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## SUCTORIA FROM PONDS AND STREAMS IN RUTHERFORD COUNTY, TENNESSEE

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## ABSTRACT

Suctoria were collected from six species of turtles and from slides placed at four stations along the West Fork of the Stones River, Rutherford County, Tennessee. Those from turtles were found attached to epiphytic algal filaments, epizoic peritrich stalks, or attached directly to the carapace and plastron. Suctoria were also found attached to glass slides left at collecting sites for four days. A total of 15 species of Suctoria representing four families were identified. With one exception, species collected from turtles differed from those found attached to slides.

## INTRODUCTION

Collin (1912) and Kahl (1934) are two of the major works that deal exclusively with the Suctoria. Both works indicate little taxonomic work has been directed toward this taxon in the United States. Goodrich and Jahn (1943) described the freshwater species associated with the western painted turtle, *Chrysemys picta belli*, and, according to Small et al. (1970), Suctoria occurred in great diversity in effluent receiving streams from a municipal waste treatment plant in Illinois. At present, no study has been published which deals exclusively with the Suctoria of Tennessee.

The purpose of this study was to identify the Suctoria from ponds and streams in Rutherford County, Tennessee. This investigation should provide new and additional insight into the understanding of the distribution of this taxon.

## METHODS AND MATERIALS

From July 1974 through July 1976, 58 turtles of six species, *Chrysemys scripta elegans* (26), *Chelydra serpentina* (11), *Stenothaerus odoratus* (3), *Kinosternum subrubrum* (5), *Graptemys geographica* (10), and *Trionyx spinifer* (3), were collected with baited traps at stations 2, 3, 5, 6, 7, and 8 from Rutherford County, Tennessee, streams and ponds (Fig. 1). Samples were obtained by scraping the folds of skin, carapace, and plastron of each turtle. These

samples, mostly filamentous algae, were maintained in the laboratory under an incandescent lamp for up to 10 days. Turtles were kept in tanks containing stream water, and additional samples were obtained when necessary. Living specimens of Suctoria were identified under a light microscope at 430X using the descriptions of Goodrich and Jahn (1943) and Jahn and Jahn (1949).

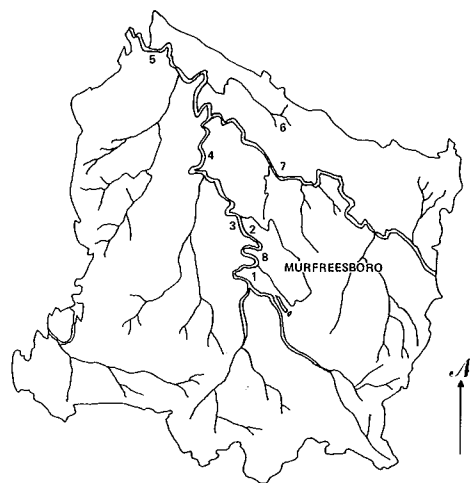


FIG. 1. Map of Rutherford County, showing sites where collections were made.

From July through September 1976, Suctoria were collected at stations 1, 2, 3, and 4 from the West Fork, Stones River, Rutherford County, Tennessee (Fig. 1). Suctoria were collected on six to 10 glass microscope slides placed in modified periphyton samplers suspended at a depth of 0.5 meter in the river for a period of four days. The samplers were collected and placed in containers, covered with stream water, and transported to our laboratory (Dept. of Biology, Middle Tennessee State Univ.) where slides were removed and examined microscopically at 440X for the presence of Suctoria. Suctoria were identified by use of the keys and descriptions of Kahl (1934), Kudo (1971), Collin (1912), Grell (1973), Corliss (1975), and Matthes (1954).

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## RESULTS

Suctorina collected from turtles trapped from six collecting sites are listed in Table 1. Table 2 contains a list of Suctorina collected from glass slides placed in the West Fork, Stones River.

Table 3 shows that a total of seven species of Suctorina representing two families were collected from turtle hosts and nine species representing four families were collected from glass slides.

TABLE 1. Collecting sites of turtle hosts for each species of Suctorina.

Table 1. Collecting sites of turtle hosts for each species of Suctorina.

Collecting Sites	Species of Turtle Hosts	Species of Suctorina
(2) West Fork, Stones River, Highway 41 N	<i>Kinosternum subrubrum</i>	<i>Multifasciculatum elegans</i> <i>Tokophrya quadripartita</i>
	<i>Chrysemys scripta elegans</i>	<i>Squalorophrya stenostyla</i> <i>Squalorophrya macrostyla</i> <i>Anarma multiruga</i>
	<i>Trionyx spinifer</i>	ND
(3) West Fork, Stones River, Thompson Lane	<i>Chrysemys scripta elegans</i>	<i>Squalorophrya macrostyla</i> <i>Anarma multiruga</i> <i>Squalorophrya stenostyla</i> <i>Podophrya okobojiensis</i>
	<i>Stenothaerus odoratus</i>	ND
(5) Percy Priest Lake Fate Sanders	<i>Chrysemys scripta elegans</i>	<i>Squalorophrya macrostyla</i> <i>Anarma multiruga</i>
	<i>Graptemys geographica</i>	<i>Squalorophrya macrostyla</i>
(6) Private pond on Holly Grove Road	<i>Chrysemys scripta elegans</i>	<i>Squalorophrya macrostyla</i> <i>Anarma multiruga</i> <i>Anarma brevis</i>
(7) Jefferson Pike Bridge Hades Branch	<i>Chelydra serpentina</i>	<i>Anarma multiruga</i> <i>Anarma brevis</i> <i>Squalorophrya macrostyla</i> <i>Tokophrya quadripartita</i> <i>Multifasciculatum elegans</i>
(8) West Fork, Stones River, Highway 96	<i>Chrysemys scripta elegans</i>	<i>Squalorophrya macrostyla</i>
	<i>Kinosternum subrubrum</i>	<i>Squalorophrya stenostyla</i>
	<i>Trionyx spinifer</i>	ND

TABLE 2. Species of Suctorina collected from glass slides placed at stations on West Fork, Stones River.

Stations	Species of Suctorina
(1) West Fork, Stones River, Highway 99 Salem Pike Bridge	<i>Metacinetina mystacina</i> <i>Lernaeophrya capitata</i> <i>Tokophrya quadripartita</i>
(2) West Fork, Stones River, Highway 41 N	<i>Acineteta tuberosa var. foetida</i> <i>Heliophrya erhardi</i> <i>Metacinetina micraster</i> <i>Podophrya fixa</i>
(3) West Fork, Stones River, Thompson Lane	<i>Tokophrya lemnaeum</i> <i>Podophrya fixa</i> <i>Metacinetina mystacina</i> <i>Acineteta tuberosa var. foetida</i> <i>Lernaeophrya capitata</i>
(4) Nice's Mill Bridge Sulphur Springs Road	<i>Tokophrya lemnaeum</i> <i>Heliophrya rotundra</i> <i>Metacinetina mystacina</i> <i>Heliophrya erhardi</i>

TABLE 3. Families and species of Suctorina, method of collection, and site from which collected.

Families and Species	Method of collecting Suctorina		Collection Site
	Glass slides	Turtle	
<b>Acinetidae:</b>			
<i>Acineteta tuberosa var. foetida</i>	+		2, 3
<i>Tokophrya lemnaeum</i>			3, 4
<i>Tokophrya quadripartita</i>	+	+	1, 2, 7
<i>Anarma multiruga</i>		+	2, 3, 5, 6, 7
<i>Anarma brevis</i>		+	6, 7
<i>Squalorophrya macrostyla</i>		+	2, 3, 5, 6, 7, 8
<i>Squalorophrya stenostyla</i>		+	2, 3, 8
<i>Multifasciculatum elegans</i>		+	2, 7
<b>Podophryidae:</b>			
<i>Metacinetina micraster</i>	+		2
<i>Podophrya fixa</i>	+		2, 3
<i>Metacinetina mystacina</i>			1, 3, 4
<i>Podophrya okobojiensis</i>		+	3
<b>Discophryidae:</b>			
<i>Heliophrya erhardi</i>	+		2, 4
<i>Heliophrya rotundra</i>			4
<b>Dendrosomatidae:</b>			
<i>Lernaeophrya capitata</i>	+		1, 3

## DISCUSSION

Since there is no published study which deals exclusively with the Suctorina of Tennessee, it is believed that most of these species are new records for the state. Epizoic suctorians were reported from a single species of turtle (*Chrysemys picta belli*) by Goodrich and Jahn (1943). According to our study, these suctorians showed a wider host preference, which suggests that probably any species of turtle with an abundant algal growth may serve as a host. Suctorina were not observed on *Trionyx spinifer* and *Stenothaerus odoratus*, but this was probably related to the small amount of algal growth on these species.

*Tokophrya quadripartita* was the only species collected from algae covered turtles and glass slides. Thirteen of the 15 species collected were found either on glass slides or turtles from the same or closely related collection sites (2,3); therefore, the opportunity for establishing themselves on either slides or turtles was present. *Anarma brevis* and *Heliophrya rotundra* were not collected at site 2 or 3.

An observation made during our study possibly helps explain why some suctorians are so closely associated with algae covered turtles. On numerous occasions during the present study, *Anarma multiruga* and *Squalorophrya macrostyla* were observed feeding on spores released by the filamentous alga, *Bacillaria sp.* Farmer (1980) suggests that suctorians feed exclusively on ciliates and that their feeding tentacles secrete a sticky substance that facilitates adherence to the appropriate prey. He furthermore concludes that this sticky substance is ciliate specific because amoebae and flagellates are unaffected by feeding tentacles. In addition to our study, two other studies contradict Farmer's hypothesis that the suctorian diet is exclusively ciliate. Gulicher (1950) stated that *Trematosoma bocqueti* gets its nourishment from zoospores of *Ulva lactuca* and Goodrich and Jahn (1943) reported *Squalorophrya macrostyla* from *Chrysemys picta belli* fed on algal spores.

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