PROTECTING MONTANE FOREST BIRDS OF BAMENDA PLATEAU, CAMEROON

[1]Eze, B. E and [2]Neba, N. E.
[1]Dept. of Geography & Reg. Planning, University of Calabar, Calabar- Nigeria
[2]Department of Geography, University of Yaounde I, ENS Bambili Campus
N.W. Province Cameroon

Abstract
The Bamenda Plateau exhibits a high level of endemism among birds and vascular plants in the montane forests. These are of scientific importance, but have received little conservation attention. A seemingly positive development in terms of conservation strategy since the 1980s has been the considerable upsurge in forest conservation schemes to protect the bird life and their habitats. Despite these efforts the habitats and the avifauna is vanishing at an alarming rate under anthropic degradation. The concrete experience of policy, programme, and project implementation in forest protection raises serious doubts over the capacity of such schemes to contribute to sustainable development in general and human welfare in particular. The study focuses on the causes of the vanishing avifauna despite state legislation and management policies. It finally identifies the micro-incoherencies in such projects as the culture. The study recommends social impact assessment as the key to sustainable conservation of this unique ecosystem.

Key words: *Bird life, degradation, Montane forest, micro-incoherencies, threatened species, protection.*

Introduction

In Western Cameroon volcanic mountain chains of sufficient height and extent exist for the development of one of the rarest of West African habitats, that of montane forests. The forests which occur in these mountains are unique in that they have one of the highest levels of endemism in the whole of Africa, particularly among birds and vascular plants. Macleod (1986) reports that 20 bird species are found only in these areas and some are confined only in one mountain. The Bamenda Plateau has some of the best surviving examples of montane forest refugia that are in critical need of conservation action. These forests were once widespread on the Bamenda plateau but have been extensively cleared. The rich volcanic soils on which they grow are amongst the most fertile in the country. The plateau also has one of the highest population densities in Cameroon. The combination of these factors results in enormous pressure to clear the remaining forests for agriculture and grazing. Despite their scientific importance and some conservation efforts by the government the wildlife is threatened with extinction if the micro – incoherencies in conservation projects are not alleviated. The main forest conservation projects and associated conflicts are summarized in Table 1.

Table 1: Forest Conservation Projects and Land use conflicts

Location	Land Use Conflict with Communities	Type of Action
MEZAM	- Bali Ngemba (State) – (farming, grazing and illegal exploitation)	- Afforestation to be continued - Regeneration
	- Bafut-Ngemba Forest(s) Farming, grazing and illegal exploitation	- Afforestation to be continued - Regeneration
	- Bafungi Forest (communal) (farming, grazing and illegal felling of trees)	- Regeneration
	- Bafut-Tingo valley Forest (communal Farming and Exploitation)	- Regeneration
	- Bambui-Mendankwe Forest Range (communal grazing, farming and exploitation)	- Afforestation - Regeneration
NGOKETUNJIA	- Ndop Plain Gallery Forest (c) (Farming and exploitation)	- Afforestation
	- Bafanji Forest (c) (Farming and exploitation activities)	- Regeneration
MOMO	- Widikum/Menka Forest (Farming activities)	- Regeneration
	- Oshia/Ekwere Forest (c) (farming and grazing activities)	- Regeneration
	- Gwofon – Oshum Forest (c) (Farming and exploitation activities)	- Regeneration
	- Ngemba/Mbengwi (council) (farming and exploitation activities) - Acha/Tugi Forest (c) (Farming grazing and exploitation activities)	- Afforestation - Afforestation - Regeneration
BOYO	- Su-Bum Forest (c) (Grazing, Farming and exploitation)	- Regeneration
	- Mbueni-Menjang Forest (Farming and exploitation)	- Regeneration
	- Ijim Mountain Forest (farming grazing and exploitation)	- On-going project need monitoring and strengthening
BUI	- Mbokam Forest (c) (Farming and grazing)	- Regeneration
	- Nkonofen Forest (c)(farming and exploitation)	- Afforestation - Regeneration
	- Kilum Mountain Forest (grazing, farming and exploitation)	- On-going projects, need monitoring and strengthening
	- Bui-Mbim Forest (c) (farming and exploitation)	- Regeneration
	- Kuflu forest (c) (farming and exploitation)	- Afforestation - Regeneration
	- Bbak forest (c)	- Regeneration
	- Berabe/Mbembe forest (c) (farming and exploitation)	- Regeneration
	- Njising/Tabenken forest (c) (Farming, grazing and exploitation)	- Regeneration

DONGA/ MANTUNG	- Mbfu/Tabenken forest (c) (Farming, grazing and exploitation)	- Re-conversion using native species
	- Nkanchi Forest (c) (Grazing, farming and exploitation)	- Regeneration - Afforestation
	- Masim valley Forest (c) (Farming and exploitation)	- Regeneration
	- Mbibi/Tala Forest (c) (Grazing, farming and exploitation)	- Regeneration
MENCHUM	- Menchum valley Forest (c) (Farming and exploitation)	- Regeneration
	- Kom/Wum Forest (c) (Farming and exploitation activities)	- Afforestation - Regeneration
	- Fungom Forest Reserves (s) (Farming and exploitation)	- Regeneration
	- Furu-Awa Forest (c) (indiscriminate logging by Nigerians)	- Protection and creation of access roads

NB: S = State forest or forest reserve, C= communal forest.

Despite the existence of state legislation and management policies, the forest preserves have continued to suffer degradation. This means that the local people, in part, have not always respected forest conservation legislation. The study focuses on the anthropic causes of montane forest degradation and the consequences on the avifauna. It identifies the micro-incoherencies in conservation projects and finally identifies the scope for sustainable protection of these forest refugia.

Biophysical Setting of the Study Area

The Bamenda Plateau is composed of four main erosion levels (Bawden and Langdale-Brown, 1968). The main surfaces being:

- The 330, metre surface: Donga Plain, Iwo, Lower Menchum and Katsina river valleys.
- 866, metre surface: Mbaw Plain.
- 1000 to 1333 metre surface: Ndop Plain, Bali-Bafut-Mankon Plateau, wum-Misaji area.
- 1666 to 2330 metre surface: The high Lava Plateau with soaring mountain Peaks such as at Oku, Ijim, Njising, Tabenken, Mbu-Pinyin, Korifem- Mbiame, Mundum and Acha-Tugi.

Lowland forest (evergreen forest) is found below the 900m surface. Montane forests are in mountainous areas (1500m to 2000m). Elsewhere, are savanna woodlands, tree and shrubs savannas and grassland savannas. The montane forest exhibit a high ornithological potential.

The avifauna of the plateau is unique. Its origin and evolution are well documented by stuart (1986). Altogether 53 species of montane forest birds are found in the mountain peaks and surrounding plateau. Twenty of these are true endemics, sometimes of only one or two mountain peaks. The Bannerman's Tauraco (Tauraco bannermani) is found in the whole plateau but large populations are now only found in the Oku and Ijim mountain forest. Others such as the Green Breasted Bush-Shrike (Malaconotus gladiator) are found on all the mountain peaks.

The Oku montane forest constitutes the largest refugia/remnant of forests that are still not degraded. Thirty six montane forest birds were recorded by stuart (1986) in this forest. See Appendix 1. These are species restricted to montane forests. Two of these birds are endemic to the plateau, Tauraco bannermani and Platysteira laticinta. Three endemic sub-species occur, Campthera tullbergi wellsi, Andropadus montanus concolor and Muscicapa adusta okuensis.

Collar and Stuart (1985) identify four momtane forest birds which occur on Mount Oku as being threatened by habitat loss. These are Tauraco bannermani, Platysteira laticinta, Andropadus montanus concolor, and Ploceus bannermani. The inventory of birds species presented in Appendix 1 constitutes montane forest birds. Detailed information of these birds and of all the montane forest species is given in the International Council for Birds

Preservation-Cameroon Mountain Forest survey Report (Stuart, 1986).

The remnant forest of Mount Oku, Mount Ejim, Mbiame, Tubah-Mendankwe range, Santa range, Pinyin-mbu range, Njising and Acha-Tugi constitute the remaining patches of natural Montane habitats left in the Bamenda Plateau. Throughout the rest of the high lava plateau, these forests have either been totally converted to Savanna grasslands or are badly fragmented and likely to be cleared in the next few years. The birds dependent on these forests are threatened with extinction. For the Montane forest birds, the Tauraco Bannermani and Platysteira laticinta would become threatened with extinction if the forests disappeared or became too fragmented.

Appendix 2 presents lists of widely distributed birds in the high plateau not restricted to mountain peaks. These birds are capable of surviving in montane woodlands, and wooded Savanna grasslands. As soon as these habitats become degraded and transformed to grass Savanna, these will certainly become extinct. The on-going Savannization process of montane and sub-montane forest remnants is a serious threat to the avifauna. Two other more widely distributed montane forest birds: Lanarius fulleborni and Phyllastrephus poensis are also under serious threat in the plateau. These two are restricted to the lowest altitude parts of the montane forests at 1300 to 1600 metres above sea level. The forests at this elevation are being cleared rapidly by migrant farmers from village settlements at lower elevations. Under these circumstances, it seems possible that these birds will eventually become extinct in the whole of the Bamenda plateau.

Methods

The study focused on montane and submontane forest habitats. The first phase was to quantitatively determine the influence of habitat alteration by man on floristic structure and composition and to establish the consequences of changes on the avifauna. Climax montane forest sites, montane woodlands, tree/shrub Savanna and grassland Savanna sites were studied in terms of floristic composition based on life form in order to establish the dynamics of various plant members of the habitats, that is, how they change from climax moist montane forest. This was largely based on the work of Hawkins and Brunt (1965), Thomas (1986) and Macleod (1986). The floristic parameters used ere based on life form: Large trees, small trees, shrubs, herbs, epiphytes, ferns, sedges and grasses. Field observations and informal interviews of local land users on sites in the various habitats yielded data on the influence of anthropic factors on the avifauna. Based on previous ethnobotanical surveys by Tame (1993), Duncan (1987) and Boiler (1999) a classification of useful plant species extracted by man from moist montane forests was made and the implications on the functioning of the montane forest ecosystem for the bird life established. The perceptions of protected areas by local land users were then appraised.

The second phase of the study focused on the conflicting interests of forest conservation projects and those of forest adjacent village communities. The Bafut-Ngemba montane forest reserve was selected for case study. The objective was to establish why the state protection reserves have registered little or no success. The socio-economic situation of the local population whose livelihoods depend on the forests was therefore investigated using informal interviews and the micro-incoherencies in such conservation projects identified.

Results

The lower limits of montane forest are presently mapped between 1500 and 2100m above sea level. Below this zone the vegetation is a complex mosaic of moist montane forest, degraded montane forest (montane woodland), scrublands and tree Savanna and grasslands. The lower limits of the forest are dominated by Schefflera abyssinica and Carapa grandiflora. Other common trees are Szygium staudtii schefflera mannii, phyeum africanum, rapanea neurophylla, and Bersama abyssinica. Smaller trees include Nuxia congesta, Ixora foliosa, Pittosporum mannii, Clausena anisata, Alophyllus bullatus and Xymalos monospora. In places, particulary under Schefflera abyssinica, there are dense stands of

Mimulopsis solmsii. Tree ferns Cyathea manniana also occur but are uncommon. At higher elevations the canopy is dominated by Szygium staudtii, Rapanea newrophylla, and Podocarpus milanjianus. The forest edge community at higher elevations, which is subject to attack by fire, contains some montane trees such as Philippia manie, Rhamus prinoides, Peddiea fischeri, Cassine eathiopica, Myrica arborea and Ageuria salicifolia.

Table 2: Comparison of plant species per life form in montane forest and montane woodland habitats.

Life form	No. of species		Percentage change in species
	Montane forest	Montane woodland	(%)
Large trees	63	0	-100
Small trees	10	9	-100
Shrubs	25	5	-800
Herbs	24	11	-54.1
Epiphytes	9	0	-100
Ferns	2	0	-100
Sedges	0	0	0.0
Grasses	0	0	0.0

Source: Field work by Authors

Table 2 is based on an inventory of plant species in the moist montane forest and degraded montane forest or montane woodlands found at the lower limits of the climax forest community. In each of the two ecosystems plants were counted according to life form and a comparison of the ecosystems established. The conversion of moist montane forest to montane woodland revealed that these sampled plots lost all the large tree species, 10% of the small tree species, 80% of the shrubs, 54% of herbs and all the epiphytes. The montane woodland is derived from moist montane forest through extensive fire damage. The understorey has many forest edge species such as Pteridium aquilinum, Hypericum Lanceolatum; and Crassocephalum mannii. Epiphytes tend to be impoverished and the rich terrestrial fern communities are absent. Livestock grazing prevents much regeneration but where regeneration occurs a tall herb community develops with second growth species such as Crassocephalum mannii; Polyscia fulva, Croton macrostachyas and Neoboutonia grabrescens.

Table 3: Comparison of plant species per life form in Montane forest and tree/shrub Savanna habitats.

Life form	No. of species		Percentage change in species
	Montane forest	Montane woodland	(%)
Large trees	63	0	-100.0
Small trees	10	9	0.0
Shrubs	25	26	+4.0
Herbs *	24	104	+76.4
Epiphytes	9	5	-44.4
Ferns	2	0	-100
Sedges	0	0	0.0
Grasses *	0	53	+100

* Immigrants
Source: Field work by Authors.

Table 3 on its part compares the plant species in the moist montane forest with those in the tree/shrub Savanna ecosystems. The conversion of moist montane forest to tree/shrub Savanna has the following outcome: all large trees are lost, small trees dominate (almost all small trees survive), almost all shrubs survive, a dramatic arrival of immigrant herbs, a 44% reduction in the total number of epiphytes and a total degradation of ferns except Pteridium. There is also a dramatic arrival, in the area of 53 immigrant species of grasses. Tree/shrub Savanna is often dominated by Lasiosiphon glancus, Hypericum lanceslatum and Pteriduim aquilinum and contains numerous forest edge species. The Lasiosiphon often surports epiphytic orchids and parasitic Loranthaceae. In the Verkovi area of Oku, many Lasiosiphon trees were seen to contain Schefflera abyssinica stranglers, which suggest that the tree/shrub Savanna could change into forest if the trees were allowed to develop. The Pteridium aquilinum is able to withstand burning because of its rhizophourous growth and therefore dominates fire-burned areas.

Table 4: Comparison of plant species per life form in montane forest and grassland habitats.

Life form	No. of species		Percentage change in species
	Montane forest	Montane woodland	(%)
Large trees	63	0	-100.0
Small trees	10	9	-100.0
Shrubs	25	0	-100.0
Herbs *	24	104	+76.4
Epiphytes	9	0	-100.0
Ferns*	2	4	+50.0
Sedges*	0	13	+100
Grasses*	0	53	+100

* Immigrants
Source: Field work by Authors

Table 4 compares the floristic elements of grassland plots with those of the climax montane forest vegetation. In the grassland plots there was a total degradation of large trees, small trees, shrubs and epiphytes. The proliferation of invading herbs and bracken fern (Pteridium aquilinum) is typical. Thirteen sedge species and 53 grass species combine with the above characteristics to create a "grassfield landscape". The grasslands were originally dominated by Hyparrhenia spp and had a rich ground flora. In a few decades the whole community had changed to be dominated by Sporobolus grass, which forms

coarse, fibrous tufts and species – poor communities. Being unpalatable when over 35cm tall. Sporobolus could withstand the heavy grazing pressure and trampling of livestock. This change in dominance combined with intensive grazing pressure, annual burning of grasslands and overall loss of vegetation has now led to serious erosion problems on most sites.

Slash-and-burn shifting cultivation with short fallow durations of 1 to 5 years accelerates the Savannization process. Fallow fields were surveyed with the objective of establishing the successions of fallow grasses and weeds. The following succession stages were identified. During the first year there is rank weed growth dominated by members of the compositae. Erigeron floribundus dominates together with Ageratium conyzoides, Anisopapus africanus, Guizotial scabra, Laggera alata and Laggera pterodonta. The annual grass Rynchelytrum repens is often also abundant on first year fallows. During the second year of fallow there is invasion by Imperate cylindrica which may become dominant towards, the end of the wet season. Third year invasion is by grasses such as Hyparrhenia, Digitaria spp. and Melinis minuntiflora. Fourth and fifth year fallows are rare. However, in areas where population pressure on land is low fourth and fifth year fallows show a gradual decline in Imperate cylindrica and Hyparrhenia dominance. Imperata cylindrica tends to persist on land which is under permanent cultivation or is being fallowed from a year to two because it is capable of growing on soils of poor fertility. It is a light demanding species and is shaded out later in the succession by the taller Hyparrhenia grasses. Hawkins and Brunt (1965) report that germination rates of Hyparrhenia are very low. This may partly account for the time it takes before it reestablishes itself in old farmlands. Ten Hyparrhenia species dominate grass Savanna sites. When left uncultivated for several years there is the dramatic invasion by several other grasses, sedges and herbs.

Over-grazing, trampling and burning have caused the once Hyparrhenia dominated grasslands to be replaced by Sporobolus grassland and their subsequent invasion by more resistant disturbance climax species such as weeds, bracken, Setatia sphacelata, Arthraxon quartinicus, Pennisetum Clandestinum and Panicum maximum (Table 4). The consequence is short, clipped tufted ineffective grass cover and complete loss of vegetation in some areas resulting in gully and sheet erosion. Most of these slopes are prone to landslides.

Forest degradation results from agricultural encroachment, grazing, fire damage and exploitation of timber products. The data presented in table 1, 2, and 3 shows a dramatic alteration of habitats of the montane forest avifauna. Habitat alteration is a major threat is to the bird life. The destruction of the remaining patches of montane forests threatens the future of many birds. Pygeum africanus is a medicinal tree found in montane forests. It is exploited by ringbarking for commercial purposes. This constitutes a threat to the future use of Pyeum africanus as a resource. Pygeum fruits are alomost certainly important in the fruitivorous diet of Tauraco bannermani. Preuss's monkey (Cercopithecus preussi) also feed on these fruits. Over-exploitation and bad harvesting could therefore constitute a threat to these two endangered species.

An ethnobotamical survey of the high plateau revealed that many other tree species are harvested in the montane forests for various purposes. This certainly affects the survival of the avifauna.

Table 5: Distribution of useful/ harvested plant species according to life form.

Users	Number of useful plant species per life form							
	Large trees	Small tree	Srubs	Climbers	Epiphytes	Herbs	Bulbs, tubers & corms	Succulents
Timber	5	0	0	0	0	0	0	0
Alcohol	0	1	0	0	0	0	0	0
Firewood	3	0	1	0	0	0	0	0
Wood carving	4	5	1	0	0	0	0	0
Construction fibre	0	2	1	0	0	0	0	0
Honey (apiculture)	3	0	0	0	0	0	0	0
Insecticide	1	1	0	0	0	0	0	0
Dye	0	1	0	0	0	0	0	0
Musical instrument	0	2	0	0	0	0	0	0
Fencing poles	2	1	0	0	0	0	0	0
Medicinal	2	9	4	3	2	11	4	5
Agroforestry	0	2	4	0	0	0	0	0
Food	0	1	1	0	0	1	0	0
Total	19	25	12	3	2	12	4	5

Source: Field work by Authors

Table 5 analyses the plant life according to life form and uses. 86 species were classified as useful. The main use categories distinguished were: timber, alcohol, fuelwood, wood carving, construction fibre, honey (apiculture), insecticide, dye (colour), musical instruments, fencing ploes, medicinal (remedies, drugs, stimulants), food (food, aromatic flavoring, antioxidant, food colorant), Agroforestry (soil amelioration, anti-erosion, and provision of shade). Large trees, small trees and shrubs offer the highest number of uses. The main uses of herbs are medicinal. Herbs constitute 27.5%, small trees 22.5%, shrubs 10%, bulbs/corms/tubers 10%, climbers 2%, large trees 5% and epiphytes 5% of total medicinal plants. Agroforestry species are found mainly on farmlands and fallows. By ranking medicinal plants constitute the largest group. The ranking is as follows: medicinal plant 40 species, wood carving 10 species, agroforestry 6 species, timber 5 species and firewood 4 species. The rest are minor use categories.

Plant families were grouped according to the number of useful species. The plant families that had the greatest number of species classified as useful plants were Euphobiaceae (7 species), Compositae (5 species), Papillionaceae (5 species), Araliacea (4 species), and Graminae (4 species). A total of 14 species (16.2%) had two uses and these were mainly of the Araliaceae (28.5%). About 72 species are used for only one purpose. This includes the browse plants. Of these useful plants only agrogorestry species and melliferous plants are actively being planted.

The harvesting of these tree species certainly causes habitat alteration and loss and affects the vital food chains necessary for the survival of birds. The birds certainly offer different rates of tolerance to human interference with the forest. For example, the bird species presented in Appendix 2 are found in Sub-montane forest areas and survive in Savanna woodlands or tree and shrub Savannas between 1000 and 1500 metres above sea level.

Some of these birds, especially the endemics seem to have a very narrow ecological range. The restricted and isolated distribution of small population of montane flora and fauna in forest refugia of the plateau is believed to have resulted in speciation and subspeciation. The localized endemism is believed to have arisen during the pleistocene age when climatic changes caused the forest to retreat to the wetter mountainous areas of Africa, leaving tracts of forests or "refugia" cut off from one another. The history of distribution and

evolution of montane forest species has been reviewed by Moreau (1966), Hamilton (1982), and Stuart (1986). Since the period of isolation was fairly brief (around 20.000 years before the temperature rose and the forest expanded) most differentiation was at subspecies level. Many of the montane forest birds have been unable to disperse subsequently from the refugia and colonise other mountains. These montane forest refugia are characterised today by a large number of endemic subspecies.

Subsistence hunting has caused the decline of wildlife in the refugia and continues to pose a threat to remaining populations. Many birds are killed with slings. Large birds are baited and trapped using snares. Some small birds are baited and trapped in baskets woven with Raphia vinifera stems. Some are baited and trapped by gums extracted from forest trees. Tauraco feathers are used by traditional rulers (tribal leaders) to state their authority and to decorate brave and deserving tribal people. The feathers of birds are also used to fabricate feather headdresses and mask gowns used for dancing during tribal festivals. It is not known how these are obtained.

The forests provide food, timber, firewood, fibre, medicine and virgin farmlands to forest adjacent communities. Awing, Akum, Njong/Bamock village are adjacent to the Bafut – Ngemba Forest reserve. These villages depend on the forest for all year round market gardening, non-timber forest products, timber and fuelwood, food crop farming under slash-and-burn shifting cultivation, alternative dry season grazing of goats and cattle, hunting and trapping of animals. Within fragmented parts of the forest reserve and at the forest borders squatter settlements by migrant farmers and cattle rearers are emerging despite the protection status of the forest. Ongoing conservation efforts by the Ministry of Forest and environment are plagued by inadequate funding, logistics, personnel and micro-incoherencies.

Table 6: Farmers responses to the awareness of who owns the forest. Awareness as a percentage of Population

Village community	Farming population depending on the forest (No.)	State owned forest. Protected (Reserve)		Open access resource for the village (adjacent communities)		Do not know who owns the Forest		Observations
		No.	%	No.	%	No.	%	
Awing	1050	600	57	325	30.9	124	11.8	There is still great need for the state to educate local people on forest resource ownership and management
Akum	450	202	44.8	98	21.7	150	33.3	
Njong/ Bamock	189	125	66.1	04	2.1	60	31.7	

People from forest adjacent communities complain of being harassed by forest guards when in their quest for livelihood activities in the forest. They cannot understand how their indigenous and local forest became state forests. Table 6 presents the awareness of local people to the question of ownership of the forest. Approximately 35 to 40% of the Farming population of the forest in adjacent communities does not regard the state as owner of the forest. This certainly makes implementation of the projects extremely difficult.

The consequence of these livelihood activities has been the extensive degradation of the semi-humid evergreen Montane forest. It has in most areas been completely cut down by migrant farmers from adjacent villages and reduced to marginal farmlands, fallows and grazing land. Bush fires have reduced the secondary and primary forests together with illegal exploitation to scattered

stands and clumps. In short, the state of degradation on about 3000 hectares of the Bafut – Ngemba reserve can be described as critical despite on-going rehabilitation and conservation programmes. Most conservation projects suffer a similar fate.

Table 7: Percentage farmers willing to cooperate with the conservation service.

Village community	Farming population depending on the forest (No.)	Willing to respect laws/regulations		Not willing to respect laws/ regulations		Neutral farmers	
		No	%	No	%	No	%
Awing	1050	725	69	200	19	175	12
Akum	45	352	78.2	76	16.8	22	4.8
Njong/ Bamock	189	185	97.8	03	1.6	01	0.5

Observation: A good proportion of local people are willing to cooperate with the State to manage forest resources but the conviction still needs to be created through education and sensitization.

Table 7 presents the responses of farmers operating in the forest when asked about their willingness to support the conservation and rehabilitation projects. About 20 to 30% of the farmers are not readily willing to cooperate with the project administration, as they are not stakeholders. This project was set up without their involvement and is drastically restricting their access to key resources for survival. Since these farmers have no alternative income generating activities, they are hostile to the reserve. Approximately 69 to 80% are willing to cooperate with the project hoping that it will offer and guarantee then alternative resources for a livelihood.

Conclusion

Habitat loss, habitat alteration and hunting are major anthropic factors threatening the survival of montane forest birds in Bamenda Plateau. Most of these birds are endemic and have a very narrow ecological range for survival. Despite the existence of state legislation and management policies these forest preserves have continued to suffer degradation. Conservation efforts are at odds with the livelihood interest of forest adjacent village communities. This means that the people, in part, have not always respected forest legislation, especially when such legislation threatens their livelihoods. Policies and schemes attempt to control the use of forest areas giving insufficient attention to the socio-economic and cultural situation of local populations whose livelihoods depend on resources found in such areas. The afforestation, rehabilitation programmes and prohibition of hunting and farming ignore not only the pressing needs of the rural poor for basic food supplies, fuelwood requirements and non-timber forest products, but also the complex and heterogenous nature of the livelihood systems of forest adjacent land users. However the laws and regulations governing land use in the protected areas remain largely unenforced. Land users are constantly harassed by forest guards who themselves are severely stretched in their efforts to enforce these laws. Their activities are largely uncoordinated with little participatory project initiation and implementation at the grassroots. There is also the inability to resolve local conflicts emanating from the alienation of local forest resources. Much is still desired in the mapping out and institution of community forests with sustainable forest management plans at the grassroots level.

There is equally the lack of concrete projects to promote appropriate alternative income generating and livelihood systems for forest adjacent communities threatened by protection and rehabilitation projects. Local people are facing restrictions imposed on economic activities necessary for socio-economic and cultural well-being. Most government protected areas do not involve dialogues and often result

in policing and harassment of local land users. Conservation projects which minimize the trade-off between environment protection and human welfare must involve intensive dialogue with various local groups in the project design phase. Such dialogue must involve or integrate indigenous knowledge systems as a measure to reduce social risks. A key to the success of protection projects will therefore depend on social impact assessments as an integral part of the planning process. This will determine which social groups stand to win or to lose from the protection scheme, identify potential conflicts of interests groups and examine the procedures for resolving them, assess how local people might respond when their livelihoods are affected as well as the social and biodiversity implications of such responses and finally, explore alternative livelihood scenarios for individuals and groups affected by the project.

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Appendix 1 Montane Forest Birds

Columba arquatrix	Olive Pigeon
Aplopelia larvata	Lemon Dove
Tauraco bannermani	Bannerman's Turaco
Apaloderma vittatum	Bar-tailed Trogon
Pogoniulus coryphaeus	Western Green Tinkerbird
Campethera tullbergi	Tullberg's Woodpecker
Mesopicos elliotll	Eliot's Woodpecker
Coracina caesia	Grey cuckoo-shrike
Andropadus montanus	Cameroon Mountain Greenbul
Andropadus tephrolaemus	Mountain Greenbul
Phyllastrephus poensis	Cameroon Olive Greenbul
Laniarius atroflavus	Yellow-bellied Boubou
Laniarius fuelleborni	Fulleborn's Black Boubou
Malaconotus gladiator	Green-breasted Bush-shrike
Cossypha isabellae	White-bellied Robin-chat

Alcippe abyssinica	African Hill Babbler
Bradyterus lopesi	Evergreen Forest Warbler
Bradypterus cinnamomeus	Cinnamon Bracken Warbler
Cisticola hunteri	Hunter's Cisticola
Urolais epichlora	Green Long-tail
Apalis cinerea	Grey Apalis
Apalis jacksoni	Black-throated Apalis
Apalis pulchra	Black-collared Apalis
Muscicapa adusta	Dusky Flycatcher
Platysteira laticincta	Banded Wattle-eye
Eliminia albiventris	White-bellied Flycatcher
Nectarinia oritis	Cameroon Blue-headed Sunbird
Nectarinia preussi	Northern Double-collared Sunbird
Linurgus olivaceus	Oriole Finch
Serinus burtoni	Thick-billed Seed-eater
Cryptospiza	Red-faced Crimson-wing
Nesocharis ansorgei	Little Olive-back
Ploceus bannermani	Bannerman's weaver
Ploceus insignis	Brown-capped Weaver
Ploceus melangaster	Black-billed Weaver
Onychognathus walleri	Wallers Chestnut-winged Starling

Appendix 2 Sub-Montane Forest Birds

Tachybaptus ruficollis	Little Grebe
Nycticorax nycticorax	Night Heron
Ardea cinerea	Grey Heron
A: malaconcephala	Black-headed Heron
Anas sparsa	Black Duck
Trigonoceps occipitalis	White-headed Vulture
Gyps bengalensis	White-backed Vulture
Neophron monachus	Hooded Vulture
Gypohierax angolensis	Palm-nut Vulture
Circus aeruginosus	Marsh Harrier
Polyboroides radiatus	Harrier Hawk
Circaetus beaudouini	Beaudoin's Snake Eagle
Kaupifalco monogrammicus	Lizard Buzzard
Buteo auguralis	Red-tailed Buzzard
Stephanoaetus coronatus	Crowned Eagle
Hieraaetus africanus	Cassin's Hawk Eagle
Aquila wahlbergi	Wahberg's Eagle
Polemaetus bellicosus	Martial Eagle
Milvus migrans	Black Kite
Elanus caeruleus	Black-shouldered Kite
Macheirhamphus alcinus	Bat Hawk
Falco peregrinus	Peregine
F. subbuteo	Hobby
F. tinnunculus	kestrel
Francolinus squamatus	Scaly Francolin
Tringa ochropus	Green Sandpiper
Turtur tympanistria	Tambourine Dove
T. afer	Blue-spotted Wood Dove
Treron australis	Green Pigeon

Corythaeola cristata	Great Blue Turaco
Cuculus solitarius	Red-chested Cuckoo
C. clamosus	Black Cuckoo
C. gularis	African Cuckoo
Chrysococcyx klaas	Klaas's Cuckoo
Centropus monachus	Blue-headed Coucal
Ciccabba woodfordi	African Wood Owl
Apus aequatorialis	Mottled Swift
A. apus/barbatus/sladeniae	European/African Black/Fernando Po Swift
A. pallidus	Pallid Swift
A. batesi	Bates's Swift
A. caffer	White-rumped Swift
A. affinis	Little Swift
Colius striatus	Speckled Mousebird
Alcedo leucogaster	White-bellied Kingfisher
Halcyon malimbica	Blue-breasted Kingfisher
H. leucocephala	Grey-headed Kingfisher
Merops apiaster	European Bee-eater
M. nubicus	Carmine Bee-eater
M. variegatus	Blue-breasted Bee-eater
Phoeniculus bollei	White-headed Wood Hoopoe
Buccanodon duchaillui	Yellow – spotted Barbet
Pogoniulus bilineatus	Yellow – rumped Tinkerbird
Indicator conirostis	Thick – billed Honeyguide
Dendropicos fuscescens	Cardinal Woodpecker
Mesopicos goertae	Grey Woodpecker
Hirundo daurica	Red-rumped swallow
H. abyssinica	Striped swallow
H. fuligula	African Rock Martin
Delichon urbica	House Martin
Psalidoprocne pristoptera	Black Roughwing
P. obscura	Fantee Roughwing
Motacilla flava	Yellow Wagtail
M. clara	Mountain Wagtail
Anthus trivialis	Tree pipit
Campephaga petiti	Petit's Cuckoo-shrike
Pycnonotus barbatus	Common Bulbul
Lanius mackinnoni	Mackinnon's Shrike
Saxicola torquata	Stonechat
Alethe Poliocephala	Brown-chested Alethe
Turdus Pelios	African Thrush
Chloropeta natalensis	African Yellow Warbler
Sylvia borin	Garden Warbler
S. atricapilla	Blackcap
Phylloscopus trochilus	Willow warbler
P. sibilatrix	Wood warbler
Cisticola brunnescens	Pectoral-patch Cisticola
Batis minima	Black – headed Batis
Parus albiventris	White-breasted Tit
Nectarinia bouvieri	Orange – tufted Sunbird
Zosterops senegalensis	Yellow White-eye
Serinus mozambicus	Yellow-fronted Canary
Estrilda nonnula	Black-crowned Waxbill

E. astrild	Waxbill
Euplectes capensis	Yellow Bishop
Oriolus nigripennis	Black-winged oriole
Corvus albus	Pied crow