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# THE PLASTER JACKET

NUMBER 40

JUNE 1982

PALEONTOLOGICAL SURVEY OF THE TOY TOWN DUMP,  
ST. PETERSBURG, FLORIDA

Brian Ridgway



A Publication of the  
*Florida Paleontological Society, Inc.*  
Florida State Museum, University of Florida  
Gainesville, Florida 32611

ADDRESS DIRECTORY ISSUE

# THE PLASTER JACKET

a publication of the  
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## OFFICIAL BUSINESS

FLORIDA PALEONTOLOGICAL SOCIETY, INC.

## SPRING MEETING

The FPS Spring Meeting in Polk County on May 15 was attended by 150 members and guests. Joe Larned and his family earned the society's highest gratitude for arranging a splendid day.

It was a clear Saturday morning, and cars and other vehicles filled the town of Bradley Junction. By 8:30 A.M. the Larneds had greeted most of the members. Punctually at 9:00, pooled more compactly in fewer vehicles, the group caravanned south to the CF Industries phosphate complex in the northern edge of Hardee County. The FPS is very grateful to CF Industries for its hospitality. The CF superintendents who spent their Saturday as our guides and hosts were indeed a delightful group.

The afternoon was devoted to "show and tell" sessions about fossils and to "tall tales" about fossil-collecting. The final stop, in late afternoon, was at Joe Larned's Bone Valley Museum back in Bradley Junction.

## FPS PATCHES

At the Spring Meeting Bessie Hall introduced the new woven patches which she had made for the Society. The accompanying figure, made from a xerox copy, does not do them justice, but gives some idea of their classy look. They are 4 3/4 inches in diameter, with a handsome tan Hexameryx over a green state of Florida on a dark blue background, and the crisp green lettering stands out clearly from the white border. These patches can now be ordered from the FPS Treasurer for \$5.00.



No official business meeting was held, but David Webb reported for the FPS Board of Directors on two items of old business. First, the Thomas Farm Fossil Dig, jointly sponsored by FPS and the Florida State Museum, was in the final stages of preparation. A group of 16 persons was coming to camp, dig, and study during the week of June 13 thru 19. If this program goes as well as anticipated, the committee hopes to repeat, and perhaps even expand, the program in 1983.

Secondly, it was reported that Dr. Cliff Jeremiah's newly formed Book Fund Committee had raised \$300 toward the Society's publication of a book on Florida Fossil Vertebrates. It is expected to resemble a set of The Plaster Jacket, but to be more complete and more up-to-date. Several members commented on the need for such a book. Once produced, it is expected to make money for the FPS. Meanwhile

contributions may be directed to Dr. Jeremiah or the FPS Treasurer. About \$500 more are needed by the beginning of 1983.

#### FPS NOMINATIONS FOR 1982-1983

The nominating committee has presented the following slate of officers for election at the annual meeting in the fall.

President-elect:	Joe Larned
Vice-President:	Frank Garcia
Secretary-Treasurer:	Howard H. Converse
Board of Directors	Ed Brown
(to join previous	Larry Lawson
Board members on a	Don Serbousek
rotating basis):	Thomas Watson

Other nominations may be submitted by members to the Secretary no later than September 1.

#### "HORNED WONDER" PUBLISHED

The full description of the "Horned Wonder from Tiger Bay" recently appeared in the Journal of Vertebrate Paleontology. The type skull shown in Figure 2 was donated by Frank Garcia to the Florida State Museum in 1979, prepared by Howard Converse in 1980, and described by David Webb in 1981. It now bears the official name Kryptoceras amatorum (bent-horned animal, of the lovers or the amateurs ).

Several other specimens of this horned animal have been collected in the same area, including two isolated teeth collected by Webb and Converse. In the private collection of John Waldrop there is also a large frontal horn, and most recently Frank Garcia collected still another frontal horn, apparently representing a young male. As announced in the published work, Kryptoceras from Florida is the last and largest known member of the extinct family Protoceratidae.

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## PALEONTOLOGICAL SURVEY OF THE TOY TOWN DUMP, ST. PETERSBURG, FLORIDA

Brian Ridgway<sup>1</sup>

The Toy Town Dump site was exposed by municipal excavation to be used as fill dirt at the city dump. The site is located about one mile east of Tampa Bay on I-275 at the corner of Roosevelt Avenue in St. Petersburg, Pinellas County (Fig. 1). As the drag line dug through the dirt near the surface few fossils were found. As it passed downward through the shell-rich marls and then into the fossiliferous-clay layers, the spoil banks yielded large amounts of fossil material (Fig. 2).

<sup>1</sup>Born in Boston, Massachusetts, 25-year-old Brian Ridgway is a member of the Suncoast Archaeological and Paleontological Society and the Florida Paleontological Society. He has taught classes on fossils for the Pinellas County Science Center and has been hunting and studying fossils for over 15 years. His collection is exhibited at the Pinellas County Science Center in St. Petersburg, Florida.

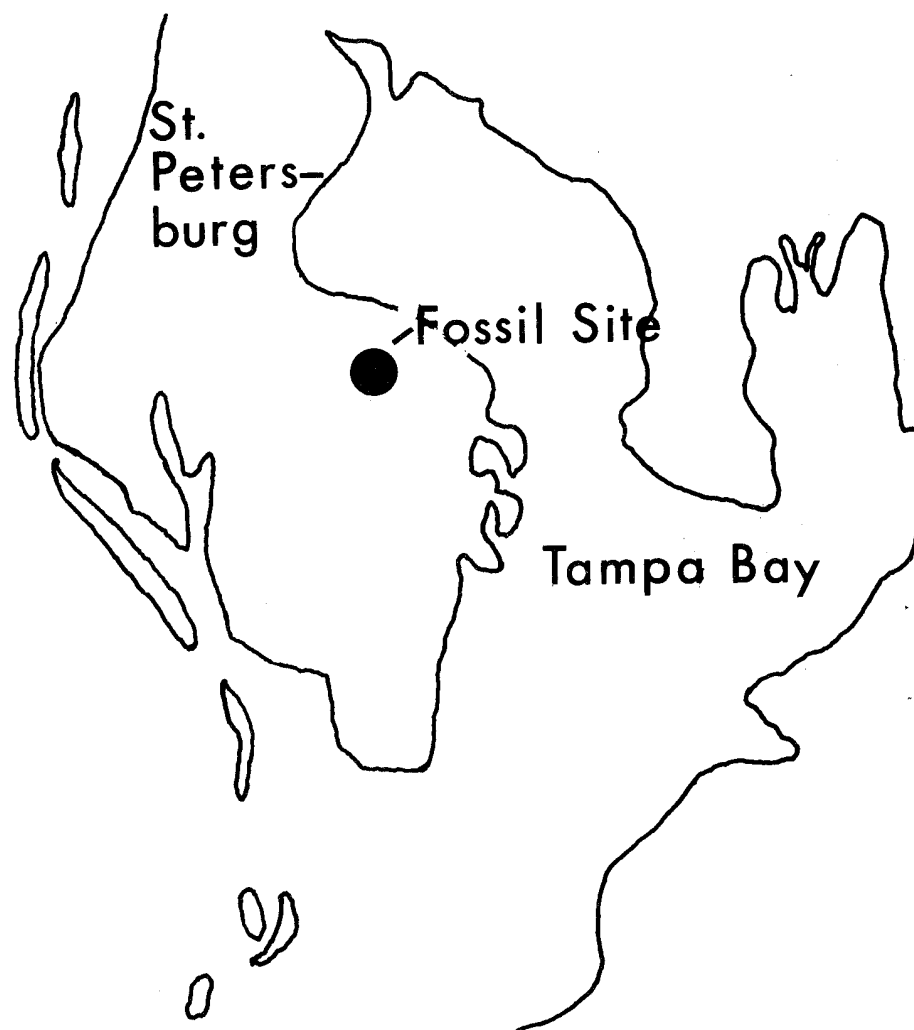


FIGURE 1. Location of the Toy Town Dump site in Pinellas County, Florida.

The excavations at the Toy Town Dump site passed through five formations, of which two are richly fossiliferous. One is a rich Miocene formation, the Hawthorne; and the other is a Pliocene formation, the Tamiami. During Hawthorne time this area was full of sharks, whales, and other sea life. Later, the Tamiami interval preserved a rich record of invertebrates, especially the shells and barnacles and clams.

This site evidently samples not the shallow intracoastal waterways often seen in peninsular Florida, but rather deeper marine deposits of the open ocean. In Pinellas County these same fossiliferous formations outcrop in narrow bands for many miles. Whereas many sites in Pinellas County produce both marine and land vertebrates, the vertebrate remains from this site are exclusively marine. This report reviews the marine flora and fauna of the Miocene and Pliocene at the Toy Town Dump site.



FIGURE 2. Field crew from Suncoast Archaeological and Paleontological Society at Toy Town Dump Site.

#### STRATIGRAPHY OF THE TOY TOWN DUMP SITE

The five formations encountered in the Toy Town Dump Site are indicated in Figure 3. They are briefly described from bottom to top.

1. The Tampa Formation was laid down first. In this area it consists of phosphatic boulders and pebbles and sandy clays. Its base was not exposed at this site.

2. The next unit represents the Hawthorne Formation, which consists chiefly of gray phosphatic sand and lenses of green or gray compact clays. In some areas it weathers to gray or black vesicular sandstone. The Hawthorne Formation apparently crops up throughout the Florida peninsula, except centrally where it has eroded off the Ocala uplift. This formation comprises the deposits of a transgressing sea that flooded and eroded land surface and usually produces fossils of about medial Miocene age.

3. The next formation is the Chipola. In this type area the Chipola Formation is a bluish-gray to yellowish-brown fossiliferous marl. It shows local variations from limestone to coarse calcareous sand and often includes lenses of clay. Within the Chipola Formation there is a sudden change in sedimentary strata that divides the lower from the upper Chipola.

4. Near the top of the section the Tamiami Formation appears. It is the most richly fossiliferous marl here. In the Pinellas peninsula east of Largo in Seminole County, it is regularly underlain by a shell marl believed also to be of Pliocene age. This may be its low member separated by an unconformity.

5. The uppermost stratum at Toy Town Dump is the Avli Formation accompanied by other sands of the Pleistocene era. No fossils are found in these layers.

In summary, then, the important fossil-bearing units in this excavation are the Hawthorne Formation of probable medial Miocene age and the Tamiami Formation of the Pliocene age. The highlights of the fossil collections from these two stratigraphic units are described below.

#### HAWTHORNE FAUNA

Some of the invertebrates and most of the vertebrates from the Hawthorne formation are listed below. The major vertebrate groups are sharks, stingrays, bony fish, sea cows, porpoises, and whales.

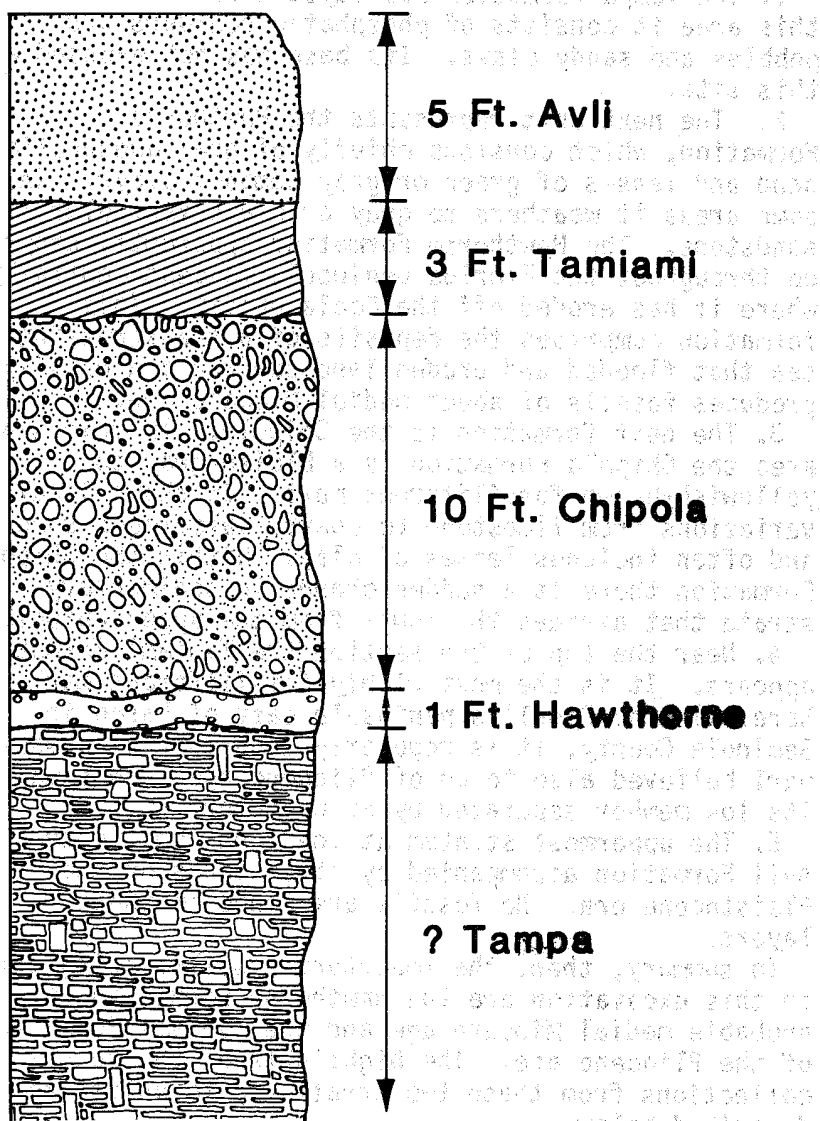


FIGURE 3. A geologic cross-section of the five formations that occur at the Toy Town Dump.

## SHELLS

Conspicuous among the Miocene shells from the Hawthorne Formation are the following groups:

- A. Scaphopoda (tusk shells)
- B. Scallops
- C. Pectens
- D. Lucines
- E. Barnacles
- F. Oysters
- G. Cockles
- H. Nautilus

These are just a few of the Miocene invertebrate groups found at the Toy Town Dump site.

## SHARKS

Carcharodon megalodon (extinct relative of the White Shark).-- This giant of sharks swam the ocean in this area. The species appeared in the Miocene epoch and then died out at the Pleistocene epoch. To judge from the size of their teeth some of them grew to lengths of nearly 100 feet. The fossilized teeth found at Toy Town Dump range between 4 and 8 inches long. Many of the teeth found are in perfect condition (Fig. 4). Whenever the heavy equipment digs new spoil piles, new samples of these teeth appear. Whenever a good rain washes off the clay, large numbers of such fossils may be discovered.

Galeocerdo cuvieri (tiger shark).-- Another large predaceous shark, the tiger grew larger than today's specimens. A shark measuring 13-14 feet may range from 500 to 1000 pounds. Today the tiger shark is mainly subtropical and usually lives in coastal waters (Fig. 5). Most fossil tiger shark teeth are 1 inch in length. They too are quite common. Other less common species are Galeocerdo latidens and Galeocerdo arcticus.

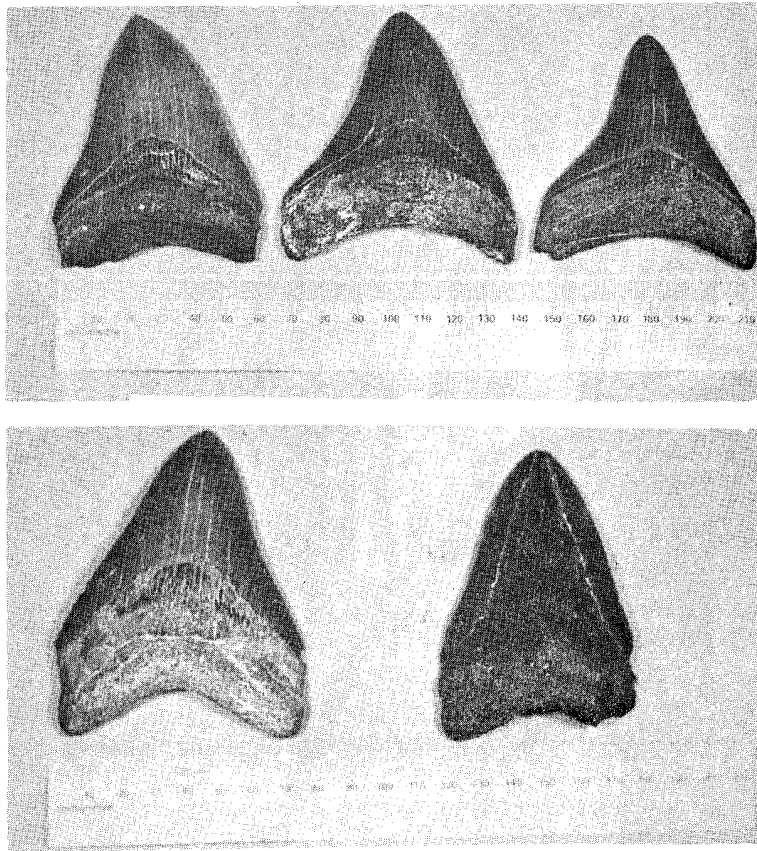


FIGURE 4. Carcharodon megalodon teeth. (A) Well-preserved teeth. (B) Some large teeth. Scale in mm.

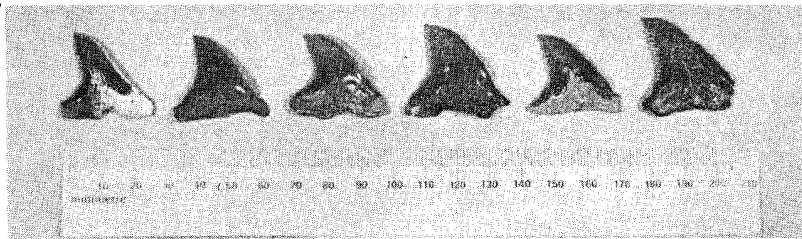


FIGURE 5. Galeocerdo cuvieri teeth.

Isurus hastalis (mako).-- This shark is a deep water fish that may reach a length of over 12 feet and weigh

over 1000 pounds. It is a fast swimming fish, too. Its teeth actually protrude from its mouth and there is little difference between the uppers and the lowers. Long and slender these teeth have an inward curve. These are by far the most common teeth found at the fossil site, and Isurus specimens 2 inches long are not unusual (Fig. 6).

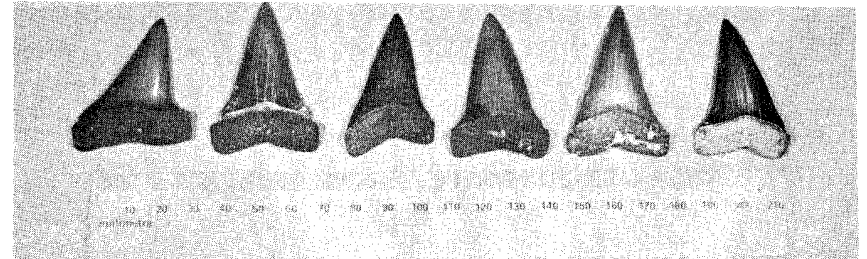


FIGURE 6. Isurus hastalis teeth.

Hemipristis serra (extinct shark).-- No members of this genus live in this hemisphere. These teeth functionally resemble the tiger shark, forming long gentle curves for shearing large chunks of flesh. The fossil teeth of this species occur in very good condition but are not as common as the Mako or Tiger shark teeth.

Carcharhinus species (requiem sharks).-- All of the species mentioned so far belong to the family Carcharhinidae, of which this genus is typical. They have broad, serrated edges on the upper teeth and narrow, less serrated edges on the lowers. They are not common at the Toy Town Dump site (Fig. 7).

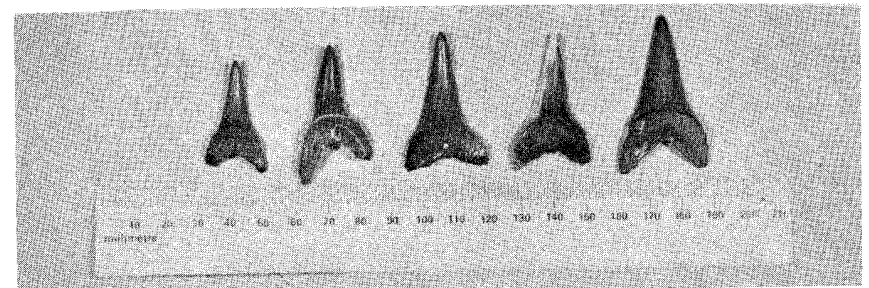


FIGURE 7. Carcharhinus species teeth.

These are just a few of the sharks found on this site. There is such variety here that it would take years to study. We are currently continuing our field work.

### STING RAYS

Sting rays are abundant at this site. Whole mouth plates and bars from the plates are in good condition. They range from 1/2 inch to 2 inches in width (Fig. 8). The barbs from the tail region are not as common.

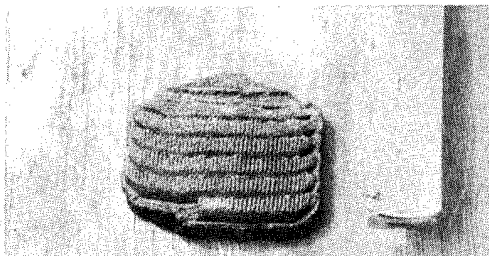


FIGURE 8. Sting ray mouth plate, used for crushing mollusks.

### BONY FISHES

Only a few kinds of bony fishes occur at the Toy Town Dump site. The most common fossils are mouth plates. Fishes bearing such mouth plates generally feed on abrasive coral reefs. The parrotfish of today is an excellent example with its "beak" and crushing plates. Extinct parrotfish abound here, and are usually in good condition. They typically range from one to three inches in length (Fig. 9).

Another fish found here is like the sheepshead of today. These plates are different in that they bear hundreds of tiny denticles. These plates too are in good condition. They are not as common as the pufferfish plates.

Five float bladders, or bony outgrowths of the vertebrae, have been recovered from this site. These bony bladders range from 6 inches to 1 foot in length,

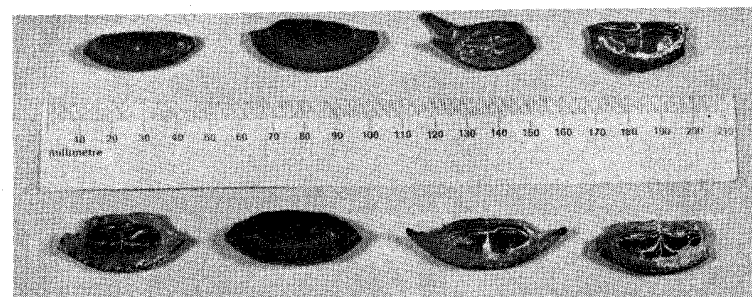


FIGURE 9. Parrotfish beaks and plates for coral-nibbling.

and are in good condition. Because only the bladders are found it is unknown to which species of fish they belong; however, they seem to be from a large fish.

A few spines of the sea catfish also have been discovered at Toy Town Dump.

### SEACOWS

Extinct members of the mammalian order Sirenia appear abundantly at this site. The present Florida manatees inhabit shallow saltwater bays and fresh or brackish waters of sluggish coastal rivers. At first I was puzzled as to why they were so abundant in this deep ocean fossil site, but I have learned that these are dugongs, a different family of seacows whose living relatives in the Indian Ocean are generally more open marine creatures than are the present Florida manatees. (The genus is probably *Halianassa*, an extinct Miocene form.) Most abundant are the ribs which are quite heavy, and may be characterized by their roundness and banana-like shape. Sirenian bones are readily recognizable by their dense massive structure. Their presence here may be correlated with the abundance of the sharks, for the sea cows made prime prey for them and may have been killed in large numbers (see comment below on tooth marks).



## DOLPHINS AND WHALES

The long beaked dolphin fossils at this site represent the extinct genus Pomatodelphis. Most common are the rostrum fragments, the anterior teeth, and the periotic bones. The rostrum pieces found here have lost their teeth, which were loosely rooted. Some isolated teeth in good condition have been found but most have been broken up. The ear bones or auditory bullae are common fossils because of their compact shape and dense bone (Fig. 10).

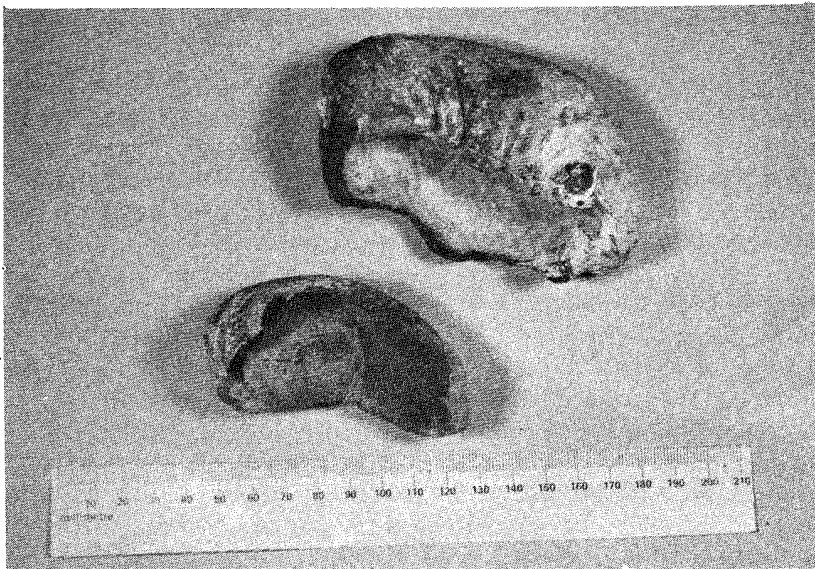


FIGURE 10. Ear (auditory bullae) bones of fossil dolphin and whale.

The whales played an important role in Florida's Miocene seas 25 million years ago. There were many species of whales, of which some grew to very large size. Off the coast of what is now Tampa, the whales played, swam, and spawned in large schools. Many died here, leaving their bones to be found by collectors. One almost complete skeleton of an ancient kind of whale was found at Toy Town Dump. Fossilized whale ribs, occasionally complete, can be found in large numbers, and whale teeth (Fig. 11) and vertebrae (Fig.

12) are also common. But the most abundant whale remains are the auditory bullae and periotics, or ear bones.

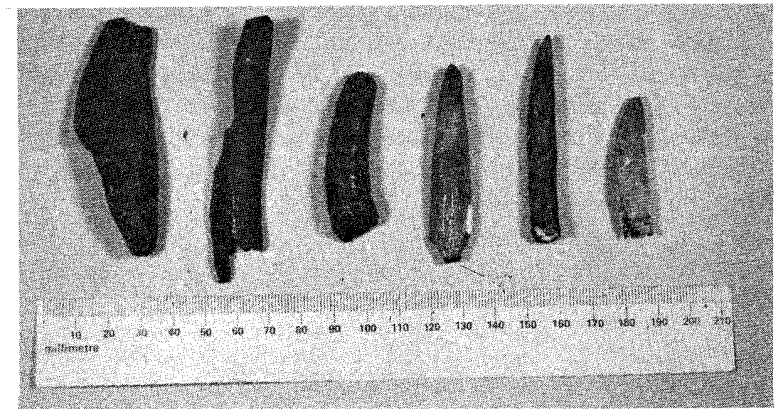


FIGURE 11. Various whale teeth.

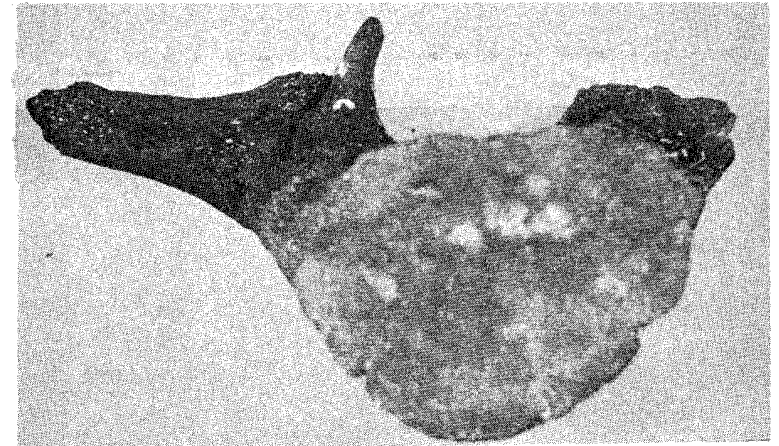


FIGURE 12. Large whale vertebra from near middle of axial column.

## TEETH MARKS

At Toy Town Dump field crews have recovered many ribs of baleen whales and the sirenians. Many of these ribs show evidence of major trauma, which is believed to have been caused by predaceous sharks. Their gnawing attacks left many tooth marks on the bones (Fig. 13). Some of the large whale ribs show

evidence of rehealing after the cuts were made. These appear to correlate with the whales great size. Presumably it would take a lot of sharks to kill the whales. By studying these marks we may be able to tell which kinds of sharks made them and what their habits were (Fig. 13). More collecting and microscopic studies are needed to further develop these interactions between marine fossil vertebrates.



FIGURE 13. Two whale ribs with numerous shallow to deep gashes.

#### TAMIAMI FORMATION

The Tamiami Formation of Pliocene age evidently accumulated mainly in shallow water, with eroding shore lines. At the Toy Town Dump site most of the fossils are invertebrate shells. Indeed most of this formation consists of shells, which can be found in many places throughout Pinellas County. One finds very few shark teeth or any other fish remains. This

phosphate-rich sea must have been a real paradise. The thickness of these shelly strata suggests that the sea must have stood here for a long time. This Pliocene sea was superseded by sands of the Pleistocene Era.

It is important to search for any possible vertebrate remains of land animals in this formation. A few worn Pliocene horse teeth have shown up. The following is a general indication of the fossil shells found in the Tamiami Formation at Toy Town Dump.

- |                 |                  |
|-----------------|------------------|
| A. Gastropods   | B. Turban shells |
| C. Periwinkles  | D. Sundials      |
| E. Wentle Traps | F. Conchs        |
| G. Whelks       | H. Olives        |
| I. Auger shells | J. Oysters       |
| K. Scallops     | L. Clams         |

The two kinds of Pecten are illustrated in Figure 14, and Figure 15 exemplifies the large barnacles.

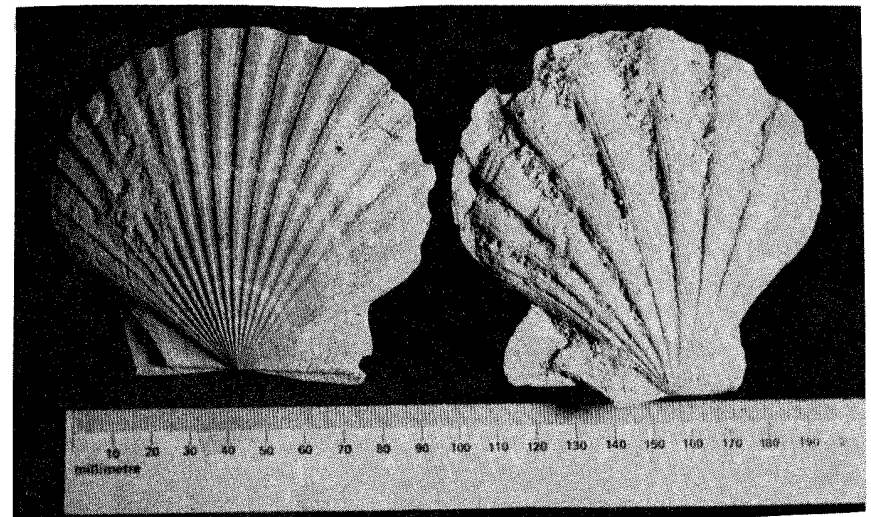


FIGURE 14. Two kinds of Pecten from the Tamiami Formation.

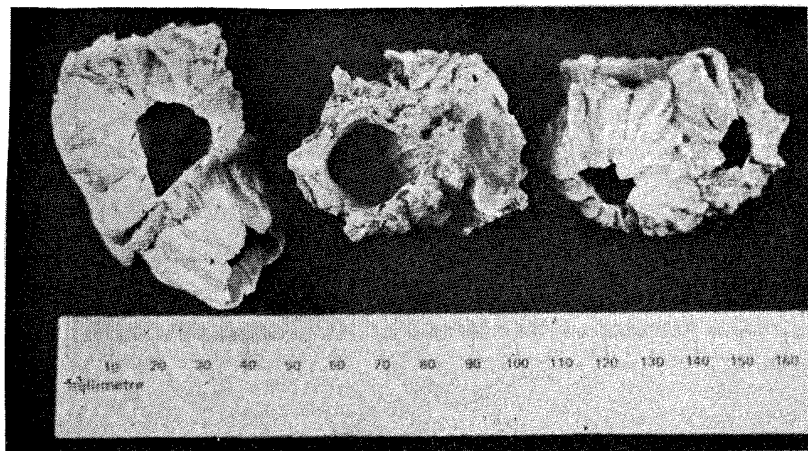


FIGURE 15. Examples of barnacles from the Tamiami Formation.

#### PALEO GEOGRAPHY

The map (Fig. 16) summarizes the general distribution of seas in Florida during the Hawthorne interval of the Miocene Era. A substantial part of the Florida peninsula stood as dry land, and sandbars were building an even more extensive coast line.

Ballast Point at the present mouth of Tampa Bay was being constructed by large coral reefs. A north-eastern current brought warm water up from the Gulf of Mexico (see arrows in Fig. 16). At this time Toy Town Dump was in the open ocean. The seas on the edge of the Gulf were warm, teemed with life, and food was plentiful. This is why the marine fossils accumulated abundantly in the slowly accumulating Miocene clays.

The Toy Town Dump was here long before man. Man only disturbed her past, made garbage mounds of her dirt, and then built a golf course on top of her. It is for this reason that this report has been written.

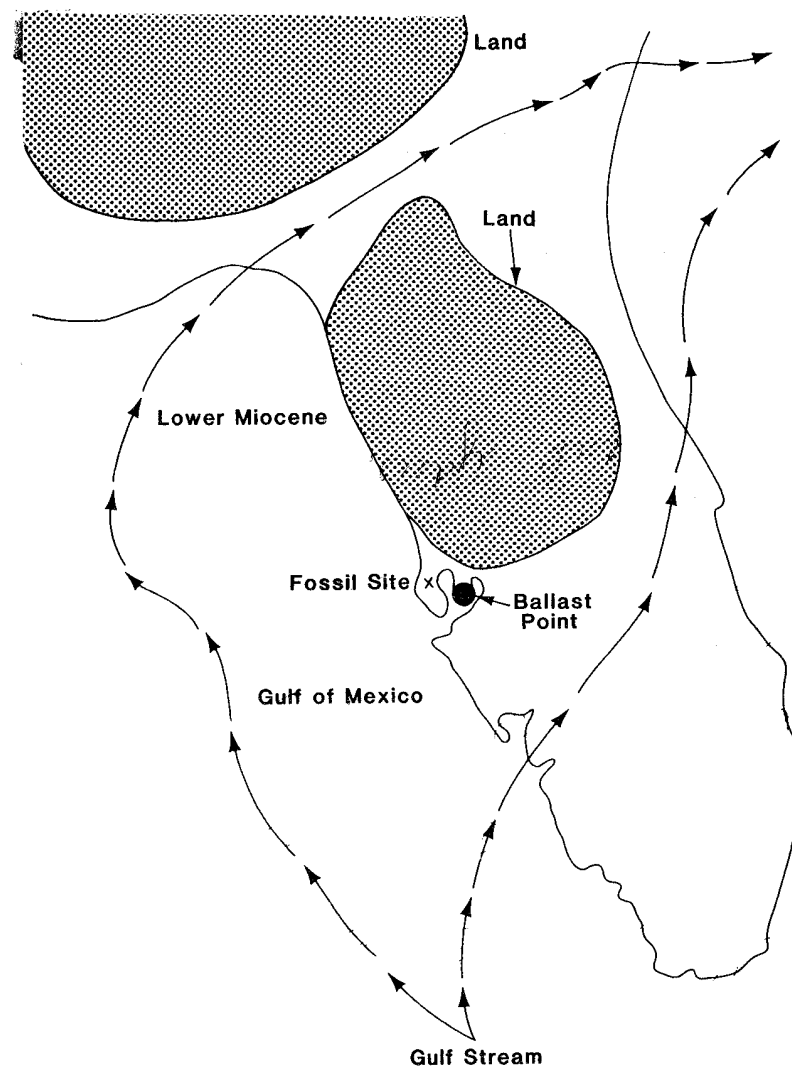


FIGURE 16. General distribution of Florida's seas during the Hawthorne interval of the Miocene era.

## ACKNOWLEDGEMENTS

I would like to thank the following for their help in this project:

Tom Leaman of Saint Petersburg City Hall, who gave initial permission to survey the Toy Town Dump property;

Frank Damato and Wayne Coakley, project managers at Toy Town Dump;

The Pinellas County Science Center and the students who helped collect and donated material;

The Suncoast Archaeological and Paleontological Society;

and my friends, Marcy Kuttner, Clyde Helgenson, Harold Majors, Steve Ritchey, Willis Beers, and Pete Watson.