IUCN

Parks and reserves of Ghana

Management Effectiveness Assessment of Protected Areas

Protected Areas Programme for West and Central Africa (PAPACO)

FFEM
Fonds Français pour l'Environnement Mondial

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IUCN – International Union for Conservation of Nature 2010

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Published by:	IUCN, Gland, Switzerland.
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Citation:	UICN/PACO (2010). *Parks and reserves of Ghana : Management effectiveness assessment of protected areas.* Ouagadougou, BF : UICN/PACO.
ISBN:	978-2-8317-1277-2
Cover photos:	Wildlife Division (Ghana)
Produced by:	UICN-PACO - Protected Areas Programme (www.papaco.org)
Printed by:	JAMANA Services, Tél. : +226 50 30 12 73
Available from:	UICN – Programme Afrique Centrale et Occidentale (PACO) 01 BP 1618 Ouagadougou 01 Burkina Faso Tel: +226 50 36 49 79 / 50 36 48 95 E-mail: paco@iucn.org Web site: www.iucn.org and www.papaco.org

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Acronyms and abbreviations

CBD	Convention on Biological Diversity
CBWM	Community Based Wildlife Management
CREMA	Community Resource Management Areas
CRMC	Community Resource Management Committee
CRMU	Collaborative Resource Management Unit
GIS	Geographic Information System
GPS	Global Positioning System
GWD	Department of Game and Wildlife
IGF	Internally Generated Fund
IUCN	International Union for the Conservation of Nature
LEU	Law Enforcement Unit
MIST	Management Information System
NREG	Natural Resource and Environment Governance
NTFP	Non Timber Forest Product
PA	Protected Area
PAMAB	Protected Area Management Advisory Board
PAMAU	Protected Area Management Advisory Unit
RAPPAM	Rapid Assessment and Prioritization of Protected Area Management
WCPA	World Commission on Protected Areas
WD	Wildlife Division
WPA	Wildlife Protected Area
WWF	World Wide Fund for Nature

SUMMARY

Ghana is endowed with diverse ecosystems, which results in a relatively high degree of diversity of plant and animal species. The network of protected areas is a fair representation of all these ecosystems namely: Guinean savannah woodland, transition between dry forest and guinea savannah, dry semi-deciduous forest, moist evergreen forest, transitional zone between moist-evergreen and moist semi-deciduous forest types, and dry evergreen forest. The diversity of Ghana Wildlife Protected Areas (WPAs) protects a very wide variety of mammals, reptiles, amphibians, birds, vascular plants and butterflies. Some WPAs are part of the upper Guinean rain forest which is very rich in biodiversity. The transboundary nature of other parks like Kyabobo makes it possible for buffalos and elephants to move between Ghana and Togo (Fazao-Malfakassa National Park).

In Ghana, the Wildlife Division (WD) of the Forestry Commission is responsible for the protection and management of wildlife protected areas (WPAs). Until 1999 the Wildlife Division was known as the Wildlife Department, a single, centralized government institution directly under the Ministry of Lands and Forestry, now Lands and Natural Resources. Since its creation in 1967, WD has been severely under-resourced and unable to perform its mandate effectively. This has led to a serious reduction in management capability and, as a result, the conservation of a lot of PAs has suffered. There are twenty one (21) WPAs in Ghana totalling 1,347,600 ha or 5.6% of the country. The protected area network includes 7 National Parks, 6 Resource Reserves, 2 Wildlife Sanctuaries, 1 Strict Nature Reserve and 5 coastal wetlands.

These PAs are of economic importance as they contribute to improving standards of living of communities surrounding them. Livelihood support programmes exist in some communities surrounding the park, as well as community based tourism programmes. Some plant species are used for wood production and some of the PAs contain medicinal plants. Some PAs also have cultural, religious or spiritual significance with shrines and sacred grooves, for example, and some have aesthetic attractions such as the Bamboo Cathedral and Rapids in Ankasa; Waterfalls, Magnificent Caves in Bomfobiri, and Kakum.

WPAs in Ghana are subject to pressures and threats, the main pressures being poaching, bush fires and land conversion due to farming or grazing around or within the PAs. Illegal gathering of wild plants and animals (poaching) is present in all PAs at different degrees of severity. There is a high demand for bush meat, rattan and chewing stick. Rattan is poached for craft; elephants are hunted for their tusks, and leopard for skin. But killing of animals is also a result of human/wildlife conflict. Poaching is less severe in some PAs because of better law enforcement or the setting up of community initiatives that regulate harvesting of non-timber forest products, which contributes to reduction in poaching. Land conversion is mainly due to cocoa farming outside the parks in southwestern Ghana. In Shai Hills, illegal grazing by livestock affects the overall productivity of the reserve.

These pressures increase the PAs' vulnerability, which is an issue in most of the PAs. Indeed, there is high demand for resources for cultural and economic purpose; in some parks like Mole, group hunting is a cultural practice, and bush fires are sometimes caused by fire festival, and for the installation of a chief, part of some key species like elephant or lion are sometimes needed.

Appropriate resource allocation mechanism is a major issue that natural resource managers are facing as information needed to make decisions is inadequate. Consequently, management of natural resources is ineffective and inefficient. Means appear to be disparate among PAs, especially regarding staffing and infrastructure; but globally, human, financial and technical means remain not sufficient to efficiently manage activities of PAs. In general, more funding is needed to especially conduct law enforcement activities within the PAs. Regular and adequate flow of funds is also needed. In terms of planning, management plans exist in most of the PAs but they are obsolete and they crucially need to be updated/revised.

Management effectiveness of the WPA network in Ghana needs to be improved. Despite the above-mentioned issues, some of its strengths (all ecological zones are represented, most PAs are refuges for wildlife, existence of a national wildlife policy, support from local communities…) reveal great opportunity for its expansion and development.

At the end of the evaluation, the following recommendations were formulated:

1. Provide adequate, improved and sustainable funding for effective management of the PAs.
2. Create additional conservation zones to connect adjacent PAs to facilitate movement of wildlife in between PAs.
3. Enhance the creation of Community Resource Management Areas (CREMAs) around PAs to address the lack of buffer zones.
4. Step up public awareness and collaboration with other partners (international and national conservation organisations).
5. Reactivate the research unit of the Division to provide scientific information to improve PAs management.
6. Strengthen monitoring and evaluation protocols.
7. Improve working conditions such as remuneration, decent housing (including necessary amenities), logistics etc. for staff.
8. Facilitate payments of outstanding compensation due to land owners.
9. Review and update Management Plans regularly.
10. Lobby the Government to put priority on protected areas, wildlife management and related issues.
11. Increase donor support to protected areas.
12. Improve the infrastructural development (internet access…), equipment such as fire arms and ammunitions, vehicles, communication tools etc, and facilities to ensure effective management.
13. Attract private investors to invest in the tourism potential of the PAs.
14. Facilitate the adoption of the new wildlife laws.
15. Develop a strategic plan for capacity building for PA management and all categories of PA staff.
16. Effectively implement fire control and prevention strategies in PAs.

RESUME

Le Ghana est doté d'écosystèmes divers ce qui lui confère un haut degré de diversité d'espèces de plantes et animaux. Les réseau des aires protégées (AP) du Ghana est une représentation juste des zones écologiques du Ghana à savoir : savane guinéenne boisée, zone de transition entre la forêt sèche et la savane guinéenne, forêt sèche semi-décidue, forêt humide sempervirente, zone de transition entre types de forêt humide sempervirente et semi-décidue, forêt sèche sempervirente. La diversité des AP du Ghana protège une très large variété de mammifères, reptiles, amphibiens, oiseaux, plantes vasculaires et papillons. Certaines AP appartiennent à l'écosystème de forêt de haute Guinée qui est très riche. La nature transfrontalière d'autres parcs comme Kyabobo permet aux éléphants et aux buffles de se déplacer entre le Ghana et le Togo (parc national de Fazao-Malfakassa).

Au Ghana, la Division de la faune sauvage de la Commission Forêt est responsable de la gestion des AP. Jusqu'en 1999 elle était connue en tant que département de faune, un établissement gouvernemental unique et centralisé directement relié au *Ministry of Lands and Forestry*, qui devenu *Ministry of Lands, Forestry and Mines*. Depuis sa création en 1967, la Division a sévèrement souffert des ressources devenues faibles et la Division a été incapable d'exécuter son mandat de façon effective. Ceci a sérieusement réduit les possibilités de gestion et, en conséquence, la conservation de beaucoup d'AP en a souffert. Il existe vingt un (21) AP au Ghana totalisant 1 347 600 ha et représentant 5,6% de la superficie du pays. Le réseau des AP inclue sept parcs nationaux, six réserves, deux sanctuaires de faune, une réserve naturelle stricte, et cinq zones humides côtières.

Ces AP sont d'importance économique puisqu'elles contribuent à améliorer le niveau de vie des communautés vivant autour du parc. Il existe des programmes d'appui aux moyens d'existence ainsi que des programmes sur le tourisme en direction de la communauté. Certaines espèces de plantes sont utilisées pour la production de bois, et certaines AP renferment des plantes médicinales. Certaines AP ont également une importance culturelle, religieuse ou spirituelle avec par exemple les lieux saints et sillons sacrés, et d'autres ont des attractions esthétiques telles que les rapides à Ankasa, chutes d'eau, cavernes magnifiques à Bomfobiri et à Kakum…

Les AP du Ghana sont sujettes à des pressions et menaces, les principales pressions étant l'extraction illégale de plantes et animaux, les feux de brousse, et la modification du milieu du à l'agriculture ou au pâturage autour ou dans les parcs. La collecte illégale de plantes et animaux sauvages est présente dans toutes les AP avec différents degrés de sévérité. Il y a une forte demande pour la viande de brousse, le rotin et le bâton de mastication. Le rotin est prélevé pour l'artisanat, l'éléphant pour ses défenses, et le léopard pour sa peau. L'abattage d'animaux est également le résultat de conflit homme/faune. La collecte illégale des ressources est moins sévère dans certains parcs grâce à une meilleure application de la loi ou la mise en place d'initiatives communautaires qui régulent la collecte de produits forestiers non ligneux, ce qui contribue à réduire toute collecte illégale. La modification du milieu est principalement due à la culture de cacao en dehors des parcs au sud ouest du Ghana. A Shai Hills, le pâturage illégal par le bétail affecte la productivité globale de la réserve.

Ces pressions accroissent la vulnérabilité des AP, ce qui est un problème dans la majorité des AP. Il y a une très forte demande pour des ressources dans un but culturel ou économique ; dans certains parcs comme à Mole, la chasse en groupe est une pratique culturelle et les feux de brousse sont parfois causés par des festivals du feu ; de plus pour l'installation d'un chef, des parties de certaines espèces clé comme l'éléphant ou le lion sont parfois nécessaires.

Le mécanisme approprié d'attribution des ressources est un problème principal auxquels les gestionnaires des ressources naturelles font face car l'information requise pour prendre des décisions n'est pas satisfaisante. En conséquence, la gestion des ressources naturelles est inefficace. Les moyens semblent être disparates parmi les AP, particulièrement concernant le personnel et les infrastructures ; mais globalement, les moyens humains, financiers et techniques demeurent insuffisants pour gérer efficacement les activités des AP. En général, les ressources financières doivent être plus importantes pour permettre l'application de la loi dans les parcs. Un flux régulier et adéquat des financements est également nécessaire. En termes de planification, des plans de gestion existent dans la majeure partie des AP, mais ils sont désuets et doivent être mis à jour.

L'efficacité de gestion du réseau des AP au Ghana doit être améliorée. En dépit des problèmes mentionnés ci-dessus, certaines de ses forces (toutes les zones écologiques sont représentées, la majeure partie des AP sont des refuges pour la faune, existence d'une politique nationale de conservation de la faune, appui des communautés locales…) révèlent une grande opportunité pour son expansion et son développement.

À la fin de l'évaluation, les recommandations suivantes ont été formulées :

1. Fournir un financement adéquat et durable pour une gestion effective des AP.
2. Créer des zones conservées pour relier les AP adjacentes afin de faciliter les mouvements ou l'extension de la faune entre les AP.
3. Encourager la création des zones de gestion de ressources communautaires (CREMA) autour des AP pour résoudre la question de l'absence de zone tampon.
4. Intensifier la sensibilisation du public et la collaboration avec d'autres partenaires (organismes internationaux et nationaux de conservation).
5. Réactiver l'unité de recherche de la Division afin de fournir l'information scientifique pour améliorer la gestion des AP.
6. Renforcer les protocoles de suivi et d'évaluation.
7. Améliorer les conditions de travail telles que la rémunération, le logement décent (y compris agréments nécessaire), la logistique etc. pour le personnel.
8. Faciliter les paiements des compensations dues aux propriétaires terriens.
9. Réviser les plans de gestion régulièrement.
10. Faire du lobby auprès du gouvernement afin qu'il donne la priorité aux aires protégées, la gestion de la faune et questions relatives.
11. Augmenter le soutien des donateurs pour les AP.
12. Améliorer le développement des infrastructures (accès Internet…), l'équipement tel que les armes à feu, munitions, véhicules, les instruments etc. de communication, et les équipements pour assurer la gestion efficace
13. Attirer les investisseurs privés afin qu'ils investissent dans le tourisme potentiel des AP.
14. Faciliter le passage de nouvelles lois sur la faune.
15. Développer un plan stratégique pour le renforcement de capacité pour la gestion et toutes les catégories de personnel des AP…
16. Mettre en œuvre des stratégies de prévention et contrôle des feux dans les AP.

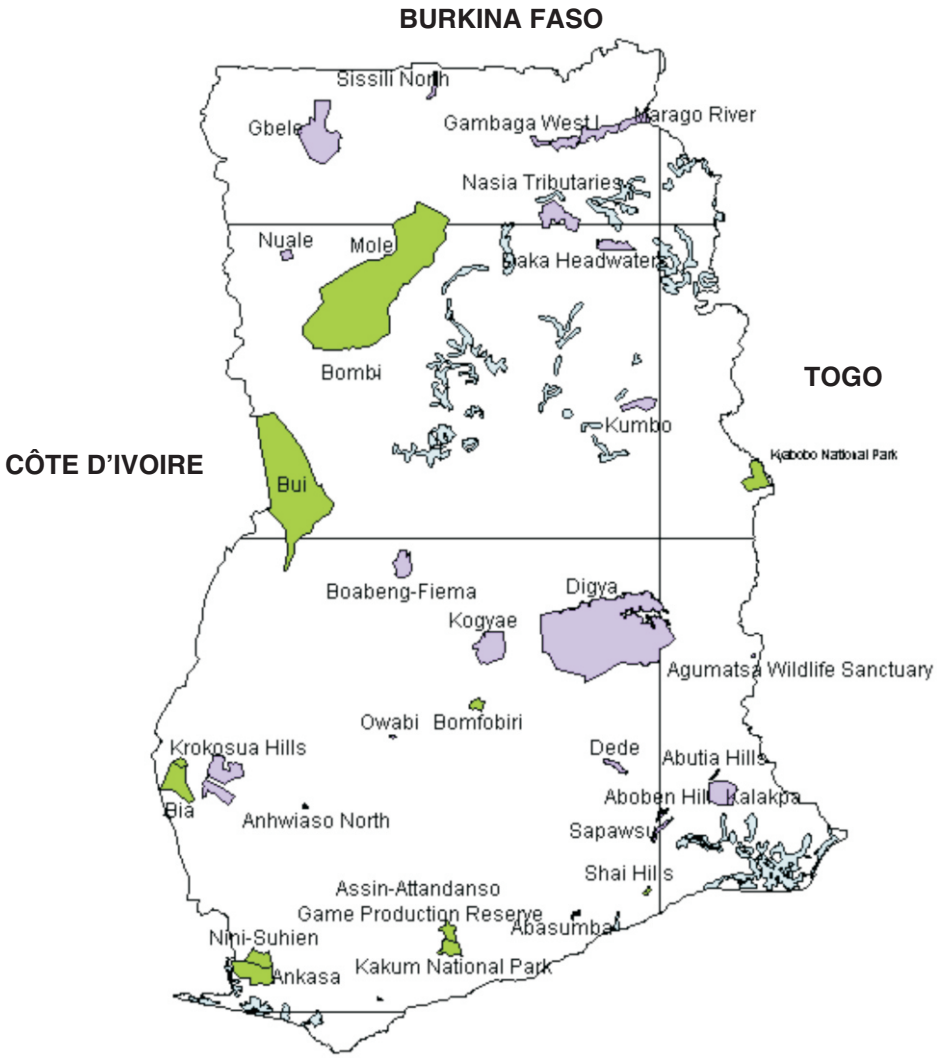
This evaluation is part of the regional programme on the improvement of management effectiveness of protected areas developed by UICN/PACO (West and Central Africa Programme), cofinanced by the International Union for Conservation of Nature (IUCN), the French Ministry of Foreign and European Affairs (Direction of International Cooperation and Development, DGCID), the Fonds Français pour l'Environnement Mondial (FFEM), the Fondation Internationale pour le Banc d'Arguin (FIBA) and UNESCO (World Heritage Centre).

More information at: www.iucn.org/paco and www.papaco.org

INTRODUCTION: DESCRIPTION OF PARKS AND RESERVES

The evaluation of management effectiveness of eight Wildlife Protected Areas of Ghana, namely: Ankasa conservation area (50,900 ha), Bia conservation area (30,500 ha), Bomfobiri wildlife sanctuary (5,300 ha), Bui national park (181,290 ha), Kakum conservation area (36,000 ha), Kyabobo national park (22,000 ha), Mole national park (457,700 ha), Shai Hills resource reserve (5,100 ha) was carried out from 16th to 18th December 2009 in Accra.

These protected areas cover 788,790 ha, approximately 3.3% of the country. The network of Wildlife PAs in Ghana covers 5.6% of the country.



Location of protected areas (in green the evaluated PAs)

ANKASA CONSERVATION AREA (50 900 HA)

Ankasa was initially managed as a protected area for timber production under the former Forestry Department. There were no clearly defined management objectives or guidelines beyond timber harvesting for the reserve. From 1934 to 1976, light-intensity timber harvesting and later attempts at plantation forestry, largely confined to the southern half of the reserve, were of a sporadic nature, being subject to constantly changing market demands for a few timber species. However in 1976, Ankasa was gazetted as a Wildlife Protected Area comprising the Ankasa Game Production Reserve, which covers 343 km^2 (67%) and the Nini-Suhien National Park, covering the remaining 166 km^2 (33%) by the Wildlife Reserves (Amendment) (Declaration of Reserves) Regulation, 1976 L.I. 1085.

Ankasa is Ghana's most "special" forest with the highest Genetic Heat Index. It is an ancient rainforest with the highest biodiversity in Ghana. It represents the only wet evergreen protected area in almost pristine state and as such its protection is of paramount concern. Its importance for scientific study, environmental stability and educational and recreational purposes cannot be overstated. It is home to over 800 vascular plant species, forest elephants, leopard, bongo, chimpanzees and many of the West African forest primates. It has an impressive avifauna in addition to six hundred (600) butterfly species. Its network of streams is an important breeding ground for many of the fish species in the Eburneo-Ghanaian ichthyofauna region as well as being of immense importance for the biotic integrity of waters west and south of the protected area.

The major threat to the integrity of Ankasa comes from external pressures which arise from the increasing human population, uncontrolled immigration and settlement. This has led to a major change in land use with subsequent depletion of natural resources off-reserve.

BIA CONSERVATION AREA (30 600 HA)

Bia Conservation Area was gazetted as a Wildlife Protected Area in 1974 by the Wildlife Reserves (Amendment) Regulations, 1974 L.I. 881 and other amendments. The PA lies in Southwest Ghana on the border with Côte d'Ivoire. It covers an area of 306 km^2 and is composed of Bia National Park (77.7 km^2) in the North and the adjoining Bia Resource Reserve (227.9 km^2) in the South. The fringe communities include communities within 5-7 km from the reserve boundaries. The Western boundary is contiguous with the Sukusuku Forest Reserve and the Southern boundary with the Bia Tawya Forest Reserve together constituting the largest Forest Reserve in Ghana. However, both Sukusuku and Bia Tawya Forest Reserves have been totally encroached by farmers who have cleared the area for cocoa farms. This has left Bia as an ecological island of forest in a sea of cocoa farms. Bia Conservation Area lies in the transition zone between two of Ghana's vegetation categories, namely Moist Evergreen Forest in the south and Moist Semi-deciduous (northwest subtype), in the north (after Hall and Swaine). This corresponds respectively, with the *Lophira-Triplochiton* association and the *Celtis-Triplochiton* association. Bia provides optimum conditions for biomass production, due to the high rainfall coupled with the fertile ochrosol soil. This has resulted in the presence of some of the tallest trees in West Africa.

The original faunal composition, prior to gazetting of the reserve, was very diverse and complex in nature. It had high abundance of elephants and primates, including chimpanzees and colobus, particularly Red Colobus. However, due to over three decades of excessive commercial and subsistence hunting, populations of several larger mammals (particularly canopy dwelling primates), reptile and lately also bird species have been severely reduced in numbers. Bia still holds viable populations of large and charismatic mammals, such as the forest elephant *(Loxodonta africana cyclotis)*, bongo *(Tragelaphus eurycerus)*, leopard *(Panthera*

pardus) and Yellow-backed Duiker *(Cephalophus sylvicultor)*. Primates are represented by six species, including Western Chimpanzee *(Pan troglodytes verus)* and Geoffroy's Pied Colobus *(Colobus vellerosus)*. The highly endangered subspecies Miss Waldron's Red Colobus *(Piliocolobus badius waldronae)* is extinct from the Park and other parts of Ghana. The Roloway Diana Monkey *(Cercopithecus diana roloway)*, and White-naped Sooty Mangabey *(Cercocebus atys lunulatus)* were endemic to Ghana/Eastern Côte d'Ivoire, but have not been reliably sighted for the last few years in Bia. Other very rare mammals of restricted range within Ghana include the forest buffalo *(Syncerus caffer nanus)*, giant forest hog *(Hylochoerus meinertzhageni)* and giant pangolin *(Smutsia gigantean).*

The bird fauna of Bia is fairly well known with at least 203 birds, with 137 Guineo-Congolian biome species. The avifauna is typical of open-canopy semi-evergreen forest: for example the Congo Serpent Eagle *Dryotriorchis spectabilis* is particularly common. The following are of special interest given the records available in Ghana (Grimes 1987): *Dryotriorchis spectabilis,* Akun Eagle Owl Bubo leucostictus, Brown Nightjar *Caprimulgus binotatus*, Baumann's Greenbul *Phyllastrephus baumanni*, Tessmann's Flycatcher *Muscicapa tessmanni* (not uncommon at mid-levels), Grey-throated Flycatcher *Myioparus griseigularis* (common), Bioko Batis *Batis poensis*, Forest Penduline Tit *Anthoscopus flavifrons*, Bates's Sunbird *Nectarinia batesi*, Tiny Sunbird *Nectarinia minulla*. Of Globally-threatened species, the White-breasted Guineafowl *Agelastes meleagrides* is probably extinct (there is a single record, in 1953). Others occurring in small numbers are Green-tailed Bristlebill *Bleda eximius*, Copper-tailed Glossy Starling *Lamprotornis cupreocauda* (rare), Yellow-throated Greenbul *Criniger olivaceus* and Rufous-winged *Illadopsis Illadopsis rufescens*.

BOMFOBIRI WILDLIFE SANCTUARY (5300 HA)

The 53 km² sanctuary consists of a remanant of semi-deciduous forest and savannah and was gazetted as a wildlife protected area in 1975 by the Wildlife Reserves (Amendment) Regulations, 1975 L.I. 1022. It is mostly a secondary semi-deciduous forest containing areas of more open savannah with sandstone outcrops.
The Bomfobiri Wildlife Sanctuary lies some 11.2 km north-east of Kumawu the District Capital of Sekyere Afram Plains District and to the south east of the Kumawu-Drobonso road in the Ashanti Region. It is almost surrounded by a Forest Reserve known as Boumfum Forest Reserve which is separately managed by the Forest Services Division of the Forestry Commission.
The purposes for establishing the sanctuary are:

- To protect the forest habitat from degradation by wildfire
- To protect and manage the forest and savannah wild animal species
- Promotion of tourist attraction scenery as part of eco-tourism development

The sanctuary serves as home to three species of crocodiles, 26 mammal species including 4 species of primates as well as duikers and red river hogs.
Among the recorded bird species is the highly threatened bare-headed rock fowl *(Pycathartis gymnocephalus)*.
The Bomfobiri falls are an important tourist attraction. There are also magnificent hills and caves which are popular places for tourists.

BUI NATIONAL PARK (181 290 HA)

Bui National Park was gazetted in 1971 by legislative instrument LI 710 of the Wildlife Reserves Regulations of Ghana. The park was created from two existing reserves created in the colonial era (about 1948): the Banda Watershed forest reserve in the Brong-Ahafo Region and the Lanka forest reserve in the Northern Region. It was extended northwards along the Black Volta

River to the Ghana – Côte d'Ivoire boundary where the river turns eastwards to enter Ghana. This was to protect the whole drainage basin of the Black Volta River inside Ghana.
The primary purposes of establishing Bui National Park were:

- Biodiversity conservation
- Protection of the proposed Bui Dam catchments area from human settlements and activities.
- Prevention of siltation due to soil erosion induced by shifting cultivation practices.
- Promotion of the attractive scenery and wildlife in the part for ecotourism.

The Bui National Park and its catchment area lie in the north-western corner of the Brong-Ahafo Region of Ghana and extend into the south-western portion of the Northern Region of Ghana. It covers an area of about 1,812 km^2 and it is bisected into two almost equal halves by the Black Volta River which takes its source from Burkina Faso (the river also serves as the boundary between the Brong-Ahafo Region and the Northern Regions of Ghana). The Ghana-Côte d'Ivoire International Boundary forms the western boundary of the park. It is bordered to the South by a long stretch of hills called the Banda Hills, through which the Black Volta River passes at a gorge.

Bui lies in the transitional vegetation zone of Ghana, where forest gradually "melts" into wooded Guinea Savannah. Bui National Park presents a peculiar vegetation type: there is a stretch of riverine forest found along both sides of the Black Volta River, where forest tree species are found. Further away from the river are many short wooded tree species interspersed with tall grasses.There are at least 122 plant species.

There is a reasonable variety of some fauna species: 13 reptile and 3 amphibian species found, 226 bird species, 40 species of large mammals belonging to 13 families, low levels of small mammals and high levels of insect species diversity.

Bui National Park is home to the largest Hippopotamus population in Ghana, about 300 in number. They are found along the length of the river inside the reserve, concentrated at specific areas where the current is not swift, designated as Hippo pools. Hippopotamus is endangered and so are black and white colobus, lions and elephants that are also present in the park.

There are indigenous tribes fringing the park. The three major groups are: the Gonjas at the northern border of the park, the Mos at the Eastern border and the Bandas at the Southern frontier. There are however some settlers among the communities. Small communities of Ivorian tribes can be found on the Western side of the park. There are about 45 communities (villages) around the park. All these communities depend on the natural resources around the park for livelihood e.g. farming, hunting, fishing, charcoal burning etc. This sometimes results in conflicts with park staff and management.

KAKUM CONSERVATION AREA (36 000 HA)

The Kakum Conservation Area was legally gazetted as a National Park and Resource Reserve in 1992 under the Wildlife Reserves Regulations (LI 1525) under the administrative jurisdiction of the Wildlife Department. As a result of an initial faunal survey, the Kakum Forest Reserve was designated a National Park and the Assin Attandanso Forest Reserve, a Resource Reserve. Kakum National Park and Assin Attandanso Resource Reserve were demarcated as forest reserves between 1925-1926 and 1935-1936 respectively (Kpelle, 1993). However, other sources indicate that the two reserves were established in 1931 and 1937 respectively (Hawthorne and Juam Musah, 1993) and in 1933 and 1950 respectively (Nchanji, 1994). All the sources, however, agree that the two reserves were established as a source of timber and protection of the watersheds of Kakum River and other rivers which supply the water needs of

Cape Coast and other surrounding areas. Timber exploitation started in the two reserves in 1936 with mahogany *(Khaya ivorensis)* being the principal species logged.

The vegetation of Kakum National Park and the southern section of Assin Attandanso Resource Reserve fall into the transition forest type, and the northern portion of the Resource Reserve falls into the moist semi-deciduous type. This classification was based only on the dominant emergent trees. 105 species of vascular plants have so far been identified in the Kakum area. These include 57 trees, 10 shrubs, 9 climbers, 17 herbs and 12 grasses.

The main features of the vegetation found in Kakum are:

- The moist forest, which is the dominant vegetation type in Kakum. The common trees are: *Entandrophragma cylindricum, E. angolense, Guarea cedrata, G.thompsonii, Piptadeniastrum africanum, Milicia excelsa Lophira alata, Triplochiton scleroxylon, Sterculia rhinopetalia, S.oblonga, Pterygota macrocarpa, Anigeria robusta Terminalia superba, Strombosia glaucescens, Cola gigantean, Mansonia altissima, Celtis zenkeri, Ricinodendron heudelotii, Antiaris toxicaria,* etc. Epiphytic plants growing on the trees and shrubs are orchids and ferns and occasionally strangling figs.
- Swamp Forest: the swamp forest is poor in species and contains fewer trees than the surrounding forest. The low herbaceous layer is dominated by Marantheceae spp such as *Marantochloa mannii, M. purpurea, Sarcophrynium brachystachys and Ataenidia conferta.* The shrub layer often has scrambling shrubs such as *Glyphae brevis, Myriathus arboreus and Paullinia pinnata*. The trees include *Raphia hookeri, Carapa procera, Xylopia spp and Uapaca guineensis*.
- Periodic swamp forest: the number of tree species is more than in the swamp forest. Characteristic trees that were frequently encountered included *Alstonia boonei, Cleistopholis patens, Carapa procera, Mitragyina stipulosa and Raphia venifera*. Scandent palms such as *Calamus deeratus, Laccosperma secundiflora, L. opacum and Eremospatha macrocarpa* were observed. The shrub layer was made up of scrambling shrubs like *Glyphae brevis, Myriathus arboreus and Paullinia pinnata*. Common herbs that were found included *Thaumatococcus daniellii, Sarcophrynium brachystachys and Ataenidia conferta*.
- Riverine forest: this is an edaphic forest formation found on soils which, even though inundated or saturated only periodically at the peak of the rainy seasons, are maintained at higher soil moisture along water courses ego Obuo, Kakum, Afia, Sukuma, Nemimi, Aboabo, Ajuesu etc. The only floral difference from the other communities is the presence of *Pseudopondias microcarpa, Ceiba pentandra, Xylopia spp and Uapaca guineensis.*
- Boval vegetation *(Hildergardia barteri-Polycarpaea tenuifolia community)* comprises all plant communities on granitic rock outcrops with patches of shallow soil. The low herbaceous layer is made up of *Sansevieria liberica, Commelina* spp. The shrub layer is dominated by *Hildergardia barteri*, a tree which produces red flowers around Christmas. The few trees found in areas of deeper soils include *Hildergardia barteri*, *Elaeophorbia grandifolia and Sterculia tragacantha*. In addition *Ceiba pathandra, Albizia furruginea* and Ricinodendron heudelotii were found at the base of the about 100m diameter circular rock outcrop near Aboabo. This circular rock and its peculiar vegetation constitute the Komfo Boateng's Shrine.

The mammals recorded in the park include potto, Demidoff's galago, grasscutter, brush-tailed porcupine, species of primates (including black and white colobus and Diana monkey), honey badger, bongo, elephant, duikers (including the yellow-backed duiker), water chevrotain, two hogs, pangolins and squirrels. The reptiles include monitor lizard, dwarf crocodile, Home's hinged tortoise and serrated tortoise.
A total of 266 bird species were reported, including rare species such as the white-breasted guinea fowl *(Agelastes meleagrides)* and the threatened yellow-throated olive bird *(Criniger*

olivaceus). There is a great number and diversity of butterflies (at least 405 species) recorded in the park. It is expected that the total number of species will be between 550 and 600 when all the rare and elusive species have been collected as well. This will represent more than two-thirds of all Ghana's 860 butterflies.
The few carnivores that occur in Kakum are low in density. They include the African civet, forest genet, leopard and palm civet.

The main threat to wildlife is poaching. This is usually recorded in the form of hunting trails, poaching camps, empty matchboxes, pieces of rubber tyres, used carbide, gunshots and cartridges.

KYABOBO NATIONAL PARK (KNP) (22 000 HA)

Kyabobo is not yet formally gazetted but has been established by the Executive Instrument No 20 of 16/09/1993 which provides for the acquisition of the land for a National Park and describes a boundary. Since then there have been many changes. The current boundary has been fixed since September 1999, and there will be no further adjustment. The boundary is known by the communities and respected. A Site Advisory Board came to KNP and inspected and approved the boundary.

One major attraction of the area for naturalists and scientists is that Kyabobo is situated right on the boundary between the savannah and forest zones in Ghana, where a mosaic of woodland and various forest types (mainly semi-evergreen) intermingle extensively, at the western edge of the Dahomey Gap.

Apart from a few ridge tops which are almost bare of trees, the park is generally densely wooded or forested. A small amount of farming activity is still taking place in the park, but farmers are likely to move out in the near future.

The habitat types have been classified as follows: wooded grassland (tree cover from 10-40 %), Woodland (tree cover at least 40%), Transition woodland, Dry *Anogeissus* forest, Semi-evergreen (rain) forest, Evergreen rain forest, Riparian forest, and "Farmbush." Some of the plant species that occur in those habitats are: *Lophira lanceolata, Burkea africana-Parinari curatellifolia, Andropogon, Loudetia simplex, Daniellia oliveri, Crossopteryx febrifuga, Detarium microcarpum, Isoberlinia doka, Lonchocarpus sericeus, Lophira lanceolata, Nauclea latifolia, Parkia biglobosa, Piliostigma thonningii, Prosopis africana, Terminalia laxiflora, Uapaca togoensis, Vitellaria paradoxa, Vitex doniana, Annona senegalensis, Bridelia ferruginea, Hymenocardia acida, Borassus aethiopum, Cussonia arborea, Ficus ingens, Hannoa undulate, Bombax costatum, Strychnos innocua, Albizia zygia, Milicia excelsa, Cola gigantea* (forest); some species belong to dry forest *(Manilkara multinervis, Vitex doniana). Adansonia digitata, Anthocleista djalonensis, Crossopteryx febrifuga, Prosopis africana, Pterocarpus erinaceus, Spondias monbin, Strychnos spinosa, Terminalia laxiflora,* etc. Annonaceae *(Uvaria chamae)*, Connaraceae (Agelaea), Convolvulaceae, Cucurbitaceae, Dioscoreaceae, Verbenaceae (Clerodendrum), Vitaceae, which may form thickets in small gaps. *Anchomanes* is a common annual subshrub.

Most mammals are difficult to see in Kyabobo, as the forest is quite thick, the terrain is difficult and numbers are low. The red-river hog is probably the most abundant large mammal and the grey duiker and red-flanked duiker are commonly seen. Other large mammals that are found in Kyabobo include baboon, patas monkey and Mona monkey, rock hyrax, waterbuck, bushbuck, kob and Cape buffalo. Tree pangolins are fairly common and the long-tailed pangolin is possible. Black and white colobus might be present, but there are no confirmed records. Elephants also visit from Togo and five were recently seen in the Kyillinga area in the dry

season. Buffalos are also found in the Chai River and Asuokoko River Forest Reserves. Bushbuck, red river hog and red-flanked duiker appear to be the most well distributed and abundant species.

There are at least 235 different species of birds in Kyabobo. Lagden's bush shrike *Malaconotus lagdeni* is listed as globally "Near Threatened" and is a new record for Ghana. One "Globally Threatened" species occurs (following BirdLife International 2000): the "Data Deficient" Baumann's Bulbul *Phyllastrephus baumanni.* The species is very widespread in Kyabobo, particularly in farmbush and fire-induced forest clearings. It has adapted well to the invasive *Chromolaena odorata* and is not considered endangered in Ghana.
The Dwarf Crocodile *(Osteolaemus tetraspis)*, was observed in Kyabobo in 2005 and is listed as Vulnerable and indicates that the forest stream ecosystems in Kyabobo are of high quality and should be protected. There are also several endemic frog species.
The butterflies of Kyabobo have been studied by Torben Larsen who found a new species, Kyabobo laurencis, which is endemic to the area.

MOLE NATIONAL PARK (457 700 HA)

Mole National Park is Ghana's largest protected area and covers about 4,577 km². It is almost entirely located in the Northern Region. Mole National Park is fairly undisturbed Guinea Savannah. Most of the 742 plant species found in Mole are widespread throughout the savannah zone. However, the species of conservation value (4 endemic, 12 disjunct and 24 species which are rare or have a very limited distribution) is relatively high. Their abundance is generally low and they are often confined to small areas.
The vegetation of Mole National Park can be grouped into eight broad vegetation types, namely:

- *1 to 3*. Open savannah woodland, which is the dominant vegetation type. The main grasses are species of Andropogon and scattered herbs are found between them. There are three main groups: (i) *the Burkea - Terminalia* savannah woodland with *Vitellaria paradoxa* (the shea-nut tree); (ii) *The Burkea - Terminalia* savannah woodland with *Detarium microcarpum* and (iii) *Anogeissus* with *Vitellaria paradoxa.*
- Boval: the boval vegetation *(Loudetiopsis kerstingii - Polycarpaea tenuifolia* community) comprises all plant communities on flat iron pans with patches of shallow soil.
- Riverine forest: this is found along most of the rivers in the park. It often forms bands of generally dense and species-rich forests of up to 38 m in height.
- Flood plain grassland and swamps: this vegetation type comprises four plant communities of seasonally water-logged valley bottoms and badly-drained depressions and areas around water-holes which are mainly dominated by grasses and sedges.
- *7 and 8)* Communities covering small areas: these are sites with special vegetation such as old termite mounds or depressions in the sandstone plateau on top of the Konkori escarpment, which are water-filled during the rainy season. There is also a scarp forest along the foot of the Konkori escarpment.

Three species which are endemic to Ghana were recorded in Mole, namely *Gongronema obscurum, Raphionacme vignei* and *Rhinopterys angustifolia*.There are 5 plants species endemic to the region where the PA is located. *Croton pseudopulchellus, Indigofera conferta, Indigofera trichopoda, Jatropha nerifolia, Pleiotaxi newtonii.*

The large mammals that are commonly seen in Mole include elephant, kob, waterbuck, bushbuck, warthog, hartebeest, roan antelope, buffalo, duiker, oribi, baboon, patas monkey and green (vervet) monkey. There have been three censuses of the large mammals of Mole by aerial

surveys. These were carried out in 1993, 2004 and 2006. There was also a survey of elephants in 2002 (table below).

Table 1: Summary of Census results, with Confidence Limits for 2004

Species	1993	2002	2004	Upper CL	Lower CL
Elephant	**589**	**380**	**259**	481	37
Buffalo	**1665**		**541**	1061	20
Hartebeest	**1632**		**3388**	5039	1736
Roan	**1012**		**155**	353	0
Waterbuck	**298**		**249**	484	14
Kob	**781**		**329**	571	87
Duikers, oribi	**241**		**432**		
Bushbuck	**55**		**142**		
Warthog	**105**		**144**		
Baboon	**241**		**432**		

Unfortunately confidence intervals are not available for the 1993 estimates so it is unwise to place too much reliance on the precise differences between the counts, but even so the following observations may be made.

Some species like elephant, buffalo, roan antelope, kob appear to have been declining while waterbuck seems stable and hartebeest appears to be increasing in numbers, possibly because they are more difficult to shoot than the other species and because they are found throughout the park, unlike the others which are concentrated in the south. Hartebeest are not a water-dependent species.
Most animals are found close to the Mole River and its tributaries, as the Mole is one of the few rivers that have water in pools throughout the year. Predators are: lions, spotted hyenas, leopards, civets, genets, honey badgers, jackals and mongooses; they are occasionally seen in Mole, and servals might also be present.

There are at least 344 different species of birds in Mole and although there are no endemics it is a good destination for bird-watchers. Some birds are so spectacular e.g. carmine bee-eater and saddle-billed storks that even ordinary tourists like to see them. Some tour-operators that specialise in birds are already organising visits to Mole for groups of birders. Mole's extensive bird list confirms the extremely important status of the park for the preservation of savannah environments; indeed, Mole is the single most important site in the country for the conservation of Guinea-Sudanian biome species (all 37 species recorded in Ghana are in Mole).

The Nile crocodile is common in the dams near the motel and in the rivers, and the slender snouted crocodile also occurs.

It is a good place to observe butterflies. The best season is probably late May and early June. 56 species have been seen there including the only recorded sighting in West Africa for Anthene talboti which is normally confined to East Africa.

Human impact has been limited to annual burning, former localized farming, tsetse control and poaching, and the collection of fruits and firewood.

SHAI HILLS RESOURCE RESERVE (5100 HA)

Shai Hills Resource Reserve was declared a Forest Reserve in 1962 with an area of 46.7 km^2 and was made a Game Production Reserve on 5/11/1971 by LI 710. The reserve was extended to 51 km^2 in 1973. It is one of Ghana's smallest protected areas. It is located in the Dangme West District of the Greater Accra Region. The Western boundary of the road is the main Tema to Akosombo road. There were plans to stock the reserve with large mammals in the 1970s so it was fenced, starting in 1975 and finishing in 1986. Animal holding pens were built in 1979 but the major restocking never took place. Four hartebeest from Mole National Park were introduced in 1975 but they escaped and were killed by local people. Until the reserve was fenced up to 500 cattle a day were grazed in the area. The fence is now in a state of complete disrepair, and cattle are again a serious problem.

At the time of the establishment of the forest reserve it was Government policy not to pay compensation as the purpose was to conserve resources for the people. This policy was continued when the area was declared a Game Production Reserve and so no direct government compensation was paid to the Shai people for their land. However it is important to note that they have also not been compensated for the Bank of Ghana's cattle ranch, 5 private quarries, 2 military camps and firing ranges and 3 forest reserves - which all exist and operate on Shai traditional lands.

The reserve is situated in Accra Plains which form the western end of the Dahomey Gap, an area of low rainfall where the West African coastal rainforest belt is interrupted and replaced by low grass and savannah. The Shai Hills are a series of inselbergs (mountains that have been largely worn away). The highest peak rises to 290 m. The hills are covered by a mixture of forest, thickets and grassland with unique low stature dry forest being mainly found in the intervening canyons. The hills are surrounded by savannah-covered plains, at about 60 m elevation. There are no permanent rivers or streams in the reserve.

The reserve's vegetation is dominated by short-grass savannah with trees and shrubs on the plains, and by dry evergreen forest and thickets on the hills. To date, 397 plant species have been identified in the reserve, including two endemic species.
The main vegetation types are:

- Short-grass savannah, with two distinguishable communities : (i) The *Vetiveria fulvibaris - Brachiaria falcifera* community (low open grassland of perennial grasses with an average plant cover of 80% and fewer than 20 species present) and, (ii) *the Vetiveria fulvibaris - Borassus aethiopum* community dominates the northern part of the reserve and is distinguished by scattered fan palms and a denser shrub and bush cover.
- Tall-grass savannah, with two communities: (i) *the Pennisetum cf. polystachyon - Schizachyrium sanguineum* is a dense high grassland (up to 2.5 m) mainly confined to alluvial clays in depressions and seasonal water courses. It is characterised by *Crinum ornatum, and (ii) the Vetiveria fulvibaris - Andropogon gayanus* community, which is generally shorter, with an average cover of more than 90%, is mainly confined to steep slopes over leptosols.
- Dry evergreen forest and thickets with three communities found: (i) Dry evergreen forest with *Diospyros abyssinica - Drypetes parvifolia* community. It grows on the richer soils of the inselberg slopes; (ii) Thickets: the *Zanthoxylum xanthoxyloides - Capparis brassii* community is confined to the deeper soils of termite mounds and hummocks on the plains. Thorny species and lianas are abundant in these dense thickets, and (iii) Riverine; the *Zanthoxylum xanthoxyloides - Mitragyna inermis* community is a dense riverine forest which is confined to vertisols along seasonal streams.

The exotic neem tree *(Azadirachta indica)* was introduced by the Forestry Department in the 1960s and has spread widely over the plains in the reserve and the lower slopes of the hills. Neem has colonized large areas of the Accra plains where it is spread mainly by fruit-eating birds and bats. The tree is an aggressive colonizer (it forms dense stands, is difficult to eradicate, it displaces native species and is a pest species).

The large mammals that are commonly seen in Shai Hills include olive baboons, kob, green (vervet) monkey, spot-nose monkey and bushbuck (in approximate order of visibility). Although there have been no systematic surveys of the animals of Shai Hills since 1992, in 2004/5 a herd of 56 Kob *(Kobus kob)* (females and young ones with one male) was seen, and several smaller herds. Olive Baboons *(Papio anubis)* and Green Monkeys *(Cercopithecus aethiops)* are common, and at least two Spot-nosed Monkeys *C. petaurista* were also seen. The bushbuck *(Tragelaphus scriptus)* is common in the thickets. Demidoff's Galago *(Galagoides demidoff)* is also present. There are records of Tree Hyrax *Dendrohyrax dorsalis* which are much more likely to be the Rock Hyrax Procavia johnstoni. (The noisy tree hyrax has not been heard and the vegetation appears too dry for it.). Other species are: grasscutter, crested porcupine, hedgehog, Togo hares, oribi, and slender tailed mongoose.

Nine Nile crocodiles were introduced into the Adwuku dam in April 2005, plus 25 terrapins. Predators are spotted hyenas, leopards, civets, genets, servals and side-striped jackals are thought to be present in Shai Hills.

There are at least 173 different species of birds to be seen in Shai Hills and although there are no endemics it is a good destination for bird-watchers in the early mornings and late evenings. Some of the more interesting birds are the Barred Owlet, the Rosy Bee-eater and Puvel's Illadopsis. Other species of local interest in the rocky hills include the Stone Partridge, Cliff Chat, Rock-loving Cisticola and Freckled Nightjar.

ORGANISATION OF PROTECTED AREA MANAGEMENT IN GHANA

In Ghana, the Wildlife Division of the Forestry Commission is responsible for the protection and management of twenty one (21) wildlife protected areas (WPAs) including five coastal wetlands, totalling 1,347,600 ha or 5.6% of the country's total surface area. Until 1999 the Wildlife Division was known as the Department of Game and Wildlife and then Wildlife Department, a single, centralized government institution directly under the Ministry of Lands and Forestry, now Lands and Natural Resources. The protected area network is a fair representation of the ecological zones of Ghana. These protected area categories include 7 National Parks (one of which, Kyabobo Range National Park, has been acquired by E.I. 20 but not yet gazetted), 6 Resource Reserves, 2 Wildlife Sanctuaries, 1 Strict Nature Reserve and 5 coastal wetlands that have been identified and put under conservation in accordance with the Ramsar Convention.

In May 1992 the Wildlife Department with assistance from IUCN, now the International Union for Conservation of Nature formerly the World Conservation Union, conducted an Appraisal of the Protected Areas System of Ghana (IUCN, 1994). It stated the main objective of the Wildlife Department over the next decade to be: *"to provide Ghana with a well protected, professionally managed network of protected areas as defined by international standards in regard to conservation of ecological integrity, environmental education of the population and compatible recreational uses. To promote, within the Game and Wildlife Department, the development of a corresponding protected area philosophy.*

- To strengthen protection in all protected areas and develop those with potential for visitation as an integrated contribution to the tourism development efforts of Ghana
- To ensure that national park management and protection play a dynamic role in the socio-economic development of the regions in which they are located
- To ensure that the management of national parks and other areas contributes to the public awareness and education concerning the national and global environmental issues
- To promote staff excellence and professionalism and enhance the image and credibility of the Game and Wildlife department as a modern protected area agency."

The creation of all Protected Areas and changes to existing ones require Ministerial and parliamentary approval. Boundaries are then published in the Government Gazette. A major change in the approach to conservation was adopted in the form of the Forest and Wildlife Policy of 19944. The aim of this policy was the "Conservation and sustainable development of the nation's forest and wildlife resources for maintenance of environmental quality and perpetual flow of optimum benefits to all segments of society." In support of this, the Department of Game and Wildlife (GWD) (now the Wildlife Division of the Forestry Commission - WD) adopted the definitions of a National Park and Resource Reserve, followed by the decisions of the General Assembly of the International Union for the Conservation of Nature and Natural Resources (IUCN), New Delhi 1961.

A national park

Generally a large and relatively undisturbed area of outstanding natural value containing representative samples of major natural regions, features or scenery and containing one or several entire ecosystems and not materially altered by man (or reflecting longstanding cultural land management practices). The areas should be accessible to the public, have high recreational, educational, inspirational and cultural potential of clear benefit to the local people, the region and the nation.

The highest competent authority i.e. WD will administer and manage these areas so as to prevent or eliminate exploitation or intensive occupation in order that they might be maintained in perpetuity in a natural or near natural state.

A Resource Reserve

An area of variable size in which habitats are managed to guarantee conditions essential to the well being of selected species for the sustained production of wildlife products (meat, timber, pasture, fruits, honey and other Non Timber Forest Products (NTFPs) for cultural practices, tourism and trophy hunting. The conservation priorities will involve the manipulative management of species and their habitats to ensure the protection and propagation of the target species, including introduced indigenous and exotic species. Management will be conducted in such a way as to preserve the areas natural aspect as far as possible. Other forms of land use compatible with these goals will be allowed.

These areas may be managed by a central authority, or through agreement, by other levels of government, special trusts or local community institutions as appropriate under the overall supervision of WD.

Table 2: The Wildlife Protected Areas of Ghana

Protected Area	Size ha	Vegetation Type
Nini-Suhien National Park/ Ankasa Game Production Reserve	50 900	Wet Evergreen Forest
Kakum National Park/Assin Attandanso Resource Reserve	36 000	Moist Evergreen Forest
Bia National Park	30 600	Transition zone between Moist Evergreen Forest and Semi Deciduous Forest
Owabi Wildlife Sanctuary	1 300	Forest
Mole National Park	457 700	Savannah
Digya National Park	3 478	Savannah
Bui National Park	181 290	Savannah
Gbele Resource Reserve	565	Savannah
Kogyae Strict Nature Reserve	38 500	Savannah
Kalakpa Resource Reserve	32 000	Savannah
Bomfobiri Wildlife Sanctuary	5 300	Savannah
Shai Hills Resource Reserve	5 100	Savannah
Kyabobo National Park	22 000	Montaine Savannah
RAMSAR Sites	**Area ha**	**Vegetation Type**
Anlo-Keta	127 280	Coastal Wetland
Songor	28 740	Coastal Wetland
Densu Delta	4 620	Coastal Wetland
Muni Lagoon	90 000	Coastal Wetland
Sakumo	1 340	Coastal Wetland

It is important to systematically evaluate management effectiveness of PAs since this should, apart from yielding reliable information for effective resource allocation, keep management on track to accomplish the goals for which the PAs were established. As part of Ghana's commitment to the Convention on Biological Diversity (CBD), parties are obliged to evaluate management effectiveness of at least 30% of protected areas by 2010.

METHODOLOGY OF THE ASSESSMENT

The management effectiveness evaluation of some selected Wildlife Protected Areas of Ghana was carried out during a 3-day workshop held from 16 to 18 December 2009 in Accra, Ghana. The names of participants are stated in the table below:

Table 3: Participants to the assessment of Ghana PAs

	Name and Position	Position & Institution	contact
1	Moses Anongura	Park Manager, Shai Hills Resource Reserve Box 8638, Community 7, Tema.	mosanong@yahoo.com
2	Gloria Aba Aikins	Wildlife Protection Officer (CRMU) Shai Hills Resource Reserve Box 8638, Community 7, Tema.	
3	Kingsley Osei Mensah	Assistant Wildlife Officer, Wildlife Division Regional Office Box 874, Koforidua.	
4	C K Abaka Haizel	Regional Manager, Wildlife Division Forestry Commission, Box 2712, Sunyani	ckahaizel@yahoo.co.uk
5	Vivian Aye-Addo	Wildlife Ranger (CRMU) Bomfobri Wildlife Sanctuary Kumawu	
6	James Puorideme	Park Manager Bomfobri Wildlife Sanctuary Kumawu	
7	John Naada Majam	Regional Manager Wildlife Division Forestry Commission, Box 874, Koforidua	jnaadamajam@hotmail.com
8	Dwobeng Nyantakyi	Assistant Wildlife Officer (LEU) Bia Conservation Area	dwonyan@yahoo.com
9	Richard Ofori-Amanfo	Park Manager Bia Conservation Area Sefwi Wiawso	
10	Moses Kofi Sam	Regional Manager Wildlife Division Forestry Commission, Box TD 484, Takoradi	osmo288@yahoo.co.uk
11	Frank Nsiah	Principal Wildlife Protection Officer Ankasa Conservation Area, P.O. Box 102, Elubo	
12	Bona Kyiire	Assistant Wildlife Officer (LEU) Ankasa Conservation Area, P.O. Box 102, Elubo	bonakyiire@yahoo.com
13	Ernest Apenkwa	Wildlife Ranger Kakum National Park P.O. Box 427 Cape Coast	
14	Edward Wiafe	Wildlife Protection Officer (LEU) Kakum National Park P.O. Box 427 Cape Coast	e_wiafe@yahoo.com
15	Daniel Ewur	Park Manager Kakum Conservation Area P.O. Box 427 Cape Coast	danielewur@yahoo.com

16	Akoula Macellinus Nana	Senior Wildlife Ranger (CRMU) Kyabobo National Park Box 65, Nkwanta	
17	Ahmed Anur-Baompong	Assistant Wildlife Officer (LEU) Kyabobo National Park Box 65, Nkwanta	
18	Luri Kanton	Park Manager Kyabobo National Park Box 65, Nkwanta	
19	Cletus K. Nateg	Operations Manager (Protected Areas) Wildlife Division Forestry Commission, Accra	cnateg@yahoo.co.uk
20	Richmond Boadu Timiase	Wildlife Ranger (LEU) Bui National Park Box 32, Wenchi	
21	Samuel Darko Akonor	Park Manager Bui National Park Box 32, Wenchi	sirras2001@yahoo.com
22	Amasa Ashie	Head (CRMU) Mole National Park P.O. Box 8 , Damongo	
23	Cletus Balangtaa	Park Manager Ankasa Conservation Area Box 102, Elubo	cbalangtaa@yahoo.com
24	Dubiure Umaru Farouk	Park Manager Mole National Park P.O. Box 8, Damongo	molewd@yahoo.com

The assessment team was represented by:

- Mr Adetayo Okunlola, NCF, Nigeria
- Mrs Cecelia Kollie, Liberia
- Mr Moses Koffi Sam, Ghana

IUCN-PAPACO analysed the information collected and drafted the report. The report was then reviewed by the managers of the Wildlife Division as well as by external experts, who are acknowledged here. The managers also provided the pictures to illustrate this work.

The methodology employed is the one developed by the World Wide Fund for Nature (WWF): the Rapid Assessment and Prioritization of Protected Area Management (RAPPAM). It is based on the assessment framework developed by the World Commission on Protected Areas (WCPA). It offers to decision makers a tool to enable them rapidly assess the overall management effectiveness of protected areas in a country or a region, then decide on ad hoc policy options in order to improve management practices.

The RAPPAM methodology can:

- Identify the strengths and weaknesses of PAs management
- Analyse the scope, severity, prevalence and distribution of a variety of threats and pressures
- Identify areas of high ecological and social importance and vulnerability
- Indicate the urgency and conservation priority for specific PAs in a network
- Help to develop and prioritize appropriate policy interventions and follow-up steps to improve protected area management effectiveness

There are 5 steps in the RAPPAM process:
Step 1: determine the scope of the assessment (parks to assess)
Step 2: assess existing information for each protected area

Step 3: administer the RAPPAM questionnaire
Step 4: analyse the findings
Step 5: identify next steps and recommendations.

It is important to recall that the RAPPAM methodology is based on the principle of a participatory auto-assessment, led by all the stakeholders in the management of assessed PAs. It is therefore based on several prior hypotheses, 3 of which are particularly important:

– the climate during the workshop must be positive: given that the quality of the data depend on the goodwill and the participation of the managers and all the partners of protected areas, confidence and transparency is essential to obtain reliable information that will give significant and usable results.

– The methodology can apply to the six IUCN categories of PAs, but it is mostly applicable to categories I to IV.

– The methodology assumes that the PAs managers have all the required knowledge of the PA to provide enough and reliable data.

The present report is on the elements presented and discussed by these actors during the workshop, and does not necessarily provide a view that is strictly in conformity with the reality. This bias is however being reduced because the participants are from diverse sort (government, managers, NGO, scientists…) and also thanks to the facilitation and proof reading undertaken by the evaluators.

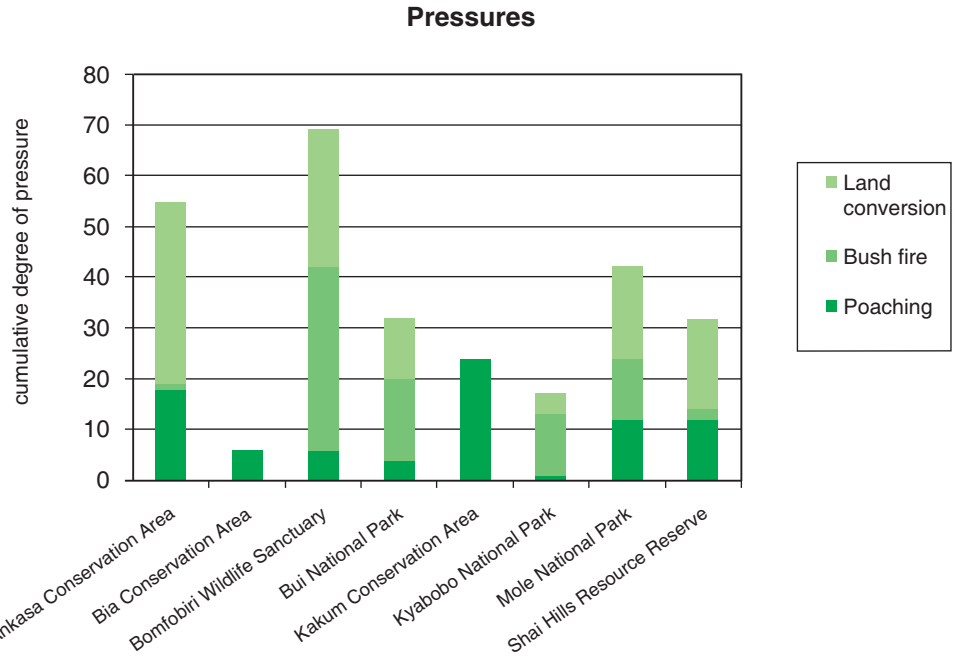
The data presented in the first part of this document (description of parks and reserves) was taken from the bibliography (not always exhaustive) provided by the protected areas managers, generally without exact reference to the author.

Detailed information related to this assessment method is available at: www.panda.org/parkassessment

PRESSURES AND THREATS

Note: each pressure or threat will have a degree (score) of between 1 and 64. The result is equal to the multiplication of the extent (scale 1 to 4: localized, scattered, widespread, throughout) by the impact (scale 1 to 4: mild, moderate, high, severe) and the permanence (scale 1 to 4: short term, medium term, long term or permanent). It is therefore not a linear scale. A score between 1-3 is weak, 4-9 moderate, 12-24 high and 27-64 severe.

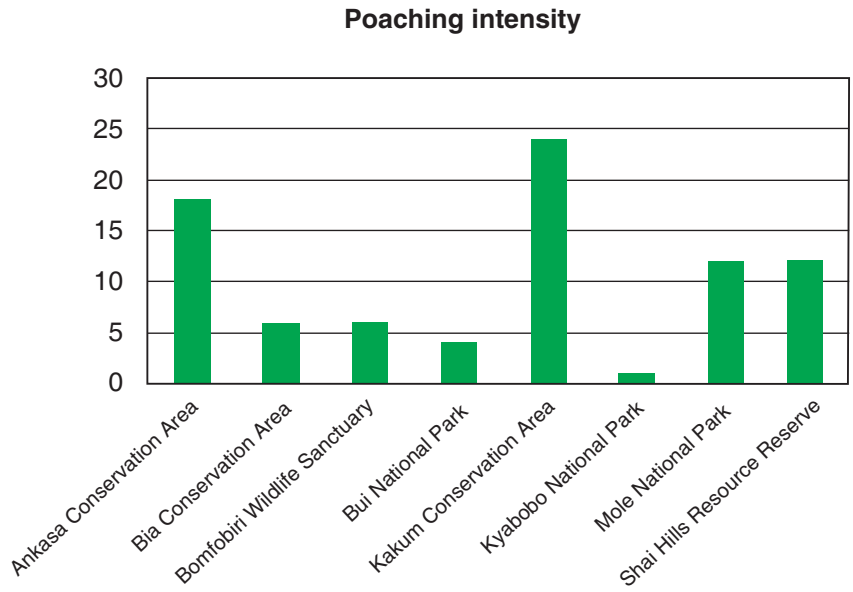
The identified pressures in the PA system are: poaching, bush fire and land conversion mainly due to agriculture around the PAs.








Poaching (pressure)

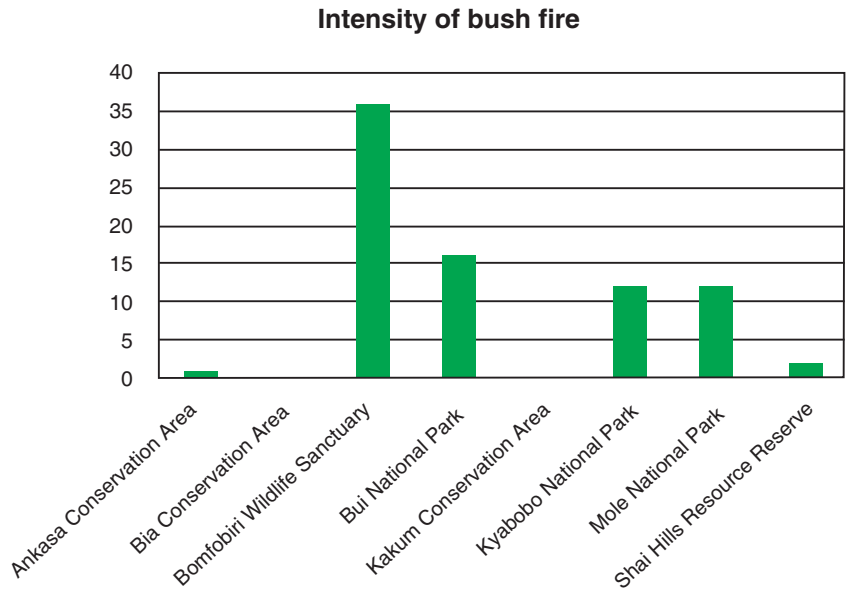


Illegal gathering of wild plants and animals (poaching) exist in all PAs at different degrees of severity.

From the analysis undertaken using the responses of the managers, it is particularly high in Kakum, despite the good law enforcement strategy in place; Ankasa, Shai Hills and Mole follow Kakum in terms of serverity of poaching. In Ankasa, it remains difficult to get support from the law enforcement agency. There is a high demand for bush meat, rattan and chewing stick in the PAs. In general, rattan is poached for craft; elephant is poached for tusk, and leopard for skin. In Bia, killing of animals is mostly as a result of human/wildlife interactions. In Kyabobo, this pressure is very low, despite the high demand for bush meat. This is due to the enhanced law enforcement leading to highly reduced poaching activities. Furthermore, the park has encouraged the creation of community resource management committees that regulate harvesting of non timber forest products, which contributes to decreasing effects of poaching. Regarding Bia, there are small local markets near the international borders that are seriously involved in the bushmeat trade; wildlife population outside the park is limited, so the PA is the major source of bushmeat, mainly to meet the protein requirement of the local population.

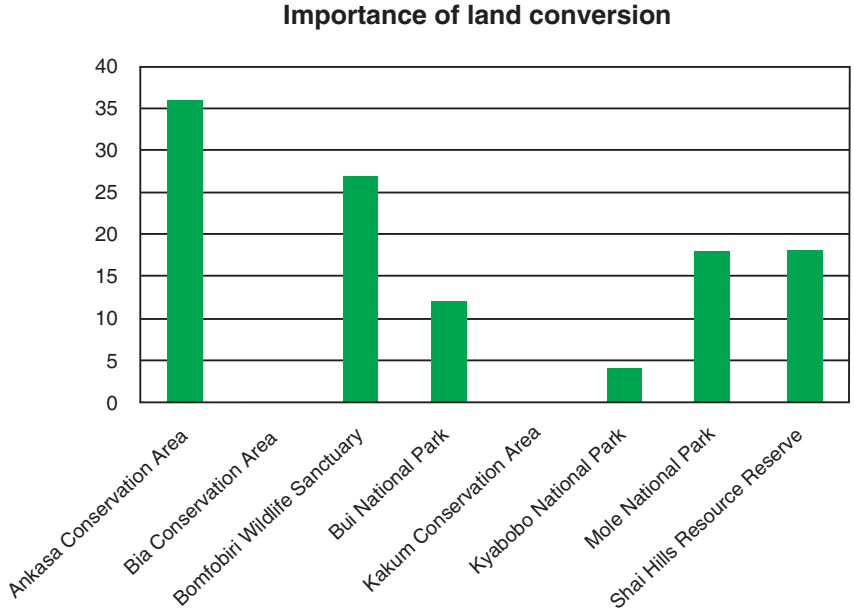
Gathering of non timber forest products (NTFP) exists in almost all the evaluated PAs. In Bia for example, it is mainly medicinal plants and snails.

Bush fire (pressure)



According to the above graph drawn from the responses of the managers, bush fire is very severe in Bomfobiri. This pressure has persisted over the past five years extending to most parts of the PA, with a high impact and significant damages to the PA that it will take long time to recover without human intervention. Other parks like Bui, Kyabobo and Mole are subject to this pressure but to a lesser extent. In Kyabobo, managers cannot prevent all fires but a bush fire strategy and plan exist which provide guidelines in prevention and management of fire. In other PAs this pressure is so low that it can be considered not existing.

Land conversion (pressure)



Land conversion refers to the allocation of some lands of the PA to housing, infrastructures, roads, agriculture, tree planting, and other uses. Land conversion is mainly the result of cocoa farming and grazing inside the PAs. In Shai hills, grazing affects the overall productivity of the reserve. In Mole, there are well-known concentrations of wildlife on the flood-plain grassland below Mole Motel. According to some wildlife guards, the area is being overgrazed. This is due to the fact that wildlife is concentrated by the Motel because there is less poaching there. In Ankasa, cocoa farming is responsible for land conversion; in Bui, it is caused by habitat destruction.

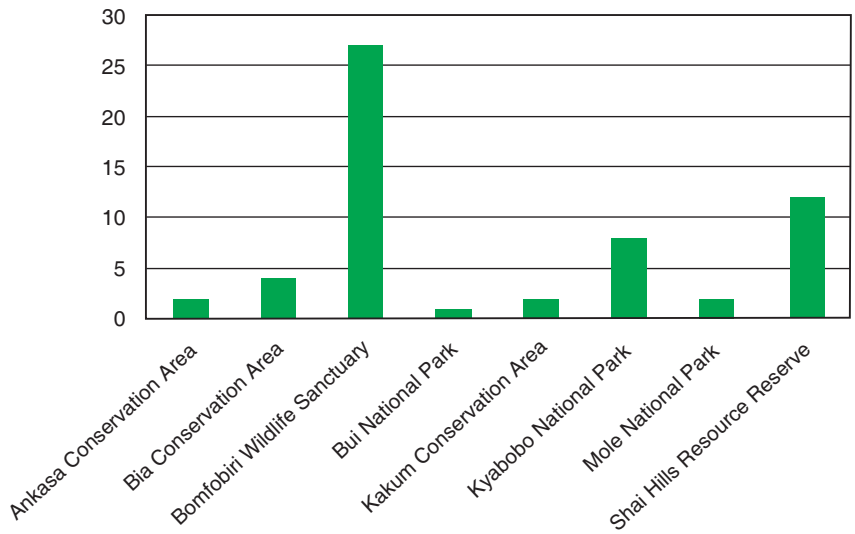
Other pressures

Other pressures relate to invasive species in Bomfobiri and Shai Hills, but it is also considered as a very important threat. There is also pollution in Kyabobo due to river poisoning, and illegal fishing and small scale mining in Bui.

Invasive species (threat)

This threat is present in Bomfobiri Wildlife Sanctuary where the *Chromolaena ordorata*, and teak are spreading, but in the Shai Hills Resource Reserve the neem is the major invasive species, and it is a very high threat.

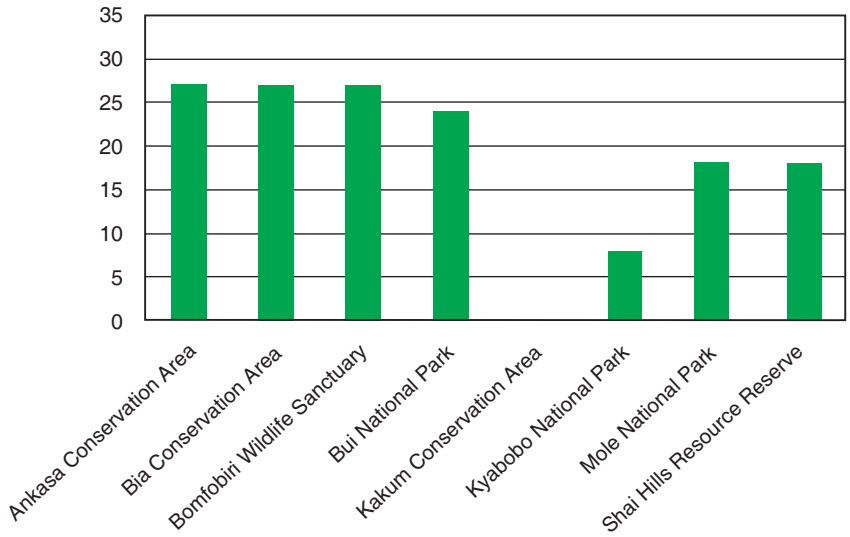
The importance of invasive species as a threat



Land conversion (threat)

Land conversion around PAs as a result of farming and grazing also appears to be a threat in almost all the PAs evaluated, except in Kakum, according to the managers. In Bia, cocoa farming is very close to the boundary of the park.

The importance of land conversion as a threat



Other threats

There are other threats identified during the evaluation namely:

- Illegal logging in the buffer zones outside the park (Bui, Kakum, Bia) ; in Bia there is an increased demand for wood,
- Road construction, tourism development : in Bui where there is ongoing construction of dam,
- Rapid estate development/increase of population growth
- Pollution of rivers and streams
- Litigation (issues of compensation), which incites people to enter the parks.

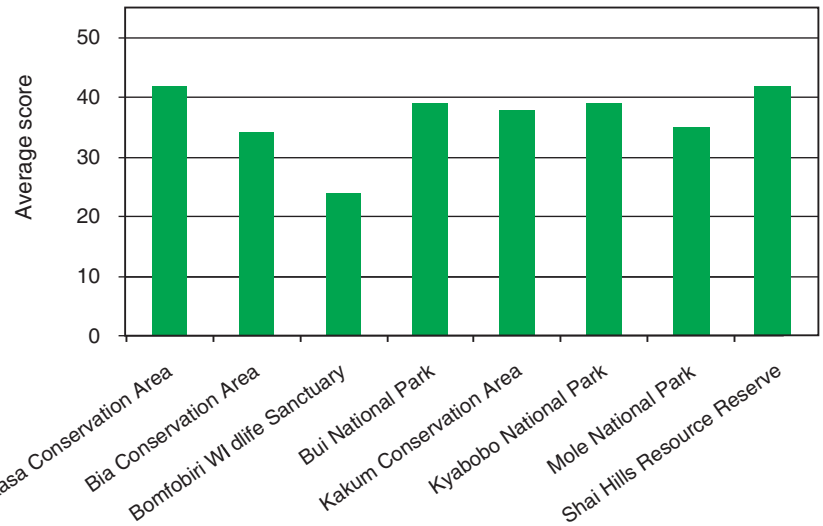
CONTEXT

There were four possible responses to this part of the questionnaire: yes = 5, mostly yes = 3, mostly no = 1 and no = 0. A score of 5 does not necessarily mean that there is no problem and a score of 0 does not indicate total failure. The results by park are calculated by doing the sum of the scores of the different questions. The results by question are average values.

BIOLOGICAL AND SOCIO-ECONOMIC IMPORTANCE

Biological importance

Biological importance of the sites evaluated



According to IUCN Red list of threatened species (2009), in Ghana, some of the vulnerable species are: the African Elephant *(Loxodonta africana)*, the Lion *(Panthera leo)*, the Diana Monkey *(Cercopithecus diana)*, Black and white colobus, Geoffroy's colobus. The endangered species are: the Leopard, the Monitor lizard, the Chimpanzee to name but few. Examples of near threatened species are: the Bongo, the Giant Pangolin… These species are fully protected in Ghana.

According to the managers, protected areas of Ghana contain the following rare, threatened, or endangered species at the local, national or regional level:

Bui: Hippopotamus is endangered; black and white colobus
Bia: Chimpanzees, forest elephant, bongo, pericopsis elata (tree species), pangolin, Leopard (endangered), olive colobus (threatened)
Kyabobo: Giant Pangolin, Black and White Columbus Monkey
Kakum: Yellow-backed duiker, Black and white colobus, forest elephant, Diana monkey, Bongo (all endangered), Leopard (endangered)
Shai Hills: Monitor lizard (endangered), oribi (locally endangered), civet cat (endangered)
Ankasa: Elephants, Bongo and Leopard, white-naped mangabey. The Roloway (Diana) monkey is possible, but is not confirmed

Bomfobiri: Black and White Colobus, Nile crocodile, Broad fronted Crocodile, Long snout Crocodile and Bosman poto
Mole: Lion, Elephant, Hippotamous. Black and White Colobus Monkey

All the sites evaluated have a high level of biodiversity. But it is highest in Kakum, Bui, Kyabobo Ankasa, and Shai Hills. Kakum, which is part of the upper Guinean rain forest that is very rich, has lots of species of mammals, reptiles, and amphibians, and different species of vascular plants; there are more than 600 different species of butterfly. Ankasa has about 300 species per hectare, over 800 vascular plant species within evergreen forest, about 200 bird species. This park is known to have the highest genetic heat index. Shai Hills has 402 vascular plant species, including 2 endemic species, 175 bird species, 31 mammal species, 13 reptile species. Bia is located in the transition of moist ever green and semi deciduous forest; there are 203 species of birds and 34 confirmed species of mammals.

Three parks have endemic species, they are:
Shai Hills: Commiphora dalzielli, Grewia megalocarpa (plant species)
Kyabobo: Kyabobo Launrensiss Butterfly
Ankasa: the PA has an endemic plant species, Psychotria ankaeansis
There is possibility of endemism in Bia.

Some PAs contain minimum viable populations of key species. According to the managers, there are about 200 elephants in Kakum and 130 in Bia, Bui contains about 200 hippopotamus. In Shai Hills baboons and kobs are enough to ensure sustainability. However, in Ankasa, according to managers Black & White Colobus, Chimpanzees, Yellow Backed Duiker, and the leopard are no longer probably viable for sustainability. In Mole, the lion population is so low that they may not be viable.

Regarding threatened ecosystems at local, national or regional level, Bui is losing its riverine forest habitat due to construction of the hydroelectric dam; in Bomfobiri, the Owam stream runs through the PA, with its source outside the PA, and could bring pollution into the PA. Besides, the catchment area of Bomfobiri Water fall has reduced as a result of bushfires. In Shai Hills, the area where cattle graze is threatened.

Some PAs contain ecosystems that have been predominant in the past and have sharply decreased today at local, national or regional level. In Bomfobiri for example, Owam River used to be permanent but is now seasonal. This is because it takes its origin from outside the PA; it is believed that the catchment is being degraded. The catchment of the waterfall has reduced as a result of bush fire. In Kakum and Kyabobo, this is not the case; Kyabobo where accessibility is relatively low, law enforcement is effective and illegal activities are highly reduced.
In other PAs like Mole, Ankasa, Shai Hills, Bia, most lands surrounding the park have been converted to agriculture and other land uses. Bui is also located within a rich agricultural area.

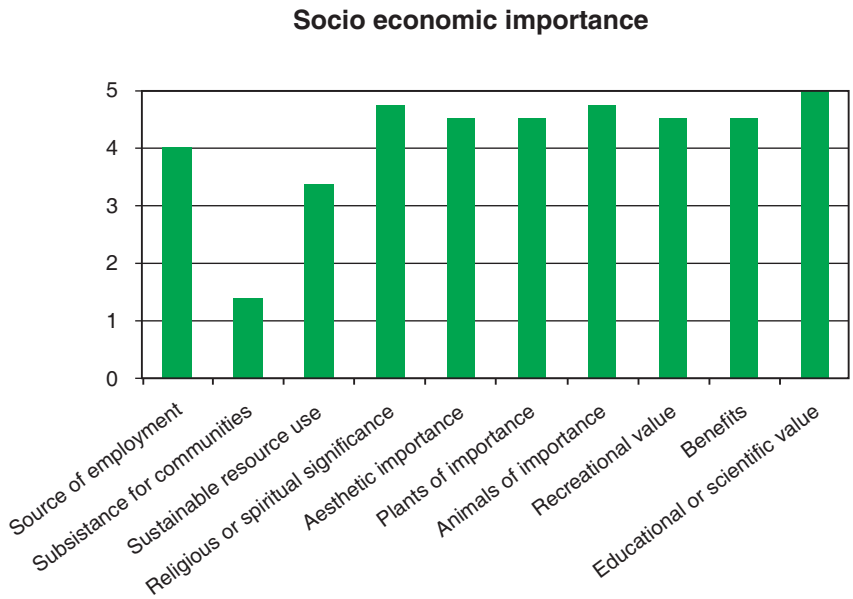
Most of the PAs contain the full range of plant and animal diversity associated to the types of ecosystems of the zone.
In Bui, lions are still there. The rest of the animal species are still intact. In Ankasa, Nini-suhien National Park has never been logged. However Ankansa Resource Reserve has recorded some minor logging activities in the past. Chimps, Leopard and Black and White Columbus are highly threatened and not sighted as frequently as before.
In Mole the lion population is highly threatened and the current population is very low, Golden Cat is highly threatened. Wild dog which used to be sighted is believed to be extinct in the Park.

The structural diversity of all the PAs, except in Bomfobiri, is close to the original structural diversity. In Mole and Ankasa, for example, the ecosystem is mostly intact. In Mole, the hippos' habitat has also been added to the park. There is no habitat loss or ecosystem degradation. In Ankasa, the patches that were logged have regenerated. In Bomfobiri, however, the forest habitat is degraded by wild fire.

Most of evaluated PAs play a significant role in the ecological functioning. Kyabobo forms part of Akwapim, Togo Atakora range of mountains in the region. As a result of the transboundary nature of the park, it serves as a transition and migratory route for buffalo and elephants between Ghana and Togo (Fazao Malfakassa National Park). Kakum contains a lot of important water sources for rivers such as Kakum, Afram and Nemine; the catchment of these rivers form delicate ecosystems within the PA. In Bui, reptiles and amphibians use the river bank as a breeding ground. There are also migratory birds that come from November to May, during the dry season. The PA provides very important breeding ground for fishes before they go to other areas. Bomfobiri and Mole serve as a breeding site for migratory species such as casqued Hornbill and White tree-faced duck in Bomfobiri and Mole respectively. Kakum, Bia and Ankasa provide favourable micro climatic conditions for agriculture, i.e. for the growing of crops such as cocoa outside the parks. Ankasa and Bia, like Kakum, protect the watershed of the vicinity. Shai Hills area represents the sample of the coastal savannah and is a refuge for all species in the region.

The PAs significantly contribute to the representativeness of the network which the PA is part of: for example, Kyabobo is situated on the second highest range of mountane of PA system in Ghana. It is the only Transboundary Park in Ghana. It is, one of few, situated in Dahome gap, an ecological set up. Ankasa is the only PA in the Wet Evergreen forest zone in Ghana. Shail Hills is a unique ecosystem (costal savannah). Mole represents the Guinea Savannah woodland. The zone where it is located makes it highly significant particularly in terms of representativeness.

Socio economic importance



Some PAs are a source of employment (direct or indirect) for local communities because in most PAs, most of the staff is from the local community. In Mole and Kyabobo they are recruited for boundary cleaning and other forms of direct labour, harvesting of nuts, alternative source of livelihood, community tour guides (Kyabobo and Kakum), etc. In Ankasa, park staff is employed for patrol trails and constructional work; in Bia they are involved in the protection; they have a formal engagement and the government pays them. In Kakum, about 33% of the staff is from the communities around the park and this is part of the policy. There are 13 tour guides from the community who support with guiding during peak visitor periods. There are also community volunteers who hope to get employment from the park. In Shai Hills, very few people are employed.

Local communities of most PAs depend upon the resources for their subsistence. Kyabobo is a source of water and harvesting of NTFPs. People also benefit from tourism; in Bui they depend on fisheries and bushmeat. In Bia, they get some resources like snails and roofing material from the park. In Mole, most plant species used for medicinal purposes also exist outside the PA. There are two PAs where people have no access: in Kakum, they don't officially have access to the park; there are few cases of entering the PA; in Bomfobiri, there is no entry into the reserve.

Some PAs provide community development opportunities through sustainable resource use.
In Mole, Community Based Wildlife Management (CBWM) has started and communities (only 3 for now) have been fully engaged on the programme. There are livelihood support programmes in about 14 communities, and community based tourism programmes, art and craft schemes.
In some PAs, communities are supported for beekeeping (Ankasa, Bia, Kyabobo, Mole) and for tourism development (Kyabobo, Bui); Bui has anticipated tourism boom as hotels have already secured land, and the communities will benefit from that. In Ankasa there is livelihood support for fish farming, and seedlings for agroforestry; 9 communities are supplied with electricity and 3 are supported for beekeeping.

PA contains elements of religious or spiritual significance, for example sacred grooves in Mole and Kyabobo. A number of shrines exist in Mole (about 20), Ankasa, and Kyabobo. In Bui, there are three major indigenous tribes found around the park boundary: the Gonjas, the Mos and the Bandas, who still consider the place they live as their ancestral home. The Banda still link some caves found in the Southern sector of the park as their spiritual object. Furthermore, Bui fell under the influence of Samory Toure; certain relics of the slaves (handcuffs) were collected from there. Mole also contains the slave trade route from North to the South of the PA.
Shai Hills were originally occupied by the Shai people. The Shai ancestral homes are located on top of the Hills, contain rocky caves with two openings (used as a hideout and a “spy point” from where they viewed enemies) and their shrines. Currently four sites have been identified by various clans of the Shai people, which they are permitted yearly to visit to perform their tradi-cultural rites.

Unusual features of aesthetic importance relate to:

(i) hills found in some parks (Shai Hills, 20% of the park is covered by the hills, the summit of 4 of them, being historical / cultural sites (one of the Hills was the ancestral homes of the Shais). Each of the hills has a cave opening from one side and exiting through another on to the top of a rock serving as a high point which offers a good view on Accra ; Pames hills (Bomfobiri); Panoramic view of top of the hills (Bui)
(ii) caves: Mole, Bomfobiri, Kyabobo and Shai Hills
(iii) water-related features: Waterfalls (Mole, Bomfobiri, Kyabobo), Rappids (Ankasa), cascades in Kakum, Murugu Springs – the boiling water in Mole

(iv) habitat-related features: Bamboo Cathedral (Ankasa), Pristine forest nature of the park (Ankasa), Breast mountain (Kyabobo), hanging stones in Kyabobo

The evaluated PAs contain plant species of high social, cultural, or economic importance. Some of these include medicinal plants like dawa-dawa *(Parkia biglobosa)* for treating hypertension (Mole, Bui, Kyabobo); there is also mahogany (in Mole, Ankasa, Bomfobiri, Bia). Trees of economic importance are the baobab tree in Shai hills, neem tree, *iegheme hecklii*, mahogany, Rattan *(Pericopsis elata)*, are used for wood production/timber purposes (Shai hills, Ankasa, Bia). In Ankasa there is also Chewing Stick – eg *Garcinia spp*. Shea butter tree (cooking butter) is found in Mole, Bui and Kyabobo. In Kakum, *Uapaca guineensis* was used as arrow poison during war.

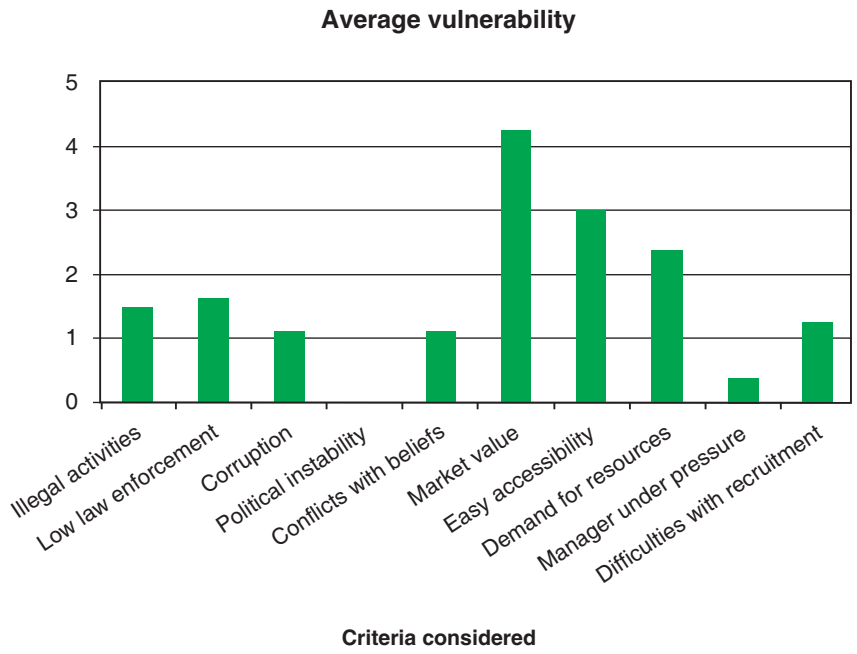
The PAs contain animal species of high social, cultural, or economic importance. Some animals are important for their skins or other parts that are used for cultural and traditional purposes e.g. lions, kobs, elephants, leopard, waterbuck, and hyena in Mole. According to managers, in Mole and Bui, the skin of the kob is used to adore a new chief, in Shai Hills it symbolises peace. In Bui, the head of buffalo symbolises strength. In Bomfobiri, crested porcupine is a symbol of the Ashantis.
Some of these animals are of economic importance for tourism: elephants in Mole, Kakum, Ankasa, Bia; hippopotamus in Bui, and also leopards, duikers, pangolin and primates like chimpanzees in Ankasa or Bia. In Shai Hills baboons and birds make it an attractive place as they attract bird watchers and other tourists. Animals are also used for bushmeat (duikers and monkeys around many of the PAs).

The PAs have high recreational value because animals like elephants, lions, buffalo, etc are key attractions as well as other cultural and aesthetic features like waterfalls, grooves, shrines, caves, etc. (see above).
In Bia, the potential is there but there are no financial or technical means. Indeed, Bia is an "Important Bird Area" (IBA) and has at least 231 (an additional 22 to be confirmed) species of birds, the majority of these being truly forest dependant. Bia is perhaps one of the richest bird areas in Ghana and has recently been designated an internationally IBA. The relatively open nature of this forest, allows good viewing prospects. This certainly provides a basis for very attractive bird watching tourism potential.

The PAs contribute to the production of significant ecosystem services and benefits for local communities. In general the PAs provide water which supports agricultural activities and for drinking by the local communities as well as providing microclimatic conditions, and opportunity for carbon sequestration. Some PAs like Bomfobiri, Mole and Bui help reduce the spread of desertification by their geographical position.

Most of the PAs have a high educational or scientific value. There are school visits on environmental education in Shai Hills, Mole, Kakum and Ankasa as well as visitors and researchers to these PAs. Mole serves as field laboratory for all universities in Ghana, and there are also partnerships with international institutions and researchers. Educational trips are organised from the US and Europe. In Kyabobo, the topography and untouched nature of the park provides huge diversity for research and education. Bomfobiri provides educational platform for scientists as there are forest and savannah ecosystems within the park.

VULNERABILITY



All PAs have a law enforcement system in place that monitor illegal activities and trends of animal populations, however in some PAs it is difficult to monitor illegal activities for a couple of reasons including inaccessibility in the rainy season, vastness and difficult terrain). In all PAs there is monitoring system in place; there is effective law enforcement system in Kyabobo, Bomfobiri, Shai Hills and Kakum; Kyabobo and Bia are difficult to reach ; in Bia, some areas are swamp and inaccessible.

In the other PAs, monitoring illegal activities is difficult, and therefore the PAs are accessible to such activities. In Bui, accessibility is a problem especially during the rainy period when canoes have to be used to get into the park; besides, the entire western boundary is international and so, staff cannot station there. In Ankasa, the terrain is difficult and staff strength is low; in Mole, the problem is that the park is huge and activities like hunting are difficult to monitor; park resources are in demand, and animals are easily seen.

According to the managers, law enforcement is low in Ankasa, Kyabobo, and Shai Hills. In Ankasa, it is difficult to get the support of law enforcement agencies in the northern part of the park. In Mole, there is collaboration between park management, police and judiciary, the protection and enforcement mainly falls on the park staff. The park is located far from law enforcement agencies. The closest checkpoint (police barrier) of the law enforcement group is about 100 km away from the park, hence a number of illegal activities go on without their knowledge. However, it is noted that there are police stations, some as close as 15km.
However, in Kakum and Bomfobiri, there is good law enforcement program and responsive judiciary, and support from other law enforcement agencies. In Bui, there are only occasional cases of non-cooperating courts. In Bia, there are good working relations with judiciary and police. In Mole, there is inadequate collaboration with law enforcement agencies and this leads to problems with prosecution, long distance to transport offenders to the nearest Police station and apathy of law enforcement officers to apprehend wildlife offenders; but law enforcement is high.

There appears to be **bribery and corruption** in the system. In some parks there is no evidence of bribery; but occasionally poachers bribe the police.

In all the PAs there are no records of civil unrest and/or political instability. There is peace and stability in the region.

Cultural practices, beliefs, and traditional uses do not conflict with the PA objectives except in Mole where there is group hunting, which is a cultural practice; fire is sometimes associated with fire festival; and for the installation of chiefs, parts of key species are often needed e.g., elephants, lions etc. In other PAs, like Bui or Kakum most species used do not fall in the category described (Bui), i.e. they are common and reproduction is not a great problem, and collection of species is not very prevalent or prominent (Bia, Kakum).

The market value of the PA resources is high in all PAs. There is high demand for bush meat, and skins of some species like leopard (Ankasa, Kyabobo). High grazing and quarrying capacity are occurring in Shai Hills. The high market value is also due to the presence of many great economic timber species in Kakum or Bia; for example, Bia is an expensive land because it's a cocoa growing area. There is high value for fish, minerals and hydropower in Bui. High value is the result of an ecosystem like the waterfalls in Bomfobiri (the only fall in the region) and the magnificent hills.

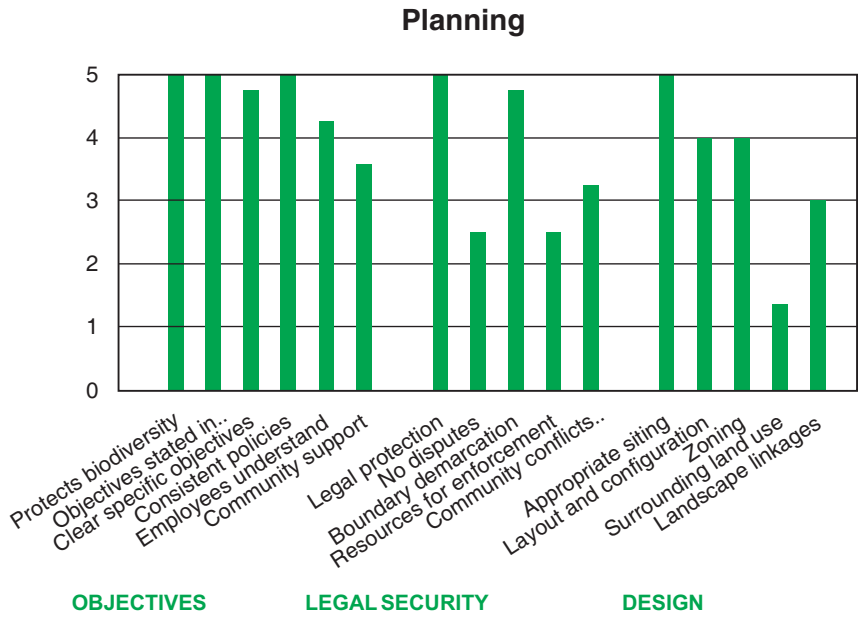
Except in Shai Hills, Bomfobiri and Bui where demand is not so much for vulnerable species or there is no demand for such species (Shai Hills), **there is a strong demand for the consumption or trading of the vulnerable resources of the PAs.** Demand for resources is for cultural, economic purposes; for example, there is demand for bush meat, rattan and chewing stick, for economic tree and medicinal species such as barks of mahogany, elephant tusk etc.

The PA managers are not under pressure to unduly exploit the PA resources. This may happen occasionally for example, in Bui, people are under pressure to exploit timber resources which will be inundated as a result of the damming of the Black Volta River. But in general, there is community conservation education and awareness programme and they are therefore sensitized not acting that way.

Generally in all the PAs evaluated, the staff are motivated, people employed stay on the job (low staff turn-over), there are not much harsh working conditions.

MANAGEMENT EFFECTIVENESS

CONCEPTION (OBJECTIVES AND PLANNING)



Objectives

All the PAs evaluated have the core objective of protecting and maintaining biodiversity and this is stated in the management plan. They also state specific biodiversity-related objectives such as bush fire control, and specific objectives related to the improvement of people well-being, e.g. setting up of community committees that regulate harvesting of NTFPs. **All PAs have a management plan** but for some PAs it needs to be updated.

PAs employees and administrators understand the PA objectives, practices, policies and regulation as they are involved in the management process (development of the management plan and other policies); they understand these issues at different levels depending on the calibre of staff. It is also explained during meetings, through capacity building or staff training exercise, staff durbars and staff annual meetings.

Local communities support the overall objectives of the PAs. This is because communication is generally good (or has improved) with local communities, and like in Kyabobo, the park was created after extensive consultation with the locals. In this PA there is a Protected Area Management Advisory Board (PAMAB) made up of all key stakeholders. Furthermore, like in Shai Hills, they are happy about the protection of their ancestral home. The establishment of Community Resource Management Areas (CREMAs) (Bia, Ankasa and Mole) and Protected Area Management Advisory Board (Bia, Shai Hills, Ankasa, Kakum, Kyabobo and Mole) also facilitates the support of the local community. In Bia, the community of Adjoafua appears to be uncooperative. Communities are volunteering (there are 145 community volunteers in Kakum); about 70% of tips leading to arrest of poachers are from the communities and chiefs.

Legal security

All evaluated PAs have a long-term legally binding protection. There is a legislative instrument protecting the parks. Kyabobo is not yet formally gazetted but there is an Executive Instrument No 20 of 16/09/1993 for its establishment which provides long-term legally binding protection.

There are no unsettled disputes regarding land tenure or use rights or on the existence of passage rights, etc in all PAs except in Bui where Banda chief disputes a portion of the park to belong to him. Otherwise, all communities have been fully compensated except one community which has no chief to be paid the compensation. But the Government is ready to pay them as soon as they resolve their leadership challenges. In Kyabobo communities are still allowed to pass (walk) through specified paths within the park.

Boundary demarcation is adequate to meet the PAs' objectives in all the PAs, as there is clear demarcation of the parks, and boundaries are clearly defined; other parts of some parks are demarcated by rivers and roads like Sushien River which serves as part of the boundary in the north of Ankasa.

In general, **financial resources are inadequate to conduct critical law enforcement activities** and more funds are required to better manage the parks. In Bomfobiri, only about 50% of fund requested are released. Staffing is generally inadequate however staff strength is relatively good in some parks and they still make efforts to work even with minimal resources. Staffs are trained to carry out protection activities.

There are generally no huge conflicts with the local community as there is cordial relationship with them; and they get general agreement with stakeholders in most situations. But when conflicts occur the Community Resource Management Committee (CRMC) is involved in conflict resolution (Kyabobo, Ankasa). In Mole there is a governance structure in place, the Protected Area Management Advisory Unit (PAMAU). There are 4 PAMAU in Mole because of the size of the park, and the unit is based on the district within which the park falls. In Bui, they used traditional structures in the past to settle some cases. In Bia, even though farmers are not compensated for human-wildlife conflicts, when talked to, they understand. PAMAB steps in occasionally to resolve issues between the park and the communities.

PA design

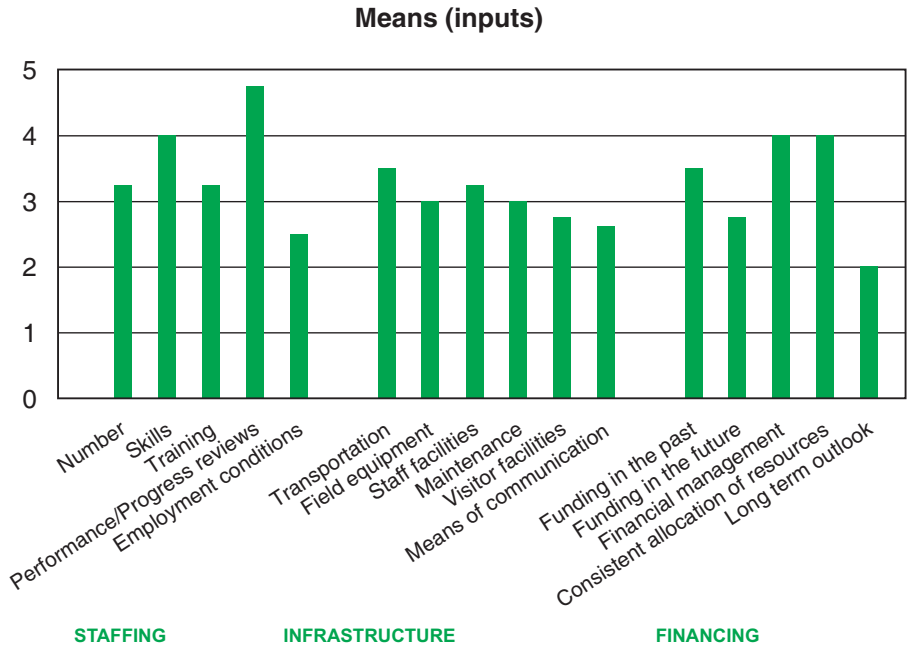
For all PAs, the sitting is consistent with the objectives and the layout and configuration of the PA optimizes the conservation of biodiversity. However this layout could be bigger in Shai Hills and Kakum. In Bia it is not big enough for the projected increase in elephant numbers.
In Kyabobo and Mole, the sitting is consistent with the protection of watershed area and/or landscape, cultural sites and with biodiversity conservation. The management objective takes care of the ecological processes, and various ecosystems within the region. In terms of representation, the sitting is a representation of ecological zones in Ghana (semi secondary deciduous forest in Bomfobiri, transitional vegetation in Bui). The layout of Ankasa covers the various ecosystems in the region including the pristine forest.

The zoning system of the evaluated PAs is more or less adequate to achieve the PA objectives. The areas are based on law enforcement, core zone (protection area) and tourism development. In Mole, the zones are based on visitor use and law enforcement. In Bomfobiri, the Bare headed Rock fowl is an endangered species; hence the habitat is a restricted zone with the intention of reintroduction of the species. In Bui however, with the dam construction some critical habitats could be lost.

Except in Kyabobo, and Bomfobiri (Bomfum Forest Reserve serves as buffer zone), **the land use in the surrounding area does not enable effective PA management.** There is no buffer zone (Mole, Ankasa and Bui), therefore activities around the park are largely uncontrolled. In Mole only three communities have adopted CREMA, which is not significant compared to the number of the communities around the park. CREMA is a wildlife policy that supports sustainable resource use outside PAs. There is no land use planning at country level. The land tenure system also makes it difficult. In Shai Hills there is quarry in the South, severe grazing in the East and estate development in the North. Bia is surrounded by farms except for two CREMAs which cover over 10% of boundary. Around Bui there are massive agricultural landscapes. Kakum is almost isolated with only about 4% bordered by forest reserve.

Except for Shai Hills and Bui, the PA is linked to another area of conserved or protected land: link with Fazao Malfacasa, Togo (Kyabobo), Kenikeni Forest Reserve directly linked to Mole, Krokosua Hills Forest Reserve is the only reserve close by though there are other reserves (Bia), Draw River Forest Reserve which also linked Ibi Forest Reserve (Ankasa), Bomfum Forest Reserve (Bomfobiri), and Kakum is linked to 3 PAs though the link is small – Adjousu, Pra-Suhien and Bimpong forest reserves.

MEANS (INPUTS)



Personnel

Except in Ankasa, **the number of staff employed is sufficient to effectively manage the PA.** The problem is that in most of the PAs evaluated, the staffs are often too old and will need to be replaced at some point in time.

In general, staff members have adequate skills to conduct critical management activities. This is because they are provided with periodic training (mobile training programme, Senior Management Training...) and refresher courses aiming at building staff skills and capacity to carry out critical management activities. In Shai Hills skills are there as well but managers think that the staff can do better; in Bui, some staff lack basic formal education.

Staff performance and progress on targets are periodically reviewed. Every park is expected to do staff appraisal using the Human Resources policy for the Forestry Commission which should serves as a basis for monitoring staff performance. In all PAs there is annual staff appraisal.

Staff employment conditions are in general not sufficient to retain high-quality staff. The salary is low, however there is motivation, and the nature of work is not too difficult.

Infrastructures

Transportation infrastructure is not always adequate to perform critical management activities; in terms of equipment, more fire arms, ammunitions, tents, appropriate GPS etc are required. All staff are mobile with logistic to perform critical activities, but sometimes the maintenance and running cost are not adequate. In Bia the critical Bonsu Nkwanta-Radio Hill road needs to be opened. In Kyabobo, there was field project which supported all the equipment - Wildlife Division Support Project (Funded by the Netherland Government).

Visitor facilities are not appropriate to the level of visitor use except in Mole, considered as one of the best tourism destinations with good facilities in the country, and Kyabobo where there are guest houses, camp sites and picnic site. In the other PAs, there are minimal facilities, the quality and services need to be improved; there is a need for more game-viewing roads and camping sites. In Bomfobiri, the only pathway to the waterfall is not good.

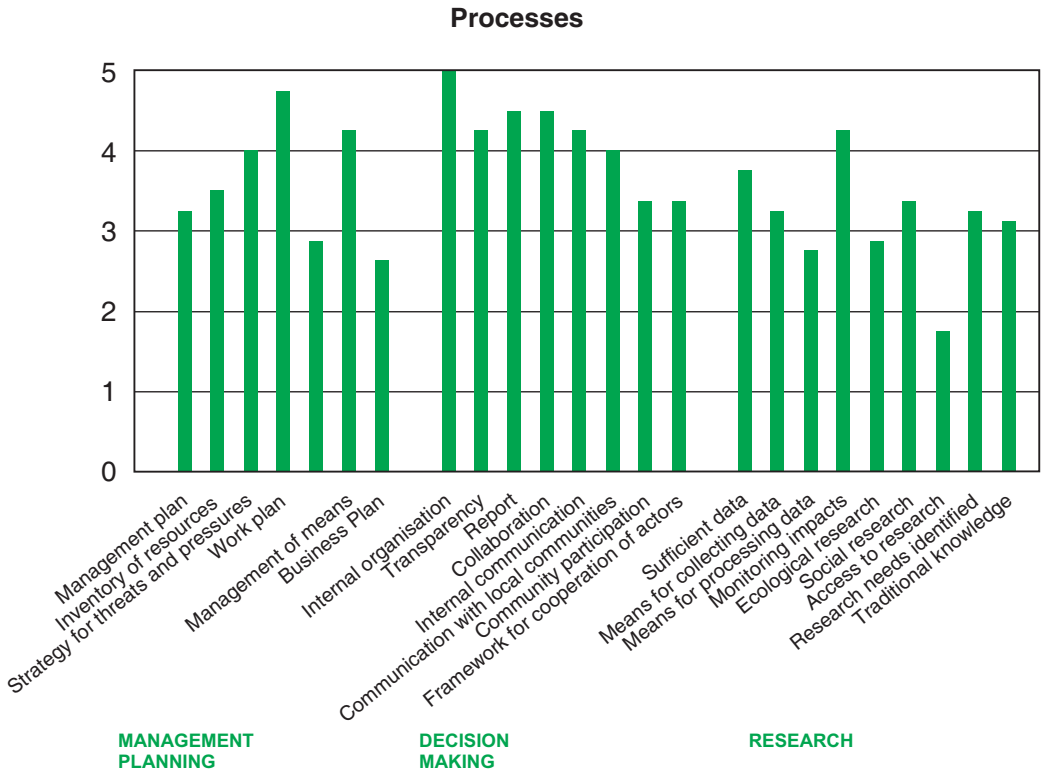
Financing

Over the last 5 years, **funding was adequate to conduct critical management activities for most of the PAs,** thanks to donor funded projects and other sources namely: Internally Generated Fund (IGF) from Forestry Commission, Government of Ghana, Natural Resource and Environment Governance (NREG), Protected Area Development Programme (EU Project), Wildlife Division Support Project (RNE), Northern Savannah Biodiversity Conservation Project (GEF, World Bank). According to the managers, in Kyabobo and Bomfobiri, funding was inadequate and/or irregular to conduct critical management activities, even though in Kyabobo, about €3 million were spent between 2003 and 2009; and for the next 3 years, they hope to be able to get access to the support from IGFand NREG funds.

In most of the PAs evaluated **financial management practices enable efficient and effective PA management** as there are regulations and policies, and processes in place to submit monthly internal returns, internal auditing, financial reports, annual work plans etc. As an example, in Ankasa, there is a divisional financial policy and donor reporting protocols for financial management.

The long-term financial outlook for the PA is not stable in most of the PAs. There is little or inadequate government support; PAs that can cope with the future in terms of financial resources are those with adequate IGF or donor funded project. However IGF is inadequate to support PA management in most of the cases. Conservation and wildlife is ranked low in terms of national priorities when compared with other competing sectors like health, agriculture and education, which makes it difficult for government to allocate adequate funds.

MANAGEMENT PROCESS



Management planning

Management plan for all PAs is outdated, except for Mole, Kyabobo, for which it will run until 2010; management plans for Bia and Ankasa are currently being revised. Management plans exists for the other parks, but need to be reviewed.

In all the PAs evaluated there is a comprehensive inventory of natural and cultural resources as well as detailed maps of the PA, but it needs to be updated. In Bui, the inventory is on-going. In Mole, the inventory available is relatively old (15 years) and needs to be reviewed. The cultural inventory of the park was undertaken through stakeholders' consultative forum in 2007. An aerial survey was undertaken in 2006. There is Satellite Imagery (2008) of the Park for habitat assessment, which looked at community resource management areas.

Except in Bui, there is an analysis of, and strategy for addressing, PA threats and pressures in all the PAs. In Kyabobo, there is Park GIS data base that monitors pressures and threats. In Mole, threat and pressures were discovered through the development of the operational manuals relating to Invasive species, and problems with animals (crop raiding). In Bomfobiri, the operational manual provides guidelines on how to handle threats and pressure in the PA.

There is no business plan for Kyabobo, Bui, and Bomfobiri. In Kakum it is skeletal and only for tourism, and was drafted a long time ago. All other PAs have a business plan. Except in Shai Hills where it needs revision, in Mole, Ankasa and Bia, it was finalised in 2009 and covers a period of 10 years.

Decision making

There is clear internal organisation in all PAs. Organisation charts, reporting lines, roles and responsibilities, or job description for all staff and positions are well defined. Management decision making is transparent; there are monthly or regular management meeting and staff meeting. In Mole, decisions are made on consultations when necessary.

Staff in all PAs regularly collaborate with different partners such as NGOs (World Vision, Concern Universal, A Rocha Ghana, Netherland Development Organisation (SNV)), public and private organisations such as Ghana Education Service, Zoom Lion Co. Ltd, WADEP – Women and Development Project (Kyabobo), Universities, Tourism Operators, District Assembly Wildfire Management Project, Ghana Fire Service, National Disaster Management Organisation, National Commission for Civic Education etc.

There is effective communication between all levels of PA staff and administration through various meetings where visions are shared and/or reviewed, quarterly Staff debates to address pertinent issues; there is also flow of communication from management to all staff and also feedback from staff to the management.

There is effective communication with local communities of the PAs concerning the management of the PAs through a Collaborative Resource Management Unit (CRMU) and/or PAMAU/B which regularly interact with communities. The CRMU particularly carries out conservation/environmental education and outreach programmes, law enforcement and community related issues. In Shai Hills, however, managers have recorded that outreach needs to be more effective. In Bui, some communities appear to be suspicious always.

Local communities participate in decisions that affect them, through the same scheme as above. All activities are communicated to the communities; their opinions and assistance to get things done are sought. The exception is in Bomfobiri where there is no management structure that involves the community.

There are processes to make sure that groups such as women and youth are consulted for the management of the PA, as structures mentioned above have it in their constitution to get women, and youth representation, especially, constitution of the PAMAB gives a special place to representation of women. Women are also particularly involved in the establishment of CREMAs, schools' wildlife clubs and programmes. In Shai Hills they consider women in concessions for exploitation of the neem tree in the reserve; in Kakum they ensure that women are involved in volunteerism. In Bomfobiri such processes to involve groups such as women and youth do not exist.

Research

In general, the information on **ecological and socio economic data needs to be reviewed;** in some PAs there is no ongoing research, and part of the existing ecological and socio economic data are from the surveys before the management plan was written. In Mole, there is community profile for most of the communities. Bomfobiri is the only park where there are no current ecological and socio economic data.

Collecting new data may be difficult, even though in most PAs, skilled staff, field equipments, etc are in place. In Bui, skills for collecting new socio-economic data is lacking; and in some PAs like Kyabobo the fact that there is no research unit, may make it difficult to collect new data. However, in Mole (and so is in Kyabobo), there is no research unit either but all field staff are trained to collect data which is fed into the Management Information System (MIST) for

processing and analysis; there is Law Enforcement and Adaptive Management Approach, which consists of manual analyses and assessment of data collected from the field.

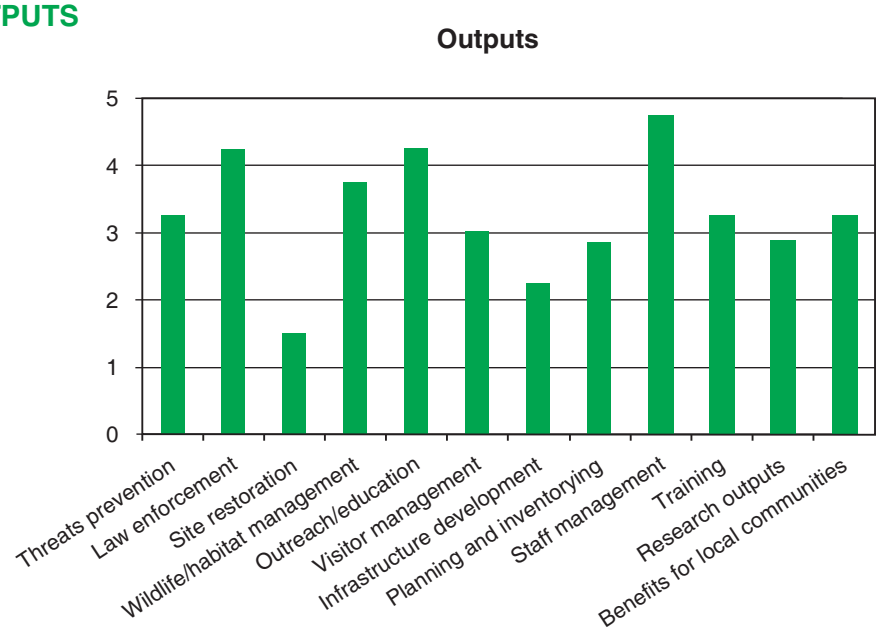
Systems to process and analyse data are more or less adequate. Some parks need more skills in terms of personnel, others need more software. Some PAs like Mole, Ankasa and Kyabobo are equipped with tools such as GIS tool and MIST for data analysis. In Kakum, there is only one computer; it is therefore difficult to efficiently process and analyse data.

Regarding research on key ecological issues, it is not always consistent with the needs of the PA. For example, in Mole, most researches conducted in the PA are not on ecological issues of the PA but the interest of researchers, most of which do not contribute to management decisions, except the research commissioned by the park. In Bomfobiri and Kyabobo little or no research is carried out; the few research conducted by the universities in Bomfobiri do not solve management problems. Furthermore they don't give to the reserve report of the research. In Ankasa however donor funding was able to support research in some key issues in line with the PA objectives: introduction of MIST, primate survey which was supported by West Africa Primate Conservation Action.

Research on key social issues is not consistent with the needs of the PA in Mole, Shai Hills. In Bomfobiri there is no research on social issues. In Kakum there is data collection on crop raiding (animal like elephant destroying people's crops), in Kyabobo, ethno -biological data are available.

In most PAs, staff members do not have regular access to recent scientific research and advice, because there are no libraries, no internet access and no subscription to any journal.

OUTPUTS



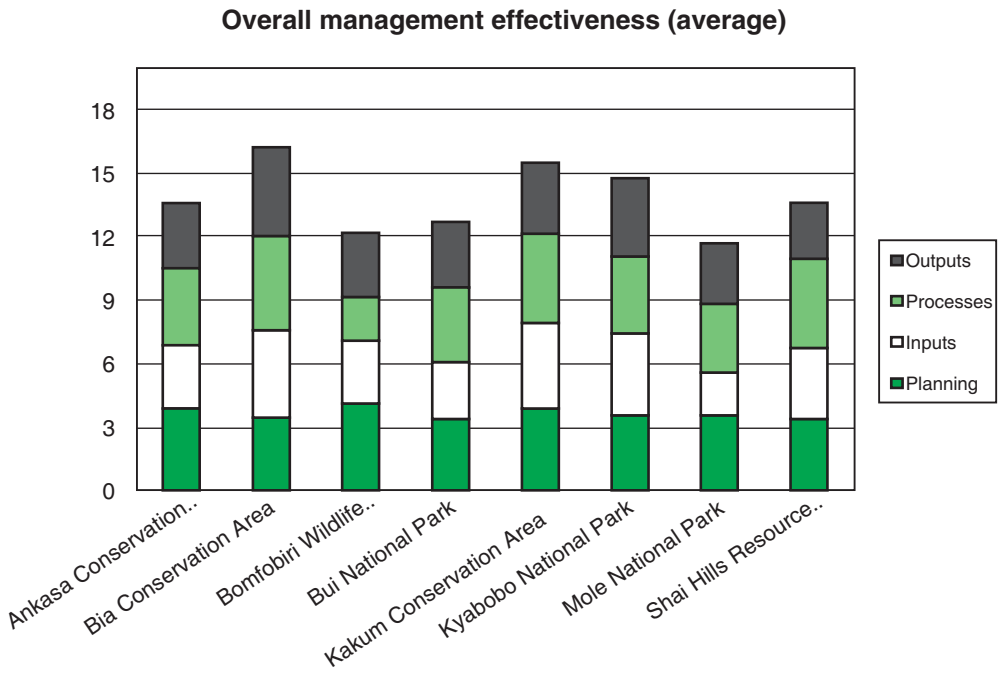
The results obtained over the last two years are consistent with the overall management effectiveness of the park even though there are still efforts to do, in particular, in site restoration and mitigation efforts (especially in Ankasa, Bia, Kakum, Bui and Mole), and infrastructure development. In Bomfobiri, there is an attempt to renovate few satellite camps, but little is being done; Kakum has worked over the two last years on maintaining the infrastructure.

Results are considered good in staff management (except in Shai Hills where they had only one internal training on principles of tour guiding and law enforcement, but no external training), in community outreach and education efforts, law enforcement and habitat management. In Bomfobiri, the field staff was provided with training on weapons handling and anti poaching skills, whereas conservation education training and tour guide training was meant for the middle grade staff.

Results in law enforcement are high for many reasons depending on the PA: existence of law enforcement strategy plan; there are patrols, prosecutions, road blocks and checks which are complemented by education and awareness on wildlife laws; staff is equipped with fire arms, GPS, protective clothing; Management Information System; existence of wildlife laws, law enforcement agencies like police and judiciary, legal instruments and teams are set to enforce the law.

In Mole, there has been great result in benefiting local communities; livelihood support has been significant such as beekeeping, craft shops, community based tourism, direct labour for development and also value (market) chain development. There were training on tour guiding, hospitality and business management. There was also support for art & craft production in about 3 communities. There is also formal employment, as about 80% of the staff is recruited locally. The park is also like a marketing centre for the communities as about 200 staff of the park patronize food and food stuff sold by local communities. In Ankasa it is the introduction of beekeeping, agroforestry and fish farming that benefited local communities.

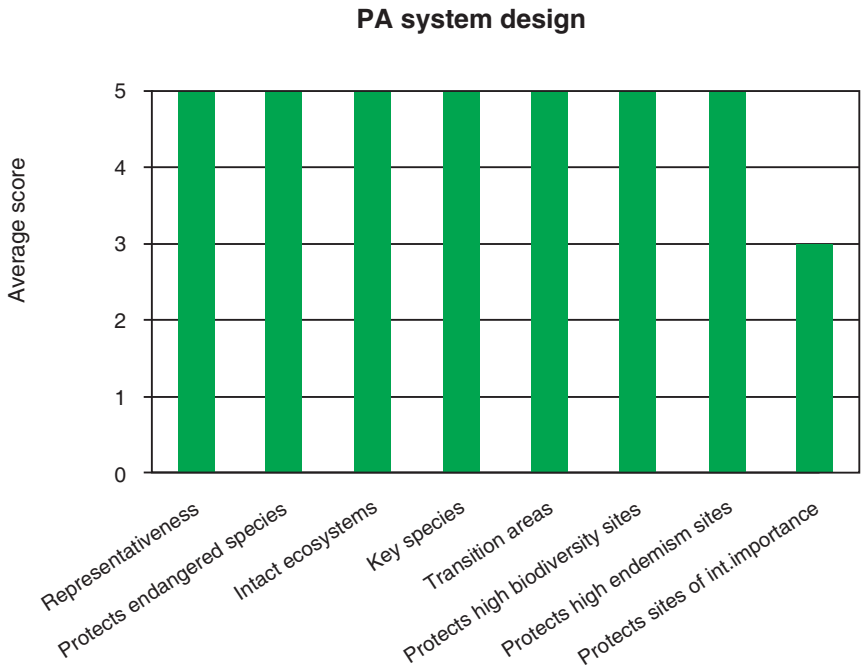
OVERALL MANAGEMENT EFFECTIVENESS



Concerning overall management effectiveness, and from the results of the evaluation, Ghana PAs seem to be on the average effectively staffed, resourced and managed, which makes the management acceptable even though there are still improvements to be made. In addition, the system of protected areas of Ghana is composed of protected areas that are, more or less, at the same level of management effectiveness, meaning there are not much disparities in the PAs.

THE NETWORK OF PROTECTED AREAS IN GHANA

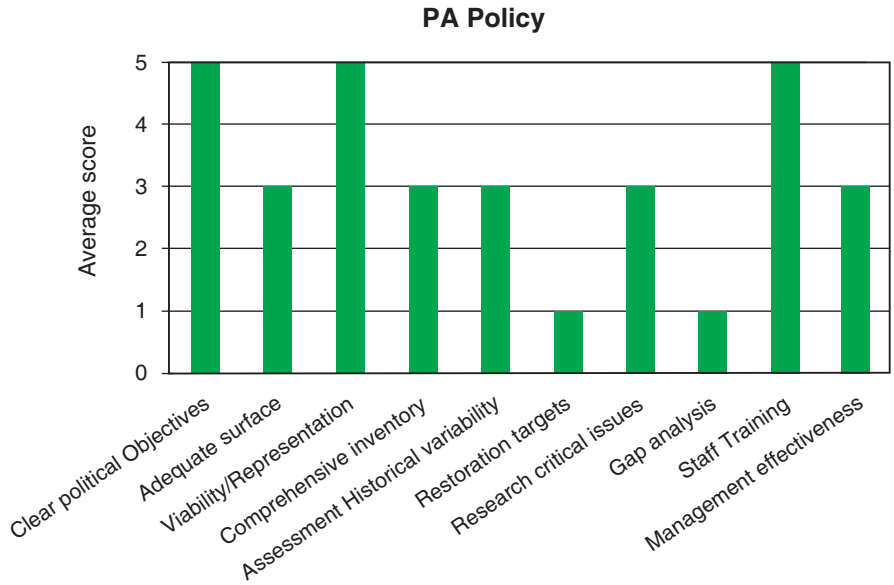
GLOBAL PROTECTED AREA SYSTEM DESIGN



The PA network adequately represents the full diversity of ecosystems within the region. Indeed the following ecosystems are represented: Guinean savannah woodland (Mole), transition between dry forest and guinea savannah (Bui), dry semi-deciduous forest (Kyabobo), moist evergreen forest (Kakum), transitional zone between moist-evergreen and moist semi-deciduous forest types (Bia), wet evergreen (Ankasa), and coastal savannah (Shai Hills). The network adequately protects against the extinction of any species and in particular water birds. Ghana has varied ecological zones, and efforts are being made to protect species of each ecological zone; when a site contributes to protecting several ecological zones it is considered being of high conservation value.

The PA network system includes the protection of transition areas between ecosystems, as depicted by Bui National Park, which lies in the forest/savannah transitional zone of Ghana. Sites of high biodiversity and high endemism are systematically protected, for example, in Kakum, Ankasa (it is a hotspot) and Mole (has savannas and endemic species).

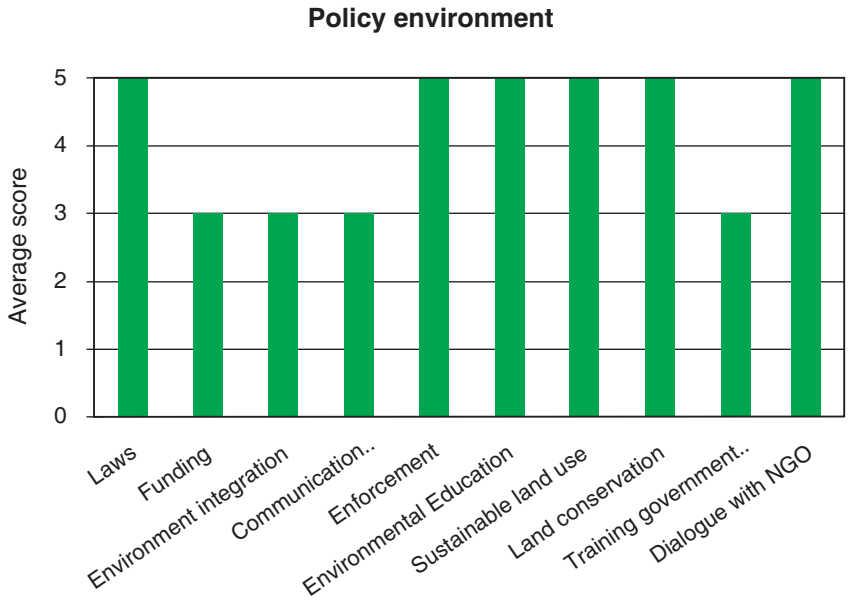
The PA network efficiently protects sites of international importance (RAMSAR, MAB…) where they exist; there are no world heritage (WH) designated sites in Ghana.



Generally speaking, the policies **adequately meet the goals, objectives of the network of PA.** For example, there is a Forest and Wildlife Policy that clearly articulates these goals and objectives. In Ghana there are no marine protected areas yet so the country does not fully have an adequate portion protected by the PA network according to the level of biodiversity. There is commitment to protecting a viable and representative PA network, through government efforts and competent staff whose capacities are developed and strengthened by training and carreer development programmes.

However, there are no restoration targets for under-represented and/or greatly diminished ecosystems, but there is a mangrove restoration programme from the coastal wetlands.

There is ongoing research on critical PA-related issues within the network, but there are no periodic gap analyses.



Policy environment is relatively good as shown in the above graph. The wildlife laws are currently being reviewed to take into account other issues that were not mentioned in the former document and that could complement PA objectives. There is commitment to administer the PA system but funding needs to be improved.

Even though PA network objectives are incorporated into all aspects of policy development and other sector policies, conflicts arise when elephants leave the PA to the fringe communities. National policies promote widespread environmental education at all levels as wildlife conservation issues of forest management are being incorporated into the senior high school curriculum. There is also public awareness raising especially during World Environment Day.

National policies also promote an array of land conservation mechanisms: Land administration project looks at land issues to eliminate conflicts of land tenure; and there is a national land policy.

STRENGTHS AND WEAKNESSES OF PROTECTED AREAS MANAGEMENT

The evaluators have identified the following strengths and weaknesses for the network of protected areas in Ghana:

Strengths

- All ecological zones are represented
- Legal status is available
- Adequate protection (law enforcement)
- Most of PAs are refuges for wildlife
- Existence of a national wildlife policy
- PAs have effective law enforcement system that monitors illegal activities and trends in wildlife
- Most PAs have management plans
- There is support from local communities
- Competent and committed human resources and annual staff performance appraisal for all PAs
- All PAs have regulations in controlling activities
- Viable populations of wildlife resources are represented in the PAs
- There is a development plan for all PAs (Infrastructure, ecotourism, human resources, research, community relations, etc)
- Boundaries are well marked on the ground
- All PAs have a common operational manual
- All PAs are categorized (IUCN management categories)

Weaknesses

- Irregular and inadequate flow of funds
- Poor working environment conditions
- Equipment is not sufficient
- Most of PAs lack buffer zones and/or are becoming ecological islands
- Inadequate accommodation for staff
- Difficulties in replacing staff
- Difficulty in getting a gender balance
- Wildlife conservation is not treated as a priority
- Outstanding compensation to pay to land owners
- Inadequate communication within some parks

RECOMMENDATIONS

The following recommendations were formulated at the end of the evaluation:

1. Provide adequate, improved and sustainable funding for effective management of the PAs.
2. Create additional conservation zones to connect adjacent PAs to facilitate movement of wildlife in between Pas.
3. Enhance the creation of Community Resource Management Areas (CREMAs) around PAs to address the lack of buffer zones.
4. Step up public awareness and collaboration with other partners (international and national conservation organisations).
5. Reactivate the research unit of the Division to provide scientific information to improve PA management.
6. Strengthen monitoring and evaluation protocols.
7. Improve working conditions such as remuneration, decent housing (including necessary amenities), logistics etc. for staff.
8. Facilitate payments of outstanding compensation due to land owners
9. Review and update Management Plans regularly.
10. Lobby the Government to put priority on protected areas, wildlife management and related issues
11. Increase donor support to protected areas.
12. Improve the infrastructural development (internet access…), equipment such as fire arms and ammunitions, vehicles, communication tools etc, and facilities to ensure effective management
13. Attract private investors to invest in the tourism potential of the PAs.
14. Facilitate the adoption of the new wildlife laws.
15. Develop a strategic plan for capacity building for PA management and all categories of PA staff
16. Effectively implement fire control and prevention strategies in Pas.

As part of the series of « Management effectiveness assessment of protected areas », published by UICN/PAPACO, the following already exist:

N°1 – Parcs de Guinée Bissau (Mars 2007)

N°2 – Parcs et Réserves de Côte d'Ivoire (Juillet 2007)

N°3 – Parcs et Réserves de Mauritanie (Octobre 2007)

N°4 – Parcs et réserves du Mali (Novembre 2007)

N°5 – Aires protégées de Guinée (Février 2008)

N°6 – Parcs et Réserves du Togo (Avril 2008)

N°7 – Aires protégées du Tchad (Juin 2008)

N°8 – Parcs et Réserves du Burkina Faso (Novembre 2008)

N°9 – Réseau des Aires Marines Protégées d'Afrique de l'Ouest (publié par la FIBA) (Juin 2009)

N°10 – Réseau des sites du Patrimoine Mondial d'Afrique de l'Ouest (only on **www.papaco.org**) (Juillet 2009)

N°11 – Sites RAMSAR d'Afrique de l'Ouest (only on **www.papaco.org**) (Juillet 2009)

All the evaluations are available at **www.papaco.org**

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