

# PEST RISK ASSESSMENT

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## Common Redpoll

*Carduelis flammea*



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May 2011

**This publication should be cited as:**

Latitude 42 (2011) Pest Risk Assessment: Common Redpoll (*Carduelis flammea*). Latitude 42 Environmental Consultants Pty Ltd. Hobart, Tasmania.

**About this Pest Risk Assessment**

This pest risk assessment is developed in accordance with the *Policy and Procedures for the Import, Movement and Keeping of Vertebrate Wildlife in Tasmania* (DPIPWE 2011). The policy and procedures set out conditions and restrictions for the importation of controlled animals pursuant to s32 of the *Nature Conservation Act 2002*.

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# I. Summary

The common redpoll (*Carduelis flammea*) is a small grey-brown finch with a red wash on the chest and a red cap on the forehead. Females have less red on the chest and the cap is noticeably duller than the males.

This species is very wide-ranging with a circumboreal distribution in northern North America and northern Eurasia. It occurs in Newfoundland, northern Quebec and Labrador, across the rest of northern Canada to Alaska, and through Siberia and northern Russia to northern Europe and Iceland. It is an irregular migrant to lower latitudes in the winter and may occur as far south in the United States as California, Oklahoma, and the Carolinas, and also throughout southern Europe, Russia, the Caucasus, and central China.

Common redpolls were introduced into New Zealand and are now widespread throughout the North and South Islands, as well as offshore islands. The common redpoll is also found on Kermadec, Chatham, Snares, Antipodes, Auckland, Campbell, Lord Howe and Macquarie Islands.

The common redpoll is not globally threatened and is listed as least concern by the IUCN. This species is not listed under the *Commonwealth Environment Protection and Biodiversity Act 1999*.

In Tasmania the common redpoll is currently listed as a controlled animal under the *Nature Conservation Act 2002*. A permit is required to import the common redpoll but they can be held without a permit to possess wildlife.

The natural distribution of the common redpoll includes areas similar in climate to Tasmania and therefore there is potential for this species to establish in Tasmania. If the common redpoll established in Tasmania it is likely to compete with the beautiful firetail for food and other resources. The establishment of the common redpoll in Tasmania also has the potential to impact on fruit growers as this species is known to cause damage to orchards in other countries.

## 2. Introduction

### 2.1 NAME AND TAXONOMY

<b>Kingdom:</b>	Animalia
<b>Phylum:</b>	Chordata
<b>Class:</b>	Aves
<b>Order:</b>	Passeriformes
<b>Family:</b>	Fringillidae
<b>Genus:</b>	<i>Carduelis</i>
<b>Species:</b>	<i>Carduelis flammea</i>
<b>Subspecies:</b>	<i>C. f. flammea</i> (Linnaeus 1758) – Mealy redpoll <i>C. f. rostrata</i> (Coues 1862) – Greenland redpoll



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**Synonyms:** *Acanthis flammea* (Linnaeus, 1758) *Acanthis linaria* (Linnaeus, 1758), *Carduelis rostrata*, *Carduelis islandica*, *Acanthis islandica*

**Taxonomic Comments:** This species has previously been placed in the genus *Acanthis*. It was until recently considered conspecific with the lesser redpoll (*C. cabaret*), and evidence from mtDNA suggests that the two, together with the hoary redpoll (*C. hornemanni*), are probably best regarded as closely related sister-species or forming a superspecies, despite a wide division in the genetic variation within their ranges. However, recent studies have found little support for lineage division between arctic-breeding and boreal-breeding redpolls, and comprehensive review of gene flow is still required in order to determine species limits; pending conclusions of any review, the species may need to be reclassified within *Acanthis* (del Hoyo et al 2010).

**Common names:** common redpoll, lesser redpoll, mealy redpoll, Greenland redpoll - also known as the North-western redpoll

**Known hybrids:** This species hybridises with *C. hornemanni* in northern Norway and has hybridised with *C. cabaret*. *C. f. flammea* intergrades with *C. f. rostrata* in eastern Canada and intermediates have been described as race *fuscescens* (del Hoyo et al 2010).

The two main types of redpoll that are used in aviculture to produce hybrids are the lesser redpoll (*Carduelis cabaret*) and the mealy redpoll (*Carduelis flammea flammea*). Mealy redpolls produce larger hybrids but the lesser redpoll produces richer coloured birds (Bird Info 2011).

The following hybrids have been produced in captivity (Williams 2011):

Redpoll X bullfinch: this cross is one of the most sought after and rarest of the bullfinch hybrids.

Redpoll X canary: these hybrids are quite drab in appearance but the breast colour and rich chestnut back makes them quite attractive, depth of colour depends on the type of canary used.

Redpoll X greenfinch: although quite easy to breed this is not a popular hybrid because of its drab appearance, it resembles a large cumbersome Redpoll with greenfinch's wings. It shows traces of redpolls bib but lacking the redpolls attractive pencilling or the rich colour of the Greenfinch.

Redpoll X linnet: although quite easy to breed they are not popular, being similar brown based birds. They may be enhanced in the many colour variant forms by using the redpoll cock to produce colour a variant hen.

Redpoll X twite: Similar to the redpoll x linnet with a smaller beak.

Redpoll X siskin: Similar to the redpoll x linnet with a smaller beak.

Redpoll X chaffinch: this hybrid is rare, probably because the birds are quite drab.

Redpoll X goldfinch: this hybrid has rich bright well defined colours contrasting with its shapely body.

Redpoll X goldfinch: this is the most popular redpoll cross. It has rich bright well defined colours contrasting with its shapely body, and is not a hard hybrid to breed.

Redpoll X brambling: one example of this cross is known in the UK.

**Close relatives:** The hoary (or Arctic) redpoll (*Carduelis hornemanni*) is considered a separate species even though hybrids with the common redpoll are thought to occur (CWBO 2011).

## 2.2 DESCRIPTION

The common redpoll (*Carduelis flammea*) is a small finch, 12-14 cm long and weighing 10-17 g (del Hoyo et al 2010). The upperparts are grey-brown with black streaks, two buff coloured wing bars, dark streaks on the whitish flanks, and a dark brown forked tail. The bill is small, conical and yellow with a black tip. The legs and feet are dark. This species is sexually dimorphic. Males have a bright red cap on the forehead and a small black patch under the chin and surrounding the bill. A pink or red wash on the chest and flanks is highly variable, and the underparts are white with brown streaks (NZ Birds 2011, Cornell University 2011). Females are similar to males but have less red wash on the chest and the cap is noticeably duller; in the summer they are duller and rarely have any pink in the plumage (Mayntz 2001). Immature males resemble adult females (Cornell University 2011).

The common redpoll song is a lengthy series of trills and twittering rattles. When perched they give a sweeee-eet call, and in flight a dry rattling *jid-jid-jid-jid* call (National Geographic). The aggression call of the male during territory disputes is a loud and harsh 'chak'. The calls of the race *rostrata* are apparently flatter, but louder and more harsh than those of the nominate (del Hoyo et al 2010).

There are two breeding subspecies in North America. The small-billed and smaller *flammea* has less coarse streaking and is widespread across Canada to Alaska; the large-billed and larger *rostrata* has coarser streaking underneath and is found on Baffin Island and Greenland.

It is difficult to identify specific races of the common redpoll because of the extreme variability in plumage. *Carduelis flammea rostrata* is generally larger and browner than *C. c. flammea*.

A similar species is the hoary redpoll (*Carduelis hornemanni*) which is difficult to distinguish, but is larger, with a smaller bill and less streaking. The rump of the hoary redpoll is white without streaks, and the undertail coverts have little to no black markings. Another similar species is the pine siskin (*Carduelis pinus*) which is more streaked, has yellow in the wings and has no red cap or black bib (Cornell University 2011).

## 2.3 CONSERVATION AND LEGAL STATUS

### CONSERVATION STATUS

The common redpoll is not globally threatened and is listed as least concern by the IUCN. This species has an extremely large range and the population size is extremely large. The common redpoll has undergone a large and statistically significant decrease over the last 40 years in North America. Despite the fact that the population trend appears to be decreasing, the decline is not believed to be sufficiently rapid to approach the thresholds for Vulnerable (Birdlife International 2011).

### LEGAL STATUS AUSTRALIA

The common redpoll is not listed under the *Commonwealth Environment Protection and Biodiversity Act 1999*.

In Tasmania the common redpoll is a controlled animal under the *Nature Conservation Act 2002*. A permit is required to import the common redpoll but they can be held without a permit to possess wildlife

# 3. Biology and Ecology

## 3.1 LIFE HISTORY

The common redpoll breeding season is in late April to August. In the north of the breeding range they raise a single brood and elsewhere two broods (possibly only in years with a good food supply). Redpolls are mostly monogamous, although very occasionally polygamous. They are solitary or very loosely colonial. Pair formation takes place before break-up of the winter flock, and pair-bonding endures for a single season. The displaying male performs a circular bounding song flight while giving a territorial song (del Hoyo 2010).

The nest is built entirely by the female, although the male may assist in collecting material. It is a cup made of grasses, small twigs, plant fibres and roots, bark strips, moss, animal hair and feathers. The nest is placed up to 5 m above the ground in a shrub or tree, preferentially juniper, spruce, larch, birch, or pine, and occasionally elder or willow. It is frequently on branches close to the trunk. In Scandinavia and northern Russia nests are also found in the canopy and more exposed branches, often in the vicinity of the nests of fieldfares (*Turdus pilaris*). In the northern tundra they nest in low bush, hummock or rocky ledges. They may re-use material from previous nests (del Hoyo 2010).

The age at first breeding is one year. Clutches are 4-6 eggs, variably bluish-white to pale bluish-green, blotched violet pink with purple-brown spots and lines. Incubation is by the female, fed on the nest by the male, for a period of 11-12 days. The chicks are fed mostly by the female, and occasionally by both parents, or the male collects the food and passes it on the female. The nestling period is 9-14 days and chicks may leave the nest before they are capable of flying. They are fully independent at 26 days and the second nest may be started during the nestling period of the first brood. In years with high redpoll populations, many eggs are unfertilised and fail to hatch or are taken by predators (del Hoyo 2010).

The nominate *C. f. flammea* (mealy redpoll) breeds from Iceland and Scandinavia east across northern and central Russia and Siberia to Kamchatka and the Bering Sea, south to southern and central Urals, Stanovoy Mts, Amurland and Sakhalin, and also in northern North America from Alaska east to Newfoundland. It winters south to north-western and central Europe, central and eastern Asia to Mongolia, north-eastern China (south to Jiangsu), Korea, northern Japan and northern and central USA, Iceland and north-western British Isles.

*C. f. rostrata* (Greenland redpoll) breeds in north-eastern Canada, western and south-eastern Greenland and Iceland. It winters in eastern Canada, north-eastern USA, Iceland and north-western British Isles.

In areas where the ranges of the common redpoll and the hoary redpoll (*C. hornemanni*) overlap, such as northern Norway, the two species may form mixed breeding pairs and produce hybrids of intermediate appearance (Novel Guide 2011).

Common redpolls are popular in aviculture and in captivity are known to hybridise with the canary, goldfinch, bullfinch, greenfinch, linnet, twite, siskin and chaffinch (see Section 2.1- hybrids). These hybrids are not fertile (Bernard Williams pers. com.).

The maximum recorded longevity for this species is 10.7 years in captivity (AnAge 2011).

### 3.2 HABITAT REQUIREMENTS AND PREFERENCES

During the summer, common redpolls are found in boreal and taiga regions of both the Old and New World Arctic, where they are often among the most common breeding passerines. In North America, their distribution shows significant overlap with human populations only in winter, and then only in alternating irruption years. The irruption cycle displayed by this species is driven by widespread failure in seed-crop production among high-latitude tree species—especially spruce (*Picea* sp.) and birch (*Betula* sp.)—which forces these birds to winter farther south (Knox 2000). These irruptions can take the common redpoll as far south as southern Canada, the northern USA and most of Eurasia. These birds are remarkably resistant to cold temperatures and winter movements are mainly driven by the availability of food (Wikipedia 2011).

In the north of its range the common redpoll breeds in the lowland treeless tundra and dry heath with dwarf birch (*Betula*) and stunted shrubby osiers (*Salix*), also open taiga of pine (*Pinus*) and spruce (*Picea*) and scrub. Further south of their range they breed in wooded slopes and swampy hollows and riverine thicket with birch, willow (*Salix*), juniper (*Juniperus*), alder (*Alnus*) and rowan (*Sorbus*), also mixed birch and pine. In Iceland redpolls also breed in introduced conifer plantations and parks (del Hoyo 2010).

Common redpolls occur from sea-level up to 200 m in Greenland, up to 1 100 m in Russia, up to 1 350 m in Alaska, and in the southern Russian Republic of Altai they breed in alpine meadows between 1 850 and 2 100 m. In the non-breeding season they occur in similar habitats of coastal and lowland open birch woods, heaths and commons (del Hoyo 2010).

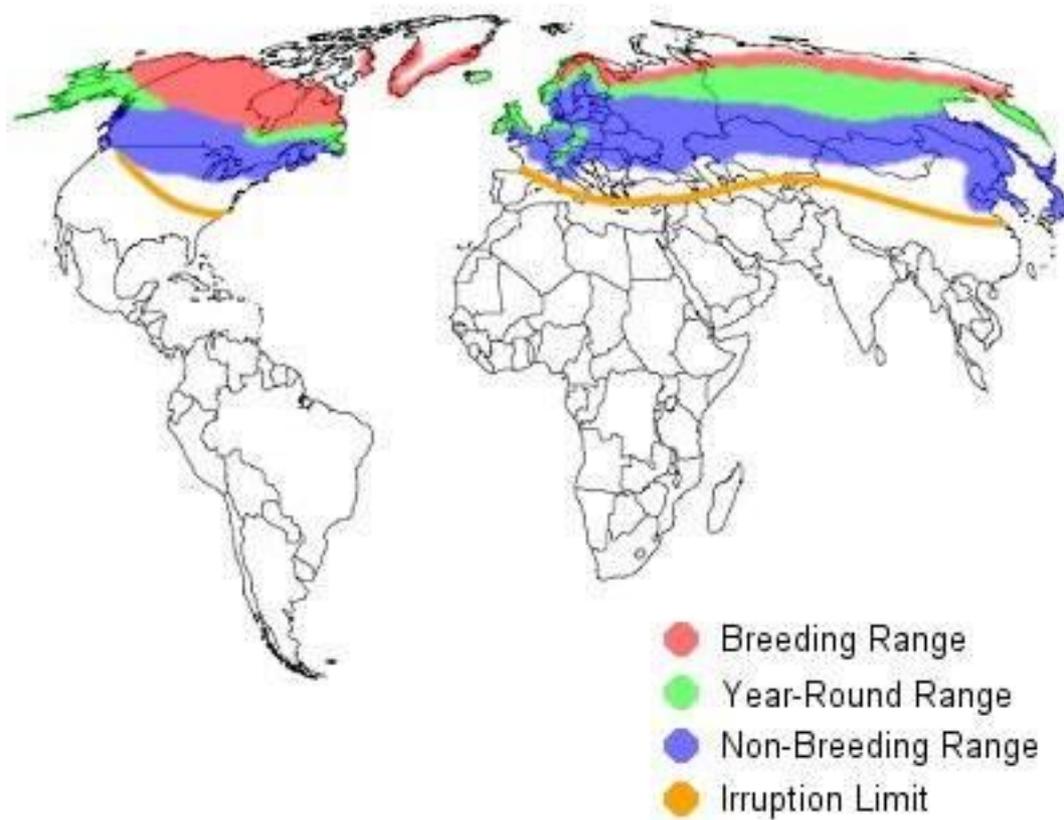
### 3.3 NATURAL GEOGRAPHIC RANGE

The common redpoll is a very wide-ranging species with a circumboreal distribution, occurring in suitable habitat in northern North America as well as in Eurasia. It occurs in Newfoundland, northern Quebec and Labrador, across the rest of northern Canada to Alaska, and through Siberia and northern Russia to northern Europe and Iceland. It is an irregular migrant to lower latitudes in the winter and may occur as far south in the United States as California, Oklahoma, and the Carolinas, and also throughout southern Europe, Russia, the Caucasus, and central China (Novel Guide 2011).

Countries included in the natural range of the common redpoll are: Austria, Azerbaijan, Belarus, Belgium, Bulgaria, Canada, China, Czech Republic, Denmark, Estonia, Faroe Islands, Finland, France, Germany, Greenland, Hungary, Iceland, Ireland, Italy, Japan, Kazakhstan, Korea, Democratic People's Republic of Korea, Latvia, Liechtenstein, Lithuania, Luxembourg, Moldova, Mongolia, Netherlands, Norway, Poland, Romania, Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, United Kingdom, United States and Uzbekistan (Birdlife International 2009).

The common redpoll is vagrant to: Bahamas, Bermuda, Bosnia and Herzegovina, Croatia, Cyprus, Jamaica, Malta, Portugal and Turkey (Birdlife International 2009).

The geographic range of the common redpoll is 18,700,000 km<sup>2</sup>. (Birdlife International 2009).



**Figure 1:** Natural distribution of the common redpoll, *Carduelis flammea*. Source: <http://birding.about.com/od/Bird-Maps/ss/Common-Redpoll-Range-Map.htm>

### 3.4 INTRODUCED GEOGRAPHIC RANGE

Common redpolls were introduced into New Zealand between 1862 and 1875. This species was well established about towns and in the settled districts on both the North and South Islands by the 1920's. The common redpoll is now widespread throughout the North Island and offshore islands, including Kapiti and Stewart Islands. It is also widespread throughout the South Island but more sparsely scattered than the North Island (Long 1981, Higgins et al 2006).

The common redpoll has also been introduced, or most likely self-introduced via New Zealand, to the following islands (Higgins et al 2006):

**Kermadec Islands:** only recorded on Raoul Island in small numbers.

**Chatham Island:** common and widespread.

**Snares Islands:** present in small numbers.

**Antipodes Islands:** present in small numbers, the most common of the 'self-introduced passerines'.

**Auckland Islands:** recorded in the mid 1950's and present on Adams Island.

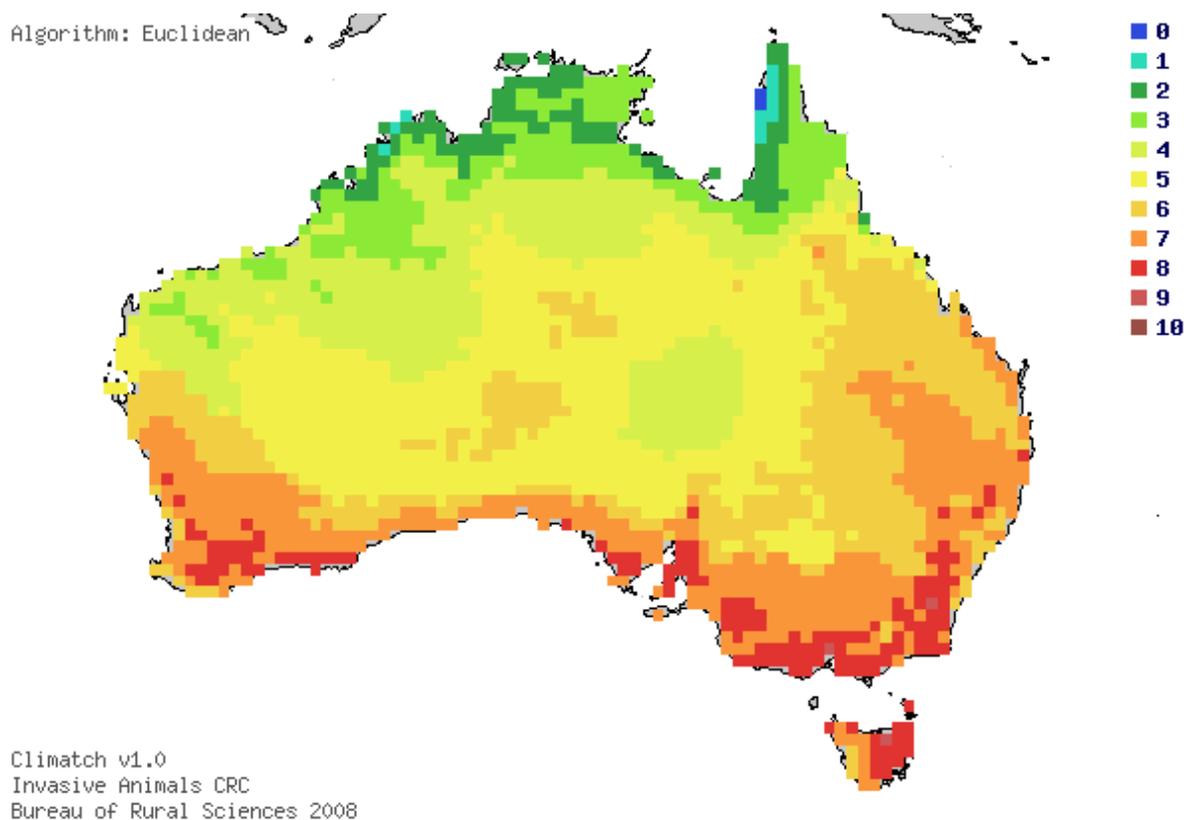
**Campbell Island:** common. First recorded in 1907, established by the early 1930's and numerous by 1942.

**Lord Howe Island:** vagrant. 15 specimens collected in 1913, a flock of 5 individuals recorded in 1983, and a small flock of finches, possibly this species reported in 1942 and 1943.

**Macquarie Island:** common and widespread. First recorded in 1912.

### 3.5 POTENTIAL DISTRIBUTION IN TASMANIA

Using modelling applications by the Bureau of Rural Science (DAFF), climate is compared between the species' current distribution and potential Australian distribution (shown in Figure 2). Modelling indicates that the natural distribution of the common redpoll includes areas similar in climate to Tasmania. The Climate match score is very high (30) and there is therefore potential for this species to establish in Tasmania.



**Figure 2:** Climate match results showing the potential geographic distribution of the common redpoll, *Carduelis flammea*, in Tasmania. (Source: CLIMATCH – <http://adl.brs.gov.au:8080/Climatch/>)

### 3.6 DIET AND FEEDING BEHAVIOUR

Common redpolls feed mainly on seeds, buds and small invertebrates. Seeds and buds include those of birch, spruce, alder, larch, juniper, ash, poplar, willow, guelder-rose, bramble, currant, buckthorn, rowan, hawthorn, willowherb, thistles, nettles, daisy, evening primrose, groundsel, chickweed, buttercup, cottongrass, dandelion, rose, clover, St John's-wort, cranberry, rushes, sedges and grasses. Invertebrates include bugs, leafhoppers, flies, ants, mites, springtails, dragonflies, damselflies, moths and their larvae, stoneflies, fleas, beetles, spiders and snails (del Hoyo et al 2010). In central Otago they feed in orchards on blossoms and young fruits (Long 1981).

Wintering birds in Alaska, where temperatures drop to  $-22^{\circ}$ , need to forage up to 8.5 hours per day to sustain energy levels. In captivity the gross daily intake at the lowest tolerable temperatures is 134 kJ and a minimum weight of 7.3 g. Unhusked birch seeds contain a higher energy content than most other seeds, enabling survival on this diet at temperatures down to  $-54^{\circ}$  (del Hoyo et al 2010).

Common redpolls forage in trees, low vegetation and seeding plants and on the ground. In the northern tundra they forage in low vegetation and on the ground throughout the year. Elsewhere they usually feed on the ground in autumn and winter when the tree seeds are finished or fallen. In Alaska they forage in holes in or under the snow. They actively and acrobatically cling to and hang upside-down on cones, catkins and outermost twigs, and perch nimbly on vertical and bent twigs. They feed singly, in pairs and in small groups. In the non-breeding season they may form flocks of up to several hundred individuals, and exceptionally larger flocks in severe weather and at preferred foraging areas (del Hoyo et al 2010).

Individuals move up to 20 kilometres while foraging during breeding season (Nature Serve Explorer 2010).

### 3.7 SOCIAL BEHAVIOUR AND GROUPINGS

The common redpoll is resident, migratory and irruptive. There are small numbers resident year round in northern Europe, but the majority migrate to non-breeding grounds in Fennoscandia European Russia in winter. Migration occurs mostly in October to mid November, but as early as mid-September in irruption years, when they occur in large numbers farther south in central Europe, occasionally reaching northern Italy and Slovenia. Small numbers from northern Norway and Sweden move south-west to winter mainly along the east coast of the British Isles. Occasionally (during irruptive movements) they occur in large numbers in central Siberia with migration occurring from late August to early November. This species regularly winters in northern Kazakhstan east to northern Mongolia from the end of September to late October, but in irruption years they move farther south, occasionally to the Pamir-Alai Mountains of Tajikistan and to the central and southern Gobi region. In the Russian far east this species is sometimes common throughout winter and rare in other years, when there is large passage through Ussuriland. There is uncommon or erratic passage through Korea and north-eastern China from mid-October to November, less frequent in spring. Numbers wintering in northern Japan are variable from year to year depending on the severity of the winter and availability of food. In North America they move south in September to October to winter in the south of the breeding range in the northern USA. The scale of movement varies annually depending on the birch seed crop. In years of poor seed crop huge numbers irrupt into wintering areas. Birds from northern Scandinavia move up to 2,400 km to a wintering area in west-central Russia (del Hoyo et al 2010).

There is little evidence of site fidelity to wintering areas as studies show short-distance movements to winter in Sweden and Finland in some years followed by longer movements to central Russia in

the following year, probably related to food supply. In North America individuals were found to winter at localities up to 2,000 km apart in successive years (del Hoyo et al 2010).

The return to breeding areas in spring begins in February to mid-March, when small scale movements are induced as food supply becomes depleted (del Hoyo et al 2010).

Common redpolls are busy, acrobatic little finches, spending much of their time flitting about, feeding and calling. Even at rest, much fidgeting and twittering is evident (Knox 2000). They are highly social birds, particularly during the non-breeding season when they aggregate into flocks, often with other species of finches (Novel Guide 2011).

This species is quite vocal with a wide vocabulary of rattling, chatter and musical calls. The calls include a territorial advertising song, contact calls between partners during the breeding season and the aggression call of the male during territory disputes (del Hoyo et al 2010).

Unlike many small birds, common redpolls are not aggressive towards other bird species and easily share space with other small bird species. They form flocks throughout the year, even during the nesting season, and they can become tame in the backyard (Mayntz 2001).

### **3.8 NATURAL PREDATORS AND DISEASE**

Predators known to take eggs of the common redpoll are the common magpie (*Pica pica*), Siberian jay (*Persisoreus infaustus*), grey jay (*Persisoreus canadensis*), eastern grey squirrel (*Sciurus carolinensis*) and American red squirrel (*Tamiasciurus hudsonicus*) (del Hoyo 2010).

Potential predators of the common redpoll in Tasmania are the brown goshawk, sparrow hawk and Australian hobby, quolls, Tasmanian devils and feral cats and foxes. Snakes may predate on chicks.

Outbreaks of disease in wild finches (family Fringillidae) have been associated with *Salmonella enterica* subsp. *enterica* serotype Typhimurium, *Mycoplasma gallisepticum*, poxvirus, and *Escherichia coli* (Oaks et al 2010).

During late winter of 2002, a severe salmonellosis outbreak occurred in the interior of north-central British Columbia, Canada. Dead birds were collected in the area and common redpolls, by far the most commonly collected species, were confirmed to have died from salmonellosis (van Ort and Dawson 2005). Salmonellosis is a disease caused by *Salmonella* bacteria, and affects a wide range of taxa including birds. The disease agent, usually *Salmonella enterica* serovar Typhimurium in songbirds, is shed in faeces by infected individuals and is propagated by ingestion of contaminated food items. Occurrences of *Salmonella* outbreaks appear to be cyclical and may be increasing. Salmonellosis results in a multitude of pathological symptoms including poor body condition, enlarged spleen and necrosis of various gastrointestinal organs (van Ort and Dawson 2005).

*Escherichia albertii* has been associated with diarrhoea in humans but not with disease or infection in animals. However, in December 2004, *E. albertii* was found, by biochemical and genetic methods, to be the probable cause of death for redpoll finches (*Carduelis flammea*) in Alaska. Subsequent investigation found this organism in dead and subclinically infected birds of other species from North America and Australia (Oaks et al 2010).

### **3.9 THREAT TO HUMAN SAFETY**

There have been no recorded adverse effects of common redpolls on humans, however populations may increase the spread of salmonella disease.

### 3.10 HISTORY AS A PEST

In New Zealand the range of the common redpoll expanded dramatically from centres of introduction, and populations increased. Common redpolls were widespread by 1900. They were first recorded at Invercargill in Southland in 1909, were common in some other parts of Southland by 1911, with up to 50 able to be caught in a single day. By 1911 populations around Christchurch and Dunedin were very large with some people able to capture '70 with one pull of the net', and catch up to a thousand within a fortnight (Higgins et al 2006).

In New Zealand in areas where large numbers occur common redpolls are sometimes considered a pest by farmers because of damage caused to fruit trees when their buds are eaten. As a result they are occasionally shot, poisoned or trapped (Higgins et al 2006, Novel Guide 2011). Strawberry growers consider them to be a serious pest as they eat the seeds in the fruit. They also eat the buds, blossoms and young fruits of other orchard crops, especially apricots and peaches. They also eat grass seed sown in forest clearings (Higgins et al 2006).

In central Otago common redpolls have made heavy attacks on blossoms and young fruits in orchards. The damage is said to have been severe to apricots, but several types of fruit have been attacked. Control measures have been implemented in some areas and in 1961 more than 2,500 birds were destroyed in nine orchards in one attempt to lessen the damage (Long 1981).

The common redpoll exists on Macquarie Island and therefore technically is already found naturalised in Tasmania. Although it is not the subject of an eradication program it is referenced in the Pest Eradication Plan and deaths due to primary or secondary poisoning for rats and rabbits are considered "not a negative impact".

This species is not recorded on the Global Invasive Species Database (GISD 2011).

### 3.11 POTENTIAL IMPACT IN TASMANIA

If the common redpoll established in Tasmanian mainland and islands (other than Macquarie island where it is already established) it is likely to compete with the beautiful firetail (*Stagonopleura bella*) for food and other resources. The common redpoll has a very high climate match with Tasmania (score of 30) and a high percentage of the range of the beautiful firetail overlaps with areas with which there is a high climate match for the common redpoll (grids with climate match scores 7, 8 and 9).

The establishment of the common redpoll in Tasmania has the potential for high impact on agricultural industries as the species is known to be capable of damaging commodities such as fruit and other crops. There have been reports of moderate damage to these commodities, or similar commodities, in several countries. Agricultural areas in Tasmania overlap with areas with which there is a high climate match with the common redpoll (grids with climate match scores 7, 8 & 9). This means that the common redpoll, if established, is likely to come into contact with these commodities.

The recorded incidents of Salmonella disease outbreaks has the potential to impact on human health. Recent outbreaks of Salmonella in house sparrows in Hobart highlight the potential to spread disease to humans. While Redpolls are not likely to come into direct contact with humans (i.e. at outdoor restaurants) a significant population could increase the potential to cross infect house sparrows, which could in turn infect people.

# 4. Risk Assessment

## 4.1 PREVIOUS RISK ASSESSMENTS

The Vertebrate Pests Committee (2007) assessed common redpolls as being in the Extreme Threat Category. Species placed in the Extreme Threat Category “...should not be allowed to enter, nor be kept in any State or Territory (Special consideration may be given to scientific institutions on a case by case basis.)” (Vertebrate Pests Committee 2007).

## 4.2 RISK ASSESSMENT

The following risk assessment determines the risk of the common redpoll to Tasmania using the Bomford model (2008) and proposes assigned threat categories and import classifications for the species.

Species:	Common redpoll ( <i>Carduelis flammea</i> )	
Date of Assessment:	24 May 2011	
Literature search type and date:	See references	
Factor	Score	
A1. Risk posed from individual escapees (0-2)	0	Low risk
A2. Risk to public safety from individual captive animals (0-2)	0	Low risk
<b>Stage A. Risk posed by individual animals (risk that a captive or escape animal would harm people)</b>	<b>Public Safety Risk Score</b> = A1 + A2 = 0	<b>Public Safety Risk Ranking</b> NOT DANGEROUS
B1. Climate match score (1-6)	6	Climatch score = 30
B2. Exotic population established overseas score (0-4)	4	Established NZ and Macquarie Island
B3. Overseas range size score (0-2)	1	33,109,820 km <sup>2</sup>
B4. Taxonomic class score (0-1)	0	Bird
<b>Stage B. Likelihood of establishment (risk that a particular species will establish a wild population in Tasmania)</b>	<b>Establishment Risk Score</b> = B1 + B2 + B3 + B4 = 11	<b>Establishment Risk Ranking</b> B = 11-13, EXTREME
C1. Taxonomic group (0-4)	2	Family Fringillidae. No native species of the same genus.
C2. Overseas range size (0-2)	2	33,109,820 km <sup>2</sup>
C3. Diet and feeding (0-3)	0	Bird
C4. Competition for native fauna for tree hollows (0-2)	0	Nests made from plant material
C5. Overseas environmental pest status (0-3)	0	

C6. Climate match to areas with susceptible native species or communities (0-5)	5	27 grid squares with climate match scores 7-9 overlap with the range of beautiful firetail. Compete for food and resources.
C7. Overseas primary production (0-5)	2	In New Zealand common redpolls have caused significant damage to fruit crops.(IBOW).
C8. Climate match to susceptible primary production (0-5)	3	The range of susceptible commodities (fruit and other crops) is covered by grid squares with climate match scores 8 & 9.
C9. Spread disease (1-2)	2	Bird
C10. Harm to property (0-3)	0	Low risk
C11. Harm to people (0-5)	0	Nil risk
<b>Stage C. Consequence of Establishment (risk that an established population would cause harm)</b>	<b>Consequence Risk Score</b> = sum of C1 to C11 = 16	<b>Consequence Risk Ranking</b> C = 15-19, SERIOUS
<b>ASSIGNED THREAT CATEGORY:</b>	<b>EXTREME</b>	
<b>PROPOSED IMPORT CLASSIFICATION:</b>	<b>PROHIBITED</b>	

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# 5. Appendices

## APPENDIX A: CALCULATING TOTAL COMMODITY DAMAGE SCORE

Column 1	Column 2	Column 3	Column 4	Column 5
<b>Industry</b>	<b>Commodity Value Index (CVI)</b>	<b>Potential Commodity Impact Score (PCIS, 0-3)</b>	<b>Climate Match to Commodity Score (CMCS, 0-5)</b>	<b>Commodity Damage Score (CDS columns 2 x 3 x 4)</b>
Cattle (includes dairy and beef)	11	0	0	0
Timber (includes native and plantation forests)	10	0	0	0
Aquaculture	6	0	0	0
Sheep (includes wool and meat)	5	0	0	0
Vegetables	5	0	0	0
Fruit (includes wine grapes)	5	2	5	50
Poultry (including eggs)	1.5	0	0	0
Cereal grain (includes wheat, barley, sorghum etc)	1	0	0	0
Other crops and horticulture (includes nuts and flowers)	1	1	5	5
Pigs	1	0	0	0
Bees (includes honey, beeswax, and pollination)	0.5	0	0	0
Oilseeds (includes canola, sunflower etc)	0.5	0	0	0
Grain legumes (includes soybeans)	0.3	0	0	0
Other livestock (includes goats and deer)	0.3	0	0	0
<b>Total Commodity Damage Score (TCDS)</b>				<b>55</b>

C8. Climate match to susceptible primary production (on a scale of 0–5) = 3

## APPENDIX B: ASSIGNING SPECIES TO THREAT CATEGORIES

A: Danger posed by individual animals (risk a captive or escaped individual would harm people)	B: Likelihood of establishment (risk that a particular species will establish a wild population in Tasmania)	C: Consequence of establishment (risk that an established population would cause harm)	Threat category	Implications for any proposed import into Tasmania
Highly, Moderately or Not Dangerous	Extreme	Extreme	Extreme	Prohibited
<b>Highly, Moderately or Not Dangerous</b>	<b>Extreme</b>	<b>Serious</b>		
Highly, Moderately or Not Dangerous	Extreme	Moderate		
Highly, Moderately or Not Dangerous	Extreme	Low		
Highly, Moderately or Not Dangerous	Serious	Extreme		
Highly, Moderately or Not Dangerous	Serious	Serious		
Highly, Moderately or Not Dangerous	Moderate	Extreme		
Highly, Moderately or Not Dangerous	Serious	Moderate	Serious	Import restricted to those collections approved for keeping serious threat species
Highly, Moderately or Not Dangerous	Serious	Low		
Highly, Moderately or Not Dangerous	Moderate	Serious		
Highly Dangerous	Moderate	Moderate		
Highly Dangerous	Moderate	Low		
Highly, Moderately or Not Dangerous	Low	Extreme		
Highly, Moderately or Not Dangerous	Low	Serious		
Highly Dangerous	Low	Moderate		
Highly Dangerous	Low	Low		
Moderately or Not Dangerous	Moderate	Moderate		
Moderately or Not Dangerous	Moderate	Low		
Moderately or Not Dangerous	Low	Moderate		
Moderately Dangerous	Low	Low		
Not Dangerous	Low	Low	Low	Import Permitted
Unknown	Any value	Any value	Extreme until proven otherwise	Prohibited
Any Value	Unknown	Any value		
Any Value	Any value	Unknown		
Unassessed	Unassessed	Unassessed		

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