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Livistona carinensis, Bankoualé Palm

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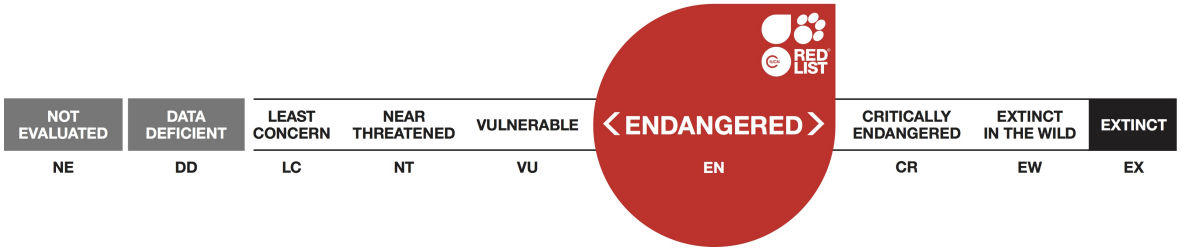

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Taxonomy

Kingdom	Phylum	Class	Order	Family
Plantae	Tracheophyta	Liliopsida	Arecales	Arecaceae

Taxon Name: *Livistona carinensis* (Chiov.) Dransf. & Uhl

Synonym(s):

- *Hyphaene carinensis* Chiov.
- *Wissmannia carinensis* (Chiov.) Burret

Common Name(s):

- English: Bankoualé Palm
- French: Palmier de Bankoualé

Taxonomic Notes:

Chiovenda (1929), first published the species under the scientific name, *Hyphaene carinensis*; the name "*carinensis*" was derived from the type locality in Somalia.

Photographs taken of the palms in Wadi Hajr, Yemen, were recognized by Burret to be the same species as the one described from Somalia. Burret (1943) described it as a Coryphoid palm and assigned it to a new monotypic genus, *Wissmannia*, named after the discoverer of the species in Yemen.

In Djibouti, the palm was first found in 1938 by Aubert de la Rüe (1939). Monod (1955) saw his photos, arranged for Chédeville to collect some specimens and published a paper in which he presented the first complete description of the palm and recognized its similarity to *Livistona*.

Dransfield and Uhl (1983) reviewed the species' taxonomy, using Monod's description and comparison provided by Tomlinson (1961) of *Wissmannia* and *Livistona*. Due to the absence of any unique characters to distinguish *Wissmannia*, they formally proposed *Wissmannia* be included within *Livistona*. Molecular evidence supports this taxonomic decision (Dowe 2009, Bacon *et al*. 2012).

Assessment Information

Red List Category & Criteria: Endangered A2c; B2ab(iii,v) ver 3.1

Year Published: 2018

Date Assessed: April 26, 2017

Justification:

Livistona carinensis is a palm species occurring in Djibouti and Yemen. It was previously also known from Somalia, but it is feared to have been extirpated in this country due to unsustainable harvesting for timber and the expansion of date palm plantations. Excluding Somalia, the known global extent of occurrence (EOO) for the species is 19,748 km^2, and the area of occupancy (AOO) appears to be limited, being restricted to just 84 km^2 across its present geographic range. The species is estimated to occur in no more than 3-5 threat-defined locations.

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In Djibouti, the palm is known to be mainly threatened by habitat loss due to gardening activities (agroforestry systems), habitat degradation due to diversion of surface water to irrigate gardens, torrential floods and livestock grazing. Violent flash-floods, livestock grazing, and the removal of young palms inside gardens, seriously affect the regeneration of the subpopulations, and explain the senescence (ageing nature) of the individuals. These threats have been exacerbated by a drought in the region since 2009, which has led to the drying up of springs and profound changes to both the wadi bed habitats used by the palm and the hydrological regime.

In Yemen, the species is facing extensive harvesting for timber and removal in order to plant date palms, although large stands are still present at one site (Al Jubah).

Over the last 60 years (three generations), it is inferred that the global population of mature individuals of *L. carinensis* has declined by at least 50%. The species does not occur in any effectively protected area and conservation actions are urgently needed. The species is assessed as Endangered, but at national level, the species is facing higher extinction risk; in Djibouti it could be considered to be regionally Critically Endangered and in Somalia it is thought likely to be regionally Extinct in the Wild.

Previously Published Red List Assessments

1998 – Vulnerable (VU)
http://dx.doi.org/10.2305/IUCN.UK.1998.RLTS.T30402A9544053.en

1998 – Endangered (E)

Geographic Range

Range Description:

The Bankoualé Palm, *Livistona carinensis* has been reported from three countries separated by the Gulf of Aden, in Djibouti, Yemen, and Somalia.

In Djibouti, the palm occurs in three wadi systems in the northeast of the Goda massif, more specifically in 21 small sites in five geographical groupings: Randa in wadi Eewali Eable (seven sites), Bankoualé and Ribta (with 10 and two sites respectively) in wadi Ayboli, and Dittilou and Wêr (two sites) in or above wadi Tôha (Chédeville 1972, Welch and Welch 1999, Ford *et al*. 2008).

In Yemen, the species is known from five localities in the Hadhramaut: Al Ayn and Al Mintaq in the middle Wadi Hajr (Bazara'a *et al*. 1990), Al Jubah in middle Wadi Hajr, also referred to by the village names Roba and Goba (Welch and Welch 1998), Al Ghyadhat in lower Wadi Hajr (Welch and Welch 1998) and Upper Wadi Al Himae, in Shabwa governorate (Kilian *et al*. 2004).

In Somalia, the palm was previously reported from five localities: Karin, Galgala, Marajo, the neighbouring sites of Duud Shabeel and Xamur (Barbier 1985) and Tisjiec (C. Barbier pers. comm. 1987). In the mid-1990s locals reported only two stands to exist – of adult palms – at Galgala and Tisjiec. The last known visit to look for the palm was to Karin in 1999, when no palms were recorded. There have been no reports of seedlings or young plants since the mid-1980s. Suitable habitat for the species may still be found at Karin, Galgala, Duud Shabeel and Xamur and it is possible that there are other

undiscovered subpopulations. Based on expert opinion (see list of Contributors to this assessment), the ageing population when last surveyed, and the lack of recent evidence for this species being present in Somalia, it is considered that it is likely to be at least functionally extinct in Somalia.

Excluding the historical observations from Somalia, the extent of occurrence (EOO) for this species is 19,748 km² and the area of occupancy (AOO) is restricted to just 84 km².

The species is considered to be found in 3-5 threat-defined locations. In Djibouti most of the subpopulations are threatened by habitat loss due to gardening activities and habitat degradation due to diversion of surface water to gardens. Here, "gardens" refer to agroforestry gardens where fruits trees (perennial plants) and vegetables (annual species) are planted in association. In Yemen the palm stands at Al Ayn and Al Mintaq, already much reduced in the past, are still threatened by cutting for timber and the expansion of date palm plantations. At the site of Al Jubah there still appears to be several intact stands (Google Earth 2016 images); however, it is likely that exploitation of the palms for timber and expansion of date palm plantations will have increased following the opening of an access track in 2004. As a result, with only a few outlying individuals and small subpopulations outside of these main areas, the species is considered to be found in 3-5 threat-defined locations.

Country Occurrence:

Native: Djibouti; Yemen

Possibly extinct: Somalia

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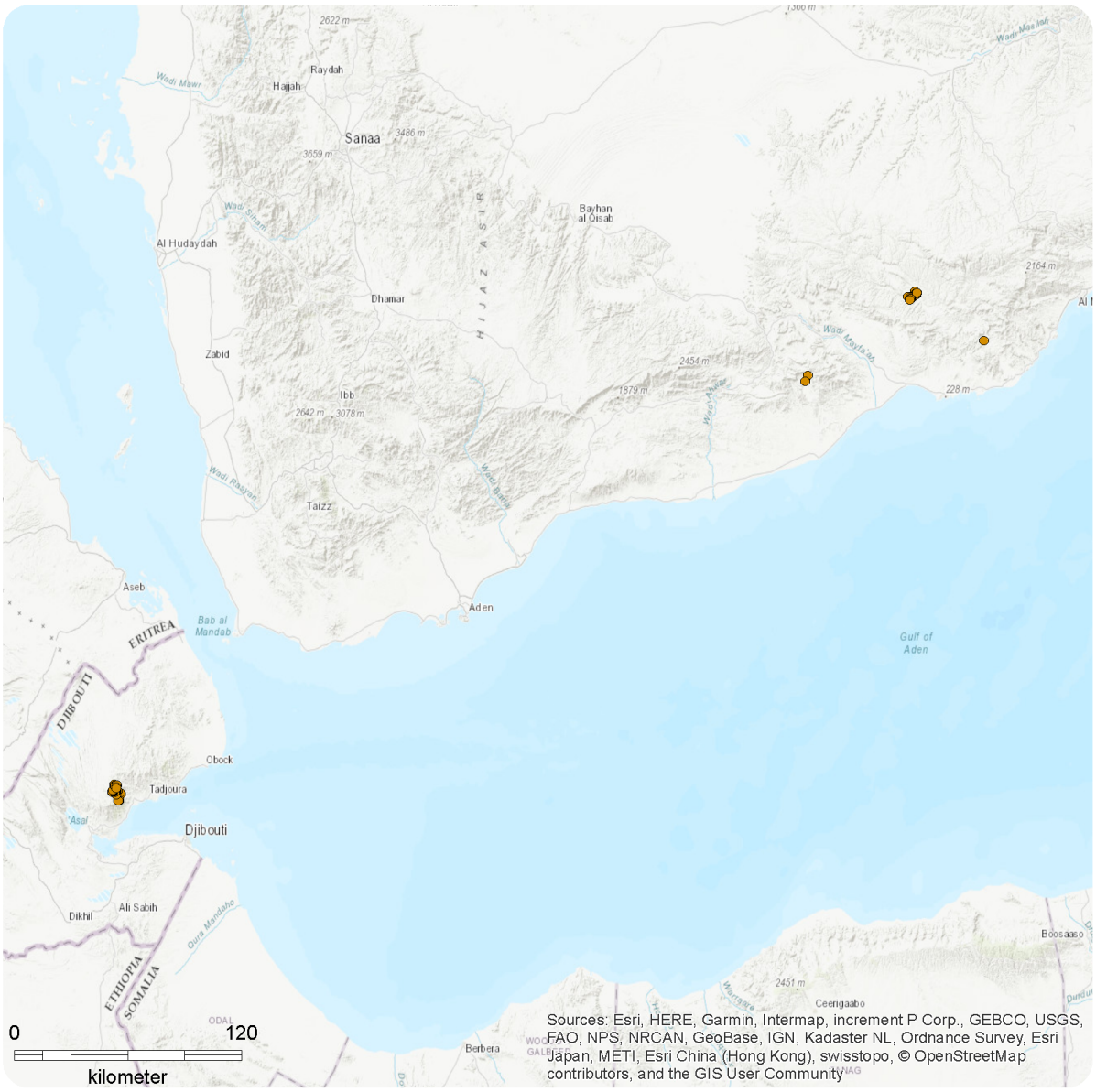
Distribution Map

Livistona carinensis



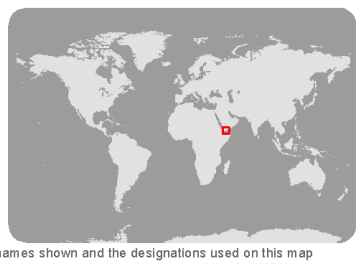
Range

- Extant (resident)

Compiled by:

IUCN SSC Palm Specialist Group

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

Almost all the known subpopulations of *Livistona carinensis* have an imbalanced age structure.

In Djibouti, the majority of trees are over-mature, and the majority of the seeding trees are expected to die from old age over a short period of time. The removal of young palms in gardens, coupled with the livestock-grazing and flash-flooding events outside gardens, greatly limit the recruitment of young palms (Welch and Welch 1999, Ford *et al*. 2008). This is likely to leave very small, fragmented subpopulations at 21 small sites.

In Somalia, juvenile palms (2-10 m of trunk, sexually mature) have never been reported. However, hundreds of young rosette palms (less than 2 m of trunk, not sexually mature) were recorded at each of the five sites in 1983-1985 (C. Barbier pers. comm. 1987), mostly growing along the irrigation ducts within the date palm plantations. The last observations of the species in Somalia dated from 1995 and 1997 when 11 and 27 mature palms (trunks of 10-40 m, sexually mature) were respectively counted at Galgala and Tisjiec (M. Thulin pers. comm. 1998).

By contrast, in Yemen, especially at Al Jubah, most subpopulations are comprised of bushy young plants (rosettes and juveniles trees), with very few tall old palms, and are thus presumed to be reproductively healthy. Indeed, Al Jubah appears to hold the largest and most intact stands of the Bankoualé Palm. Hubaishan and Bahah (M.A. Hubaishan pers. comm. 2004), estimated the number of mature individuals at 2,000 (adults and juveniles palms). Observing Google Earth 2016 satellite imagery, several dense stands can be seen, with a clumped distribution along the wadi for a distance of 5-6 km. The stands at Al-Ghyadhat and Wadi Al Himae are isolated and small, respectively one and *ca*. 90 mature individuals counted in 2003/2004 (M.A. Hubaishan pers. comm. 2004, Kilian *et al*. 2004).

The population trend for the species in Dijbouti can be inferred from subpopulation counts made between 1985 and 2015 (Welch and Welch 1999, Ford and Bealy 2004, Ford *et al*. 2008, A. Laurent pers. comm. 2015). The data which include the most sites (18) shows a decline of 21.7% over eight years. A longer set of data (12 sites), reveals a decline of 50% over 21 years (1985-2006). For the four largest sites (accounting for *ca*. 50% of the entire subpopulation for the country in 1985) there is data for the longest time period, and this shows a decline of 75.5% over 30 years. From these observed data, a population decline of at least 50% is inferred over three generations (60 years). At only one site (Satabou south) has a population increase been recorded, an increase of 23 adults (135%) over 10 years.

In Somalia, the number of mature individuals declined by 76% in 23 years, from 158 in 1973 (C. Barbier pers. comm. 1987) to 38 in 1997 (M. Thulin pers. comm. 1998). Due to the maturity of all recorded individuals and the lack of reports of young plants or seedlings when surveyed in 1997, it is not unreasonable to assume that the species is now at least functionally extinct in this region and the subpopulations in Somalia have experienced a decline of 100% over two generations (40 years). By extrapolation, it is inferred that they have experienced a decline of 100% over three generations (60 years).

In Yemen, mature palms were counted at Al Ayn and Al Mintaq in 1998 (Welch and Welch 1998) and 2004 (M.A. Hubaishan pers. comm. 2004). An 80% decline was estimated to have taken place over the six years, with the number of mature individuals falling from 970 to 196. In 1998 a total of 1936 stumps

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were also recorded - suggesting a total earlier population size of 2906, and indicating a total loss of at least 93%. Despite this, examination of 2016 satellite imagery (Google Earth), reveals many Bankoualé palms still to be present, though they are scattered among the more numerous date palms. There is not sufficient data on all the Yemen sub-populations to make an overall estimate of the degree of continuing decline over three generations. However, whilst the Al Jubah subpopulation at *ca*. 2,000 mature individuals is the most important, it can be inferred that the subpopulations in Yemen have overall experienced a continuing decline from 1989 to today.

Considering the best available data, a continuing decline in subpopulation sizes, over three generations, is inferred to be at least 50% in Djibouti, 100% in Somalia and occurring but at an undetermined rate in Yemen, leading to an inferred global continuing decline in the global population size of the species of at least 50%. The current global population for the species is estimated to comprise 2,580 mature individuals (*ca*. 2,300 in Yemen and 280 in Djibouti).
Current Population Trend: Decreasing

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

Livistona carinensis grows in the tropical dry climate of the southern Arabian Peninsula and the Horn of Africa, in semi-arid regions with rainfall of less than 400 mm per year. Most often, the species occupies the flow lines of intermittent or permanent streams in wadis, fresh and brackish water springs and oases, at an altitudinal range of 165 to 970 m.

The palm is a solitary unbranched palm, with a generally straight and slender grey-brown trunk growing to 40 m (Dowe 2009). In a natural state, it forms dense mixed age thickets with other palm species, the 30-40 m high crowns of the oldest trees over-top the rest of the stand, and the leaves of the shortest juveniles form an impenetrable thicket and micro-climate at ground level, protecting young palms from grazing and the damaging effects of extreme weather events. A presumed hermaphroditic species (work by Dowe (2009) found all the Australian species to be dioecious), seeds mature in July-August and germinate rapidly where there is water on or near the surface: flowing water facilitates seed dispersal and Shapcott *et al*. (2009) consider seed dispersal by birds is also likely. Prolific growth of seedlings may occur in wet areas, and water is essential during the early years of establishment. However, adult palms can continue to live for some time in places which have become quite dry (Welch and Welch 1999).

Due to gardening activities, diversion of surface water to gardens, and expansion of date palm plantations, a continuing decline in the extent and quality of habitat is inferred in Djibouti and Yemen (Barbier 1985, Welch and Welch 1998, Welch and Welch 1999, M.A. Hubaishan pers. comm. 2004, Ford *et al*. 2008). Indeed, the suitable areas for agricultural activities are the same places where the palm naturally grows. Although in some places adult palms are tolerated, bushy young palms are removed to make space for cultivation. Moreover, in order to develop gardening and plantations, the surface water is channeled for irrigation, leading to a continuing decline of the extent of suitable places for the germination and establishment of new individuals.

Systems: Terrestrial

Use and Trade

In Yemen, the trunk of the palm is used for house construction. People report that provides high quality

termite-resistant timber (Barbier 1985). The smaller parts not suitable for building purposes are used as good firewood and the leaves are known to be used for thatching and weaving (El Mashjary *et al.* 2001, Welch and Welch, 1999). The palm is also reported to be a source of palm wine, the sap is stored and transformed into alcohol or vinegar, and the leaves are used in basket-making (Yemen and Djibouti).

Threats (see Appendix for additional information)

In Somalia, cutting the palm for building (because the palm trunks are the only local long straight timber available) and the establishment and expansion of date palm plantations appears to have led to the disappearance of the palm in this country.

In Yemen, the major threats are also cutting for building timber and the establishment and expansion of date palm plantations (Welch and Welch 1998, M.A. Hubaishan pers. comm. 2004). However, here, perhaps because the stands and areas of suitable habitat are large, some mature young palms continue to grow among the date palm plantations at Al Ayn and Al Mintaq. The Al Jubah stands still appears intact, but it can be inferred that an increase in the unsustainable cutting of trunks for timber and expansion of the date palm plantations is likely to have occurred following the opening of an access track for vehicles in August 2004. Only the mature palms are cut because, as in Somalia, they are the only local long straight timber and are thus a valuable building material. Piles of trunks cut and ready for building use were observed at Al Mintaq in 1989 (Bazara *et al*. 1990) and 1998 (Welch and Welch 1998) and at Al Jubah in 1998 (Welch and Welch 1998) and 2004 (M.A. Hubaishan pers. comm. 2004).

In Djibouti, the major threats to the Bankoualé Palm are habitat loss due to agricultural activities, habitat degradation due to diversion of surface water to irrigate gardens, torrential floods and livestock grazing (Welch and Welch 1999, Ford *et al*. 2008). The first rural gardens were established for the production of mangoes when cheap labour was provided by the arrival of Ethiopian immigrants in the 1960s. The gardens have been built on terraces along the wadi sides in the same places where the palm grows. Although adult and small rosette palms are tolerated, bushy young palms are generally removed to make space for cultivation, and young plants are grazed by livestock. Moreover, in order to develop gardens the surface water is channelled for irrigation: as a result the only damp areas, which are protected from flash-floods and where the palm can germinate and become established, are in the gardens, putting the gardens and the palm in direct conflict. Outside the gardens, the suitable habitat for germination and establishment of young individuals has become rare due to the diversion of surface water for irrigation. The young plants are grazed by livestock, greatly reducing the survival of young plants. Additionally, the natural and regular flash-flooding events, wash away huge number of seedlings (Ford *et al*. 2008). These flash-floods, have become increasingly severe due to the gradual denuding of the water catchment. This started with the localized cutting of *Buxus hildebrandtii* bushes on the wadi sides in the early 1970s (Ethiopian immigrants used them for thatching their traditional houses) and, in 2014 became a slow but systematic removal of timber from the whole Goda massif water catchment, driven by the growing and lucrative demand for charcoal in the capital (A. Laurent pers. comm. 2017). It is also reported that adult palms are progressively uprooted due to violent summer winds (A. Laurent pers comm. 2017). These major threats are exacerbated by a drought in the region since 2009 which has led to the drying up of permanent springs and profound changes to both the wadi bed habitats used by the palm and the hydrological regime (A. Laurent pers. comm. 2017).

Conservation Actions (see Appendix for additional information)

Livistona carinensis does not occur in any effectively protected areas and there is no coordinated

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international work on the species. The species is grown *ex situ* in botanic gardens (BGCI, 2017), but populations in cultivation are small and not yet self-supporting. There have been successful *ex situ* germination trials in Yemen (S.O. Bahah pers. comm. 2016) but this work has been disrupted by civil war. Seeds from Djibouti collected in August 2007 have been deposited at the Millennium Seed Bank (UK).

Community-based conservation areas and/or micro reserves are needed to provide a suitable and practical level of protection for the remaining stands of the palm. As the largest remaining stand of *L. carinensis* in the world, Al Jubah in Yemen should be a priority site for *in situ* conservation. Effective restrictions on unsustainable harvesting for timber are needed to ensure the continued survival of the palm in Yemen. Shapcott *et al*. (2009) indicated that the subpopulations in Yemen (and Somalia if they still exist), are highly significant for the conservation of the genetic diversity of the palm.

In Djibouti, there have been positive signs of local conservation initiatives. A few young palms have been allowed to grow in peripheral areas in two gardens at Bankoualé, and some seed has been distributed in Tadjourah and Djibouti city to encourage horticultural interest in growing the palm in private gardens (A. Laurent pers. comm. 2017). At a national level, Djibouti's 2017 National Biodiversity Strategy and Action Plan (Direction de l'Environnement et du Développement Durable 2017) identifies replenishment of the underground aquifers as the primary issue for both the continuation of agricultural activities and the palm at Bankoualé, and recommends that establishment of "biodiversity conservation areas" in private gardens be integrated as much as possible into watershed management. The restoration of the *Buxus* on the mountainsides above the main wadi systems in Djibouti would help to reduce the incidence and severity of flash-floods and their impact on palm seedling survival.

In Somalia, searches should be initiated to look for any remaining palm stands, using Species Distribution Modelling and/or study of satellite imagery to pinpoint potential unexplored sites of suitable habitat where the species might be able to grow. It would also be worth carrying out feasibility studies for the re-introduction of the palm in Somalia, if suitable sites can be identified.

Credits

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Contributor(s): Bahah, O, Barbier, C., Hubaishan, A, Kilian, N., Laurent, A., Potterton, T. & Thulin, M.

Facilitators(s) and Compiler(s): Sonké, B.

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Citation

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External Resources

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Appendix

Habitats

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

Habitat	Season	Suitability	Major Importance?
5. Wetlands (inland) -> 5.9. Wetlands (inland) - Freshwater Springs and Oases	Resident	Suitable	Yes
8. Desert -> 8.1. Desert - Hot	Resident	Suitable	Yes
14. Artificial/Terrestrial -> 14.3. Artificial/Terrestrial - Plantations	Resident	Suitable	No
14. Artificial/Terrestrial -> 14.4. Artificial/Terrestrial - Rural Gardens	Resident	Suitable	Yes
15. Artificial/Aquatic & Marine -> 15.7. Artificial/Aquatic - Irrigated Land (includes irrigation channels)	Resident	Suitable	No

Threats

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

Threat	Timing	Scope	Severity	Impact Score
11. Climate change & severe weather -> 11.2. Droughts	Ongoing	Minority (50%)	Slow, significant declines	Low impact: 5
	Stresses:	1. Ecosystem stresses -> 1.3. Indirect ecosystem effects 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		
11. Climate change & severe weather -> 11.4. Storms & flooding	Ongoing	Minority (50%)	Slow, significant declines	Low impact: 5
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality		
12. Other options -> 12.1. Other threat	Ongoing	Minority (50%)	Slow, significant declines	Low impact: 5
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality		
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.2. Small-holder farming	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. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.2. Competition		
2. Agriculture & aquaculture -> 2.2. Wood & pulp plantations -> 2.2.1. Small-holder plantations	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. Species Stresses -> 2.1. Species mortality		

		2. Species Stresses -> 2.2. Species disturbance 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.2. Competition		
2. Agriculture & aquaculture -> 2.3. Livestock farming & ranching -> 2.3.2. Small-holder grazing, ranching or farming	Ongoing	Minority (50%)	Rapid declines	Medium impact: 6
	Stresses:	2. Species Stresses -> 2.1. Species mortality		
4. Transportation & service corridors -> 4.1. Roads & railroads	Ongoing	Majority (50-90%)	Slow, significant declines	Medium impact: 6
	Stresses:	1. Ecosystem stresses -> 1.3. Indirect ecosystem effects		
5. Biological resource use -> 5.3. Logging & wood harvesting -> 5.3.1. Intentional use: (subsistence/small scale) [harvest]	Ongoing	Majority (50-90%)	Rapid declines	Medium impact: 7
	Stresses:	1. Ecosystem stresses -> 1.3. Indirect ecosystem effects 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.7. Reduced reproductive success		
5. Biological resource use -> 5.3. Logging & wood harvesting -> 5.3.3. Unintentional effects: (subsistence/small scale) [harvest]	Ongoing	Minority (50%)	Slow, significant declines	Low impact: 5
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 1. Ecosystem stresses -> 1.3. Indirect ecosystem effects		
7. Natural system modifications -> 7.2. Dams & water management/use -> 7.2.3. Abstraction of surface water (agricultural use)	Ongoing	Majority (50-90%)	Slow, significant declines	Medium impact: 6
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality		

Conservation Actions in Place

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

Conservation Actions in Place
In-Place Land/Water Protection and Management
Occur in at least one PA: No
In-Place Species Management
Subject to ex-situ conservation: Yes
In-Place Education
Subject to recent education and awareness programmes: No
Included in international legislation: No
Subject to any international management/trade controls: No

Conservation Actions Needed

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

http://dx.doi.org/10.2305/IUCN.UK.2018-1.RLTS.T30402A95306943.en

Conservation Actions 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 -> 3.1. Species management -> 3.1.1. Harvest management
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
3. Species management -> 3.4. Ex-situ conservation -> 3.4.2. Genome resource bank
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
2. Conservation Planning -> 2.1. Species Action/Recovery Plan
2. Conservation Planning -> 2.2. Area-based Management Plan
3. Monitoring -> 3.1. Population trends
3. Monitoring -> 3.2. Harvest level trends

Additional Data Fields

Distribution
Estimated area of occupancy (AOO) (km^2): 84
Extreme fluctuations in area of occupancy (AOO): Unknown
Estimated extent of occurrence (EOO) (km^2): 19748
Number of Locations: 3-5
Lower elevation limit (m): 165
Upper elevation limit (m): 970
Population
Number of mature individuals: 2580
Continuing decline of mature individuals: Yes
Extreme fluctuations: No
Population severely fragmented: No

http://dx.doi.org/10.2305/IUCN.UK.2018-1.RLTS.T30402A95306943.en

Habitats and Ecology
Continuing decline in area, extent and/or quality of habitat: Yes
Generation Length (years): 20

The IUCN Red List Partnership

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

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