



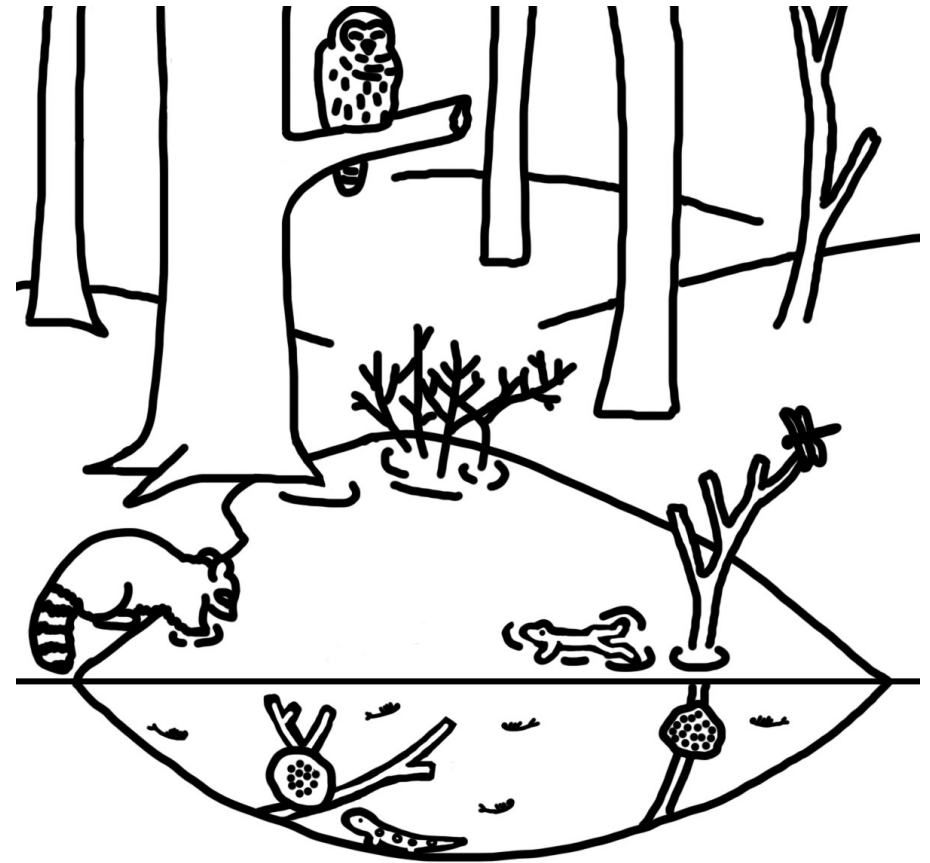
Senator George J. Mitchell Center
for Sustainability Solutions

Maine Water Resources
Research Institute



My First Field Guide to Vernal Pools

Coloring Book



New York Edition

By Kristine Hoffmann

This book belongs to _____

RECOMMENDED WEB PAGES

Of Pools and People
vernalpools.me

The Vernal Pool Association and Treefrog Educational
vernalpool.org

Amphibia Web
amphibiaweb.org

Northeast Partners in Amphibian and Reptile Conservation
northeastparc.org/our_products

Cornell Lab of Ornithology
birds.cornell.edu

Go Botany
gobotany.newenglandwild.org/

Acknowledgements

This work was funded by the Senator George J. Mitchell Center for Sustainability Solutions, Maine Water Resources Research Instituted, Foundation for the Conservation of Salamanders, and the University of Maine Department of Wildlife, Fisheries, and Conservation Biology as part of the Vernal Pools for Me project and in partnership with the Northeast Partners in Amphibian and Reptile Conservation, Hirundo Wildlife Refuge, and Alosa Studio.

I thank Dr. Aram Calhoun for her enthusiastic support and supervision of this project.

Images are based on photographs by Dr. Carly Eakin, Dr. Luke Groff, Dr. Kristine Hoffmann, Lydia Kifner, Dr. Kevin Ryan, Dr. Valorie Titus, and others. Illustrations are by Dr. Kristine Hoffmann.

Feedback was provided by Joanne Alex, Dr. Luke Groff, Dr. Malcolm Hunter Jr., Molly Jean Langlais Parker, Celia Johnson, Gudrun Keszoecze, Bram McConnell, and Elizabeth O’Leary. Coloring pages were tested by Alisha Land, Herbie McConnell, Patricia McConnell, Eli Seth Parker, Laurali Langlais Parker, and Piper Stuart Parker. Layout by Rena Carey.

This work is copyrighted (2018) by the University of Maine and Kristine Hoffmann.

Visit www.vernalpools.me for additional copies or for versions specific to other states in the Northeast USA.

Acknowledgements	3
What Is a Vernal Pool?	7
Amphibians	8
Salamander Eggs and Larvae	8
Wood Frog Eggs and Tadpoles	9
Blue-Spotted Salamander	10
Spotted Salamander	11
Jefferson Salamander	12
Marbled Salamander	13
Tiger Salamander	14
Eastern Newt	15
Northern Dusky Salamander	16
Four-Toed Salamander	17
Northern Redback Salamander	18
American Toad	19
Eastern Spadefoot	20
Gray Treefrog	21
Spring Peeper	22
Bullfrog	23
Green Frog	24
Pickerel Frog	25
Northern Leopard Frog	26
Wood Frog	27

BLUE FLAG IRIS



Scientific name: *Iris versicolor*

Traits: Curvy violet petals with yellow bases; leaves long and pointed

Size: 2 feet tall

Habitat: Moist or wet areas along edges of ponds, lakes, vernal pools, and bogs

PLANTS

FEATHERFOIL



Scientific name: *Hottonia inflata*

Traits: Thick green stems above water; white flowers;
feather shaped leaves floating underwater

Size: Up to 2 feet tall

Habitat: Only in vernal pools

Reptiles	28
Common Snapping Turtle	28
Painted Turtle	29
Spotted Turtle	30
Blanding's Turtle	31
Northern Water Snake.....	32
Ribbon Snake	33
Common Garter Snake	34
Invertebrates	35
Fairy Shrimp	35
Mosquito Larva	36
Predaceous Diving Beetle Larva (Water Tiger)	37
Dragonfly Larva	38
Caddisfly Larva	39
Water boatman	40
Damselfly Larva.....	41
Giant Water Bug	42
Birds	43
Barred Owl	43
Mallard.....	44
Wood Duck	45
Spotted Sandpiper	46
Great Blue Heron	47

Mammals48

 American Black Bear48

 White-Tailed Deer.....49

 Red Fox50

 Raccoon51

 Bobcat.....52

Plants53

 Red Maple.....53

 Winterberry54

 Meadowsweet55

 Featherfoil.....56

 Blue Flag Iris.....57

Recommended Web Pages.....58

MEADOWSWEET



Scientific name: *Spiraea alba*
Traits: Shrub with toothed green leaves, many small white flowers in cone shape clusters
Size: 3 feet tall
Habitat: Rivers, vernal pools, ponds, and other wet areas

WINTERBERRY



Scientific name: *Ilex verticillata*

Traits: Shrub; smooth grey bark; leaves toothed; red berries present in fall and winter

Size: Up to 10 feet tall

Habitat: Forested wetlands, vernal pools, and along shorelines of lakes and ponds

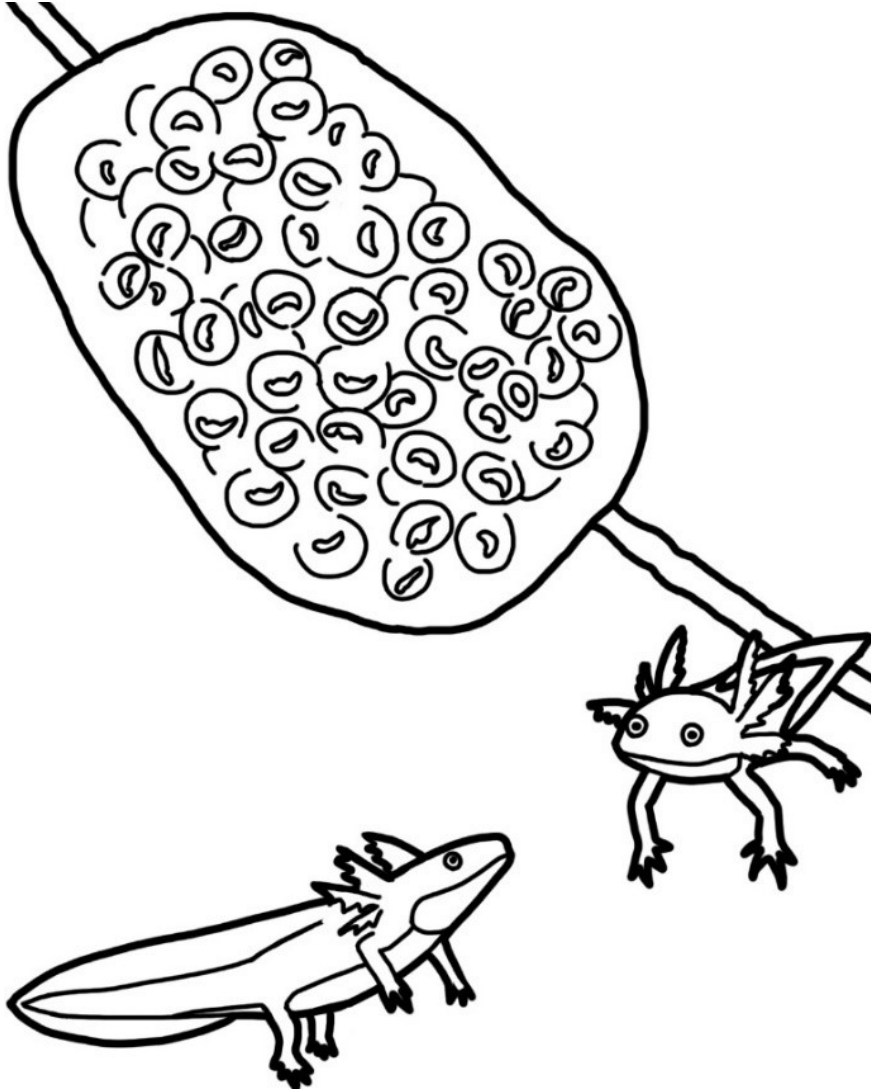
What Is a Vernal Pool?

Vernal pools are shallow wetlands with still water that dry up each year or every few years. Fish cannot persist in these temporary wetlands, but some amphibians and fairy shrimp can only reproduce or live in these small pools.

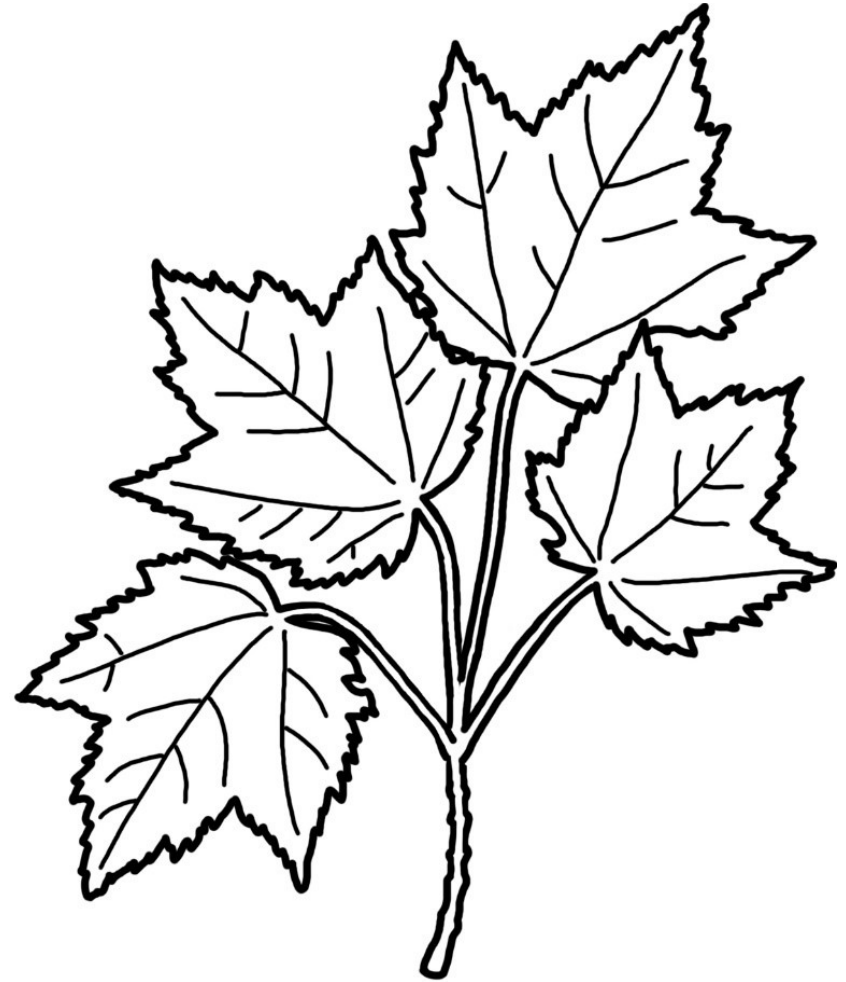


SALAMANDER EGGS AND LARVAE

Vernal pool amphibians lay eggs in clusters called egg masses. Spotted Salamander egg masses have an outer jelly-like layer. The developing salamanders look black inside the clear jelly. Larvae hatch from the eggs. Their gills look like feathery ears.



RED MAPLE



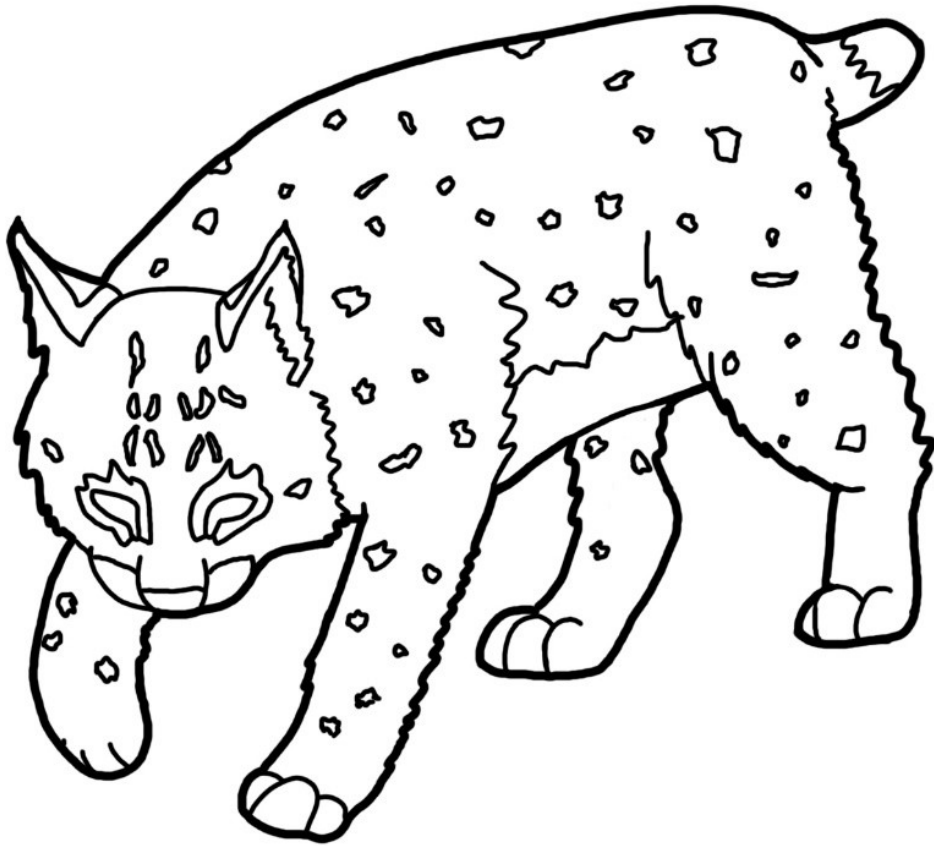
Scientific name: *Acer rubrum*

Traits: Tree; leaves are broad and have 3 to 5 lobes; leaf stems can be red and attached opposite of another stem

Size: Leaves 2 to 6 inches wide

Habitat: Most common in wet forests

BOBCAT



Scientific name: *Lynx rufus*

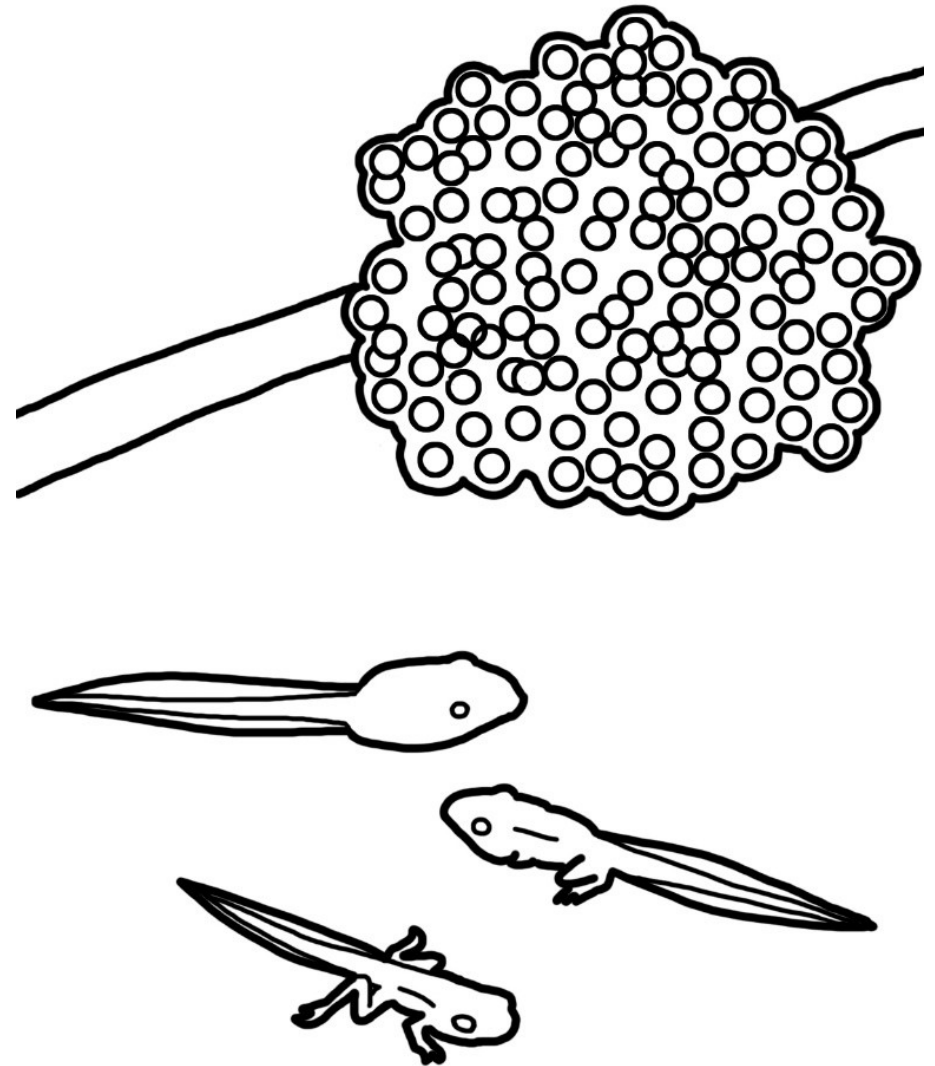
Traits: Brown to orange with black spots; short tail with a black top; white muzzle, blotches around eyes, and belly

Size: Up to 3 feet long, 2 feet tall

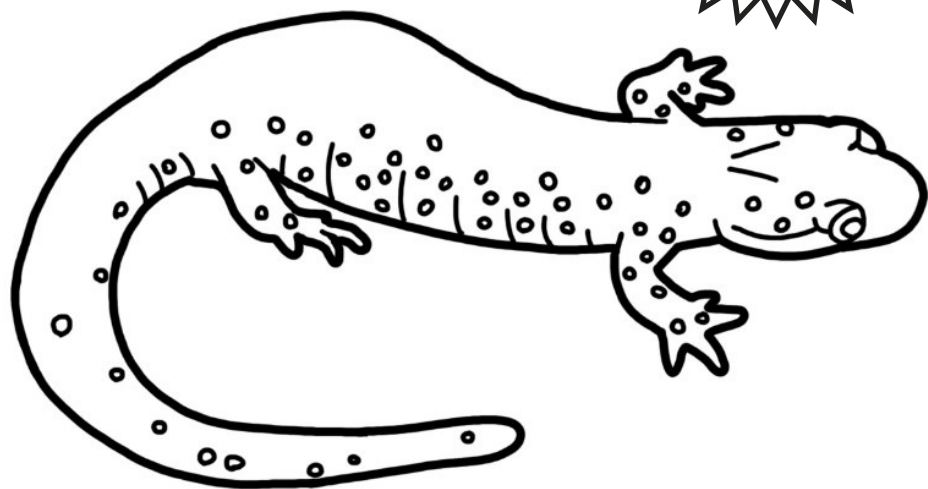
Habitat: Forests and swamps

WOOD FROG EGGS AND TADPOLES

Wood Frog egg masses are the size of softballs. The developing tadpoles are black in a clear jelly. Hundreds of tadpoles hatch from each mass. They grow legs and lose their tail as they metamorphose into young frogs.



BLUE-SPOTTED SALAMANDER



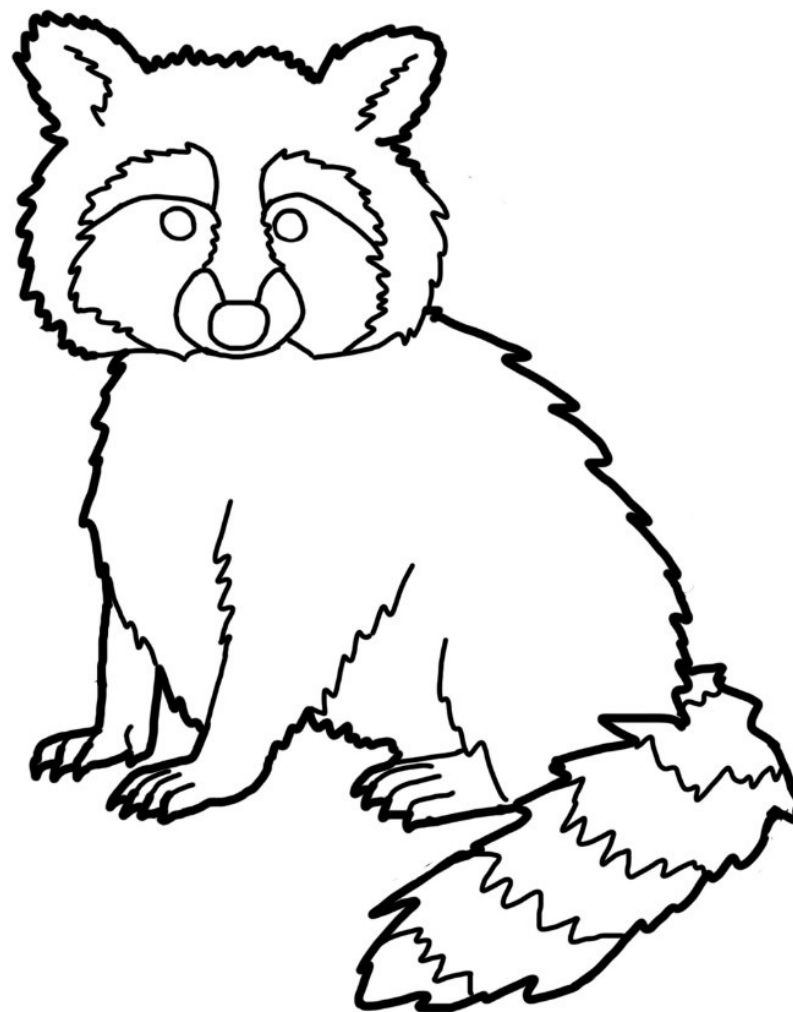
Scientific name: *Ambystoma laterale*

Traits: Black with light blue speckles

Size: 3 to 6 inches

Habitat: Underground or under the leaves in the forest; sometimes in people's basements; adults lay eggs in vernal pools in the spring and then leave

RACCOON



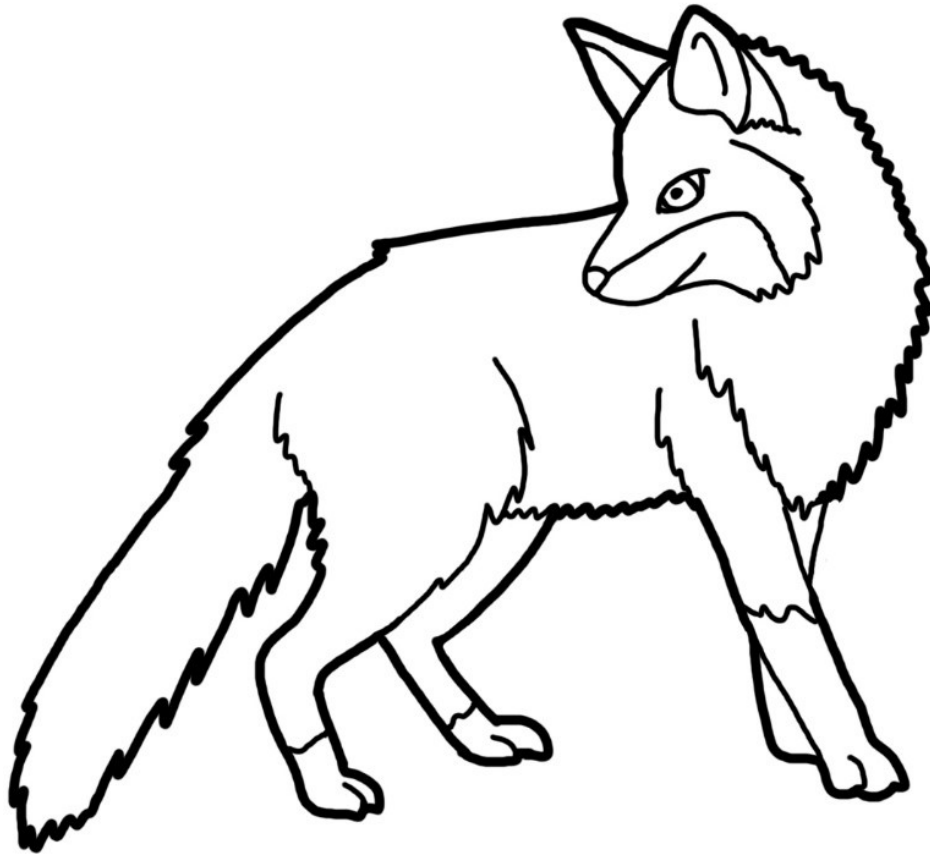
Scientific name: *Procyon lotor*

Traits: Brown with dark mask, white eyebrows and muzzle, black and brown striped tail

Size: 2 to 3 feet long, 1 foot tall

Habitat: Forests, fields, and neighborhoods

RED FOX



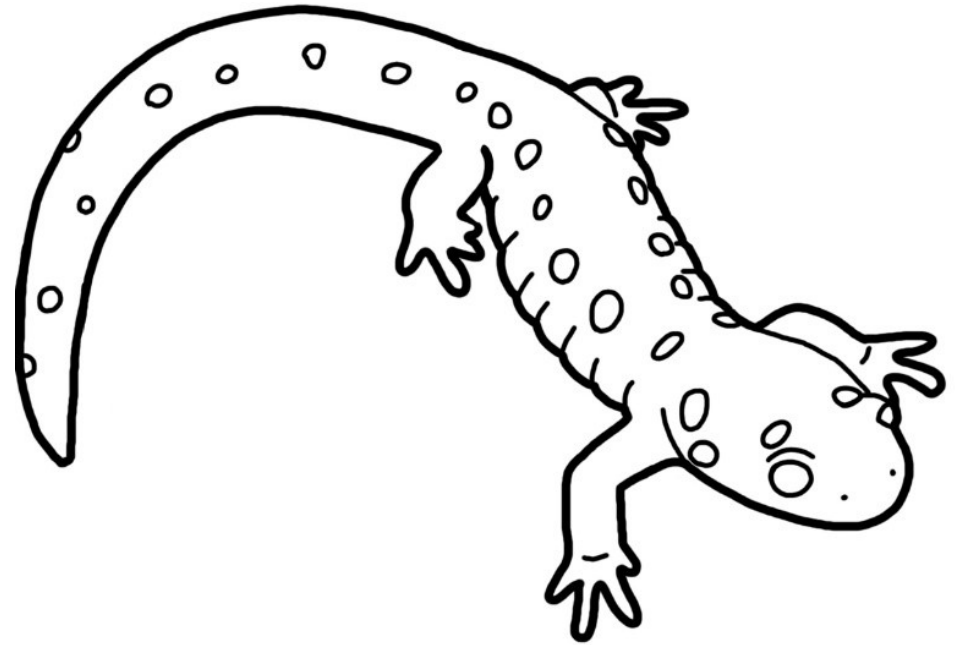
Scientific name: *Vulpes vulpes*

Traits: Red to gray body, white muzzle, black feet; ears are white on inside and black on back

Size: Up to 5 feet long, 1.5 feet tall

Habitat: Forest, fields, and neighborhoods

SPOTTED SALAMANDER



Scientific name: *Ambystoma maculatum*

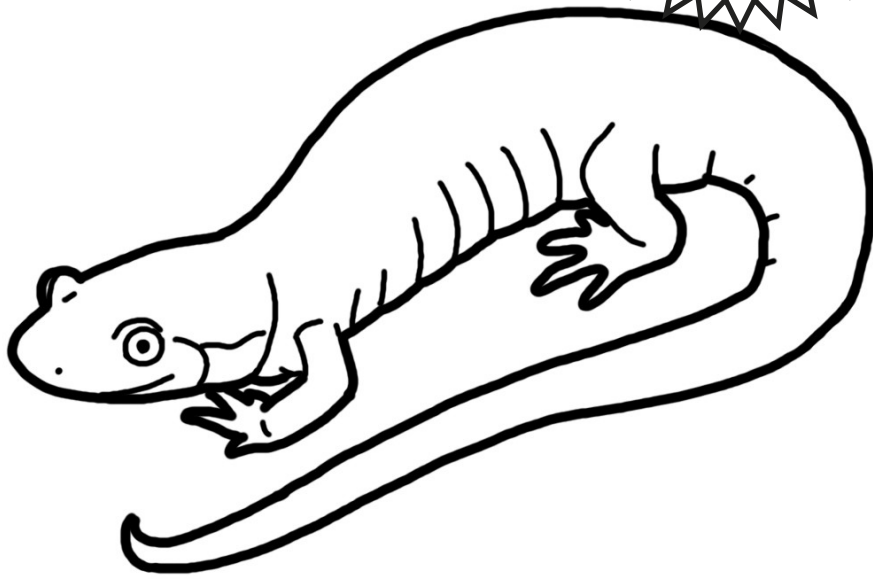
Traits: Yellow spots on a black background; sometimes they have tiny blue dots

Size: 5 to 8 inches long

Habitat: Underground in the forest; sometimes in people's basements; adults lay eggs in vernal pools in the spring and then leave

AMPHIBIANS

JEFFERSON SALAMANDER



Scientific name: *Ambystoma jeffersonianum*

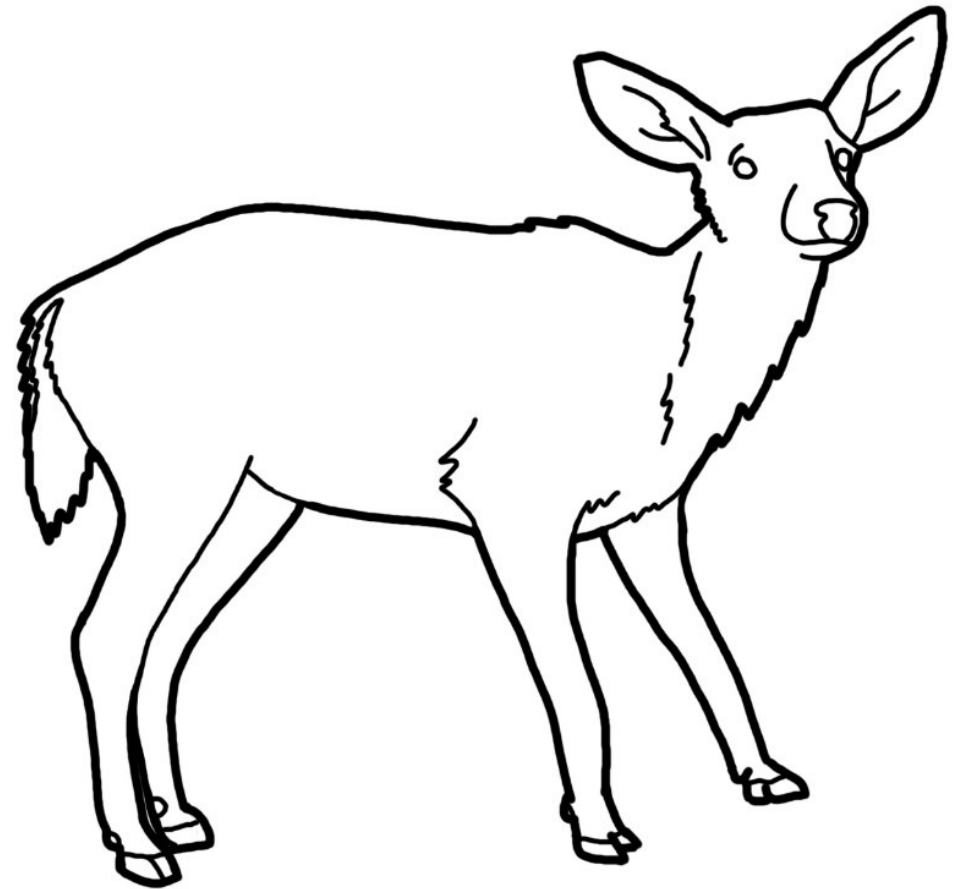
Traits: Brown to dark grey

Size: 4 to 7 inches

Habitat: Underground in the forest; adults lay eggs in vernal pools in the spring and then leave

MAMMALS

WHITE-TAILED DEER



Scientific name: *Odocoileus virginianus*

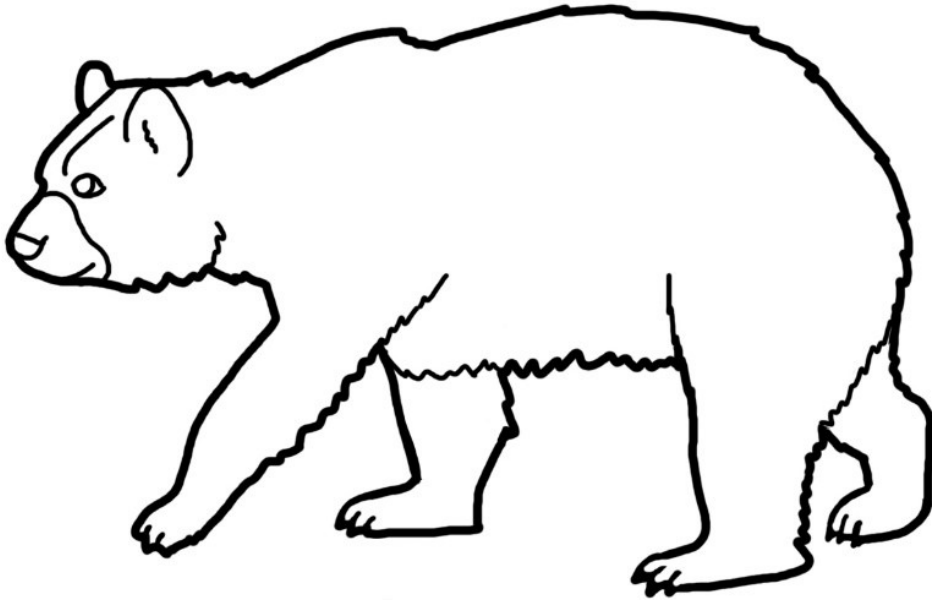
Traits: Brown with a fluffy white tail and black nose

Size: Up to 7 feet long, 4 feet tall

Habitat: Forests, brushy areas, and nearby fields

MAMMALS

AMERICAN BLACK BEAR



Scientific name: *Ursus americanus*

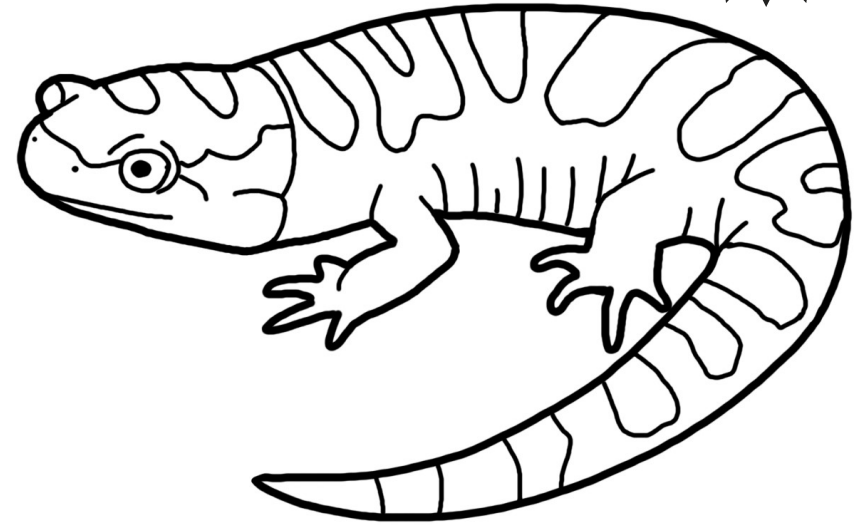
Traits: Black to brown with brown muzzle

Size: Up to 6 feet long, up to 3 feet tall

Habitat: Forests

AMPHIBIANS

MARBLED SALAMANDER



New York
Species of Special
Concern

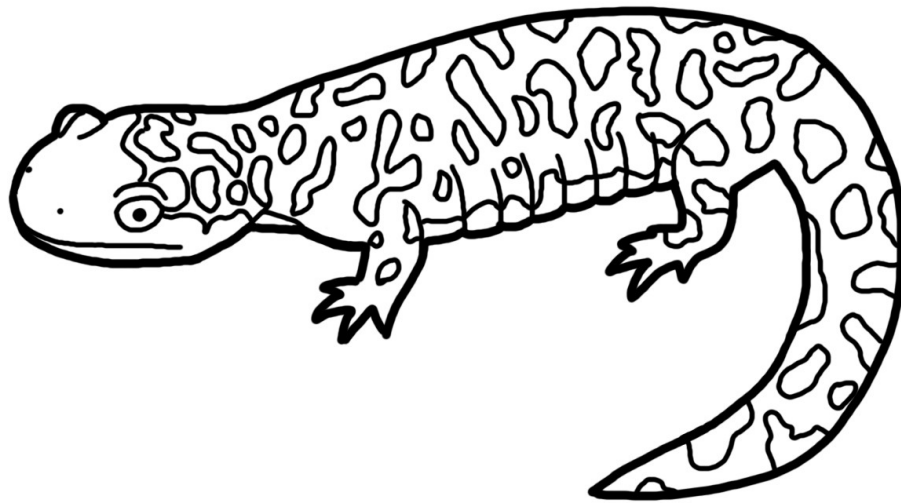
Scientific name: *Ambystoma opacum*

Traits: Black body with white or grey bars

Size: 3 to 5 inches long

Habitat: Underground in the forest; adults lay eggs under logs in dry vernal pools in the fall, and the mother stays with them until water fills the pool

EASTERN TIGER SALAMANDER



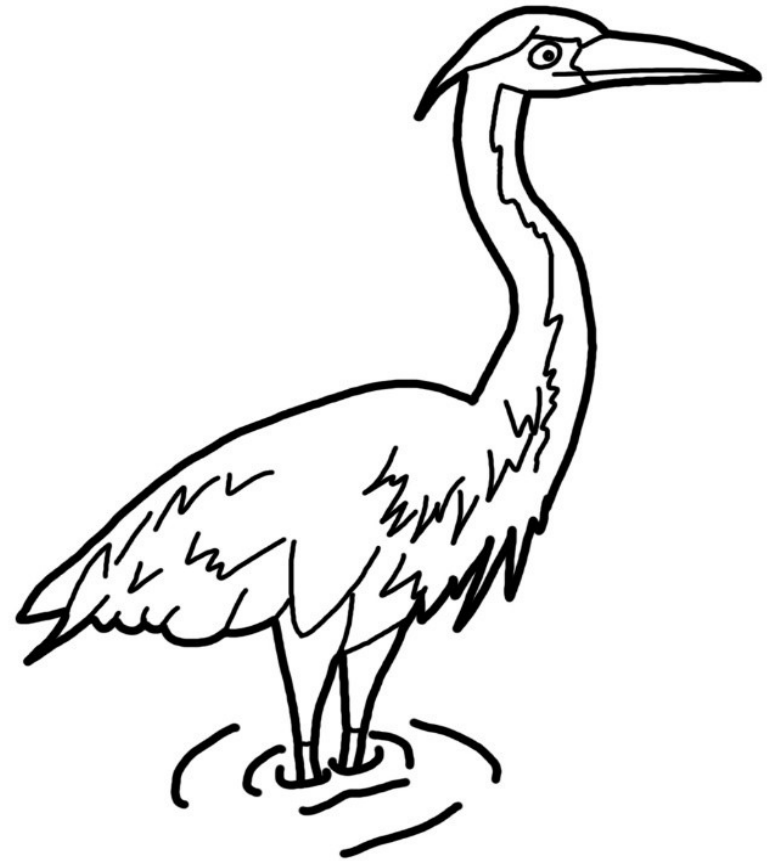
Scientific name: *Ambystoma tigrinum*

Traits: Brown with yellow or green blotches

Size: 6 to 13 inches

Habitat: Underground in the forest; adults lay eggs in vernal pools in the spring and then leave

GREAT BLUE HERON



Scientific name: *Ardea herodias*

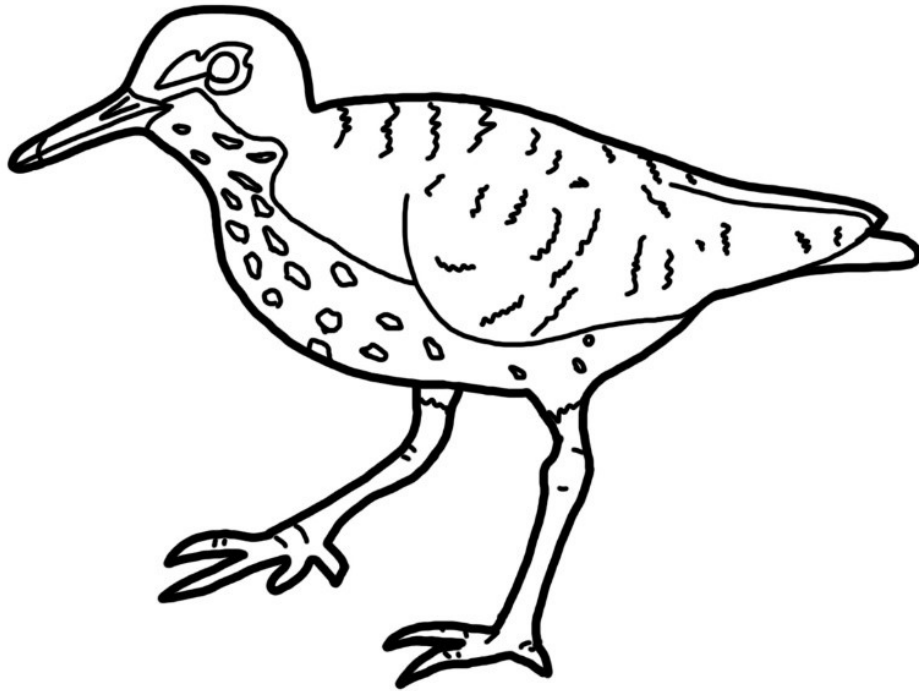
Traits: Black cap, yellow bill, grey to blue back, white throat, long necks and legs

Size: Wingspan up to 70 inches

Habitat: Ponds, swamps, vernal pools, rivers, coasts, and other wet places

Song: Loud squawks

SPOTTED SANDPIPER



Scientific name: *Actitis macularius*

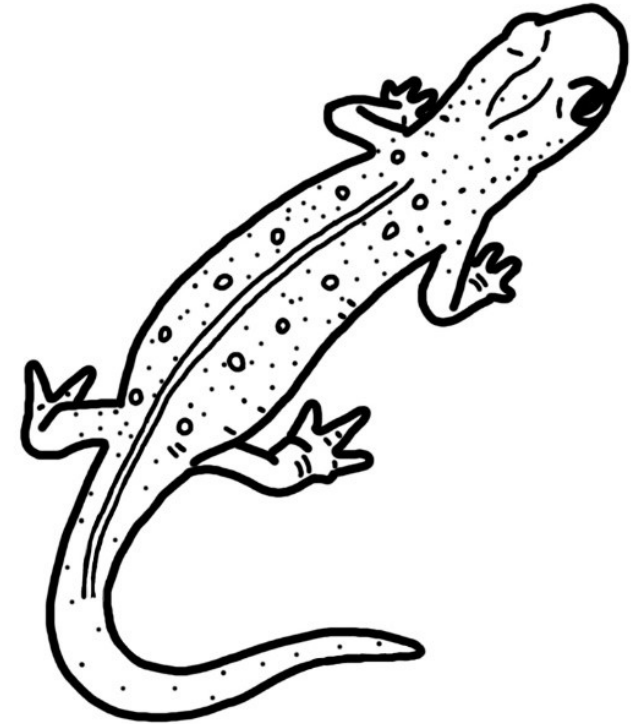
Traits: Brown back, white belly with brown spots, yellow bill and legs, and white circles around eyes

Size: Wingspan up to 15 inches

Habitat: Shorelines of rivers, ponds, vernal pools, and lakes

Song: Series of tweets

EASTERN NEWT



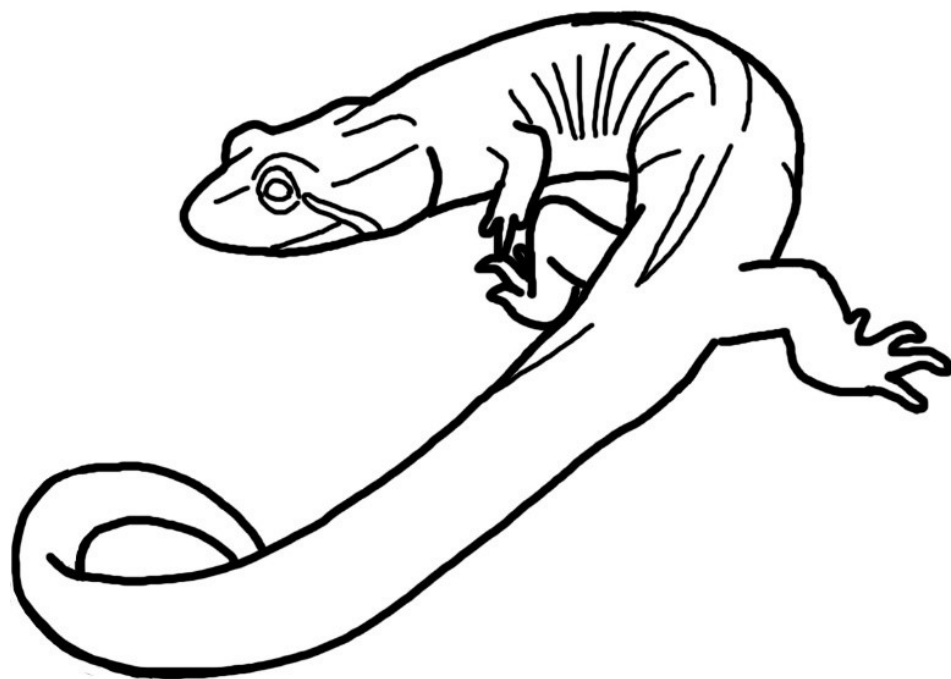
Scientific name: *Notophthalmus viridescens*

Traits: Green or brown with a lighter belly, and a line of red circles along each side; larvae metamorphose into juveniles called “efts” and are orange with red spots

Size: 3 to 4 inches

Habitat: Adults usually live in permanent ponds, but are also found in vernal pools; efts are often found on land in the forest

NORTHERN DUSKY SALAMANDER



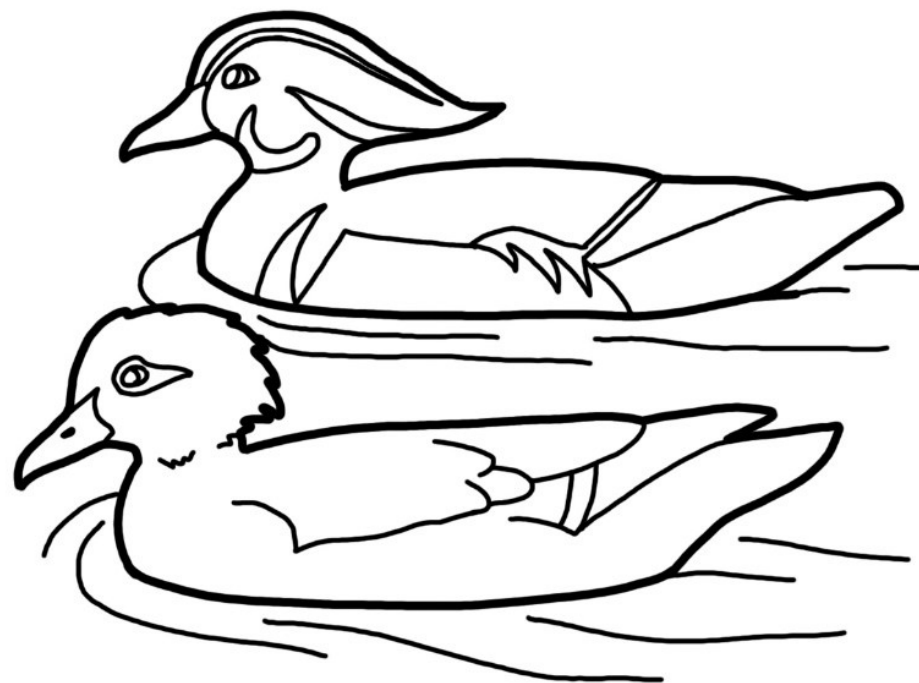
Scientific name: *Desmognathus fuscus*

Traits: Dark brown with a faint white line reaching from the eye to jaw; young may be mottled; hind legs are wider than arms

Size: 2 to 5 inches

Habitat: Under rocks and logs along stream edges, sometimes found near vernal pools

WOOD DUCK



Scientific name: *Aix sponsa*

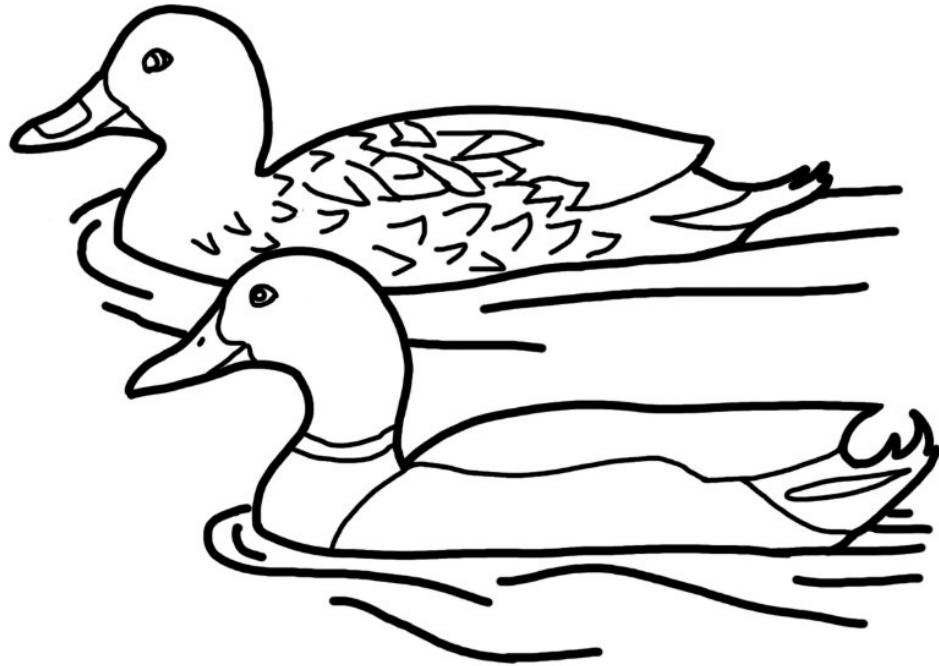
Traits: Males have green heads with white stripes, dark brown chest, light brown sides, and dark brown back; females are brown and have white eye patches and white stripes and blue patches on their wings

Size: Wingspan up to 30 inches

Habitat: Forested wetlands

Song: Whistling

MALLARD



Scientific name: *Anas platyrhynchos*

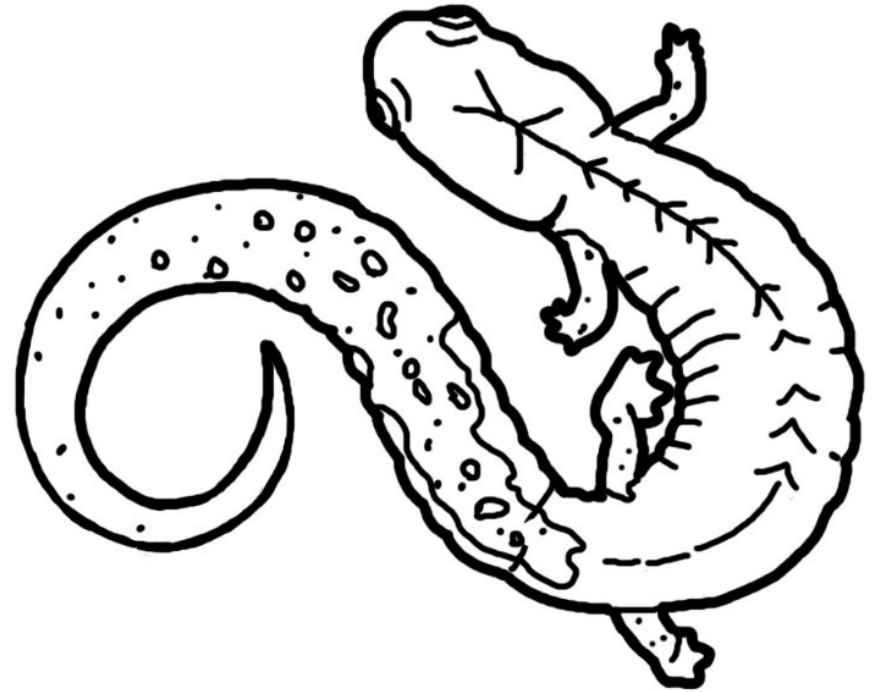
Traits: Females are brown with orange bills and a blue patch on wings; males have yellow bills, green heads, a white neckband, light brown sides, dark brown backs, and black tails

Size: Wingspan up to 40 inches

Habitat: Lakes, ponds, vernal pools, rivers, and streams

Song: Quacking

FOUR-TOED SALAMANDER



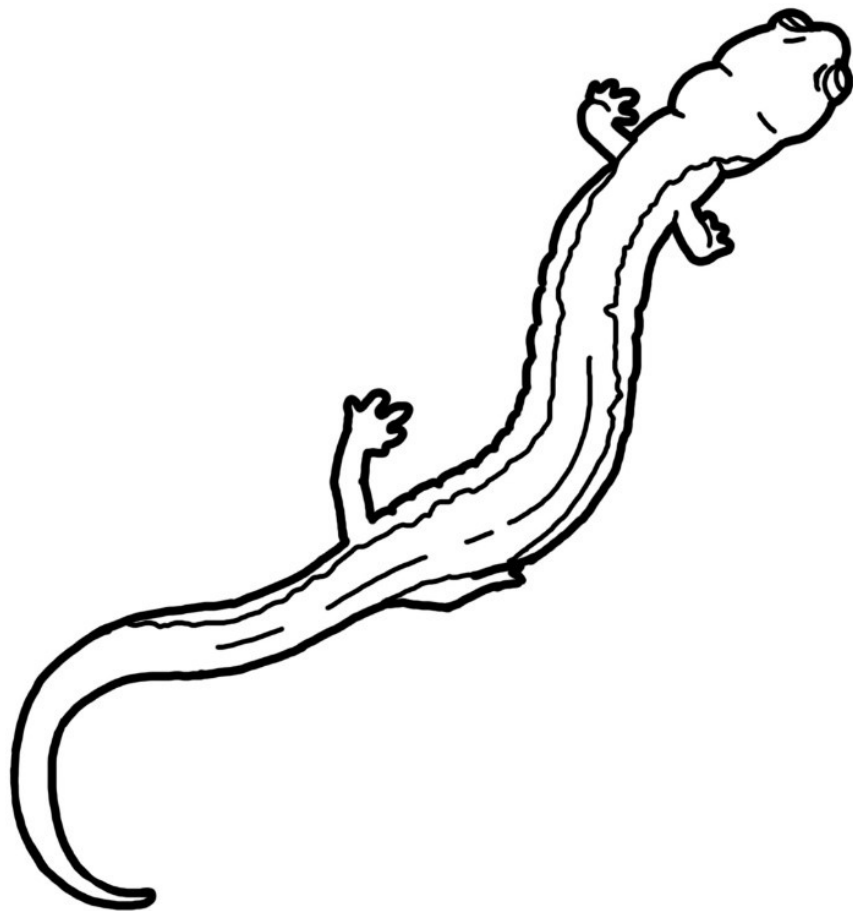
Scientific name: *Hemidactylium scutatum*

Traits: Brown back and legs, lighter tail, white belly with black “salt and pepper” spots

Size: 2 to 4 inches

Habitat: Under logs and rocks in the forest; adults lay eggs in moss above the water and the larvae drop into the pool when they hatch

NORTHERN REDBACK SALAMANDER



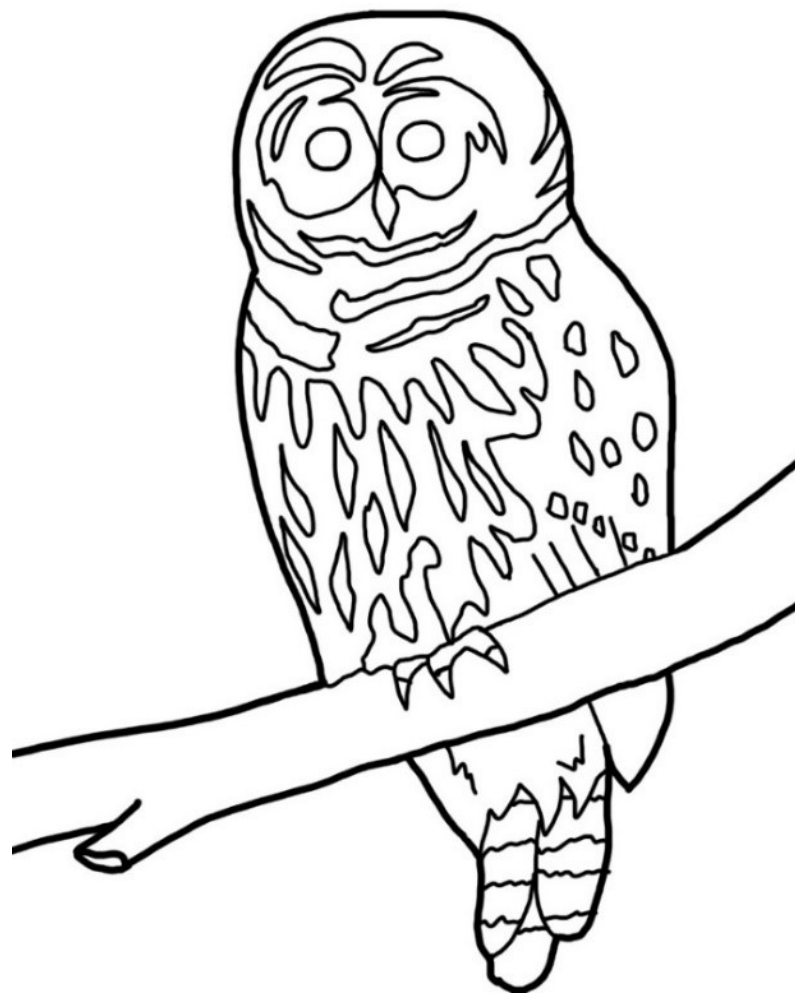
Scientific name: *Plethodon cinereus*

Traits: Most have dark gray sides with a red stripe on their back, but some lack the stripe and some have red sides

Size: 2 to 4 inches

Habitat: Under logs and rocks on dry land; often found near or in dry vernal pools but do not lay eggs in wetlands

BARRED OWL



Scientific name: *Strix varia*

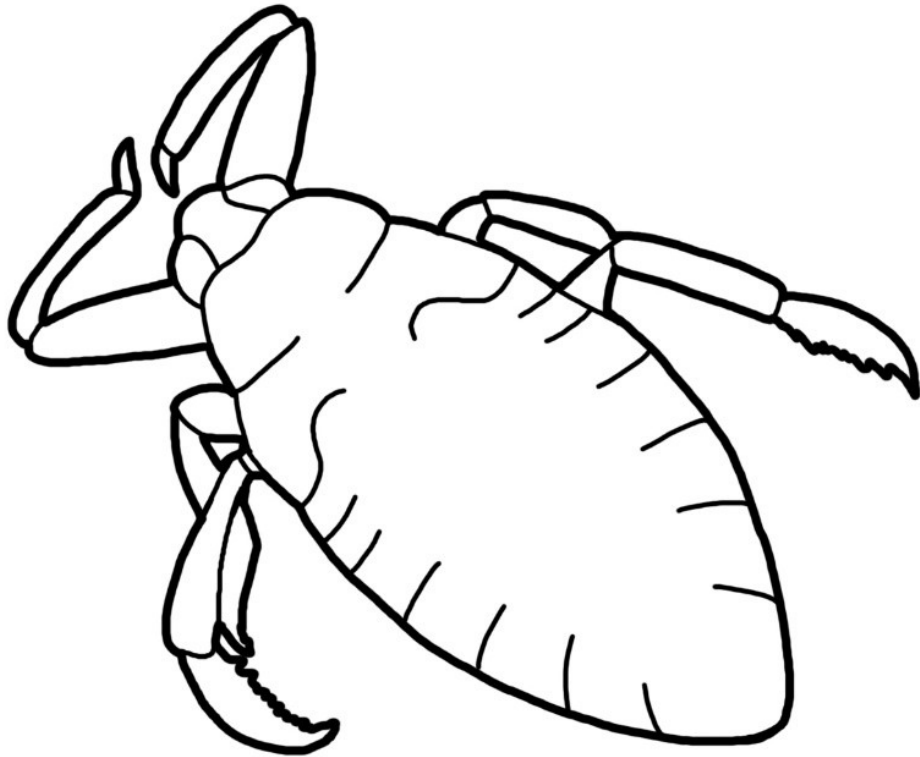
Traits: Dark brown bars on upper chest; dark brown stripes on white or tan belly; back brown

Size: Wingspan up to 50 inches

Habitat: Forests

Song: Hooting in a “who cooks for you?” rhythm

GIANT WATER BUG



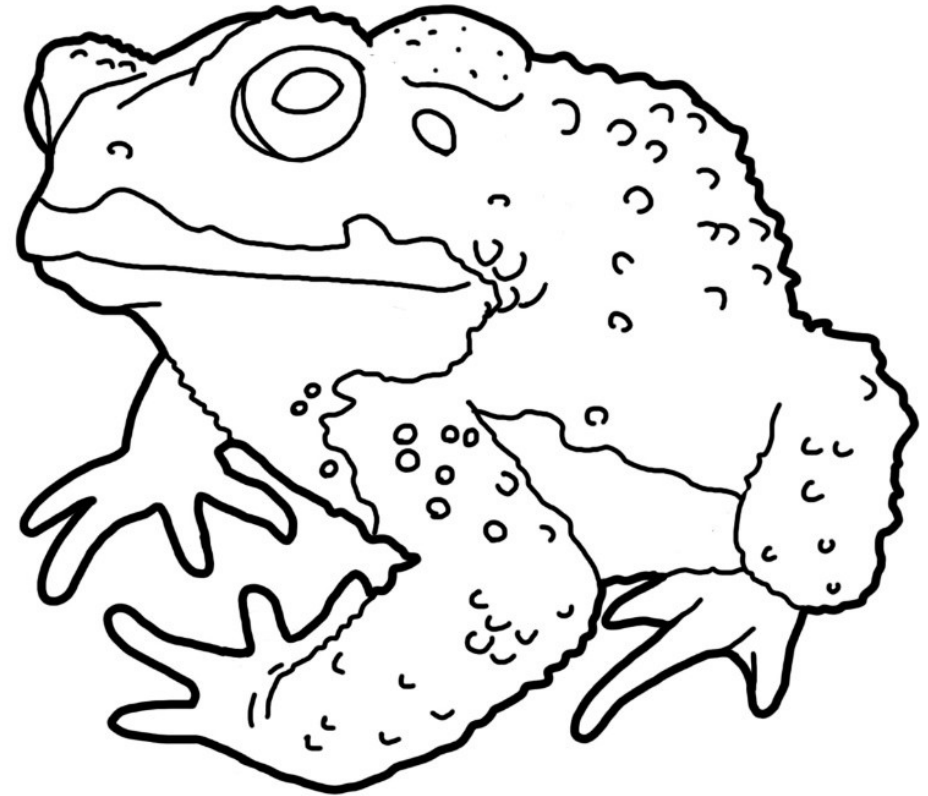
Order: Hemiptera (True bugs)

Traits: Brown or green; large and flat

Size: Up to 3 inches

Habitat: Streams, ponds, and vernal pools

AMERICAN TOAD



Scientific name: *Anaxyrus americanus*

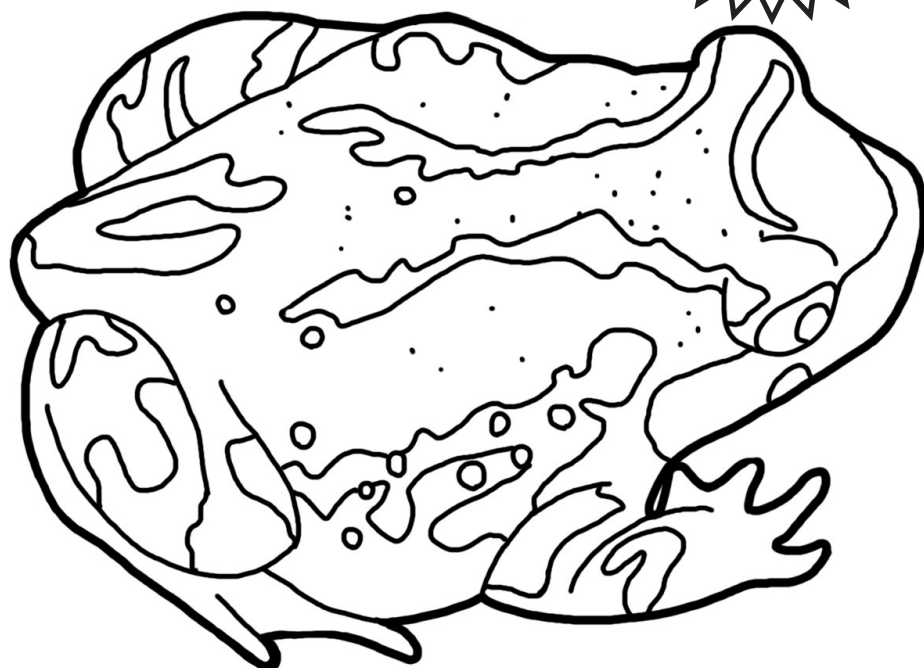
Traits: Brown, dry, bumpy skin and relatively short legs

Size: 2 to 4 inches

Habitat: Forests, fields, lawns, and wetlands

Song: Long trill (up to 30 seconds)

EASTERN SPADEFOOT



Scientific name: *Scaphiopus holbrookii*

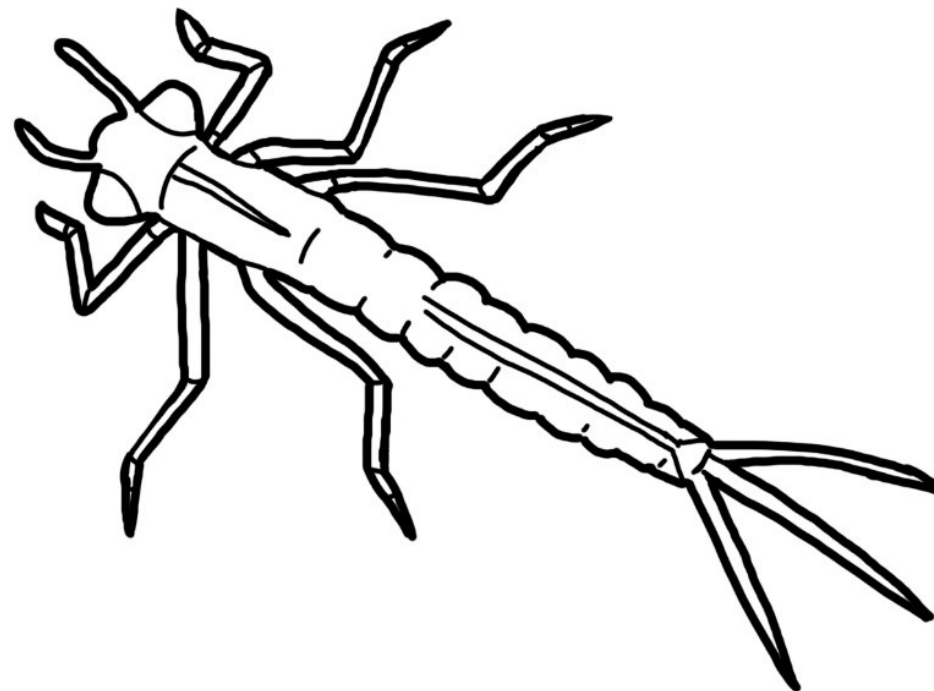
Traits: Brown with tan to yellow markings; two lines form an hour glass on its back; bumpy; light belly

Size: 1 to 3 inches

Habitat: Underground in dry and sandy areas; lay eggs in shallow pools that dry quickly

Song: Deep whine sounding like “waaaah” or “eeeh”

DAMSELFY LARVA



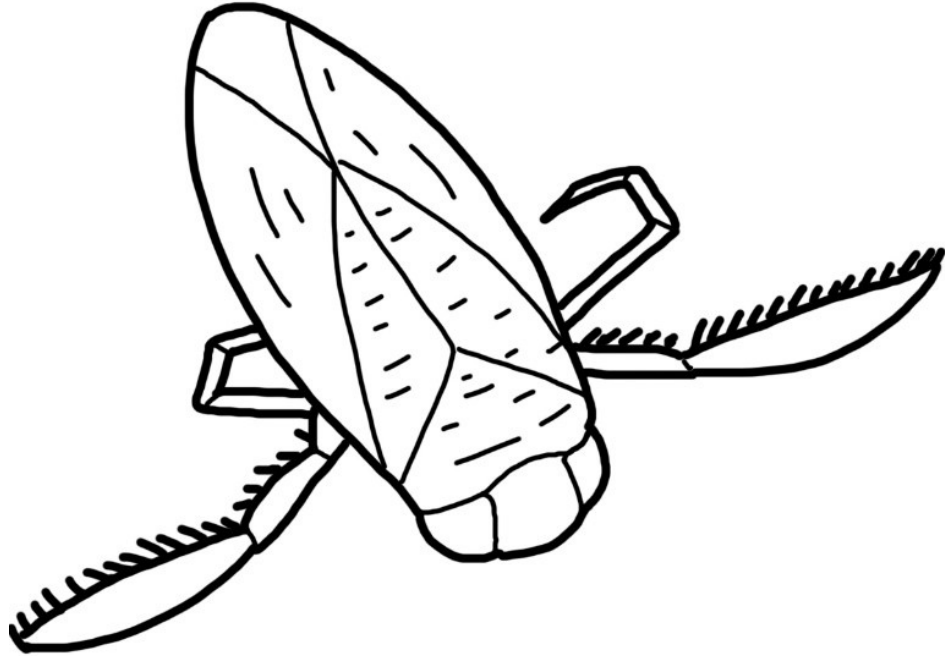
Order: Odonata (Dragonflies and relatives)

Traits: Brown; long and thin body; “tail” consists of three gills

Size: Up to 2 inches

Habitat: Ponds, vernal pools, bogs, lakes, streams, and rivers

WATER BOATMAN



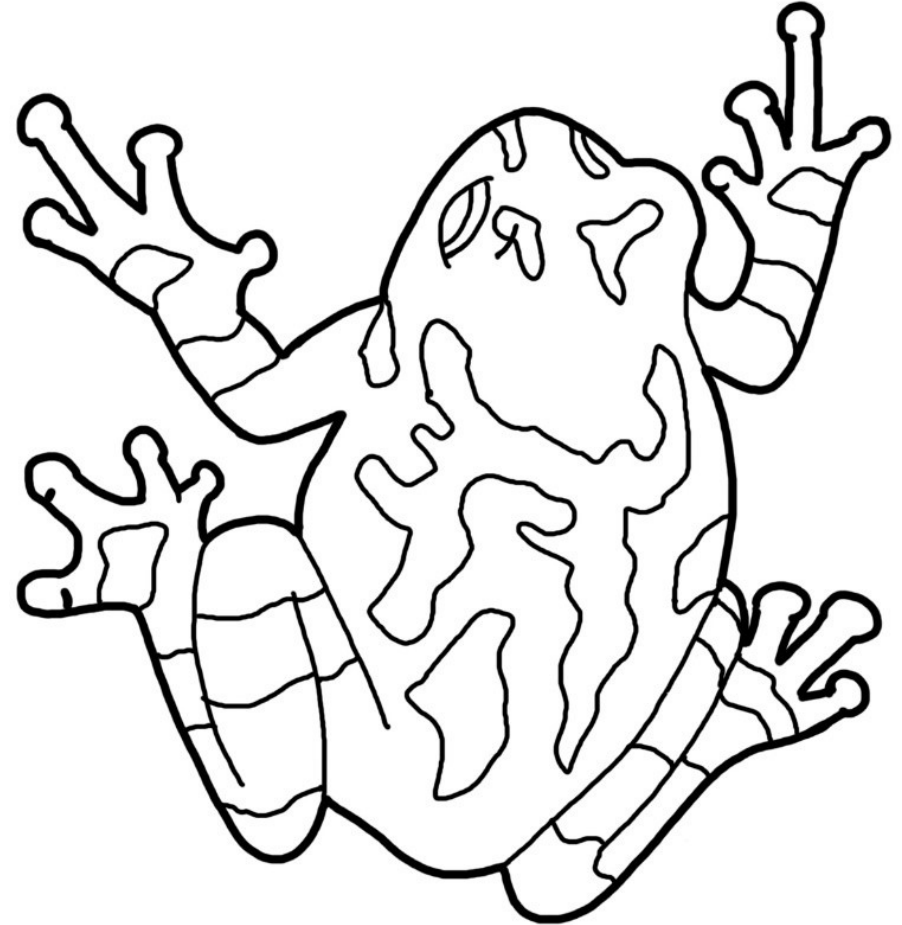
Order: Hemiptera (True bugs)

Traits: Brown to yellow with black stripes and long paddle-like legs

Size: Up to one half-inch

Habitat: Ponds, lakes, vernal pools, rivers, and streams

GRAY TREEFROG



Scientific name: *Hyla versicolor*

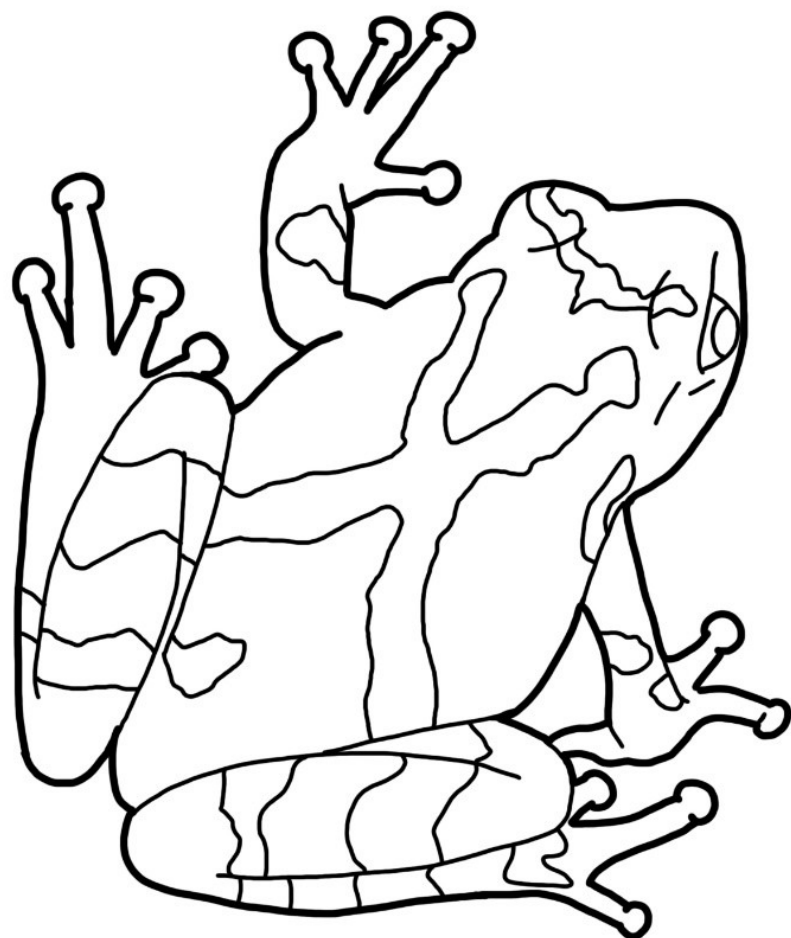
Traits: Gray, brown, or green with dark splotches; the end of each finger is a suction cup allowing the frog to climb

Size: 2 to 4 inches

Habitat: In trees; often found hiding in pipes and bird houses

Song: Short trill

SPRING PEEPER



Scientific name: *Pseudacris crucifer*

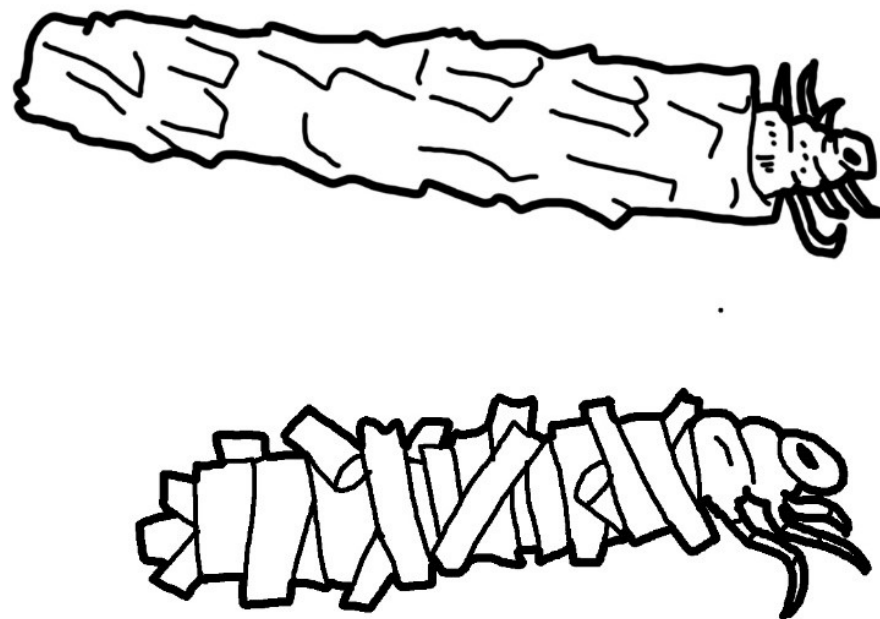
Traits: Tiny; dark blotches on their brown back form an “X” and suction cups on their fingers allow the frogs to climb

Size: 0.5 to 1.5 inches

Habitat: Forests near ponds, especially brushy areas; lay eggs in pools that stay wet most of the year

Song: Loud, high-pitched peep

CADDISFLY LARVA



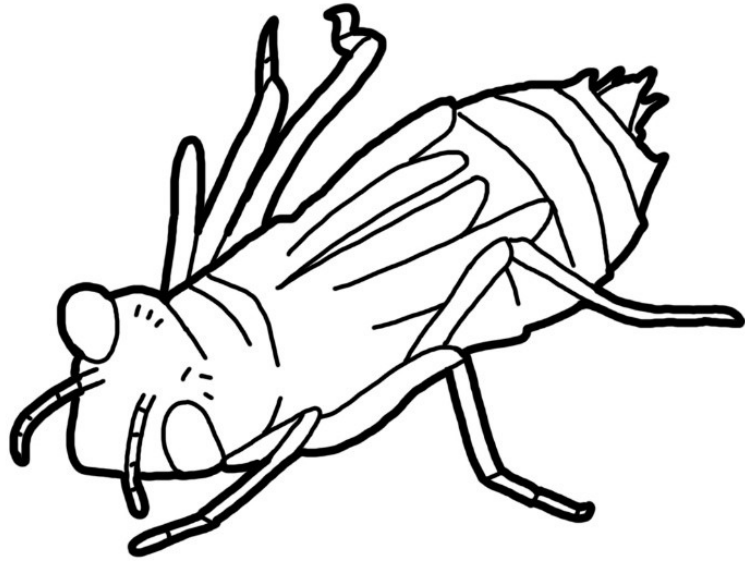
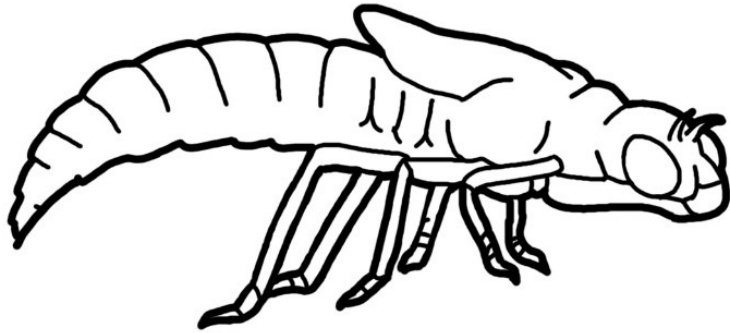
Order: Trichoptera (Caddisflies)

Traits: Brown caterpillar-like bodies surrounded by a case made of twigs, leaves, and stones

Size: 1 to 3 inches

Habitat: Ponds, lakes, vernal pools, rivers, and streams

DRAGONFLY LARVA



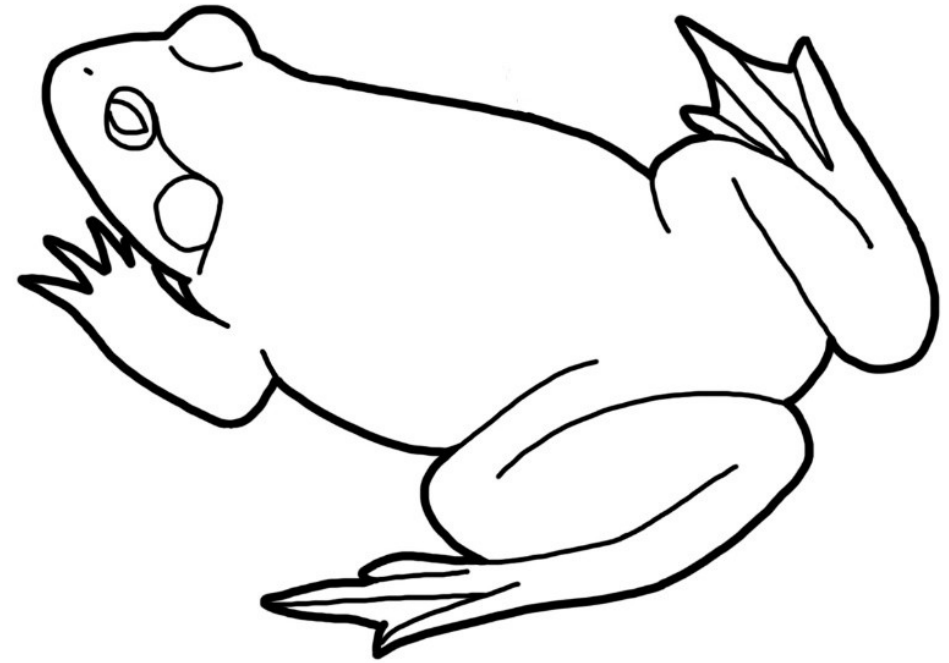
Order: Odonata (Dragonflies and relatives)

Traits: Brown and bulky; large heads and abdomen; short antennae; extendable lower jaw

Size: Up to 1 inch

Habitat: Still or slow-moving water in vernal pools, ponds, lakes, rivers, and streams

BULLFROG



Scientific name: *Lithobates catesbeianus*

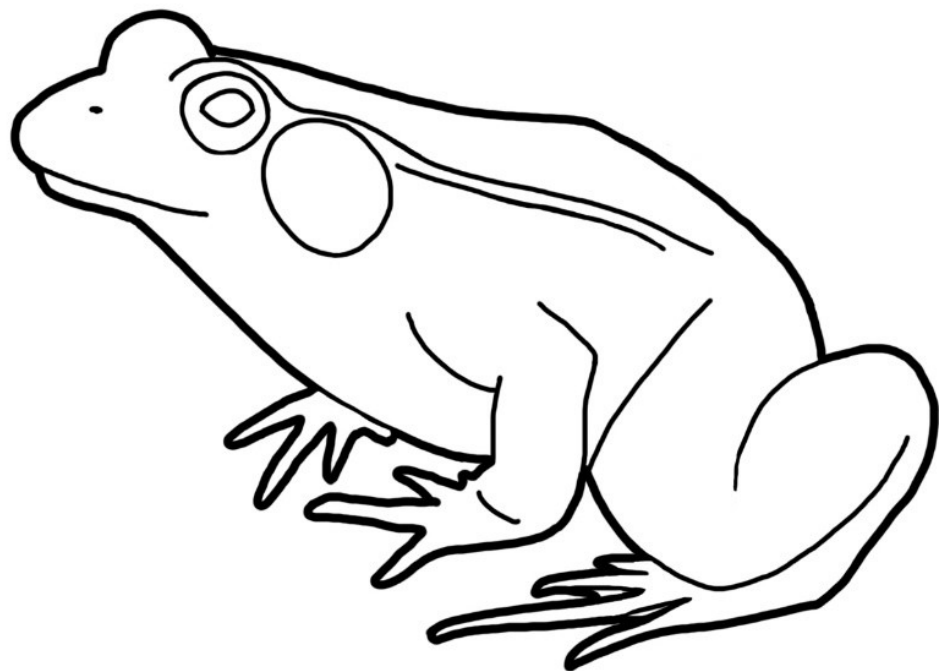
Traits: Green or brown with a light belly; a ridge reaches from the eyes to the ears, but not down the back; they can have small spots

Size: 4 to 8 inches

Habitat: Lakes, ponds, streams, and vernal pools; lay eggs in lakes and ponds

Song: Deep bellow sounding like “jug-o-rum”

GREEN FROG



Scientific name: *Lithobates clamitans*

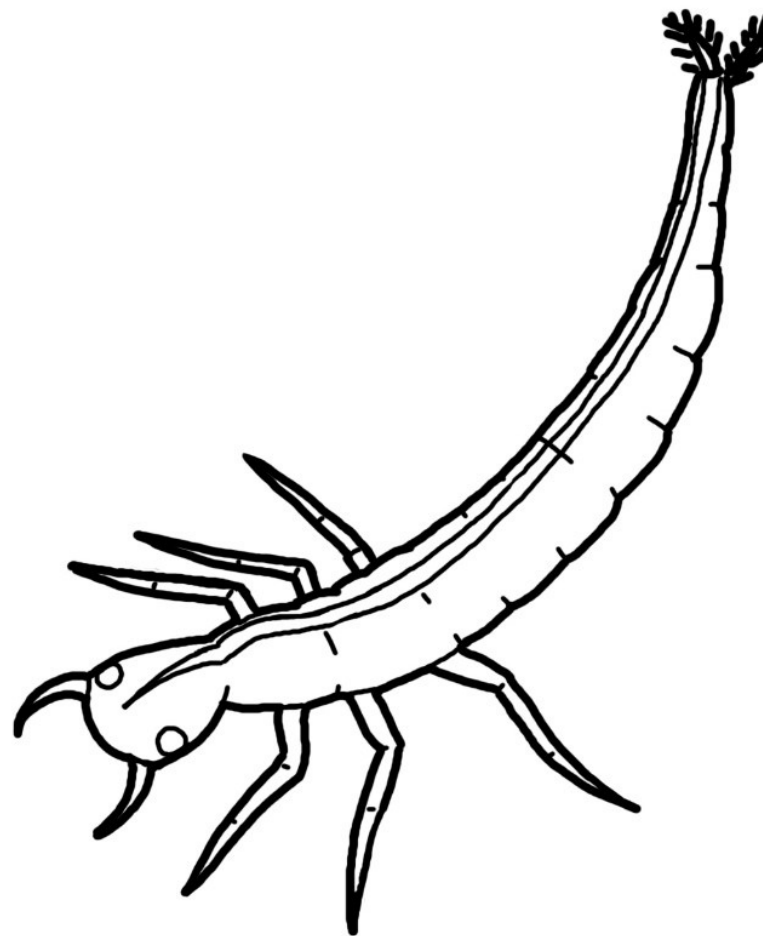
Traits: Green or brown with a light belly; ridge reaches from the eyes down the back to the waist; can have spots

Size: 2 to 4 inches

Habitat: Lakes, ponds, streams, and vernal pools

Song: Rubber band twanging or plucked banjo string

PREDACEOUS DIVING BEETLE LARVA
(WATER TIGER)



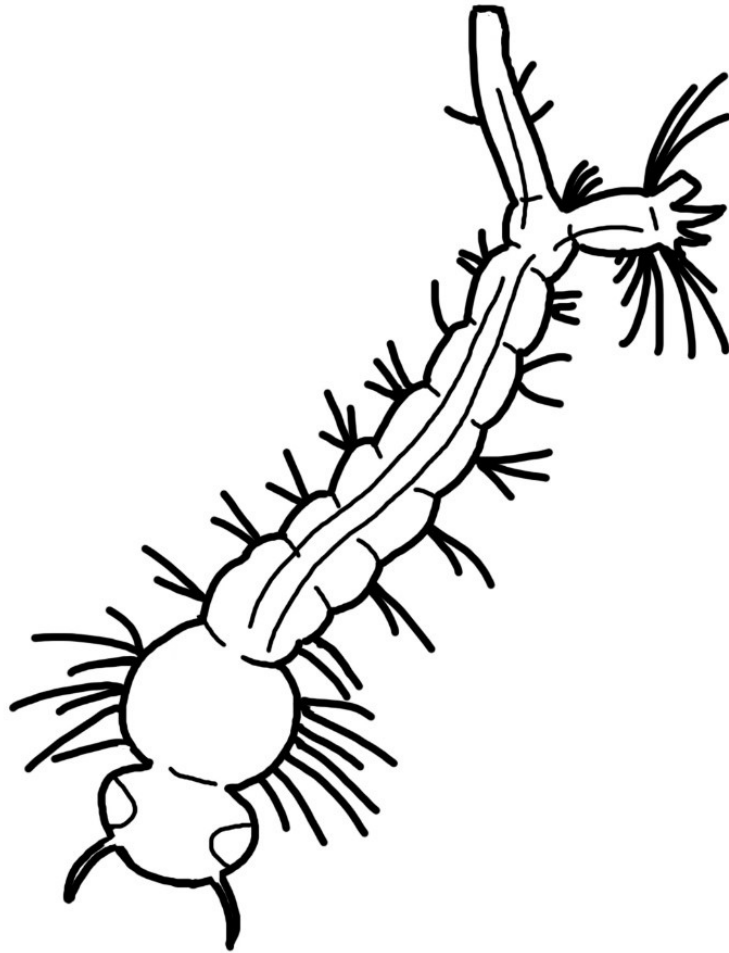
Order: Coleoptera (Beetles)

Traits: Brown with a thick abdomen and large mouth pinchers

Size: 1 to 3 inches

Habitat: Slow or still water in vernal pools, ponds, and streams

MOSQUITO LARVA



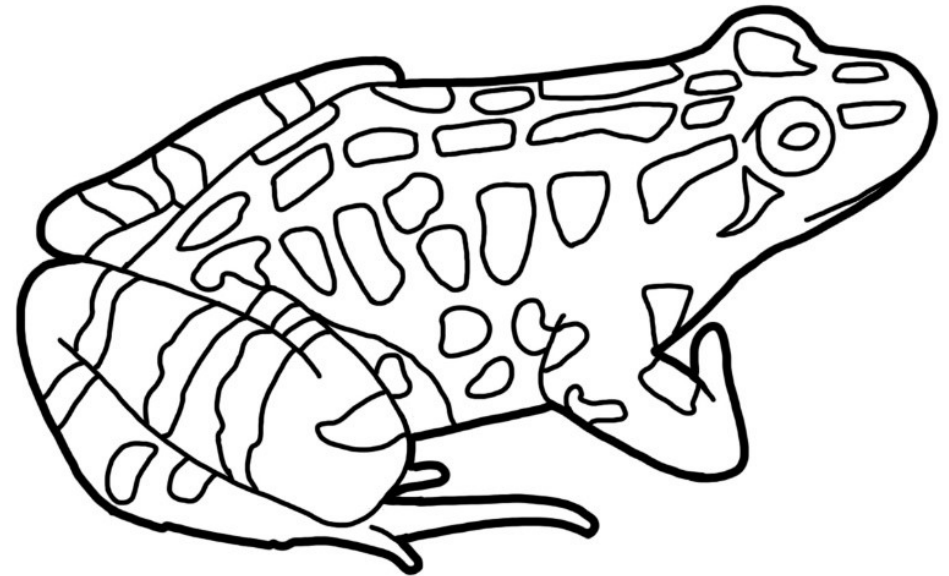
Order: Diptera (True Flies)

Traits: Brown wriggling body, often resting just under the water surface

Size: Up to one half-inch

Habitat: Still water such as in swamps, vernal pools, ditches, and bird baths

PICKEREL FROG



Scientific name: *Lithobates palustris*

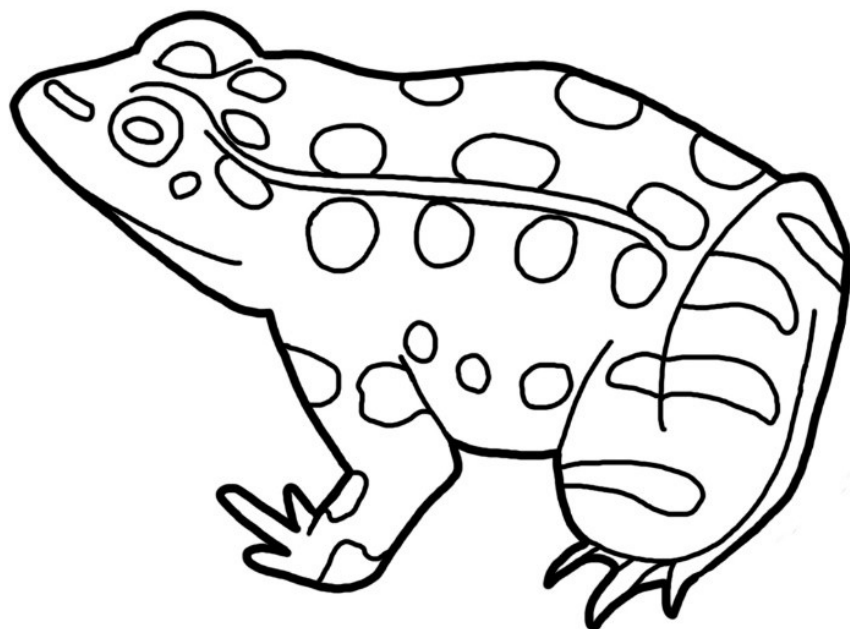
Traits: Brown or green with dark brown rectangles; the bottom of their legs and lower belly is bright yellow to orange

Size: 1 to 3 inches

Habitat: Lakes, ponds, streams, and fields

Song: Low-pitched snore or creaking door

NORTHERN LEOPARD FROG



Scientific name: *Lithobates pipiens*

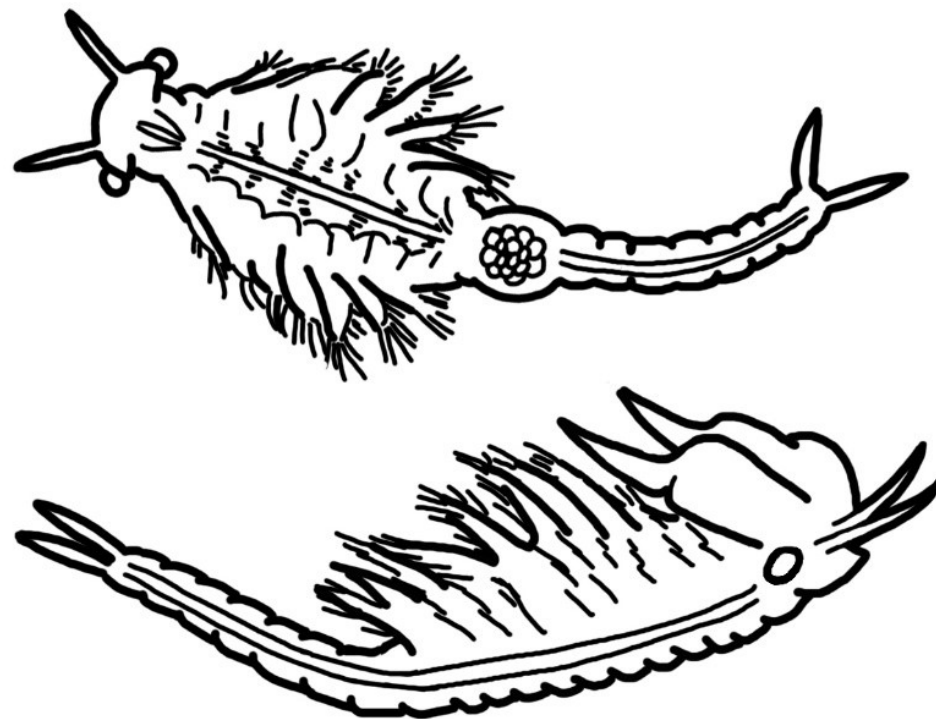
Traits: Green or brown with dark ovals; the bottom of their back legs is gray or white

Size: 2 to 4 inches

Habitat: Fields, forests, lakes, ponds, and streams

Song: Chuckle or snore

FAIRY SHRIMP



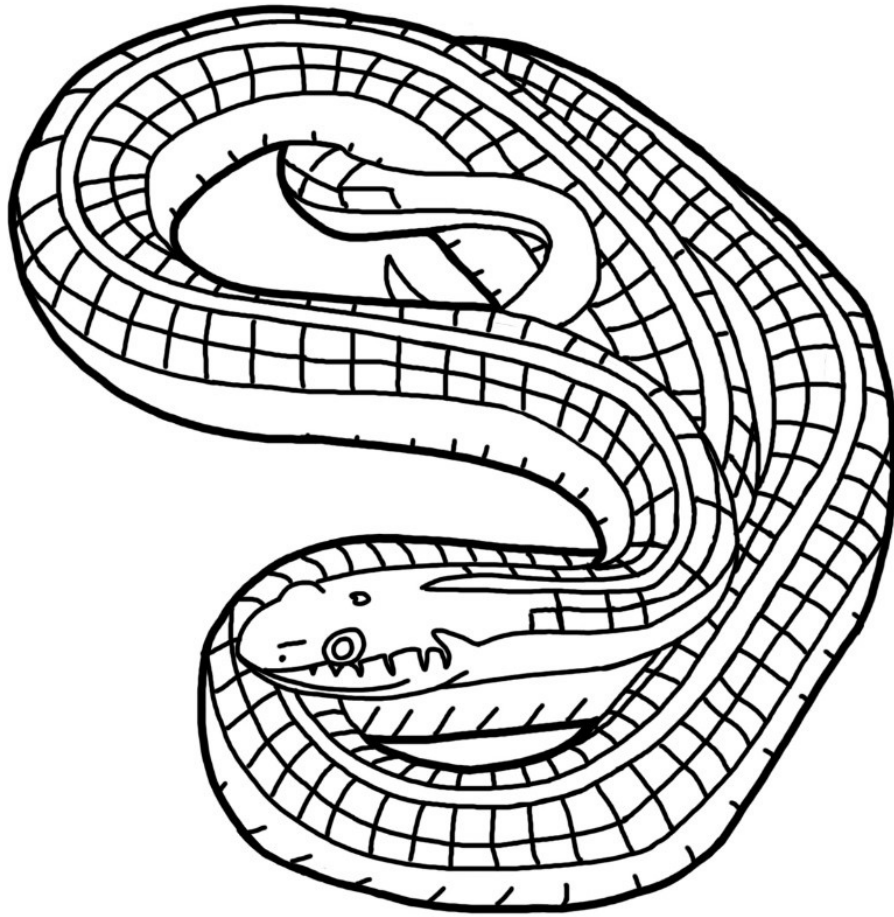
Order: Anostraca (Fairy Shrimp)

Traits: Pink to orange; swim on their back by paddling their legs; females carry eggs on their back

Size: One half-inch to 2 inches

Habitat: Vernal pools

COMMON GARTER SNAKE



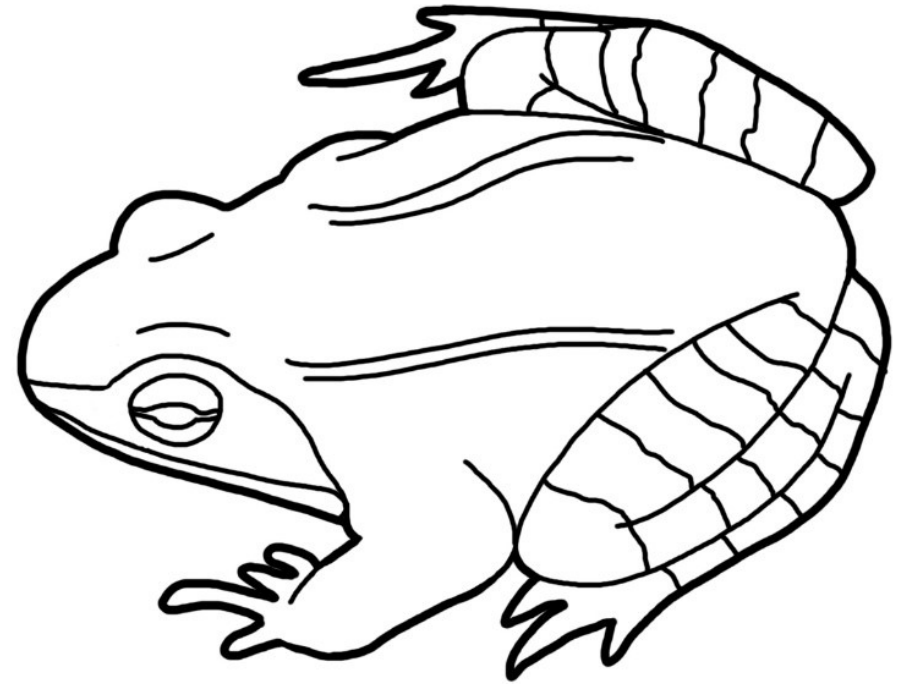
Scientific name: *Thamnophis sirtalis*

Traits: Brown or black with yellow stripes; area between stripes is checkered with light and dark squares; light belly; lips have faint stripes

Size: 9 to 25 inches

Habitat: Forests, fields, and swamps; often visit vernal pools to eat frogs and slugs

WOOD FROG



Scientific name: *Lithobates sylvaticus*

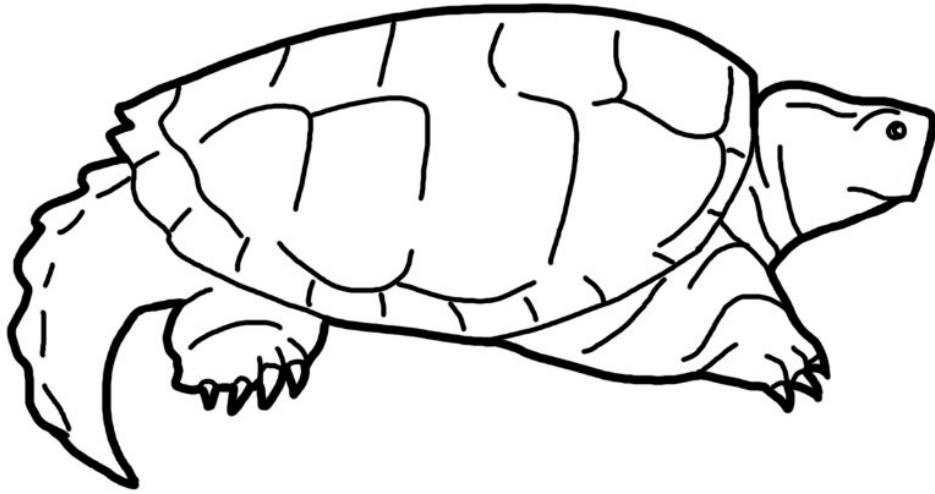
Traits: Brown to pink with white lips and a dark brown mask

Size: 1 to 3 inches

Habitat: Wet spots in the forest; lay eggs in vernal pools in the spring

Song: Chuckle or duck-like quack

COMMON SNAPPING TURTLE



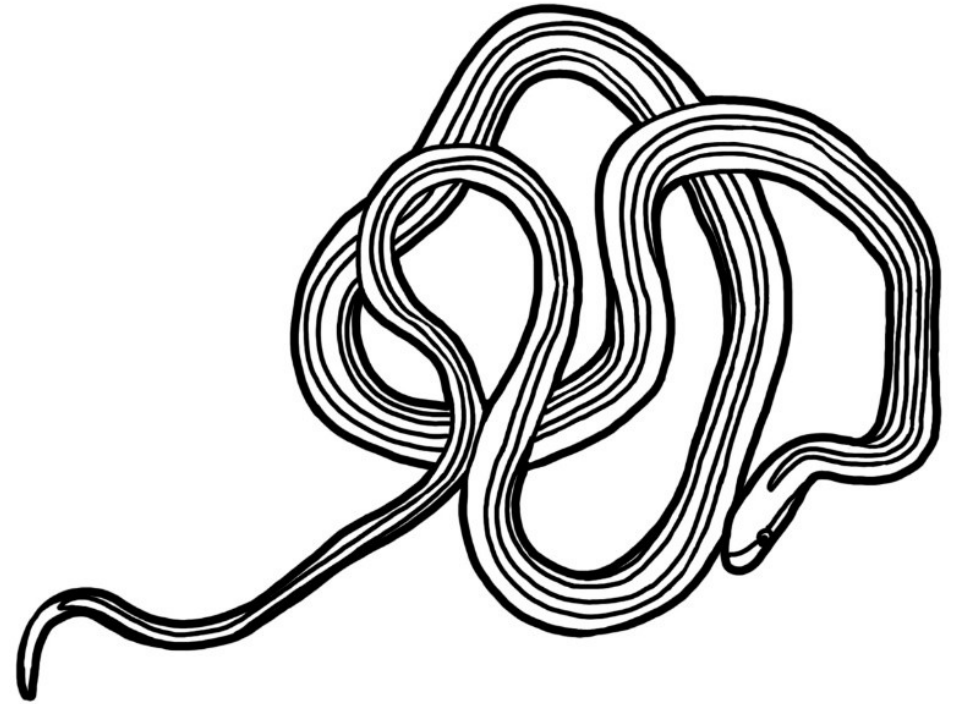
Scientific name: *Chelydra serpentina*

Traits: Brown, with spikes along the top of the tail and back of the shell

Size: Shell up to 20 inches long

Habitat: Lakes, ponds, swamps, streams, rivers; will visit vernal pools to eat tadpoles and insects

RIBBON SNAKE



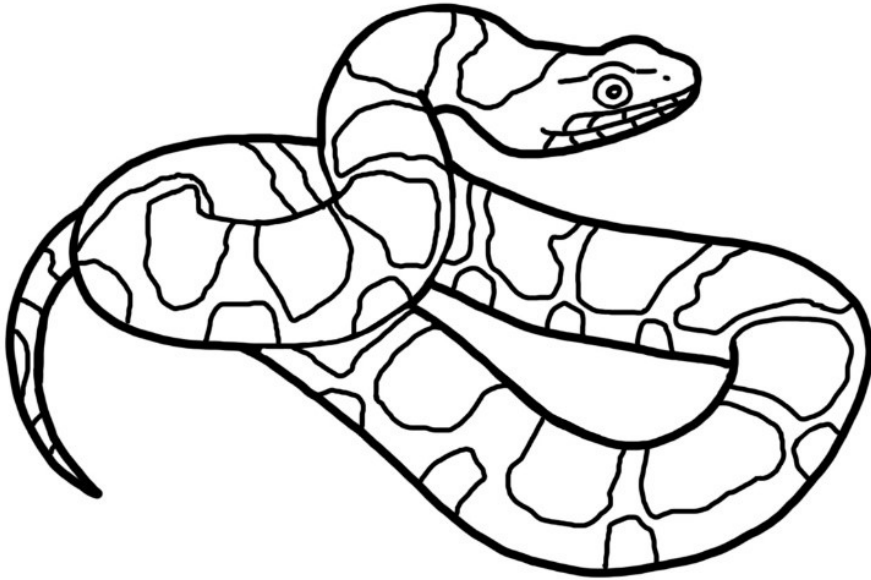
Scientific name: *Thamnophis sauritus*

Traits: Dark brown or black body with yellow stripes and a light belly; no checkers on their sides nor stripes on their lips

Size: Up to 28 inches

Habitat: Ponds, streams, swamps, and vernal pools

NORTHERN WATER SNAKE



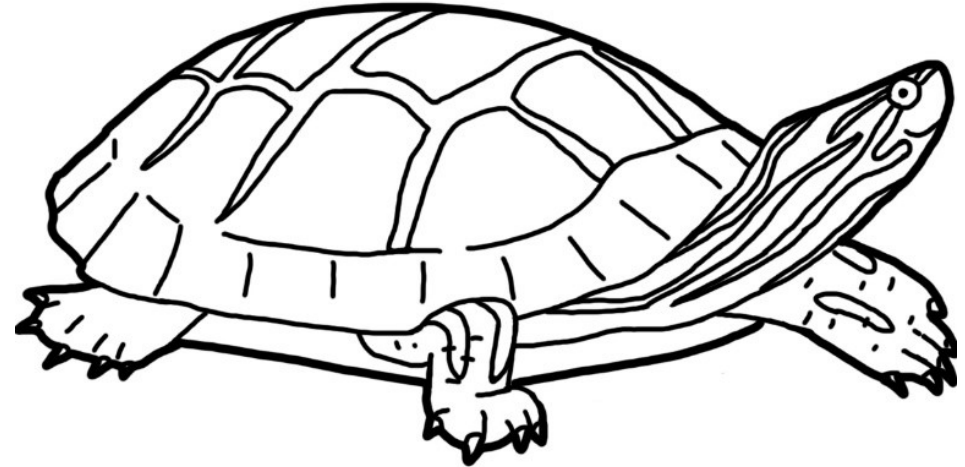
Scientific name: *Nerodia sipedon*

Traits: Brown to gray with brown, black, or red blotches

Size: 24 to 42 inches

Habitat: Ponds, lakes, streams, vernal pools, and swamps; often found basking in sunny spots along the edge of the water

PAINTED TURTLE



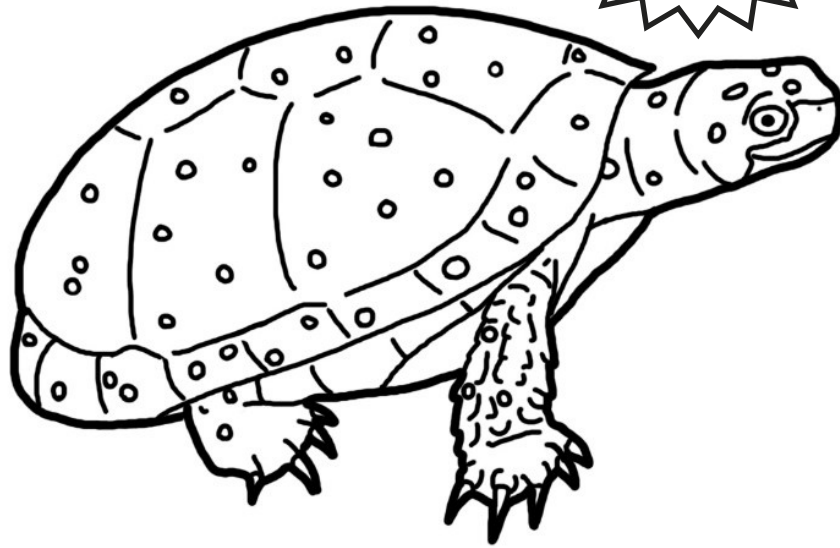
Scientific name: *Chrysemys picta*

Traits: Dark green, brown, or black shell with scales outlined in light brown; underside of the edge of the top shell has red lines outlined in black; yellow belly

Size: Shell up to 7 inches long

Habitat: Ponds, lakes, swamps, and streams; will visit vernal pools to eat tadpoles and insects

SPOTTED TURTLE



New York
Species of
Special Concern

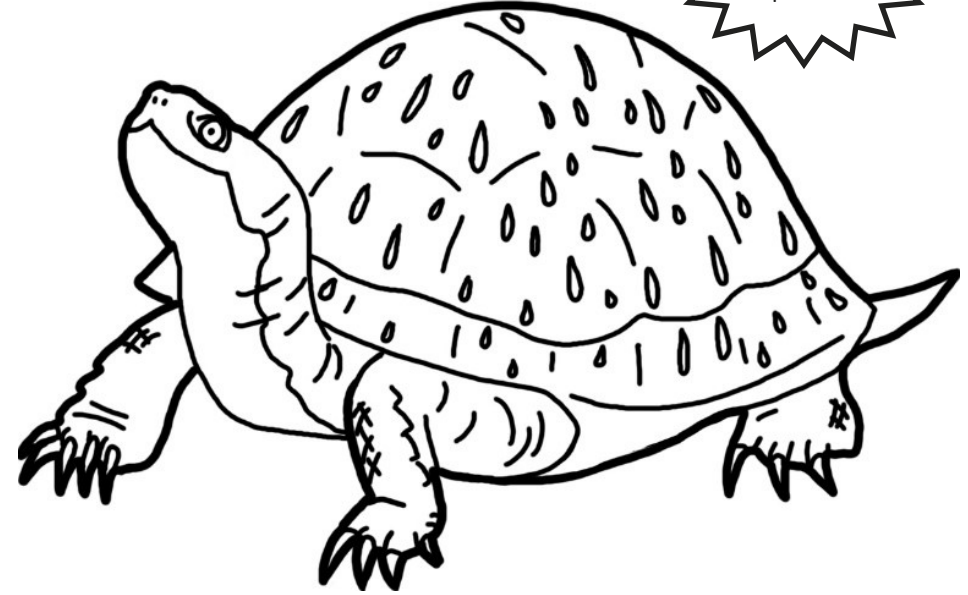
Scientific name: *Clemmys guttata*

Traits: Black with yellow spots; females have yellow chins

Size: Shell is 3 to 5 inches

Habitat: Vernal pools, swamps, shallow ponds, fields, and forests

BLANDING'S TURTLE



New York
Threatened
Species

Scientific name: *Emydoidea blandingii*

Traits: Black shell with yellow streaks that look like dripped paint; yellow chin and throat

Size: Shell 7 to 9 inches

Habitat: Ponds, marshes, and swamps; will stop at vernal pools to rest before laying eggs on land