The Red Deer River Naturalist

May 2023

Editors: Myrna Pearman & Susan van der Hoek

CENTRAL ALBERTA

May Species Count 2023

Sat. May 27 & Sun. May 28

We invite you to help us document the animals (including birds, mammals, amphibians, reptiles, insects and spiders) and flowering plants in Central Alberta! You can count in your own backyard, check out nearby parks and natural areas, or drive the backroads. This event is a fun way for the entire family to get out in nature and celebrate spring!

For tally sheets and further instructions, please see https://rdrn.ca/programs/may-species-count/

Please register for this count with Judy Boyd at 403-358-1098.

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RED DEER RIVER NATURALISTS

Dr Sally Stuart: Seasonal Sights and Sounds of Alberta: Five Sparrows, Five Songs and the Influence of Soundscape

Spring is well and truly under way. The increased photoperiod, one of the driving forces of migration, means birds are returning. Another breeding season has begun. Each year, I await the return of the sparrows. On our acreage, the arrival of native sparrows follows a distinct pattern. The American Tree Sparrows generally make a fleeting appearance in March, although this year they sang even in January before heading north to the tundra to breed. Not long afterwards, the Song, White-throated, White-crowned and Swamp Sparrows appear. By late May, most sparrow species have returned. The first four species sit in the poplars and willows, the males singing their distinctive songs. The Swamp Sparrow, a secretive bird, sits atop cattails and rattles out his buzzy song.

Sparrows may not be known for their vocal virtuosity, but they are a fascinating group of birds which often get overlooked. In each of these five species, males have their own distinctive song, particularly obvious when you turn the song into a sonogram. The three sonograms shown in this article (see page three) were all created from songs recorded adjacent to Cygnet Lake. The frequency range from 3-7KHz is similar, but the temporal pattern varies widely.

Why do male birds sing? Really there is one reason: to ensure breeding success by establishing and defending territory and attracting females. Males and females listen to the song for specific but different reasons. How do birds learn to sing their distinctive song? The environment is composed of many sounds, both natural and anthropogenic. This is the soundscape. Most birds, including oscine songbirds, must learn to sing, a skill that requires using a "tutor" (a member of the same species). Obviously, the brain and its filters play a major role. There are four phases to vocalization. In the year of hatching, birds learn the individual phrases (units of a song or syllables) which are made up of notes from a tutor. That data is stored and apparently forgotten. This period is known as the silent period. The length of this period—where no practice occurs—varies between species but can last up to eight months. Following this period, birds practice their apparently forgotten song and then finally transform it into their version of the song (crystallization). Crystallization requires the organizing of individual phrases, adjusting the timing, and entails vast amounts of practice. It is a bit like a musician putting their own interpretation on a piece of music. It might seem obvious, but auditory feedback is essential to the learning process. Birds who are deaf will not learn to sing correctly.

The secretive Swamp Sparrow (*Melospiza georgiana*) illustrates parts of this process. His song, often described as a trill, may not sound very impressive. But an examination of the details in a sonogram reveals great complexity. The call, which lasts about 2.2 seconds, sounds like a brief rattle to human ears. The sonogram reveals its deep structure. The sonogram depicts 21 big "chirps" (rapid changes in frequency, not a bird sound!) that define the approximate 0.1-second syllable. Between these chirps are two lesser chirps, which are not identical. Humans are not good at separating the individual sounds and only see and hear the complexity when the sound is slowed down (as in the sonogram). Birds will hear each individual note. Although Swamp Sparrows produce a common song, the number of repeats and the individual syllables will vary from male to male within the population. Studies showed that male birds learn a set of about eighteen syllables in the first eight weeks of life. They then store these syllables for up to 240 days. Following this period, they reduce the number of learned syllables to about five and practice them. Swamp Sparrows copy their tutors very carefully, seemingly avoiding unique or rare syllables. Precision is the key. A recent Swamp Sparrow study (2018) suggests the individual syllables may have persisted for more than five hundred years.

Contrast this song with that of the White-throated Sparrow (*Zonotrichia albicollis*), whose song has changed significantly in the last few years. Its song begins with three whistles which can all be the same frequency, or go either up or down (as shown in the sonogram). Prior to the 1960s, the song terminated in a repeated triplet of notes. However, a study by K. Otter et al. (2020) found that sometime between 1960 and 2000, a new version emerged. This new version, which ends in a doublet instead of triplet, spread rapidly across the continent. Geolocators attached to male birds breeding in the Prince George, BC area determined that these individuals migrated to wintering grounds in costal California. Tutors then spread the dialect to juvenile males, who eagerly learned and integrated the novel elements into their repertoire. This behaviour differs from Swamp Sparrows, which avoid those rare or unique syllables. The question is why? Since the males that are in the process of setting up territories reacted in the same way to both the triplet and doublet song, the authors suggest that it is the female response to the song that is responsible. Each female listens particularly carefully to the ending of the song and her response to the triplet ending has apparently waned over time. This, however, is not the end of the story. A study by S. Chartier (2021) recorded songs from 2015-2020, again around Prince George, and found yet another novel song has now emerged. This variant changes the song structure: when creating the first of the doublet sounds, males produce sounds of different amplitude, so it almost sounds like two notes. Again, this song has spread very rapidly. Interestingly, the 2019 sonogram recorded locally indicates that males in this area are still singing the triplet ending version. If females are driving this song change, it is still not clear why the song has changed so rapidly in the last few years. Perhaps the soundscape is influencing this in some yet-to-be-determined way.

The soundscape has many effects on bird song and therefore communication. Extreme effects are seen in some species where juveniles may not learn to sing if they live in noisier environments. There is no doubt that anthropogenic noise in the soundscape exerts selection pressures in terms of songs, demonstrated by the two following examples. In both studies, similar effects regarding vocalizations were observed. One examined the White-crowned Sparrow (*Zonotrichia leucophrys*) whose song as shown in the sonogram always begins with a whistle, followed by four or five distinct phrases. Like Swamp Sparrows, White-crowned Sparrow males sing one song type which varies between males. Song dialects exist in many species, and one famous study in California established White-crowned Sparrows have six distinct dialects. Evidence even suggests that dialect limits dispersal and there may be a genetic difference between birds with different dialects. E. Derryberry et al. (2016) studied their song over a 30-year period while measuring background noise level. They found the minimum frequency of the song increased when background noise was higher. Despite extremely noisy locations, it leveled off at 2.6KHz, perhaps because bandwidth is also important, particularly in male-to-male interactions. The second study looked at male Song Sparrows (*Melospiza melodia*) which, unlike the other four species, sing between four and 13 different songs. W. Wood and S. Yezerinac (2006) studied Song Sparrow songs and urban noise and found that males increased the frequency of their lowest notes and that they were quieter (less amplitude). Other components of the song were not altered.

Songs in sparrows, as in most bird species, must travel a certain distance and be clearly broadcast. Those receiving the song need to be able to detect the specific song, despite other ambient sounds. Higher frequency sounds do not travel as far and noisy environments make detection difficult. Some bird species respond by singing louder, an adaptation which is energetically expensive. Since breeding success is measured by how many genes are passed on to the next generation, the need to alter song frequency may result in fitness costs (reproductive success).

Bird song, how it is affected by noise in the environment, and the response to song by other members of the same species, is extremely complicated. As I wander around our acreage, parabolic microphone and recorder in hand, I am acutely aware of how the soundscape has become far noisier mostly due to road traffic over the past 25 years. There is much to be learned about effects of the soundscape on bird song. I eagerly await the return of the sparrows to see what I can learn from this year's songs.

See Sonograms on Page 3.

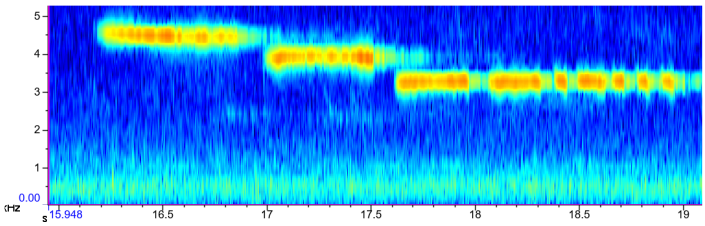
Board Notes

By Rick Tallas, President

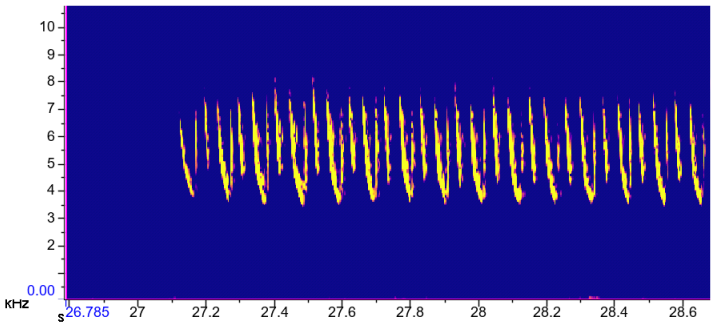
RDRN Social Media:
837 Facebook Members
312 Twitter Followers
424 Instagram Followers

- I am sure everyone is as anxious as me to get out gardening and watching for the trees and shrubs to bud out. The tulips and daffodils will be blossoming soon along with the greening up of the landscape and all of the birds returning. A time for rebirth and regrowth, a wonderful time of the year.
- Our board and volunteers continue to do an outstanding job. Look for our **Adopt-a-Stream** program to be introduced shortly.
- As this will be the last newsletter until September, I would like to wish everyone a very enjoyable summer.

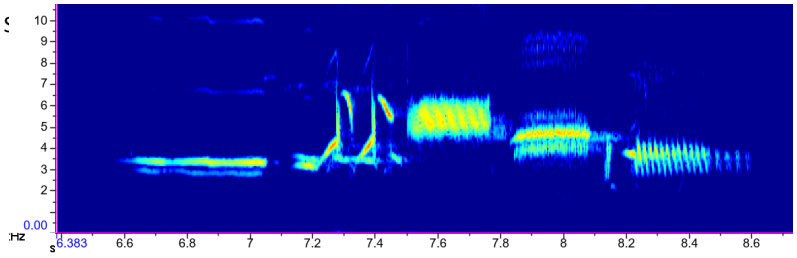
SPARROW SONOGRAMS:



White-throated Sparrow



Swamp Sparrow



White-crowned Sparrow

NATURE CENTRAL
RDRN
Celebrating our Wild Alberta Parklands

Join Caitlyn Lawrence (Education and Program Coordinator) and Abbey Van Hauvel (Naturalist-In-Residence) on May 6 and 13 when they will be joining Chris Olsen's Bird Focus walk to meet local birders and practice their bird ID skills. On May 27, Nature Central will be planning an event in conjunction with the May Species Count. This and other Nature Central summer events will be posted on the RDRN and Nature Central websites as well as on social media. We hope you can join us over the summer!

In the Alberta Wilderness! By Don Auten

By the time everyone will be reading this newsletter, everything will be starting to turn green in Alberta. This is about the time the Black Bears will be waking up and leaving their dens. It is important that they sleep this long into the spring because they need lots of food right away after fasting in hibernation for about six months. This food requirement is in the form of green grass, green plants and green leaves.

After many years of observation, May 4th stands out as the day the Aspen Poplar trees leaf out in Central Alberta and also the day my trail cameras start picking up Black Bear photos. For about two weeks after emerging, the bears will eat mostly grass. Grass helps get their digestive system working again.

The population of Black Bears in Alberta is very healthy. Living in the area where I obtained this photo, my cameras photograph about ten different bears each year, including the cubs. I find it interesting that I have spent hundreds of hours in that area over the last few years and have never seen a bear, a bear track or bear scat. They tread lightly in the environment, leaving very little sign and doing their best to avoid any contact with people.

BIRD FOCUS WITH CHRIS OLSEN

May 6—Bower Woods. Meet across from 37 Selkirk Blvd
May 13—Raven Brood Trout Station. Meet at picnic shelter
May 20—Alix Lake Nature Trail. Meet at municipal campground
May 21-26—Boreal Birding Tour (Whitney Lake/Cold Lake/LL Biche
May 27-28—RDRN May Species Count. See RDRN website
June 3—Riverbend upper trails
June10—Kuhnen Park trails (Blackfalds)
June 17—Radar Hill. RR 260 access. See Alberta Discover Guide
June 24—Ferry Point/Bjorge family farm. See RDRN website/FB
July 1—Springbrook Community Park. Meet at Tamarack Blvd
July 8—J.J. Collett Natural Area. Meet in the parking lot
July 15—Bigelow Reservoir. See Alberta Discover Guide
July22—Ellis Bird Farm. Meet in lower parking lot
July 29—The Narrows. Meet at north end of RR 221
August 5—Open Creek/Medicine Lake. Details TBA
August 12—Michael O'Brien Wetland.
August 19—Frank Lake day trip
August 26—Kuhnen East

Outings start at 10:00 AM unless otherwise noted. Directions, maps and details are posted on the RDRN Calendar of Events. Be sure to check the calendar for schedule changes or destination updates. We're an inclusive group and birders of all skill levels are welcome! ***Navigation****: Use the Alberta Discover Guide (app or free magazine), the Birding Trails Alberta website or your favorite mapping app on your mobile device. Call Chris (780-581-4430) if you have questions. Participants are encouraged to carpool, but you are responsible for your own arrangements.* ***Safety:*** *Wear sturdy, water resistant hiking footwear. Some trails are on rough or steep terrain. Carry water and an energy snack. Wear layers and carry raingear, a hat, insect repellant, sunscreen, and bear spray as required. Let your group leader know if there are any potential medical issues.*

FLOWER FOCUS WITH DON WALES

May 17—KWNC—10:00 AM

Plants, Flowers and Wildlife of Mojave and Southern California

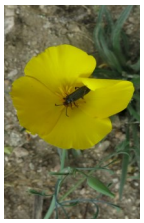


Photo by Don Wales

June 21—Field Trip (see RDRN website for details)

Speaking of Flowers…!

Don't forget that the May Species Count also entails the documentation of all plants in flower, so be sure to look and record all plants that are in flower over the weekend.

Please contact Eileen Ford at 403-886-4905 for additional information, and for submitting your plant list.

DID YOU KNOW: BY SUSAN VAN DER HOEK

A group of Swallows is called a flight or gulp. Six species of swallows occur in Alberta. Swallows can have bright or dark but iridescent or metallic feathers. Barn Swallows have iridescent blue feathers on their heads, and tawny brown/rust-coloured feathers on their necks, and a fawn colour on their chests. Cliff Swallows are the most similar in colour to Barn Swallows but are mostly grey with a tawny brown/rust-coloured neck, blue head, and white spot on their foreheads. While Tree Swallows are white and blue, Violet-green Swallows are emerald green and white, and Northern Rough-winged Swallows and Bank Swallows are mostly brown. Swallows are aerial insectivores, catching insects in flight as their main source of food. Tree Swallows also eat berries. Only Cliff and Barn Swallows regularly build mud nests on buildings and other structures. Cliff and Bank Swallows usually nest in colonies. Tree Swallows can form large flocks (reaching hundreds of thousands) during migration and throughout their wintering grounds. They gather as a dense cloud above their roost sites in the evening, and can resemble a tornado as they fly in unison. This display is called a murmuration. *(Photo: Northern Rough-winged Swallow)*

The Red Deer River Naturalists, the first natural history organization to be established in Alberta, was incorporated as a society in 1906. The objectives of the society are to foster an increased knowledge, understanding and appreciation of natural history, and to support conservation measures dealing with our environment, wildlife and natural resources.

Annual membership is $15.00 for individuals and $20.00 for families.

Regular meetings are held at 7:00 PM on the fourth Thursday of most months at Kerry Wood Nature Centre. Non-members are welcome.

Members are encouraged to contribute to this newsletter. The deadline is the last Friday of the month.

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NOVA Chemicals McElhanney

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