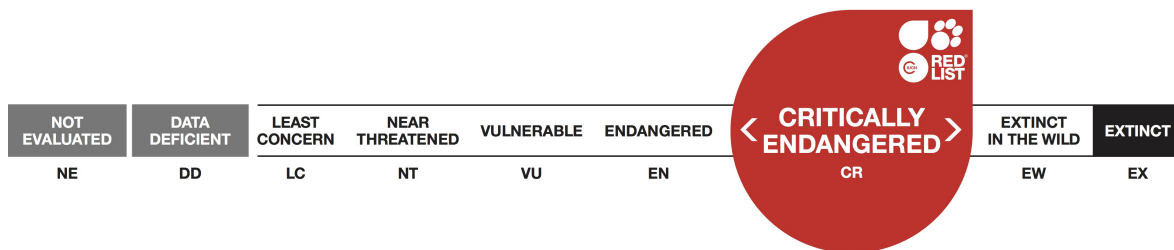


## *Acanthothecis leucoxanthoides*

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



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## Taxonomy

Kingdom	Phylum	Class	Order	Family
Fungi	Ascomycota	Lecanoromycetes	Ostropales	Graphidaceae

**Taxon Name:** *Acanthothecis leucoxanthoides* 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 containing concentrations of stictic acid, ornamented paraphyse tips, non-inspersed hymenium, and small, hyaline 6–10 celled ascospores (15–18(–21) × 4–5 µm).

## Assessment Information

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

**Year Published:** 2018

**Date Assessed:** August 30, 2017

### Justification:

This species merits ranking as Critically Endangered based on the small number of documented locations (2) both of which comprise a small number of individuals (less than 25 in each), low area of occupancy (8 km<sup>2</sup>), the 50% reduction in population size inferred from loss of the North Carolina population as a result of sea-level rise by 2100, and the documented declines in habitat quality historically, at present, and projected into the future. The species also ranks as Critically Endangered based on the small population (less than 50 mature individuals) the small number of individuals in each subpopulation (two subpopulations each with less 25 individuals). Further the species also ranks as Critically Endangered based on the overall small size of the population which is estimated to be less than 50 mature individuals.

## Geographic Range

### Range Description:

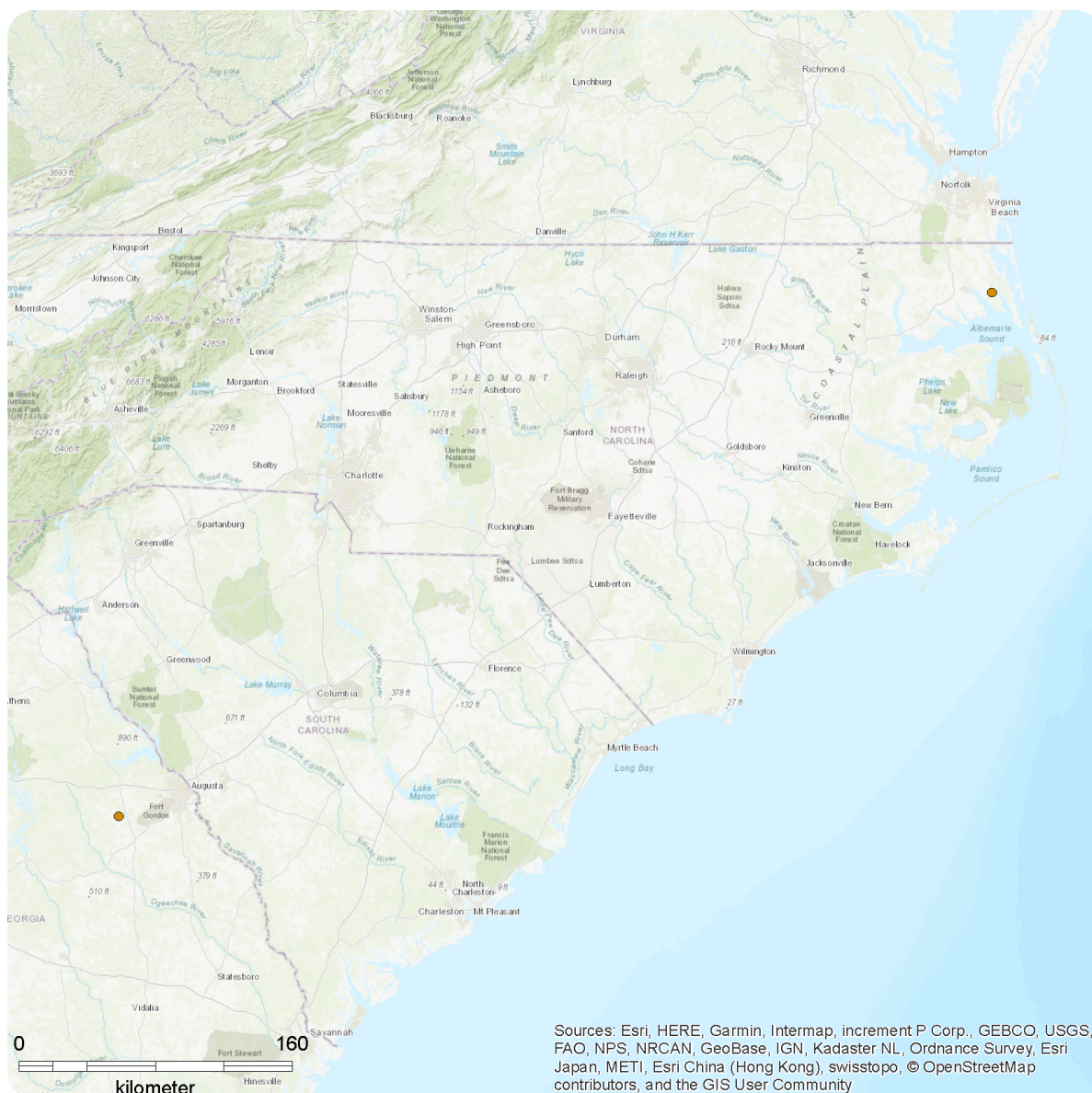
*Acanthothecis leucoxanthoides* is a rare script lichen known from two locations in the Coastal Plain of southeastern North America. Though recently described, additional populations of the species have not been located despite extensive study of the small amount of suitable habitat that persists in a region severely fragmented and degraded by anthropogenic forces.

### Country Occurrence:

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

# Distribution Map

*Acanthothes leucoanthoides*

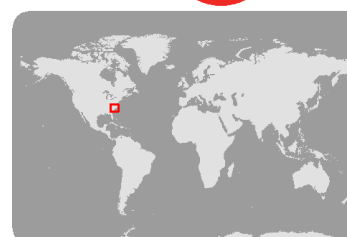


## Range

- Extant (resident)

Compiled by:

IUCN



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

## Population

Two populations have been documented and are presumed to be extant. Both populations are small in size comprise less 25 individuals each (for a total of less 50 individuals). The North Carolina population is located in a protected management unit, however the site is not specifically designated as a natural area that would improve protection of the species. The population in Georgia is not located in a protected area, and is within a small forest block within a fragmented natural landscape.

**Current Population Trend:** Stable

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

The species is restricted to the bark of hardwood trees in humid, wet swamp forests of the Coastal Plain of southeastern North America where it is known from two locations (one each in Georgia and North Carolina). This species occurs on the bark of hardwoods in a remnant rich hardwood (Liriodendron, Acer, Magnolia, Nyssa) and cypress (Taxodium). Despite extensive inventories by multiple specialists of suitable habitats throughout the region over a period spanning more than 20 years (e.g., Florida: W.R. Buck, R. Commons, R.C. Harris, F.&J. Seavey; Georgia: S.Q. Beeching, M.F. Hodges, J.C. Lendemer; North Carolina, South Carolina and Virginia: W.R. Buck, R.C. Harris, J.C. Lendemer), no additional locations have been located. While it is possible that additional populations will be located in the future, thus expanding the AOO and EOO, the available data clearly illustrates that the species is rare, the populations potentially non-viable and so the population is precautionarily assessed as severely fragmented.

**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 is projected to inundate the North Carolina location 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 location in a protected management unit (North Carolina) and by acquisition/conservation easement of the Georgia location for the purpose of habitat protection. Given the small number of populations, and the threats posed by adjacent road/utility right-of-ways and by sea-level rise, monitoring and potentially translocation are also warranted.

## Credits

**Assessor(s):** Lendemer, J. & Allen, J.

**Reviewer(s):** Scheidegger, C.

**Contributor(s):** Weerakoon, G.

## Bibliography

- Brown D. G., K. M. Johnson, T. R. Loveland & D. M. Theobald. 2005. Rural Land-Use Trends in the Conterminous United States, 1950–2000. *Ecological Applications* 15: 1851–1863.
- Hall, S. P. & M. P. Schafale. 1999. Conservation Assessment of the southeast Coastal Plain of North Carolina, using site-oriented and landscape-oriented analyses. *Raleigh*: 261.
- IUCN. 2018. The IUCN Red List of Threatened Species. Version 2018-2. Available at: [www.iucnredlist.org](http://www.iucnredlist.org). (Accessed: 15 November 2018).
- Lendemer, J.C./ Allen, J.L. 2014. Lichen Biodiversity under threat from Sea-Level Rise in the Atlantic Coastal Plain. *BioScience* 64: 923–931.
- Lendemer, J.C. and J. Allen. 2014. Lichen Biodiversity under threat from Sea-Level Rise in the Atlantic Coastal Plain. *BioScience* 64: 923–931.
- Lendemer, J.C. and R.C. 2014. Seven new species of Graphidaceae (Lichenized Ascomycetes) from the Coastal Plain of southeastern North America. *Phytotaxa*.
- Loveland T. R. & W. Acevedo. 2000. Land Cover Change in the Eastern United States. United States Geological Survey, Land Cover Trends Project. United States Geological Survey.
- Napton, D. E., R. F. Auch, R. Headley & J. L. Taylor. 2010. Land changes and their driving forces in the Southeastern United States. *Regional Environmental Change* 10: 37–53.
- Ricketts, T.H., E. Dinerstein, D.M. Olson & C.J. Loucks. 1999. *Terrestrial ecoregions of North America: a conservation assessment*. Island Press, Washington, D.C.
- Sallenger A.H. Jr., K.S. Doran & P.A. Howd. 2012. Hotspot of accelerated sea-level rise on the Atlantic Coast of North America. *Nature Climate Change* 2(884–888).
- Terando, A.J., J.K. Costanza, C. Belyea, R.R. Dunn, A.J. McKerrow & J. Collazo. 2014. The southern megalopolis: using the past to predict the future of urban sprawl in the Southeast U.S. *PLOS ONE* 9(7): e102261.

## Citation

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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	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	Ongoing	Minority (50%)	Slow, significant declines	Low impact: 5
	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		
1. Residential & commercial development -> 1.2. Commercial & industrial areas	Ongoing	Minority (50%)	Slow, significant declines	Low impact: 5
	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 -> 11.1. Habitat shifting & alteration	Ongoing	Minority (50%)	Slow, significant declines	Low impact: 5
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.3. Indirect ecosystem effects		
7. Natural system modifications -> 7.3. Other ecosystem modifications	Ongoing	Minority (50%)	Slow, significant declines	Low impact: 5
	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 Actions in Place
In-Place Research, Monitoring and Planning
Action Recovery plan: No
In-Place Land/Water Protection and Management
Conservation sites identified: Yes, over part of range

## Conservation Actions Needed

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

Conservation Actions Needed
1. Land/water protection -> 1.1. Site/area protection
1. Land/water protection -> 1.2. Resource & habitat protection
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
1. Research -> 1.3. Life history & ecology
1. Research -> 1.5. Threats
2. Conservation Planning -> 2.1. Species Action/Recovery Plan
2. Conservation Planning -> 2.2. Area-based Management Plan

## Additional Data Fields

Distribution
Estimated area of occupancy (AOO) (km <sup>2</sup> ): 8.000
Continuing decline in area of occupancy (AOO): Yes
Continuing decline in extent of occurrence (EOO): Unknown
Number of Locations: 2
Lower elevation limit (m): 0
Upper elevation limit (m): 100
Population
Number of mature individuals: 25
Continuing decline of mature individuals: Yes
Extreme fluctuations: Unknown
Population severely fragmented: Yes
No. of subpopulations: 2



<b>Population</b>
Continuing decline in subpopulations: Unknown
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

## The IUCN Red List Partnership



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