

## Contributions to the Fauna and Zoogeography of Northwest Iceland.

By  
**B. Fristrup.**

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In the summer of 1939 I had the opportunity to go on a study tour to Iceland with support from the Dansk Islandsk Forbunds-fond. Since the northwestern peninsula is among the regions least thoroughly investigated, notably in an entomological respect, I chose the area between Breiðifjörður and Húnaflói as the main field for collecting; and during a two months' stay there I was able to make collections both on the north and the south coast of the peninsula.

The north coast is very difficult of access, thus in many places it is only possible to proceed on foot, even the Icelandic ponies cannot find a foothold on the steep mountain paths. And, as a matter of fact, no systematic collection of insects has previously been made in these regions. The south coast, however, is much more easily accessible. Here Walker made collections in a very few localities in the western fjords in 1889 and 1890, and in 1926 Lindroth collected a considerable material (marked L.) at Staður on Reykjanes on the south coast of the peninsula and in several other localities, especially around Ísafjörður. In 1937 Brough Hynd, as a member of the "St. Andrews University Iceland Expedition", made collections in four areas: around the mouth of Skálmarfjörður and at Brjánslækur on the south coast,

at Ísafjörður, and on the Reykjanes Peninsula in Ísafjarðardjúp. It was his intention to publish these collections, but owing to the war it has been impossible to ascertain whether this has been done; on the other hand, I have been able to use a report which Brough Hynd worked out for the Zoological Museum of Copenhagen; all records quoted from this report are marked B. H. Geir Gígja has likewise made collections on the north-western peninsula, thus at Brjánslækur and in 1939 in Kaldalón and on the Reykjanes Peninsula in Ísafjarðardjúp, but I have not had access to these collections. In addition to these systematic entomological collections, a great many insects collected by zoologists who have visited the peninsula for other purposes, have been sent in to the Zoological Museum.

My travelling route in 1939 was planned in such a way that careful collections could be made in some localities both on the north and the south coast. From Ísafjörður I continued to Hesteyri and thence across the mountains to Hornbjarg, where I collected during a fairly long period. From Hornbjarg I went to Reykjafjörður near Þaralátursnes and thence on skis across Drangajökull to Bæir and onwards partly to Kaldalón and partly to Unaðsdalur. From Bæir I proceeded by boat along Ísafjarðardjúp and later returned to Ísafjörður, where I made collections in the valleys in the neighbourhood, as for instance in Tungudalur, Dagverðardalur, Engidalur, Önundarfjörður, and Hnífsdalur. Subsequently I made a trip from Ísafjörður to Látrar and Straumnes in Aðalvík on the north-western headland of the peninsula. Returning from this trip, I proceeded on horseback through all the western fjords to Hagi at Barðaströnd, where numerous collections were made; the return journey was made over land to Ísafjörður, but as far as possible by other routes. It was now late in August, and after collecting for some days around

Ísafjörður, and after making a trip to Vigur, Ögur, and Æðey, circumstances compelled me to go southward by steamer. I had the opportunity to collect for half a day around the whalers' station at Tálknafjörður, but this was the last of the collections on the peninsula.

It is the collections made on this journey which form the basis of the present paper. It is my pleasant duty to thank principally Mag. sc. S. L. Tuxen for much help in the determination of the material, and Messrs. Niels L. Wolff, civil engineer, Aug. West, managing clerk, Victor Hansen, Judge in the Supreme Court, stud. mag. Niels Haarløv, and Peder Nielsen, Librarian, for help in determining some few groups or individuals. — Species new to Iceland are marked with an asterisk.

**Apterygota:** The specimens have not yet been determined.

**Dermaptera, Blattoidea, Plecoptera, Anoplura, Thysanoptera:** No representatives were collected.

**Copeognatha:** Treated in Zool. of Iceland III, 41, 1942.

**Mallophaga:** Treated by C. Overgaard in Zool. of Iceland III, 42, 1942; and "Om Lundelus", B. Fristrup, Ent. Medd. Bd. XXII. Hft. 4. 1942.

**Neuroptera, Trichoptera:** Treated in Zool. of Iceland III, 43—44, 1942.

### Hemiptera.

*Arctocoris carinata* C. Sahlb.: Common all over the peninsula. Adults only in August.

*Salda littoralis* L.: Frequent both on the north and the south coast of the peninsula.

*Acalypta nigrina* Fall.: 1 spec. Hagi <sup>18</sup>/<sub>8</sub>—39 secured by sweeping in high grass; only known from the south coast: Staður (L.) and Brjánslækur (B. H.).

*Nysius ericae* Schill. *obscuratus* Horv.: Rafnseyri, Arnarfjörður, <sup>15</sup>/<sub>8</sub> secured by sweeping in the grass on the "Tún". Miklidalur, Patreksfjörður, <sup>10</sup>/<sub>8</sub>. Hagi; very common in meadows. Brough Hynd collected the species at Laugaból, Ísafjörður, and on Reykjanes, Ísafjarðardjúp. — New to the fauna of the north-west district.

*Cicadula sexnotata* Fall.: Very common.

The Aphides have not yet been determined, but it must be assumed that different species are found among the material, which was especially collected in the scrubs of *Betula pubescens*, but also from *Salix* sp.

*Eriococcus granulatus* Green: Not secured in 1939; only known from the south coast, Staður (L.).

*Orthezia cataphracta* Olafsen: Very common from sea-level to the highest points of the peninsula.

### Coleoptera.

Only the most remarkable finds are recorded in the list.

*Nebria Gyllenhali* Schönh. and var. *Balbi* Bon.: The variety was very common all over the peninsula, and was collected as far as Drangajökull; but the typical species was rather rare: Tungudalur, Ísafjörður; Miklidalur, Patreksfjörður; Mosvellir, Öundur-fjörður. All these localities are very dry, and in all of them the type form was found in company with the variety.

*Notiophilus aquaticus* L.: 1 spec. Aðalvík  $\frac{8}{8}$ ; 1 spec. Stekkjanes, Ísafjörður  $\frac{12}{8}$ . Laugaból and Reykjanes in Ísafjörðardjúp (B. H.).

*Notiophilus biguttatus* Fabr.: 1 spec. Aðalvík  $\frac{8}{8}$ ; 1 spec. Hagi  $\frac{18}{8}$ . — Not previously recorded from the peninsula.

*Bembidion bipunctatum* L.: 1 spec. Kaldalón  $\frac{29}{7}$ ; 1 spec. Bæir  $\frac{29}{7}$ ; 7 spec. Aðalvík  $\frac{8}{8}$ ; 12 spec. Stekkjanes, Ísafjörður  $\frac{12}{8}$ ; 2 spec. Hagi  $\frac{18}{8}$ . Previously only recorded from the south coast of the northwest district.

*Trechus rubens* Fabr.: Brjánslækur (B. H.). — New to the fauna of the northwest peninsula.

*Patrobus septentrionis* Dej.: Very common. At Hornbjarg 30 spec. were secured; 23 of these were more or less red, and thus belonged to the rufinistic variety, but of 10 spec. taken in Patreksfjörður, only 2 belonged to the rufinistic variety.

*Pterostichus nigrita* Fabr.: 1 spec. Tungudalur, Ísafjörður  $\frac{1}{8}$ ; 1 spec. Mosvellir, Öundur-fjörður  $\frac{12}{8}$ . Lindroth assumed this species to be found only at the hot springs in North Iceland, so it is of interest that none of the localities on the north-west peninsula (except Lindroth's locality at Staður) are situated near hot springs, and in 1939 the species was not secured near the spring where I tried to find it.

*Pterostichus diligens* Sturm: Only found at Reykhólar near the hot spring (L.).

*Aleochara sparsa* Heer: 1 spec. Hagi 19/8. Previously only known from Vatnsfjörður (L.).

*Crataraea suturalis* Mannh.: Not collected; previously recorded from Vatnsfjörður (L.).

*Oxyroda haemorrhoea* Mannh.: Only known from Reykhólar (L.).

*Oxyroda soror* Thoms.: Not collected; only known from Ísafjörður (L.).

*Tachinus collaris* Grav.: 1 spec. Tungudalur, Ísafjörður 2/8; 1 spec. Bildudalur 15/8 under a stone; 9 spec. Miklidalur, Patreksfjörður 18/8; 1 spec. Tálknafjörður 29/8, found on a carcase near the whale-station. — New to the fauna of the northwest peninsula, found previously in Southwest, South, and Southeast Iceland.

*Cafius xantholoma* Grav.: 1 spec. by Brjánslækur (B. H.). A very rare species, previously only known from Reykjavík (Staudinger 1857).

*Philonthus aeneus* Rossi: Only known from Staður (L.).

*Stenus carbonarius* Gyll.: 2 spec. Hagi 19/8; previously only known from the south coast of the peninsula.

\**Oxytelus Perrisi* Fauv.: 1 spec. in the meadow near the coast of Hagi 18/8. — New to the Icelandic fauna. In Europe the species occurs near the coast.

*Omalium septentrionis* Thoms.: 2 spec. Stekkjanes, Ísafjörður 12/8. Previously recorded from the south coast (L.).

*Omalium riparium* Thoms.: 1 spec. Siglúvíkurnúpur by Þaralátursnes 26/7; 1 spec. Aðalvík 8/8. Previously only found on the south coast (L.).

*Xylodromus concinnus* Marsh.: 1 spec. Hagi 20/8 in a fowlhouse. — New to the fauna of the northwest district, but common in stables in Iceland.

*Stenichnus collaris* Müll. & Kunze: Only known from Staður (L.).

*Aphodius lapponum* Gyll.: Very common all over the peninsula, found i. a. in the excrements of *Cygnus musicus* in a resting place on the coast of Þaralátursnes 26/7.

*Cercyon littoralis* Gyll.: Very common near Hagi. Brjánslækur (B. H.). — New to the fauna of the northwest peninsula.

*Cercyon melanocephalus* L.: 1 spec. Hagi 18/8. Brjánslækur and Vogur (B. H.). Previously only known from the south coast of the peninsula.

*Corticaria elongata* Gyll.: 2 spec. Horn 18/7 near the farm. —

New to the fauna of the northwest peninsula, but very characteristic of the hay-barns of Iceland.

*Scymnus Redtenbacheri* Muls. *limonii* Donis.: 6 spec. at Hagi 18-19/8. Previously only recorded from Staður (L.).

*Coccinella 11-punctata* L. *confluens* Donis.: Very common in the great meadows by Hagi. 1 spec. Reykjanes Ísafjarðardjúp (B. H.). Previously only recorded from Staður (L.).

*Malthodes mysticus* Kiesw.: 1 spec., female, Tungudalur, Ísafjörður 2/8; 1 spec., female, Hagi 18/8; both were taken by sweeping in the scrubs of *Betula pubescens*. Identification by Victor Hansen. — Only once before the species has been found in Iceland: on the Staudinger's expedition in 1857 Kalisch secured nearly 20 specimens by sweeping in *Calluna* on Þingvellir.

*Ptinus tectus* Boild.: 1 spec. creeping on a loaf in the farm of Horn 21/7; 2 spec. in eiderdown in a house on Flatey (B. H.). — New to the northwest district.

*Phaedon concinnum* Steph.: 11 spec. by sweeping in a meadow near the sea by Hagi 18-19/8. Only one living and one dead spec. found under a stone near the coast by the river at Staður (L.) were previously known from Iceland.

*Barynotus squamosus* Germ.: 7 spec. Eyrarhlíð, Ísafjörður 4/8 on a damp rock; 1 spec. Rafnseyri, Arnarfjörður 15/8 in a moist meadow; 2 spec. Bildudalur 15/8; 2 spec. Miklidalur, Patreksfjörður 16/8, and some dead spec. Tungudalur, Ísafjörður 26/8. Hitherto only known from a dead specimen from Ísafjörður (L.).

*Tropiphorus obtusus* Bonsd.: 1 spec. Rafnseyri, Arnarfjörður 15/8; 1 spec. Tálknafjörður 29/8. Previously only known from Staður (L.).

*Otiorrhynchus rugifrons* Gyll.: Not secured; hitherto only known from the South (L.).

### Lepidoptera.

All species found in the northwest peninsula are mentioned in the list.

*Euxoa islandica* Staud.: Only 2 spec. known from the peninsula, found at Staður (L.).

*Rhyacia festiva* Schiff. *conflua* Tr.: Collected at Vattarnes (B. H.) and at Staður (L.).

*Monima gothica* L.: An adult specimen of this rare Icelandic species was collected by Brough Hynd near the shore of Reykja-

nes, Ísafjarðardjúp; it is the first Icelandic record of the adult moth. Lindroth found a larva at Staður.

*Cerapteryx graminis* L.: 7 adult spec. were secured at Bæir <sup>29</sup>/<sub>7</sub>, flying in the sun in the morning, but I saw none in the afternoon; 1 spec. Unaðsdalur <sup>30</sup>/<sub>7</sub>. Larvae were found by Reykja fjörður near Paralátursnes on the dunes near the sea <sup>24</sup>/<sub>7</sub>; 2 larvae Eyrarhlið, Ísafjörður <sup>4</sup>/<sub>8</sub>; and 1 larva Miklidalur, Patreksfjörður <sup>16</sup>/<sub>8</sub>. The size of the adults varies greatly, the seven specimens have a wing-spread of from 21 mm. to 30 mm.

*Crymodes exulis* Lef.: 1 spec. Fannalagafjall <sup>16</sup>/<sub>7</sub>; 1 spec. Bæjafjall <sup>28</sup>/<sub>7</sub>; 1 spec. Bæjahlið <sup>29</sup>/<sub>7</sub>; and 2 spec. Tungudalur, Ísafjörður <sup>1</sup>/<sub>8</sub> and <sup>2</sup>/<sub>8</sub>.

*Syngrapha interrogationis* L.: 1 spec. Bæjafjall <sup>28</sup>/<sub>7</sub> and 2 spec. Tungudalur, Ísafjörður <sup>1</sup>/<sub>8</sub>. — New to the fauna of the peninsula.

*Phytometra gamma* L.: Collected by Brough Hynd near "Borg" <sup>16</sup>/<sub>7</sub> (1 Ex.). The locality is unknown to me, but Brough Hynd says: "Lindroth only records three other Icelandic specimens and remarks 'Probably introduced and at least not indigenous to Iceland'. Its occurrence in the northwest would seem to negative this statement".

*Cidaria citrata* L. (*immanata* Hw.): Very common.

*Cidaria munitata* Hb. One of the commonest Geometrides of Iceland, and collected several times on the peninsula; Brough Hynd found it to be the commonest Geometrid moth in the district; but in 1939 the species was only collected in three localities: 65 spec. near Hornbjarg <sup>17</sup>/<sub>7</sub>; 2 spec. Hnífsdalur, Ísafjörður <sup>4</sup>/<sub>8</sub>; and 1 spec. Tungudalur, Ísafjörður <sup>12</sup>/<sub>8</sub>. But the moth was very common in 1939, at any rate in the eastern part of Iceland, so the rather scanty distribution in the northwest must be peculiar to that year, possibly the distribution has some connection with the unusually short and cold summer of 1938.

*Cidaria caesiata* Schiff.: Found in several localities from Hagi in the south to Horn in the north, being especially characteristic of the great stone plateaus in the central part, and by Reykja fjörður near Paralátursnes it was the commonest species found. Previously only recorded from Staður (L.).

*Cidaria hastata* L. *thulearia* H.-S.: Characteristic of the birch scrubs in Iceland, and previously recorded from the peninsula; but in 1939 no adult specimen was secured. Larvae of the species were found in Tungudalur, Ísafjörður <sup>2</sup>/<sub>8</sub>.

*Cidaria alternata* Müll. (*sociata* Bkh.): Collected by Önundarfjörður (Walker) and Vattarnes (B. H.).

*Cidaria furcata* Thnbg. (*sordidata* Fabr.): Found in several localities from south to north.

*Eupithecia satyrata* Hb.: 1 spec. taken in a meadow in Unaðsdalur <sup>30</sup>/<sub>7</sub>. — New to the fauna of the peninsula.

*Crambus pascuellus* L.: 3 spec. Tungudalur, Ísafjörður <sup>2-3</sup>/<sub>8</sub>. Previously recorded from the peninsula (Walker and B. H.).

*Salebria fusca* Haw.: Not secured in 1939; but previously recorded; Brough Hynd found the species to be fairly common on the plateau.

\**Acalla maccana* Tr.: This very rare species was found in a Vaccinium-heath near Hagi; only once before recorded from Iceland, Staudinger found some larvae near Þingvellir in 1856.

*Acalla ferrugana* Tr.: One specimen of this species, new to the Icelandic fauna, was taken by sweeping near Hagi <sup>18</sup>/<sub>8</sub> in the same locality as the preceding species.

*Cnephasia osseana* Scop.: Very common all over the peninsula.

*Epiblema solandriana* L.: Only one specimen of this species found in a garden near Akureyri, was previously known from Iceland; Lindroth assumed that the species was not indigenous but had been introduced into Iceland. In 1939 7 specimens were secured near Hagi <sup>19</sup>/<sub>8</sub>; the species must be a native Icelandic species, since no gardens or cultures were found near the farm.

*Endrosis lacteella* Schiff.: 1 spec. Horn <sup>19</sup>/<sub>7</sub>. — Not previously found on the northwest peninsula.

*Coleophora algidella* Z.: Very common in the western fjords from Arnarfjörður to Hagi; especially in the meadows near the sea by Hagi. The specimens were taken on *Luzula* and *Juncus*. — New to the fauna of the peninsula.

*Plutella senilella* Zett.: Found on a large stone plain near Paralátursnes <sup>24</sup>/<sub>7</sub>.

## Diptera.

All identified species from the northwest peninsula are mentioned in the list.

*Dicranomyia didyma* Meig.: 1 spec. Tungudalur, Ísafjörður <sup>2</sup>/<sub>8</sub>. — New to the fauna of the northwest district.

*Dicranomyia autumnalis* Stæg.: Very common on the peninsula and collected from several localities: Kaldalón <sup>29</sup>/<sub>7</sub>; Tungu-



dalur, Ísafjörður <sup>20</sup>/<sub>8</sub>; Mosvellir, Öundurarfjörður <sup>12</sup>/<sub>8</sub>; Aðalvík <sup>8</sup>/<sub>8</sub>; Hagi <sup>18-19</sup>/<sub>8</sub>. Larvae were very common on hygropetric stones at Aðalvík, living in the surface-film like the larvae of Orphnephila. One specimen from Kaldalón was infected with the Gamasid mite *Episeius* sp. — Not previously recorded from this part of Iceland.

*Ormosia fascipennis* Zett.: 4 spec. Horn <sup>10-21</sup>/<sub>7</sub>; and 1 spec. Reykjafjörður by Þaralátursnes <sup>24</sup>/<sub>7</sub>.

According to a letter from Peder Nielsen, the *Ormosia Holtedahli* Alex. mentioned by Lindroth and determined by Peder Nielsen is actually this species. *Ormosia Holtedahli* should therefore be excluded from the Icelandic fauna.

*Ormosia uncinatus* Meig.: One spec. Kaldalón <sup>20</sup>/<sub>7</sub>.

*Helobia hybrida* Meig.: 6 spec. Kaldalón <sup>20</sup>/<sub>7</sub>. — New to the northwest peninsula.

*Trichocera maculipennis* Meig.: Only recorded once before from the northwest district; Bær, Hrutafjörður (L.); in 1939 I found one spec. at Þaralátursnes by Reykjafjörður <sup>24</sup>/<sub>7</sub>.

*Rhaphidolabis exclusa* Walk.?: Collected at Þaralátursnes <sup>27</sup>/<sub>7</sub>, 1 spec. The specimen is of a very peculiar appearance, being of a very pale yellowish colour (determined by Peder Nielsen, Silkeborg). Previously recorded from Arnarfjörður.

*Prionocera turcica* Fabr.: Only one spec., Unaðsdalur <sup>30</sup>/<sub>7</sub>.

*Tipula rufina* Meig.: 2 spec. Kaldalón <sup>20</sup>/<sub>7</sub>.

*Simulium vittatum* Zett.: 2 spec. caught in Kaldalón <sup>20</sup>/<sub>7</sub>. Brough Hynd found the species at Álftamýri and between Brjánslækur and Fossá (his specimens have been determined by Dr. F. W. Edwards).

*Simulium latipes* Meig.: The commonest species in my material. It was collected from Bæir <sup>20</sup>/<sub>7</sub>; Unaðsdalur <sup>30</sup>/<sub>7</sub>; Tungudalur, Ísafjörður <sup>28</sup>/<sub>8</sub>; Mosvellir, Öundurarfjörður <sup>12</sup>/<sub>8</sub>; Miklidalur, Patreksfjörður <sup>10</sup>/<sub>8</sub>. Brough Hynd found the species in Álftamýri (det. F. W. Edwards). Some specimens of *Simulium* and larvae preserved in alcohol have not been identified.

Several specimens of *Ceratopogonidae* and *Chironomidae* were secured, but they have not been identified with the exception of:

*Macropelobia nebulosa* Meig.: 1 spec. on Þaralátursnes <sup>27</sup>/<sub>7</sub> and 1 spec. in Unaðsdalur <sup>30</sup>/<sub>7</sub>. — Hitherto not recorded from this part of Iceland.

*Scatopse notata* L.: Not found. Previously recorded from Staður and Bær, Hrutafjörður (L.).

*Bibio pomonae* Fabr.: Very common all over the peninsula, and seen during the whole of my ski-trip across Dranga-Jökull. Larvae were found by Ísafjörður in August.

*Neosciara* sp.: Some specimens were collected from a few localities. — New to the fauna of the northwest peninsula.

*Atalanta stagnalis* Hal. (*Clinocera* s.): Collected at Horn on the "Tún" 21/7; at Þaralátursnes by Reykjavíkjörður 24/7; Mosvellir, Öundurarfjörður 12/8; and 2 spec. from Aðalvík 8/8. — Not previously recorded from the northwest peninsula.

*Dolichopus plumipes* Scop.: Very common all over the peninsula.

*Platychirus albimanus* Fabr. Collected at Bæir 20/7, 1 spec.; 2 spec. Tungudalur, Ísafjörður 2/8; and 2 spec. Hagi 18/8. Previously only recorded from Staður (L).

\**Platychirus islandicus* n. sp. ♀. Head robust and broad, two first segments of antennae black, third segment greyish-brown on the upper side, lighter to darker reddish-yellow on the under side. Seta slightly longer than antenna. Profile of face as in *Pl. peltatus* Meig. Frons black, shining with a metallic lustre, epistome with dense silvery hairs, central knob well developed, black, metallic. Hind margin of head with well developed, close set, silvery hairs. Sides of thorax with long silvery hairs, dorsal shield highly metallic, shining from entirely black to greenish and golden purple. Abdomen dull black with light greyish hairs, which are long at the sides, but very short and sparse in the middle. Apex shining. Second to fifth segment with a couple of rectangular blue spots, which extend on either side over about one-third of the breadth of the segment. On the second segments the blue spots may be more or less distinct and may be difficult to distinguish. On the third to fifth segments the spots may be reddish-yellow, but if so, they have in most cases a bluish hue. Front and middle legs with close-set yellow hairs, femora with black basal part about half as long as the segment, the apical part light yellow, densely hairy; knees yellow, tibia darker towards the apical part, but covered by light yellow hairs. Tarsi very light. Hind legs black with reddish-yellow knees, hairs with a yellowish tint, which especially on the under side of the tarsus gives the foot a golden hue. Length 10—11 mm. Eight ♀♀ collected in Tungudalur, Ísafjörður, Aug. 2nd.

This syrphide, which, as far as I can see, has not been described before, is very closely related to *Pl. peltatus*, but is more

vigorous and larger than the latter, and likewise differs somewhat in colour and markings from *Pl. peltatus islandicus* Ringd.

*Platychirus clypeatus* Meig.: 2 spec. were secured in Rafnseyri, Arnarfjörður <sup>15</sup>/<sub>8</sub>; and 1 spec. in Unaðsdalur <sup>30</sup>/<sub>7</sub>. Hitherto only known from Ísafjörður (L.).

*Syrphus torvus* O. S.: 2 spec. Unaðsdalur <sup>30</sup>/<sub>7</sub>; and 2 spec. Tungudalur, Ísafjörður <sup>2</sup>/<sub>8</sub>. Previously recorded from Bær, Hrutafjörður (L.).

*Sphaerophoria scripta* L. *strigata* Stæg.: 3 spec. were found in Unaðsdalur <sup>30</sup>/<sub>7</sub>. — New to the fauna of the northwest peninsula.

*Dilophus pendulus* L.: 1 spec. Kaldalón <sup>29</sup>/<sub>7</sub> and 3 spec. Aðalvík <sup>8</sup>/<sub>8</sub>. Previously recorded from Bær, Hrutafjörður (L.).

*Cinacia lappona* L.: 1 spec. Unaðsdalur <sup>30</sup>/<sub>7</sub>; 1 spec. Tungudalur, Ísafjörður <sup>2</sup>/<sub>8</sub>. Brough Hynd found the species to be common by Vattarnes. Previously only recorded from Staður.

*Scopeuma stercorarium* L.: Very common.

*Scopeuma squalidum* Meig.: Common both in the south and the north. — New to the fauna of the northwest peninsula.

*Scopeuma litoreum* Fall.: Common.

*Scopeuma villipes* Zett.: Found in several places from south to north.

*Fucomyia frigida* Fabr. (incl. *parvula* Hal.): 1 spec. Horn, the "Tún" <sup>21</sup>/<sub>7</sub>; 1 spec. Reykjafjörður near Þaralátursnes <sup>24</sup>/<sub>7</sub>; 1 spec. Siglúvirkurnúpur <sup>28</sup>/<sub>7</sub>; 1 spec. Tungudalur, Ísafjörður <sup>26</sup>/<sub>8</sub>; 1 spec. Miklidalur, Patreksfjörður <sup>16</sup>/<sub>8</sub>; 4 spec. Rafnseyri <sup>15</sup>/<sub>8</sub>.

\**Coelopa pilipes* Hal.: 2 spec. in Reykjafjörður near Þaralátursnes <sup>24</sup>/<sub>7</sub>. — New to the Icelandic fauna.

*Borborus nitidus* Meig. (*nigriceps* Rond.): 2 spec. at Horn, the "Tún" <sup>20</sup>/<sub>7</sub>. — Previously only recorded from South and Southeast Iceland.

*Borborus niger* Meig.: Only 2 specimens were found, Horn <sup>20</sup>/<sub>7</sub>. — New to the northwest peninsula. One of the specimens was infected with a parasitic Gamasid.

*Borborus equinus* Fall.: 4 spec. Horn <sup>19</sup>/<sub>7</sub>; 1 spec. Rafnseyri <sup>15</sup>/<sub>8</sub>; 3 spec. Miklidalur, Patreksfjörður <sup>16</sup>/<sub>8</sub>. Previously only recorded from the southern part of the peninsula.

*Helomyza serrata* L.: Not found. Previously recorded from Bær, Hrutafjörður.

*Tetanocera robusta* Loew (*ferruginea* Fall.): Very common all over the peninsula. — Curiously enough this species has only been recorded from the southern and southeastern parts of Iceland. Some of the specimens were infected with parasitic Gamasids.

*Piophilha vulgaris* Fall. (*affinis* Meig.): 1 spec. Miklidalur, Patreksfjörður 1<sup>6</sup>/<sub>8</sub>.

*Scatella sibilans* Hal.: 1 spec. at Hagi 1<sup>8</sup>/<sub>8</sub>. — New to the fauna of the northwest peninsula.

*Scatella stagnalis* Fall.: 2 spec. Mosvellir, Önundarfjörður 1<sup>2</sup>/<sub>8</sub>; 3 spec. Miklidalur, Patreksfjörður 1<sup>6</sup>/<sub>8</sub>; 1 spec. Hagi 1<sup>9</sup>/<sub>8</sub>. — Not found in the northwest before.

*Phormia terrae-novae* R. D. (*coerulea* R. D.): 1 spec. Horn 2<sup>1</sup>/<sub>7</sub>; and 1 spec. Tálknafjörður 2<sup>9</sup>/<sub>8</sub>. — New to the fauna of the northwest peninsula.

*Calliphora erythrocephala* Meig.: Not found. Previously recorded from Bær, Hrítafjörður (L.).

*Calliphora uralensis* Villen.: The commonest Tachinid.

*Cynomyia mortuorum* L.: 1 spec. Horn 2<sup>0</sup>/<sub>7</sub>; 1 spec. Tálknafjörður 2<sup>9</sup>/<sub>8</sub>; and 1 spec. Hagi 1<sup>8</sup>/<sub>8</sub>.

The *Anthomyiidae* have not been identified, but several species are found in the material.

*Melophagus ovinus* L. Brough Hynd collected this parasitic fly in sheep's wool at Brjánslækur.

### Hymenoptera.

Only one species: *Bombus jonellus* Kirby has been identified; this species was very common on the peninsula, only in one locality, Horn, the species seems to be lacking.

Regarding the zoogeographical distribution of the fauna it may be stated that all species mentioned in the lists belong to one of four different types of distribution found on the peninsula. As the material of the different orders is very heterogeneous, only the Hemiptera, the Coleoptera, and<sup>1</sup> the Lepidoptera will be dealt with below.

I. Species distributed all over the peninsula. All these species are very common in the whole of Iceland. Four species of Hemiptera (57.1 % of the total

fauna) belong to this group, viz.: *Arctocoris carinata* C. Sahlb.; *Salda littoralis* L.; *Cicadula sexnotata* Fall.; and *Orthezia cataphracta* Olafsen.

Twenty-eight species of Coleoptera (37.8 %) are distributed all over the district: *Nebria Gyllenhali* Schönh.; *Balbii* Bon.; *Notiophilus biguttatus* Fabr.; *N. bipunctatum* L.; *Bembidion Grapei* Gyll.; *Patrobis septentrionis* Dej.; *Calathus melanocephalus* L.; *Pterostichus adstrictus* Eschsch.; *Amara Quenseli* Schönh.; *Dichirotrichus cognatus* Gyll.; *Hydroporus nigrita* Fabr.; *Agabus Solieri* Aubé; *Colymbetes dolabratus* Payk. *groenlandicus* Aubé; *Atheta graminicola* Grav.; *A. islandica* Kr.; *Quedius mesomelinus* Marsh.; *Q. boops* Grav.; *Omalium rivulare* Payk.; *O. riparium* Thoms.; *O. excavatum* Steph.; *Aphodius lapponum* Gyll.; *Cryptophagus scanicus* L.; *Enicmus minutus* L.; *Atomaria apicalis* Er.; *Byrrhus fasciatus* Forst.; *Cryptohypnus riparius* Fabr.; *Ptinus tectus* Boild.; *Otiorrhynchus arcticus* O. Fabr.; *O. dubius* Ström.

Nine species of Lepidoptera (39.1 %) are of this type: *Cerapteryx graminis* L.; *Crymodes exulis* Lef.; *Syngrapha interrogationis* L.; *Cidaria citrata* L.; *C. munitata* Hb.; *C. caesiata* Schiff.; *C. furcata* Thnbg.; *Cnephasia osseana* Scop.; *Plutella senilella* Zett.

II. Species only found on the north coast and absent south of Ísafjarðardjúp. Only very few insects show this type of distribution; no Hemiptera are among them, but two Coleoptera (2.7 %) are only found in the north: *Notiophilus aquaticus* L. and *Corticaria elongata* Gyll. The first-mentioned species is a really northern species in the Icelandic fauna, so it represents a north-eastern fauna-element in the north-west peninsula; the second species is synanthropic and of no zoogeographical interest. Of the Lepidoptera one species (4.4 %), *Endrosis lacteella* Schiff., is only found on Horn; but this also is a synanthropic species.

III. Species found in the south and extending to the south coast of Ísafjarðardjúp. Of the Hemiptera only one (14.3 %), *Nysius ericae* Schill. *obscuratus* Horv., shows this type of distribution, but 31 species (41.9 %) of Coleoptera belong to this group, viz.: *Nebria Gyllenhali* Schönh.; *Pterostichus nigrita* Fabr.; *Aleochara sparsa* Heer; *Crataraea suturalis* Mannh.; *Oxygoda islandica* Kr.; *O. soror* Thoms.; *Sipalia circellaris* Grav.; *Atheta excellens* Kr.; *A. analis* Grav.; *A. trinotata* Kr.; *A. vestita* Grav.; *A. Lindrothi* Bernh.; *A. arenicola* Thoms.; *A. atramentaria* Gyll.; *A. fungi* Grav.; *Tachinus collaris* Grav.; *Quediüs fulvicollis* Steph.; *Creophilus maxillosus* L.; *Philonthus sordidus* Grav.; *Ph. trossulus* Grav.; *Lesteva longelytrata* Goeze; *Acidota crenata* Fabr.; *Micralymma marinum* Ström; *Omaliüm laeviusculum* Gyll.; *O. septentrionis* Thoms.; *Cercyon melanocephalus* L.; *Cryptophagus pilosus* Gyll.; *Coccinella 11-punctata* L. *confluens* Donis.; *Malthodes mysticus* Kiesw.; *Barynotus squamosus* Germ.; *Tropiphorus obtusus* Boisd.

Of the Lepidoptera seven species (30.4 %) belong to this type of distribution: *Rhyacia festiva* Schiff. *conflua* Tr.; *Monima gothica* L.; *Cidaria hastata* L. *thulearia* H.-S.; *C. alternata* Müll.; *Eupithecia satyrata* Hb.; *Crambus pascuellus* L.; *Salebria fusca* Haw.

Most of the species are widely distributed all over Iceland; but some of the beetles, *Omaliüm septentrionis*, *Malthodes mysticus*, have a southwestern distribution, and the species *Pterostichus nigrita*, *Sipalia circellaris*, *Tachinus collaris*, *Barynotus squamosus*, have a west-south-eastern distribution in Iceland.

IV. Species with a decidedly southern distribution, only occurring on the south coast. Representatives of this type are found within all orders, thus two species of Hemiptera (28.5 %): *Acalypta nigrina* and *Eriococcus granulatus*. 13 species of beetles (17.6 %): *Trechus rubens* Fabr.; *Pterostichus diligens* Sturm; *Oxy-*

*poda haemorrhoea* Mannh.; *Cafius xantholoma* Grav.; *Philonthus aeneus* Rossi; *Stenus carbonarius* Gyll.; *Oxytelus Perrisi* Fauv.; *Xylodromus concinnus* Marsh.; *Stenichnus collaris* Müll. & Kunze; *Cercyon littoralis* Gyll.; *Scymnus Redtenbacheri* Muls. *limonii* Donis.; *Phaedon concinnum* Steph.; *Otiorrhynchus rugifrons* Gyll. Among the Lepidoptera six species (26.1 %): *Euxoa islandica* Staud.; *Phytometra gamma* L.?; *Acalla maccana* Tr.; *A. ferrugana* Tr.; *Epiblema solandriana* L.; *Coleophora algidella* Z.

Some of the species, such as *Oxytelus Perrisi*, *Phaedon concinnum*, and *Acalla ferrugana*, have only been found in a single or a few localities on the south coast of the north-west peninsula and not in any other locality in Iceland. Other species, as for instance *Trechus rubens*, *Cafius xantholoma*, and *Acalla maccana*, are south-western species, and the moth *Epiblema solandriana* was previously only known from Akureyri. The rest of the species are more or less widely distributed in Iceland.

There are several reasons why the fauna falls into four distributional groups; in his thesis for the doctorate Lindroth<sup>1)</sup> has tried to explain this exclusively on the basis of climatic and historical factors. It is a well known fact that the north coast of the peninsula is washed by the cold arctic water coming from East Greenland, which especially in the winter carries large masses of ice along the coast, and the melting of these ice masses causes the summer to be much colder on the north coast than on the south coast, which is washed by the warm Atlantic water from a branch of the Gulf Stream. Thus there is a considerable difference in the temperature and the duration of the summer between the north and the south (this is distinctly shown by the isotherm chart published in Lindroth's paper). This difference is smaller

<sup>1)</sup> C. H. Lindroth, Die Insektenfauna Islands und ihre Probleme. Zool. Bidr. fr. Uppsala 13, 1931.

now than in earlier times owing to the amelioration of the climate which is taking place at present in arctic and subarctic parts of the northern hemisphere.

Lindroth uses these climatic differences to try to find a relation between the distribution of a number of Coleoptera and the temperature in "den beiden kritischen Monaten" (i. e. the mean temperature for April and October), as the stages of the Coleoptera which are most sensitive to the temperature, viz. the transition stages from larva to pupa and from pupa to imago, occur precisely at these seasons. It turns out that several of the finds mentioned above are derived from localities situated outside the earlier known limits of distribution, for instance that of *Tachinus collaris* and *Notiophilus biguttatus* (Lindroth p. 473, Fig. 37, and p. 475, Fig. 38), which in Lindroth's time seemed to follow the 2° isotherm for "d. b. k. Monate". The same applies more or less to the species *Philonthus trossulus*, *Sipalia circellaris*, *Stenichmus collaris*, and *Barynotus squamosus*. *Pterostichus nigrita*, which was found in several localities, was regarded by Lindroth as a relict in its northern localities; however, after it has been ascertained that the species has a continuous distribution on the north-western peninsula without being associated with the hot springs, this interpretation must be abandoned.

Thus Lindroth's temperature relations are not entirely in accordance with the new finds. The observations are ordinary meteorological observations, no microclimatic observations being known from Iceland. Moreover, the mean values taken together play an inconsiderable role, the absolute extremes being of far greater importance. Especially in regions like those treated here it is of vital importance for the survival of the species that it should have an opportunity of reproduction every year; as the possibilities of dispersion are exceedingly small for many species, a single unfavourable period



may exclude the species for long periods, even though for the time being there was nothing to prevent it from sustaining life there. In trying to find the relation between the distribution and the isotherm curves, it must therefore be taken into consideration whether conditions have remained unaltered during a long space of time; notably during the amelioration of the climate in recent years (thus on the peninsula in question the ice of the Gláma Jökull has melted entirely, and the Drangajökull has receded considerably) the temperatures registered during a short period will be higher than and different from those which have actually been of importance in the present area of distribution of the species.

The difference in climate is no doubt of much less importance than other factors which likewise vary from north to south, the ecological conditions of the north and the south coast differing greatly owing to the morphology of the terrain of the peninsula.

The north coast of the peninsula is steep, the mountain at Cape Horn rising almost perpendicularly from the Denmark Strait (534 m), and the face is only broken by very narrow ledges, where petrels and guillemots have their nests. No beach is found, for the sea comes in to the very foot of the cliffs, and the spray of the surf is thrown far up the face of the cliffs, creating good conditions for the algal vegetation which extends far up the mountain sides. Thus the conditions for insect life are poor. Towards Hornvík the landscape is different, the slope being more gradual; Hornbjarg itself is not covered with snow in the summer, whereas farther towards the interior of the creek the mountains are snow-clad all the summer (cf. Fig. 2). Here there is a narrow beach (I), made up of black basaltic sands and large stones, there is a strong tide, and among the vigorous algal vegetation of *Laminaria*, *Fucus*, and *Rhodophyceae* we find the first land arthro-

pod, the mite *Molgus littoralis*, which will tolerate flooding during high-tide. As a rule the narrow beach is bare, but occasionally it may be covered by a scattered growth of *Mertensia maritima* and *Honchenya peploides*, and there the first insects are met with, *Salda littoralis*, which is of rather roving habits and accordingly may be found also outside the actual patches of vegetation; more permanent are the species *Otiorrhynchus arcticus*

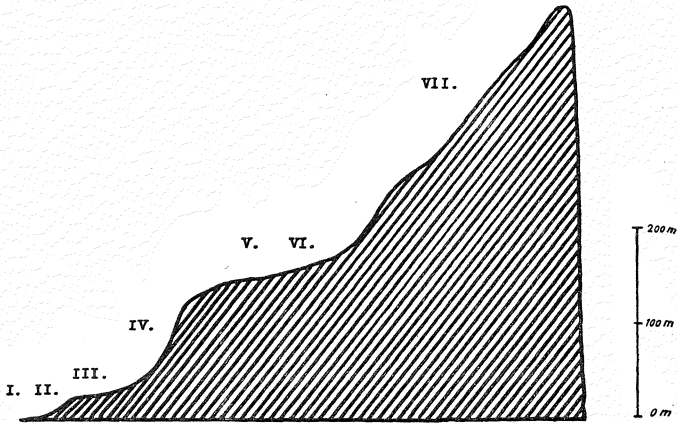


Diagram of Cape Horn. 1:12500.

I, Beach. II, Slope. III, "Tún". IV, Slope. V, Mountain plateau. VI, Pool. VII, Mountain wall.

and *Orthezia cataphracta*, the former of which lives essentially on leaves of *Honchenya*, while the latter is present wherever there are plant roots to suck. In addition *Omalium riparium* is found, as also some few Diptera, chiefly *Scopeuma litoreum*. In other places, where the thaw water streams have deposited large masses of sand, there are bare sand flats, on which only *Carex chordoriza* grows; consequently there is hardly anything to bind the sand, and heavy sand storms frequently rage; thus, at Hornvík, every day at 4 or 5 p. m., the change of the monsoon caused large clouds of sand

or dust to rise, which buried all living things on the sand flats of Háumelar; the only species actually indigenous here was *Otiorrhynchus arcticus*, which will tolerate being completely buried.

At a higher level there follows a slope (II), which is not particularly high, but generally fairly steep and consequently rather dry. Here the commonest Icelandic ground-beetles dominate, viz. *Nebria Gyllenhali Balbii*, *Patrobis septentrionis*, and *Calathus melanocephalus*, the huge common *Orthezia*, and some few Apterygotes; all these species are very common in other places also, but because other species are lacking, they dominate in this zone.

Above this slope there follows in inhabited places the part of the Icelandic landscape actually marked by cultivation, consisting of grassy fields, the "Tún" (III). The fauna occurring here is chiefly composed of species which are closely associated with man and domestic animals; this applies to the species *Aphodius lapponum*, *Enicmus minutus*, *Corticaria elongata*, *Cryptophagus scanicus*, *Quedius mesomelinus*, *Q. boops*, *Atheta graminicola*, *Cerapteryx graminis*, *Cidaria citrata*, *Scopeuma stercorarium*, *Tetanocera robusta*, *Calliphora uralensis*, and various *Anthomyidae*. In addition to these species, several of the species found in the surrounding country are met with, so that according to Icelandic conditions a very rich life may occur on the "Tún".

Above the "Tún" there follows a second slope (IV), which is very steep and very dry; only after rainfall are a number of wild streams found, which carry all loose-lying stones down the mountain side. Here the same species occur as were found in zone II, but in the lower part of the zone we find in addition a somewhat more sparse selection of the species of the "Tún" as also *Cryptohypnus riparius*, but gradually as the dryness makes itself more felt, both the number of species



Fig. 1. The beach at Horn with Hornbjarg. Diagram I is at right angles to the shore off the settlement.

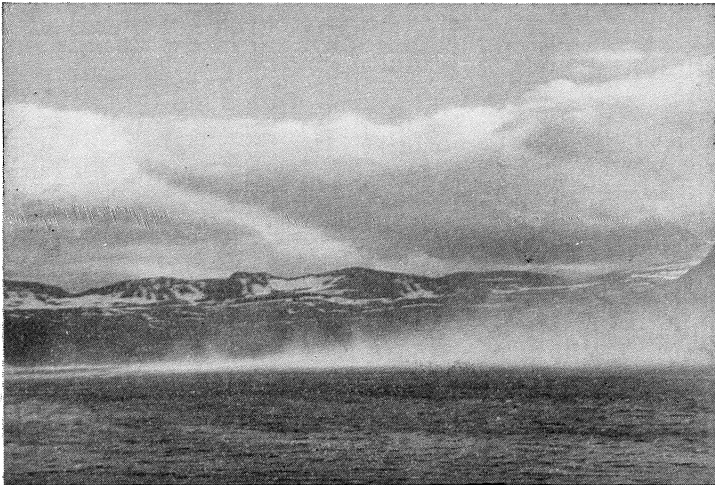


Fig. 2. Sandflat near Háumelar at the head of Hornvik. With a sandstorm coming on.



Fig. 3. Stony field in the interior highland.

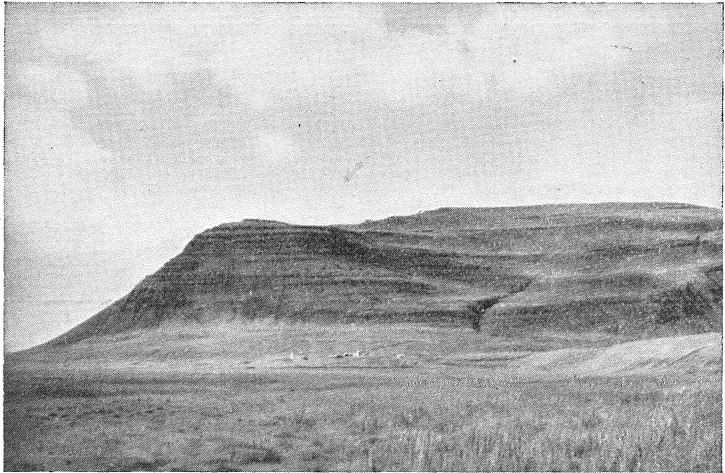


Fig. 4. Hagi, Barðaströnd. Dry meadow. Diagram II runs lengthwise down the valley.

and the number of individuals increase. On this slope *Cidaria munitata* was also found; in spite of earlier records, this was the only locality in which it was common, but, on the other hand, the imagines were observed in every rock fissure.

Above the slope, at a height of about two hundred metres, there follows a plateau (V), which is very moist and in many places has lakes and pools (VI) overgrown with *Eriophorum Scheuchzeri* and *E. latifolium*. As in all other parts of the peninsula, the pools are here characterised by four species: *Agabus Solieri*, *Colymbetes dolabratus*, *Hydroporus nigrita*, and *Arctocorisa carinata*, all of which were present in large numbers; in addition *Limnophilus griseus* was seen to fly near the pools. In the drier parts of the plateau various species of *Bembidion* and *Dichirostrichus cognatus* are met with.

At Horn the mountain rises steeply above this plateau to an altitude of several hundred metres, after which it descends abruptly towards the sea, leaving only a very narrow crest at the top. This mountain slope (VII) is very dry in most places, and is characterised by the species *Otiorrhynchus arcticus*, *Patrobus*, *Calathus*, and *Orthezia cataphracta*.

The interior of the peninsula is in most places occupied by large, flat, stony fields made up of pre-glacial lava (cf. Fig. 3). These flats are nearly bare, only crustaceous lichens such as *Gyrophora cylindrica* var. *Delisei* and *Lecanora gelida* are of common occurrence, but among the stone polygons (almost everywhere the frost has given rise to the formation of polygon soil) so much soil may be found that *Silene acaulis* and *Salix herbacea* may take root; if so, *Orthezia* is common, occurring in company with *Otiorrhynchus arcticus*. Otherwise the fauna is extremely sparse; only some Microlepidoptera such as *Plutella senilella* and *Salebria fusca* have their actual biotope here; and *Cnephasia osseana* is likewise

of common occurrence. This species, it is true, occurs in all regions, but only here does it appear as a character animal; the same applies in part to *Cidaria caesiata*. Besides the permanent species, a number of good fliers are met with more or less casually over these barren territories, e. g. the Noctuids, *Bibio pomonae* and *Limnophilus griseus*; thus, both *Crymodes exulis* and *Syngrapha interrogationis* were caught on the large thawed-up areas abounding on Drangajökull. On the Drangajökull itself *Limnophilus griseus* and *Bibio pomonae* were observed flying low across the snow, or creeping on the ice, along the whole route; thus, to several species the ascending air currents will be of importance for their dispersion from one valley to the other. In a few places very shallow-watered pools are found, which are, as a rule, extremely poor in species; the insects occurring there are chiefly *Agabus* and *Hydroporus* and the larvae of *Apatania arctica* Kol., and in addition *Apus glacialis* is characteristic, but only the two last-named species may occur in quantity.

The south coast of the peninsula has quite a different appearance from that of the north coast. The mountains are rounded and do not reach the sea, but leave space for a broad beach and wide meadows, which extend along the rivers far into the broad valleys (cf. Fig. 4).

As at Horn, the beach (I) is made up of black basaltic sands, and it is the same species, *Otiorrhynchus arcticus* and *Salda littoralis*, which dominate in company with *Omalium laeviusculum*, *Micralymma marinum*, and various Diptera such as *Scopeuma litoreum* and *Sc. vilipes*. Inside the beach comes a littoral meadow (II), which has no corresponding biotope on the north coast; here we find species peculiar to the south coast, viz. *Oxytelus Perrisi* and *Phaedon concinnum*, both of which are typical littoral meadow species in Europe. Both in

Iceland and in other places *Phaedon* is associated with *Cochlearia*. Other common species are *Scopeuma stercorarium* and *Dolichopus plumipes*. Inside the littoral meadow there follows a dry meadow (III), the chief plants of which are *Festuca rubra*, *Juncus*, and *Luzula*. According to Icelandic conditions, this meadow is exceedingly luxuriant, containing a number of species specific to the south coast of the peninsula, viz.: *Scymnus Redtenbacheri limonii*, *Coccinella undecimpunctata confluens*, *Nysius ericae groenlandicus*, *Acalypta nigrina*, and *Coleophora algidella*, all of which are very common and the most

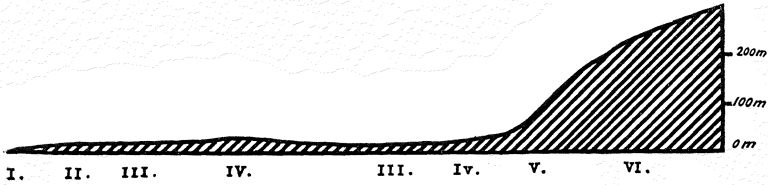


Diagram of Hagi, Barðaströnd. 1:25000.

I, Beach. II, Littoral meadow. III, Dry meadow. IV, Birch scrub. V, *Vaccinium* heath. VI, Mountain slope.

frequent species in this area. In addition the commonly occurring species *Cicadula sexnotata*, *Cryptohypnus riparius*, *Orthezia*, and *Otiorrhynchus arcticus*, are present.

The dry meadow passes into a low birch scrub of *Betula pubescens* (IV), which occurs on the low crest of a hill and thus lies like an island in the dry meadow. Birch scrubs are found in several places on the peninsula in sheltered valleys, for instance in Tungudalur, Kaldalón, Unaðsdalur, and in several of the southern west fjords. The fauna is characterised by a number of species which either feed on the leaves or on the herbivorous species. Of such species mention may be made of *Boriomyia betulina*, *Cidaria hastata thulearia*, *Platychirus albimanus*, *Syrphus torvus*, and a number of not more closely determined *Aphidae*. The same species



dominated here, too, but in addition *Malthodes mysticus* and *Epiblema solandriana* occurred, both of which are very rare Icelandic species, which have only been collected once before.

Farther inland the dry meadow appears again, passing into birch scrub at the foot of the mountain. Above the scrub there follows a *Vaccinium* heath (V) with *Vaccinium myrtillus* and *uliginosus*, which form very tall and luxuriant growths. Besides some few *Aphidae*, three species of moth flew about, viz. *Cidaria caesiata*, *Acalla ferrugana*, and *Acalla maccana*, the latter two, like the afore-mentioned ones from the birch scrub, are very rare or only known from the south coast of the northwest peninsula. Above the *Vaccinium* heath the mountain slope (VI) continues; it is rather dry and characterised by a number of the common species such as *Byrrhus fasciatus*, *Cryptohypnus riparius*, *Otiorrhynchus arcticus*, *O. dubius*, *Nebria Gyllenhali*, *Calathus melanocephalus*, *Patrobis septentrionis*, and *Orthezia cataphracta*.

It will be evident from the above that the conditions offered to the fauna on the north and the south coast differ, not only owing to bioclimatic factors, but to a much greater extent on account of the structure of the land and the resulting different edaphic conditions, as is, indeed, manifested in the different communities found in the north and in the south. This difference is the cause of the zoogeographical distribution of the fauna of the peninsula into the above-mentioned four groups.

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#### Dansk Oversigt.

Med Støtte af Dansk Islandsk Forbunds-fond har jeg i Sommeren 1939 foretaget entomologiske Indsamlinger paa Islands nordvestlige Halvø. Det indsamlede Materiale viser sammenholdt med Literaturopgivelser, at Halvøen i zoogeografisk Henseende kan deles i fire Grupper: 1: Arter udbredt over hele Halvøen;

2: Arter, der kun findes paa Nordkysten; 3: Arter, der findes paa Sydkysten og op til Ísafjarðardjúp; 4: Arter, der kun kendes fra Sydkysten. Denne Gruppering har sin Aarsag dels i klimatiske Forskelle mellem Nord- og Sydkysten, idet de nordligere Egne paa Grund af kolde Havstrømme har et langt køligere Klima end Sydkysten, og dels, og væsentligst, i terrainmorfologiske Forskelle og de dermed forbundne økologiske Forskelle. Nordkysten er en Stejlkyst, der kun giver sparsomme Muligheder for Insektfauna, medens Sydkysten er aaben med afrundede Former og brede Dale med frodige Engstrækninger og veludviklede Birkekrat og Vacciniumheder, der saaledes betinger et rigt Insektliv. Følgen er da, at ikke blot findes en lang Række Arter kun paa Halvøens Sydkyst, men de enkelte Biotopers Sammensætning er forskellig fra Nord til Syd.

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