

## The Autumn Immigration of the Greenland Redpoll (*Carduelis flammea rostrata* (Coues)) into Scotland

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(Med et dansk Resumé: Grønlandsk Gråsisken (*Carduelis flammea rostrata* (Coues)) som træk-gæst i Skotland).

### Occurrence.

In most years dark-plumaged redpolls, lacking clear white in the rump and with heavy dark striations on the flanks, appear on passage at Fair Isle. Their plumage characteristics, coupled with their relatively large size and robust, bulging bills (see measurements in Table 1), identify them as belonging to either the Greenland low-arctic race *Carduelis flammea rostrata* (Coues) or the Iceland population *C. f. islandica* (Hantzsch), a question which is further discussed below. They are normally few in number and usually in small parties of 3–6 birds, but in some years fairly considerable “irruptions” of these delightful birds take place. The great majority are young of the year.

TABLE 1.

*Measurements (mm) of Greenland Redpolls trapped at Fair Isle.*

Mål (i mm) af Grønlandske Gråsiskener fangede på Fair Isle.

	Wing (chord) <i>vinge,</i> <i>strakt</i>	Tail <i>Næb</i>	Bill (from skull) <i>Næb,</i> <i>fra kranie</i>	Tarsus <i>Mellemfod</i>
<i>Range</i> Spredning . . . . .	73–82	55–66	9–12	16–20
<i>Majority</i> Størstedelen . . . . .	79–81	60–64	9–11	17–18
<i>Average</i> Gennemsnit . . . . .	79	61	10 <sup>1</sup> / <sub>2</sub>	17 <sup>1</sup> / <sub>2</sub>
<i>Number</i> Antal . . . . .	28	25	26	28

The first invasion of which we have any record belongs to the autumn of 1905, when they appeared at Fair Isle (between the Shetland and Orkney Islands) on September 17th, became numerous by 25th, and further increased on October 2nd (CLARKE 1912). There were smaller numbers in 1908, birds being present from September 9th until November 7th, and a few in October 1911 and later years. No further large-scale influx is recorded until 1925, when numbers arrived on August 28th together with Lapland Buntings (*Calcarius lapponicus*

(L.), and were scattered over the isle in small parties totalling some 30–40 birds (STENHOUSE 1926). Since the foundation of the Fair Isle Bird Observatory in 1948 a few have been recorded each year (except 1953, when they were virtually absent), with a fair number in September 1954 (WILLIAMSON 1954), and an “irruption” on the scale of 1905 and 1925 in the present year. Spring migrants at Fair Isle are always relatively rare.

### Taxonomic.

SALOMONSEN (1951) has suggested that these immigrants to the British Isles are probably east Greenland birds, many of which apparently winter in Iceland; but he adds that many of the British records may be due to confusion with the Iceland breeding form. This may be so, and indeed TICEHURST (1929) considered that the Fair Isle specimens in the Royal Scottish Museum “match well Icelandic autumn examples except one, obtained by WILSON on September 15th 1913, which is quite like the Greenland birds, being decidedly darker on the upper parts.” He thought that 2 from St. Kilda (September 1911) and one from the Flannan Isles (October 1905) were true *rostrata*. WITHERBY (1944), however, refused to accept this opinion and was not satisfied that *islandica* is an acceptable race.

There seems no doubt that the Icelandic population, as has been emphasised by SALOMONSEN, is a “hybrid swarm” with extreme types closely matching *rostrata* on the one hand (dark-mantled birds with only a little lightening on the rump) and the high-arctic *hornemanni* on the other (paler specimens with greyish fringes and the rump often clear white). Between the two extremes there is close intergradation. I have had an opportunity of comparing the specimens in the Royal Scottish Museum and Col. R. Meinertzhagen’s collection with a fine representative autumn series of Iceland birds kindly lent to me by the Universitetets Zoologiske Museum, Copenhagen. Only 2 birds of the many from west Scottish localities come anywhere near the pale terminal of the Icelandic cline, and my field experience at Fair Isle shows that such pale birds are extremely rare. Other specimens are indeterminate and might

be from either country, but the great majority are very dark above, usually without the greyish-white mantle streaks which characterise most Icelandic birds; and the darkest *islandica* in the Copenhagen series (and also in Col. Meinertzhagen's collection) were cleaner-looking, less infuscated with buff on breast and flanks. This very variable Icelandic population constitutes a rather poor race, as is so often the case in zones of secondary intergradation, but it is an important group in that it clearly links the low-arctic *rostrata* and high-arctic *hornemanni*, just as that other poorly-defined form *Carduelis f. pallescens* (HOMMEYER) unites *flammea* and *exilipes*. I have no hesitation in following SALOMONSEN (1928, 1951) in regarding "*flammea*" and "*hornemanni*" as conspecific.

#### Migration.

On the taxonomic evidence I do not doubt that the majority of these immigrants to Fair Isle and western Scotland are true *rostrata* originating in southern Greenland. The synoptic background of several of the small movements which have taken place in the past few years is strongly suggestive of direct immigration from that country in the north-west to west airflow of depressions moving eastwards across Iceland from the Denmark Strait (WILLIAMSON 1953, 1954). With such inclement weather passing over Iceland, bringing gale force winds and rain, the emigration of local birds would be inhibited; whereas the low pressure has usually cleared the southern part of Greenland, leaving the Greenland anticyclone in control, with clear and comparatively calm weather suitable for the departure of Passerines. It has now been shown that the fairly extensive immigration of Lapland Buntings into Scotland and northern Ireland has its source in southern Greenland, the majority of the birds showing the characters of *C. l. subcalcaratus* (BREHM), and arriving under similar weather conditions (WILLIAMSON and DAVIS 1956); and the influxes of these redpolls frequently coincide with the arrival of parties of this species and the Greenland Wheatear *Oenanthe oenanthe leucorrhoea* (Gmelin).

A number of redpoll arrivals, in common with the other species mentioned, also take place into Fair Isle when there is col or anticyclonic weather to the north. These movements,

usually of small parties travelling together, represent the onward passage of birds which had previously reached Iceland, Faeroe or Shetland at an earlier stage of their migration. It is generally possible to distinguish between these two kinds of movement, direct immigration and onward passage, by the weights of examples captured in the traps.

### 1955 Invasion.

The immigration in autumn 1955 began at the end of August, as with the "irruption" of 1925. The first bird was seen at Fair Isle on August 26th, and one was trapped at 14.4 gm. next day. It is possible that these early arrivals travelled direct from Greenland roughly along Latitude  $60^{\circ}$  N. in the westerly air-flow (force 2-3) of the northern side of an anticyclone situated in the Atlantic to the west of Ireland. There was also a bird at Fair Isle on 29th, and on that day 3 flew aboard a vessel in which Col. R. MEINERTZHAGEN was returning from Greenland, at Lat.  $60^{\circ}$  N., Long.  $23^{\circ}30'$  W. (marked  $\times$  in fig. 1). There had been a change in the synoptic situation with the development of a low in the Denmark Strait, giving a cyclonic westerly wind between Lats.  $55^{\circ}$ - $60^{\circ}$  N. (fig. 1). The 3 birds were last seen on the ship at 4 p.m. on 30th in position Lat.  $60^{\circ}$  N., Long.  $12^{\circ}30'$  W., with the wind still westerly at force 4.

There were 6 birds at Fair Isle on September 1st, and one trapped at 10.7 gm. is so light that it seems almost certain to have made the long journey from Greenland in the complementary westerly airstream of the low (now centred near Jan Mayen) and the ridge of an Azores high (fig. 2). The number increased to 11 on 2nd and continued at about this figure until 5th. Examples trapped on 3rd, 5th and 6th show increased weights ranging from 15.5 to 18.6 gm., and probably represent onward passage of the end-of-August arrivals. At Fair Isle 13 were present in a small flock for a few days following September 10th.

The invasion was apparently much more marked at the island of Foula than at Fair Isle: Foula is the westernmost island of Shetland, 45 miles (70 km) N.NW. of Fair Isle, and therefore the first landfall for birds approaching Shetland from the direction of Greenland. There were said to be many birds during the first week of September and they were still present when

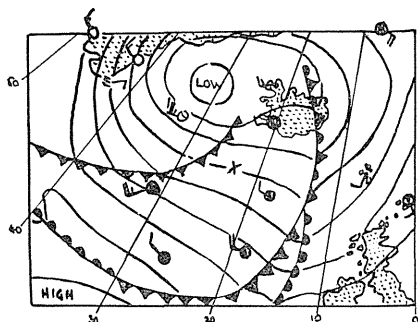


Fig. 1.

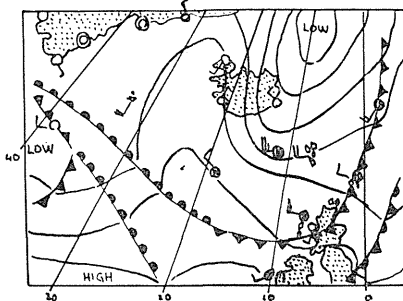


Fig. 2.

Typical down-wind tracks from south-east Greenland to northern Scotland.  
Fig. 1, cyclonic, August 29th 1955. Fig. 2, anticyclonic, August 31st 1955.

*Typiske betingelser for direkte træk fra S.Ø. Grønland til N. Skotland.*

*Fig. 1. Højtryk 29. august 1955. Fig. 2. Lavtryk, 31. august 1955.*

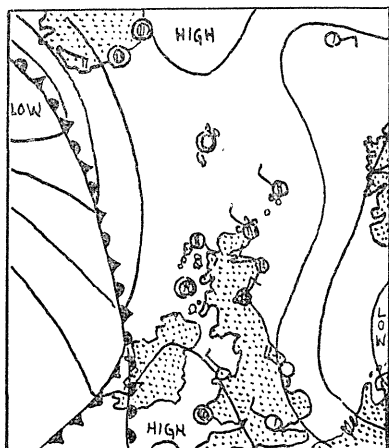


Fig. 3.

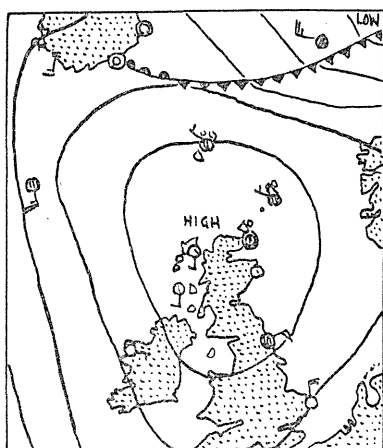


Fig. 4.

Typical "onward passage" conditions between Iceland and northern Scotland.  
Fig. 3, col weather, September 16th 1955. Fig. 4, anticyclone, November 15th 1955.

*Typiske betingelser for etapevis træk mellem Island og N. Skotland.*

*Fig. 3. Højtryk 16. september 1955. Fig. 4. Lavtryk, 15. november 1955.*

C. K. MYLNE arrived there on 14th. He saw a flock of 30 on September 16th at the south end, "continually on the move and mixing with Twites" (*Carduelis flavirostris bensonorum* Meinertzhagen), and a flock of "at least 100" was reported by islanders the same day, dispersing in the evening after having stripped all the docken seeds (*Rumex* sp.) in the gardens. There was typical col weather on 16th, with calm air in south-east Iceland and Faeroe and a light north-west wind in Shetland, and 2 birds trapped at Fair Isle that day were of good weights, 17.5 and 18.2 gm. (fig. 3). Only one was seen on 18th but at least 8 were present next day, while a flock of about 30 stayed at Foula.

Also in mid-September a number of these birds entered north-western Ireland. Major R. F. RUTLEDGE was informed by Mr. O'SULLIVAN, the Head Lightkeeper at Tory Island (Co. Donegal), that a fall of redpolls took place on September 12th and 13th. This was probably a direct cyclonic arrival, since the weather-charts for the 11th-12th show a calm area in south-western Greenland and a force 5-6 westerly airstream thence to the British Isles, in the southern segment of a depression centred on Iceland. Mr. O'SULLIVAN adds that in a long service with the Irish Lights he has twice previously encountered redpolls, once in his 7 years at Blackrock off the coast of Co. Mayo, and once in 5 years at Inishtrahull, so the 1955 movement was in unusual strength. REDMAN (1955) records seeing *rostrata* at Tory Island in September 1954.

Numbers at Foula were somewhat reduced by 23rd, and only 4 remained at Fair Isle on 24th. A light bird trapped on 25th, 12.9 gm., may have come direct from Greenland in the westerly airstream of a low moving across Iceland. At the end of the month 3 were recorded, and the capture of another very light bird on 29th at 10.7 gm. again suggests direct flight from Greenland on a force 7-8 cyclonic wind of a depression with its centre near Angmagssalik. Others at rather low weights were trapped on 30th.

There were single birds only on a few dates in early October, and none from 5th until 2 arrived on 17th, followed by 3 next day. This was probably onward passage, as conditions for migrating were excellent locally with the ridge of an Azores

TABLE 2.  
*Gains in Weight shown by Migrant Greenland Redpolls.*  
 Vægtforøgelse hos trækkende Grønlandske Gråsiskener.

Date <i>Dato</i>		Interval (days) <i>Interval i dage</i>	Weight (gm.) <i>Vægt i g</i>		Gain % <i>Forøgelse i %</i>
1st capture <i>Fangst</i>	Recapture <i>Genfangst</i>		1st capture <i>Ved fangsten</i>	Recapture <i>ved genfangsten</i>	
21.x.1954	25.x.1954	4	17.09	17.26	1
27.viii.55	5.ix.55	9	14.40	20.23	40
6.ix.55	16.ix.55	10	13.80	16.55	20
6.ix.55	23.ix.55	17	16.35	20.46	25
16.ix.55	17.ix.55	1	16.55	14.61	—
29.ix.55	1.x.55	2	10.70	11.77	1

high extending north to Faeroe. In all likelihood there were still quite a number of birds among the islands, and it is interesting to note that of 2 redpolls caught at a lighted window at Uyeasound, Unst (the most northerly isle of Shetland), on the night of October 12th, one had been ringed at Foula, 55 miles (85 km) south-west, on September 15th by C. K. MYLNE. There was more onward passage through Fair Isle on October 24th, when a party of 4 trapped had the good average weight of 17.9 gm. Small groups of redpolls visited JOHN PETERSON'S garden at Lerwick, Shetland Mainland, about this time, and on 31st a further party of 8 appeared at Fair Isle in clear anti-cyclonic weather.

When I left the island on November 11th there had been no redpolls for several days, but on 12th I saw a flock of 7 flying over fields at Spiggie in the south of Shetland Mainland. A flock of 30 reached Fair Isle on November 15th, again onward passage in anticyclonic weather (fig. 4), and a party of 5 passed through on December 2nd (James A. Stout, *pers. comm.*).

#### Weight Records.

The 37 weight records obtained at Fair Isle Bird Observatory for migrant *rostrata* (all autumn, and practically all young birds), show a very wide range from 10.7 to 21.2 gm., with an average of 16.3 gm. Table 2 gives records of birds retrapped during an "off-passage" period at the isle, and it will be seen that over a period of 9–10 days a considerable gain in weight is achieved, pointing to about 20 gm. as a normal weight in

this subspecies. The fact that recuperation appears to be slow-starting suggests a physiological basis for the weight-loss, such as would be due to the exhaustion of fat reserves during a long overseas flight.

#### Acknowledgements.

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#### DANSK RESUMÉ

##### Grønlandsk Gråsiskan (*Carduelis flammea rostrata* (Coues)) som trækgæst i Skotland.

1. Den Grønlandske Gråsiskan (*Carduelis flammea rostrata* (Coues)) ses regelmæssigt på træk gennem Fair Isle, nogle år er den fåtallig, andre år temmelig almindelig. I enkelte år, som f. eks. i 1905, 1925 og 1955, kan der forekomme store invasioner.

2. En sammenligning af de på Fair Isle og andre lokaliteter i det nordlige og vestlige Skotland indsamlede fugle viser, at størstedelen af eksemplarerne stemmer overens med *rostrata*, og de er derfor sikkert trækfugle fra lavarktisk Grønland og tilhører ikke den islandske hybrid-population *islandica*, som man undertiden har formodet.

3. Studiet af vejrforholdene under flere trækperioder synes at vise, at fuglene kommer til den nordlige del af de Britiske Øer med et lavtryk (ofte i selskab med Grønlandsk Stenpikker (*Oenanthe oe. leucorroha*) og Grønlandsk Laplandsværpling (*Calcarius lapponicus subcalcaratus*), idet de flyver på vestsiden og sydsiden af lavtryk, der bevæger sig fra Danmarksstrædet henover Island. Etapevis trækkende flokke (som har holdt rast på Island eller Færøerne) viser sig også på Fair Isle, når der findes et højtryk fra Shetlandsøerne mod nord til Færøerne. Sådanne fugle har en højere gennemsnitsvægt end de direkte trækkende fugle.

4. Der gives en oversigt over efterårsinvasionen i 1955 med bemærkninger om vejrforholdene og fuglenes vægt ved ankomsten. Ligesom i 1925 begyndte trækket i slutningen af august og fortsatte



hele efteråret igennem til december. Foula, beliggende 45 miles NNV for Fair Isle, den første landkending for de grønlandske trækfugle, havde det største antal Gråsiskener, idet der kom over 100 først i september. Den største flok, som passerede Fair Isle, talte 30 fugle, der sås d. 15. nov.

5. Vægten af fuglene svinger mellem 10.70 og 21.18 g (gennemsnit af 37 fugle 16.29 g). Genfangst af trækfugle (tabel 2) viser en betydelig tiltagen i vægt, idet de i løbet af 9–10 dage kommer op på den normale vægt på ca. 20 g.

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