

A Review of The Current Status of Migratory Wild Birds in Iraq and Syria

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Abstract. Iraq and Syria are among the countries that are frequented by wild birds in great numbers and species due to the abundance of water, green spaces, moderate climate in winter and the lack of predators. The two countries fall under the migration line of birds that stretches between East Asia and East Africa. The results of the survey, which were conducted nearly twenty years ago, indicated that there are at least 400 species of migratory birds coming to Iraq and Syria (The majority are from the Accipitres (Accipitridae) and passerines (Passeriformes)). In Iraq, the marshes (Al-Ahwar) are inhabited by species of birds that are rare in other parts of the world like the Iraq Babbler (*Turdoides squamiceps*) and the rocking reed of Basra (*Acrocephalus griseldis*). The rare endangered Namaqua Dove (*Oena Capensis*) was seen in the Syrian Badia. Recently, the status of the deputed birds has decreased in terms of numbers and species due to a set of reasons, the most important of which is the phenomenon of over-hunting, which has negatively affected the numbers of birds, especially birds that are threatened with extinction and included in the red list such as the Ferruginous duck (*Aythya nyroca*) and the Eurasian teal (*Anas Crecca*). The demographic fluctuation and war conditions have led to the reluctance of some species to come to Iraq and Syria and change the course of their migration to other places. The emergence of some non-traditional methods of hunting by bird hunters, such as the establishment of artificial waterbodies to attract waterfowl, led to an unprecedented decline in the numbers of these birds. The lack of legal oversight, lack of accountability, and the tendency of bird hunters to hunt in uncontrolled areas increased the great damage to wild birds in particular and to wildlife in general.

Keywords. Wild birds, Migration, Iraq, Syria.

1. Introduction

Bird migration remains a mystery. This seasonal movement carried out by birds according to specific paths is most likely limited to two areas: the breeding and the wintering. Due to the ambiguity surrounding this behavior, huge studies have been conducted to define this phenomenon and its reasons (1). Under the pressure of an internal desire, millions of birds migrate twice a year, crossing huge distances through deserts, high mountain peaks and oceans with high accuracy, as these birds reach their target simultaneously that corresponds to the time they arrived in the previous year (2). Most migratory birds colonize the existing areas north of the equator due to the suitability of the climate and the large land area compared to what is found in the southern hemisphere of the globe that is mostly covered by oceans. Some birds have strong endurance capabilities. The Arctic tern fowl (*Sterna paradisaea*), for example, lives in northern Canada, Greenland, Iceland, and northern Europe, but it spends the winter months in southern Africa and the Antarctic region, travelling 2,000 kilometres back and forth every year (3). Every spring and summer, one-third of the world's migratory bird species set out on journeys of different distances and directions, as birds in the northern

hemisphere take a path north-south in the fall and take the opposite direction in the spring, the birds migrate in northern Europe either through Turkey or the Strait of Gibraltar.

In Iraq, several important factors affect the weather, including the astronomical position which determines the angle of incidence of the sun's rays and the length of the hours of the day. Iraq, in particular, located between latitude 29 ° and 37 ° north, this location has given it a temperature similar to tropical regions (4). Accordingly, Iraq has many important components that made it an environment with biodiversity of wild birds at the level of type and number. The water bodies in Iraq (the most important of which are the marshes (Al-Ahwar)), attract many migratory wild birds, whether as a resident or visiting birds during the winter and summer seasons. Syria enjoys four seasons throughout the year, the climate is divided into two regions: Mediterranean climate in the coastal region and vicinity and a dry climate in the rest of the regions towards the east and south (5). Syria wildlife is characterized by great biodiversity due to the climatic diversity and the location in the middle of the three continents of the ancient world: Asia, Africa and Europe, which made it a gateway for the migration of many species from north to south and vice versa. However, Syria differs from Iraq in terms of the biodiversity of wild birds because it lacks water bodies compared to Iraq and because most of the migratory wild birds frequent the desert areas like the Syrian Al-Badia.

In this paper, we will derive a synthesis for the status of bird migration in Iraq and Syria, taking into account the biological diversity of the birds and the factors affecting the nature of migration.

2. Biodiversity Mosaic of Migratory Wild Birds in Iraq and Syria

It can be said that Iraq and Syria are relatively rich in biological diversity of wild birds, as the two countries' occurrence within more than one major migration line made this region a haven for many birds, especially small birds that avoid crossing water bodies (seas and oceans).

Geographically, both countries are located in the warm latitude belt that stretches between the cold northern and hot southern regions (4; 5). As a comparison, Iraq is the country with the most migratory birds compared to Syria due to a large number of freshwater bodies, specifically the marshes area (Al-Ahwar), while Syria is characterized by vast areas of land, especially in the Syrian Badia, where this region is characterized by high- temperature rates and the biodiversity of wild plants, which are the main food for birds. In general, the importance of the geographical location concerning the biological diversity of wild birds in the two countries can be illustrated in Figure 1, where it is noted that the areas frequented by wild birds in both countries are close to each other, namely the Marshes region and the Syrian Badia. It should also be noted that there are very important areas of biodiversity of wild birds in the areas bordering the three countries: Iraq, Syria and Turkey. To investigate future species, numerous surveys and controls have been conducted over the last twenty years. Basically, all of the results obtained about the species and their behavioral characteristics were carried out through biological survey research and observations of the local population, especially those interested in hunting. In Iraq, according to the survey results of the Iraq Key Biodiversity Areas (KBA) Project from 2005 to 2008 (Basrah, Mis- san, Thi-Qar, Erbil, Sulaimanie and Dohuk), 159 species belonging to different families were documented, from the previous number, 110 species were considered as winter visitors, while the rest of the species were breeding (6). In Syria, 85 species were considered as winter visitors, 15 species as summer visitors in an unlike statistic, 143 species of migratory birds stopped breeding in Syria. 71 species of migratory birds that do not breed. 83 species that live throughout the winter season. 15 species of birds that live throughout the summer. Also, 53 of these species of birds are considered endangered (Salloum, 2020).

Several studies have been conducted on the biodiversity of wild birds in Syria. These studies included many species whose existence in Syria depends on several factors, including the date and time of the study, the survey methods and the current situation (existing or not present). However, Table 2 shows some of the types that have been documented through these studies (8; 9; 10 and 11). In general, many of the birds of Bilad AL-Sham (Syria, Lebanon, Jordan and Palestine) are crossing that cross from Europe and Western Asia, avoiding the coldness and going to hot countries such as the Arabian Peninsula and sub-Saharan Africa in pursuit of sustenance and warmth, and remain for about five months and sometimes more, and when the warm season comes in Europe And western Asia, including Bilad AL-Sham - these birds return to it for reproduction. Countless thousands of migratory

birds cross Bilad AL-Sham during the spring and autumn seasons, most notably storks, pike, ducks, geese, pelicans and some prey.

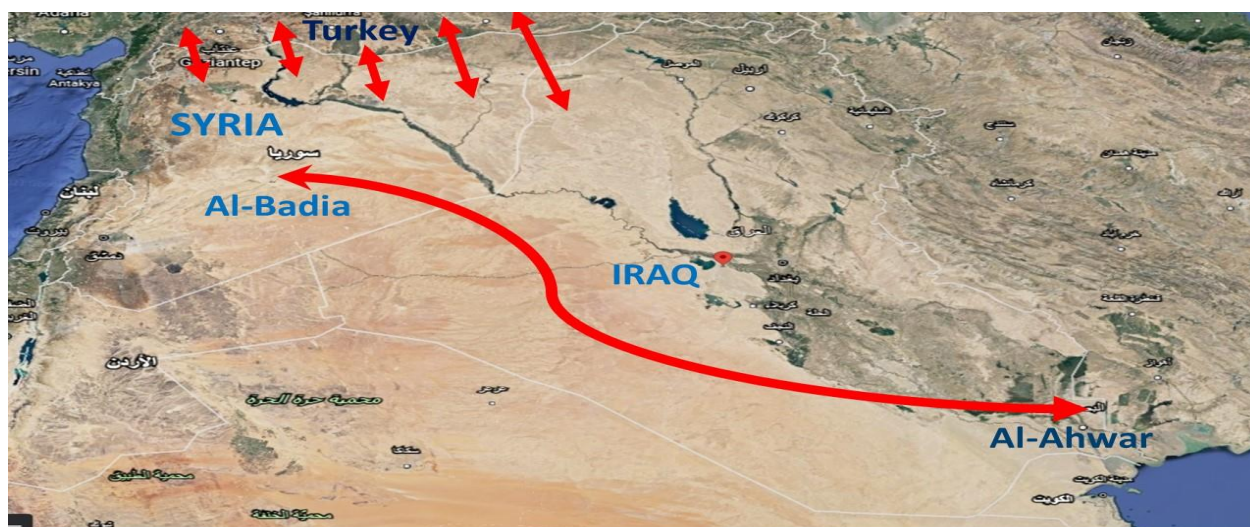


Figure 1. The main places of the relative convergence of biodiversity of migratory wild birds in Iraq, Syria and Turkey.

Table 1. Birds recorded during KBA surveys of the southern marshes of Iraq in winter and summer 2005 to 2008 (reproduced from [6]).

Common name (English)	Scientific name	Summer	Winter	Status as determined by these surveys
Black Francolin	<i>Francolinus francolinus</i>	+	+	Resident breeder
Common Quail	<i>Coturnix coturnix</i>	+	+	Passage migrant and winter visitor
Greylag Goose	<i>Anser anser</i>	-	+	Winter visitor
Whooper Swan	<i>Cygnus cygnus</i>	-	+	Rare winter visitor
Greater White-fronted Goose	<i>Anser albifrons</i>	-	+	Winter visitor
Common Shelduck	<i>Tadorna tadorna</i>	-	+	Winter visitor
Ruddy Shelduck	<i>Tadorna ferruginea</i>	-	+	Winter visitor
Gadwall	<i>Anas strepera</i>	-	+	Winter visitor
Eurasian Wigeon	<i>Anas penelope</i>	-	+	Winter visitor
Mallard	<i>Anas platyrhynchos</i>	+	+	Winter visitor; some remain in summer
Northern Shoveler	<i>Anas clypeata</i>	+	+	Winter visitor; some present in summer
Northern Pintail	<i>Anas acuta</i>	-	+	Winter visitor
Garganey	<i>Anas querquedula</i>	+	+	Winter visitor; may also breed
Eurasian Teal	<i>Anas crecca</i>	-	+	Winter visitor
Marbled Duck CC, GT	<i>Marmaronetta angustirostris</i>	+	+	Resident breeder and winter visitor
Red-crested Pochard CC	<i>Netta rufina</i>	-	+	Winter visitor
Common Pochard	<i>Aythya ferina</i>	-	+	Winter visitor
Ferruginous Duck CC, GT	<i>Aythya nyroca</i>	+	+	Winter visitor; some may remain to breed
Tufted Duck	<i>Aythya fuligula</i>	-	+	Winter visitor
White-headed Duck CC, GT	<i>Oxyura leucocephala</i>	-	+	Winter visitor
Little Grebe (Dabchick)	<i>Tachybaptus ruficollis</i>	+	+	Resident breeder and

Common name (English)	Scientific name	winter visitor		Status as determined by these surveys
		Summer	Winter	
Great Crested Grebe	<i>Podiceps cristatus</i>	+	+	Resident breeder and winter visitor
Black-necked Grebe	<i>Podiceps nigricollis</i>	-	+	Winter visitor
Greater Flamingo CC	<i>Phoenicopterus roseus</i>	+	-	Passage migrant and winter visitor
Western White Stork	<i>Ciconia ciconia</i>	+	+	Winter visitor; some may breed
Sacred Ibis CC	<i>Threskiornis aethiopicus</i>	+	+	Resident breeder
Glossy Ibis	<i>Plegadis falcinellus</i>	+	+	Winter visitor; may also breed
Eurasian Spoonbill CC	<i>Platalea leucorodia</i>	+	+	Breeding summer visitor
Eurasian Bittern CC	<i>Botaurus stellaris</i>	+	+	Resident breeder and winter visitor
Little Bittern	<i>Ixobrychus minutus</i>	+	+	Resident breeder and winter visitor
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	+	+	Resident breeder and winter visitor
Squacco Heron	<i>Ardeola ralloides</i>	+	+	Resident breeder and winter visitor
Cattle Egret	<i>Bubulcus ibis</i>	+	+	Resident breeder and winter visitor
Grey Heron	<i>Ardea cinerea</i>	+	+	Resident breeder and winter visitor
Goliath Heron CC	<i>Ardea goliath</i>	+	+	Reported to breed
Purple Heron	<i>Ardea purpurea</i>	+	+	Resident breeder and winter visitor
Great Egret	<i>Ardea [Egretta] alba</i>	-	+	Winter visitor
Little Egret	<i>Egretta garzetta</i>	+	+	Winter visitor; some remain in summer
Western Reef Heron (Reef Egret)	<i>Egretta gularis</i>	+	-	Present in summer
Great White Pelican CC	<i>Pelecanus onocrotalus</i>	-	+	Winter visitor
Pygmy Cormorant CC	<i>Phalacrocorax pygmaeus</i>	+	+	Resident breeder and winter visitor
Great Cormorant	<i>Phalacrocorax carbo</i>	-	+	Winter visitor
Darter (African Darter) CC	<i>Anhinga melanogaster</i>	+	+	Resident breeder
Common Kestrel	<i>Falco tinnunculus</i>	-	+	Winter visitor
Western Marsh Harrier	<i>Circus aeruginosus</i>	-	+	Winter visitor
Black-winged Kite	<i>Elanus caeruleus</i>	+	+	Rare resident
Long-legged Buzzard	<i>Buteo rufinus</i>	-	+	Winter visitor
Hen Harrier	<i>Circus cyaneus</i>	-	+	Winter visitor
Eurasian Sparrowhawk	<i>Accipiter nisus</i>	-	+	Winter visitor
Greater Spotted Eagle CC, GT	<i>Aquila clanga</i>	-	+	Winter visitor
Steppe Eagle CC	<i>Aquila nipalensis</i>	-	+	Winter visitor
Asian Imperial Eagle CC, GT	<i>Aquila heliaca</i>	-	-	
Macqueen's Bustard GT, CC	<i>Chlamydotis macqueenii</i>		+	Winter visitor
Water Rail	<i>Rallus aquaticus</i>	-	+	Winter visitor
Little Crake	<i>Porzana parva</i>	-	+	Winter visitor

Common name (English)	Scientific name	Summer	Winter	Status as determined by these surveys
Spotted Crane	<i>Porzana porzana</i>	-	+	Winter visitor
Purple Swamphen CC	<i>Porphyrio porphyrio</i>	+	+	Resident breeder
Common Moorhen	<i>Gallinulua chloropus</i>	+	+	Resident breeder and winter visitor
Eurasian Coot	<i>Fulica atra</i>	+	+	Resident breeder and winter visitor
Crab-plover CC	<i>Dromas ardeola</i>	+	-	Possibly resident, but only recorded in summer
Black-winged Stilt	<i>Himantopus himantopus</i>	+	+	Resident breeder and winter visitor
Pied Avocet (Avocet)	<i>Recurvirostra avosetta</i>	+	+	Resident breeder and winter visitor
Northern Lapwing	<i>Vanellus vanellus</i>	-	+	Winter visitor
Spur-winged Lapwing CC	<i>Vanellus spinosus</i>	+	+	Resident breeder and winter visitor
Red-wattled Lapwing	<i>Vanellus indicus</i>	+	+	Resident breeder and winter visitor
White-tailed Lapwing CC	<i>Vanellus leucurus</i>	+	+	Resident breeder and winter visitor
Common Ringed Plover	<i>Charadrius hiaticula</i>	-	+	Winter visitor
Little Ringed Plover	<i>Charadrius dubius</i>	+	+	Winter visitor; some may breed
Kentish Plover	<i>Charadrius alexandrinus</i>	+	+	Resident breeder and winter visitor
Common Snipe	<i>Gallinago gallinago</i>	-	+	Winter visitor
Black-tailed Godwit CC, GT	<i>Limosa limosa</i>	-	+	Winter visitor
Bar-tailed Godwit	<i>Limosa lapponica</i>	-	+	Winter visitor
Whimbrel	<i>Numenius phaeopus</i>	+	+	Winter visitor; some remain in summer
Eurasian Curlew CC	<i>Numenius arquata</i>	+	+	Winter visitor; some remain in summer
Spotted Redshank	<i>Tringa erythropus</i>	-	+	Winter visitor
Common Redshank	<i>Tringa totanus</i>	+	+	Winter visitor; some remain in summer
Marsh Sandpiper	<i>Tringa stagnatilis</i>	-	+	Winter visitor
Common Greenshank	<i>Tringa nebularia</i>	+	+	Winter visitor; some remain in summer
Green Sandpiper	<i>Tringa ochropus</i>	-	+	Winter visitor
Wood Sandpiper	<i>Tringa glareola</i>	-	+	Winter visitor
Common Sandpiper	<i>Actitis hypoleucos</i>	+	+	Winter visitor; some remain in summer
Ruddy Turnstone	<i>Arenaria interpres</i>	+	-	Recorded in summer, but these are wintering birds that have not returned
Little Stint	<i>Calidris minuta</i>	+	+	Winter visitor; some remain in summer
Temminck's Stint	<i>Calidris temminckii</i>	-	+	Winter visitor
Curlew Sandpiper	<i>Calidris ferruginea</i>	+	+	Winter visitor; some remain in summer
Dunlin	<i>Calidris alpina</i>	-	+	Winter visitor

Common name (English)	Scientific name	Summer	Winter	Status as determined by these surveys
Ruff	<i>Philomachus pugnax</i>	-	+	Winter visitor
Collared Pratincole CC	<i>Glareola pratincola</i>	+	-	Breeding summer visitor
Yellow-legged Gull	<i>Larus michahellis</i>	?	?	Status uncertain
Armenian Gull CC	<i>Larus armenicus</i>	+	+	Winter visitor; some remain in summer
Lesser Black-backed Gull	<i>Larus fuscus graellsii</i>	-	+	Winter visitor
White-headed Gull sp.	<i>Larus sp</i>		+	
Great Black-headed Gull (Pallas's Gull)	<i>Larus ichthyaetus</i>	-	+	Winter visitor
Common Black-headed Gull	<i>Larus ridibundus</i>	+	+	Winter visitor; some remain in summer
Slender-billed Gull CC	<i>Larus genei</i>	+	+	Resident breeder and winter visitor
Little Gull	<i>Larus minutus</i>	-	+	Winter visitor
Gull-billed Tern	<i>Gelochelidon [Sterna] nilotica</i>	+	+	Winter visitor and breeding resident
Caspian Tern CC	<i>Hydroprogne [Sterna] caspia</i>	+	+	Winter visitor; also recorded in summer
Common Tern	<i>Sterna hirundo</i>	+	-	Breeding summer visitor
White-cheeked Tern	<i>Sterna repressa</i>	+	-	Status uncertain
Little Tern	<i>Sternula [Sterna] albifrons</i>	+	-	Breeding summer visitor
Whiskered Tern	<i>Chlidonias hybrida</i>	+	+	Breeding resident and winter visitor
Black Tern	<i>Chlidonias niger</i>	+	-	Vagrant
Pin-tailed Sandgrouse CC	<i>Pterocles alchata</i>	+	-	Breeding resident
Spotted Sandgrouse CC	<i>Pterocles senegallus</i>	+	-	Breeding resident
Rock Dove	<i>Columba livia</i>	+	-	Probably a breeding resident
Stock Dove	<i>Columba oenas</i>	-	+	Winter visitor
Common Woodpigeon	<i>Columba palumbus</i>	-	+	Winter visitor
Eurasian Collared Dove	<i>Streptopelia decaocto</i>	-	+	Probably a breeding resident
Laughing Dove	<i>Streptopelia senegalensis</i>	-	+	Probably a breeding resident
Egyptian Nightjar	<i>Caprimulgus aegyptius</i>	+	-	Breeding summer visitor
Indian Roller	<i>Coracias benghalensis</i>	+	-	Breeding summer visitor
White-throated Kingfisher	<i>Halcyon smyrnensis</i>	+	+	Breeding resident
Common Kingfisher	<i>Alcedo atthis</i>	+	+	Winter visitor; also recorded in summer
Pied Kingfisher	<i>Ceryle rudis</i>	+	+	Breeding resident
Blue-cheeked Bee-eater	<i>Merops [superciliosus] persicus</i>	+	-	Breeding summer visitor
Eurasian Hoopoe	<i>Upupa epops</i>	+	-	Status uncertain
Daurian/Turkestan Shrike	<i>Lanius isabellinus</i>	-	+	Winter visitor
Great Grey Shrike/ Southern Grey Shrike	<i>Lanius excubitor/ meridionalis</i>	-	+	Winter visitor
Eurasian Magpie	<i>Pica pica</i>	-	+	Winter visitor
Rook	<i>Corvus frugilegus</i>		+	Winter visitor

Common name (English)	Scientific name	Summer	Winter	Status as determined by these surveys
Hooded Crow CC, Endemic Race	<i>Corvus [corone] cornix</i>	+	+	Probably a breeding resident
Grey Hypocolius CC, Endemic	<i>Hypocolius ampelinus</i>	+	+	Breeding resident and winter visitor
Sand Martin	<i>Riparia riparia</i>	+	-	Breeding summer visitor
Barn Swallow	<i>Hirundo rustica</i>	+	-	Probably a breeding summer visitor
Greater Hoopoe-Lark	<i>Alaemon alaudipes</i>	+	-	Probably a breeding resident; not yet recorded in winter
Desert Lark	<i>Ammomanes deserti</i>	-	+	Probably a breeding resident; not yet recorded in summer
Crested Lark	<i>Galerida cristata</i>	+	+	Breeding resident
Eurasian Skylark	<i>Alauda arvensis</i>	+	-	Status uncertain; probably a winter visitor that occasional- ly remains in summer
Zitting Cisticola	<i>Cisticola juncidis</i>	-	+	Probably a breeding resident; not yet observed in summer
Graceful Prinia	<i>Prinia gracilis</i>	+	+	Breeding resident
White-cheeked Bulbul CC	<i>Pycnonotus leucogenys</i>	+	+	Breeding resident
Cetti's Warbler	<i>Cettia cetti</i>	-	+	Winter visitor
Basra Reed Warbler CC, GT, Endemic	<i>Acrocephalus griseldis</i>	+	-	Breeding summer visitor
Great Reed Warbler	<i>Acrocephalus arundinaceus</i>	+	-	Breeding summer visitor
Clamorous Reed Warbler	<i>Acrocephalus stentoreus</i>	+	-	Breeding summer visitor
Eurasian Reed Warbler	<i>Acrocephalus scirpaceus</i>	+	-	Breeding summer visitor
Chiffchaff	<i>Phylloscopus collybita</i>	-	+	Winter visitor
Iraq Babbler CC, Endemic	<i>Turdoides altirostris</i>	+	+	Breeding resident
Common Babbler	<i>Turdoides caudata</i>	+	+	Breeding resident
Common Starling	<i>Sturnus vulgaris</i>	-	+	Winter visitor
Common Blackbird	<i>Turdus merulus</i>	-	+	Winter visitor
European Robin	<i>Erithacus rubecula</i>	-	+	Winter visitor
Bluethroat	<i>Luscinia svecica</i>	-	+	Winter visitor
Rufous-tailed Scrub Robin	<i>Cercotrichas galactotes</i>	+	-	Breeding summer visitor
Black Redstart	<i>Phoenicurus ochruros</i>	-	+	Winter visitor
Eurasian Stonechat	<i>Saxicola torquatus (S. rubicola)</i>	-	+	Winter visitor
Isabelline Wheatear	<i>Oenanthe isabellina</i>	+	+	Winter visitor: some may remain to breed
Desert Wheatear	<i>Oenanthe deserti</i>	-	+	Winter visitor
House Sparrow	<i>Passer domesticus</i>	+	+	Breeding resident
Spanish Sparrow	<i>Passer hispaniolensis</i>	-	+	Winter visitor
Dead Sea Sparrow CC	<i>Passer moabiticus</i>	+	+	Breeding resident
Chestnut-shouldered Petronia	<i>Gymnoris [Petronia] xanthocollis</i>	+	-	Breeding summer visitor
Western Yellow Wagtail	<i>Motacilla flava</i>	+	-	Status uncertain; summer visitor that may breed
White Wagtail	<i>Motacilla alba</i>	-	+	Winter visitor
Tawny Pipit	<i>Anthus campestris</i>	-	+	Winter visitor

Common name (English)	Scientific name	Summer	Winter	Status as determined by these surveys
Water Pipit	<i>Anthus spinoletta</i>	+	+	Winter visitor; some remain in summer.
Reed Bunting	<i>Emberiza aureala</i>		+	Winter visitor
Corn Bunting	<i>Emberiza [Miliaria] calandra</i>	-	+	Winter visitor

GT = globally threatened, CC = conservation concern

Table 2. Migratory wild Birds recorded during surveys in Syria during the last 20 year.

Common name (English)	Scientific name
Little grebe	<i>Tachybaptus ruficollis ruficollis</i>
Red-necked grebe	<i>Podiceps grisegena</i>
Great crested grebe	<i>Podiceps cristatus cristatus</i>
Horned grebe	<i>Podiceps auritus auritus</i>
Black-necked grebe	<i>Podiceps nigricollis</i>
Soft-plumaged petrel	<i>Pterodroma mollis</i>
Streaked shearwater	<i>Calonectris leucomelas</i>
Cory's shearwater	<i>Calonectris borealis</i>
Flesh-footed shearwater	<i>Puffinus carneipes</i>
Great shearwater	<i>Puffinus gravis</i>
Sooty shearwater	<i>Puffinus griseus</i>
Manx shearwater	<i>Puffinus puffinus</i>
Balearic shearwater	<i>Puffinus mauretanicus</i>
European storm petrel	<i>Hydrobates pelagicus</i>
Leach's storm petrel	<i>Oceanodroma leucorhoa</i>
Swinhoe's storm petrel	<i>Oceanodroma monorhis</i>
Red-billed tropicbird	<i>Phaethon aethereus</i>
Great white pelican	<i>Pelecanus onocrotalus</i>
Northern gannet	<i>Morus bassanus</i>
European shag	<i>Phalacrocorax aristotelis</i>
Pygmy cormorant	<i>Microcarbo pygmeus</i>
African darter	<i>Anhinga rufa</i>
Lesser frigatebird	<i>Fregata ariel</i>
Grey heron	<i>Ardea cinerea</i>
Black-headed heron	<i>Ardea melanocephala</i>
Purple heron	<i>Ardea purpurea</i>
Black heron	<i>Egretta ardesiaca</i>
Intermediate egret	<i>Mesophoyx intermedia</i>
Yellow-billed stork	<i>Mycteria ibis</i>
Black stork	<i>Ciconia nigra</i>
White stork	<i>Ciconia ciconia</i>
Northern bald ibis	<i>Geronticus eremita</i>
Mute swan	<i>Cygnus olor</i>
Greater white-fronted goose	<i>Anser albifrons</i>
Lesser white-fronted goose	<i>Anser erythropus</i>
Greylag goose	<i>Anser anser</i>
Taiga bean goose	<i>Anser fabalis</i>
Red-breasted goose	<i>Branta ruficollis</i>
Cotton pygmy goose	<i>Nettapus coromandelianus</i>
Falcated duck	<i>Anas falcata</i>
Eurasian wigeon	<i>Anas penelope</i>

Common name (English)	Scientific name
Eurasian teal	<i>Anas crecca</i>
Northern pintail	<i>Anas acuta</i>
Northern shoveler	<i>Anas clypeata</i>
Common pochard	<i>Aythya ferina</i>
Crested honey buzzard	<i>Pernis ptilorhyncus</i>
Red kite	<i>Milvus milvus</i>
Egyptian vulture	<i>Neophron percnopterus</i>
Cinereous vulture	<i>Aegypius monachus</i>
Shikra	<i>Accipiter badius</i>
Common buzzard	<i>Buteo buteo</i>
Gambel's quail	<i>Callipepla gambelii</i>
Chukar partridge	<i>Alectoris chukar</i>
Sand partridge	<i>Ammoperdix heyi</i>
Corn crake	<i>Crex crex</i>
Great bustard	<i>Otis tarda</i>
Little bustard	<i>Tetrax tetrax</i>
Pied avocet	<i>Recurvirostra avosetta</i>
Northern lapwing	<i>Vanellus vanellus</i>
Grey plover	<i>Pluvialis squatarola</i>
Black-tailed godwit	<i>Limosa limosa</i>
Red-necked stint	<i>Calidris ruficollis</i>
White-eared Bulbul	<i>Pycnonotus leucotis</i>
Bohemian Waxwing	<i>Bombycilla garrulus</i>
Alpine Accentor	<i>Prunella collaris</i>
Pallas's Leaf Warbler	<i>Phylloscopus proregulus</i>
Paddyfield Warbler	<i>Acrocephalus agricola</i>
Willow Warbler	<i>Phylloscopus trochilus</i>
Common Chiffchaff	<i>Phylloscopus collybita</i>
Common Whitethroat	<i>Sylvia communis</i>
Arabian Warbler	<i>Sylvia leucomelaena</i>
Collared Flycatcher	<i>Ficedula albicollis</i>
Semicollared Flycatcher	<i>Ficedula semitorquata</i>
White-throated Robin	<i>Irania gutturalis</i>
Black Wheatear	<i>Oenanthe leucura</i>
Red-tailed Wheatear	<i>Oenanthe chrysopygia</i>
Iraq Babbler	<i>Turdoides altirostris</i>
Wallcreeper	<i>Tichodroma muraria</i>
Red-backed Shrike	<i>Lanius collurio</i>
Eurasian Jay	<i>Garrulus glandarius</i>
Red-headed Bunting	<i>Emberiza bruniceps</i>
European Goldfinch	<i>Carduelis carduelis</i>
Syrian Serin	<i>Serinus syriacus</i>

3. The Threatened and Red List Migratory Birds

As previously mentioned about the tremendous biodiversity of migratory wild birds in the two countries, some species were exposed to some dangers, which ultimately led to the consideration of these species as globally threatened with extinction. Some studies point to the eight most important species in Iraq, which may be put into the context: Marbled Duck (*Marmaronetta angustirostris*), Ferruginous Duck (*Aythya nyroca*), White-headed Duck (*Oxyura leucocephala*), Basra Reed Warbler (*Acrocephalus griseldis*), Black-tailed Godwit (*Limosa limosa*), Asian Imperial Eagle (*Aquila heliaca*), Greater Spotted Eagle (*Aquila clanga*) and Macqueen's Bustard (*Chlamydotis macqueenii*) (Figure 2). In contrast, some species have been considered in the context of conservation concern like

the Sacred Ibis (*Threskiornis aethiopicus*), Eurasian Bittern (*Botaurus stellaris*), Goliath Heron (*Ardea goliath*), Pygmy Cormorant (*Phalacrocorax pygmaeus*), African Darter (*Anhinga rufa*), Grey Hypocolius (*Hypocolius ampelinus*) and Iraq Babbler (*Turdoides altirostris*) (Figure 3). Some resources mentioned that some types fall into the previous contexts in Syria like the Red-rumped Swallow (*Hirundo daurica*), Pin-tailed Sandgrouse (*Pterocles alchata*), Bearded Vulture (*Gypaetus barbatus*), Steppe Eagle (*Aquila nipalensis*), Cream-coloured Courser (*Cursorius cursor*), Houbara bustard (*Otis tarda*) and Namaqua Dove (*Oena Capensis*) (Figure 4) .

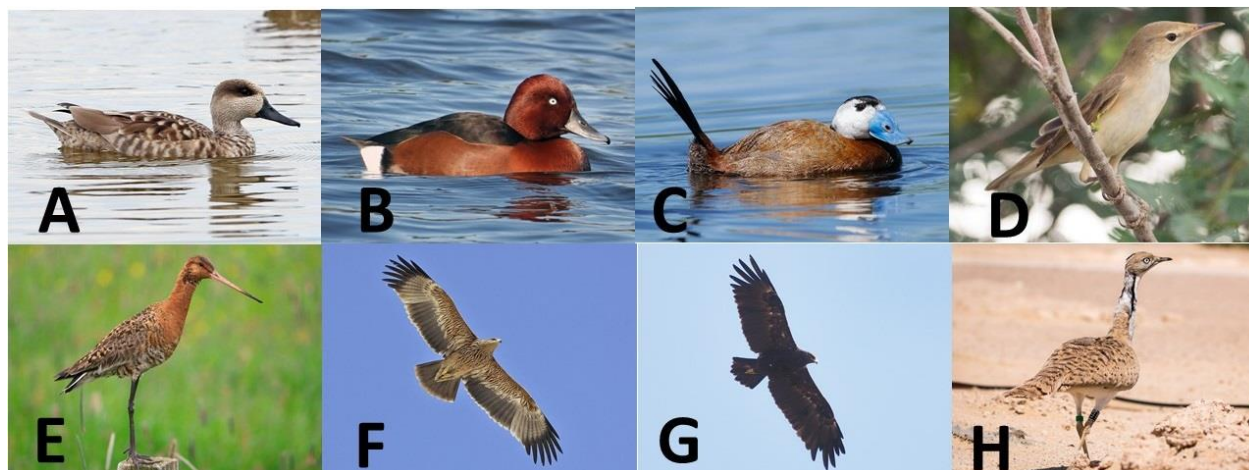


Figure 2. The most important species of migratory wild birds in Iraq, which have been classified as globally threatened with extinction. A: Marbled Duck (*Marmaronetta angustirostris*), B: Ferruginous Duck (*Aythya nyroca*), C: White-headed Duck (*Oxyura leucocephala*), D: Basra Reed Warbler (*Acrocephalus griseldis*), E: Black-tailed Godwit (*Limosa limosa*), F: Asian Imperial Eagle (*Aquila heliaca*), G: Greater Spotted Eagle (*Aquila clanga*), H: Macqueen's Bustard (*Chlamydotis macqueenii*); source: <https://ebird.org/home>. source: <https://ebird.org>.



Figure 3. The most important species of migratory wild birds in Iraq, which have been considered in the context of conservation concern. A: Sacred Ibis (*Threskiornis aethiopicus*), B: Eurasian Bittern (*Botaurus stellaris*), C: Goliath Heron (*Ardea goliath*), D: Pygmy Cormorant (*Phalacrocorax pygmaeus*), E: African Darter (*Anhinga rufa*), F: Grey Hypocolius (*Hypocolius ampelinus*), G: Iraq Babbler (*Turdoides altirostris*); source: <https://ebird.org>.

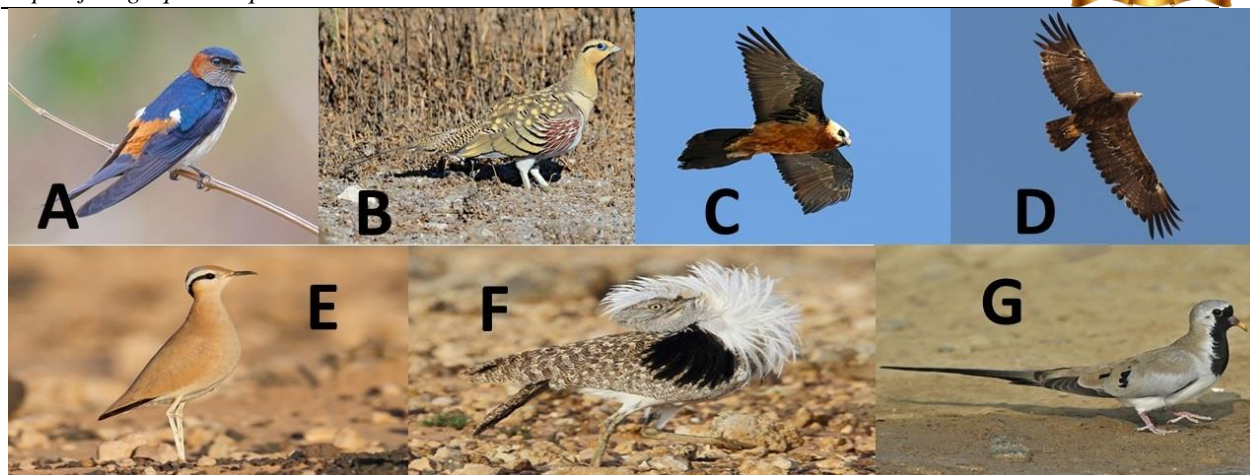


Figure 4. The most important species of migratory wild birds in Syria, which have been considered in the context of conservation concern and globally threatened with extinction. A: Red-rumped Swallow (*Hirundo daurica*), B: Pin-tailed Sandgrouse (*Pterocles alchata*), C: Bearded Vulture (*Gypaetus barbatus*), D: Steppe Eagle (*Aquila nipalensis*), E: Cream-coloured Courser (*Cursorius cursor*), F: Houbara bustard (*Otis tarda*), G: Namaqua Dove (*Oena Capensis*); source: <https://ebird.org>.

4. Threatening Factors Affecting The Biodiversity of Immigrant Birds

Currently, it can be confirmed that a decrease has occurred in the level of species and numbers of wild birds in both countries.

In the wild, birds face many threats to their survival. Many species are on the decline. Below is a summary of a number of these threats.

4.1. Climate Changes

Global warming and temperatures rise affect negatively migration cycle (12 and 13). After reaching the destinations, the birds rely on certain foods to live through the season. Breeding may succeed in some species, specifically the insect-eating songbirds. The reason could be the mismatch between the peak availability of food and the hatching of chicks. Also, climate change leads to changes in habitats, which causes re-distribution. Accordingly, some species are threatened by the nearly complete loss of their habitats (14).

4.2. Diseases

Like other birds, wild birds are affected by a range of diseases that limit their number and behavior in migration areas. In references, a group of infectious diseases that plague migratory birds are documented. Avian cholera can cause bird deaths in 12 hours, albeit 24–48 hour is typical. Salmonellosis which is resulting from a group of species of the genus *Salmonella* (i.e. *Salmonella Pullorum* and *Salmonella Gallinarum*) invades many bird species and loses their ability to move due to the severe toxic effect of bacteria. Among the bacterial diseases that affect migratory birds, digestive disease and wounds have also been documented like Avian botulism, Avian Tuberculosis, Avian chlamydiosis and Tularemia wild birds are severely affected by viral diseases, as they are either transmitters or are susceptible to degradation and death. Among the most dangerous viral diseases can be noted Newcastle disease virus, Avian pneumovirus, Egg drop syndrome virus and Duck plague virus (15).

4.3. Demographic Changes

This factor is more dangerous than the two mentioned above because the different circumstances that the two countries went through led to a severe demographic change. The increasing process of establishing the buildings in villages and countryside has negatively affected the migration of birds,

which in turn changed migration paths and went to different places of the world, which reduced the number and types of birds in the two countries.

4.4. Unfair Hunting Methods (Overhunting)

This factor is one of the most dangerous factors that threaten migratory birds at all. This phenomenon cannot be controlled through the laws governing bird hunting. Despite the relentless pursuit of eliminating this phenomenon, all efforts cannot be crowned with 100% success, but this phenomenon can be minimized as much as possible. From time to time, this phenomenon creates new methods of hunting wild birds. These methods are characterized by hunting the largest number of birds possible in ways that are quite oppressive. In this scenario, the fowlers resort to areas far from government control and practice the hobby. Perhaps the most targeted wild birds within this method of overhunting are the ducks and geese. Perhaps the most prominent method used in this type of hunting is the use of large trawls and the use of weapons that have a great impact on birds.

Recently, a method with a stronger impact in hunting has emerged, which is the establishment of artificial water bodies to lure wild birds to come to and hunt in very large quantities. This technique is applied to waterfowl.

Illegal hunting causes great harm to the wildlife of birds, as it leads to a significant reduction in the number of birds, as it forces the birds to change their migratory paths to other places, and in the end, the biodiversity in the region will be affected in terms of type and quantity.

Conclusion

The biodiversity of migratory wild birds in both Iraq and Syria has been affected by several factors that ultimately led to the classification of some species within the contexts of globally threatened with extinction and conservation concern. On the other hand, the different conditions in the last twenty years led to a decrease in the numbers and types of wild birds coming to the two countries despite all the laws governing that concerning hunting and preserving bird biodiversity.

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