

## Distribution by Altitude of Two Species of *Lemanea* in Tennessee

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During the spring of 1942, twelve samples of *Lemanea* from Tennessee were sent to the writer by Herman Silva of the University of Tennessee. All of the material was collected at various elevations from Little Pigeon River in Sevier County. The alga was attached to elastic siliceous rocks of Cambrian age. Some samples were collected in August and September of 1941, while others were obtained in May, 1942. The collector left, at that time, for military service making it impossible to obtain additional collections.

Very few specimens of *Lemanea* have been reported for Tennessee. Atkinson (1) described material from the Carolinas, back in 1890, as a new species *Lemanea australis* and assumed that other material from the southern states probably belonged to this species. The new collections of the genus made by Silva have proved to contain two species which belong to different subgenera and are readily distinguished (2). One of these is the *Lemanea australis* Atk. This is one of the few authentic reports for this species since it was first described in 1890. The species can be recognized during the spring by its peculiar *Chantransia* filaments, which are small in diameter near the base and gradually become much larger in diameter nearer the tip. The diameter at the tip may be three or more times that at the base (Fig. 1). The sexual shoot of this species is characterized as having wide regular antheridial rings near the tip, with narrower, less regular rings nearer the base (Fig. 2).

The other species of *Lemanea* found in Silva's collection is *Lemanea fucina* Bory. This species is common in New England and Canada and is present to some extent in the mountainous parts of the more southern states. It differs from *L. australis* in having an inconspicuous *Chantransia* stage with filaments of uniform diameter, and a sexual strand with antheridia in papillae instead of in rings at the nodes (Fig. 3).

The samples of *Lemanea* were collected by Silva in Little Pigeon River at five different elevations, ranging from 2,600 feet down to 1,700 feet. *L. australis* was found to be present at all altitudes, being abundant in the collections made at 2,500, 1,900, 1,750 and 1,700 feet and absent (none in one collection) to rare (one strand only in another collection) at 2,600 feet. *L. fucina*, in contrast, was abundant in the samples collected at 2,600 feet, absent in those at 2,500 feet, with a small amount at 1,900 feet and one strand only in the sample taken at 1,750 feet. It was absent in the 1,700 foot collection (Table 1).

Thus, it would appear that the southern species, *L. australis*, was common in the stream from 2,500 feet down to 1,700 feet while the northern species was abundant only at 2,600 feet and was absent entirely at the lowest level where collections were made.

Due to the infrequency with which collections of *Lemanea* are made, it has seemed worthwhile to report this apparent difference in distribution by altitude of two species of the genus, even though conclusions drawn from such a small number of samples are subject to error.

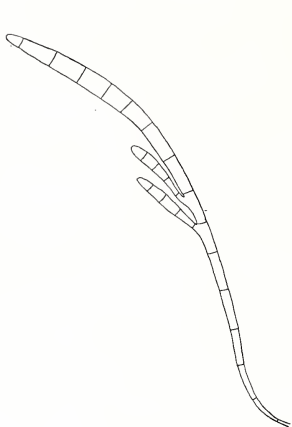


Fig. 1.

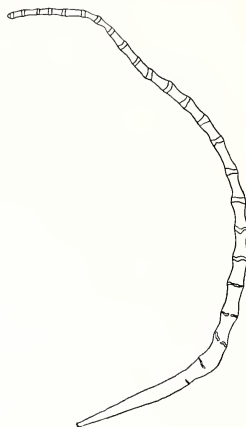


Fig. 2.

TABLE I.—Distribution by Altitude of *Lemanea fucina* and *Lemanea australis* in Little Pigeon River, Tennessee

| Elevation in feet | <i>L. fucina</i> | <i>L. australis</i> |
|-------------------|------------------|---------------------|
| 2,600             | xxxxx            | x                   |
| 2,500             | 0                | xxxxx               |
| 1,900             | xxx              | xxxxx               |
| 1,750             | x                | xxxxx               |
| 1,700             | 0                | xxxxx               |

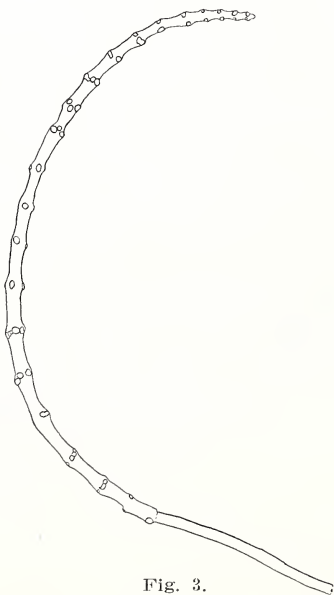


Fig. 3.

#### References Cited

1. Atkinson, G. F. Monograph of the Lemnaceae of the United States. Ann. Bot. 4:177-230. 1890.
2. Palmer, C. M. A study of *Lemanea* in Indiana with notes on its distribution in North America. Butler Univ. Bot. Stud. 5:1-26. 1941.