Israel Journal of Entomology
Vol. XV (1981) pp. 59-66

A NEW SPECIES OF *AMBL YSEIUS* (ACARINA: PHYTOSEIIDAE) FROM THE FAR EAST*

S. AMITAI and E. SWIRSKI
Division of Entomology, Agricultural Research Organization,
The Volcani Center, Bet Dagan, Israel

ABSTRACT

Descriptions are given of the femaie and male of *Amblyseius eharai* n. sp., a predacious mite found on citrus and other plants in Hong Kong and Japan.

During a survey of phytoseiid mites of Hong Kong (Swirski and Shechter, 1961), of Luzon Island (Swirski and Golan, 1967) and Mindanao Island of the Philippines, mites belonging to the *"Amblyseius largoensis* Muma (1955), A *deleoni* Muma and Denmark (1970), *A. neolargoensis* van der Merwe (1965) group" were found. Specimens collected by us in Japan and those belonging to Dr. Sh. Ehara's collection were also checked. Revision of the material revealed the presence of a new species in Hong Kong and Japan, which is described here.

Mites were preserved in 96% alcohol, cleared in Nesbitt's solution (chloral hydrate 8, hydrochloric acid 0.5, water 5), and mounted in Hoyer's fluid. The setal terminology of Garman (1948) and Nesbitt (1951), the organotaxie of Athias-Henriot (1975), as well as the spermatodactyl terminology of Wainstein and Kolodochka (1974), were followed.

The type-series is deposited in the collection of the Division of Entomology, Agricultural Research Organization, Bet Dagan, Israel.

*Contribution from the Agricultural Research Organization, The Volcani Center, Bet Dagan, Israel. No. 252-E, 1981 series.

Amblyseius eharai n. sp.
(Figs. 1-3, 6-8, 12, 13)

Female (Figs. 1-3, 6-8). Dorsal shield (Fig. 1) smooth. It is provided with 17 pairs of setae: 6D, 2M, 9L; setae L_9 very long, whip-like; setae L_4 and M_2 long; setae D_1 and L_1 moderately long, the remaining setae are very short or minute. Seven pairs of solenostomes are visible on the dorsal shield: lateral to L_1, between L_3 and D_3, posterior to L_4, between M_1 and D_4, antero-mesad to L_5, anterior to M_2, mesad to L_8.

Sternal shield (Fig. 2) smooth, its anterior margin rounded; posterior margin wavy, with a prominent median lobe; the shield bears seta v1, v2, v3; setae v4 and poroides pv3 are placed on metasternal platelets. Genital shield smooth, with a rounded anterior margin and a straight posterior one; it bears a V-line (muscle marks) and one pair of setae (v5). Ventrianal shield (Fig. 3) smooth, vase-shaped; it bears three pairs of preanal setae prominent muscle marks and a pair of solenostomes (ian pores) close to the posterior pair of preanal setae; ratio of length/width = 1.58-1.75, sometimes 1.3 or 2.

Four pairs of setae are present on the ventral interscutal membrane. Apex of peritreme reaches the bases of setae D_1, seldom D_1-L_1. Two pairs of metapodal plates are present on the membrane; the secondary ones are narrow and linear.

Cervix of spermatheca (Fig. 8) elongate, fundibuliform, and increases in diameter toward the vesicle; atrium bulbous.

Three long pointed macrosetae on genu, tibia and basitarsus of the hind leg. Coxae I with solenostomes.

The movable digit of the chelicerae (Fig. 6) bears 3 or 4 teeth; the fixed digit has 10-12 teeth, besides *pilus dentilis*.

Measurements (in microns): Dorsal shield = 352 (215-390); Lva = 74 (56-88); lva = 69 (63-76); D_1 = 39 (35-45); D_2, D_3, M_1 = 6 (5-7); D_4 = 7.5 (7-8); D_5 = 8.5 (7-10); L_1 = 45 (40-53); L_2 = 13 (12-15); L_3 = 12 (8-15); L_4 = 101 (88-116); L_5, L_8, S_2 = 11 (9-12); L_6 = 12 (10-15); L_7 = 10 (8-15); L_9 = 301 (277-320); S_1 = 13 (12-17); M_2 = 107 (91-125); VL_1 = 74 (56-88); sge = 142 (111-163); sti = 102 (91-121); st = 76 (71-88).

Male (Figs. 7, 12, 13). Dorsal shield (Fig. 12) smooth, slightly sclerotized. The setal pattern is fundamentally similar to that of the female, setae S_1 being situated on the dorsal shield. Setae L_9 whip-like, setae L_4, M_2 long, setae D_1 and L_1 of medium size; the remaining setae are short or minute.

Sternogenital shield smooth, slightly chitinized, with 5 pairs of setae. Ventrianal shield (Fig. 13) slightly chitinized, with transverse striae; it carries three pairs of preanal setae and a pair of solenostomes (ian pores). Apex of peritreme reaches the base of seta D_1 or between D_1 and L_1.

The fixed digit of the chelicerae bears 9 or 10 teeth and a pilus dentilis, the movable digit has a single tooth and a spermatodactyl (Fig. 7). In the spermatodactyl lamellum, ramus and antiramus well developed.

Measurements (in microns). Dorsal shield = 266 (246-279); Lva = 115 (105-123); lva = 146 (136-154); D_1 = 30 (27-35); D_2, D_3, D_4, M_1 = 6 (5-8); D_5 = 7 (5-8); L_1 = 42 (37-48); L_2, S_2 = 11 (10-12); L_3, L_6, L_7 = 10 (8-13); L_4 = 77 (71-83); L_5, L_8 = 9

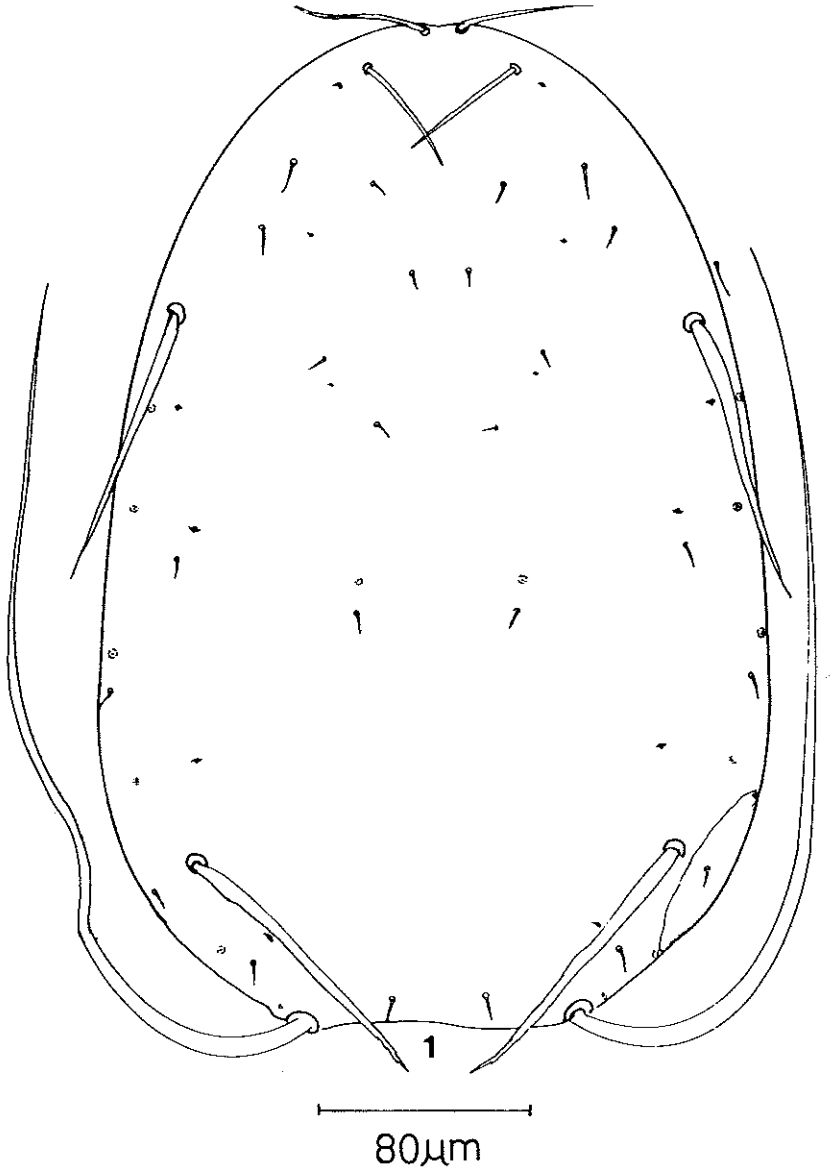
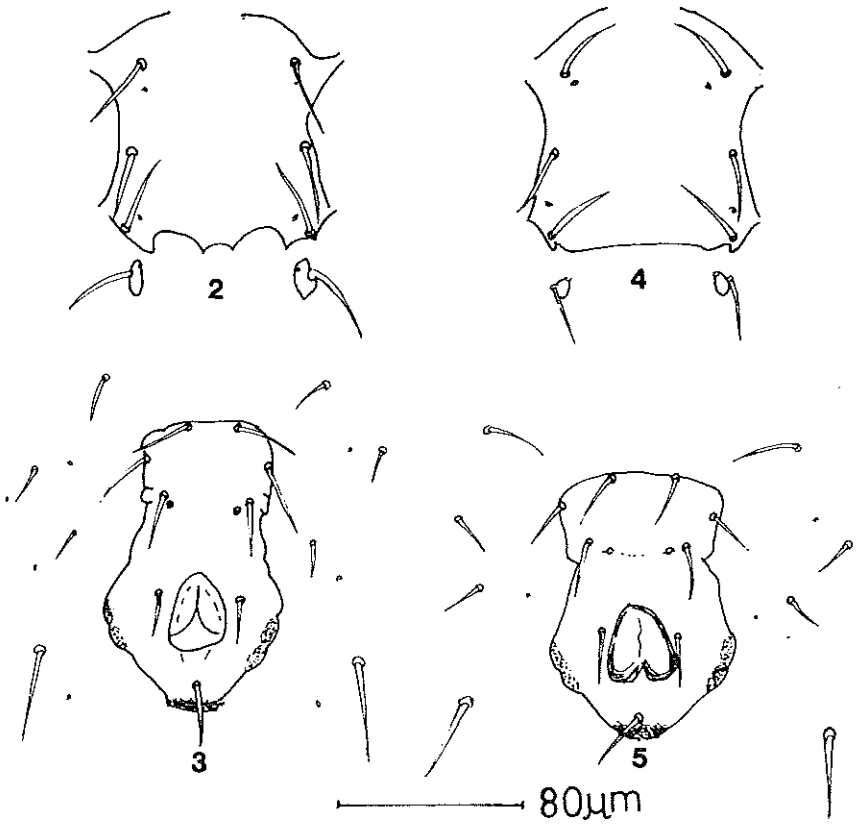


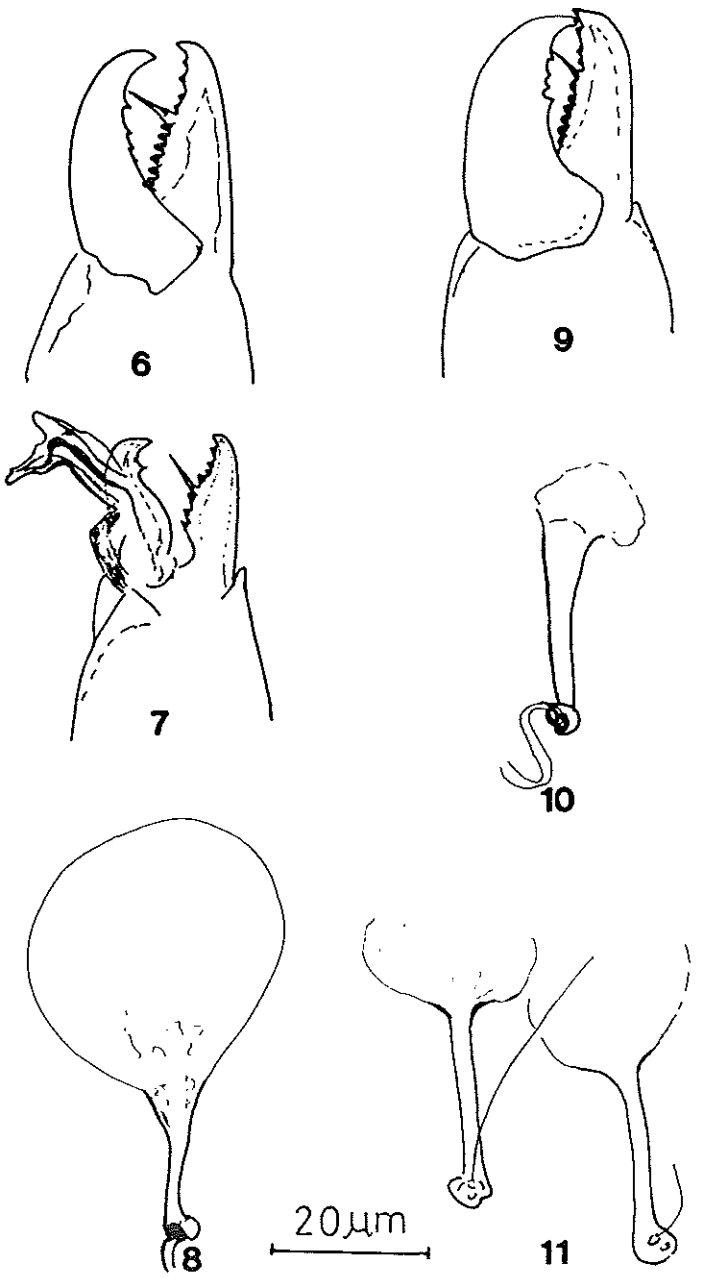
Fig. 1. *Amblyseius eharai* n. sp. female, dorsal shield.

(8-10); L_9 = 228 (199-244); S_1 = 13 (10-17); M_2 = 80 (73-90); VL_1 = 40 (37-51); sge = 83 (68-98); sti = 67 (60-80); st = 63 (51-70).

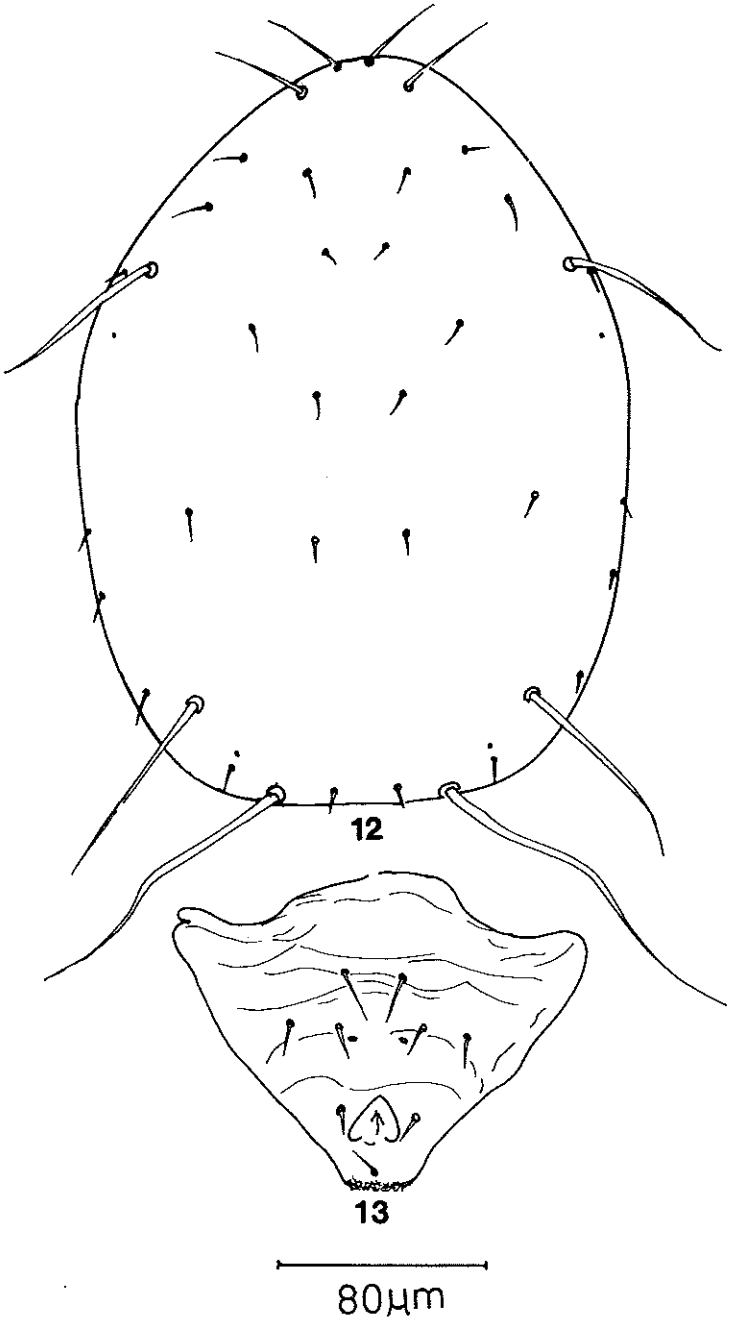
MATERIAL EXAMINED.*HONG KONG* – On *Euphoria longana:* Tai Po Hui, New Territories (N. T.), Aug. 13, 1960, ♀ holotype (No. 26a), 5 ♀♀ paratypes and 3 ♂♂. On *Citrus* spp. (cult.). Hong Kong Island, Feb. 16, 1959, 1 ♀ paratype; Dec. 28, 1959, 3 ♀♀ paratypes (coll. S.K. Cheng); Tai Po Hui (N. T.) Aug. 13, 1960, 2 ♀♀ paratypes; Tai Yu Shan Island. Aug. 14, 1960, 4 ♀♀ paratypes and 1 ♂. On pomelo: Tai Po (N. T.), Aug. 1960, 3 ♀♀ paratypes and 2 ♂♂; Ngao Tam Mei (N. T.), Aug. 17, 1960, 1 ♀. On wild citrus: Sha Tin (N. T.), Aug. 18, 1961, 1 ♂. On peach: Ha Tsuen (N. T.), Sept. 1, 1960, 1 ♀. On persimmon: Ping Shan (N. T.), Aug. 6, 1960, 1 ♀. Breeding at Bet Dagan (Israel): June 13, 1969, 9 ♀♀ paratypes. *JAPAN* – On *Rhododendron macrosepalum*: Hagi (Honshu Island), Nov. 17, 1980, 7 ♀♀ paratypes and 2 ♂♂.



Figs. 2-5. *Amblyseius* spp., females. 2, 3. *Amblyseius eharai* n. sp. 2 – sternal shield. 3 – ventrianal shield. 4. *Amblyseius deleoni* sternal shield. 5. *Amblyseius neolargoensis*, ventrianal shield.



Figs. 6-11. *Amblyseius* spp. 6-8 *Amblyseius eharai* n. sp. 6 – chelicera of female. 7 – chelicera of male. 8 – spermatheca. 9-10. *Amblyseius deleoni*. 9 – chelicera of female. 10 – spermatheca. 11. *Amblyseius largoensis*, spermatheca.



Figs. 12, 13. Amblyseius eharai, male. 12 – dorsal shield. 13 – ventrianal shield.

TAXONOMIC NOTES. *Amblyseius eharai* n. sp. resembles in many respects *A. deleoni* Muma and Denmark, 1970 (in Muma *et al.*, 1970) from which it differs by the following characters: 1) posterior margin of the sternal shield (Figs. 2, 4) lobed and not straight or slightly rounded; 2) Cervix of the spermatheca shorter (Figs. 8, 10). *A. largoensis* Muma, 1955 has a parallel-sided cervix (Fig. 11), whilst in *A. eharai* and *A. deleoni* the cervix widens toward the vesicle (Figs. 8, 10). *A. neolargoensis* van der Merwe, 1965 differs from *A. eharai* by having a straight posterior margin in the sternal shield, by a robust ventrianal shield (Fig. 5), and by longer setae L_4, L_9, M_2 (see Table 1).

TABLE 1. LENGTH (IN μm) OF THREE SETAE OF THE DORSAL SHIELD IN *AMBLYSEIUS EHARAI* AND RELATED SPECIES.

Seta	*A. eharai*	*A. deleoni* (a)	*A. deleoni* (b)	*A. deleoni* (c)	*A. largoensis* (d)	*A. largoensis* (e)	*A. neolargoensis* (f)
L_4	88-116	95-100	95-98	91-100	91	88-108	138-141
M_2	91-125	106-111	95-103	91-100	91	90-110	171-174
L_9	227-320	257-267	257-266	266	266	266-299	357-374

(a) On scaly leaf and citrus litter, Ft. Pierce, Florida, 6 females (H.A. Denmark's collection).
(b) On undet. plant. Sao Paulo, Brazil, 2 females (H.A. Denmark's collection).
(c) On *Salvia* and *Diospyros*, Kirschtenbosch and Pretoria, S. Africa, 2 females (E.A. Ueckermann's collection).
(d) On *Ipomoea*, Lake Worth, Florida, 1 female (H.A. Denmark's collection).
(e) On various plants, Manila, Philippines, 20 females.
(f) On undet. plant, Munster (Natal, S. Africa (paratype), on *Acacia*, Candover, S. Africa, 2 females (E.A. Ueckermann's collection).

Amblyseius eharai was confused by Swirski and Shechter (1961) with *A. largoensis* Muma. According to Ehara (1977) "Japanese *largoensis*" should be referred to as *A. deleoni*. However, specimens from citrus, which were kindly lent to us by Dr. Ehara, belong to *A. eharai* and not to *A. deleoni*. As regards the Philippines – mites found on Luzon Island (Swirski and Golan, 1967) and on Mindanao Island (Swirski. i.l.) are *A. largoensis*.

This species is named for Dr. Sh. Ehara, Tottori, Japan.

ACKNOWLEDGEMENTS

The authors are extremely grateful to Dr. H.A. Denmark (Gainesville, Florida), Dr. Sh. Ehara (Tottori, Japan) and Dr. E.A. Ueckermann (Pretoria, South Africa) for lending paratypes and other material of *Amblyseius deleoni, A. largoensis* and *A. neolargoensis*.

REFERENCES

Athias-Henriot, C. 1975. Nouvelles notes sur les Amblyseiini. II – Le relevé organotaxique de la face dorsale adulte (Gamasides Protoadeniques, Phytoseiidae). *Acarologia* 17:20-29.

Ehara, Sh. 1977. A review of taxonomic studies on natural enemies of spider mites in Japan. *Review Plant Protection Research* 10:29-48.

Garman, P. 1948. Mite species from apple trees in Connecticut. *Connecticut Agricultural Experiment Station Bulletin* no. 520, 27 pp.

Muma, M.H. 1955. Phytoseiidae (Acarina) associated with citrus in Florida. *Annals Entomological Society of America* 48:262-272.

Muma, M.H., Denmark, H.A. and De Leon, D. 1970. Phytoseiidae of Florida. *Arthropods of Florida and Neighboring Land Areas* 6:1-150.

Nesbitt, H.H.J. 1951. A taxonomic study of the Phytoseiinae (Family Laelaptidae) predaceous upon Tetranychidae of economic importance. *Zoologische Verhandelingen* 12:1-64.

Swirski, E. and Golan, Y. 1967. On some phytoseiid mites (Acarina) from Luzon Island (Philippines). *Israel Journal of Agricultural Research* 17:225-227.

Swirski, E. and Shechter, R. 1961. Some phytoseiid mites (Acarina: Phytoseiidae) of Hong-Kong, with a description of a new genus and seven new species. *Israel Journal of Agricultural Research* 11:97-117.

Van der Merwe, G.G. 1965. South African Phytoseiidae (Acarina). I. Nine new species of the genus *Amblyseius* Berlese. *Journal of the Entomological Society of Southern Africa* 28:57-76.

Wainstein, B.A. and Kolodochka, L.A. 1974. New species of the genus *Anthoseius* (Parasitiformes, Phytoseiidae). *Zoologicheskii Zhournal* 53:628-632.