

3.7 GUINEA

Introduction

Guinea has an area of 245 855 km², a population of 5 412 000 (1983) and therefore, a mean population density of 22 persons/km². It is bounded by Guinea Bissau, Senegal and Mali in the north, by Cote d'Ivoire in the east, and by Liberia and Sierra Leone in the south. The country extends for some 600 km from north to south between latitudes 7°13' and 12°38'N, and about 775 km from east to west between longitudes 7°36' and 15°00'W.

The 280 km coastal sector is mainly deltaic, and 50 years ago, was mangrove clad along its entire length, except for a short section about Cape Verga (10°13'N/14°27'W) and in the vicinity of Conakry (9°31'N/13°43'W). However, in recent years much coastal forest has been cleared for agriculture so that there are now substantial gaps in the mangrove belt. The coastal plain is 60 km wide in the southern section, but narrows in moving northwards to 30 km in the central section, and is fully intercepted by hills which reach the sea at Conakry and again at Cape Verga. From this latter point the coastal plain broadens to a maximum width of 90 km at the northern border. Inland the foothills of the Fouta Djallon Mountains, which form the northwestern end of the so-called Guinean Dorsale, rise abruptly from the coastal plain. Indeed, immediately behind the Bay of Sangareya, to the north of the Conakry Peninsula, a hill rises from tidally inundated land to a height of 630 m asl, over a horizontal distance of 2 km and another, at the base of the Conakry Peninsula, has an elevation of 1000 m above the plain just 2 km distant.

The Guinean Dorsale runs southeastwards from the Fouta Djallon Mountains to the Nimba Mountains on the border with Cote d'Ivoire. It is here, at Mt. Nimba (7°38'N/8°24'W), that the highest point in Guinea is reached, at 1752 m asl. However, many peaks in the Fouta Djallon and Nimba Mountains exceed 1000 m, and the northwestern and southeastern areas are mountainous and deeply dissected.

The watershed of the Guinean Dorsale is roughly aligned NW-SE along the borders with Sierra Leone and Liberia, and from this region drainage is either southwestwards to the Atlantic Ocean or northeastwards to the upper Niger Basin. The Niger River rises in Guinea, in the Fouta Djallon Mountains, close to the Sierra Leone border (9°07'N/10°40'W) and just 17 km from the highest point in the Guinean Dorsale (1853 m asl in Sierra Leone). From its source the Niger flows northeastwards across the centre of a vast shallow basin. It is joined, towards the northeastern side of the basin, by the Bala and Milo Rivers on the right bank and by the Tinkisso River on the left bank. Both these latter streams meander excessively for several hundred kilometres above their confluences. The Tinkisso drains part of the Fouta Djallon, while the Milo drains the Nimba Mountains. The Niger is a broad stream, several kilometres wide, where it leaves Guinea and enters Mali.

Other rivers draining the dorsale and flowing north, at least initially, are the Koliba (Tomin6), which swings towards the coast and enters Guinea Bissau as the Corubal River; several ephemeral headwater streams of the Gambia River, which flow into Senegal; the Senegal River; the Bafing River, a major tributary of the Senegal River, which initially flows through Mali; several ephemeral affluents of the Niger; and the Gbanhala/Sankarani River which flows northwards along the Guinea/Cote d'Ivoire border and later along the Guinea/Mali border. In the east, some minor streams draining the Nimba Mountains flow into Cote d'Ivoire as tributaries of the Sassandra River. Many streams drain the dorsale southwestwards to the sea through other countries, the most important being the Saint Paul River which flows from southern Guinea into Sierra Leone. The most important of the purely Guinean streams are, as they reach the sea from north to south, the Kogon, Nunez, Fatala, Konkoure and Kolent Rivers, the latter forming the Guinea/Sierra Leone border for 156 km above its mouth.

Climate

Rainfall is greatest at the coast and decreases inland. The coast, running NW-SE, is opposed at right angles to the path of the prevailing, moisture laden, SW Trade Winds. At the coast, north of Cape Verga, mean annual precipitation is between 2500-3000 mm, increasing to more than 3000 mm south of Cape Verga. A very wet pocket, receiving more than 4000 mm/yr occurs around Conakry, extending for some 50 km along the coast and up to 50 km inland. However, from Conakry to the southern border coastal rainfall declines to 3500 mm/yr. In the interior, most of the Fouta Djallon and the Guinean Dorsale receive mean annual falls of 2500-3000 mm, while the Niger Basin in the northwest receives 1500-2000 mm/yr. These high rainfalls are somewhat deceptive in that rain is highly seasonal throughout the country, with a 5 month dry season at the coast and a 6-7 month dry season inland. Thus, at Conakry, where mean annual rainfall is 4370 mm, no less than 4318 mm, or 98.8%, falls in the 7 months May-November, and only 52 mm falls between December and April. Precipitation is extremely intense at the height of the rainy season. Averaged over the past 25 years, 2493 mm falls in August to September, but only 3 mm in December to January. This same pattern is followed in the other regions, e.g. at Labe (11°19'N/12°17'W) in the central Fouta Djallon. Here mean annual rainfall is 1699 mm, with 1581 mm falling in the 6 month wet season, i.e. 93% of the annual total. Again some months are virtually rainless. Conakry has 155 rainy days/yr, Labe 150, Kankan (10°23'N/9°18'W) has 105 and the Guinea/Cote d'Ivoire border about 115 rainy days/yr.

The mean temperature of the coolest month at Conakry is 25°C, while that of the warmest month is 27°C. Comparable figures for Labe, at an altitude of over 1000 m asl in the mountains, are 20 and 25°C. At Kankan, over 500 m asl in the Niger Basin in the northwest, they are 24 and 29°C.

Vegetation

The coastal plain is covered by broad-leaved lowland forest, both primary and secondary, while the Fouta Djallon and Nimba Mountains are covered by upland evergreen forests. The western borderlands are covered by deciduous forest and savanna, and the headwater basin

of the Niger by Guineo-Soudanian transitional savanna, with broad bands of deciduous or semi-deciduous gallery forest along this river and its major tributaries.

Wetlands

Almost all of the coast is deltaic and mangrove clad, broken only by the high land at Cape Verga and the township of Conakry which juts out into the sea on a 20 km long peninsula. Freshwater swamp forests occur behind the mangroves, and floodplains occur along most rivers due to the highly seasonal nature of the rainfall. However, many of the latter are narrow, except where the rivers debouche onto the coastal plain or cross the floor of the Upper Niger Basin. There are a few lakes in the mountains, and innumerable small swamps around the headwaters of streams.

List of Wetlands Described

1. Coastal Wetlands
2. Riverine Wetlands
3. Lakes
4. Artificial Impoundments

1. Coastal Wetlands

General: There were some 285 000 ha of mangrove forest on the coast in 1980, and some 56 000 ha of rice paddy in areas where mangroves had been cleared. The mangroves are rather better developed in the north and south than in the central region. Some 124 000 ha of tidal forest, with a canopy up to 40 m high, occurs on the estuaries of the Komponi and Nunez Rivers, locally reaching more than 30 km in width between the land and the sea. These forests are backed by periodically inundated freshwater swamp forests, the largest block of which extends in a depression towards the city of Bok6 (10°59'N/14°20'W). Because of the seasonality of rainfall, the floors of the freshwater swamp forests tend to be dry for half the year, but are flooded, and then often tidal, for the other half. A major rice paddy scheme, 38 km long and up to 6 km wide, has been established in the mangroves on the Kapatchez and Kitali Rivers, terminating at Cape Verga. On the south side of the Cape another mangrove forest covers 46 000 ha on both sides of the Pongo Estuary near Boffa (10°10'N/ 14°02'W), while to the south of this the mangroves have been totally cleared over a distance of 30 km to the estuary of the Konkoure River, and also up this estuary for a distance of 20 km. However, a 28 000 ha mangrove forest persists on the outer southern bank of the estuary and around the head of Sangareya Bay. A further 68 500 ha of mangrove forest persisted to the south of the Conakry Peninsula in 1980, but clearances of many thousands of hectares had been made there. Despite this, a continuous strip of mangrove forest runs for 60 km from the Kidma River to the Sierra Leone border, with clearances in three major blocks of approximately 10 km x 2.5 km just behind the seaward mangroves.

Flora & Fauna: As described in the regional introduction for both mangrove and freshwater swamp forest. *Cercopithecus mona*, *Choeropsis liberiensis*, *Crocodylus*

niloticus, *Hyenzoschus aquaticus*, *Neotragus pygmaeus*, *Potamochoerus porcus*, and *Tragelaphus scriptus* have been recorded in the inner parts of tidal forests, the first species sometimes very common. Among the smaller mammals, squirrels and otters are common. Populations of crabs, including ghost and fiddler crabs, are prodigious.

Human Impact & Utilisation: As indicated above, a large area, amounting to 16% of the mangrove, had been cleared by 1980 and utilised for rice culture. Traditionally the mangrove areas have provided a rich supply of fish and prawn protein, and the estuaries and mangrove creeks have always been fished. Today a large scale offshore and coastal fishery uses trawlers, and much of the annual catch is exported to the USSR. The mangroves are also exploited for constructional timber and for fuelwood.

Conservation Status: Unprotected.

2. Riverine Wetlands

General: The most extensive riverine wetlands are the floodplains of the Upper Niger and its tributaries the Milo, Sankarani and Tinkisso Rivers in the Upper Niger Basin. Here these rivers traverse flat savanna zones, but are cloaked by galleries of deciduous or semi-deciduous forest. The Tinkisso drains the Fouta Djallon and flows northeast and then east between longitudes 10°43'-9°10'W where it joins the Niger. Over this 200 km stretch, which lies between 11°07'4 1°25'N, the river meanders tightly and continuously. At the height of the flood, following the June to September rains, the entire meander plain may be flooded briefly. Floodplains also occur on most of the tributaries, e.g. the Bouka, Nanie and Lelè Rivers, although they are not continuous. The total area subject to inundation in this system probably reaches 25 000 ha.

The Milo flows down from the highlands of SE Guinea from its source on a great N-S saddle between the Tibe Peaks (1504 and 1656 m). It begins to meander in its valley before it emerges onto the open basin at a latitude of 9°48'N. From here it winds its way northwards to a confluence with the Niger in the centre of the basin (11°03'N/9°13'W), and a floodplain is nearly continuous for 125 km along this stretch of the river, reaching a maximum width of 2 km. The total area subject to inundation, including that of the floodplains of minor affluents, reaches 16 000 ha in a wet year.

The Sankarani River is an extension of the Gbanhala River, which meanders along the border between Guinea and Cote d'Ivoire from 9°21'-10°00'N, where it has a floodplain 2-3 km wide on which, locally, upland rice is grown. On crossing the 10th parallel the Sankarani veers WNW, meanders, and receives three major affluents, the Kour, Yerè mou and Dion Rivers. These latter streams drain the highlands of SE Guinea and contribute most of the flood water for the lower Sankarani. From the confluence of the Dion and Sankarani Rivers at 10°12'N, the Sankarani meanders due north, then northeast along the Guinea/Mali border for 62 km, before leaving Guinea and finally joining the Niger on its right bank far into Mali. The Sankarani has a discontinuous floodplain for 170 km in Guinea and has a bed almost 1 km wide where it forms the international border with Mali. On this system the total floodplain area is in the vicinity of 16 000 ha.

Substantial areas of flooded forest, with grassy floodplains behind, occur along the Niger across most its upper basin, while in addition, there are intermittent floodplains on its headwater affluents, the Mafou and Niandan Rivers. The bed of the Niger is broad and island studded for 150 km above the border with Mali, and a floodplain accompanies it over this entire distance. However, this is narrow, only 1-1.5 km wide, and it alternates from side to side of the river. Nevertheless, if the open water surface of the river is included, there is a wetland strip of 35 000 ha, with a mean width of 2 km right across the basin.

Other wetlands occur on the Koliba or Tomine River in NW Guinea. This stream rises in the Fouta Djallon Mountains and flows onto a lowland plain north of Gaoual (11°45'N/14°08'W), where at an altitude less than 50 m asl, both it and its affluents overtop their banks flooding areas up to 2 km wide in meander bends. The river is quite deeply entrenched and most of the flooding takes place from affluents. It swings west and then flows SW along the Guinea/Guinea Bissau border, before finally entering the latter country at an altitude of 38 m asl where it is known as the Corubal River. Altogether there are (or were) some 120 km of intermittent floodplain on this system in Guinea, and the seasonally inundated area approached 21 000 ha. Not all of this flanked the river; some occupied depressions up to 10 km distant. There used to be a permanent wetland, including swamp forest and herb swamp, in the vicinity of Kitiara (12°10'N/14°41'W), but by 1980 at least 20 000 ha of rice culture had been established in the area. We do not know how much of the natural wetland has been replaced. Some small floodplains, totalling 3500 ha, occur to the north, on the Koulountou River before it enters Senegal.

The coastal rivers, descending from the dorsale, where the south facing catchments may receive 2000 mm of rain in the two months of August and September, all flood strongly at this time. Since rice is now grown along many of these streams we do not know the area of wetland remaining. Both seasonally inundated and permanent wetlands occur along streams crossing the coastal plain.

There is an important rice growing district in the highlands near Guóckódou (8°33'N/10°09'W). This is associated with the headwater tributaries of the Moa River which reaches the sea in Sierra Leone. This part of southern Guinea is very wet, with, for example, a mean annual rainfall of 2869 mm at Macenta (8°33'N/9°28'W), and the hillsides and valleys here are densely forested. Inundated forests occur along the thalwegs. Details of floodplains of other rivers in Guinea have not been mapped and information is not available in the literature, but since seasonal precipitation is high, and more intense than in almost any other part of Africa, there can be little doubt that they exist. There are some non-riverine marshes in the highlands, e.g. one near Gueckèdou (8°20'-8°22'N/10°35'-10°38'W) has an area approaching 5000 ha.

Flora & Fauna: The floras of swamp forest, seasonally inundated gallery forest, grassy floodplains, riverine ponds and lagoons are as described in the regional introduction. Most of the animals listed in the introduction for the various wetland types in the western sector of West Africa are found here.

Human Impact & Utilisation: Rice is grown on river floodplains. The largest developments are on the Koliba River before it enters Guinea Bissau in NW Guinea, and near Guèckedou, but some 5000 ha was under cultivation on the Tinkisso and Lelè Rivers, over a 36 km stretch between longitudes 9°40'-10°00'W, before 1970.

Conservation Status: Unprotected. Conservation issues receive very low priority here.

3. Lakes

General: There are numerous small lakes and ponds in the lowlands, but none is sufficiently large to merit specific mention except perhaps Lake Bento (10°25'N/13°45'W). However we have no information as to the hydrology or ecology of this lake.

4. Artificial Impoundments

General: Hydroelectric power is generated at Pita (11°05'N/12°24'W) on the Konkoure River, at Kale (9°55'N/13°06'W) on the Badi, an affluent of the Konkourd, and at Tinkisso (11°15'N/10°37'W), on the Tinkisso River.