

# MITEY GOINGS-ON AT THE UNIVERSITY OF ALBERTA

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I have been working on the ecology and behaviour of mites (yes, they are arachnids, too!) since my undergraduate days at the University of Alberta. In 2002 I was lucky enough to be awarded a professorial position at my old alma mater after 5 years of wandering in the wilderness of Australian academia. In Australia I continued to work on my old favourites, water mites (Acari: Parasitengona; Hydracarina), but also began to explore the biology of mites that lived in soil and on birds. This switch was inspired by the fact that water is rather scarce in Australia, while dirt and dead parrots are abundant! Together with my husband David Walter, now an adjunct at the U of A, and a growing team of graduate and undergraduate students, I am continuing all three themes with Canadian mites. The purpose of this article is to provide a brief report of the mitey goings-on in the Proctor-Walter lab.

(1) Bird-associated mites: As noted by Galloway & Danks (1990), there is surprisingly little known about the arthropods associated with birds and mammals in Canada. One of my personal goals over the next three years is to survey the feather mites and haematophagous mites associated with birds from Alberta. My freezers are packed full of avian corpses graciously donated by Fish & Wildlife Forensic lab, the Provincial Museum of Alberta, and others. Over the summer and subsequent teaching year, NSERC summer students and honors students will have their hands full with sudsy birds that they will wash to remove the mites (and lice). I am also working with several colleagues in the U.S. and overseas to describe new species of mites from parrots, kites, and other exotic birds (Figure 1).

Galloway, T.D. & H.V. Danks (1990). Arthropod ectoparasites of vertebrates in Canada. Biological Survey of Canada brief.

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## UPCOMING MEETINGS

June 23-27, 2004: The 28th annual meeting of the American Arachnological Society at the University of Oklahoma in Norman, Oklahoma hosted by Douglas Gaffin. Deadline for registration May 15, 2004. Visit [http://www.americanarachnology.org/AAS\\_Meetings/AAS\\_2004.html](http://www.americanarachnology.org/AAS_Meetings/AAS_2004.html) for more information.

August 2-7, 2004: 16th International Congress of Arachnology in Gent, Belgium hosted by Léon Baert Royal Belgian Institute for Natural Sciences. Visit <http://allserv.rug.ac.be/~jpmaelfa/index.htm> for more information.

October 15-18, 2004: Joint meeting of the Entomological Society of Canada and the Acadian Entomological Society in Charlottetown, PEI hosted by Donna Giberson. Visit the meeting website at <http://www.acadianes.org/aesesc04.html> for updates.



**Figure 1.** A new species of feather mite (Gabuciniidae: Aetacarus) from the swallow-tailed kite *Elanoides forficatus*.

(2) Host-plant specificity of soil invertebrates: Host-plant-specificity among phytophagous arthropods is well documented (e.g. Lepidoptera selecting certain food plants). But does this also occur among the denizens of the rhizosphere, the area around plant roots? Danica Belter, my M.Sc. student, will be studying boreal forest plants to determine whether there is evidence of host-specificity among below-ground mites, springtails, and nematodes.

(2) Habitat change and mite assemblages in the Yukon: Canada's north will be faced with major changes in climate (global warming) and habitat alteration (e.g. increased nutrient input) as human influence expands in intensity. Dr. David Hik from the U of A has been studying the effects of greenhouse warming and nutrient addition on Yukon plants for the past several years. Our honors student, Andrea Moore, is examining how warming and nutrients affect the assemblages of mites that live in the litter beneath these plants. One of the most exciting findings from Dave Walter's point of view was large numbers of mites from the family Arctacaridae, a cold-restricted group of Mesostigmata. It will be interesting to see whether this family is more negatively affected by the greenhouse treatments than other mites (Figure 2).

**Figure 2.** A face-on view of a menacing male *Arctacarus* sp. from the Yukon.



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## UPCOMING GATHERING

Lovers of spiders, mites, harvestmen, pseudoscorpions and their relatives, mark your calendar for the first inaugural Chelicerate Club of Canada get-together at the Entomological Society of Canada meeting in PEI (15-18 Oct, Charlottetown). Even pycnogonid fanciers are welcome! We will be assembling in an informal fashion for lunch or dinner (location and time TBA) to chat about our favourite animals, and to plan for a more formal symposium at the 2005 joint meeting of the Entomological Societies of Canada and Alberta in Canmore. Please let Heather Proctor know if you are interested in joining the arachno-fun in Charlottetown ([hproctor@ualberta.ca](mailto:hproctor@ualberta.ca)).

(3) Effects of earthworms on microarthropod assemblages: Alberta, like much of northern North America, was rendered almost earthworm-free during the last glaciation. Most worms in the province have been brought here by human activity, including deliberate release. There has been much recent hype about the potential disastrous effects of earthworm invasion on native fauna. Mike Goad, an honors student supervised by me and Dr. Cindy Paszkowski, is running lab experiments to determine whether addition of earthworms does indeed affect soil microarthropods. Oribatid mites are a particular focus, because of previous documentation of ill effects of worms on these animals.

(4) Mites of pyrophilous carabid beetles: Dr. John Spence has been a long-time aficionado of both arachnids (*Dolomedes* spiders) and carabid beetles. When he set his honors student Andrea Dechene to work on the habitat preferences of *Sericoda* spp. carabids, little did he know that arachnids would rear their little heads (ok, gnathosomas). These beetles are pyrophilous, meaning they prefer to inhabit recently burned woodlands. In counting pitfall-trapped beetles, Andrea noticed that some of them had rather large mites underneath their elytra. Her honors project quickly changed course and became a survey of mites associated with two species of *Sericoda*. So far half a dozen genera from several families have been found. What are they doing on the beetles? Some species are probably parasitic, but as for the others, that we have to wait for Andrea's NSERC work this summer (Figure 3).



**Figure 3.** A new species of *Antennoseius* nr. *bregetovae* from carabid beetles in Alberta.

(5) Cross-border trade in potted plants and inadvertent importation of arthropods: In Australia, quarantine inspectors are particularly paranoid about movement of soil into the continent from elsewhere. Justifiably, because that is how the ferocious fire ant arrived in Queensland a few years ago. Canada is more lax in its requirements for phytosanitation, but even our inspection agency requires “root washing” and repotting of garden and house plants that cross the border. But how effective is this process in removing mites and other soil arthropods from the root mass? This is the honours project of Sean Bromilow, jointly supervised by me and Dave Walter. He has extracted the soil from a wide taxonomic range of imported plants purchased from local greenhouses, and has experimented with the efficacy of root-washing. The short answer is: root-washing gets rid of some creatures, but there are many tenacious ones left behind.