

The Red Deer River Naturalist



April 2022 Editors: Myrna Pearman & Susan van der Hoek



Arctic Seabirds as Sentinels of Change

28 April 2022

7:30 p.m. - 9:00 p.m.

RDRN Zoom

Virtual Series

Join Zoom using

Meeting ID

967 7760 7119

Passcode 588502



Join us as Dr. Gabriela Ibarguchi shares the Changing Environmental Impact on the Arctic

Dr. Gabriela Ibarguchi joined Red Deer Polytechnic as a Biology Instructor in 2021. Her teaching and research focus on ecology, evolution, and applied conservation. Working with students, local and international collaborators, and community partners she has been studying the issues that affect species in rapidly changing environments, with particular focus on birds as indicators of ecosystem health. As part of long-term studies with Environment and Climate Change Canada and with Queen's University, the remarkable adaptations of cold-adapted Thick-billed Murres (*Uria lomvia*, Arctic seabirds) and their population trends have been investigated. These studies, from breeding success and population genetics to diet and health studies, have been revealing important implications for species, communities and polar environments, particularly with ongoing climate change. Using an ecosystem approach, these collaborations examine the potential factors and strategies that may enhance the persistence, recovery, and resiliency of populations, within and beyond the Arctic.



All photos provided by Dr. Gabriela Ibarguchi

HOSTED BY



DR. SALLY STUART'S SEASONAL SIGHTS & SOUNDS OF ALBERTA: GARTER SNAKES

Despite living near Cygnet Lake for 22 years, we have never encountered a single garter snake. This is somewhat surprising due to its close vicinity to Sylvan Lake, which has had many names in the past, one of which was "Snake Lake," apparently because of the abundance of garter snakes that were once seen in the area.

Imagine my delight while cycling back from Lacombe to Blackfalds one warm October day to discover a garter snake basking in the autumn sunshine. Despite me braving for a closer look, the snake quickly disappeared into the surrounding undergrowth. It was probably a Red-sided Garter Snake (*Thamnophis sirtalis*). This species belongs to the Family *Colubridae* (harmless advanced snakes), subfamily *Natricinae*.

Alberta has only nine reptile species, perhaps due to the unfavourable environmental conditions, three of which are garter snakes (Red-sided, Plains and Wandering). Although not often seen, reports submitted to iNaturalist indicate that all three species are quite common in Alberta.

Snakes are ectotherms. Because they generate little internal heat, their body temperature is dependant on the surrounding environment. However, they are able to regulate their body temperatures to some extent by adjusting their behaviour.

As temperatures drop, ectotherms decrease their activity level. Since they are unable to tolerate freezing, they must find a suitable refuge (hibernaculum) in order to survive the winter months. These hibernacula are usually shared by many individuals (sometimes thousands), all of which remain dormant during the winter season. Manitoba is famous for its many hibernacula.

Garter snakes disperse widely in the spring. In the fall, many individuals will travel great distances back to the winter den. As soon as they emerge in the spring, they shed their skins. The scaly integument associated with snakes is fascinating. The outer layer, the epidermis, is thickened in areas to form scales, thinner areas between each scale provide hinges so individual scales are flexible. The epidermis is made of epithelial tissue with basal cells constantly dividing. As these cells move upward, they turn into a unique form of the protein keratin (beta). Beta, which is found only in reptile and bird skin, provides toughness and water proofing.

The outer layer of dead skin cells covers a fresh layer of skin beneath. Between the two layers is a separation zone, into which snakes apparently secrete lymph fluid prior to shedding. They do not have mechanisms to protect the eyelids, so their eyes are also covered by this protective layer of epidermis (brille). Snake eyes become a cloudy bluish colour just prior to shedding. The image above shows how visible the brille area is in shed skin.

Skin shedding is accompanied by a release of pheromones, signally that it is mating time. Males emerge early from the hibernaculum and, when females emerge a little later, they use their remarkable

chemosensory abilities to locate them. They "smell" by flicking their tongues to capture airborne molecules. Scents are then transferred to the vomeronasal organ in the roof of their mouth.

Garter snakes, like most snakes, have paired penises (hemipene). This relatively simple but unpleasant sounding structure consists of a cylindrical organ with a ring of keratinised spines and one large sharp basal spine. Friesen et al. (2013) found a high incidence of sexual conflict during Red-sided Garter Snake mating. Multiple males can compete for a single female, who exposes her cloaca so mating can occur. She has little choice over her mate but may attempt to dislodge unwanted males by twisting her body. Other strategies are to eject sperm or mate again with a different male. To prevent dislodging, the large basal spine helps the hemipene remain in position. Friesen also found that sperm is embedded in a gelatinous capsule (spermatophore). The spermatophore facilitates a slow release of the sperm, prevents sperm from leaking out, and prevents the female from ejecting sperm or mating again.

Snakes have amniotic eggs. Amniotic eggs, which evolved during the Carboniferous period, freed animals from having to return to water in order to breed. Amniotic eggs are surrounded by four membranes, which require a mechanism for internal fertilization prior to the membranes being added.

Garter snakes are viviparous, giving birth to live young instead of laying eggs. Climate may be one of the main reasons for this adaptation, especially in colder, unpredictable climates. With no control over ambient temperature, the female can optimise her body temperature by behaviour. In the fall she gives birth to about 30 young.

True viviparity requires a placenta. The placenta is a unique and complicated structure that has evolved to deal with the competing interests of the mother vs. her fetus. From an immunological standpoint, the fetus is 50% foreign so the mother would prefer to eject it. The parasitic fetus, on the other hand, needs to receive nutrients from its mother. Research by Blackburn et al. (2002 and 2003), who studied placenta formation in garter snakes, found a chorioallantoic membrane that is closely aligned with the mother. The membrane, rich in blood vessels, is probably used for gas exchange. Despite finding maternal exchange of water and sodium, it was unclear if there was much nutrient transfer since most nutrients are derived from the yoke. According to Simon Conway (*Runes of Evolution*), the placenta has evolved independently (convergent evolution) in about 100 lizard and snake species.

Garter snakes are very particular about choosing a suitable site for their hibernaculum. Perhaps the water level near Cygnet Lake is so high that historical hibernacula are no longer available.

The first warm sunny day of April will find me on the trail to Lacombe, searching for a glimpse of freshly emerged snakes. Maybe even a snake ball!



BIRD FOCUS GROUP: RDRN is pleased to announce that Chris Olsen has agreed to lead the RDRN Bird Focus Group walks. Chris first joined the group in 2016 when he and his wife retired to Red Deer. Chris is a Professional Biologist and has worked in wildlife research, consulting and in post-secondary education. Chris recently retired after many years as Program Head and Instructor for the Wildlife and Fisheries Conservation Program at Lakeland College. Chris' teaching areas included GIS and GPS, Mapping, Field Skills and Ornithology. He was a long-time President of the Vermilion River Naturalists and is a crew coordinator (Site Schleppers) for the Edmonton Folk Music Festival. Chris is a keen student of natural history, and his hobbies include photography, kayaking, hiking, gardening and birding.



Photo by Tony Blake

Date	Location	Meeting Place
April 2	McKenzie Trails	Main parking lot
April 9	Maskepetoon Park	Playground parking lot (Kerry Wood/Oak Drive)
April 16	Gaetz Lakes	KWNC
April 23	Nova Nature Trail	Parking lot
April 30	Heritage Ranch	First parking lot
May 7	Bower Woods	On street across from 37 Selkirk Blvd
May 14	World Migratory Bird Day	TBA—check RDRN website and social media. For more info on WMBD: https://www.migratorybirdday.org/about-wmbd/
May 21	Alix Nature Trail	Campground
May 28	May Species Count	TBA

Use the *Alberta Discover Guide* (app or free magazine), the Birding Trails Alberta website or a mapping app on your mobile device. Call Chris (780-581-4430) if you have questions. Attend only if well, wear appropriate clothing and footwear as required by the season, carry water and an energy snack, and advise the group leader of medical issues. **Local trips depart at 10:00 AM and finish by about noon.**

March 26, 2022: River Bend Golf Course, Red Deer, AB

9:57 AM - 12:55 PM; Traveled 5.095 km; Checklist Comments: Red Deer River Naturalists, Bird Focus Group outing. All participants along for about the first 2 hours, and 3-6 for during the last hour; 21 species

- Canada Goose (*Branta canadensis*) 53
- Mallard (*Anas platyrhynchos*) 142
- Common Goldeneye (*Bucephala clangula*) 40
- Common Merganser (*Mergus merganser*) 4
- Killdeer (*Charadrius vociferus*) 1
- Ring-billed Gull (*Larus delawarensis*) 1
- Bald Eagle (*Haliaeetus leucocephalus*) 2
- Rough-legged Hawk (*Buteo lagopus*) 1
- Downy Woodpecker (*Dryobates pubescens*) 2
- Blue Jay (*Cyanocitta cristata*) 9
- Black-billed Magpie (*Pica hudsonia*) 6
- American Crow (*Corvus brachyrhynchos*) 5
- Common Raven (*Corvus corax*) 7
- Black-capped Chickadee (*Poecile atricapillus*) 25
- Boreal Chickadee (*Poecile hudsonicus*) 4
- Red-breasted Nuthatch (*Sitta canadensis*) 1
- White-breasted Nuthatch (*Sitta carolinensis*) 4
- American Robin (*Turdus migratorius*) 1
- Bohemian Waxwing (*Bombycilla garrulus*) 1
- American Tree Sparrow (*Spizelloides arborea*) 3
- Dark-eyed Junco (*Junco hyemalis*) 2



BLN CLUB MEETING: HISTORY OF THE SOUTH SHORE OF BUFFALO LAKE

Thursday April 21, 7:00 PM

St. George's Anglican Church 4817-51 St, Stettler



By Peggy Birse, Managing Director

- As we welcome warmer weather, longer days and the return of migratory birds, we are delighted that two of our programs are relaunching after a two-year hiatus.
- Thanks to our volunteer leaders who offer regular activities to learn more about plants and birds. Don Wales presented *Wildflowers of Waterton and Glacier National Parks* at the Kerry Wood Nature Centre on March 16. Chris Olsen offered the first Bird Focus Group outing of 2022 at Riverbend on March 26, where the group of citizen scientists observed 21 species, including several first-of-the-season notables: Rough-legged Hawk, American Tree Sparrow and Dark-eyed Junco.
- We are excited to offer our second year of Nature Central, with hiring underway for our summer staff: a Naturalist-In-Residence and an Education/Program Coordinator. Watch for upcoming events as they are scheduled. We look forward to another season offering conservation-related activities and guided tours to some of Central Alberta's protected areas.
- Thanks to the talent of RDRN member, Doug Pedersen, and our Communication Committee (led by Anto Davis), RDRN will be updating our logos, website and brochures. The newsletter banner for this month reflects our new branding. We hope you like it!

Board Notes



Photo by Don Wales

FLOWER FOCUS APRIL 20 @ 10:00 AM KWNC

Wildflowers of Central Alberta
with Caroline Harris

Pandemic isolation presented Caroline with an opportunity to organize the images she has taken of the flowers found in and around her rural property.



DID YOU KNOW: By Susan van der Hoek

A group of American Robins (*Turdus migratorius*) is called a "worm." It is one of the first birds to begin singing in the morning and one of the last to be heard at night. Robins are omnivores as they eat insects, worms, small snakes, reptiles, amphibians, fruit and berries. They often roost in trees, especially during the non-breeding season. It seems that all American Robins gather in roosting communities in the winter. The adult males roost in the breeding season, the females after nesting is completed, and the young birds as soon as they can make the trip to the roosting area. Robins are territorial on their summer breeding territories, but not at their roosts.



Social Media: 603 Facebook Members, 292 Twitter Followers and 278 Instagram Followers

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 7:30 PM on the fourth Thursday of most months by Zoom. 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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