Perrisodactyla, Pholidota, & Carnivora

Mammalogy 2019

Expectations for Today

- You will be expected to be able to:
  - Produce the common and scientific names of 32 species of Perrisodactyla, Pholidota, and Carnivora when given samples (skeletons, skins, tracks, scat, etc.)
  - Describe some basic physiological, ecological, and management characteristics of those 38 species when given the name

Taxonomy

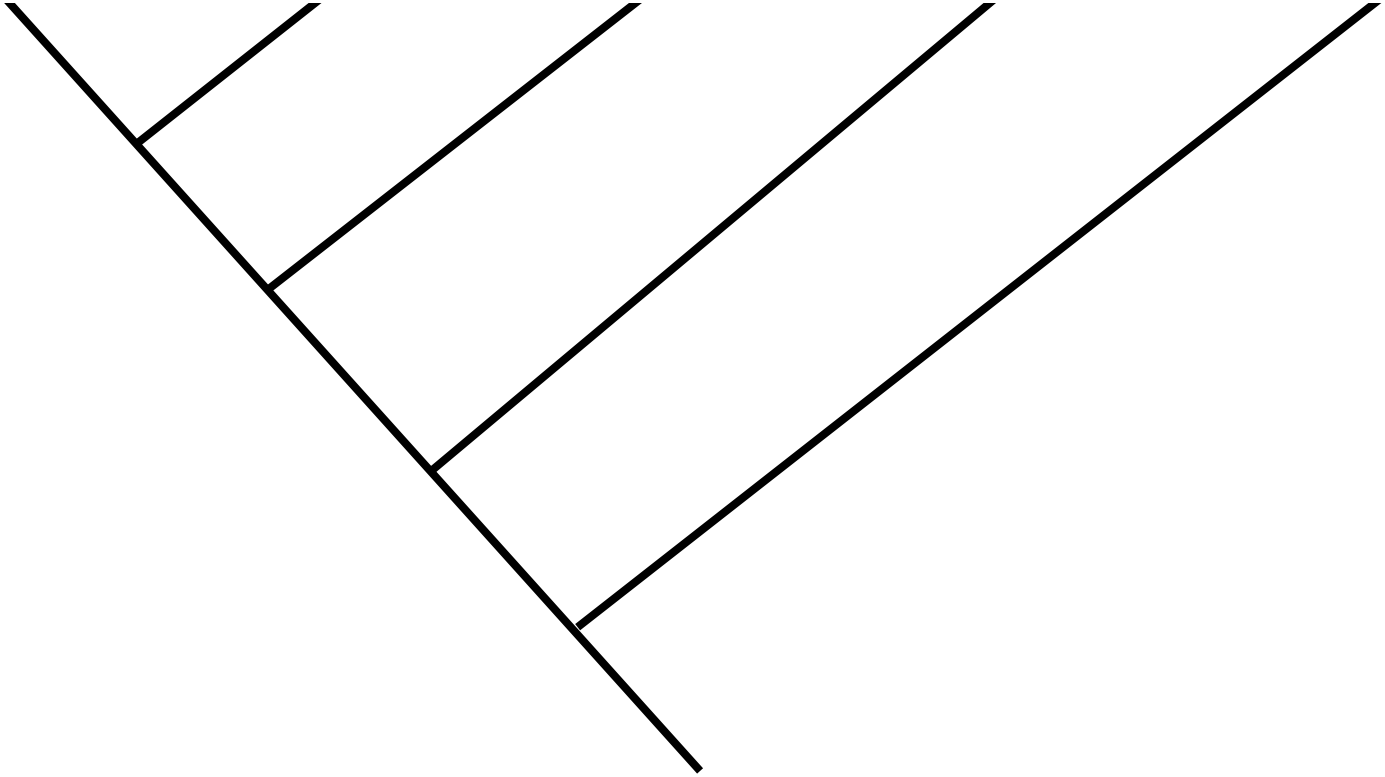
All Other Mammals

Xenarthra

Afrotheria

Marsupiala

Monotremata



Monotremata, Marsupiala, Afrotheria, Xenarthra

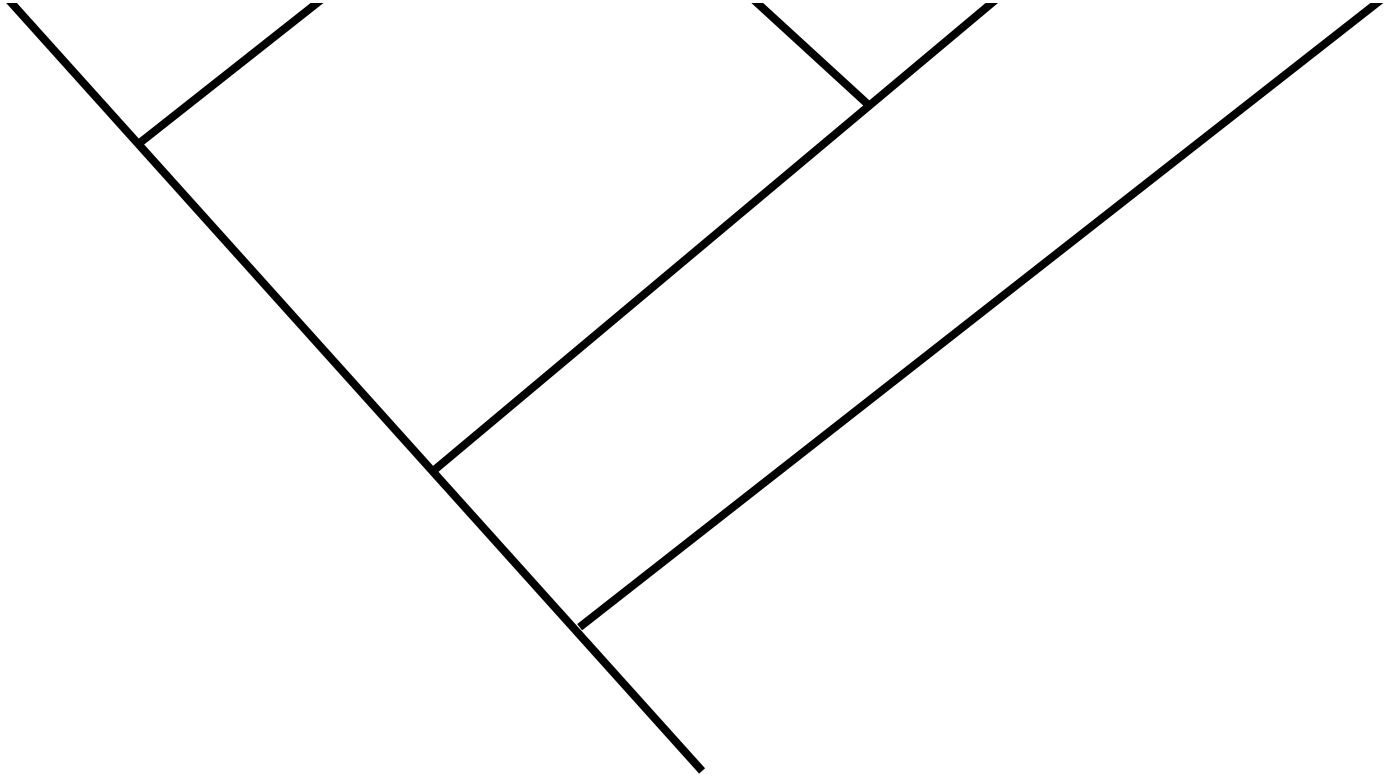
Taxonomy

Laurasiatheria





Rodentia Primates Artiodactlya Carnivora Xenarthra



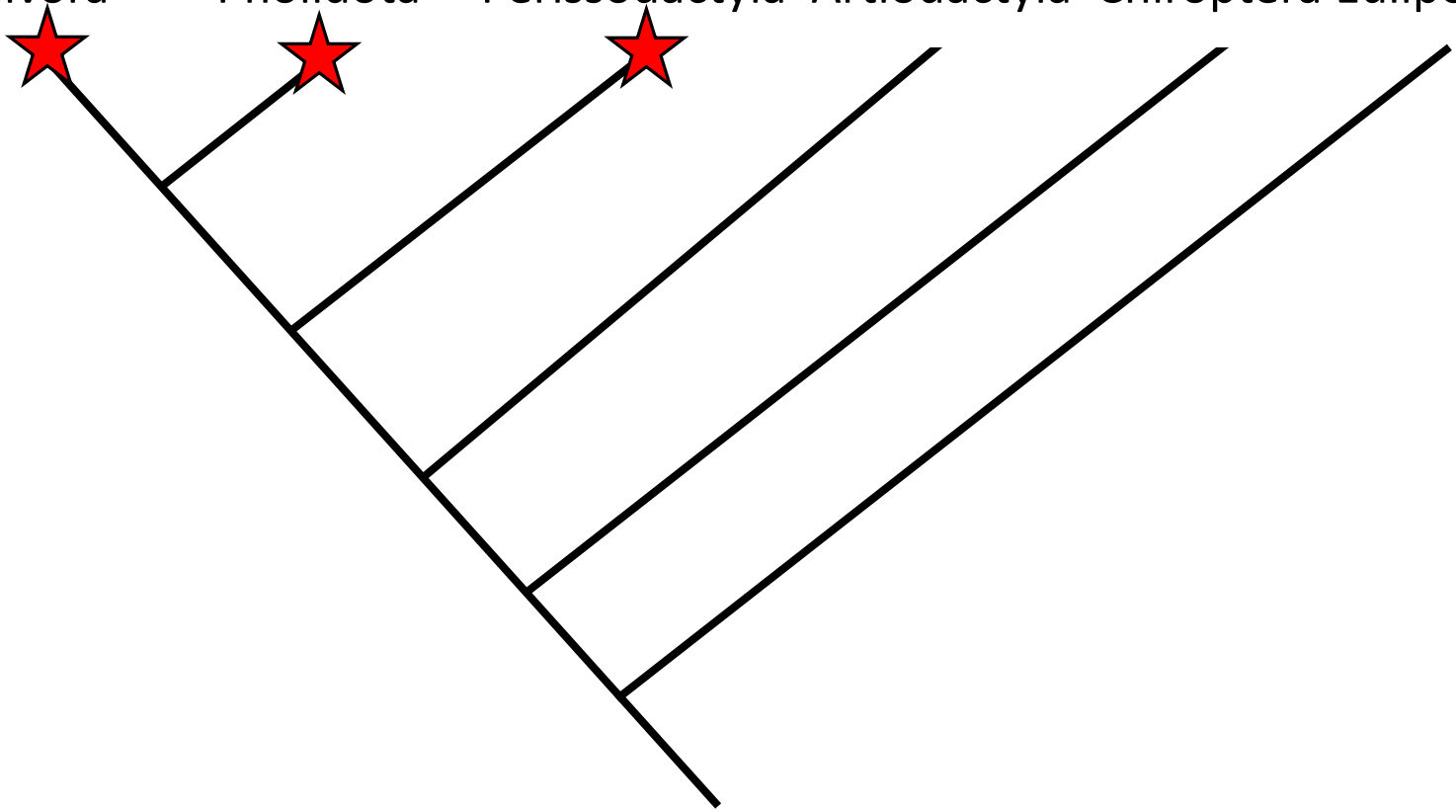
Perrisodactyla, Pholidota, Carnivora

Laurasiatheria



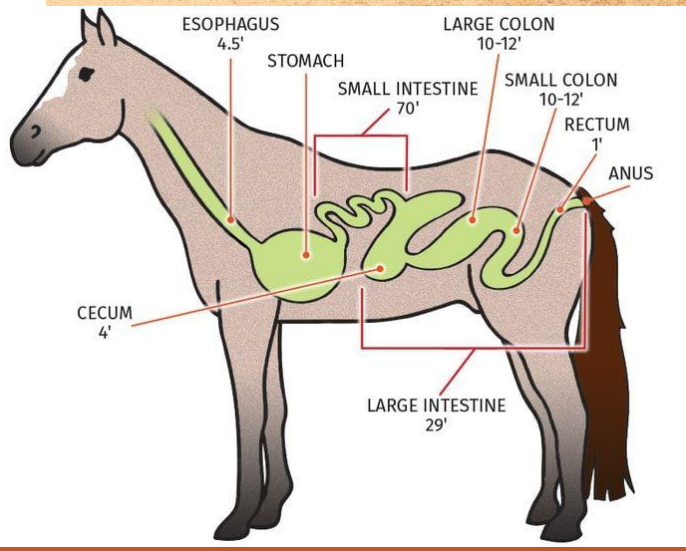



Carnivora Pholidota Perissodactyla Artiodactyla Chiroptera Eulipotyphla



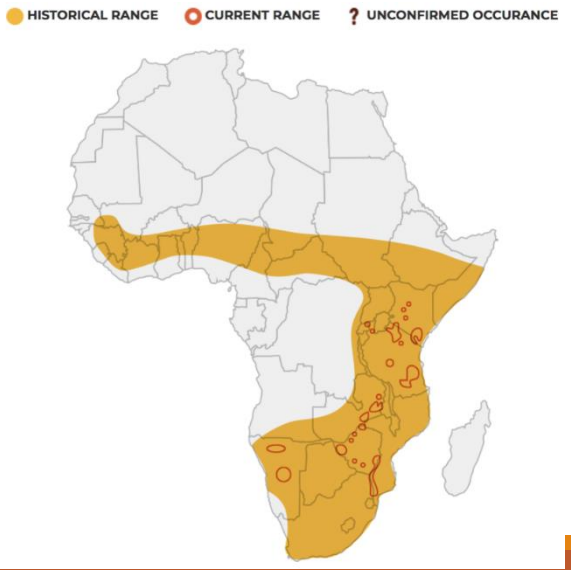
Order: Perrisodactyla

- Perriso = “odd” ; Dactyla = “toed”
- Horses (including burros and zebras), rhinos, and tapirs
- Balance all their weight on a single center toe (with rhinos and tapirs having two extra toes for balance)
- Primarily digest cellulose in the hindgut



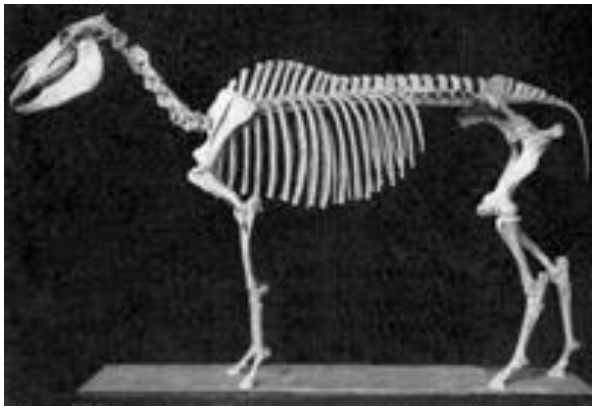
Diceros bicornis black rhinocerous

- Smaller of the two species of African rhinoceri
- Have a hooked upper lip
- 98% of rhinos killed between 1960-1995 primarily for ivory
- Now ~5,000 are alive in the wild

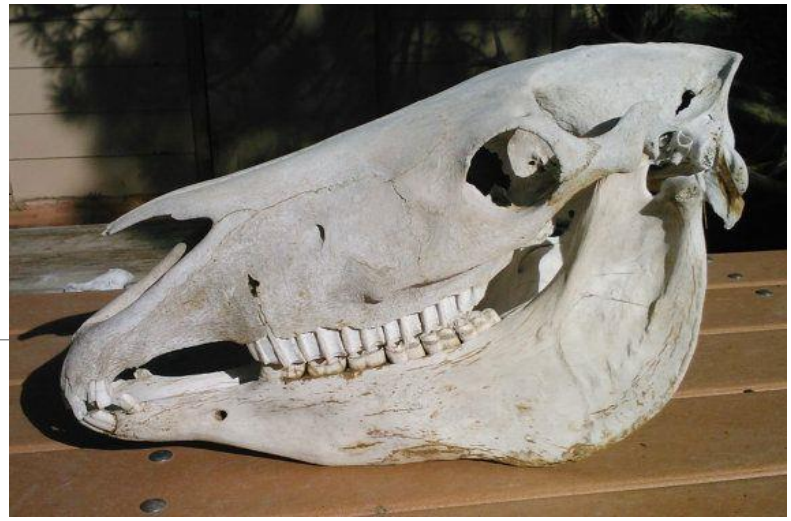


Equus asinus wild burro

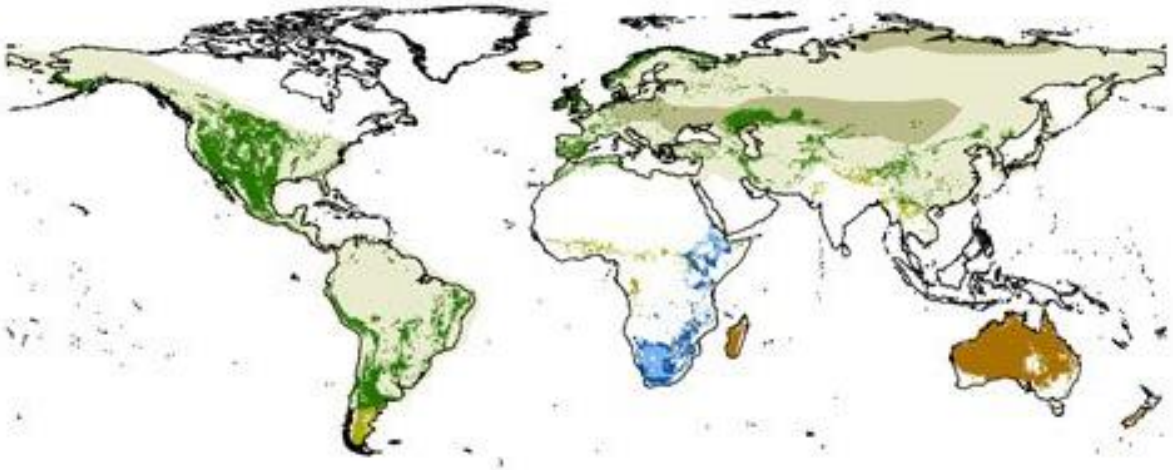
- Originally from Africa
- Grow to ~350 lbs
- Live up to ~25 yrs
- Are known for not needing much water and carrying heavy loads (they can replenish 30% of their body weight in water in just 5 minutes of drinking)



Equus ferus wild horse



- Originally from the Asian Steppe
- Now feral worldwide
- Predated by wolves, mountain lions, and African predators
- Males fight for females by kicking and biting

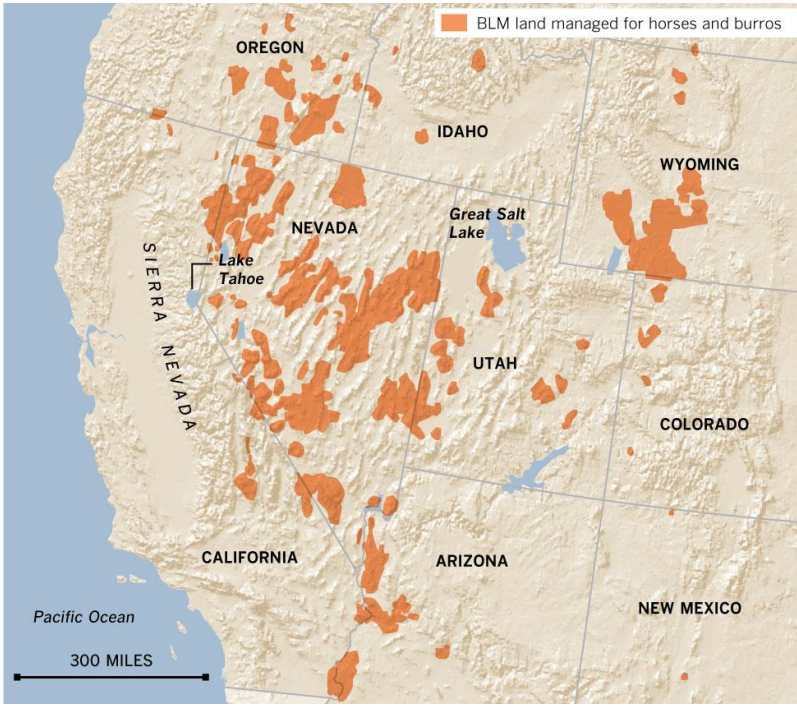


wild burro & wild horse Sign

- Tracks have unique single toe (hoof) imprint
- Burros don’t typically wear shoes because their hooves are harder than horses because they prefer deserts while horses prefer grasslands
- Scat is in large clumps the size of apples

wild burro & wild horse Management

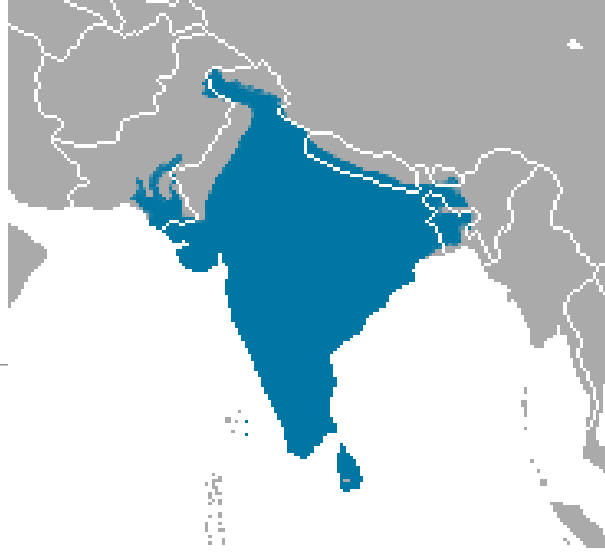
- Wild burros and wild horses feral in American southwest
- Debate over management because horses originally evolved in North America
- Plans to capture, sterilize, or domesticate horses in the works
- Possible because burros and horses are herd animals
- Not much interest in hunting them



Order: Pholidota

- Pangolins / spiny anteaters
- Native to Africa and Southeast Asia
- Specialize in ants and termites
- Have claws for digging and climbing trees
- Curl up in response to danger

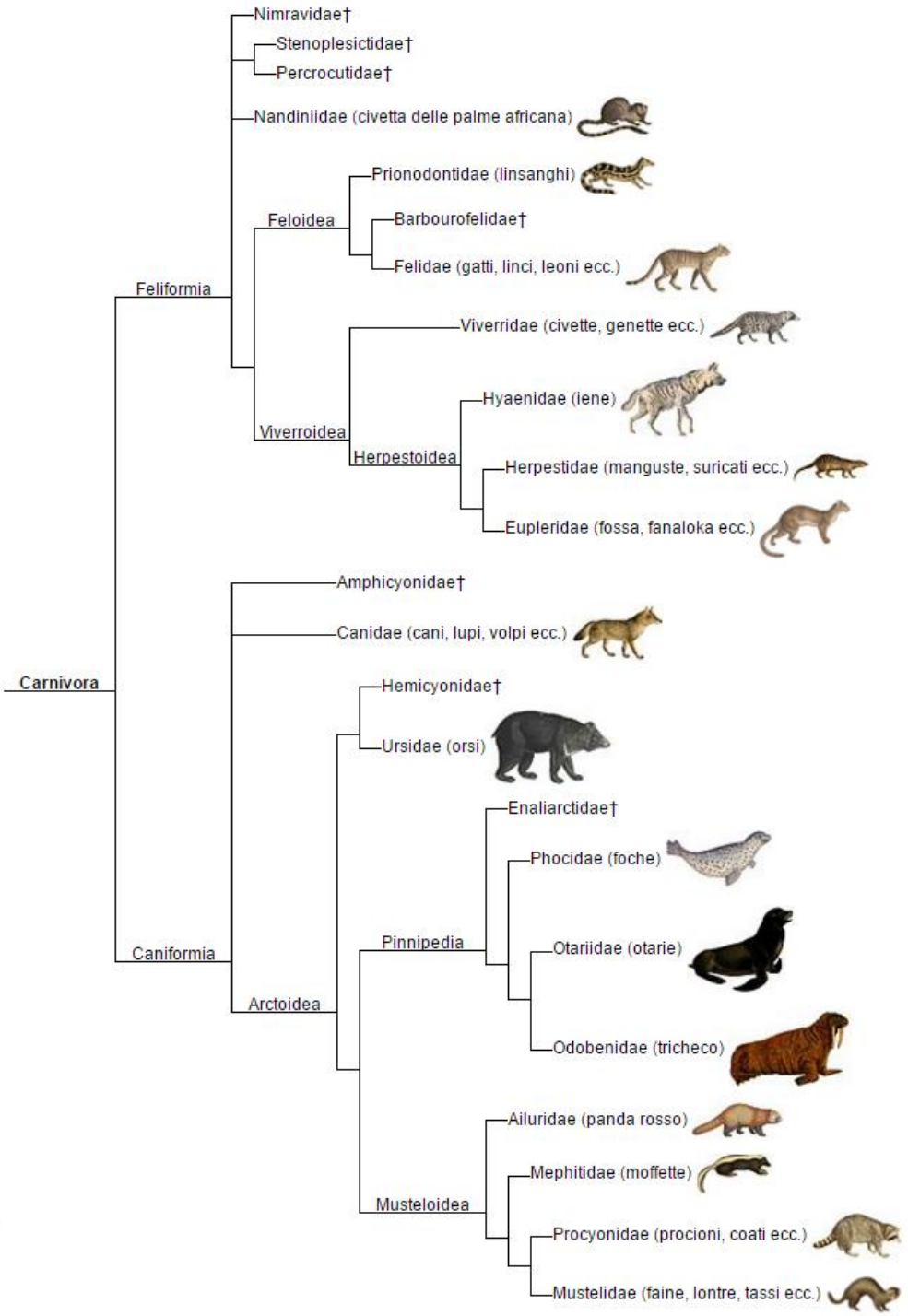
Manis crassocaudata Indian pangolin



- Nocturnal insectivore
- Digs up termite and ant mounds
- Sleeps in burrows during the day
- Threatened by hunting for meat and medicine

Order: Carnivora

- Phylogenetically, carnivores are divided into Feliformia (cat-like) and Caniformia (dog-like)



Laurasiatheria

Carnivora


Canidae


Arctoidea


Herpestoidae


Feloidae


Pholidota


Perrisodactyla

Caniformia

Feliformia

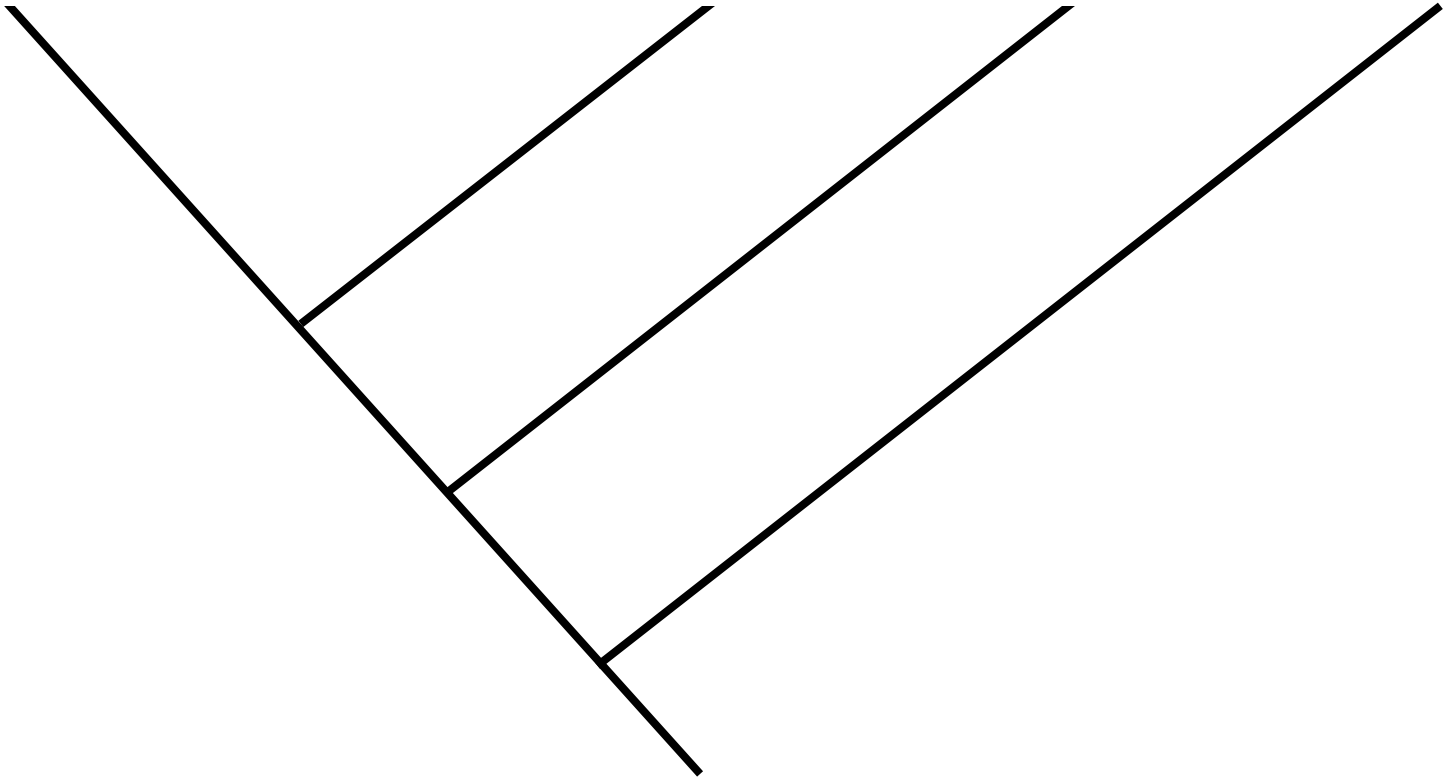
Feliformia

Eupleridae

Herpestidae

Hyaenidae

Felidae

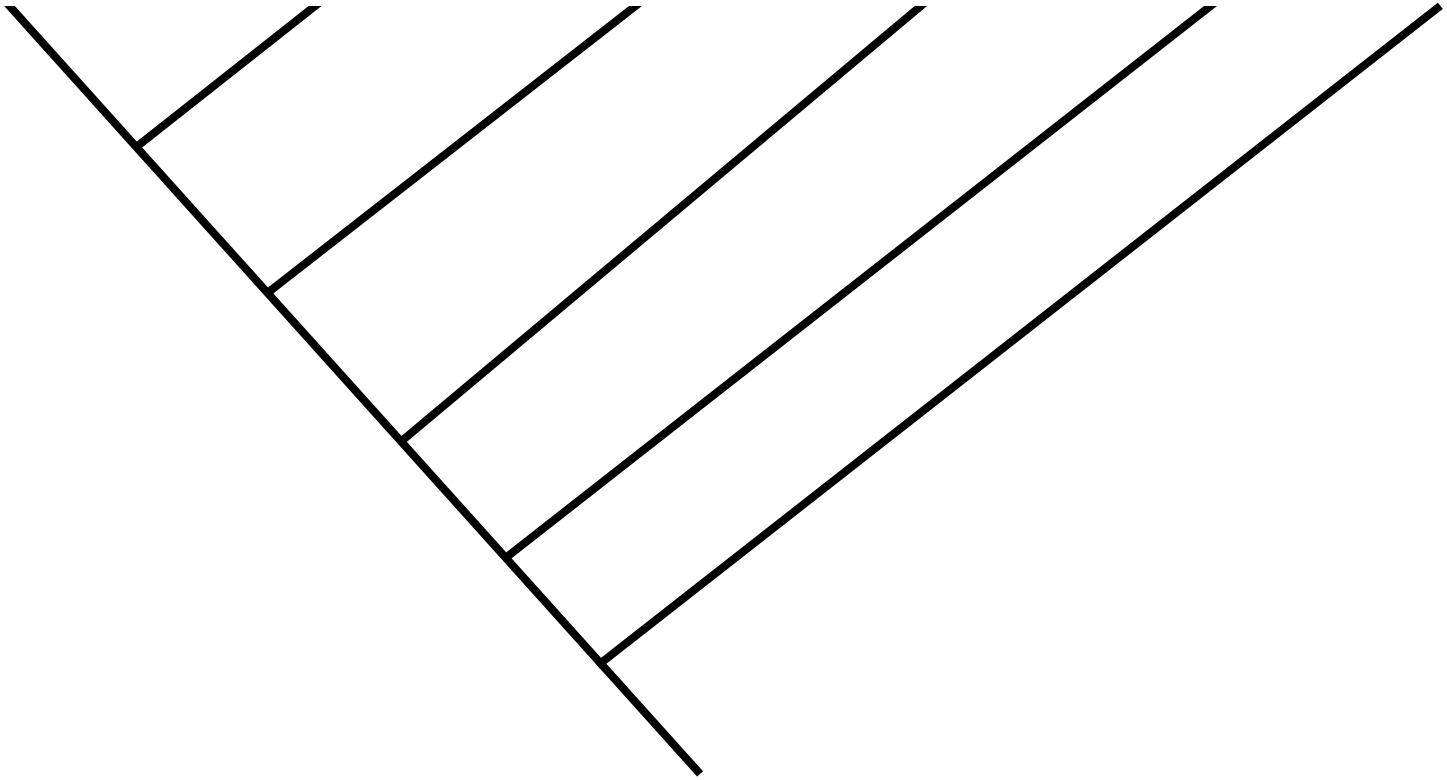


Caniformia






Mustelidae Procyonidae Mephitidae Pinnipedia Urisdae Canidae



Order: Carnivora

- Carnivora = “flesh eating”
- Primarily carnivorous, but omnivores are also numerous
- Vary widely in size from least weasels to elephant seals
- Often distinguished by canine teeth and large sagittal crests

Order: Carnivora

- Scat tends to mirror the species
  - Ursids (large and diverse)
  - Mustelids (long and spindly)
  - Felids (streamlined and clean lines)
  - Canids (streamlined but erratic lines)

Order: Carnivora

- Signs of predation mirror species
  - Ursids (kill prey by crushing skull; consume entire prey and defecate in the same place)
  - Mustelids (kill prey by crushing skull or ribs; consume entire prey)
  - Felids (kill prey by crushing windpipe; tend to avoid skin and eat the insides out)
  - Canids (kill prey by ripping limbs or throat; tear apart prey consuming everything and gnawing on bones)

Order: Carnivora

- Caching mirrors species
  - Ursids (sometimes bury food or hide it in den, but more rare)
  - Mustelids (cache prey in dens)
  - Felids (cache prey in trees or dense vegetation)
  - Canids (bury food to cache)

Order: Carnivora

- Humans fear carnivores
- This fear has led to the hunting/removal of many carnivores from their native ranges globally
- This fear is reinforced by stories such as the big bad wolf
- There have been recent efforts to reintroduce predators (such as bringing mountain lions back to New York, which isn’t going well)

Order: Carnivora

- We trap carnivores using leg traps, barrel traps, and box traps
- Often baited with rotting meat or scents such as castor oil
- This allows us to collar/tag/measure health of carnivores just like artiodactyls

Puma concolor mountain lion

- Also called cougars, pumas, and catamounts
- Habitat generalists, but don't do well around people because we kill them
- Highly territorial
- Ambush predators
- Breed year-round

Lynx canadensis Canada lynx

- Distinguished from bobcats by large ear tufts and foot fur
- Prefer dense vegetation to ambush small prey
- Need cold weather to outcompete bobcats

Lynx rufus bobcat

- Known for their “bobbed” (short) tail
- Ambush small prey, but are highly adaptable to different taxonomic groups (birds, rodents, even deer)
- Efforts to restore bobcats in Midwestern states

Herpestes edwarsi Indian gray mongoose

- Well adapted to humans (Rikki-Tikki-Tavi)
- Known for fighting snakes
- Also predate on bird eggs and small mammals
- Invasive species in Hawaii where they're aiding in extinction of native birds (introduced to kill rats in sugarcane fields)

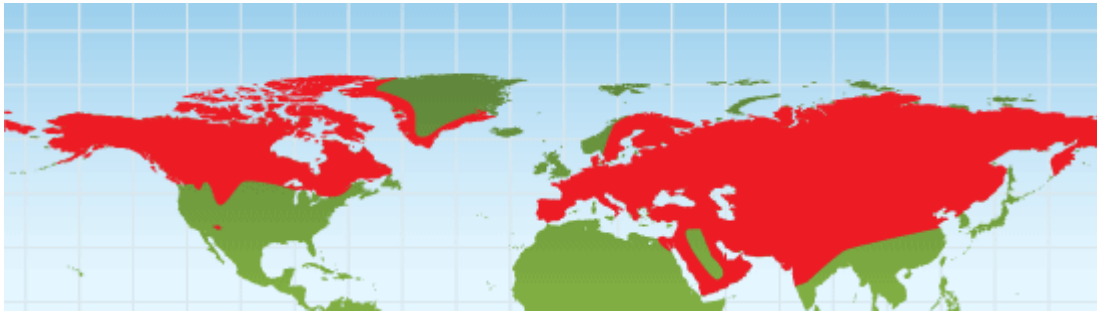
Canis latrans coyote

- Highly opportunistic carnivores
- Constantly moving (they tend to lope around in search of prey rather than ambushing or sneaking)
- Live in small family groups (not typically large packs)
- Howl like wolves, but with more erratic sound
- Often hunted and will come to a variety of calls including prey calls and fire sirens

Canis latrans coyote

- Habitat generalists that are well-adapted to humans
- Expanding range with climate change and human development
- Known to hybridize with red wolves and eastern wolves

Canis lupus gray wolf



- The most widespread of the wolf species
- The original species that was domesticated into modern domestic dogs
- Hunt in packs
- Highly territorial

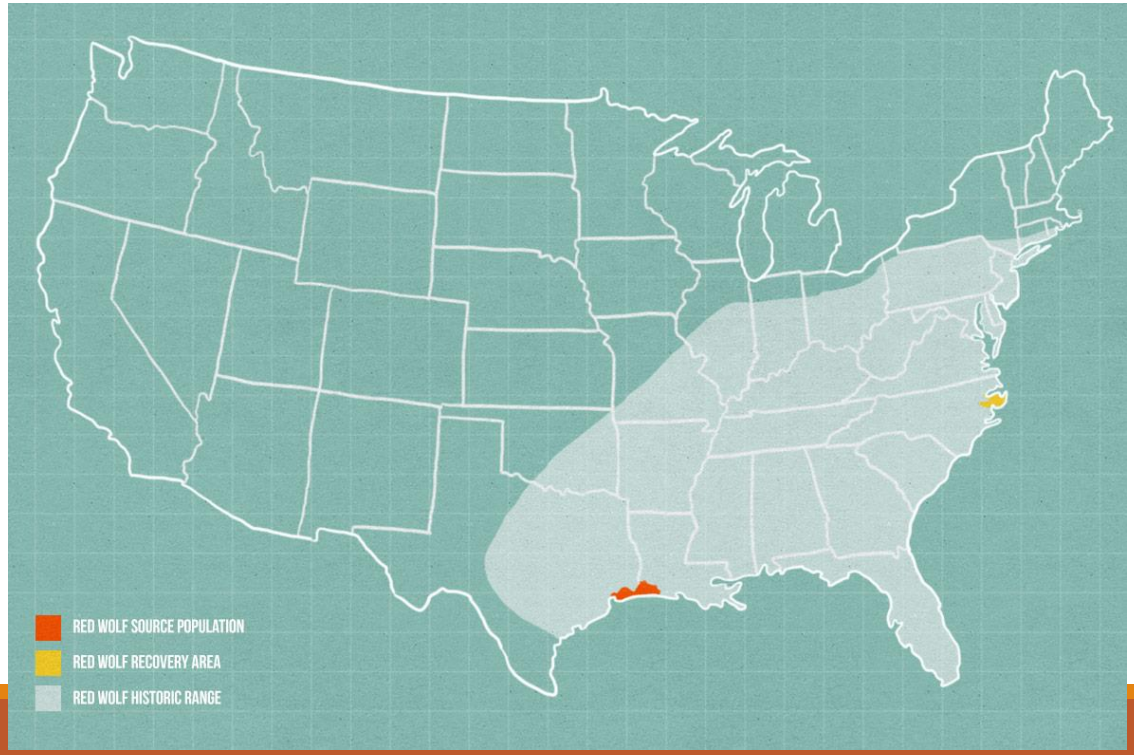
- Reintroduction efforts under debate because many ranchers fear they will eat livestock (despite evidence suggesting that rarely occurs)
- Facial fur patterns evolved to show facial expressions (improving survival in groups)

Canis lycaon
Eastern wolf

- Also known as the timber wolf
- Similar to grey wolves (live in packs, territorial, only carnivorous)
- Known to hybridize with both coyotes and grey wolves
- Primary range around the Great Lakes

Canis rufus
red wolf

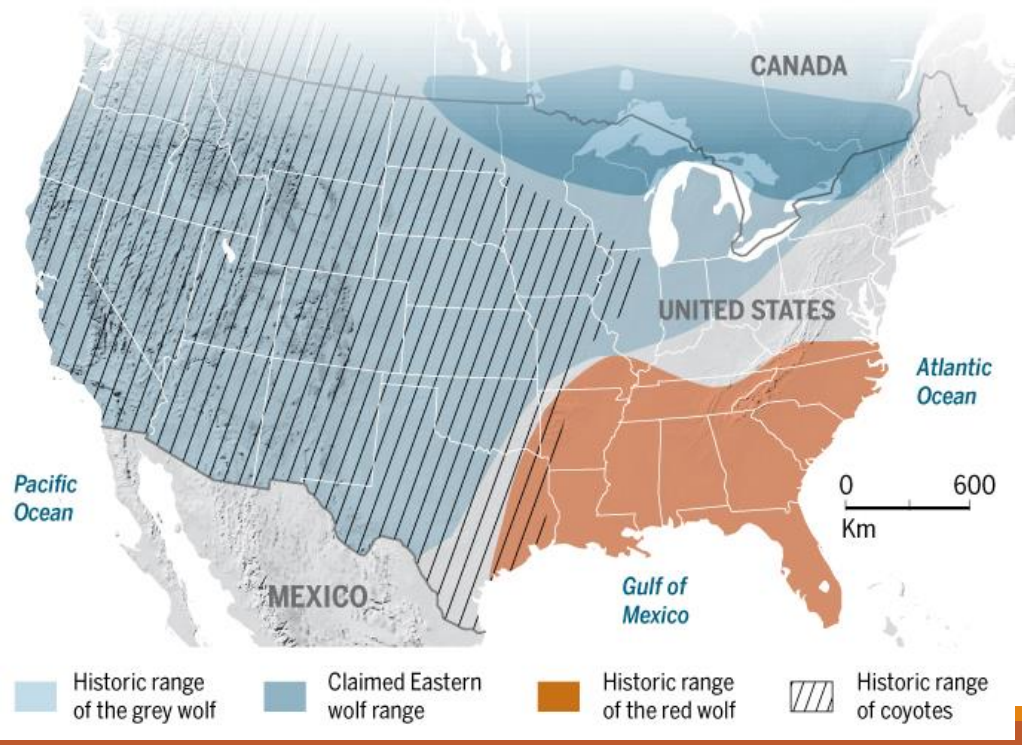
- Similar to grey wolves in ecology
- Going extinct due to hunting and hybridization



Hybridization of Canids

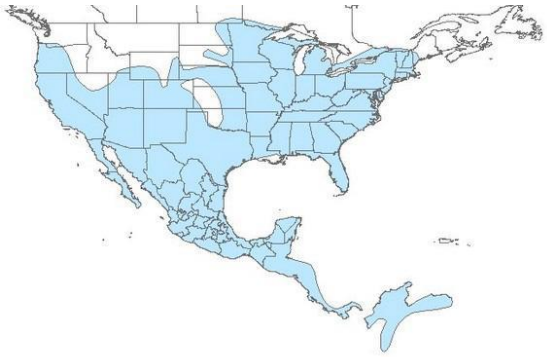
- Coyotes known to hybridize with eastern wolves, red wolves, and domestic dogs
- Presents a conservation

dilemma



Urocyon cineroargenteus gray fox

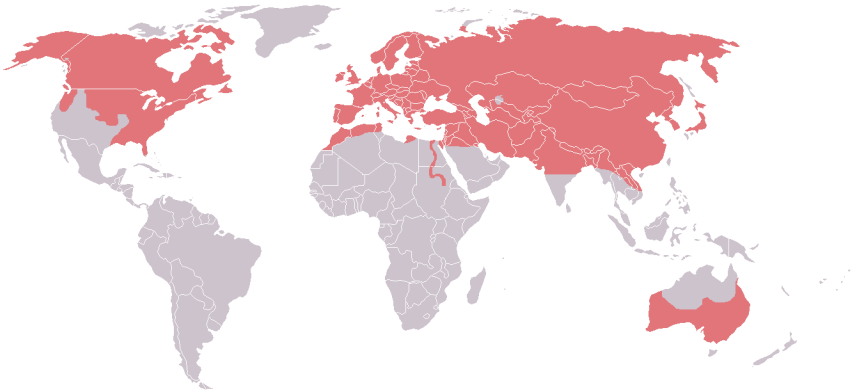
- Omnivorous (eats small mammals, bird eggs, nuts, fruits, etc.) depending on habitat (more predation in eastern US and more plants in western US)
- Is the only canid that can climb trees
- Much more gray fur compared to red
- Solitary



Vulpes velox
swift fox

- Most closely related to kit foxes (and often hybridize)
- Swift foxes prefer open plains habitats
- Can run up to 30 mph
- Dig deep dens
- Are very small and are depredated by coyotes, bobcats, badgers, and raptors
- Have lost range due to hunting and are endangered

Vulpes vulpes red fox



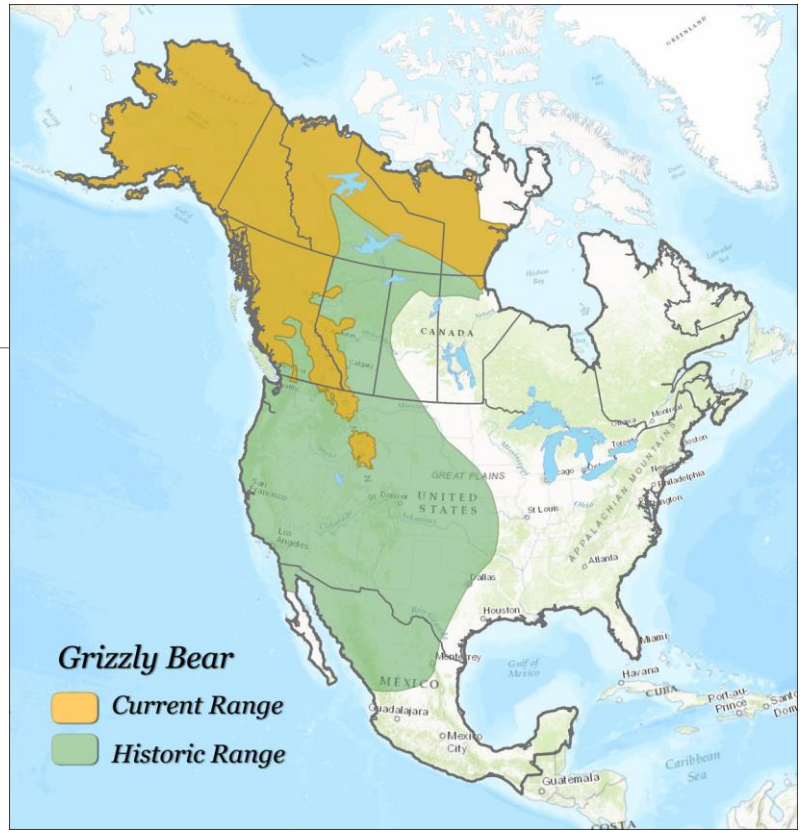
- Most widespread fox species
- Are hunted for their pelts
- Are an invasive species in Australia where they were introduced for recreational hunting
- Highly omnivorous with a meat focus
- Largely eat invertebrates

Ursus americanus black bear

- Highly omnivorous with diet changing with the seasons
- Hibernate in areas where it gets cold during the winter
- Prefer forests, but are habitat generalists
- Various color morphs including black, brown, blonde, cinnamon (tan), and Kermode (silver)
- Claw trees

Ursus arctos grizzly bear

- Closer related to polar bears than black bears
- Divided into subspecies (grizzly bear in North America) a black morph lives through Russia/Europe
- Omnivorous, but eat more meat than black bears by percentage
- Used to have much larger range, but are less prominent due to hunting

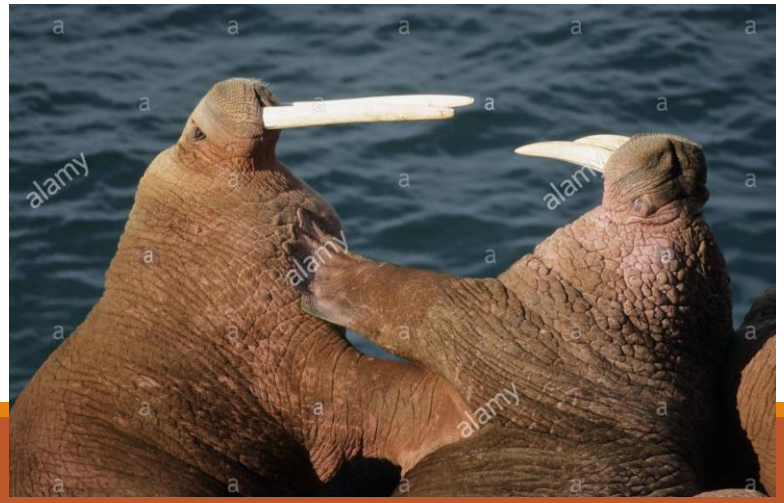


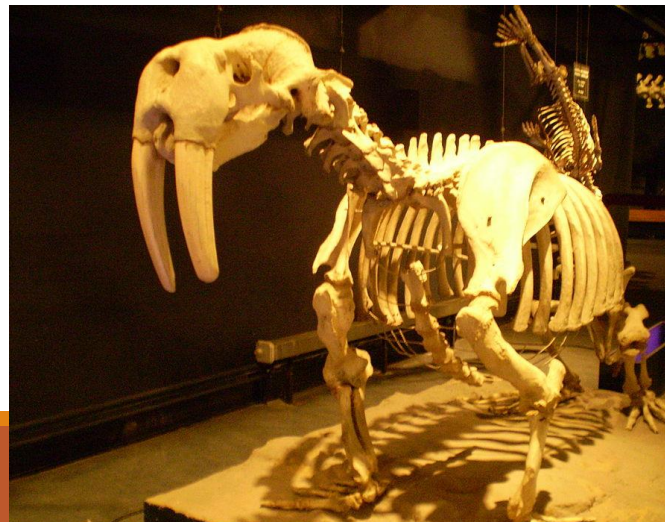
Ursus maritimus polar bear

- Primarily survive by eating seals
- Specialized fur to maintain body temperature in wet arctic conditions
- Threatened by climate change

Adobenus rosmarus walrus

- Primarily survive on mollusks
- 3rd largest carnivores behind two species of elephant seals
- Hunted for blubber, meat, and ivory
- Tusks are overgrown canine teeth used by males to fight for mates





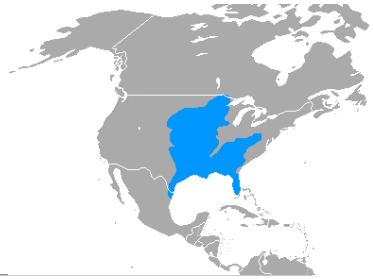
Zalophus californianus California sea lion

- Most commonly known for being the trained seals in aquariums
- Dramatic sexual dimorphism with males (~800lbs) weighing 4x as much as females (~200lbs)
- Preyed upon by killer whales and great white sharks
- Prey upon fish/shellfish/squid
- Doing fine in the wild

Mephitis mephitis striped skunk

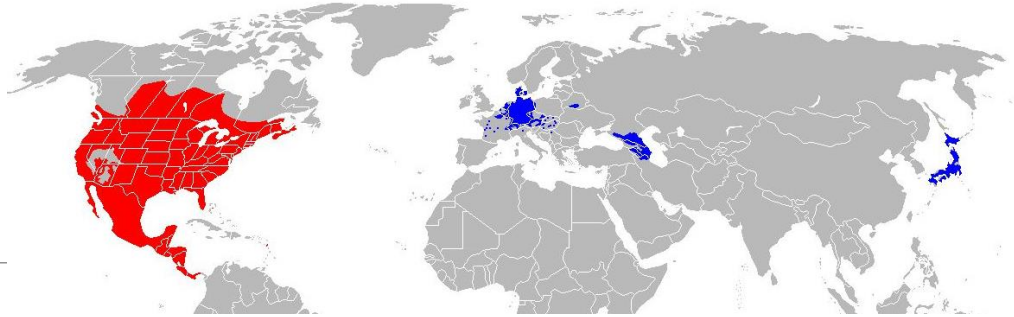
- Not typically depredated by mammals because of their musk-filled scent glands
- Can be preyed upon by large raptors (e.g. owls/eagles)
- Trapped and even bred by humans for their furs
- Can be tamed and used to be kept in barns for mouse control

Spiligale putorius
Eastern spotted skunk



- Are smaller than striped skunks with a body shape more similar to mustelids
- They hibernate in groups
- Prefer edge habitat such as forest/field interfaces or rocky outcrops
- Also have musk glands

Procyon lotor raccoon

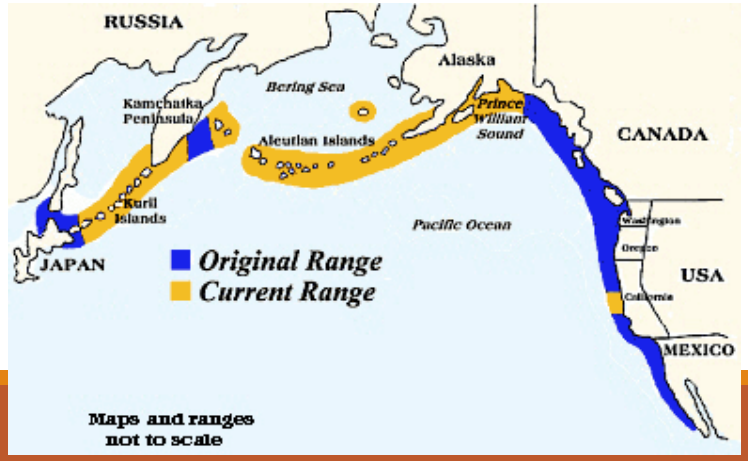


- Highly omnivorous
- Nocturnal
- Well adapted to human habitats

- Known for anthropomorphic behaviors such as washing food
- Hunted for there hides and as agricultural pests
- Introduced populations in Europe and Japan

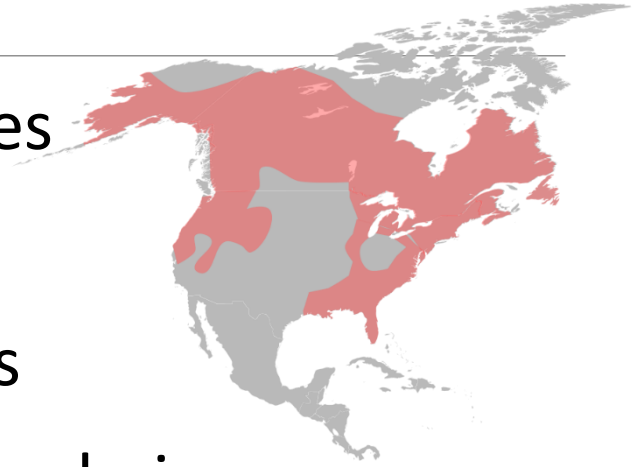
Enhydra lutris
sea otter

- Largest mustelid (up to 100 lbs)
- Only live in salt water
- Mostly eat urchins, mollusks, and crustaceans
- Hunted extensively for their fur and are now considered a conservation success story



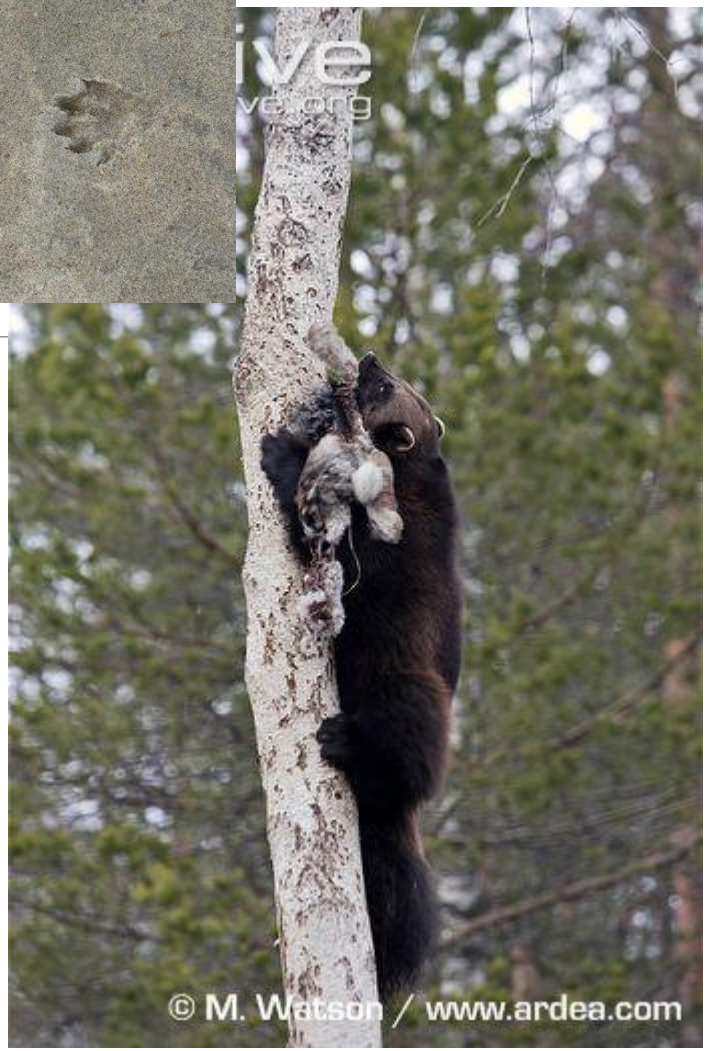
ADORABLE!

Lontra canadensis
North American river otter



- Burrow into the edge of water bodies
- Give birth to up to 6 young
- Mostly eat fish, but also crustaceans
- Hunted heavily for their pelts, but are being reintroduced to many places

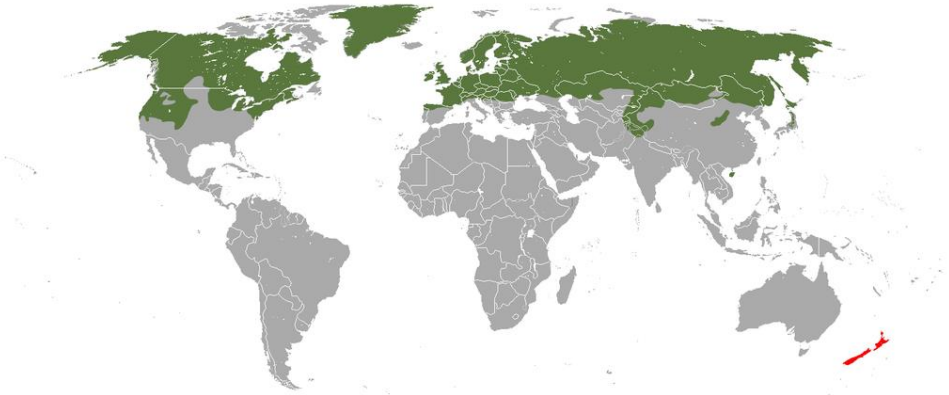
Gulo gulo wolverine

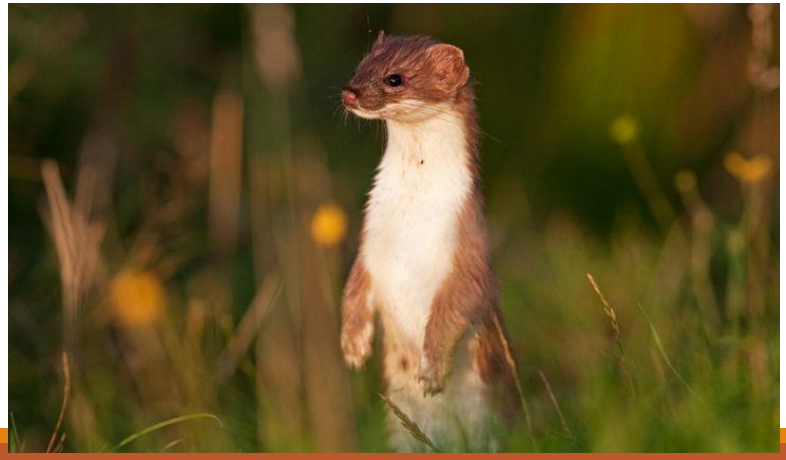


- AKA carcajou or skunk bear
- Highly aggressive (even chase away wolves, mountain lions)
- Territorial and need large ranges
- Hunted for their pelts
- Prefer boreal forest habitats

Mustela ermine
short-tailed weasel

- AKA ermine / stoat
- Native to North America and Eurasia
- Invasive in New Zealand (introduced to kill rabbits)
- Previously hunted for high-end furs





Mustela frenata long-tailed weasel

- AKA bridled weasel / big stoat
- Native to North America and South America
- Extremely similar to short-tailed weasel, with just a slightly larger body and slightly longer tail
- Switches its fur from dark brown to completely white in the winter time
- Steal dens from other species

Mustela ngripes black-footed ferret

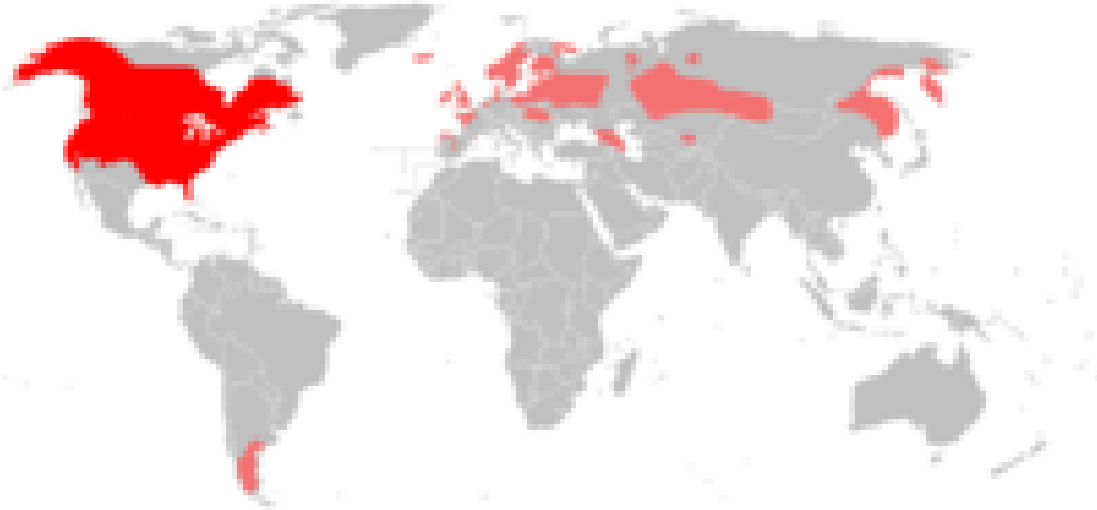
- AKA American polecat
- Previously thought to be extinct, they're making a resurgence in North America (still highly endangered)
- Threatened by sylvatic plague and canine distemper
- Nocturnal and solitary
- Specialize in eating prairie dogs

Mustela nivalis least weasel

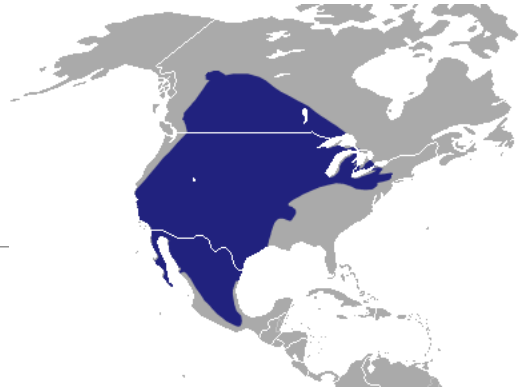
- Native to Eurasia, North America, and North Africa
- The smallest Carnivore
- Primarily eat small rodents, bird eggs, and fish

Neovison vison
American mink

- Feeds on frogs, fish, rodents, and birds
- Prefers habitats with lots of water
- Invasive in Europe, Asia, and South America
- Hunted for their fur



Taxidea taxus
American badger



- Prefers habitats with open prairies
- Digs for its prey (especially prairie dogs)
- Known to be aggressive / territorial and require large ranges
- Sometimes team up with coyotes to hunt prairie dogs

Specimens in the Lab

- *Equus asinus*
  - (Skeleton)
- *Equss ferus*
  - (Skull)
- *Manis crassicaudata*
  - (Skin)
- *Puma concolor*
  - (Skull, Scat)
- *Lynx rufus*
  - (Skull, Skin, Scat)
- *Canis latrans*
  - (Skull, Skin, Scat)
- *Vulpes vulpes*
  - (Skull, Skin, Scat, Tracks)
- *Ursus americanus*
  - (Tracks)
- *Mephitis mephitis*
  - (Skull, Skin, Scat, Tracks)
- *Spilogale putorius*
  - (Skin, Scat)
- *Procyon lotor*
  - (Skull, Skin, Scat, Tracks)
- *Gulo gulo*
  - (Tracks)
- *Lontra canadensis*
  - (Skin, Tracks)
- *Mustela frenata*
  - (Skull, Skin, Scat)
- *Mustela nivalis*
  - (Skin, Scat)
- *Neovison vison*
  - (Skull, Skin, Scat)
- *Taxidea taxus*
  - (Skull, Skin, Tracks)