GENERAL INTRODUCTION

The Socialist People’s Libyan Arab Jamahiriya, or Libya, lies on the north coast of Africa, between Egypt to the east, Tunisia and Algeria to the west and Niger, Chad and Sudan to the south; while to the north it is bounded by the Mediterranean Sea. It has an area of 1,759,540 km². The population in 1995 was 5,248,400, with an annual growth-rate of 3.7% and an average life expectancy of 64. The capital city is Tripoli, also known as Tarabalus, and the country is divided administratively into 25 regions. The vast majority of the population (97%) is Sunni Muslim. The average population density is only 3.0 persons/km², but this figure disguises the fact that the majority of the population live on the coastal plain while the vast desert interior is extremely sparsely populated.

Libya gained its independence from Italy in 1951. It has an average gross domestic product of $5,410 per capita (1990), based principally on the export of petroleum, natural gas and gypsum. The country’s water resources are limited. The amount of irrigated land in Libya was only some 2,420 km² in 1989, and as much as 75% of the country’s food is imported. However, there are vast underground aquifers in the Sahara which are being tapped by the ‘Great Artificial River Project’, reputed to be the world’s largest engineering endeavour, which seeks to pipe water over vast distances from the interior to the populated coastal region.

Libya’s coastline is 1,770 km long. The central coastal region is dominated by the Gulf of Sirt (Sirte, Sidra, Surt), where the continental shelf extends nearly 200 km offshore and whose shallow waters support the second-largest seagrass meadows in the Mediterranean. On the western side of the Gulf of Sirt the coastal plain is 50–70 km wide before rising gently towards Jabal Tarabalus, a limestone ridge 300–600 m high which extends away south-westwards towards the Tunisian border. North-west of Jabal Tarabalus the land descends again to the coastal Jifarah plain. South and south-east of the Gulf of Sirt the coastal plain merges into a vast area of some 200,000 km² below the 100 m contour, and an equal area below 200 m. To the east of the Gulf, however, the coastal plain narrows to 10–15 km wide, beyond which the land rises to Jabal al Akhdar, a plateau 300–600 m high and 70 km wide, which extends for 200 km parallel with and immediately inland of the coast. On its southern side it slopes down to the interior plain. Further east, towards the Egyptian border, the coastline is low-lying and backed by undulating land with sparse vegetation cover. Tides are weak along the Libyan coast, with a maximum amplitude of 40 cm west of Tripoli, where there are areas of mudflats and saltmarsh vegetation in the Bay of Bu Kammash, in the extreme west. Saline pans and marshes form in places where seasonal water flow from wadis collects in depressions behind the coastal dunes. These areas—‘sabkhat’—support halophytic vegetation. Important examples include Sabkhat Tawargha, which runs parallel to the coast for some 100 km on the western side of the Gulf of Sirt, and a series of smaller salt pans on the Benghazi coast, from Qaminis to Tukrah (Al Aquriyah).

Away from coastal wetlands Libya has minimal surface water. There are no permanent rivers, but many wadis, watercourses of...
temporary streams. These fill quickly after rains but dry out again almost as rapidly. Many wadis are fed by rainfall from upland areas and often feed into depressions in the surrounding desert to form ephemeral pools. In addition, surface water is present in oases where the water-table of the extensive underground aquifers breaks the surface in desert depressions, where capillary action brings water to the surface or where water is forced up under pressure into surface springs. There are three important groups of oases in Libya; around the town of Ghat in the extreme south-west of the country close to the Algerian border; in the region of Sabha in the central south-west; and those of Kufrah in the south-east. There are, in addition, several smaller groups of oases in central and eastern parts.

Permanent pools within oases are vegetated with emergents such as *Juncus* spp., *Phragmites australis*, *Scirpus holoschoenus* and *Typha capensis* and submerged species including *Ceratophyllum demersum*, *Potamogeton* spp. and *Chara* spp. Oases have enabled human habitation and development in the surrounding regions, based on the cultivation of barley, vegetables, fruits, cotton and, particularly, date-palms; all of which have largely replaced the original vegetation. Only small patches of the indigenous *Tamarix* bushes and *Hyphaene* palms remain.

Three quarters of Libya is covered by sand desert, broken only by oases and a number of isolated mountainous regions. The latter include the Hammadah al Hamra, a vast rocky plateau covering 49,000 km² at an altitude of 600–700 m and lying adjacent to the Algerian border, to the south of the coastal Jifarah plain. Jabal Tarabalus represents the northern edge of this region. It is characterized by extensive gravel-plains, sparsely vegetated with scattered bushes. The Tassili mountains extend into the south-west corner of Libya from Algeria, the Tibesti mountains of Chad reach northwards into Libya, and Jabal al Ayyanat (1,893 m) marks the meeting point of the borders of Libya, Sudan and Egypt. In the centre of the country, east of Sabha, the volcanic mountain of Al Haruj al Aswad rises to 1,200 m from the surrounding sand-plain.

Libya’s coastal region has a Mediterranean vegetation, particularly well developed in the north-east. Thus, in the mountains and gorges of Jabal al Akhdar there are relict wooded communities characterized by *Quercus*, *Juniperus*, *Cupressus*, *Pinus* and *Cedrus* spp., as well as thicket of *Olea* spp. and *Pistacia lentiscus*. The total wooded area of the country is approximately 6,800 km². The Mediterranean zone is fringed by semi-desert grassland or steppe vegetation, particularly on the Jifar plain behind Tripoli. Across the majority of the country the sand desert supports little vegetation. On some fixed dunes there grow a few perennial species which form

---

**Map 1. Location and size of Important Bird Areas in the Socialist People’s Libyan Arab Jamahiriya.**

**Table 1. Summary of Important Bird Areas in the Socialist People’s Libyan Arab Jamahiriya.**

<table>
<thead>
<tr>
<th>IBA code</th>
<th>Site name</th>
<th>Administrative region</th>
<th>Criteria (see p. 11; for A3 codes, see Table 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LY001</td>
<td>Karabolli</td>
<td>Tarabulus</td>
<td>✔️ ✔️ ✔️</td>
</tr>
<tr>
<td>LY002</td>
<td>Jabal al Akhdar</td>
<td>Al Jabal al Akhdar, Damah</td>
<td>✔️ ✔️</td>
</tr>
<tr>
<td>LY003</td>
<td>Benghazi</td>
<td>Benghazi</td>
<td>✔️ ✔️ ✔️</td>
</tr>
<tr>
<td>LY004</td>
<td>Geziret al Ela-</td>
<td>Tripoli</td>
<td>✔️ ✔️ ✔️</td>
</tr>
<tr>
<td></td>
<td>Ayn al Ghazalah Bay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LY005</td>
<td>Nethusa</td>
<td>Gharyan</td>
<td>✔️ ✔️ ✔️</td>
</tr>
<tr>
<td>LY006</td>
<td>Geziret Gahar</td>
<td>Ajdahiba</td>
<td>✔️ ✔️ ✔️</td>
</tr>
<tr>
<td>LY007</td>
<td>Zallaf</td>
<td>Sabha, Ash Shati, Awbari</td>
<td>✔️ ✔️ ✔️</td>
</tr>
<tr>
<td>LY008</td>
<td>Ghat oases</td>
<td>Awbari</td>
<td>✔️ ✔️ ✔️</td>
</tr>
</tbody>
</table>

Total number of IBAs qualifying: 1 6 3 3

1 2 3 4 5 6 7 8

EAST AFRICA

**Area of IBA (ha)**

- 100,000 to 99,999
- 50,000 to 99,999
- 10,000 to 49,999
- 1,000 to 9,999
- 100 to 999
- <100

**Table 2. Area of Important Bird Areas (ha).**

<table>
<thead>
<tr>
<th>IBA code</th>
<th>Site name</th>
<th>Administrative region</th>
<th>Area of IBA (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LY001</td>
<td>Karabolli</td>
<td>Tarabulus</td>
<td>&lt;100</td>
</tr>
<tr>
<td>LY002</td>
<td>Jabal al Akhdar</td>
<td>Al Jabal al Akhdar, Damah</td>
<td>100 to 999</td>
</tr>
<tr>
<td>LY003</td>
<td>Benghazi</td>
<td>Benghazi</td>
<td>100 to 999</td>
</tr>
<tr>
<td>LY004</td>
<td>Geziret al Ela-</td>
<td>Tripoli</td>
<td>100 to 999</td>
</tr>
<tr>
<td></td>
<td>Ayn al Ghazalah Bay</td>
<td></td>
<td>100 to 999</td>
</tr>
<tr>
<td>LY005</td>
<td>Nethusa</td>
<td>Gharyan</td>
<td>100 to 999</td>
</tr>
<tr>
<td>LY006</td>
<td>Geziret Gahar</td>
<td>Ajdahiba</td>
<td>100 to 999</td>
</tr>
<tr>
<td>LY007</td>
<td>Zallaf</td>
<td>Sabha, Ash Shati, Awbari</td>
<td>100 to 999</td>
</tr>
<tr>
<td>LY008</td>
<td>Ghat oases</td>
<td>Awbari</td>
<td>100 to 999</td>
</tr>
</tbody>
</table>

Total number of IBAs qualifying: 1 6 3 3
ORNITHOLOGICAL IMPORTANCE

The most recent review of the avifauna of Libya is that of Bundy (1976). He listed 317 species, of which 92 were then known to breed. Of the remainder, 145 species were regular non-breeding migrants and a further 80 were only known as occasional or accidental visitors.

Five species of global conservation concern are known to occur in Libya, of which one, Falco naumanni (VU), is known to breed regularly. While there are a couple of breeding records of Aythya nyroca (VU), it occurs more commonly as a non-breeding winter visitor. The remaining three species, Circus macrourus (NT), Tetrax tetrax (NT) and Larus audouinii (CD), are known as non-breeding visitors only. No species of restricted range are known, but the country holds a number of species that are restricted to two particular biomes. The Mediterranean North Africa biome (A01) extends in a narrow strip along the Libyan coast, and holds (in Libya) 12 of the 17 species restricted to this biome. The Sahara–Sindian biome (A02) covers the rest of the country and holds 14 of the 22 species of this biome. There are important breeding colonies of terns (Sternidae) along the Libyan coast, and a number of oases in the southern desert are important for migrants.

CONSERVATION INFRASTRUCTURE AND PROTECTED-AREA SYSTEM

Statutory responsibility for conservation in Libya lies with the General Secretariat of Agricultural Reclamation and Land Reform. Five species of global conservation concern are known to occur in Libya, of which one, Falco naumanni (VU), is known to breed regularly. While there are a couple of breeding records of Aythya nyroca (VU), it occurs more commonly as a non-breeding winter visitor. The remaining three species, Circus macrourus (NT), Tetrax tetrax (NT) and Larus audouinii (CD), are known as non-breeding visitors only. No species of restricted range are known, but the country holds a number of species that are restricted to two particular biomes. The Mediterranean North Africa biome (A01) extends in a narrow strip along the Libyan coast, and holds (in Libya) 12 of the 17 species restricted to this biome. The Sahara–Sindian biome (A02) covers the rest of the country and holds 14 of the 22 species of this biome. There are important breeding colonies of terns (Sternidae) along the Libyan coast, and a number of oases in the southern desert are important for migrants.

Table 2. The occurrence of biome-restricted species at Important Bird Areas in the Socialist People’s Libyan Arab Jamahiriya. Sites that meet the A3 criterion are highlighted in bold.

<table>
<thead>
<tr>
<th>A01 – Mediterranean North African biome (12 species in Libya; six sites meet the A3 criterion)</th>
<th>001 002 004 005 007 008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alectoris barbara</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Ramphocelus clothae</td>
<td></td>
</tr>
<tr>
<td>Chersophilus duponti</td>
<td></td>
</tr>
<tr>
<td>Phoenicurus moussieri</td>
<td>✓</td>
</tr>
<tr>
<td>Oenanthe leucura</td>
<td>✓</td>
</tr>
<tr>
<td>Oenanthe media</td>
<td>✓</td>
</tr>
<tr>
<td>Oenanthe franciscus</td>
<td>✓</td>
</tr>
<tr>
<td>Sylvia melanoleucura</td>
<td>✓ ✓ ✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Sylvia cantillata</td>
<td>✓</td>
</tr>
<tr>
<td>Sylvia conspicillata</td>
<td>✓ ✓ ✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Sylvia deserticola</td>
<td>✓ ✓ ✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Number of species recorded:</td>
<td>3 2 3 6 4 3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A02 – Sahara–Sindian biome (14 species in Libya; three sites meet the A3 criterion)</th>
<th>001 002 004 005 007 008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Falco concolor</td>
<td>✓ ✓ ✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Pterocles senegalus</td>
<td>✓</td>
</tr>
<tr>
<td>Pterocles coronatus</td>
<td>✓</td>
</tr>
<tr>
<td>Babo alcalphas</td>
<td>✓</td>
</tr>
<tr>
<td>Ammomanes cincturus</td>
<td>✓</td>
</tr>
<tr>
<td>Ammomanes deserti</td>
<td>✓</td>
</tr>
<tr>
<td>Alcedo atthis</td>
<td>✓ ✓ ✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Hirundo obsOLETA</td>
<td>✓</td>
</tr>
<tr>
<td>Oenanthe leucopyga</td>
<td>✓</td>
</tr>
<tr>
<td>Oenanthe lugens</td>
<td>✓</td>
</tr>
<tr>
<td>Turdus philomelos</td>
<td>✓ ✓ ✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Scotocerca inquisita</td>
<td>✓</td>
</tr>
<tr>
<td>Rhodospiza sanguinea</td>
<td>✓</td>
</tr>
<tr>
<td>Passer simplex</td>
<td>✓ ✓ ✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Number of species recorded:</td>
<td>1 1 3 7 8</td>
</tr>
</tbody>
</table>

This organization is divided into a number of committees including the Technical Committee of Wildlife and National Parks, which oversees the administration of Kouf, Hesha and Karaboll National Parks. The Forestry Department of the General Secretariat is responsible for forestry issues. Also within the General Secretariat of Agricultural Reformation and Land Reform is the Technical Centre for Environment Protection, established in 1986 to work as a consulting agency for the resolution of environmental problems, as well as to monitor violations of the law by other organizations, both private and governmental, and to disseminate information to increase environmental awareness.

In addition, the legislation to create a network of National Parks was established by the National Park Decree of the Council of Ministers of 1978. National Park status allows for the prohibition of grazing, hunting and fishing, building development, agriculture, mining, pest control and access. Three National Parks, two Nature Reserves and one Protected Area have been legally established, covering 173,000 ha, and some 20–30 further sites have been recommended for some form of protected status.

INTERNATIONAL MEASURES RELEVANT TO THE CONSERVATION OF SITES

Libya has ratified the Convention to Combat Desertification, the Convention on Climate Change, the World Heritage Convention (under which five archaeological, but no natural, sites have been designated, to date), the Ramsar Convention on Wetlands (with two designated sites) and has signed, but not ratified, the Convention on Biological Diversity (CBD). Libya is also a party to the Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean. Kouf National Park is listed in the Protocol concerning Mediterranean Specially Protected Areas, a Protocol of the Barcelona Convention.

OVERVIEW OF THE INVENTORY

A total of eight Important Bird Areas (IBAs) have been identified, covering 2,865 km², equivalent to c.0.16% of Libya’s total land area (Map 1, Table 1). This relatively low total reflects the lack of available data on birds in Libya. There have been some recent studies in coastal areas, but little is known of the birds of the country’s vast interior as yet. Four of the eight IBAs have protected-area status, one is partially protected and the other three are unprotected.

Only one site qualifies under the A1 criterion for the regular and significant presence of species of global conservation concern, on the basis of numbers of breeding Falco naumanni. It is probable that other sites holding significant colonies of F. naumanni exist, but have yet to be identified. The remaining species of global conservation concern, all migrants or non-breeding visitors, are not currently known to occur regularly or in significant numbers at sites. Three coastal wetlands have been identified for...
congregatory waterbirds, including two offshore islands holding breeding colonies of terns (Sterna neglecta). No wetland is known to hold more than 20,000 waterbirds.

Six sites qualify under the A3 criterion for species characteristic of the Mediterranean North Africa biome, between them holding nine of the 12 species known from Libya. Three sites similarly meet the A3 criterion for the Sahara–Sindian biome, holding 11 of the 14 species in Libya, with two of the three remaining species occurring at other IBAs. A number of the selected sites are currently known to hold relatively few of the species of the biome, but this is thought to be due, at least in part, to inadequate knowledge of the sites, and more biome species may be expected to occur. However, as well as further surveys at selected sites, additional IBAs also need to be identified.

ACKNOWLEDGEMENTS

The following people provided unpublished information for the completion of this inventory, for which we are exceedingly grateful: Mr Peter L. Meininger, Dr Dawd Said Dawd, Dr J. Joel Prashant, Dr Derek Scott, Professor Bruno Massa and Dr Lyndon Cornwallis.

GLOSSARY

erg sand desert
jabal mountain or hill
sebkha saltflat
wadi desert valley, usually dry except after heavy rainfall

SITE ACCOUNTS

Karabolli
Admin region Tarabulus
Coordinates 32°45'N 13°35'E
Area 15,000 ha Altitude 0–20 m
LY001
A3 (A01)
National Park

Site description
Karabolli (Garabulli, Qarabulli) is situated in north-west Libya on the Mediterranean coastal plain. It is located some 50 km east of Tripoli and 2 km north of the town of AlGarabulli (Al Qarabulli). The park is approximately rectangular in shape and is bounded by the Wadi Ramal in the west, Wadi Turghat in the east and extends up to 7 km inland from the coast. A third watercourse, the Wadi Al Mashid, runs through the site. These perennial streams are spring-fed and are generally slow-flowing except after rain. Wadi al Mashid is particularly slow and meandering and is surrounded by muddy areas and wet flushes. Wadi Ramal feeds into a small (1 ha) saline lagoon just behind the beach. The site consists of rolling continental sand-dunes, with sandy beaches and rocky shores backed by low, eroded sandstone cliffs. There are extensive seagrass Posidonia oceanica beds in the marine zone. The dunes are sparsely vegetated with marram grass Ammophila arenaria and Tamarix spp. and there is a natural scrub vegetation and areas of open pasture in some of the interdune basins while, beyond the dunes, there are open grass plains with low thorn scrub. Communities of Typha and Juncus spp., along with Phragmites australis reedbeds, interspersed with the shrubby Tamarix spp., occur beside springs and ponds in the wadis. In Wadi Turghat reedbeds extend for 2 km from the river mouth. However, most of the vegetation within the reserve is introduced, with sand-stabilizing plantations of Acacia and Eucalyptus spp. the most widespread habitat. In addition, tamarisk Tamarix spp., poplar Populus spp., pine Pinus spp., Acacia tortilis, ficus indica and date-palm Phoenix dactylifera have also been planted.

Birds
See Box and Table 2 for key species. To date, some 99 species have been recorded. More than 45 Larus audouinii were present in 1982. The site is particularly important for Palearctic passage migrants. In addition, one species of the Sahara–Sindian biome (A02) has been recorded (see Table 2).

Other threatened/endemic wildlife
Mammals of global conservation concern include Hyaena hyaena (LR/nt).

Conservation issues
The area was designated a National Park in 1992. Clearance of the original coastal woodland led to serious soil erosion. To counter this exotic Acacia and Eucalyptus spp. were planted to stabilize the dunes. This provides poor habitat for wildlife and, as the stabilized soils are colonized by native plants, the introduced vegetation should be cleared. The remaining natural vegetation is threatened by sheep-grazing and cultivation is encroaching on the site. Hunting bans have been instituted in the past, but the current situation is unknown. The introduction or reintroduction of a number of mammal species has been proposed.

Further reading

Jabal al Akhdar
Admin region Al Jabal al Akhdar, Darnah
Coordinates 32°40'N 21°40'E
Area 100,000 ha Altitude 0–850 m
LY002
A1, A3 (A01)
National Park, Unprotected

Site description
The site includes Kouf National Park which lies 150 km north-east of Benghazi, next to the town of Al Bayda (Beida). The park includes a 20 km stretch of coast and extends southwards into the Jabal al Akhdar massif. The main Benghazi–Tubruk (Tobruk) road traverses the park. The coastal section of the park consists of sandy beaches interspersed with rock outcrops and coastal cliffs. Behind the beach is a disjointed band of sand-dunes which are fringed on the landward side by shallow, seasonal brackish lagoons. The coastal strip and dunes are covered with the grasses Ammophila arenaria and Agropyron junceum together with scattered shrubs. The woody plants Limoniana monopetala and Tamarix nilotica are also common on the dunes. Species found on the seasonal mudflats include the halophytes Suaeda fruticosa and Cakile maritima. The edges of permanent water are lined with Phragmites australis.

Also included is a large section of Jabal al Akhdar, a limestone massif reaching 850 m. Wadis up to 200 m deep cut steep-sided gorges into the limestone. The vegetation is mainly dense maquis shrubland, in which Juniperus phoenicia is common. The maquis grades in places into garrigue with abundant herbaceous communities. Associated with the juniper are Cupressus sempervirens, Pistacia lentiscus and P. atlantica; along with Myrtus communis, Olea europaea and Rhumus spp. The vegetation of the rocky slopes includes Cichorium spinosum, Alkanna tinctoria, Urtica maritima and grasses. Cupressus sempervirens grows in the gorges along with Quercus coccifera trees up to 10 m high in the more sheltered areas. The shrubs Smilax aspera, Viburnum tinus and Pistacia lentiscus are also common amongst the rocks. There is no permanent water except for small springs by the sebkha lagoon of Ayn al Shaqq while the wadis carry water only for short periods following heavy rains, mainly during November to February; annual rainfall is in the range 300–700 mm.

Birds
See Box and Table 2 for key species. At least 27 pairs of Falco naumanni were recorded breeding in 1998. It is likely that more species of the Mediterranean North Africa biome will be found to occur. In addition, one species of the Sahara–Sindian biome (A02) has been recorded (see Table 2). Breeding species include Aquila chrysaetos, Alectoris barbara, Pterocles spp. and Chlamydositt undulata. The brackish lagoons are important for herons, ducks and waders as well as Ciconia nigra and C. ciconia.
Other threatened/endemic wildlife

The seal *Monachus monachus* (CR) has been reported in the past, but its current status is unknown. Other marine mammals recorded offshore include *Tursiops truncatus* (DD). The sea-turtle *Caretta caretta* (EN) nests on beaches in the park. Among the flora, notable North African endemics include *Arbutus pavarri* (V), *Arum cyrenaicum*, *Thapsia garganica* sylphium, *Ornithogalum barba-carpa*, *Origanum cyrenaicum*, *Athamanta della-cellae*, *Crocos boulkisi* (V) and *Cyclamen rohssianum* (V). Approximately 90% of Libya’s flora has been recorded from the park.

Conservation issues

The site includes Kouf National Park which was first designated a Nature Reserve in 1978 and became established as a National Park in 1979. The park originally covered 32,122 ha, but has reportedly become restricted to only 9,000 ha. Jabal al Akhdar is the second-most populous region of Libya and has been inhabited for many centuries. However, the natural vegetation of the site appears not to have been cleared in historic times. There are at least 229 sites of archaeological importance in the area. In 1984, 2,500 people were living within the park; their livelihoods were based on pastoralism and the cultivation of olives and barley. At least until recently the park suffered from excessive grazing, timber exploitation, hunting and illicit woodland fires. There is also concern over the introduction of exotic animal species and the misuse of firearms and agricultural chemicals. In addition, there is heavy pressure from tourists, with 100,000 visiting the site in 1980, rising to 300,000 in 1985. The park is seen as a key resource for national and international tourism as well as for education and the conservation of wildlife.

Further reading

and self-regenerating date-palm *Phoenix dactylifera*. On the lower slopes and foothills there are pockets of natural vegetation, consisting of spiny cushion plants and *Juniperus* spp. and *Pistacia* spp. woodland, surrounded by extensive plantations of introduced *Acacia* spp., *Pinus* spp. and *Eucalyptus* spp. Average annual rainfall is about 400 mm.

### Birds

See Box and Table 2 for key species. There have been no full surveys, but at least 46 species are known to occur.

**Key species**
- A3: Mediterranean North Africa biome: Six of the 12 species of this biome that occur in Libya have been recorded at this site; see Table 2.
- A1: Sahara-Sindian biome: Three of the 14 species of this biome that occur in Libya have been recorded at this site; see Table 2.

### Other threatened/endemic wildlife

The fauna includes the North African endemic gundi *Ctenodactylus gundi*.

### Conservation issues

The site was established as a Protected Area in 1978/79. The area is populated by the Neftuha Berber people. Overgrazing by sheep and goats has led to the loss of much of the natural vegetation of the area which has resulted in soil erosion. Exotic tree species have been planted in attempts to combat further erosion. Where grazing has been excluded the regeneration of natural vegetation has been rapid. The site is easily accessible from numerous adjacent towns and recreation, centred on the reservoir, is a significant land-use. The dam has affected seasonal water flow in Wadi Ghan.

### Further reading


**Gezeit Garah**

Admin region Ajdabiya
Coordinates 30°48'N 19°54'E
Area 5 ha
Altitude 0–8 m

**LY006**

A3i Unprotected

**Site description**

Gezeit Garah is a small, sandstone island lying 12 km offshore in the Gulf of Surt (Surt, Sirt), some 20 km west-south-west of the town of Azzuwaytin (Zuwaytinah). It measures some 150 x 300 m. On the northern, western and eastern sides there are low cliffs resulting from wave erosion. The southern side is more sheltered and slopes gradually to the sea, with some small sandy beaches. The island is sparsely vegetated with low, scattered bushes.

**Birds**

See Box for key species. The colony of *Sterna bengalensis* on the island represents 95% of the breeding population of the species in the Mediterranean. The only other species that breeds on the island is *Larus cachinnans*.

**Key species**
- A3i: *Sterna bengalensis* breeding (pairs) 1,700 (1993) non-breeding

### Other threatened/endemic wildlife

None known to BirdLife International.

### Conservation issues

The fishing areas for terns from the colony appear to lie not only in the waters immediately surrounding the island, but also in areas at some distance from it. Protection of the island and the seas adjacent to it may not, therefore, be sufficient to ensure the protection of the colony. The island lies within sight of a large oil-processing plant which presents a serious potential risk of pollution. There is no evidence of direct human disturbance on the island.

**Further reading**

Meininger and Wolf (1994), Meininger et al. (1994a, b), Moltoni (1938).
and sandy desert. Much of the natural vegetation in these areas of transition have been cleared for agriculture.

**Birds**

See Box and Table 2 for key species. In addition, *Aythya nyroca*, *Circus macrourus* and *Falco naumanni* have been recorded on page 4.

**Key species**

A1 (A01) Mediterranean North Africa biome: Three of the 12 species of this biome that occur in Libya have been recorded at this site; see Table 2.

A1 (A02) Saharan-Sindian biome: Eight of the 14 species of this biome that occur in Libya have been recorded at this site; see Table 2.

**BIBLIOGRAPHY**


**Other threatened/endemic wildlife**

Three species of fish occur naturally in the pools: *Barbus deserti* (type-locality), *Clarias lazera* and *Hemichromis bimaculatus*.

**Conservation issues**

There is great pressure on the remaining areas of natural vegetation of the oasis as a result of expanding agriculture, particularly date-palm plantations.

**Further reading**
