Lab 4 – Order Rodentia, Families Muridae and Dipodidae

Need to know:
Subfamilies Arvicolinae, Neotominae, Murinae
Clethrionomys (Myodes) gapperi—ID based on skin or skull, n. history
Lemmiscus curtatus—ID based on skin, n. history
Microtus spp—ID based on skull
M. longicaudus—ID based on skin, n. history
M. ochrogaster—ID based on skin, n. history
M. pennsylvanicus—ID based on skin, n. history
Ondatra zibethicus—ID based on skin or skull, n. history
Neotoma cinerea—ID based on skin or skull, n. history
Onychomys leucogaster—ID based on skin, n. history
Peromyscus—ID based on skull
P. maniculatus—ID based on skin, n. history
P. truei—ID based on skin, n. history
Reithrodontomys megalotis—ID based on skin or skull, n. history
Mus musculus—ID based on skin or skull, n. history
Rattus norvegicus—ID based on skull or skin, n. history
Zapus princeps—ID based on skin, n. history
Order Rodentia, Subfamily Arvicolinae—voles and allies

1) molars with triangles of dentine surrounded by enamel
2) zygomatic arches parallel or nearly so
Clethrionomys (Myodes) gapperi—
southern red-backed vole

1) bony palate terminates as a shelf between the last molars
*Clethrionomys gapperi*  
(southern red-backed vole)  

1) reddish stripe on dorsal pelage  
2) short tail relative to other voles  

Natural history  
--typically occurs in high-elevation, coniferous woodlands  
--responds negatively to timber harvests (arboreal)
*Lemmiscus curtatus*  
(sagebrush vole)

1) light gray or grayish-yellow pelage  
2) short tail relative to other voles

Natural history  
--occurs in sagebrush steppe intermixed with bunchgrasses and rabbitbrush  
--live in colonies of up to 80 individuals with extensive burrows and trails (runways)
Microtus pennsylvanicus
(meadow vole)

1) brownish-gray pelage
2) tail short relative to M. longicaudus

Natural history
-- generalist species, occurring in most types of grassland (including cropland)
-- undergoes complex population cycles resulting from interactions between food and predators
-- forms runways
*Microtus ochrogaster*  
(prairie vole)

1) brownish pelage with orange wash, particularly on ventral pelage  
2) tail of intermediate length, between 10-25% of body length

**Natural history**  
-- monogamous (rare in mammals, especially rodents)  
-- typically occurs in less-disturbed grasslands than *M. pennsylvanicus*  
-- forms runways
*Microtus longicaudus*
(long-tailed vole)

1) brownish-gray pelage  
2) long tail relative to other voles, 33-50% of body length

Natural history  
-- doesn’t form runways  
-- prolific: 2-3 litters of 5-6 young/year
*Ondatra zibethicus*—muskrat

1) largest skull in WY exhibiting microtine teeth
2) conspicuous postorbital processes squarish
**Ondatra zibethicus**  
(muskrat)

1) chocolate brown dorsum  
2) two coats: thick undercoat and outer guard hairs  
3) flattened, nearly hairless tail

**Natural history**  
--semi-aquatic, occurring in inland waters  
--introduced to Europe as a furbearer  
--most harvested furbearer in WY
Order Rodentia, Subfamily Neotominae—North American mice and rats

1) molars with 2 rows of cusps without triangles
2) postorbital processes absent or inconspicuous
Neotoma cinerea—bushy-tailed woodrat

1) microtine-like teeth, but without conspicuous triangles
2) zygomatic plate extends anteriorly from zygomatic process
Neotoma cinerea
(bushy-tailed woodrat)

1) white feet
2) bushy, squirrel-like tail

Natural history
-- herbivorous
-- strong sexual dimorphism
-- display Bergmann’s Rule
Bergmann’s Rule

- Species of larger body size are found in cooler environments
- Species of smaller body size are found in warmer environments

Brown and Lee 1968
Peromyscus spp.

1) cusps of molars rounded and arranged in 2 rows
2) upper incisors not grooved or notched
*Peromyscus maniculatus*  
(deer mouse)  

1) sharply bicolored pelage and tail

Natural history  
--omnivorous  
--habitat generalist  
--widespread and abundant throughout the Nearctic
*P. truei*
(pinyon mouse)

1) sharply bicolored pelage and tail
2) lateral orange streaks or wash
3) much larger ears than *P. maniculatus*

Natural history
-- omnivorous
-- in WY, found in sagebrush and pinyon-juniper woodlands
Reithrodontomys megalotis—western harvest mouse

1) cusps of molars rounded and arranged in 2 rows
2) upper incisors grooved
Reithrodontomys megalotis
(western harvest mouse)

1) bicolored pelage, but not as distinct
distinct as Peromyscus

Natural history
--granivorous
--in WY, found in weedy areas with high amounts of
cover
--semi-arboreal
Onychomys leucogaster
(northern grasshopper mouse)

1) gray or grayish-brown dorsum with light ventral pelage
2) Short, light-colored tail

Natural history
--insectivorous and carnivorous
--monogamous
--prefer sandy soils
Order Rodentia, Subfamily Murinae—Old World mice and rats

1) molars with 3 rows of cusps without triangles
2) postorbital processes absent or inconspicuous
Mus musculus—house mouse

1) upper incisors notched
Mus musculus  
(house mouse)

1) dull, grayish-brown  
2) not sharply bicolored

Natural history  
--introduced from India  
--nearly cosmopolitan distribution  
--major economic damage (est $60 million/yr in Australia)
1) zygomatic plate extends anteriorly from zygomatic process

2) lophodont molars
**Rattus norvegicus**  
(Norway or brown rat)

1) dull, grayish-brown  
2) tail length < body length  
3) stout rump

Natural history

--introduced from Eurasia  
--nearly cosmopolitan distribution  
--average $225,000 damage in US/year
Family Dipodidae

*Zapus princeps*

(western jumping mouse)

1) Dorsal pelage with lateral orange wash
2) Sparsely furred or naked tail twice as long as body
3) Massive hind feet

Natural history

--adapted for saltatorial lifestyle

--prefer riparian areas

--closely related to old-world gerbils

--Preble’s meadow jumping mouse has been relisted under the ESA

![Image of Zapus princeps](image_url)
For Quiz:

- Know what family and subfamily each species belongs
- Identify species based on skins and skulls
- Know natural history facts for each species
- Spelling counts!!! Capitalize family and order names. Underline Latin binomials
- Next week’s quiz covers Lab 3 and 4!