

Owl Pellet Lab

Objective: Compare and contrast the contents of barn owl pellets from four regions of the United States and use the information to compare and contrast the ecosystems and eating habits of barn owls from these areas.

Materials:

owl pellet	masking tape	rat, mole, & bird skeleton diagrams
2 probes	marker	forceps
hand lens	large sheet of paper	
2 plates	bone chart	

Procedure:

1. Read the background. Then, research answers to the following questions (cite sources).
 - a. What is an owl pellet?
 - b. How are owl pellets formed?
 - c. What types of things can be found in owl pellets?
 - d. What information can be gained about the owl by dissecting owl pellets?
 - e. What information can be gained about the owl's ecosystem by dissecting owl pellets?
2. Determine the similarities and differences you think the class will find when dissecting owl pellets from the four regions. Be as specific as possible when writing these down. Post your list at the front of the room when it is complete.
3. Record the region of your owl pellet.
4. Carefully dissect the owl pellet. Place all bone matter on one plate and all non-bone matter on the other plate. Be as precise as possible when separating the owl pellet material, and consider dividing the bone matter into further categories (type of bone and type of animal).
5. Create a data table to record the number of different types of bones found and the types of animal skulls found in the owl pellet.
6. Record observations about the non-bone material – composition (fur, feathers, or both), color, density, any other material found (plants, insect parts, etc.), and any other general observations about the pellet.
7. Compare your data with all the other groups who dissected a pellet from the same region. Using a large sheet of paper, create a regional pellet data table. Record the average number of different types of bones found, the type of animal skulls found and the average number of each type, and the similarities and differences in the bones and non-bone components of the pellets from that region. Be prepared to present these findings to the class.

Results:

Your results include all recorded data and observations.

Conclusion:

Write a summary describing the differences and similarities found between the barn owl pellets of the four regions of the United States, based on the information the class has compiled. Include observations and quantitative data to describe your findings.

*****Each group must turn in one results section.
Each group member must turn in a conclusion.*****

Owl Pellet Regional Variation Inquiry Kit

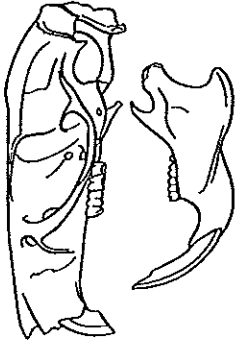
Table 1.

Order Rodentia			
Family	Genus	Representatives (Common Name)	Distribution in North America
Geomysidae	<i>Cratogeomys</i>	Yellow-faced and Mexican Pocket Gophers	central and south
Muridae	<i>Reithrodontomys</i>	American Harvest Mouse	central and south
Sciuridae	<i>Tamias</i>	Eastern American Chipmunk	east
Zapodidae	<i>Napaeozapus</i>	Woodland Jumping Mice	east
Muridae	<i>Podomys</i>	Florida Mouse	Florida
	<i>Dicrostonyx</i>	Collared Lemmings, or Varying Lemmings	north
	<i>Synaptomys</i>	Bog Lemmings	north
	<i>Lemmus</i>	True Lemmings	north
	<i>Clethrionomys</i>	Red-backed Mice, or Bank Voles	north and west
	<i>Phenacomys</i>	Heather Vole	north and west
Sciuridae	<i>Tamiasciurus</i>	Red Squirrel, or Chickaree	north and west
Echimyidae	<i>Hoplomys</i>	Thick Spined Rats, or Armoured Rats	south
Geomysidae	<i>Pappogeomys</i>	Alcorn's and Buller's Pocket Gophers	south
Heteromyidae	<i>Heteromys</i>	Forest Spiny Pocket Mice	south
	<i>Liomys</i>	Spiny Pocket Mice	south
Muridae	<i>Baiomys</i>	Pygmy Mouse	south
	<i>Habromys</i>	Crested-tailed Deer Mouse and Slender-tailed Deer Mouse	south
	<i>Oecomys</i>	Bicolored Rice Rat	south
	<i>Oryzomys</i>	Marsh Rice Rat, or Coues's Rice Rat	south
	<i>Otodylomys</i>	Big-eared Climbing Rat	south
	<i>Scotinomys</i>	Brown Mouse	south
	<i>Sigmodon</i>	Cotton Rat	south
	<i>Tylomys</i>	Climbing Rat	south
	<i>Zygodontomys</i>	Cane Mouse	south
	<i>Neofiber</i>	Round-tailed Muskrat, or Florida Water Rat	southeast
	<i>Ochrotomys</i>	Golden Mouse	southeast
Geomysidae	<i>Geomys</i>	Eastern Pocket Gophers	throughout
Muridae	<i>Microtus</i>	Voles, or Meadow Mice	throughout
	<i>Neotoma</i>	Wood Rat, Pack Rat, or Trade Rat	throughout
	<i>Peromyscus</i>	White-footed Mouse, or Deer Mouse	throughout
Sciuridae	<i>Glaucomys</i>	New World Flying Squirrels	throughout
	<i>Sciurus</i>	Tree Squirrel	throughout
	<i>Spermophilus</i>	Ground Squirrel, or Sulusks	throughout
Zapodidae	<i>Zapus</i>	Jumping Mice	throughout
Geomysidae	<i>Thomomys</i>	Western Pocket Gophers	west
Heteromyidae	<i>Dipodomys</i>	Kangaroo Rats	west
Muridae	<i>Arborimus</i>	Tree Voles	west
	<i>Arvicola</i>	Water Vole, or Bank Vole	west
Sciuridae	<i>Ammospermophilus</i>	Antelope Ground Squirrel	west
Heteromyidae	<i>Chaetodipus</i>	Coarse-haired Pocket Mice	west and central
	<i>Perognathus</i>	Silky Pocket Mice	west and central
Muridae	<i>Onychomys</i>	Grasshopper Mouse	west and central
Sciuridae	<i>Eutamias</i>	Western American Chipmunk	west and central
Heteromyidae	<i>Microdipodops</i>	Kangaroo Mice	west central
Muridae	<i>Lemmiscus</i>	Sagebrush Vole	west central
Order Insectivora			
Family	Genus	Representatives (Common Name)	Distribution in North America
Soricidae	<i>Blarina</i>	Short tailed Shrews	central and east
Talpidae	<i>Condylura</i>	Star-nosed Mole	east
	<i>Parascalops</i>	Hairy Tailed Mole	east
	<i>Scalopus</i>	Eastern American Mole	east and south
Soricidae	<i>Notiosorex</i>	Gray Shrews, or Desert Shrews	south
	<i>Cryptotis</i>	Small-eared Shrews	throughout
	<i>Sorex</i>	Long-tailed Shrews	throughout
Talpidae	<i>Neurotrichus</i>	American Shrew Mole	west
	<i>Scapanus</i>	Western American Mole	west

Bone Chart



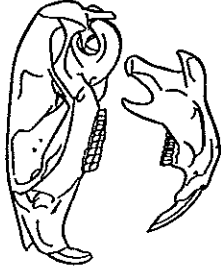
Shrew
skull and jaw



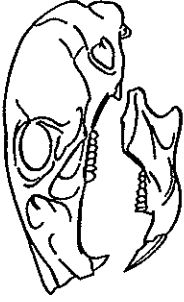
Brown Rat
skull and jaw



Red-winged Blackbird
skull and jaw

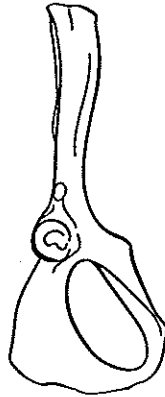


Meadow Vole
skull and jaw



House Mouse
skull and jaw

Brown Rat Bones



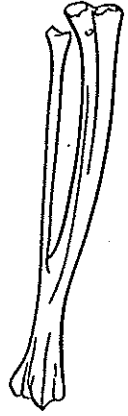
pelvic bone



femur



humerus



tibia and fibula



vertebrae

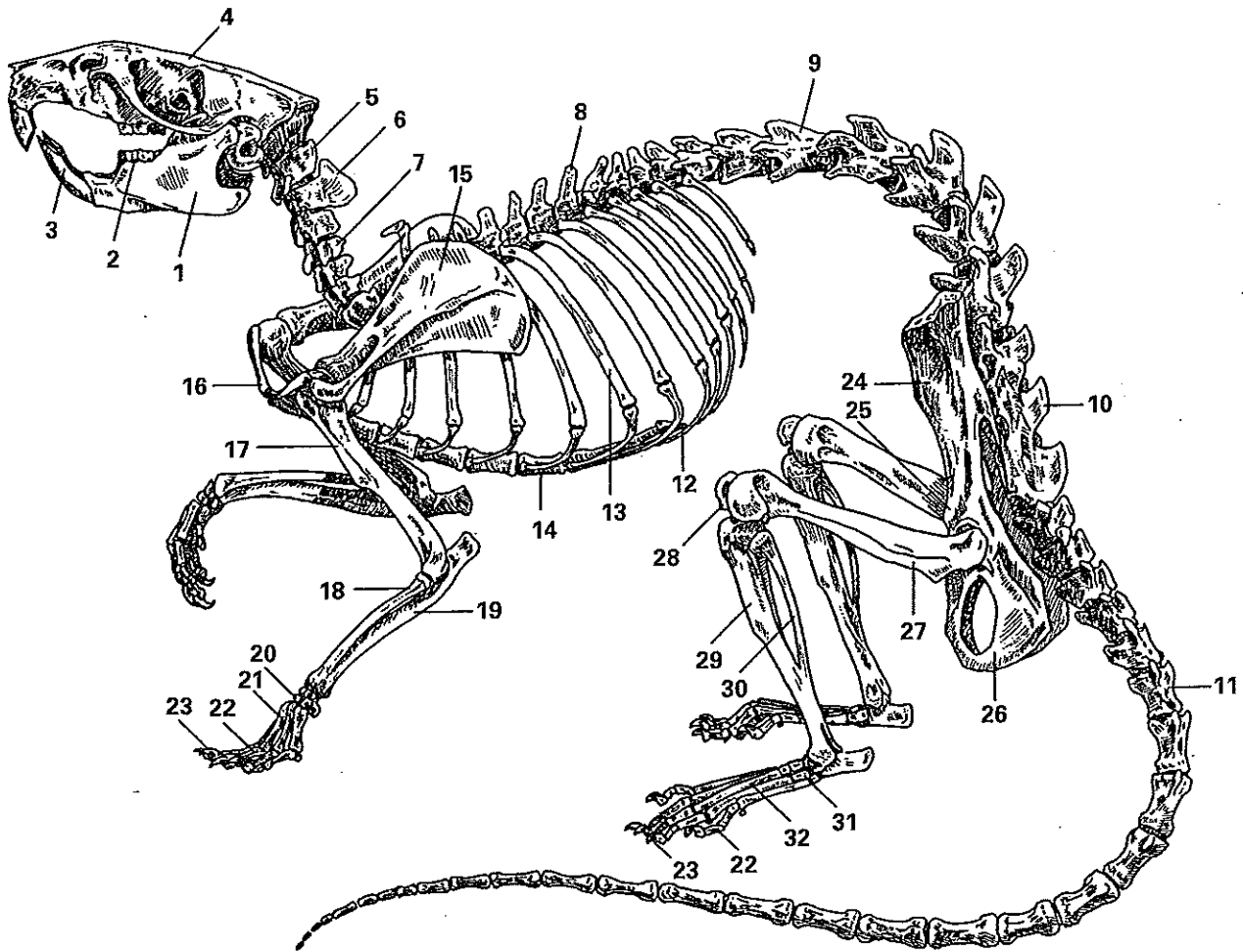


scapula



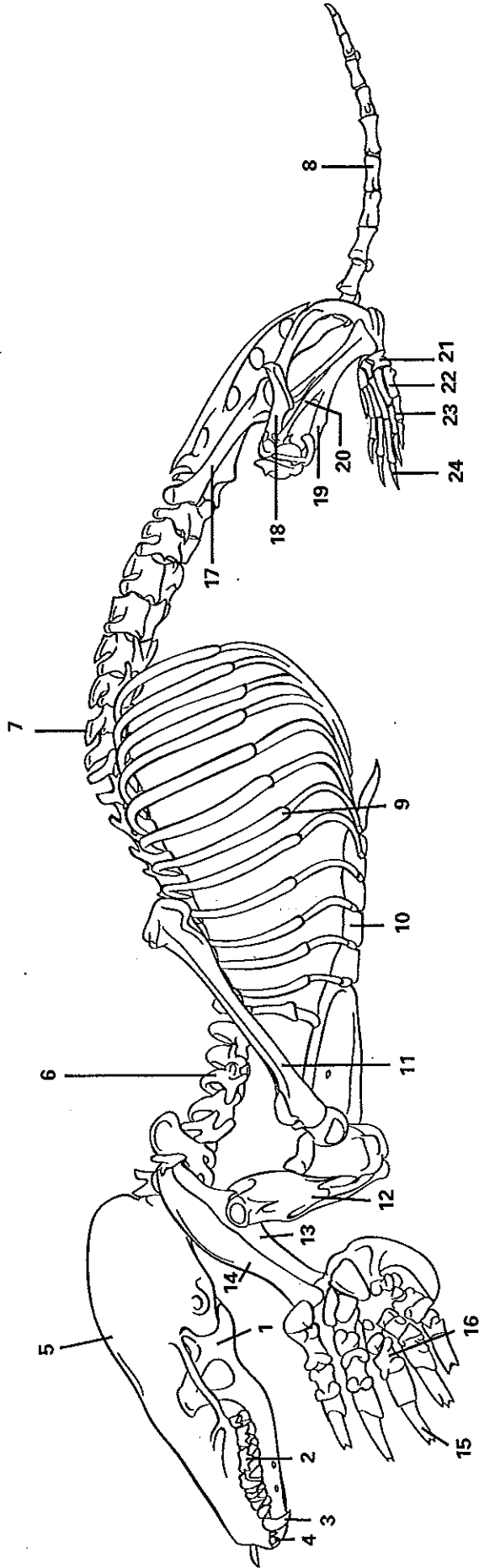
rib

Rat Skeleton



- | | |
|-----------------------------|-----------------|
| 1. Mandible | 17. Humerus |
| 2. Molar | 18. Radius |
| 3. Incisor | 19. Ulna |
| 4. Skull | 20. Carpals |
| 5. Atlas | 21. Metacarpals |
| 6. Axis | 22. Phalanges |
| 7. Cervical vertebra (7) | 23. Claw |
| 8. Thoracic vertebra (13) | 24. Ilium |
| 9. Lumbar vertebra (6) | 25. Pubis |
| 10. Sacrum (3) | 26. Ischium |
| 11. Caudal vertebra (28-30) | 27. Femur |
| 12. Xiphoid process | 28. Patella |
| 13. Rib (13) | 29. Tibia |
| 14. Sternum | 30. Fibula |
| 15. Scapula | 31. Tarsus |
| 16. Clavicle | 32. Metatarsus |

Mole Skeleton



1. Mandible
2. Molar
3. Canine
4. Incisor
5. Skull
6. Cervical vertebra
7. Lumbar vertebra
8. Caudal vertebra

9. Ribs (13)
10. Sternum
11. Scapula
12. Humerus
13. Radius
14. Ulna
15. Claw
16. Phalanges

17. Pelvic bone
18. Femur
19. Tibia
20. Fibula
21. Tarsus
22. Metatarsus
23. Phalanges
24. Claw

Bird Skeleton

1. Skull
2. Mandible
3. Hyoid
4. Eye bone
5. Atlas
6. Axis
7. Cervical vertebra (15)
8. Thoracic vertebra (5)
9. Lumbar vertebra (6)
10. Synsacrum
11. Caudal vertebra (15)
12. Pygostyle
13. Clavicle
14. Coracoid
15. Scapula
16. Humerus
17. Radius
18. Ulna
19. Carpus
20. Carpometacarpus
21. Phalanges
22. Sternum
23. Cervical ribs
24. Thoracic ribs
25. Uncinate process
26. Ilium
27. Ischium
28. Pubis
29. Femur
30. Patella
31. Fibula
32. Tibiotarsus
33. Sesamoid
34. Tarsometatarsus

