The IUCN Red List of Threatened Species™
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Scope(s): Global
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Graphis sterlingiana, Sterling Lips

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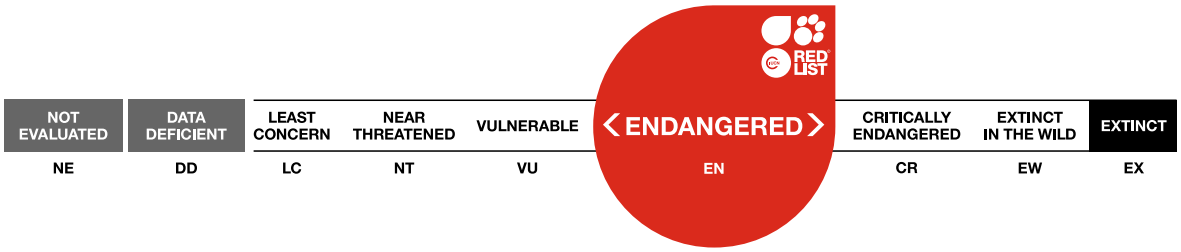

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Taxonomy

Kingdom	Phylum	Class	Order	Family
Fungi	Ascomycota	Lecanoromycetes	Ostropales	Graphidaceae

Scientific Name: *Graphis sterlingiana* E.A.Tripp & Lendemer

Common Name(s):

- English: Sterling Lips

Assessment Information

Red List Category & Criteria: Endangered A2c; D ver 3.1

Year Published: 2020

Date Assessed: October 8, 2019

Justification:

Graphis sterlingiana (Sterling Lips) is a narrow endemic of the southern Appalachian Mountains of eastern North America. It is known only from 13 locations, and there is only a maximum of 64 living individuals. The species occurs only on old-growth *Betula alleghaniensis* trees at high elevations in the Southern Appalachians, which were severely impacted by widespread logging activities in the 20th century, likely leading to widespread decline of the species. Additional declines in the population may have also been caused by widespread acid rain impacts. The exceedingly narrow range of this species combined with its highly specialised ecology suggests that Sterling Lips should be a top candidate for conservation action in the United States and, indeed, worldwide. This species warrants listing as Endangered under the D criterion due to the existence of fewer than 250 individuals left in the wild, and under A2c due to the suspected rate of the past population decline.

Geographic Range

Range Description:

Graphis sterlingiana grows only in high-elevation northern hardwood forests in the southern Appalachian Mountains of eastern North America. After a thorough search of the region it has been documented in the Great Smoky Mountains, Black Mountains and Balsam Mountains, three discrete subregions within the southern Appalachian Mountains.

Country Occurrence:

Native, Extant (resident): United States (North Carolina, Tennessee)

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Population

There are 13 documented locations where the species occurs. Nine locations occur in the Great Smoky Mountains National Park, two in the Black Mountains, and two in the Balsam Mountains. All documented locations are comprised of one to 10 individuals, thus there are very few total individuals in existence. The population size is inferred to have decreased in the past due to widespread, intensive logging over the past century that likely led to widespread extirpation of many individuals of this species. Furthermore, severe acid rain in the Great Smoky Mountains in the 20th century likely led to extirpation of many individuals.

Current Population Trend: Decreasing

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

Sterling Lips is highly specialized ecologically, occurring only on the bark of *Betula allegheniensis* (Yellow Birch). The species only grows on Yellow Birches are that extremely large in girth, and only on large, exposed roots of these mature trees. In the southern Appalachians, Yellow Birches are restricted to higher elevations and represent the emblematic hardwood of spruce-fir ecosystems.

Systems: Terrestrial

Use and Trade

Specimen collection is a potential threat to this species.

Threats **(see Appendix for additional information)**

Current threats to the only known locations of Sterling Lips include air pollution, fog pollution, habitat degradation (die-off of keystone species in habitat occupied by this species), and global warming. In light of climate change, suitable habitat for potential migration of this species may not exist for hundreds to over 1,000 miles proximal to currently extant populations. There is also a risk of specimen collecting for this species. Additionally, the population size is inferred to have decreased in the past due to widespread, intensive logging over the past century that likely led to widespread extirpation of many individuals of this species.

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

No conservation actions are known at present. Legal protection status, habitat preservation, and public awareness and education are the most important conservation actions needed for this species, while research into the species and its biology would be beneficial.

Credits

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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 -> 1.4. Forest - Temperate	Resident	Suitable	Yes

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

Plant Growth Form
M. Fungus
E. Epiphyte
LC. Lichen

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

End Use	Local	National	International
Sport hunting/specimen collecting	No	Yes	No

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

Threat	Timing	Scope	Severity	Impact Score
5. Biological resource use -> 5.2. Gathering terrestrial plants -> 5.2.1. Intentional use (species is the target)	Ongoing	Unknown	Unknown	Unknown
	Stresses:	2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		
5. Biological resource use -> 5.3. Logging & wood harvesting -> 5.3.4. Unintentional effects: (large scale) [harvest]	Past, likely to return	Unknown	Rapid declines	Past impact
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality		
7. Natural system modifications -> 7.3. Other ecosystem modifications	Ongoing	Unknown	Causing/could cause fluctuations	Unknown
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		

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9. Pollution -> 9.5. Air-borne pollutants -> 9.5.1. Acid rain	Past, likely to return	Unknown	Causing/could cause fluctuations	Past impact
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		
9. Pollution -> 9.5. Air-borne pollutants -> 9.5.4. Type Unknown/Unrecorded	Ongoing	Unknown	Causing/could cause fluctuations	Unknown
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		
11. Climate change & severe weather -> 11.1. Habitat shifting & alteration	Ongoing	Unknown	Causing/could cause fluctuations	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		
11. Climate change & severe weather -> 11.3. Temperature extremes	Ongoing	Unknown	Causing/could cause fluctuations	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		

Conservation Actions in Place

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

Conservation Action in Place
In-place research and monitoring
Action Recovery Plan: No
Systematic monitoring scheme: No
In-place land/water protection
Conservation sites identified: Yes, over entire range
Percentage of population protected by PAs: 91-100
Area based regional management plan: No
Occurs in at least one protected area: Yes
In-place species management
Harvest management plan: No
Successfully reintroduced or introduced benignly: No
Subject to ex-situ conservation: No
In-place education
Subject to recent education and awareness programmes: No

Conservation Action in Place
Included in international legislation: No
Subject to any international management / trade controls: No

Conservation Actions Needed

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

Conservation Action Needed
1. Land/water protection -> 1.1. Site/area protection
1. Land/water protection -> 1.2. Resource & habitat protection
2. Land/water management -> 2.1. Site/area management
2. Land/water management -> 2.3. Habitat & natural process restoration
4. Education & awareness -> 4.1. Formal education
4. Education & awareness -> 4.3. Awareness & communications
5. Law & policy -> 5.1. Legislation -> 5.1.2. National level

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
3. Monitoring -> 3.1. Population trends
3. Monitoring -> 3.4. Habitat trends

Additional Data Fields

Distribution
Estimated area of occupancy (AOO) (km²): 52
Continuing decline in area of occupancy (AOO): Unknown
Extreme fluctuations in area of occupancy (AOO): Unknown
Estimated extent of occurrence (EOO) (km²): 3032
Continuing decline in extent of occurrence (EOO): Unknown
Extreme fluctuations in extent of occurrence (EOO): Unknown
Number of Locations: 13

Distribution
Continuing decline in number of locations: No
Extreme fluctuations in the number of locations: No
Lower elevation limit (m): 1,219
Upper elevation limit (m): 1,864
Population
Number of mature individuals: 64
Continuing decline of mature individuals: Unknown
Extreme fluctuations: Unknown
Population severely fragmented: No
No. of subpopulations: 13
No. of individuals in largest subpopulation: 10
Habitats and Ecology
Continuing decline in area, extent and/or quality of habitat: Unknown
Generation Length (years): 30

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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.

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.