To the editor:

As I read the editorial "The Long Haul" in the winter FORUM — the thought that we should "know better" than to do much of what we do in managing our natural and cultural resources plus the idea that we could use the world's parklands to improve our knowledge of how to manage our resources more effectively — I was remided of two recent experiences in India and Africa.

I visited the Kanha National Park in the State of Madhya Pradesh in Central India to help develop plans for a pilot education project. Kanha is a superb natural area of forest highlands, plateaus, and valleys, and some natural grassy meadows. It is home to a variety of beautiful wild species, including the tiger and the gaur.

Like many other natural areas in India, it is a remnant of once much healthier lands. Kanha now presents a great contrast to much of the deforested and eroded lands of the surrounding region. I believe that a protected area such as Kanha, probably cannot last over "the long haul" unless it serves as a model of land use to restore natural resources on a broader scale.

The challenge in the short term, probably within this decade, will be to meet the basic needs of the Baiga and Gand tribes who live in the area surrounding the national park and who depend upon the natural resources of the land. If the park and its buffer zone, with its tribal villages, can become a focus for applying the best knowledge and experience available to adjust traditional land use practices and at the same time meet conservation objectives, then it could be a model for restoring natural and cultural resources on a broader scale. It is also likely that we could learn a lot from traditional cultures such as the Baiga for they are truly forest people who have uses for most things that grow.

In East Africa I saw an entirely different kind of habitat, but a somewhat similar land-use problem. This was in northern Kenya where I visited the UNESCO MAB Program's Integrated Project on Arid Lands (IPAL), which aims at finding solutions to the serious problems of desert encroachment and degradation of arid lands.

This is a research project set up in 22,500 km^2 of desert and sub-desert country in Northern Kenya, situated between Lake Turkana in the west and Marsabit Mountain in the east. Both Marsabit Mountain Reserve and Mt. Kulal — a Biosphere Reserve — are outstanding natural areas which have rainforests on their summits and which serve as the main water catchments for the few springs in the surrounding desert area. The study area is the home of the Rendille and Gabbra tribes, pastoral people whose increase in population and consequent increase in livestock subsistence herds are causing widespread destruction of vegetation and the spread of deserts.

Here too, the challenge is to provide the scientific basis, the management know-how, and somehow the will to use the land more rationally to meet the needs of people, to conserve what is left, and to restore what has been degraded.

I am afraid, however, that in many cases, particularly in the less developed countries, that land degradation has progressed so far that governments do not have the financial resources or trained people to take the necessary actions to begin to correct the situations. I think of Sir Otto Frankel's "Time Scale of Concern," where he says that the time scale of concern for genetic resources is thousands of years, the time scale of concern for the politician is the next election, and for the hunter-gatherer, it is one day.

Unless we, in the wealthiest nation the world has ever known, begin to realize it is in our own interest to do much more to help international conservation efforts, we are not really considering "the long haul." As the News Journal for the Plant Genetic Resources Community reported in its first issue this spring: "The startling fact is that all the primary U. S. food crops have been developed from genetic resources (germ plasm) native to other countries. According to USDA, of the 15 crops that literally stand between mankind and starvation, not one is native to the U. S."

This fact alone should cause us to realize that the small value we accord to international conservation efforts is not commensurate with our long-term interests.

As the editorial in FORUM stated, "mounting populations and shrinking resources pose their own kind of threat to prudence and reason." I think that if I were one of the Baiga living outside Kanha National Park, it would seem to be most prudent and reasonable to feed my family with deer from the park. Unless there were better alternatives — and I believed that they were better — I would probably be a poacher.

Tommy Gilbert, President
The George Wright Society

COMMENTARY

Syndicated Columnist Edward Flatteau, in a mid-May report from UNEP headquarters in Nairobi, Kenya, commented on what he termed "the rôle reversal" he had noted at the 10th anniversary of the 1972 Stockholm international conference on global environmental problems. He noted that in Stockholm it was the western industrial nations that provided the major driving force, with the developing countries then equating industrial pollution with affluence and viewing environmental protection as a luxury only rich nations could afford.

This year, it was the industrial nations who hung back, beset as they are with international tensions and intent on redirecting the enormous sums necessary for combating environmental pollution into military hardware.

At the same time, more of the developing nations showed an understanding of the connection between environmental issues and the poverty, hunger, and disease that afflicts their countries. Wrote Flatteau:

> "They have begun to associate sustainable economic development with sound environmental planning, recognizing that much of their countries' 'capital' consists of timber, soil, fresh water and other renewable natural resources. As a result, the developing countries of Asia, Africa and Latin America have become outspoken champions and the most frequent patrons of UNEP."

The mood at Nairobi was much more somber than at Stockholm, Flatteau said. Expectations had been lowered by discovery that the problems were more complex than had been believed ten years ago. Yet Flatteau found hope in the fact that environmental protection had been institutionalized in many countries and that "a much greater consensus" was apparent at Nairobi than had existed a short decade ago.

In the light of the Gilbert letter and the Flatteau column, the role of parks and equivalent reserves in relation to environmental enlightenment takes on richer meaning. Both within and around such "islands of hope" there can arise new kinds of searching, revealing actions that bring people closer to an understanding of their world and their own place within it, while there is still time.

Jean Matthews

TO THE EDITOR:

In the autumn issue of The George Wright FORUM, Allen, et al (1981, pp 27-28) state that "even the most superficial review of animal problems in the parks reveals that overpopulations are at the root of many difficulties." They further suggested that perhaps deputized hunting, "to take surplus big game within national parks will need to have greater consideration in the future." Although I am confident that the authors were not proposing that ungulate management in national parks be based on superficial analyses, I believe that they understate the complexity of the issue.

The term "overpopulation" implies that there are too many individuals of a given species in a given locality. However, determination of acceptable population sizes or densities is difficult, except in cases of exotic animals in national parks, where even one individual represents an overpopulation. Even that policy is based on a social judgment and is subject to change with changing societal values.

Identification of overpopulations of native animals is considerably more complex. Allen et al felt that overpopulations existed when man-caused habitat changes or other influences caused a species to increase to a level which was destructive of its food supply or damaging to pristine plant and animal communities.

If it were easy to identify man-caused changes and to document damage to food supply and pristine ecosystems animal management decisions would be fairly simple. However, identifying those impacts is usually difficult.

An important problem is our lack of understanding of primeval systems. In order to measure ecological change caused by man, we must understand how the system functioned prior to his arrival. Because we were not present to describe those environments, we must rely on historical accounts and current studies of contemporary habitats and wildlife populations that are usually conducted over a relatively short time span. As one would expect, this frequently results in oversimplification, conflicting opinions, and perhaps even misinterpretations and erroneous conclusions.

As a result, our understanding of processes by which wildlife populations were regulated primevally is fairly rudimentary. With regard to ungulates there are basically two perspectives; one emphasizes the role of predation and the other suggests that ungulate-habitat relationships are most important. It seems unlikely, however, that a single factor is involved in natural regulation of ungulates.

Peek (1980, 1981) and Caughley (1981) provide excellent discussions of those two approaches. Briefly, predation hypotheses emphasize the importance of predators in limiting prey populations, both by direct reduction of numbers and impacts on behavior and distribution. Habitat-ungulate hypotheses postulate that ungulate populations were limited principally by availability of forage. Much of the latter approach has been derived from observations of sudden increases or irruptions of ungulates following improvement of habitat (i.e., by fire) or their introduction to previously unoccupied areas. Caughley (1979) considered irruption to be a basic pattern of population growth for ungulates, with establishment of new herbivore-plant equilibria following peak populations.

Clearly the park manager is faced with a dilemma. If extirpated predators were the principal factors limiting ungulate populations, hunting or direct reduction could be appropriate. On the other hand, if irruptive growth of ungulates is natural, high densities would not necessarily represent overpopulation.

Even if an unnatural increase in a population occurred, and reduction was desirable, we still must determine an appropriate population density. In other words, a "carrying capacity" must be established. This term requires a careful definition. Caughley (1979) pointed out that it has been used commonly to denote a density of animals that provides a maximum sustained yield. Caughley calls this density "economic carrying capacity," in contrast to "ecological carrying capacity" which typifies an unharvested equilibrium.

Populations managed at economic carrying capacity will typically be at low to moderate densities, have high reproductive and survival rates, and individuals will be in relatively good physiological condition. The converse of these will be true for

populations at ecological carrying capacity.

Neither of those two versions of carrying capacity is right or wrong. Rather they reflect differences in management objectives and it is critical that park managers know the difference between the two. State game agencies will most often manage for economic carrying capacity, while the National Park Service should appropriately manage for ecological carrying capacity. Population densities which would be considered to be overpopulations on non-park lands may be perfectly natural in a national park.

Managers also should recognize that reduction of population densities will result in increased productivity and survival, thus making control even more difficult. This is precisely the technique that is used to manage ungulate populations for maximum sustained yield. Therefore, controls such as hunting would be required indefinitely. Not only will control change the demography and dynamics of the ungulate population, but behavior and distribution will also be influenced.

Thus, in view of our incomplete understanding of natural regulation, any decision to hunt or control native populations should be critically scrutinized and based on specific scientific research. This research should focus on the mechanisms of population regulation for the species and population in question. Superficial analyses may suggest that surplus individuals should be removed, when in fact populations are simply at ecological carrying capacity. On the other hand, increased knowledge of natural regulation would allow early identification of man-caused changes and permit timely implementation of management programs to either control or augment populations.

Edward E. Starkey

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