

The genus *Durenia* VERCAMMEN-GRANDJEAN, 1955 (Acari: Trombellidae) in Papua New Guinea. Description of a new species

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Summary

The larvae of two species of the genus *Durenia* VERCAMMEN-GRANDJEAN (1955) (Acari: Trombellidae) are recorded for the first time from Papua New Guinea. One is *Durenia singaporensis* VERCAMMEN-GRANDJEAN and AUDY (1959), described from *Aedes curtipes* from Singapore and only known from this locality; the second one is *Durenia papuana* n.sp. taken from *Acropsilus* sp. (Diptera: Dolichopodidae) from Madang Province, Papua New Guinea.

Key Words: Taxonomy. Acari. Trombellidae. Genus *Durenia*. Papua New Guinea.

Résumé

Les larves de deux espèces du genre *Durenia* VERCAMMEN-GRANDJEAN (1955) (Acari; Trombellidae) sont signalées pour la première fois de Papua Nouvelle Guinée. L'une est *Durenia singaporensis* VERCAMMEN-GRANDJEAN et AUDY (1959), décrite de *Aedes curtipes* de Singapour et connue seulement de cette localité; la seconde est *Durenia papuana* n.sp. récoltée sur *Acropsilus* sp. (Diptera: Dolichopodidae) de la Province de Madang, Papouasie Nouvelle Guinée.

Mots clé: Taxinomie. Acari. Trombellidae. Genre *Durenia*. Papouasie Nouvelle Guinée.

Introduction

The larvae of two species of the genus *Durenia* VERCAMMEN-GRANDJEAN (1955) (Acari: Trombellidae) were found by P.G. in Papua New Guinea. One of these is *Durenia singaporensis* VERCAMMEN-GRANDJEAN et AUDY (1959) described from *Aedes curtipes* (Culicidae) from Singapore; the second species, *Durenia papuana* n.sp. was taken from *Acropsilus* (Diptera: Dolichopodidae) from Papua New Guinea, it is described here.

The genus *Durenia* has been redefined by SOUTHCOTT (1991). It includes at present the following species:

1. *D. vilhenae* (ANDRÉ, 1958), only known from the adult forms collected in Angola.

2. *D. gracilipalpe* (ANDRÉ, 1958), only known from adults collected in Angola
3. *D. glandulosa* ROBAUX, 1968: known from adults from South America
4. *D. bukavuensis* VERCAMMEN-GRANDJEAN, 1955: known from larvae and nymphs collected in Bukavu, Zaire. The larvae were attached to Culicidae (*Culex pipiens* L., *C. bukavuensis* WOLFS, and *Aedimorphus quasi-univittatus* (THEOBALD)). The nymphs were reared from the larvae.
5. *D. singaporensis* VERCAMMEN-GRANDJEAN and AUDY, 1959. This species was only known from the typical series of larvae collected from *Aedes curtipes*, from Singapore. It is now recorded here, for the first time, from Culicidae from Papua New Guinea.
6. *D. papuana* n.sp. : All our specimens (only larvae) were collected from a small fly *Acropsilus* (Dolichopodidae), from Papua New Guinea. They are described here.

In addition, non-identified specimens of *Durenia* spp. were recorded from Culicidae from U.S.A. (MULLEN, 1975) and Guatemala (WELBOURN, 1983).

Metric data: We are following here the metric data proposed by SOUTHCOTT (1986a) and for the solenidia those of FAIN (1992). We add here a new symbol VS (=the length of the ventral setae of the opisthogaster). The lengths of the legs LI, LII and LIII mentioned here include the coxae but not the claws. All our measurements are in micrometers. Some measurements of table 1 for *D. bukavuensis* and *D. singaporensis* have been calculated from the original figures of the authors.

Remarks on some characters of the genus *Durenia* (larvae):

1. **Solenidia on the genua and the femora:** In *D. singaporensis* (specimens from Papua), the genua I-II-III bear 4-1-1 solenidia, the femora I-II-III 5-4-2 solenidia. In *D. papuana* this number is 4-1-1 on the genua and 6(5)-6-7(6) on the femora. Their lengths vary from 18

to 30 except those of leg III in *D. singaporensis* which are much longer (45-50 long). These specialised setae were not mentioned by VERCAMMEN-GRANDJEAN but SOUTHCOTT described them in an allied genus *Trombella* as follows: "A further unusual feature in larval *Trombella* is the presence of numerous spiniform sensory setae These sensory setae, although presumably solenoidales, differ from the blunt-ended, wider solenoidales, for instance on the tarsi (SOUTHCOTT, 1986, p. 614)". We think that these "setae" are true solenidia and that their presence is an important character in the systematics of this group of mites.

2. *Nasus*: The shape of the nasus is important in the systematics of the genus *Durenia*. In *D. papuana* the nasus is almost parallel-sided and narrow. In the two other species of this genus the nasus is triangular with a rounded apex.

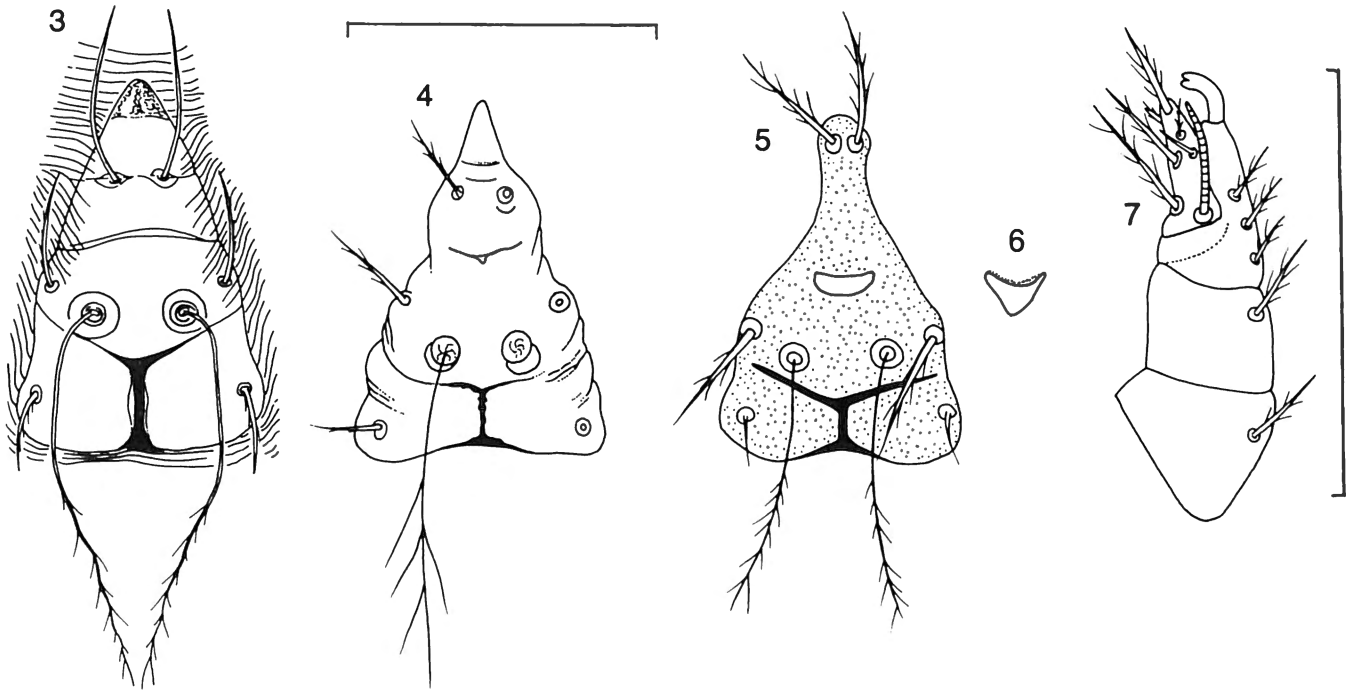
3. *Shape of tarsi*: The tarsi, especially tarsi I and III, are strongly dilated in their basal half or third and progressively attenuated towards the apex.

Key to the genus *Durenia* (larvae)

1. Nasus narrow, almost parallel-sided, with a short constriction in its median part, maximum length 14, maximum width 7,7, minimum width 7,3. Distance LN 4 to 5; AMB 4 to 5; AP 11 to 14. Setae AM and AL thick, subequal in length, with rather thick setules. Number of solenidia on genua 4-1-1, on femora 5(6)-6-6. Shield with a transverse median depression, 9 wide and 4 long, situated in front of the sensillae (fig. 1-2, 5-10) *D. papuana* n.sp.



Figs 1-2. - *Durenia papuana* n.sp. Larva: ventral (1) and dorsal (2) view. Scale line 50 μ m.



Figs 3-7. – *Durenia bukavuensis* VERCAMMEN-GRANDJEAN, Larva: dorsal shield (3); *Durenia singaporensis* VERCAMMEN-GRANDJEAN & AUDY, Larva: dorsal shield (4); *Durenia papuana* n.sp. Larva, dorsal shield (5), scutal depression in a paratype (6), palp (7). Scale line 50 μ m. (N.B.: The numbers 3 and 4 are redrawn from the original figures).

- Nasus triangular with rounded apex. Distance LN 13 to 18; AMB 8 to 9; AP 15 to 21. Setae AM and AL thin with short and thin setules. Number of solenidia less numerous (femora II and III with 3(4) and 2 solenidia respectively). No depression on the shield in front of sensillae. 2
- 2. Length of AM 33, of AL 19 of PL 16. Dorsal setae thicker and longer (52/33). Solenidion ω I 35, ω II 28 long (fig. 3) *D. bukavuensis*
VERCAMMEN-GRANDJEAN
- Length of AM 14-16, of AL 9-16, of PL 5-8. Dorsal setae thinner and shorter (29 to 36 and 21 to 28) Solenidia ω I 16-22, ω II 11 to 12 (fig. 4).
. *D. singaporensis*
VERCAMMEN-GRANDJEAN & AUDY

Durenia singaporensis
VERCAMMEN-GRANDJEAN & AUDY, 1959

This species has been described from *Aedes curtipes* from Singapore. Until now it has not been recorded again from another locality.

Our material includes 11 larvae collected from Culicidae, from Boro Village (8.V.1994; n°94070) (6 larvae) and from Condor Point (14.V.1993; n°93140), both localities in Madang Province, Papua New Guinea. The mites were attached to the abdomen of the mosquitoes.

Our specimens correspond to the typical description,

except that the legs are slightly longer in our specimens (table 1).

The length of the dorsal shield (i.e. 49 μ m) given by the authors in the original description does not correspond with the length (i.e. circa 58 μ m) calculated from the scale appendant to the figure A. This new length corresponds more closely with the lengths in our specimens (56 to 66 μ m) (fig. 4).

***Durenia papuana* nov.spec.**

Larva, holotype (figs 1-2, 5-10): Metric data, see table 1. Length and width of idiosoma: 240x210. *Dorsum*: Shield relatively well sclerotized, with a nasus longer than wide, its posterior border slightly concave; in front of the sensillae a deep transverse median depression wider (9) than long (4); behind the sensillae a more or less T-shaped sclerotized structure. Diameter of anterior eyes 8-9. Cuticle behind the shield with 4 transverse rows of 6-6-6-3 pectinate setae, 42 to 50 long. *Venter*: Coxae with 2-1-1 pectinate setae, the coxal III distinctly longer (30) than coxals I and II. Uropore well developed. Urostigma rounded. One pair of pectinate setae slightly in front of coxae III. Opisthogaster with 4 transverse rows of 2-4-2-2 pectinate setae. Posterior margin of body with 3 pectinate setae. *Gnathosoma*: Hypostomal setae pectinate, 18 long. Palps 45 long; the apical spine of tibia slightly incised; femur and genu each with a dorsal pectinate seta; tarsus 12 long with a thick basal solenidion about 10 long and 6 pectinate setae. Chelicerae with a thick curved movable

digit. Leg I-III (number of pectinate setae): Trochanters 1-1-1, Femora 5-5-5, Genua 4-4-4, Tibiae 7-7-6. Tarsi I with an eupathidia at 18 from the apex. Genua and femoral solenidia: see above.

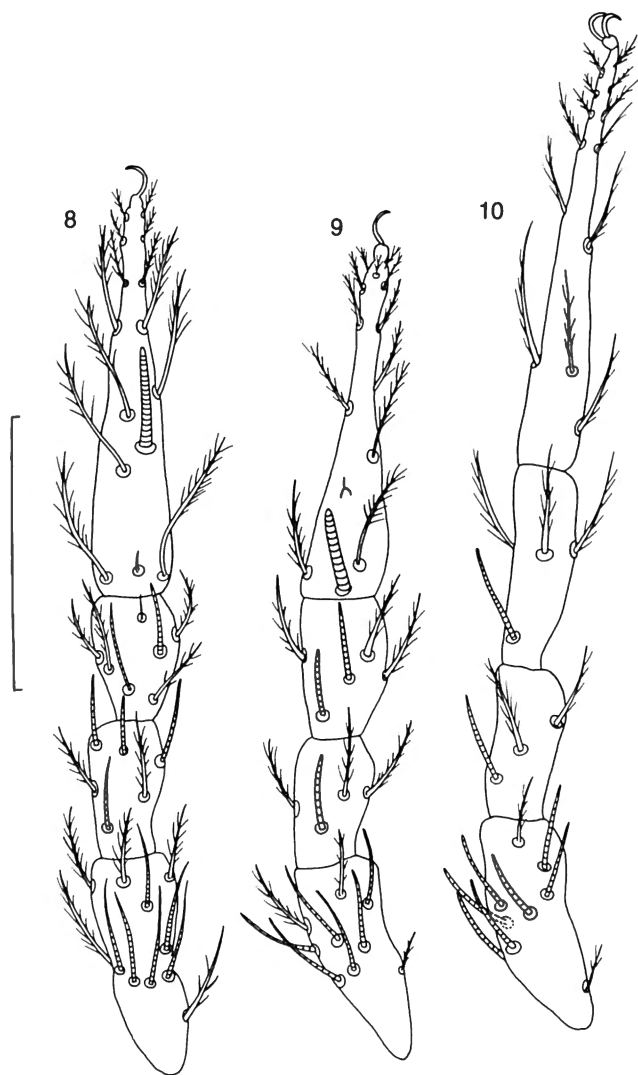
Hosts and locality: All our specimens were collected in

Madang Province, Papua New Guinea. They were fixed to the abdomen of their hosts. Holotype larva from *Acropsilus* (n°95064) (Dolichopodidae), from Baiteta Forest, Madang Province. (May 1995). Paratypes: 4 larvae with same data as holotype; 7 paratypes from the same host

Table 1. Metric data (in micrometers) for the larvae of the genus *Durenia*

(Remark: The measurements calculated from the original author's illustrations are followed by the letter c).

	<i>D. buka- vuensis</i> (Original description)	<i>D. singaporensis</i>				<i>D. papuana</i> n.sp.		
		Original description	Specimens from Papua New Guinea			Holotype	Parat. 1	Parat. 2
			Larva 1	Larva 2	Larva 3			
LN	18	14c	15	13	13	5	5	4
MA	—	18c	24	19	19	35	31	29
AP	21	21	20	15	18	13	11	14
AMB	8c	8c	—	8	9	5	5	4
AW	32	25	—	28	29	31	30	36
PW	39	34	—	33	30	35	32	36
SB	17	12	—	14	14	16	16	18
ASB	41	29	40	36	37	42	41	36
PSB	27	20	26	20	19	18	15	19
L (SD)	68	58c	66	56	56	60	55	54
W	46c	38c	—	39	36	40	40	43
AM	33	16	15	16	14	20	19	20
AL	19	16	9	12	10	23	22	25
PL	16	8	5	5	5	7	7	7
Sens	71	48	51	54	49	—	49	—
DS	52/33	29/26	32/28	36/26	32/21	48/42	48/42	50/47
VS	33/19	25/15	—	25/16	20/13	30/24	36/24	36/25
Ta1	74c	53c	65	64	62	64	68	70
Ti1	19c	18c	21	22	22	24	24	24
Ge1	19c	19c	21	20	19	24	24	27
Fe1	43c	37c	45	42	—	42	40	—
Ta2	66c	47c	57	58	57	60	63	62
Ti2	19c	22c	24	23	24	25	24	25
Ge2	19c	17c	16	17	18	22	20	24
Fe2	31c	33c	36	36	37	38	39	38
Ta3	65c	57c	64	72	68	74	76	75
Ti3	27c	22c	30	28	30	39	33	35
Ge3	27c	23c	22	27	29	28	26	26
Fe3	43c	35c	44	40	37	38	37	42
ωI	35c	22c	16	16	16	19	19	19
ωII	28c	12c	11	11	12	14	14	15
φIa	—	—	12	10	12	14	14	15
φIb	—	—	17	16	18	16	16	14
φIIa	—	—	8	10	11	16	14	15
φIIb	—	—	14	11	12	15	14	16
φIII	—	—	17	16	16	17	18	19
LI	215	175	201	205	198	210	210	190
LII	206	170	180	190	185	199	200	190
LIII	220	193	210	225	225	230	229	216



Figs 8-10. – *Durenia papuana* n.sp. Larva: Tarsus, tibia, genu and femur of legs I (8), II(9) and III(10) in dorsal view. Scale line 50 μ m.

species but from Apingan Madang Province, fly n° X16 (95042, 95044; 16.V.1995) (16.5.95). Typical series deposited in the "Institut royal des Sciences naturelles de Belgique."

References

- ANDRÉ, M., 1958. Acariens Thrombidiens (adultes) de l'Angola. *Publicações Culturais Diamang, Museo do Dundo*, 35: 1-125.
- FAIN, A., 1992. A new larval trombidiid, *Paputrombidium grootaerti* n.g. and n.sp. (Acari: Trombidiidae), parasitic on *Cymatopus* spp. (Diptera). *Bulletin de l'Institut royal des Sciences naturelles de Belgique, Entomologie*, 62: 105-108.
- MULLEN, G.R., 1975. Acarine parasites of mosquitoes. 1. A critical review of all the known records of mosquitoes parasitized by mites. *Journal of Medical Entomology*, 12: 27-36.
- ROBAUX, P., 1968. Trombidiidae d'Amérique du Sud I. Tanuapodinae, Johnstonianinae, Trombellini (Acarina, Trombidiidae). *Acarologia*, 10: 450-466.
- SOUTHCOTT, R.V., 1968a. Studies on the Taxonomy and Biology of the Subfamily Trombidiidae (Acarina: Trombidiidae) with a critical Revision of the Genera. *Australian Journal of Zoology, Supplemental Series*, 123: 1-116.
- SOUTHCOTT, R.V., 1968b. Australian larvae of the genus *Trombella* (Acarina: Trombidoidea). *Australian Journal of Zoology*, 34: 611-646.
- SOUTHCOTT, R.V., 1991. A new Trombellid mite (Acarina: Trombellidae) from South Australia. *Transactions of the Royal Society of South Australia*, 115: 207-212.
- VERCAMMEN-GRANDJEAN, P.H., 1955. Un genre nouveau: *Durenia*, de la Sous-famille des Trombellinae (Trombidiidae: Acarina). *Revue de Zoologie et de Botanique Africaines*, 52: 252-260.
- VERCAMMEN-GRANDJEAN, P.H. & AUDY, J.R., 1959. Une seconde espèce appartenant au genre *Durenia* VERCAMMEN-GRANDJEAN, 1955 et originaire de Malaisie: *Durenia singaporensis* n.sp. (Acarina: Trombidiidae). *Biologisch Jaarboek Dordonea*, 27: 98-101.
- WELBOURN, W.C., 1983. Potential use of Trombidioid and Erythraeoid Mites as Biological Control Agents of Insect Pests. In: HOY, M.A., CUNNINGSGHAM, G.L. & KNUTSON, L. eds. *Biological Control of Pests by Mites. Agricultural Experiment Station, University of California, Berkeley*. Special Publication, 3304: 185 pp.

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