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A NEW SPECIES OF *PROCTOLAEELAPS* (ACARI : ASCIDAE) FROM NEW SOUTH WALES, AUSTRALIA

BY Christine STONE

**Abstract**: A new species of ascid mite, *Proctolaelaps australis*, is described and illustrated. It occurs with *Ips grandicollis* (Eichhoff) under bark of several species of *Pinus* in New South Wales, Australia.

**Habitant de la galerie d’*Ips* sur *Pinus* Australie**

**Introduction**

A survey of the mites fauna associated with the introduced bark beetle, *Ips grandicollis* (Eichhoff), revealed that an ascid species is abundant in the galleries. Very few studies since WOMERSLEY (1956) have examined Australian Ascidae so that many species still remain undescribed. The present species is described here to make a name available for proposed ecological studies on the mites associated with *I. grandicollis* in Australia.

The system of chaetotaxy used for the dorsum and venter of the idiosoma is that of LINDQUIST and EVANS (1965). Leg and palpal chaetotaxy follows EVANS (1963, 1964).

**Proctolaelaps australis** sp. n. (Figs. 1-17)

**Diagnosis**. The tectum is triramous. Six rows of denticles are on the venter of the hypostome, with the anterior five rows connected, the fifth and sixth rows widened. On adults, the dorsal setae are moderately and similarly long, setae *J1, J2, J3, Z3, Z4* and *S5* extend to or beyond the base of the next seta in their respective series. Seta *Z5* is curvate, thickened, and finely pennate apically. The anterior margin of the sternal shield has a quadrangular emargination. The third pair of sternal pores is absent on nymphal instars and adults. The paired apical setalike processes on tarsi II to IV of adults are minute; those of the nymphal instars are elongate, nearly as long or longer than the pretarsi.

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FIGS. 1-4: Proctolaelaps australis n. sp.
1. — Body dorsum of female. 2. — Body venter of female. 3-4. — Tecta: 3a and 3b, variant forms, female; 4, larva.
FEMALE. Dorsal shield 437-466 μm long, 218-254 μm wide (46 specimens) reticulated over almost entire surface, with distinctive pattern medi ally between setae J4-J6 (Fig. 1), tendency towards lines medi ally between J6-J1, uneven line between setae J5 minutely denticulate. Dorsal shield with 42 pairs of setae; 3 most posterior pairs of marginales (R5-R7) on membrane behind rounded posterolateral corners of dorsal shield; 4 pairs of extra submarginal (UR) setae on ventrolateral membrane, 1 pair just behind level of legs IV, other 3 pairs more posterior. Setae J2-J6 32 to 40 μm long, shorter than distances between their bases; on posterior region, setae J1-J4 41 to 48 μm long, slightly shorter or as long as distances between their bases, setae J1, J2, J3 reaching the bases of setae J2, J3, J4 respectively; other posterior dorsal setae (Z1-Z4, S1-S5) of similar length. Setae J5 (24 μm) one fifth longer than para-anal setae, setae Z5 (50 μm) curvate, thickened, finely pennate apically.

Tritosternum normal in shape, with trapezoidal base and slender, tapering, pilose laciniae. One pair of pre-endopodal plates with a line projecting from anterior medial margin (Fig. 2). Sternal shield weakly reticulated laterally, smooth medially, with 3 pairs of setae and 2 pairs of pores; anterior margin of shield with quadrangular emargination; posterior margin slightly convex with posterolateral corners slightly emarginated. Third pair of sternal pores absent; fourth pair of sternal setae on metasternal plates. Endopodal plates clearly formed between coxae III and IV. Genital shield reticulated, widening but little behind genital setae, with membranous anterior margin rounded, not quite extending to level of third pair of sternal setae. Two pairs of metapodal plates, the medial pair vestigial. Anal shield ovate, longer than wide, lightly reticulated, with anterior margin rounded, posterior margin flattened; anal opening enlarged, occupying approximately half the length of the anal shield; postanal seta slender, one and one-half times as long as para-anal setae. Thirteen pairs of setae on membrane around anal shield, including eight pairs of ventral setae, two pairs of marginals and three pairs of submarginals (Fig. 2). Peritrematal shield at position of poststigmatic pore narrowly touching exopodal plate curving behind coxa IV, peritremes long, extending anteriad to setae z1. Spermathecal duct inconspicuous, about as long as diameter of coxal cavity IV (Fig. 11).

Tectum triramous, processes of approximately equal length; lateral processes denticulate near tip, central process sometimes forked distally (Figs. 3a-3b). Fixed chela with row of 14-15 teeth, with membranous lobe instead of pilus dentilis, and with short dorsal projection over base; movable chela tridentate, with one ventral spine-like process near base (Fig. 8). Deutosternum with 6 transverse rows of denticles, anterior 5 rows connected, each row evenly multidenticulate (5th row more sparsely so); fifth row widened, gently concave; sixth row free, widened, very slightly convex; seventh row absent. Anterior rostral setae not enlarged, slightly longer than posterior rostral setae and capitular setae. Corniculi moderately spaced, slightly sinuate but nearly parallel; inner basal margin of corniculi with a pair of small membranous processes with acuminate apices; internal malae not extending to tips of corniculi (Fig. 9). Proximal internal seta of palpgenu flattened and curved, not parallel to distal internal seta. Apotele of palptarsus two-tined.

Leg I and IV slightly shorter than dorsal shield; tarsi II to IV with pair of apical setalike processes minute, subapical setae not shortened (Fig. 12). Pretarsi of legs I to IV of moderate length, those of legs III-IV slightly longer than basitarsi. Coxae and trochanters of all legs lineate ventrally. Setation of genua of legs I-II-III-IV, respectively, 13-11-9-9; that of tibiae, 13-10-8-10; seta p1-2 absent on tibia III. Legs without macrosetae.

MALE. Dorsal shield 345-368 μm long, 165-195 μm wide at level of setae J1 (8 specimens), with reticulation similar to that on female except pattern medi ally between setae J4-J6 less distinctive (Fig. 5). Dorsal shield with 44 pairs of setae mostly similar in length but slightly shorter than on female; R7 on ventrolateral membrane posteriorly, submarginal setae absent; setae J5 and Z5 formed as on female.

Pre-endopodal plates, other preternal markings, and anterior margin of sternogenital shield less distinct than on female. Sternomental shield lineate laterally, smooth medially on sternal region, reticulated over entire surface of genital region, with
FIGS. 5-8: *Proctolaelaps australis* n. sp.

5 pairs of setae and 2 pairs of pores; third pair of sternal pores absent. Ventrianal shield wide, extending over areas occupied by metapodal plates, reticulated over entire surface, with 7 pairs of ventral setae in addition to anal setae; eighth, most posterior pair of ventrals (Lv5) on membrane; setae Lv2 absent. Ventrianal shield free from sternogenital and peritrematal shields, but narrowly attached to most posteromedial extremities of exopodal plates behind coxae IV (Fig. 6).

Tectum triramous, similar to that on female. Fixed chela with fewer (9-11) teeth and more weakly developed membranous lobe than on female, short dorsal projection over base; movable chela unidentate with moderately long, slender spermatodactyl downcurved in lateral view (Fig. 7). Corniculi more slender, widely spaced and divergent than on female (Fig. 10); capitular setae not conspicuously thickened basally; rows of deutosternal denticles similar to those on female; other features of gnathosoma as on female. Legs I, III and IV as on female.

**DEUTONYMPH.** Dorsal shield 308-323 μm long, 153-161 μm wide (8 specimens), with lateral incisions reaching to setae z6; shield reticulated posteriorly and laterally, smooth medially. Dorsal shield with 31 pairs of setae; 16 pairs on anterior region, including setae z1 on striplike extensions of shield; 15 pairs on posterior region; s1, s2, r2-r6 on membrane in anterior region, R1-R7 and 3 pairs of submarginals on membrane in posterior region (Fig. 13). Relative lengths of dorsal setae similar to those of adults except on posterior region where setae J1-J3 are slightly longer than distances between their bases, setae J5 shorter, half length of paraanal setae.

Sternogenital shield faintly lirate laterally, smooth medially, without endopodal extensions, with 4 pairs of sternal setae; and 2 pairs of pores; third pair of sternal pores absent; genital region narrowed, such that genital setae on membrane. Two pairs of metapodal plates, the medial pair vestigial. Ten pairs of ventral setae on membrane around anal shield (Fig. 17). Anal shield faintly reticulate, similar to that of female; para-anal setae similar in length to postanal seta. Peritremes extending beyond s1, level with setae j3, weak peritrematal shield not extending farther to unite with dorsal shield. Exopodal plates evident only around coxae IV.

Fixed chela with row of 13-15 teeth; other cheliceral features as on female. Other features of gnathosoma as on female except transverse rows of denticles faint, slightly more evenly denticulate. Legs as on adults, except apical setalike processes on tarsi II-IV much longer, three quarters as long as pretarsi.

**PROTONYMPH.** Idiosoma 301-308 μm long, 150-161 μm wide at level of legs III (3 specimens), with well-separated, lightly sclerotized, smooth podonotal and faintly reticulated pygidial shields. Body dorsum with 30 pairs of setae: 11 pairs on podonotal shield (z6 absent), 3 pairs on lateral membrane beside podonotal shield, 8 pairs on interscutal membrane (S2 present, S1 absent), and 8 pairs on pygidial shield. Anterior dorsal setae 11 to 19 μm; posterior dorsal setae mostly longer (16-20 μm); setae Z5 terminally pennate, five times longer than clunial setae J5 (5 μm) (Fig. 14).

Sternal shield sclerotized, margins indistinct, with 3 pairs of sternal setae and 2 pairs of pores. Metasternal setae and pores absent. Genital setae on membrane. Two pairs of metapodal plates, the medial vestigial pair barely discernible. Four pairs of opisthogastric setae on membrane around anal shield. Anal shield similar to that of deutonymph, with para-anal setae similar in length to postanal seta (Fig. 16). Peritremes short, extending to middle of coxae III; peritremal shields not formed.

Fixed chela with 11 or 12 teeth, movable chela tridentate; other cheliceral and gnathosomal features as on deutonymph, except palpi with normal protonymphal complement of setae (EVANS, 1964). Legs I-II-III-IV with setation normal for protonymph, that of coxae, 2-2-2-1; trochanters 4-4-4-4; femora, 10-8-5-4; genua, 8-6-6-5; tibiae, 8-7-7-7. Tarsi of legs II to IV with pair of apical setalike processes elongate, nearly as long as pretarsi.

**LARVA.** Idiosoma 267 μm long, 157 μm wide at level of legs III (1 specimen), with well-separated, lightly sclerotized, unornamented podonotal and
Figs. 9-12: Proctelealaps australis n. sp.
pygidial shields. Body dorsum with 18 pairs of setae: 9 pairs of moderate length (14-17 μm) on podonotal shield and none on lateral membrane beside it; 5 pairs in interscutal membrane varying in length from 10 to 19 μm, and 4 pairs on pygidial shield of which J4-J5 are short (8-9 μm) and Z3-Z4 longer (12-18 μm) (Fig. 15). Setae Z5 and S5 present on ventrolateral membrane behind anal shield; Z5 thickened, smooth, long (24 μm); S5 short (9 μm).

Body venter holotrichous, with 3 pairs of sternal setae on indistinctly defined sternal shield, 4 pairs of opisthogastric setae, 3 anal setae, and a pair of opisthogastric setae, para-anal setae moderately long (30 μm), almost twice as long as postanal seta. Anal shield weakly scleritized, subtriangular, broadly rounded anteriorly, truncate posteriorly. Peritremes absent.

Anterior margin of tectum flattened, finely denticate, straight-sided basally, not triramous as on subsequent instars (Fig. 4). Fixed chela with row of 2-2-2; trochanters, 4-4-4; femora, 10-7-5; genua, 8-6-6; tibiae, 8-7-7. Tarsus of legs I to III with setation normal for larva, that of coxae, 2-2-2; trochanters, 4-4-4; femora, 10-7-5; genua, 8-6-6; tibiae, 8-7-7. Tarsi of legs II to III with pair of apical setalike processes elongate, longer than pretarsi.

**Types**

*Holotype*: female, Whiporie State Forest 40 km N. of Grafton, New South Wales, Australia, 7 November 1985 (C. Stone), with *Ips grandicollis* (Eichoff) under bark of *Pinus elliottii* Engelm.; type no. 50 in the Australian National Insect Collection, Canberra.

*Paratypes*: 54 females, 10 males, 19 deutonymphs, 3 protonymphs and 1 larva, with data given below; paratypes deposited in the insect collection of Wood Technology and Forest Research Division, Forestry Commission of N.S.W., P.O. Box 100, Beecroft, Australia, 2119, the Australian National Insect Collection, Division of Entomology, C.S.I.R.O., P.O. Box 1700, Canberra City, Australia, 2601 and the Canadian National Collection, Biosystematics Research Centre, Ottawa, Ontario, K1A OC6.

**Locality and Host Records**

All paratype specimens of *Proctolaelaps australis* were sampled from bark galleries of *Ips grandicollis* in either *Pinus elliottii*, *P. teada* or *P. radiata* logs from 4 plantations in north eastern New South Wales.

Whiporie State Forest 29°15’ S, 153°02’ E, from *P. elliottii* logs: 1♀, 1 d-nym., 15 October 1985 (C. Stone); 5♀, 7 November 1985 (C. S.); 1♀, 2♂, 19 December 1985 (C. S.); 1♀, 25 February 1986 (C. S.); 1♀, 24 March 1986 (C. S.); 5♀, 1♂, 1 d-nym., 23 April 1986 (C. S.); 5♀, 1♂, 1 p-nym., 1 larva, 20 May 1986 (C. S.); 2♀, July 1986 (C. S.); 3♀, 3 d-nym., 16 July 1986 (C. S.).

Clouds Creek State Forest 30°06’ S, 152°14’ E, from *P. teada* logs: 3♀, 2♂, 3 d-nym., 25 February 1986 (C. S.); 1♀, 3 d-nym., 1 p-nym., 24 March 1986 (C. S.); 5♀, 3♂, 3 d-nym., 22 April 1986 (C. S.); 9♀, 1♂, 16 July 1986 (C. S.).


**Remarks**

*Proctolaelaps australis* belongs to the *P. cossi* species group sensu Karg (1985). Adults of *P. australis* are most similar to those of *P. hystricoides* Lindquist and Hunter (1965), but can be distinguished by setae Z5 curvate and finely pennate apically; by the anterior margin of sternal shield with quadrangular emargination; by the deuto sternum with only 6 transverse rows of denticles; by the internal maleal not extending to tips of the corniculi, by the ventrianal shield of the male with 7 pairs of ventral setae, and by tarsi II to IV with the pair of apical setalike processes minute.
FIGS 13-17: *Proctolaelaps australis* n. sp.

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