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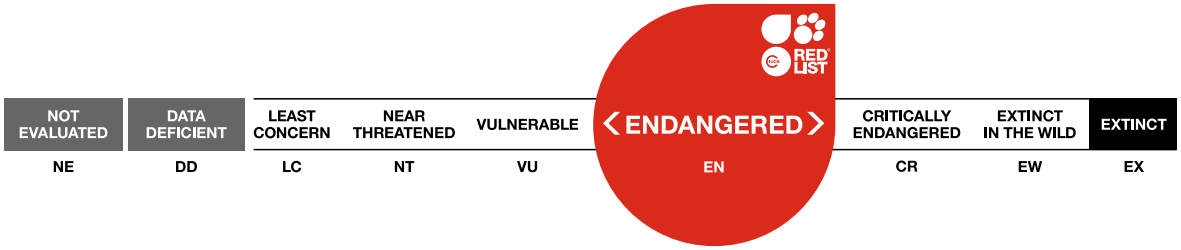
Leontopithecus chrysopygus, Black Lion Tamarin

Assessment by: Rezende, G., Knogge, C., Passos, F., Ludwig, G., Oliveira, L.C., Jerusalinsky, L. & Mittermeier, R.A.



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Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Mammalia	Primates	Callitrichidae

Scientific Name: *Leontopithecus chrysopygus* (Mikan, 1823)

Common Name(s):

- English: Black Lion Tamarin, Golden-rumped Lion Tamarin
- Spanish; Castilian: Tití León Negro
- German: Goldsteißlöwenaffe, Schwarzer Löwenäffchen
- Portuguese: Mico-leão-preto

Taxonomic Notes:

The lion tamarins, *Leontopithecus* spp., are listed as separate species following Della Serra (1951), Rosenberger and Coimbra-Filho (1984), Snowdon *et al.* (1986), Mittermeier *et al*. (1988), Natori (1989) and Rylands *et al*. (1993). *Leontopithecus chrysopygus* and *L*. *chrysomelas* have been listed as subspecies of *L. rosalia* by Coimbra-Filho (1969), Coimbra-Filho and Mittermeier (1972, 1973), Hershkovitz (1977), Mittermeier and Coimbra-Filho (1981), Forman *et al.* (1986) and Seuánez *et al*. (1988), the latter two publications on the basis of identical chromosome morphologies. Coimbra-Filho (1990) has suggested that *L. caissara* was a subspecies of *L. chrysopygus*, which was not supported neither morphologically (Burity *et al*. 1999) nor molecularly (Perez-Sweeney *et al.* 2008). A molecular phylogeny recovered three obvious clades: *L. chrysomelas*, *L. caissara* and *L. chrysopygus* / *L. rosalia*, where *L. chrysomelas* is the first to diverge from the other three (Perez-Sweeney *et al.* 2008). Here we follow the taxonomy proposed by Rylands (2012).

Assessment Information

Red List Category & Criteria: Endangered A3ce ver 3.1

Year Published: 2020

Date Assessed: January 23, 2020

Justification:

Leontopithecus chrysopygus is considered Endangered (EN A3ce) due to an anticipated population reduction of 50% or more within the next three generations (2019-2040) due to continued habitat loss within its range, the possible loss of several subpopulations that are believed to be non-viable over the mid- to long-term, and the potential for significant losses due to stochastic events (e.g., the recent yellow fever outbreak that has caused significant mortality in the *L. rosalia* populations).

Previously Published Red List Assessments

2008 – Endangered (EN)
https://dx.doi.org/10.2305/IUCN.UK.2008.RLTS.T11505A3290864.en

2003 – Critically Endangered (CR)

2000 – Critically Endangered (CR)

https://dx.doi.org/10.2305/IUCN.UK.2020-2.RLTS.T11505A17935400.en

1996 – Critically Endangered (CR)

1994 – Endangered (E)

1990 – Endangered (E)

1988 – Endangered (E)

1986 – Endangered (E)

1982 – Endangered (E)

Geographic Range

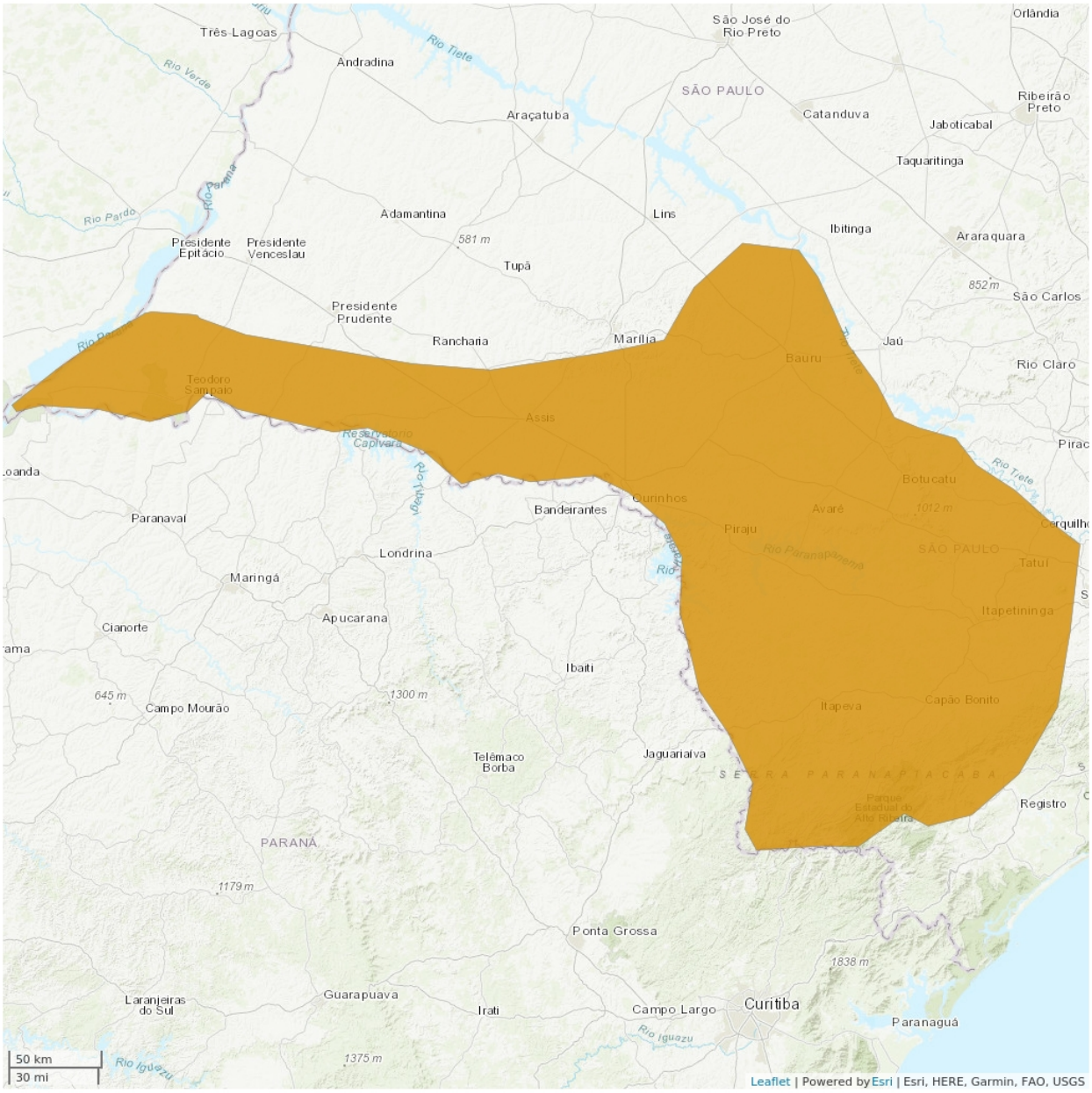
Range Description:

The Black Lion Tamarin is endemic to Brazil, occurring only in the Atlantic Forest of the state of São Paulo (Kierulff *et al.* 2008). Unlike the other three species of this genus, all of which reach the Atlantic coast, it is restricted to inland. It formerly occurred along the north (right) bank of the Paranapanema River, west as far as the Paraná River, and between the upper Paranapanema and Tietê (left bank) rivers in the state of São Paulo (Coimbra-Filho 1976a,b; Hershkovitz 1977). Its distribution boundaries to the east are probably altitude-limited by the higher peaks of Serra de Paranapiacaba, a large mountain range of forest remnant in which the Back Lion Tamarin's distribution remains unknown. Nowadays, it is known from only 15 widely separated forest patches covering about 490 km², all of them within the area belonging to the Rio Paranapanema's watershed, indicating that the current distribution of the taxon is reduced relative to its historical extent of occurrence. The black lion tamarin currently occurs in eight protected areas throughout its distribution range. In the southeast part of the state it occurs mainly in non-protected patches of gallery forest in the municipalities of Buri, Guareí and Itapeva (Lima *et al.* 2003). The recent record of the species in the Carlos Botelho State Park (Rodrigues *et al.* 2014), confirming its presence further south in the Serra de Paranapiacaba, could mean an improvement in its demographic situation, signalling potential changes in its future conservation status. On the other hand, it points to the need of obtaining more information about this population and along the length of this mountain chain within the neighbouring protected areas. Valladares-Padua and Martins (2008) also stress the importance of further investigation in the southeastern region of the state, including population estimates. A new population assessment covering the different areas of occupancy in all its geographic range is a priority. As well as other species of *Leontopithecus*, *L. chrysopygus* are very difficult to monitor and easily escape the eyes of researchers and therefore the use of radio telemetry is indispensable in studies with these species.

Country Occurrence:

Native, Extant (resident): Brazil (São Paulo)

Distribution Map



Legend

EXTANT (RESIDENT)

Compiled by:

IUCN (International Union for Conservation of Nature) 2008

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

Leontopithecus chrysopygus is now known to survive in 15 localities in the state of São Paulo. However, only the subpopulation of the Morro do Diabo State Park can be considered both demographically and genetically viable in the long term. The minimum viable population estimated for the species is more than 750 individuals in a single population to meet the management goal of at least 98% chance of persistence and 98% retention of gene diversity (Holst *et al*. 2006). The population of Morro do Diabo is estimated at approximately 1,200 animals (Paranhos 2006), living in 33,845 ha of forest. The other known subpopulations, except for the recently discovered in Carlos Botelho State Park, occupy fragments smaller than 2,300 ha (most of them between 400 and 600 ha), which can harbour populations not larger than 80 animals (24 individuals on average) and are certainly too small to be viable in the mid- to long-term. The total population size is estimated at about 1,600 animals and it is inferred that the number of mature individuals is higher than 250.

Habitat loss continues within the Black Lion Tamarin's range and could reach between 10-15% by 2040; several of the subpopulations (representing 20% of the total population) are considered non-viable over the mid-to-long term and could be extirpated by the middle of this century, and the potential mortality due to a yellow fever outbreak could be significant, as appears to have been the case recently with *L. rosalia*.

Current Population Trend: Decreasing

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

Leontopithecus chrysopygus is endemic to the seasonal rain forest of the inland extension of Atlantic forest in the state of São Paulo, also known as semi-deciduous forest, at altitudes that range from 260 to 913 m (Valladares-Padua and Cullen Jr. 1994, Röhe *et al*. 2003). The species is not restricted to primary forests, being well able to live in modified/disturbed environments such as secondary forests, relying only on sufficient year round available resources, such as tree holes to be used as sleeping sites, and fruit trees or foraging sites (Coimbra-Filho 1969, 1976a; Coimbra-Filho and Mittermeier 1973). Because they have long, slender fingers and modified claws rather than nails on all digits except the big toe, they are allowed to forage for prey efficiently in nooks and crannies and in epiphytic tank bromeliads (Coimbra-Filho 1970a). They are considered generalists and their diet is mainly composed by fruits, plant exudates, and small live prey, such as amphibians, lizards, birds, invertebrates and other animals (Passos 1999, Oliveira *et al.* 2015). Commonly, within their faeces undigested seeds are found. Such seeds were proved to be viable after passing through their digestive system, characterizing them as good seed dispersers as they walk long distances—between 1 and 3 km during a day (Passos 1997b, Medici 2001). For this reason, the species is important for the maintenance of the ecosystem services of their habitat. The group home range can vary significantly, from 40 ha to almost 400 ha (Albernaz 1997, Mamede-Costa 1997, Medici 2001, Passos 1997a, Valladares-Padua 1993). It can be influenced by several factors, such as seasonal variation of resources within the same area or difference in availability of resources among different areas. It shows the importance of studying home range in each fragment that the tamarins occur, to have a better estimation of population size and the fragment's carrying capacity. Such data can be useful for designing population management strategies. Coimbra-Filho (1970a,b, 1976a; Coimbra-Filho and Mittermeier 1977) and Martins (2003) studied their behaviour in the wild, and Valladares-Padua (1993) provides a comprehensive review of the ecology, diet and behaviour of the black lion tamarins. The species lives in extended family groups whose size varies from

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2 to 8 individuals, but on average it is 3 to 4 (Coimbra-Filho 1976a, Carvalho and Carvalho 1989). Generally, only one female per group breeds during a particular breeding season. They breed once a year, the pregnancy lasts between 125 and 132 days and the females usually give birth to twins.

Systems: Terrestrial

Threats (see Appendix for additional information)

The principal threat to *Leontopithecus chrysopygus* stems from severe habitat loss that occurred throughout its range in past decades, and which has resulted in fragmented forests and isolated sub-populations, many of which are not considered viable over the long-term (Holst *et al*. 2006). In the state of São Paulo only 6.4% (about 5,000 km²) of the Black Lion Tamarin's tropical semi-deciduous forest habitat remains, and the species actually occurs in less than 10% of that area (490 km²) as small, scattered and isolated sub-populations (Garbino *et al*. 2016). Each forest fragment is surrounded by cattle farms and/or eucalyptus, sugar cane and coffee plantations. Ongoing threats include fire, the establishment of rural settlements, agricultural expansion, road kill and the recent emergency of yellow fever in southern regions of Brazil (Bicca-Marques *et al.* 2017, Garcia 2018). Reduced population size and deforestation in some fragments may be the cause of recent local extinctions that have been reported (Garbino *et al*. 2016). According to some scenarios, climate change may also represent a future threat by affecting the extent and/or suitability of available habitat (Meyer *et al*. 2014).

Conservation Actions (see Appendix for additional information)

The isolation and the small size of existing populations are being addressed through metapopulation management, that is, the joint management of all known populations, together with the captive population treated as a single core-population (Kierulff *et al*. 2008). In addition to this management program (via translocations and reintroductions), current efforts are focused on research about home range, health and genetics of the in situ populations (Valladares-Padua *et al*. 2000a, Valladares-Padua *et al*. 2002a), environmental education (Padua and Valladares-Padua 1997, Padua *et al*. 2002), creation of protected areas in remaining forest fragments (with and without tamarins), and the planting of forest corridors reconnecting fragments and establishing larger areas of continuous forest that can harbor viable populations of *L. chrysopygus* (Padua and Valladares-Padua 1997; Valladares-Padua *et al*. 2000a,b; Cullen Jr. *et al.* 2001; Valladares-Padua *et al*. 2002b).

There is a captive breeding program going on, although it was not as successful as those of *L. rosalia* and *L. chrysomelas*, probably because of the very small founder stock, formed by individuals from the Morro do Diabo State Park in the 1970s and later in 1983-1985 as part of the rescue operation in the inundation area of the Rosana hydroelectric dam (Ballou *et al*. 2002, Rylands *et al.* 2002). However, it is growing and, despite a few founders, now this population also contributes to the metapopulation management program currently supervised by Valladares-Padua, and developed by G. Rezende and her team (Valladares-Padua and Ballou 1996; Valladares-Padua and Martins 1996; Valladares-Padua 1997; Valladares-Padua *et al*. 2000a,b; Medici 2001; Valladares-Padua *et al*. 2002a; Rezende 2014). The first translocation of a wild group of *L. chrysopygus* was held in 1995 and the first reintroduction experiment was conducted in 1999 through a combination of an adult male born in Jersey Zoo (Durrell Wildlife Park), UK, with two wild females (Valladares-Padua *et al.* 2000a,; Rezende 2014).

All actions being developed were listed and recommended during a Population and Habitat Viability

Analysis (PHVA) Workshop (Holst *et al.* 2006), and are presented in the National Action Plan for the Conservation of Central Atlantic Forest Mammals (PAN MAMAC - ICMBio 2010), elaborated by the Brazilian government and partners. The Black lion tamarin is especially considered in the Emergency Plan for the Conservation of Primates in the State of São Paulo that is being developed since 2014 by the official Commission for the Protection of Primates in the state of São Paulo ("Pró-Primatas Commission"), coordinated by the São Paulo state Secretary for Environment.

As recognition of all efforts being done for the species conservation in 2014, *Leontopithecus chrysopygus* was decreed by the São Paulo state governor as the symbol species of wildlife conservation and a Natural Heritage of São Paulo state.

Leontopithecus chrysopygus is included on the Brazilian Official List of Species Threatened with Extinction (Lista Oficial de Espécies Brasileiras Ameaçadas de Extinção, Edict No. 1.522/19th December 1989, Bernardes *et al*. 1990, Fonseca *et al*. 1994, MMA 2003, 2014), and likewise on the regional threatened species list of the state of São Paulo (SMA 1998, São Paulo 2014).

The species is listed on Appendix I of CITES.
Other assessments:

• National Red List Category from the Previous Assessment: (CR) - CR C2a(ii), E. (Machado *et al*. 2005); EN (MMA 2014)
• State Red list from São Paulo - EN - C1 (Kierulff and Carvalho 2009)

Protected areas with *L. chrysopygus* occurrence: four state protected areas, the Morro do Diabo State Park (the largest population), municipality of Teodoro Sampaio, the Caetetus State Ecological Station, municipality of Galia, the Angatuba State Ecological Station, municipalities of Angatuba and Guareí, and the Carlos Botelho State Park, municipalities of São Miguel Arcanjo e Capão Bonito; in two federal protected areas, the Black Lion Tamarin Ecological Station, in Pontal do Paranapanema region, and the Capão Bonito National Forest, municipalities of Capão Bonito and Buri; and in two private reserves (RPPN), the RPPN Mosquito, municipality of Narandiba and RPPN Olavo Egydio Setúbal, municipality of Lençóis Paulista (Valladares-Padua *et al.*2000a, Lima *et al.* 2003, Röhe *et al*. 2003, Rezende 2014, Rodrigues *et al*. 2014).

Credits

Assessor(s):	Rezende, G., Knogge, C., Passos, F., Ludwig, G., Oliveira, L.C., Jerusalinsky, L. & Mittermeier, R.A.
Reviewer(s):	Cotton, A., Molur, S. & Schwitzer, C.
Contributor(s):	Kierulff, M.C.M., Rylands, A.B., Mendes, S.L. & de Oliveira, M.M.
Facilitator(s) and Compiler(s):	Angelico, M. & Konstant, W.R.
Authority/Authorities:	IUCN SSC Primate Specialist Group

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Disclaimer

External Resources

For Supplementary Material, and for Images and External Links to Additional Information, please see the Red List website.

Appendix

Habitats

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

Habitat	Season	Suitability	Major Importance?
1. Forest -> 1.6. Forest - Subtropical/Tropical Moist Lowland	-	Suitable	-

Threats

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

Threat	Timing	Scope	Severity	Impact Score
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.3. Agro-industry farming	Ongoing	-	-	Low impact: 3
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
2. Agriculture & aquaculture -> 2.2. Wood & pulp plantations -> 2.2.2. Agro-industry plantations	Ongoing	-	-	Low impact: 3
	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	-	-	Low impact: 3
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
5. Biological resource use -> 5.3. Logging & wood harvesting -> 5.3.5. Motivation Unknown/Unrecorded	Ongoing	-	-	Low impact: 3
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation		
7. Natural system modifications -> 7.1. Fire & fire suppression -> 7.1.3. Trend Unknown/Unrecorded	Ongoing	-	-	Low impact: 3
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality		
8. Invasive and other problematic species, genes & diseases -> 8.4. Problematic species/disease of unknown origin -> 8.4.1. Unspecified species	Ongoing	-	-	Low impact: 3
	Stresses:	2. Species Stresses -> 2.1. Species mortality		
11. Climate change & severe weather -> 11.1. Habitat shifting & alteration	Ongoing	-	-	Low impact: 3
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 1. Ecosystem stresses -> 1.3. Indirect ecosystem effects		

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Conservation Actions in Place

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

Conservation Action in Place
In-place land/water protection
Conservation sites identified: Yes, over entire range
Occurs in at least one protected area: Yes
In-place species management
Subject to ex-situ conservation: 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 Action Needed
1. Land/water protection -> 1.1. Site/area protection
2. Land/water management -> 2.1. Site/area management
2. Land/water management -> 2.3. Habitat & natural process restoration
3. Species management -> 3.3. Species re-introduction -> 3.3.1. Reintroduction
3. Species management -> 3.4. Ex-situ conservation -> 3.4.1. Captive breeding/artificial propagation
4. Education & awareness -> 4.3. Awareness & communications

Research Needed

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

Research Needed
1. Research -> 1.2. Population size, distribution & trends
1. Research -> 1.3. Life history & ecology
1. Research -> 1.5. Threats
1. Research -> 1.6. Actions
3. Monitoring -> 3.1. Population trends

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Additional Data Fields

Distribution
Continuing decline in area of occupancy (AOO): Yes
Estimated extent of occurrence (EOO) (km²): 109126
Lower elevation limit (m): 260
Upper elevation limit (m): 913
Population
Number of mature individuals: 1,600
Continuing decline of mature individuals: Yes
Population severely fragmented: Yes
No. of subpopulations: 15
Continuing decline in subpopulations: Yes
All individuals in one subpopulation: No
No. of individuals in largest subpopulation: 530
Habitats and Ecology
Continuing decline in area, extent and/or quality of habitat: Yes
Generation Length (years): 7

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The IUCN Red List Partnership

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

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