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# A contribution to the sawfly fauna of the Brandberg Massif in Namibia

(Hymenoptera: Symphyta: Argidae, Tenthredinidae)

With 3 figures

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## Summary

During two entomological expeditions to the Brandberg Massif in western Namibia in 2001 and 2002 a total of 29 specimens of sawflies were collected. This material contains three species, of which two are described as new: *Arge meyi* n. sp. and *Pampsilota brandbergensis* n. sp. Additionally *Xenapates damaraensis* KOCH, 1995 was found for the first time in the Brandberg area. A map showing the current known distribution of *X. damaraensis* in Namibia is presented.

## Zusammenfassung

Im Rahmen von zwei entomologischen Expeditionen zum Brandberg Massif im westlichen Namibia in den Jahren 2001 und 2002 wurden insgesamt 29 Pflanzenwespen gesammelt. Dieses Material enthält drei Arten, von denen zwei, *Arge meyi* n. sp. und *Pampsilota brandbergensis* n. sp., als neu beschrieben werden. Außerdem wurde *Xenapates damaraensis* KOCH, 1995 erstmalig im Brandberggebiet gefunden. Eine aktualisierte Verbreitungskarte von *X. damaraensis* wird vorgelegt.

## Key words

New species, Symphyta, Argidae, *Arge* SCHRANK 1802, *Pampsilota* KONOW 1899, Tenthredinidae, *Xenapates* Kirby 1882, Namibia, Nama-Karoo, Brandberg Massif.

## Introduction

In the Afrotropical region the sawfly fauna is very poor both in number of species and individuals in comparison to other biogeographical regions, except for Australia. The taxonomy of Afrotropical sawflies is partly outdated, incomplete and in some cases incorrect.

In the middle of the last century, the taxonomic contributions of PASTEELS (1949, 1953) were very important for the knowledge of the distribution of Afrotropical sawflies. He concentrated on the fauna of the Belgian Congo and the countries adjacent to its eastern

border (Rwanda, Uganda). Only the revision of the *Athaliini* by BENSON (1962) contains all known Afrotropical *Athalia* species, but it is currently also necessary to revise this genus.

Little or nothing is known about host plants, larval stages and phenology of the species in this region (CHEVIN 1985, KOCH 2003). Among other reasons this poor knowledge of Afrotropical sawflies can be explained by the previous lack of collecting specifically targeting sawflies in Africa.

In the past 12 years the Entomological Africa Expeditions of the Museum of Natural History, Berlin, through southern Africa, especially Namibia, have been very valuable in increasing our knowledge of the Namibian sawflies. Additionally, the material of other collections, especially that of the State Museum of Namibia, was investigated.

At present 16 species of two families, Tenthredinidae and Argidae, are reported for the Namibian sawfly fauna. Most of these species have been sampled in more humid habitats of the northern parts of Namibia (KOCH 2000), especially in the Caprivi strip, along the stream banks of Okavango and Kunene as well as around permanent and temporary still waters.

In view of this contrasting previous experience records of Symphyta in the semi-desert areas including the Brandberg Massif were hardly expected. The material of the Brandberg expeditions is very important for the knowledge of the diversity, distribution and ecological adaptability (tolerance) of Afrotropical Symphyta.

#### Abbreviations used in the text:

CASC	California Academy of Sciences, San Francisco
DEI	Deutsches Entomologisches Institut am ZALF, Müncheberg
MNHU	Museum für Naturkunde, Humboldt-Universität, Berlin
NMNW	National Museum of Namibia, Windhoek
H	harpe
HT	holotype
IA	interantennal area
M	media
MS	malar space
Pp	parapenis
PT	paratype
Rs+M	radial sector and media length
Sc	costal cross-vein

## Sampling methods

The present study is based on material amassed by W. MEY (MNHU), E. MARAIS and A. H. KIRK-SPRIGGS (both NMNW) during field trips to the Brandberg area in 2001 and 2002. A total of 29 specimens, representing three species, were collected by the use of Malaise traps and sweep-net. Additional material was provided by CASC.

## Characteristics of study areas

The Brandberg Massif is an isolated mountain range in western Namibia on the eastern edge of the Namib desert. The highest peak is Königstein, at 2.573 m above sea level. This inselberg, which is visible from afar, dominates the horizon and is situated in the Central-western Plains of Namibia, 40 km west of Uis Mine, in the Erongo Region (Fig 3). The mountain belongs to the Nama-Karoo Biome, and contains about 400-499 plant species (MENDELSON et al. 2002). Further information to the Brandberg Massif is given by KINAHAN (2000), MILLER (2000) and CRAVEN & CRAVEN (2000).

The description of the following collecting sites is given according to MEY (2004).

Waterfall Area (local name "Wasserfallfläche", 1.940 m):

A richly vegetated, short valley below huge rock slabs. The dominant trees are *Acacia hereroensis* ENGLER (Mimosoideae), *Dombeya rotundifolia* (HOCHST.) PLANCHON (Sterculiaceae), *Euclea undulata* THUNBERG (Ebenaceae), *Cyphostemma currori* (J. D. HOOKER) DESCOINGS (Vitaceae) and *Rhus* spec. (Anacardiaceae).

Mason Shelter (1.800 m):

A more or less flat plain, dissected by some small river beds and fringed by rocky hills with huge boulders and rock slabs. This an upper drainage area of Nawuarib River, containing on the plain some single trees of *Acacia hereroensis*, *Ficus sycomorus* LINNÉ (Moraceae) and *Ozoroa crassinervia* (ENGLER) R. & A. FERNANDES (Anacardiaceae), abundant small trees of *Commiphora saxicola* ENGLER (Burseraceae) and scattered individuals of *Sterculia quinqueloba* (GARCKE) K. SCHUMACHER (Sterculiaceae), *Galenia africana* LINNÉ (Aizoaceae), *Eriosephalus dinteri* SCHELLENBERG (Asteraceae) and *Cyphostemma currori* at the southern margin of the plain. In addition low shrubs of *Salsola* sp. (Chenopodiaceae) are evenly dispersed throughout.

## Argidae

### *Arge meyi* n. sp.

**Female.** - Head yellow; postocellar and interocellar area including margin of front ocellus and antenna black, narrow base of scape yellow, mandible apically dark brown. Thorax yellow; mesoscutum with three large black spots, parapsis and mesosternum black. Legs yellow; dorsal surface of hind coxa and narrow apex of hind femur, hind tibia apically, mid and hind tarsi blackish. Wings hyaline; fore wing with a slight smoky substigmatal spot, intercostal area slightly infuscated, costa entirely yellow, subcosta brown, stigma and veins blackish. Abdomen yellow with blackish narrow anterior margin on tergum<sub>1</sub>, terga<sub>5-8</sub> each with small blackish medial spot.

Head slightly enlarged behind eyes. Antenna 1.3x as long as maximum head width; 3<sup>rd</sup> segment slightly enlarged toward apex, triangular in cross section, inside with moderately compressed longitudinal carina. POL : OOL = 1.0 : 0.9 (HT). MS: IA = 1.0 : 4.8 (HT). Eyes slightly converging below, lower interocular distance 1.3x eye length; clypeus triangular excised medially about 1/3 of its median length, supraclypeal area rounded

to interantennal carinae, interantennal carinae not sharply ridged, slightly converging downward, ending about half distance to clypeus. Vertex and gena shining, nearly impunctate, frons, clypeus and supraclypeal area with scattered, shallow punctures, shining. Hairs yellowish, about a half diameter of a lateral ocellus. Thorax very sparsely punctured, shining. Hairs on median lobe of mesoscutum pale yellow, shorter than on head, lateral lobes with broad glabrous strip, only laterally sparsely haired. Abdomen shining, tergum<sub>1</sub> with transverse microsculpture. Sheath as in Fig. 1c, with coarse, very short, blunt bristles. Lancet with about 19 serrulae, those at base roundly pointed at apices, serrulae at apex and centre large and flat (Fig. 1a), with 13-14 subbasal teeth (Fig. 1b).

**Length:** 7.0-7.5 mm.

**Male.** - Head black, frons, clypeus and labrum yellow, narrow base of scape yellow, mandible yellow with apex dark brown, gena brownish yellow. Thorax black; pronotum yellow with black median mark, tegula yellow, mesoscutellum brownish yellow with black at base. Legs yellow; coxae, mid and hind trochanters black, narrow apex of hind femur, hind tibia apically, and hind tarsi blackish, middle tarsomeres of mid tarsus brownish. Costa of fore wing brown. Abdomen yellow; terga<sub>1,2,5-7</sub> broadly black, tergum<sub>8</sub> with black median spot, terga<sub>3,4</sub> with narrow blackish transversal marks.

Antenna 1.5x as long as maximum head width, shape as for female, inside carina more distinct and sharply compressed. POL : OOL = 1.0 : 0.7. MS : IA = 1.0 : 4.7. Lower interocular distance 1.2x eye length. Vertex with micropunctures, shining. Other features as for female. Genitalia as in Fig. 1d, e, f.

**Length:** 6.0-6.5 mm.

#### Type material:

Holotype ♀: "Namibia, Brandberg, 1.740 m, Mason Shelter, 7.III.2002, leg.: W. Mey"; "Holotypus, *Arge meyi* sp. n. ♀, det.: F. Koch, 2005" (red) (NMNW).

Paratypes 5 ♂♂, 4 ♀♀. 5 ♂♂, 2 ♀♀: same data as holotype; 2 ♀♀: same data as holotype, except: 21°04'39"S/14°05'43"E, 05.-14.III.2002, A. H. Kirk-Spriggs & E. Marais (NMNW, MNHU).

#### Host plant:

Two females have been sampled with Malaise-traps. The other specimens (5 males, 3 females) were collected selectively using a sweep-net on *Commiphora saxicola*. This bush or small tree is endemic to the southwestern Africa semi-desert vegetation type, occurring on stony hills and rocky mountain slopes in the fringes of Namib. Therefore, if *A. meyi* is monophagous on this plant, it seems likely that the sawfly is also endemic to this region.

#### Remarks:

The colour pattern is variable in this species. In females, the black markings on the abdomen may be extended, with a small spot on tergum<sub>5</sub>, and sometimes the ventral surface of the hind coxa is blackish. In males, the black on the abdomen is either reduced to a black tergum<sub>1</sub> and median spots on terga<sub>5,8</sub> or extended to broad markings on terga<sub>1,2,4-7</sub> and median spots on terga<sub>3,8</sub>. The POL : OOL ratio varies 1.0 : 0.8-0.9 (females); the MS : IA ratio varies from 1.0 : 4.5-4.9 (females) and 4.3-5.0 (males).

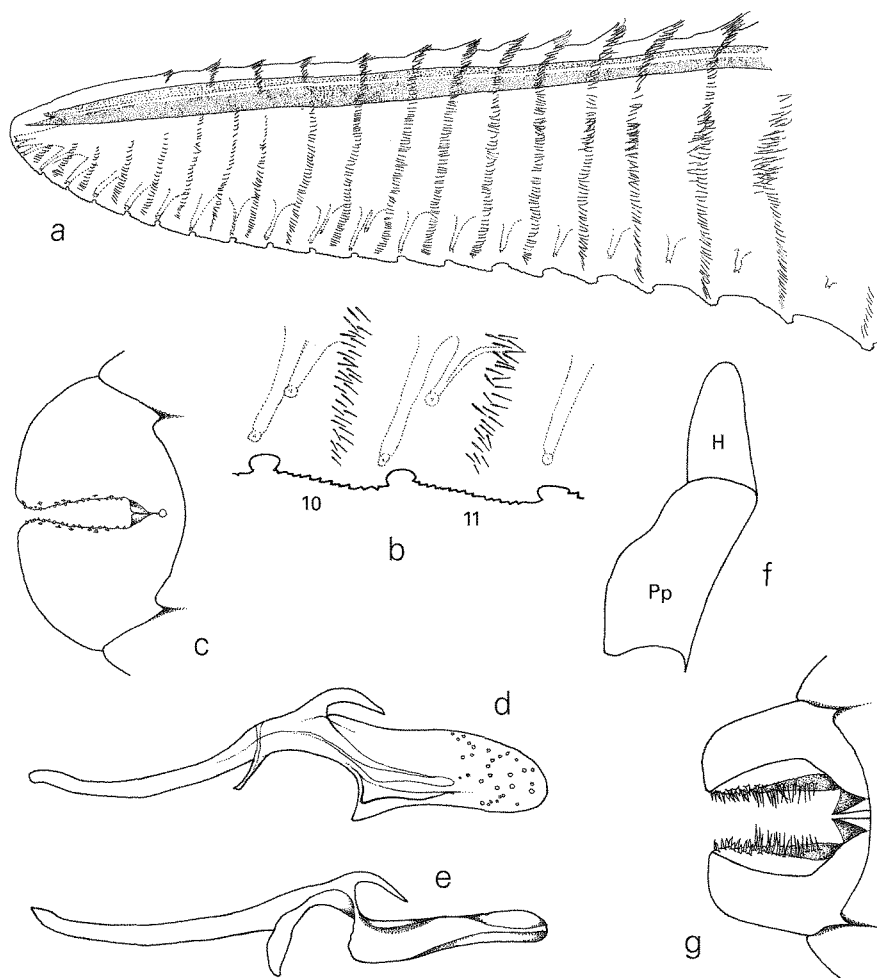


Fig 1a-g: *Arge meyi* n. sp. – a lancet lateral aspect). – b serrulae 10-11. – c saw sheath (dorsal aspect). – d penis valve (left, lateral aspect). – e penis valve (right, ventral aspect). – f harpe and parapenis (right, ventral aspect); *Arge aesculapii* FORSIUS. – g saw sheath (dorsal aspect).

According to PASTEELS (1953) the new species is similar to *Arge aesculapii* FORSIUS, 1925, but *A. aesculapii* differs mostly by the bicoloured, sharply contrasted fore wings with flavescent hyaline basal and blackish infuscated apical halves and the entirely black mesonotum including the mesoscutellar appendage. Furthermore, black is the apical half of the postocellar area, the apical third of mid and hind femora, and the apices of the mid and hind tibiae are black. Additionally, in *A. aesculapii* the inside of the sheath is covered with bristle-like hairs apically and longer hairs in the basal half (Fig. 1g).

#### Etymology:

This species is named after my colleague Dr. W. MEY.

*Pampsilota brandbergensis* n. sp.

**Male.** - Head and antenna black; anterior margin of labrum brown, apical half of mandible brown becoming dark reddish apically. Thorax black; pronotum and tegula yellow. Legs black; anterior surface of fore tibia brownish yellow, posterior surface brown. Wings subhyaline; fore wing with slightly infusate substigmatal spot, costa and stigma light brown, subcosta and veins brown. Abdomen black; terga<sub>3,5</sub> yellow with medio-apical blackish spot on tergum<sub>5</sub>, terga<sub>2,6</sub> yellow laterally, terga<sub>7,9</sub> with slight metallic lustre, sterna<sub>3,6</sub> yellow with medio-apical blackish marking, subgenital plate with yellow apical half.

Head narrowed behind eyes. Antenna 2.0x as long as maximum head width; 3<sup>rd</sup> segment scarcely enlarged toward apex, inside with sharply compressed longitudinal carina, laterally flattened, outer surface slightly rounded. POL : OOL = 1.0 : 0.7 (HT). MS : IA = 1.0 : 3.6 (HT). Eyes slightly converging below, lower interocular distance 1.2x eye length; clypeus shallowly circularly excised medially (Fig. 2a), supraclypeal area subflattened to interantennal carinae, interantennal carinae sharply ridged, converging downward, and ending about 1/3 distance to clypeus. Vertex, frons and clypeus impunctate, shining; gena with micropunctures, shining; hairs white, about as long as diameter of lateral ocellus. Thorax nearly impunctate, shining; hairs white, shorter than those on head. Abdomen shining; terga<sub>1,3</sub> with irregular microsculpture, posterior margin of tergum<sub>5</sub> with large triangular membranous medial depression.

Genitalia as in Fig. 2d, e, f.

**Length:** 5.5-6.0 mm.

**Female.** Unknown.

**Type material:**

Holotype ♂: "Namibia, Brandberg, Mason Shelter, 21°04'39"S/14°05'43"E, 05.-14.III.2002, Malaise trap, river bed, A. H. KIRK-SPRIGGS & E. Marais"; "Holotypus, *Pampsilota brandbergensis* sp. n. ♂, det.: F. KOCH, 2005 (red)" (NMNW).

Paratype 1 ♂: same data as holotype, except: below Wasserfläche, 21°10'43"S/14°32'51"E, 18.-22.III.2001, Malaise trap, A. H. KIRK-SPRIGGS & E. MARAIS (MNHU).

**Host plant:** Unknown.

**Remarks:**

Between holotype and paratype the variability in colour pattern is scarcely noticeable. The tergum<sub>5</sub> may be entirely yellow and the pronotum may have a small ventro-lateral blackish spot. POL : OOL = 1.0 : 0.9 (PT). MS : IA = 1.0 : 3.0 (PT).

Following the key of MALAISE (1941) it is very difficult to find a suitable genus for this new species, because the subapical spine on the hind tibia is absent, the basal anal cell of the fore wing is present and the head is not distinctly small, not half as wide as the thorax (couplet 13). Neither is it possible to identify *P. afer* KONOW, 1899 (the type species of *Pampsilota* KONOW) using this key, because in dorsal view the head of *P. afer* is likewise not distinctly smaller: actually much more than half as wide as the thorax.

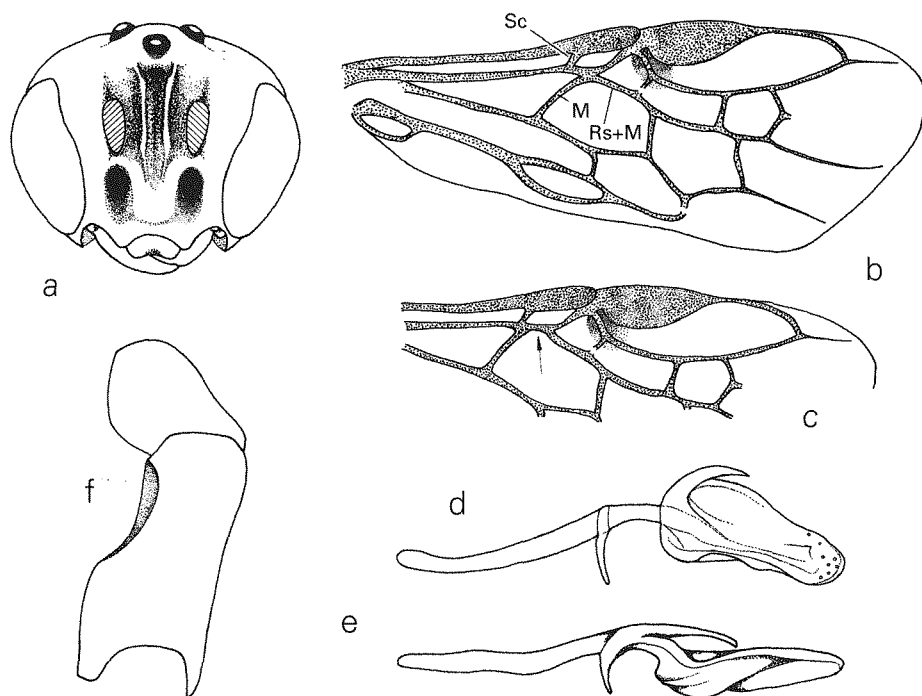


Fig 2a-f: *Pampsilota brandbergensis* n. sp., head (frontal aspect). – b fore wing of HT. – c fore wing of PT. – d penis valve (left, lateral aspect). – e penis valve (right, ventral aspect). – f harpe and parapenis (right, ventral aspect).

Based on MALAISE (1941) the new species seems to belong to *Cibdela* KONOW, 1899. However, as far as it is known, *Cibdela* is an Oriental genus in which the distance between the origin of M and Rs+M is about as long as Sc. In the holotype of *P. brandbergensis* M and Rs+M have the same origin (Fig. 2b), similar to *Arge*. In the paratype the distance between the origin of M and Rs+M is about as long as Sc (Fig. 2c); thus the venation is variable and therefore does not provide convincing generic level placement.

In the end, the new species is classified as a *Pampsilota* species, despite its relatively small size compared to *P. afer* (length 14.0–15.0 mm), because it is not possible to find significant morphological differences which would warrant placing these species in separate genera. However, a revision of the genus *Pampsilota* might require a new placement of *P. brandbergensis*.

#### Etymology:

This species is named after the collection locality.

## Tenthredinidae

*Xenapates damaraensis* KOCH

*Xenapates damaraensis* KOCH, 1995: 389.

## Investigated material:

16 ♂♂, 1 ♀: Brandberg, Mason Shelter, 21°04'39"S/14°05'43"E, 05.-14.III.2002, Malaise trap, river bed, A. H. KIRK-SPRIGGS & E. MARAIS (NMNW, MNHU).

## Remarks:

This species was described from Kaross, near Etosha Pan (Namibia) collected in 1925. Since then it was reported from different places in the Kaokoland (KOCH 2000) and south to Windhoek (1 ♀: Aris, 25 km S Windhoek, 5.II.1990, W. J. PULAWSKI) (CASC), (Fig. 3). As far as it is known, this species is endemic to the Nama-Karoo and Tree-and-Shrub Savannah Biomes of southwestern Africa.

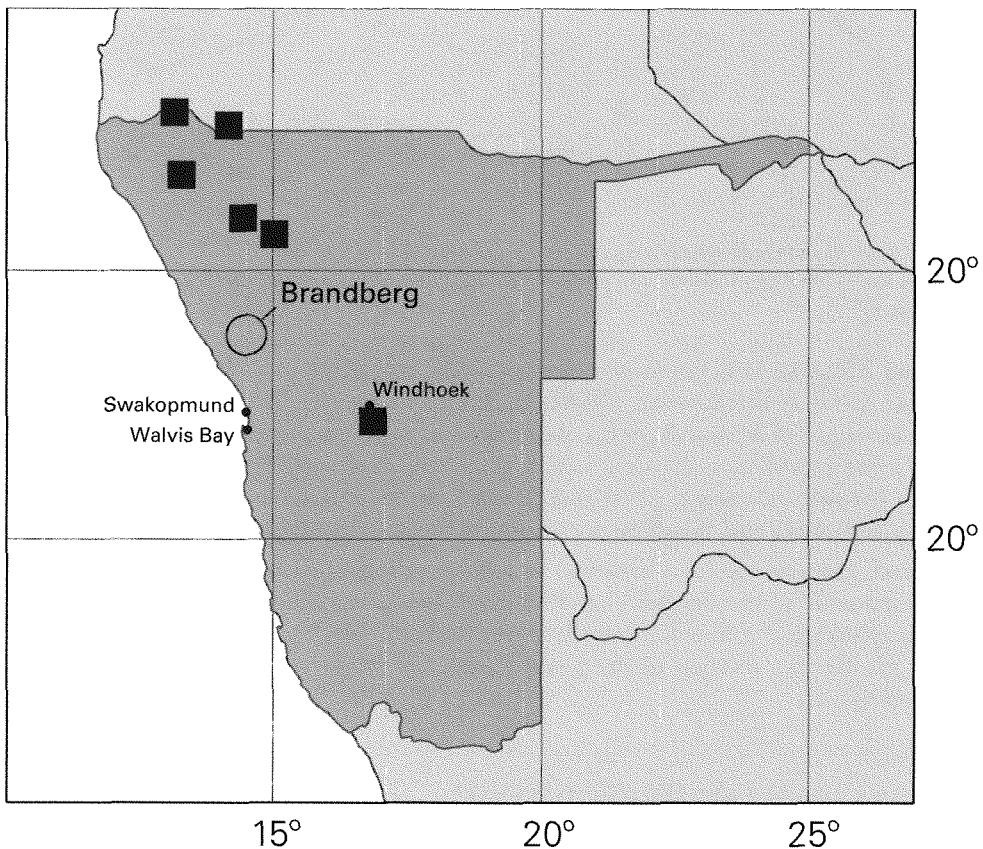


Fig 3: Brandberg Massif as type locality of *Arge meyi* sp. n. and *Pampsilota brandbergensis* sp. n. as well as new locality of *Xenapates damaraensis* KOCH; further known localities of *X. damaraensis* ■.



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