



# Network for Arthropods of the Tundra

I guess the biggest news is that thanks to Tomas Roslin and his group, especially Sini Vuorensyrjä who has done a fantastic job, we now have a website at <https://tundraarthropods.wordpress.com/>. We would like to have photos and associations for all members, so please send these along to Tomas as indicated earlier. Toke is working with a few others to try to locate funding for some activities, so please cross your fingers.

## Featured arthropod: *Aedes nigripes* (Zett, 1840)

*Aedes nigripes* (Diptera: Culicidae) is probably the most abundant Arctic mosquito (Vockeroth 1954) and is found all across the Arctic. Its larvae grow rapidly in snowmelt tundra ponds during early summer and the adult females emerge to fiercely seek blood from caribou and other wildlife. Autogeny (i.e., reproducing without a blood meal) has been documented in this species (Corbett 1964, 1967) although it is unclear if this presumed adaptation to low blood-meal density is present in all populations (Culler, pers. obs.). In Greenland, the timing of pond thaw in spring strongly predicts its emergence time, and the number of immatures that survive to the adult stage depends on pond temperature and mortality from beetle predators (Culler et al. 2015). –L. Culler



### References and links

- Corbet, P.S. 1964. Autogeny and oviposition in Arctic mosquitoes. *Nature* 669.
- Corbet, P.S. 1967. Facultative autogeny in arctic mosquitoes. *Nature* 215:662-663.
- Culler, L.E., Ayres, M.P., Virginia, R.A. 2015. In a warmer Arctic, mosquitoes avoid increased mortality from predators by growing faster. *Proceedings of the Royal Society B*. 282: 20151549
- Vockeroth, J.R. 1954. Notes on the identities and distributions of *Aedes* species of northern Canada, with a key to the females (Diptera: Culicidae). *Canadian Entomologist* 86:241-255.
- <http://motherboard.vice.com/read/why-giant-mosquitoes-are-suddenly-swarming-greenland>
- [http://news.nationalgeographic.com/2015/09/150915-Arctic-mosquito-warming-caribou-Greenland-climate-CO2/?utm\\_source=Facebook&utm\\_medium=Social&utm\\_content=link\\_fb201509016news-mosquitos&utm\\_campaign=Content&sf13101934=1](http://news.nationalgeographic.com/2015/09/150915-Arctic-mosquito-warming-caribou-Greenland-climate-CO2/?utm_source=Facebook&utm_medium=Social&utm_content=link_fb201509016news-mosquitos&utm_campaign=Content&sf13101934=1)
- <http://www.iflscience.com/plants-and-animals/arctic-mosquitoes-are-growing-faster-rising-temperatures>

## Upcoming events/opportunities

- Upcoming conference: Entomological Society of Canada Meeting – Montréal, Canada, Nov. 8-11, 2015
- MSc Position: “Invertebrate herbivory in Arctic and alpine tundra”.  
[http://www.seq.qc.ca/activites/reunions/SEQ-ESC\\_2015/index\\_eng.asp](http://www.seq.qc.ca/activites/reunions/SEQ-ESC_2015/index_eng.asp). We are looking for an MSc student to participate in a project on invertebrate herbivory in tundra ecosystems under the supervision of Dr David Hik (University of Alberta) and Dr Isabel C Barrio (University of Iceland). Contact Isabel for more details: [icbarrio@hi.is](mailto:icbarrio@hi.is).

## Summer 2015 Campaigns - How did they go?

- **Northeast Greenland** – At Zackenberg, the summer was late, wet and snowy. To sample arthropods, we used skis until the end of June. A total of five people worked in the valley during different parts of the summer, with our main focus on fungal-plant, host-parasitoid and plant-pollinator interactions. Given the late summer, we miserably failed to implement the background herbivory project (our apologies!), but will try again next year. In the Arctic, no years are brothers...Tomas Roslin, University of Helsinki
- **Yukon** – In July 2015, I studied Arctic arthropods along the Dempster Highway in the Yukon. The Dempster Highway makes a fascinating study system, with a huge amount of variety over a distance that can be driven easily in a day. In the north (67 deg N), the sun shone brightly at all hours, the mosquitoes swarmed, and tree stands looked like bonsai gardens. In the south (65 deg N), we experienced brief twilight nights, ground squirrels were abundant while mosquitoes were scant, and lush forests dominated some of the valleys. Shaun Turney, PhD student with Chris Buddle, McGill University
- **South Greenland** – Toke T. Høye, myself and a number of others (Aarhus University) headed to Narsarsuaq, South Greenland over the summer in continuation and expansion of our monitoring program. It was a particularly late summer for us as snow was not melted from the mountain tops by the

Please contact me (Joe) to announce events, research opportunities, new publications etc....  
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# Newsletter 2

## October 2015



time I left during the final week of June. Oskar LP Hansen, who remained in Narsarsuaq for the summer noted that the rest of the summer was sunny and quite warm and much of the water that had accumulated during melt had vanished.

- **Alaska** – Derek Sikes (University of Alaska, Fairbanks) made short collecting trips to various places in Alaska this summer: Barrow, Galena, and Kantishna (first time for these three sites for me), and in the Aleutians to the islands of Adak, Atka, and Little Tanaga. Barrow is the northern most point in Alaska and a hotbed for climate change research. The last attempt at a comprehensive arthropod inventory of Barrow was published by Hurd in 1958.

### Graduate corner (for students to share their work):

**Ashley Asmus**, PhD Student, University of Texas Arlington

Across many places in the Arctic, climate change has led to increased deciduous shrub dominance in tundra habitats. I am researching the effects of increased shrub abundance on arthropod communities and food webs. My work leverages five years (2010-2014) of data from a collaborative investigation of plants, insects and songbird reproductive success from several habitats near Toolik Lake, Alaska. Relative to tussock-tundra habitats, shrub habitats hold a greater number of arthropods; however, these arthropods tend to be smaller, resulting in diminished total arthropod biomass. In addition, preliminary analysis suggests that the positive relationship between air temperature and arthropod activity-density is dampened with increased shrub stature. Thus, insectivorous birds in shrub-tundra will have a harder time foraging for their food – a problem for millions of migratory songbirds as shrub expansion accelerates.

In addition to the effects of habitat type on arthropod communities, I am preoccupied with the preponderance of predatory arthropod biomass in my pitfall traps. Wolf spiders (Lycosidae) and predaceous ground beetles (Carabidae) make up the bulk of ground-dwelling arthropod biomass in my samples. Differential turnover rates, cannibalism or unobserved subsidies (aquatic, soil) could drive the pattern. I am using a combination of diet analysis (stable isotope, DNA barcode analysis), functional feeding experiments and mass-balance models to explore those possibilities. I am excited to contribute to and collaborate with this new NeAT network in order to understand how long-term perturbations will affect arthropod food web function across the Arctic.



### Tundra Arthropod Publications (please send new papers to Joe)

- **Böcher J et al.** 2015. The Greenland Entomofauna: An Identification Manual of Insects, Spiders and their Allies. Brill Publishing.
- **Buddle CM** 2015. Life history and distribution of the Arctic pseudoscorpion, *Wyochernes asiaticus* (Chernetidae). *Canadian Field Naturalist* 129: 134-138
- **Bowden JJ et al.** 2015. High-arctic butterflies become smaller with rising temperatures. *Biology Letters* In press.
- **Coulson SJ.** 2015. The alien terrestrial invertebrate fauna of the High Arctic archipelago of Svalbard: potential implications for the native flora and fauna. *Polar Research* 34: 27364
- **Culler LE et al.** 2015. In a warmer Arctic, mosquitoes avoid increased mortality from predators by growing faster. *Proceedings of the Royal Society B* 282: 20151549
- **Kozlov MV et al.** 2015. Sap-feeding insects on forest trees along latitudinal gradients in northern Europe: a climate-driven patterns. *Global Change Biology* 21: 106-116
- **Kozlov MV et al.** 2015. Insect herbivory on two willow species in northern Europe is independent of pollution load. *Boreal Environment Research* 20: 423-430
- **Tanasevitch AV & Rybalov LB.** 2015. Fauna and distribution of spiders (Aranei) of the arctic tundra in northern Yamal Peninsula, Russia. *Arthropoda Selecta* 24: 215–230
- **Visakorpi K et al.** 2015. No detectable trophic cascade in a high-Arctic arthropod food web. *Basic and Applied Ecology* doi:10.1016/j.baae.2015.06.003
- **Wirta, HK et al.** 2015. Exposing the structure of an Arctic food web. *Ecology and Evolution* 5: 3842–3856

Stay tuned at <https://tundraarthropods.wordpress.com/>

Please contact me (Joe) to announce events, research opportunities, new publications etc....  
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