Five Species of Eriophyid Mites of Elm in Sapporo

By

Tsan Huang

Zoological Institute, Hokkaido University

(With 35 Text-figures)

This report is concerned with five species of eriophyid mites of elm in Sapporo. So far as the writer is aware, twenty-four species of eriophyids parasitic on elm trees have hitherto been known from the world. The five species here recorded and redescribed are as follows, of which one was recently recorded from Japan (Ehara, 1965) and the remainder is new to this country.

Subfamily Eriophyinae
1. Eriophyes campestricola (von Frauenfeld)
2. Eriophyes brevipunctatus Nalepa

Subfamily Phyllocoptinae
3. Anthocoptes punctidorsa Keifer
4. Oxypleurites ulmi Farkas

Subfamily Rhyncaphytoptinae
5. Rhyncaphytoptus ulmivagrans Keifer

Key to Eriophyid Mites (♀) of Elm in Sapporo

1. Shield dorsal setae shorter than interval between them. ........................................ 2
   - Shield dorsal setae longer than interval between them. .................................. 3
2. Body flattened; chelicerae gently bent down; shield dorsal setae posteriorly directed. ........................................ Oxypleurites ulmi F.
   - Body not flattened; chelicerae bent down at about right angles; shield dorsal setae anteriorly directed. ...................... Rhyncaphytoptus ulmivagrans K.
3. Body fusiform; tergites much broader and fewer than sternite. .............. Anthocoptes punctidorsa K.
   - Body wormlike, tergites similar to sternites. ............................................ 4

1) Contribution No. 720 from the Zoological Institute, Faculty of Science, Hokkaido University, Sapporo, Japan.
2) The present address: Fengshan Tropical Horticultural Experiment Station, Kaohsiung, Taiwan, Republic of China.
3) It is noteworthy that these five species were sometimes found on the same leaf.

4. Rear margin of shield slightly convex caudally; genital setae adjacent (10.7μ apart); tergites slightly fewer in number than sternites. .........................

- Rear margin of shield strongly convex caudally; genital setae widely separate (16.2μ apart); tergites more in number than sternites. .........................

................................. *Eriophyes campestricola* Nal.

- *Eriophyes brevipunctatus* Nal.

**Eriophyes campestricola** (von Frauenfeld)

(Figs. 1-7)


*Eriophyes campestricola*, Liro, 1951, p. 91, fig. 47, 6.

**Female.** Body wormlike, pale yellow in color. Rostrum gently curved down. Shield wide; ratio of width/length 1.49; the rear margin slightly convex; median line and submedians incomplete, admedians prominent. Abdomen microtuberculated, with 39-43 tergites and 45-52 sternites. Relative lengths of segments of
anterior leg: tarsus = tibia = claw > featherclaw; claw slightly knobbed; feather-claw 2-rayed. Genitalia 15.2–24.3 μ wide, 9.9–13.7 μ long; genital coverflap with about 8 furrows. Thoracic setae I (ts1)1) slightly longer than accessory setae (acs); interval ts2–ts2 as long as distance ts4–ts3; relative lengths of setae: cs > ds > vs1 > ts3 ≥ ls ≥ vs2 > ts2 > vs3 = gs > ts1 > acs. Setae ls on 5–8 sternite, vs1 on 17–19, vs2 on 26–34, vs3 on 41–47. Ratio of length/interval between bases of setae ts1 = 0.4, ts2 = 1.6, ts3 = 1.4, ds = 2.3, ls = 0.5, vs1 = 1.0, vs2 = 0.4, vs3 = 1.2, acs = 0.5, cs = 7.5, gs = 0.7.


Male. Not available to the writer.

Specimens examined. Specimens on Ulmus Davidiana Planch. var. japonica Nakai in Hokkaido University campus, Sapporo, were collected on Aug. 23, Sept. 16 and Oct. 14, 1963, and Sept. 20, 1964, by the writer.

Distribution and hosts. Japan (Hokkaido), Europe (Nalepa, 1898; Liro and Roivainen, 1951); on elm.

Remarks. Judging from literature (Nalepa, Liro and Roivainen), abdominal rings of the present specimens are less numerous than those of European specimens. This mite seems to be a vagrant on the undersurfaces of the leaves. No significant damage appears to result from the presence of this mite. This is the first record of *E. campestricola* from Japan.

**Eriophyes brevipunctatus** Nalepa

(Figs. 8–14)


*Eriophyes brevipunctatus* Nalepa, 1898, p. 15; Nalepa, 1911, p. 223, pl. II, figs. 12a–b; Liro and Roivainen, 1951, p. 85, fig. 47, 4.


1) The abbreviations of names of setae are those of Hassan (1928).
Eriophyid Mites of Elm

Ratio of length/interval between bases of pair $t_1=0.6$, $t_2=1.8$, $t_3=1.3$, $d_s=2.3$, $l_s=0.5$, $v_1=1.4$, $v_2=0.4$, $v_3=1.3$, $a_c=0.4$, $c_s=6.7$, $g_s=0.5$. Average measurements in micra ($n=5$): body length 179, thickness 52, width 52; shield length 30.5, width 41.5; lengths: fore-leg, tibia 7.3, tarsus 7.3, claw 7.2, feather-claw 7.3; hind-leg, tibia 5.4, tarsus 7.3, claw 7.3; setae $t_1=6.5$, $t_2=17$, $t_3=31$, $d_s=43.5$, $l_s=25.5$, $v_1=51.5$, $v_2=9.7$, $v_3=24.0$, $a_c=3.6$, $c_s=78.5$, $g_s=8.3$; intervals of setae $d_s-d_s=18.5$, $t_1-t_1=12$, $t_2-t_2=9.5$, $t_3-t_3=24.5$, $g_s-g_s=16$, $l_s-l_s=49.5$, $v_1-v_1=37.5$, $v_2-v_2=22$, $v_3-v_3=19$, $c_s-c_s=11.5$, $a_c-a_c=9.1$, $t_1-t_2=6.0$, $t_2-t_3=8.6$, $t_3-g_s=19$, $g_s-l_s=19.5$, $l_s-v_1=36.5$, $v_1-v_2=38$, $v_2-v_3=34.0$, $c_s-a_c=2.4$.

Figs. 8-14. *Eriophyes brevipunctatus*, ♂. 8, dorsum. 9, venter. 10, lateral aspect. 11, side skin structure (right). 12, genitalia. 13, right anterior leg. 14, feather-claw.

**Male.** Not available to the writer.

**Specimens examined.** Specimens on *Ulmus Davidiana* Planch. var. *japonica* Nakai in Hokkaido University campus, Sapporo, were collected on Sept. 16 and Oct. 14, 1963, and Sept. 20, 1964, by the writer.

**Distribution and hosts.** Japan (Hokkaido), Europe (Nalepa, 1898, 1911; Liro and Roivinen, 1951); on elm.

**Remarks.** The mites inhabit the undersurfaces of the leaves, but no apparent
injury can be observed. It was reported as a gall-maker of elm leaf (Schlechtendal, 1916; Liro and Roivainen, 1951), but, so far as the writer observed, no apparent sign of gall-forming could be detected. A number of large aphid galls on the upper surfaces of the leaves, with opening onto the lower surfaces, were observed, and the five eriophyid species considered in this paper were occasionally found near the galls. This mite is new to Japan.

*Anthocoptes punctidorsa* Keifer

(Figs. 15–21)


Female. Body spindle-shaped, pale brownish yellow in color. Rostrum curving down. Shield with a ridges network-like; ratio of width/length of shield 1.5. Dorsal tubercles largely protruded on rear margin of shield; dorsal

Figs. 15–21. *Anthocoptes punctidorsa*, ♀. 15, dorsum. 16, venter. 17, lateral aspect. 18, side skin structure (left). 19, genitalia. 20, left anterior leg. 21, feather-claw.
Eriophyid Mites of Elm

setae projecting up or backward. Tergites exceedingly broader and less numerous (15-18) than sternites (47-49). Relative lengths of segments of anterior leg: tarsus > tibia > claw > feather-claw; claw knobbed; feather-claw 2-rayed. Genitalia 15.1-19.0 μ wide, 6.4-11.5 μ long. Setae 1s on 7-8 sternite, 19 on 16-19, 15 on 26-28, 15 on 43-44. Relative lengths of setae: c5 > d5 > t5 > v5 > l5 > g1 > v1 > t1 > d1 > a1. Ratio of length/interval between bases of pair t5 = 0.4, t5 = 1.5, t5 = 1.3, d5 = 2.8, l5 = 0.4, v5 = 1.9, v5 = 0.7, v5 = 1.6, a5 = 0.4, c5 = 7.0, g5 = 1.0. Average measurements in micra (n = 5): body length 137.5, thickness 46, width 55.5; shield length 31.5, width 53; lengths: fore-leg, tibia 5.8, tarsus 5.9, claw 5.2, feather-claw 4.2; hind-leg, tibia 4.6, tarsus 5.7, claw 6.1; setae t5 = 4.1, t5 = 1.2, t5 = 2.6, 55 = 0.9, v5 = 25.5, a5 = 3.2, c5 = 7.3, g5 = 1.2; intervals of setae: d5-d5 = 2.1, t5-t5 = 1.1, t5-t5 = 0.8, t5-t5 = 2.5, g5-g5 = 1.8, l5-l5 = 1.5, v5-v5 = 1.5, c5-c5 = 1.0, a5-a5 = 1.0, t5-t5 = 5.5, t5-t5 = 8.9, t5-t5 = 16.5, g5-l5 = 14.5, l5-v5 = 1.5, v5-v5 = 21.5, v5-v5 = 33.5, c5-a5 = 2.0.

Male. Not available to the writer.

Specimens examined. Specimens on Ulmus Davidiana Planch. var. japonica Nakai in Hokkaido University campus, Sapporo, were collected on Aug. 23, Sept. 16 and Oct. 14, 1963, and Sept. 20, 1964 by the writer.

Distribution and hosts. Japan (Hokkaido), U.S.A. (Keifer, 1943); on elm.

Remarks. Anthocoptes punctidorsa is a leaf vagrant on the undersurfaces. This mite is new to Japan.

Oxypleurites ulmi Farkas

(Figs. 22-28)

Oxypleurites ulmi Farkas, 1960, p. 330, figs. 41-43.

Female. Body flattened, wedge-shaped, light yellow to light amber in color. Rostrum projecting down. Shield almost smooth, anterior lobe covering rostrum; ratio of width/length of shield 1.1. Dorsal setae very short, projecting backward. Tergites about 18 in number, flattened, smooth, moderately broad, more or less elongated laterally to form lateral lobes; 62-64 sternites. Relative lengths of segments of anterior leg: tarsus > tibia > claw > feather-claw; claw knobbed; feather-claw 4-rayed. Genitalia 15.7-23.1 μ wide, 7.9-11.0 μ long. Setae 1s on 9 sternite, 22 on 22-24, 23 on 38-40, 24 on 57-59. Relative lengths of setae: c5 > v5 > t5 > v5 > l5 = 0.4, t5 = 1.5, t5 = 1.1, d5 = 0.1, l5 = 0.3, v5 = 1.1, v5 = 0.4, v5 = 1.7, a5 = 0.4, c5 = 4.7, g5 = 0.6. Average measurements in micra (n = 5): body length 150.5, thickness 40, width 58; shield length 50, width 54; lengths: fore-leg, tibia 5.3, tarsus 5.9, claw 5.2, feather-claw 4.8; setae t5 = 4.7, t5 = 13.5, t5 = 28, d5 = 4.2, l5 = 14.5, v5 = 39, v5 = 7.2, v5 = 18.5, a5 = 2.2, c5 = 49.5, g5 = 11; intervals of setae: d5-d5 = 30.5, t5-t5 = 12, t5-t5 = 9.2, t5-t5 = 25, g5-g5 = 18, l5-l5 = 53, v5-v5 = 36.5, v5-v5 = 16.5, v5-v5 = 10.5, c5-c5 = 10.5, a5-a5 = 6.2, t5-t5 = 6.8, t5-t5 = 8.9, t5-g5 = 18.5, g5-l5 = 18, l5-v5 = 22.0, v5-v5 = 32.5, v5-v5 = 37.5, c5-a5 = 2.1.
Male. Not available to the writer.

Specimens examined. Specimens on Ulmus Davidiana Planch. var. japonica Nakai in Hokkaido University campus, Sapporo, were collected on Sept. 16 and Oct. 14, 1963, and Sept. 20 and Oct. 17, 1964 by the writer.

Figs. 22-28. Oxypleurites ulmi, ♀. 22, dorsum. 23, venter. 24, lateral aspect. 25, side skin structure (left). 26, genitalia. 27, left anterior leg. 28, feather-claw.

Distribution and hosts. Japan (Hokkaido), Hungary (Farkas, 1960); on elm.

Remarks. O. ulmi is a vagrant on the undersurfaces of the leaves causing no apparent injury. This mite is first recorded from Japan.

Rhyncaphytoptus ulmivagrans Keifer
(Figs. 29-35)

Rhyncaphytoptus ulmivagrans Keifer, 1939a, p. 420, pl. XC.
Abacoptes platynus Keifer, 1939b, p. 491, pl. 110 (deutogyne).
Rhyncaphytoptus rugatus Liro, 1941, p. 45, fig. 33 (deutogyne, Finland).
Female (protogyne). Body thick, spindle-shaped, amber to brownish in color. Chelicera steeply bent down at about right angles. Ratio of width/length of shield 1.6. Dorsal setae very short, anteriorly directed. Abdomen with 30–32 tergites and 83–86 microtuberculated sternites. Relative lengths of anterior leg: tibia > tarsus > claw > feather-claw; claw knobbed; feather-claw 5-rayed. Genitalia 32.1–37.2 µ wide, 20.8–24.6 µ long. Setae ls on 19–23 sternite, vs on 39–47, vs2 on 50–58, vs3 on 72–78. Relative lengths of setae: cs > vs1 > ts1 > vs3 > ts3 > ls > vs3 > gs > ds > ts1 > acs. Ratio of length/interval between bases of pair ts1 = 0.8, ts2 = 2.0, ts3 = 1.7, ds = 0.3, ls = 0.3, vs1 = 1.3, vs2 = 0.7, vs3 = 1.3, acs = 0.4, cs = 7.1, gs = 0.6. Average measurements in micra (n = 5): body length 185.5, thickness 66.5, width 76; shield length 43, width 69; lengths: fore-leg, tibia 13.5, tarsus 11, claw 9.7, feather-claw 7.6; hind-leg, tibia 12, tarsus 10.5, claw 9.5; setae ts1 8.6, ts2 25.5, ts3 49, ds 12.0, ls 20.0, vs1 61.5, vs2 18.0, vs3 35.0, acs 4.0, cs 93.5, gs 14; intervals of setae: ds–ds

Figs. 29–35. Rhyncaphytoptus ulmivagrans, ♀. 29, dorsum. 30, venter. 31, lateral aspect. 32, side skin structure (left). 33, genitalia. 34, left anterior leg. 35, feather-claw.
Male. Not available to the writer.


Distribution and hosts. Japan (Hokkaido; Ehara, 1965), U.S.A. (Keifer, 1939a and 1939b), Europe (Liro and Roivainen, 1951; Roivainen, 1951 and 1953; Boczek, 1961); on elm.

Remarks. *R. ulmivagrans* is a vagrant on the undersides of the leaves. No apparent damage could be seen. This mite is the largest among the five species here studied, and is predominant among them. This mite was recently recorded from Japan by Ehara (1965; identified by Keifer). Two types of females of this species, protogyne and deutogyne, are known to occur (Keifer, 1952). No deutogyne was taken by the writer, but it was found that the Japanese materials somewhat vary in tergites among specimens.

The writer wishes to express his hearty thanks to Prof. Mayumi Yamada and Dr. Shōzō Ehara for their pertinent instructions and kindful suggestions. Sincere appreciations are extended to Mr. H. H. Keifer, Dr. J. Boczek and Dr. H. K. Farkas for supplying reprints of their valuable papers.

References


Eriophyid Mites of Elm