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Pan troglodytes, Chimpanzee

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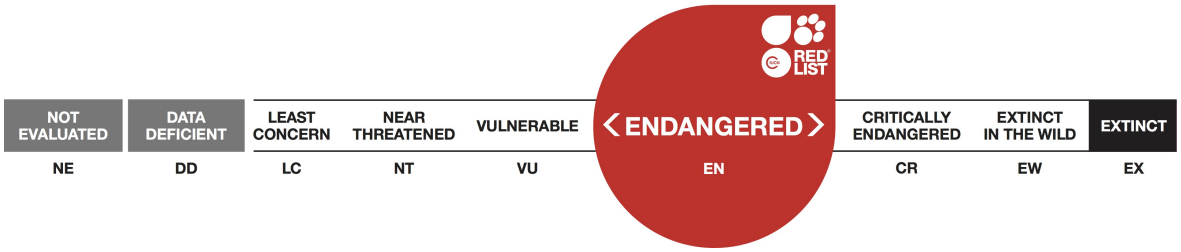

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Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Mammalia	Primates	Hominidae

Taxon Name: *Pan troglodytes* (Blumenbach, 1799)

Synonym(s):

- *Simia troglodytes* Blumenbach, 1799

Infra-specific Taxa Assessed:

- *Pan troglodytes* ssp. *ellioti*
- *Pan troglodytes* ssp. *schweinfurthii*
- *Pan troglodytes* ssp. *troglodytes*
- *Pan troglodytes* ssp. *verus*

Common Name(s):

- English: Chimpanzee, Common Chimpanzee, Robust Chimpanzee
- French: Chimpanzé
- Spanish: Chimpancé

Taxonomic Source(s):

Mittermeier, R.A., Rylands, A.B. and Wilson D.E. 2013. *Handbook of the Mammals of the World: Volume 3 Primates*. Lynx Edicions, Barcelona.

Taxonomic Notes:

Chimpanzee taxonomy remains an active area of research, particularly in population genetics. Four subspecies are commonly recognised: the Western Chimpanzee (*Pan troglodytes verus*); the Nigeria-Cameroon Chimpanzee (*P. t. ellioti*); the Central Chimpanzee (*P. t. troglodytes*); and the Eastern Chimpanzee (*P. t. schweinfurthii*). Genetic data, which include analyses of complete genomes (Prado-Martinez *et al.* 2013), suggest that the subspecies form two distinctive groups: one group includes *P. t. verus* and *P. t. ellioti* and the other group includes *P. t. troglodytes* and *P. t. schweinfurthii* (Fünfstück *et al*. 2015). *Pan t. verus* and *P. t. ellioti* separated from one another much earlier than *P. t. troglodytes* from *P. t. schweinfurthii*. Each subspecies has experienced markedly different demographic histories since their separation 100,000 years ago, with all punctuated by dramatic reductions in their effective populations size (Gonder *et al.* 2011, Mitchell *et al.* 2015, Prado-Martinez *et al.* 2013). The degree of connectivity between chimpanzee populations in western Nigeria and those in eastern Nigeria and western Cameroon has yet to be adequately examined. Published relationship trees based on the analysis of mitochondrial DNA do not group western Nigerian chimpanzees closely with those of either Upper Guinea or eastern Nigeria (Gonder *et al*. 2006); however, those analyses were based on a very small number of western Nigerian samples. A more comprehensive analysis using additional samples is urgently needed.

While taxonomic labelling is often debated and subject to revision, the relative importance of different threats faced by chimpanzees varies across Africa, making a regional approach valuable for conservation purposes.

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Assessment Information

Red List Category & Criteria: Endangered A4bcde ver 3.1

Year Published: 2016

Date Assessed: March 24, 2016

Justification:

Although *Pan troglodytes* is the most abundant and widespread of the great apes, and many populations exist in protected areas, the declines that have occurred are expected to continue, satisfying the criteria for an Endangered listing (Oates 2006). Due to high levels of poaching, infectious diseases, and loss of habitat and habitat quality caused by expanding human activities, this species is estimated to have experienced a significant population reduction in the past 20–30 years and it is suspected that this reduction will continue for the next 30–40 years. Due to their slow life history and a generation time estimated to be 25 years, Chimpanzee populations cannot sustain high levels of mortality, whether disease-induced or caused by poaching. The maximum population reduction over a three-generation (75 year) period from 1975 to 2050 is suspected to exceed 50%, hence qualifying this taxon as Endangered under criterion A. Although conservation efforts directed at Chimpanzees and other wildlife have increased significantly in recent years, the assumption that population reductions will continue is a precautionary approach based on the rapid growth of human populations in sub-Saharan Africa, continuing poaching for bushmeat, the commercial bushmeat trade, the arrival of industrial agriculture (which requires clearcutting of forest), corruption and lack of law enforcement, lack of capacity and resources, and political instability in some range states. At the same time, zoonosis and disease outbreaks present significant risks; there is, for example, evidence that *Ebolavirus* will continue to spread in some parts of the Chimpanzee's geographic range (Walsh *et al.* 2005).

For more information, see the four *Pan troglodytes* subspecies accounts.

Previously Published Red List Assessments

2008 – Endangered (EN)
http://dx.doi.org/10.2305/IUCN.UK.2008.RLTS.T15933A5322627.en

2007 – Endangered (EN)

2000 – Endangered (EN)

2000 – Endangered (EN)

1996 – Endangered (EN)

1994 – Vulnerable (V)

1990 – Vulnerable (V)

1988 – Vulnerable (V)

1988 – Vulnerable (V)

1986 – Vulnerable (V)

http://dx.doi.org/10.2305/IUCN.UK.2016-2.RLTS.T15933A17964454.en

Geographic Range

Range Description:

Chimpanzees have by far the widest geographic distribution of any great ape, with a range of over 2.6 million km² (derived from IUCN shapefiles). They have a discontinuous distribution from southern Senegal across the forested belt north of the Congo River to western Tanzania and western Uganda, between 13°N and 7°S. The four subspecies recognised here are distributed as follows:

• *Pan t. ellioti* (Gray 1862) is found only in Nigeria and Cameroon, north of the Sanaga River, and has the smallest geographical range the four Chimpanzee subspecies.

• *Pan t. schweinfurthii* (Giglioli 1872) ranges from the Ubangi River/Congo River in southeast Central African Republic (CAR) and Democratic Republic of Congo (DRC), to Burundi, Rwanda, western Uganda and western Tanzania, with a small, relict population in South Sudan. The Albertine Rift escarpment is a stronghold for this subspecies (Plumptre *et al.* 2010a).

• *Pan t. troglodytes* (Blumenbach 1799) ranges from Cameroon, south of the Sanaga River, to the Congo River/Ubangi River (DRC).

• *Pan t. verus* (Schwarz 1934) is found in West Africa from Senegal to Ghana, but has almost certainly been extirpated from Benin, Burkina Faso and Togo. More research is needed to determine whether the Chimpanzee population in western Nigeria is allied to *P. t. verus* or to *P. t. ellioti*.

The maximum elevation at which each subspecies has been confirmed is *ca* 2,000 m asl for *P. t. ellioti*, 2,790 m for *P. t. schweinfurthii*, 742 m for *P. t. troglodytes*, and 1,607 m for *P. t. verus* (Williamson *et al.* 2013).

Country Occurrence:

Native: Angola (Angola); Burundi; Cameroon; Central African Republic; Congo; Congo, The Democratic Republic of the; Côte d'Ivoire; Equatorial Guinea (Equatorial Guinea (mainland)); Gabon; Ghana; Guinea; Guinea-Bissau; Liberia; Mali; Nigeria; Rwanda; Senegal; Sierra Leone; South Sudan; Tanzania, United Republic of; Uganda

Possibly extinct: Benin; Burkina Faso; Togo

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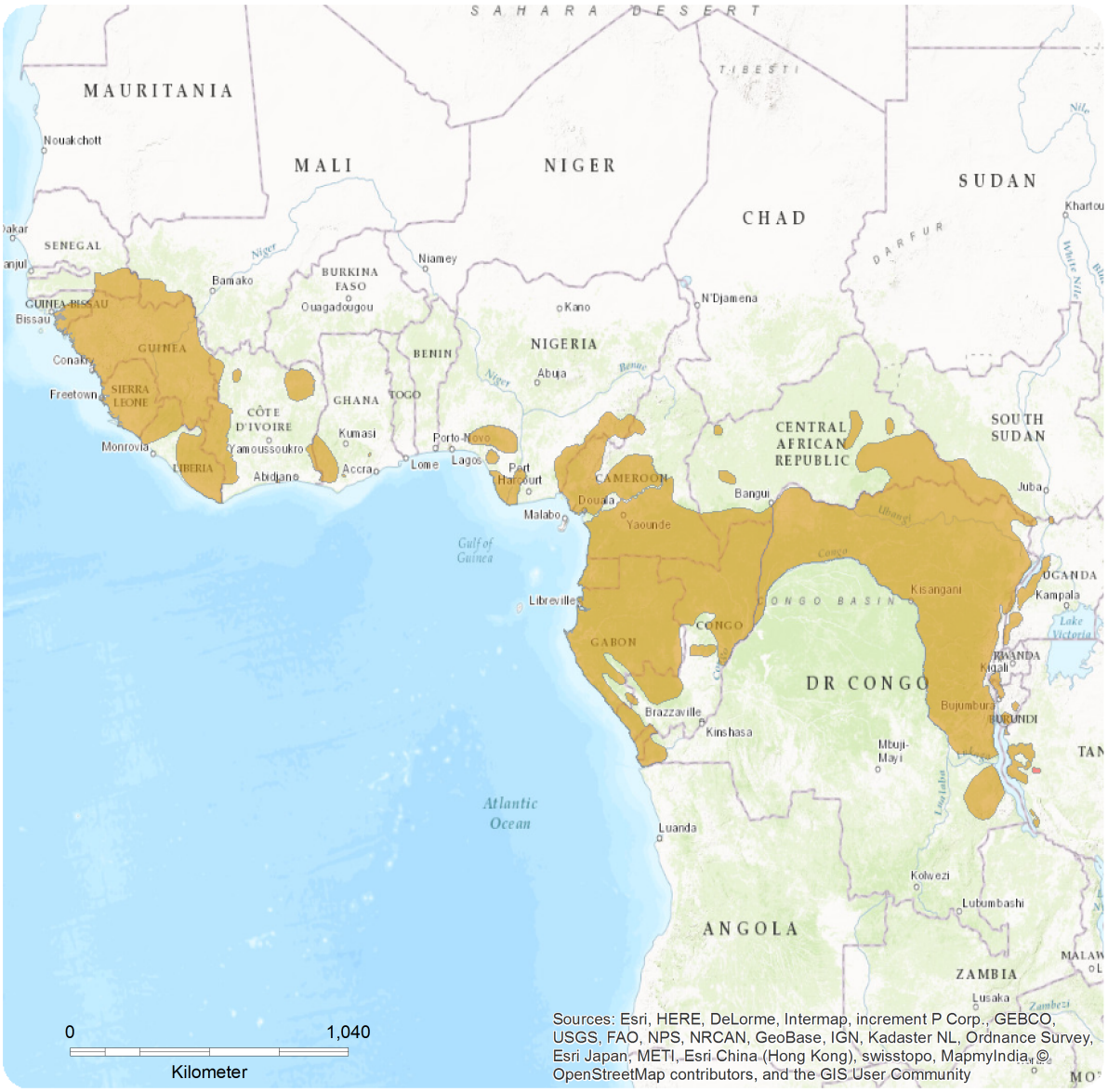
Distribution Map

Pan troglodytes



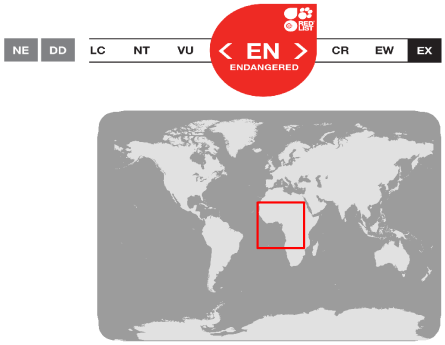
Range

Extant (resident)

Possibly Extinct

Compiled by:

IUCN SSC A.P.E.S. database, Drexel University and Jane Goodall Institute



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

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Population

Great ape population estimates are made using a standard index of abundance: night nest abundance and distribution, sometimes combined with predictive modelling. In 2003, the total Chimpanzee population size was estimated to be 172,700–299,700 (Butynski 2003). Current estimates for each subspecies are:

• probably fewer than 6,000–9,000 *P. t. ellioti* (Morgan *et al*. 2011, J. Oates pers. comm. 2015)

• 181,000–256,000 *P. t. schweinfurthii* (Plumptre *et al*. 2010a), including a large population in northern DRC that was formerly considered to be outside of the species' known range (Hicks *et al*. 2014)

• approximately 140,000 *P. t. troglodytes* (Strindberg *et al*. in prep.)

• 18,000–65,000 *P. t. verus* (Sop *et al*. in prep.)

Pan t. ellioti is the least numerous subspecies. One of the largest and probably most secure subpopulations is in Gashaka-Gumti National Park, Nigeria, estimated at 900–1,000 individuals (Ogunjemite *et al*. 2010, Adanu *et al.* 2011). Other major subpopulations are found in Cameroon in Banyang-Mbo Wildlife Sanctuary (estimated at 500–900 or 800–1,450 individuals, depending on nest-decay parameters used; Greengrass and Maisels 2007), in the proposed Ebo National Park (estimated at 626–1,480 individuals, M. Ndimbe and B. Morgan pers. comm. 2015), and in Mbam and Djerem National Park (at least 500 individuals, Maisels *et al*. 2009). The vast majority of *P. t. schweinfurthii* are found in DRC (173,000–248,000, Plumptre *et al*. 2010a, 2015). Outside the DRC, there are roughly 5,000 in Uganda (Plumptre *et al*. 2003a), just over 400 in Rwanda (WCS Rwanda unpubl. data), fewer than 400 in Burundi (Hakizimana and Huynen 2013), and fewer than 2,500 in Tanzania (A. Piel and F. Stewart, pers. comm.). Almost all Chimpanzees in Tanzania are found in the Greater Mahale Ecosystem, and their populations appear to be stable (Piel *et al*. 2015). Similarly, Chimpanzee numbers in Rwanda's Nyungwe National Park are relatively stable (Sop *et al*. 2015). In western Uganda, forest is being lost at many Chimpanzee sites; however, data from the protected areas (Budongo and Bugoma forest reserves, Kibale National Park) indicate that Chimpanzee populations there are relatively stable (Wanyama *et al.* 2009, Plumptre *et al.* 2010b). The forests of central Africa where *Pan t. troglodytes* occurs are by far the least disturbed in the species' range. About one third of the subspecies population resides in Gabon and around 40% in Congo, followed by Cameroon (Strindberg *et al*. in prep.). The area of forest in these countries is very roughly representative of the proportion of Chimpanzees that it holds. A few thousand individuals remain in Equatorial Guinea, and a few hundred in CAR; the size of the populations in Angola (Cabinda) and DRC is unknown. The *P. t. verus* strongholds are Guinea, Liberia and Sierra Leone (Ham 1998, Kormos, Humle *et al*. 2003, Brncic *et al.* 2010, Tweh *et al.* 2015). The largest population, estimated at 17,700 individuals (WCF 2012), is in the Fouta Djallon in Guinea. For more details, see the four *Pan troglodytes* subspecies accounts.

Current Population Trend: Decreasing

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

Chimpanzees are found discontinuously across the forest belt of Africa, occupying primary and secondary moist lowland forest, swamp forest, submontane and montane forest, dry forest, forest galleries in savanna woodland, and farmland (Oates 2011). In West Africa, Chimpanzees are also found in fallow-agricultural matrixes dominated by wild or feral oil palm (Leciak *et al.* 2005, Brncic *et al.* 2010, Sousa *et al*. 2011). They live in multimale-multifemale, fission-fusion communities averaging 35 members. The largest known community has c.150 members (Mitani and Watts 2005). Annual home

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ranges are smaller in mixed forest than in woodland forest mosaics: one of the smallest known is 6 km² at Budongo in Uganda (Newton-Fisher 2003), while one of the largest is 72 km² at Semliki, also in Uganda (Samson and Hunt 2012). Chimpanzees are omnivorous and opportunistic feeders. Fruit forms about half the diet, typically supplemented with terrestrial herbaceous vegetation, leaves, stems, seeds, flowers, bark, pith, honey, mushrooms, resin, eggs, and animal prey such as insects and medium-sized mammals. They are the most carnivorous of the great apes. Chimpanzees are also proficient tool users. Tools made from plant parts are used to extract bees, ants and termites from their nests (e.g., Fowler and Sommer 2007), and stone and wooden hammers are used to crack nuts (e.g., Boesch and Boesch 1984, Matsuzawa *et al*. 2011).

Life History (as summarised in Williamson *et al*. 2013): Male and female Chimpanzees reach puberty at 7–8 years of age. Females have a 35-day reproductive cycle. The first parturition is generally at 13–14 years of age, but as early as 9–10 years in one population of western Chimpanzees. Chimpanzees reproduce throughout the year. Gestation is c.230 days. The norm is a single infant, but occasionally twins are born. Offspring are typically weaned at 4–5 years of age. The interbirth interval averages 4.6–7.2 years when the preceding infant survives. Females can remain reproductive into their late forties. Maximum life span is unknown, but thought to be *ca* 50 years. Female Chimpanzees may give birth to as many as nine offspring during their lifetime, but only one third of them survive beyond infancy. Generation time is estimated to be 25 years (Langergraber *et al*. 2012).

Systems: Terrestrial

Use and Trade

Chimpanzees are completely protected by national and international laws in all countries of their range, and it is, therefore, illegal to kill, capture or trade in live Chimpanzees or their body parts.

Threats (see Appendix for additional information)

The four Chimpanzee subspecies face similar threats, but to varying degrees in different regions. The major threats to *Pan troglodytes* are:

1. Poaching

Despite the fact that all killing, capture or consumption of great apes is illegal, poaching is the greatest threat to most Chimpanzees. Due to their low population densities and slow reproductive rates, hunting often leads to the local extirpation of Chimpanzee populations. Increases in human populations, the ease of obtaining guns and ammunition, transport system efficiency, and high financial incentives for supplying urban markets with bushmeat and other forest commodities have resulted in swathes of land in the forest zone of Africa being cleared of wildlife. Chimpanzees are generally hunted opportunistically, but are sometimes targeted because they provide more meat than smaller mammals, such as duikers. Throughout the African moist forest region, poaching is intense around resources extraction camps – especially industrial and artisanal mining sites and logging camps – where bushmeat is usually the main source of protein available. Hunting with guns (targeting individuals) and snaring (an indiscriminate method of trapping) are the most common ways that Chimpanzees are killed. The widespread use of wire snares across Africa means that Chimpanzees can be caught and killed (or maimed) in snares set for other terrestrial mammals (e.g., Quiatt *et al*. 2002).

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When Chimpanzees are killed for meat, their infants sometimes become pets, and some are trafficked (e.g., Hicks *et al*. 2010). Although all trade in Chimpanzees and their body parts is illegal, a small but pernicious and clandestine trade persists is some parts of Africa (e.g., CITES Secretariat 2014). Chimpanzees are sometimes killed intentionally–even poisoned–by people protecting their crops or as retribution for crop raiding (e.g., Brncic *et al.* 2010). Such trends are likely to increase as more natural habitat is converted to agricultural fields or plantations. Instances of crop foraging and encounters between people and Chimpanzees are becoming more frequent, especially in West Africa. This exacerbates negative perceptions and aggravates people's attitudes towards Chimpanzees, thus potentially intensifying rates of killing, and subsequently fuelling the live trade with orphaned infants. Close to one thousand confiscated chimpanzees are now housed in sanctuaries in their range countries.

Until the mid-1990s, much of Central Africa was a series of vast, roadless forest blocks, to which access was extremely difficult and where human population density was very low. In the last quarter of a century, however, almost all *terra firma* forest in the non-protected areas of the central Chimpanzee's range has been assigned as logging concessions (Global Forest Watch 2016). This means that most of the once-remote, previously inaccessible forests are now covered by a network of logging roads (Laporte *et al.* 2007), which provides rapid access to hunters entering the forest and to traffickers taking consignments of bushmeat out of the forest to distant destinations – often towns and cities where bushmeat fetches the highest prices. In recent years, extractive industries have stimulated very high rates of human immigration and the creation of yet more access roads, which are also used for poaching (e.g., Edwards *et al*. 2014).

2. Habitat loss and degradation

(a) Subsistence/slash-and-burn agriculture: the conversion of forest to farmland across Africa has severely reduced the availability of Chimpanzee habitat. Such habitat loss is especially acute in West Africa, where it is estimated that more than 80% of the region's original forest cover had been lost by the early 2000s (Kormos *et al*. 2003). Extensive land conversion in eastern DRC, western Rwanda and western Uganda has destroyed much of the sub-montane forest used by Chimpanzees. In Central Africa, annual rates of loss are lower, averaging about 0.14% (2000–2010 data; Desclée *et al*. 2014). Ongoing rapid growth in human populations is expected to lead to further widespread conversion of forest and woodland to agricultural land. Along the northern border of the forest-savanna boundary at about 6°N, forests are also being lost to fires and grazing of livestock.

(b) Extractive industries – logging, mining and oil: logging generally has a negative impact on Chimpanzee densities due to habitat alteration (principally removal of important food trees) and disturbance (Morgan *et al.* 2007). As timber concessions undergo repeated cycles of logging, degradation over time will lead to profound changes in forest composition (Zimmerman and Kormos 2012), as the mature trees of certain species–some of high importance to Chimpanzees for food–are logged out. Mining of precious metals and mineral ores, and drilling for oil not only devastate wildlife habitat, but typically also lead to human inmigration and the building of roads, railways and other infrastructure. As with logging, the resulting increased accessibility to remote areas exacerbates risks to Chimpanzees through habitat degradation and fragmentation in areas not previously impacted by such anthropogenic pressures. The creation of open-pit mines leads to irretrievable loss of forest (Lanjouw 2014).

(c) Industrial agriculture – as tropical Asia nears its capacity for oil-palm plantations, Africa has become the new frontier for this crop, which offers excellent economic prospects in countries with appropriate rainfall, soil and temperature conditions (Rival and Lavang 2014). Unfortunately, these areas coincide with good great ape habitat: 42.3% of the African apes' range is suitable for oil palm (Wich *et al.* 2014), so the spread of plantations is likely to hit Chimpanzee populations hard in coming years. This situation is of special concern for Chimpanzees living outside protected areas. Changes caused by the rapid transformation of their habitat can have profound impacts on their diet, activity patterns, dispersal and ranging patterns, as well as introducing new pathogens and other risks linked to close proximity with people (Ancrenaz *et al*. 2015).

(d) Major transportation infrastructure – huge road projects, which can be several kilometres wide, are currently underway across Africa and these will substantially fragment great ape habitat and add further to the area of "lost forest" (Laurance *et al*. 2015). This phenomenon is not confined to the African continent (Laurance *et al.* 2014).

3. Disease

The second major driver of decline in central Chimpanzee populations is infectious disease, especially Ebola virus disease (EVD). Surveys carried out from the 1980s to the present day indicate that EVD caused a series of massive great ape die-offs in a large, mostly-intact forested area straddling the border between northeastern Gabon and northwestern Congo, which includes several national parks and logging concessions (Walsh *et al.* 2003, Maisels *et al.* 2004, 2013). Since the early 1990s, about 14% of their total area of distribution has been affected by Ebola virus (*Ebolavirus*). The virus is still present in the region's forests: thus, as large areas can be affected by each outbreak, and transmission between individuals is rapid (Walsh et al 2007, 2009), large numbers of central Chimpanzees could succumb to this deadly virus within a span of weeks or months. Although both the Sangha and the Ngoko rivers are barriers to great ape movements (Anthony *et al.* 2007, Fünfstück *et al.* 2014), *Ebolavirus* can cross rivers and has already been detected to the east of the major river barrier between Odzala-Kokoua National Park and the Sangha River (Reed *et al*. 2014), thus a future outbreak in this region is a strong possibility. There is no evidence to date that the recent dramatic Ebola epidemic in West Africa has affected Chimpanzees, although Ebola killed Chimpanzees in Côte d'Ivoire in the mid-1990s (Formenty *et al*. 1999).

Because Chimpanzees and humans are so similar, Chimpanzees succumb to many diseases that afflict humans. Infectious diseases, including outbreaks of respiratory disease and anthrax, are the main cause of death in several Chimpanzee populations that have been habituated to human presence (e.g., Goodall 1986, Nishida *et al*. 2003, Hanamura *et al*. 2006, Leendertz *et al.* 2006, Köndgen *et al.* 2008, Humle 2011). If not properly managed, research and tourism present opportunities for disease transmission between humans and Chimpanzees (Gilardi *et al*. 2015).

For information on threats specific to each taxon, including climate change impacts, see the four *Pan troglodytes* subspecies accounts.

Conservation Actions **(see Appendix for additional information)**

Pan troglodytes is listed on Appendix I of CITES and as Class A under the African Convention on the

Conservation of Nature and Natural Resources. Chimpanzees are protected by national and international laws throughout their range, but enforcement is generally weak. All four subspecies occur in numerous national parks; however, the majority occur outside protected areas (IUCN SSC A.P.E.S. database 2016). Even within protected areas, safe haven is not guaranteed: many protected areas in tropical Africa lack adequate management and suffer from poorly-controlled poaching. Stricter enforcement of wildlife laws and more effective management of what may become the last refuges for many great ape populations are needed urgently.

Conservation needs for Chimpanzees across Africa fall into several broad areas:

• Effective law enforcement, not only in protected areas, but also in logging, mining and agricultural concessions. Chimpanzees are protected by legislation even where the land is not protected.

• Effective, coordinated land-use planning across the geographic range of the species to avoid the clearing of large areas of Chimpanzee habitat to establish large-scale agriculture, especially oil-palm plantations (IUCN SSC Primate Specialist Group 2014, Wich *et al*. 2014, Ruysschaert and Rainer 2015). Industrial extraction of other natural resources, namely timber and minerals, should be incorporated into a holistic, spatially-explicit approach. Such planning needs to be done at both national and regional levels. Several of the most important areas for Chimpanzee conservation are transboundary, and thus fall within the remit of national agencies from two or three countries.

• Long-term standardised monitoring of law enforcement efforts and effectiveness, of Chimpanzee abundance throughout their range, and of chimpanzee health. A standardised tool for law enforcement monitoring (SMART: www.smartconservationsoftware.org) is already in use across much of the range; standard methods for surveying and monitoring great ape populations that facilitate more accurate and precise monitoring of changes in abundance have been recommended for almost a decade (Kühl *et al*. 2008 www.primate-sg.org/best_practice_surveys); and non-invasive diagnosis of a range of pathogens is now possible, for example, detection of *Ebolavirus* in faeces (Reed *et al*. 2014).

• Outreach to and awareness-raising among all sectors that deal with land and the protection of natural resources: law enforcement and judiciary; protected area authorities; mining, logging, and agricultural industries; local communities and tour operators. This effort should include information on minimising human impacts, such as avoidance of disease transmission to great apes. Recommendations for logging companies regarding management practices that are compatible with great ape conservation (Morgan and Sanz 2007, Morgan *et al.* 2013) are available for download: www.primate-sg.org/best_practice_logging

• Further research into ways of mitigating the spread and virulence of *Ebolavirus*, including means of administering vaccines that are non-detrimental to the target species (great apes) and other species that may come into contact with the vaccine, and that will protect a sufficiently large and geographically-appropriate proportion of the great ape population to form a barrier against its spread. Disease prevention guidelines (Gilardi *et al*. 2015) are available at: www.primate-sg.org/best_practice_disease

• Better understanding of the interactions between people and Chimpanzees, and involving local stakeholders in participative management, especially outside or at the periphery of protected areas.

Maintaining large, well-protected areas of forest will be key to maintaining Chimpanzee populations in the long term, and this can only be done by a combination of the actions detailed above. The IUCN SSC Primate Specialist Group has published regional conservation action plans for each subspecies of Chimpanzee. The most recent of these documents are Kormos *et al*. (2003), Plumptre *et al*. (2010a), Morgan *et al*. (2011) and IUCN (2014); all are available for download at: www.primate-sg.org/action_plans

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Credits

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External Resources

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?
2. Savanna -> 2.1. Savanna - Dry	Resident	Suitable	Yes
1. Forest -> 1.9. Forest - Subtropical/Tropical Moist Montane	Resident	Suitable	Yes
1. Forest -> 1.8. Forest - Subtropical/Tropical Swamp	Resident	Suitable	Yes
1. Forest -> 1.6. Forest - Subtropical/Tropical Moist Lowland	Resident	Suitable	Yes
1. Forest -> 1.5. Forest - Subtropical/Tropical Dry	Resident	Suitable	Yes

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	Minority (50%)	Slow, significant declines	Low impact: 5
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
11. Climate change & severe weather -> 11.1. Habitat shifting & alteration	Ongoing	Whole (>90%)	Slow, significant declines	Medium impact: 7
	Stresses:	1. Ecosystem stresses -> 1.3. Indirect ecosystem effects 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.2. Competition 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.7. Reduced reproductive success		
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.1. Shifting agriculture	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. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.2. Small-holder farming	Ongoing	Majority (50-90%)	Slow, significant declines	Medium impact: 6
	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 -> 2.1.3. Agro-industry farming	Ongoing	Majority (50-90%)	Very rapid declines	High impact: 8
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
3. Energy production & mining -> 3.2. Mining & quarrying	Ongoing	Minority (50%)	Slow, significant declines	Low impact: 5

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	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 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.2. Competition		
4. Transportation & service corridors -> 4.1. Roads & railroads	Ongoing	Majority (50-90%)	Slow, significant declines	Medium impact: 6
	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	Minority (50%)	Very rapid declines	Medium impact: 7
	Stresses:	2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		
5. Biological resource use -> 5.1. Hunting & trapping terrestrial animals -> 5.1.2. Unintentional effects (species is not the target)	Ongoing	Minority (50%)	Very rapid declines	Medium impact: 7
	Stresses:	2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		
5. Biological resource use -> 5.1. Hunting & trapping terrestrial animals -> 5.1.3. Persecution/control	Ongoing	Minority (50%)	Very rapid declines	Medium impact: 7
	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	Majority (50-90%)	Slow, significant declines	Medium impact: 6
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
5. Biological resource use -> 5.3. Logging & wood harvesting -> 5.3.4. Unintentional effects: (large scale) [harvest]	Ongoing	Majority (50-90%)	Slow, significant declines	Medium impact: 6
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 1. Ecosystem stresses -> 1.3. Indirect ecosystem effects 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.2. Competition		
8. Invasive and other problematic species, genes & diseases -> 8.5. Viral/prion-induced diseases -> 8.5.1. Unspecified species	Ongoing	Minority (50%)	Very rapid declines	Medium impact: 7
	Stresses:	2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.7. Reduced reproductive success		
8. Invasive and other problematic species, genes & diseases -> 8.5. Viral/prion-induced diseases -> 8.5.2. Named species	Ongoing	Minority (50%)	Very rapid declines	Medium impact: 7
	Stresses:	2. Species Stresses -> 2.1. Species mortality		

Conservation Actions in Place

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

Conservation Actions in Place
In-Place Research, Monitoring and Planning
Action Recovery plan: Yes
Systematic monitoring scheme: No
In-Place Land/Water Protection and Management
Conservation sites identified: Yes, over part of range
Occur in at least one PA: Yes
Area based regional management plan: Yes
In-Place Species Management
Harvest management plan: No
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
4. Education & awareness -> 4.1. Formal education
4. Education & awareness -> 4.2. Training
4. Education & awareness -> 4.3. Awareness & communications
5. Law & policy -> 5.2. Policies and regulations
5. Law & policy -> 5.3. Private sector standards & codes
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

Research Needed

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

Research Needed
1. Research -> 1.1. Taxonomy
1. Research -> 1.5. Threats
1. Research -> 1.6. Actions
2. Conservation Planning -> 2.1. Species Action/Recovery Plan
3. Monitoring -> 3.1. Population trends
3. Monitoring -> 3.4. Habitat trends

Additional Data Fields

Distribution
Lower elevation limit (m): 0
Upper elevation limit (m): 2790
Population
Continuing decline of mature individuals: Yes
Extreme fluctuations: No
Extreme fluctuations in subpopulations: Unknown
Habitats and Ecology
Generation Length (years): 25
Movement patterns: Not a Migrant

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