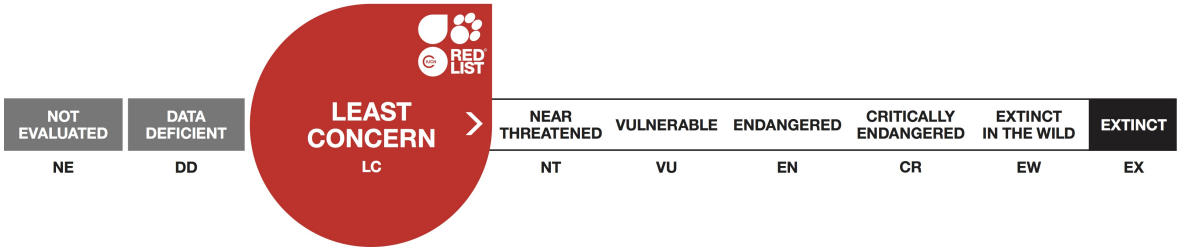
The IUCN Red List of Threatened Species™
ISSN 2307-8235 (online)
IUCN 2008: T62537A3116134
Scope: Global
Language: English

Quercus ilex, Holm Oak

Assessment by: Rankou, H., M'SOU , S., Barstow, M., Harvey-Brown, Y. & Martin, G.



View on www.iucnredlist.org

Citation: Rankou, H., M'SOU , S., Barstow, M., Harvey-Brown, Y. & Martin, G. 2017. *Quercus ilex. The IUCN Red List of Threatened Species 2017*: e.T62537A3116134.
http://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T62537A3116134.en

Taxonomy

Kingdom	Phylum	Class	Order	Family
Plantae	Tracheophyta	Magnoliopsida	Fagales	Fagaceae

Taxon Name: *Quercus ilex* L.

Synonym(s):

- *Quercus alpina* Endl.
- *Quercus castellana* Poir.
- *Quercus cookii* Loudon
- *Quercus expansa* Poir.
- *Quercus crispa* K. Koch

Regional Assessments:

- Europe

Infra-specific Taxa Assessed:

- *Quercus ilex* ssp. *ballota*

Common Name(s):

- English: Holm Oak, Evergreen oak
- Spanish: Carrasca, Chaparra, Encina Dulce, Mata Parda, Sardon

Taxonomic Source(s):

The Plant List. 2017. The Plant List. Version 1.1. Available at: http://www.theplantlist.org/.

Taxonomic Notes:

Here we are treating this taxon *Quercus ilex* s.s. not including *Quercus rotundifolia*

Assessment Information

Red List Category & Criteria: Least Concern ver 3.1

Year Published: 2017

Date Assessed: January 27, 2017

Justification:

Quercus ilex is a large tree species widespread across the Mediterranean, Balkan regions of Europe, Turkey and North Africa. The overall population trend of *Q. ilex* is considered to be stable and the subpopulation size varies from small to large in most of its localities. *Quercus ilex* is under numerous low to medium impact threats, especially: ruthless collection for domestic uses and for trade, collection practices, overgrazing, deforestation, human activities, fungal infections and climate change.

The estimated extent of occurrence (EOO) and the estimated area of occupancy (AOO) of *Quercus ilex* are greater than 20,000 km^2 and 2,000 km^2 respectively. In addition, the threats affecting the species globally are unlikely to cause the overall population to decline to the extent that it falls into a threatened

http://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T62537A3116134.en

category especially if the recommended conservation measures are applied. Therefore, *Quercus ilex* is assessed globally as Least Concern (LC).

Geographic Range

Range Description:

Quercus ilex is widespread across the Mediterranean and Balkan regions of Europe, in North Africa and in Turkey (Euro+Med 2015, WCSP 2017, GRIN 2017, GBIF 2017). Within this range, the species is most common in western zones of the Mediterranean basin with a decline in occurrence moving east (Babero *et al.* 1992, Charco 2001). The species occurs in a few localities on the coast of the Black Sea (Babero *et al.* 1992, Meusel and Jager 1998).

In Europe, the species is found from Spain, east through Italy to Greece, Malta and the Balkan states (Tutin *et al.* 1993, Euro+Med 2015, WCSP 2017). In Spain, *Quercus ilex* occurs in the autonomies of Andalusia, Extremadura, Castilla-León, Castilla-La Mancha and Madrid (Corcuera *et al.* 2004, Tuset *et al.* 2006, Patón Dominguez *et al.* 2010, de Rigo and Caudullo 2016).

In North Africa, the species occurs in Morocco, Algeria, Tunisia and Libya (Babero *et al.* 1992, Charco 2001). In Algeria, *Q. ilex* occurs in the Saharan Atlas, the Tellian Atlas, Kabylia forests and the mountains of Tlemcen between 350 m and 1,600 m of altitude (Battandier and Trabut 1890, Maire 1926, Quezel and Santa 1962, Quezel 1976). In Morrocco, *Q. ilex* makes up the primary forest type and is found in most of the major floristic divisions up to 2,900 m of altitude but not in the arid regions; Moroccan Sahara and Eastern lands (Fennane *et al.* 1999, Mhirit and Blérot 1999, Charco 2001, Fennane and Ibn Tattou 2005). In Tunisia, *Q. ilex* occurs in the alticolous part of the ridges and the high plateaus in the Forests of Kessera and Sakiet Sidi Youssef. Here it is also found in the Rora mountains, Bessouagi, Abderrahman mountains and it is generally an element of the undergrowth of the pine forests in Bargou, Southern Kroumirie (Pottier-Alapetite 1979, Le Floc'h *et al.* 2010). In Libya, *Q. ilex* occurs in the Green Valley (Charco 2001).
Quercus ilex has a wide attitudinal range from sea level up to 1,800 m in southern Spain (de Rigo and Caudullo 2016) and up to 2,900 m asl in Morocco, in the western High Atlas (Babero *et al.* 1992, Meusel and Jager 1998). In other places, the species elevation range is more limited and not as extreme (Barbero *et al.* 1992). The estimated EOO and the estimated AOO exceed the threatened categories threshold.

Country Occurrence:

Native: Albania; Algeria; Bosnia and Herzegovina; Croatia; France (Corsica, France (mainland)); Greece (East Aegean Is., Greece (mainland), Kriti); Italy (Italy (mainland), Sardegna, Sicilia); Libya; Malta; Montenegro; Morocco; Serbia; Slovenia; Spain (Baleares, Spain (mainland)); Switzerland; Tunisia; Turkey (Turkey-in-Asia, Turkey-in-Europe)

Population

In the Mediterranean Basin, *Q. ilex* covers more than 2 million ha of forest with the largest subpopulations in Algeria and Spain but we have to take the population sizes and numbers with a great caution, especially when there is no forest inventory. Therefore it is here estimated that population sizes are as follows: Spain 2890,000 ha, Portugal 530,000 ha, France 350,000 ha, Italy 380,000 ha, Tunisia 80,000 ha and Algeria 680,000 ha (Rima 2009).

In Europe, *Q. ilex* population size is currently assumed to be large and in Italy, it is even considered the dominant vegetation type. In Spain, *Quercus ilex* and *Quercus suber* are the main species of the genus (González Alonso 2008), they are found growing in large extensions and dense populations that occupy approximately 10% of the total area of the country (Tuset *et al.* 2006). Sixty percent of the Mediterranean distribution of *Q. ilex* is located in Spain within “dehesa” forests (Patón Dominguez *et al.* 2010) and 831,000 ha are present in the Extremadura region (Corcuera *et al*. 2004).

In North Africa, the species is very common and has a very wide range (Babero *et al.* 1992, Charco 2001). In Algeria, *Q. ilex* occupies a very large part of the forest surface with dense and high population size (Battandier and Trabut 1890, Maire 1926, Quezel and Santa 1962, Quezel 1976). In Morocco, *Q. ilex* is the first forest species by its surface area (1,415,201 ha) and by its production of firewood, the populations size varies from occasional to abundant and is called the "living cement that connects the forest massifs" (Mhirit et Blérot 1999, Banabid 2002). In Tunisia, *Q. ilex* populations size varies from rare to occasional in most of its stations (Agence Nationale de Protection de l’Environnement 2005).

Overall, the population trend of *Q. ilex* is considered to be stable but is predicted to decrease in the future due to many threats and the population could become patchy (de Rigo and Caudullo 2016).
Current Population Trend: Stable

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

Quercus ilex grows on a wide variety of Mediterranean bio-climates that range from semi-arid to very humid and from warm to very cold at high altitudes (Barbero *et al*. 1981, 1992; Quezel *et al.* 1987; de Rigo and Caudullo 2016). This large tree species expands up to 20 to 30 m in height and it is a long lived species, with some individuals surviving past 1,000 years (de Rigo and Caudullo 2016).

The species tolerates shade, cold and hot climates; surviving at below -24°C in short periods within Morocco (Knop 2002) and up to 42°C (Rima 2009). *Quercus ilex* has a rainfall range from 384 mm to 1,462 mm but under certain conditions, it can tolerate a minimum of 250 mm (Sauvage 1949, 1961). The species is found in all types of siliceous or calcareous substrate but prefers mobile substrates and hydromorphic soils (Achhal 1979). *Quercus ilex* flowers from April to May, fructifying from October to December (Charco 2001).

It can form single or mixed stands in less optimal sites but with the greatest densities being found in the more favourable areas (de Rigo and Caudullo 2016). The vegetation communities and associations where *Quercus ilex* is found are:
1) Matorral vegetation, where it develops in cold and semi-arid climates at high altitudes (North Africa, Spain) and is associated with Spanish juniper (*Juniperus thurifera*), belonging to the association *Junipero*

http://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T62537A3116134.en

thuriferae-Quercion.
2) Arboreal pre-forest where the species is isolated or in clumps and it is often associated with conifers, typically Aleppo pine (*Pinus halepensis*), belonging to the association *Rhamno-Quercion cocciferae*.
3) Sclerophyllous forests and maquis vegetation where *Q. ilex* is dominant belonging to the order *Quercetalia ilicis* (Barbero *et al.* 1992). In the Iberian Peninsula, *Quercus ilex* is typically associated with Olive (*Olea europea* subsp. *sylvestris*), Carob (*Ceratonia siliqua*), Cork Oak (*Quercus suber*), and in the undergrowth with Strawberry Tree (*Arbutus unedo*), Mock Privet (*Phillyrea angustifolia*), Mediterranean Buckthorn (*Rhamnus alaternus*) and Terebinth (*Pistacia terebinthus*) (Barbero *et al.* 1992, Davies *et al.* 2004).

Systems: Terrestrial

Use and Trade

Quercus ilex bark is used for the extraction of tannins (Praciak 2013) which is used for the hemostatic and healing care of lesions and wounds, usually in a powdered form but sometimes in decoction (Bellakhdar 1997). The bark powder is also used orally as an antidiarrheal agent and in the treatment of diseases of the stomach and colon (Bellakhdar 1997). Its glands and the cork oak glands are used for human food. They are sold in the souks and they are eaten raw or boiled in water. They can also be used for livestock fodder; especially in the Moroccan high Atlas (Bellakhdar 1997).

Groves of this tree have been coppiced for firewood or for the production of charcoal (Bellakhdar 1997). The species can be used for timber but this is of low value because it is very hard and difficult to dry and carve. Hence, *Quercus ilex* wood is used for making only small tools which undergo heavy usage, for example carpentry tools, handles, gear teeth, etc (Praciak 2013, de Rigo and Caudullo 2016). *Quercus ilex* woodlands are historically managed as savanna-like ecosystems, with large, isolated trees emerging from a grassland (Vicente and Alés 2006) which provides shading for livestock, firewood from pruning and refuge and breeding sites for a large number of vertebrates.
The phytochemical analysis of the different parts of the *Quercus ilex* showed that the fruits are rich in fatty acids, amino acids, mineral elements and the quantitative determination of proteins, Starch (Bellakhdar 1997, Charef 2011). The bark of *Q. ilex* is very rich in tannins and the leaves are rich in free quinic acid and shikimic acid (Bellakhdar 1997, Charef 2011).

Threats (see Appendix for additional information)

One of the current major threat to *Quercus ilex* and its forests are fires and anthropogenic land use changes that have led to the clearance of forests. Historically *Quercus ilex* has also been negatively affected by exploitation for wood and by livestock grazing. The species is heavily collected by locals and collectors for domestic uses or to trade nationally, in Morocco the species is traded for 3–5 dirhams/kg for the fruit and 1,000–3,000 dirhams for one tree (H. Rankou and M'sou pers. comm. 2017). Consequently, large areas of forests have been replaced by agriculture and human settlement (de Rigo *et al.* 2016). In some cases, this has led to the entire removal of some subpopulations (Ortego and Bonal 2010). The species is at risk from population decline due to climate change which is increasing the occurrence of drought over the species range. This can result in the species being replaced by more drought tolerant species. Alongside climate change, other human factors, such as increased soil and air contamination/pollution are also a threat to the species. Populations are also negatively impacted by the fungal pathogens; *Phytophthora quercina*, *Phytophthora cinnamomi*, *Phytophthora ramorum*, and

http://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T62537A3116134.en

cankers caused by *Cryphonectria parasitica* (Praciak *et al.* 2013, de Rigo and Caudullo 2016). Pests and diseases are considered a minor threat.

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

Quercus ilex is found in 144 *ex situ* collections from across its distribution (BGCI 2017). The species as listed as Vulnerable in Switzerland (Moser *et al.* 2002), Endangered in Albania (MEA 2013) and rare in Malta (Lanfranco *et al.* 1989). Within Europe the species has been assessed on the IUCN Red List as Least Concern (2016). It is recommended that the extent of decline in population across the species range should be investigated, and necessary action taken. Further research into the impact of climate change on the species is also essential. In general the species requires greater habitat protection; including the protection of subpopulation from habitat degradation, the fencing of the most vulnerable sites into forest enclosures of protected areas and the limitation of agricultural expansion in these areas. Where degradation has already occurred regeneration should be implemented. There is the need for greater public awareness of the importance of this species to enable and improves its protection.

Credits

Assessor(s): Rankou, H., M'SOU , S., Barstow, M., Harvey-Brown, Y. & Martin, G.

Reviewer(s): Westwood, M.

Facilitators(s) and Compiler(s): Rivers, M.C.

http://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T62537A3116134.en

Bibliography

Achhal. 1979. Le chêne vert dans le Haut Atlas central: Etde phytoécologique. Problèmes posé par les aménagements de la chênaie. Univ.Aix.Marseille.

Arbolapp (CSIC/FECYT). 2017. Quercus ilex. Available at: http://www.arbolapp.es/en/species/info/quercus-ilex/. (Accessed: Jan 2017).

Babero, M., Loisel, R. and Quézel, P. 1992. Quercus ilex L. ecosystems: function, dynamics and management. In: Romane, F. and Terrads (eds), *Advances in Vegetation Science*, pp. 19-34. Springer, Netherlands.

Barbero M., Loisel, R., Quézel P. 1992. Quercus ilex L. ecosystems: function, dynamics and management. In: Romane, F. and Terradas, J. (eds), *Advances in vegetation science*, Springer Netherlands, Netherlands.

Barbero, M., Quézel, P. and Rivas-Martínez, S. 1981. Contribution à l'étude des groupements forestiers et préforestiers du Maroc. *Phytocoenologia* 9(3): 311-412.

Battandier, J.A. and Trabut, M. 1888-1890. *Flore de l'Algérie - Ancienne Flore d'Alger Transformée*. A.Jourdan, Alger.

Bellakhdar, J. 1997. *La pharmacopée Marocaine traditionnelle. Médecine arabe ancienne et Savoirs populaires*. Ibis Press, Paris.

Benabid, A. 2002. *Flore et écosystèmes du Maroc. Évaluation et préservation de la biodiversité*. Ibis Press, Paris.

Charco, J. 2001. *Guia de los arboles y arbustos del Norte de Africa: claves de determinacion, descripciones, ilustraciones y mapas de distribucion*. Agencia Espanola de Cooperacion Internacional, Madrid.

Charef, M. 2011. *Contribution à l ' étude de la composition chimique et étude des propriétés phytochimiques et nutritionnelles des lipides des fruits de Pistacia lentiscus et du Quercus.* Universite Kasdi Merbah Ouargla.

Corcuera L, Camarero JL and Gil-Pelegrín E, 2004. Effects of a severe drought on Quercus ilex radial growth and xylem anatomy. . *Trees* 18: 83-92.

Davies, C.E., Moss, D. and Hill, M.O. 2004. *EUNIS habitat classification - revised*. European Environment Agency, Paris.

de Rigo, D. and Caudullo, G. 2016. *Quercus ilex* in Europe: distribution, habitat, usage and threats. *European Atlas of Forest Tree Species*, Publ. Off. EU.

Euro+Med. 2015. Euro+Med PlantBase. Berlin-Dahlem. Available at: http://ww2.bgbm.org/EuroPlusMed/query.asp.

Fennane, M. and Ibn Tattou, M. 2005. *Flore vasculaire du Maroc : inventaire et chorologie*. Travaux de l'Institut Scientifique, Rabat.

Fennane, M., Ibn Tattou, M., Mathez, J., Ouyahya, A. and El Oualidi, J. 1999. *Pteridophyta Gymnospermae, Angiospermae (Lauraceae – Neuradaceae), Flore pratique du Maroc: manuel de détermination des plantes vasculaires*. Rabat Institut Scientifique, Rabat.

GBIF. 2017. Global Biodiversity Information Facility (GBIF) Data Portal. Available at: data.gbif.org.

González Alonso, C. 2008. Analysis of the oak in decline in Spain; La Seca. Swedish University of

Agricultural Sciences.

GRIN. 2017. Germplasm Resources Information Network - (GRIN) [Online Database]. Available at: https://npgsweb.ars-grin.gov/gringlobal/taxon/taxonomyquery.aspx. (Accessed: January 2017).

IUCN. 2017. The IUCN Red List of Threatened Species. Version 2017-3. Available at: www.iucnredlist.org. (Accessed: 7 December 2017).

Knop, H.E. 2002. Enzyklopädie der Holzgewächse: Handbuch und Atlas der Dendrologie.In: Roloff, A., Weisgerber, H., Lang, U.M., Stimm, B., and Schütt, P. (eds), Wiley-Vch Verlag, Weinheim.

Lanfranco, E. 1989. The Flora. In: Schembri, P.J. & Sultana, J. (ed.), *Red data book for the Maltese Islands*, pp. 5-70. Malta: Department of Information., Valletta.

Le Floc'h, É., Boulos, L. and Vela, E. 2010. *Catalogue synonymique commenté de la flore de Tunisie*. Simpact.

Maire, R. 1926. Carte phytogéographique de l'Algérie et de la Tunisie. *Alger. Bacconier*: 78.

MEA. 2013. Order Nr. 1280 dt. 20.11.2013, For approval of the red list of wild Flora and Fauna of Albania. Ministry of Environment of Albania, Tirana.

Meusel, H. and Jager, E. (eds). 1998. *Vergleichende Chorologie der Zentraleuropäischen Flora - Band I, II, III* . Gustav Fischer Verlag, Jena.

Mhirit, O and Blérot, P. 1999. *Le grand livre de la forêt marocaine*. Editions Mardaga, Amazon France.

Moser, D., Gygax, B., Bäumler, B., Wyler, N. and Palese, R. 2002. *Liste Rouge des fougères et plantes à fleurs menacées de Suisse*. Centre du Réseau Suisse de Floristique, Chambésy, Conservatoire et Jardin botaniques de la Ville de Genève, Berna.

Nieto Quintano, P., Caudullo, G. and de Rigo, D. 2016. *Quercus pyrenaica* in Europe: distribution, habitat, usage and threats. *European Atlas of Forest Tree Species.*, Publ. Off. EU.

Ortego, J., Bonal, R. and Munoz, A. 2010. Genetic consequences of habitat fragmentation in long-lived tree species: The case of the Mediterranean Holm Oak (*Quercus* ilex, L.). *Journal of Heredity* 101(6): 717-726.

Patón Dominguez, D., García-Herrera R., Cuenca J, Galavis M. and Roig FA. 2010. Influence of Climate on Radial Growth of Holm Oaks (Quercus Ilex Subsp. Ballota Desf) from SW Spain. *Geochronometria* 34: 49-56.

Pottier-Alapetite, G. 1979-1981. *Flore de la Tunisie (Angiospermes-Dicotylédones)*. Publications Scientifiques Tunisiennes, Ministère de l'Enseignement Supérieur et de la Recherche Scientifique, Ministère de l'Agriculture, Tunis.

Praciak, A. et al. 2013. *The CABI encyclopedia of forest trees* . CABI, Oxfordshire, UK.

Quezel, P. 1976. Les forêts du pourtour méditerranéen. *Forêts et maquis méditerranéens: écologie, conservation et aménagement*, pp. 9-33. UNESCO, Paris.

Quézel, P. and Santa, S. 1962. *Nouvelle flore de l'Algérie et des régions désertiques méridionales*. CNRS, Paris.

Quézel, P., Barbero, M. and Beabid, A. 1987. Contribution à l'étude des groupements forestiers et préforestiers du Haut Atlas oriental (Maroc). *Ecologia Mediterranea* 13: 107-117.

Rima, H. 2009. Stress thermique et limite écologique du Chêne vert en Algérie. Faculté des Sciences de

la nature et de la vie Département de Biologie., Universite Mentouri, Constantine.

Sauvage, C. 1949. Les reliques de la Flore tropicale au Maroc. *Bulletin de la Société des Sciences Naturelles du Maroc* 29: 117-130.

Sauvage, C. 1961. Recherches géobotaniques sur les subéraies marocaines. *Trav. Inst. Sci. Chérifien, Rabat, sér. botanique* 21: 462.

Tuset, J. J., Hinarejos, C., Mira, J. J. and Cobos J. M. 1996. Implicación de Phytophthora cinnamomi en la enfermedad de la seca de encinas y alcornoques. *Boletín de sanidad vegetal, Plagas* 22: 491-499.

Tutin, T.G., Burges, N.A., Chater, A.O., Edmondson, J.R., Heywood, V.H., Moore, D.M., Valentine, D.H., Walters, S.M. and Webb, D.A. (eds) 1993. *Flora Europaea* Volume 1. Cambridge University Press.

Vincente, A.M. and Alés, R.F. 2005. Long Term Persistence of Dehesas. Evidences from History. *Agroforestry Systems* 67(1): 19-28.

WCSP. 2017. World Checklist of Selected Plant Families. London Available at: http://apps.kew.org/wcsp/prepareChecklist.do;jsessionid=ECDDCE112435111F231BD58DBBB31444?checklist=selected_families%40%40322181120151045335.

Citation

Rankou, H., M'SOU , S., Barstow, M., Harvey-Brown, Y. & Martin, G. 2017. *Quercus ilex. The IUCN Red List of Threatened Species 2017*: e.T62537A3116134. http://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T62537A3116134.en

Disclaimer

To make use of this information, please check the Terms of Use.

External Resources

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

Appendix

Habitats

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

Habitat	Season	Suitability	Major Importance?
1. Forest -> 1.4. Forest - Temperate	Resident	Suitable	Yes
3. Shrubland -> 3.4. Shrubland - Temperate	Resident	Suitable	-
3. Shrubland -> 3.8. Shrubland - Mediterranean-type Shrubby Vegetation	Resident	Suitable	Yes

Threats

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

Threat	Timing	Scope	Severity	Impact Score
1. Residential & commercial development -> 1.1. Housing & urban areas	Past, unlikely to return	Unknown	Rapid declines	Past impact
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 2. Species Stresses -> 2.1. Species mortality		
1. Residential & commercial development -> 1.2. Commercial & industrial areas	Past, unlikely to return	Unknown	Unknown	Past impact
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 2. Species Stresses -> 2.1. Species mortality		
11. Climate change & severe weather -> 11.2. Droughts	Future	Unknown	Unknown	Unknown
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 2. Species Stresses -> 2.1. Species mortality		
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.3. Agro-industry farming	Ongoing	Unknown	Unknown	Unknown
	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. Agriculture & aquaculture -> 2.3. Livestock farming & ranching -> 2.3.3. Agro-industry grazing, ranching or farming	Ongoing	Unknown	Rapid declines	Unknown
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality		
5. Biological resource use -> 5.3. Logging & wood harvesting -> 5.3.1. Intentional use: (subsistence/small scale) [harvest]	Ongoing	Unknown	Unknown	Unknown
	Stresses:	2. Species Stresses -> 2.1. Species mortality		

http://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T62537A3116134.en

7. Natural system modifications -> 7.1. Fire & fire suppression -> 7.1.3. Trend Unknown/Unrecorded	Ongoing	Unknown	Unknown	Unknown
	Stresses:	2. Species Stresses -> 2.1. Species mortality		
9. Pollution -> 9.5. Air-borne pollutants -> 9.5.4. Type Unknown/Unrecorded	Ongoing	Unknown	Unknown	Unknown
	Stresses:	2. Species Stresses -> 2.2. Species disturbance		

Conservation Actions in Place

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

Conservation Actions in Place
In-Place Species Management
Subject to ex-situ conservation: Yes

Conservation Actions Needed

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

Conservation Actions Needed
1. Land/water protection -> 1.1. Site/area protection
3. Species management -> 3.2. Species recovery
4. Education & awareness -> 4.3. Awareness & communications

Research Needed

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

Research Needed
1. Research -> 1.5. Threats
2. Conservation Planning -> 2.2. Area-based Management Plan
3. Monitoring -> 3.1. Population trends

Additional Data Fields

Distribution
Estimated extent of occurrence (EOO) (km^2): 4132000
Lower elevation limit (m): 0
Upper elevation limit (m): 2900
Population
Population severely fragmented: No

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.