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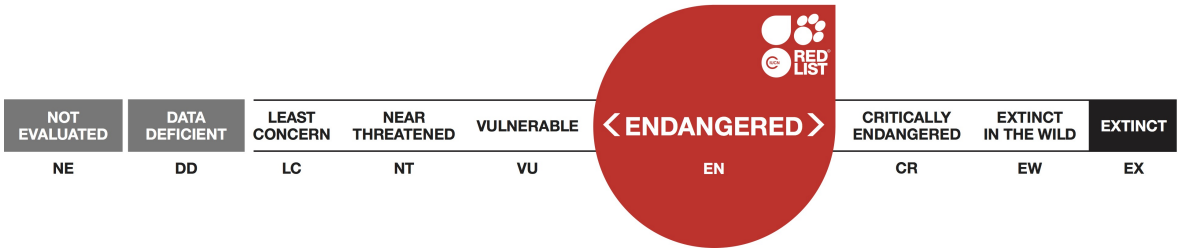
Pan paniscus, Bonobo

Assessment by: Fruth, B. *et al.*



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Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Mammalia	Primates	Hominidae

Taxon Name: *Pan paniscus* Schwarz, 1929

Common Name(s):

- English: Bonobo, Dwarf Chimpazee, Gracile Chimpanzee, Pygmy Chimpanzee
- French: Bonobo
- Spanish: Bonobo

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 Bonobo is also known as the Gracile Chimpanzee; formerly it was known as Pygmy Chimpanzee and Dwarf Chimpanzee. Population genetics suggest that Bonobos have a stable population history (Eriksson *et al.* 2004, Schubert *et al.* 2013), and that gene flow between populations is constrained by the larger riverine barriers (although Bonobos regularly enter water, they do not swim).

Assessment Information

Red List Category & Criteria: Endangered A4bcd ver 3.1

Year Published: 2016

Date Assessed: March 24, 2016

Justification:

Due to high levels of illegal hunting, and habitat destruction and degradation, *Pan paniscus* is estimated to have experienced a significant population reduction in the last 15–20 years and it is thought that this reduction will continue for the next 60 years. Currently, by far the greatest threat to the Bonobo's survival is poaching for the commercial bushmeat trade. It has been estimated that nine tons of bushmeat are extracted daily from a 50,000-km² conservation landscape within the Bonobo's range. Not only is there is a massive demand for bushmeat stemming from the cities, but rebel factions and poorly-paid government soldiers add to that demand, at the same time facilitating the flow of guns and ammunition (Fruth *et al*. 2013). In some areas, local taboos against eating Bonobo meat still exist, but in others, these traditions are disintegrating due to changing cultural values and population movements. Stricter enforcement of wildlife laws and more effective management are urgently needed.

Habitat loss through deforestation and fragmentation ranks second. Much of the forest loss in this region is caused by slash-and-burn subsistence agriculture, which is most intense where human densities are high or growing. Logging and mining do not yet occur on an industrial scale in the Bonobo's range, but in future, industrial agriculture is very likely to become a serious threat. Minimising the conversion of intact forest to human-dominated land uses, will be critical for the future survival of

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Bonobos. Countrywide factors contributing to the decline include the mobility of growing human populations, opening markets, commercial exploitation of natural resources and road construction. As in the past, the survival of Bonobos will be determined by the levels of poaching and forest loss—threats that have been shown to accompany rapid growth in human populations and political instability (Nackoney *et al*. 2014). Due to their slow life history and a generation time estimated to be 25 years, Bonobo populations cannot withstand high levels of offtake. The population decline over a three-generation (75 year) period from 2003 to 2078 is likely to exceed 50%, hence qualifying this taxon as Endangered under criterion A.

Previously Published Red List Assessments

2008 – Endangered (EN)
http://dx.doi.org/10.2305/IUCN.UK.2008.RLTS.T15932A5321906.en

2007 – Endangered (EN)

2000 – Endangered (EN)

1996 – Endangered (EN)

1994 – Vulnerable (V)

1990 – Vulnerable (V)

1988 – Vulnerable (V)

1988 – Vulnerable (V)

1986 – Vulnerable (V)

1965 – Status inadequately known-survey required or data sought

Geographic Range

Range Description:

Pan paniscus has a discontinuous range in the low-lying central basin of Equatorial Africa, south of the Congo River. Its range extends from the Lualaba River in the east, to the Kasai/Sankuru rivers in the south, and to the west as far as the Congo River just 300 km north of Kinshasa (Manzano forest) and around Lake Tumba/Lake Mai-Ndombe (Tumba-Ledima Reserve). The potential geographic range is approximately 563,330 km²; however, only 28% (156,211 km²) of this area is suitable for Bonobos (Hickey *et al*. 2013). Four geographically-distinct Bonobo strongholds have been identified (IUCN and ICCN 2012):

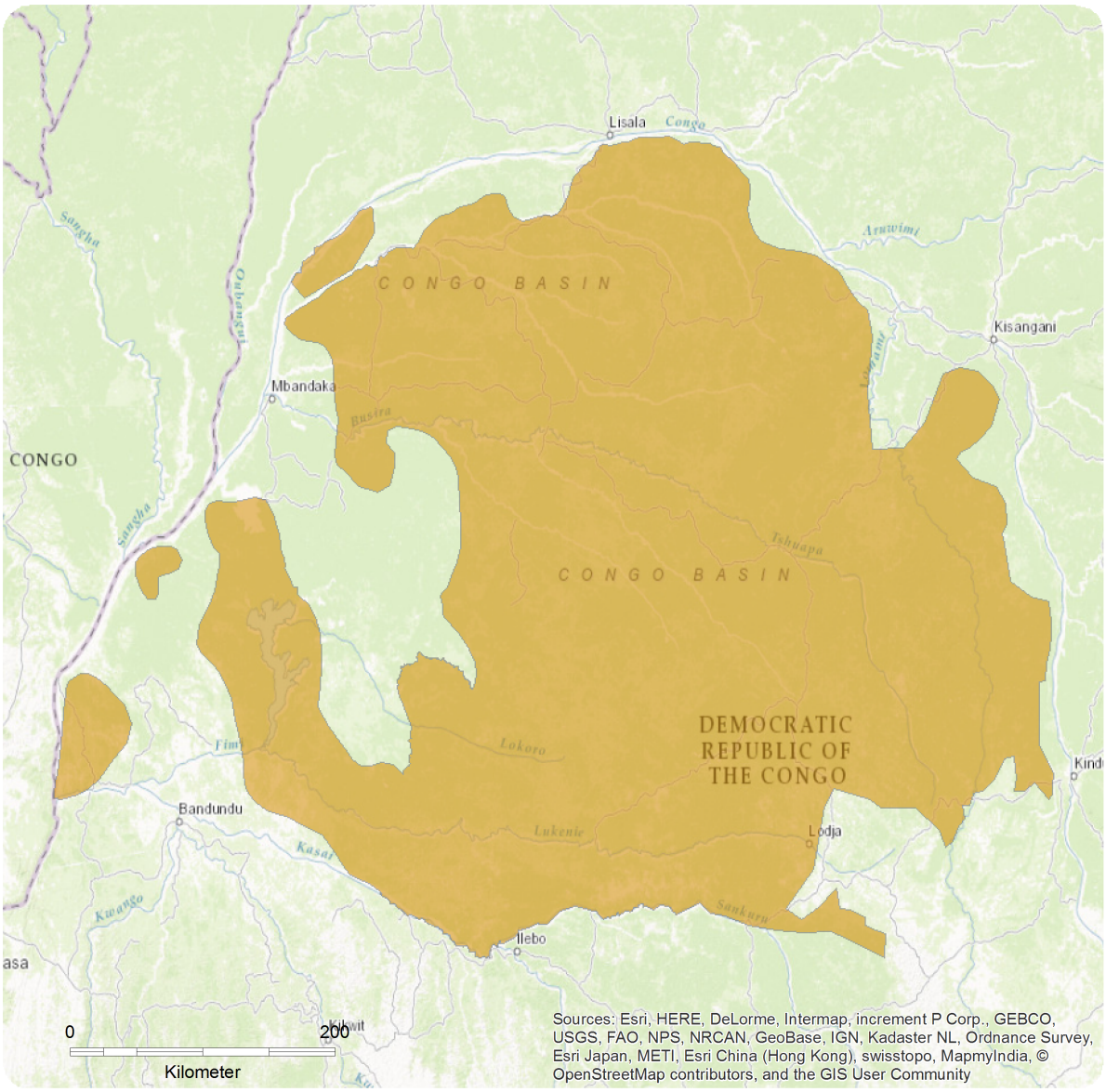
• The ‘northern block’ (Maringa-Lopori-Wamba) includes the Luo Scientific Reserve, the Lomako-Yokokala Faunal Reserve, and the Kokolopori Bonobo Reserve with community-level protection;
• The ‘eastern block’ (Tshuapa-Lomami-Lualaba) includes the Sankuru Natural Reserve;
• The ‘southern block’ (Salonga) – the 36,000-km² Salonga National Park (SNP) was the first protected area created that harbours bonobos;
• The ‘western block’ (Lac Tumba-Lac Mai Ndombe) includes the Tumba-Lediima Natural Reserve.
Additional surveys are needed to better determine the species’ overall distribution and abundance.

Country Occurrence:

Native: Congo, The Democratic Republic of the

Distribution Map

Pan paniscus



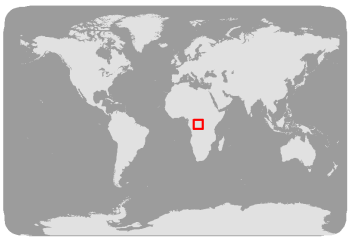
Range

Extant (resident)

Compiled by:

IUCN SSC A.P.E.S. Database (2016)

NE DD LC NT VU EN ENDANGERED CR EW EX



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

The size of the Bonobo population is uncertain because only 30% of its historic range has been surveyed. Estimates from the four known Bonobo strongholds, based around protected areas, suggest a minimum population of 15,000–20,000 individuals (IUCN and ICCN 2012, IUCN SSC A.P.E.S. database 2016). Although Hickey *et al*. (2013) compiled and analysed all Bonobo survey data collected between 2003 and 2010, the survey coverage was too patchy to allow the total number of Bonobos to be estimated.

Sop *et al*. (in prep.) used spatial modelling to investigate trends in Bonobo nest encounter rates on recce and standard line transect surveys carried out in two different periods. Data were available from eight sites, covering a total area of 16,500 km². Site-specific change estimates were weighted according to population size, and then change in nest encounter rates between different years was used as a proxy for Bonobo population change. Rate of change was estimated using two approaches: site-level Generalized Linear Models (GLMs); and a simple exponential population change model (ExpM). Sop *et al*. estimated an annual decline of 5.95% with a total decline of 54.9% between 2003 and 2015 (95% confidence interval: -17.6% to +6.4% and -18% to +0.001% for the GLM and ExpM, respectively). Under the same conditions, the expected decline in abundance over one, two and three generations (25, 50 and 75 years respectively) would be 85.6%, 97.9% and 99.7%, respectively. However, not all sites experienced significant declines in Bonobo abundance. The Lokofa Sector of Salonga National Park, for example, has ecoguards deployed throughout and was the best protected of the eight sites in the analysis (WCS 2015). Although Sop *et al*.'s assessment incorporated data from both protected and non-protected areas, the total coverage was limited by data availability. In addition, the preliminary model had limitations with regard to the representativeness of sites and data availability, such as disproportionate sampling effort between years; and lack of data on seasonality, nest production, re-use and decay rates. If few nests are located and sample size is low, then precision tends to be poor, leading to weak detection of trends. Although a drop in abundance between the two time periods was detected, the small number of paired samples did not produce population sizes. The range-wide data required will eventually show areas considered to be suitable, but from which Bonobos are absent, and perhaps presence of Bonobos in areas not yet surveyed. Despite uncertainty around the modelled rate of decline, a strong negative trend is apparent in Sop *et al*.'s analysis. Even with an annual rate of decline of only 1%, total losses would exceed 50% over three generations, underscoring the need for monitoring of Bonobo populations and threats.

Current Population Trend: Decreasing

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

The geographic range of *Pan paniscus* is characterised by undulating terrain with elevations between 300 and 700 m asl and a humid climate (Fruth *et al*. 2013). Bonobos inhabit closed, moist, mixed, mature and secondary forests as well as forest-savannah mosaics (*ibid*.). In the eastern and southern parts of their range, Bonobos occupy a mosaic of moist tropical forest, dry forest, savannah woodland, marshy grassland and swamp forest, yet they also require access to relatively-undisturbed mature forests. If available, Bonobos prefer primary forests and seasonally-inundated swamp forests, foraging in small streams and breast-deep ponds (Narat 2014, Serckx 2014).

Bonobos are diurnal and semi-terrestrial. They live in multimale-multifemale, fission-fusion

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communities, usually made up of 30–80 individuals. A single community occupies a home range of 20–60 km², and there is extensive overlap between the ranges of different communities (Fruth *et al*. 2013). Bonobos are omnivorous; over 50% of their diet is comprised of fruits and seeds, which are supplemented with leaves, stems, shoots, pith, bark, flowers, truffles, fungus, and honey (Hohmann *et al*. 2006). They appear to be more dependent on terrestrial herbaceous vegetation, including aquatic plants, than chimpanzees. Bonobos have occasionally been documented hunting and eating vertebrates (e.g., duikers, primates; Hohmann and Fruth 2008) and invertebrates (e.g., termites, caterpillars; Kano 1992). Bonobos build new nests to sleep in each night and sometimes make day nests in trees at heights of 5–50 m (Fruth 1995). It has been reported that Bonobos also make ground nests (Kano 1983, Guislain and Reinartz pers. comm). Their role as seed dispersers is critical for forest regeneration (Tsuji *et al*. 2010, Beaune *et al*. 2013).

There is no birth season. Gestation is about eight months. Interbirth interval at Wamba (1976–1996) averages 4.8 years, and females average 0.18 offspring per year of their adult life. Physical maturation is slow with infants being weaned shortly before birth of the next offspring. Infant and juvenile mortality is low, with 73% of offspring surviving to age six (Furuichi *et al*. 1998). Females migrate aged 6–13 years, settling into a new community when they start cycling at 9–12 years. They produce their first offspring at 13–14 years of age (Furuichi *et al*. 2012). One generation is estimated to be 23–25 years (Myers Thompson 1997, T. Furuichi pers. comm. 2007, Langergraber *et al*. 2012).

Systems: Terrestrial

Use and Trade

Killing or capture of Bonobos for any purpose is against national and international laws.

Threats (see Appendix for additional information)

The major threats to Bonobos include: poaching (mainly for bushmeat and for some medicinal purposes); residue from civil warfare (availability of modern weaponry and ammunition; military-sanctioned hunting); human-induced habitat alteration (commercial logging and agriculture, traditional slash-and-burn agriculture, fallow land); human population growth and migration; and lack of education (insufficient awareness among urban and rural communities that hunting and eating Bonobos is unlawful). Bonobos reproduce slowly, and thus their populations are particularly susceptible to direct losses caused by humans.

• **Poaching**: despite the fact that all killing, capture or consumption of great apes is illegal, poaching is the most direct and immediate threat to great apes in DRC. Although taboos against hunting Bonobos still exist in some regions, these taboos have become ineffective where poachers are not local. In other locations, transient and immigrant human populations with different cultural values have increased the frequency of hunting and eating of Bonobos. Poachers prefer large mammals, and since Bonobos are the largest primate in the region, they may be targeted along with ungulates and monkeys. Commercial poachers, aided by military and local administrations, are active even in legally-protected sites, such as Salonga National Park (SNP), Lomako-Yokokala Faunal Reserve, Tumba-Lediima Natural Reserve, Sankuru Natural Reserve, and the proposed Lomami National Park. The importance of these protected areas as significant reservoirs of Bonobos will be compromised rapidly if current levels of poaching continue. Between 2003 and 2006, Hart *et al*. (2008) recorded evidence of poaching in 51% of survey grids across SNP, with hunting pressure highest in the north and east. However, since then, investment in effective

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antipoaching measures appears to have protected at least the Lokofa Sector in the southern block of SNP, where Bonobo abundance remained stable between 2006 and 2015 (WCS 2015). Extrapolating from interview data gathered for a bushmeat survey conducted in the Lomami National Park (LNP) area in 2008, it was estimated that 270 Bonobos per year were consumed around Kindu, representing three Bonobos per 100 km² per year in the area investigated (Mirambo *et al*. 2014). Currently, this negative trend has been halted within the park through surveillance and collaboration with local communities (Hart and Hart 2011, 2015). The intake rate of orphaned Bonobos into the Lola ya Bonobo sanctuary may be viewed as another indicator of hunting pressure and/or anti-trafficking efforts. Hughes *et al*. (2011) estimated that 4.2 Chimpanzees (2.6–8.9 individuals) are removed from the wild whenever a single live infant is obtained as a by-product of a hunt. Considering that Bonobos are more social than Chimpanzees, the ratio of dead Bonobos per orphaned infant may be higher. Data compiled between 1994 and 2012 show a small but steady increase in the number of orphans entering the sanctuary, with two peaks each of six infants in 1997 and 2000 during the Congolese wars, and a peak of 16 individuals in 2004 after the implementation of peace and return to the regular use of rivers as major transport routes (ABC 2012). An influx of nine Bonobos in 2012 was also notably high, but arrivals decreased to two in 2015. While various explanations for lower intakes are possible (e.g., decline of Bonobos in the wild, or effective anti-poaching and anti-trafficking measures, or Bonobos being exported illegally), it is important to remember that the variation in such small numbers may be stochastic, rather than a real trend.

• **Habitat loss**: subsistence agriculture, commercial agriculture, logging and road construction all cause forest loss and fragmentation that reduces the usable (or 'effective') habitat available to Bonobos. Moreover, civil strife has been shown to exacerbate destruction and degradation of Bonobo habitat: in Luo Scientific Reserve and Iyondji Community Bonobo Reserve, primary forest loss in previously unfragmented core forests was over two times greater during a decade when conflict and war were predominant in the region (1990–2000) than during a relatively conflict-free period (2000–2010), when humans left their hiding in core forest areas and returned to their natal villages and farms within long-established agricultural complexes (Nackoney *et al*. 2014). However, as conflict recedes, large-scale commerce is expanding and industrial agriculture is likely to become a significant driver of forest loss. Oil palm is already being grown in what would otherwise be Bonobo habitat (Nackoney *et al*. 2012), and Africa is becoming the new frontier for oil-palm plantations, which offers excellent economic prospects in countries with appropriate rainfall, soil and temperature conditions (Rival and Levang 2014). A staggering 99.2% of the Bonobo's range is suitable for oil palm (Wich *et al*. 2014), highlighting the enormous risk the palm-oil industry will pose unless sustainable management plans are developed and implemented to protect great apes and their habitats (IUCN SSC Primate Specialist Group 2014). It is worth noting that even though permits for prospection or resource extraction have already been granted, drilling for petroleum is unlikely to recommence in the near future, given the low price of crude oil on the international market. Although logging and mining do not yet occur on a large scale in Bonobo habitat, industrial extraction could become a serious threat in future. Minimising the conversion of intact forest in DRC to human-dominated land uses, will be critical for the survival of Bonobos, particularly when considering DRC's high human population growth rate (2.45% in 2015; CIA 2015).

• **Disease**: infectious diseases are of particular concern in areas where Bonobos live in close proximity to human communities, or have been habituated to human observers for research or tourism purposes (Gilardi *et al*. 2015). Diseases that pose a risk to Bonobos include human-borne pathogens such as respiratory viruses, and natural pathogens such as *Ebolavirus*. Respiratory disease outbreaks were observed among Bonobos at Wamba when displaced people and soldiers were moving through the forest (Sakamaki *et al*. 2009), and human respiratory syncytial virus and *Streptococcus pneumoniae* co-

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infection has been detected at Malebo, where Bonobo habitat is surrounded by a particularly high human density (Leendertz pers. comm.). In 2014, a human outbreak of Ebola virus disease occurred in the Bonobo's range. Considering their highly cohesive social structure, and high rates of physical contact, an *Ebolavirus* outbreak could devastate a Bonobo community. Despite a lack of scientific investigation of disease in wild Bonobos, these cases highlight the increasing need for health monitoring and disease contingency plans, as recommended by Gilardi *et al*. (2015).

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

Pan paniscus is listed on Appendix I of CITES and as Class A under the African Convention on the Conservation of Nature and Natural Resources. Bonobos are protected by national and international laws throughout their range, and the majority are found in national parks (IUCN SSC A.P.E.S. database 2016). However, most protected areas lack resources and suffer from poorly-controlled poaching, and enforcement is generally weak.

An IUCN and ICCN (2012) Bonobo conservation strategy (http://www.primate-sg.org/bonobo) outlines five intervention strategies with objectives and conservation actions centred on the Bonobo 'strongholds', which are to be implemented by 2022:

• **Strengthening institutional capacity.** One objective under this strategy is the creation of new protected areas. Since SNP was established in 1970, an additional 35,580 km² supporting Bonobos has been officially designated. The Iyondji Community Bonobo Reserve in the 'northern block' was created in 2012 (Sakamaki *et al.* 2012). The establishment of LNP, currently a provincial park with a ban on all hunting, will add 8,880 km² of protected habitat to the Bonobo's range (Doumenge *et al*. 2015). Once LNP is officially gazetted, protected areas harbouring Bonobo populations will total more than 78,080 km². Protected areas, however, will not curtail poaching as long as law enforcement is ineffective, thus the objectives of eliminating poaching, monitoring and controlling the bushmeat trade, and eliminating the circulation of weapons and ammunition in protected areas are crucial. Considerable efforts have been made in SNP, with recent improvements in guard numbers, education and equipment. The government's 'Operation Bonobo' aims to confiscate military weapons that have been in circulation since 2012, carry out joint FARDC and ICCN patrols, and liberate the parts of SNP under the control of poachers. A specially-trained '*Corps en charge de la sécurisation des Parcs Nationaux*' will be in charge of anti-poaching in all national parks. However, law enforcement in the Bonobo's range as a whole is still fragmentary, and conservation efforts are hampered by the vastness of the areas to be patrolled, as well as corruption and isolation, and persistent political and economic instability. NGOs and research projects with bilateral investment provide greater assurance of active and permanent on-the-ground enforcement, and are working to strengthen ICCN's limited capacity throughout DRC.

• **Consultation and collaboration with local actors.** Here the main objective is to integrate conservation issues into national development plans, land-use and macro-zoning plans, and implement sustainable subsistence activities at key sites. In an attempt to transfer responsibility for managing natural resources to local communities, WWF began sensibilisation activities in the Lac Tumba and Salonga-Lukenie-Sankuru landscapes and around southern block of SNP, and assisted stakeholders to establish local development and conservation committees (*Comités locaux de développement et de conservation*).

• **Awareness building and lobbying.** Objectives include developing a nationwide communications strategy, undertaking awareness-building activities at key sites, sensitising urban communities and private sector operators, and lobbying government administration at national and provincial levels. In 1995, USAID established the 25-year Central Africa Regional Programme for the Environment (CARPE) to increase local, national and regional capacity and participation in natural resource management, and

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strengthen conservation policy development and implementation to reduce biodiversity loss. Recently, CARPE established two distinct but interdependent projects: an Environmental Monitoring and Policy Support (EMAPS) project intended to boost the quality and scope of conservation policy-making, and forest monitoring, analysis and information dissemination; and CAFEC (see below; USAID 2014). Smaller organisations are conducting conservation education programmes in areas adjacent to Bonobo habitat as well as urban centres, such as Kinshasa or Kisangani, where demand for bushmeat is high. For example, Lola ya Bonobo in Kinshasa welcomes more than 20,000 visitors per annum, half of them school children. Such education-outreach activities can influence local attitudes to wildlife (ABC 2014).

• **Research and monitoring activities.** The primary objective here is to develop a clear framework for monitoring Bonobo populations and the threats to Bonobos, which is necessary to track changes in population size and distribution, to assess the level and location of threats, and ultimately to assess progress towards the Goal and Vision of the 2012 conservation strategy. The Central Africa Forest Ecosystems Conservation (CAFEC) project, and the SCAEMPS programme (Strengthening Central Africa Environmental Management and Policy Support) were established under CARPE. CAFEC supports the sustainable management of targeted forest landscapes, which include most of the landscapes where Bonobos occur, and involves targeted, site-based activities. SCAEMPS is a regional 'quality control' programme, ensuring that standardised, state of the art methods of monitoring wildlife, law enforcement (such as SMART http://www.smartconservationsoftware.org), and livelihoods and governance are used across CARPE landscapes, and that databases are established to store the data collected. Supported by CARPE and other donors, ICCN and international NGOs have implemented surveys in about 40% of SNP. A three-year co-management agreement for the future monitoring and management of SNP was signed in 2015, focusing on the education, training and support of guards. Development of cost-efficient methods for biomonitoring (camera traps, drones) is underway. Development of a disease prevention plan to minimise human-Bonobo disease transmission, and establish an early detection mechanism and an emergency intervention plan to address potentially catastrophic disease outbreaks is not yet underway.

• **Sustainable funding.** Here, the objective is to evaluate funding needs for Bonobo conservation and create sustainable sources of funding. In the last 10 years, government donors (EU, KfW, USAID) have provided considerable conservation finance to support biodiversity conservation, park management, education or other developmental aid, rather than species-specific activities. While Bonobos will benefit from general support, a number of smaller donors (Arcus Foundation, Beneficia Foundation, USFWS, zoological gardens) are sponsoring the smaller NGOs and distinct projects focused on Bonobo conservation. Monetary support has slowly increased over time; however, the extent to which Bonobo populations outside protected areas is benefitting needs to be assessed. Fortunately, the Bonobo population does not need to be reinforced with individuals bred in captivity. In 2009 and 2011, Lola ya Bonobo, where intake rates and breeding have led to spatial constraints, released rehabilitated Bonobos back into the wild. The released individuals adapted easily to their new environment, became fully independent and reproduced successfully. Despite this success and the repopulation of a small area of former Bonobo habitat, reintroduction of great apes is controversial and often viewed as a mechanism for managing sanctuary populations (ABC 2014, C. André pers. comm.). Even more contentious are the potential ramifications for resident wild Bonobos, despite careful planning and selection of the site, and diligent preparation of the individual Bonobos released following IUCN guidelines for the reintroduction of great apes (Beck *et al*. 2007).

In sum, for protection of Bonobos to be effective, commercial poaching must be halted, intensification rather than expansion of local agriculture must be supported, and local industries must be actively persuaded to support rather than subvert conservation objectives. The most urgent conservation

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measures needed are those that enhance Bonobo survival em style="font-family: 'Times New Roman';">in situ: effective law enforcement; long-term project presence on the ground; population monitoring; and education at all levels of society.

Credits

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Reviewer(s): Mittermeier, R.A. & Rylands, A.B.

Contributor(s): African Wildlife Foundation, Benishay, J., Bila-Isia, I., Butynski, T.M., Coxe, S., Dupain, J., Eriksson, J., Guislain, P., Hashimoto, C., Hohmann, G., Hurley, M., Ilambu, O., Mulavwa, N., Ndunda, M., Omasombo, V., Peereboom, Z., Scherlis, J., Serckx, A., Steel, L., Stevens, J., Verhage, B., Vosper, A., Wildlife Conservation Society & World Wildlife Fund

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Disclaimer

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
1. Residential & commercial development -> 1.1. Housing & urban areas	Ongoing	Minority (50%)	Negligible declines	Low impact: 4
	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. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.1. Shifting agriculture	Ongoing	Majority (50-90%)	Rapid declines	Medium impact: 7
	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	Minority (50%)	Very rapid declines	Medium impact: 7
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
2. Agriculture & aquaculture -> 2.3. Livestock farming & ranching -> 2.3.2. Small-holder grazing, ranching or farming	Ongoing	Minority (50%)	Unknown	Unknown
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
2. Agriculture & aquaculture -> 2.3. Livestock farming & ranching -> 2.3.3. Agro-industry grazing, ranching or farming	Ongoing	Minority (50%)	Rapid declines	Medium impact: 6
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		

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3. Energy production & mining -> 3.2. Mining & quarrying	Future	Minority (50%)	Rapid declines	Low impact: 4
	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	Majority (50-90%)	Very rapid declines	High impact: 8
	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 -> 5.3. Logging & wood harvesting -> 5.3.3. Unintentional effects: (subsistence/small scale) [harvest]	Ongoing	Majority (50-90%)	Negligible declines	Low impact: 5
	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	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 -> 6.2. War, civil unrest & military exercises	Past, likely to return	Majority (50-90%)	Rapid declines	Past impact
	Stresses:	2. Species Stresses -> 2.2. Species disturbance		
6. Human intrusions & disturbance -> 6.3. Work & other activities	Ongoing	Minority (50%)	Slow, significant declines	Low impact: 5
	Stresses:	2. Species Stresses -> 2.2. Species disturbance		
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		

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

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Conservation Actions in Place
Conservation sites identified: Yes, over entire range
Occur in at least one PA: Yes
Percentage of population protected by PAs (0-100): 71-80
Area based regional management plan: Yes
Invasive species control or prevention: Not Applicable
In-Place Species Management
Harvest management plan: No
Successfully reintroduced or introduced beningly: Yes
In-Place Education
Subject to recent education and awareness programmes: Yes
Included in international legislation: Yes
Subject to any international management/trade controls: Yes

Conservation Actions Needed

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

Conservation Actions Needed
1. Land/water protection -> 1.1. Site/area protection
1. Land/water protection -> 1.2. Resource & habitat protection
2. Land/water management -> 2.1. Site/area management
4. Education & awareness -> 4.1. Formal education
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

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Research Needed
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

Additional Data Fields

Distribution
Lower elevation limit (m): 300
Upper elevation limit (m): 700
Population
Continuing decline of mature individuals: Yes
Extreme fluctuations: No
Population severely fragmented: No
Extreme fluctuations in subpopulations: Unknown
All individuals in one subpopulation: No
Habitats and Ecology
Generation Length (years): 23-25
Movement patterns: Not a Migrant

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