

Compliments
 Warnst
 1978
 Alaf Newman

The Bryologist 81(4), 1978, pp. 584-585
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**Occurrence of *Fissidens fontanus* and *Leptodictyum riparium*
 on Freshwater Mussels**

Abstract. *The moss Fissidens fontanus (B.-Pyl.) Steud. is reported for the first time from North America on shells of living freshwater mussels, Quadrula pustulosa Lea, Tritigonia verrucosa Raf. and Lampsilis straminea Conrad. The moss Leptodictyum riparium (Hedw.) Warnst. is also reported on Lampsilis straminea.*

During recent surveys of freshwater mussels in selected rivers and streams in southern Louisiana and Mississippi, we collected several specimens of clams with tufts of *Fissidens fontanus* (B.-Pyl.) Steud. and *Leptodictyum riparium* (Hedw.) Warnst. attached to the periostracum of the valves. Moss colonies were located along the exposed posterior portion of the valves surrounding the siphons and often in association with various sessile aquatic organisms such as algae, sponges and bryozoans. Apparently, the mosses colonize the exposed shell as they would any other submerged substrate.

We found *Fissidens fontanus* on specimens of *Quadrula pustulosa* Lea, *Tritigonia verrucosa* Raf. and *Lampsilis straminea* Conrad. Dr. William Reese (pers. comm.) considered the substrate very intriguing, since in North America, *F. fontanus* is reported from submerged substrates such as rocks (Breen, 1953, 1963; Whitehouse & McAllister, 1954; Elliot & Foreman, 1965; Redfearn, 1972), tree bases and roots (Breen, 1953; Reese, 1964; Wilkes, 1965), debris (Breen, 1963; Redfearn, 1972), the shell of a live snapping turtle (Whitehouse & McAllister, 1954) and a knothole 6 feet above the ground in a tree (Reese, 1972). *Fissidens fontanus* is common in swamps, lakes and streams in Louisiana and is expected to be common in Mississippi, although few reports (Wilkes, 1965; Rogers & Griffin, 1974) were found in the literature.

On a specimen of *Lampsilis straminea* sent to her, Dr. Janice Glime identified *Leptodictyum riparium* associated with the *F. fontanus*. Although not generally considered aquatic, *L. riparium* is commonly found in aquatic situations (Breen, 1955; Crum & Anderson, 1960; Miller & Thomson, 1959; Reese & Lemmon, 1970; Redfearn, 1972; Rogers & Griffin, 1974).

Dr. Glime (pers. comm.) directed us to Scandinavian studies by Luther (1951) and Lohammar (1954) that reported *F. fontanus* growing on empty clam shells and the shells of living *Anodonta* and *Margaritana* species. Crum (1976) suggested that mosses in aquatic habitats "prefer" calcareous substrates, which agrees with reports of Breen (1953) and Whitehouse and McAllister (1954).

The possible relation between moss and mussel is an open question. Glime (1978) suggests that clams use attached mosses as camouflage. Perhaps the bryophytes harbor planktonic organisms that are food for the mussels or that attract fish hosts for liberated glochidia. Lohammar (1954) observed that many *Anodonta cygnea* "wandered about carrying a luxuriant 'moss-fur.'" Many mussels migrate with fluctuations in water levels, which suggests a possible dispersal mechanism for mosses attached to such clams.

Nomenclature of mussels cited here is based on the taxonomy of Stern (1976). Voucher specimens of mosses and attached shells have been deposited in the herbarium of the University of Southwestern Louisiana (LAF), Lafayette, Louisiana.

We thank Dr. William Reese and Dr. Janice Glime for their counsel and assistance in verifying and identifying mosses collected.

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