



# The Persian leopard (*Panthera pardus tulliana*): building bridges through range-wide cooperation



IBCA webinar,  
International  
Leopard Day,  
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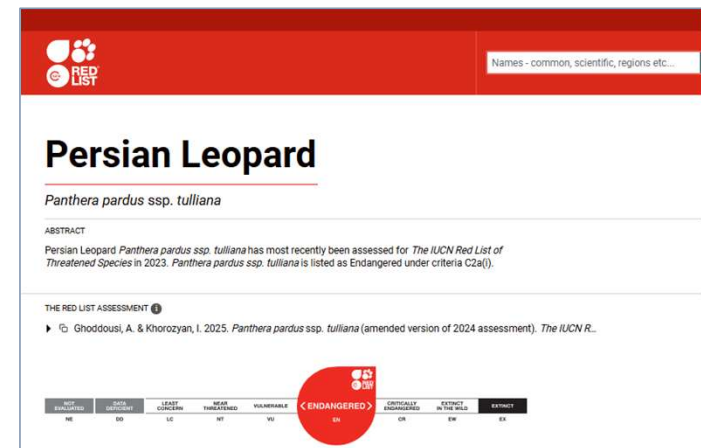
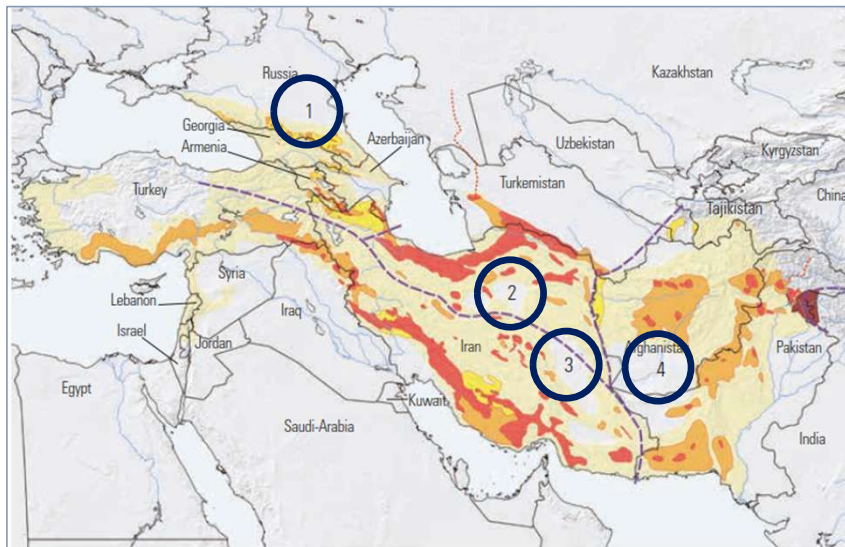
# Status

Status – **Endangered, C2a(i)**

Population < 2500 mature individuals

Continuous observed, projected or inferred decline

Each of four subpopulations < 250 mature individuals



Status – **Largely Depleted**

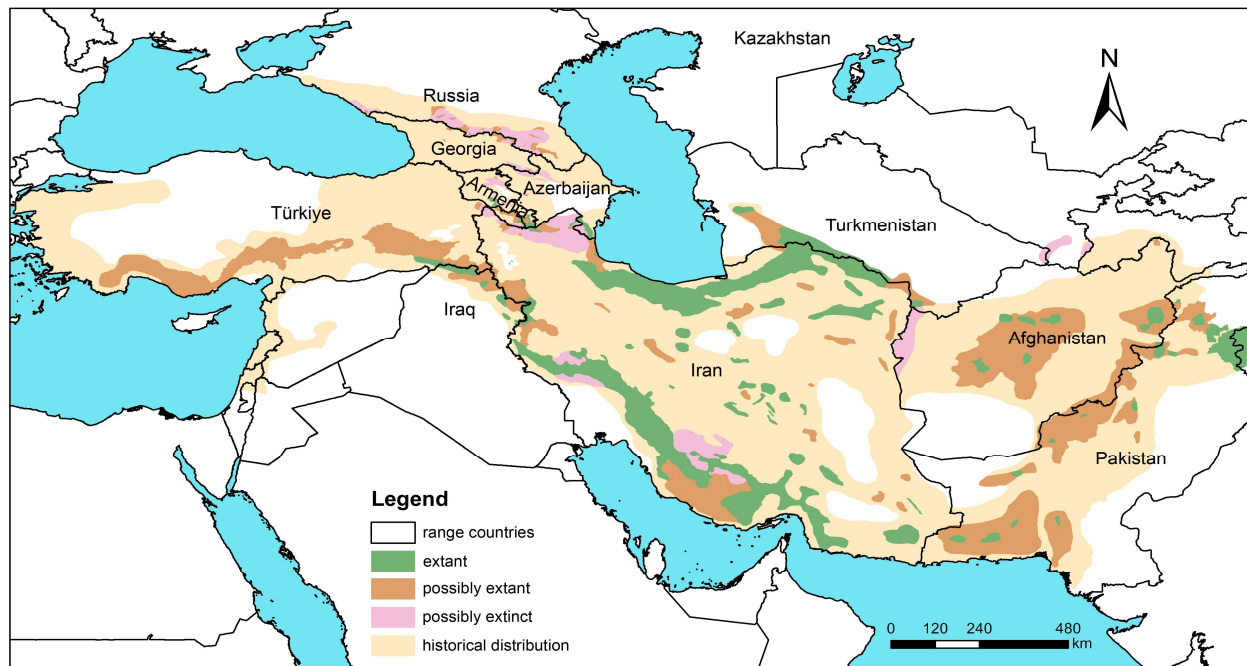
Khorozyan I. and Ghoddousi A.,  
2025, under review



## Population size

Subpopulations	Total estimated number	Total number of adults
1 – Caucasus Ecoregion	> 63-97	> 38-58
2 – western range	209-329	125-197
3 – northern Iran and Central Asia	348-440	209-264
4 – eastern range	> 130-178	> 78-107
<b>Total</b>	<b>&gt; 750-1044</b>	<b>&gt; 450-626</b>

# Distribution



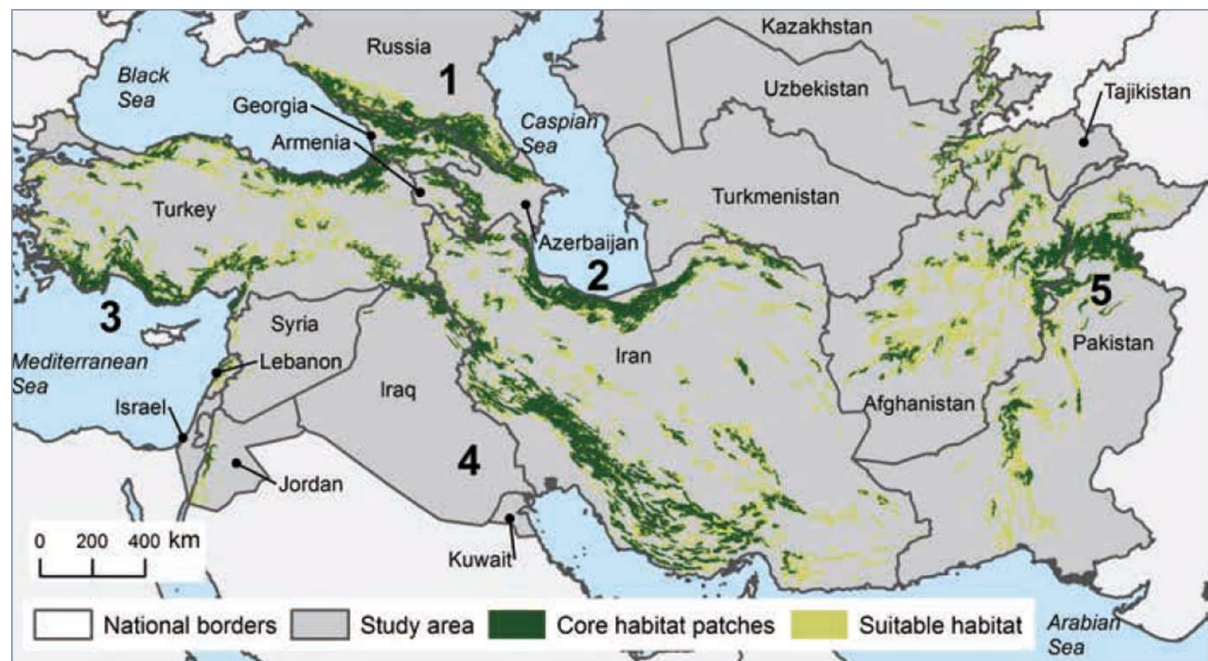
Loss of **72-84%** of the historical range since the Industrial Revolution in the mid-1700s



# Habitat loss and fragmentation

Regions capable of holding viable populations:

1. *Caucasus*
2. **Alborz-Kopetdag Mts.**
3. Taurus Mts.
4. **Zagros Mts.**
5. Hindu Kush-Western Himalayas



*Italics* – recovering due to long-term conservation

**Bold** – the largest populations as the first candidates to contain viable populations

## Core habitats

Contiguous 1\*1 km grid cells with habitat suitability index > 25<sup>th</sup> percentile in presence locations and > 250 km<sup>2</sup> (minimum area for breeding populations in Iran)

174 “islands” of core habitats and 173 corridors of an average length of 31 km (range 1-235 km)

Most in Iran, Türkiye, Pakistan and Afghanistan – but also least supported internationally

Only 53 out of 174 core habitats (30%) are currently occupied

Non-occupancy at suitability – conflicts and persecution

Country	Proportion of total study area (%)	Core habitat area (km <sup>2</sup> )	Number of core patches
Iran	24	204,005	78
Turkey	12	100,651	31
Pakistan	13	51,868	16
Afghanistan	10	43,120	26
Russia	5	35,403	3
Georgia	1	33,704	4
Azerbaijan	1	17,501	4
Iraq	7	12,958	4
Tajikistan	2	8,964	9
Uzbekistan	7	6,661	7
Armenia	1	6,332	3
Turkmenistan	7	2,869	4
Jordan***	1	1,532	1
Lebanon	1	1,350	1
Kazakhstan	7	890	2
Syria	3	81	0

# Protection

Country	Proportion of total study area (%)	Core habitat area (km <sup>2</sup> )	Number of core patches**	Area under protection (%)	Area under strict protection (%) (IUCN cat. I and II)	
Iran	24	204,005	78	9.09	0.95	Poor coverage by PAs
Turkey	12	100,651	31	9.41	0.01	
Pakistan	13	51,868	16	4.79	0.02	
Afghanistan	10	43,120	26	2.39	1.99	
Russia	5	35,403	3	35.97	11.11	Good coverage by PAs – Soviet heritage, smaller habitats
Georgia	1	33,704	4	12.16	10.44	
Azerbaijan	1	17,501	4	24.18	12.89	
Iraq	7	12,958	4	8.39	0.00	
Tajikistan	2	8,964	9	11.22	4.46	
Uzbekistan	7	6,661	7	26.68	23.30	
Armenia	1	6,332	3	25.17	15.05	
Turkmenistan	7	2,869	4	20.69	18.9	
Jordan***	1	1,532	1	18.09	11.02	
Lebanon	1	1,350	1	4.86	0.71	
Kazakhstan	7	890	2	58.84	57.76	
Syria	3	81	0	0.00	0.00	

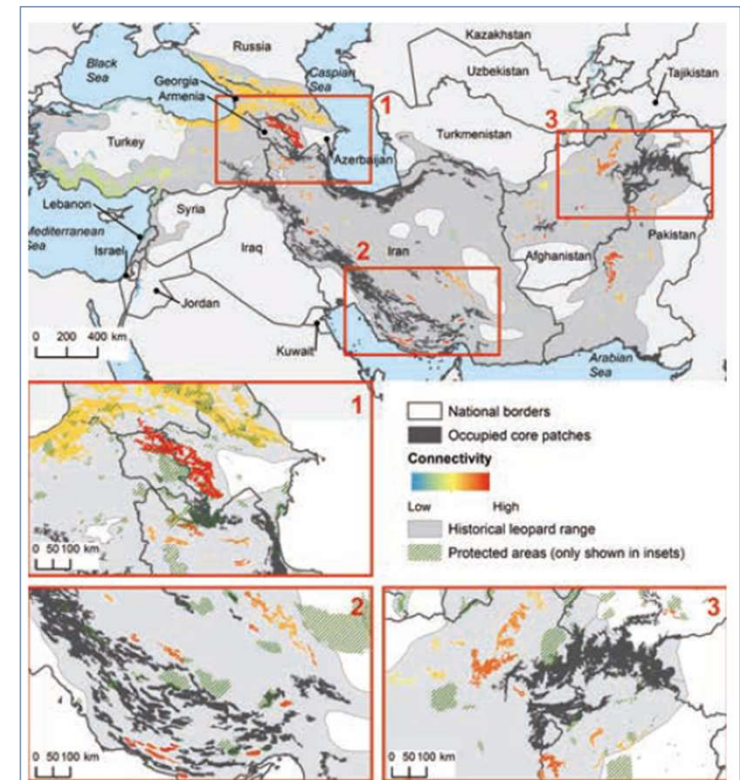
# Habitat connectivity and permeability

**Connectivity** – the length of least-cost corridors between the occupied and unoccupied core habitats

**Permeability** – probability of species movements through a habitat, opposite to habitat resistance

**Best candidates for recovery to reach viability:**

Caucasus  
Zagros Mts.





## Other threats

- **Illegal killing** – mainly shooting, but also poisoning and trapping in some localities, in relation to livestock depredation

In Iran, 54-76% of human-caused leopard mortalities are related to conflicts. Also in Afghanistan and especially Pakistan. This is very alarming as the population size in these countries is unknown. Attacks on humans are rare, but always lead to disproportional attention in mass media and direct persecution.

- **Prey depletion** – ungulate hunting and poaching leads to more frequent attacks on livestock. In Muslim countries where pork is not consumed, abundant wild boars can be a vitally important food resource.

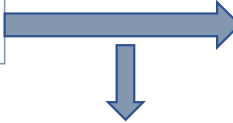


- **Climate change** – balance of habitat loss and gain. Stronger effects in arid habitats. Effects of droughts and floods on prey viability.



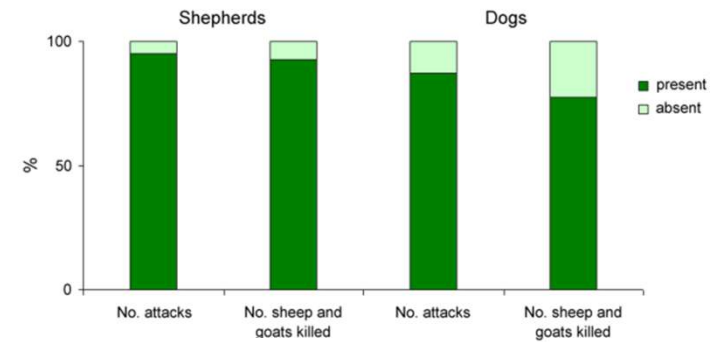
# Coexistence with humans

Human-wildlife **conflict**

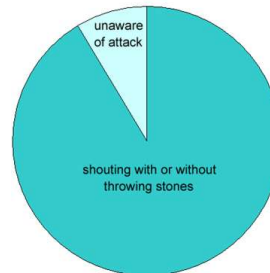


Human-wildlife **coexistence**

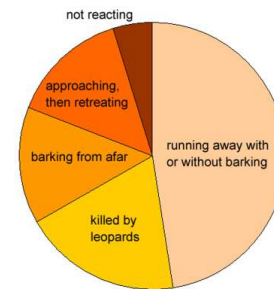
Conservation-livelihood balance and stakeholder cooperation



Shepherds



Dogs



# Conservation

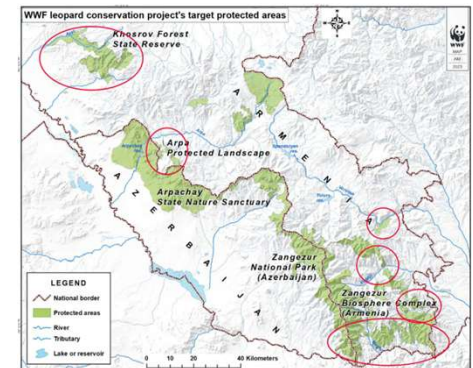
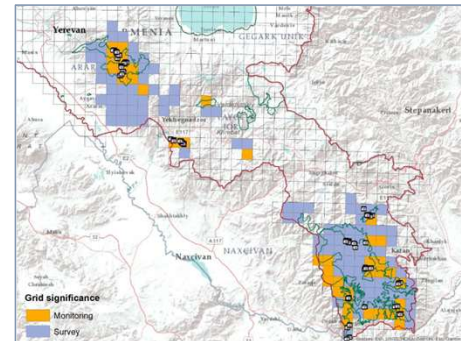
- **Protected areas** – a universal approach of **land sparing**. Huge variation in coverage and effectiveness. **Land sharing** through community involvement is urgently needed
- Only **few** protected areas, all in Iran, are **large enough** to sustain viable leopard populations
- Leopard is a **strong flagship**, but there is **lack of political will, funding and capacities**
- Need to study the unique experience of Iran in establishment of **temporary (3-5 years) no-hunting areas** to recover wildlife, mainly ungulate populations. Land remains in the locals' ownership, but their effectiveness is unknown
- **Hunting ban** in Azerbaijan's Nakhchivan Republic since 2001
- Leopard **conservation projects** in the South Caucasus (Armenia, Azerbaijan, Georgia), Russian Caucasus (reintroduction), Central Asia (Turkmenistan, Kazakhstan), Iraqi Kurdistan, Iran, Pakistan and Türkiye

# A success story of the South Caucasus

- The longest (2002-present) so far Persian leopard conservation project in the South Caucasus (Armenia, Azerbaijan, Georgia) by national WWF offices due to support by WWF Germany and WWF Switzerland
- Continuous monitoring by camera-trapping, capacity building, community involvement, training and awareness-raising
- The population increased from a few individuals in the 2000s up to 9-26 in southern Armenia and Azerbaijan

## Still concerns in place:

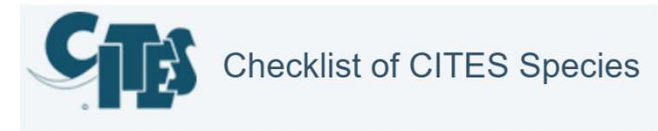
- Potential inbreeding depression because of a small founder group
- Insufficient habitat connectivity in spite of a good protected area network
- Dominance of males





# Formal conservation framework

**Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)** – threatened, highest levels of protection, commercial use forbidden, non-commercial use controlled



**Appendix II of the Bern Convention on the Conservation of European Wildlife and Natural Habitats** – strictly protected, international cooperation



**Convention on the Conservation of Migratory Species of Wild Animals (CMS)** – protection of migratory and otherwise wide-ranging species. Recently included in the CMS Central Asian Mammals Initiative (CAMI)



**Range-Wide Strategy for the Conservation of the Persian Leopard** – developed in 2022 within the CMS/CAMI, approved in 2024



**Persian Leopard Working Group (PeLeWG)** – established in 2023 to boost the implementation of the Range-Wide Strategy, affiliated with the IUCN/SSC Cat Specialist Group



# Persian Leopard Working Group (PeLeWG)

## Main activities:

Networking  
Professional training  
Awareness raising  
Capacity building  
Fundraising  
Publishing

## Major targets for fundraising:

Administration  
Range-wide status monitoring  
Mitigation of human-leopard conflicts  
Expansion of main activities

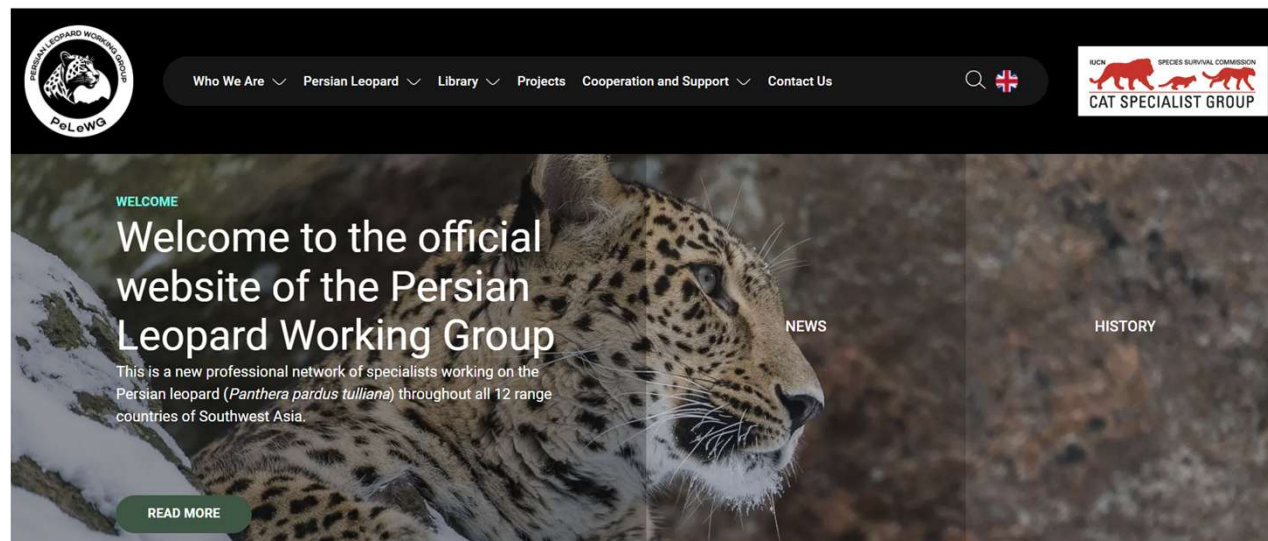
**52** members (Apr 2025) from  
**16** countries, including all **12**  
range countries

**Website** – <https://pelewg.net>

**X/Twitter** – @PersLeopWG

**Instagram** – @pelewg

**Facebook** – @PeLeWG





**We should not let them go!**

