

# THE HISTORY AND STATUS OF THE HAWTHORN SHIELDBUG *ACANTHOSOMA HAEMORRHOIDALE* (HEMIPTERA: ACANTHOSOMATIDAE) IN SCOTLAND, 1946–2008

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## ABSTRACT

The status and recent distributional changes of the hawthorn shieldbug *Acanthosoma haemorrhoidale* (L.) in Scotland are discussed. The acanthosomatid is now widespread in central and southern regions and scarce in northern and north-west Scotland.

## INTRODUCTION

The hawthorn shieldbug *Acanthosoma haemorrhoidale* (L.) (Acanthosomatidae) is a large and attractive shieldbug (Plate 6, Fig. 1) which has historically been a great rarity in Scotland, with few records prior to 1990. Recorded distribution of this species in Scotland is comparatively recent. Butler (1923) stated 'there is no record from Scotland' whilst Southwood & Leston (1959) noted that the British distribution of this species 'covers all England and Wales but it has only reached Cumberland and Durham recently'. Chinery (1997) summarised the European distribution of *A. haemorrhoidale* as occurring in 'much of Europe, but absent from Scotland'. More recent field guides such as Nau (2004) record it in Scotland. This paper summarises the historical distribution of the species in Scotland and the extent of its spread throughout southern and central Scotland from the 1990s to 2008.

## HISTORY AND DISTRIBUTION

### Recorded Distribution prior to 1990

The earliest recorded Scottish specimens were taken by D. K. Kevan in June 1946 at Kirkcudbright (VC73) (Fig. 1 and Table 1), and although overlooked by Southwood and Leston (1959) were subsequently reported by Hill (1973), and these are still present in the National Museum of Scotland (NMS) collection.

*Acanthosoma haemorrhoidale* was not recorded again in Scotland until 1959, when it was recorded from Rum (VC104) (Woodroffe, 1960). The following year it was again recorded from Rum and also from Bute (VC100). In 1969 *A. haemorrhoidale* was recorded in central Scotland for the first time from the Glasgow University Field Station at Rowardennan, Stirlingshire (VC86) on the eastern shore of Loch Lomond (Hill, 1973). In 1971 three specimens were taken in northern Kintyre (VC101) (Hill, 1973), but no further specimens were taken in Scotland until 1976, again in Kirkcudbright. Subsequent specimens were recorded in Wigtownshire (1982), Dumfries (1983 & 1988) and Drymen (1984) to the southwest of Loch Lomond, marking the beginning of a gradual range expansion throughout southern and central Scotland.

### Changes in Distribution 1990–1999

*Acanthosoma haemorrhoidale* apparently spread slowly in Scotland between 1990 and 1995, with a total of 12 records (Table 2). It was recorded in Ayrshire and Bearsden for the first time in 1991, spreading north into Crieff, Perthshire (1992) and



Table 1. Pre-1990 Scottish records of the Hawthorn Shieldbug *Acanthosoma haemorrhoidale*.

Vice County	Locality	OS Grid reference	Date	Recorder	Collection/Reference
73	Near Gatehouse of Fleet	NX5956	1–22.vi.1946	D. K. Kevan	NMS: 2 exx.
73	Anwoth	NX5856	3.x.1946	D. K. Kevan	NMS: 6 exx.
76	Paisley	NS46	18.x.1950	Unknown	PAM: 1 ex.
104	Rhum	NM49	vii.1959	H. M. Russell	Woodroffe, 1960
104	Kinloch, Rum	NM4099	21.v.1960	G. E. Woodroffe	NMS: 1 ex.
100	Rothessay, Bute	NS088644	5.x.1960	D. F. E. Reynolds	NMS: 1 ex.
86	Rowardennan	NS376959	10.x.1969	C. C. Northen	UGM: 1 ex./ Hill, 1973
101	Stronachullin, Ardrishaig	NR850858	3.x.1971	A. McG. Stirling det. A. R. Hill	UGM: 3 exx./ Hill, 1973
83	Edinburgh	n.l.	18.xi.1976	D. McDonald	NMS: 1 ex.
73	Kirkconnell Flow	NX9769	5.iv.1979	A. B. Duncan	NMS: 1 ex.
74	Torr's Warren, Glenluce	NX15	28.v.1982	A. B. Duncan	NMS: 1 ex.
72	Blackchub, Dumfries	n.l.	21.ix.1983	A. B. Duncan	NMS: 1 ex.
73	Threave	NX7560	14.ix.1984	A. B. Duncan	NMS: 1 ex.
72	Dumfries	NX974756	10.v.1988	O. R. Sandison det. E. G. Hancock	KGM: 1 ex./ Hancock, 1992
86	Drymen	NS48	19.viii.1988	C. Palma det. E. G. Hancock	KGM: 1 ex./ Hancock, 1992
86	Ross Wood, Loch Lomond	NS3796	3.ix.1989	S. M. Hewitt	KGM: 1 ex.
76	Johnstone	NS46	26.x.1989	J. E. Morgan	PAM: 1 ex.

n.l.: Grid reference not localised. Collections: KGM = Kelvingrove Museum & Art Gallery, Glasgow; PAM = Paisley Museum, Paisley; NMS = National Museum of Scotland, Edinburgh; UGM = University of Glasgow Museum

east into Glasgow (1993). Further records for West Lothian and Duddingston, Edinburgh show that it consolidated its range in the central belt of Scotland in the mid-1990s, with the Bawsinch, Duddingston record in 1995 marking the first recorded outdoor occurrence in Midlothian.

The number of records (35) of *A. haemorrhoidale* between 1996 and 1999 was considerably higher than in any previous decade (see Table 3). During this period *A. haemorrhoidale* consolidated its existing range in urban centres, with a number of records from Glasgow and Edinburgh, but was also recorded on the Isle of Arran for the time during 1996 and expanded its known range eastwards to East Lothian (1996) (see Fig. 1). In 1996 it was recorded at two sites north of the central belt at Bonskeid, Perthshire, and Fort Augustus, Inverness-shire (VC97), the most northerly known occurrence of the species in Scotland at that time.

### Changes in Distribution 2000–2008

Further range consolidation of *A. haemorrhoidale* within the central belt of Scotland occurred between 2000 and 2001 (Table 4), however range expansion during this period was apparently limited, although it was recorded from Seil in western Scotland in 2001. Remarkably it was recorded from Shetland in 2002 (see Fig. 1) and again in 2005, however it is likely that these were accidental imports.

Table 2. Scottish records of the Hawthorn Shieldbug *Acanthosoma haemorrhoidale*, 1990–1995.

Vice County	Locality	OS Grid reference	Date	Recorder	Collection/ Reference
76	Oldhall, Paisley	NS506642	15.x.1990	BRISC	KGM: 1 ex. (R. Sutcliffe)
75	Ardrossan, Ayrshire	NS234430	i.1991	R. Griffith	KGM
75	Auchincruive, Ayrshire	NS3823	04.vi.1991	det. E. G. Hancock J. Pavely	(Hancock, 1992) KGM: 1 ex. (R. Sutcliffe)
99	Bearsden, Glasgow	NS5472	14.x.1991	K. Cohen	KGM: 1 ex. (Hancock, 1992)
88	Crieff, Perthshire	NN869223	17.i.1992	det. E. G. Hancock A. Abernethy	PM: 1 ex. (M. Simmons)
99	Bearsden, Glasgow	NS551734	22.iii.1992	R. Sutcliffe	KGM: 1 ex.
86	Stirling University campus, Stirling	NS8196	18.vii.1992	det. E. G. Hancock B. S. Nau	HNRS: several nymphs
76	Clarkston, Glasgow	NS5757	12.iv.1993	E. G. Hancock	KGM: 1 ex. (R. Sutcliffe)
77	Govanhill, Langside, Glasgow	NS585615	17.x.1994	E. G. Hancock	KGM: 1 ex.
73	Southwick, Mersehead	NX9156	28.viii.1995	S. Hewitt	M. Pollitt, DGERC, FR: 1 ex.
84	Bo'ness, West Lothian	NS999813	10.ix.1995	A. J. Ramsay	AJR: 1 ex.
83	Bawsinch, Duddingston, Edinburgh	NT284723	19.ix.1995	C. P. Rawcliffe	FR: 1 ex.

Abbreviations: AJR = Author's personal collection; BRISC = Biological Recording in Scotland Campaign; DGERC = Dumfries & Galloway Environmental Records Centre; FR = field record; HNRS = Heteroptera National Recording Scheme (Shieldbugs & allies); KGM = Kelvingrove Museum & Art Gallery, Glasgow; PM = Perth Museum, Perth.

*Acanthosoma haemorrhoidale* was recorded from northeast Scotland for the first time in 2004, and has subsequently been recorded at additional sites there (see Fig. 1), suggesting it is now successfully established.

The borders and southeast Scotland appear to have been colonised much later than other parts of Scotland, with the first records only during 2005, when the species was recorded at a number of sites (see Fig. 1). In 2005 *A. haemorrhoidale* was recorded in 11 new 10 km squares, suggesting that conditions that year were particularly favourable for colonisation, from the south of Kintyre, northeast to Aberdeenshire and southwest into the borders. Perhaps surprisingly, *A. haemorrhoidale* was not recorded in Fife until 2007, but it may have been overlooked. The author however made several field trips to Fife during the late 1990s without locating it.

#### ECOLOGICAL NOTES

Hostplants of *A. haemorrhoidale* in Scotland would appear to be predominantly Hawthorn *Crataegus monogyna*. Hawkins (2003) lists 27 species of woody plants from which *A. haemorrhoidale* has been recorded in Surrey and recorded as breeding on 12 species, all in the family Rosaceae. In addition to hawthorn, *A. haemorrhoidale*

Table 3. Scottish records of the Hawthorn Shieldbug *Acanthosoma haemorroidale* 1996–1999.

Vice County	Locality	OS Grid reference	Date	Recorder	Collection/Reference
77	Kelvingrove Park, Glasgow	NS570663	23.ii.1996	E. G. Hancock	JGM: 2 exx. (R. Sutcliffe)
88	South of Bonskeid, Perthshire	NN8860	16.iv.1996	K. Bland	NMS: 1 ex.
82	Hailes Mill, East Linton	NT577761	08.v.1996	R. Saville det. A. Gillespie	LRC
73	Kirkconnell Flow NNR	NX9769	12.vi.1996	A. Godfrey	FR
96	Loch carn a'Chuillin, Fort Augustus	NH4403	26.vi.1996	J. Watson det. S. Moran	IMAG: 1 ex.
100	Auchenew Wood, I. of Arran	NS021219	28.vi.1996	A. J. Ramsay	AJR: 2 exx.
100	Auchenew Wood, I. of Arran	NS021218	28.vi.1996	A. J. Ramsay	AJR: 1 exx.
86	Falkirk, Stirlingshire	NS887795	05.vii.1996	Y. Fellingham det. A. J. Ramsay	FR: 1 ex.
100	Lochranza, I. of Arran	NR938503	29.ix.1996	C. Powell det. A. J. Ramsay	AJR: 1 ex.
77	Botanic Gardens, Glasgow	NS567676	13.x.1996	E. G. Hancock	KGM: 3 exx. (R. Sutcliffe)
100	Lochranza, I. of Arran	NR937502	28.x.1996	A. J. Ramsay	AJR: 1 ex.
84	Bo'ness, West Lothian	NS981808	30.xi.1996	A. J. Ramsay	AJR: 1 ex.
100	Glen Chalmadale, I. of Arran	NR948499	16.ii.1997	A. J. Ramsay	AJR: 1 ex.
100	Glen Chalmadale, I. of Arran	NR944499	21.ii.1997	A. J. Ramsay	AJR: 2 exx
100	Lochranza, I. of Arran	NR934503	15.iv.1997	A. J. Ramsay	AJR: 1 ex.
100	Cladach Sawmill, I. of Arran	NS014376	19.v.1997	Sawmill staff det. A. J. Ramsay	AJR: 1 ex.
76	Ralston, Paisley	NS4963	29.v.1997	S. Allan	KGM: 1 ex. (R. Sutcliffe)
99	Dawsholm Park, Glasgow	NS553702	17.xi.1997	D. Nicol	KGM: 1 ex. (R. Sutcliffe)
84	Kinningars Park, Bo'ness	NT015812	14.i.1998	A. J. Ramsay	AJR: 1 ex.
84	Kinneil Mills Farm, Birkhill	NS975875	25.i.1998	A. J. Ramsay	AJR: 1 ex.
84	Bo'ness, West Lothian	NS995812	25.iii.1998	H. Ramsay det. A. J. Ramsay	AJR: 1 ex.
84	South Queensferry, West Lothian	NT138778	v. 1998	A. J. Ramsay	FR: 1 ex.
82	Seton Sands, East Lothian	NT429761	19.ix.1998	R. Saville det. A. Gillespie	LRC
83	Newhailes Estate near Edinburgh	NT3272	19.ix.1998	K. Bland	LRC
83	Granton-Crewe disused railway	NT233772	22.ix.1998	R. Saville det. A. Gillespie	LRC
83	Braidburn Valley, Edinburgh	NT242703	23.x.1998	R. Saville det. A. Gillespie	LRC

(continued)

Table 3. Scottish records of the Hawthorn Shieldbug *Acanthosoma haemorrhoidale* 1996–1999. (continued)

Vice County	Locality	OS Grid reference	Date	Recorder	Collection/ Reference
83	Morningside, Edinburgh	NT2471	23.x.1998	R. Saville	LRC
83	Craigroyston, Edinburgh	NT219771	22.xii.1998	R. Saville	LRC
83	N. Merchiston Cemetery, Edinburgh	NT234723	04.iv.1999	R. Saville det. A. Gillespie	LRC
83	Pilrig Park, Edinburgh	NT265758	14.iv.1999	R. Saville det. A. Gillespie	LRC
83	Portobello, Edinburgh	NT303733	29.v.1999	D. Sivell det. A. Gillespie	LRC
83	Figgate Burn Park, Edinburgh	NT301736	29.v.1999	D. Sivell det. A. Gillespie	LRC
83	Leith to Seafield disused railway	NT272753	29.vi.1999	R. Saville det. A. Gillespie	LRC
83	Hawkhill Wood, Edinburgh	NT2971	19.ix.1999	K. Bland	LRC
89	Scone, Perth	NO138255	01.x.1999	M. Simmons	PM:1 ex.

Abbreviations: AJR=Author's personal collection; FR=field record; IMAG=Inverness Museum & Art Gallery; KGM=Kelvingrove Museum & Art Gallery, Glasgow; LRC=Lothian Records Centre; NMS=National Museum of Scotland, Edinburgh; PM=Perth Museum, Perth.

in Scotland has been recorded from Willow *Salix* spp., *Rhododendron ponticum*, Birch *Betula* spp., *Sorbus* spp (domestic cultivars), Rowan *Sorbus aucuparia*, Elm *Ulmus* spp., and Elder *Sambucus nigra*, although it is unlikely that all of these species are utilised as foodplants (see Hill, 1973). Confirmed breeding on species other than *C. monogyna* in Scotland has been observed only on *Cotoneaster bullata*, a large leaved species of *Cotoneaster* (pers. obs.). Small-leaved species of *Cotoneaster* do not appear to be utilised and this may be due to the area required by females to lay a single egg batch.

Scottish data suggest that adults enter hibernation from October, when adults occur under bark of a variety of trees including Alder *Alnus glutinosa*, Beech *Fagus sylvatica*, Goat Willow *Salix caprea* and Wych Elm *Ulmus glabra*. During winter *A. haemorrhoidale* has also been recorded from Yew *Taxus baccata*, suggesting that evergreen trees may provide additional hibernation sites. It is likely that other trees are utilised, and the number of records from indoors during the winter months suggests that a proportion of adults may hibernate in sheds and outbuildings where these are close to breeding habitats. Further south adults hibernate in leaf litter but there is only one record for this from Scotland, with a single adult recorded from compost in December (Kelvinbridge, Glasgow, 17.xii.2006, Table 4). Data for adults recorded in Scotland suggest emergence from early April onwards (Tables 1–4) and adults are apparently active until June.

Few records are available for nymphs in Scotland, with records between July and September (Tables 2 and 4), with adults observed from August until October prior to hibernation (Tables 1–4). Dolling (1991) notes that *A. haemorrhoidale* has an annual

life cycle, with a single generation per year, however generations can overlap, as adults have been recorded in every month of the year in Scotland (see Tables 1–4). Flight in adults has been observed during May (South Queensferry, 1998, pers. obs.). Habitats include gardens, parkland habitats including municipal parks, botanic gardens, and cemeteries, woodland and farmland hedgerows wherever suitable hostplants are present. The majority of records are from urban areas.

## DISCUSSION

*Acanthosoma haemorrhoidale* is a comparatively large insect, although it can often be difficult to locate. Kevan apparently did not publish his finds of this species in Kirkcudbright, and it may be that such a common species south of the border did not warrant mention. There are certainly more records of this species in Scotland since 1990, and it is possible that the succession of warm summers during the late 1990s and mid 2000 could have resulted in more records, however it is also noteworthy that a number of local Records Centres have become more active in the same period, possibly leading indirectly to an apparent increase in records.

Within northern Europe the expansion of *A. haemorrhoidale* has also been recorded in Finland between 1920 and 1950 (Southwood & Leston, 1959), however it is still restricted to the south of Finland (Rintala & Rinne, 2011). Within the British Isles *A. haemorrhoidale* has apparently slowly expanded its range, as it was unknown in northern England until the 1950s (Southwood & Leston, 1959). Although *A. haemorrhoidale* was already present in southwest Scotland by 1946, it is unclear whether this represents a relict population from a previous expansion, as many other predominantly southern species occur only in southwest Scotland e.g. beetles (Crowson, 1966) and bushcrickets (Marshall & Haes, 1988) or the first beginnings of range expansion. *Acanthosoma haemorrhoidale* occurs throughout Ireland to the northern counties (Southwood & Leston, 1959), but unlike in Britain there is no evidence of more recent range expansion as it has been recorded throughout Ireland prior to 1935 (Halbert, 1935).

It was not until 1996 that *A. haemorrhoidale* became more frequently recorded in Scotland. This is not consistent with published data from the south of England over the same time period. *Acanthosoma haemorrhoidale* population trends were recorded by Hawkins (2003) in Surrey between 1983 and 2003. He observed *A. haemorrhoidale* regularly but rarely between 1983 through to 1992, with highest populations in 1993, and a subsequent decline between 1994 and 1997. Populations in Surrey recovered again to become more abundant during 2000–2003.

These population trends differ from those observed in Scotland, as during 1993 very few *A. haemorrhoidale* were recorded, and Scottish populations apparently increased during 1996, during which populations in the south of England were in decline. In 2003 Scottish populations apparently declined, whereas those in the south of England increased, suggesting that factors which affect populations in the south of England are not the same as those which affect Scottish populations. The effect of recorder 'bias' cannot be ruled out in Scotland, as the increased number of records during this period may simply reflect increased recorder effort. Nevertheless it should be noted that prior to the 1990s very few records of this shieldbug were received by museums in Scotland, suggesting that populations really have increased.

Prior to the recent apparent expansion, the distribution of the *A. haemorrhoidale* was centred around southwest Scotland, with a long established population in Kirkcudbright and an outlying population on Rum (VC104). Woodroffe (1960) even suggested the Rum population indicated an undetected native northern population.

Table 4. Scottish records of the Hawthorn Shieldbug *Acanthosoma haemorrhoidale*, 2000–2008.

Vice County	Locality	OS Grid reference	Date	Recorder	Collection/ Reference
83	Lauriston Castle, Edinburgh	NT203758	15.ii.2000	R. Saville	LRC
84	Polkemmet Country Park, Whitburn	NS925651	16.iv.2000	R. Saville det. A. Gillespie	LRC
84	Muiravonside Country Park, West Lothian	NS969753	18.vi.2000	R. Saville det. A. Gillespie	LRC
82	Luffness Mains, Aberlady, East Lothian	NS485795	13.xi.2000	R. Harbison	LRC
83	Currie, Midlothian	NT1667	29.xii.2000	J. Finn det. A. Gillespie	LRC
83	Lauriston Castle, Edinburgh	NT204760	16.iii.2001	R. Saville	LRC
83	Lochend, Edinburgh	NT275746	05.iv.2001	R. Saville	LRC
83	Calton Hill, Edinburgh	NT262743	19.v.2001	S. Maxwell	LRC
83	Lochend, Edinburgh	NT273746	19.v.2001	R. Saville	LRC
83	Calton Hill, Edinburgh	NT262744	19.v.2001	R. Saville	LRC
83	Pilrig Park, Edinburgh	NT265758	22.v.2001	R. Saville	LRC
83	Dalry Community Park, Edinburgh	NT237726	11.vi.2001	R. Saville	LRC
98	Oban Seil Farm, Seil	NM771182	09.viii.2001	S. Brooke	FR: 1 ex. (3rd instar nymph) LRC
83	Malleny Garden, Balerno	NT165665	16.ix.2001	R. Saville det. A. Gillespie	LRC
88	Perthshire	n.l.	19.xii.2001*	MoP det. M. Simmons	PM: 1 ex. (M. Simmons)
112	Lerwick, South Mainland, Shetland	HU4741	16.vi.2002	M. Gray det. P. V. Harvey	FR: 1 ex, SBRC (P. Harvey)
84	Bo'ness, West Lothian	NS995812	10.viii.2002	A. J. Ramsay	FR: several nymphs
92	Asloun, Alford	NJ542147	28.viii.2004	I. Francis	FR: 1 ex. NESBRC (I. Lawrie) LRC
82	North Berwick, East Lothian	NT541848	23.ix.2004	A. Sumner	LRC
82	Nr Kingston, East Lothian	NT528824	24.ix.2004	A. Sumner	LRC
72	Castle Loch, Culshabbin, Dumfries	NY087812	15.x.2004	A. White	FR: 1 ex. DGERC (M. Pollitt)
82	North Berwick, East Lothian	NT541848	01.xii.2004	A. Sumner	LRC
88	Perthshire	n.l.	06.i.2005*	MoP det. M. Simmons	PM: 1 ex. (M. Simmons)

(continued)



Table 4. Scottish records of the Hawthorn Shieldbug *Acanthosoma haemorrhoidale*, 2000–2008. (continued)

Vice County	Locality	OS Grid reference	Date	Recorder	Collection/Reference
81	Coldingham, Eyemouth, Berwickshire	NT904661	13.iv.2005	F. Evans	FR: 1 ex. SBBRC (I. Carle)
75	Dean Castle Country Park, Ayrshire	NS434392	21.iv.2005	Unknown	NBN data accessed 08/02/08
75	Dean Castle Country Park, Ayrshire	NS437397	03.vi.2005	Unknown	NBN data accessed 08/02/08
81	Fairlaw, Auchencrow	NT856615	20.vi.2005	L. Turnbull	FR: 1 ex. SBBRC (I. Carle)
101	Grianain Forest, Carradale, Kintyre	NR7941	21.vi.2005	A. Halstead	FR: 1 ex. (R. Sutcliffe)
84	Bo'ness, West Lothian	NS995812	03.viii.2005	A. J. Ramsay	FR: 1 ex.
82	Townhead Farm, Gifford, East Lothian	NT552684	04.viii.2005	A. J. Ramsay	AJR: 1 ex.
80	Lilliesleaf, Melrose, Roxburghshire	NT534251	10.viii.2005	I. Amott	FR: 1 ex. SBBRC (I. Carle)
79	Galashiels	NT481369	17.viii.2005	L. Aitken	FR: 1 ex. SBBRC (I. Carle)
84	Bo'ness West Lothian	NS995812	21.viii.2005	A. J. Ramsay	FR: several nymphs
88	Perthshire	n.l.	24.viii.2005*	MoP det. M. Simmons	PM: 1 ex. (M. Simmons)
73	Corsock, Dumfries	NX757766	03.ix.2005	M. Pollitt	FR: 1 ex. DGERC (M. Pollitt)
92	Aboyne, S. Aberdeenshire	NO524979	09.ix.2005	N. A. Littlewood	NAL: 1 ex.
88	Perthshire	n.l.	12.ix.2005*	MoP det. M. Simmons	PM: 1 ex. (M. Simmons)
75	Dean Castle Country Park, Ayrshire	NS437394	29.ix.2005	Unknown	NBN data accessed 08/02/08
81	Stables, Harry Burn, Lauder	NT524483	x.2005	J. Mercer	FR: 1 ex. SBBRC (I. Carle)
88	Perthshire	n.l.	06.x.2005*	MoP det. M. Simmons	PM: 1 ex. (M. Simmons)
75	Dean Castle Country Park, Ayrshire	NS440394	27.x.2005	Unknown	NBN data accessed 08/02/08
77	Maryhill, Glasgow	NS567689	16.xi.2005	P. Dower	KGM: 1 ex. (R. Sutcliffe)

(continued)

Table 4. Scottish records of the Hawthorn Shieldbug *Acanthosoma haemorrhoidale*, 2000–2008. (continued)

Vice County	Locality	OS Grid reference	Date	Recorder	Collection/ Reference
112	Cunningsburgh, South Mainland, Shetland	HU4330	17.xii.2005	J. Nicolson det. P. V. Harvey	FR: 1 ex. SBBC (P. Harvey)
80	Harestanes Countryside Visitors Centre, Borders	NT6424	11.i.2006	A. Forman	FR: 1 ex. SBRC (P. Harvey)
75	Dean Castle Country Park, Ayrshire	NS436394	28.i.2006	Unknown	NBN data accessed 08/02/08
99	Kirktonhill, Dumbarton	NS3874	30.viii.2006	K. & S. Futter	KGM: 1 ex. (R. Sutcliffe)
99	Garscube Allotments, Dawsholm Park, Glasgow	NS558699	13.viii.2006	R. Sutcliffe	KGM: 1 ex. (R. Sutcliffe)
76	Waulkmill Glen, Barrhead	NS522579	07.ix.2006	R. Sutcliffe	KGM: 1 ex. (R. Sutcliffe)
92	Aberdeen Aberdeenshire	NJ932063	13.ix.2006	N. A. Littlewood	FR: 1 ex. (N. Littlewood)
77	Kelvinbridge, Glasgow	NS577670	17.xii.2006	C. Scott	KGM: 1 ex. (R. Sutcliffe)
92	Aberdeen, Aberdeenshire	NJ932063	03.iv.2007	N. A. Littlewood	FR: 1 ex. (N. Littlewood)
77	Railway station underpass, Hyndland, Glasgow	NS553675	29.iv.2007	R. Weddle	KGM: 1 ex. (R. Sutcliffe)
75	Newmilns, Ayrshire	NS536372	25.v.2007	F. Woodward	KGM: 1 ex. (R. Sutcliffe)
85	Fife minor road towards Prior Moor	NO5113	vii–viii 2007	D. Lampard	DM: 1 ex. (D. Lampard)
93	Hill of Logie, Logie Buchan Estate, Ellon	NJ9729	02.ix.2007	N. A. Littlewood	FR: several nymphs (N. Littlewood)
77	Hyndland, Glasgow	NS556676	05.x.2007	R. Weddle	KGM: 1 ex. (R. Sutcliffe)
80	Todlaw Wells Plantation, Hundalee, Jedburgh	NT633187	14.x.2007	I. Carle det. A. J. Ramsay	FR: 1 ex. SBBC (I. Carle)
84	Bo'ness, West Lothian	NS995812	iv.–v.2008	H. Ramsay det. A. J. Ramsay	FR: 2 exx.

Abbreviations: AJR = Author's personal collection; DGERC = Dumfries & Galloway Environmental Records Centre; DM = Dundee Museum; FR = field record; IMAG = Inverness Museum and Art Gallery; KGM = Kelvingrove Museum & Art Gallery, Glasgow; LRC = Lothian Records Centre; MoP = Member of public; NAL = Nick Littlewood collection; NBN = National Biodiversity Network; NESBRC = North East Scotland Biological Records Centre; NMS = National Museum of Scotland, Edinburgh; PM = Perth Museum, Perth; SBBC = Scottish Borders Biological Records Centre; SBRC = Shetland Biological Records Centre. \*Date of specimen may not be when specimen was found.

It is possible that *A. haemorrhoidale* may have been accidentally imported during the Nature Conservancy Council's tree planting programme on the island, which began in 1958 (Stiven & Smith, 2005). Old records show that the majority of woodland on Rum had been removed by 1796, and later plantings associated with the estate around Kinloch castle did not apparently include *C. monogyna* (Stiven & Smith, 2005). Still, small remnants of woodland which included hawthorn remained in coastal gulleys, cliffs and rocky areas on Rum (Stiven & Smith, 2005). However it is unlikely that many of these plants retained sufficient berries to sustain populations of hawthorn shieldbug, and it is far more likely that the shieldbug was accidentally imported to the island.

*Acanthosoma haemorrhoidale* is now well established in southern and central Scotland (Fig. 1), with small outlying populations present on Rum, in West Inverness and in north-east Scotland, but apparently absent from upland areas, as befits a lowland woodland insect.

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#### REFERENCES

- Butler, E. A. 1923. *A biology of the British Hemiptera-Heteroptera*. Witherby, London.
- Chinery, M. 1997. *Garden Insects*. Collins, London.
- Crowson, R. A. 1966. Refuges for warmth-loving species along the Scottish Solway Coast. *Entomologist's monthly Magazine* **102**: 245–246.
- Dolling, W. R. 1991. *The Hemiptera*. Oxford University Press, Oxford.
- Halbert, J. N. 1935. A List of the Irish Hemiptera (Heteroptera and Cicadina) *Proceedings of the Royal Irish Academy. Section B: Biological, Geological, and Chemical Science* **42**: 211–318.
- Hancock, E. G. 1992. Asymmetrical antennae in the hawthorn shieldbug *Acanthosoma haemorrhoidale* (L.). *British Journal of Entomology & Natural History* **5**: 93–4.
- Hawkins, R. 2003. *Shieldbugs of Surrey*. Surrey Wildlife Trust, Woking.
- Hill, A. R. 1973. Invertebrate short notes: hawthorn shieldbug. *Glasgow Naturalist* **19**: 59.
- Marshall, J. A. & Haes, E. C. M. 1988. *Grasshoppers and allied insects of Great Britain and Ireland*. Harley Books, Colchester.
- Nau, B. S. 2004. *Guide to Shieldbugs of the British Isles*. Field Studies Council, Taunton.
- Rintala, T. & Rinne, V. 2011. *Suomen Luteet* [Finnish Bugs] (2nd ed.). Tibiale, Helsinki.
- Southwood, T. R. E. & Leston, D. 1959. *Land and water bugs of the British Isles*. Warne, London.
- Stiven, R. & Smith, M. 2005. Lessons learned from tree planting on Rum National Nature Reserve, 1957–2004. *Scottish Natural Heritage Commissioned Report No. F02LD08*, Scottish Natural Heritage, Fort William.
- Woodroffe, G. E. 1960. Notes on some Hemiptera-Heteroptera from the Isle of Rhum. *Entomologist's monthly Magazine* **96**: 144.



PLATE 6. Fig. 1. Hawthorn shieldbug *Acanthosoma haemorrhoidale*, Scotland, 2014. Photo: Alex Ramsay. Fig. 2. Male *Streptanus okaensis* from the western margin of Thorne Moor on 1.x.2013 (after dissection) showing the colour characteristics of a late season specimen. Photo Stuart Foster. Fig. 3. *Ledra aurita* adult with green algal growth on body, Perry Woods, Kent, 1990. Photo: John Badmin. Fig. 4. Male velvet ant *Mutilla europaea*, Faversham Creek, Kent, 2013. Photo: Peter Maton.