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Ornithological Surveys at House of Water, East Ayrshire: Breeding season 2008 and Winter season 2008-09

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A report to Scottish Coal

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EXECUTIVE SUMMARY

1. BTO Scotland together with Scottish Coal completed a survey of breeding and wintering birds within approximately 72 ha of a restored formerly opencast site at House of Water in East Ayrshire in 2008-09. The principal interest was the re-diverted River Nith, which at 3 km long is believed to be the largest river diversion project in Europe.

2. Four transect surveys were undertaken in each of the breeding season (April – June 2008) and the winter season (November 2008 – February 2009) that followed the entire length of the re-diverted river and sampled nearby wetlands, rough grassland and other habitats within the restored area.

3. A total of 43 species was recorded within the study area within the two seasons. Thirty-four species were recorded in the breeding season including 11 recorded as using the re-diverted river channel. Behaviour indicative of likely or definite breeding was recorded for 20 species, of which seven included the river channel within their territories. Twenty-four species were recorded during the winter surveys, of which eight were observed using the river channel.

4. Five piscivorous or specialist riverine bird species were recorded on the re-diverted stretch of the River Nith. These were: (1) Grey Heron, seen in both summer and winter but not breeding; (2) Goosander seen in both summer and winter but not breeding; (3) Common Sandpiper, with six apparent breeding territories along the river; (4) Sand Martin, seen in summer but not breeding; and (5) Dipper, seen in winter only. Other species seen on or immediately by the river were: Mallard, Meadow Pipit and Pied Wagtail (both seasons); Teal and Snipe (winter only); and Oystercatcher, Ringed Plover, Lapwing, Redshank, Sedge Warbler and Reed Bunting (summer only). These latter species were also associated with the surrounding rough grassland, wetlands or scrub.

5. Given the apparently rapid development of the bird populations on the site (since 2004 when the river was restored), we recommend annual monitoring, at least initially, employing the same methods as reported here. Key indicator species for the site will be the five piscivorous or specialist riverine species (see above) plus potentially some other riverside species and potential colonists such as Grey Wagtail and Kingfisher.

6. The House of Water site offers an excellent opportunity to quantify the relationships between bird populations, river structure and its associated vegetation and invertebrate communities. This information could be used to inform the success, or otherwise, of this specific restoration project, potentially guide ongoing management of the site, and provide valuable empirical data to inform river conservation management more widely.

1. INTRODUCTION

Coal extraction at House of Water, near New Cumnock in East Ayrshire, necessitated the diversion in 2000 and subsequent re-diversion to its former route of the River Nith, a river of major importance as a salmon and sea trout fishery, and one of its tributaries, the Beoch Lane. Completed in 2004, at 3 km in length it is believed to be the largest river diversion project in Europe. This report describes and gives the results of surveys of breeding birds in 2008 and of birds present in winter 2008-09, the first ornithological surveys of the restored section of the river. The principal focus is on birds that utilise the re-diverted section of the river but we have also taken the opportunity to monitor birds on the immediately adjacent area, including restored ground and newly created wetlands, comprising an area of about 72 ha.

The development of vegetation and macro-invertebrate communities along the 3-km re-diverted section of the river are being monitored by the School of Biological and Environmental Sciences, Stirling University, following its restoration. Concurrent monitoring of bird populations that colonise and use the re-diverted section will give opportunities to (i) further quantify the success or otherwise of the project in its promotion of wildlife, (ii) ultimately identify relationships between different taxa in their colonisation of the section, and (iii) inform other similar restoration projects. As well as describing the surveys undertaken and presenting their results, this report includes recommendations for future monitoring of the site.

2. METHODS

2.1 Study area

The re-diverted stretch of the River Nith flows from south-west to north-east between the altitudes of about 240 – 220 metres above mean sea level centred around 53° 23' N, 4° 16' W (grid reference NS553122) in East Ayrshire, south-west Scotland. Birds were surveyed along a 6.1 km long transect that followed the bank of the entire section of re-diverted river, including its tributary the Beoch Lane, with deviations to include adjacent wetlands to the south of the river on restored, formerly opencast, land as well as land to the north that was both affected and unaffected by opencast operations (Figure 1). Although not specifically measured, we estimate that the water depth within the river is generally shallow (< 1 m) and its width varies between 3 – 5 m. The banks include both shallow muddy edges and steep, actively eroding banks and the developing substrate includes both rocks and soft mud and silt. Its course and nature aim to replicate the original section of the upper reaches of the River Nith prior to open-casting at the site (Halcrow Group Limited 2004). The surrounding area (*ca.* 72 ha) that was also surveyed is restored (formerly open-cast) rough grassland and includes some small specifically created wetlands (shallow rush fringed pools), some steep-banked, concrete-lined settling ponds plus haul roads and some infrastructure associated with the neighbouring active open-cast workings. For the time being, the precise boundaries of the area surveyed remain somewhat vague and may change in subsequent years in response to the site's development and to leave open the possibility of including areas of developing interest; however an area of approximately 72 ha was included for the surveys of breeding birds in 2008 and winter birds in 2008-09.

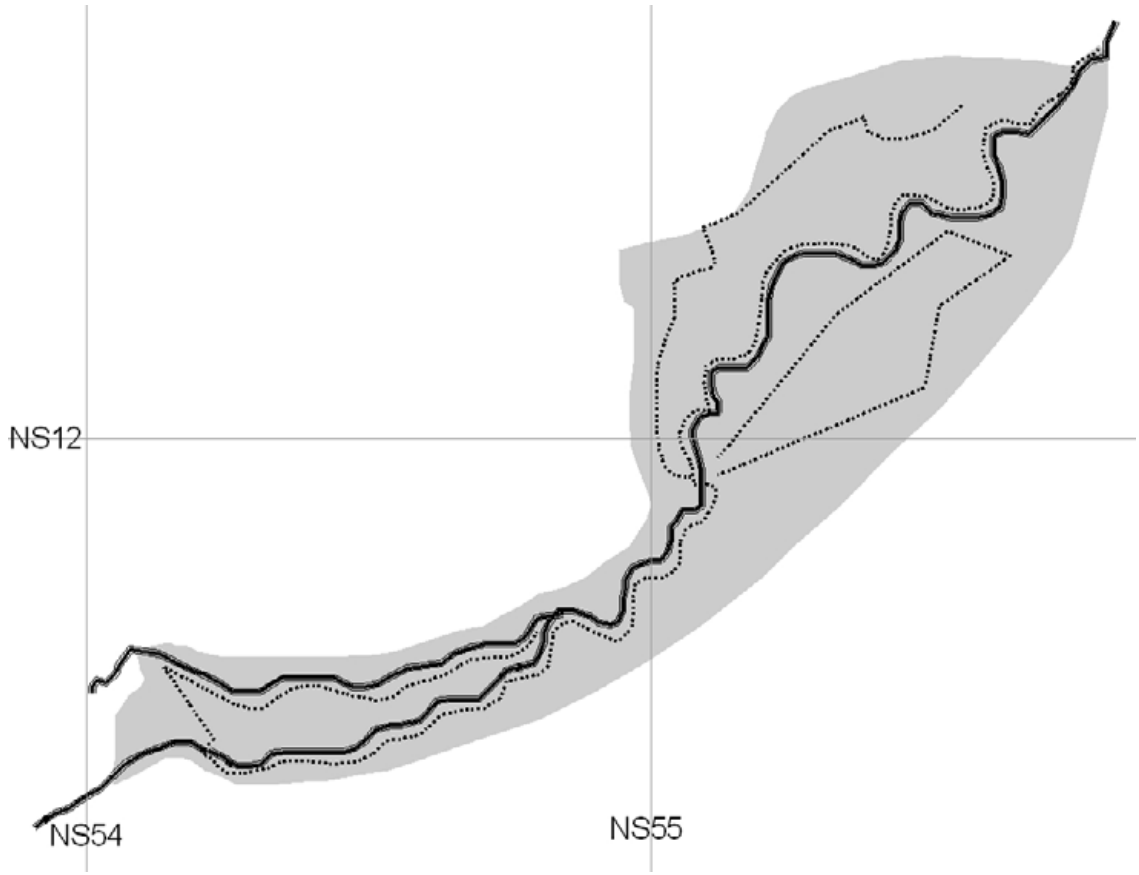

Figure 1. The House of Water study area and survey transects used in 2008. The shaded area represents the study area (*ca.* 72 ha). The solid line represents the course of the re-diverted River Nith and the dotted lines the survey transects (*ca.* 6.1 km). The grid lines represent the 1-km divisions of the Ordnance Survey's national grid.

2.2 Breeding bird surveys

Four survey visits were carried out for breeding birds in 2008: 17th April (Visit A); 7th May (Visit B); 21st May (Visit C); and 2nd June (Visit D). All surveys were completed within the first four hours of light and in relatively calm (less than Beaufort force 4) and dry conditions, when the detection likelihood of most species is expected to be high. The identity, location, activity (as represented by standard BTO survey codes; Marchant 1983) and, where possible, the sex of each bird encountered were recorded on large-scale field maps. Birds recorded as singing, displaying or alarming, or the finding of nests or dependent young were considered as indications of territory occupancy. Where it was possible, simultaneous registrations of birds were used to identify different territories. For waders, where this was not possible, and given their relatively high breeding density within a restricted area, the following rules were applied to identify apparent territories (after Reed & Fuller 1983):

a) 1 bird recorded (displaying, alarming or otherwise territorial) alone 50 m or more (for Ringed Plover), 75 m or more (for Common Sandpiper, Redshank and Lapwing) and 125 m or more (for Oystercatcher) from other birds were defined as an apparent territory;

b) 2 individual birds (displaying, alarming or otherwise territorial) within 50 m (for Ringed Plover), 75 m (for Common Sandpiper, Redshank and Lapwing) and 125 m (for Oystercatcher) of each other were defined as one apparent territory;
c) 3 or 4 birds together (displaying, alarming or otherwise territorial) were defined as 2 pairs;
d) Any drumming, chipping or alarming Snipe was defined as an apparent territory.

The above distances are for registrations in the same survey visit. For registrations from different survey visits, we adopt a more conservative approach of a minimum separation distance of 500 m, with a separation distances of less than 500 m between registrations from different survey visits being assumed to refer to the same territory, in the absence of other observations to suggest otherwise (after Brown & Shepherd 1993).

The following rules were applied to identify non-breeders to be excluded from the breeding summary maps (after Reed & Fuller 1983):

i) 5 or more birds in a flock on the ground without vocal registration;
ii) Any bird(s) which flew through the area in one direction for more than 150 m without landing or alarming.

For all other species (principally passerines) a minimum separation distance of 200 m between registrations (both within the same survey visit and between visits) was used to identify separate territories where simultaneous observation was not possible. The separation distance used here is somewhat arbitrary but is based on the 'typical' territory sizes of many passerines. Note that for our purposes, territorial behaviour recorded on just a single survey visit is sufficient for inclusion as an apparent territory in the summary data.

The above approach to identifying territories adopts a less conservative approach to some other census methods (e.g. Gilbert *et al.* 1998). For example, a single observation of territorial behaviour in a particular area is sufficient for us to recognise an 'apparent territory', whereas more than one registration is generally required for other territory mapping approaches where these generally require more frequent survey visits (e.g. Marchant 1983), though our current approach is comparable to that which is widely used for breeding waders on moorland that uses just two survey visits (Brown & Shepherd 1993). Also, we have not employed correction factors to counts of birds to estimate breeding population sizes for the survey area as a whole or for particular sections of it (e.g. O'Brien & Smith 1992 for Oystercatcher, Lapwing, Snipe and Curlew in enclosed lowland wet grassland). One of our priorities is to provide geographically referenced bird data that recognises areas that are likely to have been used for breeding. Therefore the population estimates that we give for the study area could possibly be higher than those employing an alternative approach for interpretation in some cases. Given the proposed future use of our bird data to identify relationships with other biological and hydrological data, we suggest that such estimates should be compatible with the most representative data that can be spatially referenced.

Given the principal interest in the birds using the river channel, breeding birds were recorded as 'using' the river channel if the river was included within the boundary of the minimum convex polygon plotted around the all the registrations associated with any apparent territory. Birds for which no territorial behaviour was observed were defined as 'using' the river channel if:

a) Individuals on or in the water itself;
b) Individuals on rocks or vegetated islets within the flowing river channel;

c) Individuals using the immediate river banks – areas that are either regularly inundated with water or on the immediate bank or slope above the water but always within 2 m of the 'normal' water course;
d) Individuals foraging in the air above the water and within 3 m of its surface.

2.3 Winter bird surveys

Four survey visits were undertaken in winter 2008-09: 26th November (Visit A); 10th December (Visit B); 8th January (Visit C); and 24th February (Visit D). Surveys were undertaken between 09:00 and 14:00, avoiding the first and last hours of light when bird activity in winter is suggested to be low, and avoiding periods of heavy or persistent precipitation and wind speeds generally greater than Beaufort force 4. During the second and third survey visits, all standing water (including the pools and settling lagoons) were frozen, although on all visits, the river remained predominantly unfrozen. In common with the breeding bird surveys, the identity, location, activity and where possible, sex of each bird encountered were recorded on large-scale field maps. However, the interpretation of surveys of birds in winter is more problematic than for breeding birds as they tend to be more mobile (not necessarily being attached to a particular territory) and can be more aggregated (often in flocks). Therefore we present counts seen on each survey visit and do not attempt any summarising of data for that season. As our principal aim was to record bird use of the re-established river, we recorded separately individuals within the river channel itself. The same criteria as for including apparently non-breeding individuals as using the river channel were used (see last paragraph of section 2.2).

3. RESULTS

A total of 43 species were recorded within the study area during the eight survey visits, four visits in the breeding season 2008 and another four during the winter 2008-09 (Tables 1 and 2). Thirty-four species were recorded within the study area during the breeding season, which included 11 species recorded as using the re-diverted river channel (i.e. seen in or on the river or on its immediate shore, or foraging above and within 3 m of its surface) (Table 1). Territorial behaviour was recorded for 20 species, of which 7 included the river channel within those territories (Table 1). The distributions of the apparent territories are shown in Appendix 1 and the locations of apparently non-breeding species that were using the river channel during the survey visits in April – June are shown in Appendix 2. Twenty-four species were recorded during the winter survey visits of which eight were observed using the river channel (Table 2). The locations of all species during the four winter visits are shown in Appendix 3.

Table 1. Species recorded during each of the four breeding season visits to the House of Water study area in 2008, the number of apparent territories identified within that area, the number of apparent territories that included the re-diverted river channel and additional species that were recorded as using the re-diverted river channel. 'Y' indicates that species were recorded either in the river channel or on a specific survey visit.

Species	Apparent territories	River channel[1]	Visit A	Visit B	Visit C	Visit D
Grey Heron		Y		Y	Y	Y
Mute Swan					Y	Y
Greater Canada Goose	4		Y	Y	Y	Y
Teal	1		Y			
Mallard		Y	Y	Y		Y
Goosander		Y	Y	Y		
Kestrel				Y		
Peregrine						Y
Oystercatcher	3	3	Y	Y	Y	Y
Ringed Plover	4	2	Y	Y	Y	Y
Lapwing	3	3	Y	Y		Y
Snipe	1		Y			
Curlew	1		Y			
Redshank	2	2	Y	Y	Y	Y
Common Sandpiper	6	6	Y	Y	Y	Y
Black-headed Gull			Y	Y	Y	Y
Common Gull	1				Y	Y
Lesser Black-backed Gull				Y		
Herring Gull				Y		
Great Black-backed Gull			Y			
Woodpigeon			Y			
Skylark	21		Y	Y	Y	Y
Sand Martin		Y			Y	
Meadow Pipit	18		Y	Y	Y	Y
Pied Wagtail	2	1			Y	Y
Whinchat	2			Y		Y
Wheatear	1		Y	Y		
Blackbird						Y
Grasshopper Warbler	3			Y	Y	Y

Sedge Warbler	10			Y	Y	Y
Willow Warbler	1				Y	
Carrion Crow				Y		Y
Chaffinch	1				Y	
Reed Bunting	7	2	Y	Y	Y	Y

[1] Apparent territories that include the river channel are also included in the totals for the study area as a whole.

Table 2. The numbers of each species recorded during each of the four winter survey visits to the House of Water study area in 2008-09, within the entire survey area and those seen as using the re-diverted river channel. Note that the totals for each survey visit are not mutually exclusive in that the 'Total' numbers include those using the river channel.

Species	Visit A		Visit B		Visit C		Visit D	
	Total	River channel	Total	River channel	Total	River channel	Total	River channel
Grey Heron	1	1					1	
Mute Swan	1						3	
Greater Canada Goose							56	
Teal	32		17	17	8	8	10	2
Mallard	14		18	18	8	7	15	2
Goosander							2	
Buzzard					1			
Kestrel	1						1	
Peregrine	1							
Ringed Plover							3	
Lapwing							3	
Snipe			3	1	2	2	1	
Skylark							22	
Meadow Pipit	11	1	53	40	33		7	
Pied/White Wagtail	1		2	1	1		1	
Dipper	3	3	1	1	3	3		
Wren	2		2		2		1	
Robin					1	1		
Stonechat	1		4		1			
Fieldfare			31					
Mistle Thrush	1							
Carrion Crow	2		3		5		3	
Raven			2					
Reed Bunting			2		1		1	

3.1 Wildfowl

Five species of wildfowl were recorded within the survey area; Mute Swan, Greater Canada Goose, Teal, Mallard and Goosander (scientific names of species mentioned in this report are listed in Appendix 4). All were seen during both breeding and winter seasons with Teal, Mallard and Goosander recorded in the river channel. Activity indicative of breeding or territoriality was observed only for Canada Goose and

Teal. The former (4 apparent territories) were concentrated on the settling lagoons to the north of the river and a single apparent territory (AT) of Teal was recorded in the wetlands to the south of the river on the first survey visit only (Appendix 1). Otherwise, wildfowl using the river channel (all apparently non-breeding during the summer or recorded during the winter) were concentrated in the downstream reaches of the study area with the majority of registrations recorded within its lower 1000 m (Appendices 2 & 3).

3.2 Waders

Twenty apparent territories of seven species of waders were recorded during the breeding season (Table 1). Of these, 16 apparent territories of five species included the river channel. Based on the locational data collected during the four breeding season visits, only single apparent territories of Curlew and Snipe and two of Ringed Plover appeared not to be directly associated with either the river channel or the created wetlands to the south of the river. Breeding Common Sandpipers (6 ATs) occupied nearly the entire length of the river, while the remaining breeding waders associated with the river (3 ATs of Oystercatcher, 2 ATs of Ringed Plover, 3 ATs of Lapwing and 2 ATs of Redshank) were concentrated within the lower 1000 m of its course (Appendix 1).

Three wader species were recorded during the winter surveys (Table 2). Of these, Ringed Plover and Lapwing were only seen on the latest survey visit (24th February) and are likely to have been the first birds to return to their breeding areas. Snipe was recorded during three of the four winter survey visits, with birds being recorded from the river channel on two of those visits, when the ground and other standing water were frozen (Table 2, Appendix 3).

3.3 Other species

Thirty other species (i.e. neither wildfowl nor waders) were recorded during the breeding and winter season survey visits combined (Tables 1 & 2). Of these, 11 were thought likely to be breeding within the study area based on the observations of territorial behaviour (Table 1). Many of these were associated with the restored rough grassland habitat, the planted and naturally established trees and shrubs and the wetlands, including the settling lagoons. Six of these were associated with the river, of which two (Pied Wagtail and Reed Bunting) had apparent breeding territories that included the river (Tables 1 & 2).

Within the range of habitats available in the House of Water study area, Grey Heron, Dipper and Sand Martin can be considered as riverine specialists amongst those ‘other’ species that were recorded. Sand Martin, a summer migrant to Britain, was only recorded during a single survey visit and Grey Herons were recorded three times during the breeding season and once in the winter. Dippers were recorded during winter surveys only, with up to three individuals seen during three of the survey visits. Non-riverine-specialist species, such as Pied Wagtail, Meadow Pipit, Robin and Wren also utilised the river channel, arguably most noticeably in the winter (Tables 1 & 2).

4 DISCUSSION

The bird communities recorded during the present survey will have largely colonised the study area during the previous four years. This will certainly have been the case for those species using the re-diverted river channel as it would not have been present until 2004. It should be noted, however, that an initial temporary diversion of the channel, which ran to the north and west of the original (and re-established) river course could have supported some birds that could have been displaced, thus facilitating rapid recolonisation.

4.1 Piscivorous birds and other riverine specialist species

Two principally piscivorous species were recorded, Grey Heron and Goosander, in both breeding and winter seasons. Breeding by both species within the study area may be limited by the availability of suitable nest sites. Grey Herons predominantly nest in trees (within the canopy; Marquiss 2007a) while Goosanders use holes, predominately in trees or amongst rocks (Marquiss 2007b). Both species could potentially breed close to the study areas and Goosander could potentially do so within it should suitable nest sites develop and become available either naturally or through targeted management.

Two passerines associated with the river were Dipper and Sand Martin. Dippers are almost exclusively associated with flowing water and feed principally on aquatic invertebrates (Tyler & Omerod 1994). Although Dippers were recorded on the re-diverted river in winter, none was seen during the breeding season. Nest sites of Dippers include rock ledges, amongst tree roots and the cavities and ledges of bridges, walls and other structures by rivers (Shaw 1978). Although the presence of birds in winter suggests that there was sufficient food within the river to support Dippers, a lack of suitable potential nest sites (stable ledges or developed root systems) could currently restrict their presence as a breeding species. Sand Martins also feed on invertebrates but in contrast to Dippers they predominantly forage for them aerially, often above water courses and nest in burrows dug into steep sandy banks (Turner 2007). Although recorded during one of the breeding season survey visits, none were recorded as nesting within our survey area.

Perhaps notable by its absence from the surveys is Grey Wagtail. Although not as restricted to flowing water as Dippers, Grey Wagtails do have a preference for fast flowing shallow water courses (e.g. Vickery 1991). Grey Wagtails, and possibly also Kingfisher, should perhaps be considered as a potential colonist of the re-diverted river. Similarly, Dipper, Sand Martin and Goosander could be considered as potential colonists as breeding birds should suitable nest sites develop with time (or with specific targeted management) along the course of the river. Alternatively, additional management of the site could potentially aim to create suitable nest sites for these species.

The most abundant breeding wader in the study area in 2008 and also the one that was most strongly associated with the river was Common Sandpiper. With six apparent territories along 3 km of river, breeding densities in the study area are within the range of 0.13 - 4.67 pairs per km found for established rivers in southern Scotland (Dougall & Yalden 2007). At least some of the territories of all the other breeding waders found in the study area, apart from Snipe, included the river channel. However, in the absence of more detailed studies, it is not possible to determine the relative importance of the river, its channel and of surrounding habitats for these birds. For Oystercatchers and Ringed Plovers, at least, shingle on the shallow sloping banks of the river potentially provides important nesting and foraging areas (as does other disturbed ground within the area).

4.2 Other species

Mallard, Teal and Snipe were recorded on the river in winter, notably when other standing water was frozen, and Mallard were additionally recorded on the river during the breeding season. The river and its immediate channel was also used by some passerine species (Meadow Pipit, Pied Wagtail, Wren and Robin) again most notably when the ground and other standing water was frozen.

Most other species recorded during the surveys in 2008 and winter 2008-09 were arguably most dependent on the habitats and conditions present away from the river channel (including the created wetlands, the settling lagoons, rough grassland and young trees), though some species, or particular territories, could be influenced by the developing vegetation along the river banks. Meadow Pipit, Sedge Warbler and Reed Bunting are the species present in 2008 that had territories next to the river and therefore were likely to be using the riverside habitats.

4.3 Future monitoring and potential key species

Biological monitoring is vital to inform river conservation, with birds (because of their connections to riverine food webs and habitat features) as major candidates for that purpose (Vaughan *et al*. 2007). Correlative modelling of extensive river habitat surveys and the presence of breeding birds on waterways indicated that the bird communities of fast water rivers, most typical of upland situations, showed some of the closest links with hydromorphological features (Vaughan *et al.* 2007). Given these good relationships, the House of Water site offers an excellent opportunity to further quantify the relationships between bird populations, river structure and its associated vegetation and invertebrate communities. To date, most information on factors affecting the distribution of birds on rivers is qualitative (Vaughan *et al.* 2007). A coordinated study of the bird communities with other biological and hydromorphological monitoring at House of Water could potentially identify some of the causal relationships between the occurrence of birds and riverine conditions and inform: (i) the success or otherwise of this specific river restoration project; (ii) potentially guide the ongoing management of the site, and (iii) provide valuable empirical data to inform river conservation management more widely. To achieve this we recommend:

a) Annual monitoring of the bird communities in both summer and winter using the same methods as described in this report. Given the apparent rapid development of some bird populations between 2004 and 2008, we suggest that monitoring should continue annually, initially at least, to avoid the risk of missing potentially important changes. The frequency of monitoring can be reviewed if changes proved to be less rapid in the forthcoming years;

b) Monitoring should concentrate on the birds of the river with the following potential key species: Grey Heron, Goosander, Common Sandpiper, Sand Martin and Dipper. Potential colonists such as Grey Wagtail and Kingfisher also could be included in this list;

c) Following this initial year's survey of birds, more detailed discussions should be held, notably with Stirling University staff, regarding future integration with other biological and hydrological monitoring;

d) Monitoring of the areas adjacent to the river should be continued (using the same methods as reported here) to (i) provide further insight to the developing bird communities of the wider site, (ii) potentially identify any influence of the developing river beyond the immediate boundaries of its channel, (iii) conversely potentially identify any influences on the riverine bird populations from beyond its immediate channel and (iv) ensure that some species that could be associated with developing riverside vegetation (e.g. Reed Bunting and Sedge Warbler) are monitored adequately.

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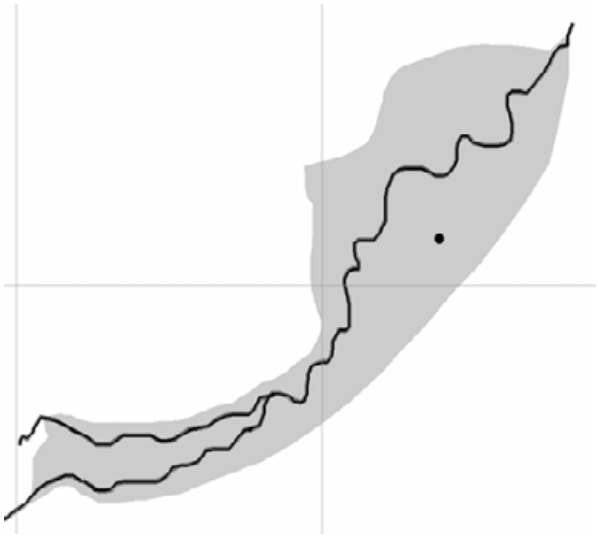
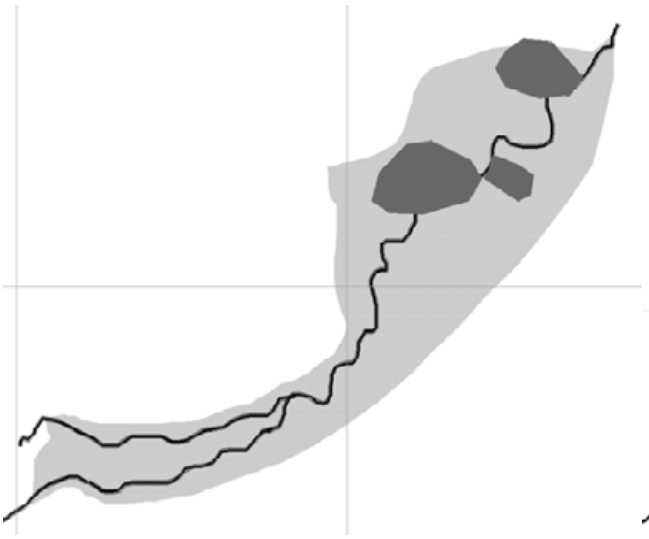
Appendix 1. Distributions of apparent breeding territories at House of Water in 2008. Dots or polygons denote single apparent territories. Polygons are the minimum convex polygons drawn around the plotted registrations deemed to refer the same territory and are presented for the breeding waders. Otherwise dots are placed centrally amongst the relevant registrations (and therefore some appear outside of the study area boundary) as the identification of territory boundaries is arguably less robust for other species based on just four survey visits.

Greater Canada Goose

Teal



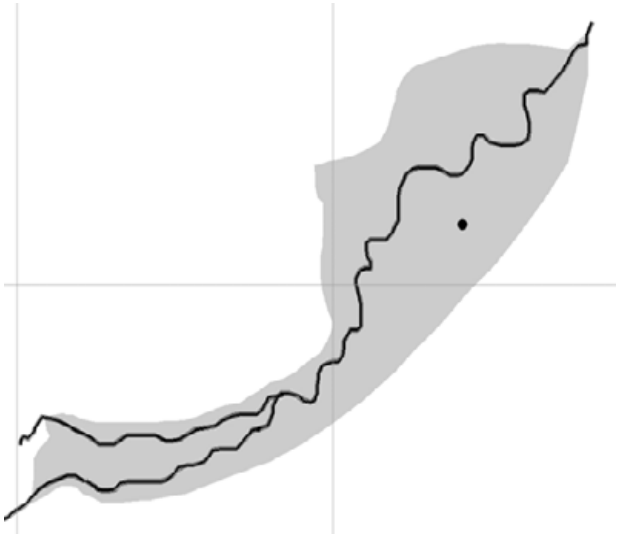
Oystercatcher



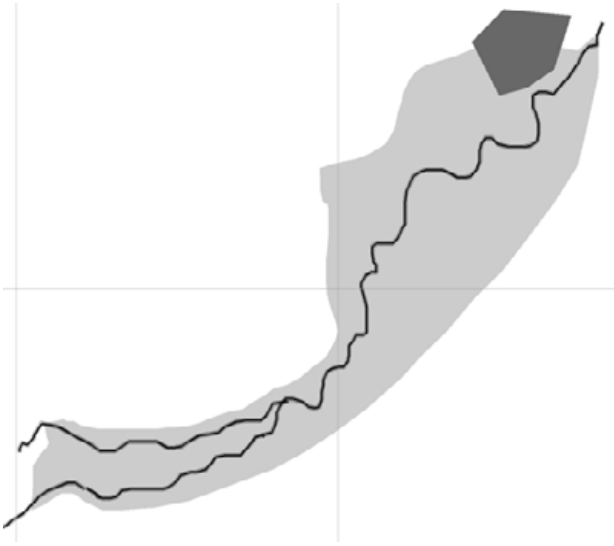
Ringed Plover

Lapwing

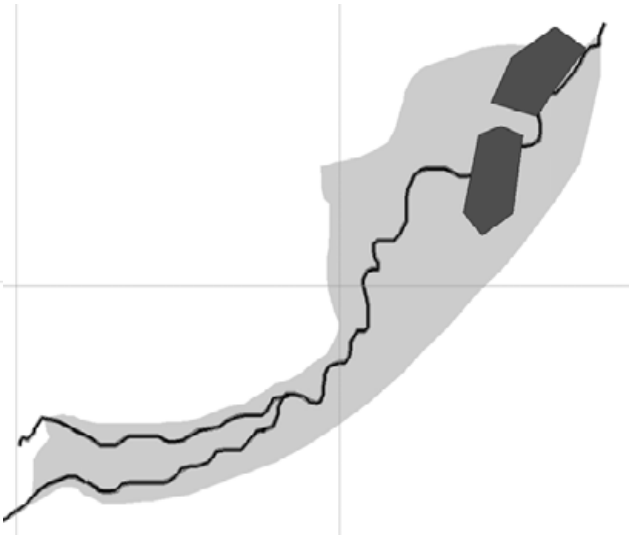
Snipe



Curlew



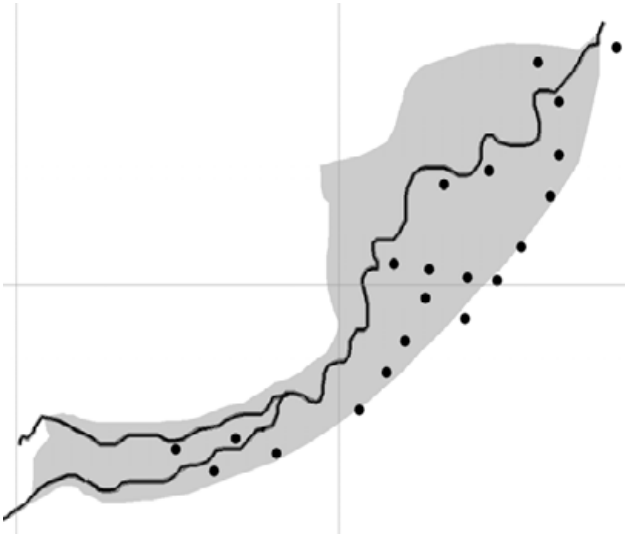
Redshank



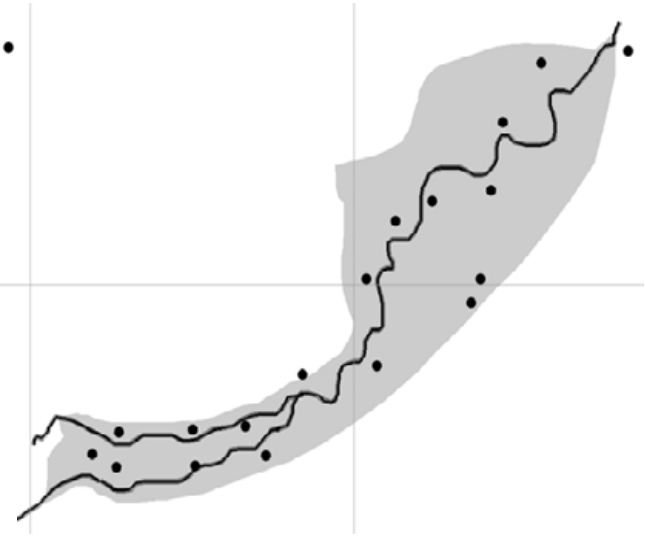
Common Sandpiper

Common Gull

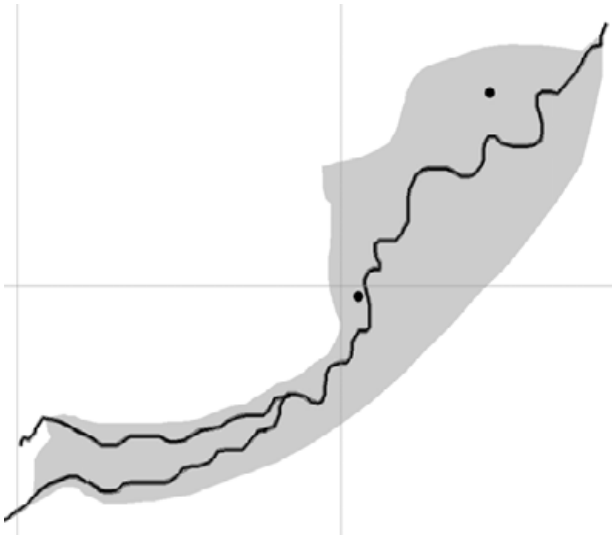
Skylark



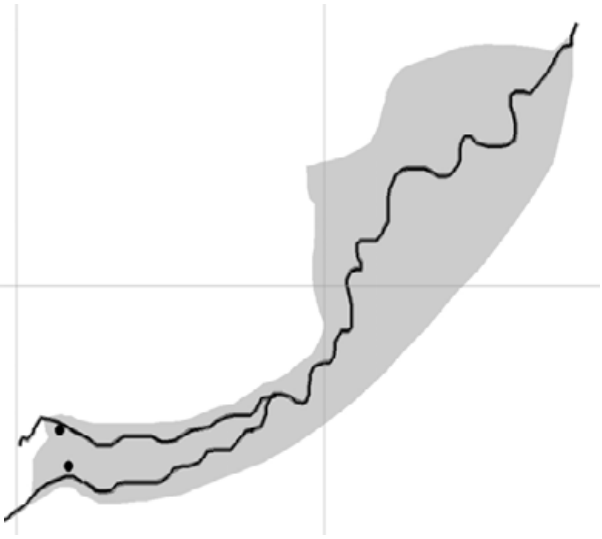
Meadow Pipit



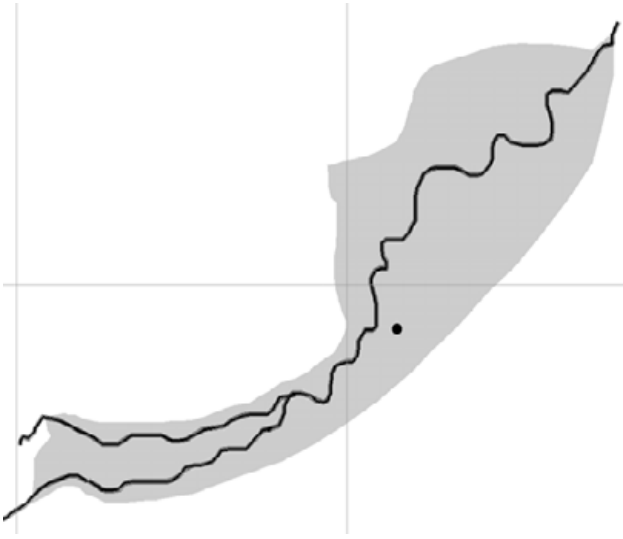
Pied Wagtail



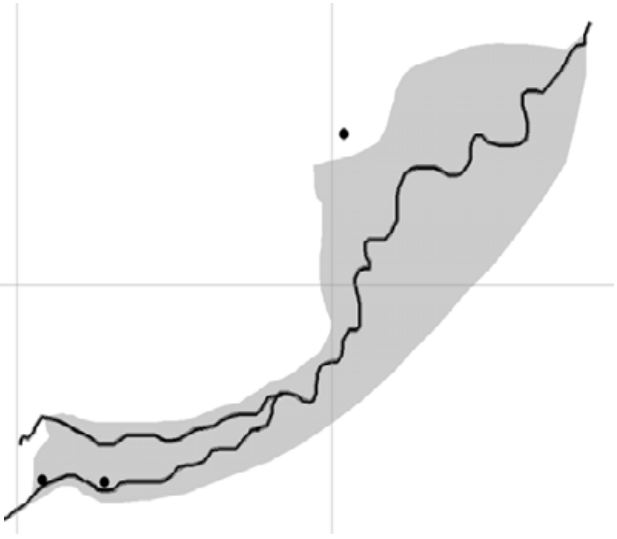
Whinchat



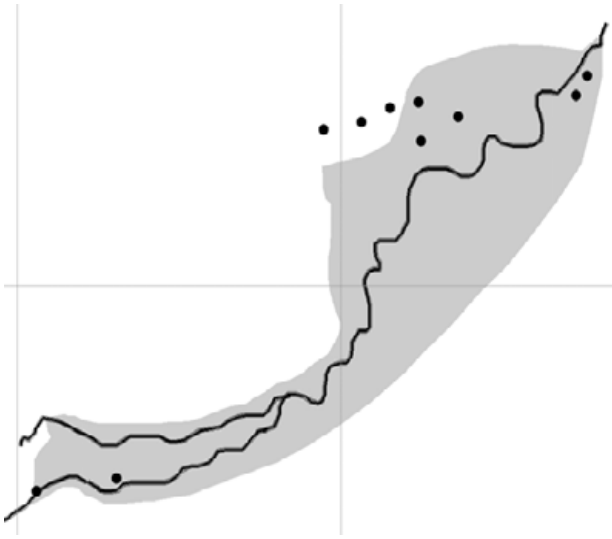
Wheatear



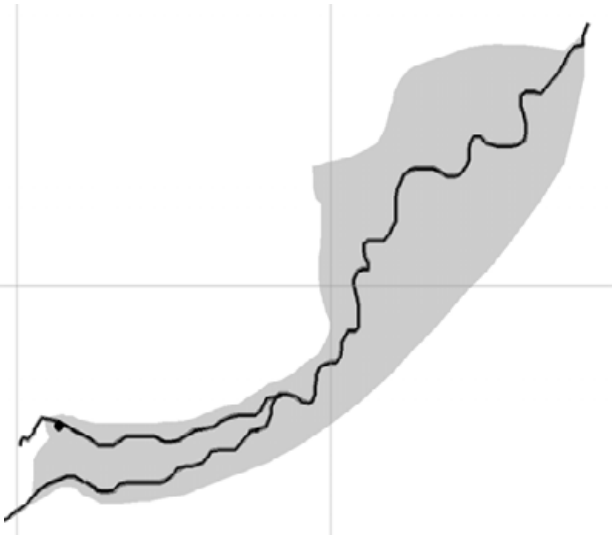
Grasshopper Warbler



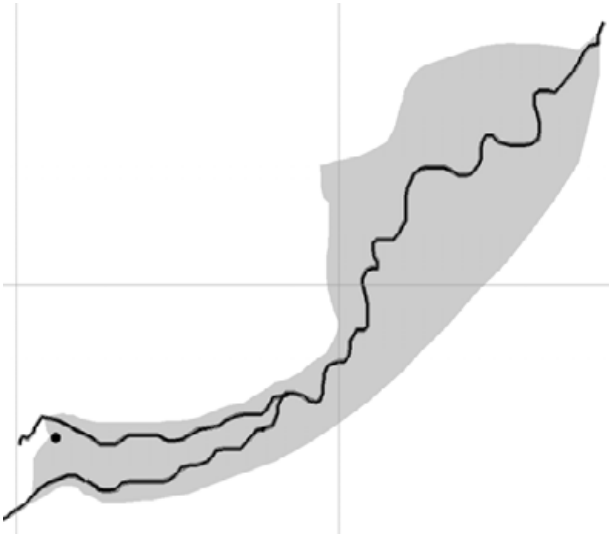
Sedge Warbler



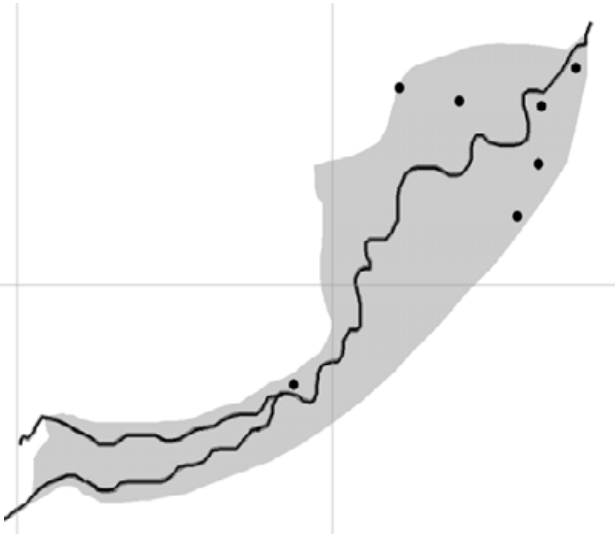
Willow Warbler



Chaffinch

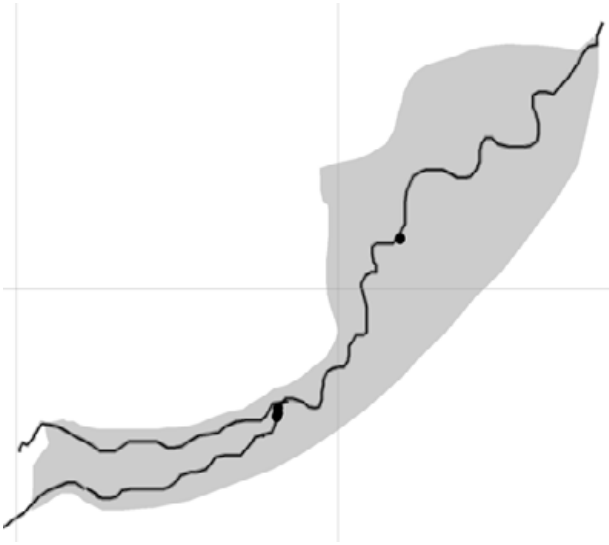


Reed Bunting

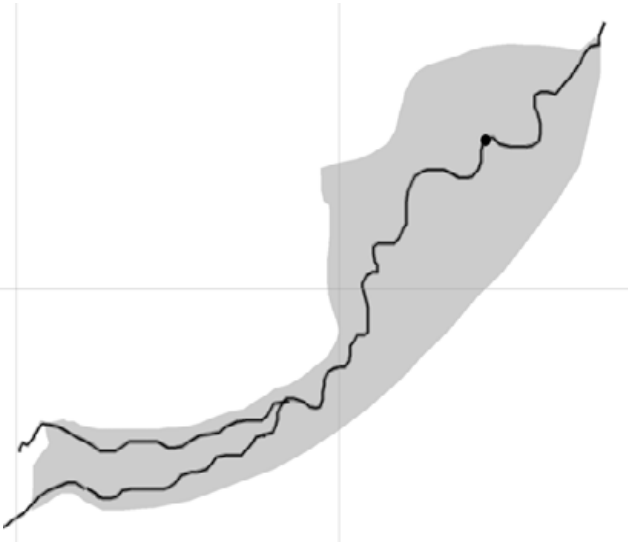


Appendix 2. The locations of apparently non-breeding species using the river channel during all four survey visits April – June 2008. Dots denote locations where individuals were first detected on any one of the four visits.

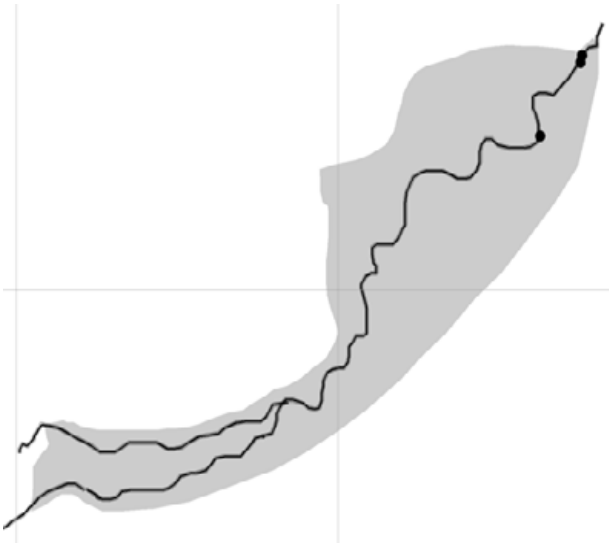
Grey Heron



Mallard



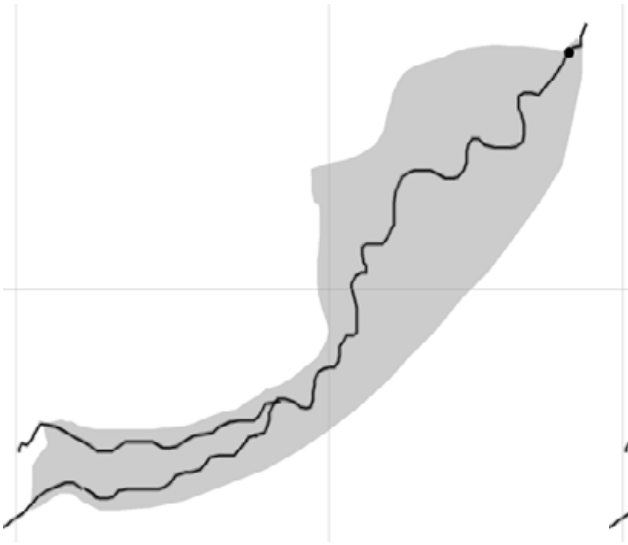
Goosander



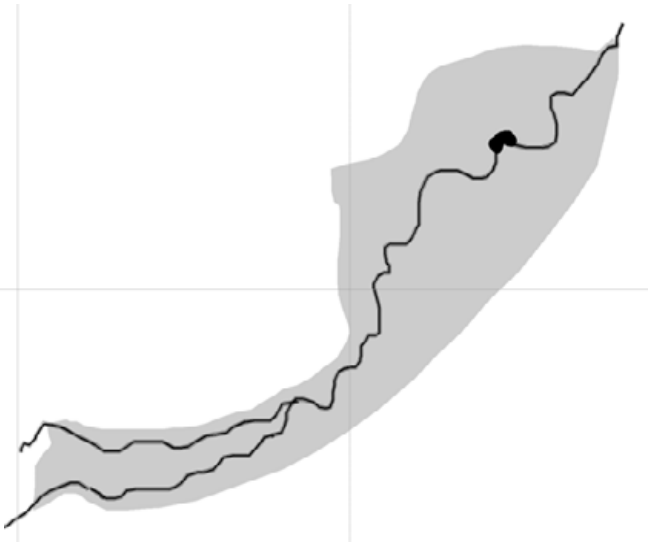
Sand Martin

Appendix 3. The locations of birds using the river channel during all four survey visits in winter 2008-09. Dots denote locations where individuals were first detected on any one of the four visits.

Grey Heron

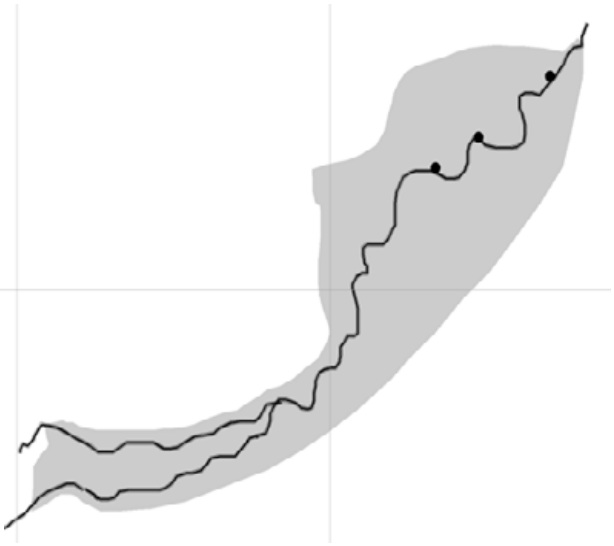


Teal

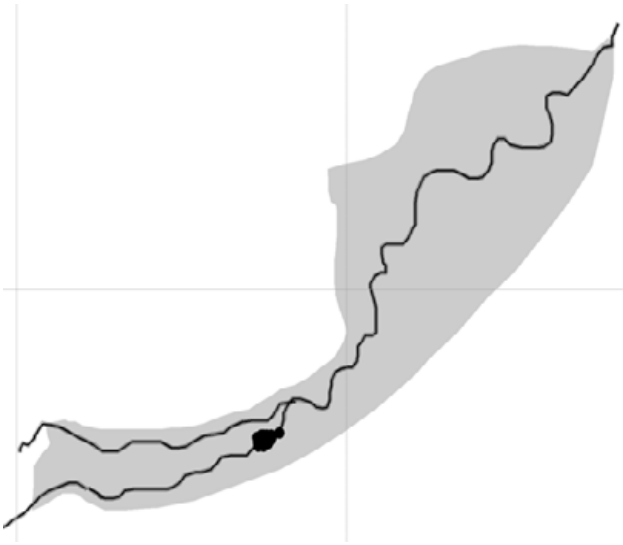


Mallard

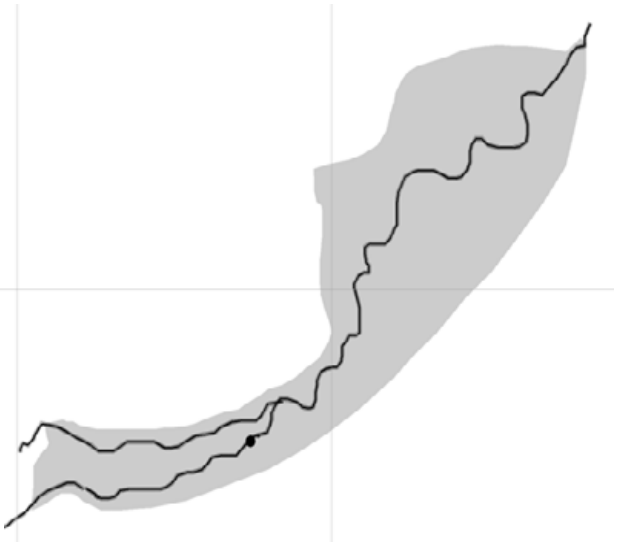
Snipe



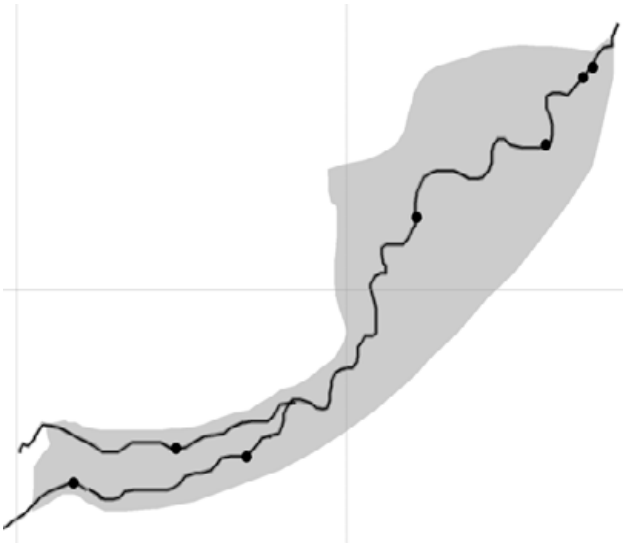
Meadow Pipit



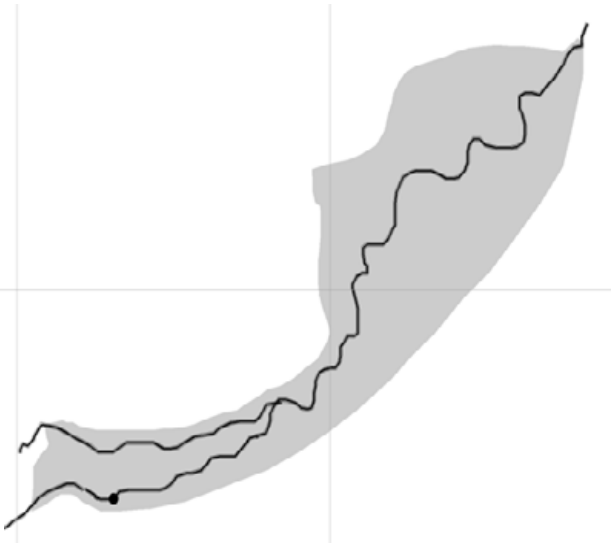
Pied Wagtail



Dipper



Robin



Appendix 4. Scientific names of species mentioned in the report.

English name	Scientific name
Grey Heron	*Ardea cinerea*
Mute Swan	*Cygnus olor*
Greater Canada Goose	*Branta canadensis*
Teal	*Anas crecca*
Mallard	*Anas platyrhynchos*
Goosander	*Mergus merganser*
Buzzard	*Buteo buteo*
Kestrel	*Falco tinnunculus*
Peregrine	*Falco peregrinus*
Oystercatcher	*Haematopus ostralegus*
Ringed Plover	*Charadrius hiaticula*
Lapwing	*Vanellus vanellus*
Snipe	*Gallinago gallinago*
Curlew	*Numenius arquata*
Redshank	*Tringa totanus*
Common Sandpiper	*Actitis hypoleucos*
Black-headed Gull	*Larus ridibundus*
Common Gull	*Larus canus*
Lesser Black-backed Gull	*Larus fuscus*
Herring Gull	*Larus argentatus*
Great Black-backed Gull	*Larus marinus*
Woodpigeon	*Columba palumbus*
Kingfisher	*Alcedo atthis*
Dipper	*Cinclus cinclus*
Wren	*Troglodytes troglodytes*
Robin	*Erithacus rubecula*
Skylark	*Alauda arvensis*
Sand Martin	*Riparia riparia*
Meadow Pipit	*Anthus pratensis*
Pied/White Wagtail	*Motacilla alba*
Grey Wagtail	*Motacilla cinerea*
Stonechat	*Saxicola torquatus*
Whinchat	*Saxicola rubetra*
Wheatear	*Oenanthe oenanthe*
Fieldfare	*Turdus pilaris*
Mistle Thrush	*Turdus viscivorus*
Blackbird	*Turdus merula*
Grasshopper Warbler	*Locustella naevia*
Sedge Warbler	*Acrocephalus schoenobaenus*
Willow Warbler	*Phylloscopus trochilus*
Carrion Crow	*Corvus corone*
Raven	*Corvus corax*
Chaffinch	*Fringilla coelebs*
Reed Bunting	*Emberiza schoeniclus*