

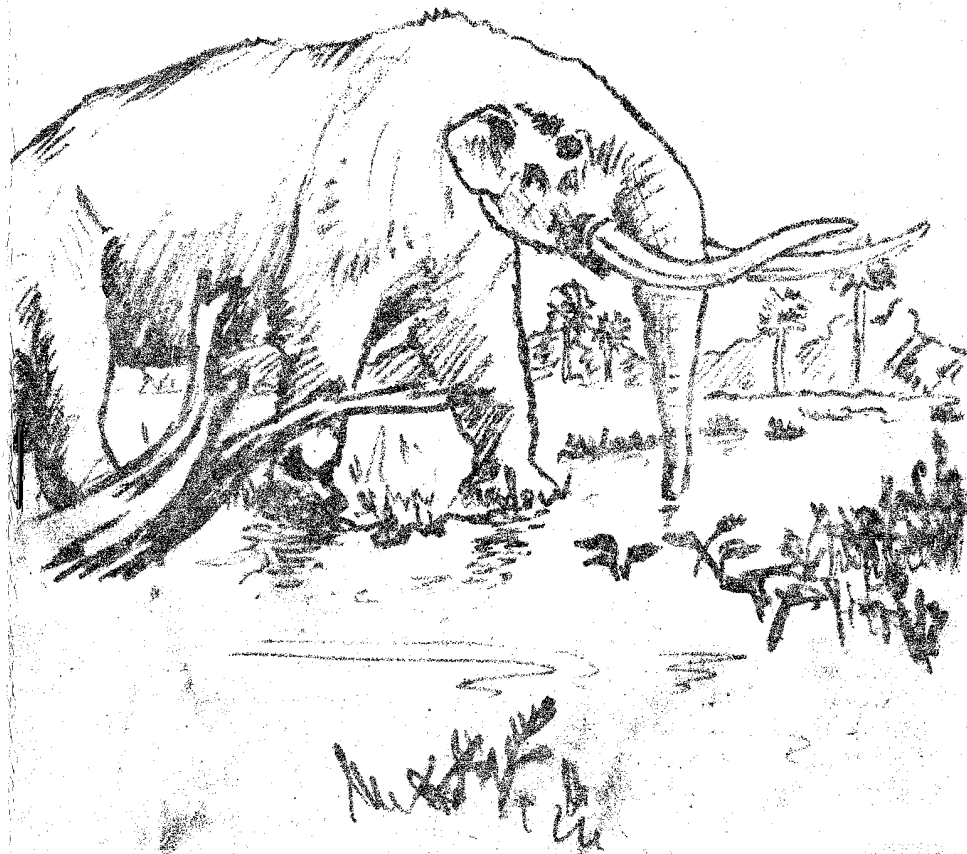
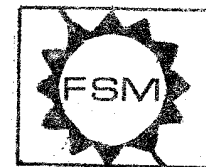
The PLASTER JACKET is a newsletter. Questions, announcements, and other communications are solicited from all readers. Information of general interest will be included in future issues.

It is our intent to produce this series at the rate of six issues per year. We hope to add as many genuinely interested paleontologists as possible to our mailing list. If you are interested, please send your name and address to the PLASTER JACKET. These issues are distributed free of charge to all interested people.

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THE PLASTER JACKET
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THE PLASTER JACKET



A PLEISTOCENE VERTEBRATE FAUNA
FROM PALM BEACH COUNTY, FLORIDA

By

Howard H. Converse, Jr.

The discovery of the West Palm Beach Site occurred while a dragline operator, digging a drainage canal, dug through the rib cage and skull of the Imperial Mammoth (Mammuthus [Archidiskodon] imperator), leaving many splintered, broken bones on the spoil bank. Several teeth and limb bones were all that survived the dragline shovel. Under my supervision, students from a local college, members of the Gem and Mineral Society of the Palm Beaches, and private local citizens worked for two months to excavate this site. The West Palm Beach vertebrate fauna was obtained from an area 16 meters by 27 meters on the eastern side of an ancient dry river bed. The site was in a shell rock operation and land development project (FIGURE 1). All collecting was done in a single pit, located west of the city of West Palm Beach in the western half of tract 17, block 1, plat 9 of Palm Beach Farms, Sec. 28, T 43-S., R-42E., Palm Beach County.

Most of the fossils represent vertebrate animals that compare closely with similar material near Vero and Melbourne approximately 75 miles north, including species from both freshwater and terrestrial communities. The latter is represented by a wet savanna situation near the edge of a major river that flows south from Port Salerno into the Everglades. Vertebrate animals found in this community were bison, proboscideans (mastodons and mammoths), land tortoises, horses, and camels. The freshwater situation was inhabited

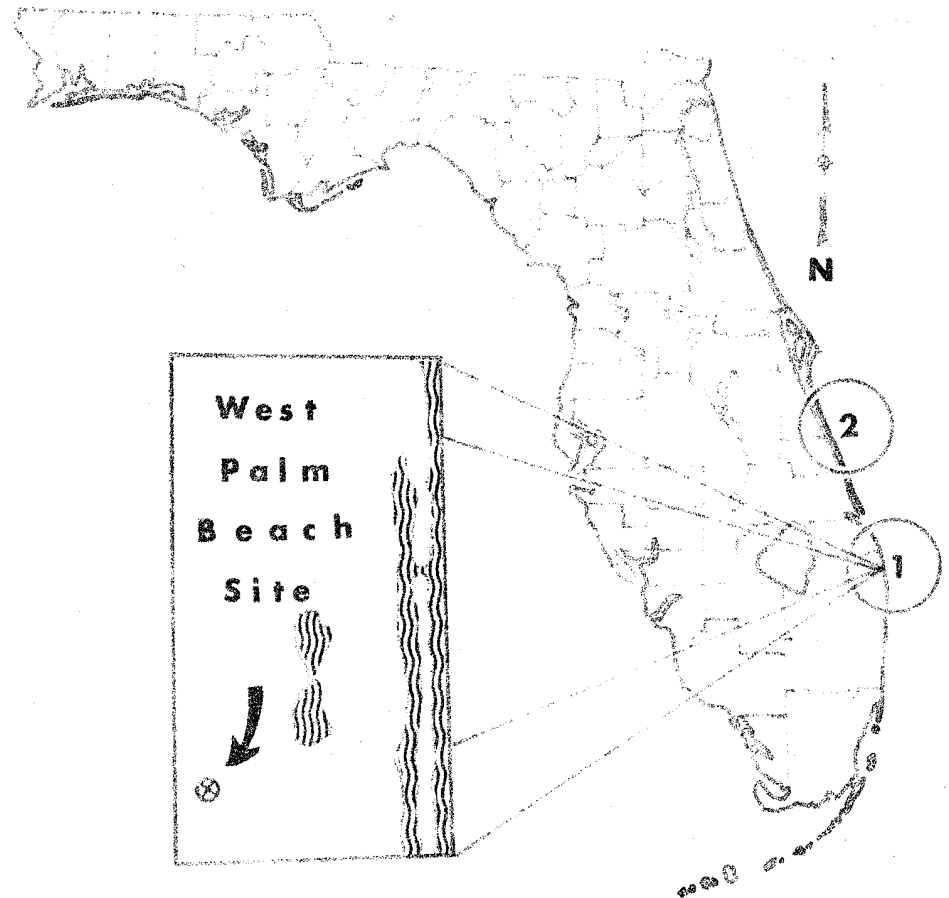


FIGURE 1.-- Pleistocene vertebrate localities in West Palm Beach and Vero Beach, Florida. 1) West Palm Beach Site, Palm Beach County; 2) Vero Beach Site, Indian River County.

by tapirs, capybara, alligators, garfish, bowfin, and catfish. Large numbers of the bones of some as yet unidentified small fish were taken by screening.

Carbon-14 dating of a section of mastodon rib from the center of the site placed the time of death of these vertebrates at $21,150 \pm 400$ years ago, indicating that all or most of the vertebrates were deposited at the peak of the Wisconsin Glaciation. During this time the ice sheet had reached its southernmost extent into the United States, drawing large amounts of water from the oceans and leaving a tremendous dry land mass throughout Florida and the rest of the coastal United States (FIGURE 2). When the Wisconsin Glacier melted, the oceans rose and southern Florida was again under a shallow sea. This is evidenced at the West Palm Beach site by a six inch layer of marl above the vertebrate fossil zone.

THE ANIMAL FAUNA

Representatives of the order PROBOSCIDEA proved to be the most abundant forms encountered throughout the entire excavation. Of the two species found in the deposit, the most common was the American mastodon (Mammut americanum). One of these, a juvenile female, was complete enough for me to reconstruct. It is currently on display at the Science Museum and Planetarium of Palm Beach County, West Palm Beach. The second species of proboscidean found at the site was the Imperial Mammoth (Mammuthus [Archidiskodon] imperator).

The next most abundant vertebrates were artiodactyls. The family BOVIDAE (cows and their relatives) was represented by four specimens of the long-horned bison (Bison antiquus) -- a nearly complete skull and many other bones were uncovered. The limb bones and some of

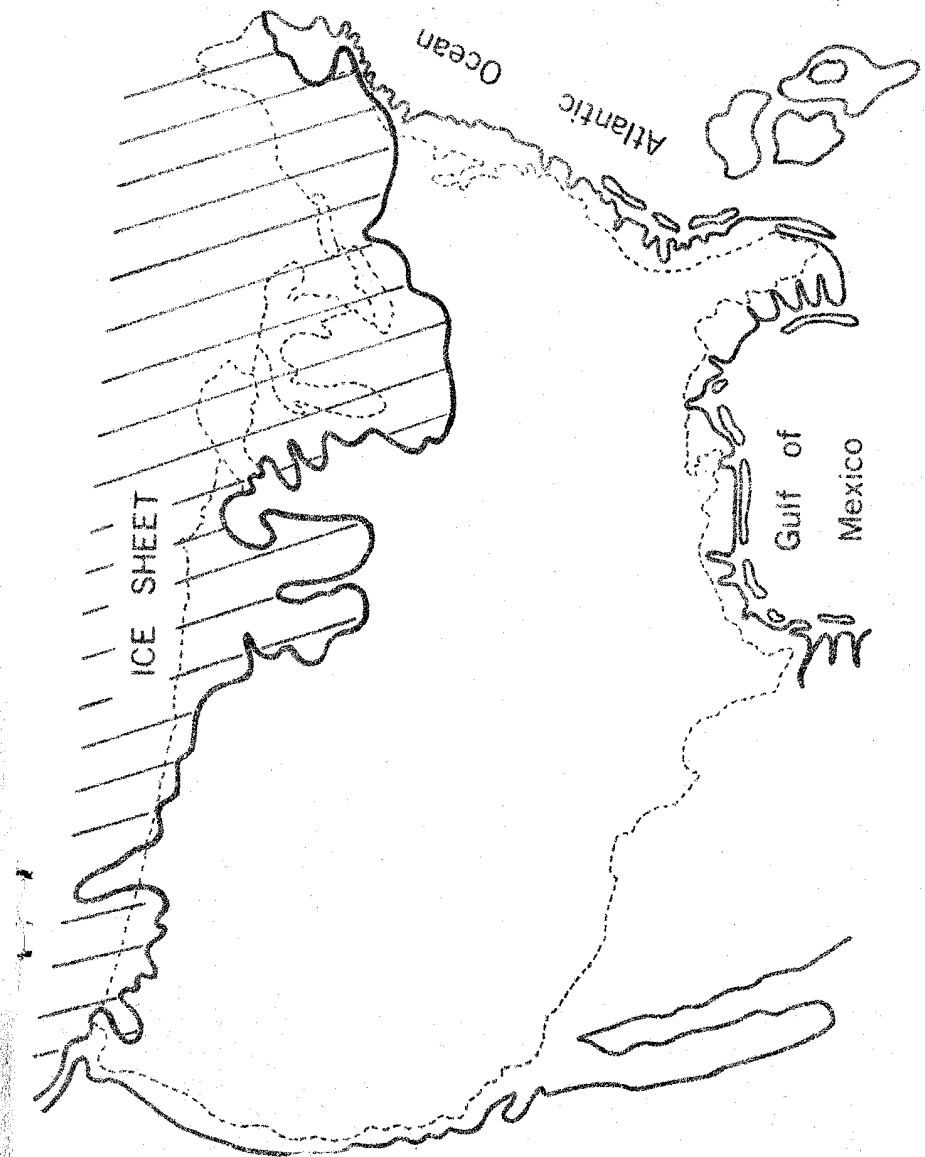


FIGURE 2.-- The general retreat of the last ice sheet in North America (Wisconsin Glacier) began about 17,000 years ago. Florida more than doubled in width during the peak of this glaciation due to the drawing of large amounts of water from the

the vertebrae of the four individuals, all adults, showed signs of arthritis, with large spurlike growths protruding from the joints. There was no evidence of calves being present in the entire site.

The family CERVIDAE was represented by many limb elements and antlers of the Virginia White-tailed deer (Odocoileus virginianus). Other ungulates included several small peccaries (Mylohyus sp.) and the llama-like camel (Tanupolama sp.).

Teeth of two individuals belonging to the order PERISSODACTYLA were included in this diverse fauna; a medium size tapir (Tapirus veroensis) and a fairly large horse (Equus sp.). One of the world's largest rodents was represented by the now extinct giant capybara (Neochoeerus sp.). A nearly complete skull and several limb bones were uncovered. The presence of aquatic rodents, such as the capybara, gives direct evidence of fresh water in the vicinity of the fossil deposit. There is no evidence that these aquatic rodents inhabited salt or brackish water.

There were several smaller land rodents found during the screening of strata. Only two have been identified at this stage of the investigation, with several others in the process. The two identified specimens are in the family CRICETIDAE, represented by the cotton rat (Sigmodon hispidus) and the extinct bog lemming (Synaptomys [Synaptomys] australis).

Two species of edentates were found. One of these was the giant ground sloth (Paramylodon harlani, family MYLODONTIDAE), represented by the lower jaws, skull fragments, and several limb bones of a single individual. The ground sloth attained a size larger than a bull, but was much heavier. The second edentate was represented by only a single dermal plate of the extinct giant armadillo Chlamytherium septentrionalis.

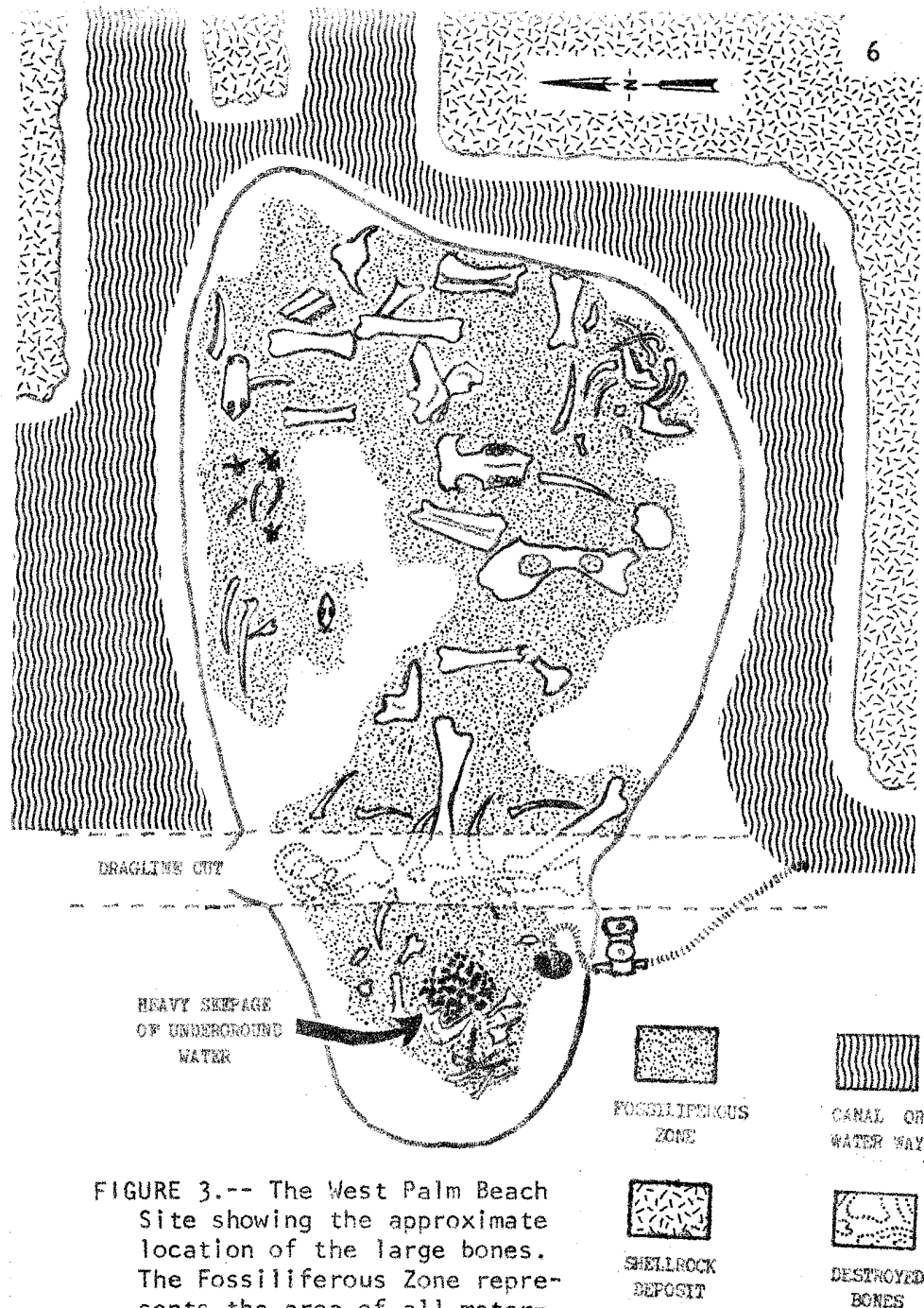


FIGURE 3.-- The West Palm Beach Site showing the approximate location of the large bones. The Fossiliferous Zone represents the area of all material excavated.

The only marsupial found in North America (the Virginia opossum (Didelphis marsupialis)) was represented by teeth.

In screening the sediments we found several jaws of lagomorphs, identifiable as rabbits belonging to the genus Sylvilagus. These individuals were about the size of our present day cottontail.

The West Palm Beach site had a very large turtle population, with some very surprising mixtures. The family TRIONYCHIDAE (softshell turtle, Trionyx ferox) was very poorly represented by only a few small carapace fragments. Snapping turtles were almost entirely missing.

The family EMYDIDAE was present in great numbers. The most common being the extinct eared slider (Chrysemys scripta petrolei). Prior to this time the slider had not been found as far south in the peninsula -- only on the western shore of Lake Okechobee. A graduate student at the University of Florida, Dale Jackson, is presently investigating

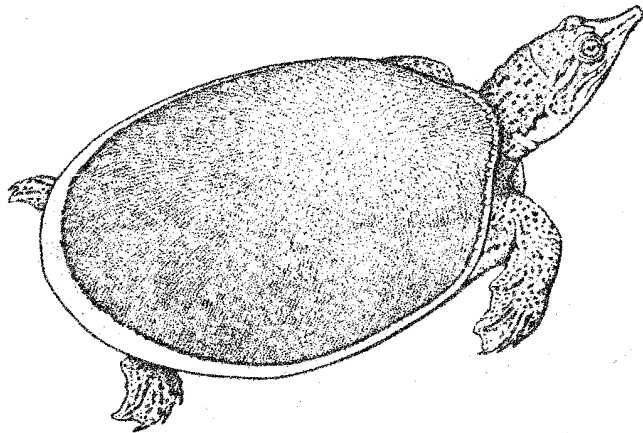


FIGURE 4.-- Softshell turtle, Trionyx ferox.

EPOCHS	NORTH AMERICAN LAND-MAMMAL AGES	ABSOLUTE AGE (in millions of years before present)	FLORIDA LOCALITIES
PLEISTOCENE	Rancholabrean	1	Devil's Den Vero-Melbourne *West Palm Beach Seminole Field Reddick-Arredondo
	Irvingtonian	3	Coleman II A Inglis IA
	Blancan		Haile XV A Santa Fe River Sites
PLIOCENE	Hemphillian	5	Bone Valley Sites Withlacoochee River Mixon's Bone Bed
	Clarendonian	10	McGeehee Farm
MIOCENE	Barstovian	15	Ashville
	Hemingfordian	20	Quincy-Midway Thomas Farm
	Arikareean	25	Buda Brooksville

FIGURE 5.-- Stratigraphic columns relating principal Florida vertebrate localities to mammal ages and

the reason why the recent form of Chrysemys scripta does not extend farther south than the southern limits of the Gainesville area -- and why Chrysemys scripta and nelsoni do not occupy the same ponds.

Chrysemys nelsoni is the next most common turtle found at this paleosite. The fossil population attains a much larger size than the present living one. Chrysemys scripta and C. nelsoni are very easily identified by the heavily sculptured details of the nuchal bone. The living population of C. nelsoni range north to about the Gainesville area near the southern boundary of C. scripta.

The last group of this family consists of the box turtles. Two different subspecies, with intergrades between the two, occur together in the West Palm Beach site. The subspecies are Terrapene carolina bauri and carolina putnami. The latter is presumed to be closer to the ancestor of the carolina group. It is believed that Terrapene carolina putnami and T. carolina bauri intergraded during a time when sea levels were lowered by glaciation. T. carolina putnami reached its widest distribution during the Pleistocene and became extinct by the end of that Epoch. The smaller box turtle, carolina bauri, appears to be a mixture between carolina carolina and carolina putnami that continued through the Rancholabrean into the present.

Last, but not least, we come to the largest of the CHELONIA, the family TESTUDINIDAE. Mixed among the very common pond turtles were several individuals of large extinct land tortoises (Geochelone crassiscutata). Not a great deal of G. crassiscutata material was recovered, but there were enough carapace fragments to determine that several different-sized tortoises were present. A very similar pond turtle fauna was described by Hay from the Vero Beach sites but, due to many errors in description of both sites and specimens, cannot be used for comparison.

FISH:Siluriformes:

Ictalurus sp. Catfish

Amiiformes:

Amia calva Bowfin

Semionotiformes:

Lepisosteus sp. Garfish

AMPHIBIANS:Amphiumidae:

Amphiuma means Congo eel

Sirenidae:

Siren lacertina
Greater siren

REPTILES:Anguinidae:

Ophisaurus sp. Glass lizard

Colubridae:

Farenia abacura Mud snake

Ophedrys sp. Green snake

Lampropeltis getulus King
snake

Natrix cyclopion Green water
snake

Natrix sipedon Common water
snake

Crotalidae:

Akistrodon piscivorus

Cottonmouth moccasin

Crotalus adamanteus

Diamondback rattlesnake

Chelonia:

Trionyx ferox Soft-shell turtle

+Chrysemys scripta petrolei Pond turtle

Chrysemys nelsoni Pond turtle

Chrysemys floridana Pond turtle

+Terrapene carolina putnami Box turtle

Terrapene carolina bauri Box turtle

+Geochelone crassiscutata Giant land tortoise

Crocodylia:

Alligator mississippiensis

American alligator

MAMMALS:Marsupialia:

Didelphis marsupialis

Opposum

Carnivora:

+Canis lupus Wolf

Proboscidea:

+Mammut americanus

American mastodon

+Mammothus (Archidiskodon)

imperator Mammoth

Perissodactyla:

+Equus sp. Horse

+Tapirus veroensis Tapir

Artiodactyla:

+Mylohyus sp. Peccary

+Tanupolama sp. Llama

Odocoileus virginianus Deer

+Bison antiquus Bison

Edentata:

+Paremylon harlani

Giant ground sloth

+Chlamytherium septentrionalis

Giant armadillo

Rodentia:

Signodon hispidus Cotton rat

+Synaptomys (Synaptomys)

australis Bog lemming

Lagomorpha:

Sylvilagus sp. Rabbit

There are (37) total species identified with 38% extinct (+).

The family COLUBRIDAE is represented by vertebrae of the common king snake (Lampropeltis getulus), the mud snake (Farancia abacura), the green water snake (Natrix cyclopion), the common water snake (Natrix sipedon), and the green snake (Ophiodrys sp.). All of these colubrids are presently found in cypress, prairie grasslands.

The only lizard (order SAURIA) found in the excavation belongs to the family ANGUINIDAE. This legless lizard is commonly called glass snake or glass lizard (Ophisaurus sp.). Ophisaurus is presently found in an association of mixed pineland and cypress swamps. At times of rising water the lizard is forced to higher ground.

There were two families of salamanders (order URODELA) discovered in the deposits. The first was AMPHIUMIDAE, represented by the congo eel (Amphiuma means). This large salamander is entirely aquatic and demands standing water. It is not found in saline water. The second family is the SIRENIDAE, represented by a single specimen of the greater siren (Siren lacertina). This siren has been found around Florida in association with the mud snake and forms the primary diet of these snakes.

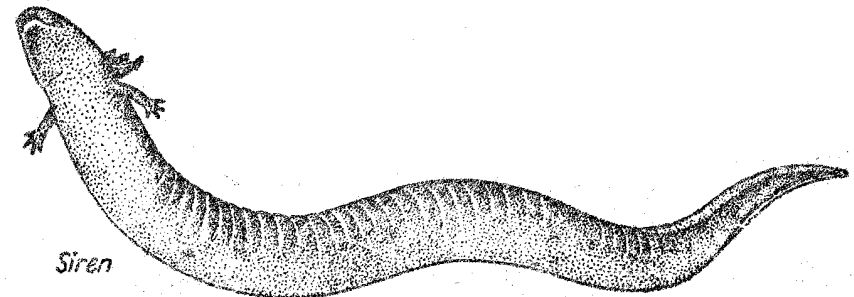
The order CROCODYLIDAE is also very common in the West Palm Beach Site, represented only by the American alligator (Alligator mississippiensis). Very large specimens were uncovered, including skull sections with lower jaws. Dermal scutes were very plentiful, as were individual teeth taken during the screening operations.

Of the entire reptile fauna examined, the most abundant was the order SERPENTES, family CROTALIDAE, represented by the cottonmouth moccasin (Agkistrodon piscivorus) and the eastern diamondback rattlesnake (Crotalus adamanteus). A large number of vertebrae

from these snakes were recovered in the screening operations.

On balance, the reptiles display a very interesting pattern in respect to environmental conditions existing at the site during the mid-Wisconsinan. All the fossil reptiles and amphibians identified are presently found in areas of alternating flooded and dry conditions. It is presumed that these environmental requirements have not changed since the Wisconsinan. The entire fauna, including the American alligator, is found abundantly in cypress flats and prairies of saw grass, poverty grass, and needle grass. The one exception is the eastern diamondback rattlesnake (Crotalus adamanteus). The environmental requirement for this snake is sandy scrubs or pineland forest and occasionally in the cypress flat, prairie situation.

The massive vertebrate fauna of this site has just been touched upon in this report. A more detailed investigation is currently in progress. Unfortunately, since the materials was collected in 1969, several important specimens retained by a south Florida institution have been lost. Therefore, attempts to borrow the material for further study have failed. Fortunately however, most of the material was documented on film shortly after the excavation, so there is still hope that these few specimens will be found prior to the completion of the investigation.



NEW DEVELOPMENTS AT THE THOMAS FARM

For many years the University of Florida has been responsible for the management of the Thomas Farm -- approximately 40 acres of agricultural land in Gilchrist County containing an extremely important vertebrate fossil locality of Middle Miocene age. Stimulated by several different problems in regard to the property, the Business Office of the University, the University lawyer, and the Florida State Museum have reviewed the policies and practices regarding the farm. As a result, a nonclimbable fence is being erected around the actual fossil site to protect it from vandalism. The trailer and house on the property are slowly being reconditioned. The University Legal Department is presently in the process of signing a three year lease assuring agricultural rights to a local farmer. Part of the property is going to be used for telemetry studies of gopher tortoises. The property has been posted and the perimeter fence is being repaired.

Except for authorized personnel, no one is allowed access to the Thomas Farm, and trespassers can expect to be prosecuted through cooperation of the University and the local sheriff's department. Right of egress will be determined solely by the person designated as manager of the Thomas Farm property. During the fiscal year 1973-74 the designated individual is Walter Auffenberg. The right of trespass can be provided only by him, and any persons wishing to visit the Thomas Farm or to conduct research there should request permission to do so from him.



The drawings used in this PJ were modified from Stanley Olsen's "Fossil Mammals of Florida," Special Publications No. 6, Florida Geological Survey. Unfortunately, this number is no longer available.