THE LIFE-CYCLE OF *ACALVOLIA SQUAMATA* (OUDEMANS, 1909) (ACARI, ASTIGMATA, SAPROGLYPHIDAE)

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----- ABSTRACT—The life-cycle of *Acalvolia squamata* (Oudemans, 1909) is described. Up to now only the hypopial stage was known. All the stages of this mite were found in nests of birds in Berlin, W. Germany. -----

INTRODUCTION

Oudemans (1909) described *Vidia squamata* from a single hypopus (*heteromorphic deutonymph*) found on *Mus jerdoni*, from Semarang, Java. On the label fixed on this slide, Oudemans wrote, "verdwaald" which means "astray". In 1920, Oudemans found 5 new specimens identical to the holotype but from the dust of an house in Arnhem, Holland. This discovery showed that the true locality of this species was not Java but Holland. Through the courtesy of Dr. L. Van der Hammen of the Leiden Museum, The Netherlands, we were able to examine and redescribe this species (Fain, 1971 and 1972).

Fain, in 1971 and 1972 created the new genus *Acalvolia* for this species. He revised the hypopi of this family Saproglyphidae and created several new genera based mainly on the characteristics of the leg chaetotaxy, the shape of the suckers, the presence or absence of a palposoma, the presence or absence of eyes, the structure of the posterior epimera and the situation of the leg solenidia.

MATERIAL EXAMINED

Recently, the junior author found numerous specimens of a species of Saproglyphidae represented by adults as well as by the immature stages in the nest of a bird in Berlin, W. Germany. The hypopi present in this collection were not separable from those of *Acalvolia squamata* (Oudemans). The adult stages, as well as the larvae, the protonymphs and the tritonymphs of this species were still unknown. We describe them here for the first time. We use here the setal nomenclature of the idiosoma proposed by Fain, (1963).

Genus *Acalvolia* Fain, 1971

DEFINITION—Hypopus: Dorsum—Sejugal furrow well developed. Dorsal surface covered by a network of striae. Pigmented eyes present in the anterior part of dorsum. Venter—Palposoma with a rectangular base ending in two apical short lobes each bearing a long solenidion alpha and a long thin seta. Setae *v i* fairly long. Epimera III fused in the midline. Epimera IV fused in the midline with a pregenital longitudinal sclerite, the latter not fused anteriorly with transverse sclerite uniting epimera III. Legs—Anterior legs long, leg III short, leg IV very short. Legs I-III with a long pretarsus ending in a small apical claw. Chaetotaxy of legs—Tarsi (I to IV) (number of setae) 6-6-8-6, tibiae 2-2-1-1, genua 2-2-0-0. Tarsi I-II with one foliate seta, tarsi III with 5 and tarsi IV with 3 foliate setae. Solenidion ω 3 close to ω 1. Solenidion ω 2 present on tarsus I.

ADULTS—Very poorly sclerotized. Eyes absent. A poorly sclerotized propodonotal plate present. Sejugal furrow present but very faint. Epimera I fused in a rather long sternum. Setae *v e* absent. All dorsal, lateral, humeral and subhumeral setae present. Three pairs of genitals

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Figs. 1-4: *Acalvolia squamata* (Oudemans) (female)—1, ventral view; 2, apex of tarsus I dorsally; 3, apex of tarsus I ventrally; 4, female dorsally.

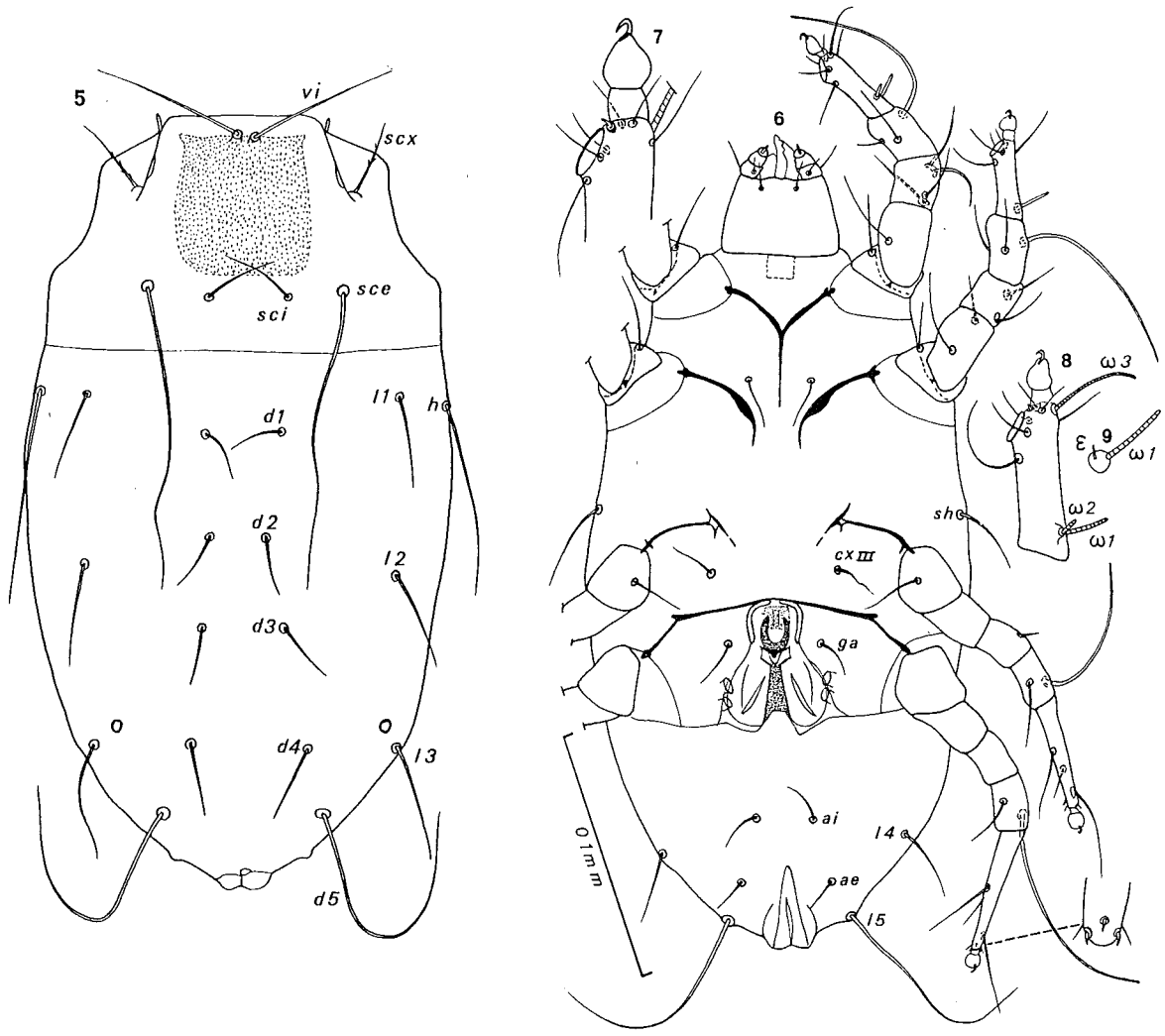
in female and one pair in male. Two pairs of anal setae in both sexes. Female—Vulva situated between coxae III-IV. Anus subterminal, ventral. Male—Epimera III fused in midline; genital organ situated behind epimera. Tarsi I-II with a rather large subapical ventral sucker. Absence of adanal suckers. Leg chaetotaxy—Tarsi (in both sexes) 8-8-8-8. Tarsi I-IV with 2 very small apico-ventrolateral spines (? or sclerites) and 6 very thin setae. Tibiae I-II with 2 setae.

SOLENIDIOTAXY—Tarsi I with apical ω 3. The ω2 present. Genu I with 2 long unequal solenidia, genua II and III with one solenidion each.

TYPE SPECIES—*Vidia squamata* Oudemans, 1909.

Description of *Acalvolia squamata*

FEMALE (Figs. 1-4)—One ovigerous specimen in good condition, 330μm long and 180μm wide (idiosoma). Measurements in 3 other specimens 338μm x 190μm; 345μm x 198μm and 360μm x 200μm. Propodonotal plate very poorly sclerotized. Length of setae: *vi* 50 μm,



Figs. 5-9: *Acalvolia squamata* (Oudemans)—(male), 5, dorsally; 6, ventrally; 7, apex of tarsus I laterally; 8, tarsus I laterally; 9, solenidion ω1 with famulus, on tarsus I.

sc i 30μm, *sc e* 130μm, *d* 1 to *d* 4 27-36μm, *l* 1 to *l* 4 35-45μm, *d* 5 130μm, *l* 5 120μm, *h* 75μm, *sh* 33μm. Supracoxal setae thin, with a few short barbs. Epimera I fused in a short sternum, other epimera free. Epigynium and genital suckers well developed. Vulva in an inverted 'Y'. Legs slender. All tarsi ending in a long ambulacrum, with a very small claw. Spermatheca soft, elongate. Bursa opening in a very small rounded, terminal papilla. Chaetotaxy of legs—As described for the genus. Gnathosoma relatively well developed, with small palps apparently formed of 3 articles.

MALE (Figs. 5-9)—Length and width (idiosoma) in 4 specimens 240μm x 138μm, 260μm x 140μm, 265μm x 138μm, 270μm x 154μm. Dorsum as in female. Venter—Sternum longer than in female. Genital organ situated at level of coxae IV. Aedeagus thick. A sclerotized structure more or less square in shape present in front of aedeagus. Adanal and tarsal IV suckers lacking. Legs I and II bear a large sucker in apicoventral region. Legs slender as in female. Gnathosoma as in female.

TRITONYMPH—Idiosoma in 2 specimens 235μm x 135μm (slightly flattened specimen) and 210μm x 120μm (non flattened specimen). Aspect as in female but without vulva or bursa.

DEUTONYMPH (hypopus)—Our specimens correspond with the description given by Fain (1972).

PROTONYMPH--Idiosoma 225μm x 135μm (slightly flattened specimen). Aspect as in tritonymph except for following main characters: absence of setae on trochanters I-III, presence of one pair of genital suckers and one pair of genital setae. Absence of solenidia $\omega 3$, chaetotaxy reduced on leg IV.

LARVA—Idiosoma 150μm x 90μm, resembles protonymph except for following characters: absence of leg IV, setae *d 4, l 4, a i, a e,* and *g* lacking. Genital suckers lacking. Coxae I bearing *cx I* setae and a long (12μm) Claparede organ situated slightly outside of *cx I*.

HABITAT—The specimens described here were found in the nests of birds in Berlin (Coll. W.K.).

REFERENCES

Fain, A. (1963). Les Acariens producteurs de gale chez les Lamuriens et les singes avec une étude des Psoroptidae (Sarcoptiformes). Bull. Inst. Roy. Sci. nat. Belgique, XXXIX (32): 1-125.

Fain, A. (1971). Notes sur les Hypopes des Saproglyphidae (Acarina: Sarcoptiformes). I. Diagnoses de Taxa nouveaux. Rev. Zool. Bot. Afr., LXXXIV (3-4): 281-284.

Fain, A. (1972). Notes sur les hypopes des Saproglyphidae (Acarina: Sarcoptiformes). II. Redéfinition des genres. Acarologia, XIV (2): 225-249.

Oudemans, A.C. (1909). Acarol. Aanteek. 26. Ent. Ber. II, n 47: 317-320.