Alaska Department of Fish and Game's Threatened Endangered and Diversity Program for funding from the State Wildlife Grant and conducting the Olive-sided flycatcher project, which appears to have significantly increased the spruce-associated species represented in the UAM Insect Collection.

References

Hodkinson, I. D. 1978. The psyllids (Homoptera: Psylloidea) of Alaska. Systematic Entomology **3**:333–360. doi:10.1111/j.1365-3113.1978.tb00004.x.

Juday, G. P., C. Alix, and T. A. Grant. 2015. Spatial coherence and change of opposite white spruce temperature sensitivities on floodplains in Alaska confirms early-stage boreal biome shift. Forest Ecology and Management **350**:46–61. doi:10.1016/j.foreco.2015.04.016.

Philip, K. W., and C. D. Ferris. 2016. Butterflies of Alaska. Second edition. Alaska Entomological Society, Fairbanks, Alaska.

A second Alaska record for *Polix coloradella* (Walsingham, 1888) (Lepidoptera: Gelechioidea: Oecophoridae), the "Skunk Moth"

doi:10.7299/X7N29X7K

by David Moskowitz[1]

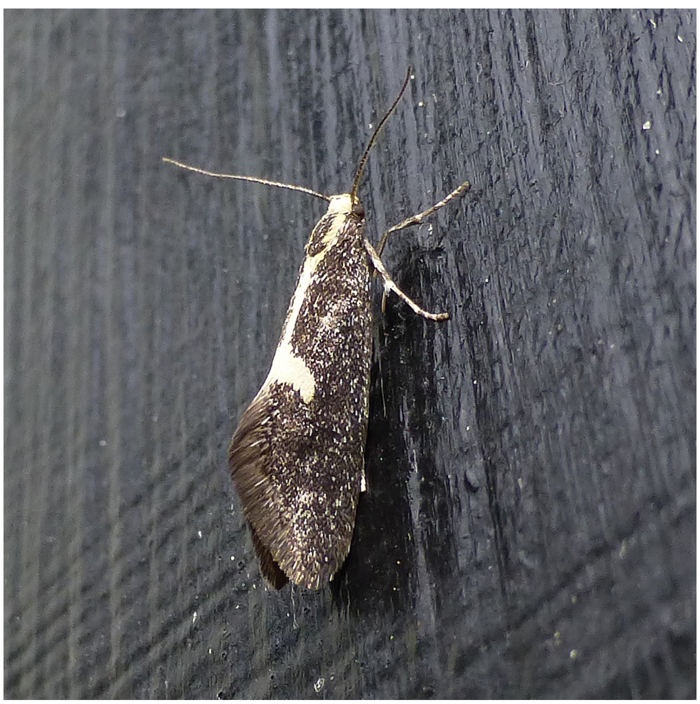

Figure 1: *Polix coloradella* photographed on 3 July, 2013.

On 3 July 2013 I photographed a single individual of the "Skunk Moth," *Polix coloradella* (Walsingham, 1888) on a wall below a backyard incandescent porchlight in Anchorage, Alaska (61° 11′ 10″N, 149° 46′ 07″W, Figure 1). The location is a single-family home in a largely residential area adjacent to a wooded area surrounded by homes (Figure 2). The photograph was submitted to Kenelm Philip for confirmation and distributional information about the species in Alaska. His reply on 23 July, 2013 follows.

> The ALS collection has one specimen of *P. coloradella*, and it's from Camp Denali in Denali National Park. That's over 100 miles from Anchorage just to get to where you can see the mountain, but I have no idea as to its distance as the crow flies. I doubt this is a rare species—so few people collect micros that they are usually far more widespread and common than one would guess from just the few known specimens.

The distance from Camp Denali to the Anchorage *P. coloradella* record is approximately 162 miles and roughly due south (Figure 3). This record appears to be only the second report for Alaska based on the information provided by Ken Philip from the Alaska Lepidoptera Survey and the two moth checklists, which reported the same single Camp Denali record (Ferris et al., 2012; Pohl et al., 2018). There are also no Alaska records of *P. coloradella* in iNaturalist, BugGuide, or Butterflies and Moths of North America. A single Alaska record of *P. coloradella* is listed in GBIF and reflects a moth collected in 1970 described below. Based on these databases, information provided by G. Pohl (p. comm. 15 Feb, 2019) and Scholtens and Wagner (2007), *P. coloradella* is widespread across northern North America

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with records from as far east as Newfoundland, Canada, as far west as Anchorage, Alaska and as far south as Arizona and the Great Smoky Mountains National Park (GSMNP) straddling the Tennessee and North Carolina border.

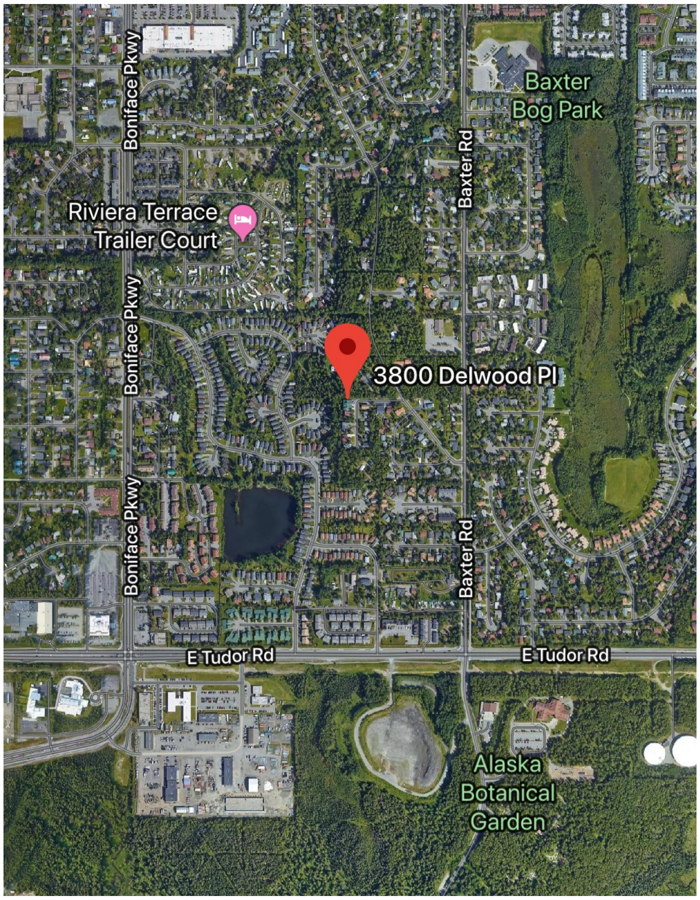

Figure 2: Location of photographed *Polix coloradella* shown by red teardrop from Google Maps (accessed 13 February, 2019).

The two previous Alaska records of *P. coloradella* are from Camp Denali on 28 June, 1970, noted as "wild caught" by Eric Payne and a second "vague literature record" lacking data (p. comm. Derek Sikes, 11 Feb, 2019) that was included in Ferris et al. (2012). These two records appear to refer to the same specimen (p. comm. Derek Sikes, 11 Feb, 2019). These two records can be accessed at http://arctos.database.museum/guid/KWP:Ento:66510 and http://arctos.database.museum/guid/UAMObs:Ento:215154. The herein reported 2013 *P. coloradella* record has also been added to the Arctos database and can be found at http://arctos.database.museum/guid/UAMObs:Ento:238005.

Despite being a distinctively-colored and easily recognizable moth, records in the databases are relatively limited, potentially indicating it is uncommon with a patchy distribution, or as suggested by Ken Philip, that it is just overlooked. *Polix coloradella* has also not been found in the Yukon during recent sampling by G. Pohl (p. comm. 12 Feb, 2019).

Habitat descriptions are quite varied for *P. coloradella* ranging from the residential area noted in this observation, old growth boreal forest (p. comm. G. Pohl, 15 Feb. 2019), high elevations in GSMNP (Scholtens and Wagner, 2007), boreal forests (Hodges, 1974) and even farms (Bugguide contributors, 2019).

The host reports are also varied. Yothers (1942) found the larvae under torn perennial cankers (*Neofabraea perennans*) on apple trees and noted, "underneath the torn canker covering there is usually a mass of debris, composed of the live and dead bodies, cast skins and frass of numerous insects of several kinds, often all enmeshed in the tangled webbing of the larva of *Epicallima coloradella*." Hodges (1974) also noted the occurrence of larvae with diseased hosts:

> The larva is associated with decaying wood and cankers caused by fungi on pine, Douglas fir, alder, hawthorn and apple. The larva might feed on the fungi or on the dead wood.

Other reported larval hosts include *Pinus contorta* and *Pinus monticola* (Robinson et al., 2010), and "dying bark in the cankers of *Gloeosporium perennans*" (Wade, 1931). G. Pohl also reported "specimens reared from logs" in Alberta, Canada (p. comm. 15 Feb. 2019), and similarly, Lawrence and Powell (1969) reported, "the present species often emerges from caged logs or in similar forestry practice situations and has been reared from fungus sporophores during our study." Matthewman and Pielou (1971) and Pielou (1966) also reported *P. coloradella* adults emerging from the sporophores of the perennial bracket fungus, *Fomes fomentarius*, and the sporophores of the annual bracket fungus, *Polyporus betulinus*, respectively. Fungal feeding is well-known for many moth families but basic data on fungal hosts for most species is commonly lacking (Rawlins, 1984; Moskowitz and Haramaty, 2012). Further exploration of the larval hosts of *P. coloradella* may help explain its somewhat enigmatic broad and apparently patchy distribution and the varied habitats reported.

Acknowledgements

This note is dedicated to the late Ken Philip who graciously confirmed the moth's identification and provided information about its distribution in Alaska. Thanks are also due to Derek Sikes, Matt Bowser and Greg Pohl for their assistance with information about *P. coloradella* records in Alaska and elsewhere, their review of the draft and their encouragement for this note.

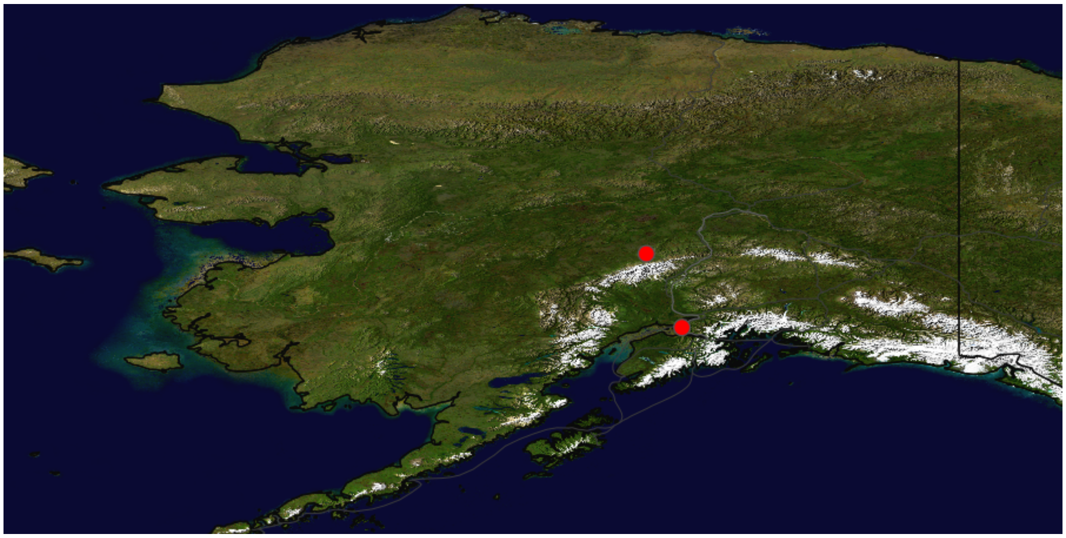

Figure 3: Map of the updated known distribution of *Polix coloradella* in Alaska. The map was generated using SimpleMappr (Shorthouse, 2010).

References

Bugguide contributors. 2019. Species *Polix coloradella* - The Skunk - Hodges#1058. Iowa State University Department of Entomology, Ames, Iowa. URL `https://bugguide.net/node/view/35511`.

Ferris, C. D., J. J. Kruse, J. D. Lafontaine, K. W. Philip, B. C. Schmidt, and D. S. Sikes. 2012. A checklist of the moths of Alaska. Zootaxa **3571**:1–25. URL `http://www.mapress.com/zootaxa/2012/f/zt03571p025.pdf`.

Hodges, R. W. 1974. Gelechioidea: Oecophoridae, Fascicle 6.2. *in* R. B. Dominick, C. R. Edwards, D. C. Ferguson, J. G. Franclemont, R. Hodges, and E. G.Munroe, editors. Moths of North America. Wedge Entomological Entomological Research Foundation, London, UK. URL `http://www.wedgefoundation.org/6_2.asp`.

Lawrence, J. F., and J. A. Powell. 1969. Host relationships in North American fungus-feeding moths (Oecophoridae, Oinophilidae, Tineidae). Bulletin of The Museum of Comparative Zoology **138**:29–51. URL `http://biostor.org/reference/731`.

Matthewman, W. G., and D. P. Pielou. 1971. Arthropods inhabiting the sporophores of *Fomes fomentarius* (Polyporaceae) in Gatineau Park, Quebec. The Canadian Entomologist **103**:775–847. doi:10.4039/Ent103775-6.

Moskowitz, D., and L. Haramaty. 2012. Fungi feeding by the Agreeable Tiger Moth (*Spilosoma congrua* Walker) (Erebidae: Arctiinae). The Journal of the Lepidopterists' Society **66**:230–232. doi:10.18473/lepi.v66i4.a8.

Pielou, D. P. 1966. The fauna of *Polyporus betulinus* (Bulliard) Fries (Basidiomycetes: Polyporaceae) in Gatineau Park, Quebec. The Canadian Entomologist **98**:1233–1237. doi:10.4039/Ent981233-12.

Pohl, G. R., J.-F. Landry, B. C. Schmidt, J. D. Lafontaine, J. T. Troubridge, A. D. Macaulay, E. van Nieukerken, J. R. deWaard, J. J. Dombroskie, J. Klymko, V. Nazari, and K. Stead. 2018. Annotated checklist of the moths and butterflies (Lepidoptera) of Canada and Alaska. Number 118 in Series Faunistica, Pensoft Publishers, Sofia, Bulgaria. URL `https://books.pensoft.net/book/13218/annotated-checklist-of-the-moths-and-butterflies-lepidoptera-of-canada-and-alaska`.

Rawlins, J. E. 1984. Mycophagy in Lepidoptera. Chapter 15, pp. 382–423 *in* Q. Wheeler and M. Blackwell, editors. Fungus-Insect Relationships. Columbia University Press, New York.

Robinson, G. S., P. R. Ackery, I. J. Kitching, G. W. Beccaloni, and L. M. Hernández. 2010. HOSTS - A Database of the World's Lepidopteran Hostplants. Natural History Museum, London, UK. URL `http://www.nhm.ac.uk/hosts`.

Scholtens, B., and D. L. Wagner. 2007. Lepidopteran fauna of the Great Smoky Mountains National Park. Southeastern Naturalist **6**:193–206. URL `https://www.eaglehill.us/SENAonline/articles/SENA-sp-1/23-Scholtens.shtml`.

Shorthouse, D. 2010. SimpleMappr, an online tool to produce publication-quality point maps. URL `https://www.simplemappr.net`.

Wade, J. S. 1931. Minutes of the 426th regular meeting of the Entomological Society of Washington. Proceedings of the Entomological Society of Washington **33**:66–67. URL `https://biodiversitylibrary.org/page/16144030`.

Yothers, M. A. 1942. *Epicallima coloradella* (Wals.), an inhabitant of perennial apple cankers in the Northwest. Journal of Economic Entomology **35**:573–576. doi:10.1093/jee/35.4.573.

Some food items of introduced Alaska blackfish (*Dallia pectoralis* T. H. Bean, 1880) in Kenai, Alaska

doi:10.7299/X7H995H7

by Matt Bowser[1], Miriam Bowser, Ethan Bowser, Apphia Bowser, and Esther Bowser

Introduction

The Alaska blackfish, *Dallia pectoralis* T. H. Bean, 1880 is native to Alaska's North Slope, Western Alaska, and Alaska's interior, but was introduced to Anchorage in the 1950s (Chlupach, 1975). The introduced range of blackfish has expanded since that time so that they occur in the Palmer area, the Kenai Peninsula (Eidam et al., 2016), and almost all lakes in the Anchorage area (Stratton and Cyr, 1997). Blackfish on St. Paul Island are also thought to have been introduced (Aspinwall, 1965; Mecklenburg et al., 2002).

It is of interest to try to understand how these introduced fish may alter the systems that they invade, especially how blackfish may affect native fish species through competition for invertebrate prey.

Alaska blackfish prefer to live in vegetated areas of ponds, lakes, and slow-moving streams. They are opportunistic predators, feeding on diverse invertebrates and, to a lesser extent, small fish. In previous studies of blackfish diet (Ostdiek and Nardone, 1959; Chlupach, 1975; Gudkov, 1998; Eidam et al., 2016), the most important prey groups included cladocerans, ostracods, dipterans, gastropods, trichopterans, and copepods.

Methods

Three blackfish were collected by Jennifer Hester in a minnow trap baited with cured salmon eggs from a small, shallow pond in Kenai, Alaska (60.5688 °N, -151.1902 °W ± 150 m). The trap was set out on October 18, 2018 and collected the following day.

In the laboratory we measured lengths of the blackfish, dissected out their stomachs, and sorted through stomach contents under a dissecting microscope. We selected 14 specimens representing a variety of perceived prey species and submitted these for DNA barcoding using lifescanner kits (`http://lifescanner.net/`).

Results

The blackfish we obtained were two small adults (KNWRObs:Fish:1 and KNWRObs:Fish:3, both 76 mm long) and one juvenile (KNWRObs:Fish:2, 31 mm long).

The most abundant prey group that we observed in blackfish stomachs was Diptera larvae, followed by Coleoptera, but a variety of arthropods were represented. We saw only one snail. No prey fish were identified from blackfish stomach contents. The two 76 mm adults both contained diverse arthropods; in the 31 mm juvenile fish we found only ostracods.

We received DNA barcode sequences for 10 of the 14 submitted samples. Sequencing apparently failed for three specimens. For one specimen (the ostracod) we obtained a blackfish DNA barcode sequence. Details for all specimens are provided in Table 1.

Discussion

Our findings are consistent with the diet of blackfish reported by previous studies. We found that smaller blackfish had eaten mostly minute crustaceans while larger fish had a more diverse diet, a pattern also observed by Chlupach (1975). These results represent only a snapshot of blackfish diet from a single time and place and so cannot be considered to be representative of the diet of Alaska blackfish in general.

The most notable observation from this small project was that blackfish had consumed several species that are not particularly aquatic. Some of these species including *Lathrobium washingtoni*, *Scyletria inflata*, and the cicadellid could have fallen into the water from above, but others including larval staphylinids, larval *Bryotropha similis*, and the pseudoscorpion were more surprising to see in blackfish stomachs. Water levels in this small pond and the stream flowing into it were high at the time the fish were

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