

Ecological monitoring update for Home Farm rewilding

July – September 2020

GRASSLAND FIXED TRANSECTS

Following on from our baseline grasslands survey of May and June, five new fixed transects were set-up and surveyed during August and early September. These provide greater focus on how the species composition will change at fixed locations over the years ahead. Each fixed transect line is 50m long and marked with a permanent post at either end. Their positions have been carefully selected to represent the variation in plant composition across the whole rewilding area.



Figure 1: Fixed transect locations

Each transect was sampled using five two metre quadrats, recording the abundance of all plant species present in each quadrat. The method used follows the standard NVC (National Vegetation Classification) protocol. The NVC is the national system of classifying vegetation into identifiable 'types', and using it gives us the chance to compare our results to a huge body of reference data for grasslands across the UK using specialised software and keys. It allows us to see how the composition of home farm currently fits in a national context, and how this will change in years to come.

The survey found great variation in species richness among the transects with the poorest (Bromley Field) having only a mean of 6.6 species per quadrat and the richest (Spring Field) having a mean of 21.8 species per quadrat.

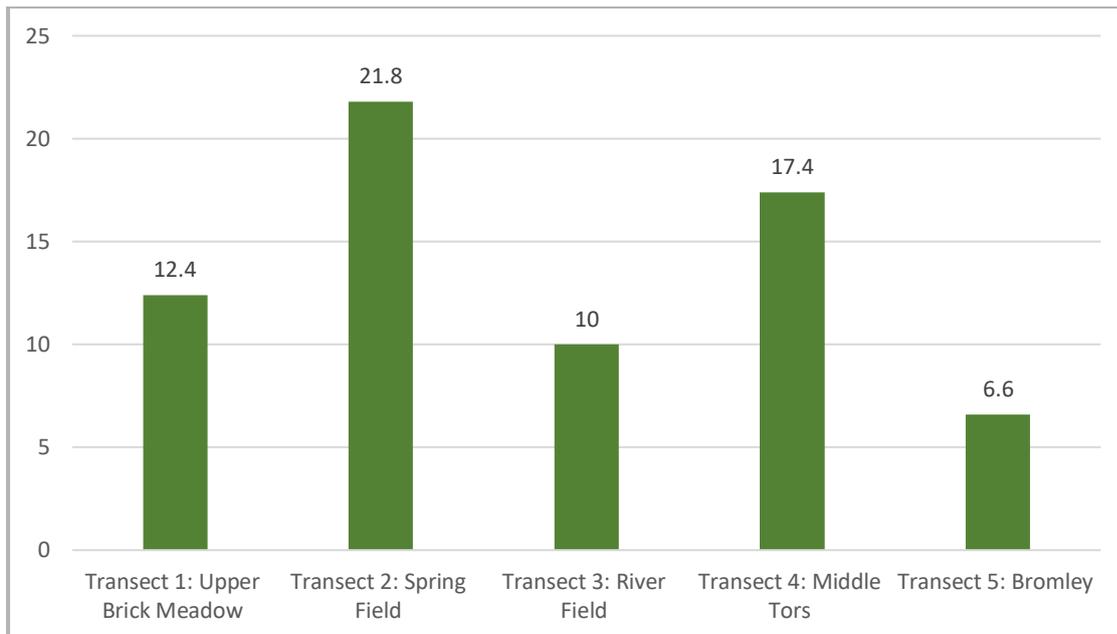


Figure 2: Mean number of plant species per transect

After the ‘number crunching’ we found no statically good fit to any one single NVC grassland community. Although this is a common outcome of NVC analysis and came as no surprise, it is none-the-less interesting because Home Farm’s management in recent decades might lead to an expectation of more typical agriculturally improved grassland at least in places. This may be, in part, a legacy of the peculiarities of former management where much of the land was ploughed and resown with what seems to have been a silage species mix, but then subsequently grazed.

FIXED POINT BAT MONITORING BASELINE

Following our pilot survey for bat monitoring in May and June, we intensified our work in August and between the 6th and the 25th, five Anabat Express bat detectors were deployed at five new permeant sampling locations. These are positioned in woody vegetation around the site boundaries and have been judged as the most practical places to provide useful information for the years ahead. A single dedicated detector was recording at each location, every night throughout the survey period. The data was analysed using Titley Anabat Insight software.



Figure 3: Anabat Express bat detector



Figure 4: Fixed bat monitoring locations

We identified at least eight bat species and more than 5700 individual bat passes! As anticipated, common pipistrelle was by far the most commonly recorded bat. Consistent with previous surveys, we picked-up the sound of the rare lesser and greater horseshoe bats which was both exciting and reassuring. Locations four and five showed particularly good numbers of lesser horseshoes. We picked up echolocation calls on four occasions that appear to be from another rare bat, the barbastelle. Although we have recorded this species locally in previous years, we are still working on confirmation of our late summer results which relies on interpretation of some pretty subtle characteristics. The sudden explosion of bush-crickets and their nightly chorus this summer posed a particular challenge to isolating the echolocation calls of bats across most of the recording locations! All records for all species at each of the sampling locations (1-5) are shown below:

	1	2	3	4	5
Common pipistrelle	2680	279	529	126	315
Soprano pipistrelle	268	92	34	17	85
Noctule	37	38	127	78	83
Leisler	18	16	51	76	65
Lesser Horseshoe	6	8	17	125	163
Greater Horseshoe	2	10	16	0	6
Myotis sp.	14	13	2	8	28
Barbastelle^(?)	0	0	2	0	2
Unknown	3	6	0	299	9
Total	3028	462	787	729	756

Number of bat recordings over the monitoring period for each location broken down into species (genus level for Myotis genus).

BUTTERFLIES

Following our first butterfly transect monitoring on Home Farm in May and June, we intensified the survey work in July & August. The monitoring protocol follows that of Butterfly Conservation's UKBMS (UK Butterfly Monitoring Scheme). The original 1.2km transect route established earlier in the year had ten sections. This was extended by two sections to a total of twelve, to better represent the range of habitats across the site.

The recording method requires the surveyor to slowly walk the transect recording all butterflies encountered within a fixed distance from transect line. Each section is recorded separately. A total of seven full transect surveys took place week between 11th August 2020 to 16th September 2020, during periods of suitably calm weather.

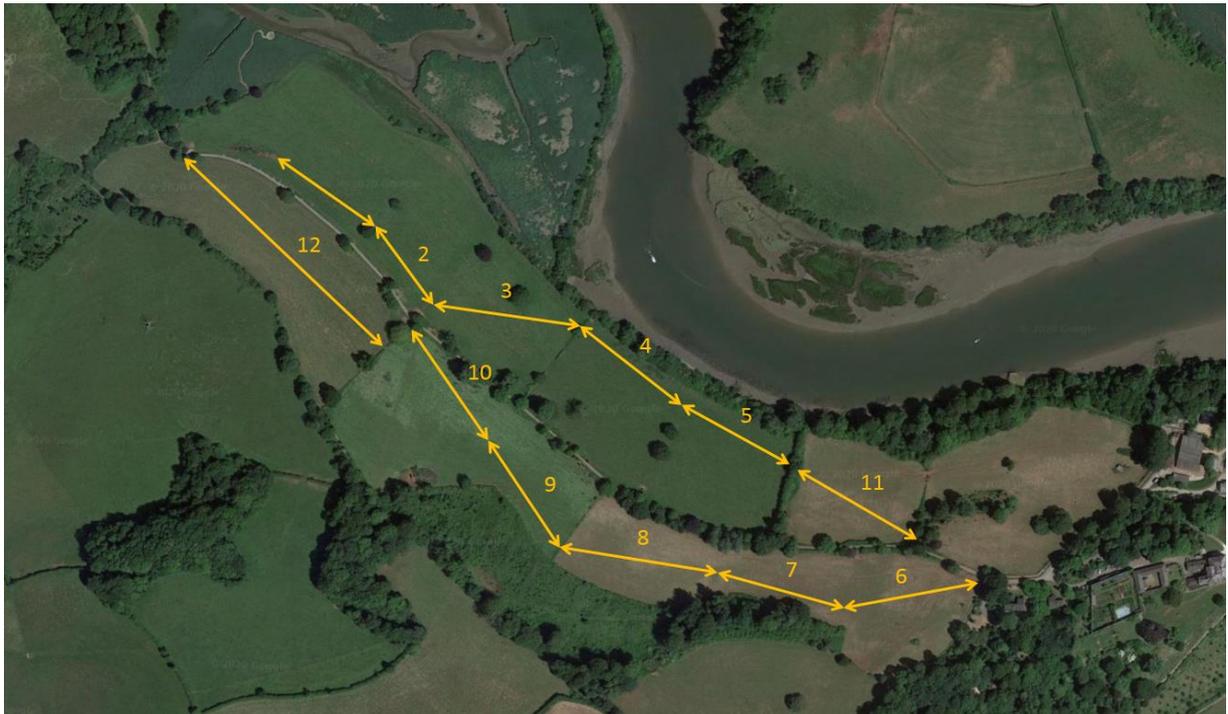


Figure 5: Butterfly transect sections

All species recorded during all surveys with total abundances for each are shown in Figure 6 below. Numbers of butterflies were generally low throughout the period.

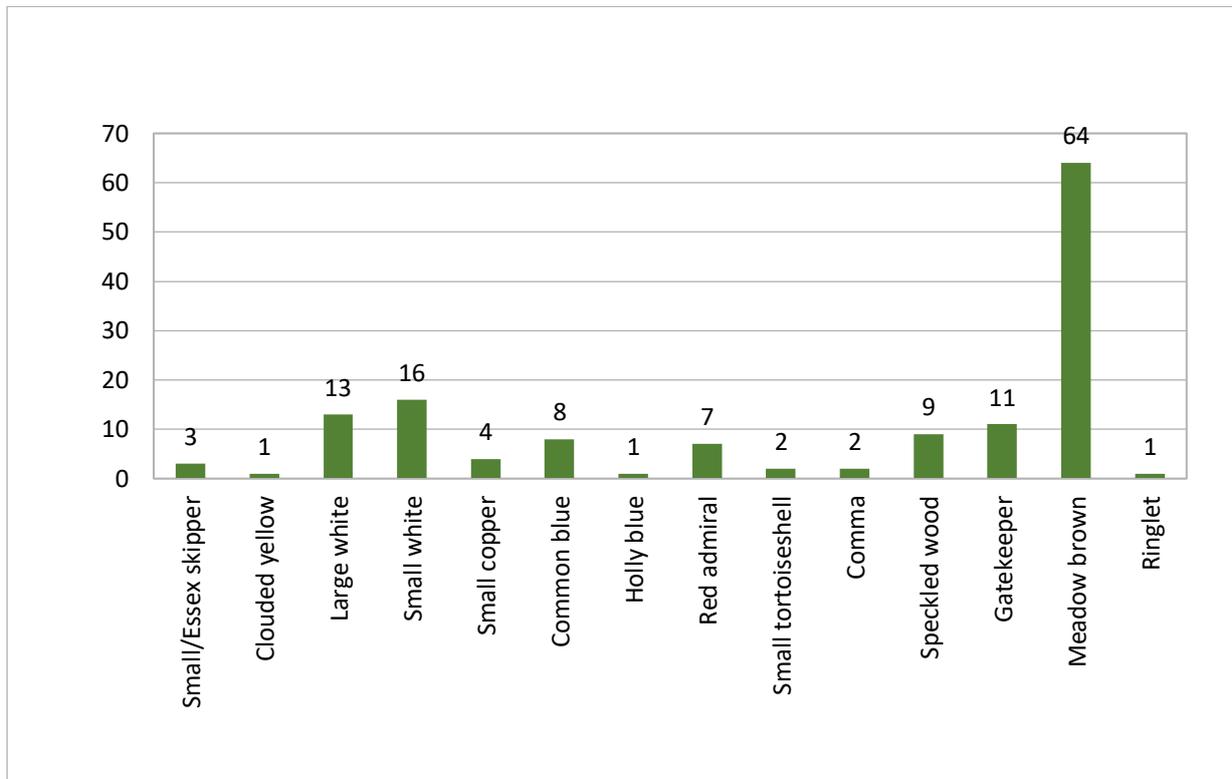


Figure 6: Total numbers of recorded butterfly species 11/08/20 – 16/09/20

A total of 14 butterfly species were recorded, with an increase of four species from the previous surveys of May and June. Once again, meadow brown dominated throughout much of the survey period. Species not previously recorded were small numbers of small copper, holly blue and fair numbers of gatekeeper, reflecting the normal annual sequence of sightings for these species in the local area. It was great to record clouded yellow, this occasional UK migrant appearing in good numbers in the local landscape in the hot summers of both 2018 and 2019.

MAMMALS

Baseline survey work using camera traps, small mammal traps and dormouse survey tubes was completed within both the boundary of Home Farm and within fringing woodland and scrub. An initial walkover survey took place to map out conspicuous tracks and signs and to help us target areas for further survey effort.

Camera trapping

Six camera traps were deployed at strategic locations judged likely to have the heaviest and most diverse local mammal traffic. Each trap was left recording in situ for three continuous weeks during August. The locations are shown in Figure 7 below.

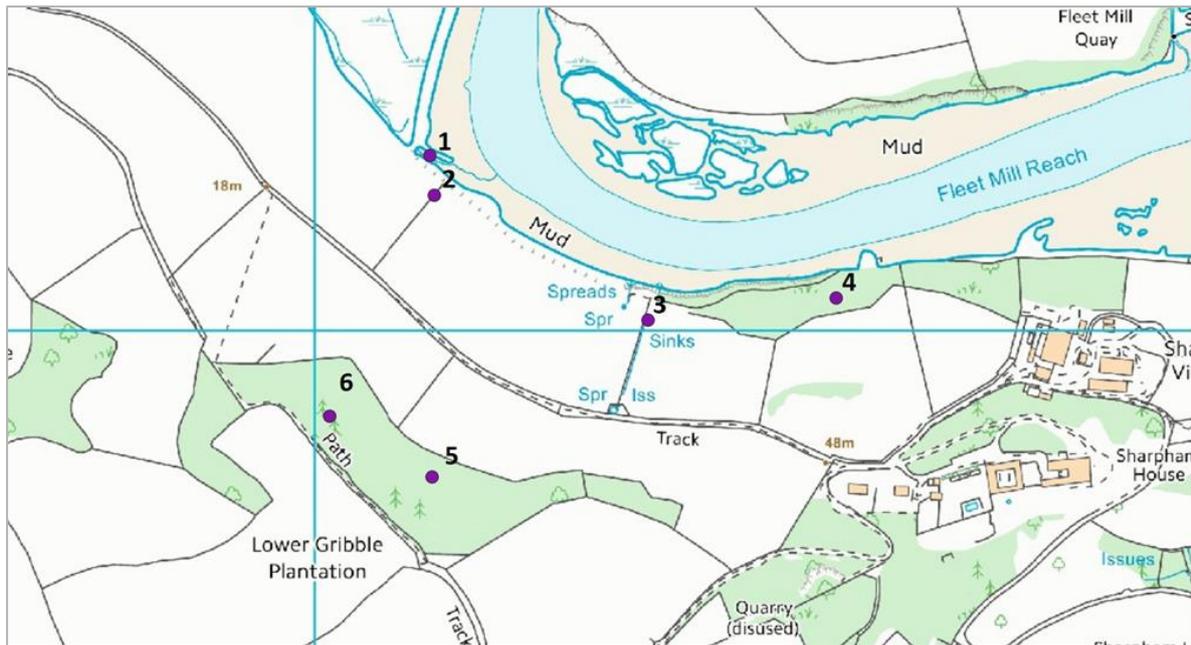


Figure 7: Camera trap locations

This survey gave us a first stage indication of the use of the site by larger animals and help us build an impression of levels of roe deer and fox activity. Initial walkover survey gave us no cast iron confirmation of badger presence, with known setts in adjacent woodland/scrub appearing to have been disused for a period of at least several years. None-the-less, we were pleased to image a single badger in the central portions of Home Farm (Location 3) on one occasion. Weasel was also caught at Location 1 on one occasion. Other mammals recorded on the cameras were grey squirrel, wood mouse and rabbit.

Small mammal trapping

Two permanent transects were established in the central portions of the site (River Field) using 24 small mammals traps. These have been positioned to sample both grassland/woodland boundary habitat and open field conditions, and to monitor comparative changes in each over the years ahead. The locations of the transects/traps are shown in Fig 8 below. Trapping took place on the nights of the 28th & 29th of August following three days of 'pre-baiting' during which the traps were locked open with bait inside. The traps were set-up to prevent the capture of shrews as best practice on welfare grounds.

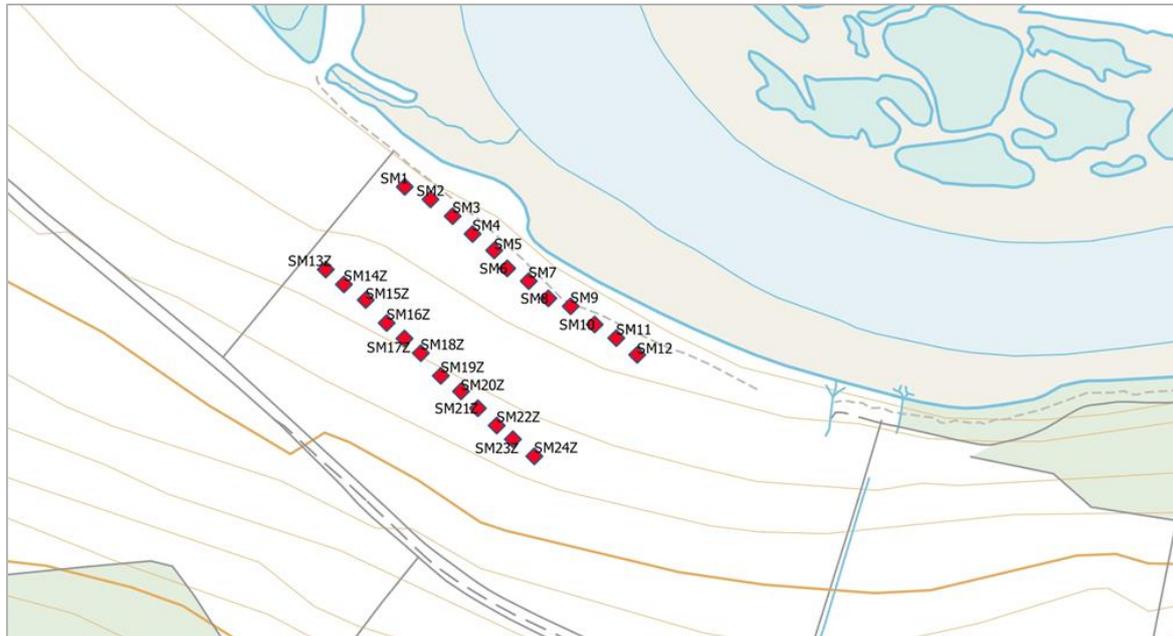


Figure 8: Small mammal trapping transects showing individual trap locations & codes

Three wood mice, three bank voles, and one field vole were caught along the northern transect on the transition between the woodland edge and the grassland. It was interesting to note that no animals were captured in the southern open grassland transect. This is a situation that we anticipate will change in the years ahead as the habitat develops.

Dormouse tube monitoring

No confirmed records exist for hazel dormice on the Sharpham Estate despite repeated surveys by Ambios. None-the-less, the local habitats along the Dart appear to be suitable for the species, and so we believe that continued survey effort is needed particularly considering the likely positive changes in habitat that will come with rewilding.

For this survey, we have followed standard nest tube survey protocol specified in The Dormouse Conservation Handbook published by Natural England. The nest tubes work by encouraging any local dormice to make a temporary nest within them. Should a nest be found then presence can be confirmed.

On the 5th of August we installed fifty standard nest tubes around the margins of the site in suitable hedgerow/scrub/woodland edge locations. These will be checked for signs of dormice on a monthly basis between April & November during 2020/2021.



Figure 9: Dormouse nest tube locations

An initial check of all nest tubes on the 9th of September showed no evidence of dormice.

RIVER BIRD MONITORING

Ambois's 12-week training programme has included a total of 62 fixed point bird surveys of the Dart on the Sharpham Estate between 2011 and 2020. With rewilding we have found new purpose for the historic data we have accumulated as a baseline to help assess any future influence of rewilding on river birdlife.

This summer we have, as a trainee-led project; 1) put the historic data onto spreadsheets, 2) expanded the survey area to approximately twice its former length to better account the sections of the river next to the rewilding area in the future, & 3) carried out 12 complete surveys to the extended survey design.

The survey area is shown in Fig10 below.

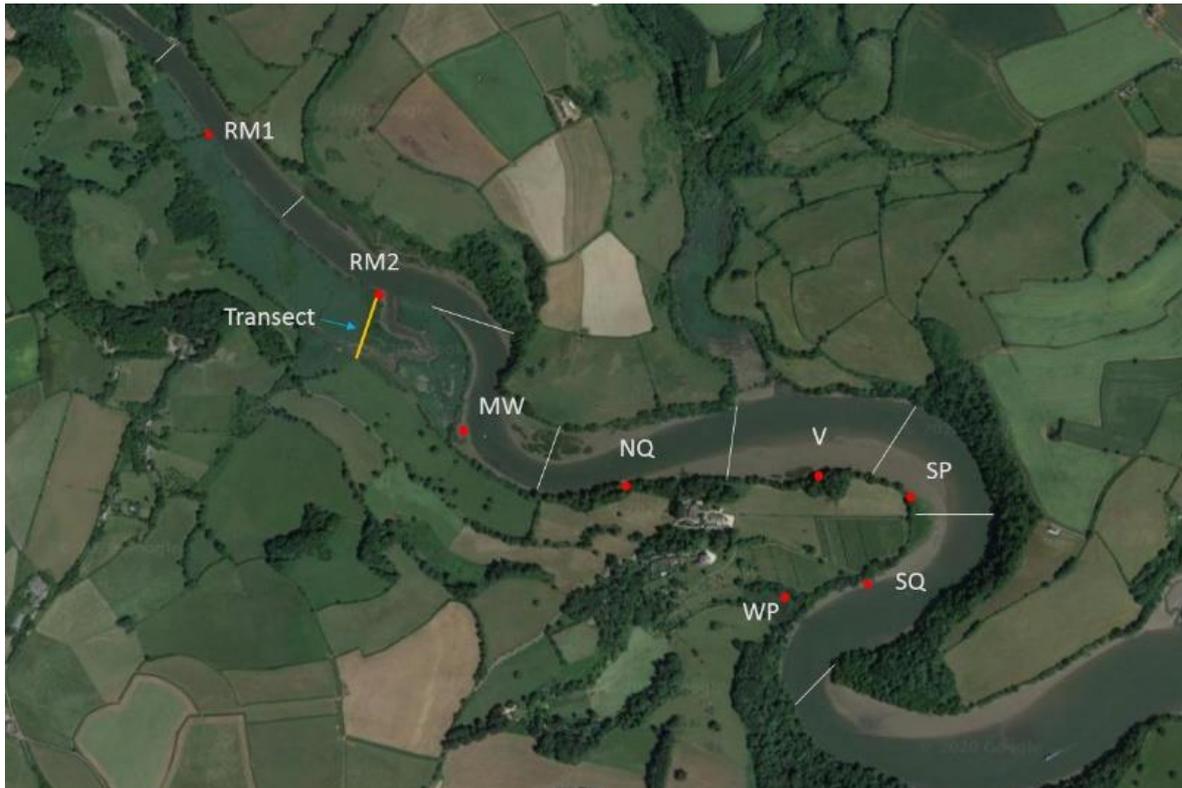


Figure 10, showing the newly expanded survey area including each fixed point recording location and recording area, each marked with its corresponding reference code. The location of the transect across the marsh is also shown.

Each fixed recording point and corresponding recording area is shown separately along with its corresponding reference code. The length of the river is walked on each survey stopping at each location for a period of 15 minutes recording all aquatic/coastal bird species and their numbers using the river within each section. The newly added sections are RM1, RM2 & MW. There is also an additional transect through the marsh recording birds encountered on-route between the rewilding area and the recording point of RM1.

A total of 12 survey visits took place between the 20th of August and the 13th of September 2020, with a total of 23 species recorded. The compiled data for all fixed points combined are shown in Figure 11 below. The cumulative counts for each individual species are presented.

Date	20/08/2020	12/08/2020	19/08/2020	20/08/2020	23/08/2020	24/08/2020	25/08/2020	26/08/2020	30/08/2020	06/09/2020	09/09/2020	13/09/2020
Survey number	1	2	3	4	5	6	7	8	9	10	11	12
Month	7	8	8	8	8	8	8	8	8	8	9	9
Grey Heron					6	1				1		1
Mallard	5	24	6	30	38	2	3	43	29	14	101	8
Moorhen			2	1	2	1	3	9	6		3	
Cormorant	3	2		3	5	1	1		1	1	4	4
Carrion Crow				1	3		1	3			1	3
BH Gull	119	258	12	223	282	20	19	158	202	59	88	28
Shelduck					1				3	1	6	
Greater BB gull	2			3	1			2			2	
Curlew				1				4				
Canada goose	63	37		43	148			9	8		49	
Herring gull	14	17	1	272	39	2	3	17	182	20	70	
Little egret	3	4		8	7	3		6	2	7	7	7
Little grebe				1								
Woodpigeon										3	2	10
Coot											3	1
Mute swan				4	4			8	2		4	
Common sandpiper				1		5	3			3	1	
Kingfisher	1			1	1							1
Cattle Egret												1
Mandarin							6				9	
Mallard hybrid					3						1	
Reed warbler						1		4	1			
Common Buzzard				1					1			
Total numbers per survey	210	342	21	593	540	36	39	263	437	109	352	64

Figure 11, showing the accumulated counts for all survey sections, for each visit, between the 20th of August and the 13th of September

The 2020 monitoring work gives us great baseline data to measure change from in the years ahead. Notable birds recorded include curlew which has suffered huge national decline and is a 'red species' on the BTO/RSPB's Birds of Conservation Concern list. Small numbers of curlew come to the river for the autumn and winter months having bred on moorland elsewhere earlier in the summer.

Some basic analysis was performed on the whole dataset between 2011 and 2020. Overall, a total of over 21,000 individual birds were observed! Initial analysis of the data suggests a decline in recorded species, with an average of 11 birds recorded per survey in 2020 compared with 13 species in 2012. Interpretation of long-term trends is complicated by the variation in the timing and frequency of the surveys over the last nine years, but we are none-the-less confident that we can put the historic data to good use as we move ahead.