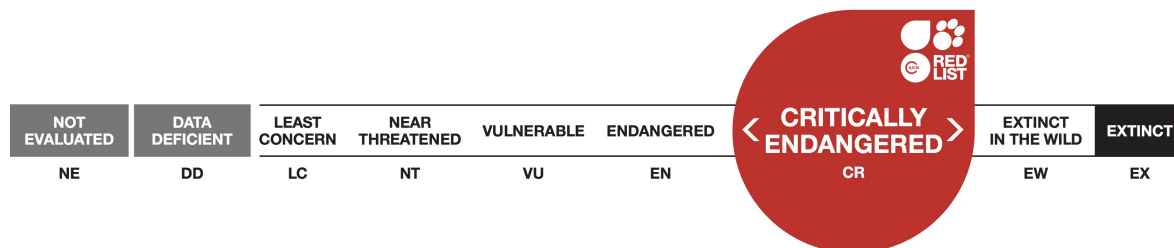


## *Acanthothecis paucispora*

Assessment by: Lendemer, J. & Allen, J.



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## Taxonomy

| Kingdom | Phylum     | Class           | Order      | Family       |
|---------|------------|-----------------|------------|--------------|
| Fungi   | Ascomycota | Lecanoromycetes | Ostropales | Graphidaceae |

**Taxon Name:** *Acanthothecis paucispora* Lendemer & R.C.Harris

### Identification Information:

This crustose lichen can be recognized by its occurrence on bark, pale, elongate lirellae that lack black carbonized areas, simple labia, ornamented paraphyse tips, non-inspersed hymenium, short, hyaline 4-5 celled ascospores ( $16\text{--}20 \times 6\text{--}8\mu\text{m}$ ), and absence of secondary metabolites.

## Assessment Information

**Red List Category & Criteria:** Critically Endangered A3c; B2ab(i,ii,iii,iv); C2a(i); D [ver 3.1](#)

**Year Published:** 2018

**Date Assessed:** August 31, 2017

### Justification:

*Acanthothecis paucispora* is a rare script lichen known from two locations in the Mid-Atlantic Coastal Plain of southeastern North America. Though recently described, additional populations of the species have not been located despite extensive study of the small amount of suitable habitat that persists in a region fragmented and degraded by anthropogenic forces. The threats to *A. paucispora* stem from degradation and fragmentation of suitable habitat, as well as projected impacts from sea-level rise mean that the species is considered to occur in a single threat location. *Acanthothecis paucispora* is therefore assessed here as Critically Endangered.

## Geographic Range

### Range Description:

*Acanthothecis paucispora* is a rare script lichen known from two localities in the Mid-Atlantic Coastal Plain of southeastern North America.

### Country Occurrence:

**Native:** United States (North Carolina)

# Distribution Map

*Acanthothecis paucispora*



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Range

- Extant (resident)

Compiled by:  
IUCN



## Population

Two subpopulations have been documented and are presumed to be extant. Both populations are small and composed of less than 25 mature individuals (i.e., total population is estimated at less than 50 mature individuals). One sub-population is included within Croatan National Forest, although not within a wilderness area or other management sub-unit that would afford additional protections. The other sub-population is located in a protected unit managed by North Carolina State University, however that sub unit is not currently part of any natural area where timber harvesting would be prevented. Both sub-populations exist as small number of scattered individuals and are entirely within the most conservative estimates of elevations that will be inundated by sea-level rise by 2100. Demographic studies are needed to assess and monitor populations sizes. Our current knowledge of the species suggests that its populations are stable.

**Current Population Trend:** Stable

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

This species is restricted to the bark of hardwood trees that occur in small pockets of mature upland hardwood forest habitat surrounded by large, wet, humid swamp forests in the Mid-Atlantic Coastal Plain of eastern North America (North Carolina). The Mid-Atlantic Coastal Plain has been subjected to intensive large scale lichen biodiversity inventory by multiple experts, yet no additional sub-populations for the species have been found. Similarly despite extensive inventories by multiple specialists of suitable habitats elsewhere in the Coastal Plain over a period spanning more than 20 years, no additional sub-populations have been located. While it is possible that additional sub-populations will be located in the future, thus expanding the AOO and EOO, the available data clearly illustrates that the species is rare.

**Systems:** Terrestrial

## Threats (see Appendix for additional information)

Suitable forest habitats throughout the Coastal Plain of the southeastern United States have been substantially impacted and fragmented by centuries of habitat loss and degradation, particularly in the form of logging, ditching and draining, and clearing for silviculture or agriculture. Remaining suitable habitats are for the most part highly fragmented and degraded, and the species has not been located in the small number of large protected areas that do exist. Trends of habitat loss and degradation are continuing at present and projected to increase in the future (Brown et al. 2005, Hall & Schafale 1999, Napton et al. 2010, Ricketts et al. 1999, Terando et al. 2014). These trends will be further exacerbated by climate change and sea-level rise, the latter of which will likely result in the inundation of both localities (i.e., the entire population) by 2100 (Lendemer & Allen 2014, Sallenger et al. 2012).

## Conservation Actions (see Appendix for additional information)

In addition to formal listing as an endangered species, conservation of the species would be effected by enhancing protected status of the existing locations. Given the small number of populations, and the threats posed by sea-level rise, monitoring is also warranted. Translocation should also be considered before both subpopulations are lost to sea-level rise.

Further research that will aid in the conservation of this species includes population assessments and

monitoring, population genetics studies, and ecological studies that incorporate threats to the species. Additionally, a species recovery plan needs to be written.

## Credits

**Assessor(s):** Lendemmer, J. & Allen, J.  
**Reviewer(s):** Scheidegger, C.  
**Contributor(s):** Weerakoon, G. & Dahlberg, A.

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## 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 | -      | 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               | Ongoing   | Minority (50%)   | Causing/could cause fluctuations | Low impact: 5    |
|   | Stresses: | 1. Ecosystem stresses -> 1.1. Ecosystem conversion<br>2. Species Stresses -> 2.1. Species mortality    |                                  |                  |
| 1. Residential & commercial development -> 1.2. Commercial & industrial areas       | Ongoing   | Minority (50%)   | Causing/could cause fluctuations | Low impact: 5    |
|   | Stresses: | 1. Ecosystem stresses -> 1.1. Ecosystem conversion<br>2. Species Stresses -> 2.1. Species mortality    |                                  |                  |
| 1. Residential & commercial development -> 1.3. Tourism & recreation areas          | Ongoing   | Minority (50%)   | Causing/could cause fluctuations | Low impact: 5    |
|   | Stresses: | 1. Ecosystem stresses -> 1.1. Ecosystem conversion<br>2. Species Stresses -> 2.1. Species mortality    |                                  |                  |
| 11. Climate change & severe weather -> 11.1. Habitat shifting & alteration          | Ongoing   | Whole (>90%)   | Slow, significant declines       | Medium impact: 7 |
|   | Stresses: | 1. Ecosystem stresses -> 1.1. Ecosystem conversion<br>2. Species Stresses -> 2.1. Species mortality    |                                  |                  |
| 11. Climate change & severe weather -> 11.5. Other impacts                          | Future    | Whole (>90%)   | Causing/could cause fluctuations | Low impact: 5    |
|   | Stresses: | 1. Ecosystem stresses -> 1.1. Ecosystem conversion<br>2. Species Stresses -> 2.1. Species mortality    |                                  |                  |
| 4. Transportation & service corridors -> 4.2. Utility & service lines               | Ongoing   | Minority (50%)   | Causing/could cause fluctuations | Low impact: 5    |
|   | Stresses: | 1. Ecosystem stresses -> 1.1. Ecosystem conversion<br>2. Species Stresses -> 2.1. Species mortality    |                                  |                  |
| 7. Natural system modifications -> 7.3. Other ecosystem modifications               | Ongoing   | Whole (>90%)   | Slow, significant declines       | Medium impact: 7 |
|   | Stresses: | 1. Ecosystem stresses -> 1.1. Ecosystem conversion<br>2. Species Stresses -> 2.1. Species mortality    |                                  |                  |
| 9. Pollution -> 9.1. Domestic & urban waste water -> 9.1.3. Type Unknown/Unrecorded | Ongoing   | Minority (50%)   | Causing/could cause fluctuations | Low impact: 5    |
|   | Stresses: | 1. Ecosystem stresses -> 1.2. Ecosystem degradation<br>2. Species Stresses -> 2.2. Species disturbance |                                  |                  |

## Conservation Actions in Place

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

|  |
|--|
| <b>Conservation Actions in Place</b>                 |
| In-Place Research, Monitoring and Planning           |
| Action Recovery plan: No                             |
| In-Place Land/Water Protection and Management        |
| Conservation sites identified: No                    |
| Percentage of population protected by PAs (0-100): 0 |

## Conservation Actions Needed

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

|  |
|--|
| <b>Conservation Actions Needed</b>                             |
| 1. Land/water protection -> 1.2. Resource & habitat protection |
| 3. Species management -> 3.2. Species recovery                 |

## Research Needed

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

|   |
|---|
| <b>Research Needed</b>  |
| 1. Research -> 1.2. Population size, distribution & trends    |
| 1. Research -> 1.5. Threats                                   |
| 1. Research -> 1.6. Actions                                   |
| 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 -> 3.4. Habitat trends                          |

## Additional Data Fields

|   |
|---|
| <b>Distribution</b>                                       |
| Estimated area of occupancy (AOO) (km <sup>2</sup> ): 8.0 |
| Continuing decline in area of occupancy (AOO): Yes        |
| Extreme fluctuations in area of occupancy (AOO): No       |
| Continuing decline in extent of occurrence (EOO): Yes     |



|   |
|---|
| <b>Distribution</b>   |
| Extreme fluctuations in extent of occurrence (EOO): No            |
| Number of Locations: 2  |
| Lower elevation limit (m): 0                                      |
| Upper elevation limit (m): 30                                     |
| <b>Population</b>   |
| Number of mature individuals: 49                                  |
| Continuing decline of mature individuals: Yes                     |
| Extreme fluctuations: No  |
| Population severely fragmented: No                                |
| No. of subpopulations: 2  |
| Continuing decline in subpopulations: Yes                         |
| Extreme fluctuations in subpopulations: No                        |
| All individuals in one subpopulation: No                          |
| <b>Habitats and Ecology</b>                                       |
| Continuing decline in area, extent and/or quality of habitat: Yes |
| Generation Length (years): 30                                     |

## The IUCN Red List Partnership



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