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JOSEPH Thomson, in 1883, was the first 'visitor' to Amboseli, which he referred to as the Njiri. His passage was apparently eased by the absence of Masai *morani* (warriors), away on a raid towards the coast. Until this time they had effectively deterred intruders by their hostile attitude. Thomson left us a reasonable account of the Njiri, which apparently impressed him both scenically and because of the large numbers and variety of game animals.

Amboseli lay south of the main trading routes to the hinterland, and few later travellers had cause to pass through. Even the early hunters did not apparently frequent the area, for by the time they

were searching for new trophy grounds, Amboseli was well within the protection of the Southern Reserve, established in 1899. From then on, Amboseli was to enjoy a long and unique protection from the impact of a changing human ecology, spreading rapidly through the rest of East Africa. It was the Masai and the unusual land rights extended to them by the colonial government which, apart from a brief period in the First World War, buffered the wildlife from the hunting and land-hunger which was consuming game populations elsewhere. In consequence, Amboseli was little different in the early 1940's to what it had been before the colonial administration.

The Ilkisongo Masai, as this group is known, had pushed south into the Kilimanjaro region in about 1600 and had displaced another pastoralist group known to have been there previously. To judge from the rich fauna throughout Masailand, it is evident that some balance of numbers had been struck with the livestock populations. Their complete indifference to wildlife, except eland which they occasionally domesticated, left the game equally indifferent to humans. Thomson was struck by the herds of game standing some 40 to 50 yards away as he watched them.

In the 1940's two aspects of modern Africa reached Amboseli that were to



throw it into a long turmoil and inevitable change. These were the introduction of preventive medicine and the establishment of the Amboseli National Reserve.

Compulsory rhinderpest inoculations for livestock, and later, medicines for both the Masai and their livestock, lowered juvenile mortality appreciably. By 1960 the livestock populations had almost tripled. Undoubtedly these numbers rose at the expense of some wildlife populations. A severe drought in 1960 demonstrated an ultimate control on the livestock numbers—some 70 per cent of the stock died. The wildlife survived better and once again a new balance has probably been struck, with lowered game

numbers. At the same time the human population had also risen and has certainly maintained a 3 per cent rise per annum during the last decade. Typically, their numbers would have declined with the cattle crash in 1960, but famine relief and sale of stock prevented this.

Amboseli National Reserve was established in 1948 to give added protection to the wildlife populations. A small number of tourists were now reaching the area, about 1000 during 1949. The National Reserve could not exclude the Masai, in view of the existing land rights, but the conservationists set up an administrative and tourist base. The Masai viewed this as a first step to land annexation, with

which they were already familiar. They did not receive any revenue from tourist entrance fees.

Amboseli possessed a unique combination of attractions for tourists, unrivalled anywhere. Most impressive was the abundance and variety of game animals and birdlife in such a small area. A morning's game drive was adequate to cover almost all of what the tourist demanded. The game was unusually tame through long contact with the Masai. The habitat was extremely varied: plains, swamps, lake, dry bush country, and a particularly attractive fever tree woodland, in places a forest. Mount Kilimanjaro provided an incomparable backdrop.

To many visitors, the Masai themselves were an added touch.

The annual tourist figure grew steadily to 6,655 in 1955; 11,588 by 1960; and rapidly shot up to some 70,000 in 1969.

The simultaneous growth of both the number of tourists to Amboseli and the indigenous populations was in itself almost certain to result in an increasing struggle for the area. It seemed that the Reserve could not cater to both interests without an unprecedented tolerance, and considering the lack of incentives for either party, this was unlikely.

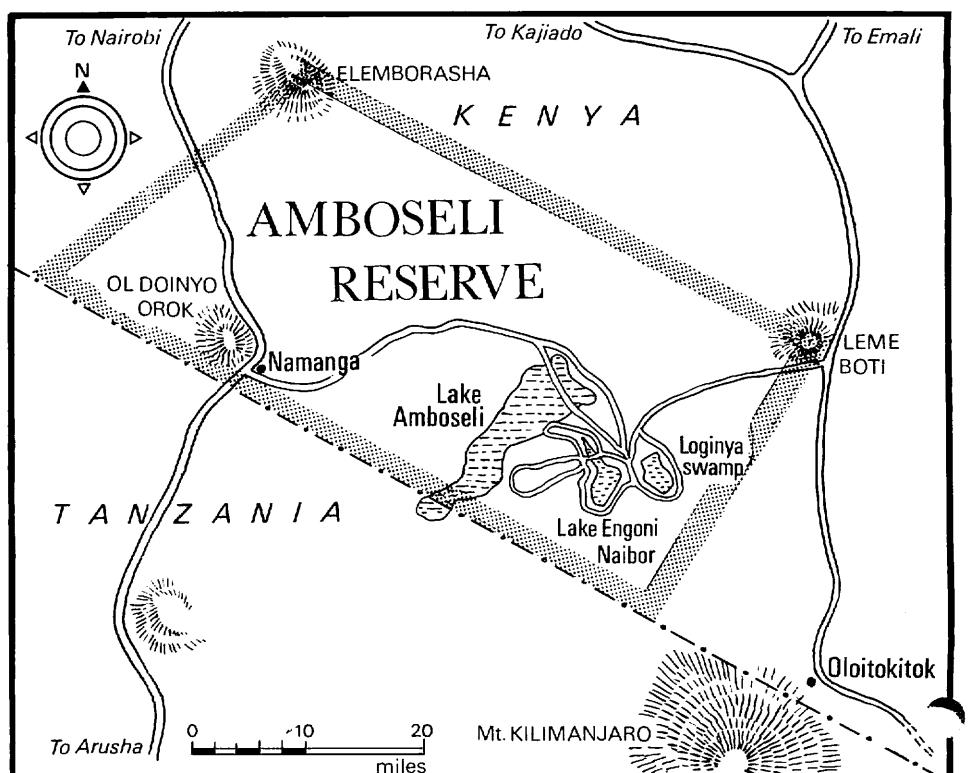
A further factor, however, added to the problem, making a dual-purpose Reserve wholly unacceptable to the conservationists. Starting in the late 1950's and increasing through the 1960's, the habitat declined. The growing international interests in Amboseli rapidly became concerned. It was generally felt that the area was turning into a dust-bowl under the influence of livestock. Others held the elephants responsible for the destruction of woodlands, much as in Tsavo National Park.

A number of abortive attempts were made to solve the problem. In 1961 the administration of the Reserve passed from National Parks to the Masai Kajiado County Council. A rapid die-off of the yellow-fever woodlands was taken as indicative of the lack of control they exercised. In fact, this was a badly misconceived argument, for not only was the period one of low cattle numbers, following the 1960-61 drought, but the local Masai in all good faith set aside an area of 80 square kilometres as a game sanctuary, free of livestock. This fact has never received much publicity, and speaks a great deal for the Masai's compliance in conservation.

What is most surprising in view of the continual concern for Amboseli, is that there was absolutely no ecological information available.

I started an ecological survey of Amboseli at the end of 1967 in order to provide the basic information for understanding the ecosystem. Daniel Sindiyo had shortly before taken over as Warden: as a Masai with both qualifications and experience in wildlife management, he combined the rare qualities long needed to resolve the conflicting viewpoints. He established a committee of Masai elders to discuss matters of mutual concern and pressed for at least a minimal financial incentive for them.

In the last three years the outlook for Amboseli has changed completely. A fairly extensive body of information has provided new insights to old problems



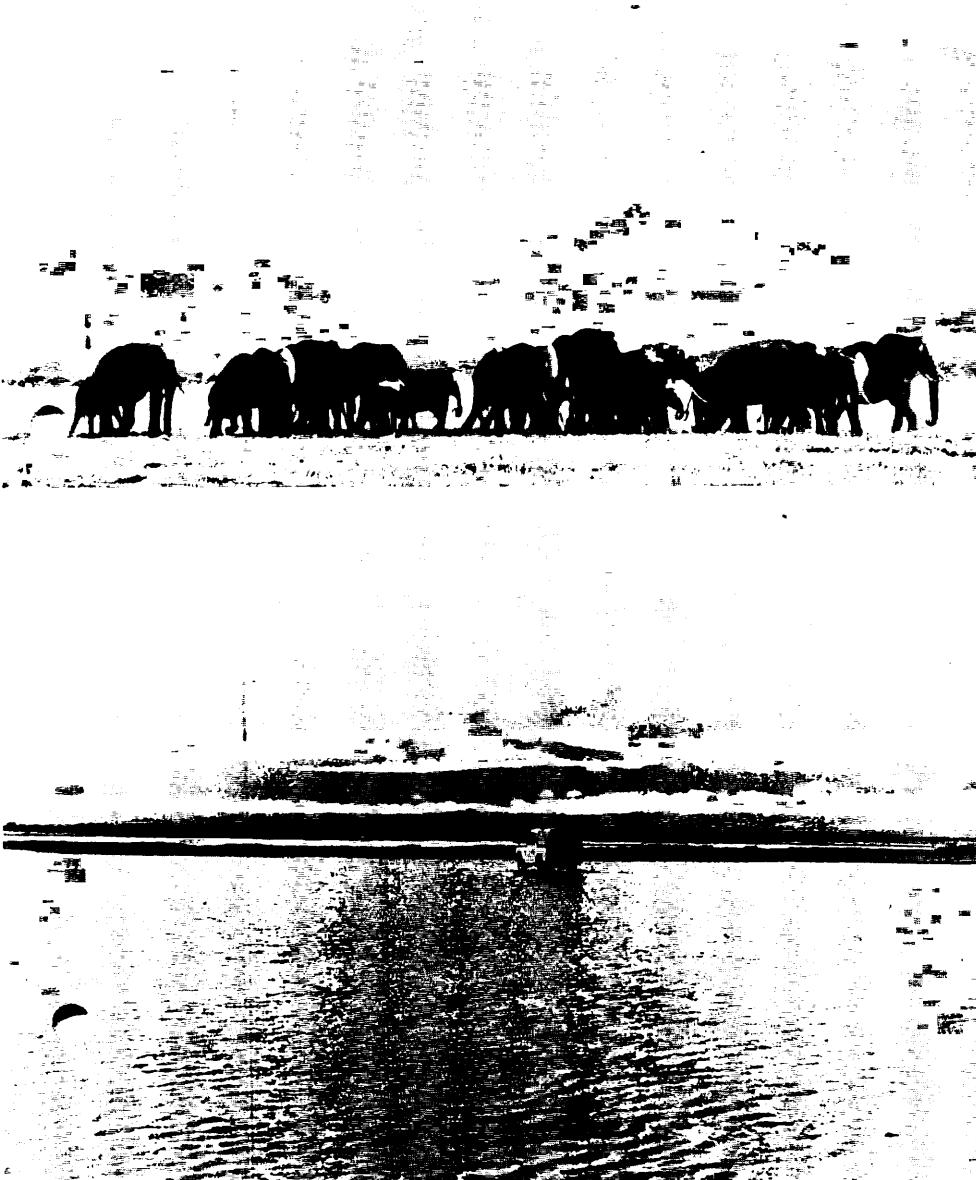
and in particular, places the relative roles of wildlife and Masai ecology in reasonable perspective. The Amboseli ecosystem is now one of the better understood of the African large mammal communities.

In essence, the controlling factor affecting the large mammals is the restricted distribution of perennial water. This is only provided by the spring and swamp water within the Amboseli basin, fed by subterranean flow from Kilimanjaro. Most of the animals are restricted to

within 10 to 15 miles of the swamps in the dry season, and there are extensive areas beyond this grazing range which are almost unutilised. Within the dry-season the utilisation of the land by both the Masai livestock and the wildlife is broadly similar. It is generally assumed that a population of animals utilises an area such that its reproductive success is at an optimum, and this seems true of Amboseli. The efficiency of the Masai can be gauged in a similar way by the milk-yield of their cattle—and this no doubt ex-

*Below left: Flood pans, wind-blown during the dry season, create the impression of a dust bowl. Bottom: An exposed area, formerly cited as being due to cattle erosion, is in fact a flood pan.*

*Below: A herd of elephants moving across Amboseli. The photo shows Mount Kilimanjaro in the background. Amboseli has become so attractive to tourists that they are fast becoming a major threat*



plains their ecological parallels to the wildlife.

In view of the competition between the Masai and conservationists for the same resources, a land-use study was undertaken to evaluate the possible forms of utilisation, their economic potentials, and ecological feasibility. The low rainfall and the closed, saline basin, renders arable agriculture impractical. Cattle ranching and game utilisation provide the only feasible alternatives. The maximum yield from livestock, employing modern ranch-

ing techniques, was computed optimistically as K£150,000 per annum over the 600 square kilometres of the ecosystem. Within an area of only 85 square kilometres wildlife (through tourism) is already yielding over K£500,000 per annum. Over the 600 square kilometres it could soon yield over K£1,500,000.

Considering the enormous revenue derived from Amboseli's wildlife, and the possibility of providing water in otherwise unutilised dry-season areas, the livestock could be redistributed to

areas of greater potential. A proposal was submitted to the government outlining a solution to the impasse reached over Amboseli's future.

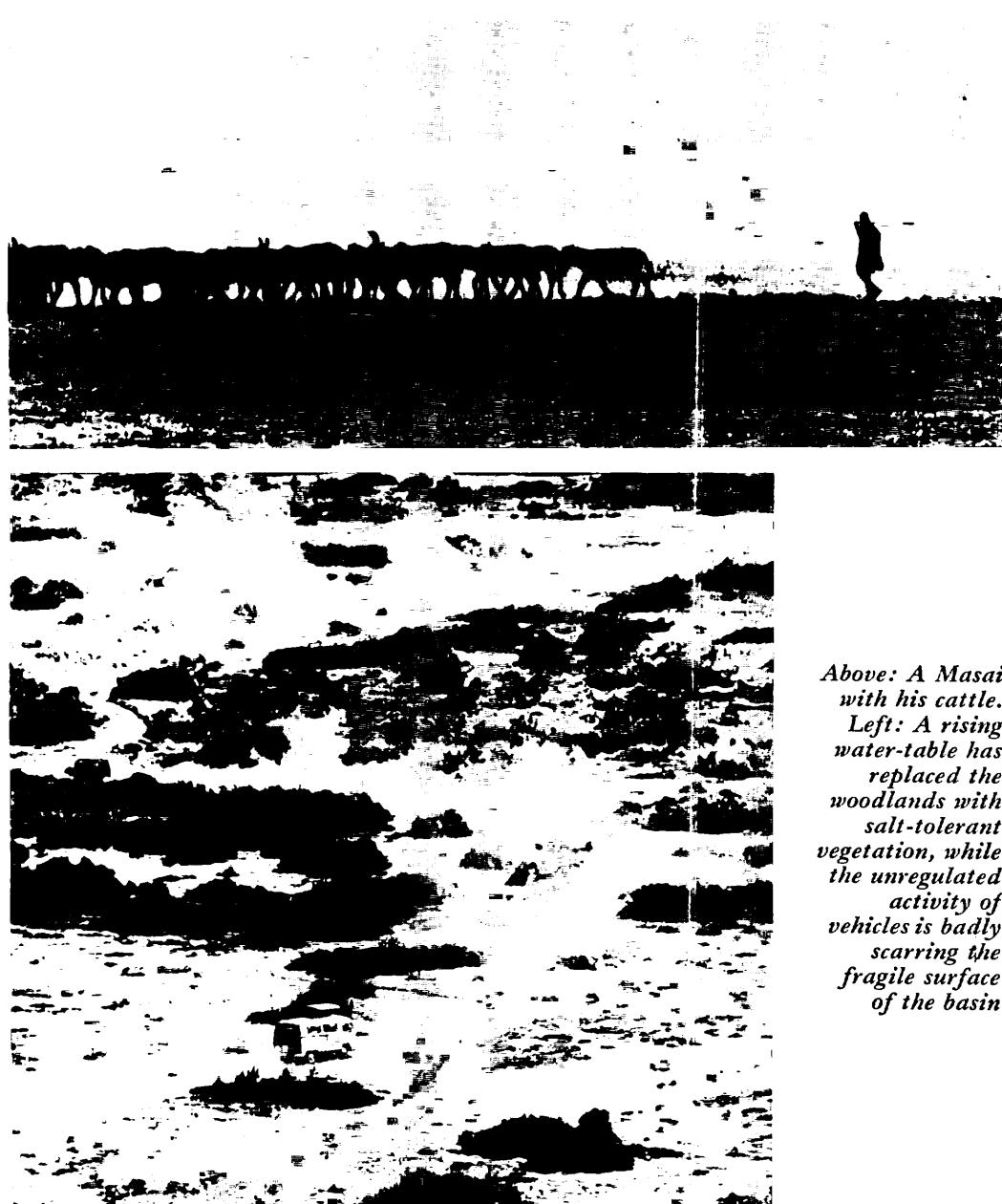
The economic incentives now applied equally to the Masai and the Kenyan Government and the proposals were based on ecological grounds. President Kenyatta in July 1970 issued a Presidential decree setting aside 400 square kilometres exclusively for wildlife, and stating that alternative water would be provided for the Masai in the outlying suitable areas. These proposals are now going forward and, provided the wet-season dispersal areas are adequately protected, Amboseli can look forward to considerably increased game populations.

The 'deterioration' of Amboseli can be amply explained on the basis of the dwindling woodland areas, gradually turning to bare expanses broken up by patchy grasses and bushes. Between 1955 and 1970 about 85 to 90 per cent of the woodland trees have died off. A survey, with Charles Van Praet of UNDP/FAO, was undertaken to establish the cause of these dramatic changes. It was shown that the Masai livestock contributed relatively little to the changes, while elephant damage, although a factor, clearly only had a catalyst effect on an already changing habitat.

Salinisation of the basin accounts for almost all the vegetation changes noted. A rising water table is rapidly increasing the surface soil salinity and killing off the non-salt-tolerant vegetation. The yellow fever tree woodlands are particularly susceptible, but less obviously, the whole vegetation associations are changing. The rapid spread of a salt bush, for instance, is particularly indicative of increasing salinity.

Considering Amboseli's geological history these changes are not surprising. Amboseli is a lake-bed which was formed during the Pleistocene activity of Kilimanjaro. It dried out a number of times, most recently, probably following the last glacial retreats. The soils of the basin are highly saline and alkaline since it has no natural outlet. Colonisation of the exposed lake surface has, therefore, been governed to a great extent by the saline-alkaline conditions, and the vegetation is still in an early stage of succession. The ground-water table appreciably controls the type of vegetation, a low water table allowing a spread of non-salt-tolerant plants across parts of the basin, while a high water table introduces a saline plant community.

The ground-water table reflects the rainfall levels, and has followed an up-



*Above: A Masai with his cattle.*

*Left: A rising water-table has replaced the woodlands with salt-tolerant vegetation, while the unregulated activity of vehicles is badly scarring the fragile surface of the basin*

ward trend very similar to all the inland lakes of East Africa over the past decade. During the previous 50 years the lakes had been relatively low, and presumably much of the vegetation, particularly the fever-trees, was established across the basin during this period. Lake levels are known to have been high at the end of the last century, suggesting that the vegetation was largely salt-tolerant at that time. Verification is provided by both Joseph Thomson's description of Amboseli in 1883 and particularly that of Schilling, in 1904. Very little mention is made of woodlands, while Schilling describes extensive areas of the salt-bush *Suaeda monoica*. Their descriptions and photographs are more comparable to the Amboseli of 1970 than to the Amboseli of the 1940's and 1950's which had little

*Suadea*, but extensive fever-tree woodlands.

It is probable that Amboseli's vegetation changed dramatically with relatively minor hydrological changes. A few Masai are quite aware of this fact and describe various areas before the woodlands appeared! The fauna evidently responded to these changes, which favoured some species at the expense of others. The swamps are still expanding but are evidently not yet as extensive as when Schilling photographed them at the turn of the century.

Amboseli might be losing the greater part of its woodlands, but it is doubtful if it will lose its attraction. To Thomson it was '... a spectacle which in certain aspects is as impressive as Kilimanjaro itself' and '... in spite of the desolate and

barren aspect of the country, game is seen in marvellous abundance'.

Most of the problems that have faced Amboseli over the last 15 years stem from parallel increases in the Masai and tourist populations. The emotional pitch generated could have been avoided to some extent had studies been undertaken earlier. The structure of Amboseli is such that continual habitat changes within a large part of the basin must be regarded as characteristic features of its ecology. No dramatic 'recovery' of the woodlands can be expected following the exodus of cattle from the newly created Park, but this will instead depend on changing climatic conditions.

Future problems for Amboseli are two-fold: the management of the wet season dispersal areas, which will be beyond the Park; and the impact of tourism within Amboseli. The limited game-viewing area, its enormous popularity, the open nature of the habitat, and its poor grass cover combine to make the area extremely susceptible to undesirable damage by vehicles.

Tourism, with an average annual growth of 22 per cent over the last eight years, is presently uncontrolled and is generating an unsightly complex of tracks out of all proportion to the number needed for effective game-viewing. Some areas already have as great a road network as the city centre of Nairobi. New lodges are being constructed with no consideration of the long-term conservation of landscape that the tourists are attracted by. Currently, the average tourist places such a high premium on spectacular shots of the predators that the tour guides are increasingly harassing them. The result has already been the abandonment of some cheetah cubs and probably a lowered hunting success by continual close-shadowing of the stalking animals.

When Amboseli is switched over entirely to tourism in the coming months, the Parks authorities will be faced with setting a precedent for other East African National Parks. The need to control the impact of tourism is more acute in Amboseli than elsewhere and demands long-term planning of road-networks and maintenance, lodge distribution, and above all a move towards containing tourist activities, through environmental education and the training of skilful guides.●

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