

A NEW SPECIES OF *NIXONIA* MASNER FROM RHODESIA
(HYMENOPTERA: SCELIONIDAE)

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ABSTRACT—*Nixonia atra*, n. sp., is described from a male specimen from Victoria Falls National Park, Rhodesia. The generic diagnosis is completed by the male characters, the systematic position of *Nixonia* is discussed and a general account of the evolution of the Scelionidae is given.

The species described below is based on a specimen loaned to me through the kindness of Dr. Paul M. Marsh, Systematic Entomology Laboratory, U. S. Department of Agriculture, Washington, D. C.

Nixonia atra, n. sp.

Male (holotype, U. S. Natl. Mus., Washington): Rhodesia, Victoria Falls National Park, IV-3-1968, Paul Spangler collr. Unique; well preserved (genitalia on slide).

Length, 7.5 mm. Entirely black, tibial spurs, radicle and base of mandibles reddish-brown; wings considerably infuscated, particularly along veins.

Head semiglobose, wider than long (68:40), as wide as thorax, coarsely rugose-punctate, covered with very fine silvery hairs; eyes large, bare; temples very narrow; ocelli large, lateral ones almost touching inner orbit of eye; clypeus small, partly smooth, its lower edge with fringe of long golden hairs; maxillary palpi 4-, labial 2-segmented; antennae 14-segmented, rather short and stout, inconspicuously narrowed towards apex, segments of flagellum very finely but densely punctured, covered with minute yet dense silvery hairs; scape stout, longer than wide (27:10), narrow at base, increased towards apex, widest at 2/3, coarsely rugose, deeply excised apically to contain pedicel; pedicel slightly longer than wide (7:5); third segment markedly elongated (15:6), increased towards apex; following segments distinctly shortened, hardly longer than wide or transverse, segments 4 and 5 with fine yet distinct longitudinal bare keels inwardly, similar keels traced on segments 6 and 7, segment 4 transverse (7:6), 5 even shorter (7:5), 6 still shorter (7:4), segments 7-13 slightly transverse till square, segment 14 longer than wide (7:4).

Much of thorax coarsely rugose-punctate, the most coarse sculpture encountered on mesoscutum and scutellum; prothorax well developed if seen from above, very hairy all over, densely punctate-rugose dorsally and in front of tegulae, almost smooth and polished at sides; mesoscutum slightly less hairy but extremely rough coriaceous-punctate; scutellum of much the same sculpture as mesoscutum; tegulae with finer yet still coarse sculpture; mesopleura with deep central declivity, mesepisternum hairy, deeply punctured; mesepisternum rather bare, shining medially, with some longitudinal striae anteriorly and row of distinct large pits bordering

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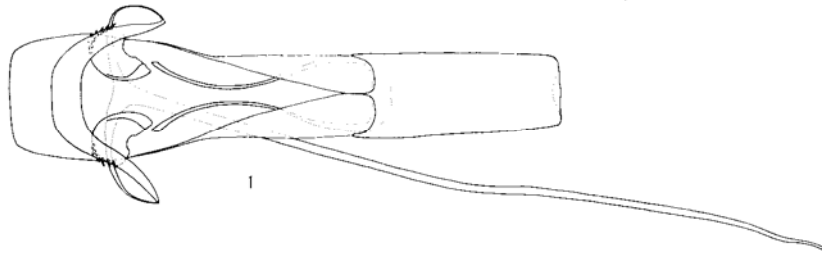


Fig. 1, *Nixonia atra*, n. sp., ♂ genitalia (holotype).

the hind margin, produced postero-laterally into a powerful hook (behind tegulae) that together with propodeal spine give the thorax a tridentate appearance (if seen from above); metanotum narrow, unarmed, coarsely punctured; fore wings not surpassing segment 6 of metasoma, submarginal vein does not exceed the basal half of the wing length, marginal vein ill-defined as stigmatalis continues almost in direction of submarginalis without touching the front margin of wing; no stigma developed, only a trace of vein (? postmarginalis) directed towards the front margin of wing; radialis, medialis, cubitalis and analis indicated as brown traces in posterior half of wing; propodeum intensively hairy, with finer sculpture than rest of thorax, raised medially into mighty thorn which is bent backwards at apex, dorsally the propodeum with two longitudinal keels running parallel along the sides; tibial spurs strong and mighty, front spur simple apically (not forked), middle and hind spurs simple, the inner longer than the outer ones; hind metatarsus almost as long as following segments of tarsus combined, slightly compressed from sides.

Metasoma elongated (165:65), longer than head and thorax united (165:130), composed of 7 tergites and 7 sternites; tergites longitudinally rugose, sculpture well defined on tergites 1 through 4, gradually disappearing to fade in irregular rugulosity on segments 6 and 7; tergites in proportions (length:width) 34:48, 27:57, 25:65, 23:63, 21:59, 18:50, 13:33. Genitalia (fig. 1).

TAXONOMY

I had some doubts whether *Nixonia atra* (male) might be the opposite sex to *Nixonia pretiosa* Masner (female) but the characters given below in the key are hardly of secondary sexual nature.

Prothorax, mesoscutum, scutellum, tegulae and legs deep orange; scape and two following segments dirty yellow-brown; mesoscutum finely reticulated, scutellum with longitudinal rugae; sides of pronotum longitudinally striated; length 5 mm. ***Nixonia pretiosa*** Masner (♀)
 Entirely black throughout; mesoscutum and scutellum coarsely coriaceous-punctate; sides of pronotum almost smooth, shining, with few minute punctures; length 7.5 mm. ***Nixonia atra***, n. sp. (♂)

The new species described above represents, in effect, the first male known of *Nixonia*. Therefore it is necessary to complete the generic diagnose as follows: Antennae in male 14-segmented, very similar to female antennae in shape but bearing fine longitudinal (inner side)

keels on segments 4 and 5 and traces of such keels on segments 6 and 7; metasoma composed of 7 tergites and 7 sternites; the acute posterolateral corners of the mesepisternum are now considered to be a character of generic rank.

DISCUSSION

Nixonia originally was considered closely related to *Scelio* Latreille and allied genera (Masner, 1958). This was largely because of its general habitus and wing venation. It was admitted at that time that a discussion of its systematic position was difficult lacking additional information. The 14-segmented antennae were interpreted as an archaic character and were compared with two fossil scelionid genera from the Tertiary and Mesozoic, respectively. The recent discovery of *Archaeoteleia* Masner, (Masner, 1968) has helped to clarify the position of *Nixonia*. The major emphasis is on the tibial spurs, a character not properly emphasized in 1958. It is understood now that the most primitive Scelionidae have the spur formula 1-2-2 while that of the advanced groups is 1-1-1. As regard to numbers the primitive group (7 genera) is heavily outnumbered by the advanced ones (some 300 genera) both in fossil and recent faunas. This way *Nixonia* is classified now in that small group of primitive genera which I prefer to call (to avoid any taxonomical implications) the *Sparasion*-group, with *Sparasion* Latreille as the most typical genus. Among those 7 genera *Nixonia* has a rather isolated position due to antennal and palpal characters (cf. Masner, 1968). It may be assumed *Nixonia* is the most archaic living scelionid, the only fragment of a group that was on retreat already in Tertiary (Oligocene) and even as late in Mesozoic (Cretaceous).

The discovery of a male in *Nixonia* permits speculation about the formation of antennae in the evolution of Scelionidae. We know now that both sexes in *Nixonia* have 14-segmented antennae. The antennae of the male of *N. atra* look so much like the antennae of the female of *N. pretiosa* that, at first sight, I thought I was handling a female. It is considered very important that the antennae in the most archaic genera (like *Nixonia*) show very little or no sexual differences in shape or number of segments. It is generally assumed ancient forms have no (substantial) secondary sexual differences in the antennae. On the other hand, advanced forms display quite a range of differences in shape and number of segments. A very important character in this consideration is the formation of a special segment in the male antenna which is called, for the sake of convenience, the sex-segment. In Scelionidae it is the 5th segment in the male antenna that is modified (enlarged, excised at base, bearing keels or little spine). In the primitive *Sparasion*-group the males of some species of *Archaeoteleia* and *Sparasion* have more than one sex-segment (segments 4 and 5). In *N. atra* the modified sex-segments (inner keels) are 4 and 5 and traces

of keels are visible even on segments 6 and 7. I assume therefore that there were more sex-segments in male antennae in archaic *Scelionidae* and during the evolution these have been reduced to two and finally stabilized on segment 5. In archaic genera these modifications are usually less pronounced (yet located on more segments) than in advanced forms.

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