Pseudanapis hoeferi, n. sp. from Central Amazonia, Brazil (Araneae, Anapidae)

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Summary

A new species of anapid, *Pseudanapis hoeferi*, is described from both sexes collected in a blackwater inundation forest near Manaus. Its relationships with other American species of *Pseudanapis* are discussed.

Introduction

Eight species of the anapid genus *Pseudanapis* Simon, 1905 have been described so far, including a single species (*P. domingo* Platnick & Shadab, 1979) occurring in South America. The following description of a second South American species of this genus is based on material collected by Dr Hubert Höfer during his investigations of the spider fauna in an Amazonian blackwater inundation forest ("igapó").

The data on "*Pseudanapis* sp." and "*Pseudanapis* sp. nov." in Höfer (1990: 174, 175, 177) and on "*Pseudanapis* sp. A" in Kropf (1990: 186, 189, 192, 197) refer to the species described below.

All measurements are in mm. The position of the tarsal organ is shown as a number between 0 (proximal end of tarsus) and 1 (distal end).

Pseudanapis hoeferi, n. sp. (Figs. 1–22)

Types: Male holotype (type locality: Rio Tarumá Mirim, Igapó, *c.* 20 km upstream from Manaus, Brazil, Amazonas), deposited in INPA (Instituto National de Pesquisas da Amazônia, Manaus, Brazil), 7 March 1988, pitfall trap, H. Höfer leg. Paratypes, leg. H. Höfer at type locality: 1♂ 1♀ (INPA), 1♂ 1♀ (AMNH, American Museum of Natural History, New York), 7 March 1988, pitfall trap; 2♂ (INPA), 2 December 1987, pitfall trap; 6♂ 1♀ (INPA), 4 March 1988, pitfall trap; 7♂ (one opisthosoma missing), 3♀ (INPA), 11 March 1988, pitfall traps; 3♂ (INPA), 17 February 1988, pitfall trap; 1♂ (INPA), 3 December 1987, pitfall trap; 1♂ (SMNK, Staatliches Museum für Naturkunde, Karlsruhe, Germany), 6 December 1987, pitfall trap; 1♀ (SMNK), 17 February 1988, arboreal funnel trap; 1♂ 3♀ (SMNK), 18 February 1988, arboreal funnel traps.

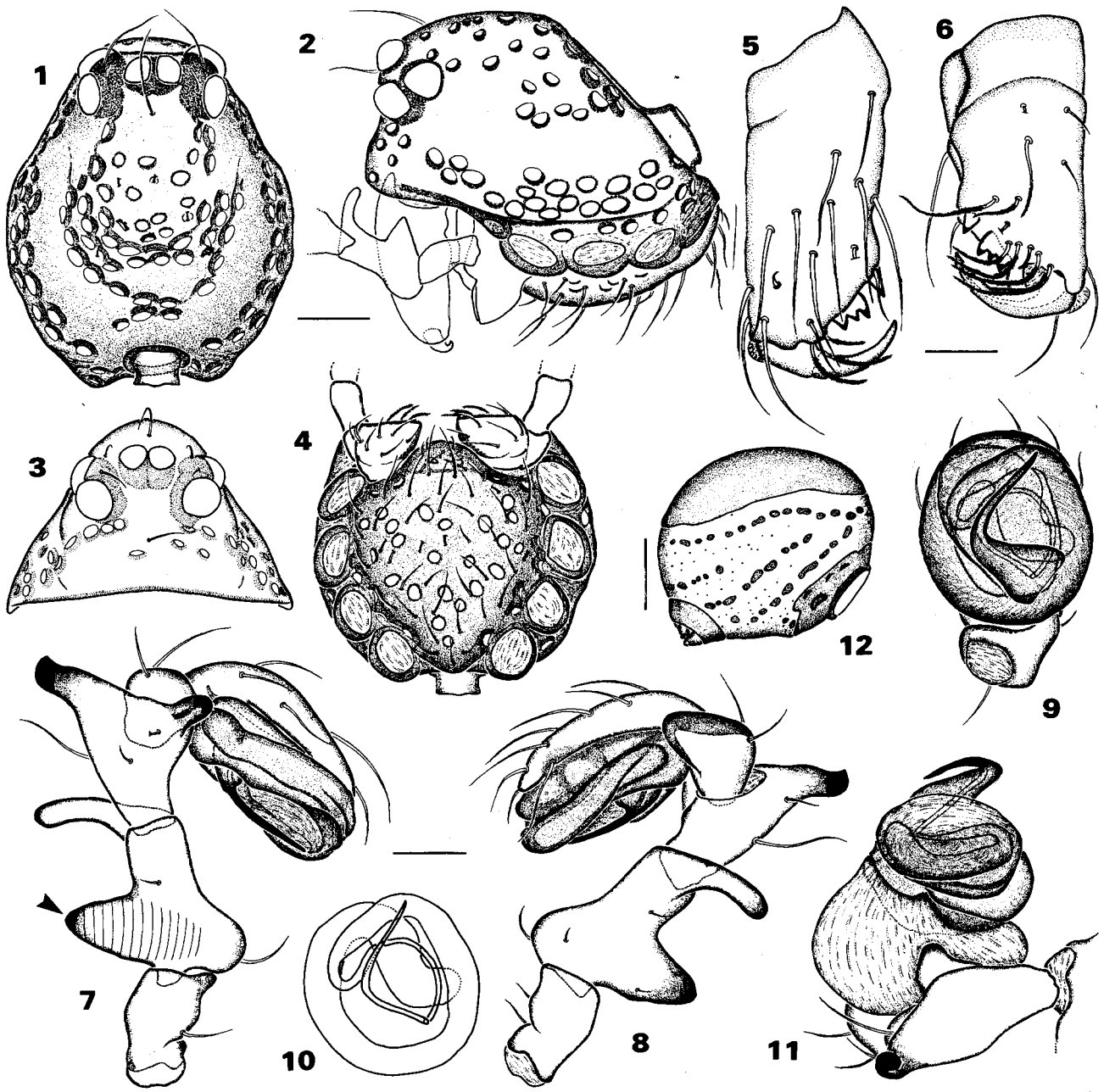
Additional material from the same collections is deposited in AMNH, not seen by the author.

Derivatio nominis: The specific name refers to the collector of the new species, Dr Hubert Höfer.

Diagnosis: Males of *Pseudanapis hoeferi*, n. sp. are separated from all other *Pseudanapis* species by the palpal femur, which bears a proximal ventral bump and a proximal apophysis with stridulatory ridges on the retrolateral surface. Females can be distinguished from *P. parocula* (Simon, 1899) and *P. wilsoni* Forster, 1959 by the long pedipalps, from *P. parocula, P. aloha* Forster, 1959, *P. serica* Brignoli, 1981 and *P. schauenbergi* Brignoli, 1981 by the simple globular spermathecae (female internal genitalia of *P. wilsoni* are insufficiently known) and from *P. gertschi* (Forster, 1958) and *P. benoiti* Platnick & Shadab, 1979 by the presence of straight copulatory ducts leading from the epigastric furrow to the spermathecae. The female of *P. domingo* is unknown.

Male: Dimensions (n=4): Total length 1.0 (0.98–1.02); prosoma length 0.44 (0.42–0.44), width 0.39 (no variation), height 0.43 (0.41–0.44); opisthosoma length 0.61 (0.60–0.61), width 0.57 (0.55–0.58), height 0.56 (0.55–0.57). *Colour* (alcohol-preserved material): Prosoma orange, palps and chelicerae light orange, legs yellow to light orange with patellae pale yellow. Opisthosoma: ventral scutum orange, dorsal scutum and ring around spinnerets light orange, sclerotised spots orange, spinnerets pale yellow, soft areas white. *Carapace* (tergum): Ovoid (Fig. 1), slightly ascending behind PME, then almost horizontal and after middle strongly descending (Fig. 2). Covered with numerous depressions with single excentric pore at bottom and sclerotised rims; lateral band and area behind PME without depressions. Striking depression with number of pores and sclerotised pad on lateral border above gnathocoxae. Four or five short hairs in middle of dorsal area, a long hair behind PME (Fig. 1). *Eyes:* Position and shape slightly variable; AME lacking; posterior row recurved, seen from above; ALE largest, PLE almost as large as ALE, diameter of PME 2/3 of ALE; PME separated by less than half their diameter, and from PLE by a little more than PME diameter; laterals separated by very narrow area, ALE separated by almost two diams; two long hairs behind ALE, two shorter hairs next to PLE (Figs. 1–3). *Clypeus:* Concave below anterior eyes, then convex (Fig. 2); almost as high as eye region; with none or only a single hair and some depressions in variable numbers and positions (Fig. 3). *Sternum:* Covered with short hairs and depressions like carapace; separating coxae IV by more than their diameter (Fig. 4); fused with pleurae and posteriorly with carapace. *Labium:* Rounded, fused with sternum (Fig. 4). *Chelicerae:* Long, with short mesal anterior extension; anteriorly with two diagonal rows of long hairs and three plumose hairs at base of fang (Fig. 5); posteriorly with transverse swelling and few hairs; mesal side with two excavations; posterior margin with row of five plumose hairs and four teeth, three on a common base, the fourth standing separately on inner side (Fig. 6) and varying in width. *Palp:* Gnathocoxae much broader than long, with transverse serrula and plumose hairs on anterior side (Fig. 4); trochanter normal; femur with ventral proximal bump and two apophyses (Figs. 7, 8): proximal apophysis (Fig. 7, arrow) dorsally situated, more or less blunt tipped (variable) and with stridulatory ridges on retrolateral surface (functional morphology of stridulatory organ will be described elsewhere); distal apophysis slender, curved backwards, originating prolaterally, protruding dorsally. Patella with distal, dorsal, sharp-pointed apophysis and small, tongue-like, retrolateral distal apophysis (Figs. 7, 8); tibia with

prolateral, scale-like prolongation (Fig. 8); cymbium without peculiarities. *Genital bulb:* Rounded, subtegulum and tegulum fused; broad invagination starting on retrolateral side (Fig. 9), narrowing distally, and continuing as slit-like groove prolaterally (Figs. 7, 8); embolus originating ventro-proximally with broad base, bent distally at right-angle, tip sharp-pointed (Fig. 9); sperm duct with wide lumen proximally, showing one rotation counter-clockwise (right palp), then forming letter "S" before entering embolus base (Fig. 10). Two haematodochae present, visible only in expanded bulb (Fig. 11): basal haematodocha large, subdistal haematodocha (*sensu* Kropf, 1993) situated at embolus base, causing erection of embolus. *Legs* (Figs. 13, 14): One strong bristle distally on each patella, two on tibiae; metatarsi shorter than tarsi; three tarsal claws. Trichobothria (large arrows in Figs. 13, 14): three on tibiae I–III, four on tibia IV, one on metatarsi I–III; most distal trichobothrium on tibia longest. On retrolateral side one blunt-tipped hair distally on metatarsi I and II and proximally on tarsi I and II, these hairs thicker than others (small arrows in Fig. 13). Tarsal organ situated proximally (I: 0.14; II: 0.16; III: 0.18; IV: 0.17). Femur IV with group of retrolateral knobs (small arrow in Fig. 14), number and position variable. Dimensions: I-IV-II-III:



Figs. 1–12: *Pseudanapis hoeferi*, n. sp., male. **1** Prosoma, dorsal view; **2** Ditto, lateral view; **3** Carapace, anterior view; **4** Prosoma, ventral view, chelicerae omitted; **5** Right chelicera, anterior view; **6** Ditto, posterior view; **7** Right palp, retrolateral view (arrow: proximal femoral apophysis with stridulatory ridges); **8** Ditto, prolateral view; **9** Right palpal bulb, ventral view; **10** Course of sperm duct, ventral view; **11** Right palpal bulb, expanded, dorso-retrolateral view; **12** Opisthosoma, lateral view, hairs omitted. Scale lines=0.1 mm (Figs. 1–4), 0.05 mm (Figs. 5–11), 0.2 mm (Fig. 12).

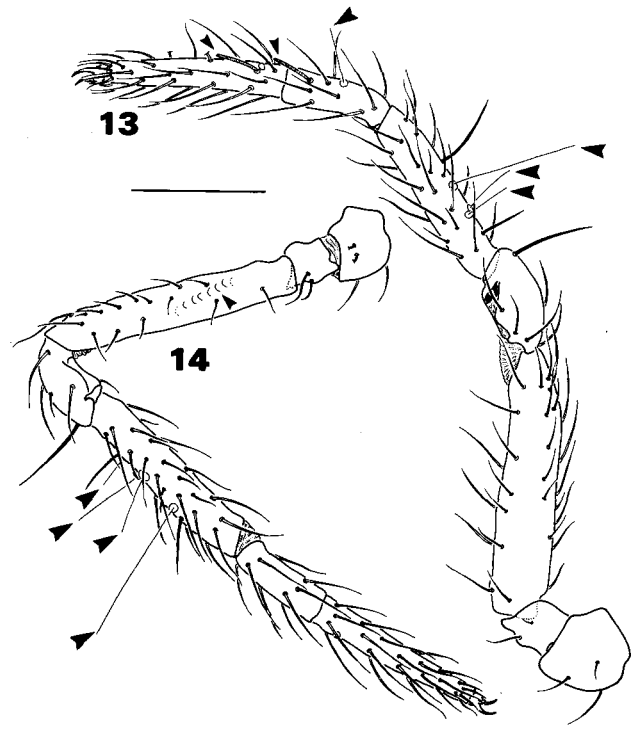
	I	II	III	IV
Trochanter	0.06	0.05	0.05	0.06
Femur	0.39	0.35	0.28	0.37
Patella	0.15	0.14	0.13	0.14
Tibia	0.27	0.24	0.19	0.29
Metatarsus	0.15	0.15	0.13	0.15
Tarsus	0.27	0.25	0.22	0.25
Total	1.29	1.18	1.00	1.26

Opisthosoma (Fig. 12): Large scutum covering dorsal surface, covered with hairs; ventral scutum showing some hairs, surrounding petiolus, extending posteriorly to epigastric furrow, with two striking darker spots behind insertion of petiolus, and lateral row of darker spots on each side; these spots bear indistinct depressions; sclerotised ring surrounding three pairs of spinnerets and anal tubercle; anterior spinnerets largest, median spinnerets smallest; colulus missing; lateral side of opisthosoma with three rows of sclerotised spots, area behind dorsal scutum with two rows, some spots on ventral side behind epigastric furrow, number of spots variable; hairs on soft parts originating from small sclerotised plates; book-lungs replaced by tracheae, posterior tracheal spiracle missing.

Female: Only differences from male are described. *Dimensions* (n=4): Total length 1.03 (1.0–1.06); prosoma length 0.44 (no variation), width 0.39 (no variation), height 0.42 (0.41–0.43); opisthosoma length 0.64 (0.62–0.65), width 0.59 (0.57–0.60), height 0.55 (0.55–0.56). *Colour* (alcohol-preserved material): Similar to male, but most individuals paler; palp pale yellow; opisthosoma without dorsal scutum and thus lighter; vulva orange. *Carapace* (tergum): Lateral border more impressed anteriorly, looking more slender than in males but with no significant difference in width (Fig. 15). Dorsal line ascending more steeply up to middle (Fig. 16). *Eyes*: Posterior row only slightly recurved in dorsal view (Fig. 15); ALE closer together, separated by only their diameter (Fig. 17); PME separated from PLE by less than PME diameter. *Clypeus:* Less high than in males, with several hairs (Figs. 16, 17); vaulted forwards, lateral areas forming "cheeks" (Fig. 17). *Palp:* Very thin, trochanter-femur and tibia-tarsus joints fused, distinguished only by transverse grooves, claws absent (Fig. 16). *Legs:* Position of tarsal organ 0.15 on tarsi I and II, 0.16 on tarsi III and IV. Legs shorter than in males. Dimensions: I=IV, II, III.

	I	II	III	IV
Trochanter	0.06	0.05	0.05	0.06
Femur	0.36	0.31	0.26	0.37
Patella	0.15	0.15	0.13	0.14
Tibia	0.25	0.21	0.19	0.28
Metatarsus	0.15	0.14	0.13	0.15
Tarsus	0.26	0.25	0.21	0.23
Total	1.23	1.11	0.97	1.23

Opisthosoma: Dorsal scutum lacking so that full pattern of sclerotised spots visible (Figs. 18–20); fourth dorsolateral row, transverse posterior row dorsally and two anterior spots, other spots as in males; ventral scutum



Figs. 13–14: *Pseudanapis hoeferi*, n. sp., male. **13** Leg I, retrolateral view (large arrows: trichobothria; small arrows: blunt-tipped hairs); **14** Leg IV, retrolateral view (large arrows: trichobothria; small arrow: knobs on femur). Scale line=0.2 mm.

(Fig. 21) extended less far anteriorly; with fewer hairs in anterior region. *Epigyne* (Fig. 21): Indistinct, external openings two narrow, curved slits (arrows in Fig. 21); vulva shining through. *Vulva* (Fig. 22): Heavily sclerotised; copulatory ducts running straight forwards to globular spermathecae; fertilisation ducts connected to copulatory ducts by fine slits anteriorly, hardly visible (Kropf, 1990), branching off posteriorly, then turning medially, sometimes laterally (variation), before entering uterus.

Distribution: Known only from the type locality.

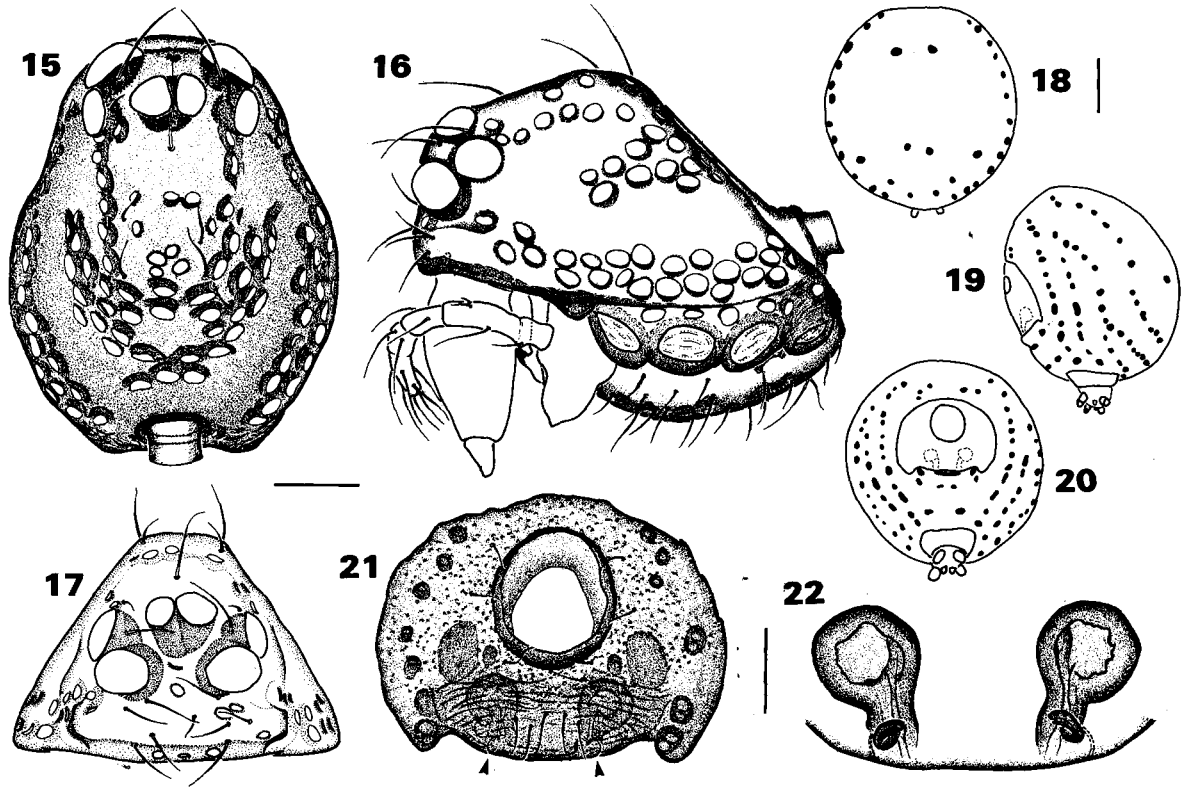
Ecology: Inhabiting the litter layer; before inundation, the species migrates to the trunk and canopy region (Höfer, 1990).

Discussion

The second South American species, *P. domingo*, is most similar to *P. hoeferi*. The male palpi of the two species seem to be almost identical, apart from the presence of stridulatory ridges on the proximal femoral apophysis and a proximal ventral bump in *P. hoeferi*, apparently lacking in *P. domingo* (see Platnick & Shadab, 1979: fig. 53).

The third American species, *P. gertschi* from Mexico, Costa Rica and Panama has a different male palpus but similar female genitalia. This species can be distinguished from *P. hoeferi* by the S-shaped, slender copulatory ducts (see Platnick & Shadab, 1979: fig. 59).

The presence of a proximal apophysis on the male palpal femur unites the American species of *Pseudanapis*. In all other species of this genus the two femoral



Figs. 15–22: *Pseudanapis hoeferi*, n. sp., female. **15** Prosoma, dorsal view; **16** Ditto, lateral view; **17** Carapace, anterior view; **18** Opisthosoma, showing pattern of sclerotised spots, dorsal view; **19** Ditto, lateral view; **20** Ditto, ventral view; **21** Ventral scutum with epigyne, ventral view (arrows: epigynal openings); **22** Vulva, dorsal view. Scale lines=0.1 mm (Figs. 15–17, 21), 0.2 mm (Figs. 18–20), 0.05 mm (Fig. 22).

apophyses are situated in the distal half of the femur. As the apomorphic status of this character remains doubtful, there is little morphological evidence for the monophyly of American *Pseudanapis* species at present.

In *Pseudanapis* and in the genus *Comaroma* Bertkau, 1889 there are prosomal depressions with a single pore at the bottom (see Kropf, 1990: fig. 11). The study of this character in other anapid genera will probably provide useful phylogenetic information.

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