

Drymus brunneus (Sahlberg) (Hemiptera: Rhyparochromidae): a seed bug introduced into North America

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ABSTRACT

The occurrence of the adventive *Drymus brunneus* (Sahlberg) in North America is documented, and characteristics to distinguish this Old World species from *D. unus* (Say) are described and illustrated. A revised key to the Western Hemisphere species of *Drymus* is included.

INTRODUCTION

Elsewhere (Scudder and Footitt 2006) reported this Old World seed bug from Richmond, British Columbia in 1966 as the first record from North America. We have now been able to assemble collection records and appropriate illustrations to document the identity of this species and distinguish it from the similar *D. unus* (Say), a species native to eastern North America. A revised key to the

Western Hemisphere species of the genus *Drymus* Fieber is included to assist in identification.

Measurements (in millimeters) given in the description below are mean and range (in parentheses) from nine specimens of each sex examined from the Old World. Unless otherwise stated, all material is in the Scudder personal collection.

DESCRIPTION

Drymus brunneus (Sahlberg)

Rhyparochromus brunneus Sahlberg 1848, Monogr. Geoc. Fenn.:57

Pachymerus pallidus Herrich-Schaeffer 1853, Wanz. Ins. 9:211 (Synonym)

Drymus notatus Fieber 1861, Europ. Hem. :179 (Synonym)

Drymus brunneus, Stål 1862, Ofv. Vet. Akad. Forh. 19:217 (Current combination)

Drymus brunneus, Slater 1964, Cat. Lyg. World 2:884 (Bibliography)

Drymus (*Sylvadrymus*) *brunneus*, Péricart 1998, Faune de France 84B:255 (Description)

Macropterous or submacropterous, robust, subglabrous, and somber coloured. Head and anterior lobe of pronotal disc dark ferruginous brown to black; rest of dorsum and venter dark ferruginous; corium with basal third tending to be pale ferruginous to ochraceous, with a more or less distinct pale spot in middle at junction with uniform darker apical two-thirds of corium; antenna ferruginous to dark

ferruginous with apical half of third segment dark brown, and apical half of fourth segment pale ferruginous; legs ferruginous, with femora darker.

Head and anterior lobe of pronotal disc closely punctate; posterior lobe of pronotal disc and scutellum with larger more dispersed punctures. Head width ♂ 0.87 (0.80-0.92) ♀ 0.92 (0.83-0.95); first antennal segment exceeding apex of head by half its length; second antennal segment with short semi-decumbent pubescence, but with longer outstanding setae confined to apical one-fifth; third and fourth antennal segment as thick as or thicker than apex of second segment, with third segment somewhat thicker in apical half and slightly spindle-shaped; fourth antennal segment in middle as thick as widest part of third segment; third and fourth antennal segments with long erect setae, in addition to shorter, more dense, decumbent pubescence along most of length; second antennal

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segment shorter than head length; on average second antennal segment 0.94 times head width, and about 1.3 times length of third antennal segment; fourth antennal segment on average about 1.2 times length of third antennal segment; antennal measurements ♂ 0.47 (0.43-0.48): 0.74 (0.60-0.78): 0.57 (0.53-0.58): 0.68 (0.63-0.72) ♀ 0.48 (0.43-0.53): 0.77 (0.70-0.80): 0.58 (0.50-0.60): 0.68 (0.67-0.70); rostrum attaining middle coxae.

Pronotum with disc rather convex; with shallow transverse impression on disc just behind middle, this impression level with concave impression on narrowly carinate lateral margins; on average pronotal width about 1.4 times pronotal length; pronotal width ♂ 1.40 (1.28-1.47) ♀ 1.49 (1.27-1.60), pronotal length ♂ 1.03 (0.92-1.10) ♀ 1.03 (0.87-1.10). Hemelytron with costal margin distinctly convex; corium widest just beyond middle, level with apex of clavus; membrane reaching middle of last abdominal tergum or just surpassing apex of abdomen. Fore femora with a single, minute, ventral spine in apical half; tibiae lacking long, erect setae.

Total length ♂ 4.19 (3.80-4.40) ♀ 4.54 (4.40-4.80).

Material examined. (a) Old World: ENGLAND: 3♂ 2♀, Berks, Cothill, 10.viii.1957 (G.G.E. Scudder); 1♂, Berks, Wytham Wood, 30.v.1957 (G.G.E. Scudder); 1♀, Oxon, Bald Hill, ix.1962; 1♀, Surrey, Oxshot, 28.vii.1957 (G.G.E. Scudder). RUSSIA: 2♂ 2♀, Moscow Distr., Birch Grove, 4.viii.1968 (G.G.E. Scudder). SCOTLAND: 2♂ 2♀, Dalkeith, Midlothian, 6.ix.1957 (R.A. Crowson); 1♂, Fullerton Est., Troon Ayrshire, 13.ix.1957 (R.A. Crowson); 1♀,

Invernesshire, Kinveachey, mixed birch and pine litter, 15-19.vii.1957 (R.A. Crowson). (b) New World: CANADA: 2♂ 1♀, B.C. Delta, Alaksen Res., CWS property, pitfall trap, 1.vii-28.viii.2009 (A. Caldicott and B. Bains) [Royal British Columbia Museum, University of British Columbia]. 1♂ 3♀, B.C., Richmond Nature Park, 23.vi-13.vii.1996 (L. Humble, J. Seed) [Pacific Forestry Centre, Victoria; Scudder Coll.]. 1♂ 2♀, BC, Coquitlam, Westwood Plateau, North Hoy Creek Park, 49°19'7.61"N, 122°47'38.18"W, 29.viii.2010 (T. Loh) [UBC; T. Loh Coll.]; 1♀, id., 25.ix.2010, ex: leaf litter, (T. Loh) [T. Loh Coll.]; 3♂ 1♀, BC, Vancouver, Pacific Spirit Park, 49°16'14.51"N, 123°14'12.26"W, 12.viii.2010 (T. Loh) [CNC; UBC; T. Loh Coll.]; 1♀, BC, Coquitlam, Westwood Plateau, Near North Hoy Creek, 49°18'1.03"N, 122°47'21.03"W, 8.v.2010 (T. Loh) [T. Loh Coll.]; 1♂, BC, Coquitlam, Upper Coquitlam River Trail, 49°18'5.26"N 122°46'1.31"W, 24.vii.2010 (T. Loh) [T. Loh Coll.]; 1♀, BC, Port Coquitlam, Coquitlam River Park, 49°17'1.88"N, 122°46'22.94"W, 5.viii.2010 (T. Loh) [T. Loh Coll.]; 1♂ 1♀, BC, Coquitlam, Upper Coquitlam River Park, 49°19'36.41"N, 122°46'22.48"W, 13.x.2010 (T. Loh) [UBC; T. Loh Coll.]; 1♂ 1♀, BC, Coquitlam, Westwood Plateau, 49°17'51.66"N, 122°47'2.20"W, 18.ix.2010 (T. Loh) [T. Loh Coll.]; 1♀, id., 14.viii.2010, (T. Loh) [T. Loh Coll.]; 1♂, BC, Coquitlam, Coquitlam River Park, 49°17'6.04"N, 122°46'31.77"W, 20.x.2010 (T. Loh) [UBC]; 1♀, id., 29.vii.2010 (T. Loh) [T. Loh Coll.]. 2♂, Surrey, Crescent Park, 49°2.904'N 122°51.647'W, Pitfall trap CPI, 5.viii-5.x.2010 (J. Heron, L. Parkinson) [Royal British Columbia Museum].

DISCUSSION

The material from British Columbia compares well with the description in Péricart (1998). It also closely resembles the colour illustration in Southwood and Leston (1959). However, most of the New World specimens are fully macropterous, and measurements are at the upper limits of the range represented in the Old World material examined. Indeed, the pronotum of the specimens measured from Richmond, BC, are both slightly wider and slightly longer than the Old World specimens studied.

Three of the Richmond, BC, specimens were captured in a multiple funnel trap (Lindgren 1983) baited with a high-release rate ethanol lure (EBT 1996-0146-06) and one was obtained in an unbaited 4-panel window pane trap (EBT 1996-0149-03), during studies of introduced and native Scolytidae in southwestern British Columbia (Humble 2001). Trapping was conducted in the west block of the Richmond Nature Park (49°10'19.5"N 123°05'50"W) that preserves the last remnants of the Greater Lulu Island

Bog. A shore pine/Sphagnum moss community predominates with the dominant tree species being European white birch (*Betula pendula* Roth), as well as hybrids with the relatively uncommon native white birch (*B. papyrifera* Marsh.), together with shore pine (*Pinus contorta* var. *contorta* Dougl.). Much of the study area has been invaded by a dense growth of highbush blueberry (*Vaccinium corymbosum* L.).

The Surrey, Crescent Park locality was in the northwest side of the park. This is a forested area of mostly second growth forest, with some manicured fields.

Most of the specimens in the T. Loh collection were obtained by sifting forest leaf litter, especially around logs or near tree stumps. Some were sifted or washed from moss and litter in wet areas near forest headwater streams (Hoy Creek specimens). Specimens from Pacific Spirit Park in Vancouver, BC, were collected mainly from forest communities dominated by red alder (*Alnus rubra* Bong.). Coquitlam specimens came primarily from forests with mixed hardwood (*Alnus*, *Populus balsamifera trichocarpa* (T.&G.) Brayshaw, *Acer*) and conifers (*Tsuga heterophylla* (Raf.) Sarg., *Thuja plicata* Donn, *Pseudotsuga menziesii* (Mirb.) Franco). A few were collected from a forest clearing in a backyard on Westwood Plateau, a suburban residential neighborhood in Coquitlam, BC. The location coordinates for most of these records (especially in the parks) are approximate and do not reflect the actual location where the specimens were found.

Southwood and Leston (1959) noted that *D. brunneus* in the British Isles frequents damp places, and is usually found on the ground amidst litter and mosses, sometimes in *Sphagnum*. The Richmond area of British Columbia is on the coast, close to industrial sites, where other adventive insects have been detected.

According to Péricart (1998), *D. brunneus* is largely a Euro-Siberian species, widely distributed in the eastern Palaearctic, with a range extending into Asia. Slater (1964) and Péricart (1998) give details of the known distribution in the Old World. The species almost certainly was introduced into North America from the Palaearctic and may represent a recent accidental introduction.

Drymus brunneus runs to the genus *Drymus* Fieber in the key to the genera of North American Drymini in Ashlock (1979). It is very similar to *D. unus* (Say), a widely distributed native species in eastern North America (Ashlock and Slater 1988). However, these two species differ in the coloration of the hemelytra and in the setation on the second antennal segment. While both species are often submacropterous, and have the costal margin of the corium distinctly convex and the widest area of the corium level with the apex clavus. The apical half of the corium is uniform chocolate brown and without a pale central spot in *D. unus* (Figure 1), whereas in *D. brunneus* there is usually a distinct pale spot in the centre of the basal third of the corium, adjacent to the border of the darker apical area (Figures. 2 and 3).

Furthermore, in *D. brunneus* the second antennal segment has long erect setae confined to the apical one-fifth (Figures 4 and 5), whereas such long erect setae occur along the whole length of the second antennal segment in *D. unus* (Figure 6).

The key to the Western Hemisphere species of *Drymus* given by Slater and Brailovsky (1997) can be modified to include *D. brunneus* as follows:

Revised key to Western Hemisphere species of *Drymus*

1. Distal half of fourth antennal segment white, strongly contrasting with dark coloration of basal half of antennae; explanate lateral margins of pronotum broad, subequal to width of second antennal segment; second antennal segment subequal to head length..... *mexicanus* Slater & Brailovsky
Fourth antennal segment unicolorous dark brown to black, or if distal half pale, not white and strongly contrasting with dark coloration of basal half of antennae; explanate lateral margins of pronotum relatively narrow, much narrower than width of second antennal segment; second antennal segment considerably longer than head length.....2

2. Large, 6.5-7mm; very dark brown to almost black; anterior and posterior lobes of pronotal disc nearly evenly punctate; expanded lateral margins of pronotum concolorous with dorsal surface of pronotum.....*crassus* Van Duzee
Smaller, under 5.5 mm; dull brown to ferruginous brown; anterior lobe of pronotal



Figure 1-6. Figs. 1-3. Dorsal view: 1. *Drymus brunneus* (Sahlberg) ♀, British Columbia, Canada, Richmond Nature Park, EBT96-0146-06, 23.vii-13.viii.1996 (L. Humble, J. Seed) [Scudder Coll.]; 2. *Drymus brunneus* ♂, Dalkeith Midlothian, UK, 6.ix.1957 (R.A. Crowson) [Scudder Coll.]; 3. *Drymus unus* (Say) ♀, ONT, Canada, Hilton Beach, Sugar Maple Forest, Pan trap, 16.ix-14.x.1989 (J.E. Swann) [Scudder Coll.]; Figs. 4-6. Detailed structure of second antennal segment: 4. *Drymus brunneus*, BC specimen; 5. *Drymus brunneus*, UK specimen; 6. *Drymus unus*, Ontario specimen. Photos by Don Griffiths.

disc more finely punctate than posterior lobe; expanded lateral margins of pronotum usually slightly paler than surface of anterior pronotal lobe.....3
 3. Second antennal segment with long erect setae confined to the apical one fifth and not distributed along whole length; basal third of corium usually with a distinct pale spot at

margin of darker apical two-thirds.....*brunneus* (Sahlberg)
 Second antennal segment with long erect setae distributed along whole length of segment; basal third of corium without a distinct pale spot at margin of darker apical two-thirds.....*unus* (Say)

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