NORTH AMERICAN *STENUS* OF THE *ADVENUS* COMPLEX INCLUDING A NEW SPECIES FROM ILLINOIS (COLEOPTERA: STAPHYLINIDAE)

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The North American species of *Stenus* are assignable to five or six subgenera primarily on the basis of the bilobed or unmodified fourth tarsal segment and the presence or absence of a lateral margin or suture on each of the abdominal segments. The subgenus *Hypostenus* Rey (1883:183) included those species having the fourth tarsal segment bilobed and the abdomen unmargined. Apparently unaware of the earlier description of *Hypostenus,* Casey (1884:150) proposed the new genus *Areus* to include species now known to have *Hypostenus* characteristics, and he also included in *Areus* four species having the abdomen margined. These four species have been referred to the subgenus *Hemistenus* by Sanderson (1946).

Within the subgenus *Hypostenus,* as now restricted, are 37 species considered by Casey (1884) in a revision of the Stenini. Through the courtesy of the United States National Museum I was permitted to examine the Casey types of these species in June of 1955. My findings regarding *advenus* Casey and two closely related species constituting the *advenus* complex are included in the present report.

Several institutions and individuals have provided collections of *Stenus* in the *advenus* complex for my study as follows: Canadian National Collection (CNC); University of Kansas (KU); M. H. Hatch (MHH); University of Alberta (UA); J. B. Wallis (JBW); Owen Bryant (OB); Borys Malkin (BM); A. Robert (AR); and C. H. Seevers (CHS). In addition to acknowledging this aid, I am grateful also to Mr. Bill M. Woods, map librarian of the University of Illinois, for locating several obscure place names.

Definition of the *advenus* Complex

Stenus advenus and its two close allies may be distinguished from other North American members of the subgenus *Hypostenus* by the following combination of characters: body and legs black, shining; first antennal segment black, and remaining segments dark brown; first segment of maxillary palpus pale yellow, and last two segments brown; pronotum shorter than elytral suture; first five segments of abdomen parallel or fourth and fifth segments often enlarged and wider than anterior segments; each of first five abdominal tergites conspicuously transversely grooved and obscurely finely punctured; sternite 7 of male narrowly and shallowly emarginate at middle of posterior

margin and with small group of short depressed hairs on each side of emargination; sternite 8 of male (Fig. 1) deeply and narrowly emarginate; sternite 9 deeply emarginate apically; and male genitalia with a bilobed process arising from ventral surface of aedeagus.

KEY TO SPECIES OF THE *advenus* COMPLEX

1. Penultimate abdominal sternite (Fig. 1) with deep and narrow emargination on posterior margin, males 2
   Penultimate abdominal sternite rounded at apex, females 4
2. Posterolateral margin of abdominal tergite 9 (Fig. 2) broad at apex, having two marginal projections; aedeagus (Fig. 7) short .... *advenus* Casey
   Posterolateral margin of abdominal tergite 9 (Figs. 3 and 4) narrowed at apex, having single marginal projection; aedeagus (Figs. 5 and 6) elongate 3
3. Marginal projection of tergite 9 (Fig. 3) less slender; paramere (Fig. 6) nearly parallel in apical one-half, apex obliquely truncate; aedeagus bluntly rounded at apex ..... *plicipennis* Casey
   Marginal projection of tergite 9 (Fig. 4) more slender; paramere (Fig. 5) with broad inner lobe near apex, and apex deeply obliquely emarginate; aedeagus constricted posterior to slender apex ..... *rossi* n. sp.
4. Pronotum and elytra finely, evenly, and closely punctured; head narrow, elytra varying from 1.32 to 1.38 times wider than head (17 specimens), averaging 1.36 times ..... *advenus* Casey
   Pronotum and elytra generally more coarsely and irregularly punctured with some conspicuous wide and shining inner spaces; head broader, elytra varying from 1.12 to 1.30 times wider than head... 5
5. Apical part of posterolateral margin of tergite 9 more slender, somewhat as in male in Fig. 4; elytra varying from 1.18 to 1.30 times wider than head, averaging 1.24 times; chiefly northeastern in distribution.....*rossi* n. sp.
   Apical part of posterolateral margin of tergite 9 less slender, somewhat as in male in Fig. 3; elytra varying from 1.12 to 1.25 times wider than head, averaging 1.19 times; chiefly northwestern in distribution .....*plicipennis* Casey

Stenus advenus Casey

Areus advena Casey, 1884:158.

Casey distinguished *advenus*, from all other Nearctic species having the fourth tarsal segment bilobed and the abdomen unmargined, by the enlarged fourth and fifth abdominal segments of the male. Some individuals of *rossi* also have these segments enlarged; thus, this feature alone will not serve to distinguish these two species. Ratios of head width to elytral width in 11 individuals showed that the elytra in *advenus* vary from 1.32 to 1.38 times the head width, averaging 1.36 times, whereas the elytra of *rossi* average 1.24 times the head width. Another distinctive feature of *advenus* is the presence of two acute angles on the posterolateral margin of tergite 9 (Fig. 2) instead of one angle as in *rossi*. The male genitalia of *advenus* also are distinctive, the aedeagus (Fig. 7) being much shorter than in *rossi* or *plicipennis*. The paramere is slender as in *plicipennis*, but it has the outer margin distinctly scalloped.

The range of *advenus* (Fig. 9) generally is within the range of *rossi*, and the two species are sympatric in two known localities. In addition to the type male from Marquette, Michigan, I have examined 17 specimens from the following localities: Victoria Beach, Manitoba (JBW); Brome Lake and Kazubazua, Quebec (CNC); Rigaud,

Quebec (AR); Cumberland Co., Maine (CHS); and Douglas and Lancaster lakes in Cheboygan Co., Michigan. A Douglas Lake specimen was collected at the edge of an inland pool. Dates of collection ranged from May 24 to August 18.

Stenus rossi new species

Male.—Length 4.0 to 4.5 mm.; dorsum shining, coarsely and somewhat irregularly punctured; head narrower than elytra, with punctures closely and evenly spaced, and median ridge broad and not strongly convex; pronotum about four-fifths as long as elytral suture, with length and width of pronotum approximately equal; lateral margin of pronotum concave between middle and base, with anterior two-thirds of dorsal surface even, and posterior third with conspicuous punctureless tubercle on each side of meson which has punctures more widely spaced than on sides; mean width of elytra 1.04 times mean total length (10 individuals, Alberta), and 1.24 times mean width of head (21 individuals, Illinois, Michigan, Alberta); elytra as coarsely punctured as pronotum and with some punctures more widely spaced than others; first five visible abdominal segments parallel or fifth visible segment wider than preceding ones; tergite 9 (Fig. 8) slightly emarginate at apex, inner side of this emargination with two widely spaced tubercles; posterolateral margin of tergite 9 (Fig. 4, arrow) very long and slender, approximately three-fourths length of apical flap of tergite 9; sternite 7 with slight emargination on posterior margin at middle, and with small group of coarse hairs on each side of emargination; sternite 8 widest about middle, narrowly and deeply emarginate (Fig. 1); sternite 9 deeply emarginate, truncate on posterior margin, with apical angles long and acute, each about one-half length of space between angles; aedeagus (Fig. 5) elongate, narrowed from base, slightly constricted posterior to the slender apex; paramere with broad inner lobe near apex, and apical margin deeply emarginate.

Female.—Similar to male except that fifth visible abdominal segment never wider than anterior segments, and apical flap of tergite 9 without tubercles on inner surface near apical emargination.

Holotype.—Male, Cary, Lake Co., Illinois, May 19, 1944, Ross and Sanderson, in marshland. *Paratypes.*—Same date, 3 males, 4 females; same data, except June 11, 1943, 1 female; Fox Lake, Lake Co., Illinois, June 3, 1943, Ross and Sanderson, 1 female. MICHIGAN: Burt Lake, Cheboygan Co., June 30, 1935, M. W. Sanderson, in lake drift, 1 male; Cheboygan Co., July 18, 1940, R. I. Sailer, 1 male (KU); Oakland Co., July 4, 1923, M. H. Hatch, 1 male (MHH). VERMONT: Burlington, Chittenden Co., April 20, 1952, F. R. Watson and F. G. Werner, in debris and leaf axils of *Cyperus*, etc. in pond, 3 males, 14 females. QUEBEC: Kazubazua, June 6-10, 1927, W. J. Brown, 2 males, 1 female (CNC); August 18, 1927, W. J. Brown, 1 female (CNC); August 28, 1928, J. A. Adams, 1 female (CNC). ONTARIO: Mer Bleue, June 1, 1928, W. J. Brown, 1 male (CNC); E. Ont., 1886 and 1887, 2 females (CNC). ALBERTA: Bilby, June 24, 1924, O. Bryant (OB); Edmonton, various dates from May to August, 1917 to 1924, F. S. Carr, 10 males, 16 females (UA). MANITOBA: Winnipeg, June 28, 1924, J. B. Wallis, 1 female (JBW); same data, except June 22, 1924, 1 female (JBW); same data, except July 6, 1924, 1 female (JBW); Aweme, July 29, 1924, J. B. Wallis, 1 male (JBW); Niverville, July 1, 1924, J. B. Wallis, 2 males (JBW); Stonewall, May 25, 1919, J. B. Wallis, 5 males, 3 females (JBW); Rosebank, July 21, 1917, J. B. Wallis, 1 male (JBW); Onah, July 11, 1918, J. B. Wallis, 1 male, 1 female (JBW); and May 24, 1912, J. B. Wallis, 1 male (JBW).

Type and paratypes are in the Illinois Natural History Survey Collection.

This species is named in honor of Dr. H. H. Ross who introduced me to the marshes of northern Illinois, the habitats of many species of *Stenus*.

The presence of a pair of tubercles on the inner surface of tergite 9 at the apex of the apical flap, the more produced posterolateral margin of tergite 9, and the large inner lobe on the paramere will distinguish *rossi* from the closely related *plicipennis*. Except for two isolated records of *rossi* from Alberta, all

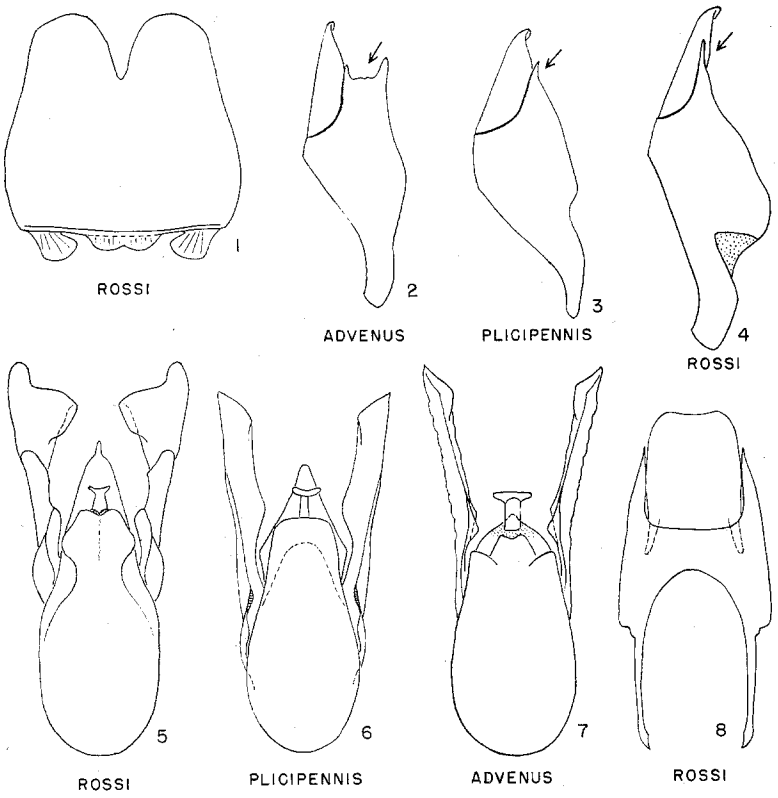

FIG. 1.—*Stenus rossi* n. sp., sternite 8, male; FIG 2.—*Stenus advenus* Casey, lateral view, abdominal segment 9, male, including apical jointed flap and posterolateral margin showing two acute apical projections; FIG. 3.—*Stenus plicipennis* Casey, lateral view, abdominal segment 9, male, showing one acute projection; FIG. 4.—*Stenus rossi* n. sp., lateral view, abdominal segment 9, male, showing one acute projection; FIG. 5.—*Stenus rossi* n. sp., ventral view, male genitalia; FIG. 6.—*Stenus plicipennis* Casey, ventral view, male genitalia; FIG. 7.—*Stenus advenus* Casey, ventral view, male genitalia; FIG. 8.—*Stenus rossi* n. sp., dorsal view, abdominal segment 9, male.

other specimens have been taken east of the 100th meridian; most *plicipennis* records are west of this line.

Stenus plicipennis Casey

Areus plicipennis Casey, 1884:162.
Areus agnatus Casey, 1884:163. New synonymy.

Casey described *plicipennis* from specimens of both sexes taken on Vancouver Island, B. C., and *agnatus* from the female collected in British Columbia. The latter was distinguished from *plicipennis* by the prominent anterior angles of the pronotum and the longer elytra. In the Fall River meadow marsh in Rocky Mountain National Park, Colorado, on September 11, 1954, I collected two males and four females of *plicipennis*. One female has

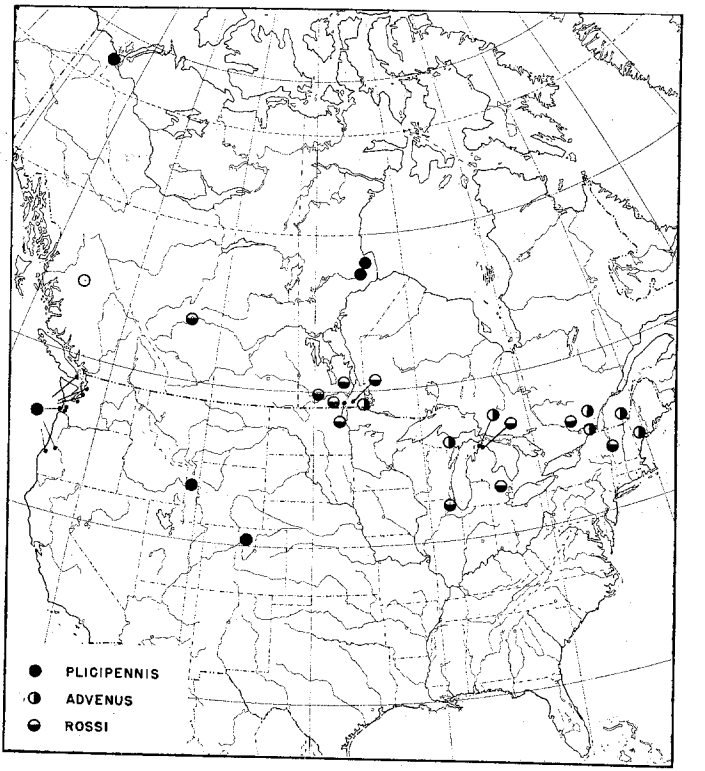

FIG. 9.—North American distribution of three species of *Stenus*. Open circle in British Columbia denotes province record only for *plicipennis*.

a small tubercle at the anterior lateral pronotal margin or angle and was found to agree favorably with the type of *agnatus*. The remaining females and males from Colorado, and a female collected in the elk range marsh two miles north of Jackson, Wyoming, September 3, 1954, essentially agree with the type of *plicipennis;* thus the presence of tubercles probably is atypical.

The individuals from Colorado and Wyoming and one male each from Mile 214, Hudson Bay Railway between Chesnaye and Cromarty, and Pikwitonei [Piquitenay], Manitoba (JBW) constitute a substantial eastern extension of the known range, and they differ biometrically from northwest *plicipennis*. The elytra are as long as or longer than wide, mean total length being 1.04 times the width; 13 individuals from Washington and Oregon have elytra wider than long, mean total width being 1.03 times length. However, one specimen from Washington has elytra slightly longer than wide. The male genitalia (Fig. 6) are similar in samples examined throughout the range of this species, but it is suggested that differences in elytral measurements from the localities mentioned may be of

some subspecific significance.

Most of the localities represented in available collections of this species are from Washington and Oregon (Fig. 9) west of the Cascade Range as follows: WASHINGTON: Ocean Park, Long Lake, Clear Lake, Pierce County; Evans Creek, King County; Naselle River near Naselle, Bothell, Bay Center, and Scribner Lake, Snokomish County (MHH); OREGON: Munsel Lake near Florence, Lane County, and Eugene (BM). Two individuals (Aklavik in Northwest Territories, on left bank near mouth of Mackenzie River) are similar to typical *plicipennis* from the Pacific Northwest.

GENERAL DISTRIBUTION OF *advenus* AND ALLIES

The records available show that *plicipennis* occurs in the Hudsonian, Oregonian, and Coloradan biotic provinces (Dice, 1943) from Rocky Mountain National Park, Colorado, slightly north of 40° N. lat., to Aklavik, Northwest Territories, approximately 100 miles north of the Arctic Circle. The greatest number of records for this species is from a narrow belt west of the Cascades in Washington and Oregon. Most of the records for *advenus* and *rossi* are within the Hudsonian and Canadian provinces, the exceptions being one record each for *rossi* in the northeast Illinoian and close to the northern border of the Carolinian. *Stenus advenus* occurs within the range of *rossi* and possibly the two are habitat sympatric, since both species are known to occur in two localities in Michigan and Quebec. So far as observed the three species inhabit marshland and probably are distributed much more widely than present records indicate.

SUMMARY

Three species of *Stenus* of the subgenus *Hypostenus* are treated taxonomically, with keys to the species represented by both sexes. *Stenus rossi* is described as a new species, from northern Illinois, Michigan, Vermont, and several Canadian provinces. *Stenus agnatus* Casey is synonymized with *plicipennis* Casey. The taxonomic value of the male genitalia and terminal abdominal segments for distinguishing these species is demonstrated. A map showing the present known distribution of *advenus* Casey and allies is presented.

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