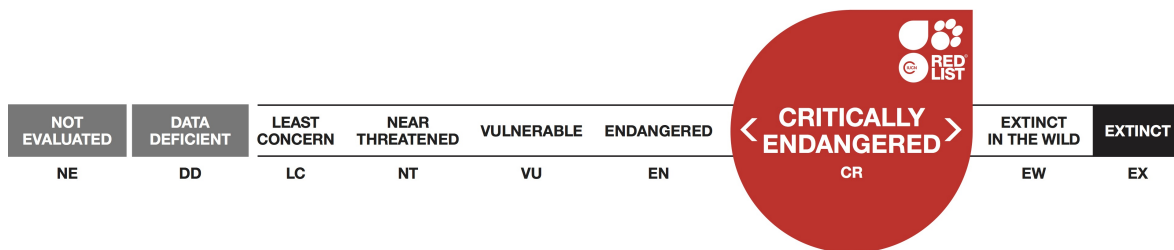


Panthera leo (West Africa subpopulation), Lion

Assessment by: Henschel, P., Bauer, H., Sogbohossou, E. & Nowell, K.



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Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Mammalia	Carnivora	Felidae

Taxon Name: *Panthera leo* (West Africa subpopulation) (Linnaeus, 1758)

Synonym(s):

- *Felis leo* Linnaeus, 1758

Parent Species: See [Panthera leo](#)

Common Name(s):

- English: Lion, African Lion
- French: Lion d'Afrique
- Spanish: León

Taxonomic Notes:

Taxonomy currently used by the IUCN SSC Cat Specialist Group:

Panthera leo persica—Asian subpopulations

Panthera leo leo—African subpopulations.

The latest published phylogeographical study of lions shows that the traditional split between Asian and Africa lions as distinct subspecies is untenable (Barnett *et al.* 2014). Based on Barnett *et al.* (2014) the Cat Classification Task Force of the IUCN SSC Cat Specialist Group has provisionally proposed a different split into two subspecies, *P. l. leo* of Asia and West, Central and North Africa, and *P. l. melanochaita* from South and East Africa. However, Barnett *et al.* (2014) is based only on mtDNA and could reflect female philopatry. In conjunction with the African Lion Working Group, Laura Bertola and colleagues are preparing a taxonomic paper, which will include reference to new molecular data from current studies, including complete mitochondrial genomes, microsatellites, and autosomal SNPs, which strongly support this taxonomic arrangement and recognize several management units within these revised subspecies. Given the poor conservation status of some regional lion populations, it is important that this new taxonomic arrangement is immediately available for use by the IUCN Red List to support the next stages in developing a conservation strategy for the lion based on coherent and sound science (Barnett *et al.* 2006a, b, 2014; Bertola *et al.* 2011; Dubach *et al.* 2005, 2013).

Assessment Information

Red List Category & Criteria: Critically Endangered C2a(ii) [ver 3.1](#)

Year Published: 2015

Date Assessed: March 7, 2014

Justification:

This is a subpopulation assessment of the Lion population in West Africa, which has been classified as a separate subpopulation since 2004 (Bauer and Nowell 2004), as it was considered to be isolated from

Lion populations of Central Africa, with little or no exchange of breeding individuals (Chardonnet 2002, Bauer and van der Merwe 2004). The prior assessment of the West African subpopulation used political boundaries to delineate its extent, incorporating populations from Senegal in the West to Nigeria in the East. Recent molecular analyses established that Lions in a relict population in central Nigeria (in Yankari Game Reserve) are closely related to Lions in Cameroon (Central Africa), while Lions from a population in western Nigeria (in Kainji Lake National Park (NP)), situated west of the lower Niger River, genetically cluster with Lions from Benin and Senegal, and are genetically distinct from Lions in Central Africa (Bertola *et al.* unpublished). These findings suggests that the lower Niger River acts as a barrier to Lion dispersal, separating Lions in West Africa (west of the lower Niger River), from Lions in central/eastern Nigeria and those of Central Africa. The current assessment therefore defines all populations west of the lower Niger River as belonging to the isolated West African subpopulation, which is justifiable in terms of Lion biology. However, IUCN and other international organizations conventionally use national boundaries for regional delineation (although not for subpopulation-level Red List assessments), and we will show that the assessment would have the same result if national boundaries had been used.

Recent (2006–2013) survey work covering 17 protected areas suspected to harbour Lions by participants of the IUCN SSC regional conservation planning workshop for Lions in West and Central Africa, held in 2005 (IUCN 2006), confirmed continued Lion presence in only three of those protected areas: Niokolo-Koba NP in Senegal (16 [0–54] Lions), the tri-national W-Arly-Pendjari Complex in Benin, Burkina Faso and Niger (356 [246–466] Lions) and Kainji Lake NP in Nigeria (32 [23–63] Lions) (Henschel *et al.* 2014). Lions were no longer recorded in Guinea-Bissau, Mali, Côte d'Ivoire and Togo. Rumours about the species' presence persist in Guinea's Haut Niger and Kankan Reserves (Henschel *et al.* 2014), as well as for Mole NP in Ghana (originally reported as a short communication in African Zoology, but subsequently refuted in a Letter to the Editors; the debate which ensued resulted in the Editors-in-Chief of the journal retracting all the publications concerned with a request not to cite them).

The recent survey results suggest that only 404 (269–583) Lions remain in West Africa (Henschel *et al.* 2014). Population size estimates relied on track counts (cf. Funston *et al.* 2010) in all areas apart from Kainji Lake NP, and included large cubs and sub-adults. Considering that 40–60% (average: 50%) of a Lion population typically consists of immature individuals (Schaller 1972, Stander 1991, Vanherle 2011), we calculated the number of mature individuals by halving population size estimates for sites where track counts were used; we established confidence intervals by using the higher end of the proportional range of immature individuals with the minimum population size estimate to calculate the lower limit, and by using the lower end of the proportional range of immature individuals with the maximum population size estimate to calculate the upper confidence limit. This results in an estimated 218 (121–375) mature animals remaining in the West African subpopulation.

Most of these Lions (*ca* 90%) persist in a single population in W-Arly-Pendjari. The recent surveys represented the first comprehensive field surveys conducted in West Africa, and while Lion monitoring efforts have been initiated in all remaining populations, reliable data on current population trends does not yet exist. There is strong evidence for ongoing declines, however. In Senegal's Niokolo-Koba NP, for example, continuing calamitous declines in prey populations are almost certainly causing concomitant declines in Lions (Henschel *et al.* 2014).

These results justify listing of the West Africa subpopulation of Lion as Critically Endangered under criterion C2a(ii). Criterion C1 may also apply, however, due to the lack of reliable population decline

data, this cannot be determined with certainty.

For comparison with the previous assessment and conventional delineations of West Africa, we note that there is an isolated resident Lion population of <15 individuals in Yankari NP in central/east Nigeria. There is no longer a resident Lion population in Gashaka Gumti NP (Nigeria), although Lions continue to disperse into the area from Faro NP in Cameroon (Central Africa). Since there is no dispersal between resident populations in West and Central Africa there is no rescue effect (Gardenfors *et al.* 2001). Using the eastern national boundary of Nigeria for regional division would thus only add the Lions in Yankari Game Reserve (<15 individuals) which would not alter the assessment.

Geographic Range

Range Description:

Historical data indicate that Lions were formerly distributed throughout West Africa, with the exception of coastal rainforests and the interior of the Sahara desert. Recent survey work suggests that Lions have lost almost 99% of their former range in West Africa (Henschel *et al.* 2014).

The current geographic distribution of Lions in West Africa was determined using data compiled by the IUCN SSC range-wide conservation planning process for Lions (IUCN 2006a), followed by comprehensive field surveys of areas suspected to harbour Lions (Henschel *et al.* 2014).

Current Lion range in West Africa is considered to comprise only the “resident range”, representing areas where Lions were confirmed to be resident within the previous 10 years. Areas where residence was not confirmed (e.g., possible range, unknown range) was excluded. See details under Rationale above.

Country Occurrence:

Native: Benin; Burkina Faso; Niger; Nigeria; Senegal

Possibly extinct: Ghana; Guinea

Regionally extinct: Côte d'Ivoire; Gambia; Guinea-Bissau; Mali; Mauritania; Sierra Leone; Togo

Population

In West Africa, the Lion subpopulation is currently estimated at just above 400 animals (<250 mature individuals). This subpopulation continues to decline.

Current Population Trend: Decreasing

Habitat and Ecology (see Appendix for additional information)

The Lion has a broad habitat tolerance, absent only from tropical rainforest and the interior of the Sahara desert (Nowell and Jackson 1996). Although Lions drink regularly when water is available, they are capable of obtaining their moisture requirements from prey and even plants, and thus can survive in very arid environments. Medium- to large-sized ungulates (including antelopes, zebra and wildebeest) are the bulk of their prey, but Lions will take almost any animal, from rodents to a rhino. They also scavenge, displacing other predators (such as the Spotted Hyaena) from their kills.

Lions are the most social of the cats, with related females remaining together in prides, and related and unrelated males forming coalitions competing for tenure over prides. Average pride size (including males and females) is four to six adults; prides generally break into smaller groups when hunting. Lions tend to live at higher densities than most other felids, but with a wide variation. Pride ranges can vary widely even in the same region.

Systems: Terrestrial

Use and Trade (see Appendix for additional information)

For information on Use and Trade see under Threats.

Threats (see Appendix for additional information)

The main drivers of Lion declines are large-scale habitat conversion, prey base depletion through unsustainable hunting, and the retaliatory killing of Lions due to perceived or real human-lion conflict. While remaining Lions in West Africa are largely restricted to within protected areas (PAs), weak management effectiveness of those PAs leads to depleted prey bases and persecution of Lions by pastoralists even inside formally gazetted PAs. In Niokolo-Koba National Park in Senegal and Kainji-Lake National Park (NP) in Nigeria, Lions are largely restricted to a small, better-protected core area in the centre of the respective NP, while in W-Arly-Pendjari, Lion population density is extremely low in the eastern half of the complex, i.e. the tri-national W NP, where >50,000 heads of cattle were recorded inside the NP in an aerial survey in 2012 (Henschel *et al.* 2014). Further deterioration of the last protected areas harbouring Lions in West Africa will likely lead to the local extinction of the species. An urgent mobilization of investment from the international community is required to assist range states to increase management effectiveness of PAs retaining Lions in West Africa.

Conservation Actions (see Appendix for additional information)

See above under Threats.

Credits

Assessor(s): Henschel, P., Bauer, H., Sogbohossou, E. & Nowell, K.

Reviewer(s): Hunter, L., Hoffmann, M., Breitenmoser-Wursten, C. & Breitenmoser, U.

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Appendix

Habitats

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Habitat	Season	Suitability	Major Importance?
1. Forest -> 1.5. Forest - Subtropical/Tropical Dry	-	Suitable	Yes
2. Savanna -> 2.1. Savanna - Dry	-	Suitable	Yes
3. Shrubland -> 3.5. Shrubland - Subtropical/Tropical Dry	-	Suitable	Yes
4. Grassland -> 4.5. Grassland - Subtropical/Tropical Dry	-	Suitable	Yes
8. Desert -> 8.1. Desert - Hot	-	Unknown	-

Use and Trade

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

End Use	Local	National	International
Medicine - human & veterinary	Yes	Yes	No
Wearing apparel, accessories	Yes	No	No
Handicrafts, jewellery, etc.	Yes	Yes	Yes
Sport hunting/specimen collecting	No	No	Yes
Establishing ex-situ production *	No	No	No

Threats

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Threat	Timing	Scope	Severity	Impact Score
1. Residential & commercial development -> 1.1. Housing & urban areas	Ongoing	Whole (>90%)	Rapid declines	High impact: 8
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.1. Shifting agriculture	Ongoing	-	-	-
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.2. Small-holder farming	Ongoing	-	-	-
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		

2. Agriculture & aquaculture -> 2.3. Livestock farming & ranching -> 2.3.1. Nomadic grazing	Ongoing	-	-	-
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
2. Agriculture & aquaculture -> 2.3. Livestock farming & ranching -> 2.3.2. Small-holder grazing, ranching or farming	Ongoing	-	-	-
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
5. Biological resource use -> 5.1. Hunting & trapping terrestrial animals -> 5.1.1. Intentional use (species is the target)	Ongoing	-	-	-
	Stresses:	2. Species Stresses -> 2.1. Species mortality		
5. Biological resource use -> 5.1. Hunting & trapping terrestrial animals -> 5.1.2. Unintentional effects (species is not the target)	Ongoing	-	-	-
	Stresses:	2. Species Stresses -> 2.1. Species mortality		
5. Biological resource use -> 5.1. Hunting & trapping terrestrial animals -> 5.1.3. Persecution/control	Ongoing	-	-	-
	Stresses:	2. Species Stresses -> 2.1. Species mortality		
5. Biological resource use -> 5.3. Logging & wood harvesting -> 5.3.5. Motivation Unknown/Unrecorded	Ongoing	-	-	-
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation		
6. Human intrusions & disturbance -> 6.2. War, civil unrest & military exercises	Ongoing	-	-	-
	Stresses:	2. Species Stresses -> 2.2. Species disturbance		
8. Invasive & other problematic species & genes -> 8.2. Problematic native species	Ongoing	-	-	-
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation		
9. Pollution -> 9.3. Agricultural & forestry effluents -> 9.3.4. Type Unknown/Unrecorded	Ongoing	-	-	-
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation		

Conservation Actions in Place

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Conservation Actions in Place
In-Place Land/Water Protection and Management
Occur in at least one PA: Yes
Percentage of population protected by PAs (0-100): 91-100
In-Place Species Management
Harvest management plan: Yes
Successfully reintroduced or introduced benignly: Yes

Conservation Actions in Place
Subject to ex-situ conservation: Yes
In-Place Education
Subject to recent education and awareness programmes: Yes
Included in international legislation: Yes
Subject to any international management/trade controls: Yes

Conservation Actions Needed

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Conservation Actions Needed
1. Land/water protection -> 1.1. Site/area protection
1. Land/water protection -> 1.2. Resource & habitat protection
2. Land/water management -> 2.1. Site/area management
2. Land/water management -> 2.3. Habitat & natural process restoration
3. Species management -> 3.1. Species management -> 3.1.1. Harvest management
3. Species management -> 3.1. Species management -> 3.1.2. Trade management
3. Species management -> 3.1. Species management -> 3.1.3. Limiting population growth
3. Species management -> 3.2. Species recovery
3. Species management -> 3.3. Species re-introduction -> 3.3.1. Reintroduction
3. Species management -> 3.4. Ex-situ conservation -> 3.4.1. Captive breeding/artificial propagation
4. Education & awareness -> 4.2. Training
4. Education & awareness -> 4.3. Awareness & communications
5. Law & policy -> 5.1. Legislation -> 5.1.2. National level
5. Law & policy -> 5.1. Legislation -> 5.1.3. Sub-national level
5. Law & policy -> 5.4. Compliance and enforcement -> 5.4.1. International level
5. Law & policy -> 5.4. Compliance and enforcement -> 5.4.2. National level
5. Law & policy -> 5.4. Compliance and enforcement -> 5.4.3. Sub-national level

Research Needed

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Research Needed
1. Research -> 1.2. Population size, distribution & trends

Research Needed
1. Research -> 1.3. Life history & ecology
1. Research -> 1.5. Threats
1. Research -> 1.6. Actions
2. Conservation Planning -> 2.1. Species Action/Recovery Plan
2. Conservation Planning -> 2.2. Area-based Management Plan
3. Monitoring -> 3.1. Population trends

Additional Data Fields

Distribution
Lower elevation limit (m): 0
Upper elevation limit (m): 4200
Population
Number of mature individuals: 121-374,218
Continuing decline of mature individuals: Yes
Extreme fluctuations: No
Population severely fragmented: Yes
No. of subpopulations: 3
Extreme fluctuations in subpopulations: No
All individuals in one subpopulation: No
Habitats and Ecology
Generation Length (years): 7

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