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Report on an Ornithological Survey in Libya from 19 to 31 January 2006

By Hichem Azafzaf, Nicola Baccetti, Pierre Defos du Rau
Habib Dlensi, Mohamed Feisal Essghaier, Khaled Etayeb
Abdulmaula Hamza & Michael Smart

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Hichem Azafzaf [1], Nicola Baccetti [2], Pierre Defos du Rau [3], Habib Dlensi [4], Mohamed Feisal Essghaier [5], Khaled Etayeb [5], Abdulmaula Hamza [6], Michael Smart [7]

[1]11 Rue Abou El Alla El Maari 2080 Ariana , Tunisia, Email: azafzaf@gnet.tn [2] INFS, 40064 Ozzano Emilia BO, Italy; Email: nicola.baccetti@infs.it [3] Office National de la Chasse et de la Faune Sauvage, Délégation Régionale Sud-Ouest, 10bis route d'Ax, 31120 Portet/Garonne, France; Email: pierre.defosdurau@oncfs.gouv.fr ;[4] *B.P. 86, 3018 Sfax, Tunisia*; Email: DLENSI.H@topnet.tn ; [5] Dept. of Zoology, University Al Fateh, Tripoli, Libya; Email: mohamedessghaier@yahoo.co.uk; khaledetayeb@yahoo.com [6] Nature Conservation Dept., EGA, P.O.B. 13, Tripoli, Libya, Email: abdhamza@gmail.com [7] 143 Cheltenham Road, Gloucester GL 2 0JH, UK, Email: smartmike@btinternet.com

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1. International Framework:

The last few years have seen the publication of new avifaunas of Morocco (Thévenot *et al*, 2003), Algeria (Isenmann *et al*, 2000) and Tunisia (Isenmann *et al*, 2005), each of these countries has contributed to the International Waterbird Census (IWC) since its inception in 1967. All hold considerable numbers of wintering geese, ducks, waders, gulls and terns, almost exclusively of western Palearctic origin. Waterbirds which breed in the western Palearctic, essentially in central and northern Europe and in western Asia, abandon their breeding areas in late summer and autumn to seek wintering areas, many of them along the Atlantic or Mediterranean coasts (Delany & Scott 2002, Veen *et al* 2005), the latter having been by far less intensively studied until now.

Libya is, ornithologically speaking, the least known country of Mediterranean Africa; Bundy (1976) presents relatively little information from the region east of the Gulf of Sirt. Gilissen *et al* (2002) comment that "Libya has never contributed to the IWC and the only data available are from a small number of expeditions". There have been few recent papers on Libyan ornithology in general or water birds in particular: Meininger *et al* (1994) deal mainly with the important nesting colonies of Lesser Crested Tern *Sterna bengalensis* (almost 100% of the Mediterranean population breeds in Libya); Massa (1999) recorded some new species for Libya; Brehme *et al* (2002) mainly relate to fairly old observations. Defos du Rau *et al* (2003) carried out a short survey of some coastal areas in April 2001. A major recent paper (Gaskell 2005) has produced valuable new information from 2004 and 2005 on the status and distribution of some Libyan birds. Libya (with its relatively dry climate) has often been regarded as a gap, with relatively few birds, between Morocco, Algeria and Tunisia (with their higher precipitation and extensive inland wetlands) and Egypt with its major wetlands of the Nile Delta and Valley, the latter also poorly covered since Goodman and Meininger's 1989 avifauna.

In the last ten years, there has been increasing interest in Libyan wetlands. In 1995 the UNEP Mediterranean Action Plan (MAP), which brings together 21 countries round the Mediterranean, including Libya, operating within the framework of the Barcelona Convention for the Protection of the marine environment and the coastal region of the Mediterranean, adopted a "Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean" with, in its Annex II, a "List of Endangered or Threatened Species", including fifteen water bird species (UNEP MAP RAC/SPA, 2003), for which a Bird Action Plan has been developed. Moreover in 2000 Libya became a Contracting Party to the Ramsar Convention, designating two wetlands in the Jebel Akhdar area north of Benghazi, and in 2005 to the African-Eurasian Waterbird Agreement

(AEWA), an agreement under the Convention on Migratory Species (CMS). In January 2005, the Environment General Authority (EGA), the official Libyan body responsible for the implementation of international agreements relating to biodiversity, in conjunction with RAC/SPA, AEWA, Wetlands International and ONCFS (France), sponsored a first ornithological survey of wetlands in Libya, which was carried out by the authors of the present report. The 2006 survey aimed to complement and extend the results of the previous survey.

2. Objectives:

The objectives (similar to those of the 2005 survey) were to fill in some of the gaps in knowledge of wintering waterbirds, and more specifically:

- to search for Slender-billed Curlew, a critically endangered species;
- to investigate the status in Libya of the other 14 species in the RAC/SPA Bird Action Plan;
- to carry out the mid-winter water bird census in Libya;
- to identify wetlands of major importance for wintering waterbirds;
- Training of Libyan field ornithologists.

3. Participants:

The participants in the 2006 survey were the same as in 2005 (three experts from Libya, two from Tunisia, one from Italy, one from France, one from UK), with in addition three trainees from EGA and Al Fateh University.

Photo 1: Expedition team in the Sidra oil port, erlay morning of 29 January 2006 ***© H.Azafzaf***

Name	Institution
Dr Abdulmaula HAMZA	Environment General Authority (EGA), Libya
Dr Mohamed Feisal ESSGHAIER Dr Khaled ETAYEB	Al Fateh University, Libya
Dr Nicola BACCETTI	National Institute for Wildlife (INFS), Italy
Mr Pierre DEFOS DU RAU	Office National de la Chasse et de la Faune Sauvage (ONCFS), France
Mr Michael SMART Mr Habib DLENSI Mr Hichem AZAFZAF	RAC/SPA consultants (UK and Tunisia)
Mr Mokhtar MOUSA SAIED (Trainee) Mr Ibrahim TABOUNI(Trainee) Mr Waheed HAMED(Trainee)	University of Al Fateh University of Al Fateh Environment General Authority Libya
Mr Mohamed EL AGERBI (Driver) Mr Jom'a GREMA (Driver) Mr Mustapha El AMRI (Driver)	Environment General Authority, Libya

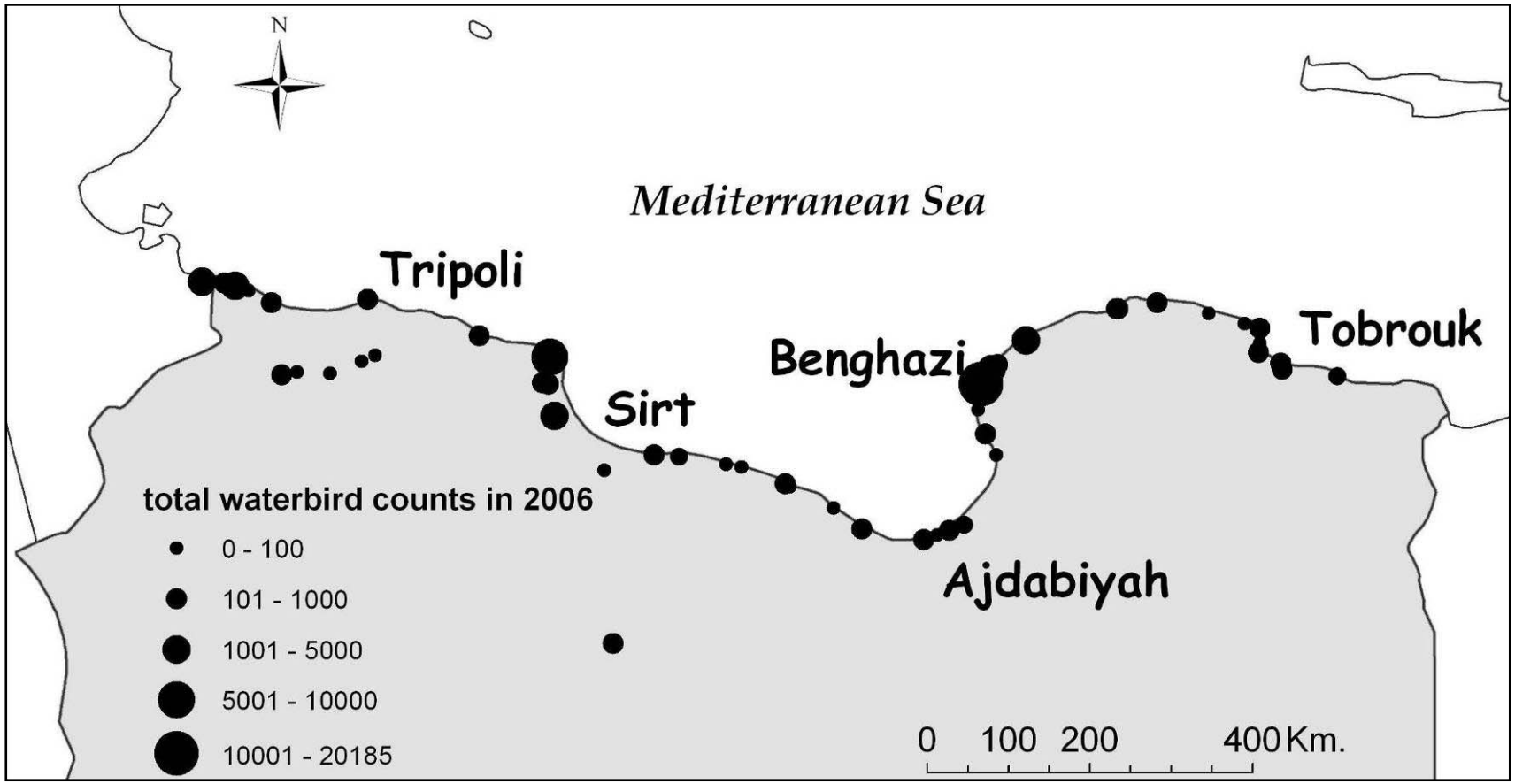
4. Programme:

The 2006 survey covered 57 sites (including all of the most important sites covered in 2005, from Ras Ajdir on the frontier with Tunisia in the west, to the Gulf of Bumba between Derna and Tobruk in the east), with a further four inland dams near Tripoli covered by Libyan members of the team on 5 January 2006. A visit was also paid to Houn, 300 km inland from the Gulf of Sirt. The major inland oases of the south, such as Kufra, Sebha and Ghadames, were not visited

In winter 2005/06, rainfall was much heavier in areas near the border with Tunisia and some sites, notably Sebkhet Boukamash, which had been dry in January 2005, were flooded and holding waterbirds in January 2006.

On returning to Tripoli, the participants presented the results to the Secretary of the people's committee of EGA and a seminar was organized at EGA headquarters to present the 2005 and 2006 findings to EGA staff and invited representatives from Al Fateh University, the National Authority for Rural and Agricultural Development, the Marine Biology Research Centre (MBRC), the Environment Protection Offices of Tripoli and Jafara, and other local stakeholders. The seminar was featured on Libyan television's main evening news on 31 January 2006. National press covered the event on 1 February. The survey was also the cover-page item in EGA's February 2006 news bulletin.

Map of the principal areas visited and waterbird counted in January 2006.



Results of 2006 survey and comparison with 2005 data

[Chapter 5 , 6 & Appendix 1] was published and should be cited as: Smart, M., Essghaier, M.F., Etayeb, K., Hamza, A., Azafzaf, H., Baccetti, N., Defos du Rau, P. & Dlensi, H., - Wetlands and wintering waterbirds in Libya, January 2005 and 2006, ©Wildfowl & Wetlands Trust (2006) 56: 173-191

5.1 Wetlands of major importance in Libya

The Mediterranean is largely a sea without tides; in only two areas, the northern Adriatic around Venice and the Gulf of Gabès in southern Tunisia is there any appreciable tidal movement. In southern Tunisia the 2-m tidal range provides extensive mudflats used by large numbers of waders and fish-eating birds (Isenmann *et al.* 2005), and these extend a short way into western Libya, notably at Farwa Lagoon, the most important tidal wetland in Libya. Farwa (called 'Pisida' by Bundy (1976); Photo 2), is a shallow lagoon sheltered from the open sea by a sandspit nearly 13 km long, but with a 3-km wide opening to the sea. The whole lagoon holds rich beds of the seagrasses *Posidonia oceanica* and *Cymodocea nodosa* and other marine plants; it lagoon is a major fishing area, largely devoid of buildings. In summer it is a nesting site for Redshank *Tringa totanus*, Little Tern *Sterna albifrons* and Caspian Tern *S. caspia*, the latter rarely recorded as a breeding species in the Mediterranean (Etayeb 2002). A total of nearly 2,500 waterbirds, comprising 31 species, was observed at the site in January 2005. In January 2006 the total was just over 2,500 birds of 27 species. Species observed included Black-necked Grebe *Podiceps nigricollis*, Great Cormorant *Phalacrocorax carbo*, Spoonbill *Platalea leucorodia*, a variety of waders (including over 100 Eurasian Curlews *Numenius arquata*) and many gulls and terns.

Photo 2 : Farwa lagoon on 20 january 2006 *© H.Azafzaf*

Inland from Tripoli, in the foothills of the Jebel Nafusa, are a number of recently constructed, generally small, freshwater dams, which held small numbers of surface-feeding ducks (c. 200 in both years). The largest numbers and range of species occurred at Wadi Zaret Dam.

In the Tripoli coastal belt, the principal wetlands are the wadi mouths between Tripoli and Misratah. Three of these wetlands, Wadi Ramal, Wadi Maseed (or Mashid) and Wadi Turghat, are included in the Garabulli National Park, established in 1992, but the largest, Wadi Kaam, further to the east, is not included. Most of these wetlands are spring-fed, and break though sand dunes stabilised with exotic plant species such as *Eucalyptus* and *Acacia* before reaching the sea. Near the sea, the water is often shallow and fresh, with reeds along the edges. About 100 waterbirds were recorded at each of these sites; species present included several Ferruginous Ducks *Aythya nyroca*, in 2005 and 2006, and Audouin's Gull *Larus audouinii*, both classed as Near Threatened at global level (IUCN 2006), while Audouin's Gull is one of the 15 species in the RAC/SPA Bird Action Plan.

From Misratah to Sirt, and on past Ajdabiyah, the Gulf of Sirt forms a deep inlet in the North African coast, with low coastal dunes and, behind them, vast salt lakes, where water levels vary enormously according to annual rainfall. Just south of Misratah is an enormous complex of such lakes, about 100 km long and extending up to 20 km inland. The area covers some 250,000 ha, making the 'Taourgha complex' one of the largest wetlands in the Mediterranean. The Taourgha complex is divided into several different sectors: Sebkhet Qasr Ahmed (Photo 14), Sebkhet Taourgha, Sebkhet Om al Adham and Sebkhet Al Hisha, and counts were recorded for each of these sectors. At Taourgha and Al Hisha, which both have long histories of human habitation, there are ancient springs and the fresh water collects in small marshes (Hamza 2004). At Taourgha Spring (Photo 5), 284 waterbirds of 29 species were noted in 2005 and some 407 waterbirds of 33 species in 2006. At Al Hisha springs (part of the Al Hisha Nature Reserve, established in 1992), 856 individuals of 28 species were seen in 2005 and 1,009 birds of 24 species in 2006. Both sites had unexpectedly large groups of wintering Eurasian Crane *Grus grus* (over 100 at each site in 2005, and roosts at both sites in 2006 when 308 were seen at Al Hisha), nesting White Stork *Ciconia ciconia*, wintering Squacco Heron *Ardeola ralloides* and Purple Heron *Ardea purpurea* in both years, and a variety of ducks and waders. The figures for Taourgha and Al Hisha include birds on the salt lakes themselves, but they are a considerable underestimate because of the huge size of the wetlands and the difficulty in accessing them. Conditions on and around the salt lakes looked suitable for Slender-billed Curlew *Numenius tenuirostris*, but none was found in either year. In 2006 many gulls were found sheltering from a storm at sea on Sebkhet Qasr Ahmed, including 500 Audouin's Gulls and 5,000 Slender-billed Gulls *L. genei*, much the largest concentrations recorded for both species in 2006.

The Taourgha complex is not the only area of salt lakes in the Gulf of Sirt; such lakes are found all along the coast (notably Sebkhet Sultan), with untouched beaches to the seaward side. The marine area is reported to have extensive beds of seagrass. Just south of Benghazi is Sebkhet Karkoura, a salt pan still used for salt extraction, where 675 waterbirds were noted in 2005. These included 18 Eurasian Cranes, just over 300 waders and 270 Audouin's Gulls, the largest group seen in Libya in 2005. Numbers of all species were lower here in 2006. North of Karkoura, coastal areas are composed mainly of agricultural areas and stony, partially and temporarily flooded pastures interspersed with occasional small lagoons and dunes. This vast area seemed highly favourable for Slender-billed Curlew, but none was found. Further north is Sebkhet Ganfouda, once a salt lake and now used as the main waste disposal area for Benghazi, which held over 12,000 gulls in 2005 and 20,000 gulls in 2006.

Photo 3 & 4: Sebkhet Al Kuz on 26 January 2006, photo on the left: Western part of the wetland, photo on the right: Greater Flamingo *Phoenicopterus roseus* in the Eastern part of the wetland *© H.Azafzaf*

The original site of the city of Benghazi was chosen for its commercial and strategic position: a coastal harbour, with a ring of salt lakes linked to the sea surrounding and protecting it on the landward side. Today this ring of *sebkhets* (Sebkhet Al Thama, Sebkhet Esselawi and Benghazi Lake and Harbours) is under heavy pressure from urbanisation. It also appears to receive some waste water and is hence highly eutrophic, with extensive reedbeds. However, the complex as a whole holds some of the highest concentrations and variety of waterbirds recorded anywhere in Libya to date. A total of nearly 5,000 waterbirds of 41 species (including 500 gulls) was seen in 2005, and nearly 7,000 waterbirds of 47 species (including nearly 4,000 gulls) in 2006, including grebes, herons, spoonbills, ducks, waders, gulls and terns.

Just north of Benghazi are two more major *sebkhets*, Ain Azziana (which also includes a lagoon fed by a freshwater spring) and Al Kuz, both of which attract Greater Flamingo *Phoenicopterus roseus* and waders. A total of 450 waterbirds was recorded at the former in 2005 and 960 in 2006, with 1,155 at the latter in 2005 and 1,399 in 2006.

Further northeast of Benghazi, the two current Libyan Ramsar sites of Sebkhet Ain Azzarga and Sebkhet Ain Ashagiga are situated in the Kouf National Park. Both are coastal salt lakes in the sandstone country of the Jebel Akhdar. Much of the coastline between Benghazi and Derna is rocky, but between Derna and Tobruk there is another inlet, the Gulf of Bumba, where the coastal salt lakes of Sebkhet Temimi and Ain al Ghazala are close to one another and support intensive fisheries. A total of over 500 birds, including cormorants, waders and gulls, was observed at Temimi in both years, while numbers at Ghazala were over 300 in 2005 and 600 in 2006, mainly grebes and cormorants, plus some waders, gulls and terns.

The only oasis visited in 2005 was Jaghbub and its nearby salt lakes, where the waterbirds recorded were 13 Great Cormorants, one Grey Heron, one Redshank and two Moorhens *Gallinula chloropus*. In 2006, a visit was also made to the Houn area, 300 km south of Sirt, where a series of agricultural projects, fed by artesian water, create streams and depressions providing suitable conditions for waterbirds. A total of 352 waterbirds was observed, with 10 herons (including two more Purple Herons), over 200 ducks (mainly Teal and Shoveler with five more Ferruginous Ducks), and, surprisingly in the desert, a further 113 Eurasian Cranes.

Photo 5: Glossy Ibis *Plegadis falcinellus*, Taourgha Spring on 21 January 2006 © *N.Baccetti*

Photo 6: Black-winged Stilt *Himantopus himantopus* Taourgha Spring, on 23 January 2006 © *N.Baccetti*

5.2 Numbers of wintering waterbirds

Full details of all species of waterbirds counted in 2006 are provided in Appendix 2, and details of the waterbirds counted in Libya in January 2005 and 2006 are provided in Appendix 1, with emphasis on new information obtained since the surveys by Bundy (1976) and Gaskell (2005). Overall, a total of 29,996 waterbirds was recorded at all sites in 2005, nearly 20,000 of them gulls, including 14,000 Black-headed Gulls. In 2006, the waterbird total was 52,012 including nearly 35,000 gulls, over 21,500 of which were Black-headed Gulls. The comments below summarise observations of particular interest within taxonomic groups.

Ardeidae – Herons

Small numbers of Ardeidae that normally winter south of the Sahara were found: Little Bittern *Ixobrychus minutus* (probably overlooked in 2005) at three sites in 2006; Squacco Heron at Taourgha Spring in both 2005 and 2006; and Purple Heron at Taourgha in 2005 and 2006 and at four other sites in 2006. Cattle Egret *Bubulcus ibis*, previously regarded as a scarce and irregular passage visitor, is clearly now wintering in larger numbers (Appendix 1). Numbers of Great Egret *Egretta alba* have also increased in recent years; one bird seen in Benghazi in 2006, which had been colour-ringed as a nestling at Lac de Grand-Lieu, northwest France, in May 2005, was the first African recovery from this ringing site.

Threskiornithidae – Storks, Spoonbills and Ibises

For White Stork, Bundy (1976) notes the species only as a possible casual breeder, but Gaskell (2005) records 20 nesting pairs at Al Marj in February 2005. In the Jeffara plain west of Tripoli, White Stork nests were seen in 2005, probably built the previous year, while at Taourgha birds were already occupying nests in palm trees on 6 January 2005. Birds were again present at Taourgha, although no occupied nests were seen, in January 2006. Four colour-ringed Spoonbills were recorded, one ringed in 2003 and three ringed in 2004, from the Danube Basin (one from Hungary and two from Serbia) and Italian breeding sites.

Phoenicopteridae – Flamingos

The main concentrations of Greater Flamingo were at coastal salt lakes in the Gulf of Sirt, with the largest numbers (about 500 each year) at Kuz, although in 2006 there were 1,800 (well above the Ramsar 1% figure of 700) near the Tunisian border at Sebkhet Boukamesh, which had been completely dry in 2005. Two colour rings were read in 2005 and 11 in 2006, mainly in the Gulf of Sirt. All birds had been ringed as pulli and most were still immature: three from Andalucia, Spain, seven from the Camargue, France, two from Sardinia and one from Turkey. There have been very few previous recoveries of colour-ringed flamingos in Libya – only one of a live bird and nine of birds found dead, probably killed by hunters. Of the latter, two were from the Gulf of Sirt, six from Benghazi and one from Tobruk.

Anatidae – Ducks

Numbers of Common Shelduck *Tadorna tadorna* were higher than might have been expected from the literature. Bundy (1976) considered Ruddy Shelduck *T. ferruginea* as an accidental; the survey recorded only one at Sebkhet Boubesla near the Tunisian border in 2006 (which was likely to have been dry in 2005). The literature indicates that, among surface-feeding ducks, only Northern Pintail

Anas acuta, Northern Shoveler *A. clypeata* and Teal *A. crecca* are regularly seen in Libya, in small numbers; there are few records of Gadwall *A. strepera*. Low numbers of all four species were recorded during the survey, mostly on the few freshwater sites, including the irrigated agricultural area round Houn, 300 km into the desert. In neither year did the surveys locate Marbled Duck *Anas angustirostris*, which winters in significant numbers in the oases of southern Tunisia (Azafzaf & Hamrouni 2002). Future winter surveys of Libyan oases would be of particular interest for this species. Only low numbers of diving ducks were seen, probably reflecting the lack of deeper waters: 233 Pochard, all at the Benghazi complex in 2006, were the most numerous. The Near Threatened Ferruginous Duck is regarded mainly as a passage visitor to Libya, but 10 were found in January 2005 and 12 in 2006. The White-headed Duck *Oxyura leucocephala*, a species classified as Endangered by IUCN (2006) and which occurs regularly in Tunisia, was not seen; again, at least partly due to the lack of deeper water.

Gruidae - Cranes

Perhaps one of the most unusual findings of the surveys was that several hundred Eurasian Cranes winter at sites in the Gulf of Sirt, although Wetlands International (2002a) notes that the wintering area of the Northeast European breeding population covers Algeria, Tunisia and Libya. A total of 246 Eurasian Cranes was found in 2005 and 592 in 2006, the major concentrations in both years being at Taourgha and Al Hisha, where the birds seemed to be feeding on dry grassland around the springs, then flying to coastal salt lakes at dusk to roost. A group of 18 was also noted at Karkoura near Benghazi in 2005 and 13 further south at Brega in 2006. At Houn, some 300 km inland from Sirt, a group of over 100 Cranes was found, and local people confirmed that they were well known in this desert area.

Photo 7: Little Egret *Egretta garzetta*, Taourgha Spring on 21 January 2006 *© A. Hamza*

Photo 8: Great Cormorant *Phalacrocorax carbo* Wadi Kaam, on 21 January 2006 *© A.Hamza*

Recurvirostridae, Burhinidae, Charadriidae, Scolopacidae – Waders:

In general, wader numbers were not exceptional, although these surveys found more Black-winged Stilts *Himantopus himantopus* and Avocets *Recurvirostra avosetta* than did previous observers. A single Little Ringed Plover *Charadrius dubius* was seen in 2005, which suggests that they winter in small numbers, as in southern Tunisia, though none was seen in 2006. Small numbers of Ringed Plover were found, 72 in 2005 and 38 in 2006. Over 1,100 Kentish Plover *Charadrius alexandrinus* were recorded in 2005 and 1,036 in 2006; it is likely that many more were overlooked on the large salt lakes where the species is numerous but ranges over large areas. The 1% of the total population size that would classify a site as being of international importance for Kentish Plover is 660 for the western Mediterranean population and 410 for the eastern Mediterranean population (Wetlands International 2002b). Thus, irrespective of whether the Libyan birds are considered to be eastern or western, this threshold is likely to be reached or exceeded at several lagoons in Libya, which emphasises the importance of the country for the species.

Four Greater Sand Plovers *Charadrius leschenaultii* and a single probable Lesser Sand Plover *Ch. mongolus* were seen in 2005, and a single Greater Sand Plover was seen in 2006, all east of Misratah; Libya is probably at the extreme west of their winter range. According to local hunters, Golden Plover *Pluvialis apricaria* (just over 400 birds recorded in 2005 and nearly 650 in 2006, mainly north of Benghazi) is a favourite quarry species. The survey found only two flocks of Dotterel *Eudromias morinellus*, which might have been expected to be common on the extensive dry plains of Libya. Observations of Temminck's Stint *Calidris temminckii* at three different sites confirm its status as a winter visitor (not surprising given its wide presence in Tunisia in winter). Knot *C. canutus* is more unusual, since there are few previous records, but there is an established wintering population in the tidal area of southern Tunisia. In 2006 the survey found a single Bar-tailed Godwit *Limosa lapponica*, also known to winter in tidal parts of Tunisia.

One of the objectives of the surveys was to search for Slender-billed Curlew. It is thought that the species – one of the rarest birds in the Western Palearctic with a world population put at fewer than 50 birds (Wetlands International 2002b) and classified in the highest category of Critically Endangered (IUCN 2006) – nests in Western Siberia and migrates through the Black Sea to winter in the Mediterranean. The preferred wintering habitat is believed to be shallow brackish coastal pools/marshes/ponds, with surrounding vegetation of glassworts *Salicornia* spp. and *Arthrocnemum* spp. (Ledant & Lafontaine 1994). Although no Slender-billed Curlews were found, large areas of this type of habitat occur in Libya, and it would be easy to overlook even appreciable numbers. Eurasian Curlews were found in the same habitat: 534 in 2005 and 397 in 2006. A single Whimbrel *Numenius*

phaeopus (not previously recorded in Libya in winter) was seen in 2006. Numbers of the six *Tringa* species recorded were in line with previous observations.

Laridae – Gulls

The 10 species of gull recorded accounted for two thirds of the waterbirds observed, and provide some of the most interesting observations.

Four Great Black-headed Gulls *Larus ichthyaetus* were recorded in 2005 and six in 2006, all at coastal sites. Mediterranean Gulls *L. melanocephalus* numbered 228 in 2005 and 239 in 2006. Mediterranean Gulls tend to feed offshore, so some birds may have been overlooked; very large roosts (several thousand) occur in the tidal areas of Tunisia (Isenmann *et al.* 2005). Large numbers of Black-headed Gull *L. ridibundus* were observed: 14,000 in 2005 and 21,500 in 2006. All but a couple of hundred were in the Benghazi area, particularly around waste disposal areas. Numbers of Little Gull *L. minutus* were small.

Slender-billed Gull *Larus genei* has increased greatly as a breeding species in Tunisia and other Mediterranean countries in recent years (Wetlands International 2002b; Isenmann *et al.* 2005); nearly 900 were recorded in Libya in 2005, mostly near the Tunisian border. Numbers were much higher in 2006, with a total of over 7,500, including over 1,000 in the general area of Farwa in the west, 5,000 at Sebkhet Qasr Ahmed in the Taourgha complex (apparently sheltering from a storm at sea with Audouin's Gulls), 500 or more in the Benghazi complex and others all along the coast to the east. Given the latest estimate of 123,000–237,000 for the Black Sea and Mediterranean population of this species (Wetlands International 2002b), the total count represents at least 3% of the individuals in this population. One Slender-billed Gull colour ring was read at Farwa in 2005. This bird had been ringed in the Camargue, France in 1999, and was seen breeding there every summer from 2001 to 2004 inclusive.

A total of 344 Audouin's Gulls was recorded in 2005 and 670 in 2006; in 2005 the majority were around Benghazi (270 at Karkoura, 34 at Sebkhet Sultan, with a couple as far east as Derna), but in 2006 there were concentrations of 500 by day, sheltering from a storm at Qasr Ahmed, and 110 at El Ghbeba (at an evening roost).

A total of 1,425 Lesser Black-backed Gulls *Larus fuscus* was recorded in 2005 and 1,438 in 2006; close attention was not paid to the race(s) concerned. Most of the birds seen did not have a very dark mantle and would appear to have been *L. f. intermedius*. Bundy (1976) notes several recoveries in Libya of Lesser Black-backed Gull, presumably *L. f. intermedius*, ringed as pulli in Bornholm (Baltic Denmark) and one from Finland. Colour rings of three marked birds were read at Benghazi waste disposal area in 2006: one had been ringed north of the Arctic Circle in Norway (near Tromso) as *L. f. graellsii*, the other two had been ringed on the west coast of Finland as *L. f. fuscus*, which winters in

the eastern Mediterranean and East Africa. Recoveries of *L. f. graelsii* are most unusual in the Mediterranean, since most winter on the Atlantic coasts of Spain and Morocco. It is possible that all three subspecies winter in Libya, together with Armenian Gull *L. armenicus*, recorded by Gaskell (2005), and Heuglin's Gull *L. (fuscus) heuglini*.

Just over 500 Yellow-legged Gulls *L. michahellis* were noted in both years, with just over 1,500 Caspian (Pontic) Gulls *L. cacchinans* in 2005 and just over 2,600 in 2006. The former were noted throughout the country, with groups of over 100 at Benghazi waste disposal areaand Essabre beach near Benghazi, but relatively few around Tripoli; at several coastal sites they were already taking up territories on nesting islands in January 2006. Caspian Gulls were found exclusively in the east, with the vast majority each year on Benghazi waste disposal area; the data appear to represent a major extension in knowledge of the wintering range of Caspian Gull. It should be noted that, in many cases, it was not possible to identify large gulls at the species level, and it was necessary to extrapolate the identity of large flocks from scans of sample groups.

Photo 9: 1st Winter Slender-billed Gull *Larus genei*, Derna Town on 27 January 2006 © *H.Azafzaf*

Photo 10: Great Black-headed Gulls *Larus ichthyaetus* Sebkhet el Ghbeba , on 23 January 2006 © *N.Baccetti*

Laridae – Terns

A single Gull-billed Tern *Gelochelidon nilotica* in 2005 was a surprise. For Caspian Tern, most previous records are from the passage period, but the species clearly winters in Libya. A total of 101 Sandwich Terns *S. sandvicensis* was counted in 2005 and 122 in 2006, dotted along the coast from the Tunisian border to beyond Benghazi, but with occasional resting groups of 10– 40 birds; these numbers are probably a considerable underestimate, as many of the birds seemed to be feeding at sea in the morning and not landing on the shore until around midday. There were no records of Lesser Crested Tern *S. bengalensis*, which is a summer visitor to Libya and is believed to winter in west Africa. The known Libyan Lesser Crested Tern colonies represent practically the whole of the

Mediterranean breeding population. For the same reasons no Little Terns were observed, but they must breed very widely, given the large amount of suitable habitat and the numbers that breed in Tunisia. The observations confirm that Whiskered Tern *Chlidonias hybrida* winters in modest numbers, mainly at the Benghazi complex, with some in the Gulf of Bumba, already in summer plumage.

6. Discussion

6.1 Census of wintering waterbirds

The total number of waterbirds recorded in the surveys, of 29,996 in 2005 and 52,012 in 2006, was relatively low when compared to total numbers in neighbouring North African countries (e.g. over 220,000 waterbirds were counted at 116 sites in Tunisia in January 2003 (Azafzaf & Feltrup-Azafzaf 2003). It should be emphasised, however, that, particularly at the very large coastal salt lakes, coverage was far from complete. Because of the limited time available, the large size of many lagoons and difficulty of access, the number of waterbirds recorded is undoubtedly lower than the number of birds actually present.

The observation that significant numbers of Audouin's Gulls winter on either side of the Gulf of Sirt, is a significant new discovery for the species. The species breeds almost entirely within the Mediterranean, and was previously believed to winter mainly in the western Mediterranean and West Africa with only limited numbers in Libya (Cramp & Simmons 1983; Wetlands International 2002b). Moreover, since the Audouin's Gull is of global conservation concern, classified as Near-Threatened (IUCN 2006), monitoring its use of Libyan wintering sites should continue to be a priority in future surveys.

Several species rarely recorded in winter in the Mediterranean were observed during the surveys (among them Little Bittern, Squacco Heron and Purple Heron), together with several species not previously noted or only rarely noted in Libya in winter (Slavonian Grebe *Podiceps auritus*, Great Egret, Glossy Ibis *Plegadis falcinellus,* Shelduck, Eurasian Crane, Black-winged Stilt, Avocet, Little Ringed Plover, Greater Sand Plover, Black-tailed Godwit *L. limosa*, Bar-tailed Godwit, Whimbrel, Wood Sandpiper *Tringa glareola*, Marsh Sandpiper *T. stagnatilis*, Caspian Gull, Great Black-headed Gull, Whiskered Tern and Pied Kingfisher *Ceryle rudis*). Furthermore, evidence was obtained of nesting by White Stork, for which there is only one definite previous record in Libya.

6.2 Importance of Libyan wetlands

Although few sites met the numerical criteria, in terms of bird numbers, for designation as a wetland of international importance under the Ramsar Convention, many met the qualitative criteria. Four sites had already been identified as Important Bird Areas by BirdLife International (Robertson & Essghaier 2001): three visited during the survey (Garabulli, Ain Azziana, Ain al Ghazala) plus Gara'a Island, not visited during the survey, the site of the largest Lesser Crested Tern colony. The authors suggest that the following sites are worthy of designation as wetlands of international importance under the Ramsar Convention and as Special Protected Areas of Mediterranean Importance (SPAMIs) under the Barcelona Convention:

1. Farwa Lagoon is an excellent example of a tidal lagoon (a rare wetland type in the Mediterranean), and as such is a high priority for protection measures. Designation would be welcomed by local people, who wish to maintain the current character of the site.
2. Libya's large salt lakes, notably the Taourgha complex, Sebkhet Sultan, Sebkhet Karkoura, Sebkhet Al Kuz (Photo 3 et 4) and Sebkhet Temimi/Ain Al Ghazala, which are all good representative examples of coastal salt lakes (a characteristic Mediterranean habitat), are of special value because of their pristine and largely natural state. These sites have special importance for several waterbird species: Audouin's Gull at Taourgha and Karkoura, and Greater Flamingo and Kentish Plover at Kuz and Ain al Ghazala.
3. The Benghazi complex of salt-lakes, which carries significant numbers of several bird species and has huge potential as an urban site for raising public awareness of wetlands and their fauna and flora. Its proximity to Benghazi, however, puts it at risk of urban development.

Overall, this study indicates that, while total numbers of waterbirds using Libyan coastal wetlands are modest, species of Mediterranean lagoon systems such as Greater Flamingo, Kentish Plover and Slender-billed Gull, as well as Audouin's Gull, occur in significant numbers. Furthermore, the size and condition of the wetlands make them an important component of this habitat type at regional (Mediterranean) level. The results of the surveys have shown that a number of Libyan wetlands are worthy of international recognition and of increased monitoring and national conservation measures.

7. Suggested follow up activities:

The 2006 results confirmed many of the main achievements of the 2005 survey and provided evidence that most observed phenomena take place on a regular basis. Most suggestions for the future, therefore, do not differ from those addressed in 2005.

- National protection measures:

  Sites designated under international conventions and also sites protected under national legislation (in particular those specified under section 6.2 above, all of which are in near-natural condition) deserve more intensive protection measures. Measures to prevent further degradation of the wetland complex adjacent to the city of Benghazi are also recommended: the sites are of high value, for heritage and public awareness, as well as biodiversity reasons.

- Special Protected Areas of Mediterranean Importance (SPAMIs):

  Many of the sites visited merit designation as SPAMIs.

- Hunting in Libya:

Again, it appeared that waterbird hunting activities were quite extensive in the eastern part of the country, notably around Sebkhet Al Kuz, Temimi wetlands, and Ain Al Ghazala. Investigation of the extent of hunting (which formally is illegal) should be carried out, and appropriate measures taken. Because illegal hunters were hardly active in the winter season, and our evidence is only based upon finding spent cartridges, hides and long dead bird corpses, a survey should be carried out perhaps at the peak of migration in order to gather more precise information.

An effort should be done in organising hunting activities legally by reactivating the licensing system and the management and monitoring of hunting.

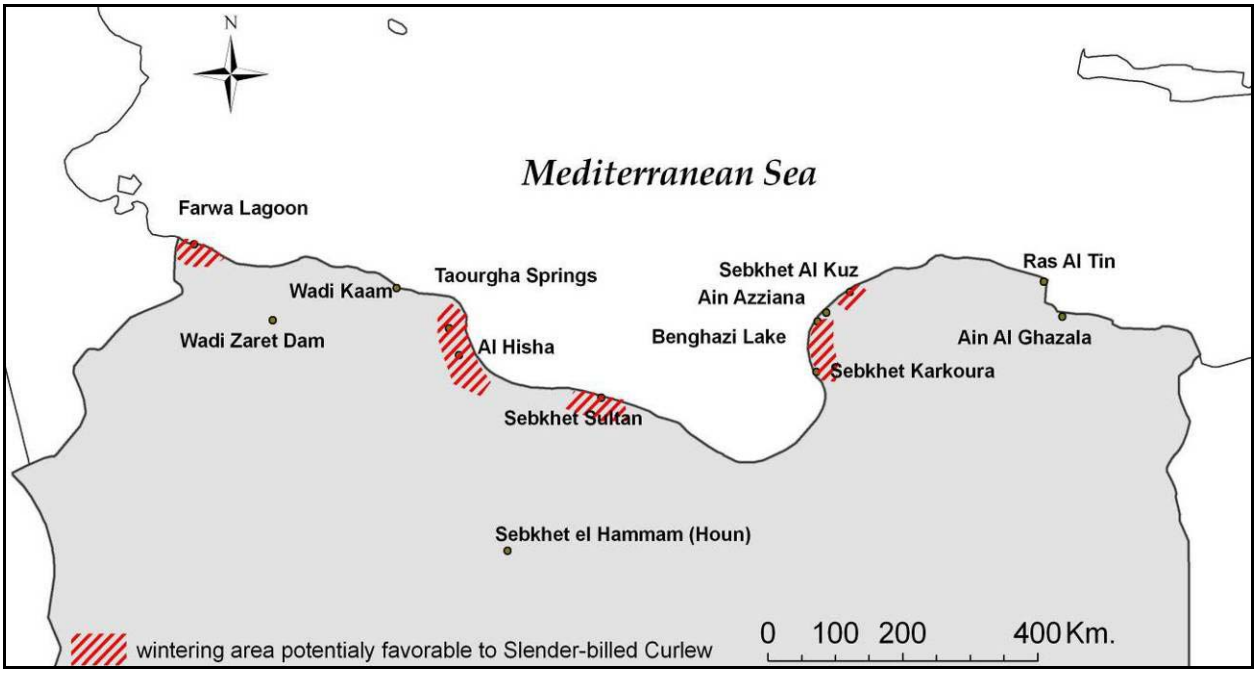
Photo 11: Ain Al Ghazala, on 27 January 2006 *© H.Azafzaf*

Photo 12: Evidence of illegal hunting in Ain Al Ghazala, on 27 January 2006 *© H.Azafzaf*

❖ Further ornithological surveys:

It is suggested that winter surveys should continue in future years, with greater attention paid to inland wetland sites. A survey during the breeding season, and particularly a visit to the Lesser Crested Tern nesting colonies (of which Libya holds more than 99% of the Mediterranean population), should be carried out in August 2006 and 2007.

Slender-billed Curlew must be looked for mainly on Tawargha wetlands complex and on the floodplains south of Benghazi, as well as within the main concentrations of wintering Eurasian Curlews, such as at Farwa lagoon and Al Kuz, Sultan and Kerkurah sebkas (Map 2). The habitat potential for wintering SBC is strong in coastal Libya and although the probability of finding the species is very low, it is not completely excluded, provided that the species still frequents North Africa in winter.



Map 2: Wintering area potentially favourable to Slender-billed Curlew

Greater attention should be paid to surveys of the rich birdlife of the Benghazi wetland complex. Monitoring Audouin's Gull wintering sites in Libya should continue to be a priority in future surveys and efforts should be made to obtain ring readings on this species, in order to link the newly discovered Libyan flocks to the respective breeding populations.

- Training:

  Further training of Libyan field ornithologists is a very high priority, both through fieldwork in Libya and visits to ornithological stations abroad. Academic studies for a small number of specialists are also urgently needed.

- Ornithological structures:

  For continued recording of Libyan avifauna, a formal recording system should be established, either through the university system or through a specialized ornithological organization, which could develop links with international ornithological bodies.

These conclusions were presented in outline to the Secretary of the People's committee of EGA, who expressed strong support for them, in particular as regards further winter surveys (especially around the inland oasis sites), summer surveys of breeding Lesser Crested Terns, site conservation (notably at Farwa, Taourgha, Ain Azziana, islands of Bumba bay), and further training.

Photo 13: Um Hafain, an example of wetland probably deserving a thorough visit; it has high potential waterbird diversity with an overlooked wintering population of little bittern (and Pied Kingfisher)
© P. Defos Du Rau

Photo 14: Sebkhet Qasr Ahmed, within the Taourgha wetland complex was holding important gull numbers sheltering from seastorm
© P. Defos Du Rau

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Appendix 1.

Numbers of waterbirds counted in Libya in January 2005 and 2006. [a] = Bundy (1976), [b] = Gaskell (2005)

Species	Sites	Numbers		Existing information
		Total 2005	Total 2006	
Little Grebe	Tripoli dams, Taourgha, Houn, Benghazi area, Tobruk	36	23	Resident breeder and winter visitor[a]
Great Crested Grebe	Mainly at Farwa; tens at Temimi, Ghazala, Tobruk	248	259	Regular east to Misratah, max. 20[a]
Black-necked Grebe	Mainly at Farwa, Benghazi complex, Ghazala	305	627	Up to 50 Tripoli harbour, probably regular Benghazi[a]
Slavonian Grebe	Farwa 2006	0	1	No previous records
Great Cormorant	Mainly at Farwa, Benghazi, Temimi, Ghazala. 13 at oasis of Jaghbub 2005	1,150	994	Regular winter visitor to Tripoli[a]
Eurasian Shag	Sea islet of Jebel Akhdar, Mediterranean subspecies	0	5	Resident breeder (?)[a]
Little Bittern	Taourgha and four sites in Benghazi complex.	Probably overlooked	11	Passage visitor only[a]
Squacco Heron	Taourgha Spring	2	2	No previous winter records
Cattle Egret	Wadi Attot dam, Taourgha, Benghazi complex esp. waste disposal area	169	326	Previously scarce and irregular, recent expansion[b]
Little Egret	Widespread, flocks not exceeding 20	80	122	Passage migrant and winter visitor[a]
Great Egret	Widespread: Farwa (35 in 2006), Garabulli, Taourgha, Benghazi	16	54	Mainly singles[a]; small number Benghazi.[b]
Purple Heron	Taourgha (both years), Al Hisha, Houn, Ain Ghezala	2	8	Passage migrant only[a]
Night Heron	Taougha and Temimi	0	2	Mainly passage, individuals may winter[a]
Grey Heron	Widespread, largest groups Benghazi	133	92	Mainly passage, not scarce in winter[a]
White Stork	Nesting Jeffara and Taourgha	6	6	Nests recently found for first time east of Benghazi[b]
Glossy Ibis	Only Taourgha	1	70	Passage migrant only [a]
Spoonbill	Mainly Farwa and Benghazi	86	99	Scarce passage and winter visitor[a] ; up to 24 Benghazi.[b]
Greater Flamingo	Nearly 2000 Boukamesh in 2006; Gulf of Sirt and Kuz	775	2,920	Regular winter visitor Kuz[a]
Greylag Goose	Wadi Attot dam near Tripoli	0	8	Accidental[a]
Common Shelduck	Boukamesh, Taourgha, Al Hisha (120), Benghazi	107	303	Accidental[a]
Ruddy Shelduck	Boubesla (near frontier with Tunisia)	0	1	Accidental[a]
Wigeon	Dams near Tripoli, Taourgha, Benghazi, Kuz	27	53	Scarce but regular[a]
Gadwall	W. Turghat, Al Hisha, Benghazi, Temimi	14	13	Winter visitor[a] ; rare[b]
Teal	Dams near Tripoli, Taourgha, Al Hisha, Houn (120), Benghazi (300 in 2006)	231	606	Common in winter[a,b]
Mallard	Tripoli dams, Taourgha, Gulf of Sirt, Benghazi	40	41	Scarce winter visitor in west[a]

Northern Pintail	Tripoli dams, Taourgha (300 in 2006), Benghazi	154	452	Locally common[a], common[b]
Northern Shoveler	Tripoli dams, Taourgha, Al Hisha, Houn (90 in 2006), Benghazi (700 in 2006), Kuz	501	1,138	Regular in Tripoli area[a], common round Benghazi[b]
Pochard	Tripoli dams, Benghazi (200 in 2006)	42	233	Scarce[a]; up to 100 Benghazi[b]
Ferruginous Duck	Tripoli dams, W. Kaam, Al Hisha, Houn, Benghazi	10	12	Common Tripoli in autumn[a], up to 6 Benghazi[b]
Tufted Duck	Tripoli dams, Benghazi	20	24	Scarce Tripoli[a], peak 35 in Jan[b]
Red-breasted Merganser	Ain Azziana near Benghazi	0	1	Scarce but regular Tripoli[a], once at Benghazi[b]
Moorhen	Tripoli wadi mouths, Taourgha, Benghazi and east of Benghazi	38	44	Resident, scarce in winter Tripoli and Benghazi[a]
Water Rail	Taourgha, Benghazi Lake, east of Benghazi	4	12	Present in winter in low numbers Benghazi[b]
Coot	Tripoli dams, W. Turghat, Taourgha, Al Hisha, Benghazi (300), Ain Ghazala	391	417	Common winter visitor in flocks up to 500 near Tripoli[a], common Benghazi[b]
Eurasian Crane	Taourgha (100), Al Hisha (300), Houn (100), Karkoura	246	595	Scarce and irregular[a]
Oystercatcher	Only Farwa area near Tunisian border	20	6	Scarce[a]
Black-winged Stilt	Taourgha (150), Al Hisha, Benghazi (90)	245	205	Passage visitor commonest in west[a], modest numbers wintering Benghazi[b]
Avocet	Boukamesh (120 in 2006), Farwa, Bishr, Benghazi	35	193	Accidental[a]
Stone Curlew	Gulf of Sirt, Temimi	1	6	Resident breeder[a]
Little Ringed Plover	Taourgha, near Benghazi	2	0	Passage migrant[a]
Ringed Plover	Farwa, Taourgha, Al Hisha, Benghazi, Temimi, Ain Ghazala	72	72 39	Passage and winter visitor[a]; very small numbers[b]
Kentish Plover	Widespread, e.g. Farwa (470), Qasr Ahmed, Al Hisha (95), Sultan (150), Benghazi (450)	1,110	1,058	Resident breeder, less numerous in winter[a]. Over 700 late summer, Ain Azziana (Meininger 1994) (meets Ramsar 1% criterion)
Greater Sand Plover	Al Hisha, Karkoura, Temimi	4	1	Perhaps passage migrant[a]
Lesser Sand Plover	Ain Al Ghazala	1	0	Not previously recorded
Golden Plover	Boukamesh, Qasr Ahmed, but mainly Benghazi: Kuz (320), Gfanta (110)	433	645	In Tripoli, locally common in winter, flocks up to 150[a]
Grey Plover	Widespread in small numbers: Farwa (130 in 2006)	67	195	Winter visitor, locally common[a,b]
Dotterel	Karkoura, Temimi	52	3	Locally common winter visitor[a]
Northern Lapwing	Tripoli dams, Taourgha, Ghemines, Shahat, Bumba	2	5	Scarce winter visitor[a]
Sanderling	Boukamesh, Farwa, W. Masaad, Ras Lanouf, Ganfouda, Benghazi	140	57	Local and seldom, commoner on passage[a,b]
Knot	Sultan	1	0	Accidental[a]
Little Stint	Widespread: Farwa (130), Boukamesh (200), Qasr Ahmed (230), Benghazi (350).	924	773	Winter visitor, commoner on passage[a,b]
Temminck's Stint	Tripoli dams, Taourgha, Ain Azziana	7	2	Mainly passage, some winter[a,b]

Dunlin	Farwa (200), Qasr Ahmed (150), Al Hisha (150), Benghazi (500), Kuz (400), Temimi (180)	1,399	1,947	Common Farwa, scarce elsewhere[a]
Ruff	Qasr Ahmed, Al Hisha (25), Karkoura (32)	60	27 27	Mainly on passage, also winters[a]
Jack Snipe	Tripoli dams, Taourgha, Temimi	9	3	Scarce winter visitor[a], one, Benghazi[b]
Snipe	Taourgha, Benghazi, Ashagiga, Temimi	58	22	Common in winter[a]
Black-tailed Godwit	Farwa, Benghazi	10	10	Passage migrant[a]; 7, Benghazi[b]
Bar-tailed Godwit	Temimi	0	1	Accidental on passage[a]
Eurasian Curlew	Farwa (200), Sultan (100), Karkoura (60), Kuz (140)	534	419	Regular near Tunisian border, scarce elsewhere[a]
Slender-billed Curlew	None found, despite extensive search in good habitat	0	0	Accidental, one old record
Whimbrel	Tripoli harbour	0	1	Scarce passage migrant[a]
Spotted Redshank	Benghazi, Kuz	3	1	Passage migrant scarce in winter[a]
Redshank	Largest numbers east of Benghazi: Farwa (120), Benghazi (50), Kuz (130) Ashagiga (60), Temimi (50)	343	765	Locally common Tripoli[a], present in winter Benghazi[b]
Greenshank	Farwa (20), otherwise in small numbers	8	31	Scarce in winter[a]
Green Sandpiper	Tripoli dams, Benghazi	7	2	Passage migrant, but scarce in winter[a,b]
Wood Sandpiper	Tripoli dams, Taourgha, Benghazi	5	9	Passage migrant, scarce in winter, but 20 at Benghazi[a,b]
Common Sandpiper	Farwa, W. Kaam, Taourgha. Only one near Benghazi	6	8	Not scarce along coast in winter in Tripoli area[a]
Marsh Sandpiper	Tripoli dams, Taourgha, Al Hisha, Benghazi, Ain Azziana	9	4	Scarce on passage[a,b]
Turnstone	Farwa (35), Ras Lanouf, Karkoura (38), Benghazi, Kuz (17).	102	47	Scarce along coasts[a,b]
Mediterranean Gull	Majority round Farwa (190) in 2005, Tripoli harbour (50) Benghazi (175) in 2006	228	289	Common but local along coasts in winter[a]; about 500 winter Benghazi[b]
Little Gull	Only around Benghazi	55	2	Regular in winter in rough weather[a]
Black-headed Gull	All but 200 from Benghazi eastward, mainly at rubbish tips	14,137	21,491	Common Tripoli, scarce elsewhere[a], several thousand round Benghazi[b]
Slender-billed Gull	Mainly Farwa (700) in 2005; Farwa, sheltering from storm at Qasr Ahmed (5000) and round Benghazi in 2006	893	7616	Regular round Benghazi, scarce Tripoli[a], sparingly round Benghazi in winter[b]
Audouin's Gull	Majority 2005 in Benghazi area (Karkoura 270, Sultan 34); in 2006, 500 sheltering from storm at Qasr Ahmed	344	670	Winter visitor Tripoli, max. 72[a], all the year round in west[b]
Lesser Black-backed Gull	50% near Farwa, Qasr Ahmed (380), 600 Benghazi waste disposal area .	1,425	1,438	Winter visitor, up to 800 Tripoli[a]
Caspian Gull	Found exclusively in east, vast majority at Benghazi waste disposal area	1,582	2,629	Small numbers Benghazi Jan-Mar[b]
Yellow-legged Gull	Thinly spread west to east, 100 Benghazi waste disposala area	535	506	Winter visitor

Great Black-headed Gull	Farwa, Sultan, El Ghebaba	4	6	First Libyan record two near Benghazi[b]
Gull-billed Tern	Farwa	1	0	Only on passage[a], Benghazi Oct/Nov[b]
Caspian Tern	Farwa (30), some east of Benghazi	38	42	Mainly on passage, some winter[a], at Benghazi to 19 Oct[b]
Sandwich Tern	Thinly spread along coast west to east	101	122	Winter visitor Tripoli[a], and Benghazi[b]
Whiskered Tern	Mainly Benghazi both years, a few in Gulf of Bumba	77	53	Passage migrant[a], passage and also winter visitor to Benghazi[b]

Photo 13: Despite not many cormorants are present in Libya, the net covering this fish-farm at Waadi Kaam on 23 January 2006 suggests that there are local problems of competition with man; the bird sitting on the light was looking for a gap in the net and a small day-roost was present at the river mouth nearby ***© N.Baccetti***

Appendix 2: Full details of all species of waterbirds counted

Site			Sebkhet Al Mangoub 32° 53,732 N 12°08,513 E	Sebkhet Mellita 32° 50,156 N 12°15,756 E	Farwa Lagoon 33° 04,848 N 11°44,200 E	Coast Farwa to Ras Ajdir 33° 05,538 N 11°39,476 E	Gataya Island 33° 06,731 N 11°37,631 E	Sebkhet Boubesla ouest 33° 02,918 N 11° 49,804E	Sebkhet Boubesla est 33° 01,780 N 11° 53,696E	Sebkhet Boukamech 33° 07,543 N 11°22,331 E	Tripoli harbour 32° 06,087 N 20°03,218 E	Wadi Kaam 32° 31,189 N 14°26,733 E	Taourgha Springs 32° 00,129 N 15°08,419 E	Qasr Ahmed I 32°21,077 N 15°10,575 E	Qasr Ahmed II 32°22,133 N 15°10,499 E	Sebkhet east of Qasr Ahmed 32°15,275 N 15° 09,025 E	Sebkhet Qasr Ahmed 32° 00,105 N 15°08,408 E	Wadi el Azrak 32°00,906 N 15°09,325 E	Sebkhet Umm el Ez 31°59,337 N 15°12,022 E	Sebkha Wadi Mrah 31°20,410 N 15°49,568 E	Sebkhet el Ghbeba 31°12,863 N 16°22,117 E	Al Hisha springs 31°38,915 N 15°16,189 E	Sebkhet el Hammam (Houn) 29°07,503 N 15°55,518 E	Sebkhet Ras Lanouf 30° 23,418 N 18°39,794 E	Sebkhet Bishr 30° 16,276N 19°21,536 E	Sebkhet Brega 30° 19,474N 19°30,535 E	Sebkhet Hafiroun 30° 22,339 N 19°38,593 E	Sebkhet Shuwayrib 30° 26,700 N 19°48,150 E	Ghemines 31°42,162 N 19°57,138 E	Sebkhet Karkoura 31° 26,116 N 20°02,145 E	Sebkhet Chott Al Bedin 31°12,963 N 20°09,753 E	Sebkhet Ben Jawad 30° 51,359 N 17°52,362 E	Sebkhet Garyounes 32° 03,972 N 20°02,328 E	Benghazi Lake and Harbours 32° 05,567 N 20°03,777 E	Sebkhet Al Kuz 32° 28,700 N 20°29,544 E	Bou Dzira Lake 32° 10,241N 20°07,786 E	El Mgarin Lakes 32° 10,027 N 20°07,833 E	Ain Azziana 32° 12,616 N 20°09,766 E	Sebkhet Al Thama and Sebkhet Esselawi 32°09,000 N 20°06,000E	Hnia 32° 09,719 N 20°08,255 E	Sebkhet Gfanta (Zaouet El Hnia) 32° 49,806 N 21°30,285 E	Sebkhet Ain Ashagiga 32° 49 N 21°29 E	Sebkhet Ain Azzarga 32° 47,955 N 21°27,411 E	first islet of Susa 32° 53,583 N 21°56,205 E	Derna Town 32° 46,380 N 22°30,209 E	Wadi Al Khalij 32° 39,422 N 22°54,941 E	Ras El Tin 32° 36,154 N 23°04,800 E	Um Hafain 32° 33,840 N 23°04,992 E	Ain Al Ghazala 32° 09,171 N 23°19,744 E	Gaziret Elba 32°13,000 N 23°18,000 E	Sebkhet Temimi 32° 31,950 N 23°03,630 E	Bumba Marsh 32° 26,092 N 23°04,403 E	Sebkhet Fairouz 32° 02,789 N 20°01,533 E	Sebkhet Ganfouda 31° 59,642N 19°59,991 E	Sidra oil terminal 30° 37,769N 18°21,494 E	Sebkhet Sultan 31° 06,256 N 17°10,667 E	Sebkhet Hassila and Wadi Lahmer 31° 04,564 N 17°20,952 E	Oum Elghendel 30°53,277N 17°49,116 E	Total by species
Date of visit			20/01/2006									21/01/2006		22/01/2006				23/01/2006					24/01/2006	25/01/2006									26/01/2006							27/01/2006													28/01/2006		29/01/2006				
Coverage in %			50	80	70	40	60	40	80	40	10	70	50	100	100	30	50	20	90	10	100	60	50	100	90	70	30	20	90	80	100	80	100	95	90	90	70	70	70	100	100	90	70	40	80	80	70	35	90	30	70	100	90	50	90	90	80	80	
Species code	**English name**	**Scientific name**																																																									
	Waterbird species																																																										
TACRU	Little Grebe	*Tachybaptus ruficollis*											2										3											10		3	1		4																				23
PODCR	Great Crested Grebe	*Podiceps cristatus*			206							2	1																					1					2										38		9								259
PODNI	Black-necked Grebe	*Podiceps nigricollis*			207							5										4										2		40		2		30	101				4						220		6							6	627
PODAU	Slavonian Grebe	*Podiceps auritus*			1																																																						1
PUFYE	Yelkouan Shearwater	*Puffinus yelkouan*										8																																															8
MORBA	Gannet	*Morus bassanus*			1																														2																								3
PHAAR	Mediterranean Shag	*Phalacrocorax aristotelis*																																										5															5
PHACA	Great Cormorant	*Phalacrocorax carbo*		1	274						35	18	5				3					2					4						38	230		26	1	40	93						7	3	5	5	76	66	55								987
IXOMI	Little Bittern	*Ixobrychus minutus*											1																							1	5		1									3											11
ARDRA	Squacco Heron	*Ardeola ralloïdes*											2																																														2
BUBIB	Cattle Egret	*Bubulcus ibis*										4	117																					3		16	34		72															80					326
EGRGA	Little Egret	*Egretta garzetta*			14		1				17	2	10	1				2				10	5				2							1		19	4	16	14												2					1			121
EGRAL	Great Egret	*Egretta alba*			35							1	1					5				2																5	5																				54
ARDPU	Purple Heron	*Ardea purpurea*											3					1				1	2																										1										8
NYCNY	Night Heron	*Nycticorax nycticorax*											1																																						1								2
ARDCI	Grey Heron	*Ardea cinerea*	6		16	2					2	2	4					2				1	5											4			2	1	9							1		3	3		13								76
CICCI	White Stork	*Ciconia ciconia*											6																																														6
PLEFA	Glossy Ibis	*Plegadis falcinellus*											70																																														70
PLALE	Spoonbill	*Platalea leucorodia*			34	20							5									2												15					10																				86
PHORU	Greater Flamingo	*Phoenicopterus roseus*							7	1767	1						12		280			195		12	22	7	14					53		10	515																							25	2920
TADTA	Common Shelduck	*Tadorna tadorna*		15						54							24					120		3											15				59			8					2											2	302
TADCA	Ruddy Shelduck	*Tadorna casarca*							1																																																		1
ANAPE	Wigeon	*Anas penelope*										1							15															2					17																				35
ANAST	Gadwall	*Anas strepera*																																4				9																					13
ANACR	Teal	*Anas crecca*											17									30	120										92	25				11	178			17				11													501
ANAPL	Mallard	*Anas platyrhynchos*											12					27					1												1																								41
ANAAC	Pintail	*Anas acuta*																	300			25	2										40	40					6			3																	416
ANACL	Shoveler	*Anas clypeata*										7	12	80					20			40	90	6									5	180	4				531			107																	1082
AYTFE	Pochard	*Aythya ferina*																																15					218																				233
AYTNY	Ferruginous Duck	*Aythya nyroca*										2											5																5																				12
AYTFU	Tufted Duck	*Aythya fuligula*																																					24																				24
MERSE	Red-breasted Merganser	*Mergus serrator*																																				1																					1
GALCH	Moorhen	*Gallinula chloropus*										10	15										1											10			6											2											44
RALAQ	Water Rail	*Rallus aquaticus*											3																					1			1											3	2			2							12
FULAT	Coot	*Fulica atra*										18	11					19					5											94		4			207							5			51			1							415
GRUGR	Crane	*Grus grus*											60				5		93			308	113			13																																3	595
HAEOS	Oystercatcher	*Haematopus ostralegus*			5	1																																																					6
HIMHI	Black-winged Stilt	*Himantopus himantopus*		25	1							2	20	43	4							20											2	30					58																				205
RECAV	Avocet	*Recurvirostra avosetta*								120												2		28	23	1						10	7	2																									193
BUROE	Stone Curlew	*Burhinus oedicnemus*															2																																							1	1	2	6
CHAHI	Ringed Plover	*Charadrius hiaticula*					4																										4	5				1							2				10		10			2		1			39
CHAAL	Kentish Plover	*Charadrius alexandrinus*			471		4			20		5	1				112			4		100		4			50		10	10		2	12	75	76			15	10	2	2	5				1	8		20		10		5	1		19	2	1	1057
CHALE	Greater Sand Plover	*Charadrius leschenaultii*																																																	1								1
PLUAP	Golden Plover	*Pluvialis apricaria*							12								30																		81						482			40															645
PLUSQ	Grey Plover	*Pluvialis squatarola*			130		10				3	1					4													2			2	22				1				1	1						12		3					3			195
PLUVI	Plover ssp.																									34																																	34
CHAMO	Dotterel	*Charadrius morinellus*																												3																													3
VANVA	Northern Lapwing	*Vanellus vanellus*											2																2																							1							5
CALID	Dunlin/Little Stint/small waders					120											626		15												50																												811
CALAL	Sanderling	*Calidris alba*								10		18												17	1		2			1																					2				1			5	57
CALMI	Little Stint	*Calidris minuta*			130					200	1		6				5					100		8			21			26			75	80	65			1	11			17					5		6		2			1				13	773
CALTE	Temminck's Stint	*Calidis temminckii*											2																																														2
CALAL	Dunlin	*Calidris alpina*			213		30			100							45					10		41	49		31			4				25	416			400	207		2	40					17	7	58		180					30	2	40	1947
PHIPU	Ruff	*Philomachus pugnax*										1	1									25																																					27
LYMMI	Jack Snipe	*Lymnocryptes minimus*											1									1																													1								3
GALGA	Snipe	*Gallinago gallinago*											3									1												4			1		1			1						4	1		2	4							22
LIMLI	Black-tailed Godwit	*Limosa limosa*			6																												4																										10
LIMLA	Bar-tailed Godwit	*Limosa lapponica*																																																	1								1
NUMAR	Eurasian Curlew	*Numenius arquata*	8	2	184	27	12						1				1								20	5			32	9			6		70			1									3		4		1		11			3	3	16	419
NUMPH	Whimbrel	*Numenius phaeopus*									1																																																1
TRIER	Spotted Redshank	*Tringa erythropus*																								1																																	1
TRITO	Redshank	*Tringa totanus*	1		112						3		3	1			50					7		12	8		7		3	9			1	40	128		1	15	54	1		73	3				27	10	85		78	1	5	1		2		22	763
TRINE	Greenshank	*Tringa nebularia*			20														1		1	2					5											1	1																				31
TRI OC	Green Sandpiper	*Tringa ochropus*																											1																							1							2
TRI GL	Wood Sandpiper	*Tringa glareola*											6																					1					2																				9
ACTHY	Common Sandpiper	*Actitis hypoleucos*			4						1		1																								1																						7
TRIST	Marsh Sandpiper	*Tringa stagnatilis*																																3																									3
	Medium sized waders																															10																											10
AREIN	Turnstone	*Arenaria interpres*			35						6																							3						1											2								47
LARME	Mediterranean Gull	*Larus melanocephalus*	11		18	3					20						3																	5			4		170						3								1		1				239
LARMI	Little Gull	*Larus minutus*																																1				1																					2
LARRI	Black-headed Gull	*Larus ridibundus*	120	1	42		4				90			40	8		2																600	1600		34	1	239	1580														100	17000	30				21491
LARGE	Slender-billed Gull	*Larus genei*	40	8	272	510	500			70	12			208	35		5000				100				1		8							300			1	168	78	1	1	3	11		10	1	148		16		55		2		10		1	46	7616
LARAU	Audouin's Gull	*Larus audouinii*	2														500				110								10	6	34				5										2		1												670
LARFU	Lesser Black-backed Gull	*Larus fuscus*	5	24	36	160	65				25			58			380				50													5	1				100												5			500	20	4			1438
LARCA	Caspian Gull	*Larus cachinnans*																			2																2		85						40									2500					2629
LARUS	Lesser Blackback/Yellow-legged Gull			30																															15																								45
LARMI	Yellow-legged Gull	*Larus michahellis*		27	49	2	4					3					25				2						3			1		3		4	5				1					75	10				2	180				100		10			506
LARCA	Caspian/Yellow-legged Gull	*Larus cachinnans/michahellis*																			4								7								1		4												150							1	167
LARIC	Great Black-headed Gull	*Larus ichthyaetus*																			6																																						6
STECA	Caspian Tern	*Sterna caspia*			32	1	3				1	2																																					2		1								42
STESA	Sandwich Tern	*Sterna sandvicensis*	40								20						6				10								1	3				30				2	2								1		3		3		1						122
CHLHY	Whiskered Tern	*Chlidonias hybridus*																																40			2	1	6												3	1							53
CERRU	Pied Kingfisher	*Ceryle rudis*																																														2	1										3
ALCAT	Kingfisher	*Alcedo atthis*											2									1														1	1	1	1			1	1			1		1	1										12
Total by site			**233**	**133**	**2548**	**846**	**637**	**0**	**20**	**2341**	**238**	**112**	**407**	**431**	**47**	**0**	**6835**	**56**	**724**	**4**	**285**	**1009**	**352**	**131**	**124**	**61**	**147**	**0**	**66**	**124**	**34**	**80**	**888**	**2960**	**1399**	**106**	**69**	**960**	**3927**	**5**	**487**	**276**	**20**	**120**	**74**	**23**	**217**	**40**	**612**	**246**	**596**	**11**	**125**	**20185**	**62**	**74**	**9**	**182**	**51698**

Appendix 3: Full details of Non-Waterbird species counted

Site		Sebkhet Al Mangoub 32° 53,732 N 12°08,513 E	Sebkhet Mellita 32° 50,156 N 12°15,756 E	Farwa Lagoon 33° 04,848 N 11°44,200 E	Coast Farwa to Ras Ajdir 33° 05,538 N 11°39,476 E	Gataya Island 33° 06,731 N 11°37,631 E	Sebkhet Boubesla ouest 33° 02,918 N 11° 49,804E	Sebkhet Boubesla est 33° 01,780 N 11° 53,696E	Sebkhet Boukamech 33° 07,543 N 11°22,331 E	Tripoli harbour 32° 06,087 N 20°03,218 E	Wadi Kaam 32° 31,189 N 14°26,733 E	Taourgha Springs 32° 00,129 N 15°08,419 E	Qasr Ahmed I 32°21,077 N 15°10,575 E	Qasr Ahmed II 32°22,133 N 15°10,499 E	Sebkhet east of Qasr Ahmed 32°15,275 N 15° 09,025 E	Sebkhet Qasr Ahmed 32° 00,105 N 15°08,408 E	Sebkhet inconnu 31°55,836N 15°02,332 E	Wadi el Azrak 32°00,906 N 15°09,325 E	Sebkhet Umm el Ez 31°59,337 N 15°12,022 E	Sebkha Wadi Mrah 31°20,410 N 15°49,568 E	Sebkhet el Ghbeba 31°12,863 N 16°22,117 E	Al Hisha springs 31°38,915 N 15°16,189 E	Sebkhet el Hammam (Houn) 29°07,503 N 15°55,518 E	Sebkhet Ras Lanouf 30° 23,418 N 18°39,794 E	Sebkhet Bishr 30° 16,276N 19°21,536 E	Sebkhet Brega 30° 19,474N 19°30,535 E	Sebkhet Hafiroun 30° 22,339 N 19°38,593 E	Sebkhet Shuwayrib 30° 26,700 N 19°48,150 E	Ghemines 31°42,162 N 19°57,138 E	Sebkhet Karkoura 31° 26,116 N 20°02,145 E	Sebkhet Chott Al Bedin 31°12,963 N 20°09,753 E	Sebkhet Ben Jawad 30° 51,359 N 17°52,362 E	Sebkhet Garyounes 32° 03,972 N 20°02,328 E	Benghazi Lake and Harbours 32° 05,567 N 20°03,777 E	Bou Dzira Lake 32° 10,241N 20°07,786 E	El Mgarin Lakes 32° 10,027 N 20°07,833 E	Ain Azziana 32° 12,616 N 20°09,766 E	Sebkhet Al Thama and Sebkhet Esselawi 32°09,000 N 20°06,000E	Sebkhet Al Kuz 32° 28,700 N 20°29,544 E	Hnia 32° 09,719 N 20°08,255 E	Sebkhet Gfanta (Zaouet El Hnia) 32° 49,806 N 21°30,285 E	Sebkhet Ain Ashagiga 32° 49 N 21°29 E	Sebkhet Ain Azzarga 32° 47,955 N 21°27,411 E	first islet of Susa 32° 53,583 N 21°56,205 E	Derna Town 32° 46,380 N 22°30,209 E	Wadi Al Khalij 32° 39,422 N 22°54,941 E	Ras El Tin 32° 36,154 N 23°04,800 E	Um Hafain 32° 33,840 N 23°04,992 E	Ain Al Ghazala 32° 09,171 N 23°19,744 E	Gaziret Elba 32°13,000 N 23°18,000 E	Sebkhet Temimi 32° 31,950 N 23°03,630 E	Bumba Marsh 32° 26,092 N 23°04,403 E	Sebkhet Fairouz 32° 02,789 N 20°01,533 E	Sebkhet Ganfouda 31° 59,642N 19°59,991 E	Sidra oil terminal 30° 37,769N 18°21,494 E	Sebkhet Sultan 31° 06,256 N 17°10,667 E	Sebkhet Hassila and Wadi Lahmer 31° 04,564 N 17°20,952 E	Oum Elghendel 30°53,277N 17°49,116 E	Total by species
Date of visit		20/01/2006									21/01/2006		22/01/2006				23/01/2006						24/01/2006	25/01/2006									26/01/2006							27/01/2006													28/01/2006		29/01/2006				
Coverage in %		50	80	70	40	60	40	80	40	10	70	50	100	100	30	50	50	20	90	10	100	60	50	100	90	70	30	20	90	80	100	80	100	95	90	70	70	70	90	100	100	90	70	40	80	80	70	35	90	30	70	100	90	50	90	90	80	80	
English name	**Scientific name**																																																										
Non-waterbird species																																																											
Hen Harrier	*Circus cyaneus*																		1			1	1																1										1										**5**
Marsh Harrier	*Circus aeruginosus*			3	1							40						2	3			4	2										4				1									1		7	1			1		1	2		1		**74**
Pallid Harrier	*Circus macrourus*											1				1																																											**2**
Black Kite	*Milvus migrans*																															1																											**1**
Long-legged Buzzard	*Buteo rufinus*																	1		2						1																						1		1									**6**
Peregrine Falcon	*Falco peregrinus*											1				1						1																																					**3**
Lanner Falcon	*Falco biarmicus*																									1																																	**1**
Kestrel	*Falco tinnunculus*											1	1						1			1								1	1							1							1						1		1			1	2		**13**
Barbary Partridge	*Alectoris barbara*															4																							2																				**6**
Rock Dove	*Columba livia*																																						50																				**50**
Laughing Dove	*Streptopelia senegalensis*										3	10										50										1	2	5		1	3		20													2							**97**
Little Owl	*Athene noctua*												2																		1											1																	**4**
Hoopoe	*Upupa epops*											2																	4	1	1		2					1																2			5		**18**
Bar-tailed Lark	*Ammomanes cincturus*																						2																																				**2**
Crested Lark	*Galerida cristata*		3	10				1				2		2		15						2					1	5	2	5			4	5			2		20												10	5		5		5	10	20	**134**
Calandra Lark	*Melanocorypha calandra*																																																		10								**10**
Skylark	*Alauda arvensis*															19														6									40															1			7	4	**77**
Short-toed Lark	*Calandrella brachydactyla*															30														5																													**35**
Lesser Short-toed Lark	*Calandrella rufescens*																																																		2								**2**
Swallow	*Hirundo rustica*											1																						1				1																					**3**
Crag Martin	*Ptyonoprogne rupestris*																																									1	1																**2**
House Martin	*Delichon urbica*										5					1																													1														**7**
Red-throated Pipit	*Anthus cervinus*																																					1													1								**2**
Meadow Pipit	*Anthus pratensis*		2	4							1	20		1					2			5								1			2	5			5	10	10	2								5			2	4		10	1			1	**93**
Water Pipit	*Anthus spinoletta*										1																																									1							**2**
Grey Wagtail	*Motacilla cinerea*																						1																																				**1**
White Wagtail	*Motacilla alba*			3					1	5	1	130	31			4			2			5	5			1				1				3		10		10	5							2		10				20	1	50	3	7	10		**320**
Robin	*Erithacus rubecula*						1				10	5																		1				2		1										1		1				1							**23**
Moussier's Redstart	*Phoenicurus moussieri*							1										1																																									**2**
Black Redstart	*Phoenicurus ochruros*										1	2						3				1								1	1		1													1			1								2		**14**
Bluethroat	*Luscinia svecica*																																	1												2						1							**4**
Red-rumped Wheatear	*Oenanthe moesta*																													6																													**6**
Desert Wheatear	*Oenanthe deserti*															1	1					1																																					**3**
Mourning Wheatear	*Oenanteh lugens*																1						1																																				**2**
White-crowned Wheatear	*Oenanthe leucopyga*																						2																																				**2**
Stonechat	*Saxicola torquata*		1	1	1						4	5	2			2			1			2	1						1	4			1	6		1	3		12			3	2			1		1			1	2	2				1		**61**
Blue Rock Thrush	*Monticola solitarius*											1							1																																								**2**
Song Thrush	*Turdus philomelos*											2						1																																									**3**
Fan-tailed Warbler	*Cisticola juncidis*										4	6						3																																									**13**
Reed Warbler	*Acrocephalus scirpaceus*										3							1					6										1	15														10				5							**41**
Sardinian Warbler	*Sylvia melanocephala*										5	2																	1	1						2	1		2			1	2						2		1	1							**21**
Spectacled Warbler	*Sylvia conspicillata*															1							1																3																			1	**6**
Blackcap	*Sylvia atricapilla*										1		1											1											2																								**5**
Scrub Warbler	*Scotocerca inquieta*															1																																											**1**
Chiffchaff	*Phylloscopus collybita*										10	20										2	5							2				50		1	2		3				5			3		50				41					10		**204**
Fulvous Babbler	*Turdoides fulvus*							5															7																																				**12**
Cream-coloured Courser	*Cursorius cursor*																							3																																			**3**
Hoopoe Lark	*Alaemon alaudipes*																2					2	1	1						2																												5	**13**
Southern Grey Shrike	*Lanius meridionalis*						1				5	1									1	1	1								1		2			2	4		5	1		1	1						2					2			3	1	**35**
Raven	*Corvus corax*																2							1																																	2		**5**
Brown-necked Raven	*Corvus ruficollus*																						2																																				**2**
Starling	*Sturnus vulgaris*										50	2000				500						8										150				100000			300		10					300		300			200	100		100	40000		10		**144028**
House Sparrow	*Passer domesticus*										10	3										150											10																15					50					**238**
Spanish Sparrow	*Passer hispanoliensis*			4						20													50							50		100							100													60	2		300	35	30		**751**
Linnet	*Acanthis cannabina*										1					20																										5	5																**31**
Chaffinch	*Fringilla coelebs*																					10																		10		5	2																**27**
Serin	*Serinus serinus*										40																																																**40**
Goldfinch	*Carduelis carduelis*										4																													5		5																	**14**
Reed Bunting	*Emberiza schoeniclus*										1																							5		1																							**7**
Corn Bunting	*Milaria calandra*																												2										30																				**32**
Total by site		**0**	**6**	**25**	**2**	**0**	**2**	**7**	**1**	**25**	**160**	**2255**	**37**	**3**	**0**	**600**	**6**	**12**	**11**	**2**	**1**	**246**	**88**	**6**	**0**	**3**	**1**	**5**	**10**	**87**	**5**	**252**	**29**	**98**	**2**	**100019**	**21**	**24**	**603**	**18**	**10**	**22**	**18**	**0**	**2**	**311**	**0**	**385**	**22**	**1**	**228**	**244**	**6**	**221**	**40306**	**48**	**93**	**32**	**146621**

Appendix 4
Details of colour rings controlled in winter 2006

Greater Flamingos *Phoenicopterus roseus*

AJBS

Ring reading order from top to bottom

LIFE HISTORY

Greater Flamingo ringed the 22.07.1987 (pullus unable to fly) , Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")

Plastic ring : AJBS in Black on Yellow background. Metal ring : P0628
Estimated sex from sightings : Female

TOUR DU VALAT STATION BIOLOGIQUE

Date	Ring	Sex	Observation Site	Behaviour	Comments	Observer(s)	Kms
17.08.1987	AJBS		Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")	On or near colony		Nathalie HECKER	0
27.08.1987	AJBS		Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")	On or near colony		Nathalie HECKER	0
27.08.1987	AJBS		Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")	On or near colony		Nathalie HECKER	0
03.08.1988	AJBS		Salines de Thyna - Sfax - TUNISIA (N34°38'00", E10°43'00")			Mike SMART	1108
09.04.1993	AJBS		Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")	On or near colony		Pierre-André CROCHET	2215
08.06.1993	AJBS		Etg. du Grand Rascaillan - Bouches-du-Rhone - FRANCE (N43°24'23", E04°37'55")			Alan R. JOHNSON	2218
31.03.1994	AJBS	F	Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")	Paired		Pierre-André CROCHET	2220
11.04.1994	AJBS		Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")	On or near colony		Pierre-André CROCHET	2220
24.11.1994	AJBS		Les Pointes - Bouches-du-Rhone - FRANCE (N43°21'57", E04°44'39")			André BLASCO	2232
05.05.1995	AJBS		Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")	On or near colony		Virginie DIEVART	2243
07.05.1995	AJBS		Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")	On or near colony		Virginie DIEVART	2243
18.05.1995	AJBS		Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")	Believed breeding		Shira GOLDEN	2243
07.06.1995	AJBS		Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")	Believed breeding		Caroline HENRY	2243
18.06.1995	AJBS		Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")	Accepted breeding		Shira GOLDEN	2243
20.06.1995	AJBS		Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")	Known breeders (but egg/chick not visible)		Christophe TOURENQ	2243
26.06.1995	AJBS		Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")	On or near colony		Alan R. JOHNSON	2243
03.07.1995	AJBS		Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")	On or near colony		Christophe TOURENQ	2243
09.07.1995	AJBS		Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")	Feeds/attends chick in creche still on island		Alan R. JOHNSON	2243
04.05.1997	AJBS		Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")	Believed breeding		Emmanuelle FARIS	2243
12.05.1997	AJBS		Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")	On or near colony		Bertrand PEZAVENT	2243
13.05.1997	AJBS		Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")	On or near colony		Bertrand PEZAVENT	2243
12.04.1998	AJBS		Stagno di Molentarglus - Cagliari (Sardegna) - ITALY (N39°13', E09°08')	On or near colony		Vincenzo LOI	2842
19.04.1998	AJBS		Stagno di Molentarglus - Cagliari (Sardegna) - ITALY (N39°13', E09°08')	On or near colony		Vincenzo LOI	2842
07.06.1998	AJBS		Stagno di Molentarglus - Cagliari (Sardegna) - ITALY (N39°13', E09°08')	On or near colony		Vincenzo LOI	2842
18.08.1998	AJBS		Sebkhet Sejoumi - Tunis - TUNISIA (N36°46', E10°09')			Mike SMART	3129
20.05.1999	AJBS	F	Briscon - Bouches-du-Rhone - FRANCE (N43°25'01", E04°39'03")			Guillaume BERTAULT	4002
21.05.1999	AJBS	F	Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")			Guillaume BERTAULT	4004
26.06.1999	AJBS		Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")			Alan R. JOHNSON	4004
25.04.2000	AJBS ↓	F	Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")	Believed breeding		Camas KEY	4004
29.04.2000	AJBS ↓		Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")			Camas KEY	4004
05.05.2000	AJBS ↓		Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")	Incubating, egg seen		Jean-Luc CHIL	4004
07.05.2000	AJBS ↓		Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")	Known breeders (but egg/chick not visible)		Camas KEY	4004
12.05.2000	AJBS ↓		Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")	Known breeders (but egg/chick not visible)		Antoine ARNAUD	4004
17.05.2000	AJBS ↓		Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")	Known breeders (but egg/chick not visible)		Jean-Luc CHIL	4004
30.05.2000	AJBS ↓		Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")	Known breeders (but egg/chick not visible)		Antoine ARNAUD	4004

Date	Ring	Sex	Observation Site	Behaviour	Comments	Observer(s)	Kms
23.01.2006	AJBS ↓		Al Hishah springs - Baladiyat Misratah - LIBYA (N31°38'55", E15°16'11")		143 ind. (all checked)	Hichem AZAFZAF & Ibrahim TABOUNI	5609

Date	Ring	Sex	Observation Site	Behaviour	Comments	Observer(s)	Kms
06.04.1998	BVHL ↑	F	Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")	On or near colony		Patrick MAYET	0
17.05.1998	BVHL ↑		Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")	On or near colony		Giuseppe GAUDENZI	0
17.06.1998	BVHL ↑	F	Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")	On or near colony		Guillaume BERTAULT	0
05.07.2000	BVHL ↑		Stagno di Molentargius - Cagliari (Sardegna) - ITALY (N39°13', E09°06')	On or near colony		Associzione per il Parco Molentargius	599
25.01.2006	BVHL ↑		Sebkhet Ras Lanouf - Baladiyat Ajdabiya - LIBYA (N30°23'25", E18°39'48")		13 ind. (2 juv.). Read with Habib DLENSI and Mohamed Faisel Ashor ESSGHAIER	Hichem AZAFZAF & Moktar MOUSSA AMR	1907

Date	Ring	Sex	Observation Site	Behaviour	Comments	Observer(s)	Kms
25.01.2006	T|AZA ↓		Sebkhet Brega - Baladiyat Ajdabiya - LIBYA (N31°21'44", E19°30'33")		Read with Habib DLENSI and Mohamed Faisel Ashor ESSGHAIER. PVC on right tibia.	Hichem AZAFZAF & Moktar MOUSSA AMR	1040

Ring reading order from bottom to top

LIFE HISTORY

Greater Flamingo ringed the 20.07.1994 (pullus unable to fly) , Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")

Plastic ring : BXFZ in Black on Yellow background. Metal ring : P5366
Unknown sex

Date	Ring	Sex	Observation Site	Behaviour	Comments	Observer(s)	Kms
25.08.1994	BXFZ †		Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")	On or near colony		Pierre-André CROCHET	0
31.08.1994	BXFZ †		Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")	On or near colony		Pierre-André CROCHET	0
17.10.1995	BXFZ †		Salines de Thyna - Sfax - TUNISIA (N34°38'00", E10°43'00")			Habib DLENSI	1108
08.12.1995	BXFZ †		Salines de Thyna - Sfax - TUNISIA (N34°38'00", E10°43'00")			Habib DLENSI	1108
08.12.1996	BXFZ †		Salines de Thyna - Sfax - TUNISIA (N34°38'00", E10°43'00")			Habib DLENSI	1108
20.11.1997	BXFZ †		Sebkhet Sejoumi - Tunis - TUNISIA (N36°46', E10°09')			Marco BASSO	1350
13.08.1998	BXFZ †		Salines de Thyna - Sfax - TUNISIA (N34°38'00", E10°43'00")			Mike SMART	1592
13.01.1999	BXFZ †		Salines de Thyna - Sfax - TUNISIA (N34°38'00", E10°43'00")			Mike SMART	1592
14.01.1999	BXFZ †		Salines de Thyna - Sfax - TUNISIA (N34°38'00", E10°43'00")			Camille DUPONCHEEL & Pascal RAEVEL	1592
16.01.1999	BXFZ †		Salines de Thyna - Sfax - TUNISIA (N34°38'00", E10°43'00")			Mike SMART	1592
25.11.2004	BXFZ †		Jerba, Ghizen - Medenine - TUNISIA (N33°52'36", E10°56'37")			Lobna BEN NAKHLA & Habib DLENSI	1679
23.01.2006	BXFZ †		Al Hishah springs - Baladiyat Misratah - LIBYA (N31°38'55", E15°16'11")		143 ind. (all checked)	Hichem AZAFZAF & Ibrahim TABOUNI	2152

Ring reading order from bottom to top

LIFE HISTORY

Greater Flamingo ringed the 18.07.2001 (pullus unable to fly) , Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")

Plastic ring : DZFV in Black on Yellow background. Metal ring : X1578
Sex genetically determinated : Probably male

Date	Ring	Sex	Observation Site	Behaviour	Comments	Observer(s)	Kms
20.07.2004	DZFV †		Salines de Thyna - Sfax - TUNISIA (N34°38'00", E10°43'00")			Med Ali CHOKRI	1108
23.01.2006	DZFV †		Al Hishah springs - Baladiyat Misratah - LIBYA (N31°38'55", E15°16'11")		143 ind. (all checked)	Hichem AZAFZAF & Ibrahim TABOUNI	1645

FFCD

Ring reading order from bottom to top

LIFE HISTORY

Greater Flamingo ringed the 29.07.2003 (pullus unable to fly) , Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")

Plastic ring : FFCD in Black on Yellow background. Metal ring : X2504
Unknown sex

Date	Ring	Sex	Observation Site	Behaviour	Comments	Observer(s)	Kms
08.01.2005	FFCD	↑	Sebkhet Ras Lanouf - Baladiyat Ajdabiya - LIBYA (N30°23'25", E18°39'48")		Grp de 26 dont 3 juv, 2 bagués. Egalement lue par Mike SMART	Hichem AZAFZAF & Habib DLENSI	1904
25.01.2006	FFCD	↑	Sebkhet Ras Lanouf - Baladiyat Ajdabiya - LIBYA (N30°23'25", E18°39'48")		13 Ind. (2 juv.). Read with Habib DLENSI and Mohamed Faisel Ashor ESSGHAIER	Hichem AZAFZAF & Moktar MOUSSA AMR	1904

FHVD

Ring reading order from bottom to top

LIFE HISTORY

Greater Flamingo ringed the 22.07.2004 (pullus unable to fly) , Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")

Plastic ring : FHVD in Black on White background. Metal ring : X2962
Unknown sex

Date	Ring	Sex	Observation Site	Behaviour	Comments	Observer(s)	Kms
25.01.2006	FHVD	↑	Sebkhet Bishr - Baladiyat Ajdabiya - LIBYA (N30°16'17", E19°21'32")		Read with Habib DLENSI and Mohamed Faisel Ashor ESSGHAIER. PVC on left tibia.	Hichem AZAFZAF & Moktar MOUSSA AMR	1955

FNSP

Ring reading order from top to bottom

LIFE HISTORY - sightings sent by Khaled S. ETAYEB (observer(s) M. F. ESSGHAIER & Khaled S. ETAYEB)

Greater Flamingo ringed the 27.07.2005 (pullus unable to fly) , Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")

Plastic ring : FNSP in Black on White background. Metal ring : X2710
Unknown sex

Date	Ring	Sex	Observation Site	Behaviour	Comments	Observer(s)	Kms
30.06.2005	FNSP	↓	Etg. du Fangassier - Bouches-du-Rhone - FRANCE (N43°25'40", E04°37'44")	On or near colony		Antoine ARNAUD	0
17.12.2005	FNSP	↓	Sebkhet Al-Mallaha - LIBYA (N32°54'09", E13°17'04")		Immature. 221 Ind.	M. F. ESSGHAIER & Khaled S. ETAYEB	1389

Sens de lecture de bas en haut

HISTORIQUE DE VIE - observations envoyées par Pierre DEFOS du RAU

Flamant rose bagué le 06.08.2005 (poussin) , Saline di Macchiareddu - Cagliari (Sardegna) - ITALIE (N39°13', E09°02')

Bague plastique : MPKJ en Noir sur fond Blanc. Bague Métal : E0007212
Sexe non identifié

Istituto Nazionale per la Fauna Selvatica

Date	Bague	Sexe	Lieu d'observation	Comportement	Commentaires	Observateur(s)	Kms
15.08.2005	MPKJ↑		Saline di Macchiareddu - Cagliari (Sardegna) - ITALIE (N39°13', E09°02')	A la colonie	in asilo	Sergio NISSARDI	0
20.10.2005	MPKJ↑		Saline di Macchiareddu - Cagliari (Sardegna) - ITALIE (N39°13', E09°02')			Carla ZUCCA et Sergio NISSARDI	0
20.01.2006	MPKJ↑		Sebkhet Boubesla est, Farwa - LIBYE (N33°01'47", E11°53'42")		group of 7 birds	Pierre DEFOS du RAU	733

Ring reading order from bottom to top

LIFE HISTORY - sightings sent by Khaled S. ETAYEB (observer(s) Khaled S. ETAYEB & M. F. ESSGHAIER)

Greater Flamingo ringed the 31.07.2004 (pullus unable to fly) , Saline di Macchiareddu - Cagliari (Sardegna) - ITALY (N39°13', E09°02')

Plastic ring : MLFZ in Black on White background. Metal ring : E0007740
Unknown sex

Istituto Nazionale per la Fauna Selvatica

Date	Ring	Sex	Observation Site	Behaviour	Comments	Observer(s)	Kms
11.08.2004	MLFZ↑		Saline di Macchiareddu - Cagliari (Sardegna) - ITALY (N39°13', E09°02')	On or near colony		Sergio NISSARDI	0
16.08.2004	MLFZ		Saline di Macchiareddu - Cagliari (Sardegna) - ITALY (N39°13', E09°02')	On or near colony		Vincenzo LOI & Simona PISANO	0
03.09.2005	MLFZ↑		Salines de Thyna - Sfax - TUNISIA (N34°38'00", E10°43'00")			Med Ali CHOKRI	530
17.12.2005	MLFZ		Sobkhet Al-Mallaha, Tripoli - LIBYA (N32°54'09", E13°17'05")		221 ind.	Khaled S. ETAYEB & M. F. ESSGHAIER	835

Ring reading order from bottom to top

LIFE HISTORY - sightings sent by Khaled S. ETAYEB (observer(s) Khaled S. ETAYEB & M. F. ESSGHAIER)

Greater Flamingo ringed the 06.08.2005 (pullus unable to fly) , Saline di Macchiareddu - Cagliari (Sardegna) - ITALY (N39°13', E09°02')

Plastic ring : MPJB in Black on White background. Metal ring : E0007192
Unknown sex

Istituto Nazionale per la Fauna Selvatica

Date	Ring	Sex	Observation Site	Behaviour	Comments	Observer(s)	Kms
29.08.2005	MPJB↑		Sebkhet Sejoumi - Tunis - TUNISIA (N36°46', E10°09')			Mike SMART	289
17.12.2005	MPJB		Sobkhet Al-Mallaha, Tripoli - LIBYA (N32°54'09", E13°17'05")		juv; photo; 221 ind.	Khaled S. ETAYEB & M. F. ESSGHAIER	804

Lesser Black-backed Gull *Larus fuscus*

Ringing Centre
P. O. Box 26
FI–00014 UNIVERSITY OF HELSINKI, FINLAND
Tel. +358–9–191 28847 Fax +358–9–191 28843

Ref. number : 882554

08.02.2006

HICHEM AZAFZAF

11 RUE ABOU EL ALLA EL MAARI
2080 ARIANA, TUNIS
TUNISIA

RING RECOVERY REPORT

Thank you very much for your information on a Finnish bird ring. Ringing and finding details are given below.
If you find any errors in this report, please let us know about them referring both to the ring number and to the reference number in the upper right corner of this letter.

RINGING DATA

Ring number	HT254782		
Species	Lesser Black–backed Gull	Larus fuscus	
		Wing	297.0 mm
Age	Young, out of the nest	*Weight*	812.0 g
Ringing date	21.07.2005		
Ringing place	UUSIKAARLEPYY, VAASA, FINLAND		
Coordinates	63°37'N 22°24'E		
Status	Healthy, wild bird		
Ringer	MIKAEL BÄCK, C/O JUNGSUNDVÄGEN 232, 65710 SINGSBY		

RECOVERY DATA

Verification of the ring	Number not verified	
Species	Lesser Black–backed Gull	Larus fuscus
Age	Full–grown, hatched 2005	
Recovery date	28.01.2006	
Recovery place	SEBKHET GANFOUDA LIBYA	
Coordinates	31°59'N 19°59'E	
Status	Alive	
Recovery code	Bird identified from coloured or numbered legring(s)	
Additional comments	Red CR82 read	
Finder	HICHEM AZAFZAF, 11 RUE ABOU EL ALLA EL MAARI, 2080 ARIANA, TUNIS, TUNISIA	

Elapsed time 0 years, 6 months and 7 days.
Distance 3532 km; direction S from ringing place.

Mailing address
Ringing Centre
Finnish Museum of Natural History
P.O.BOX 26
00014 UNIVERSITY OF HELSINKI

Visiting address
Ringing Centre
Natural History Museum
Teollisuuskatu 23
00510 HELSINKI

Telephone
+358–9–191 28847

Telefax
+358–9–191 28843

Email
ehmu_ren@cc.helsinki.fi

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Ringing Centre
P. O. Box 26
FI–00014 UNIVERSITY OF HELSINKI, FINLAND
Tel. +358–9–191 28847 Fax +358–9–191 28843

Ref. number : 883186 *1*

08.02.2006

HICHEM AZAFZAF

11 RUE ABOU EL ALLA EL MAARI
2080 ARIANA, TUNIS
TUNISIA

RING RECOVERY REPORT

Thank you very much for your information on a Finnish bird ring. Ringing and finding details are given below.
If you find any errors in this report, please let us know about them referring both to the ring number and to the reference number in the upper right corner of this letter.

RINGING DATA

Ring number	HT131469		
Species	Lesser Black–backed Gull	Larus fuscus	
		Wing	196.0 mm
Age	Young, out of the nest		
Ringing date	30.06.1999		
Ringing place	PIETARSAARI, VAASA, FINLAND		
Coordinates	63°38'N 22°30'E		
Status	Healthy, wild bird		
Ringer	RALF WISTBACKA, SÖDRA LARSMOVÄGEN 139, 68570 LARSMO		

RECOVERY DATA

Verification of the ring	Number not verified	
Species	Lesser Black–backed Gull	Larus fuscus
Age	Full–grown, hatched before 2005	
Recovery date	28.01.2006	
Recovery place	SEBKHET GANFOUDA LIBYA	
Coordinates	31°59'N 19°59'E	
Status	Alive	
Recovery code	Bird identified from coloured or numbered legring(s)	
Additional comments	White CPMO read	
Finder	HICHEM AZAFZAF, 11 RUE ABOU EL ALLA EL MAARI, 2080 ARIANA, TUNIS, TUNISIA	

Elapsed time 6 years, 6 months and 28 days.
Distance 3534 km; direction S from ringing place.

Mailing address
Ringing Centre
Finnish Museum of Natural History
P.O.BOX 26
00014 UNIVERSITY OF HELSINKI

Visiting address
Ringing Centre
Natural History Museum
Teollisuuskatu 23
00510 HELSINKI

Telephone
+358–9–191 28847

Telefax
+358–9–191 28843

Email
ehmu_ren@cc.helsinki.fi

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Appendix 5

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The present survey was organized and sponsored by:

Regional Activity Centre for Specially Protected Areas
Boulevard du Leader Yasser Arafat B.P.337 - 1080 Tunis CEDEX
Tel: (+216) 71 206 649, Fax: (+216) 71 206 490
E-mail: car-asp@rac-spa.org
Website: www.rac-spa.org

The Environment General Authority
P.O.Box 83618, AlGheran-Tripoli
Great Socialist Peoples Libyan Arab Jamahiriya
Tel: (+218) 21 4871590, 4870266, Fax: (+218) 21 4870266, 4872160
E-mail: egainfo@environment.org.ly
Website: www.environment.org.ly

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African-Eurasian Migratory Waterbird Agreement
UN-Premises, Martin-Luther-King Str. 8, 53175 Bonn, Germany
Tel: (+49) 228 815 2414, Fax: (+49) 228 815 2450
E-mail: aewa@unep.de
Website: www.unep-wcmc.org/aewa

Istituto Nazionale per la Fauna Selvatica "A. Ghigi"
via ca' Fornacetta, 9, I-40064 Ozzano Emilia BO
Italy
Tel: (+39) 051 6512219, Fax: (+39) 051 796628

Office national de la chasse et de la Faune Sauvage
85 bis avenue de Wagram, BP 236
75822 Paris Cedex 17
Tel : (+33) 01 44 15 17 17, Fax : (+33) 01 47 63 79 13
E-Mail: mai@oncfs.gouv.fr
Website:www.oncfs.gouv.fr

Wetlands International
PO Box 471, 6700 AL Wageningen
the Netherlands
Tel: (+31) 317 478854, Fax: (+31) 317 478850
E-Mail: Post@wetlands.org
Website: www.wetlands.org

Waha Oil Company
P.O.Box 395, Tripoli, Libya
Tel: (+218) 21 3331116, Fax: (+218) 21 3337169
E-Mail: infowaha@wahaoil.com
Website: www.wahaoil.com

British Council
Casablanca Street, Hey El Wihda El Arabia, Siyahia
PO Box 4206 Tripoli
Tel: (+218) 21 4843164, Fax: (+218) 21 4840178
E-Mail: info.libya@ly.britishcouncil.org
Website: www.britishcouncil.org