
The history and current status of the orange ladybird *Halyzia sedecimguttata* (Linnaeus, 1758) in the Clyde area in the UK context (Coleoptera: Coccinellidae)

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ABSTRACT

Records of orange ladybird *Halyzia sedecimguttata* from the Clyde area in the past ten years are reviewed in the context of earlier records from the area. This species appears now to be much more common and widespread, and this increase appears to be linked to a new association with *Acer* spp., particularly sycamore. These findings are discussed in the light of a similar increase which appears to have occurred in England some years earlier.

INTRODUCTION

Recent reports in The Glasgow Naturalist of sightings of the orange ladybird in the West End of Glasgow (Grist, 2002) and in Dumbarton (Futter & Futter, 2001) attest to the apparent comparative rarity of this species in the Clyde area (and Scotland generally) in previous years. The former is apparently the first record within the City of Glasgow, and the latter is the first urban record in Dunbartonshire, and one of a very few (at that time) known records in the Greater Glasgow area. Both accounts comment on the previous lack of records for that area, mention an association with sycamore, and Grist wonders if it is becoming more common. However, the subsequent increase in frequency of sightings of this species - notably in and around the author's address in north west Glasgow (not far from Grist's location), and in other parts of Glasgow have prompted this review of recent and historical records as well as field-visits to look for further occurrences. The 'Clyde area' in this account generously includes: North and South Lanarkshire (VC77); Glasgow (various VCs); Renfrew, East Renfrew & Inverclyde (VC76); North, South and East Ayrshire (VC75), East and West Dunbartonshire (VC99), Argyll and Bute (VCs 98, 100, 101, 102 & 103); and the western part of Stirling (part of VC86). In this review, details of grid references for the various sightings mentioned are not given, as in the 'historical' records the locations are merely indicative, and should be interpreted as 'in the general area' of the location specified, though almost certainly in a birch woodland. And whereas the more recent records may have more or less accurate grid references, even this is often a site centroid (for a park etc). Details of any of these records can be found, and downloaded if necessary, from the NBN Gateway, the 'Clyde' records can also be supplied on request

from Glasgow Museums BRC:
biological.records@csglasgow.org

In the account below, the following acronyms are used:

BRC: Biological Record Centre

CP: Country Park

LNR: Local Nature Reserve

NBN: National Biodiversity Network

NMS: National Museum of Scotland

SSSI: Site of Special Scientific Interest

- and the scientific name of the orange ladybird is abbreviated to *H. 16-guttata*

METHODS

The orange ladybird is a distinctive insect having orange elytra usually with eight irregular white (or off-white) spots on each. However rather darker specimens, perhaps with only fourteen spots clearly visible, can resemble paler specimens of the cream-spot ladybird *Calvia quattuordecimguttata* which is normally a mahogany colour, and generally has fourteen spots.

The easiest way to distinguish them in the field is to check the alignment of the spots: the cream-spot ladybird, generally has a (transverse) row of 6 spots behind the two at the bases of the elytra; in the orange ladybird, the spots can only aligned in arcs, and none of these includes more than 4 spots. In the event that these characteristics do not give a clear verdict, microscopic examination of the underside is necessary; see Majerus, M. and Kearns, P. (1989) for details. A cluster of orange ladybirds is illustrated in Fig. 1. Adult and larval orange ladybirds have been recorded by the author on leaves of deciduous trees (*Acer* sp. particularly sycamore, and birch), congregating on tree trunks and posts, and resting on walls and windows. In addition, records of orange ladybird have been gleaned from other local naturalists, from various museum collections in Scotland, from the Scottish biological record centres, from the NBN Gateway, and from literature sources (published and unpublished).



Fig. 1. A cluster of orange ladybirds on a holly-trunk in Tollcross Glen (NS6368 6358), December 16th 2006 (RB Weddle, L Gemmell, G Linstead)

RESULTS

Historical Records

Murray (1853) gives the Scottish locations for *Coccinella sedecimguttata* (as *H. 16-guttata* was then known) as 'Roslin, Cramond, Raehills etc', that is the 'Forth' and 'Solway' areas, though Fowler (1888) lists it as 'rare, on birches' in the Solway, Forth, Tay, Dee and Moray areas. Sharpe's Catalogue (Sharp, 1876) adds nothing to Fowler's information. The first record in the Clyde area is apparently at Luss (c. NS3593) on Loch Lomond, recorded in August 1870 by the Rev. JE Somerville (Somerville, 1870); this supplies the only occurrence for this species quoted in the 1901 Handbook (Fergusson, 1901). The analogous 1876 Handbook does not include Coleoptera. A Renfrewshire Catalogue (Anon, 1932) lists nine Coccinellid species, but *16-guttata* is not one of them. This list acknowledges the contributions of Anderson Fergusson, whose earliest record of this species was from Lochgoilhead in September 1915 (the specimen is in the Hunterian Museum collection in Glasgow). Fergusson had been collecting Coleoptera for many years prior to this date. A specimen in the National Museum of Scotland attests to a record made by William Evans in 1892 at Fearnan on Loch Tay, but this is outside the Clyde area. There is however a specimen in the the TG Bishop collection (Hunterian Museum) that was taken at Taynuilt, presumably in the latter part of the 19th century; and a further specimen in Glasgow Museums collection taken by John Leslie at Aberfoyle in September 1900. Apart from these, no other 19th century records of the species in the Clyde area have come to light.

Early records from other parts of Scotland are similarly sparse (see Fowler, 1888), suggesting that the species was indeed difficult to find in the 19th century, a time when many dedicated coleopterists were enthusiastically recording, collecting and describing the beetle fauna of most areas of Scotland, apparently giving particular attention to mature broadleaf woodland habitats, which typically support a diverse range of insects, and which, as discussed below, would be the favoured habitat of *H. 16-guttata*. It also seems significant that the prolific collector JJFX King (1858-1926), who worked mainly in the Clyde area and Strathspey, had only one specimen of *H. 16-guttata* in his collection: from Loch Maree area in 1916 (now in the Hunterian Museum). The earliest 20th century record, after Fergusson's at Lochgoilhead, is from Rowardennan by AH May in May 1917 (NMS collection). Fergusson collected another specimen at Pluscarden (near Elgin) in 1938. Thereafter, between the years 1958 and 1994, I have been able to find only seven specimens recorded/collected by Roy and Betty Crowson: from around the southern part of Loch Lomond and at Killiegowan Wood (near Gatehouse of Fleet), the latest being at Balloch Park in 1994 (Crowson, 1997). Crowson would typically underline records of *H. 16-guttata* in his field diary/notebook to indicate its noteworthiness. His records of the species are very few and far between, and the fact that he was in the habit of noting all the species he took indicates

that this is a good indication of how often he came across it – and he did much of his collecting in long-established broad-leaf woodlands, the 'traditional' habitat of the species.

The Fergusson and Crowson specimens are in the Hunterian Museum collection, which also contains specimens (from several collectors) from other parts of Scotland, especially the more southern Highland areas. Again, though there well may be further records not yet located, this sample seems to contain significantly few records, and suggests that the distribution of this species was as 'local' for most of the 20th century as it was in the 19th. Fig. 2 illustrates the Scottish records known prior to 1980. A comparison with the records up to 1996 (Fig. 4), shows a significant increase in frequency of observation and spread of distribution. This is undoubtedly mainly due to an increase in recording effort, particularly in the Highland Region, though here, as far as can be ascertained, the records are all from long-established broad-leaf woodlands, and it is not until 1998 that an association with sycamore is noted. The Scottish Invertebrates Records Index (SIRI) includes only one published reference to *H. 16-guttata*: that of Grist (2002).

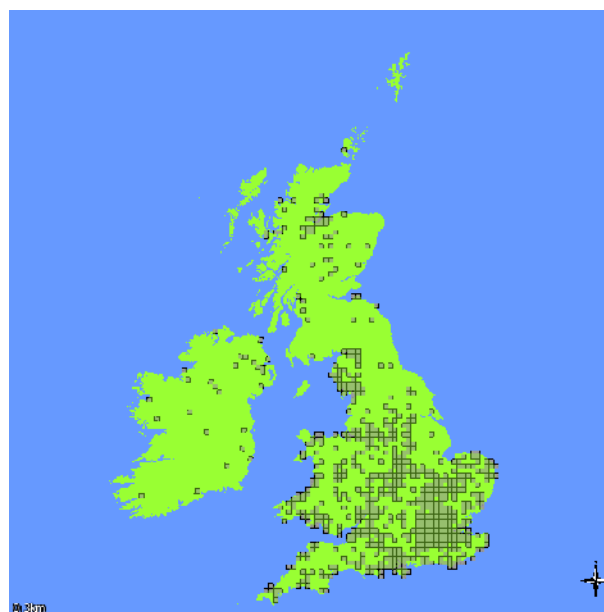


Fig. 2. Records of orange ladybird in Scotland prior to 1980 (pre-1940 records shown as open circles, 100km OS squares). Glasgow Museums BRC

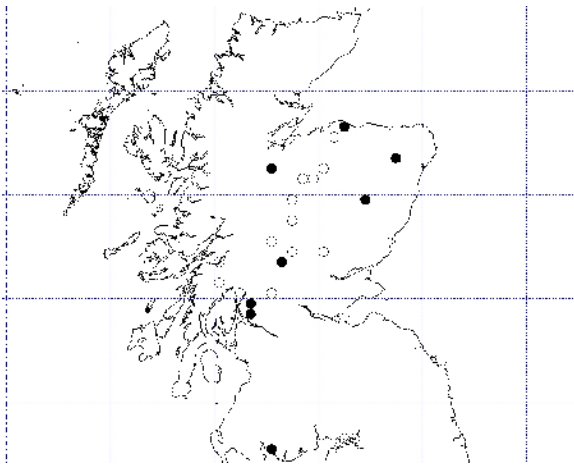


Fig. 3. Records of orange ladybird in Scotland prior to 1996 (pre-1980 records shown as open circles, 100km OS squares). Glasgow Museums BRC and other sources

Recent records

Since the first urban sightings by Norman Grist in 1999 (Grist, 2002) and Susan and Keith Futter in 2000 (Futter & Futter, 2001), the orange ladybird has frequently been seen in and around Airlie Lane, Hyndland (personal obs.), sometimes resting on windows or walls (there are several mature sycamores in the lane). I have also found it (dead) indoors in Pollokshields, and there have been reports from many of the Glasgow parks, notably Tollcross Park where large numbers can be seen in late autumn or early spring congregating on a holly tree in Tollcross Glen, numbering over 160 on one occasion (G. Linstead, pers. comm.). Similar, though smaller, clusters have been noted on wooden posts in Castle Semple CP (P. Boustead, pers. comm.) and on metal railings in Glasgow Botanic Gardens (P. Thomson, pers. comm.). Other locations where the insect has been seen in the Clyde area during the last 10 years are: Kelvingrove Park, Dawsholm Park LNR, Garscadden Wood, Pollok CP, University of Glasgow campus, Dams to Darnley CP, Hyndland Old Station Park, Gartnavel Hospital area, Garscube Allotments, Glasgow Necropolis, Mugdock CP, Chatelherault CP, Calderglen CP, Plean CP, Gleniffer Braes CP, Dean Castle CP, Culzean CP, Ayr Gorge SSSI, West Kilbride quarry, Isle of Bute, Isle of Arran, and Grianain Forest (Kintyre). *H. 16-guttata* has been recorded on other *Acer* species, particularly the 'ornamental' types (pers. obs.) and on *Cornus* sp. (Majerus, 1995); a pair have been seen mating on a sunny *Cornus* leaf in Hyndland Old Station Park (pers. obs.). It has also been reported in association with moth traps (pers. obs.; N. Gregory, pers. comm.). There are records from in or around both ultra-violet and tungsten (Rothamsted) light traps; this suggests that the orange ladybird may prefer to fly at night. Other Coccinellidae are rarely found in our around traps; I have found the much more common (in urban environments) two-spot ladybird (*Adalia bipunctata*) and ten-spot ladybird (*Adalia decempunctata*) in the trap only once each. The records mentioned above are mapped, along with records from

other sources, in Fig. 4. All the records so far discovered (apart from those from other BRCs) have been added to the Glasgow Museums Biological Record Centre database and will be made available on the NBN Gateway (NBN, 2009) which also shows records from other sources, and is updated several times a year.

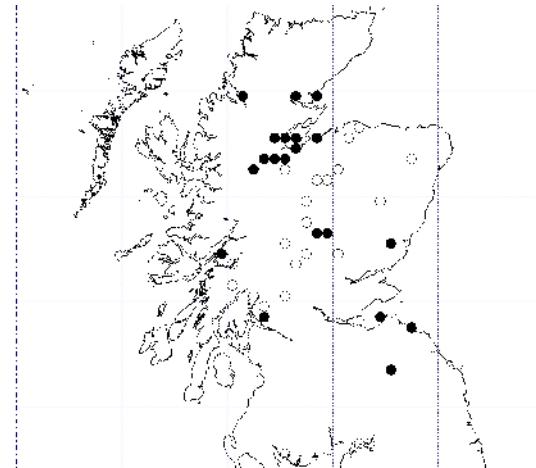


Fig. 4. Records of orange ladybird in Scotland to date (pre-1996 records shown as open circles, 100km OS squares). Glasgow Museums BRC and other sources

DISCUSSION

Muggleton (1996) begins an account of *H. 16-guttata* by saying that until 'less than 20 years ago' the species was only known from 'the Scottish Highlands and a few scattered sites in southern England', the former presumably referring to the locations listed in Fowler. Even as late as 1989, the status of *H. 16-guttata* was described as 'local and scarce' (Majerus and Kearns, 1989). Muggleton goes on to describe how in England the species appears to have 'undergone an explosive spread in the southern half of England and in Wales' in the decade to 1996. The records listed above suggest that the population in the Clyde area began to follow suit shortly afterwards; and information from BRCs in other parts of Scotland indicate a similar trend (see Figs 2-4). The current distribution of *H. 16-guttata* for the whole of the Britain and Ireland (NBN, 2009) as shown on the NBN Gateway is reproduced in Fig. 5 to emphasise the current abundance of records of this species in England, though many of the observations from Scotland and the Clyde area in particular (Figs 2-4) were not available on NBN at that date.

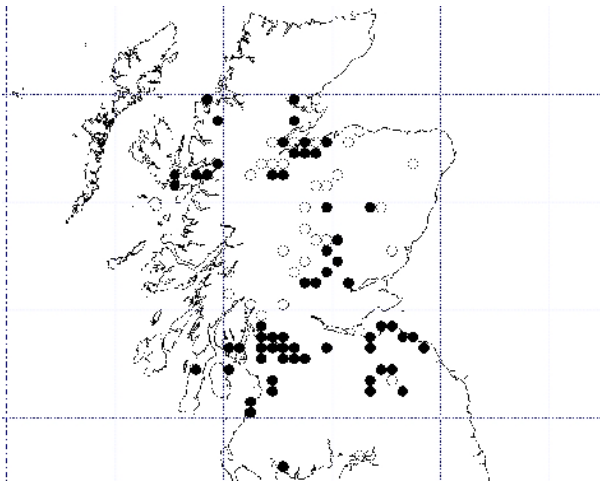


Fig. 5. UK distribution of orange ladybird records as shown on the NBN Gateway (2009) prior to the submission of records from Glasgow Museums BRC

The orange ladybird feeds on mildew typically on leaves of birch (*Betula* sp.) or occasionally ash (*Fraxinus excelsior* L.) (Majerus, 1989). The increase in numbers appears to be associated with a move to sycamore (*Acer pseudoplatanus* L.). Possible factors which may have contributed to this change in habit could include an adaptive change in the ladybird itself Majerus (1995), perhaps associated with a change in the species or quantity of mildew(s) associated with sycamore leaves; the latter could speculatively be associated with the reduction in atmospheric pollution over the last 50 years, and could have supported an increase in the numbers of sycamore aphids producing greater quantities of the honeydew which is the primary substrate of the mildews. The observation that the habit of associating with sycamore seems to have spread gradually northwards supports the idea that migration (of ladybird, aphids or fungus) has played a part, as the air quality changes would have occurred more uniformly across the UK. However it is doubtful whether these effects can be properly investigated retrospectively unless sufficient material (such as specimens of the ladybird, aphids, mildewed sycamore leaves) can be gleaned from collections. On the other hand, Majerus (1995) suggests that the recent increase in frequency of reports of the species was merely a result of more recorders giving attention to sycamore once the association had been publicised. This may well be true in some areas of the UK, but it seems hardly credible that what is now one of the most frequently-reported Coccinellid species could have gone almost completely unnoticed in the Clyde area by the collectors mentioned above. And, though most of the adult insects may well spend most of the summer months relatively high in the tree canopy, they can be seen in significant numbers on tree trunks and posts at a height of 1-2m in the spring and late autumn, and the larvae can be found on the lowest leaves in mid-summer (pers. obs.), so the species is unlikely to have escaped notice for so long if it had always been as widespread as it now seems to be. However, it would be difficult retrospectively to tease out the true increase

in numbers and range of the orange ladybird, from the effects of possible earlier under-recording and the recent increase in awareness giving rise to increased frequency of sightings.

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