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**LARVAL TAXONOMY AND DISTRIBUTION OF
GERRIS PINGREENSIS AND *G. INCOGNITUS*
(HEMIPTERA: GERRIDAE) IN BRITISH COLUMBIA**

J. R. SPENCE AND G. G. E. SCUDDER

Department of Zoology
University of British Columbia
Vancouver, B.C.

ABSTRACT

Diagnostic morphological characters are given for the five larval instars of *Gerris pingreenensis* and *Gerris incognitus*. The geographic ranges of the two species are compared and discussed.

INTRODUCTION

Waterstriders (*Gerris*) are common inhabitants of British Columbia's inland waters. Ease of observation and the common occurrence of multispecies assemblages make these insects attractive subjects for comparative ecological study. A knowledge of species characteristics and natural history are necessary prerequisites for such work.

Scudder (1971) provided keys and descriptions for the adults of British Columbia gerrids and Scudder and Jamieson (1972) produced an identification guide for the larvae of seven species. At the time of these publications it was not possible to separate the first three instars of *Gerris pingreenensis* D&H and *Gerris incognitus* D&H. Furthermore, the characteristics noted for separation of fourth and fifth instars of these two species are inefficient because of a typographical error missed in the proof.

In this paper we provide diagnostic descriptions for all larval instars of both species and compare the geographic ranges of these two species in British Columbia. Areas of sympatry and allopatry are noted.

METHODS AND MATERIALS

During May 1976 and 1977 we established laboratory cultures of *G. pingreenensis* and *G. incognitus*. Adult *G. pingreenensis* were collected from Westwick Lake in the Cariboo region while *G. incognitus* were obtained from small ponds in the University of British Columbia Endowment Lands. All five larval instars of both species were subsequently reared from eggs laid by isolated adults. Details of the rearing methods are given by Scudder and Jamieson (1972). Specimens of each larval instar were preserved in 70% ethanol 1 or 2 days after molting. Instar descriptions are based upon study of these laboratory-reared specimens. We have also checked the descriptions against field material collected on the lower mainland and in the central interior from locations where only one of the species is known to occur.

RESULTS AND DISCUSSION

A. Larval Taxonomy

The keys and descriptions provided by Scudder and Jamieson (1972) afford easy separation of *G. pingreenensis* and *G. incognitus*

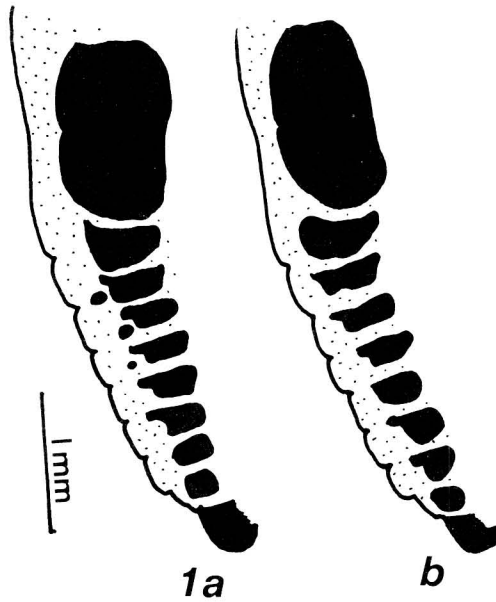


Figure 1. First Instar (a) *G. pingreensis* (b) *G. incognitus*.

from other gerrid species in the province. The descriptions that follow can be used to separate the five instars of these two species. Diagnostic measurements provided by Scudder and Jamieson (1972) are additionally helpful for identifying the fourth and fifth instars.

First and Second Instars

G. pingreensis: (Fig. 1a) with small but distinct sclerotized spots at the postero-lateral corners of at least the 2nd and 3rd abdominal terga.

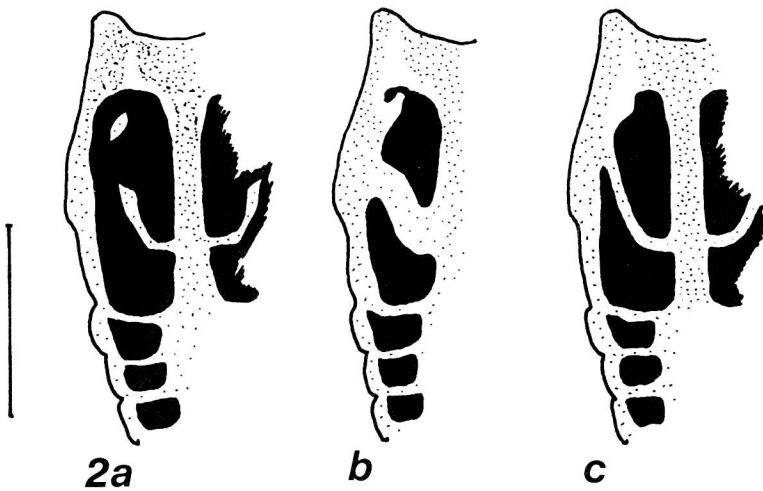


Figure 2. Third Instar (a) fully sclerotized *G. pingreensis* (b) teneral *G. pingreensis* (c) *G. incognitus*.

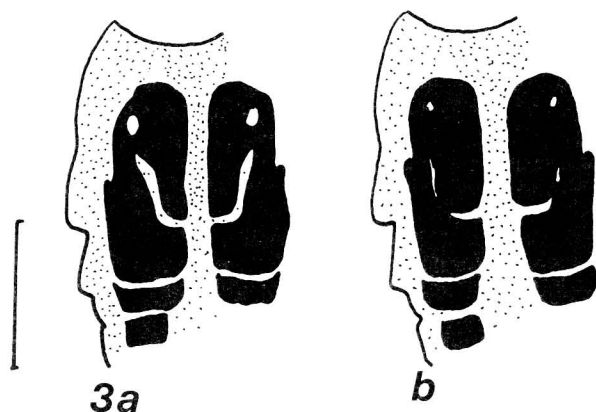


Figure 3. Fourth Instar (a) *G. pingreensis* (b) *G. incognitus*.

G. incognitus: (Fig. 1b) without such markings or with only an indistinct spot near the 2nd abdominal tergum.

Third Instar

G. pingreensis:

fully sclerotized specimens (Fig. 2a) arrow-shaped mark on mesonotum not extending to the antero-lateral corner of the notum; distinct light spot in the antero-lateral corner of the mesonotum.

general specimens (Fig. 2b) sides of mesonotal arrow with broad light bands and expanded light area in the antero-lateral corner.

G. incognitus: (Fig. 2c) sides of arrow-shaped mark on mesonotum extending to the antero-lateral corner as a narrow light band; distinct light spot never delimited within the mesonotum.

Fourth and Fifth Instars

G. pingreensis: (Figs. 3a and 4a) with distinct arrow-shaped mark on mesonotum; isolated light spot in antero-lateral corner of mesonotum always present in 4th instar and usually present in 5th instar.

G. incognitus: (Figs. 3b and 4b) arrow-shaped mark on mesonotum poorly defined; lateral portion of arrow's head not present or ex-

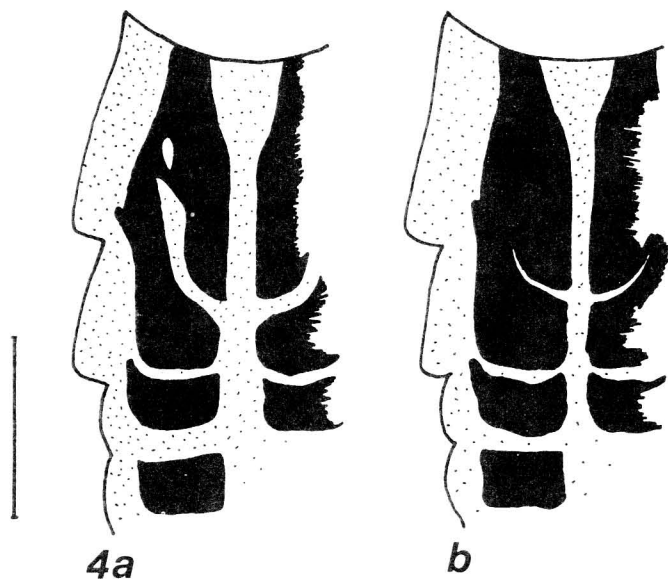


Figure 4. Fifth Instar (a) *G. pingreensis* (b) *G. incognitus*.

tending to the antero-lateral corner of the mesonotum only as a very thin line which is barely distinguishable from the surrounding sclerotization; 4th instar occasionally with isolated light spot at the antero-lateral corner of the mesonotum, such markings never present in 5th instar.

B. Distribution

Locality records of these two species in British Columbia are plotted in Figure 5. The records are taken from Scudder (1977) and from additional collections in the Chilcotin region during the Spring and Summer of 1977.

The ranges of these two species are some-

what complementary in British Columbia. *Gerris incognitus* is the dominant species of the pair in the southern half of the province. However it is not generally successful in the parkland of the central interior even though clear access seems possible from both east and west. *Gerris pingreensis* is the only species of the pair to be recorded from the northern interior and occurs without *G. incognitus* on the interior Chilcotin Plateau.

Although these two species are generally allopatric in British Columbia, a broad zone of overlap occurs in the central interior. This area is one of the main suture zones in the province where species from the prairies have establish-



Figure 5. Distribution of *G. pingreensis* (o) and *G. incognitus* (●) in British Columbia.

ed contact with Cordilleran species. Remington (1968) points out that significant biological interactions often occur between similar species in such suture zones.

The fact that *G. pingreensis* and *G. incognita* co-occur over such a broad area in the central interior suggests either that these species are not experiencing significant inter-specific competition despite their pronounced similarity or that competitive advantages are

shifting over space or fluctuating in time. We shall discuss these possibilities in more detail elsewhere.

ACKNOWLEDGEMENTS

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THE APHIDS (HOMOPTERA:APHIDIDAE) OF BRITISH COLUMBIA 5. NAME CHANGES¹

CHO-KAI CHAN AND A. R. FORBES

Research Station, Agriculture Canada
Vancouver, British Columbia

ABSTRACT

Name changes in accordance with current usage in aphid taxonomy are listed.

INTRODUCTION

An approach to a stable nomenclature for aphids became possible with the recent publication of a "Survey of the World's Aphids" (Eastop and Hille Ris Lambers 1976). We de-

ecided to adopt that work as a standard for all our aphid names. This has necessitated changing 72 names used in our previous lists (Forbes, Frazer and MacCarthy 1973; Forbes, Frazer and Chan 1974; Forbes and Chan 1976). All of these changes are listed here. They are arranged alphabetically by genus and species of the names used previously.

¹Contribution No. 416, Research Station, 6660 N.W. Marine Drive, Vancouver, British Columbia, V6T 1X2.

LIST OF NAME CHANGES

Previous Name

Acyrtosiphon dirhodum (Walker)
Acyrtosiphon pisum spartii (Koch)
Allaphis verrucosa (Gillette)
Aphis corniella Hille Ris Lambers
Aphis sambucifoliae Fitch
Asiphum rosettei Maxson
Aspidaphis longicauda Richards
Aulacorthum clavicornis Richards
Aulacorthum dorsatum Richards
Aulacorthum scabrosum Richards
Bipersona torticauda Gillette
Brachycolus atriplicis (Linnaeus)
Cavariella umbellatarum (Koch)
Cepigillettea betulae-foliae Granovsky
Chaitophorus delicata Patch
Chaitophorus neglectus Hottes & Frison

Current Name

Metopolophium dirhodum (Walker)
Acyrtosiphon pisum (Harris)
Thripsaphis verrucosa Gillette
Aphis salicariae Koch
Aphis sambuci Linnaeus
Asiphum tremulae (Linnaeus)
Goessigia longicauda (Richardell)
Wahlgreniella nervata (Gillette)
Sitobion dorsatum (Richards)
Aulacorthum capilanoense Robinson
Bipersona ochrocentri (Cockerell)
Hayhurstia atriplicis (Linnaeus)
Cavariella aegopodii (Scopoli)
Calaphis betulae-foliae (Granovsky)
Chaitophorus stevensis Sanborn
Chaitophorus populifolii neglectus
Hottes & Frison