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Conservation in Equatorial Guinea

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Equatorial Guinea, the only Spanish-speaking country in tropical Africa, is an important enclave for wildlife. Because of its dire economic situation, the outcome of the withdrawal of colonial paternalism and 11 years of ruthless military dictatorship, the country sees the exploitation of its natural resources as the panacea to its financial deficit. The consequences for fauna and flora of the unchecked exploitation and uncontrolled opening of forest land for commercial logging will be enormous. Some protected areas have been decreed, but effective action to enforce new laws needs to be taken and the country lacks trained personnel and infrastructure.

The republic of Equatorial Guinea consists of three geographical entities: (a) a continental zone, Rio Muni (or Mbini) region, limited to the north by Cameroon, to the east and south by Gabon and to the west by the Atlantic Ocean; (b) Bioko Island (formerly Fernando Po) on 3°30' N within the Gulf of Guinea; and (c) Annobon Island (Pagalu) to the south of Sao Tomé and Príncipe in the Atlantic Ocean (Figure 1). The country has been facing severe economic conditions for the past two decades. Rising payments deficit, growing dependence on external financial sources, mounting external debt arrears and excessive short-term capital flight have contributed to the fall of the country's gross domestic product. The economy is based on agriculture, forestry and, to a lesser extent, on fisheries; the manufacturing industrial sector is insignificant. Exports consist almost totally of cacao, timber and coffee. A drop in international cacao market prices has led to a loss of income, which has been offset somewhat by a rise in coffee and timber exports.

Equatorial Guinea is one of the poorest countries in Africa. Annual income per capita was estimated at $US350, infant mortality 144 per 1000, gross mortality 22 per 1000 and life expectancy only 44 years (UNDP, 1987). About 78 per cent of the country's population is rural and, therefore, significantly dependent on the land. Against such a backdrop, forest conservation and protection of biological diversity can only be achieved in line with the rational use of natural resources.

Forests and wildlife

The vegetation in Equatorial Guinea is mostly Guineo–Congolian lowland rain forest. Because of the considerable complexity of the country's terrain and especially because of human action, there is a mosaic of types found irregularly throughout the territory, often interdigitating and forming complex ecotones. Bioko's vegetation is conditioned by its ruggedness and steep elevations from sea level to over 3000 m. The extreme variation in precipitation, from 2000 mm at Malabo in the north to 11,000 mm at Ureka in the south, contributes also to the vast range of types. These occur as discrete belts characterized by altitude, but with differences related to precipitation levels. In general, lowland rain forest is succeeded by montane forest, a tree-fern zone, scrub and subsequently subalpine meadows on the summits. This pattern is unmodified along the north-facing slopes of the Basilé and Luba massifs, but changes to a monsoonic component along the lower south-facing elevations.

Vegetation types in Rio Muni form well-defined belts with palm and *Terminalia catappa* communities along the coast, succeeded by a savannah corridor not more than 2 km wide

and tropical rain forest communities inland. Climax formations in Equatorial Guinea are known locally as 'afan' and distinguished from disturbed vegetation ('bicoro'). Other forest types, namely mangroves, are found primarily on the Rio Muni and Rio Uolo estu-

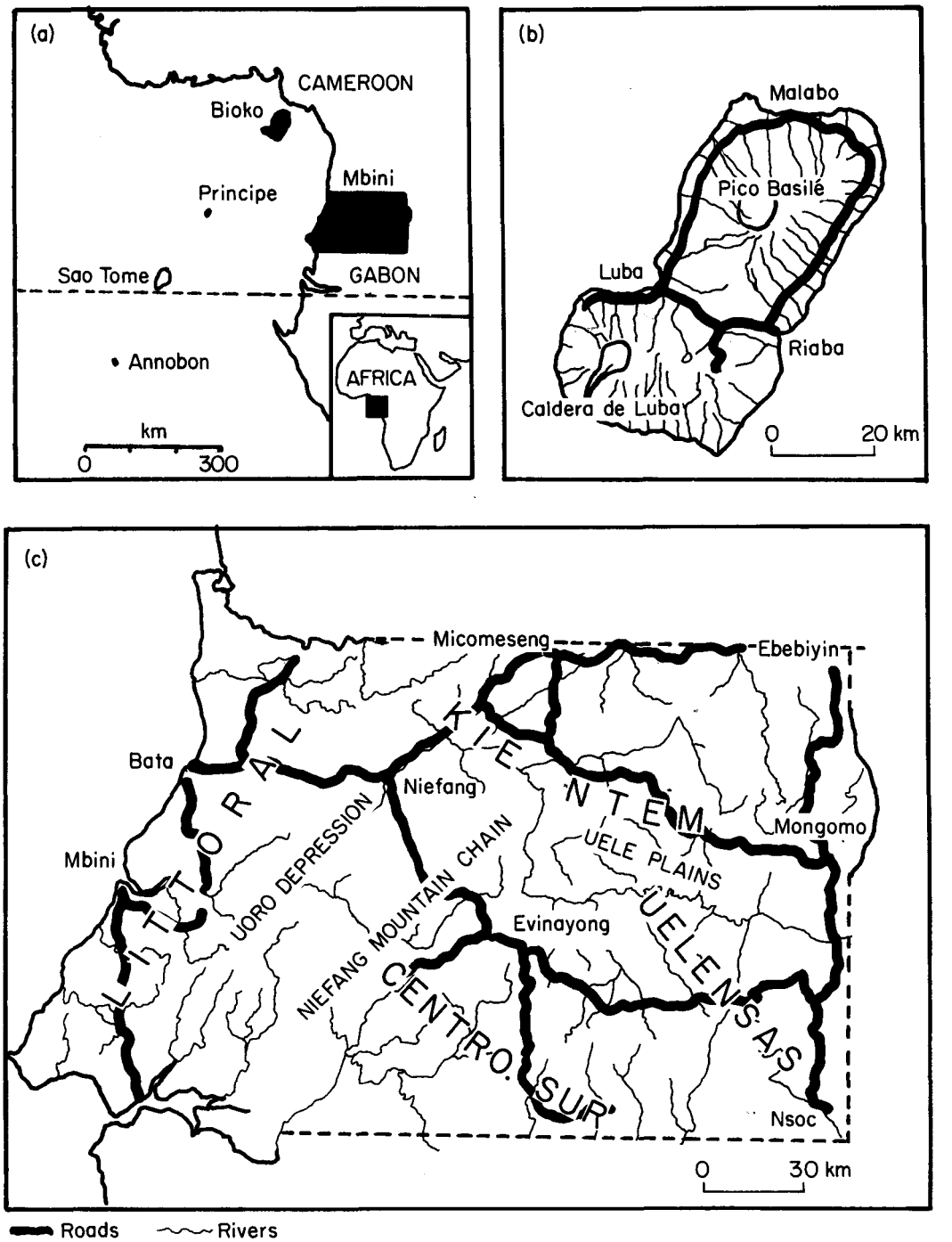

Figure 1. Location and geographical entities in Equatorial Guinea.

Secondary forest of value to wildlife is common throughout the country (*John Fa*).

aries and riparian palm forests along some parts of the coast and bordering the major river systems. 'Cerros cupulas', or granitic inselberg domes, which emerge from the tropical forest covered with grassland, are common in the east.

A very large proportion of Equatorial Guinea, both on the continent and on Bioko, is still covered with forest (Fa, 1991). Primary and secondary formations in both regions could cover about 70 per cent of the total land area (Malleux, 1987; Lepitre *et al.*, 1988). Forest cover in Bioko has not changed much since reported by Ocaña Garcia (1962), but the majority of lowland moist forest is now tall secondary forest due to the abandonment of cacao plantations. Forest land in the Rio Muni region is greater at around 15,350 sq km (Lepitre *et al.*, 1988). There is primarily dense forest within the Niefang chain, south of Rio Ntem and in a northwest-southeast belt from Nsoc to Micomeseng. Pristine primary forest

Table 1. Changes in forest cover (sq km) in Rio Muni and Bioko

Forest type[1]	1960[2]		1980[3]		1985[4]	
	Rio Muni	Bioko	Rio Muni	Bioko	Rio Muni	Bioko
Intact forest	–	–	780	5	740	4
Exploited forest	–	–	220	10	217	9
Productive forest	–	–	1000	15	987	13
Non-productive forest	–	–	180	100	180	100
Dense primary forest	1475	1180	115	1167	113	–
Secondary forest	–	1130	35	1145	35	–
Open forest	–	–	1.4	12		
Savannah	10	10	0	10	0	–

[1]FAO (1981) classification; [2] Mapa Forestal de Guinea Ecuatorial, Ejercito Español; [3] & [4] FAO, 1981

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is still found in the Centre Sur province, but the Litoral province has large expanses of secondary forest. Although the areas of secondary forest vegetation have changed through agriculture, a 1960 Spanish Army forestry map is still probably the most accurate for depicting the extent of forest types in the region. Changes in actual forest land in Bioko and Rio Muni are hard to calculate accurately because of differences in classification. However, a comparison of forest classified as dense and open in the 1960 forestry map with exploited and unexploited forest from FAO estimates for the end of 1980 (Table 1) suggest that there has been a 20 per cent reduction in forest cover. Further loss of forest has taken place since that date.

Biological diversity

Knowledge of the biological diversity of the country is still patchy given that no complete species lists of even the vertebrates are available. Mammalian diversity is best known, while birds, reptiles, amphibians and fishes are still poorly documented. Only a full list of vertebrates for Bioko as of 1973 is provided by Eisentraut (1973). It seem likely that a small number of species is still to be added; in all, 336 vertebrates had been collected on the island. No lists of vertebrate species have yet been compiled for the continental region. Equally, there is a lack of inventory data on the flora of the entire country. Despite the dearth of information it has been recognized (Adams, 1957; Davis *et al.*, 1986) that the flora of the islands, namely Bioko and Annobon, harbour important endemics.

Basílio (1962) documented the presence of 182 mammals in Equatorial Guinea during the 1960s but this is now known to be an underestimate. Recent studies and inventory work undertaken in the continental region by the Cooperacíon Española Conservation and Research Programme have come up with a number of unrecorded bats and other mammals (J. Juste Ballesta, pers. comm.).

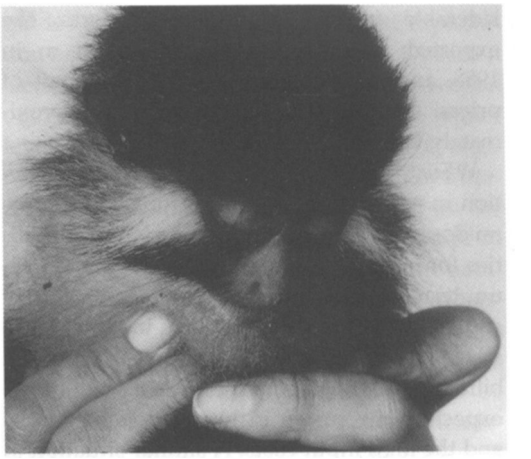
Like Gabon (McShane, 1990) Equatorial Guinea is an important country for large mammals such as chimpanzee, gorilla and forest elephant. The country harbours one of the highest number of primate species in Africa with 21 taxa: five are subspecies endemic to Bioko. Preuss's guenon *Cercopithecus preussi*, which is found on the two peaks in Bioko (Butynski and Koster, 1988) is one of the rarest primates in Africa (Lee, Bennett and Thornback, 1988).

Conflict between resource use and wildlife conservation

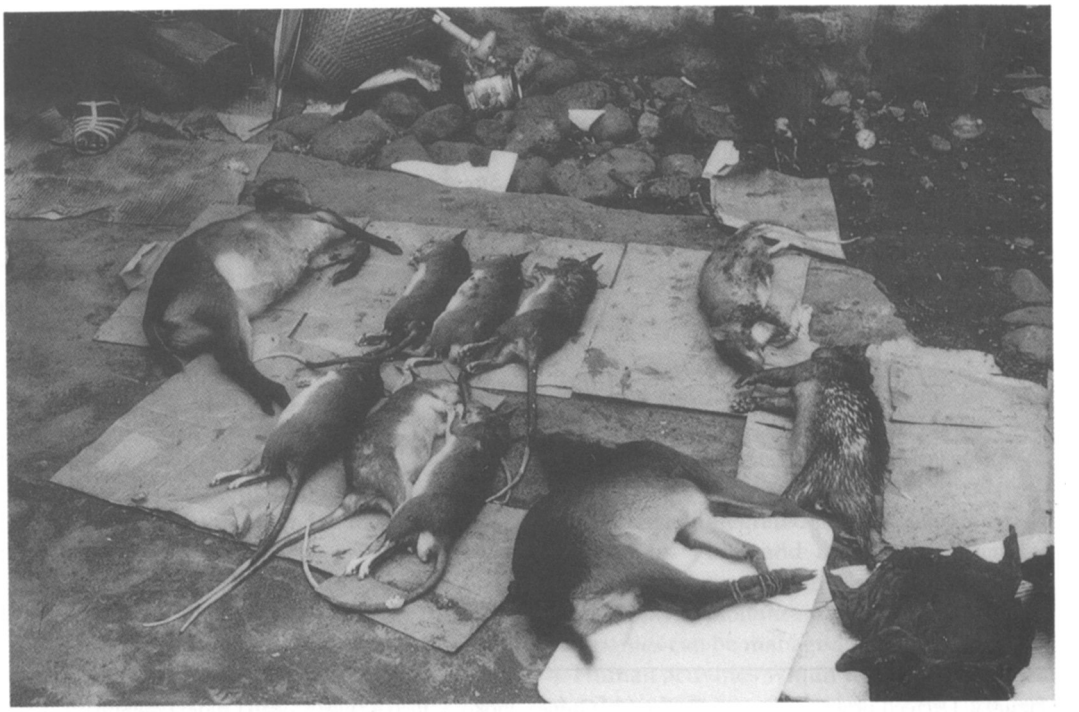
Equatorial Guinea's largely rural population survives on a basic itinerant agriculture supplemented by hunting of a variety of animals (Fa, 1991). The exploitation model is based on the family and its manual labour. Forest is cleared, usually incompletely, debris burnt and land cultivated for less than five years and then allowed to revert to forest or other secondary vegetation before being cleared again. This type of agriculture uses a natural fallow system, which, if undertaken by a small population of agriculturalists, presents no real problems for the forest in the long term. Long-fallow shifting cultivation is the most ecologically sound, leaving small openings similar to natural ones caused by landslides or falling trees. Regeneration following abandonment can take place fairly rapidly. When field sizes are enlarged or fallow times shortened, a situation generally related to a high population of agriculturalists, large forest areas can be destroyed beyond recovery. Vannière (1969) claims that the main cause of forest degradation in Equatorial Guinea is itinerant agriculture. Most of this kind of destruction has occurred in the Micomeseng–Ebebiyin region, but more than 44 per cent of the Litoral province has been degraded in this way. Rates of forest conversion by shifting agriculture according to FAO (1981) indicate that 23,000 families in Rio Muni and 1000 in the islands practising this cultivation annually disturbed 14,000 and 1000 ha of forest, respectively. Similarly, Lepitre *et al.* (1988) calculated that 1425 sq km of the land was affected by agriculturalists each year, 80 per cent being forest

land. They estimate a conversion rate of 7.3 ha per inhabitant per year (calculated from converted forest area/rural population).

Of the 26,000 sq km that make up the entire territory, 3000 sq km (11.5 per cent) is under agriculture. According to international agriculture programmes (Cooperation Française, 1982), another 5000 sq km, or 19.2 per cent of the entire country, are potentially exploitable. During colonial times, around 25,000 ha were dedicated to coffee, cacao, oil palm and coconut. Only 75 plantations are now left in the continental region, 7 per cent of which are larger than 100 ha. Cacao plantations, which were originally one of the prime land holders, are at present reduced to 3 per cent of their former extent. Thus, whereas in 1969 more than 36,000 tons of cacao were produced, by 1979 this figure had been reduced to less than 7000 tons. Despite the halt in this downward trend and a significant increase in exports between 1980 and 1983, production fell again due to a combination of adverse climatological conditions and a decline in market prices. This represented a reduction of income of approximately $US4 million. There was also a sharp reduction in coffee exports in 1986, the total export value being maintained due to price increases. On the other hand, there was a con-



The russet-eared guenon is one among five recognized primate subspecies endemic to Bioko (*John Fa*).



Wild animals are important as bush meat for the rural populations in Equatorial Guinea (*John Fa*).

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siderable increase in timber exports; the exported volume reached 138,000 cu m in 1988, and, together with an improvement of prices, accounted for an increase of approximately US$6.5 million.

Whilst there is potential to increase production in agriculture as well as forestry, there is no doubt that forestry offers the best possibilities for expansion both in the short and medium term. It is unlikely that the cacao industry could be restored to its pre-independence state, even if old cacao plantations were rehabilitated. It would be too costly in view of the expected low prices in international markets and the high input costs. A similar situation of low market prices due to an increase in worldwide production affects the coffee trade.

Future trends

High taxation and the excessive costs of road-building (vehicles transporting wood are not allowed to use public roads) are considered to be the two main obstacles for the expansion of the timber industry in the country. Taxation is 27 per cent for roundwood and 18 per cent for sawnwood, but taxes on petrol, handling and port facilities are also high. For okoumé *Aucoumea klaineana*, the major timber exported from this part of Africa, tax is 1.36-fold higher than in neighbouring Gabon. Timber export from Rio Muni takes place exclusively from Bata, thus any increment in the timber trade would also necessarily entail expansion of these port facilities or the opening of another port at Cogo as suggested by the EC (Lepitre *et al.*, 1988).

The country's reliance on timber to boost its gross national product has been translated into an expected production rise of 87.5 per cent for roundwood, 7.4 per cent for sawnwood and 5.1 per cent for boardwood by 1989 (Malleux, 1987). According to figures from the International Monetary Fund, the participation of timber in the nation's economy would have to increase from 35 per cent in 1984 to 54 per cent in 1991 (Lepitre *et al.*, 1988). After studying the tax system, Taupiac (1988) recommended the substantial lowering of taxes while Lepitre *et al.* (1988) concluded that the enlargement of the forest road network would accommodate the necessary increase in traffic.

Conservation of the country's biological diversity has been recently promoted in the decree of five protected areas in Rio Muni, another two on Bioko Island as well as Annobon Island in its entirety, as proposed by

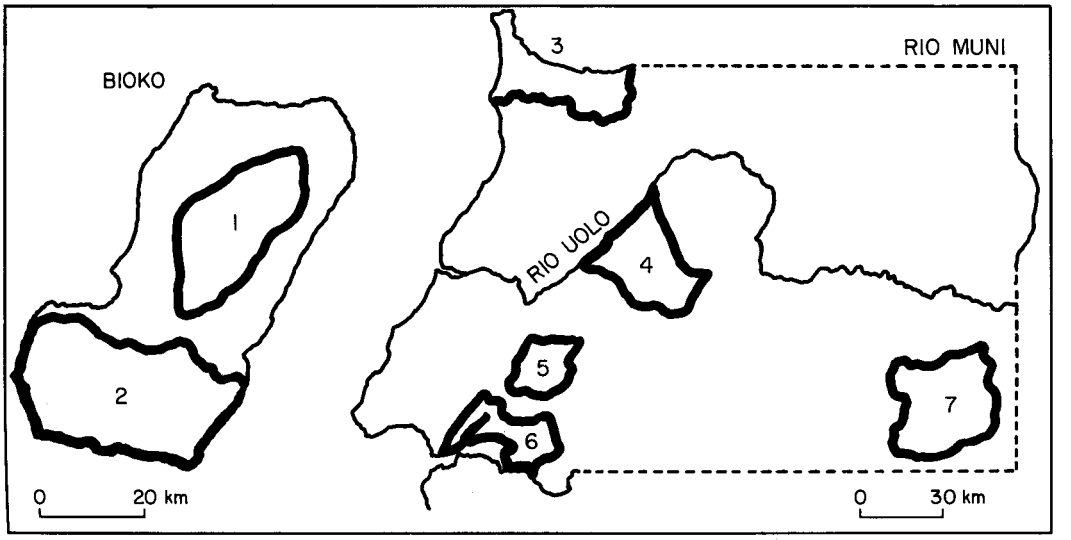

Figure 2. Decreed protected areas in Equatorial Guinea. Bioko: 1. Pico Basilé; 2. Gran Caldera de Luba; Rio Muni: 3. Rio Ntem Estuary; 4. Monte Alén; 5. Montes Mitra; 6. Rio Muni Estuary; 7. Nsoc Highlands.

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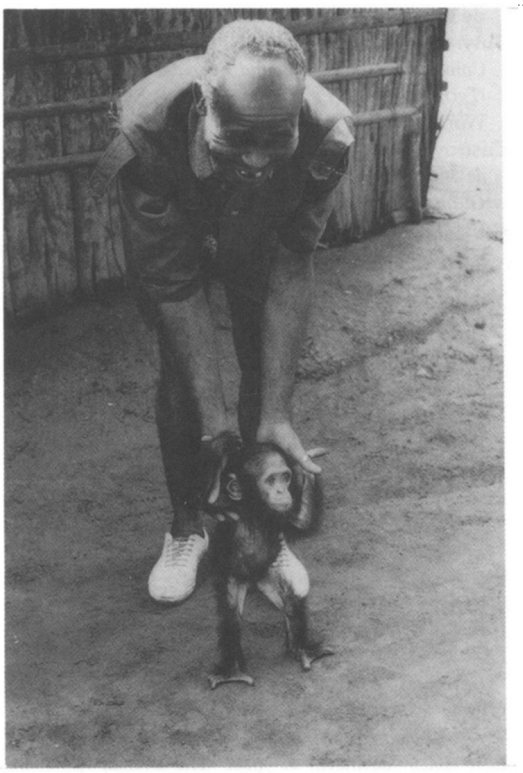

Capture of chimpanzees and gorillas for sale to dealers may be having a significant impact on these primates in Rio Muni (*John Fa*).

Castroviejo *et al.* (1986) and Fa (1991) (Figure 2). However, this exercise remains a nominal attempt in protection although it opens ways for future action.

Solutions

Equatorial Guinea's legal framework for conservation is still in its incipient stages. Two ordinances now exist that relate to natural resources, a forestry law enacted in 1985 for the protection and regulation of the use of forest products, and the other for the protection of wildlife in December 1988.

The Dirección General de Bosques at Malabo, through its Ministerio de Agricultura, Ganadería, Pesca y Forestal, is the ultimate authority responsible for the administration of natural resources in Equatorial Guinea. Its representative office in Rio Muni, at Bata, guides all action pertaining to forest exploitation and conservation. Yet, the entire Dirección General has 35 persons working in the section out of which only five are trained at a higher level (1 in economic forestry, 2 in civil engineering and 2 others as technicians). No tropical forestry training is undertaken and on the ground wardening is absent. Any attempt to conserve Equatorial Guinea's important natural resources should lead to a system of sustainable use of its forest resources, for which training of personnel becomes vital. Immediate conservation action needs to be based on the following main recommendations:

Forest exploitation and management

1. It may be premature to advance extensive exploitation strategies based on the existing inventory information. Resource inventories that consider general aspects of the forest (water availability, soil fertility, important species) as well as the abundance of timber are urgently needed.
2. Application of information from neighbouring countries on conservation problems of logged and unlogged forests is required. Attention must be paid to ways of making timber extraction compatible with the conservation of biological diversity. Monitoring and improvement of regeneration is needed to determine sustainable felling cycles, extraction intensities etc.

Protected areas

3. It is important to gazette the designated protected forest areas in the December 1988 Wildlife Conservation Law. These are valuable as representative sites for the conservation of the country's flora and fauna. Local populations must be integrated in the management of these areas. Plant and animal conservation, use of natural resources by local human populations and exploitation of timber by logging companies can be managed jointly.
4. Human activities within the protected areas should be kept to a minimum in core sites, but should be managed in buffer zones. Rare

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species should be protected from exploitation but sustained-yield harvesting of commoner species must be tolerated.

Personnel training and rural development

5. The Dirección General de Bosques is understaffed and requires personnel trained in forestry and resource conservation. Every effort should be invested in the training of existing officers and in fostering the integration of new persons for future training *in situ*.
6. The field centre proposed for the area of Monte Alén (Fa, 1991) as part of the demonstration project for the EC Forestry Programme for West Africa should be seen as the first of a number to be set up in the country. These will be significant as training centres in forest ecology and practical forest management, including cooperation with local communities.
7. Conservation education programmes, especially those which focus on sustainable use of the forest for the long-term benefit of the local populations, must be started within demonstration areas that are also focusing on exploitation and wildlife conservation.

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References

Adams, C.D. 1957. Observations on the fern flora of Fernando Po. *Journal of Ecology*, **45**, 479–494.

Basílio, A. 1962. *La Vida Animal en la Guinea Española*. Instituto de Estudios Africanos, Consejo Superior de Investigaciones Científicas, Madrid.

Butynski, T.M. and Koster, S.H. 1988. *The Status and Conservation of Forests and Primates on Bioko Island (Fernando Po), Equatorial Guinea*. Report to the World Wildlife Fund.

Castroviejo, J., Juste, J. and Castelo, R. 1986. *Proyecto de Investigación y Conservación de la Naturaleza en Guinea Ecuatorial*. Ministério de Asuntos Exteriores, España, Secretaría de Estado para la Cooperación Internacional y para Iberoamérica-Oficina de Cooperación con Guinea Ecuatorial.

Cooperation Française. 1982. *Analyse de la Situation Agro-Pastorale de la Région Continentale (Rio Muni)*. Propositions d'actions.

Davis, S.D., Droop, S.J.M., Gregerson, P., Henson, L., Leon, C.J., Villalobos, E., Synge, H. and Zantovska, J. 1986. *Plants in Danger: What Do We Know?* IUCN, Gland, Switzerland and Cambridge, UK.

Eisentraut, M. 1973. Die Wirbeltierfauna von Fernando Poo und Westkamerun. *Bonner Zoologische Monographien*, 3.

Fa, J.E. 1991. *Guinea Ecuatorial—Conservación y Manejo Sostenible de los Ecosistemas Forestales*. IUCN, Gland, Switzerland and Cambridge, UK.

FAO. 1981. *Guinea Ecuatorial. Projet d'evaluation des Resources Forestieres Tropicales, Les Ressources Forestieres de l'Afrique Tropicales, Deuxieme Parte: Resumes par Pays*. Rome.

Lee, P.C., Bennett, E. and Thornback, J. 1988. *Threatened Primates of Africa*. IUCN, Gland, Switzerland and Cambridge, UK.

Lepitre, C., Mille, G. and de Royer, G. 1988. *Programme d'Appui au Secteur Forestier en Guinée Equatoriale*. Fond Européen de Developpement.

Malleaux, J. 1987. *Informe de la Misión de Inventario y Ordenación Forestal*. FAO, Rome.

McShane, T.O. 1990. Conservation before the crisis—an opportunity in Gabon. *Oryx*, **24**, 9–14.

Ocaña Garcia, M. 1962 Factores que influencian la distribución de la vegetación en Fernando Poo. *Archivos del Instituto de Estudios Africanos*, **XIV** (55), 67–85.

Taupiac, M. 1988. *Estudio sobre los Impuestos sobre la Madera en Guinea Ecuatorial*. Cooperation Française.

Vanniere, B. 1969. *Mission d'Inventaire Forestier, 20 Juin–29 Juillet 1969, Guinea Equatoriale*. FAO, Rome.

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