

Bird Survey at Al-Makhrou Valley and its vicinity

1) Introduction:

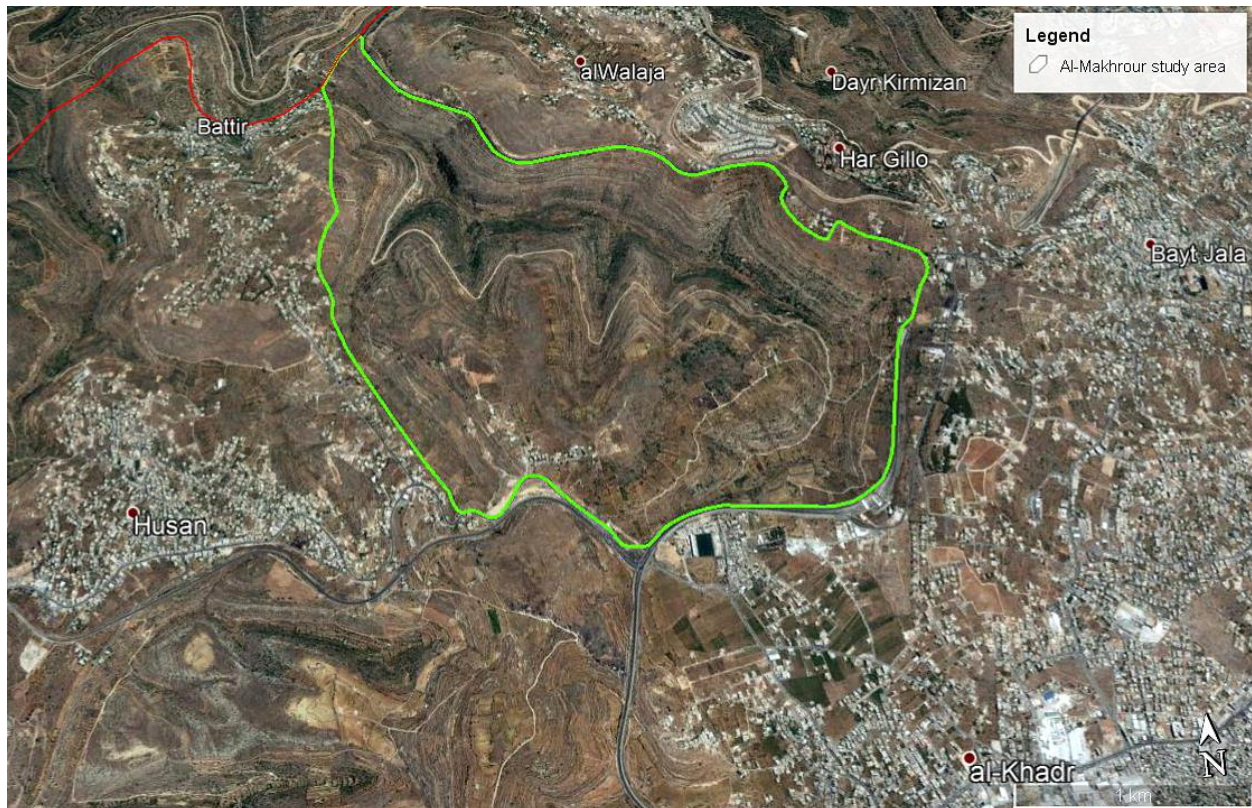
a) Avifauna of Palestine

The birds of Palestine can be classified into four main groups. The ***Breeding species (Resident and summer visitor breeders)***, ***The Migrant Species***; this group of birds regularly migrates through Palestine during the spring (February to mid-May) and autumn (August to end of October) migration seasons. ***The Winter Visitor Species***; this group of birds breeds mainly in Europe and some in Asia. They start to arrive in the second half of the autumn migration season (October–November) and the departure for most of these birds takes place during February and March. ***The last group of bird species are the Vagrants***; these birds are accidental visitors to Palestine, they are from outside the normal migration range or wintering regions. Some of them are recorded rarely and unexpectedly, others are seen rarely but at predicted times. Consequently, the records of bird species in this group will increase if we create a large scheme of bird ringing, monitoring, and surveys throughout Palestine. However, the total number of bird species that occur in Palestine (West Bank area and Gaza) are not completely known to the Palestinians because a comprehensive bird survey was not conducted by any Palestinian institutes or expertise until now. Despite that, the total number of bird species, that belongs to the above mentioned categories can reach up to 370 species, 135 of them considered as breeding species (resident breeders, summer breeders, or complex breeders).

b) Study area: Al-Makhrou Valley and its vicinity:

The study site is located in the western part of Bethlehem district; Al-Makhrou area is part of a valley system that starts from west-southern part of Beit Jala city and extend to Battir village (map 1). The site is declared by the Environmental Quality Authority as a Rich Biodiversity Area and as an Important Bird Area by the Birdlife international. The valley itself is about 5 km length while the total area of the study site is about 5.3 km². The general habitat of the site belongs to the Mediterranean mountain range; slopes covered with

different size patches of maquis, garrigues, and batha vegetation types (map1), in many cases mixed with orchards (or cultivated areas), and different type of scattered coniferous trees (in one site the coniferous trees form a small patch, close to Battir village). The study area also include exposed rocky sites and cliffs, mainly at the center-northern part of the valley. In addition, several small spring are located at different areas within the site.



Map 1) Study area. The site is located between several cities and villages. Al Walajeh village, Diar Cremizan, and the Israeli settlement of Har Gilo from the North and northwestern side. Jerusalem and parts of Battir from the west and west southern side. Hussan and parts of Battir from the Southern side. The city of Beit Jala, and Al-Khader Village from the east and east-southern side.

c) **Duration of the study and justification:**

The study was carried through the autumn and winter seasons of 2020 and spring season of 2021 to create a better understanding of the Avifauna of Al-Makhrour area. The bird survey was conducted between mid-September to mid- April, in a total of 10 days. During the autumn season, three days of bird surveys were performed, and two days during the winter season. During the spring season, between the beginning of February and mid-April 5 days of bird survey was conducted, as the focus of the study is to establish a

comprehensive information regarding the breeding birds of Al-Makhrou area, and to compare these information with collected data from the previous study that was executed during the spring season of 2018. The comparison between the results of 2018 and 2021 is needed to evaluate the status of the breeding birds of Al Makhrou area before the activities of the Darwin funded project were implemented at the initial stages and after accomplishing the project activities, at the end of the project.

2) Methodology:

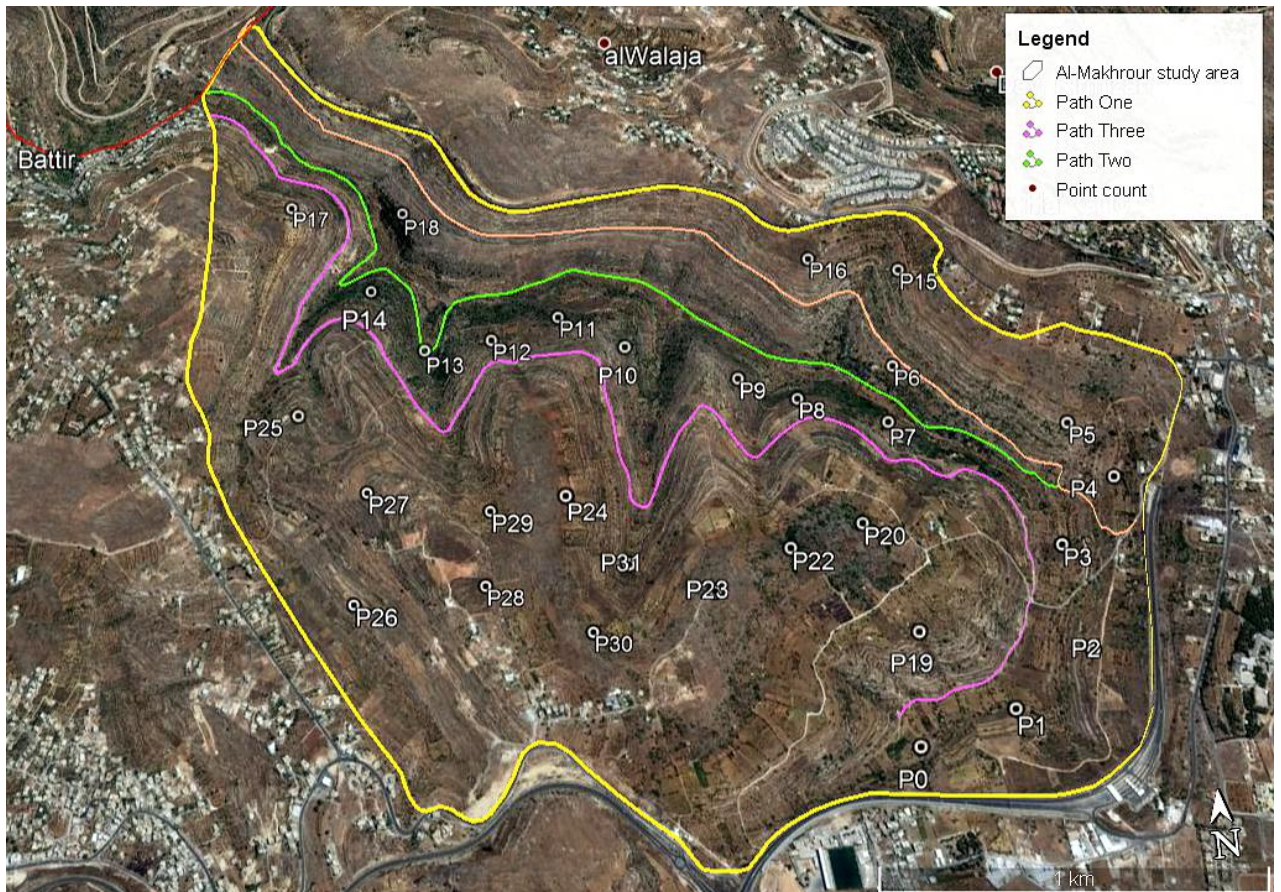
a) Autumn and winter seasons bird survey:

The bird survey was conducted at Al Makhrou area between September 2020 and beginning of February 2021, in a total of six days of field survey; three days during the autumn season and two days during the winter season (see table 1). The purpose of this survey was to observe and record the maximum number of bird species of different categories that include resident, migratory and winter visitor species. Moreover, the survey was conducted systematically to cover the different habitat of Wadi Al-Makhrou area, which is based on the designated point counts and line transects of the spring season bird survey.

a) Spring season bird survey:

The bird survey was conducted using the same preselected three main line-transects and 31 point counts of the previous study that was performed during the spring season of 2019, which cover the different habitats of the study area (maps 1 and 2). The same methods and techniques of the previous study were followed in order to examine the population trend of recorded breeding bird species between the years 2019 and 2021. In addition, all bird species that were seen at any point of the line-transects, point counts or while walking from one point to another were recorded in order to maximize the number of recorded migratory species. Birds considered breeding at the site if they showed breeding signs (for example, birds showed territorial behavior, carrying nesting materials, seen building nests or incubating nests, or by observed fledged birds, or adults species seen feeding chicks at /or near nesting sites). The survey was performed twice a day, the first period extended from

sunrise until 11:00 am, while the second period extended from 15:00 to about sunset. A description of the habitat of each line-transect and point count was recorded during the survey. The line-transects and point counts were distributed systematically to cover maximum areas with the limited days of survey. Google Earth was used to distribute the line-transects and the point counts. The casual point count were added in the field and installed to the map after conducting the survey. Both the preassigned point counts and the casual records were merged into one category and given specific numbers (P0, P1, to P34. map 2).



Map. 2 showing the study site, line transects and point counts. The length of the light orange line transect is about 3.9 km, the length of the Green line-transect is 3.3 km, and the length of the pink line- transect is about 5.9km.

3) Results

a) Recorded bird species:

A total of 105 species of birds were recorded at Al-Makhrour area and its vicinity, in 10 days of bird survey between September 2019 and mid-April 2021 (table 1). The study focused on developing a better understanding of the avifauna of the study area, breeding species population trend, and bird status. To evaluate population trend, the status of recorded breeding species from the year 2019 will be compared to the current status of recorded breeding bird species. Thirty-seven recorded bird species at Al-Makhrour area are evaluated as breeding species, an increase of four breeding species than the previous study. Twenty-nine of the 37 breeding species are resident breeders, while the other eight species are considered summer breeders. Three birds of the eight summer breeders are confirmed to breed in the study area, while the other five-recorded species are not, most probably breeds in nearby areas. Moreover, three species of the 29 recorded resident breeders, we could not confirm if they do breed within or outside the study area. One of the breeding species is categorized as invasive alien bird species, the Common Myna. This bird was recorded within Al-Makhrour Valley, unlike the previous year, where it was recorded only in the town of Battir. Fifty-eight birds of the 105-recorded species are considered as passage migrant, while the remaining nine species are classified as mainly winter visitors, and to lesser extent passage migrants. However, some of the recorded bird species have a complex behavior; for example, most of the bird species that classified as winter visitors, they were also recorded during the autumn migration season, while three species were recorded only during the winter season (Common Buzzard, Finche's Wheatear). The long legged Buzzard (resident breeder in Palestine), and the Short-toed snake eagle (summer breeder and passage migrant) were both recorded at the site and both showed breeding signs but none of them recorded breeding within the study area, therefore, given the status of resident dispersal (RD) . The most abundant breeding species recorded at the site are the (Common) Blackbird, Sardinian Warbler, Spectacled Bulbul, Great Tit, Graceful Prinia, (Eurasian) Collared Dove, Chukar, and Laughing dove, which are typical bird species of the mountainous Mediterranean habitat. Nine species of the recorded birds

are classified as threatened species at the national, which include Long-billed pipit, Black-eared Wheatear, Long-legged Buzzard, Cretzschmar's Bunting and Little Swift, Lanner falcon, Tawny pipit, and Turtle dove. Two recorded bird species, the Meadow pipit and the Turtle dove, are listed as Near threatened and Vulnerable, respectively, at the IUCN Red list.

b) Breeding birds' population trend:

The population trend of most breeding species was stable or increased. For example, in the previous study, we recorded a single breeding Syrian woodpecker within the study area, but this year, three pairs were recorded breeding. For our surprise, the long-billed pipit, an endangered species at the national level, showed significant increase in its breeding population, from one pair during the spring survey of 2019 to four pairs during the current study. However, the breeding population of the Winter wren showed significant decrease, from eight pairs in 2019, to only four pairs in the current study. This decreased is mainly caused by habitat distraction and fragmentation due to land reclamation of the species typical habitat and breeding sites (see image 1). The Cretzschmar's Bunting is an endangered bird species at the national level, in the previous study it was recorded breeding in two different locations, with at least three breeding pairs. However, this year only one breeding pair was recorded breeding. In addition, the Turtle dove, which is listed at the IUCN Redlist as Endangered species and Vulnerable at the National level, was recorded in few numbers during the autumn and spring migrations seasons, but this species was not recorded breeding at the study area, even though it considered as summer breeder in Palestine.



Image 1): Land reclamation within Al-Makhrouf area, between 2018 and 2021. In order to convert the site into agricultural land, the landowner destroyed the natural habitat through cutting the trees, building agricultural terraces, and creating new agricultural road that reach the site and beyond. These actions, caused severe damage to the natural habitat of the Winter Wren and other bird species.

4) Species of special concerns and their habitat:

Long-billed pipit: *Anthus similis*, (Jerdon, 1840). Subspecies in Palestine: *Anthus similis captus*, Harter, 1905, breeds in Palestine, Jordan, Lebanon, and Syria.

In Palestine, the long-billed pipit is resident in the Mediterranean mountainous region; inhabit rocky and terraced mountain slopes with low vegetation (Batha). At the study site, the bird is located at steep rocky slope at the west-northern parts of the study area (see map 3). The habitat of this area is typical for the long-billed pipit. Several studies showed that the minimum breeding area for this species is about 6 ha, and the distance between nests is about 350 m. The breeding of this species starts as early as mid-January and ends as late as beginning of August. The main threats facing this species are habitat fragmentation, egg collection, and expansion of agricultural areas that change its typical habitat.

Little Swift: *Cypselus affinis* (J. E. Gray, 1830). Subspecies in Palestine: *Apus affinis galilejensis* (Antinori, 1855). Breeds NW and C Africa, E to Middle East and Pakistan.

In Palestine, the little swift is resident breeder, to some extent summer breeder. It also recorded during spring and autumn migration seasons in small numbers, usually in mixed flocks with other swifts. It usually inhabit mountainous regions, cliff-lined wadis and ravines. At the study area, several birds seen migrating over the site with other swift. Some individuals seen occupying cliff-lined area within the steep rocky slope at the west-northern parts of the study area (map 3), during April. This is was an indication that the birds might be breeding in this location. The main threats facing this species is intensive use of pesticides, which led to shortage in food (insects), and distraction by tourists during breeding season.

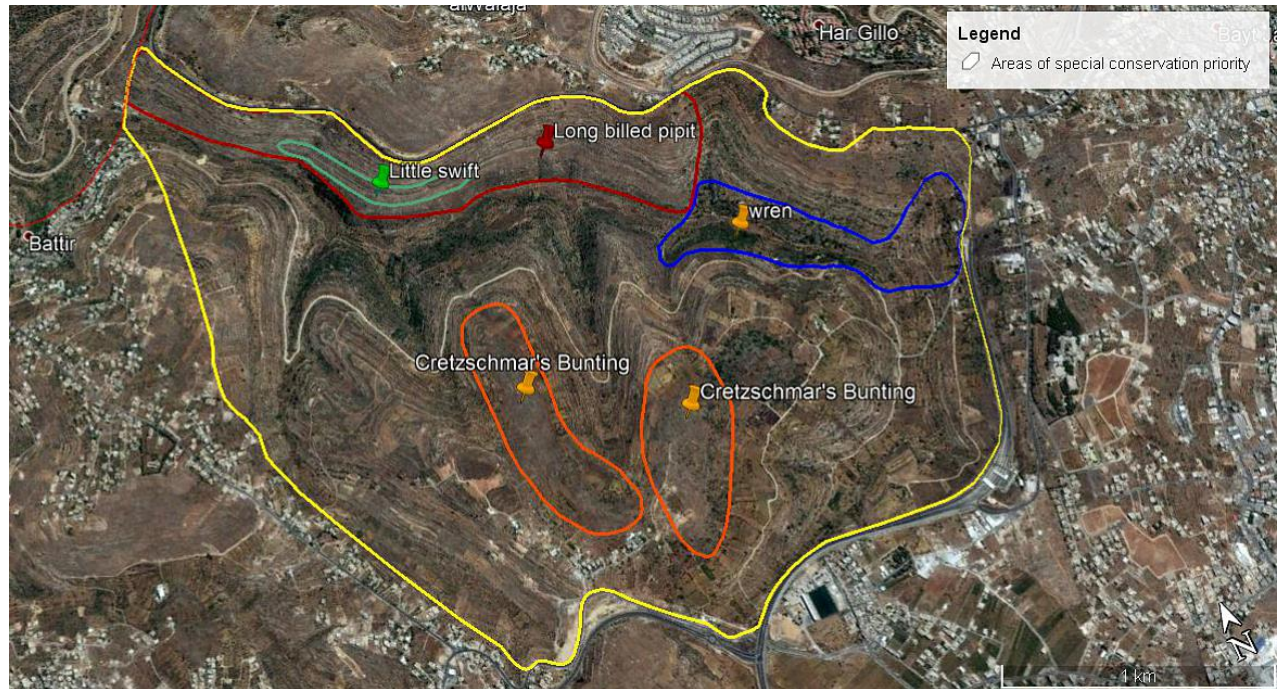
Cretzschmar's Bunting: *Emberiza caesia* (Cretzschmar, 1827). Monotypic.

In Palestine, the species is common passage migrant, and summer breeder. At the study area, this species was recorded at different sites, in small numbers, during the spring migration, mainly in areas with scattered low trees, agricultural fields, and rocky hillsides. Breeding birds (1 pair) were located at the rocky slopes and terraced hillsides, mainly at the south-western part of the study area at the top of the hilly region (map 3). The breeding season starts as early as beginning of March, juveniles becomes independent by July, and most birds leave the breeding area by August to mid-September.

Winter Wren: *Motacilla Troglodytes* Linnaeus, 1758,. Subspecies in Palestine: *Troglodytes Troglodytes cypriotes* (Bate, 1903). Breeds Cyprus and North of Middle East (S to N Palestine).

In Palestine, the species is resident breeder, mainly in Mediterranean regions. In the last years, the distribution range of the winter wren expanded from the north of the West Bank to the southern parts to reach Hebron (wadi Al-Quf). This species inhabit dense thickets in wooded areas, forested land, and tangled vegetation (mainly maquis) with some source of water (springs). The existence of this species in certain areas reflect the health of the maquis habitat. This year, only four pairs were recorded, mainly at the east central parts of the valley, which holds the majority of the recorded birds (map3). However, this area of Al-

Makhrour area is under major threat because of land reclamation by landowners, which impose serious threats on the breeding population of this species.



Map 3) Areas of special conservation priority for flagship and threatened species (Winter Wren, Cretzschmar's Bunting, Little Swift, Long billed pipit).

Table 1) List of recorded bird species at Al-Makhrour area between September 2020 and March 2021. The list also include population trend of breeding bird species (2019 -2021)

No.	English Name	Latin Name	Status	Local Status	IUCN/ National Status	Population trend
1	Little Bittern	<i>Ixobrychus minutus</i>	PM, sb?	Rare pm	Least Concern	
2	Cattle Egret	<i>Bubulcus ibis</i>	RB, pm, wv	Rare RD	Least Concern	
3	Black Stork	<i>Ciconia nigra</i>	PM, wv	Rare pm	Least Concern	
4	White Stork	<i>Ciconia ciconia</i>	PM, wv	Uncommon pm	Least Concern	
5	Mallard	<i>Anas platyrhynchos</i>	pm, wv	Rare pm	Least Concern	
6	(European) Honey Buzzard	<i>Pernis apivorus</i>	PM	Uncommon pm	Least Concern	
7	Black Kite	<i>Milvus migrans</i>	PM, wv	Uncommon pm	Least Concern	
8	Short-toed Eagle	<i>Circaetus gallicus</i>	PM, sb, wv	Uncommon pm	Least Concern	
9	(Eurasian) Sparrowhawk	<i>Accipiter nisus</i>	PM, wv, sb	Uncommon pm, wv, rare sb	Least Concern	
10	Common Buzzard	<i>Buteo buteo</i>	wv, pm	Rare wv	Least Concern	
11	Steppe Buzzard	<i>Buteo buteo vulpinus</i>	PM	Uncommon pm	Least Concern	
12	Long-legged Buzzard	<i>Buteo rufinus</i>	RB, wv, pm	Rare RB, Breeding not confirmed	Least Concern Near Threatened	
13	Lesser Spotted Eagle	<i>Aquila pomarina</i>	PM	Rare pm	Least Concern	
14	Merlin	<i>Falco columbarius</i>	wv, pm	Rare pm	Least Concern	
15	(Common) Kestrel	<i>Falco tinnunculus</i>	RB, wv, pm	Uncommon rb	Least Concern	Increase
16	Lanner Falcon	<i>Falco biarmicus</i>	rb, pm, wv	Rare pm	Least Concern Critically Endangered	
17	Chukar	<i>Alectoris chukar</i>	RB	Uncommon rb	Least Concern	
18	(Common) Quail	<i>Coturnix coturnix</i>	PM, wv	Rare pm	Least Concern	
19	Corncrake	<i>Crex crex</i>	pm	Rare pm	Least Concern	
20	Common Crane	<i>Grus grus</i>	PM, wv	Rare pm	Least Concern	

21	(Eurasian) Collared Dove	<i>Streptopelia decaocto</i>	wv, pm	Uncommon RB	Least Concern	Stable
22	(European) Turtle Dove	<i>Streptopelia turtur</i>	PM, SB	Rare pm	Vulnerable Endangered	
23	Laughing Dove	<i>Streptopelia senegalensis</i>	RB	Common RB	Least Concern	Stable
24	(Common) Cuckoo	<i>Cuculus canorus</i>	pm, sb	Uncommon pm and sb?	Least Concern	
25	Great Spotted Cuckoo	<i>Clamator glandarius</i>	sb, pm	Uncommon pm, sb?	Least Concern	
26	Barn Owl	<i>Tyto alba</i>	Rb	Uncommon rb	Least Concern	
27	(Eurasian) Scops Owl	<i>Otus scops</i>	sb, PM, wv	Rare pm, wv, and sb?	Least Concern	
28	(Eurasian) Eagle Owl	<i>Bubo bubo</i>	Rb, rd	Uncommon rb	Least Concern	Decrease
29	Little Owl	<i>Athene noctua</i>	RB	Uncommon rb	Least Concern	Increase
30	(European) Nightjar	<i>Caprimulgus europaeus</i>	pm	Rare pm	Least Concern	
31	(Common) Swift	<i>Apus apus</i>	SB, PM, wv	Common pm	Least Concern	
32	Pallid Swift	<i>Apus pallidus</i>	sb, PM, wv	Common pm	Least Concern	
33	Alpine Swift	<i>Apus melba</i>	sb, PM, wv	Common pm	Least Concern	
34	Little Swift	<i>Apus affinis</i>	rb, rd, pm, wv	Unommon pm, Rare sb	Least Concern Vulnerable	
35	White-throated Kingfisher	<i>Halcyon smyrnensis</i>	RB	Uncommon rb	Least Concern	Stable
36	(European) Bee-eater	<i>Merops apiaster</i>	PM, sb	Common PM	Least Concern	
37	(Eurasian) Hoopoe	<i>Upupa epops</i>	RB, SB, PM, WV	uncommon rb, sb, and pm	Least Concern	Stable
38	(Eurasian) Wryneck	<i>Jynx torquilla</i>	PM, wv	Uncommon pm	Least Concern	
39	Syrian Woodpecker	<i>Dendrocopos syriacus</i>	RB	uncommon RB	Least Concern	Increase
40	Crested Lark	<i>Galerida cristata</i>	RB	Uncommon RB	Least Concern	Stable
41	Barn Swallow	<i>Hirundo rustica</i>	Rb, sb, pm, wv	Uncommon pm	Least Concern	
42	Red-rumped Swallow	<i>Hirundo daurica</i>	PM, sb	Uncommon pm, and sb	Least Concern	Stable
43	(Common) House Martin	<i>Delichon urbica</i>	pm, sb	Uncommon pm	Least Concern	

44	Tawny Pipit	<i>Anthus campestris</i>	PM, WV, (sb ?)	Uncommon pm, and sb	Least Concern Critically Endangered	
45	Long-billed Pipit	<i>Anthus similis</i>	RB	Rare RB	Least Concern Vulnerable	Increase
46	Tree Pipit	<i>Anthus trivialis</i>	PM, wv	Common PM	Least Concern	
47	Meadow Pipit	<i>Anthus pratensis</i>	PM, wv	Uncommon pm	Near Threatened	
48	Water Pipit	<i>Anthus spinoletta</i>	WV, pm	Rare pm	Least Concern	
49	Yellow Wagtail	<i>Motacilla flava</i>	PM	Uncommon pm	Least Concern	
50	Grey Wagtail	<i>Motacilla cinerea</i>	WV, pm	Rare pm and wv	Least Concern	
51	White Wagtail	<i>Motacilla alba</i>	PM, WV	Uncommon wv, rare pm	Least Concern	
52	Spectacled Bulbul	<i>Pycnonotus xanthopygos</i>	RB	Common RB	Least Concern	Stable
53	(Winter) Wren	<i>Troglodytes troglodytes</i>	rb, rd, wv	Uncommon RB	Least Concern	Decrease
54	(European) Robin	<i>Erithacus rubecula</i>	WV, pm	Uncommon wv	Least Concern	
55	Thrush Nightingale	<i>Luscinia luscinia</i>	pm	Uncommon pm	Least Concern	
56	(Common) Nightingale	<i>Luscinia megarhynchos</i>	PM, sb (local)	Uncommon pm	Least Concern	
57	Black Redstart	<i>Phoenicurus ochruros</i>	PM, WV	Uncommon wv	Least Concern	
58	(Common) Redstart	<i>Phoenicurus phoenicurus</i>	PM	Uncommon pm	Least Concern	
59	Whinchat	<i>Saxicola rubetra</i>	PM	Uncommon pm	Least Concern	
60	(Common) Stonechat	<i>Saxicola torquatus</i>	PM, wv	Uncommon wv, and pm	Least Concern	
61	Northern Wheatear	<i>Oenanthe oenanthe</i>	PM	Uncommon pm	Least Concern	
62	Black-eared Wheatear	<i>Oenanthe hispanica</i>	PM, SB	Uncommon pm	Least Concern Endangered	
63	Finsch's Wheatear	<i>Oenanthe finschii</i>	WV, pm	Rare wv	Least Concern	
64	(Rufous-tailed) Rock Thrush	<i>Monticola saxatilis</i>	pm	Rare pm	Least Concern	
65	Blue Rock Thrush	<i>Monticola solitarius</i>	RB, wv, pm	Rare rb	Least Concern	
66	(Common) Blackbird	<i>Turdus merula</i>	RB, pm, wv	Common RB	Least Concern	

67	Song Thrush	<i>Turdus philomelos</i>	WV, pm	Uncommon pm, Common WV	Least Concern	
68	Graceful Prinia	<i>Prinia gracilis</i>	RB	Common RB	Least Concern	Stable
69	Marsh Warbler	<i>Acrocephalus palustris</i>	pm	Uncommon pm	Least Concern	
70	(European) Reed Warbler	<i>Acrocephalus scirpaceus</i>	pm, sb	Uncommon pm	Least Concern	
71	Olivaceous Warbler	<i>Hippolais pallida</i>	PM, SB	Uncommon pm, possibly rare sb	Least Concern	
72	Olive-tree Warbler	<i>Hippolais olivetorum</i>	pm	Rare pm	Least Concern	
73	Sardinian Warbler	<i>Sylvia melanocephala</i>	RB, PM, WV	Common RB	Least Concern	Stable
74	Eastern Orphean Warbler	<i>Sylvia hortensis</i>	PM, sb?	Uncommon pm	Least Concern	
75	Barred Warbler	<i>Sylvia nisoria</i>	pm	Rare pm	Least Concern	
76	Lesser Whitethroat	<i>Sylvia curruca</i>	PM	Common pm	Least Concern	
77	(Common) Whitethroat	<i>Sylvia communis</i>	PM, sb	Uncommon pm	Least Concern	
78	Garden Warbler	<i>Sylvia borin</i>	PM	Uncommon pm	Least Concern	
79	Blackcap	<i>Sylvia atricapilla</i>	PM, wv	Common pm	Least Concern	
80	Eastern Bonelli's Warbler	<i>Phylloscopus orientalis</i>	pm	Uncommon pm	Least Concern	
81	Wood Warbler	<i>Phylloscopus sibilatrix</i>	pm	Uncommon pm	Least Concern	
82	Chiffchaff	<i>Phylloscopus collybita</i>	WV, PM	Common WV, uncommon pm	Least Concern	
83	Willow Warbler	<i>Phylloscopus trochilus</i>	PM	Common pm	Least Concern	
84	Spotted Flycatcher	<i>Muscicapa striata</i>	PM,	Uncommon pm	Least Concern	
85	Semi-collared Flycatcher	<i>Ficedula semitorquata</i>	pm	Rare pm	Least Concern	
86	Collared Flycatcher	<i>Ficedula albicollis</i>	pm	Rare pm	Least Concern	
87	(European) Pied Flycatcher	<i>Ficedula hypoleuca</i>	pm	Rare pm	Least Concern	
88	Great Tit	<i>Parus major</i>	RB	Common RB	Least Concern	Stable
89	Palestine Sunbird	<i>Nectarinia osea</i>	RB	Common RB	Least Concern	
90	(Eurasian) Golden Oriole	<i>Oriolus oriolus</i>	pm	Rare pm	Least Concern	
91	Red-backed Shrike	<i>Lanius collurio</i>	PM	Uncommon pm	Least Concern	

92	Woodchat Shrike	<i>Lanius senator</i>	PM, SB	Uncommon pm	Least Concern	
93	Masked Shrike	<i>Lanius nubicus</i>	PM, sb	Uncommon pm	Least Concern	
94	(Eurasian) Jay	<i>Garrulus glandarius</i>	RB	Common RB	Least Concern	Stable
95	(Western) Jackdaw	<i>Corvus monedula</i>	RB, RD, WV	Locally common RB	Least Concern	Increase
96	Hooded Crow	<i>Corvus corone cornix</i>	RB	Common RB	Least Concern	Stable
97	(Common) Raven	<i>Corvus corax</i>	rb, rd	Rare RB, Breeding not confirmed	Least Concern	
98	Common Myna	<i>Acridotheres tristis</i>	IB	Uncommon IB	Least Concern	Increase
99	House Sparrow	<i>Passer domesticus</i>	RB, RD	Common RB	Least Concern	Stable
100	(Common) Chaffinch	<i>Fringilla coelebs</i>	WV, pm	Common WV, Uncommon pm	Least Concern	
101	Brambling	<i>Fringilla montifringilla</i>	pm, wv	Uncommon wv, and pm	Least Concern	
102	(European) Greenfinch	<i>Carduelis chloris</i>	RB, wv, pm	Common RB, Uncommon pm and wv	Least Concern	Stable
103	(Common) Linnet	<i>Carduelis cannabina</i>	RB, pm, wv	Uncommon rb	Least Concern	Increase
104	Ortolan Bunting	<i>Emberiza hortulana</i>	PM	Uncommon pm	Least Concern	
105	Cretzschmar's Bunting	<i>Emberiza caesia</i>	SB, PM	Uncommon pm, and rare sb	Least Concern Vulnerable	Decrease

*Abbreviation:

RB: Resident Breeder.

RD: Resident Dispersal.

SB: Summer Breeder.

PM: Passage Migrant.

WV: Winter Visitor.