

TAXA OF *IDIOCERUS* LEWIS NEW TO CANADA (RHYNCHOTA: HOMOPTERA: CICADELLIDAE)

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ABSTRACT

Six new species and one new subspecies of *Idiocerus* are described: *I. cabottii* from N.S., *I. canae* from Alberta, *I. glacialis* and *I. indistinctus* from B.C., and *I. albolinea*, *I. musteus arsinatus* and *I. setaceus*, widespread east of the Cordilleran region. The identities of *I. duzei* Provancher (N.S.-Ont.) and *I. interruptus* Gillette & Baker (N.S.-Colo.) are discussed, and these species are removed from synonymy.

The Cicadellid tribe Idiocerini (subfamily Idiocerinae of authors) is a large and complex assembly of genera and species. The number of genera is relatively small in the Holarctic, but the species feeding on *Salix* and *Populus* are numerous. Beirne (1956) listed only 13 species and Freytag (1965) listed 19 of the 49 Nearctic species as occurring in Canada, all in the single genus *Idiocerus* Lewis. Since then, many additional species have been discovered. Hamilton (1980) recognized 3 genera containing 82 Nearctic species, of which 1 species in *Rhytidodus* Fieber, 3 in *Balcanocerus* Maldonado-Capriles, and 49 in *Idiocerus* are now known to occur in Canada. In *Idiocerus* there are an additional 6 undescribed species, 2 previously described but unrecognized species, and 1 new subspecies.

Idiocerus albolinea n. sp.

Nymph. Colour pale yellow, boldly marked with deep brown on dorsum, with pale areas restricted to around coronal maculae, lateral margins of pronotum, posterior edges of wing pads, antepenultimate visible abdominal segment, and median line from head to tip of abdomen.

Male. Width across eyes 1.7 mm; length including folded tegmina 4.9-5.2 mm. Head much broader than thorax, weakly produced, coronal margin evenly curved, posterior margin arched as far forward as eyes (Fig. 13); antenna with very small, narrowly oval disc one-eighth as long as antennal filament, ending in prominent apical filament, as in *I. ramentosus* (Hamilton 1980: Fig. 17). Abdominal apodemes as in *I. alternatus* Fitch (idem: Fig. 58). Male genitalia as in *I. alternatus* (Freytag 1965: Figs. 45, 98, 146, 191) but with apical pair of setae slightly longer, 0.07-0.08 mm, and preapical microsetae almost as long as apical setae (Fig. 18). Head pale yellow, face unmarked except for two pale brown streaks down frons, and gena with grey line edging lora; crown bearing two prominent, black coronal maculae, and broad brown areas interrupted at middle and next to eyes with yellow ground colour; pronotum blackish anteriorly, brown posteriorly, with broad, median white stripe and two indefinite pairs of lateral greyish stripes; scutellum yellow, boldly marked

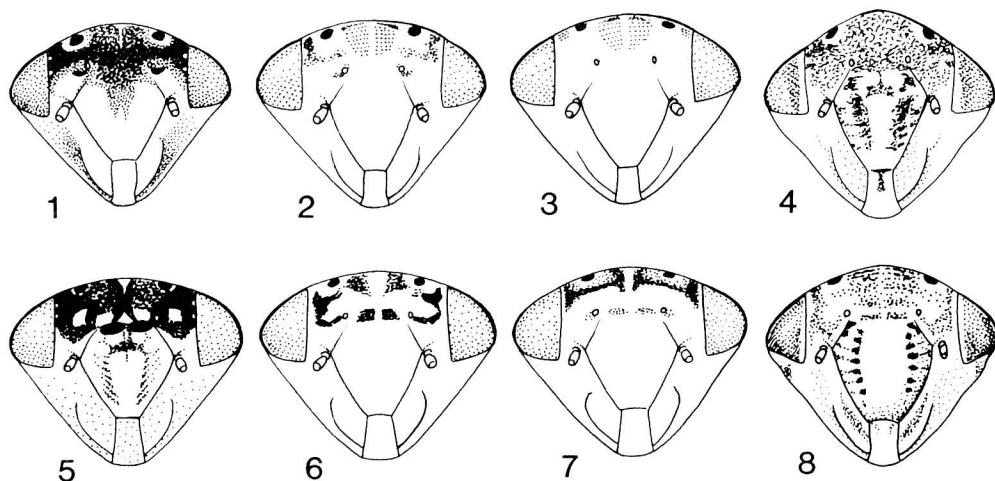
with black (Fig. 13); pleura yellow near wing bases, black below; coxae black; legs tan; tegmina hyaline with blackish veins interrupted by pale spots on inner edges of basal and anteapical cells, and with bold, pale spot on commissure at apices of first claval veins.

Female. Width 1.6-1.7 mm; length 4.6-5.2 mm. Form as in male, but antennae simple, ovipositor extending one-quarter to one-fifth its length from pygofers, toothed as in *I. xanthiops* (Hamilton 1980: Fig. 120). Colour as in male, but less boldly marked, with eyes edged with pale line, dark areas on crown and pronotum broken up into black spots, median markings on scutellum brown to tan, and white pronotal stripe usually narrower and greyer; face between eyes brown, flecked with pale spots near ocelli, and with an arcuate chain of pale spots across upper margin of frons; pleura and coxae pale with a black spot each, to as dark as in male; tegmina sometimes with a pale brown "saddle" across clavi.

Hosts. A short series was taken on *Salix amygdaloides* in Manitoba. As this willow does not range as far east as does *I. albolinea*, at least one other willow host is likely.

Types. Holotype male, Tillsonburg, Ont., 3 June 1961 (Kelton & Brumpton). Paratypes: 2 nymphs, 4 males, 6 females, 27 May and 23 July - 15 August, from the following localities: Patricia Beach, Man.; Miscou Centre, N.B.; Lone Sheiling, CBHNP, N.S.; St.-Vianney, P.Q.; Ipperwash Prov. Pk. and Prince Edward Co., Ont.; Saskatchewan, Sask. All types No. 18457 in Canadian National Collection, Ottawa (CNC).

Remarks. This species resembles the eastern *I. alternatus*, the western *I. freytagi* Hamilton and the northern *I. striolus* Fieber, but differs from these in the length of the apical styler setae (Figs. 17-20). Its head is also broader and only weakly produced, and the median pronotal stripe is highly developed in *albolinea* (Fig. 13) compared to that of the other species (Fig. 9). The long, preapical styler microsetae are unique, and prevent this species from running through the first couplet of the key (Hamilton 1980: 827). The male antennae resemble those of *I. indistinctus*, but this species has a single styler seta, and the paired apical styler setae of *albolinea* show that they are not closely related.



Figs 1-8. Facial aspect of *Idiocerus* spp. omitting antennae: 1-3, males; 4-8, females. 1-2, 5-6, *I. musteus verrucosus* Ball; 3, 7, *I. musteus arsinatus* n. subsp., holotype; 4, *I. glacialis* n. sp.; 8, *I. cana* n. sp., holotype.

***Idiocerus* (*I.*) *cabottii* n. sp.**

Nymph. Unknown.

Male. Width across eyes 1.6-1.7 mm; length including folded tegmina 4.8-5.0 mm. Head much broader than thorax, strongly produced, coronal margin sinuately curved near eyes, posterior margin arched before eyes (Fig. 11); antenna with small, oval disc one-fifth length of antennal filament, as in *I. alternatus* Fitch (Hamilton 1980: Fig. 24). Abdominal apodemes as in *alternatus* (idem: Fig. 58). Male genitalia as in *I. distinctus* Gillette & Baker (Freytag 1965: Figs. 48, 100, 149, 194), with apical seta of style small and fine, 0.05 mm long (Fig. 21). Dorsum chocolate-brown with pale flecks on crown near black coronal maculae, on anterior margin of pronotum and disc of scutellum; face pale yellow with 2 short, brown lines on disc of frons, brown lines down sides of frons, and a heavy brown line extending from eye across each gena, bordering lora; pleura and lateral triangles of scutellum black; median stripe of pronotum grey; legs tan; tegmina brownish hyaline with dark brown, setigerous veins interrupted with white spots on inner edges of basal and anteapical cells, and with a large, white spot on commissure at apices of first claval veins.

Female. Size, shape and colour as in male, but coronal margin evenly curved, antennae simple, and face evenly tan; ovipositor extending one-fifth its length from pygofers, with toothed portion one-third its length, teeth fine and very close-set, as in *I. xanthiops* Hamilton (1980: Fig. 120).

Host. The holotype was taken on *Salix eriocephala*.

Types. Holotype male, Cheticamp River [mouth], Cape Breton Highlands N.P., N.S., 28 May 1984 (H. Goulet). Paratypes: 1 male, 1 female, same locality, 23 May. All types No. 18450 in C.N.C.

Remarks. This species keys to *I. distinctus* (Hamilton 1980: 827-828) but resembles *I. alternatus* in its more strongly arched head margins and darker, unbanded colour pattern. *Idiocerus femoratus* Ball, *I. glacialis* n. sp. and *I. xanthiops* have a similar style, but these have enlarged mesofemora, even in "sex reversed" individuals. The only other species with a similar style is *I. indistinctus* n. sp., a much paler western species (Fig. 12).

This species is named for the discoverer of Cape Breton Island, known to the English as "John Cabot", who is reputed to have landed near the type locality.

***Idiocerus* (*I.*) *canae* n. sp.**

Nymph and male. Unknown.

Female. Width across eyes 1.7 mm; length including folded tegmina 4.9 mm. Head much broader than thorax, prominently produced, coronal margin evenly curved, posterior margin arched before eyes (Fig. 15); frons broad and inflated; clypellus nearly parallel-margined (Fig. 8); ovipositor extending one-fifth its length from pygofers, with toothed portion two-fifths its length, teeth coarse and well spaced, as in *I. delongi* Freytag (Hamilton 1980: Fig. 121). Colour pale yellow boldly patterned with a widely separated double row of black spots on frons, prominent black coronal maculae, a curvilinear row of black freckles on front of pronotum, black lateral triangles and discal spots on scutellum, black lower half of pleuron, and indefinite brown markings on frons, lora, vertex, pronotum and scutellum (Figs. 8, 15); tegmina tan, with outer vein (R) prominently setose, other veins barred with dark brown as in *I. alternatus*.

Hosts. The only known specimen was taken on shrubs of hoary sagebrush, *Artemisia cana*, high on the banks of the South Saskatchewan River. It may have flown up from a moister area.

Type. Holotype female, Medicine Hat, Alta., 14 August 1981 (K.G.A. Hamilton); No. 18451 in C.N.C.

Remarks. This unique specimen resembles weakly patterned individuals of *Idiocerus musteus* Ball and *I. utahnus* Ball & Parker, to which species it runs in the key (idem: 830-831). However, the more strongly arched head of *cana* resembles those of the *alternatus* species-group (Figs. 9-14) rather than those of the *musteus* species-group (Fig. 16). The ovipositor and nearly parallel-sided clypellus resemble those of *I. huachucae* Ball & Parker, which is also an arid-adapted species. The inflation of the frons and widely separated rows of frontal spots are unique.

Idiocerus (Populicerus) duzei

Provancher, reinstated species

Idiocerus duzei Provancher, 1890: 292.

Idiocerus obsoletus Walker (sic): Hamilton 1980: 844 (incorrect synonymy).

Nymph. Unknown.

Male. Size and structural characters as in *I. pallidus* Fitch and *I. obsoletus* (Walker). Yellow, lateral triangles of scutellum orange-yellow, abdominal terga black, tegmina infumate, darker beyond apex of clavi and on basal two-thirds of clavi.

Female. Size and structural characters as in *pallidus* and *obsoletus*. Colour ochre, abdominal terga black, tegmina hyaline.

Host. Broadleaved *Salix* sp., probably *eriocephala*.

Type. Female, No. 386 in Provancher collection, Laval University, examined by Hamilton (1976). The size and colour are distinctive.

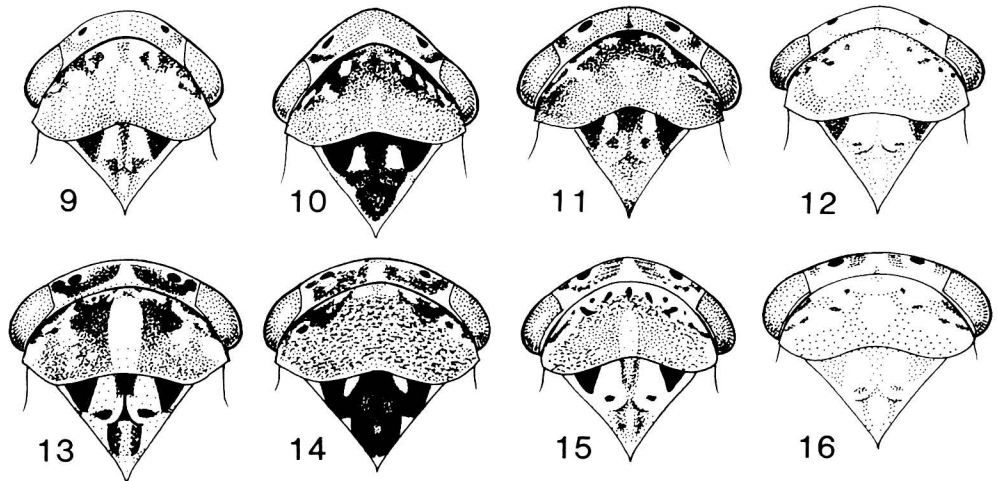
Remarks. I had previously supposed (op. cit.) that the black abdominal terga (usually a male character) in an otherwise normal female specimen showed that the type is a "sex-reversed" individual. I have now examined an additional 23 females and 3 males of this colour form from N.B., N.S., Ont. and Mass., none of which were taken together with either *pallidus* or *obsoletus*. One of these series consists of 2 males and 10 females. *Idiocerus duzei* is thus a taxon equivalent to *pallidus* and *obsoletus*. The possibility that both *duzei* and *obsoletus* are ecophenotypes of *pallidus* cannot be ruled out at the present time. However, in the absence of any such correlation, it seems best to regard them as separate species until rearing under controlled conditions can settle this question.

***Idiocerus (I.) glacialis* n. sp.**

Idiocerus xanthiops Hamilton, 1980: 837 (in part: 4 paratypes).

Nymph. Unknown.

Male. Width across eyes 1.7 mm; length including folded tegmina 4.9-5.0 mm. Head not much broader than thorax, proportioned as in *I. albolinea* (Fig. 14); antennae with very large, broad disc half as long as antennal filament, as in *I. taiga* Hamilton (1980: Fig. 29), but without apical filament; mesofemora enlarged and mesotibia shortened, as in *I. xanthiops* (idem: Fig. 15). Abdominal apodemes not well developed in either male examined. Male genitalia as in *I. distinctus*. Dorsum brown with paler mottling (Fig. 14); coronal maculae, scutellum, pleura and coxae mostly black; face pale yellow heavily striped with black, as in *I.*



Figs. 9-16. Crown, pronotum and scutellum of *Idiocerus* spp.: 9-14, males; 15-16, females. 9, *I. freytagi* Hmlt.; 10, *I. setaceus* n. sp., holotype; 11, *I. cabottii* n. sp., holotype; 12, *I. indistinctus* n. sp., holotype; 13, *I. albolinea* n. sp., holotype; 14, *I. glacialis* n. sp., holotype; 15, *I. cana*, holotype; 16, *I. musteus* Ball.

taiga (idem: Fig. 4); tegmina infumose, veins dark brown freckled with a few pale spots.

Female. Width 1.8 mm, length 5.3-5.6 mm. Form as in male, but antennae and legs simple; ovipositor as in *I. cabottii*. Light brown, patterned with black spots on frons (Fig. 4), coronal maculae, anterior margin of pronotum, and lateral angles and disc of scutellum; lower half of face mostly pale yellow; pleura black; tegmina as in male.

Hosts. One pair of specimens was taken on *Salix sitchensis*, and the other pair on *Alnus crispa* var. *snuatus* adjacent to *Salix sitchensis*.

Types. Holotype male, Taft, B.C., 10 August 1976 (K.G.A. Hamilton). Paratypes: 1 male, 2 females, 10 and 22 August, Taft (c. 1500') and Glacier (c. 3500'), B.C. All types No. 18452 in C.N.C.

Remarks. This species is closely related to *I. xanthiops*, with which it was confused when the latter was described, and to which species it runs in the key (idem: 827-828). However, the darkly patterned male face and large antennal discs are strikingly like those of *I. taiga* (idem: Figs. 4, 29), which in male genital characters is similar to *I. striolus* Fieber (Fig. 19). Males of *xanthiops* differ from those of *glacialis* in having a bright yellow face with fine brown lines and antennal discs one-third to one-quarter as long as the antennal filament. No geographical variation in these characters was observed in long series of *xanthiops* from across Canada, including southern B.C., where *xanthiops* feeds on *Salix candida*.

***Idiocerus (I.) indistinctus* n. sp.**

Nymph. Unknown.

Male. Width across eyes 1.6 mm; length including folded tegmina 4.6 mm. Head much broader than thorax, weakly produced, coronal margin sinuately curved near eyes, posterior margin arched slightly before eyes (Fig. 12); antenna with tiny, oval disc one-seventh length of antennal filament, as in *I. ramentosus* Uhler (Hamilton 1980: Fig. 17) but without the apical filament. Abdominal apodemes poorly developed in only known male. Male genitalia as in *I. distinctus*. Pronotum grey; legs tan; rest of body and head pale yellow marked with brown stripe down each gena from eye to apex, edging lora, and with dark spots on coronal maculae, anterior margin of pronotum and sides of scutellum (Fig. 12); lower halves of pleura black; tegmina infumate, with clavus and veins brown except for hyaline base of tegmina, a large, pale spot across commissure at ends of first claval veins, and several inconspicuous pale spots on inner corial vein (Cu).

Female. Width 1.6 mm; length 5.0 mm. Form as in *I. canae*, but with small, flat frons as in male; ovipositor as in *I. cabottii*. Pronotum, upper part of face and legs tan; rest of body and head pale yellow, marked as in male, but with face and clavus unmarked, except for an arcuate chain of 4 pale spots between eyes, and brown claval veins.

Hosts. Both specimens were taken on *Salix bebbiana*.

Types. Holotype male, 6 mi N Quilchena, B.C., 9 August 1976 (K.G.A. Hamilton). Paratype: 1 female, same data as holotype. Both types No. 18453 in C.N.C.

Remarks. The male genitalia and unmodified legs show that this species is closely related to *I. distinctus* and to *I. cabottii*. It runs in the key to *distinctus* (Hamilton 1980: 827-828). Its colour pattern is entirely different from those of both related species. *Idiocerus distinctus* has a reddish to black dorsum, and white tegmina with a prominent transverse band; *I. cabotti* is dark brown, including the tegmina.

***Idiocerus (I.) interruptus* Gillette & Baker, reinstated species**

Idiocerus interruptus Gillette & Baker, 1895: 74.

Idiocerus alternatus Fitch: Osborn & Ball 1898: 125 (incorrect synonymy).

Nymph and male. Unknown.

Female. Width across eyes 1.8-1.9 mm; length including folded tegmina 5.1-5.3 mm. Head much broader than thorax, proportioned as in *I. albolinea* (Fig. 13); ovipositor extending one-third its length from pygofer, toothed as in *I. xanthiops*. Colour pale yellow, dorsum mottled in ferruginous with black coronal spots, 2-6 black freckles on anterior margin of pronotum, and sometimes with discal and lateral black markings on scutellum; tegmina infumate, veins narrowly darkened, interrupted with indefinite pale spots.

Host. One series of females is known from *Ribes aureum*. The *Idiocerus* species that feed on *Ribes* have longer ovipositors than others in the same genus, and this is characteristic also of *I. interruptus* although the original description and illustration do not show this character.

Types. Syntypes, 1 male and 2 females, locality not given but presumably from Colorado. They are omitted from Gillette's (1898) catalogue of types and are not in the present Gillette collection in Colorado State University (H. E. Evans, in litt.). Osborn & Ball (1898) examined 2 of the types, and I examined one female from the Ball collection in the U.S. National Museum. Lectotype female, here designated, Colo. 1373, (C. F. Baker), "Type", in U.S. National Museum.

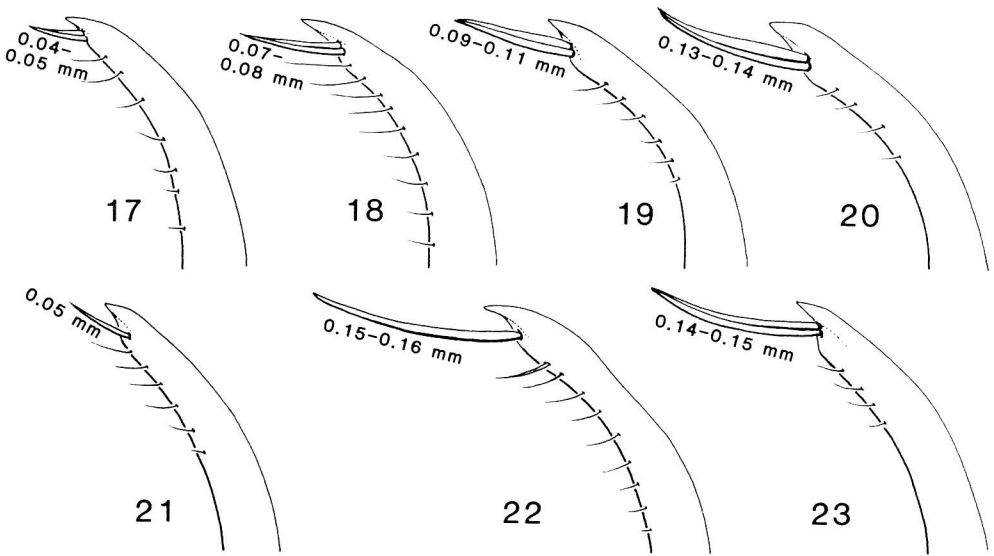
Remarks. This species is similar to *I. ensiger* Ball, but has a shorter ovipositor. It runs to *iodes* Hamilton in the key (Hamilton 1980: 830) but differs in the much paler colour and broader head.

***Idiocerus (I.) musteus arsiniatus* n. subsp.**

Idiocerus musteus verrucosus Ball: Hamilton 1980: 834 (in part).

Nymph. Colour brown with 4 bold black spots on crown, irregular black spots across dorsum of thorax, and dark brown bands around abdominal tergites, to entirely blackish brown with yellow coronal margin and paler brown around coronal maculae and on leg bases.

Male. Size and form as in typical subspecies. Colour as in typical *musteus*, or with 4 pale brown spots along coronal margin (Fig. 3).



Figs. 17-23. Apex of left style, ventral (widest) aspect, of *Idiocerus* spp. 17, *I. alternatus* Fitch; 18, *I. albolinea*; 19, *I. striolus* Fieber; 20, *I. freytagi*; 21, *I. indistinctus*, holotype; 22, *I. setaceus*, holotype; 23, *I. cedrus* Hmlt.

Female. Size and form as in typical subspecies. Colour as in typical *musteus*, but with dark, transverse I-shaped lines under each coronal macula and often also with indefinite brown marks between ocelli (Fig. 7).

Hosts. This species has been collected on various willows, including *Salix bebbiana*, *S. discolor*, *S. eriocephala*, *S. humilis*, *S. pellita*, *S. petiolaris* and *S. planifolia*. Three series each from *S. discolor* and *S. eriocephala*, and one series from each of the other species were examined.

Types. Holotype female, 14 mi E Kenora, Ont., 9 August 1960 (Kelton & Whitney). Paratypes: 2 nymphs, 20 males, 50 females, 24 June-10 September, from the following localities: High Prairie, Lundbreck, Wabamun and Wildwood, Alta.; Brandon and Steinbach, Man.; Princess Park, N.B.; Gambo, Nfld.; Marion Bridge, N.S.; Bancroft, Black Sturgeon L., Borups Corners, Bourkes, Deacon, Devil's Glen, Dryden, Kenora, McFarlane L., Naiscoot L., One Sided L., Raith, Shoals Prov. Park, Sylvan, Thunder Bay, and Washago, Ont.; Aylmer, Gr. Cascapédia, La Minerve, Louvricourt, Mt. Lyall, Rollet, St. Germaine and St.-Vianney, P.Q.; Elbow and Loveburn, Sask.; Jacksonville, Me.; Bristol Springs and Cheshire, N.Y. All types No. 18454 in C.N.C.

Remarks. This is one of three geographically approximate (parapatric) taxa with identical morphology but differing colour patterns. Since the ranges of these forms abut, and are separated by the ridges of the Cascade and Rocky Mountain ranges (Fig. 24), I consider them as geographical subspecies of a single species despite the lack of clear evidence of genetic compatibility.

Typical *musteus*, the Pacific coastal subspecies, is characterized by the heads of both sexes being marked only by the black coronal maculae. The Cordilleran subspecies *verrucosus* Ball usually has the heads extensively darkened; males (Figs. 1-2) have at least a trace of markings between the ocelli and the coronal maculae; females have a row of 4 pale spots (Fig. 5) that may be confluent when the dark markings are restricted (Fig. 6). Some individuals of both sexes of *verrucosus* have the facial markings so pale that they are scarcely traceable. This contrasts with females of *arsiniatus*, which always have characteristic linear dark markings below the coronal maculae (Fig. 7). Males of *arsiniatus* cannot always be distinguished from those of the other subspecies except by their distribution.

***Idiocerus* (*I.*) *setaceus* n. sp.**

Idiocerus striolus Fieber: Hamilton 1980 (in part: Fig. 62).

Idiocerus lucidae Hamilton, 1980: 834 (in part: paratype from Plainfield, N.Y.).

Nymph. Colour blackish brown, paler on thorax, marked with four large, often confluent black spots between eyes, these separated from black frons by pale yellow band; coronal maculae black, ringed with light brown; median line of thorax and abdomen, hind wing pads and fifth visible abdominal segment tan; dorsum of thorax freckled with black.

Male. Width across eyes 1.5-1.7 mm; length including folded tegmina 4.8-5.5 mm. Head broader than thorax, strongly, conically produced, coronal margin nearly straight near eyes, almost pointed at apex of head, posterior margin strongly arched before eyes (Fig. 10); antenna with small, nearly

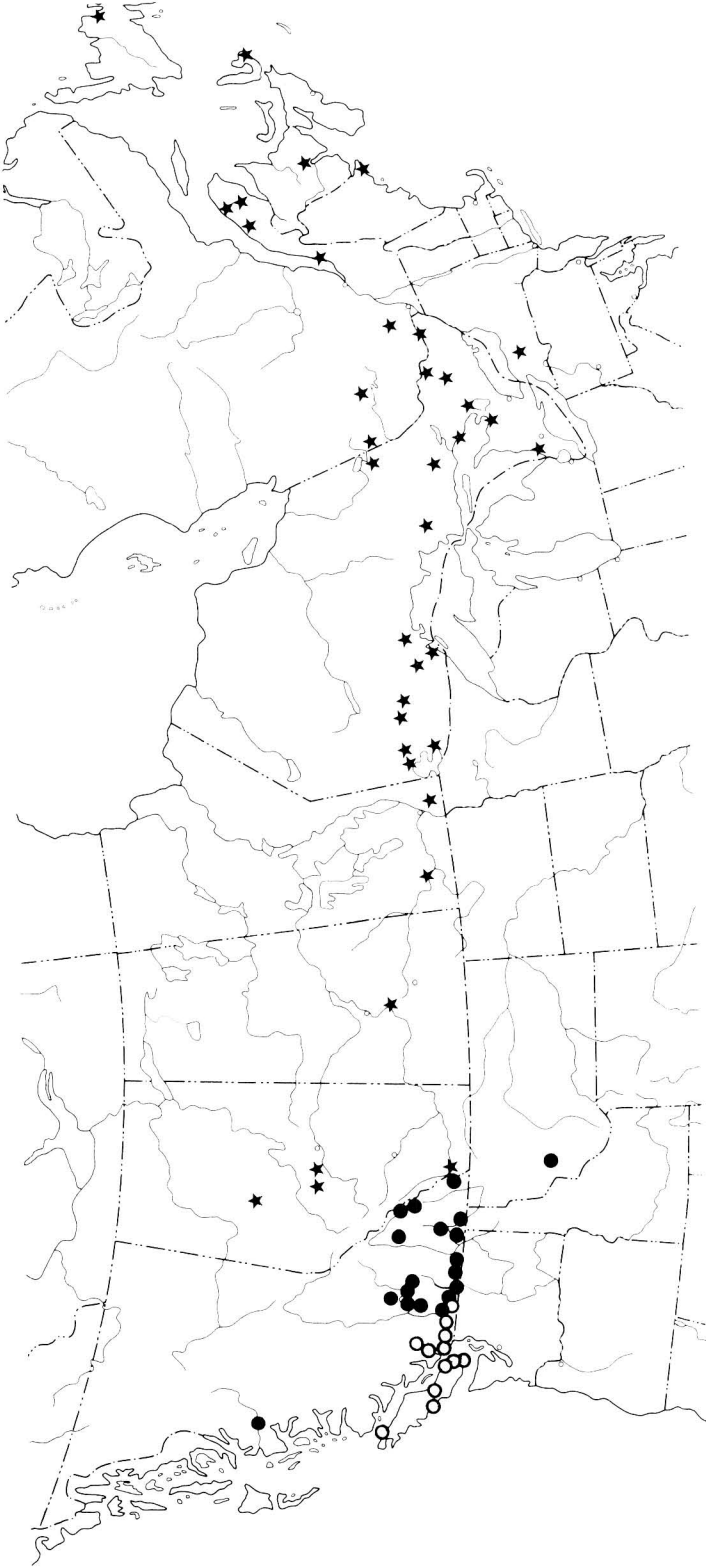


Fig. 24. Distribution of subspecies of *Idiocerus musteus* Ball. ○, typical subspecies; ●, subspecies *terrucosus* Ball; ★, subspecies *arsiniatus* Hmlt.

round disc one-sixth length of antennal filament, as in *I. tahotus* Ball & Parker (Hamilton 1980: Fig. 25). Abdominal apodemes similar to those of *I. alternatus* and *I. striolus*, but sternal apodemes twice as long as wide, two segments long (idem: Fig. 62). Male genitalia as in *I. alternatus*, but with style armed with single apical seta 0.15-0.16 mm long (Fig. 22). Dorsum chocolate-brown, blackish flecked with pale yellow on anterior margin of pronotum and disc of scutellum; face pale yellow, with grey disc between ocelli and pronotum, boldly marked with two pairs of brown stripes, one running length of frons, second edging frons and traversing inner angles of lora; gena with central grey streak; coronal maculae, irregular spot near eye on crown, and pleura black; legs tan, with outer faces of tibiae dark brown; tegmina grey-brown with dark brown veins interrupted with pale spots, as in *I. cabottii*.

Female. Width 1.6-1.7 mm; length 5.0-5.5 mm. Head broader than thorax, strongly produced, coronal margin evenly curved, posterior margin arched before eyes (as in Fig. 15); antenna simple; ovipositor as in *I. cabottii*. Colour as in male, but yellow areas more extensive on dorsum; face and legs mottled with brown; usually with large, pale yellow areas on disc of frons and between ocelli and eyes.

Hosts. Three series (including nymphs) have been taken on *Salix petiolaris*, which is probably its primary host. Two adults and three nymphs were taken on *Salix sericea*, and two adults on an isolated bush of *Salix eriocephala*. Short series of adults (probably strays) have been taken on *Populus sargentii*, *P. balsamifera*, *P. tremuloides*, *Betula glandulifera*, *Sabina horizontalis* and *Pinus strobus*. Several other series have been recorded from *Salix* spp.

Types. Holotype male, Kinburn, Ont., 29 April 1957 (J. E. H. Martin). Paratypes: 5 nymphs, 70 males, 84 females, 5 July-12 October, and 19 April-21 June (N.W.T.), from the following localities: Black Foot Hills, High Prairie, Lethbridge and Styal, Alta.; Quesnel, B.C.; Aweme, Brandon and Dallas, Man.; Norman Wells, N.W.T.; Huntley, Kinburn, Marmora, Odessa and Raith, Ont.; Attons L., Indian Head, Lashburn, Lumsden, Rutland and Saskatoon, Sask.; Moriah Corners and Plainsville, N.Y.; Hayward and Montello, Wisc. All types No. 18456 in C.N.C.

Remarks. This species is similar to the sympatric *I. striolus*, to which it runs in the key (idem: 827-828). The single, long stylar seta is unique. The stylar setae of *I. cedrus* Hamilton (Fig. 23) are similar in size and shape, but are always paired.

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