Review of the ninth annual meeting

by Logan Mullen

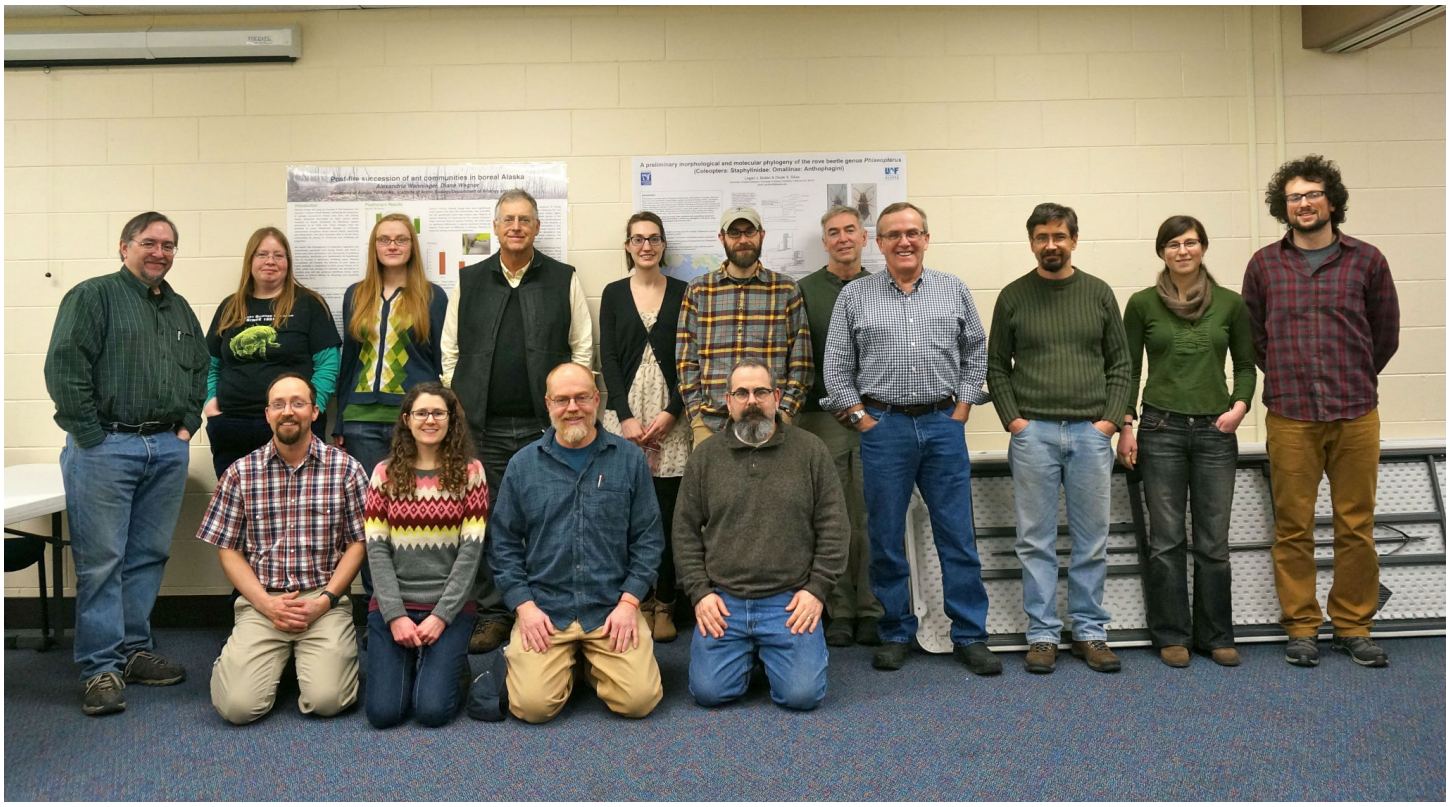

Figure 1: Members present at the end of the meeting. Back row, from left: Michael Baldwin, Robin Andrews, Kathryn Daly, John Lundquist, Alexandria Wenninger, Jason Moan, Dan Bogan, Roger Burnside, Derek Sikes, Molly McDermott, and Logan Mullen. Front row, from left: Matt Bowser, Jessie Moan, Steve Swenson, and Garret Dubois.

The ninth annual meeting of the Alaska Entomological Society was held at the Anchorage Cooperative Extension Service office on January 30th, 2016. We are very grateful to Jessie Moan for offering to host the meeting.

Presentations

We had many excellent presentations this year. In the morning, Jacque Shade presented on "CAPS program in Alaska", followed by Matt Bowser's "Inventorying arthropods on Tetlin National Wildlife Refuge by next generation sequencing" and "Building a DNA barcode library of Alaskan nonmarine arthropods" by Derek Sikes.

The student talks consisted of two presentations: "Response of arthropod communities to shrub expansion in Western Alaska" by Molly McDermott, and "An update on the Kenelm W. Phillip Lepidoptera collection at the University of Alaska Museum" by Kathryn Daly. Both student talks were excellent, making the job of the student award committee particularly challenging, and Molly McDermott was selected as this year's Student Presentation Award recipient. Congratulations Molly!

In a first for society, a pest control expert, Ken Perry of Paratex Pied Piper Pest Control presented "What is pestering Alaska?", providing intriguing anecdotes and insights into the world of pest control in Alaska. Wrapping up the presentations, John Lundquist presented "Highlights from the FHP program in Alaska" and Robin Andrews spoke on "Soil mites of interior Alaska".

Posters

Alexandria Wenninger and myself presented research posters this year, the former presenting a poster entitled "Post-fire succession of ant communities in boreal Alaska", and myself presenting "A preliminary morphological and

molecular phylogeny of the rove beetle genus *Phlaeopterus* (Coleoptera: Staphylinidae: Omaliinae: Anthophagini)."

Business items—highlights

- Butterflies of Alaska, published by the society, was printed in December 2015, has sold out of its first printing as of January 2016! The second edition should be available soon.
- The Alaska Entomological Society will begin to maintain a list of "species of interest" to raise awareness of species of particular value (rare species, invasive species, species of commercial or agricultural importance, etc.) for collection or observation in Alaska. The list will be maintained on the society's website.
- Election Results: Logan Mullen (president), Alexandria Wenninger (vice president), Jill Stockbridge (secretary), Roger Burnside (treasurer)
- Next year the student presentation award will include a category for posters as well as for oral presentations

The minutes from the business meeting are available on our website.

Presentation and poster abstracts

Soil Mites of Interior Alaska *Robin Andrews*
This photo-rich presentation introduces common soil mites present in the greater Fairbanks region of Interior Alaska. Collembola, Protura, and small myriapods, spiders, and insects are covered briefly to provide perspective on the greater soil arthropod community. The role of worms and protists in the soil environment and concerns about invasive worms are briefly mentioned. An overview of basic Acari taxonomy is given. Mesostigmata, Endeostigmata, Prostigmata, and Oribatida groups are introduced. Some very basic techniques used to determine family level taxonomy are presented. Problems of Acari preservation and identification are discussed.

Forest Health Protection in South Central Alaska—2015 Highlights *J. E. Lundquist, S. Swenson, and G. Dubois*
Southcentral Alaska is situated at an intersection of the Boreal and Maritime forests. It is an area rich in topography, vegetation, climate, native and non-native cultures, the ecosystem services provided by its forested areas, and the 'community-think' expressed by people living in the various villages and towns within this region. Because it is the most populated region in Alaska, its forests are more accessible than elsewhere in the state. This region has a deep history of insect infestations, some of the most notably include: the spruce beetle outbreak on the Kenai Peninsula during the 1990s, the amber-marked birch leaf miner infestations of birch during the early 2000s, and the widespread geometrid moth and leaf roller defoliations in succession during the early and mid-2010s. Notable occurrences during 2015 were the expanded range of spruce aphid to Homer and the re-emergence of the Amber-marked birch leaf miner on the outskirts of Anchorage. Apart from monitoring annual insect pest conditions, South Central FHP entomology activities during 2015 included inspecting for insect pests and diseases the tree chosen to be the Capitol Christmas Tree before it travelled to Washington DC, contributing to the Climate Change Vulnerability Committee as part of the Chugach National Forest Plan revision effort, distributing and managing approximately $300,000 of the Western Bark Beetle Initiative grants, composing a forest health kiosk at the Alaska Botanical Gardens, establishing of a Forest Health Treatment Area on the Kenai Peninsula, conducting various field visits at the requests of stakeholders, and collaborating in a variety of forest health oriented projects with colleagues from the PNW Research Station and other USFS research stations, various universities and Alaskan tribal entities.

Response of arthropod communities to shrub expansion in Western Alaska *Molly McDermott*
Shrub thickets have increased in coverage across the Arctic in recent decades as temperatures have risen and permafrost has thawed. This is affecting the distribution, abundance and phenology of arctic arthropods. Arthropods are sensitive indicators of temperature change, provide a variety of ecosystem services, and comprise the majority of biodiversity in arctic environments. Previous research in Arctic Alaska has found that overall arthropod abundance increases with shrub dominance and is strongly predicted by NDVI and snowmelt timing, however, taxon-specific responses to shrub dominance and changes in phenology remain understudied components of arctic ecology.

My research focuses on testing the hypotheses that 1) the timing of food availability is earlier in tundra habitats due to earlier snowmelt and 2) plant height heterogeneity increases arthropod abundance across a gradient of habitats in the boreal-Arctic transition zone of northwestern Alaska. I use a combination of pitfall traps and sweep net sampling in shrub and tundra habitats, focusing on arthropods used by migratory songbirds. Here I present findings indicating that arthropod biodiversity and abundance increase with shrub height, but important songbird prey groups are most abundant between shrub thickets and open tundra, supporting the second hypothesis. Understanding the ecological drivers of spatial and temporal patterns of arthropod abundance in these rapidly shifting habitats will help scientists model how Arctic ecosystems may respond to climate-mediated changes.

A preliminary morphological and molecular phylogeny of the rove beetle genus *Phlaeopterus* (Coleoptera: Staphylinidae: Omaliinae: Anthophagini) *Logan Mullen*
The omaliine rove beetle genus *Phlaeopterus* Motschulsky 1853 contains 14 species, which are known from the northwestern United States, western provinces of Canada, and Alaska. These beetles are largely confined to the edges of alpine snowfields and streams, habitats that are particularly sensitive to the impacts of climate change. Here, I present preliminary Bayesian and maximum likelihood phylogenetic analyses of the genus *Phlaeopterus* using morphology and molecular data. Species hypothesis of Campbell (unpublished), Hatch (1957), Fauvel (1878), and Motschulsky (1853) are tested for the first time with modern phylogenetic methods. My analyses support the addition of multiple undescribed species to the genus *Phlaeopterus*, as well as the synonymizations of several current species.

Post-fire succession of ant communities in boreal Alaska *Alexandria Wenninger and Diane Wagner*
Research suggests that climate warming will cause an increase in fire frequency and severity in Alaskan boreal forests, increasing the proportion of younger successional forests over time, and shifting forests previously dominated by black spruce to forests dominated by deciduous species. These changes in post-fire succession have the potential to cause widespread changes in arthropod communities throughout boreal interior Alaska. We predict that heterogeneity in understory vegetation and microclimate associated with young forests will foster a diverse prey base, promoting a rich community of predatory Hymenoptera, specifically ants (Formicidae). Additionally, we hypothesize that an increase in deciduous trembling aspen (Populus tremuloides) will increase the diversity of ants; aspen is highly palatable in comparison to black spruce, which may increase the diversity and abundance of available prey, and also produces extrafloral nectar, which mediates an indirect defense by attracting and nourishing ants. The objectives of this project are 1) to characterize changes in the boreal Hymenoptera community during post-fire succession and 2) to test the hypothesis that aspen fosters higher abundance and diversity of ants than black spruce. Ants are sampled across successional time (young, intermediate, and mature aged post-fire regenerating forests) and between two successional trajectories (shift to aspen and return as black spruce). Field collection of ants includes pitfall trapping and sweep netting. The data are used to characterize and compare the Hymenoptera communities among successional ages and trajectories. Preliminary results suggest that ants are more abundant and speciose in young successional forests compared to intermediate aged forests, regardless of successional trajectory. The ant communities of young successional forests are also compositionally dissimilar to the intermediate aged forests. This work will contribute to understanding how climate change will impact boreal insect communities.