The Natural History Journal of Chulalongkorn University 4(2): 45-51, October 2004

A New Species and New Records of *Pseudobonzia* Smiley (Acari: Prostigmata: Cunaxidae) from Thailand

MARUT FUANGARWORN AND CHARIYA LEKPRAYOON*

Department of Biology, Faculty of Science, Chulalongkorn University, Bangkok 10330, THAILAND

ABSTRACT.–A new species of the cunaxid mite genus *Pseudobonzia* Smiley, 1975, *P. tangkanasingae* n. sp., from Thailand is described and illustrated. *P. clathratus* (Shiba, 1976) and *P. gruezoi* Corpuz-Raros and Garcia, 1995 are recorded for the first time from the country. Key to species of *Pseudobonzia* in Thailand is provided.

KEY WORDS: Acari; Prostigmata; Cunaxidae; *Pseudobonzia*; new species; new records; Thailand

INTRODUCTION

The cunaxid mite genus *Pseudobonzia* was proposed by Smiley (1975) with *Cunaxa reticulata* Heryford, 1965 as type species. This genus is characterized by the following combination of characters: Setae hg_1 simple (not geniculate); palpus five segments; setae f_2 present, except *P. reticulata* (Heryford, 1965); tarsi I-IV without lateral bilobed flanges; dorsal shield of female confined to propodosoma; sternal shield absent. The genus *Pseudobonzia* was revised by Smiley (1992), in his monograph of the Cunaxidae, including 18 species in the genus. Corpuz-Raros (1996) then described two new species from the Philippines. Little is known about their biology and ecology. However, they primarily live in soil-litter habitats and may prey on soil microarthropods and nematodes. Some are predators of scale insects, others may be useful biocontrol agents of some pests in soil. The aims of this paper are to describe a new species of *Pseudobonzia* from Thailand, bringing the world fauna to 21 species, and to record two species of the genus, *P. clathratus* (Shiba, 1969) and *P. gruezoi* Corpuz-Raros and Garcia, 1996, found for the first time in this country. Key to species of *Pseudobonzia* in Thailand is provided.

* Corresponding author.
Tel: (662) 218-2567
Fax: (662) 218-5267
E-mail: chariya.l@chula.ac.th

MATERIALS AND METHODS

The soil and litter samples were collected from various localities in central Thailand and extracted in Berlese funnels for five to seven days. The extracted samples were preserved in 70% ethanol. Cunaxid mites were picked from the samples under a stereomicroscope and mounted on slides in Hoyer's medium (Krantz, 1978). Drawings were made from slide-mounted material with the aid of drawing tube mounted with the microscope. Measurements are in micron presented as minimum-maximum and mean in parenthesis. Length of hypognathum is measured from its anterior tip to hypognathum posterior base, length of idiosoma from gnathosomal base to posterior end of hysterosoma, length of legs from trochanter to tip of tarsi. Terminology follows Smiley (1992)

except for dorsal setal designation following those of Kethley (1990).

RESULTS

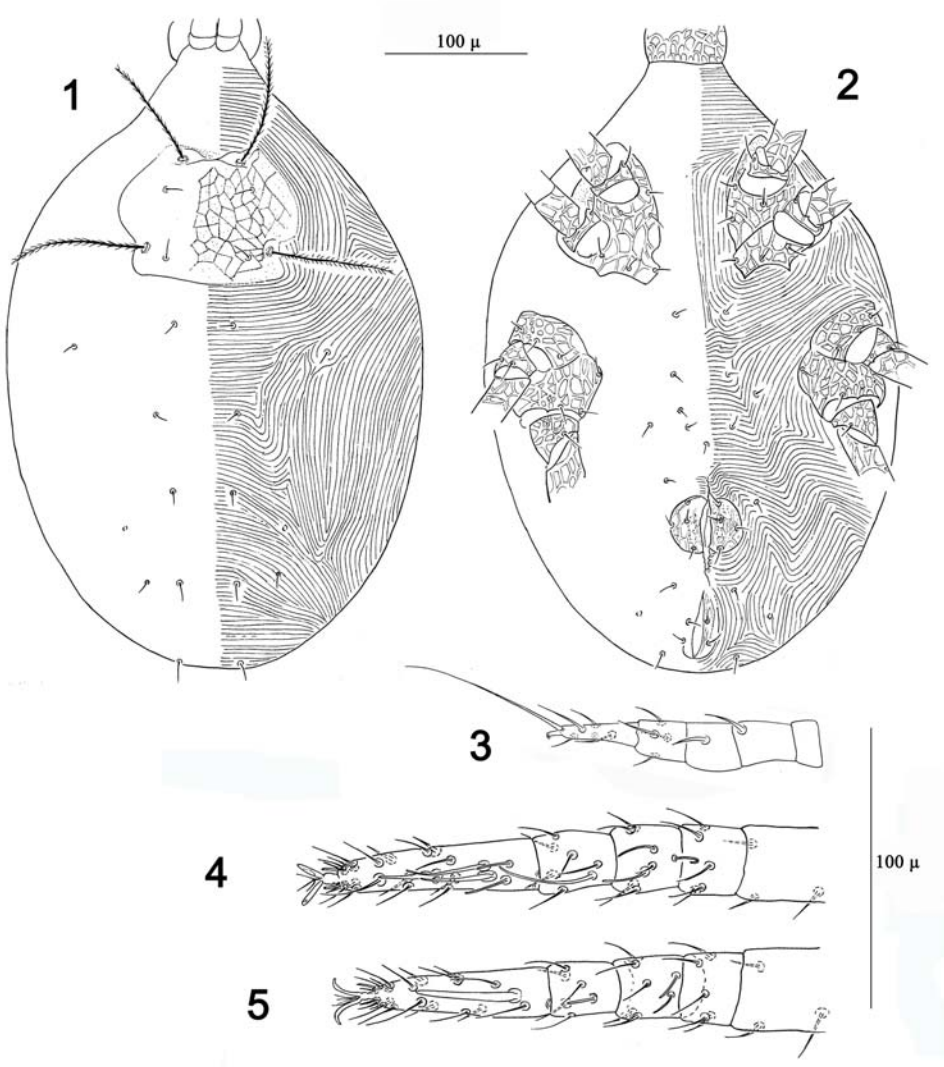
Genus *Pseudobonzia* Smiley

Pseudobonzia Smiley, 1975: 243.
Type species – *Cunaxa reticulata* Heryford, 1965.

1. *Pseudobonzia clathratus* (Shiba, 1976)
(Figs. 1-5)

Cunaxa clathratus Shiba, 1976: 112.
Pseudobonzia clathratus Smiley, 1992: 99; Corpuz-Raros and Garcia, 1996: 16.

Type Data – Female Holotype, Pasoh Forest outside of Plot 1, West Malaysia, on litter, 4. III. 1971, by M. Shiba, Type deposited in the Biological Laboratory, Matsuyama Shinonome Junior College, Matsuyama, Japan.



FIGURES 1-5. *Pseudobonzia clathratus*, female – 1, dorsum; 2, venter; and 3, palp. 4, leg I; 5, leg II.

Material examined – 15♀♀ (CUMZ-AC00008-22), Bang Khan Taek, Samut Songkhram 13°22′N/99° 57′E, on grass litter, 23. VI. 2002; 9♀♀ (CUMZ-AC000023-31), as previous data but on litter under *Citrus grandis*, 6. IX. 2002; 5♀♀ (CUMZ-AC000032-36), Bang Khan Taek, Samut Songkhram, on litter under *Leucaena leucocephala*, 6. IX. 2002. All collected by M. Fuangarworn.

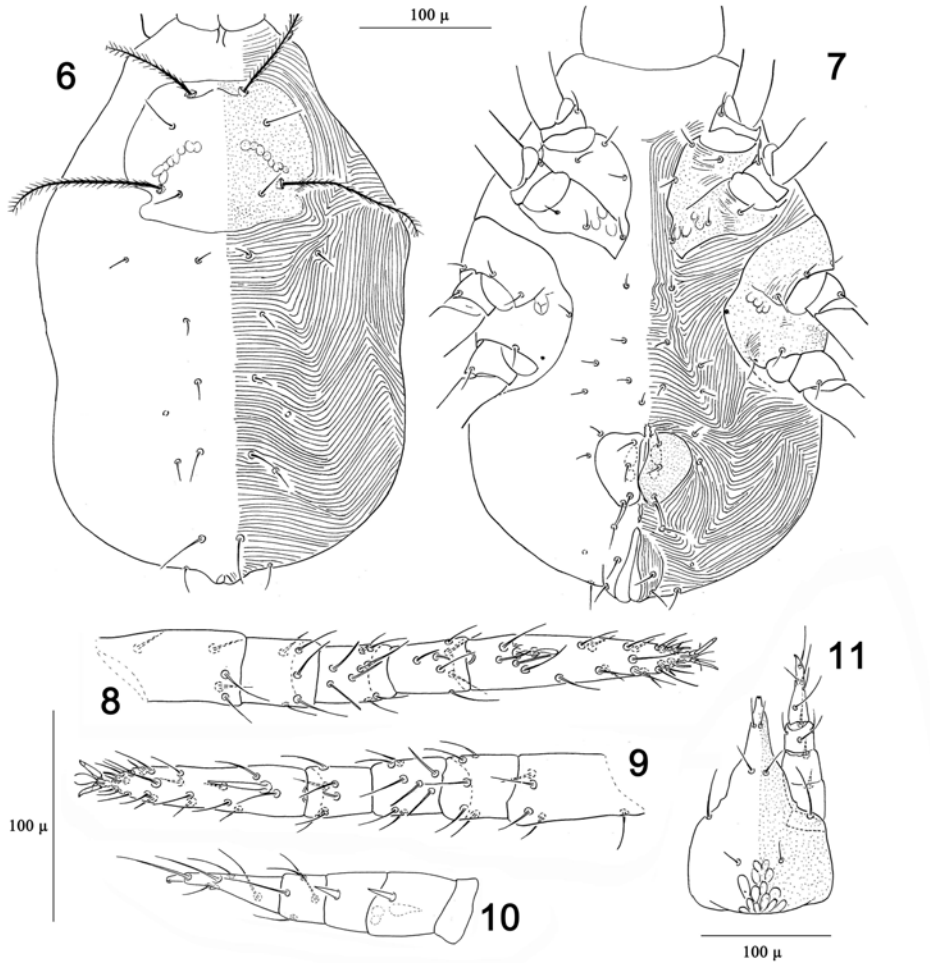
Distribution – Malaysia, the Philippines, Thailand (NEW RECORD).

2. *Pseudobonzia gruezoi* Corpuz-Raros and Garcia, 1996
(Figs. 6-11)

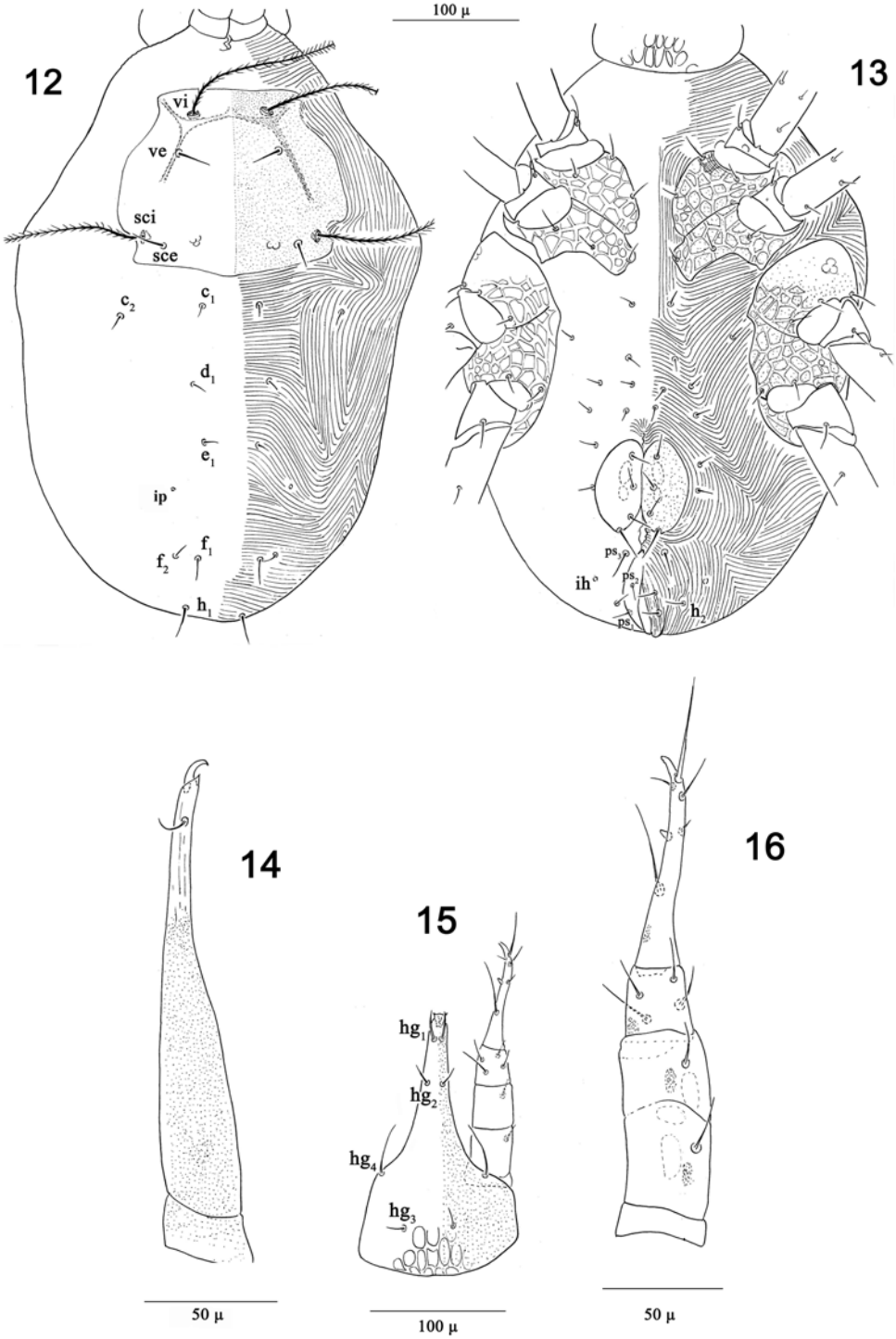
Pseudobonzia gruezoi Corpuz-Raros and Garcia, 1996: 18.

Type Data – Female Holotype, Mt. Makiling at the Upland Hydroecology Program site, Puting Lupa, Calamba, Laguna, The Philippines, on secondary forest litter, 13. X. 1976, by R. C. Garcia. Type deposited in the Museum of Natural History of University of the Philippines, Los Baños.

Material examined – 1♀ (CUMZ-AC000037), Pho Chon Kai, Bang Rachan, Sing Buri, on decomposing banana leaves, 20. X. 2002; 1♀ (CUMZ-AC000038), near Satta Mitr water fall, Thong Pha Phoom, Kanchana Buri, on forest litter, 24. II. 2003. All collected by M. Fuangarworn.



FIGURES 6-11. *Pseudobonzia gruezoi*, female – 6, dorsum; 7, venter; 8, leg I; 9, leg II; 10, palp; and 11, ventral hypostome.



FIGURES 12-16. *Pseudobonzia tangkanasingae* n. sp. (holotype), female – 12, dorsum; 13, venter; 14, chelicera; 15, ventral hypostome; 16, palp.

Distribution – The Philippines; Thailand (NEW RECORD).

3. *Pseudobonzia tangkanasingae* n. sp.
(Figs. 12-26)

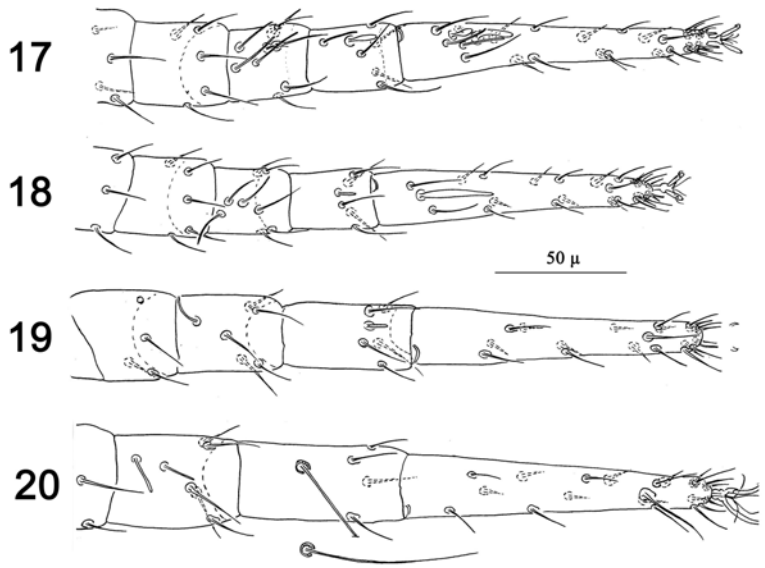
Diagnosis – This species is readily recognized by having granulated propodosomal shield with ridges, coxae I+II and coxae III+IV with subcuticular reticulation, granulated genital shield, and palp tibiotarsus with one small turbercle at distal 1/3 of the segment.

Female – Dimension (n = 6) – Length of idiosoma 440-500 (477), width 310-350 (332); length of hypognathum 180-188 (185.80), width 105-120 (113.2); length of palp 160-178 (170.8); length of chelicera 170-183 (175.8); length of legs: I 265-285 (273); II 255-265 (260); III 300 (300); IV 320-335 (326.67).

Gnathosoma – Hypostome (Fig. 15) subrectangular, coneshaped distally. Ventral surface of hypostome granulated with four pairs of *hg* setae, hg_4 longest. Palp with five segments (Fig. 16) and palpal chaetotaxy as follows: Trochanter with no setae; basifemur with one dorsomedial simple seta; telofemur with one dorsomedian simple seta; genu with four simple setae; tibiotarsus with one long simple seta submedially and one small turbercle at distal 1/3 of the segment on inner surface, one short simple seta at the level of tubercle on outer surface, apically with one dorsal and one ventral simple setae, one long aciculate setae, terminating with a tridentate claw. Chelicera with two segments (Fig. 14), segment I and II granulated with one simple subterminal seta behind chela.

Dorsum (Fig. 12) – Propodosoma with a finely granulated shield with ridge-like band around anterior sensillum and running to nearly posterior sensillum; two pairs of propodosomal setae *ve* and *sce*, and two pairs of setose sensillae on the shield; setae *ve* and *sce* simple and subequal. Hysterosomal surface striate with dotlike lobes; bearing dorsal hysterosomal setae c_1, c_2, d_1, e_1, f_1, f_2, h_1 and h_2; setae h_1 longest; the cupule *ip* posteriolaterad of e_1.

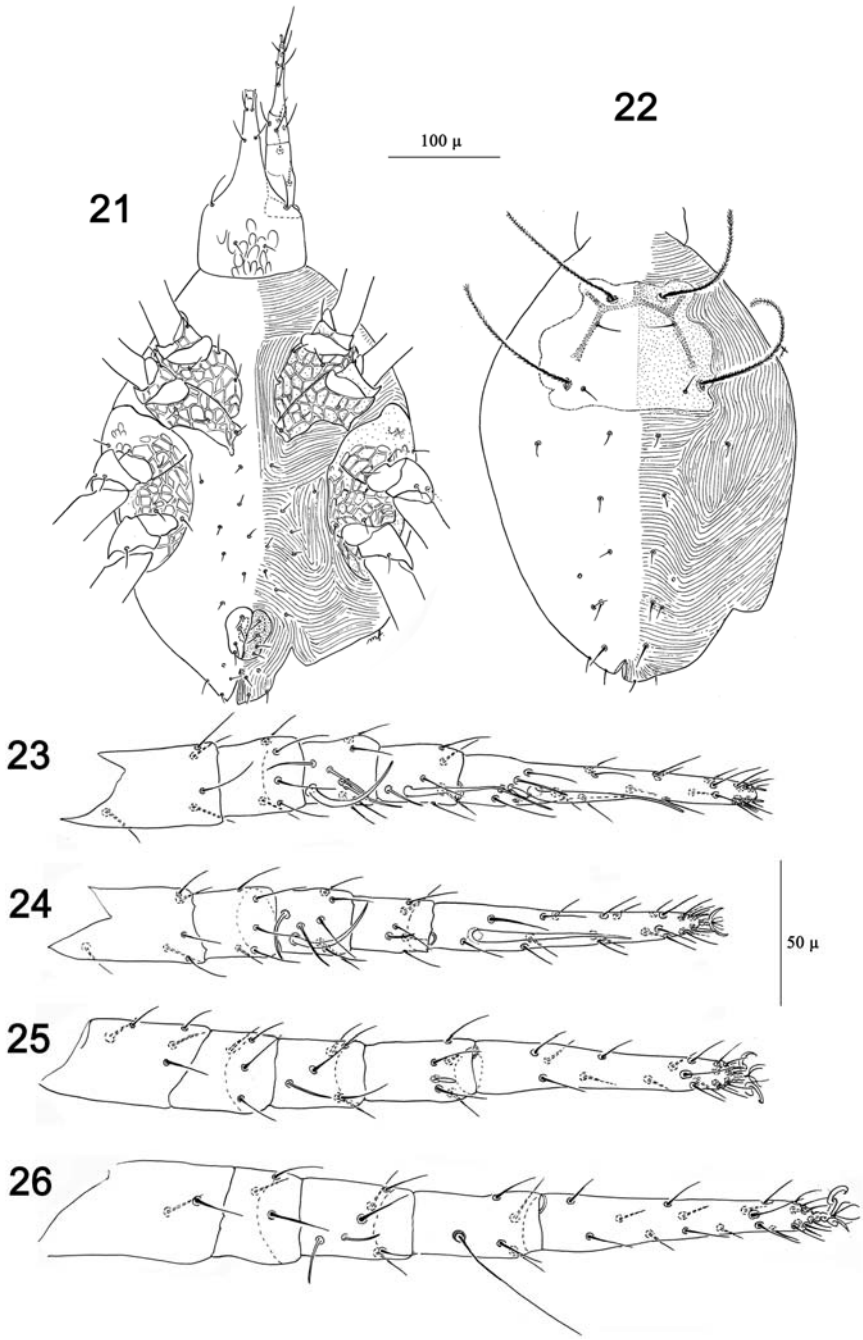
Venter (Fig. 13) – Coxae I-II and III-IV contiguous and with subcuticular reticulation except the anterior half region of coxae III which granulated, nine pairs of ventral simple setae (except coxal, genital and anal setae); genital shields granulated, reticulation absence, with four pairs of simple setae, arranged as shown in figure 13. Anal region with three pairs of anal



FIGURES 17-20. *Pseudobonzia tangkanasingae*, n. sp. (holotype), female – 17, leg I; 18, leg II; 19, leg III; 20, leg IV.

setae *ps1, ps2,* and *ps3*, and one pair of cupule *ih*.

Legs (Figs. 17-20) – All legs shorter than idiosoma. Tarsi I-IV stout and without terminal lateral lobes. Number of setae on leg segments I-IV as follows: Coxae 3-3-3-2; trochanters 1-1-2-1; basifemora 5-6-5-2; telofemora 5-5-4-3; genu I, 4 attenuate solenidia, 1 microseta + 4; genu II, 3 attenuate solenidia + 5; genu III, 1



FIGURES 21-26. *Pseudobonzia tangkanasingae* n. sp. (paratype), male – 21, dorsum; 22, venter; 23, leg I; 24, leg II; 25, leg III; 26 leg IV.

attenuate solenidion + 5; genu IV, 2 attenuate solenidia + 5; tibia I, 1 attenuate solenidion, 1 blunt solenidion + 5; tibia II, 1 blunt solenidion + 5; tibia III, 1 blunt solenidion + 5; tibia IV, 1 trichobothrium + 4; tarsi I, 2 attenuate solenidia, 2 blunt solenidia, 1 peglike seta, + 24; tarsi II, 1 blunt solenidion + 24; tarsi III, 21; tarsi IV, 21.

Male (Figs. 21–26) – Generally similar to female but smaller. Measurements (n=4) as follows: Length of idiosoma 380-410 (393.75), width 260-325 (282.5); length of hypognathum 160-165 (161.25), width 100-115 (103.75); length of palp 150-165 (157.50); length of chelicera 150-160 (153.75); length of legs: I 245-250 (248.75); II 230-240 (236.25); III 260-270 (265); IV 275-280 (278.33).

Larva and other nymphal stages – Unknown.

Type Data – Holotype ♀ (CUMZ-AC000039), Pho Chon Kai, Bang Rachan, Sing Buri, Thailand, on decomposing banana leave, 20. X. 2002. 9 Paratypes: 1♀ (CUMZ-AC000040) and 2♂♂ (CUMZ-AC000041-42), same data of holotype but on litter under *Streblus asper*; 2♀♀ (CUMZ-AC000043-44) and 1♂ (CUMZ-AC000045), Bang Khan Taek, Samut Songkhram, Thailand, 13°22′N 99°57′E, on litter under *Citrus grandis*, 6. IX. 2002; 2♀♀ (CUMZ-AC000046-47) and 1♂ (CUMZ-AC000048), as previous data but on 4. XIII. 2002. All collected by M. Fuangarworn. Holotype and paratypes are deposited in Acari Collection of the Chulalongkorn University Museum of Natural History. Two paratypes (one female and one male) are also deposited in U.S. National Museum, Washington D.C.

Etymology – Type species is named in honor of the late Professor Dr. Pensri (Vaivanijkul) Tangkanasing in recognition of her contributions to Entomology and Acarology in Thailand.

Key to species of *Pseudobonzia* Smiley, 1975 in Thailand

1. Propodosomal shield granulated.....2
   Propodosomal shield totally reticulated. .....*P. clathratus*
2. Coxae I+II and III+IV without subcuticular reticulation.....*P. gruezoi*
   Coxae I+II and III+IV with subcuticular reticulation.....*P. tangkanasingae* n. sp.

ACKNOWLEDGMENTS

We would like to thank Robert L. Smiley (retired acarologist, the United State Department of Agriculture, Beltsville, USA) for reviewing the manuscript, Drs. Alexander A. Khaustov (Nikitskii Botanical Garden, Ukraine), Jianzhen Lin (Fujian Academy of Agricultural Science, China), M. Mohanasundaram (Tamil Nadu Agricultural University, India) for providing literatures on cunaxid mites. This work was supported by the TRF/BIOTEC Special Program for Biodiversity Researches and Training grant T_146006.

LITERATURE CITED

Corpuz-Raros, L. A., and Garcia, R. C. 1996. Philippine predatory mites of the family Cunaxidae (Acari). 4. Genus *Pseudobonzia* Smiley and *Scutascirus* Den Heyer. Philippine Entomologists, 10: 15-28.

Heryford, N. 1965. A new species of *Cunaxa* (Acari: Cunaxidae). Journal of Kansas Entomological Society, 38: 310-314.

Kethley, J. 1990. Acarina: Prostigmata (Actinedida). In D. L. Dindal. (ed.), Soil biology guide. New York: John Wiley & Sons, 668-756 pp.

Krantz, G. W. 1978. A manual of acarology. Corvallis: Oregon State University Book Store.

Shiba, M. 1976. Taxonomic investigation on free-living Prostigmata from Malay Peninsula. Nature and Life in South East Asia, 7: 83-229.

Smiley, R. L. 1975. A generic revision of the mites of the family Cunaxidae (Acarina). Annals of the Entomological Society of America, 68: 227-244.

Smiley, R. L. 1992. The predatory mite family Cunaxidae (Acari) of the world with a new classification. Michigan: Indira Publishing House. 356 pp.

Received: 14 September 2004
Accepted: 29 October 2004