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BLUE JAY

There are two butterflies commonly mistaken for Monarchs that are found in Saskatchewan: Viceroys and Painted Ladies. This article explains the most reliable ways to visually identify each as well as compare and contrast them to Monarchs, so you can feel confident when in the field or in your backyard.

Muriel Carlson shares the story of the history of the Turtle Lake Nature Sanctuary and discusses some of the highlights of the Sanctuary, including Boreal Chorus Frogs, information signs, the trails and other flora and fauna that can be found there.

Using data collected by volunteer citizen-scientists, it is now possible to estimate the annual rate at which available chimney habitat is being lost in the Chimney Swift's range in Manitoba. This article presents data on chimney loss in Southern Manitoba and examines the effect of volunteer efforts to reverse habitat loss.

David Larson shares his observations of 'decaudated' Variegated Meadowhawks in southwest Saskatchewan, and provides evidence in support of both spring and fall breeding populations of the dragonfly along the province's southern border.

Birds are among the natural enemies of butterflies, but the few observations of butterfly predation in a riparian habitat at Delta Marsh, Manitoba, suggest this predation is rare.

Eighty-eight Christmas Mammal Counts were conducted in Saskatchewan during the winter — three more than last year. Several high count records were set or tied as well.

WHAT'S INSIDE

FROM THE PRESIDENT

Dr. Branimir Gjetvaj
President, Nature Saskatchewan

Earlier this spring, I attended the launch of the Saskatchewan Breeding Bird Atlas (BBA), one of the largest citizen science projects in the province. The Atlas brings together volunteer citizen scientists and professional biologists to collect information about the population and distribution of nesting birds in Saskatchewan. The BBA launch took place at the Last Mountain Bird Observatory (LMBO), a bird migration research and education facility located in the heart of the Last Mountain Lake National Wildlife Area. Co-managed with the Canadian Wildlife Service from 1989 until 2007, LMBO has been looked after by Nature Saskatchewan for the last 10 years.

ON THE FRONT COVER
A one-year-old female Bald Eagle photographed on Lac La Ronge, Saskatchewan on August 16, 2016. The image was taken with a Pentax DA*300mm lens and 1.4x teleconverter for an effective focal length of 420mm (600 mm equivalent) mounted on a Pentax K3 DSLR; ISO 400, f/6.3, 1/2500 sec. Photo credit: Dale Mierau

ON THE BACK COVER
This beaver enjoyed a snack on the shores of Wascana Marsh before jumping in for a sunset swim. Photo credit: Shayna Hamilton

On a beautiful Saturday morning, over 100 people came to the BBA launch at LMBO. I was thrilled to see a rather large number of children and young participants.

Nature Saskatchewan runs several programs based on engagement and contribution from amateur citizen scientists. A growing worldwide phenomenon, citizen science contributes to our knowledge about climate change, invasive species, ecological restoration and conservation biology. Through participation in ecological monitoring and community science programs, citizen scientists help address a diversity of health, environmental, and social justice challenges facing our society.

Several factors seem to be responsible for the proliferation and success of citizen science projects. First, new emerging technologies make communication, data collection and distribution of results easier and more accessible. Ubiquity of Internet tools and websites come to mind, as well as user-friendly applications that field naturalists can access on their smartphones. Second, professional scientists are realizing that the public can provide a large source of experienced labour that would otherwise be prohibitively expensive to hire for research projects. For example, Nature Saskatchewan is in the finishing stages of publishing a major publication about the birds of Saskatchewan. This undertaking would not have been possible without a vast amount of historical data collected by knowledgeable and dedicated amateur naturalists, no different from present-day participants in the Saskatchewan BBA.

A third factor driving the growth of citizen science comes from the appreciation of the benefits that arrive from public engagement: increased

Dr. Branimir Gjetvaj

confidence in one's knowledge and abilities, and a stronger sense of belonging to, and caring, for a place. There is also the potential to enhance public understanding of science — the best way to understand and appreciate the scientific process is to participate in it. Think of various BioBlitz projects, in which expert scientists and an engaged public work together to map and inventory as many species as they can in one location over a short period of time. Close to home, Regina BioBlitz will take place in Wascana Centre on June 9 and 10, 2017, and Nature Saskatchewan is one of the hosting organizations. The aim of the event is to provide an enjoyable learning opportunity for those who may not normally interact with nature.

I believe active participation in well-designed citizen science programs enables the informed citizen to understand and appreciate the scientific process and the knowledge it provides. One might hope that informed citizens will become active citizens, and more enthusiastically take part in dialogue and decision making around issues related to climate change and environmental degradation. Nature Saskatchewan is working hard to promote the public participation and understanding of science behind projects such as the Breeding Bird Atlas or BioBlitz. We hope that you will join one of our citizen science programs so the 1970s mantra of 'Science for the People' becomes a more inclusive 'Science by the People.'

BLUE JAY

Blue Jay, founded in 1942 by Isabel M. Priestly, is a journal of natural history and conservation for Saskatchewan and adjacent regions. It is published quarterly by Nature Saskatchewan.

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Blue Jay welcomes all submissions, preferably by e-mail (although hand-written or typed manuscripts will be considered to accommodate those who do not have access to computer equipment), polished or in need of some editorial assistance. All items for publication should be sent to the editor electronically (in a Microsoft Word document) by e-mail or on CD. Hard copies and CDs can be mailed to the editor at the address above.

Submission deadlines

January 1 for the Spring issue,
April 1 for the Summer issue,
July 1 for the Fall issue, and
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For detailed information, please see the "Guidelines for Authors" under the Publications section of the Nature Saskatchewan website.

Female Monarch butterfly. Photo credit: Kim Mann

MISTAKING MONARCHS

MONARCH ID AND DISTINGUISHING LOOKALIKES

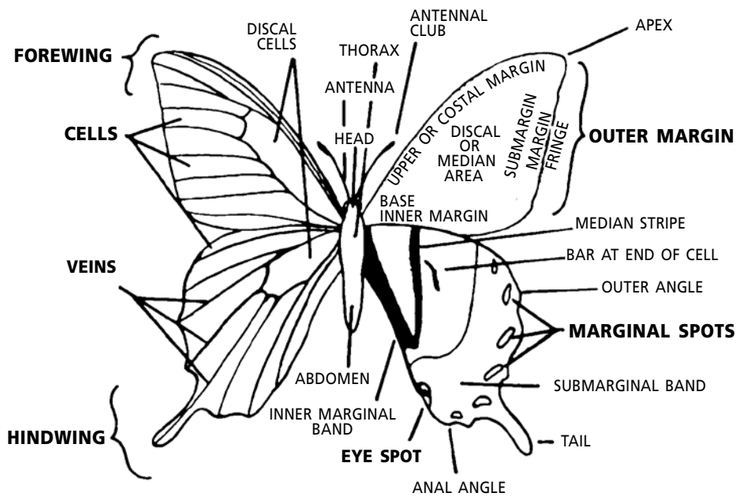

FIGURE 1. Illustration "Parts of a Butterfly (Tiger Swallowtail)" from Ron Hooper's *Butterflies of Saskatchewan*. Bolded are features used in this article to identify butterflies.

Shayna Hamilton
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Doing any kind of identification in the field, whether it be birds, plants, or invertebrates, can be tricky at the best of times. Usually you have limited time to observe a specimen before it continues on its way. Any skill or resource that can help to quickly identify between families or species saves you time and allows you to be more confident in your identification ability. Being confident in your ability to ID in the field is beneficial to both beginners and experienced personnel in order to identify a larger volume of specimens in the same amount of time.

It is fairly easy to tell a mammal

FIGURE 2. Monarch (right) and a Viceroy (left). The white arrow points out the black vein that isn't present on Monarchs. Also notice the two rows of white spots on the wing margin of the Monarch compared to only one on the Viceroy. Photo credit: Fran Kerbs

from a bird, but what about those tricky cases where only minor variations occur between species? The first that comes to mind is the plentiful amount of little brown sparrows. Another very common identity crisis is that of Monarch butterflies (*Danaus plexippus*) and their lookalikes. There are two butterflies commonly mistaken for Monarchs that are found in Saskatchewan: Viceroys (*Limenitis*) and Painted Ladies (*Cynthia*). This article explains the most reliable ways to visually identify each as well as compare and contrast them to Monarchs, so you can feel confident when in the field or in your backyard.

Monarch butterflies are listed as a Species of Special Concern under the Species at Risk Act; however, the Committee on the Status of Endangered Wildlife in Canada has recently recommended they be uplisted to Endangered. Populations have declined due to habitat loss from logging, agriculture, urban development and pesticides that affect milkweed (*Asclepias* spp) and wildflowers. They are limited to laying their eggs on species of milkweed plants, which the caterpillars rely on for food. This plant affords them protection as it causes them to become toxic to predators into adulthood. Female butterflies lay eggs throughout their two-to-six week life and eggs hatch four to six days after being laid. The brightly striped black, yellow and white caterpillar gorges on the milkweed plants and can grow 2,000 times in size during this stage in life. Approximately two weeks after hatching, the caterpillar attaches itself to a sturdy surface and uses silk to transform into a chrysalis. About two weeks later the adult emerges and begins to feed on the nectar of wildflowers such as goldenrod (*Solidago* spp) and asters (*Aster* spp).

The eastern population of Monarch butterflies migrates south to Mexico for the winter. In the spring they begin their journey north and some make it all the way to Saskatchewan. It takes as many as four successive generations of Monarchs to complete a round trip. Each generation lasts only a few weeks as they make their way north, laying eggs along the way. In August, the final generation of the trip lives for as long as nine months, making the flight back south and overwintering until spring, when they begin the journey all over again.

Monarchs are true royalty in the butterfly world, and are the largest butterflies in Saskatchewan. Their wingspan is 9-10 cm, dominantly orange with black veins and margins, and two rows of white spots (Figure 1). Their body is black with paired rows of white spots. Male Monarch butterflies have two black spots on their hind wings, while the female's wing margins are thicker and they lack the hindwing spots of the males.

FIGURE 3. Underside of a Painted Lady wing. Notice the eyespots that run parallel to the outer margin. Photo credit: Wikipedia

FIGURE 4. Side-by-side comparison of a Monarch (left) and a Painted Lady (right). The most noticeable difference is the brown colouration and the lack of true veining in the Painted Lady. Photo credit: Fran Kerbs

The butterfly most likely to be incorrectly identified as a Monarch is the Viceroy (Figure 2). The mimicking of appearance has evolved because of the Monarch's poisonous nature to potential predators. In other words, if you look like something that is poisonous, fewer predators will try to eat you. Viceroys are slightly smaller than Monarchs in size, but have the same general colouring — orange wings with black veins and margins with white spots. The key differences are in the veins and spots. Viceroys will have a single vein on the hindwing that runs perpendicular to the others, whereas Monarch veins all go in the same general direction. The spots on the margins of the wing can also help to distinguish between them, as Monarchs have two rows of white spots on the margins while Viceroys only have one row. Viceroys also lack the white spots on the length of their body when seen from above.

When compared side-by-side, it is obvious to see that a Painted Lady is not a Monarch butterfly, but you are much more likely to come across a Painted Lady in the field (Hooper, 1973). These butterflies are significantly smaller than Monarchs but have the same colour scheme: orange, black and white. The underside of Painted Ladies is a dull brown with a row of brown spots that resemble eyes, called eyespots, placed just inside the outer margin (Figure 3). This is the easiest way to distinguish them from Monarchs. Just remember, if you see any brown colour on the body or wings, it isn't a Monarch.

Butterflies hardly ever sit as still as a picture and one often catches a glimpse of the upper side of the wing, seeing black margins, some white spots, and an orange wing. But it's important to note that Painted Ladies don't have veining around the cells of the wing, and the black margin is only on the forewings. Painted Ladies also lack white spots along the margin of their wings and their body colour ranges in shades of brown (Figure 4). Finally, they also have a single row of black spots along their hindwings that reside just inside the outer margin.

The best way to see a Monarch butterfly at home is by planting milkweed and other wildflowers in the spring. Monarchs rely on naturalists more than ever to provide habitat in urban spaces that were historically breeding grounds. By planting milkweed you are helping to ensure these Monarchs reign over the butterfly kingdom for generations to come.

HOOPER, R. 1973. Butterflies of Saskatchewan. Saskatchewan Department of Natural Resources.

For more information about Monarchs, or the Stewards of Saskatchewan program for all Species at Risk, please e-mail Ashley Vass at outreach@naturesask.ca.

Nature Saskatchewan is asking the public to report Monarch sightings to its toll-free line: 1-800-667-4668.

Viceroy butterfly. Photo credit: Fran Kerbs

Shaggy Scalycap mushrooms (*Pholiota squarrosa*). Photo credit: Brenda Rutz

HISTORY OF THE TURTLE LAKE NATURE SANCTUARY

Muriel Carlson

Serendipity, as I interpret it, means "something wonderful and unexpected, an event worth remembering." The origins of our Nature Sanctuary at Turtle Lake is one such example.

This is how it all began

There is a quarter section of spectacular lakefront land between two resorts on Turtle Lake. There has been an attempt to develop it as acreages, but it failed, and the land has sat quiet and natural for decades, except for 12 acres in the center that was used as a gravel operation in the 80s, then invaded by dirt bikes for a BMX trail. An old car trail near the lake shore follows a foot path that is locally known as the Beaver Trail. It winds through the riparian zone beside the lake and, because the lake straddles the forest and parkland ecotone, it has a much higher number of species of everything. It was beside my summer home for 46 years.

One sunny afternoon in 1993, I was walking north on this trail from Indian Point, birding and botanizing my way along, when I met a man coming from Turtle Lake Lodge. We met in the spot everyone calls the butterfly meadow. The man was E.M. (Rob) Robinson, who was a member of the Saskatchewan Wildlife Association. He was doing his compulsory walking after major heart surgery.

We soon began to talk about the outdoors, but mostly about that sunny spot, until he commented "It's a shame, but this land is for sale."

"Really? Why?" I asked.

"The Saskatchewan Wildlife Fund owns the property."

"And they don't want to keep it?'

"No. They're hunters, and this quarter has a caveat against hunting. They plan to keep the other dozen quarters east of the grid road, but sell this one."

I do not remember who said it first, perhaps it doesn't matter. He mentioned that the price for that quarter was $10,000, but we both agreed that Nature Saskatchewan might be the best future owner.

I contacted Doug Schmeiser, then president of Nature Saskatchewan, whereupon I invited him to see it. He and his wife Irene came to see the land, and loved it. At the very next meeting of the Saskatoon chapter of Nature Saskatchewan, Doug outlined the case for developing a sanctuary at Turtle Lake by raising the money from our members and others who were interested. I took home cheques for $1,350 that night and called the Robinsons about our plan. They agreed to raise funds from their beach, and within three weeks we had raised several thousand dollars. But we needed a corporate donor, so I approached Wascana Energy in Regina (now Nexen in Alberta), which gave us $8,000 to top it up. The rest is history.

The deeds were completed and on June 13, 1994, we took possession of the land at a brief ceremony with Doug Schmeiser presiding and competition from a noisy Great Crested Flycatcher. Preep! Preep! That species is now our official bird!

Ah, but all was not yet complete. We did not have title to three small wedges of lake shore land where Franklin's Lady's Slippers grow. They are the rare orchid that had convinced me to protect the land. This time we located more corporate donors. Then we placed a sign at the entry. We were in business. That was serendipity!

I would like to say that everything went smoothly from then on, but we had problems with the dirt bikes and ATVs. They were a threat to the small kids who walked or rode bicycles up to the Lodge (for an ice cream cone) and the noisy bikers loved to dig useless deep holes in trails. After a request for an agreement was ignored, we simply decided that a fence was the only answer. So we raised more money and, for $20,000, we built one of post and pole design with a cable wire below it that allowed animals to freely climb through. Arnold Thiessen designed and built the fence in three months. Some Nature Saskatchewan members and residents helped, and one day we brought in a pile driver that made slick work of the last portion. Thank you, Arnold! Your work will stand as a testament of proof that a good fence makes good neighbours.

E.M. Robinson, Michael Williams and myself were designated as stewards of the sanctuary. We shared tasks, too. E.M. repaired and cleared the trails for 17 years and built nest

Oyster Mushrooms (*Pleurotus ostreatus*) at the Turtle Lake Nature Sanctuary. Photo credit: Brenda Rutz

boxes for swallows; he developed ski trails for winter use and maintained them. Michael came up every spring when we did our Breeding Bird Surveys nearby. He and Lois Wooding helped clear hundreds of aspen and poplars along the power right-of-way and Dave Swift from St. Walburg mulched them for trails using their big tree shredder. Arnold helped blaze additional trails and prepared one wide enough to use to transport medical or fire emergencies. So far, nobody has needed them.

All of these tasks were labour intensive. We had Grade 5 students at St. Walburg School build information boxes, and Marvin Brose installed them along trails with some help from my granddaughters Carmen and Sarah Cooper. It took them three years to clear the weeds from the gravel pit and then return the little frog pond. Marvin and wife Linda still clear the deadwood off of the fence-line and the walking trails; Bob and Sharon Parker donated the sign beside the frog pond; Cliff Wieger's family set up GPS sites and donated funds to replace the old sign at the front gate. Dozens of others helped in so many ways. Thank you all.

Some highlights of the Turtle Lake Nature Sanctuary

One of the joys of spring is that every May, little Boreal Chorus Frogs begin singing beside the frog pond, and by June little froglets are all over the place. Then Wood Frogs and toads take over. Everywhere.

Be sure to read the little box info-signs. They give us a Grade 5 student's interpretation about many birds, plants and animals. One sign box states that "many frogs' eggs hatch every year but most are eaten by predators. What you will see are the lucky survivors." Love that.

When the Lodge was still open, we had many guided trail tours, but since I gave up the stewardship, Darlene Roth, my replacement, has been further developing the self-guided trails, with tiny signs for single plants and colourful upright signs to tell about the history and geology of the region: photos of birds, animals, amphibians, rare flowers, mushrooms and lichen. If you can take the time to walk all of the trails, you will begin to understand how important that small quarter-section of land is. We have two upraised areas of shoreline that are much like cliffs, which provide great viewing places (see article by Darlene Roth in the Summer 2016 *Blue Jay*). There are beavers busy changing that landscape too.

About 125 species of birds call the sanctuary home most summers, and the surrounding area has a total of 262 and counting. Of these, 22 warbler species are regular nesters, although numbers have fallen sharply, and are of concern. We even have two drumming logs for Ruffed Grouse. We have found nests and banded Great Gray Owls, Broad-winged Hawks, Ospreys, Northern Goshawks and several songbirds beside the sanctuary. The BBS survey that I conducted nearby for 34 years counted a total of 143 nesting species of birds during that time (1979-2013). There are many butterflies, but only 18 species have been identified.

In 2010, we had a florescence of mushrooms following a very wet August and September. Brenda Rutz and I were so fascinated by the mushroom "bloom" that we photographed and identified 117 species and more than 20 others (with the help of several experts and five field guides). We may not see that spectacular display again for decades. We made posters featuring one mushroom, a beautiful *pleurotus ostreatus/porrigens* (hybrid) and raised $2,000 for signs. Everyone is familiar with Amanita mushrooms, but not their deadly aftermath, so one of our descriptive signs outlines the dos and don'ts of poisonous species. Another profiles the lichen and its importance to the ecosystem. Biologists identified 76 species of lichen present on the trees and ground, as well as the invertebrates in the frog pond. But somehow we still have not done a count of the grasses, trees and shrubs. More work to be done.

And the flowers! 260 and counting. Look for 10 species of orchid, including three species of coral root, Franklin's (or sparrows egg) Lady's Slipper (June 22-July 21), both Yellow Orchids and two green species; our leather-leaved grape fern is unusual and found right along one path; Western Red Lilies, our Saskatchewan flower emblem, are almost everywhere.

Every month of summer has its special blossoms. It should be noted that the vast majority of flowers and fungi are found close to the power line. When it was cleared 60 years ago, the logs and trash were piled in long rows then rotted and they produced the incredible bounty of mushrooms, fungi, lichen, mosses and orchids.

We have only completed a small list of butterflies and moths, mostly because you have to be there: it is still a work in progress.

This place will always hold a special place in my heart. My children grew up there, so have my grandchildren. Now I have to tackle the great-grandchildren and make naturalists out of them. The bright sunny days of late May until early August are great to explore. It is now best to park at our gate on the paved grid road. Lots of space!

One of the problems today is where to stay. Your best bet is at Moose Country Service east on Hwy #4, where there are several modern clean rooms with spare beds for kids. They will provide meals on request, and Carol and the family will cook up a hearty country meal or box lunch for everybody. She is also a taxidermist and has a great gift shop. Birding right in their yard is a good start, and the road between there and the Sanctuary is great for owling around dusk.

Sadly, E.M. Robinson died in 2015. His widow, Marie, lives in Saskatoon. We owe them a lot.

LOSS AND PRESERVATION OF CHIMNEY SWIFT HABITAT IN MANITOBA, 2007-2016

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FIGURE 1. A Chimney Swift (*Chaetura pelagica*) in flight showing the characteristic ovoid body and boomerang-shaped wings. The bristled tail feathers, used for bracing when the bird rests on vertical surfaces, can also be seen. Photo copyright – DM Lavigne, 2015

Introduction

The Chimney Swift (*Chaetura pelagica*, Fig. 1) in Canada has been assigned the status of "Threatened" under the Species At Risk Act (SARA).[1] Manitoba has also listed the Chimney Swift as "Threatened" under The Endangered Species and Ecosystems Act.[2] SARA lists loss of nesting and roosting habitat (chimneys) as the most significant threat although Fitzgerald *et al.* suggest chimney habitat in Ontario may not be a limiting factor.[3]

There seem to be few data on the rate at which chimneys suitable for Chimney Swifts are being lost from their environment and whether such losses are limiting or not. Using data collected by volunteer citizen-scientists in Manitoba, it is now possible to estimate the annual rate at which available chimney habitat is being lost in this part of the bird's range. Here we present data on chimney loss in southern Manitoba between the start of the Chimney Swift season (nominally May 1) of 2007 until the start of the season in 2017 (10 years). We also examine the effect of volunteer efforts to reverse habitat losses.

Methods

The Manitoba Chimney Swift Initiative (MCSI) benefits from a cadre of about 60 volunteers who search for, and identify, potential and active Chimney Swift nest or roost sites. In the decade since 2007, volunteers have collected data on the numbers of birds observed entering the chimneys and, occasionally, data on nesting behaviour and outcome.[4,5]

New sites are often discovered when Chimney Swifts are seen in the air and an effort is made to track them to a chimney in the evening. Others are found by happenstance. One was classified as 'active' because although no entries or exits were recorded, there was evidence of former nesting activity in the chimney cleanout trap. Chimneys were considered to be suitable as Chimney Swift habitat if they were of adequate size (≥ 2.5 bricks square), unlined, accessible (not capped or screened), and in an area where Chimney Swifts have been observed. The 'area where Chimney Swifts have been observed' was a broad criterion. In some smaller rural locations, it meant local residents had reported seeing Chimney Swifts in the air.

Known sites accrued over the years. We assumed in this analysis that if a chimney was seen to be active at any time in the decade, it had been available habitat for the whole decade. For example, if a suitable site was 'discovered' in 2016 it was considered to have been suitable habitat in 2007 and all intervening years. None of the chimneys in the data base was constructed after 2007.

In 2009, MCSI initiated a Chimney Swift habitat preservation program. This entails entering into agreements with property owners to assist financially with essential chimney repairs in return for a commitment to retain the chimney as available Chimney Swift habitat. It also includes direct education leading to agreements with owners that planned closures will not proceed. MCSI also conducts a public education program and there may be other chimneys that remain open due to the information made available to the public. There are no data on these sites.

Results

Over 10 monitoring seasons, spring of 2007 to fall of 2016, MCSI volunteers identified 200 potential Chimney Swift sites. The number of observations varied among years (Fig. 2) and by site. Of the 200 chimneys or sites in the MCSI database, nine were not monitored in any year. Another 57 chimneys were monitored with variable effort and there were no observations of Chimney Swifts using them. These two categories of chimneys were grouped and referred to as **potential habitat**. The remaining 134 **active sites** were known to house Chimney Swifts at least one year in the 10-year sample by volunteers observing entries or exits.

Over the 10 years of the MCSI database, 29 of the total 200 identified sites were lost (14.5%). Of sites known to have been used by Chimney Swifts in this period, 19 of 134 (14.2%) were lost. Losses varied among years (Fig. 3) and averaged 2.9 + 1.1 (mean + 1 SE) chimneys per year (n = 10) for potential plus active sites and 1.9 + 0.6 (n = 10) for active sites only. The timing of habitat loss was not always apparent. Many chimneys were closed between Chimney Swift seasons although some were removed when the birds were still present. Most lost chimneys had been occupied the season before loss or the season of loss (15 of 19). For three of the remaining four sites, MCSI has no occupancy data in the season before destruction. The last chimney was not occupied the year before it was lost but housed a pair the year before that.

The average number of birds that had occupied the chimney immediately prior to it being lost was 2.1 + 0.4 (n = 19 chimneys) although the average usage for years for which there are data was 4.3 + 1.1 (n = 52 annual counts at 19 chimneys). The difference arises because the maximum counts at two of the 19 lost sites were 18 and 48 birds (Fig. 4). The average number of birds using the chimney, immediately before the chimney became unavailable, is negatively biased because the parents were feeding young in at least one site when it was demolished.

Data on the type of Chimney Swift use (nest or roost) are incomplete. However, at 14 of the 19 lost chimneys the maximum recorded count was one or two. More than 10 birds were recorded entering each of two sites which, therefore, were clearly used as roosts (Fig. 4).

Chimneys were lost to three main events. They were capped or lined (16), torn down (nine, including one demolished with the building) or screened (three). One collapsed.

Winnipeg had the largest number of sites (120 or 60.0% of potential plus active sites) of all municipalities monitored and 69.0% of the total losses. Winnipeg lost 20 potential or active sites (16.5%). Some smaller communities had higher loss rates of active sites. For example, one of three (occupied annually since 2010) in Carman was lost (33%); four of 11 in Portage la Prairie (36%); one of two (occupied every year from 2010 on) sites in Brandon (50%); and the only active site known in Lorette, found in 2012, was occupied in 2012 and 2013 then lost (100%). Both the Carman and Brandon sites may have been roosts as well as nest sites; the others appear to have been nest sites only. In larger communities, there may be undiscovered alternate sites but this is less likely in smaller settlements.

Since 2009, MCSI and its partners have assisted with the repair of 11 chimneys (Fig. 5) and reached agreements with owners to abandon plans to close another three chimneys. All 14 sites were known to have had Chimney Swift residents before preservation. Preserved chimneys were in six different communities. In all but two cases, preservation took place in the fall, after Chimney Swifts had left the area; the other two were repaired in early spring before Chimney Swifts arrived. Eight sites were preserved after the 2016 season and their efficacy cannot be gauged.* The other six, which were all repaired, were all occupied following the repairs, including the two repaired in the spring. The average number of birds using the chimney after repair was 5.5 + 1.03 (n = 19 observations at six chimneys) although the modal count was two. The maximum was 19. Only a few chimneys are monitored by MCSI to assess nesting success. Despite that low effort, young have been documented fledging from two of these six repaired sites.

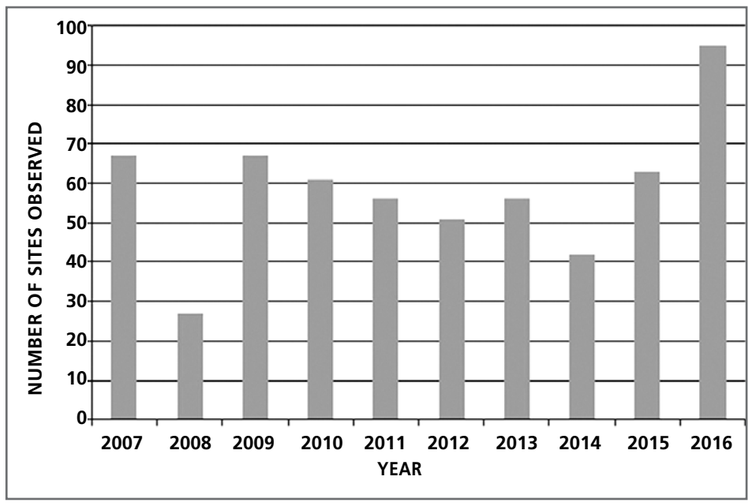

FIGURE 2. Number of chimneys monitored each year since the inception of the Manitoba Chimney Swift Initiative monitoring program.

Discussion

Our estimates of the number of potential sites available to Chimney Swifts may be positively biased. Many liners are detectable because they extend several centimetres above the bricks but some may not be seen. Screens are usually obvious. Caps may be installed that are undetected. Conversely, flashing installed only to protect the bricks may be mistaken for a cap and a metal or tile insert that is seen from the ground may extend only a short distance into the chimney (negative biases). However, the calculated loss rate of potential sites was virtually identical to that for active sites and the effects of any detection bias must be small.

Habitat losses refer to both active and potential habitat. The value of protecting potential habitat was made obvious by two subsequent events. One small chimney where no entries or exits were recorded was on a small hotel with a second chimney that was used by Chimney Swifts. That known active chimney required repairs and in the course of repairing it in 2016, the cleanout trap of the small chimney was inspected. It contained considerable amounts of Chimney Swift nesting debris and hundreds of dead bees; there was a bees' nest blocking the flue. The debris and nest were removed and the chimney repaired. Whether Chimney Swifts return to this site awaits a future season but the presence of a bee nest may have been the main deterrent to Chimney Swift occupancy.

The second case involves the sudden 'colonization' of one site in Winnipeg. Assiniboine School had been monitored by MCSI since the program's inception in 2007. Prior to 2014, it had been occupied by zero to 10 birds each year. Since then it has housed more than 100 Chimney Swifts each year (Fig. 6), including a nesting pair in 2016, and is currently

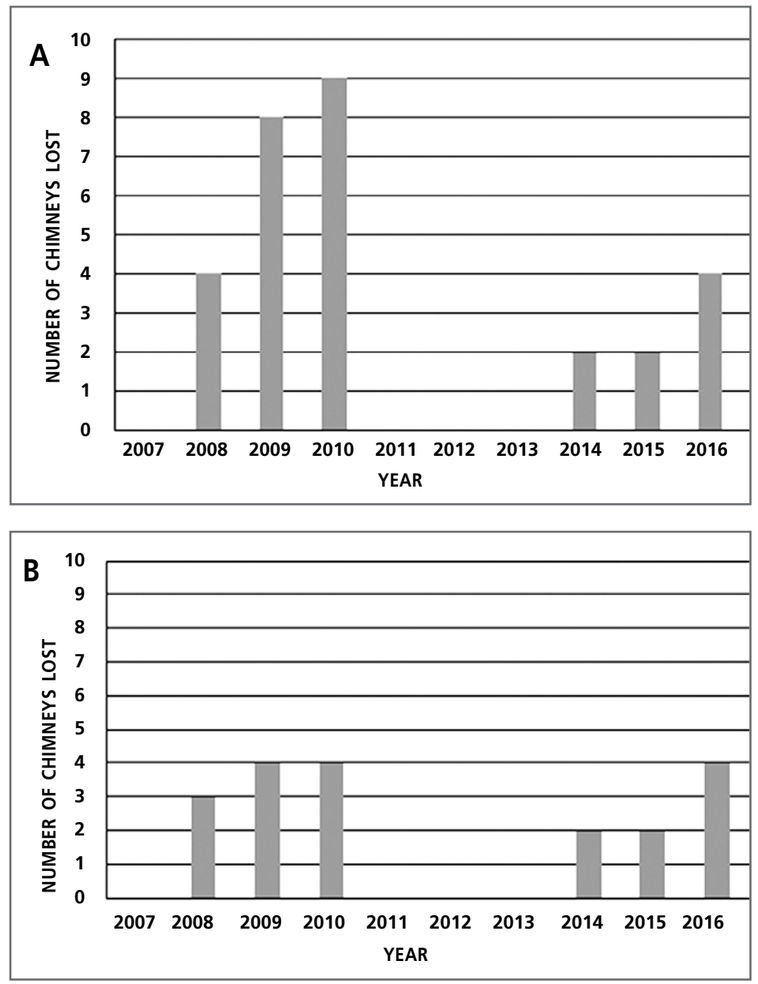

FIGURE 3. Recorded numbers of (A) potential plus active sites and (B) the number of active Chimney Swift sites lost in Manitoba in 2007-2016. Monitoring began in 2007 and recorded losses that year may be negatively biased.

*Note added in proof: One of these eight, a nest site, was reoccupied in May 2017 but is not included in the analysis.

the largest known roost in Manitoba. This influx of birds also indicates our estimate of habitat loss is negatively biased because the most obvious cause of the sudden arrival of so many birds is displacement from some other roost or roosts. Based on local reproductive success a population explosion producing 100 new birds is implausible.[4,5]

Our monitors recorded no losses of known sites in the years 2011, 2012 and 2013 (Fig. 3) which appeared unrelated to monitoring effort (Fig. 2). We are at a loss to explain this as anything but a reflection of the vagaries of the chimney repair business. There are too few data for detailed spatio-temporal analysis but 18 of the 20 lost sites in Winnipeg were in a part of the city settled largely before 1930 and all within a few kilometres of each other. Some sites are close enough that seeing repairs at one site could influence the owners of nearby sites.

MCSI's chimney preservation activities began in 2009 but most have taken place since 2015. Over the decade, 15 chimneys were slated for closure or demolition. Had these chimneys been added to the realized losses, 44 sites (22% over the 10 years) would have been lost rather than 29 sites (14.5% over 10 years).

MCSI has shown that chimneys designated for closure can be saved and it follows that some lost chimney habitat may be restored. Capped or screened chimneys can be reopened with a reasonable expectation that the Chimney Swifts would return. The chimney at St. Avila School in Winnipeg was used by a pair of Chimney Swifts in 2009 and 2011 (not in 2010) then capped after the 2011 season, unbeknownst to MCSI, which continued to monitor the site. The cap blew off in a storm before the 2016 season. The site was not monitored in 2015 but supported a nesting pair in 2016. Officials have agreed not to recap this chimney and preserve it as Chimney Swift habitat.

We found that both actively used chimneys and potential sites for which MCSI had no evidence of occupancy were being rendered unavailable to chimneys swifts at a rate of about 1.5% per year between 2007 and 2016. COSEWIC indicated about 35% of parish chimneys in Québec were not available but did not provide a temporal reference.[6] That report used 1950 as the nominal start of conversions to electric heat and chimney obsolescence. Using 1950 to 2007 as the time frame for 35% loss provides an estimate of about 0.6% per year. We could find no other estimate of the rate of annual habitat loss in the literature.

But is loss of habitat at 1.5% (2.2% without preservation actions) significant to the population of Chimney Swifts in Manitoba? Overall, information on population trends for Chimney Swifts is imprecise and often contradictory and data for Manitoba are sparse. The best data may be the Breeding Bird Survey data for the Prairie Pothole Bird Conservation Region, tabulated in the United States Fish and Wildlife Service (USFWS) database.[7] The USFWS data for this region are considered only moderately reliable and suggest a population decline of 1.66% per year between 2005 and 2015, but the 95% credibility interval (-5.90 to 2.34) includes zero so the trend is not statistically significant.[7] The large credibility interval on the USFWS estimate does not mean there has been no decline; only that the data are insufficient to detect a change.

While it is not possible to link the annual rate of chimney losses to the equivocal and perhaps not significant changes in population, it is reasonable to suggest that closure of chimneys may be a limiting factor in Chimney Swift recovery. However, Fitzgerald *et al.* noted that over 75% of potentially suitable Chimney Swift sites were not occupied in southern Ontario.[3] Of the 191 chimneys monitored by MCSI, 57 (29.8%) have not been seen to house Chimney Swifts (sampling rate is 13.7% of 519 chimney-years, adjusted for lost chimneys). Moreover, three large roost sites in Manitoba have housed large numbers of Chimney Swifts after nesting had started. There appears to be a critical threshold for nesting success in southern Manitoba; no Chimney Swifts that started nest building after June 4 were successful.[5] Observations on June 6, 2015 and 2016, that is after the threshold for nesting success, indicated that 83% and 75% of birds counted (281 and 194 respectively) were in three large roosts (MCSI unpublished data). Large numbers of Chimney Swifts remain in these roosts through the summer *e.g.*, up to ~80 birds in July of 2014-2016. In Manitoba, the proportion of non-breeding birds is much higher than the 40% reported for Québec and agrees with Fitzgerald *et al.*'s conclusion that other factors are at play when there are numerous empty chimneys and large numbers of non-breeding birds.[3,6]

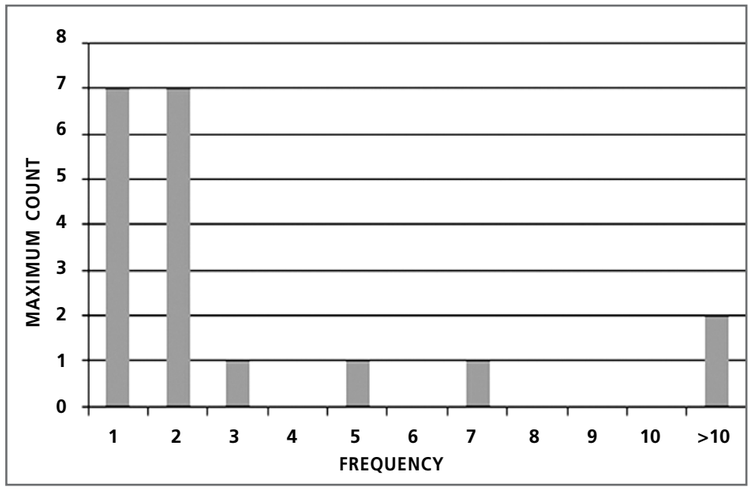

FIGURE 4. Maximum number of Chimney Swifts recorded entering chimneys which were subsequently closed.

FIGURE 5. A chimney repaired in the Manitoba Chimney Swift Initiative preservation program. Before (left) lost bricks and failing joints are apparent before the repairs (right). (Photo copyright - TF Poole, 2016)

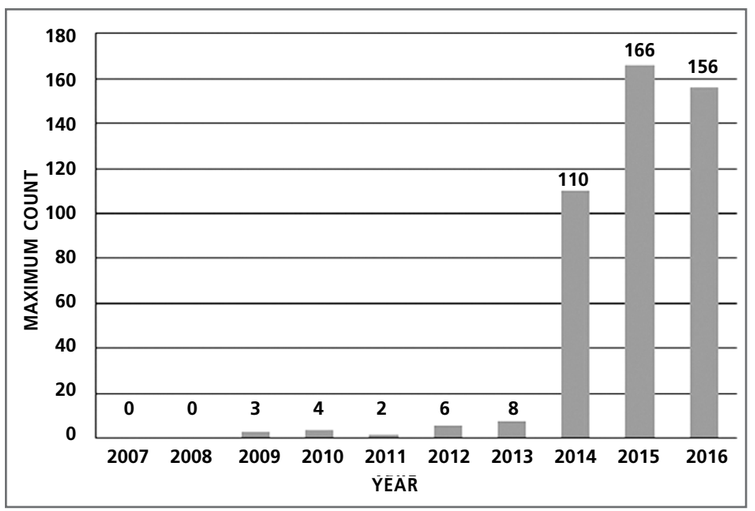

FIGURE 6. Maximum counts of Chimney Swifts entering Assiniboine School in Winnipeg in the roosting hour (30 min before sunset to 30 min after sunset) in the years 2007-2016. Numbers above the bars are the counts.

Acknowledgements

We appreciate the indefatigable efforts of MCSI volunteers, especially those who steadfastly collected valid-zero data points, over the decade. Their dedication made this analysis possible. All authors are members of the Manitoba Chimney Swift Initiative Steering Committee and we thank the other Steering Committee members for their ongoing support. We appreciate the assistance of the editor, A. McLeod, and an anonymous reviewer in getting this paper published. MCSI operates under the umbrella of Nature Manitoba. We greatly appreciate DM Lavigne making his photograph of a flying Chimney Swift available to us. Funding was provided to MCSI for chimney repair and restoration by Environment Canada's EcoAction (2009 and 2010), Environmental Damages Fund (2014-2017) and Habitat Stewardship Program (2016 and 2017) and a private donation.

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LEOPARD FROG PREDATION ON EMERGING ADULTS OF COLONIZING VARIEGATED MEADOWHAWK DRAGONFLIES

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The early spring of 2016 was very dry in southwestern Saskatchewan. The soil was dry the previous fall and very little snow fell over the winter. Spring melt occurred with no runoff so vernal ponds were empty and water levels in dugouts and dams were low. At a period with so much concern about climate change, one could not help but wonder if this drought presaged future dry conditions.

At any rate, it is never a bad idea to try to improve water security. The dry soil meant that heavy equipment could operate without doing too much damage. We hired a track-hoe to come in late April to dig a dugout and make two dams. These observations relate to the larger of the dams, which we called Cactus Flats Dam in recognition of the habitat that was destroyed in its construction. It is located on the north slope of the Cypress Hills (SW 28 09 26 W3), about 14 km S of Maple Creek.

The dam was built at the confluence of two small coulees that cut through Bearpaw age bedrock consisting mainly of clays and shales with lenses of sand and gravel. The coulee bottom was an alluvial pan of white clay with sparse vegetation of mainly western wheat grass, cacti and sagebush. On completion, the water depth could potentially average 5 to 6 m in a pond about 75 by 50 m, and flood up the side walls of the coulee into a mixed grassland community of gramma, needle grass, and prairie muhly on sandy-clay soil. The term potentially is used because our feeling was that it would take several years of accumulated runoff to reach the outflow culvert level, if ever.

FIGURE 1. Cactus Flats Dam with water level near capacity. Dragonfly and frog observations were made along the shorelines where the grass was flooded. Photo credit: D. Larson

The weather changed — there was a little rain and snow in late April, just during the last phases of construction, that put more than 1 m of water into the basin of the dam. Over the next several weeks, heavy rainfalls (*e.g.* more than 60 mm on May 9 and 10) added more run-off and by mid-July the dam was close to full. Most of the pond was 4 to 5 m deep but there were shallow margins where the sparse grasses had been flooded to give an emergent zone of drowning arid land plants along the shoreline (Fig. 1).

I took great pleasure in visiting the dam each day to watch the water level rise. Immediately on holding water, new life appeared. On the first night of there being water, an invasion of larger water bugs, most notably backswimmers (*Notonecta*), and water beetles (*Acilius, Graphoderus* and *Rhantus*) occurred. Smaller water boatmen (Corixidae) and water beetles (Dytiscidae, Gyrinidae, Hydrophilidae) quickly followed. Shore flies, small ground beetles (*Bembidion*), rove beetles, variegated mud-loving beetles and shore bugs populated the mud at the water's edge. Chironomid flies and mayflies (*Callibaetis* sp.) swarmed along the waters edge and oviposited over the water. Microcrustaceans became apparent, first shoreline swarms of copepods then later of daphnia. Changing water color indicated various algal blooms, filamentous algae formed a mat along the shorelines and duckweed colonized protected embayments.

Dragonflies appeared, most abundant were small blue damselflies that perched on emergent grass stems along the shoreline or that paired up in tandem sets in mating and egg laying. Larger dragonflies were less abundant but were more conspicuous, especially the spectacularly patterned Twelve-spotted Skimmer (*Libelulla pulchella*).

Amphibians also appeared. A few Striped Chorus Frogs (*Pseudacris triseriata*) called from amongst a dense patch of flooded grasses but this lasted only a few days and no eggs or tadpoles were found. Occasionally in the deeper water some larger creatures rolled or thrust their forebody up out of the surface. These were probably Tiger Salamanders (*Ambystoma tigrinum*) as they occur in a neighbouring dam. Northern Leopard Frogs (*Rana pipiens*) were very common from July into early October when there was a heavy snowfall. However, a few reappeared later and the last was seen in mid-November.

Daily observations of this vein were made over the summer. On August 16, there was a teneral (a newly moulted insect in which the cuticle is soft and usually pale) female specimen of a small dragonfly — a meadowhawk (*Sympetrum*) species. This specimen seemed most unusual as species of meadowhawk are abundant in local ponds but generally have a one-year life cycle with eggs laid one summer emerging as adults the following summer. This dam was not present the previous summer, the dragonfly had to have been laid as an egg after May and its larval development completed by August 16. Most local meadowhawk species do not occur as adults in the spring — they are summer to fall species and a rough rule of thumb is that any small pond dragonfly seen in spring and early summer is a whiteface (*Leucorrhinia* species) and in summer and fall is a meadowhawk species. I resolved to return the next day to see if I could find a male, preferably one with sufficiently hard cuticle that it would be suitable for identification and preservation as a voucher specimen.

On August 17, the shoreline of the dam had numerous exuviae (the cast cuticle left behind when an insect moults, Fig. 2) and some newly emerged dragonflies. They had probably emerged overnight for at 09:00 h some specimens were leaving the shoreline area in the weak fluttering first flight of a newly emerged dragonfly. I checked out a number of specimens near the water's edge to find one suitable to collect but all were too teneral. I would have to find a specimen that had flown from the pond and had a more hardened cuticle. However, what I did notice was several dragonflies had no abdomens — they had been decaudated (Figs. 3, 4, 5). They were still alive and clinging to grass stalks but were immobile. If prodded to move they were unsteady and could not fly. Also, leopard frogs were abundant and I wondered if these were the culprits that had injured the dragonflies.

In order to get a better measure on what was observed, a simple count was conducted that consisted of walking a line 1 m back from the edge of the pond and at each pace (a little less than 1 m but a close approximation) stopping and counting frogs, and dragonflies (as exuviae; tenerals; tenerals with no abdomen; and sets of dragonfly wings (presumably a dragonfly eaten by some predator that left the wings)). The frogs counted were those that flushed when a step was made; the various dragonfly stages were those seen within the area in front of me that could be carefully searched without moving my feet, roughly 1 m^2. Two 25-pace transects were walked but dragonflies were counted on only one. The second transect had such dense grass that exuviae could only be found by laborious searching. The counts were made between 10:00 and 12:00 h, and the day was sunny and warm with a light SW wind. The results are given in Table 1. On a return visit the following day (August 18), no new exuviae or teneral specimens were observed so the counts were not repeated.

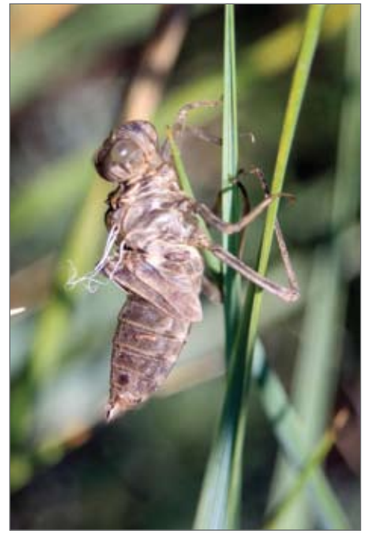

FIGURE 2. Exuvium, shed larval cuticle, of the Variegated Meadowhawk dragonfly. Photo credit: D. Larson

The results of the survey indicate that there were more exuviae than dragonflies. The exuviae were not present (at least not noticed) on the previous morning (August 16) and they probably represent overnight emergence (August 16/17) with most new adults flying away from the pond before the count was made in

FIGURES 3, 4, 5. Variegated Meadowhawk, teneral adults that had been decaudated (abdomens removed). Photo credit: D. Larson

the morning. This was supported by observation of teneral but airworthy dragonflies both on vegetation and flying at distances of several hundred metres or more downwind from the pond. A voucher specimen was collected from among these. This corresponds to the observation of Hutchings and Halstead that dragonflies tend to emerge under the cover of darkness as it reduces the likelihood of predation.[1] The newly emerged dragonflies must have dispersed rather quickly from the pond edge into the surrounding grasslands. The population in the dam apparently emerged in one synchronized peak over the night of August 16/17 and most specimens had left the pond margin by noon of August 17. During this emergence period, the population suffered a predation mortality of at least 16 per cent based on remains (wings) and injured (decaudate) specimens. If entire insects (either or both nymphs and adults) were consumed, this mortality estimate would be too low.

I accuse the leopard frogs (Fig. 6) as being the predator. This is based on not seeing any other potential predator. Two Lesser Yellowlegs and one Spotted Sandpiper were present on the morning of August 17, but their foraging was along barren, muddy shorelines and not in the grass. A sparrow (unidentified, possibly a Savannah Sparrow) was seen in shoreline grass on the other side of the pond but not in the survey area, although there were several hours of daylight in the morning before the survey was made during which time a bird could have dined on dragonflies. There is the question as to why a predator would be satisfied with snipping the abdomen off a dragonfly. Once the abdomen was taken, the dragonfly would be helpless, easy prey and the thorax with its large flight muscles would be the most nutritious part of the insect. If a frog was acting as an ambush predator, the act of snapping the abdomen off a moving, teneral dragonfly would traumatize the dragonfly and probably render it immobile, at which point the frog may not recognize the inert body as prey and not continue the attack.

The dragonfly was identified as Variegated Meadowhawk (*Sympetrum corruptum* (Hagen)) (Fig. 7). This species has a wide range in North America extending from Mexico north into the boreal zone of the Prairie provinces, although Hutchings and Halstead regard it as a fringe species in the western boreal forest.[1,2] The life history of Variegated Meadowhawks in the Canadian prairies is not well known. Walker & Corbet report that there tend to be two seasonal peaks in adult abundance, one from June to early July and a second in August and September.[3] However, this is known to be a highly migratory species that breeds more or less continuously over the year in the southwestern United States and disperses out of these breeding areas as warm weather advances in the spring. It is possible that the early population peak on the Prairies represents migrants from the south rather than individuals that overwintered in the north as nymphs. This was suggested by Walker & Corbet and supported by Paulson who states adult specimens, especially males, are found in the spring from British Columbia to Manitoba before any sign of emergence.[2,3] The species breeds in shallow open or marshy lakes and ponds, often alkaline, and also in temporary or newly formed water bodies.[2,3] My observations fit the pattern of migrant adults from the south ovipositing in Cactus Flats dam in May or June as it was filling with water, and the resulting nymphs completing growth and emerging as adults in later August. Thus, this species was able to colonize new habitat and complete a generation taking advantage of the flush of productivity in a newly formed habitat with no competition or significant aquatic predation. However, this strategy was somewhat foiled when emerging dragonflies encountered predation as they crawled into a shoreline aggregation of leopard frogs.

In a more rigorously designed survey of leopard frogs in Manitoba, Hamel & Grantham found an average density of 0.29 frogs per m^2 in a pothole wetland area.[4] The density at Cactus Flats Dam was higher but the count was made along the shoreline where frogs were concentrated. The quarter section in which the dam occurs has several other dams, dugouts and a seasonal stream along which frogs are regularly observed. They are often found in grasslands away from water but at low densities and a survey of frog density in the grasslands would probably indicate only that they were present. Corbet states "frogs frequently prey on adult dragonflies near margins of lentic water bodies, where they employ both stalking and ambush foraging modes. In such habitats ... larger frogs can become dominant predators of Odonata thus reversing the predator-prey relationship in which odonates prevail during the larval stage."[5]

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TABLE 1. Number of leopard frogs and Variegated Meadowhawk dragonflies counted in each transect, August 17, 2016, 10:00 to 12:00 h: total numbers (number per pace in brackets). Per cent (%) mortality is the ratio of the number of dragonflies for which there is evidence of death (decaudate, or only wings remaining) to the number of emerging dragonflies (exuviae only counted). nr = no record.

TRANSECT	# PACES	FROGS	EXUVIAE	TENERALS	DECAUDATED	WINGS ONLY	% MORTALITY
1	25	13 (0.52)	80 (3.2)	4 (0.16)	8 (0.32)	5 (0.20)	16.25
2	25	19 (0.76)	nr	nr	nr	nr	nr

FIGURE 6. Leopard frog, looking well fed? Photo credit: D. Larson

FIGURE 7. Variegated Meadowhawk. The yellow spots on the lower portion of the thorax and the complexly patterned abdomen are unique to immature (teneral) specimens of this species. Photo credit: D. Larson

THE CHANGE OF APPEARANCE OF THE BALD EAGLE
FROM JUVENILE TO DEFINITIVE

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The Bald Eagle (*Haliaeetus leucocephalus*) is unique to North America. Many Bald Eagles live near oceans but there are inland populations. The images of birds in this article were photographed between June 1 and October 1 on Lac La Ronge, a large glacial lake on the southern border of the pre-Cambrian shield in Northern Saskatchewan, Canada. Lac La Ronge has a shoreline of 1,015 km and a surface area of 1,413 km^2. The surface of the lake is interrupted by 1,035 rocky islands that serve Bald Eagles well by allowing them to establish well-defined breeding territories on a large body of water. Bald Eagles do not remain at Lac La Ronge year-round. The birds migrate south in late fall at freeze-up and return before break-up in the spring.

A Bald Eagle does not attain its characteristic appearance of an evenly colored brown body, white head and tail, light yellow iris and yellow beak until it reaches maturity in its fifth year.[10] The juvenile Bald Eagle (birth year) is a uniform sooty-gray or olive brown with a dark head, dark tail, dark beak and dark iris of the eye. The appearance of the bird changes during each of the first four annual summer molts.[10] There is significant individual variation in the overall appearance of sub-adult Bald Eagles, including the juveniles.[2] An accurate assessment of the age of any sub-adult Bald Eagle is complicated by the gradual change of appearance of the individual during the summer season, when they are in Saskatchewan. The most profound change occurs during the third molt, the so-called transitional stage. However, one can make an accurate estimate of the age of a sub-adult Bald Eagle by considering the constellation of changes including the body plumage, the head, the tail, the beak, the cere and iris of the eye.

What follows is an illustrated description of the change in appearance of the Bald Eagle, with each molt, from juvenile (birth year) to the definitive appearance of the adult when it reaches five years of age. The changes, and the various methods of describing them, are summarized in a table adapted from Arenholtz (2001)[1] (Table 1). The age classification system that uses the terms juvenile, adolescent, transitional, adult and definitive (seen at the at the bottom of Table 1) is well-suited to the casual observer. Others tend to identify the bird by molt, one through five.

Juvenile - birth year - 'even smoke gray or brown body, dark eye'

Bald Eagles are fully feathered at 11-14 weeks of age[2] (Figure 1). The immature flight feathers are larger than mature flight feathers, which can make a fledgling appear larger than an adult. The juvenile plumage can vary in color from a uniform sooty gray (Figure 2) to olive brown. The most consistent characteristic of a juvenile Bald Eagle is the dark head, the uniform smoke-gray beak and cere, and dark iris of the eye (Figure 3).

Adolescent - Basic I second year - first molt

The first molt begins when the Bald Eagle migrates north in the spring after its first winter in the south. A juvenile Bald Eagle appears sooty gray or olive brown when it returns to the north in early spring. During the first molt the bird becomes more mottled, the beak and cere remain dark but some yellow can be appreciated on the cere and a crème/yellow colour begins to creep out along the beak (Figure 4). A tan coloured 'cap' appears on the top of the head. The iris is less dark and appears to be more sepia in colour. A white inverted triangle, best appreciated from a distance, is prominent on the back (Figure 5). The most distinguishing feature of a Bald Eagle in its first molt is the ragged trailing edge of the wing while in flight (Figure 6). This is a sign that mature flight feathers are replacing the immature ones.

Adolescent - Basic II third year - second molt

During the second annual molt, the plumage becomes darker and more heavily mottled. The light 'cap' is prominent and the white triangle remains on the back. The main distinguishing features occur around the beak. The cere is yellow as is the area around the nares. The beak remains more gray than yellow. The color of the iris appears a lighter, crème color (Figure 7). The mature flight feathers now give the appearance of an even trailing edge. This is the most reliable characteristic to distinguish a bird in its second molt from a first molt bird.

(*Text continued on page 25)*

FIGURE 1. A young Bald Eagle testing its wings on August 8, 2013. All figures by Dale Mierau.

FIGURE 2. Uniform coloured plumage of a juvenile Bald Eagle.

FIGURE 3. A juvenile Bald Eagle with its dark eye and beak.

FIGURE 4. Light yellow begins to show on the cere and beak along with a tan 'cap' of a first-year adolescent Bald Eagle.

FIGURE 5. An inverted white triangle identifies an adolescent Bald Eagle from afar.

FIGURE 6. The ragged trailing wing of a first-year adolescent Bald Eagle.

FIGURE 7. The progressing yellow along the beak and the crème coloured eye of a second-year adolescent Bald Eagle.

FIGURE 9. A transitional Bald Eagle has a black terminal band on the mostly white tail.

FIGURE 8. A transitional Bald Eagle with a lighter coloured head, lighter neck feathers, a dark band across the eye and an iris, beak and cere that are mostly yellow.

FIGURE 10. There is an obvious change in the appearance of a transitional Bald Eagle during the summer season with the progression of the molt.

FIGURE 11. An adult Bald Eagle with its nearly definitive appearance.

FIGURE 12. A fully mature Bald Eagle sits with an adult illustrating the subtle differences.

FIGURE 13. A breeding pair demonstrates the definitive plumage. The female on the left is larger, the 'shoulders' appear broader and she has a beak that is deeper in its vertical dimension.

TABLE 1. Summary of the change in appearance of a Bald Eagle from Juvenile to Definitive*
*** Adapted from Arenholtz A. Friends of the Bosque Newsletter. 2001;8:6.**

YEAR	BIRTH		SECOND	THIRD	FOURTH	FIFTH	SIXTH
			1	2	3	4	5
Stage	Hatchling	Juvenile	Basic I	Basic II	Basic III	Basic IV	Basic V
Overall	Dark above light brown/gray		Gray/Brown mottled	Gray/brown more mottled	Gray/brown above light	Brown with little white	Even brown
Head	Smoky gray		Tan crown feathers	Light cap – some white	50% White with dark flecks - 'osprey head'	Dingy white	Bright White
Cere	Gray		Light gray	Gray with buffy yellow	>50% yellow	>75% yellow	Yellow
Beak	Dark Gray		Light gray	Gray with buffy yellow	>50% yellow	>75% yellow	Yellow
Iris	Dark		Sepia	Crème	Pale yellow	>50% yellow	Yellow
Tail	Dark		Dingy gray	Dingy gray	Mottled - terminal bar	White – no terminal bar	White
Trailing wing edge	Smooth		Ragged	Smooth	Smooth	Smooth	Smooth
White wing linings	Yes		Yes	Yes	No	No	Even dark brown
White back triangle	No		Yes	Yes	No	No	No
	JUVENILE		ADOLESCENT	ADOLESCENT	TRANSITIONAL	ADULT	DEFINITIVE

Transitional - Basic III fourth year - third molt

The greatest change in the appearance of a Bald Eagle occurs in the third molt during the fourth summer. The plumage is darker and less mottled. The feathers of the neck become a lighter colour and there appears a dark 'eye band' between the neck and the top of the head giving the appearance of an 'Osprey head' (Figure 8). The tail has a dark terminal band (Figure 9). The cere is yellow and the beak is mostly yellow with a dark area on the top. The iris is pale yellow. As the summer progresses, the head and tail become progressively whiter as dark feathers on the head and tail are replaced by white ones (Figure 10).

Adult - Basic IV fifth year - fourth molt

The appearance of a Bald Eagle in its fourth molt is close to definitive. The head and tail are predominately white. There remain some subtle signs associated with immaturity including a dingy tinge to the head, subtle dark areas on the beak and some body mottling (Figure 11). These subtleties can be appreciated when a fourth molt bird sits near a more mature bird (Figure 12).

Definitive - Basic V sixth year - fifth molt

The Bald Eagle, in its sixth year, has acquired the definitive plumage with a completely white head and tail feathers. The body plumage appears clean without mottling. The beak, cere and iris are bright yellow. A breeding pair of Bald Eagles demonstrate the gender differences (Figure 13). The female on the left is larger, bulkier (wider shoulders giving it an inverted V-shape). She has a beak with a larger vertical dimension that is shaped like a parrot. The male on the right is smaller with a more streamlined appearance and a beak that appears more like that of a hawk.

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SONGBIRD PREDATION ON BUTTERFLIES IS A RARE EVENT AT DELTA MARSH, MANITOBA

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Birds are among the natural enemies of butterflies[1-4], but the few observations of butterfly predation in a riparian habitat at Delta Marsh, Manitoba suggest this predation is rare. I recorded three predation attempts on butterflies during ecological studies of songbirds that nest in the dune-ridge forest[5] that separates Lake Manitoba and Delta Marsh (50°11'N, 98°19'W)[6], from 1975 to 1986. The anecdotal observations are backed by quantitative observations of foraging behaviour and determinations of diets of adults and young in this songbird community.[7-12]

Observations

Colias sp. (Sulphur). – At 12:00 hr (DST) on July 7, 1977, an Eastern Kingbird (*Tyrannus tyrannus*) captured on the wing and consumed whole an unidentified sulphur after a pursuit of 1-2 seconds. The kingbird was flying above a dike road, about 50 m south of the ridge forest, when it suddenly veered in pursuit of the butterfly.

Vanessa atalanta (Red Admiral; Figure 1). – I observed an adult Eastern Kingbird capture a Red Admiral in flight at 10:10 hr on June 30, 1977. The kingbird left its original perch, sallied low and captured the butterfly on the first attempt, then it returned to a different perch and ingested the insect, wings and all.

At 10:55 hr on May 20, 1983, a female Black-and-white Warbler (*Mniotilta varia*) flew out from a stand of Sandbar Willow (*Salix interior*) and pursued a Red Admiral in flight for about two seconds, before giving up and returning to the willows. From my vantage point, I determined that the warbler missed the butterfly, which continued on its way, wings intact. Aerial pursuit of flying prey by the generally bark-foraging Black-and-white Warbler, a spring and autumn migrant at Delta Marsh, is unusual.[13]

Discussion

Based on these anecdotal observations, I conclude that predation on adult butterflies in the dune-ridge forest at Delta Marsh is opportunistic, but nevertheless extremely rare. Two lines of evidence support this conclusion. First, only three observations of predation or attempted predation on butterflies were made during hundreds of hours observing and being around the birds in and near the ridge forest during the first 14 years of our work in this habitat. This includes observations focused specifically on aspects of kingbird ecology.[14-16] Second, and more importantly, adult butterflies were not recorded as prey in any of the quantitative studies of foraging behaviour and diets of adults and nestlings conducted throughout the breeding seasons from 1975 to 1986, although small moths and larvae were taken by most species.[7-12]

Confirmation of the rarity of songbird predation on butterflies in the ridge forest would involve a comparison of the numbers of butterflies sampled in the habitat. *i.e.*, availability, with numbers taken over the season. If butterflies were rare to begin with, the expectation would be that few would have been taken as prey, unless they were specifically targeted. We have shown, however, that the breeding birds in this community were generally opportunistic and took prey in proportion to their abundance.[12] I did not observe Red Admirals in the ridge forest every year, although a major migration was noted in southern Manitoba in 1977[17], the same year that one of the observations of predation on this species was recorded.

A final point concerns the butterflies' erratic flight, which renders them difficult for many birds to capture[1], assuming they are palatable. Eastern Kingbirds are known to take large prey[18], and I occasionally observed them capturing large dragonflies on the wing, which they took back to a perch, snipped off the wings, and ingested the bodies. Some perches were identified by the piles of dragonfly wings that built up under them.[19]

In summary, the most plausible explanation for the rarity of butterfly predation in the ridge forest is that other more abundant and accessible prey are available[12], particularly during the successive emergences of adult midges (Diptera: Chironomidae) that occur over the course of the breeding season. This prey provides the mainstay of the diets of adult passerines and their young in the ridge forest.[7-12]

Acknowledgements

I am indebted to former graduate students, J.V. Briskie, D.G. Busby, D.M. Guinan, D.I MacKenzie, and G.C. (Biermann) Pohajdak, whose studies of foraging and diet ecology of passerine birds in the dune-ridge forest provided an important backdrop for the observations presented here. I thank Peter Taylor for allowing me to use his photograph, pointing out important websites, and commenting on the manuscript. Comments offered by an anonymous reviewer also are appreciated. Research conducted at Delta Marsh over the years was funded chiefly by the Natural Sciences and Engineering Research Council of Canada, augmented by important in-kind support provided by the Delta Marsh Field Station (University of Manitoba).

FIGURE 1. Red Admiral, Seven Sister Falls, Manitoba. May 19, 2015. Photo credit: Peter Taylor

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NATURE SASKATCHEWAN AWARDS:

Each year at the Fall Meet, Nature Saskatchewan recognizes outstanding service and contributions that Society members, and/or affiliate and partner organizations have made toward Nature Saskatchewan's objectives and goals. Recently, the Awards Committee has recommended that the awards be restructured slightly.

Clear criteria have been established in terms of purpose, eligibility, and nomination procedure. This year, we are seeking nominations for three classes of awards – **Volunteer Recognition Award, Fellows Award, and Conservation Award.**

The Volunteer Recognition Award and Conservation Award can be conferred on the same individual or organization more than once.

The Cliff Shaw Award will also be presented at the Fall Meet. The recipient is chosen by the *Blue Jay* editor.

Local societies throughout Saskatchewan play an important role in furthering conservation and appreciation of nature at the local level. There are always those who step up to the plate to organize meetings and outings, go the extra mile to help others connect with nature, or work silently and tirelessly behind the scenes.

It's time those contributions were recognized. We encourage anyone from a local society to consider nominating someone from your local group who is a Nature Saskatchewan member and deserves recognition for any of these awards.

Note that nominees for the Volunteer Recognition Award and Fellows Award must hold a current membership with Nature Saskatchewan.

In the interests of space, we are including the nomination procedure only for the first award, since the procedure is the same for all three awards. The criteria and names of past recipients can be found on the website at www.naturesask.ca/what-we-do/awards. The office can also send you a copy by mail, if you prefer.

Nomination Procedure

- Nominations can be made by Nature Saskatchewan members, directors, and staff. Local societies should consider nominating someone from their local group.
- Self-nominations will not be accepted.
- Nominations are to be made in writing and submitted by the published deadline.
- Nominations are to include the following information: The nominee's name, address, and phone number; The nominator's name and contact information; Details of the nominee's efforts.
- The Awards Committee will independently rate the nominations, and confirm that the nominee holds a current membership with Nature Saskatchewan.
- Chairperson of the Awards Committee will bring the recommendations to the Board.
- If ratified, the President or his/her delegate shall confer the respective Awards to the recipients at the Fall Meet.

The deadline to submit nominations for awards is August 31, 2017.

All Nature Saskatchewan Awards consist of the following:

- The announcement of the recipient's name at the Fall Meet.
- The presentation of a certificate recognizing the contribution.
- An announcement in *Blue Jay* recognizing the distinction.

1. Volunteer Recognition Award

This award was created in 1996 to acknowledge an individual Nature Saskatchewan member who has devoted significant time and energy to promoting the objectives of the Society, including contributions made at the local society level. Priority for this award will be given to a Nature Saskatchewan member whose volunteer work has helped to enhance the public awareness of the Society (this may include contributions to a Society conservation project or program). It may be appropriate in some years to have this award shared by more than one person, if they have worked together on the same project, or on closely related projects.

Eligibility

Nature Saskatchewan members who have provided valuable time and effort in contributing to the Society are eligible. Local societies are encouraged to nominate someone from their local group who is a Nature Saskatchewan member, recognizing that Nature Saskatchewan values their contributions to the overall goals of the Society. The nominee must be a current member of Nature Saskatchewan. This award can be conferred on the same person more than once.

CALL FOR NOMINATIONS

2. Fellows Award

A motion was passed at the 1987 Annual General Meeting creating a new class of honorary membership entitled "Fellows of the Saskatchewan Natural History Society." This award recognizes an extensive and continuing contribution of time over many years to the Society and its objectives. Up to five recipients may be chosen annually. Once selected, Fellows hold that title as long as they remain members of the Society. It is the highest honour the Society can bestow upon a member.

Eligibility

Eligible individuals are members of Nature Saskatchewan who have provided an outstanding time and work contribution to the Society over many years. These contributions have been significant, and may have come in the form of leadership, communication, authorship, social media outreach, research, and other areas. The contributions have been cumulative or ongoing, and represent long-standing service or commitment to Nature Saskatchewan and its objectives.

3. Conservation Award

In addition to advocacy and other forms of conservation action, it is important that Nature Saskatchewan recognize, as it has done since 1953, those both within and beyond the organization who have done "meritorious work in the interest of conservation in Saskatchewan."

Nature Saskatchewan's Conservation Award will be presented to an individual or organization whose total contribution to conservation is outstanding, whether in relation to a particular project or in a number of roles over a period of years.

Eligibility

Individuals, affiliate and/or partner organizations, not-for-profit associations, institutions, community groups, businesses, government and non-government organizations that have contributed significantly to conservation in Saskatchewan.

This award can be conferred on the same individual or organization more than once.

CALLING ALL PHOTOGRAPHERS

Larry Morgotch Images of Nature Event

Any member may show up to 10 images that illustrate natural history interests and activities, and may speak briefly about them (no longer than two minutes, please). Images labelled with your name should be left with the projectionist before the start of the program. Digital images may be individual files, assembled as a PowerPoint or similar type of presentation, or an executable file if you are using a slideshow editing program. Individual images must be in JPEG format with the longest dimension of no more than 1,500 pixels. Name your images so that they display in the correct order. Digital images should be stored in a folder indicating your name and saved on a USB flash drive. ***Please be sure that your presentation runs on a standard PC.***

We'll have a computer and digital projector already set up.

Here's a chance to showcase some of your favourite images of nature without pressure of competition.

CALL FOR RESOLUTIONS

The resolutions considered during the Business Meeting at each year's Fall Meet are important expressions of member concerns on environmental issues. The Nature Saskatchewan Board of Directors is responsible for acting on all resolutions that are passed by the members. This includes sending resolutions directly to the responsible government ministry and pursuing further action and/or meetings with government and others, as deemed appropriate.

Anyone wishing to submit a resolution for consideration at the 2017 Business Meeting, to be held on Saturday, Saturday September 30, is asked to send a written draft to the Nature Saskatchewan office (info@naturesask.ca) no later than **Friday, August 11**. This provides an opportunity to receive feedback from members of the resolutions committee that can help to improve your resolution. It also helps us prepare for the meeting. Please note that resolutions not submitted to the Nature Saskatchewan office by 5 p.m. on Friday, September 8 will be considered only with the agreement of a two-thirds majority of those attending the business meeting.

Resolution Guidelines:

1. Resolutions must be in keeping with the society's mandate, bylaws and goals.
2. All resolutions must be submitted in writing.
3. A resolution is, essentially, an exercise in communication. Simple, clear language and focus on one topic or issue is most effective.
4. Supporting information presented in "Whereas" statements must be accurate and factual.
5. Resolutions should be no longer than one page, and preferably less.

29TH ANNUAL WINTER BIRDING CONTEST RESULTS

Boyd Metzler
Whitewood, SK

The 29th Annual Winter Birding Contest concluded on February 29, 2017. This year there were seven entries: Nick Saunders of Saskatoon (85 species), Vicki and Warren St. Germaine of Prince Albert (72 species), Joel Cherry and Annie McLeod of Regina (64 species), Boyd Metzler of Whitewood (49 species), Orval Beland of Denholm (38 species), Jaxon Finkas of Whitewood (34 species), and Bev Sobush-Melby of Midale (14 species).

Nick had a great start when he observed many stragglers in early December, including Sandhill Cranes, Franklin's Gull, Ring-billed Gull, Glaucous Gull, Rusty Blackbird, Red-tailed Hawk, White-winged Scoter, Ruddy Duck and the Harlequin Duck. He noted an abundance of Rough-legged Hawks, Short-eared Owls and White-winged Crossbills. He also found a Spotted Towhee (a first winter observation for him) and a Northern Pygmy-Owl (his absolute highlight for the winter). A Red Crossbill, which were very scarce this winter, was seen on Boxing Day in Saskatoon. All in all, it was a fantastic winter for Nick with some real nice treats.

A Chipping Sparrow, first observed during the Regina Christmas Bird Count, photographed in the Whitmore Park neighbourhood of Regina on January 8, 2017. Photo credit: Annie McLeod

Vicki and Warren were able to join the Saskatoon Nature Society group that saw the Northern Pygmy-Owl as well. They also saw a Gyrfalcon trying to catch a Common Raven near Montreal Lake, as well as two Willow Ptarmigan west of Creighton. Vicki and Warren observed a great collection of owls — Great Horned, Snowy, Northern Hawk, Barred, Great Gray, Short-eared and the Northern Pygmy-Owl mentioned above.

Joel and Annie noted the following birds of interest — Northern Harrier that they spotted and photographed flying over the reservoir at Gardiner Dam on February 17, a Red-tailed Hawk found in Regina on January 14, a Tundra Swan on February 26 in Regina (new to their winter bird list) and a Chipping Sparrow that had been observed previously on Regina's Christmas Bird Count.

Boyd had a good year for sparrows as he saw the Harris's Sparrow, the Fox Sparrow, and the White-throated Sparrow (it spent the entire winter here). It was also a great feeder watch year as 10 to 15 species arrived daily, including 20-30 American Goldfinches, 20+ Pine Siskins, 20+ Common Redpolls and 10-15 House Finches. In addition, 10-20 Eurasian Collared-Doves showed up to drink at the pond daily.

Orville saw the only Cooper's Hawk and Ring-necked Ducks. He also noted that there were more sightings of Snowy Owls this winter than in recent memory — about 22 sightings of an estimated six to seven individuals.

One of the 85 species on Nick Saunders' 2016-17 winter bird list — a Sandhill Crane that was observed in Wascana Park in Regina on December 4, 2016. Photo credit: Nick Saunders

Jaxon accompanied his Grandpa Boyd on their early December trip up the Qu'Appelle, and on the Whitewood CBC. Interesting observations they had were Great Blue Heron, Pied-billed Grebe and the three merganser species. They also observed more than 200 swans in Round Lake.

Bev had a good year for upland game birds as she observed many Sharp-tailed Grouse and Gray Partridge. She also observed 46 Dark-eyed Juncos.

As Vicki mentioned, "every bird was a highlight." It is interesting to compare areas. For us, American Goldfinches and Tundra Swans are quite common, whereas Snowy Owls and Dark-eyed Juncos are very rare here. I hardly ever see the northern owls and northern woodpeckers. What a pleasure it is to live in this province and to share its natural wonders.

A special thank you to everyone who is willing to share their winter bird lists. It was so nice to have more entries this year.

Nature SASKATCHEWAN

FALL MEET 2017

SEPTEMBER 29 - OCTOBER 1, 2017 ELBOW, SK

Friday, September 29
Dinner on your own

6:00 p.m. Registration & Reception
Elbow Harbor Golf Club & Resort
Light refreshments provided

7:30 p.m. Program
Introductions

Larry Morgotch Photo Presentation Bring your USB flash drive with your nature photos to share

Explanation of details and logistics of Saturday's tours

Saturday, September 30
Breakfast on your own

Itinerary
TOURS
(groups will be travelling via bus):

8:00 a.m. Board bus, depart for Douglas Provincial Park

8:30 a.m. Sand Dunes Hike
Come take in a leisurely hike and explore the active sand dunes at Douglas Provincial Park; led by Nature Saskatchewan

11:30 a.m. Board bus, depart for lunch (bagged lunch)

1:00 p.m. Arrive for tour of Gardiner Dam
Led by Cam Leslie from SaskWater — a tour of Gardiner Dam and its operations to learn about the power of water (please note: there are several stairs as well as metal grating on this tour)

3:00 p.m. Birding opportunities on return trip to Elbow

4:00 p.m. Business meeting

5:30 p.m. Cocktails at Elbow Harbor Golf Club & Resort

6:15 p.m. Dinner/Banquet

7:00 p.m. Awards

7:30 p.m. Presentation by David Weiman: "Humane trapping in today's world – What does it really mean?"

Sunday, October 1
Breakfast on your own

REGISTRATION (including cost) ON BACK SIDE OF PAGE

ACCOMMODATION SUGGESTIONS

Hotels/Motels:
Sarah's Cove
(306) 854-2003
There is a block of rooms set aside at Sarah's Cove for those attending the meet. Please e-mail or call to make a reservation.

Elbow Hotel
(306) 854-2214

Camping:
Elbow Sunset Suites & RV Park
(306) 854-2144

Nature SASKATCHEWAN

FALL MEET 2017

SEPTEMBER 29 - OCTOBER 1, 2017 ELBOW, SK

Name(s): _____

_____

Address: _____

Postal Code: _____

Telephone: _____

Email: _____

Registration includes Friday evening social (light snacks), Saturday's lunch & evening banquet meal

Nature Saskatchewan Member Fees
Registration Fee: **$85.00 x _____ = $ _____**

Registration after
September 22: **$100.00 x _____ = $ _____**

Non-Member Fees
Registration Fee: **$100.00 x _____ = $ _____**

Registration after
September 22: **$120.00 x _____ = $ _____**

NOTES:

Do you have any dietary needs or allergies (please circle)?
YES or NO
IF YES, what are they?_____

_____

_____

_____

_____

☐ **PLEASE CHECK BOX IF YOU PLAN TO BE PRESENT FRIDAY EVENING**

TOTAL AMOUNT DUE: $ _____

Payment by Visa/Mastercard:
Card #: _____/_____/_____/_____
exp: _____/_____

Payment by Cheque:
Make cheque payable to Nature Saskatchewan

Mail, e-mail or call our office to register:

Nature Saskatchewan
206-1860 Lorne Street
Regina, SK S4P 2L7
info@naturesask.ca
1-800-667-4668

44TH ANNUAL SASKATCHEWAN CHRISTMAS MAMMAL COUNT - 2016

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Eighty-eight Christmas Mammal Counts were conducted this winter – three more than last year. The 3,443 mammals seen or heard were up by 40 per cent over the 2,458 animals recorded in 2015. Over half of this change was, however, a result of an increase in the numbers of Mule Deer, which were up from 490 to 1,005. In comparison, White-tailed Deer were only up from 758 to 856.

Several high count records were set or tied. Five Northern Flying Squirrels at Togo tied the high count set last year at Greenwater. Estevan set the record for Eastern Cottontail with 15, the previous high was five at Estevan on January 4, 2010 and January 1, 2014. Two American Marten at Togo on January 5, 2017 set a new high exceeding singles at Squaw Rapid on the 1986 count, Love in 2000, Togo in 2007 and 2008, Prince Albert National Park in 2009, and Christopher Lake in 2012. Bison are flourishing in Grasslands National Park: 237 were counted, tripling the previous high of 77 in 2012.

With 14 species seen or heard, Odessa bested Togo's 11 for the most species seen or heard on a count. For the ninth year, no new species were added this winter so the all-time provincial total remains at 51 species seen or heard (plus three species found dead and two others recorded only on the basis of tracks).

For information on participants, weather, coverage and location of CMCs, see the CBC summary that will be provided in the next issue of *Blue Jay*.

White-tailed Deer. Photo credit: Randy McCulloch

White-tailed Jackrabbit.
Photo credit: Randy McCulloch

Explanation of entries in Table 1.

The number of mammals actually seen or heard on count day is treated separately from those recorded by other means, or those recorded during count period (December 14 to January 5) but not on count day. Numbers of individuals seen or heard are given in Table 1 and are tallied in the first line of totals at the bottom of the table. The number of species they represent is given in the second line.

For species only detected by tracks or by other means, or that are seen or heard only in the count period but not on count day, no numbers of individuals is given in Table 1. Species detected only by tracks are indicated by 't' in the table; those detected only by other means — dead animals 'm', more clearly identifiable chewing or digging 'd', dens or lodges 'L' (including Muskrat push-ups) and by smell 's.' Species detected by any means during the count period, but not on count day are indicated by 'c' in the table. These additional species are tallied in lines 3, 4 and 5 at the bottom of the table. If a mammal is reported as member of a species group (*i.e.* mouse species, deer species), it is counted as a species only if no other species in this group has been definitely recorded. The columns at the end of the table give totals for each species.

Table 1. 44th Saskatchewan Christmas Mammal Count - 2016.

SPECIES	ARCHERWILL 28 DEC 2016	AVONLEA 21 DEC 2016	BALGONIE 2 JAN 2017	BENGOUGH 2 JAN 2017	BIGGAR 27 DEC 2016	BIRCHHILLS 23 DEC 2016	BORDEN - RADISSON 16 DEC 2016	BROADVIEW 29 DEC 2016	CATER 1 JAN 2017	CHATSWORTH S.D. 5 JAN 2017	CHRISTOPHER LAKE 20 DEC 2016	CHURCHBRIDGE A 28 DEC 2016	CHURCHBRIDGE B 31 DEC 2016	CLARK'S CROSSING 17 DEC 2016	CORONACH 18 DEC 2016	CRAVEN 17 DEC 2016	CREIGHTON 30 DEC 2016	CROOKED LAKE 17 DEC 2016	CROOKED RIVER 19 DEC 2016	CYPRESS HILLS P.P. 30 DEC 2016	DENHOLM 25 DEC 2016	DUVAL 28 DEC 2016	EASTEND 29 DEC 2016	EBENEZER B 21 DEC 2016
Shrew species	c					t											t							
Eastern Cottontail																								
Nuttall's Cottontail																2				1			4	
Snowshoe Hare	t		t		t	t		t	t		t			t		1	t		1		1			2
White-tailed Jack Rabbit			1		t			t						1	t			t				t		
Eastern Grey Squirrel			2													2								
Eastern Fox Squirrel		5	16	1				4								4						6		
American Red Squirrel	6					1	2	6	2	4	3	1	2			4	3	4	1	3				
Northern Flying-Squirrel																					1			
Northern Pocket Gopher																								
American Beaver						L		L		L												L		
Deer Mouse	c							t			t										c			
Muskrat					L	L		L	L									L			c	L		
Gapper's Red-Backed Vole																					c			
Meadow Vole											1													
Vole species					t											1	t					t		
House Mouse																								
Mouse species						t									t	t			1			t		
American Porcupine	c						1																	
Coyote	c		1		3	t	7	t		1			1	13	8	6	t	1	1		1	1	9	1
Gray Wolf																	t							
Red Fox			t		1	t		t			t			2	t	1	1	1			1	t	1	
Raccoon	t															m								
American Marten											1													
Fisher								t																
Ermine						t		t								t					1	t		
Long-tailed Weasel						t		t		t												t		
Weasel species																	t						t	
American Mink	1				1								t		t									
American Badger	1		t			t												t						1
Striped Skunk																								
River Otter						t								1										
Mountain Lion								t									t							
Canada Lynx																	t							
Mule Deer			38	21	16		1	4	1					12	63	19		2			c		206	
White-tailed Deer	7	7	4	14	9		8	t	4	19	t		c	26	4	45		7	8	12	7	10	42	2
Deer species						t																		
Moose	2						2	1					c				t	1		2	1	c		6
Elk	c																							
Pronghorn																								
American Bison																								
TOTALS SEEN/HEARD ON COUNT DAY	17	12	62	36	30	1	21	15	7	24	5	1	3	55	75	85	4	16	12	18	13	17	262	12
TOTAL SPECIES SEEN/HEARD	5	2	6	3	5	1	6	4	3	3	3	1	2	6	3	10	2	6	5	4	7	3	5	5
TOTAL SPECIES RECORDED BY TRACKS	2	0	3	0	3	10	0	10	1	1	4	0	1	1	4	2	9	2	0	0	0	6	1	0
TOTAL SPECIES OTHERWISE RECORDED	0	0	0	0	1	2	0	2	1	1	0	0	0	0	0	1	0	1	0	0	0	2	0	0
SPECIES RECORDED COUNT PERIOD	5	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	4	1	0	0
TOTAL SPECIES COUNT PERIOD AND DAY	12	2	9	3	9	13	6	16	5	5	7	1	5	7	7	12	11	9	5	4	11	12	6	5

SPECIES	ENDEAVOUR 2 JAN 2017	ESTEVAN 1 JAN 2017	ESTUARY NORTH 2 JAN 2017	FENTON 2 JAN 2017	FLORAL 22 DEC 2016	FORT QU'APPELLE 17 DEC 2016	GARDINER DAM 19 DEC 2016	GOOD SPIRIT LAKE 2 JAN 2017	GRASSLANDS N.P. 16 DEC 2016	GREENWATER 3 JAN 2017	HARRIS 15 DEC 2016	HAZLET 22 DEC 2016	INDIAN HEAD 28 DEC 2016	KENASTON 20 DEC 2016	KENOSEE LAKE 23 DEC 2016	KETCHEN 26 DEC 2016	KILWINNING 19 DEC 2016	KINDERSLEY NORTH 27 DEC 2016	KINLOCH 30 DEC 2016	KUTAWAGAN LAKE 2 JAN 2017	KYLE 30 DEC 2016	LA RONGE 26 DEC 2016	LAST MTN. LAKE NWA 1 JAN 2017	LEADER NORTH 30 DEC 2016
Shrew species																c								
Eastern Cottontail		15																						
Nuttall's Cottontail			6				3		6												5			
Snowshoe Hare					t			3		t	2								2			c		
White-tailed Jack Rabbit		2			2		t	1	1		t			t				t	c	t	1		1	2
Eastern Grey Squirrel																								
Eastern Fox Squirrel						3	1						2											
American Red Squirrel	3			3		14		4		7			13		4	1	6		2				1	
Northern Flying-Squirrel																						c		
Northern Pocket Gopher																								
American Beaver							1	L						L	L	L			L					
Deer Mouse																								
Muskrat				L	1		L	L			L			L	L			L		L			1	
Gapper's Red-Backed Vole																								
Meadow Vole			2		1		2	t							t									
Vole species		t		t							t										t		t	
House Mouse																								
Mouse species	t											t			t						t		t	2
American Porcupine	1	c	1			1		t						c			1		t					
Coyote		5	4	t		4	5		6	t	1	t	5	t	t	2	1	2	2	1	5	c	5	2
Gray Wolf																								
Red Fox	2			1		1		t		t			3	1	t	t			t	3				
Raccoon														t										
American Marten																								
Fisher	1																							
Ermine								t																
Long-tailed Weasel														t										
Weasel species				t															t					
American Mink																								
American Badger																								
Striped Skunk					d							d								d				
River Otter														t			s							
Mountain Lion																						c		
Canada Lynx																								
Mule Deer		56	32			11	6		135		45		47	t				7	12	31	18			6
White-tailed Deer		5	27		1	22	38	23	29	7	18	m	15	2	4		t			1	29		12	16
Deer species	4			t												t			1					
Moose	t	1	3					8		1			2	c		t			4		t			2
Elk	t									t						t			t					
Pronghorn			30									65									c			32
American Bison									237															
TOTALS SEEN/HEARD ON COUNT DAY	11	84	105	4	5	56	56	39	414	15	66	65	87	3	8	3	8	9	23	36	58	0	20	62
TOTAL SPECIES SEEN/HEARD	5	6	8	2	4	7	7	5	6	3	4	1	7	2	2	2	3	2	6	4	5	0	5	7
TOTAL SPECIES RECORDED BY TRACKS	3	1	0	4	1	0	1	4	0	4	2	2	0	6	4	4	1	1	4	1	3	0	2	0
TOTAL SPECIES OTHERWISE RECORDED	0	0	0	1	1	0	1	2	0	0	1	2	0	2	2	1	1	1	1	2	0	0	0	0
SPECIES RECORDED COUNT PERIOD	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	1	0	1	4	0	0
TOTAL SPECIES COUNT PERIOD AND DAY	8	8	8	7	6	7	9	11	6	7	7	5	7	12	7	8	5	4	11	7	9	4	7	7

SPECIES	LOVE-TORCH RIVER 26 DEC 2016	LUSELAND 26 DEC 2016	MARTINEAU RIVER 27 DEC 2016	MEADOW LAKE 26 DEC 2016	MOOSE JAW 20 DEC 2016	MOOSE MOUNTAIN P.P. 27 DEC 2016	MORSE 18 DEC 2016	NIPAWIN 27 DEC 2016	NISBET FOREST WEST 28 DEC 2016	ODESSA 27 DEC 2016	PIKE LAKE 2 JAN 2017	PONTEIX 17 DEC 2016	PRINCE ALBERT 18 DEC 2016	PRINCE ALBERT N.P. 27 DEC 2016	QU'APPELLE 28 DEC 2016	QU'APPELLE DAM 18 DEC 2016	RAYMORE 25 DEC 2016	REGINA 26 DEC 2016	ROSCOMMON S.D. 28 DEC 2016	ROULEAU 21 DEC 2016	ROUND LAKE (Q.V.) 19 DEC 2016	SALTCOATS 26 DEC 2016	SK. LANDING P.P. 18 DEC 2016	SK RIVER FORKS 19 DEC 2016
Shrew species	t																		t					
Eastern Cottontail																								
Nuttall's Cottontail																2							3	
Snowshoe Hare	1			t						2	7		t		t	t	c	t	t		t	1		t
White-tailed Jack Rabbit		2					1			6	t	m			t			12	t	m	t		t	
Eastern Grey Squirrel										2								2						
Eastern Fox Squirrel					31					4					9	3		72	1			2		
American Red Squirrel	14		5	3		1		7	4		8		28	12		2	1		t		1			9
Northern Flying-Squirrel																								
Northern Pocket Gopher																								
American Beaver					1								L				L							L
Deer Mouse							1								c									t
Muskrat							L						L		L		L	1			L		L	L
Gapper's Red-Backed Vole																								
Meadow Vole											t							2						
Vole species	1						1				t		2		t	t			t	t			2	t
House Mouse																		1	7					
Mouse species											t	t	t						t					
American Porcupine	t									2					c									
Coyote	2	3		2	2		18			3	6	t	6		1	1	t	2	t	4	6		t	t
Gray Wolf	t		t																					
Red Fox	1	1	t							2	1	t	5	t	1				t	1		1	t	t
Raccoon										3					t				t					
American Marten																								
Fisher																								
Ermine	t												t		c									
Long-tailed Weasel	t																							t
Weasel species	t																							
American Mink										3									t					
American Badger																					1			
Striped Skunk							d			1									d					
River Otter							s			2		s			s				t					
Mountain Lion																								
Canada Lynx																								
Mule Deer		13			5		40			12	4	9				24	10		t				35	
White-tailed Deer	35	4	1	t			86	13	c	9	12	26	14	1	5		30	8	3		t		10	t
Deer species		7																						
Moose										3	t				c	4	c		2	1	1			t
Elk	t													20										t
Pronghorn							18					10						c						
American Bison																								
TOTALS SEEN/HEARD ON COUNT DAY	54	30	6	5	39	1	165	20	4	54	38	45	55	33	16	36	41	100	13	6	9	4	50	9
TOTAL SPECIES SEEN/HEARD	6	6	2	2	4	1	7	2	1	14	6	3	5	3	4	6	3	8	4	3	4	3	4	1
TOTAL SPECIES RECORDED BY TRACKS	7	0	2	2	0	0	0	0	0	0	5	3	3	1	4	2	1	1	12	1	3	0	3	9
TOTAL SPECIES OTHERWISE RECORDED	0	0	0	0	0	0	3	0	0	0	0	2	2	0	2	0	2	0	1	1	1	0	1	2
SPECIES RECORDED COUNT PERIOD	0	0	0	0	0	0	0	0	1	0	0	0	0	0	4	0	2	1	0	0	0	0	0	0
TOTAL SPECIES COUNT PERIOD AND DAY	13	5	4	4	4	1	10	2	2	14	9	8	9	4	14	8	8	10	16	5	8	3	8	12

SPECIES	SASKATOON 26 DEC 2016	SAWYER LAKE 28 DEC 2016	SHAMROCK 28 DEC 2016	SNOWDEN 3 JAN 2017	SPINNEY HILL 29 DEC 2016	SQUAW RAPIDS 30 DEC 2016	SWIFT CURRENT 21 DEC 2016	THICKWOOD HILLS SPRITWOOD 17 DEC 2016	TOGO 5 JAN 2017	TURTLE LAKE 22 DEC 2016	TURTLEFORD 29 DEC 2016	WEYBURN 17 DEC 2016	WHITE BEAR 1 JAN 2017	WHITEWOOD 30 DEC 2016	WINGARD 26 DEC 2016	YORKTON 31 DEC 2016	# INDIVIDUALS SEEN/ HEARD COUNT DAY	# COUNTS SEEN/HEARD	# COUNTS RECORDED AS TRACKS	# COUNTS RECORDED AS OTHER	# COUNTS, COUNT PERIOD	# COUNTS, COUNT PERIOD & COUNT DAY	HIGH COUNT
Shrew species		t									t						0	0	6	0	2	8	0
Eastern Cottontail																	15	1	0	0	0	1	15
Nuttall's Cottontail							2						1				35	11	0	0	0	11	6
Snowshoe Hare	2	t		t		t		t	10		2			2			39	15	23	0	2	40	10
White-tailed Jack Rabbit	7						1						t	1		t	42	16	17	2	1	36	12
Eastern Grey Squirrel							29									1	38	6	0	0	0	6	29
Eastern Fox Squirrel												6		13			183	18	0	0	0	18	72
American Red Squirrel	8	3		8	4	12		1	1	3	2			11	1	1	250	50	1	0	0	51	28
Northern Flying-Squirrel		c							5								6	2	0	0	2	4	5
Northern Pocket Gopher											d						0	0	0	1	0	1	0
American Beaver						L		L			L			L			2	2	0	16	0	18	1
Deer Mouse											T						1	1	4	0	3	8	1
Muskrat	1	c				L					1			L			5	5	0	23	2	30	1
Gapper's Red-Backed Vole																	0	0	0	0	1	1	0
Meadow Vole	1		1											1			11	8	3	0	0	11	2
Vole species		t				t		t			t						7	5	18	0	0	23	2
House Mouse							1										9	3	0	0	0	3	7
Mouse species		t	t	t									t				3	2	17	0	0	19	2
American Porcupine	d				t			1				1					9	8	4	1	4	17	2
Coyote	2	t	5		1	t	1	1	5		4	1	4	2		1	187	53	15	0	2	70	18
Gray Wolf		t				t			4								4	1	5	0	0	6	4
Red Fox	1	c	t				t	1	1		3	3		c			41	26	19	0	2	47	5
Raccoon			t														3	1	5	1	0	7	3
American Marten						t			2								3	2	1	0	0	3	2
Fisher		c															1	1	1	0	1	3	1
Ermine	1	t								t							2	2	9	0	1	12	1
Long-tailed Weasel									1								1	1	7	0	0	8	1
Weasel species						t											0	0	6	0	0	6	0
American Mink																	5	3	3	0	0	6	3
American Badger	t	c															3	3	4	0	1	8	1
Striped Skunk			d				d										1	1	0	7	0	8	1
River Otter																s	3	2	3	5	0	10	2
Mountain Lion		c				1					t						1	1	3	0	2	6	1
Canada Lynx																	0	0	1	0	0	1	0
Mule Deer		c	39				4				9	2	10				1005	37	2	0	2	41	206
White-tailed Deer	28	t		3	7		15	25	16	3	1	12		t		5	856	59	8	1	2	70	86
Deer species						t											12	3	4	0	0	7	7
Moose		c						1	9		7			t			64	22	7	0	6	35	9
Elk		t							109								129	2	7	0	1	10	109
Pronghorn													75				230	6	0	0	2	8	75
American Bison																	237	1	0	0	0	1	237
TOTALS SEEN/HEARD ON COUNT DAY	51	3	45	11	12	13	53	30	163	6	29	25	90	30	1	8	3443						
TOTAL SPECIES SEEN/HEARD	9	1	3	2	3	2	7	6	11	2	8	6	4	6	1	4		32					
TOTAL SPECIES RECORDED BY TRACKS	1	9	3	2	1	7	1	2	0	1	4	0	2	2	0	1			24				
TOTAL SPECIES OTHERWISE RECORDED	1	0	1	0	0	2	1	1	0	0	2	0	0	2	0	1				9			
SPECIES RECORDED COUNT PERIOD	0	8	0	0	0	0	0	0	0	0	0	0	0	1	0	0					19		
TOTAL SPECIES COUNT PERIOD AND DAY	11	17	6	4	4	11	9	9	11	3	14	6	6	11	1	6						37	

STEWARDS OF SASKATCHEWAN PROGRAMS WELCOME SUMMER STAFF FOR 2017

Catherine Boutin

Catherine Boutin grew up in Regina and spent much of her youth camping with her family throughout the Prairie provinces, where her love of nature began. Propelled by her hobbies of camping, hiking, nature photography, and wild herbalism, she went to Lakeland College in Vermilion and, in 2015, received a diploma in Conservation & Restoration Ecology. She has continued on to the University of Regina and is working toward a degree in Environmental Biology. She is excited to join Nature Saskatchewan and hopes to continue making a difference in the realm of conservation.

Desirée Hobbins

Desirée Hobbins was born and raised in Regina, Saskatchewan. From a young age, Desirée has had an immense curiosity for nature and wildlife; whether she was lifting up rocks in her grandmother's garden to inspect the life that lies underneath, or exploring the sand dunes at Good Spirit Lake. In present time, Desirée's life continues to be driven by a curiosity and fascination for the natural world. She has become extremely passionate about making a positive impact in her surrounding environment. Entering her third year of studies as a Biology student at the University of Regina, Desirée hopes to pursue a career in conservation when she graduates. In her free time, Desirée loves to travel, hike, camp, play music, and read. She is extremely excited and grateful to have the opportunity to work with Nature Saskatchewan and contribute to such a great cause.

Jenna Van Parys

Hi, everyone! My name is Jenna Van Parys, and I am a student entering my fourth year at the University of Regina studying Biology. I grew up on an acreage just north of Regina, where I spent much of my time outdoors maintaining and improving our land. My interest in Saskatchewan's ecosystems started when I was young, spending my summers at Madge Lake and going on hikes with my family. The majority of our family vacations were spent exploring all that Saskatchewan has to offer, and I'm hoping to provide future generations with those same opportunities. In my spare time you can find me playing sports outside, going for walks, or watching football. This summer, I am pleased to shift gears and spend my time connecting with land stewards and conducting surveys for our species at risk. I hope that this summer I can help improve Saskatchewan's ecosystems, improve habitat for our species at risk, and learn a few things along the way!

Each summer, the Stewards of Saskatchewan staff is busy connecting with land stewards, surveying for species at risk, and promoting awareness of our disappearing prairie parkland landscapes and their biological diversity. This work is supported by hard working summer staff and, in 2017, we are very pleased to welcome Catherine Boutin, Desirée Hobbins, Jenna Van Parys, Michelle Lang and Tiffany Blampied.

Michelle Lang

Michelle Lang was born and raised in Regina, Saskatchewan and she developed a love of nature from a young age. Growing up, Michelle loved spending her summers gardening, hiking, and camping throughout the province. Due to her interest in the environment Michelle pursued a degree in science and completed her degree in biology with a concentration in ecology and environmental studies in 2016. During her undergraduate studies she spent her summers working as a field assistant in a water quality laboratory where she sampled and monitored lakes and streams in southern Saskatchewan. Through her education and work experience, Michelle became very passionate about conservation work and is excited to join the Nature Saskatchewan team. In her spare time, Michelle enjoys travelling, reading, hiking, and visiting new provincial parks every summer. She also enjoys venturing out of the city where she can take landscape photography.

Tiffany Blampied

Hi, my name is Tiffany Blampied and I was born and raised in Regina. I am finishing up my B.Sc. in Biology this spring and returning in the fall to complete an additional B.Sc. in Geography. I am passionate about biology and the environment and I love to contribute my time to volunteer and work with organizations that parallel my interests. I like to spend my free time with my family and friends and taking part in various activities such as hiking, kayaking, and camping. I enjoy exploring Saskatchewan and finding new and interesting parks and places! So much of Saskatchewan is underappreciated and I think it is important to spread knowledge and get the community involved. I am looking forward to this summer and the new experiences that will come with it!

RESCUED WHITE-WINGED CROSSBILL NESTLING IN SASKATOON

Stan and Jan Shadick
903 Temperance St.
Saskatoon, SK S7N 0N3

A fully-feathered White-winged Crossbill nestling had fallen out of its nest in a short spruce tree in Sid Buckwold Park in Saskatoon on March 18, 2017. A passerby rescued it and called Living Sky Wildlife Rehabilitation (www.livingskywildliferehabilitation.org) for advice.

The rescuer was then instructed on how to make an artificial nest for the bird and return it to the tree. After securing the nest in the tree, a White-winged Crossbill call was played and one of the parents came and fed the bird. The next day, on March 19, Jan and Stan Shadick re-checked the nest and Jan obtained a photo of the healthy nestling.

Another juvenile White-winged Crossbill was found outside of its nest at Harold Tatler Park in Saskatoon on April 25 and returned to its nest the next day.

#206 - 1860 Lorne St
Regina, SK S4P 2L7

www.naturesask.ca
info@naturesask.ca

Nature SASKATCHEWAN

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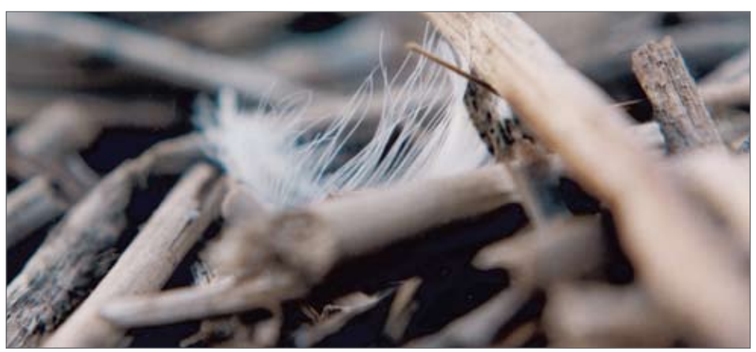
HUMAN NATURE

Powm Beach on Turtle Lake. Photo credits: Tara Sample



Tara Sample
Regina, SK

I have many favourite places across the province. However, there is one place in particular that holds a very special place in my heart. It is one of those places that, at first glance, does not look like a very special place and, after all, it's just a couple hundred metres of public beach. And, over the years, this special place has been altered and altered again; perhaps in an attempt to live up to a more tropical expectation that comes with bearing the name of Powm Beach, not to be confused with Palm Beach.

Powm Beach is on Turtle Lake. My grandparents had retired to their cabin there when I was quite small and I spent much of my childhood at that beach. It is where I saw my first Osprey and where I came face-to-face with a Burbot. It is where I discovered wild mint and fell in love with botany.

But, that is not why it is so special to me.

As a biology student, I had to make a fish collection for a course I was taking in my final year. Thanksgiving was at grandma's cabin. I hauled along my equipment, hoping to add the final few species to my collection. As I was setting up minnow traps near a patch of rushes not far from the beach, I noticed a mother and two little boys. They were watching me and in the pit of my stomach I wondered if they thought I was doing something wrong. I continued to work and stewed about if I should show them my collection permit. I was painfully shy and approaching strangers was something I would rather not do. However, I had chosen biology because I wanted to make a difference and the thought of looking like a poacher won over.

With my heart pounding, I stumbled through my explanation of having a permit. The boys asked a few questions about the traps and nets and soon I was telling them about the fish that lived in the lake. I returned to my work feeling relieved.

Later, I returned to check on the traps. The boys had also returned to the beach and I overheard them talking. One boy said "It's kind of weird that there is a biologist at the lake." And his brother said "Yeah, it makes it kind of special."

This is why it is a special spot to me. It is the place I learned the importance of sharing nature with others. It is where I became a naturalist.

Human Nature is an ongoing series for Blue Jay. In each issue, we will feature someone's favourite/ memorable nature spot in Saskatchewan. Please contact editor Annie McLeod if you are interested in this opportunity.

Photo credit: Kim Mann

Mystery Photo
Spring 2017 (above)

ANSWER:

The thorax shown in the Spring 2017 mystery photo belonged to a Variable Darner dragonfly. Variable Darners are named for the pattern of their lateral thoracic stripes, which are either thin lines or four spots.

Have you taken a picture that may make for a good mystery photo? Send it to the editor for possible inclusion in the next issue.

Photo credit: Dale Mierau

Mystery Photo
Summer 2017 (above)

THE QUESTION IS: To which species of bird do these tail feathers belong?

Please send your answers to Blue Jay editor Annie McLeod at bluejay@naturesask.ca or by letter mail: 3017 Hill Ave. Regina, SK S4S 0W2.

Those with correct answers will be entered into a draw for a prize from Nature Saskatchewan.

Nature SASKATCHEWAN

206 – 1860 Lorne Street
Regina, SK S4P 2L7

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