MINISTRY FOR THE COORDINATION
OF ENVIRONMENTAL AFFAIRS

First National Report on the Conservation of Biological Diversity in Mozambique

MAPUTO

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EXECUTIVESUMMARY

The First National Report on the Conservation of Biological Diversity in Mozambique has been prepared in accordance with Article 26 of the Convention of Biological Diversity which requires Parties to prepare periodic reports of the measures taken to implement CBD provisions and fhe effectiveness of such measures. The First Report covers CBD implementation activities carried out during 7997 and highlights the current status of biodiversity in Mozambique, trends in biodiversity, institutional and legal framework for biodiversity conservation and the formulation of a draft National Strategy and Action Plan which seeks to integrate biodiversity considerations into cross-sectoral policies, plans and programmes.

Mozambique occupies the southeastern seaboard of Africa from the Rovuma River mouth (1 0°30'S) to the South African border (26°49'S). Mozambique covers an area of 784 755 km², has an estimated (7997) population of 16,000,000 and is characterized by a wide diversity of ecosystems and habitafs including Afromontane habitats, many different woodland/forest types, edaphic grasslands and a variety of wetlands, coastal and marine habitats.

Notwithstanding this rich diversify remarkably little is known about the status of Mozambique's biological diversify Due to the long period of internal conflict that affected much of the country there is consequently a profound lack of information regarding the conservation status of Mozambique's biological diversity, and no Red Data Books for Mozambique's fauna and flora exist. Several areas are, however, known to be biological "hotspots", for example the Gorongosa Mountain - Rift Valley - Marromeu complex, the Chimanimani Massif and the Maputaland Centre of Endemism,

Since the signing of the Peace Accord in 1992 and the consolidation of peace throughout the country new and challenging opportunities now exist for natural resource scientists to gather primary data regarding the status of Mozambique's biodiversity.

As may be expected, in the absence of baseline dafa, there is little accurate information regarding trends in biodiversity and process/activities threatening biodiversity The commercial harvesting of fuelwood is known to have a major impact on woodlands and forests especially in the vicinity of major urban areas. However; the precise rate of removal of woody cover is not known.

The trends in wildlife populations at a national level is poorly documented although recent surveys carried out in selected protected areas since the signing of the Peace Accord have shown massive declines in large mammal populations in protected areas with the exception of Niassa Reserve in northern Mozambique. This decimation is directly linked to the long period of internal conflict that afflicted Mozambique.

One of the greatest threats to marine mammals, especially the endangered dugong, is the fisheries sector through the use of shark nets, gill nets and trawl nets. Dugongs am believed to be extinct, or on the verge of extinction, in Maputo Bay although a relatively large population (c. 300 individuals) inhabits Bazaruto Bay

Current estimates indicate that mangroves cover 396,080 ha of Mozambique's coastline which represents a reduction of 3.9% since 1972. Although the total degraded mangrove area appears to be small, uncontrolled cutting of mangrove occurs in locaiised areas close to urban centres.

A National Environmental Management Programme (NEMP) has been drawn up by the newly created Ministry for the Coordination of Environ-mental Affairs (MICOA). The NEMP comprises sectoral plans, for the medium and long term, which are intended to lead to sustainable development The NEMP was adopted by the Government of Mozambique in 7996 and MICOA has been given the authority to oversee it's implementation.

In 1997 the National Policy and Strategy of the Department of Forestry and wildlife (DNFFB) which seeks to realize the potential of forest and wildlife resources through the sustainable use and conservation of biodiversity was officially adopted by the Government of Mozambique. The DNFFB Strategy recognizes the need to rehabilitate protected areas as well as the need to implement measures to promote the sustainable use and conservation ofbiological diversity outside protected areas.

in 7996 the Government of Mozambique adopted a new Fisheries Policy and Implementation Strategy which seeks to maximize economic benefits whilst en suring the sustainability of the resource.

The Government of Mozambique has adopted (7995) a set of guidelines for the development of the tourism industry as outlined in two documents: the National Policy for Tourism and the Strategy for Tourism Development In Mozambique.

A guiding principal of the Policy is: "The promotion of initiatives which ensure the maintenance of ecological integrity, preservation of the environment and the sustainable use of the natural resource so as to improve the quality of life of local people'!

The passing of the framework Environmental Law in July 1997 was a watershed for environmental protection in Mozambique. importantly, the Law obliges all sectoral legislation related to environmenfai managemenf to be reviewed and, if necessary, revised so that if is consistent with fhe Environmental Law. A National Commission for Sustainable Development (NCSD) was created by a provision in the Environmental Law. The NCSD is a consultative body directly /inked to the Council of Ministers (the Cabinet) which will ensure that that considerations related to the conservation and sustainable use of biodiversity are integrated into sector-al plans, programmes and policies at the highest level

The passing of the new Land Law during the same sitting of Parliament provides a further legal instrument for the creation of total and partially protected zones for ecologically sensitive areas. In a farsighted move the new Land Law includes provisions for the participation on local communities in the protection of natural resources.

No new Forest laws have been promulgated since 1965 and no new Wildlife laws since 19 78. The old laws an? currently being reviewed will be accordingly revised. The adjustment of legislation and regulations so as to respond adequately to the new social and economic environment as highlighted in the National Forestry and Wldlife Policy and Strategy is seen as a priority by the DNFFB.

MICOA is responsible for the coordination

of activities related to the implementation of the Convention on Biological Diversity in Mozambique - to this end a provisional unit, a **National Biodiversity Unit,** has been established. The precise structure, role and function of the Unit is being currently being defined and formalized.

One of the principal outputs of MICOA in 1997 was the formulation of a draft National Strategy and Action Plan for the Conservation Biological Diversity in Mozambique in accordance with Article 6 of the Convention. Mozambique's National Strategy has identified a series of strategic objectives and associated areas foraction to achieve these objectives. The draft National Strategy and Action Plan identifies as a highest priority the need to update and acquire information in order to identify and monitor the important components of biological diversity, recognizing that conservation and sustainable use depends upon such information. In addition, it is recognized that the integration of biodiversity considerations into sectoral plans, policies and programmes is a priority and will be a prerequisite for implementing many of the actions outlined in the Strategy

The **first** purpose of this Mozambique's Strategy is to meet the requirement of the Convention which calls upon all parties to develop national strategies reflecting the measures set out in the Convention (Article 6).

The **second** purpose of the Strategy is to identify issues for which national action will be taken as a matter of priority and for which there is an immediate need force-ordination of efforts. For some of the issues covered by the Strategy there will be a need to develop mote detailed action plans.

The **third** purpose of the Strategy is to serve as an instrument that will help government agencies and society in general in ensuring that the overall government policy goals related to biodiversity are realised, principally through efforts to co-ordinate relevant sectoral policies, programmes and strategies.

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I. INTRODUCTION - CHALLENGES FACING MOZAMBIQUE

Mozambique, located on south-eastern seaboard of Africa and covering an area of some 784 755 km^2, is blessed with wide variety of habitats and natural resources including marine resources, fertile soils, minerals, forests, wildlife, and some 2 770 km of near-pristine coastline.

Following National Independence in 1975 expectations were high that Mozambique and Mozambicans would be able to achieve sustainable social and economic development. Indeed, during the early years of Independence significant achievements were recorded.

Unfortunately, during the 1980's and early 1990's internal conflict prevailed throughout much of the country resulting in large-scale social upheaval and stalled economic development. However, since the signing of the Peace Accord in October 1991, the subsequent consolidation of peace and the successful holding of the first national elections in October 1995 a peace dividend is now resulting in a flow of investment into the economic and social sectors.

Contrary to expectations macro-economic indicators show the Mozambique has experienced an estimated 5-6% economic growth per annum during 1995 and 1996. Despite this impressive growth Mozambique remains one of the poorest countries in the worldwide community of nations.

The natural resource base of the country is, therefore, coming under increasing pressure from a variety of developments. The Government of Mozambique recognizes the need to adopt sustainable development policies and programmes and is committed to ensuring that this is achieved.

However, many controversial issues and concerns have surfaced for countries seeking to promote economic development on the one hand and to conserve biological diversity on the other - the challenge of sustainable development. These challenges are particularly significant for the so-called developing countries such Mozambique. The issues that need to be addressed in order to conserve biodiversity include technical, legal, political, cultural and socio-economic issues.

As highlighted the Government of Mozambique is fully committed to pursuing sustainable development pathways and, shortly after the holding of elections in 1995, the Ministry for the Coordination of Environmental Affairs (MICOA) was created. One of the first tasks of the newly created Ministry was the completion of the National Environmental Management Programme (NEMP) to promote and implement sound environmental policy.

A watershed for environmental conservation and management in Mozambique was achieved in 1997 with the passing of the framework Environmental Law. Thus for the first time in the history of our young nation Mozambique possesses a legal instrument to ensure that environmentally sound development pathways are adopted. The enactment of this new legislation highlights the importance that Mozambique gives to protection of the environment notwithstanding the severe economic problems that the country is currently facing.

In addition to the framework Environmental Law, a new Land Law was also passed in 1997. The new Land Law recognizes the need to protect ecologically sensitive areas such lakesides, riverine habitats and coastal areas thereby providing new opportunities for conserving biodiversity in these areas. Importantly, the new Land law also recognizes

the rights of local communities over land and natural resources thereby offering, for the first time, the possibility of involving rural communities fully in the management and conservation of biological resources.

Prior to the war the National Parks and Reserves in Mozambique were considered to be among the finest in southern Africa. Approximately 7% of the national territory comprises National Parks and Wildlife Reserves. However, the wildlife in most protected areas has been decimated and the infrastructure largely destroyed. With the onset of peace great efforts are being made to rehabilitate **these wildlife** sanctuaries which will provide new opportunities for conservation of biodiversity and tourism. The rehabilitation of Mozambique's protected area network is cornerstone of the Nation Forest & Wildlife Policy and Strategy (Department of Forestry and Wildlife).

Mozambique was an active participant at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, Brazil in 1992. One of the major results of UNCED was the formulation of the Convention of Biodiversity. The Government of Mozambique signed the Convention in 1992 with the subsequent ratification in 1994 by the Parliament. As part of its commitment to the Convention the government has embarked upon a series of initiatives to implement the main objectives and obligations of the Convention of Biodiversity in Mozambique. A National Biodiversity Strategy and Action Plan is currently in the final phase of completion following consultation with a large number of stakeholders and the holding of a National Workshop. In addition, a technical report, *THE BIOLOGICAL DIVERSITY OF MOZAMBIQUE* has been produced which provides the first comprehensive account, under one cover, of existing information related to biodiversity and biodiversity conservation in Mozambique. As such, the Report provides up-to-date information that will be useful for natural resource users, planners and managers as well as serving as a reference point for further biodiversity research in Mozambique.

An immense opportunity, therefore, now exists for Mozambique to meet the twin challenges of economic development on the one hand and the sustained and wise use of biological resources on the other. Initial steps have been taken and the foundation has been laid to meet these challenges. The Government of Mozambique is cogniscent of the difficulties remaining -however it is firmly believed that through the commitment and endeavour of government and civil society these will be addressed and the challenges met.

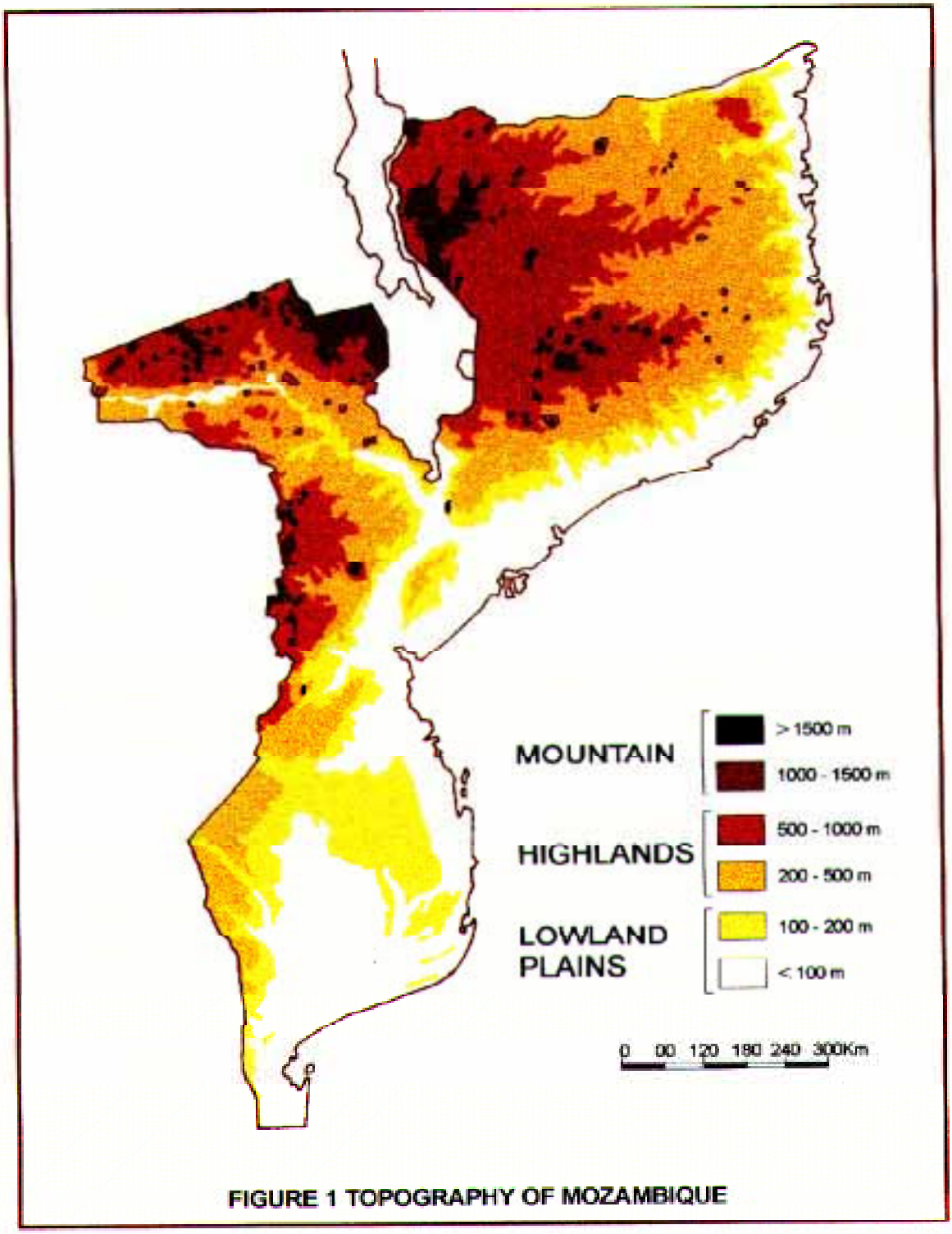

FIGURE 1 TOPOGRAPHY OF MOZAMBIQUE

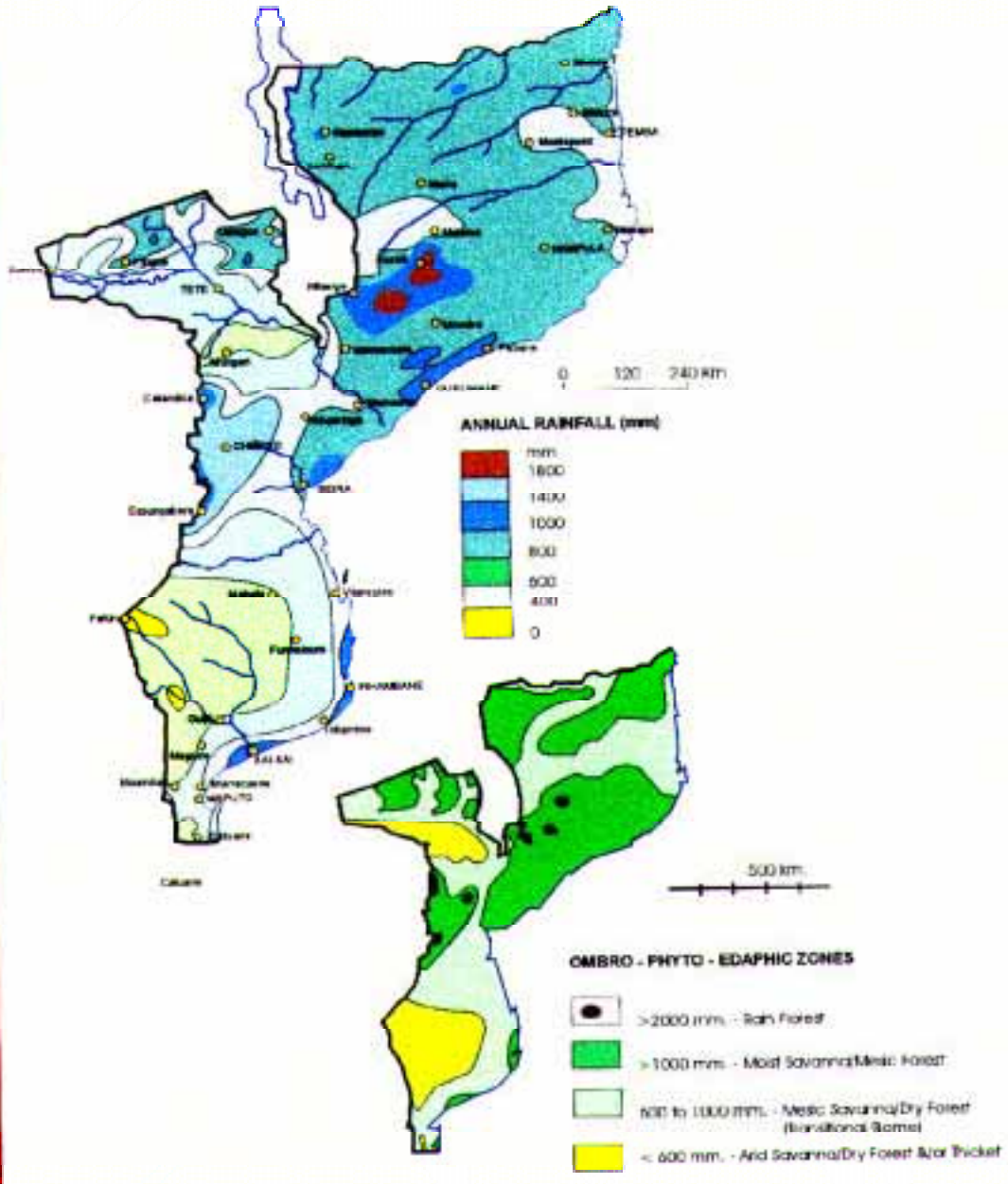

FIGURE 2 RAINFALL ISOHYETS AND CORRESPONDING "ECOZONES"

II. LOCATION, GEOGRAPHY AND CLIMATE

Mozambique occupies the southeastern seaboard of Africa from the Rovuma River mouth (10°30'S) to the South African border (26°49'S). It is bounded by Tanzania in the north, by Malawi, Zambia, Zimbabwe, South Africa and Swaziland in the west, and by the Indian Ocean in the east. It has an area of 784 755 km² and an estimated (1994) population of 16 000 000.

The northern part of the country is a great mountainous block with maximum elevations along the eastern edge of the East African Rift Valley system (Figure 1).

The central region is dominated by the lower Zambezi Valley and its delta plains, but in the interior, in Tete Province, the rims of the valley are mountainous. The Shire River, draining Lake Malawi, enters the Zambezi in the lowlands.

The southern part of the country, south of Beira (19°49'S/34°52'E), comprises a broad coastal plain backed by mountains along the western national border.

For most of the year the weather is dominated by the high pressure system which prevails over the southern African Plateau, but NE and SE air streams from the Indian Ocean bring rain during the months of October-March.

The entire coastline receives 800-900 mm of rain a year, with four more humid pockets along certain stretches of coast.

In southern Mozambique rainfall is relatively high on the coast (c. 750mm per annum), from where it decreases rapidly on passing inland, but rises again on the slopes of the Libombo mountains along the western borders. The interior of Gaza Province on the border with South Africa/Zimbabwe is semi-and (annual rainfall less than 400 mm per annum).

The north of the country is generally more humid than the south except for part of the lower Zambezi Valley in Tete Province, which receives less than 600 m/yr. There are a series of very humid pockets along the western border on the upper slopes of the mountains on the border with Zimbabwe. Rainfall also exceeds 1500 mm/yr. on the isolated Gorongosa Massif (18°30'S/34°03'E), standing midway between the western highlands and Beira on the coast. All the higher mountainous areas north of the Zambezi are wet.

There is a close relationship between broad "ecozones" and precipitation. Areas receiving >2000mm per annum are characterized by moist forest - with decreasing rainfall there is a gradation from moist to and savanna.

III THE STATUS OF BIOLOGICAL DIVERSITY IN MOZAMBIQUE

Mozambique is characterized by a wide diversity of ecosystems and including islands of Afromontane habitats, many different woodland/forest types, edaphic grasslands and a variety of wetlands, coastal and marine habitats.

Notwithstanding this rich diversity remarkably little is known about the status of Mozambique biological diversity.

No coordinated, comprehensive surveys of Mozambique's biological resources have been carried out. This is partially due to a long period of civil unrest that affected much of the country and consequently there is a profound lack of information regarding the conservation status of Mozambique's biological diversity, and no Red Data Books for Mozambique's fauna and flora exist.

Several surveys and assessments of selected components of Mozambique's biological diversity have been carried by variety relevant agencies and university researchers but these have been carried out in an uncoordinated fashion.

Information related to Mozambique biodiversity exists in the form scientific articles, internal (unpublished) reports, project document, NGO reports, satellite imagery, etc. However, these data are dispersed over a various sectoral agencies as well as with individuals. This information has not been integrated at the national, local and even in some cases, the institutional level. In addition the data sets are based on different classification systems, organized along different formats and are of varying accuracies.

The draft National Strategy identifies as a highest priority the need to update and acquire information in order identify and monitor the important components of biological, recognizing that conservation and sustainable use depends entirely on such information.

Consequently, when describing the status of Mozambique's biological diversity it must always be borne in mind that major information gaps exist and information regarding the conservation status of ecosystems, habitats and species is often speculative.

III. 1 . VEGETATION AND FLORA

Due to the long period of internal conflict that affected much of the country little or no botanical surveys were carried out between 1980 and 1994. Many ecosystems are poorly documented, especially the woodlands and forests northern Mozambique and the Afromontane areas.

Sixteen broad vegetation types that can be recognized in Mozambique (Figure 3) although at more detailed scale many more subtypes can be distinguished.

Miombo woodland is the most extensive vegetation type and dominates in the north and centre of the country, Dominant tree species are *Brachystegia* spp. often mixed with *Julbernardia globiflora* although a tide diversity of other plant species occur associated with *Brachystegia-Julbernardia* indicators. Although mapped as a single vegetation unit, the reality is much more complexand many different types of miombo woodland can be distinguished based on species composition and structure.

The second most extensive vegetation type is mopane woodland occurring in the Limpopo-Save area and upper Zambezi

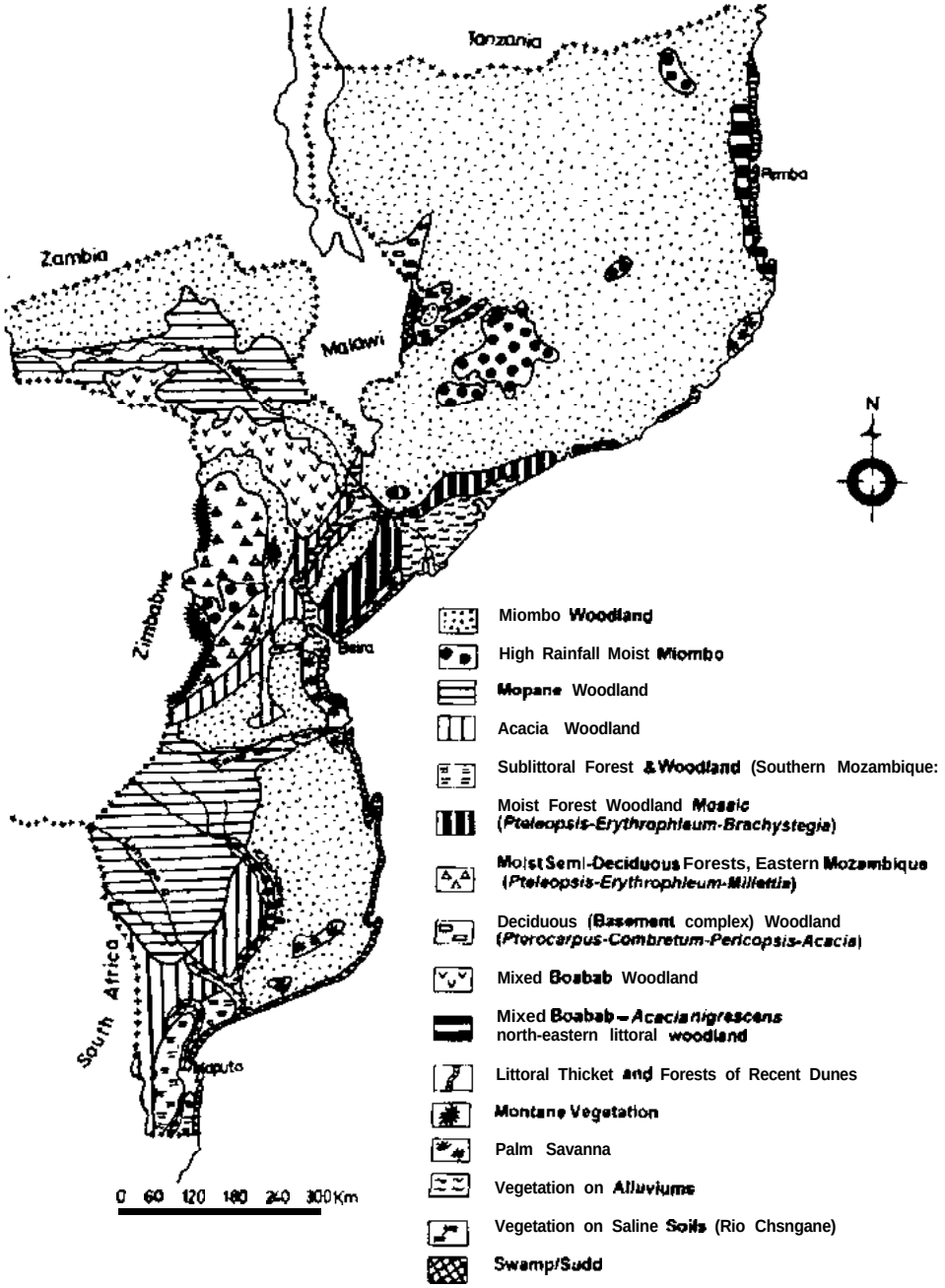

FIGURE 3 BROAD VEGETATION TYPES OF MOZAMBIQUE

Valley dominated by the tree species *Colophospermum* mopane. Other commonly occurring tree species include Adansonia *digitata* ("imbondeiro" or "baobab"), *Afzelia quanzensis* ("chamfuta") and *Sterculia rogersii*.

Large areas of Acacia woodland occur in the more arid areas of southern and central Mozambique.

The sandy soils of south-eastern coastal Mozambique are characterized by the presence of sublittoral forest, woodland and grassland. This area is now recognized for the high levels of biodiversity and endemism and falls within a recoginzed Centre of Plant Diversity (the Maputaland Centre of Endemism).

Littoral thicket and forest dunes *(Diospyros rotundifolia, Euclea natalensis* and *Mimusops caffra)* occurs on the high parabolic dunes of southern Mozambique and the smaller dunes of central and northern Mozambique.

Exceptionally well-developed moist forests (*Pteleopsis myrtifolia, Erythrophleum* and *Brachystegia* spp.) occur on the Cheringoma Plateau between the Rift Valley and the coast north of Beira. These forest formations are considered to have some of the highest production potentials in Mozambique.

Small "islands" of Afromontane habitats comprising moist forests and montane grasslands occur along the eastern border with Zimbabwe and Malawi where the Mozambican plains rise up sharply to the western rim of the great southern African plateau. These areas are recognized for their high levels of biodiversity and endemism. Interesting conifer forests formations *(Widdringtonia, Podocarpus* or *Juniperus)* at higher altitudes whilst at lower at moist evergreen forests (*Maranthes polyandra, Khaya, Aphloia, Macaranga, etc.)* may occur.

Vegetation formations on alluvial plains are predominant in the Zambezi, Limpopo and Nkomati valleys. Fringing forest comprising woody species *Ficus* spp., *Syzygium cordatum* and *Kigelia africana* occur along the immediate banks of the Rivers. Behind this zone the plains are periodically flooded and badly drained with extensive grasslands.

Inland halophytic communities are widespread in the Changane Valley, a tributary of the Limpopo comprising succulent plants such as *Arthrocnemum* sp. *Chenolea* and *Salicomia* and scattered bushes of *Atriplex*, *Suaeda,* etc.

Palm savanna *(Phoenix reclinata, Hyphaene crinita)* occurs in coastal regions where the water table approaches the surface.

More than 5500 plants species have been recorded for Mozambique although the actual number of species is undoubtedly much higher (Table 5). It is estimated that 250 plant species may be endemic. The conservation status of Mozambique's flora is not known although at least 20 species are reported as endangered - this is probably an underestimate.

111.2. TERRESTRIAL ANIMAL BIODIVERSITY

111.2. 1. Terrestrial Mammals

According to Smithers and Tello (1970) there are 222 mammal species in Mozambique. Several endemic large mammal subspecies occur including the Blue Niassa Wildebeest *(Connochaetes taurinus johnstoni)* is characterized by a white band across the muzzle (believed to be endangered) and a sub-species of Burchell's Zebra *(Equus burchelli* subsp. *bohmi)* both of which occur in northern Mozambique.

On a national level large mammal several species are believed to be extinct or on the verge of extinction e.g. the black and white rhino, giraffe, roan antelope, tsessebe, eland, the mountain reedbuck and the African wild dog.

Two rodent species of conservation concern occur. The Selinda veld rat, *Aethomys silindensis*, which is only known from the Mozambique-Zimbabwe borderarea in rock areas at 700-800 m in miombo woodland, and a species of woodland mouse, *Grammomys comestes*, only known from the costal forest belt (also in Tanzania ands South Africa). The chequered elephant shrew subspecies *Rhynchocyon cireni cireni* is known only from Quelimane, Zambezia Province. Its occurrence and conservation requirements in the coastal forest belt require investigation.

III.2.2. Birds

The avifauna of Mozambique is generally shared with neighbouring countries and at least five hundred and eighty-one species have been recorded for Mozambique.

There are a number of near endemic species and restricted range species, mostly associated with isolated montane habitats such as the Gorongosa Massif, the Chiperone and Namuli Mountains and the Njesi plateau.

There is a large colony (200 pairs) of Cape vultures in the Lebombo Hills in the extreme south of the country. The wattled crane is severely reduced, but still occurs in wetlands in the centre of the country, especially in Gorongosa National Park and Marromeu Game Reserve. The east coast akalat occurs in coastal forest. Current records are from the centre and south of the country, but it might occur in the north as well. More information is needed to identify its main populations, the only recent records being from the lnhamitanda Forest between Beira and the mouth of the Zambezi River. Other species of concern in montane forests are: the Thyolo alethe on Chiperone and Namuli Mountains (and Malawi); the dappled mountain-robin on Namuli Mountain (and Tanzania); Swynnerton's forest-robin on Gorongosa and Chimanimani Mountains (also Zimbabwe and Tanzania); the white-winged apalis on Chiperone Mountain (also Malawi and Tanzania). The importance of improved forest conservation in these critical sites is clear.

Preliminary data indicate that bird 24 species are of conservation concern.The current knowledge regarding the conservation status of bird species in Mozambique is shown in Box 1.

III.2.3. Herpetofauna (Reptiles and Amphibians)

The herpetofauna of Mozambique poorly well documented, especially the amphibi ans.

Reptiles

One hundred and sixty seven (167) reptile species have been recorded for Mozambique.

The conservation status of reptiles, with the exception of sea turtles, is largely unknown. Sixty reptile species (including 34 species of snake) have been recorded for the Chimanimani Massif of which one is endemic (*Platysaurus ocellatus* - the flat rock lizard). One snake species, the African Rock Python, is believed to endangered.

Amphibia

The exact number of species of amphibia in

BOX 1

Conservation Status of the Birds of Mozambique (Preliminary)

Of Special Concern
Wattled Crane - *Bugeranus carunculatus* (Gmelin, 1789)
African skimmer – *Rynchops favirostris*
Martial Eagle – *Polemaetus bellicosus*

Rare
Cape Vulture - Gyps *coprotheres* (Forter, 1798).
Swynnerton's Forest Robin - *Swinnertonia swynnertoni* (Shelley, 1908).
East Coast Akalat - *Sheppardia gunningi* (Haagner, 1909).
Dappled Mountain Robin - *Modulatrix orostruthus* (Vincent, 1933)
Long-Billed Apalis - *Apalis moreaui* (Sclater, 1931).

Endangered
Thyolo Alethe - *Alethe choloensis* (Sclater, 1927).

Near-threatened bird species in Mozambique:
Southern Banded Snake Eagle - *Circaetus faciolatus*
Stierlin's Woodecker - *Dendropicos stierlingi*.
Forest Prinia - *Prinia robertsi*.
White-winged Apalis - *Apalis chariessa*.
Rudd's Apalis - *Apalis ruddi*.
Chirinda Apalis - *Apalis chirindensis*.
Woodward's Batis - *Batis fratrum*.
Plain-backed Sunbird - *Anthreptes reichenowi*.
Uluguru Violet-backed Sunbird - *Anthreptes neglectus.*
Neergaard's Sunbird - *Nectarinia neergaardi*.
Gurney's Sugar-bird - *Promerops gumeyi.*
Lemmon-breasted Canary - *Setinus citrinipectus*.
Pink-thoated Twinspot - *Hypargos margaritatus*.

Incipient species at risk or requiring monitoring in Mozambique:
Thyolo Green Bat-bet - *Stactolaema belcheri*.
Namuli Apaiis - *Apalis lynesi.*

Mozambique is unclear, due to taxonomic uncertainty. Seventy-nine species are recorded in the literature as present in Mozambique.

About 28 species, mostly located in the highlands, are believed to be endemic. Thirty-five amphibian species were recorded for the Chimanimani Massif of which two are endemic: *Bufo vertebralis grindleyi* (Grindleys toad) and *Anthroleptis troglodytes* (the cave squeaker).

The conservation status of the amphibia is unknown.

III.2.4 Insects

Only 3074 insect species occur in the Natural History Museums records. This is obviously an underestimate.

The dragonfly *Ceriagrion mourae* is endemic to Mozambique and is very little known. A dragonfly subspecies *Eleuthemis buettikoferi quadriguttata* is known only from the Mozambique-Zimbabwe border area.

111.3. MARINE AND COASTAL BIODIVERSITY

Mozambique lies on the coast of Africa between latitudes 10°20'S to 26°50'S with a coastline of c. 2770 km in length. The warm southward flowing Mozambique Current, has far-reaching influences on the climate and life of southern Africa.

The Mozambique coast is a compound shoreline and can be divided into three main natural regions with one additional type of limited occurrence (Figure 4).

i) Coral Coast

The northernmost section of the coast extending about 770 km from the Rovuma River in the north to the Primeiro/Segundo Archipelago in the south (17°20') is essentially a coral reef coast.

Corals also occur at intervals offshore from Bazaruto Island southward to South Africa. The southern limit for shallow water fringing coral is reported from Inhaca Island at latitude 26°S.

ii) Swamp Coast

The central section of Mozambique of c. 978 km between Angoche (16°14'S) and Bazaruto Island (21°10'S), is classified as a swamp coast with simple linear to arcuate beaches, swamps and estuaries. Twenty four rivers discharge into the Indian Ocean along this central section of the coast, each with an estuary supporting well established mangrove swamps.

iii) Parabolic Dune Coast

The third coastal region stretches from Bazaruto Island southward to Ponta de Ouro on the South African border is classified as a parabolic dune coast. This section of coast is about 850 km long and is characterized by high parabolic dunes and north-trending capes and barrier lakes. These dunes are Pleistocene formations and reach considerable heights such as 114 metres at Inhaca Island and are considered to the tallest vegetated dunes in the world.

iv) Delta Coasts

There are only two sections of the Mozambique coast that can be classified as Delta Coasts viz. the Zambezi and Save River deltas.

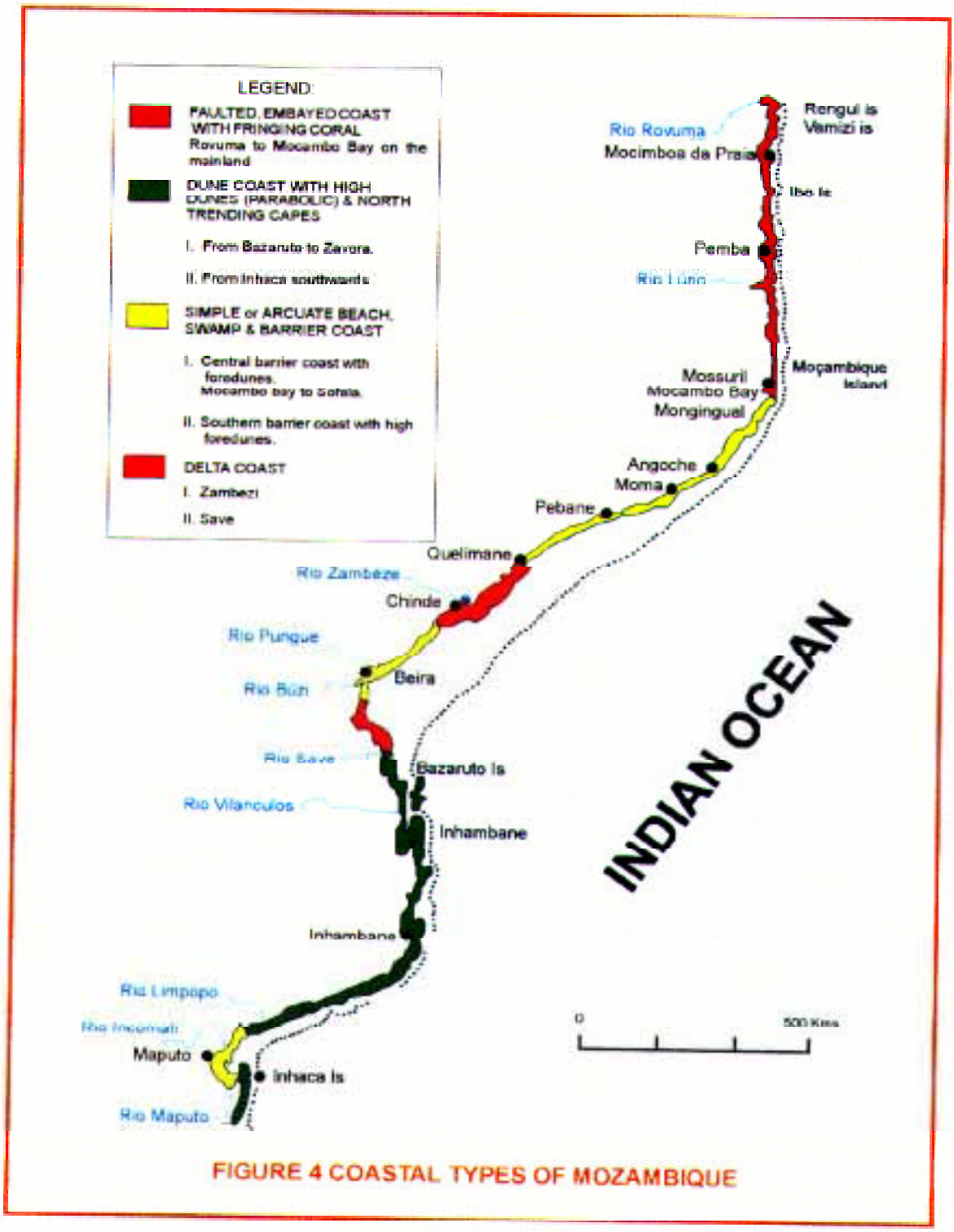

FIGURE 4 COASTAL TYPES OF MOZAMBIQUE

III.3.1. Marine Mammals

Dugongs

Dugongs (*Dugong dugon*) are tropical marine mammals occurring in shallow waters with seagrass beds. Dugongs are considered highly endangered in Mozambique. It is believed that one of the largest populations of dugong along the East African coast inhabits the littoral waters of the Bazaruto Archipelago (estimated at c. 300 individuals, Guissamulo, 1993) whilst a smaller population occurs in Inhambane Bay. It is believed that a few individuals still inhabit Maputo Bay although this population is believed to be on the verge of extinction.

III.3.2. Dolphins and Whales

Seven species of dolphins inhabit the littoral waters off Mozambique, the humpback dolphin (Sousa chinensis), bottlenose dolphin (*Tursiops truncatus*), Spinner dolphin (*Stenella longirostris*), Spotted dolphin (*Stenella affenuafa),* Common dolphin (*Delphinus delphis*), Rough-toothed dolphin *(Steno bredanensis*) and the False-killer whale (*Pseudorca crassidens*).

Humpback whales (*Megaptera novaeangliae*) and Minke whales (*Balanoptera acutorostrata*) occur in littoral waters between Ponta do Ouro and Inhambane. However, they do not enter Maputo or Inhambane Bays.

III.3.3. Corals

The coral reefs of Mozambique are a southern continuation of the well-developed fringing reefs that occur along major sections of the fairly narrow continental shelf of the East African coast. It is estimated that corals occupy 2500km^2 (IUCN/UNEP, 1985) comprising at least 50 genera and 150 species. However, precise data on the coral reefs of Mozambique are lacking and these figures need to be revised.

Reefs are dominated by *Acropora* or *Porites*, with members of the Pocilloporidae and Faviidae also being common, the former particularly in the shallow and the latter at mid depths.

III.3.4. Turtles

All five species of Indian Ocean sea turtles nest on beaches along the Mozambique coast: the Loggerhead turtle (*Caretta caretta*), the Leatherback (*Dermochelys coriacea*), the Green Turtle (*Chelonia mydas*), the Hawksbill turtle (*Eretmochelys imbricata)* and the Olive Ridley turtle *(Lepidochelys olivacea*).

The Loggerhead (*Caretta caretta)* and Leatherback turtles (*Dermochelys coriacea)* nest along the coast from Ponta do Ouro to Bazaruto Archipelago.

The Green Turtle (*Chelonia mydas)* nests from Qewene Peninsula to Quirimbas Archipelago. The biggest concentration appears to be in the Primeiras e Segundas Islands. Nests of this species were found recently on the Bazaruto Archipelago (Gove and Magane, 1998).

The Hawksbill turtle (*Eretmochelys imbricata)* and Olive Ridley turtle (*Lepidochelys olivacea)* occur on the northern coast (Hughes, 1971) but their nesting areas are unknown.

III.3.5. Mangroves

Mangrove forests are floristically well developed in the northern and central sectors of the coast and less so along the

southern sector. Plant species associated with mangroves in Mozambique are listed in Table 1.

III.4 FRESHWATER WETLANDS

Freshwater wetlands in Mozambique include: lakes (natural and artificial), rivers (including floodplains) and palustrine areas (swamps and dambos).

Wetlands are important both as habitat for wild species and for agriculture during the dry season. Lakes and rivers supply much fish protein in Mozambique. Floodplains, such as Marromeu in the Zambezi Delta and the Lower Limpopo River provide breeding

Table 1. Plant species occurring in the mangroves of Mozambique

FAMILY	SPECIES
RHIZOPHORACEAE	*Rhizophora mucmnata* *Ceriops tagal* *Bruguiera gymnorrhiza*
VERBENACEAE	*A vicennia marina*
COMBRETACEAE	*Lumnitzera racemosa*
SONNERATIACEAE	*Sonneratia alba*
STERCULIACEAE	*Heretiera littoralis*
MELIACEAE	*Xilocarpus granatum*
LECYTHIDACEAE	*Barringtonia racemosa*
SURIANACEAE	*Suriana maritima*
CHENOPODIACEAE	*Arthrocnemum australasicum* *Arthrocnemum indicum* *Arthrocnemum perenne* *Salicomia pem'ere* *Chenolea diffusa*. *Suaeda monoica*
MALVACEAE	*Hibiscus tiliaceus*
POLYPODIACEAE	*Acrostichum aureum*
LYTHRACEAE	*Pemphis acidula*
AIZOACEAE	*Sesuvium portulacastrum*

for fish as well as wildlife habitat. Wetlands also provide temporary habitat for migratory species.

The largest natural lake in Mozambique is Lake Niassa (also known as Lake Malawi). With a surface area of between 24,504 km^2 and 30,800 km^2 it is the third largest lake in Africa and the world's third deepest. Lake Niassa is shared by Mozambique, Malawi and Tanzania. Mozambican territory occupies 6.400 km^2 (20.8 percent). The lake contains one of the most diverse fish fauna in the world. The Lake is especially well known for its spectacular diversity of endemic cichlid fish fauna. The majority of these are haplochromine cichlids, currently assigned to 22 genera containing a total of 191 described species. In total 320 fish species have been recorded for Lake Niassa. However, the biodiversity of Lake Niassa may be much higher and many species still have to be identified. It has been suggested that the Lake may host about 500-1000 species of fish. The Mozambican portion of Lake Niassa is not protected.

Other important natural lakes include: Lake Amaramba (14°22'-14°40'S/35°52-35°58'E) covering an area c. 8350 ha (4350 ha open water + 4000 ha swamp), Lake Chiuta (14°42'-14°47'S/35°50'-35°54'E) covering an area of 32,000 ha (3500 ha open water + 28,500 ha swamp) and Lake Chilwa (15°09'-15°31'S/35°33'-35°50'E) covering an area of 185,000 ha (including lacustrine swamps). All these lakes are shared between Mozambique and Malawi.

Lake Cahorra Bassa, created in 1975, located at 1 5°29'-16°00'S/30°28'-32°43'E on the Zambezi River, covering an area of 2,665 km^2 is the fourth largest man made lake in Africa. In 1967/1968 the Lake Tanganyika sardine (or kapenta) *Limnothrissia miodon* was introduced into Lake Kariba some 500km upstream. Subsequently kapenta became established in Cahora Bassa apparently by invasive spread from Lake Kariba. Evidently *Limnothrissia* had been able to survive passage through the Kariba barrage hydro-electric turbines and move down the Zambezi River to colonize Lake Cahora Bassa.

The most important river system in Mozambique is the Zambezi River which enters national territory at Zumbo where it immediately swells into the impoundment of Lake Cahora Bassa. The most important tributary of the Zambezi in its lower course is the Shire River, which drains Lake Malawi via Elephant Marsh. The Limpopo is the second largest river in Mozambique with a catchment of more than 390,000 km^2. It drains parts of Botswana, South Africa and Zimbabwe before reaching Mozambique. The hydrology of these river systems has been considerably modified by numerous impoundments along their courses.

Information on freshwater fish sites other than Lake Niassa is limited but there is known to be one endemic species, *Parakneria mossambica,* in Mjutzambidzi River, Gorongosa National Park. At least two other threatened freshwater species occur in the south along the border with South Africa: the orange-fringed largemouth *Astatotilapia brevis* and the lowland largemouth *Serranochromis meridianus*. One globally threatened estuarine fish the checked goby *Redigobius dewali* occurs from the lower Limpopo south-wards.

The section of the Rift Valley between the Zambezi River in the north and the Pungue River in the south is essentially a floodplain system. The central feature of the Rift Valley is Lake Urema which is surrounded by extensive open floodplain grassland. The expansion of the floodplain system during the wet season allows the spread of wildlife and their utilisation of the savannas before they

are forced back to the permanent water bodies. This portion of the Rift valley is protected within the Gorongosa National Park.

Marshy areas, commonly known *dambos*, throughout southern Africa are areas where groundwater discharges into low-lying areas. They are common in the highlands of north-western Mozambique (where they are known as "milambos") and are important in maintaining the base flow of river systems that drain the higher areas. The conservation status of dambos is not well known and a study of these habitats should be considered a priority.

III.5 AGRICULTURAL BIODIVERSITY

The small-scale farming system (comprising cultivated, fallow and grazing subsystems) is the mainstay of agriculture in Mozambique. It is estimated that the family farming sector accounts for more 75% of marketed production and 80% of agriculture export earnings. Farming activities are dependent on improved varieties of plants and animals and small-scale farmers have for generations selected the material that were most suited to local conditions as their basis for agriculture.

Landraces can provide the small-holder farmer with a more reliable crop yield in areas with poor/erratic rainfall and low soil fertility. In variable environments higher production may be obtained by employing a range of crop varieties and farmers often use intercropping and agroforestry techniques that employ a mixture of species with complementary requirements.

Several wild relative of crop are found in Mozambique (see Table 2). It is worth noting that Mozambique shares with other southern African countries the centre of diversity for wild cowpeas and sorghum. There is limited information on these species due to the lack of co-ordinated and

Table 2. Wild crop relatives found in Mozambique

SPECIES NAME	COMMON NAME	LOCAL NAME
Cereals		
Pennisetum sp.		Mexoeira
Sorghum spp.	Sorghum	Mapira Nfawa
Oryza longistaminata	Wild rice	Arroz
O. punctata	Wild rice	Bombo
Leersia hexandra		Lihoca
Legumes		
Vigna unguiculata	Cowpea	Feijão Nhemba
V. vexillata		
Oilseeds		
	Wild sunflowers	
Cash crops		
Gossypium spp.	Wild cotton	Algodão Tonge
Coffea spp.	Wild coffee	Café; Kopfi
Root and tubers		
Impomea spp.	Wild yam	Tingwelane

systematic inventory, collection and documentation of these important genetic resources. Apparently, many of crop wild relatives are under threat of genetic erosion as a result of overgrazing, land clearing, burning and other types of poor resource management.

At the infra-specific level the National Varieties List includes 124 varieties of 10 crops species (Table 3). The list is incomplete and does not include some important crops such has cassava and cash crops.

Table 3. National Variety List of Mozambique

CROP	Nº OF VARIETIES
Cereal	
- Maize	26
- Rice	12
- Sorghum	11
- Wheat	4
Legumes	
- Cowpea	26
- Common bean	20
- Groundnuts	10
- Soya bean	8
- Pigeonpea	1
- Oil seed	
- Sunflower	6
Total	124

111.4. BIOLOGICAL "HOTSPOTS" IN MOZAMBIQUE

The biodiversity of Mozambique is relatively poorly known. However, studies to date have identified several areas that are considered highly important from a biological perspective. The most notable areas are the following:

- GORONGOSA MOUNTAIN - RIFT VALLEY - MARROMEU COMPLEX
- CHIMANIMANI MASSIF (MAWENDJE) - of the Mozambique - Zimbabwe Frontier Escarpment Region, Central Mozambique
- THE MAPUTALAND CENTRE OF ENDEMISM

The location of these sites is shown in Figure 5.

GORONGOSA MOUTAIN - RIFT VALLEY - MARROMEU COMPLEX

This area encompasses the isolated massif of Gorongosa Mountain which rises to 1863m, the southern-most, Mozambican sector, of the African Rift Cheringoma Plateau (300m above sea level) and the mangrove coast and great Zambezi Delta grasslands and swamps.

Gorongosa Mountain is 160km inland from the sea and as the only eminence in the entire region which forces the ascent of moist trade wind air resulting in heavy orographic rains to its confines of over 2000mm per year. The mountain supports tropical to montane rainforests and heath grasslands with a number of near-endemic plants and animals e.g. the Greenheaded Oriole (*Oriolus chlorocephalus*) sub-species *O.c. speculifer*, characterized by a white wing patch is found on Gorongosa Mountain, the Dappled-mountain Robin (*Modulatrix orostruthus*), the Chirinda Apalis (*Apalis chirindensis*) a restricted range species, Swynnerton's Forest Robin (*Swynnertonia swynnertoni*) and separate subspecies of the Whitebreasted Alethe (*Alethe fuellebomi*).

CHIMANIMANI MASSIF (MAWENDJE) - of the Mozambique - Zimbabwe Frontier Escarpment Region, Central Mozambique.

The Chimanimani Massif forms part of the eastern escarpment of the Interior Continental Plateau of South Central Africa, along the Mozambique-Zimbabwe frontier.

The whole massif area is some 40km from north to south and 20km wide, contained within coordinates 19°24' to 20°5' South latitude, and between 32°50' and 33°25' East longitude, standing mostly above the 800m contour. The Chimanimani Massif although relatively small in area is characterized by an exceptionally high diversity of habitats and species.

Nearly 1000 vascular plant species have been recorded for the area of which 45 are endemic (Dutton and Dutton, 1975). No less than five *Aloe* species are endemic in the Chimanimani mountains *(A. munchii, A.* hazeliana, *A. howmanii, A. plawsii* and *A. wildii*) hilst three species of *Erica* (E. *lanceolifera, E. pleiotricha* and *E. wildii*) and two species of *Protea* (*P. crinita* and *P. enervis*) are considered endemic.

Over 160 bird species have been recorded for the Chimanimani (Dutton & Dutton, 1975) some of which are considered endemic to the Afro-montane regions of eastern Africa.

Swynnerton's Robin *(Swynnertonia swynnertonia)* is reported to inhabit the moister elements of the montane forests (Collar & Stuart, 1985) highlighting of the faunal connections that exist with other dysjunct montane areas (eg. the Eastern Arc Mountains of Tanzania). Other rare avifaunal species occurring in the moist forests of the Chimanimani Massif include *Circaetis fasciolatus* (Southern Banded Snake Eagle), *Cercococcyx montanus* (Barred Cuckoo), *Andropadus importunis* (Sombre Bulbul), *Prinonops scopifrens* (Chestnutfronted Helmetshrike) and *Batis fratum* (Woodwards' Batis). Neither the rare Dappled Mountain-Robin (*Arcanator arostruthus*) described in 1933 from Mount Namuli nor the White-winged Apalis (*Apalis chariessa*) indentified in a remnant forest on Mount Chiperone (Collar & Stuart, 1985), have been reported for the Chimanimani forests although their presence may yet be confirmed.

THE MAPUTALAND CENTRE OF ENDEMISM

Recently, van Wyk (1994) has proposed an Indian Ocean coastal centre of plant diversity (CPD) viz. the Maputaland-Pondoland Region (MPR).

The MPR is clearly floristically very diverse and complex. However, there are two clear foci of high endemism in the Region: the Maputaland Centre (MC) and the Pondoland Centre. The MC (c. 26.734 km²) is defined as that part of southern Mozambique and north-eastern Natal bounded in the north by the Inkomati-Limpopo River, in the west by the western foothills of the Libombos, in the south by the St. Lucia estuary and in the east by the Indian Ocean. The MC contains extensive wetland notably Lake St. Lucia (c. 350 km²), Lake Sibaya (c. 65 km²) and the Kosi Lake System in South Africa and Lakes Piti, Xingute and Satine in Southern Mozambique.

At least 1100 species of vascular plants occur in the MC. However, this figure may be as high as 2000 to 3000 species. Of these at least 168 species/infraspecific taxa (this is probably also an underestimate) and 4 genera (*Brachychloa*, *Ephippiocarpa, Helichrysopsis, Inhambanella)* are endemic/near-endemic to the centre. Several of the

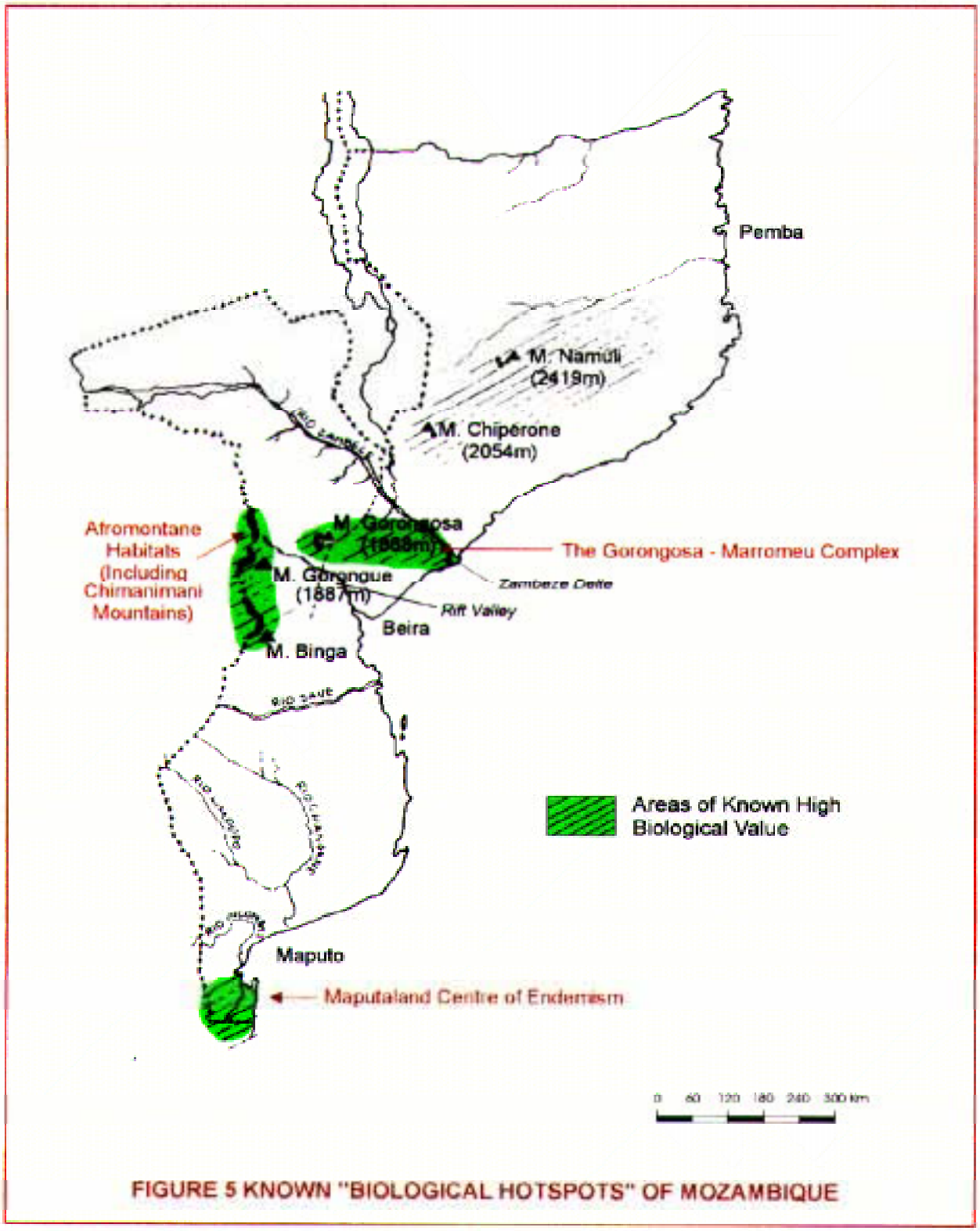

FIGURE 5 KNOWN "BIOLOGICAL HOTSPOTS" OF MOZAMBIQUE

endemics are rare and known only from a few collections.

The associated fauna of the MPR, and particularly of the MC, is interesting and rich. Of the more than 472 species of birds in the MC (57% of South Africa's total), 47 subspecies are endemic/near-endemic to the centre.

Table 4. Endemism Among Selected Groups Of Plant And Animals in the Maputaland Centre of Endemism (from van Wyk, 1994).

Total number of vascular plant & infraspecific taxa	1100
Endemic/near-endemic vascular plant (genera)	4
Endemic/near-endemic vascular plants (specific & infraspecific taxa	168
Endemic/near-endemic mammals (subspecies)	14
Endemic/near-endemic birds (subspecies)	47
Endemic/near-endemic reptiles (specific infraspecific taxa)	23
Endemic/near-endemic frogs (specific & infraspecific taxa)	3

Other endemic/near-endemic species and infraspecific taxa (total indigenous to the centre in brackets) include 14 mammals (102 species, about 4 locally extinct) 23 reptiles (about 112 species/subspecies), 3 frogs (45 species/subspecies) and 7 freshwater fishes (67 species) – see Table 4; (van Wyk, 1994).

III.5. SUMMARY OF BIODIVERSITY IN MOZAMBIQUE

Table 5 provides a summary of the current knowledge of biodiversity in Mozambique.

Table 5. Number of Species per Major Taxonomic Group Currently Recorded for Mozambique.

TAXA	NUMBER OF SPECIES	OBSERVATIONS
FLORA (Plants and Fungi)	>5642	This is an underestimate. Many for est areas are poorly documented. Preliminary data indicates that 56 species may be threatened.
Vascular Plants	4 9 1 4	250 species are reported to be en demic but this needs to be confirmed
Mosses	?	No data available
Marine Algae	338	Data mainly for two sites only
Fresh Water Algae	207	An underestimate
Lichens	?	No data available
Fungi	183	This group is poorly documented
FAUNA (ANIMALS)		
CHORDATA		
Mammals	222	Only one species reported to be truly endemic. Several species are known to be threatened
Birds	>581	An underestimate. Large areas of the country are poorly documented. Several species are considered to be threatened
Freshwater Fish	±400	This is an underestimate. Data for Lake Niassa (Malawi) based on Malawian reports.
Marine Fish	782	Mainly based on commercial fish species
Reptiles	>167	An underestimate. Status not known
Amphibians	> 79	An underestimate. Status not known
INVERTEBRATES		
Echinoderms	>100	Mainly for one site (Inhaca island)
Molluscs (marine)	>140	Data from two sites only
Anthropoda (excluding insects)	N.D.	
Insects	3074	Based on Museum records. This is obviously on underestimate
Corals	> 150	Preliminary data. Currently under revision
Other Annelida, Nematoda, Flatwoms, Coelenterata & Sponges	?	No data available

IV TRENDS IN BIODIVERSITY

As may be expected, in the absence of baseline data, there is little accurate information (with a few notable exceptions – for example in National Parks and Game Reserves) regarding trends in biodiversity and process/activities threatening biodiversity.

IV.1. FOREST AND WOODLANDS

It is well known the commercial hatvesting of fuelwood is having a major impact an woodlands and forests especially those in the vicinity of major urban areas (for example Maputo City). However, the precise rate of removal of woody cover is not known.

A series of forest maps (1:1,000,000 and 1:250,000) based an satelite imagery covering the entire country has recently been produced (Saket, 1994). This coverage could serve as base-line data to determine changes in woodland and forest cover over time.

Based on the forestry maps and preliminary forest inventory total of 19, 160,000 hectares has been identified as high and medium density forests with the potential for forest production. (see Figure 6 and Table 6) mainly in the northern and central provinces.

It is recognized that sustainable forest management could contribute significantly to Mozambique's national economy. To this end the Department of Forestry and Wildlife (the DNFFB) has formulated a National Policy and Strategy which seeks to realize the potential of forest resources through sustainable use and the conservation of biodiversity. The Strategy includes an Ecological Objective which aims at improving the management and conservation of forest and wildlife resources in order to contribute to sustainable national and local development, proper use of the land and conservation of biological diversity. The objective highlights the contribution of forest resources to the maintenance of soil and water resources, biological diversity and other environmental benefits.

One of the main tasks the DNFFB of will be monitoring to ensure that this objective is achieved.

Table 6: Areas of Productive Forest (Areas are expressed in thousands of hectares).

Province	Potential Production Forest
Sofala	1,770
C. Delgado	2,139
Zambeze	3,250
Niassa	2,589
Nampula	1,589
Manica	1,492
Other Provinces	6,330
Total Area	**19,159**

IV.2. WILDLIFE

The trends in wildlife populations at a national level is not known. Recent surveys carried out in protected areas since the signing of the Peace Accord have shown massive declines in large mammal populations in most protected areas with the exception of Niassa Reserve in northern Mozambique.

The number of elephant in the flagship Gorongosa National Park prior to the conflict was in the order of 3000 whilst in 1994 only 108 elephants were recorded during an aerial survey. Similar massive declines were recorded for buffalo 8from 14.000 in 1979 to zero in 1994), hippo (from 4800 in 1979 to zero in 1994), wildebeest (from 5500 in 1968 to zero in 1994) and water-buck (3500 in 1988 to 129 in 1994).

A similar trend was recorded for Marromeu Buffalo Reserve. The Reserve, famous for it's large herds of buffalo, boasted 20,000 buffalo in 1968 – in 1994 the estimate was 2346 animals. Other large mammals species showed similar declines.

It should be noted that these data are based on aerial transect surveys and remnant populations may still occur in densely wooded areas.

Changes in large mammals populations for Gorongosa National Park and Marromeu Buffalo are shown in Figures 7 and 8.

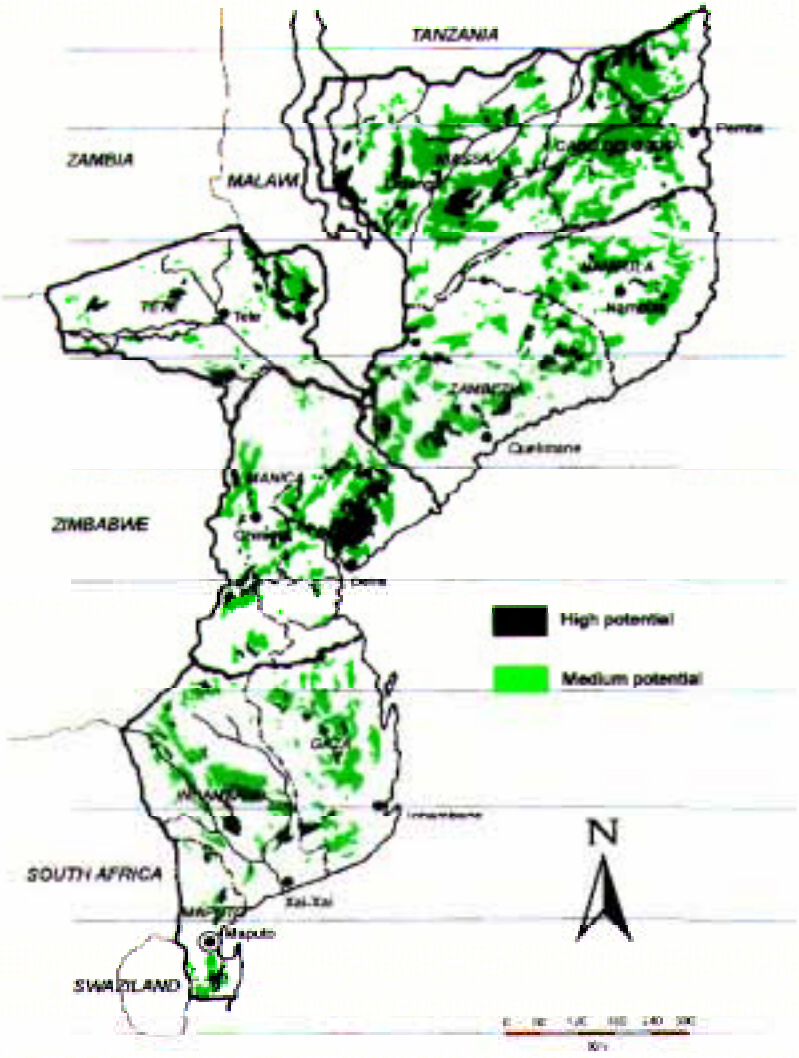

FIGURE 6 POTENTIAL PRODUCTION FOREST AREAS

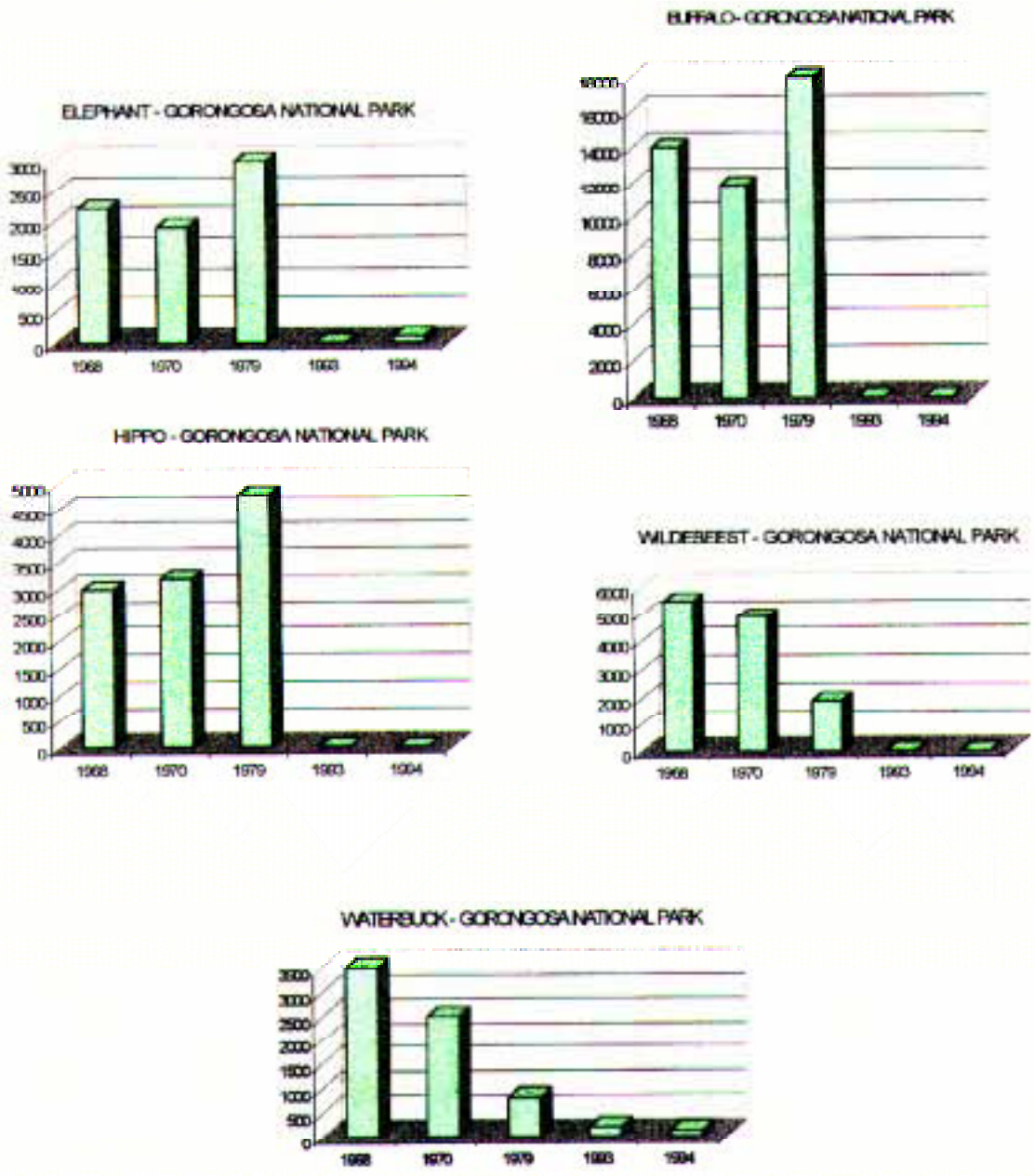

FIGURE 7 CHANGES IN LARGE MAMMAL POPULATIONS, GORONGOSA NATIONAL PARK

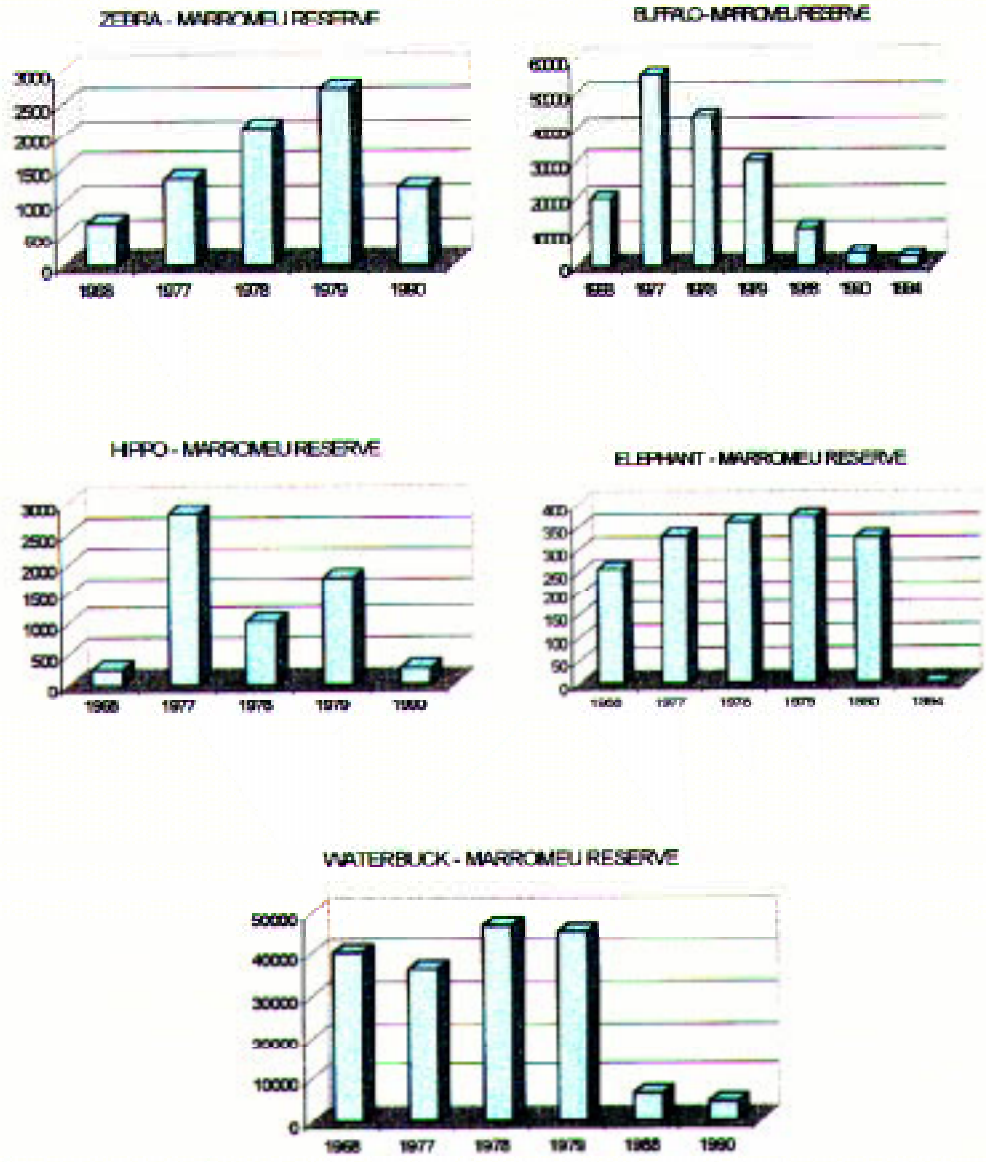

FIGURE 8. CHANGES IN LARGE MAMMAL POPULATIONS, MARROMEU RESERVE

It?3 MARINE MAMMALS

One of the greatest threats to marine mammals is the fisheries sector especially shark nets, gill nets and trawl nets.

Guissamulo (1993) has shown that there is a clear interaction between fishing and marine mammal distribution and abundance in Maputo Bay. Only a few dugongs still inhabit Maputo Bay and this population is believed to be on the verge of extinction. Set gill nets of large mesh size are used in channels around lnhaca Island (eastern Maputo Bay) which occasionally catch dugongs and dolphins.

At lnhambane Bay, bottlenose dolphins occur at its entrance of the Bay, while humpback dolphins and dugongs inhabit the entire Bay. Shark nets laid out at the entrance of the Bays catch dolphins and dugongs incidentally. An average of three dugongs are caught by this fishery per year. The number of dolphins caught by shark netting is unknown.

One of the largest dugong populations along the East African coast inhabits the littoral waters of the Bazaruto Archipelago (estimated at c. 300 individuals, Guissamulo, 1993). Incidental catches of dugongs and dolphins (as well as turtles) due to shark-net fishing in the channels of Bazaruto Bay are known to occur.

Quantitative data on the distribution and abundance of marine mammals and the interactions with fishing activities are urgently required for the implementation of improved conservation measures.

IV.4. MANGROVES

Current estimates indicate that the mangroves cover 396,080 ha in Mozambique which represents a reduction of 3.9% since 1972 (Saket and Matusse, 1994) -Table 7.

At the present, although the total degraded mangrove area appears to be small overall there is uncontrolled cutting of mangrove in localised areas close to urban centres. Among the most destructive activities affecting mangrove ecosystems are clear felling of mangrove for the establishment of solar salt pans (mainly in the northern region), charcoal production and large-scale removal of firewood. The selective cutting of poles for local house construction is not a major threat if adequately controlled. With the development of the shrimp aquaculture activity a new threat to mangrove ecosystems may arise when large areas are cleared for aquaculture ponds.

Table 7. Mangrove cover (ha per province) in Mozambique

Province	Mangrove area (ha)		Area degraded (ha)	New Mangrove area (ha)	%Change
	1972	1990			
Maputo	14,605	12,599	2,217	211	15.2
Gaza	387	387	0	0	0
Inhambane	20,094	19,848	246	0	1.2
Sofala	129,997	125,317	6,334	1,654	4.9
Zambézia	159,417	155,757	3,766	106	2.4
Nampula	55,849	54,336	2,006	493	3.6
C. Delgadc	27,730	27,836	0	106	0
TOTAL	408,079	396,080	14,569	2,570	3.9

V. LEGAL FRAMEWORK FOR THE CONSERVATION OF BIOLOGICAL DIVERSITY IN MOZAMBIQUE

V.1. THE FRAMEWORK ENVIRONMENTAL. LAW

The passing the framework Environmental Law in July 1997 was a watershed for environmental protection in Mozambique.

Article 2 of the Law states that "the objective of the present Law is the provision of a legal basis for the correct use and management of the environment and it's components in order to ensure sustainable development in the country". The Law covers all activities, public or private, which may directly or indirectly affect the environment (Article 3).

Article 4 recognizes the right of all citizens to an ecologically sound environment suitable for their physical and mental well being. Section 1, Article 4 refers to the need to "ensure the rational use and management of the components of the environment in order to promote improvement of the quality of life of citizens and the maintenance of biodiversity and ecosystems".

- **Protection Of Biodiversity**

Chapter IV, Article 4 specifically refers to the Protection of Biodiversity:

1. All activities that threaten the conservation, reproduction, quality and quantity of biological resources, especially those that are threatened with extinction, are prohibited.

2. The Government will ensure that adequate measures are taken for:

a) The maintenance and regeneration of animal species, rehabilitation of degraded habitats and creation of new habitat, especially through the control of activities and substances that may negatively impact upon faunal species and their habitats.

b) The special protection of plant species threatened with extinction, or botanical specimens, isolated or in groups, owing to their genetic potential, size, age, rarity and scientific or cultural value require protection.

- **Protected Areas**

Article 13 of the Environmental Law provides a legal basis the creation of protected areas based on a variety of criteria. Important the Law specifies the need to indicate the role of community in the management of protected areas:

1. In order to ensure the protection and preservation of the components of the environment as well as the maintenance improvement of ecosystems recognized for their ecological and socioeconomic value, the Government will establish environmental protection areas which will be well-demarcated.

2. The protected areas may be national, regional, local or even international in nature an may comprise terrestrial areas, lacustrine, fluvial or marine waters and other distinct nature zones.

3. The environmental protection areas will be subject to classification, conservation and control measures, which will always take into consideration the need to preserve biodiversity as well as areas of social, economic, cultural, scientific and landscape value.

4. The measures referred to in (3) above must include an indication regarding activities that are permitted inside and surrounding the protection areas as well as and indication of the role of communities in the management of these areas.

- **Environmental Protection**

Chapter 4 of the framework Environmental Law refers to the Prevention of Environmental Damage. An Environmental Impact Assessment is required for project likely to cause significant environmental impacts. The issuing of an environmental licence is contingent upon the EIA and is a necessary prerequisite for the issuance of any other legally necessary licences.

Article 30 of the Environmental Law recognizes the need to guarantee the participation of local communities and to utilize their knowledge and human resources in the protection of the environment.

- **Cross Sectoral Integration**

Importantly, the framework Environmental Law obliges all sectoral legislation that deals in any way with the management of components of the environment to be reviewed and revised so that it is in conformity with the new Law (Article 32).

- **Establishment of a National Commission for Sustainable Development**

In order to ensure the effective co-ordination and integration of sectoral policies and plans related to environmental management at the highest level, a **National Commission for Sustainable Development (NCSD),** linked to the Council of Ministers, was created by a provision in the Environmental Law.

V2. THE NEW LAND LAW

The new land Law was passed during the some sitting of Parliament which passed the Environmental Law. The new Land Law provides a further legal basis for demarcating areas for protection and conservation (Article 5) and the creation of total and partially protected zones (Article 6). The latter provision will now permit the conservation and management of riparian and coastal habitat together with their associated species. In a far-sighted move the new Land Law includes provisions for the participation on local communities in the protection of natural resources (Article 31).

Provisions in the new Land Law relevant to the Conservation of Biological Diversity:

- **REGISTERING LAND USE/TYPES (ARTICLE 5)**

The National Land Cadastre shall compile data:

a) To know the types of occupancy, the use and benefits as well as an evaluation of the fertility of soils, the forest areas, water reserves, plant and wildlife, mining and tourist zones.

b) To organize efficiently land use, protection and conservation.

- **ZONES OF TOTAL** AND PARTIAL PROTECTION (ARTICLE 6)

1. Total and partial protection zones belong to the public domain.

2. Zones of total protection are areas to be used for nature conservation and protection activities.

3. The following are considered zones of partial protection:

a) the bed of interior waters, of the territorial sea and of the exclusive economic zone;

b) the continental platform;

c) the strip along the maritime coast and along the coast of islands, bays and estuaries which is measured from the maximum high tide line to a mark 100 metres inland;

d) the land strip of up to 100 metres surrounding a source of water;

e) the land strip of up to 250 metres along the edge of dams and reservoirs.

- LOCAL COMMUNITIES (ARTICLE 21)

1. In rural areas, the communities shall participate in:

a) the management of natural resource;
b) conflict resolution,
2. In the exercise of the activities referred to in paragraphs (a) and (b) of Number 1 of the present Article, the communities shall, inter *alia*, rely upon customary norms and practices.

V.3 FOREST AND WILDLIFE LAWS

No new Forest laws have been promulgated since 1985 and no new Wildlife laws since 1978. In view of the new objectives for forest and wildlife management in as outlined in the newly formulated National Forestry and Wildlife Strategy the old laws are currently undergoing review will be accordingly revised. The adjustment of legislation and regulations so as to respond adequately to the new social and economic environment is seen as a priority by the DNFFB. The revision will take into account other legislation including the Environmental Law, the Land Law and the Municipality Law. Other aspects will include a review of the resource use rights of local communities and the private sector as well as Mozambiques participation in international treaties and conventions.

VI. INSTITUTIONAL ARRANGEMENTS FOR BIODIVERSITY CONSERVATION IN MOZAMBIQUE

VI.1. NATIONAL POLICIES AND STRATEGIES

The newly created **Ministry** for **the Coordination of Environmental Affairs (MICOA)** is responsible for implementing the National Environmental Management Programme and associated environmental policy.

The Ministry, as indicated by it's title has, primarily, a coordinating role. Environmental management is shared by all ministries and sector policies must incorporate, therefore, environmental dimensions. The coordination of these sector-al policies is one of the major tasks of MICOA.

The Ministry is also responsible for the coordination of activities for the implementation of the Convention on Biological Diversity in Mozambique - to this end a provisional unit, the Biodiversity Unit, has been established within the Ministry. The precise structure, role and function of the Unit is currently under revision. However it is envisaged that the Biodiversity Unit, although housed within the Ministry, will comprise permanent and *ad hoc* members representing relevant government agencies (to ensure cross-sectoral integration) and civil society.

The Unit will liaise with the National Council for Sustainable Development (linked to the Council of Ministers) to ensure that biodiversity considerations are incorporated into all sectoral plans, programmes and policies.

In view of the economic and ecological importance of Mozambique's coast and marine environment a Coastal Zone Management Unit (CZMU) also been created within MICOA. The CZMU is currently drawing up an Integrated Coastal Zone Management Plan which will focus on the sustainable use and conservation of coastal and marine biological resources. As part of the formulation of the ICZM the Coastal Zone Management Unit is evaluating the current status of coastal and marine ecosystems, habitats and species. Another major responsibility of the CZMU together with the National Directorate of Forestry and Wildlife, is the coordination of a series of activities which will lead to full-blown project proposal (the Conservation and Management of Coastal and Marine Biodiversity) due to be submitted to the Global Environmental Facility/World Bank in September 1998 for funding.

MICOA is also responsible for regulating Environmental impact Assessment (EIA) procedures in Mozambique. As indicated above (Legislation), all projects likely to have significant environmental impacts are obliged by the new Environmental Law to carry out an EIA prior to authorizations being given. MICOA is currently drawing up regulations for EIA in Mozambique will include considerations related to the conservation of biological diversity.

In addition to these above tasks and responsibilities MICOA activity promotes environmental awareness and education through the publication of a monthly environmental journal ("Moçambiente") and other activities.

The **Ministry of Agriculture and Fisheries** has formulated an Agricultural Policy which states in its primary declaration that all agricultural activity will have as its basis:

"..the sustainable use of natural resources and the guarantee of social equity".

The **National Directorate of Forestry and Wildlife (DNFFB),** one of seven directorates within the Ministry of Agriculture and Fisheries has the responsibility for managing forestry and wildlife resources in Mozambique. The DNFFB Forestry and Wildlife Strategy (April, 1997) takes its lead from the Agricultural Policy and has as it's overall objective:

"To conserve utilize and develop forest and wildlife resources for the social, ecological and economic benefit of the present and future generations of the Mozambique people".

The DNFFB is responsible for the management of gazetted protected areas in Mozambique as well for the management and conservation of wildlife and forestry resources outside of the protected areas network. (Apart from the Biological Reserves of Ilhas de Inhaca/Portuguese and which are managed by the Department of Biological Sciences, University Eduardo Mondlane).

The new Forestry Wildlife Policy seeks to promote Community-based Natural Resource Management Projects in areas adjacent to gazetted protected areas. Importantly, the DNFFB is responsible for the Transfrontier Conservation Area Project which seeks to conserve biological diversity in areas recognized for their biological importance in collaboration with local communities residing in these areas (see Protected Areas section below).

Other recently formulated National Policies and Strategies include those for Tourism **(Ministry of Commerce, Industry and Tourism)** and Fisheries **(National Directorate of Fisheries, MAF).**

In 1996 the Government of Mozambique adopted a new **Fisheries Policy and Implementation Strategy** which seeks to maximize economic benefits whilst ensuring the sustainability of the resource.

The **National Directorate of Tourism** and the **National Tourism Company** (both of the **Ministry of Commerce, Industry and Tourism - MICTUR)** plan, manage and regulate tourism operations in Mozambique. The Government of Mozambique has adopted is a set of guidelines for the development of the tourism industry as formulated in two documents: the **National Policy for Tourism** and the **Strategy for Tourism Development in Mozambique. A** guiding principal of the Policy is: "The promotion of initiatives which assure the maintenance of ecological integrity, preservation of the environment and the sustainable use of the natural resource so as to improve the quality of life of local people".

These and other National Strategies all recognize the need exploit Mozambiques natural resources on a sustainable basis. Nonetheless, a major area for action of Mozambique's draft National Strategy for the Conservation Biological Diversity (see VIII.3) is a review of sectoral legislation, policies and programmes with regards to conservation and sustainable use of biodiversity.

91.2 SCIENTIFIC RESEARCH INSTITUTIONS

Scientific research in biodiversity conservation is being carried out by scientists from Mozambique's single national university (the Eduardo Mondlane University which incorporates the Natural History Museum) and a variety of government agencies including the

Forestry Research Centre, the Forestry Inventory Unit, the National Herbarium, the Institute for Agronomic Research (INIA), the Fisheries Research Institute and the National Institute for Veterinary Research.

Botanical Collections

Mozambique has two herbaria. The Nartional Herbarium is located the National Institute for Agronomic Research (INIA) complex (designated LMA Herbarium) whilst a second smaller herbarium is administered by the Department of Biological Sciences, Eduardo Mondlane University (designated the LMU Herbarium).

The LMA Herbarium house approximately 52,000 specimens.

Faunal Collections

The Natural History Museum, located in Maputo, has a large collection of faunal groups. However, these are not property catalogued and the Museum's staff is currently revising and cataloguing the collection. The Museum is unique architecturally although it is in a state of disrepair; it is currently undergoing renovation.

Seed Conservation

Seed collection and conservation is being carried out by the National Plant Genetic Resources Centre (NPGRC) of INIA, the Department of Forestry Engineering (Eduardo Mondlane University, the Forestry Research Centre (CEF), the Institute of Animal Production (IPA).

The NPGRC holds 1122 germplasm (seed) accessions of 14 crop species. Most of these accessions here acquired through collaborative programme between INIA and International Agriculture Research Centres (CIAT, CIMMYT, IRRI, IITA). In fact, only small portion of these accessions were collected locally. Seeds of several important indigenous tree species as well as exotic species (mainly *Eucalyptus* spp and *Pinus* spp) seed are kept by CEF. There are no seeds of endangered species kept in the national collection. There is a great need for research on seed technology which will determine the suitability of these species to be conserved as seed.

Field Gene Banks

Some accessions are kept in field gene banks in Mozambique. Examples include the banana clones and citrus kept at the Umbeluzi Research Station. There 576 clones of cashew nut kept countrywide. Most of these accessions are not properly maintained, documented and evaluated. The lack of financial resources, training personnel and poor management capacity are the main constraints to adequate management of these field gene bank in the country.

In-vitro Collections

The root and tubers crops sector of INIA is managing a tissue culture laboratory meant for rapid multiplication, maintenance and safe distribution of cassava and sweet potato germplasm. Strictly speaking, this is not an in-vitro gene bank as nearly all accessions are working collections.

Medicinal Plant Conservation

The Botany Section of the Department of Biological Sciences (EMU) is currently

establishing an ex-situ collection of indigenous medicinal plants. The long-term objective is to contribute to the conservation of medicinal plants threatened due to over-exploitation in the wild.

Botanical Gardens

Unfortunately Mozambique has no botanical gardens for the conservation of indigenous flora in the real sense of the word. A botanic garden, "Jardim Tunduru", is located in the heart of the Maputo City. It was established in 1885 an covers an area about 6.4 ha. However, 80% of the species in the Jardim Tunduru are exotic.

The creation of botanical gardens in different ecological regions of country is highly recommended.

Zoological Gardens

Mozambique has a single zoological garden located in Maputo City. The Maputo Zoological Garden is currently being rehabilitated to fulfill the role with regards to both education and conservation. The Zoo might also in the future be used in relation to breeding and reintroduction of threatened species.

Biodiversity Conservation by Non-governmental Organizations

Several non-governmental organizations are currently carrying out biological surveys in Mozambique.

A Mozambican registered NGO, Frontier – Moçambique, in partnership with MICOA, is carrying out marine biodiversity surveys in northern Mozambique (the Quirimbas Archipelago). The Endangered Wildlife Trust (South Africa) in collaboration with the Ornithological Club of Mozambique is producing a Bird Atlas for the entire country. The IUCN, in partnership with several Mozambican agencies, is carrying out biological and socio-economic surveys of the Zambezi delta wetlands for the conservation and sustainable use of this fragile ecosystem. A joint World Wildlife Fund/National Directorate of Forestry and Wildlife project to conserve biodiversity in the Bazaruto Archipelago is currently being implemented.

A list of institutes and their associated principal research activities is presented in Table 8.

VI.3 INSTITUTIONAL CONSTRAINTS FOR BIODIVERSITY CONSERVATION IN MOZAMBIQUE

Implementing the National Strategy for the Conservation of Biological Diversity

Currently, there is no proper institutional ar rangements to implement the National Strategy. The establishment of a National Biodiversity Unit is planned. In this regard the Ministry for the Coordination of Environmental Affairs will need to strengthened.

Environmental Protection

MICOA is responsible for ensuring that Environmental Impact Assessments are carried out according to the new Environmental Law. However, the EIA unit within the Ministry is understaffed and those staff that are in place need to be fully trained.

MICOA will need to be strengthened to: a) draw up Terms of Reference for EIA's related to a variety of development projects b) Review EIA

Table 8. Institutes involved in biodiversity research in Mozambique

INSTITUTE	RESEARCH AREA
Eduardo Mondlane University	
Department of Biological Sciences (DBS)	• Mainly coastal and marine biodiversity • Botanical collection (the DBS has a fully functional herbarium-LMU)
The National History Museum	• Currently re-organizing collections • Selected surveys (especially avifauna)
Department of Forest Engineering	• Forest Inventories
Department of Geography	• Land-use and habitat surveys
Ministry of Agriculture 8 Fisheries	
Forestry Research Centre	• Seed collection • Forest ecology • Resource use patterns
Forestry Inventory Unit	• Forest inventories
The National Herbarium	• Botanical Collection • Wild crop genetic research
Institute of Agronomic Research	• Crporesearch • Soil surveys • Biosafety
Department of Forestry &Wildlife	• Wildlife surveys and forest inventories
Fisheries Research Institute	• Fish stock estimates
National institute for Veterinary Research	• Veterinary research
Animal Production Institute	• Livestock breeding • Pasture and grazing research
Ministry for the Coordination of Environmental Affairs	
Coastal Zone Management Unit	• Coastal & marine biodiversity surveys
Non-Government Organizations	
The Endangered Wildlife Trust in collaboration with the Mozambican Ornithological Club	• Currently producing a Bird Atlas for the whole of Mozambique; due to be completed by 2006
Frontier-Moçambique (in collaboration with MICOA)	• Coral reef and marine surveys of the Quirimbas Archipelago, northern Mozambique
WWF in collaboration with the DNFFB	• Biodiversity conservation, Bazaruto Archipelago
IUCN in collaboration with several Mozambican organizations	• The Zambezi Delta survey

Reports c) Monitor the implementation of mitigating measures and the environmental management for inter *alia* the conservation of biodiversity.

Wildlife and Forestry Management

Staff resources and capacity within the National Directorate of Forestry and Wildlife and the Provincial Services for Forestry and Wildlife are weak. In 1998 there were 573 staff of which approximately 70 were located at DNFFB heaquarters and 500 covered the 10 provincial (SPFFB) and district offices. Given the size of forest and wildlife protected areas (over 100,000 km^2) and their distribution within the country, DNFFB´s personnel are spread extremely thinly and not in proportion to the extent of the resource base in each province.

Most field staff have received little or no training since the 1970s. The number of trained technical and professional level staff (70 to 100) and core headquarters staff (39) is low. A lack of transport, communication and other equipment and funds for field allowances effectively precludes field monitoring and enforcement,

Research

A major constraint facing Mozambique is the lack of trained personnel to carry out research. Prior to Independence in 1975 there were few trained Mozambican scientists. Following Independence, Mozambique embarked upon a massive educational development strategy focussing on primary, secondary and tertiary education.

It was only the late 1980's and early 1990's that the first cadre of trained Mozambican biologists, foresters and agronomists graduated from Mozambique's only national University. Today the process of consolidating scientific and research capacity building is continuing through a variety of postgraduate programmes. It should be noted that due to the inheritance of a very weak institutional and human resource base, all Mozambican postgraduates are still obliged to register for higher degrees Universities outside of the country.

One of the major challenges facing Mozambique is therefore, strengthening research capacity through scientific and technical training. It must stated upfront that a major constraint to building research capacity as well as carrying out research is the very limited amount of funds that can be allocated to this sector.

The Government of Mozambique will, therefore, together with the national University and research institutes promote the acquisition of funds through a variety of mechanisms to support research.

It is important that research not only be carried out in the technical and biological fields, but that the full range of issues of importance for the implementation of the Convention are included in research programmes.

A number of existing institutes will be relevant for capacity building, including the National Herbarium, Eduardo Mondlane University (various departments), the Natural History Museum, the Plant Genetic Resources Centre, the Department of Forestry and Wildlife and the Forestry Research Centre.

It is important that also institutions in the fields of social and economic sciences are involved in future research related to biodiversity, not least because many of the underlying causes of biodiversity

degradation are of a socio-economic nature.

VII.4 FINANCIAL ASPECTS

The recently approved State Budget (September 1997) allocates approximately US$2 million to the Ministry for the Coordination of Environmental Affairs (MICOA) for the 1998 financial year. This covers staff salaries, consumables and services, recurrent costs and investment for the Ministry. It is not possible at this stage to predict how much financial support will be given to biodiversity conservation. However, bearing in mind that the amount allocated to MICOA is small (in fact the second lowest amount of the 18 ministries) which needs to be divided among the various Directorates and Department, the actual amount allocated for biodiversity conservation *per se* is expected to be very limited. Moreover, only a very small amount funding (US$3500) is allocated for the Provincial Directorates of MICOA which will greatly limit the proposed establishment of Provincial arms of the Ministry.

The Ministry of Agriculture and Fisheries, which houses the National Directorate of Forestry and Wildlife (DNFFB) and the National Directorate of Fisheries, is allocated c. US$24 million from the State Budget for 1998. However, this is a large Ministry comprising many Directorates and Departments. It is not possible to predict the financial support that will be allocated to the management forestry and wildlife *per se* for 1998. However, based on past years this amount is generally low. Between 1992 and 1995, the total public sector financial resources made available for managing forest and wildlife resources declined from US$1,4 million to US$0.35 million due to a combination of declining budget, currency devaluation and low priority.

Similarly, it is not possible to specify the amount that will be allocated to the fisheries sector for 1998. Marine fisheries constitutes one most important income earners for Mozambique. This fisheries sector, therefore, has an important role in ensuring that this resource is exploited on a sustainable basis.

In any event it is clear that the State Budget does not provide adequate financial support to ensure the conservation and sustainable use of Mozambique's biological resources. There is, therefore an urgent need for financial support from bilateral and multilateral donors to implement the CBD implementation activities in Mozambique.

VII. THE PROTECTED AREAS NETWORK

Mozambique has an impressive system of protected areas. Parks and reserves in Mozambique are established under Decree N° 40040, 20 January 1955.

National Parks are managed for ecological, cultural, aesthetic and socio-economic objectives. Game Reserves are similar but exclude the socioeconomic objective and may have one or more species protected. Hunting activities under Licence are permitted in the Coutadas (Controlled Hunting Areas). The exploitation of forest resources in the Forest Reserves is strictly controlled.

The numbers (in parentheses) of protected areas per category are ; National Parks (4), Game Reserves (5), Controlled Hunting Areas or Coutadas (13), Vigilance Areas (2) and Forest Reserves (16). The list of protected areas and their size is presented in Table 9 and their distribution shown in shown in Figure 9.

In a far-sighted move the Government of Mozambique recently (October, 1996) approved the implementation of a Transfrontier Conservation Areas Project. The new concept of Conservation Areas (rather than National Parks) which places greater emphasis on multiple resource use and management by local communities living in/adjacent to these areas.

Three transfrontier conservation areas (see Figure IO) were selected based an biodiversity, social and economic criteria warranting priority attention in Mozambique:

The Gaza TFCA

The Gaza TFCA covers 20,700 sq. km. in the Provinces of Gaza and Inhambane and borders on Zimbabwe in the north west and South Africa in the south west. This is an important TFCA as it includes three main conservation areas: Zinave (3,700 sq.km) and Banhine National Parks (7,000 sq. km.) and Coutada 16 (a 10,000 sq. Km. wildlife utilisation area); the latter is contiguous with the Kruger National Park in South Africa.

The Gaza TFCA also borders on the Gono-Rhe-Zhou National Park in Zimbabwe.

The Maputo TFCA

This area lies in the south-eastern part of Maputo Province, in the extreme south east of Mozambique. It includes the Maputo Game Reserve (700 km^2) and the proposed Futi corridor (an area of undisturbed habitat and relatively low population density), which would link the Maputo Reserve with the Tembe Elephant Park and the Ndumo Game Reserve in Kwazulu, South Africa. The project area forms part of the Maputaland Centre for Endemism and ranks as a first order site of global botanical significance. Over 1,100 species of vascular plants (and possibly may more) occur in the area (see Section III.4 “Biological Hotspots”). The high area has a potential for conservation and ecotounsm-based development.

The Chimanimami TFCA

The Chimanimami TFCA is contiguous with the Chimanimani National Park in Zimbabwe, this TFCA in Manica Province is a relatively small area of 1,740 km^2, and includes the eastern escarpment and foothills of the Chimanimani massif. The area in Mozambique is better preserved, and represents a relatively intact Afro-montane ecosystem, with high species endemism (notably plants), and rich wildlife and bird populations.

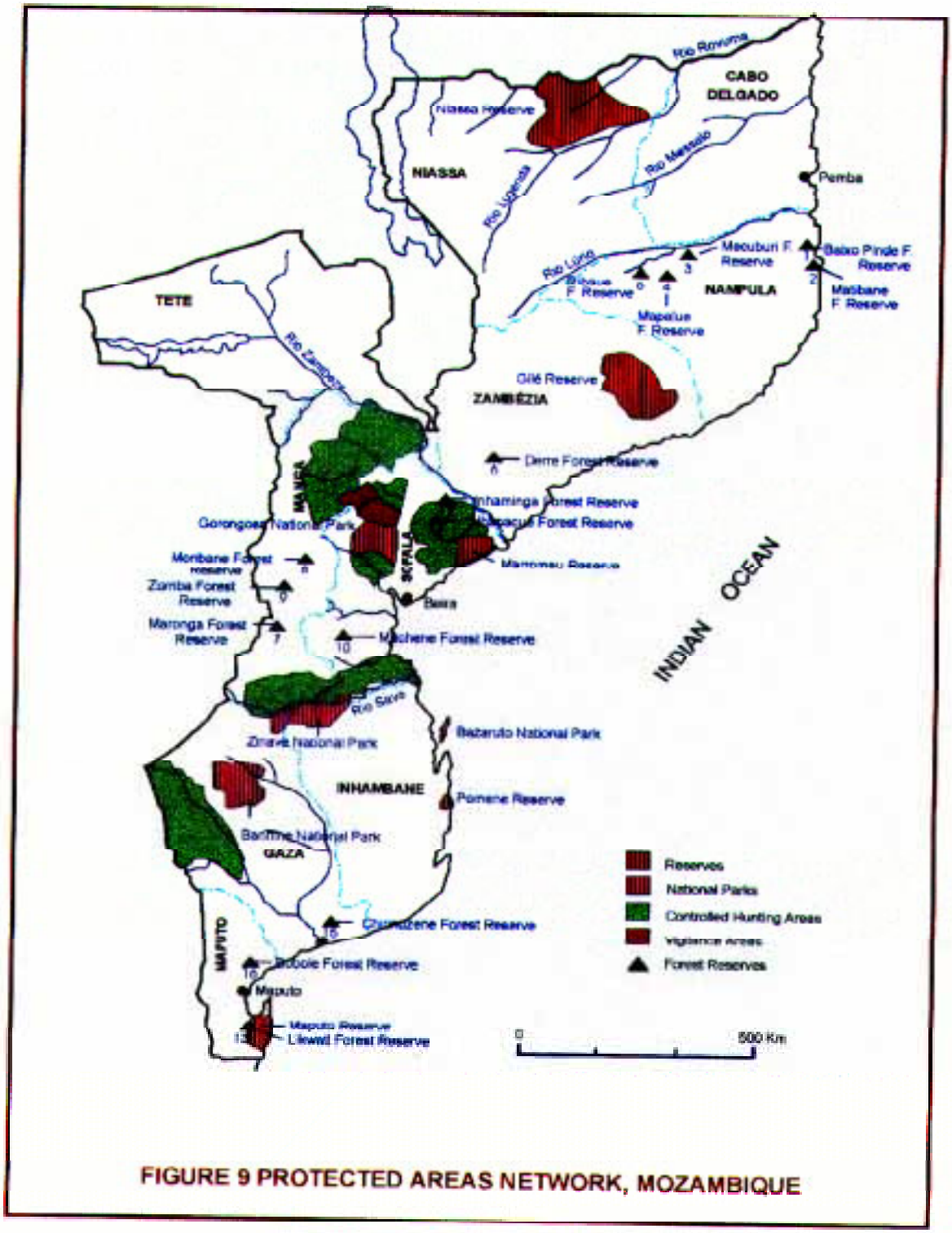

FIGURE 9 PROTECTED AREAS NETWORK, MOZAMBIQUE

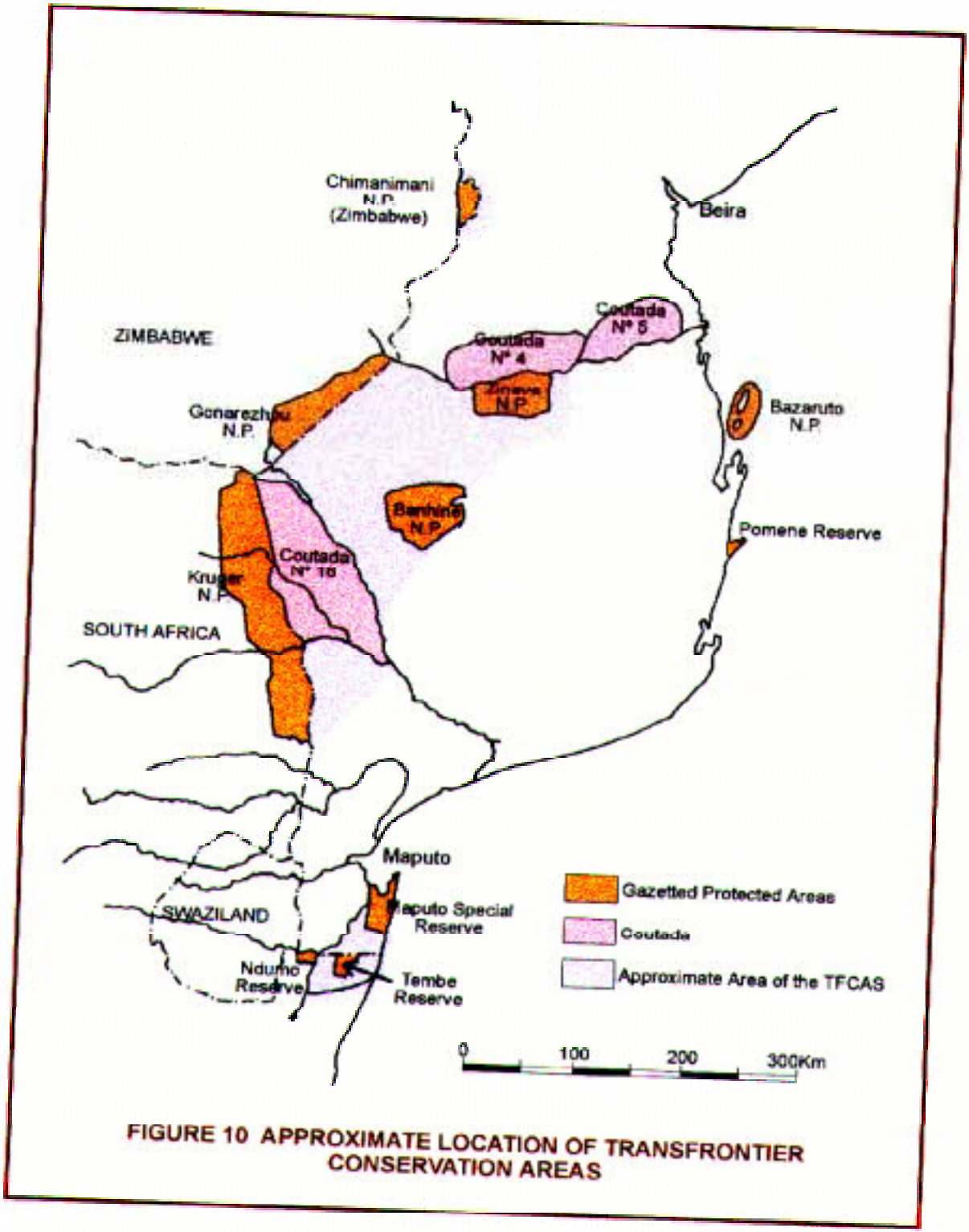

FIGURE 10 APPROXIMATE LOCATION OF TRANSFRONTIER CONSERVATION AREAS

Table 9. National Parks, Game Reserve, Controlled Hunting (CH) Areas and Forest Reserves

PROVINCE	DESIGNATION	Sq. Km	YEAR OF CREATION
NIASSA	Niassa Game Reserve	15000	1969
NAMPULA	Mecuburi Forest Reserve	1954	1950
	Baixo Pinda Forest Reserve	196	"
	Matibane Forest reserve	42	"
	Mpalwé Forest Reset-v	51	"
	Ribawé Forest Reserve	5 2	"
ZAMBEZIA	Gilé Game Reserve	2100	1960
	Derre Forest Reserve	1700	1950
MANICA	C.H. Area 4	8900	1969
	C.H. Area 7	5450	1969
	C.H. Area 9	4450	1969
	C.H. Area 13	5680	1960
	Maronga Forest Reserve	83	1950
	Zomba Forest Reserve	31	"
	Moribane Forest Reserve	53	"
SOFALA	Gorongosa Nat. Park	5370	1960
	Marromeu G. Reserve	1500	1961
	C.H. Area 5	6860	1972
	C.H. Area 6	4560	1960
	C.H. Area 8	310	1969
	C.H. Area 10	2000	1961
	C.H. Area 11	1930	1969
	C.H. Area 12	2960	1969
	C.H. Area 14	1350	1969
	C.H. Area 15	2300	1969
	Nhamitanga Forest Reserve	1067	1943
	Nhapakwe Forest Reserve	170	1953
	Mucheve Forest Reserve	90	1950
INHAMBANE	Zinave Nat. Park	3700	1972
	Bazaruto Nat. Park	150	1971
	Pomene Game Reserve	?	1972
GAZA	Banhine Nat. Park	700	1972
	C.T. Area 16	10000	1969
	Chirindzene Forest Reserve	?	1974
MAPUTO	Maputo game Reserve	700	1969
	Boboli Forest Reserve	13	1961
	Likwati Forest Reserve	33	1943

VIII. EVALUATION OF THE IMPLEMENTATION OF THE BIODIVERSITY CONVENTION IN MOZAMBIQUE FOR 1997

VIII.1 RATIFICIATION OF THE CONVENTION ON BIODIVERSITY BY THE MOZAMBIQUE PARLIAMENT.

The Mozambican Parliament ratified the Convention of Biodiversity in 1994. The announcement of the Ratification and the Convention, in its entirety in English and Portuguese, was published in the Government Bulletin (*Boletim de República*, N°34, I Serie) on 24 August 1994.

VIII.2 INTERNATIONAL COOPERATION

Current Status

Besides being a Party to the Convention on Biodiversity, Mozambique participates in several other international and regional conventions, agreements and organizations which are relevant to biodiversity conservation. The Mozambican Parliament approved the ratification of two important conventions in 1997 namely the **Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal** and **the Bamako Convention on the Ban of the import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa.**

However, Mozambique still needs to accede to important conventions most notably Convention on Wetlands of International Importance Especially as Waterfowl Habitats (Ramsar Convention) and the Convention on the Conservation of Migratory Species of Wild Animals. This need for Mozambique to become a party to these conventions forms part of the National Strategy and Action Plan.

The current status of Mozambique's participation in international and regional initiatives is shown in Table 10.

Regional Workshop for Incorporating Biodiversity-related Conventions and Agreements into National Legislation

A Regional Workshop for incorporating biodiversity-related conventions and agreements into national legislation in Africa was held in Maputo, 30 June- 4 July 1997. The workshop, promoted by the UNEP/ UNDP Joint Project on Environmental Law and Institutions, was attended by lawyers from 12 African countries: Mozambique, South Africa, Lesotho, Malawi, Tanzania, Kenya, Uganda, Swaziland, Zambia, Ethiopia, Burkina Faso, and Sao Tome and Principe.

The workshop dealt with a range of topics including:

- overview of biodiversity
- overview of issues involved in implementing CBD Article 15
- access to genetic resources
- area-based conservation with related CBD provisions as organizing principle
- planning as a tool for area-based conservation
- area classifications
- the role of planning and use controls
- coastal zone management as a tool for area-based conservation
- introduction to species-based conservation with related CBD provisions as organising principle.

Table 10. Status of Mozambique's Participation in International and Regional Conventions, Agreements and Organizations Relevant to

1. Convention concerning the Protection of the World Cultural and Natural Heritage	Paris, 1972; Ratified 1982
2. Convention on Biological Diversity	Rio de Janeiro, 1992; ratified in 1996
3. International Convention on Conservation of New Breeds of Plants	Paris, 1961, not signed
4. Convention on Wetlands of International Importance Especially as Waterfowl Habitats (Ramsar Convention)	Ramsar, 1971, not signed but steps being taken to acced.
5. Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, or Washington Convention)	Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, or Washington Convention)
6. Convention on the Conservation of Migratory Species of Wild Animals	Bonn, 1979, not signed
7. Convention on Migratory Birds	Bonn, 1991, not signed
8. Convention for the Protected, Management Development of the Marine and Coastal Environment of the Eastern African Region and related Protocols	Nairobi, 1985; Ratified in 1996
9. International Maritime Organization	Member since 1991
10. Organization on the Indian Ocean Marine Affairs Cooperation-IOMAC	Member since 1991
11. The Basel Convention on the control of transboundary movements of hazardous wastes and their disposal.	Basel, 1989; Ratified 1997
12. The Bamako Convention on the ban of the import into Africa and the control of transboundary movement and management of Hazardous wastes within Africa.	Bamako, 1991; Ratified in 1997
13. Protocol on Shared Watercourse Systems in the SADC Region.	Signed, 1995
14. The Zambezi River Basin Multilateral Agreement	Signed, 1987
15. United Nation Convention on the Law of the Sea	Jamaica, 1982; Signed 1982
16. International Convention to Combat Dought and Desertification	Ratified 1996

- legal mechanisms for sustainable use
- creating a legal regime for community management, including conservation & sustainable use of species
- an overview of CBD provisions related to damaging processes and threats to biological resources
- trade in endangered species

Representatives of the Ramsar, CITES, and Bonn Conventions and the Lusaka Agreement introduced the respective conventions and agreements, noting the key elements which require legislative attention.

VIII.3 FORMULATION OF A NATIONAL STRATEGY AND ACTION PLAN FOR THE CONSERVATION OF BIOLOGICAL DIVERSITY IN MOZAMBIQUE.

The Ministry for the Coordination of Environmental Affairs (MICOA) has been tasked by the Government of Mozambique to oversee the implementation of the Biodiversity Convention in Mozambique. To this end a provisional Biodiversity Unit has been established within the Ministry to coordinate all implementation activities.

One of the principal tasks of MICOA in 1997 was the formulation of a National Strategy for the Conservation of Biological Diversity in Mozambique in accordance with Article 6 of the Convention which calls upon all parties to develop national strategies which reflect the measures set out in the Convention. Financial support was provided by UNEP and DANIDA.

Under the guidance and coordination of MICOA a team of local consultants representing various sectors were requested to produce strategies and actions for selected sectors and biological areas namely:

- Forestry
- Wildlife
- Fisheries
- Fauna
- Flora
- Coastal Biota
- Crop Genetic Resources

These sectoral papers were edited and compiled into a single draft strategy document - the first draft National Strategy.

The first draft document was widely distributed to Government agencies, non-Government Organizations and other agencies in Mozambique for comment and discussion, The first draft document was presented, reviewed and revised during a 3 day National Workshop held in Maputo during 22-24 September 1997. The Workshop was attended by 65 persons representing 37 agencies:

GOVERNMENT DEPARTMENTS

- Coastal Zone Management Unit, Ministry for the Coordination of Environmental Affairs
- Directorate of Planning and Studies, Ministry for the Coordination of Environmental Affairs
- Department of Biological Sciences, Eduardo Mondlane University
- Department of Environmental Impact Assessment, Ministry for the Coordination of Environmental Affairs
- Department of Forestry and Wildlife, Ministry of Agriculture and Fisheries
- Department of Forest Engineering, Eduardo Mondlane University
- Department of Gender, Ministry for the Coordination of Environmental Affairs

- Department of Plant Health, Ministry of Agriculture and Fisheries
- Fisheries Research institute, Ministry of Agriculture and Fisheries
- Forest Inventory Unit, Ministry of Agriculture and Fisheries
- National Directorate of Natural Resources Management, Ministry for the Coordination of Environmental Affairs
- National Directorate for Fisheries, Ministry of Agriculture and Fisheries
- National Directorate for Environmental Promotion and Education
- National Directorate for Tourism, Ministry of Commerce, Industry and Tourism
- National Herbarium, Ministry of Agriculture and Fisheries
- National Institute for Rural Development, Ministry of Agriculture and Fisheries
- Provincial Directorate for the Coordination of Environmental Affairs (Nampula Province)
- Provincial Directorate for the Coordination for Environmental Affairs (Gaza Province)
- Small-scale Fisheries Research Institute, Ministry of Agriculture and Fisheries.

NON-GOVERNMENTAL ORGANIZATIONS

- ADOC (Nampula Province) -Association for the Development of Community Organizations
- Endangered Wildlife Trust
- FOCAMA - Forum for NGO's Manica, Province
- FONGZA - Forum for NGO's, Zambezi Province
- FORPOSA - Forum for NGO's, Sofala Province
- Frontier-Moçambique
- IUCN – World Conservation Union

PRIVATE SECTOR

- IMPACT0 Lda. – Estudos e Projectos Ambientais

OTHERS ORGANIZATIONS

- Embassy of the Netherlands
- Malawian Environmental Affairs Department (two representatives from Malawi)
- Royal Danish Embassy
- Secretariat for Eastern Africa Coastal Area Management (SEACAM)
- United National Development Programme
- United Nations Environment Programme (representative from Kenya)
- World Bank (Mozambique)

Based on the comments and observations received during the Workshop a second draft document has been produced which has been circulated nationally and internationally for a further final review. Several international organizations, have reviewed, or are currently reviewing, the document including the World Resources Institute, IUCN ROSA, UNEP (Nairobi) and the Ministry for Environmental Affairs and Tourism, Malawi

The overall goal of the National Strategy is:

THE CONSERVATION OF BIOLOGICAL DIVERSITY AND THE MAINTENANCE OF THE ECOLOGICAL SYSTEMS AND PROCESSES TAKING INTO ACCOUNT THE NEED FOR SUSTAINABLE DEVELOPMENT *AND A* ***FAIR AND EQUITABLE DISTRIBUTION OF THE BENEFITS ARISING FROM THE USE OF BIOLOGICAL DIVERSITY***

The purpose and scope of the Strategy is outlined in Box 2.

BOX 2 PURPOSE AND SCOPE OF **MOZAMBIQUES** NATIONAL STRATEGY

The first purpose of the strategy is to meet the requirement of the Convention which calls upon **all** parties to develop national strategies reflecting the measures set out in the Convention (Article 6).

Biological diversity, as defined in the CBD is a very broad concept. There are number of issues that need to be addressed in order to be able to conserve biological diversity including technical, legal, political, cultural and socio-economic aspects. This calls for the active participation of all parts of society, including government ministries, institutions, local communities and the private sector.

Conservation of biodiversity may be envisaged as the ultimate goal of all activities related to nature and environmental policies. However, in developing the Strategy it is recognized that there is a need to prioritize issues that have the most direct influence on biodiversity and therefore most urgently need attention. In this respect the Strategy represents the first attempt to put these prioritized issues forcefully on the future agenda of our country.

The nature of the task of conserving biodiversity also calls for a well co-ordinated and cross-sectoral approach, given that many of the problems faced are not confined to just one sector, but involves several stakeholders and sectors.

Consequently, the **second** purpose of the strategy is to identify issues for which national action will be taken as a matter of priority and for which there is an immediate need for co-ordination of efforts. For some of the issues covered by the strategy there will be a need to develop more detailed actions plans.

The **third purpose** of the Strategy is to serve as an instrument that will help government agencies and society in general in ensuring that the overall government policy goals related to biodiversity are realised, principally through efforts to co-ordinate relevant **sectoral** policies, programmes and strategies.

Mozambique National Strategy has identified a series of strategic objectives and associated areas for action to achieve these objectives. The objectives and associated areas for action as defined in the Strategy are as follows:

1. CONSERVATION OF MOZAMBIQUE'S BIODIVERSITY

.1 IDENTIFICATION OF IMPORTANT COMPONENTS OF MOZAMBIQUE'S BIODIPERSITY

OBJECTIVE 1.1: identify and monitor components of biological diversity important for its conservation and sustainable use and of processes and activities with an adverse impact on it.

ACTIONS

1. Identify institutions responsible for identification and monitoring of important components of biological diversity, and strengthen the capacity of these institutions to carry out their tasks.

2. Promote the identification and monitoring of important components of biodiversity, based on a systematic and coordinated approach.

3. Identify policies, activities or processes which may adversely **affect** faunal, floral, plant genetic (crop), marine and coastal and other aquatic components of biological diversity, and seek to mitigate these where appropriate.

1.2 SPECIES PROTECTION OF SPECIES

OBJECTIVE 1.2:
To determine the conservation status of species in Mozambique and to identify and implement appropriate conservation measures for threatened species

ACTIONS

1. Review existing policies, legislation and programmes to ensure that these include, where necessary, provisions for the conservation and recovery of threatened species and/or the rehabilitation of degraded ecosystems.

2. Ensure that guidelines for conducting Environmental Impact Assessments (see Section 3) include provisions for the protection of threatened species and populations

3. Review and if necessary strengthen institutions related to the implementation of the CITES convention, as well as to other conventions or regional agreements ratified by Mozambique relevant to the protection of endangered species, populations and habitats.

4. Promote the ratification by Mozambique to relevant agreements and conventions related to species protection and recovery most notably the Convention on the Conservation of Migratory Species of Wild Animals (Bonn-Convention) and the Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar-Convention).

5. Promote research to determine the conservation status of plant, animal and fungal species and where possible draw

up Red Data lists of threatened species according to internationally recognized categories.

1.3. PROTECTION OF HABITATS

OBJECTIVE 1.3:
To establish and manage a representative system of areas for the protection of habitats and maintenance of viable populations of species in natural surroundings.

ACTIONS

1. Promote the rehabilitation and redefinition of existing protected areas.
2. Promote the involvement of local communities and other stakeholders in the management of protected areas, e.g. using the model of the TFCA Project.
3. Assess the need for additional measures for the protection of natural habitats, both inside, adjacent to, and outside of protected areas.
4. Review and where necessary update existing legislation, especially related to the rights of local communities to acquire rights over their land and resources.
5. Promote the identification of sensitive ecosystems, with a view to appointing additional conservation areas if necessary, including TFCA's.

1.4. EX-SITU CONSERVATION

OBJECTIVE 1.4:
Strengthen the capacity for ex-situ conservation of animals, plants, fungi and micor-organisms

ACTIONS

1. Strengthen the capacity of existing ex-situ institutions and if necessary establish additional ones
2. Upgrade the existing botanical gardens and arboreta and the creation of new ones
3. Promote the upgrading of Maputo Zoological Garden, particularly as it relates to ex-situ conservation of threatened species.

2. SUSTAINABLE USE OF BIOLOGICAL RESOURCES

2.1. AGRICULTURE

OBJECTIVE 2.1:
To ensure that biodiversity considerations are an integral part of the agricultural sector legislation, policies and strategies and of agricultural practises

ACTIONS

1. Review and evaluate legislation, policies and programmes related to the agricultural sector with regards to conservation and sustainable use of agricultural biodiversity.
2. Promote and encourage activities and incentives aimed at developing and implementing agricultural practices supporting the conservation of biodiversity.
3. Promote national legislation and codes of conduct related to access to genetic resources and intellectual property rights, in line with relevant decisions by the COP of the CBD.

4. To establish, improve and strengthen existing/proposed animal, plant and microbial genetic resource centres.

5. Promote on-farm conservation of genetic resources, especially land-races in areas where they evolved.

6. Identify and promote technologies with minimal adverse impacts on biodiversity.

7. Strengthen and refocus agricultural extension services to promote farming practices and techniques which contribute to the conservation and sustainable use of biodiversity.

6. Establish an inter-ministerial body related to biotechnology and bio-safety issues.

9. Develop legislation and procedures for the safe handling and use of GMO's as called for in existing guidelines and any future provisions of the protocol on bio-safety, and strengthen national institutions responsible for this issue.

10. Promote a thorough assessment of the current and potential use of GMO's in Mozambique.

2.2 FORESTS AND FORESTRY

OBJECTIVE 2.2:
To ensure that biodiversity considerations are an integral part of the forestry sector legislation, policies and strategies and of forest management practices

ACTIONS

1. Ensure that biodiversity considerations are fully reflected in the implementation of existing forestry legislation, policies and programmes.

2. Support and encourage activities aimed at developing and implementing forest management practices securing conservation of biodiversity. Activities could include development of methods for natural regeneration of indigenous forests.

3. Develop procedures and methods for incorporating biodiversity considerations in Environmental Impact Assessments of forestry related activities.

4. Develop criteria and indicators for sustainable forest management, including criteria and indicators for the conservation of biodiversity.

5. Support and encourage activities related to inter-sectoral dialogues on biodiversity conservation and sustainable use of forest resources.

6. Ensure, through legislation, policies and land-use planning, that sufficient land is destined for permanent forest cover, especially in areas of high diversity.

7. Develop mechanisms and incentives for the involvement of rural communities, NGO's and private sector in forest use, management and conservation.

6. Establish a fire management plan for each forest management unit.

9. Conduct assessments of biodiversity in forests, especially in those suspected of having a'high diversity.

2.3. FISHERIES

OBJECTIVE 2.3:
To ensure that biodiversity considerations are an integral part of the fisheries **sector legislation,** policies and strategies and of fisheries practices.

ACTIONS

1. To review and revise policies, legislation and programmes to ensure the incorporation of biodiversity considerations in the fisheries sector, including the adoption of codes for sustainable fisheries in accordance with the FAO Code of Conduct for Responsible Fisheries.

2. Promote and coordinate inter-sectoral planning, management and monitoring for the conservation and sustainable use of coastal and marine biodiversity.

3. Introduce improved data collection techniques to ensure that not only commercially important fish species are recorded and monitored.

4. Identify and adopt fisheries management practices that will contribute to the conservation and sustainable use of marine biodiversity and minimize adverse impacts on marine biodiversity.

5. Promote the full participation and sharing of benefits by local communities, as an incentive to the conservation and sustainable use marine biodiversity.

6. Review existing international legal instruments related to marine biodiversity and where appropriate promote accession to these.

7. Promote training and capacity building to ensure that biodiversity considerations are incorporated into coastal and marine research, planning and management.

8. Promote the enforcement of existing regulations for the conservation and sustainable use of marine biodiversity.

2 4. TOURISM

OBJECTIVE 2.4:
Ensure the development of a tourism industry which incorporates in plans and operations, considerations for the conservation and sustainable use biodiversity.

ACTIONS

1. Promote and implement tourism development that will contribute to the conservation and sustainable use of the biodiversity, including through the use of incentives for tourism developments which actively contribute to biodiversity conservation and/or rehabilitation through restocking and/or re-vegetation programmes.

2. Promote private sector tourism developers who seek to form equitable partnerships with local communities. Through these joint-venture schemes local communities will be involved in the co-management of biological resources, and from which they will accrue tangible economic benefits.

3. Monitoring the impacts of tourism especially those in, or adjacent to, sensitive areas and critical habitats.

4. Based on monitoring activities to propose and implement measures that may reduce or eliminate any identified adverse impacts on biological diversity.

5. Ensure that recommendations and mitigating measures for reducing or

eliminating adverse environmental impacts arising from tourism development are implemented and maintained.

2.5 LOCAL COMMUNITIES AND TRADITIONAL KNOWLEDGE

OBJECTIVE 2.5:
Promote community-based sustainable use of biodiversity, and recognize, document and promote the use of traditional knowledge systems of importance to the conservation of biodiversity,

ACTIONS

1. Promote and establish community-based natural resource management schemes in accordance with existing national strategies and policies.

2. Monitor and audit the socio-economic and biodiversity impacts of community-based management schemes, and where necessary, adjust the activities and approaches of these schemes.

3. Promote the documentation and use of traditional knowledge systems relevant to the conservation of Mozambique's biodiversity.

4. To establish ethical guidelines to ensure that research related to ethnobiology is carried out in cooperation with, and with the consent of, the owners of traditional knowledge. Wherever possible the research should be directed at providing tangible benefits to the communities providing that knowledge.

5. Promote the integration of traditional knowledge concerning biodiversity into scientific research programmes and the as well as projects and activities that involve the use and management of biological resources.

6. Ensure, through adequate legislation and regulations, that the community rights to their traditional knowledge and practices is secured, including that communities gain royalty payments, or other forms of compensation, from commercial products using traditional knowledge and/or from natural resources belonging to these local communities.

7. Promote the integration of traditional knowledge and management practices into conservation and sustainable use policies, plans and initiatives.

2.6. INTEGRATED MANAGEMENT PLANNING

OBJECTIVE 2.6:
Promote integrated management planning, where necessary on a regional basis, for the conservation and sustainable use of Mozambique's biodiversity.

ACTIONS

1. Promote the use of Integrated Management Planning, including co-ordination and support to on-going integrated management planning activities in relation to the conservation of biodiversity.

2. Provide for better co-ordination of activities related to intergrated coastal zone management, including definition of institutional mandates, adjustment of

mandates to avoid gaps, overlap of powers and conflicts, and definition of common responsibilities and strategies on the management of the coastal area (MICOA in liaison with NCSD).

3. Promote the integrated Use of Shared Catchment Resources, in accordance with regional protocols.

2.7. SECTORAL AND CROSS-SECTORAL INTEGRATION

OBJECTIVE 2.7:
Integrate the conservation and sustainable use of biological diversity into relevant **sectoral** and cross-**sectoral** plans, ptogrammes and **policies.**

ACTIONS

1. Ensure that that considerations related to the conservation and sustainable use of biodiversity are integrated into **sectoral** plans, programmes and policies in accordance with the NEMP.

2. Establish a Biodiversity Unit within MICOA in order to promote and co-ordinate the integration of biodiversity considerations into **sectoral** and cross-**sectoral** planning and management.

3. Develop and promote integrated resource-use planning.

4. Promote sector legislation and establishment of norms and criteria for sustainable use of the countries' natural resources.

5. Strengthen MICOA's capacity to meet the requirements stated in its mandate, especially with regards to cross-**sectoral** issues related to biodiversity conservation.

3. IMPACT ASSESSMENT AND MINIMIZING ADVERSE IMPACTS

3.1 ENVIRONMENTAL IMPACT ASSESSMENT

OBJECTIVE 3.1:
To develop guidelines for environmental impact assessments and **to ensure that environmental impact assessments are conducted for projects and activities, likely to have significant adverse effects on biodiversity.**

ACTIONS

1. MICOA will draw up and submit regulations and guidelines for Environmental Impact Assessments in Mozambique which will include clauses pertaining to biodiversity conservation. This is currently being carried out by the MICOA.

2. Strengthening of MICOA to : **a)** draw up Terms of Reference for EIA's related to a variety of development projects b) Review EIA Reports c) Monitor the implementation of mitigating measures and the environmental management for *inter alia* the conservation of biodiversity.

3. Draw up national emergency response capabilities to deal with:

a) environmental impacts arising from oil spills and other marine pollutants

b) terrestrial impacts arising spillage of hazardous and toxic materials

c) definition of responsibilities related the rehabilitation of degraded habitat arising from (a) and (b) above.
d) review existing legislation and regulations with regards to culpability, compensation and indemnity in cases of environmental degradation resulting from oil spills, marine pollution and terrestrial pollution.

3.2. ALIEN SPECIES AND MODIFIED ORGANISMS

OBJECTIVE 3.2:
Control the introduction and spread of alien **species and genetically modified organisms that threaten or have the potential to threaten Mozambique's biological diversity.**

ACTIONS

1. Review, revise and formulate policy, legislation and programmes related to the control, introduction, translocation and management of alien species that may adversely affect ecosystem processes and/or biological diversity.

2. Ensure that projects involving the introduction and management of alien organisms (such as re- and afforestation and fresh water and marine aquaculture) are subject to a proper EIAs in accordance with the Environmental Law.

3. Promote research into the extent nature and impacts introduced alien organisms that threaten or have the potential to threaten Mozambique's biological diversity.

4. Develop and implement appropriate control and eradication measures for alien organisms that threaten biological diversity.

5. Promote, and collaborate in, regional initiatives for the control of alien species in shared ecosystems.

6. Promote the use of indigenous flora and fauna for the rehabilitation and re-vegetation of degraded areas or areas prone to erosion.

7. Promote, through the dissemination of information, public awareness regarding the risks of introduction of alien species.

4. SCIENTIFIC KNOWLEDGE AND CAPACITY

OBJECTIVE 4.1:
Improve the knowledge **of important components of Mozambique's bio-**diversity

ACTIONS

1. Promote the compilation, synthesis and analysis of existing biodiversity information, and ensure that this information is disseminated in a usable form, in order to facilitate the conservation and sustainable use of biodiversity.

2. Identify a focal point institute tasked with the activities referred to in action 1 above.

3. Promote the training of scientists and technicians from relevant institutions to carry out research into and inventories of Mozambique's biodiversity.

4. Promote research programmes, as well

as individual surveys and inventories relevant to the knowledge about important components of biodiversity, and secure that, where necessary, activities are carried out using a multi-disciplinary approach.

5. PUBLIC AWARENESS AND EDUCATION

OBJECTIVE 5.1:
Improve the knowledge of important components of Mozambique's **biodi-versity**

ACTIONS

1. Establish and implement, through the National Biodiversity Unit, a coordinated programme, to enhance public awareness and education related to conservation and sustainable use of biodi-versity.

2. Encourage institutes and organization involved in research into and conservation of biodiversity to embark upon public awareness building and education through stimulating an interest in biodiversity related issues.

6. INTERNATIONAL RELATIONS

OBJECTIVE 6.1:
To ensure the prioritised **and co-ordinated participation of Mozambique, internationally and regionally,** in initiatives aimed at the conservation and sustainable use of biological diversity

ACTIONS

1. Review Mozambique's participation in regional and international agreements relevant to the conservation and sustainable use of biodiversity, and ensure that efforts are well coordinated and prioritised.

2. Contribute to the formulation and development of new bilateral agreements relevant to conservation of biodiversity.

3. Promote accession to, and ratification of, regional and international agreements relevant to biodiversity conservation will be promoted especially the RAMSAR Convention for the Protection Wetlands of International Importance and the ratification of the CITES convention.

4. In accordance with international conventions and agreements identify sites of natural, biological or scenic value and promote the recognition of these sites according to international status for example Natural Heritage Sites, RAMSAR Sites, Biosphere Reserves etc.

5. Maintain and strengthen Mozambique's participation in international organisations concerned with sustainable development and biodiversity conservation.

6. Participate actively in agreements, protocols and activities of international organisations.

Review, and if necessary revise, existing legislation in Mozambique to ensure that national legislation complies with the obligations and objectives of international and regional conventions and agreements.

VIII.4 INTEGRATION OF BIODIVERSITY CONSIDERATIONS INTO SECTORAL PLANS, POLICIES AND PROGRAMMES.

It is recognized that the integration of biodiversity considerations into sectoral plans, policies and programmes will be one of the major challenges in implementing many of the actions outlined in the Strategy.

The Ministry for the Coordination of Environmental Affairs (MICOA) has been tasked to promote and co-ordinate the implementation of sound environmental policies. For this purpose the Ministry has drawn up the National Environment Management Programme (NEMP) which is the environmental master-plan for Mozambique.

The NEMP consists of Sectoral Plans, for the medium and long term, which are intended to lead to sustainable development of Mozambique. MICOA has been given the authority to oversee the implementation NEMP. In this regard MICOA will evaluate plans and policies of other ministries as well as their capacity to promote and implement sound environmental policy.

The Law of the Environment, proposed by NEMP, was passed by the Mozambican Parliament in 1997 -this will facilitate and strengthen the role of MICOA.

A **National Commission for Sustainable Development (NCSD)** was created by a provision in the Environmental Law. The NCSD is a consultative body directly linked to the Council of Ministers (the Cabinet) and will ensure that that considerations related to the conservation and sustainable use of biodiversity are integrated into sectoral plans, programmes and policies at the highest level. In addition a Biodiversity Unit within MICOA will be created in order to promote, co-ordinate and guide this integration.

Objective 2.7 of Mozambique's Strategy directly addresses this issue. In addition, the objectives and associated actions related to agriculture, forestry, fisheries, wildlife and tourism recognize the need to review and evaluate legislation, policies and programmes with regards to the incorporation of biodiversity considerations into these sectors.

VIII.5 ESTABLISHMENT OF CLEARING HOUSE MECHANISM

Mozambique has received support during 1997 from the United Nations Environmental Programme (UNEP) to establish a Clearing House Mechanism to promote and facilitate scientific and technical cooperation. However, the necessary equipment and staffing structure is not yet place in order to carry out CHM operations. Once the equipment is installed MICOA will coordinate the establishment of fully functional CHM in Mozambique.

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LIST OF ABBREVIATIONS APPEARING IN THE TEXT

CBD	Convention on Biological Diversity
CEF	Centro de Experimentação Florestal (Forestry Research Centre)
CITES	Convention on the International Trade of Endangered Species
CHM	Clearing House Mechanism
COP	Conference of the Parties
DNFFB	Direcção Nacional de Florestas e Fauna Bravia (National Directorate of Forestry and Wildlife
EIA	Environmental Impact Assessment
EMU	Eduardo Mondlane University
GOM	Government of Mozambique
INIA	Instituto Nacional de Investigação Agronomica (National Institute for Agronomic Research)
MICOA	Ministerio para a Coordenação de Acção Ambiental (Ministry for the Coordination of Environmental Affairs)
MICTUR	Ministerio de Indústria, Comercio e Turismo (Ministry of Industry, Commerce and Tourism)
NEMP	National Environmental Management Programme
NCSD	National Commission for Sustainable Development
NGO	Non-Governmental Organization
NPGRC	National Plant Genetic Resources Centre
SADC	Southern African Development Community
SEMOC	Sementes de Moçambique (Mozambique Seed Company)
SPFFB	Serviços Provinciais das Florestas e Fauna Bravia (Provincial Forestry and Wildlife Services)
TFCA	Transfrontier Conservation Area
UNCED	United Nations Conference on Environment and Development
UNEP	The United Nations Environmental Programme
ZACPLAN	Zambezi River Basin Action Plan