

MISCELLANEOUS PUBLICATIONS  
MUSEUM OF ZOOLOGY, THE UNIVERSITY OF MICHIGAN NO. 172

**The Birds of  
the Egyptian Western Desert**

by

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Ann Arbor  
MUSEUM OF ZOOLOGY, THE UNIVERSITY OF MICHIGAN  
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## ABSTRACT

*Goodman, Steven M., Peter L. Meininger and Wim C. Mullié 1986. The Birds of the Egyptian Western Desert. Misc. Publ. Mus. Zool. Univ. Mich., 172:1-91, figs. 1-10.* Information is reviewed for nine separate oases or massifs in Egypt's Western Desert, an area which is poorly known ornithologically. After a brief description and review of ornithological work conducted in each region, an annotated summary of the avifauna is given. A total of 242 species have been recorded in the area, and of these, six are former nesting species, 14 are doubtful or unsubstantiated, and 47 are extant breeding species. A zoogeographical comparison is made of breeding species inhabiting desert regions of north-central and northeastern Africa and central Arabia. The Red Sea does not act as a barrier to the dispersal of desert birds between northeastern Africa and the Arabian Peninsula. Desert reclamation projects have resulted in the creation of new habitats which appear to be related to patterns of colonization.

*Key words: Egyptian birds, Western Desert, distribution, zoogeography.*

## CONTENTS

	PAGE
INTRODUCTION.....	1
SYSTEMATIC ARRANGEMENT.....	2
DESCRIPTIONS OF OASES.....	3
REVIEW OF ORNITHOLOGICAL WORK IN THE WESTERN DESERT....	18
ANNOTATED LIST OF SPECIES.....	23
DISCUSSION.....	76
Zoogeography.....	76
Island Biogeography Analysis.....	82
Recent Geological History of the Area.....	83
SUMMARY.....	84
ACKNOWLEDGMENTS.....	85
LITERATURE CITED.....	86
APPENDIX I: Gazetteer of Western Desert localities mentioned in text.....	90

## ILLUSTRATIONS

FIGURE		PAGE
1	Map of the northeastern corner of Africa.....	6
2	Map of Wadi Natroun .....	7
3	Salt marsh, Wadi Natroun .....	8
4	Map of Siwa Oasis and Qattara Depression.....	10
5	Map of Bahariya, Farafra, Dakhla and Kharga oases (El Wadi el Gedeed).....	12
6	Bawiti, Bahariya Oasis .....	13
7	Descent into Kharga Depression .....	14
8	<i>Sebakha</i> , Kharga Oasis .....	15
9	Cultivated land, Kharga Oasis .....	16
10	Map of Gilf el Kebir and Gebel Uweinat .....	17

## TABLES

TABLE		PAGE
1	Climatic conditions in several Western Desert oases .....	4
2	Division of observations and records for each area by month .....	19
3	Breeding birds of the Western Desert.....	77
4	Distributional patterns of breeding birds of the central and eastern Sahara and central Arabia.....	78

## INTRODUCTION

In the autumn of every year millions of birds, representing large proportions of populations that breed in the western and central Palearctic region, migrate across the Sahara Desert to their wintering grounds in central and southern Africa. The species range in size from passerines weighing less than 10 gm to large herons, storks, and birds of prey. Much ornithological research has been devoted to the study of trans-Saharan bird migration; this earlier work has focused on the physiological requirements for the journey, identification of migratory-wave patterns, and route and temporal tenacity of individuals and populations.

Within Egypt, three relatively direct migratory paths exist for Palearctic species that breed in Eastern Europe (between 20° and 35° E) and winter south of the Sahara. Once these birds enter Egypt, either by flying directly across the Mediterranean Sea or via the Levant, they can cross the eastern Sahara Desert on a broad front, or move through the Nile Valley, or along the Gulf of Suez and Red Sea coasts. In this paper we summarize data from museum specimens, published literature, our own observations, and unpublished field notes on the bird species migrating through, wintering, and breeding in the Egyptian portion of the eastern Sahara Desert generally referred to as the Egyptian Western Desert.

The Egyptian Western Desert (hereafter, Western Desert), also known as the Libyan Desert, stretches west from the Nile Valley to the Libyan political border (25° E), and north from the Sudanese political border (22° N) to the coastal fringe of the Mediterranean Sea (Fig. 1). This massive, mostly barren region forms the eastern portion of the Sahara Desert and occupies approximately 681,000 km<sup>2</sup>, or about two-thirds of the total land area of Egypt. The Western Desert is primarily a flat plateau of sedimentary rock, occasionally broken by depressions containing oases and by massive rock outcrops.

The principal oases of this region and those dealt with in this paper include: Wadi Natroun, Qattara Depression, Siwa, Bahariya, Farafra, Dakhla and Kharga oases (Fig. 1). In the extreme southwest are the rocky peaks of Gebel Uweinat and the expansive plateau of Gilf el Kebir from which information is also summarized. The Faiyum, Wadi el Ruwayan (Rayaan) and Wadi Kurkur have not been included in this review, for the composition of the resident species and the patterns of migrants passing through these localities are very similar to the Nile Valley, to which they are directly adjacent, rather than the Western Desert. The term New Valley (el Wadi el Gedeed) is variously used in the literature to designate reclamation projects in the Kharga and Dakhla oases and, at times, these oases plus Siwa, Bahariya and Farafra. We document the seasonal occurrence of breeding and nonbreeding birds at these nine sites in the Western Desert.

The late R. E. Moreau made a paramount contribution to the subject of Palearctic-Afrotropical bird migration. Since Moreau's (1961) paper, "Problems of Mediterranean-Saharan Migration," and his (1972) book, "The Palearctic-African Bird Migration Systems," were published, much

ornithological work in the Egyptian Western Desert has yielded new information on the species occurring in the region. Further, there has never been a thorough compilation of the birds of the region. The purposes of this paper are to summarize our present knowledge of the species of birds which have been recorded in the Western Desert, and to analyze the zoogeographic affinities of this avifauna in relation to other regional desert areas.

### SYSTEMATIC ARRANGEMENT

We have generally followed the generic and specific arrangement and English vernacular names of Voous (1973, 1977), except for a few deviations which are explicitly noted. The subspecific designations are based solely on specimens we have examined and, unless otherwise stated, follow Vaurie (1959, 1965). These trinomial designations, particularly for birds that breed in the Western Desert, are not inclusive for all of the oases; they include only those from which we have critically identified material. Museum acronyms used in text are defined in the Acknowledgment section. In several cases, no or insufficient material is available of breeding birds from some oases, to work out the patterns of geographical variation and subspecific relationships. Further, many Palearctic species cross the Sahara on migration. For some, more than one subspecies passes over the Western Desert, but our material may only contain a single recognizable form. It must be emphasized that the use of subspecies in this work is meant to illustrate patterns of geographical variation in resident populations and to help approximate the breeding ranges of migrants passing through the area. The sedentary populations of breeding birds in separated Western Desert oases are unique natural experiments in gene flow, patterns of geographical variation and rates of differentiation. We hope that this paper will provide the general groundwork for such studies.

#### Abbreviations for the status of each species in the whole of the Western Desert:

RB	Resident breeder.
MB	Migrant breeder.
CB	Casual breeder.
FB	Former breeder.
PV	Passage visitor.
WV	Winter visitor.
AV	Accidental or casual visitor $\leq 3$ records and likely to be rare in the Western Desert or accidental in Egypt as a whole.
( )	Variable or irregular.
[ ]	Entry in brackets: occurrence not authenticated.

#### Abbreviations used for Oases or Depressions:

WN	Wadi Natroun.
Si	Siwa Oasis.
Qa	Qattara Depression.
Ba	Bahariya Oasis.
Fa	Farafra Oasis.
Da	Dakhla Oasis.
Kh	Kharga Oasis.
GK	Gilf el Kebir.
GU	Gebel Uweinat.



**Definitions of Arabic Geographical or Habitat Terms:**

Ain	spring.
Bir	well or sometimes spring and cistern.
Gebel	large hill or mountain.
Hamada	rocky desert covered with non-smooth pebbles.
Karkur	winding gorge.
Minqar	cliff.
Qaret	small hill or hillock.
Sebakha	salt pan.
Serir	undulating desert covered with small, wind polished pebbles.
Wadi	valley or dry stream bed.

**DESCRIPTIONS OF OASES**

All references to elevation are relative to sea-level. Information on climatic conditions in five of the oases is summarized in Table 1. The binomial plant names follow Täckholm (1974).

**WADI NATROUN (WN)**

Wadi Natroun is a narrow depression located approximately 90 km south of Alexandria and 110 km northwest of Cairo (Figs. 1 and 2). It is oriented in a northwest-southeast direction and lies between 30°17'-30°38' N and 30°02'-30°30' E. The width varies between 7-10 km and the length is about 50 km. The total area is approximately 250 km<sup>2</sup>. The depression is surrounded by a terrace of Quaternary lake and alluvial deposits underlain by older sedimentary rock (Abdel Salam, 1966).

The following description is based on our own field work and a few published sources. Toward the center of the depression are a series of salt-water lakes aligned parallel to its main axis. Along the edges, the ground tends to be sumpy and encrusted with salts (Fig. 3), and the dominant vegetation includes *Scirpus litoralis*, *Juncus acutus*, *Panicum repens*, *Fuirena pubescens*, *Samolus valerandi*, *Cyperus* ssp., *Phragmites australis* and *Typha* ssp. (El Hadidi, 1971; Zahran and Girgis, 1972). The only known wild extant stand of papyrus (*Cyperus papyrus*) in Egypt is along the edge of the lake at Umm Risha (El Hadidi, 1971).

Generally adjacent to the lakes, but on a higher level, are the cultivated lands. These areas are irrigated by water pumped from aquifers. The main cultivated plants are date palm (*Phoenix dactylifera*), olives, citrus, and clover.

**SIWA OASIS (SI)**

The Siwa Oasis lies approximately 300 km south of the Mediterranean Sea coast at Sidi Barrani and just east of the Libyan political border (Fig. 4). It is orientated in an east-west direction between 29°06'-29°21' N and 25°16'-26°08' E. The maximum width is 28 km and length 50 km. The total

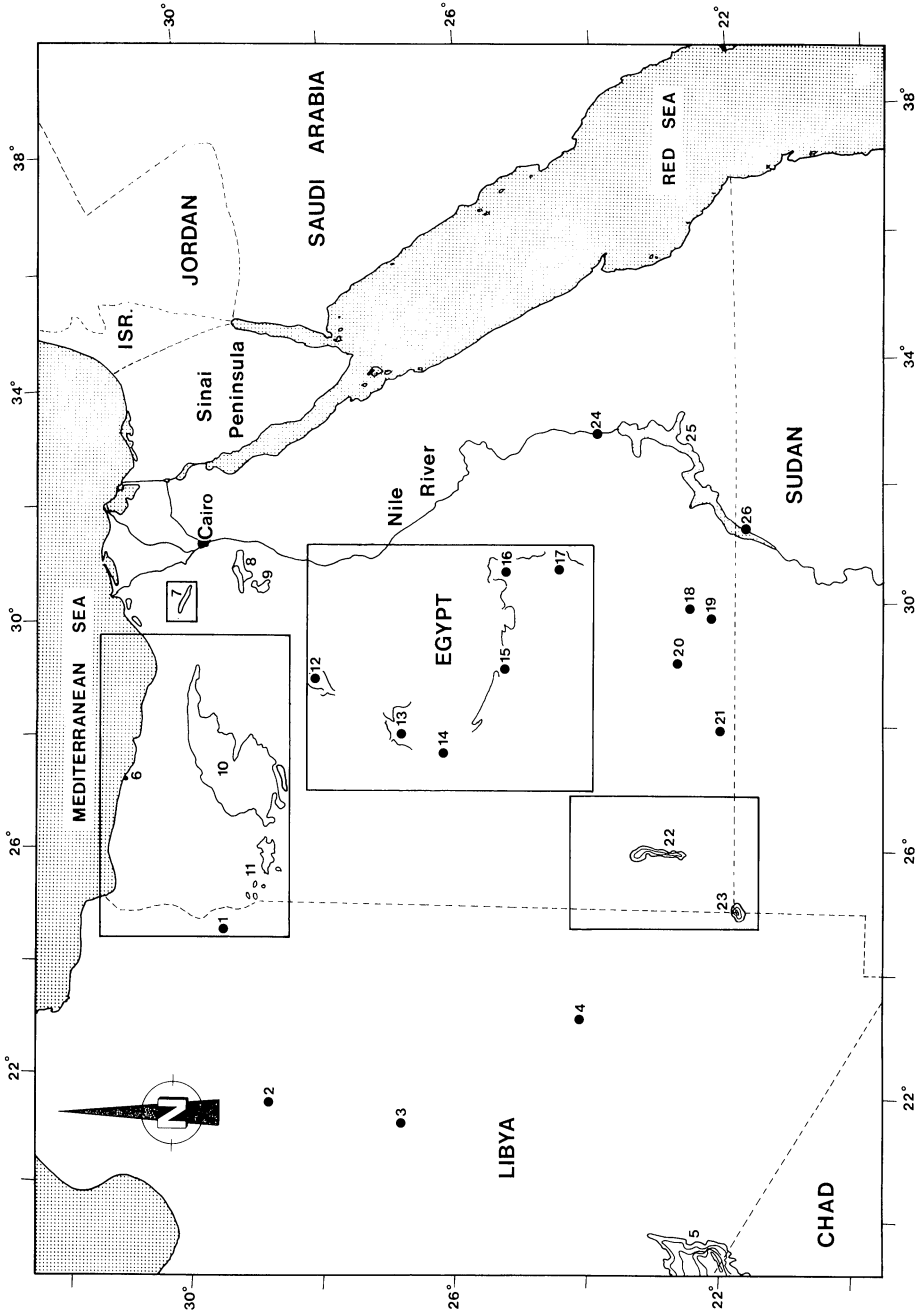
TABLE I  
CLIMATIC CONDITIONS IN SEVERAL WESTERN DESERT OASES

Climatic Variable	Kharga <sup>1</sup> 1926–1945	Dakhla <sup>1</sup> 1905–1915 1931–1945	Bahariya <sup>1</sup> 1931–1945	Siwa <sup>1</sup> 1912–1915 1920–1945	Wadi Natroun <sup>2</sup> 1946–1955
Temperature (in °C.)					
Mean for year					
Annual	23.6	22.8	20.9	20.7	22.8
Daily Maximum	32.3	31.9	29.4	29.9	
Daily Minimum	15.9	15.0	13.4	12.7	
Mean for January (generally coldest month)					
Daily	13.1	12.3	11.3	10.7	
Maximum	22.1	21.5	19.7	19.7	20.6
Minimum	6.0	4.8	4.6	3.6	7.2
Mean for July (generally hottest month)					
Daily	31.4	30.8	27.8	28.9	
Maximum	39.5	39.2	36.6	38.1	36.4
Minimum	23.4	23.1	20.1	20.5	20.6
Record Maximum	48.0	49.4	48.6	49.0	46.7
	16 May	18 June	13 June	26 June	July
	1927	1933	1933	1940	
Record Minimum	-2.1	-4.0	-3.5	-4.5	1.0
	9 February	9 February	12 January	4 January	January
	1932	1932	1942	1945	and February

Rainfall (in mm)					
Annual Total	0	1		10	55.1
Evaporation (mm/day)					
Annual Mean	18.4	13.5	10.4	9.5	
January Mean	9.5	6.8	5.8	4.8	
June Mean	25.1	20.0	15.4	14.2	
Relative Humidity					
Annual Mean	46%	40%	53%	61%	54%
Range	60% December – 38% May–August	53% December – 30% July–August	63% December – 42% May	70% December – 52% May	62% December – 44% May

<sup>1</sup>Based on Climatological Normals for Egypt (1950).

<sup>2</sup>Taken from Abdel Salam (1966).



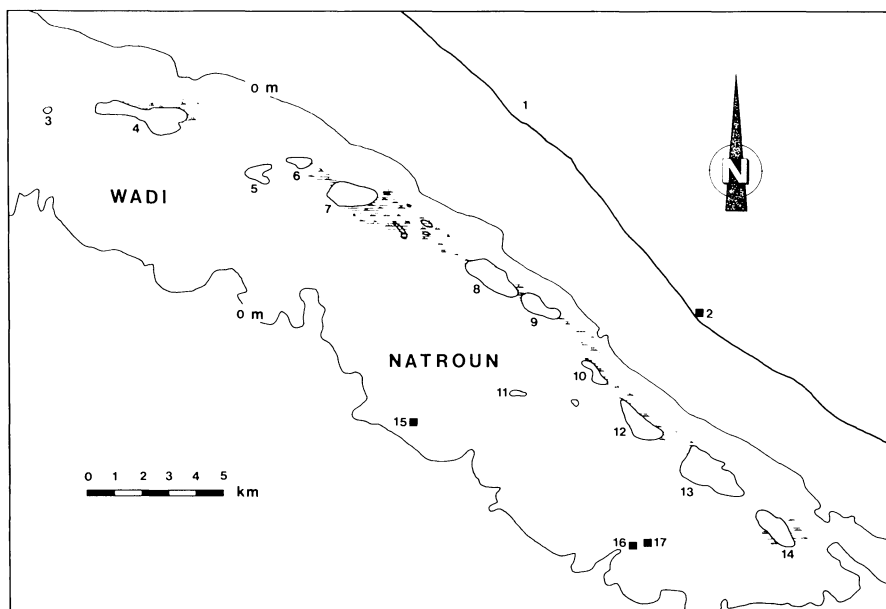


FIG. 2. Map of Wadi Natroun. Numbers indicate specific localities. 1 Cairo-Alexandria desert road, 2 Wadi Natroun resthouse, 3 Lake Affuna, 4 Lake Gaar, 5 Lake el Sebakha, 6 Lake Khadra, 7 Lake el Brida, 8 Lake el Zugm, 9 Lake Hamra, 10 Lake Abu Gebara, 11 Lake Muluk, 12 Lake Ruzunia, 13 Lake Umm Risha, 14 Lake Fazda, 15 Deir Baramus, 16 Deir Surian, 17 Deir Amba Bishoi.

surface area is about 1100 km<sup>2</sup>. To the north of the oasis is a limestone plateau rising to +200 m, to the south a similar plateau reaching +500 m, to the west the edge of the Great Sand Sea and to the east the Qattara Depression. The deepest parts of the Siwa depression lie at -30 m.

Compared to the Kharga and Dakhla oases (see below), little desert reclamation work has been conducted in the Siwa Oasis. The oasis, however, has considerable ground water with about 18 lakes and 150 artesian wells (Zahran, 1972). The major lakes, which are generally brackish, include Aghurmi, El Zeitun, Maragi and Khamisah.

The major ecological survey work in the oasis was conducted by Omer-Cooper (1947) and Zahran (1972), from which the following descriptions of the local communities are primarily derived.

FIG. 1. Map of the northeast corner of Africa. Numbers indicate localities mentioned in text. Blocks in portions of map are illustrated in greater detail in following figures. 1 Jaghbug, 2 Jalo, 3 Serir, 4 Kufra, 5 Tibesti, 6 Mersa Matruh, 7 Wadi Natroun, 8 Faiyum, 9 Wadi el Ruwayan, 10 Qattara Depression, 11 Siwa, 12 Bahariya, 13 Farafra, 14 Abu Minqar, 15 Dakhla, 16 Kharga, 17 Baris, 18 Bir Kiseiba, 19 Bir el Shab, 20 Bir Terfawi, 21 Bir Misaha, 22 Gilf el Kebir, 23 Gebel Uweinat, 24 Aswan, 25 Lake Nasser, 26 Wadi Halfa.



FIG. 3. Salt Marsh, Wadi Natroun. The dominant vegetation in foreground is *Juncus* sp. In the background is a salt-water lake, behind which is desert.

- 1) Sand Formations—Large sand plains occur between the salt marshes and the bases of the surrounding limestone plateau. The predominant plant in these areas is *Alhagi maurorum*. *Nitraria retusa* and *Tamarix nilotica* occur to a lesser extent.
- 2) Aquatic Habitats—These can be separated into two distinct types, reed swamps and salt marshes. The reed swamps are characterized by growths of *Typha domingensis* and *Phragmites australis*, and the salt marshes are dominated by *Arthrocnemon glaucum*, *Juncus rigidis*, *Alhagi maurorum*, *Cladium mariscus*, and *Cressa cretica*. Near the edges of the marshes and lakes there are large areas of salt pan or *sebakha*.
- 3) Agricultural Areas—Salih (1970) noted over 150,000 date palms in the oasis, which is the major cultivated crop, and thousands of olive trees. A wide assortment of other agricultural plants also grow in the oasis (Forbes, 1921).

#### QATTARA DEPRESSION (QA)

The northern edge of the Qattara Depression is located approximately 75 km south of the Mediterranean Sea coast between the cities of Mersa Matruh and El Alamein, and the western edge is just east of the Siwa Oasis (Fig. 4). The depression lies between 28°55'-30°28' N and 26°24'-28°55' E.

The greatest length is 200 km and width is 145 km. The total area exceeds 19,500 km<sup>2</sup>, making it one of the largest depressions in the world. Over two-thirds of the floor is below -50 m and the deepest point, near Qara, sinks to -134 m.

The only major ecological survey that we are aware of for the Qattara Depression was conducted by Girgis et al. (1971) at El Moghra, a small, uninhabited oasis in the extreme northeast corner. In the center of El Moghra is a small brackish lake that is bordered by *sebakha*. Girgis et al. (1971) distinguished two types of terrestrial habitats in the oasis, saline flats and sand formations. The saline flats are dominated by *Juncus rigidus*, which forms dense tussocks with up to 90–100% coverage. Associated with these rushes are isolated plants or patches of *Phragmites australis*, *Inula crithmoides*, *Tamarix nilotica*, *Arthrocnemon glaucum* and semi-wild date palms. Three plants dominate the sand formation: *Zygophyllum album*, *Nitraria retusa* and *Tamarix nilotica*.

Omer-Cooper visited Qara between 2 and 5 July 1935 and (1947, p. 31) considered it “a miserable oasis the water being brackish and all the fruit was poor.” He further noted that heavy dews fell nightly and mists were present over gardens in the morning.

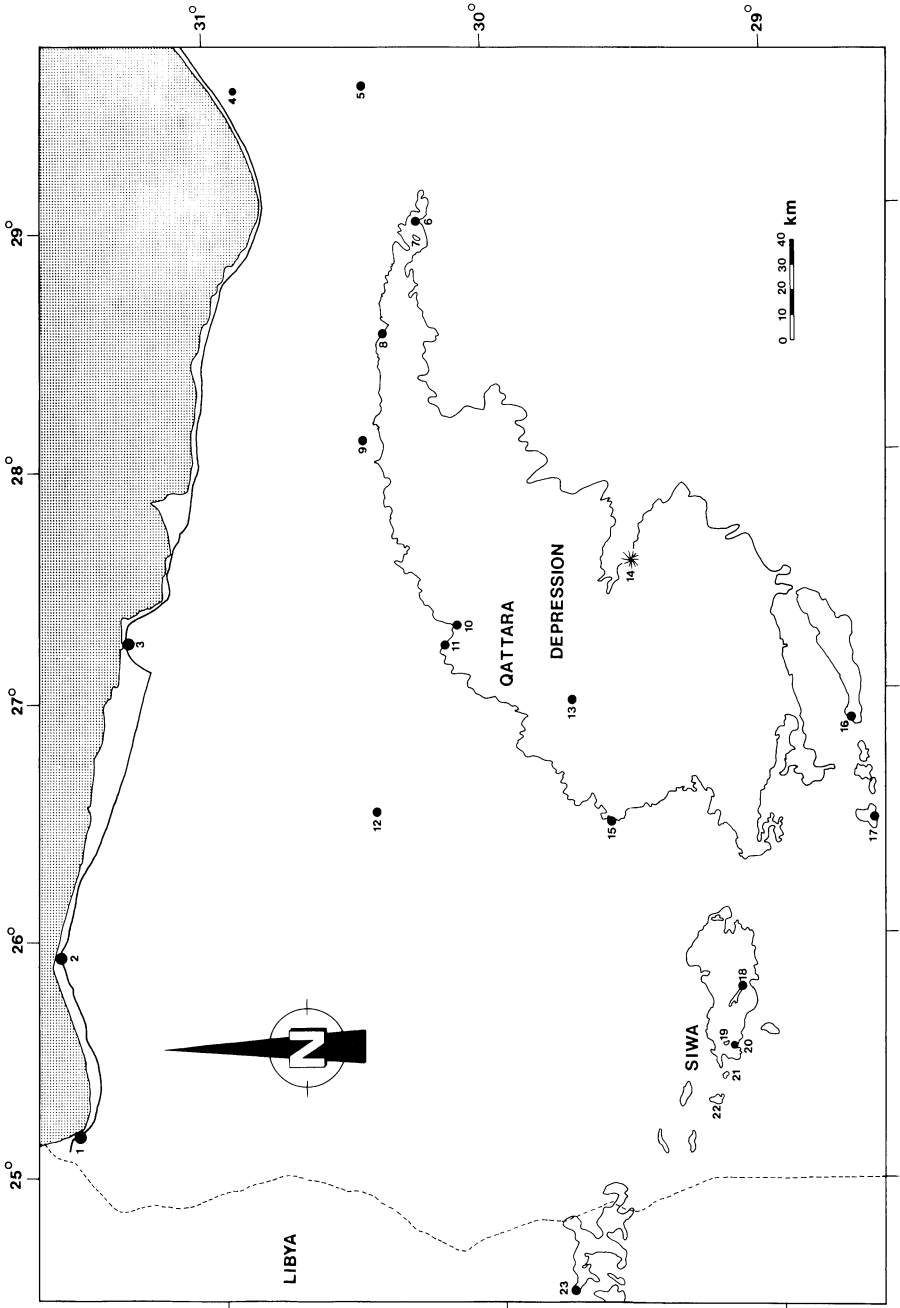
#### BAHARIYA OASIS (BA)

The Bahariya Oasis lies approximately 180 km west of the Nile Valley at El Minya and between 27°48'-28°30' N and 28°35'-29°10' E (Fig. 5). The greatest length is about 95 km and width is 40 km. The total area approaches 1,800 km<sup>2</sup>. The depression is bounded by an escarpment on all sides that rises sharply to over 150 m above the floor. The lowest point is near El Qasr at +133 m.

As in the other Western Desert oases, the agricultural lands are completely dependent upon irrigation for water. The principal crop in the oasis is dates (Fakhry, 1974) and the palm groves are noticeably dense, particularly along the edges of irrigation canals or ditches (Fig. 6). The native vegetation is presumably similar to the Kharga Oasis (see below). In the northernmost portion of the area are the El Gedida iron ore mines. The land near several buildings of the mine complex and homes of the employees has been irrigated and is agriculturally productive.

#### FARAFRA OASIS (FA)

The Farafra Oasis is positioned approximately 300 km west of Asyut and 175 km southwest of the Bahariya Oasis (Fig. 5). It is oblong to triangular in shape, orientated in a north-south direction and lies between 26°10'-27°40' N and 27°48'-28°50' E. The maximum width is 95 km and length 120 km. The depression is bordered by high escarpments to the east and west, a low escarpment to the north, and is open to the south. The lowest point is +26 m at Ain el Wadi.





There is very little ground water, and the few functional wells and springs are situated near Qasr Farafra. Although this depression is one of the largest in the Western Desert, the lack of ground water accounts for the relatively small amount of arable land and low human populations in the oasis.

The major agricultural crop is dates, followed by olives. The diversity of fruits and vegetables grown near Qasr Farafra is impressive; on 27 April 1981 we counted over 32 different crops being grown on a single family plot. The native vegetation is presumably similar to the Kharga Oasis (see below).

#### KHARGA OASIS (KH)

The Kharga Oasis lies in a depression approximately 200 km west of the Nile Valley opposite Luxor and Idfu, and is orientated in a north-south direction between 24°15'-25°40' N and 30°29'-30°47' E (Fig. 5). The width of the oasis varies from 20 km in the north to 80 km in the south and the greatest length is about 185 km. The complete surface area is approximately 3,000 km<sup>2</sup>. The depression itself is bordered on all sides by a steep escarpment, except to the south, and descends to a depth of 350 to 400 m below the Western Desert plateau (Fig. 7). The lowest spot is -18 m at Qasr Zayan.

The oasis has received considerable attention concerning its potential of reclaiming desert areas for agriculture. Below the surface of the desert lies a large aquifer. This water is brought to the surface by artesian pressure or by deep well drilling (sometimes over 500 m) and pumping, and has been utilized in massive irrigation projects (Paver and Pretorius, 1954). These projects have had a profound effect on the local ecology, including the composition of plant and animal communities, and the establishment of villages and cities.

Migahid et al. (1960) recognized six different habitats in the oasis:

- 1) Sand Plains—These areas are flat, generally barren expanses of siliceous sand. The vegetation is typically confined to the stable sand sheets and is generally composed of *Tamarix* spp. and *Alhagi maurorum*, with the xerophytes *Calotropis procera* and *Hyoscyamus muticus* on the elevated plains.
- 2) Sand Dunes—Within the sand plains and in outlying areas, large sand dunes occur. Some are mounds of mobile, unstable sand of the Barchan dune type (Embabi, 1970–71). These aeolian-formed dunes are pushed across the desert in the direction of the prevailing wind at a rate of up to 10–20 m/year (Beadnell, 1909; Embabi, 1970–71). On the

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FIG. 4. Map of Siwa and Qattara Depression. Numbers indicate specific localities. 1 Salum, 2 Sidi Barrani, 3 Mersa Matruh, 4 Burg el Arab, 5 Nahlet el Balah, 6 Bir Nahid, 7 El Moghra, 8 Minqar Abu Dweiss, 9 Qaret el Tarfaya, 10 Bir Qattara, 11 Ras el Qattara, 12 Bir Bouweib, 13 Qaneitra Crossing, 14 Cicely Hill, 15 Qara, 16 Sitra, 17 El Bahrein, 18 El Zeitum, 19 Aghurmi Lake, 20 Temple of Jupiter Amun, 21 Khamisah, 22 Maragi, 23 Jaghbub.

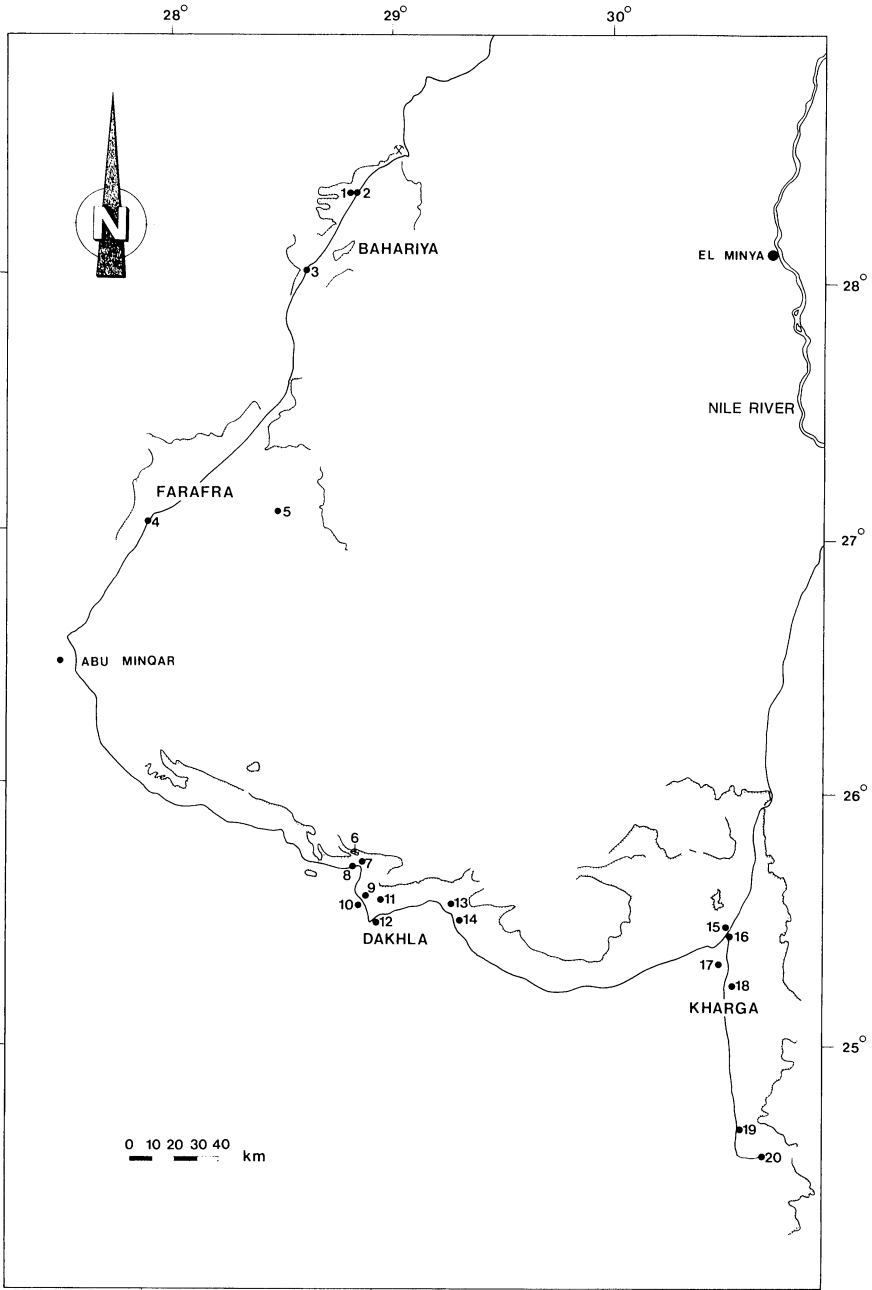


FIG. 5. Map of Bahariya, Farafra, Dakhla and Kharga (El Wadi el Gedeed). Numbers indicate specific localities. 1 Bawati, 2 El Qasr, 3 El Heiz, 4 Qasr Farafra, 5 Karawein, 6 Dinaria, 7 Umar Seraya, 8 El Qasr, 9 Rashida, 10 El Qalamun, 11 El Aweina, 12 Mut, 13 Ezbet Bashindi, 14 Tenida, 15 Hibis Temple, 16 El Kharga, 17 Ginah, 18 Qasr Zayan, 19 Baris, 20 Dush. Hatching indicates escarpments.



FIG. 6. Bawiti, Bahariya Oasis. Dense date palm (*Phoenix dactylifera*) grove. Note irrigation canal just below rise in foreground.

older, more stable dunes, *Tamarix* spp. and *Alhagi maurorum* grow. In the low-lying basins, between two encroaching dunes, are somewhat protected areas in which *Cressa cretica*, *Alhagi maurorum* and *Stipagrostis scoparia* are found. Windbreaks have proven somewhat successful in controlling the movements of dunes and long lanes of *Eucalyptus*, *Lagonychium*, *Saccharum*, *Tamarisk* and *Acacia* have been planted for this purpose.

- 3) Waste Lands—These areas consist of formerly cultivated lands that are fallow or no longer irrigated. Such tracts may have been abandoned because water was no longer available for irrigation or the salinity level of the soil became too high to grow agricultural crops. When lands with poor drainage are irrigated with brackish water, salt residues are deposited and accumulate. In some areas the soil becomes so encrusted that *sebakha* forms (Fig. 8). The plant cover in some of the less saline waste lands reaches up to 60% and is predominantly composed of *Zygophyllum* ssp., *Hyoscyamus muticus*, *Sporobolus spicatus*, *Astralegus trigonus*, and in wetter areas *Cyperus laevigatus*.
- 4) Cultivated Lands—All currently worked agricultural or cultivated lands are in close proximity to wells from which water is obtained for irrigation. Some water is communicated through ditches and tile troughs to scattered points in the oasis (Fig. 9). The date palm is the



FIG. 7. Descent into Kharga Depression. Escarpment in the background drops approximately 350 m. below the plateau. Note complete lack of vegetation.

single most important crop. A large assortment of domestic plants are grown.

- 5) Salt Marshes—The evaporation rate is extremely high and salt marshes form when poorly drained soils are continuously inundated with brackish water. Soluble salt levels may exceed 60%, and in such areas vegetation is very sparse if present at all.
- 6) Aquatic Habitats—In the well pools, irrigation canals, and often in the spill-over reservoirs there is a great diversity of different types of algae and higher plants.

#### DAKHLA OASIS (DA)

The Dakhla Oasis lies approximately 300 km west of the Nile Valley at Luxor and 120 km west of the Kharga Oasis (Fig. 5). It is orientated in an east-west direction between 25°28'-25°44' N and 28°48'-29°21' E. The maximum length is 55 km and the width varies from 10–20 km. North of the



FIG. 8. *Sebakha*, Kharga Oasis. Former agricultural land that was irrigated with brackish water. Salt residues accumulated in the soil. Note standing pools of water and salt encrusted ground.

oasis lies a sharp escarpment, east and west low sand dunes and south a completely open area. The lowest point is +100 m at Tenida.

The habitats recognized by Migahid et al. (1960) in the Kharga Oasis are very similar to those in the Dakhla Oasis:

- 1) Sand Plains—Sand sheets are particularly common in the vicinity of El Qasr. The same basic plant communities are found here as at Kharga.
- 2) Sand Dunes—Large sand sheets with migrating aeolian dunes are found near El Qasr and El Qalamun.
- 3) Waste Lands—Near Balat a large tract of formerly fertile agricultural land has become so encrusted with salts, that it is unproductive, although crops are occasionally planted. On the whole, the non-agricultural flora of this habitat is similar to Kharga.
- 4) Cultivated Lands—The major fruit crops grown in Dakhla include oranges, dates, olives, figs, bananas and *Opuntia* cactus. In the winter, wheat, barley, and clover are grown and in the summer, maize and rice.
- 5) Salt Marshes—Such habitats are widely scattered throughout the oasis. Extensive salt marshes are located near Bir Talata, Pumping Station Four, and El Qalamun. These marshes often have a rich algal flora.
- 6) Aquatic Habitats—Same as Kharga.



FIG. 9. Cultivated land, Kharga Oasis. Field of partially harvested wheat. Note series of small dikes which act as basins when field is flooded. An irrigation ditch is visible in the immediate foreground.

#### GILF EL KEBIR (GK)

Gilf el Kebir is a large sandstone plateau lying northeast of Gebel Uweinat between  $22^{\circ}45'-24^{\circ}40'$  N and  $24^{\circ}55'-26^{\circ}29'$  E (Fig. 10). It extends about 240 km in a north-south direction and the maximum width is 80 km. This isolated tract of high ground is divided into two distinct parts, the northern and southern plateaus. The highest point reaches about +1000 m.

This region has been explored on few occasions. It is completely waterless, except for one reputed well near Abd el Malik, and virtually surrounded by inhospitable, barren sand dunes (Bagnold, 1939). In 1938, an expedition to the area found much live vegetation. Misonne (1974) visited the wadis of the northern plateau in January 1969 and found the vegetation almost entirely dead except for a few specimens of *Acacia* and *Maerua*.

#### GEBEL UWEINAT (GU)

Gebel Uweinat lies between  $21^{\circ}47'-22^{\circ}06'$  N and  $24^{\circ}47'-25^{\circ}17'$  E (Fig. 10). The massif rises to 1906 m and is approximately 1,500 km<sup>2</sup> in total area. Fanning out from the main mountain plateau is a series of wadis which end in alluvial plains (Osborn and Krombein, 1969). At the base of the moun-

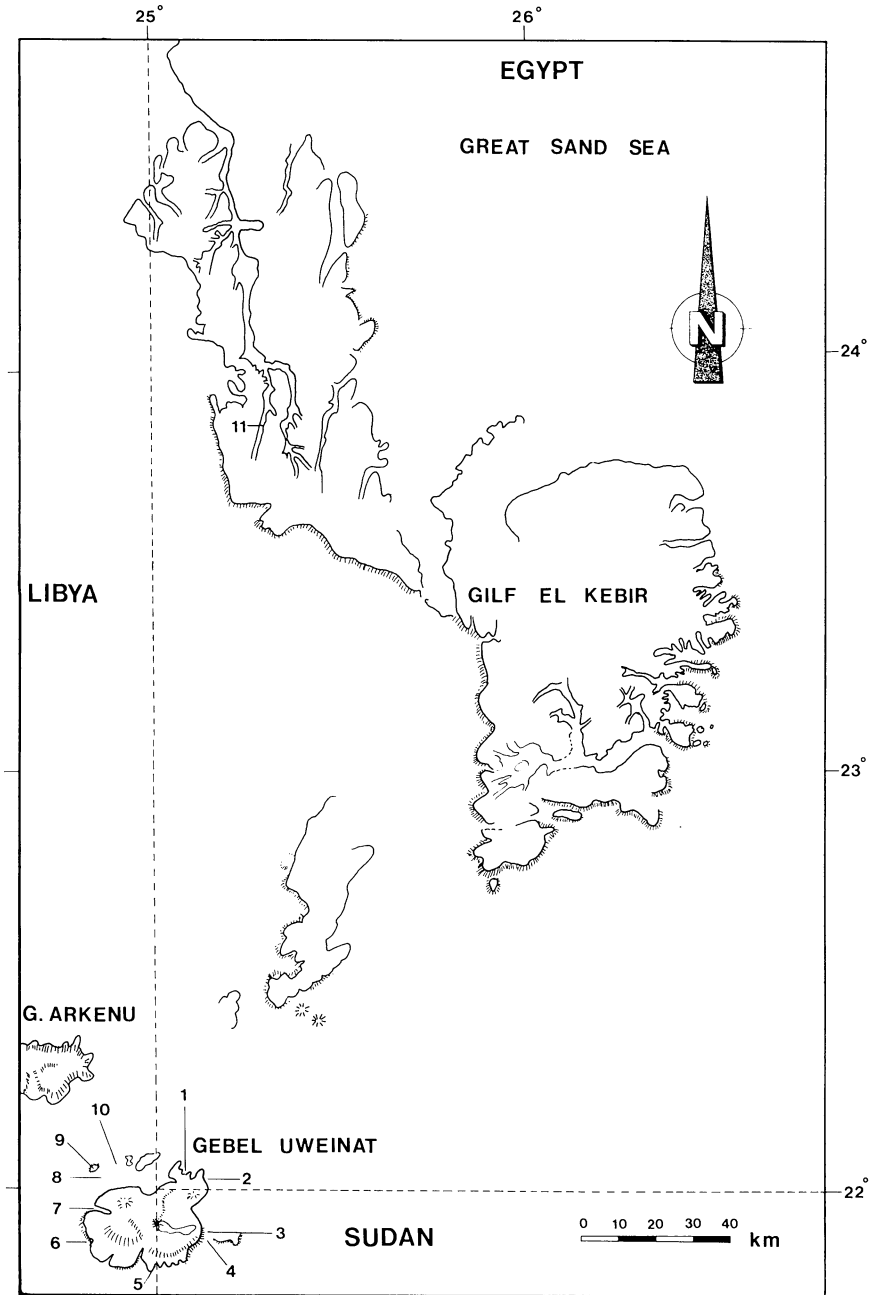


FIG. 10. Map of Gilf el Kebir and Gebel Uweinat. Numbers indicate specific localities. 1 Wadi Hanzul, 2 Karkur Tahl, 3 Ain el Brins, 4 Karkur Murr, 5 Wadi Waddan, 6 Ain Zuweina, 7 Karkur Ibrahim, 8 Karkur Idriss, 9 Isolotto, 10 Karkur Hamid, 11 Abd el Malik. Hatching indicates escarpments.

tain and in nearby winding gorges (*karkur*) are a number of rock basins filled with water. The water is not from artesian sources, as is generally true in the other Western Desert oases, but rather from the run-off of periodic rain showers. Heavy rains are reported to fall at long intervals (Peel, 1939). The flora has been described by Léonard (1969), Osborn and Krombein (1969) and Boulos (1982).

Between 15 and 18 April 1961, Jany (1963) recorded the air temperature in the shade; the minimum temperature ranged from 20.5–25.0°C (average 22.1°C) and maximum from 30.0–31.8°C (average 30.3°C).

One unique feature of the area is the presence of over 4000 known rock paintings and engravings dating from the Neolithic (6000–3300 B.C.). Several well preserved scenes depict animals which are now extinct or extremely rare in the area, such as Ostrich. See van Noten (1978) for documentation of this rock art and photographs of modern habitats, and McHugh (1982) for a history of the exploration of the region.

## REVIEW OF ORNITHOLOGICAL WORK IN THE WESTERN DESERT

Information reported herein on the birds of this region is based on published records, museum specimens and unpublished field notes. As can only be expected with an area as remote and desolate as the Western Desert, not all the oases have been visited with the same frequency and few records are available during the summer months (Table 2). The following review summarizes ornithological work conducted in each oasis.

### WADI NATROUN

The first report on the birds of Wadi Natroun was written by Loat (1905). He visited the area from 21 January to 24 February 1903 and his specimens are mostly housed in the BMNH. The Hon. N. C. Rothschild and F. R. Henley also made collections in the area during January and February 1903 and May 1904. The information they gathered was never formally published and their collection was divided between the "Medical School, Cairo" (Loat, 1905, p. 455), the GZM, and the BMNH. We have examined their specimens in the latter two museums. W. Innes Bey collected a few birds in mid-June 1903 which are housed in the GZM.

In the early twentieth century, Nicoll (1912) worked extensively in Wadi Natroun and was able to obtain information and specimens from M. Balboni, who was employed by a local salt company. Nicoll's main visits were from 18 to 27 March 1910 and from 22 to 28 November 1911. He continued to collect in the area, often with S. S. Flower, at least through April 1923. J. L. Bonhote visited the area in early April 1914 and September 1916 and collected a few birds which are housed in the BMNH and GZM. W. Raw stayed in Wadi Natroun from mid- to late-May 1918 and published his



TABLE 2  
DIVISION OF OBSERVATIONS AND RECORDS FOR EACH AREA BY MONTH<sup>1</sup>

Oasis	Month											
	J	F	M	A	M	J	J	A	S	O	N	D
WN	xxxx	xxxx	xxxx	xxxx	xxxx	oo	x x	xx	oooo	x	xxxx	x
Si	x	xx	xxox	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx			
Qa			xxx	xx				x				x
Ba	x	xxx	xxx	x		xx			x			
Fa			xxx	xx x					x			
Da	xxxx	x	xx	x x				x	x	xxxx	xxxx	xxxx
Kh	x	xx	x	xxx				x	x	x	x	x
GK & GU	xx		ooox	xx						xx	xxxx	xxxx

<sup>1</sup>Each month is divided into four approximately equal parts. x = exact dates known, o = exact dates unknown (e.g. mid-June in Wadi Natroun).

records in a 1921 paper, that also included some post-Nicoll (1912) information collected by Balboni. We have examined in the BMNH and GZM specimens collected by Balboni in Wadi Natroun, which were not mentioned by Nicoll (1912) or Raw (1921). In these two museums there are also birds taken by R. E. Moreau in mid-April 1922 and by R. Meinertzhagen in mid-April 1923.

Maclaren (1944), a British soldier stationed at Amriya, near Alexandria, visited the area on 18 and 24 August, 8 and 28 September, and 6 October 1942. A zoological expedition sponsored by the Natural History Museum, Budapest, passed through Wadi Natroun on 23 November 1957 and the ornithological results were published by Horváth (1959). Specimens housed in the FMNH were collected in the area by field teams from the Medical Zoology Department, U.S. Naval Medical Research Unit No. 3 (NAMRU-3), under the direction of Dr. Harry Hoogstraal, on 7 July 1953, on 5 May, 28 August and 5 November 1958, and on 25 July 1962. Kattinger (1970) made a short visit to Wadi Natroun on 17 August 1966. A Dutch ornithological expedition carried out a survey of waterbirds on 17 January 1979 (Meininger et al., 1979).

The following people have kindly sent unpublished notes on the birds observed in the area on the date(s) noted. The dates of our own visits are also given:

J. C. Cowley (JCC)—27 to 28 May 1950. Steven M. Goodman (SMG)—16 to 18 January 1985, 11 February 1985 and 8 March 1985. Steven M. Goodman (SMG) and Jürgen Haffer (JH)—2 March 1984. Steven M. Goodman (SMG) and Sherif Tewfik (ST)—7 May 1981. Steven M. Goodman (SMG) and Robert W. Storer (RWS)—27 May 1984. Yossi Leshem (YL)—6 to 8 January 1982. Peter L. Meininger (PLM), Wim C. Mullié (WCM), and Sudhir Vyas (SV)—1 May 1981. T. D. H. Merrie (TDHM)—24 May 1985. Bedros Orchanian (BO)—7 May 1982 and February 1983. Bernd Riedel (BR)—5 February 1983. Hans Riehm (HR)—10 April 1983. Martin

Stelzer (MS)—7 October 1980. Werner Suter (WS)—30 March to 3 April 1981. John Tennent (JT)—26 February 1967. Sudhir Vyas (SV)—late February 1980, March 1980, 25 April 1980 and 1 May 1981. Pim Waldeck (PW)—13 November 1982. Richard Weaving (RW)—11 December 1980. Jörg Wittenberg (JW)—19 March 1982.

#### SIWA

Between 24 and 29 January 1920, R. Meinertzhagen visited the Siwa Oasis and collected specimens which are housed in the BMNH. The original records from this trip were included in a 1921–22 paper, but not all of this information was used in his 1930 book. Moreau (1928) visited the area from 24 to 28 March 1927, during which time he recorded 32 species and gathered information from local inhabitants. Casual observations were made by W. E. Almond in mid-March 1936 and reported in a 1937 paper. From 6 to 13 February 1939, Al Hussaini (1939) observed and collected birds in the oasis.

An expedition from Armstrong College worked in the area between 15 April and 11 September 1935. Although their focus was primarily hydrobiological, ornithological records and collections were obtained. This information was summarized by Moreau (1941) and we have been able to examine most of their specimens in the BMNH. In late March 1964, and early February 1974, expeditions from NAMRU-3 visited the area and collected some birds. This material was deposited in the FMNH, and reviewed by Goodman and Ames (1983). Kiepenheuer and Linsenmair (1965) visited Siwa from 14 to 15 May 1963 and from 19 to 27 September 1963. The material they collected was reported by Steinbacher (1965). The Palearctic Migrant Survey, under the direction of Dr. George E. Watson, obtained specimens in the area on 13 and 14 March 1970, which were deposited in the USNM. See Watson (1971) for a description of this project. Unpublished observations include: Steven M. Goodman (SMG) and Peter L. Meininger (PLM)—8 to 10 May 1985.

#### QATTARA DEPRESSION

Zoologically, the Qattara Depression is one of the least known areas of the Western Desert. In late August 1964, mid-May 1965, mid-December 1967 and mid-May 1975, expeditions from NAMRU-3 visited the area and made collections in the vicinity of El Moghra. P. L. Ames and I. Helmy visited the depression from 4 to 9 March 1976 and worked in the vicinity of Qara. The following year Ames returned with D. J. Osborn and J. Kosinová and worked near El Moghra between 12 and 20 April. Both the Ames and NAMRU-3 material is housed in the FMNH and was summarized by Goodman and Ames (1983).

## BAHARIYA, FARAFRA, DAKHLA AND KHARGA

In 1925, R. E. Moreau visited Bahariya from 20 to 24 March, Dakhla from 10 to 13 April, and Kharga from 7 to 9 and 14 to 16 April. He collected specimens that are housed in the GZM. The records obtained on these trips were summarized in his 1927 paper. The following year (1928) Moreau published another paper in which he summarized bird observations made by H. J. L. Beadnell, between 19 February and 11 April 1927, in the area south of Dakhla, near Bir Terfawi. In 1934, Moreau published a major paper that included information collected by several Western Desert explorers and his own work in the region. Moreau (1934) used the records of R. A. Bagnold and J. E. H. Boustead from the area south of El Wadi el Gedeed to Gebel Uweinat, and those of O. C. Wingate from the desert south of Farafra. This paper was the first major synthesis on bird migration across, and resident populations in, the eastern Sahara. In the GZM there are a few specimens which were collected near Kharga, Dakhla and Bir el Shab in the spring of 1939 by "Hassan Eff. Fares", on his way to and from Gebel Uweinat.

In late March 1928, R. Meinertzhagen visited the Dakhla and Kharga oases, and obtained specimens which are housed in the BMNH. Some important distributional records from the 1928 trip mentioned in Meinertzhagen's 1930 book are not represented by museum specimens, and conversely several unique museum specimens are not mentioned in the 1930 book. We have noted ambiguous Meinertzhagen records or conflicting information in the species accounts.

From 10 to 18 February 1937, Al Hussaini visited Kharga and in the same year published a list of the birds observed and collected. He worked in Bahariya from 14 to 22 February 1938 and from 26 January to 4 February 1958, and published two short papers on the ornithological information collected on these trips (1938; 1959b). During the winter of 1958-59 Al Hussaini traveled to Dakhla, and subsequently wrote a review paper (1959a) based on his work in the Western Desert. We have examined a few specimens collected by Al Hussaini in the BMNH.

Scharlau (1963) visited Dakhla from 2 to 4 October 1962 and noted 55 species of birds. Kiepenheuer and Linsenmair (1965) made observations and collections in 1963 at Dakhla between 12 and 13 August and at Kharga on 14 August (specimens reviewed in Steinbacher, 1965). Material housed in the FMNH was collected by NAMRU-3 field teams in Kharga during late November 1966 and in Bahariya between 13 and 20 June 1974. Researchers from the Palearctic Migrant Survey visited and collected in Bahariya between 7 and 13 February 1972, Dakhla between 15 and 20 January 1972, and Kharga between 12 and 14 January 1972; these specimens are housed in the USNM. Between 29 March and 10 April 1979 Abdel Rahim et al. (1980) conducted a survey of the birds occurring in the Bahariya and Farafra oases. However, several of their sight records seem doubtful and need further confirmation. When we visited Farafra in 1981 Mr. Badr

Abdel Moghany, a school teacher in Qasr Farafra, had started to collect birds. By March 1984 (SMG, HS), his collection had expanded and was housed in the FMFA (all uncatalogued). According to Mr. Badr, all the specimens were taken locally.

The following people visited the area and kindly supplied us with their unpublished records made on the date(s) noted. The dates of our own work are also included:

Sherif M. Baha el Din (SBD)—**Kh**: 29–30 March 1982. Steven M. Goodman (SMG) and Hesham Sabry (HS)—**Ba**: 16 to 18 March 1984; **Fa**: 18 to 21 March 1984; **Da**: 21 to 24 March 1984; and **Kh**: 24 to 25 March 1984. Alan Hollet (AH)—**Da**: October to December 1978, 1979 and 1980; January 1982 and 1983; January and February 1984; and January and February 1985. Stan Howe (SH) and T. D. H. Merrie (TDHM)—**Ba**: 8 September 1984; **Fa**: 7 to 8 September 1984; **Da**: 7 September 1984; **Kh**: 5 to 7 September 1984. Peter L. Meininger (PLM), Wim C. Mullié (WCM) and Steven M. Goodman (SMG)—**Ba**: 28 to 29 April 1981; **Fa**: 26 to 28 April 1981; **Da**: 24 to 26 April 1981; and **Kh**: 22 to 24 April 1981. Hans Riehmman (HR)—**Da**: 2 February 1983. John Tennent (JT)—**Kh**: 10 December 1965. Sudhir Vyas (SV)—**Ba**: 4 and 9 March 1980 and 12 to 15 March 1981; **Fa**: 14 March 1981; **Da**: 18 October 1980; and **Kh**: 17 to 21 October 1980.

#### GILF EL KEBIR AND GEBEL UWEINAT

Until recently, virtually all of the ornithological information published from these two remote areas was provided by desert explorers and cartographers. Perhaps the records of R. A. Bagnold and O. C. Wingate are the most outstanding. (These have been reviewed by Moreau [1941].) In the GZM, there are a few specimens collected in this area by "Dr. Hassan Eff. Fares" in March 1939.

In 1961, scientists visited Gebel Uweinat on two separate occasions. H. Setzer worked near Ain Zuweina between 25 and 28 March, and collected a few bird specimens which we examined in the USNM. This expedition was chronicled by Collins and Pomeroy (1963). The second group visited the area between 13 and 19 April 1961, and the ornithological results were summarized by Jany (1963).

D. J. Osborn and team (see Osborn and Krombein, 1969) spent four days in April 1967, at Gebel Uweinat. While traveling between this massif and the Nile Valley they collected several dead birds that we examined in the USNM. The following year a Belgian expedition visited Gebel Uweinat from 20 October 1968 to 15 January 1969 and took a side trip to Gilf el Kebir between 1 and 12 January 1969. Misonne (1974) published the ornithological results of this expedition; it forms to a large extent the basis of our knowledge of the local birds of that region.

## ANNOTATED LIST OF SPECIES

**Ostrich** *Struthio camelus* FB

Heuglin (1873, p. 928) wrote, "Um die Oasen Mittelegyptens, von Fajum süd- und westwärts bis zum Wach el Chardjeh und el Dachleh lebt der Strauss heute noch,..." The last record for the Ostrich in the Western Desert was in 1935 when one was caught at "Abou-al-Oql," about midway between Kharga and Dakhla (Al Hussaini, 1959a). Ostrich eggshell fragments have been found on numerous occasions in the Western Desert *in situ* (e.g. Moreau, 1934). In the GZM there are several old ostrich eggshell fragments collected by R. S. Wilson in the early portion of this century in a "dry water pan south of Bir Halda [30.50 N, 27.16 E] on the road from [Mersa] Matruh to Qattara, about 45 miles SE of Matruh on Christmas day." Walters (1982) described an old and weathered ostrich egg that was recently found in the Qattara Depression. The egg was somewhat small and raises the interesting possibility that a diminutive form of the ostrich formerly inhabited the Western Desert. See Goodman et al. (1984) for a review of recent records of this species in Egypt.

**Little Grebe** *Tachybaptus ruficollis capensis* RB WV?

**WN:** On 17 January 1979 four birds (two calling) were seen near a reed-bed in the northern most lake (PLM, WCM), and a single bird on 1 May 1981 (SV). Meinertzhagen (1930) regarded this species as a resident in Wadi Natroun and mentioned egg clutches taken there. Nicoll (1912) reported birds taken on 15 February 1911, 3 June 1911 ("enlarged oviduct") and 5 June 1910 (all in GZM) and a large number on the lake at Gaar in November 1911. **Ba:** Moreau (1927) heard one in a reed-bed between 20 and 24 March 1925. No recent records. **Fa:** There is a specimen in the FMFA. At Abu Minqar one was observed on 21 March 1984 (SMG, HS). **Da:** On 26 January 1981 at least 200 birds were seen on the newly created lake near Bir Talata and during the winter of 1982–83 they were common on the lake at El Qalamun (AH); these were probably for the most part wintering birds. On 24 April 1981 we saw a flock of 20 individuals and at least three pairs on the lake near Pumping Station Four where it may well breed. An adult male (USNM 550932) taken on 18 January 1972 and an adult female (UMMZ 206906), with a slightly enlarged ovary, obtained on 22 March 1984 are referable to the Egyptian breeding form *capensis*. **Kh:** On 22 April 1981 at least two pairs were present on a small lake, with suitable breeding habitat, near the Hibis Temple (PLM, WCM, SMG).

**Black-necked Grebe** *Podiceps nigricollis nigricollis* WV

**WN:** On 17 January 1979, 65 individuals were observed on one of the saline lakes (PLM, WCM). About 200 were noted on 5 February 1983 (BR). **Kh:** One record from the oasis; an adult female (USNM 550934) was taken on 14 January 1972.

**Great Cormorant** *Phalacrocorax carbo* AV

**Da:** Two were observed on the lake near Pumping Station Four on 19 January 1985 (AH).

**Bittern** *Botaurus stellaris stellaris* WV

**WN:** Common during the winter in Wadi Natroun (Meinertzhagen, 1930). A female was shot on 7 May 1910 (Nicoll, 1912; in GZM) and an unsexed bird (GZM 5146) was taken on 1 January 1913. **Fa:** One adult specimen in the FMFA.

**Little Bittern** *Ixobrychus minutus* RB PV

**WN:** Nicoll (1912) stressed the absence of records of this species. However, it has subsequently been found breeding there (Meinertzhagen, 1930) and migrates through the region. It was noted on 7 May 1981 (SMG, ST). **Si:** On 8 May 1985 one was shot by Siwans near Aghurmi Lake (SMG, PLM). **Fa:** There is one adult specimen in the FMFA.

**Night Heron** *Nycticorax nycticorax nycticorax* PV

**WN:** All specimen records are from the spring and autumn (Nicoll, 1912). An immature male (GZM 5162) was taken on 13 September 1911. **Qa:** On 20 May 1975 one was collected near El Moghra (Goodman and Ames, 1983). **Ba:** Four birds on 28 April 1981 (PLM, WCM, SMG). **Fa:** One specimen in the FMFA. **Da:** Scharlau (1963) saw nine individuals between 2 and 4 October 1962. **Kh:** One individual was observed near the Hibis Temple on 23 April 1981 (PLM, WCM, SMG). A flock of 14 adults was noted on 6 September 1984, 25 km south of El Kharga (SH, TDHM).

**Squacco Heron** *Ardeola ralloides* PV WV

**WN:** Specimens collected on 16 April, 7 May, 13 May and 22 May (Nicoll, 1912; all in GZM), and during January (Meinertzhagen, 1930). **Qa:** On 16 May 1975 two were collected at El Moghra (Goodman and Ames, 1983). **Ba:** We observed two individuals on 28 April 1981 at Bir Matar. **Fa:** Two specimens in the FMFA. **Da:** One female (UMMZ 206773) was collected 14 km north of Mut on 22 March 1984. **Kh:** At least 23 birds were present on 23 April 1981 (PLM, WCM, SMG).

**Cattle Egret** *Bubulcus ibis* RB? PV WV

**WN:** Three were observed on 17 January 1979 (Meininger et al., 1979); one on 7 May 1981 (SMG, ST); and on 19 March 1982 (JW). **Si:** The only records are one observed on 9 May 1985 (SMG, PLM) and two collected between 7 and 13 February 1939 (Al Hussaini, 1939). There is no evidence for breeding, contrary to Al Hussaini (1959a) and Cramp and Simmons (1977). **Ba:** On 15 March 1981 two birds were seen near El Hayez and on 6 and 12 March 1981 two and four birds (respectively) were present near the El Gedida iron ore mines (SV). According to a local hunter, Cattle Egrets nest locally, but breeding needs to be substantiated. Both Moreau (1927) and Al Hussaini (1938) noted the absence of this species. Four birds were observed on 12 March 1981 resting in the shade of a ruined house, along the Cairo-Bahariya road, 124 km from Cairo (SV), which demonstrates that this species crosses the desert on occasion (also see Hogg, 1974, for a further example of trans-desert migration). **Fa:** Abdel Rahim et al. (1980) saw

this species sometime between late March and early April 1979. In April 1981, we unsuccessfully searched for a colony. There are two specimens in the FMFA. **Da:** The first mention of this species is that of Al Hussaini (1959a) who saw it in 1959. Scharlau (1963) observed several hundred individuals between 2 and 4 October 1962. By 10 December 1965 it was common (JT) and on 10 October 1980 "abundant" (SV). On 24 April 1981 about 30 birds were noted, but no nesting colony was located (PLM, WCM, SMG). Breeding seems likely. **Kh:** On 10 December 1965 none were observed (JT), but by 18 October 1980 the species was common (SV). We counted over 300 birds on 23 April 1981, of which 250 flew over in small groups from a night roost or perhaps a breeding colony. On 29 May 1982 a flock of 30 was observed flying to a roost (SBD). According to natives, the species breeds locally in trees. The first mention of Cattle Egrets in Kharga was by Al Hussaini (1937, p. 865), who found it "very common in cultivation fields."

**Little Egret** *Egretta garzetta garzetta* PV WV

**WN:** An adult male was shot on 29 April 1910 (Nicoll, 1912). **Si:** On 9 May 1985, 25 were observed at Aghurmi Lake (SMG, PLM). Moreau (1941) mentioned that it was observed and collected on 17 April, 21 April and 31 May 1935. Between 7 and 13 February 1939 eight birds were present (one collected), near Aghurmi Lake (Al Hussaini, 1939). **Qa:** On 14 April 1977 five or six individuals were seen at El Moghra (Goodman and Ames, 1983). **Ba:** One adult male (UMMZ 206772) was collected 88 km south of Bawiti on 18 March 1984. **Fa:** Abdel Rahim et al. (1980) recorded this species sometime between late March and early April 1979. Three individuals were observed on 19 March 1984 near Qasr Farafra (SMG, HS). **Da:** In mid-October 1982 at least 12, on 25 April 1981 at least 15 and on 22 March 1984 three birds were noted (AH; PLM, WCM, SMG; SMG, HS). Scharlau (1963) saw about six between 2 and 4 October 1962. **Kh:** Three individuals were observed on 23 April 1981 (PLM, WCM, SMG) and one on 19 October 1980 (SV).

**Grey Heron** *Ardea cinerea* PV WV

**WN:** Recorded in March 1980 (SV) and a single individual was observed on 6 January 1982 (YL). Meinertzhagen (1930) mentioned that it might possibly breed in the area, but presented no supporting evidence. Maclaren (1944) saw three flying south on 6 October 1942. **Si:** Five were noted on 8 May 1985 at Aghurmi Lake (SMG, PLM). Al Hussaini (1939) saw two pairs at a salt lake near Siwa and another at Khamisah between 7 and 13 February 1939. One was observed on 17 April 1935 (Moreau, 1941). **Qa:** On 13 April 1977 one individual was noted southeast of El Moghra (Goodman and Ames, 1983). **Ba:** Moreau (1927) heard a flock going over during the night of 22 March 1925. **Fa:** Abdel Rahim et al. (1980) noted this species between late March and early April 1979. There is an adult specimen in the FMFA. **Da:** On 13 October 1982, 20–25 were observed at Bir Talata (AH). Meinertzhagen (1930) noted that Grey Herons were seen in March, and

Scharlau (1963) saw four between 2 and 4 October 1962. **Kh:** The only record that we are aware of is Meinertzhagen's (1930) March observation.

**Purple Heron** *Ardea purpurea purpurea* PV

**WN:** Single specimens were collected on 20 and 21 April 1910 (Nicoll, 1912; in GZM). **Si:** One was observed on 8 May 1985 at Aghurmi Lake (SMG, PLM). **Ba:** Moreau (1927) saw one individual on 23 March 1925. A single individual was observed flying over Bir Matar on 17 March 1984 (SMG, HS). **Da:** Scharlau (1963) observed one between 2 and 4 October 1962. **Kh:** We observed five birds on 23 April 1981.

**Black Stork** *Ciconia nigra* (PV)

**Qa:** One individual was shot at El Moghra on 18 May 1975 but could not be retrieved (Mr. S. Tewfik, pers. comm.). **Ba:** Moreau (1927, p. 222) noted that the natives were familiar with the bird "ganas iswid khalas," which may be the Black Stork.

**White Stork** *Ciconia ciconia ciconia* PV

In spring and autumn, White Storks pass through Egypt in large numbers (Reed and Lovejoy, 1969). There are several records west of the Nile, sometimes in considerable numbers, which indicates that some flocks must cross the full breadth of the eastern Sahara.

**WN:** On 3 April 1981, four individuals were seen flying over the area (WS). Single specimens were collected on 18 and 20 April 1910 (Nicoll, 1912). **Si:** Moreau (1941) reported three separate observations: two on 8 May, one on 9 May and one on 1 June 1935. **Qa:** On 2 April 1977 one bird was seen near Ras el Qattara (Goodman and Ames, 1983). **Ba:** A native of Bahariya told us that a flock of approximately 150 birds flew north on 27 April 1981. **Da:** On 24 April 1981 we observed two birds flying over the village of Mut. Moreau (1934) reported a bird found dead in the desert halfway between Dakhla and Uweinat at 23°30'N, 27°28'E. Kiepenheuer and Linsenmair (1965) saw six White Storks on 13 August 1963 near a salt lake, 90 km east of Dakhla. **Kh:** A flock of eight individuals was observed on 20 October 1980 (SV) and of 85 on 29 May 1982 (SBD). **GK:** According to Moreau (1934) Clayton saw a flock near Gilf el Kebir. **GU:** Moreau (1934) noted that Boustead found this species in the general vicinity of the mountain.

**Glossy Ibis** *Plegadis falcinellus falcinellus* PV

**WN:** On 28 April 1952, a Glossy Ibis ringed on 11 June 1942 at Kisbalaton, Hungary, was recovered in Wadi Natroun (Keve and Pátkai, 1959). On 11 April 1910 two males were collected, on 7 May 1910 a single female was shot from a group of at least 100, and on 24 May 1904 an adult male was taken (Nicoll, 1912; specimens in GZM). **Si:** Two were noted on 8 May 1985 at Aghurmi Lake (SMG, PLM). Moreau (1941) mentioned records of eight birds on 25 April, six on 4 May and one on 31 May 1935. A male (BMNH 1936.9.21-5) was taken on 6 May 1935. **Qa:** On 13 and 15 May 1975 two females were collected at El Moghra and on 17 May 1965 another female was taken at Qara (Goodman and Ames, 1983). **Ba:** We received a recently captured bird from natives at Bawiti on 28 April 1981



(UMMZ 204528). **Fa:** There are two specimens in the FMFA. **Kh:** On 23 April 1981 we observed 11 individuals.

**Spoonbill** *Platalea leucorodia leucorodia* PV

**WN:** This species has been obtained in Wadi Natroun on 27 May 1910 (Meinertzhagen, 1930; GZM 5169). **Da:** In early October 1982 one individual was noted at Ezbet Bashindi roosting with Cattle Egrets (RG, AH). Scharlau (1963) saw one adult and one immature between 2 and 4 October 1962.

**Greater Flamingo** *Phoenicopterus ruber roseus* WV

**WN:** On 2 March 1984, four individuals were noted at Birket Hamra (SMG, JH). Loat (1905) saw a flock of several thousand between 21 January and 24 February 1903. Nicoll (1912, p. 439) saw a "huge flock" in March 1910, but believed that this species did not breed in the area. **Si:** Two were noted on 8 and 9 May 1985 (SMG, PLM). Kiepenheuer and Linsenmair (1965) observed it between 14 and 15 May and 19 and 27 September 1963. A female was collected on 1 February 1974 (Goodman and Ames, 1983).

**"Grey Geese"** *Anser* sp.

*A. albifrons*, *fabalis*, and *anser* have been recorded in Egypt (Meinertzhagen, 1930; El Negumi et al., 1950; Meininger and Mullié, 1981a).

**WN:** Maclaren (1944) saw 2000 "Grey Geese" flying over Mareopolis on 25 September 1942 towards the northern lake in Wadi Natroun. Considering the locality, number of individuals, and time of year it is possible that these birds were Cranes (*Grus grus*). **Ba:** Moreau (1927, p. 222) mentioned that a "goose" was flushed from bulrushes sometime between 20 and 24 March 1925. Beadnell (1901, p. 7) noted that amongst the edible wild birds occurring in the oasis there are "probably geese."

**[Egyptian Goose** *Alopochen aegyptiacus* (AV?)

Presently, the main Egyptian breeding grounds of this species is Lake Nasser and it generally winters south of Sohag (Meininger and Mullié, 1981a; Short and Horne, 1981).

**Da:** On 25 January 1982 six birds, probably of this species, were seen on the lake near Bir Talata (AH).]

**Ruddy Shelduck** *Tadorna ferruginea* (WV)

**WN:** According to Meinertzhagen (1930), this species was a fairly common winter visitor to Egypt, including Wadi Natroun. However, in recent years it has apparently become rather scarce, as there are only a few recent records from the Nile Valley (Short and Horne, 1981).

**Shelduck** *Tadorna tadorna* WV

**WN:** About 130 individuals were counted on 17 January 1979 (Meininger and Mullié, 1981a) and 11 on 6 January 1982 (YL). In February 1983, a flock of 3,000–5,000 birds was seen and according to a local hunter such numbers occur every year (BO). A female was collected on 23 December 1910 (Nicoll, 1912; in GZM).

**Wigeon** *Anas penelope* PV WV

**WN:** One was observed on 18 January 1985 and a pair were seen on 8

March 1985 (SMG). Loat (1905) found it uncommon from 21 January to 24 February 1903 and Nicoll (1912) believed he saw one in late March 1910. **Si:** Meinertzhagen (1930) listed the bird as occurring in Siwa, but presented no supporting evidence. **Da & Kh:** Listed by Meinertzhagen (1930) as occurring in these oases. Jarvis (1936) observed Wigeons at these two localities, but all details are lacking.

**Gadwall** *Anas strepera* WV

**WN:** Meinertzhagen (1930) mentioned it as occurring in November and February. **Da:** Jarvis (1936) observed this species.

**Teal** *Anas crecca crecca* PV WV

**WN:** Meininger et al. (1979) counted 220 on 17 January 1979. A female (GZM 6488) was taken on 10 April 1917. Maclaren (1944) saw Teal in the autumn of 1942 after 8 September. **Si:** Six pairs were seen at Aghurmi Lake between 7 and 13 February 1939 (Al Hussaini, 1939). **Ba:** Moreau (1927) recorded a few between 20 and 24 March 1925. From 14 to 22 February 1938 it was fairly common in small flocks (Al Hussaini, 1938). **Fa:** Six individuals were observed on 19 March 1984 (SMG, HS). **Da:** On 26 January 1982, 150 individuals were present at the lake near Bir Talata and in November 1982 about 50 (AH). Moreau (1927) saw a few on Umar Seraya between 10 and 13 April 1925. **Kh:** On 18 October 1980 "some" Teal were observed (SV). Jarvis (1936, p. 56) observed "a flight of . . . twenty teal or so." Beadnell (1909, p. 227) noted that "teal" were among the "most common" ducks.

**Mallard** *Anas platyrhynchos platyrhynchos* CB? PV WV

**WN:** On 17 January 1979, 10 individuals were counted (Meininger et al., 1979). Loat (1905) found it one of the least numerous ducks during his visit from 21 January to 24 February 1903. **Da:** Meinertzhagen (1930) shot a female (BMNH 1965.M.540) on 25 March 1928 that "had huge ovaries, and appeared to be about to lay." Four were noted at Abu Minqar on 21 March 1984 (SMG, HS). **Kh:** Seen by Jarvis (1936), no details given. Beadnell (1909) noted it as one of the more common ducks.

**Pintail** *Anas acuta acuta* PV WV

**WN:** Loat (1905) mentioned it as fairly numerous from 21 January to 24 February 1903. A flock of over 50 was noted on 8 March 1985 (SMG). **Si:** Two pairs observed on 8 May 1985 at Aghurmi Lake (SMG, PLM). **Ba:** Moreau (1927) recorded one female between 20 and 24 March 1925. **Fa:** We saw two individuals on 26 April 1981 on the lake north of Qasr Farafra. **Da:** On 25 April 1981 eight birds were observed (PLM, WCM, SMG) and on 26 January 1982 about 200 (AH). Scharlau (1963) noted it between 2 and 4 October 1962. **Kh:** On 18 October 1980 a few individuals were observed (SV). Jarvis (1936) saw a flock of seven during an unspecified period.

**Garganey** *Anas querquedula* PV

**WN:** Raw (1921) saw a pair on 24 May 1918. **Si:** Six were noted on 8 May 1985 at Aghurmi Lake (SMG, PLM). **Fa:** There is one specimen in the FMFA. **Da:** We observed three individuals on 24 April and four on 25 April 1981 at the lake near Pumping Station Four. Moreau (1927, p. 240) saw "at

least a score" at Umar Seraya and many more at Dinaría on 12 April 1925. Scharlau (1963) noted about 40 birds between 2 and 4 October 1962. **Kh:** Only recorded by Jarvis (1936), but no details given.

**Shoveler** *Anas clypeata* PV WV

**WN:** Two were observed on 17 January 1979 (Meininger et al., 1979) and 50 on 1 April 1981 (WS). Loat (1905) found it the most abundant duck from 21 January to 24 February 1903. Females (GZM 5197, 5198) taken on 7 and 10 May 1910. **Si:** Al Hussaini (1939) observed 28 on a lake near Khamisah between 7 and 13 February 1939. **Ba:** According to Al Hussaini (1938) this species was not common from 14 to 22 February 1938. **Fa:** A female specimen is housed in the FMFA. **Da:** In mid-October and mid-November 1982 about 12 were observed near Mut (AH). On 24 April 1981 we saw six and on the following day at least 10 on the lake near Pumping Station Four. **Kh:** The only records from the oasis are those of Jarvis (1936) and Beadnell (1909), but precise details are lacking.

**Marbled Duck** *Marmaronetta angustirostris* FB

According to Meinertzhagen (1930) this species bred in Wadi Natroun, the Faiyum and Dakhla Oasis. However, there is no recent evidence of its nesting in these areas, and Meinertzhagen's basis for considering it a breeding bird in Dakhla is ambiguous.

**WN:** The only clutch taken in Egypt, examined by Meinertzhagen (1930), was four eggs collected in May at this locality. Nicoll specimens in the GZM include: a male (1453; "testes very much enlarged"), 16 May 1910; female (5186; "oviduct very large"), 17 May 1910; and two males (5185, 5187), 5 June 1910. Nicoll (1912) mentioned that young were observed. There are no recent records from the area. **Fa:** Three individuals were observed on 19 March 1984 (SMG, HS). **Da:** Moreau (1927) saw two at Umar Seraya between 10 and 13 April 1925. Jarvis (1936) shot this species in Dakhla. A few were noted on 7 September 1984 near Mut (SH, TDHM).

**Red-crested Pochard** *Netta rufina* AV

**WN:** On 20 January 1911 an adult male was shot (Nicoll, 1912; in GZM).

**Pochard** *Aythya ferina* WV

**WN:** A flock of over 40 was noted on 16 January 1985 (SMG) and a female was observed on 19 March 1910 (Nicoll, 1912). **Da & Kh:** The only report of this species from these two oases is that of Jarvis (1936), but details are lacking.

**Ferruginous Duck** *Aythya nyroca* WV

**WN:** Six were observed on 8 March 1985 (SMG). Loat (1905) found it not uncommon between 21 January and 24 February 1903 and shot one. Another was collected on 21 November 1911 (Nicoll, 1912; in GZM). **Da:** In the winter 1982–83 it was recorded at Bir Talata, El Qalamun, and near Ezbet Bashindi (AH).

**Tufted Duck** *Aythya fuligula* WV

**WN:** One was observed on 21 March 1910 (Nicoll, 1912). **Da:** Jarvis (1936) saw this species in the oasis.

**Honey Buzzard** *Pernis apivorus* PV

**WN:** This species was observed on 7 May 1981 (SMG, ST). An adult male was collected on 2 June 1910 (Nicoll, 1912; in GZM). **Da:** Scharlau (1963) observed two on 2 October 1962.

**Black-winged Kite** *Elanus caeruleus caeruleus* FB

**WN:** According to Meinertzhagen (1930) this species was a resident in Wadi Natroun and newly hatched nestlings were found on 22 January. There are no recent records from Wadi Natroun, and it seems likely that Black-winged Kites have disappeared from this area, as they have from the greater portion of the Nile Delta (Mulli  and Meininger, 1985).

**Black Kite** *Milvus migrans migrans* PV WV

Two forms occur in Egypt. Nominate *migrans* is a Palearctic migrant and winter visitor and *aegyptius* a breeding resident in portions of the Nile Valley and Delta (Mulli  and Meininger, 1985).

**WN:** This species was observed on 7 May 1981 (SMG, ST). Nicoll (1912) saw it in November 1911. An adult male (GZM 5025), with a black bill, taken on 19 April 1910 was referred to *aegyptius* by Meinertzhagen (1930), but it is of nominate *migrans*. **Qa:** Specimens of nominate *migrans*, were taken at El Moghra on 19 May 1975 (Goodman and Ames, 1983). **Ba:** On 28 and 29 April 1981 we observed one individual near the El Gedida iron ore mines. **Da:** This species was recorded on 14 January 1982 and twice in mid-January 1983 (AH).

**White-tailed Eagle** *Haliaeetus albicilla* AV

**WN:** Meinertzhagen (1930) mentioned a specimen in the GZM (not examined) taken on 28 February 1911. This is the only record from the Western Desert that we are aware of.

**Egyptian Vulture** *Neophron percnopterus* PV

Statements of Meinertzhagen (1930) that this species is a breeding resident in Wadi Natroun, Dakhla and Kharga lack documentation, and all dated observations fall within the migration periods of this species (Bijlsma, 1983; Cramp and Simmons, 1980).

**WN:** Loat (1905) noted that Egyptian Vultures were occasionally observed. **Si:** Meinertzhagen (1930) recorded it in the oasis, but gave no details. **Da:** This species was observed on 1 November 1978, 22 October 1979 and 6 October 1980 (AH). Moreau (1927) noted it as not uncommon from 10 to 13 April 1925. On 26 April 1981 we observed one adult in the desert midway between Dakhla and Farafra. **Kh:** Meinertzhagen (1930, p. 653) listed it as a resident, but gave no supporting evidence. **GU:** Misonne (1974) found a carcass on 15 January 1969 north of Isolotto and mentioned a possible sight record on 14 November 1968 between Gebel Uweinat and Gebel Arkenu.

**Griffon Vulture** *Gyps fulvus* (PV)

Meinertzhagen (1930) noted that this species has been observed in Wadi Natroun, Dakhla and Kharga. However, the basis for these records was not stated nor are we aware of any recent records from the Western Desert.

**Black Vulture** *Aegypius monachus* AV

**Kh:** Meinertzhagen (1930) observed one in March 1928 between Kharga and the Nile Valley.

**Short-toed Eagle** *Circaetus gallicus gallicus* (FB?) PV

The only documented breeding record within Egyptian limits is a nest found near Cairo on 5 April 1923 by Meinertzhagen (1930; 1 egg in BMNH 1941.4.1.50). Recent information indicates that it is strictly a passage visitor to the Western Desert.

**WN:** Specimens in GZM (examined) collected on 19 June 1911 and 10 December 1912 (Meinertzhagen, 1930). On 15 June 1911 one was caught by a Mr. Balboni and a nest was reputed to have been found containing two young birds (Nicoll, 1912). **Si:** On 5 May 1935 a male was collected (Moreau, 1941; BMNH 1936.9.21-2). **Ba:** Moreau (1927) noticed eagles on several occasions between 20 and 24 March 1925, that he believed were this species. **Da:** Meinertzhagen (1930) saw a few individuals in late March 1928. **Kh:** A group of 18 birds was observed on 23 March 1928 (Meinertzhagen, 1930). **Marsh Harrier** *Circus aeruginosus aeruginosus* PV WV RB?

**WN:** Nicoll (1912, p. 432) mentioned the following records: frequent in March 1910, a few in November 1911, and that "possibly it nests in the great tracts of bulrushes which fringe most of the lakes." Loat (1905) collected a bird on 26 January and saw others on one or two occasions between 21 January and 24 February 1903. Maclaren (1944) noted several on 6 October 1942 and Raw (1921, p. 365) stated that a pair observed on 24 May 1918 "were possibly nesting." Specimens in GZM include: a female (4990) and unsexed bird (544) taken on 20 May 1910 and 29 May 1904, respectively. Although breeding in Egypt has never been substantiated, it cannot be ruled out. **Si:** Moreau (1928) recorded two on 25 March 1927. **Qa:** A specimen was collected on 18 May 1975 and one bird observed on 17 April 1977 at El Moghra (Goodman and Ames, 1983). **Ba:** One was observed on 17 March 1984 (SMG, HS). **Fa:** On 26 April 1981 we saw a single bird midway along the Dakhla-Farafra road and the following day two north of Qasr Farafra. **Da:** It was noted in January and February 1985 near Mut (AH), and early October 1982 near Mut and El Qalamun (RG, AH). Moreau (1927) observed one near Rashida on 11 April 1925. A female was observed on 3 October 1962 (Scharlau, 1963). **Kh:** On 3 October 1980 three were counted (SV). On 24 March 1984 one was noted near the Hibis Temple (SMG, HS).

**Hen Harrier** *Circus cyaneus cyaneus* WV

**WN:** An immature female was shot on 21 November 1911 and a few observed later that month (Nicoll, 1912). **Qa:** Single birds were observed on 13 and 14 April 1977 and a pair on 17 April 1977 (Goodman and Ames, 1983). **Ba:** Al Hussaini (1938) considered it not common between 14 and 22 February 1938. **Da:** Scharlau (1963) observed a male on 2 October 1962.

**Pallid Harrier** *Circus macrourus* PV WV

**WN:** One male was observed on 3 April 1984 (WS). Loat (1905) saw it once between 21 January and 24 February 1903. In late March 1910 several were seen (Nicoll, 1912). An adult male (GZM 4999) was taken on 13 October 1911. **Ba:** Moreau (1927) saw several between 20 and 24 March 1925.

**Fa:** We observed a female between Dakhla and Farafra on 26 April 1981. **Da:** Moreau (1927) frequently met this species between 10 and 13 April 1925. Sometime in the winter or early spring of 1927, a Pallid Harrier was found at Bir Terfawi, 300 km south of Mut (Moreau, 1928). **Kh:** On 18 October 1980 one individual was seen (SV). Moreau (1927) observed it in mid-April 1925. A male (BMNH 1965.M.1308) was taken on 23 March 1928.

**Montague's Harrier** *Circus pygargus* PV?

**WN:** On 2 April 1981 a male and possibly a female were observed (WS).

**Sparrowhawk** *Accipiter nisus nisus* PV WV

**WN:** One was observed on 2 March 1984 near Birket Hamra (SMG, JH). During the latter part of November 1911 one was seen daily (Nicoll, 1912). This species was also collected on 13 October 1914 (GZM 5021; Meinertzhagen, 1930). **Kh:** On 18 October 1980 one was observed (SV).

**Levant Sparrowhawk** *Accipiter brevipes* AV

**WN:** In the GZM there is an immature female (5023) collected on 28 April 1910. This is the same specimen reported by Nicoll (1912).

**Buzzard** *Buteo buteo* PV

**WN:** One was observed on 24 May 1985 (TDHM). **Si:** A single bird was noted near Khamisah on 10 May 1985 (SMG, PLM). **Fa:** On 27 April 1981 one individual was observed (PLM, WCM, SMG) and another on 21 March 1984 (SMG, HS). **Da:** A single bird was recorded on 22 March 1984, 4 km north of Mut (SMG, HS). **Kh:** On 7 September 1984, two small parties of 26 were noted 30 km west of Kharga (SH, TDHM).

**Long-legged Buzzard** *Buteo rufinus* PV WV

**WN:** One was seen on 23 November 1957 (Horváth, 1959). Nicoll (1912) observed one on 21 March 1910. **Da:** On 21 January 1982 one individual was observed (AH). **GK:** One record on 8 January 1969 (Misonne, 1974). **GU:** Misonne (1974) saw one at Ain Zuweina on 7 November 1968 and another at Karkur Tahl on 13 January 1969.

**Lesser Spotted Eagle** *Aquila pomarina* PV

**Da:** On 24 April 1981 we observed one at the lake near Pumping Station Four. There are two records of this species and/or *A. clanga* from Dakhla: one between 10 and 13 April 1925 near El Qasr (Moreau, 1927) and another between 2 and 4 October 1962 (Scharlau, 1963).

**Steppe Eagle** *Aquila rapax* PV

**WN:** On 2 April 1981 one immature was noted (WS). **Fa:** We observed an immature on 26 April 1981. **Da:** Two were noted on 2 February 1983 near El Qasr (HR) and one on 23 March 1984, 21 km north of Mut (SMG, HS).

**Booted Eagle** *Hieraetus pennatus* PV

**WN:** There is a male specimen in the GZM (5010) collected on 2 May 1910. This is presumably the same specimen mentioned by Nicoll (1912). **Fa:** We observed one individual on 27 April 1981. **Da:** On 19 October 1980 one was noted (SV). Scharlau (1963) found a dark-phase Booted Eagle on 3 October 1962. **Kh:** One was seen on 18 October 1980 (SV).

**Bonelli's Eagle** *Hieraetus fasciatus* AV

**WN:** Nicoll (1912) saw one on 27 November 1911.

**Osprey** *Pandion haliaetus* PV

**Qa:** On 13 April 1977 two or three individuals were observed southeast of El Moghra. "The birds were probably migrating, but seemed to be flying southeast" (Goodman and Ames, 1983).

**Lesser Kestrel** *Falco naumanni* PV

According to Meinertzhagen (1930, p. 383) Lesser Kestrels "pass north in great numbers over Dakhla, Kharga, the Faiyum, Wadi Natrun," but no details were given. In autumn, it migrates at high altitudes and non-stop directly to the sub-Saharan winter quarters, but in spring migrates low and makes frequent stops (Moreau, 1961).

**WN:** Records include: two males observed on 14 March 1980 (SV), two females taken on 18 March 1910, a flock of 25 on 22 March 1910 of which three males and three females were collected (Nicoll, 1912; all specimens in GZM). **Qa:** One male was collected on 15 May 1975 at El Moghra (Goodman and Ames, 1983). **Ba:** Moreau (1927) observed parties on 22 and 23 March 1925.

**Kestrel** *Falco tinnunculus* subspp. RB PV WV

Two subspecies occur in Egypt. Nominate *tinnunculus* is a Palearctic migrant and winter visitor and *rupicolaeformis* the local breeding race.

**WN:** On 17 January 1979 one bird was observed (Meininger et al., 1979). Nicoll (1912) mentioned that a male was shot on 6 May 1910 and a juvenile on 24 August 1910 (both in GZM). Meinertzhagen (1930) considered it a resident. A male (BMNH 1965.M.1599) taken on 12 April 1923 is referable to *rupicolaeformis*. **Si:** Al Hussaini (1939) noted one pair between 7 and 13 February 1939 that he identified as *rupicolaeformis* (not examined). Moreau (1928, 1941) identified a bird taken on 8 May 1935 as nominate *tinnunculus* (examined, in BMNH). It has been listed as a resident of Siwa (Meinertzhagen, 1930, p. 653). **Qa:** This species was noted in the El Moghra area on 13 and 14 April 1977 (Goodman and Ames, 1983). **Ba:** We saw five individuals on 28 April 1981, and it may well breed in the oasis. Moreau (1927) noted a few between 20 and 24 March 1925 and that, according to the natives, it did not breed locally. **Fa:** Kestrels are reputed to breed (Mr. Badr Abdel Moghany, pers. comm.). One was observed on 2 February 1983 (HR). **Da:** It was noted as "fairly frequent" between late September 1982 and mid-January 1983 (AH). In March 1980 and on 25 April 1981 Kestrels were observed (SV; PLM, WCM, SMG). Meinertzhagen (1930) mentioned he found birds sitting on eggs in the middle of March 1928. An immature male (USNM 550958) taken on 17 January 1973 cannot be confidently assigned to either subspecies. **Kh:** On 18 October 1980, this species was observed (SV). Meinertzhagen (1930) considered it a resident. A male (GZM A2655) collected on 3 April 1939 between Asyut and Kharga is referable to nominate *tinnunculus*, as is a pair (FMNH 284685-284686) taken north of the oasis on 28 November 1966.

**Red-footed Falcon** *Falco vespertinus vespertinus* PV

**WN:** The following specimens were noted by Nicoll (1912; examined in

GZM): one adult female and male and one male molting into adult plumage taken on 11 May 1910; one immature male on 16 May 1910; and one adult female on 22 May 1910. Other specimens in GZM include: female (5061), 16 May 1910; two females (547, 548), 28 May 1904 and female (549), 29 May 1904. **Si:** Kiepenheuer and Linsenmair (1965) observed a falcon between 19 and 27 September 1963 that may have been this species. **Da:** Two males (BMNH 1965.M.1531-1532) were taken on 25 March 1928. **GU:** Two individuals were seen on 21 October 1968 near Isolotto (Misonne, 1974).

**Merlin** *Falco columbarius* WV

**WN:** One observed on 17 January 1979 (Meininger et al., 1979). A male was obtained on 12 February 1903 (Loat, 1905). On 26 November 1911, several were seen near Gaar and one daily until the end of the month (Nicoll, 1912). **Si:** One was noted between 7 and 13 February 1939 (Al Hussaini, 1939). **Fa:** One specimen in the FMFA.

**Hobby** *Falco subbuteo subbuteo* PV

**WN:** Nicoll (1912) observed a single bird on 26 November 1911. **Si:** One noted on 8 May 1985 at Aghurmi (SMG, PLM). **Ba:** A male (FMNH 296928) was taken on 18 June 1974, and a single bird observed on 8 September 1984 (SH and TDHM). **Kh:** One was observed on 21 October 1980 (SV).

**Sooty Falcon** *Falco concolor* MB

**Qa:** A nest was found sometime during World War II (1940–45) at “Magharra” [= El Moghra] by Galal El Din (1959). **Ba:** Three adult females (FMNH 296929-296931) were collected on 14 June and 17 June 1974. According to Mr. I. Helmy (pers. comm.) there were at least two breeding pairs in the oasis in the mid-1970s. **Fa:** Wingate (1934) collected one individual at 26°35'N, 26°53'E in late February or early March 1933 in the Great Sand Sea about 110 km southwest of Farafra (Moreau, 1934). Wingate found in total about four pairs occupying rocky outcrops in a belt of country between 110 and 190 km south and west of the oasis (Moreau, 1934). There is an adult specimen in the FMFA. On 21 March 1984 an adult was observed at Abu Minqar; where a falconer from Farafra was reputed to have taken a nestling the previous autumn (SMG, HS). **Da:** Bagnold shot one on 2 October in the desert about 110 km south of Dakhla at 24°30'N, 28°58'E while “flying over its natural roosting place” (Moreau, 1934, p. 603). **Kh:** One was observed on 7 September 1984, 60 km west of the oasis (SH, TDHM). **GU:** Booth (1961) observed this species in the autumn of 1954.

**Lanner** *Falco biarmicus tanypterus* RB

Meinertzhagen (1930) noted that this species had not been recorded from the Western Desert.

**Si:** On 10 May 1985 one was observed near Khamisah (SMG, PLM). A male was collected on 20 May 1935 (Moreau, 1941; BMNH 1936.9.21-9). **Qa:** A male Lanner was collected on 27 August 1964, 110 km south of El Moghra and a large pale falcon observed on 6 March 1976, 8 km north of Qara, was either this species or a Saker (*F. cherrug*) (Goodman and Ames, 1983). **Ba:** On 29 April 1981 we observed a displaying pair near the El



Gedida iron ore mines. **Fa:** In February 1933 Wingate (1934) found seven pairs of Lanners (or Barbary Falcons, *F. peregrinoides*, which is unlikely) occupying rock outcrops 110 and 190 km south and west of Farafra (Moreau, 1934). On 19 March 1984, one captive bird was observed in Qasr Farafra that was reported to have been captured locally (SMG, HS). A pair was noted at Abu Minqar on 21 March 1984 (SMG, HS). **Da:** During the periods between October and December 1978, 1979 and 1980, in January 1982 and between late September 1982 and mid-January 1983, this species was observed regularly (AH). At Ezbet Zayat, halfway between Dakhla and Kharga, two were observed on 24 March 1984 (SMG, HS). Falcons, probably resident Lanners, were observed at Bir Terfawi, 300 km south of Mut sometime between 19 February and 11 April 1927 (Moreau, 1928).

**Saker** *Falco cherrug* (WV)

**WN:** Nicoll (1912) saw a Saker on 26 November 1911 at Gaar. **Da:** There is one (undocumented) sight record from Dakhla of two individuals on 28 November 1980 (AH). **GU:** On 25 March 1925 a Saker was identified by Prince Kemal el Din between Bir Terfawi and Gebel Uweinat (Moreau, 1928).

**Peregrine** *Falco peregrinus* (WV)

**WN:** Nicoll (1912) saw an adult male on 26 November 1911. **GU:** "Peregrines" were identified by Prince Kemal el Din between Bir Terfawi and Gebel Uweinat in March 1925 (Moreau, 1928).

**Barbary Falcon** *Falco peregrinoides* AV

**WN:** On 3 April 1981, one individual was observed (WS). **Da:** Meinertzhagen (1930, p. 370) stated that "Falcons, probably of this form [*F. peregrinus peregrinoides*], were seen in Dakhla Oasis, where they are said to be resident;" however, no details were given and the birds may well have been Lanners.

**Quail** *Coturnix coturnix coturnix* PV

In May 1967, Hubbard and Seymour (1968) found evidence of this species breeding at Bahig, 55 km west southwest of Alexandria. It is possible that the summer records from the Western Desert are of breeding birds.

**WN:** On 19 March 1982, two individuals were observed (JW). Meinertzhagen (1930) mentioned it as a common migrant. A male (GZM 97) was collected on 7 April 1914. **Si:** Moreau (1927-28) stated that large numbers were found dead in autumn in the sand dunes approximately 160 km south of Siwa. A few were seen on 3 May, one on 16 June, and one on 28 August 1935 (Moreau, 1941). Kiepenheuer and Linsenmair (1965) rarely saw it between 19 and 27 September 1963. **Ba:** On 9 March 1980, six were observed near the El Gedida iron ore mines and a few on 19 March 1981 (SV). Moreau (1927-28) stated that in autumn and spring a few were seen. Al Hussaini (1938) observed some in the fields between 14 and 22 February 1938, but presented no evidence to substantiate its inclusion as "residents." **Fa:** Abdel Rahim et al. (1980) saw this species between late March and early April 1979. **Da:** Moreau (1927) noted odd birds at Umar Seraya and near Mut between 10 and 13 April 1925. In the autumn at Bir Terfawi, 300 km south of Mut, a number were seen, including many dead (Moreau,

1927–28). At Ezbet Zayat, halfway between Dakhla and Kharga, six to eight were noted on 24 March 1984 (SMG, HS). **Kh:** This species was observed on 18 October 1980 (SV). Moreau (1927–28) mentioned that Quail are abundant in spring but only “a few” are noted in autumn. Beadnell (1909, p. 230) stated that the “best bags [of Quail] can be made in the spring.” **GU:** On 2 November 1968, 50 were observed at Karkur Tahl and on the following day 15 in Wadi Tahl (Misonne, 1974).

**Water Rail** *Rallus aquaticus aquaticus* RB PV WV

**WN:** On 17 January 1979, about 15 were seen and heard in the reed-beds (Meininger et al., 1979). Nicoll (1912, p. 442) considered it “a most abundant resident” and had a collection of several clutches and birds ranging in age from fledglings to adults. On 27 May 1918, Raw (1921) found three nests within a hundred yards of one another in a dense reed-bed. The local breeding population is augmented during the winter months by migrants. **Qa:** On 15 April 1977, one bird was observed at El Moghra (Goodman and Ames, 1983). **Ba:** Moreau (1927) tentatively identified a bird vocalizing in a reed-bed as this species. **Da:** Scharlau (1963) observed this species between 2 and 4 October 1962.

**Spotted Crake** *Porzana porzana* PV?

**WN:** One was collected on 29 October 1910 (Nicoll, 1912).

**Corn Crake** *Crex crex* AV

**Si:** One was observed on 9 May 1985 near Aghurmi (SMG, PLM).

**Moorhen** *Gallinula chloropus chloropus* RB PV WV

**WN:** On 17 January 1979, about 22 were seen (Meininger et al., 1979). A clutch of seven eggs was found on 28 May 1950 (JCC). Nicoll (1912, p. 443) mentioned it as an “abundant resident” and had a series of specimens representing the gamut of age classes. The breeding populations in Wadi Natroun, as well as other oases, are augmented during the winter months by migrants. **Si:** The only record is a bird collected on 18 April 1935 (Moreau, 1941; BMNH 1936.9.21-10). **Ba:** Moreau (1927) heard Moorhens in the bulrushes between 20 and 24 March 1925. **Fa:** An adult specimen is housed in the FMFA. One was observed at Abu Minqar on 21 March 1984 (SMG, HS). **Da:** This species was noted throughout the period between late September 1982 and mid-January 1983, and on 26 January 1982 at least 200 were present on the lake near Bir Talata (AH). On 24 April 1981, we saw at least 10 individuals that may have been breeding. **Kh:** On 23 April 1981, we observed at least six birds, with nestlings, on the lake near the Hibis Temple.

**Coot** *Fulica atra atra* RB PV WV

**WN:** A flock of about 400 was noted on 16 January 1985 (SMG), and individuals on 2 March 1984 (SMG, JH) and on 7 May 1981 (SMG, ST). Specimens in GZM include: an unsexed bird (5389) and two females (5390-5391) taken on 24 October 1910 and 24 November 1911, respectively. **Qa:** On 18 December 1967, one was collected at El Moghra (Goodman and Ames, 1983). **Ba:** According to Moreau (1927) natives were familiar with this species as a winter visitor. **Fa:** Abdel Rahim et al. (1980) saw Coot

sometime between late March and early April 1979. One specimen is housed in the FMFA. Six were noted on 22 March 1984 at Abu Minqar (SMG, HS). **Da:** On 26 January 1982, at least 1500 Coots were present on the lake near Bir Talata and between late September 1982 and mid-January 1983, about 1000 were observed on the lakes near Mut and El Qalamun (AH). On the lake near Pumping Station Four, which seems to have suitable breeding habitat, we observed 10 birds on 24 April 1981. Meinertzhagen (1930) saw birds in March at an unspecified place in the oasis carrying nesting material. **Kh:** One was observed on 25 March 1984 near the Hibis Temple (SMG, HS).

**Crane** *Grus grus grus* PV

**Si:** Almond (1937) saw Cranes flying over Siwa in mid-March 1936. Al Hussaini (1939) observed 12 birds at the lake near Aghurmi between 7 and 13 February 1939. **Qa:** On 12 May 1975, a female was collected at El Moghra and on 13 April 1977, one was observed out in the desert near Qaret Nanous (Goodman and Ames, 1983). **Ba:** On 23 March 1925, a flock of 60 birds and the following day 400 were seen passing over the area (Moreau, 1927). **Da:** Moreau (1927, p. 241) mentioned that "immense numbers pass by way of Dakhla in spring, flying due north" and that "Jarvis has seen the sky 'practically grey with them'" and "a thousand or more walking about on the bare desert." On 8 March 1927, a flock of several hundred was observed west of Bir Tarfawi, 300 km south of Dakhla (Moreau, 1928). Moreau (1967) mentioned that several hundred were seen in the spring, 320 km west of Dakhla. **Kh:** On 12 October 1978, 150 were observed circling in a southerly direction (AH). Meinertzhagen (1930) mentioned that many thousands were seen passing over in the third week of March. **GK:** In early March 1938, Bagnold (1939) observed flocks of Cranes circling and recircling Gilf el Kebir each evening. **GU:** Misonne (1974) saw or heard flocks moving through in December 1968. Bagnold (1939) noted a flock of Cranes just east of Gebel Uweinat in mid-March 1938.

**Demoiselle Crane** *Anthropoides virgo* PV

**Ba:** Moreau (1927, p. 223) identified two birds on 24 March 1925 which "fell out from" a flock of 400 Common Cranes. **Da:** According to Moreau (1927), D. Wallace saw this species, and Moreau (1967) reported a party traveling overhead in the spring. **Kh:** In March 1928, among a huge flight of cranes was a small detached party of this species (Meinertzhagen, 1930).

**Houbara Bustard** *Chlamydotis undulata undulata* RB

**WN:** The GZM possesses four specimens referable to nominate *undulata* taken in February, April, and November (Meinertzhagen, 1930) and one egg on 10 April 1914. According to Meinertzhagen (1930, p. 626), this species is "not uncommon round the Wadi Natrun at all seasons." **Si:** Many were observed between Siwa and Salum in February 1920 (Meinertzhagen, 1930). Belgrave (1923, p. 31) mentioned that there is "an occasional bustard." In October 1980, the owner of a hunting shop in Mersa Matruh told us that there were "many" Houbara Bustards 80 km south of Mersa Matruh towards Siwa and 20 km to the west. He further noted that this species was

regularly hunted with falcons and guns. Bulman (1942) estimated that in the area south of Mersa Matruh, between 16 and 40 km from the coast, approximately 50 were present in October 1940. Dr. D. Osborn (pers. comm.) saw this species between 1965 and 1967, 20–30 km south of Bahig. **Ba:** According to a local hunter, Houbara Bustards formerly nested in the area between Bahariya and Siwa. In April 1981, another hunter told us he shot an individual about four years earlier, 25 km north of Bahariya. Abdel Rahim et al. (1980) reported observing this species near El Heiz between late March and early April 1979, but presented no details. **Fa:** Abdel Rahim et al. (1980) mentioned that they noted this species between late March and early April 1979, but details are lacking. **Da:** According to Meinertzhagen (1930), the Houbara Bustard was absent during the winter months, but reappeared in the spring and apparently bred on the desert edge. No recent records. **Kh:** Jarvis (in Moreau, 1927, p. 230) noted that Houbara Bustards have been observed "from time to time in winter in the open sandy country at the north end of the oasis," but they were probably only winter visitors; although Meinertzhagen (1930) thought that they might breed on the desert edge. A native hunter told us in April 1981 that he had seen Houbara Bustards three years ago.

**Painted Snipe** *Rostratula benghalensis benghalensis* RB

**WN:** Recent records include a female on 2 March 1984 (SMG, JH), two on 27 May 1984 (SMG, RWS), and one on 7 May 1981 (SMG, ST). Nicoll (1912) collected birds in both spring and autumn, and Raw (1921) found a nest on 25 May 1918 with three eggs. A male specimen (FMNH CC 22453) was obtained on 28 August 1959.

**Oystercatcher** *Haematopus ostralegus ostralegus* WV

**WN:** Two were observed on 7 May 1981 (SMG, ST) and a single bird on 6 January 1982 (YL). An adult was shot on 15 August 1910 (in GZM) and a small flock recorded in November 1911 (Nicoll, 1912).

**Black-winged Stilt** *Himantopus himantopus himantopus* FB WV

**WN:** Recent observations include: five on 31 March and 35 on 3 April 1981 (WS); two on 5 May 1981 (SMG, ST); and one on 6 January 1982 (YL). Specimens were collected on 25 August 1910 (Nicoll, 1912; in GZM). Six pairs were observed and three nests found on 25 May 1918 (Raw, 1921). However, there is no recent evidence of breeding in Wadi Natroun or anywhere else in Egypt. **Si:** Two were noted at Aghurmi Lake on 8 May 1985 (SMG, PLM). **Ba:** On 8 March 1980, a few were seen migrating north (SV). **Fa:** We saw three at the lake north of Qasr Farafra on 26 April 1981. **Da:** Twenty were noted at Pumping Station Four on 7 September 1984 (SH, TDHM). It was noted at Bir Talata in early October 1982 (RG, AH). Moreau (1927) saw six individuals on 12 April 1925 south of Umar Seraya. Between 22 and 23 March 1984, six to eight individuals were present on a small lake 13 km north of Mut (SMG, HS). **Kh:** On 22 and 23 April 1981, we observed 8 and 13 individuals (respectively) in a flooded field at El Kharga.

**Avocet** *Recurvirostra avosetta* FB PV WV

**WN:** On 17 January 1979, 12 were seen (Meininger et al., 1979). Accord-

ing to Meinertzhagen (1930) there was formerly a small breeding colony in Wadi Natroun. Birds were collected on 17 April and 8 May 1910 (Nicoll, 1912; in GZM). **Si:** Moreau (1941) mentioned two birds on 3 May 1935. **Da:** In mid-October 1982, five were observed and on 27 October 1980, three at the lake near Bir Talata (AH). Wallace (in Moreau, 1927) reported winter records from Umar Seraya.

**Stone Curlew** *Burhinus oediconemus saharae* RB

**WN:** An adult female of *saharae* was shot on 21 May 1910 (GZM 5381) and two eggs were taken from a nest (Nicoll, 1912). A newly hatched chick (BMNH 1965.M.3752) was collected on 15 April 1923 (Meinertzhagen, 1930). **Kh:** Moreau (1927) was in the oasis from 7 to 9 and 14 to 16 April 1925, during that time he found a nesting pair.

**Senegal Thick-knee** *Burhinus senegalensis* RB

**WN:** In March 1910 two were seen and in May 1910 eggs were collected (Nicoll, 1912). Presumably *inornatus* is the form that breeds in Wadi Natroun.

**Cream-coloured Courser** *Cursorius cursor cursor* RB

**WN:** On 3 April 1981, one was observed in Wadi Natroun (WS). Raw (1921) saw young, about a month old, on 24 May 1918. Two specimens (GZM 5408-5409) were taken on 20 July 1910. **Qa:** On 7 March 1976, one bird was seen at Qaneitra Crossing and on 15 April 1977, two individuals 1 km south of El Moghra (Goodman and Ames, 1983). **Ba:** A native hunter told us in April 1981 that he was familiar with this species. **Fa:** One was noted north of Qasr Farafra on 19 March 1984 (SMG, HS). **Kh:** On 18 October 1980, one was observed (SV). Meinertzhagen (1930, p. 654) listed this species as a breeding resident in the Kharga and Dakhla oases, but presented no supporting evidence.

**Collared Pratincole** *Glareola pratincola pratincola* MB? PV

**WN:** Specimens include two males taken on 19 and 20 April 1910 (Nicoll, 1912; in GZM), a female on 16 April 1923 (BMNH 1956 M.3853), and a female on 5 May 1959 (FMNH CC 22329). Meinertzhagen (1930) stated that it may possibly breed and that birds have been observed throughout May and June. **Si:** Five were noted at Aghurmi Lake on 9 May 1985 (SMG, PLM). Moreau (1941) mentioned that birds were observed or collected on 29 April, 10 May, and on 14 May 1935. **Qa:** One was shot from a group of six at El Moghra on 13 May 1975 (Goodman and Ames, 1983). **Fa:** One specimen in FMFA. **Da:** On 24 April 1981, we saw a group of eight near Ezbet Zayat, midway between Kharga and Dakhla, and about 40 in Dakhla, at the lake near Pumping Station Four.

**Little Ringed Plover** *Charadrius dubius curonicus* (MB) PV WV

**WN:** Two were observed on 18 January 1985 (SMG), four on 3 April 1981 (WS), and two on 7 May 1981 (SMG, ST). Meinertzhagen (1930) noted that two nests were located during April. It was also found breeding on 7 July 1984 (SH, TDHM). **Si:** One at Aghurmi Lake on 9 May 1985 (SMG, PLM). **Da:** We observed one bird on 24 April 1981 along the lake near Pumping Station Four. At this same locality several were noted in mid-October 1982.

An immature male and female (USNM 551003-551004) were taken on 20 January 1972. **Kh:** Moreau (1927) saw one on 7 April 1925.

**Ringed Plover** *Charadrius hiaticula* PV WV

**WN:** Six were observed on 17 January 1979 (Meininger et al., 1979) and one on 10 April 1983 (HR). **Qa:** On 14 April 1977, one was observed at Bir Nahid, 4.5 km east of El Moghra (Goodman and Ames, 1983). **Da:** Occasionally observed in January and February 1985 near Pumping Station Four and in mid-October 1982 at Bir Talata (AH). On 22 March 1984, one was noted at the lake near El Qalamun (SMG, HS).

**Kittlitz's Plover** *Charadrius pecuarius* RB

**WN:** On 10 April 1983, two were observed (HR); on 5 February 1983, 12-15 (BR); and on 17 January 1979, 19 (Meininger et al., 1979). Kattinger (1970) found a small flock on 17 August 1966. Meinertzhagen (1930) considered this species a resident. A male (UMMZ 207012) taken on 27 May 1984 had slightly enlarged testes.

**Kentish Plover** *Charadrius alexandrinus alexandrinus* RB PV WV

**WN:** Local breeding records include: one nest with eggs and two pairs with small nestlings on 3 April 1981 (WS), a pair with chicks on 1 May 1981 (SV) and a clutch on 27 May 1918 (Raw, 1921; BMNH 1973.1.1440). Meininger et al. (1979) noted 115 on 17 January 1979 and Kattinger (1970) an unspecified number on 17 August 1966. **Si:** A pair was observed near Aghurmi Lake on 8 May 1985 with three chicks (SMG, PLM). **Qa:** On 14 April 1977, one bird was observed at Bir Nahid, 4.5 km east of El Moghra (Goodman and Ames, 1983). **Fa:** On 19 March 1984, a group of four was noted on the lake north of Qasr Farafra, from which a female (UMMZ 206800) was collected. It had an enlarged ovary. Two were observed at Abu Minqar on 21 March 1984 (SMG, HS). **Da:** On 22 March 1984, five to ten individuals were recorded at the lake near Pumping Station Four (SMG, HS).

**Greater Sand Plover** *Charadrius leschenaultii* PV WV

**WN:** Recent observations include: three on 17 January 1979 (Meininger et al., 1979), one on 7 October 1980 (MS), and two on 2 March 1984 (SMG, JH).

**Caspian Plover** *Charadrius asiaticus* AV

**Da:** On 24 April 1981, we observed and photographed two individuals at the lake near Pumping Station Four. One was in breeding plumage and the other in winter plumage. This species has only been recorded in Egypt on a few occasions (Goodman and Watson, 1983).

**Golden Plover** *Pluvialis apricaria* PV

**WN:** Several were seen and one obtained on 26 November 1911 (Nicoll, 1912; in GZM). **Fa:** One specimen is housed in FMFA.

**Grey Plover** *Pluvialis squatarola* PV

**Si:** One was observed on 8 May 1985, at Aghurmi Lake (SMG, PLM). **Fa:** On 26 April 1981, we saw two individuals near the lake north of Qasr Farafra.

**Spur-winged Plover** *Hoplopterus spinosus* RB (PV)

**WN:** There are several recent records from this area: four on 17 January 1979 (Meininger et al., 1979), at least four pairs on 3 April 1981 (WS), and two birds on 7 May 1981 (SMG, ST). Maclaren (1944) saw flocks on 24 August 1942. Eggs were taken and newly hatched young seen at the end of May 1918 (Raw, 1921). **Da:** Three were seen on 20 October 1980 (AH). **Kh:** On 23 April 1981, we saw one bird in suitable breeding habitat.

**Lapwing** *Vanellus vanellus* PV WV

**WN:** On 17 January 1979, 49 birds were counted (Meininger et al., 1979). Older records include one bird (collected) on 20 December 1910 and many (two collected) in late November 1911 (Nicoll, 1912; in GZM). **Si:** Meinertzhagen (1930) considered it a winter visitor to the oasis, but presented no supporting records. **Qa:** On 14 April 1977, one was found dead at Bir Nahid, 4.5 km east of El Moghra (Goodman and Ames, 1983). **Fa:** There is one specimen in the FMFA. **Da:** One was observed at Tenida in late December 1982 and six in mid-January 1983 near Bir Talata (AH).

**Little Stint** *Calidris minuta* PV WV

**WN:** On 17 January 1979, over 1300 were observed (Meininger et al., 1979) and on 8 April 1981, 200 (WS). Maclaren (1944) noted it as numerous between 18 August and 6 October 1942. **Si:** Sixteen were observed on 8 May 1985 at Aghurmi Lake and 110 the following day at Zeitun Lake (SMG, PLM). **Ba:** We observed two on 28 April 1981. **Fa:** On 26 April 1981, we found three individuals and the following day a single bird. **Da:** One was collected (UMMZ 206808) from a flock of 40, on 22 March 1984. We observed 30 (each day) on 24 and 25 April 1981. Scharlau (1963) counted about 250 birds between 2 and 4 October 1962. **Kh:** Six birds were counted on 23 April 1981 (PLM, WCM, SMG).

**Temminck's Stint** *Calidris temminckii* PV WV

**WN:** Recent records include: five on 17 January 1979 (Meininger et al., 1979), an unspecified number in March 1980 (SV) and two on 7 May 1981 (WS). **Si:** Meinertzhagen (1930, p. 558) stated that it "has occurred" but gave no details. **Ba:** Al Hussaini (1938) shot one at El Qasr sometime between 14 and 22 February 1938. **Da:** We saw at least 15 birds on 24 April 1981. Scharlau (1963) noted about 30 birds between 2 and 4 October 1962. **Kh:** One female in the USNM (551065) was taken on 14 January 1972.

**Curlew Sandpiper** *Calidris ferruginea* PV

**WN:** In April and May 1910, several specimens were collected (Nicoll, 1912; in GZM). A female (GZM 7657) was taken on 8 October 1916. **Si:** On 8 May 1985, 16 were observed at Aghurmi Lake (SMG, PLM). **Qa:** One bird was collected on 17 May and another on 19 May 1975 at El Moghra (Goodman and Ames, 1983). **Da:** On 24 April 1981, we saw five birds at the lake near Pumping Station Four. Scharlau (1963) observed one between 2 and 4 October 1962.

**Dunlin** *Calidris alpina* PV WV

**WN:** In March 1910, a few were observed, on 23 October 1910, one was shot and in November 1911, two noted (Nicoll, 1912). **Da:** It was noted near Mut on 7 September 1984 (SH, TDHM).

**Ruff** *Philomachus pugnax* PV WV

**WN:** On 2 April 1981, 13 birds were observed (WS). Nicoll (1912) saw thousands of migrants during a few days in late March 1910. A few were recorded by Maclaren (1944) on 18 August 1942 with more following thereafter. Two specimens (FMNH CC 22312-22313) were taken on 5 May 1959. **Si:** Over 60 were noted on 8 May 1985 at Aghurmi Lake (SMG, PLM). Individuals were collected on 17 and 21 April 1935 (Moreau, 1941). **Qa:** There are several mid-May 1975 and early March 1976 records (Goodman and Ames, 1983). **Fa:** One specimen housed in FMFA. **Da:** We observed six on 5 April 1981. Scharlau (1963) observed about 15 between 2 and 4 October 1962. **Kh:** The basis for Moreau's (1967) statement that this species occurs in Kharga during the spring is unknown to us.

**Jack Snipe** *Lymnocyptes minimus* PV WV

**WN:** Records include six birds on 18 January 1985 (SMG), two between 21 January and 24 February 1903 (Loat, 1905), and a few in March 1910 and in November 1911 (Nicoll, 1912). **Si:** This species has been recorded in February, but no details were given (Meinertzhagen, 1930). **Ba:** Moreau (1927) saw a few between 20 and 24 March 1925. **Da:** Meinertzhagen (1930) stated that this species has been observed during March in the oasis, but gave no specific details. **Kh:** Beadnell (1909, p. 227) noted that "jack snipe are to be met with."

**Snipe** *Gallinago gallinago* PV WV

**WN:** Over 50 were counted on 8 March 1985 (SMG), and 18 on 17 January 1979 (Meininger et al., 1979). Maclaren (1944) saw the first one on 8 September 1942. Specimens in GZM include: a female (7616), 24 March 1910; unsexed bird (7617), 25 August 1910; and a male (7620), 25 November 1911. **Si:** One was observed on 26 March 1927 (Moreau, 1941). **Qa:** Goodman and Ames (1983) reported a single bird on 14 April 1977 at Bir Nahid, 4.5 km east of El Moghra. **Ba:** Moreau (1927) saw a few between 20 and 24 March 1925 and Al Hussaini (1938) found it common in the salt marshes from 14 to 22 February 1938. **Da:** Many hundreds were observed in mid-March (Meinertzhagen, 1930). Scharlau (1963) observed about eight between 2 and 4 October 1962. **Kh:** Al Hussaini (1959a) noted that one was collected on a February 1937 trip to the oasis; however, this record was not mentioned in his (1937) report on the expedition. Beadnell (1909) found "snipe" common between December and February, but as early as October and as late as April.

**Great Snipe** *Gallinago media* PV (WV)

**WN:** On 8 March 1985, five were seen (SMG) and on 17 January 1979, three (Meininger et al., 1979). Nicoll (1912) considered it a common spring and autumn visitor.

**Black-tailed Godwit** *Limosa limosa limosa* PV WV

**WN:** On 11 December 1980, two were observed (RW). Loat (1905) collected one on 15 February 1903 and another one was obtained on 20 April 1910 by Nicoll (1912; in GZM). Maclaren (1944) saw two on 8 September 1942. **Fa:** One was observed at Abu Minqar on 21 March 1984 (SMG, HS).



**Da:** A dehydrated bird, which had perished in the desert, was found at Bir Terfawi, 300 km south of Dakhla (Moreau, 1928).

**Curlew** *Numenius arquata* WV

**WN:** Recent records include four on 2 March 1984 (SMH, JH), a small flock on 13 November 1982 (PW), and 62 on 17 January 1979 (Meininger et al., 1979). A male (GZM 658) taken on 23 May 1904 cannot be confidently assigned to a subspecies. **Si:** Two were found on 26 March 1925 and one on 7 September 1935 (Moreau, 1928; 1941).

**Spotted Redshank** *Tringa erythropus* PV WV

**WN:** Three females were collected on 13 May 1910 and one on 9 November 1910 (Nicoll, 1912; in GZM). **Si:** One was noted at Aghurmi Lake on 8 May 1985 (SMG, PLM). **Fa:** On 19 March 1984, one (UMMZ 206804) was collected from a flock of six on the lake north of Qasr Farafra. **Da:** On 25 January 1982, three were observed (AH) and on 24 April 1981, ten (PLM, WCM, SMG). It has been noted on 7 September 1984 (SH, TDHM). **Kh:** On 18 October 1980, one was observed (SV).

**Redshank** *Tringa totanus* subsp. PV WV

**WN:** On 17 January 1979, about 114 were counted in total on several salt lakes (Meininger et al., 1979). Specimens referable to nominate *totanus* include: birds taken on 23 March 1910 and in August 1910 (Nicoll, 1912). A large female collected on 9 November 1910 was identified by Meinertzhagen (1930) as *T. t. eurhinus* (not examined). **Si:** Moreau (1928; 1941) mentioned records from 26 March 1927 and 6 May 1935. **Ba:** Between 20 and 24 March 1925, small flocks were noted (Moreau, 1927). **Da:** This species was seen between mid-October 1982 and late January 1983 near Mut and El Qalamun (AH). Two were noted on 22 January 1982 (AH) and one on 24 April 1981 (PLM, WCM, SMG).

**Marsh Sandpiper** *Tringa stagnatilis* PV WV

**WN:** On 3 April 1981, one was observed (SV). A female (FMNH CC 22487) was collected on 5 November 1959. Loat (1905) found it not common between 21 January and 24 February 1903. Nicoll (1912) obtained two that were shot on 12 April and one on 10 May 1910. **Si:** One noted on 9 May 1985 at Zeitun Lake (SMG, PLM). **Da:** Three were observed on 22 March 1984 near El Qalamun (SMG, HS). An unspecified number were noted in mid-October 1982 and one on 1 December 1978 at Bir Talata (AH).

**Greenshank** *Tringa nebularia* PV WV

**WN:** Nicoll (1912) recorded this species in late March 1910. **Si:** Five were noted on 9 May 1985 at Aghurmi Lake (SMG, PLM). **Qa:** On 14 April 1977, three were found dead at El Moghra (Goodman and Ames, 1983). **Ba:** Moreau (1927) observed one between 20 and 24 March 1925. **Da:** This bird was noted throughout the period from late September 1982 to late January 1983 (AH). We observed five on 24 April 1981. **Kh:** One was recorded on 18 October 1980 (SV) and four on 23 April 1981 (PLM, WCM, SMG).

**Green Sandpiper** *Tringa ochropus* PV WV

**WN:** On 17 January 1979, six were observed (Meininger et al., 1979). Nicoll (1912) found this species in November 1911. Two females (GZM 92

and BMNH 1965.M.3100) were taken on 6 April 1914 and 13 April 1923, respectively. **Qa:** One female was collected on 12 May 1975 at El Moghra (Goodman and Ames, 1983). **Ba:** Recorded on 9 March 1980, 15 March 1981 (SV), and 28 April 1981 (PLM, WCM, SMG). Al Hussaini (1938) mentioned this species as a common bird between 14 and 22 February 1938. Moreau (1927) noticed a wave of migrants on 23 March 1925. **Fa:** On 19 March 1984, six were observed near Qasr Farafra, one of which was collected (UMMZ 206801). Twenty were noted at Abu Minqar on 21 March 1984 (SMG, HS). **Da:** A flock of 12–14 was noted on 22 March 1984 near Pumping Station Four (SMG, HS). Al Hussaini (1959a) mentioned this species as a winter visitor. Scharlau (1963) recorded about ten between 2 and 4 October 1962. **Kh:** We observed four on 23 April 1981. On 18 October 1980, this species was observed (SV). Moreau (1927) saw one on 7 April, several on 9 April and a distinct movement on 16 April 1925. Al Hussaini (1959a) listed this species as a winter visitor but provided no evidence.

**Wood Sandpiper** *Tringa glareola* PV WV

**WN:** Three were observed on 11 February 1985, and ten on 8 March 1985 (SMG). A female (FMNH CC 22487) was taken on 5 November 1959. Nicoll (1912, p. 451) mentioned this species was "fairly numerous" during March 1910 particularly around the fresh water lakes. An adult female and immature were collected on 18 April and 25 August 1910, respectively (Nicoll, 1912; in GZM). **Si:** Three were noted on 8 and 9 May 1985 at Aghurmi Lake (SMG, PLM). On 26 March 1927, two were observed (Moreau, 1941). **Qa:** A pair was collected on 13 May 1975 at El Moghra (Goodman and Ames, 1983). **Ba:** One was observed on 17 March 1984 (SMG, HS) and on 28 April 1981 (PLM, WCM, SMG). **Da:** We saw five on 28 April 1981 and Scharlau (1963) recorded about 10 individuals between 2 and 4 October 1962. **Kh:** On 23 April 1981, we saw five. It has also been noted on 10 October 1980 (SV).

**Common Sandpiper** *Actitis hypoleucos* PV WV

**WN:** One was recorded on 7 May 1981 (SMG, ST), another on 10 April 1983 (HR) and three on 2 March 1984 (SMG, JH). After 18 August 1942, it was noted as common on autumn passage (Maclaren, 1944). **Si:** On 9 May 1985, three were observed at Aghurmi Lake (SMG, PLM) and two on 6 May 1935 (Moreau, 1941). **Ba:** We observed five on 28 April 1981. **Fa:** One was observed on 19 March 1984 on the lake north of Qasr Farafra (SMG, HS). **Da:** Along the lake near Pumping Station Four, about 30 individuals were present on 24 April 1981 (PLM, WCM, SMG) and two on 26 January 1982 (AH). **Kh:** We observed about ten on 23 April 1981. Moreau (1927) saw one on 7 April 1925, several on 9 April 1925 and a northward movement in the "teeth" of a sandstorm on 16 April 1925.

**Little Gull** *Larus minutus* AV

**WN:** An immature was observed on 17 January 1979 (Meininger et al., 1979).

**Black-headed Gull** *Larus ridibundus* PV WV

**WN:** One was shot on 23 December 1910 (GZM 7782) and another observed in November 1911 (Nicoll, 1912). **Si:** An unidentified *Larus* sp. was seen on 16 June 1935 (Moreau, 1941). **Fa:** One specimen housed in FMFA. **Da:** Records include about six between late September 1982 and mid-January 1983, four on 6 November 1981, 15 on 16 January 1982 (AH) and two on 25 April 1981 (PLM, WCM, SMG).

**Lesser Black-backed Gull** *Larus fuscus fuscus* PV WV

**WN:** Two were observed on 8 January 1982 (YL). Two males (GZM 7788, 661) were collected on 12 April 1912 and 20 May 1904, respectively. **Kh:** Moreau (1927) saw ten individuals moving north on 16 April 1925.

**Common Tern** *Sterna hirundo* AV

**Da:** Twenty were observed on the lake near Pumping Station Four on 7 September 1984 (SH, TDHM).

**Whiskered Tern** *Chlidonias hybridus hybridus* PV (WV)

**WN:** A flock of four was noted on 16 January 1985 (SMG) and another of eight on 27 May 1984 (SMG, RWS). **Si:** An unidentified *Chlidonias* sp. was observed on 16 June 1935 (Moreau, 1941). **Fa:** Al Hussaini (1959a) mentioned that a freshly dead specimen in winter plumage was found in late January 1958. **Da:** On 24 April 1981, we recorded 12 individuals. Scharlau (1963) saw three between 2 and 4 October 1962. **Kh:** We observed one on 23 April 1981.

**Black Tern** *Chlidonias niger niger* PV

**WN:** On 24 August 1910, an immature was shot (Nicoll, 1912; in GZM). **Si:** One was noted on 8 May 1985 (SMG, PLM).

**White-winged Black Tern** *Chlidonias leucopterus* PV

**WN:** Recent records include five on 24 May 1985 (TDHM) and three in a flock of eight *C. hybridus* on 27 May 1984 (SMG, RWS). Ten adults were collected on 10 May 1910 (Nicoll, 1912) and many were seen in late May 1918 (Raw, 1921). **Si:** Two were noted on 8 May 1985 (SMG, PLM). **Da:** On 25 April 1981, about 80 were present at the lake near Pumping Station Four (PLM, WCM, SMG). Scharlau (1963) observed three between 2 and 4 October 1962.

**Crowned Sandgrouse** *Pterocles coronatus coronatus* RB?

**WN:** Specimens in the GZM include two males (5294, 5295) and two females (5296, 5297) obtained alive on 22 May 1910. **Qa:** On 6 March 1976 a male, not in breeding condition (based on gonad size), was shot from a group of approximately 12 at Qara (Goodman and Ames, 1983).

**Spotted Sandgrouse** *Pterocles senegallus* RB

**WN:** A wing of a female (GZM A2041) and of a male (GZM A2042) were found at Bir Victoria in April 1922. **Ba:** In April 1981, a native hunter told us that he was familiar with this species. Another hunter knew the bird from the environs of the El Gedida iron ore mines. **Fa:** Abdel Rahim et al. (1980) recorded this species sometime between late March and early April 1979; however, details are lacking. **Da:** In the winters of 1978 through 1983 this species was fairly common (AH). A female in the USNM (551083) was collected on 17 January 1972. In the collection of Ain Shams University,

Cairo, there is a pair (not catalogued) collected on 30 January 1959. On 24 April 1981, we saw six at the resthouse near Ezbet Zayat, midway along the Kharga-Dakhla road, where Meinertzhagen (1930, p. 518) noted this species "can always be met with." **Kh:** On 17 October 1980, two flocks of six individuals each were observed 10 km north of El Kharga (SV). Al Hussaini (1959a) mentioned that he saw eight captive birds sometime between 10 and 18 February 1937. On 2 February 1983 about 200 were observed between Kharga and Asyut (HR).

**Rock Pigeon (Rock Dove)** *Columba livia dakhlae* RB

According to Meinertzhagen (1930), the subspecies *dakhlae* is only known from the Dakhla and Kharga oases, where they are resident. The subspecific identity of wild birds from Bahariya and Farafra needs to be determined.

**Ba:** Abdel Rahim et al. (1980) recorded this species sometime between late March and early April 1979 at several localities. However, details are lacking and since feral pigeons occur in Bahariya, it is impossible to know if these were wild birds. **Fa:** On 26 April 1981, we saw one pigeon resting in barren desert midway along the Farafra-Dakhla road. Abdel Rahim et al. (1980) recorded this species sometime between late March and early April 1979. **Da:** From October to December 1978, 1979, and 1980, this species was observed daily (AH). We have examined four specimens (USNM 551084-551087) collected in January 1972. All are very pale in plumage coloration, typical of *dakhlae*, and thus, interbreeding with local domestic pigeons appears to be minimal. **Kh:** On 23 April 1981, we saw several individuals. Moreau (1927) mentioned the species as a common resident.

**Stock Pigeon (Stock Dove)** *Columba oenas oenas* (WV)

**WN:** Specimens examined include three females (GZM 5244-5246) taken on 24 and 26 November 1911 and 14 October 1914 (respectively). Nicoll (1912) recorded this species on 19 March 1910.

**Collared Dove** *Streptopelia decaocto* RB

This species has only recently become established in the country (Meininger and Mullié, 1981b; Goodman and Houlihan, 1981)

**WN:** On 1 May 1981, one was seen near a new tree plantation, not far from the Wadi Natroun resthouse, along the Cairo-Alexandria road (PLM, WCM). Two birds were shot and another two were observed on 16 April 1982 at Asher Talaaf, 60 km south of Alexandria; by the autumn of 1982 they were breeding at that locality. About 100 were observed at Asher Talaaf on 11 February 1983 (BO). In early May 1982, one individual was shot on the edge of the Nile Delta, 30 km east of Wadi Natroun (BO).

**Turtle Dove** *Streptopelia turtur* subspp. MB PV WV

Several subspecies have been collected in the Western Desert. *S. t. turtur*, *arenicola* and *isabellina* are migrants or winter visitors throughout the area. The later is a breeding resident in the Nile Valley and Delta. The local breeding form, in at least Dakhla and Kharga, is *rufescens* (Vaurie, 1965).

**WN:** Two were observed on 8 September 1942 (Maclaren, 1944). An adult male (GZM 5274) shot on 28 April 1910 was referred to *arenicola* by Nicoll (1912). Raw (1921, p. 374) "observed quite a few" *isabellina* at the end of May

1918, but could not find any evidence of breeding. **Si:** Between 8 and 10 May 1985, a number were observed throughout the oasis displaying and building nests (SMG, PLM). Moreau (1928) noted that a few arrive in late spring and breed. Kiepenheuer and Linsenmair (1965) found it common from 19 to 27 September 1963. A male (BMNH 1936.9.21-16) taken on 10 May 1935 is referable to *isabellina*. **Ba:** Recent observations include: "a few" on 13 March 1981 (SV), over 100 on 28 April 1981 and 50 the following day at the El Gedida iron ore mines (PLM, WCM, SMG). **Fa:** We observed about 50 on 27 April 1981. **Da:** It was common on 18 October 1980 (SV) and we observed a few on 24 April 1981. Recent specimens include adult males collected on 16 January 1972 (USNM 551092) and on 24 March 1984 (UMMZ 206927) which are referable to *S. t. rufescens*. The March specimen had enlarged gonads. On 24 March 1984, eight individuals were present at Ezbet Zayat, halfway between Dakhla and Kharga (SMG, HS). One male (UMMZ 206926) with enlarged gonads was collected at this locality and is referable to *rufescens*. **Kh:** On 23 April 1981, we observed 20 birds in total and found evidence of breeding in the oasis. It has also been noted on 18 October 1980 (SV). An adult female (USNM 551088) collected on 14 January 1972 is referable to *S. t. turtur*. **GU:** Misonne (1974) saw this species in the autumn of 1968.

**Laughing Dove** *Streptopelia senegalensis aegyptiaca* RB

**WN:** On 17 January 1979, two were observed (Meininger et al., 1979); at the end of February 1980 it was also noted (SV); and on 1 May 1981 at least two pairs were observed (PLM, WCM). Apparently the Laughing Dove has recently invaded the oasis, for Meinertzhagen (1930) stated that it did not occur in Wadi Natroun. **Si:** Between 8 and 10 May 1985, displaying birds were noted throughout the oasis (SMG, PLM). **Ba:** It was common near Bir Matar on 17 March 1984 (SMG, HS). Four (GZM 9931-9934) were taken in late March 1925 by Moreau. **Fa:** Abdel Rahim et al. (1980) observed this species sometime between late March and early April 1979. This species has not been recorded subsequently, and breeding seems unlikely. **Da:** It has been recorded on 13 January 1981 nesting near El Aweina and frequently between late September 1982 and mid-January 1983 (AH). In late March 1928, Meinertzhagen (1930) located two nests and considered this species abundant and very tame. We follow Vaurie (1965) in treating the subspecies *dakhlae* as a synonym of *aegyptiaca*. **Kh:** Recent records include birds on 18 October 1980 (SV), and on 24 April 1981 when a few were found breeding (PLM, WCM, SMG).

**Cuckoo** *Cuculus canorus canorus* PV

**WN:** Two were shot on 20 September 1910 and 25 September 1911 (Nicoll, 1912; examined in GZM). A male (GZM 9524) was taken on 15 April 1923. **Kh:** We noted one on 24 April 1981, and Kiepenheuer and Linsenmair (1965) saw another between 10 and 14 August 1963.

**Barn Owl** *Tyto alba alba* RB

The occurrence of this species in the Western Desert (excluding Wadi Natroun) needs further substantiation.

**WN:** According to Meinertzhagen (1930) this species is a resident. A female (GZM 4942) was taken on 5 April 1911. **Si:** Meinertzhagen (1930) mentioned this species as a resident, but Moreau (1941) did not accept this record. **Ba:** Moreau (1927) heard one in the vicinity of his tents between 20 and 24 March 1925. **Da:** Meinertzhagen (1930) considered this species a local resident, but no details were given and it has not been recorded since. **Kh:** Specimen in the BMNH (1965.M.4921) collected on 29 March 1928 by Meinertzhagen, but was not mentioned in his 1930 book.

**Scops Owl** *Otus scops scops* PV

**WN:** Birds have been shot on 26 April 1910 and 16 April 1911 (Nicoll, 1912; examined in GZM). Fourteen individuals were seen perched in a tree on 16 April 1923 (Meinertzhagen, 1930). **Qa:** On 15 April 1977, one individual was netted, photographed, and released at El Moghra (Goodman and Ames, 1983). **Fa:** One specimen housed in FMFA.

**Eagle Owl** *Bubo bubo ascalaphus* RB

**WN:** Nicoll (1912) was informed by a Mr. Balboni that this species occurs in the area. No recent records. **Si:** On 7 March 1964, one male was "shot at night in rocky sandy area" 25 km east of the Siwa Oasis (Goodman and Ames, 1983). In early May 1985, local residents mentioned that they were familiar with this species (SMG, PLM). **Ba:** Moreau (1927) saw one on 25 March 1925, 225 km south of Burg el Arab, between Befi and Bahariya. **Fa:** In late March or early April 1979 this species was recorded (Abdel Rahim et al., 1980), but details are lacking. Two specimens are housed in FMFA. **Da:** Two specimens in the BMNH (1965.M.5057-5058) were taken on 25 and 27 March 1928 by Meinertzhagen. **Kh:** Moreau (1927) saw one in the ruins of the Christian Necropolis in April 1925. Fledglings were taken from a nest in the outskirts of the village of Dush, 15 km southeast of Baris in May (Al Hussaini, 1959a). **GU:** Misonne (1974) saw one individual between 8 November and 5 December 1968 at Karkur Tahl and Wadi Hanzul.

**Little Owl** *Athene noctua* subsp. RB

Specimens from the Western Desert are highly variable in color. Within an oasis, color variation sometimes spans the range used to differentiate the two subspecies, *glauca* and *saharae*, and some populations may be polymorphic. This problem is in need of further investigation and no subspecific designations are used in this paper.

**WN:** Nicoll (1912) saw several individuals in November 1911. Specimens in GZM include: male (9416), 27 February 1923 and female (9417; "ovary enlarged"), 28 February 1923 at Bir Victoria; male (9482), 13 April 1923 and female (9485; "sitting on eggs"), 16 April 1923. **Si:** Two were noted at different places on 10 May 1985 (SMG, PLM). **Ba:** In April 1981, natives told us that it breeds in the oasis. Moreau (1927) collected one (GZM 9892) on 28 March 1925 and learned from the locals that this species colonized seven years ago (circa 1920). Al Hussaini (1938) obtained two between 7 and 13 February 1938. **Fa:** Mr. Badr Abdel Moghany (pers. comm.) mentioned that it breeds locally. Specimen housed in FMFA. **Da:** It was seen regularly from late September to mid-January 1978–1983 (AH), and a female

(USNM 551131) was collected on 15 January 1972. On 25 April 1981, we saw at least five at different localities in the oasis. **Kh:** Recent records include one on 10 December 1965 (JT), several from 17 to 21 October 1980 (SV), and one on 23 April 1981 (PLM, WCM, SMG). Meinertzhagen (1930, p. 653) listed it as a resident. Many were observed by Kiepenheuer and Linsenmair (1965) from 10 to 14 August 1963, and one was collected on 11 August (Steinbacher, 1965).

**Long-eared Owl** *Asio otus otus* PV WV

**WN:** Two females (GZM 4964 and 4963) were collected on 18 October 1914 and 25 November 1911 (Nicoll, 1912; Meinertzhagen, 1930). **Fa:** One specimen held in FMFA.

**Short-eared Owl** *Asio flammeus flammeus* PV WV

**WN:** Nicoll (1912) shot two individuals in late March 1910 (examined in GZM). Other specimens include: an unsexed bird (GZM 9235) taken in April 1922 at Bir Victoria, and two males (GZM 4958, 4959) collected on 14 January 1913 and 12 January 1914, respectively. **Si:** One was observed on 25 May and another on 4 June 1935 (Moreau, 1941). A female (BMNH 1936.9.21-6) was taken on 25 April 1935 in Siwa and a male (BMNH 1936.9.21-7) on 4 May 1935 at Khamisah. **Fa:** One specimen in FMFA. A foot of this species was picked up in early March 1933 at 27°30'N, 25°35'E, approximately 190 km south of Farafra (Moreau, 1934; Wingate, 1934).

**Nightjar** *Caprimulgus europaeus* subspp. PV

**WN:** A male and female collected on 16 April 1923 (Meinertzhagen, 1930; BMNH 1965.M.5331-5332) may be referable to the form *meridionalis*. A female was taken on 8 May 1910 (Nicoll, 1912; in GZM). **Si:** Kiepenheuer and Linsenmair (1965) saw this species on a few occasions between 19 and 27 September 1963 and collected a male 110 km north of Siwa on 16 September and a female in Siwa on 26 September that Steinbacher (1965) identified as nominate *europaeus*. **Kh:** Moreau (1934) stated that a *Caprimulgus* sp. was collected on 29 September at 26°45'N, 30°10'E, 110 km northwest of Kharga (specimen not examined).

**Egyptian Nightjar** *Caprimulgus aegyptius* subspp. MB

The distribution and movements of the two subspecies occurring in Egypt, *aegyptius* and *saharae*, are poorly known.

**WN:** Specimens of nominate *aegyptius* from Wadi Natroun include two adult females taken on 18 March 1910 and two adult males obtained on 25 March 1910 (all in GZM). Nicoll (1912) referred the 25 March specimens to the subspecies *saharae*, but they are not as pale as typical *saharae* and are best assigned to *aegyptius*. Several specimens of *saharae*, which breeds in Wadi Natroun (Meinertzhagen, 1930; Vaurie, 1965), were mentioned by Nicoll (1912); birds collected in 1910 include: one male on 8 May, one female on 8 June (GZM 4817, "ovaries much enlarged") and one male on 13 June. **Ba:** An immature female (FMNH 296932) was collected on 13 June 1974. **Da:** One was seen on 18 October 1978 and in late January 1984 (AH). Scharlau (1963) observed about 60 between 2 and 4 October 1962.

**Swift** *Apus apus apus* PV

It is possible that some of the following sight records are of the similar looking Pallid Swift, *A. pallidus*.

**WN:** One female specimen (UMMZ 207151) collected on 27 May 1984 out of a flock of about 20 is referable to nominate *apus*. **Si:** Moreau (1941) mentioned a single bird on 29 May 1935. **Qa:** Between 12 and 15 April 1977, dozens were seen at El Moghra (Goodman and Ames, 1983). **Ba:** Substantial migratory movements were observed on 22 March 1925 (Moreau, 1927).

**Pallid Swift** *Apus pallidus* subspp. RB? PV

**Ba:** On 17 March 1984, a flock of about 30 was observed over Bir Matar (SMG, HS), from which a male (UMMZ 206931) was collected. This specimen had enlarged testes and is intermediate in plumage coloration between *ilyricus* and *brehmorum*. We saw four on 28 April 1981. Al Hussaini (1938) observed a group of six near El Qasr between 14 and 22 February 1938. **Fa:** Abdel Rahim et al. (1980) reported several observations between late March and early April 1979, but without details these records cannot be accepted. **Da:** On 25 April 1981 we saw several individuals in the oasis. This species was recorded regularly between late September 1982 and mid-January 1983 (AH). Scharlau (1963) reported about 100 individuals between 2 and 4 October 1962. Meinertzhagen (1930) considered it a breeding resident in the earth cliffs. A female in the USNM (551166) taken on 16 January 1972 appears to be of *A. p. brehmorum* (Goodman and Watson, 1983). **Kh:** Moreau (1927) saw it on 15 and 16 April 1925. Meinertzhagen (1930) considered it a resident but no details were given. A male (USNM 551165) collected on 13 January 1972 approaches the coloration of *A. p. brehmorum* (Goodman and Watson, 1983). The subspecific identity of the breeding birds of Bahariya, Dakhla and Kharga needs to be further investigated.

**Kingfisher** *Alcedo atthis atthis* PV WV

**WN:** Two males were collected on 18 and 29 August 1910 (Nicoll, 1912; examined in GZM) and another observed on 6 October 1942 (Maclaren, 1944). A female in the BMNH (1905.6.4.22) was collected on 12 March 1903. **Si:** Moreau (1941) saw one on 25 March 1927. **Fa:** Two specimens are housed in FMFA.

**Little Green Bee-eater** *Merops orientalis* AV

**WN:** On 7 May 1981, at least eight were seen (SMG, ST) and on 10 April 1983 another two were noted (HR). Nicoll (1912) mentioned a sight record from autumn 1910. On geographical grounds the local form should be *cleopatra*.

**Blue-checked Bee-eater** *Merops superciliosus persicus* PV MB?

**WN:** Recent observations include: birds in April 1980 (SV), on 31 March 1981 (WS) and one on 1 May 1981 (PLM, WCM). On 7 July 1984 it was found to be common and probably breeding (SH, TDHM). A specimen in the FMNH (219624) taken on 7 July 1953, further supports the possibility that this species breeds in Wadi Natroun. **Si:** Seen in spring (Meinertz-



hagen, 1930), but according to Moreau (1941) this statement cannot be accepted. **Ba:** Moreau (1927) saw large numbers each day from 20 to 24 March 1925. **Fa:** One specimen in FMFA. A flock was noted on 7 September 1984 (SH, TDHM). **Da:** Several were observed between 10 and 13 April 1925 (Moreau, 1927). **Kh:** Flocks were noted on 7 and 15 April 1925 (Moreau, 1927). A female (BMNH 1965.M.5916) was taken on 22 March 1928 and two males (UMMZ 206832 and 206833) on 24 March 1984 in the oasis and two males (GZM 2653-2654) on 3 April 1939 between Asyut and Kharga. **GU:** A female (GZM 2641) was collected on 24 March 1939 at Bir el Shab, approximately 500 km east of Gebel Uweinat.

**Bee-eater** *Merops apiaster* PV

**WN:** On 7 May 1981, at least 50 were seen (SMG, ST). Three were collected in May 1910 (Nicoll, 1912; all in GZM). **Si:** Many were noted and some collected in May 1935 through the 14th of the month (Moreau, 1941), and it has been observed as early as 1 April (Meinertzhagen, 1930). **Qa:** A female was shot on 15 May 1975 at El Moghra and on 17 April 1977 a flock was seen at the same locality moving northeast (Goodman and Ames, 1983). **Ba:** On 28 April 1981, we saw at least 100 individuals. It was also noted on 8 September 1984 (SH, TDHM). **Fa:** On 27 April 1981, we observed at least 80 within the oasis and several migrating north along the Dakhla-Farafra road. **Da:** Several flocks were seen on 24 and 25 April 1981 (PLM, WCM, SMG). Scharlau (1963) found two individuals between 2 and 4 October 1962. **Kh:** Tens were seen on 23 April 1981 (PLM, WCM, SMG). One noted on 30 May 1982 (SBD). A mummified bird (USNM 548390) was found on 7 May 1967 at Bir Kiseiba, approximately 300 km south of Kharga.

**Roller** *Coracias garrulus garrulus* PV

**WN:** An adult male was obtained on 20 August and an immature on 29 August 1910 (Nicoll, 1912; examined in GZM). **Si:** One was observed on 2 September 1935 in the oasis (Moreau, 1941). Kiepenheuer and Linsenmair (1965) saw this species a few times between 19 and 27 September 1963, and collected one 120 km north of Siwa on 20 September (Steinbacher, 1965). **Qa:** A female was collected on 12 May 1975 at El Moghra (Goodman and Ames, 1983). **Fa:** On 26 April 1981, one individual was observed between Dakhla and Farafra and another in Farafra (PLM, WCM, SMG). **Da:** We observed one on 25 April 1981. A specimen in the BMNH (1965.M.5998) was collected on 25 March 1928 by Meinertzhagen. Scharlau (1963) saw one between 2 and 4 October 1962. **Kh:** Meinertzhagen (1930) stated that it passes over Kharga, but gave no details.

**Abyssinian Roller** *Coracias abyssinicus* AV?

**GU:** Misonne (1974) found a wing and tail of this species on 22 November 1968 at Karkur Ibrahim (Abd el Malik). This is the only record of this species in Egypt except for a male taken on 14 February 1928 at Abu Simbil (BMNH 1965.M.6011; Meinertzhagen, 1930) and a bird collected in 1874 in "Egypt" (FMNH 40783).

**Hoopoe** *Upupa epops* subsp. RB PV

The nominate form is a passage migrant throughout the Western Desert, while *U. e. major* is the breeding form of the Nile Valley and Delta, the Faiyum and the southern Western Desert oases.

**WN:** On 17 January 1979, seven were observed (Meininger et al., 1979) and on 1 May 1981, three (PLM, WCM). The form *major* has been taken once in Wadi Natroun (Meinertzhagen, 1930). Five specimens in GZM, all referable to nominate *epops*, were collected between 18 March and 16 April. There is no positive evidence that this species breeds in Wadi Natroun, but it seems likely. **Si:** A few were seen daily from 24 to 28 March 1927 (Moreau, 1928) and in the autumn as early as 18 August (Moreau, 1941). Kiepenheuer and Linsenmair (1965) observed a few individuals between 19 and 27 September 1963. **Qa:** On 16 April 1977, one was seen at El Moghra and another on 19 April, 10 km northwest of Cicely Hill (Goodman and Ames, 1983). **Ba:** We saw one on 29 April 1981 near the El Gedida iron ore mines and learned from a native that it breeds locally in tree cavities. A female (USNM 551204) collected on 11 February 1972 is referable to *major*. A male (GZM 9761) taken on 24 March 1925 is of nominate *epops*. **Fa:** We saw one on 27 April 1981 and learned from a native that it possibly breeds in the oasis. A female (UMMZ 206835) collected on 19 March 1984 is referable to nominate *epops*. **Da:** This species was common from late September to mid-January 1978–83 (AH). On 25 April 1981, we saw several pairs and a bird carrying food into a rock pile (presumably *U. e. major*). **Kh:** On 23 April 1981, we observed about 10 in total and found this species breeding. A male (USNM 552158) collected on 12 January 1972 is assignable to *major*. Moreau (1927) saw several on 14 and 15 April 1925 and learned from the local inhabitants that it is absent from the oasis in mid-summer.

**Wryneck** *Jynx torquilla torquilla* PV

**WN:** On 3 April 1981, two or three were seen (WS). A male was shot on 24 March 1910 (Nicoll, 1912). Four specimens in GZM taken between 4 and 15 April are referable to nominate *torquilla*. **Si:** Meinertzhagen (1930) stated Wrynecks have been observed here on passage, but gave no specific details. **Qa:** One was found dead on the south edge of El Moghra on 14 April 1977 (Goodman and Ames, 1983). **Ba:** On 14 March 1981, one was seen (SV). **Fa:** We saw four on 27 April 1981. **Da:** Moreau (1927) saw several at Abar Meihub between 10 and 13 April 1925. **Kh:** One was observed in a garden at El Kharga on 23 April 1981 (PLM, WCM, SMG).

**Black-crowned Finch Lark** *Eremopterix nigriceps melanauchen* AV

**WN:** Three were seen by Nicoll during the winter of 1912–1913 (Meinertzhagen, 1930) and an adult male (GZM 4457) was shot on 10 September 1911 (also see Nicoll, 1912). **GU:** Moreau (1934) mentioned a specimen collected by Bagnold on 3 October in the desert between Dakhla and Uweinat at 23°50'N, 27°40'E.

**Bar-tailed Desert Lark** *Ammomanes cincturus arenicolor* RB

**WN:** According to R. Sparrow (in Raw, 1921) Nicoll found a fully fledged young on 25 May 1910. A fledgling (GZM 2048) was taken on 20 May 1904.

A nest was found on 7 May 1981 (SMG, ST). **Si:** Meinertzhagen (1930, p. 139) mentioned it as “common in the desert behind Salum, south to Siwa” and collected two (BMNH 1965.M.6671-6672) in the oasis on 24 January 1920. On 14 February 1939, a pair was seen at Bir Bouweib, between Siwa and Mersa Matruh (Al Hussaini, 1939). **Qa:** A female was collected at El Moghra on 11 May 1975 (Goodman and Ames, 1983). **Ba & Fa:** Noted by Abdel Rahim et al. (1980) sometime between late March and early April 1979, but details lacking. **Da:** Meinertzhagen (1930, p. 139) remarked that it has been “observed in the desert between Dakhla and Kharga.” **Kh:** On 23 April 1981, one was observed in the sandy desert near Kharga (PLM, WCM, SMG).

**Desert Lark** *Ammomanes deserti* subsp. RB

Vaurie (1959) listed the subspecies *deserti* and *isabellinus* as residents in various portions of the Western Desert. The characters used to separate these two forms are not clear nor perhaps is their validity.

**Ba:** On 29 April 1981, we observed one near the El Gedida iron ore mines. **Fa:** Observed sometime between late March and early April 1979 by Abdel Rahim et al. (1980), but no specific details mentioned. **Da:** This species was recently observed on 18 October 1978 (AH) and on 18 October 1980 (SV). Meinertzhagen (1930) stated that it is abundant; however, we failed to find it on our April 1981 visit. **Kh:** Meinertzhagen (1930, p. 651) listed this species as a resident in Kharga, but presented no supporting records. **GU:** Misonne (1974) saw four individuals in the northern part of Karkur Tahl and occasionally in Karkur Hamid in October and November 1968.

**Hoopoe Lark** *Alaemon alaudipes alaudipes* RB

**WN:** Recent records include three on 17 January 1979 (Meininger et al., 1979), several in March and April 1980 (SV), and two on 7 May 1981 (SMG, ST). R. Sparrow (in Raw, 1921) reported two fresh eggs were collected on 6 June 1910. **Si:** Meinertzhagen (1930, p. 651) considered it a resident. Al Hussaini (1939) saw one on 16 February 1939, 20 km north of Siwa. **Qa:** Four recent specimens: including one male, with enlarged gonads, taken on 7 March 1976 at Qaneitra Crossing, 100 km northeast of Qara (Goodman and Ames, 1983). **Ba:** Moreau (1927) found it nesting between 20 and 24 March 1925. A juvenile female (FMNH 296934) was collected on 13 June 1974 and three adult males (USNM 551281, 551282, 551287) in February 1972. **Fa:** On 26 April 1981, three were seen along the road between Dakhla and Farafra (PLM, WCM, SMG). On 20 March 1984, two individuals were observed at Karawein, east of Farafra (SMG, HS). **Da:** From late September to mid-January 1978–1983 Hoopoe Larks were common throughout the oasis (AH). We saw five individuals on 24 April 1981, three of which were singing and presumably males on territory. **Kh:** On 23 April 1981, we found at least six singing birds between El Kharga and Baris. Two specimens in the USNM (551283-551284) were collected on 13 and 14 January 1972. **GU:** On 15 November 1968, one was observed at Karkur Idriss and on 16 December 1968, one at Karkur Ibrahim (Misonne, 1974).

**Dupont's Lark** *Chersophilus duponti margaritae* RB

**Si:** Meinertzhagen (1921) observed this species in the desert 24 km south of Salum and in the desert north of Siwa.

**Short-toed Lark** *Calandrella brachydactyla* subspp. CB? PV

**WN:** On 26 February 1967, this species was common (JT). *C. b. longipennis* is present between October and early April and specimens of *C. b. hermonensis* have been taken in April, May and October (Meinertzhagen, 1930). The inscription on the data tag of a female specimen (GZM 4566) taken on 28 March 1910 reads, "large incubation patch-eggs have recently been laid." **Si:** Moreau (1928) saw many each day from 24 to 28 March 1927 and Almond (1937, p. 94) observed "good numbers" during March 1936. A specimen in the USNM (551234) taken on 3 March 1970 is referable to *C. b. brachydactyla*. **Qa:** A female was collected on 14 April 1977 and one was seen on 15 April 1977 at El Moghra (Goodman and Ames, 1983). **Ba:** Moreau (1927) observed and heard flocks overhead from 20 to 24 March 1925, during which time he collected a male and a female (GZM 9770 and 9763) referable to *longipennis*. **Da & Kh:** Common on passage through both oases (Meinertzhagen, 1930). We observed four resting in the desert near the resthouse halfway between Asyut and Kharga on 22 April 1981.

**Lesser Short-toed Lark** *Calandrella rufescens* subspp. RB? PV?

The form *C. r. nicolli* is a breeding resident in the northern Nile Delta west to at least Alexandria (Meinertzhagen, 1930). This form may well breed in Wadi Natroun, Siwa and the Qattara Depression.

**WN:** This species was seen on 3 April 1981 (WS). Breeding cannot be excluded. **Si:** Two females, one with a slightly enlarged ovary, were taken at El Zeitun on 9 March 1976 (Goodman and Ames, 1983). **Qa:** Two males were collected 3 km south of Qara on 6 and 7 March 1976. One was observed near a well on 5 March 1976 between Qaneitra Crossing and Qara. Neither the Siwa or Qattara specimens could be confidently assigned to a subspecies (Goodman and Ames, 1983).

**Crested Lark** *Galerida cristata altirostris* RB

**WN:** Nicoll (1912) collected a large series during March 1910 and November 1911, including a female (GZM 4721) on 23 March 1910 with "ovary containing large eggs." Further, Raw (1921) saw young being fed by adults in mid-May 1918. **Qa:** On 4 March 1976, this species was noted 2 km north of Qara, where they may breed (Goodman and Ames, 1983). **Da:** The only record we are aware of for this species in the oasis was on 7 September 1984 (SH, TDHM).

**Wood Lark** *Lullula arborea* cf. *pallida* AV

**WN:** On 24 November 1911, two were collected (Nicoll, 1912; GZM).

**Skylark** *Alauda arvensis cantarella* WV

**WN:** Nicoll (1912) found this species common in November 1911 and collected eight individuals (in GZM). No recent records. **Ba:** On 7 March 1980, three Skylarks were seen near the El Gedida iron ore mines (SV).

**Temminck's Horned Lark** *Eremophila bilopha* RB

**WN:** The GZM has a series taken between May and August including

fledglings and breeding birds. **Si:** A male was taken on 27 February 1974 (Goodman and Ames, 1983). Meinertzhagen (1930, p. 651) considered it a resident in Siwa. **Qa:** Mr. I. Helmy (pers. comm.) has observed this species at Bir Qattara, Qaret el Tarfaya, Minqar Abu Dweiss, El Moghra and Nahlet el Balah. Al Hussaini (1939) observed two pairs at Bir Bouweib, 90 km north of Qara, on 14 February 1939. **Ba:** Moreau (1927) saw one in the desert between Bahariya and Burg el Arab on 25 March 1925. **Fa:** Abdel Rahim et al. (1980) reported observing this species sometime between late March and early April 1979, but presented no supporting evidence.

**Sand Martin** *Riparia riparia* subspp. MB? PV

The subspecies *R. r. shelleyi* breeds in the Nile Delta west to Alexandria and south along the Nile Valley to Dongola, Sudan (Meinertzhagen, 1930; Vaurie, 1959). Two other forms, nominate *riparia* and *diluta*, pass through the country on migration.

**WN:** According to Meinertzhagen (1930) *R. r. shelleyi* breeds in the wadi, but there is no recent supporting evidence. Marked movements of migrants were noted in March 1910 (Nicoll, 1912), with birds present at least up until early May (SMG, ST). Specimens examined of *diluta* include a male and female (BMNH 1965.M.8263-8264) taken on 14 April 1923. A male (BMNH 1965.M.8273) taken on the same day as the above specimens of *diluta* is referable to the form *shelleyi*. **Si:** It was observed at intervals in the spring, between 15 April and 29 May 1937, and the autumn migration began on 29 August 1937 (Moreau, 1941). Kiepenheuer and Linsenmair (1965) saw scattered birds between 19 and 27 September 1963. **Qa:** A male referable to *R. r. riparia* was collected at El Moghra on 17 May 1975, and this species was noted as scarce at Bir Nahid on 14 April 1977 (Goodman and Ames, 1983). **Ba:** On 8 March 1980 and 12 March 1981, a few were observed (SV). We saw several hundred on 29 April 1981. **Fa:** Over one hundred were seen on 26 April 1981 (PLM, WCM, SMG). **Da:** It was frequently seen in late autumn 1982 (AH). On 24 and 25 April 1981, we observed a few individuals. Moreau (1927) recorded "numbers" at Abar Meihub between 10 and 13 April 1925. **Kh:** On 18 October 1980, this species was noted (SV). We saw a few birds on 23 April 1983 in the oasis and five the following day at Ezbet Zayat, between Kharga and Dakhla. **GU:** A specimen (USNM 548706) was found dead in the desert on 30 April 1967 at 22°0'N, 27°12'E, or approximately 220 km east of Gebel Uweinat. The specimen cannot be confidently assigned to a subspecies.

**Pale Crag Martin (Rock Martin)** *Ptyonoprogne o. obsoleta* RB

We deviate from the arrangement of Voous (1977) in treating this form as specifically distinct from *P. fuligula*.

**WN & Si:** Meinertzhagen (1930, p. 652) included this species as a resident in Wadi Natroun and Siwa in an appendix to his book; however, in the main text (p. 311) he noted that this species had not been recorded from these localities. Its occurrence in Wadi Natroun and Siwa needs documentation. **Fa:** Abdel Rahim et al. (1980) recorded this species between late March and early April 1979, but no details were given. **Da:** Recent records include

birds on 25 April 1981 (PLM, WCM, SMG) and 23 January 1982 (AH). Moreau (1927) found a few breeding at Mut and El Qasr in mid-April 1925. Scharlau (1963) saw it between 2 and 4 October 1962. **Kh:** We saw one on 23 April 1981. A female specimen in the USNM (551309) was taken on 13 January 1972. **GU:** In November 1968, Misonne (1974) found a nest in Wadi Hanzul.

**Swallow** *Hirundo rustica* subsp. RB? PV WV

The form *H. r. savignii*, which has a distinctly dark rufous breast, breeds in the Nile Delta west to Bahig, the Nile Valley and the Faiyum. *H. r. rustica* and *H. r. transitiva* are migrants to the country. Excluding Wadi Natroun all records from the Western Desert are of light-breasted *H. r. rustica* and/or *transitiva*.

**WN:** On 17 January 1979, one dark-breasted *savignii* was observed (Meininger et al., 1979). On 7 May 1981, a few dark-breasted Swallows were observed in a flock of about one hundred light-breasted birds (SMG, ST). A male (BMNH 1965.M.8362) taken on 15 April 1923 is referable to nominate *rustica*. The form *savignii* could breed in the area, but this needs to be substantiated. **Si:** Meinertzhagen (1922) saw a small flock on 26 January and Moreau (1928) observed many individuals on 26 and 27 March 1927. In 1935, it was still numerous until 10 May, not uncommon through 25 May, and stragglers were recorded on 29 May and 16 June; the autumn migration began on 29 August (Moreau, 1941). **Qa:** Birds referable to nominate *rustica* were collected at El Moghra on 18 May 1975 and 14 April 1977, and it was noted as common in the depression in mid-April 1977 (Goodman and Ames, 1983). **Ba:** On 9 March 1980, a few were seen (SV) and on 29 April 1981, hundreds were present (PLM, WCM, SMG). **Fa:** On 26 April 1981, we saw at least a hundred individuals. **Da:** From October to December 1978, 1979 and 1980, it was regularly seen and in January 1982, only a few birds were present (AH). We saw small numbers on 24 April 1981. **Kh:** On 23 April 1981, a few were seen in the oasis and the following day along the Kharga-Dakhla road (PLM, WCM, SMG). **GU:** Misonne (1974) observed one on 21 October 1968 at Karkur Tahl and another the following day at Wadi Hanzul. Jany (1963) saw migrating Swallows at Ain Zuweina between 16 and 18 April 1961. Two birds referable to nominate *rustica* (USNM 548698-548699) were found dead on 2 May 1967 in the desert at Bir Misaha, approximately 350 kms east of Gebel Uweinat.

**Red-rumped Swallow** *Hirundo daurica rufula* PV

**WN:** Birds pass through in large numbers from late March to the middle of April, the latest record being on 4 May (Meinertzhagen, 1930). Seven specimens (in GZM) were taken between 8 and 14 April. **Si:** One noted on 9 May 1985 (SMG, PLM). **Ba:** On 9 March 1980, a few were seen (SV) and on 29 April 1981, at least 25 were observed (PLM, WCM, SMG). **Da:** Many hundreds were seen in late March 1928, in mixed flocks of Swallows and House Martins (Meinertzhagen, 1930). **Kh:** We saw one on 23 April 1981.

**House Martin** *Delichon urbica urbica* PV

**WN:** Specimens in the GZM were collected on 25 March and on 5, 11 and

13–15 April. **Si:** On 8 May 1985, a flock of over 100 was noted (SMG, PLM). In spring 1935, it passed through the oasis until 15 May, although a straggler was seen on 16 June (Moreau, 1941). Kiepenheuer and Linsenmair (1965) found it not so common from 19 to 27 September 1963. **Qa:** A male was collected on 16 May 1975. On 14 April 1977, it was numerous near Bir Nahid and noted on 20 April 1977, at El Moghra (Goodman and Ames, 1983). **Ba:** On 29 April 1981, we saw about 50 individuals. Moreau (1927) recorded one on 20 March 1925. **Fa:** We saw two on 23 April 1981. **Da:** Small numbers were seen on 24 April 1981 (PLM, WCM, SMG). Meinertzhagen (1930) noted it as very common in late March 1928. **Kh:** We saw a few individuals on 22 April 1981. Meinertzhagen (1930) noted it as very common in late March 1928 and obtained a female (BMNH 1965.M.8528) on 21 March. It has been noted as late as 30 May 1982 (SBD).

**Richard's Pipit** *Anthus novaeseelandiae* AV

**Kh:** Moreau (1927) saw one on 7 April 1925. No recent records from the Egyptian Western Desert, although it has been observed in the Libyan Desert on several occasions (Bundy, 1976).

**Tawny Pipit** *Anthus campestris campestris* PV

**WN:** On 11 February 1985 (SMG), and on 2 March 1984 (SMG, JH), it was common along the edge of Birket Hamra, and on 3 April 1981, several were observed (WS). **Si:** One was present on 9 May 1985, near Aghurmi (SMG, PLM). Moreau (1941) noted that two were taken on 26 March 1927. **Ba:** One collected (UMMZ 206885) on 17 March 1984 near Bir Matar. **Fa:** Between 19 and 20 March 1984, it was common (SMG, HS) and one was noted on 27 April 1981 (PLM, WCM, SMG). **Da:** At Ezbet Zayat, between Dakhla and Kharga, eight were observed on 24 March 1984, one of which was collected (UMMZ 206884). **Kh:** On 18 October 1980, one was seen (SV). Moreau (1927, p. 228) saw a few pipits, "probably of this species," from 7 to 9 and 14 to 16 April 1925.

**Tree Pipit** *Anthus trivialis trivialis* PV

**WN:** Specimens in the GZM include birds taken on 22 March, and 6–8 and 28 April. **Si:** On 19 April 1935, one was collected (Moreau, 1941). Between 19 and 27 September 1963, Kiepenheuer and Linsenmair (1965) seldom saw this species, and collected a female on 26 September (Steinbacher, 1965). **Qa:** One was seen 2 km north of Qara on 5 March 1976 (Goodman and Ames, 1983). **Kh:** We observed two on 23 April 1981. **GU:** In 1968, Misonne (1974) observed two pipits that he thought were this species on 25 October at Karkur Tahl, one on 17 November at Wadi Hanzul and three on 24 November at Wadi Waddan.

**Meadow Pipit** *Anthus pratensis pratensis* WV

**WN:** On 17 January 1979, 14 were observed (Meininger et al., 1979) and on 6 January 1982 it was noted (YL). Nicoll (1912) saw a few in late March 1910 and collected one on 24 (GZM 1879) and another (GZM 1880) on 28 November 1911. **Ba:** On 15 March 1981, a few were seen near El Heiz (SV). A female in the USNM (551765) was collected on 12 February 1972. **Da:** On 15 January 1982, two were seen (AH).

**Red-throated Pipit** *Anthus cervinus* PV WV

**WN:** Recent records include 23 on 17 January 1979 (Meininger et al., 1979), at least four on 3 April 1980 (WS), and several on 7 May 1981 (SMG, ST). Nicoll (1912, p. 419) noted it as fairly abundant in March 1910 and "in swarms" in November 1911. **Si:** Two were observed on 8 May 1985 and four the next day (SMG, PLM). Moreau (1928) saw one on 27 March 1927 and (1941) reported that one was collected on 19 April 1935. Al Hussaini (1939) noted two between 7 and 13 February 1939. **Ba:** This species was seen on 8 March 1980 (SV) and on 29 April 1981 near the El Gedida iron ore mines (PLM, WCM, SMG). Al Hussaini (1938) reported it as not common between 14 and 22 February 1938. **Fa:** On 27 April 1981, we observed ten individuals. **Da:** Near El Qalamun, a flock of about 40 was noted on 22 March 1984 (SMG, HS). This species was seen on 28 November 1981 in the oasis (AH) and about 15 were noted on 26 April 1981, along the Dakhla-Farafra road (PLM, WCM, SMG). Specimens include a male and female (USNM 551762-551763) taken on 16 January 1972. **Kh:** On 18 October 1980, it was abundant (SV) and on 23 April 1981, two were observed (PLM, WCM, SMG). Al Hussaini (1937, p. 865) shot three near El Kharga and stated that it was "not uncommon in the fields" between 10 and 18 February 1937.

**Water Pipit** *Anthus spinoletta coutellii* PV WV

**WN:** On 2 March 1984 several were noted (SMG, JH) and on 17 January 1979 two were seen (Meininger et al., 1979). A male (FMNH 256975) was taken on 5 November 1959. **Qa:** One male was collected on 7 March 1976, 3 km south of Qara (Goodman and Ames, 1983). **Ba:** Moreau (1927) found it not uncommon in the wet areas between 20 and 24 March 1925. **Kh:** From 7 to 9 and 14 to 16 April, it was not uncommon (Moreau, 1927).

**Yellow Wagtail** *Motacilla flava* subspp. RB PV

Of the six subspecies of the Yellow Wagtail found in Egypt (using Vaurie's, 1959, arrangement) at least four, *flava*, *pygmaea*, *thunbergi* and *feldegg* have been recorded in the Western Desert. All are migrants, except *pygmaea*, which breeds in the Nile Valley and Delta, the Faiyum and Wadi Natroun (Meinertzhagen, 1930).

**WN:** Nominate *flava* was observed and collected in late March 1910 (Nicoll, 1912) and big flocks, presumably of this subspecies, were found flying south on 5 October 1942 (Maclaren, 1944). Meinertzhagen (1930) noted that *thunbergi* had been taken in mid-October. The GZM has a series of *feldegg* taken in late March 1910 by Nicoll. Kattinger (1970, p. 69) found "Jungvögel" of *pygmaea* on 17 August 1966. **Si:** Almond (1937) found this species to be the most common migrant in March 1936. Omer-Cooper (in Moreau, 1941) visited the oasis from 15 April to 11 September 1935 and found this species abundant until the end of April, stragglers up to 22 May, and the autumn migration began on 16 August. A male (BMNH 1936.9.21-31) taken on 18 April 1935 is referable to *feldegg* and another male (BMNH 1936.9.21-33) collected on 19 April 1935 to nominate *flava*. **Qa:** Specimens of *feldegg* were collected near Qara on 6 and 8 March 1976 and at El Moghra on 16 April 1977 (Goodman and Ames, 1983). **Ba:** On 8



March 1980, nominate *flava* was recorded as abundant (SV). A bird (GZM 9772) taken on 22 March 1925 is referable to nominate *flava*. **Fa:** We counted about 20 individuals on 26 April 1981 which appeared to be of the form *feldegg*. **Da:** Scharlau (1963) reported about 100 individuals per day from 2 to 4 October 1962. **Kh:** A few nominate *flava* were observed on 18 October 1980 (SV) and five probable *feldegg* on 23 April 1981 (PLM, WCM, SMG). **GU:** Moreau (1934, p. 602) reported that one was "shot from a flock" on 7 October. Misonne (1974) observed it on the following occasions: one on 13 and four on 14 at Karkur Ibrahim and one at Karkur Idriss on 15 December 1968.

**Grey Wagtail** *Motacilla cinerea cinerea* PV WV

**WN:** Noted as "apparently scarce" in the area (Meinertzhagen, 1930, p. 168). **Si:** A specimen in the BMNH (1934.1.1-7227) collected on 24 January 1920 is referable to nominate *cinerea*. Four were obtained between 16 and 25 September 1963 (Steinbacher, 1965). **Ba:** Al Hussaini (1938) recorded this species in the gardens of Bawiti between 14 and 22 February 1938. **GU:** On 15 April 1961, one was seen at Karkur Murr (Jany, 1963). Several individuals were observed on 25 October and from 13 to 15 December 1968 at Karkur Ibrahim (Misonne, 1974).

**White Wagtail** *Motacilla alba alba* PV WV

**WN:** About 200 were counted on 17 January 1979 (Meininger et al., 1979), several were seen on 7 May 1981 (SMG, ST), and two were noted on 10 April 1983 (HR). Nicoll (1912) considered it abundant in March 1910 and very abundant in November 1911. **Si:** This species is a common winter visitor to the oasis (Al Hussaini, 1939) with odd birds remaining until 17 May 1935 (Moreau, 1941). Scattered individuals were seen between 19 and 27 September 1963 (Kiepenheuer and Linsenmair, 1965). **Qa:** Goodman and Ames (1983) mentioned this species as an extremely common winter visitor throughout the Qattara Depression, "especially around water sources and vegetation." **Ba:** We saw small numbers on 28 and 29 April 1981. Al Hussaini (1938) found it abundant in February 1938. **Fa:** On 19 March 1984, this species was common in the vicinity of the oasis (SMG, HS). About 15 individuals were observed on 26 April and a few on 27 April 1981 (PLM, WCM, SMG). Six were noted on 21 March 1984 at Abu Minqar (SMG, HS). **Da:** Small numbers were seen on 24 and 25 April 1981 (PLM, WCM, SMG). From late September to mid-January 1978 to 1983 it was seen daily (AH). Scharlau (1963) saw one on 2 October, ten on 3 October and 15 on 4 October 1962. **Kh:** We saw small numbers on 22 April 1981. Moreau (1927) noticed single birds on 7, 15 and 16 March 1925. **GU:** Misonne (1974) recorded several individuals in the area in December 1968.

**Common Bulbul** *Pycnonotus barbatus* RB

According to Meinertzhagen (1930) the Common Bulbul first appeared in the Nile Delta about 1909 and established itself quickly around Cairo, but had not yet reached Alexandria. Presently the form *arsinoe* breeds throughout the Nile Valley and the Delta west to at least Bahig.

**WN:** Recent records include four individuals in April 1980 (SV) and one

on 3 April 1980 (WS). It appears that this species has established itself as a breeding bird in the oasis, but this needs to be confirmed.

**Rufous Bush Robin** *Cercotrichas galactotes galactotes* MB PV (WV)

**WN:** Common summer resident with clutches taken (Nicoll, 1912; Meinertzhagen, 1930). **Si:** Between 8 and 10 May 1985, at least 40 singing and displaying birds were observed (SMG, PLM). Moreau (1941) considered this species a summer resident and reported that birds were collected on 17 May and 30 July 1935. Kiepenheuer and Linsenmair (1965, p. 88) found it not so common ("nicht so häufig") from 19 to 27 September 1963 and collected two on 25 September (Steinbacher, 1965). **Ba:** On 28 April 1981, we counted five singing birds near Bawiti and one near the El Gedida iron ore mines. Moreau (1927) visited Bahariya from 20 to 24 March 1925 and noticed the arrival of this species on the 23rd. A specimen in the FMNH (296935) was collected on 17 June 1974. **Fa:** On 27 April 1981, two were seen (PLM, WCM, SMG). **Da:** On 22 March 1984, one was noted near Pumping Station Four and another singing near Musaiya (SMG, HS). We observed small numbers on 24 April, and one was seen on 16 January 1982 (AH). Meinertzhagen (1930) noted it as a common summer visitor. Kiepenheuer and Linsenmair (1965) saw many between 10 and 14 August 1963. At Ezbet Zayat, between Dakhla and Kharga, one was observed on 24 March 1984 (SMG, HS). **Kh:** On 23 April 1981, we counted over 25 singing birds in portions of the oasis, including Baris in the extreme south. Four fledglings were noted on 30 May 1982 (SBD). Kiepenheuer and Linsenmair (1965) saw many from 10 to 14 August 1963 and collected three birds (Steinbacher, 1965). **GU:** On 4 November 1968, one was seen in Wadi Tahl (Misonne, 1974).

**Thrush Nightingale** *Luscinia luscinia* (PV)

**Si:** Kiepenheuer and Linsenmair (1965, p. 88) noted it as "Selten" between 19 and 27 September 1963. **Kh:** One was noted on 6 September 1984 (SH, TDHM).

**Nightingale** *Luscinia megarhynchos megarhynchos* PV

**WN:** One was observed on 3 April 1981 (WS). According to Meinertzhagen (1930) this species was previously known in the Western Desert only from Wadi Natroun, where he obtained single specimens on 12, 13 and 14 March 1923 (BMNH 1965.M.10862-64). **Si:** Collected on 18 April 1935 (Moreau, 1941). **Qa:** Several records from mid-April 1977 (Goodman and Ames, 1983). **Da:** Individuals were seen by Moreau (1927) on 10 and 11 April 1925. It is not clear why Meinertzhagen (1930) omitted these records.

**Bluethroat** *Luscinia svecica* subspp. PV WV

According to Meinertzhagen (1930) three subspecies have been taken in Egypt. *L. s. svecica* is common between mid-October and the end of March; *L. s. volgae* (= *occidentalis* of Meinertzhagen) is fairly common between 18 November and 22 March; and *L. s. cyanecula* is the least common and has been recorded between 5 January and 28 March.

**WN:** Recent records include one on 17 January 1979 (Meininger et al., 1979) and one on 6 January 1982 (YL). All three subspecies have been

recorded in Wadi Natroun (Nicoll, 1912; Meinertzhagen, 1930). **Ba:** On 14 March 1981 one was observed (SV). Al Hussaini (1938) found this species common near wells and ditches from 14 to 22 February 1938. **Da:** One male was noted on 14 and 15 January 1982 and in mid-January 1983 (AH). Two males in the USNM (551493-551494) collected on 19 January 1972 cannot be confidently assigned to subspecies. **Kh:** On 18 October 1980, several were recorded (SV). A specimen (USNM 551496) taken on 13 January 1972 cannot be identified to subspecies. Al Hussaini (1937) found it common between 10 and 18 February 1937 and collected two specimens.

**Black Redstart** *Phoenicurus ochruros gibraltariensis* WV

**WN:** Records include one on 6 January 1982 (YL), one in the second-half of March 1910, and "in some numbers" in November 1911 (Nicoll, 1912, p. 410). It is not clear why Meinertzhagen neglected Nicoll's records. Also a female (GZM 1333) was taken on 11 February 1913. **Si:** Almond (1937) saw a few in March 1936. Al Hussaini (1939) noted three between 7 and 13 February 1939, and collected one (BMNH 1941.5.30.3678) on 8 February that is referable to *gibraltariensis*. Kiepenheuer and Linsenmair (1965) saw it on a few occasions between 19 and 27 September 1963. **Ba:** Two specimens in the USNM (551476-551477) taken on 11 and 13 February 1972 are referable to *gibraltariensis*. **Da:** One male was observed almost daily from 9 to 17 January 1985 (AH).

**Redstart** *Phoenicurus phoenicurus* subsp. PV

Two forms of Redstarts, nominate *phoenicurus* and *samamisticus*, pass through Egypt on migration (Horner, 1977).

**WN:** On 3 April 1981, several were observed (WS). Loat (1905) found it uncommon between 21 January and 24 February 1903 and collected specimens on 2 and 9 February. **Si:** One was observed on 8 May 1985 (SMG, PLM), two between 24 and 28 March 1927 (Moreau, 1928) and several were collected on 18 and 29 April 1935 (Moreau, 1941). Kiepenheuer and Linsenmair (1965) saw single birds from 19 to 27 September 1963. **Qa:** On 16 April, a male of nominate *phoenicurus* was collected and on 20 April 1977, a female was observed at El Moghra (Goodman and Ames, 1983). **Ba:** On 29 April 1981, tens were present in the gardens near the El Gedida iron ore mines (PLM, WCM, SMG). **Fa:** We saw about 20 individuals on 27 April 1981. **Da:** One bird was observed on 25 April 1981 (PLM, WCM, SMG). Scharlau (1963) found six on 2 October and a pair on 3 October 1962. **Kh:** On 18 October 1980, several were seen in the oasis and on 21 October 1980, one was observed midway between Asyut and Kharga (SV). On 23 April 1981, we saw a pair near Baris. **GU:** On 26 October 1968, one male was seen at Karkur Tahl (Misonne, 1974).

**Blackstart** *Cercomela melanura* (RB?)

**GU:** On 7 and 30 December 1968, one individual was observed at Karkur Hamid (Misonne, 1974). There is no evidence that this species is a trans-Saharan migrant and the known Egyptian breeding population is thought to be sedentary. Thus, it is probably a breeding resident in the Gebel Uweinat region.

**Whinchat** *Saxicola rubetra* PV

**WN:** Seven specimens in the GZM were collected between 8 and 28 April and single birds taken on 10, 18 and 24 October, 25 and 27 November and 11 February. **Si:** On 8 May 1985, one was observed (SMG, PLM). Specimens have been collected on 18 and 19 April 1935 (Moreau, 1941) and an immature male on 23 September 1963 (Steinbacher, 1965). **Qa:** One male was collected on 17 April 1977 at El Moghra (Goodman and Ames, 1983). **Ba:** On 29 April 1981, one individual was observed near the El Gedida iron ore mines (PLM, WCM, SMG). It was noted on 8 September 1984 (SH, TDHM). **Da:** Scharlau (1963) saw one on 3 October and 12 on 4 October 1962. **Kh:** One was seen on 20 October 1980 (SV) and another on 23 April 1981 (PLM, WCM, SMG). **GU:** Jany (1963) saw one at Ain Zuweina on 15 April 1961.

**Stonechat** *Saxicola torquata rubicola* WV

According to Meinertzhagen (1930), this species is abundant during the winter in Wadi Natroun, Siwa, Dakhla and Kharga.

**WN:** On 17 January 1979, 17 individuals were seen (Meininger et al., 1979), and a single bird on 11 December 1980 (RW). In March 1910 a few were seen, on 29 October 1910 two were shot, and in November 1911 it was fairly numerous (Nicoll, 1912). **Si:** Meinertzhagen (1922) found it common in January. Al Hussaini (1939, p. 151) considered it "not common" between 7 and 13 February 1939 when he collected two females. A female was seen sometime between 24 and 28 March 1927 (Moreau, 1928). **Qa:** Two or three were observed on 7 March 1976 at Qara (Goodman and Ames, 1983). **Ba:** On 4 March 1980 and on 12 March 1981, several were seen (SV). In the USNM there is a series of seven specimens taken between 7 and 13 February 1972, all of which are referable to the form *rubicola*. **Da:** On 14 January 1982, one was observed (AH) and it has been collected here by Al Hussaini (1959a). **Kh:** On 18 October 1980 many were seen (SV).

**Isabelline Wheatear** *Oenanthe isabellina* PV WV

**WN:** Four were recorded on 17 January 1979 (Meininger et al., 1979) and 5 to 10 were seen on 19 March 1982 (JW). A female was collected by Meinertzhagen on 16 April 1923 (BMNH 1965.M.11746). **Si:** One was seen between 7 and 13 February 1939 (Al Hussaini, 1939). A female in the USNM (551408) was taken on 13 March 1970. **Qa:** A male was collected at Qara on 6 March 1976 (Goodman and Ames, 1983). **Ba:** On 9 March 1980, this species was abundant (SV) and a specimen (USNM 551439) was collected on 7 February 1972. **Fa:** Many were observed in the environs of Qasr Farafra on 19 March 1984 (SMG, HS). **Da:** It was recorded on 19 October 1980 (SV). In the USNM (551409) there is a female obtained on 16 January 1972 and in UMMZ (206881) an unsexed bird taken on 22 March 1984. **Kh:** It was common on 18 October 1980 (SV). A male in the USNM (551410) was taken on 14 January 1962. Al Hussaini (1937) found it fairly common from 10 to 18 February 1937.

**Wheatear** *Oenanthe oenanthe oenanthe* PV

**WN:** Wheatears were common on 4 April 1981 (WS). Nicoll (1912) found

it numerous in March 1910. Seven specimens in GZM were collected during the first half of April. **Si:** During 1935 it was collected between 26 April and 15 May and autumn migration started on 16 August (Moreau, 1941). Two adult males (USNM 551396-551397) were collected on 13 and 14 March 1970. **Qa:** It was recorded at El Moghra on 13 and 14 April 1977 (Goodman and Ames, 1983). **Ba:** On 8 and 9 March 1980 and from 12 to 15 March 1981, it was abundant (SV). We regularly observed it on 29 April 1981. **Fa:** On 14 March 1981, it was abundant (SV) and on 27 April 1981, we saw five. **Da:** We recorded several individuals on 25 April 1981. One was shot from a party at 24°20'N, 28°45'E, about 160 km southwest of Dakhla, on 3 October (Moreau, 1934). **Kh:** On 22 April 1981, at least four were seen halfway between Asyut and Kharga and the following day ten in the oasis (PLM, WCM, SMG).

**Black-eared Wheatear** *Oenanthe hispanica melanoleuca* PV

**WN:** This species was seen on 25 April 1980 (SV) and several on 3 April 1981 (WS). A male (BMNH 1965.M.11984) collected on 12 April 1923 by Meinertzhagen is referable to *O. h. melanoleuca*. **Si:** Moreau (1928) saw two on 25 March 1927 at Hassunah. Al Hussaini (1939) recorded it in the desert between Siwa and Mersa Matruh on 13 February 1939. **Ba:** It was noted on 9 March 1980 (SV). Moreau (1927) saw one or two males daily from 20 to 24 March 1925. **Da:** Moreau (1927) observed several between 10 and 12 April 1925 and Scharlau (1963) noted one male between 2 and 4 October 1962. One recorded at Ezbet Zayat, halfway between Dakhla and Kharga, on 24 March 1984 (SMG, HS). **Kh:** Moreau (1927) found it numerous from 7 to 9 and 14 to 16 April 1925, with males appearing before females.

**Desert Wheatear** *Oenanthe deserti* subsp. RB? PV WV

Although there have been several inferences about this species breeding in the Western Desert, it has yet to be documented. On geographical grounds, the subspecies *homochroa* would be the local breeding resident and the other subspecies would be migrants.

**WN:** On 3 April 1981, a pair was seen (WS). Loat (1905) saw a few individuals regularly from 21 January to 24 February 1903. Nicoll (1912) obtained birds in March 1910 and stated that specimens collected during the summer of 1910 had evidently been breeding. Summer specimens, all referable to *homochroa*, include an adult male (GZM 1192) and female (GZM 1193) taken on 13 June 1910 and another female (GZM 1194) on 16 June 1910. **Si:** One male was observed on 8 May 1985 (SMG, PLM). According to Meinertzhagen (1930) it is abundant in winter in the desert around Siwa. **Qa:** A male (testes not enlarged), referable to *O. d. homochroa*, was collected on 8 March 1976, 3 km south of Qara (Goodman and Ames, 1983). **Ba:** This species was common on 8 and 9 March 1980 (SV). We saw one on 28 April 1981 as did Moreau (1927) on 20 March 1925. A male (UMMZ 206950) not in breeding condition and taken 57 km west of Bawiti is referable to nominate *deserti*. **Fa:** One individual was observed on 27 April 1981 (PLM; WCM, SMG). **Da:** On 25 April 1981, two were seen (PLM, WCM, SMG). It was noted as not uncommon between late September 1982 and

mid-January 1983 (AH). Meinertzhagen (1930) assigned two males and a female collected on 27 March 1928 to *O. d. atrogularis*; however, we have examined these specimens (BMNH 1965.M.11935-11937) and based on size and plumage color (Vaurie, 1959) they are referable to nominate *deserti*.

**Kh:** We saw four individuals on 23 April 1981, including a pair at Baris. Al Hussaini (1937) obtained five males at El Kharga between 10 and 18 February 1937. An adult female (USNM 551401) taken on 12 January 1972 is referable to *O. d. homochroa*. **GU:** Misonne (1974) collected two individuals on 15, and one on 17 December 1968.

**Finsch's Wheatear** *Oenanthe finschii finschii* AV

**Qa:** A male (sexed by plumage, although noted on data tag as female) was collected on 11 May 1975 at El Moghra (Goodman and Ames, 1983). This is the only record that we are aware of for this species in the Western Desert.

**Red-tailed Wheatear** *Oenanthe xanthopyrmyna* AV

**GU:** Misonne (1974) saw two and collected one (Institut Royal des Sciences Naturelles de Belgique, Brussels, no. 55821) at Karkur Hamid on 2 December 1968.

**Mourning Wheatear** *Oenanthe lugens* AV

**Si:** Bulman (1942) saw one in March 1941, 80 km south of Mersa Matruh on the road to Siwa. This appears to be the only record from the general area.

**White-crowned Black Wheatear** *Oenanthe leucopyga leucopyga* RB

**Si:** Between 8 and 10 May 1985, this species was common throughout the oasis, particularly in urban areas, and it was noted entering occupied village houses (SMG, PLM). Meinertzhagen (1922), Moreau (1928), and Almond (1937) all remarked that it is a common resident in the oasis. **Qa:** Early March 1976 records include four males with enlarged testes (Goodman and Ames, 1983). **Ba:** It was observed on 8 and 9 March 1980 and on 12 and 13 March 1981 (SV). Moreau (1927) and Al Hussaini (1938) considered it a local breeding bird. Numerous specimens examined (UMMZ and USNM).

**Fa:** This conspicuous species was not observed during visits in April 1981 (PLM, WCM, SMG) or March 1984 (SMG, HS), and the local inhabitants were not familiar with it. The records of Abdel Rahim et al. (1980), who reported observing this species sometime between late March and early April 1979, need further substantiation. **Da:** It was regularly observed between late September and mid-January 1978–83 (AH). We noted a few on 25 April 1981. Meinertzhagen (1930) found eggs in late March 1928. **Kh:** This species was observed on 18 October 1980 (SV), one on 23 April 1981 (PLM, WCM, SMG) and one on 5 September 1984 (SH, TDHM); however, on 24 and 25 March 1984 it was not noted (SMG, HS). Meinertzhagen (1930, p. 652) included it as a resident in Kharga, but made no mention of this in the species accounts (p. 279). Moreau (1927) and Al Hussaini (1939, 1959a) mentioned the absence of this species from Kharga. At present it seems to be a scarce resident. **GK:** Misonne (1974) noted it in the northern part of Gilf el Kebir in January 1969, where densities approached one individual per 2 km of wadi. **GU:** Moreau (1934) mentioned a record on 7

October. In mid-April 1961, it was recorded breeding in the vegetated valleys (Jany, 1963). Misonne (1974) found it common in the winter of 1968–69. A specimen (GZM A2652) was taken on 29 March 1939.

**Rock Thrush** *Monticola saxatilis* PV

**WN:** Nicoll (1912, p. 408) collected a male on 21 March 1910, saw several "a day or two later" and noted that Mr. Balboni took another male on 20 September 1910 (in GZM). Other specimens include a male (GZM 1042) collected on 16 April 1911 and two males (BMNH 1965.M.12370-12371) taken on 13 and 14 April 1923. **GU:** Records include one on 2 November and two on 4 November 1968 (Misonne, 1974).

**Blue Rock Thrush** *Monticola solitarius solitarius* PV WV

**WN:** On 6 January 1982, one was observed (YL). Nicoll (1912) saw the first on 19 March 1910 and obtained several later that month, all being male. A female collected on 11 April 1923 (BMNH 1965.M.12411) is referable to nominate *solitarius*. **Si:** Moreau (1928) observed two males on 25 March 1927. **Ba:** On 12 March 1981, one was noted (SV). **Kh:** Sight records include one on 18 October 1980 (SV) and a female on 16 April 1925 (Moreau, 1927). A male in the USNM (551388) taken on 12 January 1972 is of *M. s. solitarius*.

**Blackbird** *Turdus merula merula* WV

**WN:** It was observed during March (Nicoll, 1912) and two males (GZM 1029, 1030) were collected on 10 November 1912. **Si:** On 9 March 1976, one was observed 10 km east of El Zeitun (Goodman and Ames, 1983). **Qa:** A female collected on 10 February 1974 at El Moghra is referable to nominate *merula* (Goodman and Ames, 1983).

**Fieldfare** *Turdus pilaris* (WV)

**WN:** One was observed on 17 January 1979 (Meininger et al., 1979). Nicoll (1912) reported one was shot on 20 December 1910 (GZM 1021).

**Song Thrush** *Turdus philomelos philomelos* WV

**WN:** According to Meinertzhagen (1930) this species has been recorded only once at Wadi Natroun (in March); however, one was collected on 21 December 1910 (GZM 1006) and it was seen twice in November 1911 (Nicoll, 1912). More recently, Meininger et al. (1979) observed seven on 17 January 1979. **Fa:** One specimen in FMFA.

**Redwing** *Turdus iliacus* (WV)

**WN:** Two were seen on 17 January 1979 (Meininger et al., 1979).

**Fan-tailed Warbler** *Cisticola juncidis juncidis* RB

According to Meinertzhagen (1930) it has been observed in Wadi Natroun during March, where it is a resident, but not in any other Western Desert oasis.

**WN:** Two males (UMMZ 207187-88) taken on 2 March 1984 had slightly enlarged testes and are referable to nominate *juncidis*. On 27 May 1984, adults were observed feeding fledglings (SMG, RWS). **Si:** Kiepenheuer and Linsenmair (1965, p. 88) observed it "Sehr selten" from 19 to 27 September 1963. **Kh:** On 18 October 1980, several were seen (SV). On 23 April 1981, at least four were observed or heard singing, of which two were halfway be-

tween El Kharga and Baris (PLM, WCM, SMG). Apparently, this species has recently established itself in the oasis as a breeding resident. It was not noted before 1980 by other ornithologists visiting the area.

**Graceful Warbler** *Prinia gracilis natronensis* RB

**WN:** Common breeding resident. Present throughout the year. Recent work has confirmed that the local breeding population, *P. g. natronensis*, is subspecifically distinct (Goodman, 1984). Several nests with eggs noted on 28 May 1950 (JCC).

**Savi's Warbler** *Locustella luscinioides* PV

**WN:** Loat (1905) collected a male on 9 February 1903 and Nicoll (1912) found several on 20 March 1910 (at least one collected, GZM 1681) and shot one three days later (GZM 1682). We could not confidently assign these specimens to subspecies.

**Sedge Warbler** *Acrocephalus schoenobaenus schoenobaenus* PV

**WN:** Loat (1905) collected a female on 2 February 1903 and Nicoll (1912) found it fairly abundant in March 1910. Two males (GZM 1676, 1677) were taken on 13 and 18 October 1914 and a female (BMNH 1965.M.13573) on 16 April 1923. **Si:** It was recorded as "Sehr selten" between 19 and 27 September 1963 and one was collected on 22 September (Kiepenheuer and Linsenmair, 1965, p. 88; Steinbacher, 1965). **Ba:** Moreau (1927, p. 219) observed several "little brown Warblers" in a reed-bed between 20 and 24 March 1925, of which one was collected (GZM 9764) and proved to be this form. **Da:** A male (UMMZ 206865) taken near Pumping Station Four on 22 March 1984, appears to be the only definite record. **Kh:** On 18 October 1980, it was recorded as common (SV).

**Marsh Warbler** *Acrocephalus palustris* PV

**Fa:** One specimen (UMMZ 206871) was collected from a flock of *A. scirpaceus* on 19 March 1984. **Kh:** One observed on 19 October 1980 (SV).

**Reed Warbler** *Acrocephalus scirpaceus scirpaceus* PV

**WN:** Nicoll (1912) obtained two specimens on 19 March 1910 (one in GZM) and saw several others later that month. A male (BMNH 1965.M.13616) was taken on 15 April 1923. **Si:** One was singing on 9 May 1985 near Aghurmi (SMG, PLM). **Qa:** One was found dead at El Moghra on 14 April 1977 (Goodman and Ames, 1983). **Ba:** On 4 March 1980 and on 12 March 1981, this species was noted as abundant (SV). Al Hussaini (1938) obtained a male between 14 and 22 February 1938, that he identified as nominate *scirpaceus*. **Fa:** This species was common on 19 March 1984 around the lake north of Qasr Farafra; one male (UMMZ 206942) is referable to nominate *scirpaceus*. **Da:** We observed a small number on 24 April 1981. **Kh:** This species was common on 18 October 1980 (SV) and at least three were seen on 23 April 1981 (PLM, WCM, SMG).

**Clamorous Reed Warbler** *Acrocephalus stentoreus stentoreus* RB

**WN:** Four were observed on 17 January 1979 (Meininger et al., 1979). Nicoll (1912) mentioned it as a resident and that nearly fully-grown young were collected on 8 June 1910 (GZM 1665). On 28 May 1950, one clutch of four eggs and another of one egg were found (JCC). Raw (1921) also re-



ported the collection of fresh eggs and young in late May 1918. **Qa:** "A reed-warbler with fledged young" was seen by Omer Cooper at Sitra, south of the Qattara Depression, on 15 June 1935 (Moreau, 1941, p. 252). As the most common *Acrocephalus* known to breed in Egypt is *stentoreus*, this record may well be of this species. **Ba:** On 17 March 1984, this species was common in the reed-beds near Bir Matar (SMG, HS). Numerous individuals were singing, and a female (UMMZ 206939), referable to nominate *stentoreus*, had slightly enlarged ovarian follicles. **Da:** We found at least ten birds on 25 April 1981 in the reed-bed near Bir Talata. The species was undoubtedly breeding, as they were singing and carrying nest material. A singing male (UMMZ 206940) with enlarged gonads was collected on 22 March 1984 near Bir Talata and is referable to nominate *stentoreus*.

**Great Reed Warbler** *Acrocephalus arundinaceus* (AV?)

**WN:** A male (GZM 115) taken on 6 April 1914 and which died eight days later cannot be confidently assigned to subspecies. There are no recent records from any of the Western Desert oases. It has been recorded in the Serir Oasis, Libya, on 19 April 1970 (Hogg, 1974).

**Olivaceous Warbler** *Hippolais pallida* subspp. MB PV

Two forms occur in the country. Nominate *pallida* is a breeding resident in the Nile Valley and Delta, the Faiyum and Wadi Natroun, and *elaeica* a Palearctic migrant (Vaurie, 1959).

**WN:** Abundant summer visitor (Meinertzhagen, 1930). **Si:** Between 8 and 10 May 1985 singing birds were common throughout the oasis (SMG, PLM). Moreau (1928) found it common from 24 to 28 March 1927, perhaps preparing to nest. **Ba:** On 12 March 1980, several were seen (SV). Moreau (1927, p. 219) stated that they were just beginning to arrive between 20 and 24 March 1925 and "doubtless remain there to breed." **Fa:** We saw and heard several on 27 April 1981. One male (UMMZ 206943) not in breeding condition and taken at Abu Minqar on 21 March 1984 is referable to *elaeica*. **Da:** On 24 April 1981, this species was not uncommon and possibly breeding locally (PLM, WCM, SMG). Scharlau (1963) saw two between 2 and 4 October 1962. A male (UMMZ 206944) collected on 22 March 1984 is referable to *elaeica*. **Kh:** On 29 March 1982, it was found breeding (SBD). Moreau (1927) noted that it was numerous and about to nest in mid-April 1925. On 29 May 1982, one was observed along the Kharga-Asyut road (SBD).

**Icterine Warbler** *Hippolais icterina* (PV)

**Da:** A male was obtained on 26 March 1928 (BMNH 1965.M.13678) and about six were seen between 2 and 4 October 1962 (Scharlau, 1963).

**Spectacled Warbler** *Sylvia conspicillata* PV (WV)

**WN:** This species was found in the ecotone between cultivation and desert (Meinertzhagen, 1930). There appears to be no recent records.

**Subalpine Warbler** *Sylvia cantillans albistriata* PV WV

**WN:** According to Meinertzhagen (1930) this species is not uncommon during the spring migration between 23 February and 5 April. **Si:** A male was taken on 25 March 1927 at Hassunah (Moreau, 1928). **Qa:** On 7 March

1976, one male was collected at Qaneitra Crossing, 100 km northeast of Qara and on 16 April 1977, a female at El Moghra (Goodman and Ames, 1983). **Ba:** On 16 and 17 March 1984, this species was common in the oasis (SMG, HS) and five specimens were taken (UMMZ 206855-206858 and 206945), all of which are referable to *albistriata*. **Fa:** One was observed on 19 March 1984 near Qasr Farafra (SMG, HS). Three were noted at Abu Minqar on 21 March 1984 (SMG, HS). **Da:** On 22 March 1984, one group of seven was observed 4 km north of Mut and one male (UMMZ 206854) was collected near Pumping Station Four. **GU:** Misonne (1974) found this species wintering in large and unfluctuating numbers from 20 October 1968 to mid-January 1969. He observed about one individual per 30 acacias, or approximately 165 individuals near Karkur Tahl and 300 at Gebel Uweinat. The Subalpine Warbler is not known to winter anywhere else in Egypt.

**Sardinian Warbler** *Sylvia melanocephala* subsp. PV WV

Three subspecies have been recorded in Egypt: *melanocephala* and *momrus* are winter visitors in various portions of the country and *norrisae* is a breeding resident in the Faiyum. Meinertzhagen (1930) presented no records of this species from the Western Desert.

**WN:** On 5 February 1983, a Sardinian Warbler was noted (BR). **Si:** Al Hussaini (1939) observed this species twice between 7 and 13 February 1939. **Ba:** From 14 to 22 February 1938 it was very common (Al Hussaini, 1938). Two specimens in the USNM (551596, 551600) taken on 12 February 1972 are of nominate *melanocephala*. **Da:** Recent records include one found dead in December 1979 and regular observations during the winters of 1980–85 (AH). **Kh:** On 12 December 1965, it was noted as common (JT) and on 18 October 1980, several were seen (SV). An adult male (USNM 551598) taken on 14 January 1972 is referable to nominate *melanocephala*. **GU:** Two were observed on 4 December and one on 9 December 1968 (Misonne, 1974).

**Rüppell's Warbler** *Sylvia rueppelli* PV

**WN:** On 3 April 1981, a female and a singing male were observed (WS). Nicoll (1912) reported birds in late March 1910 and a male taken on 28 April 1910. Meinertzhagen (1930) noted it on both passages. **Si:** Moreau (1928) saw one each day on 25 and 27 March 1927. **Qa:** One male was taken on 7 March 1976 at Qaneitra Crossing, 100 km northeast of Qara (Goodman and Ames, 1983). **Ba:** On 17 March 1984, a male was observed near Bir Matar with a group of seven *S. cantillans* (SMG, HS). **Fa:** One was noted at Abu Minqar on 21 March 1984 (SMG, HS). **Da:** On 22 March 1984, six were noted 4 km north of Mut (SMG, HS). Scharlau (1963) recorded one individual between 2 and 4 October 1962. **GU:** A female (GZM A2642) was collected on 27 March 1939.

**[Orphean Warbler** *Sylvia hortensis* (WV?)

**Si:** Mackintosh (1941) mentioned that a bird banded in Rome, Italy, on 29 April 1935 was recovered in Siwa on 26 September 1935. This record could not be confirmed by the Italian Ringing Center (Dr. Mario Spagnesi, pers. comm.). The Orphean Warbler is an uncommon winter visitor to Egypt (Goodman and Watson, 1983).]

**Lesser Whitethroat** *Sylvia curruca curruca* PV WV

**WN:** On 3 April 1981, this species was noted as common (WS). Nicoll (1912) saw it frequently in late March 1910. **Ba:** It was noted as common on 4 March 1980 in Bahariya and one was seen on 6 March 1980 about midway between Cairo and Bahariya (SV). We saw two individuals on 29 April 1981 near the El Gedida iron ore mines. **Fa:** Two or three were noted on 19 March 1984 near Qasr Farafra (SMG, HS). **Da:** On 15 January 1982, six were seen (AH). At Ezbet Zayat, between Dakhla and Kharga, one was observed on 24 March 1984 (SMG, HS). **Kh:** It was abundant on 18 October 1980 (SV). **GU:** From 25 October to 2 November 1968 this species was very abundant at Karkur Tahl (Misonne, 1974).

**Common Whitethroat** *Sylvia communis communis* PV

**WN:** Nicoll (1912) shot one on 21 March 1910. Other Nicoll specimens include: birds taken on 11 April 1923 (GZM 9525), 15 April 1923 (GZM 9526, 9529) and 16 October 1914 (GZM 1401). **Si:** Kiepenheuer and Linsenmair (1965) found it common from 19 to 27 September 1963. **Qa:** Specimens were collected between 16 and 18 April 1977 near El Moghra (Goodman and Ames, 1983). **Ba:** On 28 April 1981, we saw a few individuals in Bahariya and on 29 April 1981, we found a dead bird at the resthouse halfway between Bahariya and Cairo (UMMZ 204282). **Fa:** Four were observed on 19 March 1984 (SMG, HS) and one on 27 April 1981 (PLM, WCM, SMG). **Da:** It was recorded on 22 March 1984 (SMG, HS) and in early October 1982 (RG). **Kh:** On 21 October 1980, this species was noted (SV). Kiepenheuer and Linsenmair (1963) found one 80 km northeast of Kharga between 10 and 14 August 1963.

**Garden Warbler** *Sylvia borin* PV

**Kh:** One was observed at the resthouse halfway between Kharga and Asyut on 25 March 1984 (SMG, HS).

**Blackcap** *Sylvia atricapilla* PV (WV)

**WN:** According to Meinertzhagen (1930, p. 217) "they abound on spring and autumn passages, and a few winter in Lower Egypt, Wadi Natrun and the Faiyum." No recent records. **Si:** Kiepenheuer and Linsenmair (1965) saw it a few times between 19 and 27 September 1963.

**Bonelli's Warbler** *Phylloscopus bonelli orientalis* PV

**WN:** Meinertzhagen (1930) noted that in spring they pass through Wadi Natroun in large numbers between 12 March and 26 April, but it is rare in autumn. **Si:** Moreau (1928) found it to be a common migrant between 24 and 28 March 1927. **Ba:** This species has been noted between 20 and 24 March 1925 (Moreau, 1927). **Fa:** Between 19 and 21 March 1984, it was noted several times near Qasr Farafra and two specimens were collected (UMMZ 206862-63). **Da:** Several were observed at Abar Meihub between 10 and 13 April 1925 (Moreau, 1927). **Kh:** One was seen on 15 April 1925 (Moreau, 1927).

**Wood Warbler** *Phylloscopus sibilatrix* PV

**WN:** Specimens in the GZM taken by Nicoll include two males on 16 April 1923 and a female on 28 April 1910. **Si:** Kiepenheuer and Linsenmair (1965) saw many on 14 and 15 May 1963. **Da:** We found one on 24

April 1981. Moreau (1934) mentioned that this species was collected on 2 October at 25°15'N, 30°10'E (between Dakhla and Kharga) and at 24°20'N, 29°30'E (96 kms south of Dakhla). **Kh:** One was seen on 23 April 1981 (PLM, WCM, SMG). Scharlau (1963) observed three individuals in early October 1962.

**Chiffchaff** *Phylloscopus collybita* subsp. PV WV

Two subspecies have been recorded in Egypt, *collybita* and *abietinus*. Both are winter visitors from late September to April or early May (Meinertzhagen, 1930).

**WN:** On 17 January 1979, about 15 were seen (Meininger et al., 1979). Loat (1905) noted that nominate *collybita* was abundant in March 1903. **Si:** One was collected at El Zeitun on 9 March 1976 that cannot be confidently assigned to subspecies (Goodman and Ames, 1983). Moreau (1928) saw one on 27 March 1927 which he identified, based on vocalization, as *abietinus*. Al Hussaini (1939, p. 151) found this species to be "very common" from 7 to 13 February 1939. **Ba:** Moreau (1927, p. 219) heard Chiffchaffs in the gardens "where they had doubtless wintered," and also stated that *abietinus* was present, based on its distinctive call. A female in the USNM (551632) taken on 11 February 1972 is referable to nominate *collybita*. **Fa:** About 10 individuals were observed near Qasr Farafra on 19 March 1984 (SMG, HS). **Da:** This species was seen on 28 November 1980, in January 1982 and regularly between late September 1982 and mid-January 1983 (AH). **Kh:** On 10 December 1965, it was recorded as common (JT). Two were present on 24 March 1984 at the resthouse between Kharga and Asyut (SMG, HS). **GU:** Chiffchaffs were frequently seen between October and early December 1968, with numbers decreasing thereafter. Two were caught on 14 December 1968 at Karkur Ibrahim (Misonne, 1974).

**Willow Warbler** *Phylloscopus trochilus trochilus* PV (WV?)

**WN:** This species was recorded as extremely abundant between late August and mid-October, and a specimen (GZM 9476) taken on 15 April 1923 appears to be the only spring record (Meinertzhagen, 1930). **Si:** A single bird at Khamisah on 10 May 1985 (SMG, PLM). Kiepenheuer and Linsenmair (1965) found it very common from 19 to 27 September 1963, and collected five birds between 20 and 26 September that Steinbacher (1965) identified as nominate *trochilus*. **Da:** It was seen on 19 October 1980 (SV). One was collected on 13 August 1963 between Kharga and Dakhla and identified by Steinbacher (1965) as nominate *trochilus*. **Kh:** It was recorded as abundant on 18 October 1980 (SV) and a small number were seen on 23 April 1981 (PLM, WCM, SMG). **GU:** Two were seen and one collected on 11 December 1968 at Karkur Tahl (Misonne, 1974). An unsexed specimen (GZM A2643) was collected on 27 March 1939. A dead bird (USNM 548581) was found in a dehydrated state on 30 April 1967 at 22°0'N, 27°12'E, or approximately 220 kms east of Gebel Uweinat.

**Spotted Flycatcher** *Muscicapa striata* PV

Two subspecies pass through Egypt on migration, nominate *striata* and *neumanni*. Although all the specimens we have examined from the Western

Desert are best referred to nominate *striata*, *neumanni* may migrate through the area.

**WN:** On 1 May 1981, one was observed (PLM, WCM). Specimens were collected on 28 April, 5 and 7 May 1910 (Nicoll, 1912) and on 13 April 1923 (BMNH 1965.M.14864; GZM 9521). **Si:** Birds were collected on 27 April and 11 May 1935 (Moreau, 1941). Kiepenheuer and Linsenmair (1965) found this species not common between 19 and 27 September 1963, and saw many on 14 and 15 May 1963. Two specimens were collected on 25 September 1963 and identified by Steinbacher (1965) as nominate *striata*. **Qa:** There are several spring records from El Moghra (Goodman and Ames, 1983). **Ba:** On 29 April 1981, we saw five individuals near the El Gedida iron ore mines and three midway between Bahariya and Cairo. **Fa:** Observed in the oasis and at Abu Minqar on 7 September 1984 (SH, TDHM). **Da:** It was noted in early October 1982 (RG). One was collected on 3 October about 160 km south-southwest of Dakhla at 24°20'N, 28°45'E (Moreau, 1934). **Kh:** Moreau (1927) saw a few from 7 to 9 and 14 to 16 April 1925. Scharlau (1963) saw four on the 2nd and 20 on the 4th and 10th of October 1962.

**Red-breasted Flycatcher** *Ficedula parva parva* (PV)

**WN:** Three males in the GZM were taken on 14 (4087), 17 (4088) and 19 October 1914 (4089). **Si:** Kiepenheuer and Linsenmair (1965) observed it rarely between 19 and 27 September 1963. **Ba:** One was observed on 8 September 1984 at the resthouse between Bahariya and Cairo (SH, TDHM).

**Semi-collared Flycatcher** *Ficedula semitorquata* PV

**WN:** According to Meinertzhagen (1930) it only occurs on spring passage between 26 March and 11 May.

**Collared Flycatcher** *Ficedula albicollis* PV

Meinertzhagen (1930) noted that it had not been recorded in the Western Desert.

**WN:** Specimens in GZM collected between 1912 to 1923 on 30 March and 7, 8 and 30 April and in BMNH on 10, 13 (two), 14 (two) and 15 (two) April 1923. **Ba:** We observed one near the El Gedida iron ore mines on 29 April 1981.

**Pied Flycatcher** *Ficedula hypoleuca hypoleuca* PV

**WN:** On 1 May 1981, one was seen (PLM, WCM). Specimens in the GZM were collected on 11, 12 (two) and 13 (two) April 1923 and in the BMNH on 12 (two) and 14 April 1923. **Qa:** Several spring records from El Moghra (Goodman and Ames, 1983). **Ba:** We saw one near the El Gedida iron ore mines on 29 April 1981. **Da:** Moreau (1927) saw one male at Abar Meihub between 10 and 13 April 1925.

**Golden Oriole** *Oriolus oriolus oriolus* PV

**WN:** Spring passage is well marked (Meinertzhagen, 1930). One was seen on 25 April 1980 (SV) and ten on 1 May 1981 (PLM, WCM). **Si:** Several were noted on 2 September 1935 (Moreau, 1941). This species was recorded as rare between 19 and 27 September 1963 and one was seen on 14 or 15

May 1963 (Kiepenheuer and Linsenmair, 1965). **Qa:** A male and a female were collected at El Moghra on 13 and 15 May 1975, and several were noted in mid-April (Goodman and Ames, 1983). **Ba:** Three were observed on 8 September 1984 (SH, TDHM). In late April 1981, Golden Orioles were considered a pest to the ripening mulberry (*Morus* sp.) crop by the local farmers and were consequently hunted (PLM, WCM, SMG). **Fa:** One specimen in the FMFA. **Da:** Scharlau (1963) saw one male between 2 and 4 October 1962. **Kh:** We observed one individual on 23 April 1981.

**Isabelline Shrike** *Lanius (collurio) isabellinus* AV

**Da:** Moreau (1934) stated that one was obtained from a flock on 2 October at 25°6'N, 29°30'E, or 96 km south of Dakhla, and another on 3 November at 23°50'N, 27°40'E in the desert between Gebel Uweinat and Dakhla. There are only two other published records of this form in Egypt, both from the Red Sea coast region (Meinertzhagen, 1930).

**Red-backed Shrike** *Lanius collurio collurio* PV (WV?)

According to Meinertzhagen (1930) this species' main spring migratory route bypasses the Nile Valley and Delta, and is more marked in the Sinai. In autumn, passage occurs between 8 August and 22 September, with one specimen taken in December.

**WN:** An adult male (GZM 4020) was collected on 15 August and an adult female (GZM 4021) on 18 August 1910 (Nicoll, 1912). **Si:** Kiepenheuer and Linsenmair (1965) found females common from 19 to 27 September 1963 and collected two immature females on 21 and 23 September 1963 (Steinbacher, 1965). **Fa:** One specimen in FMFA. It was observed at Abu Minqar on 7 September 1984 (SH, TDHM). **Da:** Between 2 and 4 October 1962 three individuals were seen (Scharlau, 1963). **Kh:** It was noted as common between 5 and 7 September 1984 (SH, TDHM). Only females were seen from 10 to 14 August 1963 (Kiepenheuer and Linsenmair, 1965). **GU:** Misonne (1974) observed this species several times between 23 and 25 December 1968.

**Lesser Grey Shrike** *Lanius minor* (PV?)

Meinertzhagen (1930) noted that it had not been recorded from any Western Desert oasis.

**Si:** One was found on 28 August 1935 and the species was noted as numerous on 3 September 1935 (Moreau, 1941).

**Great Grey Shrike** *Lanius excubitor* RB WV?

**WN:** On 17 January 1979, two were seen (Meininger et al., 1979). **Fa:** Abdel Rahim et al. (1980) observed this species sometime between late March and early April 1979, but presented no details. **Da:** Moreau (1927) recorded one at Rashida between 10 and 13 April 1925. **Kh:** Meinertzhagen (1930) noted it as a rare resident, and no subsequent records are known. **GU:** Jany (1963) found this species breeding at Karkur Murr in mid-April 1961.

**Woodchat Shrike** *Lanius senator* subspp. PV

**WN:** On 3 April 1981, two or three individuals were seen (WS). Both subspecies have been recorded in the wadi; but *L. s. senator* is more common (Meinertzhagen, 1930). Numerous specimens of both forms examined

(BMNH and GZM). **Si**: One bird collected on 17 April 1935 is referable to nominate *senator* (Moreau, 1941; Goodman and Ames, 1983), while another collected the following day was identified by Moreau (1941) as *niloticus*. **Qa**: A female of nominate *senator* was collected on 16 May 1975 at El Moghra. Single birds were seen in the depression on 14, 15, 17 and 20 April 1977 (Goodman and Ames, 1983). **Ba**: Pairs of birds have been observed on 29 April 1981 (PLM, WCM, SMG), on 12 March 1980 (SV), and on 20 March 1925 (Moreau, 1927). **Fa**: A male (UMMZ 206888) was taken on 19 March 1984 near Qasr Farafra. **Da & Kh**: According to Meinertzhagen (1930) this species had been observed on spring passage. One was noted at Ezbet Zayat, between these two oases, on 24 March 1984, and single birds 70 and 112 km north of El Kharga on 25 March 1984 (SMG, HS).

**Masked Shrike** *Lanius nubicus* PV

Meinertzhagen (1930) mentioned that it had not been recorded in the Western Desert.

**Da**: We saw one male on 24 April 1981. **Kh**: One immature was observed on 18 October 1980 (SV) and a male on 23 April 1981 (PLM, WCM, SMG).

**Hooded Crow** *Corvus corone sardonius* (WV)

Two subspecies are known from Egypt. The breeding resident throughout much of the non-desert regions is *sardonius* and *cornix* is an uncommon migrant from Europe.

**WN**: One obtained by Meinertzhagen (1930) in April 1923 (not examined). In March 1911, a small flock was seen and in the autumn of 1911 many were noted (Nicoll, 1912). Both authors refer their material or observations to *C. c. cornix*. Two specimens in the GZM taken on 8 February 1913 (4774) and 20 April 1913 (4775) are referable to *sardonius*.

**Brown-necked Raven** *Corvus ruficollis ruficollis* RB

**WN**: On 17 January 1979, four were seen along the road between Cairo and Wadi Natroun (Meininger et al., 1979). Meinertzhagen (1930, p. 651) considered it a resident, but presented no supporting evidence. **Si**: From 8 to 10 May 1985 this species was common throughout the oasis and in flocks of up to 20 (SMG, PLM). Meinertzhagen (1921; 1930) collected two specimens and found it breeding in palm trees and on cliffs. **Qa**: Several records from early March 1976 and April 1977 including a pair attending a nest at El Moghra (Goodman and Ames, 1983). **Ba**: We observed two in Bahariya on 28 April 1981, and the following day a pair near the El Gedida iron ore mines and six along the Bahariya-Cairo road. Moreau (1927) stated that it was a resident along the scarps. **Fa**: We saw a pair on 27 April 1981. Abdel Rahim et al. (1980) observed this species sometime between late March and early April 1979. **Da**: Between late September 1982 and mid-January 1983, it was seen daily and sometimes in fairly large numbers (AH). Meinertzhagen (1930) stated that they breed in the oasis in palm trees and on cliffs. **Kh**: Moreau (1927, p. 229) mentioned it as a "doubtless resident" along the cliffs in April 1925. Records from Ezbet Zayat, between Kharga and Dakhla, include one on 24 March 1984 (SMG, HS) and a pair on 23 April 1981 (PLM, WCM, SMG).

**Starling** *Sturnus vulgaris vulgaris* WV

**WN:** Nicoll (1912) saw a few Starlings daily during November 1911 and on the 26th a specimen was collected that he identified as nominate *vulgaris*. Meinertzhagen (1930) stated that *S. v. poltaratskyi* is probably the most frequent subspecies of Starling wintering in Egypt, penetrating to Wadi Natroun. Although we have not examined all the material reviewed by Meinertzhagen, this seems unlikely, for *poltaratskyi* generally winters in Iran and east into southern Asia (Vaurie, 1959). **Si:** This species was noted by Meinertzhagen (1930) as occurring in the oasis, but no precise information was given.

**House Sparrow** *Passer domesticus niloticus* RB

The subspecies *niloticus* is the resident Egyptian form of the House Sparrow. It is presumably *niloticus* that has recently colonized several Western Desert oases. In Meinertzhagen's (1930) time it had not yet been recorded in Wadi Natroun or anywhere else in the Western Desert.

**WN:** Several nests were found on 1 May 1981 (PLM, WCM, SV). **Da:** On 18 October 1980, and on 24 April 1981, small numbers were seen (SV; PLM, WCM, SMG). **Kh:** On 17 and 18 October 1980, this species was observed (JV). We found it common in the vicinity of El Kharga on 23 April 1981, where it was definitely breeding.

**Spanish Sparrow** *Passer hispaniolensis hispaniolensis* PV WV

**WN:** Large flocks were observed moving north through Wadi Natroun between 12 and 15 April (Meinertzhagen, 1930). Nicoll (1912) observed two in late March 1910, found it abundant in November 1911, and possessed birds collected on 19 April and 10 May 1910. A specimen in the GZM (4324) was taken on 11 February 1913. **Si:** A female in the USNM (552119) was collected on 13 March 1970. Al Hussaini (1939) found it to be the most common winter visitor to Siwa between 7 and 13 February 1939. **Ba:** "Huge" flocks were seen on 8 March 1980 and between 12 and 15 March 1981 (SV). Nine specimens (USNM 552131-552139) were obtained between 7 and 13 February 1972, and some are clearly referable to nominate *hispaniolensis*. **Da:** Meinertzhagen (1930) noted several were observed at Dinarria during March. Al Hussaini (1959a) stated that it is a winter visitor to the oasis. **Kh:** On 18 October 1980, many were seen in Kharga and a few between Kharga and Asyut (SV). Four specimens in the USNM (552124-552127) of nominate *hispaniolensis* were taken on 14 January 1972.

**Desert Sparrow** *Passer simplex* WV?

**GU:** Five were seen between 21 October and December 1968 at Ain Zuweina and 22 on 27 and 28 December 1968 at Karkur Tahl (Misonne, 1974). The Karkur Tahl records are the first for Egypt.

**Chaffinch** *Fringilla coelebs coelebs* WV

**WN:** Several were seen in November 1911 and one female (GZM 4340) was collected on the 24th (Nicoll, 1912). Meinertzhagen (1930) considered it a straggler to Wadi Natroun. **Ba:** On 8 March 1980, three females were seen (SV).

**Serin** *Serinus serinus* AV

**WN:** On 9 November 1911, one female (GZM 4163) was collected and during that same month several others observed (Nicoll, 1912).



**Greenfinch** *Carduelis chloris* RB(?)

**WN:** One observed on 24 May 1985 (TDHM). It is presumed that this species breeds in the area.

**Goldfinch** *Carduelis carduelis niediecki* RB

Meinertzhagen (1930) mentioned this species only as a possible resident of Cairo. Since about 1930, the subspecies *niediecki* has extended its range in Egypt, and at present breeds throughout the Nile Delta west to at least Burg el Arab, the Nile Valley south to Aswan, in the Suez Canal area and several Western Desert oases.

**WN:** Meinertzhagen (1930, p. 108) noted it has "straggled" to the area. Recent records include two on 17 January 1979 (Meininger et al., 1979), individuals on 25 April 1980 (SV) and a pair feeding young on 1 May 1981 (SV). **Ba:** A few were seen on 12 March 1981 (SV) and a pair and a single individual on 28 April 1981 (PLM, WCM, SMG). Two (USNM 551937, 551939) were taken on 9 February 1972. **Fa:** Between 19 and 21 March 1984, groups of three to four were often observed in the *Casuarina* groves near Qasr Farafra (SMG, HS). One unsexed bird (UMMZ 206962) was collected on 21 March 1984 and is referable to *niediecki*. **Da:** On 11 January 1984, a flock of nine was seen between Bashindi and Tenida (AH) and on 22 March 1984 a single individual was found 4 km north of Mut (SMG, HS). **Kh:** On 10 December 1965, a small flock was seen (JT), on 18 October 1980 several flocks (SV) and on 23 April 1981, six individuals (PLM, WCM, SMG).

**Siskin** *Carduelis spinus* AV

**WN:** One was obtained on 17 October 1914 (Meinertzhagen, 1930; in GZM).

**Linnet** *Carduelis cannabina cannabina* PV WV

**WN:** Occasional winter visitor (Meinertzhagen, 1930). On 14 March 1981, one male was recorded (SV). In late March 1910 and November 1911, this species was abundant in the cultivated areas (Nicoll, 1912). **Ba:** Eight were seen on 8 March 1980 and several on 12 March 1981 (SV). Two specimens in the USNM (551947-551948) were taken on 8 February 1972.

**Trumpeter Finch** *Bucanetes githagineus* subsp. RB

**Ba:** Al Hussaini (1938, 1959) found it fairly common in gardens between 14 and 22 February 1938 and collected a female on the 17th (BMNH 1941.5.30.6186). **Fa:** Abdel Rahim et al. (1980) mentioned seeing it sometime between late March and early April 1979. **Da:** Moreau (1927) saw one between 10 and 13 April 1925 at Tenida and Meinertzhagen (1930, p. 651) listed it as a resident. **Kh:** Many were seen on 18 October 1980 (SV). In the first half of April 1925, Moreau (1927) saw a female being fed by a male and also noted two other males near the Hibis Temple. Al Hussaini (1937) shot a male and a female near the Hibis Temple between 10 and 18 February 1937. **GU:** Jany (1963) saw small flocks in mid-April 1961 at wells. Misonne (1974) found this species common between October and December 1968. Two males in the USNM (575348-575349) taken at Ain Zuweina on 25 March 1961 are referable to *B. g. zedlitzi*.

**Hawfinch** *Coccothraustes coccothraustes coccothraustes* WV

**WN:** Not infrequent in winter, where it has been collected in October and December (Meinertzhagen, 1930). Specimens examined include one male and two females (GZM 4164-4166) taken on 17 October 1914. **Si:** On 25 March 1927, a freshly dead bird was found (Moreau, 1928, 1941).

**House Bunting** *Emberiza striolata* AV (RB?)

**GU:** From 5 November to 4 December 1968, six were seen at Karkur Tahl (Misonne, 1974). This species may breed locally.

**Ortolan Bunting** *Emberiza hortulana* PV

**WN:** This species has been obtained on several occasions in March and April (Meinertzhagen, 1930; GZM). **Si:** Moreau (1928) saw a few at Shindit on 27 March 1927.

**Cretzschmar's Bunting** *Emberiza caesia* PV

**WN:** In late March 1910, this species was reported to be "exceedingly common" and several were obtained (Nicoll, 1912, p. 424; in GZM). **Ba:** On 9 March 1980, two males were observed (SV).

**Corn Bunting** *Miliaria calandra calandra* WV

**WN:** Nicoll (1912, p. 423) saw one on 15 March 1910 and found it "remarkably numerous" and collected at least 11 (in GZM) during November 1911. Winter records include a bird taken on 4 February 1914 (GZM 4386) and a pair on 27 February 1923 (GZM 9411, 9412). **Ba:** On 4 March 1980, several small flocks were observed (SV). **Kh:** Moreau (1927) saw small flocks on 7 and 9 April 1925.

## DISCUSSION

### ZOOGEOGRAPHY

Of the 242 species recorded in the Western Desert, 53 have been documented to breed there (Table 3). Many of these species have continuous distributions throughout the eastern Sahara and disjunct populations across the Red Sea on the Arabian Peninsula. In Table 4, we have compiled a list of birds known to breed in five regions across the central and eastern Sahara and the central Arabian Desert. These five regions are the desert of southern Tunisia, the Fezzan (western Libya), eastern Libya, the Western Desert, and the desert of central Arabia (all are defined in Table 4). Except for the central Arabian desert these deserts are contiguous. The central Arabian region was included to assess the effects of a large body of water (the Red Sea) on the dispersal of desert birds. These five regions appear geographically and ecologically homogenous, at least superficially. The large expanses of virtually barren desert are occasionally broken by vegetated oases.

It is critical to point out that these regions have not been equally studied. Only nine species are known to breed in the desert of eastern Libya, a disparity almost certainly reflecting the lack of ornithological work conducted there. Information from the area between the Nile Valley and the

TABLE 3  
BREEDING BIRDS OF THE WESTERN DESERT

Species	Oasis								
	WN	Si	Qa	Ba	Fa	Da	Kh	GK	GU
<i>Struthio camelus</i>			—			—	—		
<i>Tachybaptus ruficollis</i>	x			x	?	x	?		
<i>Ixobrychus minutus</i>	x								
<i>Bubulcus ibis</i>				?	?	?	⊗		
<i>Anas platyrhynchos</i>						? <sup>1</sup>			
<i>Marmonetta angustirostris</i>	—				?	?			
<i>Elanus caeruleus</i>	—								
<i>Neophron percnopterus</i>	?					?	?		
<i>Falco tinnunculus</i>	x	x		?	?	x	x		
<i>Falco concolor</i>			⊗	⊗	⊗	?			?
<i>Falco biarmicus</i>		?	?	⊗	⊗	?			
<i>Rallus aquaticus</i>	x								
<i>Gallinula chloropus</i>	x	?		?	?	?	x		
<i>Fulica atra</i>	?					⊗	?		
<i>Chlamydotis undulata</i>	—	x	⊗	—	?	—?	—?		
<i>Rostratula benghalensis</i>	x								
<i>Himantopus himantopus</i>	—								
<i>Recurvirostra avocetta</i>	—								
<i>Burhinus oedicnemus</i>	x						x		
<i>Burhinus senegalensis</i>	x								
<i>Cursorius cursor</i>	x		?	?	?	?	?		
<i>Glareola pratincola</i>	?								
<i>Charadrius dubius</i>	x								
<i>Charadrius pecuarius</i>	x								
<i>Charadrius alexandrinus</i>	x	⊗			?	?			
<i>Hoplopterus spinosus</i>	x						?		
<i>Pterocles coronatus</i>	⊗		?						
<i>Pterocles senegallus</i>	?			x	?	x	x		
<i>Columba livia</i>				?	?	x	x		
<i>Streptopelia decaocto</i>	⊗								
<i>Streptopelia turtur</i>	?	⊗		?	?	x	x		
<i>Streptopelia senegalensis</i>	⊗	⊗		x	?	x	x		
<i>Tyto alba</i>	?	?		?		?	?		
<i>Bubo bubo</i>	?	x			?	?	⊗		?
<i>Athene noctua</i>	x	x		⊗	⊗	x	x		
<i>Caprimulgus aegyptius</i>	x			?		?			
<i>Apus pallidus</i>				x		x	x		
<i>Merops orientalis</i>	?								
<i>Merops superciliosus</i>	?								
<i>Upupa epops</i>	?			⊗	?	⊗	⊗		
<i>Ammomanes cincturus</i>	x	?	?	?	?	?	⊗		
<i>Ammomanes deserti</i>				?	?	x	?		?
<i>Alaemon alaudipes</i>	x	x	⊗	x	⊗	x	x		⊗
<i>Calandrella brachydactyla</i>	—?								
<i>Calandrella rufescens</i>	?	?	?						
<i>Galerida cristata</i>	x		?			?			
<i>Eremophila bilopha</i>	x	⊗	⊗		?				
<i>Riparia riparia</i>	?								
<i>Ptyonoprogne obsoleta</i>	?	?			?	x	x		⊗

TABLE 3 Continued

Species	Oasis								
	WN	Si	Qa	Ba	Fa	Da	Kh	GK	GU
<i>Hirundo rustica</i>	?								
<i>Motacilla flava</i>	x								
<i>Pycnonotus barbatus</i>	?								
<i>Cercotrichas galactotes</i>	x	x		x	?	x	x		
<i>Cercomela melanura</i>									?
<i>Oenanthe deserti</i>	?	?	?	?	?	?	?		?
<i>Oenanthe leucopyga</i>		x	x	x		x	x	⊗	⊗
<i>Cisticola juncidis</i>	x	?					⊗		
<i>Prinia gracilis</i>	x								
<i>Acrocephalus stentoreus</i>	x		?	⊗		⊗			
<i>Hippolais pallida</i>	x	x		x	?	?	⊗		
<i>Lanius excubitor</i>						?	-?		⊗
<i>Corvus ruficollis</i>	?	x	x	⊗	⊗	x	x		
<i>Passer domesticus</i>	x					⊗	⊗		
<i>Passer simplex</i>									?
<i>Carduelis chloris</i>	?								
<i>Carduelis carduelis</i>	⊗			⊗	⊗	⊗	⊗		
<i>Bucanetes githagineus</i>				?	?	x	x		⊗
<i>Emberiza striolata</i>									?

x = documented or good evidence of breeding.

? = breeding not substantiated or doubtful.

- = no recent records, presumed former breeding resident.

⊗ = breeding resident, not mentioned by Meinertzhagen (1930).

<sup>1</sup>Female with enlarged ovary taken, see species accounts.

TABLE 4  
DISTRIBUTIONAL PATTERNS OF BREEDING BIRDS OF THE CENTRAL  
AND EASTERN SAHARA AND CENTRAL ARABIA<sup>1</sup>

Species	Southern Tunisia <sup>2</sup>	Fezzan <sup>3</sup>	Eastern Desert Libya <sup>4</sup>	Western Desert	Central Arabia <sup>5</sup>
<i>Struthio camelus</i>	x	x	x	x	x
<i>Tachybaptus ruficollis</i>				x	
<i>Ixobrychus minutus</i>				x	
<i>Bubulcus ibis</i>				x	
<i>Marmonetta angustirostris</i>				x	
<i>Aythya nyroca</i>		x			
<i>Elanus caeruleus</i>				x	
<i>Neophron percnopterus</i>	x			?	x
<i>Gyps fulvus</i>	x				x
<i>Torgos tracheliotus</i>	x				?
<i>Buteo rufinus</i>	x				x
<i>Falco tinnunculus</i>	x			x	x

TABLE 4 Continued

Species	Southern Tunisia <sup>2</sup>	Fezzan <sup>3</sup>	Eastern Desert Libya <sup>4</sup>	Western Desert	Central Arabia <sup>5</sup>
<i>Falco concolor</i>		?	x	x	
<i>Falco biarmicus</i>	x	x	x	x	?
<i>Falco pelegrinoides</i>		?			x
<i>Alectoris barbara</i>		x			
<i>Ammoperdix heyi</i>					x
<i>Rallus aquaticus</i>				x	
<i>Gallinula chloropus</i>	x	x		x	x
<i>Fulica atra</i>		x		x	
<i>Chlamydotis undulata</i>	x			x	x
<i>Rostratula benghalensis</i>				x	
<i>Himantopus himantopus</i>				x	
<i>Recurvirostra avosetta</i>				x	
<i>Burhinus oedicnemus</i>	x	?		x	
<i>Burhinus senegalensis</i>				x	
<i>Cursorius cursor</i>	x	?	?	x	x
<i>Charadrius dubius</i>				x	
<i>Charadrius pecuarius</i>				x	
<i>Charadrius alexandrinus</i>	x	x		x	
<i>Hoplopterus spinosus</i>				x	
<i>Pterocles coronatus</i>	x	x		x	?
<i>Pterocles senegallus</i>	x	x		x	
<i>Pterocles orientalis</i>	x				
<i>Pterocles alchata</i>	x				?
<i>Columba livia</i>	x	x		x	x
<i>Streptopelia decaocto</i>				x	x
<i>Streptopelia turtur</i>	x	x	x	x	x
<i>Streptopelia senegalensis</i>	x	?		x	
<i>Oena capensis</i>					x
<i>Bubo bubo</i>	x	?		x	?
<i>Athene noctua</i>	x	?		x	x
<i>Strix butleri</i>					x
<i>Caprimulgus aegyptius</i>	?			x	
<i>Apus pallidus</i>				x	x
<i>Merops orientalis</i>				?	x
<i>Upupa epops</i>	x			x	x
<i>Eremopterix nigriceps</i>			?		x
<i>Eremalauda dunni</i>					x
<i>Ammomanes cincturus</i>	x	x		x	x
<i>Ammomanes deserti</i>	x	x		x	x
<i>Alaemon alaudipes</i>	x	x	x	x	x
<i>Rhamphocoris clotbey</i>	x				
<i>Calandrella brachydactyla</i>				x	
<i>Calandrella rufescens</i>	x			?	x
<i>Galerida cristata</i>	x	x		x	x
<i>Galerida theklae</i>	x				
<i>Eremophila bilopha</i>	x	?		x	x
<i>Hirundo obsoleta</i>		x		x	x
<i>Motacilla flava</i>				x	
<i>Pycnonotus xanthopygos</i>					x

TABLE 4 Continued

Species	Southern Tunisia <sup>2</sup>	Fezzan <sup>3</sup>	Eastern Desert Libya <sup>4</sup>	Western Desert	Central Arabia <sup>5</sup>
<i>Cercotrichas galactotes</i>	x			x	x
<i>Cercotrichas podobe</i>					x
<i>Cercomela melanura</i>				?	x
<i>Oenanthe hispanica</i>	x				
<i>Oenanthe deserti</i>	x	?		?	
<i>Oenanthe moesta</i>	x				
<i>Oenanthe lugens</i>	x				
<i>Oenanthe monacha</i>					x
<i>Oenanthe leucopyga</i>	x	x	x	x	x
<i>Oenanthe leucura</i>	x				
<i>Cisticola juncidis</i>				x	
<i>Prinia gracilis</i>				x	
<i>Scotocerca inquieta</i>	x				x
<i>Acrocephalus stentoreus</i>				x	
<i>Hippolais pallida</i>	?	?		x	x
<i>Turdoides squamiceps</i>					x
<i>Turdoides fulvus</i>	x	x			
<i>Lanius excubitor</i>	x	x	x	x	x
<i>Lanius senator</i>	x				
<i>Corvus ruficollis</i>	x	x	x	x	x
<i>Corvus corax</i>	x				
<i>Corvus rhipidurus</i>					x
<i>Passer domesticus</i>	x			x	x
<i>Passer simplex</i>	?	x		?	
<i>Petronia petronia</i>	x				
<i>Bucanetes githaginea</i>	x	x	x	x	x
<i>Carduelis carduelis</i>				x	
<i>Emberiza striolata</i>	x	x		?	x
Totals <sup>6</sup>	47	23	9	53	43
Number shared with Western Desert	27	18	9	—	23
Number of species restricted to region	10	1	0	20	9

<sup>1</sup>Includes breeding records in the 20th century and only species for which breeding has been documented in at least one of the five regions.

<sup>2</sup>Non-coastal region south of approximately 33° N. After Thomsen and Jacobsen (1979) and Vaurie (1959, 1965).

<sup>3</sup>Fezzan Desert of Libya west of 19° E and south of 30° N. After Bundy (1976) and Cowan (1983).

<sup>4</sup>Eastern Desert of Libya east of 19° E and south of 30° N. After Bundy (1976).

<sup>5</sup>East of the Hejaz and Asir mountains, inland of the Gulf littoral, and between the Great Nafud Desert and the Rub al Khali (Empty Quarter). After Jennings (1980).

Information from Vaurie (1959, 1965) and Snow (1978) have also been used in compiling distributions.

<sup>6</sup>Questionable records ("?") are not included in total.

Red Sea was not included because the breeding birds are so poorly known. However, even with the paucity of information from portions of these five regions several zoogeographic patterns emerge.

A total of 89 breeding species have been recorded in the eastern Sahara and the central Arabian desert. There are no endemic species in any of the five regions. Three subspecies are restricted to the Western Desert; these are *Columba livia dakhlae*, *Streptopelia turtur rufescens* and *Prinia gracilis natronensis*.

Of these 89 species, 13 are found in each of the five areas, or in the combination of the Western Desert and three other areas. Of these 13 species, nine are truly desert adapted, in that they are not dependent on the green oases for their complete existence. Consequently, wide areas of desert do not act as dispersal barriers. These are: *Struthio camelus*, *Falco biarmicus*, *Ammomanes cincturus*, *Ammomanes deserti*, *Alaemon alaudipes*, *Oenanthe leucopyga*, *Lanius excubitor*, *Corvus ruficollis*, and *Bucanetes githaginea*. The remaining four species, *Gallinula chloropus*, *Columba livia*, *Streptopelia turtur*, and *Galerida cristata* occur only in the vegetated oases. None of these four has recognized subspecies endemic to a single oasis.

A total of 20 species are documented breeding residents in the Western Desert but are unknown to do so in any of the other four regions. Of these 20, 15 breed only in Wadi Natroun (Table 3). The majority are associated with aquatic or semi-aquatic habitats. Their occurrence in Wadi Natroun can be explained at least in part by the position of the oasis. It lies about 40 km from the lush Nile Delta, a reservoir for potentially colonizing species. It is interesting to note that a subspecies, *Prinia gracilis natronensis*, is endemic to Wadi Natroun, and the 40 km of desert have proven to be a barrier to gene flow between this population and those inhabiting the western Nile Delta (Goodman, 1984).

Twenty species are not known or suspected to nest in the Western Desert but breed in only one of the other four regions. Of these, ten are restricted to southern Tunisia, one to the Fezzan, and nine to central Arabia. The Arabian group includes: *Ammoperdix heyi*, *Oena capensis*, *Strix butleri*, *Eremalauda dunni*, *Pycnonotus xanthopygos*, *Cercotrichas podobe*, *Oenanthe monacha*, *Turdoides squamiceps*, and *Corvus rhipidurus*. None of these birds is endemic to the Arabian Peninsula and all except for *Pycnonotus xanthopygos* and *Turdoides squamiceps* occur on the African continent (Vaurie, 1959, 1965; Snow, 1978; Goodman and Sabry, 1984). These later two species are part of superspecies complexes which have members in North Africa. Thus, the Red Sea does not act as a barrier to the dispersal of Arabian species into the desert regions of North Africa, but some other factor(s) comes into play. This is presumably due to the lack of suitable habitat in the Western Desert or competition with other birds. It is plausible that some of these species dispersed across the Sinai Peninsula rather than over the Red Sea.

Since the publication of Meinertzhagen (1930), several species have been recorded nesting for the first time in the Western Desert (Table 3). Most of these birds are so conspicuous it is unlikely that they were overlooked by

earlier ornithologists; however, the discovery of others such as *Oenanthe leucopyga* at Gebel Uweinat and Gilf el Kebir is clearly related to the exploration of the area. Further, the vast majority of these new breeding species consist of desert-adapted birds that presumably wander to some extent across the region and adjust their local breeding ranges to seasonal conditions.

Six non-desert adapted birds, all of which are conspicuous, show a rather striking colonization pattern. These include: *Bubulcus ibis*, *Upupa epops*, *Cisticola juncidis*, *Acrocephalus stentoreus*, *Passer domesticus* and *Carduelis carduelis*. All of these species are characteristic of the Egyptian Nile Valley, and only *Upupa epops* is known to have Palearctic populations that migrate across the Western Desert. Thus, the source area for these colonizing species must have been the Nile Valley. In the case of *Upupa* the nominate form breeds across portions of the Palearctic and migrates to Africa for the winter. However, there is evidence from specimens that the Nile Valley form, *major*, is the one that has recently colonized a few oases in the Western Desert. *Cisticola* and *Acrocephalus* are birds of vegetated aquatic habitats, and the balance are generally associated with humans, either as commensals or as foragers in agricultural fields. All except *Bubulcus* were first recorded in the Western Desert, after 1959, when desert reclamation campaigns started to drastically alter local ecosystems. *Bubulcus* was first noted in 1937. Whether these species had been unrecorded vagrants to this region before the reclamation is unknown, but it appears that it was not until certain habitats were available that colonizers were able to establish themselves. The case with *Carduelis* is slightly different. This species feeds extensively on the seeds of certain trees. *Casuarina*, tamarisks and other trees that could potentially be exploited by *Carduelis* have been extensively used in the Western Desert as wind breaks; it is presumably for this reason that *Carduelis* has been able to colonize the region so effectively. The activities of man in the region have had pronounced changes on local habitats which in turn have allowed several Nile Valley and Delta species to establish local viable breeding populations.

#### ISLAND BIOGEOGRAPHY ANALYSIS

The oases of the Western Desert are ecological equivalents of islands and invite analysis using the equilibrium model of MacArthur and Wilson (1967). However, we feel that this approach to the analysis of the distribution of birds in the Western Desert is not appropriate at this time. There is not equivalent information from vast portions of the Western Desert. This is particularly true of the Gilf el Kebir and Gebel Uweinat regions. Since the potential number of breeding species in the Western Desert is small, significant miscalculations could enter into the analysis. Even for several oases which are reasonably well known, there is a paucity of information from the summer months, and our knowledge of the breeding residents during this period is nil. One potentially interesting application of island biogeography theory would be a comparison of the Nile Valley and Delta species inhabit-



ing the Western Desert. For these birds, in contrast to the desert adapted forms, the oases are vegetative islands in a sea of sand. As our knowledge of the breeding birds of these oases increases, a study of the relationships between the effect of human changes, and oasis shape, size and distance to the mainland (Nile Valley) might yield some interesting results.

On a preliminary basis, the following observations can be made concerning the pattern of colonization of Nile Valley birds (number in parentheses is the distance from the eastern edge of these oases to the Nile Valley) in the Kharga (200 km), Dakhla (300 km), Farafra (300 km) and Bahariya (180 km) oases. It should be remembered that Kharga lies between Dakhla and the Nile Valley. Both *Gallinula chloropus* and *Cisticola juncidis* have colonized Kharga, but are not known to breed in any of the other three oases. *Acrocephalus stentoreus* breeds in Bahariya and Dakhla. Whether it invaded these two oases independently or colonization of one oasis took place from the other is impossible to say. *Passer domesticus* has recently established itself in Kharga and Dakhla, and *Carduelis carduelis* in all four oases. Three Nile Valley and Delta species (*Tyto alba*, *Hoplopterus spinosus*, and *Galerida cristata*) have been observed in these four oases, but there is no positive evidence that they breed. While other species or subspecies also typical of the Nile Valley, have not yet been recorded: *Elanus caeruleus*, *Merops orientalis cleopatra*, *Riparia riparia shelleyi*, *Hirundo rustica savignii*, *Pycnonotus barbatus*, *Prinia gracilis*, *Anthreptes platurus*, and *Corvus cornone*. We defer an indepth analysis until the region is further explored and our information on the breeding birds is more complete.

Another important point is that if one looks at the Sahara Desert as a whole, many of the bird species inhabiting the region are desert-adapted and readily cross expanses of desert; some central Arabian forms presumably cross the Red Sea. Thus, the distribution of these birds does not appear to be restricted by dispersal ability, but rather some difference in local desert ecosystems.

#### RECENT GEOLOGICAL HISTORY OF THE AREA

Recent geoarcheological work in the Western Desert has revealed that between 9,500 and 6,700 B.P. the region received considerably greater rainfall than it does today. Numerous playas, or ephemeral lakes, were scattered across the area. Often associated with these basins were habitation sites of hunting and plant gathering *Homo* cultures (Wendorf and Hassan, 1980). During the early Holocene, portions of the region were open desert steppe with tracts of wild grasses, thornbush, and tamarisk and acacia trees, somewhat resembling the acacia short grass scrub and acacia long grass scrub regions of modern southern Darfur and Kordofan, Sudan. Shuttle-imaging radar scans of the region have uncovered a braided system of former drainage networks (McCauley et al., 1982). There is evidence that during the early Holocene, the Western Desert was connected with the savanna rangeland of western Sudan, which was in turn connected with distinctly wetter regions further south (Williams et al., 1980). Thus, a dispersal cor-

ridor existed for Afrotropical savanna birds into North Africa. As the Western Desert experienced increasing aridity and the desert steppe scrub lands disappeared, the bird fauna would have had to either find refuge in the remaining vegetated areas or disappear from the region. If indeed Afrotropical species occurred in the area and were able to find refuge in the remaining oases, one would expect some remnant populations to exist in the modern Western Desert. Such birds might include storks (*Ephippiorhynchus* and *Leptoptilos*), hawks (*Melierax* and *Micronisus*), bustards (*Ardeotis* and *Neotis*), white-eyes (*Zosterops*), starlings (*Lamprotornis* and *Spreo*), weavers (*Ploceus*) and finches (Estrildidae). None of these birds or other typical savanna species are known to breed in the Western Desert. The only birds breeding in the Western Desert which are restricted to the African continent are *Charadrius pecuarius* and *Burhinus senegalensis*. The former is found from the Cape to the Nile Delta and the latter in a variety of habitats north of the equator.

There is strong evidence that several mammals that are now virtually or completely restricted to sub-Saharan Africa ranged widely over the Western Desert during the early Holocene. On the basis of pictorial and fossil material these included elephant (*Loxodonta africana*), addax (*Addax nasosulcatus*), bubal hartebeest (*Alcelaphus buselaphus*), Soemmering's gazelle (*Gazella soemmeringi*) and wild ass (*Equus asinus*) (Bagnold et al., 1939; van Noten, 1978; Gautier, 1982). All of these animals are now extinct in the Western Desert. We believe that the relatively recent climatic changes in the Western Desert and the associated ecological vicissitudes are directly related to the disappearance of these animals. If indeed Afrotropical birds once exhibited a similar pattern of distribution as these mammals, they must have been extirpated within the region since the early Holocene. However, if this parallel is indeed true, our understanding of such patterns is precluded by the lack of bird fossils from the region. Using this hypothesis, we would predict that fossils of late Pleistocene or early Holocene found in the Western Desert will contain a preponderance of Afrotropical savanna bird species.

The presence of vegetated regions across the Western Desert in the early Holocene might help to explain the evolution of modern trans-Saharan migration of several species. Formerly, the migration from the north African coast to tropical Africa would have been less rigorous than in recent times. Migrants would have been able to find shelter, food and water in areas which are today virtually barren. It is plausible that considerable numbers of Palearctic migrants wintered in the Western Desert. As the region became more arid several species were able to physiologically adapt to long-distance migration without stopping for refueling.

## SUMMARY

1. A brief geographical description is given for each of the nine oases or depressions extensively mentioned.

2. The history of ornithological research in the region is reviewed. The various oases have not been surveyed with the same frequency and there is a paucity of information from the summer months.

3. A total of 242 species have been recorded in the region, and of these: six formerly-nested, 14 are doubtful or unsubstantiated, and 47 are extant breeding species.

4. A comparison is made of the breeding species inhabiting desert regions of north-central and northeastern Africa and central Arabia. The Red Sea does not act as a barrier to the dispersal of desert birds between the Arabian Peninsula and North Africa. There is little specific or subspecific endemism to these regions.

5. In the Western Desert, a relationship seems to exist between the distance an oasis is from the Nile Valley or Delta ("mainland" and source of potentially colonizing birds) and the number of local non-desert breeding species. This is exemplified by Wadi Natroun. In several of the oases, irrigation and desert reclamation projects have resulted in the creation of new habitats, and subsequent to these alterations several bird species have colonized these regions.

6. Through the early Holocene, the Western Desert received greater rainfall than it does today, and contained large tracts of open desert steppe. The desert steppe graded into acacia savanna habitat in western central Sudan, and presumably a corridor existed for Afrotropical birds to disperse into the Western Desert. There are no remnant populations of Afrotropical bird species in the Western Desert. Pictorial and fossil records contain evidence that large Afrotropical mammals occurred in the region into the early Holocene.

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APPENDIX I  
GAZETTEER OF WESTERN DESERT LOCALITIES MENTIONED IN TEXT

Locality	Oasis	Lat. N		Long. E	
		(°)	(')	(°)	(')
Abd el Malik (Abdel Malek)	Gilf el Kebir	23	50	25	18
Abar Meihub	Dakhla	not located <sup>1</sup>			
Abu Minqar	between Farafra and Dakhla	26	30	27	35
Aghurmi Lake (Birket)	Siwa	29	12	25	34
Ain el Brins	Gebel Uweinat	21	55	25	07
Ain Zuweina (Zueia, Zuya)	Gebel Uweinat	21	53	24	50
Arkenu (Archanu)	Libya: Cyrenaica	22	18	24	47
Baris (Berys)	Kharga	24	40	30	36
Bawiti	Bahariya	28	21	28	52
Bir Bouweib	90 km N Qara	30	39	26	32
Bir el Shab	500 km E Gebel Uweinat	22	19	29	46
Bir Kiseiba	300 km S Kharga	22	41	29	55
Bir Matar	Bahariya	28	22	28	54
Bir Misaha	300 km E Gebel Uweinat	22	12	27	57
Bir Nahid (Nahed)	Qattara	30	14	28	58
Bir Qattara	Qattara	30	11	27	13
Bir Talata	Dakhla	not located			
Bir Terfawi (Tarfawi)	270 km S Dakhla	22	55	28	53
Bir Victoria (El Qaraya)	Wadi Natroun	30	24	30	27
Christian Necropolis	Kharga	25	29	30	33
Cicely Hill (Sisili)	Qattara	29	31	27	34
Dinaria (Dinariya)	Dakhla	25	44	28	54
Dush (Doash)	Kharga	24	34	30	42
El Aweina (Awana)	Dakhla	25	33	28	58
El Gedida iron ore mines	Bahariya	28	29	29	02
El Heiz	Bahariya	28	02	28	39
El Kharga	Kharga	25	26	30	33
El Moghra (Maghra, Magrah)	Qattara	30	14	28	56
El Qalamun	Dakhla	25	33	28	54
El Qaraya	Wadi Natroun	see Bir Victoria			
El Qasr	Bahariya	28	21	28	51
El Qasr	Dakhla	25	47	28	52
El Zeitun	Siwa	29	19	25	48
Ezbet Bashindi	Dakhla	25	33	29	18
Ezbet Zayat	between Dakhla and Kharga	25	14	29	56
Gaar (Qaar)	Wadi Natroun	30	28	30	09
Gebel Uweinat	Gebel Uweinat	21	54	24	58
Gilf el Kebir	Gilf el Kebir	23	27	26	00
Ginah	Kharga	25	20	30	31
Hassunah	Siwa	29	11	25	30
Hibis Temple	Kharga	25	28	30	33
Isolotto	Gebel Uweinat	22	04	24	52
Jaghbug (Giarabub)	Libya: Cyrenaica	29	42	24	38
Karawein (Karawayn)	Farafra	27	06	28	32
Karkur Hamid	Gebel Uweinat	22	01	24	58
Karkur Ibrahim	Gebel Uweinat	see Abd el Malik			
Karkur Idriss	Gebel Uweinat	22	03	24	52
Karkur Murr	Gebel Uweinat	21	53	25	06
Karkur Tahl	Gebel Uweinat	22	02	25	08
Khamisah	Siwa	29	12	25	25



## APPENDIX 1 Continued

Locality	Oasis	Lat. N		Long. E	
		(°)	(')	(°)	(')
Kufra Oasis	Libya:Cyrenaica	24	10	23	15
Maragi	Siwa	29	14	25	19
Mareopolis	S Alexandria	30	59	29	52
Minqar Abu Dweiss (Duways)	Qattara	30	24	28	32
Musaiya	Dakhla	25	37	28	52
Mut	Dakhla	25	29	28	59
Nahlet el Balah	Qattara	29	26	29	33
Pumping Station Four	Dakhla	25	31	28	58
Qaneitra Crossing	Qattara	29	42	27	01
Qara (Gara)	Qattara	29	36	26	31
Qaret el Tarfaya	Qattara	30	28	28	01
Qaret Nanous	Qattara	30	16	29	00
Qasr Farafra	Farafra	27	04	28	01
Qasr Zayan	Kharga	25	15	30	34
Ras el Qattara	Qattara	30	10	27	17
Rashida	Dakhla	25	35	28	56
Serir (Sarir)	Libya:Cyrenaica	27	30	22	30 <sup>2</sup>
Shindit	Siwa	not located			
Sitra	S Qattara	28	42	26	54
Tenida (Tunaydah)	Dakhla	25	31	29	21
Umar Seraya	Dakhla	25	42	28	54
Umm Risha	Wadi Natroun	30	21	30	23
Wadi Hamrul	Gebel Uweinat	see Wadi Hanzul			
Wadi Hanzul (Hamrul <sup>3</sup> )	Gebel Uweinat	22	03	25	06
Wadi Tahl	Gebel Uweinat	see Karkur Tahl			
Wadi Waddan	Gebel Uweinat	21	51	25	02
Zeitun Lake	Siwa	29	11	25	43

<sup>1</sup>According to Moreau (1927) this locality is in the extreme northwest corner of Dakhla.

<sup>2</sup>According to Moreau (1928) this locality is several miles from Aghurmi.

<sup>3</sup>Wadi Hamrul is a misspelling of Wadi Hanzul (Misonne, pers. comm.).





