NEW GENERA AND SPECIES OF THYSANOPTERA (TUBULIFERA: PHLAEOTHRIPIDAE) FROM ILLINOIS AND ALABAMA

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The following new genera of the Phlaeothripinae have in common the unusual characteristic of possessing two pairs of conspicuous epimeral setae; that is, there are two well-developed setae present on each epimeral sclerite on either side of the prothorax. This feature is shared by the Neotropical *Holcothrips* and *Phrasterothrips*, some *Acanthothrips*, several Oriental and Australian entities in the genera *Tolmetothrips*, *Austrothrips*, *Eothrips* and allies, and *Pselaphothrips*, as well as in a few genera belonging to the Megathripinae. It is apparently a characteristic of evolutionary convergence. Although useful in taxonomic analyses, it is not completely reliable, as forms are found, even within the same species or genus, which may have one of these pairs of setae considerably reduced. Although they key out well together, the two new genera described herein do not appear to be closely related.

The new species of *Hoplandrothrips* is from native Illinois prairie grasses and is not yet known elsewhere.

Diphyothrips, new genus

Head just slightly longer than broad, with weak, transverse striae. Eyes moderately small, shorter than combined lengths of antennal segments I and II, not ventrally prolonged. Ocelli present, moderately far apart, fore ocellus overhanging insertion of antennae. Antennae eight-segmented; segments I and II more or less symmetrical; segments III with basal half abruptly narrowed; segment VIII only slightly narrowed basally, broadly attached to segment VII. Postocular setae long. Maxillary stylets, when at rest position, extended far into the head and placed fairly close together within the center of the head. Mouth cone moderately long, broadly rounded.

Prothorax shorter than head, nearly smooth. All major setae well developed, midlateral setae closer to epimeral suture than to anterolateral setae. Epimeral suture complete. Each epimeron divided into three parts, with two well developed setae. Praepectus apparently absent. Metascutum nearly smooth medially with weak elongated reticulations that tend to become longitudinal striations laterally, lacking long setae; mesopraesternum band-like, completely separated by a suture from the mesosternum. Fore femora not particularly enlarged. Fore wings of even width throughout, with accessory fringe cilia.

Pelta small, triangular to bell-shaped. Wing holding setae relatively slender, curved to nearly sigmoidal. Abdominal tergite II at sides not especially fractured into small stipple-like platelets. Abdominal tergite IX with major posterior setae much longer than tube in female; condition in male unknown. Tube slightly shorter than head; terminal setae shorter than tube.

Type-species.—*Diphyothrips morainensis*, new species.

The division of the epimeral plate into three parts is a unique characteristic for this genus.

Of the genera of Phlaeothripinae occurring in the Americas, those which have two pairs of epimeral setae differ from *Diphyothrips* in important respects: *Phrasterothrips*

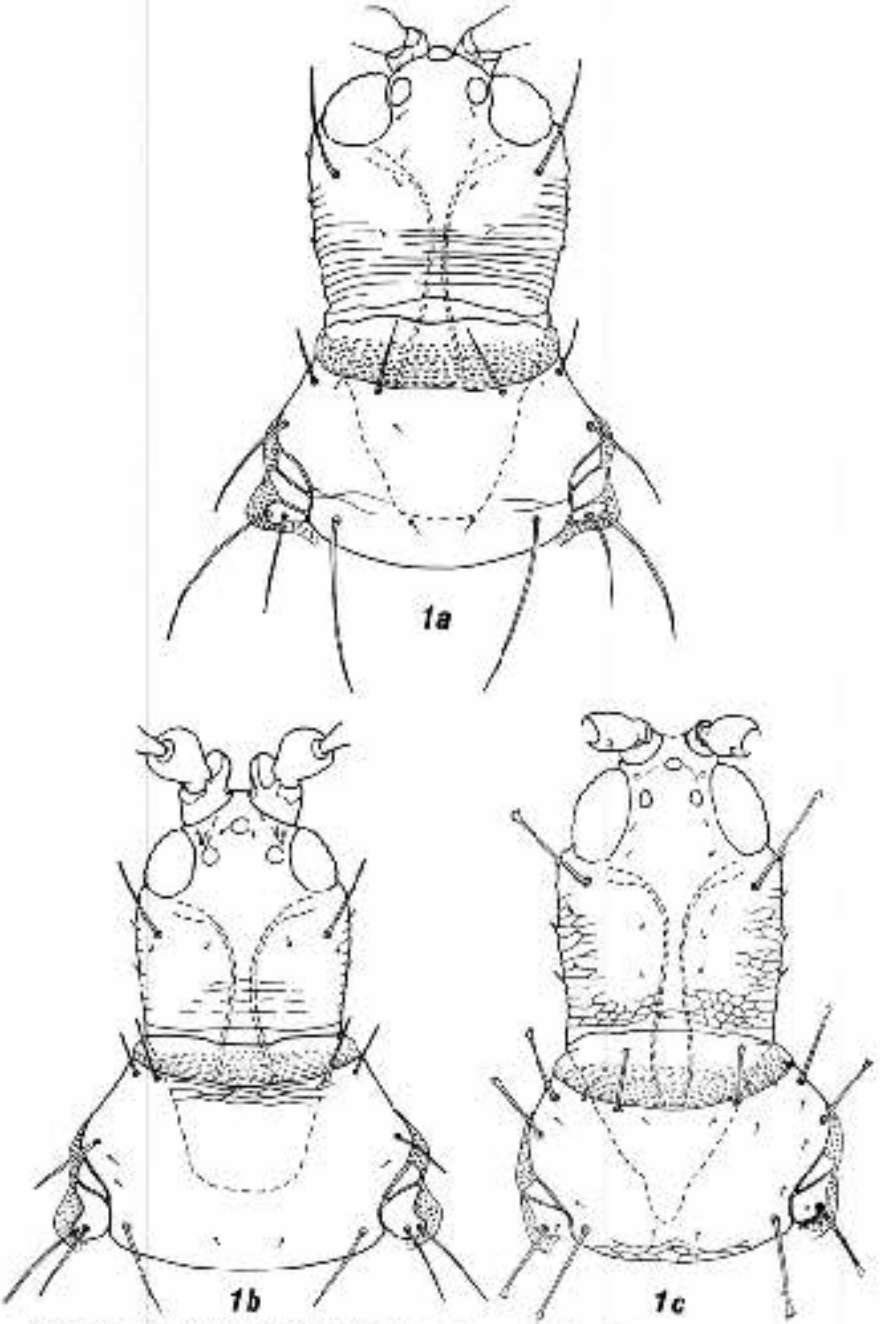

FIGURE 1.—Dorsal view of head and prothorax of 1a, *Diphyothrips moraiensis* n. sp.; 1b, *Aeranothrips asymmetricus* (Watson); and 1c, *Hoplandrothrips lateralis* n. sp.

has the midlateral prothoracic setae placed closer to the anterolateral setae than to the epimeral suture, whereas in *Diphyothrips* these lateral setae arise close to the epimeral suture; *Acrosothrips* has antennal segments I and II strongly asymmetrical in contrast to the nearly symmetrical condition found in *Diphyothrips*; and *Holcothrips* is said to have the dorsal surface of the head reticulate, the post ocular setae very short, the major prothoracic setae dilated, and the fore wings lacking accessory setae—characteristics which are not found in *Diphysothrips*.

Diphyothrips morainensis, new species

Female (macropterous). — Length nearly 2 mm. Color dark brown. Antennal segment III, fore tibiae and all tarsi, yellowish brown. Subintegumental pigment red. All body setae pale yellow. Wings colorless except light brown at base including scale of fore wing.

Head as in figure 1a. Post ocular setae pointed. Ocellar setae minute. Antennal segment III with one outer sense cone, which is about 10 μ long, and no inner sense cone. Antennal segment IV with one outer sense cone, which is about 24 μ long, and one inner sense cone, which is about 16 μ long.

Prothorax, figure 1a, with all major setae long and blunt at tips. Anteromarginal setae longer than anterolateral setae. Posteromarginal setae longest, longer than length of prothorax. Pterothorax with all lateroventral setae pointed. Fore tarsi unarmed. Fore wings with 11 to 13 accessory fringe cilia.

Abdomen with pelta triangular to slightly bell shaped, not abruptly expanded near posterior margin. Lateral abdominal setae becoming progressively longer on segments II to IX, only lateral setae on segment IX longer than tube. Abdominal tergite IX with all long major setae pointed at tips.

Measurements in μ: Holotype ♀, paratype ♀. — Head length 228, 228, greatest width, just behind eyes 227, 216; compound eye dorsal length 64, 60, dorsal width 59, 56; post ocular seta length 120, 110; antenna total length, including membranes 435, . . . ; antennal segments, exclusive of membranes:

	length	*width*
I	32, 29	39, 38
II	55, ..	36, ..
III	64, 60	36, 34
IV	54, 52	38, 38
V	59, 56	36, 36
VI	56, 53	36, 36
VII	60, 55	28, 28
VIII	41, 41	16, ..

Pronotum length 147, 135, width 280, 280; anteromarginal seta length 64, 56; anterolateral seta length 50, 46; outer epimeral seta length 160, 152; inner epimeral seta length 88, 75; posteromarginal seta length 168, 160; fore wing length 886, 866, mid width 88, 74; major posterior setae on abdominal segment IX each length 250, 260; abdominal segment X (tube) length 240, 240, width at base 88, 80, apical seta length 160, 145.

Holotype. — Female; Elgin, Illinois; September 21, 1961; L. J. Stannard; swept from grasses on morainal hill prairie along Shoefactory Road. Paratype.—1 ♀: same data as for holotype except July 28, 1953.

In general form, *D. morainensis* resembles some species in *Liothrips* subgenus *Rhynchothrips*, differing especially in having a shorter and more broadly rounded mouth cone and in bearing two pairs of epimeral setae. Possibly even in *Rhynchothrips* there is a latent tendency for the production of two pairs of epimeral setae because Hood (1912) illustrated *Rhynchothrips dentifer* as having an additional well-developed seta on one side only in addition to the usual one pair of epimeral setae.

The rare *Liothrips* (*Rhynchothrips*) *longitubus* Hood is superficially like *D. morainensis;* both have fairly long tubes and many major setae on abdominal segments longer than the tube length. The two can be easily distinguished, however, be-

cause *longitubus* not only lacks the extra well developed setae on the prothorax but also antennal segment IV and V are yellow not brown as in *morainensis*.

Acrosothrips, new genus

Head, figure 1b, slightly longer than broad, nearly smooth. Eyes moderately small, shorter than the combined lengths of antennal segments I and II. Vertex broad at the apex between the antennae. Ocelli present, moderately far apart, fore ocellus not overhanging. Antennae eight-segmented; segments I and II each produced on the inner ventral apex making these segments asymmetrical; segment III gradually narrowed to base; intermediate segments moderately small; segment VIII slender, not broadly attached to segment VII. Postocular setae long. Maxillary stylets, when at rest position, extend far into the head and placed fairly close together within the center of the head. Mouth cone moderately long, broadly rounded.

Prothorax, figure 1b, not quite as long as head, nearly smooth. All major setae well developed, mid lateral seta closer to epimeral suture than to anterolateral seta. Epimeral suture complete. Each epimeron divided into two parts, with two well developed setae. Praepectus apparently absent. Metascutum faintly marked by longitudinal striations, without extremely long setae. Mesopraesternum completely separated by a suture from the mesosternum. Fore femora enlarged. Fore wings of uniform width throughout, without accessory fringe cilia.

Pelta small, bell-shaped. Wing-holding setae slender, mostly sigmoidal. Abdominal tergite II at extreme sides fractured into small stipple-like platelets. Abdominal tergite IX with major posterior setae much longer than tube. Tube (segment X) shorter than head; terminal setae shorter than tube.

Type-species.—*Tricholhrips asymmetricus* Watson (1937:8).

The asymmetrical form of antennal segments I and II is diagnostic, figure 1b.

Possibly this monobasic genus is a derivative of the *Plectrothrips* line. The shape of the head, the slender form of antennal segment VIII, the enlarged fore femora, and the condition of the sides of abdominal tergite II which is fractured into tiny platelets are, characteristics suggestive of *Plectrothrips* and its allies.

From those in the subfamily Phlaeothripinae that occur in the Americas, and which have two pairs of well-developed epimeral setae, *Acrosothrips* may be distinguished by the negative feature of a lack of accessory fringe cilia on the fore wings.

The sole species, *A. asymmetricus*, has not been recorded since the protologist's report.

Hoplandrothrips lateralis, new species

Female. (macropterous). — Length, distended, about 2.5 mm. General color dark brown. Tibiae and median streak on each of abdominal tergites II to VIII yellowish brown. Tarsi yellow. Antennal segments I, II, and VIII brown, segment II lighter at tip, segments III yellow becoming clouded with brown in apical third, segments IV to VII yellow basally, at least in the region of the pedicel. Fore wings pale yellow. Body with much red subintegumental pigment.

Head, figure 1c, moderately long, one-fourth longer than broadest width which is just behind eyes. Checks with three or four pairs of small spines, the basal pair being the most prominent. Dorsum of head with hexagonal reticulations basally, and with modified, somewhat transverse reticulations or anastomosing striae laterally; center of head smooth. Post ocular setae long, dilated. Antennal segment III asymmetrical, longest segment, subvasiform, with two outer and one inner sense cone; segment IV ovoid, pedicellate, with two outer and two inner sense cones; segments V, VI, and VII slender, pedicellate; segment VIII fairly broadly attached to segment VII, with a slight indication of a pedicel. Maxillary stylets, when retracted, extending within the head to the eye region, nearly touching in the center

of the head. Mouth cone pointed.

Prothorax, figure 1c, with dorsal surface smooth except the posterior central margin which is reticulate. All major setae well developed, dilated; anteromarginal pair each shorter than anterolaterals. Epimeral sutures complete. Praepectus absent.

Pterothorax widest part of body; metanotum hexagonally reticulate medially. Mesopraesternum degenerate medially, divided into three parts. Fore femora and tibiae not armed. Fore tarsi each with a moderate tooth. Fore wings narrow, slightly indented in the middle, with 9 accessory fringe cilia, basal wing setae subequal, more or less in line, dilated.

Abdomen slender. Pelta "derby" shaped reticulate. Tergites II to VII each with two pairs of sigmoidal wing-holding setae; tergites II to VIII with lateral setae dilated. Tergite IX with major posterior setae shorter than tube, middle pair dilated, lateral pair pointed at tip. Tube much shorter than head; terminal (anal) setae longer than tube.

MEASUREMENTS in μ: Holotype ♀, paratype ♀, from Donovan, Illinois.—Head length 280, 282, greatest width, just behind eyes 208, 192; compound eye dorsal length 88, 96, dorsal width 56, 48; post ocular seta length 93, 96; antennae total length, including membranes 420, 416; antennal segments, exclusive of membranes:

	length	*width*
I	24, 32	34, 34
II	43, 40	32, 30
III	76, 72	36, 34
IV	72, 64	34, 32
V	64, 64	27, 26
VI	56, 56	24, 22
VII	50, 51	24, 21
VIII	32, 32	14, 11

pronotum length 144, 142, width 320, 286; anteromarginal seta length 50, 48; anterolateral seta length 80, 64; mid lateral seta length 74, 53; epimeral seta 80, 72; posteromarginal seta length 91, 96; fore wing length 920, 936, mid width 50, 54; three pairs of basal fore wing setae, each length 70 to 80, 64 to 72; abdominal tergite IX, major mid posterior seta 160, 174; abdominal segment X (tube) length 168, 176, width at base 72, 70; apical seta length 240, 256.

MALE.—Not yet positively associated.

HOLOTYPE.—Female; Seymour, Illinois; November 13, 1953; Atcheson and Stannard; from clump of *Andropogon gerardi*. PARATYPES.—1♀; Donovan, Illinois; October 21-25, 1962; McCollum and Roberts; *Andropogon* sod. 2♀♀; Galton, Illinois; October 22, 1959; L. J. Stannard; grass piles. 1♀; Danville, Illinois; November 1, 1942; H. H. Ross; decayed stump. 1♀; Clarksville, Illinois; June 14, 1950; Sanderson and Stannard. 1♀; Glendale, Illinois; November 7, 1947; Ross and Burks; debris in pine plantation.

This species is similar to *Hoplandrothrips xanthopus*. In the female sex, *H. lateralis* differs principally in having a longer head and in having the major posterior lateral setae on abdominal tergite IX pointed. In addition, *H. lateralis* may be similar to *H. scutellaris*. *Hoplandrothrips scutellaris* was described in the protolog as having, as does *H. xanthopus*, all the major posterior setae on abdominal tergite IX dilated. Another grass species, *H. uzeli*, known in Illinois in the Wabash Valley, has antennal segment VIII strongly pedicellate, and the major mid posterior setae on abdominal tergite are pointed, not dilated.—two characteristics that readily distinguish it from *H. lateralis*.

LITERATURE CITED

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