



Monotremata, Marsupiala, Afrotheria, and Xenarthra



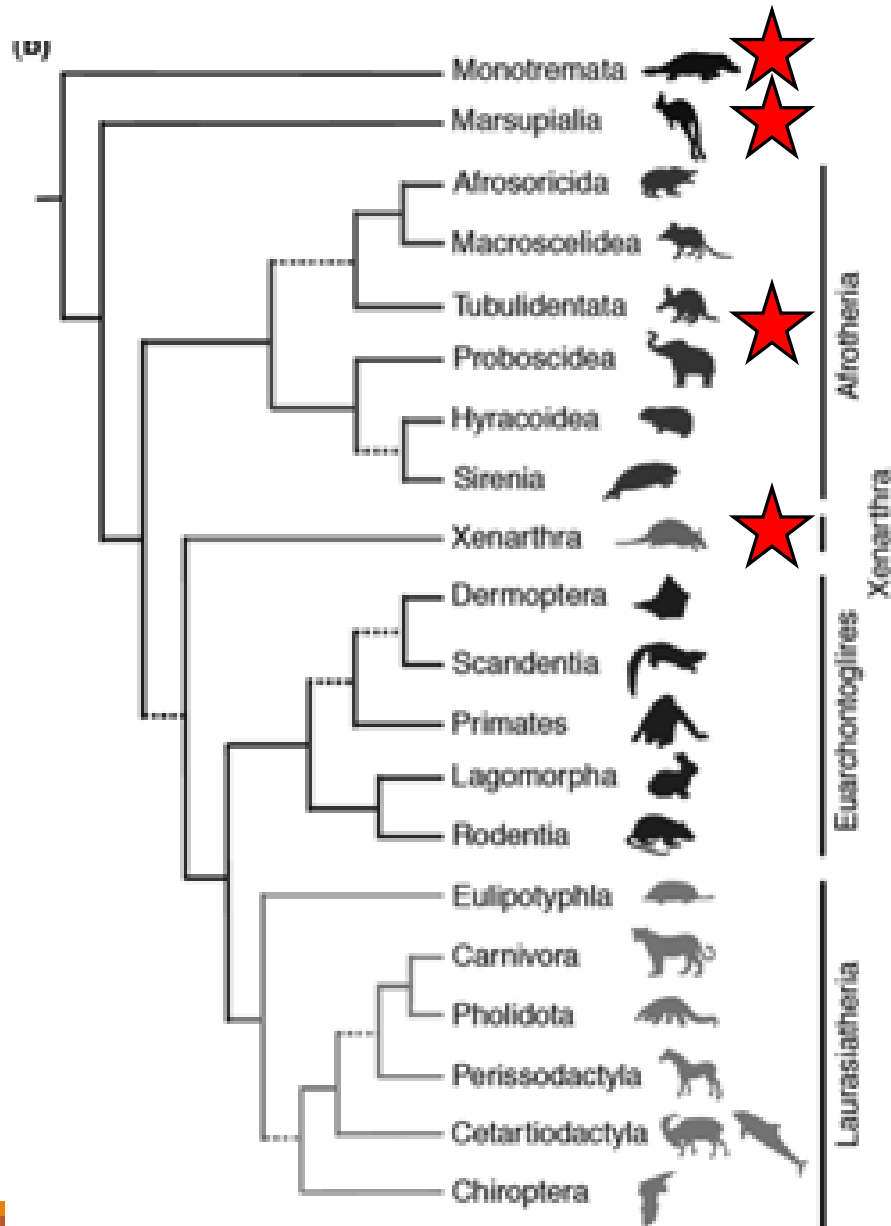
Mammalogy 2019

Expectations for Today

- You will be expected to be able to:
 - Produce the common and scientific names of 12 species of Monotremes, Marsupials, Afrotheria, and Xenarthra when given samples (skeletons, skins, tracks, scat, etc.)
 - Describe some basic biological and ecological characteristics of those 12 species when given the name

*Also, if I give you a sample from these species you should still be able to write their dental formula, tell me what bone on that specimen you're looking at, etc.

Taxonomy



- Today, we're focusing on these four clades, which are basal to the remaining species we'll study

Taxonomy



All Other Mammals



Xenarthra



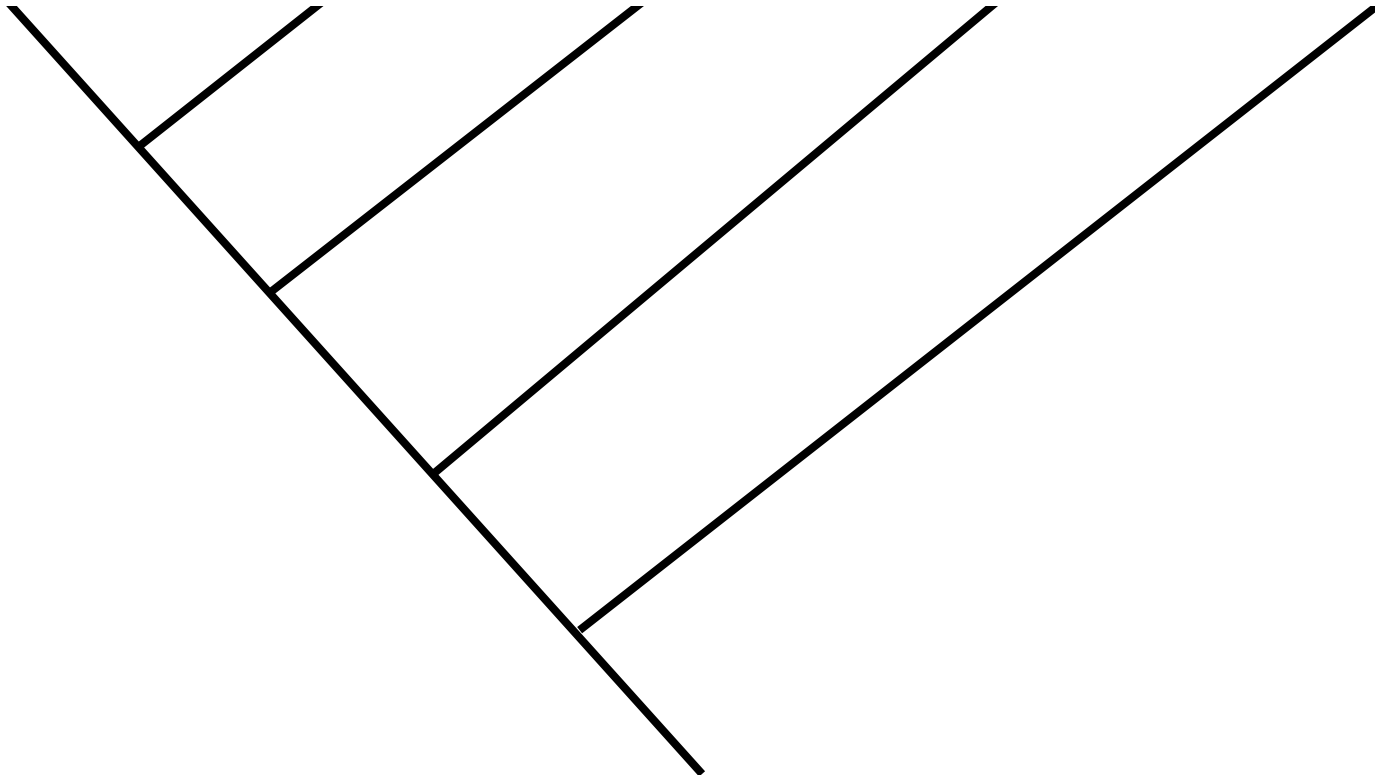
Afrotheria



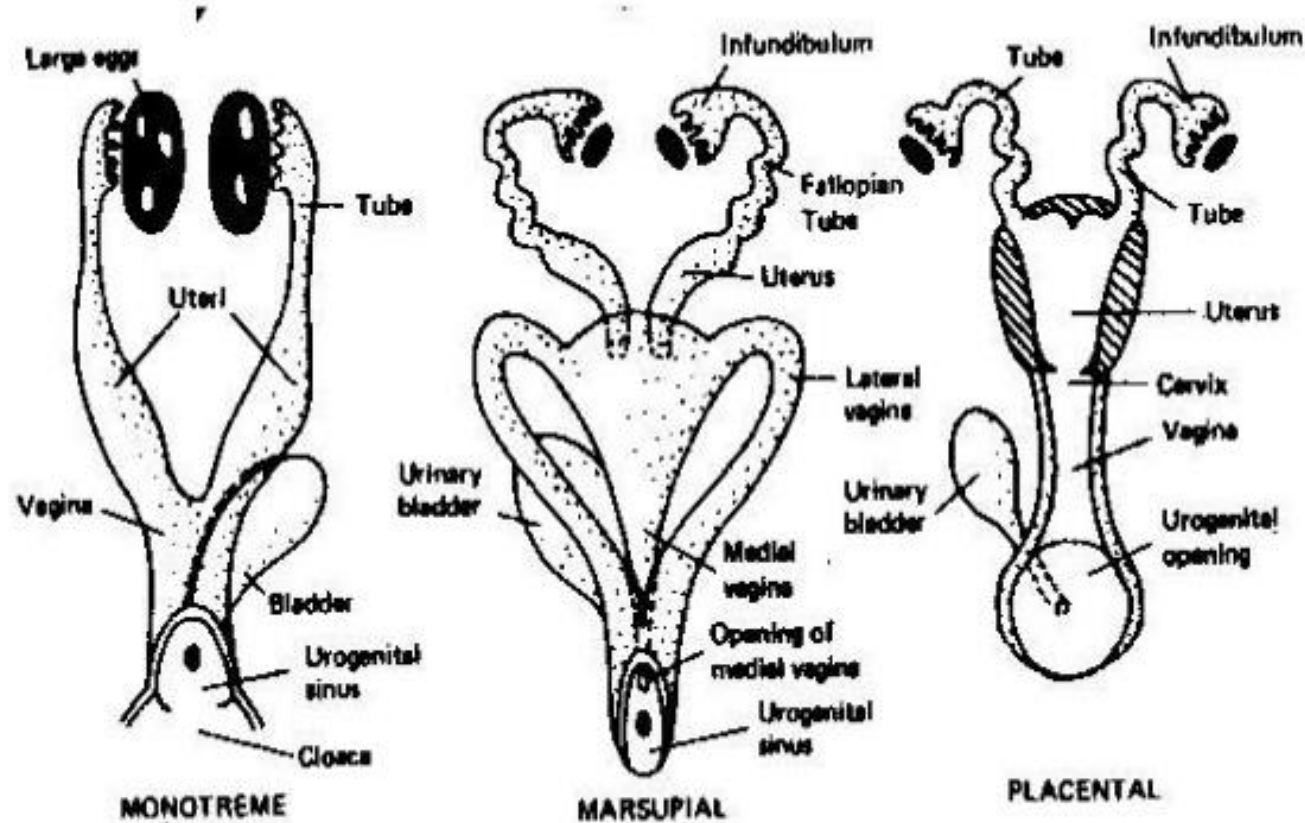
Marsupiala



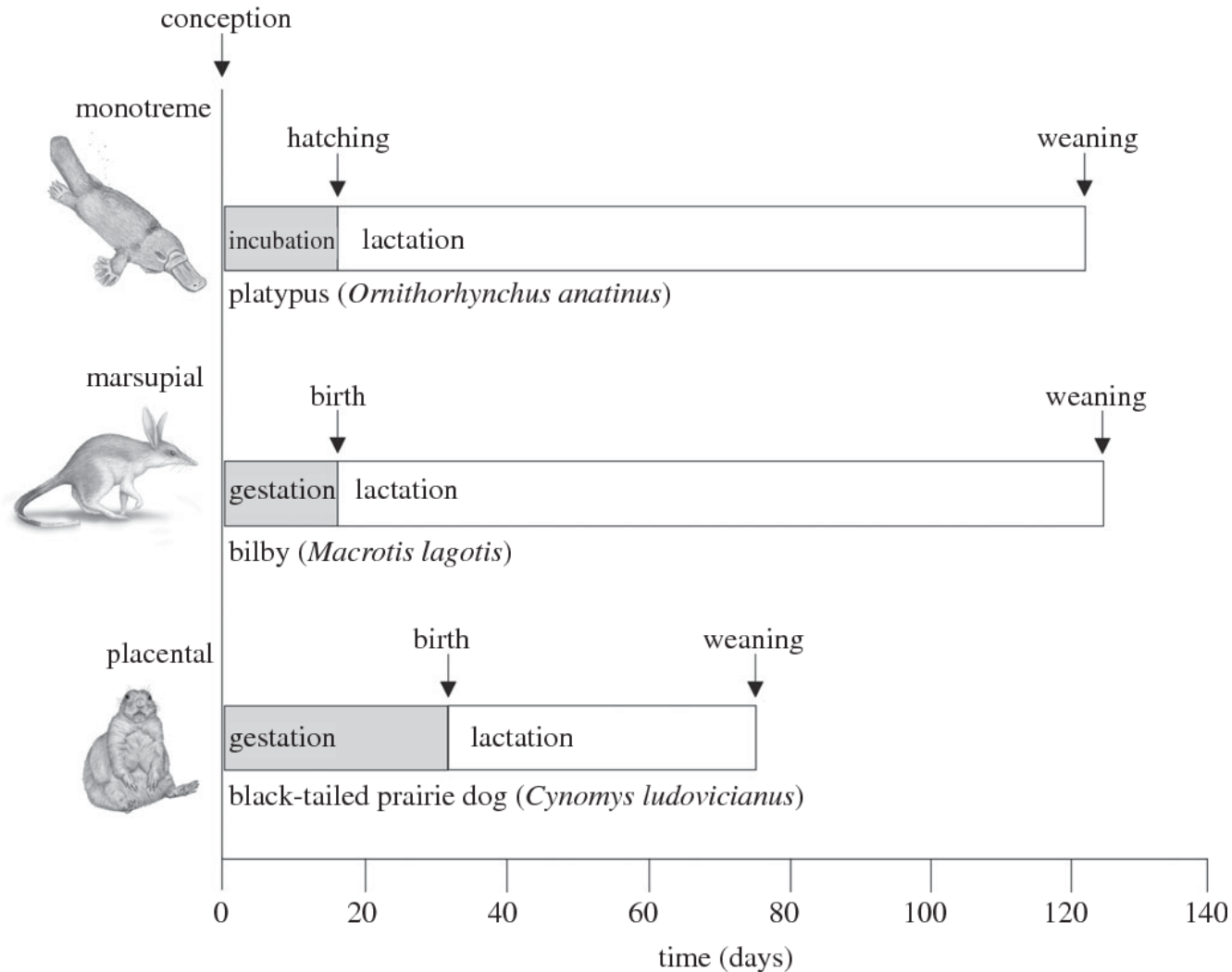
Monotremata



Differences in Reproductive Tracts



Differences in Gestation



Subclass: Prototheria

Order: Monotremata

- Mono = “one”
- Tremata = “hole”
- This describes their single opening in their reproductive tract
- Most of the species in this clade are extinct with the remainder found in Australia and New Guinea

Unique Traits in Monotremes

Monotremes:

- Lay eggs
- Don't have teeth as adults
- Don't have nipples
- Males don't have a scrotum
- Have a cloaca
- Have electrosensory abilities in beaks and bills
- Don't have auditory bullae



Tachyglossus aculeatus short-beaked echidna

- Lay only one egg each year
- Hibernates in areas where winters are cold



Ornithorhynchus anatinus platypus

- Males have a spur that allows them to inject venom into prey or predators
- Juveniles have a full mouth of teeth before they're replaced with bony plates as adults



Infraclass: Marsupialia



KANGAROO



WALLABY



OPOSSUM



PADEMELON



TASMANIAN DEVIL



QUOLL



KOALA



BANDICOOT



POSSUM



CUSCUS



WOMBAT



SUGAR GLIDER



POTOROO



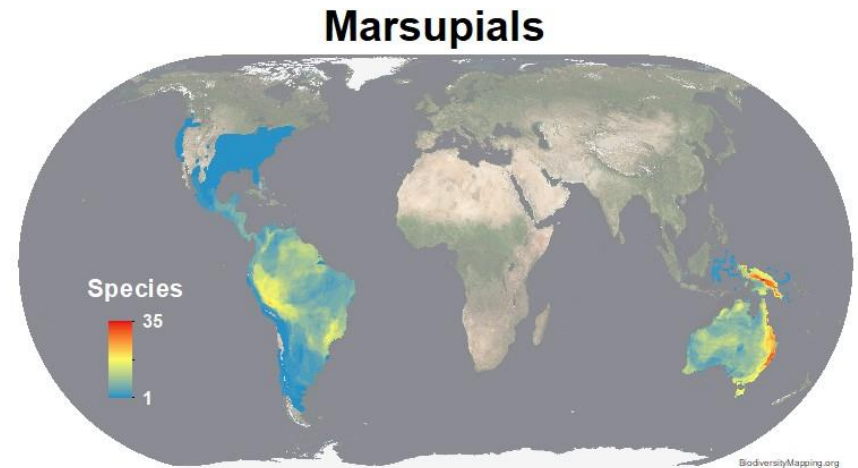
WALLAROO



TREE KANGAROO

Marsupiala

- Marsippos = “pouch”
- All marsupials give birth to underdeveloped live young and most are thereafter raised in a pouch



Sarcophilus harrisii

Tasmanian devil

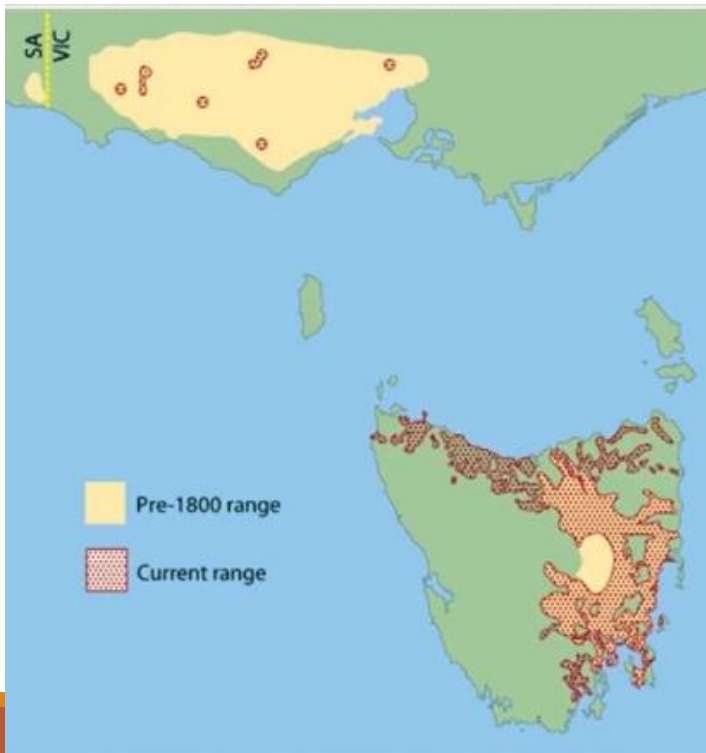


- The largest living marsupial predator
- Has very strong bite force to body size ratio
- Known for tearing violently into its food
- Protected species on the island of Tasmania



Perameles gunnii eastern barred bandicoot

- One of three species of bandicoot
- Threatened by invasive foxes (*Vulpes vulpes*)



Phascolarctos cinereus koala

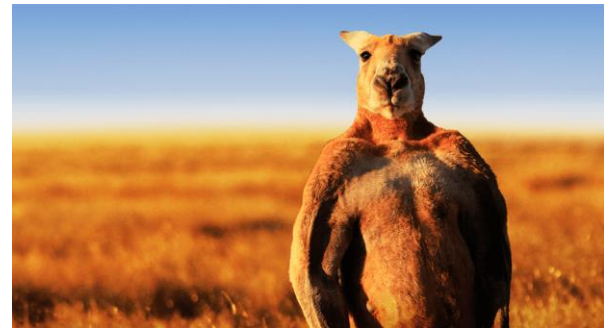
- Specialize in eating low nutrition eucalyptus leaves
- Sleep 20 hours a day
- Many sanctuaries attempt to protect their status



Macropus rufus

red kangaroo

- Largest marsupial and largest terrestrial mammal in Australia
- They are recreationally hunted and raised commercially for their meats and hide (their meat is pretty good)



Didelphis virginiana

Virginia opossum



Ecology

- Omnivorous
- Habitat generalists
- Nocturnal
- Solitary
- Don't hibernate
- Live 1-3 years in wild
- Hunted for pelts in most states

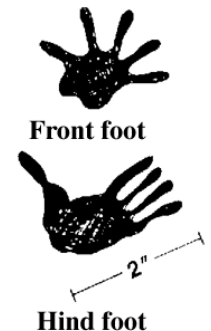


Didelphis virginiana

Virginia opossum

Physiology

- Elongated rostrum
- Prominent sagittal crest
- Prehensile tail
- Opposable pollex
- Plantigrade
- 13 nipples (12 circled w/ 1 middle)
- Most teeth of any North American mammal
- Marsupium may or may not be present



Didelphis virginiana

Virginia opossum

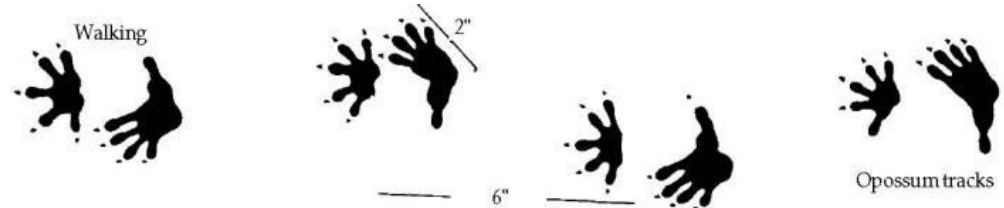
Scat

- 0.5 to 1" diameter
- Squeezed off end
- Changes with diet

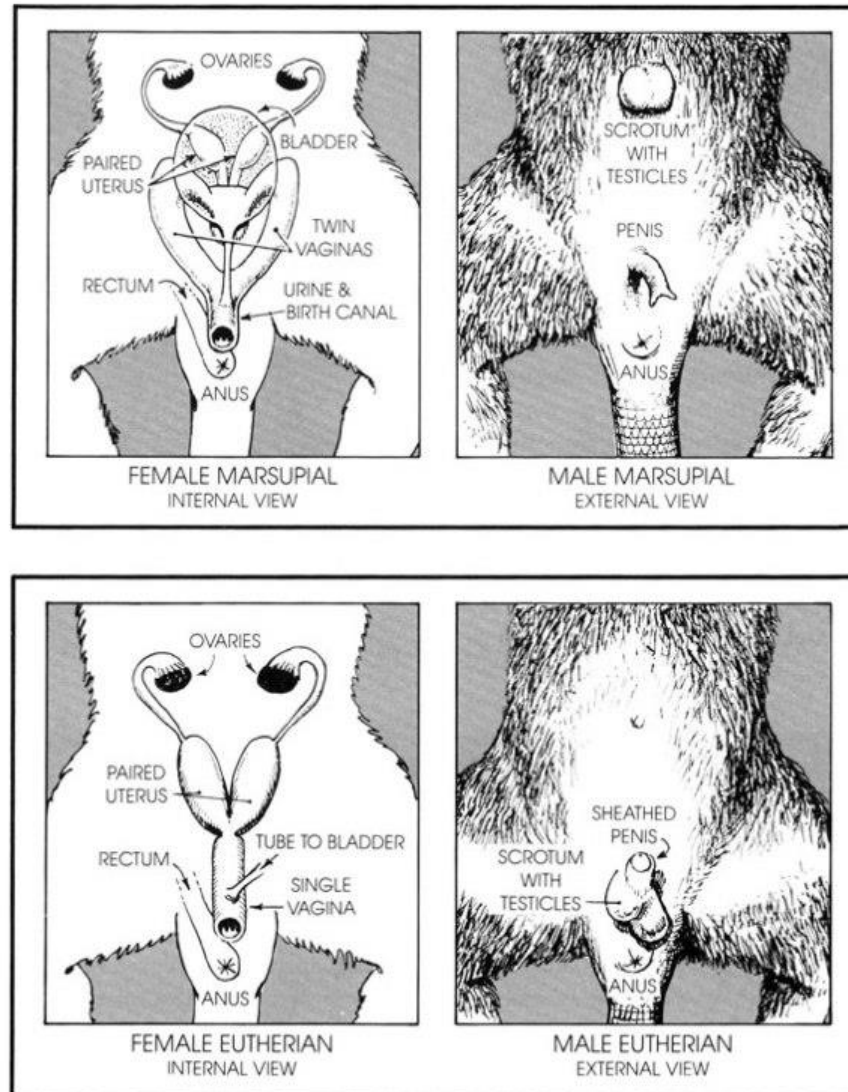


Tracks

- 2" long
- 6" gait
- 5 toes
- Opposable pollex
- Drag marks from tail



Marsupiala vs Placentalia



Afrotheria



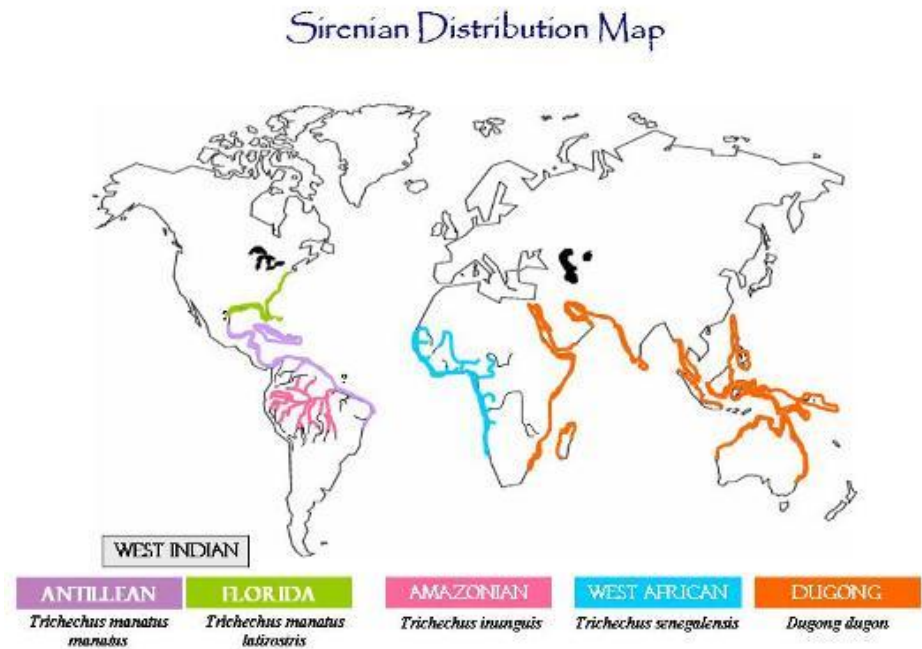
- Afro = “wild” ; theria = “beast”
- Most species are endemic to Africa
- Includes aardvarks, hyraxes, elephants, sea cows, and several extinct clades
- Convergent evolution of many traits due to isolation



Trichechus manatus

West Indian manatee

- Known for their conservation success in Florida

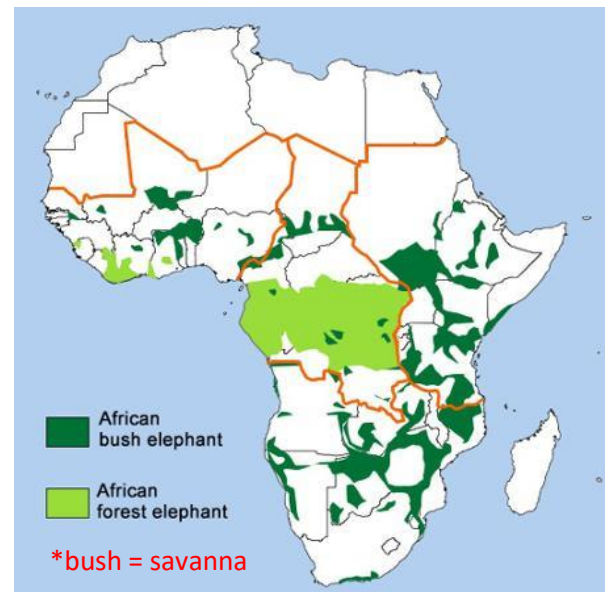


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Loxodonta africana

African savanna elephant

- Largest terrestrial mammal
- Both males and females have tusks between age 1-3 yrs
- Threatened by habitat loss as well as poaching for meat and ivory



Orycteropus afer brown aardvark

- Nocturnal
- Insectivorous (use claws to dig up anthills and termite mounds)



Xenarthra

- Xenarthra = “strange joints” because they have extra joints compared to other placental mammals
- Includes anteaters, tree sloths, and armadillos
- Ischium and sacrum are fused
- Males’ testicles are internal



Bradypus variegatus

brown-throated three-toed sloth



- Known for being slow moving
- Sleep ~18 hrs per day



Dasyurus novemcinctus nine-banded armadillo



Biology

- Homodont teeth
- Polyembryonic (4 embryos from 1 egg)
- Ossified bony plates covered in keratin

Ecology

- Nocturnal
- Insectivorous
- Solitary



Dasyurus novemcinctus nine-banded armadillo



Scat

- Small clumps 1" long

Tracks

- 2" long w/ 4 front toes, 5 back toes
- Tail drags

Other Signs

- Dig for food and shelter
- 7-10" wide burrow next to structures
- 1-3" deep holes in ground for food



Specimens in the Lab

- *Ornithorhyncus anatinus* (1 skull)
- *Didelphis virginiana* (multiple skulls, skins, and signs)
- *Phascolarctos cinereus* (1 skull)
- *Macropus rufus* (1 skull)
- *Dasypus novemcinctus* (1 skull, 1 skin)
- *Orycteropus afer* (1 skull)