

SMITHSONIAN MISCELLANEOUS COLLECTIONS
VOLUME 107, NUMBER 16

CHARLES T. SIMPSON'S TYPES
IN THE MOLLUSCAN
GENUS LIGUUS

(WITH ONE PLATE)

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Charles Torrey Simpson collected his first *Liguus* in the year 1885, and in the following 30 years made an extensive collection of these snails. He tramped many times from Key Largo to Key West and back, along the Overseas Railway, collecting on every island and in every hammock along the way. In addition, he collected in Cuba and in Haiti, gathering material on the variation and distribution of the various species and races of *Liguus*. He also was well acquainted with most of the early collectors, who materially aided him with information and with specimens from their own cabinets. In this way, Dr. Simpson became as familiar with the tree snails as was any other student at that time.

When his review of the genus¹ was published in 1929, Dr. Simpson saw that the tree snails in Florida were fighting a losing battle for existence, and that those in Cuba were being exterminated over great areas. His fears that the genus might become extinct have come close to realization, for today many of the forms have been so extensively collected as to be nearly, if not quite, extinct. The hammocks have been cleared, and even where the snails have not been deliberately collected, they have been wiped out as innocent bystanders. Great tracts of land, such as Paradise Key, Pinecrest, and areas near The Big Cypress, have been subject to devastating fires, due, at least in part, to man's interest in draining the vast Everglades. Other areas are being exploited for their timber, and this process clears the land, which promotes evaporation and thus hastens the drying and burning sequence. All these factors are contributing to the destruction of these arboreal mollusks in Florida, their only native habitat within the United States.

¹ The Florida tree snails of the genus *Liguus*. Proc. U. S. Nat. Mus., vol. 73, art. 20, pp. 1-44, 4 col. pls., 1929.

Many varieties of *Liguus* are now living in hammocks far outside of their original ranges, having been carried thence by collectors desirous, perhaps, of saving a choice race. As a result, distribution records made within the last few years mean relatively little; but Dr. Simpson's data, collected before this widespread transplanting had begun, gave him an excellent conception of variation, relationship, distribution, and sources of stock.

During the years Dr. Simpson spent in the study of *Liguus*, he recognized as new 18 varieties to which he assigned names. Of these, 16 are now generally accepted as valid forms. He likewise noticed, but did not name, the form subsequently called *splendidus* by Frampton, referring to it as the "form . . ." which ". . ." has broad, brown, zigzag stripes."

Certain discrepancies have been noted between the measurements given in the original descriptions and those published in 1929, and it was therefore considered advisable to remeasure the types, with regard to a high degree of accuracy. This has been done, using vernier type calipers, and the resulting dimensions are given in this paper. The careful observer also will note certain discrepancies with respect to the specimen figured as "the type" in a few cases, and the question might easily arise as to just what specimen the type might be. However, by careful examination of the figures and descriptions, and comparison of specimens, the identity of each type has been established in all cases except one (*crassus*) that seems to be lost. In each instance, the final decision coincides with those labeled "type" in Dr. Simpson's own hand.

Some of the types are figured in a popular account of south Florida² published in 1920. Others are illustrated in the 1929 monograph, while one, *Liguus fasciatus castaneus*, has not been previously shown, neither of the specimens figured in the monograph being the type.

Since the figures of the types are located in volumes now practically unobtainable, we have gathered them together on one plate, with the hope that they will be of interest to students of the genus.

It is also desirable to confirm the presence of these types in the Biological Museum of the University of Miami. It is very gratifying to know that they are at last in a place of safety, and have suffered only one loss.

² Simpson, C. T., In Lower Florida Wilds. G. P. Putnam's Sons, New York, 1920.

The nomenclature adopted in this paper is in accordance with Pilsbry's³ most recent decisions on the matter. His system recognizes most of the forms thrown unconditionally into the synonymy by other authors, taking into consideration the fact that many are the end points in variation of the same subspecies. Although the majority intergrade perfectly, the extremes are easily recognizable, and are worthy of a certain degree of systematic distinction. Naturally, several of Simpson's "subspecies" fall into this category. It is not the purpose of this paper to discuss the validity of these forms, however, and those interested in the taxonomic complexities are referred to Pilsbry's excellent monograph.

The publication of the accompanying color plate of *Liguus* types has been possible only through the unlimited generosity of the University of Miami, and I am deeply indebted to Dr. Jay F. W. Pearson, vice president, and to Dr. E. Morton Miller, chairman of the zoology department, not only for making this paper possible, but for hearty encouragement as well. I also wish to thank Dr. Harald A. Rehder, curator of mollusks of the United States National Museum, for checking the manuscript, and for making many necessary arrangements connected with its publication.

LIGUUS FASCIATUS SOLIDUS variety **PSEUDOPICTUS** Simpson, 1920

Plate 1, figure 1, the type

Liguus solidus pseudopictus SIMPSON, 1920, Proc. Biol. Soc. Washington, vol. 33, p. 122.

Type figure.—Proc. U. S. Nat. Mus., vol. 73, art. 20, pl. 1, fig. 9.

Dimensions.—Length 50 mm., diameter 25 mm.

Type locality.—Lower Matecumbe Key, Fla. (upper end of island).

Range.—Lower Matecumbe Key.

LIGUUS FASCIATUS GRAPHICUS variety **DELICATUS** Simpson, 1920

Plate 1, figure 2, the type

Liguus solidus delicatus SIMPSON, 1920, Proc. Biol. Soc. Washington, vol. 33, p. 122.

Type figure.—Proc. U. S. Nat. Mus., vol. 73, art. 20, pl. 1, fig. 4.

Dimensions.—Length 39 mm., diameter 21 mm.

Type locality.—Lower Matecumbe Key, Fla. (upper end of island).

Range.—Upper and Lower Matecumbe, and Indian Keys, Fla.

³ Pilsbry, Henry A., Land Mollusca of North America (north of Mexico), vol. 2, pt. 1. Acad. Nat. Sci. Philadelphia, Monogr. No. 3, 1946.

LIGUUS FASCIATUS LOSSMANICUS variety **LUTEUS** Simpson, 1920

Plate 1, figure 3, the type

Liguus crenatus luteus SIMPSON, 1920, Proc. Biol. Soc. Washington, vol. 33, p. 123.*Type figure.*—Proc. U. S. Nat. Mus., vol. 73, art. 20, pl. 3, fig. 12.*Dimensions.*—Length 45 mm., diameter 24 mm.*Type locality.*—Hammock along the railroad above Conch Town, Key Vaca, Fla.*Range.*—Upper Keys, and peninsular Florida from Long Pine Key north to Dania.**LIGUUS FASCIATUS CASTANEOZONATUS** form **ROSEATUS** Pilsbry, 1912Plate 1, figure 4, the type of *livingstoni* SimpsonPlate 1, figure 7, the type of *lineolatus* Simpson*Liguus fasciatus livingstoni* SIMPSON, 1920, Proc. Biol. Soc. Washington, vol. 33, p. 124.*Type figure.*—Proc. U. S. Nat. Mus., vol. 73, art. 20, pl. 2, fig. 3.*Dimensions.*—Length 48 mm., diameter 25 mm.*Type locality.*—Brickell Hammock, Miami, Fla.*Range.*—Miami area, peninsular Florida.*Liguus fasciatus lineolatus* SIMPSON, 1920, Proc. Biol. Soc. Washington, vol. 33, p. 125.*Type figure.*—"In Lower Florida Wilds," frontispiece, fig. 2.*Dimensions.*—Length 50 mm., diameter 24.5 mm.*Type locality.*—Totten's Key, Fla.*Range.*—Vaca group of the Upper Keys; all the Upper Keys from Upper Matecumbe to and including Elliott's Key; mainland from Marco south to Cape Sable; south shore of the mainland. (Simpson.)**LIGUUS FASCIATUS CASTANEOZONATUS** variety **MIAMIENSIS** Simpson, 1920

Plate 1, figure 5, the type

Liguus fasciatus miamiensis SIMPSON, 1920, Proc. Biol. Soc. Washington, vol. 33, p. 124*Type figure.*—Proc. U. S. Nat. Mus., vol. 73, art. 20, pl. 2, fig. 4.*Dimensions.*—Length 45 mm., diameter 25.5 mm.*Type locality.*—Miami Hammock (Brickell Hammock), Miami, Fla.

Range.—Ojus south and west along the rocky ridge to Paradise Key. (Simpson.)

LIGUUS FASCIATUS CASTANEOZONATUS form **ALTERNATUS** Simpson,
1920

Plate 1, figure 6, the type

Liguus fasciatus alternatus SIMPSON 1920, Proc. Biol. Soc. Washington, vol. 33, p. 123.

Type figure.—"In Lower Florida Wilds," frontispiece, fig. 8. Proc. U. S. Nat. Mus., vol. 73, art. 20, pl. 2, fig. 1.

Dimensions.—Length 40 mm., diameter 20 mm.

Type locality.—Timm's Hammock, Fla.

Range.—Timm's Hammock; Black Creek, Paradise Key, all in Lower Dade County, Fla. "This form . . . seems to be confined to a few localities in the south end of the mainland of the state." (Simpson.)

LIGUUS FASCIATUS CASTANEOZONATUS variety **ELEGANS** Simpson,
1920

Plate 1, figure 8, the type

Liguus fasciatus elegans SIMPSON, 1920, Proc. Biol. Soc. Washington vol. 33, p. 124.

Type figure.—"In Lower Florida Wilds," frontispiece, fig. 5.

Dimensions.—Length 41.5 mm., diameter 21.5 mm.

Type locality.—13 miles southwest of Paradise Key, Fla.

Range.—A small key east of Whitewater Bay, where this and *roseatus* were the only form(s) of *Liguus*; small hammock on Long Pine Key, one very large specimen; Paradise Key; Costello's Hammock; Miami; Arch Creek; Pinecrest. (Simpson.)

LIGUUS FASCIATUS ELLIOTTENSIS variety **CAPENSIS** Simpson, 1920

Plate 1, figure 9, the type

Liguus crenatus capensis SIMPSON, 1920, Proc. Biol. Soc. Washington, vol. 33, p. 122.

Type figure.—Proc. U. S. Nat. Mus., vol. 73, art. 20, pl. 3, fig. 9.

Dimensions.—Length 52.5 mm., diameter 25 mm.

Type locality.—Northwest Cape Sable, Fla.

Range.—Northwest, Middle, and East Cape Sable; hammock near Flamingo. (Simpson.)

LIGUUS FASCIATUS TESTUDINEUS form ORNATUS Simpson, 1920

Plate I, figure 10, the type

Liguus fasciatus ornatus SIMPSON, 1920, Proc. Biol. Soc. Washington, vol. 33, p. 124.*Type figure.*—"In Lower Florida Wilds," frontispiece, fig. 4.*Dimensions.*—Length 38 mm., diameter 22 mm.*Type locality.*—Paradise Key, Fla.*Range.*—Long Pine Key and hammocks along the rocky ridge to the Miami River. (Simpson.)**LIGUUS FASCIATUS ELLIOTTENSIS variety VACAENSIS Simpson, 1920**

Plate I, figure 11, the type

Liguus crenatus vacaensis SIMPSON, 1920, Proc. Biol. Soc. Washington, vol. 33, p. 122.*Type figure.*—Proc. U. S. Nat. Mus., vol. 73, art. 20, pl. 4, fig. 10.*Dimensions.*—Length 54 mm., diameter 28 mm.*Type locality.*—Southwest of Conch Town, Key Vaca, Fla.*Range.*—Vaca Keys; Long Island; Key Largo; Angelfish Key; Sands Key; Northwest and Middle Cape Sable (?) near Flamingo (?). (Simpson.)**LIGUUS FASCIATUS ELLIOTTENSIS variety EBURNEUS Simpson, 1920**

Plate I, figure 12, the type

Liguus crenatus eburneus SIMPSON, 1920, Proc. Biol. Soc. Washington, vol. 33, p. 122.*Type figure.*—"In Lower Florida Wilds," frontispiece, fig. 10.*Dimensions.*—Length 44 mm., diameter 24 mm.*Type locality.*—Timm's Hammock, Fla.*Range.*—Hammocks along the rocky mainland ridge from Long Pine Key to Lemon City and opposite it on the peninsula. (Simpson.)**LIGUUS FASCIATUS TESTUDINEUS variety CASTANEUS Simpson, 1920**

Plate I, figure 13, the type

Liguus fasciatus castaneus SIMPSON, 1920, Proc. Biol. Soc. Washington, vol. 33, p. 126.*Type figure.*—Plate I, figure 13, herewith.*Dimensions.*—Length 38 mm., diameter 21 mm.*Type locality.*—Paradise Key, Fla.*Range.*—Miami to Long Pine Key. (Simpson.)

LIGUUS FASCIATUS ELLIOTTENSIS variety **CINGULATUS** Simpson, 1920

Plate 1, figure 14, the type

Liguus crenatus cingulatus SIMPSON, 1920, Proc. Biol. Soc. Washington, vol. 33, p. 123.*Type figure*.—Proc. U. S. Nat. Mus., vol. 73, art. 20, pl. 3, fig. 6.*Dimensions*.—Length 39.5 mm., diameter 21.5 mm.*Type locality*.—Brickell Hammock, Miami, Fla.*Range*.—Long Island of the Upper Keys; Key Largo; Middle Cape Sable; East Cape Sable; Flamingo; Long Pine Key (?); Timm's Hammock; Lysiloma Hammock, both in Lower Dade County; Miami; Lemon City. (Simpson.)**LIGUUS FASCIATUS LOSSMANICUS** variety **MOSIERI** Simpson, 1920

Plate 1, figure 15, the type

Liguus crenatus mosieri SIMPSON, 1920, Proc. Biol. Soc. Washington, vol. 33, p. 123.*Type figure*.—Proc. U. S. Nat. Mus., vol. 73, art. 20, pl. 4, fig. 2.*Dimensions*.—Length 45 mm., diameter 24 mm.*Type locality*.—Brickell Hammock, Miami, Fla.*Range*.—Hammocks from Arch Creek southward and westward along the great rocky mainland ridge to Long Pine Key, being most abundant at Miami, the type locality. (Simpson.)**LIGUUS FASCIATUS GRAPHICUS** form **SIMPSONI** Pilsbry, 1921Plate 1, figure 16, the type of *lineatus* Simpson*Liguus solidus lineatus* SIMPSON, 1920, Proc. Biol. Soc. Washington, vol. 33, p. 121, non *Achatina lineata* Valenciennes 1833.*Liguus fasciatus simpsoni* PILSBRY, 1921, Nautilus, vol. 34, p. 140.*Type figure*.—"In Lower Florida Wilds," frontispiece, fig. 3 (*lineatus*).*Dimensions*.—Length 40 mm., diameter 22 mm.*Type locality*.—Lignumvitae Key, Fla. (north side of island).*Range*.—Lignumvitae and Lower Matecumbe Keys, Fla. (Simpson.)**LIGUUS FASCIATUS TESTUDINEUS** variety **VERSICOLOR** Simpson, 1920

Plate 1, figure 17, the type

Liguus fasciatus versicolor SIMPSON, 1920, Proc. Biol. Soc. Washington, vol. 33, p. 125.

Type figure.—"In Lower Florida Wilds," frontispiece, fig. 12.

Dimensions.—Length 38.5 mm., diameter 21.5 mm.

Type locality.—Big Hammock, Long Island Key, Everglades, Fla.

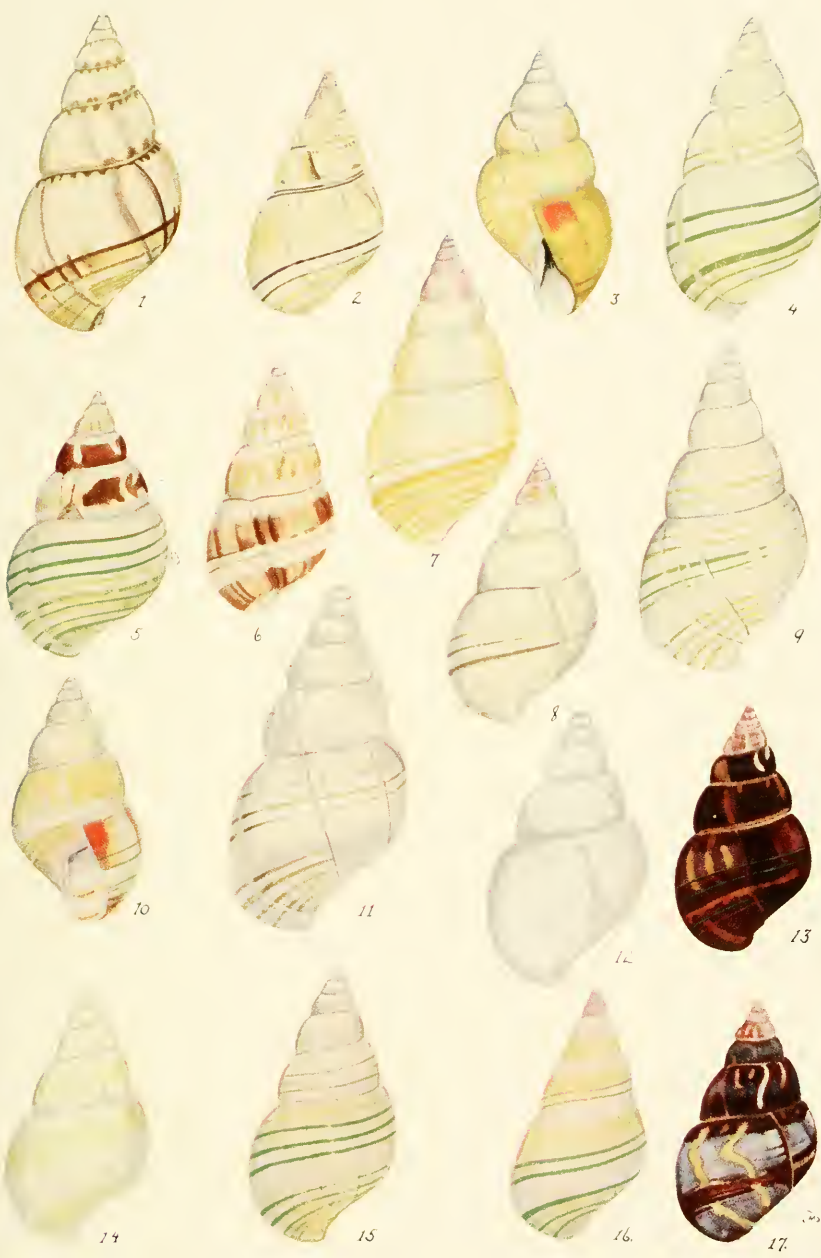
Rangc.—Confined to Long Pine Key according to Simpson.

LIGUUS FASCIATUS GRAPHICUS variety CRASSUS Simpson, 1920

The type and one additional specimen, the only material of this variety, have both been lost since Dr. Simpson's death.

EXPLANATION OF THE PLATE

- FIG. 1. *Liguus fasciatus solidus* variety *pseudopictus* Simpson.
 2. *Liguus fasciatus graphicus* variety *delicatus* Simpson.
 3. *Liguus fasciatus lossmanicus* variety *luteus* Simpson.
 4. *Liguus fasciatus castaneozonatus* form *roseatus* Pilsbry, the type of Simpson's *livingstoni*.
 5. *Liguus fasciatus castaneozonatus* variety *miamiensis* Simpson.
 6. *Liguus fasciatus castaneozonatus* form *alternatus* Simpson.
 7. *Liguus fasciatus castaneozonatus* form *roseatus* Pilsbry, the type of Simpson's *lineolatus*.
 8. *Liguus fasciatus castaneozonatus* variety *elegans* Simpson.
 9. *Liguus fasciatus elliotensis* variety *capensis* Simpson.
 10. *Liguus fasciatus testudineus* form *ornatus* Simpson.
 11. *Liguus fasciatus elliotensis* variety *vacaensis* Simpson.
 12. *Liguus fasciatus elliotensis* variety *eburneus* Simpson.
 13. *Liguus fasciatus testudineus* variety *castaneus* Simpson.
 14. *Liguus fasciatus elliotensis* variety *cingulatus* Simpson.
 15. *Liguus fasciatus lossmanicus* variety *mosieri* Simpson.
 16. *Liguus fasciatus graphicus* form *simpsoni* Pilsbry, the type of Simpson's *lineatus*.
 17. *Liguus fasciatus testudineus* variety *versicolor* Simpson.



CHARLES T. SIMPSON'S TYPES IN THE MOLLUSCAN GENUS *LIGUUS*
(For explanation, see p. 8.)