



ARCTIC CORNER

News about studies of arctic insects

Introduction

Arctic Corner provides a forum for news of particular arctic interest, replacing the Biological Survey's newsletter *Arctic Insect News* (1990–2000). Contributions to *Arctic Corner* are welcomed by the Editor (see inside front cover).

From the canoe to the microscope: New faunal information on mayflies and stoneflies from Arctic Canada

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Over the past several years, my colleague Doug Currie (ROM) and I have reported on several forays into the central arctic mainland to collect aquatic insects (Currie et al. 2000, 2002; Giberson and Currie 2004; Giberson 2005). This project has moved into the data processing stage, and exciting collecting expeditions to the north have given way to laboratory exploration of the findings.

Mayflies of Nunavut

Eighty-two species have been reported in northern Canada (i.e. north of the line of continuous permafrost). However, most of these are restricted to the northern boreal zone, with only 17 species reported north of tree-line (several of which were found only at Churchill Manitoba), and only 9 species were known from Nunavut (Cobb and Flannagan

1980; Harper and Harper 1981). Our collecting in mainland Nunavut has nearly doubled the known number of species of mayflies from the territory from 9 species in 4 families to 16 species in 7 families (Giberson and Burian in review).

The dominant mayfly family in the north is Baetidae, containing 9 of the 16 Nunavut species. In addition, only 4 species are known from the most northerly collecting localities, and these are all baetids. One baetid species, *Baetis bundyae* Lehmkuhl, was extremely abundant in our recent surveys, especially in



Jade Savage, collecting from the edge of Landing Lake, north of Rankin Inlet, NU, July 2005
(photo by D.J. Giberson)

the coastal zone of northern Hudson Bay, so we were able to study the life cycle more fully than for other taxa. This species showed life-history strategies that are suited to the harsh northern climate, with extremely rapid summer development (2.5-4 weeks) and female-biased sex ratios (suggesting parthenogenesis) (Giberson and Burian in review).

Mayflies of Northwest Territories

The mayflies of the Northwest Territories are better known than the mayflies of Nunavut, largely because of the large Mackenzie Valley Pipeline study of the early 1970s (Brunskill et al. 1973) and subsequent work in the Mackenzie drainage (e.g. Cobb et al. 1995). 54 species were reported from NWT prior to this study, and only 5 additional species were collected along the Horton and Thelon Rivers. Of those, 3 were found only along the Horton River, one was found on the Thelon, and one was found in both rivers. I have recently started a new initiative with Steve Burian to re-examine specimens from the Mackenzie Valley pipeline survey to try to identify a number of specimens that were unidentified, or identified only to genus, for the original study. Specimens from this study were deposited in the CNC in Ottawa and at the Freshwater Institute in Winnipeg, and are in remarkably good shape, considering the length of time they have been in storage. We expect a number of new records and range extensions for the Northwest Territories from this study. We have also been examining some recent collec-

tions along the Mackenzie River valley made by workers from Fisheries and Oceans Canada, but these are not expected to yield much additional information due to the small size of the specimens.

Stoneflies north of 60

According to a stunning new reference book on Plecoptera of the North American north west (Stewart and Oswood 2006), 81 species of stonefly are known from Canada north of the 60th parallel. The numbers of known species in the north declines dramatically as we move east from Alaska (88 species) through the Yukon (75 species) to NWT (29 species) and Nunavut (10 species). Part of this pattern may relate to the intensity of collecting, especially for the Northwest Territories. The authors of the book note the number of new species records reported in this book, and these also show dramatic differences from west to east. Only 15 new records were reported for Alaska (17% of the new total), compared to 6 for Yukon (8%), 15 for NWT (52%) and 8 for NU (80%). The new records for NWT and Nunavut were based on examination of specimens from the CNC (including both Mackenzie Valley Pipeline studies, and specimens from various arctic projects such as the Northern Insect Survey) and collections made during our expeditions to the central mainland barrens. As noted above for the mayflies, many of the NWT records stem from the Mackenzie River Pipeline study material deposited at the CNC (Brunskill et al. 1973). Preliminary examination of additional Mackenzie River study specimens from the Freshwater Institute collection has resulted in 2 more territorial records for NWT (bringing the total to 17), and that number is expected to grow as we continue our work with the large number of unidentified specimens remaining from this project.



Baetis bundyae, partially grown nymph
(photo by D.J. Giberson)

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New Book on Arctic Stoneflies

The Stoneflies (Plecoptera) of Alaska and Western Canada, by K.W. Stewart and M.W. Oswood (The Caddis Press, 2006, Columbus Ohio. 325 pp.)

This is an exciting new reference work for anyone working on stoneflies in Northwestern North America, particularly British Columbia, Alberta, Alaska, Yukon, and the western Northwest Territories. The book includes well illustrated keys to the regional Plecoptera fauna, which includes 153 species in 9 families. Species keys are given for adults, and keys to the nymphs are given to the lowest possible taxon. The book also has considerable information on life history and biology (where known), and historical collecting and biogeographical notes. Although the book focusses on the western part of northern North America, it also includes new collection material from eastern NWT and Nunavut. This book should be in the library of everyone doing work on aquatic insects in the northwest!

D.J. Giberson



Steve Burian sorting insects by a pond in Rankin Inlet, and showing the children what is in the pond. (photo by D.J. Giberson)