

THE MIGHTY MITES

Dr. Heather Proctor

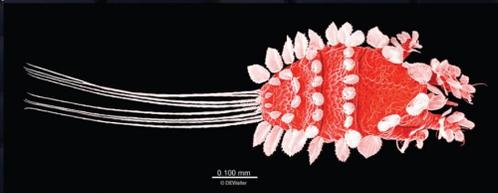


Thursday, October 22 @ 7:30pm
Kerry Wood Nature Centre
Red Deer

photo by
Dr. Heather Proctor

What creatures live in the dark depths of the ocean, in the lungs of birds, in the canopies of rainforests and in the pillow beneath your head? Mites. Wherever biologists have peered, from forest floors to facial pores, they have found these tiny arachnids. More than 40,000 species have been described and up to one million may grace our planet.

Mites are predators, parasites, herbivores and detritivores. They are vectors of disease, vital players in soil formation and important agents of biological control. You'll be introduced to the diversity and ecology of mites, focusing on those you may encounter yourselves.



Dr. Heather Proctor, born in Edmonton, grew up in St. Albert and completed her undergraduate education in the Dept of Zoology at the University of Alberta. Her honours work involved a literature review and survey of water mites of Alberta. She completed a MSc degree on the ecology of a sponge-associated water mites at the University of Calgary. For her PhD she studied the evolution of sperm-transfer behaviour in water mites.



photos by Dave Walter

Her first academic position was Asst. Professor, Dept of Biology at Queen's University (Ontario). She then moved Queensland, Australia for a five-year position as lecturer at Griffith University. In 2002 she returned to the University of Alberta as a Freshwater Invertebrate Biologist.

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SEASONAL SIGHTS AND SOUNDS OF ALBERTA: THE MAGNETIC FORCE OF MIGRATION

by Sally Stuart

The signs are everywhere. It's early October and in the woods we encounter a large flock of several hundred birds, mostly Red-winged Blackbirds.

"It feels like I'm in a tropical rainforest because the noise is deafening. As we approach, a sudden silence falls, followed by the incredible sound of flapping wings. Fall migration has begun and winter is on its way.

Migration in North America generally follows a south-north route in the spring and the reverse in the fall.

There are many risks associated with migration and many birds never survive the journey. However, the benefits must outweigh the risks. Migration eliminates the need for physiological adaptations (e.g., hibernation), but the most obvious reasons to migrate north in spring are the benefit of the copious food supplies and breeding grounds with less competition.

According to the *Atlas of Bird Migration*, the Sora (which is rarely observed flying) may travel from Alberta up to 4,800 km to islands in the Caribbean. Even more remarkable is the tiny Ruby-throated Hummingbird, which weighs only 3-4g. The male generally arrives on the breeding ground in Alberta in mid-May, and then leaves in July, making an incredible journey up to 6,000 km. All this just to mate, but obviously worth the vast energy expenditure to successfully produce offspring. These are marvellous feats of endurance, with really no human equivalent.

Prior to migration, hormonal physiology is changed by daylight length, a process which prepares birds for northern migration. Physiologically it might seem obvious that before undertaking such a journey birds would increase their weight; however, it's rather more sophisticated than this. Scientists studying Black-necked Grebes (see Frank Gill's book *Ornithology*) found they doubled their weight before migration which also required doubling the size of their digestive organs. Meanwhile, their pectoral muscles shrank and unable to fly, they moulted. Moulting is important as feathers wear and need to be in prime condition for the long flight. This phase was followed by a 2-3 week fast, during which time their digestive organs and leg muscles shrank while the size of their

heart and pectoral muscles increased. These changes, which prepare them for a long flight with high energy demands, are amazingly complex.



The ability to migrate is partly learned and partly innate, with immature birds sometimes getting lost. Navigation is complex, with birds using visual landmarks such as coast lines, the sun, the stars, geomagnetism, polarised light, even odours and sounds.

The most intriguing navigational tool is geomagnetism.

The mechanisms of this tool are not completely understood, but appear to involve magnetic minerals, receptors and chemical reactions.

Magnetic minerals have been found in many organisms; they can align with a magnetic field and interact with receptors. Small crystals of magnetite are situated above the nostrils of some birds. Receptors found in a branch of the trigeminal cranial nerve which innervates this area are very sensitive to incredibly small changes in the intensity of the earth's magnetic field. The strength of the magnetic field which differs at different latitudes serves as a map location system, showing their position. Working in conjunction with this system are chemical reactions which can be affected by magnetic fields such as can occur in the ancient blue light receptor called a cryptochrome. Perhaps a photopigment like this is found in the retinas of some birds, allowing them to detect magnetic fields which provide a directional compass, based on the direction of the magnetic field. Even more incredible is research which as Tim Birkhead explains in his excellent book *Bird Sense What It's Like to be a Bird*, suggests in European Robins that it is only the right eye that responds in this way. As Tim says, scientists couldn't make this stuff up!

As the mornings become cooler and autumnal colours tint the trees, I feel an urge to eat more. Is this a primordial instinct? Will my digestive organs expand? I can almost feel the tug of the earth's magnetic core, perhaps I should become a human "snow bird" and migrate to warmer climates.

DOROTHY DICKSON HONOURED

On June 9, Dorothy Dickson won not one but two *Women of Excellence* Awards from the Red Deer District Community Foundation. She knew she was to receive the Environmental Award but was totally surprised by the Lifetime Achievement award, the prestigious award given to women who have done immeasurable good in their communities.

This was the first time in the nine-year history of the awards where anyone won two awards in one night and it was the first time an environmentalist won the Lifetime Achievement Award. Dorothy was especially pleased that her family surprised her and showed up for the awards.



Photo by Bonnie Mullin

GAIL HUGHES

Gail Hughes passed away September 4, 2015 after a valiant fight with cancer.

Gail was a great nature lover and was active with the JJ Collett Natural Area Foundation and the Red Deer River Naturalists. Gail loved to go hiking and camping in the mountains with her dog Carly, and her cat, Miss Kitty.

Botany was one of her main interests and she took many beautiful photos of our native plants and provided information for the yearly species count for Alberta.

Gail loved travelling but also spent many hours in her yard. Her gardens were a riot of colourful blossoms and she grew some tasty vegetables in multiple pots. She was clever at various crafts and brightened up her home with her hand made items.

Gail was a very generous and good-hearted person who was always there when a friend needed help. She will be missed but always remembered by those who were fortunate to have known her.

RDRN FALL BANQUET



A small but enthusiastic crowd enjoyed the fall banquet at Ellis Bird Farm. Myrna Pearman gave a presentation entitled *An Inspiration of Bluebirds*. A delicious meal was served by Blake and Pavla of Terre It Up Catering. A highlight of the evening was the auction of two of Blake and Pavla's pies. Thanks to the auctioneering skill of Dr. Sandy Murray and the generosity of Judy Hoak (visiting from Macungie, PA) and Eileen Ford, a total of \$224.00 was raised for RDRN!

Photos by Bonnie Mullin and Myrna Pearman

FIELD TRIPS

Keith Kline will be leading Sunday field trips to interesting places around Red Deer. Contact Keith for information (403-347-6883 or redkline@hotmail.com).

October 4—Michael O'Brien Wetlands (meet beside the safety training centre).

October 18—Three Mile Bend (meet at the first parking lot right after the bend)

October 25—River Bend Perimeter Trail (meet at the parking lot at the bottom of the hill when entering the golf course)

FLOWER FOCUS

October 21

10:00 AM

McCullough House, KWNC

Eileen Ford will give a presentation about

The Flowers of Switzerland and the Balkans



You are invited to help Nature Alberta celebrate their 45th Anniversary at a Gala and Awards Banquet on Saturday, November 7th at 5 PM. Help celebrate the clubs, the people and the history that have enabled Nature Alberta to be the voice for the greater appreciation and conservation of Alberta's natural environment. Early bird tickets are \$75 each + GST. After October 16 tickets are \$80 + GST. For event details and to buy tickets online, visit www.naturealberta.ca

YOUR INPUT NEEDED: The Red Deer River Watershed Alliance (RDRWA) is seeking public input on a draft *Integrated Watershed Management Plan, Phase One, Water Quality*. An online survey will be available for input until October 14th. The online survey is a key opportunity for the public and key stakeholders to help chart a course forward for watershed management and water quality.

The draft *Integrated Watershed Management Plan* and the online survey are accessible through the RDRWA website at www.rdrwa.ca. The survey can be completed online or a paper copy can be requested by calling the RDRWA at 403-340-7379.

The RDRWA aims to finalize the first phase of the plan in late 2015, prior to moving on to subsequent phases that will address land use, riparian areas, wetlands, biodiversity, and water quantity. Everyone has a role to play in protecting the health of our watersheds.

Eileen Ford photographed this trembling aspen tree near Mt Butte (Battle Lake). It had a twining honeysuckle wound around it, causing the trunk to form into a corkscrew shape.

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 p.m. on the fourth Thursday of most months at the Kerry Wood Nature Centre, 6300-45 Ave., Red Deer, AB. Non-members are welcome.

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

Box 785 Red Deer, AB T4N 5H2

Phone/Fax: 403.347.8200

rd.rn@hotmail.com

www.rdrn.fanweb.ca

<http://wearenaturalwise.blogspot.com>

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