

***PSORERGATES SQUAMIPES*, N. SP. (Acari: Psorergatidae),
A SKIN MITE FROM *ANOUROSOREX SQUAMIPES*
(Insectivora) IN TAIWAN**

By F. S. Lukoschus¹, J. M. W. Louppen¹ and T. C. Maa²

Abstract. *Psorergates squamipes*, n. sp. found within the ear epidermis of *Anourosorex squamipes* Milne-Edwards in Taiwan is described and figured in detail. Measurements of this and 6 other *Psorergates* species, all found on Insectivora, are tabulated for comparison.

Members of the family Psorergatidae (skin mites) have been reported from Insectivora, Chiroptera, Primates, Rodentia, Carnivora, and domestic cattle and sheep as well, from Europe (Michael 1889, Fain 1959a, b, Fain et al. 1966, Lukoschus et al. 1967, Lukoschus 1967, 1968a, b, 1969, Fain & Lukoschus 1968, Cock et al. 1970), Africa (Zumpt & Till 1955, Fain 1959a, b), Asia (Fain 1959a, b), Australia (Womersley 1941), North America (Tyrrel 1883, Kok et al. 1970, 1971) and South America (Lukoschus et al. 1973, Lukoschus et al. 1974). In Asia, the only known psorergatid is from bats from Burma (Fain 1959a) and Malaysia (A. Beck, pers. commun.). In this paper, which is part of a series of reports on the family from different parts of the world, the first species from an Asian insectivore is described and compared with 6 other species belonging to the "Insectivora-group" of the genus *Psorergates* Tyrrel: *P. desmanae* Lukoschus, ex *Galemys pyrenaicus* (E. Geoffroy), France; *P. talpae* Lukoschus, ex *Talpa e. europaea* L., Netherlands, Spain; *P. crocidurae* Lukoschus, ex *Crocidura r. russula* (Hermann), Netherlands; *P. etruscus* Cock et al., ex *Suncus e. etruscus* (Savi), Italy, Sardinia; *P. sorici* Lukoschus, ex *Sorex a. araneus* L., Netherlands; *P. cinereus* Kok et al., ex *Sorex cinereus* Kerr, Canada.

In the following description of adults, measurements for the holotype and allotype are followed, in parentheses, by the minimum and maximum measurements and/or by the average for 20 ♀♀ and 4 ♂♂ paratypes, respectively.

***Psorergates squamipes* Lukoschus, Louppen & Maa, new species** Fig. 1-10.

♀ (Holotype). Body similar in shape and formation to that of other *Psorergates* species. Length including gnathosoma 130 (121-139, avg. 129) μ , width 100 (91-112) μ .

Venter (fig. 1). Cuticle soft, not striated. Ventral setae (*vs*) 5 μ long, 11 (10-30) μ interspaced. Genital opening (*Go*) 12 μ long, lying between 2 adanal lobes each bearing 2 terminal setae 62 (avg. 59) μ in length. Epimeron I anteriorly curving laterad and posteriorly forming a closed ring which arises from ventral surface; epimera II-IV directed toward body center and lying beneath ventral surface. Legs inserted ventrolaterally. Trochanters ventrally each with 1 seta 4 μ long, and 2 strong spurs, of which the smaller one directed toward corresponding femoral spur (thus together forming pair of "pincers"). Femora with huge ventral spurs; femora I-III each with 2 lateroposterior setae about 15 μ long, while IV with only a single such seta 20 μ long. Lateroposterior setae of genua I-III 1 μ long, that of genu IV about 36 μ long. Tibiae each with 1 short dorsomedian seta and (except on tibia IV) 1 anteroventral spine. Tarsi (fig. 2) each with 2 bifid claws, 1 simple ventromedian spine, 1 dorsoposterior seta (*dp*) (lacking on tarsus IV) 9 μ long, 1 dorsoanterior seta (*da*) 2 μ long, and 1 bilobed empodium. In addi-

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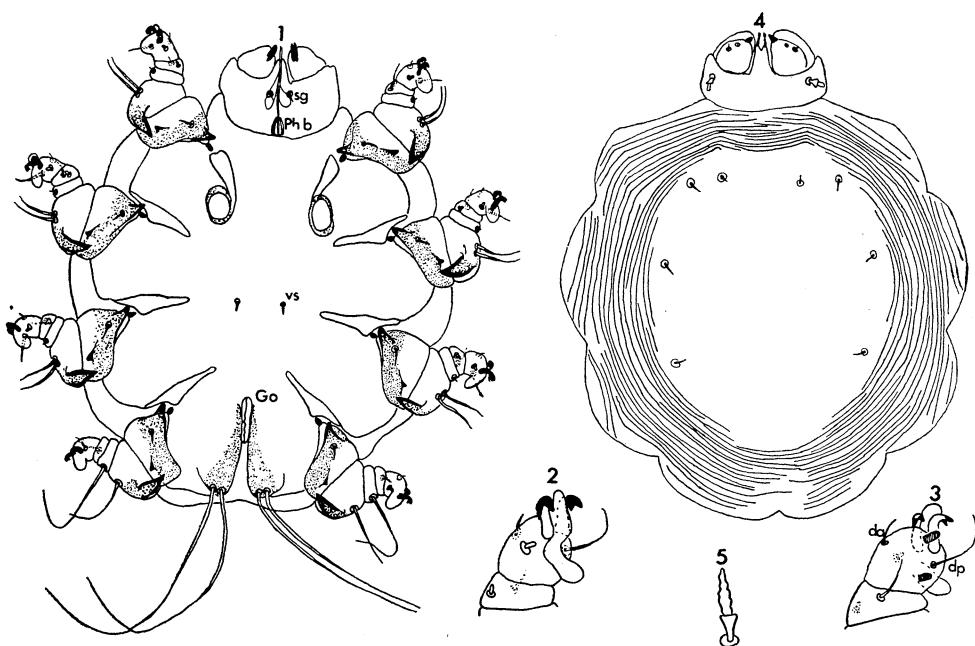


Fig. 1-5. *Psorergates squamipes*, n. sp., holotype ♀: (1) body, ventral view; (2) tarsus and tibia of leg I, ventral view; (3) tarsus and tibia of leg I, dorsal view; (4) body, dorsal view; (5) gnathosomal seta. *da*, dorso-anterior setae; *dp*, dorsoposterior seta; *Go*, genital opening; *Ph b*, pharyngeal bulb; *sg*, subgnathosomal seta; *vs*, ventral seta.

tion, tarsi I and II (fig. 3) each with 2 dorsal solenidia.

Dorsum (fig. 4). Dorsal shield sclerotized, distinctly punctate, 86 (81—89, avg. 85) μ long, 65 (63—70, avg. 66) μ wide, with a remarkable anteromedian sinuation, with 3 pairs of lateral setae (4 μ long) and 1 pair of paramedian setae (3 μ long) near borders and with, as in congeners from *Insectivora*, 6 pairs of minute spots. Weaker parts of dorsum uniformly striated.

Gnathosoma. Ventral surface with 2 short subgnathosomal setae (*sg*) before an oval-shaped pharyngeal bulb (*Ph b*); dorsal surface (fig. 5) with 1 pair of complex setae, each composed of a cup-like basal portion and a lanceolate distal portion, the latter having notched margins. Palptibia dorsally with 1 simple posterior seta 2 μ long, 1 point-like seta and 1 conical spine; palptarsus ventromedially inserted with 2 claws and 1 spine. Chelicera with dentate digitus fixus and stinging bristles.

♂ (Allotype). Body similar in shape and formation to that of congeners from *Insectivora*. Length including gnathosoma 121 (100—123, avg. 114) μ , width 91 (85—100, avg. 96) μ .

Venter (fig. 6). Similar to ♀, but only 1 terminal seta on each side, 59 (45—60) μ in length and both lying on a sclerotized tubercle; almost all setae on legs comparatively shorter (Table 2).

Dorsum (fig. 7). Dorsal shield 85 (77—90, avg. 80) μ long, 67 (60—76, avg. 67) μ wide, with most parts sclerotized and distinctly punctate; both sides of genital opening, i. e., near anteromedian border of the shield, impunctate and strongly sclerotized; punctures on lateral parts gradually becoming irregular and forming long, pale, stria-like spots; 3 pairs of setae and 6 pairs of points lined near lateral border. Anterior genital setae (*ga*) bodiced, 8 μ apart from each other; posterior genital setae (*gp*) 13 μ apart. Penis straight, pointed, 50 μ long; penis envelope 34 μ long.

Table 1. Measurements (in μ) of *Psorergates* species of "Insectivora-group," ♀♀.*

	<i>Psorergates</i> species and specimens examined						
	<i>desmanae</i>	<i>talpae</i>	<i>crocidurae</i>	<i>etruscus</i>	<i>sorici</i>	<i>cinereus</i>	<i>squamipes</i>
	12	31	10	9	10	10	20
Length, body	135—168	126—144	123—138	97—120	117—135	138—159	121—139
Width, body	108—140	99—117	96—112	78—97	93—99	112—131	91—112
Length, shield	87—96	80—96	78—85	72—78	76—87	85—92	81—89
Width, shield	75—90	70—76	66—72	58—60	63—72	68—77	63—70
Terminal setae	78—98	60—72	49—58	36—43	52—60	51—77	53—69
Ventral setae	5—6	3—4	2	4	4	8	5
Setae, trochanters	10—12	9—11	8	4—8 I-III	9—10	10—13	4
				6—10 IV			
Setae, femora I-III	20—28	28—36	20—35	13—18	20—25	16—23	15
Setae, femur IV	36—45	33—39	25—33	16—20	28—33	19—25	20
Setae, genua I-III	5	3	3	1	2	2	1
Setae, genu IV	51—60	50—55	30—35	22	30—35	32—36	36—45
Seta <i>da</i> , tarsus II	6	4	3	1—2	3—4	4	2
Seta <i>dp</i> , tarsus II	15—18	16—20	—	—	14—18	16—18	9
Seta 2nd lateral, shield	5—6	4—5	4	2—3	4—5	5	4
Setae, palptibia	5—6	4	3	4	2—3	3	2
Setae, gnathosoma	9—10	6	7	5—7	8—9	11—13	7—9
Length, genital opening	9—12	10—11	12	10—12	10—12	10—12	12
Interspace, ventral setae	9—11	7—11	13—18	6—7	9—12	11—13	10—30
No. setae, femur IV	2	2	2	2	1	1	1
No. teeth, claws	1	1	3	3	2	2	2

*Minima and maxima for all specimens examined; a single figure indicates that all measurements were the same.

Weaker parts of dorsum striated.

Immature Stages. Egg. Thinly shelled, almost spherical in outline, average diameter in 9 specimens 93 μ .

Larva (fig. 8). Disc-shaped, 82—86 μ long, 73—80 μ wide, with 3 pairs of 2-segmented legs (femur to tarsus fused together to form a single flattened segment which bears 2 trifid claws). Leg I with 1 solenidion. Trochanters with spurs and small epimera. Cuticle of both dorsal and ventral surfaces irregularly striated. Gnathosoma (fig. 9) similar in structure and almost so in size to that of adults.

Nymphs. Similar to larva but with 4 pairs of legs and 2 solenidia on legs I and II. Length 102—135 μ and width 91—109 μ in 5 specimens.

Protonymph and deutonymph morphologically inseparable. The existence of these 2 stages was confirmed by the fact that one nymph might be contained within another.

Type Series. 30 ♀♀, 4 ♂♂, 9 eggs, 2 larvae, 5 nymphs, TAIWAN (Formosa), Ari-san, 2300 m, 6—10.VI.1972, ex *Anourosorex squamipes* Milne-Edwards (Insectivora: Soricidae), found within ear epidermis.

Holotype ♀ and allotype ♂ in Institute of Zoology, Academia Sinica, Taipei. Paratypes in B. P. Bishop Museum, Honolulu, Hawaii; U. S. National Museum, Washington, D. C.; British Museum (Natural History), London; Muséum National d'Histoire Naturelle, Paris; Zoologisches Institut und Museum, Hamburg; Institute of Parasitology, Czechoslovak Academy of Sciences, Prague; Rijksmuseum van Natuurlijke Historie, Leiden.

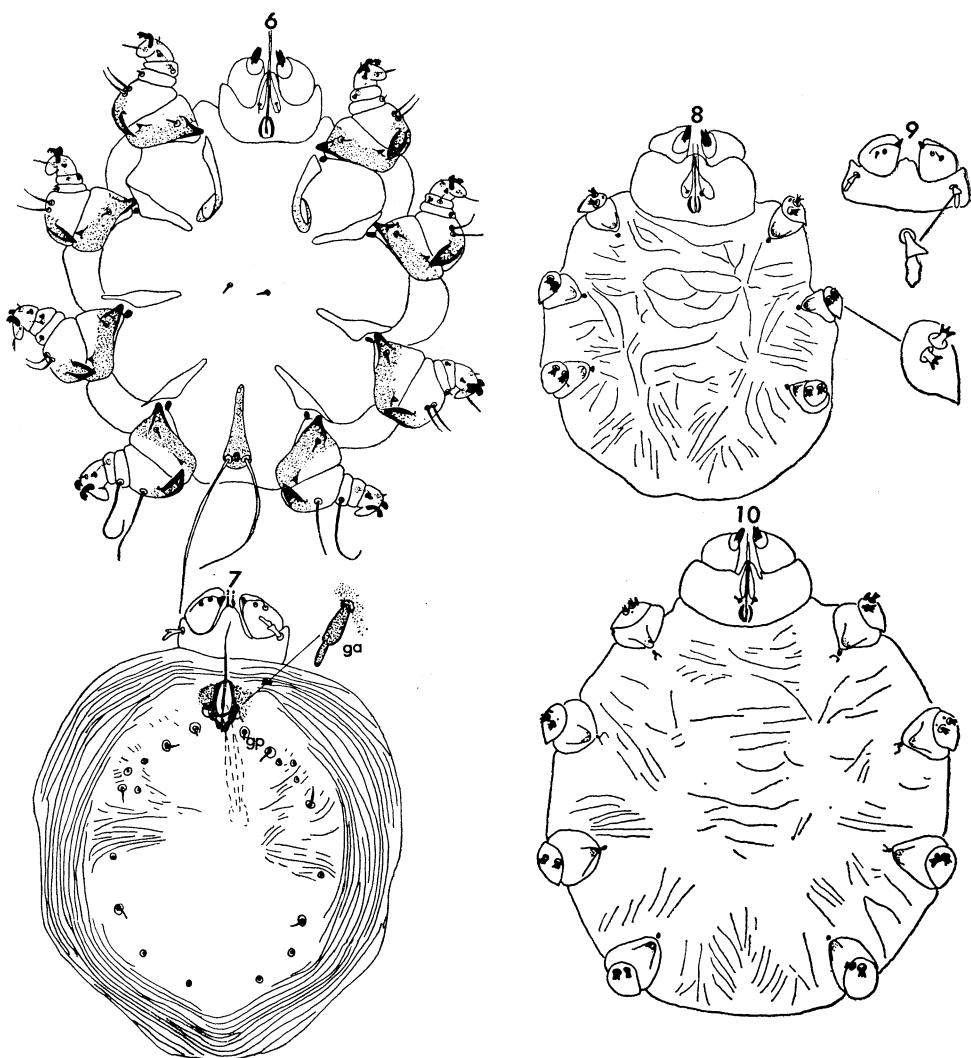


Fig. 6-7. *Psorergates squamipes*, n. sp., allotype ♂: (6) ventral view; (7) dorsal view. *ga*, anterior genital seta; *gp*, posterior genital seta. Fig. 8-10. *Ps. squamipes*, n. sp., immature stages: (8) larva, ventral view; (9) gnathosoma of larva, dorsal view; (10) nymph, ventral view.

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Remarks: *P. squamipes* is closely related to *P. sorici* and *P. cinereus* in having a single seta on femur IV and having bifid claws. The most distinctive characters of the new species appear to be (a) trochanteral setae, and dorsoposterior seta on tarsus II exceedingly short, (b) interspace of anterior genital setae in ♂ much smaller than that of posterior ones, (c) penis and penis envelope longer.

Table 2. Measurements (in μ) of *Psorergates* species of "Insectivora-group," ♂♂.*

	<i>Psorergates</i> species and specimens examined						
	<i>desmanae</i> 5	<i>talpae</i> 7	<i>crocidurae</i> 10	<i>etruscus</i> 1	<i>sorici</i> 10	<i>cinereus</i> 6	<i>squamipes</i> 5
Length, body	132—146	108—120	105—114	103	102—115	110—129	100—121
Width, body	105—120	90—99	85—93	79	84—93	86—113	85—100
Length, shield	84—90	72—74	75—84	76	70—78	75—78	77—85
Width, shield	75—81	62—66	64—70	56	57—62	63—70	60—67
Terminal setae	72—89	51—54	42—48	32—36	52—60	41—50	45—60
Ventral setae	4—5	3	2—3	2—3	3—4	6	5
Setae, trochanters	9—10	7—8	8—9	4—5 I-III 5—8 IV	7	6	3
Setae, femora I-III	15—20	25—28	18—23	16	20—25	12—16	12
Setae, femur IV	25—36	30—33	20—25	21	20—25	14—19	13—27
Setae, genua I-III	4	3	3	1	2	2	1
Setae, genu IV	35—40	40—45	30—33	18	27—34	29	25—30
Seta <i>da</i> , tarsus II	5	3	2	1	3	3	2
Seta <i>dp</i> , tarsus II	14—15	14—16	—	—	14—18	14	7
Seta 2nd lateral, shield	4—5	4	3—4	3	3—4	5	4
Seta, palptibia	5	3—4	3	3	2	2—3	2
Seta, gnathosoma	9—10	6	7—8	6	7—8	11	7—8
Penis	28—31	25—29	24—27	21	36—38	36—39	50—51
Penis envelope	23—24	18	15—16	14	11—14	20—23	32—34
Interspace, ventral setae	7—8	7—10	12—14	7	10—14	10	10
Interspace, ant. genital setae	9—10	10—11	12—13	9	12—14	13—15	8
Interspace, post. genital setae	10—11	9	7—8	7	5	4	13
No. setae, femur IV	2	2	2	2	1	1	1
No. teeth, claws	1	1	3	3	2	2	2

*Minima and maxima for all specimens examined; a single figure indicates that all measurements were the same.

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