Chapter 4
Africa

VEGETATION AND SPECIES COMPOSITION

Mangroves are found in almost all countries along the west and east coasts of Africa, spreading from Mauritania to Angola on the west coast, and from Egypt to South Africa on the east coast, including Madagascar and several other islands. They are absent from Namibia, probably due to the semi-arid, desert-like climate, with low and irregular rainfall, a lack of warming currents and of favourable topographical features.

Forest structure and species composition differ significantly from one coast to the other, as is described in the following paragraphs.

On the east coast they generally form narrow fringe communities along the shores or small patches in estuaries, along seasonal creeks or in lagoons. The trees do not usually grow to more than 10 m in height, with a minimum height of 0.7–2 m in the Sudan and 1–2 m in South Africa. Madagascar (especially the northwest region), Mozambique and the United Republic of Tanzania represent the few exceptions: the extensive deltas and estuaries found in these countries allow the development of well-extended communities, with tree heights reaching 25–30 m. The Messalo and Zambezi river deltas (Mozambique) are home to some of the most extensive mangrove forests in the region.

On the west coast well-developed mangroves are often found in large river deltas, in lagoons, along sheltered coastlines and on tidal flats. These forests may extend several kilometres inland, as happens in the Gambia and Guinea-Bissau, where major forests are found even 100–160 km upstream (e.g. Tendaba, Elephant Island and Dan Kun Ku Island). Along the coast in Cameroon and Nigeria, mangrove trees may reach heights of up to 40 m. Among the best-structured forests in western Africa are the Niger Delta communities (Nigeria), with stands stretching 30–40 km inland; the mouth of the Gambia River; the Komo estuary (Gabon), with *Rhizophora* spp. attaining heights of 30 m; and the Yawri Bay (Sierra Leone), a shallow coastal wetland that includes some 14 percent of the total national mangrove area.

As reported in Tables 4 and 5, the east coast, with its 14 true mangrove species, features a higher species diversity than the west coast, where only seven species occur naturally, usually homogeneously distributed throughout all the countries. The highest diversity is found in Mozambique, Kenya and Seychelles. A few species, such as *Avicennia marina* and *Rhizophora mucronata,* have a wide distribution along this coast and are found in most of the eastern countries. On the other hand, other species grow only in one or a few countries, for example *Bruguiera cylindrica* (found in Mozambique) and *Ceriops somalensis* (endemic to Somalia).

Mangrove communities in Egypt and Mauritania represent the northernmost stands for eastern and western Africa, respectively, and owing to their extreme environmental conditions (high salinity, low rainfall and extreme temperatures), the trees are generally stunted, rarely exceeding 5 m in height. In these countries mangrove species diversity and cover are fairly low. However, as mangroves are often the only forest ecosystem found along the coasts, they provide needed resources for local communities and a habitat for a wide range of wildlife, and are important in the conservation of forest genetic resources.

TABLE 4
Mangrove species composition in Western Africa

Species	Angola	Benin	Cameroon	Congo	Dem. Rep. of the Congo	Côte d'Ivoire	Equatorial Guinea	Gabon	Gambia	Ghana	Guinea	Guinea-Bissau	Liberia	Mauritania	Nigeria	Sao Tome and Principe	Senegal	Sierra Leone	Togo
Acrostichum aureum	√	√	√	√	√	√		√	√	√	√		√		√	√	√	?	
Avicennia germinans	√	√	√	√[a]	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Conocarpus erectus	√	√	√	√	√	√		√	√	√	√	√	√	√	√	√	√	√	
Laguncularia racemosa	√	√	√	√	√	√		√	√	√	√	√			√		√	√	
Nypa fruticans[b]			√												√				
Rhizophora harrisonii	√	√	√	√				√	√	√	√	√	√		√	√	√	√	
Rhizophora mangle	√		√		√			√	√		√	√	√		√		√	√	
Rhizophora racemosa	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√	√
Total no. of species	**7**	**6**	**8**	**6**	**6**	**5**	**2**	**7**	**7**	**6**	**7**	**6**	**6**	**3**	**8**	**4**	**7**	**6**	**2**

[a] Kaya (2003 and unpublished, 2004) differentiates specimens of *A. germinans* from those of *A. nitida*. However, these two species are treated as the same in Tomlinson (1986) and in the present report.
[b] Introduced in both countries.

TABLE 5
Mangrove species composition in Eastern Africa

Species	British Indian Ocean Territory	Comoros	Djibouti	Egypt	Eritrea	Kenya	Madagascar	Mauritius	Mayotte	Mozambique	Seychelles	Somalia	South Africa	Sudan	United Rep. of Tanzania
Acrostichum aureum							√			√	√		√		√
Avicennia germinans									√						
Avicennia marina		√	√	√	√	√	√			√	√	√	√	√	√
Bruguiera gymnorrhiza		√			√	√	?[a]	√	√	√	√	√	√	√[b]	
Bruguiera cylindrica										√					
Ceriops somalensis												√			
Ceriops tagal					√	√	√		√	√	√	√	√		√
Conocarpus erectus															
Heritiera littoralis						√	√		√	√					
Laguncularia racemosa															
Lumnitzera racemosa	√	√				√	√			√	√	√	√		√
Pemphis acidula											√				
Rhizophora harrisonii															
Rhizophora mangle															
Rhizophora mucronata		√	√	√	√	√	√	√	√	√	√	√	√	√[b]	√
Rhizophora racemosa															
Sonneratia alba		√				√	√		√	√	√	√			
Xylocarpus granatum						√	√			√	√	√	√		
Xylocarpus mekongensis						√									
Total no. of species	**1**	**5**	**2**	**2**	**4**	**9**	**9**	**2**	**6**	**10**	**9**	**8**	**7**	**3**	**5**

[a] Uncertain.
[b] May have become extinct.

MANGROVE RESOURCES: STATUS AND TRENDS 1980–2005

Analysis of the data shows that total mangrove forest cover for 2005 in Africa is estimated at 3.2 million hectares (Table 6).

As can be seen in Table 6 and Figure 5, some 70 percent of all African mangroves can be found in just five countries: Nigeria, Mozambique, Madagascar, Guinea and Cameroon. These extensive mangrove forests have an important role in national

TABLE 6
Status and trends in mangrove area – Africa (1980–2005)

Country/area	Most recent reliable estimate		1980	1990	Annual change 1980–1990		2000	Annual change 1990–2000		2005	Annual change 2000–2005	
	ha	Ref. year	ha	ha	ha	%	ha	ha	%	ha	ha	%
Angola	33 600	2000	53 000	43 300	–970	–2.0	33 600	–970	–2.5	33 000	–120	–0.4
Benin	1 700	1989	2 100	1 650	–45	–2.4	1 350	–30	–2.0	1 150	–40	–3.2
British Indian Ocean Territory	n.a.	n.a.										
Cameroon	251 545	2000	272 000	256 300	–1 570	–0.6	251 500	–480	–0.2	250 000	–300	–0.1
Comoros	117	2002	125	120	–1	–0.4	117	n.s.	–0.3	115	n.s.	–0.3
Congo	8 000	2003	20 000	12 000	–800	–5.0	8 350	–365	–3.6	8 000	–70	–0.9
Côte d'Ivoire	9 940	2000	30 200	20 100	–1 010	–4.0	9 940	–1 016	–6.8	9 900	–8	–0.1
Dem. Rep. of the Congo	19 600	2000	63 700	30 800	–3 290	–7.0	19 600	–1 120	–4.4	19 500	–20	–0.1
Djibouti	1 000	1985	1 000	1 000	0	0	1 000	0	0	1 000	0	0
Egypt	512	2002	500	500	0	0	500	0	0	500	0	0
Equatorial Guinea	25 700	1995	26 700	26 000	–70	–0.3	25 300	–70	–0.3	25 000	–60	–0.2
Eritrea	6 400	1997	6 700	6 500	–20	–0.3	6 400	–10	–0.2	6 400	0	0
Gabon	152 940	2000	218 500	185 800	–3 270	–1.6	152 940	–3 286	–1.9	150 000	–588	–0.4
Gambia	58 100	2000	70 400	61 200	–920	–1.4	58 100	–310	–0.5	58 000	–20	n.s.
Ghana	13 729	2000	18 000	16 800	–120	–0.7	13 800	–300	–2.0	12 400	–280	–2.1
Guinea	276 342	1997	299 200	279 200	–2 000	–0.7	276 200	–300	–0.1	276 000	–40	n.s.
Guinea-Bissau	248 400	1990	276 000	248 400	–2 760	–1.1	221 000	–2 740	–1.2	210 000	–2 200	–1.0
Kenya	52 980	1982	54 700	52 000	–270	–0.5	50 000	–200	–0.4	50 000	0	0
Liberia	9 244	2000	19 300	14 300	–500	–3.0	9 250	–505	–4.3	6 750	–500	–6.1
Madagascar	303 814	2004	330 000	330 000	0	0	315 000	–1 500	–0.5	300 000	–3 000	–1.0
Mauritania	104	1993	150	110	–4	–3.1	100	–1	–1.0	100	0	0
Mauritius	120	2004	45	70	3	4.5	90	2	2.5	120	6	5.9
Mayotte	668	1989	670	670	0	0	670	0	0	670	0	0
Mozambique	392 749	1997	402 500	396 200	–630	–0.2	391 800	–440	–0.1	390 200	–320	–0.1
Nigeria	997 700	1995	999 000	998 000	–100	n.s.	997 000	–100	n.s.	997 000	0	0
Sao Tome and Principe	n.a.	n.a.										
Senegal	127 702	2000	169 000	145 000	–2 400	–1.5	127 000	–1 800	–1.3	115 000	–2 400	–2.0
Seychelles	2 900	1960	2 500	2 500	0	0	2 500	0	0	2 500	0	0
Sierra Leone	105 300	2000	167 700	145 400	–2 230	–1.4	105 300	–4 010	–3.2	100 000	–1 060	–1.0
Somalia	10 000	1975	9 500	8 600	–90	–1.0	7 800	–80	–1.0	7 300	–100	–1.3
South Africa	3 054	1999	3 500	3 500	0	0	3 050	–45	–1.4	3 000	–10	–0.3
Sudan	500	1995	500	500	0	0	500	0	0	500	0	0
Togo	1 094	2000	1 000	1 000	0	0	1 000	0	0	1 000	0	0
United Rep. of Tanzania	127 200	2000	152 000	140 000	–1 200	–0.8	127 200	–1 280	–1.0	125 000	–440	–0.4
Africa	**3 242 754**	**1997**	**3 670 190**	**3 427 520**	**–24 267**	**–0.68**	**3 217 957**	**–20 956**	**–0.63**	**3 160 105**	**–11 570**	**–0.36**

Note: n.a. = not available; n.s. = not significant.

economies and local livelihoods. They represent a significant, traditional source of wood (timber, fuelwood and charcoal) and tannins, and they support the fisheries of local populations. Notwithstanding these benefits, the rapid growth of human populations and the resulting pressure on coastal environments often lead to uncontrolled exploitation (especially in Cameroon and Guinea), posing severe threats to the mangroves.

According to the results of the current assessment, Africa has lost about 500 000 ha of mangroves over the last 25 years (Figure 6) (or about 13.8 percent of the 1980 extent), with the major losses occurring in Gabon, Sierra Leone, Guinea-Bissau, Senegal and the Democratic Republic of the Congo.[1] Conversion of land for rice production and coastal infrastructure, and to a lesser extent cutting of wood for poles and for fuelwood – used for drying fish, making salt and cooking – are among the main causes of this loss.

In relative terms, Côte d'Ivoire and Liberia have been identified as the countries with the highest negative annual rate of change. Commercial exploitation and the massive urbanization in Côte d'Ivoire have been identified as the main causes of this annual change, which is the highest in the region (–4.4 percent for the period 1980–2005). In Liberia, uncontrolled urbanization and extensive felling caused a loss of –4.1 percent over the last 25 years.

On the other hand, the successful plantation programme begun in the 1980s in Mauritius has led to an increase in the extent of mangrove area in this country, which nearly balanced the considerable previous net loss from the high demand for fuelwood and infrastructure development. According to recent surveys, the extent of mangroves may continue to increase in the future. Increased awareness of the uses and benefits of mangroves in the region is leading to other small successes in conservation, reforestation and sustainable use of these coastal ecosystems. In Eritrea, recent small-scale afforestation activities helped in the stabilization of mangrove extent; in Kenya, the 1982 presidential ban on commercial exploitation of mangrove poles helped slow the rate of impoverishment of this national resource; in Sierra Leone, efforts were made to rehabilitate degraded sites and control the exploitation of mangroves for fuelwood for fish smoking in the late 1980s and early 1990s; in the Congo, several activities and initiatives are raising awareness of the importance of sustainable management of these coastal ecosystems as a source of food security for local populations and of their restoration in already degraded sites; educational activities are being undertaken in the Gambia, Seychelles and South Africa.

A few countries showed no major changes in their mangrove area since the 1980s. However, in the case of Djibouti, Mayotte, Seychelles and Togo, this apparent success may be due to a lack of recent, reliable quantitative information. In some other countries, even though the extent of forests has effectively remained constant, camel browsing or other threats or uses have seriously compromised the health and quality of the stands (e.g. in Egypt and the Sudan).

MAIN USES AND THREATS

Mangroves have been used for generations as a source of wood, medicine and food. Rural communities in West Africa extract fuelwood, timber for houses and boat construction, and wood for charcoal. A large number of non-wood forest products, such as tannins, medicines, beverages and natural pesticides (*Laguncularia racemosa* leaves, mostly used in Guinea) are also collected in mangrove forests. Food security in these countries is closely linked to these coastal forests in which local people collect shrimp, oyster and other species of shellfish. Subsistence and commercial fisheries, which are traditional activities in several countries, depend on healthy mangroves.

[1] Countries listed in order of size of losses.

FIGURE 5
Africa – five countries with the largest mangrove area, 2005

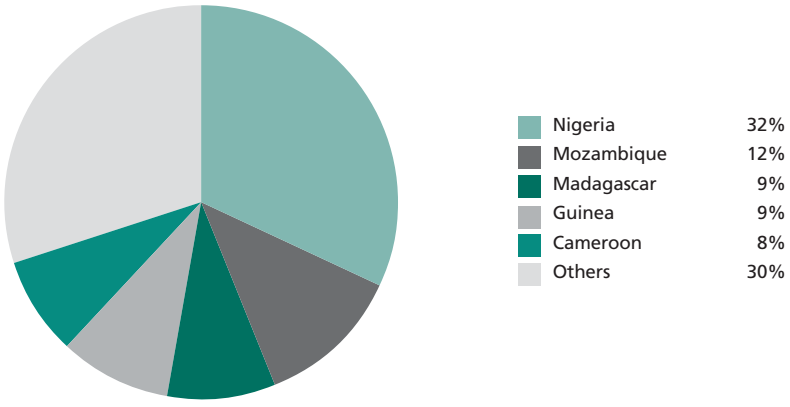
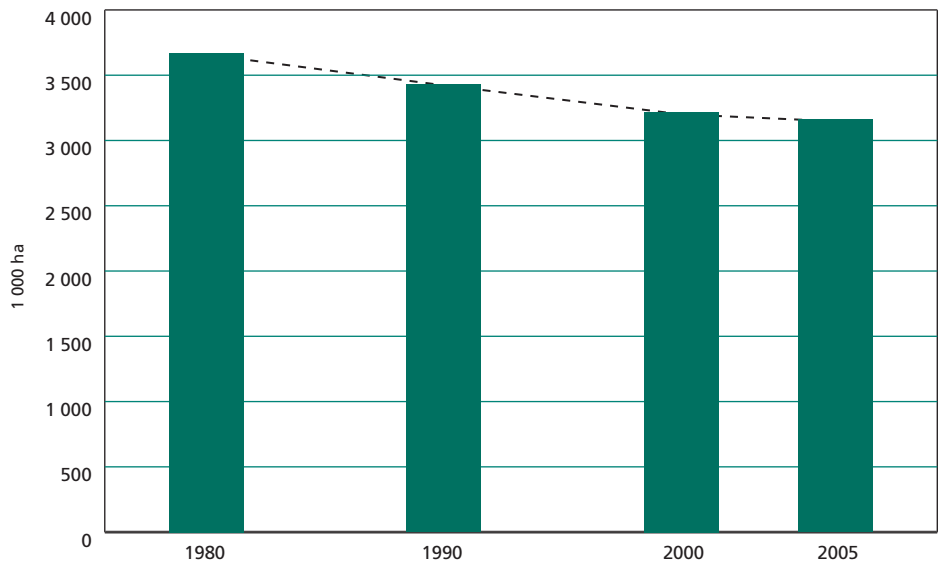


FIGURE 6
Africa – mangrove area changes, 1980–2005



During the past decades, substantial areas of mangrove in West Africa have been converted to other land uses such as the production of salt and rice. The shrimp-farm industry has been less developed than in other regions, but a few countries have undertaken this activity (e.g. Guinea). Other causes of mangrove loss on this coast are the overexploitation of resources and urban and tourism development. In contrast, awareness of the services and benefits provided by mangroves is growing in most western African countries. Despite this positive note, mangroves in West and Central Africa still have to face major threats, particularly the ever-increasing human pressure on coastal lands (e.g. Cameroon, Guinea and Sierra Leone), the lack of sustainable resource management (e.g. the Congo), and the absence of adequate legislation for mangrove protection (e.g. Cameroon). Pollution is also an increasing threat in several countries (Cameroon, Democratic Republic of the Congo and Ghana).

In eastern Africa, mangroves are mainly used for production of charcoal and fuelwood, construction of huts and boats, and collection of non-wood forest products such as tannins, leaves (used as fodder for animals), shellfish, honey and medicines. Fisheries industries, such as those in Madagascar, Mozambique and the United Republic of Tanzania, depend on mangrove health for their productivity. Oil and solid pollution are significant problems along this coast, owing to the proximity of industries and oil terminals and the related heavy maritime traffic. Mangroves have also been converted to other land uses – mainly for tourism and urban development – even though the east coast has a smaller mangrove area than the west.

In arid and semi-arid countries, browsing of mangroves by camels (and in some countries cattle and goats) is the main threat. It negatively affects the health and quality of the stands by limiting tree growth and regeneration, but may leave the total extent of the forest unchanged.

MANGROVE CONSERVATION AND MANAGEMENT

Adequate legislation to protect and conserve mangrove forests is lacking in most African countries. The United Republic of Tanzania, where all mangroves are legally protected, but also the Congo, Egypt, Kenya, Seychelles and South Africa are exceptions. Notwithstanding the lack of legal protection, consciousness of the services and benefits provided by mangroves is growing, and an increasing number of initiatives are being undertaken to rehabilitate and protect local forests. Educational activities are also being launched in a number of countries (the Congo, Eritrea, the Gambia, Seychelles and South Africa among others).

Mangrove afforestation and reforestation of previously cleared areas have been undertaken in this region, but these activities have often been developed only at the community level. Some examples can be found in Benin, Eritrea, Guinea, Mauritius and Sierra Leone. In Mauritius, reforestation programmes were begun in the early 1980s and continue today, steadily increasing the national mangrove area. Natural expansion of mangroves is very rare in Africa. The literature reports some evidence of this process only in the Comoros.