Fossil Mammals of Florida

- Background
- Miocene
- Pliocene
- Pleistocene

Background

- During the break up of Pangea, Florida left Africa and joined N. America
- Dinosaurs were roaming the Earth, but sadly, Florida was underwater
- During this time, mammals were also roaming the Earth (tiny little things who spent most of their time trying not to be crushed under sauropod feet)
- After the dinosaurs meet their untimely demise, those pesky mammals flourish

The Paleogene

- The Paleogene includes the first three epochs of the Cenozoic (Paleocene, Eocene, Oligocene)
- The Paleogene was a watery time for Florida
- During of the middle of the last epoch of the Paleogene (the Oligocene), roughly 35 Mya, Florida began to emerge
- There are some terrestrial fossils, but they are few and far between

The Neogene

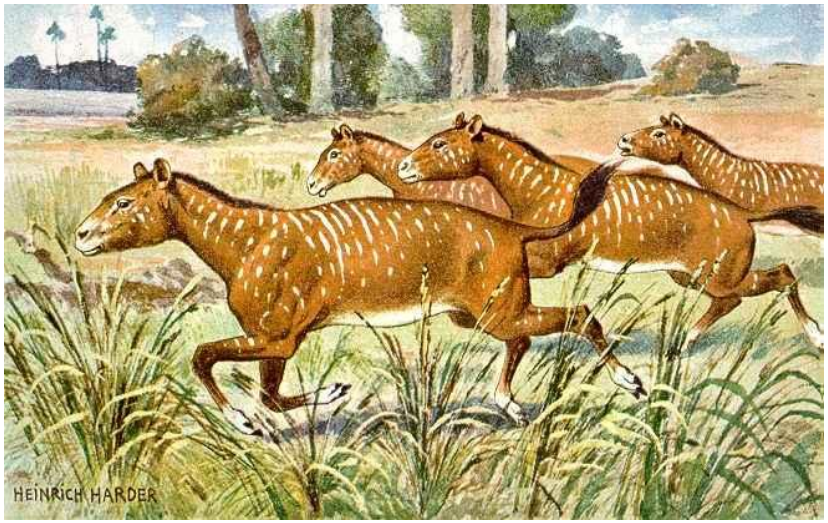
- Made up of the remaining epochs of the Cenozoic – Miocene, Pliocene, Pleistocene and Holocene
- Mammals have diversified greatly in the post-dino world. By the Neogene they come in all makes and models.

Oligocene to Pleistocene

- The Horse
  - Can see the transition from browsing (O-Late M) to grazing (Late M-present)
  - Can also see transition from three toes to one toe (aka – a hoof)
  - This lineage has been historically important to the study of evolution, and is still widely stude
  - http://www.flmnh.ufl.edu/fhc/

Olg. To Pleist.

- Mesohippus



Olg. To Pleist.

Miocene ("Less New")

- 23 – 5.33 Mya
- This is a time when grazing animals diversified, and by the end of the epoch had reached their heydey – exploiting expanding grasslands
- This is really good for paleontologists – animals that tend to live in large groups also have a habit of dying together in large groups
- Why do we care about lots of specimens of one species?

Miocene in N. Florida

- Thomas Farm Site
  - One of the richest terrestrial fossil sites in the state
  - It is a prehistoric sinkhole (what else did you expect in FL?)
  - http://www.flmnh.ufl.edu/vertpaleo/fall_2009.htm
- The Hawthorne Formation
  - If you have ever taken a lab in geology at UF, chances are that at some point you were required to stand in creek
  - The fossils you found (assuming you did) are from this formation

Miocene Critters

- Fossil Tapirs

Miocene Critters

- Tapirs
  - Known from Early Miocene in Hernando County
  - Very abundant in FL, perhaps more abundant here than anywhere else
  - Browsers (I know, I said Miocene was heydey of grazers….) – as evidenced by the teeth

Miocene Critters

- Rhino (Menoceras barbouri and Floridaceras whitei)

(Thomas Farm Site)

Miocene Critters

- Rhino
  - Agate Springs, NE = famous site for them
  - Browsers – I know, again, not a grazer
  - Lightly built
  - Two bumps, side by side, on upper snout – thought to be a male-only characteristic
  - Two tusks on lower jaw that oppose small upper teeth – looks like they have severe under bites
  - Thought to look something like the brontotheres (think “He ate the last dandelion of the season”

Miocene Critters

- Jefferson's Ground Sloth

Miocene Critters

- Jefferson's Sloth
  - Named for President Thomas Jefferson – renowned naturalist
  - Specimen in the FL Museum
  - And, yes, they were browsers
  - How did they get here?

Miocene Critters

- “Hell Pig” (Entelodonts)

Miocene Critters

- Likely a scavenger – bone crushing jaws
- More abundant in northern midwest (think SD)
- As number and size of grazers grew, so did the number and size of hell pigs – well, to a point

Pliocene ("More New")

- 5.3 to 2.5 Mya
- Getting colder and drier, but not quite the Ice Age
- Time of the Great American Interchange
  - Volcanic activity gives rise to isthmus of Panama
  - Lots of animals cross it – although immigration is a bit lopsided (more NA going to SA than vice versa)

Pliocene in N. Florida

- Haile Quarry
  - Yet another sinkhole, also in the Ocala Limestone
  - Actually, it's several sinkholes and several quarries – all of which have unique identifying numbers
  - Ages actually range from Miocene to Pleistocene
  - Good area in which to find articulated skeletons
  - It is privately owned and mining operations continue (For instance, you may have gone here on a field trip. That site was closed down as it was not producing enough fossils anymore and is now being mined)

Pliocene Critters

- Terror Birds

Pliocene Critters

- Terror Birds (Titanis waleri)
  - I know, not mammals, but terrestrial and very cool
  - ft tall, +300 lbs, could run (maybe 65 mph) = really, really scary
  - Gifts from SA across the isthmus (found in TX - marks a trail from SA to FL across land, terrorizing as it goes)
  - No surprise, these survive into the Pleistocene

Pliocene Critters

- Glyptodonts (and other Giant Armadillos)

Pliocene Critters

- Glyptodonts (and other Giant Armadillos)
  - Glyptodonts were the size of a VW Beetle that were grazers and hung out around streams. Unlike modern Armadillos (but a lot like Stegosaurs) it had a spiky tail
  - Giant Armadillos (Dasypus bellus, Holmesina) are a lot like extant armadillos, only, well, bigger – think, 6 ft long and 500 lbs in some species. They ate ants, grubs, etc. (can tell by teeth) and have teeth that grow continually and never wear out

Pleistocene ("most new")

- 2.5 Mya to 12,000 yrs. ago
- Welcome to the Ice Age
- a.k.a. Time of the Megafauna
- Very well represented in FL (including the Haile site mentioned earlier)

Pleistocene Critters

- Scimitar Cat (Xenosmilus hodsonae)

Pleistocene Critters

- Scimitar Cat (Xenosmilus hodsonae)
  - Lived 1.5 Mya to 10,000 yrs ago
  - Relatives of Sabre Toothed cats, but smaller – about the size of a modern lion
  - Might have hunted like a modern Cheetah – short bursts of speed
  - Cave paintings in France show a cat of similar size; the cat is depicted as spotted with a light colored underside
  - Found at Haile Quarry
  - They traveled to SA – fair trade for a terror bird?

Pleistocene Critters

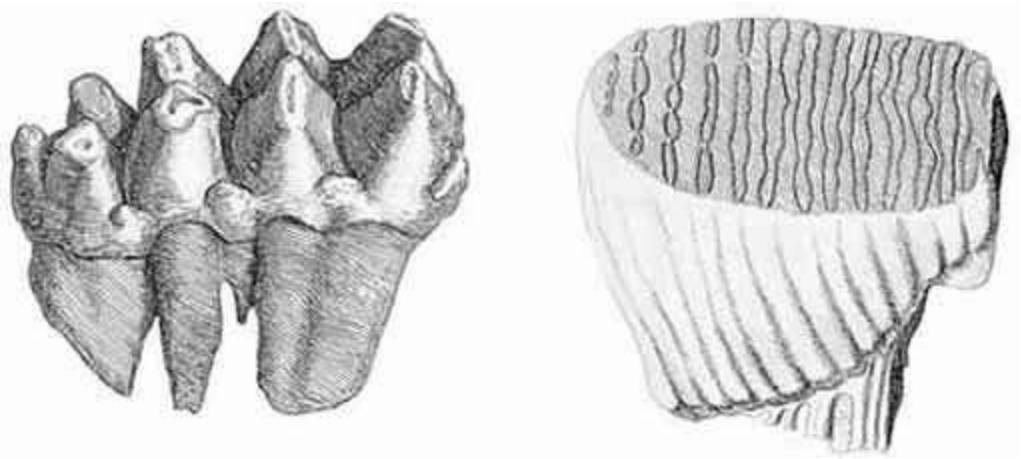
- Giant Short Faced Bear

Pleistocene Critters

- Giant Short Faced Bear (Arctodus simus)
  - Lived 800,000 to 12,000 years ago
  - At shoulders: 5.5 feet; on hind legs: 11.5 feet tall
  - Despite the huge incisors and slashing claws, it was probably an omnivore (although there is some debate about this)
  - Thought to be related to the Cave Bear – their DNA has been recovered (well, 21 or so genes – still pretty good)

Pleistocene Critters

- Mammoths vs. Mastodons



Pleistocene Critters

- Mammoths and Mastodons
  - Mammoths can to FL in the late Pliocene
  - Mastodons came in the early Pleistocene
  - And there is evidence that the coexisted with another ice age mammal….

Pleistocene Critters

- What happened to all of the megafauna?
  - Humans
  - Climate Change
  - Disease (esp. because many genetically isolated populations)
  - Meteor, Gamma Ray Burst, etc. (aka – the usual extinction suspects)