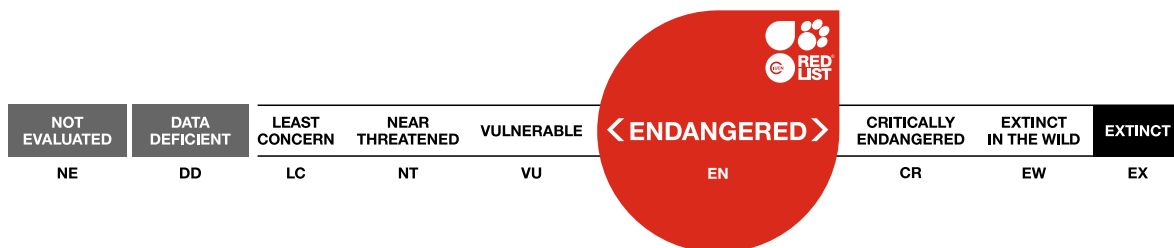


Sporodophoron americanum

Assessment by: Lendemer, J.



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Taxonomy

Kingdom	Phylum	Class	Order	Family
Fungi	Ascomycota	Arthoniomycetes	Arthoniales	Arthoniaceae

Scientific Name: *Sporodophoron americanum* (Lendemer, E.A. Tripp & R.C. Harris) Ertz & Frisch

Assessment Information

Red List Category & Criteria: Endangered B2ab(i,ii,iii,iv,v); C2a(i) [ver 3.1](#)

Year Published: 2021

Date Assessed: February 1, 2021

Justification:

This species has an area of occupancy in the range of 164-400 km², a severely fragmented population estimated to comprise fewer than 500 mature individuals (196-410 mature individuals; maximum subpopulation size comprised of 50 mature individuals), and there are continuing declines in EOO, AOO, number of locations, number of mature individuals and habitat quality inferred or observed across its range. Past and ongoing declines are due largely to logging, development, air pollution, and climate change. These factors likely disproportionately impacted historical occurrences in the Appalachian foothills and adjacent Piedmont, where the species is known from few occurrences. Tentatively, the higher estimate for the area of occupancy is used here, as this incorporates additional potential sites that have so far been unsampled. Thus, it is listed as Endangered under criterion B2ab(i,ii,iii,iv,v) and C2a(i).

Geographic Range

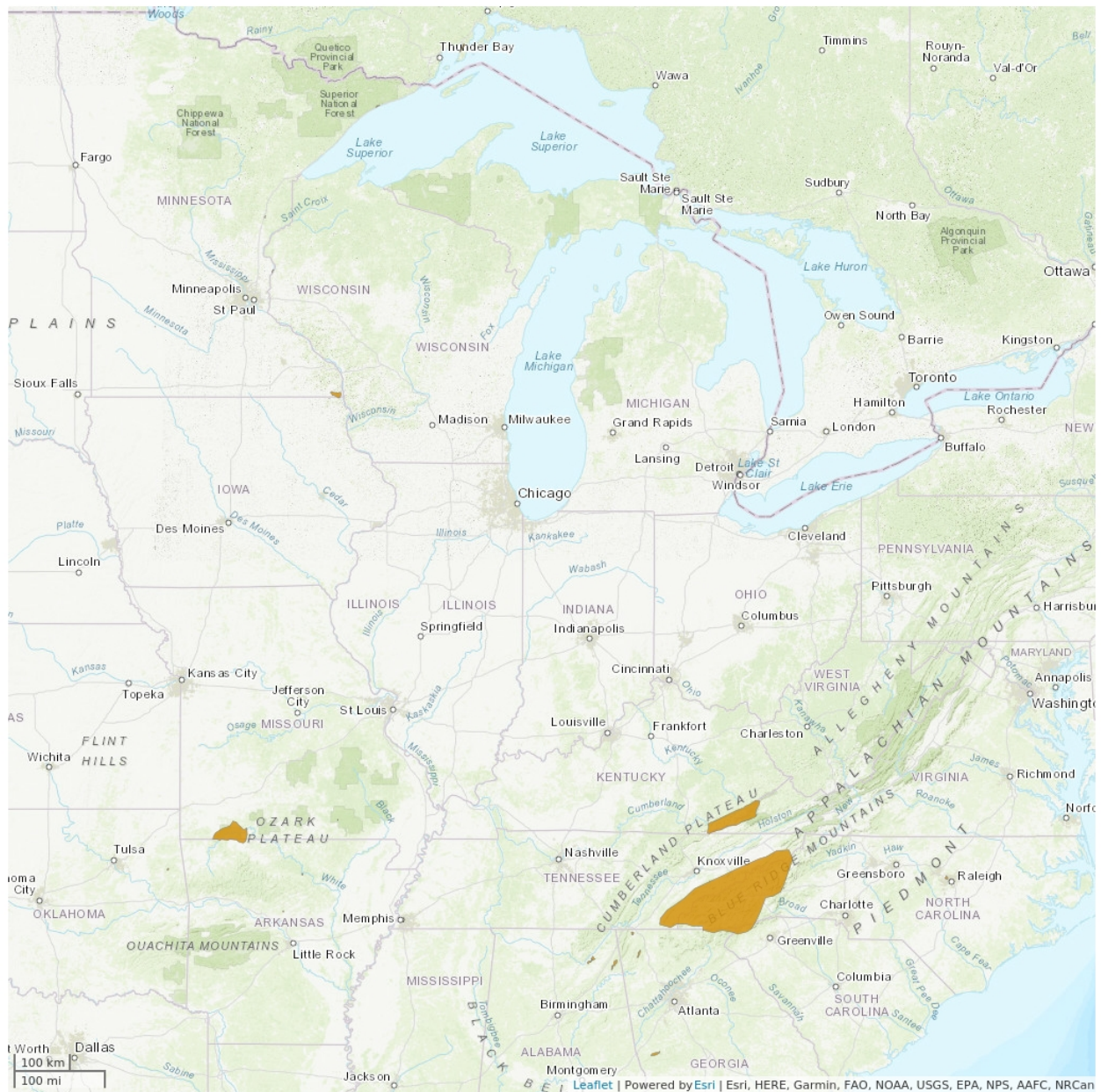
Range Description:

Sporodophoron americanum is endemic to eastern North America. The majority of known occurrences are located in the southern Appalachian Mountains, especially eastern Tennessee (Blount, Monroe, Sevier Counties; Great Smoky Mountains and Unicoi Mountains). Scattered sites are also known from the Ozarks and Piedmont in the south-eastern United States. Several disjunct sites have been located in Minnesota, and one has been found in Ontario, Canada.

Country Occurrence:

Native, Extant (resident): Canada (Ontario); United States (Alabama, Arkansas, Georgia, Kentucky, Minnesota, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee)

Distribution Map

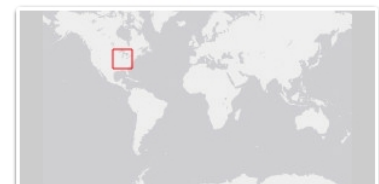


Legend

EXTANT (RESIDENT)

Compiled by:

IUCN 2021



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

Population

This species was described in 2013 from scattered sites in the south-eastern United States as *Tylophoron americanum* (Lendemer *et al.* 2013). Since that time, additional subpopulations have been located in the region, and several northern disjunctions have been found. No occurrences outside of eastern North America have been found and the species has been treated in detail as part of a taxonomic revision (Frisch *et al.* 2015) wherein it was transferred to the genus *Sporodophoron*. The species is easily recognized by its blue-grey crustose thallus, *Trentepohlia* photobiont, and white sporodochia. As an old-growth associated species, primarily restricted to mature host trees, nearly all sites host only 1-10 functional individuals (the only exception is a location in Sevier Co., Tennessee which hosts 30-50 individuals). All of the known disjunct sites in Minnesota and Ontario occur in protected rock overhangs and consist of 1-5 functional individuals that are highly clustered spatially. We suspect that the population declined historically (during the last 3 generations; 90 years, based on a 30 year generation time) due to extensive logging, habitat loss, and land use change throughout its range (Yarnell 1998, Martinuzzi *et al.* 2015). These activities have led the extant population to become highly fragmented, as the species is almost entirely restricted to mature forest stands in suitable habitat and these areas have become very limited in extent and are no longer contiguous (e.g. Ervin 2016). We suspect that the already fragmented and reduced population is currently decreasing due to numerous ongoing and projected trends in anthropogenic and climate change impacts that would directly affect this species (Keyser *et al.* 2014, Klepzig *et al.* 2014, Cartwright and Wolfe 2016).

Current Population Trend: Decreasing

Habitat and Ecology (see Appendix for additional information)

This species occurs primarily on the bark of hardwood trees, especially chestnut oak (*Quercus montana*), in the grooves formed on the boles of mature individuals. It also rarely occurs on sheltered non-calcareous rock overhangs in high humidity habitats, usually directly associated with talus slopes or bodies of water. All of the northern disjunct occurrences are from rock overhangs associated with bodies of water. It is found primarily in temperate hardwood forests, especially riparian area, and infrequently occurs in boreal forests and rocky areas.

Systems: Terrestrial

Threats (see Appendix for additional information)

The primary threats to this species are habitat fragmentation and loss (historical and ongoing) and impacts from air pollution, climate change and natural disasters (historical, ongoing and projected). The species occurs primarily in existing protected areas, some of which are large in overall area. However it occurs in isolated locations where suitable habitat exists within large areas that are not suitable (i.e. mature forest stands or massive rock outcrops with high humidity are spatially restricted within a matrix of younger forests, forests without appropriate tree hosts, drier habitats as well as more generally within a highly fragmented matrix anthropogenic land uses). These naturally dispersed locations were degraded and fragmented historically (last 90 years) due to extensive logging, building of roads, alteration of riparian corridors by dams, air pollution, agriculture and urbanization. All of the above are still impacts to the species across its range in the south-eastern United States, although threats vary depending on the individual location. Within the last 30-40 years, fragmentation has continued as the region has undergone rapid population growth (Anderson *et al.* 2013, Klepzig *et al.* 2014). Available data

indicate that the species is highly localized where it occurs, the habitat it has occurred in has become fragmented in the past and is increasingly fragmented in present. Further the region is currently experiencing climate change impacts (increased fire frequency and severity, intense storms that damage forest stands, droughts, temperature changes) and extensive alteration of forest communities due to invasive species. Although the small number of sites in Minnesota are less threatened by the above forces, all occur along rivers and could be extirpated by a major flooding event.

Conservation Actions (see Appendix for additional information)

Many areas where the species is known are within existing public lands, however locations outside of National Parks and federally designated wilderness could be impacted by resource extraction or further fragmentation in the future. Increased education about the species and its threatened status is needed. Inclusion in local and national conservation policy is needed. The distribution and ecology of the species are well known, however comprehensive location level demographic data and population estimates are needed. Targeted efforts to locate additional occurrences in suitable habitats are also needed, and a monitoring and recovery plan needs to be developed.

Credits

Assessor(s): Lendemer, J.

Reviewer(s): Allen, J.

Bibliography

Anderson, M., Prince, J., Ray, D., Sutton, M. and Watland, A. 2013. Southern Blue Ridge: An Analysis of Matrix Forests. The Nature Conservancy.

Cartwright, J.M. and Wolfe, W.J. 2016. Insular ecosystems of the southeastern United States—A regional synthesis to support biodiversity conservation in a changing climate. *U.S. Geological Survey Professional Paper* 1828: 162.

Ervin, J.S. 2016. Master's Project: Describing Forest Structure in Southern Blue Ridge Cove Forests: A LiDAR-Based Analysis. Rubenstein School of Environment and Natural Resources, University of Vermont.

Frisch, A., Ohmura, Y., Ertz, D. and Thor, G. 2015. *Inoderma* and related genera in Arthoniaceae with elevated white pruinose pycnidia or sporodochia. *The Lichenologist* 47(4): 233-256.

IUCN. 2021. The IUCN Red List of Threatened Species. Version 2021-2. Available at: www.iucnredlist.org. (Accessed: 04 September 2021).

Keyser, T., Malone, J., Cotton, C. and Lewis, J. 2014. Outlook for Appalachian-Cumberland Forests: A Subregional Report from the Southern Forest Futures Project. General Technical Report, Southern Research Station (SRS-18). U.S. Department of Agriculture; Forest Service (USDA-FS), Asheville, NC.

Klepzig, K., Shelfer, R. and Choice, Z. 2014. Outlook for Coastal Plain forests: a subregional report from the Southern Forest Futures Project. U.S. Forest Service.

Lendemer, J.C., Harris, R.C. and Tripp, E.A. 2013. *The Lichens and Allied Fungi of Great Smoky Mountains National Park*. The New York Botanical Garden Press, Bronx, New York.

Martinuzzi S., Withey J.C., Pidgeon A.M., Plantinga, A.J., McKerrow, A.J., Williams, S.G., Helmers, D.P. and Radeloff, V.C. 2015. Future land-use scenarios and the loss of wildlife habitats in the southeastern United States. *Ecological Applications* 25(1): 160-171.

Yarnell, S.L. 1998. The Southern Appalachians: A History of the Landscape. General Technical Report, Southern Research Station (SRS-18). U.S. Department of Agriculture; Forest Service (USDA-FS), Asheville, NC.

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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 -> 1.1. Forest - Boreal	Resident	Suitable	No
1. Forest -> 1.4. Forest - Temperate	Resident	Suitable	Yes
5. Wetlands (inland) -> 5.1. Wetlands (inland) - Permanent Rivers/Streams/Creeks (includes waterfalls)	Resident	Suitable	Yes

Plant Growth Forms

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

Plant Growth Form
LC. Lichen
E. Epiphyte

Threats

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

Threat	Timing	Scope	Severity	Impact Score
1. Residential & commercial development -> 1.1. Housing & urban areas	Ongoing	Minority (50%)	Negligible declines	Low impact: 4
1. Residential & commercial development -> 1.3. Tourism & recreation areas	Ongoing	Minority (50%)	Slow, significant declines	Low impact: 5
4. Transportation & service corridors -> 4.1. Roads & railroads	Ongoing	Minority (50%)	Slow, significant declines	Low impact: 5
5. Biological resource use -> 5.3. Logging & wood harvesting -> 5.3.3. Unintentional effects: (subsistence/small scale) [harvest]	Ongoing	Majority (50-90%)	Slow, significant declines	Medium impact: 6
5. Biological resource use -> 5.3. Logging & wood harvesting -> 5.3.4. Unintentional effects: (large scale) [harvest]	Ongoing	Minority (50%)	Rapid declines	Medium impact: 6
7. Natural system modifications -> 7.1. Fire & fire suppression -> 7.1.1. Increase in fire frequency/intensity	Ongoing	Majority (50-90%)	Slow, significant declines	Medium impact: 6
11. Climate change & severe weather -> 11.1. Habitat shifting & alteration	Ongoing	Whole (>90%)	Slow, significant declines	Medium impact: 7

11. Climate change & severe weather -> 11.2. Droughts	Ongoing	Majority (50-90%)	Slow, significant declines	Medium impact: 6
11. Climate change & severe weather -> 11.4. Storms & flooding	Ongoing	Whole (>90%)	Slow, significant declines	Medium impact: 7

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: No
Percentage of population protected by PAs: 21-30
Area based regional management plan: No
Occurs in at least one protected area: Yes
In-place species management
Subject to ex-situ conservation: No
In-place education
Subject to recent education and awareness programmes: Yes
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
4. Education & awareness -> 4.1. Formal education
4. Education & awareness -> 4.2. Training
4. Education & awareness -> 4.3. Awareness & communications
5. Law & policy -> 5.2. Policies and regulations

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

Additional Data Fields

Distribution
Estimated area of occupancy (AOO) (km ²): 164-400
Continuing decline in area of occupancy (AOO): Yes
Extreme fluctuations in area of occupancy (AOO): No
Estimated extent of occurrence (EOO) (km ²): 1532335
Continuing decline in extent of occurrence (EOO): Yes
Extreme fluctuations in extent of occurrence (EOO): No
Number of Locations: 40
Continuing decline in number of locations: Yes
Extreme fluctuations in the number of locations: No
Population
Number of mature individuals: 196-410
Continuing decline of mature individuals: Yes
Extreme fluctuations: No
Population severely fragmented: Yes
No. of subpopulations: 36
Continuing decline in subpopulations: Unknown
Extreme fluctuations in subpopulations: No
All individuals in one subpopulation: No
No. of individuals in largest subpopulation: 50
Habitats and Ecology
Continuing decline in area, extent and/or quality of habitat: Yes
Generation Length (years): 30

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