

2.2 DJIBOUTI

Introduction

Djibouti has an area of 23 000 km², a population of 330 000 (1983) and therefore a mean population density of 14.3 persons/km². It stretches 200 km from north to south between latitudes 10°54' and 12°26'N, and 175 km from west to east between longitudes 41°46' and 43°26'E. It is bounded by Ethiopia in the north, west and south, but has a 66 km border with Somalia in the southeast, while in the east it has a frontage to the Gulf of Aden and the mouth of the Red Sea.

The coastline is 375 km long and includes the Gulf of Tadjoura which runs E-W and penetrates 120 km inland to the centre of the country. The coastal plain is 10 -30 km wide, but in the bay (Ghoubet Kharab) at the head of the Gulf of Tadjoura, a low ridge, scarcely 3 km wide, separates the sea from a SE-NW depression which sinks to 155 m below sea level. On either side of the depression mountains rise steeply; to 1695 m in the west (11°50'N/42°15'E) and to 1783 m in the east (11°45'N/42°38'E). Indeed the western landscapes of Djibouti are dominated by a series of ridges oriented SE-NW, while the eastern half of the country, north of the gulf, is a dissected plateau some 600 m asl, but which rises southwards to hills of 1500 m along the gulf shore and northwards to 2029 m (12°28'N/42°24'E) on the Ethiopian border. Other hills, reaching 1289 m, lie along the border with Somalia in the far south.

Lake Abbè, at the southwestern extremity of Djibouti, receives drainage from Ethiopia via a branch of the Awash River, and from local wadis. North and east of this there is a series of pans, again oriented SE-NW, which receive the run-off from local hills. Otherwise drainage from the southwestern part of the country finds its way into wadis which lead to, but do not feed, Lake Asal. Drainage from the northeastern plateau is either to pans or to the coast.

Climate

Djibouti is hot and arid. The mean annual temperature at Djibouti Town (11°33'N/43°07'E) is 30°C and occasional temperatures of 48°C have been recorded near Lake Asal (155 m below sea level). It remains hot throughout the year but there is a cooler period from November to April. Mean annual rainfall is less than 200 mm in the southwest, 127 mm at Djibouti, and 300-500 mm on the mountains north of the Gulf of Tadjoura. Djibouti is in the rain-shadow of the Ethiopian Highlands, so far as the summer winds from the SW are concerned, however, rain has been recorded in all months. Humidity is always high at the coast but decreases dramatically in passing inland.

Wetlands

There are two important lakes, numerous pans, and some tidal wetlands.

List of Wetlands Described

1. Natural Lakes
 - (a) Lake Abbe
 - (b) Lake Asal
2. Interior Pans
3. Tidal Wetlands

1. Natural Lakes

Wetland Name: Lake Abbe

Country: Djibouti

Coordinates: 11°02 ' -11°17 'N/41°38 ' -41°54 'E

Area: 34 000 ha (11 000 in Djibouti)

Altitude: 243 m asl

Nearest Town: Djibouti (135 km ENE)

General: Lake Abbe is described more fully in section 2.4 Ethiopia. It is situated on the floor of a basin which once contained a much larger lake. It is 37 m deep, endorheic, and is fed principally by the Awash River, which with its tributaries drains a major part of the eastern slopes of the Ethiopian Highlands. Since 1954 an increasing volume of water has been removed from the upper Awash for irrigation and by 1984 the lake surface had shrunk to two thirds of what it was in the late 1940s. This shrinkage is evidenced by extensive flats now covering some 11 500 ha to the southwest of the lake. A small part of these flats extends into Djibouti.

Flora & Fauna: The biology of the lake is not known.

Human Impact & Utilisation: Apparently little used or disturbed in Djibouti.

Conservation Status: Unprotected.

Wetland Name: Lake Asal

Country: Burundi

Coordinates: 11°40 'N/42°25 'E

Area: 10 800 ha (5200 ha open water + 5600 ha salt flats)

Altitude: 155 m bsl (lake surface)

Nearest Town: Djibouti (105 km ESE)

General: Lake Asal, which has maximum dimensions of 7x10 km, is situated on the floor of a depression leading NW from the head of the Gulf of Tadjoura. The land falls steeply, and in places precipitously, from sea level to a saline plain about 150 m below sea level which marks the floor of an older, larger lake. The present lake surface is set some 5 m below this, and is again ringed by steep banks. The saline plain is narrow to the south and east of the lake, but reaches nearly 2 km in width along the western shore, and 6 km in the northwest, having a total area of approximately 5600 ha. The lake surface is 4 km from the sea at the nearest point.

Hydrology & Water Quality: Lake Asal is fed by subterranean inflows which include infiltration of sea water, as well as by wadis which lead into the depression. Maximum depth is of the order of 20 m. Occasional rains in nearby catchments may lead to the wetting of the salt flats, but rain in more distant catchments, which includes an area south of

the head of the Gulf of Tadjoura, does not nowadays reach the depression. Potential evaporation from the lake is very high, c. 5800 mm/yr, thus its waters are highly saline, the concentrations of the principal ions being sodium 104 340 mg/l; potassium 5104 mg/l; calcium 2640 mg/l; magnesium 12 366 mg/l; chloride 196 756 mg/l; sulphate 2554 mg/l; silicate 13 mg/l; and bicarbonate 4 mg/l, while the pH is generally close to 7.2. Surface water temperatures range from 28-32°C.

Flora & Fauna: The biology of the lake is not known, but the peripheral salt flats support patchy Red Sea coastal salt desert vegetation as described in the regional introduction.

Human Impact & Utilisation: Not utilised.

Conservation Status: Unprotected.

2. Interior Pans

General: A series of 20 saline pans is situated to the northeast and east of Lake Abbe in southwest Djibouti (11°06'-11°25'N/41°50'-42°15'E). A long hogsback slopes southeastwards from Gemeru Hauk (1197'N/41°39'E-1358 m) in Ethiopia to a hill (11°12'N/42°05' E 684 m) in Djibouti, and these pans, also oriented SE-NW, are situated on it or on its southwestern side facing Lake Abbè. They have a total area of about 15 400 ha. The largest measures 14 km in length and reaches widths of 4 km; the smallest is barely 1 km long and 800 m wide. They are all fed by little wadis which may remain dry for several consecutive years, and when flooded, they seldom hold water more than 50 cm deep. They have sandy/clay or sandy/gravel floors and support tufts of *Cenchrus ciliaris* together with *Aeluropus lagopoides*, *Sporobolus spicatus*, *Suaeda monoica*, *Triantheina crystallina* and *Urochondra setulosa*. Bushes of *Acacia tortilis* and *Cadaba glandulosa* occur at the sides of some wadis.

Another series of SE-NW oriented pans is situated north and east of Lake Asal (11°52'-12°26'N/42°15'-42°46'E). They lie between 300 and 600 m asl and are fed by wadis leading northwards from the hills along the north shore of the Gulf of Tadjoura, and south from the highlands along the Ethiopian border. The largest pan is 19 km long and 6 km wide at its southern end and their total area approaches 20 000 ha. They support scant vegetation.

Yet other pans and shallow wadis are found at the foot of the coastal hills. These are flooded by sandy alluvium which in places extends down to the sea and covers the raised Quarternary reefs which line parts of the coast. The largest pan is 50-100 m asl, covers some 32 000 ha (12°23'-12°40'N/42°55'-43°10'E) and is 32 km long and up to 20 km in width. All these latter pans support some saltmarsh/salt-desert vegetation, including such species as *Aeluropus lagopoides*, *Aerva persica*, *Calotropis procera*, *Cenchrus ciliaris*, *Cyperus congloineratus*, *Eleusine compressa*, *Halopeplis perfoliata*, *Heliotropum pterocarpum*, *Panicum turgidum*, *Salsola forskalii*, *Sporobolus spicatus*, *Urochondra setulosa*, and at the edges of wadis, bushes of *Cadaba glandulosa*. Occasional trees of *Acacia tortilis* and *Balanites aegyptiaca* are to be found. These pans and wadis are not utilised and are unprotected.

3. Tidal Wetlands

General: Coral reefs occur offshore and extend southwards from the Djibouti/Ethiopia border to a latitude of 12°16'N. South of this the beaches are sandy, but often the sand overlies old reefs, and in places alluvium from wadis has washed out over these reefs. Other reefs occur east of Djibouti Town on the southern shore of the Gulf of Tadjoura and near the mouth of the gulf. In places small mangrove stands occur in little bays, e.g. behind the northward pointing peninsula of Ra's Siyyan (12°29'N/43°19'E). Tidal amplitudes here are little more than 1 m, but some saltmarshes occur on the beach behind mangroves and behind low narrow dune ridges. *Avicennia marina* is the dominant mangrove and the saltmarsh vegetation is as described in the regional introduction. These coastal wetlands are not utilised and are unprotected.