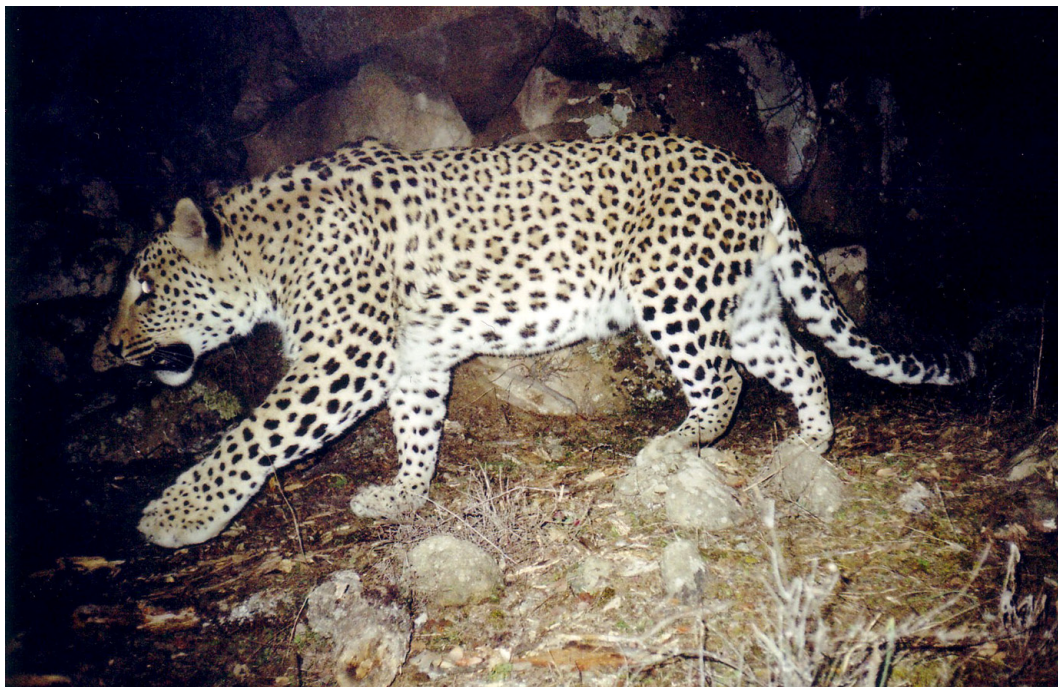


NATIONAL ACTION PLAN FOR LEOPARD (*Panthera pardus*) CONSERVATION IN ARMENIA

Draft



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December 2008
Yerevan

CONTENTS

I. INTRODUCTION	3-5
1.1 Structure of the National Action Plan	3
1.2 Justification	3-4
1.3 Procedures and partners of the National Action Plan	4-5
II. GENERAL INFORMATION	5-9
2.1 Leopard distribution, ecology and current status	5-7
2.2 Scientific research	7
2.3 Conservation	8
2.4 Analysis of problems and favourable conditions	8-9
III. VISION, GOAL AND OBJECTIVES OF THE NATIONAL ACTION PLAN	9-10
PLAN	
3.1 Vision	9
3.2 Goal	9
3.3 Objectives	9-10
IV. ACTIVITIES	10-19
V. IMPLEMENTATION OF THE NATIONAL ACTION PLAN	19-20
5.1 Official approval and follow-up	19
5.2 Institutional capacities	19
5.3 Financial support	20
LIST OF REFERENCES	20
APPENDIX 1	
National Action Plan for Leopard (<i>Panthera pardus</i>) Conservation in Armenia (2009-2017)	21-25
APPENDIX 2	
List of participants of the meetings held under preparation of the National Action Plan	26

Abbreviations:

CEPF – Critical Ecosystem Partnership Fund
GIS – Geographical Information System
IUCN – International Union for Conservation of Nature
NAS – National Academy of Sciences
NGO – non-governmental organization
PA – protected area
RA – Republic of Armenia
WWF – World Wide Fund for Nature

I. INTRODUCTION

1.1 Structure of the National Action Plan

The leopard is teetering on the brink of extinction in Armenia, surviving only in the least accessible cliffy habitats of southern Armenia. Until the early 1970s it lived also in the north-eastern parts of Armenia where it later vanished. Nowadays, the leopard population size numbers no more than 10-15 individuals.

Retention of the leopard within the Armenian fauna demands for implementation of urgent and efficient measures. It is justified by that this predator has been the focal species in the entire Caucasus. In other words, the leopard is an umbrella species (being atop the ecological niches, it safeguards the existence of all biodiversity) and a flagship species (beautiful and recognizable, it captures the attention of local people, governments and international cooperation).

Conservation of the leopard and other species inevitably entails conflicts with local communities and other stakeholders. From this standpoint, efficient and timely implementation of the Strategy for Leopard Conservation in the Caucasus Ecoregion and the National Action Plan for Leopard Conservation in Armenia represents a guarantee of saving the leopard from imminent extinction in the country.

This document consists of the following parts:

- Justification
- Procedures and partners of the National Action Plan
- Leopard distribution, ecology and current status
- Scientific research
- Conservation
- Analysis of problems and favourable conditions
- Vision
- Goal
- Objectives
- Activities
- Official approval and follow-up
- Institutional capacities
- Financial support
- List of references

The appendices include the National Action Plan for Leopard Conservation in Armenia and the list of workshop participants.

1.2 Justification

The RA Government has ratified the following documents:

- Convention on Biological Diversity (1993)
- National Action Plan on Nature Conservation (1998)
- Strategy and National Action Plan for Development of Protected Areas (2002).

The favourable legislative basis that was recently shaped in the RA includes the following laws:

- Law on fauna. Valid from 12 May, 2000.
- Law on hunting and game management. Valid from 2 June, 2007.
- Law on specially protected natural areas. Valid from 4 January, 2007.
- Law on rates of compensation of the damage inflicted to flora and fauna by violation of nature conservation. Valid from 18 June, 2005.

Moreover, the Ministry of Nature Protection of the RA has approved a number of regional documents:

- Ecoregional Conservation Plan (2005) in which the leopard is ranked a focal (umbrella and flagship) species in the Caucasus
- Strategy for Leopard Conservation in the Caucasus Ecoregion (2007).

Urgency of measures to be taken to save the leopard from disappearance in Armenia has been dictated by the following reasons:

1. The leopard is endangered both nationally and internationally:
 - The leopard is listed in the 1987 Red Data Book of Armenia as “endangered”
 - According to the assessment report prepared for the new edition of the Red Data Book of the RA, the leopard in the country should be given the status “critically endangered”
 - In the 2008 and earlier editions of the IUCN Red List of Threatened Species the leopard in Armenia and the Caucasus in general is classified as “endangered” [(EN C2a(i)).
2. Contemporary range of the leopard in Armenia includes only two important PAs (Khosrov Forest and Shikahogh reserves) and its overwhelming part is spread over the unprotected lands.
3. The leopard is permanently present only within the **two areas** (central and eastern Khosrov Reserve and eastern Meghri Ridge) which are located in the extreme north-west and south-east of the national range, respectively, and are isolated from each other by a network of narrow and interwoven corridors. Such a pattern makes the leopard population entirely dependent upon the functioning of corridors. Given the high level of range fragmentation, the most efficient way to preserve this predator would be the incorporation of prey-rich habitats into the network of large (reserves and national parks) and small (sanctuaries) PAs.
4. Today’s leopard range in Armenia is concentrated on the Zangezur Ridge which is extended along the Armenian-Azerbaijani (Nakhichevan) state border and where the leopard lives only temporarily.
5. Economic growth, particularly intensification of mining and road construction, leads to reduction of habitat quality and degradation of leopard and its prey populations.
6. Leopard existence has been challenged by many threats (item 2.4).

1.3 Procedures and partners of the National Action Plan

The National Action Plan for Leopard Conservation in Armenia is based on, and follows, the Strategy for Leopard Conservation in the Caucasus Ecoregion which was

approved by the Ministry of Nature Protection of the RA (letter №2-04/166 dated 25 July, 2008).

This draft was prepared by WWF Armenia within the project “Leopard conservation in the Caucasus Ecoregion” under financial support provided by WWF Switzerland. Preparatory stage comprised a number of workshops and roundtables for WWF staff and other stakeholders (September 23, October 17, October 31, November 14 in 2008).

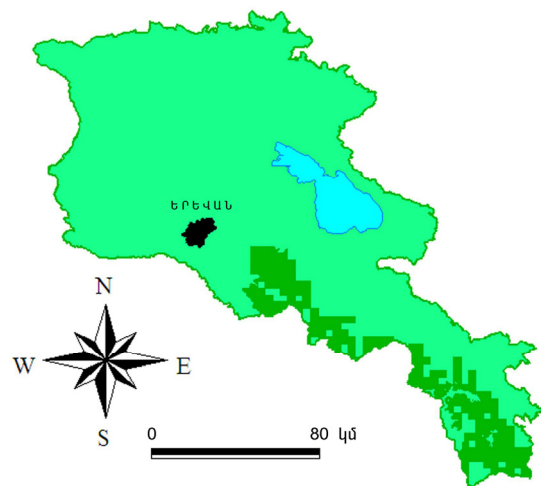
On 4 December, 2008, at the Aarhus Centre in Yerevan the workshop was held on discussion of the draft National Action Plan. The list of participants of this and the earlier meetings is presented in the Appendix 2.

II. GENERAL INFORMATION

2.1 Leopard distribution, ecology and current status

The Caucasian leopard (*Panthera pardus ciscaucasica*), also known as the Persian leopard (*P. p. saxicolor*), has been the rarest mammal of the Armenian fauna apart from the Pallas’ cat (*Otocolobus manul*) and the striped hyena (*Hyaena hyaena*). Existence of the Pallas’ cat and the hyena, last time recorded in Armenia in 1935 and the late 1940s, respectively, is neither confirmed nor fully refuted. The leopard is definitely living in Armenia, but faces imminent extinction because of meager numbers.

In 1972 the leopard was declared a protected species and included to the 1987 Red Data Book of Armenia as “endangered”. In 2008 and earlier editions of the IUCN Red List of Threatened Species it is listed as the Persian leopard of “endangered” [(EN C2a(i)] status. In the last assessment report (April 2008, 2008 IUCN Red List of Threatened Species) it is classified under the same name as “endangered” [EN2a(i)] and “decreasing”. Now, according to the IUCN criteria the leopard in Armenia should be reclassified as “critically endangered” [CR C2a(i) + D]. The Caucasian and Persian leopards are the same animals, but the former name was introduced in scientific literature earlier and has a priority over the latter one.



The leopard range in Armenia

The first records of leopards in Armenia began to come much later than elsewhere in the Caucasus, only in the late 1930s. Almost all information, mostly as trophies, arrived from the area which in 1958 was set aside as Khosrov Forest Reserve. Gleanings about leopard killings also used to come from the Zangezur Ridge. Until the early 1970s leopards also lived in north-eastern Armenia, but later were wiped out from there.

In Armenia and the whole Caucasus the leopard exists from the late Pliocene-early Pleistocene (170,000-300,000 years ago) when it penetrated from Africa to the Middle East. The rock carvings depicting men's hunts on leopards and dated the late Stone Age (5,000-4,000 B.C.) and the first half of the Bronze Age (3,000-2,000 B.C.) are found on the Geghama Ridge and in the Siunik Province of southern Armenia.

At present, the leopard inhabits south-western and southern Armenia from central and eastern Khosrov Forest Reserve (Khosrov and Khachadzor districts) southwards to the Armenian-Iranian state border within the Geghama, Zangezur, Vayk, Bargushat and Meghri ridges. The range boundaries are stretched along the Azat River in the north-west, Vardenis Ridge in the north, semi-desert of the Ararat Valley in the west, Azerbaijani border and nival belt in the west and east, and the Arax River along the Armenian-Iranian border in the south.

The maximum possible size of the leopard population in Armenia is 10-15 individuals, including adults, sub-adults and cubs. The population is breeding and makes only 0.008-0.01% of global population of this subspecies (up to 1300 individuals). So, the leopard in Armenia is a marginal taxon.

In Armenia, as well as in other areas of the Middle East, the most imminent threat to leopard survival is ever-increasing fragmentation of populations into the isolated and often too small patches of sub-populations. Prey reduction caused by poaching, infrastructure development, disturbance and habitat loss (plant gathering, livestock grazing, mining, road construction, deforestation, fires) is the principal factor of population fragmentation which leaves vast tracts of suitable habitats free of leopards. Dispersing sub-adult males are capable of passing long distances between the "islands" of good habitats, but such movements are dangerous and can end up with killing a predator for its certain or alleged attacks on domestic livestock. Only handful of protected areas (all located in Iran) is sufficiently large to maintain viable leopard populations.

Mountain ecosystems are naturally patchy what further aggravates the impact of human-induced fragmentation.

Direct poaching of leopards in Armenia and other parts of the Caucasus represents occasional killings upon encounters. It occurs rather infrequently, but inflicts a substantial impact on populations for their small sizes. In Armenia the leopard population is thinly spread over the vast range and the removal of just a single individual hinders population recovery and stabilization. As a result, even in the optimal habitats (e.g., on the Meghri Ridge) where ungulate densities are high the actual leopard density is much lower than that which could be supported by existing prey resources. Killed leopards have always been concealed by poachers to avoid official punishment and their skins are usually sold to rich high-rank persons through the unknown routes.

Political conflict between Armenia and Azerbaijan over Nagorno-Karabakh brought about the factors which accelerate poaching: military posts and bases, development of agriculture and mining in safety zones and re-settlement of abandoned villages.

Viability of Armenian and Caucasian leopard populations has been maintained by immigration of individuals from northern Iran. The rates and positive effects of immigration will likely decrease in time due to erection of artificial barriers (reservoirs, infrastructure) along the Armenian-Iranian and Azerbaijani-Iranian state borders. It is

supposed that the leopard density in northern Iran is below the carrying capacity of local habitats.

Leopard presence in Armenia is inversely proportional to human density, settlements and infrastructure.

Contemporary range of the leopard in Armenia (extent of occurrence, EOO in IUCN terminology) is 7497.2 km² or 25.2% of the territory of Armenia. Area of occupancy (AOO) is only 2856.8 km² (9.6%); it encompasses the areas of permanent living and temporary (corridors) living. The predator is permanently present only in the two areas: central and eastern Khosrov Forest Reserve (207.9 km²) and eastern Meghri Ridge to the north of Nuvadi village (296.9 km²). These two areas are situated in the extreme north-west and south-east of the range, respectively, and are separated by a network of narrow and interwoven corridors. Such a pattern of range structure makes the leopard population entirely dependent upon the functioning of corridors.

The leopard habitats in Armenia include arid grasslands, arid sparse forests, mountain, subalpine and alpine meadows. The last three landscapes are used only in snow-free seasons for transient movements. Snow depth is an important limiting factor, so the leopard and its prey prefer arid grasslands and sparse forests located on the southern slopes. Hardly accessible and precipitous cliffs are essential for leopards as they hold the staple prey (bezoar goat *Capra aegagrus*), provide many shelters for hunting from ambush and resting, and are least accessible for humans and livestock. The natural prey species include the bezoar goat, wild goat (*Sus scrofa*), roe deer (*Capreolus capreolus*), Indian porcupine (*Hystrix indica*) and European hare (*Lepus europaeus*).

The leopard range in Armenia encompasses two large enough PAs: Khosrov Forest and Shikahogh reserves.

2.2 Scientific research

The first records of leopards in Armenia come from the late 1930s and until the late 1990s they represented the sporadic and anecdotal gleanings, mostly of trophies. Systematic and in-depth leopard research efforts began in 1999, first in Khosrov Forest Reserve and then all over the range southwards to the Armenian-Iranian border. Leopard distribution and ecology were investigated by means of sign counts, fecal bile acid thin-layer chromatography, photo-traps, GIS mapping and computer modeling.

These works have enabled to identify the areas of permanent presence (priority leopard conservation areas), temporary presence (corridors) and absence, as well as to determine the effects of natural and man-caused factors on leopard distribution.

At present, WWF Armenia conducts the leopard monitoring in some areas of southern Armenia. It is vitally important to improve and standardize the monitoring procedures, expand the monitoring areas, train new staff and involve other organizations (e.g., Scientific Centre of Zoology and Hydroecology of NAS RA) in monitoring leopards and their prey.

2.3 Conservation

Even though Khosrov Forest and Shikahogh reserves were established in 1958, up to 1972 the leopard had been considered as vermin and was subjected to eradication. The first step towards its conservation was inclusion to the Red Data Book of Armenia in 1987 as an endangered species. But even then the leopard conservation activities continued to be superficial and limited to the maintenance of regular conservation regime in these PAs and the functioning of conservation inspections outside of PAs.

In 2002, a number of long-term activities focused specifically on leopard conservation were launched by international organizations (WWF, CEPF and others) and the Ministry of Nature Protection of the RA. These programmes include technical assistance to the important PAs (Khosrov Forest and Shikahogh reserves) and anti-poaching squads, implementation of leopard monitoring, promotion of educational programmes and campaigns and build-up of economic incentives for local communities. Establishment of new PAs in southern Armenia is underway in compliance with the Strategy and National Action Plan for Development of Protected Areas (2002) due to financial support provided by international donors (WWF, CEPF).

2.4 Analysis of problems and favourable conditions

The principal **threats** are:

1. Leopard and prey poaching
2. Habitat loss and fragmentation because of
 - Agriculture, particularly livestock grazing
 - Plant gathering
 - Deforestation
 - Mining
 - Road and pipeline construction
 - Fires
3. Strengthening of borderline infrastructure, human capacities and test grounds
4. Absence of policies on targeted land use and re-settlement
5. Insufficient implementation of laws and conservation control
6. Lack of socio-economic incentives for local communities to be involved in conservation
7. Socio-economic hardship of local people
8. "Shortsightedness" of mentality (preference of short-term economic gains over the long-term global benefits).

The main **gaps** in knowledge about the leopard in Armenia are:

- Movement patterns inside Armenia and between Armenia and Iran
- Use of corridors, particularly in the Zangezur Ridge
- Sex/age structure of population
- Population size and its trends in space and time
- Mechanisms of population self-maintenance and location of breeding units.

The following **gaps** are also present:

- Insufficient participation of stakeholders in leopard, prey and habitat conservation
- Insufficient awareness of stakeholders
- Insufficient exchange of information between the stakeholders on cases of leopard and prey poaching
- Insufficiency of existing PAs
- Absence of transboundary cooperation.

In spite of these threats and gaps, Armenia holds certain **favourable conditions** which could promote the leopard conservation:

- Will of the RA Government
- Involvement of Armenia in international conservation agreements
- Ecoregional Conservation Plan
- Caucasus Biodiversity Council
- Ecoregional exchange of experience and knowledge
- High profile of the species
- Expansion of existing PAs and establishment of new PAs
- Ongoing conservation programmes and projects
- Growth of international financial support
- Existence of national and international NGOs involved in biodiversity, particularly leopard and its prey, conservation
- Growing role of local communities in conservation
- Existence of educational and awareness-raising programmes targeted on local communities.

III. VISION, GOAL AND OBJECTIVES OF THE NATIONAL ACTION PLAN

3.1 Vision

The leopard and other wildlife prosper in natural habitats of Armenia and co-exist with local people.

3.2 Goal

The general goal of leopard conservation is to ensure, by 2017, stabilization of leopard population as measured by monitoring and efficient conservation of leopard, prey and their habitats.

3.3 Objectives

The National Action Plan pursues the accomplishment of the following objectives (Appendix 1):

1. Implementation of research and monitoring of leopard and prey numbers and the status of their habitats

ACTIVITY 3

ESTABLISH THE PAs OF DIFFERENT STATUS IN THE IMPORTANT AREAS ON A BASIS OF ANALYSIS OF INFORMATION ON LEOPARD POPULATION AND HABITATS

Activity 3.1

Establish Arevik, Zangezur, Gnishik and other PAs

Establishment of new PAs (Arevik on the Meghri and Zangezur ridges, Zangezur in the Zangezur Ridge) has been under consideration by the Ministry of Nature Protection of the RA. Preliminary works on establishment of Gnishik PA in the Vayk Ridge were carried out before. The status of these PAs is still unclear. Establishment of these and other PAs is intended by the Strategy and National Action Plan for Development of Protected Areas (2002).

Activity 3.2

Develop and approve the management plans of PAs located in southern Armenia

The management plan of Khosrov Forest Reserve is under adoption now. The draft management plan of Shikahogh Reserve was prepared very recently. Besides these documents, it is essential to prepare and adopt the management plans of the pending PAs (Arevik, Zangezur, Gnishik).

Activity 3.3

Ensure efficient work of newly established PAs by provision of technical assistance, personnel training and other ways

To avoid making the pending PAs “paper projects”, they should be supported by all available means: technical assistance, staff training, participation in scientific and conservation programmes, etc.

Activity 3.4

Develop and implement the leopard conservation programmes designed specifically for PAs

Apart from general conservation strategy and targeted activities, each PA should have and implement its own programme on leopard conservation.

ACTIVITY 4

SAFEGUARD THE LONG-TERM EXISTENCE OF CORRIDORS AND STEPPING STONES FOR THE LEOPARD

Activity 4.1

Identify the important corridors and stepping stones for the leopard in Armenia

This information should be received by means of population monitoring (see above). Corridors represent the integral areas of suitable habitats where leopards can move from one site to another and also live, depending on prey sufficiency and other factors (disturbance, available shelters and water sources, snow cover). Stepping stones are the disjunct areas of suitable habitats which are too small for leopard living and can only be used for movements, even under optimal environmental conditions.

Existence of safe corridors and stepping stones is especially important for adult male leopards maintaining vast home ranges and for sub-adult males dispersing far from

Activity 11.3

Coordinate the research activities and estimate leopard numbers by using unified methodologies

Joint implementation of leopard research and monitoring, creation and maintenance of relevant database, and standardized analysis of leopard data in transboundary areas of Armenia and Iran have been the essential tools of leopard conservation and population status assessment. Of particular emphasis is receiving and analyzing data on leopard movements across the Armenian-Iranian state border and on their role in the maintenance of Armenian leopard population viability.

ACTIVITY 12

COORDINATE THE ESTABLISHMENT OF TRANSBOUNDARY ECONET

Activity 12.1

Establish the transboundary Armenian-Iranian PAs

The best way to keep the integrity of Armenian and Iranian leopard populations is the establishment of PAs inside southern Armenia and the adjoining areas of Iran and creation of well-functioning network of transboundary PAs. The pending Arevik PA in Armenia and Kiamaky Wildlife Refuge and Arasbaran Protected Area in Iran's East Azerbaijan Province should serve the cores of this prospective Econet.

V. IMPLEMENTATION OF THE NATIONAL ACTION PLAN

5.1 Official approval and follow-up

Official approval and signing of the National Action Plan by the Minister of Nature Protection of the RA will indicate the beginning of its practical realization.

5.2 Institutional capacities

The organizations listed below should play an important role in implementation of the National Action Plan through the elaborated mechanisms of collaboration and coordination.

- Ministry of Nature Protection of the RA, including PAs and Conservation Inspection
- Ministry of Agriculture of the RA
- Ministry of Economy of the RA
- Ministry of Education and Science of the RA
- Ministry of Regional Administration of the RA
- Ministry of Foreign Affairs of the RA
- National academic entities, including the Scientific Centre of Zoology and Hydroecology of the NAS RA
- National and international NGOs
- International academic entities
- Local urban and rural communities.

5.3 Financial support

It is anticipated that financial resources essential for proper implementation of the National Action Plan will come from the state budget of the RA and international donors (grants, donations).

LIST OF REFERENCES

- Khorozyan I. 2008. Leopard in Armenia. *Caucasus Environment*, March 2008: 45-50.
- Gavashelishvili A. and Lukarevskiy V. 2008. Modelling the habitat requirements of leopard *Panthera pardus* in west and central Asia. *Journal of Applied Ecology* 45: 579-588.
- International Union for Conservation of Nature and Natural Resources. 2008. The 2008 IUCN Red List of Threatened Species. Downloaded from www.iucnredlist.org on 24 October 2008.
- Khorozyan I. 2008. Global assessment of Persian leopard (*Panthera pardus saxicolor*) for the 2008 IUCN Red List of Threatened Species. Submitted to the IUCN/SSC Red List Felidae Authority on 11 April 2008, 25 p.
- Khorozyan I. G. and Abramov A. V. 2007. The leopard, *Panthera pardus* (Carnivora: Felidae), and its resilience to human pressure in the Caucasus. *Zoology in the Middle East* 41: 11-24.
- Khorozyan I. and Malkhasyan A. 2005. Research and conservation of the Persian leopard in Armenia. *Russian Conservation News* 39: 37-38.
- Khorozyan I., Malkhasyan A. and Asmaryan S. 2005. The Persian leopard prowls its way to survival. *Endangered Species Update* 22: 51-60.
- Khorozyan I. G., Malkhasyan A. G. and Abramov A. V. 2008. Presence-absence surveys of prey and its use to predict leopard (*Panthera pardus*) densities: a case study from Armenia. *Integrative Zoology*: in press.
- Lukarevsky V., Malkhasyan A. and Askerov E. 2007. Biology and ecology of the leopard in the Caucasus. *Cat News Special Issue 2*: 9-15.
- Lukarevsky V., Akkiev M., Askerov E., Agili A., Can E., Gurielidze Z., Kudaktin A., Malkhasyan A. and Yarovenko Y. 2007. Status of the leopard in the Caucasus. *Cat News Special Issue 2*: 15-22.
- Zazanashvili N., Morschel F., Askerov E., Manvelyan K., Krever V., Farvar M. T. and Kalem S. 2007. Conservation of the leopard in the Caucasus. *Cat News Special Issue 2*: 4-9.

APPENDIX 1

National Action Plan for Leopard (*Panthera pardus*) Conservation in Armenia (2009-2017)

<i>Objectives</i>	<i>Activities</i>	<i>Indicators</i>	<i>Dead- lines</i>	<i>Preliminary budget (Euro)</i>	<i>Sources of financial support</i>	<i>Implementing bodies (stakeholders)</i>
SPECIES AND POPULATION						
I. Implementation of research and monitoring of leopard and prey numbers and the status of their habitats	<p>1. Develop and apply the unified methods of leopard and prey monitoring and census, as well as habitat monitoring</p> <p>1.1 Develop the methodologies of leopard and prey (at least the bezoar goat) census and evaluation of their population status</p> <p>1.2 Verify the methodologies in selected areas</p> <p>1.3 Develop and verify the methodologies of assessment of natural and man-caused impacts on the leopard, prey and habitats</p> <p>1.4 Hold the training courses for PA personnel on monitoring implementation and database maintenance</p> <p>1.5 Carry out the leopard and prey (at least the bezoar goat) counts and population status assessment in the priority and other areas</p> <p>1.6 Create and maintain the database on population status of the leopard and its prey (at least the bezoar goat)</p>	Annual and interim reports, agreements, documents	2009-2010	300,000	State budget, international donors	Scientific Centre of Zoology and Hydroecology of NAS RA, Ministry of Nature Protection of the RA, Ministry of Education and Science of the RA, Ministry of Regional Administration of the RA, PAs, academic entities, national and international NGOs, local communities

HABITATS AND CORRIDORS						
II. Establishment of well-managed system of PAs (Econet) to ensure safe existence of the leopard and its prey	<p>2. Assess the role and efficiency of PAs in leopard conservation and propose the improvement measures</p> <p>2.1 Assess the role and efficiency of PAs located within the leopard range, define and initiate the measures to increase the effectiveness of PAs</p>	Annual and interim reports, agreements, maps, documents	2009-2012	20,000	State budget, international donors	Ministry of Nature Protection of the RA, PAs, national and international NGOs
	<p>3. Establish the PAs of different status in the important areas on a basis of analysis of information on leopard population and habitats</p> <p>3.1. Establish Arevik, Zangezur, Gnishik and other PAs 3.2. Develop and approve the management plans of PAs located in southern Armenia 3.3. Ensure efficient work of newly established PAs by provision of technical assistance, personnel training and other ways 3.4. Develop and implement the leopard conservation programmes designed specifically for PAs</p>	PAs, annual and interim reports, maps, agreements, documents, goods of technical assistance	2009-2017	5,000,000	State budget, international donors	Ministry of Nature Protection of the RA, PAs, Ministry of Regional Administration of the RA, national and international NGOs
	<p>4. Safeguard the long-term existence of corridors and stepping stones for the leopard</p> <p>4.1. Identify the important corridors and stepping stones for the leopard in Armenia 4.2. Carry out the analysis of modern land use inside the corridors and stepping stones 4.3. Define the leopard- and prey-friendly land use patterns and strategies in the corridors and stepping stones 4.4. Assign the status to the corridors and stepping stones and ensure their conservation, management and integrity 4.5. Delineate the areas in demand of urgent and specific conservation measures and identify the “core groups” essential for survival of the leopard and prey populations</p>	Annual and interim reports, maps, agreements, documents	2009-2017	3,500,000	State budget, international donors	Ministry of Nature Protection of the RA, Ministry of Agriculture of the RA, Ministry of Economy of the RA, PAs, local communities, national and international NGOs, economic entities

STAKEHOLDERS AND COOPERATION

<p>III. Ensuring efficient work of stakeholders involved in leopard, prey and habitat conservation</p>	<p>5. Ensure efficient functioning of conservation departments of the PAs, as well as forestries and regional conservation inspections</p> <p>5.1. Ensure efficient functioning of conservation departments of Khosrov Forest and Shikahogh reserves, regional conservation inspections and forestries located within the leopard range</p> <p>5.2. Establish and technically support the anti-poaching squads in the Vayots Dzor and Siunik provinces, Khosrov Forest and Shikahogh reserves</p> <p>5.3. Develop the educational programmes and conduct the annual advanced training courses for relevant entities</p> <p>5.4. Improve the legislative basis</p>	<p>Annual and interim reports, agreements, documents, goods of technical assistance</p>	<p>2009-2017</p>	<p>2,000,000</p>	<p>State budget, international donors</p>	<p>Ministry of Nature Protection of the RA, PAs, Scientific Centre of Zoology and Hydroecology of NAS RA, local communities, national and international NGOs</p>
<p>IV. Ensuring assistance to leopard conservation by local population and national security forces</p>	<p>6. Ensure the involvement of local communities and national security forces in leopard, prey and habitat conservation</p> <p>6.1. Develop and implement the action plan aimed at involvement of local communities and security forces in leopard, prey and habitat conservation</p> <p>6.2. Develop and implement the community-based leopard conservation programmes</p> <p>6.3. Prepare and sign the memorandum on cooperation with local communities and security forces in leopard, prey and habitat conservation</p> <p>6.4. Develop and implement the awareness-raising programmes for local communities and security forces</p>	<p>Annual and interim reports, agreements, documents</p>	<p>2009-2017</p>	<p>50,000</p>	<p>State budget, international donors</p>	<p>RA Government, PAs, Centre of Zoology and Hydroecology of NAS RA, local communities, national and international NGOs</p>

	<p>7. Assist to development of alternative income generating programmes for local communities</p> <p>7.1. Develop and implement the model projects targeted at sustainable use of natural resources and generation of alternative incomes</p> <p>7.2. Develop the model ecotourism development project in a PA which would contribute to leopard and prey (at least the bezoar goat) conservation</p> <p>7.3. Prepare the legislative basis and create the opportunities for ecotourism development in the leopard range</p> <p>7.4. Advertise the ecotourism resources of southern Armenia</p> <p>7.5. Develop and use the ecotourism routes and services</p> <p>7.6. Apply the successful model projects in other areas of the leopard range</p>	Annual and interim reports, agreements, maps, documents	2009-2017	1,500,000	State budget, international donors	Ministry of Nature Protection of the RA, Ministry of Economy of the RA, tour-operators, local communities, national and international NGOs
V. Development and implementation of awareness-raising strategy, action plan and environmental education system in relation to leopard conservation	<p>8. Develop and implement the awareness-raising strategy and action plan focused on leopard, prey and habitat conservation</p> <p>8.1. Develop and apply the national awareness-raising strategy and action plan for leopard, prey and habitat conservation for different target groups and stakeholders</p>	Annual and interim reports, agreements, maps, published materials, documents	2009-2017	250,000	State budget, international donors	Ministry of Nature Protection of the RA, Ministry of Education and Science of the RA, PAs, local communities, biological and educational entities, national and international NGOs
	<p>9. Improve the system of environmental education</p> <p>9.1. Develop, publish and apply the methodological materials for tutors and educational materials for schoolchildren and students, and hold the training courses for tutors and lecturers</p> <p>9.2. Incorporate the leopard topic to all levels of existing biology and conservation curricula</p>	Annual and interim reports, agreements, published materials, documents	2009-2017	1,000,000	State budget, international donors	Ministry of Nature Protection of the RA, Ministry of Education and Science of the RA, PAs, secondary and higher schools, colleges and universities, local communities, national and international NGOs

INTERNATIONAL COOPERATION						
VI. Ensuring international cooperation and coordinated activities in leopard conservation within the transboundary areas of the leopard range	<p>10. Ensure the mechanisms of transboundary, particularly Armenian-Iranian, cooperation</p> <p>10.1. Prepare and sign the inter-state memorandum on cooperation in conservation between the RA and Iran</p> <p>10.2. Prepare and sign the memorandum on cooperation in leopard monitoring and conservation between the Ministry of Nature Protection of the RA and the Department of Environment of Iran</p>	Annual and interim reports, agreements, documents	2009-2012	30,000	State budget, international donors	Ministry of Nature Protection of the RA, Ministry of Foreign Affairs of the RA, Centre of Zoology and Hydroecology of NAS RA, national and international NGOs
	<p>11. Ensure the exchange of scientific and research expertise and information and establish the database on leopard monitoring</p> <p>11.1. Hold the training courses and workshops for participants from the involved countries</p> <p>11.2. Develop and apply the system of information and expertise exchange</p> <p>11.3. Coordinate the research activities and estimate leopard numbers by using unified methodologies</p>	Annual and interim reports, agreements, documents, maps, scientific and popular publications	2009-2012	50,000	State budget, international donors	Ministry of Nature Protection of the RA, Centre of Zoology and Hydroecology of NAS RA, national and international NGOs
	<p>12. Coordinate the establishment of transboundary Econet</p> <p>12.1. Establish the transboundary Armenian-Iranian PAs</p>	PAs, annual and interim reports, agreements, documents, maps, scientific and popular publications	2010-2017	1,400,000	State budget, international donors	Ministry of Nature Protection of the RA, Ministry of Foreign Affairs of the RA, Centre of Zoology and Hydroecology of NAS RA, national and international NGOs

APPENDIX 2

List of participants of the meetings held under preparation of the National Action Plan

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