



THE NYMPH OF *HOLCOPERLA ANGULARIS* (WISELY) (PLECOPTERA: GRIPOPTERYGIDAE) FROM NEW ZEALAND

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ABSTRACT

The nymph of *Holcoperla angularis* (Wisely) is described and figured for the first time. Notes on habitat and a distribution map are given.

Keywords: Plecoptera, Gripopterygidae, *Holcoperla angularis*, apterous stonefly, alpine fauna

INTRODUCTION

Wisely (1953) described and figured the first wingless stoneflies known from New Zealand, and erected the genus *Apteryoperla* to contain them. McLellan (1977) removed Wisely's species *angularis* from *Apteryoperla* and designated it as the type species of a new genus, *Holcoperla*.

Wisely (1953) described what he thought was the nymph of *H. angularis* but McLellan (1983), after examining Wisely's material, found that the nymphs designated as *H. angularis* were in fact those of *Apteryoperla monticola*, the other wingless species described by Wisely at the same time. He also noted that the pattern of pale patches on the abdominal tergites was peculiar to each species.

Material collected in recent years contains a number of specimens of the nymphs of *H. angularis* easily distinguished by the characteristic abdominal tergal patterns common to both adults and nymphs. Their identity was also verified by examination of the developing genitalia of nymphs.

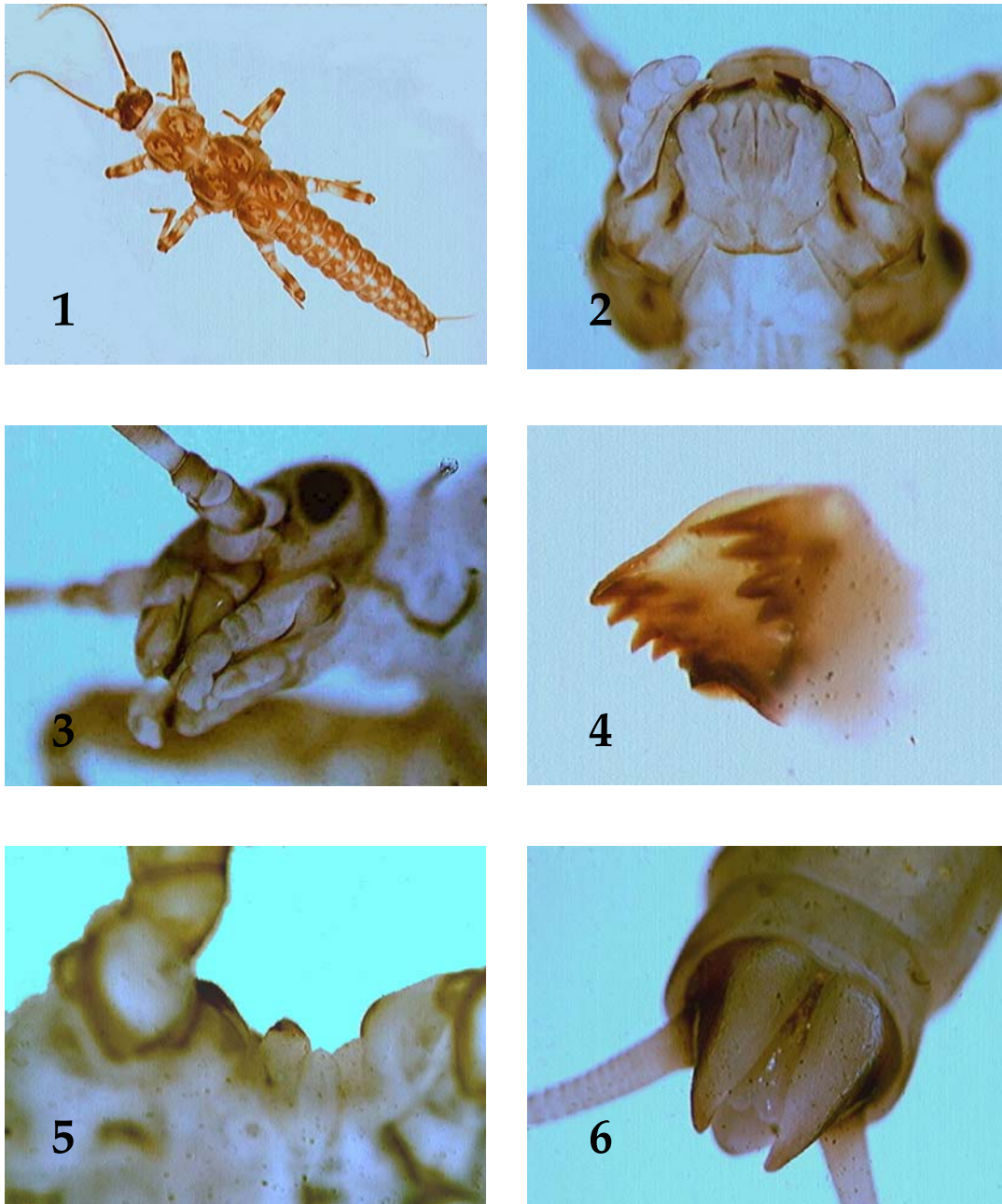
Conventions. In material examined the entries are usually shown in the following order: stages with number of each i.e. 2♂, 2♀, 2n, is 2 males, 2 females, 2 nymphs or larvae; the area code (Crosby et al. 1998) i.e. NZWN is New Zealand, Wellington Province: the locality; its metric coordinates i.e. 26662 59974; the altitude in meters i.e. 120m; the date as follows — 12 Oct 1923; collectors name(s); notes; repository initials in parenthesis.

Holcoperla angularis (Wisely) (Figs. 1-7)

Apteryoperla angularis Wisely 1953: 6(3): 219-231 (initial description of male, female and erroneous description of nymph).

Holcoperla angularis: McLellan 1977: 4(2): 119-147 (transfer as type species of *Holcoperla*); McLellan 1983: 10: 263-266 (comparison with other species).

Material examined. Holotype ♂ and 8 paratypes ♀, NZFD, Murchison Mts, 20768 55396, 1430-1525m, 5 Feb 1953, B. Wisely; 1♀, NZFD, Mt George, 20589 55114, Lake Manapouri, 1360m, 27 Jan 1972, D. R. Sidwell; 1♀, NZFD, Mt George, L. Manapouri, snowgrass by hut, 20589 55114, 1370m, 27 Jan 1972, D. R. Sidwell; 1♀, NZFD, Gertrude Saddle, 2115599.00 5594699.00, upper Hollyford Valley, 6 Jan 1967, A. K. Walker; 1♂, NZFD, Mt Grey, 2061257.00 5502039.00, Turret Range, 1220m, Manapouri Exp., 14 Jan 1970, Ramsay, G.W.; 1♀, NZFD, Irene Saddle, 2 Jan 1955, ?collector; 1♀, NZFD, Mt Barber, 2055800.00 5505366.00, 1050m, Wilmot Pass, 19 Jan 1970, J. McBurney; 1♂, NZFD, Canyon Creek, Lugar Burn Tops, 20849 55629, tussock and scree, 20 Dec 1966, R.E.L and S.C.L.; 1♀, NZFD, Mt Talbot, 2114282.00 5594619.00, 1830m, Homer, 5 Feb 1963, P. C. Le Couteur and E. C. Leitch; 1♀, NZOL, Mt Alta, 2189356.00 5626564.00, 1830m, Wanaka, shingle scree, 11 Feb 1967, P. Child; 1♀, WD, Mt Annetta, 2132912.00 5638396 00, Little Red Hill,



Figs. 1-6. *Holcoperla angularis*. 1. Nymph, habitus; 2. Nymphal head, ventral; 3. Nymphal head, lateral; 4. Nymphal left mandible, ventral; 5. Nymphal spiracular cone, ventral; 6. Nymphal abdomen tip, ventral.

Barrier Valley, 1372m, 4 Feb 1975, J. S. Dugdale, under rock; 1♀, Tutoko Bench, Mt Waitiri, 2117677.00 5604102.00, 1829m, 10 Jan 1977, P.

Johnson, by runnel; 1n, NZFD, Pleasant Range, 20533 54854, Lake Bright, 31 Dec 2005, S.J. Morris; 3n, NZSL, Takitimu Mts, Family Peaks, 2103870.00

5488189.00, 1350-1450m, 7 Mar 1997, B.H. Patrick; 1♀, NZSL, Takitimu Mts, Tower Pks, 2104813.00 5493817.00, 14 Jan 1991, G.W. Gibbs; 1♂, 3n, NZFD, Gertrude Saddle, 2115599.00 5594699.00, 1400m, 15 Feb 2002, B.H. Patrick; 1n, NZOL, Eyre Mts, Helen Pks, 2144836.00 5522205.00, 1100m, B.H. Patrick, 23 Feb 1998; 1♂, NZFD, Nth Murchison Mts, Miller Pks, tarn trib, Snag Burn, 2084409.00 5546322.00, 1200m, 12. Nov 1997, B. Rance; 1♀, NZFD, Gertrude Saddle, 2115599.00 5594699.00, Darran Mts, Upper Hollyford, 1402m, ?.May 1977, S. Forster; 1♂, NZOL, Eyre Mts, Helen Pks, 2144836.00 5522205.00, 1540m, 2. Mar 1998, B.H. Patrick; 1n, NZFD, Gertrude Cirque, 21157

55942, 1000m, 18 Feb 1991, E. Edwards, J.B.Ward, under rocks; 1♀, NZFD, Gertrude Saddle, 2115599.00 5594699.00, 1350m, 3 Jan 1981, B.H. Patrick; 1n, NZFD, Homer Tunnel, 2113078.00 5592689.00, 1145m, 24 Feb 1996, B.H. Patrick; 1♂, 3♀, NZFD, Gertrude Valley, Black Lake, 2115599.00 5594699.00, 16 Feb 1995, P.M. Johns, alpine vegetation rocks in water film; 1n, NZFD, Tamatea Peak, 20564 54860, 1380m, 17 Mar 2004, G. W. Gibbs; 1♀, NZFD, Tamatea Peak, 20564 54860, 1380m, 17 Mar 2004, G. W. Gibbs; 1n, NZFD, Lake Bright, Pleasant Range, 31 Dec 2005, 20540 54849, 820m, Simon J. Morris.



Fig. 7. Distribution of *Holcoperla angularis* on the South Island of New Zealand.

Description of Late Instar Nymph. Body length 21mm; antenna 7 mm; cercus 3.5 mm. A brown animal without wing pads. Head darker than rest of body with no ocelli; a small pale patch on anterior of frons with a dark round patch either side. Antennae light brown with two white patches on scape, a single one on pedicel and the basal segment of the flagellum off-white. Each segment of the antenna with a ring of minute hairs distally. Maxillary palps with the distal segment much smaller than the preceding segment. Mandibles with 5 strongly pointed teeth and a distinct prosthema. Pronotum with the usual dark markings characteristic of

gripopterygids (like a pair of lyres back to back centred on the pronotum with vermiculate dark marks between it and the lateral margins) plus a white wedge-shaped patch anteriorly along the centre line and a white patch between the central marking and the outer vermiculate markings. Mesonotum and metanotum with similar markings but with up to about eight white patches. Over each of the developing thoracic spiracles there is a prominent cone with a sclerotised tip. Each leg has a pale spot on coxa; femur with 2 pale bars, one distal, the other about the centre of the femur; tibia with 3 pale bars, one basal, another at about a third length

and the other at about two thirds length; tarsus with basal and distal segments pale in the basal two thirds. Each tergite of abdominal segments 1–9 with a lateral ridge (tergal ridge of McLellan 1977) and a short medial spine on the posterior margin; 5 pale patches on each tergite, one antero-medial, two antero-lateral and two postero-lateral (the lateral patches on each side may be joined by a thin bar). Abdominal segment 10 has a pale pointed patch extending posteriorly from its anterior margin and a lateral elongate pale patch either side. No anal gill rosette present. Sub-anal lobes sub-triangular and stout. Cerci short, about the length of the last 3 abdominal segments; each segment with a ring of minute hairs only visible at 40X.

Remarks. The brown color and distinct white patches of the nymph are found in newly emerged adults but as the adults age they become almost black without distinct pale markings. This caused some identification problems until newly emerged adults were collected and could be positively identified by their distinct genitalia.

Habitat. This is an alpine species not found below about 1200 m above sea level. Nymphs have been found in alpine vegetation, under stones away from water and in water films but not submerged in streams or tarns. This is the usual habitat for *Holcoperla* species nymphs and a number of other apterous stoneflies.

Distribution (Fig. 7). So far this species has been found only in the mountains of Fiordland (NZFD) and some of the mountains of Westland (NZWD), Otago Lakes (NZOL) and Southland (NZSL) adjoining Fiordland.

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