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The Origins, Development and Legacy of Scientific Forestry in Cameroon

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ABSTRACT

The influence of scientific forestry in southwestern Cameroon (today Southwest Province) is examined. A brief overview of the pre-colonial and German colonial periods (1885-1916) is provided to describe the beginnings of scientific forestry and how German ideas and institutions formed the foundation for subsequent forest policies. The main focus is on British rule (1916-1940), the period in which modern forestry expanded rapidly. The final section focuses on the intellectual 'construction' of scientific forestry and how the modern legacy continues to influence current forest policies and practices.

KEYWORDS

Scientific forestry, resource management, deforestation, indigenous knowledge, Cameroon forestry

INTRODUCTION

This article examines the influence of scientific forestry in southwestern Cameroon (today Southwest Province). A brief overview of the pre-colonial and German colonial periods (1885-1916) is provided to describe the beginnings of scientific forestry and how German ideas and institutions formed the foundation for subsequent forest policies.¹ The main focus is on British rule (1916-1940), the period in which modern forestry expanded rapidly. The final section focuses on the intellectual 'construction' of scientific forestry and how the modern legacy continues to influence current forest policies and practices.

Scientific forestry can be defined as the application of scientific methods to forest ecology in order to achieve the most efficient means of producing timber for commercial ends. This relationship is most accurately captured in the concept 'maximum sustainable timber yields.' It is a purely instrumental calculus in which the value of a forest is defined in terms of its material output – the number of trees that a given area can yield during a given period of time. From a commercial vantage it is the most rational way of managing forests. Yet, from an ecological and cultural perspective this approach is problematic because it radically oversimplifies the complexities of forest ecology. By defining the forest as a closed ecosystem, scientific forestry relegates non-commercial timber species, animals and human inhabitants as external to the production process. They must either be reduced or eliminated so that maximum yields can be achieved.

Given its overt emphasis on systematic knowledge and control, scientific forestry can be better understood as part of a broader historical process that sociologist Max Weber described as *rationalism*². While rationalism is a complex phenomenon with diverse cultural and historical manifestations, Weber viewed the ascendance of science and the rigorous application of the scientific method as a type of rationality that was unique to post-Renaissance European history. It is a perspective that holds that all social and natural phenomena can be understood through scientific principles and then improved through the application of universal scientific laws and rules. In the social realm, this is clearly manifest in the development of law, policy and technology for the ostensible purpose of social improvement.³ Because rationalisation is closely associated with material growth and institutional complexity it has become synonymous with 'modernisation,' a process which carries the powerful normative implications of moral and cultural 'progress.' Scientific forestry embodies these very principles, and more importantly, it is intimately bound to the pre-eminent structures of modern power and knowledge – the market and the state. It is in this sense that scientific forestry can appropriately be termed modern forestry.

Scientific forestry was first developed in eighteenth-century Germany and it was later exported to the world via colonialism.⁴ Through territorial rule European powers were able to penetrate and control forests in an unprecedented fashion. Once political hegemony was established, scientific methods could be employed to 'discover' the many commercial values of the forest. This knowledge allowed colonial administrations to reorder what had heretofore been an unwieldy ecological and cultural domain into a veritable production system that could be readily integrated into an expanding global economy. Nowhere was the impulse to control the environment greater than in tropical Africa, with its impenetrable and mysterious 'jungles' and its wealth of exotic species to discover, catalogue and exploit. These vast forests also harboured untold numbers of equally exotic 'natives' who could be civilised through political, economic and religious means.

Understanding scientific forestry as an aspect of the historical process of rationalisation is significant for a number of reasons. First, it provides a theoretical framework through which diverse perspectives on environmental and social change can be better understood. Second, it provides a means of clarifying the terms 'traditional' and 'modern.' Rather than viewing them as antithetical, they can be understood as a continuum based on the *degree* to which scientific ideas, practices and institutions have permeated society and its environment. Third, understanding the rationalisation of forestry lends greater insight into current resource management problems, especially the debate over sustainable development in which local resource knowledge and control are increasingly being advocated as alternatives and/or complements to scientific forestry.

The Case of Southwestern Cameroon

Southwestern Cameroon is an important environmental history case study because it underwent four distinct phases of economic and political development: 1) the pre-colonial period, 2) the German Colonial period (1885-1916), 3) the British Colonial period (1916-1961) and 4) Independence (1961–present). After 1961, Southern Cameroons joined French speaking Cameroon to become part of the modern nation of Cameroon, at which time it was divided into the current political divisions of Northwest and Southwest Province. It is a relatively small territory with an area of 27,520 sq. km. and a population of about one million.⁵ The economy is based primarily on cash crop production and subsistence agriculture, with additional income derived from timber extraction, oil production and tourism. There are four main urban areas – the capital of Buea, the port city of Limbe (formerly Victoria) and the inland trading centres of Kumba and Mamfe. These urban areas together account for less than thirty per cent of the total population. Most people still live in rural villages that are dispersed throughout the forest zone.

The province is also significant to scientific research because it contains the last remnants of the Eastern Atlantic rainforest bloc that formerly covered the African coast as far west as Senegal. These remaining forests are confined to the western part of the Province where they border the mangrove swamps of the coast and stretch northward to converge with a band of volcanic relief known as the Bambouto area. This mountain chain connects Bioko Island (Fernando Po) and Mount Cameroon with the Adamawa massif, protecting a dense and undulating wilderness area that covers most of the lower Nigeria-Cameroon border.⁶ The altitude of this range (up to 4,000 m) and its intense rainfall have created unique ecological conditions that harbour some of the richest concentrations of flora and fauna in Africa.⁷ These ancient mountains protected the rainforests during the last Ice Age that occurred some 16,000 years ago. These 'Pleistocene Refuges' have survived some 60 million years, making them some of the oldest forests on earth.⁸

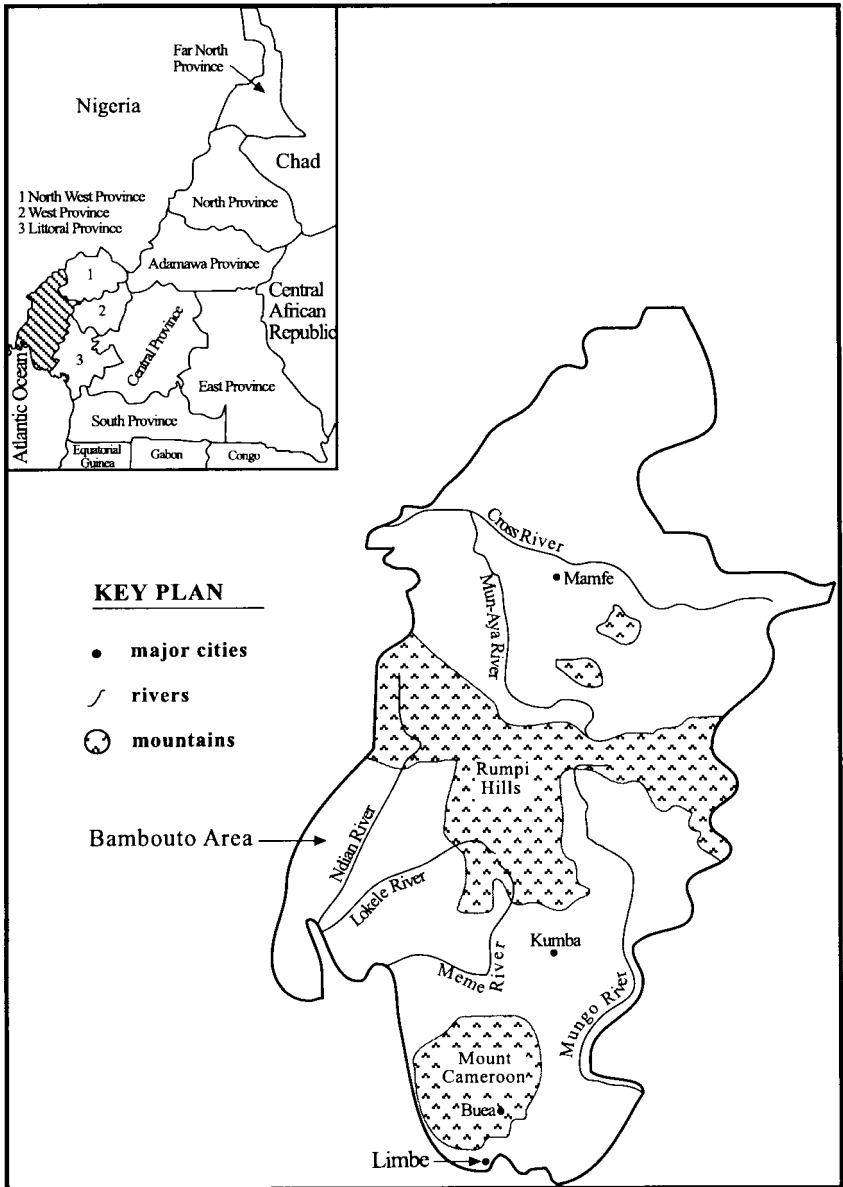


FIGURE 1. Southwest Province (inset shows map of contemporary Cameroon)

In recent years, Southwest Province has also become a centre of conservation activity. Because of growing demographic and commercial pressures, domestic and international actors have converged to preserve the region's remaining forests. Yet, there is an irony in this contemporary conservation movement, in that it continues to draw upon the scientific methods of natural resource management and an inordinate reliance upon institutional actors. The structure and logic of modern forestry is so deeply rooted that it continues to influence the logic of both commercial exploitation and conservation efforts. This legacy can only be understood by examining the history of forestry in Cameroon and the powerful influence that scientific methods had in its conceptualisation and implementation.

THE INTRODUCTION OF MODERN FORESTRY

Pre-Colonial Cameroon

The forest societies in pre-colonial Cameroon were geographically and linguistically diverse,⁹ but they shared a common socio-economic and political tradition in which ideas and practices were transmitted across generations through an oral culture. Generally low population densities and poor soil conditions in the forest belt yielded segmentary or 'horizontal' societies in which individual villages maintained an equal and autonomous political relationship to neighbouring villages and clans.¹⁰ This is in contrast to the great kingdoms of the West African savanna that are considered 'vertical' societies in which numerous villages and chieftaincies are headed by a single paramount chief. Since there was little centralised political and economic control in horizontal societies they tended to be more mobile and subject to change. In these societies it is not uncommon for small groups to splinter off from larger villages to exploit new lands during times of resource shortages or human conflict. Historically such social mobility was possible because there was ample land and forest to accommodate these changes.

The economy in the Cameroon forest zone at the time of European penetration was based primarily on shifting cultivation, hunting and gathering.¹¹ The basis of this subsistence economy was the banana-plantain complex. These staple crops were introduced into Cameroon through the Bantu migrations sometime after the last millennium, and were well established in the southwest centuries before European contact. Other important cultivars included cocoyam (*Colocasia*), cassava (*Manihot*) and yam (*Dioscorea*). The latter are native to Cameroon and are widespread in the lowland forest areas. Cassava and cocoyam are native to Latin America and Asia respectively, and were probably introduced to West Africa by Portuguese and British traders some time after the Sixteenth century. Pre-colonial land ownership was communal and controlled by the

village chief who partitioned land to village members for planting or hunting purposes. Hunting rights were granted as usufruct and extended over larger sections of unconverted forest land.

Pre-colonial African forestry differed greatly from European methods. Unlike modern forestry which is oriented towards timber production, African societies valued the forest more for its secondary products such as fruits, nuts, fuel wood and an assortment of herbs and medicines. Given the low levels of technology and lack of infrastructure, timber had virtually no economic value in the forest culture. Even traditional dwellings did not utilise wood. They were constructed largely of mud and thatch. The main uses of timber were for ornamental purposes (carvings etc.) and for canoe construction (the trunk of the Camwood tree was especially desirable for this purpose). Ironically, the largest trees in the forest – those that were later most sought after by Europeans – often survived in pre-colonial Africa. Prior to the European arrival there was little economic demand for these species and they could survive the traditional processes of forest clearing and burning.

The Portuguese were the first Europeans to reach the area of what is now southwestern Cameroon. In 1472 they entered the coastal region of the Wouri River estuary and dubbed it Rio dos Cameroes (River of Prawns). Coastal trading centres soon sprang up and the region quickly became the intersection of the burgeoning global trade in spices, ivory and slaves, which attracted traders from all over Europe. These interactions often had devastating human and ecological consequences. But such impacts tended to be localised because early mercantile contact did not establish political and technical hegemony over the forest zone and its inhabitants. In southwestern Cameroon, coastal areas were exploited for slaves and other natural resources, but many inland areas were often isolated from these activities. Moreover, since European trading practices exploited established hunting, agricultural and slave trading economies, they did not radically alter these existing exchange and production patterns. As a result, the socio-economic and cultural integrity of forest societies and the surrounding forest ecosystem did not change significantly during the first two centuries of Western contact.

German Rule and the Beginnings of Modern Forestry

The penetration of the Cameroon hinterlands under German colonial rule ushered in the modern age of resource management and control. Between 1884 and 1895 the Germans established their dominion over the central coastal region of the territory they dubbed 'Kamerun', to expand trade in palm products, ivory and wild rubber.¹² This incursion had two far reaching effects. First, the control of the trading centre of Douala linked coastal Cameroon to inland areas that previously had few outside commercial or political links.¹³ Second, total control over land and labour allowed the Germans to convert coastal rainforests into

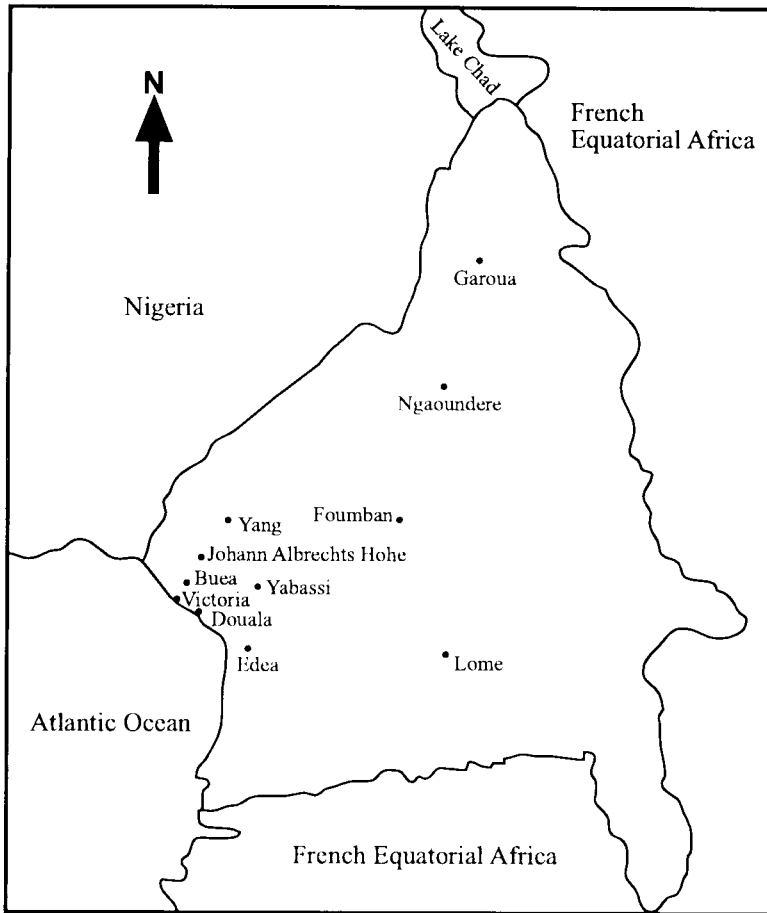


FIGURE 2. German Cameroon (Kamerun) 1916

plantations which created socio-environmental dislocations on an unprecedented scale. This was most prevalent in the Douala-Buea area where 1000 sq. km. of tropical forests were converted to plantations by 1913. Approximately 80 per cent of these lands were expropriated from the Bakweri peoples with no compensation.¹⁴ The socio-ecological consequences were dramatic in that they transformed traditional hunting and farming societies from subsistence cultures to forced labour and/or low wage economies whose logic was production and profit in orientation.

As the Germans moved into the interior after the turn of the century, timber extraction became more extensive and systematic. This massive movement was facilitated by the introduction of the concession system in 1898.¹⁵ Concessions were organised by individual speculators and financial institutions and they varied in size and economic focus. The two largest concessions were the Gesellschaft für Sudkammerun (GSK) and the Gesellschaft für Nordwest Kamerun (GNWK). GSK initially controlled 7,200,000 sq. ha. in the southeast and GNWK maintained 5,000,000 sq. ha. in the north, that included the northern most parts of the southwest.¹⁶ Although the German concessions did not have complete sovereignty over labour and resources, as was the case in the Belgian Congo, they did maintain total authority over economic activities. All lands and resources within a respective concession were controlled by the concessionaire, including local trade and production.¹⁷ This arrangement suited the colonial regime, as it provided rapid profits and facilitated in the management of native populations.

Concessionary capitalism focused almost explicitly on plantation agriculture, but scientific forestry played crucial roles in every stage of the production process – from forest clearing and re-planting to the harvesting of final products. More importantly forestry operations paralleled the expansion of plantation agriculture. As plantations moved inland, they created the infrastructure that gave timber companies access to previously isolated forests. Second, as the forestry sector expanded it prompted the government to invest in forestry programs to sustain production and profits. Afforestation had begun at Johann-Albrechts Hohe (Barombi) and forest reserves were established in inland areas – at Yabassi, Edea and Jang (Dschang) districts. A forestry school was also established at Jang, through which forestry officials and guards were trained to oversee the colony's forests.¹⁸

The most prominent agricultural and forestry research facility in Kamerun were the Victoria Botanical Gardens that were established in 1892. Although most of the experimentation in Victoria focused on plantation forestry (rubber [*Hevea*], cocoa [*Theobroma*], oil palm [*Elaeis*] and coffee [*Coffea*]), the Gardens experimented on a number of 'new' forest products. It also served as the administrative centre for experiment stations attached to military posts and other government facilities throughout the interior. Information gathered through this network was then channelled to the Central Botanical Bureau in Berlin (*Die Botanische Zentrallstelle*) which acted as the global clearing-house for all scientific research in Germany's colonial empire.¹⁹ Berlin sorted and classified thousands of plant species every year and directed agricultural and forestry research based on the potential commercial applications of new-found tropical species. This period was characterised by a considerable exchange of scientific information, techniques and resources (cultivars etc.), that were integrated into agricultural and forestry programmes throughout the German colonial realm (Togoland, Sudwest Afrika and Tanganyika).

Through the research network centred around the Victoria Botanical Gardens, the German colonial state was able to create an infrastructure of resource management and control that was readily adopted by the British. Under British rule, forestry gained greater autonomy from the plantation system as the timber industry grew in economic importance. As a result, forest exploitation and trade became more centralised and systematic. This expansion allowed a deeper and more thorough penetration of Cameroon's forests and its societies.

BRITAIN AND THE EXPANSION OF MODERN FORESTRY

German rule in Kamerun ended with the First World War. Its possessions were seized and placed under French and British jurisdiction. The western part of the colony fell under British rule where it was administered under the territory of Nigeria in two parts – Northern and Southern Cameroons.²⁰ The remainder of Kamerun territory fell under French control. In Southern Cameroons, the forest estate came under the control of the British Colonial Forest Department which had been in operation since 1899. After the political amalgamation of Nigeria in 1914, a single forestry service was created. Although centralised, the service was

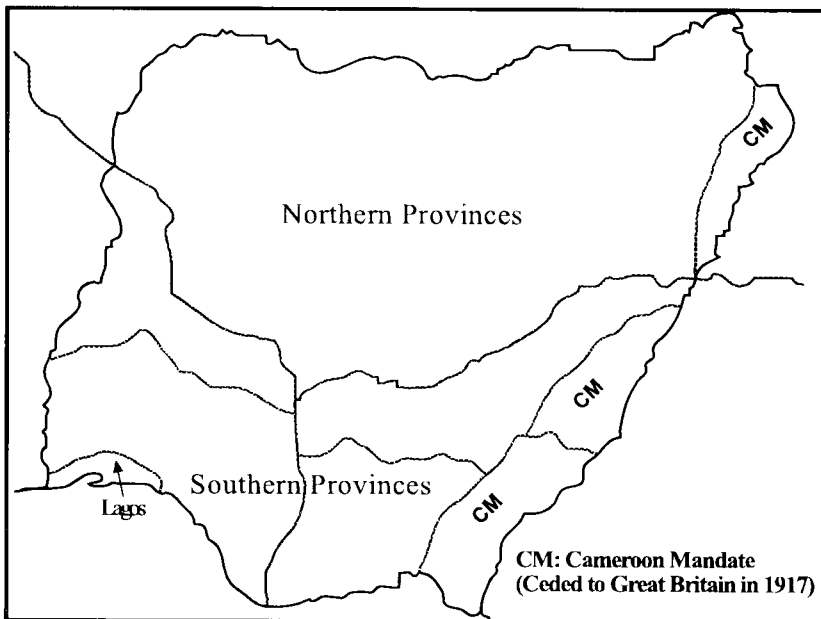


FIGURE 3. Nigeria under British administration, 1916–1938

divided into northern and southern departments for administrative purposes. The two departments had to deal with very different socio-political and environmental issues. The Southern administrative area, which stretched from Lagos through Southern Cameroons, managed most of Nigeria's rainforests and hence was responsible for the majority of the colony's commercial timber reserves. The Northern administrative region (which also administered the Northern Cameroons) consisted primarily of savanna woodland, in which forest management centred around very different issues than those in the tropical forest realm – issues associated with grazing, water and fuel wood problems.

British forestry philosophy perpetuated the German legacy in that it pursued a policy oriented towards achieving maximum sustainable yields. Similar to the German experience, the early decades of British resource development in the Cameroons were strongly oriented towards the expansion of plantation agriculture, with the timber industry playing a subsidiary role. It was only after the First World War that the scale and rate of forest conversion had reached the point of 'diminishing returns,' in exploitation began to threaten the possibility of long term forest regeneration. The regime recognised that increased exploitation had to be balanced with increased controls over forest access and use. The immediate reason for forest conservation was economic – to ensure a consistent and growing supply of timber to satisfy European industrial demand. Yet, there was also a scientific logic to conservation – to conserve the integrity of tropical ecosystems, especially soils and watersheds.

The Creation of the Reserve System in Nigeria and Southern Cameroons

While the reasoning behind forest conservation was scientific and economic in nature, the actual process of reserve creation was manifestly political. It involved many actors and yielded a number of policy positions, coalitions and consequences. Early opposition to state control over forest use and access came from African forest communities and British commercial interests alike. Both parties shared a belief that government controls would disrupt traditional resource use and interfere with the expansion of the cash crop and timber industries respectively. As a result, the first forestry ordinance of 1897, which sought to establish minimal restrictions on timber felling, was summarily rejected. A similar ordinance was passed in 1901 that required licenses for local peoples to extract timber, rubber and other forest products. But again, considerable protest by African elites, European firms and even the Aborigines Protection Society (A. P. S.) of London diluted the Forestry Bill so that any government forestry ordinance could be vetoed by local authorities (traditional African chiefs).²¹

Commercial and indigenous interests were not the only factors affecting forest policy. Scientific institutions played important roles in the struggle between the state, commerce and local communities. The Royal Botanical

Gardens at Kew were the preeminent forestry and agricultural research institution in the British Empire and were the equivalent to Germany's Central Botanical Bureau. With respect to government involvement in forestry, Kew was initially opposed to the idea of state mandated conservation, an issue that was first introduced in the forestry Bill of 1897. The institution feared that it would interrupt the timber trade and the expansion of plantation agriculture that were closely linked to Kew research activities.²² Yet, support for decentralised forest control, in which traditional African law and custom still held sway, began to dwindle after Forestry Department reports indicated that the primary cause of forest destruction in Southern Nigeria and the Cameroons was the expansion of traditional agriculture. By 1901 the Gardens had reversed their previous position and became firm advocates of centralised control over the colony's forest resources. They felt that this would ensure continuous timber supplies and prevent the rampant abuse of forest resources by local communities.

Scientific and economic arguments provided the factual basis for the creation of a reserve system. The spectre of forest loss created an urgency that invited greater government controls over forest use and access. Early ordinances also sought to restrict the trade of certain forest products for export, which invoked strong criticisms by commercial actors (trading, agricultural and timber firms). However, due to their influence and pressure, these firms managed to have the restrictions lifted in the Forestry Bill of 1916.²³ An implicit consensus in forest management had been achieved – the desire to conserve timber was consistent with the desire to sustain a constant flow of resources for trade and industry. This alignment of science and commerce with the state had a number of consequences. First, the state came to be viewed as the guarantor of, rather than a threat to, resource development. Second, the shift away from the state as a threat to resource development was now replaced by the African 'native' whose practice of shifting cultivation was singled out as the principle threat to long term forest conservation.

This perspective became the official view of the colonial government and formed the practical and moral logic that justified forest reserve creation after 1901. These sentiments are captured in the Governor of Nigeria Lord Lugard's view of the colony's forest estate at the turn of the century:

These forests are rapidly being destroyed by shifting cultivation ... Until education in forestry and agriculture has made much greater progress, it is manifestly the duty of Government, as trustee for posterity against the reckless destruction by the present generation, to safeguard what remains of these forests...²⁴

This passage represents the official view on forest destruction in which shifting cultivation is the chief cause of forest depletion, a practice that is perpetuated by the lack of rational alternatives (i.e. formal or scientific education in agriculture and forestry) for Africans. This view fits squarely with Lugard's political

philosophy of rule expressed in *The Dual Mandate*, which held that the goal of colonial governance was to promote 1) the moral and material development of Africans for self rule and 2) the development of colonial resources for external demand. Government controlled and directed forestry was a manifestation of these goals and provided the justification for strict legal measures, and even the use force, to protect the colony's forests.

Forest conservation became compulsory with the Forestry Bill of 1916. Amended forestry laws of 1927 and 1937 continued to expand the state's power to conserve the colony's forests. While the process was continuous, the early years of conservation remained difficult. The Nigeria-Cameroon territory was a land of farmers in which the average peasant resented forest laws as an excessive imposition by authorities. As a result, initial attempts to extend state power were often met by the mistrust of the local populace. In certain areas local resentment escalated into violence and even murder over newly constructed forest boundaries and rights. While the 1916 law empowered the administration to create forest reserves on communal lands and required permits to fell commercial timber species, the government remained reluctant to enforce these laws to their fullest extent given the potential conflicts with local communities.²⁵ It was not until the passage of the Forestry Ordinances of 1927 and 1937 that Native Authorities (N. A.s) were created to manage communal reserves directly and to control revenues from these lands.²⁶

This devolution of power seemed to shift resource control away from the state back to local peoples. In reality it was a way of reducing administrative costs and to facilitate a more efficient means of resource management. N. A.s were not locally elected nor were they part of the traditional village power structure. Rather, they were appointed by the colonial administration to execute its policies, which allowed the state to maintain its control over the forests and its inhabitants.

THE CASE OF SOUTHERN CAMEROONS

After the British assumed political control over Southern Cameroons, one of the first tasks of the colonial Forestry Department was to survey the forests. In 1917 A. H. Unwin undertook an expedition, which went from Buea to Kumba and north to the Ossidinge (Mamfe) district. He recorded the tremendous wealth of these forests, particularly in the lowlands surrounding Kumba and Mamfe, where 37 commercial tree species were identified.²⁷ It was quickly noted that the creation of reserves was imperative to preserve this wealth, not only of the timber rich lowland forests, but also those of the surrounding mountain areas 'from which arise important rivers'.²⁸ The mountain forests of the Rumpi Hills, Korup and Nta Ali regions were identified as three of the most critical forest reservation areas in British Cameroons.²⁹

Throughout Southern Cameroons, Unwin estimated that there were 14,000 square miles of forest of which 3,500 were accessible for commercial timber exploitation.³⁰ He also indicated that the extension of the Nigerian Laws to Cameroon would not pose any serious problems, and could in fact be conducted fairly expeditiously given local attitudes. He noted:

The Chiefs are only too willing to assist the government in any way and welcome anything in the nature of an increase in authority over the people, such as is promised by forestry laws. The payment of royalties to them for trees felled in the Native Reserves will be quite an inducement to most of them to help carrying (sic) out any rules sanctioned.³¹

This statement was an accurate reflection of the relatively tranquil relations that existed between forest communities and the state prior to the expansion of the reserve system. The real conflict, at this point, was within the Forestry Department itself, where the question over indirect and direct rule had become a serious point of contention. While indirect rule had become universal in British Cameroons in 1922, the state remained hesitant to relinquish direct control over the forest estate.

The Forestry Department in Southern Cameroons was in favour of an immediate implementation of indirect rule. It based these claims on the positive results witnessed in northern Nigeria, where local communities, with relative autonomy from the state, had been successful in timber and fuel wood management.³² This experience, in combination with the acquiescence of local rulers and the perceived difficulties of direct administration over a scattered and decentralised populace, led provincial forestry officials to push for indirect rule. However, the central headquarters in Ibadan viewed the situation differently. The Conservator of Forests posited that the N. A. approach was not a feasible option in Southern Cameroons and direct control was still necessary:

Forestry ... is a political science which affects people to a great extent, greater probably than in the case of any other science, not even forgetting agriculture, and largely for the reason of the primitiveness of the communities which are generally dealt with in connection with Forestry questions.

I confess I have doubts as to whether the N. A.s concerned possess the requisite scientific and administrative knowledge to supervise the work. Moreover such reserves acquire an importance which is national or even imperial and are therefore more likely to be better managed directly by officers who possibly take such aspects into consideration rather than through the medium of a group of chiefs of a somewhat primitive community.³³

His superior in Ibadan, H. N. Thomson, was sympathetic to the indirect approach, but ultimately sided with the Conservator in favour of maintaining direct control for political and technical reasons:

As a general rule the efficiency of the Native Forestry staff is directly proportional to the extent to which it is controlled by and supervised by the European Officers of the Department. Where this is complete the best possible arrangements prevail and good results may be confidently expected to follow. A wise N. A. will therefore be serving its interests best by transferring the control of its Native Forestry staff to the technical agency that is best fitted to undertake that duty.³⁴

The assertions of the central administration again provide insights into the administration's convictions about forest and society, namely that local peoples were incapable of managing their own resources, and that their 'backwardness' in technology and institutional development required the state apparatus to facilitate proper resource management. This view was especially prevalent with respect to the forest societies of Southern Cameroons, which were small, decentralised and lacking the socio-political complexity of the cultures found in the Bamenda Grassfields to the north and throughout much of Nigeria.

Direct rule held sway over the decentralised and diverse forest communities of Southern Cameroons and southern Nigeria for almost three decades. Yet, as the populations of these areas grew, and demands over forest resources increased, direct rule became increasingly difficult to enforce. Anti-government protest and resentment to direct rule grew throughout the Southern Cameroons in the 1930's. The observations of the Acting Secretary of the Southern Provinces illustrate some of these problems:

It appears that Forestry, the work of the Forestry department, is not fully appreciated by the native population and that there is much misunderstanding. Indiscriminate farm clearing has done, and is unfortunately still doing, irreparable damage to the exiguous amount of forest which remains. Control of the pernicious system of shifting cultivation has occupied the attention of the Forestry Department and has become most unpopular with the inhabitants, as well as on occasion with Administrative Officers. The situation calls for much tact, persuasion and education of the farming community in degrees, but probably the Forestry Officers in the past were themselves largely to blame for their unpopularity in that they were overzealous in the discharge of their duties.³⁵

... forestry starts off by saying 'you must not do this etc.', and this initial prohibition no doubt is largely responsible for so much antipathy towards forestry in general. But that is not Forestry. Forestry has been defined as by a leading economist as the preservation of the forest for its wise use.³⁶

Do the Chiefs and their people want more money and employment? Then it is their duty to assist government in managing their forests wisely so that such benefits may be obtained.³⁷

These insights suggest that local communities were still perceived to be problematic in the management of forest resources, but that the system of direct forest management only compounded this situation by introducing unnecessary con-

flicts between foresters and local inhabitants. Thus, the state was faced with a dilemma. It had to maintain ever stricter controls over forest resources to deal with growing resource demands, but it could not afford to place more stringent controls over forest communities without suffering resentment and reprisal. These factors prompted the colonial administration in Southern Nigeria and Southern Cameroons to adopt indirect rule in forest management in 1937. Effective forest management could thus be achieved through 'tact, persuasion and education' rather than through direct authoritative means.

From a structural perspective this shift in philosophy also reflected the changing role of the state in the overall process of reserve creation. Between 1914 and 1937 forest reserves in Nigeria and Southern Cameroons increased from 5,200 to 31,200 sq. km. Half were designated as N. A. reserves and the remainder were government reserves, which were managed directly by the Colonial Forestry Department.³⁸ This was a considerable undertaking by the state, one that required direct rule and the concomitant use of law and force. Yet, once the principle goal of reserve creation had been attained, the focus of the administration shifted to 'system maintenance' rather than expansion. This allowed the state to focus its administrative and technical energies on the management of the newly created government reserves, while 'allowing' forest communities greater freedom to tend to their traditional communal forests. Viewed in this light, indirect rule was a shrewd political calculation that could sustain both 'order and progress' in the forest zone with minimal investment.³⁹

With indirect rule the state changed its methods of forest management, but its overall system of rational resource controls was not compromised. Through the application of law, policy and technology, the power of the state continued to expand. It culminated in the completion of the forest reserve system in the early 1940s. Through this process, the decades long quest by the state to gain scientific knowledge of Cameroon's forests and political control over its people through rational (legal and spatial) means appeared to have been successful. It is only in hindsight that the naïveté of this conviction and its deleterious consequences became evident.

COLONIAL PERCEPTIONS AND THE MAKING OF MODERN FORESTRY

The Creation of Modern Forestry

The Cameroon case provides important insights into the development of scientific forestry. The basic goal of this system under both German and British rule was to develop forest resources for trade and industry and to organise African society towards these ends. As part of an overarching ideology of progress, modern forestry also penetrated the tropical world with new assumptions, beliefs and values concerning society and nature. In traditional African cosmologies,

human activities and organisation were seen as an extension of the natural world, rather than as something separate from it. However, scientific forestry, founded upon a utilitarian worldview, carved the holistic nature world of traditional African culture into its various instrumental sub-components, allowing the forest and its inhabitants to be defined in purely material terms. This was achieved through the imposition of institutions and policies that rested upon a powerful critique and counter to the traditional forest culture and its subsistence mode of production.

The basis of this culture – shifting cultivation – had always been viewed with deep suspicion by Europeans. Unlike temperate agriculture, in which cleared land could be successfully farmed for generations, even millennia, the tropical experience was radically different. It was a system in constant flux, based on the perpetual cycle of burning and clearing of forests, and one that yielded low and erratic returns in comparison to the European case. Moreover, from a social perspective, shifting cultivation possessed no rigid system of controls, such as those imposed by state and market in the West. Hence it was believed that these systems were prone to expand until they reached the natural limits imposed by population and/or the ecosystem, at which time they became exhausted.

The expansionary impulse of shifting cultivation and its unforeseeable and unplanned consequences stood in stark contrast to the rational organisation of society and nature in Europe. If left unchecked, this African pattern of erratic agricultural expansion posed a serious threat to colonial prosperity and social stability. These fears supported the underlying perceptions that Europeans already had about traditional societies in general – that they were irrational and destructive and had to be checked by the imposition of formal controls. These ideas formed the core assumptions of colonial forest policies under both German and British rule. They justified the institution of a rigid system of rules and methods to conserve the colony's dwindling forests while providing more efficient resource access to fulfil global demands.

Since this series of core beliefs and clichés rested upon a progressive ideology and a modern-primitive dichotomy that necessarily placed Western scientific achievements above traditional ways, any insights and contributions of traditional societies with respect to forestry were summarily rejected. This is ironic since the technological simplicity of the traditional forest culture created fewer disturbances to the ecosystem and relied on a broader range of resources than the colonial economy, which focused on a few basic commodities and drastically simplified the forest ecosystem. Yet, despite the seemingly sensible resource use patterns among traditional peoples, the colonial narrative was overpowering. Not only could it display its superiority through technical and economic prowess, but moreover it provided a constant stream of empirical evidence which confirmed the destructive consequences of shifting cultivation.

Beginning with Lord Lugard's warnings in 1901, documentation on deforestation in Nigeria and Southern Cameroons was abundant. This evidence led to a general theory of deforestation which implicated shifting cultivation as the

major cause of deforestation. Given the scientific plausibility of this causal connection, this thesis remained dominant throughout the colonial era and has continued as the dominant narrative in contemporary tropical forest conservation. It remains compelling because the evidence that supports these claims is difficult to dispute – the leading cause of tropical deforestation in West Africa and much of the tropical world has been shifting cultivation and not timber extraction and plantation agriculture. If one examines the case of Nigeria in particular, the rate and extent of rainforest destruction outstrips even the most sombre colonial predictions. Within the last decade, it has maintained the third highest rate of deforestation in the world – over four per cent per year – and in the process destroyed virtually all of its remaining tropical forests.⁴⁰ In southwestern Cameroon, the majority of lowland forests have also been greatly affected by the expansion of subsistence agriculture. Only the mountainous forests along the Nigeria border and the coastal mangroves have been spared this fate due to their difficult terrain.

This evidence lends considerable support to the dominant colonial construction of society and ecology, in which traditional peoples were viewed as irrational and incapable, a fact that justified the imposition of scientific forest management. Yet, upon closer inspection the rational perspective also contains a number of contradictions that undermines this logic. From the conceptual standpoint, the deforestation thesis was problematic because its conclusions were often derived from worst case scenarios in which population pressures had already reached ecological limits.⁴¹ The reality throughout the forest zone, especially in Southern Cameroons, was that subsistence agriculture produced (and continues to produce) a wide range of environmental and social effects, not all of which lead to total forest destruction. But the extreme cases were convincing and abundant enough to support a general condemnation of shifting cultivation, which necessitated an equally rigid response – the implementation of universal forest controls.

From a practical perspective, the imposition of a universal forestry system had a number of unintended costs and consequences. In the first instance, because colonial efforts were directed at creating a comprehensive system of resource extraction and exchange, little interest and effort was oriented toward developing alternatives to subsistence agriculture that could alleviate pressures on forests. Paradoxically, these policy choices allowed for the perpetuation of shifting cultivation, that ultimately called for the creation of an exclusive forest reserve system and other coercive measures to bring it back under control. Second, the tremendous expropriation of lands for forest reserves, plantations and infrastructure forced forest inhabitants to new and marginal lands, and often in greater demographic concentrations. This process further increased the pressures on land and forest. Thus, the great irony of colonial forest policy is that in its attempts to repress traditional agriculture, it only displaced it, thereby perpetuating the demographic trends and socio-economic conditions that continue to threaten tropical forests today.

The Modern Legacy

The logic and structure of forestry in Cameroon has changed little since independence. It remains a dual system in which the majority of closed canopy forests (a minimum of 30 per cent of national territory) is controlled by the state as 'Permanent' forests and the remainder are classified as 'Non-Permanent' forests.⁴² The latter is a broad category that includes private lands and commercial areas such as plantations, but refers largely to fragmented forests that are scattered throughout areas of agricultural and urban activity. Permanent forests are more 'valuable' because they yield monetary income from timber, research or tourist activities. Non-permanent forests are deemed less valuable, as they possess subsistence value for rural societies that cannot readily be appropriated by the state or market. Permanent forests correspond almost exactly to the old colonial State and Native Authority forests, and they remain the focus of conservation and development efforts at the expense of other areas. The neglect of forestry in Non-Permanent forests, especially policies that address the critical issues of deforestation, tenure reform and alternative development strategies in areas of intense agricultural activity, has led to a slow ecological deterioration in these regions. As these fragmented forests continue to decline, the demand on Permanent forests is increasing. In Southwest province this scenario is readily observable as there are eleven forest reserves and a number of protected areas that now exist as a collection of 'islands' surrounded by a sea of demographic and economic expansion.

The pressures on remaining forests are compounded by institutional failures. The Cameroon state is a classic 'soft state' that is characterised by corruption and inefficiency. As a result, forestry departments are underfunded and poorly trained. There is little incentive to manage these resources in accordance with state laws and regulations and even less incentive to implement alternative forestry programs. This situation is compounded by economic problems. To overcome economic stagnation and foreign indebtedness, natural resource extraction is increasing dramatically – Cameroon is now the second largest timber exporter in Africa. Conservation is faring better in Protected Areas due to the influx of international organisations. These organisations are accountable and actively seek to implement forestry programmes that focus on community participation and sustainable development. However, they still rely heavily upon transfers of capital and technology and the expertise of Western trained 'specialists' as the principal agents of change. Moreover, the impact of these programmes is limited because they are centred in the Permanent forest estate, where they are isolated from the areas of greatest demographic and economic pressure. Most of the internationally funded projects in Southwest Province operate in remote or less accessible areas around Mount Cameroon or along the Nigerian border.⁴³

The incapacity of the formal sector in Cameroon points to the most critical flaw in the scientific resource management rationale – it assumes the viability of

formal actors and institutions and a civil society that respects their roles and functions. In contemporary Cameroon these factors are lacking entirely. The interrelationship between institutional incapacity, ecological deterioration and rural underdevelopment is providing increasing evidence that the century long reliance on rational methods and ideas has not produced the desired results, and in many cases has created even greater problems. Thus the ultimate legacy of scientific forestry is that it has proven to be largely incompatible with the political, cultural and ecological realities of Cameroon, and indeed many developing societies. This realisation stands at the centre of the movement towards alternative forest development and management approaches.

CONCLUSION

The exploration of alternative resource management models has drawn much of its evidence from traditional (indigenous) knowledge and methodology. These investigations into traditional ideas and practices have demonstrated that indigenous methods may effectively supplant or complement conventional conservation practices in a number of ways. For example, traditional knowledge systems value numerous forest plants and animals which can be harvested with less destructive consequences than timber extraction, which is the only economic product and process that modern forestry values. Similarly, decentralised resource management, based on traditional community resource controls, may provide a viable option and/or complement to centralised state management – especially in cases like Cameroon and other developing nations where state incapacity and corruption are pervasive problems. This bureaucratic de-evolution may serve to reduce the cost of management and increase local stakes in conservation, thereby creating more efficient and sustainable resource management systems.

Despite the appeal of alternatives to scientific forestry, their implementation embodies significant transfers of power away from the state to society. This question of changing power relations may prove to be the greatest obstacle to the implementation of alternative resource management policies. This is a political problem that becomes even more complex as it involves international actors who often act as the catalysts for these social and ecological changes. Caution is also in order with respect to the conceptualisation of alternative management approaches, as there is a risk of constructing resource management paradigms based solely upon indigenous knowledge and local participation, at the expense of incorporating scientific ideas where they may be relevant.⁴⁴ Radical revisionism of this type simply reverses the old modern-primitive dichotomy by reinventing the ‘noble savage’ and placing traditional knowledge above any scientific contributions to resource management. The experiences of colonial rule should alert contemporary environmental scholars and practitioners to the fallacies of employing extreme dichotomies and exclusive epistemologies. A

critical evaluation of formal resource management is not meant to heap scorn upon the Western scientific tradition, but rather to reveal the shortcomings of these approaches when applied to diverse ecological and cultural settings. Historical experiences should provide a guide to constantly re-examine the problems of resource management, in which a range of theoretical and epistemological options, including Western and non-Western approaches, can be drawn upon to address the rapidly changing social and ecological conditions in the tropical world.

NOTES

The maps accompanying this article were drawn by Xiaomin Li, a doctoral student in the Geography Department, University of South Carolina.

¹ For a detailed examination of German colonial resource policy in Cameroon see B. Rietsch, *Nutzung und Schutz Natürlicher Ressourcen in Kamerun* (Hamburg: Institut für Afrika-Kunde, 1992).

² Weber's main works on this topic include *Economy and Society*, ed. G. Roeth and C. Wittich (New York: Bedminster, 1968) and *The Protestant Work Ethic and the Spirit of Capitalism*, trans. T. Parsons (New York: Scribners, 1958).

³ In a social context, scientific rationalism may also be termed 'formal' rationalism because social complexification is based on the universal application of formal standards and routines – a logic that adheres closely to the scientific method. For an explication of formal rationality and other types of rationality see in S. Kalberg, 'Max Weber's Types of Rationality: Cornerstones for the Analysis of Rationalization Processes in History', *The American Journal of Sociology* Vol. 85, no. 5 (1980), pp. 1145-1179.

⁴ In Europe, the scientific management of forests was part of the state's desire to extend the principles of fiscal planning and economic development. For an exploration of the development of scientific forestry see C. Maser, *The Redesigned Forest* (San Pedro, CA: R. and E. Miles, 1988).

⁵ M. DeLancey and H. M. Mokeba, *Historical Dictionary of Cameroon*. 2nd. ed. (Metuchen, NJ: Scarecrow Press, 1990), p. 187.

⁶ A. B. Mountjoy and D. Hilling, *Africa: Geography and Development* (Totowa, NJ: Barnes and Noble Books, 1988), p. 269.

⁷ The biodiversity of Southwest Province and that of other tropical forest regions places Cameroon fifth among African nations in terms of the overall number of plant and animal species. Cameroon has 9,000 known plant species, 297 mammal species (including 29 primates) and 848 bird species. P. Alpert, 'Conservation of Biodiversity and Tropical Forests in Cameroon, ' A Contribution to the USAID/Cameroon Natural Resources Management Assessment (August, 1991), p. 6.

⁸ S. Gartlan. 'Cameroon', in *The Conservation Atlas of Tropical Forests in Africa*, eds. J. Sayer, C. Harcourt and N. Collins (New York: Simon and Schuster, 1992), p. 116.

⁹ The actual number of ethnic groups is difficult to ascertain, as ethnographers continue to debate over what constitutes a distinct ethnic group. Yet a rough estimate would place the number at two to three dozen in what today comprises Southwest province. The largest groups in the are the Bakweri, Basosi, Banyang and Obang peoples.

¹⁰Historian Basil Davidson thought these small societies epitomised what he termed the 'African genius for self rule'. This form of egalitarian political organisation could be found throughout southwestern Cameroon and in Iboland of eastern Nigeria. B. Davidson, *Africa in History: Themes and Outlines* (New York: MacMillan, 1974), pp. 156-159.

¹¹It is important to note that these 'traditional' economies were dynamic and adaptive. However change tended to be incremental and based on experience, rather than through the dissemination of standardised knowledge through institutions and 'experts', as is the case with modern agriculture and forestry.

¹²L. Gann and P. Duignan, *The Rulers of German Africa: 1884-1914* (Stanford, CA: Stanford University Press, 1977), p. 166.

¹³R. Austin and D. Hedrick, 'Equatorial Africa under Colonial Rule', in *History of Central Africa, Volume Two*, eds. D. Birmingham and P.M. Martin (New York: Longman Publishers, 1983), p. 30.

¹⁴N. Rubin, *Cameroon: An African Federation*, (London: Pall Mall Press, 1971), p. 36. For an historical and ethnographic study of the Bakweri see E. Ardener, *Kingdom on Mount Cameroon: Studies in the History of the Cameroon Coast, 1500-1970*. (Oxford: Berghahn Books, 1996).

¹⁵H. S. Rudin, *Germans in the Cameroons, 1884-1914: A Case Study in Modern Imperialism* (New Haven, CT: Yale U. Press, 1938), p. 276.

¹⁶Steer, G. L., *Judgment on German Africa*. (London: Hodder and Stoughton LTD, 1939), p. 163.

¹⁷Stoecker, H., *German Imperialism in Africa* (Atlantic Highlands NJ: Humanities Press International, 1986), p. 76.

¹⁸Great Britain Foreign Office, Historical Section, *Cameroon*, (London: H. M. Stationary Office, 1920), p. 60.

¹⁹Rudin, pp. 174-175.

²⁰Northern Cameroons should not be confused with present day Northwest Province, which was part of Southern Cameroons during British rule. Northern Cameroons voted to join Nigeria after independence in 1961.

²¹E. Egboh, *Forest Policy in Nigeria: 1897-1960* (Nsukka, Nigeria: University of Nigeria Press, 1984), pp. 40-41.

²²Ibid., p. 34.

²³By 1937, restrictions on trade had been lifted almost entirely, a dramatic reversal from the original Forestry Bill of 1901.

²⁴Lord F. Lugard, *The Dual Mandate in British Tropical Africa* (London: Frank Cass Publishers, 1965), p. 315.

²⁵In areas of dense population and resource competition, such as Abeokuta and Ibadan, District Commissioners described several cases of violent protests as the result of changes in forest policy. C. W. Newbury, *British Policy Towards Tropical Africa: Select Documents 1875-1914* (Oxford: Clarendon Press, 1971).

²⁶Egboh, p. 52.

²⁷Native Authorities were based on the principle of indirect rule that was designed to educate indigenes to manage their affairs and to modify their 'own institutions to conform to civilised standards'. V. Ngoh, *Constitutional Developments in Southern Cameroons: From Trusteeship to Independence* (Yaounde, Cameroon: Pioneer Press, 1990), p. 14. In cultural and social affairs, the N.A.s still maintained local power, but with respect to resource management, they were not granted any authority until the passage of these later forestry bills.

²⁸ A. H. Unwin, 'Preliminary Report on the Forests of the Cameroons', Commissioner of Lands, Forests and Plantations Office. Buea, Cameroon, 1916, p. 3.

²⁹ These mountains, which lie on the Cameroon-Nigeria border, are the source of numerous rivers and streams that feed the Rio del Rey and Cross River estuaries.

³⁰ I. D. Macpherson, Assistant Conservator of Forests. 'Report on the Western Part of the Forest Country, Cameroon Province', Buea, Cameroon, 1917, p. 13.

³¹ Unwin, p. 3. Note - the forests described by Unwin were rainforests that existed almost exclusively in the Victoria, Mamfe and Kumba administrative districts of Southern Cameroons (today Southwest Province). In contrast, the montane forests of the northern portion of the territory (today Northwest Province), had been largely deforested before the colonial era due to intensive human settlement and agricultural expansion.

³² *Ibid.*, p. 8.

³³ E. J. Arnett. The Resident, Cameroons Province, Buea, 'Forestry in the Cameroons.' Memo to the Senior Conservator of Forests. Enugu, No. 1435/1925, Feb. 1, 1928.

³⁴ J. R. Ainslie. Senior Conservator of Forests, Eastern Province. 'Forestry in the Cameroons', Memo to the Honorable, the Senior Resident, Cameroons Province. Buea, No. 167/32. Feb. 14, 1928, pp. 1-2.

³⁵ H. N. Thomson. Senior Conservator of Forests, 'Forestry in the Cameroons', Memo to the Senior Conservator of Forests, Eastern Provinces. Enugu. No. 293/169. Feb. 15, 1928.

³⁶ H. P. Wetherell. Acting Secretary Southern Provinces, 'Forest Reserves.' Memo to District Officer. Victoria, No. E. P. 25/2A/4/120. May 13, 1938, p. 1.

³⁷ *Ibid.*, p. 3.

³⁸ *Ibid.*, p. 5.

³⁹ Egboh., p. 73.

⁴⁰ It must be noted that men like E. J. Arnett based their preference for indirect forest management on their experiences in Northern Nigeria. This region not only had different forest problems, but more importantly had extensive hierarchical (vertical) political societies through which the British could easily implement and integrate their policies.

⁴¹ H. Gregersen, S. Draper and D. Elz, *People and Trees: The Role of Social Forestry in Sustainable Development* (Washington D.C.: World Bank, 1989), p. 12.

⁴² Evidence from heavily populated areas such Ibadan, Abeokuta, Owerri and Onitsha was frequently used to make these claims.

⁴³ Permanent and Non-Permanent forest represent a number of tenure arrangements. While private and community owned forests do exist, the state still owns much of the forest outright as Forest Reserves or retains rights to timber and other resources that exist under other tenure arrangements. The process to wrest individual or community resource rights from the state is a tedious bureaucratic procedure, especially for much of the population which is semi-literate and has little access to legal services.

⁴⁴ The two main conservation Projects in Southwest Province are the Mount Cameroon Project, which is funded largely by the German government and the Korup Project, which is a joint effort by the Worldwide Fund for Nature (WWF-UK), the European Community and the German government.

⁴⁵ A pertinent example is the introduction of scientific innovations such as high yielding food crops and intensive cropping methods in areas of high population density. These introductions may serve to reduce pressures on forests while simultaneously increasing agricultural output.