

LONG-TERM RESEARCH IN SNOW  
LEOPARD CONSERVATION

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Until quite recently, when someone proposed to discuss a long-term research program in connection with wildlife conservation, it was safe to assume that he would focus on biological information and how to obtain it. Now, however, wildlife conservation is coming to be reviewed in a broader context, a context that includes the humans sharing the wildlife habitat. We can call them indigenous peoples, and the change in attitude toward indigenous peoples by the international conservation community is important for those of us concerned with the conservation of the snow leopard.

Up to a century ago, and for many, many centuries before that, there were substantial populations of snow leopard prey, and consequently of snow leopards, throughout the snow leopard range despite the fact that indigenous peoples inhabited the same regions. It is probable that these indigenous peoples, like others who have inhabited a region for centuries, had by trial-and-error worked out cultural regulations that kept their use of renewable natural resources within the ability of those resources to maintain their productivity.

Through the past century, however, there has been an accelerating decline in prey, in snow leopards and even in the watershed qualities of these montane realms. The overall cause of this deterioration has been a sort of cultural invasion from the industrialized world, an invasion that has weakened traditional ways of life and the cultural regulations that had promoted the sustainable use of natural resources.

Throughout most of that century, there has been an often unstated assumption that indigenous peoples would somehow become successfully integrated into the industrial life that seemed to hold such promise for the future. Traditional lifestyles would fade away.

Generally speaking, this has not happened. While some indigenous peoples have disappeared, many have persisted. With cultures more or less affected by new forces, they still carry on in many traditional ways. Throughout the mountainous habitat of the snow leopard, indigenous peoples still exist, and some of the practices that contribute to their existence bear heavily on the snow leopard and its prey. The international conservation community has traditionally acted as though it considered indigenous peoples as enemies of wildlife conservation to be controlled by exclusion from national parks or to be constrained from poaching by the prohibition of wildlife commerce. From 1948, when the present International Union for the Conservation of Nature and Natural Resources (IUCN) was established, past 1975, when the Convention on International Trade in Endangered Species (CITES) came into effect, protection and economic constraint were the major tools of nature conservation (Boardman, 1981).

Then the recognition that wildlife welfare could not be effectively pursued without a parallel regard for human welfare led in 1960 to the IUCN World *Conservation Strategy* (Allen, 1980), which promoted the integration of nature conservation and economic development.

More recently still in 1982, IUCN focused on a particular aspect

of economic development, the improvement of material welfare of indigenous peoples. The Bandung Conference on the topic of *Traditional Life Styles, Conservation, and Rural Development* (IUCN 1984) emphasized the necessity in any locality of pursuing human welfare and nature conservation within a single coordinated program, and also emphasized the scientific understanding to be gained from the traditional knowledge and practice of the local people.

## WORLD CONSERVATION STRATEGY

Even more recently, the 1986 international Conference on Conservation and Development Implementing the World Conservation Strategy produced, among other statements, the following (IUCN. 1986):

- "2. Principles and Measures for Sustainable Development vi.  
*Indigenous People and Sustainable Development*  
Indigenous peoples have a" unique relationship to the Earth, expressed in their cultures, knowledge, practices and careful stewardship of the living Earth. Recommendation;
1. The sponsors of the World Conservation Strategy should. In the future development of their thinking, reflect:
    - (a) The unique environmental ethics of indigenous peoples and in particular their understanding that: The earth is the foundation of indigenous peoples. It is the well of their spirituality, knowledge, languages, and cultures. It is not a commodity to be bartered to maximize profit . . .
    - (b) The accrued riches of traditional conservation knowledge. The sponsors of the World Conservation Strategy should also recognize the need for cultural

diversity as much as biological diversity in conservation.

2. Indigenous peoples have the right to self-determination, including the right to control the use of the traditional territories and resources . . ."

These statements emphasize the current attitude of IUCN toward indigenous peoples - that for any specific locality the pursuit of nature conservation should be carried out in concordance with the whole culture of the local people so that there is sustained benefit to both human welfare and nature conservation.

If we now turn to the theme of research to provide a reliable fund of knowledge to support the managerial programs, and to provide a periodic feedback of information to help guide those programs, we can see that we are not talking only about biology, but cultural anthropology and associated disciplines as well. The time scale of investigation in support of ongoing management programs would be long in any event and might well be prolonged still more by due attention to the human element.

## SNOW LEOPARD RESEARCH PROGRAM

A long-term research program for the snow leopard would include the following considerations:

Snow leopard habitat is marked not only by climactic extremes and wide climactic variations between years, but also the strong action of physical processes. This results in a wide amplitude of environmental conditions from year to year. In order to understand the con-

sequences of each complex of environmental conditions for the snow leopard and its prey, it is necessary to have information covering the whole gamut of environmental variation, necessitating many years of study. Otherwise, it is not possible to distinguish between the consequences of management programs and consequences of natural environmental variation. If it is not possible to distinguish between these, it is not possible to make a realistic appraisal of the effectiveness of managerial measures.

Since the snow leopard inhabits difficult terrain, and its numbers are relatively few, it is more efficient to obtain some basic biological information from captive rather than free-living individuals: Already, research on captives has produced useful knowledge on behavior (Rieger, 1978; Freeman, 1978). on vocalizations (Peters, 1980), on reproductive biology (Blomqvist and Sten, 1982) and the individuality of facial markings (Blomqvist and Nystrom, 1980), among others. Additional information useful to field investigators that could be obtained from studies of captive animals would be characteristics of tracks (and gaits) by sex and age, skeletal characteristics by sex and age, means of distinguishing scats, tracks, and other signs, and skeletal remains, between snow and common leopards. As field investigations go forward many other potential areas of study will become apparent since the investigator can use all the help he can get in obtaining the maximum amount of information possible from the fragments of evidence that he obtains.

Field studies should aim at understanding the snow leopard in each of its major sorts of habitat, the ecosystems that include snow leopard prey and indigenous peoples. From long-term tracking of radio-collared animals, and direct observation of identifiable individuals (or their signs), vital information on movements, territoriality, population density, dispersal routes, and gene-flow between population units can be obtained. Food-seeking patterns, food habitats, food availability, and relations of nutrition to reproduction and survival can be determined. Along with such intensive biological studies, there will be the development of methods to monitor snow leopard populations on a broad scale, since it is necessary to have reliable monitoring methods to provide a flow of feedback into managerial programs.

Another aspect of the long-term research program is the study of indigenous human cultures as these relate to snow leopard recovery. This is a complex area that is just in its infancy. With sufficient understanding, however, there is ordinarily much room for improvement in the relations between indigenous peoples and management programs for the benefit both of human welfare and nature conservation. It will not always be easy since it will often require cultural adaptations for managers and indigenous peoples alike.

Managerial programs themselves will require research of a sort since each program must be adapted to the local biological and cultural situation. Since the flow of managerial decisions is continuous, so must the flow of feedback data from the monitoring system be continuous so that management planning can respond to the current realities.

Over the life of the research program and beyond, there should be a flow of information within the communities of research and management, within the circle of "Snow Leopard Nations" and within the international conservation community that provides moral and financial support and within the indigenous communities that ultimately control the prospects for snow leopard recovery.

As an aid in all of these aspects of a long range research program, the Snow Leopard Recovery Plan (see Chapter 24) which has been submitted to this Symposium in draft form could play a useful part. Through frequent revisions as additional information becomes available, it can convey a reliable account of what is known and

needed, of what measures are being devised for snow leopard recovery, and with what success. Thus it will serve to support and strengthen the interest and activity on behalf of free-living snow leopards throughout their range.

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