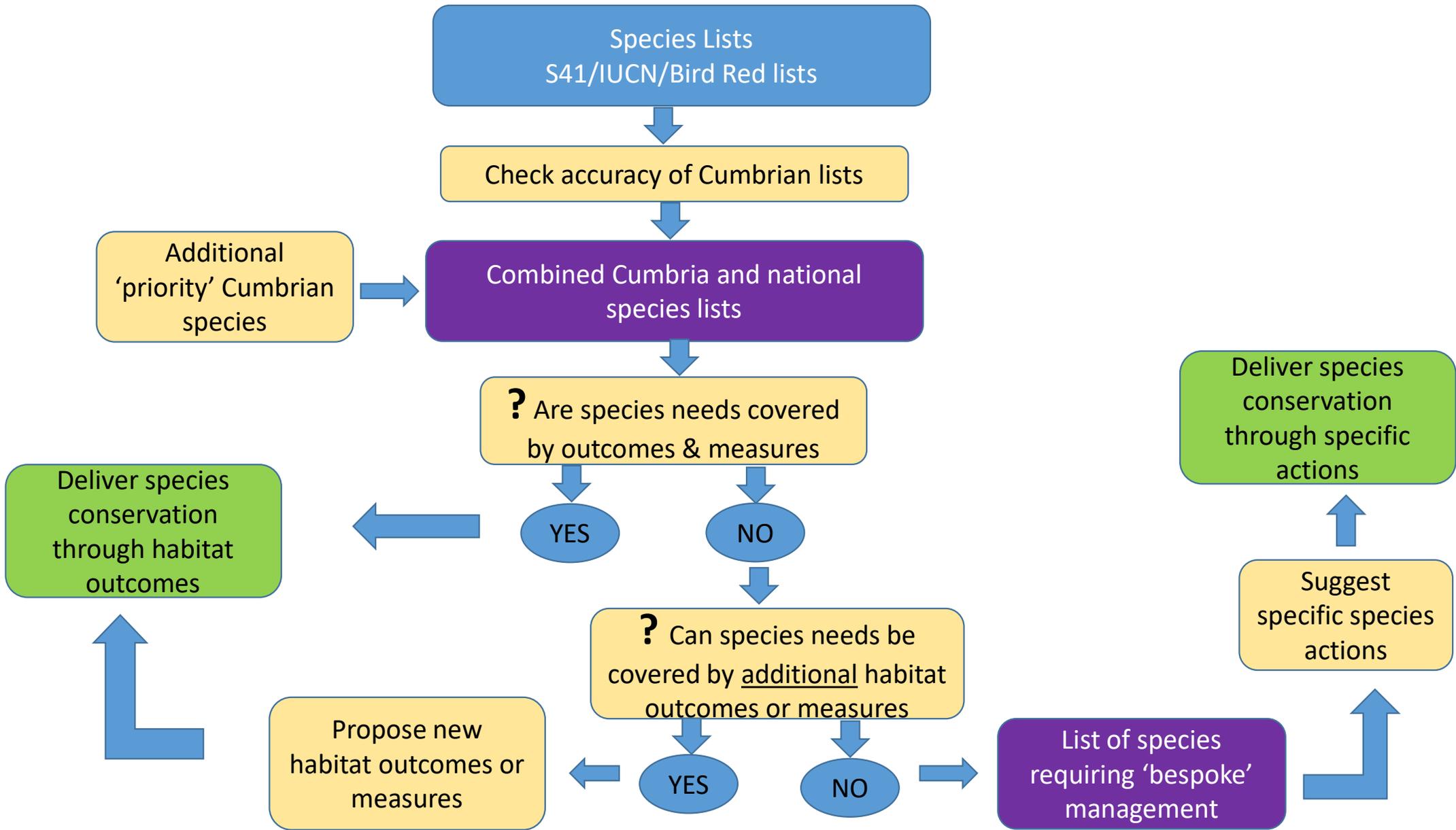


Appendix 4

Methodology and initial review of
outcomes and measures for species



Cumbria Local Nature Strategy Pilot: Priority Species Review - DRAFT

Reptiles and amphibians

NERC S41 and IUCN (Red) Lists – 9 species identified from Cumbria Species Records. From discussion with national and local recorders 7 species were assessed as being ‘Priority Species’ for Cumbria.

Species requiring bespoke management beyond LNRS Measure highlighted in orange. Species potentially addressed by Measures but requiring targeted advice and/or support for land managers highlighted in green.

Species	Common Name	Habitat Association/ requirements	LNRS Measures	Requirements addressed by LNRS Measure	Suggested Amendments to Measures, or other requirements
<i>Anguis fragilis</i>	Slow worm	Grasslands, arable field margins, hedgerows, lowland heathland, traditional orchards, brownfield sites, woodland	B1, W2, W3, W4, W5, W6, W7, U10, LH4	Y	Covered by measures - advisers/land managers will need awareness of habitat management requirements.
<i>Bufo bufo</i>	Common toad	Ponds, woodland, hedgerows, grassland, brownfield sites	WT17, WT18, WT20, U8, U10, W1, W2, W3, W4, W5, W6, W7, G5	Y	Covered by measures
<i>Epidalea calamita</i>	Natterjack toad	Ponds, lowland heathland, coastal sand dunes, coastal saltmarsh	H19, PN5, G4, G5, G6, L13, WT1, WT17, WT18, WT20, C2, C3, C15	N	This species requires specific management measures that are linked to distribution, including the creation of seasonal shallow pools that are shallower than most ponds.
<i>Natrix helvetica</i>	Grass snake	Grassland, arable field margins, hedgerows, traditional orchards, brownfield sites, woodland, coastal floodplain and grazing marsh, lowland fens, lowland raised bog, reedbeds, rivers, lakes, ponds.	WT 18, WT20, L6, L7, W2, W3, G4, G5, G14.	Y	Covered by measures - advisers/land managers will need awareness of habitat management requirements.

<i>Triturus cristatus</i>	Great crested newt	Coastal and floodplain grazing marsh, lowland fens, lakes, ponds, arable field margins, hedgerows, grasslands, traditional orchards, woodland, wet woodland, coastal sand dunes	WT17, WT18, WT20	Y	Covered by measures - advisers/land managers will need awareness of habitat requirements including sufficient aquatic vegetation.
<i>Vipera berus</i>	Adder	Lowland fens, lowland raised bog, grassland, lowland heathland, brownfield sites, blanket bog, upland heathland, woodland, coastal sand dunes, maritime cliff and slope	H7, H19, LH4, W2, B1, G5	Y	Covered by measures - advisers/land managers will need awareness of habitat management requirements.
<i>Zootoca vivipara</i>	Common lizard	Lowland fens, lowland raised bog, arable field margins, hedgerows, grassland, lowland heathland, upland heathland, traditional orchard, brownfield sites, blanket bog, woodland, coastal sand dunes, maritime cliff and slope	H7, H19, LH4, W2, B1, G5	Y	Covered by measures - advisers/land managers will need awareness of habitat management requirements.

Cumbria Local Nature Strategy Pilot: Priority Species Review - DRAFT

Birds

NERC S41 and IUCN (Red) Lists – 130 species identified from Cumbria Species Records (+ 30 very rare/vagrant species and 9 extinct species). From discussion with national and local recorders 59 species were assessed as being 'Priority Species' for Cumbria, including some extinct species that could be reintroduced.

Species requiring bespoke management beyond LNRS Measure highlighted in orange. Species potentially addressed by Measures but requiring targeted advice and/or support for land managers highlighted in green.

Species	Common Name	Habitat Association/ requirements	LNRS Measures	Requirements addressed by LNRS Measure	Suggested Amendments to Measures, or other requirements
<i>Larus fuscus subsp. graellsii</i>	British Lesser Black-Backed Gull	Coastal habitat, urban areas	C1, C15	Y	Covered by measures - populations should be monitored as Cumbria holds a significant part of the world population of this race and there is poor breeding productivity at coastal sites.
<i>Sterna paradisaea</i>	Arctic tern	Saltmarsh/coastal shingle	C1, C10, C15	Y	Covered by measures
<i>Tyto alba</i>	Barn owl	Arable field margins, woodland edge, rough grassland	H5, H7, H12, H14, H15, H16, H19, PN18, PN19, U7, G4	N	This species requirements for conservation are not fully addressed by LNRS habitat-based measures. Availability of nesting sites, prey availability and secondary poisoning through rodenticides are main conservation issues
<i>Botaurus stellaris</i>	Bittern	Reedbeds	WT11, WT12	Y	Covered by measures through reedbed enhancement and expansion. Distribution of this species in Cumbria is restricted to

					around Morecombe Bay which is where efforts should be focussed.
<i>Tetrao tetrix</i>	Black Grouse	Fell edge scrub/rough pasture	H1-6, H11, H16, H19, P11, P16, F1-12	Y	Covered by measures - advisers/land managers will need awareness of habitat management requirements, particular regarding grazing intensity.
<i>Cephus grylle</i>	Black Guillemot	Coastal habitats	C1, C9, C11, C15	Y	Covered by measures. Distribution of this species in Cumbria is restricted to St. Bees head which is the only breeding colony in England.
<i>Cinclus cinclus subsp. gularis</i>	British Dipper	Fast flowing rivers	R1, R2, R9, R10, R18-27	Y	Covered by measures
<i>Pyrrhula pyrrhula</i>	Bullfinch	Orchards, parkland, good quality woodland, scrub	W2, W7, W8, W22, W24, W25, W26, W40, W41, W42, H14, PN1, PN2	Y	Covered by measures
<i>Larus canus</i>	Common Gull	Arable, wetlands, lakes, coastal habitats	L6, L7, L8, L9, L10, WT1, WT2, WT14, C10	Y	Covered by measures. Creation of "safe islands" (L9) is recommended at Tindale Tarn.
<i>Actitis hypoleucos</i>	Common Sandpiper	Rivers, lakes	R1, L8	Y	Covered by measures
<i>Sterna hirundo</i>	Common Tern	Breeds along coasts with shingle beaches and rocky islands, on rivers with shingle bars and at inland gravel pits and reservoirs, feeding along rivers and over freshwater	C10, C14, H18, PN5, PN6, PN25, PN26	Y	Covered by measures. This species is vulnerable to disturbance and predation which should be understood by land managers.
<i>Crex crex</i>	Corncrake	Coastal sand dunes, coastal floodplain and grazing marsh, lowland fens, reedbeds, lowland	G9, G10, G11, G12		This species is extinct in Cumbria and requires reintroduction, feasibility studies are ongoing.

		heathland, grassland, broadleaved woodland			
<i>Grus grus</i>	Crane	Reedbeds, lowland fens, lowland raised bog, coastal flood plain and grazing marsh	WT1, WT3, WT7, WT11		This species could be considered for reintroduction/re-establishment via existing expanding England populations
<i>Cuculus canorus</i>	Cuckoo	Reedbeds, moorland, heaths, rough grassland, unimproved grassland, salt marshes, dune systems	G5, LH1, LH2, WT11, WT12	Partially	The main conservation challenges are around migration. The focus should be on supporting host species (meadow pipit and reed warbler) through habitat measures.
<i>Numenius arquata</i>	Curlew	Upland grassland, rushy/wet pasture, upland heath, blanket bog, estuaries, intertidal mudflats	F1-10, F13, G7, P4-8, P14, P15, WT1, WT2, WT4, WT5, WT14, WT15, R9	Y	Covered by measures if WT17 is amended to include “ponds and scrapes”. Advisers and landowners should be aware of appropriate habitat management.
<i>Charadrius morinellus</i>	Dotterel	Montane habitats, blanket bog	F1-10, P1-10	Partially	This is a red listed species and the causes of recent population decline are uncertain, but the effects of climate change, nitrogen deposition, intensive grazing and nest predation are likely contributors. Additional bespoke action may be required.
<i>Calidris alpina</i>	Dunlin	Montane habitats, peatland habitats	F1-10, P1-10	Y	Covered by measures – advisors and land managers should be aware of habitat management requirements such as the use of cutting to break up areas of contiguous long heather.
<i>Somateria mollissima</i>	Eider	Coastal habitats	H1, PN	Y	Covered by measures – additional measure recommended: “working with local fisheries to minimise risk of bycatch”.

<i>Fulmarus glacialis</i>	Fulmar	Coastal habitats	C1, C15	Y	Covered by measures
<i>Pluvialis apricaria</i>	Golden Plover	Farmland, upland moorland, grassland, estuaries	F1-10, P1-10	Y	Covered by measures
<i>Locustella naevia</i>	Grasshopper Warbler	Hedgerows, traditional orchards, broadleaved woodland, wood pasture and parkland, brownfield sites	H14, H19, G5, W2-8, W13, W22, W24, W25, W26, W37, W38, W40, W41, W42	Y	Covered by measures
<i>Perdix perdix</i>	Grey Partridge	Farmland	G9, G10, G11, G12	Y	Covered by measures. Advisers and land managers should be aware of habitat management requirements, there are guidelines available from Game Conservancy.
<i>Coccothraustes coccothraustes</i>	Hawfinch	Traditional orchards, broadleaved woodland, wood pasture and parkland	W1, W9-20, W21-28, W38	Partially	This species is red-listed and the causes of decline are unknown. Surveying and monitoring of existing populations is required, and bespoke action may be required.
<i>Circus cyaneus</i>	Hen Harrier	Lowland heathland, upland heathland, grasslands, reedbeds, arable field margins	P10, P11, P12	N	This species is red-listed and persecution remains a major threat. Bespoke monitoring and protection of nest sites and winter roosts is required
<i>Larus argentatus</i>	Herring Gull	Coastal habitats	C1, C15	Y	Covered by measures – populations should be monitored as there is low breeding productivity at coastal sites
<i>Delichon urbicum</i>	House Martin	Grassland, farmland, water bodies	U7	Y	Covered by measures
<i>Vanellus vanellus</i>	Lapwing	Coastal saltmarsh, coastal and floodplain grazing marsh, saline lagoons, grassland, upland hay meadows, brownfield sites	H5, H6, PN29, F1-3, F10, WT1, WT2, WT13-16,	Y	Covered by measures if WT17 is amended to include “ponds and scrapes”. Advisors and land

			WT19, WT20, G9-12		managers will need to be aware of appropriate habitat management.
<i>Charadrius dubius</i>	Little Ringed Plover	Gravel pits, reservoirs, sewage works, shingle beaches, river banks.	B1, R1, R2, C4, C14	Y	Covered by measures. This species requires bare gravel/shingle habitat, maintenance of these areas could be mentioned in measures.
<i>Sternula albifrons</i>	Little Tern	Coastal habitats, shingle beaches	C1, C10, C14, C15	Y	Covered by measures – this species is particularly vulnerable to disturbance and predation
<i>Asio otus</i>	Long-eared owl	Coniferous woodland, deciduous woodland, hedgerows, scrub	W2-7, W13, W23, W28, W29, W37, W38, W39	Y	Covered by measures
<i>Circus aeruginosus</i>	Marsh Harrier	Reedbeds, coastal and floodplain grazing marsh, arable fields	WT1, WT2, WT11, WT12, WT20	Y	Covered by measures. Enforcement of the law on raptor persecution would also benefit this species.
<i>Poecile palustris</i>	Marsh tit	Broadleaved woodland, carr woodland and scrub	W1, W10-18, W22, W23, W37-39	Y	Covered by measures
<i>Falco columbarius</i>	Merlin	Upland heath, scrub, mature heather/vegetation >40cm	P10, P11, P12, F2, F5-9	N	Bespoke monitoring and protection of nest sites is required for this red-listed species
<i>Haematopus ostralegus</i>	Oystercatcher	Wet grassland, coastal habitats, shingle beaches,	C14, H5, H6, PN29, F1-3, F10, WT1, WT2, WT13-16, WT19, WT20	Y	Covered by measures – amend WT17 to include “ponds and scrapes”. Advisers and land managers should be aware of appropriate habitat management
<i>Falco peregrinus</i>	Peregrine falcon	Cliffs, quarries, tall buildings	P11, U7, PN14, PN25	N	Bespoke monitoring and protection of traditional nest sites is required as this species is vulnerable to persecution.
<i>Ficedula hypoleuca</i>	Pied Flycatcher	Mature broadleaved woodland with an open-structured under-storey,	W9-20, W38, W39	Y	Covered by measures. Advisers and land managers should be aware of

		low levels of tall field layer and high abundance of deadwood			appropriate woodland management for this species.
<i>Anas acuta</i>	Pintail	Coastal habitats, estuaries	C1, C4, C8, C9, C14	Y	Covered by measures
<i>Tringa totanus</i>	Redshank	Wet grassland, hay meadows	H5, H6, PN29, F1-3, F10, WT1, WT2, WT3, WT7, WT11, WT13-16, WT19, WT20	Y	Covered by measures – amend WT17 to include “ponds and scrapes”. Advisers and land managers should be aware of appropriate habitat management
<i>Phoenicurus phoenicurus</i>	Redstart	Broadleaved woodland, wood pasture and parkland, hedgerows, traditional orchards	W1, W9-20, W21-28, W38	Y	Covered by measures
<i>Emberiza schoeniclus</i>	Reed Bunting	Broadleaved woodland, coniferous woodland, lowland fens, reedbeds, hedgerows, grasslands, brownfield sites	H10-15, WT1, WT2, WT11, WT12-15	Y	Covered by measures
<i>Turdus torquatus</i>	Ring Ouzel	Inland rock, outcrop and scree, mountain heath and willow scrub, upland calcareous grassland, upland heathland	F1-6, F8, F10, F12, F13	Y	Covered by measures – advisers and landowners should be aware of habitat management requirements, particularly relating to grazing intensity.
<i>Charadrius hiaticula</i>	Ringed Plover	Coastal habitats	C1, C4, C10, C14	Y	Covered by measures
<i>Sterna sandvicensis</i>	Sandwich Tern	Coastal vegetated shingle	C1, C10, C14, C15	Y	Covered by measures
<i>Spatula clypeata</i>	Shoveler	Wetlands	L1, L2, L4, L8	Y	Covered by measures
<i>Alauda arvensis</i>	Skylark	Coastal sand dunes, coastal and floodplain grazing marsh, upland calcareous grassland, upland hay meadows, upland heathland, arable field margins, brownfield sites	H10-15, G4, G5	Y	Covered by measures – advisers and landowners should be aware of habitat management requirements.

<i>Gallinago gallinago</i>	Snipe	Wet grassland, upland heathland, upland bog	H5, H6, PN29, F1-3, WT1-3, WT7, WT11, WT13-16, WT19, WT20	Y	Covered by measures if WT17 is amended to include “ponds and scrapes”. Advisers and landowners should be aware of habitat management requirements.
<i>Muscicapa striata</i>	Spotted Flycatcher	Hedgerows, traditional orchards, broadleaved woodland, wood pasture and parkland, brownfield sites	W2, W8, W30, W40-44	Y	Covered by measures – advisers and landowners should be aware of habitat management requirements including the development and management of wide rides and glades.
<i>Hirundo rustica</i>	Swallow	Grassland, farmland, hedgerows, wetland, rivers, lakes, open woodland	U7	Y	Covered by measures
<i>Apus apus</i>	Swift	Grassland, farmland, hedgerows, wetland, rivers, lakes, open woodland, urban areas	U7	Y	Covered by measures
<i>Passer montanus</i>	Tree sparrow	Broadleaved woodland, wood pasture and parkland, traditional orchards, hedgerows, grasslands, arable field margins	U7, H10-15, W2-7	Y	Covered by measures – amend U7 which currently relates specifically to urban areas but nest boxes for rural species such as tree sparrow are helpful and important.
<i>Linaria flavirostris</i>	Twite	Upland moorland, hay meadows, pasture	F2, F5-9, G6	Y	Covered by measures – advisors and land managers should be aware of habitat management requirements.
<i>Saxicola rubetra</i>	Whinchat	Upland heathland, fell and fell edge habitats, bracken	F1-3, F5-8, F10	Y	Covered by measures. Further research into the cause of decline are required which is ongoing at RSPB Geltsdale.
<i>Haliaeetus albicilla</i>	White-tailed eagle	Coastal habitats, lakes			This species is currently extinct in Cumbria and may be considered for re-introduction.

<i>Poecile montanus</i>	Willow tit	Wet copses, riverside woodland and scrubby areas often near reservoirs and gravel pits, brownfield sites	W12, W21-28, W38	N	This red-listed species requirements for conservation are not fully addressed by LNRS measures. Bespoke action is required to slow or prevent natural succession in young woodlands or provide young successional woodland patches in reasonable proximity to existing occupied sites.
<i>Phylloscopus sibilatrix</i>	Wood Warbler	Broadleaved woodland	W21-28, W38	Y	Covered by measures – advisors and land managers should be aware of habitat management requirements.
<i>Scolopax rusticola</i>	Woodcock	Broadleaved woodland, mixed woodland	W1, W11, W13, W21, W22, W23, W29, W37, W38, W39	Y	Covered by measures – advisors and land managers should be aware of habitat management requirements.
<i>Motacilla flava</i>	Yellow Wagtail	Wet grassland, wetland habitats, hay meadows, arable field margins, coastal salt marsh.	G5, G6, G9, G10, G11, G12, H10-15, WT14, WT15	Y	Covered by measures.
<i>Emberiza citrinella</i>	Yellowhammer	Broadleaved woodland, traditional orchards, lowland heathland, grassland, hedgerows, arable field margins	F10, G4, G5, G6, G14, W2, W26	Y	Covered by measures.
<i>Aquila chrysaetos</i>	Golden Eagle	Montane habitats, upland moorland			This species is currently extinct in Cumbria and may be considered for reintroduction.

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Butterflies and Moths

NERC S41 and IUCN (Red) Lists – 112 species identified from Cumbria Species Records (+ 8 ‘incorrect’ records and 3 extinct species). From discussion with Butterfly Conservation and recorders 30 species were assessed as being ‘Priority Species’ for Cumbria (included several species not on S41 or IUCN Lists).

Species requiring bespoke management beyond LNRS Measure highlighted in orange. Species potentially addressed by Measures but requiring targeted advice and/or support for land managers highlighted in green.

Species	Common Name	Habitat Association/ requirements	LNRS Measures	Requirements addressed by LNRS Measure	Suggested Amendments to Measures, or other requirements
<i>Rheumaptera hastata</i>	Argent & Sable	Larval hosts are young birch and bog myrtle. Recent records from fewer than 10 sites. Threatened/possibly extinct due to mire re-wetting at two sites.	W38, W39, P13	N (partially)	Management for this species not included in heathland and mire Measures. Specific mention in P13. Needs targeted proactive management.
<i>Trichopteryx polycommata</i>	Barred Tooth-striped	At risk from ash dieback; larval hosts are young ash and wild privet (mainly former in Cumbria). Cumbria holds a significant proportion of the national resource.	?	?	Need to confirm actions required for this species
<i>Selidosema brunnearia</i>	Bordered Grey	In Cumbria, Bordered Grey is a mire specialist with populations in South Cumbria, notably at Meathop Moss.	?	?	Need to confirm actions required for this species
<i>Thecla betulae</i>	Brown Hairstreak	Requires young sucker growth of blackthorn in 1-3 year category therefore can be conserved by allowing soft scrub edge to develop. Population could be enhanced by sympathetic hedgerow management.	W2, W3, W6, W7, W23, W25, W27	Y	Potentially species requirements can be met by Measures relating to hedgerows and scrub. However this will need targeted and proactive work, supported by advisers with good overview of the species/ locations

Thera cognata	Chestnut-coloured Carpet	Most surviving English populations in Cumbria. Larval host threatened by Phytophthora juniperus so conservation efforts should focus on protecting/increasing the shrub. Plantings to be mapped so future surveys can target the moth.		N	Bespoke targeted action required on protection or increasing juniper scrub
Adscita geryon	Cistus forester	Caterpillar feeds on common rock-rose. Key requirement is rockrose as larval food plant - needs appropriate grazing levels at key locations.	G2, G4,G6	Y	Needs awareness raising in land managers and advisors with regards to optimal grazing management and key locations.
Pelurga comitata	Dark Spinach	Much declined throughout range - suspected direct habitat loss larvae feed on orache (Atriplex) and goosefoot (Chenopodium); suburban habitats, waste ground and similar weedy locations	B1, B2	N	Needs new Measure specifically identifying and protecting key brownfield and other sites.
Epione vespertaria	Dark bordered beauty	Restoring habitat for potential re-introduction would be of national importance in supporting this species.			Consider for Re-introduction
Erynnis tages	Dingy Skipper	Main threat redevelopment of brownfield sites. Mitigatory habitat creation viable.	B1, B2	Y	Needs new measures with identifying and protection of key brownfield sites
Hamearis lucina	Duke of Burgundy	Lowland calcareous grassland, grassland, broadleaved woodland. Threatened by lack of and inappropriate management in woodlands. Decreasing.	W38, W39, G2, G4, G6	N	Requires bespoke management - requirements not always served by standard CS agreements on grasslands, threatened by lack of and inappropriate management in woodlands.

Adscita statices statices	Forester	Species rich grassland of all types. Maintenance of a medium-tall sward with abundant sorrel and nectar plants is essential. Light grazing is required to prevent scrub encroachment, over-grazing can be very detrimental.	G2, G4,G5, G6,G7	Y	Targeted action at known sites - wider landscape habitat management?
Hipparchia semele	Grayling	Many Cumbrian populations are on brownfield 'open mosaic on previously developed land' sites; habitat not easily created, unlike small blue and dingy skipper: grayling needs barer ground and habitat of occupied brownfield sites has often taken decades to attain suitability.	B1	N	Needs new Measure relating to identification and protection of key brownfield sites. Needs targeted proactive management of brownfield habitats
Argynnis adippe	High Brown Fritillary	Requires bespoke management of both woodlands and grasslands.		N	Requires bespoke management of both woodlands and grasslands
Coenonympha tullia davus	Large Heath	Drainage & tree planting possible main threats, possibly N pollution	P2, P4, P5, P12, P13	N	Requires targeted action in sites in close proximity to existing populations. Restoration of peatland hydrology.
Photedes captiuncula	Least Minor	Larval host: Glaucous Sedge. Species seems to fare best on ungrazed or very lightly grazed habitat. Extremely rare in England with most extant populations in Cumbria.	G2, G4,G5, G6,	Y	Potentially covered by Measures, but needs targeted management and sites survey
Euphydryas aurinia	Marsh Fritillary	Doing well following reintroduction after species was lost from Cumbria but site management requires input (advisory) and resource.	G2, G4,G5, G6,G7	Y	Measures cover species requirements (specifically mentioned in G7) - but specialist advice required.

Erebia epiphron	Mountain Ringlet	Likely to shift upwards therefore maintenance of both occupied and potential habitat essential.	F1, F2, F10	N	Requires more targeted action with creation of micro-climate/habitat niches (particularly as colonies may need to move to higher altitudes in response to changing climate)
Eustroma reticulata	Netted Carpet	Cumbria holds entire UK population Management of woodland and disturbance of ground to facilitate establishment of larval host plant is effective. Larvae feed on the foliage of touch-me-not (<i>Impatiens noli-tangere</i>), and the moth is only to be found in close proximity to the foodplant	N	N	Bespoke targeted woodland management required.
Aricia artaxerxes artaxerxes	Northern Brown Argus	Intolerant of heavy grazing, especially sheep. Climate change increases risk of hybridisation with <i>A. aegestis</i> which is spreading northwards.	LP9, LP12, G2, G4, G5, G6	Y	Covered by Measures - will need land managers and advisers to be aware of habitat management requirement
Xestia alpicola alpina	Northern Dart	Extremely rare; threatened by climate change. The larval foodplant is crowberry		N	Very rare species - needs targeted action
Boloria euphrosyne	Pearl-bordered Fritillary	Woodland, scrub, bracken, grassland. Food plant violets.	W38 & W39	N	Needs bespoke pro-active management targeted at key sites/locations
Melanthia procellata	Pretty Chalk Carpet	Restricted to limestone woodland close to Kent estuary. Larval host: Traveller's Joy.	W38, W39	N	Very restricted species - requires bespoke targeted management
Coenophila subrosea	Rosy Marsh Moth	South Cumbria Mosses - larvae feed on bog-myrtle	P13	N	Very limited distribution - South Cumbria Mosses. Needs targeted action at these sites
Erebia aethiops	Scotch Argus	England's entire population is in Cumbria (note undocumented)	LP9, LP12, G2, G4, G5, G6	N	Requires bespoke management

		releases in Yorkshire). Declining at Arnside Knott, believed stable at Smardale Gill.			
Cupido minimus	Small Blue	Threatened by development of brownfield sites; habitat creation is possible.	B1	Y	Needs specific protection of brownfield sites
Eriogaster lanestris	Small Eggar	Improved management of hedgerows and scrub would benefit both Small Eggar and Brown Hairstreak, both of which occur within Morecambe Bay Limestones LCA Small Eggar is both rare and decreasing, especially so in northern England.	W2, W5, W6, W7, W25, W26	Y	Species reflected in the Measures. Will need land managers and advisers to be aware of habitat management requirement.
Erebia epiphron mnemon	Small Mountain Ringlet	Mountain heath and willow scrub, upland heathland, upland flushes, fens and swamps, upland calcareous grassland			Potential re-introduction?
Boloria selene	Small Pearl-bordered Fritillary	Requires woodland management where it occurs in that habitat	W38, W39, G6, G7	Y	Species reflected and mentioned in the Measures. Will need land managers and advisers to be aware of habitat management requirement
Synanthedon scoliaeformis	Welsh Clearwing	Red Data Book	?	?	Unsure of management needs
Anania funebris	White-spotted Sable	Beneficiary of coppice management and managed wide woodland rides - promotes growth of larval host (Golden-rod)	LP12, LP13, W22, W25, W26, W38, W39	Y	Species reflected in the Measures. Will need land managers and advisers to be aware of habitat management requirement

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Fish

NERC S41 and IUCN (Red) Lists – 13 species identified from Cumbria Species Records. From discussion with local Rivers Trusts and recorders 7 species (all S41 species) were assessed as being ‘Priority Species’ for Cumbria.

Species	Common Name	Habitat Association/ requirements	LNRS Measures	Requirements addressed by LNRS Measure	Suggested Amendments to Measures, or other requirements
<i>Anguilla anguilla</i>	European Eel	Lakes, ponds, rivers, lowland fens, coastal floodplain and grazing marsh. Unobstructed rivers (natural) – migratory species. Connectivity to wetlands. Water quality (for invertebrate food)	L1, L2, L5, L13, R18, R23, R24R28	Y	Could be more specific about mentioning eel in the outcomes/measures?
<i>Coregonus albula</i>	Vendace	Lakes. High Water Quality, naturally oligotrophic conditions and cool water. Deep water and gravels for spawning (no siltation and water depth over littoral zones-could be harmed by over abstraction), absence of non-native coarse fish	R1, R2, R3, R4, R7, R8, R14, R16, R17, R18, R20, R23, R24, R26, R27, R29	N	Needs measures relating more explicitly to introductions of alien species into habitats, including coarse fish.
<i>Salmo salar</i>	Atlantic Salmon	Rivers. High Water Quality, unobstructed natural rivers systems –migratory species (low to upper reaches of the system). Deep pools, shallow water, gravel beds (no siltation). Commercial fishing.	L1, L2, L5 L13, R1, R2, R3, R4, R7, R8, R14, R16, R17, R18, R20, R23, R24, R26, R27, R29	Y	
<i>Salmo trutta</i>	Brown/Sea Trout	Lakes, Rivers. High Water Quality. Unobstructed natural river systems	L1, L2, L5 L13, R1, R2, R3, R4, R7, R8, R14,	Y	

		(lower to upper reaches). Gravel beds (no siltation). Commercial fishing	R16, R17, R18, R20, R23, R24, R26, R27, R29		
<i>Salmo trutta subsp. fario</i>	Brown Trout	Lakes, Rivers. High Water Quality. Unobstructed natural river systems (lower to upper reaches). Gravel beds (no siltation). Commercial fishing	L1, L2, L5 L13, R1, R2, R3, R4, R7, R8, R14, R16, R17, R18, R20, R23, R24, R26, R27, R29	Y	
<i>Salmo trutta subsp. trutta</i>	Sea Trout	Lakes, rivers, marine. High Water Quality. Unobstructed natural river systems (lower to upper reaches). Gravel beds (no siltation). Commercial fishing	L1, L2, L5 L13, R1, R2, R7, R9, R14, R17, R18, R21, R23, R24, R27	Y	
<i>Salvelinus alpinus</i>	Arctic Charr	Lakes. High Water Quality, cool water and deep lakes. Gravels for spawning (no siltation and water depth over littoral zones for lacustrine spawners -could be harmed by over abstraction)	L1, L2, L5, L13, R18, R23, R24R28	N	Needs measures relating more explicitly to introductions of alien species into habitats, including coarse fish

With adjustments to Measures as outlined in table no species are considered to require bespoke management outwith general habitat management measures.

Cumbria Local Nature Strategy Pilot: Priority Species Review - DRAFT

Mammals

NERC S41 and IUCN (Red) Lists – 25 species identified from Cumbria Species Records. From discussion with national and local recorders 6 species were assessed as being ‘Priority Species’ for Cumbria.

Species requiring bespoke management beyond LNRS Measure highlighted in orange. Species potentially addressed by Measures but requiring targeted advice and/or support for land managers highlighted in green.

Species	Common Name	Habitat Association/ requirements	LNRS Measures	Requirements addressed by LNRS Measure	Suggested Amendments to Measures, or other requirements
<i>Arvicola amphibius</i>	European water vole	Rivers, ponds, and other lowland wetland habitats with dense marginal vegetation.	L10, L12, R5, R14, WT20, H15	N	This species has a very limited distribution in Cumbria and bespoke action to control populations of American mink is required in addition to LNRS habitat-based measures.
<i>Lutra lutra</i>	European otter	Lakes, ponds, rivers, brownfield sites, coastal and floodplain grazing marsh, lowland raised bog and reedbeds	R14, R18, R19, R20, R21, R22, R23, R27	Y	Covered by Measures - will need land managers and advisers to be aware of habitat management requirement
<i>Martes martes</i>	Pine marten	Woodland	W1, W13, W23	N	There are no confirmed populations of this species in Cumbria, reintroduction will likely be necessary, feasibility studies for reintroduction into South Cumbria are ongoing.
<i>Muscardinus avellanarius</i>	Hazel dormouse	Hedgerows, traditional orchards and broadleaved woodland.	W1, W3, W4, W5, W6, W7, W38	N	This species has a very limited distribution and is subject to a reintroduction project in South Cumbria. Bespoke woodland

					management beyond the LNRS Habitat –based measures is required
<i>Sciurus vulgaris</i>	Eurasian Red Squirrel	Broadleaved woodland and coniferous woodland	W34, W1, W11, W13, W23, W38	Y	Covered by measures – control of grey squirrel populations is important for the conservation of this species but this is addressed in measures.
<i>Castor fiber</i>	Eurasian beaver		R5	N	Reintroduction of this species is necessary. There are currently 2 enclosed trials in Cumbria.

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Molluscs

NERC S41 and IUCN (Red) Lists – 12 species identified from Cumbria Species Records (of which 1 considered to be an incorrect record). From discussion with national (Buglife and Conchological Society of Great Britain and Ireland) and local recorders 6 species were assessed as being ‘Priority Species’ for Cumbria.

Species requiring bespoke management beyond LNRS Measure highlighted in orange. Species potentially addressed by Measures but requiring targeted advice and/or support for land managers highlighted in green.

Species	Common Name	Habitat Association/ requirements	LNRS Measures	Requirements addressed by LNRS Measure	Suggested Amendments to Measures, or other requirements
<i>Margaritifera (Margaritifera) margaritifera</i>	Freshwater Pearl Mussel	Clean, nutrient poor low-calcium rivers. Cumbrian Population under SAC designation.	R21, R22, R23, R24, R25, R1	N	This species is critically endangered and subject to focussed Species Recovery Work – and as such is characterised as needing bespoke management beyond the LNRS Habitat –based measures.
<i>Omphiscola glabra</i>	Mud Snail	Ponds, rivers, lowland fens, grasslands freshwater marshes, small ditches, temporary pools or seepages. Most often found on coastal and floodplain grazing marsh and ponds.	L1, L10, R9, R10, R11, WT3, WT4, WT7, WT9, WT16, WT17, WT18	Y	Need to include ponds in outcome/measure (where missing). Worth regularly monitoring populations. Specific Measures relating to this species need linking to distribution
<i>Quickella arenaria</i>	Sandbowl Snail	Bare mud in calcareous flushes and seepages. Ponds, upland flushes, fens and swamps, coastal sand dunes. Undergrazing more of a threat than undergrazing? Open habitat (unshaded with low vegetation)	WT1, WT3, WT4, WT9,	Y	Advisers/land managers will need awareness of grazing management needs. Specific Measures relating to this species need linking to distribution

<i>Succinella oblonga</i>	Small Amber Snail	Damp places where it can feed on algae and plant detritus, for example, calcareous stony unvegetated/muddy flushes	WT1, WT3, WT4, WT9,	N	Very restricted species potentially only one site which is inappropriately managed. Needs bespoke or pro-active management
<i>Vertigo (Vertigo) geyeri</i>	Geyer's Whorl Snail	Open flushes in calcareous fens and mires. It lives in sedges (e.g. <i>Carex viridula</i> , <i>Schoenus nigricans</i>) and mosses (e.g. <i>Drapanocladus</i> , <i>Palustriella</i>) at the interface between the water table and the base of the herb layer where the surface substrates are at or near field capacity but not subject to seasonal flooding	WT1, WT3, WT4, WT9,	Y	Covered by Measures - will need land managers and advisers to be aware of habitat management requirements
<i>Vertigo (Vertigo) lilljeborgi</i>	Lilljeborg's Whorl Snail	Clean, nutrient poor low-calcium rivers. Cumbrian Population under SAC designation.	?	?	