's wetlands already lost, it is critical that we as birders, conservationists, and citizens

become more involved with conservation efforts.

By birding an IBA and its temporary wetlands, and submitting your results to eBird or your local nature society, conservationists and biologists are better able to understand the role that ecosystems hold for not only the 600 bird, animal, and invertebrate species which depend on them, but for recreational, agricultural, and economic uses critical to the province. Combined with conservation and restoration efforts, your observations will



**LITTLE BOW PROVINCIAL PARK (TRAVERS RESERVOIR).** BROOK SKAGEN

dynamically impact the sustainability of seasonal wetlands and their corresponding watersheds that rejuvenate the landscape from peatlands to prairie. So the next time you visit an IBA, look beyond the path and the water's edge: the ditch you pass or the pond you miss may have the birds you're looking for!

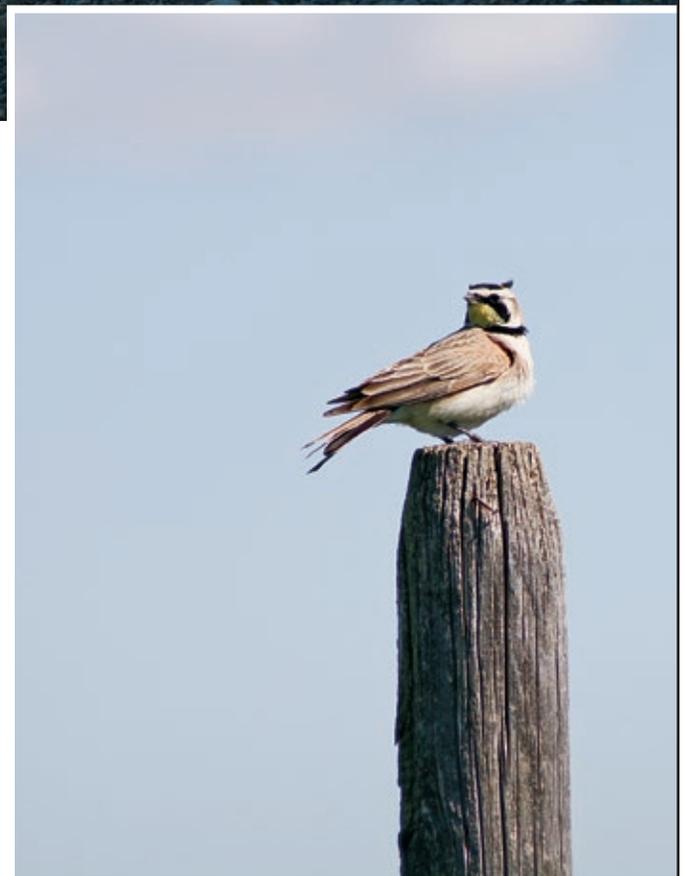
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**HORNED LARK AT  
TRAVERS DAM  
RECREATIONAL  
AREA.**  
BROOK SKAGEN



## FEATURE ARTICLE

# Trumpeter Swans (*Cygnus buccinator*) in Southern Alberta: A Personal Perspective

BY L.V. HILLS, M.SC, PH.D (1933-2013)

## INTRODUCTION

A chance sighting in the spring of 1992 by my wife Marian and me of 81 swans on a man-made pond at Jumping Pound stimulated interest in which species they were. Fortunately one was collared, making it easily identified as a Trumpeter. Both Trumpeter Swans (*Cygnus buccinator*) and Tundra Swans

(*Cygnus columbianus*) were present (49 Trumpeters and 32 Tundras). They were quite unconcerned, allowing close observations on key identifying features, fixing my ability to differentiate them and stimulating interest in the Trumpeters.

This was followed the next spring by a revisit to the area and also to other ponds. The mix of swans

had returned and were both feeding and resting on many other ponds in the area. This initiated daily trips in new areas to determine the extent of the staging area and determine if it warranted a long-term study.

A program of daily visits was initiated in an ever expanding area, often requiring eight or more hours per day to complete. This

LEN HILLS



continued every year since, with one season racking up about 13,000 km, and a totaled truck in a rollover with fortunately only a few bruises and the loss of my hearing aids.

This research allowed me to develop a personal perspective on many aspects of Trumpeter Swans in Southern Alberta. This paper is a description of my understanding of various aspects of Trumpeters in Southern Alberta and is divided into a series of parts as follows:

**Part 1** – The flyway, landings and takeoffs, pond usage, pitting

**Part 2** – Counts, age distribution and timing of spring migration

**Part 3** – Recruitment and survival

**Part 4** – Juvenile abandonment

**Part 5** – Intraspecific and interspecific relationships

**Part 6** – Miscellaneous observations – reaction to coyotes, bald eagles, hawks, cattle and human activity.

### **PART 1 – THE FLYWAY, LANDINGS AND TAKEOFFS, POND USAGE**

Development of the southern Alberta flyway is based on observations, taking advantage of phoned sightings that I verified and those made as part of the survey.

**CONCLUSIONS:** The eastern limit of the flyway extends NNW from west of Lethbridge to east of Frank Lake, Chestermere Lake and about 6 km east of Airdrie AB, then shifts more NW towards the foothills. The eastern limit

may be partially masked by the fact that it is now on the western edge of massive numbers of Tundras. The western limit is easily defined as it follows the eastern limit of the foothills with a significant westward bulge to Lac des Arcs then northwest east of Mount Yamnuska to rejoin the northern flyway proper.

**LANDINGS:** Landing on water and ice proceeds in the same manner. Initially there is a glide or slow flying approach then back-flapping to slow down. The pattern changes as the water or ice is approached. When approaching water, back-flapping continues, further slowing forward motion and rotating the body to about 60 to 70° to the surface. The legs are extended rigidly perpendicular to the body and feet are fully open. When the feet strike the water they slowly sink, forming a wave much like that of the prow of a boat which breaks the forward motion. There may be a series of quick backward flaps which also slow forward motion. The body then rotates forward into the water. Stopping may require less than two meters. No collisions were observed in the 20-year study.

Landing on ice differs only in the final approach. Back-flapping



**MAP SHOWING BREEDING, WINTER AND STUDY AREAS. LEN HILLS**

continues until a stall is induced a few centimeters off the surface. The body rotates to the horizontal and the legs are extended and feet open. This allows for a vertical drop onto the ice with little or no forward motion. No collisions were observed in the entire study period.

**TAKEOFFS:** Takeoffs provide numerous different approaches depending on the number of birds present and individual group sizes. If only one or a few birds are present they simply move downwind, turn and take off. Both the feet and the wings are involved. Features to watch are flexing of the humerus-ulna on impact with the water at the carpals. The feet are used to add additional lift. Watch the feet; as they push down, they are splayed. As the legs move forward out of the water, they collapse at the knees and the feet are splayed as contact is made to give less drag and then greater thrust (lift). The running motion will continue a



**A MOST UNUSUAL EVENT: APPARENTLY THERE WERE THREE BIRDS INVOLVED. THE MUTE SWAN (ON THE LEFT) DECIDED THE OTHER TRUMPETER WAS HIS MATE SO WAS CHASING AWAY THE TRUMPETER ON THE RIGHT. MUTE SWANS WERE NEVER SEEN HERE DURING THE STUDY. DAVID SHACKLETON**

short distance after contact with the water is lost, at which point the feet will collapse and legs will be tucked under the body.

Once out of the water or off the ice, the feature to watch is the head and neck bobbing produced by the downward thrust of wings where the head and neck bob downwards. On the wing lift, the head and neck move down. As they approach their desired altitude the bobbing decreases. Once having attained the desired altitude, wing beat rate and depth decline so that no bobbing occurs.

When there are large, concentrated, co-mingled flocks, a sequence of events occurs that require coordination between those leaving and those arriving. This involves development of a takeoff strip where those intending to stay clear out of an area, allowing a runway into the wind. The birds taking off move into the cleared area and then leave. If large numbers are leaving there can be a well-orchestrated departure whereby successive

waves leave. Once departures cease, some of the remaining birds will move back into the takeoff area and continue to feed.

An interesting situation arises where a flock has comingled with others. Here, exodus is started by one adult vocalizing and heading to a downwind position. Dispersed birds will quickly assemble as a runway is cleared and takeoff results. This procedure is common and was observed every year.

Families are common migration groups in the fall and spring and it is possible that these larger groups are extended family conglomerations.

**POND USAGE:** Pond and reservoir lake usage has varied through time depending on weather conditions which control ice cover and access to food. With an expanding population there has been an increase in sites used.

Initially Trumpeters in the area were restricted to small ponds that had come open early

(e.g. Jumping Pound, Sibbald and Sibbald East) when larger bodies of food sources such as the Ghost Reservoir remained ice covered. As the population expanded, more small bodies, but not all, were utilized. Eventually Trumpeters appeared on the Ghost Reservoir at Ghost Village south of McDougall Anglican Church and at Morley. Lac des Arcs had a few (5 to 10) but the dominance of Tundras, distance of view and no good vantage point resulted in surveys that yielded little useful information; therefore, annual surveys at Lac des Arcs were abandoned except for occasional observations during the latter part of the survey.

The upper reservoir at Seebe dam opposite the Bow Valley Park started to attract Trumpeters (ca. 2006) and it was then included in the survey. In 2006-2007, significant numbers started to appear on the Ghost Reservoir at all localities and it was added to the survey. Over the same interval, Trumpeters in small numbers (plus or minus 50)

started to regularly appear on small ponds in the area where they had not been seen before. These were added but it should be pointed out that most were part of the survey and their small numbers cannot be the source of the increased population in the study area.

In the first years, Jumping Pound, Sibbald pond, Sibbald East and Shell pond (informal names) in that order were the dominant ponds. Jumping Pound pond has remained the dominant pond in the study area during all survey years. Sibbald pond was abandoned immediately after cattle feeding was discontinued at the site in 1995 to 1996 and later was used only sporadically. Sibbald East use continued and expanded, then was essentially abandoned. Numbers there have slowly increased but in different areas of the pond. The areas abandoned are heavily pitted from

swan use which deepens them and even if regeneration occurs they are too deep unless water levels fall. All other ponds retain annual variable use.

Ghost Reservoir at Ghost Village use increased to at least 200 birds on a single day. Ghost Reservoir at McDougall Church is used annually. At Morley it was used until 2012. The Seebe dam had up to about 100 Trumpeters by 2012. Lac des Arcs use has increased to over 200 per day. The shift to the Ghost and Seebe reservoirs and Lac des Arcs accounted for the majority of sightings during peak spring migration. This is significant because with the lack of good viewpoints, distant viewing and heat haze, species identification and identification of light-phase juveniles become difficult; however, with patience, a good scope and recounts, plus or minus 10 percent is attainable. In the case of juveniles this may be

as little as one or two individuals.

Field cattle feeding stations that encompassed ephemeral ponds became important as a food source in 2007 to 2012. One station particularly has hosted 180 to 200 birds for a period of up to five days, fully one-third of the count for the day. A second station had 200 birds per day but only for one year. This change of food source had three effects: it helped to offset the impact of an increased population and probably attracted Trumpeters from ponds being over utilized, and spread them more evenly across the area.

Field feeding stations, Ghost Reservoir, Lac des Arcs and Seebe Dam became the major feeding areas during the last five years of this study.

**PITTING:** Pitting is the excavation process created during tip-ups to reach rhizomes and other buried food resources. Pits can be circular,

**A TRUMPETER FEEDS BY "TIPPING" AS ANOTHER, LIKELY ITS MATE, WATCHES WITH NECK ERECT.** LEN HILLS



rectangular, linear or lobate ranging from 5 to 30+ cm. deep. The working front and sides are steep, whereas the distal side is often sloped from backfill. They always face into the wind or current.

The pits are created by first loosening sediment with the bill, alternately pushing down with an open foot, forcing water against the loosened sediment dislodging it and flushing it from the pit. This is repeated until the desired depth is attained, feeding occurs and the pit is expanded to expose more food. Each pit represents a single or family group throughout its stay.

#### **PART 2 – COUNTS, AGE DISTRIBUTION AND TIMING OF SPRING MIGRATION**

In the early phase of the study, counts were generally easy, as 100 or fewer Trumpeters were observed on daily surveys. Counts could be difficult for a number of reasons including flat viewing field, moving concentrations or clustered resting and increasing numbers; therefore, an overview is presented such that anyone continuing counts can gain from my experience.

Initial counts were to determine the number of swans present, then determine if only one or both species were present. Mixed flocks became more of a problem and the procedure followed was to select either species, do a count on one species and then count the second species. If the combined count was within one or two of the total count, it was considered to be correct. Moving birds presented a problem. Fortunately they tended to move in one direction so that it was possible to count in the opposite direction to movement, thereby eliminating repeat counts on an individual or individuals. Counts should be made early in the day to avoid identification problems related to heat waves.

Juvenile swans have two color phases, grey or dark grey and very light grey to almost white. Initially, this probably resulted in an underestimation of juveniles; however, this did not affect later counts because of recognition of the problem and using size and relationship to other Trumpeters present. The number of pairs vs. unpaired is not simply numbers present divided by two. Two feeding side by side is easy to identify, whereas in flocked or

moving birds that are separated by three or four meters, one has to spend time watching interactions to determine relationships. In moving swans the female tends to be in front and the cob or male swan trailing. Following their movement for a short distance can often resolve the question as to paired/non-paired as the cob will close the gap and therefore define a pair, or move off indicating a non-paired condition. Counts of numbers of juveniles per brood are easy unless resting. Although they may co-mingle they quickly separate into family groups.

**RECOMMENDATION:** If possible always pick a viewing spot where you are looking down on the swans. This eliminates the possibility of missing birds because of them being hidden, and it partially limits heat haze.

**RESULTS:** The counts revealed an interesting pattern. The beginning of the migration varied from first sighting in early March to April 6th, peaking between April 15th to 27th, followed by a rapid decline. The first arrivals were always paired adults with only one exception when a pair arrived with a light-phase juvenile. The paired adults move on but may

**SWANS MAY REST AND FEED EVEN ON VERY SMALL PONDS OR SLOUGHS. LEN HILLS**



LEN HILLS

remain for periods of up to two weeks. Juveniles generally appear about April 6th and gradually increase in numbers, apparently reaching their maximum after April 27th as a result of abandonment and staying behind. Unpaired Trumpeters arrive later and remain later.

Counts on a single day indicated that a minimum of about 600 Trumpeters were using the southern Alberta flyway. Early departures would possibly double that number. The survey is a major spring staging area as collared or recognizable groups remain in the area for periods of up to two weeks.

### **PART 3 – RECRUITMENT AND SURVIVAL**

There was a marked increase in the number of Trumpeters in the study area over time. This was due to influx into the area and not to reproductive success of birds.

I used the term recruitment to define the number of cygnets being added in the fall and the number of juveniles returning in the spring. Fall 2011 and spring 2012 are used as an example of

recruitment and they did not differ in any significant way from other years.

**PROCEDURE FOLLOWED:** With each observation of pairs with cygnet(s) or juvenile(s) their location was recorded as to position on a pond and any other characteristics (color, number, relationship, etc.). Repeat visitations were used to assess retention and addition to the site. Surveys in the fall were from north to south and reversed in the spring. This was done to identify pond shifts. Banded birds greatly helped in assessing pond transfers because of the positive identification of family groups (e.g. Green Tags N24 and N25) now gone. In the fall, pairs with cygnet(s) tended to remain longer on a pond to feed and rest. No clearly defined movement from one pond to another took place in the fall.

In the fall of 2011, 159 pairs were identified and 29 pairs had cygnets. Successful pairs/unsuccessful pairs indicated that about one in five pairs were successful for an average of about three cygnets per successful pair.

The 2012 spring migration as in previous years identified an

even lower ratio of pairs with juveniles to pairs without juveniles indicative of losses on their winter range. Conclusions:

1. Recruitment and survivorship did not account for the increase in Trumpeters in the study area.
2. Comparisons of fall recruitment/spring survivorship indicated that there is a high first winter mortality rate.
3. Drying conditions to the east of the current flyway could have resulted in a shift to the western part, thereby resulting in an apparent but not real increase in numbers.
4. Extension of the flyway into the Yukon could result in transfer from that area into the Foothills Flyway, thereby increasing numbers.
5. Censusing along the flyway posed difficulties for interpreting observations in that there were increasing numbers of juveniles as the spring season progressed due to their abandonment in the area resulting in apparently high survivorship.



DR. LEN HILLS CONTINUING HIS OBSERVATIONS IN THE FIELD. LEN HILLS

#### PART 4 – JUVENILE ABANDONMENT

There are three observed means of abandonment: chasing off by the cob, adoption by a surrogate, deception and possibly a fourth which is a gradual distance increase between adults and juveniles.

Chasing off by the cob was observed on numerous occasions. If the juvenile attempted to return, the chase would become more vigorous until such time as it no longer attempted to rejoin the family group. The parents departed and the juvenile(s) remained behind. The juveniles did not join other family groups. This is the most common means of separation.

The second most common is the situation where a single adult with one or more juveniles was observed (N=50+). Initially it was assumed that the adult was a parent that had lost its mate. Subsequent observations were made that family groups often

consisted of three adults and a juvenile or juveniles. The parents could be easily identified by their closeness, whereas the third was more peripheral, often drawing the juvenile(s) away from the parent. Eventually the parents left and the juvenile(s) remained with the single bird. The separation was without any apparent stress. They often remained at the feeding spot for several days before departing.

The third involving deception was observed only once. In this instance Green N24 and N25 (the parents of three juveniles) were seen to take off, fly to an adjacent pond partially screened by a grove of trees. In the first move the juveniles followed their parents quickly. As soon as they landed, the parents took off and returned to the first pond. With each takeoff the juveniles delayed their takeoff, creating a separation between parents and offspring. I watched this procedure for an hour until it became too dark

to observe. The next morning I drove out to find the juveniles by themselves and the parents were nowhere in sight as they had apparently used the tactic and tree screen to effect the separation.

The fourth possibility is that there is a progressive separation between parents and juveniles. When an identifiable family remained in the area, on first arrival parents and juveniles closely intermingled, but over a five to ten-day period there was a progressive separation between them: first during resting (3 to 4 m), then during feeding. The separation periodically increased to 20 m or more but periods of close contact were still maintained. Eventually the juveniles remained at the site and the parents were nowhere in the area; a possible effective separation without any conflict. There is of course the possibility that conflict occurred in my absence.

During the late stages of spring migration, single adults occupy many of the ponds well after the main migration. With time the juveniles move to ponds with a single adult, not close at first, but over two to three days approach the adult to within a few meters. Two subsequent observations were made: both adult and juveniles left in the period between visitation, generally the next day. There are several possibilities arising from this: one is the single swan which is not in a rush to go the breeding grounds familiarizes the juvenile(s) to the overall flyway and guides them to the food resources which they

can use in subsequent years. This has the possibility to disperse the juveniles into territories other than their fledging place, thereby potentially shifting the gene pool. The continued observation of this phenomenon convinced me that this is a strong dispersal mechanism as I saw it on more than 50 occurrences. Furthermore, in those situations I did not see juveniles on the pond after the adult left.

I never saw juveniles enter the study area unaccompanied either by a single adult or parents. Major abandonment occurs along the Bow corridor; however, juveniles do continue north with their parents to be abandoned further along the flyway.

## **PART 5 – INTRASPECIFIC AND INTERSPECIFIC TRUMPETER RELATIONSHIPS**

### **Trumpeter-Trumpeter Interactions:**

During the initial spring migration groups are small, often just a pair so that separation is possible and there is little or no conflict. Exceptions do, however, occur where pairs are known to each other and are in conflict. One such incident began with a pair on the pond and an incoming pair about a kilometer away started vocalizing. There were several other swans present which moved away from the pair on the pond. The incoming pair landed directly in front of the resident pair. There was a brief skirmish where both sexes were involved which consisted of all becoming semi erect, breast to breast, some vigorous neck entanglement and

shoving but no pecking. After five to ten seconds the intruding pair was driven off onto the ice. The victors then faced each other, came breast to breast in a near vertical position, vocalized and head bobbed for three or four seconds, then resumed feeding – a celebration of victory. The repulsed birds remained on the ice for at least ten minutes. Others returned to feeding as if nothing had happened.

A second conflict was observed where a pair and a single on a pond were joined by another pair which landed some 15 m away. The single swan immediately charged by flattening out with its neck in the water and propelled itself forward by both paddling and wing flapping directly at the new arrivals. Their reaction was to spread slightly, allowing the aggressor to pass between them. As it passed they both delivered sharp open-beaked pecks to its back which resulted in loss of feathers. The aggressor adopted its normal posture and swam away. The victorious pair acted as if nothing had happened and proceeded to rest. The whole incident lasted maybe ten seconds including landing, charge and termination.

A third incident involved an adult and an unrelated juvenile. The adult was feeding via tip-ups and was approached by a juvenile which moved in and attempted to take over the spot. It temporarily displaced the adult, tipped up and started to feed. As soon as the juvenile tipped up the adult delivered a feather-removing peck and the juvenile left immediately.

None of the conflicts above indicate a high level of aggression; indeed even in crowded ponds there is ample evidence that there is a deliberate attempt to avoid it. Avoidance is indicated by behavior when moving through another pair's feeding territory. The moving birds slowly pass, heads fully erect, looking straight forward beyond the feeding pair. The feeding pair takes no action (N=100's).

### **Trumpeter-Tundra Interaction:**

I noted only a single incidence of conflict where a juvenile Trumpeter displaced an adult Tundra from a feeding area. The juvenile swam over when the Tundra had its head underwater and delivered a sharp peck. The Tundra left, leaving the spot to the aggressor to feed.

Both species comingle during resting and feeding and will join as a single group when threatened. Single Trumpeters and Tundras on a pond will feed separately but rest together; therefore, conflict is minimal between the two species.

## **PART 6 – MISCELLANEOUS OBSERVATIONS**

This section will cover a diversity of species interactions with Coyotes, Bald Eagles, hawks, cattle and human activity.

### **Coyotes:**

Four interactions with Coyotes were observed. On the first occasion the Trumpeters on the pond were forming a V, heads erect, heading generally in my direction about 500 meters distant. When scoping the flock of about

25, it became apparent that their focus was on an area of tall thick grass. A Coyote was crawling toward them. As the Trumpeters approached the Coyote with their heads erect they started head bobbing with their bills touching their breasts. At this point the Coyote stood up and trotted away. The Trumpeters quickly moved to the center of the pond and waited until the Coyote had cleared the area. They then resumed feeding.

The other three interactions involved the Coyote making an open approach twice along the shore with shoreline feeding and once across the ice toward resting Trumpeters. In the shoreline approaches the Coyote appeared to be focused on small rodents (actually taking one), not looking at the Trumpeters. At about 25 m distant the Trumpeters moved about 10 m offshore and continued to feed. The Coyote trotted on by.

The last was the Coyote approaching Trumpeters resting on ice on Lac des Arcs. Its intention was obviously the Trumpeters. It started its approach from about 100 m distant, not directly at them but slowly arcing towards them. At about 30 m it was obvious to the Trumpeters that they were the object of the approach and they slipped into the water and moved off a short distance and continued to rest. The Coyote veered away and trotted off.

#### **Bald Eagles, Rough-Legged Hawks, Red-Tailed Hawks and Swainson's Hawks:**

A Bald Eagle was observed

approaching a widely-dispersed mixed flock of Trumpeters and Tundras. As soon as the eagle broke from flapping to gliding there was an instant response to concentrate into a single close cluster with heads fully erect. One isolated Trumpeter about 100 m distant propelled itself to the concentration by vigorous paddling and wing paddling until it reached the flock. It did not attempt to fly, although it easily could have done so. Once congregated, all swans rigidly held their heads erect. The eagle flew over them, circled and landed on shore about 50 m distant, waded into the water to a depth of about 15 cm towards the swans. It was joined on shore by a second eagle. They left after about five minutes and the swans relaxed, dispersed and again went about feeding.

A second instance at Lac des Arcs involved four adult Bald Eagles and an immature eagle with numerous feeding Trumpeters and Tundras within 5 to 10 m. Here the eagles were feeding on winter-killed fish. Neither the Trumpeters nor the Tundras showed any concern nor did the eagles show any interest in them.

Reaction to hawks produced varying results. Flyover of Rough-legs (two occasions) brought on an alert that resulted in heads erect until the hawk had passed.

Direct flyover of Red-tailed Hawks or Swainson's Hawks (20 plus) produced no response by either the swans or the hawk; therefore, Coyotes, Bald Eagles and Rough-legged Hawks are considered potential threats.

#### **Cattle:**

There are three observed interactions between cattle and Trumpeters: cattle wading into the pond with feeding Trumpeters, coming to drink near shore-feeding or resting birds, and cattle grazing along the shoreline with nearby birds.

**RESULTS:** There was no reaction even with cattle wading to within a meter of a feeding Trumpeter. In the others, the swans may move off a cattle trail to accommodate cattle. This is always done without any sign of stress.

**CONCLUSION:** Cattle do not pose a threat to Trumpeters (N=50+).

#### **Ranching Activity**

One of the main ponds had an active lot for calving and a second major feeding station for yearlings and cattle. The first required periodic visits by the cowboy either on horseback or driving a truck. The second required moving of ranch equipment with round bales, opening and closing of gates, fence mending and often close approach to the pond. In over 100 observations the Trumpeters showed no stress. None were observed to leave. On the other hand, I approached both ponds to the entrance gate, got out to get into the back of the truck to set up the spotting scope and observed anxiety on the part of the Trumpeters that led from alert postures to flight.

**CONCLUSION:** The Trumpeters become familiar with the sounds and activity of ranching and apparently are not affected by it; therefore, ranching activities adjacent to utilized ponds are not



**THE PRESENCE OF CATTLE DOES NOT CAUSE ANY STRESS TO TRUMPETERS, EVEN WHEN WADING TO WITHIN A METER OF A FEEDING SWAN.**

LEN HILLS

a major stress factor. Trumpeters perceive different activities although similar, one normal, the other a threat.

#### **Highway Construction (N=1)**

A group of 25 Trumpeters was feeding on Jumping Pound pond within 30 to 40 meters of Highway 1A when a paving crew progressively approached with all the noise and tar smells. Even when the crew was adjacent to them they showed no stress-related activity. I could see this as I approached and pulled into my observation position. As soon as I stopped some 200 to 300 meters distant heads came up, head bobbing increased and they all looked directly at me while still ignoring the noise and smell of the paving crew. Within two to three minutes they took flight.

**CONCLUSION:** Even small changes can trigger a reaction. It is possible that they were already stressed but it was not obvious.

Progressive changes in their surroundings, even though noises such as road building can be accommodated without too much stress or causing abandonment of a feeding site; however, a small addition of a differing nature can result in flight.

#### **Stress levels**

Over the course of the 20 years of observation a sequence of increasing stress levels related to human impact has been developed.

**LEVEL 1:** No stress. Trumpeters continue to rest or feed without reaction. Feeding swans will not change their pattern of feeding. Paired birds will tip up to feed simultaneously and will develop the lazy neck posture which lays the neck along the bird's back and arcs forward readying for the next tip-up. This posture has been observed at less than 20 meters.

**LEVEL 2:** Birds continue their activity but on tip-up will look

directly at the disturbance and will continue to feed. Resting birds will frequently open their eyes to look. No other action will be taken.

**LEVEL 3:** Feeding birds will turn to look directly at the object of concern with heads erect. Feeding continues but every tip-up is followed by a look to determine if change has taken place. Alternating tip-ups may begin. Resting birds continue as in Level 2.

**LEVEL 4:** Feeding birds will cease feeding and focus on the disturbance with neck extended but may retain the neck kink. They may relax to the lazy-neck position and resume feeding after a few minutes. Some resting birds may stand up.

**LEVEL 5:** Birds cease feeding, turn with heads erect to watch the intruder. Resting birds will start to raise their heads, or if on ice, stand.

**LEVEL 6:** Feeding birds will remain on the pond but will move away if possible, then may resume feeding. Resting birds will, in increasing numbers, raise their heads, stand if on ice and may move away but not take flight.

**LEVEL 7:** Head bobbing – mild head bobbing occurs in both groups but still no flight.

**LEVEL 8:** Both groups turn to face the disturbance. Head bobbing reaches the point where the bill touches its breast. Flight often ensues with both groups.

**LEVEL 9:** Swans face the object of concern, form a V and swim directly towards the problem, often to get into a downwind position readying for takeoff; will turn and take off.

Note: There is a wide range of variability in accepting change. All may leave or simply part of the group may do so.

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**"If people concentrated on the really important things in life, there'd be a shortage of fishing poles." - Doug Larson**



[albertadiscoverguide.com](http://albertadiscoverguide.com)

photo: Watered Down Underwater Photography

# First Hand: Great Horned Owl

BY SHARIF GALAL

Human love for owls started long ago. Drawings of different owls is present in ancient Greek and Egyptian artifacts. In fact, the owl symbol was one of the letters in the hieroglyphic alphabet and a symbol of wisdom for the ancient Egyptians.

In most of the story books, the Great Horned Owl (*Bubo virginianus*) is representative of all owl species. It is the most common owl in North America. It can be found in all the Canadian provinces including Alberta, equally in wetlands, forests, mountain valleys, grasslands, backyards and cities –

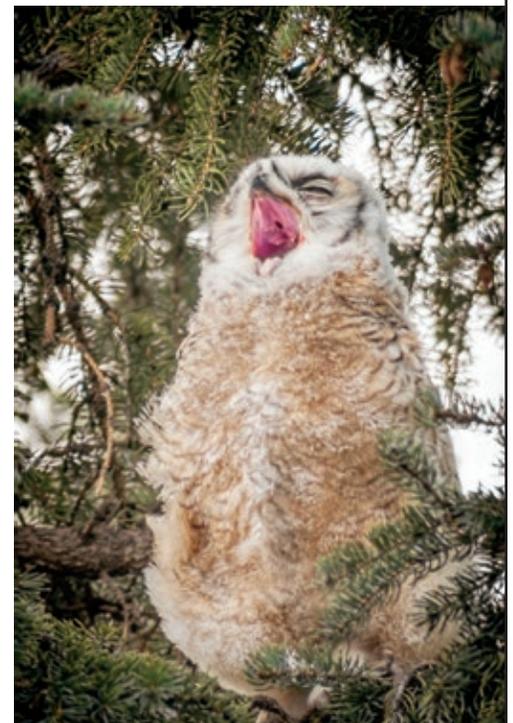
easily recognizable because of the feather tufts that resemble horns, hence the name “great horned.”

Great Horned Owls are adaptable birds and live from the Arctic to South America. They are at home in suburbia as well as in woods and farmlands. Northern populations migrate in winter, but most live permanently in more temperate climates.

These birds don't build nests, usually taking the abandoned nests of other large birds or nesting in tree holes or stumps. The nesting pair have one to five eggs (2-3 average). January to

ALMOST TIME TO FLY FROM THE NEST! SHARIF GALAL

NO WORRIES – JUST SLEEPY –  
WHEN YOU'RE WELL FED. SHARIF GALAL



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If you have a first-hand experience with nature, send it in and share it with other naturalists. After all – there are 8 million stories in the Nature City. Yours... could be one of them.

early February is a popular time for the Great Horned Owl to lay eggs, and both the male and female incubate. In addition to that, the male also hunts for food.

The owlets at birth are the cutest little birds, covered with down like fluffy balls; it's not until later that they develop feathers. The young owlets leave their nest when they are able to fly, around nine to ten weeks following birth. The mother and father are very protective of their young and will often attack intruders, including humans, which come too close to the nest or young. This protection is vital, as their young owlets are not able to protect themselves; unfortunately they often don't reach adulthood.

Like other birds of prey, owls have a very strong digestive system. Most of the time, they swallow their prey whole and later regurgitate pellets composed of bone, fur, and the other unwanted parts of their meal. Owls prey on different small animals and birds and sometimes on different species of smaller owls like Pigmy and Northern Saw-whet Owls. Surprisingly, it is reported that Great Horned Owls

- The Great Horned Owl is the second largest owl in North America after the Great Grey Owl.
- The 'horns' of the Great Horned Owl are also known as ear tufts, although they don't actually have anything to do with hearing.
- Length : 18.1–24.8 in
- Wingspan: 39.8–57.1 in
- Weight :32.1–88.2 oz



**"COVERED WITH DOWN LIKE FLUFFY BALLS."** SHARIF GALAL

hunt skunks and porcupines as well – one of the few animals that can handle the usually formidable defenses of skunks and porcupines. They have also been known to prey upon cats and little dogs. I personally know a lady who lost her chihuahua dog when a Great Horned Owl took it while she was camping.

I observed a family of Great Horned Owls with their three owlets and was fortunate enough to document different steps of their life cycle. I had been there several times in many weeks watching them growing up. One morning when I arrived, it seemed that one of them was not feeling well and was laying down on its back not able to move; the other little one was showing signs of sympathy and tried several times to let it stand up [see the back cover photo]. I thought for a moment that this owl would not survive because it looked very ill to me but luckily, a week later, I found all three young owls in a very happy and healthy status. They were



**EVEN AS DOWNY YOUNG, THE CLAWS ARE QUITE LONG AND SHARP.** SHARIF GALAL

exercising with their wings in order to leave the nest soon.

Every time I see an owl, I can't resist the urge to observe them and take several pictures; my love for owls started very early in my childhood. I always remember the kindergarten song:

A wise old owl lived in an oak

The more he saw, the less he spoke

The less he spoke, the more he heard

Why can't we all be like that bird?

Reference: Cornell Lab of Ornithology,  
[www.allaboutbirds.org/](http://www.allaboutbirds.org/)

# Come Alive in Alberta's Biggest Mountain Park!

BY KEVIN GEDLING, PROMOTIONS OFFICER, JASPER NATIONAL PARK

*Jasper is the largest national park in the Canadian Rockies. The landscapes are unforgettable, and wilderness is within reach. Every year, dozens of volunteers contribute hundreds of hours to help make a difference in this special protected place.*

**CARIBOU AMBASSADORS GET TO EXPERIENCE SOME OF JNP'S MOST AMAZING PLACES.**

Want to do something meaningful and have a great new story to share with your friends? This summer, Parks Canada is offering a number of exciting volunteer programs that provide unique experiences, while savouring all that this world heritage site has to offer.

**Want to help conserve one of Alberta's iconic wildlife species?** This summer, as part of Jasper National Park's newest volunteer program, **Scat Seekers**, volunteers will work to help wildlife specialists further understand the population trends of grizzly and black bears. Using

the Foothills Research Institute's *Grizzly Scat App*, scat seeking is easy. Carry a kit; pick a piece of bear scat found on the trail; place it in a vial; and take a picture of it and the QR code on the vial using your iPhone or Android. The image will be automatically sent to bear biologists and the GPS location of your sample site will be recorded, along with the bear's DNA details a little later on.

**DATES:** Training offered May to June 2015, and as needed throughout the season.

**BEAR SCAT CONTAINS VALUABLE INFORMATION ABOUT THE HEALTH OF ROCKY MOUNTAIN BEARS.** WIKIPEDIA

COMMONS



**LUIZ IS ONE OF JASPER'S MOST DEDICATED PARK STEWARDS, HAVING CONTRIBUTED 1,000 HOURS OVER THE PAST TWO SUMMERS!**

**Like hiking and spending time in Jasper's caribou country?** Are you a regular in Jasper National Park, particularly in the summer? Do you enjoy meeting like-minded people who take conservation to heart? **Caribou Ambassadors** join Parks Canada staff at key access points to caribou habitat in Jasper three to four times per hiking season. You will be asked to share important information with park visitors about caribou and help build awareness about this iconic endangered species. You can expect to spend time



around the world-renowned Maligne Lake and Mount Edith Cavell areas of the park especially.

DATES: Training offered in May or June 2015.

**Want to make Jasper's trails even better?** Every June to September, the *Jasper Trails Alliance* offers volunteers the opportunity to join exciting trails-based projects throughout the park. Volunteers typically carry out light trail maintenance projects throughout Jasper's multi-use trail system, with materials and direction provided. Trails Alliance volunteer days offer a good chance to get exercise, learn in a hands-on fashion about trail maintenance and a great way to meet like-minded outdoor enthusiasts. Contact the Friends of Jasper National Park (*which will be profiled in the Summer edition of Nature Alberta!*) for Jasper Trails Alliance's latest plans on trails-based volunteer activities you can join: [www.friendsofjasper.com](http://www.friendsofjasper.com).

DATES: 5th, 15th and 25th of the month, June to September 2015

### Did you know that many hands do make for light work?

Volunteering is an activity that is best done together! At any time of year, all organizations, including nature groups and service clubs are welcome in the park. **Group volunteering** includes a wide range of activities such as weed pulls, shoreline clean-ups and trails projects. Some group opportunities are self-guided to suit the needs of your group, and others can be facilitated with the help of Parks Canada staff or volunteers. If you are planning your next group volunteer session, the park has a number of affordable options for groups, including camping and hostels operated by our friends at Hostelling International.



**A SMALL BUT DEDICATED GROUP OF PARK STEWARDS CLEARED A SMALL CEMETERY AT POCAHONTAS IN JUST ONE AFTERNOON!**



**PARKS CANADA VOLUNTEER HELPS DURING A FIRE-LIGHTING ACTIVITY FOR NEW CANADIANS AT JASPER'S LEARN TO CAMP PROGRAM.**

## The Right Fit for You

Talk to Jasper National Park's volunteer programs coordinator on which of our many, year-round volunteer opportunities are best suited to your interests. You can even propose your own volunteer idea!

FOR MORE INFORMATION, CONTACT:

JASPER NATIONAL PARK – [JASPER.VOLUNTEERS@PC.GC.CA](mailto:JASPER.VOLUNTEERS@PC.GC.CA), 780-883-0486, OR

FRIENDS OF JASPER NATIONAL PARK – [VOLUNTEERS@FRIENDSOFJASPER.COM](mailto:VOLUNTEERS@FRIENDSOFJASPER.COM), 780-852-4767





## Wildlife! Starring... Tent Caterpillars

DENNIS BARESCO

*Even people who might appreciate and like regular caterpillars are not overly fond of tent caterpillars.*

Many people find them disgusting and destructive pests. Individually, tent caterpillars are sort of attractive; but in squirming globs or a messy “tent” on a tree limb, they are almost like something out of a sci-fi horror flick. On the other hand, they are really quite interesting – and in many ways quite beneficial. If you don’t care to know anything more, stop reading now.

**A COMMON, EARLY SUMMER SIGHT!** JACKFROST2121/WIKIMEDIA COMMONS



Tent caterpillars are, of course, insects: the larva stage of moths in the genus *Malacosoma*. For caterpillars, they are extremely social, hence the squirming masses and overcrowded tent parks. They start off with the adult female moth depositing an egg mass around the circumference of a branch during the early summer. She covers the egg mass with spumaline, a frothy hydrophilic coating which prevents the eggs from drying out but also serves

as protection from parasitic wasps. Then the female dies; her whole adult life may be less than 24 hours and even the male will only live for a week or so.

Interestingly, the larva hatch a few weeks after the eggs are laid, but they stay within the shell of the

egg until spring, able to withstand bitter winter temperatures of minus 40°C. They enter their world just as the leaves are starting to grow. Initially they are very small, but grow rapidly through five or six instars (the period between each moult) before reaching their final – and most noticeable – stage in seven to eight weeks. It’s that last stage that is the most voracious eater, with the food intake approximately 80% of the whole life cycle. It’s no surprise that this is the stage which causes the greatest leaf defoliation.

Two species of tent caterpillars live in Alberta. The first is the Forest Tent Caterpillar (*Malacosoma disstria*) which is pretty well restricted to the Boreal Forest, Aspen Parkland and Mountains – places where there are hardwood trees. This species does not make a tent, even though it is called a tent caterpillar; instead, it spins a mat of silk on the trunk or main branches of the trees on which they rest when not feeding. Thus, it is a nomadic forager, establishing temporary resting sites as its larval development progresses.

The other species is the Prairie or Western Tent Caterpillar, *Malacosoma*



**PRAIRIE TENT CATERpillARS AT HOME.** BROCKEN INAGLORY/WIKIMEDIA COMMONS

*californicum*, of which there are two subspecies in Alberta: *M. californicum pluviale* (in the boreal forest and foothills) and *M. californicum lutescens* (in the prairies and aspen parkland). Prairie Tent Caterpillars do live up to their name by making the well-

**AN ADULT MOTH WITH EGG MASS.**

SCOTT TUNNOCK, USDA FOREST SERVICE,  
BUGWOOD.ORG/WIKIMEDIA COMMONS



known tent in which to rest and to which they return each evening.

The tent is positioned so that it can catch the early morning sun's rays. Tent caterpillars need that morning heat to elevate their body temperatures. Within the tent are compartments with varying temperatures; thus, the tent caterpillars can move to different compartments, or different sides of the tent, to adjust body temperatures.

**WHAT GOOD ARE THEY?**

We may not like them, nor do most birds, but there are still a surprising number of bird species – sixty or so, like chickadees, cuckoos, orioles, jays – that eat the caterpillars, pupae and the moth adults. As well, an amazing variety of

insect predators/parasites, amphibians, reptiles, and mammals – including bats which devour the moths – feast on them. One study found that a single bear will eat, on average, 25,000 in a day! Since they defecate 50% of what they eat, in tiny pellets, they are great at returning nutrients to the soil. Bottom line: they are an important ecological species and, except for the more fragile nursery shrubs and trees, do little lasting damage; the host plants can survive attacks for few years without much concern; trees and shrubs quickly sprout new leaves once the feeding has ceased. Don't forget, they've been around for many thousands of years and native plants especially have been quite fine. In fact, the Alberta Agricultural Pest Act does not classify them as a Pest.

Now...don't you feel much better about tent caterpillars?

INFORMATION FROM WIKIPEDIA, COUNTY OF GRANDE PRAIRIE WEBSITE AND THE ROYAL ALBERTA MUSEUM.

# Up Close Naturally: Little Fishes

BY MARGOT HERVIEUX

*The next time you spend some time by the water, consider trying some fish watching.*

Our lakes and rivers are not just home to walleye and trout; they abound with fishes that seldom reach more than a few centimetres in length.

One of the most common fish in our shallow lakes and wetlands is the Brook Stickleback (*Culaea inconstans*). These plain-coloured, 5 cm (2.5 in) fish can easily be recognized by the 4-6 spines along the ridge of their back. Sticklebacks live in almost any kind of pond and can tolerate very low levels of oxygen. They prefer the weedy shallows where they can dine on insects, crustaceans, and even frogs and fish eggs.

Another plain but abundant small fish is the Lake Chub (*Couesius plumbeus*). They prefer lakes with gravel shores and can often be seen around docks. Lake Chub eat a wide variety of aquatic creatures and are one of Alberta's largest minnows, often getting as long as your hand.

Spot-tailed Shiners (*Notropis hudsonius*) also gather in the shallows of larger lakes and are easy to spot as the schools turn in the sun. Their name-sake tail spots act as false eyes to trick predators and also help keep the schools together. These 4 - 6 cm (2 - 3 in) long

minnows eat all kinds of insects and crustaceans but are especially fond of fish fry including the walleye.

If you are exploring along the shores of a forest wetland, watch for Red-bellied Dace (*Chrosomus eos* or *Phoxinus eos*) and Finescale Dace (*Phoxinus neogaeus*). These colourful fish have yellow fins and the Red-bellies have a brilliant red belly and black side stripe, while Finescales have a white belly and red and black stripes. Both can reach 10 cm (4 in) in length. These algae-eaters are difficult to spot, but watch for them in beaver ponds.

Walk in the rocks along a fast flowing creek and you might see a Long-nosed Dace (*Rhinichthys cataractae*) flit to safety. These plain looking fish have a narrower profile ideal for life in moving water. They avoid predators by hiding under rocks during the day and feeding after dark.

Life is risky for a minnow. Little fish are an important food source for a multitude of creatures. In open water they are hunted by larger fish like pike, trout and walleye; diving birds including grebes, loons, mergansers and cormorants; and mammals like mink, otters and even muskrats. In the shallows they can also be captured from above by herons and kingfishers.

Fish watching will never become as popular as birding but it can be a lot of fun. Start with a great guide book like "Fish of Alberta" by Joynt and Sullivan, find a dock or shore-side rock and see what you can spot beneath the waves.



BROOK STICKLEBACK. WIKIPEDIA



LAKE CHUB. WIKIPEDIA



**SPOT-TAILED SHINER: A. LARGE PROMINENT SPOT AT THE BASE OF THE TAIL, DORSAL, AND ANAL FINS; B. DORSAL FIN, SET DIRECTLY OVER THE PELVIC FINS.**

ALBERTAFISHINGGUIDE.COM



**RED-BELLIED DACE.** ELLEN EDMONSON AND HUGH CHRISP/WIKIMEDIA COMMONS



**FINESCALE DACE.** RARESPECIES.NEBRASKA.GOV



**LONG-NOSED DACE.** WWW.ZOOLOGY.UBC.CA



*Margot also writes a column for the Peace Country Sun, archived copies of which are available at [www.peacecountrysun.com](http://www.peacecountrysun.com).*

# In the Bedrooms of the Bull Trout

LORNE FITCH, P. BIOL.

*The tug upstream seems inexorable, an urge not to be denied or ignored.*

Up Bull Trout (*Salvelinus confluentus*) swim, from the wide expanses of river, from the comparative security of deep pools and boulder-choked riffles. Upstream, against a rapidly increasing current, in a channel that narrows and gets shallower. Upstream, where water temperatures drop perceptibly and the medium becomes so clear fish appear to be suspended rather than immersed.

Streamlined, appearing much like a baseball bat with fins, Bull Trout move in a timeless migration. Their destinations are the spots where each emerged from the stream gravels some five to ten years earlier. Each survivor has bulked up substantially. Nothing escapes them; suckers, Mountain Whitefish, big stoneflies and the occasional mouse, vole and snake. To get big you have to eat big.

Bull Trout are the ultimate aquatic predator, at the top of the watery food chain. Think of them as scaled Grizzlies, with gills. Nowadays a big one might top out at four kg. In earlier days, remembered still by elderly anglers, a big one might stretch over a saddle and dangle nearly from stirrup to stirrup. In the waters of their spawning tributaries these giants would only be partially submerged.



*Lorne Fitch is a Professional Biologist, a retired Fish and Wildlife Biologist and an Adjunct Professor with the University of Calgary.*

Their movements upstream are anything but random. The magnet that pulls, attracts them, is the unique combination of cool ground water bubbling up from some subterranean reservoir through gravels shaped from the persistent grinding action of erosion. Context here is everything. It takes a watershed, not just a stream, to meet Bull Trout needs for the biological imperative of replacing themselves.

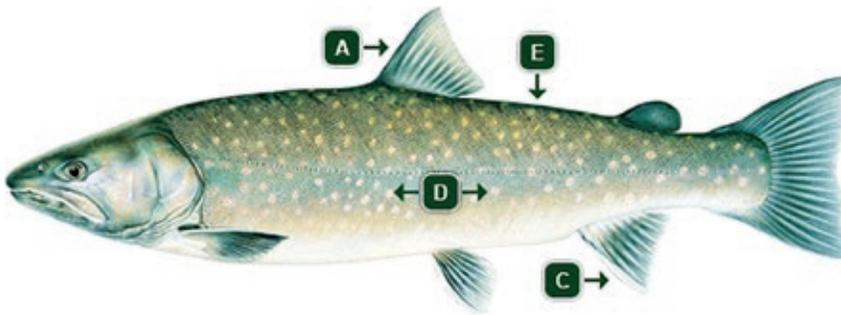
Forests, generally of the old growth variety, with thick underlays of absorbent mosses capture and store snowmelt and rainfall. This water, the unheralded treasure of forests, slowly is entrained below the surface. There it is then meted out just as slowly to add to streamflow. That these streams flow in the winter when all else seems frozen is the magic of this unseen supply of water. Bull Trout appreciate it more than we seem to, for their eggs are deposited in the gravels in the fall and survival is dependent on this interplay between surface and ground water.

The seeps and springs are not often obvious to our eyes. What was obvious to early hunters, trappers and anglers was the autumn splashing of female trout absorbed in moving gravels. Around them, like teenagers at a high school dance, the males

vied with each other for position. Often these fish were of a size that the shallow riffles couldn't provide enough depth. Heads, fins and backs would protrude into the alien environment of air. To be successful in the dance of sex requires Bull Trout to comprehend the nuances of water movement, depth, velocity and changes during the time of egg incubation. The combination must be one of hydrological experience and clairvoyance.

From the memories of early outdoorsmen, a faint picture of Bull Trout ecology and abundance emerged. More detailed biological investigations, done recently, have validated early observations of Bull Trout migration and favored destinations. Alarming, more comprehensive inventories have shown diminishment in Bull Trout populations generally and extirpation of some.

In the Oldman River watershed, Bull Trout are missing from 70% of their former range. Historically trout populations (both Bull Trout and Westslope Cutthroat Trout *Oncorhynchus clarki lewisi*) are to be found as far downstream as present day Lethbridge. A combination of overfishing and dramatic habitat shifts pushed these populations into the far reaches of the Oldman watershed. Even there, in isolated spots, there is no security from persistent land uses that continue to threaten their existence.



**BULL TROUT IDENTIFICATION IMAGE FROM THE ALBERTA FISHING GUIDE: A. NO BLACK SPOT ON DORSAL FIN; B. LARGE HEAD/MOUTH; C. FINS HAVE WHITE LEADING EDGES; D. PALE YELLOW OR CREAM COLOURED SPOTS; E. DARK/OLIVE GREEN BACK.** ALBERTAFISHINGGUIDE.COM

I get to play fisheries biologist again, for a few days, on one of the ongoing inventories of Bull Trout in the upper Oldman watershed. This work, done jointly by the Alberta Conservation Association and AB Environment/Sustainable Resource Development, represents the systematic collection of good data to inform better land use decisions. On a late and crisp September day, I pull on my chest waders and accompany Matthew Coombs, the only fisheries biologist for southwestern Alberta. On paper Matthew has a small area in which to ply his trade – just the entire headwaters of the Oldman watershed from the US border to the boundary with the Bow watershed. It reminds me, painfully, of the minimal priority placed on fish by the province of Alberta.

Matthew warns me the waters of Hidden Creek, a tiny and seemingly insignificant tributary to the upper Oldman River, are very cold. Fresh snow ices the peaks of the continental divide and frost coats the ground. None of this registers until my feet desert me on the slick boulders and I stick an arm in the water to steady myself. The water is numbingly cold. As I wring out my shirt sleeve I marvel at creatures that make this glacial medium their home.

Hidden Creek enters the Oldman River tumbling over bedrock and boulders. Not much wider than I am tall, it joins the larger river discretely, without fanfare. It seems to fit its name well. Before a logging bridge over the Oldman River provided easier access a watery moat kept the creek secure, free from all but the most persistent explorer. The headwaters of the stream wrap themselves around the base of Tornado Mountain, the highest peak of the southern High Rock range, part of the continental divide.

Hidden Creek's watershed is not untouched, but at most is only nibbled at with old seismic lines and small clearcuts in the shadow of Tornado Mountain. Compared with the logging footprint in drainages to the north and south, Hidden Creek looks relatively pristine.

Except, of course, for the mouth of the valley, where a large clearcut focuses the eye as Hidden Creek enters the Oldman. Walking from the marginal buffer of unlogged forest adjacent to the stream into the clearcut is like a trip from soft broadloom to a city sidewalk. One is soft, spongy and shaded; the other hard, unyielding and bright. The buffer seems like

an administrative abstraction rather than a logical solution to protecting water quality. How can we think the answer is to parcel the landscape into discrete, unrelated bits when all work together in unity? Bull Trout might see this industrial dismemberment of the landscape as reductionist and an anathema.

A fence of aluminum rods directs fish into a mesh trap. The materials of the trap are modern but the technology is of the Stone Age. One Bull Trout has been fooled by the labyrinth. We net it and anesthetize it with clove oil – a similar formulation has been used for generations to sooth the pain of toothache in humans.

The gills open and close, breathing in the aqueous tranquilizer until the fish no longer struggles and is quiescent. Scarred from life in a turbulent environment it is as long as my arm and likely heavier than it as well. Matthew gently squeezes along its sides and announces it is a spent male, probably returning from earlier action.

Using the equivalent of a grocery store scanner, Matthew determines it has an imbedded chip – an identity device - from an encounter with another fisheries biologist. Like a can of corn this Bull Trout has a number and few secrets. The world of electronics has taken much of the mystery out of the lives of wildlife. Conversely, the use of technology has sensitized us, with better data, to issues of species biology and survival, especially those critters hovering on the edge.

Measurements done, the trout is placed in a tub of fresh water and gently rocked back and forth. The anesthetic wears off quickly. Holding him to recover, he seems like 100% muscle, arching and twisting in my grip, displaying a power disproportionate to size. On return to the stream, with a disdainful



**BULL TROUT.** FISHERIES AND OCEANS CANADA

flip of his tail he disappears downstream amid the turbulence. I have touched and connected with a creature that represents the outcome of 10,000 years of trial, error, adaptation and evolution. It fits here perfectly.

One Bull Trout does not a story tell though. The number of Bull Trout that seek out Hidden Creek to spawn does tell a story. Extensive trapping over a two year period by the Alberta Conservation Association indicates that amid all of the tributary streams Hidden Creek is the hands down bedroom of choice for nearly 8 out of every 10 Bull Trout. Hidden Creek is the epicenter for about half of all Bull Trout reproduction in the upper Oldman River watershed. We may not understand all of the virtues of this one tiny stream, but Bull Trout do.

Yet, a population cannot afford to put all its eggs in one basket or, as is the case for Bull Trout, in one stream. Bull Trout have hedged their bets, over time, by spawning in a number of streams in the upper Oldman. By spreading

out, disaster in one stream is compensated for by success in another. The choices have narrowed however. In the upper Oldman the list of streams that attracted spawning Bull Trout has shrunk by at least three since the late 1950's. The quality of many of the remainder is dubious.

Dutch Creek, the next downstream tributary to the Oldman, is a river by comparison to Hidden Creek. Despite its size, less than one out of 10 Bull Trout choose it as a spawning destination. In Dutch Creek the stories of big Bull Trout and many of them from the dusty archives stored in the memories of elderly anglers are hard to square with today's reality. Dutch Creek (and its near twin, Racehorse Creek) are watersheds checkerboarded with clearcuts. A little cyber trip on Google Earth shows the footprint of logging in these watersheds to be extensive.

The history of large scale, commercial logging dates back 60 some odd years, following construction of the Forestry Trunk

Road. In many respects, this trail, with an initial rationale for forest protection from fire, lit a fire storm of resource exploitation that hasn't cooled yet. Extracting the wealth of our forests is a largely one way affair; resources go out and the legacy of their removal lingers to haunt subsequent generations. Past generations of Bull Trout had to contend with poachers using a variety of contrivances. Angling isn't the issue of today. What is troubling today is the change in landscape integrity and stream quality from decades of industrial (and recreational) use.

We slip on our chest waders again to count Bull Trout redds in a reach of Dutch Creek. Redds are the "nests" Bull Trout mothers excavate in the gravels. First on their minds is the selection of an appropriate spot, an inscrutable science to we who live in air, not water. What seems evident is the female must sense the presence of an intergravular flow of water. That flow is crucial to provide oxygenated water to the incubating eggs and to flush away metabolic wastes. Additionally, that flow must persist throughout the overwinter incubation period until the eggs hatch in the spring. This explains why ground water is so key to Bull Trout.

If the water-witching is successful the female then turns on her side and with a vigorous wave-like undulation of her body and tail uses a hydraulic shock wave of water to dislodge stream bed gravels and cobbles. This blast of water flushes away sediment and creates a depression. Into this depression she lays some of her eggs, attended to by a randy male who completes the conjugal unit. The process is repeated, moving upstream, covering the previous excavation and creating a new one for more eggs. Over the course of this the female will move several times her own weight of gravels and cobbles. Counting these redds provides an indication of

## Anglers you are in Bull Trout Country!



*Be sure you can identify them. They may not be kept and possession can result in a \$200.00 fine. If you don't know, be safe and let it go!*

**A SIGN FOR ANGLERS REGARDING THE PROTECTION OF BULL TROUT AT LAKE PEND OREILLE, IDAHO.** BRAMBLESHERE/WIKIPEDIA COMMONS

population size; monitoring year to year helps gauge population trends.

This is one of those clear, bright blue days of Indian summer. Snow capped peaks give evidence the summer season is ending but the day tells the lie it will persist. Dutch Creek is clearing; a rainstorm the previous day clouded the water with sediment. What happens in the uplands of a watershed inevitably follows the fundamentals of gravity. The footprint of disturbed land, the clearcuts, roads and trails, continues to bleed sediment and even a slight rainstorm mobilizes that sediment.

We walk upstream, in the channel, looking for the telltale signs of redds – oval signatures of stream gravels cleaned of their patina of algae and silt. On reach after reach, I mentally challenge myself to discern the signs that would indicate a Bull Trout would find the place pleasing. So many of

the reaches seem to have the right stuff; suitable water depth, sufficient velocity, appropriately sized substrate and overhead cover. But we find few redds.

Stymied, we consider the reasons for trout rejection. The gravel holds a clue. It is solid under our feet and when we probe it with our measuring sticks it yields only to excessive force. Despite the appearance of being clean it takes a human scaled effort to excavate a depression. This is not the usual loose, friable substrate where a step leaves a footprint behind. Alarming, this is pavement, aggregate cemented together with an outward appearance of a roughed surface. Without pickax or jack hammer no trout could penetrate this stuff.

The count for a six km wade is a disappointing 10 redds. In Hidden Creek nearly 10 times as many redds were counted in a four km stretch in 2008. None of this is surprising when one

connects the dots between land use and fish populations. Logging, the predominant land use has a greater impact on streams than on forests because of the long term nature of effects in and on streams. A subtle and less evident change is in runoff – both the amount and the speed of delivery. For a species like Bull Trout that are reliant on ground water, subtle shifts in hydrologic response from forest harvest is a problem.

The connection between logging and streams is less subtle when roads are considered. The scientific literature abounds with information on the effects of logging and associated roading on trout populations. Roads funnel, streamline and contribute to sediment delivery. It is evident that wherever studied the impacts are real, measurable, long-term and negative.

A clear conclusion, across the research is that as road densities (and the number of stream crossings) increase, the proportion of streams that support strong, healthy populations of trout diminish. All aquatic species have adapted to periodic disturbance but roading increases sediment delivery sometimes by an order of magnitude greater than the natural background levels. But, sediment delivery is just the tip of the problem.

Decades of research in experimental watersheds shows only a fraction of the sediment eroded will work its way downstream, out of the stream system. Measurement in the usual short monitoring period consistently underestimates sediment yield from land use. Much, especially the bedload sediment, is stored in the streambed and within the substrate. Researchers term the residence time for that sediment as “centennial” time. There it lingers, migrating downstream as little as a few meters a year to perhaps a kilometer a year in

larger rivers. Mike Miles, a fluvial geomorphologist, calls it “a slow moving train of sediment”.

Recent research in nearby streams in the Oldman watershed confirms these impacts. Comparing undisturbed with disturbed (i.e. logged) watersheds clearly shows substantial increases in sediment even after logging ceases. Most alarming is the amount of sediment from logging and roading entrained in the substrate. From paired watersheds, logged systems have 2.5X more entrained sediment.

The impacts are neither fleeting nor transitory. As the sediment settles in for the long haul it reduces the depth and quality of pools. Less evident is the infilling of the interstitial spaces between the gravels, where trout eggs incubate and insects (the building block of fish flesh) live. As it infiltrates the gaps some of the sediment bonds, effectively cementing together the substrate materials.

This cemented layer, which may extend down some distance into the substrate, becomes resistant to periodic flushing flows. Reduced permeability of the substrate, the ability of water to percolate up or down, becomes another impact on Bull Trout. Like tar in a smoker's lungs the accumulated sediment squeezes the life out of streams. So the forest may regrow quickly but the legacy of logging will persist as an influence on streams and all the aquatic creatures over centennial time.

Work done by biological consultants on the cumulative effects of access roads in the upper Oldman watershed indicates the problem faced by Bull Trout (and Westslope Cutthroat Trout). In 1950 there were 177 stream crossings in

the entire upper watershed. By 2001 this had ballooned to 2803 crossings. Most of the upper Oldman watershed had, in 1950, a very low density of crossings: from 0 to 0.5/km<sup>2</sup>. By 2001 only a tiny fraction of the watershed (notably Hidden Creek) had such a low density of crossings. Dutch and Racehorse creeks have stream crossing densities that range from two to more than 4/km<sup>2</sup>. The road densities for Dutch and Racehorse creeks exceed any threshold recommended for the continued survival and viability of Bull Trout by a wide margin.

We may have inadvertently doomed trout populations in logged watersheds to a slow, drawn-out and anticlimactic end, like a candle finally burning out. The overwhelming and unfortunate legacy of landuse decisions and their cumulative effects will haunt these watersheds until the last native fish slips away and all that remain are ghosts. Without an ecosystem approach and more balance in decisions about land use, soon we might be arguing over the last Bull Trout. By then it will be too late. Watersheds with an extensive logging footprint need quick remedial actions and mitigation involving road closures and rehabilitation if native fish are to be saved.

We should be using Bull Trout as an indicator, an icon of the health and integrity of our headwaters. Their continued presence and increasing abundance would provide a strong signal we know how to manage these vital watersheds. And, to many of us who see Bull Trout (and all native species) in that context, it is about sense of place, centuries old. Bull Trout know place, know how to return home and they know where they came from. All they

require of us is to acknowledge their presence and needs as well as share the watershed with them in ways that don't contribute to them winking out of existence.

Sadly, our industrial focus for the Forest Reserve is not far removed from the pursuit of buffalo hides and tongues; the resource economy of logging is equally simplistic, rapacious and blind. It would appear the decline of Bull Trout provincially and in the Oldman watershed has slipped beneath the consciousness and conscience of the land manager, the Forest Service. In the words of David Brower, founder of the Sierra Club, it is as if “the relationship of everything to everything else and how it is not working is so comprehensive no one can comprehend it”.

Splashing up Dutch Creek puts into sharp focus the treasure that Hidden Creek represents. To log the Hidden Creek watershed, to liberate sediment for decades to come, to turn the stream into a small facsimile of Dutch Creek (and others) seems retrogressive. Neither the Forest Service nor the timber industry have yet demonstrated the soft, sensitive, careful touch required to maintain Bull Trout habitat and to keep sediment from streams.

In the case of Hidden Creek (and other critical watersheds) the cost of repeated mistakes in timber harvest is too high to let them keep trying. Pierre Trudeau, the bogeyman for Alberta, once famously said, “The state has no business in the bedrooms of the nation”. To paraphrase that, logging has no business in the bedrooms of the Bull Trout.

## CELESTIAL HAPPENINGS

# Starry Nights

## Summer: June to August

BY JOHN MCFAUL

### FEATURED CONSTELLATIONS: DORADO, MENSA, VOLANS

Certainly a couple of celestial objects that any stargazer must have on their bucket list while traveling down under this time of year are the Large and Small Magellanic (discussed in the summer 2013 edition of *Nature Alberta*) Clouds. These nebulosities were named after Ferdinand Magellan who was the first European to describe them, although they were known to earlier astronomers. We now know that these clouds of light are part of the Local Group of about 54 nearby galaxies.

The Large Magellanic Cloud (LMC) is thought to be about 162,000 light years away from us. This galaxy is composed of about 10 billion stars one of which was first observed as a supernova in 1987 by Canadian astronomer Ian Shelton. This was the first supernova visible to the naked eye since 1604. The light from the supernova took 162,000 years to reach us. The LMC straddles the border between the constellations Dorado and Mensa.

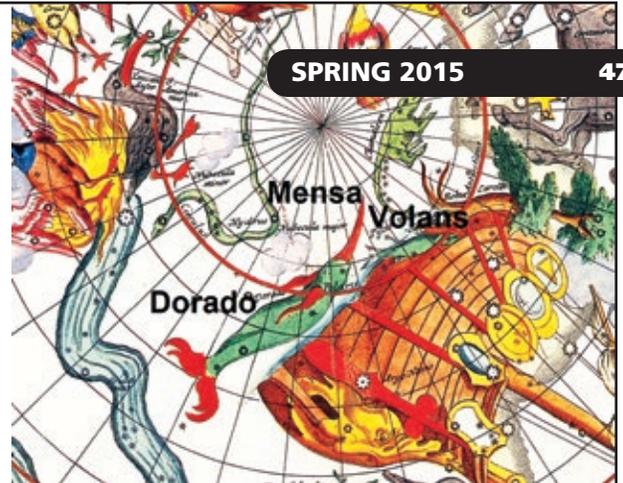
Dorado (the Goldfish), also known as the swordfish, was named by the 17th century German astronomer Johann Bayer based on the reports of early European explorers of the southern latitudes. The name refers to species of dolphin fish. One of the stars in this constellation known

as S Dorado is considered one of the most luminous stars known. It is a hypergiant star in the LMC. It is about a million times more luminous than our sun. The south pole of the ecliptic, the path that the sun takes across the sky, is located in Dorado.

The LMC extends southward into the constellation Mensa, the Table Mountain (often just called the Table). This refers to Table Mountain of Cape Town, South Africa. It was named by the French astronomer

Nicolas Louis de La Caille. He travelled to the Cape of Good Hope in 1750 in an attempt to measure the distances to the planets. While there he catalogue over 10,000 stars and created 14 new constellations.

Like Dorado the constellation Volans, the Flying Fish, was a creation of Johann Bayer. It immortalizes the flying fish that captivated the early sailors sailing the southern seas. The Dorado fish often prey upon the flying fish.



### CELESTIAL HAPPENINGS

**Sun:** Rise – June 1 (5:12 MDT), July 1 (5:09 MDT), August 1 (5:49 MDT)  
Set – June 1 (5:12 MDT), July 1 (5:09 MDT), August 1 (5:49 MDT)  
Summer Solstice: June 21st, 10:38 AM, MDT

**Moon:** Full – June 2, July 1, August 29 (super full moon)  
New – June 16, July 15, August 14  
**Note:** A super full moon occurs when it is closer than 360,000 km.

**Planets:** **Mercury** may be seen very low in the NE sky shortly before sunset near the end of June. Afterwards it will be hidden by the glare of the sun until August. At that time it might appear just above the western horizon in the middle of August after sunset.  
**Venus** shines brightly in the west in the evening sky. It will continue to sink closer to the horizon through the summer months. On June 19th it will form a nice triangle with Jupiter and the moon. On June 30th it will be very close to Jupiter. By the end of August it will become a morning object in the eastern sky.

**Mars** will be too close to the sun for most of the summer, but will be far enough from the sun to allow it to be seen in the NE about an hour before sunrise by the middle of August.

**Jupiter** will descend lower in the western sky as the summer progresses. On June 30th it will be very close to Venus. On July 18th it again will be close to Venus and the moon, but will be very close to the western horizon and will set soon after sunset.

**Saturn** has moved into Scorpio. It will be best seen about 20 degrees above the southern horizon late in the evening. The moon will be nearby on June 1st, June 28th and July 25th.

**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.*

## BOOK REVIEW

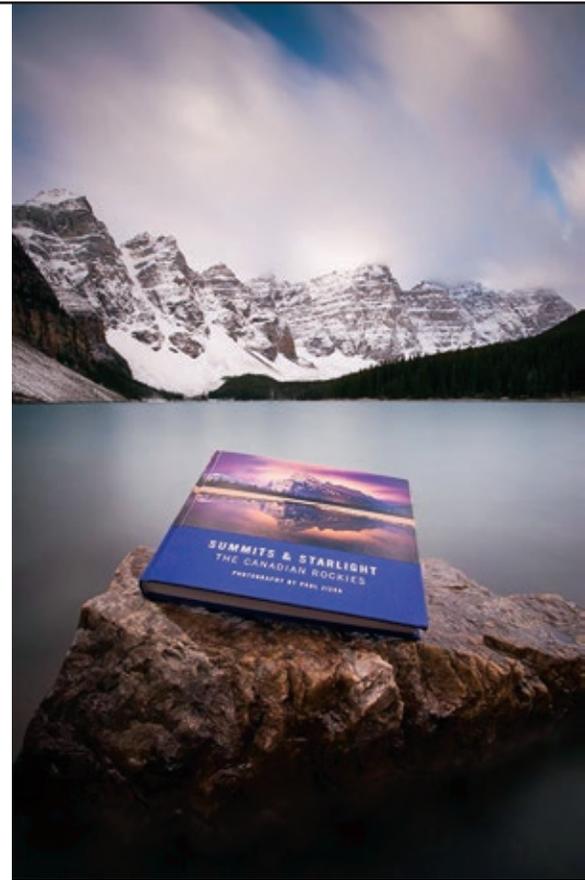
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