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Pan troglodytes ssp. troglodytes, Central Chimpanzee

Errata version

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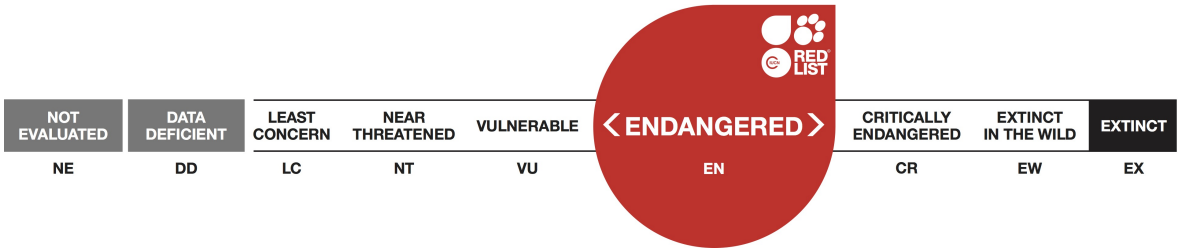

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Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Mammalia	Primates	Hominidae

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

Parent Species: See *Pan troglodytes*

Common Name(s):

- English: Central Chimpanzee

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:

The four commonly recognised subspecies of Chimpanzee are: 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*. Recent mitochondrial DNA work (Gonder *et al.* 2011) suggests that there are three major clades of Chimpanzees: *Pan troglodytes verus* in West Africa, *P. t. ellioti* between the Dahomey Gap and the Sanaga River in Cameroon, and *P. t. troglodytes* in Central and East Africa, the last of which is usually subdivided into *P. t. schweinfurthii* and *P. t. troglodytes* (e.g., Fünfstück *et al.* 2015). The relative importance of different threats faced by each taxon varies across Africa, making a regional approach valuable for conservation purposes. We, therefore, use a four-subspecies classification, acknowledging that future work may lead to recognition of more or fewer subspecies.

Assessment Information

Red List Category & Criteria: Endangered A4bcde ver 3.1

Year Published: 2016

Date Assessed: January 29, 2016

Justification:

Pan troglodytes troglodytes has a very large geographic range (over 700,000 km^2) and a relatively large population size, currently estimated at about 140,000 individuals (Strindberg *et al.* in prep). However, this subspecies has experienced a significant population reduction since the 1970s. Between 1983 and 2000, the country of Gabon lost half its great ape population to poaching and disease, at an annual rate of decline 4% (calculated from Walsh *et al.* 2003). A more recent study examined nest survey data collected between 2003 and 2013 across the entire range of the taxon and created a predictive model to map Central Chimpanzee density and distribution (Strindberg *et al.* in prep). Although the results show no statistically significant decline during those 10 years, Central Chimpanzee populations remain highly vulnerable to poaching and disease. Due to their slow life history and a generation time estimated to be 25 years, Chimpanzee populations cannot sustain high mortality levels, whether disease-induced or caused by humans. Given the scale of the poaching problem across Central Africa, this taxon is likely to

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be experiencing declines significant in terms of the population status, which we do not have the statistical power to detect.

It is suspected that this reduction will continue for the next 30 to 40 years due to illegal hunting and expansion of the commercial bushmeat trade, and to habitat loss and degradation occurring at an increasing rate as a result of expanding human activities. The causes of the reduction, although largely understood, have certainly not ceased and are not easily reversible. The predicted continuation of the population decline is a precautionary approach based on the rapidly-increasing human population density in the region, and the expansion of land clearing for industrial-scale agricultural plantations, which requires the clearcutting of forest and is likely to accelerate in the next two to three decades. The effects of climate change will also become increasingly evident. At the same time, the threat of emerging infectious diseases is ongoing; there is, for example, evidence that *Ebolavirus* will continue to spread (Walsh *et al.* 2005), which would have devastating consequences for Central African great ape populations. At a conservative rate of loss of 1% each year, the population reduction over three generations (75 years) from 1975–2050 is likely to exceed 50%, hence qualifying Central Chimpanzees as Endangered under criterion A.

Previously Published Red List Assessments

2008 – Endangered (EN)
http://dx.doi.org/10.2305/IUCN.UK.2008.RLTS.T15936A5323646.en

2007 – Endangered (EN)

2000 – Endangered (EN)

2000 – Endangered (EN)

1996 – Endangered (EN)

1988 – Vulnerable (V)

Geographic Range

Range Description:

Pan troglodytes troglodytes (Blumenbach 1799) has a very large geographic range (just over 700,000 km²). The eastern limit of their distribution is the Ubangi River; the northwestern limit is the Sanaga River in Cameroon; the northern limit is the forest-savanna boundary to a maximum of roughly 6°N. The Congo River south of its confluence with the Ubangi, to the coast, then becomes the southern and southeastern limit. Distribution is closely related to the proportion of forest cover in each country in their range: most Central Chimpanzees are found in the Republic of Congo (42%), followed by Gabon (~34%) and southwestern Cameroon (17%) (Strindberg *et al.* in prep).

Country Occurrence:

Native: Angola (Angola, Cabinda); Cameroon; Central African Republic; Congo; Congo, The Democratic Republic of the; Equatorial Guinea (Equatorial Guinea (mainland)); Gabon

Population

Central Chimpanzees occur throughout almost all the protected areas and logging concessions in their geographic range, in both *terra firma* and swamp forests; the majority (81%) live outside the protected area network (Strindberg *et al.* in prep). Great ape population estimates are made using a standard index of abundance: night nest abundance and distribution, sometimes combined with predictive modelling. A recent meta-analysis examined 83 nest survey datasets collected using standardised methods across the entire range of Central Chimpanzees and western lowland gorillas between 2003 and 2013. Half the surveys were carried out in protected areas, the other half in logging concessions or unattributed forests, and a predictive model was produced to map great ape density and distribution. Excluding DRC where only a small number of Central Chimpanzees remain, the population is now estimated to be ~140,000 (Strindberg *et al*. in prep.), updating the previous estimate of 70,000–117,000 individuals (Oates *et al*. 2008). The results of the analysis show that no statistically-significant overall decline occurred in the decade between 2003 and 2013 (Strindberg *et al*. in prep.). However, there may be a time lag associated with these impacts on younger cohorts of individuals or on the overall reproductive fitness of these apes that is not detected with current survey methods. Thus, Central Chimpanzees are likely to be experiencing significant population declines that we do not have the statistical power to detect.

Current Population Trend: Decreasing

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

Central Chimpanzees are found predominantly in moist lowland tropical forests and swamp forests. Although they prefer mixed species forest, they will use other forest types for nesting and foraging, including monodominant forest stands comprised largely of medium- to large-sized *Gilbertiodendron* trees. Chimpanzees are omnivorous, and their diets vary greatly between populations and seasons. Ripe fruit is the major constituent of their diet; young leaves, bark, stems and flowers are also important (Morgan and Sanz 2006, Head *et al.* 2011). Faunivory has been documented in all groups studied and mammals comprise a small but significant component of their diet. Consumption of other primates has been documented, but appears to be less frequent in Central Chimpanzees than in conspecifics inhabiting the forests of East and West Africa. Chimpanzee community sizes of 64–71 individuals have been recorded (Morgan 2007). The size of Chimpanzee community home ranges in Goualougo, Republic of Congo, is 13.7–25.6 km² (Morgan 2007). In Loango, Gabon, minimum home range size can reach 45 km² (Arandjelovic *et al*. 2011).

Generation length is estimated to be 25 years (24.6 in Langergraber *et al*. 2012). Central Chimpanzees have an interbirth interval of 6.04±0.73 years between surviving offspring, which decreases to 3.39±0.77 years when an offspring does not survive (Morgan and Sanz, unpublished data).

Systems: Terrestrial

Use and Trade

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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 major threats to *P. t. troglodytes* are:

• **Poaching.** Illegal hunting for bushmeat is a serious problem across Central Africa and is the primary driver of Central Chimpanzee population declines. Until the mid-1990s, much of their range 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 attributed as logging concessions (Global Forest Watch 2016). This means that most of the once-remote, previously inaccessible forest is 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. Throughout Central Africa, mining permits for prospection or extraction are being issued over an increasingly large surface area. As well as direct removal of Chimpanzee habitat (depending on the type of extraction), mining leads to very high rates of human immigration and the creation of yet more access roads, which are then used for poaching (Edwards *et al*. 2014, White and Fa 2014). Huge road projects are currently underway across the continent and these will substantially fragment existing Chimpanzee habitat (Laurance *et al*. 2015). Across their range, Central Chimpanzee densities are lowest near roads, particularly unprotected public and major logging roads (Strindberg *et al.* in prep), because the ease and speed of transport is now orders of magnitude higher than before the creation of the access roads, and hunting pressures are much higher. In addition, human populations in these once-remote areas have increased, as people have migrated to the new employment opportunities offered in logging towns (Wilkie *et al.* 2000, Poulsen *et al*. 2009). This is a global phenomenon, not one confined to Central Africa (Laurance *et al*. 2014).

• **Disease.** The second major driver of Central Chimpanzee decline is infectious disease, especially Ebola virus disease (EVD). Surveys carried out from the 1980s to the present day show that a series of massive great ape die-offs have occurred 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). About 14% of their total area of distribution is thought to have been affected by *Ebolavirus* since the early 1990s. Populations in the protected areas have started to recover; however, total recovery from a disease outbreak would take a Chimpanzee population around 100 years in the absence of poaching (Walsh *et al*. 2003). *Ebolavirus* has already been detected to the east of the major river barrier (Mambili River) between Odzala-Kokoua National Park and the Sangha River and it is known that *Ebolavirus* can cross rivers (Reed *et al*. 2014), thus a future outbreak in the Ngombe concession is a strong possibility. The vast Ngombe logging concession (over 11,500 km²) and the Ntokou-Pikounda National Park (4,252 km²) together contain about 9,500 Central Chimpanzees (Maisels *et al.* 2015). This area is limited to the east by the Sangha River, on the opposite side of which is the Ndoki-Likouala landscape, which contains a further 8,800 or so Central Chimpanzees (Maisels *et al.* 2012). To the north of the Ngombe concession is the Ngoko River, which forms the international boundary between Congo and Cameroon, and the southeastern corner of Cameroon probably contains 16,000 Central Chimpanzees in a series of national parks and logging concessions (Blake *et al.* 2012). As large areas can be affected by each *Ebolavirus* outbreak, and rapid transmission is possible between individuals (Walsh *et al*. 2007, 2009), large numbers of Chimpanzees could succumb to this deadly virus within a span of weeks or months.

• **Habitat loss and degradation.** A threat that is increasingly impacting Central Chimpanzees is loss of habitat. Habitat degradation has long been ongoing, as the type of timber extraction used in Central Africa is selective logging, which removes marketable timber species, among them several important Chimpanzee food sources (Morgan and Sanz 2007, Morgan *et al.* 2013). Chimpanzees are best suited to old-growth forests in this region, and even without clearcutting, the habitat change caused by selective logging is likely to impact Chimpanzee food availability and thus reduce suitability of forests for this taxon. 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. In the past, habitat loss (as opposed to degradation) was not an issue for most great apes in Central Africa. However, as Asian oil-palm plantations are reaching capacity, Africa has become the new frontier for this crop, and offers excellent economic prospects for countries with appropriate rainfall, soil and temperature conditions (Rival and Lavang 2014). Unfortunately, these areas coincide with good great ape habitat: 41.7% of the *Pan troglodytes*' range is suitable for oil palm (Wich *et al.* 2014). The creation of the development corridors, which can be several kilometres wide, adds to areas of "lost forest" (Laurance *et al.* 2015), as does the creation of open-pit mines (Lanjouw 2014). In all central chimpanzee range states except Gabon, there is a disconnect between the various bodies responsible for land-use planning in the realms of conservation, mining and agriculture. Consequently there will be increasing competition for land between long-term conservation needs and immediate financial gain as range states explore the potential of clearing natural habitat in favour of this crop. Without careful and immediate land-use planning involving cooperation between the government bodies responsible for protected areas and wildlife on one hand, and economic agricultural development on the other, large areas of habitat could be converted to cultivated land that does not support Chimpanzees within a few decades.

• **Climate change.** Climate change is already thought to be affecting Central African tropical moist forests (Lewis *et al*. 2013). Although the impacts of global climate change in Western Equatorial Africa are not yet known, some predictions suggest a drying of this region with potentially-negative consequences for forest ecology, such as changes in forest productivity and fruit and flower phenology, increased vulnerability to fire, and even forest retreat (James *et al*. 2013). Seasonal changes in precipitation and temperature, and weather extremes are likely already ongoing and set to continue during the next few decades (Lovett 2015). Negative consequences for great apes in this region have already been predicted (Lehmann *et al.* 2010), particularly along the coast (Korstjens *et al.* 2010). Some species of trees that are important sources of fruit for Chimpanzees require a minimum temperature to set seed (Tutin and Fernandez 1993), so increases in temperature will prevent their fruiting. Climate change is the least likely factor for which effective action for great apes, and for African tropical forests in general, can be taken in a timely manner. Although the 2015 Conference of the Parties to the United Nations Framework Convention on Climate Change resulted in international cooperative agreement between most of the world's nations as to the need for action, the task of reversing or even flattening current temperature trends will be extremely challenging. Nonetheless, there is potential for mitigating against the impacts of habitat degradation or conversion, which would otherwise exacerbate the effects of climate change on both the short- and long-term prospects for Chimpanzee survival.

While each of the major threats to the Central Chimpanzee's survival is described as an independent factor, these threats are often interconnected and may interact in ways that exacerbate their impacts on wildlife. For example, as access to forests is opened up, poaching intensifies in regions where *Zaire ebolavirus* and other pathogens are already significant threats. The extensive selective-logging regime

applied over most of the Central Chimpanzee's geographic range is leading to widespread habitat modification, while global warming is likely to cause additional changes in the extent and quality of habitats suitable for great apes. Global warming may also lead to increased exposure to novel pathogens, as Chimpanzees expand their diets to acquire adequate resources.

Conservation Actions (see Appendix for additional information)

Pan troglodytes is listed on Appendix I of CITES and in Class A of the African Convention. National and international laws controlling hunting or capture of great apes exist in all habitat countries, but enforcement of protective legislation is inconsistent or lacking throughout much of the species' range. Only around 33% of Central Chimpanzees and about 22% of their range are protected by forest guards, who work in most protected areas and in the well-managed logging concessions; the remainder of their range is unprotected and highly vulnerable to poachers.

Two targeted conservation action plans for the great apes of Western Equatorial Africa have been produced (Tutin *et al*. 2005, IUCN 2014). The areas where most of the world's Central Chimpanzees occur in geographically distinct blocks have been identified and a series of actions outlined for each, which can be broadly encapsulated as:

• An increase in effective law enforcement throughout the region, not only in protected areas, but also in logging concessions and unprotected swamp forests as only 14% of Central Chimpanzees occur in protected areas, with a further 8% in FSC-certified logging concessions.

• Effective, coordinated land-use planning to avoid the clearing of large areas of intact Chimpanzee habitat to establish large-scale agriculture, especially oil-palm plantations. Industrial extraction of other natural resources, namely timber and minerals, should be included in this holistic, spatially-explicit approach. Such planning needs to be done at both national and regional levels. Several of the most important areas for great ape conservation are transboundary, and thus fall under the remit of national agencies of two or three countries.

• 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 outreach effort should include specific information on minimising human impacts, such as avoidance of human disease transmission to great apes. IUCN best practice recommendations for logging companies regarding management that is compatible with great ape conservation (Morgan and Sanz 2007; Morgan *et al.* 2013) can be downloaded here: http://www.primate-sg.org/best_practice_logging

• Further research into ways of mitigating the spread and virulence of *Ebolavirus*, such as addressing the possibilities 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 protect a sufficiently large and geographically-appropriate proportion of the great ape population to form barriers against its spread. IUCN disease prevention guidelines (Gilardi *et al*. 2015) are available here: http://www.primate-sg.org/best_practice_disease

• Long-term standardised monitoring of law enforcement efforts and effectiveness, of Chimpanzee abundance throughout their range, and of great ape health, particularly with respect to *Ebolavirus*. A standardised tool for law enforcement monitoring (SMART: http://www.smartconservationsoftware.org) is 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 in use for about a decade (Kühl *et al*. 2008 http://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).

Maintaining large, intact and well-protected areas of forest will be key to maintaining great ape populations in the long term, and this can only be done by a combination of the actions detailed in the 2015–2025 IUCN Action Plan. Threats and conservation actions needed are outlined in greater detail in the action plans than is possible here. These documents can be downloaded at: http://www.primate-sg.org/action_plans

Credits

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Bibliography

Anthony, N.M., Johnson-Bawe, M., Jeffery, K., Clifford, S.L., Abernethy, K.A., Tutin, C.E., Lahm, S.A., White, L.J.T., Utley, J.F., Wickings, E.J. and Bruford, M.W. 2007. The role of Pleistocene refugia and rivers in shaping gorilla genetic diversity in central Africa. *Proceedings of the National Academy of Sciences of the United States of America* 104: 20432–20436.

Arandjelovic, M., Head, J., Rabanal, L.I., Schubert, G., Mettke, E., Boesch, C., Robbins, M.M. and Vigilant, L. 2011. Non-invasive genetic monitoring of wild central chimpanzees. *PLoS One* 6(3): e14761.

Bermejo, M., Rodríguez-Teijeiro, J.D., Illera, G., Barroso, A., Vilà, C. and Walsh, P.D. 2006. Ebola outbreak kills 5000 gorillas. *Science* 314: 1564.

Blake, S., Strindberg, S. and Princée, F. 2012. Evaluation of the CARPO/GHOA Biological Monitoring Programme. Reporting on Consultancy Contract No. WWF CARPO/AFGAP/FY12/CC/030 and Project Activity No. 9F0865.01. World Wide Fund for Nature, Morges, Switzerland.

Edwards, D.P., Sloan, S., Weng, L., Dirks, P., Sayer, J. and Laurance, W.F. 2014. Mining and the African environment. *Conservation Letters* 7(3): 302-311.

Fünfstück, T., Arandjelovic, M., Morgan, D.B., Sanz, C., Breuer, T. et al. 2014. The genetic population structure of wild western lowland gorillas (*Gorilla gorilla gorilla*) living in continuous rain forest. *American Journal of Primatology* 76: 868–878.

Fünfstück, T., Arandjelovic, M., Morgan, D.B., Sanz, C., Olson, S.H., Cameron, K., Ondzie, A., Peeters, M. and Vigilant, L. 2015. The sampling scheme matters: *Pan troglodytes troglodytes* and *P. t. schweinfurthii* are characterized by clinal genetic variation rather than a strong subspecies break. *American Journal of Physical Anthropology* 156: 181–191.

Gilardi, K.V., Gillespie, T.R., Leendertz, F.H., Macfie, E.J., Travis, D.A., Whittier, C.A. and Williamson, E.A. 2015. *Best Practice Guidelines for Health Monitoring and Disease Control in Great Ape Populations*. IUCN SSC Primate Specialist Group, Gland, Switzerland.

Global Forest Watch. 2016. Available at: http://www.globalforestwatch.org/map/6/0.74/15.68/ALL/grayscale/none/581.

Gonder, M.K., Locatelli, S., Ghobrial, L., Mitchell, M.W., Kujawski, J.T., Lankester, F.J., Stewart, C-B. and Tishkoff, S.A. 2011. Evidence from Cameroon reveals differences in the genetic structure and histories of chimpanzee populations. *Proceedings of the National Academy of Sciences* 108: 4766–4771.

Head, J.S., Boesch, C., Makaga, L. and Robbins, M.M. 2011. Sympatric chimpanzees (*Pan troglodytes troglodytes*) and gorillas (*Gorilla gorilla gorilla*) in Loango National Park, Gabon: dietary composition, seasonality, and intersite comparisons. *International Journal of Primatology* 32: 755–775.

IUCN. 2014. *Regional Action Plan for the Conservation of Western Lowland Gorillas and Central Chimpanzees 2015–2025*. IUCN SSC Primate Specialist Group, Gland, Switzerland.

IUCN. 2016. The IUCN Red List of Threatened Species. Version 2016-2. Available at: www.iucnredlist.org. (Accessed: 04 September 2016).

IUCN. 2016. The IUCN Red List of Threatened Species. Version 2016-3. Available at: www.iucnredlist.org. (Accessed: 07 December 2016).

James, R., Washington, R. and Rowell, D.P. 2013. Implications of global warming for the climate of African rainforests. *Philosophical Transactions of the Royal Society B: Biological Sciences* 368: 20120298.

Korstjens, A.H., Lehmann, J. and Dunbar, R.I.M. 2010. Resting time as an ecological constraint on primate biogeography. *Animal Behaviour* 79: 361–374.

Kühl, H., Maisels, F., Ancrenaz, M. and Williamson, E.A. 2008. *Best Practice Guidelines for Surveys and Monitoring of Great Ape Populations*. IUCN/SSC Primate Specialist Group, Gland, Switzerland.

Langergraber, K.E., Prüfer, K., Rowney, C., Boesch, C., Crockford, C., Fawcett, K., Inoue, E., Inoue-Muruyama, M., Mitani, J.C., Muller, M.N., Robbins, M.M., Schubert, G., Stoinski, T.S., Viola, B., Watts, D., Wittig, R.M., Wrangham, R.W., Zuberbühler, K., Pääbo, S. and Vigilant, L. 2012. Generation times in wild chimpanzees and gorillas suggest earlier divergence times in great ape and human evolution. *Proceedings of the National Academy of Sciences* 109: 15716–15721.

Lanjouw, A. 2014. Mining/oil extraction and ape populations and habitats. In: Arcus Foundation (ed.), *State of the Apes 2013: Extractive Industries and Ape Conservation*, pp. 127–161. Cambridge University Press, Cambridge, UK.

Laporte, N.T., Stabach, J.A., Grosch, R., Lin, T.S. and Goetz, S.J. 2007. Expansion of industrial logging in Central Africa. *Science* 316: 1451.

Laurance, W.F., Clements, G.R., Sloan, S., O/'Connell, C.S., Mueller, N.D., Goosem, M., Venter, O., Edwards, D.P., Phalan, B., Balmford, A., Van Der Ree, R. and Arrea, I.B. 2014. A global strategy for road building. *Nature* 513: 229–232.

Laurance, W.F., Sloan, S., Weng, L. and Sayer, J.A. 2015. Estimating the environmental costs of Africa's massive development corridors. *Current Biology* 25: 3202–3208.

Lehmann, J., Korstjens, A.H. and Dunbar, R.I.M. 2010. Apes in a changing world – the effects of global warming on the behaviour and distribution of African apes. *Journal of Biogeography* 37: 2217–2231.

Lewis, S.L., Sonke, B., Sunderland, T., Begne, S.K., Lopez-Gonzalez, G. et al. 2013. Above-ground biomass and structure of 260 African tropical forests. *Philosophical Transactions of the Royal Society B-Biological Sciences* 368: 20120295.

Lovett, J.C. 2015. Modelling the effects of climate change in Africa. *African Journal of Ecology* 53: 1–2.

Maisels, F., Ella Akou, M., Douckaga, M. and Moundounga, A. 2004. Mwagne National Park, Gabon: large mammals and human impact. WCS/WWF Gabon.

Maisels, F., Nishihara, T., Strindberg , S., Boudjan, P., Breuer, T. et al. 2012. Great Ape and Human Impact Monitoring Training, Surveys, and Protection in the Ndoki-Likouala Landscape, Republic of Congo. Final Report. Wildlife Conservation Society, Brazzaville, Congo.

Maisels, F., Strindberg, S., Kiminou, F., Ndzai, C., Ngounga, R. et al. 2013. Wildlife and Human Impact Survey 2012, and monitoring 2005–2008–2012. Odzala-Kokoua National Park, Republic of Congo. Fondation Odzala-Kokoua and Wildlife Conservation Society, Brazzaville, Congo.

Maisels, F., Strindberg, S., Rayden, T., Kiminou, F., Madzoke, B., Mangonga, P. and Ndzai, C. 2015. Wildlife and Human Impact Survey of the Ngombé Ntoukou-Pikounda Forest Landscape, Republic of Congo. Feb–Oct 2014. Wildlife Conservation Society, Brazzaville, Congo.

Morgan, D. and Sanz, C. 2006. Chimpanzee feeding ecology and comparisons with sympatric gorillas in the Goualougo Triangle, Republic of Congo. In: G. Hohmann, M. Robbins and C. Boesch (eds), *Primate Feeding Ecology in Apes and Other Primates: Ecological, Physiological and Behavioural Aspects*, pp. 97–122. Cambridge University Press, Cambridge, UK.

Morgan, D. and Sanz, C. 2007. *Best Practice Guidelines for Reducing the Impact of Commercial Logging on Great Apes in Western Equatorial Africa*. IUCN/SSC Primate Specialist Group, Gland, Switzerland.

Morgan, D.B. 2007. Socio-ecology of Chimpanzees (*Pan troglodytes troglodytes*) in the Goualougo Triangle, Republic of Congo. Cambridge University.

Morgan, D., Sanz, C., Greer, D., Rayden, T., Maisels, F. and Williamson, E.A. 2013. *Great Apes and FSC: Implementing 'Ape Friendly' Practices in Central Africa's Logging Concessions*. IUCN/SSC Primate Specialist Group, Gland, Switzerland.

Oates, J.F., Tutin, C.E.G. et al. 2008. *Pan troglodytes troglodytes*. Available at: http://www.iucnredlist.org/details/15933/0.

Poulsen, J.R., Clark, C.J., Mavah, G. and Elkan, P.W. 2009. Bushmeat supply and consumption in a tropical logging concession in northern Congo. *Conservation Biology* 23: 1597–1608.

Reed, P.E., Cameron, K.N., Ondzie, A.U., Joly, D., Karesh, W.B. et al. 2014. A new approach for monitoring Ebolavirus in wild great apes. *PLoS Neglected Tropical Diseases* 8: e3143.

Rival, A. and Levang, P. 2014. Palms of Controversies: Oil Palm and Development Challenges. CIFOR, Bogor, Indonesia.

Strindberg, S., Maisels, F. et al. In prep. Guns, germs and trees: key factors influencing the status of gorillas and chimpanzees in Western Equatorial Africa.

Tutin, C. and Fernandez, M. 1993. Relationships between minimum temperature and fruit production in some tropical forest trees in Gabon. *Journal of Tropical Ecology* 9: 241–248.

Tutin, C.,Stokes, E., Boesch, C., Morgan, D., Sanz, C., Reed, T., Blom, A., Walsh, P., Blake, S. and Kormos, R. 2005. *Regional Action Plan for the Conservation of Chimpanzees and Gorillas in Western Equatorial Africa*. IUCN/SSC Primate Specialist Group and Conservation International, Washington DC.

Tyukavina, A., Hansen, M.C., Potapov, P.V., Krylov, A.M. and Goetz, S.J. 2016. Pan-tropical hinterland forests: mapping minimally disturbed forests. *Global Ecology and Biogeography* 25: 151–163.

Walsh, P.D., Bermejo, M. and Rodriguez-Teijeiro, J.D. 2009. Disease avoidance and the evolution of primate social connectivity: Ebola, bats, gorillas, and chimpanzees. In: M.A. Huffman and C.A. Chapman (eds), *Primate Parasite Ecology: The Dynamics and Study of Host–Parasite Relationships*, pp. 183–198. Cambridge University Press, Cambridge, UK.

Walsh, P.D., Biek, R. and Real, L.A. 2005. Wave-like spread of Ebola Zaire. *PLoS Biology* 3: 1946–1953.

Walsh, P.D., Breuer, T., Sanz, C., Morgan, D. and Doran-Sheehy, D. 2007. Potential for Ebola transmission between gorilla and chimpanzee social groups. *American Naturalist* 169: 684–689.

White, A. and Fa, J.E. 2014. The bigger picture: indirect impacts of extractive industries on apes and ape habitat. In: Arcus Foundation (ed.), *State of the Apes 2013: Extractive Industries and Ape Conservation*, pp. 197–225. Cambridge University Press, Cambridge, UK.

Wich, S.A., Garcia-Ulloa, J., Kühl, H.S., Humle, T., Lee, J.S. and Koh, L.P. 2014. Will oil palm's homecoming spell doom for Africa's great apes? *Current Biology* 24: 1659–1663.

Wilkie, D., Shaw, E., Rotberg, F., Morelli, G. and Auzel, P. 2000. Roads, development and conservation in the Congo basin. *Conservation Biology* 14: 1614–1622.

Williamson, E.A., Rawson, B.M., Cheyne, S.M., Meijaard, E. and Wich, S.A. 2014. Ecological impacts of extractive industries on ape populations. In: Arcus Foundation (ed.), *State of the Apes 2013: Extractive Industries and Ape Conservation*, pp. 65–99. Cambridge University Press, Cambridge, UK.

Zimmerman, B.L. and Kormos, C.F. 2012. Prospects for sustainable logging in tropical forests. *BioScience*

62: 479–487.

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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?
1. Forest -> 1.8. Forest - Subtropical/Tropical Swamp	Resident	Suitable	Yes
1. Forest -> 1.6. Forest - Subtropical/Tropical Moist Lowland	Resident	Suitable	Yes

Threats

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

Threat	Timing	Scope	Severity	Impact Score
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. 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 2. Species Stresses -> 2.2. Species disturbance		
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.2. Small-holder farming	Ongoing	Minority (50%)	Slow, significant declines	Low impact: 5
	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 -> 2.1.3. Agro-industry farming	Future	Minority (50%)	Very rapid declines	Low impact: 5
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 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 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.7. Reduced reproductive success		
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 1. Ecosystem stresses -> 1.3. Indirect ecosystem effects 2. Species Stresses -> 2.2. Species disturbance 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		

http://dx.doi.org/10.2305/IUCN.UK.2016-2.RLTS.T15936A17990042.en

4. Transportation & service corridors -> 4.1. Roads & railroads	Ongoing	Minority (50%)	Slow, significant declines	Low impact: 5
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.3. Indirect ecosystem effects 2. Species Stresses -> 2.2. Species disturbance 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		
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 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.7. Reduced reproductive success		
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 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.7. Reduced reproductive success		
5. Biological resource use -> 5.1. Hunting & trapping terrestrial animals -> 5.1.3. Persecution/control	Ongoing	Minority (50%)	Very rapid declines	Medium impact: 7
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:	2. Species Stresses -> 2.2. Species disturbance 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		
6. Human intrusions & disturbance -> 6.1. Recreational activities	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 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		
6. Human intrusions & disturbance -> 6.3. Work & other activities	Ongoing	Majority (50-90%)	Slow, significant declines	Medium impact: 6
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.2. Species disturbance 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		
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 entire range
Occur in at least one PA: Yes
Percentage of population protected by PAs (0-100): 11-20
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
2. Land/water management -> 2.2. Invasive/problematic species control
3. Species management -> 3.2. Species recovery
4. Education & awareness -> 4.1. Formal education

Conservation Actions Needed
4. Education & awareness -> 4.2. Training
5. Law & policy -> 5.3. Private sector standards & codes
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 -> 1.2. Population size, distribution & trends
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 -> 3.2. Harvest level trends
3. Monitoring -> 3.3. Trade trends
3. Monitoring -> 3.4. Habitat trends
0. Root -> 4. Other

Additional Data Fields

Distribution
Continuing decline in extent of occurrence (EOO): Yes
Lower elevation limit (m): 0
Upper elevation limit (m): 750
Population
Continuing decline of mature individuals: Yes
Extreme fluctuations: No
Population severely fragmented: No
Continuing decline in subpopulations: No
Extreme fluctuations in subpopulations: No
All individuals in one subpopulation: No
Habitats and Ecology
Generation Length (years): 24.6

Habitats and Ecology
Movement patterns: Not a Migrant

Errata

Errata reason: This is an errata version of the 2016 assessment to correct some grammatical errors in the *Threats* section, and to remove the estimate of "140000" mature individuals: this figure includes juveniles and subadults along with mature animals; the percentage that are mature individuals is not known.

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.

The IUCN Red List Partners are: Arizona State University; BirdLife International; Botanic Gardens Conservation International; Conservation International; NatureServe; Royal Botanic Gardens, Kew; Sapienza University of Rome; Texas A&M University; and Zoological Society of London.