

## *Conus sauros*, a new *Conus* species (Gastropoda: Conidae) from the Gulf of Mexico

Emilio Fabián GARCIA  
115 Oakcrest Dr, Lafayette, LA 70503, USA  
efg2112@louisiana.edu

**KEYWORDS.** Gulf of Mexico, taxonomy, Conidae, *Conus* n.sp.

**ABSTRACT.** A new *Conus* species from the western Gulf of Mexico is described and compared with its western Atlantic congeners *C. armiger* Crosse, 1874, *C. mazei* Deshayes, 1874, *C. mazei* form *mcgintyi* Pilsbry, 1955, and *C. rainesae* McGinty, 1953. It is also compared with the Indo-Pacific species *Conus orbigny* Audouin, 1831.

### INTRODUCTION

In June, 2005 I joined a dredging expedition to Bahía de Campeche, southern Gulf of Mexico, to study the marine flora and fauna of the area. Among the material collected in the expedition there was a specimen of an interesting cone that eluded identification.

In January, 2006 I had the opportunity to visit the malacological collection of the Houston Museum of Natural Science. Among its holdings there were several more specimens of the unidentified *Conus* species. One of the specimens had been trawled off Port Aransas, Texas during a Northwestern Gulf Survey in 1970; the other three lots, two from the Alaminos area, off Houston, Texas, and one from Louisiana, had been donated to the museum from the collection of Margie Baldwin Sargent.

Although the Texas specimens had been collected by dredging and trawling, the Louisiana specimens had been hand-collected in the intertidal mudlumps that occur at the mouth of the Mississippi river, an area that has been studied in detail by Morgan, Coleman & Gagliano (1963). The authors have concluded in their studies that the animal life comprising this shell unit consists predominantly of forms inhabiting a depth of approximately 50-67 m (1963: 34), a depths that will be used in this study as true habitat for the species. Through carbon dating, the authors have also established that the shells in the upper horizon were deposited there some 15,000 YBP (p. 35). Otherwise, their study concentrates mostly on foraminifera.

The molluscan species present in the mudlumps have not been studied in detail. However, Dr. Emily Vokes, who has collected in the area, has establishes that the muricids found there form part of the Recent Gulf of Mexico fauna. Some examples are *Calotrophon ostrearum* (Conrad, 1846) (1976: 109, pl. 5, fig.6), *Hexaplex fulvescens* (Sowerby, 1834) (1990: 79), *Favartia cellulosa* (Conrad, 1846) (1994: 125-126, pl. 21, figs 4,5), and *Pteropurpura bequaerti* Clench & Farfante, 1945 (1997: 87). I have also seen among the same material specimens of *Scaphella dubia* form *kieneri* Clench, 1946, and *Sconsia striata* (Lamarck, 1816).

Although all of the specimens in the type material have been collected dead, there is no question that the new species described herein belongs to the Recent fauna of the Gulf of Mexico. It belongs to a complex of cones composed of *Conus armiger* Crosse, 1858, with which it seems to have its closest affinity. *C. mazei* Deshayes, 1874 and its form *mcgintyi* Pilsbry, 1955, and *C. rainesae* McGinty, 1953.

The labels accompanying the material in the Houston Museum did not include coordinates. Efforts to obtain more accurate data from the Texas A & M curator of mollusks were unsuccessful. The coordinates for the HMNS material used here are approximate, and are based on general locality and depth as they appear on the original labels.

### Abbreviations

HMNS: Houston Museum of Natural Science

EFG: author's collection

RLP: Robert L. Pace collection

dd: dead taken

### SYSTEMATICS

Family **CONIDAE** Fleming, 1822

Genus **Conus** Linnaeus, 1758

Type species: *Conus marmoreus* Linnaeus, 1758, by original designation.

*Conus sauros* n. sp.

Figs 1-9, 16, 18, 21-22

**Type material.** **Texas.** 43.5 miles SSE of Port Aransas, 27.3°N, 96.6°W, 140 m, 1 dd, length 29.5 mm, width 10.6 mm (Figs 1-2, 18, 21) (holotype HMNS 20465). - Texas A & M Alaminos Station 19, coordinates and depth unknown, 1 dd (paratype 1 HMNS 37177) (Figs 3-4). - Texas A & M Alaminos Station 5, 27.6°N, 94.6°W, 64 - 68 m, 3 dd (paratypes 4, 5 & 6 HMNS 37180). **Louisiana.** Mississippi River Delta, 28°58' to 28°59'N, 89°08'W to 89°09'W, in exposed mud lumps, 2 dd (paratypes 2 & 3 HMNS 37178) (Figs 5-6). **Mexico.** Off Campeche.

20°46.97'N, 91°55.86'W, 28-48 m, 1 dd (paratype 7 EFG 25813) (Figs 7-8).

**Other material.** Locality unknown, Robert L. Pace collection, 1 dd.

**Type locality.** 43.5 miles SSE of Port Aransas, Texas, 27.3°N, 96.6°W, 140 m.

**Distribution.** Western Gulf of Mexico, from the mouth of the Mississippi River, Louisiana, west to Alaminos Canyon, Texas, and south to Bahía de Campeche, Mexico, in 28 - 140 m.

**Description.** Holotype 29.5 mm in length, light in weight, conically elongated (width/ length ratio 0.36) (Figs 1-2, 18, 21). Protoconch missing. Teleoconch of 8 whorls; whorls shouldered, carinated; carina on early whorls almost central, progressing anteriorly on later whorls. Suture deep (Fig. 18). Axial sculpture of numerous arched thread on shoulder, evanescent at carina (Fig. 18), weakly appearing again anterior to carina; last whorl with numerous, relatively wide, low, flat axial threads ( Fig. 21); threads becoming weaker and narrower when crossing spiral cords. Spiral sculpture of two to four strong threads posterior to carina, creating reticulations at shoulder when crossing over axial elements; threads followed by a heavy, nodulose, otherwise smooth cord and one or two undulating threads anterior to carina (Fig. 18); last whorl with strong, flat, evenly distributed spiral cords; cords as wide as interspaces, minutely wrinkled by axial threads (Fig. 21). Color light cream.

Protoconch of juvenile paratypes whitish, semi-translucent, paucispiral, of less than two whorls; first whorl about half the size of second whorl (Figs 9, 16); transition from protoconch to teleoconch whorls inconspicuous.

**Variations.** Although the type material mostly follows the description of the holotype, there are variations in the structure of the spiral cords and in shell coloring. Paratypes 2 (Figs 5-6, 22) and 7 (Figs 7-8) have more rounded, slightly more nodulose spiral cords, and brownish-orange dots on the dorsum of the cords, very similar to those of *C. armiger* (Figs 10-11, 24). Paratypes 4, 5 and 6, and the RLP specimen, have the same color pattern but flat, wide spiral cords.

These variations are comparable to the "verrucose" forms in the *Conus jaspideus* Gmelin, 1791 complex and in other *Conus* species.

**Discussion.** *Conus sauros* n. sp. presumably attains a maximum size of around 30 mm, judging by the size and structure of paratype 1 (Figs 3-4), which has the appearance of an older shell in a complex of cones characterized by their thin lip, even at maturity. Although the shell coloration of most specimens is light cream, other specimens from the type material, which seem fresher, suggest that specimens collected alive will have a lighter background, such as that of paratype 7.

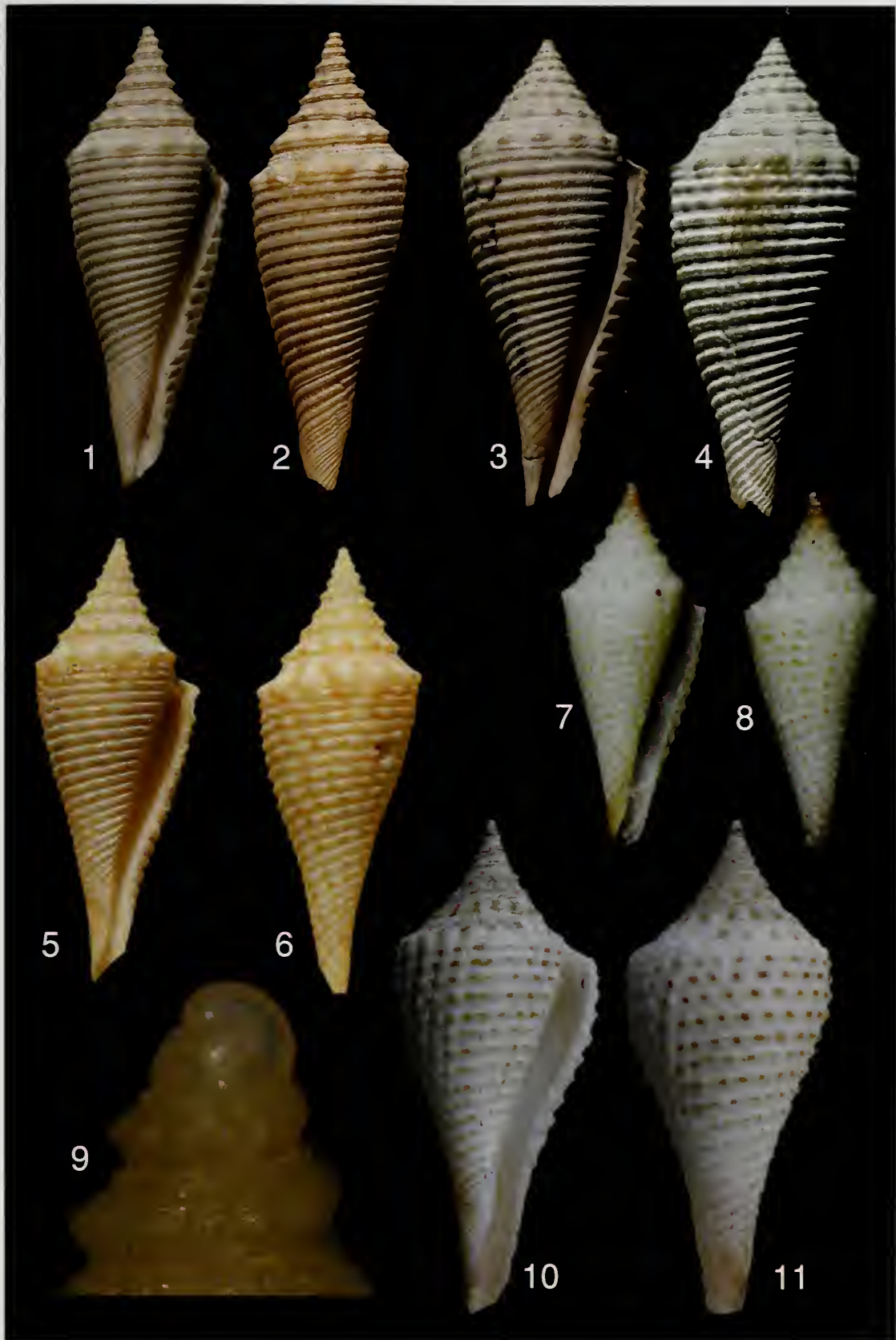
The "dotted" variation of the new species is superficially similar to *C. armiger* in coloration (Figs 22, 24) and, in the case of paratypes 2 (Figs 5-6) and 7 (Figs 7-8), in having spiral cords with a more angular profile; however, the shells of all of the specimens of the new species are narrower, with a width / length ratio of 0.37 for *C. sauros* vs 0.44 for *C. armiger* (Tables 1 & 2), and the number of primary spiral cords on the last whorl are more numerous, with an average of 20 for *C. sauros* and 16.5 for *C. armiger* (Tables 1 & 2). The narrower, closely packed spiral threads that appear on the syphonal canal of older specimens of both species have been excluded from this count.

*C. sauros* also differs from *C. armiger* in having a more prominent, "true" carina that is separated from the anterior suture by an area wide enough to accommodate one or two spiral threads (Fig. 18). *Conus armiger* lacks a carina in later teleoconch whorls, as its nodulose spiral cord is positioned against the posterior edge of the suture (Fig. 19). As is the case with *C. sauros*, *C. armiger* seems to have a rather fixed number of primary spiral cords throughout its growth.

*Conus mazei* Deshayes, 1874 and its form *mcgintyi* Pilsbry, 1955 (Figs 12-13, 17, 20) grow to at least twice the size of *C. sauros*. They are thinner, with a more delicate appearance, and are more elongated. The holotype of *C. mazei* has a width / length ratio of 0.27 (Clench, 1942:17), and the form *mcgintyi* has a width / length ratio of 0.29 (Tables 1 and 3). This species also has a smoother ornamentation, without the strongly nodulose carina of *C. sauros*. The "dotted" markings of typical *C. mazei* are similar to

## Figures 1- 11

**1-9.** *Conus sauros* n. sp. **1-2.** 43.5 miles SSE of Port Aransas, Texas, 27.3°N, 96.6°W, 140 m. Holotype HMNS 20465, length 29.5 mm, width 10.6 mm; **3-4.** Off Houston, Texas, Texas A & M Alaminos Station 19. Paratype 1 HMNS 37177, length 30 mm, width 12.2 mm; **5-6.** Mississippi River Delta, 28°58' to 28°59'N, 89°08'W to 89°09'W, intertidal. Paratype 2 HMNS 37178, length 25.7mm, width 9.5 mm; **7-8.** Off Campeche, Gulf of Mexico, 20°46.97'N, 91°55.86'W, 28 - 48 m. Paratype 7 EFG 25813, length 17.9 mm, width 6.7 mm; **9.** Protoconch of paratype 6. Off Houston, Texas, Texas A & M Alaminos Station 5, 27.6°N, 94.6°W, 64- 68 m. HMNS 37180, length 12.6 mm, width 4.6 mm. **10-11.** *Conus armiger* Crosse, 1874, 4 miles S. of Chandeleur Ids. Louisiana, 29° 56' N, 88° 56' W, 16 m. EFG 4772, length 37.1 mm, width 15.2 mm.



those of the new species; however, the form *mcgintyi* has bands of relatively large, squarish blotches (Figs 12-13, 23). This taxon also has an inconsistent number of spiral cords in relation to its length, e.g., a 49 mm specimen has 50 cords while a 65.7 mm specimen has 51 (Table 3). The number of spiral cords in *C. sauros* seems to be rather constant regardless of its length (Table 1).

*Conus rainesae* McGinty, 1953, has a width / length ratio somewhat similar to that of *C. sauros*, i. e. 0.35 for *C. rainesae* vs. 0.37 for *C. sauros* (Tables 1 and 4); however, the former grows to a smaller size, is more delicate, does not have the strongly nodulose carina of *C. sauros*, has a shiny surface, the posterior half of the last whorl is smooth, with only incised lines at anterior half, and its markings include large blotches of coloration within the "dotted" pattern.

*Conus orbigny* Audouin, 1831, an Indo-Pacific species, is also similar in proportion to *Conus sauros*, with a width / length ratio of about 0.34. It also has a strongly nodulose carina and flat spiral cords, with rather flat axial threads in the interspaces. Although *C. orbigny* also has a pattern of brownish dots on the surface of the spiral cords, these dots tend to form spiral bands and/ or axial arches, and to coalesce to form large blotches, instead of forming the regular "dotted" pattern of *C. sauros*. *Conus orbigny* also differs from *C. sauros* in reaching more than twice its size, in having a shoulder sculpture of four or five strong cords and hair-like axial threads that do not create reticulations, and in having more spiral cords.

**Etymology.** From the Greek *sauros* (noun, meaning reptile), referring to the rough surface of the species, not unlike the skin of some reptiles.

#### ACKNOWLEDGEMENTS

My thanks to my colleagues Drs. Suzanne Fredericq and Darryl Felder for inviting me on the dredging expedition to Bahía de Campeche; to Mrs. Tina

Petway, who was my hostess at the Houston Museum of Natural Science, and who so graciously helped me find my way around; to the Houston Conchology Society and Lucy Clampit, for inviting me to their city; to Mr. Robert L. Pacc, of Miami, Florida, for the loan of specimens; and last, but not least, to Dr. Emily Vokes, Professor Emerita, Tulane University, for her advice concerning the geological status of the Mississippi mudlumps. Suggestions made by an unknown reviewer, and the insightful editing of Mr. Roland Houart, improved the quality of this paper. Part of the material for this study is based upon work supported by the National Science Foundation under Grant No. 0315995.

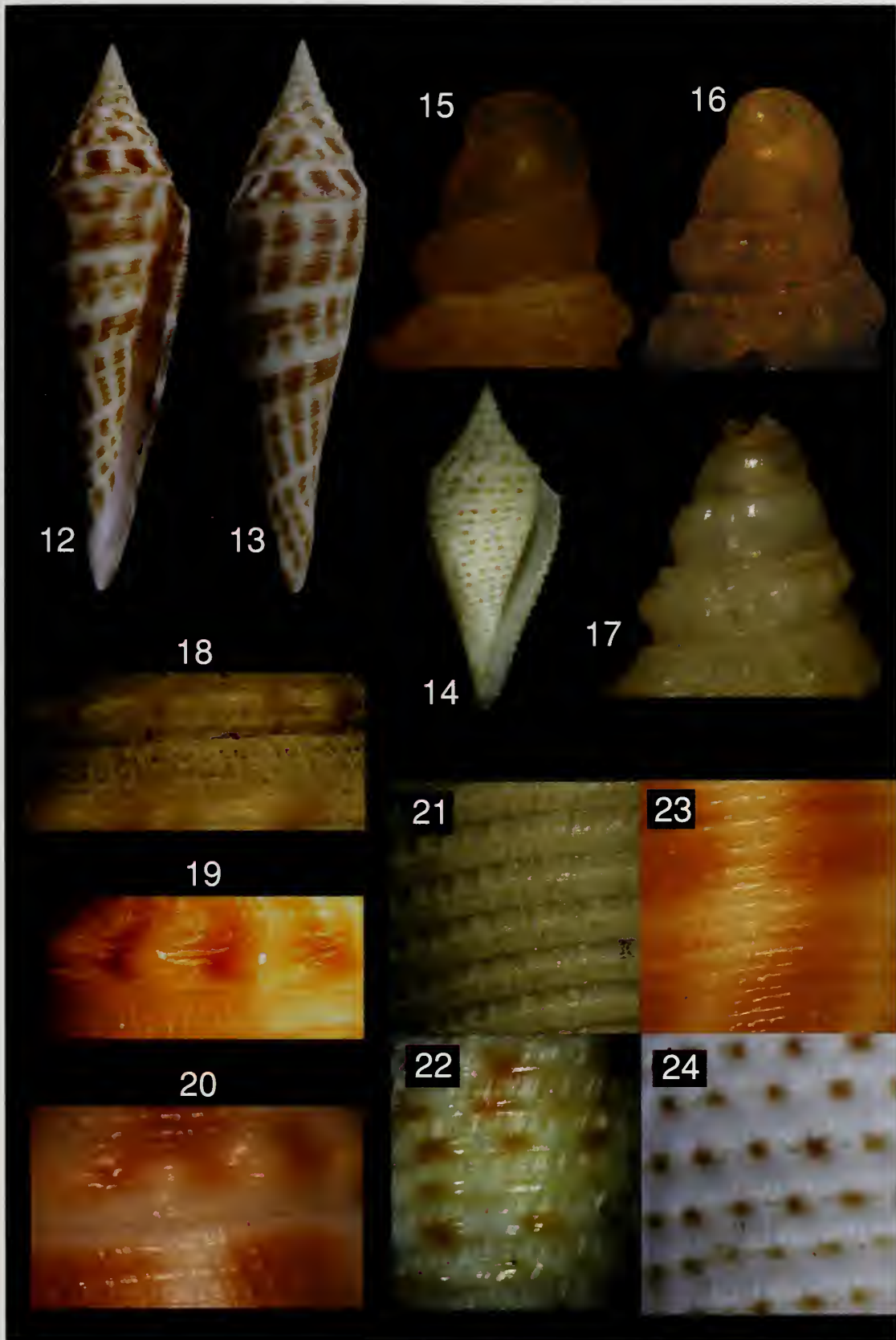
#### REFERENCES

- Clench, W. J. 1942. The genus *Conus* in the western Atlantic. *Johnsonia* 1(6) 1-40.
- Morgan, J.P., Coleman, J. M., and Gagliano, S. M. 1963. Mudlumps at the mouth of South Pass, Mississippi River. *Louisiana State University, Coastal Studies no. 10*, 190 pp.
- Vokes, E. H. 1976. Cenozoic Muricidae of the western Atlantic region. Part VII - *Calotrophon* and *Attiliosa*. *Tulane Studies in Geology and Paleontology* 12: 101-132.
- Vokes, E. H. 1990. Cenozoic Muricidae of the Western Atlantic region. Part VIII - *Murex* s.s., *Haustellum*, *Chicoreus*, and *Hexaplex*; additions and corrections. *Tulane Studies in Geology and Paleontology* 23: 1-96.
- Vokes, E. H. 1994. Cenozoic Muricidae of the Western Atlantic region. Part X - The subfamily Muricopsinae. *Tulane Studies in Geology and Paleontology* 26: 49-160.
- Vokes, E. H. 1997. Cenozoic Muricidae of the western Atlantic region. Part XII - The subfamily Ocenebrinae (in part). *Tulane Studies in Geology and Paleontology* 29 69-118.

#### Figures 12-24

**12-13, 17, 20.** *Conus mazei* form *mcgintyi* Pilsbry, 1955. Off Mobile, Alabama, 29.3°N, 88.1°W, 200 m. EFG 4938, length 49mm, width 13.5 mm. **14-15.** *Conus armiger* Crosse, 1874. Off Panama City, Florida, 29.4°N, 85.7°W. 60 m. RLP collection, length 19.4 mm, width 8.4 mm. **16.** Protoconch of *C. sauros* n.sp., Paratype 3, HMNS37178, Mississippi River Delta, 28°58' to 28°59'N, 89°08'W to 89°09'W. Length of shell 7.2 mm, width 2.7 mm. **18.** Suture structure of holotype, HMNS 20465. **19.** Suture structure of *Conus armiger* Crosse, 1874, EFG 4772.

**21-24.** Surface structures and color patterns. **21.** *C. sauros*, holotype, HMNS 20465; **22.** *C. sauros*, paratype 2, HMNS 37178; **23.** *Conus mazei* form *mcgintyi*, EFG 4938; **24.** *C. armiger*, EFG 4772.



**TABLE 1:**  
Width / length ratio and number of primary cords of  
*Conus sauros* n. sp.

	Length (mm)	Width (mm)	W / L Ratio	Primary cords on last whorl
Holotype	29.5	10.6	0.36	19
Paratype 1	30.0	12.0	0.40	21
Paratype 2	25.2	9.5	0.37	20
Paratype 3	7.0	2.5	0.36	20
Paratype 4	12.4	4.5	0.36	20
Paratype 5	13.5	5.0	0.37	20
Paratype 6	14.8	5.7	0.38	20
Paratype 7	17.9	6.7	0.37	18
RLP	16.0	6.2	0.38	20
AVERAGES			0.37	20

**TABLE 2:**  
Width / length ratio and number of primary cords of  
*Conus armiger* Crosse, 1858

	Length (mm)	Width (mm)	W / L Ratio	Primary cords on last whorl
EFG 4772	37.0	15.6	0.42	16
EFG 25740	32.3	15.0	0.46	17
	34.0	14.5	0.42	16
EFG 23753	32.0	14.1	0.44	18
RLP	18.5	8.2	0.44	15
	19.4	8.4	0.43	17
AVERAGES			0.44	16.5

**TABLE 3:**  
Width / length ratio and number of primary cords of  
*Conus mazei* form *mcgintyi* Pilsbry, 1955

	Length (mm)	Width (mm)	W / L Ratio	Primary cords on last whorl
EFG 4938	49.0	13.5	0.28	50
	65.7	18.8	0.29	51
	61.0	17.2	0.28	47
	44.1	13.0	0.29	32
AVERAGES			0.29	Not applicable

**TABLE 4:**  
Width / length ratio of *Conus rainesae* McGinty, 1953

	Length (mm)	Width (mm)	W / L Ratio	Primary cords on last whorl
EFG 14910	18.5	6.5	0.35	Not applicable
EFG 10331	19.3	6.8	0.35	
	21.7	7.8	0.36	
AVERAGES			0.35	