

Abundance Annex

Ape Population Abundance Estimates

This annex presents ape abundance estimates at the site level. The term “site” refers to a protected area and its buffer zone, a logging concession or group of concessions, or any discrete area where a survey has taken place in the past two decades, although this annex also lists a few sites that were last surveyed in the 1970s and 1980s.

Most of the estimates are drawn from peer-reviewed publications and gray literature; some have been reconfirmed by experts in the field. In the tables, some specify ‘survey year’, which refers to when data were concretely collected in the field, and some use ‘year of estimate’, where a statistical prediction was made. Since records of absolute ape numbers are rarely available, this annex uses abundance classes, defined in Table 1, to indicate population ranges.

TABLE 1

Abundance Class Definitions

Abundance class	Class definition
≤50	Up to 50 individuals
51–100	51–100 individuals
101–300	101–300 individuals
301–500	301–500 individuals
501–1,000	501–1,000 individuals
1,001–5,000	1,001–5,000 individuals
5,001–10,000	5,001–10,000 individuals
10,001–20,000	10,001–20,000 individuals
20,001–50,000	20,001–50,000 individuals
50,001–100,000	50,001–100,000 individuals
>100,000	More than 100,000 individuals
Present	Confirmed presence; population size unknown
Extirpated	Apes extirpated locally
Possibly extinct	Apes are “possibly extinct” nationwide (IUCN, 2015)
Extinct	Apes are “regionally extinct” (IUCN, 2015)

In the following tables, asterisks in the abundance columns indicate which ape populations are stable (*) or increasing (**). Most ape populations, however, are in decline or the population trend is unknown.

Site names in **bold** are recognized as priority sites for African ape conservation by the Primate Specialist Group of the International Union for Conservation of Nature (IUCN) Species Survival Commission (SSC). This prioritization is based on the best available data, but the authors recognize that for some areas, data may be incomplete. Priority sites for orangutans and gibbons have not yet been identified.

Abbreviations, acronyms and references are listed at the end of this annex.

Notes on Tables 5 and 9: Gorillas are often sympatric with chimpanzees, meaning that they occupy the same geographic range. Biologists who survey great apes usually count their nests as proxies for the apes themselves; in areas where gorilla and chimpanzee ranges overlap, it is not always possible to determine which species made each nest.¹ An additional column lists the number of species represented in each abundance estimate, showing a value of “1” (gorillas in Table 5, chimpanzees in Table 9) or “2” (gorillas and chimpanzees counted together as “apes”).

The list of sites in these tables is not exhaustive as abundance estimates are not available for all ape populations. To inform us of any errors or omissions, please contact the A.P.E.S. database manager (e-mail: apes@eva.mpg.de). Updates will be made available in digital form via the A.P.E.S. Portal (<http://apesportal.eva.mpg.de>) and in subsequent volumes of *State of the Apes*.

TABLE 2**Mountain Gorilla (*Gorilla beringei beringei*) Abundance Estimates**

Country	Site name	Abundance	Survey year(s)	Source
Democratic Republic of Congo (DRC)	Virunga National Park (NP)	**604 **400	2015-2016	Greater Virunga Transboundary Collaboration (2018)
Rwanda	Volcanoes NP			
Uganda	Mgahinga Gorilla NP			
	Bwindi Impenetrable NP	**400	2010	Roy <i>et al.</i> (2014)

Notes: The Greater Virunga Transboundary Collaboration have, so far, only released the total number of mountain gorillas in the Virunga Massif, covering the three national parks indicated in the table, in the DRC, Rwanda and Uganda.

Two asterisks (**) indicate that an ape population is growing.

TABLE 3**Grauer's Gorilla (*Gorilla beringei graueri*) Abundance Estimates**

Country	Site name	Abundance class	Survey year(s)	Source
DRC	Balala	Extinct	2011–15	Plumptre <i>et al.</i> (2015)
	Forêts pour le Développement Intégral (FODI)	≤50	2011–15	Plumptre <i>et al.</i> (2015)
	Itombwe	51–100	2011–15	Plumptre <i>et al.</i> (2015)
	Kahuzi-Biega Tshivanga	101–300	2011–15	Plumptre <i>et al.</i> (2015) Spira <i>et al.</i> (2016)
	Kahuzi-Biega Itebero-Lulingu	501–1,000	2011–15	Plumptre <i>et al.</i> (2015) Spira <i>et al.</i> (2016)
	Kahuzi-Biega Nzovu	101–300	2011–15	Plumptre <i>et al.</i> (2015)
	Kahuzi-Biega Kasese	101–300	2011–15	Plumptre <i>et al.</i> (2015)
	Kisimba-Ikobo	501–1,000	2011–15	Plumptre <i>et al.</i> (2015)
	Maiko (including Lubutu and Angumu)	101–300	2011–17	FFI and ICCN, unpublished data, 2016–2017
	Réserve de Gorilles de Mukingiti et Kingombe (REGOMUKI)	101–300	2011–15	Plumptre <i>et al.</i> (2015)
	Réserve des Gorilles de Punia (RGPU) north	101–300	2011–15	Plumptre <i>et al.</i> (2015)
	RGPU east	Extinct	2011–15	Plumptre <i>et al.</i> (2015)
	Tayna Gorilla Reserve	101–300	2011–15	Plumptre <i>et al.</i> (2015)
	Usala	501–1,000	2011–15	Plumptre <i>et al.</i> (2015)
	Virunga NP (Mt. Tshiaberimu)	6 individuals	2015	Plumptre <i>et al.</i> (2015)
Walikale	501–1,000	2010	Nixon <i>et al.</i> (2012)	
Nationwide	1,001–5,000	2011–15	Plumptre <i>et al.</i> (2015)	

TABLE 4**Cross River Gorilla (*Gorilla gorilla diehli*) Abundance Estimates**

Country	Site name	Abundance class	Survey year(s)	Source
Cameroon	Ebo proposed NP	≤50	2007	Morgan (2010)
	Kagwene Gorilla Sanctuary	≤50	2006-2008	De Vere <i>et al.</i> (2011)
	Mbulu Forest	≤50	2008	Warren and Bila (2008)
	Mone River Forest Reserve (FR) east	≤50	2008	Warren <i>et al.</i> (2008)
	Takamanda NP	≤50	2013	Kuchambi and Ikfuingei (2014)
	Tofala Hills	≤50	2012	Dunn <i>et al.</i> (2014)
Nigeria	Afi Mountain Wildlife Sanctuary	≤50	2012	Dunn <i>et al.</i> (2014)
	Cross River NP Boshi Extension	≤50	2009	Imong, Mengnjo and Okeke (2009)
	Cross River NP Okwangwo Division	≤50	2012	Dunn <i>et al.</i> (2014)
	Mbe Mountains	≤50	2012	Dunn <i>et al.</i> (2014)

TABLE 5**Western Lowland Gorilla (*Gorilla gorilla gorilla*) Abundance Estimates**

Country	Site name	Abundance class	No. spp.	Survey year(s)	Source
Angola	Maiombe (Cabinda)	Present	2	NA	IUCN (2014)
Cameroon	Boumba-Bek NP	1,001–5,000	1	2015	Nzooch <i>et al.</i> (2016b)
	Boumba-Bek NP northern forest management units (FMUs 10-020 to 10-023, 10-029 and 10-030)	1,001–5,000	1	2015	Nzooch <i>et al.</i> (2016b)
	Campo Ma'an (Dipikar Island)	301–500	1	2014–15	Nzooch <i>et al.</i> (2015)
	Campo Ma'an NP (North)	301–500	1	2014–15	Nzooch <i>et al.</i> (2015)
	Campo Ma'an– Operational Technical Unit (OTU) (total for all landscape strata)	501–1,000	1	2014–15	Nzooch <i>et al.</i> (2015)
	Deng Deng FMU 10-065	*301–500	1	2012	Maisels <i>et al.</i> (2013a)
	Deng Deng NP	*101–300	1	2012	Maisels <i>et al.</i> (2013a)
	Dja Biosphere (or Faunal) Reserve	5,001–10,000	1	2015	MINFOF and UICN (2015)
	FMU 09-021	51–100	1	2014–15	Nzooch <i>et al.</i> (2015)
	FMU 09-024	≤50	1	2008	Nzooch <i>et al.</i> (2015)
	FMU 09-025	51–100	1	2014–15	Nzooch <i>et al.</i> (2015)
	FMU 10-007, ZIC 28	1,001–5,000	2	2014–15	Nzooch <i>et al.</i> (2016a)
	FMUs 10-009 and 10-010, ZIC 29	1,001–5,000	2	2014–15	Nzooch <i>et al.</i> (2016a)
	FMU 10-011, ZICGC 1	1,001–5,000	2	2014–15	Nzooch <i>et al.</i> (2016a)
	FMU 10-012, ZIC 30	1,001–5,000	2	2014–15	Nzooch <i>et al.</i> (2016a)

Country	Site name	Abundance class	No. spp.	Survey year(s)	Source
	FMU 10-013, ZICGC 2	1,001–5,000	2	2014–15	Nzooch <i>et al.</i> (2016a)
	FMU 10-015	1,001–5,000	1	2015	Nzooch <i>et al.</i> (2016b)
	FMU 10-027 and FMU 10-028	501–1,000	1	2015	Nzooch <i>et al.</i> (2016b)
	FMU 10-032 and FMU 10-067	1,000–5,000	1	2015	Nzooch <i>et al.</i> (2016b)
	FMU 10-038	1,001–5,000	1	2001	Etoga (2001)
	FMU 10-039	Present	1	2001	Etoga (2002)
	FMU 10-047a	301–500	1	2007	Bombome (2007)
	FMU 10-063, ZICGC 3	1,001–5,000	1	2014–15	Nzooch <i>et al.</i> (2016a)
	FMU 10-064, ZIC 31	1,000–5,000	1	2014–15	Nzooch <i>et al.</i> (2016a)
	Lobéké NP	1,001–5,000	1	2014–15	Nzooch <i>et al.</i> (2016a)
	Mengamé Gorilla Sanctuary	1,001–5,000	1	2006	Ekobo (2006)
	Nanga-Eboko forest	Present	1	2002	Fotso, Eno Nku and Groves (2002)
	Ngoyla Mintom Complex	5,001–10,000	1	2015	Nzooch <i>et al.</i> (2016b)
	Nki NP	1,001–5,000	1	2015	Nzooch <i>et al.</i> (2016b)
	Sanaga-Yong	Present	1	2002	Fotso <i>et al.</i> (2002)
	ZICGC 9	Present	1	2007	Mahop (2007)
Central African Republic (CAR)	Dzanga NP	101–300	1	2015–16	N’Goran, Ndomba and Beukou (2016)
	Dzanga-Sangha Special Reserve	1,001–5,000	1	2015–16	N’Goran <i>et al.</i> (2016)
	Dzanga-Sangha landscape (for all strata combined)	1,001–5,000	1	2015–16	N’Goran <i>et al.</i> (2016)
	Ndoki NP	501–1,000	1	2015–16	N’Goran <i>et al.</i> (2016)
	SINFOCAM concessions	501–1,000	1	2015–16	N’Goran <i>et al.</i> (2016)
	Société de transformation de bois en Centrafrique (STBC concession)	501–1,000	1	2015–16	N’Goran <i>et al.</i> (2016)
DRC	Maiombe	Extirpated	1	NA	IUCN (2015)
Equatorial Guinea	Nationwide	1,001–5,000	1	2011	Murai <i>et al.</i> (2013)
Gabon	Bambidie	101–300	1	2012	Haurez <i>et al.</i> (2014)
	Batéké Plateau NP	Present	2	2005–06	Bout (2006)
	Birougou NP	501–1,000	2	2006–07	Aba’a and Bezangoye (2007)
	Djouah-Zadie	1,001–5,000	2	2016	Le-Duc Yeno & N’Goran (2016)
	Evaro	Present	2	2005	Latour (2005)
	Ivindo concessions	501–1,000	2	2010	Motsaba and Maisels (2010)
	Ivindo NP	1,001–5,000	2	2009	Motsaba <i>et al.</i> (2009)

Country	Site name	Abundance class	No. spp.	Survey year(s)	Source
	Loango NP	301–500	2	2006	Maisels (2009)
	Lopé NP	1,001–5,000	2	2008–09	Bezangoye and Maisels (2010)
	Lopé-Waka corridor	1,001–5,000	2	2007	Maisels, Abitsi and Bezangoye (2008)
	Mayombe	1,001–5,000	2	2011	Aba'a <i>et al.</i> (2011)
	Mayumba NP	*Present	2	2006–10	Makaya (2010)
	Minkébé NP	**Present	2	2012–13	ANPN (2013)
	Monts de Cristal NP	Present	2	2005	Aba'a (2006)
	Moukalaba Doudou NP	Present	2	2010	Nakashima <i>et al.</i> (2013)
	Mwagna NP	**Present	2	2012	Maisels and Ella Akou (2013)
	Waka NP	Present	2	2005–06	Abitsi (2006)
	Wonga Wongué	Present	2	2011	Motsaba and Aba'a (2011)
Republic of Congo (Congo)	Bailly Swamps	10,001–20,000	1	2010	Maisels <i>et al.</i> (2012)
	Batanga	*1,001–5,000	1	2012	Iyenguet <i>et al.</i> (2012)
	Batéké Forest	501–1,000	1	2012	Tolisano <i>et al.</i> (2013)
	Conkouati-Douli NP	1,001–5,000	2	2013	Vanleeuwe (2014)
	Dimonika Biosphere Reserve	101–300	1	2009	Pintea <i>et al.</i> (2012)
	Djoua-Ivindo Forest	5,001–10,000	1	2014–15	Allam <i>et al.</i> (2016)
	Impfondo	Present	1	2008	Iyenguet <i>et al.</i> (2008)
	Kabo	*5,001–10,000	1	2010	Maisels <i>et al.</i> (2012)
	Lac Télé Community Reserve	*10,001–20,000	1	2011	Maisels <i>et al.</i> (2012)
	Lossi Gorilla Sanctuary	Present	1	2006	Bassouama <i>et al.</i> (2006)
	Loundougou	5,001–10,000	1	2010	Maisels <i>et al.</i> (2012)
	Messok-Dja	1,000–5,000	1	2015–16	Allam <i>et al.</i> (2017)
	Mokabi	301–500	1	2006	Stokes <i>et al.</i> (2010)
	Ngombe	*50,001–100,000	1	2014	Maisels <i>et al.</i> (2015)
	Nouabalé-Ndoki NP	*1,001–5,000	1	2010	Maisels <i>et al.</i> (2012)
	Ntokou-Pikounda NP	5,001–10,000	1	2014	Maisels <i>et al.</i> (2015)
	Odzala-Koukoua NP	20,001–50,000	1	2012	Maisels <i>et al.</i> (2013b)
	Pokola	*10,001–20,000	1	2010	Maisels <i>et al.</i> (2012)
	Tanga	1,001–5,000	2	2009	Malanda, Iyenguet and Madzoke (2010)

Notes: One asterisk (*) indicates that an ape population is stable; two asterisks (**) show that an ape population is growing. The “number of species” (No. spp.) column specifies whether the abundance estimate refers to gorillas only (1) or to gorillas and chimpanzees together (2).

TABLE 6**Bonobo (*Pan paniscus*) Abundance Estimates**

Country	Site name	Abundance class	Survey year(s)	Source
DRC	Lac Tumba Bolobo	51–100	NA	IUCN and ICCN (2012)
	Lac Tumba Bolombo-Losombo	Present	2005	Inogwabini <i>et al.</i> (2007)
	Lac Tumba Botuali-Ilombe	Present	2005	Inogwabini <i>et al.</i> (2007)
	Lac Tumba Botwali	51–100	2004	IUCN and ICCN (2012)
	Lac Tumba Lediiima Reserve	51–100	2004	IUCN and ICCN (2012)
	Lac Tumba Malebo	1,001–5,000	2005	Inogwabini <i>et al.</i> (2007)
	Lac Tumba Mbala-Donkese	≤50	2005	Inogwabini <i>et al.</i> (2007)
	Lac Tumba Mbie Mokele	51–100	2006	IUCN and ICCN (2012)
	Lac Tumba Monieke-Bokote	Present	2006	IUCN and ICCN (2012)
	Lac Tumba Mpelu, Nkala/Nkoo, Lokoso and Mankere	≤50	2011–13	Serckx (2014)
	Lac Tumba Mpoka	Present	2009	IUCN and ICCN (2012)
	Lac Tumba Ngombe-Botuali	101–300	2005	Inogwabini <i>et al.</i> (2007)
	Lac Tumba Nkosso	Present	2006	IUCN and ICCN (2012)
	Lubefu	Present	2010	IUCN and ICCN (2012)
	Maringa-Lopori-Wamba landscape Bilya-lyondje	Present	2009	IUCN and ICCN (2012)
	Maringa-Lopori-Wamba landscape Boseka-Bokungu	51–100	2008	IUCN and ICCN (2012)
	Maringa-Lopori-Wamba landscape Cadjobe	301–500	2009	Reinartz and Guislain (2010)
	Maringa-Lopori-Wamba landscape lyondji Reserve	301–500	2012	Lushimba, Kasalevo and Fowler (2012)
	Maringa-Lopori-Wamba landscape K7	Present	2010	IUCN and ICCN (2012)
	Maringa-Lopori-Wamba landscape Kokolopori	301–500	2004–05	IUCN and ICCN (2012)
	Maringa-Lopori-Wamba landscape Lingomo	51–100	2008	IUCN and ICCN (2012)
	Maringa-Lopori-Wamba landscape Lomako-Yokakola Faunal Reserve	1,001–5,000	2015	Levo <i>et al.</i> (2015)
	Maringa-Lopori-Wamba landscape Lonua	Present	2006	IUCN and ICCN (2012)
Maringa-Lopori-Wamba landscape Luo	51–100	2003–05	IUCN and ICCN (2012)	
Maringa-Lopori-Wamba landscape Mompono-Bekumolokole	51–100	2008	IUCN and ICCN (2012)	
Maringa-Lopori-Wamba landscape Mompono-Yaama	51–100	2008	IUCN and ICCN (2012)	
Maringa-Lopori-Wamba landscape Samba	51–100	2007	IUCN and ICCN (2012)	

Country	Site name	Abundance class	Survey year(s)	Source
	Salonga landscape corridor	Present	2007–08	Maisels <i>et al.</i> (2009)
	Salonga landscape Ikela-Bokungu	Present	2008	IUCN and ICCN (2012)
	Salonga landscape Lokoro-Lukenie	Present	2006–07	IUCN and ICCN (2012)
	Salonga landscape Lotoi-Lokoro	Present	2006–07	IUCN and ICCN (2012)
	Salonga landscape LuiKotale-Bompusa	≤50	2012	IUCN and ICCN (2012)
	Salonga landscape Lukenie-Sankuru	Present	2006–07	IUCN and ICCN (2012)
	Salonga landscape Lukuru	51–100	1994–95	IUCN and ICCN (2012)
	Salonga landscape Yetsi-Ikela	51–100	2008	IUCN and ICCN (2012)
	Salonga NP Beminyo	101–300	2000–02	Reinartz <i>et al.</i> (2006)
	Salonga NP Bonima	Present	2000–02	Reinartz <i>et al.</i> (2006)
	Salonga NP southeast	Present	2007–08	Maisels <i>et al.</i> (2010)
	Salonga NP Lokofa	1,001–5,000	2015	WCS (2015)
	Salonga NP Lomela	1,001–5,000	2016	Ikati, Liengola and Maisels (2017)
	Salonga NP south	5,001–10,000	2003–06	Grossmann <i>et al.</i> (2008)
	Salonga NP Watsi-Kengo and Mondjoko sectors combined	5,001–10,000	2016–17	Reinartz <i>et al.</i> (2017)
	Sankuru Nature Reserve (NR)	Present	2009	Liengola <i>et al.</i> (2009)
	Tshuapa-Lomami-Lualaba	5,001–10,000	2008–10	IUCN and ICCN (2012)

TABLE 7**Nigeria–Cameroon Chimpanzee (*Pan troglodytes ellioti*) Abundance Estimates**

Country	Site name	Abundance class	Survey year(s)	Source
Cameroon	Ako-Mbembe FR	Present	2005	Morgan <i>et al.</i> (2011)
	Assaka Forest	Present	2006	Ekinde and Ashu (2006)
	Bafut-Ngamba FR	Extirpated	2011	Ellioti.org (n.d.)
	Bakossi NP	Present	2009	Fonkwo, Angwafo and Mbida (2011)
	Banyang-Mbo Wildlife Sanctuary	501–1,000	2006–07	Greengrass and Maisels (2007)
	Ebo proposed NP	501–1,000	2011	Morgan <i>et al.</i> (2011)
	Ejagham FR	Present	2003	Eno Nku (2003a)
	Etinde Wildlife Reserve	51–100	2003	Eno Nku (2004b)
	FMU 00-004	51–100	2007	Ellioti.org (n.d.)
	FMU 11-002	Extirpated	2003	Eno Nku (2003b)

Country	Site name	Abundance class	Survey year(s)	Source
	Fungom FR	Present	2004	Ekinde, Ashu and Sunderland-Groves (2005)
	Kom-Wum FR	≤50	2014	O. Ndoumbe, Unpublished data, 2017
	Korup NP	51–100	2015	M. Waltert, A. Binczik and K.S. Bobo, unpublished data, 2015
	Lake Barombi Mbo FR	Present	2004	Morgan <i>et al.</i> (2011)
	Mak-Betefou-Nkingkuoe	51–100	2011	Ellioti.org (n.d.)
	Makombe Forest	Present	NA	WWF (2003)
	Manb'ra	Present	1997	Ellioti.org (n.d.)
	Mbam et Djerem NP	301–500	2008–09	Maisels <i>et al.</i> (2009)
	Mbulu Forest	Present	2008	Warren and Bila (2008)
	Mone River FR	101–300	2007	Warren and Ekinde (2008)
	Mpen & Njim NP	Present	2011	Ellioti.org (n.d.)
	Mt. Cameroon NP	Present	2007	Eno Nku and Ekobo (2007)
	Mt. Kupe	Present	2009	Fonkwo <i>et al.</i> (2011)
	Mt. Nlonako Wildlife Reserve	51–100	2005	Ellioti.org (n.d.)
	Nkwende Hills	Extirpated	2002	Bobo, Ntumwel and Aghomo (2013)
	Nta Ali FR	Present	2005	Morgan <i>et al.</i> (2011)
	Rumpi Hills	Present	2005	Morgan <i>et al.</i> (2011)
	South Bakundu FR	Extirpated	2004	Eno Nku (2004a)
	Takamanda NP	Present	2013	Kuchambi and Ikfuingei (2014)
	Tubah-Awing Forest	≤50	2011	Ellioti.org (n.d.)
Vome Forest	Present	2008	Ellioti.org (n.d.)	
Nigeria	Afi Mountain Wildlife Sanctuary	Present	2009	Imong, Wood and Okeke (2009)
	Afi River FR	Present	2009	Imong, Wood and Okeke (2009)
	Ago-Owu FR	Present	2005	Ogunjemite <i>et al.</i> (2006)
	Akure-Ofosu FR	Present	2012	Ikemeh (2013)
	Ala FR	Extirpated	2006	Greengrass (2006)
	Cross River NP Oban Division	101–300	NA	A. Dunn and I. Imong, personal communication, 2015
	Cross River NP Okwangwo Division	101–300	NA	A. Dunn and I. Imong, personal communication, 2015
	Eba FR	Present	2004–05	Ogunjemite (2011)
	Eti-Oni FR	Present	2004–05	Ogunjemite (2011)

Country	Site name	Abundance class	Survey year(s)	Source
	Gashaka-Gumti NP	501–1,000	2005	Adanu, Sommer and Fowler (2011)
	Idanre FR	51–100	2013	Ikemeh (2013)
	Ifon FR	Present	2006	Greengrass (2006)
	Ila FR	Present	2011	Ogunjemite (2011)
	Ise FR	≤50	2012	Ikemeh (2013)
	Mbe Mountains	Present	2009	Imong and Okeke (2009)
	Oba Hills FR	Extirpated	2006	Greengrass (2006)
	Ogbesse FR	Extirpated	2006	Greengrass (2006)
	Ogotun FR	Present	2006	Greengrass (2006)
	Okeluse FR	Present	2004	Ogunjemite (2011)
	Okomu NP	Present	2006	Greengrass (2006)
	Ologbo FR	Present	2006	Greengrass (2006)
	Oluwa FR	Present	2012	Olaniyi, Ogunjemite and Dansu (2014)
	Omo FR	Present	2006	Greengrass (2006)
	Onisere FR	Present	2004–05	Ogunjemite (2011)
	Owo FR	Present	2004–05	Ogunjemite (2011)
	Shasha FR	Present	2006	Greengrass (2006)

TABLE 8**Eastern Chimpanzee (*Pan troglodytes schweinfurthii*) Abundance Estimates**

Country	Site name	Abundance class	Survey year(s)	Source
Burundi	Bururi FR	≤50	2006–07	Barakabuye <i>et al.</i> (2007)
	Kibira NP	301–500	2011–13	Hakizimana and Huynen (2013)
	Rumonge FR	≤50	1989	Anonymous (1989)
	Vyanda FR	≤50	1989	Anonymous (1989)
CAR	Bangassou	Extirpated	2004	Williamson <i>et al.</i> (2004)
	Chinko NR	101–300	2015	Aebischer <i>et al.</i> (2017)
	Zemongo Faunal Reserve	501–1,000	2009	Plumptre <i>et al.</i> (2010)
DRC	Balala	Extinct	2011–15	Plumptre <i>et al.</i> (2015)
	Bili-Uélé	20,001–50,000	2009	Plumptre <i>et al.</i> (2010)
	FODI	101–300	2011–15	Plumptre <i>et al.</i> (2015)

Country	Site name	Abundance class	Survey year(s)	Source
	Greater Virunga Semuliki	1,001–5,000	2007	Plumptre, Kujirakwinja and Matunguru (2008a)
	Itombwe	101–300	2012	Plumptre <i>et al.</i> (2015)
	Ituri landscape Mai-Tatu (partial)	501–1,000	2015	WCS DRC, unpublished data, 2015
	Ituri Okapi Faunal Reserve	5,001–10,000	2010–11	Vosper, Masselink and Maisels (2013)
	Kahuzi-Biega Itebero-Lulingu	501–1,000	2011–15	Plumptre <i>et al.</i> (2015)
	Kahuzi-Biega Itebero	1,001–5,000	2015	Spira <i>et al.</i> (2017)
	Kahuzi-Biega Kasese	≤50	2011–15	Plumptre <i>et al.</i> (2015)
	Kahuzi-Biega Nzovu	501–1,000	2011–15	Plumptre <i>et al.</i> (2015)
	Kahuzi-Biega Tshivanga	≤50	2011–15	Plumptre <i>et al.</i> (2015)
	Lubutu	51–100	2011–15	Plumptre <i>et al.</i> (2015)
	Maganja Hills	101–300	2009	Plumptre <i>et al.</i> (2010)
	Maiko NP	51–100	2011–15	Plumptre <i>et al.</i> (2015)
	Misotshi-Kabogo	501–1,000	2007	Plumptre <i>et al.</i> (2008b)
	Mt. Hoyo	101–300	2011–15	Plumptre <i>et al.</i> (2015)
	REGOMUKI	101–300	2011–15	Plumptre <i>et al.</i> (2015)
	RGPU east	501–1,000	2011–15	Plumptre <i>et al.</i> (2015)
	RGPU north	101–300	2011–15	Plumptre <i>et al.</i> (2015)
	Rubi-Télé	501–1,000	2009	Plumptre <i>et al.</i> (2010)
	Tayna Gorilla Reserve	51–100	2011–15	Plumptre <i>et al.</i> (2015)
	Tayna-Kisimba-Ikobo	51–100	2011–15	Plumptre <i>et al.</i> (2015)
Usala	51–100	2011–15	Plumptre <i>et al.</i> (2015)	
Virunga NP Rwenzori	501–1,000	2009	Plumptre <i>et al.</i> (2010)	
Watalinga	501–1,000	2009	Plumptre <i>et al.</i> (2010)	
Rwanda	Gishwati FR	≤50	2009–10	Chancellor <i>et al.</i> (2012)
	Nyungwe NP	301–500	2014	WCS Rwanda, unpublished data, 2014
South Sudan	Nationwide	Present		Plumptre <i>et al.</i> (2010)
Tanzania	Greater Gombe Ecosystem	101–300	2011–12	Piel <i>et al.</i> (2013)
	Greater Mahale Ecosystem, including Masito-Ugalla	1,001–5,000	2011–12	Piel <i>et al.</i> (2013)
	Loasi FR	51–100	2008	Davenport <i>et al.</i> (2010)
	Masito-Ugalla Ecosystem	301–500	2014	Piel <i>et al.</i> (2015)

Country	Site name	Abundance class	Survey year(s)	Source
Uganda	Budongo NP	501–1,000	2010 (model)	Plumptre <i>et al.</i> (2010)
	Bugoma FR	501–1,000	2010 (model)	Plumptre <i>et al.</i> (2010)
	Bugoma-Budongo Corridor	101–300	2013–14	McCarthy <i>et al.</i> (2015)
	Bulindi	≤50	2014	McLennan (2013)
	Bwindi Impenetrable NP	101–300	1999–2002	Plumptre, Cox and Mugume (2003)
	Echuya FR	Extirpated	1999–2002	Plumptre <i>et al.</i> (2003)
	Ibambaro FR	Extirpated	1999–2002	Plumptre <i>et al.</i> (2003)
	Kibale-Itwara	1,001–5,000	2010 (model)	Plumptre <i>et al.</i> (2010)
	Kagombe FR	101–300	1999–2002	Plumptre <i>et al.</i> (2003)
	Kagorra region	≤50	1999–2002	Plumptre <i>et al.</i> (2003)
	Kasato FR	≤50	1999–2002	Plumptre <i>et al.</i> (2003)
	Kibego FR	≤50	1999–2002	Plumptre <i>et al.</i> (2003)
	Kitechura FR	Extirpated	1999–2002	Plumptre <i>et al.</i> (2003)
	Kyambura Wildlife Reserve	51–100	1999–2002	Plumptre <i>et al.</i> (2003)
	Maramagambo-Kalinzu-Kashyoha-Kitomi landscape	1,001–5,000	2010 (model)	Plumptre <i>et al.</i> (2010)
	Matiri FR	Extirpated	1999–2002	Plumptre <i>et al.</i> (2003)
	Muhangi FR	≤50	1999–2002	Plumptre <i>et al.</i> (2003)
	Otzi FR	≤50	1999–2002	Plumptre <i>et al.</i> (2003)
	Rwenzori Mountains NP	301–500	1999–2002	Plumptre <i>et al.</i> (2003)
	South Bugoma	≤50	1999–2002	Plumptre <i>et al.</i> (2003)
Toro-Semliki Wildlife Reserve	51–100	2010–11	Samson and Hunt (2012)	
Wambabya FR	101–300	1999–2002	Plumptre <i>et al.</i> (2003)	

TABLE 9**Central Chimpanzee (*Pan troglodytes troglodytes*) Abundance Estimates**

Country	Site name	Abundance class	No. spp.	Survey year(s)	Source
Angola	Maiombe (Cabinda)	Present	2	NA	IUCN (2014)
Cameroon	Boumba-Bek NP	501–1,000	1	2015	Nzooch <i>et al.</i> (2016b)
	Boumba-Bek NP northern FMUs (10-020 to 10-023, 10-029 and 10-030)	301–500	1	2015	Nzooch <i>et al.</i> (2016b)
	Campo Ma'an (Dipikar Island)	301–500	1	2014–15	Nzooch <i>et al.</i> (2015)
	Campo Ma'an NP (North)	301–500	1	2014–15	Nzooch <i>et al.</i> (2015)

Country	Site name	Abundance class	No. spp.	Survey year(s)	Source
	Campo Ma'an– Operational Technical Unit (OTU) (total for all landscape strata)	1,001–5,000	1	2014–15	Nzooch <i>et al.</i> (2015)
	Deng Deng FMU 10-065	Present	1	2012	Maisels <i>et al.</i> (2013a)
	Deng Deng NP	Present	1	2012	Maisels <i>et al.</i> (2013a)
	Dja Biosphere (or Faunal) Reserve	1,001–5,000	1	2015	MINFOF and UICN (2015)
	FMU 00-004	Present	1	2007	Ekobo (2007)
	FMU 09-021	51–100	1	2014–15	Nzooch <i>et al.</i> (2015)
	FMU 09-024	101–300	1	2008	Nzooch <i>et al.</i> (2015)
	FMU 09-025	51–100	1	2014–15	Nzooch <i>et al.</i> (2015)
	FMU 10-013	Present	1	2003	Blake, Strindberg and Princée (2012)
	FMU 10-015	301–500	1	2015	Nzooch <i>et al.</i> (2016b)
	FMU 10-027 and FMU 10-028	301–500	1	2015	Nzooch <i>et al.</i> (2016b)
	FMU 10-032 and FMU 10-067	501–1,000	1	2015	Nzooch <i>et al.</i> (2016b)
	FMU 10-038	Present	1	2001	Etoga (2001)
	FMU 10-047a	301–500	1	2007	Bombome (2007)
	FMU 10-064	Present	1	2004	Blake <i>et al.</i> (2012)
	FMU 10-08/10-09/10-010/10-012	Present	1	2005	Blake <i>et al.</i> (2012)
	Lobéké NP	501–1,000	1	2015	Nzooch <i>et al.</i> (2016a)
	Mengamé Gorilla Sanctuary	Present	1	2006	Ekobo (2006)
	Nanga-Eboko	Present	1	2002	Fotso <i>et al.</i> (2002)
	Ngoyla Mintom complex	1,001–5,000	1	2015	Nzooch <i>et al.</i> (2016b)
Nki NP	301–500	1	2015	Nzooch <i>et al.</i> (2016b)	
Sanaga-Yong	Present	1	2002	Fotso <i>et al.</i> (2002)	
ZICGC 9	Present	1	2007	Mahop (2007)	
CAR	Dzanga NP	≤50	1	2015–16	N'Goran <i>et al.</i> (2016)
	Dzanga-Sangha landscape (all strata combined)	301–500	1	2015–16	N'Goran <i>et al.</i> (2016)
	Dzanga-Sangha Special Reserve	101–300	1	2015–16	N'Goran <i>et al.</i> (2016)
	Ndoki NP	101–300	1	2015–16	N'Goran <i>et al.</i> (2016)
	SINFOCAM concessions	101–300	1	2015–16	N'Goran <i>et al.</i> (2016)
	STBC concession	51–100	1	2015–16	N'Goran <i>et al.</i> (2016)
Congo	Bailly Swamps	501–1,000	1	2011	Maisels <i>et al.</i> (2012)
	Batanga	101–300	1	2012	Iyenguet <i>et al.</i> (2012)
	Batéké Forest	301–500	1	2012	Tolisano <i>et al.</i> (2013)

Country	Site name	Abundance class	No. spp.	Survey year(s)	Source
	Conkouati-Douli NP	5,001–10,000	2	2013	Vanleeuwe (2014)
	Dimonika Biosphere Reserve	Present	1	2009	Pintea <i>et al.</i> (2012)
	Djoua-Ivindo Forest	5,000–1,0000	1	2014–15	Allam <i>et al.</i> (2016)
	Impfondo	501–1,000	1	2008	Iyenguet <i>et al.</i> (2008)
	Kabo	1,001–5,000	1	2010	Maisels <i>et al.</i> (2012)
	Lac Télé Community Reserve	501–1,000	1	2011	Maisels <i>et al.</i> (2012)
	Lossi Gorilla Sanctuary	Present	1	2004–05	Bermejo <i>et al.</i> (2006)
	Loundougou	1,001–5,000	1	2010–11	Maisels <i>et al.</i> (2012)
	Messok-Dja	552	1	2015–16	Allam <i>et al.</i> (2017)
	Mokabi	101–300	1	2006	Stokes <i>et al.</i> (2010)
	Ngombe	5,001–10,000	1	2014	Maisels <i>et al.</i> (2015)
	Nouabalé-Ndoki NP	1,001–5,000	1	2010–11	Maisels <i>et al.</i> (2012)
	Ntokou-Pikounda NP	1,001–5,000	1	2014	Maisels <i>et al.</i> (2015)
	Odzala-Koukoua NP	1,001–5,000	1	2012	Maisels <i>et al.</i> (2013b)
	Pokola	1,001–5,000	1	2010	Maisels <i>et al.</i> (2012)
	Tanga	≤50	1	2009	Malanda <i>et al.</i> (2010)
DRC	Lac Tumba	Present	1	2007–10	Inogwabini <i>et al.</i> (2012)
	Maiombe	Present	1	NA	IUCN (2015)
Equatorial Guinea	Nationwide	5,001–10,000	1	2012	Murai <i>et al.</i> (2013)
Gabon	Bambidie	Present	1	2012	Haurez <i>et al.</i> (2014)
	Batéké Plateau NP	Present	2	2005–06	Bout (2006)
	Birougou NP	501–1,000	2	2006–07	Aba'a and Bezangoye (2007)
	Evaro	Present	2	2005	Latour (2005)
	Djouah-Zadie	1,001–5,000	2	2016	Le-Duc Yeno and N'Goran (2016)
	Ivindo concessions	501–1,000	2	2010	Motsaba and Maisels (2010)
	Ivindo NP	1,001–5,000	2	2009	Motsaba <i>et al.</i> (2009)
	Loango NP	301–500	2	2006	Maisels (2009)
	Lopé NP	1,001–5,000	2	2008–09	Bezangoye and Maisels (2010)
	Lopé-Waka corridor	1,001–5,000	2	2007	Maisels <i>et al.</i> (2008)
	Mayombe	1,001–5,000	2	2011	Aba'a <i>et al.</i> (2011)
	Mayumba NP	*Present	2	2006–10	Makaya (2010)
	Minkébé NP	**Present	2	2012–13	ANPN (2013)

Country	Site name	Abundance class	No. spp.	Survey year(s)	Source
	Monts de Cristal NP	Present	2	2005	Aba'a (2006)
	Moukalaba Doudou NP	Present	2	2010	Nakashima et al. (2013)
	Mwagna NP	**Present	2	2012	Maisels and Ella Akou (2013)
	Pongara NP	Present	1	2006	Latour (2006)
	Waka NP	Present	2	2005–06	Abitsi (2006)
	Wonga Wongué	Present	2	2011	Motsaba and Aba'a (2011)

Notes: One asterisk (*) indicates that an ape population is stable; two asterisks (**) show that an ape population is increasing. The "number of species" (No. spp.) column specifies whether the abundance estimate refers to chimpanzees only (1) or to chimpanzees and gorillas together (2).

TABLE 10

Western Chimpanzee (*Pan troglodytes verus*) Abundance Estimates

Country	Site name	Abundance class	Survey year(s)	Source
Benin	Nationwide	Possibly extinct	2013–14	Campbell and Hougbedji (2015)
Burkina Faso	Nationwide	Possibly extinct	2012	Ginn et al. (2013)
Gambia	Nationwide	Extinct		IUCN (2015)
Ghana	Atewa FR	Present	2007	McCullough et al. (2007)
	Bia-Goaso	101–300	2009	Danquah et al. (2012)
	Boi-Tano FR	Present	2006	Oates (2006)
	Cape Three Points FR	Extirpated	2009	Gatti (2009)
	Draw River FR	Present	2003	McCullough et al. (2007)
	Subri River FR	Present	2011	Buzzard and Parker (2012)
Guinea	Bafing River area	1,001–5,000	2013–14	WCF (2014b)
	Diecke Classified Forest	51–100	2011	WCF (2012)
	Foutah Djallon	10,001–20,000	2011–12	WCF (2012)
	Gadha Woundou Classified Forest	≤50	2011	WCF (2012)
	Haut Niger NP Kouya core area	101–300	2011	WCF (2012)
	Haut Niger NP Mafou core area	101–300	2011	WCF (2012)
	Kankan Faunal Reserve	Present	2010–11	WCF (2012)
	Koumbia	101–300	2010	WCF (2012)
	Mt. Nimba Strict NR	101–300	2009	WCF (2012)
	Oure Kaba Classified Forest	51–100	2009	WCF (2012)
	Pic de Fon Classified Forest	51–100	2002	Herbinger and Tounkara (2002)
	Sangaredi Alumina Project	101–300	2014	WCF (2014a)
Ziama Strict NR	≤50	2010–11	WCF (2012)	

Country	Site name	Abundance class	Survey year(s)	Source
Guinea-Bissau	Boe area (including Boe NP)	1,001–5,000	2016	Chimbo Foundation, personal communication, 2017
	Cantanhez NP	Present	2007	Sousa <i>et al.</i> (2014)
	Lagoas de Cufada NP	101–300	2011	Carvalho, Marques and Vicente (2013)
Ivory Coast	Azagny NP	≤50	2007	Herbinger (2007)
	Banco NP	≤50	2015	Normand, personal communication, 2016
	Bossematie Classified Forest	Present	2007	Campbell <i>et al.</i> (2008)
	Cavally Classified Forest	51–100	2010	Normand, Singo and Boesch (2010)
	Comoé NP	Present	2009	WCF (2009)
	Dassiekro Classified Forest	Extirpated	2007	Campbell <i>et al.</i> (2008)
	Duekoue Classified Forest	Extirpated	2007	Campbell <i>et al.</i> (2008)
	Gobodienou Classified Forest	Extirpated	2007	Campbell <i>et al.</i> (2008)
	Goin-Débé Classified Forest	≤50	2009	Normand <i>et al.</i> (2010)
	Haute Dodo	Present	2002	Sanderson <i>et al.</i> (2005)
	Mabi Classified Forest	Present	2007	Campbell <i>et al.</i> (2008)
	Marahoué NP	≤50	2006	N'Goran (2007)
	Monogaga Classified Forest	Extirpated	2007	Campbell <i>et al.</i> (2008)
	Mt. Kope	Present	2007	Campbell <i>et al.</i> (2008)
	Mt. Nimba Strict NR	≤50	2010–11	Granier <i>et al.</i> (2014)
	Mt. Peko NP	Extirpated	2015	Normand, personal communication, 2016
	Mt. Sangbe NP	Present	2014	WCF, unpublished data, 2015
	Niouniourou Classified Forest	Extirpated	2007	Campbell <i>et al.</i> (2008)
	Nizoro Classified Forest	Extirpated	2007	Campbell <i>et al.</i> (2008)
	Okromodou Classified Forest	Extirpated	2007	Campbell <i>et al.</i> (2008)
	Port Gauthier Classified Forest	Extirpated	2007	Campbell <i>et al.</i> (2008)
Tai NP	301–500	2016	Tiédoué <i>et al.</i> (2016)	
Tamin Classified Forest	Extirpated	2007	Campbell <i>et al.</i> (2008)	
Liberia	Grebo National Forest	101–300	2013	Kouakou Y. C., Vergnes v. and Normand E. (2013)
	Sapo NP	1,001–5,000	2016	Tweh (2017)
	Nationwide	5,001–10,000	2011–12	Tweh <i>et al.</i> (2015)
Mali	Bafing Biosphere Reserve	≤50	2014	PanAf, unpublished data, 2015

Country	Site name	Abundance class	Survey year(s)	Source
Senegal	Fongoli	≤50	2006	Pruetz and Bertolani (2007)
	Nathia	Present	2010	Gašperšič and Pruetz (2011)
	Nationwide	501–1,000	2015	Guesstimate, Wessling and Pruetz, 2016
	Niokolo Koba NP	≤50	2000	Pruetz <i>et al.</i> (2002)
Sierra Leone	Gola Rainforest National Park	101–300	2015–16	B. Barca, personal communication, 2017
	Kambui FR	Present	2010	Brncic, Amarasekaran and McKenna (2010)
	Kangari FR	Present	2010	Brncic <i>et al.</i> (2010)
	Kilimi NP	51–100	2010	Brncic <i>et al.</i> (2010)
	Lake Sonfon Proposed NP	Present	2010	Brncic <i>et al.</i> (2010)
	Loma FR	1,001–5,000	2010	Brncic <i>et al.</i> (2010)
	Moyamba	Present	2010	Brncic <i>et al.</i> (2010)
	Nationwide	5,001–10,000	2009	Brncic <i>et al.</i> (2010)
	Nimini FR	Present	2010	Brncic <i>et al.</i> (2010)
	Outamba NP	501–1,000	2010	Brncic <i>et al.</i> (2010)
	Tingi FR	51–100	2010	Brncic <i>et al.</i> (2010)
	Tonkoli FR	Present	2010	Brncic <i>et al.</i> (2010)
	Western Area Peninsula FR	51–100	2010	Brncic <i>et al.</i> (2010)
Togo	Nationwide	Possibly extinct	2013–14	Campbell and Hougbedji (2015)

TABLE 11
Sumatran Orangutan (*Pongo abelii*) Abundance Estimates

Country	Site name	Site name in previous volumes of <i>State of the Apes</i>	Abundance class	Year of estimate	Source
Indonesia	East Leuser	East Leuser Ecosystem, East Middle Aceh Ecosystem	5,001–10,000	2015	Wich <i>et al.</i> (2016)
	Sikulaping	Sidiangkat	101–300	2015	Wich <i>et al.</i> (2016)
	Siranggas, Batu Ardan	Sidiangkat	51–100	2015	Wich <i>et al.</i> (2016)
	Tripa Swamp	Tripa Swamp	101–300	2015	Wich <i>et al.</i> (2016)
	Trumon-Singkil	Trumon Singkil	1,001–5,000	2015	Wich <i>et al.</i> (2016)
	West Leuser	West Leuser Ecosystem, West Middle Aceh Ecosystem	5,001–10,000	2015	Wich <i>et al.</i> (2016)

Note: The current and previous site names do not necessarily refer to identical areas. In some cases the new site name may encompass multiple sites that were previously listed separately. As a result, orangutan numbers are not directly comparable over time at site level.

TABLE 12**Tapanuli Orangutan (*Pongo tapanuliensis*) Abundance Estimates**

Country	Site name	Site name in previous volumes of <i>State of the Apes</i>	Abundance class	Year of estimate	Source
Indonesia	West Batang Toru	West Batang Toru	501–1,000	2015	Wich <i>et al.</i> (2016)
	East Batang Toru	East Sarulla	101–300	2015	Wich <i>et al.</i> (2016)

Note: The Tapanuli orangutan was first described in November 2017 (Nater *et al.*, 2017). The distribution and population estimates provided here are based on earlier surveys in the area where the Tapanuli orangutan occurs. At the time of the surveys, these populations were still identified as Sumatran orangutans; therefore, the cited source makes no reference to the Tapanuli orangutan.

TABLE 13**Northeast Bornean Orangutan (*Pongo pygmaeus morio*) Abundance Estimates**

Country	Site name	Site name in previous volumes of <i>State of the Apes</i>	Abundance class	Year of estimate	Source
Indonesia	Belayan landscape	N/A	51–100	2016	Utami-Atmoko <i>et al.</i> (2016)
	Bontang landscape	Kutai NP	51–100	2016	Utami-Atmoko <i>et al.</i> (2016)
	Kutai landscape	Kutai NP and Sangatta-Bengalon and Muara Wahau	1,001–5,000	2016	Utami-Atmoko <i>et al.</i> (2016)
	Lesan landscape	Lesan watershed	51–100	2016	Utami-Atmoko <i>et al.</i> (2016)
	Sangkulirang landscape	Sangkulirang-Mangkalihat karst area	301–500	2016	Utami-Atmoko <i>et al.</i> (2016)
	Senyuir landscape	N/A	101–300	2016	Utami-Atmoko <i>et al.</i> (2016)
	Wehea landscape	Kelai watershed	501–1,000	2016	Utami-Atmoko <i>et al.</i> (2016)
Malaysia	Bonggaya landscape	Bonggaya FR	101–300	2016	Utami-Atmoko <i>et al.</i> (2016)
	Central Forest range landscape	Keningau, Kinabalu, Kuamut, Pinangah, Segama	5,001–10,000	2016	Utami-Atmoko <i>et al.</i> (2016)
	Crocker range landscape	Crocker Range NP, Kinabalu	101–300	2016	Utami-Atmoko <i>et al.</i> (2016)
	Lingkabau landscape	Lingkabau FR	101–300	2016	Utami-Atmoko <i>et al.</i> (2016)
	Lower Kinabatangan range landscape	Kinabatangan, Kulamba Wildlife Reserve	1,001–5,000	2016	Utami-Atmoko <i>et al.</i> (2016)
	North Kinabatangan range landscape and Ulu Tungud	Upper Kinabatangan	1,001–5,000	2016	Utami-Atmoko <i>et al.</i> (2016)
	Sepilok	Sepilok	101–300	2016	Utami-Atmoko <i>et al.</i> (2016)
	Tabin range landscape	Tabin	1,001–5,000	2016	Utami-Atmoko <i>et al.</i> (2016)
	Trus madi landscape	Trus Madi forests	101–300	2016	Utami-Atmoko <i>et al.</i> (2016)
	Ulu Kalumpang range landscape	Ulu Kalumpang FR	301–500	2016	Utami-Atmoko <i>et al.</i> (2016)
	Ulu Tungud landscape	N/A	≤50	2016	Utami-Atmoko <i>et al.</i> (2016)

Note: The current and previous site names do not necessarily refer to identical areas. In some cases the new site name may encompass multiple sites that were previously listed separately. As a result, orangutan numbers are not directly comparable over time at site level.

TABLE 14**Northwest Bornean Orangutan (*Pongo pygmaeus pygmaeus*) Abundance Estimates**

Country	Site name	Site name in previous volumes of <i>State of the Apes</i>	Abundance class	Year of estimate	Source
Indonesia	Betung Kerihun NP and protection forest	Betung Kerihun, part of Upper Kapuas swamps	1,001–5,000	2016	Utami-Atmoko <i>et al.</i> (2016)
	Danau Sentarum and corridor	Danau Sentarum, part of Upper Kapuas swamps	501–1,000	2016	Utami-Atmoko <i>et al.</i> (2016)
	Pygmaeus fragmented North	N/A	≤50	2016	Utami-Atmoko <i>et al.</i> (2016)
	Pygmaeus fragmented South	N/A	≤50	2016	Utami-Atmoko <i>et al.</i> (2016)
Indonesia/ Malaysia	Bungoh NP–Gunung Nyiut NR, Penrisen protection forest	N/A	51–100	2016	Utami-Atmoko <i>et al.</i> (2016)
	Klingkang Range NP, Sintang Utara	N/A	51–100	2016	Utami-Atmoko <i>et al.</i> (2016)
Malaysia (Sarawak)	Batang Ai–Lanjak Entimau landscape	Batang Ai, Lanjak Entimau	1,001–5,000	2016	Utami-Atmoko <i>et al.</i> (2016)
	Ulu Sebuyau–Sedilu landscape	N/A	≤50	2016	Utami-Atmoko <i>et al.</i> (2016)

Note: The current and previous site names do not necessarily refer to identical areas. In some cases the new site name may encompass multiple sites that were previously listed separately. As a result, orangutan numbers are not directly comparable over time at site level.

TABLE 15**Southwest Bornean Orangutan (*Pongo pygmaeus wurmbii*) Abundance Estimates**

Country	Site name	Site name in previous volumes of <i>State of the Apes</i>	Abundance class	Year of estimate	Source
Indonesia	Arabela Schwaner	Bukit Baka, Bukit Rongga and Perai, Arut Belantikan, Seruyan, Bukit Raya, Sei Kahayan–Sei Samba, Sei Samba–Sei Katingan, Cagar Alam B. Spt Hawung	10,001–20,000	2016	Utami-Atmoko <i>et al.</i> (2016)
	Barito Timur	N/A	101–300	2016	Utami-Atmoko <i>et al.</i> (2016)
	Gunung Palung–Sungai Putri	Gunung Palung	1,001–5,000	2016	Utami-Atmoko <i>et al.</i> (2016)
	Kahayan–Kapuas	Kahayan Kapuas	1,001–5,000	2016	Utami-Atmoko <i>et al.</i> (2016)
	Kapuas–Barito	Mawas, Cagar Alam Pararawen	1,001–5,000	2016	Utami-Atmoko <i>et al.</i> (2016)
	Katingan	Katingan	1,001–5,000	2016	Utami-Atmoko <i>et al.</i> (2016)
	Kendawangan–Jelai	N/A	≤50	2016	Utami-Atmoko <i>et al.</i> (2016)
	Kotawaringan–Lama	Tanjung Keluang	501–1,000	2016	Utami-Atmoko <i>et al.</i> (2016)

Country	Site name	Site name in previous volumes of <i>State of the Apes</i>	Abundance class	Year of estimate	Source
	Kubu Raya	N/A	1,001–5,000	2016	Utami-Atmoko <i>et al.</i> (2016)
	Lamandau-Sukumara	Lamandau	501–1,000	2016	Utami-Atmoko <i>et al.</i> (2016)
	Pematang Gadung	N/A	501–1,000	2016	Utami-Atmoko <i>et al.</i> (2016)
	Rungan River landscape	Rungan Kahayan	1,001–5,000	2016	Utami-Atmoko <i>et al.</i> (2016)
	Sebangau	Sebangau NP, Sebangau Kahayan	5,001–10,000	2016	Utami-Atmoko <i>et al.</i> (2016)
	Seruyan-Sampit	N/A	101–300	2016	Utami-Atmoko <i>et al.</i> (2016)
	Sungai Tengar	N/A	101–300	2016	Utami-Atmoko <i>et al.</i> (2016)
	Tanjung Puting	Tanjung Puting NP	1,001–5,000	2016	Utami-Atmoko <i>et al.</i> (2016)

Note: The current and previous site names do not necessarily refer to identical areas. In some cases the new site name may encompass multiple sites that were previously listed separately. As a result, orangutan numbers are not directly comparable over time at site level.

TABLE 16

Gaoligong Hoolock (*Hoolock tianxing*) Abundance Estimates

Country	Site name	Abundance class	Survey year	Source
China	Mt. Gaoligong, Yunnan	101–300	2011	Fan <i>et al.</i> (2011)
Myanmar	Shan state	20,001–50,000	2013	Geissmann <i>et al.</i> (2013)
	Kayah and Kayin states	10,001–20,000	2013	Geissmann <i>et al.</i> (2013)

TABLE 17

Western Hoolock (*Hoolock hoolock*) Abundance Estimates

Country	Site name	Abundance class	Survey year(s)	Source
Bangladesh	Kalachara Forest Beat	≤50	2009	Akers, Islam and Nijman (2013)
	Lawachara and Chunati	Present	1989–90	Ahsan (2001)
		Present	1990–91	Islam and Feeroz (1992)
India	Assam	1,001–5,000	1994–2004	Das <i>et al.</i> (2005)
	Barail and Langting-Mupa Reserve Forests (North Cachar Hills), Hollongapar Reserve Forest (Jorhat district), Innerline Reserve Forest (Cachar)	Present	1986–88	Choudhury (2000)
	Dampa Tiger Reserve	≤50	2011	Pachau <i>et al.</i> (2013)
	Hollongapur FR	Present	1971–73	Tilson (1979)
	Lower Dibang Valley, Arunachal Pradesh	1,001–5,000	2007–10	Kumar <i>et al.</i> (2013)
	Mehao Wildlife Sanctuary, Arunachal Pradesh	301–500	2008–09	Chetry and Chetry (2010)
	Sadiya subdivision, Assam	51–100	2010	Chetry and Chetry (2010)

Myanmar	Chaung Tha (Rakhine)	10,001–20,000	2008	Geissmann <i>et al.</i> (2013)
	Do Kwe Chaung (Rakhine)	10,001–20,000	2008	Geissmann <i>et al.</i> (2013)
	Gaba Gaso (Sagaing)	>100,000	2009	Geissmann <i>et al.</i> (2013)
	Goatsiyo (Magwe)	Present	2009	Geissmann <i>et al.</i> (2013)
	Kyaukpyar Kyaw (Magwe)	Present	2009	Geissmann <i>et al.</i> (2013)
	Naga (Kachin)	50,001–100,000	2006	Geissmann <i>et al.</i> (2013)
	Natyekan (Magwe)	Present	2009	Geissmann <i>et al.</i> (2013)
	Paik Chaung (Magwe)	Present	2009	Geissmann <i>et al.</i> (2013)
	Yaw Par Mi (Sagaing)	>100,000	2009	Geissmann <i>et al.</i> (2013)
	Ye Paw Gyi (Rakhine)	10,001–20,000	2008	Geissmann <i>et al.</i> (2013)

Note: For Myanmar, abundance estimates relate to the state named in parentheses, not the site.

TABLE 18

Eastern Hoolock (*Hoolock leuconedys*) Abundance Estimates

Country	Site name	Abundance class	Survey year	Source
Myanmar	Gata Bum (Kachin)	>100,000	2009	Geissmann <i>et al.</i> (2013)
	Gato (Kachin)	>100,000	2009	Geissmann <i>et al.</i> (2013)
	Hopom (Kachin)	>100,000	2010	Geissmann <i>et al.</i> (2013)
	Hpongun Razi (Kachin)	>100,000	2009	Geissmann <i>et al.</i> (2013)
	Htee Khaw Lay Ko (Kayin)	10,001–20,000	2010	Geissmann <i>et al.</i> (2013)
	Htee Ler Kee (Kayin)	10,001–20,000	2010	Geissmann <i>et al.</i> (2013)
	Kyi Nort (Kachin)	>100,000	2009	Geissmann <i>et al.</i> (2013)
	Lwan Khong (Kachin)	>100,000	2009	Geissmann <i>et al.</i> (2013)
	Mahamyaing (Sagaing)	>100,000	2004	Geissmann <i>et al.</i> (2013)
	Mine Naung (Kachin)	>100,000	2010	Geissmann <i>et al.</i> (2013)
	Nam Pagon (Sagaing)	>100,000	2009	Geissmann <i>et al.</i> (2013)
	Nam Pilin (Sagaing)	>100,000	2009	Geissmann <i>et al.</i> (2013)
	Nant Nint (Kachin)	>100,000	2010	Geissmann <i>et al.</i> (2013)
	Ohnyan (Kachin)	>100,000	2010	Geissmann <i>et al.</i> (2013)
	Plo Doh Kee (Kayin)	10,001–20,000	2010	Geissmann <i>et al.</i> (2013)
	Salin (Kachin)	>100,000	2010	Geissmann <i>et al.</i> (2013)
Su Bum (Kachin)	>100,000	2009	Geissmann <i>et al.</i> (2013)	

Notes: Abundance estimates relate to the state named in parentheses, not the site. No population information could be found for this species in China and India.

TABLE 19**Abbott's Gray Gibbon (*Hylobates abbotti*) Abundance Estimates**

There are no accurate population density estimates for this species; all population numbers are based on best-estimate extrapolations from related species. Significant populations probably exist outside protected areas, yet these require further assessment. The impact of plantations (especially oil palm plantations) on gibbon populations is unknown and more data are needed.

TABLE 20**Agile Gibbon (*Hylobates agilis*) Abundance Estimates**

Country	Site name	Abundance class	Survey year	Source
Indonesia	Air Tarusan Reserve	Present	2015	Chanee, unpublished data, 2015
	Kerinci Seblat NP	Present	1994	A. Yannuar, personal communication, 2012

Note: No population information could be found for this species in Malaysia.

TABLE 21**Bornean White-Bearded Gibbon (*Hylobates albibarbis*) Abundance Estimates**

Country	Site name	Abundance class	Survey year	Source
Indonesia	Bawan	20,001–50,000	2010	Harrison <i>et al.</i> (2012)
	Block C Ex-Mega Rice Project	5,001–10,000	2011	Cheyne (2011)
	Bukit Baka Bukit Raya NP	10,001–20,000	2003	S. Cheyne, unpublished data, 2003
	Gunung Palung NP	5,001–10,000	2014	Marshall, Beaudrot and Wittmer (2014)
	Mungku Baru	1,001–5,000	2010	Harrison <i>et al.</i> (2010)
	Pararawen Reserve	501–1,000	2014	Chanee, unpublished data, 2015
	Sabangau catchment	**10,001–20,000	2007	Cheyne <i>et al.</i> (2007)

Note: Two asterisks (**) indicate that an ape population is growing.

TABLE 22**Bornean Gray Gibbon (*Hylobates funereus*) Abundance Estimates**

Country	Site name	Abundance class	Survey year	Source
Indonesia	Betung Kerihun NP	Present	None	Anecdotal [^]
	Danau Sentarum-Betung Kerihun	Present	None	Anecdotal [^]
	Kayan Menterang NP	10,001–20,000	2003	Nijman and Menken (2005)
	Kutai NP	Present	None	Anecdotal [^]
	Sankulirang karst area	Present	None	Anecdotal [^]
	Wehea Protection Forest	1,001–5,000	2014	Cheyne et al. 2016

Country	Site name	Abundance class	Survey year	Source
Malaysia	Crocker Range NP	Present	None	Anecdotal [^]
	Danum Valley	Present	None	Anecdotal [^]
	Imbak Canyon Conservation Area	Present	None	Anecdotal [^]
	Kinabatangan	Present	None	Anecdotal [^]
	Malinau Basin	Present	None	Anecdotal [^]

Notes: No population information could be found for this species in Brunei. [^] This information comes from a number of researchers who heard gibbon calls whilst working on projects in these areas.

TABLE 23

Kloss's Gibbon (*Hylobates klossii*) Abundance Estimates

Country	Site name	Abundance class	Survey year	Source
Indonesia	Saraboa and Sikakap	Present	1970	Tenaza and Hamilton III (1971)
	Siberut Island NP	10,001–20,000	2012	Quinten <i>et al.</i> (2014) Höing <i>et al.</i> 2013

TABLE 24

Lar Gibbon (*Hylobates lar*) Abundance Estimates

Country	Site name	Abundance class	Survey year(s)	Source
China	Nangunhe NR, southwest Yunnan	Extirpated	2007	Grueter <i>et al.</i> (2009)
Indonesia	Ketambe Research Station	Present	1985–87	Palombit (1995)
Lao People's Democratic Republic (PDR)	Nam Pouy National Protected Area (NPA)	≤50	2011	Boonratana <i>et al.</i> (2011)
Thailand	Khao Yai NP	Present	1992–96	Reichard and Sommer (1997)
	Mo Singto, Khao Yai NP	Present	1994–95	Bartlett (2009)

Note: No population information could be found for this species in Malaysia or Myanmar.

TABLE 25

Moloch Gibbon (*Hylobates moloch*) Abundance Estimates

Country	Site name	Abundance class	Survey year(s)	Source
Indonesia	Bojongpicung	≤50	1994–2001	Nijman (2004)
	Cisolok	≤50	1994–2001	Nijman (2004)
	Gede Pangrango	101–300	2007	Iskandar (2007)
	Gunung Halimun Reserve	Present	2011	Setiawan <i>et al.</i> (2012)

Country	Site name	Abundance class	Survey year(s)	Source
	Lengkong	≤50	1994–2001	Nijman (2004)
	Leuweung Sancang	≤50	2003	Nijman (2004)
	Mt. Burangrang-Tangkuban Perahu	51–100	1994–2001	Nijman (2004)
	Mt. Ciremai	Present	1994–2001	Nijman (2004)
	Mt. Dieng and Mt. Pegunungan Dieng	501–1,000	2003	Nijman (2004)
	Mt. Halimun Salak NP	1,001–5,000	2007	Iskandar (2007)
	Mt. Halu	≤50	1994–2001	Nijman (2004)
	Mt Jayanti-Tangkuban Perahu	≤50	1994–2001	Nijman (2004)
	Mt. Lawet/Cupu-Simembur/Jaran	51–100	1994	Nijman (2004)
	Mt. Malang	≤50	1994–2001	Nijman (2004)
	Mt. Manglayang	≤50	1994–2001	Nijman (2004)
	Mt. Masegit-Kareumbi	≤50	1994–2001	Nijman (2004)
	Mt. Papandayan	101–300	1994–2001	Nijman (2004)
	Mt. Pongkor	≤50	1994–2001	Nijman (2004)
	Mt. Porang	≤50	1994–2001	Nijman (2004)
	Mt. Sawal	Present	1994–2001	Nijman (2004)
	Mt. Segara	51–100	1994	Nijman (2004)
	Mt. Simpang	501–1,000	1994–2001	Nijman (2004)
	Mt. Slamet	51–100	2009–10	Setiawan <i>et al.</i> (2012)
	Mt. Tilu	51–100	1994–2001	Nijman (2004)
	Mt. Wayang	101–300	1994–2001	Nijman (2004)
	Pasir Susuru	≤50	1994–2001	Nijman (2004)
	Sanggabuana	51–100	1994–2001	Nijman (2004)
	Takokak	≤50	2003	Nijman (2004)
	Telaga Warna	Present	2000	Nijman (2004)
	Telaga Warna-Megamendung	51–100	2001	Nijman (2004)
	Ujung Kulon (Honje-Tereleng)	501–1,000	2001	Nijman (2004)
	Ujung Kulon-Gunung Honje NR	Present	2011	Setiawan <i>et al.</i> (2012)

TABLE 26**Müller's Gibbon (*Hylobates muelleri*) Abundance Estimates**

Country	Site name	Abundance class	Survey year	Source
Indonesia	Gunung Lumut Reserve (Hutan Lindung)	5,001–10,000	2011	Chanee, unpublished data, 2015
	Sungai Wain Protection Forest	**1,001–5,000	2012	Gilhooly, Rayadin and Cheyne (2015)
	Uut Murung (mixed community and unprotected)	50,001–100,000	2011	Cheyne <i>et al.</i> (2012)

Note: Two asterisks (**) indicate that an ape population is growing.

TABLE 27**Pileated Gibbon (*Hylobates pileatus*) Abundance Estimates**

Country	Site name	Abundance class	Survey year(s)	Source
Cambodia	Bokor NP	1,001–5,000	2005	Traeholt <i>et al.</i> (2005)
	Botum Sakor NP	5,001–10,000	2005	Traeholt <i>et al.</i> (2005)
	Central Cardamoms Protected Forest	10,001–20,000	2005	Traeholt <i>et al.</i> (2005)
	Kirirom NP	1,001–5,000	2005	Traeholt <i>et al.</i> (2005)
	Kulen Promtep Wildlife Sanctuary	1,001–5,000	2005	Traeholt <i>et al.</i> (2005)
	Phnom Aural Wildlife Sanctuary	1,001–5,000	2005	Traeholt <i>et al.</i> (2005)
	Phnom Samkos Wildlife Sanctuary	5,001–10,000	2005	Traeholt <i>et al.</i> (2005)
	Prey Long	1,001–5,000	2005	Traeholt <i>et al.</i> (2005)
	Samling concession	1,001–5,000	2005	Traeholt <i>et al.</i> (2005)
	Southern Cardamom Mountains	10,001–20,000	2005	Traeholt <i>et al.</i> (2005)
Thailand	Khao Ang Rue Nai Wildlife Sanctuary	1,001–5,000	2011	Phoonjampa <i>et al.</i> (2011)
	Khao Soi Dao Wildlife Sanctuary	1,001–5,000	2004–05	Phoonjampa and Brockelman (2008)
	Khao Yai NP	1,001–5,000	2004–05	Phoonjampa and Brockelman (2008)
	Pang Sida and Tab Lan NPs	1,001–5,000	2004–05	Phoonjampa and Brockelman (2008)

Note: No population information could be found for this species in Lao PDR.

TABLE 28**Northern Yellow-Cheeked Crested Gibbon (*Nomascus annamensis*) Abundance Estimates**

Country	Site name	Abundance class	Survey year	Source
Cambodia	Vensai Siempang NP	Present	2017	Conservation International Cambodia, unpublished data, 2017
	Virachey NP	Present	2017	GDANCP, MoE, Cambodia, unpublished data, 2017
Lao PDR	Bolaven Northeast	Present	1995	Duckworth (2008)
	Bolaven Southwest	Present	1995	Duckworth (2008)
	Dakchung plateau	Present	1994	Duckworth (2008)
	Dong Ampham NPA	Present	2007	Duckworth (2008)
	Dong Hua Sao NPA	Present	2008	Duckworth (2008)
	Dong Kapho production forest	Present	2005	Duckworth (2008)
	Dong Nathat conservation area	Present	Pre-1990	Duckworth (2008)
	Dong Phou Vieng NPA	Present	2008	Duckworth (2008)
	Dong Sithouan production forest	Present	2005	Duckworth (2008)
	Laongam production forest	Present	2002	Duckworth (2008)
	Muang Kaleum	Present	2008	Duckworth (2008)
	Muang Lamam	Present	2008	Duckworth (2008)
	Muang Nong	Present	2007	Duckworth (2008)
	Muang Paksong	Present	2007	Duckworth (2008)
	Muang Pathoumphon	Present	2005	Duckworth (2008)
	Muang Samakhixai	Present	2007	Duckworth (2008)
	Muang Sanamxai	Present	2007	Duckworth (2008)
	Muang Somoy	Present	2008	Duckworth (2008)
	Muang Taoy	Present	2007	Duckworth (2008)
	Nam Ghong Provincial Protected Area	Present	2007	Duckworth (2008)
Phou Ahyon	Present	1996	Duckworth (2008)	
Phou Khathong proposed NPA	Present	2008	Duckworth (2008)	
Phou Talava production forest	Present	2005	Duckworth (2008)	
Phou Theung proposed NPA	Present	2006	Duckworth (2008)	

Country	Site name	Abundance class	Survey year	Source
	Phou Xiang Thong NPA	Present	2008	Duckworth (2008)
	Silivangveun production forest	Present	2002	Duckworth (2008)
	Thateng	Present	1989	Duckworth (2008)
	Xe Bang-Nouan NPA	Present	2008	Duckworth (2008)
	Xe Khampho proposed NPA	Present	1995	Duckworth (2008)
	Xe Kong Pine Forest	Present	1992	Duckworth (2008)
	Xe Pian NPA	Present	2008	Duckworth (2008)
	Xe Sap NPA	Present	2008	Duckworth (2008)
	Xonbuly Eld's Deer Sanctuary	Present	2008	Duckworth (2008)
Viet Nam	A Luoi Watershed	≤50	2008	Rawson <i>et al.</i> (2011)
	Ba Na-Nui Chua NR	Present	2006	Rawson <i>et al.</i> (2011)
	Ba Nam Commune, Ba To district	≤50	2011	Rawson <i>et al.</i> (2011)
	Bach Ma NP	Extirpated	2010	Rawson <i>et al.</i> (2011)
	Chu Mom Ray NP	≤50	2007	Rawson <i>et al.</i> (2011)
	Dak Rong NR	51–100	2010	Rawson <i>et al.</i> (2011)
	Dakroong and Tam Lap state forest enterprises (SFEs)	≤50	2008	Rawson <i>et al.</i> (2011)
	Kon Cha Rang NR	≤50	2010	Rawson <i>et al.</i> (2011)
	Kon Ka Kinh NP	≤50	2010	Rawson <i>et al.</i> (2011)
	Kon Plong SFE	≤50	2009	Rawson <i>et al.</i> (2011)
	Nam Dong Watershed Forest	≤50	2007	Rawson <i>et al.</i> (2011)
	Ngoc Linh NR	Present	2006	Rawson <i>et al.</i> (2011)
	Ngoc Linh proposed NR	Extirpated	2005	Rawson <i>et al.</i> (2011)
	Phong Dien NR	≤50	2010	Rawson <i>et al.</i> (2011)
	Quang Nam Saola NR	Present	2005	Rawson <i>et al.</i> (2011)
	Que Son proposed Species and Habitat Conservation Area (SHCA)	Present	2009	Rawson <i>et al.</i> (2011)
	Song Thanh NR	≤50	2004	Rawson <i>et al.</i> (2011)
	Thua Thien Hue Saola NR	Extirpated	2010	Rawson <i>et al.</i> (2011)

Note: In Lao PDR, researchers have found that *Nomascus gabriellae* has previously been mis-identified and the gibbons here are actually *Nomascus annamensis*. No surveys have been undertaken since this came to light.

TABLE 29**Western Black-Crested Gibbon (*Nomascus concolor*) Abundance Estimates**

Country	Site name	Abundance class	Survey year(s)	Source
China	Ailaoshan National NR	101–300	2009–10	Li <i>et al.</i> (2011)
	Ailaoshan National NR and Xinping Ailaoshan County-level NR	301–500	2009–10	Li <i>et al.</i> (2011)
	Jinggu	Present	2008	Fan and Huo (2009)
	Lanbanghe Provincial NR	Present	2011	Li <i>et al.</i> (2011)
	Lancangjiang Provincial NR	Present	2011	Li <i>et al.</i> (2011)
	Northern part of Nangunhe National NR	Present	2011	Li <i>et al.</i> (2011)
	Wuliangshan National NR	1,001–5,000	2012	Fan <i>et al.</i> (2013)
	Yongdedaxueshan National NR	≤50	2011	Li <i>et al.</i> (2011)
	Zhenyuan	≤50	2011	Luo (2011)
Lao PDR	Houay Nam Loi	Present	1991	Duckworth (2008)
	Louang-Namtha	Present	2006	Duckworth (2008)
	Nam Ha NPA	Present	2007	Duckworth (2008)
	Nam Kan NPA	Present	2008	Duckworth (2008)
	Nam Kong Provincial Protected Area	101–300	1997	Duckworth (2008)
Viet Nam	Hoang Lien NR and vicinity	Present	2009	Rawson <i>et al.</i> (2011)
	Hoang Lien-Van Ban NR	≤50	2009	Rawson <i>et al.</i> (2011)
	Mu Cang Chai SHCA	≤50	2010	Rawson <i>et al.</i> (2011)
	Muong La Watershed Protection Forest	≤50	2010	Rawson <i>et al.</i> (2011)
	Pan village, Muong Do commune, Phu Yen district	Extirpated	2005	Rawson <i>et al.</i> (2011)
	Tram Tau	Extirpated	2005	Rawson <i>et al.</i> (2011)
	Xuan Son NR	Extirpated	2005	Rawson <i>et al.</i> (2011)

TABLE 30**Southern Yellow-Cheeked Crested Gibbon (*Nomascus gabriellae*) Abundance Estimates**

Country	Site name	Abundance class	Survey year	Source
Cambodia	Phnom Prich Wildlife Sanctuary	501-1000	2008	Gray, Phan and Long (2010)
	Seima Biodiversity Conservation Area	Present	2015	WCS Cambodia, unpublished data, 2015
Viet Nam	Bi Dup-Nui Ba NR	≤50	2010	Rawson <i>et al.</i> (2011)
	Bu Gia Map NP	101–300	2010	Rawson <i>et al.</i> (2011)
	Cat Tien NP	301–500	2010	Rawson <i>et al.</i> (2011)
	Chu Yang Sin NP	≤50	2009	Rawson <i>et al.</i> (2011)
	Cu Jut district	Present	2007	Rawson <i>et al.</i> (2011)
	Dong Nai NR	≤50	2010	Rawson <i>et al.</i> (2011)
	Ea So NR	Present	2006	Rawson <i>et al.</i> (2011)
	Ea Sup/Ea H'leo district	Present	1998	Rawson <i>et al.</i> (2011)
	Ea Trang Commune, M'drak	Present	1998	Rawson <i>et al.</i> (2011)
	Hon Ba NR	101–300	2015	Hoang, Tran and Covert (2015)
	Khanh Hoa SFE and Tram Huong Forestry Company	101–300	2015	Hoang <i>et al.</i> (2015)
	Krong No district	Present	1998	Rawson <i>et al.</i> (2011)
	Loc Bac SFE	≤50	2004	Rawson <i>et al.</i> (2011)
	Nam Nung NR	≤50	2010	Rawson <i>et al.</i> (2011)
	Ninh Son SFE	101–300	2015	Hoang <i>et al.</i> (2015)
	Nui Ong NR	Extirpated	2010	Rawson <i>et al.</i> (2011)
	Phuoc Binh NP	101–300	2015	Hoang <i>et al.</i> (2015)
	Quang Truc Commune, Dak Rlap district	101–300	2013	Hoang <i>et al.</i> (2014)
	Ta Dung NR	51–100	2010	Rawson <i>et al.</i> (2011)
	Yok Don NP	Present	2007	Rawson <i>et al.</i> (2011)
Yun Pa proposed NR	Present	2000	Rawson <i>et al.</i> (2011)	

Note: In Lao PDR, researchers have found that *Nomascus gabriellae* has previously been mis-identified and the gibbons here are actually *Nomascus annamensis*. No surveys have been undertaken since this came to light.

TABLE 31**Hainan Gibbon (*Nomascus hainanus*) Abundance Estimates**

Country	Site name	Abundance class	Survey year	Source
China	Bawangling National Nature Reserve	≤50	2012	Bryant (2014)

TABLE 32**Northern White-Cheeked Crested Gibbon (*Nomascus leucogenys*) Abundance Estimates**

Country	Site name	Abundance class	Survey year	Source
Lao PDR	Muang Bolikhan	Present	2006	Duckworth (2008)
	Muang Feuang	Present	1999	Duckworth (2008)
	Muang Hinheup	Present	1999	Duckworth (2008)
	Muang Houamouang	Present	2006	Duckworth (2008)
	Muang Kasi	Present	1999	Duckworth (2008)
	Muang Met	Present	1999	Duckworth (2008)
	Muang Sangthong	Present	1996	Duckworth (2008)
	Muang Vangviang	Present	1999	Duckworth (2008)
	Muang Viangthong	Present	2008	Duckworth (2008)
	Muang Xanakham	Present	2003	Duckworth (2008)
	Muang Xiangkho	Present	2008	Duckworth (2008)
	Nam Et-Phou Louey NPA	Present	2008	Duckworth (2008)
	Nam Gniap catchment	Present	2008	Duckworth (2008)
	Nam Kading NPA	Present	2010	Thinh <i>et al.</i> (2010)
	Nam Xam NPA	Present	2000	Duckworth (2008)
	Northern Xiangkhouang	Present	2008	Duckworth (2008)
	Phou Dendin NPA	Present	2005	Duckworth (2008)
	Phou Khaokhoay NPA	Present	2007	Duckworth (2008)
	Phou Phanang NPA	Present	1983	Duckworth (2008)
	Southern Xiangkhouang	Present	1996	Duckworth (2008)
Viet Nam	Ben En NR	Extirpated	1998	Rawson <i>et al.</i> (2011)
	Hang Kia-Pa Co NR	Extirpated	2009	Rawson <i>et al.</i> (2011)
	Huong Son Forest	≤50	2011	Rawson <i>et al.</i> (2011)
	Ke Go NR	≤50	2010	Rawson <i>et al.</i> (2011)
	Khe Ve proposed NR	Extirpated	2004	Rawson <i>et al.</i> (2011)
	Long Luong Commune	Extirpated	2011	Rawson <i>et al.</i> (2011)
	Muong Nhe NR	≤50	2010	Rawson <i>et al.</i> (2011)
	Ngoc Son-Ngo Luong	Extirpated	2007	Rawson <i>et al.</i> (2011)
	Pu Hoat NR	Extirpated	2010	Rawson <i>et al.</i> (2011)
	Pu Hu NR	Extirpated	2003	Rawson <i>et al.</i> (2011)
	Pu Huong NR	Extirpated	2009	Rawson <i>et al.</i> (2011)
	Pu Luong NR	Extirpated	2008	Rawson <i>et al.</i> (2011)

Country	Site name	Abundance class	Survey year	Source
	Pu Mat NP	≤50	2011	Rawson <i>et al.</i> (2011)
	Sop Cop NR	≤50	2011	Rawson <i>et al.</i> (2011)
	Thach Tuong Commune	Extirpated	Post-2000	Rawson <i>et al.</i> (2011)
	Vu Quang NR	≤50	2011	Rawson <i>et al.</i> (2011)
	Xuan Lien NR	≤50	2007	Rawson <i>et al.</i> (2011)
	Xuan Nha NR	Extirpated	2011	Rawson <i>et al.</i> (2011)

TABLE 33**Cao Vit Gibbon (*Nomascus nasutus*) Abundance Estimates**

Country	Site name	Abundance class	Survey year(s)	Source
China	Ailaoshan National NR	51–100	2006 and 2010	CMBNR (2006); Li <i>et al.</i> (2011)
	Bangliang Gibbon NR	101–300 [^]	2016	Trịnh Đình Hoàng, Lê Văn Dũng và Nguyễn Văn Trường (2016)
	Huanglianshan National NR	≤50	2006	Ni and Ma (2006)
	Xilongshan (in Fenshuiling National NR)	≤50		Ni and Ma (2006)
Viet Nam	Cao Vit Gibbon Conservation Area, Trung Khanh	101–300 [^]	2016	Hoang, Tran and Covert (2016)
	Kim Hy NR	Extirpated	2009	Rawson <i>et al.</i> (2011)
	Lung Ri	Extirpated	2009	Rawson <i>et al.</i> (2011)
	Thanh Hen Lake	Extirpated	2011	Rawson <i>et al.</i> (2011)
	Than Sa-Phuong Hoang NR	Extirpated	2010	Rawson <i>et al.</i> (2011)

Note: [^] This abundance estimate, drawn from a survey that China and Viet Nam published jointly in 2016, is for the combined transboundary area of Bangliang Gibbon NR and the Cao Vit Gibbon Conservation Area in Trung Khanh district.

TABLE 34**Southern White-Cheeked Crested Gibbon (*Nomascus siki*) Abundance Estimates**

Country	Site name	Abundance class	Survey year	Source
Lao PDR	Dong Phousoi production forest	Present	2005	Duckworth (2008)
	Hin Namno NPA	Present	2008	Duckworth (2008)
	Muang Boulapha	Present	1998	Duckworth (2008)
	Nakai-Nam Theun NPA	Present	2014	Coudrat and Nanthavong (2014)
	Nakai plateau	Present	2008	Duckworth (2008)
	Nam Kading NPA	Present	2010	Thinh <i>et al.</i> (2010)

Country	Site name	Abundance class	Survey year	Source
	Nam Theun Corridor	Present	2004	Duckworth (2008)
	Nam Theun Extension	Present	2007	Duckworth (2008)
	Nongkapat production forest	Present	2005	Duckworth (2008)
	Phou Hinpoun	Present	2008	Duckworth (2008)
	Xe Bang Fai headwaters	Present	1998	Duckworth (2008)
Viet Nam	Bac Huong Hoa NR	≤50	2009	Rawson <i>et al.</i> (2011)
	Giang Man proposed NR	Extirpated	2004	Rawson <i>et al.</i> (2011)
	Khe Giua SFE	Extirpated	2006	Rawson <i>et al.</i> (2011)
	Khe Net proposed NR	Extirpated	2010	Rawson <i>et al.</i> (2011)
	Phong Nha–Ke Bang NP	51–100	2009	Rawson <i>et al.</i> (2011)
	Truong Son SFE	≤50	2009	Rawson <i>et al.</i> (2011)

Note: There remains some debate as to which species are present in Lao PDR and many areas with possible gibbon populations are not listed here.

TABLE 35

Siamang (*Symphalangus syndactylus*) Abundance Estimates

Country	Site name	Abundance class	Survey year(s)	Source
Indonesia	Air Tarusan Reserve	Present	2012	Chanee (2014)
		Present	2014	Chanee (2014)
	Bukit Barisan Selatan NP	20,001–50,000	1998–2002	O'Brien <i>et al.</i> (2003)
	Kalaweit Supayang Reserve	Present	2014	Chanee (2014)
Malaysia	Ulu Sempam and Krau Game Reserve, Gunong Benom	Present	1969–73	Chivers (1974)

Note: No population information could be found for this species in Thailand.

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- Borneo Nature Foundation
- Chester Zoo
- Columbus Zoo and Aquarium
- Conservation International
- Critical Ecosystem Partnership Fund
- Denver Zoo
- ECOFAC: Programme de Conservation et Utilisation Rationnelle des Ecosystèmes Forestiers en Afrique Centrale
- European Union/EuropeAid
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List of Abbreviations

ANPN	Agence Nationale des Parcs Nationaux (Gabon)
CAR	Central African Republic
CMBNR	Chuxiong Management Bureau of Nature Reserves
Congo	Republic of Congo
DRC	Democratic Republic of Congo
FFI	Fauna and Flora International
FMU	Forest management unit
FR	Forest reserve
GDANCP	General Department of Administration for Nature Conservation and Protection (Cambodia)
ICCN	Institut Congolais pour la Conservation de la Nature
IUCN	International Union for Conservation of Nature (also UICN)
JGI	Jane Goodall Institute
Lao PDR	Lao People's Democratic Republic
MINFOF	Ministère des Forêts et de la Faune, Cameroon
MoE	Ministry of the Environment
No. spp.	number of species
NP	national park
NPA	national protected area
NR	nature reserve
OuTROP	Orangutan Tropical Peatland Project
REGOMUKI	Réserve de Gorilles de Mukingiti et Kingombe
RGPU	Réserve des Gorilles de Punia
SFE	state forest enterprise
SHCA	Species and Habitat Conservation Area
SSC	Species Survival Commission
UICN	Union Internationale pour la Conservation de la Nature (also IUCN)
WCF	Wild Chimpanzee Foundation
WCS	Wildlife Conservation Society
WWF	World Wide Fund for Nature/World Wildlife Fund
ZIC	zone d'intérêt cynégétique (hunting zone)
ZICGC	zone d'intérêt cynégétique à gestion communautaire (community-managed hunting zone)

Endnote

- 1 A statistical tool developed in 2007 can be applied post hoc to distinguish between nests built by sympatric gorillas and chimpanzees, if the appropriate covariables are collected for each nest (Sanz *et al.*, 2007).

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