

Redpolls: a review of their taxonomy, identification and British status

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420. Hornemann's Arctic Redpoll, Cunningsburgh, Shetland, October 2009.

Abstract For taxonomists and birdwatchers alike, redpolls have long posed complex problems. This paper reviews our progress in solving those problems. It summarises the history and nature of the taxonomic debates and, for each form, describes its currently understood identification criteria and British status, both historical and present-day. A particular effort is made to disentangle some of the complexities surrounding Iceland's redpolls, notably its intriguing pale birds. Finally, some currently unresolved questions are posed.

Introduction

Britain is arguably the best place in the world to see redpolls *Carduelis cabaret/flammea/hornemanni*. Nowhere else provides such opportunities to see all the recognised forms. This happy situation brings with it some difficulties, however. Redpolls are both a delight and a frustration, charming and charismatic but also an infamously thorny

problem for both the taxonomist and the birdwatcher.

For the taxonomist, the proliferation of morphologically distinct but genetically similar forms provides a fascinating case study in speciation and the application of species concepts. There is, however, no consensus on the number of forms, let alone how these might be grouped into species. For

the birdwatcher, identification is frustrated by extensive plumage variation within, and by overlapping characters between, those forms. Identifying and recording redpolls accurately is a challenge, not helped by the birds' nomadic habits, erratic and unpredictable irruptions, rapid changes in population size and distribution, and a propensity for extralimital breeding. We still do not even know which redpoll forms breed in Britain.

The problems are therefore complex and, inevitably, our progress in solving them has been slow and halting. A brief historical review is therefore useful in providing a context and rationale for this paper.

A long and winding road

In the post-Witherby era the most intractable redpoll problem was considered to be the separation of Arctic Redpoll *C. hornemanni* from Mealy Redpoll *C. f. flammea*. However, even after the formation of the British Birds Rarities Committee (BBRC) in 1959, the identification of Arctic Redpoll continued to suffer from a major confidence crisis that persisted into the 1980s, driven mainly by debates over the bird's taxonomic position and therefore its diagnosability. As recently as 1977, BBRC qualified the few non-trapped acceptances as 'sight records', an 'accolade' granted to no other species.

In the 1980s, a consensus at last emerged over the taxonomic position of Arctic Redpoll (Molau 1985; Knox 1988) and over the following decade a series of influxes enabled a number of the long-standing myths about its identification to be banished (Lansdown *et al.* 1991; Stoddart 1991; Votier *et al.* 2000). Finally, the credibility barrier was broken and it was acknowledged that typical examples could, after all, be identified in the field. These episodes of rapid learning confirmed its status as a regular though erratic late-autumn and winter visitor, occurring mainly during periodic influxes of Mealy Redpolls.

The problems are not over, however. In the wake of the record influx of 1995/96, Coues's Arctic Redpoll *C. h. exilipes* was removed from the BBRC list at the end of 2005. Claims are now considered by local and county records committees but a run of poor

winters for this form has left the latest generation of observers and record assessors lacking in recent experience.

Nor are today's problems confined to the identification of Arctic Redpoll. The split of Lesser Redpoll *C. cabaret* (Knox *et al.* 2001) triggered a taxonomic debate that rumbles on to this day and also brought into focus the problem of separating some Lesser and Mealy Redpolls. In much of Britain, Mealy Redpoll is sufficiently rare to warrant careful documentation whereas in the Northern Isles the same is true for Lesser Redpoll.

In the late 1990s, the spotlight also fell on the taxonomic and identification problems associated with Greenland *C. f. rostrata* and Iceland Redpolls *C. f. islandica*, the latter a curious 'aggregate form' long sidelined in the convenient belief (or hope?) that it was resident in Iceland and could therefore be ignored. Two papers in particular (Riddington & Votier 1997 and Reid & Riddington 1998) helped to further our understanding of the taxonomy, appearance and status of these forms. Today, after a series of influxes beginning in 2003, we have also had to refresh our understanding of Hornemann's Arctic Redpoll *C. h. hornemanni*, a form previously neglected in the quest to separate Arctic and Mealy Redpolls.

The occurrence of these northwestern forms in northern Scotland is now well established but they remain unfamiliar to observers farther south. Yet, since there have been recent records of all these forms in southern England, we clearly have another new and potentially troublesome set of problems for observers and records committees.

Continuing challenges

It is now clear that all the redpoll forms should be 'on the radar' anywhere in Britain but we are still not well equipped to identify them. For example, *The Collins Guide* (Svensson *et al.* 2009) – the market-leading and most widely used field guide – makes only a fleeting reference to Greenland Redpoll and none whatsoever to Icelandic birds or to Hornemann's Arctic Redpoll, and none of these forms is illustrated.

Given that taxonomic difficulties remain

unresolved and that the number of identification challenges seems to be increasing, it is perhaps not surprising that a defeatist attitude sometimes prevails. Redpolls are, however, demonstrably not 'all the same' and calling for them to be lumped will not make the problems go away! The morphological, vocal and ecological differentiation between the forms is real – they are in most cases 'diagnosably different' – and, whatever their taxonomic status, we should still be attempting to identify and record them.

It is hoped that this paper will provide both encouragement and a useful resource for observers and records committees. It reviews our knowledge of the taxonomy, identification and British status of all the redpoll forms and highlights a number of areas where questions remain. A particular effort is made to disentangle some of the complexities surrounding Iceland's redpolls and to present as much information as possible on its intriguing pale birds.

The paper is based on an extensive review of the literature but also on many years of personal field experience, notably contact with well over a hundred Coues's Arctic Redpolls in Britain and others in Canada, Finland and Norway. It also draws on experience of Iceland and Hornemann's Arctic Redpolls in Iceland, and of Iceland, Greenland and Hornemann's Arctic Redpolls in Britain.

Taxonomy

Six redpoll forms are recognised by most authors, as follows (and using the English names given in Witherby *et al.* 1940):

Lesser Redpoll *C. cabaret*, which breeds in alpine central Europe, Britain & Ireland and around the southern North Sea, and is now spreading into southern Scandinavia and the southern Baltic region. In winter it withdraws from the more northerly or high-altitude parts of the range. It has been introduced to New Zealand, from where it has colonised a number of South Pacific islands.

Mealy Redpoll *C. (f.) flammea*, which breeds in the boreal zone across the whole of northern continental Europe, Asia and North

America. It winters to the south in all three continents but is highly irruptive and nomadic.

Greenland Redpoll *C. (f.) rostrata*, which breeds mainly in southern Greenland (where it is spreading north) and on Baffin Island and reportedly in northern Labrador. Most move southwest into eastern Canada and the northeastern USA but some move southeast to northwest Europe.

Iceland Redpoll *C. (f.) islandica*, which breeds in Iceland, where formerly considered resident, but there is increasing evidence that some wander southeast to Britain.

Hornemann's Arctic Redpoll *C. (h.) hornemanni*, which breeds in east and northwest Greenland and on Axel Heiberg, Baffin, Bylot, Devon and Ellesmere Islands. Many winter at high latitudes but some move southwest into eastern Canada and the northeastern USA and southeast to northwest Europe.

Coues's Arctic Redpoll *C. (h.) exilipes*, which breeds in the tundra zone across the whole of northern Europe, Asia and North America apart from Iceland, Greenland and the east Canadian Arctic. Many winter at high latitudes but some also move south with *flammea*.

Since the nineteenth century (when the fashion was to recognise many forms as species) the redpolls have generally been grouped into two polytypic species: Common Redpoll, comprising *cabaret*, *flammea*, *rostrata* and *islandica*, and Arctic Redpoll, comprising *exilipes* and *hornemanni*. However, since 2000 *cabaret* has been split by BOURC as 'Lesser Redpoll' (Knox *et al.* 2001).

Continuing controversies

Redpoll taxonomy remains controversial; by no means all authors agree on the above definition of forms and there has been much debate over the question of how many (or few) species might be involved. As few as one (Salomonsen 1951) and as many as seven (Coues 1862) species have been proposed.

Today, taxonomic controversies have intensified following the initial results of DNA analysis which have, in the markers so far examined, shown no differentiation between the forms and no genetic support for the current taxonomy (Seutin *et al.* 1995; Ottvall *et al.* 2002; Marthinsen *et al.* 2008). This might suggest that redpolls form a single gene pool with variation explained by Bergmann's rule (organisms inhabiting colder environments tend to be larger) and Gloger's rule (organisms inhabiting drier environments tend to be paler) (Marthinsen *et al.* 2008).

The absence of genetic differentiation does not, however, preclude the possibility that there are several species within the redpoll complex. Although genetic differences are a good indicator of species distinctiveness, lack of them cannot be taken as proof of conspecificity (Seutin *et al.* 1995). Indeed the 'diagnosable distinctiveness' of the forms (expressed in terms of morphology, vocalisations and ecology) suggests that at least some may qualify for species status under the Phylogenetic Species Concept (PSC), while the evidence of reproductive barriers might also indicate species status under the Biological Species Concept (BSC). The DNA results may merely indicate that these are recently evolved species which have yet to show detectable genetic divergence (Ottvall *et al.* 2002; Marthinsen *et al.* 2008).

The problem of *flammea* and *exilipes*

Traditionally, redpoll studies have focused on the taxonomic position of Common and Arctic Redpolls, more specifically the extent of gene flow between the two widespread sympatric forms *flammea* and *exilipes*. Some authors (e.g. Williamson 1961) have suggested that these forms exhibit a continuous cline in characters and have claimed the existence of a large number of apparent 'intermediates', which are cited as evidence of widespread hybridisation. Troy (1985) studied both forms breeding in Alaska and proposed that they should be regarded not only as conspecific but also as consubspecific.

However, most subsequent authors (notably Knox 1988) have rejected this hypothesis on the basis that the so-called 'intermediates' merely represent the normal, though overlapping, range of seasonal and age- and sex-related plumage variation in each form. In other words, most 'intermediates' are either bright, fresh *flammea* or dull, worn *exilipes*. Nor are the differences confined to plumage. Herremans (1990) considered that at least 95% (and perhaps as many as 99%) of *flammea* and *exilipes* can be separated biometrically, the latter being consistently shorter-billed and longer-tailed. Knox (1988) also argued that



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421. Mealy Redpoll, Anjalankoski, Finland, 2007. Ringing recoveries have shown Mealy Redpolls to be capable of exceptional journeys; in fact, this redpoll form is one of the most travelled of all passerines. Birds may be reaching Britain from as far away as northeast China.

the two forms are also diagnosably distinct and valid species on the basis of vocalisations, migration strategy and feeding and breeding ecology. Such multiple differences preclude the possibility of *flammea* and *exilipes* being colour morphs of a single form.

Furthermore, while *flammea* and *exilipes* inhabit vast and overlapping breeding ranges and are prone to extensive nomadism, there is no evidence of interbreeding. Conversely, there is ample evidence that assortative mating is the norm. Published statements to the contrary are based on the existence of apparent 'intermediates' (often in museum collections) not on observations of actual mixed breeding (Knox 1988).

These findings in respect of *flammea* and *exilipes*, also supported by the studies of Molau (1985) and Seutin *et al.* (1992), form the basis of the widely accepted split of Common and Arctic Redpolls. There is also no evidence of any significant gene flow between *rostrata* and *hornemanni* in Greenland (Knox 1988). Only in Iceland is the situation more complex (see below).

The position of *cabaret*

The traditional two-way split of the redpoll complex was abandoned in 2000 when BOURC split *cabaret* from *flammea* on the basis of morphology, vocalisations and sympatric breeding (Knox *et al.* 2001). This split has also been adopted in the Netherlands by the CSNA and in the USA by the AOU. Until recently, the ranges of these two forms lay some way apart but in the 1990s *cabaret* spread north to meet the southern Scandinavian range of *flammea*. Here, the first studies showed evidence of assortative mating between the two forms (Lifjeld & Bjerke 1996).

The position of *cabaret* has remained controversial, however. Ottvall *et al.* (2002) noted the small sample size of Lifjeld & Bjerke's study and claimed the occurrence of apparent 'intermediates', citing anecdotal difficulties encountered in southern Scandinavia in separating some *cabaret* from some *flammea*. Furthermore, even Lifjeld considered a split based on his paper to be premature (AERC TAC 2003). In view of these assertions, and also because of the subsequent results from genetic analysis,



Michael McKee

422. Lesser Redpoll, Out Skerries, Shetland, September 2011. Although this individual is relatively straightforward to separate from *flammea*, being strongly washed warm brown above and below, some can be more problematic. Nor are problems confined to identification, for the taxonomy of this form remains much debated too.

some authorities, including the IOC and BirdLife International, have not followed BOURC in splitting *cabaret*.

It is not yet clear whether identification difficulties mean that some birds are genuinely 'intermediate' (indicating hybridisation) or simply that, like some other redpoll forms, *cabaret* and *flammea* are variable and overlapping in their characters, an issue only now receiving attention in the wake of the split. Furthermore, the claimed high percentage of 'intermediates' implies that interbreeding must be taking place in an extensive area of range overlap. However, no such area is known and no such interbreeding has been recorded (Collinson 2006). Consequently, in the absence of any published contradiction of the findings of Lijfeld & Bjerke (1996), the BOU split stands, for the time being at least.

The situation in Iceland

Even more uncertainty surrounds the taxonomic position of redpolls in Iceland. Early accounts of the form breeding in that country were contradictory, variously claiming it to be *flammea*, *hornemanni* or *exilipes*. Hantzsch (1904) described 'islandica' from a mixed (though largely dark) type series, likening it to *rostrata*. Witherby *et al.* (1940) took a similar view, only recognising the presence of dark birds in Iceland and regarding them as indistinguishable from *rostrata*. Salomonsen (1951) showed that the Icelandic breeding population contained both dark and pale birds, but he treated them as a single, continuously variable form, a 'hybrid swarm' in which the isolating mechanisms between the two types (assumed to be *rostrata* and *hornemanni*) had broken down.

The view that Iceland hosted only one, albeit highly variable, form was accepted for decades but Knox (1988) argued that two distinct forms, separable by plumage, were actually involved: a dark form most resembling *rostrata* and a pale form most resembling *exilipes* or *hornemanni*.

Herremans (1990) corroborated and extended Knox's findings, showing that Iceland's redpolls comprised two distinct lineages distinguishable not just on the basis of plumage but also in terms of

measurements. In a multivariate study of all the redpolls, he produced new evidence of biometric differences, showing that pale Icelandic birds are consistently smaller-billed and longer-tailed than the dark birds. The pale birds are biometrically distinct not only from Iceland's dark birds but also from all dark redpoll forms; their measurements cluster with (but are not the same as) those of *exilipes* and *hornemanni* to form a separate group of three pale taxa.

Herremans (1990) went on to argue that such multiple differences, encompassing both plumage and structure, preclude the possibility that Iceland's dark and pale birds are colour morphs of a single form. Given that such differences are unlikely to be found in a freely interbreeding population, they do not support the notion of a 'hybrid swarm' either. Regarding the dark Icelandic birds as indistinguishable from *rostrata*, he included them within that form; the pale birds were recognised as a separate entity, a hitherto undescribed and unnamed endemic form of Arctic Redpoll. This treatment was followed by Cramp & Perrins (1994).

As with *flammea* and *exilipes*, the question arises as to how easily a line can be drawn between the two types (dark and pale) and to what extent – if any – gene flow between them may explain the existence of apparent 'intermediates'. Knox (1988) noted that: 'most of the breeding Icelandic redpolls can easily be assigned to either the light or the dark form'. Herremans (1990) observed that it is 'generally easier to classify birds as dark than to decide between pale or indeterminate'. Herremans showed that, since the biometrics of so-called 'intermediates' cluster with those of pale birds, they represent the normal range of variation within that form. In other words, they are the more worn, or darker and more heavily streaked individuals, mainly female and young birds – a situation analogous to that now demonstrated for *exilipes*, where previously over-rigid plumage definitions created a large but false pool of 'intermediates'.

The situation in Iceland is clearly complex but to date there are no published Icelandic studies which might confirm or refine the above arguments.

A pragmatic approach

Given the absence of a stable taxonomy, it seems best to keep an open mind on whether the redpoll complex is formed of one, two, three or even as many as six species. From an identification and recording perspective, it makes sense to deal not in the currency of species at all but in that of forms, and with only those forms that are likely to be identifiable in a field situation.

In this respect, however, the form *islandica*, as currently constituted, is unhelpful. It contains both dark birds – some of which are effectively indistinguishable from *rostrata* – and pale birds – some of which are strikingly different, and which cannot be properly recorded if they are lost within an aggregate form. Consequently, I have followed Herremans (1990) and Cramp & Perrins (1994) in treating the dark birds from Iceland (henceforth referred to as ‘Dark Iceland Redpoll’ or ‘dark *islandica*’) with

rostrata and accord separate treatment to the pale birds. Since no unique English name exists for the latter, I have coined the provisional and taxonomically neutral term ‘Pale Iceland Redpoll’. If this pale form was regarded formally as a separate taxon, ‘Iceland Arctic Redpoll’ would better reflect its plumage and structural affinities, while the name ‘*islandica*’ (which was first used with reference to dark birds) would be unavailable and a new scientific name would be required.

The separate treatment here of pale Icelandic birds is intended simply to facilitate discussion of their appearance and status. It should not be construed as favouring a particular taxonomic position but it does recognise the reality that Iceland’s pale birds differ significantly in appearance from their dark counterparts. Since their occurrence in Britain has already been documented, it would be perverse not to give them full

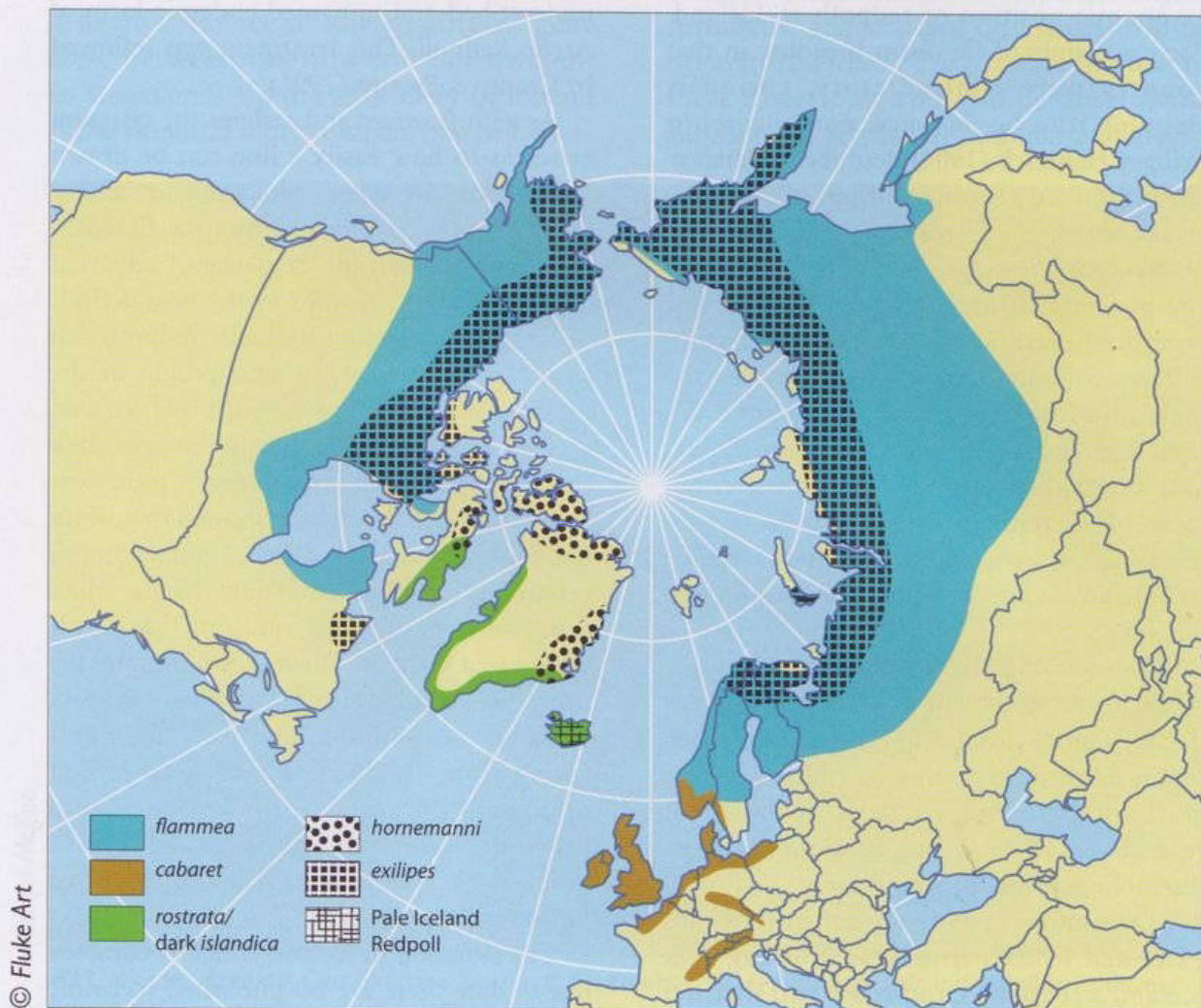


Fig. 1. The breeding distribution of the six redpoll forms, as treated in this paper, in the northern hemisphere.

treatment here. For British observers, it is these birds which will cause some of the greatest identification difficulties and from which we have the most to learn.

This paper therefore discusses the identification and British status of six 'field identifiable forms'. These are: Lesser (*cabaret*), Mealy (*flammea*), Greenland/Dark Iceland (*rostrata*/dark *islandica*), Pale Iceland, Coues's Arctic (*exilipes*) and Hornemann's Arctic Redpolls (*hornemanni*), and the breeding distribution of the six forms is shown in fig. 1. Although this arrangement does not reflect some current taxonomy, it is a more rational and pragmatic approach in that it reflects the reality of what is seen in the field.

Identification

Redpolls are notoriously hard to identify, never possessing a single absolutely diagnostic feature. In this respect they are comparable with large gulls *Larus* and their identification requires a similar tolerance of uncertainty. Identifying redpolls can sometimes be as much an art as a science and progress involves much learning from mistakes. Most birds have to be identified by reference to a 'suite of characters' (an approach familiar to gull-watchers), which, when taken together, will render most birds assignable to a form. Some birds, however, will still be problematic. To identify such 'problem redpolls' may require a combination of previous experience, time and patience, good views, note-taking, photographs, sound recording and subsequent research and reflection. Even then, some may still defy certain identification and we should be content to leave them unidentified.

This section explores some generic aspects of redpoll identification before addressing that of each form through an identification summary and a series of captioned photographs.

Plumage

The most significant problem is the considerable seasonal and age- and sex-related plumage variation shown by all forms.

All redpolls have one moult per year. The adults have a complete post-breeding moult,

while first-years have a partial moult (not including most of the wing and tail feathers) in their first autumn. First-years are most readily aged by the slightly more worn and pointed tips to the juvenile tail feathers. In autumn, redpolls are in fresh plumage and most birds display considerable buff in the face and upper breast, bold wing-bars, broad, pale fringes to the upperparts and wing feathers and, in some forms, white in the rump.

As winter progresses, the buff hues fade and the pale feather tips gradually wear away to reveal more extensive dark feathering below. By the spring many birds have become quite abraded, appearing darker, greyer and more streaked. At this season, redpolls are at their hardest to identify, very different in appearance from fresh bright autumn birds (and from those illustrated in field guides). The red or pink of breeding plumage is acquired through abrasion (wear) but such hues can be pale or muted early in the season before their full colour and extent are revealed.

There is also considerable age- and sex-related variation in plumage, though redpolls are difficult to age and sex, even in the hand. Adults are generally paler than first-years and males are paler and less streaked on the flanks, rump and undertail-coverts than females. In breeding plumage adult male Common Redpolls (though see *rostrata*/dark *islandica*) show extensive red across the breast, lower face, upper flanks and rump, and some colour can also be shown by young males and adult females. Adult (and some young) male Arctic Redpolls show a restricted pale pink flush on the breast centre, sometimes also on the lower face and rump.

This high degree of plumage variability means that it is important to compare birds of the same age and sex and at the same time of year before coming to conclusions about their identity. It is also vital to consider the effect of light on a bird's appearance – on a dull winter's day a bright buffy bird can appear grey. Furthermore, when fluffed up, redpolls generally look whiter-rumped and whiter-flanked but sleeked down they appear correspondingly darker with more concentrated and organised streaking.

Table 1. Wing, tail, bill and weight measurements of six redpoll forms. Wing, tail and bill measurements are from Knox (1988), weights from Cramp & Perrins (1994).

		Lesser <i>cabaret</i>	Mealy <i>flammea</i>	Greenland/ Dark Iceland <i>rostrata/dark islandica</i>	Pale Iceland Redpoll	Coues's <i>exilipes</i>	Hornemann's <i>hornemanni</i>
Wing length (mm)	mean	69.5	74.4	78.4	78.5	74.5	84.1
	range	62–77	70–81	71–85	73–85	71–79	80–91
	sample	79	213	102	29	73	40
Tail length (mm)	mean	50.4	54.2	57.6	60.4	56.1	62.4
	range	46–55	49–62	52–66	52–66	52–62	55–70
	sample	79	211	100	29	72	40
Bill length (mm)	mean	8.5	9	9	8.6	7.8	9.1
	range	7–11	7–13	7.8–11	7.8–9.3	7–9.1	8.6–10
	sample	77	210	98	26	72	40
Bill depth (mm)	mean	5.5	5.9	6.4	6.2	5.8	6.9
	range	5–7	5–7	5.9–7.3	5–7	5–6.5	5.9–7.8
	sample	57	115	76	25	44	29
Bill width (mm)	mean	5.6	5.8	6.2	6	6.9	6.9
	range	5–7	5–7	5.8–7	5–6.8	5.9–7.8	6.0–7.9
	sample	71	204	101	28	69	40
Weight (g)	mean	11.9	12.9	16.3	NA	12.3	NA
	range	9–16.5	10.3–16	10.7–21.7		10.7–14.2	
	sample	1,343	321	37		6	

Table 2. To compare with redpolls, wing length and weight measurements of Siskin *C. spinus*, Twite *C. flavirostris* and Common Chaffinch *Fringilla coelebs*. All measurements are from Cramp & Perrins (1994).

	Wing length (mm)	Weight (g)
Siskin	mean 72.6	mean 12.8
	range 68–76	range 10.5–15.0
Twite	mean 77.5	mean 16.2
	range 76–80	range 11–23
Common Chaffinch	mean 86.5	mean 22.9
	range 78–95	range 20–28

Size and structure

An assessment of size and structure is just as important as one of plumage. Given that some forms show highly convergent or overlapping plumage characters, these can

often be decisive factors in identification. Caution is needed, however, since although the differences in average size are considerable there can be overlap at the edges of the range. It is also particularly hard to judge the size of a lone bird. Structure is perhaps a more valuable aid: even minor differences in bill proportions, body length and tail length can give a bird a rather different 'feel' (see tables 1 & 2).

Another important determinant of perceived size and structure is feather density, notably the dense body plumage of the Arctic Redpolls. This gives these forms a more bull-necked and broad-bodied appearance and an overall more fluffy and well-padded look. Furthermore, these forms habitually fluff up this dense plumage, making them look even bigger and fatter, sometimes almost spherical, and they often seem to have difficulty covering up their rumps. This feather density is, however, not well conveyed

by traditional biometrics, including weight.

Vocalisations

There is some evidence (e.g. Herremans 1989) of vocal differences, albeit often slight, between the forms, some of which may be sufficient to resolve the identity of an otherwise difficult bird. In general, *cabaret* is considered to have high-pitched and rather rapid 'chatter calls', while those of *flammea* are lower-pitched, slower and more staccato. The chatter calls of *exilipes* are often considered to be a little higher-pitched than those of *flammea* but the differences seem subtle at best.

The chatter calls of *rostrata*/dark *islandica* at least are more clearly different, however, being loud, harsh and low-pitched, often delivered slowly and comprising single, well-separated 'chup' notes (Reid & Riddington 1998; pers. obs.). Harsh, low-pitched chatter calls also appear to characterise Pale Iceland Redpoll and *hornemanni*.

The use of vocalisations in redpoll identification is still evolving, however. Redpolls have a wide vocabulary and their calls may vary individually, geographically or according to context. This is an area of study to which sound recordings and sonograms will doubtless bring a new understanding.



John Miller

423. Coues's Arctic Redpoll, Kelling, Norfolk, January 2012. Coues's Arctic and Mealy Redpolls (*exilipes* and *flammea*) differ in both structure and plumage. The short-billed, long-tailed and densely feathered appearance of this bird is typical of *exilipes*, as are its plain face, pale rear scapulars, sparsely marked flanks and apparently white undertail-coverts.



Michael McKee

424. Hornemann's Arctic Redpoll, Out Skerries, Shetland, October 2009. With its deep buff face, pale upperparts, crisp black-and-white wing markings and snowy, billowing flanks, this is surely the most attractive and desirable redpoll form of all.

Lesser Redpoll (*cabaret*)

This is the smallest redpoll, short-bodied and relatively short-tailed. In many cases it is readily distinguishable by size alone. There is, however, some overlap of measurements with *flammea* and even with *rostrata*/dark *islandica* though the latter's large bill, long body and long tail should be apparent.

There remains some debate over how diagnosable *cabaret* really is by plumage. Knox (2001) surely overstated the case by saying that this is 'the most distinctive of all the redpoll taxa, and the only form that is not liable to be confused with any other'. Svensson (1992) regarded *cabaret* as 'identifiable after some practice'.

Worn, grey-looking spring birds, particularly those with white central mantle 'tramlines' and white greater-covert wing-bars, may be distinguishable from some *flammea* only with difficulty, while *cabaret* and *rostrata*/dark *islandica* share dark and warm plumage tones and may also hardly differ in plumage.



425. Lesser Redpoll, Cambridgeshire, March 2009. This *cabaret* looks typically neat and compact. The plumage is dark, heavily streaked and strongly suffused with warm brown; the nape is dark, not contrasting with the mantle; there are no obvious white mantle tramlines; and the wing-bars and the fringes to the wing feathers are washed with buff.

Tony Mills



426. Lesser Redpoll, Norfolk, February 2009. This individual is a brighter buff or yellowy-brown in the face and upperparts, and shows white mantle tramlines. However, there is still extensive buff in the wing-bars and wing-feather fringes. The belly is white, contrasting strongly with the warm buff face, upper breast and flanks, the last overlain with prominent dark streaking, which extends to the rear.

John Miller

427. Lesser Redpoll, Norfolk, February 2009. A colder-toned bird, showing grey hues in the face, bright white mantle tramlines and a white greater-covert wing-bar. Such birds may closely resemble *flammea*.



John Miller

428. Lesser Redpoll, Norfolk, March 2009. This breeding-plumaged adult male is strongly washed brown across the upperparts and wings, while the pinkish-red in the underparts is both deep-toned and extensive, covering the lower face, breast and flanks.



John Miller

429. Lesser Redpoll, Fair Isle, October 2010. This fresh autumn bird is typically bright buff, this colour extending right down the flanks and also infusing the wing-bar and fringes to the wing feathers. The flank streaking is extensive and heavy. The undertail-coverts on such fresh birds in autumn typically show thin dark shaft streaks and there is often a rich buff wash across the whole feather tract.



Rebecca Nason

Mealy Redpoll (*flammea*)

This is a medium-sized redpoll, similar in structure to, but larger overall and larger-billed than, *cabaret*; and smaller, shorter-bodied and shorter-tailed than *rostrata*/dark *islandica* (though measurements overlap with both). It is closest in size to *exilipes*, though less densely feathered and, on average, longer-billed and shorter-tailed. Some (formerly attributed to 'holboellii') are strikingly long-billed, resembling Goldfinch *C. carduelis*. Such birds are the longest-billed of any redpoll form.

Greyer, more frosty plumage hues will distinguish many *flammea* from *cabaret*. However, browner individuals may resemble that form more closely, while paler birds, particularly fresh, frosty and pink-breasted adult males, are most likely to be confused with *exilipes*.

Confusion with *rostrata*/dark *islandica* (particularly the latter) is also possible, though this form is typically darker, browner and more heavily streaked. There is also a risk of confusion with some Pale Iceland Redpolls but that form typically shows a plain, more buff-washed face and paler upperparts.



Markus Varesvuo

430. Mealy Redpoll, Kotka, Finland, January 2009. In terms of structure this bird appears similar to *cabaret*, but it is typically a dull grey-brown above, lacking any warm tones, and the greater-covert wing-bar is white. It also shows a pale nape, which contrasts with the mantle, and a well-defined ear-covert patch. The flanks are greyish-white and well streaked while the rump is bright white but heavily streaked throughout almost its entire length.



Rebecca Nason

431. Mealy Redpoll, Fair Isle, October 2010. This is a paler, greyer individual but it still shows a contrasting paler nape. Although it is in fresh plumage, note the relative lack of buff in the face and upper breast. The wing-bar is broad, crisp and white, as are the fringes to the wing feathers, while white tramlines are also visible on the mantle. The flanks are well streaked on a greyish-white background. The bill is typically quite stout.

432. Mealy Redpoll, Fair Isle, October 2010. Though bright white, this bird's rump is almost wholly marked with heavy, dark grey streaks. Some birds may be a little less well marked on the rump, however, and may show a narrow unstreaked area. Also obvious here is a near-absence of buff in the face, a contrastingly pale nape and a quite heavy-looking bill.



Rebecca Nason

433. Mealy Redpoll, Anjalankoski, Finland, 2007. In this breeding-plumaged adult male the breast, lower face and upper flanks (and even the fore-supercilium) are extensively washed deep pinkish-red. Typically, in this plumage, the upper flanks are unmarked, with streaking restricted to the mid and rear flanks. Just visible here are white undertail-coverts with apparently only a single dark shaft streak on the longest feather – a common pattern in adult males. Birds of other plumage classes typically show a broad dark shaft streak on the longest undertail-covert and similar marks on adjacent feathers too.



Markus Varesvuo

434. Mealy Redpoll, Kotka, Finland, January 2009. This bird shows a typical combination of grey-brown upperparts, contrasting pale nape and stout bill. However, this relatively fresh-plumaged individual still has white tips covering the pinkish-red in the breast and lower face – making it look paler and less extensive – and whiter, less streaked rear flanks, while its undertail-coverts are white with a single dark shaft streak on the longest feather. Such birds are most likely to be confused with *exilipes*, though they lack the densely feathered and bull-necked appearance of that form.



Markus Varesvuo

Greenland/Dark Iceland Redpoll (*rostrata*/*dark islandica*)

This form's large size, its long, deep and broad-based bill, and its long-bodied, long-winged and long-tailed appearance should allow separation from most *flammea* and *cabaret*, though there is some slight overlap in measurements with both forms. Owing to almost wholly overlapping measurements with *rostrata*, only small examples of dark *islandica* will be identifiable in the hand.

In terms of plumage *rostrata* and dark *islandica* are very similar, indeed some are identical. Such birds may also be indistinguishable from *cabaret*. Many dark *islandica* are, however, somewhat paler, both above and below, and whiter-rumped than *rostrata*, thus recalling *flammea*, but typically darker, browner and more heavily streaked than that form.

Most *rostrata*/dark *islandica* are clearly darker than Pale Iceland Redpolls but some birds are more difficult to assign to one form or the other and are probably best left unidentified. Such birds may either indicate genetic mixing of the two Icelandic forms or they may simply represent the extremes of variation in each.

Many adult males in breeding plumage show no red in the underparts, and those which do show colour may have just a pale wash on the breast.



435. Greenland/Dark Iceland Redpoll, Fair Isle, October 2012. This bird is typically sturdy-looking, large-billed, long-winged and long-tailed. The plumage is dark, recalling *cabaret*, with earth-brown tones to the face and upperparts and, most strikingly, heavily sullied flanks with long lines of thick, blurry streaking extending to the rear. The greater-covert wing-bar on this individual is whitish, though on others it can be more buff.



436. Greenland/Dark Iceland Redpoll, Norfolk, March 2009. This bird is one of the very few so far recorded in England. It was clearly a large-looking redpoll in the field, and its identity was confirmed in the hand. Note the long-bodied appearance as well as strikingly long wings and tail. The bill is large and the culmen subtly convex. Most obvious, however, is the very heavy flank streaking, which continues to the rear to join up with broad, dark arrowhead markings on the undertail-coverts. In life, this bird was strongly grey-toned, typical for a spring bird, yet note also the deep buff wash to the face and throat.

Roger Riddington

John Miller

437. Greenland/Dark Iceland Redpoll, Selfoss, Iceland, October 2009. This bird is long-bodied, long-winged and long-tailed, while the bill is long, deep and broad-based with a subtly convex culmen. The upperparts are dark, brown and heavily streaked, the white mantle tramlines are much reduced and the greater-covert wing-bar and wing feather fringes are extensively washed buff. In addition the nape is dark, concolorous with the mantle, and the face is rather plain with little ear-covert demarcation. Instead, there is a rather solid dark wash across the ear-coverts, and the face and upper breast are washed rich buff. The rump of this individual resembles that of *flammea*, but many are darker-rumped.



Örn Óskarsson

438. Greenland/Dark Iceland Redpoll, Selfoss, Iceland, February 2011. This bird also appears very dark and heavily streaked. Here too the nape lacks contrast, the ear-coverts are solidly dark and there is a rich buff wash across the face and the sides of the upper breast. The underparts are a cold greyish-white and the flank streaking is long and heavy and extends to the rear flanks.



Örn Óskarsson

439. Greenland/Dark Iceland Redpoll, Selfoss, Iceland, March 2009. This dark Icelandic bird is typical of many. It closely resembles *rostrata* in its long-billed, long-winged and long-tailed structure but its face and upperparts are a touch paler and its underparts slightly whiter. In these latter respects such birds can recall *flammea*. The subtle pink wash across the breast and fore-flanks may well indicate an older male (this form may show little red in adult male plumage).



Örn Óskarsson

Pale Iceland Redpoll

This is a large redpoll, larger than *flammea* and *exilipes* and closest to *rostrata*/dark *islandica* though, on average, very slightly slimmer-billed (therefore sometimes looking a little 'pointy-beaked') and longer-tailed. Like the Arctic Redpolls, it is densely feathered and fluffy-looking.

The plumage of this form is also that of an Arctic Redpoll and adult males in breeding plumage show the restricted pale pink breast of an Arctic. Most Pale Iceland Redpolls are clearly paler than *rostrata*/dark *islandica* but some birds are more difficult to assign to one form or the other and are probably best left unidentified. Such birds may represent genetic mixing of the two Icelandic forms or simply the extremes of variation in each.

Most Pale Iceland Redpolls give a first impression closest to an *exilipes* with 'excessive' flank, rump and undertail-covert streaking. A minority, however, are much paler and much less streaked. Such birds may be difficult to distinguish from even a pale *exilipes* or *hornemanni* though overall size and bill structure should provide clues.

These very pale birds are much debated in Iceland, where they need to be distinguished from both passage *hornemanni* and the occasional presumed vagrant *exilipes*, and they often remain unidentified. This is a potentially significant problem in Britain too. It is quite possible that some British records of both *exilipes* and *hornemanni* actually refer to very pale Pale Iceland Redpolls.



Örn Óskarsson

440. Pale Iceland Redpoll, Selfoss, Iceland, January 2013. This typical bird shows a combination of plain, buff-washed face and upper breast, buffy mantle and scapulars and buff hues in the wing-feather fringes. The rump is bright white but overlain with heavy dark streaking while the flanks have a bright white ground colour but with dark streaks extending to the rear flanks. Overall, the bird looks more like an Arctic Redpoll than a pale version of *rostrata*/dark *islandica*.



Andy Stoddart

441. Pale Iceland Redpoll, Norfolk, March 2009. This bird looks similar to that in plate 440 and was photographed in England. It looks densely feathered, long-bodied, long-winged and long-tailed; the face and upper breast are plain buff; and the upperparts are buff and there are buff edges to the wing feathers. The rump is white, though heavily streaked, and the flanks are also white but marked with three rows of heavy streaking at the rear. The longest undertail-coverts of this bird were marked with broad arrowheads. Though this streaking might suggest *rostrata*/dark *islandica*, the overall impression is much closer to *exilipes*.

442. Pale Iceland Redpoll, Selfoss, Iceland, May 2012. The fringes to the wing feathers of this bird are whiter than those shown by the other Pale Iceland Redpolls illustrated here and its flanks are much less streaked. Pale Iceland Redpolls are, like all the Arctic Redpolls, densely feathered and persistently fluff up their flank feathering. They can also have difficulty covering their rump.



Örn Óskarsson

443. Pale Iceland Redpoll, Selfoss, Iceland, April 2011. This individual is a touch paler than those in plates 440–442. It is densely feathered, long-bodied, long-winged and long-tailed and has a plain face pattern with, typically for spring, reduced buff on the face and upper breast. Other features include buffy upperparts, brownish fringes to the wing feathers, and white flanks with long streaks to the rear. The flank streaking on this bird is, however, quite fine and the undertail-coverts look white although a single, medium-width shaft streak was present on the longest feather.



Andy Stoddart



Örn Óskarsson

444. Pale Iceland Redpoll, Selfoss, Iceland, April 2011. This breeding-plumaged adult male is strikingly pale and ghostly with the typical (for Arctic Redpoll) weak and rather restricted pale pink flush on the breast centre. It resembles *exilipes* and *hornemanni* but, in life, its large size excluded the former while its bill structure (rather long though slim) was not typical of either. Note also the single, medium-width shaft streak on the longest undertail-covert.

445. Pale Iceland Redpoll, Fair Isle, June 2008. This breeding-plumaged adult male shows obvious similarities with the Icelandic individual in plate 444. It is a very pale, grey-looking bird with a plain face, weak and restricted pale pink breast flush and fine streaking on the flanks. It resembles *exilipes* and *hornemanni* but the bill is rather long and slim and there are fine dark marks throughout the undertail-coverts.



Mark Breaks

Coues's Arctic Redpoll (*exilipes*)

This is a medium-sized redpoll, smaller than Pale Iceland Redpoll and *hornemanni* and closest to *flammea* – though on average shorter-billed and longer-tailed. It is, like all the Arctic Redpolls, densely feathered and fluffy-looking.

The separation of darker examples of *exilipes* from paler examples of *flammea* is the classic redpoll identification problem. There are two main pitfalls – identifying a fresh, frosty and pink-breasted adult male *flammea* as an *exilipes* (the male Mealy trap) and, more likely, identifying darker, more streaked or worn female and first-year *exilipes* (particularly in spring) as *flammea*. The variation in *exilipes* has long been underestimated and many observers feel, understandably, most comfortable in claiming only the most 'obvious' birds as this form, labelling more difficult birds as 'intermediates' or, worse, identifying them by default as *flammea*. In reality, however, only a very small percentage are truly intermediate.

The separation of *exilipes* from *hornemanni* and Pale Iceland Redpoll is equally taxing. Hornemann's shares all its plumage characters with *exilipes* and is best identified by its larger size and large, deep bill. Pale Iceland Redpoll is also larger overall and longer-billed and many (though not all) exhibit more extensive flank, rump and undertail-covert streaking.



446. Coues's Arctic Redpoll, Kirkkonummi, Finland, February 2007. This bird is typically short-billed and long-tailed. It is also densely feathered, making it appear dumpy and bull-necked. It is often the case that *exilipes* seems to have trouble covering its rump with its wings, and when relaxed, as here, its rump and flank feathers can be 'inflated' to such an extent that it appears almost spherical. Among the best features of *exilipes* is a large pure white, un-streaked rump. The presence of light spotting or streaking can, however, still be compatible with identification as *exilipes*. Typically, dark streaking extends from the mantle into the upper rump, restricting the area of pure white to a narrower band.



447. Coues's Arctic Redpoll, Finland, October 2005. This autumn bird is typically fresh and bright. The eye is drawn immediately to the bird's plain face, golden-buff wash to the face and upper breast and bright white sides marked only with fine, wispy grey streaks concentrated at the breast sides and on the upper and mid flanks. Also visible here are pale straw-coloured upperparts, apparently clean white undertail-coverts and white rump sides wrapping round to the rear flanks. The similarity of this individual to some of the *hornemanni* illustrated on pp. 728–729 emphasises the overlap of features between the forms.

Dick Forsman

Arto Juvonen



Brandon Holden

448. Coues's Arctic Redpoll (right) and Mealy Redpoll, Matheson, Ontario, Canada, February 2011. This is a greyer and more worn, late-winter bird but it is also a much more heavily streaked and *flammea*-like individual. In this highly instructive comparison, the *exilipes* shows a densely feathered and bull-headed appearance while the rear scapulars are contrastingly pale and the undertail-coverts appear wholly white. The flank streaking is at the heavy end of the spectrum for *exilipes* but within the normal range of variation. Birds like this are subtle and require close attention.

449. Coues's Arctic Redpoll, Inari, Finland, April 2006. This presumed male (note the subtle pale pink in the breast centre) shows the classic plumage characters of *exilipes*, notably a relatively plain face, pale mantle with only thin dark feather centres and clearly paler rear scapulars. Its flanks are stunningly white with thin, wispy grey streaking restricted to the mid flanks.



Markus Varesvuo

450. Coues's Arctic Redpoll, Inari, Finland, April 2010. This breeding-plumaged adult male is especially eye-catching and shows just how white and frosty *exilipes* can look. The pink on the breast is particularly pale and restricted while the flanks and undertail-coverts are bright white and almost unmarked.



Tomi Muukkonen

Hornemann's Arctic Redpoll (*hornemanni*)

This is the largest redpoll of all, larger even than *rostrata*/dark *islandica* and much larger than *exilipes*. However, *hornemanni* is most likely to be seen alongside redpolls from Greenland or Iceland and may therefore not look quite so large, while a fluffed-up *exilipes* can look disconcertingly big. Hornemann's is very long-winged and long-tailed and its bill is strikingly deep and broad-based. It is also very densely feathered, appearing particularly heavy-headed and bull-necked.

The main identification issue is the elimination of *exilipes*. On average, *hornemanni* is 'whiter', with a paler mantle and scapulars, less streaked flanks and a bigger white rump but there is complete overlap in characters between the two forms and a bright *exilipes* may look 'better' than a dull *hornemanni*. Perhaps the best plumage clue is the tendency for some to show a greater contrast between a pale mantle and a particularly deep buff wash to the face and upper breast.

The other identification problem is the separation of *hornemanni* from Pale Iceland Redpoll, though the latter is slightly smaller overall and slimmer-billed, while many (though not all) show more extensive flank, rump and undertail-covert streaking.



Hugh Harrop

451. Hornemann's Arctic Redpoll, Cunningsburgh, Shetland, October 2009. Apart from size, perhaps the best clues in identifying *hornemanni* are structural. It most resembles *exilipes* but is even more densely feathered. It looks large and heavy-headed, broad and long-bodied, deep-chested, bull-necked and 'front-heavy' while its bill is deep and broad-based. Also obvious here is a strong deep buff wash to the face and upper breast.



Brandon Holden

452. Hornemann's Arctic Redpoll, Ontario, Canada, February 2011. This bird is strikingly densely feathered, its bill appearing a little lost in the thick feathering. It shows pale, frosty mantle and scapulars; crisp white wing-feather fringes; white flanks with minimal, wispy grey streaking confined to the upper/mid flanks; and clean white undertail-coverts. By late winter, the buff wash to the face and upper breast is muted. Although this is a striking bird, its appearance can be matched by *exilipes* so ultimately the identification comes down to size; here, the comparison with a *flammea* is revealing.

453. Hornemann's Arctic Redpoll, Suffolk, December 2012. This bird shows the typically dense feathering and deep-based bill of this form. As for plumage, it is strikingly white with few markings on the flanks and an extensive 'wrap-around' of white from the rump and uppertail-coverts to the rear flanks. The undertail-coverts are also pure white. The buff wash to the face and upper breast has faded considerably, however.



John Miller

454. Hornemann's Arctic Redpoll, Norfolk, October 2012. Though structurally convincing (note the heavy head and deep-based bill), this *hornemanni* is, in terms of plumage, perhaps less striking, showing strong buff hues in the mantle, a narrow, buff-tipped greater-covert wing-bar and liberally streaked flanks. Some also show streaking in the rump and undertail-coverts. Such birds can be less visually striking than many *exilipes*. In reality, all of the supposedly distinctive aspects of *hornemanni* plumage can be matched or even exceeded by *exilipes* and there is no single plumage feature that will conclusively identify this form. The best plumage clue here is the deep buff wash to the face and upper breast.



Jim Lawrence

455. Hornemann's Arctic Redpoll, Matheson, Ontario, Canada, February 2011. This breeding-plumaged adult male is stunningly pale with a typically weak, pale pink flush restricted to the breast centre and lower face. In most Arctic Redpoll plumage classes, flank streaking is least prevalent towards the rear (the white rear flanks thereby 'wrapping round' to the white rump), but all pink-breasted Arctic redpolls can show, as here, streaking concentrated on the rear flanks. This bird would be difficult to separate from a very pale *exilipes* from this image but its true size was assessed in the field.



Brandon Holden

Status in Britain

Lesser Redpoll (*cabaret*)

This is the commonest redpoll across most of Britain and the only regularly breeding form. It nests in pioneer woodland, birch *Betula*, willow *Salix*, alder *Alnus* and hawthorn *Crataegus* thickets, untidy hedges and young conifer plantations (Newton 1972). It is common throughout much of Britain although there are large gaps in its distribution in central, southern and southwest England. It breeds on the Outer Hebrides but has only very rarely bred in Orkney and Shetland (Stevenson 2005; Forrester *et al.* 2007).

Redpolls are known to experience marked fluctuations in population size and distribution and this is especially true of *cabaret*. After a rapid population increase between 1900 and 1910, it underwent a long period of decline only to increase once more between 1950 and the 1970s to around 300,000–600,000 pairs, largely in response to the proliferation of commercial forestry plantations and a prevalence of young birch woodland (Sharrock 1976). At this time it also spread from Britain to coastal dune plantations on the near continent. Since the late 1970s, however, *cabaret* has declined once more, possibly due to the increasing age of conifer plantations, a reduced availability of birch seed in maturing woodland and the removal of hedgerows and farmland trees (Gibbons *et al.* 1993). The population was estimated to be 160,000 pairs by Gibbons *et al.*, although Musgrove *et al.* (2013) suggested 190,000 pairs.

This form can be seen in Britain all year round but it is also a partial short-distance migrant, with a varying proportion of the British population leaving in autumn according to food availability. Great emigrations occurred in 1959, 1964 and 1977 (Wernham *et al.* 2002). Most foreign ringing recoveries come from France, Belgium, the Netherlands and Germany (Wernham *et al.* 2002). In winter *cabaret* can be found in a wide variety of habitats including coniferous and deciduous woodland (typically birch and alder) and weedy fields but also gardens, where it is increasingly attracted to nyjer seed feeders.

Mealy Redpoll (*flammea*)

This form is predominantly a late autumn and winter visitor, mainly to Scotland and the north and east of England. Its appearances are erratic, however, with very few in some winters while in other years large influxes occur. Large irruptions have been documented since at least 1829, occurring approximately once every decade throughout the nineteenth century. In the twentieth century a particularly large influx occurred in 1910, with another in 1923 (Witherby *et al.* 1940). More recently, significant irruptions occurred in 1965, 1972, 1975, 1984, 1990 and 1995, with smaller arrivals in some other years (Riddington *et al.* 2000).

Influxes normally take place in October and November (though birds can arrive in September or even earlier) and can persist into the winter, particularly in cold weather and/or easterly winds. Even in irruption years, however, the arrivals are quickly absorbed in northern and eastern parts of Britain and this remains a very scarce bird in the south and west of England and in Wales (Lovegrove *et al.* 1994; Brown & Grice 2005). Pre-departure flocks can build up in spring (1,000 were at a single site in North-east Scotland in early spring 1996; Forrester *et al.* 2007) and return spring passage is often recorded in the north and east. As with *cabaret*, winter birds are best sought in stands of birch or alder but they will also frequent weedy fields and visit garden feeders.

The Mealy Redpoll is a rare, irregular breeder in Highland, Orkney, Shetland and the Outer Hebrides (and, in 2011, on Tiree, Argyll; Holling 2013). Numbers are very variable, however. A colony of eight pairs bred in Sutherland (Highland) in 2000 (Forrester *et al.* 2007), 19 pairs were found on the Outer Hebrides in 2004 (Holling 2007) and in summer 2005 up to 50 (including juveniles) were recorded at a site in Caithness (Holling 2008). In recent years, however, only a handful of breeders have been recorded, the current average being around four pairs per year (Holling 2013).

Though assumed to be *flammea*, the possibility that some of these breeding records might actually relate to *rostrata*/dark *islandica* or Pale Iceland Redpoll has also been raised (Stevenson 2005; Forrester *et al.*

2007). Identification difficulties hinder a proper assessment of the breeding status of *flammea*, which is confounded by the presence of breeding *cabaret* in Highland and the Outer Hebrides.

This form is, like other irruptive boreal species, highly nomadic, shifting both its breeding and its wintering areas within and between years according to the size of the post-breeding population and food availability. Ringing recoveries include three movements between northeast China and western Europe (a distance of over 8,000 km) while, even more remarkably, a bird ringed in Michigan, USA, was later recovered in eastern Siberia, a movement of 10,200 km (Newton 2008). It is clear, therefore, that some *flammea* in Britain may have travelled from a very great distance. Although as yet unproven by ringing recoveries, there must also be the potential for transatlantic vagrancy to Britain from North American populations.

Greenland/Dark Iceland Redpoll (*rostrata*/dark *islandica*)

The first British record was a bird on Barra, Outer Hebrides, in October 1896 (Witherby *et al.* 1940). Eagle Clarke (1912) recorded this form as a regular visitor to Fair Isle in the first decade of the twentieth century and noted that it was 'extremely abundant' there

in the autumn of 1905. Witherby *et al.* (1940) listed a number of further records, all but two from the islands of north or west Scotland. A 'party' was near Glasgow in November–December 1913 (a specimen from there was noted in Forrester *et al.* 2007) and one was on the Isle of May in October 1934. Notable arrivals occurred on Shetland in 1925, 1955 (when as many as 200 were reported on Foula), 1959, 1976, 1996, 1997 (when 180 were on Unst) and 2003 (Williamson 1965; Reid & Riddington 1998; Forrester *et al.* 2007).

Today, *rostrata*/dark *islandica* remains a familiar and expected feature of autumn in northernmost Scotland, particularly in Shetland but also in Orkney and the Outer Hebrides. In some years this is the commonest redpoll form in these areas. Arrivals usually occur in northwesterly airflows and show no correlation with those of *flammea*. This form also occurs earlier in the autumn, sometimes as early as late August but mainly from early September, though arrivals can continue into November. There are, however, only a small number of winter records from these areas and only a few are noted in spring. The winter quarters of these autumn immigrants remain largely unknown but perhaps lie on the British mainland.



Michael McKee

456. Greenland/Dark Iceland Redpoll, Out Skerries, Shetland, September 2004. With its strong brown plumage hues and heavily lined flanks, this form resembles a giant Lesser Redpoll. Though it is a familiar feature of autumn in Britain's far north and northwest, there are still very few records farther south.

Murton & Porter (1961) described the successful breeding of 'Greenland-type' birds in Inverness-shire (Highland) in 1959, while occasional birds of unknown identity, but resembling this form, have also been recorded on the Outer Hebrides in summer (Stevenson 2005). There is clearly a possibility that *rostrata*/dark *islandica* may breed undetected in Scotland, albeit irregularly and/or in small numbers; Forrester *et al.* (2007) speculated that some Shetland breeding records of *flammea* may in fact relate to this form.

Away from northernmost Scotland, *rostrata*/dark *islandica* is very rare. The first for England was found in Norfolk, on the north side of Breydon Water, on 31st December 1947 (Evans 1951); the second was a bird on Scilly in October 1966 (Flood *et al.* 2007). Subsequent twentieth-century records came from Scilly in October 1971 and 1985

and from Cumbria in November 1995 (Brown & Grice 2005; Flood *et al.* 2007).

There are four well-documented English records since 2000: on Scilly in October 2004 (Flood *et al.* 2007), in Norfolk in March 2009 (Miller & Stoddart 2010), in Hampshire in March/April 2009 (Cox 2010) and in Cambridgeshire in March 2011 (Thomas 2013). All these birds were photographed and those in Norfolk and Cambridgeshire were also trapped and measured.

Clearly there is further potential for *rostrata*/dark *islandica* to be found wintering on the mainland, including in England, particularly following autumns which have seen influxes to northern Scotland. Interestingly, the three most recent records were all at feeders. Local and county records committees should clearly have this form on their description lists.

Most birds reaching Britain are considered to be *rostrata*, widely regarded as more migratory than dark *islandica*, but small birds have been trapped (Riddington & Votier 1997) and small and slightly paler-looking birds have also been noted in the field (Pennington & Maher 2005), indicating that dark Icelandic birds might not be exclusively sedentary. Confirming an out-of-range dark *islandica* will be challenging, however, so the precise proportion of Icelandic birds amongst the *rostrata*/dark *islandica* reaching Britain is likely to remain unknown.

Pale Iceland Redpoll

The British status of pale Icelandic birds is clouded by their current taxonomic treatment, by a lingering belief that they are sedentary and by a lack of awareness of their appearance. Despite these difficulties, there is increasing evidence that Pale Iceland Redpolls are reaching Britain.

The first reference to the occurrence of pale redpolls from the northwest in Britain was in



Andy Stoddart

457. Pale Iceland Redpoll, Selfoss, Iceland, April 2011. An out-of-range bird of this form will prove problematic, resembling an Arctic Redpoll with its plain, buffy face and pale upperparts, but being too large for an *exilipes* and with disconcertingly bold streaking on the flanks, rump and/or undertail-coverts.

Davis (1960). In his account of the 1959 *rostrata* irruption he described a paler-mantled and whiter-rumped bird in September 1959, noting that it was 'perhaps a pale example from the hybrid populations ("islandica") of Iceland'. Williamson (1961) described two such birds, possibly of this form, and a few other 'indeterminates' in an examination of skin collections from the Northern Isles and Outer Hebrides. He also noted that earlier reports of *islandica* by Ticehurst (1929) referred to dark birds and are therefore most likely to have been *rostrata*. Riddington & Votier (1997) described three pale northwestern birds on Fair Isle in late autumn 1996 while Reid & Riddington (1998) confirmed the occasional appearance of these birds on Shetland and included a photograph of one on Fair Isle in September 1997.

Pennington & Maher (2005) noted the continuing occurrence in Shetland of paler redpolls which do not match the appearance of *rostrata*/dark *islandica* but which occur within influxes of these birds. They provided details (including photographs) of several such birds from Unst in autumn 2003. They assumed that such birds were Icelandic in origin and referred to them as 'putative Iceland Redpolls'. A similar situation exists on the Outer Hebrides where occasional pale birds are also noted. As with *rostrata*/dark *islandica*, these occur in northwesterly airflows and arrive earlier in the autumn than would be expected for *flammea* (A. Stevenson *in litt.*).

Around a dozen records of apparent Pale Iceland Redpolls (the majority supported by photographs) have been published online but their official recording in local bird reports seems less secure. A presumed Pale Iceland Redpoll on Shetland in November 2010 was well documented (Riddington 2011). Most such birds were on Shetland (the others being on the Outer Hebrides) and all were in September, October or November with the exception of a bird on Fair Isle in June 2008.

Pale Iceland Redpoll has also been found and photographed in England. At least one accompanied the *rostrata*/dark *islandica* in Norfolk in March 2009 (Stoddart 2011), having presumably wintered successfully in England. There is clearly the potential for further mainland discoveries of this form.

Intriguingly, a few pale redpolls, thought more likely to be of this form than *flammea*, have also been recorded breeding on the Outer Hebrides since at least the 1960s (Stevenson 2005). There is clearly scope for further study of these birds.

The status of Pale Iceland Redpoll in Britain is therefore still not fully elaborated, though on current evidence it may be rarer than both *exilipes* and *hornemanni*. This form is scarce even in Iceland (where it is greatly outnumbered by dark birds) and the very pale birds there are particularly rare. Indeed, a number of putative very pale Pale Iceland Redpolls in Iceland have proved on closer examination to be passage *hornemanni* rather than native birds (Y. Kolbeinsson *in litt.*). All of this suggests that this form is unlikely ever to be anything other than a rare visitor to Britain. It also suggests that it should be considered by BBRC but, despite its often identifiable appearance, it has no official status as a distinct form and is therefore slipping through the recording net.

To add a further twist, BOU has now removed Iceland Redpoll from the British List since no first record was ever properly accepted (BOU 2013). In view of the taxonomic question marks hanging over these birds, however, there is surely a need to define what we mean by 'Iceland Redpoll' (i.e. pale birds, dark birds or, as currently, an aggregate of the two) before any first for Britain can be formally accepted.

Coues's Arctic Redpoll (*exilipes*)

This form is almost exclusively a late autumn and winter visitor to Britain, where it occurs in very variable numbers, usually accompanying influxes of *flammea*. The first British *exilipes* was taken at Easington, Yorkshire, in the winter of 1893/94 but only ten subsequent records were listed by Witherby *et al.* (1940), including three on Fair Isle in the great *flammea* invasion of 1910. Only a few records were accepted in the first 25 years of BBRC's existence, a high proportion of which were in the *flammea* influx years of 1965, 1972 and 1975. However, a number of other presumed *exilipes* occurred on Shetland in these influxes but details were not submitted, owing to BBRC's caution over sight records

at the time (Pennington *et al.* 2004). Of those that were accepted and published, many are not specifically attributed to *exilipes* but their dates and locations leave little room for doubt that this was the form involved (Sharrock & Sharrock 1976).

Clearly greatly overlooked in the past, it was not until 1984 that the first significant influx of this form was properly registered, with 33 accepted records, 25 of which were from Fair Isle, including a flock of ten. Since then, further irruptions have occurred in 1990 and 1995. The first of these produced over 100 birds, including a flock of 20 in Norfolk, still England's largest. The second was even larger, with at least 440 recorded and a new British single-site record set in North-east Scotland, where 48 birds were accepted.

Most *exilipes* occur from October onwards, although the earliest birds have occurred in late September. Unlike northwestern redpolls, which are rarely seen away from northern Scotland and rarely after November, *exilipes* has been found more widely in Britain throughout the winter, and a few departing birds are also seen in spring. Summer records are very rare. Unsurprisingly, the geographical spread of records, in Scotland and in the north and east of England, mirrors that of *flammea*. This form remains very rare in the south and west of England and in Wales (Lovegrove *et al.* 1994; Brown & Grice 2005). Though most readily found in flocks of *flammea*, it may also be found with *cabaret* or even alone. It favours birch and alder but weedy fields can also be attractive, as can garden feeders.

The 1995 influx ensured the removal of this form from the BBRC list at the end of 2005 but in other years, and particularly since 1996, *exilipes* has remained rare or very rare and is now, in most years, rarer than *hornemanni*. Given the very real problems involved in separating *exilipes*, *hornemanni* and Pale Iceland Redpoll, there is perhaps a case for *exilipes* being considered by BBRC once more.

Hornemann's Arctic Redpoll (*hornemanni*)

The first British *hornemanni* was at Whitburn, Co. Durham, in April 1855, but only a handful of further records was listed

by Witherby *et al.* (1940), all singles apart from five on Fair Isle in September and October 1905. The subsequent British status of *hornemanni* is relatively poorly documented and for much of the early BBRC era most published records of Arctic Redpoll failed to distinguish between this form and *exilipes*; it seems clear that *hornemanni* has been under-recorded (Kehoe 2006).

Only recently has due attention been given to the documentation of this form, thanks mainly to at least 12 birds in 2003 and then further influxes of 22 in 2009, 12 in 2010 and a record arrival of around 30 (including a flock of five on Unst) in 2012 (Pennington & Maher 2005; Thomason & Pennington 2013). In recent years, *hornemanni* has become a regular irruptive visitor and, in an unexpected status reversal, is currently occurring more regularly than *exilipes*. The comment by Kehoe (2006) that *hornemanni* 'does not seem prone to irruptions' has now been overtaken by events.

The occurrence pattern of *hornemanni* is rather different from that of *exilipes*. It occurs earlier in the autumn, usually in late September and early October. As with other redpolls from the northwest, it is largely confined to the far north and northwest, in particular to Shetland. Records in England, or in fact anywhere on the British mainland, are very rare indeed. Birds definitely or potentially *hornemanni* have only previously been reported from Northumberland, Co. Durham, Yorkshire, Norfolk, Kent and Scilly so the occurrence of three birds in autumn 2012 (in the Isles of Scilly, Norfolk and Suffolk) was all the more notable. In northern Scotland *hornemanni* often accompanies other redpolls from Greenland and Iceland but the two well-watched birds on the east coast were both alone and, despite a wider choice of habitats than is available in northern Scotland, both were found in bare, open locations not normally attractive to redpolls.

Few *hornemanni* have been recorded in winter but a number have been seen in spring, often in April but also as late as early June. This pattern accords well with a recently discovered light spring passage of *hornemanni* through Iceland (E. Rickson *in litt.*; pers. obs.), presumably of birds

returning to east Greenland. Some of these Icelandic birds may be displaced migrants from winter quarters in southern Greenland but others may be birds that have wintered in Britain or elsewhere in northwest Europe.

Further questions

Despite our progress in solving redpoll problems, there remain, inevitably, many unresolved issues. Some interesting questions are:

1. Can a definitive taxonomic position be reached for Pale Iceland Redpoll? In particular, can the degree of reproductive isolation between pale and dark birds be determined?
2. What is the status within Iceland of Pale Iceland Redpoll? There is some evidence that its occurrence patterns differ from those of dark birds. The very pale birds are recorded mainly in spring (E. Rickson and Y. Kolbeinsson *in litt.*) – are there ecological as well as plumage and structural differences? Does it, for example, have different altitudinal or habitat preferences? Does it breed or winter in different areas?
3. Which redpoll forms breed on the Outer Hebrides?
4. Where do the autumn *rostrata*/dark *islandica* seen in northern Scotland winter?
5. Is there any further evidence of reproductive isolation between *cabaret* and *flammea*?
6. Might recordings, sonograms and an improved knowledge of vocalisations help in identification? Are there, for example, any vocal differences between Pale Iceland Redpoll and *rostrata*/dark *islandica*?

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