

Maryland Envirothon: Class Mammalia

WILDLIFE AND HERITAGE SERVICE






Nov 2024 edit by K. Gorsuch/S. Wichter, original author Kerry Wintzel, all photos by K. Wintzel unless otherwise stated.
 Note: All scientific names are per field guide editions used by Envirothon; taxonomy may have changed.

Top: Terry Jackson
 Bottom: Scott Suriano, Chuck Meadows

Mammalia Overview

- >100 species in Maryland
- Extirpated species include:
 - American elk
 - American marten
 - Gray wolf
 - American bison

Note: This guide is an overview of select species found in Maryland. The taxonomy and descriptions are based on Peterson Field Guide to Mammals of North America, 4th Ed




Top: Lori Iverson/USFWS
 Bottom: Hollingsworth, John and Karen/USFWS

Virginia Opossum (*Didelphis virginiana*)

- Omnivore
- Marsupial
 - Prehensile tail
 - Pouch for young
- Low body temperature
- Resistant to many viper venoms, including Maryland's native venomous snakes





Order: Didelphimorphia, Family: Didelphidae

Clickerbox from top left: Rick Dove, Matt Tibert (CC-BY-NC)
 Jeff Davis (CC-BY-NC), Mark Johnson

Order: Rodentia

- Largest group of mammals
- 25 species in Maryland
 - Castoridae (beaver)
 - Erethizontidae (porcupine)
 - Muridae (mice and rats)
 - includes native mice and rats, jumping mice, introduced mice and rats, lemmings, voles, muskrats
 - Sciuridae (squirrels, chipmunks, woodchucks)
- Teeth never stop growing
- Until recently: Myocastoridae (nutria) - eradicated in 2022



Beaver teeth



White-footed Mouse



Porcupine

Above: Rick Dover

Bottom: L to R: James St John (CC 2.0), National Park

Order: Rodentia

Semi-aquatic Rodents



Castoridae: American Beaver
(*Castor canadensis*)

Head & body = 2-3', tail = 1'
Scaly, paddle-shaped tail; 1 hump visible when swimming (usual)

Arvicolinae: Common Muskrat
(*Ondatra zibethicus*)

Head & body = 12", tail = 9"
Flattened tail; 3 humps visible when swimming (usual)

Myocastoridae: Coypu (Nutria)
(*Myocastor coypus*)

Head & body = 22", tail = 13"
Squared-off head w/white whiskers; rounded tail; **invasive**

Order: Rodentia

Left to Right: Jimmy Eppes, Neil Clark (CC BY), Jenkie Orsawa (USFWS)

Family: Sciuridae

- 7 species in Maryland
- Includes chipmunks, tree squirrels, flying squirrels, woodchucks
- Largest: woodchuck/groundhog (*Marmota monax*)

Woodchucks have grizzled brownish-black fur. Underfur is black



Woodchuck



Southern Flying Squirrels



Eastern Chipmunk



Above: Barbara Saffo

Bottom left to right: Nancy McAllister, Debbie MacArthur, Krystina Spencer

Order: Rodentia, Family: Sciuridae

Red Squirrel (*Tamiasciurus hudsonicus*)

- Head & body = 7", tail = 5"
- Belly and eye ring white
- Ears tufted in winter
- Tail tipped in orange
- Prefers conifer forests



Order: Rodentia; Family: Sciuridae

Above: Hugh David Photohouse
Right: Matt Teitel, Mike Mosser, Joe DeGrip

Sciurus- tree squirrels with diurnal habits



Eastern Gray Squirrel
(*Sciurus carolinensis*)
Head & body = 9-11.2", tail = 6-10"
Upper parts gray with yellow-brown on back and head; eye ring white or pale orange; belly white

Eastern Fox Squirrel
(*Sciurus niger niger*)
Head & body = 10-14.5"
tail = 8-13"
Belly, cheeks, eye-ring, and feet orange to rusty brown

Delmarva Fox Squirrel
(*Sciurus niger cinereus*)
Head & body = 10-14.5"
tail = 9-13"
Gray above; belly white; cheeks and eye-ring cream; lower legs and feet white; rare.

Order: Rodentia; Family: Sciuridae

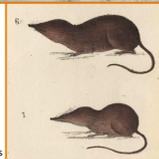
Left to Right: Elena Gilroy, Jared Fisher, Theresa Willcox

Order: Soricimorpha*

- Previously called Insectivora
- 11 species
 - Soricidae (shrews)
 - Talpidae (moles)
- Small w/ long, narrow snouts
- Have 5 toes on front and hind feet



Masked Shrew



Masked shrew, historic depictions

*Current taxonomy is Order: Eulipotyphla. Families have not changed. However, Soricimorpha is the order as listed in the guide, so this is what we will be using for Envirothon

Order: Soricimorpha

Top: Keziahmor (CC BY-NC), Richardson 1828 and Bachman 1837

Northern Short-tailed Shrew (*Blarina brevicauda*)

- Head & body = 4", tail = 1"
- Small eyes, tiny ears, short tail
- Must eat 3x its weight/day
- Toxic saliva, which can paralyze or kill insects
- Echolocation



Order: Soricomorpha, Family: Soricidae

Bottom, from left: Clayton Koonce (CC-BY-NC), Jennifer Kelly and Jennifer Hoy (CC-BY-NC)

Talpidae: Moles

- 3 species
 - Eastern mole
 - Hairy-tailed mole
 - Star-nosed mole
- Large front feet
- Worms = ❤️

The eastern mole does not have a hairy tail and is the most common species in Maryland.

Eastern Mole scared by lawnmower



Star-nosed mole (*Condylura cristata*) is uncommon in Maryland. It has 22 finger-like appendages on its nose.

Order: Soricomorpha, Family: Talpidae

Top: Bill Heupel (CC-BY-NC) Left to right: Dan MacNeal (CC-BY), Ryan Douglas (CC-BY-NC), Aaron Dralman (CC-BY-NC)

Order: Chiroptera

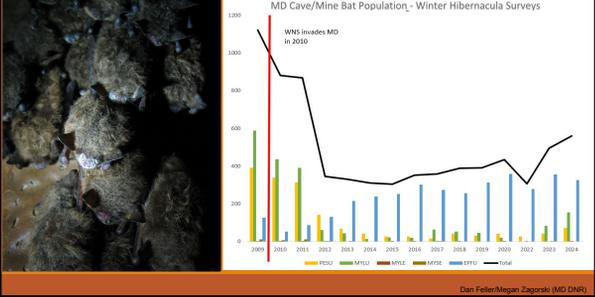
- Bats
 - Only flying mammals
- Family: Vespertilionidae
 - 10 species in Maryland
 - Insectivores
 - Some hibernate, some migrate
- Many declining due to white-nose syndrome



Order: Chiroptera

Top: Peter Pottersma (USFWS), Bottom, L to R: David Abour, Kyle Drummond

White-Nose Syndrome



Order: Carnivora

22 species in Maryland

- Canidae (canines)
- Felidae (cats)
- Mephitidae (skunks)
- Mustelidae (weasels)
- Phocidae (seals)
- Procyonidae (raccoon)
- Ursidae (bears)



Order: Carnivora

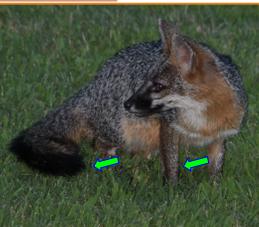
Top: Sharon Sexton
Bottom, from left: Nathaniel Peck, Catherine Blair

Canidae: Foxes



Red Fox (*Vulpes vulpes*)

White tip on end of tail; dark marks on legs and ear tips



Gray Fox (*Urocyon cinereoargenteus*)

Black tip on end of tail

Order: Carnivora, Family: Canidae

Left: Michele Carr
Right: AJ Papa

Eastern Coyote (*Canis latrans*)

- First documented in MD in 1972
- Omnivore
- Identification:
 - Large ears and narrow muzzle
 - Color can vary
 - Black tip on end of tail



Order: Carnivora, Family: Canidae

Top, Bottom L two: Cory Byrne
Bottom Mid: Laura Hammerl, B1 (Blauvelt) (CC BY-ND)

Felidae

- Bobcat (*Lynx rufus*) only extant species in Maryland
 - Head & body = 3'
 - Tail = 4-8" ("bobbed" tail)
 - Has ear tufts and striped legs
 - Mainly nocturnal
 - Relatively small: 9 - 40 lbs; avg 21 lbs male, 15 lbs female
- Eastern cougar (*Puma concolor cougar*) declared extinct in 2011



Order: Carnivora, Family: Felidae

From left: Sue Miller, covernicole (CC BY-NC); Grayson Smith (USFWS); Mark Stewart (USFWS)

Mustelidae

- 5 extant species in Maryland
- Long, slender bodies with short legs
- Well-developed anal scent glands



Least Weasel



American Marten (extirpated)



Fisher released from trap during field research



Fisher stealing ball

Order: Carnivora, Family: Mustelidae

Top: USFWS Staff
Bottom: L to R: Steve Hillebrand (USFWS), NPS, USFWS Staff

Mustelids



American Mink (*Mustela vison*)
Head & body = 12-16"
Tail = 5.5-8"

Dark brown with white on chin and chest;
usually near water



Fisher (*Martes pennanti*)
Head & body = 17-31"
Tail = 12-16"

Large and dark; head and shoulders grizzled;
prefers coniferous or deciduous-conifer forest

Order: Carnivora; Family: Mustelidae

From Left: David Edgerton,
National Park

Northern River Otter (*Lontra canadensis*)

- Head & body = 26-31"
- Tail = 12-20"
- Feet broad and webbed
- Upperparts brown and belly silvery
- Strong swimmer
- Eats fish, crayfish, frogs, etc.



Order: Carnivora; Family: Mustelidae

Above: Maureen Lemire
Inset: Jay D'Elia

Phocidae - Seals

- 4 species in Maryland
- Lack external ears
- Hind flippers face back & front flippers are small
- Mostly found along Atlantic coast in Maryland, but can travel up the Bay
- Protected under the Marine Mammal Protection Act



Juvenile Harp Seal (*Pagophilus groenlandicus*)

Adult males have black face and black horseshoe-shaped patch on back; Adult females have similar markings though lighter.

Order: Carnivora; Family: Phocidae

Above: Stephanie Venarich, MFS

Order: Artiodactyla

- Even-toed ungulates
- 2 species in Maryland
- Family Cervidae:
 - White-tailed deer
 - Sika deer



Order: Artiodactyla; Family: Cervidae

From left: Erik Yelton, DNR east; Peter Joyce, DNR, DNR east

Cervids



Sika Deer (*Cervus nippon*)

Introduced. Coat usually reddish-brown and spotted in summer, dark brown in winter; midline of back black; white rump patch



White-tailed Deer in winter

White-tailed Deer (*Odocoileus virginianus*)

Coat usually grayish in winter and reddish-brown in summer; adults lack spots; tail long with white underside

Order: Artiodactyla; Family: Cervidae

From left: Ryan Deangler, Linda Roy Walls, Randel Stenowald

Robies

- Top 5 species: raccoons, skunks, foxes, bats, cats
- Passed through saliva
- Disorientation, uncoordinated movement and staggering, paralysis of hind legs
- **Do not approach;** secure people & pets; call animal control
- **Contact Health Dept if exposure suspected**

Laboratory Confirmed Rabies in Maryland by Species, 2013			Laboratory Confirmed Rabies in Maryland by Species, 2014		
Species	Total	%	Species	Total	%
Bat	18	8%	Bat	16	8%
Cat	22	10%	Cat	13	6%
Cow	1	0%	Cow	1	0%
Dog	0	0%	Dog	0	0%
Fox	23	11%	Fox	9	4%
Groundhog	2	1%	Groundhog	7	3%
Raccoon	118	55%	Raccoon	133	55%
Skunk	29	13%	Skunk	21	10%
Coyote	1	0%	Coyote	1	0%
Horse	1	0%	Goat	2	1%
Other	1	0%	Other	2	1%
Positive	216	100%			

ANIMAL RABIES IN MARYLAND, 2005-2013											
SPECIES BY YEAR											
Year	Bat	Cat	Cow	Dog	Fox	Goat	Horse	Raccoon	Skunk	Other	Total
2005	0	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0	0	0
2013	18	22	1	0	23	1	1	118	29	1	216
2014	16	13	1	0	9	0	0	133	21	2	195

For Additional Information

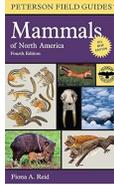
For more information on Maryland's mammals, please visit our webpage at: dnr.maryland.gov/wildlife
Additional information can be found in the following resources.

Book Resources:

- Peterson Field Guide to Mammals of North America, 4th Ed

Online Resources:

- [Maryland Environment \(Wildlife and Heritage Service\)](#)
- [Mammals of Maryland \(MD DNR\)](#)
- [Maryland Biodiversity Project \(Mammals\)](#)



Wildlife and Heritage Service • 560 Taylor Ave., E-11 Annapolis, MD 21401
410-261-8640

dnr.maryland.gov/wildlife

For questions about this presentation, contact Sarah Wichee at sarah.wichee1@maryland.gov.
