

The IUCN Red List of Threatened Species™ ISSN 2307-8235 (online) IUCN 2008: T33048A2831968 Scope: Global Language: English

# **Diospyros crassiflora**, Ebony

### Assessment by: Schatz, G.E., Lowry, II, P.P., Onana, J.-M., Stévart, T. & Deblauwe , V.



View on www.iucnredlist.org

**Citation:** Schatz, G.E., Lowry, II, P.P., Onana, J.-M., Stévart, T. & Deblauwe , V. 2019. *Diospyros crassiflora*. The IUCN Red List of Threatened Species 2019: e.T33048A2831968. <u>http://dx.doi.org/10.2305/IUCN.UK.2019-1.RLTS.T33048A2831968.en</u>

### Copyright: © 2018 International Union for Conservation of Nature and Natural Resources

Reproduction of this publication for educational or other non-commercial purposes is authorized without prior written permission from the copyright holder provided the source is fully acknowledged.

*Reproduction of this publication for resale, reposting or other commercial purposes is prohibited without prior written permission from the copyright holder. For further details see <u>Terms of Use</u>.* 

The IUCN Red List of Threatened Species<sup>™</sup> is produced and managed by the <u>IUCN Global Species Programme</u>, the <u>IUCN</u> <u>Species Survival Commission</u> (SSC) and <u>The IUCN Red List Partnership</u>. The IUCN Red List Partners are: <u>Arizona State</u> <u>University</u>; <u>BirdLife International</u>; <u>Botanic Gardens Conservation International</u>; <u>Conservation International</u>; <u>NatureServe</u>; <u>Royal Botanic Gardens</u>, <u>Kew</u>; <u>Sapienza University of Rome</u>; <u>Texas A&M University</u>; and <u>Zoological Society of London</u>.

If you see any errors or have any questions or suggestions on what is shown in this document, please provide us with <u>feedback</u> so that we can correct or extend the information provided.

## Taxonomy

Kingdom	Phylum	Class	Order	Family
Plantae	Tracheophyta	Magnoliopsida	Ericales	Ebenaceae

### Taxon Name: Diospyros crassiflora Hiern

### Synonym(s):

- Diospyros ampullacea Gürke
- Diospyros evila Pierre ex A.Chev.
- *Diospyros incarnata* Gürke ex De Wild.

### Common Name(s):

• English: Ebony

## **Assessment Information**

Red List Category & Criteria:	Vulnerable A4c <u>ver 3.1</u>		
Year Published:	2019		
Date Assessed:	July 2, 2018		

### Justification:

*Diospyros crassiflora* is a widespread tall tree in African evergreen Guineo-Congolian forest, distributed from Benin province in southern Nigeria to southernmost Gabon, and eastwards into the Congolian basin in a narrow band between the equator and 4 degrees N latitude to the easternmost rim of the basin at 1,000 m altitude. The trees are harvested for their dark heartwood, the source of West African Ebony. Recent studies have estimated a total population size of 30.9 million mature individuals. In Cameroon, the largest exporter of West African Ebony, 1,200 trees are harvested/year. Because the market for ebony is relatively small (primarily for string musical instruments, i.e., guitars and violins), exploitation of the trees for wood is not considered to be the most severe long-term threat. In addition, a current Sustainable Ebony Project has the goal of planting 15,000 trees/year in the rural communities in Cameroon where trees are being harvested. Rather, the most severe long-term threat is the conversion of forest to agriculture and grazing, as well as logging of other commercial timber species. With a suspected population reduction of over 16% having already occurred in the past 120 years, a total population reduction of greater than 30% is projected within the next 100 years (a total of three generations from 1898 to 2118) due to a decline in the area of occupancy and quality of habitat, hence the species qualifies for listing as Vulnerable.

### **Previously Published Red List Assessments**

1998 – Endangered (EN) http://dx.doi.org/10.2305/IUCN.UK.1998.RLTS.T33048A9753158.en

1998 – Not Threatened (nt)

# **Geographic Range**

#### **Range Description:**

*Diospyros crassiflora* is a relatively widespread Guineo-Congolian species excluding the Upper Guinea. It is known from Benin province in southern Nigeria to southernmost Gabon and extends eastwards into the Congolian region in a narrow belt between the equator and 4 degrees north to the eastern rim of the Zaire basin at an altitude of 1,000 m (White 1978). It appears to be absent from the very wettest forest (Equatorial Guinea and northern Gabon). Although it is not a characteristic member of dry semi-evergreen forest, it occurs within islands of evergreen forest within dry semi-evergreen forest.

In Cameroon, this species is well known near Victoria and Kribi. It is also found towards Mamfe, Lomie, Bafia, Yaounde, Abong Mbang, Bertoua and Yokadouma. It is quite rare in the Libreville region (Letouzey and White, 1970).

#### **Country Occurrence:**

**Native:** Cameroon; Central African Republic; Congo; Congo, The Democratic Republic of the; Gabon; Nigeria

# **Distribution Map**

Diospyros crassiflora



#### Range

• Extant (resident)

Compiled by: IUCN SSC Central African Plant Red List Authority





The boundaries and names shown and the designations used on this map do not imply any official endorsement, acceptance or opinion by IUCN.

© The IUCN Red List of Threatened Species: Diospyros crassiflora – published in 2019. http://dx.doi.org/10.2305/IUCN.UK.2019-1.RLTS.T33048A2831968.en

## Population

Based upon the geographical coordinates of known populations of *Diospyros crassiflora*, collated from herbarium records, tree inventory data from old-growth forest, and timber company data, a recent environmental niche analysis estimated 1.36 million km<sup>2</sup> of suitable habitat. By 2000, 14% of the suitable habitat had been converted to degraded forest or cropland, leaving 1.167 million km<sup>2</sup> of suitable habitat remaining. Based on data from 448 tree inventories within the remaining suitable habitat, *D. crassiflora* has an average density of 26.5 trees greater or equal to 10 cm DBH (the estimated minimum diameter at which trees may flower) per square kilometre. Therefore, in the year 2000, there were an estimated 30.9 million mature individuals of *D. crassiflora* over its entire range. Over a period of three generations (generation length estimated to be approximately 140-220 years), with 120 years in the past, during which an estimated 16.4% of the original suitable habitat has been lost, and 100 years in the future, with an additional minimum of 14% loss of suitable habitat (likely considerably more with an increased rate of conversion of intact forest to degraded forest and cropland), a corresponding greater than 30% population reduction is suspected.

Current Population Trend: Decreasing

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

Lowland evergreen rainforest (Hutchinson *et al.* 1927, Burkill 1985). However, it may also be found in islands of mature, semi-deciduous forest near the coast or also in islands of evergreen rainforest within semi-deciduous Sterticulaceae or Ulmaceae forest (Letouzey and White, 1970).

Systems: Terrestrial

## Use and Trade

The ebony heart wood is much in demand for export trade from the countries of origin, which has led to over-exploitation. The exported ebony has been used for blackwood cabinetry and furniture manufacture (Hutchinson *et al.* 1927, Letouzey and White 1970), and is now mainly utilized in the manufacture of string instruments (guitars, violins, etc.) for the fretboard.

The wood of young trees is flexible and is used in the Republic of Congo to make crossbows. The bark is used in Gabon with the red heartwood of *Pterocarpus soyauxii* (Leguminaceae) to treat yaws. In the Democratic Republic of the Congo it is applied to sores (Bouquet 1972) and a bark decoction is taken in draught and by enema for ovarian troubles. Leaf sap is instilled into the eyes for purulent opthalmia (Burkill 1985). Recently, the species has been listed among 29 species suitable for use in the manufacture of Chinese hongmu furniture, but it is unclear to what extent it is currently being imported into China from Central Africa.

### Threats (see Appendix for additional information)

The market for ebony wood from *Diospyros crassiflora* is relatively small. Cameroon, the largest exporter, allows an annual harvest of 1,200 trees. Thus, despite a steady reduction in mature individuals, logging is not the most severe long-term threat to the species over its entire range. Rather, conversion of forest for agriculture and grazing, and commercial logging for other species, are projected to result in a population size reduction of 30% over the next 100 years, due to a decline in the overall

area of occupancy and quality of habitat. The wood is thought to have been overexploited in the regions of Yabassi, d'Edea and Libreville in Cameroon (Letouzey and White 1970).

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

The Sustainable Ebony Project (https://www.cbi.ucla.edu/projects/sustainable-ebony-project/) has been underway in Cameroon since 2016. Its goals are to:

1. Create a scalable program for the sustainable production and stewardship of ebony seedlings in rural areas;

2. Model West African ebony distribution to identify a sustainable harvesting rate and appropriate planting areas;

3. Understand the basic ecology of ebony necessary to enhance natural reproduction and dispersal, and test restoration approaches to determine the most successful methods; and

4. Test alternative propagation approaches, including tissue culture, to identify optimal conditions for cultivating ebony.

The goal is to plant 15,000 ebony trees/year in a number of different rural communities where mature ebonies are being harvested.

## Credits

Assessor(s): Schatz, G.E., Lowry, II, P.P., Onana, J.-M., Stévart, T. & Deblauwe , V.

**Reviewer(s):** Hilton-Taylor, C.

# Bibliography

Bouquet, A. 1972. Plantes Medicinales du Congo-Brazzaville. Orstom, Paris.

Burkill, H.M. 1985. The Useful Plants of West Tropical Africa. Royal Botanic Gardens, Kew.

Govaerts, R. 2009. World Checklist of Ebenaceae. Available at: <u>http://www.kew.org/wcsp/</u>. (Accessed: 4 December 2009).

Hutchinson, J., Dalziel, J.M. and Hepper, F.N. 1927. *Flora of West Tropical Africa*. English Ministry of State for the Colonies, London.

IUCN. 2019. The IUCN Red List of Threatened Species. Version 2019-1. Available at: <u>www.iucnredlist.org</u>. (Accessed: 21 March 2019).

Letouzey, R. and White, F. 1970. Ebenaceae. In: A. Aubreville and J.F. Leroy (eds), *Flore du Cameroun*, Musee Nationale de L'Histoire Naturelle, Paris.

White, F. 1978. The taxonomy, ecology and chorology of African Ebenaceae, I. The Guineo-Congolian species. *Bulletin du Jardin Botanique National de Belgique* 48: 245-358.

# Citation

Schatz, G.E., Lowry, II, P.P., Onana, J.-M., Stévart, T. & Deblauwe , V. 2019. *Diospyros crassiflora*. The IUCN Red List of Threatened Species 2019: e.T33048A2831968. <u>http://dx.doi.org/10.2305/IUCN.UK.2019-1.RLTS.T33048A2831968.en</u>

# Disclaimer

To make use of this information, please check the <u>Terms of Use</u>.

# **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 -> 1.6. Forest - Subtropical/Tropical Moist Lowland	Resident	Suitable	Yes

## 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 -> 2.1.2. Small-holder farming	Ongoing	Minority (50%)	Slow, significant declines	Low impact: 5
	Stresses:	1. Ecosystem stre	esses -> 1.1. Ecosyster	n conversion
		1. Ecosystem stre	esses -> 1.2. Ecosyster	n degradation
2. Agriculture & aquaculture -> 2.3. Livestock farming & ranching -> 2.3.2. Small-holder grazing, ranching or farming	Ongoing	Minority (50%)	Slow, significant declines	Low impact: 5
	Stresses:	1. Ecosystem stre	esses -> 1.1. Ecosyster	n conversion
		1. Ecosystem stre	esses -> 1.2. Ecosyster	m degradation
5. Biological resource use -> 5.3. Logging & wood harvesting -> 5.3.1. Intentional use: (subsistence/small scale) [harvest]	Ongoing	Minority (50%)	Slow, significant declines	Low impact: 5
	Stresses:	2. Species Stress	es -> 2.1. Species mor	tality
5. Biological resource use -> 5.3. Logging & wood harvesting -> 5.3.4. Unintentional effects: (large scale) [harvest]	Ongoing	Minority (50%)	Slow, significant declines	Low impact: 5
	Stresses:	2. Species Stress	es -> 2.1. Species mor	tality

## **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: Yes
In-Place Species Management
Harvest management plan: Yes
Subject to ex-situ conservation: Yes

## **Conservation Actions Needed**

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

#### **Conservation Actions Needed**

3. Species management -> 3.1. Species management -> 3.1.1. Harvest management

3. Species management -> 3.4. Ex-situ conservation -> 3.4.1. Captive breeding/artificial propagation

## **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
- 2. Conservation Planning -> 2.3. Harvest & Trade Management Plan
- 3. Monitoring -> 3.2. Harvest level trends

# **Additional Data Fields**

Distribution
Estimated area of occupancy (AOO) (km <sup>2</sup> ): 2788-1160000
Continuing decline in area of occupancy (AOO): Yes
Estimated extent of occurrence (EOO) (km <sup>2</sup> ): 1738278
Continuing decline in extent of occurrence (EOO): Yes
Number of Locations: 379
Lower elevation limit (m): 0
Upper elevation limit (m): 1000
Population
Number of mature individuals: 30900000
Continuing decline of mature individuals: Yes
Population severely fragmented: No
Habitats and Ecology
Continuing decline in area, extent and/or quality of habitat: Yes
Generation Length (years): 140-220

## The IUCN Red List Partnership



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

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