

SNOW LEOPARD SURVEY AND CONSERVATION HANDBOOK



International Snow Leopard Trust
U.S. Geological Survey
Biological Resources Division

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This document consists of three parts:

Part I: Introduction (Objectives & Background). 4.4 MB ([SL_Survey_Cons_Handbook_Part_1.pdf](#))

Part II: Snow Leopard Survey Methods. 2.2 MB ([SL_Survey_Cons_Handbook_Part_2.pdf](#))

Part III: Prey Species, Habitat Assessment, Conservation and Appendices. 1.8 MB ([SL_Survey_Cons_Handbook_Part_3.pdf](#))

TWO – SNOW LEOPARD ECOLOGY

Snow leopards are closely associated with the alpine and subalpine ecological zones, preferring broken, rocky terrain with vegetation that is dominated by shrubs or grasses (Figure 2–1). In the Sayan Mountains of Russia and parts of the Tien Shan Range, they are found in open coniferous forest, but they usually avoid dense forest. They generally occur between elevations of 3,000 to 4,500 m, except within their northern range limit where they are found at lower elevations (900 to 2,500 m). Reports suggest that they migrate to lower elevations during winter in northern Pakistan, the Tien Shan Mountains, ranges in Russia, and parts of India, following movements of their primary prey species such as ibex and markhor. Snow leopards prefer steep terrain broken by cliffs, ridges, gullies, and rocky outcrops, although they may traverse relatively gentle country, especially if ridges offer suitable travel routes and shrubs or rock outcrops provide sufficient cover. They show a strong preference for irregular slopes in excess of 40° and well-defined landform edges, such as ridgelines, bluffs and ravines, along which to travel about their home range.

Home range size and shape is not well known. The home range size of five snow leopards in prime habitat in Nepal ranged from 12 to 39 km², with substantial overlap between individuals and sexes. Animals usually moved straight line distances of 1 to 1.3 km between consecutive days, but are capable of periodic long-distance movement. Typically, a snow leopard remains within a relatively small area for 7 to 10 days, then shifts its activities to another relatively distant part of its home range. A study in Nepal indicated that 42–60% of home-range use occurred within only 14–23% of the animal's total home area, indicating strong use of core areas, although this use was separated temporally. Core areas were marked significantly more than non-core sites suggesting that social marking plays an important role in spacing individuals. Home ranges overlap in other areas, with ranges of similar size being reported from Ladakh and Mongolia.

The snow leopard is an opportunistic predator capable of killing prey up to three times its own body weight. Its main prey are blue sheep (*Pseudois nayaur*), Asiatic ibex (*Capra ibex sibirica*), argali (*Ovis ammon*) and other wild sheep and goats, along with domestic stock, marmots (*Marmota* spp.), pikas (*Ochotona* spp.), hares (*Lepus* spp.), and gamebirds (snowcocks, *Tetraegallus* and chukar partridge, *Alectoris chukar*) (Figure 2–2). In Russia, Siberian red deer (*Cervus elaphus maral*), roe deer (*Capreolus capreolus*), wild boar (*Sus scrofa*), and even reindeer have been taken by snow leopards, while young camels (*Camelus bactrianus*) are occasionally killed in Mongolia.

The range of ibex and blue sheep closely parallels that of the snow leopard. The figure on the frontispiece shows the potential range of the snow leopard based on habitat, which encompasses a total of over 3.0 million km². It is not present throughout this area; its core distribution ranges from China in the Gongga Shan Mountains of Sichuan Province, the Qilian Shan of Gansu Province, and the Bayan Har Shan and Anyemaqin ranges of Qinghai Province along the Kunlun Shan, Arjin Shan and through numerous mountain chains on the Tibetan Plateau (Tibet or Xizang Autonomous Region) to the Himalayas of India, Bhutan, and Nepal,

THREE – BASIC STEPS

- (b) areas in core snow leopard range that support high quality habitat for snow leopards and other wildlife, and which appear good candidates for reserve status, and
- (c) border areas with overlapping snow leopard habitat.

Box 3–2 indicates general habitat features associated with snow leopards.

Box 3–2. General habitat features associated with snow leopards.

- Mountain ranges (especially cliffs, rocky outcrops, uneven hill–slopes, drainages, and deep ravines).
- Elevations above 3,000 m, although they may be found as low as 1,000 m.
- Open shrub, grass, or herbaceous vegetation, rather than closed–canopied forest.
- Drier areas, especially those that receive less than 2,000 mm per year.
- Areas with relatively few human settlements and areas not unduly disturbed or heavily hunted.
- Any prey such as domestic or wild sheep and goats, deer, marmots, and game–birds.

Schedule and Prepare for the Survey

After reviewing SLIMS background information on detecting snow leopards in the wild, schedule the field survey for a time of year when access is easiest and when snow leopard sign is most likely to be detectable (Box 3–3 and Table 3–1) (see Chapter 4, and Appendix B, “Distinguishing Snow Leopard Sign from that of Other Species”). Generally, the best time of year to conduct the snow leopard surveys is late winter or early spring (January through April). By conducting surveys in mid–summer when weather is warmer, the surveyor risks having most sign destroyed by herds of livestock. After determining the means of travel, estimate how much time it will take to reasonably cover the area on the ground (at least 3 to 5 sites per 1,000 km² land area), and then finalize the field schedule and duration.