ADVANTAGES OF FOREST PROTECTION

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INTRODUCTION

In this modern changing world where many and variable pressures are exerted on forest areas some flexibility of approach may be desirable and is probably inevitable.

The philosophy underlying management for prosperity is conditioned often by considerations of certainty of market and scarcity in relation to existing or anticipated shortages of some resource of forest land; Timber, Natural Areas, Water, Wildlife, Pleasant Wooded Landscapes, Recreational Space, etc.

Consequently, the objects of management are expressed usually in terms of maintaining or improving in perpetuity some forest resource for the benefit of man. (Firewood, Pitprops, Logs for construction work, pulpwood for paper, and other industrial uses).

Often in the past, timber production has been the sole benefit specified, but increasingly other requirements are having to be considered and with growing demands for land there will soon be few forests left that can be managed, for a single product.
Although the capacity of a forest to provide timber or any other product can often be increased by skillful management, there is at all times a biological limit to the amount a forest is capable of producing. This also affects the status of wildlife populations. (Abere 1998)

The exploitation of natural forest sometimes had unfortunate consequences since with the destruction of the forest cover the soil eroded and flooding occurred downstream. Such events led to increasing awareness of the need for forest conservation. Nevertheless, it should be recognized that timber gained from natural reserves of forest contributed much to human progress, providing vast amounts of raw materials for housing and industry. However deforestation by industrial and domestic activities, a major concern of environmentalist and conservationist (Abere and Ekeke 2011)

**CONSERVATION**

Since the forest is the natural vegetation cover over much of the land surface of the world, and has been greatly modified by man, it is not surprising that conservationists are very concerned with the forest.

The importance of a forest is not confined to its boundaries because it contributes to the general conservation value of a diversified landscape through acting as a reservoir of wildlife and modifying environmental factors in neighbouring areas.

Forest protection may be needed to attain specified conservation aims such as maximum numbers of a rare animal, the protection of a particular group
of living things, or the preservation of some scientifically valuable forest resource.

Where the forest cover has been greatly modified and damaged by past use, intensive rehabilitation involving soil amelioration pest control and tree planting may be required.

**FOREST PROTECTION IN RELATION TO FOREST RESOURCE**

The interaction between living things within a forest ecosystem is complex and dynamic and the activities of one group may greatly affect others.

i. **TIMBER**

Since timber is normally regarded as the main product of forest, attention has centered inevitably on the trees and those living organisms which have an obvious and direct bearing on tree growth.

Trees are the principal forest plants capable of photosynthesis, and are the basic source of food for a bulk of forest organisms. They provide living quarters for many animals and plants.

Consequently, the nature of the associated plants and animals is greatly influenced by the trees, for example the heights, depths and densities of the tree crowns are very important in relation to the well-being of the associated organisms. When the tree crowns are well developed and close together few understorey plants are able to survive and the animals tend to be concentrated in the tree crowns and in the litter layers.
Where forest is being managed for timber production the usual aim is to obtain the greatest economic return by harvesting the maximum amount of timber of specified dimensions that can be taken on a sustained basis without reducing the productive capacity of the forest.

The practical advantages of regular sustained yield are obvious, to an individual owner or worker it means steady supplies of timber, money or work, and on a national scale it permits efficient working of local industrial or a regular export trade since orderly supplies of wood are assured.

If sustained yield is required there must be some limitations of the annual or periodic harvest of wood to prevent over-cutting. Regulation of yield may be achieved by restricting cutting to prescribed areas of woodland, a simple example is a 500 – acre forest worked on a hundred-year rotation and divided into five-acre blocks. Only one block is harvested each year and is then left to regenerate for hundred years before harvesting again so that all blocks are cropped once every century.

ii. BENEFITS FROM FOREST PLANTS OTHER THAN TREES
Although some plants are regarded by foresters as harmful to trees, and a threat to the survival of the forest community, the majority of forest seems harmless and in certain cases may be beneficial.

Plants with root nodules such as members of the Leguminous increases the nitrogen capital of a forest since the bacteria which causes nodulation have the power of fix atmospheric nitrogen. Thorny shrubs may protect seedling
and sapling trees from browsing animals and so facilitate natural regeneration. The storey plants are valuable for wildlife, providing both food and cover. Well developed shrub field and ground layers supplement the trees in soil erosion control, reducing the likelihood of flash runoff and flooding.

iii. MAMMALS
Many mammals such as monkeys and tree sloth’s are adapted to an arboreal existence spending much of their life in the tree canopy, the main forest photosynthetic zone.

However, man has changed profoundly the abundance and kinds of mammals present in forest either by direct killing or indirectly by the destruction of the original forest habitat and the breaking up of the forest cover into paths too small to provide a refuge for large animals. Where there has been long and intensive human settlement, some of the larger mammals have been exterminated.

Man frequently replaced the larger wild animals of the forest with domestic stock – cattle, ponies, pigs, sheep and goats. The introduction of domestic stock has endangered the forest since tree seedlings tend to be destroyed, forest diversity is reduced by selective grazing and trampling may cause soil compaction. A marked increase in the number of small mammals and a decrease in the soil microfluna has been observed with the onset of grazing in forest. Milligan (1979) The replacement of the cover of the indigenous hardwoods by softwood plantations may also tend to reduce the variety and number of certain forest mammals.
iv. BIRDS
The main foods eaten by forest birds are seeds and invertebrates, and the nature of both is conditioned to some extent by the plant cover, it follows that the age and species of trees in a forest partly determines the type and abundance of the avifauna. Certain habitat factors within the forest are also very significant in meeting the biological requirement of bird species, notably the presence of understorey plants and shelter, availability of resting sites and perches, food supply, the number of dead trees and the abundance of slash and dead wood.

BENEFITS DERIVED FROM FOREST AVIFAUNA

- Birds assist the dispersal of tree seed
- Many species of forest birds are insectivores and some of the insect they eat are harmful to forest plant.
- Forest birds of prey may limit rodent damage. The prey taken by these birds depends upon the vegetation cover.
- Birds constitute an attractive and valuable feature of the forest.

Unfortunately forest birds of some species have been reduced in numbers in the interests of sports and land management.

There is considerable opportunity for foresters to make the forest more favourable for birds. The number and variety of birds can be increased by creating glades, by preserving rest trees and trees whose fruits are food for birds and by developing a border of shrubs along the forest edge and rides.
Because of the high value placed on game birds for shooting, the population of forest game birds can be maintained at an artificially high level by destroying predators and introducing specially reared birds which are shot later. Industrial management of forest for the production of game birds can be very profitable and the returns from the renting of shooting rights may exceed those from timber production.

v. WATER
Traditionally, wooded uplands are regarded as water collecting grounds from which man satisfies his needs for adequate supplies of clean water. Consequently it is not surprising that often as a matter of course, treeless water catchments are planted with trees and where forest is present on catchments every effort is made to maintain and protect it against destructive forces such as fire.

A tree cover on water catchments is thought to bestow several advantages. The large biomass of plant material present in the varied strata of woodlands acts as a kind of reservoir intercepting and forest holding back precipitation so that after heavy rain the flow of water from forest lands compared with treeless areas tends to be delayed and more regular with peak flows. As a result the dangers of sudden flash floods and of land being flooded downstream are diminished. Surface run off of water is usually less from wooded than treeless areas since the precipitation percolates readily through the litter and soil which act as filters so that the water discharged from the forest areas emerges as relatively high-quality water free from sediments. Pollution of water by fertilizers or insecticides and by animal excreta is likely where land is under forest.
RECREATION AND AMENITY

With a multiplying world population and the automation of industry making more leisure time available, the demand for recreation space increases every year.

Increasing population not only creates a greater demand for land for recreational purposes but reduces the potential areas available for this by urban sprawl and the need to produce more food.

Inevitably the public must turn more to forest land for recreation, the relaxation provided by the forest environment counting the tension of urban life.

The reasons for the recreational use of the forest are varied and cover a great range of activities – desire to get away from crowds, hiking, fishing, hunting, nature study etc.

In all cases the forester can cater for these by careful management. For people who simply wish for a pleasant drive through the forest, adequate roads and picnic places plus parking facilities at vantage points are all that are required. By careful siting of roads and making openings in the forest at suitable places so that a series of agreeable vistas are presented to travelers, the forester can add much to the attractiveness of the drive.
The concentration of people in camp sites present a wonderful educational land propaganda opportunity to foresters. It is interesting that great emphasis is often placed by the public on having some forest as natural as possible and the preservation of old individual or groups of trees of historic interest is greatly appreciated.

Multiple benefits may occur by planting food trees and increasing forage by opening up of canopy alongside pathways, game can be made more plentiful for hunters and a wonderful stroll can be more rewarding to nature lovers.

Forest are usually an important feature of beautiful landscapes. Great care is needed to ensure that forest management does not impair the aesthetic value of forest in areas of great scenic beauty, particularly in National Parks. Forestry measures such as road making, bridge building, the division of a forest into compartments and large-scale introduction of exotic trees can mar the charm of the traditional landscape if improperly done.

**MANAGEMENT FOR PROTECTION**

Forest afford many different kinds of protection some of which extend beyond their boundaries. Typical of these protective influences are the modification of climate.

1. **CLIMATE**

   The climate within a forest is modified by the vegetation in various ways since each plant layer acts like a screen shielding the layers beneath it. The overall effect is to moderate climate extremes progressively downwards.
from the tree apices to the soil. The interior of tropical forest is probably one of the most equable climate situations for terrestrial plants and animals.

A dense forest canopy constitutes a more effective barrier than an open shallow canopy and the nature of the upper canopy surface is also important in relation to climatic influences.

ii. SOLAR RADIATION
Forest reduce the amount of solar energy reaching the ground since the upper canopy reflects some incident radiation. The radiant energy is absorbed by the different plant layers within the forest community and there is an intricate interchange of radiation between the different parts of the forest ecosystem.

Solar radiation between wave length frequencies 0.4 and 0.8 thousands of a millimeter is visible to man and it is common experience that this visible light is diminish since reflection and transmission of light by leaves varies for light at different wavelength the quantity as well as the quality of light is affected by the forest vegetation, which changes by cutting off a greater percentage of blue (short wave) than red light.

iii. TEMPERATURE
Tree seedlings are killed when subjected to high or low temperature. Forest cover reduces temperature fluctuations and extremes, but this effect diminishes when the canopy is opened up by tree cutting.
The reduction of maximum temperatures in mineral soil has been shown to be due to both shading by the living vegetation and insulation by the surface organic layer, but of the two, shading is the more important.

d. **WIND**

Forest present a physical barrier to air movement so that winds are gentler in forest areas than in neighbouring open areas, the greatest reduction in wind velocity taking place when winds are strong. Dense forests with a complex, multi-storied structure are most effective in lowering wind speed. When wind meets woodland, some air is deflected upwards and flows over the tree tops with little change in velocity.

v. In mountainous areas protective forests are important in minimizing the adverse effect of torrents, land sliders and avalanches.

**CONCLUSION**

With more comprehensive use of the forest, foresters increasingly need to be land managers rather than timber grower. The preservation of truly natural forest does not permit timber harvesting, maximum water yield, and a pleasant forest walk may be highly dangerous in the hunting season.

The problem of resolving the different demands placed on forest is challenging and is so immense that computers will be needed increasingly to compare all the possible different combination of use.
Management must be kept adaptable, and there is a great need for research on the development of techniques to determine the physical and biological limits to the capacity of forest for resources use. Howells (1968)

REFERENCES
Milligan, K. 1979: Counting Animals from the Air. Field Note 3
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