

The Great Lakes Entomologist

Volume 17
Number 2 - Summer 1984 *Number 2 - Summer*
1984

Article 3

June 1984

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David Voegtlin
Illinois Natural History Survey

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**NOTES ON *HYADAPHIS FOENICULI* AND REDESCRIPTION OF
HYADAPHIS TATARICAE (HOMOPTERA: APHIDIDAE)**David Voegtlin¹

ABSTRACT

The occurrence of *Hyadaphis foeniculi* in North America is discussed and a list of its synonyms in the North American literature is presented. *H. tataricae* is redescribed and a key to separate the two species is given along with comparative drawings and photographs.

Until the mid 1970's, *Hyadaphis foeniculi* (Passerini), was the only species of this genus known in North America. Although this species is considered to be of European origin, it was widely distributed across North America in the early 1900's. Patch (1923) recorded it from Connecticut in 1909 and Davidson (1909) named it from collections taken in California. I believe Sanborn (1904) was referring to this species in his study of the aphids of Kansas. He provided a description and figure of an *Aphis* n. sp. taken on honeysuckle but in this or his subsequent host list (Sanborn 1906) did not provide a specific name for the species. Gillette (1911) noted its presence in Colorado. Smith (1978) listed a distribution of 23 states and four provinces, but I suspect that this species could be found across Canada and in the northern states not included in the list. There has been considerable confusion as to the identity of this species as is indicated by the number of names it has been given in the American literature (see below). *H. foeniculi* is a host-alternating species utilizing *Lonicera* spp. as primary hosts and species of Umbelliferae as secondary hosts. This added to the confusion as it has been named from collections on both primary and secondary hosts.

A second species *Hyadaphis tataricae* (Aizenberg) arrived in North America within the last decade (Boisvert et al. 1981, Voegtlin 1981). It too is associated with *Lonicera* spp. but apparently is limited to those species in the *L. tatarica* complex (Voegtlin 1982). It has proven to be a severe pest of ornamental honeysuckles especially in the northern states and Canada where it is presently found. Unfortunately a high percentage of these ornamental honeysuckles are related to *L. tatarica* and are highly susceptible. As far as is known it is monophagous on honeysuckles; i.e., it does not have an alternate summer host.

It is quite common to find mixed colonies of these two species in the spring and fall on honeysuckle. The eventual deformation of honeysuckles by *H. tataricae* is more severe than that caused by *H. foeniculi*, but in the early spring it is not possible to say which of the species may be causing the beginning of a "witches broom" until the aphids are examined. I took several early spring collections as samples of *H. tataricae* which contained only fundatrices and nymphs of *H. foeniculi*. Correspondingly in the fall the "witches brooms," caused by *H. tataricae* in the summer, will often have gynoparae and sexuales of *H. foeniculi* in them as well as apterous viviparae and sexuales of *H. tataricae*.

¹Illinois Natural History Survey, 607 E. Peabody, Champaign, IL 61820.

Hyadaphis Kirkaldy

The North American literature lacks an adequate generic description of *Hyadaphis* as presently defined. Generic descriptions can be found in Cottier (1953), Eastop (1961) and Raychaudhuri et al. (1980). The genus contains 15 species (Eastop and Hille Ris Lambers 1976) associated with *Lonicera* and (or) Umbelliferae and is considered Palearctic in origin.

The following couplet will separate all morphs of both species of *Hyadaphis* found in North America. Measurements throughout the paper are in millimeters.

1. Siphunculi pale, never strongly clavate, 0.5–1.15 times length of hind tarsal II (usually shorter); ultimate rostral segment 0.063–0.096 (usually less than 0.080); found only on *Lonicera* spp. in the tatarian complex. (Figs. 4B–D & 5B,C)
..... *Hyadaphis tataricae*
- 1'. Siphunculi medium to dark brown, often strongly clavate, especially in summer apterae and alatae, greater than 1.45 times length of hind tarsal II; ultimate rostral segment, 0.090–0.110 (usually greater than 0.095); with *Lonicera* spp. as primary hosts and various species of Umbelliferae as secondary hosts. (Figs. 4A & 5A,C)
..... *Hyadaphis foeniculi*

The following synonymic list for *Hyadaphis foeniculi* in the American literature may not be exhaustive but should include all the name combinations. This literature provides host and distribution records and descriptions of all forms.

Hyadaphis foeniculi (Passerini)

- Siphocoryne xylostei* (Schrank), Davidson 1909.
Siphocoryne conii Davidson 1909.
Hyadaphis umbellulariae Davidson 1911.
Rhopalosiphum pastinacae (Linnaeus), Gillette 1911.
Hyadaphis xylostei (Schrank), Essig 1911.
Hyadaphis conii (Davidson), Davidson 1914.
Siphocoryne pastinacae Linnaeus, Swain 1919.
Hyadaphis mellifera Hottes 1930.
Rhopalosiphum melliferum (Hottes), Hottes and Frison 1931, Gillette and Palmer 1932, Essig 1938, Knapp 1973.
Rhopalosiphum conii (Davidson), Palmer 1952, Pepper 1965.
Hyadaphis foeniculi (Passerini), Robinson and Bradley 1965, Leonard 1968, Leonard and Bissell 1970, Forbes and Chan 1978, Walker et al. 1978.

Hyadaphis tataricae (Aizenberg 1935)

Since the literature on this species is not readily available in North America, the following redescription is presented. It is based primarily on material collected from April to November 1981 in the north central states. Specimens from Illinois were sent to V. F. Eastop and D. Hille Ris Lambers, who both verified the identification.

- Hayhurstia tataricae* Aizenberg 1935, Rupais 1961.
Neohayhurstia tataricae (Aizenberg), Aizenberg 1956.
Semiaphis tataricae (Aizenberg), Rupais 1969.
Hyadaphis tataricae (Aizenberg), Grigorov 1965, Gunkel and Uschdraweit 1964, Hille Ris Lambers 1966, Müller 1972, Müller and Buhr 1965, Shaposhnikov 1964, Tashev 1963, Tomilova 1959.

Fundatrices

This form was first described by Müller (1972) based on specimens taken on 13 May 1969 in Berlin on *Lonicera bella*. The description is in German.

Color in life: Body dull yellow green completely covered with light pulverulence. Vertex, front and antennal I dark, antennal II to distal portion of III pale then dusky to end of process terminalis. Legs relatively uniformly dusky throughout; cauda, and sclerite on VIII concolorous with legs and darker than siphunculi which is only slightly darker than body.

Sclerotization pattern in mounted specimens (Fig. 5B): Body free of sclerites except as follows: vertex, prothorax often with a small sclerite on median line, on eighth tergum,

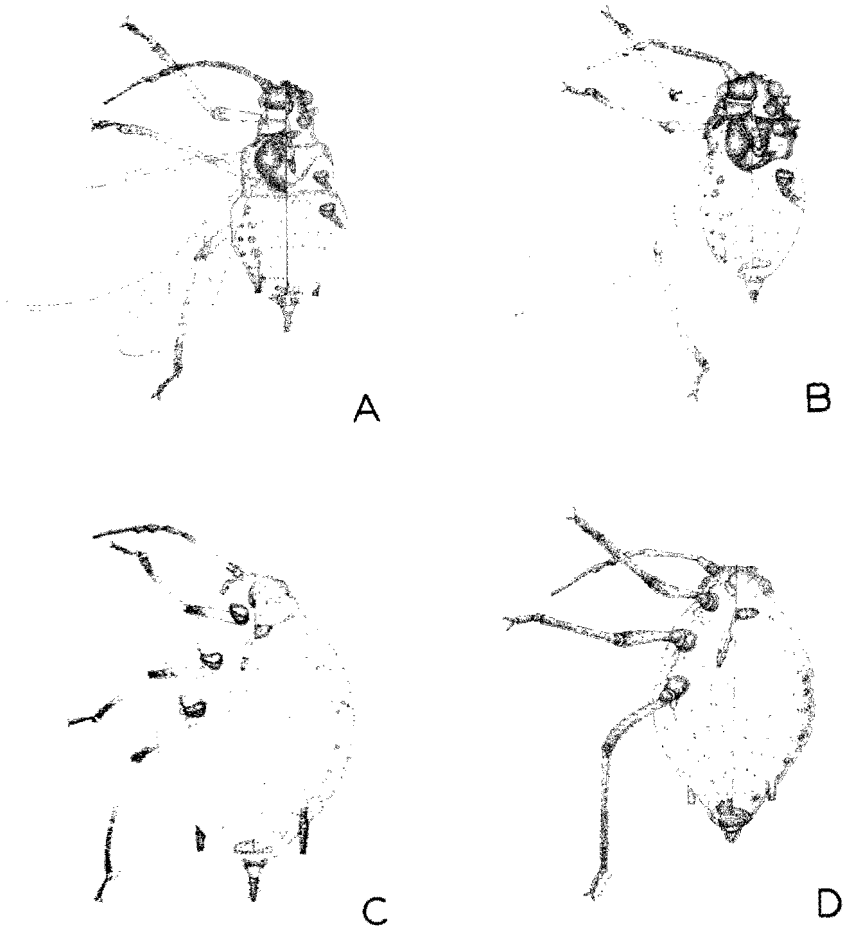


Fig. 1. Alate vivipara: (A) *H. foeniculi*, (B) *H. tataricae*; apterous vivipara: (C) *H. foeniculi*, (D) *H. tataricae*.

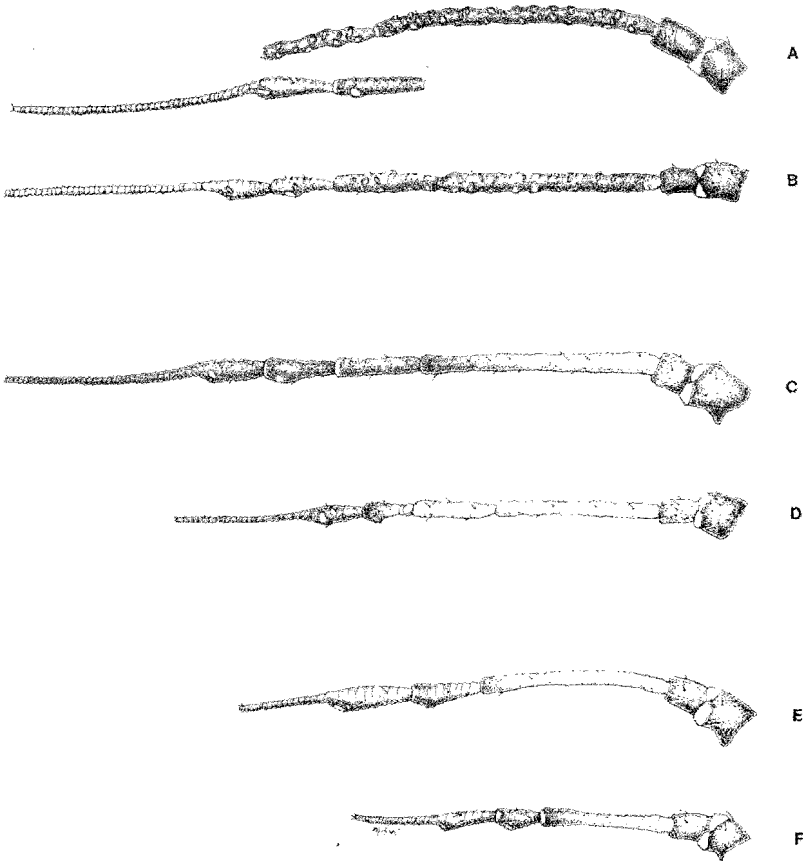


Fig. 2. Alate viviparae: (A) *H. foeniculi*, (B) *H. tataricae*; apterous viviparae: (C) *H. foeniculi*, (D) *H. tataricae*; fundatrices: (E) *H. foeniculi*, (F) *H. tataricae*.

subgenital plate and small areas near coxae; prosternal furca not dark; antennal I concolorous with head, II and most of III pale, dark from distal 1/6 of III to end of process terminalis; sclerotized areas concolorous with dark regions of legs which vary from evenly dark throughout to mostly pale as in Figure 5B, small sclerite on prothorax and siphunculi lighter; subgenital plate usually evenly sclerotic throughout but sometimes paler on anterior median region.

Morphology: Front flat, median frontal and antennal tubercles not indicated; antennal I and II smooth, III-V slightly imbricated without secondary rhinaria (Fig. 2E); body surface smooth; siphunculi lightly wrinkled, constricted slightly below a very minimal flange, varying from straight sided to slightly swollen; cauda triangular, evenly tapered, broadly rounded at tip; subgenital plate broad, oval.

Measurements: See Table 1.

Setation: Body with relatively few setae on both dorsum and venter; dorsal setae on thorax and abdominal segments I-VII short <0.015, with blunt tip, setae on head and

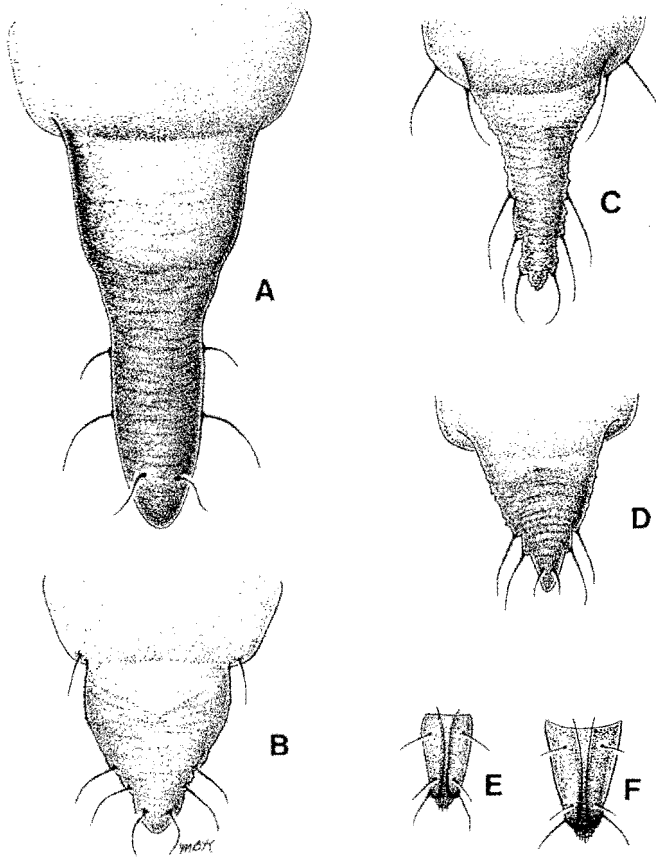


Fig. 3. Caudae of apterous viviparae: (A) *H. foeniculi*, (B) *H. tataricae*, and alate viviparae: (C) *H. foeniculi*, (D) *H. tataricae*. Ultimate rostral segments of both apterae and alatae: (E) *H. tataricae*, (F) *H. foeniculi*.

abdominal tergum VIII slightly longer, 0.013–0.026; cauda with 6–7 setae, generally 2 pair laterally and 2 or 3 on dorsal surface near tip; subgenital plate with from 9–14 setae along margin of posterior half and from 2–5 setae on anterior half; abdominal tergum VIII with 4–6 setae usually on or near the large sclerite; first tarsal formula 3,3,2 or 2,2,2; ultimate rostral segment with 2 accessory setae.

Apterous Viviparae

This form was originally described by Aizenberg (1935) in Russian with an English version immediately following. Müller and Buhr (1965) included a description of this form.

Table 1. Measurements for the five morphs of *Hyadaphis tataricae*. The symbol * refers to specimens having five antennal segments. Measurements for the last antennal segment of specimens with only five antennal segments are shown under the columns for segment 6 even though they represent the 5th segment by count. All measurements in millimeters. The letters nm mean that the character could not be measured accurately.

specimen #	body length	antennal segments									length of					number of				
		III	IV	V	VI	b	VI	pt	III	IV	V	last segment	rostral	hind tibiae	hind tarsal I	II	siphunculi	cauda	cauda	setae on eighth tergum
Fundatrices																				
81-27-4†	2.02	*.237-	.070	.085	.115	-	-	-	.087	.602	.122	.109	.173	6	5					
81-27-4b	2.05	*.198-	.064	.077	.115	-	-	-	.086	.627	.115	.096	nm	6	4					
81-29-1†	1.80	*.198-	.085	.085	.128	-	-	-	.085	.602	.115	.102	.173	6	4					
81-29-2	1.69	*.211-	.070	.085	.096	-	-	-	.090	.608	.102	.115	.160	6	4					
81-27-2	2.09	*.230-	.090	.077	.122	-	-	-	.085	.621	.122	.096	.179	6	5					
81-28-2†	2.24	*.230-	.077	.090	.112	-	-	-	.096	.640	.128	.109	.192	7	6					
81-28-3b	2.24	*.224-	.077	.090	.128	-	-	-	.090	.640	.128	.102	.173	6	6					
81-75-1†	1.84	*.205-	.080	.085	.134	-	-	-	.090	.614	.122	.109	.173	7	4					
81-76-1†	2.02	*.224-	.077	.077	.115	-	-	-	.085	.621	.128	.128	.166	7	4					
81-77-6†	1.98	*.211-	.070	.077	.128	-	-	-	.080	.544	.115	.090	.154	7	6					
81-77-5†	2.13	*.208-	.077	.087	.122	-	-	-	.085	.602	.115	.128	.160	6	5					
81-77-3†	1.80	*.186-	.070	.080	.096	-	-	-	.085	.544	.115	.102	.141	7	5					
81-77-1†	2.24	*.230-	.077	.087	.122	-	-	-	.090	.660	.122	.122	.173	7	5					
81-76-9†	2.33	*.211-	.077	.085	.122	-	-	-	.085	.660	.122	.128	.179	6	5					
81-76-7b	2.20	*.186-	.064	.077	.115	-	-	-	.077	.563	.122	.096	.154	6	6					
Aptarous viviparae																				
81-140-1	1.81	.230	.109	.085	.077	.192	-	-	-	.080	.660	.134	.122	.166	5	5				
81-140-2	1.58	.224	.109	.085	.070	.186	-	-	-	.085	.660	.128	.134	nm	5	5				
81-140-3	1.75	.256	.090	.080	.070	.179	-	-	-	.085	.640	.128	.115	.160	6	5				
81-121-5	1.54	.224	.096	.070	.070	.186	-	-	-	.080	.580	.122	.115	nm	5	5				
81-122-1	1.61	.147	.064	.061	.058	.147	-	-	-	.085	.510	.119	.109	.141	6	5				
81-123-1	1.63	.211	.109	.085	.074	.192	-	-	-	.085	.640	.128	.128	.166	6	5				
81-123-2	1.54	.205	.096	.080	.074	.186	-	-	-	.085	.570	.128	nm	.147	6	5				
81-124-1	1.65	.173	.090	.085	.070	.160	-	-	-	.085	.480	.122	.102	nm	6	5				
81-124-3	1.54	.179	.077	.077	.064	.173	-	-	-	.077	.460	.115	.102	.128	6	5				
81-179-1	1.52	.218	.096	.064	.070	.173	-	-	-	.080	.570	.122	.109	.134	6	5				
81-181-1	1.83	.301	.122	.096	.070	.211	-	-	-	.080	.730	.128	.128	.154	6	5				
81-181-2	1.83	.307	.102	.096	.070	.224	-	-	-	.080	.640	.128	.109	.147	6	5				
81-183-1	1.32	*.186-	.070	.064	.141	-	-	-	.074	.460	.112	.109	.115	6	5					
81-183-1b	1.36	.186	.077	.070	.064	.166	-	-	-	.077	.460	.112	.096	.128	6	5				
81-183-2	1.12	.102	.051	.058	.109	-	-	-	.070	.350	.096	.077	.109	6	4					
81-183-2b	1.16	*.128-	.058	.055	.102	-	-	-	.067	.360	.096	.077	.109	6	5					
81-184-1	1.53	.186	.083	.077	.070	.160	-	-	-	.077	.530	.126	.102	.128	6	5				
81-184-2	1.32	*.211-	.064	.070	.128	-	-	-	.070	.460	.111	.096	.115	5	5					
81-184-3	1.45	.160	.077	.064	.070	.141	-	-	-	.070	.470	.115	.096	.122	6	5				

Voegtlin: Notes on *Hyadaphis Foeniculi* and Redescription of *Hyada*

81-189-3	1.27	.122	.098	.064	.064	.194	-	-	-	.070	.420	.109	.096	.115	6	5
81-189-4	1.47	.192	.089	.077	.064	.160	-	-	-	.077	.550	.122	.115	.154	6	5
81-244-4	1.49	.218	.087	.077	.070	.175	-	-	-	.077	.550	.122	.096	.128	6	4
81-271-2	1.61	.245	.096	.085	.074	.192	-	-	-	.077	.620	.128	.122	.147	6	4
81-250-1	1.10	-.191-		.064	.064	.122	-	-	-	.077	.440	.109	.077	.109	6	4
81-268-1	1.45	-.186-	.098	.064	.128		-	-	-	.077	.440	.109	.090	.109	7	6
Alnus Viviparæ																
81-140-3	1.52	.320	.140	.096	.070	.307	24	9	1	.070	.680	.128	.109	.134	6	5
81-140-1	1.63	.307	.122	.083	.083	.218	20	7	0	.077	.730	.128	.109	.128	6	6
81-170-2	1.54	.320	.109	.115	.077	.288	23	7	2	.077	.770	.134	.109	.141	7	6
81-181-1	1.58	.301	.109	.077	.077	.230	19	4	0	.070	.660	.122	.096	.115	6	5
81-181-2	1.61	.314	.122	.090	.070	.269	22	7	1	.074	.730	.122	.096	.122	6	5
81-178-3	1.15	.256	.091	.069	.067	.193	17	4	0	.063	.530	.089	.091	.096	6	5
81-179-1	1.34	.256	.090	.090	.077	.198	17	4	1	.077	.580	.115	.083	.096	6	5
81-181-1	1.58	.301	.109	.077	.077	.230	19	4	0	.070	.680	.115	.090	.122	6	5
81-181-2	1.61	.314	.122	.090	.070	.269	22	7	1	.077	.700	.115	.090	.115	6	5
81-183-1	1.56	.320	.126	.083	.073	.237	20	7	0	.077	.660	.122	.090	.115	5	5
81-185-3	1.65	.326	.115	.096	.077	.243	19	4	0	.077	.700	.128	.102	.122	6	5
81-185-4	1.34	.256	.096	.083	.064	.243	17	7	1	.070	.560	.115	.083	.109	5	6
Oviparæ																
81-256-1	1.34	.134	.067	.064	.064	.122	-	-	-	.070	.380	.102	.083	.109	6	6
81-257-1	1.14	.109	.045	.051	.058	.102	-	-	-	.064	.370	.096	.058	.102	7	7
80-308-4	1.38	-.179-		.064	.064	.115	-	-	-	.077	.384	.102	.083	nm	6	7
81-260-1	1.10	-.134-		.051	.058	.102	-	-	-	.070	.365	.096	.077	.090	7	7
81-260-2	.97	-.141-		.058	.051	.096	-	-	-	.070	.384	.102	.077	.096	7	6
81-260-3	1.45	-.160-	.058	.064	.115		-	-	-	.064	.405	.102	.077	.109	7	7
81-261-4	1.30	-.198-	.064	.070	.122		-	-	-	.070	.410	.102	.083	.122	7	8
81-261-2	1.28	-.160-	.055	.061	.102		-	-	-	.070	.384	.105	.083	.109	6	7
81-262-2	1.23	-.154-	.058	.058	.122		-	-	-	.068	.390	.102	.077	.102	6	9
81-262-3	1.23	-.147-	.061	.058	.122		-	-	-	.072	.384	.105	.064	.109	6	8
81-263-1†	1.43	-.218-	.064	.070	.134		-	-	-	.074	.454	.115	.096	.128	7	9
81-278-4	1.21	-.141-	.055	.064	.115		-	-	-	.070	.384	.096	.070	.109	7	6
81-278-5	1.32	-.179-	.051	.070	.115		-	-	-	.070	.410	.102	.077	.122	6	6
81-281-2	1.16	-.147-	.058	.064	.128		-	-	-	.070	.397	.109	.077	.115	7	9
81-287-1	1.24	-.134-	.045	.064	.102		-	-	-	.070	.365	.090	.070	.109	7	6
Males																
81-184-1	1.16	.275	.109	.083	.077	.237	22	7	1	.067	.512	.109	.058	.064	6	6
81-243-4	1.21	.275	.115	.109	.070	.250	27	10	8	.077	.550	.109	.064	.070	6	5
81-257-1	1.25	.288	.122	.096	.064	.269	25	12	7	.064	.589	.115	.064	.083	5	5
80-268-1	1.03	.294	.115	.080	.064	.211	27	8	3	.070	.531	.109	.058	.077	6	4
81-289-3	1.25	.294	.122	.083	.070	.218	29	6	5	.070	.544	.102	.058	.077	6	4
81-280-3	.88	.269	.109	.077	.077	.211	27	9	3	.070	.467	.096	.058	.064	6	4
81-279-4	1.08	.307	.115	.083	.070	.237	31	9	4	.077	.518	.109	.064	.096	6	3
81-279-2	.99	.237	.090	.070	.064	.198	24	7	3	.070	.448	.109	.068	.083	6	4
81-278-5b	1.18	.323	.115	.090	.070	.230	34	8	5	.070	.544	.115	.070	.083	6	5
81-274-5	1.16	.294	.122	.090	.064	.243	29	13	5	.070	.550	.115	.058	.077	6	5

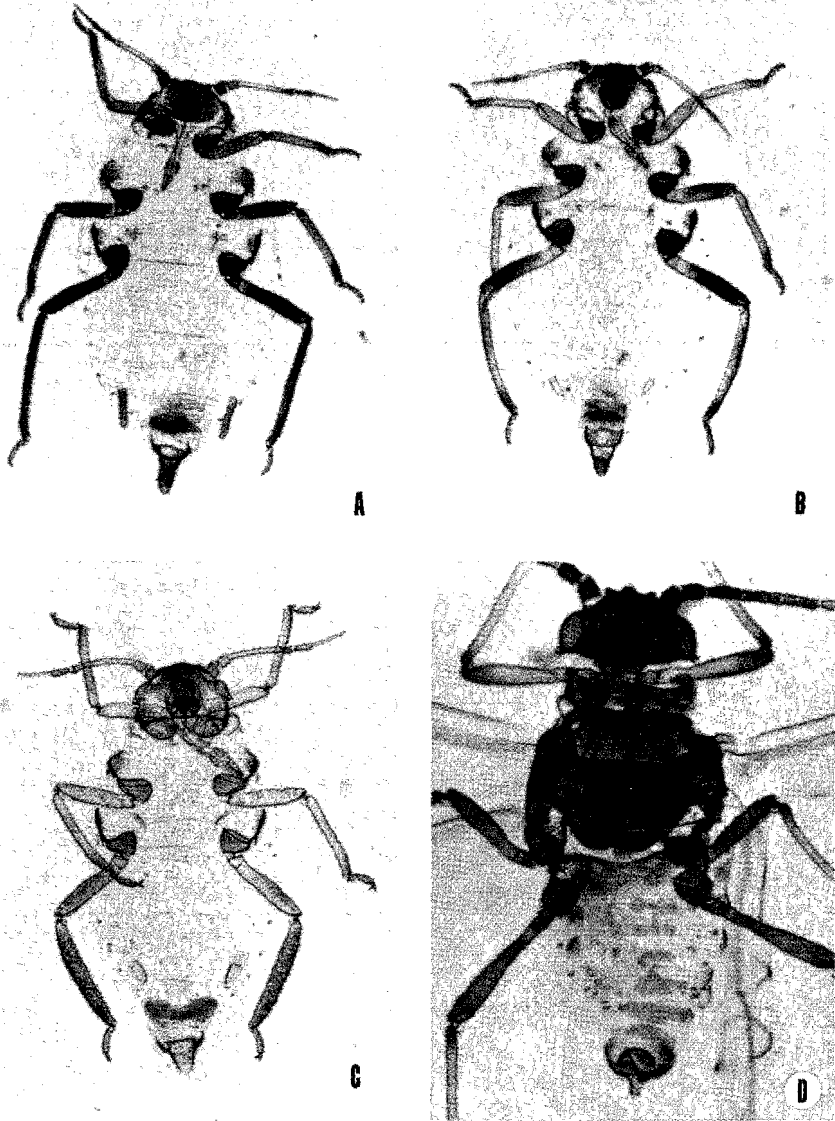


Fig. 4 Fundatrices: (A) *H. foeniculi*, ex. *Lonicera* sp., Marseilles, La Salle Co., IL., 15-IV-81; (B) *H. tataricae*, ex. *Lonicera* sp. Marseilles, La Salle Co., IL., 15-IV-81. Ovipara: (C) *H. tataricae*, ex. *Lonicera* × *bella*, Lima, Allen Co., Ohio, 23-IX-81. Male: (D) *H. tataricae*, ex. *Lonicera tatarica*, Beardstown, Cass Co., IL., 14-VII-81.

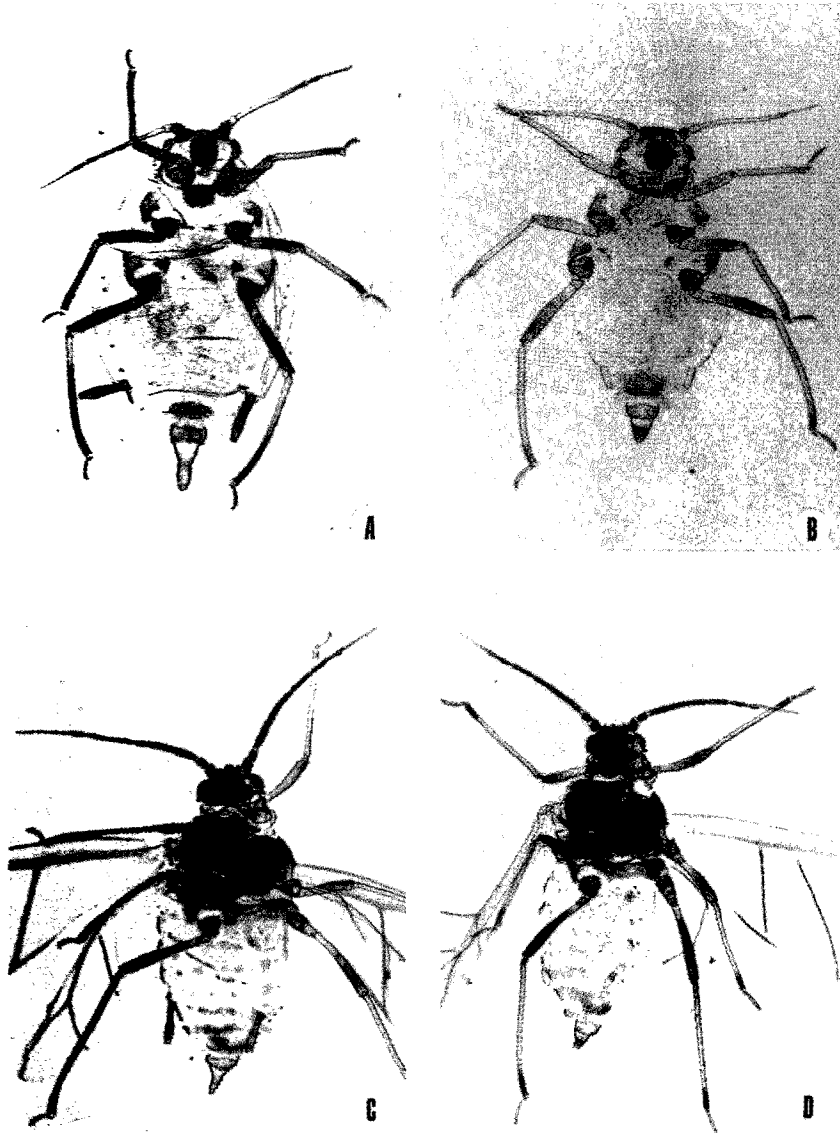


Fig. 5. Apterous viviparae: (A) *H. foeniculi*, ex. *Conium maculatum*, Briones Reservoir, Contra Costa Co., CA., 25-VI-79; (B) *H. tataricae*, ex. *Lonicera × bella*, Reedsburg, Sauk Co., WI., 16-VII-81. Alate viviparae: (C) *H. foeniculi*, ex. *Conium maculatum*, Urbana, Champaign Co., IL., 3-VIII-81; (D) *H. tataricae*, ex. *Lonicera × bella*, Princeville, Peoria Co., IL., 17-VI-81.

Color in life: Body surface covered with a light to medium pulverulence masking the yellow to green body color, darker areas as follows, distal region of tibiae, all tarsi, antennae V and VI (base of VI sometimes pale), cauda, vertex and front; siphunculi may be dusky or almost colorless, when observed in life this form as well as the fundatrices and oviparae appear dull gray with a hint of yellow or green in some specimens.

Sclerotization of cleared specimens (Fig. 4B): Entire body without any dark sclerotized areas; front, distal region of tibiae, all tarsi, cauda, anal and subgenital plate slightly darker than the transparent body and legs; antennae pale to penultimate segment then usually darker to tip of process terminalis; prosternal furca often forming a very dark rectangular patch, but often with only the ends sclerotized and in many specimens no sclerotization could be seen; pale dorsal abdominal sclerites on segments VIII, VII and sometimes VI.

Morphology (Fig. 1D): Frontal and antennal tubercles slightly developed, antennae 5 or 6 segmented, without secondary rhinaria, lightly imbricated; body surface smooth; siphunculi lightly imbricated, not to slightly swollen, constricting below the small flange; cauda triangular, rounded smoothly at tip, sometimes appearing to taper in steps corresponding to the base of the setae (Fig. 3D); usually with a small tubercle anterior to the siphunculi, located on the antesiphuncular sclerite when the latter is present, additional lateral tubercles may be found on abdominal segments II-IV, usually about half the diameter of the tubercle on V and unevenly distributed, i.e. on one side there may be tubercles on segments II-V while on the other side only a tubercle on V.

Measurements: See Table 1.

Setation (Fig. 1D) Body sparsely setate, dorsal setae on thorax and abdomen short, 0.013-0.019; on head slightly longer, 0.019-0.032 with acute tip; cauda with 5-7 setae, usually 6; subgenital plate with from 6-11 setae on posterior half and 1-4 on anterior half, most often with one pair near median line on anterior margin; first tarsal formula 3,3,2 and rarely 3,3,3; eighth tergum with 5 or 6 setae; ultimate rostral segment with 2 accessory setae.

Alate Viviparae

This form was first described by Müller and Buhr (1965) in German.

Color in life: Head and thorax black; abdomen pale yellow-green, pulverulent with irregular dusky areas on abdominal terga II-VII, presence and shape of anterior abdominal tergites variable; coxae, trochanters, distal $\frac{2}{3}$ rds of femora, tip of tibiae and all tarsi black, antennae black except for small pale region at base of III; siphunculi concolorous with body; cauda dusky.

Sclerotization pattern of mounted specimens (Fig. 5D): Pattern essentially as in living specimens, black areas in life are brown to dark brown; abdomen and siphunculi clear; dark regions of appendages concolorous with head and thorax; cauda, subanal plate, subgenital plate, lateral sclerites on abdominal segments II-VI and sclerites on abdominal terga VI-VIII, paler.

Morphology (Fig. 1B): Median frontal tubercle exceeding antennal tubercles; antennal I rugose on median surface, II-VI evenly imbricated (Fig. 2B); abdominal dorsum smooth; siphunculi lightly imbricated, not to slightly swollen, constricting below tip; cauda triangular, tip acute (Fig. 3C); lateral tubercle anterior to siphunculi on antesiphuncular sclerite, additional tubercles may be present on several of the lateral sclerites on segments II-IV.

Measurements: See Table 1.

Setation (Fig. 1B): Body sparsely setate; dorsal abdominal setae, short, 0.013-0.024, most located on dorsal abdominal sclerites; shorter on head, <0.016, all with acute tip; cauda with 5-7 setae, usually 6, located on distal half; subgenital plate with 7-12 on posterior half and 4-6 on anterior half; antesiphuncular sclerite with 1 seta, lateral sclerites on abdominal II-IV with 1-3 setae, usually 2; first tarsal formula 3,3,2, rarely 2,2,2 or 3,2,2; ultimate rostral segment with 2 accessory setae.

Oviparae

This form was originally described by Aizenberg (1935) in Russian with an English version immediately following.

Color in life: Body color varying from pale yellow to pale green, usually covered with light pulverulence. Darker areas of body as follows; vertex and front of head, antenna 1, distal part of antennal IV, distal half of base and process terminalis of last antennal segment. Dark areas on legs variable, joints always dark, fore and middle tibiae may be evenly dusky to dusky on distal third only, hind tibiae dusky over region with pseudosensoria: cauda and siphunculi dusky.

Sclerotization of mounted specimens (Fig. 4C): Dorsum of thorax and abdomen without sclerites; antennae, legs, cauda and siphunculi darker as noted for living specimens; hind legs always darker than fore and middle; cauda variable, usually with tip paler than base; siphunculi pale; prosternal furca not dark; subgenital plate often pale on anterior central section.

Morphology: Median frontal tubercle only slightly indicated; antennae with usually 5 but sometimes 6 segments, antennal I and II relatively smooth, III-V or VI evenly imbricated; body surface smooth; siphunculi very lightly imbricated, not to slightly swollen. constricted below flange; cauda triangular, more acute at tip than apterae but less so than alatae; with a small tubercle anterior to siphunculi on V, additional lateral tubercles may be on IV and sometimes III; hind tibiae swollen, region covered with pseudosensoria varying from proximal $\frac{3}{4}$ to all of hind tibiae.

Measurements: See Table 1.

Setation: Setae sparse and of similar length to that in apterae; cauda with 6-7 setae; tergum VIII with 6-9 setae; subgenital plate with 8-12 setae on anterior half and 13-22 on margin of posterior half; first tarsal formula 3,3,2; ultimate rostral segment with 1-2 accessory setae.

Males

This form was originally described by Aizenberg (1935) in Russian with an English version immediately following.

Head and pterothorax black, prothorax dark on anterior half, yellow green on posterior half; abdomen mottled dull green and yellow; siphunculi pale yellow to colorless; cauda dark; femora varying from almost all dusky to proximal half pale; tibiae pale except for dark distal tip; tarsi dark; antennae evenly dark throughout except for short pale area at base of III.

Sclerotization of mounted specimens (Fig. 4D): Head and thorax dark brown, antennal I and II concolorous with head, III and VI slightly lighter, base of III pale; coxae and trochanters dark; femora pale on proximal $\frac{1}{5}$ then gradually darkening distally; fore and middle tibiae pale on proximal $\frac{3}{4}$; hind tibiae pale on proximal $\frac{1}{5}$, dark at joint; tarsi dark; siphunculi lighter than to only slightly darker than body; cauda and genitalia darker than siphunculi; sclerites on abdominal tergum VII and VIII extending across segment, sclerites on anterior abdominal segments becoming increasingly smaller.

Morphology: Median frontal tubercle slightly exceeding antennal tubercles; antennal I and II imbricated on median surface, III-VI evenly imbricated; body surface smooth; siphunculi lightly imbricated, usually swollen, barrel shaped, with base slightly smaller than diameter just below flange; cauda short, triangular approximately as long as wide; forewings with median forked twice; hind wings with one median and one cubitus vein.

Measurements: See Table 1.

Setation: Body with relatively few setae; dorsal abdominal setae 0.016-0.026; setae on head 0.013-0.016; cauda with 6 setae in all specimens examined; eighth tergum with from 3-5 setae; antesiphuncular sclerite with 1 setae, other lateral sclerites with from 2-5 setae; first tarsal formula 3,3,2; ultimate rostral segment with 2 accessory setae.

PHENOLOGY OF *HYADAPHIS TATARICAE*

No attempt was made to ascertain precise phenologies for the morphs of *Hyadaphis tataricae*. Personal observations in Illinois and collection records from the north central states suggest the following approximate time periods for various morphs: fundatrices from early April to mid May, apterous viviparae from late April to late October, alate viviparae from early May to late October, males from late August to November (there are two records of males in central Illinois in mid July), and oviparae from mid September to mid November. The elongated time period when fundatrices were observed reflects collection records from south to north, i.e., egg hatch in central Illinois may be expected to precede egg hatch in northern Minnesota or the upper peninsula of Michigan by at least a month. The presence of sexuales is likely curtailed in the reverse manner.

ACKNOWLEDGMENTS

I would like to thank the following people for their assistance: V. F. Eastop, British Museum (Natural History), London, for supplying a list of references on *H. tataricae*; Many B. Stoetzel, Systematic Entomology Laboratory, USDA, Beltsville, Maryland, for loan of specimens of *H. foeniculi* and a copy of the original description of *H. tataricae*; George L. Godfrey and Wallace E. LaBerge, Illinois Natural History Survey, Champaign, Illinois, for their review and comments on the manuscript; and M. B. Kidd for the line drawings.

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