



Primates, Lagomorpha, & Rodentia



Mammalogy 2019



Expectations for Today

- You will be expected to be able to:
 - Produce the common and scientific names of 43 species of Rodentia, Lagomorpha, and Primates when given samples (skeletons, skins, tracks, scat, etc.)
 - Describe some basic physiological, ecological, and management characteristics of those 43 species when given the name

Taxonomy



All Other Mammals



Xenarthra



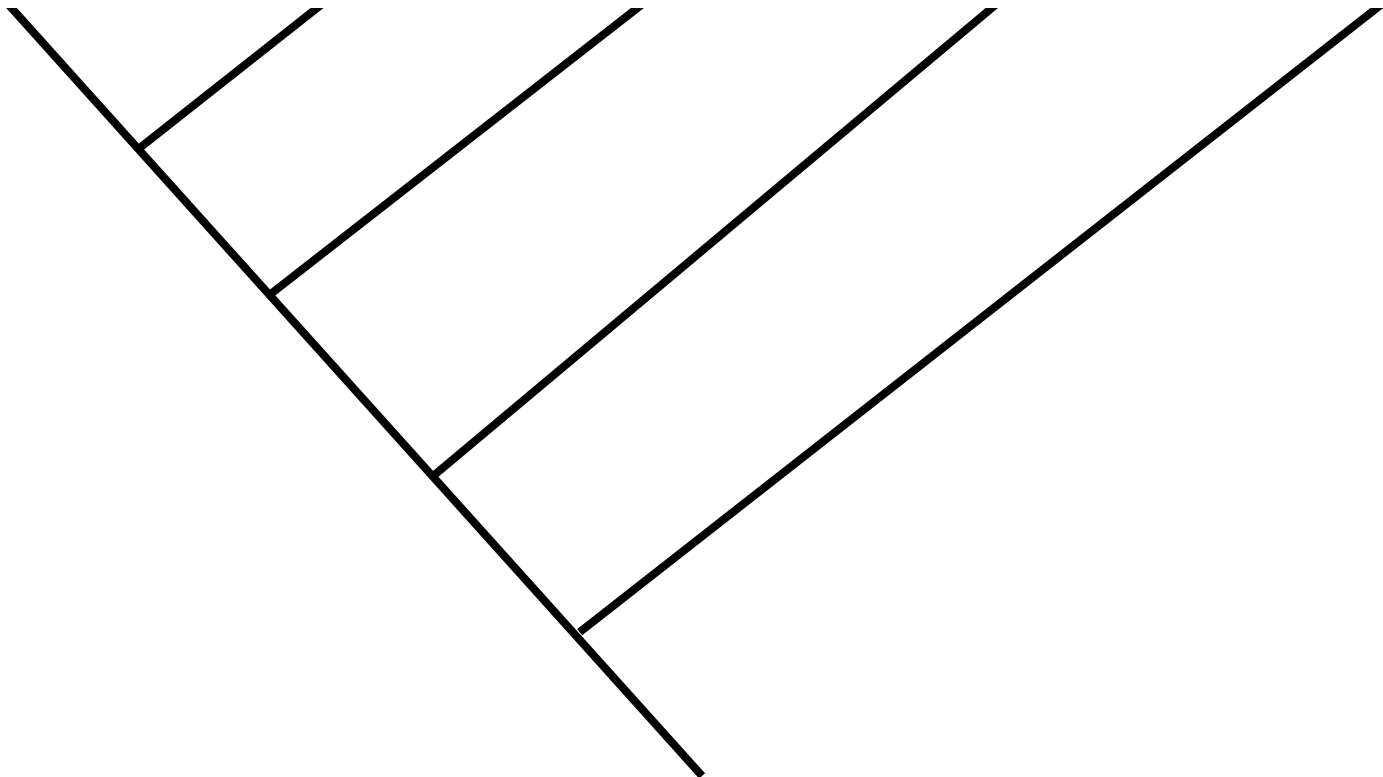
Afrotheria



Marsupialia



Monotremata



Taxonomy

Euarchontoglires



Rodentia



Primates



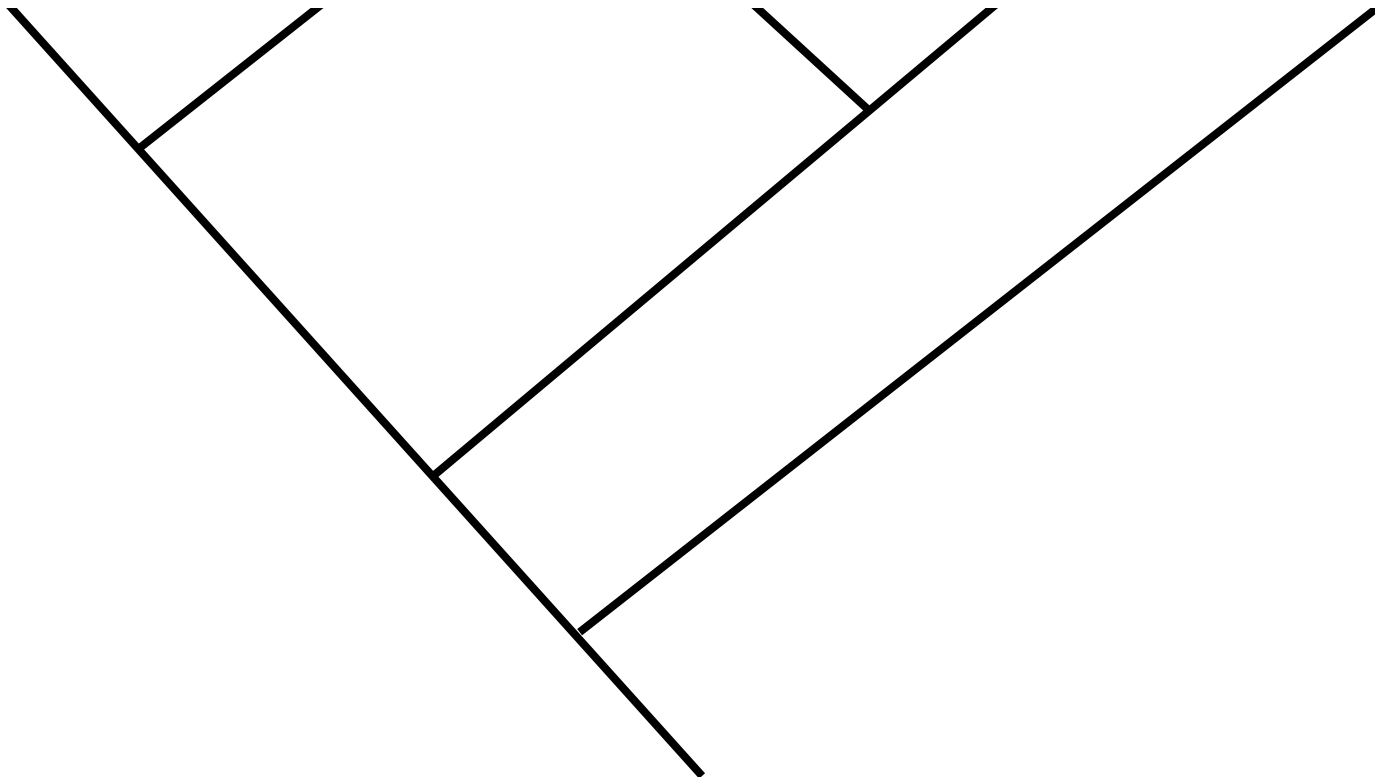
Artiodactyla



Carnivora



Xenarthra



Euarchontoglires



Rodentia



Lagomorpha



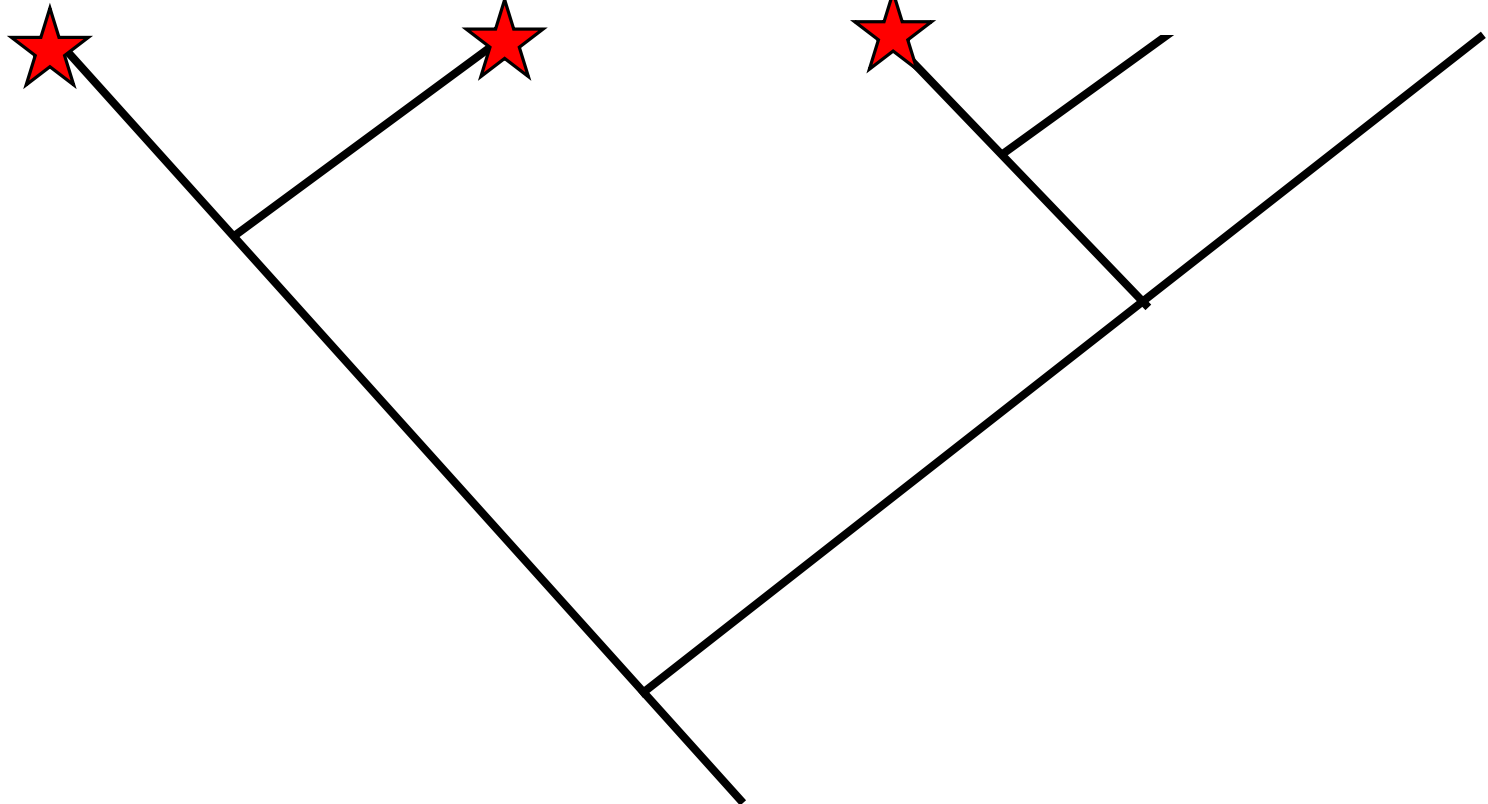
Primates



Dermoptera



Scandentia

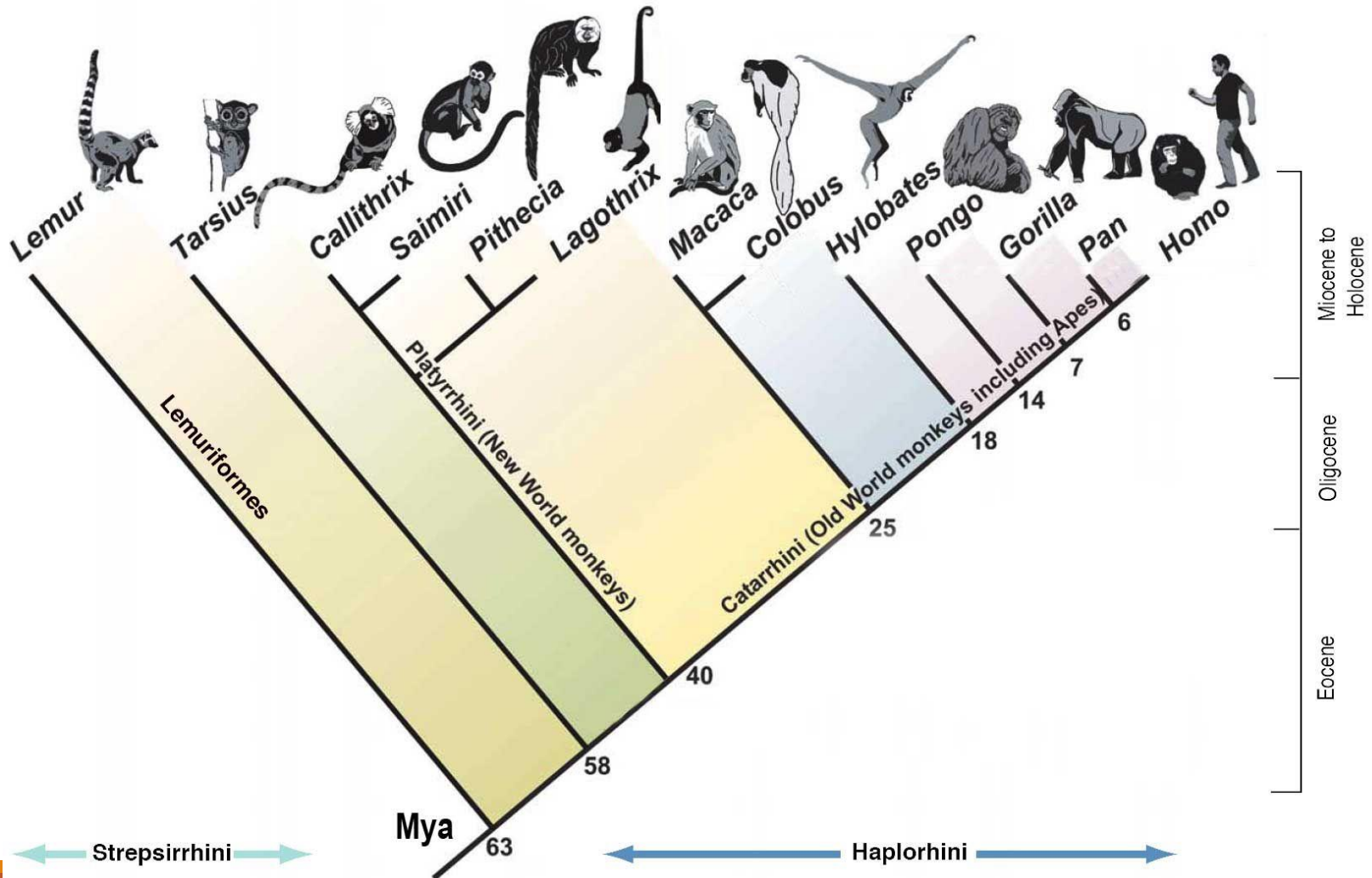


Order: Primates

- Primus = “first rank”
- Range from <1lb to >400lbs
- Some are terrestrial while others are arboreal
- Highly social

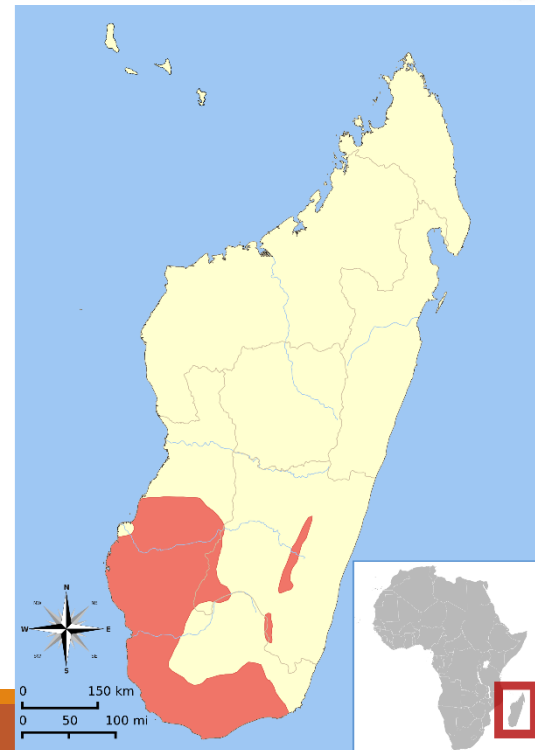


Order: Primates



Lemur catta ring-tailed lemur

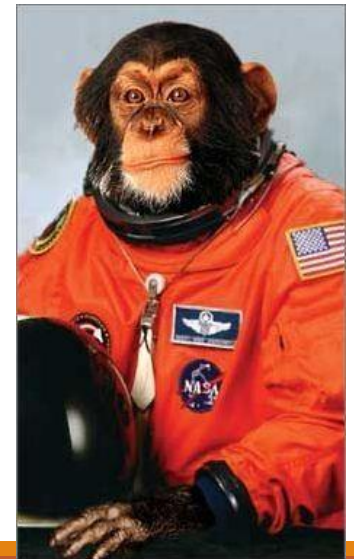
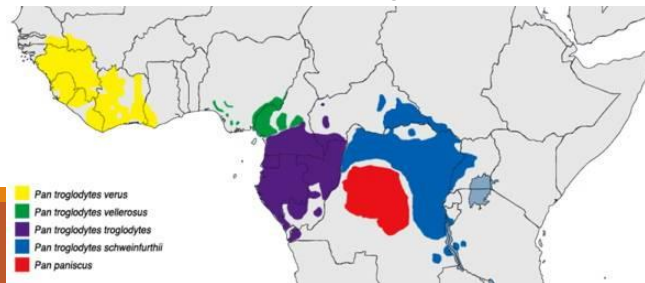
- Diurnal
- Live in troops of up to 30
- Endangered due to habitat loss and exotic pet trade
- Breeds well in captivity and commonly found in zoos



Pan troglodytes chimpanzee



- Closest extant relative to humans
- Weigh 60-130lbs
- Offspring maintain close relationships with mothers for many years
- Are known to use tools and solve problems
- Often used in research
- Live in large territorial troops



Homo sapiens
human



Order: Lagomorpha

- Lagomorph = “rabbit look”
- Includes: hares, rabbits, and pikas
- Have 4 incisors compared to rodents, which have 2
- Often reproduce many times a year



Lepus californicus black-tailed jackrabbit

- Live in elevations from 0-10,000ft
- Grow up to 6lbs
- Moms abandon offspring as soon as their done nursing



Lepus townsendii

white-tailed jackrabbit

- Prefer open prairies or scrublands
- Grow up to 10lbs and change fur pattern seasonally
- Are larger than black-tailed jackrabbit (why?)



Sylvilagus audubonii desert cottontail



- Primarily nocturnal
- Reproduce many times annually with few young surviving due to predation
- Larger ears than eastern cottontail
- Makes use of burrows abandoned by other species



Sylvilagus floridanus eastern cottontail

- Primarily crepuscular
- Reproduce many times annually with a peak during spring when temperatures first warm
- Evades predators by running in a zigzag pattern
- Prefer edge habitats with a mix of dense cover and open fields



Order: Rodentia

- Divided into five increasingly derived clades:
- Hystricomorpha (gundis, porcupines, and guinea pigs)
- Sciuromorpha (mountain beavers, squirrels, and chipmunks)
- Castorimorpha (beavers, pocket gophers, and kangaroo rats)
- Muridea (mice and rats)
- Dipodoidea (jumping mice)

Order: Rodentia



Dipodoidea



Muroidea



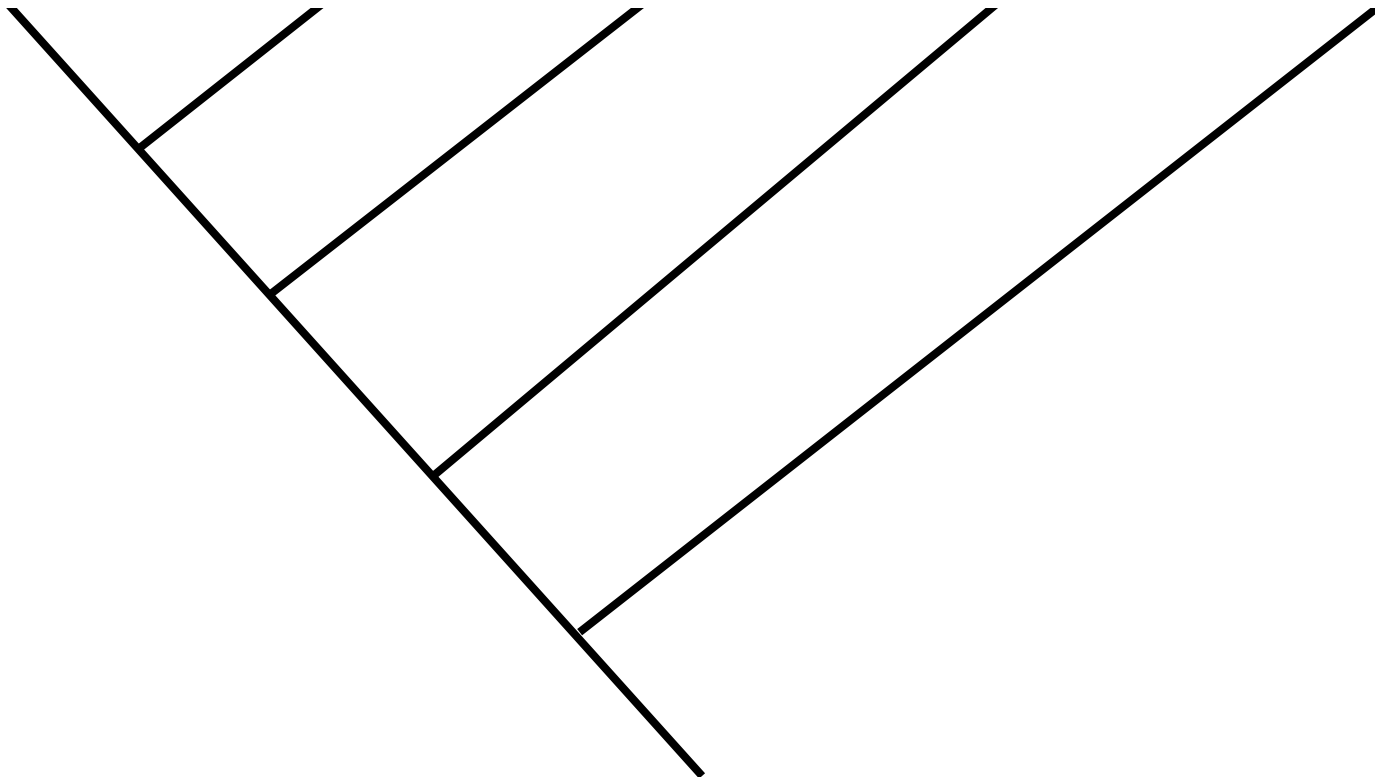
Castorimorpha



Sciuromorpha



Hystricomorpha



Order: Rodentia

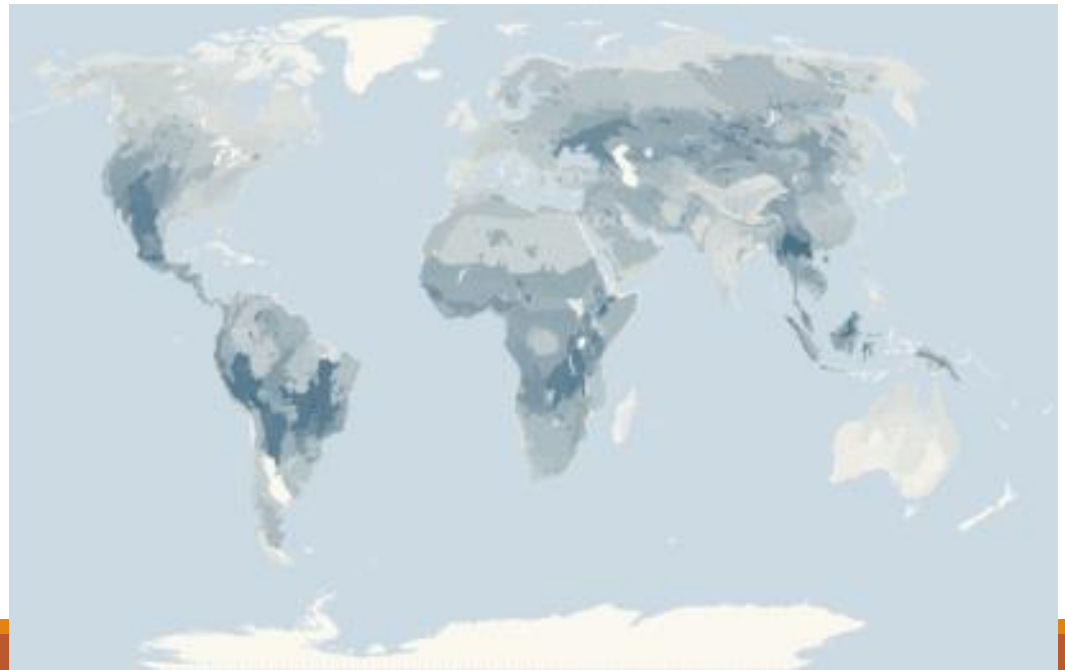


- Roderere = “gnaw”
- Highly diverse including >2,000 species
- Terrestrial, fossorial, arboreal, semi-aquatic
- Often well-adapted to human modified environments
- Social systems range from prairie dog colonies to solitary pocket gophers
- Often used in research due to their intelligence and high rate of reproduction

Order: Rodentia



- Almost exclusively herbivorous
 - (but we'll talk about the exceptions)
- Teeth have enamel only on the front with dentine on the back creating a chisel
- No canine teeth



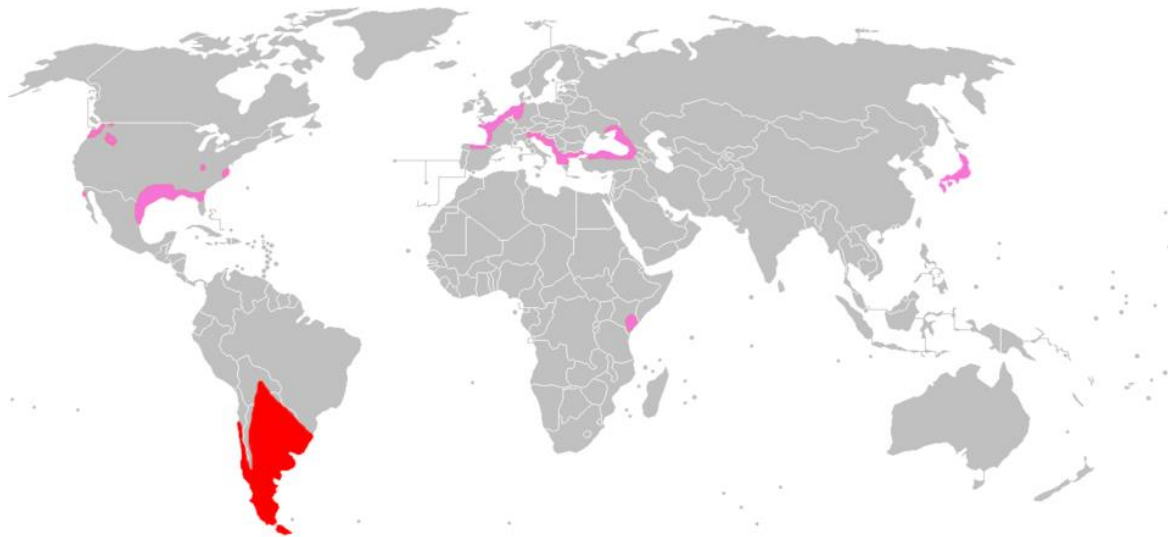
Order: Rodentia



- Rodent research is often done in labs or through direct observation
- Because of their small home ranges, we can create habitats large enough for rodents in controlled closed settings
- We can also observe rodents within most of their home range to watch their behaviors (as we did with squirrels last week)
- We use small traps to live catch wild rodents and transfer them to labs
- The same is true of many lagomorphs

Myocastor coypus nutria

- Semi-aquatic
- Up to 20-40lbs
- They are invasive in the US where they significantly reduce vegetation quantity and compete with beaver/muskrat



Erethizon dorsatum

porcupine



- Have sharp quills and a musky odor to protect themselves from predators
- Fishers specialize in hunting porcupines
- Weigh up to 35lbs
- Often strip bark from trees to eat
- Go through winter lethargy leaving large volumes of scat at the base of trees
- Originated in South America and moved during the Great American Interchange

Erethizon dorsatum porcupine



Cynomys ludovicianus black-tailed prairie-dog



- Famous for their huge prairie dog towns
- Impacted by habitat destruction largely by agriculture
- Diurnal
- Coterie are composed of 1 adult male and 3-4 females which breed all summer increasing the coterie size
- Offspring then disperse in May the year after birth
- The holes they dig show obvious signs of their presence

Cynomys ludovicianus
black-tailed prairie-dog



Glaucomys volans southern flying squirrel

- Nocturnal
- Specialize in fruits and nuts
- Glide rather than truly flying
- Wings also called “patagium”
- Prefer deciduous or mixed forests
- Build dreys like other tree squirrels



Ictidomys tridecemlineatus thirteen-lined ground squirrel

- Omnivorous (grass, seeds, insects, mice/shrews)
- Diurnal preferring warm days
- Hibernates earlier than many similar species



Marmota monax groundhog



- Largest of the Sciuridae, weigh up to 15lbs
- Dig hidden burrows that can ruin building foundation
- Prefer edge habitats with close access to cover/den sites
- Can actually climb trees to escape predators
- True hibernation
- Mostly eat grasses



Poliocitellus franklinii

Franklin's ground squirrel

- Known for its musky scent
- Has numerous glands along its back to scent mark its tunnels
- Hibernates
- Diurnal



Sciurus carolinensis eastern grey squirrel



- Prominent in forests east of the Mississippi River
- Important dispersers of seeds because they bury them for later use
- Are born hairless
- Well adapted to humans
- Build dreys to nest in
- Shelled nuts are a good indicator sign



Sciurus niger eastern fox squirrel

- Build dreys and shell nuts
- Largest North American squirrel
- Prefer wooded habitats with minimal understory
- Have darker fur patterns through the Appalachian Mts



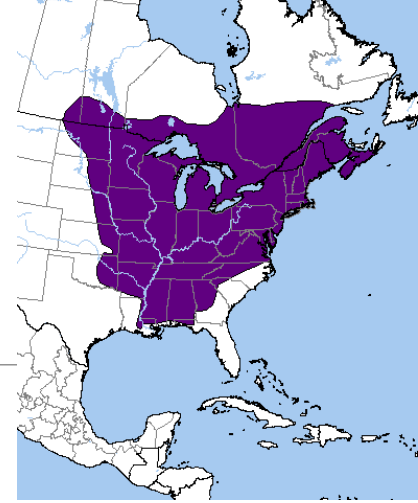
Tamias minimus least chipmunk



- Smallest Sciuridae species
- Are adaptable to environments with both large hardwoods or scrub
- Mark areas without food with urine to improve foraging
- Cache food to survive winter



Tamias striatus eastern chipmunk



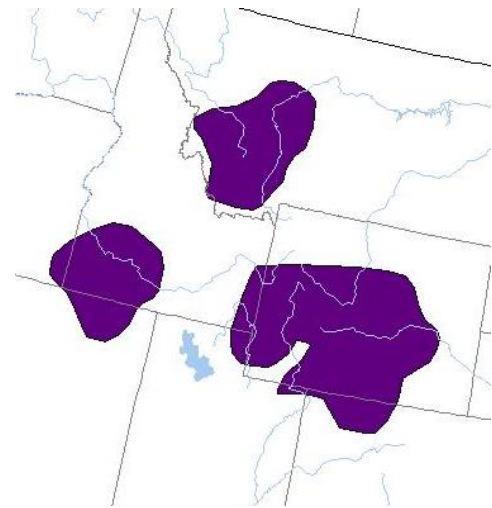
- Diurnal
- Prefers deciduous forest habitats with dense understory
- Burrows in ground and carries food cheek pouches to cache



Urocitellus elegans

Wyoming ground squirrel

- Endemic to the U.S.
- It is facing threats due to habitat loss



Xerospermophilus spilosoma spotted ground squirrel

- Caches food to eat during winter lethargy
- Digs its own small burrows
- Unique spotted pelage



Castor canadensis

American beaver

- Known for building dams and lodges
- Considered ecosystem engineers
- Use their adapted tail to pack mud onto wooden structures
- Only live near water, but will disperse over dryer terrain
- Prominent food source for large predators
- Historically more prominent prior to human hunting for pelts



Castor canadensis

American beaver



pocket gophers

- Have external pouches (“pockets”) on their cheeks to store food
- Fossorial feeding off roots and rarely coming aboveground
- Tunnels can be several feet deep into the ground
- Adapted to low oxygen and water underground
- Known for large front claws for digging

Geomys bursarius plains pocket gopher



Thomomys talpoides northern pocket gopher



Chaetodipus hispidus hispid pocket mouse

- Solitary; granivorous
- Dig individual burrows and plug the entrances
- Prefers short grass habitats



Dipodomys ordii

Ord's kangaroo rat



- Nocturnal
- Dig shallow burrows to rest during daytime
- Prefer sandy habitats with open gaps between vegetation
- Long tail



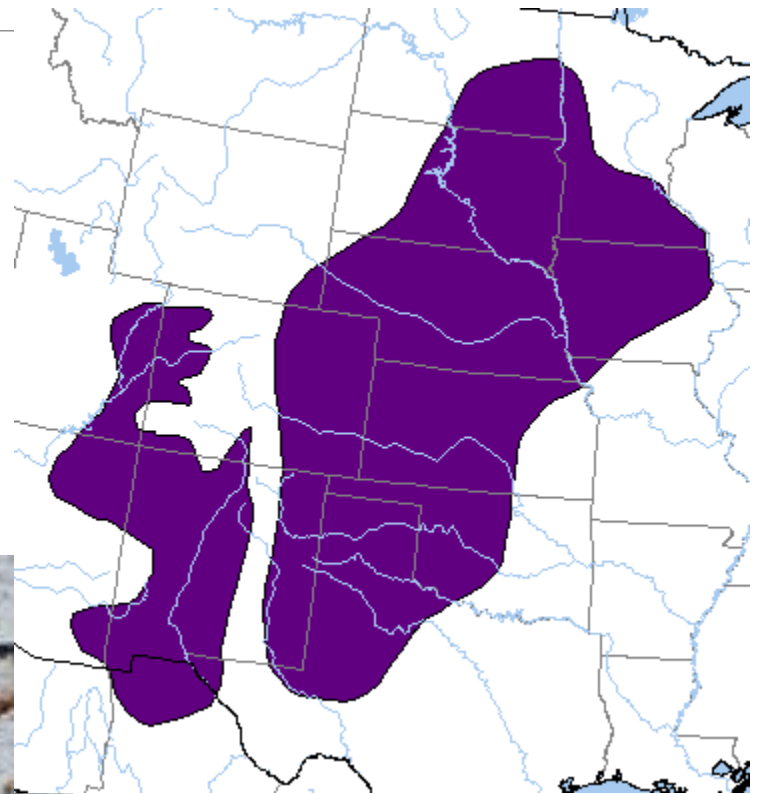
Perognathus fasciatus olive-backed pocket mouse

- Nocturnal
- Dig extensive underground tunnels relative to body size
- Prefers grassland habitats



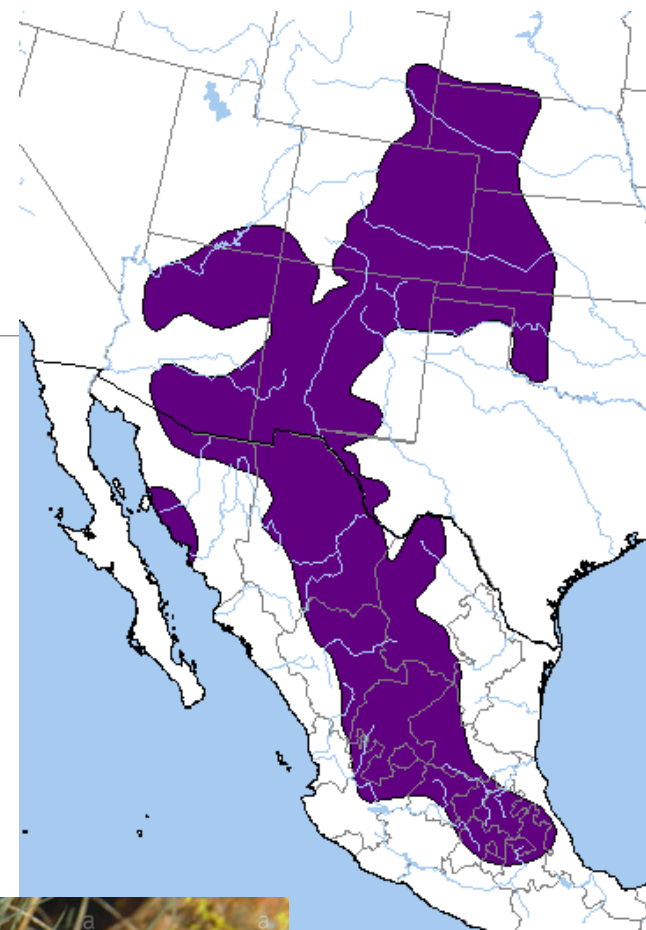
Perognathus flavescens plains pocket mouse

- Prefer desert habitats
- Often live directly under cacti
- Can survive in sandy grasslands
- Eat mostly seeds and grasses

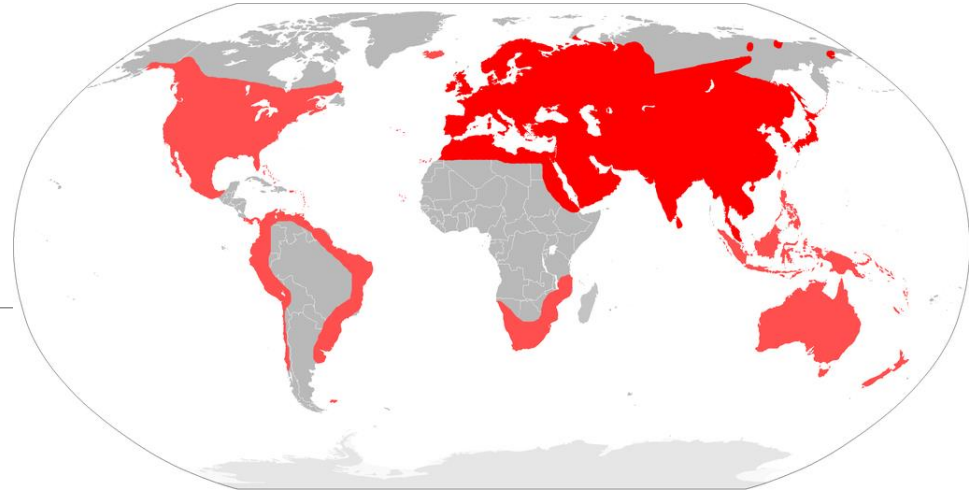


Perognathus flavus silky pocket mouse

- Smallest pocket mouse species
- Nocturnal
- Caches food in burrows to eat during day
- Large aboveground home range relative to body size

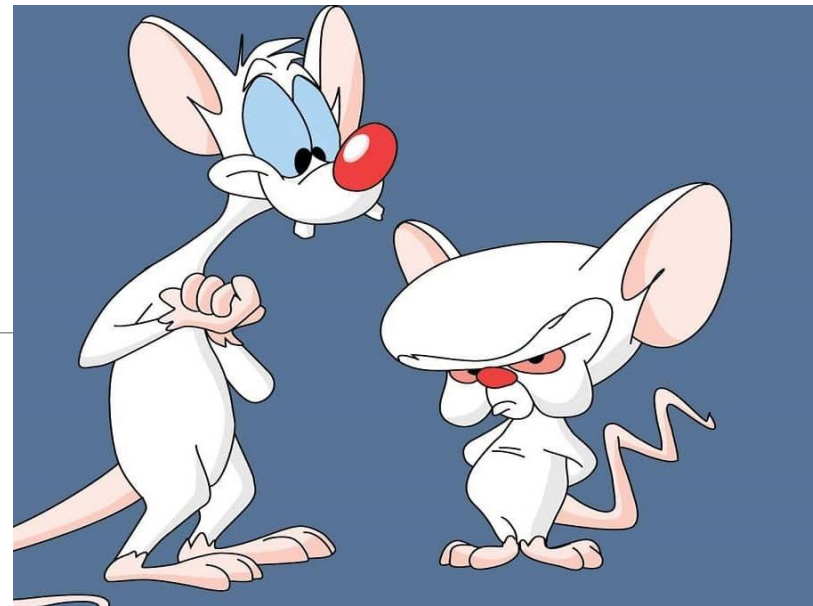


Mus musculus house mouse



- Well adapted to humans
- Used for research in labs
- Adapt social structure to meet environmental cues
- Considered invasive in many places they've been introduced
- Also considered a nuisance in homes/businesses
- Mouse scat is a common sign to find

Mus musculus house mouse



© Kim A. Cabrera

Rattus norvegicus

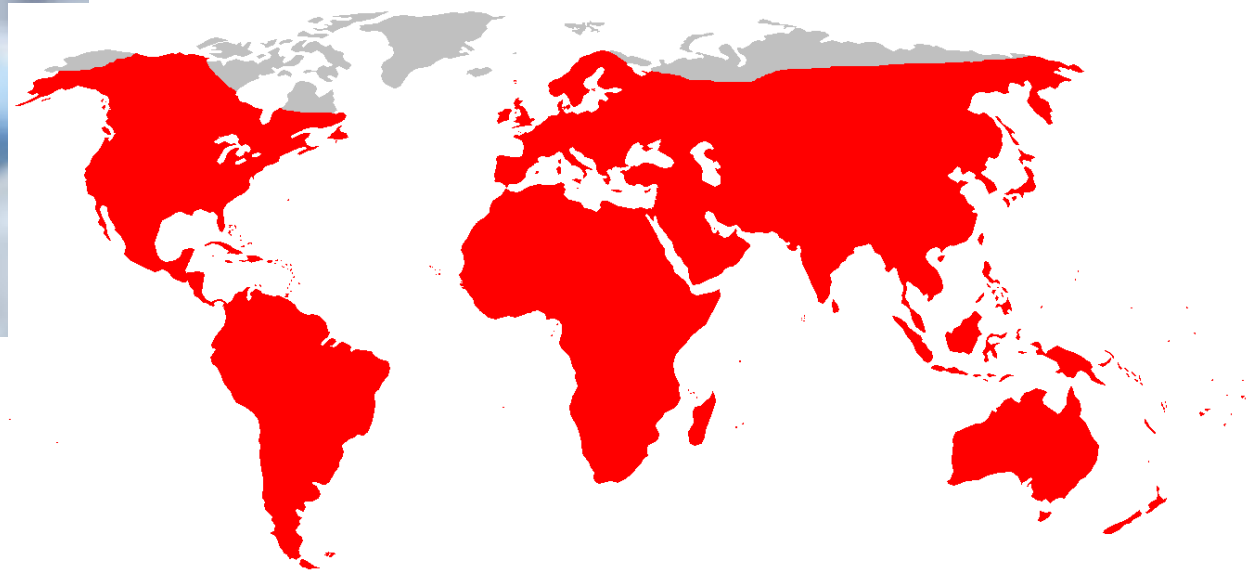
Norway rat

- Well adapted to humans
- Used for research in labs
- Most widespread of the mice
- Considered an invasive species and will eat bird eggs limiting their reproduction
- Burrow in habitats with available soil
- Live in large colonies



Rattus norvegicus

Norway rat



Microtus ochrogaster prairie vole



- Prefer dry grasslands
- Build runways under grasses and through snow
- Monogamous

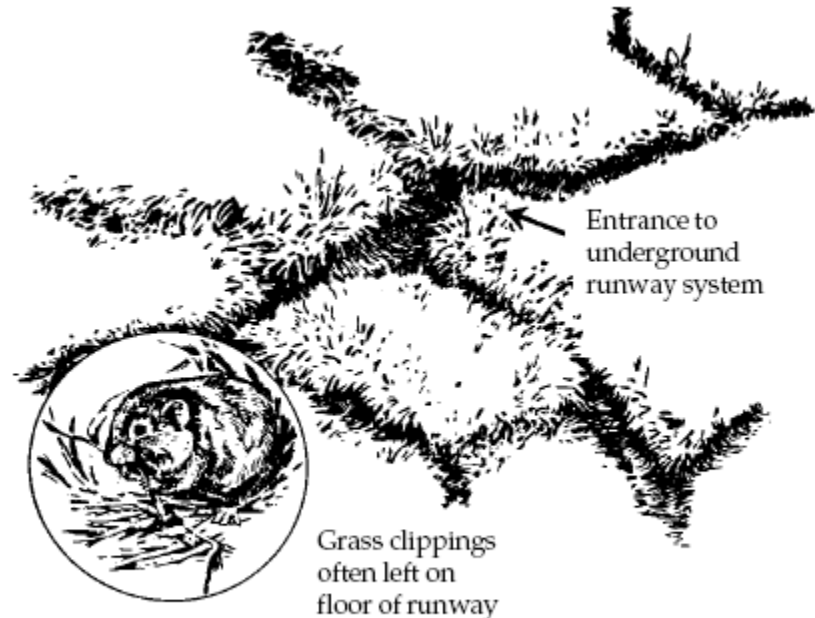


Fig. 6. Surface runway system of the prairie vole.

Microtus pennsylvanicus meadow vole



- Prefer moist grasslands
- Build runways under grasses and through snow
- Fur slightly darker than prairie voles (why?)



Microtus pinetorum woodland vole

- Prefer deciduous forests
- Live in social family groups
- Will climb trees for food
- Are particularly damaging to apple orchards



Neotoma cinerea bushy-tailed woodrat

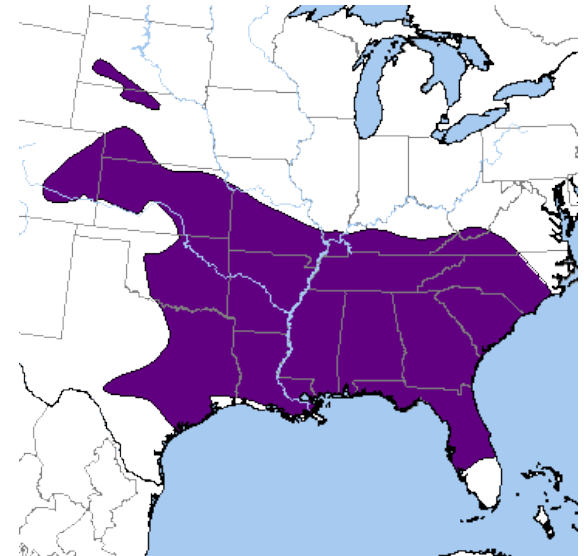
- a.k.a. packrats because they will drop whatever they're holding in exchange for shiny objects
- Cache food and shiny objects in dens
- Prefer boreal forest habitats
- Solitary; nocturnal; territorial
- males protect their territory from other males



Neotoma floridana eastern woodrat



- Builds large dens called “middens” that are used by offspring through multiple generations
- Prefer warm moist forest habitats and often are attracted to houses/cabins
- Are threatened by feral/house cats



Ondatra zibethicus muskrat

- Semi-aquatic
- Build lodges using reeds and other wetland vegetation
- Hunted for their pelts
- Will also burrow into the sides of riverbanks and wetlands

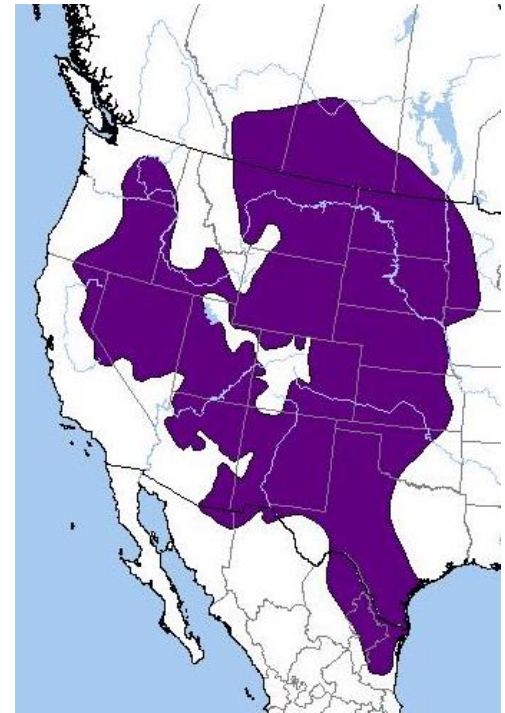


Ondatra zibethicus muskrat



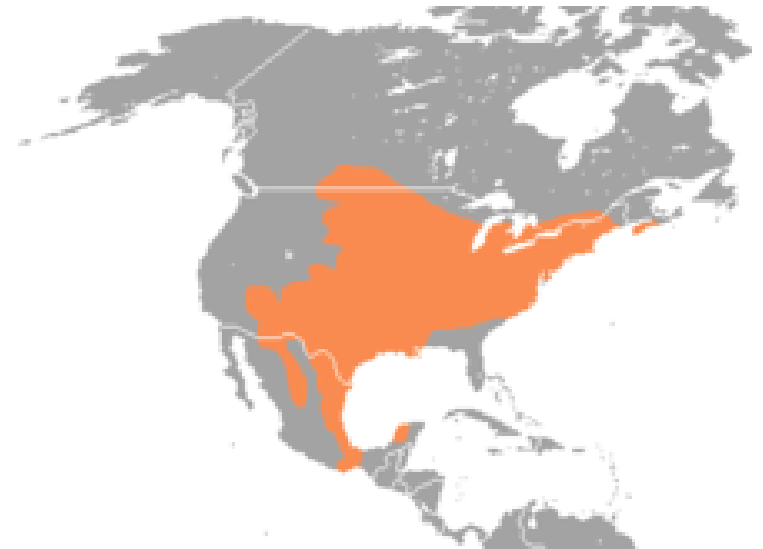
Onychomys leucogaster northern grasshopper mouse

- Carnivorous (other mice) / insectivorous (especially scorpions)
- Prefer deserts and dry grasslands



Peromyscus leucopus white-footed deermouse

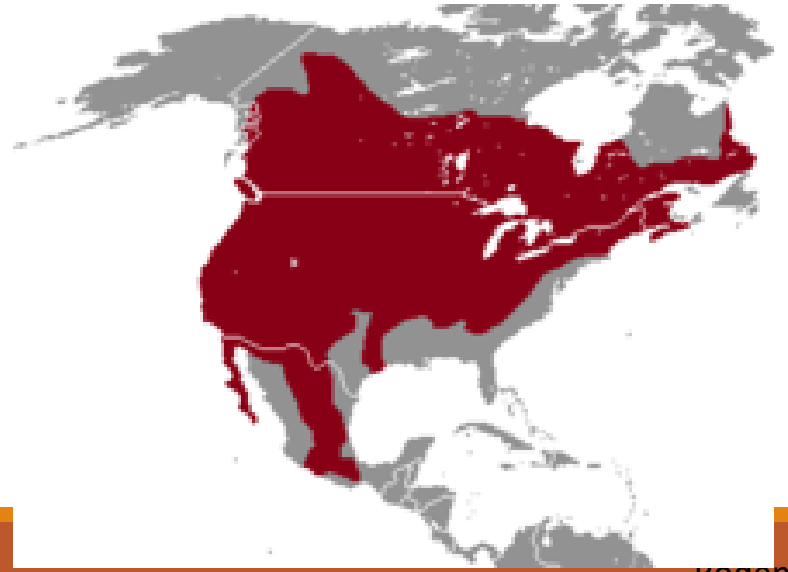
- Primarily insectivorous; nocturnal
- Adapt well to various habitats, but need tree cover



Peromyscus maniculatus

North American deermouse

- So similar to white-footed deermouse that you have to use a blood test to tell the difference
- North America's most abundant, widespread mammal
- Known to carry Lyme disease



Reithrodontomys megalotis western harvest mouse

- Nocturnal; herbivorous
- Weave nests of grass on ground or in shrubs
- At risk due to predation from feral/house cats



Sigmodon hispidus hispid cotton rat

- Omnivorous
- Habitat generalists
- No distinct circadian pattern (always active)



Synaptomys cooperi southern bog lemming

- Prefer mixed forest habitats, but expand into grasslands in the absence of prairie/meadow voles
- Build runways like voles in and out of edge habitat



© mammalwatching.com

Zapus hudsonius meadow jumping mouse

- Prefer moist habitats with lots of water
- Saltatorial and can jump 6-8ft (72-96x its body length)
- True hibernation
- Despite similarities, not closely related to kangaroo rats



Specimens in the Lab

- *Castor canadensis*
 - (skin, skull, scat)
- *Chaetodipus hispidus*
 - (skin)
- *Cynomys ludovicianus*
 - (skin, skull)
- *Erethizon dorsatum*
 - (skin, scat)
- *Geomys bursarius*
 - (skin)
- *Homo sapiens*
 - (skull)
- *Ictidomys tridecemlineatus*
 - (skin)
- *Lepus californicus*
 - (skin)
- *Marmota monax*
 - (skin)
- *Microtus ochrogaster*
 - (skin)
- *Microtus pennsylvanicus*
 - (skin)
- *Mus musculus*
 - (skin)
- *Myocastor coypus*
 - (skull)
- *Ondatra zibethicus*
 - (skin, skull, scat)
- *Onychomys leucogaster*
 - (skin)
- *Pan troglodytes*
 - (skull)
- *Peromyscus maniculatus*
 - (skin)
- *Poliocitellus franklinii*
 - (skin)
- *Rattus norvegicus*
 - (skin, skull, preserved)
- *Reithrodontomys megalotis*
 - (skin)
- *Sciurus niger*
 - (skin)
- *Sylvilagus floridanus*
 - (skin, skull, scat, tracks)
- *Tamias minimus*
 - (skin)
- *Tamias striatus*
 - (skin)