What's the Buzz?: A Closer Look at the Chironomid Diversity of Pigeon Lake

Prepared for the 2024 ALMS Annual Conference in Hinton, AB

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The Back Story:

May 2021

Hi Dr. Sperling,

Jordan Omstead here from CBC Edmonton. I hope you're well! Sorry to bother on a weekend.

I'm hoping to do a brief story about Mayfly in Alberta and was hoping to speak with you today to get a better understanding of what these short-lived but high-impact insects are all about. If this isn't really your specialty, perhaps you could suggest someone else?

Thanks for your time!

All the best,
Jordan

'You can't even go outside': Alberta's Pigeon Lake overrun with midges

Swarms expected to die off in the coming days, entomologist says

CBC News · Posted: May 30, 2021 10:29 AM MDT | Last Updated: May 30, 2021

Non-biting midges have amassed in huge numbers around Alberta's Pigeon Lake. (Submitted by Janet Sperling)

"What are these? Why is this happening? What does it mean?"

The Globe and Mail

Bugging out: Canadians swat at spring swarm of midges

The chironomid is attracted to light, so light traps are an effective countermeasure: They draw the bugs in and zap them. Otherwise, homeowners...

May 7, 2014

The Boston Globe

Billions of bugs swarm New Orleans

"Chironomid midges are a gigantic part of the food web," DeLisi said ... in front of us," said Red Sox chief baseball officer Chaim Bloom.

Jun 19, 2019

CBC

'You can't even go outside': Alberta's Pigeon Lake overrun with midges

In Alberta's Pigeon Lake, cabins and cars are blanketed in quivering clumps. The midges have taken over in swarms of almost biblical...

May 30, 2021

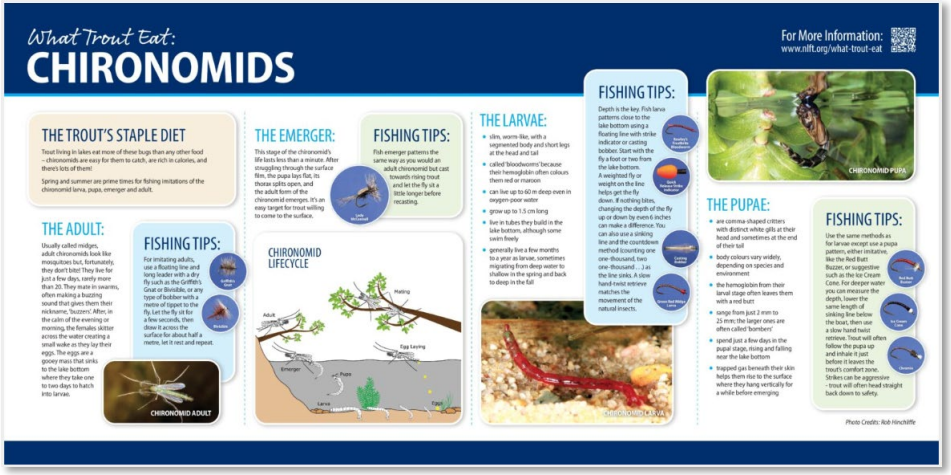
MLB

The Night the Bugs Came for Joba Chamberlain

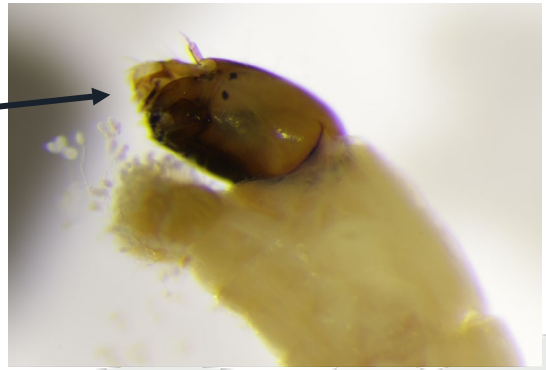
When the rookie phenom took the mound in Game 2 of the 2007 ALDS, he seemed poised to deliver the Yankees a victory. Then the midges swarmed—and created one of the most indelible moments in baseball history.

By Jake Kring-Schreifels | May 11, 2021, 6:10am EDT

Me, kayaking for the first time amongst a chironomid mass emergence at Hastings Lake, 2015.
Photo: C. Scragg



Sclerotized ("crunchy") head capsule

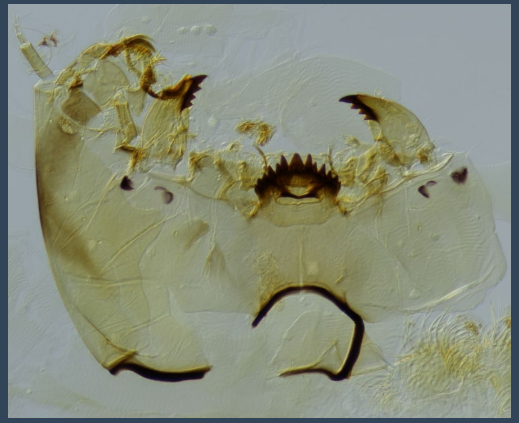


Chironomus sp.

Scanning Electron Microscope image of *Dicrotendipes crypticus* (John Epler 1987) (Photo: J. Sublette)

Chironomus sp.

Cryptochironomus sp.

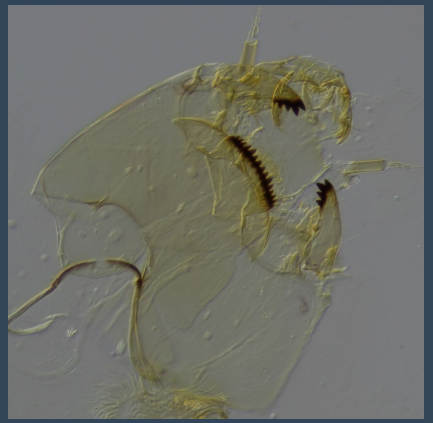


Dicrotendipes sp.

Procladius sp.

Ablabesmyia sp.

Tanytarsus sp.



Polypedilum sp.

Cricotopus sp.

“What are these? Why is this happening? What does it mean?”

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The plan:

2 seasons (summer and winter)

- Summer sampling in August 2021 and 2022
- Summer sampling using Ekman grab off of boat
- Winter sampling in February 2022 and 2023
- Winter sampling using Ekman grab through ice
- Winter sampling largely confined to Grandview

3 sampling points

- Deepest point to shallow
- Summer: 10-11m; 8.5m; 7m
- Winter: 8m, 4m, 1.5m deep
- Limitations in winter: cannot travel as far!

Additional shoreline samples

- Samples taken near to shore primarily in summer; net sweeps off of deck near Itaska beach

Yellow dots = summer sampling

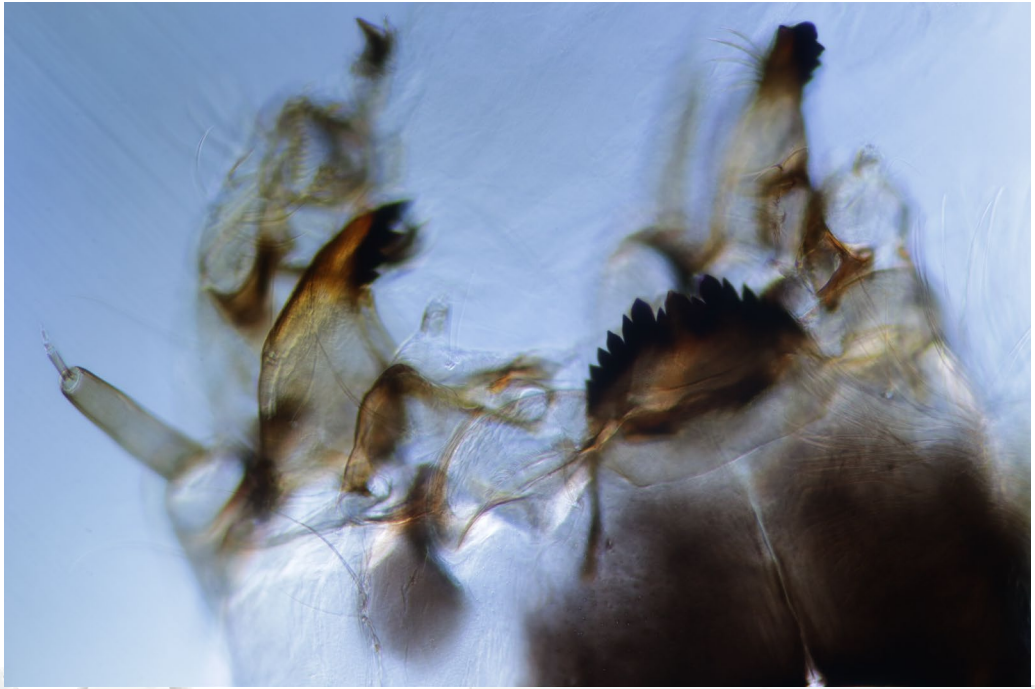
White stars = winter sampling

A – C, deepest to shallower

X = shoreline sample

Field collection

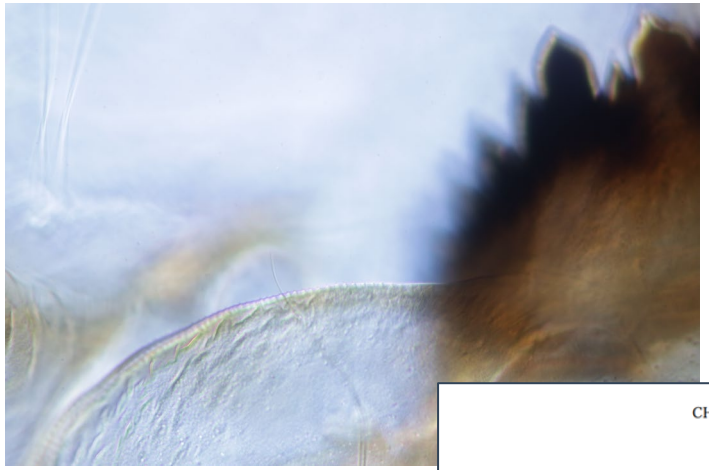
What we found (so far):



Chironomus plumosus

- Found in deep water (10-11m, 7m)
- Diagnostic “teeth” along edge of VM plate (Epler, 2001)
- Reported as being a “nuisance swarmer” in Denmark (Lindegaard and Jonsson, 1987); Table 13.1 from “The Chironomidae” by Armitage, Cranston and Pinder

What we found (so far):



HUGE!

CHIRONOMINAE 8.41

5(4') Anteromedial margin of ventromental plate with fine teeth 6

5' Anteromedian margin of ventromental plate smooth (minute teeth may be present beneath plate, but margin is smooth; or outer (lateral) margin of plate may be faintly crenulate) 8

6(5) Mandible with 3 dark inner teeth ..... ***Ch. plumosus***

Chironomus plumosus

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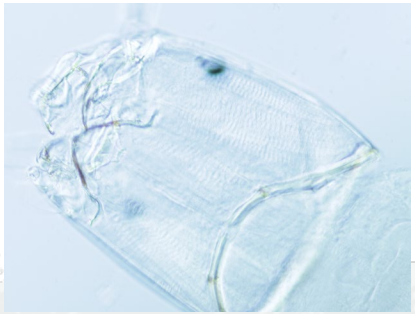
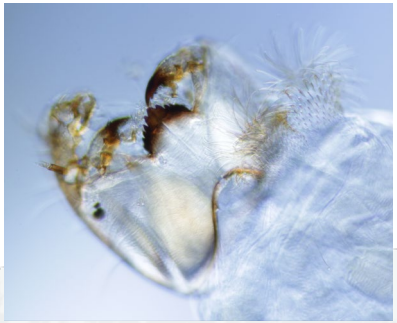
What we found (so far):

Other deep water taxa:

- *Chironomus* sp. (morphospecies)
- *Tanytarsus* sp. (morphospecies)
- *Procladius* sp. (morphospecies)

What we found (so far):

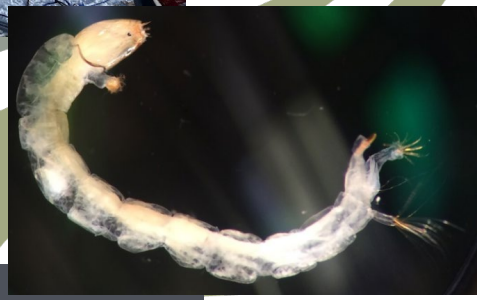




Shoreline taxa (2021 only):

***Cryptochironomus* sp.** (unidentifiable to species, Epler 2001)
***Endochironomus* sp.** (morphospecies)
***Glyptotendipes* sp.** (morphospecies)
***Corynoneura* sp.** (morphospecies)
***Cricotopus* sp.** (morphospecies)
***Nanocladius* sp.** (morphospecies)

Species Table of Shoreline Specimens
COMING SOON!



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Thank You!

References

→ Armitage, Patrick D., L. C. Pinder, and P. S. Cranston, eds. *The Chironomidae: biology and ecology of non-biting midges*. Springer Science & Business Media, 2012.

→ Epler, J. “Identification manual for the larval Chironomidae (Diptera) of North and South Carolina: a guide to the midges of the southeastern United States including Florida”. 2001. Version 1.0. **Available online through John Epler’s personal website: *johnepler.com***

→ Lindegaard, C., and E. Jónsson. "Abundance, population dynamics and high production of Chironomidae (Diptera) in Hjarbæk Fjord, Denmark, during a period of eutrophication." *Entomologica Scandinavica Supplement* 29 (1987): 293-302.

Unless otherwise noted, all photos by C. Tebby

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