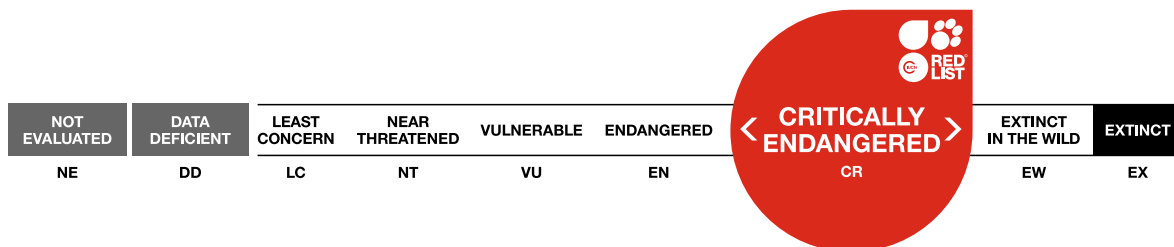


## *Loxodonta cyclotis*, African Forest Elephant

### Errata version

Assessment by: Gobush, K.S., Edwards, C.T.T, Maisels, F., Wittemyer, G., Balfour, D. & Taylor, R.D.



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## Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Mammalia	Proboscidea	Elephantidae

**Scientific Name:** *Loxodonta cyclotis* Matschie, 1900

**Synonym(s):**

- *Loxodonta africana* ssp. *cyclotis* Matschie, 1900

**Common Name(s):**

- English: African Forest Elephant, Forest Elephant
- French: Éléphant de forêt
- Spanish; Castilian: Elefante de Bosque

**Taxonomic Source(s):**

Wilson, D.E. and Reeder, D.M. 2005. *Mammal Species of the World*. Johns Hopkins University Press, Baltimore, MD, USA.

**Taxonomic Notes:**

Three elephant taxa remain from the sixteen elephant-like species that are known from across the planet in the Pleistocene: Asian Elephant (*Elephas maximus*), African Savanna Elephant (*Loxodonta africana*), and African Forest Elephant (*Loxodonta cyclotis*) (Faurby and Svenning 2015, Malhi *et al.* 2016). The Asian and African ancestral lineages diverged approximately seven million years ago, and the African Savanna and African Forest ancestral lineages began diverging approximately one million years later (Rohland *et al.* 2010, Brandt *et al.* 2014, Roca *et al.* 2015, Meyer *et al.* 2017, Palkopoulou *et al.* 2018). The Third Edition of 'Mammal Species of the World' (Wilson and Reeder 2005) was the first to formally designate the African elephant as these two separate species. Recent genetic findings also support this designation (Roca *et al.* 2007, Ishida *et al.* 2011, Mondol *et al.* 2015, Palkopoulou *et al.* 2018, Kim and Wasser 2019). Hybridization between the two species appears restricted and evident at only 14 of the more than 100 localities recently examined across the vast forest-savanna ecotone. In nine of these 14 localities, hybrid individuals occurred alongside non-hybrid individuals of either one species or the other and not both (i.e., three localities had hybrids and African Forest Elephants only and assigned as this species; six localities had hybrids and African Savanna Elephants only and assigned as this species). For the IUCN Red List assessments, a distribution map published in Mondol *et al.* (2015) and recent data by Kim and Wasser (2019) are used to assign localities as range of either *L. africana* or *L. cyclotis*.

## Assessment Information

**Red List Category & Criteria:** Critically Endangered A2abd [ver 3.1](#)

**Year Published:** 2021

**Date Assessed:** November 13, 2020

**Justification:**

The African Forest Elephant (*Loxodonta cyclotis*) is assessed as Critically Endangered A2abd. Analysis of estimates from 161 localities across the species range indicates a reduction of more than 80% of the continental population in the past three generations (93 years) that is understood to be continuing and likely irreversible. The continental trend is not, however, spatially uniform with some subpopulations increasing or stable while others are declining significantly faster than the continental rate. Many local subpopulations have been extirpated.

A generation length (GL) of 31 years is used; calculated in the standard format as the average age of mothers in the population (IUCN SPC 2019, p. 29). This figure is based on findings from demographic studies on GL for African Forest Elephants on the basis of a 23-year study in Central African Republic (Turkalo *et al.* 2018).

Subcriterion A2 is applied because some of the major causes for population reduction such as habitat loss due to human population expansion have not ceased, are projected to increase in coming decades and are unlikely to be reversible. The population reduction assessment for subcriterion A2 (considering three generations back) is inferred from published survey data. Density and distribution estimates for the African Forest Elephant across its continental range vary in methodology, completeness, regularity, date of first survey and certainty. Few credible site-specific estimates exist prior to the 1980s, and there is no available estimate for the species' population across its combined central and west African range. For this assessment, an attempt was made to model the data three generations back to 1922 (see Supplementary Information for description of data that is current as of and up to the end of 2015); however, given the sparseness of information available to inform the model, such modelling was not informative. Therefore, rather than projecting declines well beyond the extent of the survey data used in the assessment, we made the assumption that the continental population of three generations back (1922) is equal to that of one generation back (1984). Additional assumptions, necessary to fill gaps in the dataset, are detailed in the attached Supplementary Information document.

Subcriterion A3 has not been applied, because although the major threats to the species are known, projecting the level of such threats 31 to 93 years into the future (i.e., three generations, up to a maximum of 100 years) would likely introduce high levels of uncertainty.

An assessment of population reduction according to subcriterion A4 considering one to two generations back and one to two forward is in progress by this team of Assessors (Edwards *et al.* in prep.). Analysis of poaching and human influence in the recent past and future based upon available data of two representative indices (i.e., proportion of illegal killed elephants (PIKE) and the human footprint index) are being included as covariates in the projection.

Criteria B, C and D are not relevant to the threatened status as the species currently occupies more than 20,000 km<sup>2</sup> and there are more than 10,000 mature individuals. No quantitative analysis of the probability of extinction in the wild was conducted, and therefore criterion E does not apply.

#### **Previous Assessments of African Elephant:**

This is the first assessment of the African Forest Elephant (*Loxodonta cyclotis*) as a species separate from the African Savanna Elephant (*L. africana*).

The African Elephant, as a single species, was listed as Vulnerable (VU A2a) in the 2004 and 2008 IUCN Red List of Threatened Species, under the same IUCN Categories and Criteria used in this assessment (Version 3.1; IUCN 2001). In the 2008 Assessment, the Central African region, which consists mainly of Forest Elephant range plus Savanna Elephant range in Cameroon, Chad and the Democratic Republic of the Congo, was considered Data Deficient.

In an assessment conducted in 1996 by the IUCN SSC African Elephant Specialist Group, the African Elephant was listed as Endangered (EN A1b) under the IUCN Categories and Criteria Version 2.3 (IUCN 1994).

For further information about this species, see [Supplementary Material](#).

## Geographic Range

### Range Description:

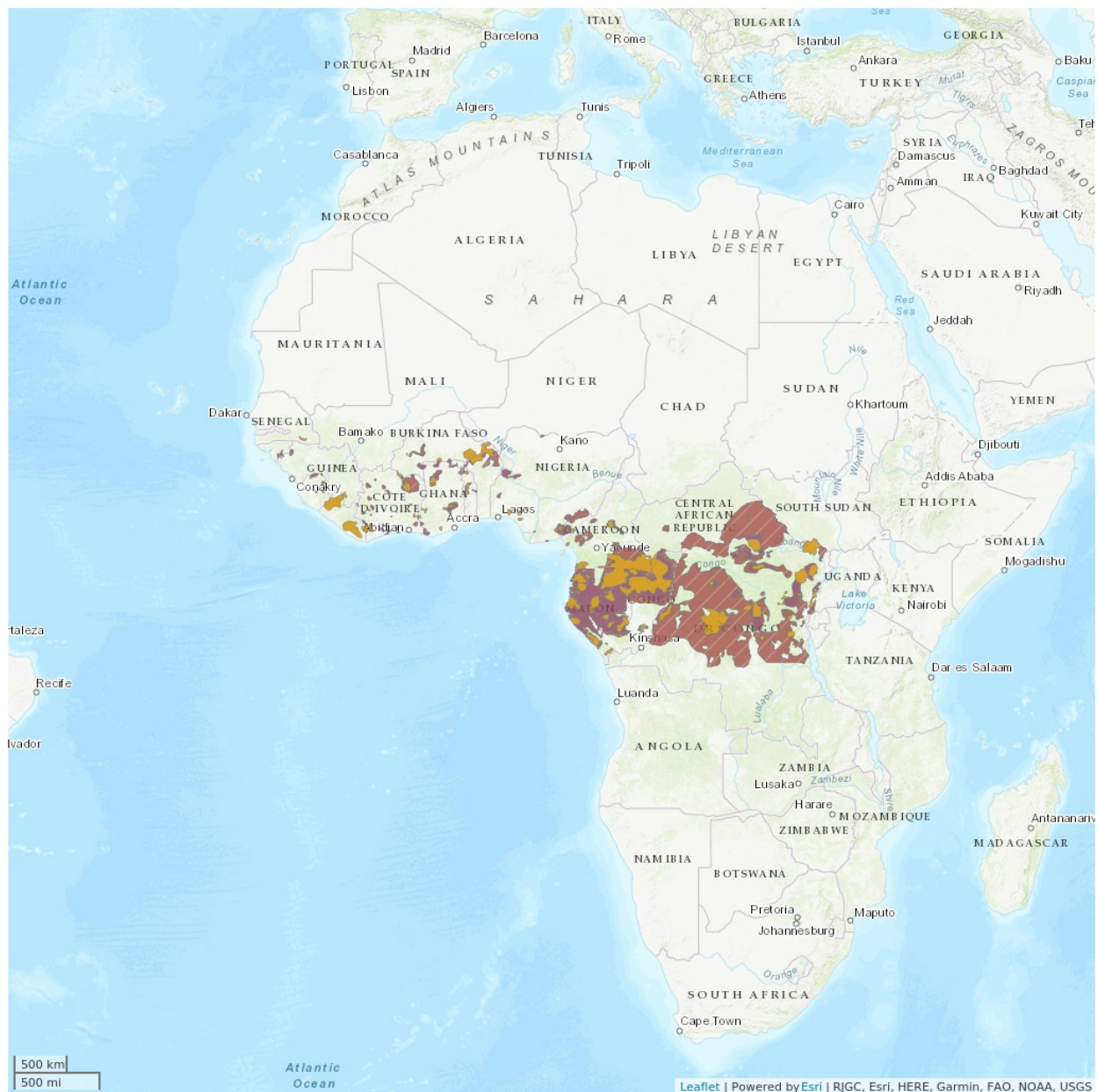
African Forest Elephants once occurred across the entire humid forest area of western and central Africa, and currently are found in 20 countries (see range map). Their range is decreasing and is highly fragmented in western Africa where seven range countries are reported to have fewer than a hundred African Forest Elephants each (this includes Senegal subject to genetic confirmation of its very small population as *Loxodonta cyclotis*) (Bouche *et al.* 2011, Thouless *et al.* 2016). Recent observations in Angola and South Sudan indicate African Forest Elephant presence though no population survey data is available. African Forest Elephants are considered nationally extirpated in the Gambia. The majority of the remaining population is found in six central African countries where they occupy an estimated 25% of their former range (Maisels *et al.* 2013).

### Country Occurrence:

**Native, Extant (resident):** Angola; Benin; Burkina Faso; Cameroon; Central African Republic; Congo; Congo, The Democratic Republic of the; Côte d'Ivoire; Equatorial Guinea; Gabon; Ghana; Guinea; Guinea-Bissau; Liberia; Niger; Nigeria; Senegal; Sierra Leone; South Sudan; Togo

**Native, Extinct:** Gambia

# Distribution Map

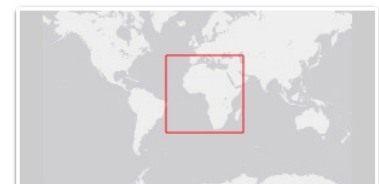
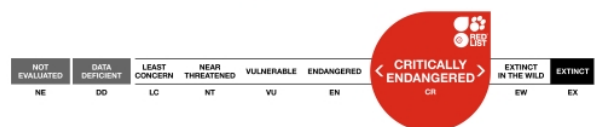


## Legend

- EXTANT (RESIDENT)
- POSSIBLY EXTANT (RESIDENT)
- POSSIBLY EXTINCT

Compiled by:

IUCN SSC African Elephant Specialist Group 2021



The boundaries and names shown and the designations used on this map do not imply any official endorsement, acceptance or opinion by IUCN.



## Population

Over the past century, African Forest Elephant populations have declined across most of their range. The African Elephant Status Report 2016 estimated a continental population of 415,428 (+/- 95% C.I. 20,111) for both African Savanna and African Forest Elephants combined and reported a continental decline of approximately 111,000 elephants since 2006 (Thouless *et al.* 2016). An assessment of African Forest Elephants in the central African range (representing approximately 95% of their present geographic range) estimated an overall decline of 62% between 2002 and 2011 with 72% of the remaining population being located in Gabon and the Republic of Congo (Maisels *et al.* 2013).

For further information about this species, see the attached Supplementary Information document.

For further information about this species, see [Supplementary Material](#).

**Current Population Trend:** Decreasing

## Habitat and Ecology (see Appendix for additional information)

African Forest Elephants are found across the Guineo-Congolian tropical forests of west and central Africa stretching from remnant habitat in the northwest in Guinea and Sierra Leone (10 ° North, 12° West) to the eastern Democratic Republic of the Congo (4° South, 29° East). They occupy a variety of forest habitats including lowland humid forest on terra firma, swamp forests, the lower reaches of Afro-montane forests, dry forests and forest-savanna mosaics. They have a wide altitudinal range from the littoral forests along the Atlantic coast to about 2,000 metres in the Albertine Rift.

African Forest Elephants are capable of moving long distances and may do so regularly, usually depending on fruiting events and a requirement for mineral salts. African Forest Elephants also demonstrate range residence and regular movement patterns with home ranges varying between less than 10 km<sup>2</sup> to more than 2,000 km<sup>2</sup> (Blake *et al.* 2008, Schuttler *et al.* 2012). Their movements are largely predicted by human pressure such as roads and villages rather than by vegetation type (Blake *et al.* 2008, Molina-Vacas *et al.* 2019). Fifteen African Forest Elephant subpopulations (seven of which number more than 1,000 individuals) span international boundaries, including more than 25,000 African Forest Elephants in the three-country TRIDOM landscape where a transfrontier management agreement is formalized between Cameroon, the Republic of Congo and Gabon (Lindsay *et al.* 2017). Such management agreements also exist for the WAP complex in Burkina-Faso, Benin, and Niger, and for the Sangha Tri-National Landscape in Cameroon, Congo, and the Central African Republic.

### Ecosystem Services:

Specific ecosystem services provided by both species of African elephants vary and depend to a large extent on the ecosystem (forest, savanna, grassland or desert) specific conditions on the ground and geographical context under consideration. In general, they play an important ecological role as bulk processors of plant material (Owen-Smith 1989). African Forest Elephants are highly frugivorous and are instrumental in dispersing many tree species (Blake 2009, Terborgh 2016). They are obligate seed dispersers for some tree species (Blake *et al.* 2009, Campos Arceiz and Blake 2011, Beaune *et al.* 2013) and particularly the seeds of large trees which tend to have high carbon content (Stephenson *et al.* 2014). The loss of the largest herbivores has repercussions on carbon storage in Amazonia (Doughty *et*



*al.* 2015, 2016) and the same may occur in Africa. African Forest Elephants create and maintain forest clearings in mineral-rich soil on which a wide variety of African forest fauna depend; they distribute the limited micronutrients available in “bais” to outlying areas (Turkalo and Fay 1995, 2001; Turkalo *et al.* 2013; Crooms *et al.* 2018).

African Forest Elephants are an important symbol within the cultures of many African communities. African elephants (both species combined) are one of the few iconic animals that occur in the majority of African countries, and innumerable stories, songs, and cultural traditions revolve around them.

**Systems:** Terrestrial

## Use and Trade

**Ivory:** Use of African elephant ivory is entrenched in numerous cultures across the globe, primarily for ornamental and decorative items. Historically, demand for African elephant ivory has been high in Europe, the USA and Asia. For example, beginning in the 1920s, Japanese carvers turned to African elephant ivory as Asian supplies diminished through the 1970s when Japan accounted for about 40% of the global ivory market with a particular preference in Japan for African Forest Elephant ivory due to its hardness, suitable for hankos and the large plectrums for shamisen (Martin 1986; Nishihara 2003, 2012).

In 1989, the Convention on International Trade of Endangered Species of Wild Flora and Fauna (CITES) banned the international commercial trade of ivory in response to a steep decline in African elephants across a substantial portion of their range. Thereafter, two CITES-sanctioned sales of national ivory stockpiles occurred in 2002 and 2008 with Botswana, Zimbabwe, Namibia and South Africa selling ivory to China and Japan. At the same time, a nine-year moratorium (ending in 2017) on any new ivory sale proposals from the four African countries followed ([www.cites.org](http://www.cites.org)). In the 2000s, Chinese demand for ivory greatly surpassed that of Japan where demand for ivory appeared to substantially decline (CITES 2014). As a consequence, prices rose steeply in China and in Africa (Wittemyer *et al.* 2011, 2014). Debates about the benefits and consequences of the sale of national ivory stockpiles are highly polarized with limited consensus (Stiles 2004, 't Sas-Rolfes *et al.* 2014, Bennett 2015, Biggs *et al.* 2017).

Analysis of ivory seizure data indicates illegally trafficked ivory has increased substantially since 2006 (Underwood *et al.* 2013; Milliken 2016; CITES 2018, 2019). Undercover investigations and DNA forensics point to the laundering of illegal ivory in legal domestic ivory markets and seizure analyses indicate that the majority of illegally trafficked ivory is destined for Asia, especially China, Viet Nam and Thailand (CITES 2016, 2018 and 2019; Lui 2015; Krishnasamy 2016). As a result of this and other concerns, China closed its legal domestic ivory market in 2017, Hong Kong SAR took steps to do the same by 2021 (<https://www.info.gov.hk/gia/general/201706/02/P2017060100655.htm>), and Thailand tightened its domestic Asian elephant ivory trade regulations in 2015 (<http://www.mfa.go.th/main/en/media-center/14/52929-Thailand-Submits-First-Progress-Report-on-Implement.html>). A considerable drop in ivory prices in mainland China was associated with this action (Vigne and Martin 2017, Meijer *et al.* 2018). Significant illegal ivory markets remain in several Southeast Asian countries, such as Lao PDR and Viet Nam ([www.cites.org](http://www.cites.org); Vigne and Martin 2017).

**Non-consumptive Tourism:** African Forest Elephants potentially have a significant tourism draw for wildlife watching and photographic tourism along with other iconic species that share their habitat such as western lowland gorillas and chimpanzees. National parks in Gabon, Republic of Congo and Benin

among others, are actively developing tourism opportunities despite the species' cryptic nature and often closed canopy habitat. Unlike the African savanna elephant, tourism does not contribute substantially to the conservation of African Forest Elephants in central Africa (Naidoo *et al.* 2016) and little documentation of its success in west Africa exists.

**Trophy Hunting:** Trophy hunting for African Forest Elephant is rare; Cameroon is the only range country to submit trophy quotas (80 individuals annually) in recent decades but it has ceased to do so since 2019 (<https://cites.org/eng/resources/quotas/index.php>, Assessed 26 January 2019).

**Other Trade:** There have been limited reports of African Forest Elephant poaching for body parts other than ivory, such as tails, bone, skin and hair (e.g., [www.enca.com/africa/tusks-and-elephant-tails-seized-in-ivory-coast-ngo](http://www.enca.com/africa/tusks-and-elephant-tails-seized-in-ivory-coast-ngo)). The bushmeat trade is thriving in parts of west and central Africa and likely includes a considerable volume of African Forest Elephant meat as indicated in hunter interviews (Stiles 2011, Abernethy *et al.* 2013). No live trade of African Forest Elephants is known to occur.

## Threats (see Appendix for additional information)

Poaching for ivory is currently the principal cause of death of African Forest Elephants (Wittemyer *et al.* 2014, Thouless *et al.* 2016) with persistent poaching pressure at many sites evident from their first surveys in the 1970s to the present day (Douglas-Hamilton 1989, Barnes *et al.* 1993, Maisels *et al.* 2013). Data collected as a part of the CITES Monitoring the Illegal Killing of Elephants programme (MIKE), indicate that poaching significantly intensified across the continent starting in 2008 and peaking in 2011 – an unsustainably high level of poaching has continued into current times (CITES 2018, 2019).

Rapid land use change, driving the direct loss and fragmentation of habitat, is an increasing threat to African elephants across their range. Land conversion is a product of the ongoing expansion of the human population and associated agriculture and infrastructure development, which in turn are driven by economic and technological advances. A specific manifestation of this trend is the reported increase in human-elephant conflict (e.g., Ngama *et al.* 2016). Human population growth projections suggest land conversion will accelerate rapidly in the coming decades across Africa (see <https://population.un.org/wpp/Publications/>) which will likely increase this threat.

## Conservation Actions (see Appendix for additional information)

The African Forest Elephant was listed in CITES Appendix I in 1989 when all African elephants were considered a single species. Subsequently, the populations of Botswana (1997), Namibia (1997), South Africa (2000) and Zimbabwe (1997) were transferred to Appendix II, each with specific annotations. These annotations have been recently replaced by a single annotation for all four countries, with specific sub-annotations for the populations of Namibia and Zimbabwe. A separate CITES listing for each species has not occurred yet because a formal designation as two separate species (i.e., *Loxodonta africana* and *L. cyclotis*) is still in progress.

The African Elephant Action Plan (developed and adopted by African elephant range countries) was adopted by CITES in March 2010 and is a sanctioned statement by all range countries regarding the most important and immediate activities which require implementation which require implementation and funding if Africa's elephants are to be conserved. The African Elephant Fund was established to support the implementation of the African Elephant Action Plan. It should be noted that the AEAP does not distinguish different taxa of African elephant. The African Forest Elephants which occur in



transboundary populations require that matters of sovereignty are considered when national populations are being presented for CITES purposes (Lindsay *et al.* 2017).

A number of CITES-initiated instruments were created to monitor and combat illegal trade in ivory. The CITES MIKE programme was established in 2002, has 66 designated sites across the range of both African elephants; this includes 29 sites in 15 range countries of the African Forest Elephant (<https://cites.org/eng/prog/mike>, Accessed 21 July 2020). Guinea Bissau, Sierra Leone and Nigeria do not have MIKE sites for their African Forest Elephant populations. The MIKE programme provides the most detailed and reliable data available on continental poaching pressure (CITES 2018, 2019). However, metrics used by the MIKE programme that depend on carcass finds are less statistically sensitive and reliable in the closed canopy forest habitat because detection of carcasses is difficult and decomposition in humid environments is relatively rapid. The Elephant Trade Information System (ETIS) established in 1996, is managed by TRAFFIC as a comprehensive information system for tracking illegal trade in ivory and other elephant products (CITES 2016, 2019). At a national level the implementation of National Ivory Action Plans (NIAPs) are a practical tool designed to track significant and timely action to combat the illegal trade in ivory. Currently 24 African, Middle Eastern and Asian countries, as identified by ETIS analyses, are required to produce and implement a NIAP (<https://cites.org/eng/niaps>, Accessed 21 July 2020); six of these are range countries of the African Forest Elephant.

At a national level African Forest Elephants are subject to varying degrees of legal protection in the 20 range states, with most granting them the highest possible protection status. However, up to 70% of the animals may live outside protected areas (Maisels *et al.* 2013) and are vulnerable to poaching, as the degree of protection (by anti-poaching agents) and road access are both important predictors of their density (Blake *et al.* 2008, Yackulic *et al.* 2011, Maisels *et al.* 2013).

Conservation measures usually include habitat management and protection through legislation, policy and law enforcement. Successful anti-poaching and management has resulted in the maintenance of numbers of African Forest Elephants in some localities. In other instances where protection efforts have failed, African Forest Elephant numbers have been reduced by 70% or more in a decade (ANPN, WCS, and WWF 2013; Nzooh Dongmo *et al.* 2016; Poulsen *et al.* 2017).

## Credits

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**Authority/Authorities:** IUCN SSC African Elephant Specialist Group

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## Disclaimer

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## External Resources

For [Supplementary Material](#), and for [Images and External Links to Additional Information](#), please see the Red List website.

# Appendix

## Habitats

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

Habitat	Season	Suitability	Major Importance?
1. Forest -> 1.5. Forest - Subtropical/Tropical Dry	-	Marginal	-
1. Forest -> 1.6. Forest - Subtropical/Tropical Moist Lowland	-	Suitable	Yes
1. Forest -> 1.7. Forest - Subtropical/Tropical Mangrove Vegetation Above High Tide Level	-	Marginal	-
1. Forest -> 1.8. Forest - Subtropical/Tropical Swamp	-	Suitable	Yes
1. Forest -> 1.9. Forest - Subtropical/Tropical Moist Montane	-	Marginal	-
2. Savanna -> 2.2. Savanna - Moist	-	Marginal	-
3. Shrubland -> 3.6. Shrubland - Subtropical/Tropical Moist	-	Marginal	-

## Use and Trade

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

End Use	Local	National	International
Sport hunting/specimen collecting	No	Yes	Yes
Pets/display animals, horticulture	No	Yes	Yes
Handicrafts, jewellery, etc.	No	Yes	Yes

## Threats

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

Threat	Timing	Scope	Severity	Impact Score
1. Residential & commercial development -> 1.3. Tourism & recreation areas	Future	Minority (50%)	Unknown	Unknown
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 2. Species Stresses -> 2.2. Species disturbance		
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.1. Shifting agriculture	Ongoing	Majority (50-90%)	Unknown	Unknown
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.2. Species disturbance		
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.2. Small-holder farming	Ongoing	Unknown	Unknown	Unknown



	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.2. Species disturbance		
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.3. Agro-industry farming	Future	Minority (50%)	Slow, significant declines	Low impact: 3
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.2. Species disturbance		
2. Agriculture & aquaculture -> 2.2. Wood & pulp plantations -> 2.2.2. Agro-industry plantations	Ongoing	Minority (50%)	Slow, significant declines	Low impact: 5
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.2. Species disturbance		
2. Agriculture & aquaculture -> 2.3. Livestock farming & ranching -> 2.3.3. Agro-industry grazing, ranching or farming	Future	Unknown	Slow, significant declines	Unknown
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 2. Species Stresses -> 2.2. Species disturbance		
3. Energy production & mining -> 3.1. Oil & gas drilling	Ongoing	Minority (50%)	Slow, significant declines	Low impact: 5
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		
3. Energy production & mining -> 3.2. Mining & quarrying	Ongoing	Minority (50%)	Slow, significant declines	Low impact: 5
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		
4. Transportation & service corridors -> 4.1. Roads & railroads	Ongoing	Majority (50-90%)	Slow, significant declines	Medium impact: 6
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		
5. Biological resource use -> 5.1. Hunting & trapping terrestrial animals -> 5.1.1. Intentional use (species is the target)	Ongoing	Majority (50-90%)	Rapid declines	Medium impact: 7
	Stresses:	1. Ecosystem stresses -> 1.3. Indirect ecosystem effects 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.3. Indirect species effects		
5. Biological resource use -> 5.1. Hunting & trapping terrestrial animals -> 5.1.3. Persecution/control	Ongoing	Majority (50-90%)	Slow, significant declines	Medium impact: 6
	Stresses:	2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		
5. Biological resource use -> 5.3. Logging & wood harvesting -> 5.3.3. Unintentional effects: (subsistence/small scale) [harvest]	Ongoing	Minority (50%)	Unknown	Unknown
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.2. Species disturbance		

5. Biological resource use -> 5.3. Logging & wood harvesting -> 5.3.4. Unintentional effects: (large scale) [harvest]	Ongoing	Minority (50%)	Slow, significant declines	Low impact: 5
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.2. Species disturbance		
6. Human intrusions & disturbance -> 6.1. Recreational activities	Ongoing	Minority (50%)	Unknown	Unknown
	Stresses:	2. Species Stresses -> 2.2. Species disturbance		
6. Human intrusions & disturbance -> 6.2. War, civil unrest & military exercises	Ongoing	Minority (50%)	Slow, significant declines	Low impact: 5
	Stresses:	2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		
7. Natural system modifications -> 7.1. Fire & fire suppression -> 7.1.3. Trend Unknown/Unrecorded	Ongoing	Minority (50%)	Unknown	Unknown
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		
7. Natural system modifications -> 7.2. Dams & water management/use -> 7.2.11. Dams (size unknown)	Ongoing	Minority (50%)	Unknown	Unknown
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
11. Climate change & severe weather -> 11.2. Droughts	Ongoing	Minority (50%)	Unknown	Unknown
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 1. Ecosystem stresses -> 1.3. Indirect ecosystem effects 2. Species Stresses -> 2.1. Species mortality		

## Conservation Actions in Place

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

<b>Conservation Action in Place</b>
In-place research and monitoring
Action Recovery Plan: Yes
Systematic monitoring scheme: Yes
In-place land/water protection
Conservation sites identified: Yes, over entire range
Occurs in at least one protected area: Yes
In-place species management
Harvest management plan: No
Successfully reintroduced or introduced benignly: No
In-place education

<b>Conservation Action in Place</b>
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>)

<b>Conservation Action Needed</b>
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
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
4. Education & awareness -> 4.1. Formal education
4. Education & awareness -> 4.2. Training
4. Education & awareness -> 4.3. Awareness & communications
5. Law & policy -> 5.1. Legislation -> 5.1.1. International level
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
6. Livelihood, economic & other incentives -> 6.1. Linked enterprises & livelihood alternatives

## Research Needed

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

<b>Research Needed</b>
1. Research -> 1.1. Taxonomy
1. Research -> 1.2. Population size, distribution & trends
1. Research -> 1.3. Life history & ecology

<b>Research Needed</b>
1. Research -> 1.4. Harvest, use & livelihoods
1. Research -> 1.5. Threats
1. Research -> 1.6. Actions
3. Monitoring -> 3.1. Population trends

## Additional Data Fields

<b>Distribution</b>
Lower elevation limit (m): 0
Upper elevation limit (m): 2,000
<b>Population</b>
Continuing decline of mature individuals: Yes
Population severely fragmented: No
<b>Habitats and Ecology</b>
Continuing decline in area, extent and/or quality of habitat: Yes
Generation Length (years): 31
Movement patterns: Not a Migrant

## Errata

**Errata reason:** A reference cited in the Trade and Use section of the assessment has been deleted and removed from the Bibliography. An errata version of the Supplementary Material has been attached; an error in Figure 1 has been corrected and some additional text about the data in Tables 2 and 3 has been added.

## The IUCN Red List Partnership



The IUCN Red List of Threatened Species™ is produced and managed by the [IUCN Global Species Programme](#), the [IUCN Species Survival Commission \(SSC\)](#) and [The IUCN Red List Partnership](#).

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