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Abstract: This draft is a first attempt to develop a Snow Leopard Recovery Plan, for consideration at the Fifth International Snow Leopard Symposium. It is intended as a working base for agencies responsible for snow leopard conservation, research and management. The plan, when thoroughly reviewed and revised, will provide more accurate estimates of snow leopard status and threats, and recommendations concerning actions necessary for the maintenance, enhancement and recovery of the snow leopard in its original habitat.

Notes: for the 5th International Snow Leopard Symposium

TOWARD A FREE-LIVING SNOW LEOPARD RECOVERY PLAN

(Prepared by the International Snow Leopard Trust
for the Fifth International Snow Leopard Symposium)

India October 1986

The Snow Leopard (Panthera uncia) is listed as Endangered, which means that it will become extinct soon if the present situation continues. Efforts to reverse the decline in this species and insure its continued existence are focused both on captive and free-living populations.

For Snow Leopards in captivity there has been over a decade of careful work, under European leadership, on the compilation and maintenance of the International Snow Leopard Stud Book, basic to an understanding and guidance of breeding programs. Building on this, North American workers have developed a Species Survival Plan, aimed at maintaining a viable captive Snow Leopard gene pool in perpetuity. For free-living Snow Leopards, a similar aim would be facilitated by an internationally-developed Snow Leopard Recovery Plan. The attached draft is a first attempt, for consideration at the Fifth International Snow Leopard Symposium.

The International Snow Leopard Trust, by initiating a Snow Leopard Recovery Plan, hopes to encourage a cooperative effort toward the increasing viability of free-living Snow Leopard populations on the part of the "Snow Leopard Nations", the Survival Service Commission's Cat Specialist Group, Snow Leopard research teams, and all other persons and agencies concerned with the free-living Snow Leopard, its montane habitats. The attached Recovery Plan is a draft document intended as a working base for agencies responsible for Snow Leopard conservation, research and management.

As a Non-Governmental Organization, the International Snow Leopard Trust has the potential for interacting with both official and private entities, on behalf of Snow Leopard welfare, and for serving as a permanent clearinghouse and source of information on the current state of knowledge and conservation relevant to Snow Leopard recovery.

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INTRODUCTION

The Snow Leopard has a high-mountain distribution through the central Asian portions of India, Pakistan, Afganistan, the USSR, Mongolia, China, Bhutan, and Nepal. Throughout its range, its aboriginal numbers have been much reduced, in some areas to complete extirpation. It is listed as an Endangered Species in the Convention on International Trade in Endangered Species.

Initial efforts to perpetuate the Snow Leopard as a species have been led by authorities in Zoos holding captive Snow Leopard populations. Over the past decade a Species Survival Plan has been developed and implemented, with impressive results. Publications from captive studies provide a genetically sound basis for captive breeding; detailed studies of behavior have enhanced reproductive success; and the increase in captive production has reduced the demand for capture in the wild.

Beginning in 1978, much of this work has been reported in the proceedings of a biennial conference on the Snow Leopard, International Pedigree Book of Snow Leopards (Leif Blomquist, Helsinki Zoo, editor). The conference papers, presented in Helsinki (1978), Zurich (1980), Seattle (1982), and Krefeld (GFR) (1984), include a substantial amount of information relevant to the biology and conservation of the Snow Leopard not only in captivity, but in the wild as well.

The International Snow Leopard Trust, which was established in cooperation with the Woodland Park Zoo of Seattle, has been active in cooperative endeavors to perpetuate viable breeding populations of this species, both in captivity and in the wild. As of present writing, the Trust is co-sponsoring (with the Wildlife Institute of India) the Fifth International Snow Leopard Symposium, under the auspices of the Government of India, Department of Environment, Forests, and Wildlife, and with the collaboration of the Wildlife Department of the State of Jammu and Kashmir, the U.S. Fish and Wildlife Service, and Seattle's Woodland Park Zoological Gardens.

It is hoped that researchers and administrators concerned with the free-living Snow Leopard in its native habitats will participate in this Fifth Symposium, and that one major focus of the Symposium will be to increase cooperative efforts to advance the welfare of the Snow Leopard in the wild. Toward this end, the International Snow Leopard Trust will provide three background documents for Symposium participants:

1. A selection of publications that are relevant to the biology and conservation of Snow Leopards in the wild, thus providing a useful compendium for researchers and managers in "Snow Leopard Nations."

2. A draft of Annotated Bibliography of Literature on the Snow Leopard, by Dr. Joseph L. Fox, of the International Snow Leopard Trust Research Board.

3. A draft Recovery Plan for the Snow Leopard for the restoration of Snow Leopard populations in the wild to viable self-perpetuating levels. The draft Recovery Plan comprises the remainder of this document.

* We appreciate US Fish and Wildlife Service support in duplicating these documents for distribution at the Symposium.

SNOW LEOPARD RECOVERY PLAN (DRAFT)

For consideration at the Fifth International
Snow Leopard Symposium, October 13-15, 1986, India

This Recovery Plan is intended to serve as a means of compiling basic biological data, identifying needed further information, and working toward recommendations for administrators responsible for Snow Leopard populations and habitats. It is envisioned that sequential drafts will contain an increasing amount of reliable data applicable to the progressive development of effective conservation measures for the Snow Leopard and its habitat throughout its range, and more and more accurate estimates of the status of Snow Leopard populations.

The plan, when thoroughly reviewed and revised, will embody the contributions of many individuals and agencies with expertise and responsibilities related to Snow Leopards and their management. Ultimately, the plan will provide recommendations concerning actions necessary for the maintenance, enhancement and recovery of the Snow Leopard in its aboriginal habitat. The very nature of that habitat, of course, has made Snow Leopard study arduous, and Snow Leopard protection difficult. An early step toward Recovery, therefore, is in the development of ways to obtain current and comparable information on the status of Snow Leopard populations throughout their present geographic distribution. Another is the intensive study of sample populations to strengthen available knowledge on the basic elements of Snow Leopard biology. These, and other tasks relevant to the overall goal of Snow Leopard Recovery, should be reviewed for priority, and accepted for pursuit by one or another of the cooperating bodies.

Recovery of the Snow Leopard will be a long-term proposition. Ultimately, implementation of the Recovery Plan should provide viable, self-sustaining populations in perpetuity. Researchers have already realized some successes in determining food habits, and other biological characteristics for free-living Snow Leopards, and many useful observations have been made of the biology of those in captivity. However, a great deal of field research remains to be done before conservation plans can be reliably tailored to biological requirements.

Some mechanism for the identification of currently necessary tasks, and recognized acceptance of responsibility for carrying out each such task, along with the provision of a way to record and disseminate the resulting information comprise the tactics that advance the strategic aim of the Recovery Plan toward its goal.

In order to identify the lack of necessary information one must have a firm grip on information already available. One part of each successive draft Recovery Plan, then, should be a concise "Data Bank" on the Snow Leopard.

A Preliminary "Data Bank" Outline for the Snow Leopard Recovery Plan

History

Physical characteristics

Social Organization and Behavior

Past Distribution

Current Distribution/Status

Corridors and Buffer Zones

Population Characteristics

 Density

 Home Range, Movement (Tracks, Sign)

 Age and Sex Structure (Criteria of sex and age)

 Natality, Survival to independence

 Mortality, including man-caused

Habitat

Food Habits

Conservation education

Conservation programs

 wild

 captive

NOTE: The Snow Leopard Bibliography should be annotated to conform
to Data Bank Categories.

In addition to the basic biology of the Snow Leopard, it is necessary to consider this species within its habitat, in order to identify and assess the factors responsible for its endangered status, and to explore ways of alleviating significant constraints on the recovery of its populations.

It is often useful, when an overall distribution of an endangered species has been fragmented, to assess the fragments in terms of long-term genetic viability. This involves numbers of interbreeding individuals, and so deals with population numbers and composition and also, since free-living animals require habitat, the geographic distribution of each population. Within each surviving population, if it is to recover, the factors limiting recovery must be identified and alleviated sufficiently for population increase. To maintain or enhance habitat quality it is often useful to identify the Critical Habitat, essential for that population and hence the rational target of managerial protection and enhancement. Similarly Movement Corridors along which individuals could move from one population to another, can be identified, and made a focus of maintenance and enhancement. And since managerial tactics, including the tactics of persecution and neglect, are carried out by entities engaged in land-use practices, the human side of Snow Leopard habitat use must be taken into account.

Some of these considerations are outlined below.

Information Basic to the Understanding, Monitoring and Management of
Fragmented Snow Leopard Populations

BIOLOGICAL INFORMATION

1. Populations: number, structure, and distribution
 - a. Define the minimal number and structure to insure that a Snow Leopard population is viable.
 - b. Define the amount of Snow Leopard habitat necessary to maintain a minimal viable population: - this should be the minimum unit of management.
 - c. Describe each identified population in terms of 1a and 1b above.

2. Limiting factors: patterns and causes of mortality
 - a. Direct control by man.
 - b. Indirect control (such as habitat modification) by man.
 - c. Other limiting factors.
 - d. For each population unit, assess limiting factors and devise potential ways of encouraging population recovery.

MANAGEMENT INFORMATION

3. Critical habitats and movement corridors
 - a. Identification and suggestions for protection of critical habitats.
 - b. Identification and suggestions for protection of movement corridors.

4. Human land-use and administration
 - a. Relation of traditional human land-uses to Snow Leopard welfare.
 - b. Relation of contemporary or proposed land-use changes to Snow Leopard welfare.
 - c. Agencies with custodial authority over general land-use, parks and reserves, and law enforcement.
 - d. Aspects of agency and other programs with relevance to Snow Leopard welfare.

POTENTIAL MANAGERIAL ACTIONS

5. Managerial tactics
 - a. Establish channels of communication, and mechanisms of cooperation with principal human entities, and work toward practicable advances in Snow Leopard welfare.
 - b. Monitor Snow Leopard populations and habitats before and during recovery.

6. Communication

- a. Maintain a steady flow of reliable Snow Leopard information between all Snow Leopard cooperators, including responsible national land-use and conservation agencies.
- b. Communicate to the greatest extent possible with local, national, and global publics.

The review of current knowledge and the search for needed new information may be broken into a number of specific TASKS, for clearer definition of objectives, for helping to determine priorities, and for facilitating the acceptance of specific responsibilities.

TASKS CONTRIBUTING TOWARD THE SUCCESSFUL
DEVELOPMENT AND IMPLEMENTATION OF THE
SNOW LEOPARD RECOVERY PLAN

The following list, which does not imply priority, will be discussed and, as necessary, amended or revised, during the afternoon Symposium session of October 15.

- (a) Prepare a critical review of the biological data base for the Snow Leopard, clearly identifying what is and is not known.
- (b) Review and report upon needed biological data that have been and could be obtained from studies of captive Snow Leopards.
- (c) Integrate the organization and information of (a) and (b) above into the Annotated Snow Leopard Bibliography, for use in Snow Leopard research and management.
- (d) Review and compare current methods for obtaining and reporting comparable information on free-living Snow Leopard populations.
- (e) Develop and conduct intensive study of population parameters in each major Snow Leopard habitat, and improve and test extensive population monitoring systems.
- (f) Establish and maintain a Snow Leopard Mortality Center, to develop guidelines on recording mortality, and to maintain records on all evidence of mortality, including skins in trade.

- (g) Review and compile current information for each "Snow Leopard Nation" on location and management of protected Snow Leopard habitats, both reserves and travel corridors, protective regulations, and programs to promote Snow Leopard recovery.
- (h) Review and compile current information for each "Snow Leopard Nation" on legal position and custodial responsibility for management of Snow Leopard populations and habitats.
- (i) Establish and maintain a central clearinghouse for the receiving and distributing of information relative to the biology, management programs and monitoring of free-living Snow Leopard populations.