

Maryland Envirothon: Class Mammalia

WILDLIFE AND HERITAGE SERVICE

June 2023 edit by K. Gorsuch/S. Wilcher; original author Kerry Wilcher; all photos by K. Wilcher unless otherwise stated.
 Note: All scientific names are per field guide editions used by Envirothon; taxonomy may have changed.

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

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: 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**




Order: Rodentia

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

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**

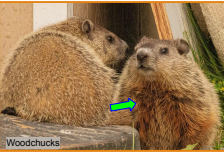
Order: Rodentia

Left to Right: Jimmy Bopp
 Peter Clark (CC BY), Jackie Orsini (USFWS)

Family: Sciuridae

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






Order: Rodentia; **Family: Sciuridae**

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

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



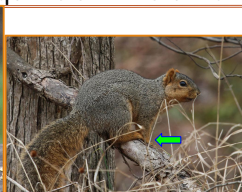
Order: Rodentia, Family: Sciuridae

Above: Hugh David Fischmann
Right: Matt Teitel, Mike Mosser, Joe Eklund

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 Glazy, Jared Fisher,
Theresa Willard

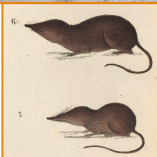
Order: Soricimorpha*

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

*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



Masked shrew,
historic depictions



Top: Keziahmoe (CC BY-NC)
Richardson 1828 and Bachman 1839

Order: Soricimorpha

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: Soricimorpha, Family: Soricidae

Bottom, from left: Clayton Koonce (CC-BY-NC), Jennifer Smith and Jennifer Hays (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: Soricimorpha, Family: Talpidae

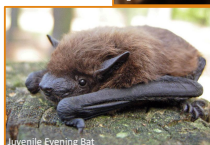
Left to right: Dan MacNeal (CC-BY), Ryan Douglas (CC-BY-NC), Aaron Graham (CC-BY-NC)

Order: Chiroptera

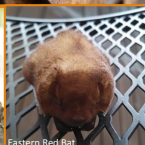
- Bats
 - Only flying mammals
- Family: Vespertilionidae
 - 10 species in Maryland
 - Insectivores
 - Some hibernate, some migrate
- Many declining due to white-nose syndrome
 - Specifically cave bats



Big Brown Bats



Juvenile Evening Bat

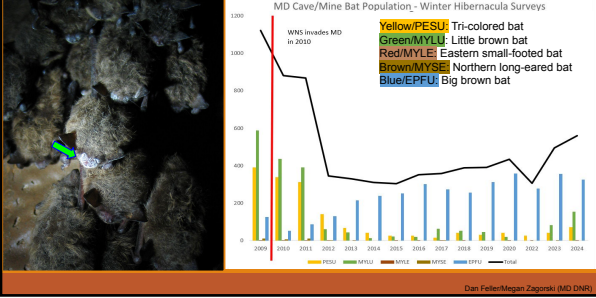


Eastern Red Bat

Order: Chiroptera

Top: Peter Patterson (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



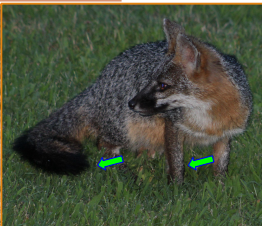
Top: Sharon Seaton
Bottom, from left: Nathaniel Peck, Catherine Blair

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 Conn
Right: AJ Pava

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

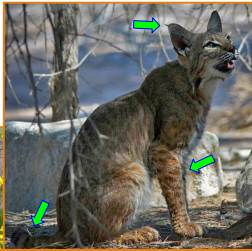


Order: Carnivora, Family: Canidae

Top, Bottom Left: Cory Byrne
Bottom Mid: Laura Hammerl, Bill Blauvelt, Joe Blauvelt

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, coverdale (CC BY-NC)
Graydon 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 Hildebrand (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.

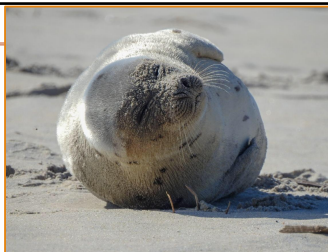


Order: Carnivora; **Family: Mustelidae**

Above: Maureen Lemire
Inset: Jay Olack

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*)

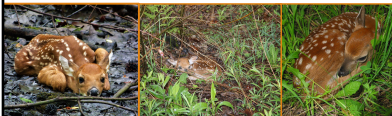
Adult males have black face and black
horseshoe-shaped patch on back. Adult females have
similar markings though lighter.

Order: Carnivora; **Family: Phocidae**

Above: Stephanie Venardick, MFS

Order: Artiodactyla

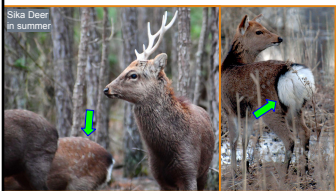
- Even-toed ungulates
- 2 species in Maryland
- Family Cervidae:
 - White-tailed deer
 - Sika deer



Order: Artiodactyla; Family: Cervidae

From left: Erik Yelton, DNR staff; Peter Jayne, DNR; David 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 (*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 Wallis, Randall Stenowicz

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%	
Goat	1	0%		Coyote	1	0%	
Horse	1	0%		Goat	2	1%	
Other	1	0%		Other	2	1%	
Positives	218	100%					

AVIAN RABIES IN MARYLAND, 2005-2013

AVIAN RABIES IN MARYLAND, 2005-2013											
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
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	0	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0	0	0

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 \(Wildlife and Heritage Service\)](http://dnr.maryland.gov/wildlife)
- [Mammals of Maryland \(MD DNR\)](http://dnr.maryland.gov/wildlife)
- [Maryland Biodiversity Project \(Mammals\)](http://dnr.maryland.gov/wildlife)



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For questions about this presentation, contact Sarah Witcher at sarah.witcher1@maryland.gov.

