



Gray Squirrel
Virginia Opossum
Eastern Cottontail



Photo by Jim the Photographer

Natural History of Small Mammals

Wildlife Rehabilitators of North Carolina 2024



Photo by Don Loarie



Photo by Ian Morton

Natural history includes

- Evolution and characteristics
- Habitats
- Activity patterns
- Feeding habits
- Ecology
- Population dynamics
- Behavior
- Social organization

Gray Squirrels

Sciurus carolinensis



General information

- Bushy tails
- Strong hind legs
- Born naked, blind, toothless
- Hind limbs longer than forelimbs
- 4 toes on front feet, 5 on back feet
- Descend tree headfirst by rotating ankles 180 degrees, enabling hind paw to point backwards to grip tree bark



Photo by Nina Laakso



Photo by Alex Starr

General information



- Rodents
- 2 sets open rooted incisors
- Powerful jaws
- 20-22 pre molars/molars

Life span

- Most live less than one year
- Potentially 10 or more years

Habitat



Photo by Ian Morton

- Mature continuous woodlands
- Diverse understory vegetation

Nests



- Nests are called dreys
- Winter dreys more substantial
- Exterior is twigs, leaves
- Lined w/moss, bark, soft things

Molts



Two molts a year

Spring: starts head to flanks

Fall: starts flanks to head

Tails: once a year, late summer

Coloration



- Not really “gray”
- Hair bands of brown, white, black
- Tips of guard hairs white
- Some distinctly reddish
- Paws rusty brown to almost white
- Belly usually white to buff

Predators & Defenses

- Predators: bobcat, coyote, red fox, hawk
- Defenses
 - Can run up to 20 miles/hour
 - When threatened run in a zig zag pattern

Communication



Photo by Chris Sorge



Waving tail

Photo by David Hill

- Visual
 - Tail flicking: agitation or warning
 - Flatten ears against head: fear or submission
 - Standing up on hind legs to get a better view
 - Bare teeth: aggression

Communication

- Vocal
 - Chirping
 - Barking: danger
 - Whining and growling



Squirrel fussing

Communication

- Chemical
 - Use scent glands to mark territory by rubbing cheeks and chin on trees
 - Urinate and defecate in locations to mark territory
 - Use pheromones to attract females

Senses

- Vision
 - Excellent day vision, both focal and peripheral
 - Poor night vision
- Remarkable hearing
 - Wide range of frequencies including ultrasonic
 - Hear from a distance 2 to 2-1/2 times our range
- Excellent sense of smell
 - Locate buried nuts



Squirrel hiding nut



Now, where did I hide that nut?



Photo by Audreyjm529



Photo by Matthew Pauls

Diet

- Omnivores: meat, fruits, vegetables and other plants
- Nuts, seeds, flowers, buds, fruits, plant parts, fungi, truffles, insects, bird's eggs
- Raid bird feeders and pet bowls
- Bury food and hide it in tree crevices

Reproduction

- Females choose mate
- Males compete, chase and dance to attract females
- Estrous lasts less than 8 hours
- Polygynandrous (several partners)
- Female solely responsible for parental care of young (in nest up to 3 months)

Surviving Winter

- Eat lots in fall
- Bury food for later use
- Find shelter in tree cavities and nests
- Thick, water-resistant fur
- Long bushy tail
- Homeothermic: constant body temperature throughout year



Photo by Williamette Biolo



Virginia Opossum

Didelphis virginiana



Photo by Jim Isaacs

Wildlife Rehabilitators of North Carolina 2024

General Information

- Marsupial
- Solitary
- Nocturnal
- Good climbers
- Resistant to rattlesnake venom
- Low Body temperature
- 50 teeth



Photo by USFWS

Prehensile Tail and Opposable Thumbs

- Prehensile Tail
 - Transport nest materials
 - Use tail for balance
 - Do *not* hang from trees by the tail
- Opposable thumbs



Photo by Tony alter



Lifespan

- 2-4 years
- Grow throughout lives

Reproduction

- Polygynous (males have multiple partners)
- Sexually mature within first year
- 13 teats
- Average 2 litters per year

Habitat

- Woody, particularly deciduous forests
- Close to a water source, such as a stream or lake
- Adaptable, live in urban areas too
- Nomadic living



Photo by kthypyn



Photo by Mista Sparkle



Photo by ksblack99

Dens

- Sleep during day in dens
 - Hollowed trees and logs, rock crevices, abandoned burrows, wood piles and bushes
- In urban areas also use existing structures
 - Garages
 - Under decks, stairs and outbuildings

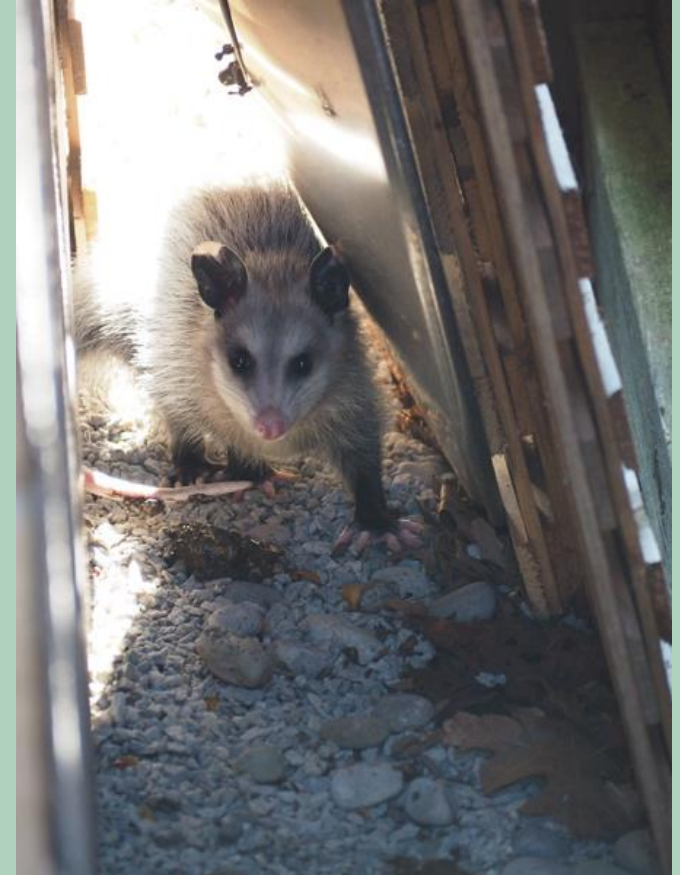


Photo by JP Newell



Photo by Helena Jacoba



Photo by USFWS Midwest Region



Photo by Land Between the Lakes KYTN

Diet

- Opportunistic omnivores
 - Insects, rodents, birds, frogs, carrion, fruits, vegetables
- Scavengers
 - Garbage
 - Roadkill
 - Forage for bird seed, and pet food
- Tick eating machine is a myth



Photo by Tony Alter

Senses

- Vision
 - Dichromatic
 - Poor daytime vision
- Exceptional smell
- Keen sense of touch
 - Use vibrissae (whiskers)



Photo by TexasEagle

Communication

- Hiss, snarl and screech
- Clicking by males during mating



Photo by Peggy Davis

Surviving winter

- Active throughout the winter
- Do not store food
- Use fat reserves
- Seek warm areas and pad den with grass and leaves
- Move nests to avoid predators
- Scavenge for food, including carrion
- Curling into a tight ball to conserve heat

Predators and Defenses

- Predators: foxes, coyotes, wolves, wild dogs, bobcats, eagles, hawks, owls, raccoons, badgers, snakes, cats, dogs, humans
- Defenses
 - Hissing and showing teeth
 - Involuntary comatose-like state (“Playing dead”)
 - Release anal gland fluid



Photo by Florida Fish and Wildlife



Photo by Tony Alter

Cottontails

Sylvilagus floridanus



Wildlife Rehabilitators of North Carolina 2024

General Information



Photo by Jim the Photographer

- Prey species
- Ears help control thermoregulatory system
- Temperature is 101-103 degrees (warm to touch)
- Mostly nocturnal
- Feed after dusk & before dawn
- Lagomorphs: 4 upper & 2 lower incisors

Lifespan

- 15 months average

Habitat

- Habitat generalists
- Meadows, orchards, farmlands
- Prefer disturbed habitats: brushy areas, old fields, pastures, cultivated areas, thickets, brush piles
- Suburban areas with food and cover



Photo by Greyloch



Photo by Tom Sprinker



Photo by USFWS

Nests

- Ground nest
- Shallow fur-lined depression, covered with grass



Photo by USFWS



Photo by Jhansonxi

Diet



Photo by Toni Genberg

- Herbivore
- Leaves, berries, twigs, flowers, seeds, grasses, stems, bark
- Tender green herbaceous vegetation: clovers, crabgrasses, alfalfa, bluegrasses, quackgrass, redtop, plantains, chickweed, and dandelion



chickweed



clover



plantain



alfalfa



crabgrass



dandelion

Reproduction

- Mom feeds young at dawn and dusk
- Average 4 litters per season
- Average 3-6 young per litter (varies regionally)



Senses

■ Vision

- Wide field of vision
- Monocular vision
- Far-sighted
- Red-green color blind
- Blind spot



Photo by Neil DeMaster

Ears to side



Photo by Jim the Photographer

One forward, one to side

■ Hearing

- Excellent
- Can move ears back and forth separately to determine sound location
- Ears are cupped to amplify sound



Photo by Greyloch

Ears backward



Photo by USFWS

Ears forward

Senses



Photo by jjjj56cp

- Smell
 - 20 times better than human's
 - Smell predators miles away
 - Sniff out food, even underground

Communication

- Body language
- Thumping with hind legs: danger
- Scent markings

Predators and Defenses



Photo by Brandon Keim

- Predators: foxes, bobcats, birds of prey, mustelids, coyotes, snakes, mountain lions
- Defenses:
 - Heightened sense of smell, sharp eyesight and excellent hearing
 - Run fast (18 mi/hour)
 - Freeze in place or zigzag
 - Bite & kick with hind legs
 - Growl and emit high-pitched scream
 - Hide underground

Surviving winter

- Do not hibernate
- Actively forage
- Shelter in hollow logs, rock piles and brush piles
- Eat more wood-based food: tree bark, twigs and conifer needles
- Produce more vitamin C



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The End



Photo by Toni Genberg



Photo by Photo by Williamette Biolo



Photo by Florida Fish and Wildlife