

## ***Semiaphis nolitangere* Aizenberg, 1954 and differences between the genera *Semiaphis* van der Goot, 1913 and *Hyadaphis* Kirkaldy, 1904**

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The life cycle and distribution of *Semiaphis nolitangere* Aizenberg are cleared, the alate sexupara and the sexual morphs are described, and the differences between the genera *Hyadaphis* Kirkaldy, 1904 and *Semiaphis* van der Goot, 1913 are discussed.

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### **1. Additional description of *Semiaphis nolitangere* (Aizenberg, 1954)**

The abbreviations used in the descriptions:

PT or VIb ..... Processus terminalis of ant. segm. VI  
VIa ..... Basal part of ant. segm. VI  
BdIII ..... Basal diameter of ant. segm. III  
Ars ..... Apical rostral segment  
sht ..... Second segment of metatarsus

Shaposhnikov (1964) describes the apterous viviparous female of *S. nolitangere* only briefly. The information given from the author to Heie (in litt.; Heie 1995) comprised facts about the apterous viviparous female, alate sexupara, ovipara and alate male. More detailed descriptions are represented below (Table 1).

*Apterous viviparous female* (Fig. 1 a–e). Body elongate roundish and highly convex, pale green, covered with brownish-white wax powder. Head, segment I of antennae and cauda dark. Abdomen with dusky cross bar on tergite VIII. Siphunculi and legs dusky, apices of tibiae dark. Marginal tubercles on abd. segments I and V. Nymphs are pale green, covered with wax powder.

Antennae six-segmented,  $0.34\text{--}0.38 \times$  body length, PT about  $2.5\text{--}3.0 \times$  VIa,  $0.8\text{--}0.9 \times$  segm. III. Longest setae on ant. segm. III  $0.6 \times$  bdIII. Rostrum reaching to middle coxae; its apical segm  $0.8\text{--}0.9 \times$  sht, with 4 accessory setae. Siphunculi very short, as long as or a little longer than their basal diameter, without a flange,  $0.02\text{--}0.03 \times$  body, and  $0.2\text{--}0.3 \times$  cauda; their median side almost straight, lateral side inflated, so that their aperture and basal level form an angle of  $60\text{--}70^\circ$ . Diameter of the aperture of the siphunculi about  $0.6\text{--}0.7 \times$  their basal diameter. Cauda subtriangular–tongue-shaped, with rounded apex and with 8–12 setae. Body 2.1–2.3 mm.

*Alate viviparous female (sexupara)* (Fig. 2f–j). Body pale green. Head, antennae, thorax, siphunculi and cauda dark, legs dusky with dark apices of femora, tibiae and tarsi, small marginal sclerites on abd. segm. II–V, cross bars on tergites VII and VIII, and a spinal short cross bar on VI, dark. Marginal tubercles are on abd. segments I and V. Antennae 6-segmented,  $0.85\text{--}1.00 \times$  body length. PT  $4.65\text{--}5.15 \times$  VIa,  $0.8\text{--}1.1 \times$  ant. segm. III. Setae on segm. III inconspicuous, about  $0.6\text{--}0.7 \times$  bdIII. Number of sec. rhinaria on segm. III

35–52, on IV 10–18 and on V 2–7, most large and outstanding. Metatibia 0.45–0.60 × body. Siphunculi 0.025–0.03 × body, 0.3–0.5 × cauda, their shape as in apterae viviparae. Cauda elongated, subtriangular, pointed, in some specimens slightly constricted in the middle, with 8–13 setae. Body 1.4–2.5 mm.

*Oviparous female* (Fig. 1f, g). Body pale yellow, faintly wax powdered, dull. Cauda, apices of antennae, tarsi, metatibiae, cross bar on abd. tergite VIII, siphunculi and cauda dusky. Antennae 5-segmented, 0.3–0.4 × body, PT 1.38–1.64 × VIa, 0.8 × ant. segm. III, without sec. rhinaria. Rostrum reaching to the middle coxae, its apical segm. 0.84 × sht, with 4 accessory setae. Metatibiae strongly swollen, with numerous scent plaques, 0.36–0.38 × body. Siphunculi as in apterous viviparae. Basal part of cauda with parallel sides, its apical part triangular, pointed, with 11–12 setae. Body 1.05–1.15 mm.

*Alate male* (Fig. 2a–e). Body orange yellow, dull. Head, antennae, thorax, tarsi, apices of femora and tibiae, marginal sclerites on abd. segm. II–VI, and cross bars on tergites VII and VIII dark; short spinal cross bar on abd. tergite VI, and basal sclerites of spinal and pleural setae on tergites II–V dusky. Siphunculi and cauda dark. Antennae

6-segmented, 0.95–1.1 × body. PT 5.3–6.4 × VIa, and 0.96–1.40 × ant. segm. III. Segm. III with 44–52, IV with 16–22, V with 10–17, and VIa with 0–4 sec. rhinaria. Apical segm. of rostrum 0.7–0.9 × sht, with 4 accessory setae. Metatibiae 0.55–0.6 × body. Siphunculi 0.025–0.03 × body, and 0.3–0.5 × cauda, their shape as in apterae viviparae. Cauda slightly elongate-triangular with slightly convex sides. Body 1.1–1.7 mm.

*Distribution*. According to Shaposhnikov (1964) Aizenberg found *S. nolitangere* near Moscow in Russia. The author found one apterous and one alate female already on 8 September 1940 in (N) Helsinki on *Impatiens nolitangere*, but this sample remained unidentified until 1991 (Albrecht 1993). After this, the species has been found elsewhere in Southern Finland only: N: Sipoo 1991 (A. Albrecht), N: Inkoo 1994 (O. Heikinheimo, O.E. Heie, A. Albrecht leg.) and Sa: Kouvola 1993 (O. Heikinheimo, Jussi Halme leg.) (Table 1).

*Biology*. The apterous adults and nymphs were collected on flower stalks of *Impatiens nolitangere*. The nymphs were reared to adults outdoors. In September, on isolated *Impatiens nolitangere*, all nymphs grew to alate sexuparae and alate males. All alatae eagerly tried to fly away from the isolation. This is typical behaviour for a

Table 1. Measurements of some morphs of *Semiaphis nolitangere* Aizenberg.

Morph	Sp. no.	Body mm	Measurements in $\mu\text{m}$								
			Antennal segments					Ars	sht	Cauda	Metatibia
			III	IV	V	VIa	PT				
Apt. viv.	1	2.18	260	118	118	80	211	106	135	202	710
—"	2	2.30	300	130	102	84	249	110	130	220	780
—"	3	2.22	250	103	90	84	230	108	121	215	672
—"	4	2.14	258	113	84	71	215	100	119	211	740
Al. sexup.	5	1.40	465	203	130	96	463	90	110	135	850
—"	6	1.82	550	260	182	105	488	96	130	160	990
—"	7	1.82	618	277	187	97	500	108	135	170	1090
Ovip.	8	1.15	—126—		54	76	105	80	95	132	410
—"	9	1.05	—140—		70	77	117	83	100	130	405
Al. male	10	1.55	498	232	198	98	630	103	115	120	890
—"	11	1.12	360	188	137	77	420	90	110	75	625
—"	12	1.70	568	280	225	100	550	97	138	120	980

Material studied. 1: Helsinki (N) 8.IX.1940 (O. Heikinheimo leg.); 5–12: Kouvola (Sa) 16.IX.1993 (O. Heikinheimo); 2–4: Inkoo (N) 19.IX.–16.X.1994 (O. Heikinheimo, A. Albrecht & O.E. Heie leg.). Nos 8–9 reared on *Lonicera tatarica*, the others from *Impatiens nolitangere*.

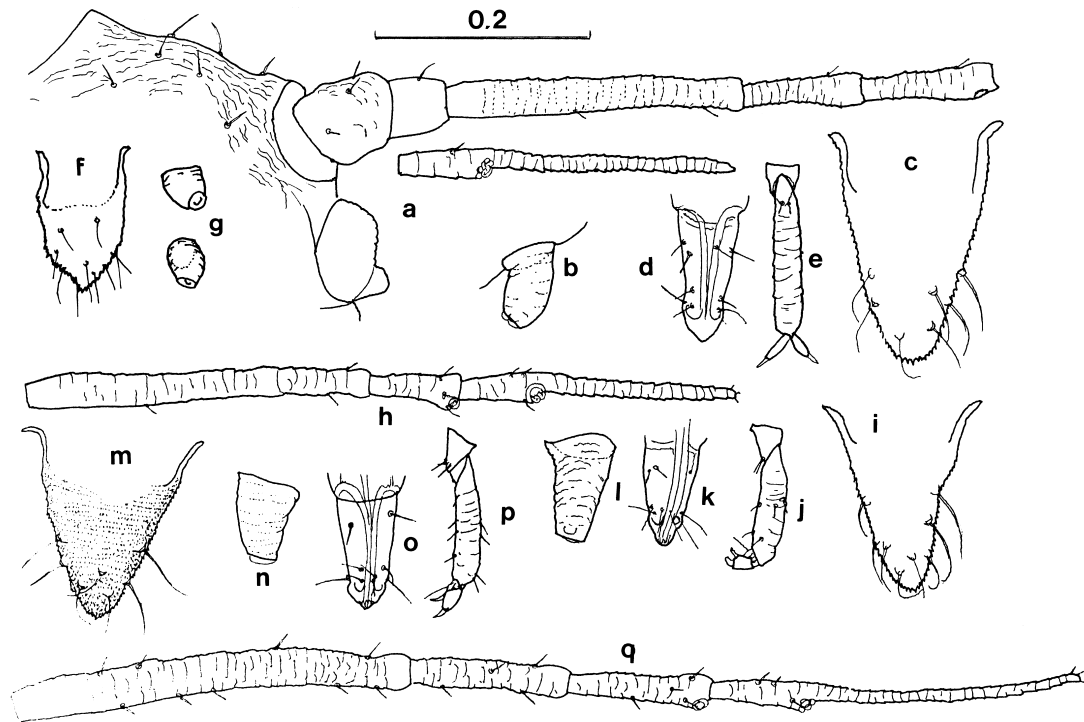


Fig. 1. *Semiaphis nolitangere* Aizenberg. Apterous viviparous female: a–e; oviparous female: f, g. *S. anthrisci* (Kaltenbach), apterous viviparous female: h–l. *S. sphondylia* (Koch), apterous viviparous female: m–q. Antennal segments: a, h, q; siphunculi: b, g, l, n; cauda: c, f, i, m; apical rostral segment: d, k, o; metatarsus: e, j, p. Scale 0.2 mm.

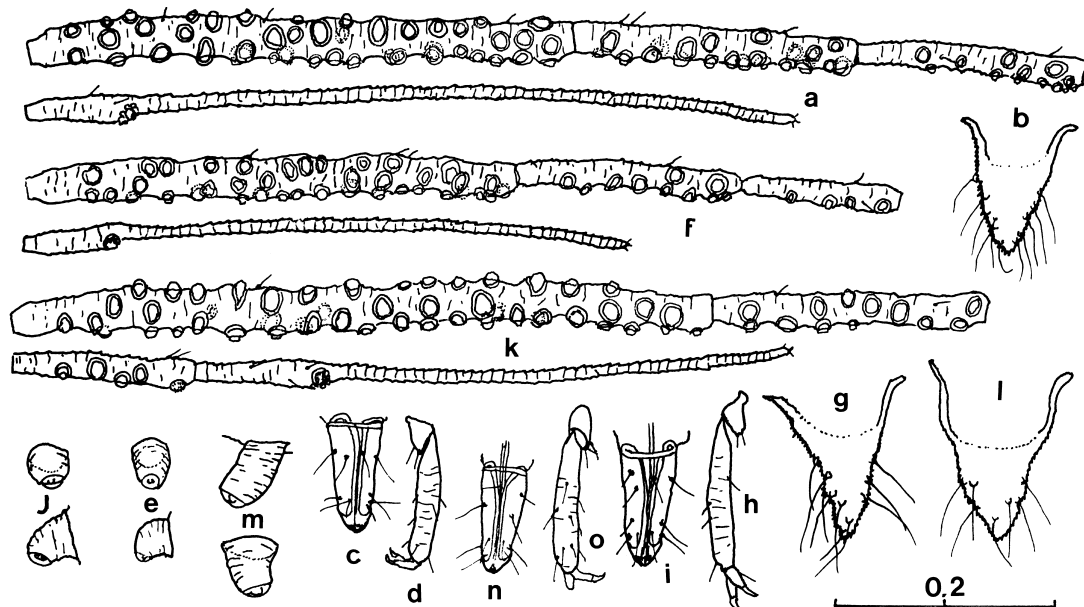


Fig. 2. *Semiaphis nolitangere* Aizenberg, male: a–e, alate sexupara: f–j. *S. sphondylia* (Koch), alate viviparous female: k–o. Antennal segments III–VI: a, f, k; cauda: b, g, l; apical rostral segment: c, i, n; metatarsus: d, h, o; siphunculus: e, j, m. Scale 0.2 mm.

migrating species. When sexuparae and alate males were placed on *Lonicera tatarica*, they settled down on the underside of the leaves and soon began to suck the leaves causing yellowish spots to form on them. During the following days some oviparae were born on *Lonicera*, and after a few weeks they grew as adults within a few days, when some alate sexuparae and males (which originally had been put in isolation) were still alive on *Lonicera*. The conclusion is that the species has a migration between *Lonicera* and *Impatiens*.

The biology of the first generations is currently unknown.

## 2. Differences between the genera *Semiaphis* van der Goot and *Hyadaphis* Kirkaldy

Different characters have been used when individual species were placed into the genera *Hyadaphis* Kirkaldy, 1904 (typus generis *Aphis xylostei* Schrank, 1901) and *Semiaphis* Fabricius, 1775 (typus generis *Aphis dauci* Fabricius, 1775). The species *sphondylii* (Koch, 1854) has sometimes been placed in *Hyadaphis* (Eastop & Hille Ris Lambers 1976, Rupais 1989, Heie 1992) or, by some authors, in *Semiaphis* (Heinze 1960, Shaposhnikov 1964, Rupais 1969, Remaudière & Remaudière 1997). However, the species shares more characters with *Semiaphis anthrisci* (Kaltenbach, 1843), which is closely related to the typus generis *dauci* (Fabricius, 1775) (Fig. 1 h–l). Another case is the species *tataricae* (Aizenberg, 1935) which has been placed into genera *Semiaphis* (Shaposhnikov 1964, Rupais 1989) or *Hyadaphis* (Müller & Buhr 1965, Müller 1972, Rupais 1989, Heie 1992). The siphunculi of *tataricae* are short like in the *Semiaphis* species but several other characters are more like characters in the genus *Hyadaphis*. Both genera have shared characters, but there are also some distinguishing ones, according to which each species can be placed correctly (Raychaudhuri 1980, pp. 84–85).

*Hyadaphis*: Siphunculi straight, smooth or almost smooth and with a preapical circumcission and an apical flange, their length being  $0.7 \times$  cauda or more, and more than  $2 \times$  their basal diameter. Their maximal diameter not at base. Alatae with

moderate sized, not outstanding secondary rhinaria. From the treated species *tataricae* (Aizenberg) belongs here.

*Semiaphis*: Siphunculi more or less corrugated, without a preapical circumcission and a flange, their length  $0.4 \times$  cauda or less, and  $2.6 \times$  their basal diameter or less. Siphunculi often bent inwards, their maximum diameter situating basally. Alatae mostly with large outstanding rhinaria on their antennae. From the treated species *anthrisci* (Kaltenbach), *dauci* (Fabricius), *nolitangere* Aizenberg and *sphondylii* (Koch) belong here.

Similarities in the shape of the siphunculi indicate that *anthrisci* (Fig. 1 h–l), *nolitangere* and *sphondylii* are closely related species. In these three species the siphunculi are without a flange and a subapical incision, like the other species of this genus. Moreover, the secondary rhinaria in the alatae are mostly large and numerous on ant. segments III–V. These indicate that the right genus is *Semiaphis*. On the contrary, the species *tataricae* has a subapical incision and a flange in the siphunculi, which indicates that it belongs to the genus *Hyadaphis*. As a result, the author agrees with Remaudière & Remaudière (1997) in placing the above treated species to the genera *Hyadaphis* Kirkaldy and *Semiaphis* van der Goot.

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