

Supplementary electronic material: Chapter 9

Arctic-alpine mountain birds in northern Europe: contrasts between specialists and generalists

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Appendix E9.1 Specialists and generalists breeding widely in arctic-alpine mountain habitats in northern Europe

The species in bold are alpine specialists. The habitat details are given only for birds in alpine/arctic-alpine areas in Britain and Scandinavia above or north of the present treeline. The list is presented in two parts: A lists 19 species that occur in the British arctic-alpine zone and B lists species that occur in Scandinavian arctic-alpine areas, but not in these areas in Britain. SPEC refers to 'Species of European Conservation Concern' categories: global conservation concern (1), global populations concentrated in Europe which have unfavourable conservation status (2), global populations not concentrated in Europe, but have unfavourable conservation status (3), have favourable conservation status (-). European threat status (ETS): endangered (EN), vulnerable (VU), declining (D), rare (R), depleted (H), localised (L), secure (S), not evaluated (NE); where letters are given in brackets the status is provisional. SPEC and ETS scorings are taken from BirdLife International (2004). Species which breed in the UK are denoted 'UK', and those with estimated breeding populations of <10 pairs per annum over the past 50 years in the alpine (montane) zone are denoted as '(UK)'. Habitat use and land-use impact information are taken from the references given at the foot of the Appendix, and our own observations.

		SPEC category, European threat status, and presence in UK		Habitats used in UK		Habitats used in Scandinavia		Land-use impacts in breeding season in mountains	
Species	Migrant or resident	arctic-alpine zone	arctic-alpine areas	Presence in mountains	Feeding specialism	Land-use impacts in breeding season in mountains			
A. Species occurring in the British arctic-alpine zone									
Golden eagle <i>Aquila chrysaetos</i>	Resident and dispersive	3, R, (UK)	Arctic-alpine, alpine, timberline	Yes	Predator, also scavenger	Localised persecution			
Peregrine <i>Falco peregrinus</i>	Resident and dispersive; Norwegian population largely migratory	-, S, (UK)	Arctic-alpine, alpine	Yes		Localised persecution			
Willow/red grouse <i>Lagopus lagopus</i>	Resident	-, S, UK	Arctic-alpine heath and timberline	Yes	Herbivore, insects for chicks	Hunting			
Ptarmigan <i>Lagopus muta</i>	Resident	-, S, UK	Arctic-alpine heath and peatland	Yes	Herbivore, insects for chicks	Hunting; in UK losses of habitat to heavy grazing in southern range			

Ringed plover <i>Charadrius hiaticula</i>	Migrant	-, S, (UK)	Arctic-alpine heath (river and lake)	Yes	Arctic-alpine, coast, arctic-tundra	Invertebrates	Probably none
Dotterel <i>Charadrius morinellus</i>	Migrant	-, S, UK	Arctic alpine fellfield and heath	Yes	Arctic-alpine, arctic-tundra	Invertebrates	Probably none; though in UK losses of habitat to heavy grazing and acidic deposition in southern range, which may have been exacerbated by localised recreational disturbance
Golden plover <i>Pluvialis apricaria</i>	Migrant	-, S, UK	Arctic-alpine heath and peatland	Yes	Arctic-alpine, arctic-tundra	Invertebrates, berries	Probably none
Purple sandpiper <i>Calidris maritima</i>	Migrant	-, S, (UK)	Arctic-alpine fellfield	Yes	Arctic-alpine, arctic-tundra	Invertebrates	Climatic changes?
Dunlin <i>Calidris alpina</i>	Migrant	3, H, UK	Arctic-alpine heath and peatland	Yes	Arctic-alpine, arctic-tundra, peatland, coast	Invertebrates	None observed
Common snipe <i>Gallinago gallinago</i>	Migrant	3, D, UK	Peatland	Yes (but <10% in arctic-alpine mountain)	Arctic-alpine, taiga, coast	Invertebrates	None observed
Common gull <i>Larus canus</i>	Migrant	2, H, (UK)	Lakes	Yes (but <10% in arctic-alpine mountain)	Arctic-alpine, taiga, coast	Omnivorous	None observed

SPEC category, European threat status, and presence in UK		Habitats used in UK		Presence in Scandinavian mountains		Habitats used in Scandinavian arctic-alpine areas		Feeding specialism		Land-use impacts in breeding season in mountains	
Species	Migrant or resident	arctic-alpine zone	Heath, grassland, peatland	Heath, grassland, peatland	No	Yes	Yes	Yes	Yes	Yes	Yes
Skylark <i>Alauda arvensis</i>	Migrant	3, H, UK	Heath, grassland, peatland	Arctic-alpine	No	Yes	Yes	Yes	Yes	Yes	Yes
Shore-lark <i>Eremophila alpestris</i>	Migrant	- , S, (UK)	Heath, grassland, peatland	Arctic-alpine	No	Yes	Yes	Yes	Yes	Yes	Yes
Meadow pipit <i>Anthus pratensis</i>	Migrant	- , S, UK	Heath, grassland, peatland	Arctic-alpine	No	Yes	Yes	Yes	Yes	Yes	Yes
Dipper <i>Cinclus cinclus</i>	Partial migrant	- , S, UK	Streams	Arctic-alpine	Yes (but <10% in mountain)	Yes	Yes	Yes	Yes	Yes	Yes
Wheatear <i>Oenanthe oenanthe</i>	Migrant	3, D, UK	Heath, grassland, peatland	Arctic-alpine	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ring ouzel <i>Turdus torquatus</i>	Migrant	- , S, UK	Heath, grassland	Arctic-alpine	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Snow bunting <i>Plectrophenax nivalis</i>	Migrant	-, S, UK	Arctic-alpine boulder fields	Yes	Arctic-alpine, arctic-tundra	Invertebrates, seeds	Climatic changes?
Lapland bunting <i>Calcarius lapponicus</i>	Migrant	-, S, (UK)	Arctic-alpine heaths	Yes	Arctic-alpine, arctic-tundra	Invertebrates, seeds	None observed
B. Further species found in Scandinavian but not in UK arctic-alpine areas							
Black-throated diver <i>Gavia arctica</i>	Migrant	3, VU	-	Yes (but <10% in arctic-alpine mountain)	Arctic-alpine, arctic-tundra, taiga, coastal, lakes	Fish, invertebrates	Hydroelectric power schemes, Recreational disturbance during breeding including gill-nets
Red-throated diver <i>Gavia stellata</i>	Migrant	3, H	-	Yes (but <10% in arctic-alpine mountain)	Arctic-alpine, arctic-tundra, taiga, coastal, lakes	Fish	Hydroelectric power schemes, Recreational disturbance during breeding including gill-nets
Wigeon <i>Anas penelope</i>	Migrant	-, S	-	Yes (but < 10% in arctic-alpine mountain)	Arctic-alpine, arctic-tundra shallow lakes and taiga	Almost entirely vegetarian	None observed, possibly hydroelectric schemes
Teal <i>Anas crecca</i>	Migrant	-, S	-	Yes (but <10% in arctic-alpine mountain)	Arctic-alpine, arctic-tundra, taiga, coastal, peatland, lakes	Invertebrates, aquatic plants	None observed, possibly hydroelectric schemes
Pintail <i>Anas acuta</i>	Migrant	3, D	-	Yes (but <10% in arctic-alpine mountain)	Arctic-alpine, arctic-tundra, taiga, coastal, lakes	Invertebrates, aquatic plants	None observed, possibly hydroelectric schemes
Tufted duck <i>Aythya fuligula</i>	Migrant	3, D	-	Yes (but <10% in arctic-alpine mountain)	Arctic-alpine, taiga, coastal, lakes	Invertebrates, aquatic plants	Gill-nets during breeding, possibly hydroelectric schemes

SPEC category, European threat status, and presence in UK						
Species	Migrant or resident	arctic-alpine zone	Habitats used in UK	Presence in Scandinavian mountains	Habitats used in Scandinavian arctic-alpine areas	Land-use impacts in breeding season in mountains
Scaup <i>Aythya marila</i>	Migrant	3, EN	-	Yes	Arctic-alpine, arctic-tundra, lakes coastal	Invertebrates, aquatic plants Gill-nets during breeding, possibly hydroelectric schemes
Long-tailed duck <i>Clangula hyemalis</i>	Migrant	-, S	-	Yes	Arctic-alpine, arctic-tundra, lakes, coastal	Invertebrates, Gill-nets during breeding, possibly hydroelectric schemes
Common scoter <i>Melanitta nigra</i>	Migrant	-, S	-	Yes	Arctic-alpine, arctic-tundra, lakes	Invertebrates, Gill-nets during breeding, possibly hydroelectric schemes
Velvet scoter <i>Melanitta fusca</i>	Migrant	3, D	-	Yes	Arctic-alpine, arctic-tundra, coast (Sweden), lakes	Invertebrates, Gill-nets during breeding, possibly hydroelectric schemes
Rough-legged buzzard <i>Buteo lagopus</i>	Migrant	-, S	-	Yes	Arctic-alpine, taiga	Predator, small rodent specialist None observed
Gyrfalcon Falco rusticolus	Resident (dispersive migrant) Migrant	3, R	-	Yes	Arctic-alpine, also coast in Northern-Norway Arctic-alpine, taiga	Predator (mainly on birds) Localised persecution None observed
Hen harrier <i>Circus cyaneus</i>	Migrant	3, H	-	Yes		Birds and small rodents

Merlin <i>Falco columbarius</i>	Migrant	-, S	-	Yes (but <10% in arctic-alpine mountain)	Arctic-alpine, arctic-tundra, taiga, coast	Birds and small rodents	None observed
Kestrel <i>Falco tinnunculus</i>	Migrant	3, D	-	Yes (but <10% in arctic-alpine mountain)	Arctic-alpine, Taiga, coast	Birds and small rodents	None observed
Snowy owl <i>Bubo scandiacus</i>	Partial migrant	3, R, (UK)	Arctic-alpine heath and peatland	Yes, but rare in Norway, though in 2011 >40 nests found in Fennoscandia in high lemming year	Arctic-alpine, arctic-tundra	Predator, small rodent specialist	Possible effect of weather on small rodent population peaks; disturbance during breeding?
Crane <i>Grus grus</i>	Migrant	2, H	-	Yes (but <10% in arctic-alpine mountain)	Arctic-alpine, taiga	Herbivorous, and animals	None observed
Temminck's stint <i>Calidris temminckii</i>	Migrant	-, S	-	Yes	Arctic-alpine, arctic-tundra, coast	Invertebrates	None observed
Ruff <i>Philomachus pugnax</i>	Migrant	2, D	-	Yes	Arctic-alpine, arctic-tundra, peatland, coast	Invertebrates	None observed
Great snipe <i>Gallinago media</i>	Migrant	1, D	-	Yes	Arctic-alpine (peatland and floodplains in Poland, Baltic states, Belarus, Ukraine and Russia)	Invertebrates	Climatic changes (bushes and trees moving into fens)
Whimbrel <i>Numerius phaeopus</i>	Migrant	1, NE	-	Yes (but <10% in arctic-alpine mountain)	Arctic-alpine, fens in sub-alpine birch forest, arctic bush tundra, taiga, coast	Invertebrates, berries	None observed

Species	Migrant or resident	SPEC category,			Presence in Scandinavian mountains	Habitats used in arctic-alpine areas	Habitats used in Scandinavian arctic-alpine areas	Feeding specialism	Land-use impacts in breeding season in mountains
		European threat status, and presence in UK	arctic-alpine zone	Habitats used in UK arctic-alpine areas					
Wood sandpiper <i>Tringa glareola</i>	Migrant	3, H	-	-	Yes (but <10% in arctic-alpine mountain)	Arctic-alpine, low alpine and fens in sub-alpine birch forest, arctic bush tundra, taiga	Arctic-alpine, low alpine and fens in sub-alpine birch forest, arctic bush tundra, taiga	Invertebrates	None observed
Greenshank <i>Tringa nebularia</i>	Migrant	-, S	-	-	Yes (but <10% in arctic-alpine mountain)	Arctic-alpine, low alpine and fens in sub-alpine birch forest, arctic bush tundra, taiga	Arctic-alpine, low alpine and fens in sub-alpine birch forest, arctic bush tundra, taiga	Invertebrates	None observed
Redshank <i>Tringa totanus</i>	Migrant	2, D	-	-	Yes (but <10% in arctic-alpine mountain)	Arctic-alpine, taiga, coast	Arctic-alpine, taiga, coast	Invertebrates	None observed
Common sandpiper <i>Actitis hypoleucos</i>	Migrant	3, D	-	-	Yes (but <10% in arctic-alpine mountain)	Arctic-alpine, taiga, coast	Arctic-alpine, taiga, coast	Invertebrates	None observed, but possibly hydroelectric power schemes
Red-necked phalarope <i>Phalaropus lobatus</i>	Migrant	-, (S)	-	-	Yes	Arctic-alpine, arctic-tundra	Arctic-alpine, arctic-tundra	Aquatic invertebrates	None observed
Long-tailed skua <i>Stercorarius longicaudus</i>	Migrant	-, S	-	-	Yes	Arctic-alpine, arctic-tundra	Arctic-alpine, arctic-tundra	Predator, small rodent specialist	None observed

Cuckoo <i>Cuculus canorus</i>	Migrant	-, S	-	Yes (low alpine areas and subalpine birch forest)	Arctic-alpine, taiga, coast	Invertebrates	None observed
Short-eared owl <i>Asio flammeus</i>	Migrant	3, H	-	Yes (low alpine areas and open areas in the subalpine birch forest)	Arctic-alpine, taiga	Predator, small rodent specialist	None observed
Yellow wagtail <i>Motacilla flava</i>	Migrant	-, S	-	Yes	Arctic-alpine, taiga, heath, peatland	Invertebrates	None observed
Bluethroat <i>Luscinia svecica</i>	Migrant	-, S	-	Yes	Arctic-alpine, arctic bush tundra, taiga, heath, peatland	Invertebrates	None observed
Raven <i>Corvus corax</i>	Resident	-, S	-	Yes	Arctic-alpine, arctic tundra, taiga, coast	Omnivorous	None observed
Fieldfare <i>Turdus pilaris</i>	Migrant	-, S	-	Yes (but <10% in arctic-alpine mountain)	Arctic-alpine, arctic bush tundra, taiga, coast	Invertebrates	None observed
Willow warbler <i>Phylloscopus trochilus</i>	Migrant	-, S	-	Yes (but <10% in arctic-alpine mountain)	Arctic-alpine, arctic bush tundra, taiga, coast	Invertebrates	None observed
Reed bunting <i>Emberiza schoeniclus</i>	Migrant	-, S	-	Yes (but <10% in arctic-alpine mountain)	Arctic-alpine, arctic bush tundra, taiga, coast, peatland with bushes	Invertebrates	None observed
Twite <i>Carduelis flavirostris</i>	Migrant	-, S	-	Yes (>50% of the population in arctic-alpine mountain)	Arctic-alpine, coast	Invertebrates, seeds	None observed

Workers such as Nethersole-Thompson and Watson (1981) provide important examples of exceptional breeding records from the Cairngorms (e.g. lapwing formerly nesting in the arctic-alpine zone on one mountain) which we have not included as these are atypical. Several more species occur across these habitats throughout northern Europe, but are not regular or typical breeders within the arctic-alpine zone – these are also excluded. For instance, in Britain, Manx shearwaters *Puffinus puffinus* nest above the former treeline on Rum, blackbirds *Turdus merula* nest almost at the former treeline in the Lake District and song thrushes *T. philomelos* nest above such habitat in the Outer Hebrides (see also Ratcliffe and Thompson, 1988; Ratcliffe, 1990). The authors would welcome any records or information which could be used to revise this Appendix.

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