REDESCRIPTION AND DISTRIBUTION OF THE SPIDER MITES *TETRANYCHUS EVANSI* AND *T. MARIANAE* [1]

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MORPHOLOGY
CHOROLOGY
TETRANYCHIDAE

ABSTRACT : *Tetranychus evansi* Baker & Pritchard and *Tetranychus marianae* McGregor are redescribed. The main differences between these two species are : the relative position of the proximal duplex setae on tarsus I of the female ; shape of empodium II of the male ; degree of development of the dorsal spur of the male empodia ; lengths of intercoxal setae 3 and 4 ; and sizes of idiosoma, body setae and leg segments. A reassesment of the distribution of both species is provided.

MORFOLOGIA
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RESUMO : *Tetranychus evansi* Baker & Pritchard e *Tetranychus marianae* McGregor são redescritos. As principais diferenças entre estas duas espécies são : a posição relativa des setas dúplices proximais no tarso I da fêmea ; forma do empódio II do macho ; grau de desenvolvimento do esporão dorsal mediano do empódio do macho ; comprimentos das setas intercoxais 3 e 4 ; e comprimentos do idiossoma, setas do idiosoma e segmentos das patas. Uma reavaliação da distribuição de ambas as espécies e também apresentada.

INTRODUCTION

The spider mite *Tetranychus marianae* McGregor was described from specimens collected in Tinian, Mariana Islands (McGREGOR, 1950) ; whereas *Tetranychus evansi* Baker & Pritchard was described from specimens from Mauritius Island (BAKER & PRITCHARD, 1960). These species are very similar morphologically and have been mistaken for each other (BAKER & PRITCHARD, 1960 ; DENMARK, 1973 ; FLECHTMANN & BAKER, 1970 ; QURESHI *et al.*, 1969).

This study includes redescriptions of *T. evansi* and *T. marianae*, a re-evaluation of some previous identifications, records of new collections, and the distribution of both species based on present information.

The nomenclature of dorsal and ventral body setae follows that used by BAKER & TUTTLE (1983). In the males, PAI = internal para-anals ; PAE = external para-anals. All measurements are in micrometers.

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Tetranychus evansi Baker & Pritchard
(Figs. 1 and 2)

Tetranychus evansi : BAKER & PRITCHARD, 1960 : 540 ; QURESHI *et al.*, 1969 : 898 ; JEPPSON *et al.*, 1975 : 223.
Tetranychus marianae : MOUTIA, 1958 : 61 ; OATMAN *et al.*, 1967 : 477 ; SILVA, 1954 : 18.

FEMALE : measurements given in Table 1. Dorsal body setae sparsely barbed, reaching beyond bases of setae of next row. Peritremes curved distally, sometimes with a secondary branch arising at the curvature. Dorsal striae lobed, longitudinal between setae E1 and between setae F1, forming a diamond-shaped pattern between those setae.

Venter with striae smooth anteriorly to IC3 and with small lobes posteriorly ; intercoxal setae slender and nude ; IC1 much longer than distance between their bases ; IC3 and IC4 about as long as distance between bases of same setae on opposite sides.

Empodia without distinct dorsal spur. Number of tactile setae (+ solenidia) (+ duplex setae) on legs I through IV, respectively : femur 10, 6, 4, 4 ; genu 5, 5, 4, 4 ; tibia 9 + 1, 7, 6, 7 ; tarsus 10 + 4 + 2, 10 + 4 + 1, 9 + 1, 10 + 1. Proximal duplex setae of leg I approximately in line with the four most proximal tactile setae and never in line with the most proximal solenidion. Lengths of segments shown in Table 2.

TABLE 1. Measurements (μm) of adult females and males of *Tetranychus evansi* and *Tetranychus marianae* from different localities.

	FEMALES				MALES			
	T. evansi		*T. marianae*		*T.evansi*		*T. marianae*	
		a		b		a		b
	Paratypes	Average (Range)[c]	Cotypes	Average (Range)	Holotype	Average (Range)	Cotypes	Average (Range)
Body length	372	451 (348-600)	408	395 (324-468)	291	348 (288-420)	308	288 (252-324)
Body wide	?	335 (326-444)	?	292 (246-372)	204	207 (192-216)	189	189 (286-192)
Stylet	153	153 (138-182)	122	135 (119-149)	115	118 (106-130)	84	98 (79-112)
Ve	74	73 (68-84)	52	64 (52-80)	58	56 (49-64)	41	48 (38-58)
Sci	163	158 (134-179)	119	129 (108-152)	109	109 (94-122)	78	88 (72-96)
Sce	117	114 (91-131)	88	91 (74-121)	76	77 (59-92)	53	62 (52-78)
C1	148	147 (125-176)	108	119 (102-148)	96	96 (84-112)	68	78 (66-94)
C2	153	145 (115-160)	184	114 (96-138)	94	97 (84-114)	67	76 (60-102)
C3	142	132 (108-155)	104	104 (84-128)	93	91 (67-106)	64	71 (61-80)
D1	144	143 (120-169)	96	116 (96-140)	98	95 (80-103)	71	76 (68-96)
D2	150	143 (118-168)	98	113 (96-140)	102	99 (83-114)	72	79 (71-96)
E1	148	139 (106-170)	98	112 (96-132)	99	89 (72-103)	62	71 (62-86)
E2	145	140 (120-168)	100	113 (90-142)	94	94 (77-104)	68	77 (66-89)
F1	128	123 (103-139)	82	99 (79-126)	73	73 (48-86)	42	51 (38-58)
F2	107	100 (82-118)	80	88 (78-110)	65	61 (48-72)	38	44 (36-54)
H1	55	52 (47-60)	43	47 (40-54)	36	33 (24-38)	21	20 (17-26)
H2	50	48 (38-58)	44	42 (31-50)	31	26 (18-31)	18	7 (12-24)
IC1	61	63 (54-72)	48	50 (41-64)	50	49 (37-60)	33	38 (30-48)
IC3	69	69 (61-79)	54	54 (48-66)	53	52 (41-61)	37	40 (36-44)
IC4	80	80 (67-91)	56	65 (50-77)	66	59 (52-66)	40	46 (38-52)
PG1	87	83 (74-98)	70	71 (60-78)	—	— —	—	— —
PG2	56	55 (44-65)	47	44 (38-50)	—	— --	—	— —
G	51	51 (44-62)	42	44 (36-49)	—	— —	—	— —
PG	—	— —	—	— —	60	59 (53-67)	47	49 (42-54)
PAI	—	— —	—	— —	25	23 (18-29)	16	15 (12-19)
PAE	—	— —	—	— —	20	19 (12-24)	12	12 (10-18)
Prox. Dup. I	75	71 (58-79)	68	71 (58-85)	58	57 (49-62)	50	56 (49-67)
Distal Dup.I	100	90 (72-101)	91	92 (77-106)	70	67 (60-73)	65	72 (64-85)
Dup. II	70	64 (53-73)	59	63 (55-73)	59	54 (44-62)	47	52 (42-62)
Aedeagus	—	— —	—	— —	12	12 (10-16)	?	11 (10-12)

(a) Of the means for : Riverside, USA ; Petrolina, Brazil ; Harare, Zimbabwe ; São Paulo, Brazil ; Belle Vue, Mauritius ; Donna, USA ; Saint Thomas, Virgin Island ; Florida, USA ; Belèm do São Francisco, Brazil ; Yuma, USA. (b) Of the means for : Pacajus, Brazil ; Costa Rica ; Guam ; Puerto Vallarta, Mexico ; Key West, USA ; Grand Island, USA ; Colombia. (c) For both species and sexes, the ranges refer to the individual specimens collected. See text for the number of individuals of each region studied.

TABLE 2. Lengths (μm) of adult females and males of *Tetranychus evansi* and *Tetranychus marianae* from different localities.

	FEMALES				MALES			
	T. evansi		*T. marianae*		*T.evansi*		*T. marianae*	
		a		b		a		b
	Paratypes	Average (Range)	Cotypes	Average (Range)	Holotype	Average (Range)	Cotypes	Average (Range)
				LEG I				
Femur	96	91 (78-104)	77	77 (70-90)	73	71 (62-82)	53	59 (53-64)
Genu	54	52 (46-58)	42	44 (36-53)	43	42 (35-48)	32	35 (31-42)
Tibia	65	63 (56-70)	48	51 (42-60)	51	51 (44-56)	39	40 (37-46)
Tarsus	102	96 (84-108)	78	82 (72-96)	59	61 (56-72)	52	59 (52-67)
				LEG II				
Femur	63	60 (50-66)	50	50 (42-60)	51	49 (42-56)	35	39 (34-47)
Genu	45	44 (38-54)	34	36 (31-42)	39	36 (31-42)	26	30 (23-36)
Tibia	50	47 (38-55)	35	38 (32-46)	38	37 (32-42)	24	28 (22-34)
Tarsus	83	78 (68-89)	63	67 (60-82)	47	54 (44-64)	44	50 (43-60)
				LEG III				
Femur	67	63 (54-72)	52	55 (48-64)	48	49 (44-60)	34	39 (31-47)
Genu	43	41 (36-46)	36	34 (30-40)	32	32 (26-38)	21	25 (19-29)
Tibia	56	55 (50-62)	43	43 (36-52)	43	42 (35-48)	27	33 (24-36)
Tarsus	91	87 (72-96)	69	72 (61-88)	60	61 (54-72)	45	51 (41-60)
				LEG IV				
Femur	93	88 (74-100)	78	74 (60-86)	63	64 (56-73)	37	52 (42-55)
Genu	53	50 (43-55)	42	39 (36-46)	38	38 (31-44)	25	29 (23-32)
Tibia	71	71 (62-76)	53	55 (48-64)	51	52 (42-58)	35	41 (34-44)
Tarsus	110	105 (90-119)	79	83 (72-96)	74	72 (64-82)	51	60 (43-72)

See table 1.

MALE : measurements given in Table 1. Dorsal body setae sparsely barbed, reaching beyond bases of setae of next row. Peritremes curved distally. Dorsal striae smooth, with a V-shaped pattern between F1 and F2.

Venter with striae smooth ; intercoxal setae slender and nude ; IC1 much longer than the distance between their bases ; IC3 and IC4 about as long as or longer than distance between bases of same setae on opposite sides.

Empodia of legs I and II divided only distally ; empodia of legs III and IV split for most of their lengths. Empodia of all legs with distinct dorsal spur. Number of leg setae : femur 10, 6, 4, 4 ; genu 5, 5, 4, 4 ; tibia 9 + 4, 7, 6, 7 ; tarsus 10 + 6 + 2, 10 + 4 + 1, 9 + 1, 10 + 1. Lengths of leg segments shown in Table 2.

Aedeagus shoe shaped, with knob forming a wide angle with the axis of the shaft ; with the anterior angulation much smaller than the posterior, which is acute and somewhat deflexed.

SPECIMENS EXAMINED : Belle Vue Harel, Mauritius, 2 males on a slide labeled " holotype " and 4 female paratypes, tomato, 10-V—1955, (L. A. MOUTIA) ; 3 males and 2 females, *Solanum tuberosum* L., 6-XI-1970, (H. DOVE) ; Plaine de Papayes, Mauritius, 3 males, tomato, 8-XI-1954, (L. A. MOUTIA) ; Riverside California, U.S.A., 2 males and 8 females, *Solanum douglasii* Dunal, 10-I-1984, (G. J. DE MORAES) ; 8 males and 10 females, *S. douglasii*, 27-XI-1977 (H. JOHNSON) ; Anthony, Florida, U.S.A., 1 male and 1 female, *Lycopersicon* sp., 22-V-1968, (E. W. HOLDER) ; Bradenton, Florida, U.S.A., 2 males and 1 female, *Lycopersicon esculentum* Mill., 9-VI-1980, (D. J. SCHUSTER) ; Donna, Texas, U.S.A., 2 females, nightshade, 16-V-1957, (H. A. DEAN) ; Yuma, Arizona, U.S.A., 1 male,

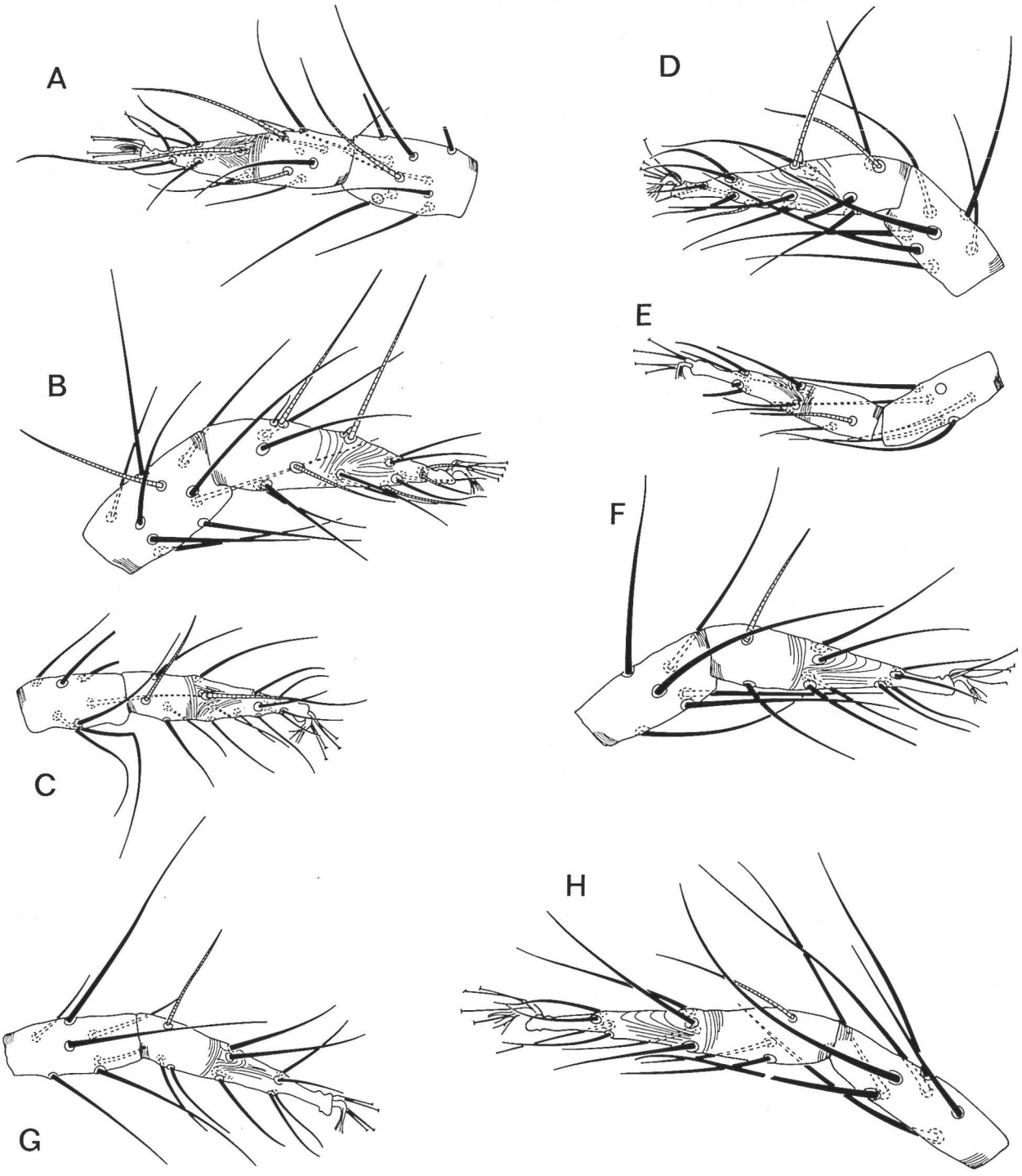


FIG. 1, A to H : Tibia and tarsus of adult female of *Tetranychus evansi* paratype and *Tetranychus marianae* cotype. Leg I : A, *T. evansi* ; B, *T. marianae* ; Leg II : C, *T. evansi* ; D, *T. marianae* ; Leg III : E, *T. evansi* ; F, *T. marianae* ; Leg IV : G, *T. evansi* ; H, *T. marianae*.

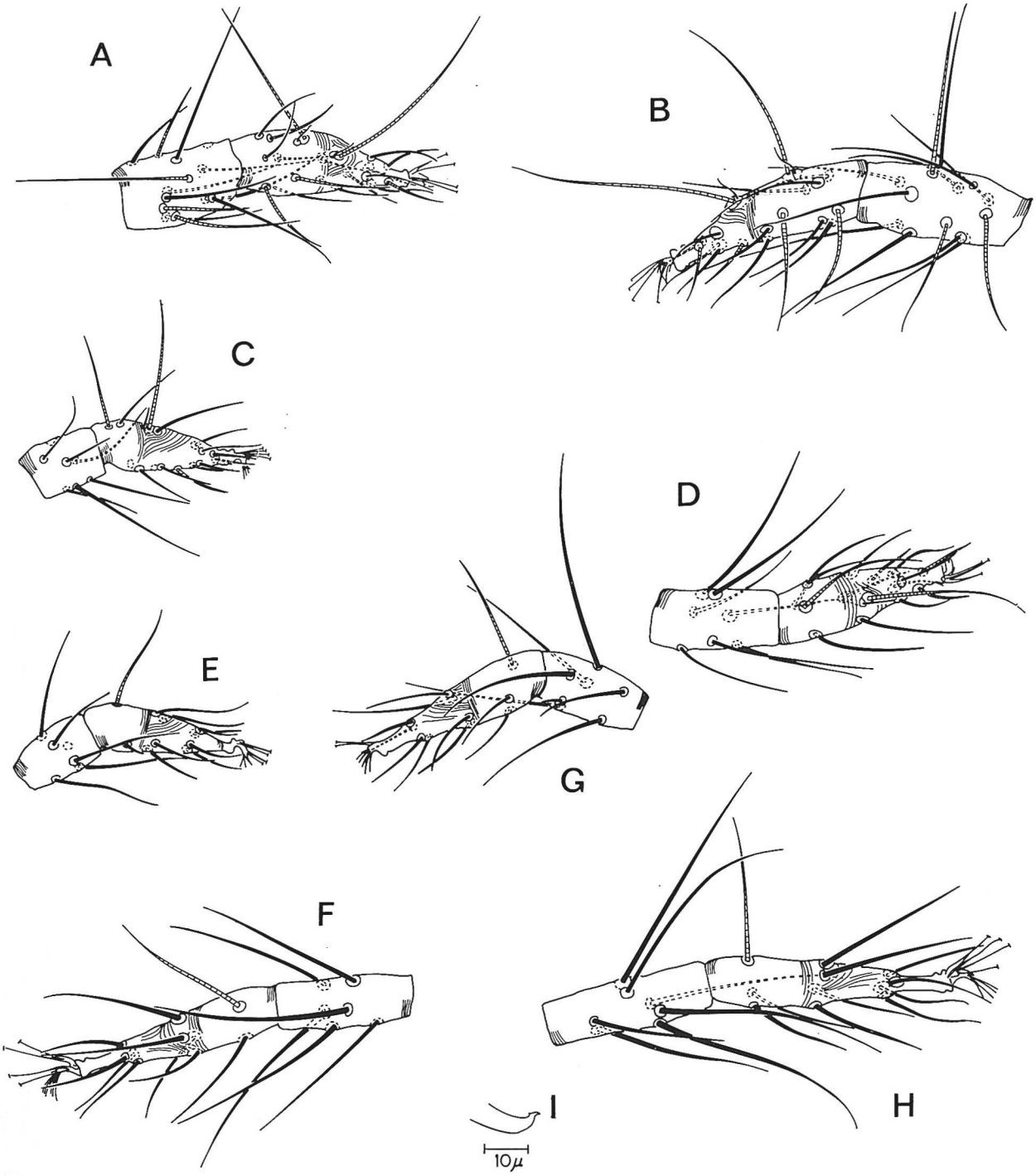


FIG. 2, A to H : Tibia and tarsus of adult male of *Tetranychus evansi* holotype and *Tetranychus marianae* cotype. Leg I : A, *T. evansi* ; B, *T. marianae* ; Leg II : C, *T. evansi* ; D, *T. marianae* ; Leg III : E, *T. evansi* ; F, *T. marianae* ; Leg IV : G, *T. evansi* ; H, *T. marianae* ; I, Aedeagus of the holotype of *T. evansi*.

Solanum elaeagnifolium Cav., and 2 males and 3 females, *L. esculentum*, 28-V-1979, (D. M. TUTTLE); Saint Thomas, Virgin Islands, 1 male and 2 females, tomato, no date, (MILLER/FREEMAN); Belem do São Francisco, Brazil, 4 males and 4 females, *L. esculentum*, II-1985, (A. C. REIS); Petrolina, Pernambuco, Brazil, 3 males and 1 female, *L. esculentum*, 5-IX-1978, (G. J. DE MORAES); 1 female, *Solanum americanum* Mill., 4-X-1978, (G. J. DE MORAES); Indaisatuba, São Paulo, Brazil, 1 male and 1 female, *L. esculentum*, 31-X-1966, (H. TOKESHI); Itaporanga, São Paulo, Brazil, 2 males and 2 females, *S. tuberosum* IV-1984, (C. H. W. FLECHTMANN); Campinas, São Paulo, Brazil, 2 females, *S. tuberosum*, 6-V-1968, (A. ORLANDO); Harare, Zimbabwe, 6 males and 6 females, *Nicotiana tabacum* L., 21-VI-1983, (B. W. BLAIR); 7 males and 12 females, *Solanum incanum* L.; 3 males and 5 females, *Datura stramonium* L., 2 males and 4 females, *Solanum panduriforme* R. Mey.; 4 males and 1 female, *Physalis peruviana* L., 14 males, *Sida acuta* Murm., 19 males and 13 females, *S. melongena*, II-1985, (J. A. MCMURTRY/B. W. BLAIR).

Tetranychus marianae McGregor
(Figs. 1 and 2)

Tetranychus marianae : MCGREGOR, 1950 : 291; PRITCHARD & BAKER, 1955 : 429; JEPPSON *et al.*, 1975 : 228.

FEMALE : measurements given in Table 1. Dorsal body setae sparsely barbed, reaching beyond bases of setae of next row. Peritreme curved distally. Dorsal striae with lobes, longitudinal between setae E1 and between setae F1 and between F1, forming a diamond-shaped pattern between E1 and F1.

Venter with striae apparently smooth anteriorly to IC3 and with small lobes posteriorly; intercoxal setae slender and apparently nude; IC1 much longer than distance between their bases; IC3 and IC4 up to 30 % shorter than distances between bases of same setae on opposite side.

Empodia without dorsal spur. Number of leg setae : femur 10, 6, 4, 4; genu 5, 5, 4, 4; tibia 9 + 1, 7, 6, 7; tarsus 10 + 4 + 2, 10 + 4 + 1, 9 + 1, 10 + 1. Proximal duplex setae of leg I distal to the four most proximal tactile setae and at the same level as the most proximal solenidion. Lengths of leg segments shown in Table 2.

MALE : measurements given in Table 1. Dorsal body setae sparsely barbed, reaching bases of setae of next row. Peritreme curved distally. Dorsal striae smooth, forming a V-shaped pattern between F1 and F2.

Venter with striae smooth; intercoxal setae slender and nude; IC1 much longer than the distance to their bases; IC3 and IC4 shorter than or as long as distance between bases of same setae on opposite sides.

Empodium of legs I divided only distally; empodia II, III and IV split for most of their lengths. Dorsal spur of empodia I and II reduced; dorsal spur of empodia III and IV indiscernible. Number of leg setae : femur 10, 6, 4, 4; genu 5, 5, 4, 4; tibia 9 + 4, 7, 6, 7; tarsus 10 + 6 + 2, 10 + 4 + 1, 9 + 1, 10 + 1. Lengths of leg segments shown in Table 2.

Aedeagus as described for *T. evansi*.

SPECIMENS EXAMINED : Mt. Lasso, Tinian Island Mariana Islands, 6 males and 3 females, cotypes *Melanolepis multiglandulosa* Reichb. f. & Zoll., 12-VI-1946, (H. K. TOWNES); Yilig, Guam, 1 male, eggplant, 17-V-1956, (W. W. CANTELO); Guam (at Portand), 2 females, host ?, 8-IV-1953, (R. WILBUR); Songhla Beach, Thailand, 1 male and 1 female, *Centrosema pubescens* Benth., 8-VI-1975, (collector ?); Pacajus, Ceara, Brazil, 1 male and 1 female, *Psidium guajava* L., 2-VIII-1972, (D. M. TUTTLE/F. M. SALES); Turrialba, Costa Rica, 1 male and 2 females, bean, 12-XI-1971, (R. FAERRON); Bebedero, Canas, Guanacaste, Costa Rica, 1 male and 3 females, cotton, 24-I-1979, (L. SALAZAR); San Juan de Uraba, Colombia, 1 male and 2 females, *Melochia lupulina* Sw. (E. URUETA); Puerto Vallarta, Jalisco, Mexico, 1 male and 3 females, *Alocasia* sp., 13-XII-1981, (E. W. PADDOCK); Key West, Florida, U.S.A., 1 male and 2 females, wild lavender, 17-VII-1952, (E. W. BAKER); Grand Island, Florida, U.S.A., 2 males and 1 female, *Chenopodium ambrosioides*, L., 12-VII-1983, (H. L. MORRISON).



FIG. 3 : Variation in the position of setae on tarsus I of adult females of *T. evansi* from : A, Belle Vue Harel, Mauritius Island (paratype) ; B, Donna, Texas, USA ; C, Riverside, California, USA.

Remarks

The main differences between the type specimens of *T. evansi* and *T. marianae* are : the relative position of the proximal duplex setae of tarsus I of the female (in line with the four most proximal tactile setae in *T. evansi* ; distal to those tactile setae and at the same level as the most proximal solenidion in *T. marianae*) ; shape of empodium II of the male (similar to empodium I, divided only distally in *T. evansi* ; similar to empodia III and IV, divided for most of its length in *T. marianae*) ; degree of development of the dorsal spur of the male empodia (well discernible in all legs in *T. evansi* ; indiscernible, especially in legs II, III and IV in *T. marianae*) ; lengths of IC3 and IC4 (equal to or longer than distances to bases of same setae on opposite sides in *T. evansi* ; shorter than or equal to same setae on opposite side in *T. marianae*) ; sizes of idiosoma, body setae and leg segments (larger in *T. evansi*).

Jeppson *et al.* (1975) mentioned the presence of small empodial spurs on all legs of *T. evansi* females. In the original description, Baker & Pritchard (1960) stated that females of *T. evansi* had a minute empodial spur on leg I. Dorsal spurs of empodia were not distinct in the females observed in the present study. Jeppson *et al.* (1975) also mentioned that females of *T. evansi* are carmine (or reddish). However, we observed in an unpublished study that the color of the females of *T. evansi* varies from reddish brown at low temperatures to greenish at high temperatures. Older females become dark.

Most specimens examined in this study could be easily sorted to one of the two species. However, some variations observed were as follows. Proximal duplex setae of leg I of *T. evansi* females may be somewhat distal to the four most proximal tactile setae (Figure 3). In a few females from Riverside there was an extra solenidion proximal to the proximal duplex setae (Figure 3). Nevertheless, proximal duplex setae were always proximal to the most proximal solenidion in those individuals.

Specimens from Puerto Vallarta, Key West and Grand Island were tentatively identified as *T. marianae* but their position is uncertain. They have proximal duplex setae distal to the four most proximal tactile setae and at the same level as the most proximal solenidion ; in addition, IC3 and IC4 are shorter than the distances to the same setae on the opposite side. However, empodium II of the male is not clearly different from empodium I ; dorsal spurs of empodia of the male are very distinct in the specimen from Grand Island ; and measurements of specimens from those localities are intermediate between *T. evansi* and *T. marianae*. Furthermore, females apparently differ from *T. evansi* and *T. marianae* by the presence of lightly lobed striae between IC1 and IC3. Further collections in those areas should indicate whether those differences represent morphological variation in *T. evansi* and *T. marianae* or whether a new species is involved.

Table 3 shows the previous records of *T. evansi* and *T. marianae* worlwide. Distribution preceeded by an asterisk indicates that specimens from that area were examined in this study. In short duration searches for natural enemies, we did not find *T. evansi* in Chile, Kenya, Nigeria or Peru.

T. evansi seems to have a strong preference for solanaceous plants, although hosts of other families are also mentioned in Table 3. During 3 years of frequent collections in northeastern Brazil and in southern California, we have not collected *T. evansi* from hosts other than solanaceous plants. However, this species can be found on other hosts if they are adjacent to heavily infested preferred hosts (Oatman *et al.*, 1967); Wene, 1956).

Acknowledgements

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TABLE 3. Distribution and host plants of *Tetranychus evansi* and *T. marianae* worlwide.

Distribution	Host plant	Reference
	T. evansi	
*Mauritius	*Arachis hypogaea* L., *Asystasia coromandeliana*, *Capsicum anuum* L., *Ipomoea batatas* (L.) Lam., *Lycopersicon esculentum* Mill., *Solanum auriculatum*, *Solanum indicum*, *Solanum melongena* L., Solanum nigrum L., *Solanum tuberosum* L.	Moutia (1958)
Reunion Is.	—	J. Gutierrez (pers. comm.)
Rodriguez Is.	—	Same
Seychelles Is.	—	Same
Bahia-Brazil	*L. esculentum*, *Physalis* sp., *Solanum gilo*, *S. nigrum*, *S. tuberosum*	Flechtmann & Baker (1970), Moraes & Flechtmann (1981), Paschoal (1970), Silva (1954)
Ceara-Brazil	*Anacardium occidentale* L., *Bixa orellana* L., *Capsicum frutescens* Willd., *Convolvulus arvensis* L., *Hibiscus esculentus* L., *L. esculentum*, *Malva sylvestris* L.	Flechtmann & Bastos (1972), Tuttle *et al.* (1977)
Minas Gerais-Brazil	*S. tuberosum*	Paschoal (1970)
Pernambuco-Brazil	*L. esculentum*, *Solanum americanum* Mill	This study
*São Paulo-Brazil	*A. hypogaea*, *L. esculentum*, *S. melongena*, *Solanum* sp., *S. tuberosum*	Flechtmann & Baker (1970), Paschoal (1968, 1970), This study
*St. Thomas-Virgin Is.	*L. esculentum*	This study
Puerto-Rico	*L. esculentum*	Medina Gaud & Garcia Tuduri (1977)
*Arizona-USA	*L. esculentum*, *Solanum elaeagnifolium* Canavilles	This study
*California-USA	*Artemisia douglasiana* Bess, *L. esculentum*, *Nicotiana glauca* Graham, *Phacelia* sp., *Rosa* sp., *Salpichroa rhomboidea* Miers, *Solanum douglasii* Dunal, *S. elaeagnifolium*, *S. melongena*, *Solanum* sp.	Harper (1966), Oatman *et al.* (1967)
*Florida-USA	*Amaranthus retroflexus* L., *Cupressus sempervirens* L., *Dieffenbachia picta* Engler, *L. esculentum*, *Lycopersicon* sp., *Triumfetta semitriloba* Jacq.	Denmark (1970), Denmark (1973).
*Texas-USA	*Gossypium* sp., *L. esculentum*, *S. elaeagnifolium*, *S. melongena*	Schuster (1959), Wene (1956), Wolfenbarger & Getzin (1964)
*Zimbabwe	*Dactura stramomium* L., *L. esculentum*, *Nicandra physalodes* (L.) Gaertn., *Nicotiana tabacum* L., *Physalis peruviana* L., Sida acuta Burm., *Solanum incanum* L., *S. melongena*, *Solanum pandiruforme* E. Mey., *S. tuberosum*	B. W. Blair (pers. comm.), J. A. McMurtry (unpublished)
	T. marianae	
*Saipan and Tinian Is.-Marianas	*Argyreia ?* sp., *Melanolepis multiglandulosa* Reichb f. & Zoll., *Passiflora foetida* L., *Ricinus communis* L.	McGregor (1950)
Marschall Is.	*Wedelia* sp.	Baker & Pritchard (1953), Pritchard & Baker (1955)
*Guam	*S. melongena*	This study
*Thailand	*Centrosema pubescens* Benth.	Baker (1975)
Philippines	—	Baker (1975)
Papua New Guinea	*Dolichos lablab* L.	Davis (1969)
New Caledonia	—	Same
New Hebrides	—	Same
Solomon	—	Same
Fiji	—	Same
Samoa	—	Same
Queensland-Australia	*Gossypium barbadense* L.	Davis (1968)

Distribution	Host plant	Reference
Nicaragua	*Croton* sp., *Cucurbita* sp., *Gossypium* sp.	Baker & Pritchard (1953, 1962), Pritchard & Baker (1955)
West Indies	—	Baker & Pritchard (1953)
Bahamas	—	Same
*Florida-USA	*Chenopodium ambrosioides* L., *T. semitriloba*, wild lavender	Baker & Pritchard (1953), Pritchard & Baker (1955)
Tamaulipas-Mexico	—	Estebanes & Baker (1968), Tuttle *et al.* (1976)
*Jalisco-Mexico	*Alocasia* sp.	This study
Puerto Rico	*H. esculentus*, *Urena lobata* L., *Petiveria alliacea* L.	Cromroy (1958)
*Costa Rica	*Datura arborea* L., *Dolichos lablab* L., *Glycine javanica* L., *Gossypium* sp., *H. exculentus*, *Phaseolus vulgaris* L., *Sechium edule* (Jacq.), *Solanum* spp., *Vigna* sp.	Freitez Ruiz (1974), Salas (1978), This study
Honduras	*Butneria aculeata*, *Passiflora biflora* Lam., *Pueraria javanea*, *Solanum* sp., *Thunbergia alata* Bojer	Baker & Pritchard (1962)
*Colombia	*Melochia lupulina* Sw.	Urueta (1975)
Bahia-Brazil	*C. anuum*, *C. ambrosoides*, *H. esculentum*, *I. batatas*, *Morus* sp., *R. communis*, *S. edule*, *Thunbergia* sp.	Flechtmann & Abreu (1973)
*Ceara-Brazil	*Glycine max* (L.) Merrill, *H. esculentus*, *Psidium guajava* L., *S. gilo*, *S. melongena*	Cavalcante *et al.* (1977), Flechtmann & Bastos (1972), Tuttle *et al.* (1977)
Pernambuco-Brazil	*Piper*	Moraes & Flechtmann (1981)
São Paulo-Brazil	*L. esculentum*	Paschoal (1968)

1 : misidentified as *T. marianae* (Baker & Pritchard, 1960 ; Denmark, 1973 ; Flechtmann & Baker, 1970 ; Qureshi *et al.*, 1969) ; 2 : misidentified as *T. evansi* (This study) ; 3 : probably *T. evansi* — see Flechtmann & Baker (1970).

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