

***Heterogaster urticae* (Hemiptera: Heterogastridae), a new alien species and family to New Zealand**

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Abstract

The Old World species *Heterogaster urticae* (Fabricius, 1775), belonging to the hemipterous family Heterogastridae, is recorded for the first time as an alien introduced species in New Zealand. Morphological characteristics for its identification are presented.

Keywords: Hemiptera; Heterogastridae; *Heterogaster urticae*; New Zealand; alien; new record

Introduction

The Heterogastridae, formerly considered to be a subfamily of the seed bug family Lygaeidae, was raised to family rank by Henry (1997) as a result of a phylogenetic analysis of family groups within the hemipterous Infraorder Pentatomomorpha.

Heterogaster Schilling, 1829 is a genus with two New World and nine Old World species (Slater 1964; Slater & O'Donnell 1995). *Heterogaster urticae* (Fabricius, 1775) is an Old World species that occurs naturally in Europe, the Canary Islands, and North Africa. *Heterogaster urticae* (Fig. 1) is here reported as an alien introduced species in New Zealand and the Chatham Islands, and joins an estimated 2200 alien invertebrates already in the fauna (Barlow & Goldson 2002). Heterogastridae is a new family record for New Zealand.

This species has only recently appeared in collections in New Zealand. The earliest date on specimen labels is 23 April 1979. It was brought to our attention in the 1990s when specimens were found during inspections of export apples, exiting through Port Napier, to the United States of America. A possible mode of introduction is discussed.



Figure 1. *Heterogaster urticae* male (Blenheim).

Taxonomy

Abbreviations for repositories:

CMNZ	Canterbury Museum, Christchurch, New Zealand.
LUNZ	Lincoln University, Lincoln, New Zealand.
MONZ	Museum of New Zealand Te Papa Tongarewa, Wellington, New Zealand.
NZAC	New Zealand Arthropod Collection, Landcare Research, Auckland, New Zealand.
PANZ	National Plant Pest Reference Laboratory (formerly Plant Protection Centre), Lynfield, Auckland, New Zealand.
PLNZ	National Plant Pest Reference Laboratory (formerly Plant Protection Centre), Lincoln, New Zealand.

As a family within the superfamily Lygaeoidea, the Heterogastridae have trichobothria mid-ventrally on the anterior abdominal sterna, and laterally on the posterior abdominal sterna, plus a hemelytral membrane with basically five simple veins. The Heterogastridae have, characteristically, all abdominal spiracles situated ventrally on the sterna, and the suture between abdominal sterna IV and V straight and attaining the lateral abdominal margin. The head is without trichobothria, the base of the hemelytral membrane has a distinct closed cell, the fore femora are weakly incrassate and the ovipositor in females divides at least sterna VI and VII.

Scudder (1962) enumerated the full list of characters of the Heterogastridae, and provided a key to separate the genus *Heterogaster* from 18 other genera in the taxon. One additional genus from Sarawak was described by Scudder (1968). Characteristically, *Heterogaster* has the body elongate and the pronotum laterally carinate, but not greatly constricted. The anterior margin of the corium is usually straight in the basal half, the fore femora of the male are usually armed antero-ventrally and in the female sternum V is not constricted in the midline, but is produced forward.

Heterogaster urticae (Fabricius, 1775) (Fig. 1)

Recognised by the setose dorsum, fore femora armed with a single spine, and tibiae pale with three fuscous annulations (Fig. 1). The rostrum reaches only to the middle coxae. Keyed by Stichel (1958).

Material examined: This is listed in chronological order. The two-letter area codes are those proposed by Crosby *et al.* (1998) for specimen localities in New Zealand. Fifteen specimens (CMNZ, LUNZ, MONZ, NZAC, PANZ, PLNZ).

New Zealand: 1male MC, Christchurch, Redcliffs, Bay View Rd, in house on curtain, 23 April 1979 (Ent 1063); 1male NC, Hanmer Forest Park Survey, roadside grass,

sweep, 7 December 1979, P. M. Johns (Canterbury University); 4 male, 1 female **MB**, Blenheim, ex manuka, 21 June 1982, E. R. Unsworth (1314); 1 female **SC**, Cave, inside house, 11 April 1983, S. M. Cumberworth (Lab. ref. 4327); 1 male **HB**, Hastings, ex Braeburn apple, USDA preclearance, 4 April 1994, L. Munchof, with label "Lygaeidae: *Rhyphodes sericatus* Det. O. R. Green 1994"; 1 male **HB**, Haumoana, 3 August 1994, T. H. & J. M. Davies; 1 specimen **HB**, Hastings, Calla survey, 10 January 1995, S. Garner; 1 specimen **MC**, Southbridge, Calla survey, 12 January 1995, K. Beach & J. Anderson; 1 male **HB**, Hastings, BP apple carton, USDA MIMIC T009, 19 March 1997, J. Kelly, with label "Lygaeidae: *Rhyphodes sericatus* Det. J. B. Keall 1997"; 1 male **AK**, Auckland, International mail centre, September 2002, PB "interception", NPPRL (4064).

Chatham Islands: **CH**, Pitt Is., Preece Block, under bark of fallen *Myrsine* branch, 25 July 1995, L. Smith.

Biology

The usual host plant in Europe is the stinging nettle, *Urtica dioica* L. (Urticaceae), but the species is also reported on other species of *Urtica* and on the roots of marram grass, *Ammophila arenaria* (L.) Link., = *A. arudinacea* Host (Poaceae) (Stichel 1958).

In England, Southwood & Leston (1959) state that all stages of *H. urticae* live on stinging nettle, that it overwinters as adults beneath bark or in hollow woody stems of nearby plants and that eggs are laid in the ground at the base of the host plant (sometimes on the stem or leaves). A copious secretion is poured out over the egg masses and subsequently hardens.

Discussion

In New Zealand *H. urticae* is known to be present in Canterbury, Marlborough, Hawkes Bay, Auckland and the Chatham Islands. The Auckland specimen would be of local origin as the bug is now established here. Many New Zealand orchards contain stinging nettle host-plants growing between the trees or around the perimeter, but this bug is not expected to harm apples or other orchard trees or fruits. Some specimens have been taken on manuka, *Leptospermum scoparium* J. R. et G. Forst (Myrtaceae), and on or in close proximity to calla lily, *Zantedeschia aethiopica* (L.) Sprengel (Araceae).

In early pakeha settlement days feed for horses was imported (L. G. Morrison, *personal communication*). However, *H. urticae* is unlikely to have arrived with stinging nettle seed impurities in imported hay or pasture seed. If it did and survived, one would have expected it to have appeared in insect collections many decades ago. A possible means of entry may have been as eggs attached by a gluey secretion to the base of the stems of marram plants. Although marram grass was introduced to

Miramar, Wellington in 1873 (Allan 1940), multiple introductions from England were made in the early 1900s, particularly following Cockayne's (1911) advice on stabilisation of sand dunes (see Patrick 2002), up until the start of the first world war. Thereafter, plants grown in New Zealand were used. Alternatively, *H. urticae* may have arrived more recently as viable adults on other imported produce. For example, in the 1980s apples were imported from France, and large quantities of grapes from Spain (L. G. Morrison, *personal communication*).

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