



LOWER MILL
COTSWOLDS



LOWER MILL ESTATE

COTSWOLD WATER PARK ECOLOGICAL MONITORING SUMMARY

2023 – 2024

Wintering waterbirds

Twelve surveys were carried out (bi-monthly) between October 2023 and March 2024. The peak count overall for the five priority species was 352 on visit 8 in January 2024. This was a decrease on numbers from last year where a peak count of 450 was recorded. Priority species for these surveys are Coot, Gadwall, Great crested grebe, Pochard and Tufted duck.

Compared to the previous winter, the mean count for the total water bird assemblage (excluding gulls) decreased from 611 in 2022/2023 to 536 this winter. The majority of species had decreased on the 2022/23 survey; it was noted that this again is likely due to the weather conditions this year, with species such as the Coot choosing to “short stop” on their migration in mainland Europe due to the mild Autumn



The peak count for the total water bird assemblage (excluding gulls) was 934 on visit 6 on the 26th December 2023, which is an increase on the peak recorded last winter, which was 882, which was recorded on visit 7 on the 15th January 2023.

Table 1: Wintering waterbird counts 2023/2024 (species with a mean count of over 10)

Species		Counts		
Common	Scientific	Min	Peak	Mean
Tufted duck	<i>Aythya fuligara</i>	14	167	97
Mallard*	<i>Anas platyrhynchos</i>	34	118	66
Gadwall*	<i>Anas strepera</i>	2	163	55
Teal*	<i>Anas crecca</i>	0	134	39
Wigeon*	<i>Anas penelope</i>	0	114	39
Moorhen*	<i>Gallinula chloropus</i>	25	56	38
Coot	<i>Fulica atra</i>	8	74	30
Red-crested pochard	<i>Netta rurina</i>	0	64	28
Great crested grebe	<i>Podiceps cristatus</i>	8	43	27
Black-headed gull*	<i>Chroicocephalus ridibundus</i>	0	186	25
Cormorant	<i>Phalacrocorax carbo</i>	4	57	22
Canada goose	<i>Branta canadensis</i>	0	45	17
Lapwing**	<i>Vanellus vanellus</i>	0	150	16
Goosander	<i>Mergus merganser</i>	0	63	16
Mute swan	<i>Cygnus olor</i>	11	26	16
Goldeneye**	<i>Bucephala clangula</i>	0	22	11

LME priority species * BoCC5 Amber-listed ** BoCC5 Red-listed

An additional 20 species were recorded with a mean count of less than 10 including Shoveler, Pintail and Grey heron.

Of the 16 species with a mean count of 10 or over, nine species had a decreased mean, six increased and one stayed the same. There was undoubtedly a significant impact from the mild, wet weather virtually throughout the count period. The Autumn started very mild and the impact

of species now not coming this far west and ‘short-stopping’ further east was again evident. A great example is coot. The mean and (max) for 2021/22 were 165 (326), in 2022/23 these were 117 (231) and in 2023/24 these were 30 (74). The peak count point has switched from November to January when the cold snap pushed coot onto larger lakes like Somerford Lagoon, where they slowly dispersed from over the next month. There was an increase in some dabbling duck species such as gadwall and wigeon who were presumably pushed off of traditional sites due to the depth of water, heading to places where they kleptoparasited from Coot and Mute swan.



The species count increased on last year to 36 compared to 34 in 22/23, with dunlin, ruff and cattle egret amongst the new species recorded on core counts. With the impacts of flooding being apparent and bringing in more wading birds.

Table 2: Mean counts for the five LME priority species

Species	2022/23	2023/24	Increase / (decrease)
Coot	117	30	(74%)
Gadwall	30	55	83%
Great crested grebe	20	27	35%
Pochard	<1	0	(100%)
Tufted duck	126	97	(23%)

The decrease in coot has continued and appears to have reached the point where very few birds arrive for the winter. It appears coot are ‘short stopping’ on the Continent in ever increasing numbers. The increase in gadwall numbers was most likely driven by the impact of above average water levels for the majority of the winter. A dabbling duck like gadwall lost areas where they could feed individually by upending and had to seek out a species to kleptoparasitise. The trend in Great crested grebe numbers in 2023/24 mirrored last winter, having bucked the recent trends of numbers reducing as the winter progressed. The high number on survey 1 suggests a decent late breeding season. There were no pochard recorded on the standard surveys however a pair were seen on Somerford Lagoon during the cold snap on the additional survey work. The State of UK Birds report states that: “Pochards are threatened with extinction globally (they are classed as Vulnerable by the IUCN), and the decrease in their UK overwintering numbers may be a symptom of a wider global population decline.”

Other species of interest recorded during the wintering bird surveys were:

- Approximately 200 Pied wagtail were noted going to roost in the Howell’s Mere / Clearwater reeds and willows on survey 2. This ceased once the reeds were cut.
- Corvid roosts made up of Carrion crow, Rook and Jackdaw were at Freeth Mere and surrounding area, estimated at c7,500
- A hybrid male Goldeneye x probably Hooded merganser was present on several surveys, amazingly two present on two surveys, using Swillbrook Lakes, Freeth Mere and Somerford Lagoon.
- Most evenings until the end of January, up to 50,000 Starling could be seen traversing the Estate at dusk, heading to a communal roost to the east. Occasionally c1,000 would roost on Swillbrook Lakes and up to 10,000 on Somerford Lagoon.

- Excluded from the counts was a Goosander roost on Swillbrook Lakes, the maximum count was 71 (including 25 males) on survey 7.
- A Woodcock was flushed from the edge of Swillbrook Lakes on survey 3.
- The maximum gull roost counts were as follows (survey in brackets):
 - Black-headed gull - 45 (3)
 - Common gull – 200 (3)
 - Herring gull – 2,770 (3)
 - Lesser black-backed gull - 2,435 (3)
- A single Crossbill flew across the site on survey 1.
- A 1st winter female Marsh harrier was foraging along the Flagham Fen / Somerford Lagoon causeway on survey 2.

Breeding waterbirds

Five monthly surveys were carried out between April and August 2023. Overall, the number of waterbirds breeding at LME appears to be slightly increasing, although there is fluctuation from year to year. 10 species were recorded as breeding in 2023 which is a slight decrease from 11 in 2022 but remains consistent with previous years. Shoveler were not recorded as breeding this year. Based on the annual totals since 2007 most species appear to be stable. The overall number of pairs of breeding birds recorded this year was also higher than last year. This increase is due to a continued increase in moorhen numbers, together with an increase in Mallard, offset by a decline in coot. Bird species were well distributed across the lakes.

Table 5: Lower Mill Estate Breeding Waterbirds 2023

Species	Lake (Territories/pairs)									All
	41	42	44	45	47	57	58	77	Mil	
Black-headed gull (A)	0	0	0	0	0	5	0	0	0	5
Canada goose	0	0	0	0	2	0	0	0	2	4
Coot	1	2	2	0	0	1-2	2	0-1	0	8-10
Egyptian goose	0	0	0	0	0	0-1	0	0	0	0 - 1
Great crested grebe	1-2	1	3	0	0	3-5	1	0	0	9-12
Mallard (A)	1	0-1	1	1	2	2-3	4	0-1	0-1	10-14
Moorhen (A)	1-2	1-3	1-2	5-8	6	7-11	0-1	3-6	1	25-40
Mute swan	1	1	1	1	0	1	0	1	0	6
Red-crested pochard	0	0	1	0	0	0-1	0	0	0-1	1-3
Shoveler (A)	0	0	0	0	0	0	0	0	0	0
Tufted duck	1-3	0-2	1	0	0	0-1	0	0	0	2-7
Total	6-10	5-10	10-11	7-10	10	19-30	7-8	4-9	3-5	70-102
Species	6	6	7	3	3	9	4	4	4	10

Lake references: 41 Freeth Mere; 42 Farmhouse Lake; 44 Mill Lake; 45 Clearwater Lake; 47 Howell's Mere; 57 Somerford Lagoon; 58 Flagham Fen; 77 Spinney Lake; Mil Minety Lake. A = amber list species (BoCC5)

Based on the annual totals in the last five years most species appear to be stable. Black headed gull, Gadwall, Great crested grebe and Tufted duck have shown stable populations. Whereas Mute swan, Mallard and Moorhen have shown an increase. Coot have declined significantly, continuing a long-term downward trend. The decline from 2022 would seem to be linked to the high-water levels at the start of the breeding season, there were next to no breeding sites for coot available. Other species like Moorhen and Great crested grebe waited, whereas the Coot seem more sensitive to these climatic variations and moved away.



Bittern were not seen on the breeding waterbird surveys but were seen on two terrestrial bird surveys: survey two on Somerford Lagoon and Survey five on Freeth Mere. The surveyor suspects they are breeding nearby, probably on lake 40 as the Freeth Mere bird was coming from that direction.

Breeding terrestrial birds

The number of species confirmed as breeding has increased from last year with 40 species recorded in 2023 compared to 36 in 2022, this is following a significant increase from 2021 when 19 species were recorded. The total number of territories held (including confirmed and probable) has also increased from 399 last year to 550 this year. The dominant species were again Wren, Woodpigeon, Reed warbler and Blackcap. Carrion crow, Magpie, Jay, Kestrel, Sparrowhawk and Stock dove were all confirmed as breeding in 2023 having been absent in 2022. Barn owl and kingfisher were not confirmed breeding this year having been recorded in 2022.

Chaffinch and Willow warbler are declining nationally, this is reflected in the long-term figures at LME, although there does seem to have been some level of stabilisation in the last three years, with both slightly increasing this year. Territories for most species recorded during this year's survey have increased compared to the 2022 with the exception of Grey wagtail, Linnet, Pied wagtail, and Starling which all saw slight decreases of one territory each, and Sedge warbler and Bullfinch seeing a decline of two territories each.



Table 7: All LME Breeding Terrestrial Birds in 2023

Species		Territories / pairs 2023		
Common name	Scientific name	Confirmed	Probable	Total
Blackbird	<i>Turdus merula</i>	8	7	15
Blackcap	<i>Sylvia atricapilla</i>	21	19	40
Blue tit	<i>Cyanistes caeruleus</i>	5	19	24
Bullfinch (A)	<i>Pyrrhula pyrrhula</i>	4	3	7
Carrion crow	<i>Corvus corone</i>	7	0	7
Cetti's warbler	<i>Cettia cetti</i>	13	3	16
Chaffinch	<i>Fringilla coelebs</i>	6	5	11
Chiffchaff	<i>Phylloscopus collybita</i>	13	11	24

Cuckoo (R)	<i>Cuculus canorus</i>	1	0	1
Dunnock (A)	<i>Prunella modularis</i>	10	11	21
Garden warbler	<i>Sylvia borin</i>	10	23	33
Goldcrest	<i>Regulus regulus</i>	1	2	3
Goldfinch	<i>Carduelis carduelis</i>	13	8	21
Great spotted woodpecker	<i>Dendrocopos major</i>	3	1	4
Great tit	<i>Parus major</i>	2	13	15
Greenfinch (R)	<i>Chloris chloris</i>	11	2	13
Green woodpecker	<i>Picus viridis</i>	1	1	2
Grey wagtail (A)	<i>Motacilla cinerea</i>	1	0	1
House sparrow (R)	<i>Passer domesticus</i>	10	1	11
Jay	<i>Garrulus glandarius</i>	1	1	2
Kestrel (A)	<i>Falco tinnunculus</i>	0	1	1
Long-tailed tit	<i>Aegithalos caudatus</i>	10	2	12
Linnet (R)	<i>Linaria cannabina</i>	0	3	3
Magpie	<i>Pica pica</i>	4	0	4
Mistle thrush (R)	<i>Turdus viscivorus</i>	1	1	2
Oystercatcher (A)	<i>Haemotopus ostralegus</i>	1	1	2
Pied wagtail	<i>Motacilla alba</i>	1	4	5
Reed bunting (A)	<i>Emberiza schoeniculus</i>	14	4	18
Reed warbler	<i>Acrocephalus scirpaceus</i>	30	11	41
Robin	<i>Erithacus rubecula</i>	20	12	32
Sedge warbler (A)	<i>Acrocephalus schoenobaenus</i>	5	6	11
Song thrush (A)	<i>Turdus philomelos</i>	8	10	18
Sparrowhawk (A)	<i>Accipiter nisus</i>	1	0	1
Starling (R)	<i>Sturnus vulgaris</i>	11	0	11
Stock dove (A)	<i>Columba oenas</i>	2	3	5
Treecreeper	<i>Certhia familiaris</i>	3	1	4
Whitethroat (A)	<i>Sylvia communis</i>	7	8	15
Willow warbler (A)	<i>Phylloscopus trochilus</i>	1	4	5
Woodpigeon (A)	<i>Columba palumbus</i>	28	14	42
Wren (A)	<i>Troglodytes troglodytes</i>	35	12	47
Total		324	226	550
Species		37	35	40

A = amber list species R = red list species (BoCC5 - 2021)

In 2023 Blue tit, Great spotted woodpecker, Greenfinch, Long tailed tit, Willow warbler and Wren territories rose from stable to increasing, while Robin went from declining to increasing. Reed warbler went from declining to stable trend.

Other species observed on LME but not recorded as at least probably breeding were Hobby, Buzzard, Red kite and Raven. Jackdaw are breeding colonially in tree holes around the Estate, however the survey route does not take the surveyor close enough to be able to estimate the population.

Nightingale

The Nightingale surveys were undertaken in April and May (three surveys) 2023. No Nightingale were recorded in 2023. Since 2018 only one transient male has been recorded, this was in 2022.

Reed Bunting

Ten individual sightings and 18 territories of Reed bunting were recorded (including confirmed and probable). The sightings and territories were spread across LME with no particular concentrations of sightings. Reed bunting were recorded in Swillbrook Lakes again this year, with one additional confirmed territory there. Overall, there were significantly more sightings and territories recorded in 2023 than in 2022 or 2021.

Reed Warbler

Reed warbler surveys in 2023 recorded 41 territories and 15 individual sightings which is significantly more than recent surveys. There were also six confirmed territories and three individual sightings on Swillbrook lakes. This is more in line with the results from ten years ago, when the territories ranged up to a maximum of 49 territories.

House Martin

Numbers of confirmed and apparently occupied House martin nests increased from 93 in 2022 to 101 in 2023, with 83 confirmed as occupied this year compared to 66 confirmed in 2022. However, there was a continued decrease in apparently unoccupied nests with 69 recorded in 2021, 55 recorded in 2022 and 49 recorded this year. This is consistent with an increasing population taking advantage of partially built/damaged nests to reduce the amount of work needed in building.



Tern Rafts



In 2023, the impact of Avian Influenza (bird flu) was all too apparent. The initial Black-headed gull pairs either deserted or died. Rafts were then repopulated later in the year by a small number of Black-headed gulls and Common tern. On raft 1 there ended up being two pairs of common tern with three chicks. For Raft 2, one pair of Common tern nested along with 5 pairs of Black-headed gulls. For Raft 3 in Flagham Fen, three Common tern were recorded raising at least 3 chicks, this was after the 15 Black-headed gull nests fell silent earlier in the year.

Bats

The three bat lofts at Clearwater, Howell's Mere No.1 and No.2 were surveyed for the presence of bats. Droppings were found and were sent for DNA analysis to establish the species, the results showed these droppings did not belong to bats but instead four different species of small mammal. No evidence of use by bats was recorded during the surveys. Previous ad hoc use has been recorded in 2015 and 2016 in the two Howells's Mere buildings but bat evidence has yet to

be recorded in the Clearwater bat loft. No evidence of use by bats was recorded in the bat boxes under the bridges at location 2 and 3, with bat box 1 unavailable for survey.

Brown Hairstreak

Surveys this year had to be postponed due to flooding, this meant the surveys took place in March compared to November when they are usually performed. A total of 83 eggs were found across Lower Mill Estate which is a decrease of 23 compared to last year. The timing of the survey could be a cause for this decline as the blackthorn had begun to blossom and leaf growth had begun making it harder to discover the eggs. All eggs were in Gloucestershire, with Lower Mill Estate being one of only a few confirmed sites for the butterfly in that county. In addition, 15 Blue-bordered carpet moth eggs were also recorded.

Amphibians

Four surveys were undertaken between April and May 2023 using three survey methods. Great crested newts were recorded in four ponds during the amphibian surveys with populations recorded in ponds A, 8, 10 and 11. A good diversity of amphibian species were present throughout the ponds. Lower numbers of Common toad were recorded but the majority of frogs and toads may have completed their breeding cycle prior to the commencement of surveys. Common toads are usually found in good numbers across the Estate.