

is subcircular and very oblique. The peristome is thin, its margin only slightly thickened and scarcely at all expanded or reflexed except at the base. There is an excessively delicate parietal callus. The type measures, alt. 8, major diam. 16.5, lesser diam. 14 mm.; diam. of umbilicus 2 mm.; aperture 8 x 8 mm.

Largest specimen, alt. 11, major diam. 19 mm.

Smallest adult, alt. 7, major diam. 15 mm.

Type: Cat. No. 3733 of the writer's collection. A paratype is Cat. No. 117086 of the Academy of Natural Sciences of Philadelphia, and another is in the collection of George Willett.

Type Locality: Roosevelt, Gila County, Arizona; in rock slides on north slopes, 2200 ft. altitude. 31 specimens examined, taken by Mr. George Willett, December 15, 1914, and November 1916.

Remarks: Although the shell characters of this modest species offer no very striking peculiarities, I have been unable to identify it with any of the sixty or so described members of the genus. There is apparently no end to the Arizonan *Sonorellas*. As compared with the other species of which I have seen specimens, *S. rooseveltiana* seems more than usually thin and fragile. The general proportions of the shell, as the spire, aperture, and so on, are quite variable.

Some of Mr. Willett's shells have found their way into other collections as *S. coloradoensis* Stearns, from the figures a quite different species.

Redlands, California.

THE DISTINCTIVE CHARACTERS OF *LAMPSILIS MINOR* AND
L. VILLOSA.

BY T. VAN HYNING.

In sending out specimens of the *Unionidae* of Florida from the Florida State Museum, we have stated of *Lampsilis villosa* B. H. Wright, and *Lampsilis minor* Lea, that it was impossible to differentiate with certainty all of the adult specimens; this

being due to the eroded umbones, but with young specimens showing umbonal sculpture, it was an easy matter. Simpson says in his Descriptive Catalogue for both species, that the umbonal sculpture was not seen; hence no description. This museum has numerous specimens of young and adult of both species recently collected, and the young show the umbonal sculpture of both species to be composed of about four coarse ridges; in *minor* they are circular and in *villosa* V-shaped looped.

Mr. Frierson, in a letter of November 27, '16, writes that he has discovered how to differentiate the adults of these two species. He calls attention to an additional small muscle scar (cicatricula?) at the upper end of the anterior muscle scar (cicatrix) in *minor*.

I have just found time to go over the specimens in this museum and open them up, and separate them according to Mr. Frierson's discovery, and I am now prepared to give some additional information. In the majority of specimens a glass is required to see the small scar referred to, and then in the majority of specimens the small scar, instead of being separate, is but an extension of the larger one, which makes it still harder to determine. Simpson says, of *minor*, "anterior scars deep," and of *villosa* "muscle scars scarcely impressed." In opening a shell, the deep scar in *minor* is at once noticeable from the shallow one of *villosa*. *Minor* is a heavier, wider, and shorter shell than *villosa*, and the anterior distance from the umbo is shorter in *minor*.

Florida State Museum.

NOTES ON REPRODUCTION AND GROWTH IN CERTAIN VIVIPAROUS
MUSSELS OF THE FAMILY SPHAERIIDAE.

BY RALPH J. GILMORE.

The present study was undertaken in an effort to determine the nature of the reproductive process in certain common forms of the family *Sphaeriidae*. For a long time incubation of the young has been known to occur in European forms, but no investigation has been made of related forms from America.

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