J. Acad. Entomol. Soc. 22: 4-7 (2025)

NOTE

Discovery of the Palearctic *Aphidecta obliterata* (Coleoptera: Coccinellidae) in Newfoundland over 55 years after its release as a biocontrol agent

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A photograph (Figure 1a) of an unusual adult ladybug was taken on 3 May 2023 in the town of Mount Moriah (48.96692 °N, 58.03142 °W), Bay of Islands, on the island of Newfoundland. This photo was posted 8 July 2023 on iNaturalist (iNaturalist 2023). Subsequently, an earlier photograph (Figure 1b) of the same species, taken 28 May 2020 and posted 30 May 2020 on iNaturalist (iNaturalist 2020) was discovered. The locality was Irishtown (48.983536 °N, 57.935527 °W), also located on the coast of the Bay of Islands and <8 km from the Mount Moriah locality. On 1 August 2024, a photo was taken of the same species near Rocky Harbour, Gros Morne National Park (49.60287 °N, 57.95556 °W), and posted to iNaturalist on 12 August 2024 (iNaturalist 2024). The species depicted in the photos was identified by DWL and others as the non-native larch ladybug (or larch ladybird), *Aphidecta obliterata* (L.) (Coleoptera: Coccinellidae).

To corroborate the identity of this photographed species, in May and June 2024, extensive sampling was conducted on spruces (*Picea* spp.; Pinaceae) and balsam fir, *Abies balsamea* (L.) Mill. (Pinaceae) around Mount Moriah and Irishtown as well as at other areas around the Bay of Islands and along the adjacent Humber River Valley, extending as far as the town of Deer Lake. Sixteen specimens collected at two localities near Mount Moriah were identified as *A. obliterata*.

Voucher specimens were deposited in the following collections:

CFS Natural Resources Canada, Canadian Forest Service, Atlantic Forestry Centre, 26 University Drive, Corner Brook, Newfoundland and Labrador, A2H 6J3, Canada

CNCI Canadian National Collection of Insects, Arachnids and Nematodes, Agriculture and Agri-Food Canada, K.W. Neatby Bldg., 960 Carling Ave., Ottawa, Ontario, K1A 0C6, Canada

NFM The Rooms Provincial Museum, 9 Bonaventure Ave., St. John's, Newfoundland and Labrador, A1C 5P9, Canada

NFRC Natural Resources Canada, Canadian Forest Service, Northern Forestry Centre, 5320 – 122 St. NW, Edmonton, Alberta, T6H 3S5, Canada

Received March 2025. Accepted for publication June 2025. Published on the Acadian Entomological Society website at www.acadianes.ca/journal.php in August 2025.

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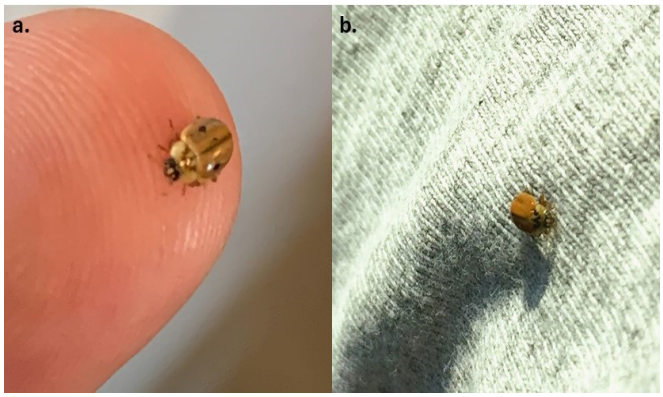
Figure 1. Photographs of *Aphidecta obliterata* adults from western Newfoundland: **a**. Mount Moriah (48.96692 °N, 58.03142 °W), 3 May 2023 [photo credit: James Dawson]. **b**. Irishtown (48.983536 °N, 57.935527 °W), 28 May 2020 [photo credit: Adam Durocher].



Specimen locality information NEWFOUNDLAND: Mount Moriah, Serpentine Road, 48.9731°N, 58.0636°W, 29 May 2024, sweeping of spruce and balsam fir, Cheryl Butt [7 specimens: CFS (2), CNCI (2), NFM (2), NFRC (1)]; Ibid., 21 June 2024 [1 specimen: NFRC]; Mount Moriah, Cook's Brook Day Park, 48.9730°N, 58.0640°W, 17 May 2024, sweeping of spruce and balsam fir, Cheryl Butt [2 specimens: CFS]; Ibid., 22 May 2024 [6 specimens: NFM (4), NFRC (2)].

The photographs and specimens from Newfoundland are the first records of *A. obliterata* from Eastern Canada. The species is native to the Palearctic, ranging throughout Europe as far east as Russia, Asia Minor and the Caucasus (Kovář 2007). In its native range this ladybug is found in high bogs, peatlands, and coniferous and mixed forests where it feeds on aphids and adelgids on Pinaceae (Nikitsky and Ukrainsky 2016).

Aphidecta obliterata has been introduced multiple times from Europe into Canada (British Columbia, New Brunswick, Newfoundland, and Nova Scotia) and the United States of America (North Carolina, Oregon, and Washington) (McGugan and Coppel 1962, Clark et al. 1971). It is one of many insect species introduced from Europe and Asia and released as a biocontrol agent for the balsam woolly adelgid, *Adelges piceae* (Ratzeburg) (Hemiptera: Adelgidae), a pest of conifers in North America that was inadvertently introduced from the Palearctic (McGugan and Coppel 1962, Clark et al. 1971). *Aphidecta obliterata* was thought to be established only in North Carolina (Amman 1966) and British Columbia (Humble 1994).

In the Atlantic Provinces, about 5600 adults of *A. obliterata* were released at 10 locations in New Brunswick (Fredericton, Oak Bay, and Rexton) from 1941-1957 (Brown and Clark 1959, McGugan and Coppel 1962) and an additional 7600 adults were released from 1962-1967 (Clark et al. 1971) but populations did not apparently establish. In Newfoundland, over 12450 adults were released in at least six sites in western Newfoundland from 1957-1968 (Table 1). Overwintering survival in Newfoundland did not occur until 1966, when adults were recovered in sheltered places on the boles of balsam fir infested by *A. piceae*, and 1968, when all life stages were recovered in infestations of the native Cooley spruce gall adelgid, *Adelges cooleyi* (Gillette)(Hemiptera: Adelgidae), on white spruce, *Picea glauca* (Moench) Voss (Pinaceae) (Clark et al. 1971).

Table 1. Sites and dates of release of *Aphidecta obliterata* adults in Newfoundland (McGugan and Coppel 1962, Bryant 1963, Clark et al. 1971).

Site of release	Geographic coordinates	Date of release	No. released	Source of insects
Deer Lake		24 June 1959	186	Czechoslovakia
Frenchman's Cove	49°4'N, 58°10'W	6 July 1957	16	Czechoslovakia
Frenchman's Cove	49°3'N, 58°10'W	1 August 1958	22	Sweden
Pasadena		19 May 1960	934	West Germany
Pynn's Brook		25 July 1962	343	Czechoslovakia
St. Georges		16 July 1959	549	Czechoslovakia
Steady Brook		29 June 1962	153	Czechoslovakia
Steady Brook		5 July 1962	352	Czechoslovakia
Unknown		1963	989	West Germany
Unknown		1964	1187	West Germany
Unknown		1965	185	Czechoslovakia
Unknown		1965	267	West Germany
Unknown		1966	509	Czechoslovakia
Unknown		1966	1380	Austria
Unknown		1967	4288	Austria
Unknown		1968	1096	Austria, W. Germany
TOTAL			**12,456**	

The discovery of established populations of *A. obliterata* in Newfoundland was unexpected given the reported failure of earlier introductions. At the Mount Moriah sites where specimens were obtained in 2024 there were indications of old damage by balsam woolly adelgid but no evidence of active infestations. There was, however, an abundance of aphids on spruces (identity unknown), and spruce and larch gall adelgids (*Adelges* spp.) are ubiquitous in this part of Newfoundland.

The closest known release sites for *A. obliterata* to recent recovery sites are: 12 km west of Mount Moriah, at Frenchman's Cove; 9 km southeast of Irishtown, at Steady Brook; and about 60 km southeast of Rocky Harbour, at Deer Lake. It seems populations of *A. obliterata* have established previously, feeding on either balsam woolly adelgid or on another adelgid or aphid species, and gone undetected for more than 55 years. Interestingly, a similar scenario of long-delayed post-introduction detection for

this ladybug also occurred in British Columbia. There, *A. obliterata* was released for balsam woolly adelgid biocontrol from 1960-1969 but was not recovered during the release period (Schooley et al. 1984) nor during surveys at the release sites in 1971, 1974, and 1978 (Humble 1994). However, in 1987 it was found associated with: balsam woolly adelgid on balsam fir; hemlock woolly adelgid, *Adelges tsugae* Annand (Hemiptera: Adelgidae), on western hemlock, *Tsuga heterophylla* (Raf.) Sarg.; and green spruce aphid, *Elatobium abietinum* (Walker) (Hemiptera: Aphididae), on Sitka spruce, *Picea sitchensis* (Bong.) Carr. (Humble 1994). Therefore, despite targeted surveys at release sites, *A. obliterata* went undetected for about 20 years after establishment. The situations in both British Columbia and Newfoundland underscore the need for long term monitoring to assess establishment of introduced biocontrol agents.

In addition to *A. obliterata*, nine other non-native species of Palearctic Coccinellidae have been released in Newfoundland for biocontrol of balsam woolly adelgid from 1952-1966 (Table 2), as have other Palearctic insect predators of this pest (Bryant 1963). The number of released ladybug specimens ranged from 32 for *Harmonia eucharis* (Mulsant) to over 35 400 of *Scymnus impexus* Mulsant (Table 2). Only *S. impexus* was recovered after the year of release, and this species persisted the longest at the Corner Brook release sites where the species was recovered up to six years post-release (Bryant 1963). However, *S. impexus* has not been seen in Newfoundland since 1961, and the other introduced ladybug species were recovered no more than a few weeks after release. Nonetheless, it is possible that *S. impexus* has established populations in Newfoundland, albeit likely small and localized, that have not yet been discovered. *Scymnus impexus* did establish in southern British Columbia (Humble 1994). Although the winter climate is milder in southern British Columbia than at the release sites in western Newfoundland, winter temperatures were not thought to be the main cause for limited establishment in Newfoundland (Bryant 1963) as the species experiences a wide range of climatic conditions through its range in continental Europe (Kovář 2007).

Clearly *A. obliterata* has adapted to the western Newfoundland environment and there is no reason to doubt it will continue to persist. Based on very limited sampling it is impossible to ascertain whether the species exerts much control of adelgid or aphid populations.

Table 2. Non-native species of Coccinellidae introduced to Newfoundland as biocontrol agents for balsam woolly adelgid but did not apparently establish (Bryant 1963, Clark et al. 1971).

Species	Site of release	Years of release (no. released)	Type of release	Source of specimens
Adalia tetraspilota (Hope)				
	Corner Brook	1960(33)	open	India
Adalia luteopicta Mulsant				
	Steady Brook	1960(159)	open, caged	India
Adalia ronina Lewis				
	Deer Lake	1961(67)	caged	Japan
Diomus pumilio (Weise)				
	Corner Brook	1960(6954)	open, caged	Australia
	Gillams	1960(2683)	open	Australia
Exochomus lituratus Gorham				
		1960(110)	open	Pakistan
Exochomus uropygialis (Mulsant)				
	Frenchman's Cove	1960(2891)	open, caged	India, Pakistan
	Steady Brook	1960(174)	open	India
Harmonia breiti Mader				
		1960(88)	open	Pakistan
Harmonia eucharis (Mulsant)				
	Corner Brook	1960(32)	open	India
Scymnus impexus Mulsant				
	Corner Brook	1954(2000), 1960 (726)	open	West Germany (1960); Unknown (1954)
	Frenchman's Cove	1957(464), 1958 (513), 1959(3500)	open	West Germany (1959); Unknown (1957,1958)
	Robinsons	1952(1306)	open	Unknown
	St. George's	1953(1534)	open	Unknown
	Steady Brook	1961(131)	open	West Germany
	Stephenville	1955(890)	open	Unknown
	South Brook	1959(6000)	open	West Germany
	Wild Cove Point	1960(420)	open	West Germany
	Unknown	1966(18,036)	open	West Germany

ACKNOWLEDGEMENTS

Thanks to John Klymko and David McCorquodale for bringing these records to the attention of DL, and for helpful discussions. We commend those who created and manage online forums such as iNaturalist, Bugguide, and Insects of Newfoundland Facebook group for promoting the power of citizen science through georeferenced photography, the legions who contribute photos and information, and the many taxonomic experts who regularly spend time adding value in the form of expert determinations. We are grateful for the field assistance of Allysia Caines, Dara Walsh and Jodi Young.

REFERENCES

Amman, G.D. 1966. *Aphidecta obliterata* (Coleoptera: Coccinellidae), an introduced predator of balsam woolly aphid, *Chermes piceae* (Homoptera: Chermidae), established in North Carolina. Journal of Economic Entomology **59**: 506-508.

Brown, N.R., and Clark, R.C. 1959. Studies of predators of the balsam woolly aphid, *Adelges piceae* (Ratz.) (Homoptera: Adelgidae) VI. *Aphidecta obliterata* (L.) (Coleoptera: Curculionidae), an introduced predator in eastern Canada. The Canadian Entomologist **91**: 596-599.

Bryant, D.G. 1963. *Adelges piceae* (Ratz.) studies in Newfoundland: review of associated predators, introduced and native, from 1952 to 1962. Canada Department of Forestry, Forest Entomology and Pathology Laboratory, Corner Brook, Newfoundland, Interim Report 1963-1.

Clark, R.C., Greenbank, D.O., Bryant, D.G., and Harris, J.W.E. 1971. *Adelges piceae* (Ratz.), balsam woolly aphid (Homoptera: Adelgidae). *In* Biological control programmes against insects and weeds in Canada 1959-1968. Technical Communication No. 4, Commonwealth Agricultural Bureaux, Farnham Royal, England. *Compiled by* R.M. Prentice and P.S. Corbet. pp. 113-127.

Humble, L.M. 1994. Recovery of additional exotic predators of balsam woolly adelgid, *Adelges piceae* (Ratzeburg) (Homoptera: Adelgidae), in British Columbia. The Canadian Entomologist **126**: 1101-1103.

iNaturalist. 2020. Larch lady beetle (*Aphidecta obliterata*). Available from: https://inaturalist.ca/observations/47856486 [accessed 1 June 2024].

iNaturalist. 2023. Larch lady beetle (*Aphidecta obliterata*). Available from: https://inaturalist.ca/observations/171800749 [accessed 1 June 2024].

iNaturalist. 2024. Larch lady beetle (*Aphidecta obliterata*). Available from: https://inaturalist.ca/observations/235427624 [accessed 1 June 2024].

Kovář, I. 2007. Family Coccinellidae Latreille, 1807. *In* Catalogue of Palaearctic Coleoptera, Vol. 4: Elateroidea, Derodontoidea, Bostrichoidea, Lymexyloidea, Cleroidea, Cucujoidea. Apollo Books, Stenstrup, Denmark. *Edited by* I. Löbl, I. and A. Smetana. pp. 568-631.

McGugan, B.M., and Coppel, H.C. 1962. Part II – Biological control of forest insects, 1910-1958. *In* A review of the biological control attempts against insects and weeds in Canada. Technical Communication No. 2, Commonwealth Agricultural Bureaux, Farnham Royal, England. *Compiled by* J.H. McLeod, D.M. McGugan, and H.C. Coppel. pp. 35-216.

Nikitsky, N.B., and Ukrainsky, A.S. 2016. The ladybird beetles (Coleoptera, Coccinellidae) of Moscow Province. Entomological Reviews **96**: 710-735.

Schooley, H.O., Harris, J.W.E., and Pendrel, B. 1984. *Adelges piceae* (Ratz.), balsam woolly adelgid (Homoptera: Adelgidae). *In* Biological control programmes against insects and weeds in Canada 1969-1990. Commonwealth Agricultural Bureaux, Farnham Royal, England. *Edited by* J.S. Kelleher and M.A. Hulme. pp. 229-234.