

Conservation of the Leopard in the Caucasus

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This report attempts to compile and analyze all existing data on leopards and their conservation in the Caucasus creating a sound basis for the development of a leopard conservation strategy for the entire region. The Caucasus spans 6 countries and has been recognized as globally outstanding for its biodiversity. The leopard was identified as top priority species by the Ecoregional Conservation Plan (ECP), a key strategic document for biodiversity conservation in the region. Information on leopards before year 2000 has mainly been based on indirect evidences (tracks, skins). No scientific research or direct conservation action has been carried out during that time. Despite the fact that leopards indirectly benefited from the establishment of protected areas, they have been directly persecuted. As a result, their numbers have been dramatically reduced. Beginning in 2001, WWF has started to systematically investigate the status of leopards in the Caucasus through surveys and field monitoring. Additionally, urgent conservation measures have been implemented. This work not only improved the situation for the leopard but also managed to shift public opinion and perception. The leopard has become a symbol for the need of cooperation among the Caucasus countries because this wide-ranging cat can not be saved by one country alone.

Purpose of the report

The main purpose of this report is compiling and analyzing all existing baseline data on leopard conservation in the Caucasus to generate a sound basis for the development of a leopard conservation strategy for the entire region: a long-term vision, main strategic directions for its realization, as well as important milestones on this way, identified and agreed by national representatives of main stakeholder groups. This will create clear guidelines for further preparation and implementation of National Action Plans for leopard conservation in the ecoregion's countries.

The Caucasus

The Caucasus region, historical-geographically interpreted as the isthmus between the Black and Caspian seas, covers a total area of some 580,000 km², and spans six countries – Armenia, Azerbaijan, Georgia, the North Caucasus part of the Russian Federation, north-eastern Turkey, and part of north-western Iran (Fig. 1).

The Caucasus Isthmus is a region of natural contrasts and is composed

of several prominent elements, including the Greater Caucasus Range, (Fig 2; highest peak: Mt. Elbrus, 5642 m a.s.l.), the Lesser Caucasus Mountain Chain (up to 4000 m a.s.l.), the Talysh-

Western Alborz Mountains (up to 3200 m a.s.l.) at the south-western part of the Caspian Sea coast, and the South Caucasian Highlands covering parts of Asia Minor, Armenian and Iranian uplands



Fig. 1. Map of the Caucasus ecoregion (within red boundaries), with the Greater Caucasus in the north and the Lesser Caucasus in the south.

(highest point: Mt. Ararat (Agri Dagi), 5165 m a.s.l.).

Forests (Fig. 3) are among the most important biomes for biodiversity conservation in the Caucasus, covering around 112,000 km², nearly one-fifth of the region. High mountain habitats occupy more than 100,000 km² or around 17 % of the region. Mountain broad-leaved forest, open dry woodlands and high mountains (primarily sub-alpine zone) are the main habitats of leopard in the Caucasus.

An estimated 150 mammal species occur in the Caucasus. Of these, 19 are endemic to the region (Zazanashvili *et al.* 1999). There are a number of important flagship species in the region, of which the leopard is probably the publicly best known and the most celebrated in poems, rhymes, and songs. The leopard was widespread throughout the Caucasus at the beginning of the 20th century but is now reduced to only certain inaccessible areas of the region. The leopard has always evoked mixed emotions of fear, hatred and respect among local people.

The Caucasus is one of WWF's Global 200 Ecoregions (#78 Caucasus-Anatolian-Hyrcanian Temperate Forests), identified as globally outstanding for biodiversity (www.worldwildlife.org/science/ecoregions/). One of the most biologically rich ecoregions on earth, the Caucasus is ranked among the planet's 25 most diverse and endangered hotspots as well (Mittermeier *et al.* 1999; Myers *et al.* 2000). The Caucasus is also a globally significant centre of cultural diversity, where a multitude of ethnic groups and languages intermingle over a relatively small area. The 2006 IUCN Red List for Endangered Species™ (www.redlist.org) identifies 57 species and 5 subspecies of globally threatened vertebrates in the Caucasus, among them 20 species and 3 subspecies of mammals, including leopard as *Panthera pardus saxicolor* (Endangered).

The conservation of the rich Caucasian biodiversity is a great challenge and focus of WWF's work in the region: WWF and over 160 representatives from governments, universities and NGOs of all six Caucasus countries established the Ecoregional Conservation Plan (ECP; Williams *et al.* 2006). The ECP



Fig. 2. Greater Caucasus range in Georgia (Photo WWF Caucasus Programme Office).

is a comprehensive strategy for action to protect biodiversity and to support regional development in the Caucasus. Its purpose is to serve governments as well as national and international organizations as an action guideline. At the same time, the ECP is a strategic planning instrument to help governments with the implementation of their obligations towards international conventions, especially the Convention on Biological Diversity (CBD). The Convention on Biological Diversity (CBD) has been ratified by all six countries of the Caucasus region (Armenia 1993, Georgia 1994, Russia 1995, Iran 1996, Turkey 1997 and Azerbaijan 2000). With signing the CBD the countries committed themselves to reduce the present rate of species loss significantly on national, regional, and global levels until 2010. The leopard has been identified as one of the top priority species by the ECP. Additionally, leopard conservation is a priority topic for the Caucasus Biodiversity Council consisting of representatives from governments, NGOs and science of ecoregion's countries. The Caucasus Biodiversity Council oversees the implementation of the ECP.

Leopard conservation in the Caucasus up to 2000

The first scientific publication on mammals/carnivores in the Caucasus, which includes some information on leopard occurrence throughout the region appeared at the beginning of the 20th cen-

tury (Dinnik 1914, Satunin 1914, 1915; etc.). Afterwards, a considerable number of scientific publications followed, basically covering the geography of the species based on facts about revealing tracks or skins of killed animals in different parts of the Caucasus. On the other side in the course of the 20th century, actually no research has been carried out devoted to the direct study of the species taxonomy, populations' status, ecology, or conservation issues.

In parallel there were no direct field conservation actions aiming at protecting the leopard during the 20th century. However, the leopard indirectly benefited from the development of protected

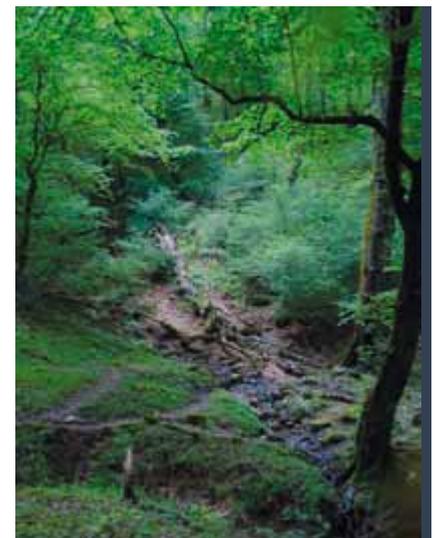


Fig. 3. Rich broadleaf forest in the Talysh Mountains, Azerbaijan (Photo WWF Azerbaijan).

Table 1. Leopard nomenclature according to Red Data Books of former Soviet countries and USSR

Country (edition)	Year of Red Book	Common name	Scientific name
Armenia	1987	<i>Front Asian leopard</i>	<i>Panthera pardus tullianus Valenciennes, 1856</i>
Azerbaijan	1989	<i>Front Asian leopard</i>	<i>Felis pardus tullianus Valenciennes</i>
Georgia	1982	<i>Leopard</i>	<i>Felis pardus L.</i>
Russian Federation (1st edition)	1983	<i>Front Asian leopard</i>	<i>Panthera pardus tulliana</i>
Russian Federation (2nd edition)	2001	<i>Leopard</i>	<i>Panthera pardus (Linnaeus, 1758)</i>
USSR (1st edition)	1978	<i>Front Asian leopard</i>	<i>Panthera pardus tullianus</i>
USSR (2nd edition)	1984	<i>Front Asian leopard</i>	<i>Panthera pardus ciscaucasica (syn. P.p. tulliana)</i>

areas which were mainly created for the conservation of biologically valuable forest ecosystems and the establishment of hunting reserves. These actions certainly contributed to the preservation of leopard populations up to our time, despite the dramatic reduction of their numbers. Especially the following protected areas played a significant role for the survival of the leopard. In the eastern part of the Greater Caucasus: Lagodekhi (established in 1912, Georgia),

in light of the historic socio-cultural circumstances: most of the leopard's range in the Caucasus was part of the Soviet Union in which predators such as the leopard were seen as pests and detrimental to agricultural and livestock production. Therefore, the systematic extermination of leopards and other predators was encouraged by state authorities through a bounty system. Only retrospectively scientists and conservationists realized the dramatic decline of

two editions of the Red Data Book of the Russian Federation (1983, 2001), Red Data Books of Armenia (1987) and Azerbaijan (1989). In all publications it was registered as a species under the threat of extinction. This status doesn't directly correspond to IUCN Red List Categories; it could be considered as Critically Endangered or Endangered. "Soviet" categorization was not based on strong criteria; it was an expert driven process. With the same status, the leopard was included in two editions of the Red Data Book of the USSR (1978, 1984). All these documents had uncertain legal basis. Interesting to note that at the same time different nomenclature was used (Table 1; Lukarevsky *et al.* 2007a).

It is symptomatic that after publishing of the Red Data Books mentioned above, not a single case of leopard killing has been officially registered right up to 2002, when the first WWF project started. This indicates that these editions had no real legal basis and accordingly were not supported with adequate law enforcement measures.

The legal basis for leopard conservation has begun to improve since 2000, when in Azerbaijan "Regulation on Red Data Book" was adopted by the resolution of the Cabinet of Ministers of Azerbaijan; the last revision of the Red List of Georgia was made recently, using IUCN methodology, and was approved by the President of Georgia in 2006 in accordance to the Law of Georgia on Red List and Red Data Book (of 2003, prepared with the support of the WWF). In this Georgian Red List, the leopard is listed as Critically Endangered. In Armenia the List according to the Red Data Book (with no changes) was officially approved by the Government in 2006.



Fig. 4. Anti-poaching unit in Armenia (Photo K. Manvelyan).

Zakatala (1929, Azerbaijan), Batsara and Tusheti (1935, 1980, Georgia) strict nature reserves; between Greater and Lesser Caucasus on Iori-Mingechaur highlands: Vashlovani (1935, Georgia) and Turianchai (1958, Azerbaijan) strict nature reserves; in the Lesser Caucasus: Gioi-Giol (1925, Azerbaijan), Khosrov and Shikahogh (1958, Armenia) strict nature reserves; in the South Caucasian Highlands: protected areas Marakan, Arasbaran and Kiamaki (1966, 1971, 1974, Iran), and some others. The apparent neglect of the leopard by the scientific and conservation community in the 20th century is comprehensible only

the Caucasian leopard population. This decline appeared so severe that from the 1960ies until the end of the 20th century when WWF started its investigations, the majority of scientists really doubted the existence of the species in most parts of the Caucasus.

Nevertheless, the only action that has been taken was including the species to the Red Lists/Books of the Caucasus countries. In particular, the first Red List of Georgia including data on the leopard was approved by the Council of Ministers in 1977. Afterwards, the Red Data Book of Georgia was published (1982). The leopard is included in the

In general, it should be noted that during the 20th century there was no adequate attention paid neither to research nor to the conservation of leopards throughout the Caucasus, which subsequently created the critical situation with regard to the species' population in the region.

Leopard conservation in the Caucasus since 2000

The situation, both with research and conservation of the leopard, has significantly changed during the last 5-6 years, when the first phase (2001-2005) of WWF's project on leopard conservation in the Caucasus has been implemented thanks to support of WWF-Switzerland and personally Heinz Stalder. Since 2003, WWF-Germany has also actively supported the project.

The main goal of the first phase of the project was the identification of conditions of leopard populations in the Caucasus and the implementation of urgent, primary conservation measures in some regions of its distribution (South Armenia and South Azerbaijan). In particular:

- Surveys have been carried out in the Greater and Lesser Caucasus and in the South Caucasus Highlands¹ (Armenia, Azerbaijan, Georgia, Iran, Russia, Turkey; Lukarevsky *et al.* 2007b); during the project implementation period, colleagues from the NGO NACRES have discovered a so far unknown leopard occurrence in the Vashlovani Reserve (Eastern Georgia, Iori-Mingechaur plateau, between Greater and Lesser Caucasus). This project has been supported by GEF/WB Georgia Protected Areas Development Project.
- The WWF project has supported the planning process of new protected areas, important for preserving the species in the Caucasus (Ordubad and Hirkan National Parks, Akhabakhar section of Illisu reserve, Azerbaijan, protected areas Zangezour and Arevik, Armenia); by Presidential Decree of the Republic of Azerbaijan and efforts of the Ministry of Ecology and

Natural Resources of Azerbaijan, Ordubad National Park was founded in 2003 (12,000 ha; development and enlargement of which is included in GEF/WB on-going Azerbaijan Rural Environment Project), Hirkan National Park in 2004 (21,500 ha) and the Akhabakhar section of Illisu reserve in 2004 (5,000 ha). Planning of new protected areas in South Armenia is coming to an end; management plans are under development, basic infrastructure will be created; the project is supported by the Critical Ecosystem Partnership Fund (CEPF) and support from the Norwegian government is expected as well.

- Assistance has been rendered to existing protected areas for strengthening protection programs in Armenia and Azerbaijan (Khosrov and Shikahogh reserves, Armenia, Ordubad and Hirkan National Parks, Azerbaijan);
- An anti-poaching brigade has been established and run in southern Armenia (Fig. 4);
- Systematic field monitoring has been set up and run in Armenia and partially in Talysh Mountains of Azerbaijan (Fig. 5);
- School education campaigns have been organized in leopard distribution areas in Armenia and Azerbaijan (Fig. 6);
- Informational meetings and seminars have been conducted with the border guards in Armenia and Azerbaijan;
- Increase of penalties for killing leopards has been lobbied, e.g. in Armenia penalty for damaging leopard has been repeatedly increased and currently amounts USD 7,085. In Azerbaijan, before 2004 the penalty was USD 337, and today it is USD 3,300. If the killing happens in a protected area, it is three times higher.
- A number of communication and awareness raising materials have been produced and distributed.

During the initial phase of project implementation important positive results on the ground were achieved. Traces of territorial leopards have been recorded on a regular basis in southern Armenia, particularly in the Meghri mountain range, including Shikahogh Nature Reserve, and in March 2005 a photo of



Fig. 5. Tracks left by leopards are very important for surveys (Photo WWF, F. Mörschel).

a free living leopard was taken with a camera-trap installed by the group led by Igor Khorozyan. According to the monitoring results (Lukarevsky *et al.* 2007b), the number of bezoar goats increased up to 25%, and the presence of leopards in Meghri mountain ridge became permanent. The project has certain achievements in Azerbaijan too, particularly in Talysh Mountains and Nakhchivan. In January 2007, a photo of a free living leopard was taken in Talysh Mountains with a camera trap installed by expert Elshad Askerov and local supporter Babakhan Rakhmanov.

Additionally, the first phase of WWF's project - together with efforts of colleagues from NACRES, Georgia, experts Igor Khorozyan and Alexander Malkhasyan, Armenia, colleagues from Institute of Zoology of National Academy of Sciences of Azerbaijan, expert Emre Can, Turkey, expert Ali Aghili, Iran and other colleagues who contributed to leopard conservation in the Caucasus managed to shift the opinion and perception of politicians, the media and local people in the region: They not only began to realize that the leopard still exists in a number of areas in the Caucasus; instead of the previously hated and dangerous animal they now recognize the leopard as a flagship species on the verge of extinction which urgently needs special attention for its survival. The leopard now more and more becomes a symbol for the need

¹ The leading role in determining status of leopard populations in regional scale and also, in training of local specialists and establishing field monitoring played Dr. Victor Lukarevsky.



Fig. 6. Education program in Armenia (Photo K. Manvelyan).

of cooperation among the Caucasus countries because it is so obvious that this wide-ranging cat can not be saved by one country alone. This could be seen at the Caucasus Ministerial Conference held in March 2006 in Berlin where the leopard was the symbol of the conference. This conference brought together representatives of all 6 Caucasus countries, including the environmental ministers of Armenia, Azerbaijan and Georgia.

The first phase of WWF's project addressed urgent conservation needs of leopards. As a next step, a broadly accepted ecoregional vision and strategy are needed to effectively enhance leopard conservation. This ecoregional vision and strategy has to be translated into corresponding national action plans officially approved by relevant governmental organizations.

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References

- Dinnik N. Ya. 1914. Carnivores of the Caucasus (Predators). - Proceedings of the Caucasian Dept. of Imperial Russian Geographic Society, Book XXVII, Issue II. Publishing-House of K.Ts. Kozlovsky, Tiflis, 536 p. (In Russian).
- Mittermeier R. A., Myers N., Gil P. G. and Mittermeier C. G. 1999. Hotspots: Earth's biologically richest and most endangered terrestrial ecoregions". CEMEX/Agrupacion Sierra Madre, Mexico

- City. Printed in Japan by Toppan Printing Co., 431 p.
- Lukarevsky V., Malkhasyan A., Askerov A., 2007a. Biology and ecology of the leopard in the Caucasus. Cat News Special Issue No. 2, 9-14.
- Lukarevsky V., Akkiev M., Askerov E., Agili A., Can E., Gurielidze Z., Kudaktin A., Malkhasyan A. and Yarovenko Y. 2007b: Status of the leopard in the Caucasus. Cat News Special Issue No. 2, 15-21.
- Myers N., Mittermeier R. A., Mittermeier C. G., Da Fonseca G. A. B. and Kent J. 2000. Biodiversity hotspots for conservation priorities. - Nature, vol. 403, IUCN, Gland, Switzerland. Produced by Nature Conservation Bureau Limited, UK, pp. 853-845.
- Red Data Book of Armenian SSR. Rare and Endangered Species of Animals. 1987. "Hayastan", Yerevan, 124 p. (In Russian).
- Red Data Book of Azerbaijan SSR. 1989. "Ishig", Baku, 544 p. (In Azeri).
- Red Data Book of Georgian SSR. 1982. "Sabchota Sakartvelo", Tbilisi, 255 p. (In Georgian).
- Red Data Book of RSFSR (Animals). 1983. "Rosselkhozizdat", Moscow, 454 p. (In Russian).
- Red Data Book of RSFSR (Animals), Second Edition. 2001. "Rosselkhozizdat", Moscow, 860 p. (In Russian).
- Red Data Book of USSR (Animals). 1978. "Lesnaia Promishlennost", Moscow, 460 p. (In Russian).
- Red Data Book of USSR, Second Edition. 1984. "Lesnaia Promishlennost", Moscow, 392 p. (In Russian).
- Satunin K. A. 1914. Key-book of mammals of the Russian Empire. Printing-House of the Imperial Governor for the Caucasus, Tiflis, 184 p. (In Russian).
- Satunin K. A. 1915. Mammals of the Caucasus region (Chiroptera, Insectivora, Carnivora). - Proceedings of the Caucasian Museum, Series A, I. Printing-House of the Imperial Governor for the Caucasus, Tiflis, 410 p. (In Russian).
- Williams L., Zazanashvili N., Sanadiradze G. and Kandaurov A. (Eds.) 2006. Ecoregional Conservation Plan for the Caucasus. Contour Ltd, Tbilisi, 220 p.
- Zazanashvili N., Sanadiradze G., Bukhnikashvili A. 1999. Caucasus. In Mittermeier R. A., Myers N., Gil P. G. and Mittermeier C.G. (Eds). Hotspots: Earth's biologically richest and most endangered terrestrial ecoregions". CEMEX/Agrupacion Sierra Madre, Mexico City. Toppan Printing Co, Japan. pp. 269-273.