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Lindneromyia, a New Genus of Flat-footed Flies, and the Descriptions of Two New Species of Platypezidae from Africa (Diptera)

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Some time ago it was my good fortune to receive from Professor Dr. Erwin Lindner a number of platypezids which he had collected during his East African expeditions. He invited me to study the flies and to prepare a report on them for publication. I am thankful for the extraordinary opportunity to study these rare insects and have named the new genus represented in this collection *Lindneromyia* in recognition of the extensive contributions which Professor Lindner has made to dipterology. The descriptions of two new species and identifications of the already described platypezids contained in the shipment are given at the end of the paper.

Lindneromyia Kessel, **new genus**

Type of genus: *Lindneromyia africana* Kessel, **new species**

Generic diagnosis: Head as broad as the thorax; eyes widely separated in the female (the male is unknown, but in agreement with other members of the family the eyes of the male are without doubt contiguous and divided by a shallow groove just above the level of the antennae into an upper region with larger facets and a lower portion consisting of smaller facets); thorax moderately arched; 3rd antennal segment supplied with numerous bristles, not bare nor merely pubescent; arista not segmented at base; a single pair of small ocellar bristles; acrostichal bristles lacking; dorsocentrals pluriserial in front of the suture; wings broad; 4th longitudinal vein not furcate by reason of the loss of its posterior branch; 1st longitudinal vein not setulose; posterior tarsi moderately enlarged; 3rd segment of posterior tarsus longest; sole on 3rd and 4th segments of posterior tarsus well developed in the female.

Comparisons: *Lindneromyia* differs from *Platypeza* Meigen, *Protoclythia* Kessel, *Calotarsa* Townsend, and *Platypezina* Wahlgren in having the 4th longitudinal vein unforked. In this respect it agrees with *Callomyia* Meigen, *Agathomyia* Verrall, and *Metaclythia* Kessel, but differs from the first and agrees with the last two genera in having the 1st longitudinal vein bare instead of setulose. *Lindneromyia* agrees with *Platypeza, Protoclythia, Metaclythia,* and *Calotarsa* and differs from all the other genera of the family in having the head as broad as the thorax, in possessing a thorax which is only moderately arched, and in lacking acrostichal bristles. *Lindneromyia* agrees with *Platypeza, Protoclythia,* and *Metaclythia* in general facies and size, and differs in size from *Calotarsa* which is always larger. In regard to the relative lengths of the segments of the posterior tarsi, *Lindneromyia* agrees with *Platypeza, Metaclythia,* and *Calotarsa* in having the third segment longest. In those platypezid genera which have

retained the more primitive, unflattened type of hind tarsus, e. g., *Opetia* Meigen, *Platycnema* Zetterstedt, *Melanderomyia* Kessel, *Platypezina, Callomyia,* and *Agathomyia,* it is the 1st segment which is longest. Even in *Protoclythia,* which has flattened posterior tarsi, it is still the 1st segment which is longest. In the female of *Lindneromyia,* the soles on the 3rd and 4th hind-tarsal segments are prominent as they are in the females of *Platypeza, Metaclythia,* and *Calotarsa.* This emphasis on the formation of the tarsal soles appears to be a recent one in the evolutionary history of the Platypezidae. Sole formation is much less pronounced in the more primitive genus *Protoclythia.* Because of this character of sole formation it seems certain that the genera *Platypeza, Calotarsa, Metaclythia,* and *Lindneromyia* must have been differentiated after *Protoclythia.* Moreover, because of the loss of a branch of the 4th longitudinal vein in both *Metaclythia* and *Lindneromyia,* it appears that these genera had their origins from ancestral stocks which we would classify today in the genus *Platypeza.* The members of this genus always have the forked 4th longitudinal vein, although the posterior branch is sometimes short of the wing margin.

Although *Lindneromyia* and *Metaclythia* both lack the forked 4th vein of their *Platypeza* ancestors, it seems probable from the configuration of this vein in the two genera that its unforked state has been accomplished in different ways; in *Lindneromyia* this vein is distinctly arched where the anterior branch arches off in *Platypeza,* whereas in *Metaclythia* it continues in a more direct line to the wing margin.

There is much additional evidence to indicate that *Lindneromyia* and *Metaclythia* are distinct genera. *Lindneromyia* has the 3rd antennal segment provided with distinct bristles and not mere pubescence such as is found on this segment in *Metaclythia.* In *Lindneromyia* the arista lacks the distinct basal segments which are to be found in *Metaclythia* and many species of *Platypeza.* There are also many differences in chaetotaxy as shown by the type species of the two genera: the female of *Lindneromyia* has a single pair of ocellar bristles, while that of *Metaclythia* has 3 pairs; the presutural dorsocentrals are distinctly pluriserial in *Lindneromyia* as they are in *Platypeza polypori* Willard and certain other platypezas, not uniserial as they are in *Metaclythia;* and in *Lindneromyia* there are 3 instead of 2 pairs of marginal scutellar bristles. Among the obvious differences in wing venation between the two genera are: a line extending the anterior crossvein in *Lindneromyia* would intersect the costal cell some $^5/_6$ of its length from its base, whereas in *Metaclythia* this figure would be about $^2/_3$; in *Lindneromyia* the posterior crossvein is located about $^1/_2$ its length from the wing margin, while in *Metaclythia* it is a little more than its length removed; in *Lindneromyia* the anal cell is much shorter, separated from the wing margin by a distance greater than its length, while in *Metaclythia* the anal cell is longer and removed from the wing margin by a distance less than its length. While not all of these differences may prove to be valid criteria for separating these two genera in case additional species representing one or both of them are discovered, I believe that enough evidence will remain to demonstrate their diphyletic origin and thereby justify their distinctness.

Lindneromyia africana Kessel, **new species**

Holotype: female, from Marangu, Tanganyika, East Africa, collected between March 1 and 20, 1959, by Erwin Lindner. This specimen is being returned to Professor Lindner.

General appearance: Blackish brown; wings glassy clear, without stigmata.

Length: 3 mm.

Head: Face and front rich brown; proboscis and palpi yellowish brown; occiput brownish black; all bristles blackish brown except those on the proboscis which are yellowish; 1st two antennal segments short, subequal, a little shorter than broad, 2nd with a circlet of setae at the distal margin; 3rd antennal segment as broad as the 1st two,

as long as broad, somewhat flattened, tapering at the end where the arista is attached; 3rd antennal segment supplied with numerous bristles, especially distally; arista twice as long as the basal antennal segments combined, not segmented at the base; all antennal segments brownish. Eyes widely separated, brownish red; ocellar triangle moderately raised, of the same brown color as the front, ocelli greyish amber. Chief cephalic bristles: a single pair of small ocellars; frons with about 20 minute frontal and frontorbital bristles on each side; verticals and occipitals missing. None of the postorbitals reach forward over the eyes. There are several irregular rows of paracephalics subequal to the adjacent postorbitals. Together, they are continuous on each side with the beard of the cheeks.

Thorax: Rich brown, becoming black in the middle in front of the suture, no vittae; squamae brown, with a fringe of brownish hairs; bristles black; no acrostichals; 2 columns of dorsocentrals consisting on each side of about 15 uniserial postsutural members (the last just in front of the scutellum being some 6 times the length of the others) and of about 20 pluriserial presutural members, the column on each side fanning outward in front to become 3 to 5 hairs wide; 2 posthumerals, the posterior one much larger; 3 tiny humeral bristles; 3 large notopleurals; a column of about 13 small subequal intraalar bristles, pluriserial in arrangement, above the wing and starting just behind the suture; 2 postalars; scutellum bare except for 3 pairs of large marginal scutellar bristles. On the prothorax there are on each side about 5 slender postpleural bristles located above the articulation of the front coxa.

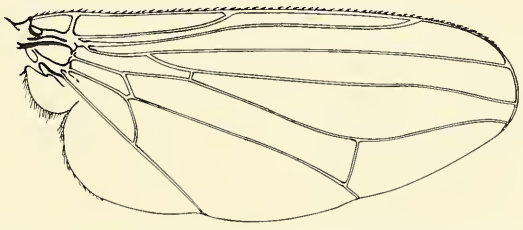

Fig. 1. *Lindneromyia africana*, new genus and species.

Wings (Fig. 1): Clear, without stigmata; a line extending the anterior crossvein would intersect the second costal cell $^5/_6$ of its length from its base; anal triangle with distal side a little shorter than the proximal; anal triangle about $1^1/_2$ times the length of its base, or about 3 times the length of the right side, removed from the wing margin; 1st longitudinal vein without setulae; 4th longitudinal vein unbranched but distinctly curved nearer to the wing margin than to the posterior crossvein to indicate that it is the posterior branch of this 4th vein which has been lost. Posterior crossvein about $^1/_3$ its length removed from the wing margin. Halteres cream colored.

Legs: Yellowish brown, proximal 4 segments of the hind tarsi greatly flattened, the 3rd segment twice as long as segment 1 and segment 2; segment 3 bearing a sole along its inner ventral margin; the smaller segment 4 also bearing a sole; both soles with long delicate hairs extending from them.

Abdomen: All segments rich brown, with thin cream-colored posterior margins.

Comparison: As the only-known species of its genus, *L. africana* is not likely to be confused with any other. The only other platypeza-looking species which has been recognized and which has an unbranched 4th longitudinal vein is *Metaclythia currani* Kessel and a comparison of its genus with *Lindneromyia* has already been made. Moreover, this nearctic species has an overall black general appearance in contrast to the brown appearance of *L. africana*.

Platypeza lindneri Kessel, **new species**

Holotype: female, from Msingi, Tanganyika, East Africa, May 1—19, 1952, collected by Erwin Lindner. This is the same specimen which Lindner (1956) suggested might be the female of *Platypeza inornata* Loew and which he described under the heading of that species in his paper. He based his suggestion on the fact that all of the platypezid males which he collected belonged to that species and so it was likely that the single female which he captured also belonged to *Platypeza inornata*. He states the matter as follows: "The six males in question are completely identical, and since no other species were observed, the single female might belong to these." Then he goes on to suggest that this female could fit the description of *Platypeza lugens* which Loew based only on females and proposed therefore that "*lugens* could be a synonym for *inornata*".

Professor Lindner's suggestions were reasonable ones, particularly because color-pattern differences between the sexes such as those exhibited by the female in question with her grey and black markings as opposed to the all-black male of *P. inornata*, often occur in the same species. Furthermore the wing venation of the female is similar to that of *P. inornata*. But in the platypezids sympatric species may be so timed in their emergences that they only partially overlap, only the females of one species occurring in a particular locality along with the males of another. In my rearing experiments with *Calotarsa* (Kessel, 1963) it was evident that while some females may emerge with the males at the beginning of the season, the males predominate at that time. Moreover, the males complete their emergences earlier and the last flies to complete their metamorphosis are females exclusively. Some of the males live long enough to fertilize these late-emerging females whose youth permits them to live on long after all of the males are dead. During the period of their survival, these females are likely to be joined in their habitat by an abundance of males of a later-emerging species. Unless the similarity in appearance between males and females occurring together in a locality is so strong as to preclude reasonable doubt, it is my practice to rely only on one of the following two criteria in associating the sexes in a species: (1) the flies must be captured in copulation, (2) the flies must be reared from the same mushroom and must be the only representatives of their genus coming from the fungus in question.

As for Lindner concluding that his fly corresponded with the statements made by Loew for *P. lugens*, the Latin description given by Loew is so brief and ambiguous that it could be applied to almost any black fly with grey markings. The fact is that Lindner himself realized the mistake when, on a subsequent trip to East Africa he collected two all-black females and which he now regards as the true females of *P. inornata*. I concur with him in this matter. Also on this trip he collected females which more readily fit Loew's description of *P. lugens*, and I also agree that these belong to that species. I thank Professor Lindner for sending all of these specimens to me for study. They are listed below with their proper data.

Our decision that the female, which Lindner (1956) suggested might be the female of *P. inornata*, actually does not belong to that species, leaves this fly without a name. It is with great pleasure, therefore, that I name it after the man who collected it and has worked with it so much.

General appearance: Grey, with black markings on the abdomen; legs yellow; wings hyaline.

Length: 3 mm.

Head: Face and front grey; proboscis and palpi yellow; occiput grey; all bristles black except those of the proboscis which are yellow; first 2 antennal segments yellowish, short, subequal, a little shorter than broad, the 2nd with a half circlet of small bristles along the outer distal margin; 3rd antennal segment a little broader than the first two, as long as broad, somewhat flattened, tapering at the end where the arista is attached;

3rd antennal segment supplied with a dense growth of relatively long (for platypezids) stiff hairs; arista twice as long as the basal antennal segments combined, not segmented at the base. Eyes widely separated, brownish red; ocellar triangle moderately raised, of the same grey color as the front; ocelli dark amber. Chief cephalic bristles: a pair of greater ocellars between and behind the posterior ocelli, arched forward; additional and smaller ocellar bristles consist of a pair a little behind and outside of the greater ocellars, another pair in front of them and between the posterior ocelli, and in front of them in turn a row of 4 bristles crossing just behind the anterior ocellus; frons with about 20 small frontal and frontorbital bristles scattered on each side; verticals and occipitals missing. None of the postorbitals reach forward over the eyes. There are several irregular rows of paracephalics which are subequal to the postorbitals and along with them continuous on each side with the beard of the cheeks.

Thorax: Brownish grey, the mesonotum with 4 brown stripes running lengthwise but not reaching the scutellum; the outer stripe on each side is interrupted at the transverse suture; squamae yellowish grey, with a fringe of yellowish hairs; bristles black; no acrostichals; 2 columns of mostly small dorsocentrals consisting on each side of about 31 pluriserial postsutural members (the last 2 bristles of each column situated one behind the other and much larger than the others, the one behind being twice the length of its fellow) and some 15 irregularly pluriserial presutural members, the column on each side fanning outward in front; 4 posthumerals, the posteriormost of which is a little larger than its fellows. On each side there are 3 minute humeral bristles, 4 large notopleurals, a column of about 20 minute subequal intraalars behind the suture and pluriserial in arrangement, 4 postalars with the uppermost one a long stout bristle subequal to the next to the last dorsocentral. Scutellum bare except for 2 pairs of prominent marginal scutellars, the inner pair being larger.

Wings: Clear, without stigmata; a line extending the anterior crossvein would intersect the second costal cell at about $^5/_6$ of its length from its base; distal side of the anal triangle about $^2/_3$ as long as the proximal; anal triangle a little more than the length of its base removed from the wing margin; 1st longitudinal vein without setulae; 4th longitudinal vein branched, the posterior section reaching only about half way from the bifurcation to the wing margin; posterior crossvein about its length removed from the wing margin.

Legs: Yellowish brown; the proximal 4 segments of the posterior tarsi greatly flattened; 3rd segment twice as long as either segment 1 or segment 2; segments 3 and 4 bearing soles with many long delicate hairs emerging from them.

Abdomen: Grey, except for black markings on the tergites as follows: 1st segment with a black anterior band in the middle about $^1/_2$ the width of the tergite, but not extending posteriorad to interrupt the grey; 2nd segment with black bands across both the anterior and posterior margins, these both widened in the middle to coalesce and leave the grey forming a spot at each side; 3rd segment with a narrow black band behind, widened in the middle to form a black triangle, the apex of which interrupts the grey in front so that it forms only a grey spot on each side; 4th segment marked asymmetrically with the black limited to the left side where it forms a band in front which is widened in the middle to interrupt the grey behind; segments 4 and 5 have only thick black bands in front, leaving both of these segments with wide grey crossbands.

Comparison: Of all of the species of *Platypeza* known at this date *Platypeza lindneri* as described above seems to resemble most closely the female of the palaearctic *Platypeza consobrina* Zetterstedt. In both species the body is predominantly grey with black markings on the anterior abdominal segments. The 4 longitudinal lines on the mesonotum are similar also. But there are a number of obvious differences: (1) the black marking on the 1st abdominal segment is much larger in *P. lindneri;* (2) in *P. con-*

sobrina there is only a suggestion of a black band across the anterior margin of abdominal segment 2 while this band is very distinct in *P. lindneri;* (3) *P. lindneri* has the black band more thickly widened in the middle to interrupt the grey in front; (4) while the wing venation is very similar in the two species, *P. consobrina* has the posterior crossvein much nearer the wing margin and the anterior crossvein nearer the apex of the wing; (5) in the chaetotaxy the postsutural dorsocentrals of *P. consobrina* are uniserial and at least the last four are much enlarged whereas these bristles are pluriserial in *P. lindneri* and only the last two are enlarged; there are 3 notopleurals in *P. consobrina* and 4 in *P. lindneri;* and whereas *P. consobrina* has no humeral bristles, *P. lindneri* possesses 3 small ones.

Platypeza minuta Lindner

The type and only known specimen of this species was loaned to me for study by Professor Lindner. It was collected by him in March, 1952, at Torina, Tanganyika, East Africa. For his original description see Lindner (1956). Except for its smaller size this fly is very similar to the typical form of *P. lugens* Loew. The two species are best distinguished on the basis of their abdominal markings as follows: In *P. minuta* the grey band in front is relatively wider, involving the whole of the second tergite along with a narrow posterior portion of the 1st segment, whereas in *P. lugens* only the anterior half of the 2nd segment is involved along with the narrow hind part of the 1st segment. In *P. minuta* the whole of the 7th segment is grey also, a feature which I have not found in *P. lugens.*

Platypeza lugens Loew

The collection of African platypezids which Professor Lindner loaned to me for study includes four flies of this species, the male of which is unknown. The data for these specimens are as follows: (1) Msingi, Tanganyika, May 1-19, 1953; (2) and (3) Marangu, Tanganyika, March 1-20, 1959; (4) Livingstone, Rhodesia, November 16-20, 1958. All these flies were collected by Lindner, the first during the D. O. Afrika Expedition.

Platypeza inornata Loew

This species is represented among the flies sent to me by Professor Lindner by five males and two females, the males all credited to the D. O. Afrika Expedition and the females too captured by Lindner himself. The data for the males are as follows: (1) and (2) Kware, Tanganyika, January 17-21, 1952; (3) Kware b. Moshi, Tanganyika, December 27-January 13, 1952; (4) and (5) Msingi, Tanganyika, May 1-19, 1953. The data for the females are: (1) and (2) Marangu, Tanganyika, March 1-20, 1959.

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