Three New Subspecies of Aphids from Iceland (Hem., Hom.).

By
H. L. G. Stroyan
Plant Pathology Laboratory, Harpenden, England.

1. *Hyperomyzus boerneri* Prevost, ssp. *thorsteinni* ssp. n.

The name *boerneri* has recently been given by Prevost (1959) to a species of *Hyperomyzus* Börner living on *Euphrasia* species without host alternation. Börner (1952) gave the name *euphrasiae* Walker to this species, but erroneously. Miss Prevost's account of the species is based on material collected in Austria and Switzerland. A recent collection of aphids made in Iceland includes samples close to *H. boerneri* taken on *Euphrasia frigida* in two localities. By good fortune comparable material of apterous viviparae and sexual morphs is available. It appears from this that the Icelandic population is distinct from the continental European form, at least at the subspecific level, although further investigation is certainly desirable. The following account is based on morphological comparison of Icelandic aphids with the type material, kindly made available by Mr. J. P. Doncaster of the British Museum (Natural History) and Miss C. A. Prevost.

I have pleasure in naming the subspecies after Mr. Thorsteinn Bernhardsson of Reykjavík, whose kindness in helping my colleague Mr. Prior to smooth out administrative details contributed greatly to the success of his stay in Iceland.

Apt. viv. ♀.

Similar to *H. boerneri* Prev. s. str., except as follows: Mean body length somewhat smaller, ranging from 1.49 mm. to 2.00 mm. (1.83 to 2.14 mm. in type material of

boerneri). Antennal flagellum (i. e. joints III—VI inclusive) always shorter than body, with processus terminalis 4.04 to 5.83 times as long as basal part of joint VI (6.21 to 7.33 times base of VI in types of *boerneri*); joint III with 21—37 secondary rhinaria arranged in 1—3 irregular rows all along the joint, and joint IV with 0—7 secondary rhinaria (comparable figures for *boerneri* s. str. are 11—25 on III and none on IV). Apical segment of rostrum[1]) 1.09 to 1.20 times as long as second segment of hind tarsus[2]) (1.24 to 1.35 times as long in *boerneri* s. str.). Dorsal body hairs on mid-abdominal segments very short, those on the third tergite maximally from 8 μ to 12 μ long (16 μ to 25 μ in *boerneri* s. str.).

Alate ♂.

Similar to males of *boerneri* s. str., but smaller than the two available specimens of the latter, 1.49 mm. to 1.63 mm. long. Processus terminalis 5.15 to 6.80 times as long as basal part of joint VI of antenna (8.00 to 8.13 times as long in *boerneri* s. str.). Apical segment of rostrum 0.98 to 1.19 times as long as second segment of hind tarsus (1.27 to 1.36 times as long in *boerneri* s. str.). Rhinarial numbers on joints III to V inclusive smaller than in type material of *boerneri*, but this is probably a size effect and not of taxonomic significance.

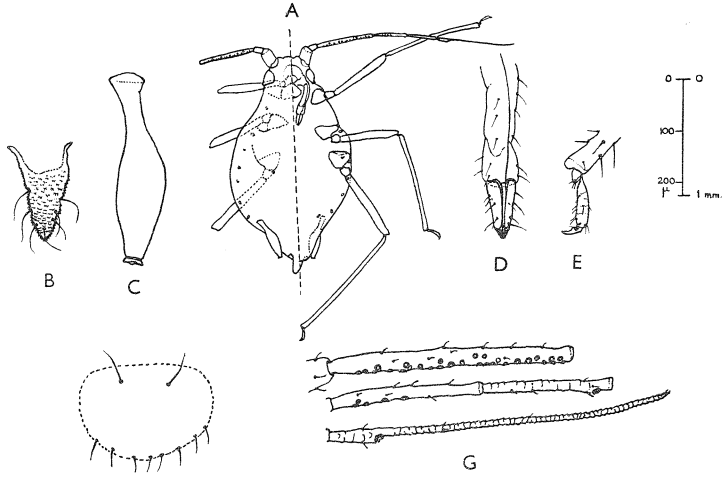
Oviparous ♀.

The single specimen available differs from oviparae of *boerneri* s. str. in the same way as the viviparous apterae. The processus terminalis is shorter relative to base of antennal joint VI (3.70 to 3.92 times as long, against 4.46 to 6.21 times as long in typical oviparae of *boerneri* s. str.); antennal joint III bears more rhinaria (18—19, as against 9—15 in *boerneri* s. str.), and joint IV bears 2—3 rhinaria, which are always absent in *boerneri* s. str.

[1]) Measured from insertion of retractor apodemes to apex.
[2]) Measured without claws and their articular sclerites.

Biology.

From the occurrence of oviparae on *Euphrasia frigida* it appears that the entire life cycle is passed on this host, as is the case in *boerneri* s. str. on *Euphrasia* species in Europe. The Icelandic host plant was identified by Mr. Geir Gígja.



Text figure 1. *Hyperomyzus boerneri* Prevost, ssp. *thorsteinni* ssp. n. A, apt. viv. ♀ (holotype); projector drawing from cleared and mounted specimen, to right-hand scale. B, detail of cauda; C, detail of siphunculus; D, detail of apical rostral segments; E, detail of hind tarsus; F, detail of subgenital plate chaetotaxy; G, detail of antenna; B—G all to left-hand scale.

Taxonomic discussion.

The status of the Icelandic form of *H. boerneri* is considered to be not more than subspecific. This opinion is based partly on the fact that *boerneri* and *thorsteinni* are apparently allopatric vicariant forms having the same biology, and partly on the fact that the characters in which they differ are already known, in a number of other cases, to differ in the same way between pairs of aphid taxa in which one is more boreal in distribution

than the other. The present instance might be held to be exactly parallel with that of *Nasonovia compositellae* (Theob.) and *N. nigra* (H. R. L.), were it not that in the latter the two forms overlap spatially in the British Isles, but are there still isolated from one another by apparent differences in the method by which they overwinter; it has proved so far impossible to rear sexual forms from British strains of *N. nigra,* even under the same conditions in which *N. compositellae* becomes entirely sexual. Therefore for the moment these two species are given full rank, though it must be suspected that the division between them is fundamentally no different from that between *Hyperomyzus boerneri* and its subspecies *thorsteinni.*

Type material.

Holotype, apterous viviparous female from *Euphrasia frigida,* Selfoss, Iceland, 5. viii. 1958 (R. N. B. Prior leg.); paratypes and morphotypes, seven apt. viv. females, five alate males and one oviparous female, same data. Additional material, one apterous viviparous female and larvae, near Reynivellir, Hvalfjörður, Iceland, 25. vii. 1958 (R. N. B. Prior leg.). The holotype is deposited in the Zoological Museum, Copenhagen. Paratypes and/or morphotypes are in the British Museum (Natural History) and in the author's collection.

Biometric data.

For measurements of specimens of *H. boerneri thorsteinni,* see Table I.

2. ***Schizaphis geijskesi* Hille Ris Lambers, ssp. *priori* ssp. n.**

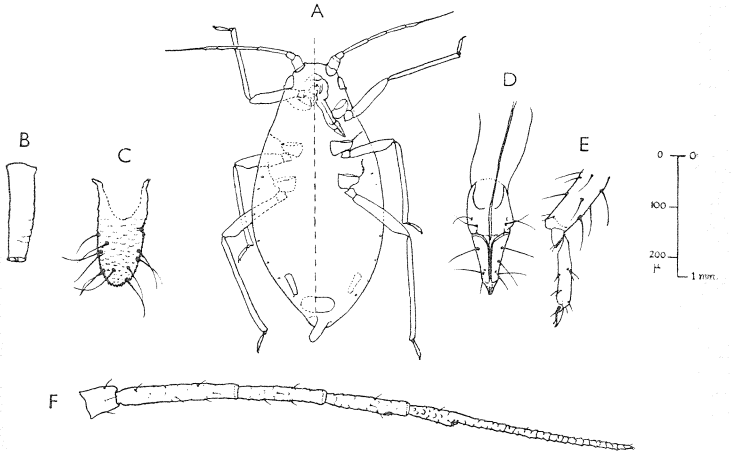
Schizaphis geijskesi was first described by Hille Ris Lambers (1939) from *Ammophila arenaria,* and a key was given in which western European species of *Schizaphis* Börner were separated. Later, the same author (1947)

Table I: Biometric data for *Hyperomyzus boerneri* Prev., ssp. *thorsteinni* ssp. n.

Morph	Body length	Ant. flag.	Joint ratios (III—VI incl.) of antennal flagellum	Siph.	Cauda	Cdl. hrs.	Ap. rost. segment		2nd seg. hd. tars.	Secondary rhinarial no.			Hair length maxima		
							Length	Sec. hrs.		III	IV	V	III	3T	8T
Apt. v. ♀	1.74	1.65	110:62:50:23+125	0.36	0.17	7	0.109	8	0.092	33/30	7/7	0/0	17	12	32
„	1.49	1.44	90:49:50:26+107	0.29	0.14	6	0.108	6	0.090	22/25	2/3	0/0	19	8	28
„	1.87	1.76	108:67:59:27+133	0.37	0.18	7	0.117	7	0.105	37/32	5/5	0/0	20	12	36
„	2.00	1.91	120:78:60:27+143	0.39	0.19	7	0.122	8	0.104	29/28	5/4	0/0	17	10	?
„	1.88	1.74	100:66:60:24+140	0.37	0.19	6	0.116	9	0.104	24/23	6/7	0/0	16	10	32
Ovip. ♀	1.56	1.39	83:52:48:26+102	0.31	0.14	6	0.106	7	0.088	19/18	3/2	0/0	16	9	36
Al. ♂	1.61	1.82	108:60:56:27+157	0.28	0.13	7	0.100	7	0.102	34/32	13/12	4/5	18	13	40
„	1.63	1.84	118:61:55:26+152	0.29	0.13	7	0.105	7	0.099	29/36	10/11	5/6	16	12	40
„	1.55	1.70	107:54:53:27+139	0.28	0.12	6	0.107	7	0.100	30/32	9/9	5/5	19	15	36
„	1.49	1.48	92:47:40:20+132	0.26	0.10	6	0.095	7	0.087	31/34	9/10	4/3	16	13	36
„	1.56	1.55	99:49:44:20+136	0.26	0.12	6	0.101	5	0.085	35/36	13/10	6/5	16	10	38

Nos. 1—4 and 6—11 from Selfoss, 5. viii. 58; No. 5 from Hvalfjörður, 25. vii. 58. No. 3 is the holotype.
All length measurements are in millimetres, except hair length maxima which are in microns.
III = Third antennal joint. 3T = Third abdominal tergite. 8T = Eighth abdominal tergite.

extended his treatment of the genus, but without adding to his account of *geijskesi.* Eastop (1956) gave a key to British species, and added a note on *geijskesi* in which he wrote "This species is easily recognised by the long ultimate rostral segment". The data given in the key show that the ultimate rostral segment of the apterae varies from 1.10 to 1.33 times as long as the second



Text figure 2. *Schizaphis geijskesi* H. R. L., ssp. *priori* ssp. n. A, apt. viv. ♀ (holotype); projector drawing from cleared and mounted specimen, to right-hand scale. B, detail of siphunculus; C, detail of cauda; D, detail of apical rostral segments; E, detail of hind tarsus; F, detail of antenna; B—F all to left-hand scale.

segment of the hind tarsus. The host is quoted as *Ammophila (Elymus) arenarius* (L.) Link, a statement which overlooks the fact that *Ammophila (Psamma)* and *Elymus* are different genera, each with a species *arenarius* or *arenaria,* and that both species of grass, the marram and the sea lyme grass, are hosts of *S. geijskesi.*

A sample of *Schizaphis* collected in Iceland in 1958 from *Elymus arenarius* was at first identified on the general facies as *S. geijskesi,* until a closer examination revealed that it fell out under the wrong half of Eastop's

key (1956). This is because all the material available has the apical rostral segment distinctly shorter than the second segment of the hind tarsus. Closer examination, and comparison with samples of *geijskesi* from various localities and from both *Ammophila* and *Elymus,* revealed that this short rostral segment was an idiosyncrasy of the Iceland sample alone, and that two other slight differences from typical *geijskesi* could be detected. Icelandic aphids have the antennae slightly longer relative to the body, there is a greater tendency towards the expression of alatiform characters (typified by such features as rudimentary lateral ocelli, secondary rhinaria on joint III and deeper pigmentation) and the body is a little broader relative to its length than in specimens of *S. geijskesi* s. str. On the basis of these differences, which are more fully tabulated below, I think it is justifiable to regard the Icelandic material as belonging to a distinct subspecies, which I have much pleasure in naming after my colleague Mr. R. N. B. Prior, whose enthusiasm in the collection of Icelandic aphids has materially increased our knowledge of the country's fauna.

Apt. viv. ♀

Characters as in *S. geijskesi* s. str., except as follows: There is, as in *S. geijskesi* s. str., a tendency to the production of intermediate or alatiform apterae, in which the antennae bear a few secondary rhinaria. In *priori,* however, the tendency is rather stronger than in the typical subspecies, joint III bearing up to 5 secondary rhinaria, and joint IV occasionally having one, while in my material of typical *geijskesi* joint III bears 0—2 only, and joint IV is apparently always without rhinaria; this character may be liable to breakdown when more material is examined, but is based on examination of specimens from six different collections of *geijskesi* s. str. Irrespective of alatiformity as measured by the presence of rhinaria, the antennae of *priori* are also longer rela-

tive to the length of the body than those of *geijskesi* s. str. The value of the ratio Body length/Antennal flagellum for normal summer apterae ranges from 2.18 to 2.52 (mean 2.30) in *priori,* and from 2.76 to 3.12 (mean 2.96) in *geijskesi* s. str. Comparable figures for alatiform apterae are 2.06 to 2.31 (mean 2.20) in *priori,* and 2.58 to 2.87 (mean 2.72) in *geijskesi* s. str. There is a slight separation in values of the ratio Body length/Maximum width, measured in specimens mounted in slides (and therefore to some extent flattened). In *geijskesi* s. str. the ratio varies from 2.10 to 2.25, with a mean of 2.15, while in *priori* the range is from 1.88 to 2.10, mean 2.00. This character is more distinctly visible than the figures suggest, but as aphids flattened on slides are liable to vary considerably in degree of flattening according to the quantity and viscosity of mountant used it is not to be trusted as a discriminant.

The principal character on which *priori* is distinguished from *geijskesi* s. str. is, as has been mentioned above, the relative proportions of the apical rostral segment and the second segment of the hind tarsus; the latter is consistently longer relative to the size of the individual, and the former both absolutely and relatively shorter, than in *geijskesi* s. str.; the ranges of variation are: *geijskesi* s. str., 0.142—0.156 mm. and 0.116—0.136 mm. respectively, *priori* 0.120—0.124 mm. and 0.132—0.149 mm. respectively (apical rostral segment given first in each case). The ratio of these two lengths given by dividing the apical rostral segment by the second hind tarsal segment varies in *priori* from 0.82 to 0.94, as against values of 1.10 to 1.24 in *geijskesi* s. str. (Eastop quotes 1.10 to 1.33 in his 1956 key to apterae).

Apt. ♂ (from three specimens).

Characters as in *S. geijskesi* s. str., except in the same respects as seen in the apterous viviparous female, i. e. in the relative proportions of (a) body length to antennal

flagellum and (b) apical rostral segment to second hind tarsal segment. The ratio B/AF for the Icelandic males is from 1.41 to 1.59, against not much less than 2 in *geijskesi* s. str.; while the A. r. s./2. h. t. ratio ranges from 0.87 to 0.90 in *priori*, against 1.17 in one male of *geijskesi* s. str. How reliable these differences are cannot be accurately assessed without seeing more extensive material of both subspecies. The range of rhinarial numbers on the antennal joints in *priori* is: III 16—21, IV 15—19, V 14—18, basal part of VI 0—3.

Biology.

The presence of apterous males may be taken as evidence that the entire cycle is passed on *Elymus*. This plant is also one of the hosts of *geijskesi* in Britain and continental Europe; but the other main host, *Ammophila arenaria*, is absent from the Iceland flora. *Elymus*, however, is widespread throughout the island, occurring even in sandy desert areas where angiosperms can hardly exist (Thoroddsen, 1914, 308); and it is used also to perform the function often discharged by *Ammophila* in Britain: the stabilisation of loose blown sand in coastal areas.

Taxonomic discussion.

As in the case of *Hyperomyzus boerneri* ssp. *borealis*, the status of the present form is probably not more than subspecific, though it might perhaps be considered not less distinct from *geijskesi* s. str. than is *Myzus (Nectarosiphon) polaris* H. R. L. from *M. (N.) certus* (Wlk.). However, in the absence of any known overlap in geographical distribution, or of any biological information on host preferences, it is clearly unwise to make *priori* a full species on the strength of a single collection. The origin of a distinct subtaxon of *geijskesi* in Iceland might well have been due to long isolation from the main centres of distribution of the species, coupled with the absence from Iceland of one of the main hosts of *geijskesi*,

Ammophila arenaria. The latter is a highly specialised plant whose leaf morphology has very probably influenced the evolution of the long, acute apical rostral segment of *Schizaphis geijskesi,* which is very different from the short, blunt or rounded segment typical of many aphids living above ground on grasses. The absence of *Ammophila* may therefore be directly linked with the evolution of a shorter, or perhaps the failure to evolve a longer, rostral segment among the Iceland population. It is noteworthy that specimens from *Elymus* in other parts of the range of *geijskesi* are not distinguishable from *Ammophila* material in the length of the apical rostral and second hind tarsal segments.

Type material.

Holotype, apterous viviparous female from *Elymus arenarius,* Akranes, Iceland, 25. vii. 1958 (R. N. B. Prior leg.); paratypes and morphotypes, 26 apterous viviparous females and 3 apterous males, same data. The holotype is deposited in the Zoological Museum, Copenhagen. Paratypes and/or morphotypes are in the British Museum (Natural History) and in the collections of Dr. D. Hille Ris Lambers, Bennekom, and the author.

Biometric data

For measurements of specimens of *S. geijskesi priori,* see Table II.

3. *Schizaphis graminum* (Rondani), ssp. *gigjai* ssp. n.

Hitherto no member of the complex now classified (Eastop, 1956) under *S. graminum* (Rond.) has been recorded from Iceland. A single collection taken near the Great Geysir in 1958 appears to belong in *graminum,* but differs from the hitherto described subspecies (*graminum* s. str., *holci* H. R. L. and *agrostis* H. R. L.) in western and southern Europe sufficiently to make it seem desirable to give it a name, at least pending op-

Table II: Biometric data for *Schizaphis geijskesi* H. R. L., ssp. *priori* ssp. n.

Morph	Body length	Ant. flag.	Joint ratios (III—VI) of antennal flagellum	Siph.	Cauda	Cdl. hrs.	Ap. rost. segm.	2nd seg. hd. tars.	Secondary rhinarial no.				Hair length maxima		
									III	IV	V	VIb	III	3T	8T
Apt. v. ♀	2.33	1.00	52:38:36:23+76	0.19	0.21	12	0.120	0.142	—	—	—	—	16	17	36
„	2.57	1.02	58:35:37:21+77	0.19	0.24	8	0.124	0.144	—	—	—	—	15	15	35
„	2.25	1.01	56:38:37:23+72	0.18	0.18	11	0.124	0.132	—	—	—	—	15	13	31
„	2.53	1.16	70:46:44:24+76	0.21	0.22	8	0.120	0.143	—	—	—	—	16	16	40
„	2.54	1.13	64:40:42:23+84	0.21	0.22	6	0.122	0.142	—	—	—	—	17	15(2T)	40
Alatifm.	2.64	1.15	66:41:44:24+82	0.23	0.24	9	0.124	0.149	1/1	0/0	0/0	0/0	16	16	36
„	2.41	1.17	(70:44):42:24+81	0.21	0.23	7	0.122	0.138	2/3	0/1	0/0	0/0	18	16(2T)	36
„	2.57	1.18	68:47:46:24+80	0.20	0.23	10	0.122	0.148	4/1	0/0	0/0	0/0	16	19	29
„	2.84	1.23	72:52:44:23+84	0.21	0.25	7	0.122	0.148	4/5	0/1	0/0	0/0	18	20	33
„	2.55	1.18	68:48:44:24+80	0.21	0.22	8	0.124	0.146	2/4	0/0	0/0	0/0	17	20	35
Apt. ♂	1.63	1.16	58:50:48:23+80	0.10	0.15	10	0.111	0.128	19/18	19/18	14/18	3/0	16	16	40
„	1.80	1.26	68:49:53:24+88	0.13	0.15	11	0.120	0.134	21/17	17/19	18/18	2/1	17	21	52
„	1.78	1.12	63:43:44:24+76	0.10	0.15	10	0.120	0.135	17/16	15/16	16/17	1/1	20	20	52

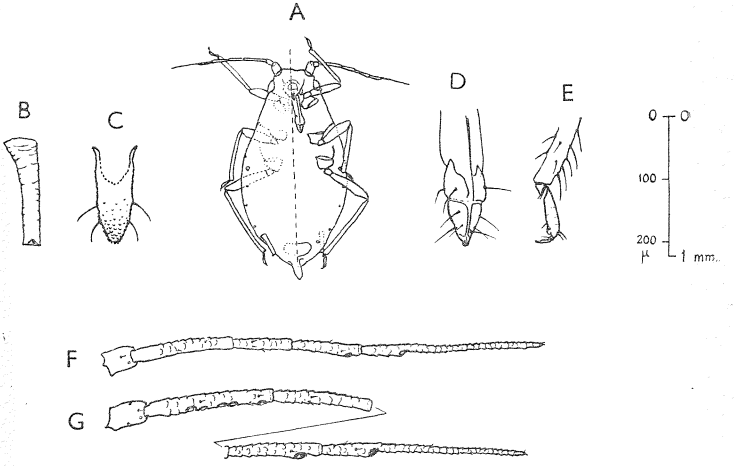
All specimens from Akranes, 25. vii. 58. No. 1 is the holotype.

Antennal joint ratios within parentheses indicate partial fusion of such joints.

The addition of (2T) after hair length maxima indicates that these were measured on the second tergite where the hairs on the third could not be measured accurately.

Other particulars as in Table I.

portunities to investigate its status more thoroughly. I take pleasure in naming the subspecies after Mr. Geir Gigja, who has contributed largely to the faunistic and floristic exploration of Iceland, and who kindly assisted my colleague Mr. R. N. B. Prior by determining plants on the occasion of the latter's collecting expedition to the country in 1958.



Text figure 3. *Schizaphis graminum* (Rond.), ssp. *gigjai* ssp. n. A, apt. viv. ♀ (holotype); projector drawing from cleared and mounted specimen, to right-hand scale. B, detail of siphunculus; C, detail of cauda; D, detail of apical rostral segments; E, detail of hind tarsus; F, detail of antenna; G, detail of antenna of al. viv. ♀; B—G all to left-hand scale.

Apt. viv. ♀.

Colour recorded as dark green, about the same as that of *Hyperomyzus rhinanthi* (Schout.); not pruinose. Body small, from 1.30 to 1.68 mm. long. Morphologically closer to sspp. *holci* and *agrostis* than to *graminum* s. str., and agreeing with them in most respects. Differing from all other subspecies in the complete absence of marginal tubercles from all abdominal segments; from *graminum* s. str. in the short rather cylindrical siphunculi with

slight or no apical constriction and expansion (a not very positive character, but rather distinctive in the material I have seen); and from *holci* and *agrostis* in the shortness of the processus terminalis (2.50 to 3.46 times as long as basal part of VI, against 3.33 to 4 times in the other two subspecies (Eastop, 1956)). In other characters there is no positive separation between *gigjai* and the other subspecies.

Al. viv. ♀ (from three specimens).

Very similar to apterae in characters used for separation of subspecies. Marginal tubercles absent. Processus terminalis 2.60 to 2.90 times as long as basal part of VI. Joint III of antennae with 3—6 secondary rhinaria in a single row; joint IV usually without rhinaria, but with a single one on the right side of one specimen. Siphunculi not or hardly longer than cauda.

Biology.

The type sample was collected from an unidentified grass growing in tufts on moist warm ground near the margin of the Great Geysir. The grass is described as rather narrow bladed, but with the blades broader than in *Festuca*. This description would appear not to exclude *Agrostis canina* or *A. stolonifera*. There were no sexual forms present in the type sample, and it is therefore not possible to be precise about the kind of cycle prevailing in the subspecies. Hille Ris Lambers (1955) has drawn attention to the survival of *Rhopalosiphum padi* (L.) in Iceland by means of a few specimens overwintering viviparously near hot springs, and this type of cycle is not excluded for *S. graminum gigjai*, although a monoecious cycle with sexuales on grasses is the normal biology of *Schizaphis graminum agrostis* and *S. g. holci*.

Taxonomic discussion.

The exact relationship of the present form to ssp. *agrostis* H. R. L. requires further investigation. *Holcus*

lanatus is apparently a very rare grass in Iceland (Stefansson, 1924), and does not in any case agree with the account given of the host of ssp. *gigjai*. The original description of *agrostis* suggests that it is a less regularly myrmecophilous subspecies than *holci*, which also increases the probability that the Icelandic aphids were near *agrostis* rather than *holci*. The colour in life of *gigjai* is apparently rather darker than that of *agrostis* as originally described. The value of the absence of marginal tubercles as a discriminant is perhaps less than one might wish, since these tubercles are very small in the other subspecies, and ssp. *gigjai* is itself a rather small form, although overlapping to some extent with small specimens of *agrostis*. The short processus terminalis of *gigjai* could be environmentally determined by the low temperatures of the Icelandic climate, but the fact that this character persists in a sample living under warm moist conditions near a geysir suggests the possibility of genetic fixation, such as is seen in *Nasonovia compositellae* (Theob.) and *N. nigra* (H. R. L.) when these two species are reared in the insectary under the same conditions of temperature (to within the limits obtainable without constant temperature equipment).

Type material.

Holotype, apterous viviparous female from unidentified grass, Great Geysir, Iceland, 4. viii. 1958 (R. N. B. Prior leg.). Paratypes and morphotypes, 24 apterous and 3 alate viviparous females, same data. The holotype is deposited in the Zoological Museum, Copenhagen. Paratypes and/or morphotypes are in the British Museum (Natural History) and in the collections of Dr. D. Hille Ris Lambers, Bennekom, Dr. F. Ossiannilsson, Uppsala, and the author.

Biometric data.

For measurements of specimens of *S. graminum gigjai* see Table III.

Table III: Biometric data for *Schizaphis graminum* (Rond.), ssp. *gigjai* ssp. n.

Morph	Body length	Ant. flag.	Joint ratios (III—VI) for antennal flagellum	Siph.	Cauda	Cdl. hrs.	Ap. rost. segm.	2nd seg. hd. tars.	Secondary rhinarial no.			Hair length maxima		
									III	IV	V	III	3T	8T
Apt. v. ♀	1.52	0.67	37:22:25:18+49	0.17	0.15	4	0.080	0.086	—	—	—	8	12	22
„	1.68	0.79	44:29:29:20+54	0.20	0.16	3	0.080	0.085	—	—	—	11	9	?
„	1.52	0.72	39:24:28:18+53	0.16	0.14	4	0.076	0.085	—	—	—	8	11	20
„	1.63	0.78	42:26:28:19+60	0.18	0.15	4	0.080	0.092	—	—	—	8	11	24
„	1.56	0.78	44:27:28:19+56	0.18	0.16	4	0.078	0.088	—	—	—	8	8	24
„	c. 1.52	0.79	46:27:27:20+56	0.18	0.15	4	0.080	0.084	—	—	—	8	9	32
„	1.46	0.68	36:28:22:17+49	0.16	0.15	4	0.073	0.085	—	—	—	8	7	14
„	1.30	0.67	38:19:24:16+52	0.15	0.13	4	0.072	0.084	—	—	—	8	9	16
„	1.51	0.71	40:26:26:18+50	0.17	0.14	5	0.078	0.088	—	—	—	7	9	17
„	1.50	0.71	42:22:26:18+51	0.17	0.14	4	0.072	0.081	—	—	—	8	8	21
Al. v. ♀	1.48	0.79	50:26:29:19+52	0.14	0.13	4	0.070	0.088	3/4	0/0	0/0	8	9	21
„	c. 1.50	0.90	56:32:36:20+58	0.14	0.13	4	0.072	0.089	6/4	0/0	0/0	8	9	24
„	1.55	0.83	46:36:33:20+52	0.13	0.13	4	0.072	0.087	4/5	1/0	0/0	8	9	20

All specimens from Great Geysir, 4. viii. 58. No. 1 is the holotype.

Antennal joint ratios as shown were measured with a $^2/_3$ inch objective. Ratios as quoted in the text were calculated from measurements under a $^1/_6$ inch objective.

Particulars of abbreviations and units of measurement as in Table I.

Acknowledgements.

I am much indebted to my colleague Mr. R. N. B. Prior for the opportunity to describe these three subspecies from the material collected by him in Iceland. Also to be thanked for very helpful information and discussion are Drs. Hille Ris Lambers, Bennekom, and F. Ossiannilsson, Uppsala; and for access to British Museum material and other help Mr. J. P. Doncaster, Dr. V. F. Eastop and Miss C. A. Prevost, all of the Department of Entomology, British Museum (Natural History).

References.

Eastop, V. F., 1956: Keys to the British species of *Schizaphis* Börner, s. str., and the description of a new species. Ent. mon. Mag., **92**, 268—70.

Hille Ris Lambers, D., 1939: On Some Western European Aphids. Zool. Meded., **22**, 79—119.

—, 1947: On Some Mainly Western European Aphids. Zool. Meded. **28**, 291—333.

—, 1955: Hemiptera 2. Aphididae. The Zoology of Iceland, **3**, Part 52a, 1—29.

Prevost, C. A., 1959: *Hyperomyzus boerneri* sp. n. Entom., **92**, 137—43, figs. A—G.

Stefánsson, S., 1924: Flóra Íslands (2nd Ed.). Kaupmannahöfn.

Thoroddsen, Th., 1914. An Account of the Physical Geography of Iceland with special reference to the Plant Life. Botany of Iceland, Part I (2), 191—343.