

Snow Leopard (*Panthera uncia*) Schreber 1775
Synonym (*Uncia uncia*) Gray 1854

Once (French); *Schnee leopard* (German); *Irbis* (Russia and former USSR, Mongolia); *Bharal he*, *Barfani chita* (Hindi); *Heung chituwa* (Nepali); *Sarkaye*, *Sah*, *Zig* (Tibetan); *Shan* (Ladakhi); *Shureebao* (Mandarin)

Description: Adult shoulder height about 60 cm with head and body length of 100 - 130 cm. Adult weight averages 35 - 40 (♀) and 45 - 55 (♂). Distinguished by long tail (about 3/4 of body length), short, broad muzzle and luxuriant spotted pelage of whitish-gray (tinged with yellow) with dark, open or indistinct rosettes and spots. Adaptations for mountain life include large forepaws, short limbs, well-developed chest muscles, long hair with dense, wooly underfur, and the long tail. Information on geographic variations in size and pelage coloration lacking.

Behaviour and Reproduction: Generally solitary, although male - female pairs form during the brief breeding season, and female/offspring groups of 2 - 4 are not infrequently encountered (Dang 1967; Fox 1989a; Jackson and Ahlborn 1989; Schaller 1977). Siblings may travel together briefly following separation from their mother at ages 18 - 22 months (Jackson and Ahlborn 1989). Snow leopards leave scrapes, feces, scent sprays and claw rakings along their travel lanes (Ahlborn and Jackson 1988, Mallon 1984a, Schaller 1977).

Time of mating: Early January to mid-March. In captivity copulation occurs over a 3-6 day period (Freeman 1983). In the wild, vocalizations are most commonly heard during the mating season. Gestation 93-110 days (Ewer 1973, Hemmer 1972); Litter size: 1-5, usually 2 or 3. Age at sexual maturity (captivity): 2 - 3 years. Age at last reproduction (captivity): 15 years. Longevity: Wild - not known; captivity - 21 years (Blomqvist and Sten 1982; Wharton and Freeman 1988).

Habitat: Most closely associated with arid and semi-arid shrubland, grassland or barren habitats. In the Sayan Mountains of Russia and parts of the Tien Shan Range, found in open coniferous forest, but generally avoids dense forests (Heptner and Sludskij 1980). Primarily an inhabitant of the alpine and subalpine zones, from elevations of 900 m to 5,500 m or more, but usually between 3,000 and 4,500 m (except in the northern range limits where snow leopards occur between 900 and 2,500 m) (Heptner and Sludskij 1980, Schaller et al. In Press). In Pakistan, Russia and parts of India said to migrate to lower elevations during winter, following prey (Roberts 1977 and Dang 1967). Snow leopards prefer steep terrain broken by cliffs, ridges, gullies and rocky outcrops (Chundawat 1990, Fox 1989a, Jackson and Ahlborn 1984, 1988), although they may traverse relatively gentle country especially if ridges offer suitable travel routes and shrubs or rock outcrops sufficient cover (Schaller et al. 1988b). Show a strong preference for irregular slopes in excess of 40° and well-defined landform edges, like ridgelines, bluffs and ravines.

Home Ranges and Movements: Home range size of 5 snow leopards in prime habitat in Nepal ranged from 12-39 km² (Jackson and Ahlborn 1989), with substantial overlap between individuals and sexes. Daily distances moved ranged up to 7 km, but averaged 1.0 km (males) and 1.3 km (females). Typically, a snow leopard remains within a relatively small area for 7-10 days, then shifts its activities to another relatively distant part of its home range. Analysis of

four radio-collared snow leopards indicated that 42-60% of home-range use occurred within only 14-23% of the total home area. Use of common areas was separated temporally, however. Core areas were marked significantly more than non-core sites, suggesting that social marking plays an important role in spacing individuals (Ahlborn and Jackson 1988). Home range overlaps in other areas, with ranges of similar size being reported from Ladakh (Chundawat 1990) and Mongolia (Schaller et al. In Press).

Prey: An opportunistic predator capable of killing prey up to three times their own weight (Jackson and Ahlborn 1988), snow leopards are capable of preying upon most species found within their range, except for fully grown yak (*Bos grunniens*) or wild ass (*Equus hemionus*). Blue sheep (*Pseudois nayaur*), Asiatic ibex (*Capra ibex sibirica*), argali (*Ovis ammon*) and other wild sheep and goats are the most common prey items, along with domestic stock, marmots (*Marmota* spp), pikas (*Ochotona* spp.), hares (*Lepus* spp.) and gamebirds (snowcocks, *Tetraegallus* and chukor partridge, *Alectorus chukor*) (Fox 1989a, Hemmer 1972, Mallon 1984a, Schaller, 1977, Schaller et al. 1987, 1988b). In Russia, Siberian red deer (*Cervus elaphus maral*), roe deer (*Capreolus capreolus*) wild boar (*Sus scrofa*) and even reindeer have been taken by snow leopard (Annenkov 1990, Smirnov et al. 1990).

Distribution: Snow leopards inhabit the mountains of Central Asia over a 1.5 million km² area (Figure 1). The core of its 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; then northwesterly along the Karakorum Range of Pakistan through the Hindu Kush mountains into Afghanistan. From here snow leopard occur northward through the Pamirs into Tajikistan and the Alayskiy, Gissarskiy and Zeravshanskiy ranges; along the Turkestanskiy and Chatkalskiy ranges of Uzbekistan; through the Talasskiy Alatau and Kirgizskiy mountains bordering Kyrgystan (Kirghizia) into the Kazakhstan Republic; and then through the Tien Shan bordering China's Xinjiang Autonomous Region north to the Zailiskiy Alatau and Dzhungarskiy Alatau of Kazakhstan, and eastward to the Nan and Karlik Shan ranges near the Mongolian border.

The Kazakhstan populations are separated from those in Russia (southern Siberian) and Mongolia by a gap of 200 km or more. In Russia, snow leopards are found in the Altai and the western Sayan mountains very nearly to Lake Baikal. In Mongolia, they occur in the Altai, its subsidiary (and isolated) ranges, the Hangai mountains, and the string of trans-Altay Gobi massifs. Reports of occurrence in the Kopet Dag Mountains of Turkmenistan are erroneous.

Population Status: IUCN - Endangered.

Said to be extirpated from many areas within its range, but baseline information is lacking. There are no reliable estimates for the total snow leopard population. Green (1988) estimated the world's wild population at 1,504 - 2,880, while Fox (1989) put the number at 3,350 - 4,050 individuals. During recent years, population estimates for several countries, notably China, Nepal and parts of the former USSR have been revised upward. Although comprehensive status and population surveys are lacking, there may possibly be as many as 5,000 - 7,000 snow leopards remaining. Fox (1989) reported suitable habitats totals some 1,230,000 km², but this figure should be viewed as preliminary.

Country Status: The following paragraphs summarize the population estimates for each country, with habitat area according to Fox (1989).

Afghanistan: Available habitat totals 80,000 km², but no population estimate is available (Sayer 1980). *Bhutan*: 10,000 km² (Blower 1986 cited in Fox 1989b), but no population estimate has been made. *China*: 400,000 km² of suitable habitat, with a population of about 1,400 (Fox 1989a), but this excludes Sichuan and the potentially significant populations of Tibet (Xizang Autonomous Region), particularly along the Himalaya and southeastern edge of the Tibetan Plateau (which may increase the area of suitable habitat to 550,000 km²). Estimates for Tibet and Sichuan Province are not presently available. Thus, the total Chinese population is more likely on the order of 2,000 - 2,500 animals (Jackson and Schaller pers comm.), including 750 in 170,000 km² of suitable habitat in Xinjiang (Schaller 1988a), and 650 in a 65,000 km² area in Qinghai and the neighbouring Province of Gansu (Schaller 1988b), a mean density of 1 cat per 100 - 200 km². However, Schaller (1988b) estimated mean densities of 3-4 snow leopards per 100 km² in parts of Qinghai Province, a number similar to that reported by Jackson et al (In Press) for parts of southern Tibet along the northern slopes of the Himalaya. *India*: According to Chundawat et al. (1988), suitable habitat totals about 95,000, with about 72,000 km² in Ladakh (nearly a third of which constitutes disputed border areas with Pakistan and China). Mallon (1984a) estimated the Ladakh population at 100 - 300 individuals. Fox et al. 1991 estimate that about 400 snow leopards reside within a 52,000 km² area of northwestern India, with a nation-wide population of some 500 animals. This figure is derived from using a mean density of one snow leopard per 110 km² in good habitat along the northern side of the main Himalayan Range (an area of 30,000 km²) and one per 190 km² in lower quality habitat along the southern slopes of the Himalaya (22,000 km²). These authors noted that small patches of prime habitat may support as many as one snow leopard per 15 km². *Mongolia*: 130,000 km² suitable habitat, with a population of 500-900 (Bold and Dorzhzunduy 1976), but recently estimated at about 1,000 (Schaller et al. In Press) in an occupied range of some 90,000 km². These authors revised Mallon's (1984b) range map for Mongolia, and clearly substantiated the fragmented distribution of snow leopards in this country. The main populations occur in the Altay and Transaltai Gobi mountain ranges, with more isolated enclaves in the Hangai, Hanhohhiy Uul and Harkhyra Uul mountains. Bold and Dorzhzunduy (1976) estimated a population of 190-250 snow leopards in a 6,600 km² area in the desert massifs of the southern Gobi, with a mean density of 4.4 animals per 100 km² for the Tost Uul range. Schaller et al. (In Press) estimated at least 10 snow leopards roamed a 200 km² area of the Burhan Budai range. *Nepal*: 30,000 km² suitable habitat; population estimated at 150-300 (Jackson 1979), an estimate recently increased to 350-500 (Jackson pers comm.), based upon computer modelling using a map-derived Habitat Suitability Index system (Jackson and Ahlborn 1990). Snow leopards are distributed along the northern border of Nepal with Tibet, with the largest concentrations occurring in the western part (Mugu, Dolpo and Humla districts) of Nepal (Jackson 1979). Snow leopards have been sighted north of the Annapurna Range, in the Langtang Himal, Rolwaling Himal, Makalu, Walunchung and the Kanchenjunga massifs. Jackson and Ahlborn (1989) reported densities of 5-10 snow leopards per 100 km² in the remote Langu Valley of west Nepal, slightly higher than estimated densities for Nar-Phu located north of Annapurna (M. Oli, pers comm.). *Pakistan*: Estimated area is 80,000 (from Roberts 1977) with a population of fewer than 250 animals according to Schaller (1976). He searched a 300 km² area in Chitral known for its snow leopards, but found evidence of only four or possibly five animals. Assuming a mean density of one snow leopard per 250 km², the total population for Pakistan would be no more than some 300. They occur in the Hindu Kush range in the Northwest Frontier Province's Chitral

District, and through the Karakorum Range of the Northern Areas in Gilgit, Hunza and Baltistan districts. Presence in Azad Kashmir has not been recently confirmed. Good populations are reported from Shimshal in Hunza, but no density estimates are available (Wegge 1988). *Former USSR* - Estimated area of suitable habitat about 400,000 with a total population of 1,000 - 2,000 (Braden 1982; Bannikov 1984). About two-thirds of the habitat is located in the newly declared republics of Tajikistan, Kazakhstan, Uzbekistan and Kyrgyzstan. According to Bannikov (1984) the population consists of 1,400 in Kyrgyzstan, 200 in the Pamirs of Tajikistan, 50 in the Altay and Tuva of the Russian Union Republic, and 300 in Uzbekistan and Kazakhstan (180 - 200 in Kazakhstan), for a total of 1,950. The Tien Shan and Dzhungarsky Alatau support 400-500 individuals. According to Koshkarev (1989), there are 113-157 snow leopards in the Tien Shan in Kyrgyzstan, a mean density of 2.35 animals per 100 km². The following paragraphs detail estimates according to current political entities: Russia: Amount of suitable habitat totals about 131,000 km² (Koshkarev, pers comm.), with snow leopards being reported from the Altay and Sayan ranges bordering the People's Republic of Mongolia. Smirnov et al (1990) estimates about 80 snow leopards reside in southern Siberia, including those animals that wander into Mongolian territory. There are no confirmed sightings from the Eastern Sayan Mts, although tracks were reported by local herdsman in the early 1980's (Medvedev 1990). The southern Siberian snow leopards are isolated from those of central Asia. Sopin (1977, cited in Fox 1989b) estimates mean densities at 0.75 - 1.5 snow leopards per 100 km² in parts of the Altai Mountains, for a total population of about 40. Kyrgyzstan (Kirgizia): Snow leopards occur in the Talasskiy Alatau and Ferganskiy mountains, as well as the Tien Shan bordering China and Kazakhstan (Braden 1982, Kosharev 1989). Koshkarev (1989) mapped snow leopard occurrence over much of its range in Kyrgyzstan, recording 20 inhabited areas (totalling 6,554 km²), with an estimated population of 113-157 animals. Estimated densities ranged between 0.8 and 4.7 animals per 100 km², averaging 2.4 animals. Over its entire range (65,800 km²) in Kyrgyzstan, Kosharev calculated a mean density of about one snow leopard per 100 km². Kazakhstan: In the south, snow leopards occur along the Khigizskiy Range and Tasskiy Alatau bordering Kyrgyzstan, in the Sarytau Mountains near Alma Ata, and bordering China in the Dzhungarsky Alatau, a place they are apparently most common. Annenkov (1990) reported some 65-70 snow leopards in a 8,200 km² area, giving a mean density of 0.83 individuals per 100 km². The Zailiskiy Alatau in the northern Tien Shan has about 20 leopards (Zhirjakov 1990). Tajikistan: Little is known about snow leopard abundance in the former Union Republic of Tadzhikistan. Sokov (1990) estimates the number at about 200 - 300, significantly higher than previous estimates. They occur in the central and western parts in the Zeravshanskiy, Gissarskiy, Karateginskiy, and Petr Pervyi mountains, and in the Hazratishog and Darvaskiy Mountains, and in the Gorno-Badakhshansk area, including the Pamirs. Uzbekistan: Snow leopards are reported from the Turkestanskiy, Chatkalskiy and Gissarskiy ranges bordering Tajikistan and Kyrgyzstan (Braden 1982), with a total population of about 50 (Sludskiy 1973, cited in Braden 1982). No density estimates are available.

Protected Status: CITES Appendix 1. National legislation: although fully protected through much of its range (CHECK LIST Bhutan, China, India, Nepal, Pakistan and Russia; Unknown - other countries), laws are rarely enforced and policing is virtually impossible, given the remoteness of snow leopard habitat from administrative centers and recent political upheavals in many range areas. Although discouraged under CITES, several countries offer or have offered snow leopards for trophy hunting (Xinjiang, China and People's Republic of Mongolia).

Occurrence in Protected Areas: Green (1988 and In Press) summarizes the status of protected areas within snow leopard range. The following country summaries

are partly based upon unpublished information in files maintained by the International Snow Leopard Trust, Seattle, for its SLIMS reserve-based snow leopard data base. (Codes used: NP = National Park; NR = Nature Reserve; SR = State Reserve; WS = Wildlife Sanctuary; GS = Game Sanctuary; GR = Game Reserve; HR = Hunting Reserve): Afghanistan: Snow leopards have been reported by local people to occur in the 500 km² Arjar Valley WS, but their presence has not been confirmed (Sayer 1980). Known to occur in the 679.4 km² Pamir-i-Buzurg (Big Pamir) WS (Petocz 1978). Bhutan: The Jigme Dorje WS, declared in 1974, occupies about 7,892 km² area along the northern border with Tibet (WWF, unpub. data). Since much of the area is covered with coniferous forest, subalpine dwarf bamboo grassland or dense rhododendron shrubland, snow leopard habitat would be largely limited to grasslands inhabited by blue sheep. No population estimate is available for this reserve, the only one within Bhutan's snow leopard range.

China: Jackson et al. (In Press) estimate about 100 individuals reside within the 33,910 km² Qomolangma Nature Preserve in Tibet. This reserve is a significant transboundary park that links Nepal's Sagarmatha and Makalu--Barun national parks in the east with Langtang National Park and the Annapurna Conservation Area in the west, for a total combined protected area of over 40,000 km². The 5,000 km² Yanchiwan Reserve in Gansu has a few snow leopards (Schaller 1988b), as does the Dulang HR in Qinghai (Yongsheng Liu, pers comm.). The 14,000 km² Taxkorgan Reserve in Xinjiang supports 50-75 leopards (a mean density of 0.35 - 0.5 snow leopards per 100 km²), while the 3,000 km² Tomur Feng Reserve has fewer than 15 cats (Schaller 1987, 1988a). Snow leopards are very rare in the 45,000 km² Arjin Shan (Xinjiang) and 300,000 km² Changtang (Tibet) Reserves (Schaller pers comm.). They may occur in or near panda reserves bordering high mountain ranges, but further information is lacking. India: There are at least 18 and possibly as many as 34 reserves (existing and proposed) which could possibly contain snow leopard based on its range (Anon, 1988; Fox et al. 1991; Green 1992; Rodgers and Panwar 1988; and Singh et al. 1990). Snow leopards have been reliably reported from 7 reserves: Jammu and Kashmir - 4,100 km² Hemis NP; Himachal Pradesh - 675 km² Pin Valley NP; Uttar Pradesh - 953 km² Govind Pashu Vihar WS; 630 km² Nanda Devi NP; and 967 km² Kedarnath NP; Sikkim - 850 km² Kangchendzonga NP; Arunachal Pradesh - 1,807 km² Namdapha NP. They may occur in 27 other reserves (many of which have not been formally gazetted), as follows: Jammu & Kashmir - 141 km² Dachigam NP; 425 km² Overa-Arun WS; 425 km² Kishtwar NP; 200 - 550 km² Rangdum (Nunkun) WS; 100 - 340 km² Kanji WS; 400 - 1,000 km² Lungnag WS; 25 - 70 km² Tongri WS; 5,000 km² Karakorum (Saichen-Shyok) WS; 500 - 1,000 km² Daultberg Depsang WS; 1,000 - 3,000 km² Changtang WS; and 1,000 - 3,000 km² Rupshu WS; Himachal Pradesh - 1,716 km² Great Himalayan NP; 61 km² Kanwar WS; 592 km² Khokhan WS; 118 - 379 km² Kugti WS; 31 - 109 km² Lippa Asrang WS; 278 km² Nargu Winch WS; 34 - 138 km² Raksham Chitkul; 125 - 269 km² Rupi Bhaba WS; 103 km² Sechu Tuan Nala WS; 61 km² Tirthan WS; 64 km² Tundah WS; Sikkim - 468 km² Dzungri WS; 230 km² Tolung WS; Arunachal Pradesh - 2,000 km² Dibang Valley; Uttar Pradesh - 88 km² Valley of Flowers NP; 200 km² Yamunotri WS; Density estimates are available for one protected area only. Mallon and Bacha (1989) "questimated" 75-120 cats in a 1,200 km² area of Hemis National Park of Ladakh. Fox et al. 1991 noted that their previous estimates (5-14 animals) for this reserve, based on fresh tracks and available prey, appear to be low according to a new study by Chundawat (1990). Mongolia: Snow leopards occur in 3 reserves: the 723 km² Khokh Serkeen Nuruu Reserve, 53,000 km² Great Gobi National Park, and the Khasagt Khaikhan Uul Reserve. Schaller et al. (In Press) report about 55 snow leopards in the extreme northerly part of the Great Gobi National Park in two isolated sectors. The species is apparently scarce in the Khokh Serkeen Nuruu Reserve. Nepal: Snow leopard presence is confirmed in 4 protected areas: the 1,710 km² Langtang National Park, the 3,555 km² Shey-Phoksundo National Park, the 1,325 km² Dhorpatan

Hunting Reserve, and the 800 km² Annapurna Conservation Area. Small populations are thought to occur in the Sagarmatha National Park and the upper parts of the newly designed 2,233 km² Makalu-Barun National Park and Conservation Area. Jackson and Ahlborn (1989) estimated densities as high as 10 animals per 100 km² in a remote, uninhabited part of the Shey-Phoksundo National Park. Based on a computerized habitat model, these authors (1990) predicted that 65% of Nepal's snow leopard population may exist outside of protected areas. Populations of 50 or more individuals might be expected in three reserves (Shey-Phoksundo, Langtang and Annapurna), but no reserve would be expected to contain more than 180 animals, even assuming mean densities of 5 snow leopards per 100 km². Pakistan: Green (1988) reports the total amount of protected area supporting snow leopard is 3,190 km², but this figure is too low. There are about 16 existing or proposed protected areas within potential snow leopard range. Presence has been confirmed in the 778 km² Chitral Gol NP (NWFP); 25 km² Agram Besti GR (NWFP); and in the Northern areas in the 2,669 km² Khunjerab NP; 414 km² Baltistan WS; 650 km² Kilik/Mintaka GS; 72 km² Nazbar Nallah GS; and the 168 km² Sherquillah GS. Snow leopards may also occur in the following existing or proposed protected areas: Northern Areas - 129 km² Askor Nallah GS; 415 km² Astore WS; 370 km² Chassi/Bowshdar GS; 443 km² Danyor Nallah GS; 443 km² Kargah WS; 72 km² Nazbar Nallah GS; and the 75 km² Pakora GS; Northwest Frontier Province - 30 km² Gahriat Gol GR; 55 km² Parit Gol GR; and Azad Kashmir - 273 km² Ghamot GR. Russia: Prior to dissolution of the USSR, there might have been as many as 25 protected areas with snow leopard (Braden 1984; ISLT, unpub. data). In Russia, it is confirmed in two reserves, the 389 km² Sayano Shushensky NR (where densities have been estimated as high as one per 100 km² according to Zavatsky 1988), and the 864 km² Altaiskiy NR. Also reported from the following *Zakazniki* or short-term reserves: 1,030 km² Ininskiy, 2,413 km² Kosh-Agachskiy, 1,780 km² Shavlinskiy and 3,200 km² Khindikhtig-Khol'skiy. Kazakhstan: Snow leopards are reported from the following protected areas: 744 km² Aksu Dzhabagliy SR and the 915 km² Alma Atinskiy NR. Presence in the 714 km² Markakol'skiy SR is suspected, but unconfirmed (E. Koshkarev, pers comm.). Kyrgystan: Present in the 182 - 1,167 km² Besh-Aral'skiy SR, 173 - 190 km² Issyk-kul'skiy Reserve, 182 - 242 km² Narynskiy *zakaznik* Reserve, 237 km² Sary-Chelekskiy NR (also a Biosphere Reserve), and the 194 km² Ala Archa NP. Tajikistan: They are present in two of the three protected areas. Six animals are reported in the 161 km² Ramit SR and the 197 km² Dashti-Dzhumskiy Reserve (Sokov 1990). Also reported from the 300 km² Iskanderskul'skiy, the 680 km² Muzkul'skiy, 5,006 km² Pamirsskiy, and the 510 km² Sangvorskiy *Zakazniki* reserves. Uzbekistan: They are reported to occur in the 106 km² Zaaminskiy SR and in the 324 km² Uzbek NP, as well as the 875 km² Gissarskiy SR, which was formed from the Kyzylsuiskiy and Mirakinskiy reserves. The Chatkal'skiy SR, consisting of two areas 111 and 242 km² in size and separated by 20 km, also harbors snow leopards (ISLT, unpub. data).

Principal Threats: The primary threats are hunting for its valuable pelt and bones, trapping of animals suspected of taking livestock, and the depletion (through hunting, poisoning or habitat loss) of natural prey species (thereby increasing dependence upon domestic stock). Although pelts may fetch from 50 to 500 or more US dollars, the international fur trade has greatly declined due to regulation, animal rights activism and changes in western fashion, the primary market for fur coats. However, snow leopards appear to face significant threat from the Chinese medicinal trade (Jackson et al. In Press), which places high value on bones of tiger and the larger felids. For example, local tribesmen in northern Nepal trade snow leopard bones for sheep along the border with Tibet, from where they make their way to China and south-east Asia. Medicinal products are marketed in the wealthy cities like Hong Kong, Seoul, Taipei and Singapore, where demand greatly exceeds the supply. A few

animals are captured for zoos in China.

Recommended Conservation Measures: Primary conservation priorities involve securing effective protected areas; strengthening conservation within reserve buffers and along important corridors linking separated reserves; reducing trade in pelts and other body parts; protecting the natural prey base; and developing local solutions to address loss of livestock to problem snow leopards.

SPECIFIC RECOMMENDATIONS:

1. Surveys are urgently needed to establish the status and distribution of snow leopards, especially in Afghanistan, Tajikistan, Uzbekistan, and southeast and southwest Tibet, using standardized field survey methods developed by the International Snow Leopard Trust as part of its SLIMS project.
2. Establishment of Protected Areas: Snow leopard countries are urged to identify and fill gaps in their coverage of mountain habitats and ecosystems. Reserves for snow leopards protect many other plant and animal species. Protected areas are most needed where range bottlenecks exist (e.g., the Mongolia - Kazakhstan - China - Russia border) or where coverage is presently limited (e.g. Afghanistan and parts of China). Parks need to be of a size adequate to sustain relatively large snow leopard populations (50 to 100 or more). There is a need for "wilderness" reserves with few or no resident human populations, as well as reserves in which the local residents assist in management and protection responsibilities. Transboundary parks should receive high priority, as these link populations in different countries and facilitate international co-operation in conservation. To this end, the snow leopard can serve as Flagship Species, or an ambassador of environmental quality for the high mountains of Central Asia.
3. Corridors: Since very few protected areas are large enough to maintain genetically viable populations (500 or more individuals), snow leopard reserves should be linked, to the extent possible, by mountain corridors that permit the survival of snow leopard and their natural prey - albeit at low numbers. Since most parts of the cat's range are sparsely populated by humans, this could be achieved with carefully planned multiple land-uses (with grazing and animal husbandry receiving priority over cultivation of crops, logging or mining, for example). Roads, the primary agent of change in undisturbed areas, should be limited to less sensitive areas. Traditional forms of livelihood, such as nomadic pastoralism, should be promoted over more intensive (and ultimately unsustainable) land-uses. Local people should be offered incentives to conserve habitat and wildlife, and empowered with appropriate policing authority.
4. Depredation of Livestock: Livestock surveys should be conducted, especially in or near protected areas, in order to gather baseline data for resolving and avoiding further people-wildlife conflict due to livestock predation or other factors. Local communities should be offered economic incentives and compensation to offset their losses from predation of domestic stock. Rangeland and livestock management plans should be developed for key snow leopard areas.
5. Protection of Prey Base: The IUCN should encourage governments to enact legislation aimed at protecting and enhancing the natural prey base of

snow leopards, including rangeland rodents, in order to minimize the taking of livestock.

6. Trade in Body Parts: In cooperation with CITES, the IUCN should immediately organize a Task Force of experts and government officials to investigate the extent and ecological impact of the medicine trade in bones and other parts of snow leopard (and other rare cats). Measures to curb and control trade in snow leopard bones should be implemented as soon as possible, especially in China.
7. Cooperation: All countries supporting wild populations of snow leopard should participate in the International Snow Leopard Trust's SLIMS (Snow Leopard Information Management System) endeavour, in order to promote timely exchange of information, expertise and technology concerning the status, management and conservation of snow leopards. SLIMS promotes standardized field methodologies, thereby allowing comparisons between different observers and studies. The Trust provides handbooks and workshops to facilitate training and technology transfer, and plans to establish a data base in each snow leopard country.
8. Species and Habitat Conservation Programs: Snow leopard countries are urged to develop and adopt conservation plans for high mountain areas present within their respective territories.
9. Research: Management agencies and institutions are urged to support research aimed at increasing knowledge about snow leopards and their habitat, with assistance from international institutions and funding agencies. To this end, the snow leopard could serve as a flagship species for research and conservation in the mountains of Central Asia.
10. Captive Breeding and Management: Given the surplus of animals and diverse existing gene pool contained in the captive pool of North America and Europe zoos, these facilities should assist all qualified zoological gardens in Asia to obtain their snow leopards through cooperative breeding programs and enhanced management of existing captive stock.