

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

Species	Order/family	Manoeuvrability	Size	Flight speed	Vision physiology/ Perception in flight direction	Habitat / habitat use	Foraging	Active time	Status (migratory, non migratory, wintering)	Congregation (flocking/ gregarious)	Similarity Points (Max. 30)	CSR reference species	CSR reduction compared to the reference species	Similarity-based KSR reduction of the reference species (final result)
Great-bustard (R) <i>Otis tarda</i>	Otidiformes; ; Otididae	26.2 g/cm	70-100 cm	50-90 km/h	Extensive blind area	Open land, Agricultural grassland	Walking on the ground; poking/ pecking	diurnal and crepuscular	J	Grouping in winter		2		
Capercaillie <i>Tetrao urogallus</i>	Galliformes; Phasianidae	30.7 g/cm	54-95 cm	65 km/h	Extensive blind area or poorly developed fovea	Quiet coniferous and mixed forests	Walking on the ground; poking/ pecking	diurnal and crepuscular	J	Grouping in winter			-1	1
	0	2	2	3	3	0	3	3	3	3	22			
Black grouse <i>Tetrao tetrix</i>	Galliformes; Phasianidae	15.5 g/cm	32-39 cm	50-75 km/h	Extensive blind area or poorly developed fovea	Zone of the forest to battle/display (mountains, moors)	Walking on the ground; poking/ pecking	diurnal and crepuscular	J	Grouping in winter			-1	1
	0	0	0	2	3	0	3	3	3	3	17			
Hazel grouse <i>Tetrastes bonasia</i>	Galliformes; Phasianidae	8.2 g/cm	35-40 cm	Fast, manoeuvrable flight	Extensive blind area or poorly developed fovea	Underwood-rich forests with rich horizontal and vertical structure	Walking on the ground; poking/ pecking	diurnal	J	No grouping in winter			-2	0 (assumed 1 level reduction)
	0	0	0	2	3	0	3	2	3	0	13			
Rock partridge <i>Alectoris graeca</i>	Galliformes, Phasianidae	12.5 g/cm	32-35 cm	fast gliding flight; horizontal	Extensive blind area or poorly developed fovea	Stony steep slopes with possibly sparse vegetation	Walking on the ground; poking/ pecking	diurnal and crepuscular	J	Grouping in winter			-1	1

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention'. It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

				flight rare, flies little										
	0	0	0	2	3	0	3	3	3	3	17			
Rock ptarmigan <i>Lagopus muta</i>	<i>Galliformes; Phasianidae</i>	10 g/cm	33-38 cm	75 km/h	Extensive blind area or poorly developed fovea	Alps with varying slopes and vegetation	Walking on the ground; poking/pecking	crepuscular	J	Grouping			-1	1
	0	0	0	3	3	0	3	2	3	3	17			
Partridge <i>Perdix perdix</i>	<i>Galliformes; Phasianidae</i>	8.5 g/cm	29-31 cm	40-56 km/h	Extensive blind area or poorly developed fovea	Open field and meadow areas with a high herb layer for cover	Walking on the ground; poking/pecking	diurnal and crepuscular	J	outside the breeding season in small groups			-1	1
	0	0	0	0	3	3	3	3	3	3	18			
Quail <i>Coturnix coturnix</i>	<i>Galliformes; Phasianidae</i>	3 g/cm	16-18 cm	70 km/h	Extensive blind area or poorly developed fovea	Open field and meadow areas with high herb shift to cover	Walking on the ground; poking/pecking	Diurnal and nocturnal	ZW	No grouping			-2	0
	0	0	0	3	3	3	3	2	0	0	14			
Eurasian crane (R) <i>Grus grus</i>	<i>Gruiformes; Gruidae</i>	27.4 g/cm	110-120 cm	50 km/h	Extended blind area	Breeding in wet forests and wetlands; foraging on agricultural land; resting in wide open spaces; roosting in shallow	Walking on the ground; poking/pecking	diurnal and crepuscular, also migrates at night	ZW	As a resting bird large groups		2		

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

						water or marshes.								
Black-stork <i>Ciconia nigra</i>	<i>Ciconiiformes</i> ; <i>Ciconiidae</i>	20 g/cm	95-100 cm	58 km/h	Small blind area	Deciduous and mixed forests with water bodies and wet grassland; resting area also in dry areas	wading in the water and walking on the ground; poking/pecking	diurnal	Z	Often in smaller groups			-1	1
	0	1	2	3	1	3	2	2	2	3	19			
Gray heron (R) <i>Ardea cinerea</i>	<i>Ardeiformes</i> ; <i>Ardeidae</i>	8.4 g/cm	90-98 cm	43 km/h	None relevant blind area	Breeding colonies in trees and reeds, foraging in water bodies and on agricultural land	Wading; raised hide, also terrestrial on ground	diurnal and crepuscular, also migrates at night	JZW	Colony-breeder				
Spoonbill <i>Platalea leucorodia</i>	<i>Ardeiformes</i> ; <i>Threskiornitidae</i>	12.4 g/cm	70-95 cm	50 km/h	None relevant blind area	Breeding colonies in sedimentation zones with reeds; foraging in shallow water, outside the breeding season on seashores, dunes and	Wading, sifting through water and mud	diurnal and crepuscular	Z	Gregarious outside breeding season; colony-breeder		3	-2	1

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohn et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention'. It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

[illegible]

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

						shallow water as well as flooded like-senior								
	3	2	2	3	3	3	3	2	3	3	27			
Little egret <i>Egretta garzetta</i>	<i>Ardeiformes; Ardeidae</i>	5.5 g/cm	55-65 cm	slow flight	None relevant blind area	Marshes and siltation zones with trees and bushes; foraging in shallow water	Wading; stalking mainly at the watercourse	Diurnal	Z	Colony-breeder			-1	2
	2	0	0	2	3	3	2	2	1	3	18			
Mute swan (R) <i>Cygnus color</i>	<i>anseriformes; anatidae</i>	48.2 g/cm	125-160 cm	58 km/h	Low blind area	Water bodies, outside the breeding season also on agricultural land	Dabbling, picking up on land	Diurnal and nocturnal	Z	During moulting season and in winter also in larger groups				
Whooper swan <i>Cygnus cygnus</i>	<i>anseriformes; anatidae</i>	42.9 g/cm	140-165 cm	62 km/h	Low blind area	Larger bodies of water, marshes, heaths, moors, taiga lakes; foraging also on agricultural land	Dabbling, picking up on land	Diurnal and nocturnal	JZW	Families stay together in large groups over the winter			0	3
	3	2	3	3	3	3	3	3	3	3	29			

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention'. It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

Bewick's Swan <i>Cygnus bewickii</i>	Anseriformes; Anatidae	34.8 g/cm	115-140 cm	67 km/h	Low blind area	Breeds on tundra waters; rests on vegetation-rich waters; forages on flooded pastures, meadows, marshes, also on rapeseed fields	Dabbling, picking up on land	Diurnal and nocturnal	ZW	Sociable during the breeding season			0	3
	3	0	2	2	3	3	3	3	2	3	24			
Lapwing (R) <i>Vanellus vanellus</i>	Charadriiformes, Charadriidae	2.7 g/cm	28-31 cm	45 km/h	Low blind area	Open land, wetlands, agricultural land	Picking at the ground/picking up	Diurnal and nocturnal	Z	As a resting bird large groups				
Eurasian curlew <i>Numenius arquatus</i>	Charadriiformes; Charadriidae	8.6 g/cm	50-60 cm	59 km/h	Low blind area	Open land, wetlands, agricultural land; outside the breeding season on the sea coast (mudflats, salt marshes), estuaries and floodplains	Picking at the ground, poking	Diurnal and nocturnal	Z	Solitary and in groups in winter			-1	1
	1	0	0	0	3	3	3	3	3	3	19			
Black-tailed godwit	Charadriiformes; <i>scolopacidae</i>	4.5 g/cm	36-44 cm	66 km/h	Low blind area	Wet meadows, cattle pastures	Poking	Diurnal; migrates at night	Z	Group size varies greatly,			-1	1

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

Limosa limosa										rarely solitary			
	;	0	0	0	3	2	2	3	3	3	17		
European golden plover <i>Pluvialis apricaria</i>	<i>Charadriiformes</i> ; <i>Charadriidae</i>	3.3 g/cm	26-29 cm	agile, rapid flight	Low blind area	Areas with low vegetation height and without structural elements, as a resting bird also on fields	Pecking, poking at the ground	Diurnal and nocturnal	Z	As a resting bird on the coast, larger groups		0	2
	2	2	3	3	3	2	3	3	3	3	27		
Ruff <i>Philomachus pugnax</i>	<i>charadriiformes</i> ; <i>scolopacidae</i>	3.2 g/cm	26-32 cm	56 km/h	Low blind area	Wet lowland meadows near the coast	Pecking, poking at the ground	Diurnal; migrates at night	Z	Gregarious outside the breeding season		0	2
	1	2	3	1	3	2	3	3	3	3	24		
Jack snipe <i>Limnospiza minima</i>	<i>Charadriiformes</i> ; <i>Scolopacidae</i>	1.4 g/cm	17-19 cm	62 km/h	Low blind area	Wet moors, wet meadows, edge of siltation zones	Poking	diurnal, crepuscular and nocturnal active	ZW	Neither grouping nor colony breeding		-2	0 (assumed 1 level reduction)
	1	0	3	0	3	1	2	3	2	0	15		
Dotterel <i>Charadrius morinellus</i>	<i>Charadriiformes</i> ; <i>Charadriidae</i>	1.9 g/cm	20-22 cm	72-81 km/h	Low blind area	Breeding in tundra; as a migrant in steppe-like dry areas.	Peck at the ground	Diurnal and nocturnal	Z	As a resting bird, sometimes in large groups		-1	1
	2	1	1	0	3	1	3	3	3	3	20		

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

Great snipe <i>Gallinago media</i>	<i>Charadriiformes;</i> <i>Scolopacidae</i>	3.9 g/cm	27-29 cm	62 km/h	Low blind area	Boreal moors and wet meadows; as a migrant at snipe resting places, marshes and marshlands	Poking	Crepuscular active; migration at night	Z	Neither grouping nor colony breeding		-2	0 (assumed 1 level reduction)
	1	0	3	0	3	2	2	2	3	0	16		
Dunlin <i>Calidris alpina</i>	<i>Charadriiformes;</i> <i>Scolopacidae</i>	1.5g/cm	16-20 cm	55 km/h	Low blind area	Damp, marshy areas with low vegetation; as a migrant in mudflats, also on open land on the coast.	Pecking, probing	Diurnal and nocturnal	ZW	as a resting bird large groups		-1	1
	1	0	0	2	3	1	2	3	2	3	17		
Common sandpiper <i>Actitis hypoleucos</i>	<i>Charadriiformes;</i> <i>Scolopacidae</i>	1.3 g/cm	19-21 cm	56-72 km/h	Low blind area	River gravel banks; as a migrant on a wide variety of shore types.	Picking at the ground/ picking up	Diurnal and nocturnal	Z	Neither grouping nor colony breeding		-2	0 (assumed 1 level reduction)
	1	0	0	0	3	1	3	3	3	0	14		
Eurasian stone-curlew	<i>Charadriiformes;</i> <i>Burhinidae</i>	5.4 g/cm	40-44 cm	41-47 km/h	Low blind area	Open dry soils with not too	Picking at the	Diurnal, crepuscul	Z	Neither grouping nor		-1	1

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention'. It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

<i>Burhinus oedicephalus</i>						high vegetation; as a migrant on wasteland areas and on the coast.	ground/picking up	diurnal and nocturnal		colony breeding			
	1	0	0	3	3	1	3	3	3	0	17		
Common ringed plover <i>Charadrius hiaticula</i>	<i>Charadriiformes; Charadriidae</i>	1.1 g/cm	18-20 cm	70 km/h	Low blind area	Sandy and gravelly soils on coasts, also on bare lake shores and on	Picking at the ground/picking up	Diurnal and nocturnal	Z	Tendency to form groups		-1	1
	2	0	0	0	3	1	3	3	3	3	18		
Ruddy turnstone <i>Arenaria interpres</i>	<i>Charadriiformes, Scolopacidae</i>	2.6 g/cm	21-26 cm	54 km/h	Low blind area	Coast and inland on vegetation-poor tundra; as migrant on coast, inland on lakes	Picking at the ground/picking up	Diurnal and nocturnal	ZW	Gregarious outside the breeding season		-1	1
	1	3	1	1	3	1	3	3	2	3	21		
Kentish plover <i>Charadrius alexandrinus</i>	<i>Charadriiformes; Charadriidae</i>	1.1 g/cm	15-17.5 cm	63 km/h	Low blind area	Low-vegetation soils on the coast, on salty inland waters; as a migrant on sand and mud flats, shallow lagoons.	Picking at the ground/picking up	Diurnal and nocturnal	Z	Gregarious outside the breeding season		-1	1

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

	2	0	0	0	3	1	3	3	3	3	18		
Snipe <i>Gallinago gallinago</i>	<i>Charadriiformes, Scolopacidae</i>	2.8 g/cm	25-27 cm	62 km/h	Low blind area	Wet areas with dense but not too tall vegetation; resting places at muddy and shallow water areas, meadow ditches with vegetation for cover nearby	Poking	Diurnal, crepuscular and nocturnal	ZW	Gregarious outside the breeding season		-1	1
	1	3	2	0	3	2	2	3	2	3	21		
Common redshank <i>tringa totanus</i>	<i>Charadriiformes, Scolopacidae</i>	2.0 g/cm	27-29 cm	44 km/h	Low blind area	Open wet areas near the coast	Pecking, probing	Diurnal and nocturnal	ZW	As a resting bird on the coast, usually larger groups		-1	1
	1	1	3	3	3	2	2	3	2	3	23		
Oystercatcher <i>haematopus ostralegus</i>	<i>Charadriiformes; Haematopodidae</i>	7.4 g/cm	40-47.5 cm	47 km/h	Low blind area	Coastal bird, breeding in open areas with little vegetation; inland near water and on agricultural land; as a migrant	Poking	Diurnal and nocturnal	JZW	As a resting bird on the coast, usually larger groups		-1	1

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohn et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention'

It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#).

For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

						often on the coast on sandy muddy areas, less often inland								
	1	0	0	3	3	2	2	3	1	3	18			
Eurasian woodcock <i>scolopax rusticola</i>	<i>Charadriiformes; Scolopacidae</i>	4.9 g/cm	33-35 cm	40-50 km/h	Low blind area	Forest bird	Poking	Diurnal, crepuscular and nocturnal active	JZW	Neither grouping nor colony breeding			-2	0 (assumed 1 level reduction)
	1	0	2	3	3	0	2	3	1	0	15			
Wood sandpiper <i>tringa glareola</i>	<i>Charadriiformes; Scolopacidae</i>	1.2 g/cm	19-23 cm	35 km/h	Low blind area	Taiga and tundra; as a migrant on nutrient-rich shallow water zones, flooded meadows	Pecking, poking at the ground	Diurnal and crepuscular; migration mainly at night	Z	Sociable on migration and in the winter habitat			-1	1
	1	0	1	1	3	1	3	3	3	3	19			
Pied avocet <i>Rrecurvirostra avosetta</i>	<i>Charadriiformes; Recuvirrostidae</i>	3.5 g/cm	42-45 cm	59 km/h	Low blind area	Coastal bird, inland in shallow water zones	Whisk, stir	Diurnal; also migrates at night	JZW	Gregarious outside the breeding season			-2	0 (assumed 1 level reduction)
	1	1	0	0	3	1	1	3	1	3	14			
Green sandpiper <i>Tringa ochropus</i>	<i>Charadriiformes; Scolopacidae</i>	1.3 g/cm	21-24 cm	44 km/h	Low blind area	As breeding birds in wetlands with forests, as migrants	Pecking, poking at the ground	Diurnal and nocturnal	ZW	Neither grouping nor colony breeding			-1	1

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

						on water banks								
	1	0	1	3	3	1	3	3	2	0	17			
Broad-billed sandpiper <i>Calidris falcinellus</i>	<i>Charadriiformes</i> ; <i>Scolopacidae</i>	1.3 g/cm	16-18 cm	55 km/h	Low blind area	Bogs, as migrants in brackish water biotopes, inland waters, river mouths with muddy substrates, sewage fields	Pecking, poking at the ground	Diurnal and nocturnal	Migratory bird	Gregarious outside the breeding season		-1	1	
	1	0	0	1	3	1	3	3	3	3	18			
Purple sandpiper <i>Calidris maritima</i>	<i>Charadriiformes</i> ; <i>Scolopacidae</i>	1.8 g/cm	20-22 cm	55 km/h	Low blind area	Dry rocky soils on the coast or mountain tundra; outside the breeding season also on rocky structures on the coast; foraging in the intertidal zone of the rocky coast	Pecking, poking at the ground	Diurnal, crepuscular and nocturnal active	ZW	Gregarious outside the breeding season		-1	1	
	1	0	1	1	3	0	3	3	2	3	17			

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

Eurasian whimbrel <i>Numenius phaeopus</i>	<i>Charadriiformes; Scolopacidae</i>	5.3 g/cm	40-46 cm	59 km/h	Low blind area	Open boreal, sub-arctic to arctic grasslands and heaths; as a migrant on sandy, muddy, rocky coasts, partly also moorland and heaths.	Pecking, poking at the ground	Predomin antly diurnal; migration mainly at night	Z	Large roost assemblies			-1	1
	1	0	0	1	3	1	3	3	3	3	18			
Bar-tailed godwit <i>Limosa lapponica</i>	<i>Charadriiformes; Scolopacidae</i>	4.5 g/cm	37-41 cm	66 km/h	Low blind area	Tundra; outside the breeding season sandy areas on tidal flats, estuaries, islands/islands, sea bays, also mudflats	Poking	Predomin antly diurnal; migration mainly at night	Z	Gregarious outside the breeding season			-1	1
	1	0	1	0	3	1	2	3	3	3	17			
Spotted redshank <i>Tringa erythropus</i>	<i>Charadriiformes; Scolopacidae</i>	2.6 g/cm	29-32 cm	44 km/h	Low blind area	Open areas of tundra and taiga; as a migrant at mud and silt areas of fresh and brackish water, sea bays,	Poking	Predomin antly diurnal; migration mainly at night	Z	Breeds solitarily or in loose colonies; on migration or in wintering grounds usually			0	2

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

						inland, shallow water zones and flooded, wet meadows, sewage fields.				solitary, in families or small groups			
	1	3	3	3	3	1	2	3	3	2	24		
Knot <i>Calidris canutus</i>	<i>Charadriiformes; Scolopacidae</i>	2.7 g/cm	23-25 cm	72 km/h	Low blind area	Dry areas of the tundra near wet places; as a migrant on sand and mud areas of the intertidal zone, sea bays, inland, shallow water zones of larger lakes, fish ponds and sewage fields.	Pecking, probing	Diurnal and nocturnal	ZW	Outside the breeding season in large flocks		-1	1
	1	3	2	0	3	1	2	3	2	3	20		
Sanderlings <i>Calidris alba</i>	<i>Charadriiformes; Scolopacidae</i>	1.2 g/cm	20-21 cm	55 km/h	Low blind area	Braided tundra near wet places; outside the breeding season on sandy coasts,	Picking at the ground/ picking up	Diurnal and nocturnal	ZW	Foraging and in small groups outside the breeding season.		-1	1

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention'. It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

						inland on bare shores.								
	1	0	0	2	3	1	3	3	2	3	18			
Little stint <i>Calidris minuta</i>	<i>Charadriiformes; Scolopacidae</i>	0.7g/cm	12-14 cm	55 km/h	Low blind area	Damp places and coast of the Arctic and subarctic; as a migrant on mud, sand and muddy areas on coast and inland waters.	Picking at the ground/ picking up	Predominantly diurnal; migration mainly at night	Z	Outside the breeding season mostly in small groups		-1	1	
	1	0	0	2	3	1	3	3	3	3	19			
Temminck's stint <i>Calidris temminckii</i>	<i>Charadriiformes; Scolopacidae</i>	0.6 g/cm	13-15 cm	55 km/h	Low blind area	Tundra on dry areas with low bushes; as a migrant on vegetation-free or sparsely vegetated areas, avoids open, sandy coasts.	Picking at the ground/ picking up	Predominantly diurnal; migration mainly at night	Z	Neither grouping nor colony breeding		-2	0 (assumed 1 level reduction)	
	1	0	0	2	3	1	3	3	3	0	16			
Curlew sandpiper	<i>Charadriiformes;</i>	1.3 g/cm	18-23 cm	55 km/h	Low blind area	Coastal tundra; as a migrant on	Probing	Diurnal and nocturnal	Z	Gregarious outside		-1	1	

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

<i>Calidris ferruginea</i>	<i>Scolopacidae</i>					mud, sand and mudflats on the coast and inland waters, sewage fields				the breeding season			
	1	0	0	2	3	1	2	3	3	3	18		
Grey plover <i>Ppluvial squatarola</i>	<i>Charadriiformes</i> ; <i>Charadriidae</i>	2.9 g/cm	27-31 cm	64 km/h	Low blind area	Arctic tundra; outside breeding season on tidal flats and sand flats, inland open wide areas, short-grassed flooded meadows, gravel and sandy shores	Picking at the ground/ picking up	Diurnal and nocturnal	Z	During migration , partly large groups		0	2
	2	3	3	0	3	2	3	3	3	3	25		
Common greenshank <i>Tringa nebularia</i>	<i>Charadriiformes</i> ; <i>Scolopacidae</i>	2.9 g/cm	30-35 cm	44 km/h	Low blind area	Open grassland, heath, moorland and tundra landscape; as a migrant on mudflats and mudflats of larger	Picking at the ground/ picking up	Predominantly diurnal, migration mainly at night	Z	On migration and outside the breeding season singly or in smaller groups		0	2

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

						water bodies, flooded fields and meadows.								
	1	3	3	3	3	2	3	3	3	3	27			
Marsh sandpiper <i>Tringa stagnantilis</i>	<i>Charadriiformes</i> ; <i>Scolopacidae</i>	1.1 g/cm	22-26 cm	44 km/h	Low blind area	Steppe with not too high vegetation near water points; during migration at shallow inland waters, marshes, ponds	Picking at the ground/ picking up, rarely poking	Diurnal	Z	neither grouping nor colony breeding			-1	1
	1	0	2	3	3	2	3	2	3	0	19			
Red-necked phalarope <i>Phalaropus lobatus</i>	<i>Charadriiformes</i> ; <i>Scolopacidae</i>	0.9 g/cm	18-19 cm	47 km/h	Low blind area	Pools, ponds surrounded by wet meadows, tundra and upland moorland; as a migrant on shallow sea coasts or inland lakes.	Picking at the ground/ picking up	Predominantly diurnal; migrates at night	Z	Large flocks outside the breeding season			-1	1
	1	0	0	3	3	1	3	3	3	3	20			

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

Little ringed plover <i>Charadrius dubius</i>	<i>Charadriiformes; Charadriidae</i>	0.9 g/cm	14-17 cm	70 km/h	Low blind area	Gravel banks, areas with little vegetation on shallow water, sand pits	Picking at the ground/ picking up	Diurnal and nocturnal	Z	Outside the breeding season small groups, and association e.g. with Ringed Plover		-1	1
	2	0	0	0	3	1	3	3	3	3	18		
Corn crane <i>Crex crex</i>	<i>Gruiformes; Rallidae</i>	3.6 g/cm	27-30 cm	intermediate airspeed	Low blind area	Open and semi-open terrain with dense stands, partly cereal fields, beet and potato fields, clover fields	Harvesting from soil and plants	Diurnal and nocturnal	Z	Neither grouping nor colony breeding		-1	1
	0	0	3	3	3	3	3	3	3	0	21		
Spotted crane <i>Porzana porzana</i>	<i>Gruiformes; Rallidae</i>	2.3 g/cm	22-24 cm	50 km/h	Low blind area	Wet areas with low water levels and dense vegetation; migrant on water bodies with siltation zones and small mudflats	Picking up in sedimentation vegetation / reeds	Diurnal and crepuscular; nocturnal migration	Z	Neither grouping nor colony breeding		-2	0 (assumed 1 level reduction)

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

	0	2	1	2	3	0	1	3	3	0	15			
Little crane <i>Zapornia parva</i>	<i>Gruiformes</i> ; <i>Rallidae</i>	1.4 g/cm	18-20 cm	intermediate airspeed	Low blind area	Reed beds and sedimentation communities with dense vegetation	Picking up in sedimentation vegetation / reeds	Predominantly diurnal	Z	Neither grouping nor colony breeding			-2	0 (assumed 1 level reduction)
	0	0	0	3	3	0	1	2	3	0	12			
Baillon's crane <i>Zapornia pusilla</i>	<i>Gruiformes</i> ; <i>Rallidae</i>	1.0 g/cm	17-19 cm	intermediate airspeed	Low blind area	Reed beds and sedimentation communities with dense vegetation	Picking up in sedimentation vegetation / reeds	Diurnal and crepuscular (little known)	Z	Neither grouping nor colony breeding			-2	0 (assumed 1 level reduction)
	0	0	0	3	3	0	1	2	3	0	12			
Barnacle goose (R) <i>Branta leucopsis</i>	<i>Anseriformes</i> ; <i>Anatidae</i>	14.6 g/cm	58-71 cm	61 km/h	Low blind area	Rocky outcrops near coast or lake; resting areas in salt marshes, pastures, meadows, fields	Grazing on land/ picking up	Mostly diurnal	ZW	As a resting bird usually in large groups		3		
Shelduck <i>Tadorna tadorna</i>	<i>Anseriformes</i> ; <i>Anatidae</i>	8.2 g/cm	58-67 cm	55 km/h	Low blind area	Sea coast, flat coasts with sand and mud flats	Swimming in the wet silt or shallow water	Mostly diurnal; migration mainly at night	JZW	As a resting bird usually in large groups			-1	2
	2	0	3	3	3	2	1	2	2	3	21			

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

Lesser white-fronted goose <i>Anser erythropus</i>	<i>Anseriformes; Anatidae</i>	15.3 g/cm	65-86 cm	Geese fast flyers	Low blind area	Forest tundra; wintering in pastures and agricultural areas. Cultivated areas, hardly at the sea	Grazing on land/ picking up	Diurnal	ZW	Gregarious outside the breeding season		0	3
	2	3	2	3	3	2	3	3	3	3	27		
Brant goose <i>Branta bernicla</i>	<i>Anseriformes; Anatidae</i>	12.6 g/cm	55-66 cm	64 km/h	Low blind area	High Arctic tundra, coastal areas with freshwater lakes; outside the breeding season, flat coast with tidal flats and salt marshes, resting places at sea in sheltered bays	Grazing/ picking up salt marshes and mudflats	Mostly diurnal	ZW	As a resting bird, sometimes in large groups		0	3
	3	2	3	3	3	2	3	3	3	3	28		
Pink-footed goose <i>Anser brachyrhynchus</i>	<i>Anseriformes; Anatidae</i>	17.4 g/cm	60-75 cm	Geese fast flyers	Low blind area	Breeds on rock faces/cliffs, tundra marshes; as resting and winter habitat, moist	Grazing on land/ picking up	Diurnal and nocturnal	ZW	Outside the breeding season in sometimes large groups		0	3

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

						meadows and pastures with shallow water zones in tidal areas and river mouths									
	2	2	3	3	3	3	3	2	3	3	27				
Greylag goose (R) <i>Anser anser</i>	Anseriformes; <i>Anatidae</i>	21.7 g/cm	76-89 cm	52 km/h	Low blind area	Varies, mostly inland waters rich in cover, grassland and open water areas for resting and foraging	Grazing on land, seldom grazing	Diurnal and nocturnal	JZW	As a resting bird usually in large groups		3			
Shelduck (2) <i>Tadorna tadorna</i>	Anseriformes; <i>Anatidae</i>	8.2 g/cm	58-67 cm	55 km/h	Low blind area	Sea coast, flat coasts with sand and mud flats	Swimming in the wet silt or shallow water	Predominantly diurnal; migration predominantly nocturnal	JZW	As a resting bird usually in large groups			-1	2	
	2	0	1	3	3	2	1	3	3	3	21				
Tundra bean goose <i>Anser rossicus/fabalis</i>	Anseriformes; <i>Anatidae</i>	19.7 g/cm	66-84 cm	62 km/h	Low blind area	Open tundra; conifer and birch stands of the taiga; as a migrant on meadows, pastures	Grazing on land/ picking up	Diurnal and nocturnal	ZW	Large roosting groups			0	3	

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

						and farmland, shallow waters as roosting and resting places.								
	3	3	3	2	3	2	3	3	2	3	27			
Gadwall (R) <i>Anas strepera</i>	<i>Anseriformes</i> ; <i>Anatidae</i>	9.2 g/cm	46-58 cm	Group of ducks fast flyers	Low blind area	Shallow stagnant to slow- flowing eutrophic inland waters; on migration also marine shallow water areas	Filtering, dredging	Diurnal and nocturnal	JZW	Gregarious, mostly in single- species groups		3		
Scaup (1) <i>Aythya marila</i>	<i>Anseriformes</i> ; <i>Anatidae</i>	13.8 g/cm	40-51 cm	77 km/h	Low blind area	Tundra, forest tundra; in winter as a resting bird on coasts and on large, deep lakes.	Diving, swimming	Diurnal and nocturnal	JZW	As a winter visitor in larger groups			-1	2
	2	0	2	3	3	2	2	3	3	3	23			
Garganey (1) <i>Anas querquedula</i>	<i>Anseriformes</i> ; <i>Anatidae</i>	5.7 g/cm	37-41 cm	51 km/h	Low blind area	Inland waters rich in cover, on large shallow lakes during migration, floodplains	Filtering on the surface	Diurnal and nocturnal	Z	Gregarious outside the breeding season			-1	2

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

	3	0	0	1	3	3	3	3	1	3	20		
Teal (1) <i>Anas crecca</i>	Anseriformes; <i>Anatidae</i>	5.3 g/cm	34-43 cm	70 km/h	Low blind area	Shallow inland waters with high cover in the shore area; also on the coast during the migratory season	Filtering, dredging	Diurnal and nocturnal	JZW	As a winter visitor in larger groups		0	3
	3	0	1	3	3	3	3	3	3	3	25		
Shoveler <i>anas clypeata</i>	Anseriformes; <i>Anatidae</i>	10.1 g/cm	43-56 cm	85 km/h	Low blind area	Eutrophic shallow inland waters, wet grassland with ditch complexes; outside the breeding season seashore and salt lakes	Filtering	Diurnal and nocturnal	JZW	Gregarious outside breeding season		0	3
	3	3	3	3	3	3	3	3	3	3	30		
Pochard <i>Aythya ferina</i>	Anseriformes; <i>Anatidae</i>	13 g/cm	42-58 cm	85 km/h	Low blind area	Eutrophic inland waters with well-developed reed belt; resting places also on reservoirs	Diving, swimming	Diurnal and nocturnal	JZW	Sociable all year round		0	3

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

						and fish ponds								
	2	0	3	3	3	3	2	3	3	3	25			
Pintail <i>Anas acuta</i>	Anseriformes; <i>Anatidae</i>	9.1 g/cm	50-66 cm	74 km/h	Low blind area	Large standing inland waters with riparian vegetation, floodplains, on migration estuaries, lagoons, flat coasts	Dabbling, diving in	Diurnal and nocturnal	JZW	Outside the breeding season like to be in pure species groups		0	3	
	3	3	2	3	3	3	3	3	3	3	29			
Tufted duck <i>Aythya fuligula</i>	Anseriformes; <i>Anatidae</i>	10.7 g/cm	40-47 cm	76 km/h	Low blind area	Larger water bodies	Diving, swimming	Diurnal and nocturnal	JZW	Outside the breeding season larger flocks		0	3	
	2	2	3	3	3	3	2	3	3	3	27			
Common eider (1) <i>Somateria mollissima</i>	Anseriformes; <i>Anatidae</i>	22.9 g/cm	50-71 cm	64 km/h	Low blind area	Coasts and Islands, Wadden Sea, Sea Bays	Diving, swimming	Diurnal and nocturnal	JZW	Very sociable all year round		-1	2	
	2	0	2	3	3	1	2	3	3	3	22			
Long-tailed duck (1) <i>Clangula hyemalis</i>	Anseriformes; <i>Anatidae</i>	10.2 g/cm	36-47 cm	79 km/h	Low blind area	Freshwater ; outside the breeding season sea and large	Diving, swimming	Diurnal and nocturnal	JZW	Very sociable outside the breeding season		-1	2	

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

						inland lakes								
	2	2	1	3	3	1	2	3	2	3	22			
Velvet scoter <i>Melanitta fusca</i>	Anseriformes; <i>Anatidae</i>	16.4 g/cm	51-58 cm	72 km/h	Low blind area	Tundra and mountain lakes; resting places on shallow water zones near the coast, partly open sea, inland on large lakes	Diving, swimming	Diurnal and nocturnal	JZW	Sociable			-1	2
	2	0	3	3	3	1	2	3	2	3	22			
Common scoter <i>Melanitta nigra</i>	Anseriformes; <i>Anatidae</i>	11.5 g/cm	44-54 cm	80 km/h	Low blind area	Freshwater s; outside breeding season sea, inland large lakes	Diving, swimming	Diurnal; migrates mainly at night	ZW	Gregarious outside the breeding season			-1	2
	2	1	3	3	3	1	2	3	2	3	23			
Red-necked grebe <i>Podiceps grisegena</i>	Podicipidiformes; <i>Podicipidae</i>	10 g/cm	40-50 cm	Group of divers fast flyers	Low blind area	Smaller waters with very extensive siltation zone, during migration also on deep lakes and coasts	Diving, swimming	Diurnal and nocturnal	ZW	neither grouping nor colony breeding			-1	2
	0	3	2	3	3	3	2	3	2	0	21			

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

Black-necked grebe <i>Podiceps nigricollis</i>	<i>Podicepsiformes; Podicipididae</i>	5.7 g/cm	28-34 cm	Group of divers fast flyers	Low blind area	Eutrophic lakes and ponds with marginal vegetation, strong attachment to black-headed gull colonies; outside breeding season open water area of larger lakes	Diving, swimming	Diurnal and nocturnal	JZW	Colony breeder, very sociable (roosting society, group behaviour outside the breeding season).			-1	2
	0	0	0	3	3	3	2	3	3	2	19			
Little grebe <i>Tachybaptus ruficollis</i>	<i>Podicepsiformes; Podicipididae</i>	4.3 g/cm	25-29 cm	Group of divers fast flyers	Low blind area	Standing inland waters with dense siltation zone; outside the breeding season also on vegetation-free waters	Diving, swimming	Diurnal and nocturnal	JZW	Outside the breeding season mostly singly but also in groups			-1	2
	0	0	0	3	3	3	2	3	3	3	20			
Horned grebe (1) <i>Podiceps auritus</i>	<i>Podicepsiformes; Podicipididae</i>	6.2 g/cm	31-38 cm	Group of divers fast flyers	Low blind area	Eutrophic lakes and ponds, as close as possible to black-headed gull colonies; during migration,	Diving, swimming	Diurnal and nocturnal	ZW	Singly and in small groups in autumn and winter, larger groups during			-1	2

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention'. It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

						coast and large inland lakes				spring migration			
	0	0	0	3	3	2	2	3	2	3	18		
Common merganser (1) <i>Mergus merganser</i>	Anseriformes; <i>Anatidae</i>	17 g/cm	58-66 cm	70 km/h	Low blind area	Rivers, lakes, coasts with tree stands; in winter on larger lakes, rivers and on the coast	Diving, swimming	Diurnal; migrates mainly at night	Z	Large groups outside the breeding season		-1	2
	2	0	2	3	3	2	2	3	1	3	21		
Smew <i>Mergellus albellus</i>	Anseriformes; <i>Anatidae</i>	10.5 g/cm	38-44 cm	Flight very fast	Low blind area	Food-rich waters with tree cover; outside breeding season larger coastal and inland waters	Diving, swimming	Diurnal; also migrates at night	Z	Sociable especially in autumn and winter		-1	2
	2	2	1	3	3	2	2	3	1	3	22		
Common guillemot (1) <i>Uria aalge</i>	Charadriiformes; <i>Alcidae</i>	11.4 g/cm	38-43 cm	80-82 km/h	Low blind area	Seabird, breeding on steep cliffs; outside breeding season in shelf seas	Diving, swimming	Diurnal and crepuscular active	JZW	Colony-breeder		-2	1
	0	0	1	3	3	0	2	2	3	2	16		

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

Mallard (r) <i>Anas platyrhynchos</i>	Anseriformes; <i>Anatidae</i>	12.9 g/cm	50-65 cm	68 km/h	Low blind area	Waters of all kinds, feeding also on agricultural land; on migration also at sea lagoons	Filtering, digging, picking up on land	Diurnal and nocturnal	JZW	as a winter visitor in larger groups		3		
Scaup (2) <i>Aythya marila</i>	Anseriformes; <i>Anatidae</i>	13.8 g/cm	40-51 cm	77 km/h	Low blind area	Tundra, forest tundra; in winter as a resting bird on coasts and on large, deep lakes.	Diving, swimming	Diurnal and nocturnal	JZW	As a winter visitor in larger groups			-1	2
	2	3	1	2	3	2	1	3	3	3	23			
Pochard <i>Netta rufina</i>	Anseriformes; <i>Anatidae</i>	13 g/cm	53-57 cm	Group of ducks, fast flyers	Low blind area	Eutrophic shallow inland waters with rich sedimentation vegetation	Dabbling, diving/submerging	Diurnal and nocturnal	JZW	Gregarious outside the breeding season			0	3
	2	3	3	3	3	3	2	3	3	3	28			
Goldeneye <i>Bucephala clangula</i>	Anseriformes; <i>Anatidae</i>	12.6 g/cm	42-50 cm	73 km/h	Low blind area	Lakes and rivers in forested areas; outside the breeding season, larger inland waters, sea bays	Diving, swimming	Mostly diurnal	ZW	Outside the breeding season, mostly in small, purely species-specific groups			-1	2

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

	2	3	2	3	3	2	1	2	2	3	23		
Eider duck (2) <i>Somateria mollissima</i>	Anseriformes; <i>Anatidae</i>	22.9 g/cm	50-71 cm	64 km/h	Low blind area	Coasts and Islands, Wadden Sea, Sea Bays	Diving, swimming	Diurnal and nocturnal	JZW	Very sociable all year round		-1	2
	2	0	3	3	3	1	1	3	3	3	22		
Great crested grebe <i>Podiceps cristatus</i>	Podicipediformes; <i>Podicipedidae</i>	11.8 g/cm	46-61 cm	Group of divers fast flyers	Low blind area	Standing inland waters with riparian vegetation; outside the breeding season also coastal and flowing waters	Diving, swimming	Diurnal and nocturnal	JZW	Colony formation in the absence of nesting vegetation; cohesion in larger groups on resting waters usually only loose		0	3
	0	3	3	3	3	3	1	3	3	2	24		
Red-breasted merganser <i>Mergus serrator</i>	Anseriformes; <i>Anatidae</i>	13.7 g/cm	52-58 cm	72 km/h	Low blind area	Coasts and islands, inland lakes, fish ponds; outside the breeding season, marine shallow water zones, brackish water	Diving, swimming	Diurnal	ZW	Sociable even outside the breeding season		0	3

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

						lagoons, estuaries									
	2	3	3	3	3	3	1	2	2	3	25				
Common merganser (2) <i>Mergus merganser</i>	<i>Anseriformes</i> ; <i>Anatidae</i>	17 g/cm	58-66 cm	70 km/h	Low blind area	Rivers, lakes, coasts with tree stands; in winter on larger lakes, rivers and on the coast	Diving, swimming	Diurnal; migrates mainly at night	Z	Large groups outside the breeding season			-1	2	
	2	0	3	3	3	2	1	3	1	3	21				
Wigeon (r) <i>Anas penelope</i>	<i>Anseriformes</i> ; <i>Anatidae</i>	8.6 g/cm	45-51 cm	74 km/h	Low blind area	Vegetated lakes; on migration in winter coastal waters, grasslands, fields, salt marshes	Grazing, grazing on land / picking up	Diurnal and nocturnal	JZW	As winter visitor, near the coast in larger groups					
Scaup (3) <i>Aythya marila</i>	<i>Anseriformes</i> ; <i>Anatidae</i>	13.8 g/cm	40-51 cm	77 km/h	Low blind area	Tundra, forest tundra; in winter as a resting bird on coasts and on large, deep lakes.	Diving, swimming	Diurnal and nocturnal	JZW	As a winter visitor in larger groups			-1	2	
	2	0	3	3	3	2	1	3	3	3	23				
Garganey (2) <i>Anas</i>	<i>Anseriformes</i> ; <i>Anatidae</i>	5.7 g/cm	37-41 cm	51 km/h	Low blind area	Inland waters rich in cover,	Filtering on the surface	Diurnal and nocturnal	Z	Gregarious outside			-1	2	

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

<i>querquedula</i>						on large shallow lakes during migration, floodplains				the breeding season			
	3	0	2	0	3	3	2	3	1	3	20		
Teal (2) <i>Anas crecca</i>	<i>Anseriformes</i> ; <i>Anatidae</i>	5.3 g/cm	34-43 cm	70 km/h	Low blind area	Shallow inland waters with high cover in the shore area; also on the coast during the migratory season	Filtering, dredging	Diurnal and nocturnal	JZW	As a winter visitor in larger groups		0	3
	3	0	2	3	3	3	2	3	3	3	25		
Ferruginous duck <i>Aythya nyroca</i>	<i>Anseriformes</i> ; <i>Anatidae</i>	8.2 g/cm	38-42 cm	Group of ducks fast flyers	Low blind area	Eutrophic shallow inland waters with rich siltation zone; outside the breeding season also at more open lakes	Diving, swimming	Diurnal and nocturnal	ZW	Outside the breeding season also in small groups		0	3
	2	3	2	3	3	3	1	3	2	3	25		
Long-tailed duck (2) <i>Clangula hyemalis</i>	<i>Anseriformes</i> ; <i>Anatidae</i>	10.2 g/cm	36-47 cm	79 km/h	Low blind area	Freshwater ; outside breeding season sea and large	Diving, swimming	Diurnal and nocturnal	ZW	Very sociable outside the breeding season		-1	2

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

						inland lakes								
	2	2	2	3	3	1	1	3	2	3	22			
Horned grebe (2) <i>Podiceps auritus</i>	<i>Podicipediformes; Podicipedidae</i>	6.2 g/cm	31-38 cm	Group of divers fast flyers	Low blind area	Eutrophic lakes and ponds, as close as possible to black-headed gull colonies; during migration, coast and large inland lakes	Diving, swimming	Diurnal and nocturnal	ZW	Singly and in small groups in autumn and winter, larger groups during spring migration			-1	2
	0	0	1	3	3	2	1	3	2	3	18			
Common guillemot (2) <i>Uria aalge</i>	<i>Charadriiformes; Alcidae</i>	11.4 g/cm	38-43 cm	80-82 km/h	Low blind area	Seabird, breeding on steep rocky cliffs; outside the breeding season in shelf seas.	Diving, swimming	Diurnal and crepuscular active	JZW	Colony-breeder			-2	1
	0	0	2	3	3	0	1	2	3	2	16			
Coot <i>Fulica atra</i>	<i>Gruiformes; Rallidae</i>	12.1 g/cm	36-39 cm	Intermediate flying speed	Low blind area	Stagnant, slow-flowing waters with riparian vegetation; often overwinter on the coast	Diving, burrowing, ingesting on land and from water surface	Diurnal and nocturnal	JZW	As a resting bird larger groups			-1	2
	0	0	1	1	3	3	3	3	3	3	20			

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

Moorhen <i>Gallinula chloropus</i>	<i>Gruiformes; Rallidae</i>	5.1 g/cm	32-35 cm	Intermediate flying speed	Low blind area	Stagnant, slow-flowing waters with riparian vegetation; also foraging on land in meadows, fields	Picking up from water surface and bottom	Diurnal and nocturnal	JZW	Outside the breeding season in smaller groups			-1	2
	0	0	1	1	3	3	3	3	3	3	20			
Water rail <i>Rallus aquaticus</i>	<i>Gruiformes; Rallidae</i>	3.2 g/cm	23-28 cm	Intermediate flying speed	Low blind area	High dense riparian vegetation; in winter also on ditches and banks of running waters	Pecking in reeds or on floating plants, partly swimming from water surface	Diurnal; migratory at night	JZW	Usually several individuals close together at migration time			-1	2
	0	0	0	1	3	2	3	3	3	3	18			
Cormorant (r) <i>Phalacrocorax carbo</i>	<i>Phalacrocoracidae; Phalacrocoracidae</i>	16 g/cm	80-100 cm	60 km/h	Low blind area	Coast and inland waters	Diving	Diurnal	JZW	Breeding colonies; outside the breeding season loose troops		3		
Yellow-billed loon <i>Gavia adamsii</i>	<i>Gaviiformes; Gaviidae</i>	36.2 g/cm	76-91 cm	67 km/h	Low blind area	Inland waters of the tundra; outside the breeding season sea and coastal areas	Diving, swimming	Diurnal and nocturnal	Z	Autumn and winter also in small troops			-1	2

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

	0	0	3	2	3	2	3	2	1	2	18		
Red-throated loon <i>Gavia stellata</i>	<i>Gaviiformes</i> ; <i>Gamesviidae</i>	13 g/cm	53-69 cm	67 km/h	Low blind area	Standing waters; outside breeding season in the sea near the coast, inland on slow-flowing rivers, lakes, fish ponds and reservoirs	Diving, swimming	Diurnal and nocturnal	ZW	Gregarious, larger aggregations possible in winter		-1	2
	0	1	0	2	3	2	3	2	2	2	17		
Common loon <i>Gavia immer</i>	<i>Gaviiformes</i> ; <i>Gamesviidae</i>	26.5 g/cm	69-91 cm	Group of divers fast flyers	Low blind area	Large, deep freshwater lakes; as migrant and winter visitor near the coast at the sea	Diving, swimming	Diurnal and nocturnal	W	Outside the breeding season usually solitary or in small loose groups		-1	2
	0	0	2	2	3	2	3	2	1	2	17		
Black-throated loon <i>Gavia arctica</i>	<i>Gaviiformes</i> ; <i>Gamesviidae</i>	19.7 g/cm	58-73 cm	69 km/h	Low blind area	Large, deep freshwater lakes; as a migrant and winter visitor near the coast at the sea, inland waters	Diving, swimming	Diurnal and nocturnal	ZW	On migration and small groups in winter		-1	2
	0	1	1	2	3	2	3	2	2	2	18		

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention'. It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

Gannets <i>More bassanus</i>	<i>Pelecaniiformes; Sulidae</i>	17.1 g/cm	87- 100 cm	56 km/h	Low blind area	Sea bird; rocky islands near the coast or cliffs	Shock diving	Diurnal	JZW	Colony- breeder			0	3
	0	3	3	3	3	1	3	3	3	2	24			
Black- headed gull (R) <i>Chroicoce phalus ridibundu s</i>	<i>Charadriiformes; Laridae</i>	2.9 g/cm	34-43 cm	43 km/h	Low blind area	Breeding colonies in/near water with not too high vegetation of standing waters, inland on buildings; on coast in salt marshes; versatile feeding habitat, often on grassland and farmland, mudflats and eutrophic waters; in winter at harbour and industrial sites, rubbish tips	Picking up from the ground and water surface	Diurnal, crepuscul ar and nocturnal active	JZW	Colony- breeding; as a resting bird, sometime s in large groups		2		

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

Little gull <i>Hydrocoloeus minutus</i>	<i>Charadriiformes; Laridae</i>	1.6 g/cm	25-30 cm	41 km/h	Low blind area	Shallow eutrophic inland waters, marshes, salt marshes, fish ponds, islands; also migrates to larger inland waters and river valleys.	Flight hunting over land and water, picking up from water surface	Diurnal; migrates at night	Z	Colony-breeding; gregarious outside the breeding season		-1	1
	2	0	0	3	3	2	3	2	1	3	19		
Great black-backed gull <i>Larus marinus</i>	<i>Charadriiformes; Laridae</i>	10.4 g/cm	64-79 cm	49 km/h	Low blind area	Coast, sandbanks at river mouths; outside the breeding season beaches, high seas, rubbish dumps, fishing ports	Picking up from the ground and water surface	Diurnal and crepuscular active, partly nocturnal active	JZW	Colony-breeding; outside the breeding season solitary or in small groups		-1	1
	2	0	0	2	3	3	3	3	3	3	22		
Caspian gull <i>Larus cachinnans</i>	<i>Charadriiformes; Laridae</i>	6.7 g/cm	58-67 cm	Group of gulls slow flyers	Low blind area	Coastal islands, salt pans, brackish marsh, dune area in Mediterranean	Picking up from the ground and water surface	Diurnal, crepuscular and nocturnal active	ZW	Colony-breeding; outside the breeding season solitary or in		-1	1

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

						temperate habitats; outside the breeding season, rubbish dumps, agricultural land, harbours, rivers				small groups			
	2	0	0	2	3	3	3	3	2	3	21		
Black-legged kittiwake <i>Rissa tridactyla</i>	<i>Charadriiformes; Laridae</i>	3.8 g/cm	38-40 cm	47 km/h	Low blind area	Coast, islands; outside the breeding season high seas	Picking up from water surface	Diurnal, crepuscular and nocturnal active	JZW	Colony-breeding; outside the breeding season solitary or in small groups		0	2
	2	1	3	3	3	1	3	3	3	3	25		
European herring gull <i>Larus argentatus</i>	<i>Charadriiformes; Laridae</i>	7.8 g/cm	55-67 cm	46 km/h	Low blind area	Coastal bird, inland on buildings; in winter rubbish dumps, fishing ports, etc.	Picking up from water surface	Diurnal, crepuscular and nocturnal active	JZW	Colony-breeding; gregarious outside the breeding season		-1	1
	2	0	0	3	3	3	3	3	3	3	23		
Yellow-legged gull <i>Larus michahellis</i>	<i>Charadriiformes; Laridae</i>	7.7 g/cm	58-68 cm	Group of gulls slow flyers	Low blind area	Coast, rock, gravel, sand islands, dunes/wetl	Picking up from the ground and water surface	Diurnal, crepuscular and nocturnal active	ZW	Colony-breeding; outside the breeding season		-1	1

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

						ands, areas in Mediterranean temperate habitats, rooftops, riverbanks, lakes; outside the breeding season, coast, agricultural areas, rubbish dumps, etc.				solitary or in small groups				
	2	0	0	2	3	3	3	3	2	3	21			
Common gull <i>Larus canus</i>	<i>Charadriiformes; Laridae</i>	3.5 g/cm	40-46 cm	48 km/h	Low blind area	Islands, areas with short vegetation preferably on coast; in winter on fields, mudflats and open sea	Picking up from the ground and water surface	Diurnal and crepuscular	JZW	Colony-breeding; as a resting bird, sometimes in large groups.		0	2	
	2	2	3	2	3	3	3	2	3	3	26			
Lesser black-backed gull <i>Larus fuscus</i>	<i>Charadriiformes; Laridae</i>	5.2 g/cm	51-64 cm	45 km/h	Low blind area	White and brown dune vegetation-rich coastal areas; outside the breeding season coast,	Picking up from the ground and water surface	Diurnal and nocturnal	ZW	Colony-breeding; gregarious outside the breeding season		-1	1	

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

						inland, agricultural land								
	2	0	0	3	3	3	3	2	2	3	21			
Mediterranean gull <i>Ichthyophaga melanocephala</i>	<i>Charadriiformes; Laridae</i>	2.7 g/cm	36-38 cm	Group of gulls slow flyers	Low blind area	Coastal islands, lagoons, salt marshes; outside the breeding season open sea, inland larger lakes	Picking up from the ground and water surface	diurnal, crepuscular and nocturnal active	ZW	Colony-breeding; gregarious outside the breeding season		0	2	
	2	3	3	2	3	2	3	3	2	3	26			
Long-tailed jaeger <i>Stercorarius longicaudus</i>	<i>Charadriiformes; Stercorariidae</i>	2.6 g/cm	48-53 cm	49 km/h	Low blind area	Tundra; outside the breeding season Seabird	Picking up from water surface, partly diving, partly hunting	Diurnal	Z	Neither grouping nor colony breeding		-2	0 (assumed 1 level reduction)	
	1	3	1	2	3	1	2	2	1	0	16			
Great skua <i>Stercorarius skua</i>	<i>Charadriiformes; Stercorariidae</i>	9.4 g/cm	51-56 cm	45 km/h	Low blind area	On grass, moor, sand, gravel areas near seabird colonies; foraging on beach and land; out of breeding season at sea	Picking up from water surface, partly diving, partly hunting	Diurnal	ZW	Breeding in small colonies		-2	0 (assumed 1 level reduction)	
	1	0	0	3	3	1	2	2	2	2	16			

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

Pomarine jaeger <i>Stercorarius pomarinus</i>	<i>Charadriiformes; Stercorariidae</i>	5.5 g/cm	46-50 cm	55 km/h	Low blind area	Tundra; outside the breeding season at sea	Picking up from water surface, partly diving, partly hunting	Diurnal; migratory at night	Z	Breeding in small colonies		-2	0 (assumed 1 level reduction)
	1	0	1	1	3	1	2	2	1	2	14		
Parasitic jaeger <i>Stercorarius parasiticus</i>	<i>Charadriiformes; Stercorariidae</i>	3.8 g/cm	41-46 cm	50 km/h	Low blind area	Open areas preferably near the coast; in winter pelagic with coastal reference	Picking up from water surface, partly diving, partly hunting	Diurnal; migration at night	Z	Breeding in small colonies		-2	0 (assumed 1 level reduction)
	1	0	2	2	3	1	2	2	1	2	16		
Caspian tern <i>Hydroprogne caspia</i>	<i>Charadriiformes; Sternidae</i>	4.6 g/cm	47-56 cm	44 km/h	Low blind area	Coast, inland shallow sandy beaches on coast, islands in larger waters; also on smaller inland waters when migrating.	Shock diving, picking up from water surface, partly aerial hunting	Mostly diurnal	Z	Colony-breeder		-2	0 (assumed 1 level reduction)
	1	0	0	3	3	2	2	2	1	2	16		
Gull-billed tern <i>Gelochelidon nilotica</i>	<i>Charadriiformes; Sternidae</i>	2.1 g/cm	33-38 cm	Group of terns, slow flyers	Low blind area	Shallow coasts with adjacent extensive grassland,	Shock diving, picking up from water surface,	Diurnal; migration at night	Z	Colony-breeding; gregarious outside the		-1	1

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

						freshwater lakes with little vegetation, often breeds following colonies of black-headed gulls and other terns	partly aerial hunting			breeding season			
	1	1	3	2	3	2	2	2	1	3	20		
Common tern <i>Sterna hirundo</i>	<i>Charadriiformes; Sternidae</i>	1.5g/cm	31-39 cm	Group of terns, slow flyers	Low blind area	Sea coast, breeding in salt marshes and dunes, also in gravel pits and along rivers	Shock diving, picking up from water surface, partly aerial hunting	Diurnal; migration at night	Z	Colony-breeding; gregarious outside the breeding season		-1	1
	1	0	3	2	3	2	2	2	1	3	19		
Black tern <i>Chlidonias niger</i>	<i>Charadriiformes; Sternidae</i>	1.1 g/cm	22-28 cm	Group of terns, slow flyers	Low blind area	In lowland landscapes on eutrophic water bodies with strong floating leaf zone	Shock diving, picking up from water surface, partly aerial hunting	Diurnal and crepuscular active; also migrates at night	Z	Colony-breeder; gregarious all year round		-1	1
	1	0	0	2	3	2	2	3	1	3	17		
Little tern <i>Sternula albifrons</i>	<i>Charadriiformes; Sternidae</i>	1.1 g/cm	22-28 cm	Group of terns, slow flyers	Low blind area	Low vegetation areas on the coast	Shock diving, picking up from water surface, partly	Diurnal	Z	Colony-breeding; gregarious outside the breeding season		-2	0 (assumed 1 level reduction)

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

							aerial hunting						
	1	0	0	2	3	1	2	2	1	3	15		
Sandwich tern <i>Sterna sandvicensis</i>	<i>Charadriiformes; Sternidae</i>	2.5 g/cm	36-41 cm	Group of terns, slow flyers	Low blind area	Seashore, breeding on vegetation-free islands, sand and gravel banks	Shock diving, picking up from water surface, partly aerial hunting	Mostly diurnal	Z	Colony-breeding; gregarious outside the breeding season		-1	1
	1	2	3	2	3	2	2	2	1	3	21		
Arctic tern <i>Sterna paradisaea</i>	<i>Charadriiformes; Sternidae</i>	1.5g/cm	31-39 cm	39 km/h	Low blind area	Sea coast, breeding in salt marshes and dunes, also in gravel pits and along rivers	Shock diving, picking up from water surface, partly aerial hunting	Diurnal; migration at night	Z	Colony-breeding; gregarious outside the breeding season		-1	1
	1	0	3	3	3	2	2	2	1	3	20		
Whiskered tern <i>Chlidonias hybrida</i>	<i>Charadriiformes; Sternidae</i>	1.1 g/cm	20-23 cm	Group of terns, slow flyers	Low blind area	Floating leaf cover of eutrophic waters or very shallow siltation zones, flooded meadows	Shock diving, picking up from water surface, partly aerial hunting	Diurnal; migration at night	Z	Colony-breeding; gregarious outside the breeding season		-2	0 (assumed 1 level reduction)
	1	0	0	2	3	2	2	2	1	3	16		

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

White-winged tern <i>Chlidonias leucopereus</i>	<i>Charadriiformes; Sternidae</i>	1.1 g/cm	20-23 cm	43 km/h	Low blind area	Eutrophic water bodies or very shallow siltation zones, flooded meadows	Shock diving, picking up from water surface, partly aerial hunting	Diurnal; migration at night	Z	Colony-breeding; gregarious outside the breeding season			-1	1
	1	0	0	3	3	2	2	2	1	3	17			
Northern fulmar <i>Fulmarus glacialis</i>	<i>Procellariiformes; Procellariidae</i>	7.5 g/cm	45-50 cm	slow, gentle wing beats	Low blind area	High-sea bird, breeding on islands and the coast	Shock diving, picking up from water surface, partly aerial hunting	Diurnal and nocturnal	JZW	Colony-breeding; gregarious outside the breeding season			-1	1
	0	0	1	2	3	1	2	2	3	3	17			
Common wood pigeon <i>Columba palumbus</i>	<i>Columbiformes; Columbidae</i>	6.5 g/cm	41-45 cm	63 km/h	Low blind area	Wooded areas, open land, settlements	Pecking/picking up on the ground	Mostly diurnal	JZW	As resting birds, sometimes in large flocks, large roosting communities		3		
Turtle dove <i>Streptopelia turtur</i>	<i>Columbiformes; Columbidae</i>	2.8 g/cm	26-28 cm	Group of pigeons fast flyers	Low blind area	Breeding in bushes, copses, forest edges semi-open cultural landscape, parks	Pecking/picking up on the ground	Diurnal and crepuscular active; migration at night	Z	Foraging in larger aggregations			-1	2
	2	0	0	3	3	3	3	2	1	3	20			

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention' It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#). For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

Carrion crow (R) <i>Corvus corone</i>	<i>Corvidae; corvus</i>	5.5 g/cm	45-49 cm	59 km/h	Low blind area	Varied; open to semi-open landscape with trees/woods; parks, settlements; foraging in fields, pastures and meadows.	Pecking/picking up on the ground	Diurnal	JZW	Partly shared roosts		3		
Common raven <i>Corvus corax</i>	<i>Corvidae; corvus</i>	9.4 g/cm	64 cm	51 km/h	Low blind area	Varied; rocky coast, semi-open to open landscape with trees and in forests; foraging in open countryside	Pecking/picking up on the ground	Diurnal	J	Max. Sleeping site concentration > 600 ind., groups or flocks of ind. up to 2 years old and adult non-breeders			-1	2
	3	0	0	3	3	3	3	3	1	3	22			
European roller <i>Coracias garrulus</i>	<i>Coraciiformes; Coraciidae</i>	2.0 g/cm	29-34 cm	62 km/h	Low blind area	Light oak/pine forests rich in cavities, parks etc.; dry savannah in winter	Flight hunting	Diurnal	Z	Neither grouping nor colony breeding			not possible	not possible
	0	0	0	3	3	2	0	3	1	0	12			

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention'

It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#).

For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

Hoopoe <i>Upupa epops</i>	<i>Bucerotiformes; Upupidae</i>	1.5g/cm	26-28 cm	39 km/h	Low blind area	Open dry landscape with sparse vegetation and structures for breeding cavities; outside the breeding season ruderal areas, roadsides, sports fields, savannah landscape	Pecking/ picking up, poking at the ground	Diurnal	Z	Neither grouping nor colony breeding			not possible	not possible
	0	0	0	0	3	2	2	3	1	0	11			
Wryneck <i>Jynx torquilla</i>	<i>Piciformes; Picidae</i>	1.6 g/cm	16-17 cm	Intermediate flight, not too fast	Low blind area	Partially wooded to loosely tree-covered landscape with open spaces and cavity trees (parks, orchards, etc.); during migration in completely treeless terrain, in winter savannah and steppe	Pecking / picking up on the ground	Diurnal; migrates at night	Z	Neither grouping nor colony breeding			-2	1

Annex II: Translated 'Similarity Index' on the effectiveness of wire markers for bird species which have not yet been subject to study

The below table has been translated from the Liesenjohann et al. (2019). 'Species-specific effectiveness of wire markers on overhead powerlines - A technical convention'
It shows reference species and comparison species similarities based on 10 criteria and similarity-based CSR collision reduction values (based on tables 20 and 22 – see also 21 and 23) [Link](#).
For an explanation in English, see Annex I: Translated summary of relevant German studies and guidelines on species-specific collision with power lines and wire marker effectiveness.

	0	0	0	3	3	2	3	2	1	0	14			
--	---	---	---	---	---	---	---	---	---	---	----	--	--	--