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Results of the seventh winter waterbird census in Libya, January–February 2011

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Résultats du septième dénombrement hivernal d'oiseaux d'eau en Libye, janvier–février 2011. Les oiseaux d'eau et certains rapaces de 83 zones humides libyennes ont été dénombrés en janvier–février 2011 dans le cadre d'un programme de suivi commencé en 2005. Au total, 35.890 individus appartenant à 88 espèces ont été recensés. Des détails sont fournis pour 28 espèces pour lesquelles des différences significatives en nombre ou en répartition ont été notées par comparaison avec les données des six hivers précédents. La Mouette de Franklin *Leucophaeus pipixcan* est nouvelle pour la Libye, et la Sterne naine *Sternula albifrons* et l'Aigle criard *Aquila clanga* n'ont pas été observés pendant les inventaires hivernaux précédents. Des observations occasionnelles de certaines espèces non aquatiques sont également rapportées.

Summary. Waterbirds and selected raptor species were counted at 83 Libyan wetlands in January–February 2011 as part of a monitoring programme begun in 2005. In total, 35,890 individuals belonging to 88 species were recorded. Details are provided for 28 species which showed significant differences in numbers or distribution compared with the previous six winters. Franklin's Gull *Leucophaeus pipixcan* was new for Libya, and Little Tern *Sternula albifrons* and Greater Spotted Eagle *Aquila clanga* had not been recorded during previous Libyan midwinter censuses. Occasional observations of selected non-waterbirds are also reported.

An analysis of the first six waterbird censuses in Libya in the winters of 2005–10, part of the International Waterbird Census programme of Wetlands International, has recently been published (EGA–RAC/SPA Waterbird Census Team 2012). Field activities continued uninterrupted in the following seasons, despite the period of civil unrest and war. Here we present the main results of the seventh census, undertaken by the authors between 29 January and 13 February 2011. Major differences compared to the previous six years' data are highlighted; for the general aims, organisation and sponsorship of the initiative, see EGA–RAC/SPA Waterbird Census Team (2012).

Site coverage and methods

The survey was particularly extensive in 2011, with 83 sites covered, including 22 new ones, i.e. marked as never visited in the national wetland list and map (EGA–RAC/SPA Waterbird Census Team 2012). From a 'traditional' western start point in the Farwah area, the survey of coastal sites reached Al Marj and Sabkhat al Kuz in the east. To also sample some inland sites, we elected to visit the Jufrah region and the Shati Valley (for the fourth and third time, respectively), because a number of promising wetlands had been detected using satellite images. A quick and incomplete visit to the Sarir desert was made by part of the

team, immediately prior to the coastal survey. The ten observers (including one trainee, M. Bouzainen) usually worked in separate teams in two Toyota LandCruisers, meeting each other repeatedly during each day or at sunset, depending on wetland size and location. Only waterbirds, seabirds, kingfishers and some raptor species that depend on wetlands were censused.

Results

In total, 35,890 individuals belonging to 88 species of waterbirds and wetland-dependent raptors were recorded (Appendix 1). The overall number of species was higher than in all years between 2005 and 2010, whereas that of individuals was remarkably low, due to the small number of gulls in the Benghazi area. For 30 species, however, the 2011 total was higher than (or equal to) the maximum of all previous years, whereas it was below the minimum value for just four species. Details of the most noteworthy records are presented below. Unless otherwise stated, records in 2005–10 are from EGA–RAC/SPA Waterbird Census Team (2012).

Ruddy Shelduck *Tadorna ferruginea*

One at Tabilbah on 4 February. Second record in our seven-year database. First recorded in 2006 (one).

Mallard *Anas platyrhynchos*

Confirmed as scarce and local in coastal areas, with just six at the Tawurgha complex (where none was found at Wadi al Azrak, a key site for the species in previous years) and four at Wadi Kaam dam. Small numbers (total: 73) possibly belonging to a locally resident population were present at eight wetlands in desert regions, especially in the Jufrah (*cf.* Cowan 1985 and Hering 2009 for other records in the Fezzan oases). Previous highest total was 42 in 2009.

Garganey *Anas querquedula*

Two at Hijarah Lake, near Sabha, on 10 February. Third record in our database. Previously recorded in 2007 (one) and 2010 (two).

Marbled Teal *Marmaronetta angustirostris*

A record flock of 40 on 2 February at Ayn Tawurgha, the only site where it had been previously recorded in more than one winter. Previously observed in only four years, with one in 2007, 12 in 2008 and 2009 (EGA–RAC/SPA Waterbird Census Team 2012) and one on 27 April 2010 (J. Hering *in litt.* 2012).

Ferruginous Duck *Aythya nyroca*

Only 13 in the entire coastal region, at three dams (with 11 at Wadi Kaam dam on 11 February), but 16, possibly belonging to a locally resident population, were found on 9–10 February at four wetlands in the desert regions of the Jufrah, Shati and at Hijarah Lake near Sabha, where breeding and wintering has been reported in the past (Cowan 1983). Previous annual totals: 10–36, wintering at 3–6 sites. Additionally, two males and one female were observed on 6 January 2010 at Al Marj, where, according to reliable information from local residents, the species also breeds (J. Hering *in litt.* 2012).

Northern Gannet *Morus bassanus*

Thirty-seven individuals of various ages, foraging on 12 February off Janzour beach at Tripoli, represented the largest concentration recorded so far in the database; 1–2 were also observed at two sites in the southern Gulf of Sirt. Previous highest total was 12 in 2007.

Black-crowned Night Heron *Nycticorax*

nycticorax

Twenty-three in total, of which 15 were roosting in reeds at Buhayrat al Majdhub, the westernmost of the Al Maqarin karstic lakes, Benghazi, on 7 February, and five under the nets of a small fish farm near Hun on 8 February.

Cattle Egret *Bubulcus ibis*

In total, 940 were counted at 15 sites, including 250 in full breeding plumage and on nests in the Bou Dzira reedbed heronry near Benghazi on 6 February (*cf.* Hering & Fuchs 2010). Close inspection of *c.*10 nests revealed that most of them were newly built or had been refurbished with green materials, but none had eggs. An evening count of the Bou Dzira heronry on the same day yielded 800 individuals (versus 547 counted during the day at all of the Benghazi wetlands and on the rubbish tip), raising the 2011 total to 1,193, the highest since 2005. Other heronries (*e.g.* at the tobacco factory in Tripoli), which might well have hosted substantial numbers, were not visited. A site visited for the first time, Misratah sewage farm, held 363 birds. Additional counts for sites / periods uncovered by our survey: ten at Sarir on 29 December 2010; 15 at the sewage farm and 30 at the camel market of Al Kufra on 31 December 2010; *c.*550 roosting at the sewage farm at Al Kufra on 3 January 2011; and 20 in irrigated fields of the Al Kufra government farm on 4 January 2011 (J. Hering *in litt.* 2012).

White Stork *Ciconia ciconia*

Beside a lower than average total (12) at wetlands, flocks were observed at two agricultural projects in the desert, 47 north-east of Sabha (at 27°23'32"N 15°02'21"E) on 10 February and 27 at Sarir on 29 January (Fig. 1), where *c.*120 had been present one month earlier (J. Hering *in litt.* 2012). Approximately 160 were also seen at Al Kufra government farm on 4 January 2011 (J. Hering *in litt.* 2012).

Greater Flamingo *Phoenicopterus roseus*

The total of 577 individuals was the lowest so far. This was due to a combination of locally unfavourable conditions at key sites such as Sabkhat Abu Kammash (which was totally dry), the Tawurgha complex (little water on the mudflats and only 60 flamingos, including



Figure 1. White Storks *Ciconia ciconia* on irrigated fields in the middle of the desert, Sarir, Libya, 29 January 2011 (Essam Bourass)

Cigognes blanches *Ciconia ciconia* dans des champs irrigués au milieu du désert, Sarir, Libye, 29 janvier 2011 (Essam Bourass)

37 at Al Hishah on 11 February) and Sabkhat Julyanah (lagoon drained; only three flamingos on 6 February). The best sites were Sabkhat al Kuz (214 on 7 February) and Sabkhat Urqub Jawwah, near Marsa al Burayqah airport, a site visited for the first time (108 on 4 February). Outside the surveyed sites and earlier in the same winter, five were recorded in the eastern desert at Lake Arashiyah and 22 at other lakes near Al Jaghub on 27 December 2010 (J. Hering *in litt.* 2012).

Greater Spotted Eagle *Aquila clanga*

An immature at Wadi Kaam dam on 11 February was the fifth record for Libya and the first in winter (Bundy 1976), as well as a new species for the 2005–10 winter dataset.

Water Rail *Rallus aquaticus*

Total 67 (previous max. 12, in 2006). The higher number is largely due to as many as 63 at five sites in the desert, some of which had not been visited previously, e.g. Quttah-Barqin and Wanzarik, which held 41 and 13 individuals, respectively, on 9 February. See also Massa & Visentin (2006) and Hering (2009) for the presence of this species at Libyan oases.

Common Crane *Grus grus*

Total for all Libyan wetlands: 910 (the highest since 2005), with 390 at the roosts of Mellahat al Mesherrek and Umm al Ez, in the Tawurgha wetlands complex, on 2 February. Relatively large flocks were also observed at several Jufrah wetlands and in the surrounding desert (333

birds on 8 February) and at Karkurah (147 on 5 February), with lower totals west of Tripoli and in the southern Gulf of Sirt. Away from wetlands, 1,097 were found in irrigated fields at Sarir Government Farm, in the middle of the desert, on 29 January (*c.* 1,200 there on 29–30 December 2010: J. Hering *in litt.* 2012). Given the absence of wetlands suitable for roosting both in the Jufrah and at Sarir, these flocks possibly spent the night on open-desert sands.

Eurasian Oystercatcher *Haematopus ostralegus*

Total 56, recorded, as usual, at the westernmost wetlands on the Libyan coast. Previous annual max. 41, in 2008.

Black-winged Stilt *Himantopus himantopus*

The overall total of 753 was more than twice the max. count in 2005–10. Previously identified key sites held comparable numbers to other years. The increase was mainly the product of counts at sites surveyed for the first time, including in the desert region (e.g. 66 at Quttah-Barqin lakes in the Shati Valley on 9 February) and by 121 individuals at Al Labadia near Al Marj, where unusually wet grasslands covered most of the former Al Ghariq Lake's surface (see also Northern Lapwing *Vanellus vanellus*).

Greater Sand Plover *Charadrius leschenaultii*

A single of this very scarce but regular winterer was found at the relatively western location of Sabkhat Qasr Ahmed on 2 February.

Little Ringed Plover *Charadrius dubius*

Total 30 (previous max. 18, in 2007), 14 of which were at four wetlands in the desert (e.g. six at Hijarah Lake on 10 February), nine (the largest group) at Ajdabiyah sewage farm on 5 February and seven at two of the Nafusa dams on 13 February.

Northern Lapwing *Vanellus vanellus*, **Common Snipe** *Gallinago gallinago* and **Green Sandpiper** *Tringa ochropus*

All three species were recorded in unprecedented numbers (Northern Lapwing: 96; Common Snipe: 352; Green Sandpiper: 80) mainly due to large counts in the wet grasslands at Al Labadia near Al Marj (69 Northern Lapwings, 263 Common Snipe and 17 Green Sandpipers on 7 February), at wetlands in the Fezzan desert for the latter two species (e.g. 20 Common Snipe at Quttah-Barqin lakes on 9 February) and at Ajdabiyah sewage farm for Northern Lapwing (22 on 5 February). In the previous winter at least 1,000 Common Snipe, with 25 Jack Snipe *Limnocyptes minimus*, were present in wet grasslands near Al Marj on 6 January 2010 (J. Hering *in litt.* 2012).

Spotted Redshank *Tringa erythropus*

Total 40 (previous max. 10, in 2007), 31 of which were at Sabkhat al Kuz on 7 February and seven at three wetlands in the desert regions of Jufrah and Shati.

Wood Sandpiper *Tringa glareola*

Total 87, 35 of which were in the Sabha and Shati desert regions (previous max. 36, in 2008, when Sabha and the Shati Valley were also visited). As many as 34 were counted at Al Labadia, in north Cyrenaica, where the grasslands were unusually flooded in 2011.

Black-headed Gull *Chroicocephalus ridibundus*

Recorded in the desert (an adult at Hijarah Lake on 10 February) and sparsely along the coast. The relatively low annual total (7,610) is mainly due to only 3,800 being recorded at Sabkhat Qanfudhah, a wetland adjacent to a refuse tip (numbers in the remainder of the Benghazi wetlands were similar to those of previous years).



Figure 2. Adult Franklin's Gull *Leucophaeus pipixcan*, Zuwarah harbour, Libya, 1 February 2011 (Nicola Baccetti)

Mouette de Franklin *Leucophaeus pipixcan* adulte, port de Zuwarah, Libye, 1 février 2011 (Nicola Baccetti)

Franklin's Gull *Leucophaeus pipixcan*

An adult in Zuwarah harbour on 1 February (Fig. 2). First record of this Nearctic gull for Libya. There are six records in Morocco (including one in December 2010) and one in Mauritania, but none in Tunisia and Algeria (Bergier *et al.* 2012, Isenmann *et al.* 2000, 2005, 2010). One observed at Luxor, Egypt, c.1 month later (http://www.chn-france.org/upload_content/eorc_report_8.pdf) was perhaps the same individual.

Pallas's Gull *Ichthyaelus ichthyaelus*

Total 14, at just three sites in the Gulf of Sirt (previous max. 8, in 2008). The tiny Sabkhat al Ghbeba, now almost totally dumped with solid waste, was confirmed as the most important Libyan site for this species, with six individuals on 3 February. Several adults were in full breeding plumage.

Yellow-legged Gull *Larus michahellis* and **Caspian Gull** *L. cachinnans*

Total for the two species combined: 945 (previous minimum 1,590). As with Black-headed Gull, small numbers at Sabkhat Qanfudhah were responsible for this low total. A careful scan of 350 *michahellis* / *cachinnans* in the Benghazi area (Sabkhat al Thama and Qanfudhah) on 6 February revealed all to be *cachinnans*. A further 195 individuals at Benghazi and Sabkhat al Kuz were attributed to *cachinnans*.

Little Tern *Sternula albifrons*

One at Farwah Lagoon on 1 February. Second published midwinter record for Libya (the first being of one in Tripoli harbour on 22 December 1970: Brehme *et al.* 2003), but flocks of up to 50 were recorded in the Benghazi urban wetlands on



Clockwise from top left

Figure 3. Merlin *Falco columbarius*, Sabkhat Kasr Ahmed, Libya, 2 February 2011 (Adriano De Faveri)

Faucon émerillon *Falco columbarius*, Sabkhat Kasr Ahmed, Libye, 2 février 2011 (Adriano De Faveri)

Figure 4. Thick-billed Lark *Ramphocoris clotbey*, between Sabha and Jabal as Sawda, Libya, 10 February 2011 (Adriano De Faveri)

Alouette de Clotbey *Ramphocoris clotbey*, entre Sabha et Jabal as Sawda, Libye, 10 février 2011 (Adriano De Faveri)

Figure 5. Rock Martin / Hirondelle isabelline *Ptyonoprogne fuligula*, Barqin, Shati Valley, Libya, 9 February 2011 (Adriano De Faveri)

Figure 6. Isabelline Wheatear / Traquet isabelle *Oenanthe isabellina*, Sabkhat al Waset, Libya, 4 February 2011 (Adriano De Faveri)



27 December 2009–7 January 2010 (J. Hering *in litt.* 2012). Several winter records in Tunisia and one in Algeria; the species overwinters along the West African coast (Isenmann *et al.* 2000, 2005).

Lesser Crested Tern *Thalasseus bengalensis*

A higher total than in most winters, with 15 roosting at Farwah Lagoon, three at Sabkhat al Manqub (both on 1 February) and one at Sabkhat al Ghbeba in the Gulf of Sirt on 3 February.

Whiskered Tern *Chlidonias hybrida*

Total 128 (previous max. 77, in 2005). As many as 105 were at six sites in the Benghazi area, including at the almost drained Sabkhat Julyanah, with 33 there on 6 February. In the west, 17 were at Wadi Kaam dam on 11 February.

Non-waterbirds

Occasional sightings of other species, mainly near wetlands, included five **Black-shouldered Kites** *Elanus caeruleus* at the Mashrua, near Birak, on

10 February; single **Merlins** *Falco columbarius* at two sites in the Tawurgha complex on 2 February (Fig. 3); a gathering of 66 **Eurasian Collared Doves** *Streptopelia decaocto* at Ajdabiyah sewage farm on 5 February (*cf.* Brehme *et al.* 2009, Yahia & Hamza 2011); two **Common Swifts** *Apus apus* at Misratah sewage farm on 2 February; a **Thick-billed Lark** *Ramphocoris clotbey* between Sabha and Jabal as Sawda (at 27°55'N 15°28'E) on 10 February (Fig. 4); **Rock Martins** *Ptyonoprogne fuligula* in the Shati and near Sabha (max. 40 at Quttah / Barqin on 9 February; Fig 5); >100 **Barn Swallows** *Hirundo rustica* at Sabkhat al Kuz and c.50 at Qaryunis near Benghazi on 6–7 February (smaller numbers at ten other sites); **Common House Martins** *Delichon urbicum* at 13 sites with max. 20 at Tabilbah; **Red-throated Pipits** *Anthus cervinus* at seven sites with max. 5 at Al Labadia on 7 February; three **Isabelline Wheatears** *Oenanthe isabellina* at Sabkhat al Waset on 4 February and singles at three sites in the Shati area (Fig. 6); a **Blue Rock Thrush** *Monticola solitarius* at Sabkhat Zuwaytinah on 5 February; one or two **Fieldfares** *Turdus pilaris* heard in palm trees at Wadi al Azrak on 2 February; two **Streaked Scrub Warblers** *Scotocerca inquieta* at Sabkhat al Washkah on 3 February; two **Spectacled Warblers** *Sylvia conspicillata* at Sabkhat al Kuz on 7 February; **Eurasian / African Reed Warblers** *Acrocephalus*



scirpaceus / *baeticatus* in full song at 13 sites with the largest total (c.20) at Quttah-Barqin lakes on 9 February; a **Great Reed Warbler** *A. arundinaceus* singing at Wanzarik on 9 February; and two **Spotted Flycatchers** *Muscicapa striata* at Al Labadia on 7 February.

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Appendix 1. Waterbird totals recorded at Libyan wetlands in January–February 2011.

For White Stork *Ciconia ciconia* and Common Crane *Grus grus*, numbers obtained outside wetlands (see text) are also included.

Annexe 1. Totaux des oiseaux d'eau recensés dans les zones humides libyennes en janvier–février 2011.

Pour la Cigogne blanche *Ciconia ciconia* et la Grue cendrée *Grus grus*, les nombres obtenus en dehors des zones humides (voir texte) ont également été inclus.

Species	Totals
Ruddy Shelduck	<i>Tadorna ferruginea</i> 1
Common Shelduck	<i>Tadorna tadorna</i> 298
Eurasian Wigeon	<i>Anas penelope</i> 7
Common Teal	<i>Anas crecca</i> 470
Mallard	<i>Anas platyrhynchos</i> 83
Northern Pintail	<i>Anas acuta</i> 156
Garganey	<i>Anas querquedula</i> 2
Northern Shoveler	<i>Anas clypeata</i> 1,146
Marbled Teal	<i>Marmaronetta angustirostris</i> 40
Common Pochard	<i>Aythya ferina</i> 197
Ferruginous Duck	<i>Aythya nyroca</i> 29



Tufted Duck	<i>Aythya fuligula</i>	19	Little Gull	<i>Hydrocoloeus minutus</i>	4
Yelkouan Shearwater	<i>Puffinus yelkouan</i>	5	Franklin's Gull	<i>Leucophaeus pipixcan</i>	1
Northern Gannet	<i>Morus bassanus</i>	40	Mediterranean Gull	<i>Ichthyaeus melanocephalus</i>	320
Great Cormorant	<i>Phalacrocorax carbo</i>	1,331	Audouin's Gull	<i>Ichthyaeus audouinii</i>	279
Little Bittern	<i>Ixobrychus minutus</i>	1	Pallas's Gull	<i>Ichthyaeus ichthyaeus</i>	14
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	23	Common Gull	<i>Larus canus</i>	4
Cattle Egret	<i>Bubulcus ibis</i>	1,193	Lesser Black-backed Gull	<i>Larus fuscus</i>	3,388
Little Egret	<i>Egretta garzetta</i>	120	Yellow-legged Gull	<i>Larus michahellis</i>	500
Great Egret	<i>Egretta alba</i>	17	Caspian Gull	<i>Larus cachinnans</i>	445
Grey Heron	<i>Ardea cinerea</i>	198	gulls	<i>Laridae spp.</i>	22
Purple Heron	<i>Ardea purpurea</i>	3	Little Tern	<i>Sternula albifrons</i>	1
White Stork	<i>Ciconia ciconia</i>	86	Caspian Tern	<i>Hydroprogne caspia</i>	87
Glossy Ibis	<i>Plegadis falcinellus</i>	37	Sandwich Tern	<i>Thalasseus sandvicensis</i>	314
Eurasian Spoonbill	<i>Platalea leucorodia</i>	145	Lesser Crested Tern	<i>Thalasseus bengalensis</i>	19
Greater Flamingo	<i>Phoenicopterus roseus</i>	577	Whiskered Tern	<i>Chlidonias hybrida</i>	128
Little Grebe	<i>Tachybaptus ruficollis</i>	108	Common Kingfisher	<i>Alcedo atthis</i>	5
Great Crested Grebe	<i>Podiceps cristatus</i>	170	Total		35,890
Black-necked Grebe	<i>Podiceps nigricollis</i>	267			
Marsh Harrier	<i>Circus aeruginosus</i>	69			
Hen Harrier	<i>Circus cyaneus</i>	2			
Pallid Harrier	<i>Circus macrourus</i>	1			
Greater Spotted Eagle	<i>Aquila clanga</i>	1			
Osprey	<i>Pandion haliaetus</i>	2			
Water Rail	<i>Rallus aquaticus</i>	67			
Common Moorhen	<i>Gallinula chloropus</i>	403			
Eurasian Coot	<i>Fulica atra</i>	284			
Common Crane	<i>Grus grus</i>	2,007			
Eurasian Oystercatcher	<i>Haematopus ostralegus</i>	56			
Black-winged Stilt	<i>Himantopus himantopus</i>	753			
Pied Avocet	<i>Recurvirostra avosetta</i>	31			
Eurasian Thick-knee	<i>Burhinus oedinenus</i>	12			
Cream-coloured Courser	<i>Cursorius cursor</i>	11			
Little Ringed Plover	<i>Charadrius dubius</i>	30			
Common Ringed Plover	<i>Charadrius hiaticula</i>	101			
Kentish Plover	<i>Charadrius alexandrinus</i>	873			
Greater Sand Plover	<i>Charadrius leschenaultii</i>	1			
Eurasian Dotterel	<i>Charadrius morinellus</i>	11			
Eurasian Golden Plover	<i>Pluvialis apricaria</i>	205			
Grey Plover	<i>Pluvialis squatarola</i>	161			
Northern Lapwing	<i>Vanellus vanellus</i>	96			
Sanderling	<i>Calidris alba</i>	100			
Little Stint	<i>Calidris minuta</i>	977			
Temminck's Stint	<i>Calidris temminckii</i>	3			
Curlew Sandpiper	<i>Calidris ferruginea</i>	11			
Dunlin	<i>Calidris alpina</i>	2,800			
Small waders	<i>Calidris spp.</i>	394			
Ruff	<i>Philomachus pugnax</i>	252			
Jack Snipe	<i>Limnocyptes minimus</i>	4			
Common Snipe	<i>Gallinago gallinago</i>	352			
Black-tailed Godwit	<i>Limosa limosa</i>	1			
Bar-tailed Godwit	<i>Limosa lapponica</i>	17			
Whimbrel	<i>Numenius phaeopus</i>	3			
Eurasian Curlew	<i>Numenius arguata</i>	678			
Common Sandpiper	<i>Actitis hypoleucos</i>	27			
Green Sandpiper	<i>Tringa ochropus</i>	80			
Spotted Redshank	<i>Tringa erythropus</i>	40			
Common Greenshank	<i>Tringa nebularia</i>	40			
Marsh Sandpiper	<i>Tringa stagnatilis</i>	5			
Wood Sandpiper	<i>Tringa glareola</i>	87			
Common Redshank	<i>Tringa totanus</i>	792			
Large waders	<i>Tringa sp.</i>	69			
Ruddy Turnstone	<i>Arenaria interpres</i>	69			
wader spp.		270			
Slender-billed Gull	<i>Chroicocephalus genei</i>	3,732			
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	7,610			

Appendix 2. Coordinates of localities mentioned

Annexe 2. Coordonnées des localités citées

Ajdabiyah sewage farm	30°41'41"N 20°15'32"E
Al Jaghub	c.29°36'N 24°43'E
Al Kufra	c.24°12'N 23°16'E
Al Labadia	32°30'17"N 20°53'35"E
Al Maqarin karstic lakes	32°09'33"N 20°08'19"E
Al Marj	32°30'17"N 20°53'35"E
Ayn Tawurgha	32°00'50"N 15°06'26"E
Bou Dzira	32°10'06"N 20°07'55"E
Farwah Lagoon	33°05'17"N 11°45'37"E
Hijarah Lake	27°03'32"N 14°28'15"E
Hun	29°09'06"N 15°51'21"E
Jufrah	c.29°17'N 16°00'E
Lake Arashiyah	29°36'38"N 24°51'37"E
Mashrua	27°29'48"N 14°20'04"E
Mellahat al Mesherrek	31°58'00"N 15°08'07"E
Misratah sewage farm	32°19'35"N 15°08'43"E
Nafusa dams	c.32°07'N 12°48'E
Quttah-Barqin lakes	27°32'05"N 13°37'12"E
Sabha	c.27°01'N 14°26'E
Sabkhat Abu Kammash	33°05'02"N 11°35'38"E
Sabkhat al Ghbeba	31°12'59"N 16°22'22"E
Sabkhat al Kuz	32°26'27"N 20°26'00"E
Sabkhat al Manqub	32°54'34"N 12°07'25"E
Sabkhat al Thama	32°08'58"N 20°06'10"E
Sabkhat al Waset	30°43'05"N 18°15'05"E
Sabkhat al Washkah	31°25'56"N 15°35'05"E
Sabkhat Julyanah	32°05'25"N 20°03'34"E
Sabkhat Karkurah	31°24'04"N 20°03'18"E
Sabkhat Qanfudhah	32°00'01"N 19°59'19"E
Sabkhat Qaryunis	c.32°04'N 20°02'E
Sabkhat Qasr Ahmed	32°09'37"N 15°19'36"E
Sabkhat Tabilbah	30°27'37"N 19°42'58"E
Sabkhat Umm al Ez	31°59'18"N 15°12'04"E
Sabkhat Urqub Jawwah	30°22'47"N 19°32'20"E
Sabkhat Zuwaytinah	30°48'33"N 20°02'56"E
Sarir	c.27°39'N 22°30'E
Sarir Government Farm	27°44'27"N 22°04'15"E
Shati Valley	c.27°29'N 14°00'E
Tawurgha complex	c.32°00'N 15°06'E
Tripoli harbour	32°54'06"N 13°11'31"E
Wadi al Azrak	32°00'00"N 15°09'00"E
Wadi Kaam dam	32°23'48"N 14°19'45"E
Wanzarik	27°28'17"N 13°19'19"E
Zuwarah harbour	32°55'23"N 12°07'17"E