

Conservation by Utilisation

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The African continent is so productive it could have doubled the world's meat production today if there had been proper wildlife management over the last fifty years. But European man has brought the wild animals to the verge of extinction for the sake of his own unsuitable domestic animals, notably the cow. Today there are signs of change, with farmers looking to the ranching of wild animals, and national parks selling meat from animals that have to be culled. But time is short. The increasing human population is leading rapidly to the complete disappearance of wildlife outside national parks, and the author believes that today every large mammal species is in danger. The only hope for wildlife lies in its utilisation, and the implications of this will be the subject of a second article in the next *Oryx*.

Man must eat to survive. At the beginning of this century there were an estimated 1000 million people; today the figure is in the region of 4000 million and the present annual birth rate is of the order of 70 million. If this trend continues the end of this century will see 6000 million people struggling for survival, with an annual birth rate in excess of 100 million, which is equivalent to half the present total population of the USA. In 1966 Sir Norman Wright commented that by the end of the century we should need to double cereal output and increase animal production fourfold just to maintain a reasonable standard of nutrition, for it is estimated that between 1000 and 1500 million people are undernourished today. In the advanced countries the rate of progress in agriculture has been remarkable, but slower in the developing countries, where the greatest population explosion is taking place. The rate of increase in the annual production of maize, milk, eggs and meat only just falters about the critical 2 per cent required to keep pace with the annual population increase.

This is a moment in history in which man, if he is to survive as a species, must meet three challenges with vigour: he must regulate his population; he must live with other countries, and he must feed himself, and to do the last it is vital that he attempts to explore new systems of food production both in the sea and on land.

The African continent could hold a key to success for future food production, for it is highly productive, although few people realise the fact. The high rainfall areas have a productivity of between 30-60 tons of vegetation per acre, the semi-arid about 10 tons, which is similar to that of an English pasture; what is lost by a low rainfall is made up by sun and warmth. The problem is not lack of productivity but a suitable method to exploit the productivity. Here the African fauna with their unique adaptations could play a vital role.

Man's use of tame animals probably goes back to the Babylonian Empire, but the husbandry has been primitive until recently. Bruce records the Ethiopians cutting flesh from the living cow, eating the

meat raw and sealing the wound with mud. Today the Karamajong, Masai and Samburu drink a mixture of blood and milk. Little effective management was practised in Europe until recently; the cow liked grass, and grass it was made to eat. The milk and meat from the cow relieved man from the time-consuming business of hunting animals and provided him with a nutrient-rich diet that not only enabled him to develop physically and intellectually but also allowed him time to develop other skills and techniques in managing his environment.

Man's ability to manipulate was a prominent feature of his success both as a species and as a race. But paradoxically he is a traditionalist, and having once manipulated something he is reluctant to change despite clear evidence that the original conception is no longer in keeping with new circumstances. This is particularly true of domestication of animals, and, in general, of man's remarkable inability to feed himself. The population explosion has now entered its logarithmic phase of growth. Man can split the atom, send rockets to the moon, and is nearing the stage at which he can synthesise life in a test tube, but he cannot meet the challenge of planning his cities or the tasks of feeding himself, coping with the social pressures of overcrowding, or, above all, regulating his own population structures.

More than half a century ago biologists concerned about food looked hopefully to Africa, a continent only partly known but teeming with wild animals adapted to the heat, the drought and the flies. But at this time rational man was busily finishing off his irrational slaughtering of the 20 million bison that roamed the North American plains. When he did turn his attention to Africa he slaughtered the animals there as a sacrifice to the sacred cow. On the gentle English pastures the cow worked well and enjoyed the cool soft drizzle and the fresh green blades of grass. The paradox of man's manipulative ability worked its full power: 'the cow must be right for Africa'.

But cows are not indigenous to Africa. Probably the early colonisers did not realise this. They saw Africans with vast herds of cattle and took it for granted that they were part of the scenery. The facts that the cattle were but flesh and bones with little meat, that no African would sell or barter a cow at midday because the shadows from the protruding ribs are accentuated by the overhead sun, that these little cattle were surrounded by fat wild animals many times their size did not penetrate the minds of our traditionalist administrators. Early travellers like Methuen and Roosevelt towards the end of the nineteenth century suggested that certain wild African species should be domesticated instead; but tradition was too strong.

More than half a century of industrious labours by the European settlers, colonisers and traditionalists have done what? More than two-thirds of the world's cattle population is now resident in Africa and Asia, and is, as Pirie pointed out, relatively non-productive. Their only achievement was the slaughter of millions of animals with their own incredibly exciting gene pool. These species were adapted to the heat stress and water limitations of the African climate. During this period the bubal hartebeest, rufous gazelle, mountain zebra, giant eland and scimitar-horned oryx either became extinct or are listed in the *Red Data*

Book as threatened with extinction. In most of Africa the extermination has been so successful that the remaining wild animals are confined within the boundaries of the national parks. Had the early policy makers only listened to the biologists half a century ago the African continent could have doubled the present world meat production by today.

Rinderpest Epidemic

Instead what happened? The first tragedy resulting from the introduction of cattle into Africa was the rinderpest epidemic. This may have started in Ethiopia but it finished in the Cape. Cattle were new to Africa and suffered the disadvantage that they were not resistant to the endemic diseases which the indigenous animals took in their stride. But rinderpest was new to the game animals. Almost overnight the human population was left bewildered with both wild and tame animals destroyed. The significance of this epidemic has never been fully admitted, but it robbed millions of people of high quality animal foods; it was probably a most important factor in turning the nutritional tables in Africa. The overnight loss of animal foods entrenched an attitude to poor quality staple foods, and in this sense cattle and the rinderpest could be said to have been a primary cause of the widespread malnutrition in Africa today.

Ever since that epidemic, rinderpest has lurked in the background as a constant threat to both wild and domestic animals. We can now control it to a limited extent, but many areas simply never recovered from the damage. Nevertheless, the traditionalists ploughed on. It soon became clear that the wild animals were adapted to the fly-borne diseases and that the cattle could not tolerate the tsetse and the trypanosomiasis. Their logic therefore required that we exterminate the wild animals that do not mind being bitten by these flies in order to introduce these animals that do object! However, it was not so simple as mass slaughter. The tsetse lived on small animals that could not be shot from the convenience of a landrover. It soon became apparent in Rhodesia and other parts of Africa that the only way to eliminate the trypanosome-carrying fly was to cut down all the trees. The tsetse fly requires the mini-environment of the shade and moisture from the leaves for breeding. So millions of pounds in international aid were spent on clearing the trees and the bush in, for example, Ankole, whilst the carcasses of the animals that did not mind the fly rotted in the sunshine: there was too much meat to be able to use it.

In one year in one small area the size of an English county some 2000 tons of meat fed the vultures, the hyaenas and ants, enough to provide 2 lbs a week for every man, woman and child in half a dozen African townships for a whole year.

But the fly was not the only problem for foreign animals in Africa. The ticks in some areas carried an unpleasant disease with which the indigenous animals had learned to live, but which killed the cattle: East Coast fever was another reason why the indigenous animal must go.

Again in keeping with the traditions, the colonisers, at considerable expense, imported pigs, which had never been seen in Africa before.

These had been bred and adapted for a high-fat carcass. It was not long before it was discovered that Africa had a disease called African swine fever which, for these exotic animals, had a 98 per cent mortality rate. Of course this disease was carried by the indigenous African wild pigs to whom it mattered little more than a cold in the nose. So, not only did the traditionalist have to erect strong fences to keep these strange looking wart-hogs and bush-pigs out, he also set about the business of exterminating all wild pigs within sight.

In a world in which high quality food is becoming a hard currency it is odd that meats from the wild bovids, the antelopes and indeed the wart-hog are considered as delicacies by experienced hunters and yet removed as a nuisance by others. The flesh of the warthog tastes rather like a mixture of turkey and pork with the turkey flavour accentuated when it is cold. Eland has a meat taste that is different from beef being without the high grease content of stall-fed cattle. An adult eland can weigh over 1600 lbs, and even at ten or more years of age the meat will still be tender. Even the hard currency value of meat did not make people question the premise on which they were operating. Ledger published his detailed analyses which showed that domestic animals weighing 1000 lbs might have a dressed carcass consisting of up to 30 per cent or more fat and 50 per cent lean, whereas wild animals of the same weight contained only some 2–4 per cent fat, 80 per cent lean, which means that much more nutrient value.

The Talbots' Findings

Then of course there were the American ecologists, the Talbots, who studied productivity on the African plains and soon came to the extraordinary conclusion that, if you compared the productivity of a group of wild animals in marginal bush country with moderately managed cattle on red oats grassland, the productivity of the unmanaged wild animals was some four or more times greater than that of the managed cattle. The traditionalists argued that there was something wrong with the Talbots' data, that the cattle were at a disadvantage and probably poorly managed. The cattle certainly were at a disadvantage, but it was not due to the management but to the simple fact that they were not physiologically adapted to that type of African climate.

You will find buffalo in the riverine areas of Africa where there is plenty of water and rapid growing grasses and woodlands, but you will not find them running across the semi-arid bushlands where the eland and oryx thrive. In parts of Africa these two types of habitat may be separated by only a few miles, but the division of the species is as dramatic as the division of the landscape and the vegetation, dictated by the rainfall. This in a sense is a key to the understanding of the biology of Africa. Today it is difficult to imagine how people could have thought that a water-loving animal like the cow could satisfy all these contrasting extremes.

In recent years there has been an increasing use of ranching, culling and even domestication of wild animals, for two reasons. In the first place, overpopulation of certain species, such as the hippopotamus in

Queen Elizabeth National Park, led ecologists to suggest that the numbers should be culled to achieve a balance. (It should be pointed out that the main reasons for this overpopulation were the intrusion of man into the game areas, the cutting of the migration routes and the confinement of unbalanced populations of carnivores and herbivores in small areas.) Elephant over-population in Murchison Falls National Park also led to a cropping programme, and the meat from both these sources has been sold at 1s a pound. In this way some 6000 tons of meat have become available at a price that people could afford. It is now probable that continuous control of park populations could provide a regular supply of low-price meat at 5–10p per lb.

Wildlife Ranching

The other development is the ranching of wild animals by farmers in place of conventional domestic animals. In Rhodesia it was found on the Henderson Ranch that a larger profit could be made from wild animals than from cattle; the Johnstons have also turned to game. In South Africa breeding eland are now fetching a price of \$450, and a number of farmers both in East and South Africa are experimenting with the wild game. The Hopcrafts outside Nairobi have domesticated both eland and Thomsons gazelle. In the Luangwa Valley in Zambia, game cropping, backed by abattoirs and cold storage facilities, has made a viable contribution.

In New Zealand it was realised that the red deer and the opossum were eating the forests; this was causing soil erosion which could have serious consequences to the valley farmers whose watercourses were being altered by the soil eroded from the hills. Biologists groaned when it was announced that it was intended to shoot the deer out. However, in a hungry world meat is a precious commodity which speaks for itself. During the slaughter someone thought that it would be a good idea to at least cover the costs by selling the meat. The first year's sales realised some £30,000 in the overseas markets; in the fourth year this rose to £2,000,000, and, far from being intent on exterminating these animals, discussions are now underway to rationalise the farming of venison in areas where sheep are unmanageable or less productive. New Zealand venison is now being despatched halfway across the world and sold in the German and European markets at a price which undercuts that of Scottish venison! The ironical feature of this operation is that the red deer originally came from Scotland and were taken to New Zealand for sporting purposes. They liked the country, which in terms of vegetation probably approaches conditions in Scotland some 2000 years ago, before the forests were plundered.

For some extraordinary reason, European man only questions his traditions when they have been proved so wrong that economic necessity forces him to change his ways, a characteristic that seems to be peculiar to him. In Russia the saiga antelope contributes some 6000 metric tons annually to the meat economy from Khazaksthan where no other animal is so suitably adapted to cope with the steep hills and the sand storms on the plains. A third of a million deer are listed as livestock in the Ukatia region, and in the Ukraine eland imported in 1892 have been domesticated; since 1950 a small herd of milking

animals has been studied and are now being upgraded for production of their 'long life' milk by selective breeding.

With present population pressures on land in Europe and Africa, the only hope for the remaining large mammals is conservation through utilisation; and this implies the substitution of biology for tradition in food and agricultural policies.

Iran Guards its Wildlife

The great care and interest that Iran takes in her wildlife is evident in *Conservation and Wildlife Management in Iran*, by Eskandar Firouz, published by the Iran Game and Fish Department, an excellent, informative and well illustrated booklet. Nearly every major habitat of this vast country is represented in the seven wildlife parks and thirty protected regions, covering some ten million acres.

The story of the extremely rare Persian fallow deer is typical. Believed to be extinct in 1940, when two small populations were discovered in south-west Iran in 1955 the area was given Protected Region status, and is now estimated to hold at least 40 animals. Some were sent to Dr Georg von Opel in Germany to build up a captive breeding herd (which now numbers 16 pure-bred animals) and a new park was created on land presented by HH Prince Abdorreza, where, after considerable difficulties, a herd has been built up to at least 17 animals.

With the Persian wild ass, the onager, which had been hunted almost to vanishing point, protection of the herds and preservation of the habitat have permitted a dramatic increase, and numbers are now put at a minimum of 1200 animals. The cheetah, thanks to successful management of its prey species, such as the gazelle, is holding its own in the eastern deserts and numbers may exceed 200.

The creation in 1971 of the Buhu Kalat Protected Region should give the marsh crocodile the chance to build up its very low numbers.



YOUNG MARAL STAG,
a race of the red deer
found in Asia Minor,
the Caucasus and
northern Iran —
Eskandar Firouz