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A NEW SPECIES OF THE GENUS *NEOHAPALOTHRIX*
FROM JAPAN
(Diptera: Blephariceridae)

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The genus *Neohapalothrix* was founded by Kitakami for a new species, *N. kanii* Kitakami, 1938, from the Central Mountain Region of Honshu, Japan and it belongs to the subfamily Paltostominae. This subfamily comprise eight genera, of which the most primitive genus, *Kelloggina*, is distributed in the Neotropical Region. *Neohapalothrix* retains many plesiomorphic characters of Paltostominae, i. e. 15-segmented antennae, 3- or 4-segmented maxillary palpi, simple claws, two spurs on hind tibiae, etc. and it is only slightly advanced from *Kelloggina* in the absence of the basal section of vein M_{3+4} and of the male mandibles. *Dimorphotarsa* from the Neotropical Region is most closely related to *Neohapalothrix* in every structure except for the reduced number of antennal segments and the presence of mandibles in both sexes.

Originally *Neohapalothrix* contains only the type-species, but in 1950 Kitakami transferred Manchurian *Curupira manschukuensis* Mannheims, 1938 to this genus based on the original description of the adult female and his own material of the larvae and pupae which were collected at the locality different from the type-locality and were presumably associated with *manschukuensis* by him. These two are all the known species of *Neohapalothrix* and their known localities are restricted to the limited areas of the Eastern Palaearctic Region.

In summer of 1952 Professor T. Shirôzu collected a unique male specimen of Blephariceridae at Piuka (or Bifuka), Hokkaido and he kindly offered it to me for study. This midge is extraordinarily different from the known Japanese blepharicerids in having the strongly modified front and middle legs. Notwithstanding this curious deformations, the specimen has all the generic characters of *Neohapalothrix* and it seems to be quite reasonable to include the specimen in the genus. As stated above, it is obvious that the present species is utterly distinct from *N. kanii* which is known from both sexes and has the simple legs even in the male. On

the other hand, *N. manschukuensis* (Mannheims) is known only from the female. Kitakami (1950) mentioned in his key to species of the genus that the spur numbers of *manschukuensis* are 0. 0. 2., but those of middle and hind legs are still unknown because the holotype, only the known specimen, is devoid of the apical portion of these legs distal of middle of tibiae. Thus this character can not be used to separate *manschukuensis* from *kanii* and the present species. However, apical segment of maxillary palpus is very short in *manschukuensis*, while it is nearly $2 \times$ as long as the third segment. I consider the present specimen represents the third species of *Neohapalothrix* and describe it as follows.

No detailed biological data of the new species are given except for the locality and data of collection. Piuka is in a lowland of northern Hokkaido and Professor Shirôzu collected insects at a hill-foot of Piuka in summer of 1952. It is interesting that the new species (adult ♂) was collected in middle of July at the northern part of Hokkaido. Kitakami (1938, 1950) considered *kanii* as "the monogenerative summer-type", in which the larvae appear in May or June, pupate in July to August and the adult appear in August. According to Kitakami (1938), in the mountain region (ca. 1,000 m above sea-level) of the central part of Honshu, the larvae of *kanii* did not appear in May but were observed from 20th of June to 17th of August and the pupae were found from the 1st to 31st of August, so that the adult of this species may appear in August (he got only the adult specimens extracted from the mature pupae). The date of capture of the new species is apparently much earlier than that of *kanii*, so there is a possibility that the new species is the second subtype of "the mono-generative winter-type". Incidentally, the adults of *Bibiocephara infuscata* (Matsumura) which belongs to the first subtype of "the mono-generative winter-type" are collected until late June in lowlands of Hokkaido. In this subtype the hatching of eggs is earlier than in the first subtype, usually in autumn.

Nothing is known about adult habit of *Neohapalothrix*. Most of the blephariderids are predaceous upon the soft-bodied insects. The present new species almost certainly visits some flowers as *Apistomyia uenoi* does, because many yellow pollen of plants attach on the legs of the type-specimen, especially among the dense anteroventral hairs of the front legs.

Before going further I wish to express my hearty thanks to Professor Takashi Shirôzu for his kindness giving me the opportunity to study the specimen of this interesting midge, and also to Dr. Kintaro Baba of Niigata Prefecture for his kind help in the valuable material of *N. kanii* Kitakami.

Neohapalothrix shirozui Saigusa, sp. nov.

♂. *Coloration*: Head black, small triangular frons just above antennae and face dark grey pollinose, occiput densely ash-grey pollinose with a

slight bluish tinge. Antenna blackish brown, mouth parts dark brown to blackish brown, clypeus shining. Compound eye dark brown, facets of lower division darker. Thorax blackish brown; mesoscutum blackish brown in ground colour, and densely dark brown pollinose with a slight purplish tinge except on notopleural portion which appears greyish in profile, a pair of narrow longitudinal pale pollinose bands appearing on mesoscutum when viewed posterodorsally; pleura densely light grey pollinose with a weak bluish tinge. Legs predominantly yellow to yellowish brown; front and hind coxae brown, thinly covered with greyish pollen, middle coxa darkened at extreme base; trochanters with a black ventro-distal spot; femora apically brown for a distance $1.5-2 \times$ as long as femur thickness; tibiae with a brown basal condyle; front tibia slightly darkened at tip; a spur of front tibiae brown, those of middle and hind tibiae yellow; front and middle tarsi brown except for basal $1/2$ of basitarsus, hind tarsus darker than its tibia, and blackish at extreme tip of each tarsomere; claws yellowish brown. Wing hyaline with a slight yellowish tinge, veins C and R to R_1 yellow, the former dark brown beyond tip of R_1 ; R_s , m-cu crossvein, M between its base and r-m crossvein, and A_1 near axillary incision dark brown, M_{1+2} , M_4 , Cu and A_1 pale yellow; axillary incision dark brown. Halter brown with a long yellow shaft. Abdominal terga blackish brown in ground colour, densely blackish brown pollinose, 1st tergum entirely bluish grey pollinose, 2nd to 6th terga with a pair of large, anterolateral, light bluish grey pollinose markings, of which the posterior border curves posteriorly and extends from dorsomedian portion of anterior margin of terga to lateral margin a little distad of its middle; 2nd to 4th terga also with a narrow greyish pollinose posterior marginal band somewhat widened laterally; 7th and 8th terga dark grey pollinose. Abdominal sterna light bluish grey pollinose, 2nd to 6th sterna with a transverse blackish band beyond the middle of sternum, 7th sternum dark brown. Male genitalia dark brown with pollinosity of the same colour.

Head: Large and simiglobose, length:width=4:7. Compound eye large, bisected; upper part larger than lower part, occupying most of dorsal $1/2$ of head, contiguous for a long distance on frons with opposite eye, and with facets much larger than those of lower part; lower part somewhat smaller than upper part; pubescence of eye short, almost as long as diameter of lower facets. Ocellar tubercle prominent, clothed with short hairs on posterior surface, median ocellus larger than posterior ones. Occiput with several black hairs along posterior margin of upper part of eyes; gena with a few long black hairs; face short. Antenna slender, short, slightly shorter than $2 \times$ length of head; scape short and thick, slightly longer than broad, short-setose and with 2 longish fine ventral hairs; pedicel slender, $2 \times$ as long as scape, somewhat swollen apically, short-setulose; flagellum slender, consisting of 13 segments, which are ellipsoidal in shape, slightly longer than broad, sparsely short-setulose.

Mouth parts: Elongate, combined length of clypeus and labrum $1.3 \times$ as long as head height. Clypeus slightly longer than $1/2$ length of labrum, short-setose, labrum sharply pointed at tip. Mandible absent. Maxillary sclerite (composite of cardo and stipes) separated into a basal and an apical sclerites by a slender membranous streak along a transverse fold at middle, entirely bare; lacinia elongate, slightly shorter than labrum (5:6), pointed at tip; palpifer short; maxillary palpus long and consisting of 4 segments, extending beyond tip of labella, relative lengths of its segments 27:17:17:33, apical segment long, possibly consisting of original 4th and 5th segments, almost $2 \times$ as long as the 3rd and with several constrictions. Labium elongate; prementum long, labella not long furcate, its 1st segment as long as prementum, apical segment broad and mostly membranous, with a short inner membranous projection.

Thorax: Normal for blepharicerids, postnotum rather reduced dorso-medially by posterior expansion of scutellum. Chaetotaxy: Lateral portions of mesoscutum behind transverse suture and posterior surface of scutellum sparsely with very short hairs; pronotum with a transverse row of wavy yellow hairs; prosternum (prothoracic basisternum) clothed with fine erect yellow hairs at anterolateral corners; meso-katepisternum (sternopleuron) with 1-2 longish yellow hairs on its dorsal margin just before the invagination of pleural apophysis, also with several brown hairs near discremen before middle coxa and a short brown hair near anterior margin at middle; metapleuron with several ventrally curved brown hairs above hind coxa and a short black hair close to ventral coxal condyle.

Legs: Not so much slender as in *Philorus*, middle leg rather short, hind leg not strongly lengthened as in *Apistomyia*; hairs and bristles of legs mostly black. *Front leg:* Front coxa sparsely clothed with black hairs on basal portion, yellowish ones on apical portion. Front trochanter elongate, as long as its coxa. Front femur weakly bisinuate in both dorsal and lateral aspects, laterally compressed, much thickened beyond basal $1/3$, almost bare on lateral surfaces, short setulose on dorsal surface, densely clothed anteroventrally with yellow setae, which are short and erect on basal $1/2$, almost absent for a short distance at middle, much lengthened and suberect beyond the middle and gradually shortened towards tip. Front tibia laterally compressed, short-setulose except for bare dorsal and anterior surfaces, anteroventral setae long, stiff, curved anterodorsally and arranged in 1-2 rows except on basal and apical portions, there the setae are scattered. Anterior spur absent, posterior spur dark brown, flattened and foliated. Front tarsus long and slender; 1st tarsomere short-setulose on dorsal and posterior surfaces, very densely clothed with fine hairs (slightly shorter than thickness of tarsus) on ventral side, and bearing long stiff suberect hairs ($1.5 \times$ as long as thickness of tarsomere) on anterior surface; 2nd tarsomere short, $1/2 \times$ as long as 1st tarsomere or $2/3 \times$ as long as 3rd tarsomere, constricted for middle $1/3$ on ventral side, short setulose

on dorsal surface, and with a row of longish suberect anterior setae and a strong, curved, ventral bristle ($1/2 \times$ as long as the tarsomere) at subbasal portion; 3rd and 4th tarsomeres slender and straight, the former with similar but shorter pubescence as in 1st tarsomere, the latter short-setulose; 5th tarsomere slightly curved ventrally, short-setulose; claws simple. *Middle leg*: Middle coxa with short hairs on apical margin; middle trochanter short, with a few minute hairs beneath at base and tip. Middle femur short and cylindrical, as long as front femur, slightly thickened towards tip, short-setulose except on posterior surface. Middle tibia cylindrical and straight, only slightly thickened on apical $1/3$; spurs yellow and normal in shape, anterior spur $2/3 \times$ as long as apical thickness of tibia, posterior spur shorter than anterior one. Middle tarsus short and much deformed, strongly curved as in S-shape, produced posteriorly at apical portion of 1st tarsomere, produced anteriorly at apical portion of 3rd tarsomere; distance between base and tip of tarsus in dried condition slightly longer than $1/2$ length of tibia (tarsus:tibia=52:94). First tarsomere short and setulose, strongly excavate on apical $1/2$ of anterior surface, produced into a dorsal and a ventral short projections at the basal portion of the excavation, and a short, broad hair-pencil (consisting of 2 hairs) on a short subapical dorsal projection; 2nd tarsomere as long as the 1st, strongly compressed laterally, densely minutely pilose on posterior surface, with a dorsal tooth at the middle and with 3 ventral processes, of which basal one is elongate and curved apically, middle one is short and straight, and apical one is broad, lamellate and pointed into a small apical projection; 3rd tarsomere $2/3 \times$ as long as the 2nd, more or less flattened, setulose above and bearing a strong, spine-like, ventral hair-pencil; 4th and 5th tarsomeres normally slender and compressed, the former as long as the 3rd; the latter $2 \times$ as long as the 4th. Claws simple and minutely pilose on basal portion. *Hind leg*: Hind coxa with long black hairs on outer side; trochanter with a few black hairs beneath. Hind femur slightly thickened on apical $1/4$, short-setulose, and with a few longish posterior hairs at base. Hind tibia slender, cylindrical, short-setulose, and with 2 spurs, the anterior one slightly longer than the posterior one and almost $2 \times$ as long as thickness of tibia; hind tarsus weakly compressed laterally, short-setulose and mixed beneath with a few short spine-like bristles on

Table 1. Relative lengths of leg segments of *N. shirozui* ♂.

	Coxa	Troch.	Femur	Tibia	Tarsus				
					1	2	3	4	5
Front leg	17	17	72	100	41	19	29	23	23
Middle leg	18	11	72	94	16	16	9	9	19
Hind leg	19	16	172	169	82	41	28	22	22

1st and 2nd tarsomeres; claws as in middle leg. Relative lengths of leg segments as in Table 1.

Wing: Moderately broad ($3 \times$ as long as wide), widest beyond the middle, axillary lobe well developed, apex produced; stem of R and R_1 with scattered macrotrichiae; venation almost as in *N. kanii*, R_5 slightly longer than $2 \times$ length of R_4 .

Abdomen: Laterally compressed in dried condition, sparsely with minute fine black pubescence, 2-3 fine yellow hairs at sides of 1st and 2nd abdominal terga, 7th sternum with a row of several fine black hairs on hind margin.

Genitalia: Epandrium more or less convex; hypandrium completely fused with gonocoxites; coxosternum large, with a tongue-like, pilose, lamellate process on dorsal hind-submarginal portion and with a pair of finger-like processes, which arise from inner side near the base of gonostylus and extend to the middle of the latter; gonostylus slightly concave on dorsal margin, weakly bilobed at tip; cerci united with each other at their basal $1/2$, and with a small notch at tip; phallic organs consisting of a short basal portion and 5 fine and long processes.

Length: Body 6.3 mm; wing 6.3 mm.

Distribution: Hokkaido, Japan.

Holotype: ♂, Piuka, Teshio, Hokkaido, 11. vii. 1952, T. Shirôzu leg. (right wing mounted on a slide, macerated head and genitalia glued on a card pinned under the specimen). The type-specimen is preserved in the author's collection at Biological Laboratory, College of General Education, Kyushu University.

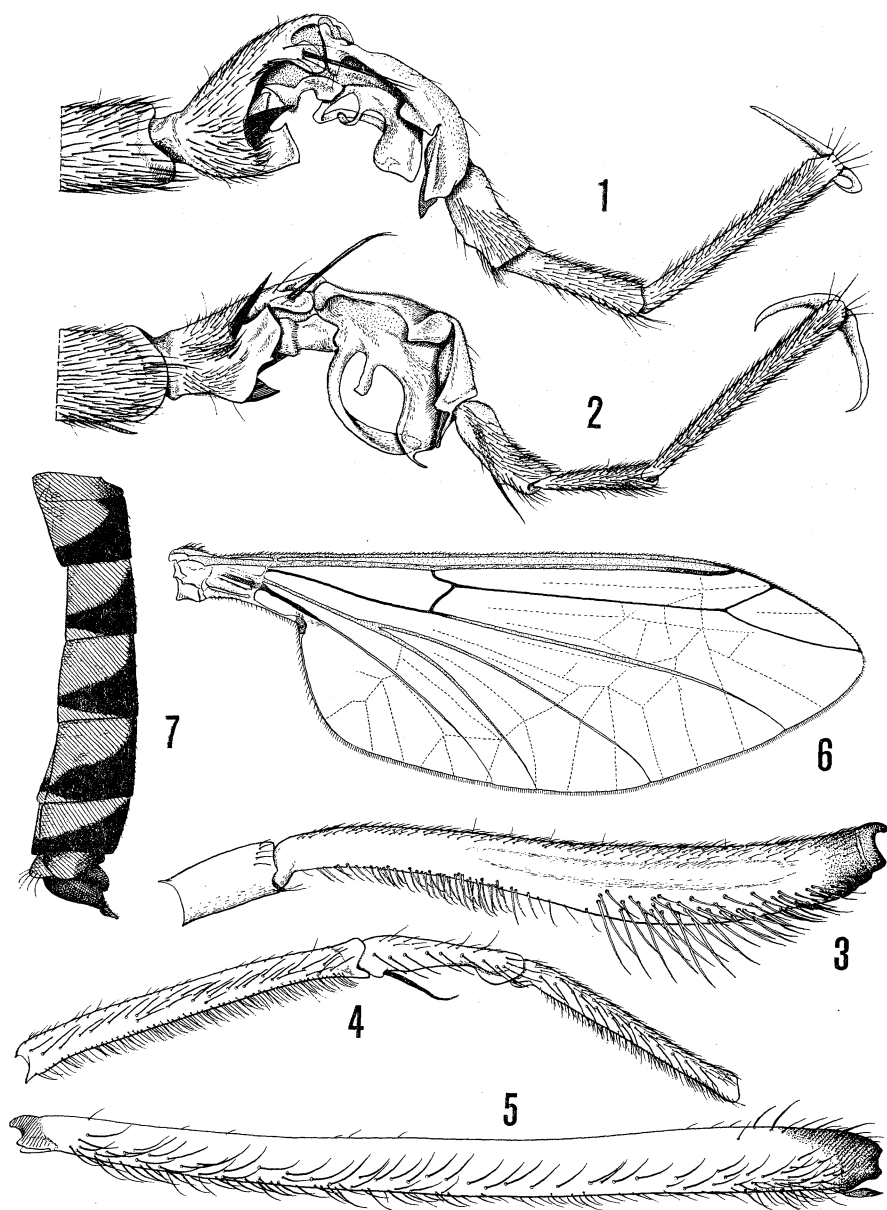
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Explanation of Plate 16

Neohapalothrix shirozui Saigusa, sp. nov., holotype ♂.

- Fig. 1. Left middle tarsus, dorsal aspect.
- Fig. 2. Ditto, anterior aspect.
- Fig. 3. Left front femur, anterior aspect.
- Fig. 4. Left front tarsus (1st to 3rd tarsomeres), anterior aspect.
- Fig. 5. Left front tibia, anterior aspect.
- Fig. 6. Wing.
- Fig. 7. Abdomen, lateral aspect.



Explanation of Plate 17

Neohapalothrix shirozui Saigusa, sp. nov., holotype ♂.

- Fig. 1. Head (macerated), frontal aspect.
- Fig. 2. Ditto, lateral aspect.
- Fig. 3. Antenna.
- Fig. 4. Genitalia, dorsal aspect.
- Fig. 5. Ditto, lateral aspect.
- Fig. 6. Ditto, ventral aspect.
- Fig. 7. Phallic organs, lateral aspect.
- Fig. 8. Basal portion of phallic organs, dorsal aspect.

