

**FIRST INCURSIONS OF *ALOEA AUSTRALIS*
(HEMIPTERA: MIRIDAE) AND *PULVINARIA DELOTTOI*
(HEMIPTERA: COCCIDAE) IN EUROPE, AND THREE OTHER
HEMIPTERAN INSECTS IMPORTED FROM SOUTH AFRICA**

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ABSTRACT

In July 2011 succulent plants in the quarantine glasshouse at the Royal Horticultural Society's (RHS) Garden Wisley, Woking, Surrey were found to be infested with five non-native hemipteran pests: the aloe aphid *Aloephagus myersi* Essig, the white aloe scale *Duplachionaspis exalbida* (Cockerell), a mealybug *Vryburgia* sp., the small mirid bug *Aloea australis* Schuh and the iceplant scale *Pulvinaria delottoi* Gill. This is the first incursion of the latter two insects into Europe.

INTRODUCTION

In July 2011 several pot-grown aloes of undetermined species (*Aloe* spp., Asphodelaceae) and a *Cheiridopsis glomerata* Hammer (Aizoaceae) growing in the quarantine glasshouse at the Royal Horticultural Society's (RHS) Garden Wisley, Woking, Surrey (TQ0659) were found to be infested with five hemipteran pest species. Specimens of the pests were identified at The Food and Environment Research Agency (Fera). All of the infested plants had originally been imported from South Africa and exhibited at the RHS Chelsea Flower Show, London, on the Kirstenbosch National Botanical Garden stand, 24–28 May 2011. As with all imported plants at the Chelsea Flower Show, they were inspected by the Plant Health and Seeds Inspectorate prior to the show opening. The plants were donated to the Royal Horticultural Society at the end of the show. On arrival at RHS Garden Wisley the plants were placed in the propagation department's quarantine glasshouse. No pests were found on the plants at an initial inspection by RHS entomologists (6 June 2011), shortly after arrival at Wisley Garden. However, by 6 July, it was clear that the plants were infested with several sap-sucking insects.

THE INSECTS

Aloea australis Schuh (Hemiptera: Miridae), commonly known as the small mirid bug in South Africa (Annecke & Moran, 1982), was found to be heavily infesting some of the *Aloe* plants. The foliage of the infested plants was covered with hundreds of tiny 1–2mm diameter droplets of liquid excrement that had dried to form black specks (Plate 15, Fig. 1). Infested plants also exhibited severe chlorotic spotting, which in some areas had coalesced to form pale patches. This is the first report of this mirid in Europe and it appears to be the first known breeding population outside South Africa (Mike Wilson, National Museum of Wales, pers. comm.). *Aloea australis* was described from specimens collected from *Aloe* sp. in Pretoria, Transvaal, South Africa (Schuh, 1974). The adults are 2.6mm long, the head and pro-thorax are dark reddish brown, and the wings have a yellowish base, a distinct orange red band across the fore-wing (cuneus), and a membranous tip (Plate 15,

Fig. 2). It has been recorded as a pest of *Aloe* in South Africa (Anneck & Moran, 1982). Dried specimens of *A. australis* have been deposited in the Fera and RHS insect reference collections.

One other non-native species of *Aloea* has been recorded in Britain: *A. nigritula* Linnavuori; two adults were found in England on an *Aloe* imported from Tanzania in 1990 (determined by Gary Stonedahl, formerly of the International Institute of Entomology, London, Ref. IIE A21345).

Aloephagus myersi Essig (Hemiptera: Aphididae), commonly known as the aloe aphid, was found to be heavily infesting one of the *Aloe* plants. This aphid has been found previously in the UK at The Eden Project, north Cornwall (SX0554), in 2002, and at the Royal Botanic Gardens (RGB) Kew, Surrey (TQ1776), in October 2010, on plants imported for a display at the British Museum, London, from Kirstenbosch Botanical Garden, South Africa (Fera unpublished data). The aloe aphid is widespread in sub-Saharan Africa, where it is possibly native (Blackman & Eastop, 2006). It has been reported as established in glasshouses in Europe and outdoors in Spain and Italy (Biase, 1988; Hermoso de Mendoza *et al.*, 2002; Blackman & Eastop, 2006). Outside Europe it is reported as present in Queensland, Australia (CSIRO, 2004), Japan (Sano & Matsumota, 2005), and California, from where the species was originally described, and Florida, USA (Halbert, 2004; Blackman & Eastop, 2006). The apterous stage of the aphid is densely dusted with wax, giving it a woolly appearance (Plate 15, Fig. 3), and 1.8–2.5mm long. It is easily confused with a mealybug (Pseudococcidae). Hosts are listed as *Aloe* species; in Africa it probably has *Pistacia* sp. (Anacardiaceae) as a second host in the sexual phase (Blackman & Eastop, 2006).

Pulvinaria delottoi Gill (Hemiptera: Coccidae), known as an iceplant scale, was found on *Cheiridopsis glomerata*. One adult female with an ovisac and five bright green first-instar nymphs were present. This is the first UK and European report of this scale (Ben-Dov, 2011). It was previously only known from South Africa and California (Ben-Dov, 1993). In California it is a pest that feeds on *Carpobrotus* species (Aizoaceae), used to stabilise roadside embankments (Washburn, & Frankie, 1985), other hosts include: *Carpobrotus edulis* (L.), *Cheiridopsis inaequalis* L., *Lampranthus* sp., *Mesembryanthemum* sp. in the Aizoaceae and *Crassula muscosa* L. and *Sedum* sp. in the Crassulaceae (Ben-Dov, 1993). Adult females are circular to oval; moderately convex and 2–5mm long, young adults are bright green (Plate 15, Fig. 4) but change significantly with maturity and oviposition. At first they develop a reddish margin and a thin dorsal covering of white powdery wax before becoming a uniform reddish-brown with transverse wrinkles. They produce an irregular white ovisac beneath the body. *Cheiridopsis glomerata* is a new host record for this scale. Specimens have been deposited in the Fera insect reference collection. *Pulvinaria delottoi* can easily be confused in life with *Pulvinariella* (= *Pulvinaria*) *mesembryanthemi* (Vallot), a species also known as iceplant scale that has become naturalised on Aizoaceae in Cornwall, including the Isles of Scilly (Williams, 1985). The two species may be distinguished using the descriptions and keys provided by Gill (1988).

Diplachionaspis exalbida (Cockerell) (Hemiptera: Diaspididae), commonly known as the white aloe scale, was found to be heavily infesting *Aloe* species. This species occurs widely in southern Africa and feeds exclusively on *Aloe* (Malumphy, in press). This is the fourth time that it has been found in the UK; first recorded from England in 1926 from London; a large population was found at The Eden Project in 2002; and thirdly, aloes imported to RGB Kew for an exhibition at the British Museum, in 2010 (Malumphy, in press).

Specimens of a mealybug *Vryburgia* sp. (Hemiptera: Pseudococcidae) were also found on the *Aloe* plants, but they were all damaged by hymenopteran parasitoids and it was not possible to determine the species.

All the above pest infestations took about six weeks before the insects and damage became conspicuous. It is likely that all the pests encountered on the plants would only survive under glasshouse conditions in the UK and so no statutory action was required by Fera. However, to eliminate the risk to RHS plant collections all infested plants were destroyed by bagging and burning in August 2011.

DISCUSSION

This case highlights the risk of introducing non-native insects into plant collections with plants donated from botanical shows when the plants originally came from abroad. It is also obvious that such pests may not be evident on imported plants for months after importation into the UK. It is therefore clear that imported plants should ideally be kept in quarantine for several months before they are introduced into plant collections in order to reduce the risk of non-native pests becoming established.

ACKNOWLEDGEMENTS

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SHORT COMMUNICATION

***Harpella forficella* (Scopoli) (Lep.: Oecophoridae) new to the UK.** – On the night of Friday 19 August 2011, NJP ran a 125W Skinner trap in his garden in Barkham, Wokingham, in east Berkshire (SU784676, VC22). The night was clear and cool but dry, and the following morning there was a moderate catch for the site of 93 moths of 35 species. While unpacking the trap, NJP's son Adam (14) pointed out an unfamiliar ginger and white micro-moth about 10mm long (see Plate 15, Fig. 5). The moth was tubed for later examination.

Closer inspection revealed a pair of long upwardly curved palps and a head-up posture. The moth had a gingery brown ground colour with a broad, irregular curved cream line running from the base of the forewing to the tornus, and a further pale patch close to the apex. Suspecting it might be an oecophorid, NJP checked the standard identification books and websites, without success. A photo of the moth was posted on the Berkshire Moth Group yahoo site appealing to more experienced members of the group for assistance. Both Roy Dobson and Mark Calway independently suggested *Harpella forficella* (Scopoli) as a possible identification, and a brief search online yielded images that matched the moth. This identification was subsequently confirmed from the photo by David Agassiz and John Langmaid. There are no known previous records of this species in the UK (J. R. Langmaid pers. comm.). The moth has been allocated the species code 652a, being between *Alabonia* and *Tachystola* in Bradley's Checklist of Lepidoptera recorded from the British Isles (2000).

The trap site is a suburban garden near the edge of a housing estate, with oak/birch/rowan woodland and open countryside nearby. None of the other species taken that night was an obvious migrant. It is possible that an earlier stage such as a larva or pupa could have been imported into Berkshire with woody material from the continent, although this is speculative.

Harpella forficella is widely distributed on the continent, especially in western and southern areas, becoming scarcer to the north and east. Its larvae are found in the dead wood of deciduous trees, often underneath loose bark, and the moth is said to spend two years in the larval stage. Adults fly in the afternoon and early evening, and again at dawn, but are also attracted to light occasionally (Palm, E. 1989, *Nordeuropas Prydvnger*, Fauna Boger, Copenhagen). Additional photos of the adult and early stages can be seen at http://www.lepiforum.de/cgi-bin/lepiwiki.pl?Harpella_Forficella

Thanks to Adam Percival for spotting the moth, to Roy Dobson and Mark Calway for the initial identification and to David Agassiz and John Langmaid for confirming this, following correspondence with MCH. – NICK J. PERCIVAL, 24 Almond Close, Barkham, Wokingham, RG41 4UU (email: nick@perci.u-net.com) and MARTIN C. HARVEY, Evermore, Bridge Street, Great Kimble, Aylesbury, HP17 9TN (email: kitenetter@googlemail.com).

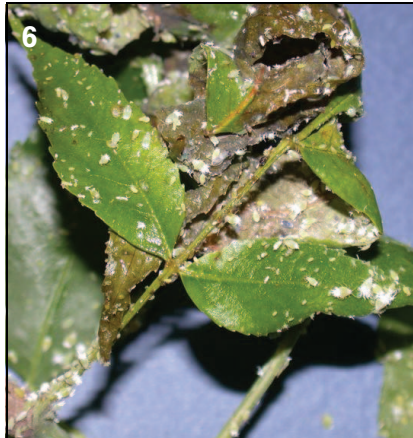
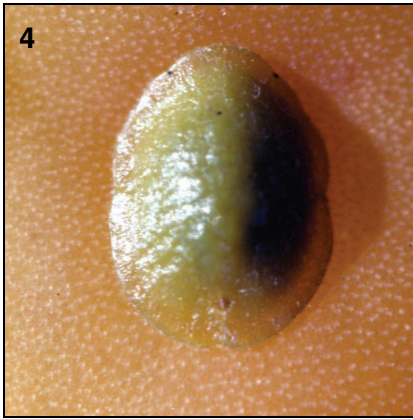


PLATE15. Fig. 1. Feeding damage to *Aloe* sp. caused by the small mirid bug *Aloe australis*. Fig. 2. Adult small mirid bug *Aloe australis* (body length 2.6mm). Fig. 3. Adult aloe aphid *Aloephagus myersi* (body length 2.5mm). Figs 1–3, © Fera, 2011. Fig. 4. Young adult female of an iceplant scale *Pulvinaria delottoi* (body length 2.5mm). © www.bugwood.org. Fig. 5. *Harpella forticella* Barkham, Berkshire, 19.viii.2011 (wingspan 14mm), © N. J. Percival. Fig. 6. The aphid *Prociphilus traxinifolii*. © Purdue University.