Project snow leopard: a model for conserving central Asia biodiversity

Full Text

The Himalaya mountains and associated ranges comprise the greatest collection of high-altitude ecosystems on earth. They support richly diverse flora and fauna that vary with altitude and from east to west (Rodgers 1990). Like other regions of Asia, these fragile environments suffer from increasing anthropogenic degradation as population increases. Some experts believe the Himalayas may be the most actively degraded ecosystem on earth (Cai et al. 1990, Rodgers and Panwar 1989, Ives and Messerli 1989). Conservation efforts in the region are hindered by political instability and large border areas that are off-limits to scientific study. In addition, the high mountains of central Asia are perhaps the most inhospitable in the world for scientific study (Jackson and Ahlborn 1986). The snow leopard, given its position in the food chain, is a unique indicator of ecological health and biological diversity (Chundawat et al. 1989; Jackson and Ahlborn 1991). Moreover, the snow leopard is a notable species whose endangerment has made it a symbol for international cooperation. As an indicator species, the decline in snow leopard numbers coincides with increasing population and ecological degradation in the mountains of central Asia. The International Union for the Conservation of Nature and Natural Resources lists it as endangered throughout its range.

The mountainous region of central Asia includes portions of 12 countries: China, India, Pakistan, Nepal, Afghanistan, Mongolia, Bhutan, Russia, Kazakhstan, Kirghizstan, Tajikistan, and Uzbekistan. Reserves (including parks, protected areas, and sanctuaries) are established to protect endangered species or unique biogeographic zones--criteria that do not conform to political boundaries. The future of the snow leopard and other rare species depends on protecting large blocks of suitable habitat, including border areas (Schaller et al. 1987, 1988).

Most countries of central Asia are attempting to set aside more reserves for endangered species or unique biogeographic zones. Each country, however, surveys high mountain species and habitats differently, and the criteria for establishing reserves also differ in each country (Rodgers and Panwar 1988, Fox and Nurbu 1990). There is little exchange of data on reserves and few are located along border areas. In addition, conflicts between local people and the authorities counter the effective management of parks and protected areas (Panwar 1991, Jackson et al. 1990, Schaller et al. 1987).

Project Snow Leopard (PSL) proposes to bring uniformity to the methods for gathering data on mountain biodiversity and make these data readily accessible through a standard computer program networked among the countries that share the high mountains of central Asia. Information available through the network will be scientific data (no military value) on reserves. Standard methods will help biologists gather biodiversity information in uniform fashion. Collectively, these data will provide a more meaningful picture of biodiversity in the region, the trends of current management strategies on endangered species, and ease cooperation among countries in establishing new reserves at or near borders.

The objectives of Project Snow Leopard are to:

1. Build a multinational network to help preserve the snow leopard, its habitat, and prey base, with special emphasis on conserving biodiversity in existing and proposed reserves in central Asia
2. Serve as a catalyst that encourages collaboration among governments, organizations, and individuals working on biodiversity action plans or other programs aimed at conserving central Asian biodiversity
3. Promote standard methods, terminology, and protocols for surveys of mountain habitats and wildlife
4. Help build partnerships and strengthen natural resource institutions in central Asia in a way that will increase their capacity for doing work

PROCEDURES

Project Snow Leopard has three major components: (i) technology transfer (ii) environmental awareness education, and (iii) triennial symposia.

Technology Transfer

Over the past four years, the International Snow Leopard Trust (Trust) and the U.S. Fish and Wildlife Service, National Ecology Research Center developed a computer program to store biodiversity information on reserves and drafted a field techniques handbook that describes how to conduct high mountain habitat and animal surveys. The program and handbook are meant to help each country collect and store data on high mountain reserves in standard fashion. The data on reserves will reside on computers supplied by the project. Each country agrees to share data with the Trust and each other, thus creating a network among the countries of central Asia.

Information Network -- The PSL computer program for reserves is presently called Snow Leopard Information Management System (SLIMS). The SLIMS computer program consists of two closely related data bases: (1) a relational data base designed to permit rapid comparisons or tabulations of data across the snow leopard's entire range, between countries, or between selected reserves; and (2) a text data base designed to provide profiles of selected reserves, or range-wide and country-specific summaries of relevant environmental subjects or key conservation issues.

The relational data base contains six basic files covering reserve administration, physical features, biological attributes, human activities and landuse, field survey results, and key elements of conservation biology. Data for existing and proposed reserves will come from scientific literature, questionnaires, maps and unpublished reports, and field surveys conducted after methods standardized in the PSL handbook. Products will include status reports and summaries by reserve or country, text files for exchange between interested parties, and special reports on the conservation of high-altitude biodiversity in Asia.

The SLIMS software runs on a standard 386 DOS microcomputer. PSL helps each country configure a system and acquire the necessary hardware. SLIMS software runs under an easy-to-use Windows-based interface, using a mouse to enter, retrieve, and edit files. The main program and user interface are flexible and will evolve as the system is tested in the field.

Standard Survey Methods -- The SLIMS handbook provides a standard procedure for evaluating the status, distribution, and abundance of snow leopard and its major prey. Users may conduct two types of surveys, depending on their specific needs and objectives. First order surveys cover large areas at frequent intervals, while second order surveys focus on areas key to snow leopard conservation and attempt to assess predator or prey abundance and habitat use. First order surveys use a quick presence-absence approach, as opposed to the more quantitative and time-consuming approach of second order surveys. The handbook also describes how to map snow leopard range, assess habitat conditions, identify snow leopard sign, census large ungulates, and evaluate key management and conservation issues in the survey area. Information accrues from interviews with local people and experts and on-site inventories. Data are recorded on standard forms (also a part of the handbook) and transferred to SLIMS. The handbook has photographs and other illustrations for users with limited survey experience. As needed, the handbook is to be translated into local languages.

The first step in implementing Project Snow Leopard, after a branch node is established, will be to conduct workshops on the SLIMS computer program and the SLIMS handbook. The workshops are directed to ranger-level field staff from reserves. The workshops will cover: (1) classroom work on the SLIMS program, (2) field training for detecting snow leopards and monitoring their relative abundance, (3) methods to census major prey species (markhor, ibex, blue sheep, and marmot), (4) characterization of biogeographic zones, and (5) evaluation of people-wildlife conflicts, especially depredation of livestock.

Institution Building -- Each country participating in PSL signs a protocol with the Trust that describes the responsibilities of both sides. The protocol establishes a partnership between the Trust and a local conservation institution, either government or non-government. That institution becomes the central PSL node or branch responsible for collecting country-wide information on high altitude reserves and the subsequent entry of these data into SLIMS. The designated institution will receive a computer, SLIMS software, and training as part of the agreement, and in some cases, funds for partial staff support. When feasible, scientists are supported to visit PSL organizations in the United States for supplemental training on the use of the handbook and SLIMS software.

The SLIMS concept has undergone wide review; the World Conservation Monitoring Center (WCMC) supports the program and wants to share data between its center in Cambridge, England and the

SLIMS country branches. In addition, PSL has received support from the World Wide Fund For Nature (Pakistan); and the Fish and Wildlife Service - Chinese Ministry of Forestry Bilateral Program.

Environmental Awareness Education

This part of PSL hopes to enhance awareness by peoples in and around reserves of environmental issues and the need to conserve high altitude biodiversity. After a country branch node has been identified and the SLIMS program and survey techniques are in place, the next phase of PSL is to develop resource materials for distribution at villages and schools in the region. These materials will include lesson plans and study aids on high altitude ecology for teachers and local nature clubs. The material will be regionally specific, focusing on endemic wildlife problems and potential solutions that protect the reserve and enhance local economies.

A resource specialist will be hired through the country branch or a local nongovernment organization (NGO) to carry out this part of PSL. This person--a local teacher, reserve officer, or NGO staff--will help prepare resource materials, conduct workshops, and work with local leaders. A brochure will explain the resources protected by the reserve and why they are important to the region and the local people. It will also include the status of important wildlife species, illustrations, descriptions of biology and behavior, and suggestions for conservation. Where appropriate, the brochure will be translated into the local language.

International Symposia

The first international symposium on snow leopards was held in Helsinki, Finland, almost 20 years ago in response to problems with snow leopard survival and captive breeding in zoos. Over the years, interest in the symposium has grown and its program has expanded to include presentations on the species in the wild. The fifth symposium was held in Srinagar, India, in 1986. It was the first symposium held in a country with native populations of snow leopard, and the program focused on high altitude habitat and conservation of the species in the wild. The sixth symposium took place three years later in Alma Ata, Kazakhstan, bringing together zoo professionals in the former Soviet Union with field personnel from central Asian republics. The seventh symposium (this symposium) was held in Xining, Qinghai Province, People's Republic of China, in July 1992. Its theme "Parks, People, and Snow Leopard," recognizes that (1) the snow leopard stands as an indicator species for high altitude biodiversity, and (2) that conservation of wildlife and habitat depends upon concurrent efforts to enrich local economies and preserve local cultures. The next symposium will be held in 1995 in another country with wild populations of snow leopard.

In the broader picture of PSL, the triennial symposia are catalysts for international collaboration. The symposia bring together the principals in reserve management and help make it possible to publish and disseminate papers on current theories, studies, and recommendations. In addition, they bring a conservation message to the general public of the region in which the symposium is held.

SUMMARY

The snow leopard is one of more than 15 endangered species found in the high mountains of central Asia--countries seeking common ground among themselves and closer economic ties to the West. For centuries this region has been a land of conflict. Ageless disputes have kept border areas volatile, preventing in-depth scientific study of the environmental problems threatening local economies and endemic wildlife. The snow leopard is an indicator of ecological health and is in the unique position of possibly serving as the conservation ambassador among the countries of central Asia. Recognizing the peace-keeping and conservation role of the snow leopard, the Trust, in cooperation with other international organizations, is spearheading Project Snow Leopard, a major multinational conservation program aimed at conserving biodiversity in central Asia. PSL is a strategy of partnerships among the countries with snow leopard habitat, the International Snow Leopard Trust, and other international conservation organizations. Within a framework of technology transfer, environmental awareness education, and triennial symposia, PSL hopes to strengthen the capability of local conservation institutions to manage and conserve central Asian biodiversity.

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