Live-specimen Key for the Mammals of Southeast Coast Network Parks

Natural Resource Report NPS/SECN/NRR—2009/122
ON THE COVER
Black bear (*Ursus americanus*) in central Georgia.
Photograph courtesy of B. Bond, Georgia Department of Natural Resources
Live-specimen Key for the Mammals of Southeast Coast Network Parks

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# Contents

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Dichotomous Keys</td>
<td>5</td>
</tr>
<tr>
<td>Key to the Orders</td>
<td>5</td>
</tr>
<tr>
<td>Key to the Order Artiodactyla:</td>
<td>6</td>
</tr>
<tr>
<td>Key to the Order Lagomorpha &gt; Family Leporidae:</td>
<td>6</td>
</tr>
<tr>
<td>Key to the Order Insectivora:</td>
<td>6</td>
</tr>
<tr>
<td>Key to the Order Carnivora:</td>
<td>7</td>
</tr>
<tr>
<td>Key to the Order Rodentia:</td>
<td>8</td>
</tr>
<tr>
<td>Literature Cited</td>
<td>11</td>
</tr>
</tbody>
</table>
Introduction

This document includes a dichotomous key to mammal Orders, dichotomous keys for each mammal Family for 53 mammals known to occur in Southeast Coast Network (SECN) parks (Webster 2007, NPSpecies 2008) (Table 1). SECN mammals in the Orders Cetacea (whales and dolphins), Chiroptera (bats), and Sirenia (manatees) are not included in this document, nor are feral dogs and cats. When only one species occurs in the SECN for any Order or Family, the species is identified when the Order or Family is identified. Nomenclature follows the Integrated Taxonomic Information System (ITIS 2008).

SECN parks include, Canaveral National Seashore (CANA), Cape Hatteras National Seashore (CAHA), Cape Lookout National Seashore (CALO), Castillo de san Marcos (CASA), Chattahoochee National Recreation Area (CHAT), Congaree National Park (CONG), Cumberland Island National Seashore (CUIS), Fort Caroline National Memorial (FOCA), Fort Frederica National Monument (FOFR), Fort Matanzas National Monument (FOMA), Fort Pulaski National Monument (FOPU), Fort Sumter National Monument (FOSU), Horseshoe Bend National Military Park (HOBE), Kennesaw Mountain National Military Park (KEMO), Moores Creek National Battlefield (MOCR), Ocmulgee National Monument (OCMU), and Timucuan Ecological and Historic Preserve (TIMU).

Given the SECN spans five states, many mammals, particularly small mammals, exhibit a wide range of morphological variability. Consequently, whenever possible emphasis is placed on using descriptive characteristics, instead of discrete measurements, to differentiate species. When measurements are required, the authors recommend that two observers obtain each measurement twice, as measurement error is common and can result in incorrect identification (Blackwell et al. 2006). Information included in this key was taken from several sources, and all sources are identified in the Bibliography section.

Differentiation among some groups requires opening the mouths of specimens to inspect incisor and canine teeth. Tools necessary for some species include a metric ruler and a caliper. Due to the limitations inherent in a living mammal key and some characteristics included in this key can be ambiguous and lack adequate specificity, absolute identification may require collection for post-mortem analysis (i.e., skull and dentition evaluation) or to conduct DNA analysis. It is important to note that some species in this key are identified by locality; however these assumptions are based upon the published literature regarding known and expected range and do not account for atypical geographic occurrences. If these species need to be identified with more assurance of proper identification, the specimen should also be collected and processed for further analysis.

The authors recommend review of the descriptions provided in Webster (2007) to confirm identification of individuals identified through use of the key.
<p>| Order          | Family        | Scientific name               | Common name          | CAHA | CALO | CASA | CANA | CHAT | CONG | CUSS | FOCA | FOFR | FOMA | FOPU | FOSU | HOBE | KEMO | MOCR | OCMU | TIMU |
|---------------|---------------|-------------------------------|----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Artiodactyla  | Cervidae      | Odocoileus virginianus        | White-tailed deer    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| Artiodactyla  | Suinae        | Sus scrofa                    | Feral pig            | X    | X    | X    | U    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| Carnivora     | Canidae       | Canis latrans                | Coyote               | U    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| Carnivora     | Canidae       | Urocyon cinereoargenteus      | Common gray fox      | U    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| Carnivora     | Canidae       | Vulpes vulpes                | Red fox              | X    | X    | U    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| Carnivora     | Felidae       | Lynx rufus                   | Bobcat               | X    | X    | X    | X    | X    | X    | X    | U    | U    | U    | U    | U    | U    | U    | U    | U    | U    |
| Carnivora     | Mephitidae    | Mephitis mephitis            | Striped skunk        | U    | X    | X    | X    | X    | X    | X    | X    | U    | U    | U    | U    | U    | U    | U    | U    | U    |
| Carnivora     | Mephitidae    | Spilogale putorius           | Eastern spotted skunk| X    | U    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| Carnivora     | Mustelidae    | Mustela frenata              | Long-tailed weasel   | U    | E    | E    | E    | E    | E    | E    | E    | E    | U    | U    | U    | U    | U    | U    | U    | U    |
| Carnivora     | Mustelidae    | Mustela vison                | American mink        | X    | X    | X    | X    | X    | X    | X    | X    | X    | U    | X    | X    | X    | X    | X    | X    | X    |
| Carnivora     | Procyonidae   | Procyon lotor                | Northern raccoon     | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| Carnivora     | Ursidae       | Ursus americanus             | American black bear  | U    | U    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| Cingulata     | Dasypodidae   | Dasypus novemcinctus         | Nine-banded armadillo| X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| Didelphimorphia| Didelphidae   | Didelphis virginiana         | Virginia opossum     | X    | U    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| Insectivora   | Soricidae     | Blarina brevicauda           | Northern short-tailed shrew | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| Insectivora   | Soricidae     | Blarina carolinensis         | Southern short-tailed shrew | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| Insectivora   | Soricidae     | Cryptotis parva              | Least Shrew           | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| Insectivora   | Soricidae     | Sorex longirostris           | Southeastern shrew   | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| Insectivora   | Talpidae      | Condylura cristata           | Star-nosed mole      | U    | U    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| Insectivora   | Talpidae      | Scalopus aquaticus           | Eastern mole         | X    | X    | U    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| Lagomorpha    | Leporidae     | Sylvilagus aquaticus         | Swamp rabbit         | X    | E    | E    | E    | E    | E    | E    | E    | E    | E    | E    | E    | E    | E    | E    | E    | E    |
| Lagomorpha    | Leporidae     | Sylvilagus floridanus        | Eastern cottontail  | X    | X    | E    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| Lagomorpha    | Leporidae     | Sylvilagus palustris         | Marsh rabbit         | X    | X    | X    | U    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| Perissodactyla| Equidae       | Equus caballus               | Feral horse          | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| Rodentia      | Castoridae    | Castor canadensis            | American beaver      | X    | U    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| Rodentia      | Dipodidae     | Zapus hudsonius             | Meadow jumping mouse | E    | U    | E    | U    | E    | U    | E    | U    | E    | U    | E    | U    | E    | U    | E    | U    | E    |</p>
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Dichotomous Keys

Key to the Orders:

1. Toes modified as hooves........................................................................................................................................2.

2. Even number of toes, antlers sometimes present...........................................Order Artiodactyla

2. Odd number of toes, antlers never present.......................................................Order Perissodactyla > Family Equidae >
Equus caballus (feral horse)

1. Toes not modified as hooves.................................................................................................................................3.

3. Dorsal surface of body covered with bony flexible plates,
including 8-9 bands across the back, tapered snout..................................Order Cingulata > Family Dasypodidae >
Dasypus novemcinctus (nine-banded armadillo)


4. Scaly prehensile tail, first toe on hind foot opposable
and clawless, gray/white pelage, females have marsupium........................................Order Didelphimorphia > Family Didelphidae >
Didelphis virginiana (Virginia opossum)

4. Tail not scaly and prehensile, first toe on hind foot not opposable and has a claw, females do not have marsupium.................................................................5.

5. Canine teeth absent, either two or four large incisor teeth that are longer than other teeth, diastema present........................................................................6.

6. Tail tuft-like and resembling a cotton ball, tail length less than ear length, two pair of incisors in upper jaw with one directly behind the other..................................................Order Lagomorpha > Family Leporidae

6. One pair of incisors in upper jaw, chunky body with short legs, tail thin furred or furless and longer than ear length.........................................................Order Rodentia

5. Canine teeth present and occasionally large and longer than other teeth, space between teeth does not exceed width of largest tooth........................................7.

7. Eyes small or reduced appearing to have limited function, canine teeth present but not large relative to other teeth, pinnae reduced or not clearly visible, long snout that extends well beyond the mouth, velvet-like pelage, head and body length less than 170mm .....................................................Order Insectivora

7. Eyes well developed, canine teeth large and longer than other teeth, pinnae well developed..........................................Order Carnivora
Key to the Order Artiodactyla:

1. Stout with stocky body, snout flattened and disk-shaped at tip, antlers absent, large canines occasionally curved and extending outside mouth. ..................... Family Suidae > Sus scrofa (feral pig)

1. Long legs, antlers seasonally present on males, tail broad basally and white below. .................................................................................................................. Family Artiodactyla > Odocoileus virginianus (white-tailed deer)

Key to the Order Lagomorpha > Family Leporidae:

1. Underside of tail not white, other ventral surfaces dark ................................................................. Sylvilagus palustris (marsh rabbit)

1. Underside of tail white, other ventral surfaces posterior of the chest generally whitish ................................................................. 2.

2. Rufous-colored nape, occasionally white spot on forehead, large eyes relative to head size .................................................................................... Sylvilagus floridanus (eastern cottontail)

2. Often cinnamon-colored ring around eye, small pinnae relative to head size ................................................ Sylvilagus aquaticus (swamp rabbit)

Key to the Order Insectivora:

1. Front feet broad and paddle-shaped, twice as large as hind feet, large claws, head-and body-length greater than 105mm .............................................................. Family Talpidae 2.

2. Fingerlike fleshy projections surrounding the nose, tail hairy and constricted at base ........................................................................ Condylura cristata (star-nosed mole)

2. No fingerlike fleshy projections surrounding the nose, tail mostly hairless ................................................ Scalopus aquaticus (Eastern mole)

1. Front feet not broad, long toes with short sharp claws, head and body length less than 106mm .................................................................................. Family Soricidae 3.

3. Head and body length greater than 65mm ......................................................................................... 4.

4. Tail length less than 20mm, cinnamon pelage .................................................................................. Cryptotis parva (least shrew)

4. Tail length greater than 20mm, dark brown pelage ......................................................................... Sorex longirostris (Southeastern shrew)

3. Head and body length less than 64mm .............................................................................................. 5.

5. Occurs at CHAT, KEMO, HOBE, MOCR ............................................................. Blarina brevicauda (Northern short-tailed shrew)

5. Occurs at CAHA, CANA, CONG, CUIS, OCMU, TIMU/FOCA .................................................. Blarina carolinensis (Southern short-tailed shrew)
Key to the Order Carnivora:

1. Toes on hind foot exhibit webbing, body long and sleek..................................Family Mustelidae 2.

2. Toe webbing to the terminal digit pads, thick tail moderately dorso-ventrally flattened at base............................Lontra canadensis (Northern river otter)

2. Toe webbing less extensive than above.........................................................................................3.

3. Slender black-tipped tail, tail length approximately half of head- and body-length, dorsal pelage yellow-brown with buff-colored ventral pelage that typically extends through the throat to the chin.........................................................Mustela frenata (long-tailed weasel)

3. Tail length less than half of head- and body-length, furred tail, pelage dark brown or black pelage on dorsal surfaces, ventral surfaces typically dark occasionally with white patches, midline of belly is occasionally white.....................................Mustela vison (American mink)

1. Toes on hind foot do not exhibit webbing, body not long and sleek.................................................4.

4. Claws retractile..........................................................Family Felidae > Lynx rufus (bobcat)


5. Four toes on base of hind foot, metacarpal pads triangular in shape.................................Family Canidae

6. Tail length less than half of body length, hind foot length typically greater than 62mm.................................................................Canis latrans (coyote)

6. Tail length more than half of body length, hind foot length typically less than 62mm .................................................................................................7.

7. Pelage reddish-brown but can be silver or black, lower legs and feet generally black, tail tip white...........................................Vulpes vulpes (red fox)

7. Dorsal pelage mostly gray, ventral pelage white, lower legs and feet same color as pelage, tail tip black............................Urocyon cinereoargenteus (gray fox)

5. Five toes on base of hind foot, metacarpal pad asymmetrical and not triangular in shape.................................8.

8. Hind foot length greater than 11cm, approximate body weight greater than 50lbs, pelage black, brown, or cinnamon, often with white patch on chest .................................................................Family Ursidae > Ursus americanus (American black bear)

8. Hind foot length less than 11cm.................................................................................................9.

9. Pelage black with white spots or stripes.................................................................Family Mephitidae 10.

10. Pelage with white stripes.............................................................Mephitis mephitis (striped skunk)

10. Pelage with white spots and multiple interrupted white stripes........................................Spilogale putorius (Eastern spotted skunk)

9. Pelage not black with white spots or stripes, tail hairy with five to ten black rings, distinct black mask across the eyes and cheeks outlined with white, pinnae pointed..............Family Procyonidae > Procyon lotor (raccoon)
**Key to the Order Rodentia:**

1. Five toes with obvious claws on front foot

2. Tail length greater than 1.5 times head and body length…………………………*Family Dipodidae > Zapus hudsonius* (meadow jumping mouse)

2. Tail length less than 1.5 times head and body length…………………………*Family Sciuridae*

3. Flying membrane between fore- and hind-limbs…………………………*Glaucomys volans* (Southern flying squirrel)


4. Pelage has distinct white or beige lateral stripe bordered by dark brown or black stripes…………………………*Tamias striatus* (Eastern chipmunk)

4. Pelage with no distinct white or beige lateral stripe bordered by dark brown or black stripes…………………………*5.

5. Tail length less than half head and body length…………………………*Marmota monax* (woodchuck)

5. Tail length approximately equal to head and body length…………………………*6.

6. Pelage variable but typically a reddish- to yellowish-brown, but can be dark gray or black with yellowish to beige ventral pelage, can have black patches on face with white on the ears, cheeks, and nose, tail hairs typically beige-tipped, body size may be quite large…………………………*Sciurus niger* (Eastern fox squirrel)

6. Pelage typically gray with occasional reddish flanks, ventral pelage white, tail hairs typically white-tipped…………………………*Sciurus carolinensis* (Eastern gray squirrel)

1. Five toes with obvious claws on front foot

7. External cheek pouches present, upper incisors have two grooves on front surface, large claws on front foot…………………………*Family Geomyidae > Geomys pinetis* (Southeastern pocket gopher)

7. External cheek pouches absent, upper incisors do not have two grooves on front surface, no large claws on front foot

8. Hind feet adapted for swimming with webbing or swimming-fringe hairs

9. Tail dorsoventrally flattened, hairless and scaly, tail half as wide as width of body…………………………*Family Castoridae > Castor canadensis* (American beaver)

9. Tail not dorsoventrally flattened, hairless and scaly, tail not half as wide as width of body

10. Hairless and scaly tail laterally compressed…………………………*Family Muridae > Ondatra zibethicus* (common muskrat)

10. Thinly haired and scaly tail not laterally compressed…………………………*11.

11. Tail length less than 20cm, pinnae concealed in pelage, hind foot not strongly webbed, hind foot with swimming-fringe hairs…………………………*Family Muridae > Neofiber alleni* (round-tailed muskrat)
11. Tail length greater than 20cm, pinnae evident,  
hind foot strongly webbed..........................**Family Myocastoridae > Myocastor coypus** (nutria)

8. Hind feet not adapted for swimming with webbing or swimming-fringe hairs..........................**Family Muridae**

12. Inconspicuous eyes and pinnae, ear often concealed in pelage, tail  
length less than one-third head- and body-length.................................................................13.

13. Tail length greater than 30mm..........................**Microtus pennsylvanicus** (meadow vole)

13. Tail length less than 30mm..........................**Microtus pinetorum** (woodland vole)

12. Conspicuous eyes and pinnae, tail length greater than one-third head and body length......................14.

14. Hind foot length greater than or equal to 28mm...............................................................15.

15. Tail length greater than or equal to head- and body-length...................................................16.

16. Dorsal surface of tail darker than ventral surface, dorsal pelage  
gray-brown, ventral pelage gray, whitish feet, hairy pinnae..........................**Oryzomys palustris**  
(marsh rice rat)

16. Tail uniform in color, pelage a uniform back or brown..........................**Rattus rattus** (black rat)

15. Tail length less than head- and body-length........................................................................17.

17. Pinnae concealed in long pelage..........................**Sigmodon hispidus** (hispid cotton rat)

17. Pinnae not concealed in pelage...........................................................................................18.

18. Dorsal surface of tail darker than ventral surface.............................................................**Neotoma floridana**  
(Eastern woodrat)

18. Tail uniform in color..........................**Rattus norvegicus** (Norway rat)

14. Hind foot length less than or equal to 27mm

19. Upper incisors grooved..........................**Reithrodontomys humulis** (Eastern harvest mouse)


20. Tail scaly, hairless and length greater than half of  
head and body length..........................**Mus musculus** (house mouse)

20. Tail hairy.............................................................................................................................21.

21. Dorsal pelage gold..........................**Ochrotomys nuttalli** (golden mouse)

21. Dorsal pelage brown or cinnamon.........................................................................................22.

22. Five pads on sole of hind feet..........................**Podomys floridanus** (Florida mouse)

22. Six pads on sole of hind feet.............................................................................................23.

23. Hind foot length less than 20mm, tail  
length less than 61mm..........................**Peromyscus polionotus** (Oldfield mouse) 24.
24. Occurs at CASA/FOMA............... *Peromyscus polionotus phasma*  
(Anastasia Island beach mouse)

24. Occurs at CANA..................... *Peromyscus polionotus niveiventris*  
(Southeastern beach mouse)

23. Hind foot length greater than 19 mm, tail length greater than ..........................................................25.*

25.* *Peromyscus leucopus* (white-footed mouse) (PELE) – Present and does not coexist with PEGO at CAHA

25.* *Peromyscus gossypinus* (cotton mouse) (PEGO) – Present and does not coexist with PELE at CUIS, FOCA, FOFR, FOMA, OCMU, TIMU

25.* Both species occur at CHAT, CONG, MOCR, HOBE, KEMO. These species cannot be reliably differentiated in the field.

* Not only are *P. leucopus* and *P. gossypinus* very similar in living-specimen characteristics, the skulls do not exhibit substantial differences. Differences in pelage require both species to be present at the time of inspection to derive relative comparisons. Further, these two species exhibit variability across parks within the SECN. Although unlikely in wild animals, these two species are also known to crossbreed in captivity; adding this as a potential issue for differentiation. Proper and reliable identification can only be obtained through DNA analysis or evaluation by an expert with these species.
Literature Cited


The Department of the Interior protects and manages the nation’s natural resources and cultural heritage; provides scientific and other information about those resources; and honors its special responsibilities to American Indians, Alaska Natives, and affiliated Island Communities.

NPS 910/100148, July 2009