

Atlas of Missouri Amphibians and Reptiles for 2025



Richard E. Daniel and Brian S. Edmond

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Introduction

Since 1988, members of the Missouri Herpetological Association have compiled new county distribution records for amphibians and reptiles native to the state (Daniel *et al.* 2025 and previous updates). Cumulative accounts of these new records were presented in Powell *et al.* (1993), Powell and Daniel (1997), and Daniel and Edmond (2002). Johnson (2000) presented revised distribution maps based on a combination of these cumulative accounts and more recent annual compilations. The publication of Johnson (1987, 2000) renewed interest in expanding our knowledge of the distribution of the state's herpetofauna. Briggler and Johnson (2021) published an updated version of the *The Amphibians and Reptiles of Missouri* that incorporated all *Atlas* records up until that time. In order to provide herpetologists working in Missouri with current information that is easily taken into the field, we are presenting revised species distribution and county records maps in a format that can be easily updated as new records are documented.

In 1997, with the initiation of the Missouri Herpetological Atlas Project (MOHAP), a database was established to serve as the basis for verifying new distribution records and tracking changes in individual species distributions within the state (Edmond and Daniel 2026). Qualification for inclusion in the database requires a catalogued voucher specimen housed in an institutional collection (Appendix A). However, in order to be valuable in tracking changes in the distribution of individual species, it is important to document historical records. Many of the specimens collected prior to the 1970s, most notably those reported by Hurter (1911) and Anderson (1965), were documented by specimens that have since been lost or destroyed. In order to provide the most accurate picture of the distribution of the state's herpetofauna we have included some literature records (Appendix B).

Some records were not included because the identification could not be determined with certainty. Within Missouri, the *Dryophytes versicolor* complex consists of two broadly sympatric and morphologically indistinguishable species (*D. chrysozelis* and *D. versicolor*). Specimens collected for which the species identification was not determined by some non-morphological trait were not included.

Currently, the MOHAP database contains 38,958 entries and 34,819 valid, non-duplicated collections. This represents specimens housed in 37 museum collections and cited from 34 historical literature sources; 5,363 documented county records; 11,200 unique localities; and 18,556 unique species / locality combinations. This new total constitutes 603 new database entries since the 2023 edition of the *Atlas* (Daniel and Edmond 2024). The total number of species contained in the current edition of the atlas is 119, comprised of 117 native species and 2 non-native species. We follow the most recent SSAR Checklist (Nicholson 2025) with an adjustment to some common names.

Previous editions of the atlas are available upon request. Readers may also contribute new records for the project. The MOHAP web site (Edmond and Daniel 2026)

contains project details. Questions, comments, and suggestions should be directed to the senior author.

Distribution

Distribution is one of many characteristics used to describe a species and range maps (such as those found in Conant and Collins (1998)) are used to approximate a species' likely distribution. This atlas uses locality dot maps, with each dot representing a known locality for that species. This conservative method results in an underestimate of a species distribution but is more accurate than a range map. The purpose of the atlas project is to document as closely as possible both current and historical distributions for all native amphibians and reptiles in Missouri.

However, the printed version of the atlas only reflects the best historical approximation of each species' distribution in the state. The most noticeable resulting incongruity is that fact that some species are shown in historical localities in which they are almost certainly no longer found. For example, the Smooth Greensnake (*Opheodrys vernalis*) was once found in scattered populations in the prairie regions of the state. Due to extensive habitat loss and possibly other reasons, they are extremely rare or extirpated in the state.

While natural communities have long been a staple in ecology, formal classification of natural communities has been undertaken relatively recently in Missouri (Nelson 2005). Like individual species, natural communities can be described and characterized with distinct distributions and abundances in different ecoregions (see next section). For example, glades are common in the Ozarks but rare elsewhere in the state. Steyermark (1963), Yatskievych (1999), Pflieger (1989), Hawker (1992), and Unklesbay and Vineyard (1992) all describe and summarize the complex interplay among geology, natural history, ecoregions, natural divisions, natural communities, and the passage of time from slightly different perspectives. Taken together, these ideas form the basis of the biogeography of Missouri and they are essential in understanding why plants and animals have the distributions that we see today.

Terrestrial Ecoregions

An ecoregion classification system attempts to define and describe geographic regions that correspond to broad ecosystem patterns, topography, geology, soils, vegetation patterns, and the distributions of plants and animals. Omernik (1987) described ecoregions (Levels I, II, and III) for the conterminous United States as a hierarchical scheme with Level I corresponding to large regions and Level III representing smaller, more precisely described regions. The Environmental Protection Agency (2003) is coordinating an effort to further subdivide Level III regions into Level IV regions. Nigh and Schroeder (2002) published Level III and Level IV ecoregions for Missouri.

Some amphibian and reptile species follow defined ecoregions closely. For example, the Cave Salamander (*Eurycea lucifuga*) is neatly confined to the Ozark

Highlands (Level III) and found throughout the ecoregion, with the exception of most of the Springfield Plateau (Level IV). Several species found in the southeastern alluvial plain are particularly characteristic and also confined to that area (e.g., Three-toed Amphiuma (*Amphiuma tridactylum*) and Southern Watersnake (*Nerodia fasciata*)).

Many species, however, seem to be abundant throughout Missouri, regardless of the region or natural community. The North American Bullfrog (*Lithobates catesbeianus*) and North American Snapping Turtle (*Chelydra serpentina*), among many others, fall into this category. Finally, many species are more closely associated with a particular natural community or habitat than with a particular ecoregion or natural division. For example, The Flat-headed Snake (*Tantilla gracilis*) can be found in the Ozark Highlands, Osage Prairie, and Interior River Valleys and Hills but it is restricted to rocky glades.

In general, Level IV ecoregions are too granular to be useful in describing the distributions of Missouri amphibians and reptiles, several Ozark salamander species and many of the coastal plains species being notable exceptions. However, this level of detail is useful to understand natural community distributions on which some species are dependent. It also underscores the importance of looking at border states and across artificial political boundaries to understand distributions within Missouri.

Level I (page 8), Level II (page 9), Level III (page 10), and Level IV (page 11) ecoregion maps for Missouri and surrounding states, based on Omernik (1987) and Nigh and Schroeder (2002) are included here. The hierarchy for Levels I, II, and III is included in Table 1 (below), while the Level III and Level IV hierarchy is included in Table 2 (below). Unfortunately, the authors' coding scheme for Level III is inconsistent, though the names do match. Both authors' codes for Level III are included in the tables as a cross-reference. An earlier approach by Thom and Wilson (1980) divided Missouri into natural divisions and sections (page 7), roughly corresponding to Level III and Level IV ecoregions, respectively.

Table 1. List of Level I, II, and III Terrestrial Ecoregions from Omernik (1987). Those regions marked with an asterisk (*) do not occur in Missouri but are sufficiently close to be of interest to Missouri biologists. Level III codes from Nigh and Schroeder (2002) are in parentheses.

- 8. Eastern Temperate Forests
 - 8.3. Southeastern USA Plains
 - 8.3.3. Interior Plateau* (71)
 - 8.3.6. Mississippi Valley Loess Plains (74)
 - 8.3.2. Interior River Valleys and Hills (72)
 - 8.4. Ozark / Ouachita / Appalachian Forests
 - 8.4.5. Ozark Highlands (39)
 - 8.4.6. Boston Mountains* (38)
 - 8.5. Southeast US Coastal Plain
 - 8.5.2. Mississippi Alluvial Plain (73)
- 9. Great Plains
 - 9.2. Temperate Prairies
 - 9.2.3. Western Corn Belt Plains (47)
 - 9.2.4. Central Irregular Plains (40)

Table 2. List of Level III and Level IV Terrestrial Ecoregions from Nigh and Schroeder (2002). Those regions marked with an asterisk (*) do not occur in Missouri but are sufficiently close to be of interest to Missouri biologists. Those regions marked with a caret (^) are contained entirely within the state's borders.

- 38. Boston Mountains* (8.4.6)
 - 38a. Upper Boston Mountains*
 - 38b. Lower Boston Mountains*
- 39. Ozark Highlands (8.4.5)
 - 39a. Springfield Plateau
 - 39b. Elk River Hills
 - 39c. White River Hills
 - 39d. Central Plateau
 - 39e. Osage / Gasconade River Hills^
 - 39f. Saint Francois Knobs / Basins^
 - 39g. Meramec River Hills^
 - 39h. Current River Hills^
 - 39i. Easter Ozark Border^
 - 39j. Black River Hills Border^
 - 39k. Prairie Ozark Border^
- 40. Central Irregular Plains (9.2.4)
 - 40a. Loess Flats and Till Plains
 - 40b. Osage Cuestas*
 - 40c. Wooded Osage Plains
 - 40d. Cherokee Plains
 - 40e. Claypan Prairie^
- 47. Western Corn Belt Plains (9.2.3)
 - 47d. Missouri Alluvial Plain
 - 47e. Steeply Rolling Loess Prairies
 - 47f. Rolling Loess Prairies
 - 47h. Nebraska / Kansas Loess Hills*
 - 47i. Loess and Glacial Drift Hills*
 - 47m. Western Loess Hills
- 71. Interior Plateau* (8.3.3)
 - 71m. Northern Shawnee Hills*
 - 71n. Southern Shawnee Hills*
- 72. Interior River Valleys and Hills (8.3.2)
 - 72a. Wabash / Ohio Bottomlands*
 - 72d. Upper Mississippi Alluvial Plain
 - 72e. Middle Mississippi Alluvial Plain
 - 72f. River Hills
 - 72g. Southern Ozarkian River Bluffs*
 - 72i. Western Dissected Illinoian Till Plain*
 - 72j. Southern Illinoian Till Plain*
 - 72k. Cretaceous Hills*
 - 72l. Karstic Northern Ozarkian River Bluffs*
- 73. Mississippi Alluvial Plain (8.5.2)
 - 73a. Northern Holocene Meander Belts
 - 73b. Northern Pleistocene Valley Trains*
 - 73c. Saint Francis Lowlands
 - 73f. Western Lowlands Holocene Meander Belts
 - 73g. Western Lowlands Pleistocene Valley Trains
- 74. Valley Loess Plains (8.3.6)
 - 74a. Bluff Hills
 - 74b. Loess Plains

Aquatic Subregions

Like terrestrial ecoregions, aquatic subregions can be classified in discrete units, based on watershed and hydrological characteristics. Subregions are composed of ecological drainage units, which are major watersheds that are consolidated based on similarity and proximity (MSDIS 2009a). Subregions and their component drainage units can be seen in Table 3 (below).

Naturally, many of the same patterns emerge in both terrestrial and aquatic geographic classifications since the two are not independent of one another. However, aquatic subregions and ecological drainage units can differ from their terrestrial counterparts since most aquatic organisms are confined to watersheds as well as specific habitats. Since many species of amphibians and reptiles are partially or wholly dependent on aquatic habitats, distributions can sometimes be best understood and explained by examining aquatic subregions, ecological drainage units, and even individual watersheds.

The base map for major rivers and streams (page 12) shows locations of actual rivers and streams inside Missouri and just outside the state's borders where appropriate (USGS 1994; MDC 2007b). The watershed boundaries map (page 13) displays the maximum terrestrial boundary for major watersheds (NRCS 2002). Both of these maps are underlain with unique background colors to display Missouri's primary drainage systems: a) Mississippi River, b) Missouri River, c) Arkansas River, and d) White River.

Some species found in the state exhibit distributions that can be better understood by referring to these primary drainage systems. The ecological drainage units map (page 14) shows a somewhat consolidated view of the watersheds map based on those watersheds and other characteristics. It is underlain with unique background colors showing the three broad aquatic subregions in the state. Still more detailed aquatic region classifications are available but often include areas based on very small creeks and their watersheds and are therefore not included here.

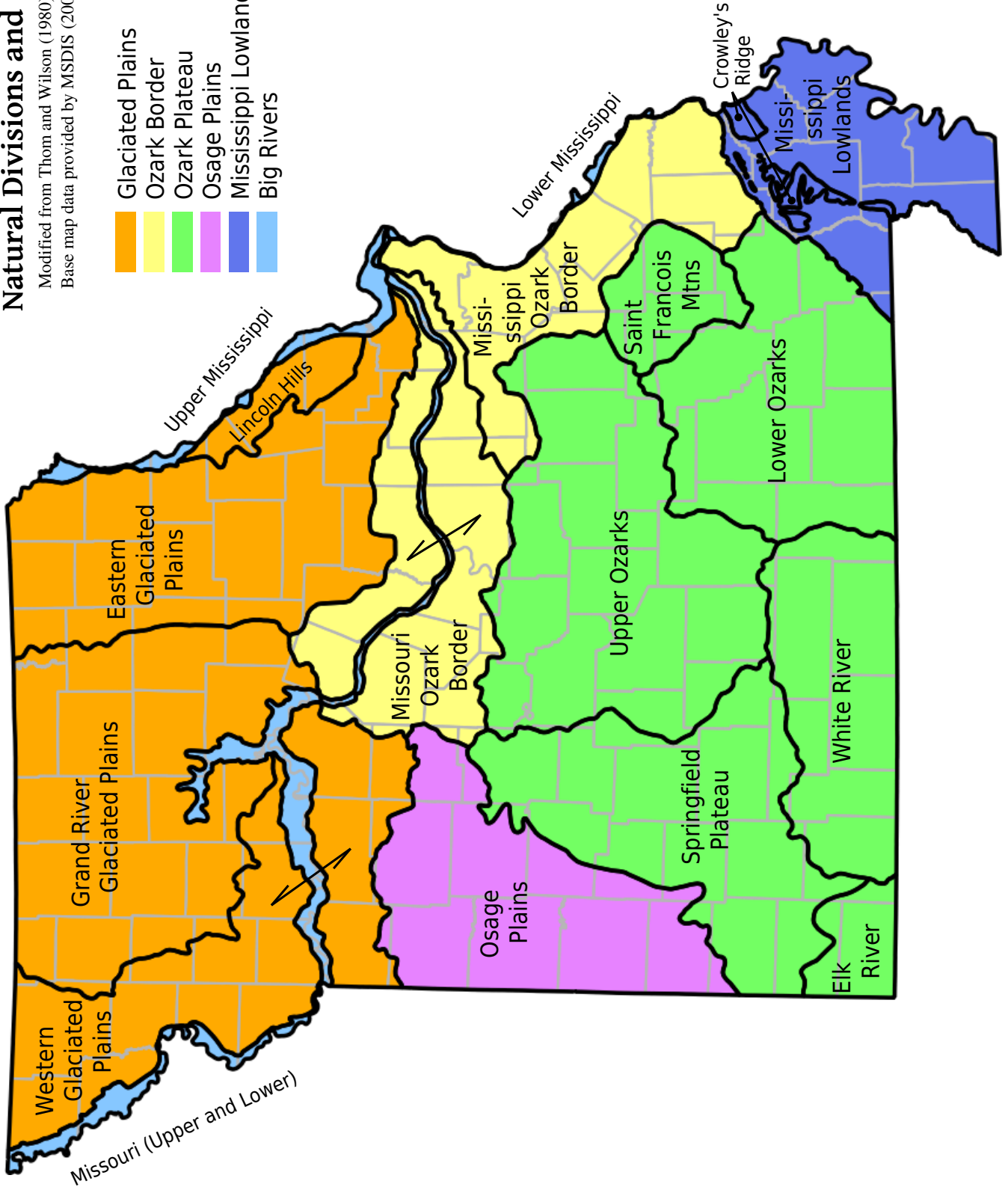
Table 3. List of Aquatic Subregions and Ecological Drainage Units from MSDIS (2009a, 2009c). Each drainage unit is indicated with its primary drainage system: a) Mississippi River, b) Missouri River, c) Arkansas River, d) White River.

- * Central Plains Subregion
 - * Blackwater / Lamine (b)
 - * Cuivre / Salt (a)
 - * Des Moines (a)
 - * Grand / Chariton (b)
 - * Kansas (b)
 - * Nishnabotna / Platte (b)
 - * Osage / South Grand (b)
- * Ozarks Subregion
 - * Apple / Joachim (a)
 - * Black / Current (d)
 - * Gasconade (b)
 - * Meramec (a)
 - * Moreau / Loutre (b)
 - * Osage (b)
 - * Neosho (c)
 - * Upper Saint Francis / Castor (a)
 - * White (d)
- * Mississippi Alluvial Subregion
 - * Black / Cache (a)
 - * Saint Francis / Little (a)
 - * Saint Johns Bayou (a)

Natural Divisions and Sections

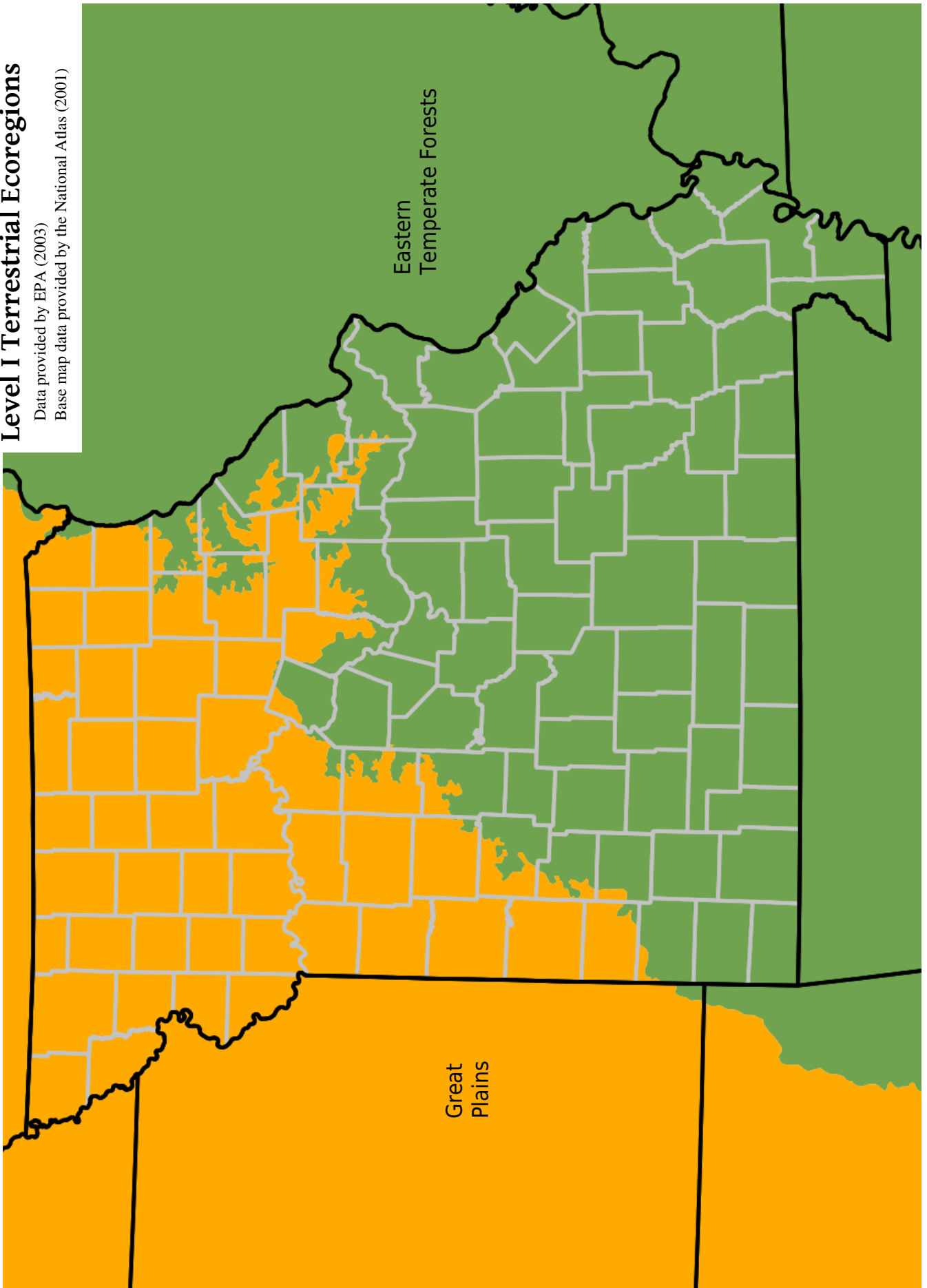
Modified from Thom and Wilson (1980)
Base map data provided by MSDIS (2009b) and MDC (2007a)

- Glaciated Plains
- Ozark Border
- Ozark Plateau
- Osage Plains
- Mississippi Lowlands
- Big Rivers



Level I Terrestrial Ecoregions

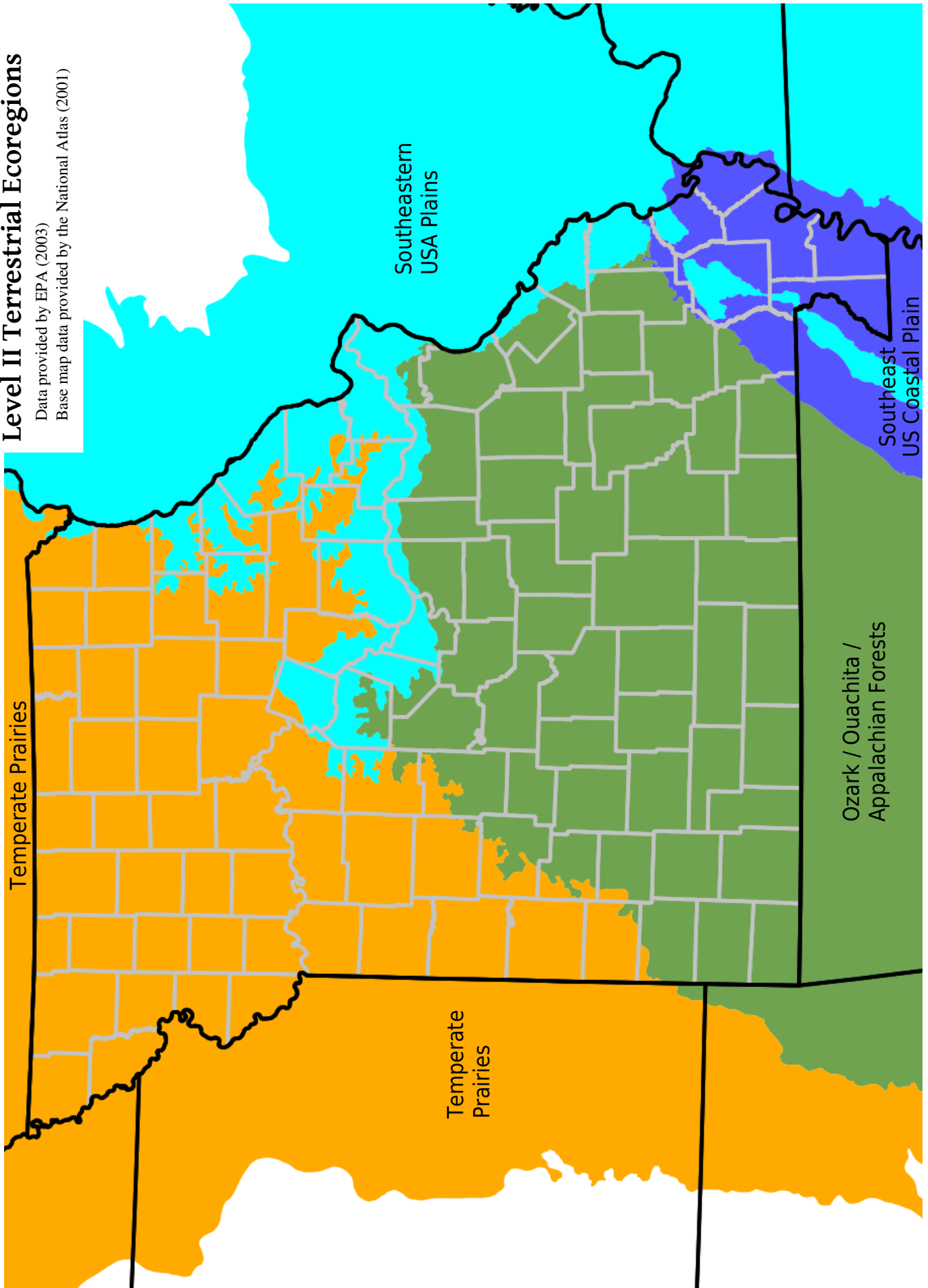
Data provided by EPA (2003)
Base map data provided by the National Atlas (2001)



Level II Terrestrial Ecoregions

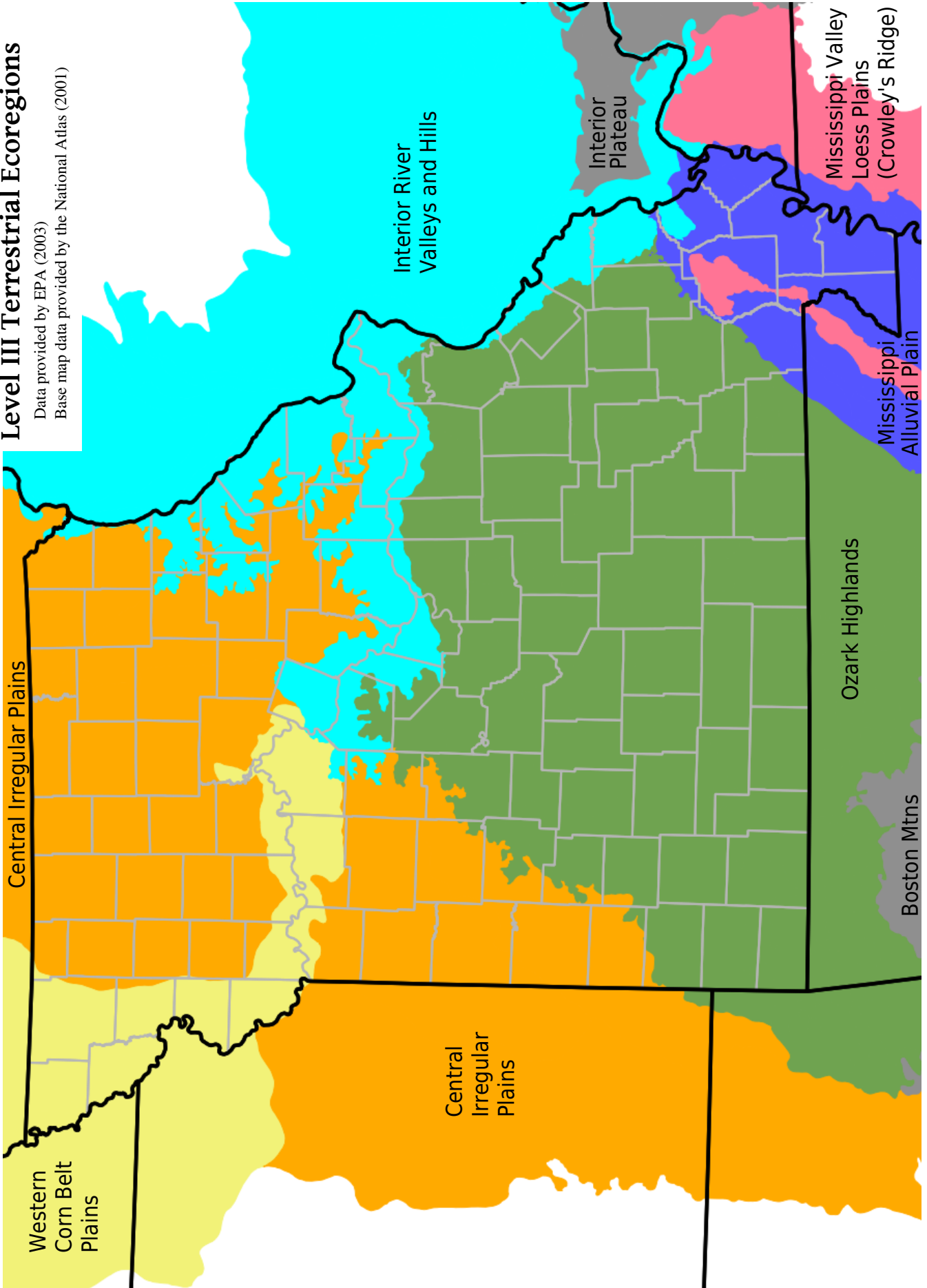
Data provided by EPA (2003)

Base map data provided by the National Atlas (2001)



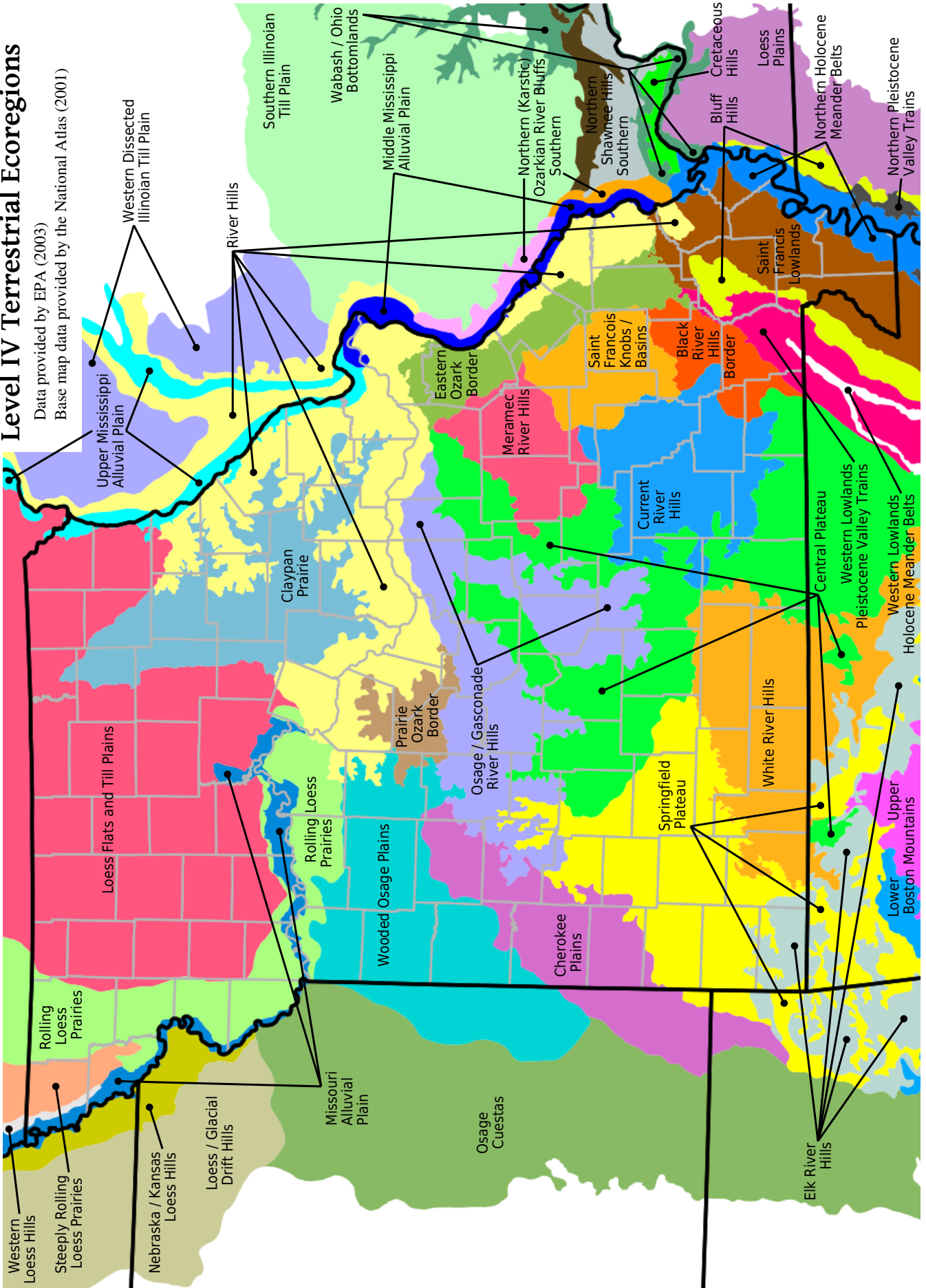
Level III Terrestrial Ecoregions

Data provided by EPA (2003)
Base map data provided by the National Atlas (2001)



Level IV Terrestrial Ecoregions

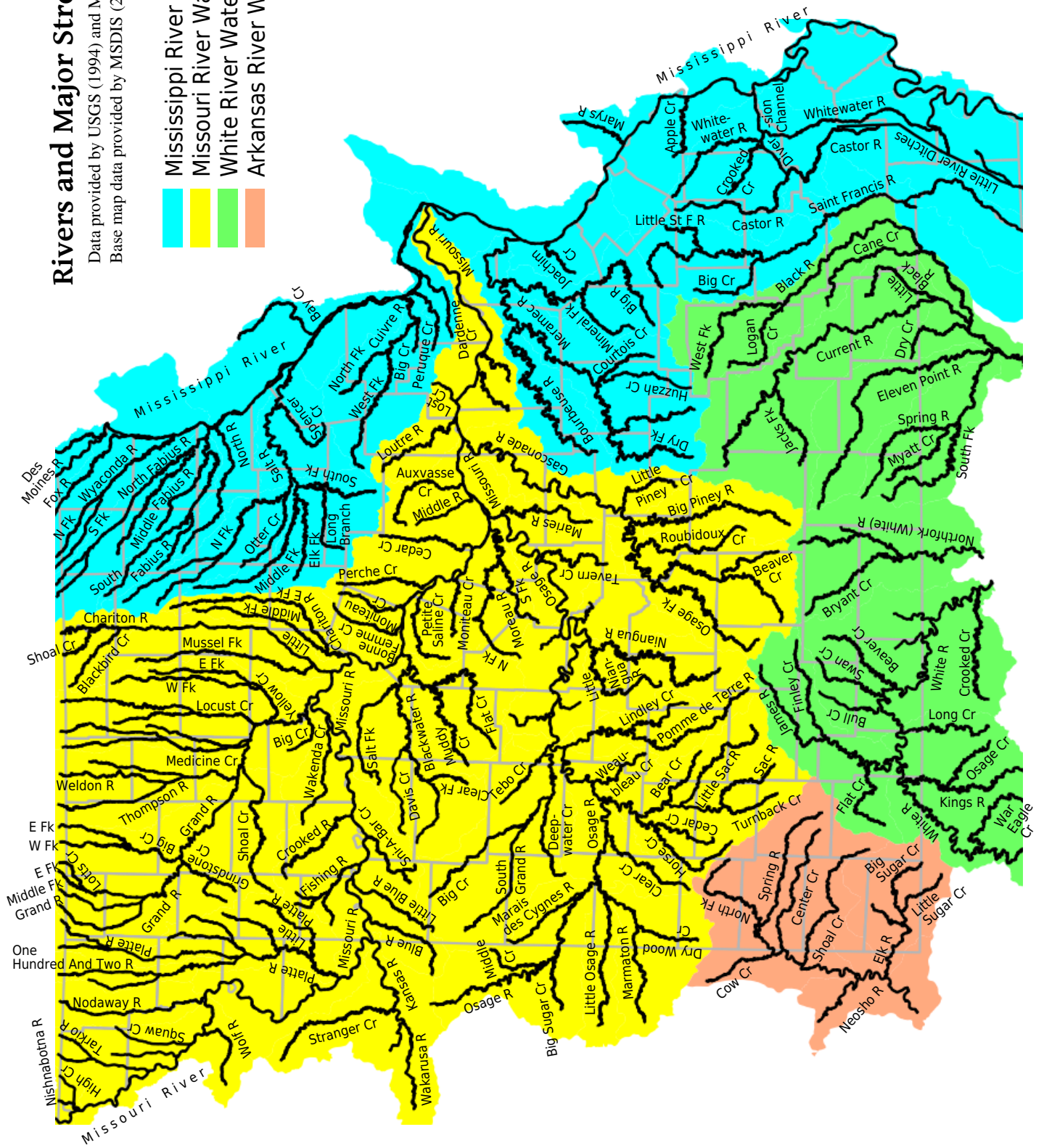
Data provided by EPA (2003)
Base map data provided by the National Atlas (2001)



Rivers and Major Streams

Data provided by USGS (1994) and MDC (2007b)
 Base map data provided by MSDIS (2009b)

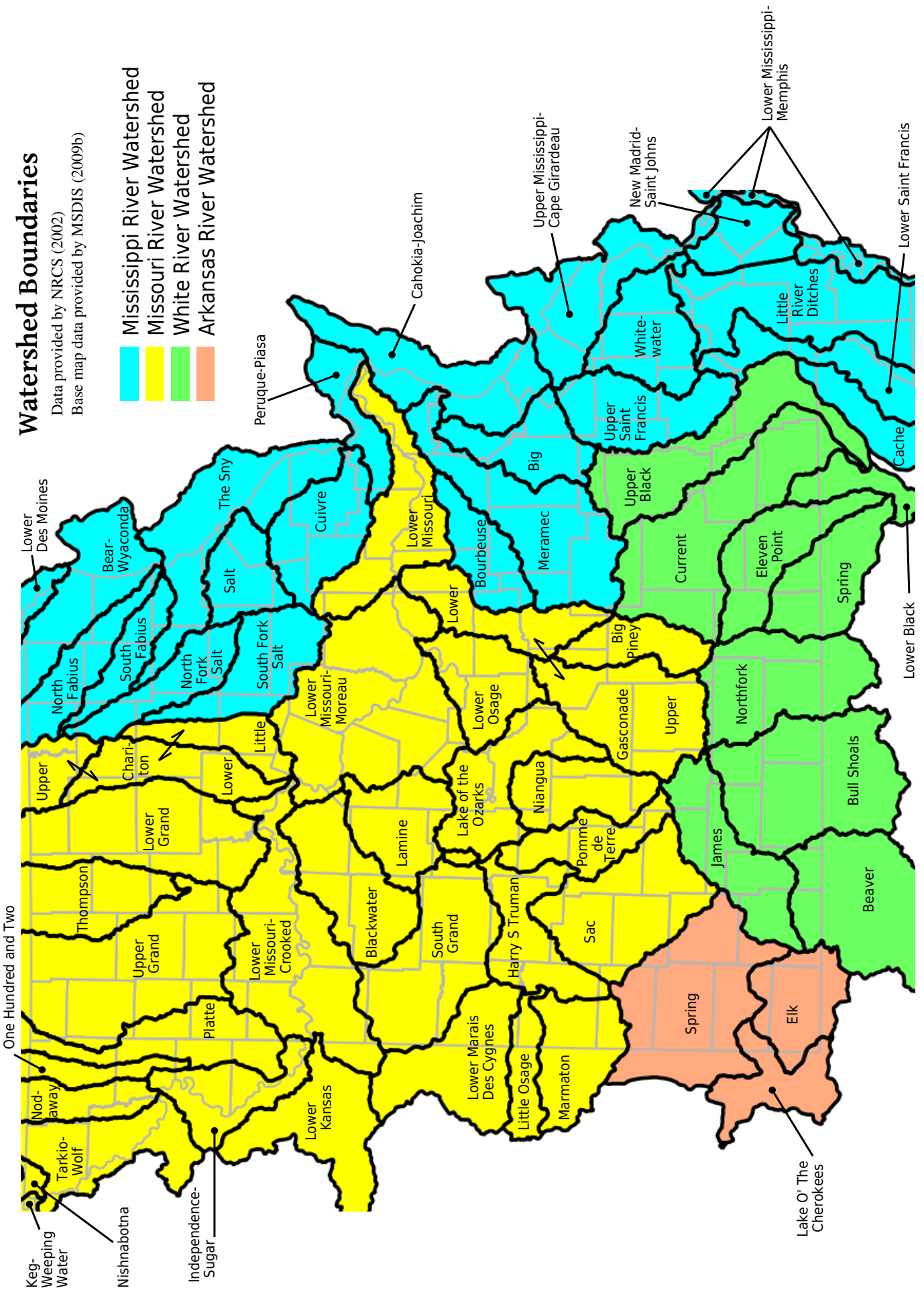
- Mississippi River Watershed
- Missouri River Watershed
- White River Watershed
- Arkansas River Watershed



Watershed Boundaries

Data provided by NRCS (2002)
 Base map data provided by MSDIS (2009b)

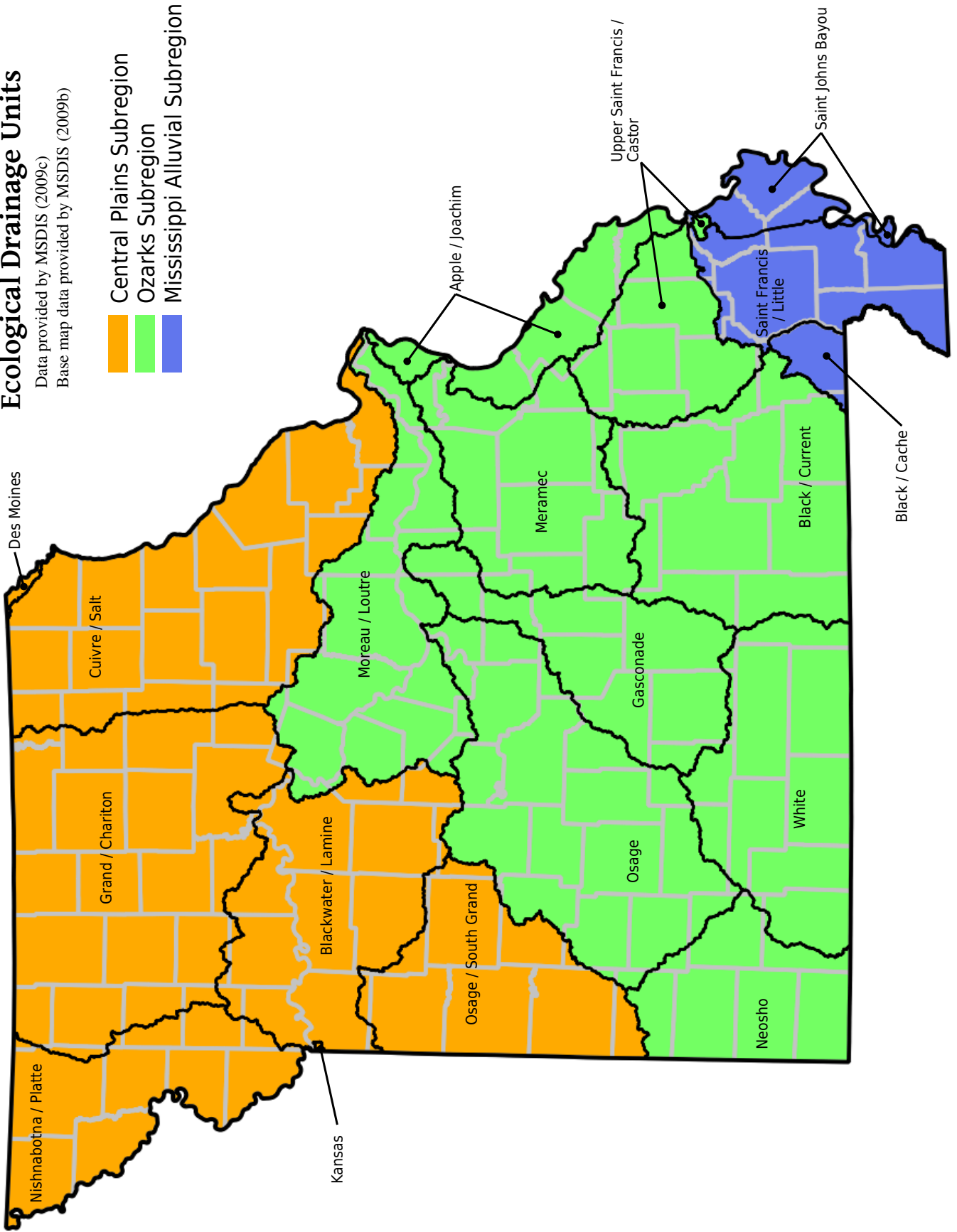
- Mississippi River Watershed
- Missouri River Watershed
- White River Watershed
- Arkansas River Watershed



Ecological Drainage Units

Data provided by MSDIS (2009c)
Base map data provided by MSDIS (2009b)

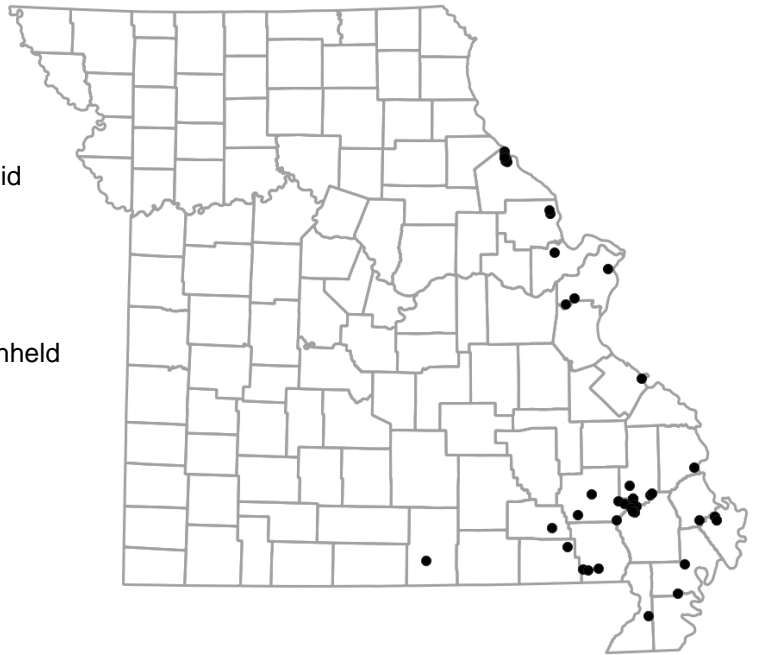
- Central Plains Subregion
- Ozarks Subregion
- Mississippi Alluvial Subregion



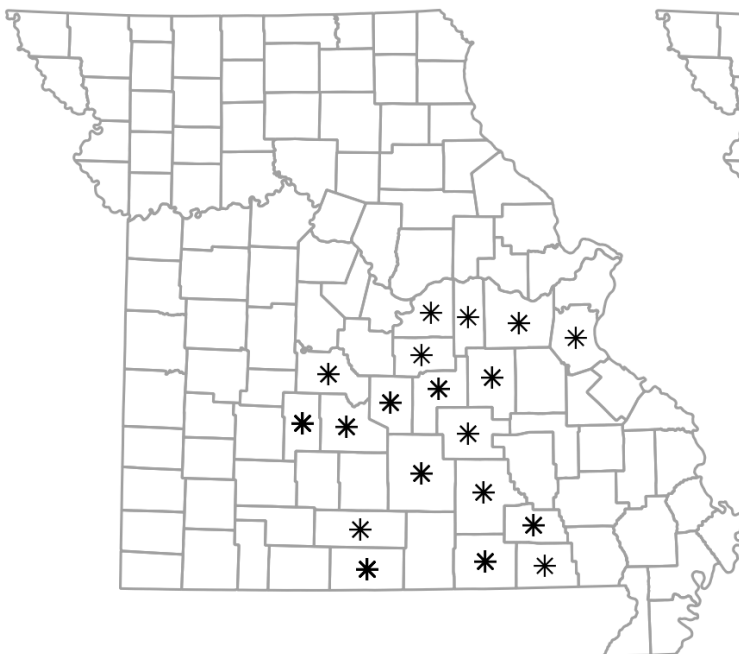
Species Locality Maps

Key:

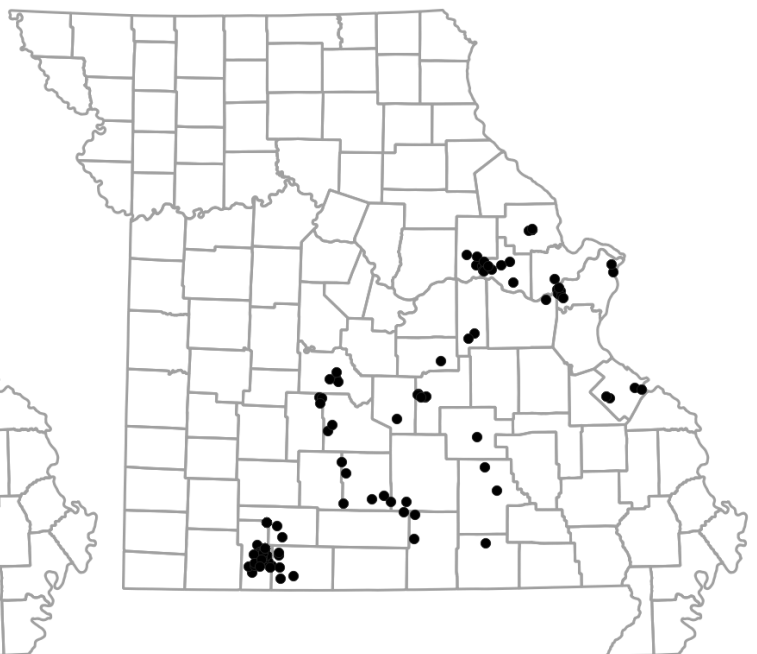
- Museum or published record believed to be valid
- * County record only for:
 - Valid record without a specific locality
 - Species of conservation concern, locality withheld
- ? Questionable record that may be valid



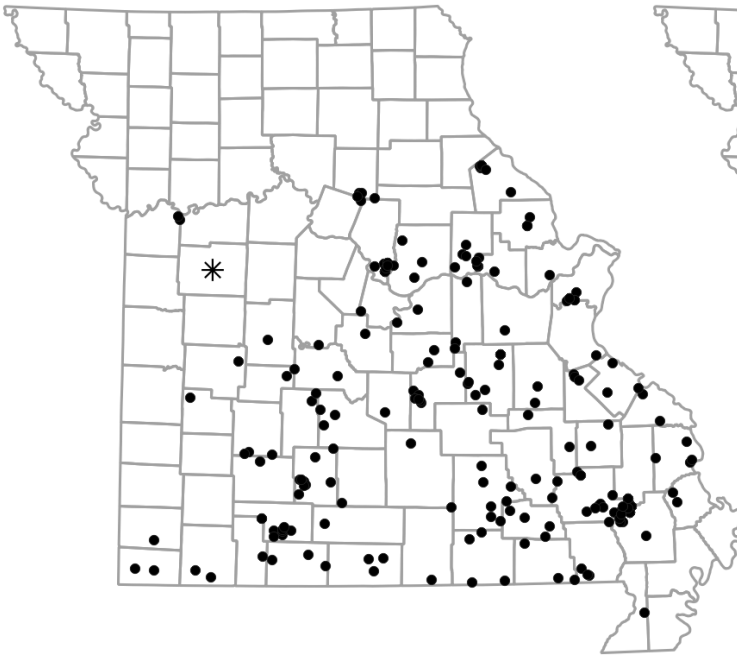
Siren nettingi
Western Lesser Siren



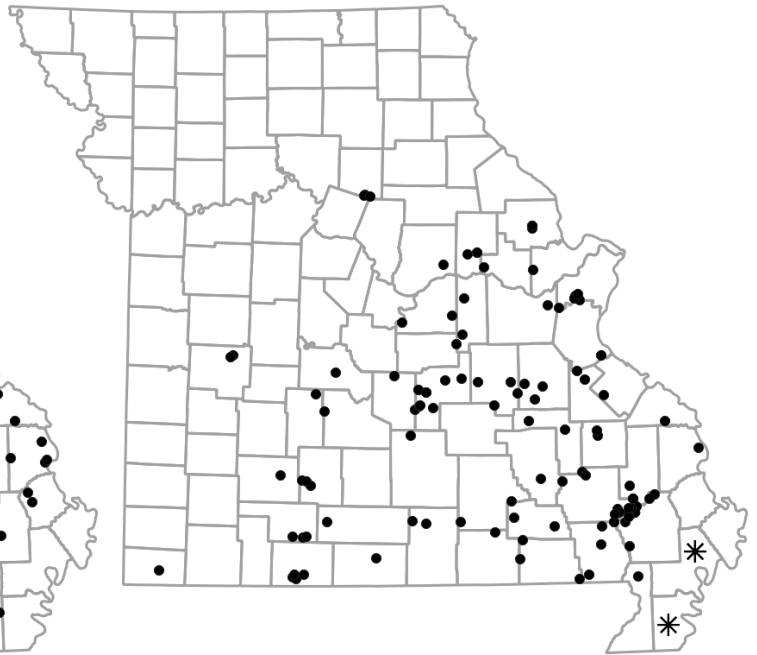
Cryptobranchus alleganiensis
Hellbender



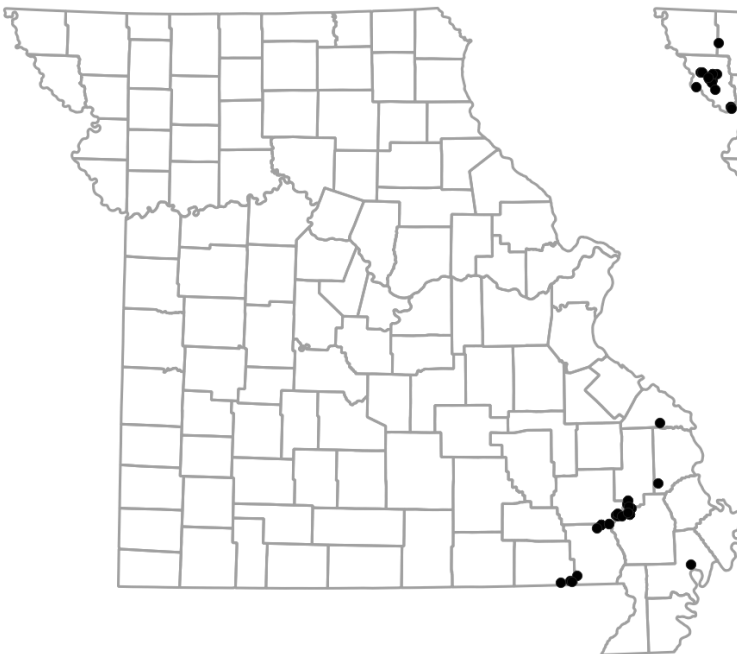
Ambystoma annulatum
Ringed Salamander



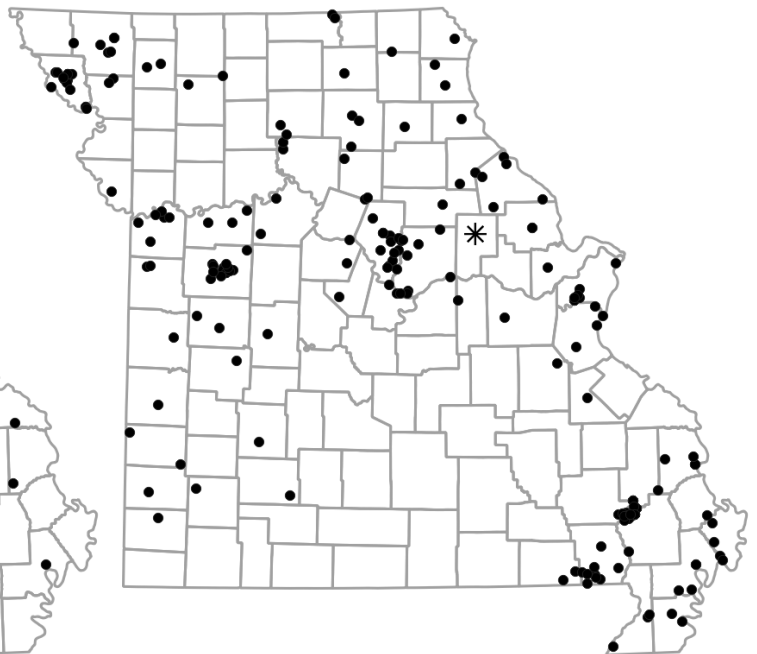
Ambystoma maculatum
Spotted Salamander



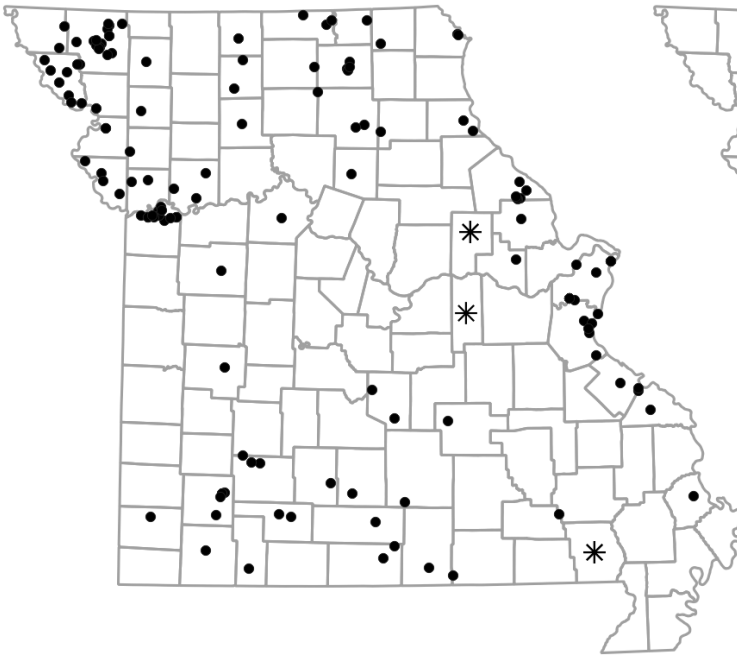
Ambystoma opacum
Marbled Salamander



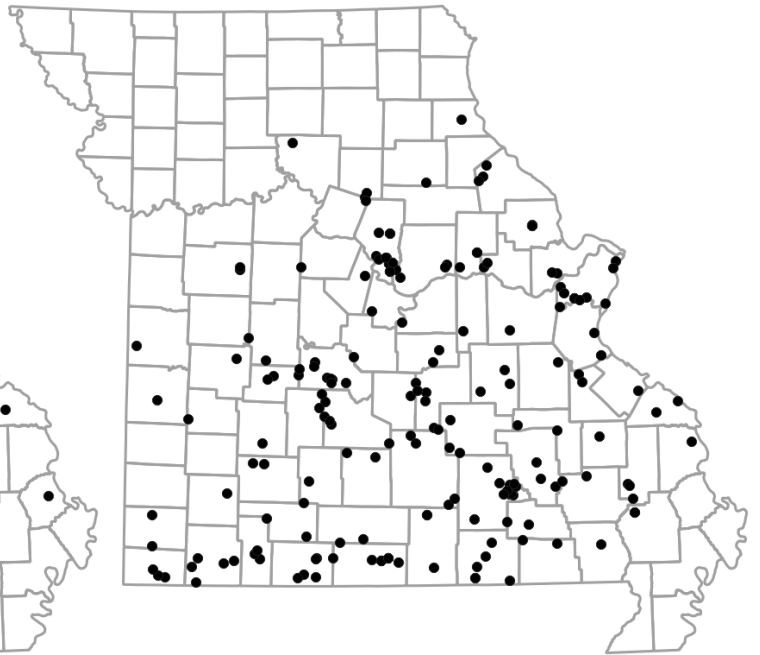
Ambystoma talpoideum
Mole Salamander



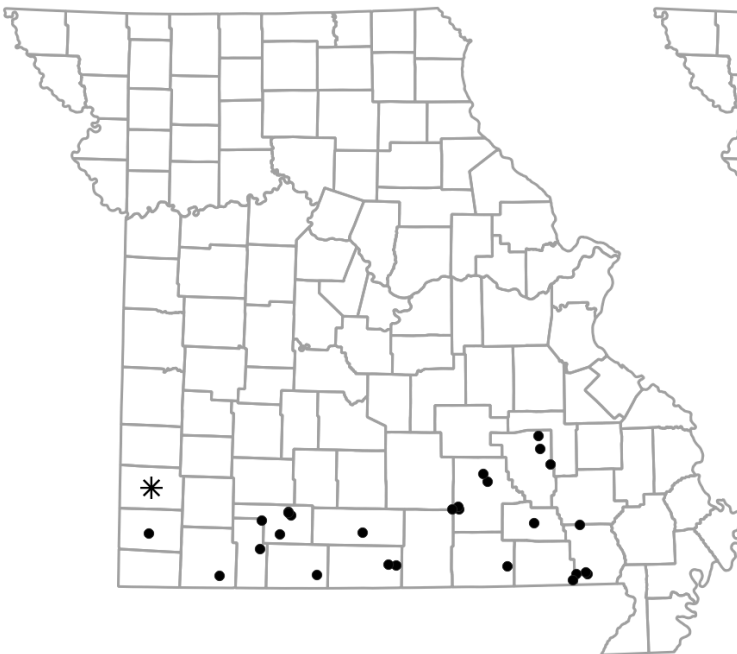
Ambystoma texanum
Small-mouthed Salamander



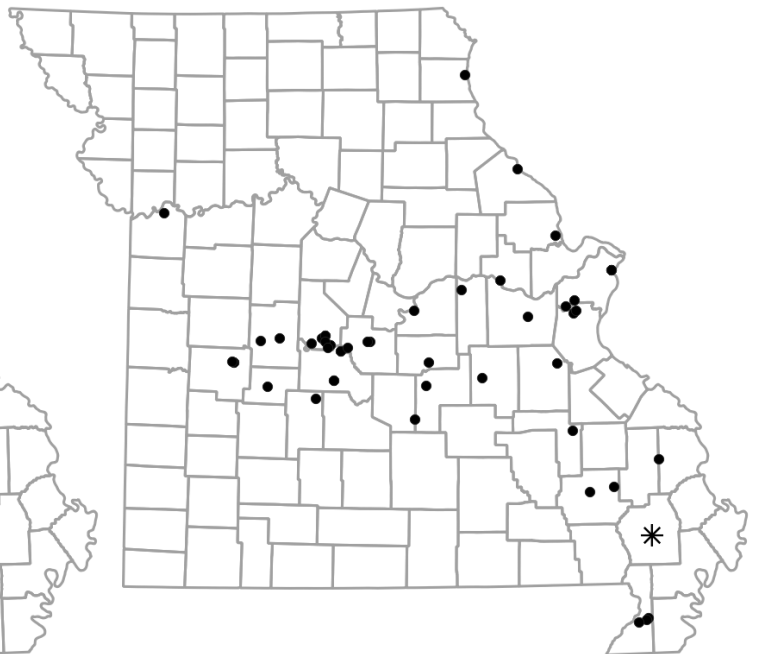
Ambystoma tigrinum
Eastern Tiger Salamander



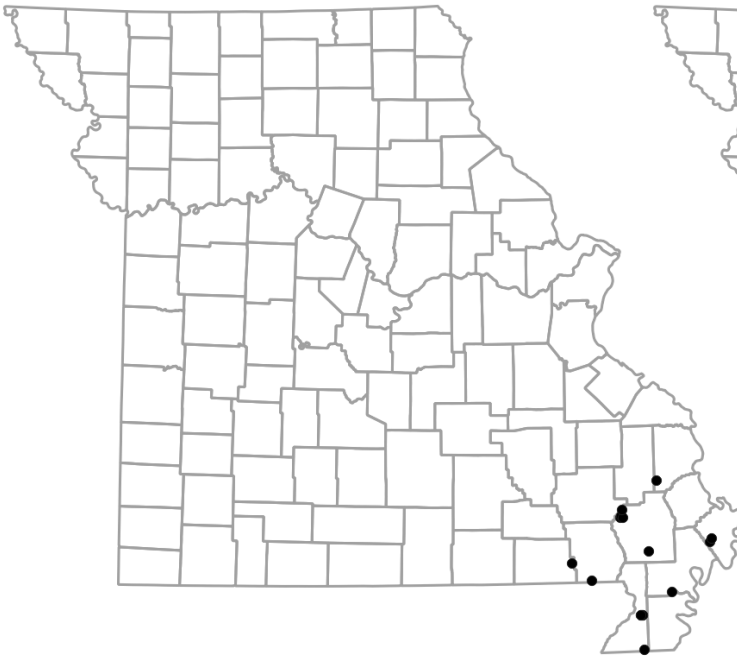
Notophthalmus viridescens
Central Newt



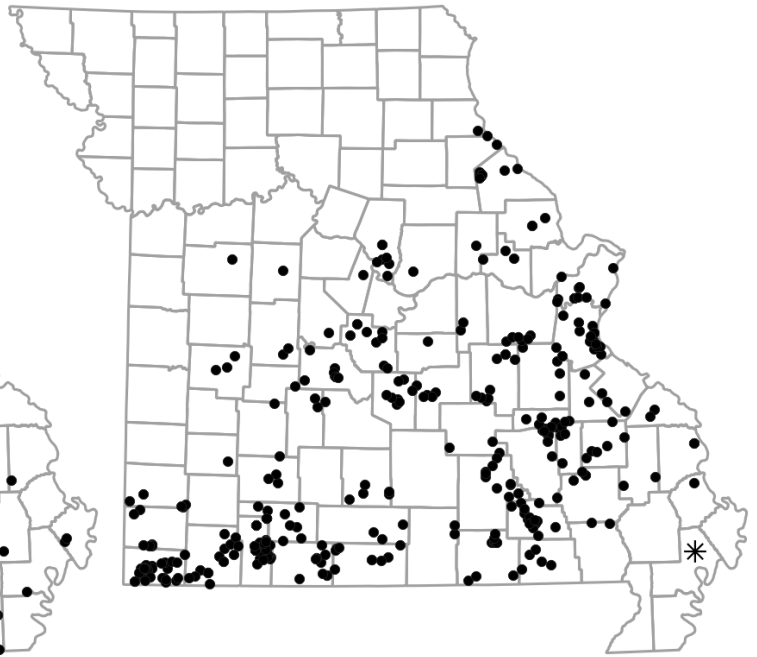
Necturus louisianensis
Red River Mudpuppy



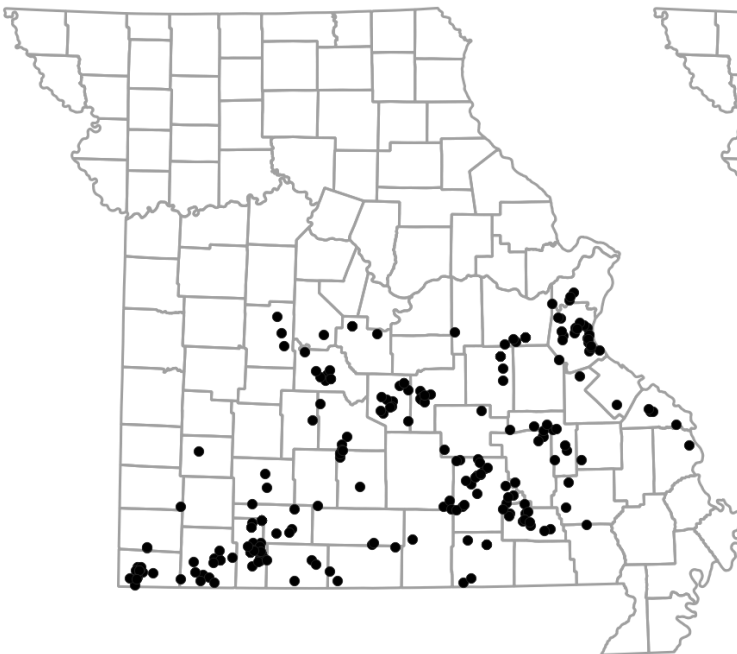
Necturus maculosus
Mudpuppy



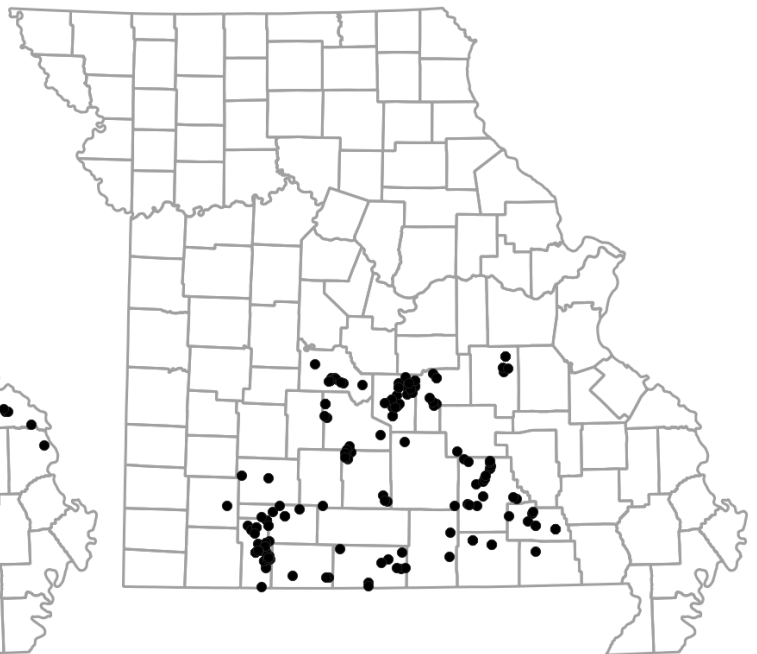
Amphiuma tridactylum
Three-toed Amphiuma



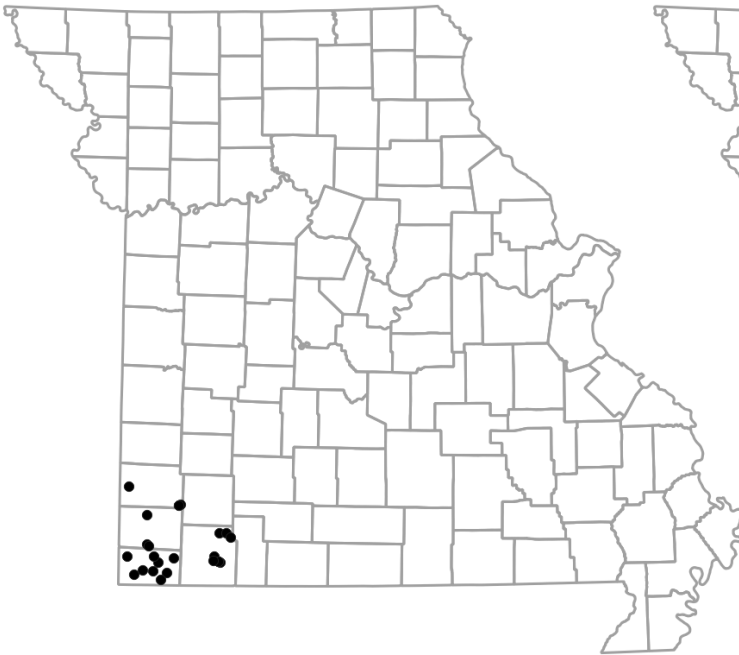
Eurycea longicauda
Long-tailed Salamander



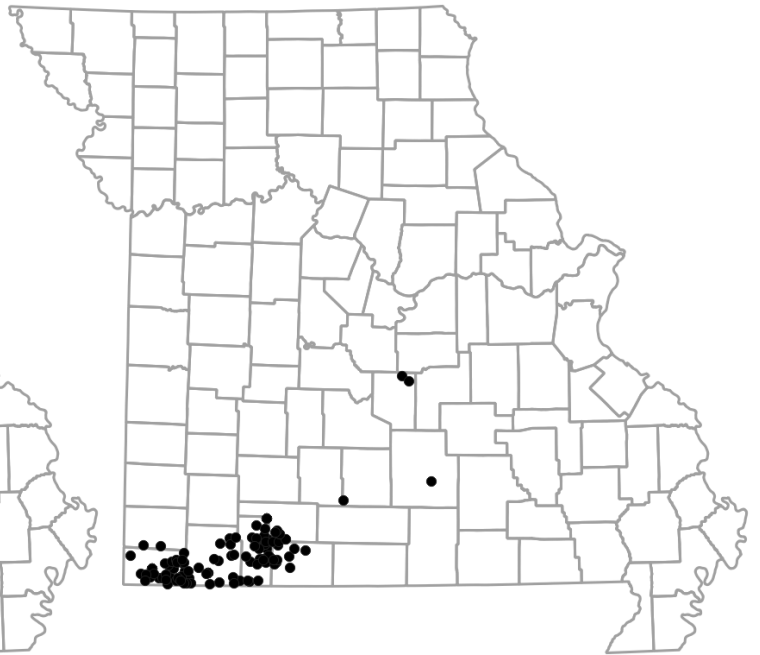
Eurycea lucifuga
Cave Salamander



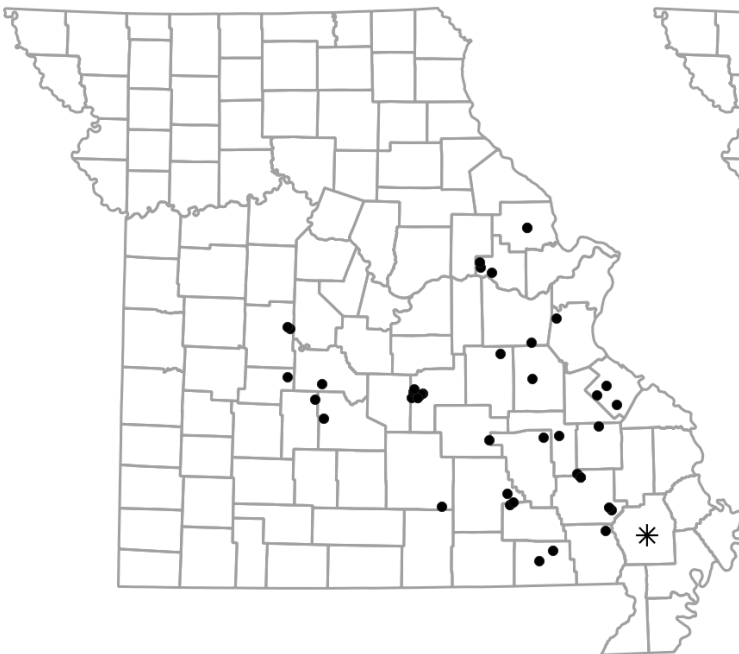
Eurycea nerea
Northern Grotto Salamander



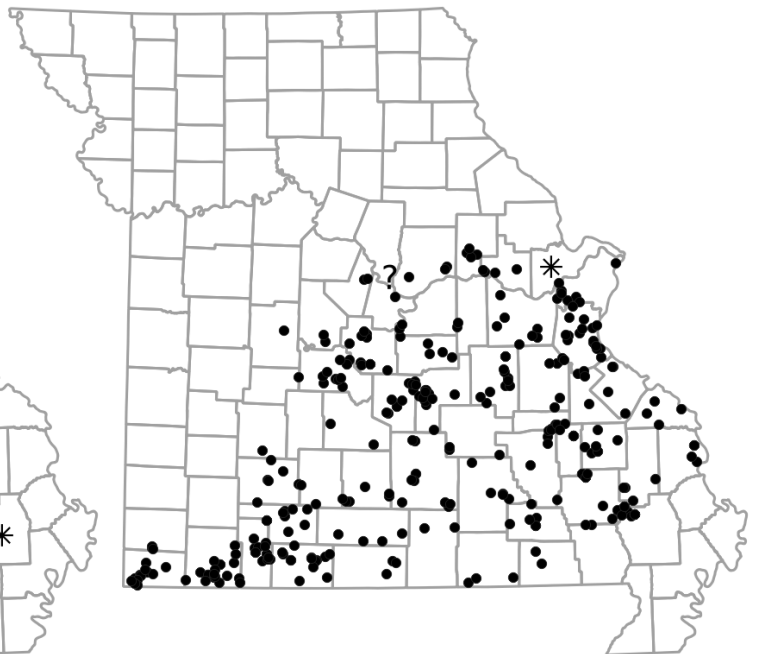
Eurycea spelaea
Western Grotto Salamander



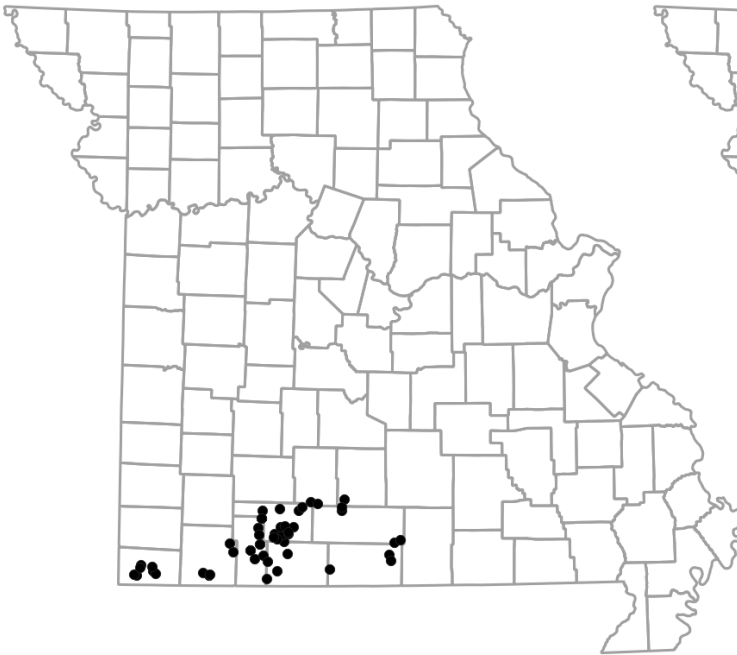
Eurycea tynerensis
Oklahoma Salamander



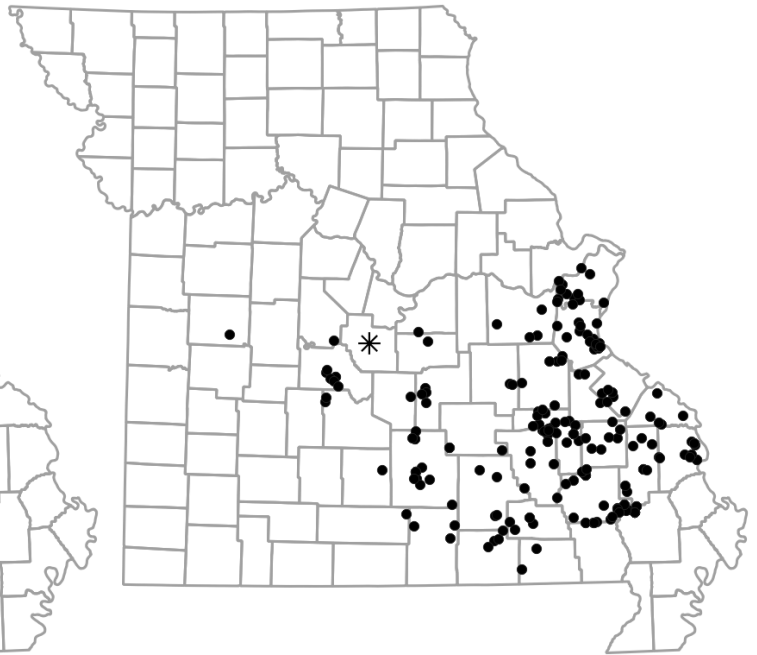
Hemidactylium scutatum
Four-toed Salamander



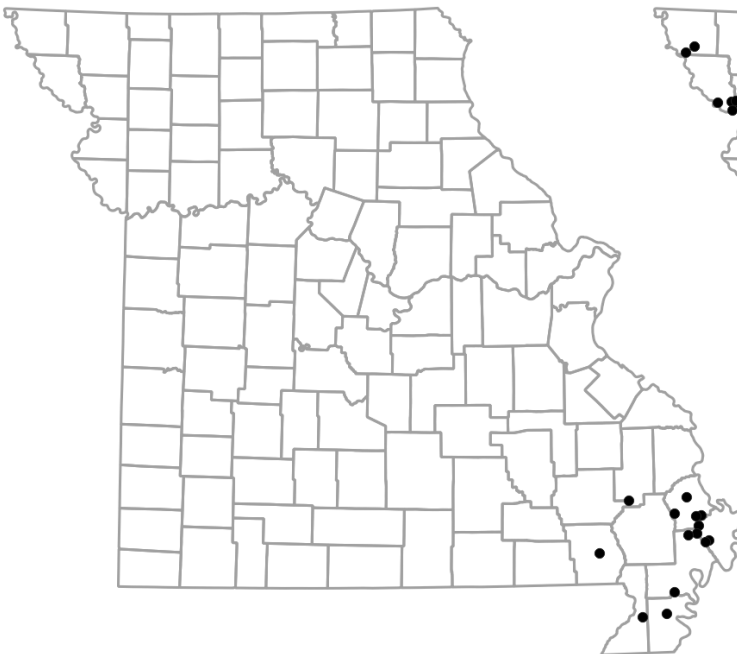
Plethodon albagula
Western Slimy Salamander



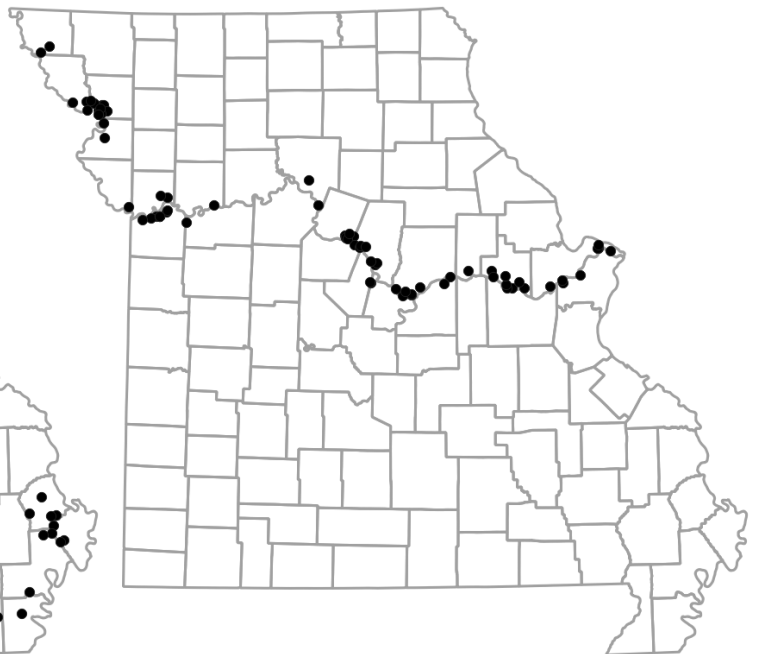
Plethodon angusticlavius
Ozark Zigzag Salamander



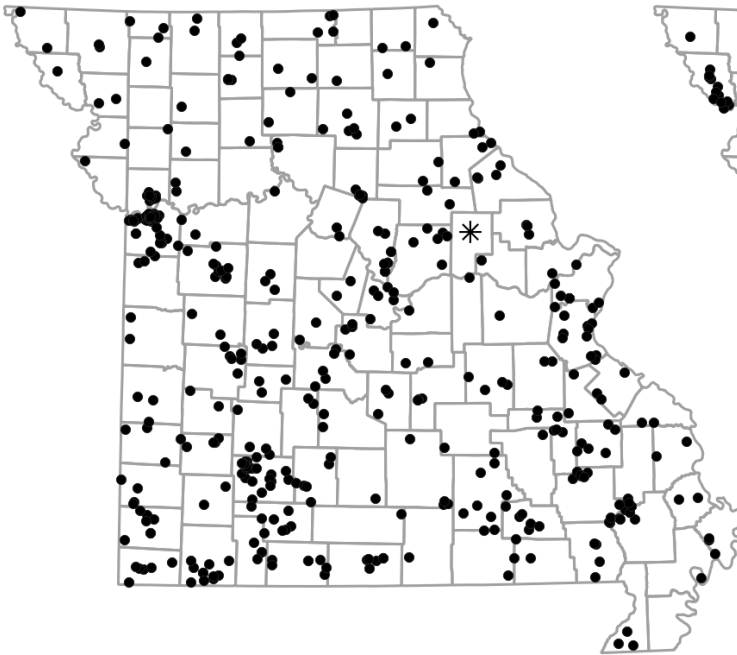
Plethodon serratus
Southern Red-backed Salamander



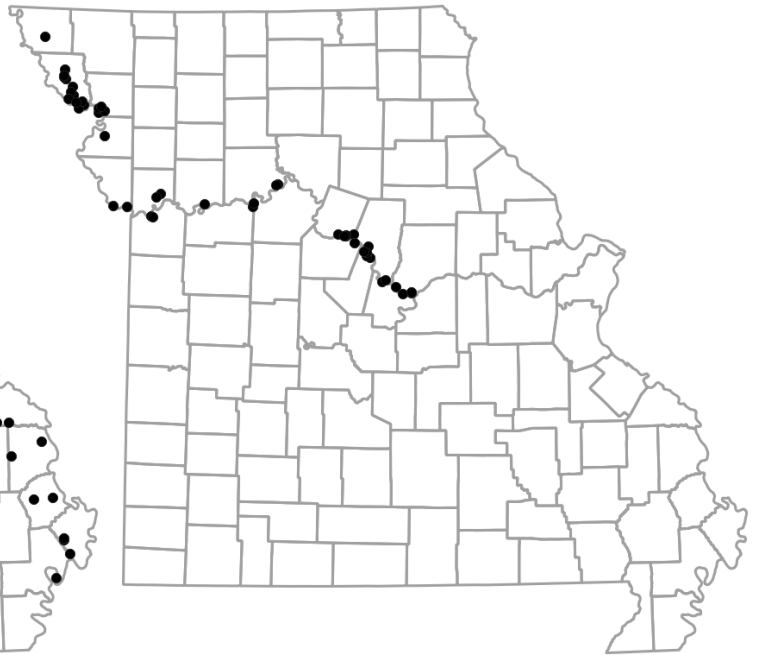
Scaphiopus holbrookii
Eastern Spadefoot



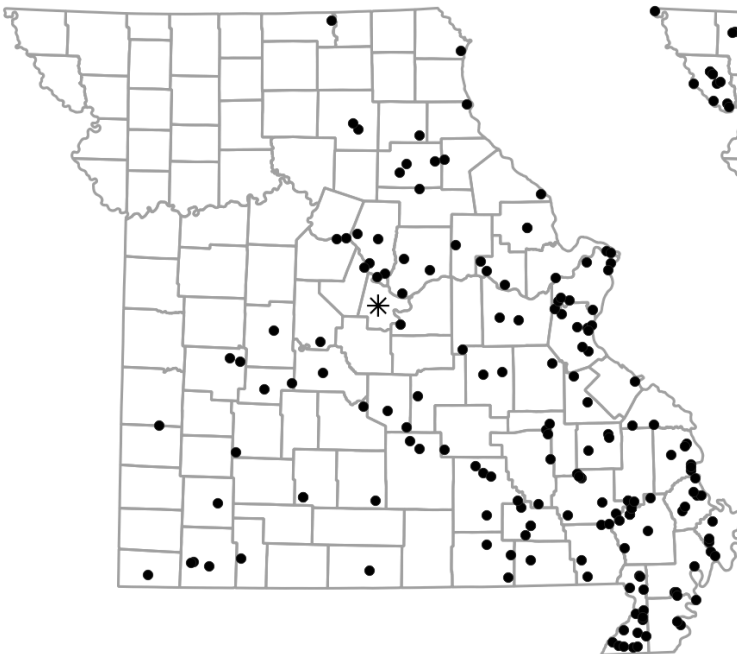
Spea bombifrons
Plains Spadefoot



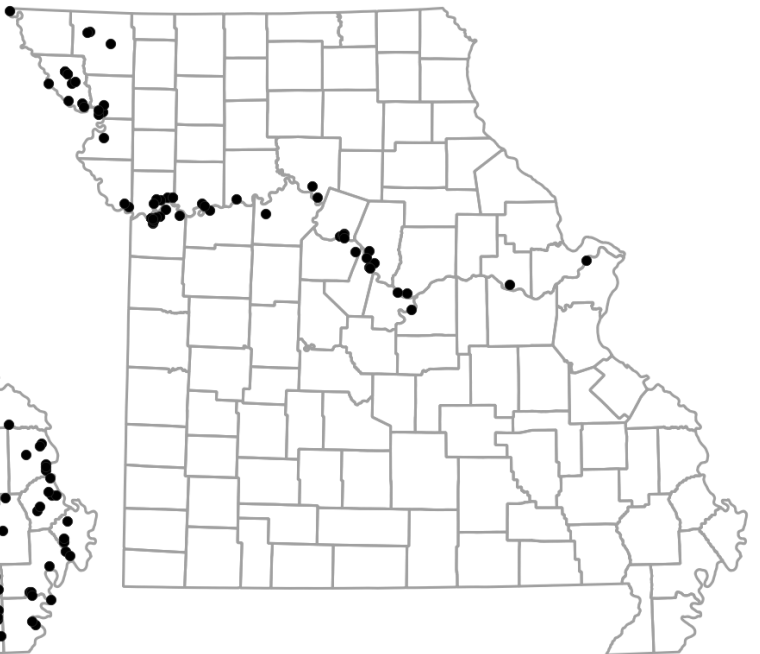
Anaxyrus americanus
American Toad



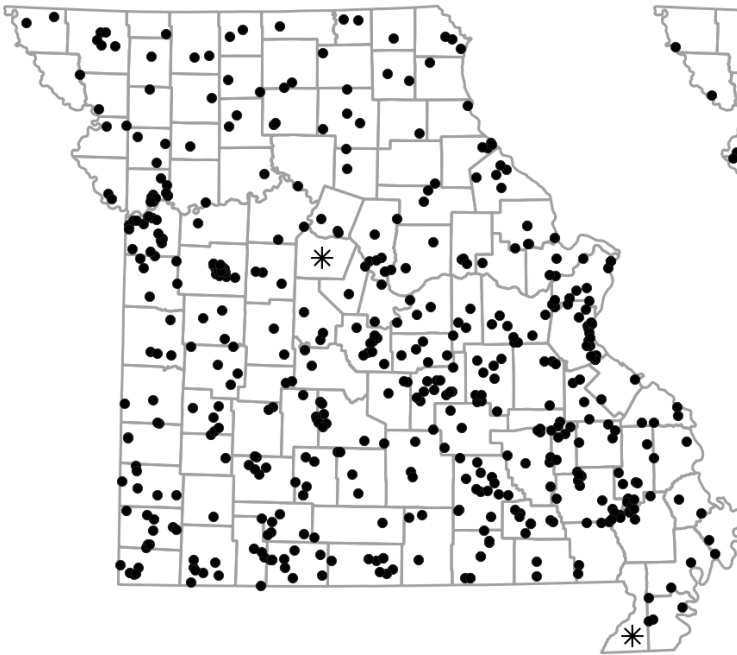
Anaxyrus cognatus
Great Plains Toad



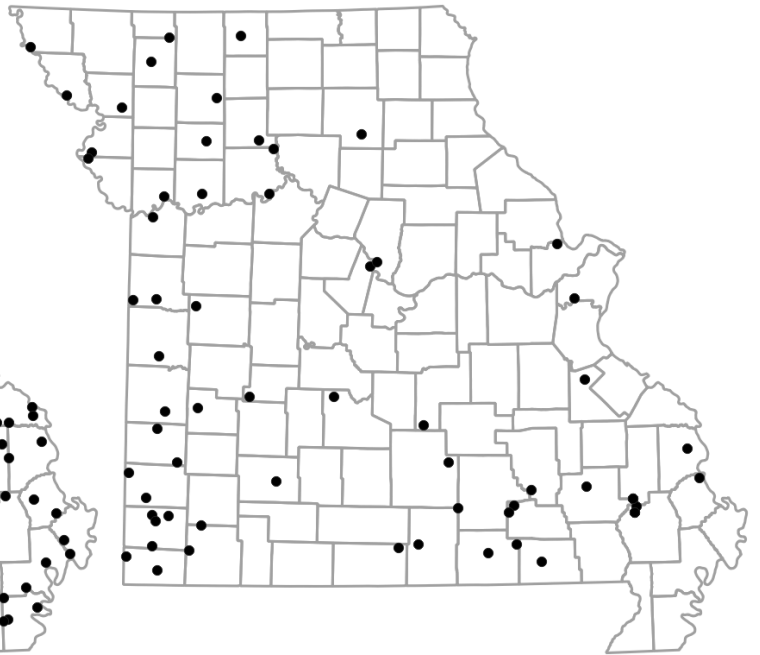
Anaxyrus fowleri
Fowler's Toad



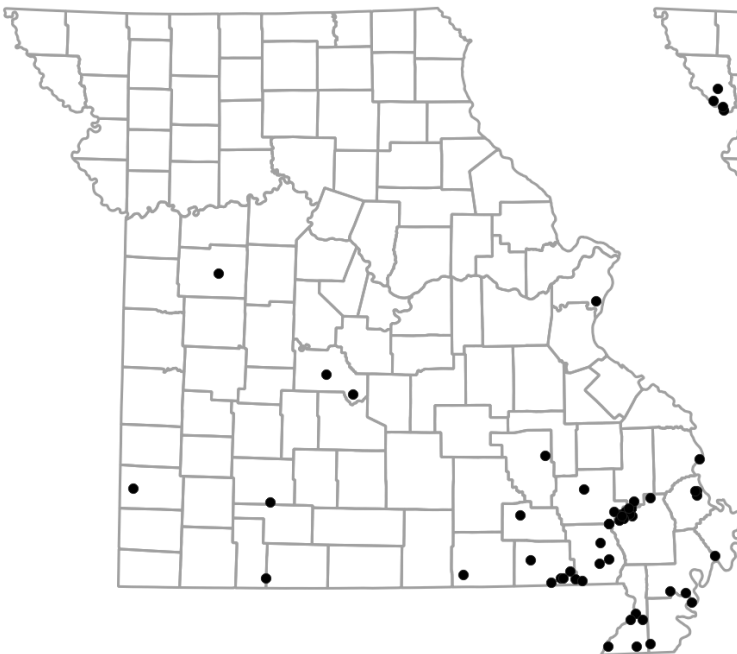
Anaxyrus woodhousii
Rocky Mountain Toad



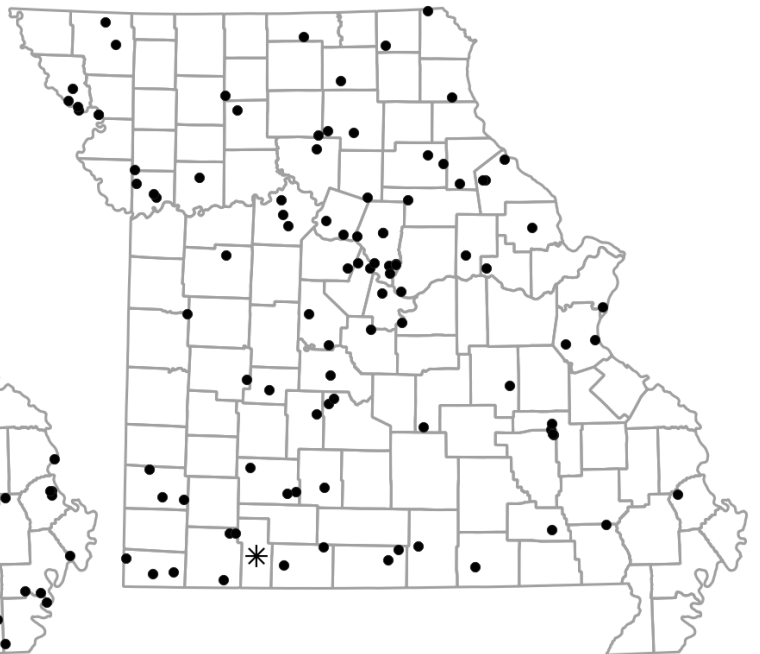
Acris blanchardi
Blanchard's Cricket Frog



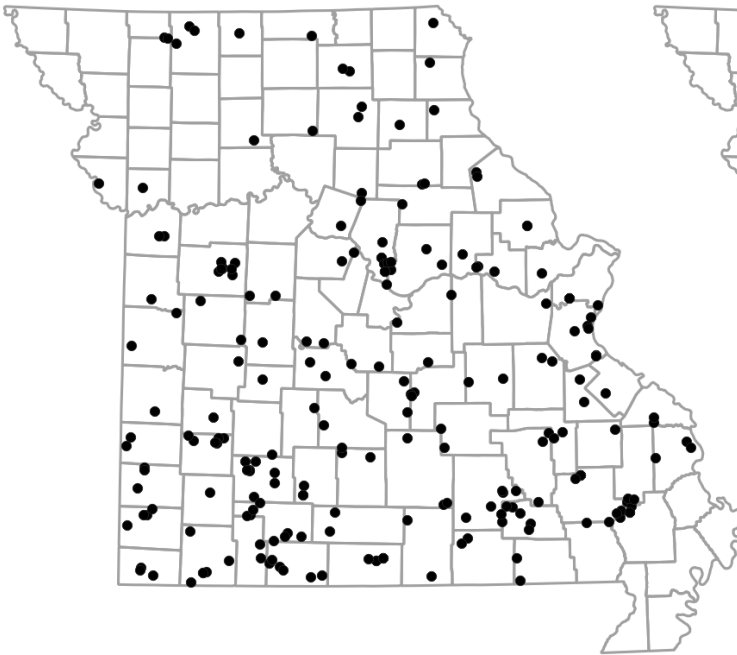
Dryophytes chrysoscelis
Cope's Gray Treefrog



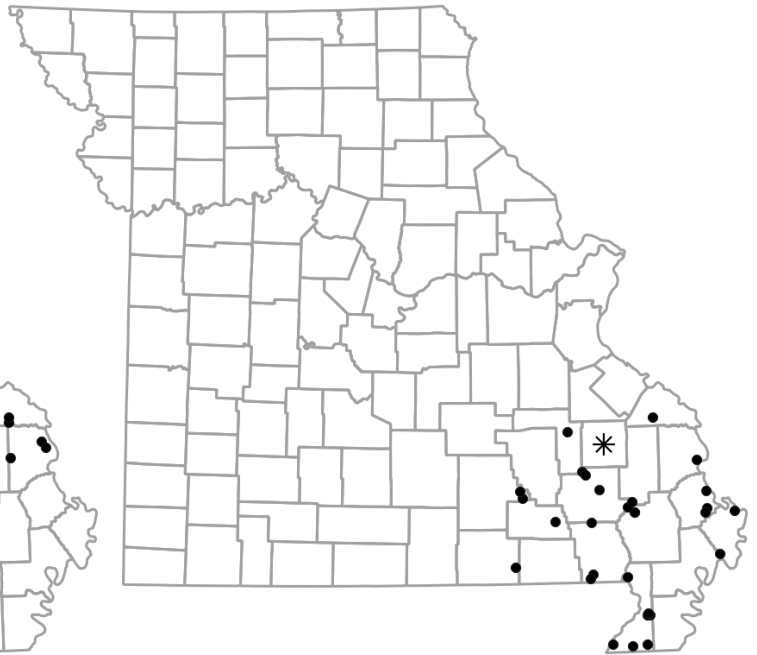
Dryophytes cinereus
Green Treefrog



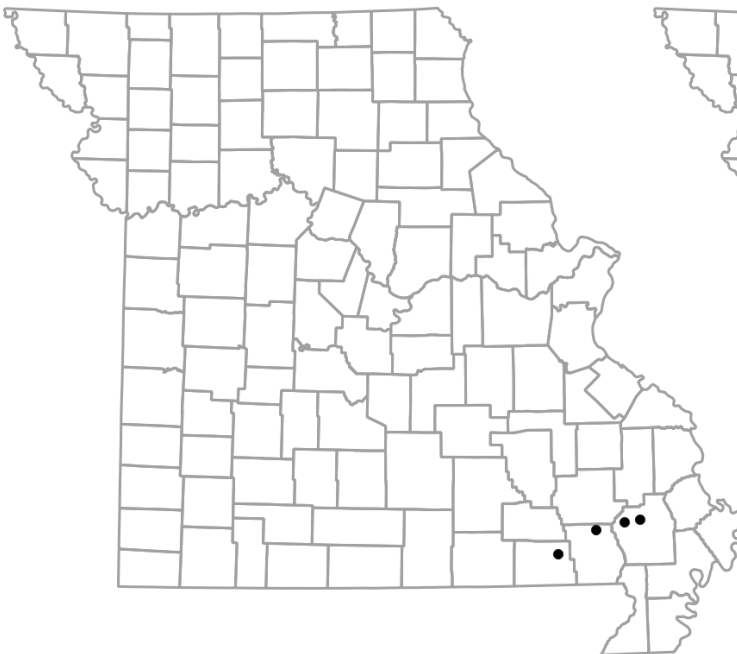
Dryophytes versicolor
Gray Treefrog



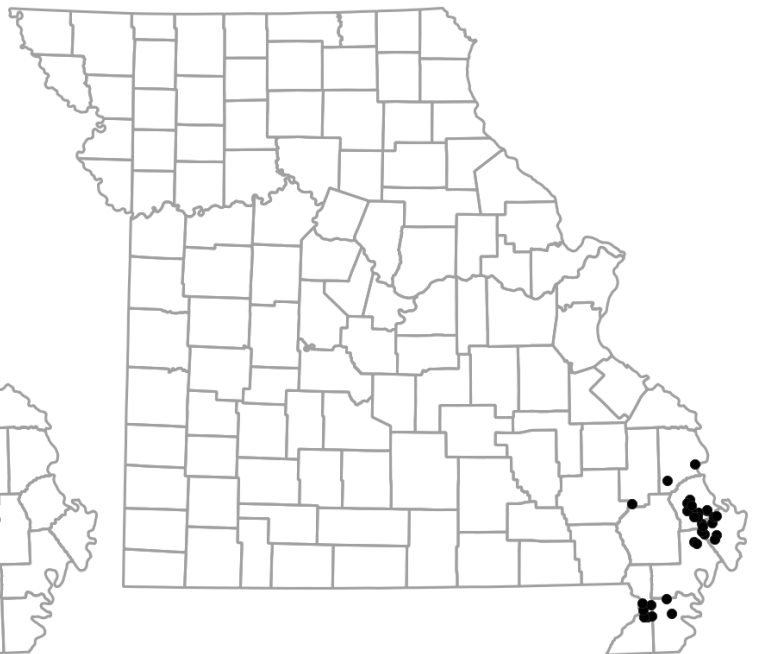
Pseudacris crucifer
Spring Peeper



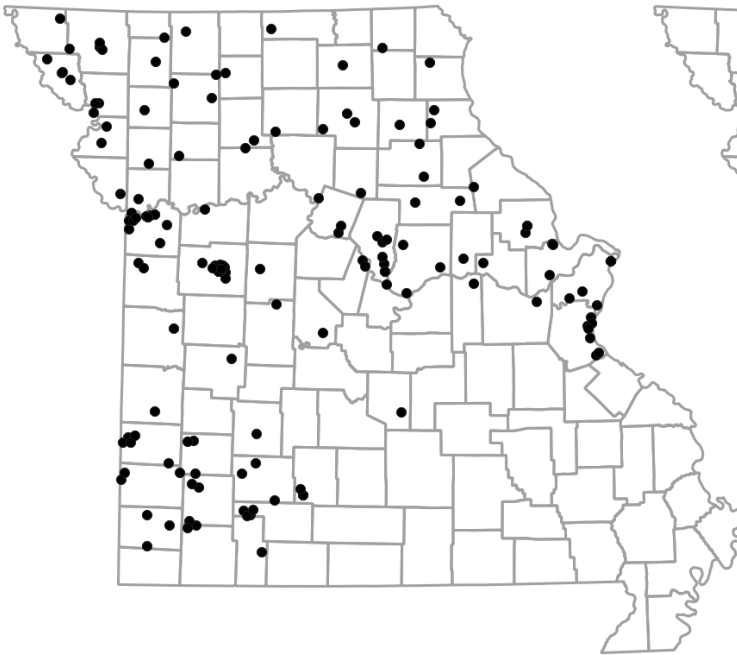
Pseudacris feriarum
Upland Chorus Frog



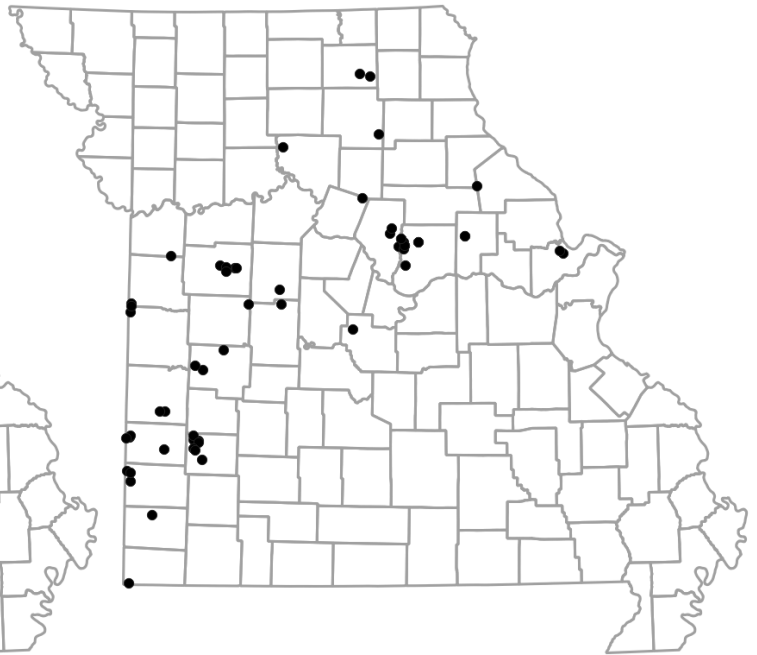
Pseudacris fouquettei
Cajun Chorus Frog



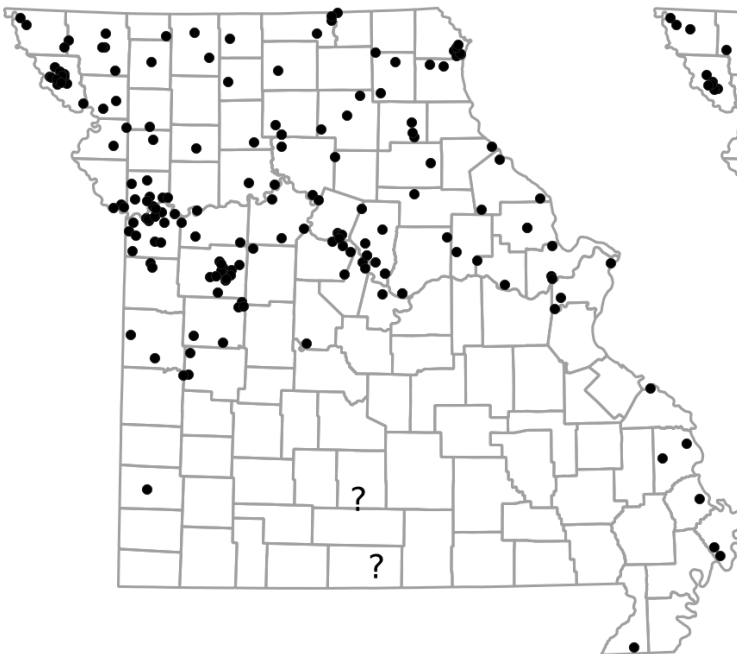
Pseudacris illinoensis
Illinois Chorus Frog



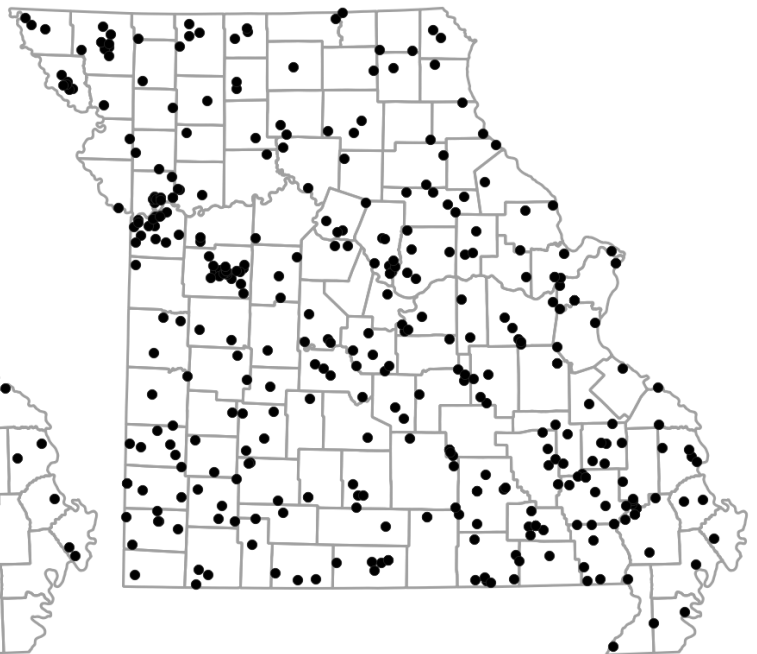
Pseudacris maculata
Boreal Chorus Frog



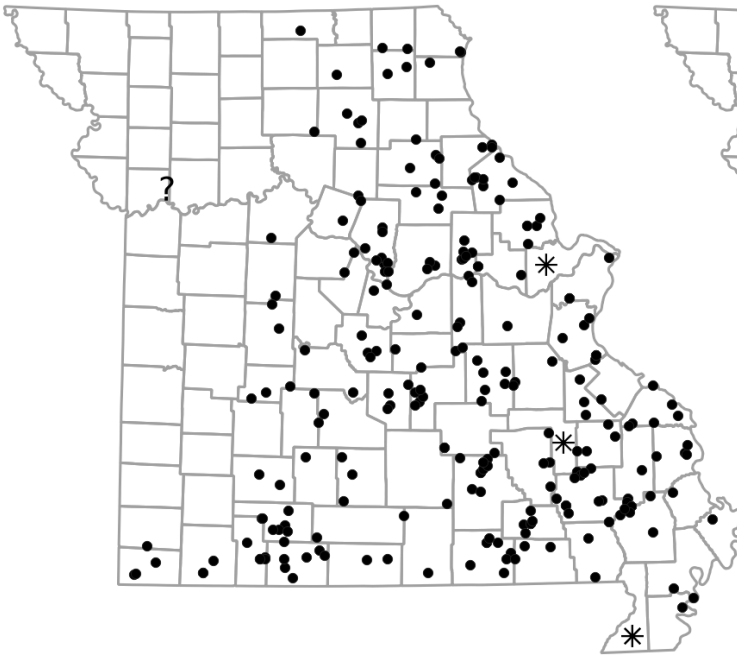
Lithobates areolatus
Northern Crawfish Frog



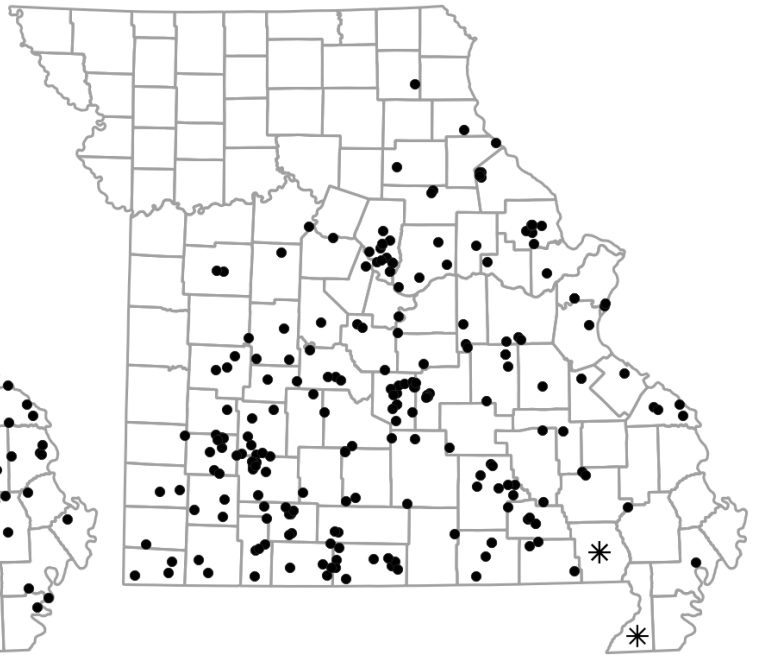
Lithobates blairi
Plains Leopard Frog



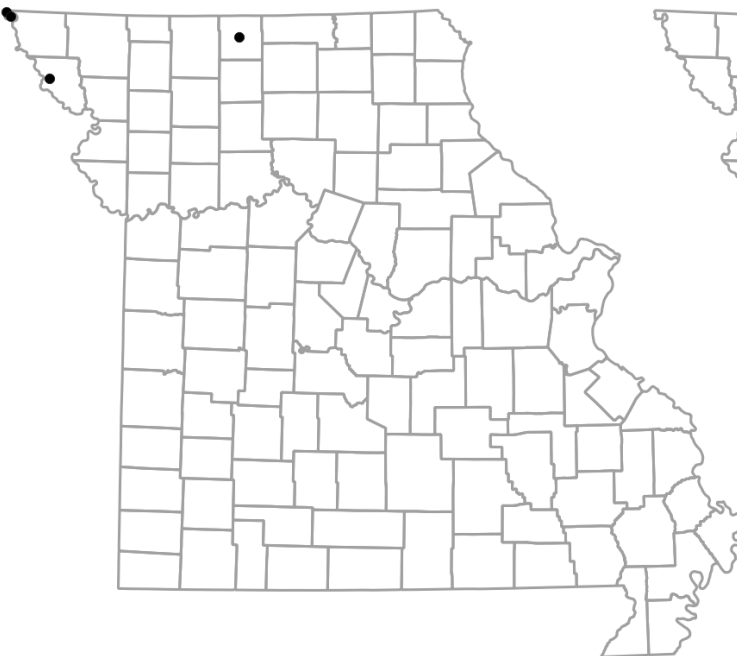
Lithobates catesbeianus
North American Bullfrog



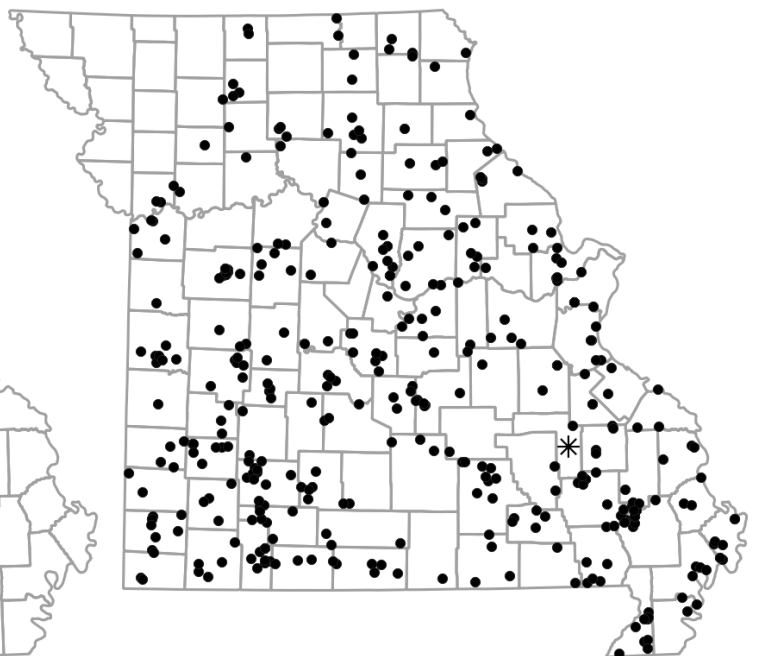
Lithobates clamitans
North American Green Frog



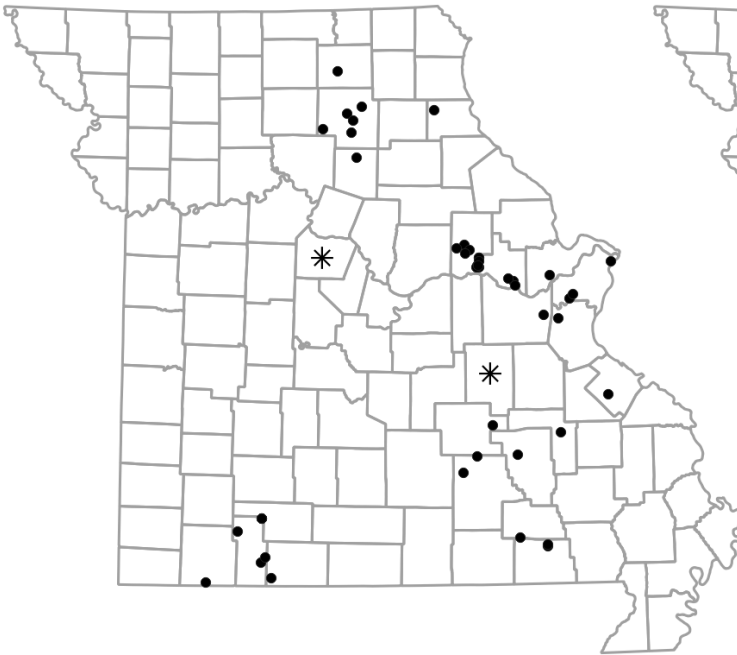
Lithobates palustris
Pickerel Frog



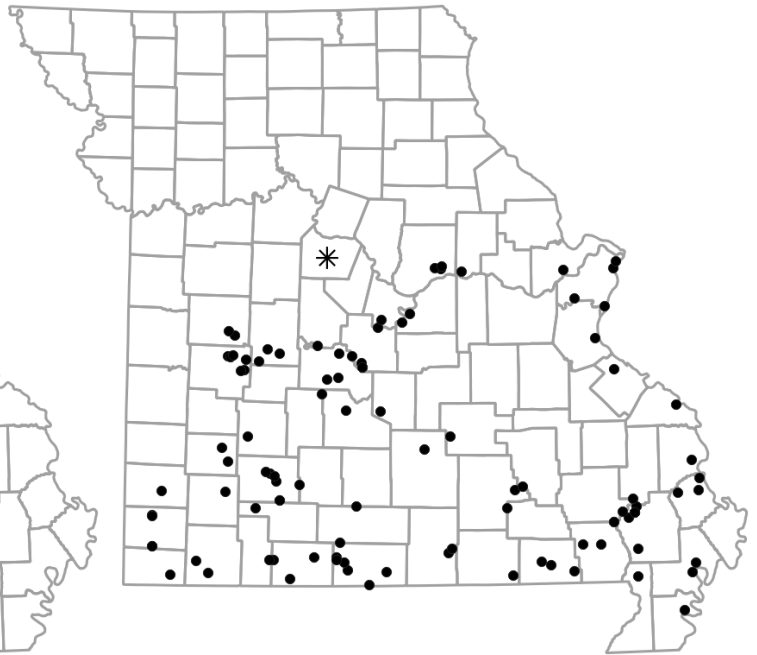
Lithobates pipiens
Northern Leopard Frog



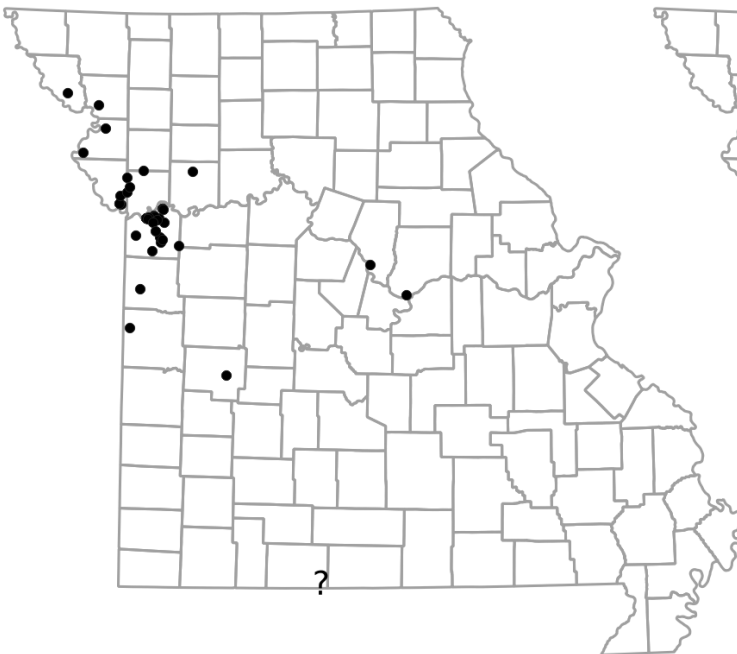
Lithobates sphenoccephalus
Coastal Plains Leopard Frog



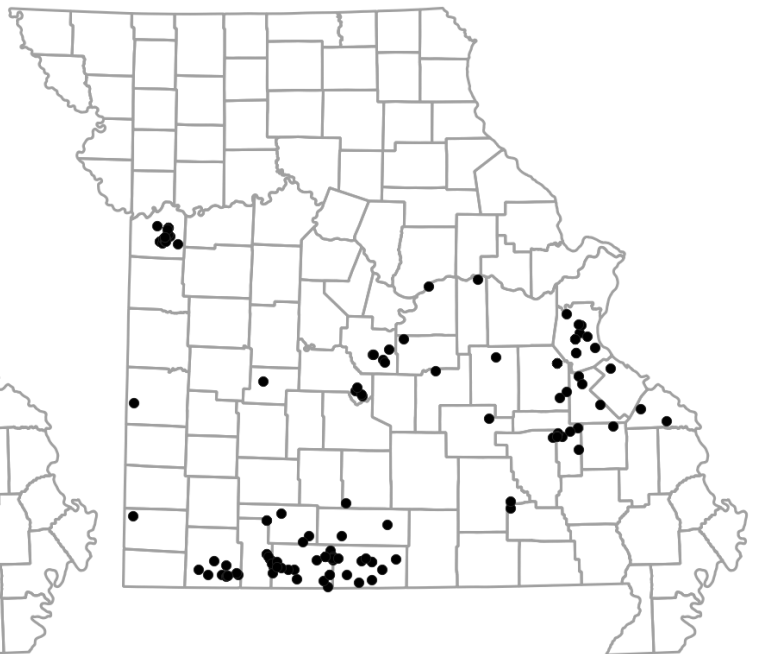
Lithobates sylvaticus
Wood Frog



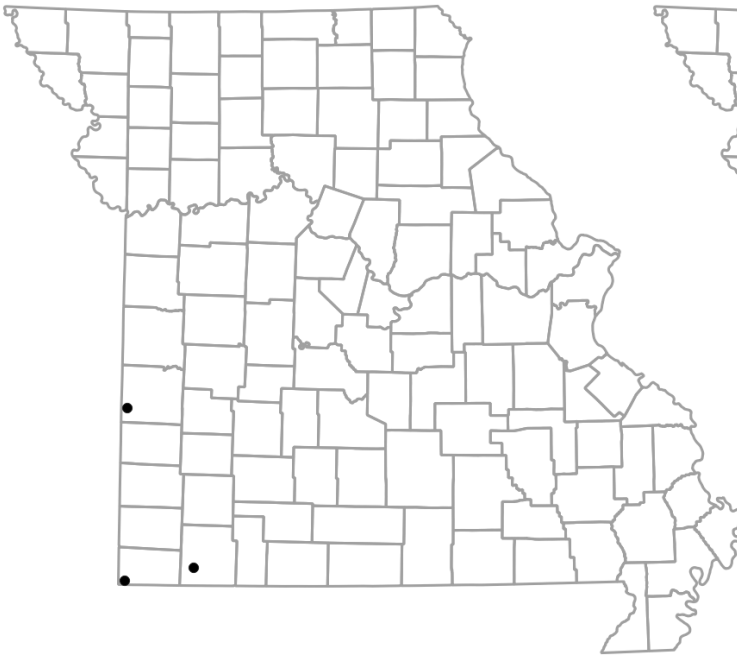
Gastrophryne carolinensis
Eastern Narrow-mouthed Toad



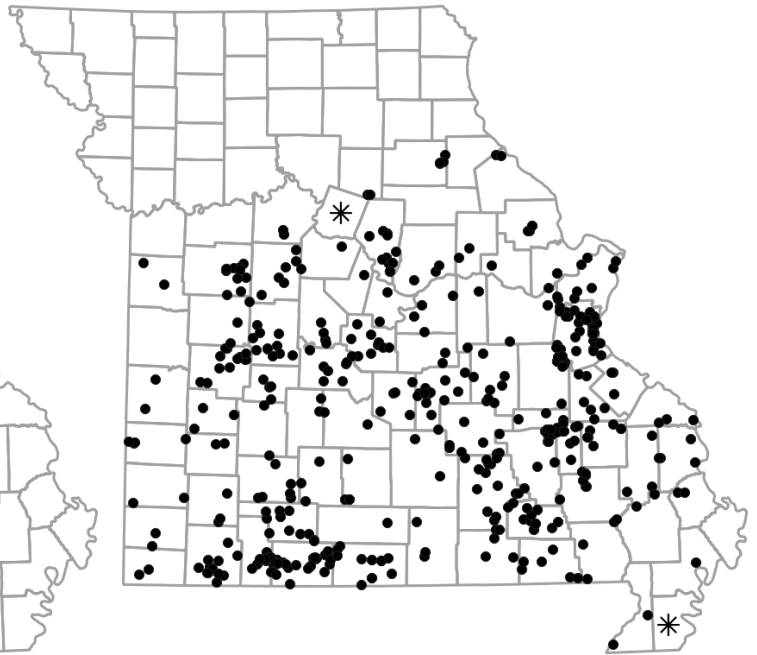
Gastrophryne olivacea
Western Narrow-mouthed Toad



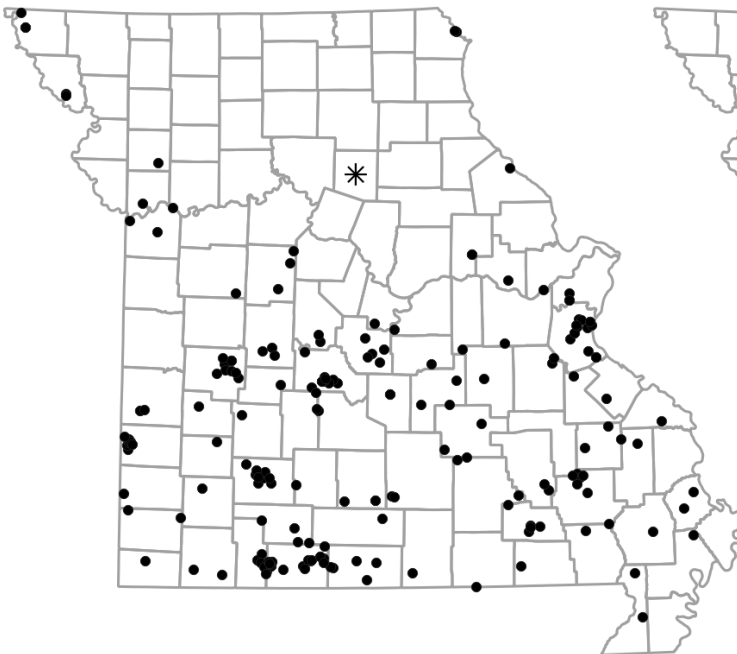
Crotaphytus collaris
Eastern Collared Lizard



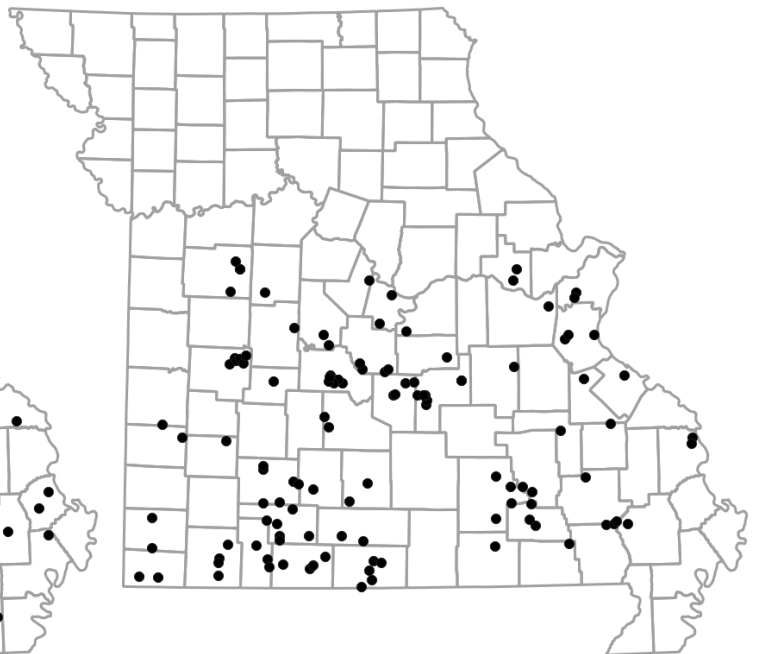
Phrynosoma cornutum
Texas Horned Lizard



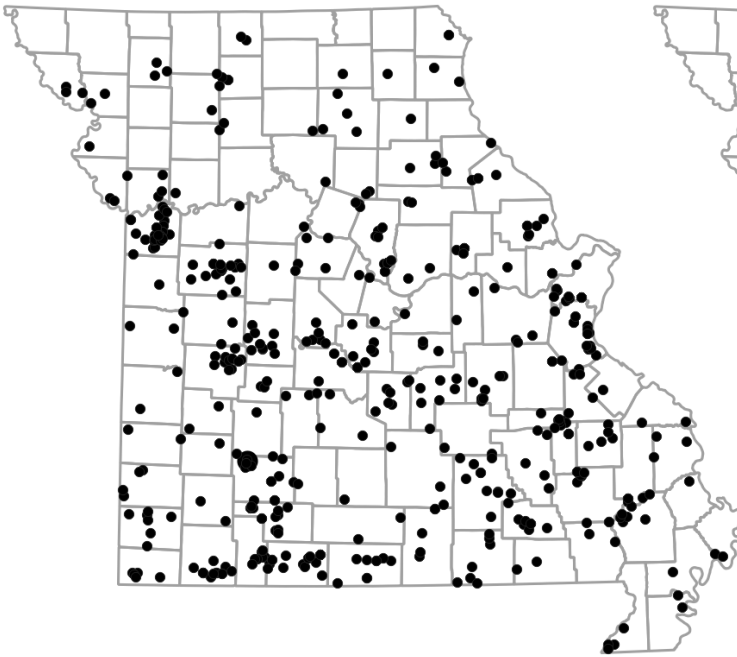
Sceloporus consobrinus
Prairie Lizard



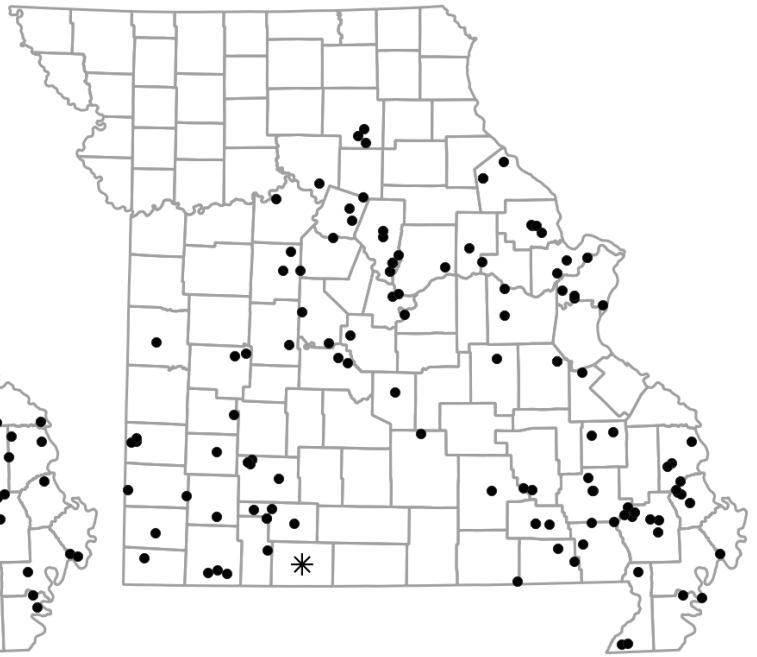
Aspidoscelis sexlineatus
Prairie Racerunner



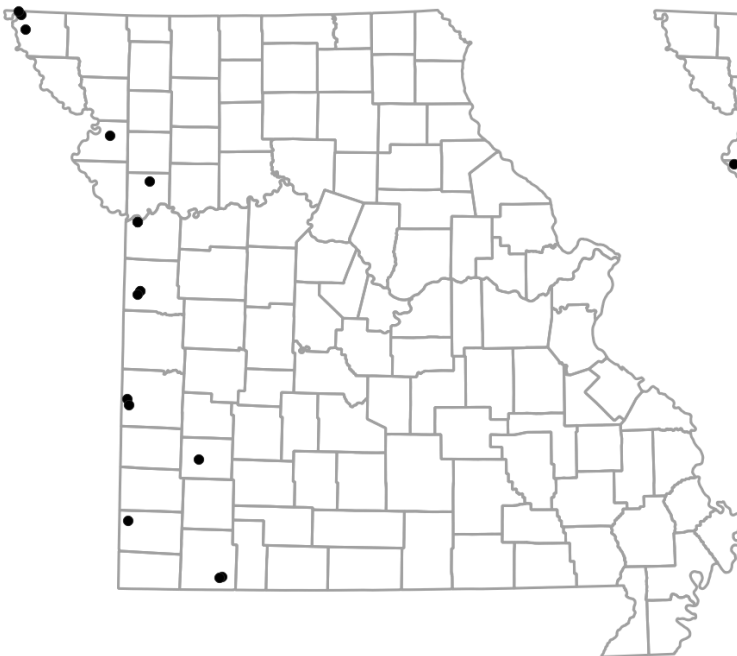
Plestiodon anthracinus
Southern Coal Skink



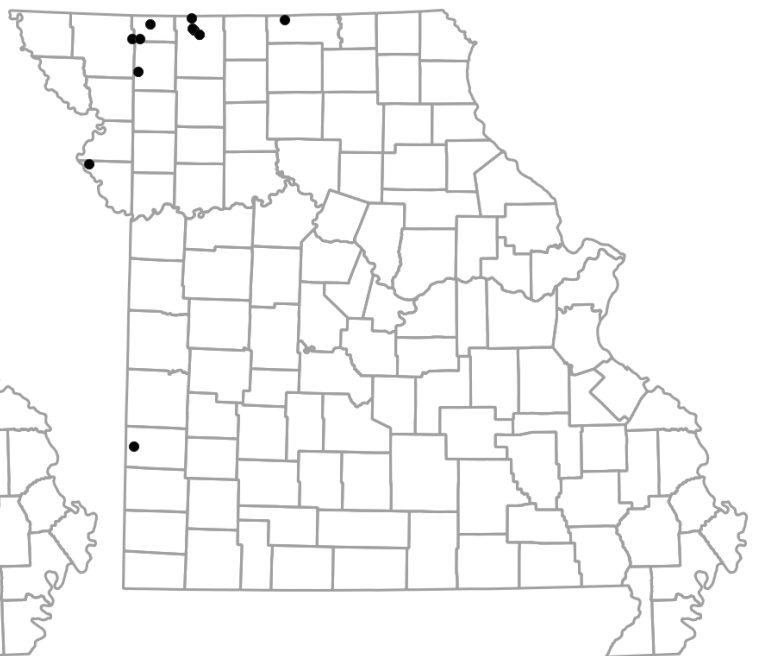
Plestiodon fasciatus
Common Five-lined Skink



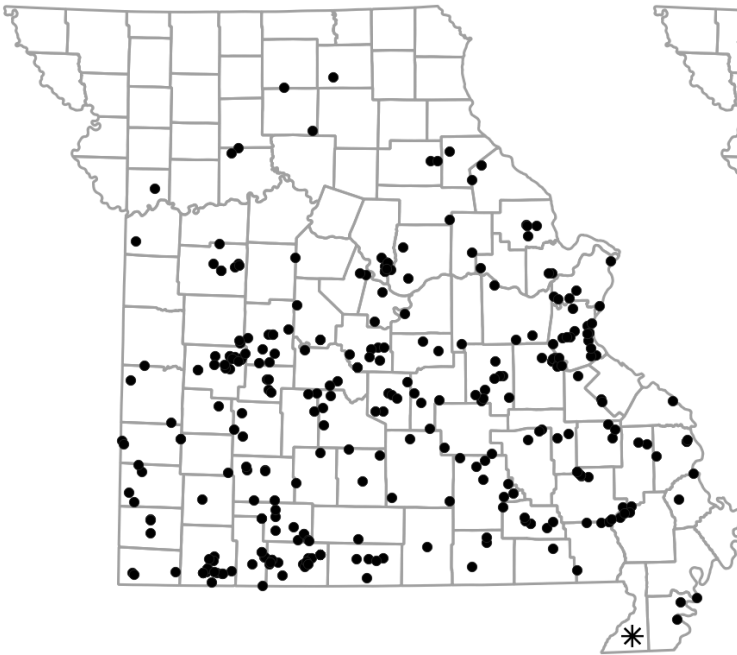
Plestiodon laticeps
Broad-headed Skink



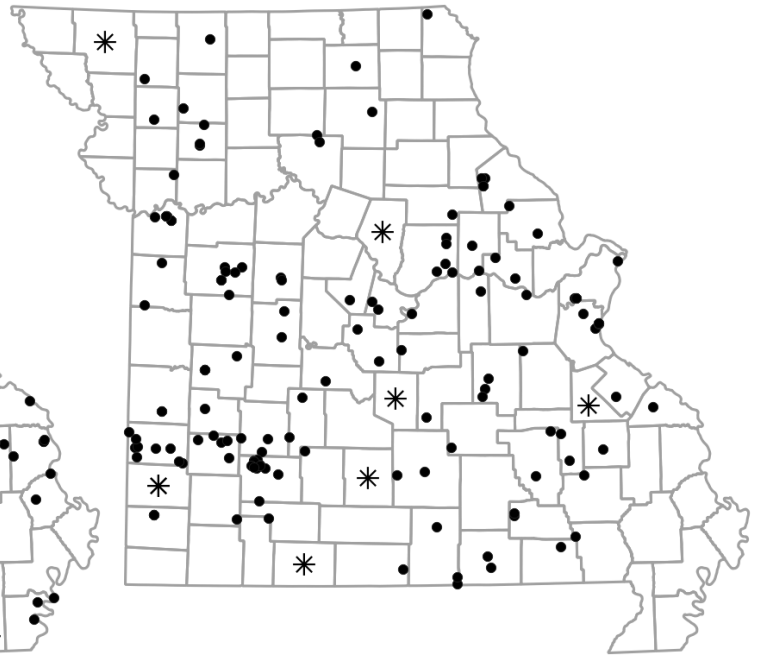
Plestiodon obsoletus
Great Plains Skink



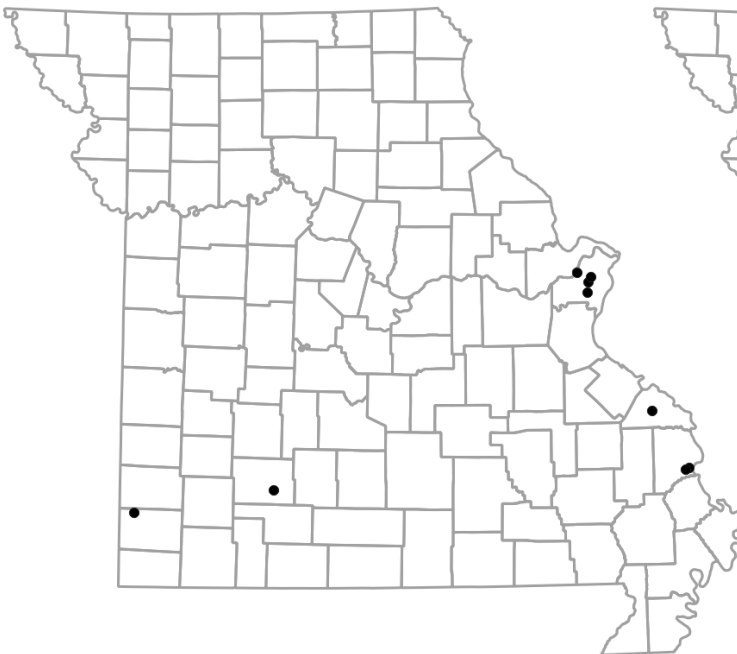
Plestiodon septentrionalis
Prairie Skink



Scincella lateralis
Little Brown Skink



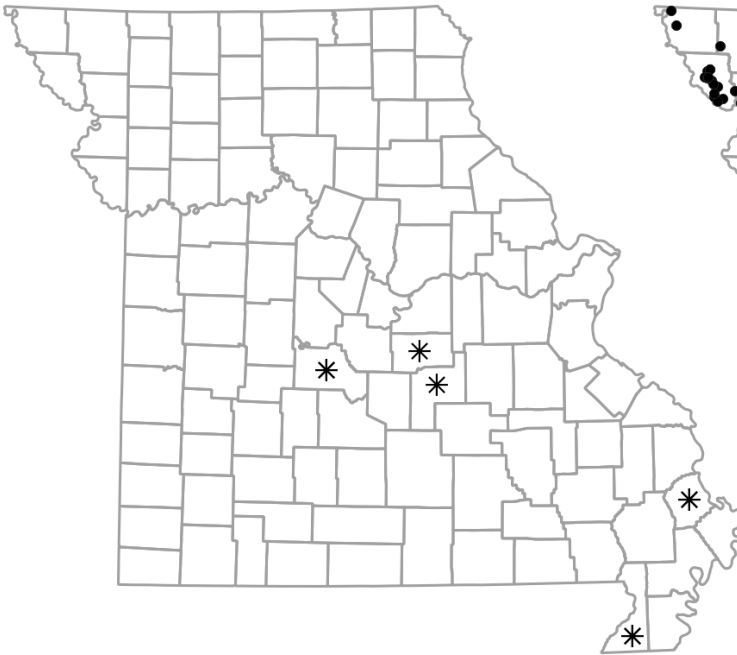
Ophisaurus attenuatus
Western Slender Glass Lizard



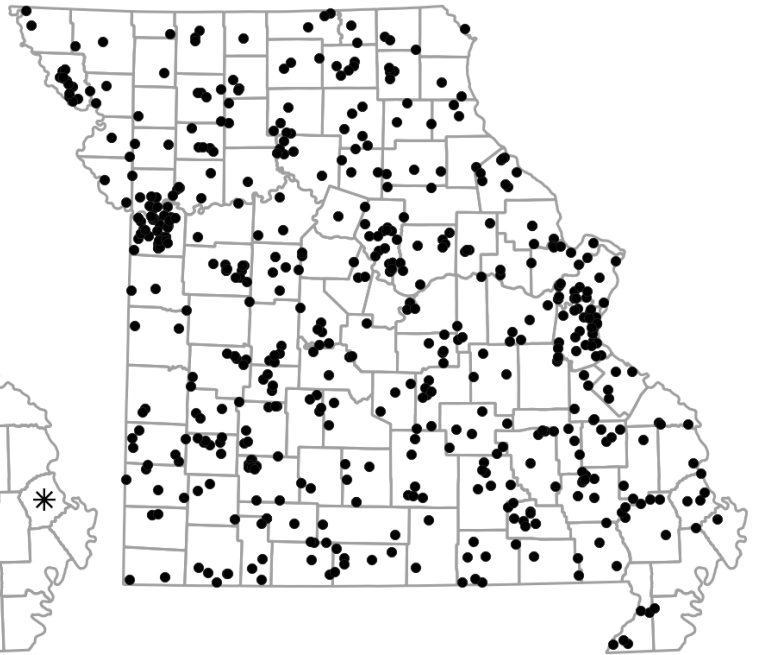
Hemidactylus turcicus
Mediterranean Gecko



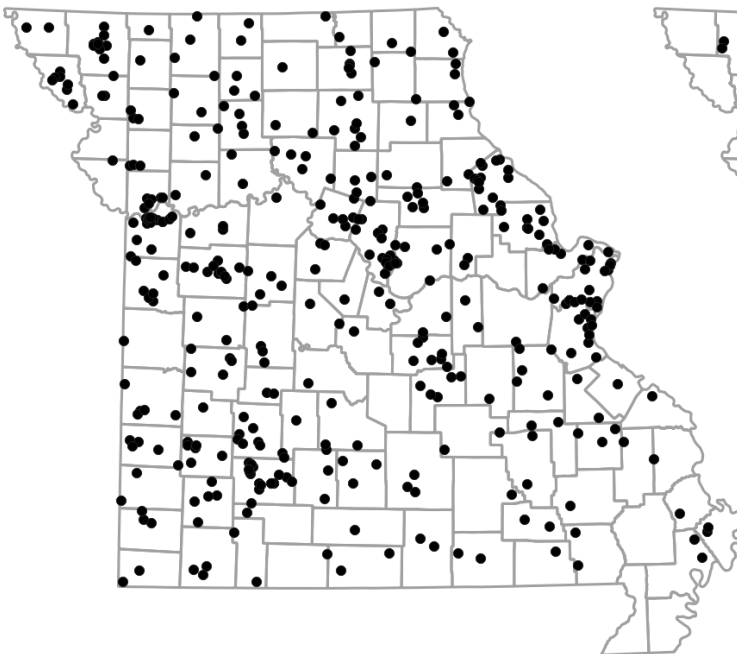
Podarcis siculus
Italian Wall Lizard



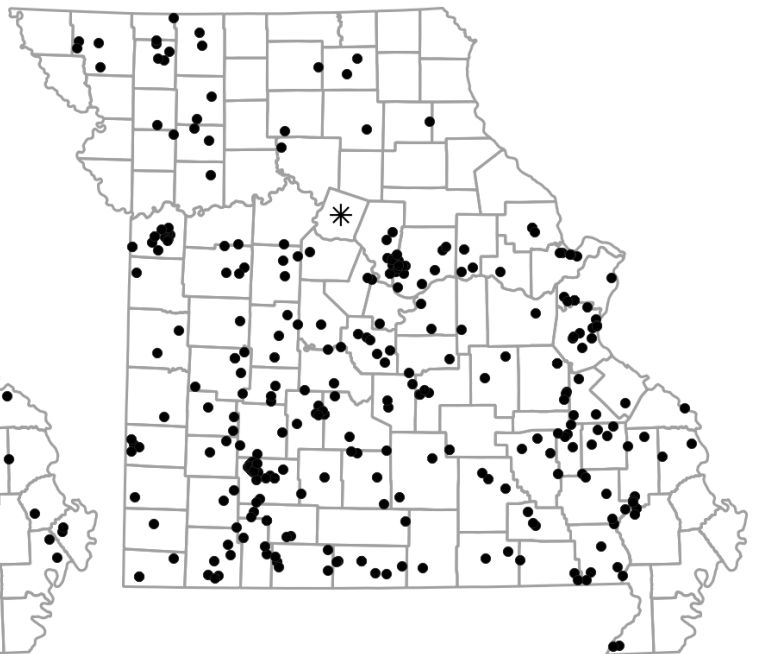
Cemophora coccinea
Northern Scarletsnake



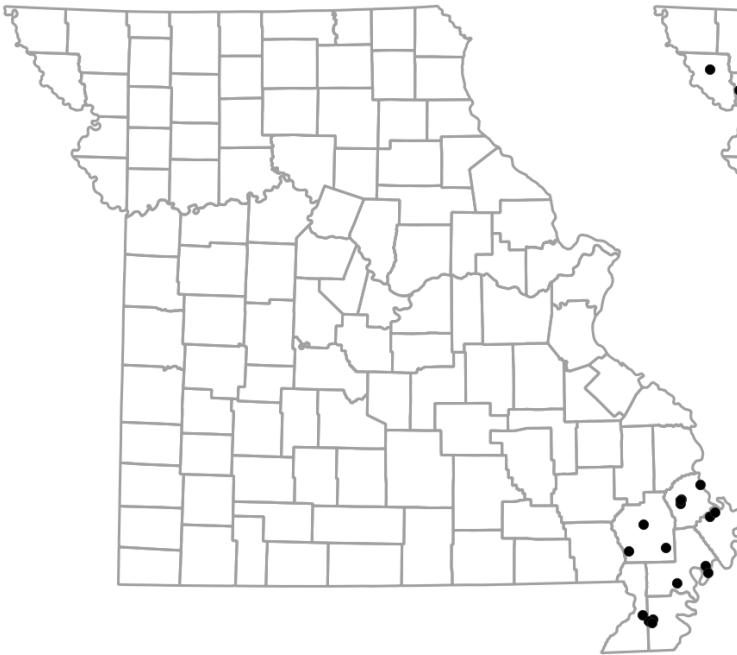
Coluber constrictor
North American Racer



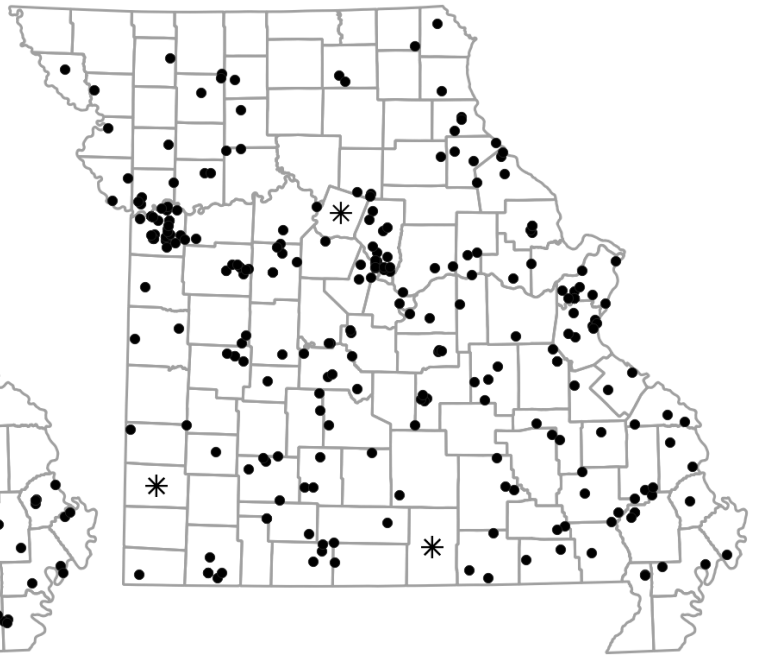
Lampropeltis calligaster
Prairie Kingsnake



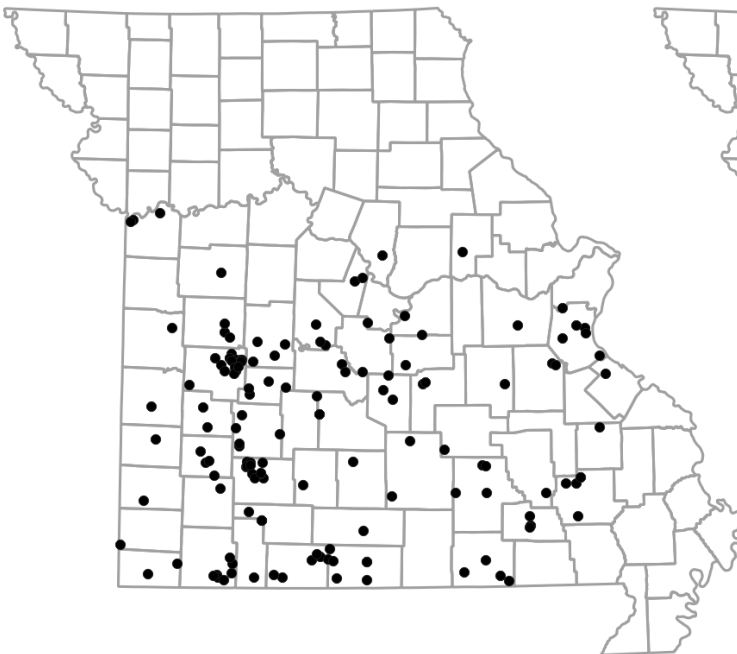
Lampropeltis holbrooki
Speckled Kingsnake



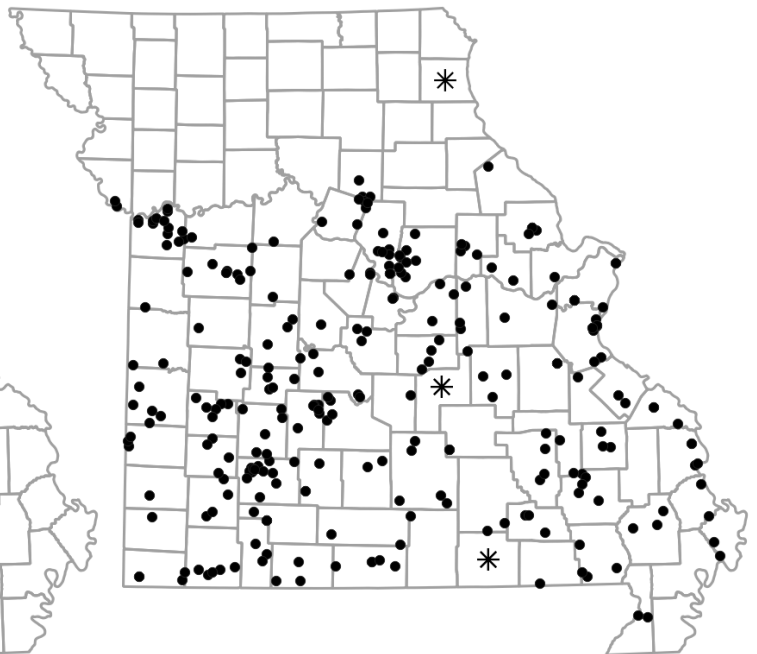
Lampropeltis nigra
Eastern Black Kingsnake



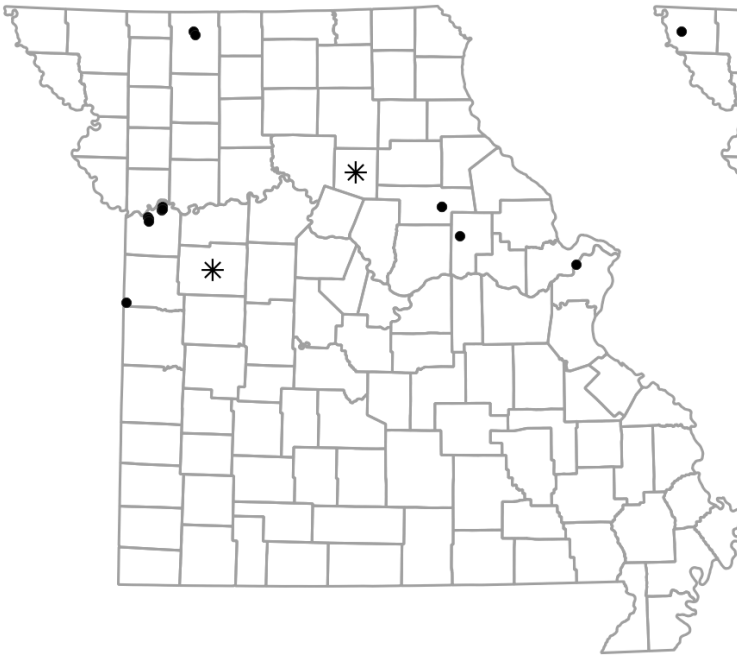
Lampropeltis triangulum
Eastern Milksnake



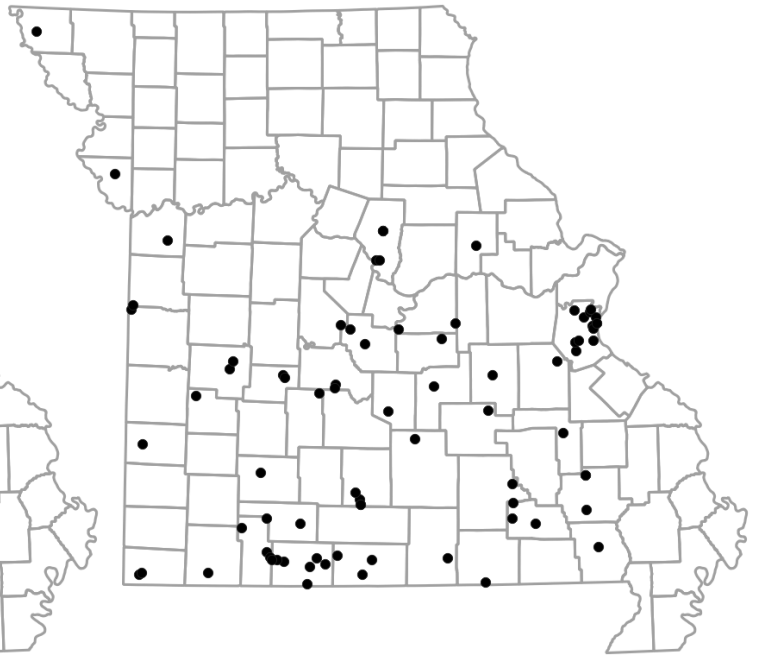
Masticophis flagellum
Eastern Coachwhip



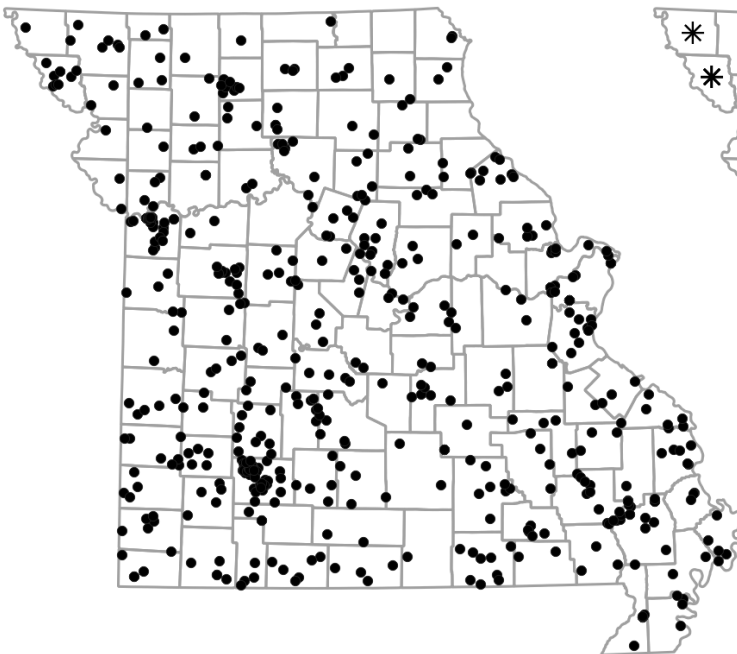
Opheodrys aestivus
Northern Rough Greensnake



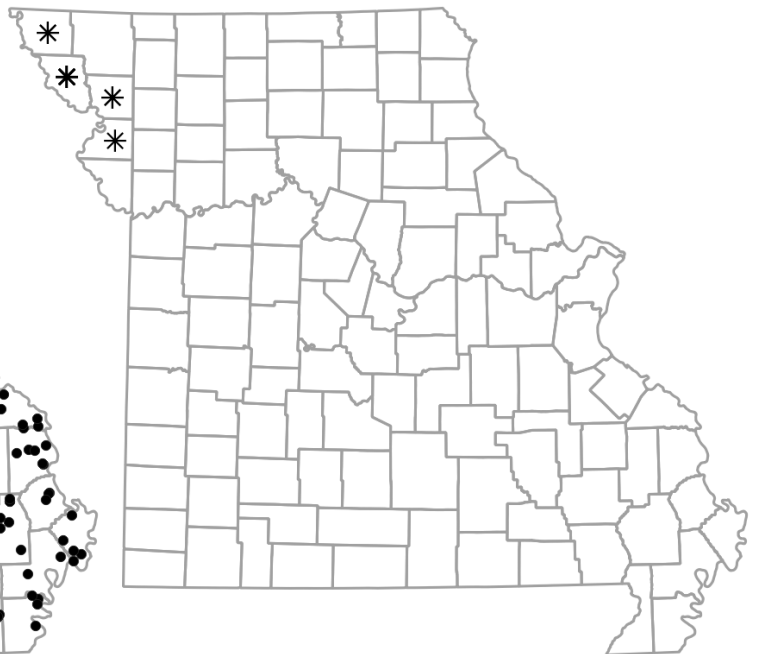
Opheodrys vernalis
Smooth Greensnake



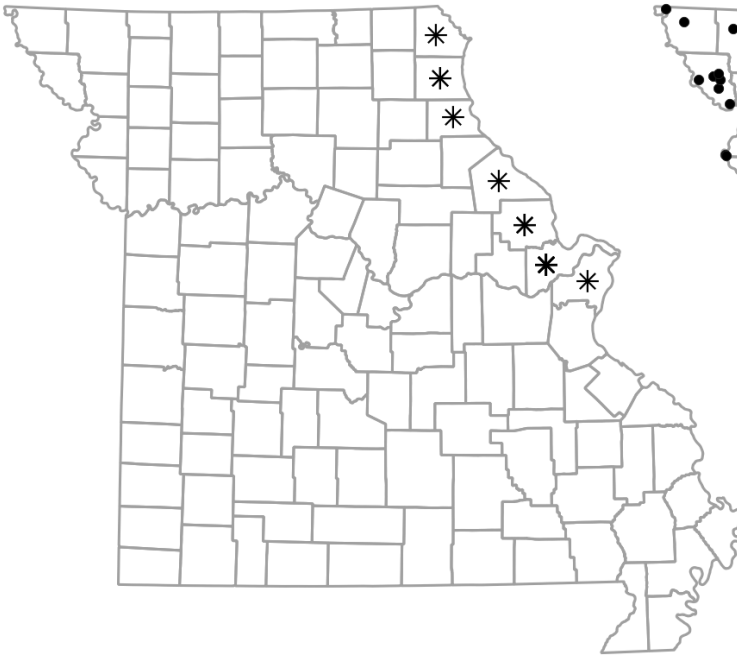
Pantherophis emoryi
Great Plains Ratsnake



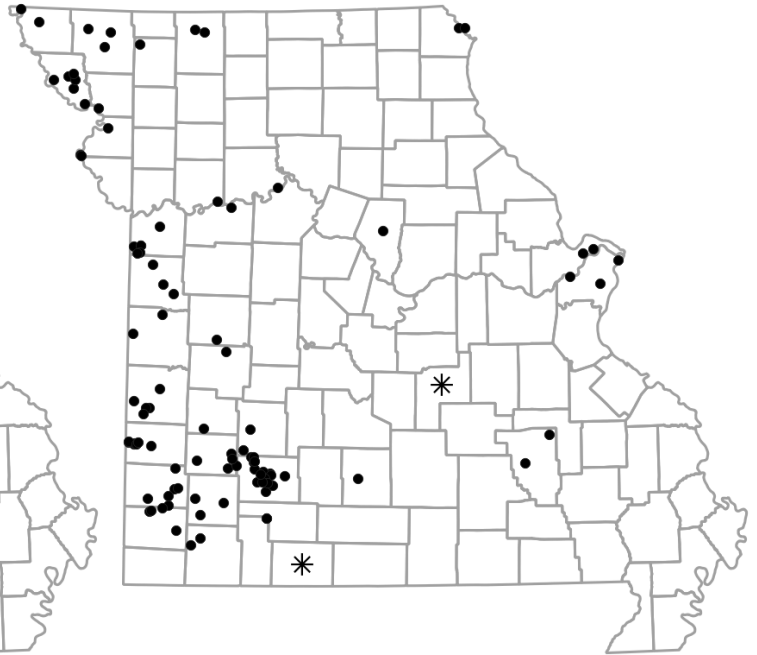
Pantherophis obsoletus
Western Ratsnake



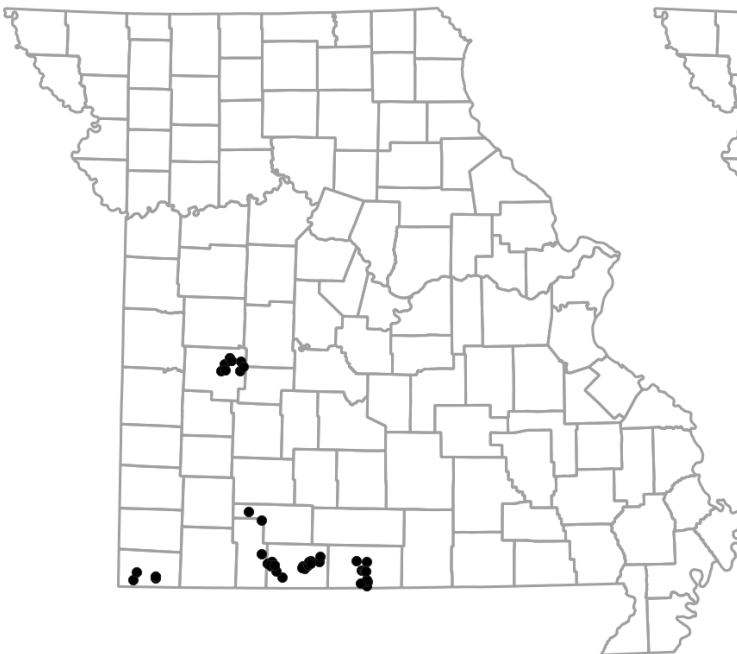
Pantherophis ramspotti
Western Foxsnake



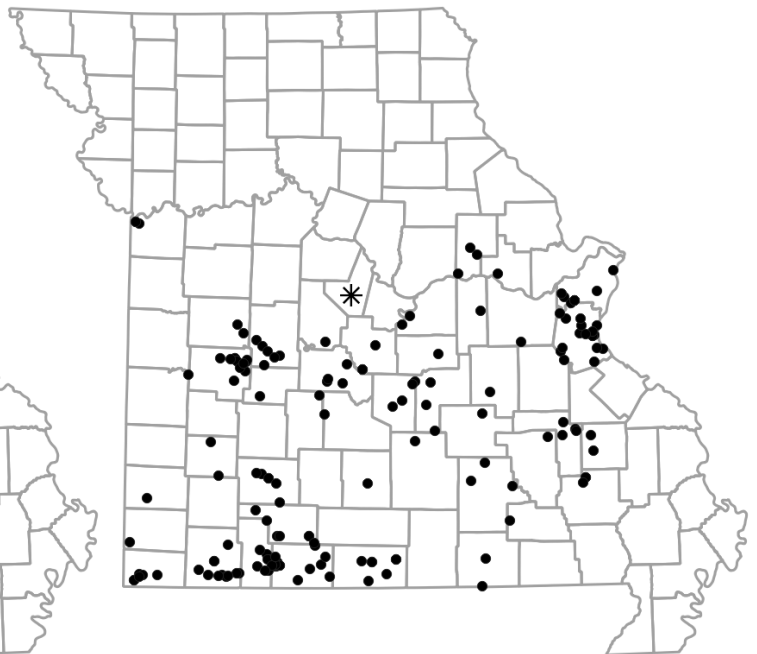
Pantherophis vulpinus
Eastern Foxsnake



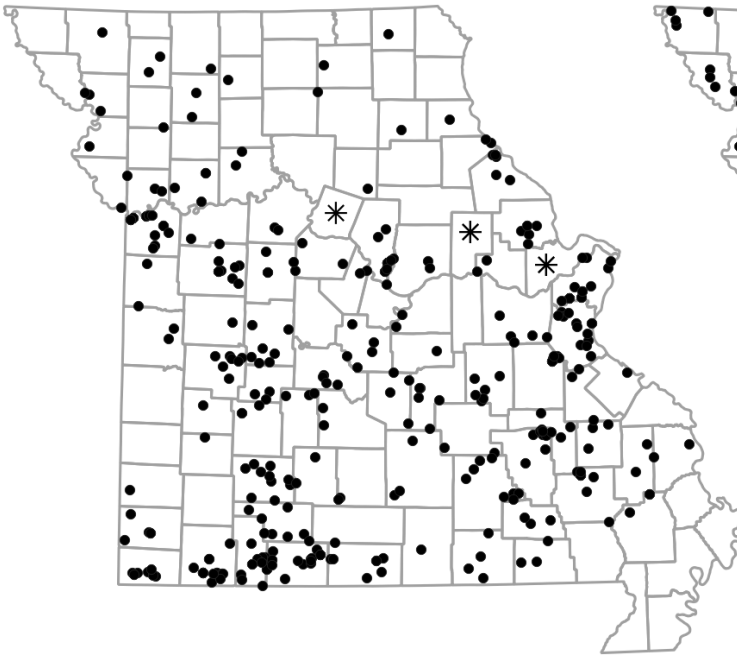
Pituophis catenifer
Bullsnake



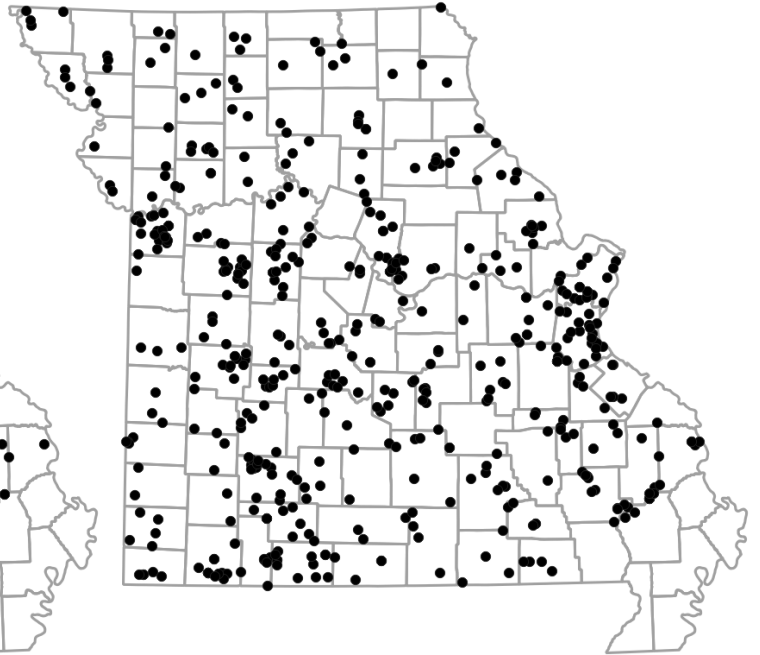
Sonora episcopa
Great Plains Groundsnake



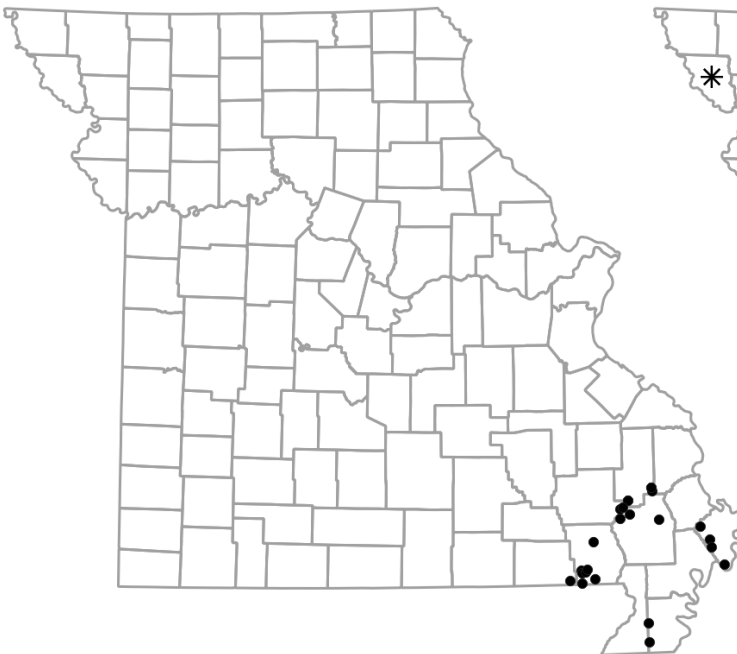
Tantilla gracilis
Flat-headed Snake



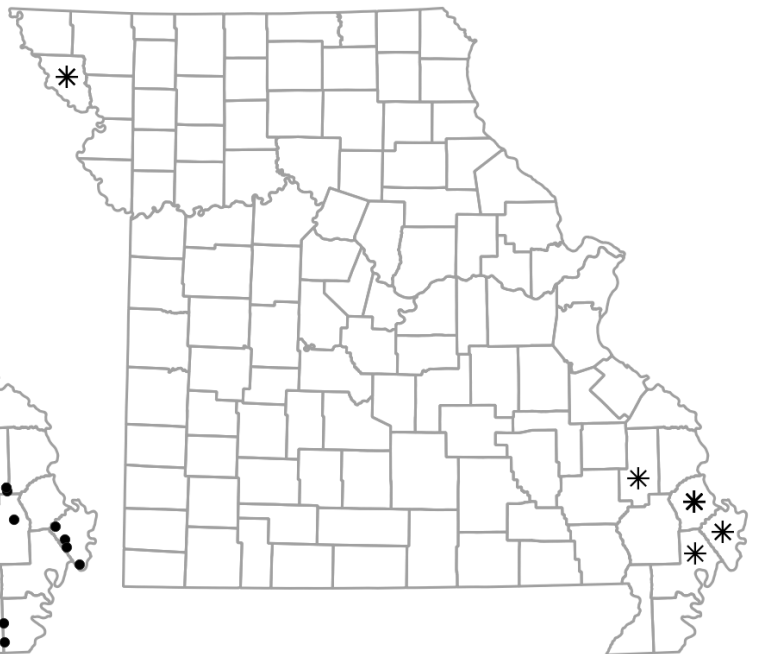
Carphophis vermis
Western Wormsnake



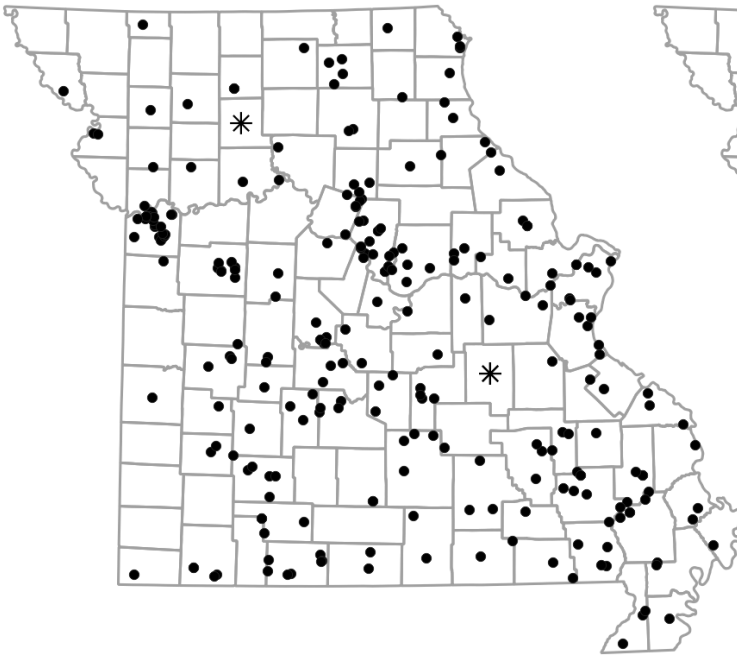
Diadophis punctatus
Ring-necked Snake



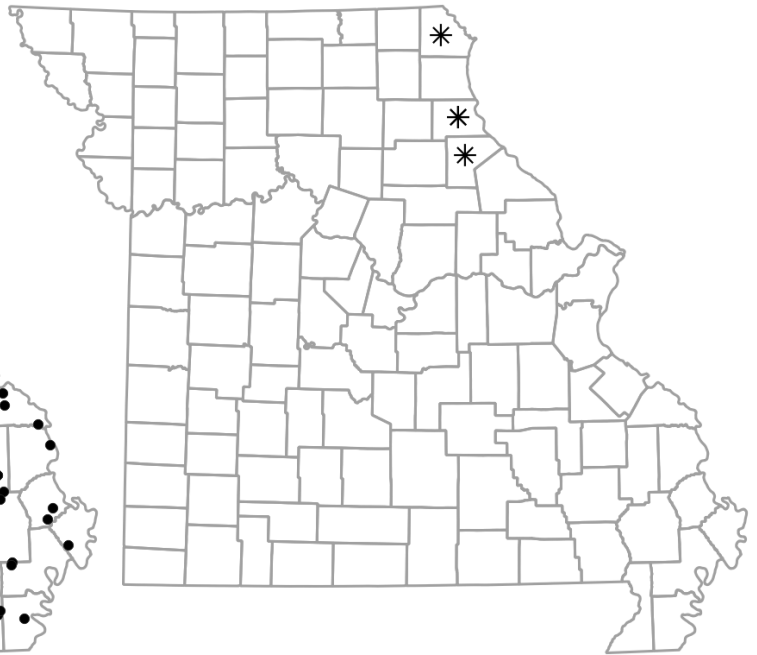
Farancia abacura
Western Mudsnake



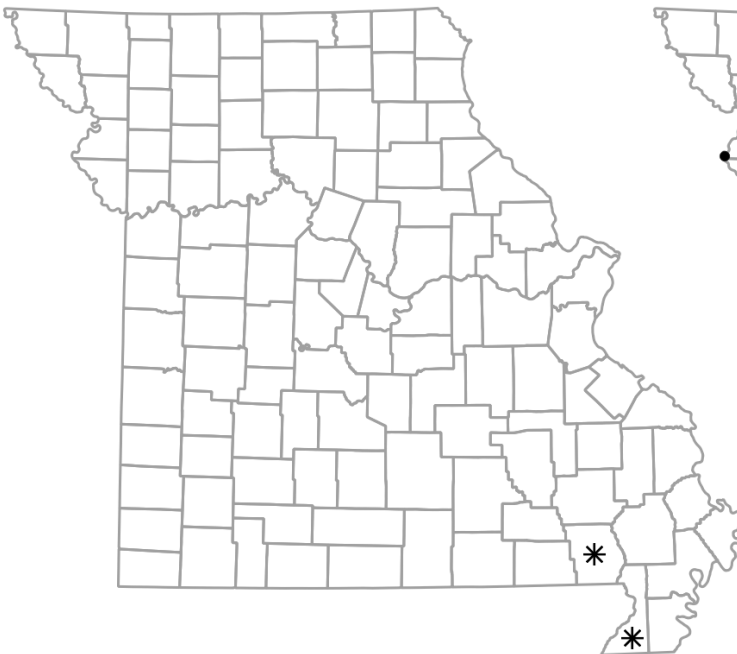
Heterodon nasicus
Western Hog-nosed Snake



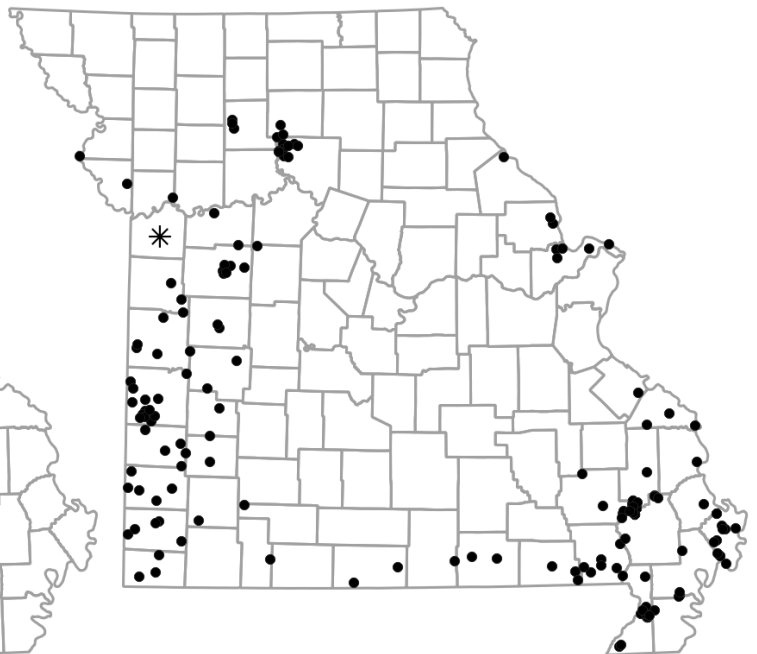
Heterodon platirhinos
Eastern Hog-nosed Snake



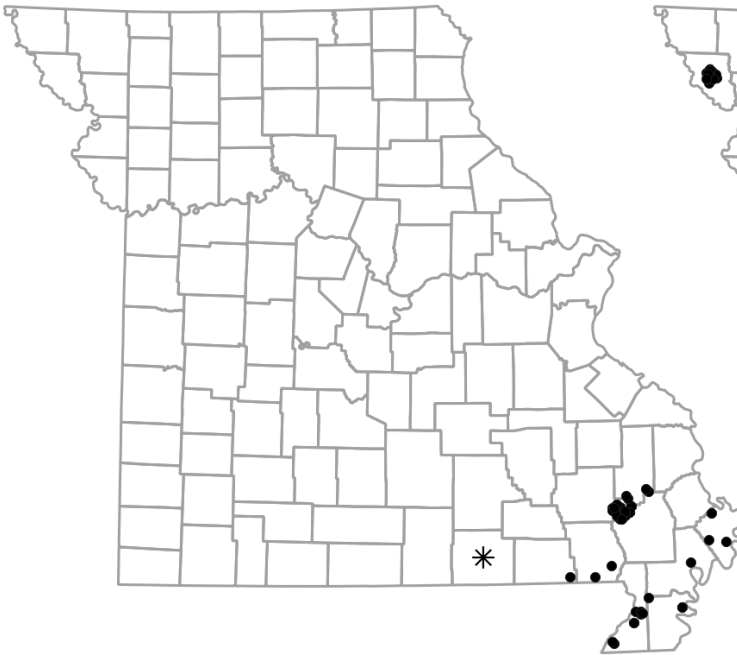
Clonophis kirtlandii
Kirtland's Snake



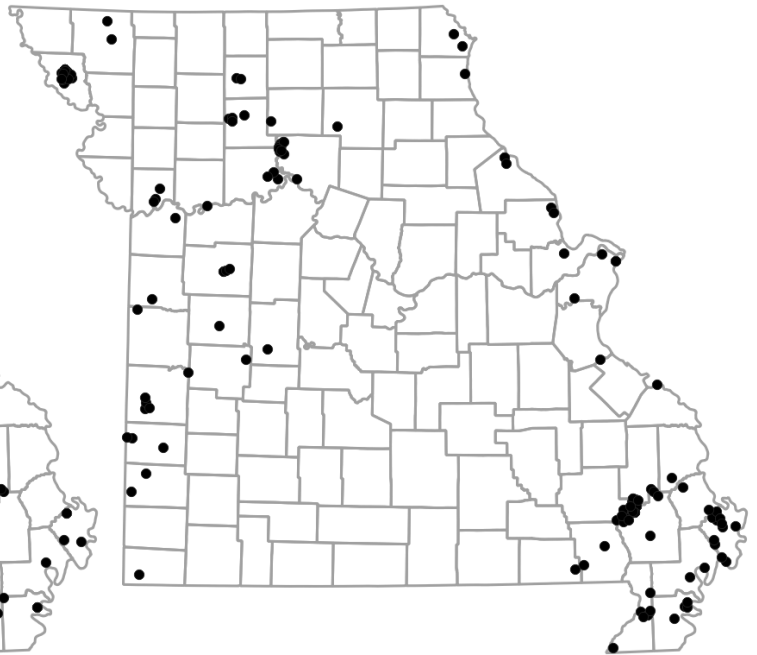
Nerodia cyclopion
Mississippi Green Watersnake



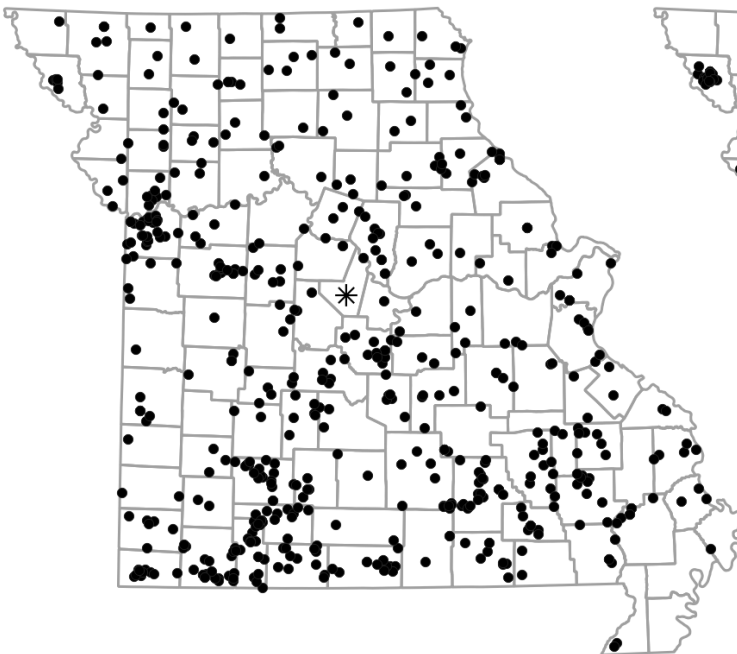
Nerodia erythrogaster
Yellow-bellied Watersnake



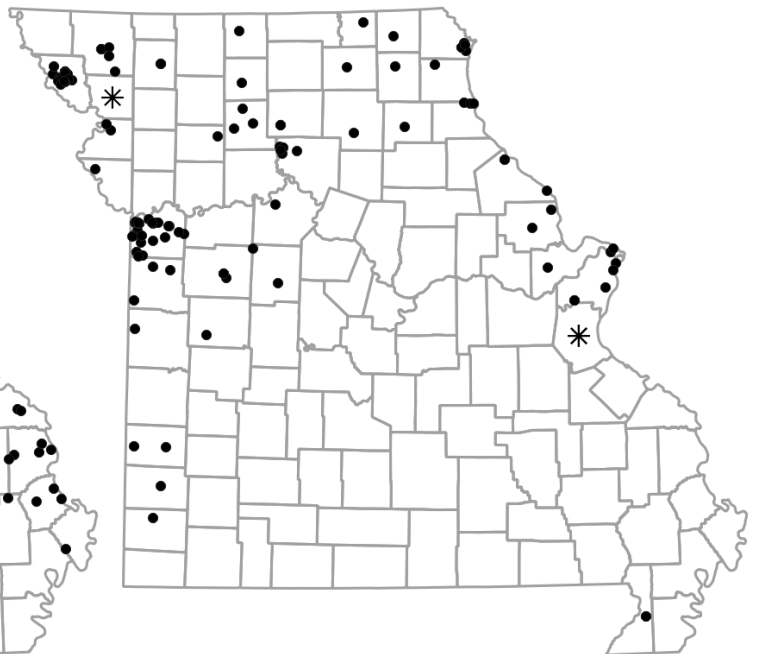
Nerodia fasciata
Broad-banded Watersnake



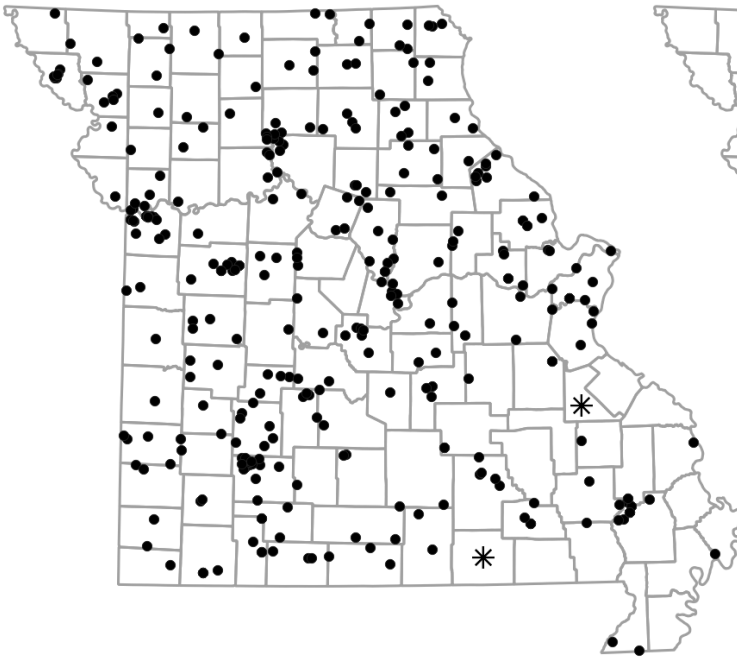
Nerodia rhombifer
Northern Diamond-backed Watersnake



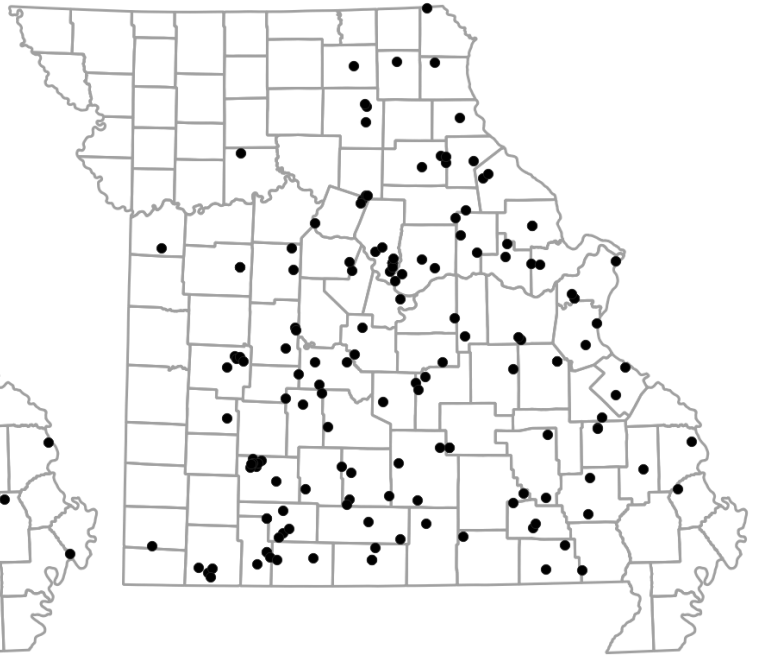
Nerodia sipedon
Common Watersnake



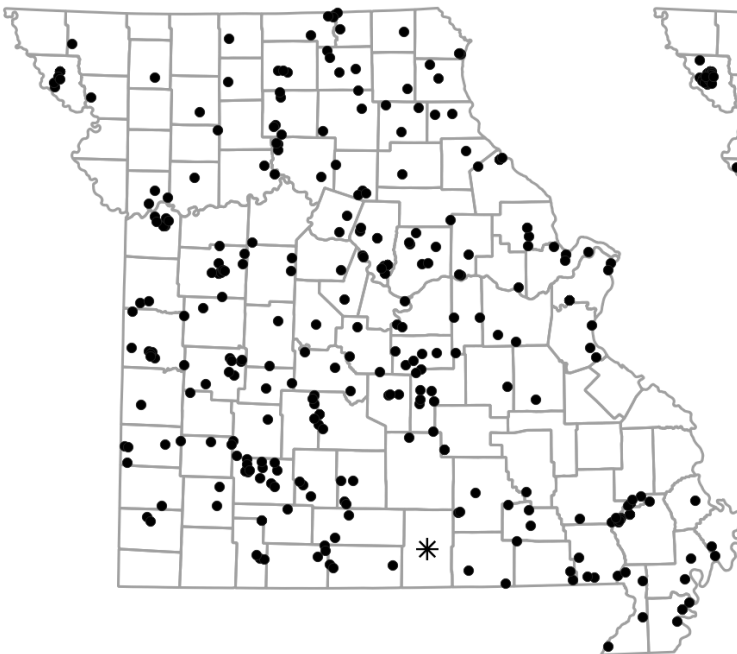
Regina grahamii
Graham's Crawfish Snake



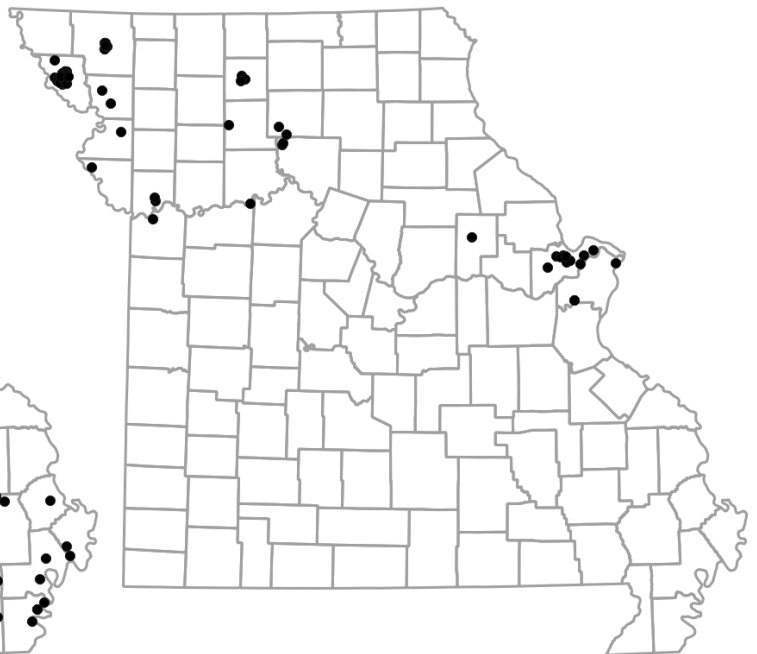
Storeria dekayi
DeKay's Brownsnake



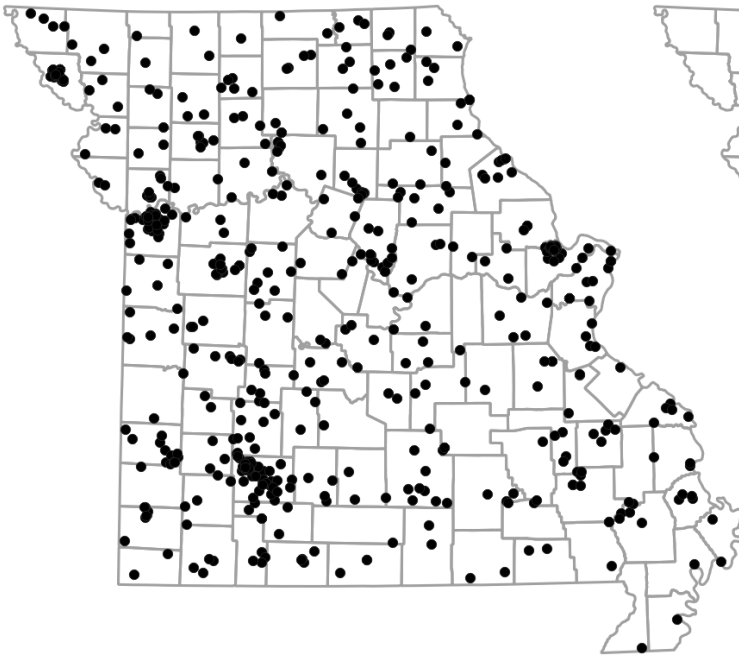
Storeria occipitomaculata
Red-bellied Snake



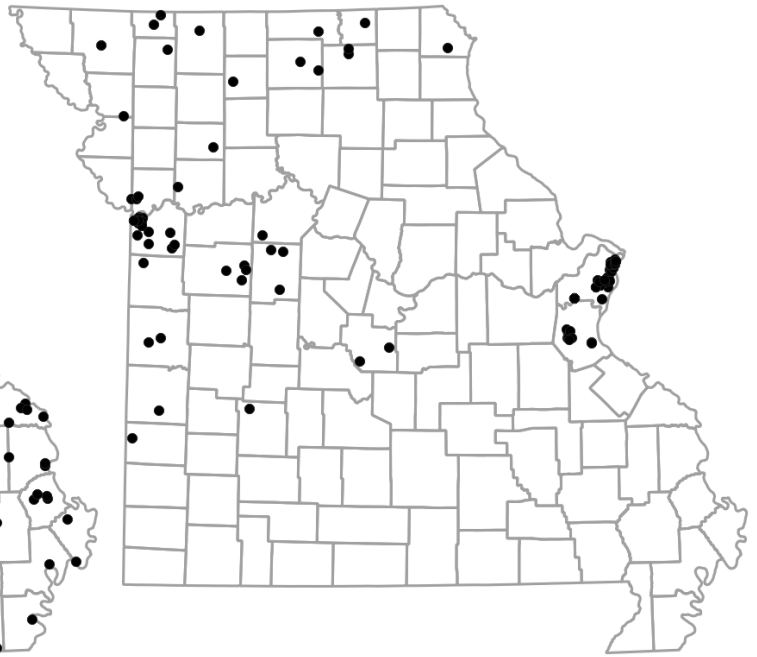
Thamnophis proximus
Orange-striped Ribbonsnake



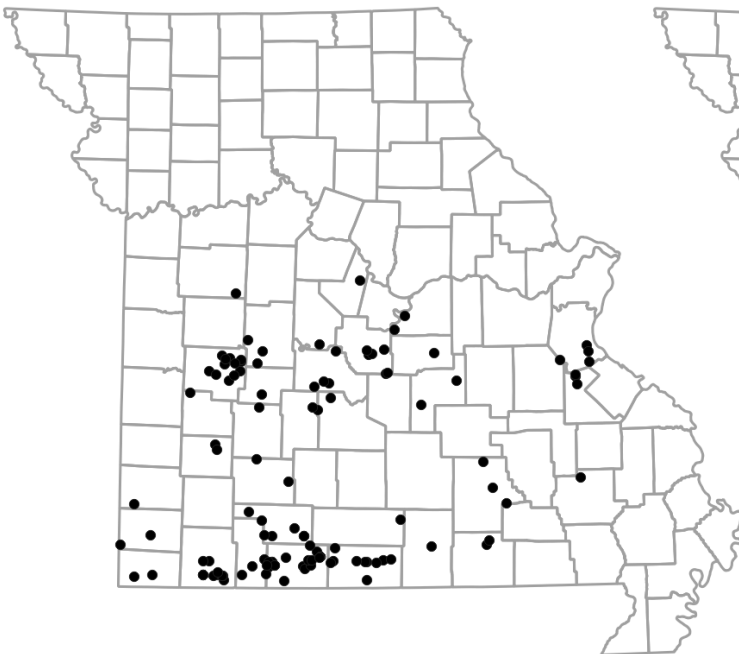
Thamnophis radix
Plains Gartersnake



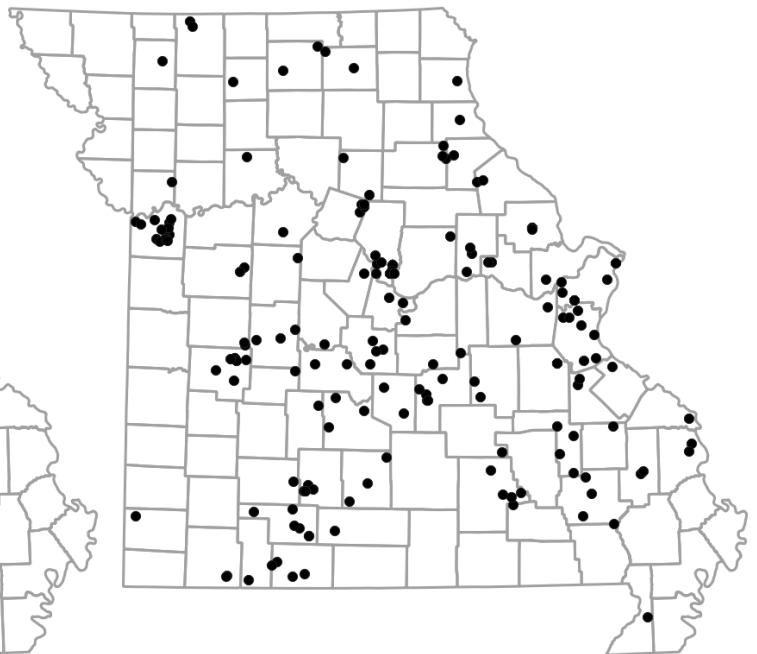
Thamnophis sirtalis
Common Gartersnake



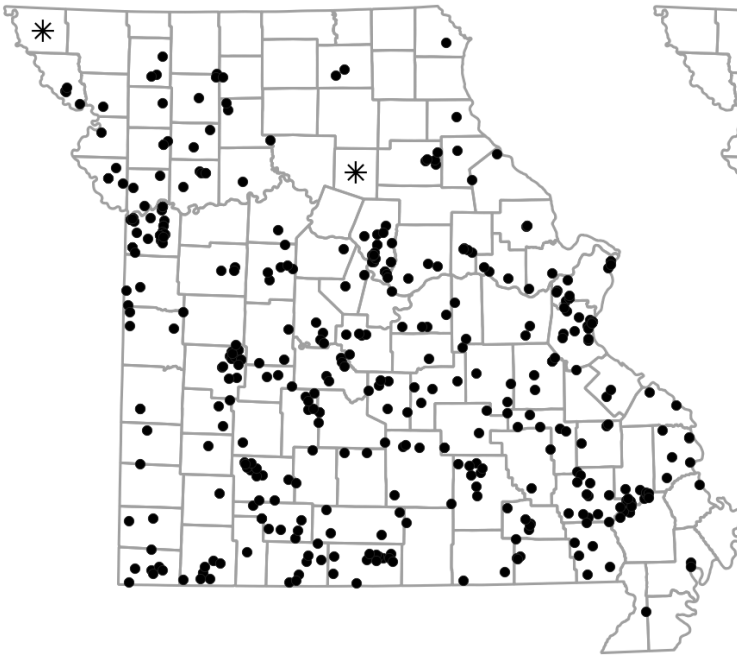
Tropidoclonion lineatum
Lined Snake



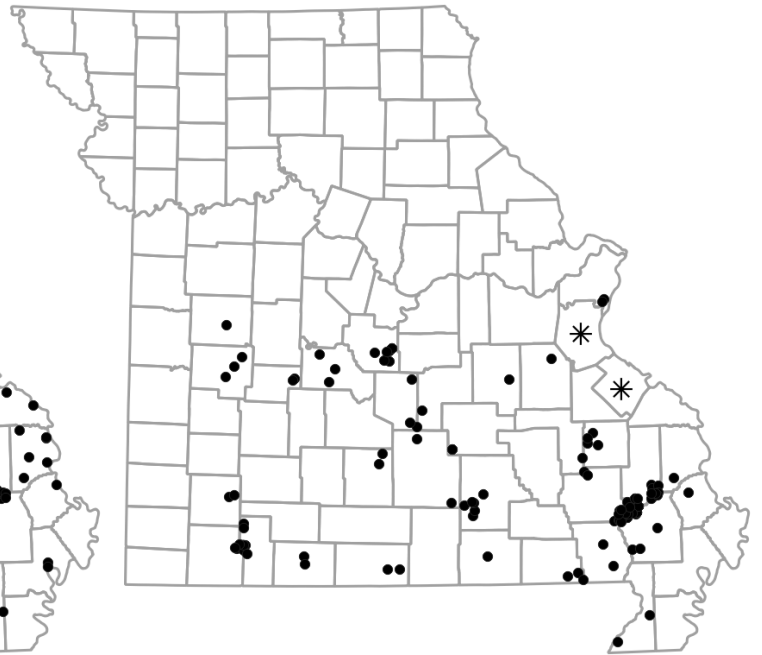
Virginia striatula
Rough Earthsnake



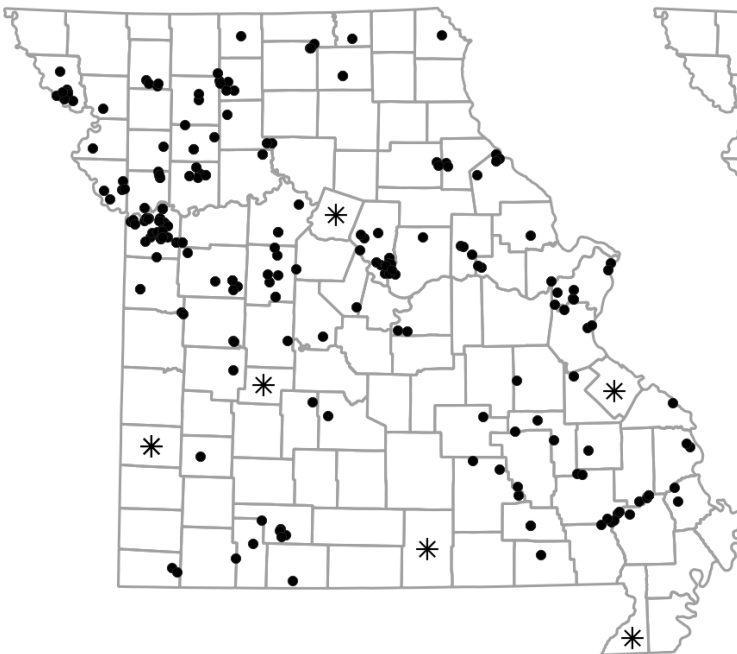
Virginia valeriae
Western Smooth Earthsnake



Agkistrodon contortrix
Eastern Copperhead



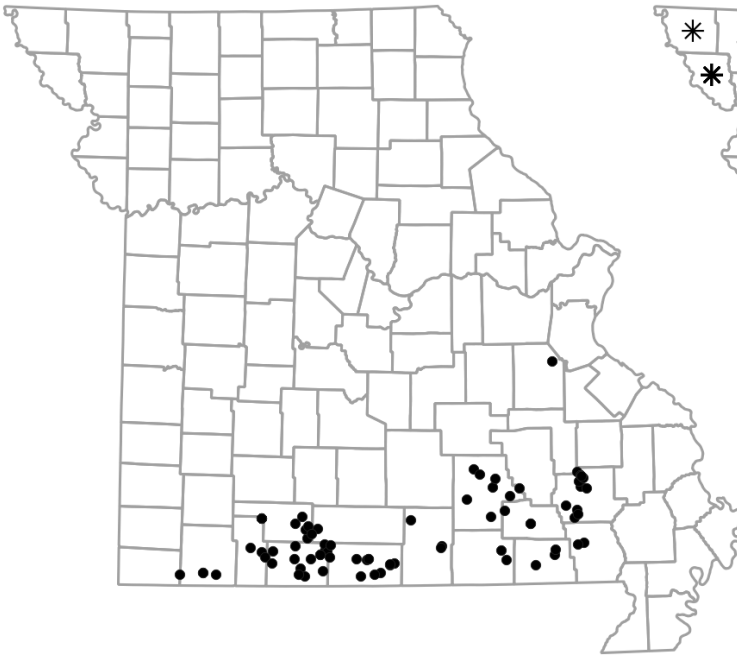
Agkistrodon piscivorus
Northern Cottonmouth



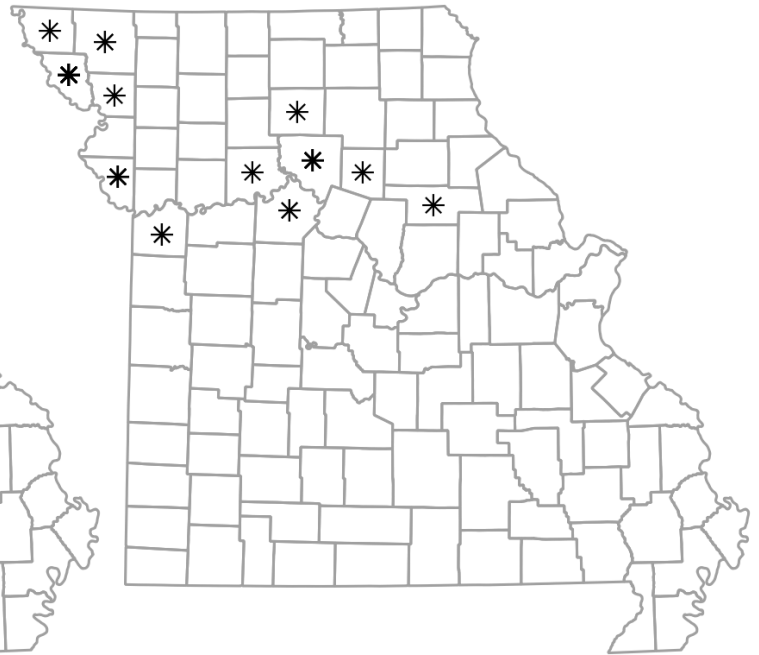
Crotalus horridus
Timber Rattlesnake



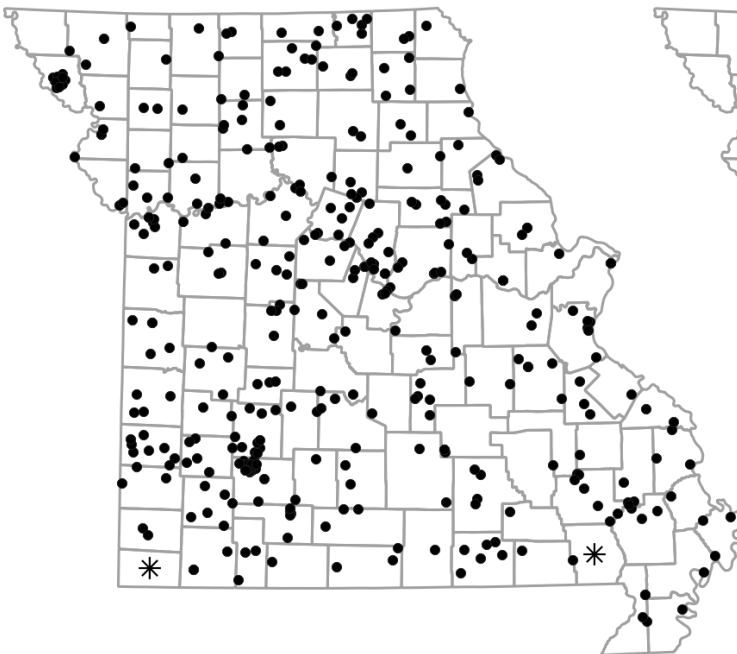
Sistrurus catenatus
Eastern Massasauga



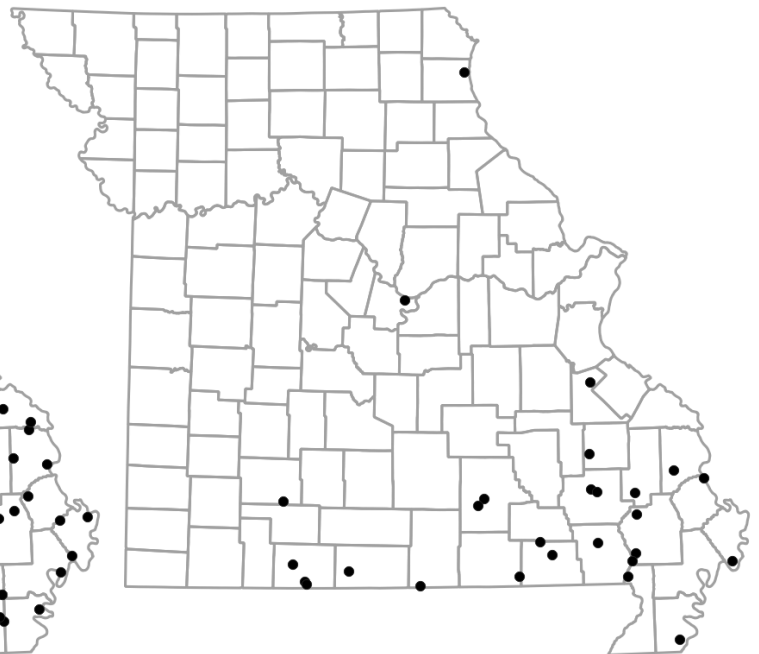
Sistrurus miliarius
Western Pygmy Rattlesnake



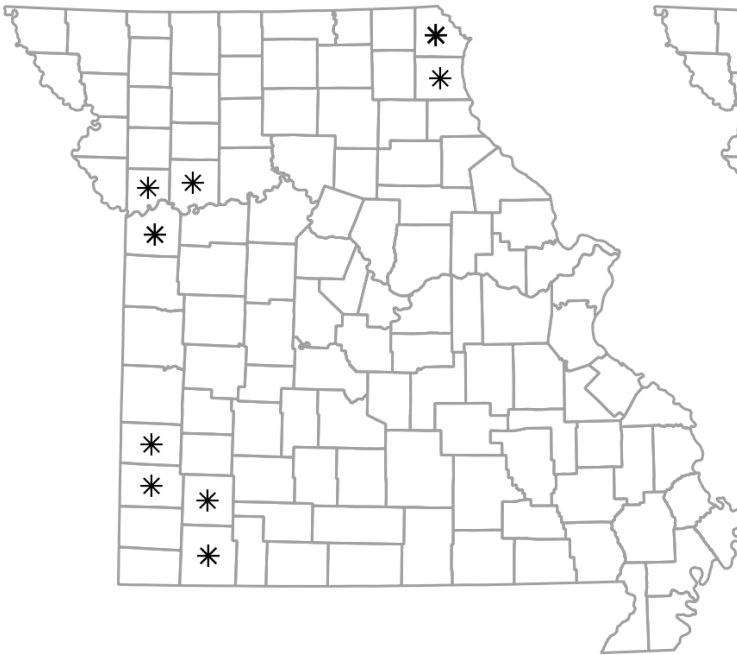
Sistrurus tergeminus
Prairie Massasauga



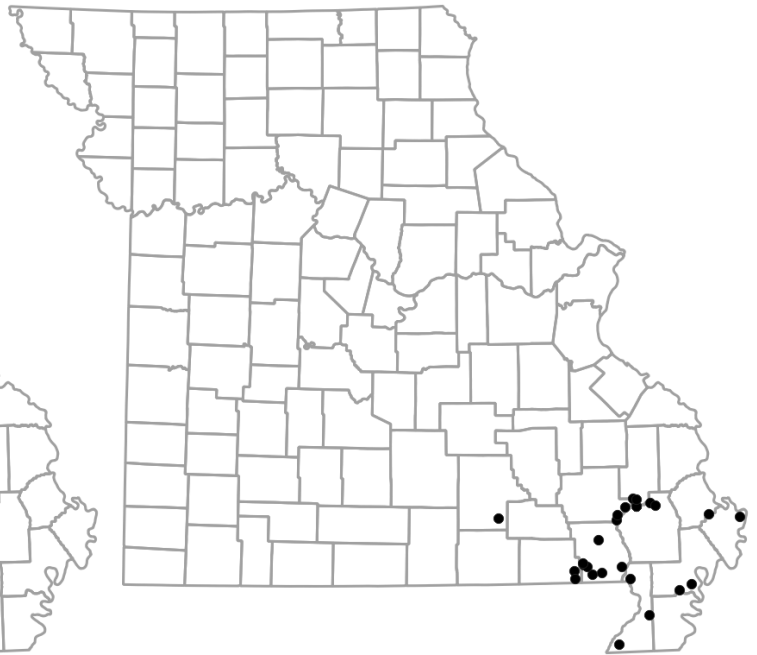
Chelydra serpentina
North American Snapping Turtle



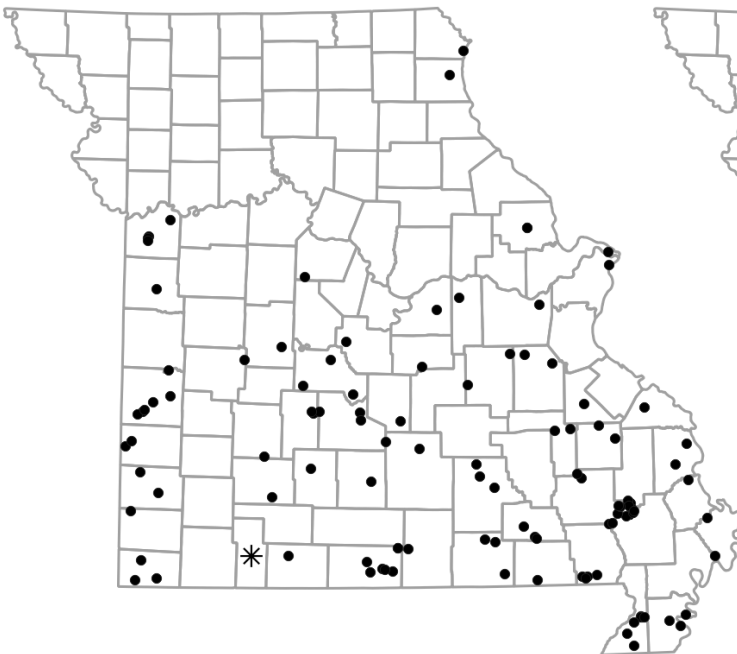
Macrochelys temminckii
Western Alligator Snapping Turtle



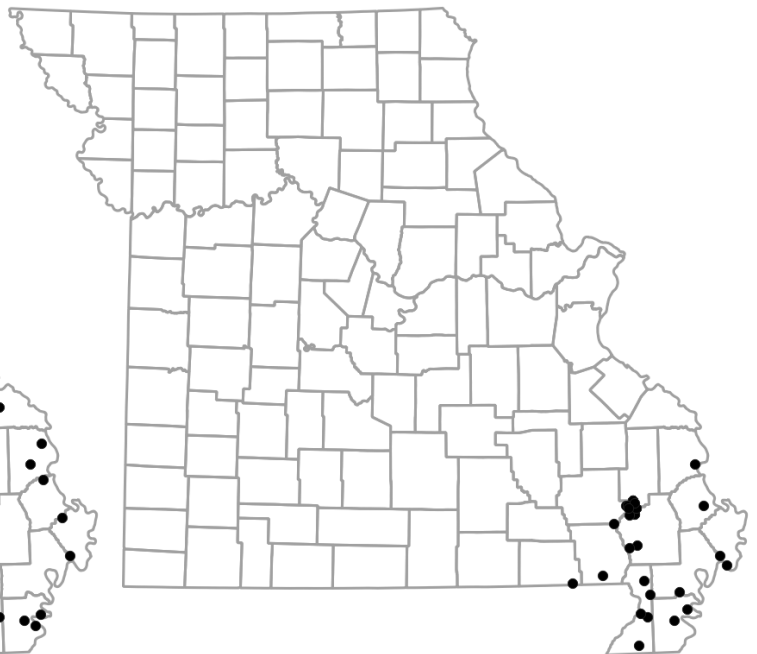
Kinosternon flavescens
Yellow Mud Turtle



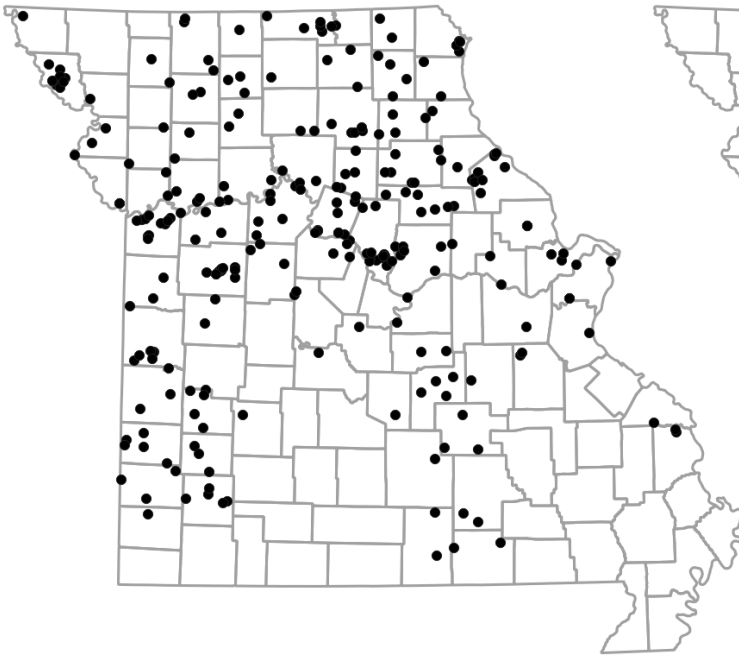
Kinosternon subrubrum
Mississippi Mud Turtle



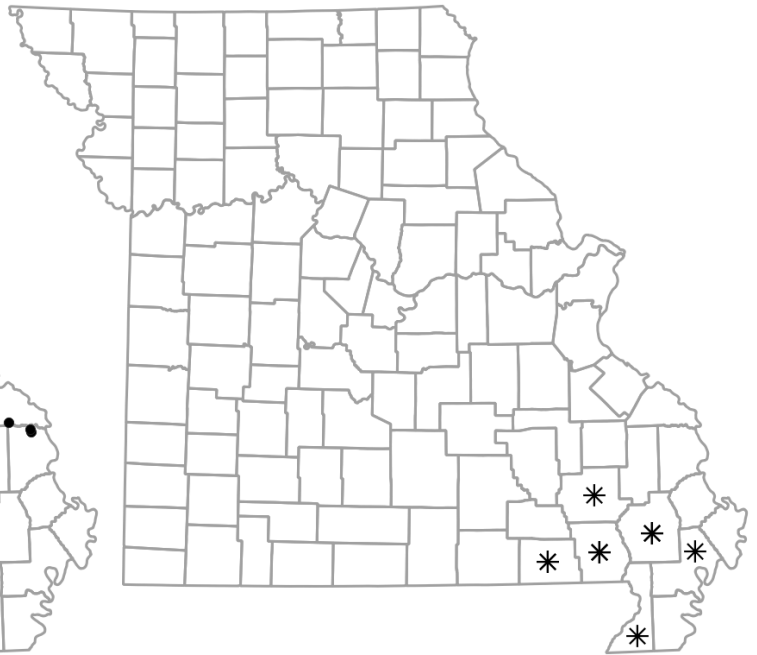
Sternotherus odoratus
Eastern Musk Turtle



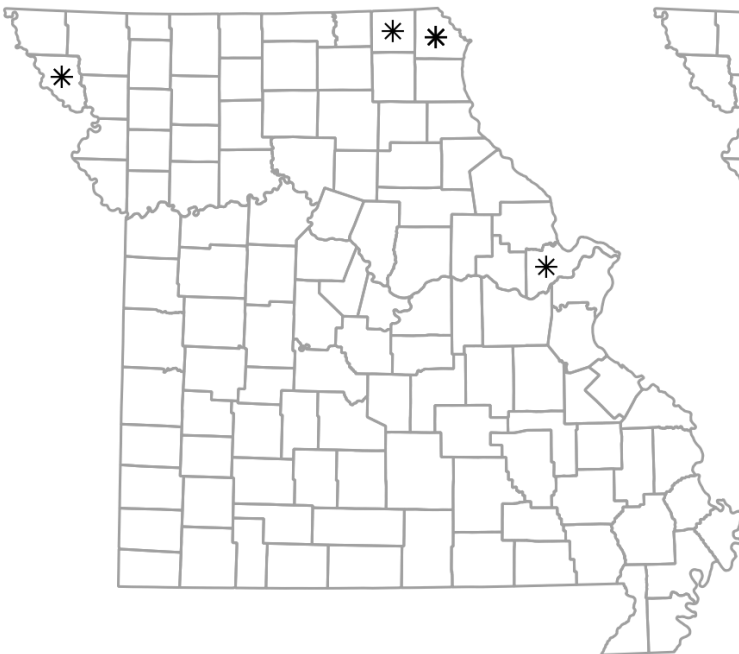
Chrysemys dorsalis
Southern Painted Turtle



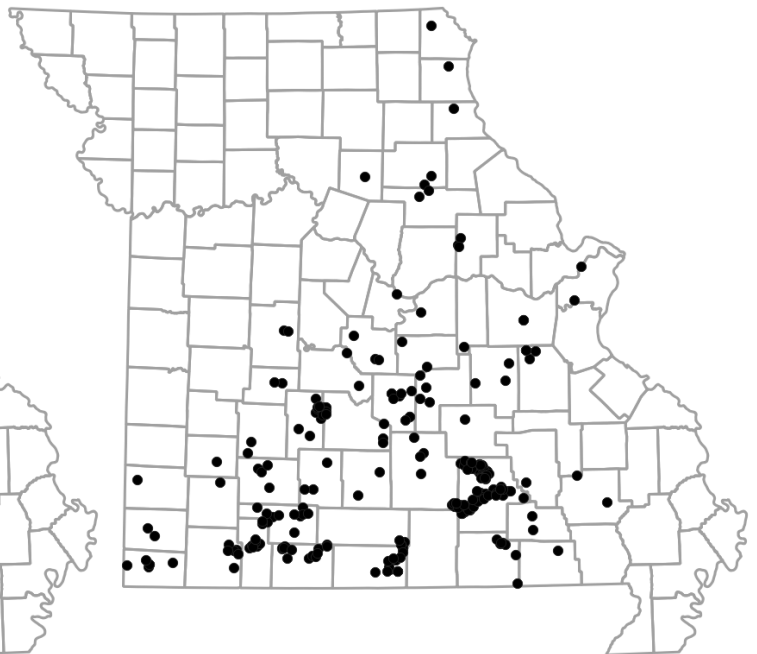
Chrysemys picta
Western Painted Turtle



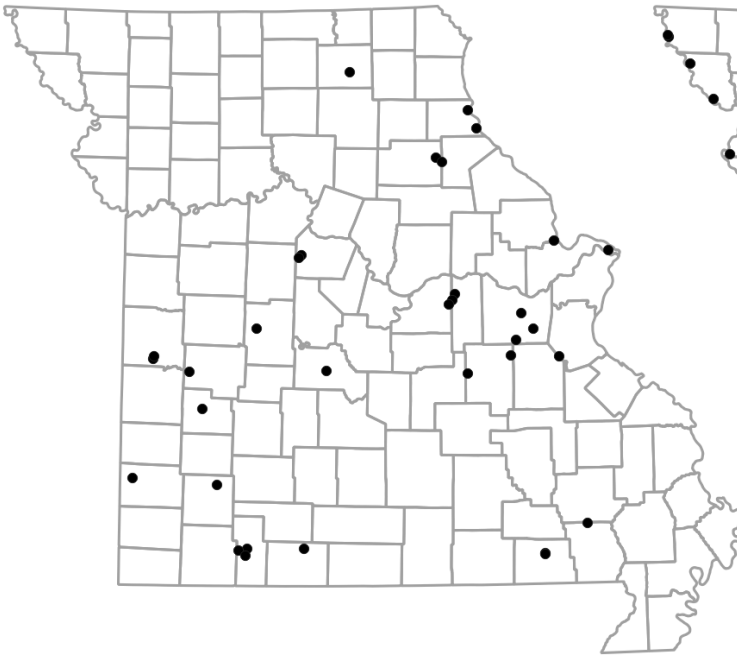
Deirochelys reticularia
Western Chicken Turtle



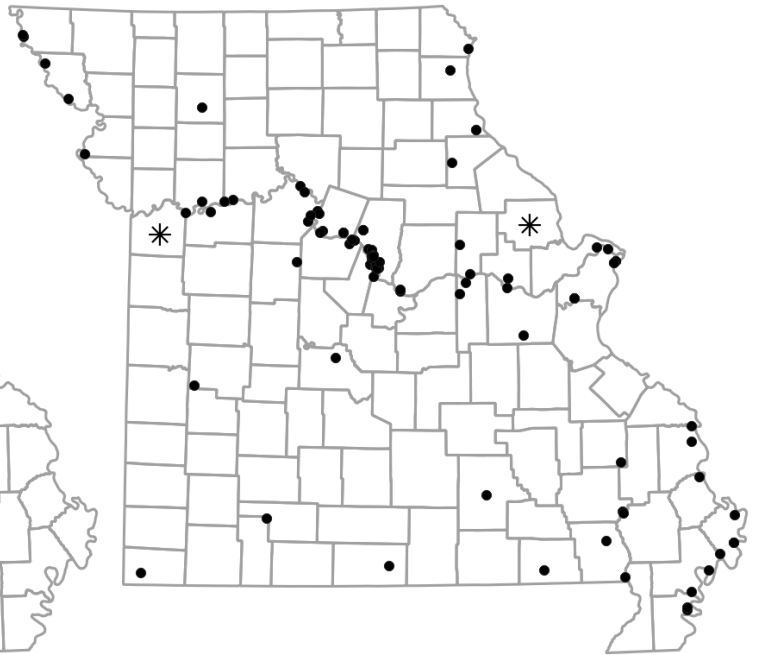
Emydoidea blandingii
Blanding's Turtle



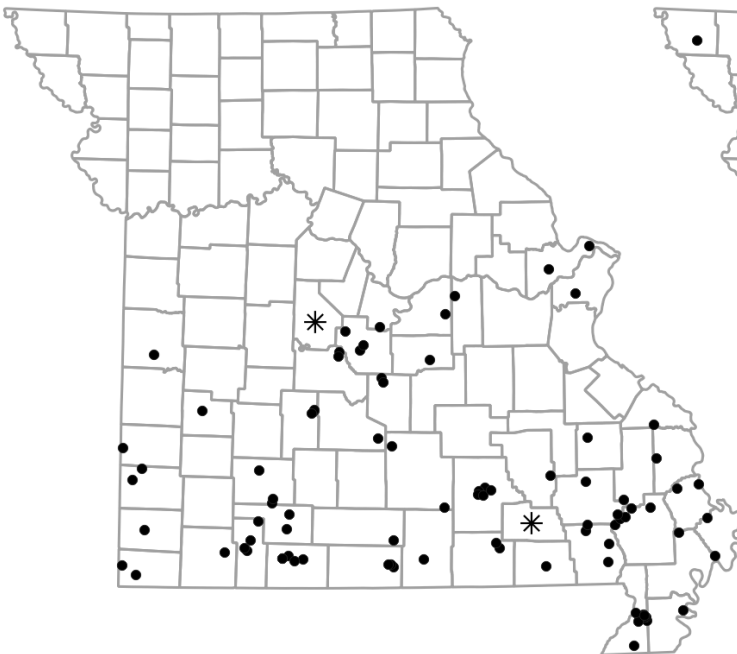
Graptemys geographica
Northern Map Turtle



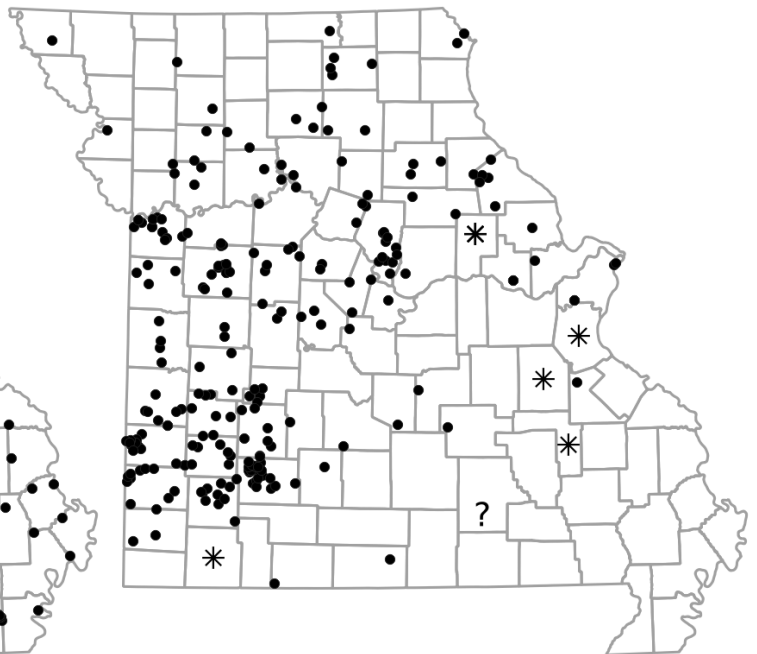
Graptemys ouachitensis
Ouachita Map Turtle



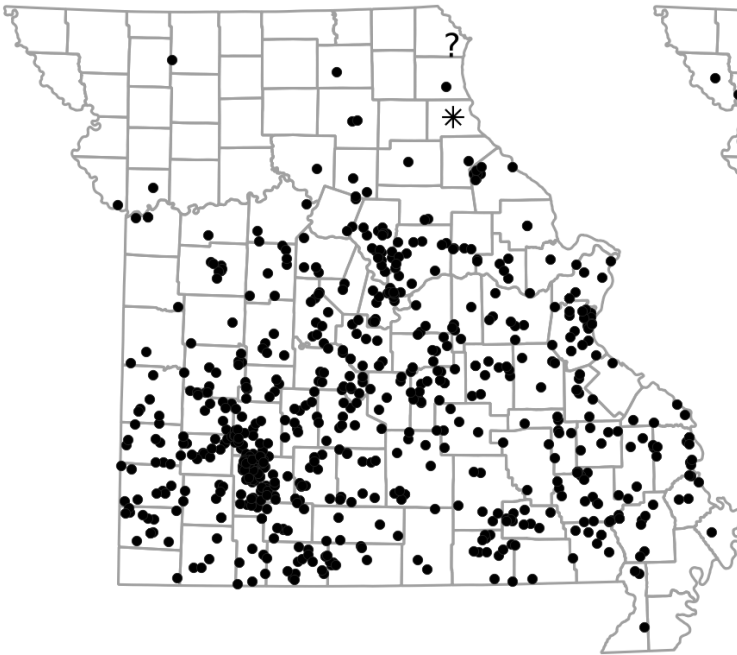
Graptemys pseudogeographica
False Map Turtle



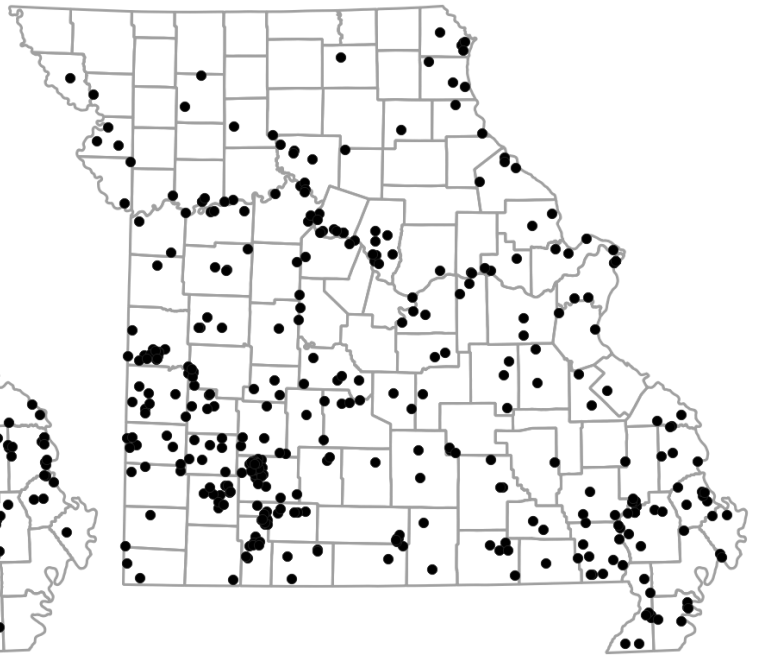
Pseudemys concinna
Eastern River Cooter



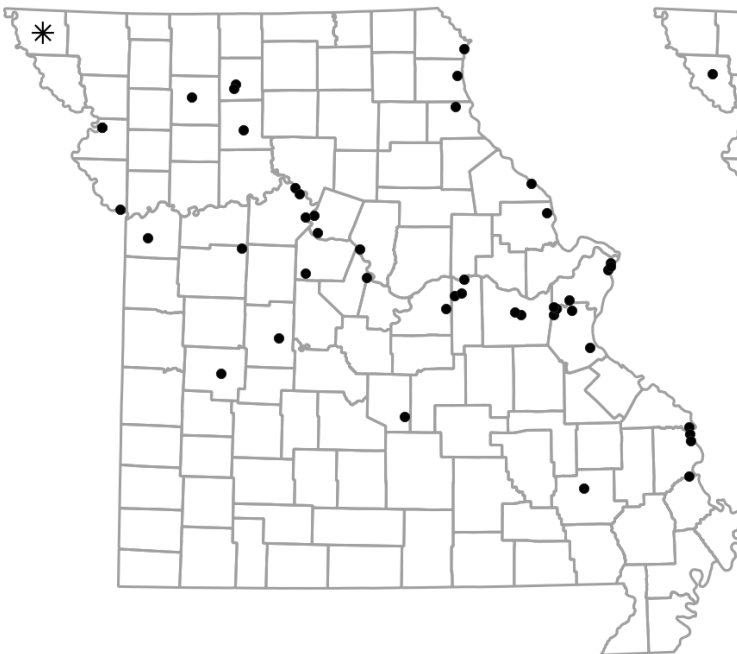
Terrapene ornata
Ornate Box Turtle



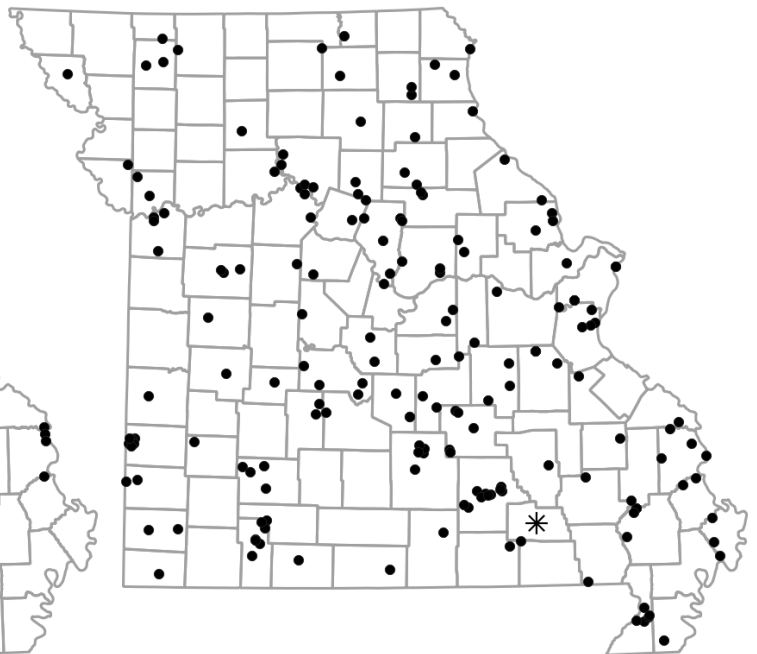
Terrapene triunguis
Three-toed Box Turtle



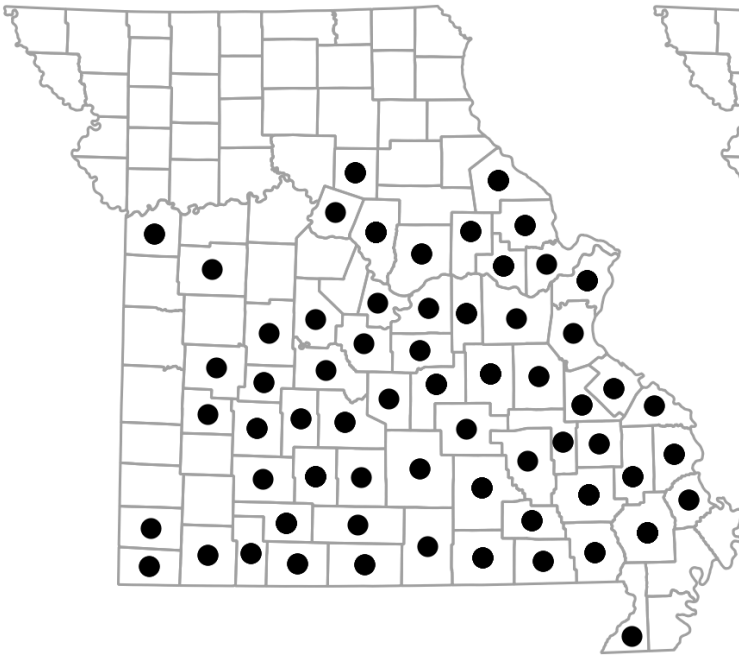
Trachemys scripta
Red-eared Slider



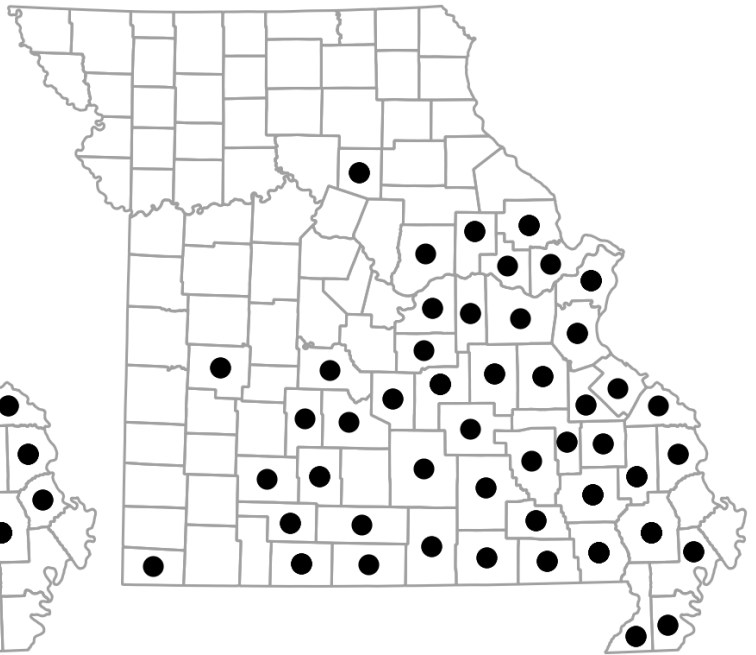
Apalone mutica
Midland Smooth Softshell



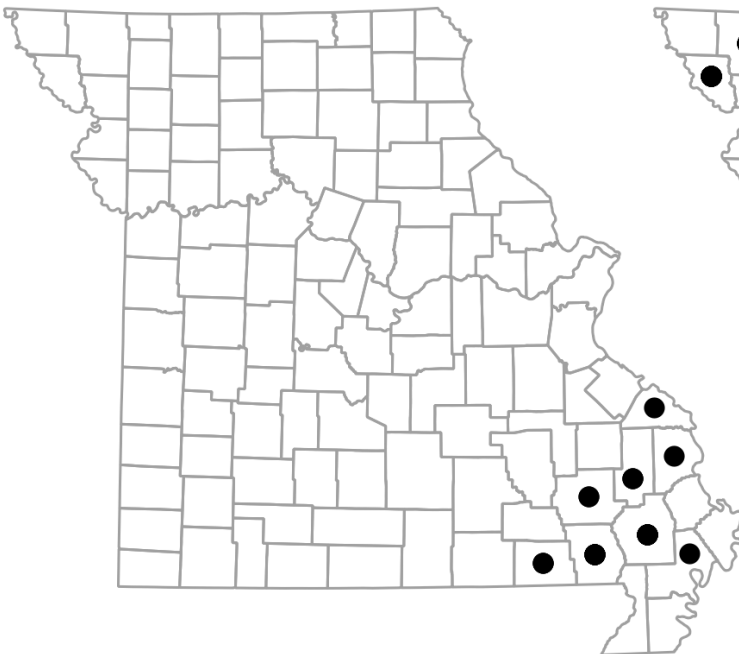
Apalone spinifera
Northern Spiny Softshell



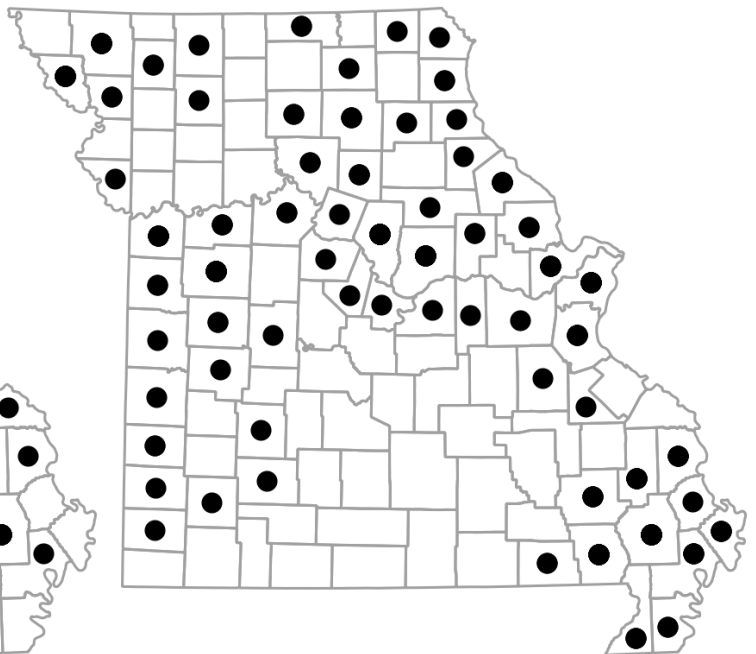
Ambystoma maculatum
Spotted Salamander



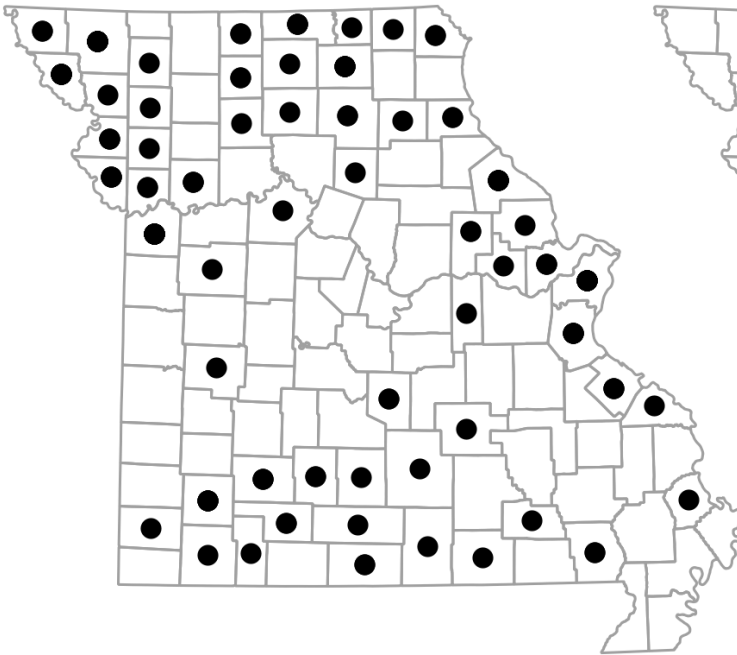
Ambystoma opacum
Marbled Salamander



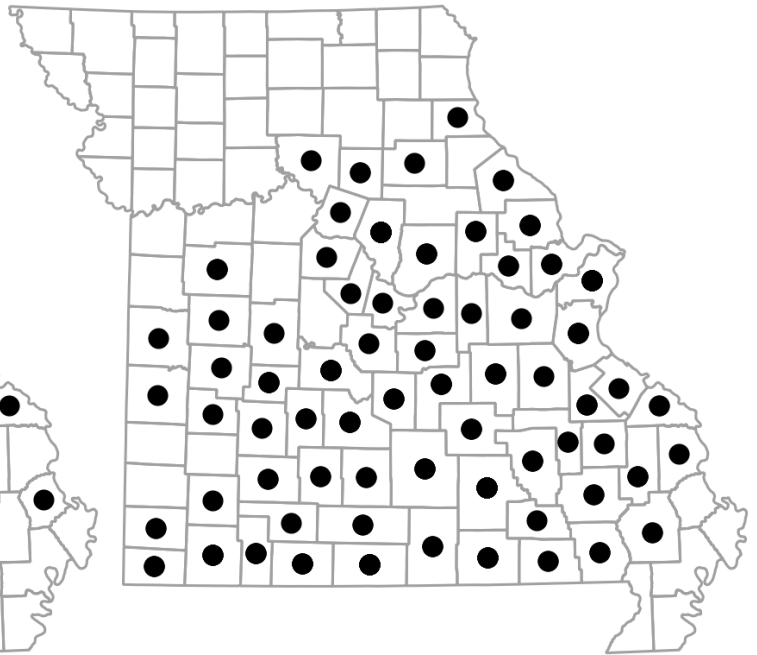
Ambystoma talpoideum
Mole Salamander



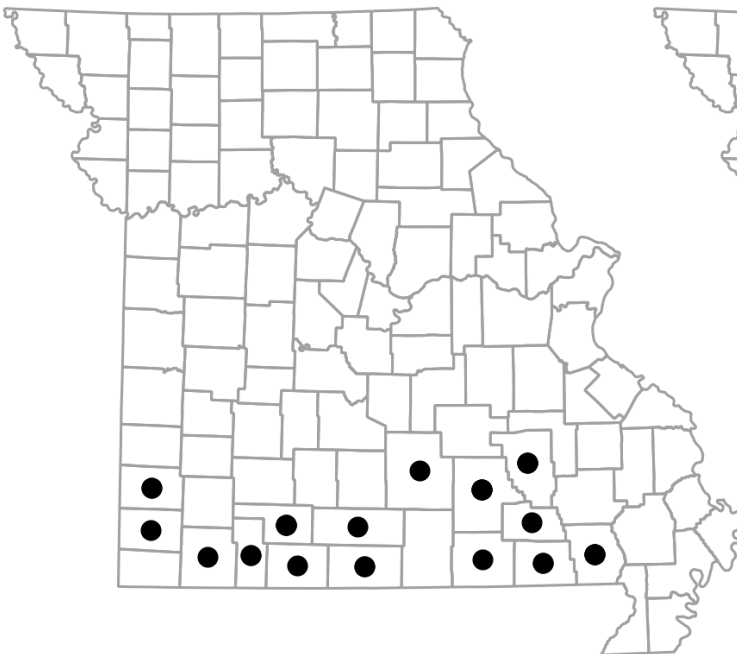
Ambystoma texanum
Small-mouthed Salamander



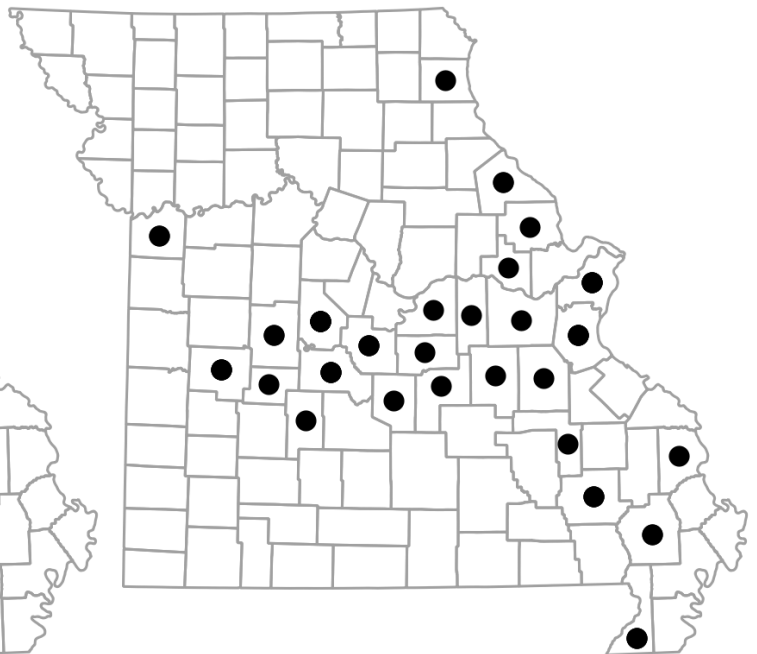
Ambystoma tigrinum
Eastern Tiger Salamander



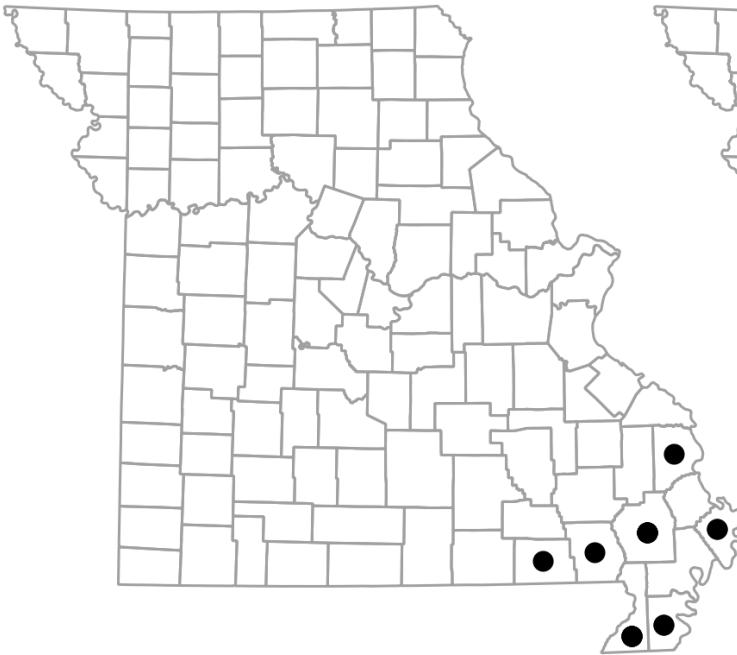
Notophthalmus viridescens
Central Newt



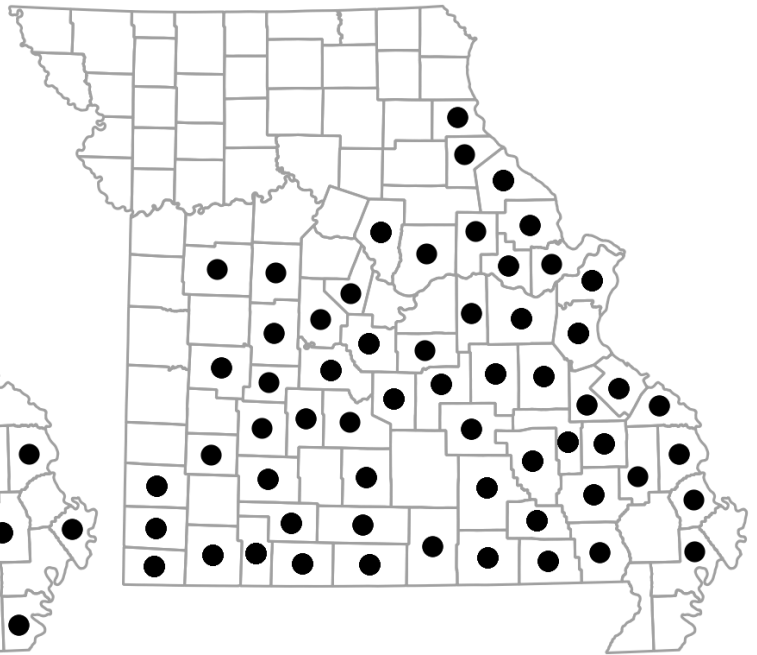
Necturus louisianensis
Red River Mudpuppy



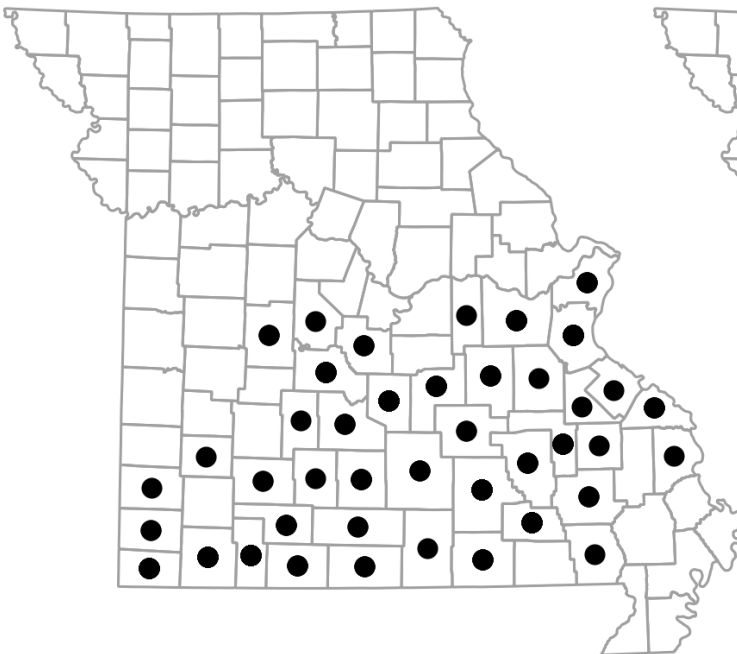
Necturus maculosus
Mudpuppy



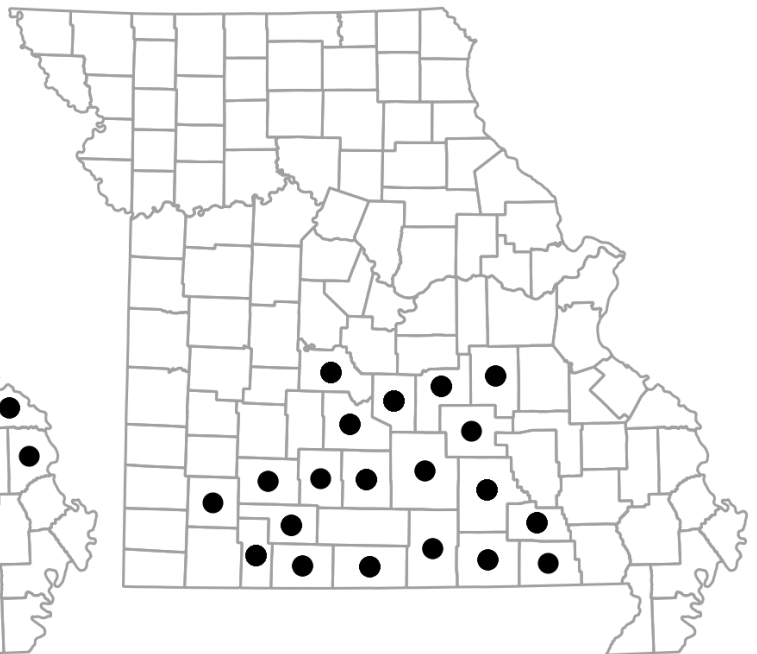
Amphiuma tridactylum
Three-toed Amphiuma



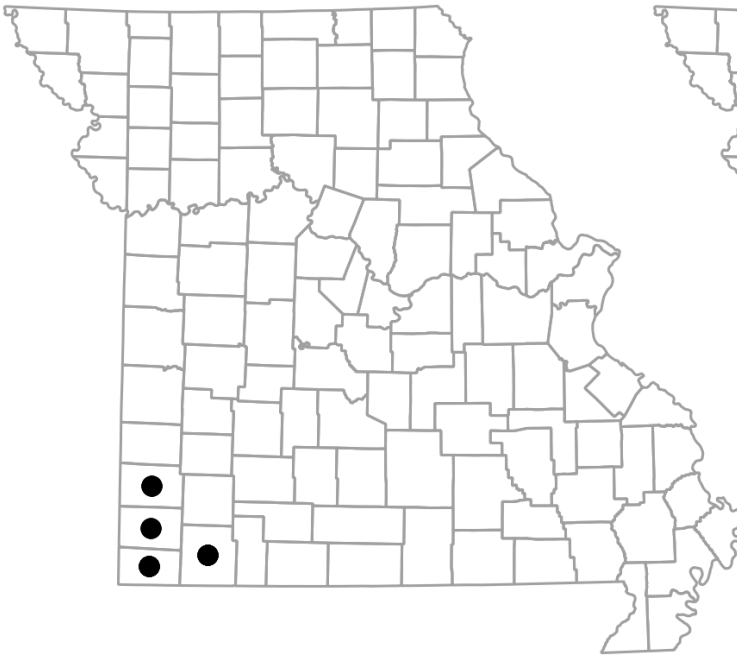
Eurycea longicauda
Long-tailed Salamander



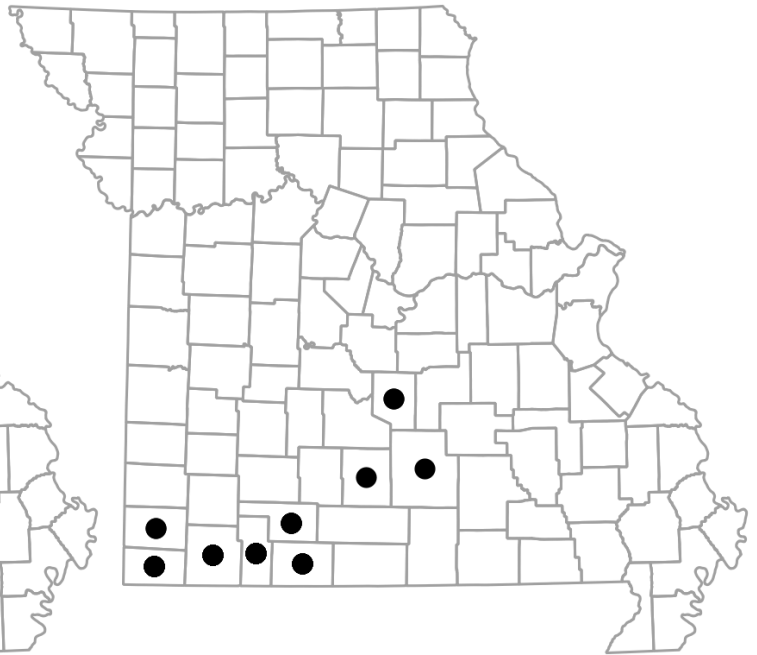
Eurycea lucifuga
Cave Salamander



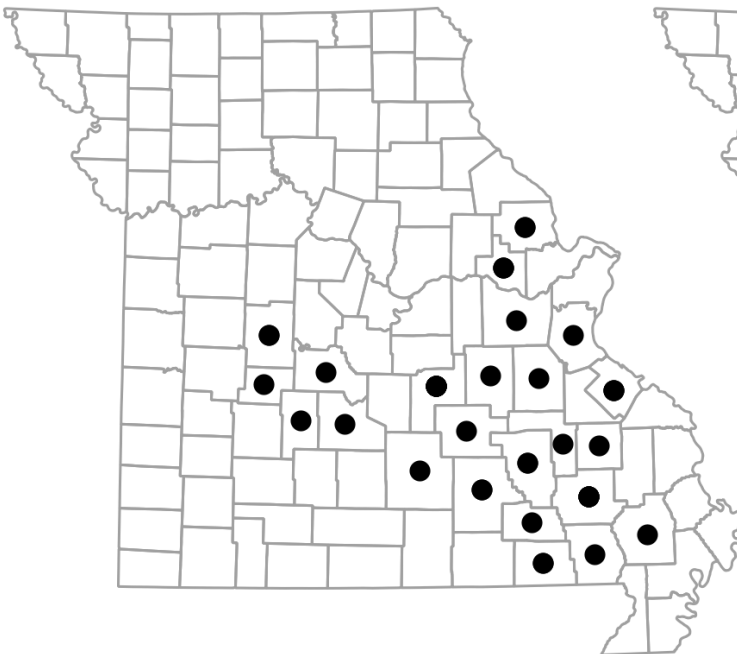
Eurycea nerea
Northern Grotto Salamander



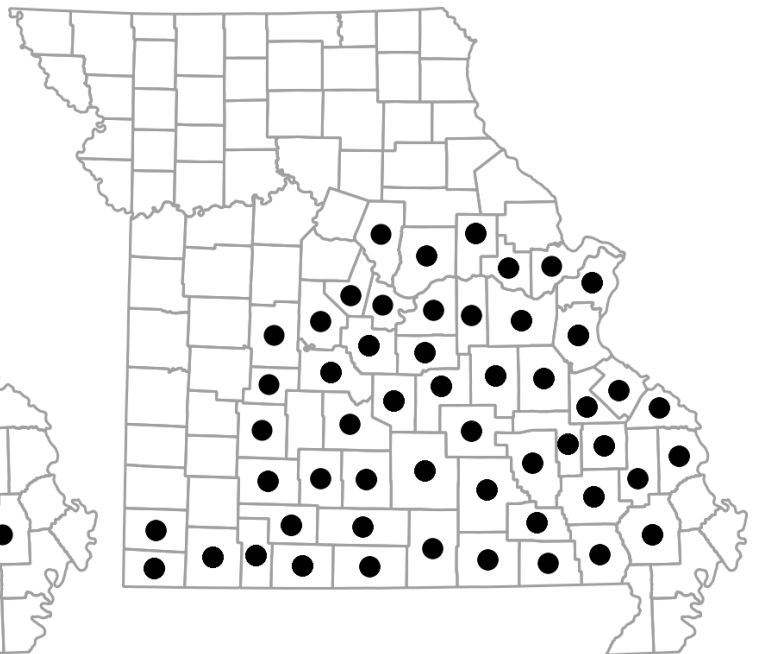
Eurycea spelaea
Western Grotto Salamander



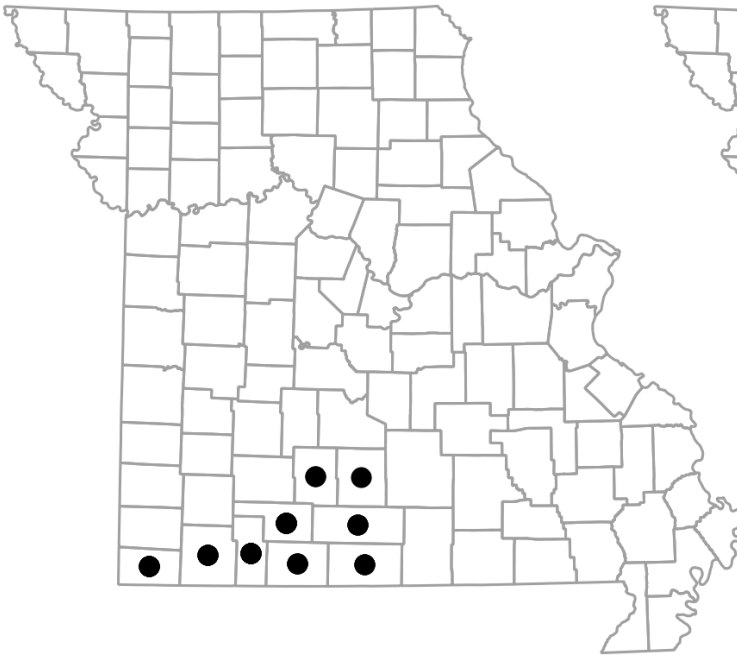
Eurycea tynerensis
Oklahoma Salamander



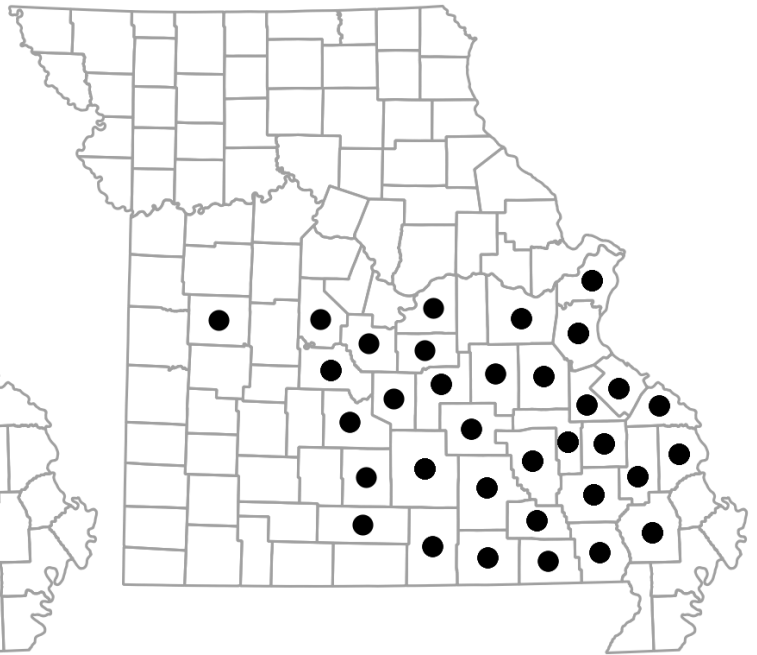
Hemidactylium scutatum
Four-toed Salamander



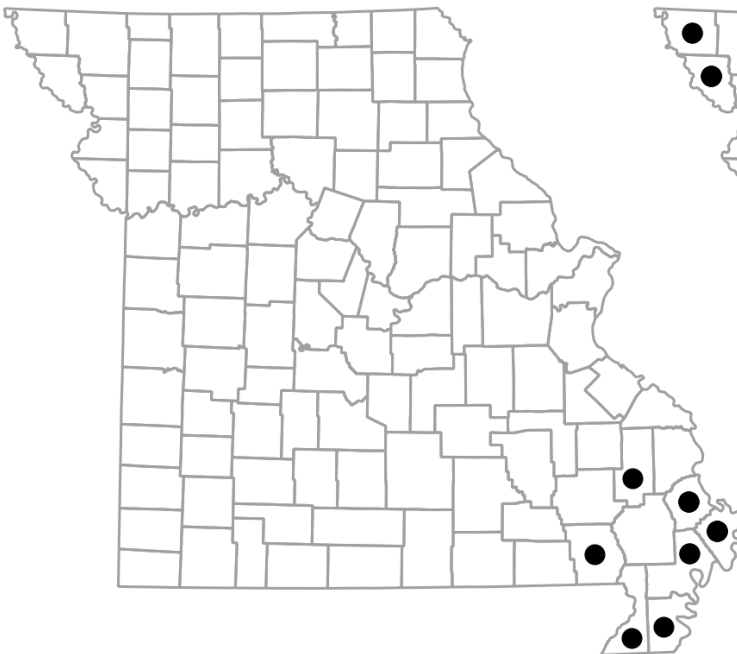
Plethodon albagula
Western Slimy Salamander



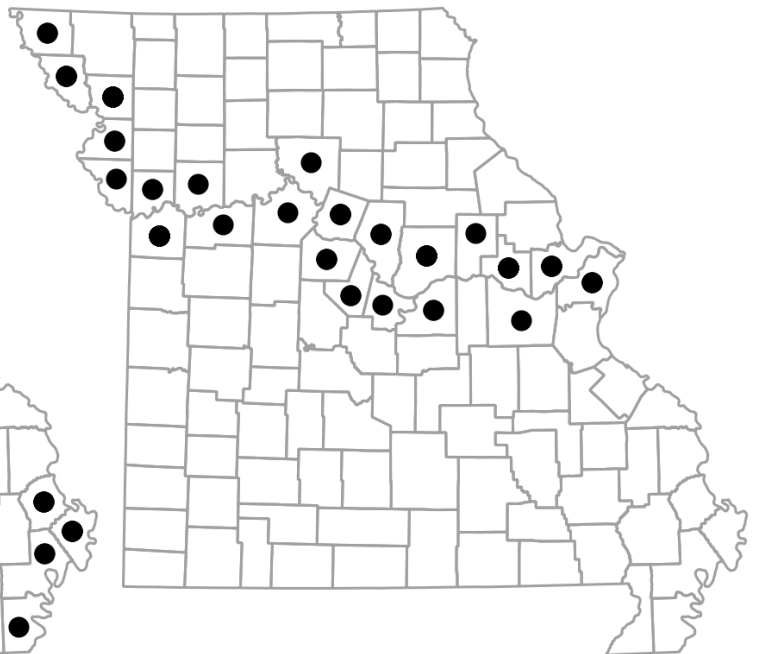
Plethodon angusticlavius
Ozark Zigzag Salamander



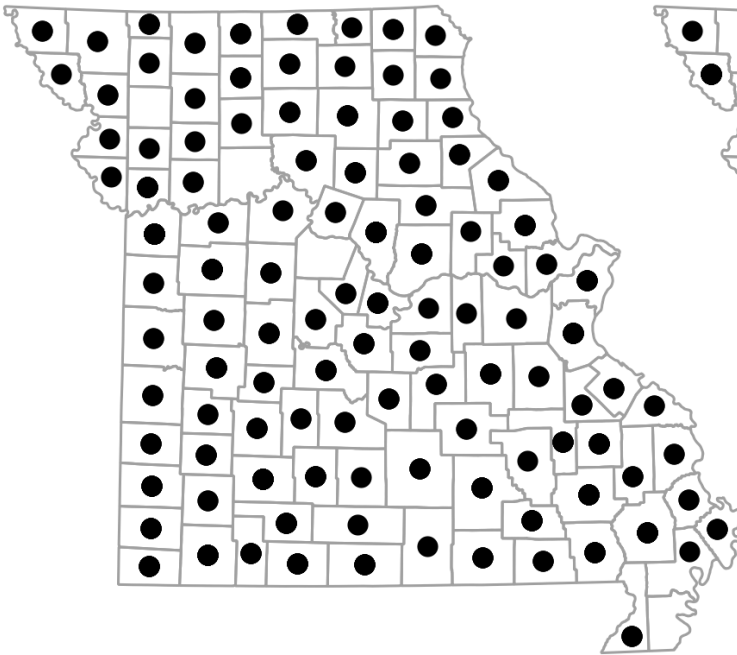
Plethodon serratus
Southern Red-backed Salamander



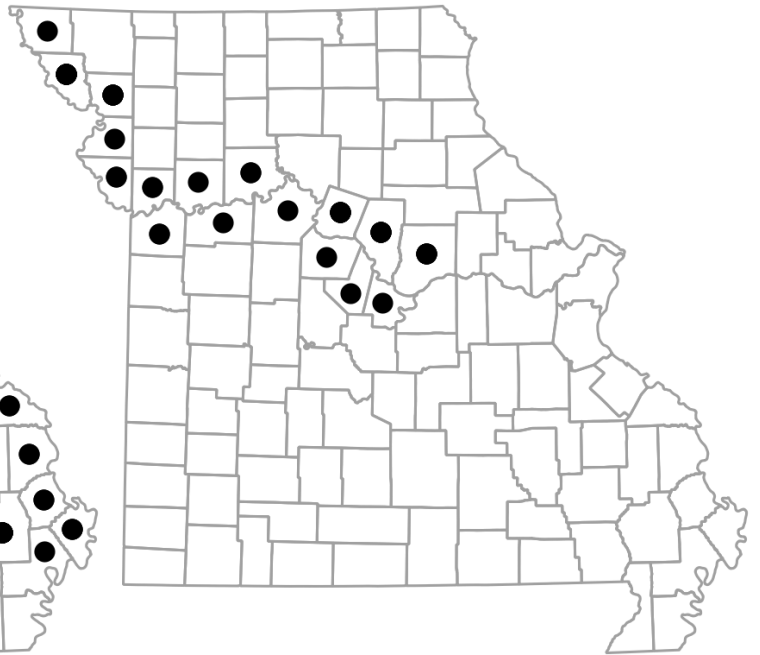
Scaphiopus holbrookii
Eastern Spadefoot



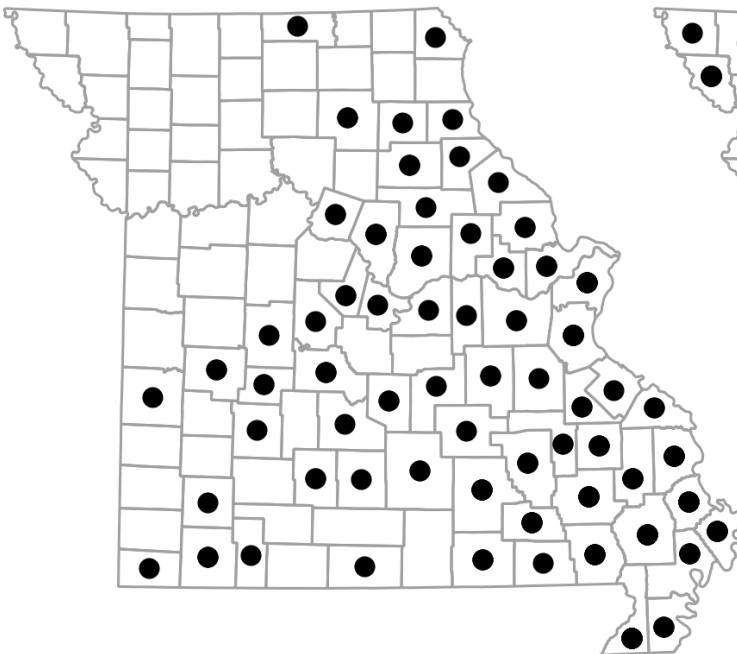
Spea bombifrons
Plains Spadefoot



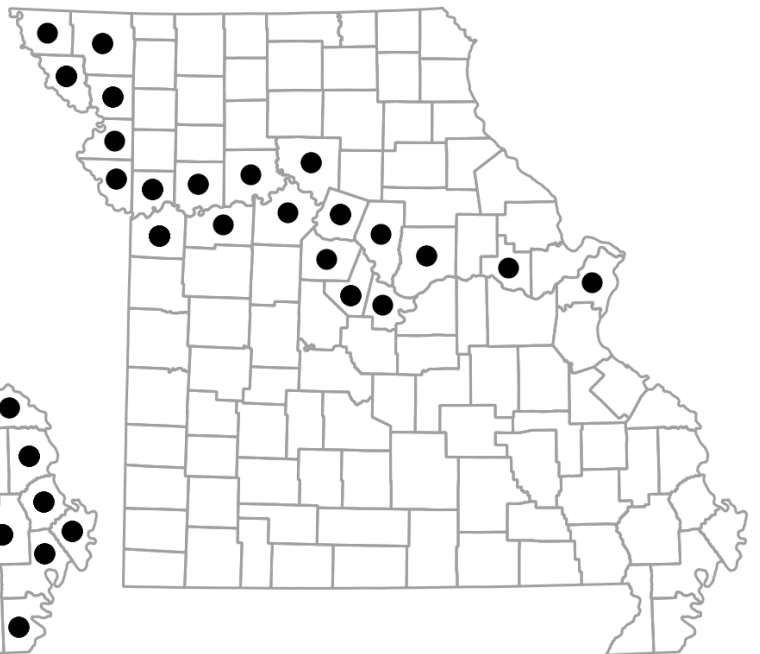
Anaxyrus americanus
American Toad



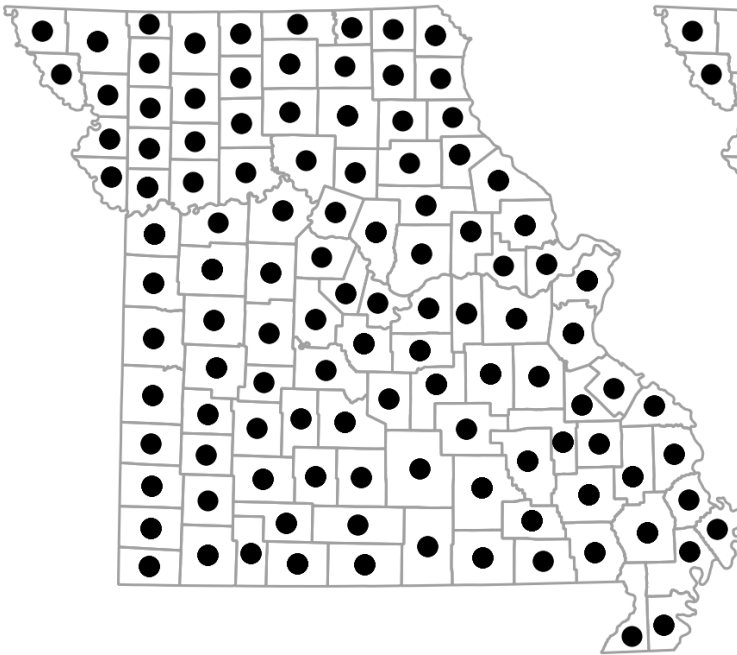
Anaxyrus cognatus
Great Plains Toad



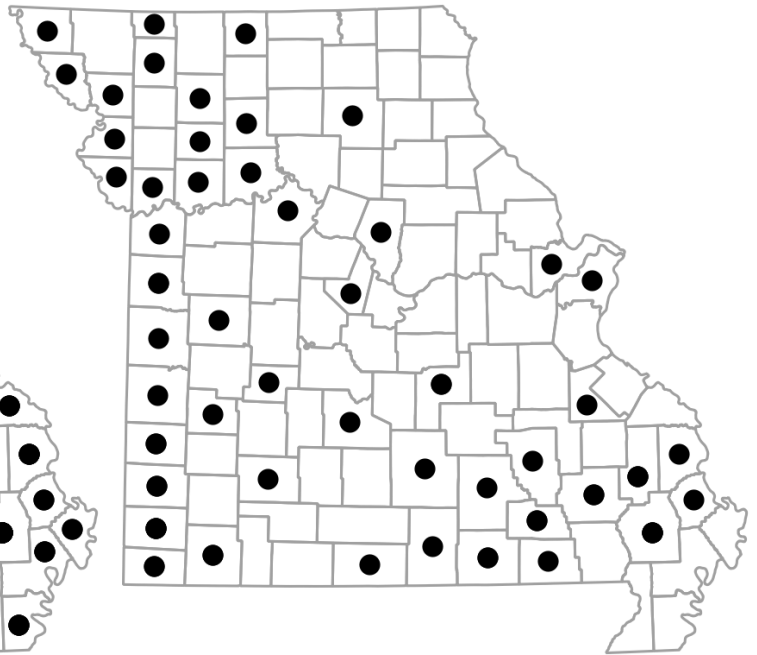
Anaxyrus fowleri
Fowler's Toad



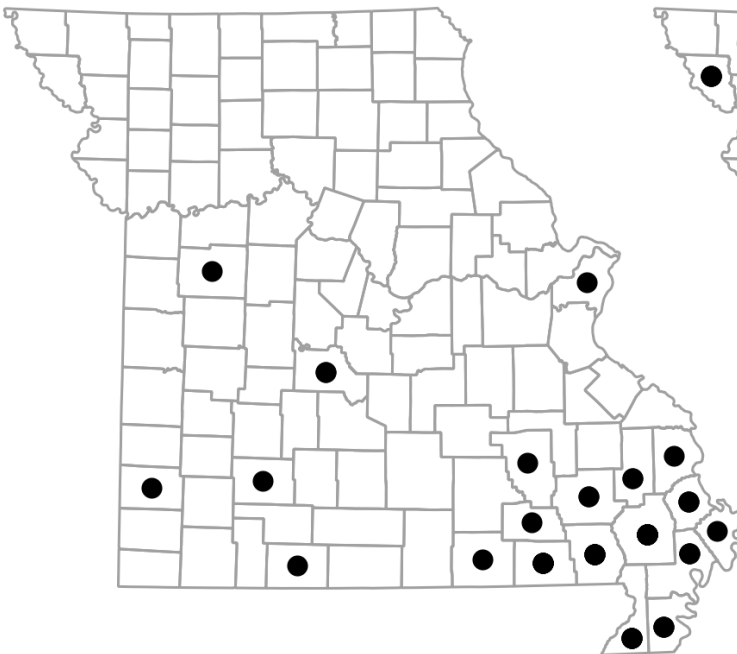
Anaxyrus woodhousii
Rocky Mountain Toad



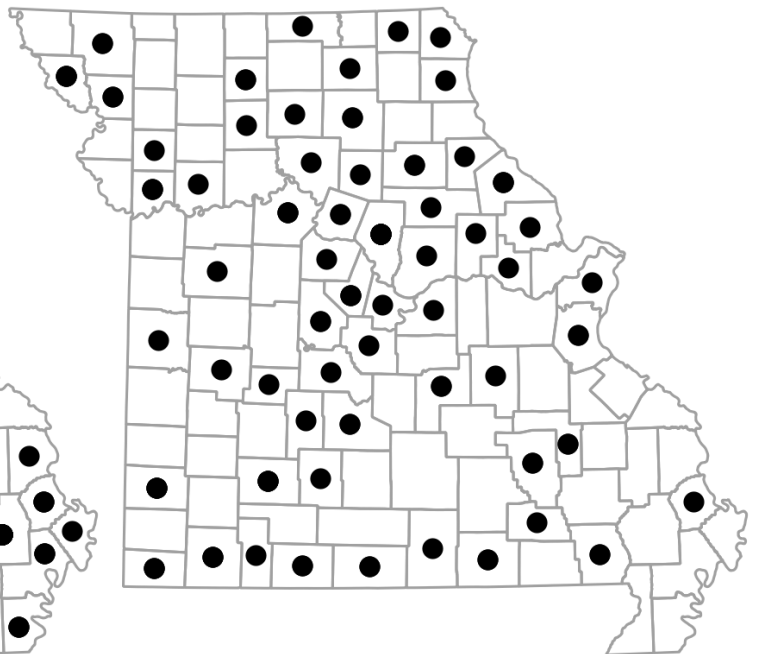
Acris blanchardi
Blanchard's Cricket Frog



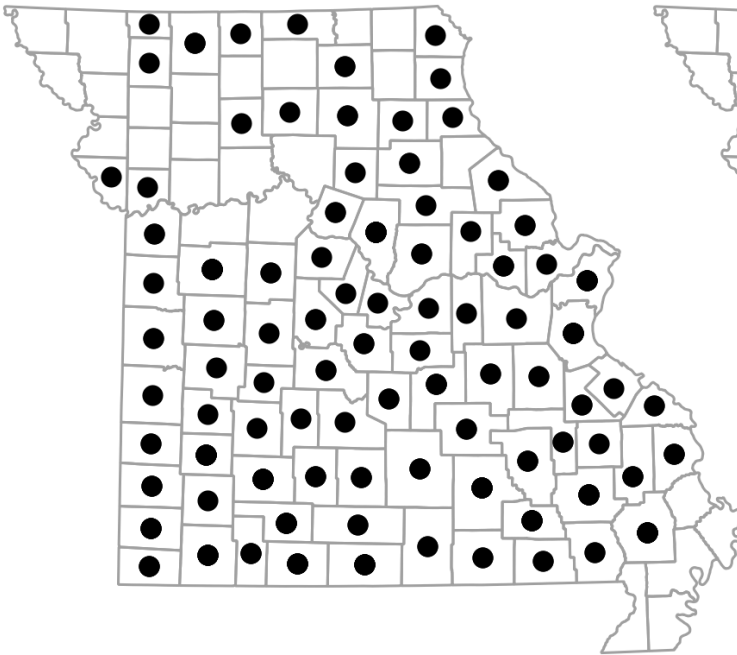
Dryophytes chrysoscelis
Cope's Gray Treefrog



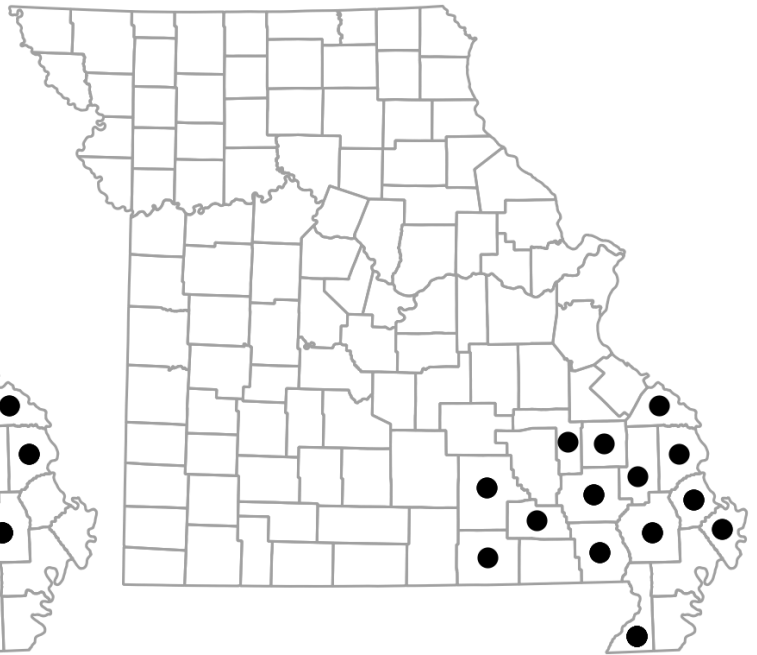
Dryophytes cinereus
Green Treefrog



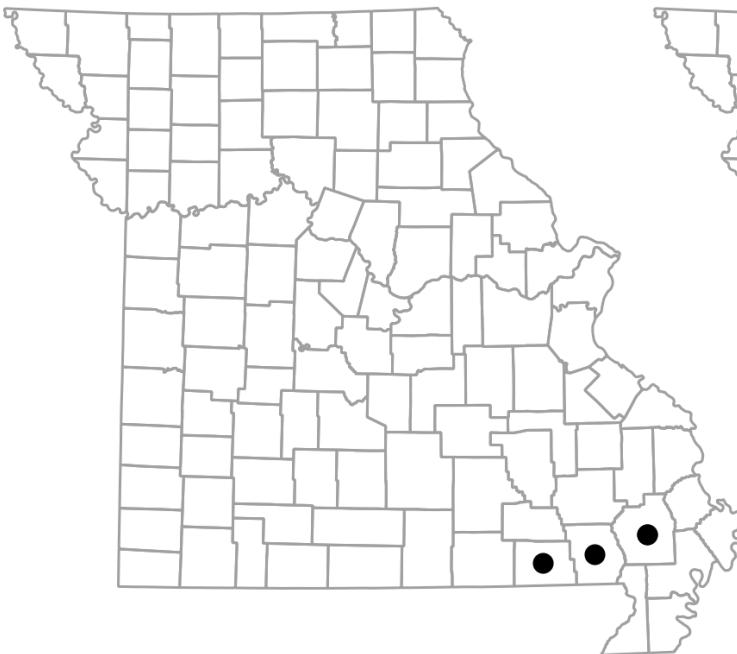
Dryophytes versicolor
Gray Treefrog



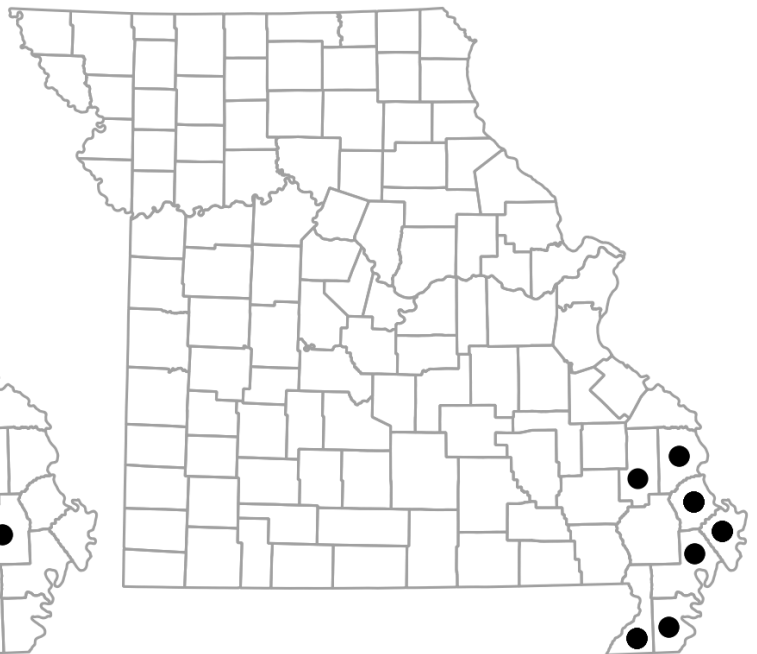
Pseudacris crucifer
Spring Peeper



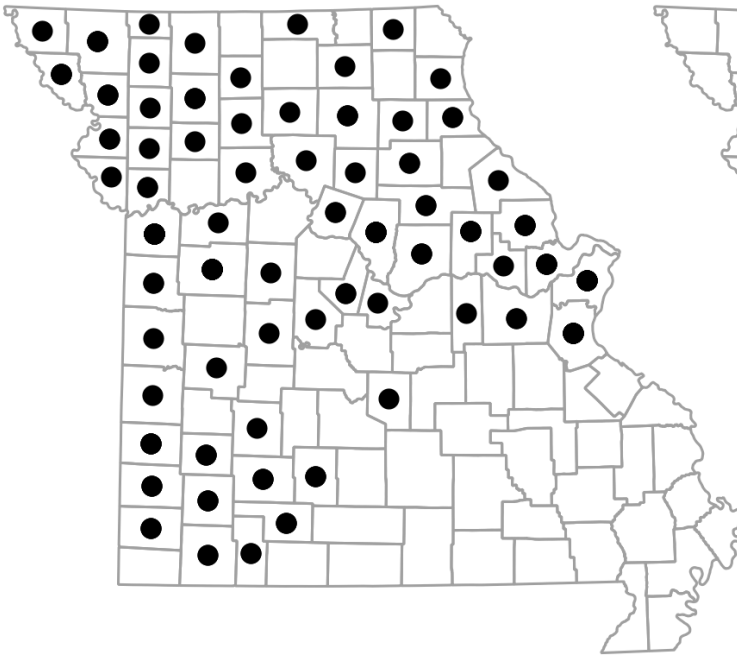
Pseudacris feriarum
Upland Chorus Frog



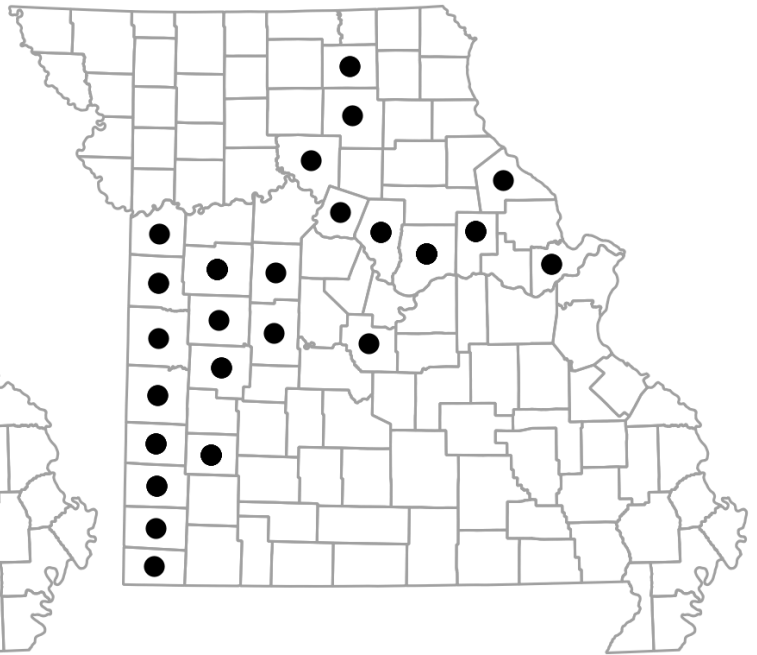
Pseudacris fouquettei
Cajun Chorus Frog



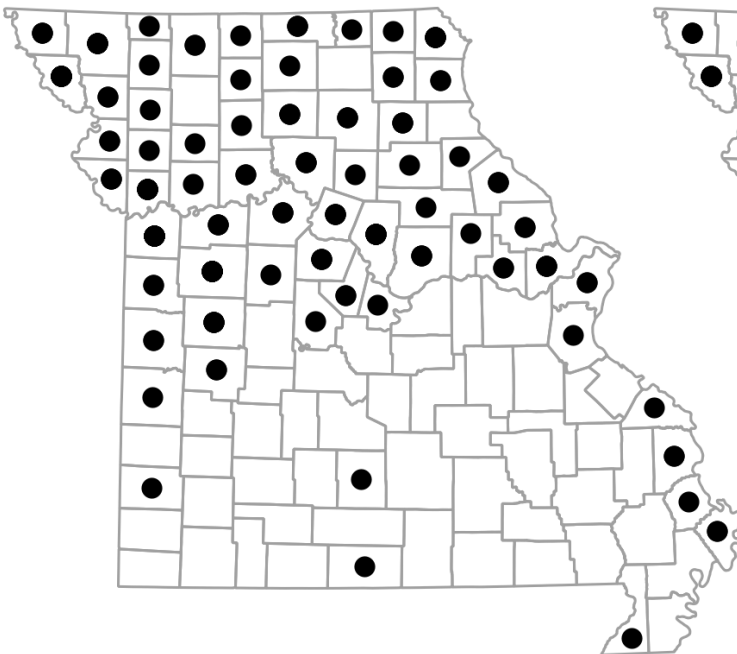
Pseudacris illinoensis
Illinois Chorus Frog



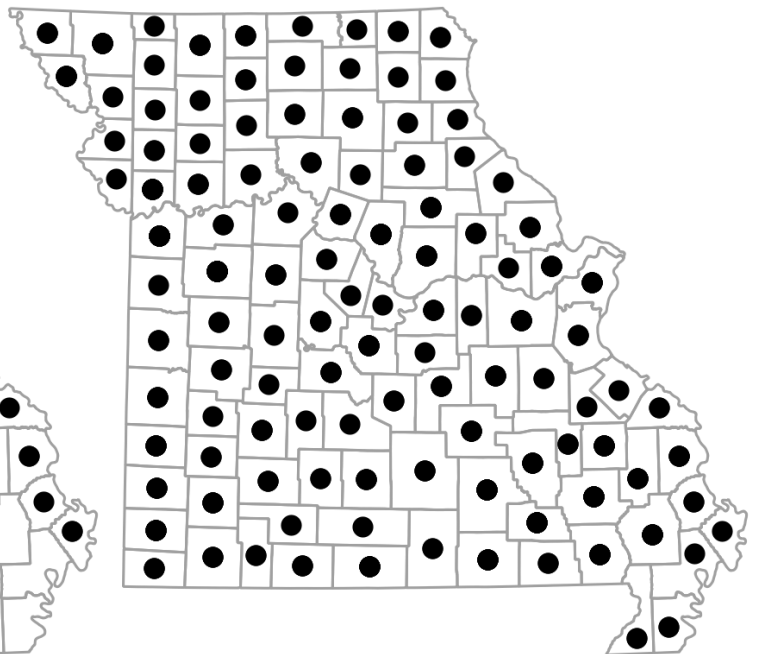
Pseudacris maculata
Boreal Chorus Frog



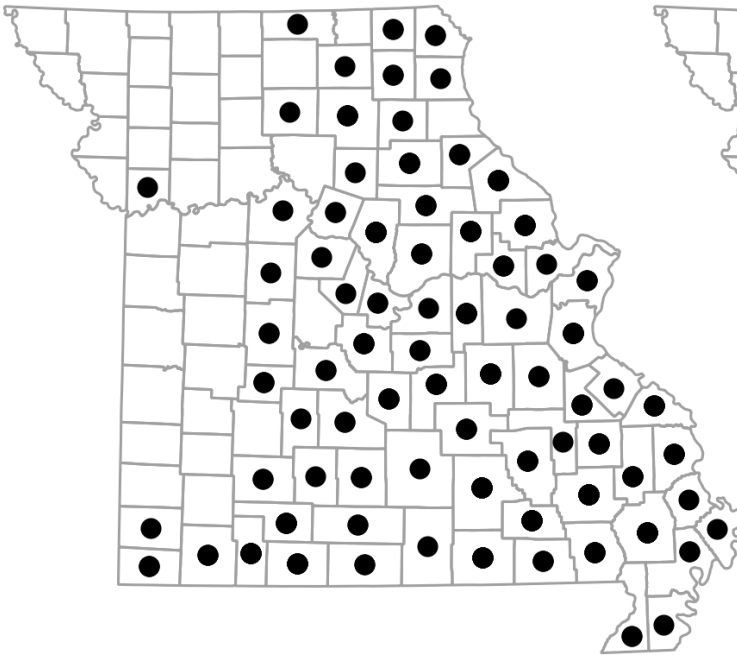
Lithobates areolatus
Northern Crawfish Frog



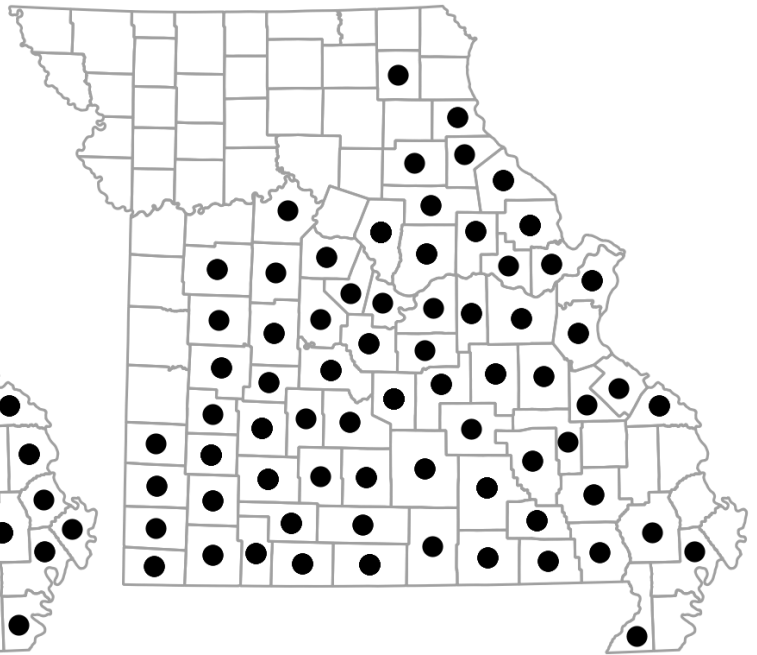
Lithobates blairi
Plains Leopard Frog



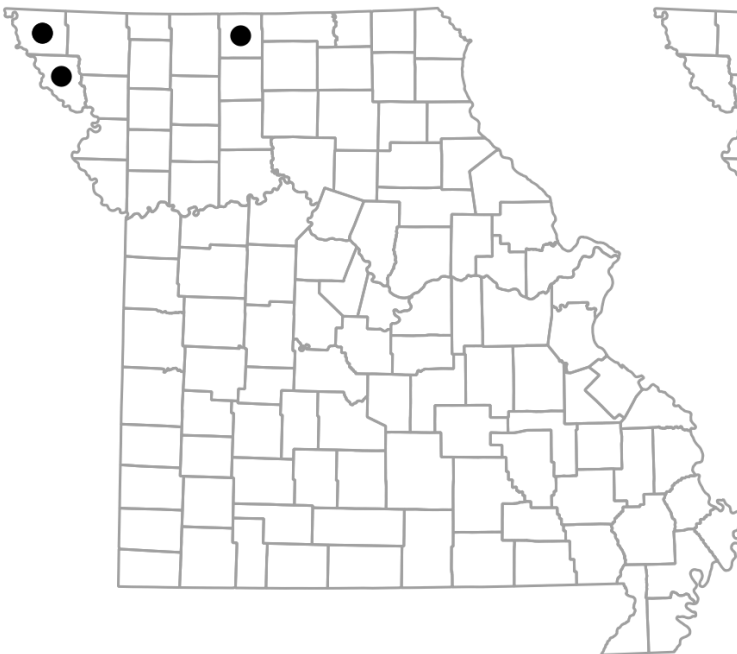
Lithobates catesbeianus
North American Bullfrog



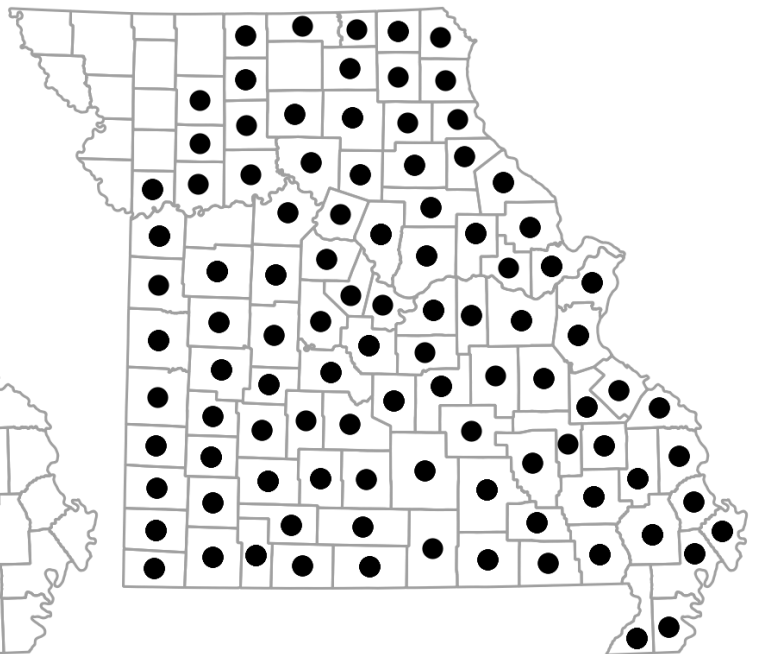
Lithobates clamitans
North American Green Frog



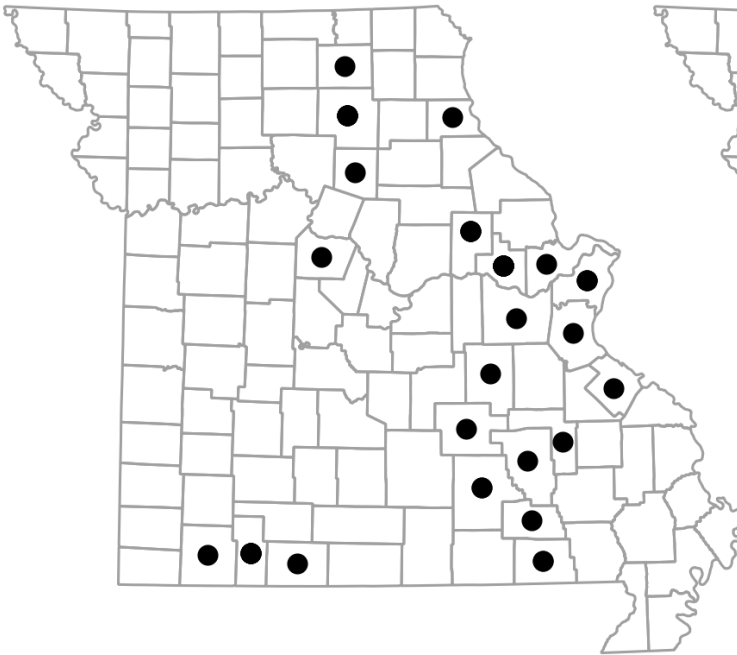
Lithobates palustris
Pickerel Frog



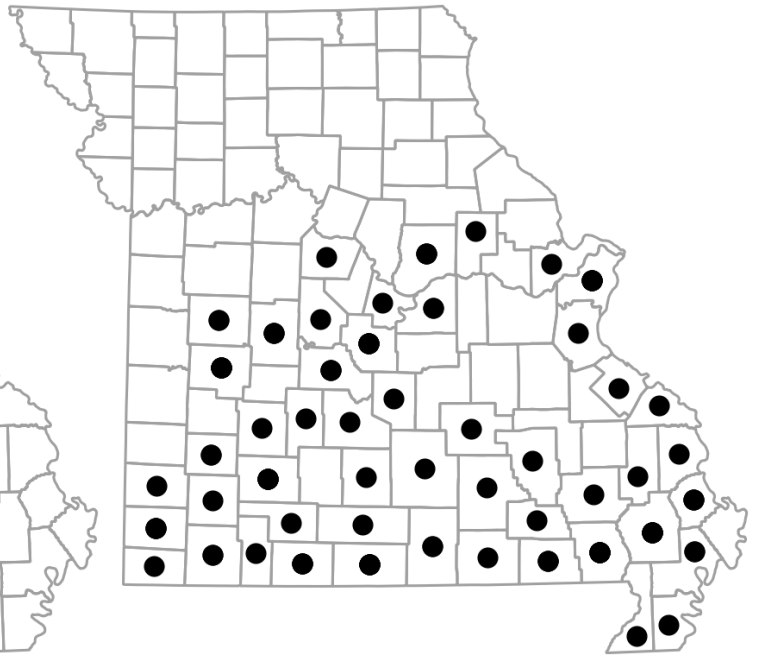
Lithobates pipiens
Northern Leopard Frog



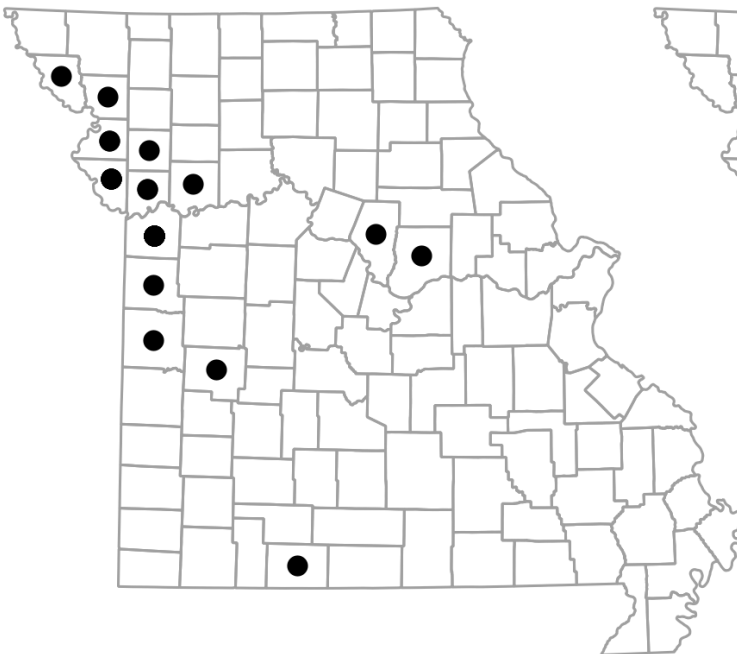
Lithobates sphenoccephalus
Coastal Plains Leopard Frog



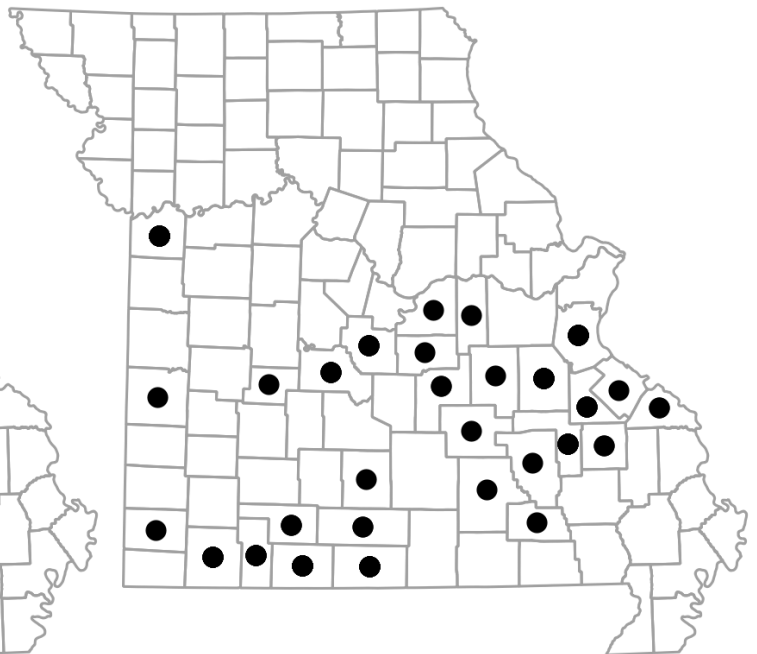
Lithobates sylvaticus
Wood Frog



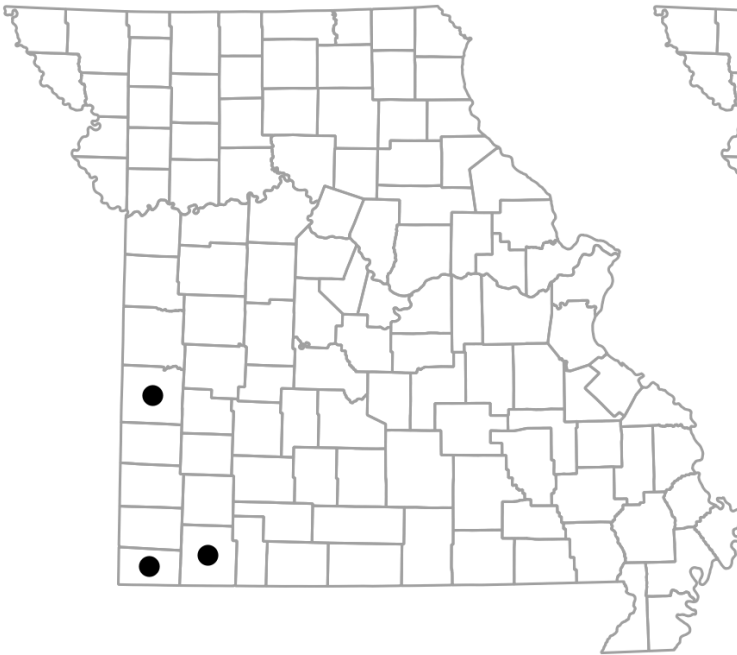
Gastrophryne carolinensis
Eastern Narrow-mouthed Toad



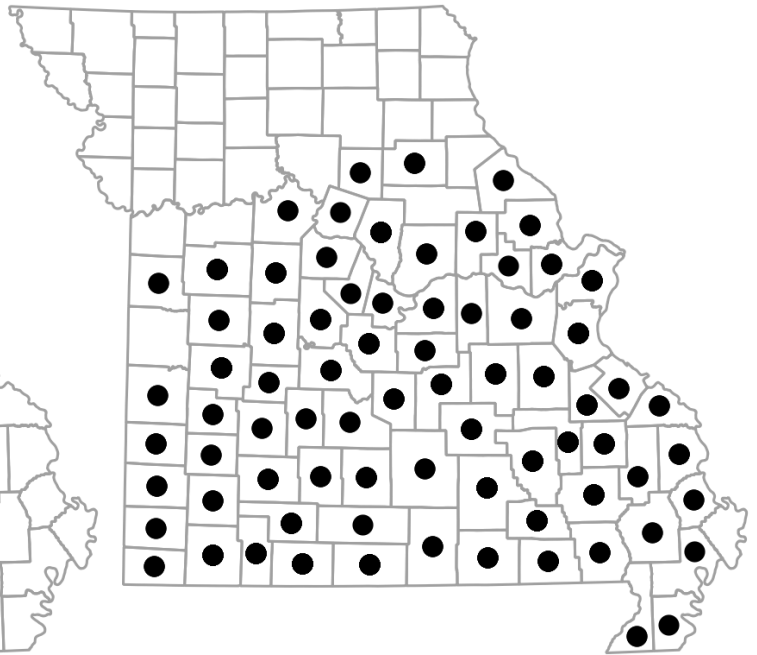
Gastrophryne olivacea
Western Narrow-mouthed Toad



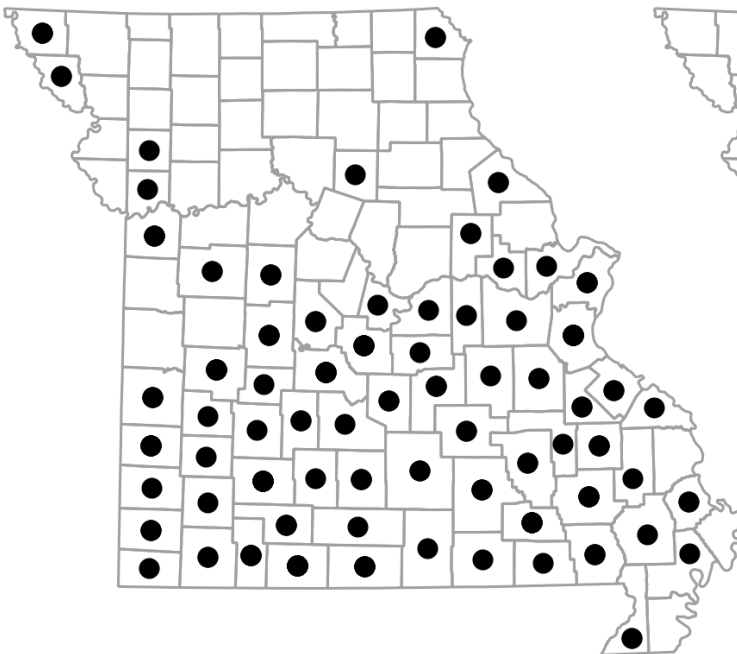
Crotaphytus collaris
Eastern Collared Lizard



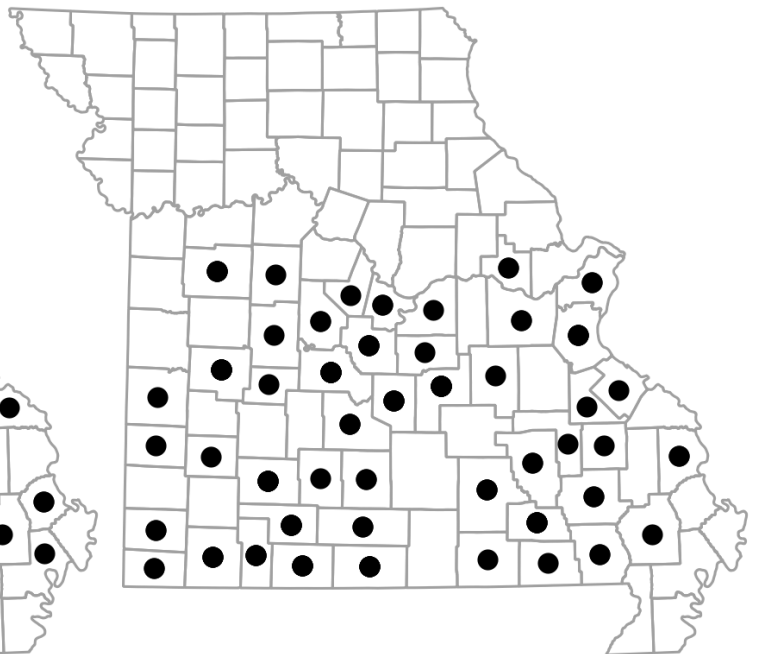
Phrynosoma cornutum
Texas Horned Lizard



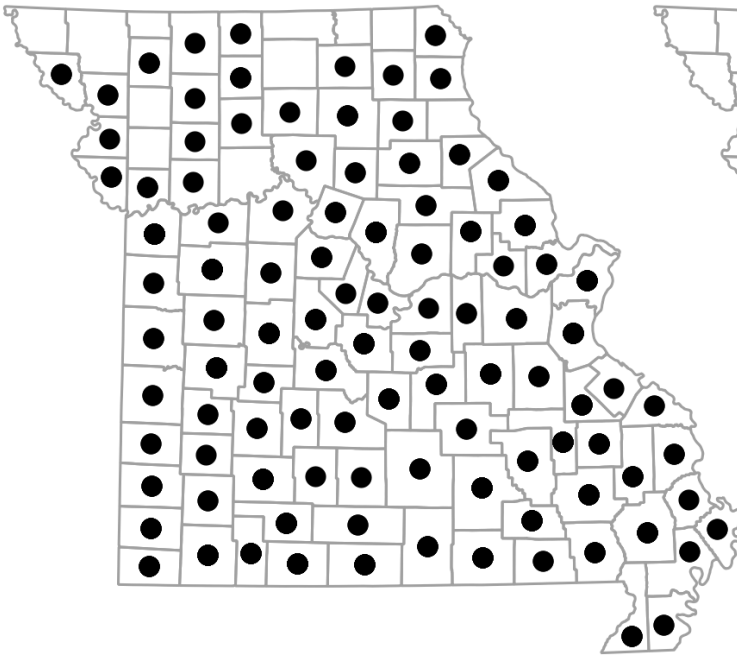
Sceloporus consobrinus
Prairie Lizard



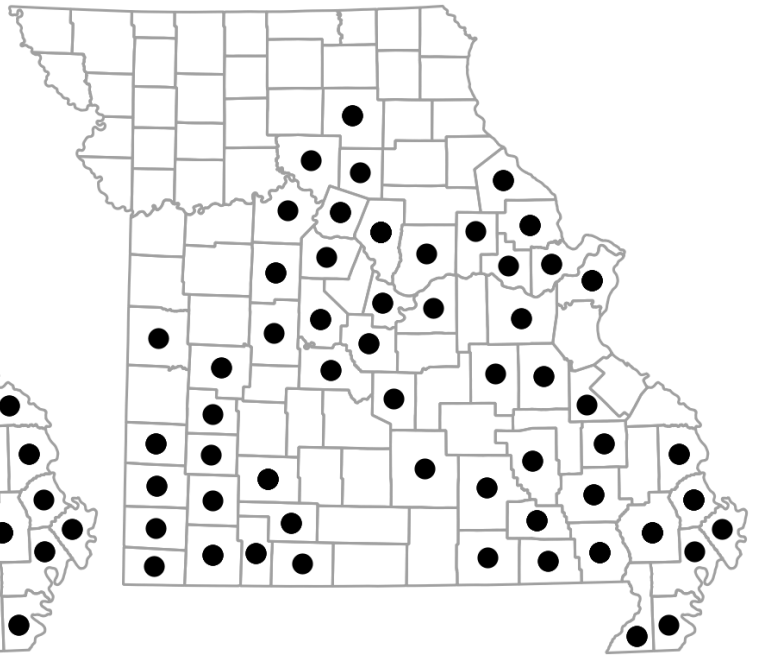
Aspidoscelis sexlineatus
Prairie Racerunner



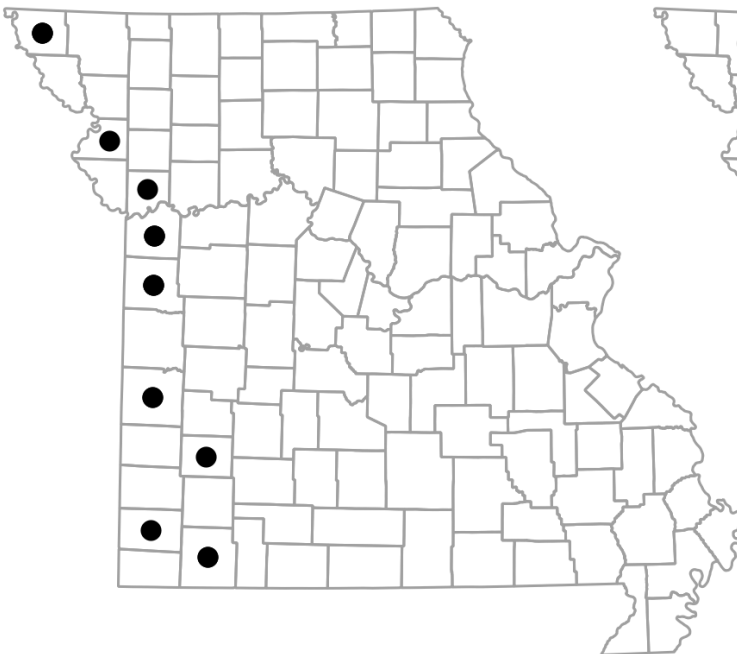
Plestiodon anthracinus
Southern Coal Skink



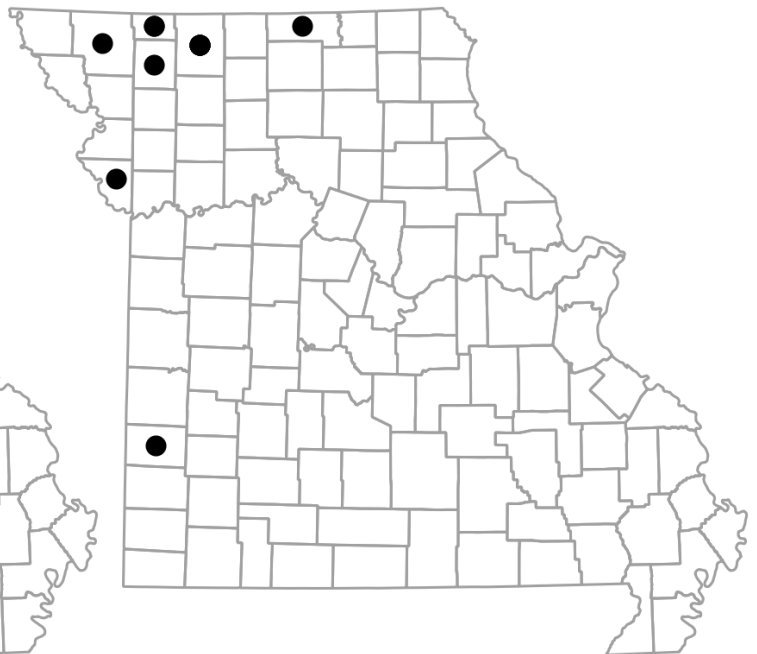
Plestiodon fasciatus
Common Five-lined Skink



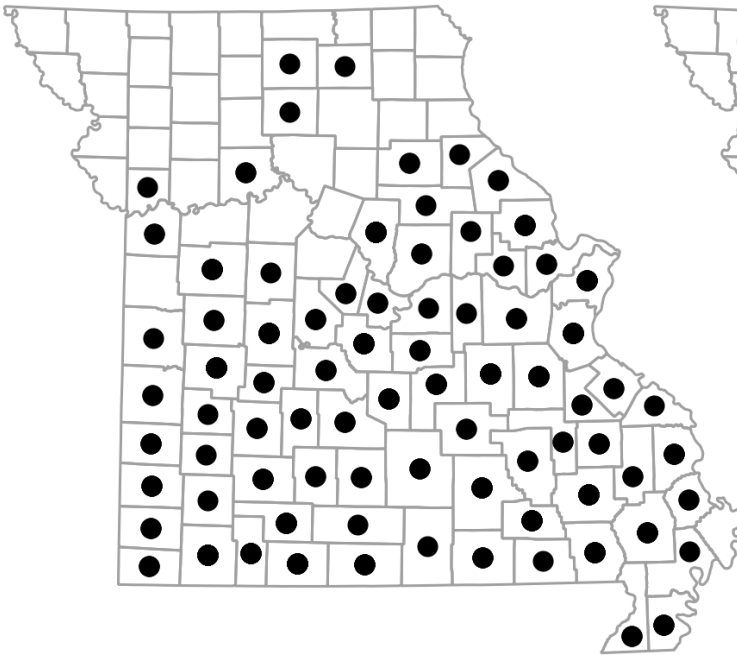
Plestiodon laticeps
Broad-headed Skink



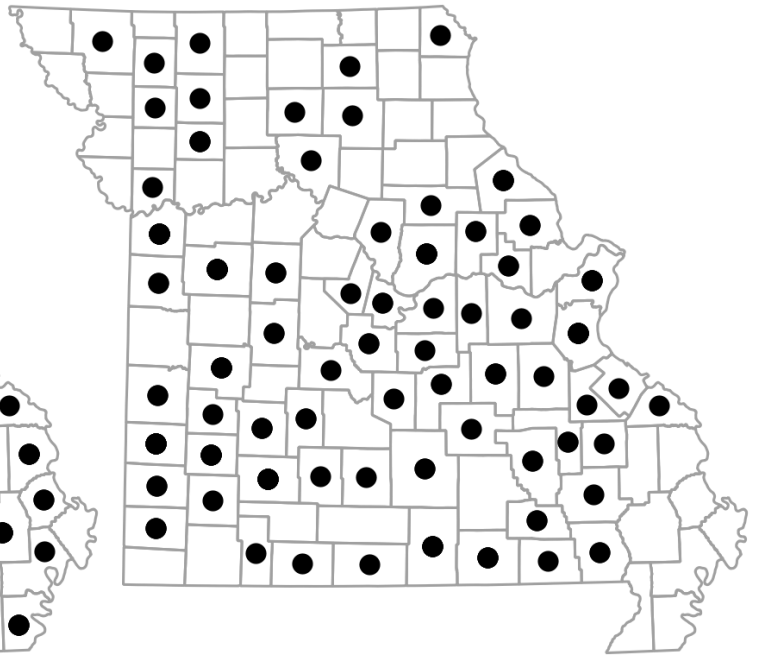
Plestiodon obsoletus
Great Plains Skink



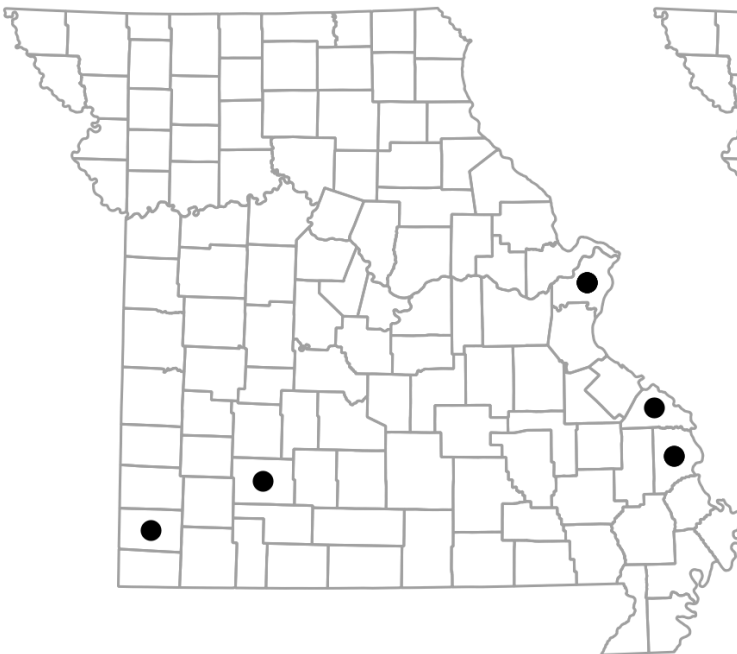
Plestiodon septentrionalis
Prairie Skink



Scincella lateralis
Little Brown Skink



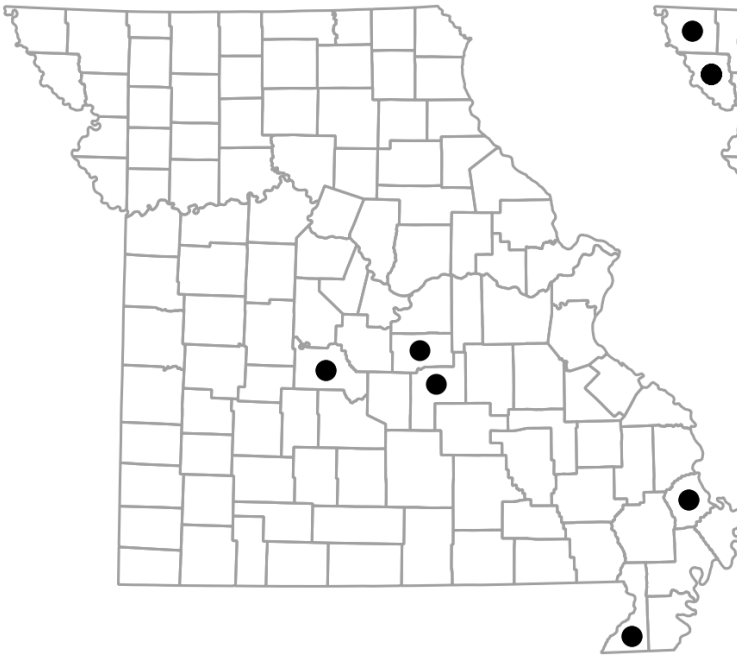
Ophisaurus attenuatus
Western Slender Glass Lizard



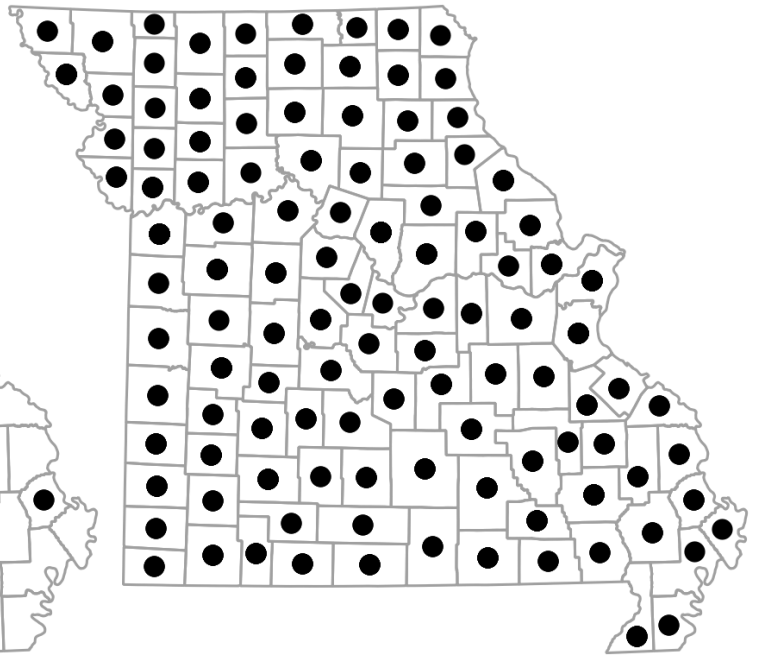
Hemidactylus turcicus
Mediterranean Gecko



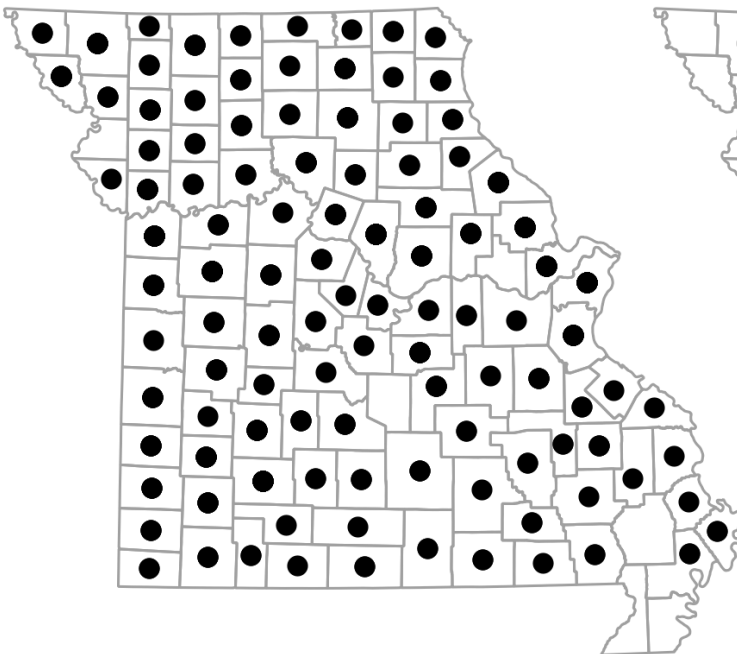
Podarcis siculus
Italian Wall Lizard



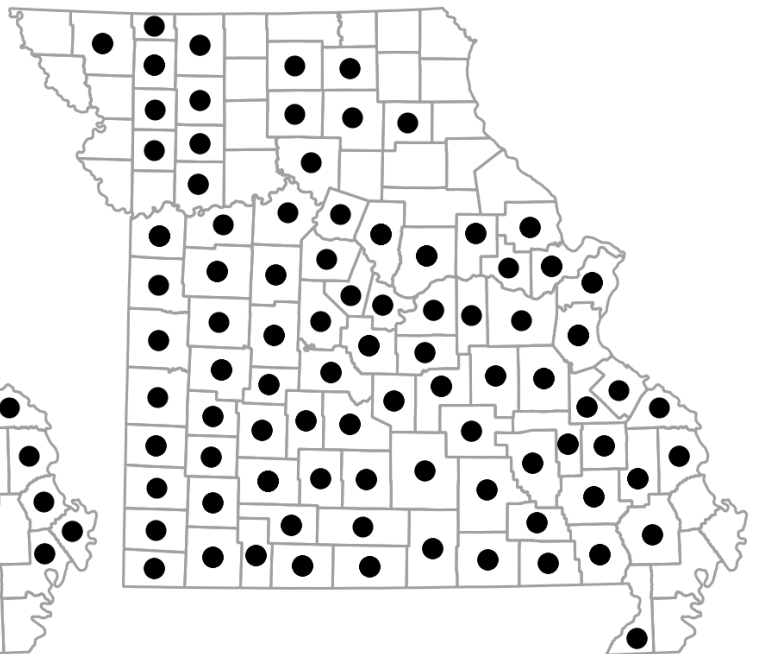
Cemophora coccinea
Northern Scarletsnake



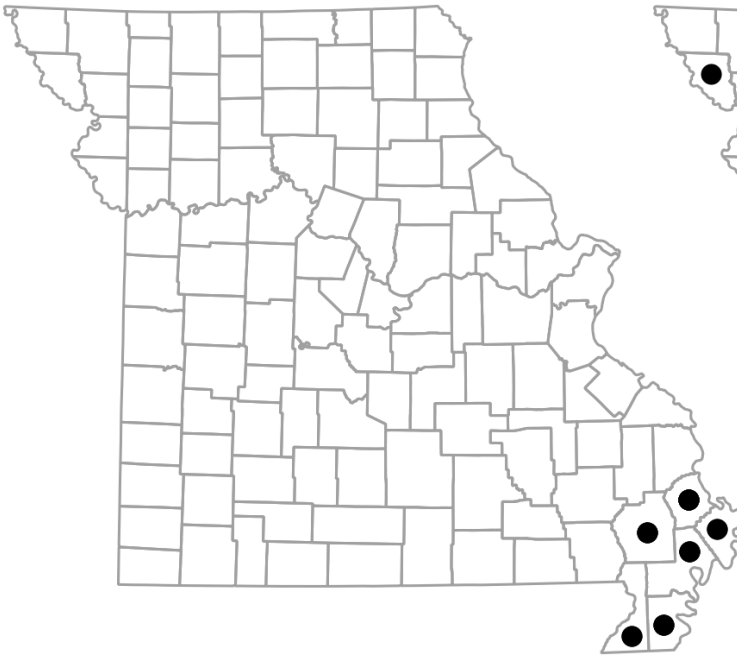
Coluber constrictor
North American Racer



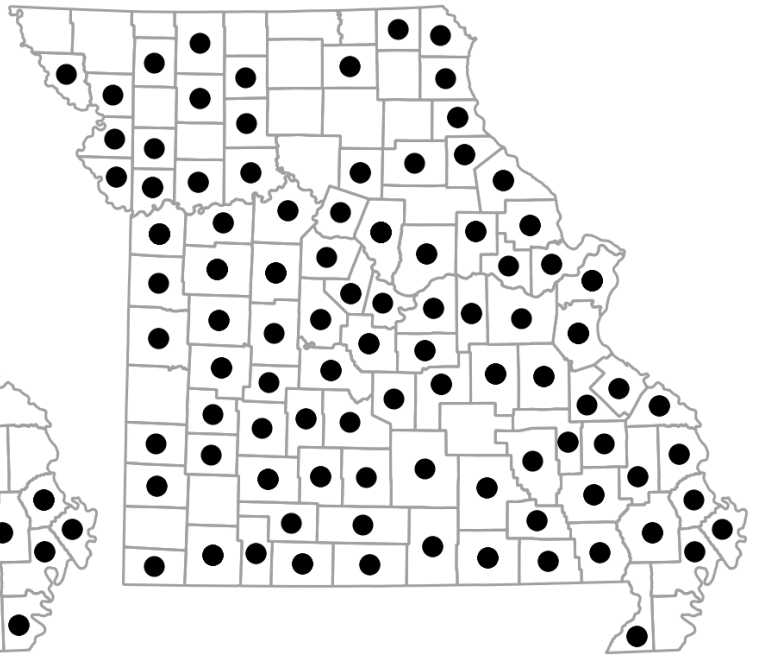
Lampropeltis calligaster
Prairie Kingsnake



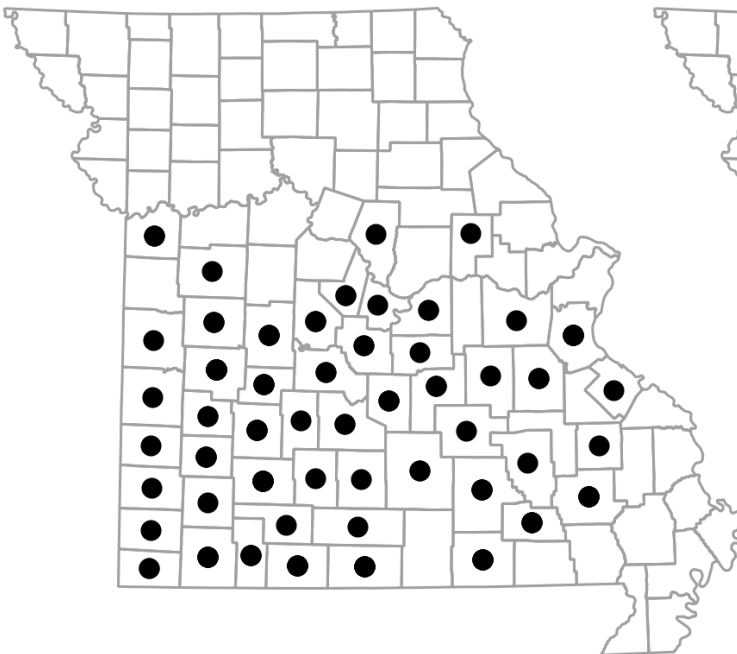
Lampropeltis holbrooki
Speckled Kingsnake



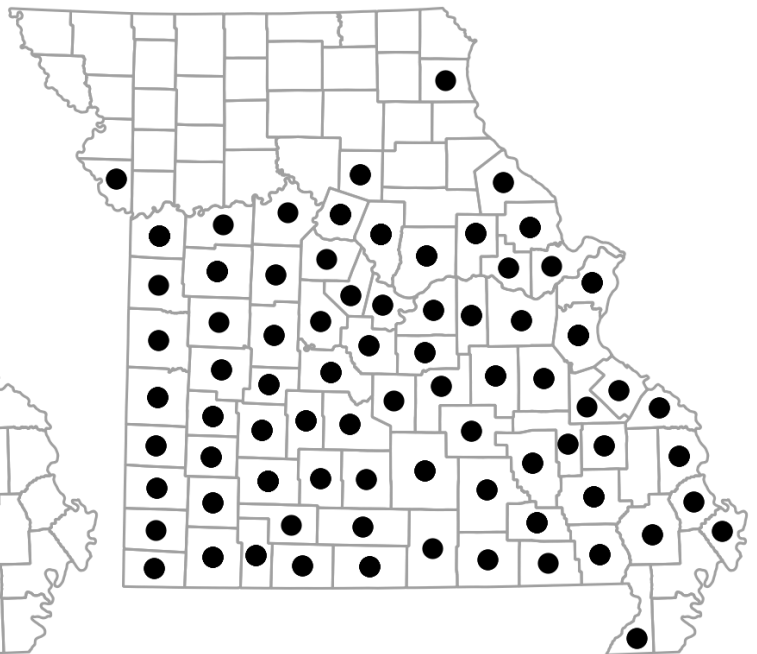
Lampropeltis nigra
Eastern Black Kingsnake



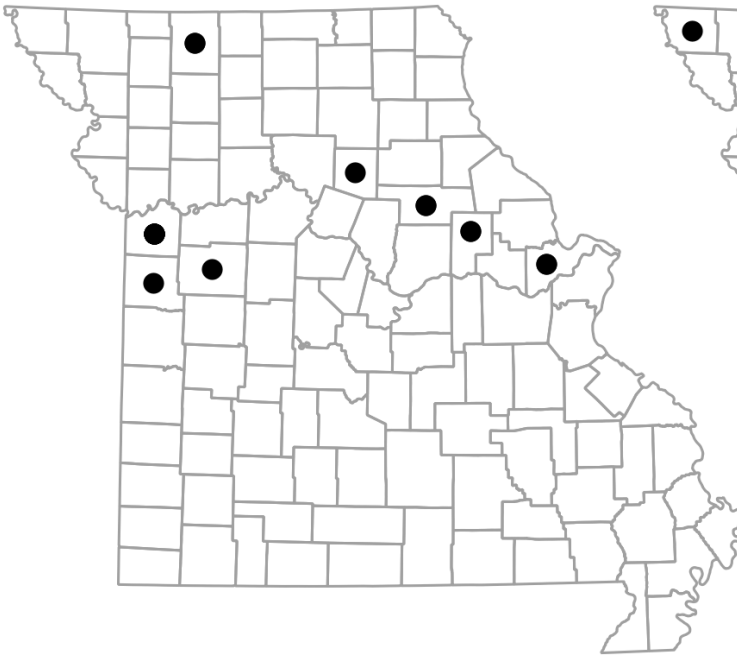
Lampropeltis triangulum
Eastern Milksnake



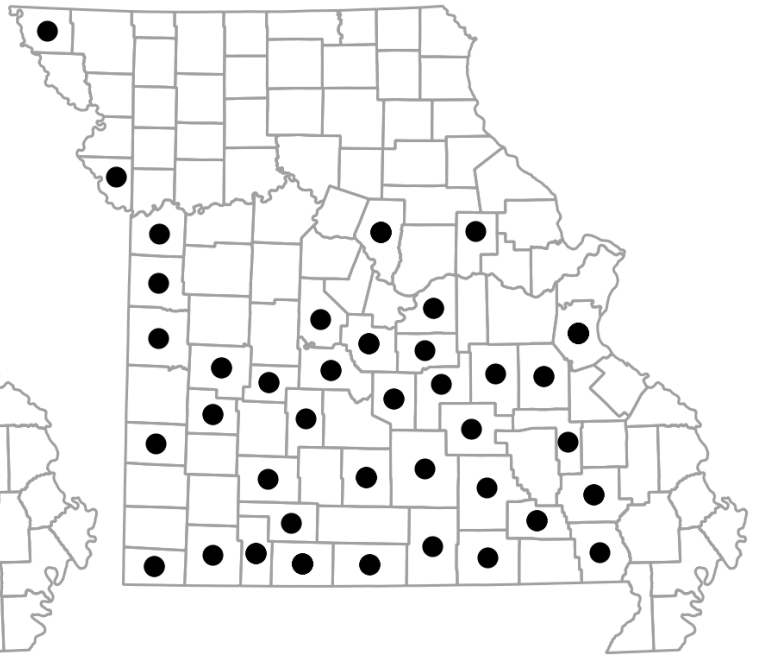
Masticophis flagellum
Eastern Coachwhip



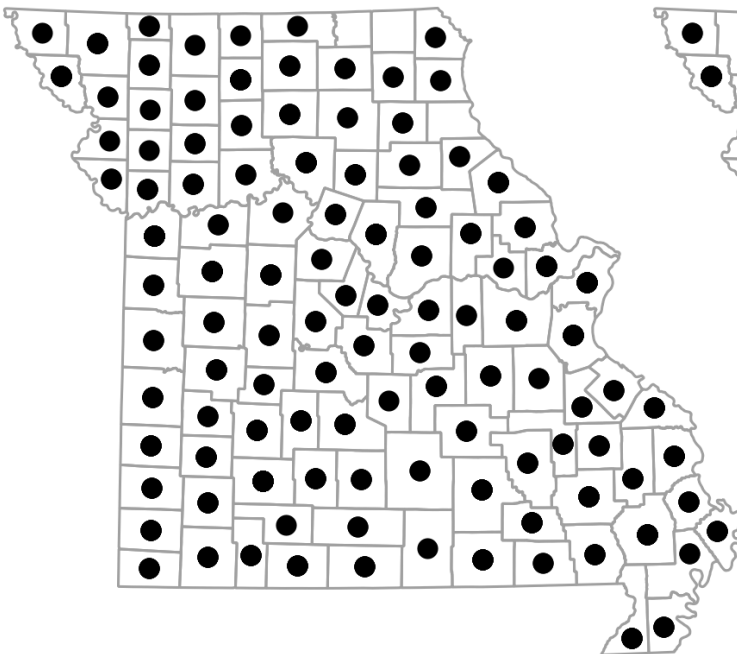
Ophedryx aestivus
Northern Rough Greensnake



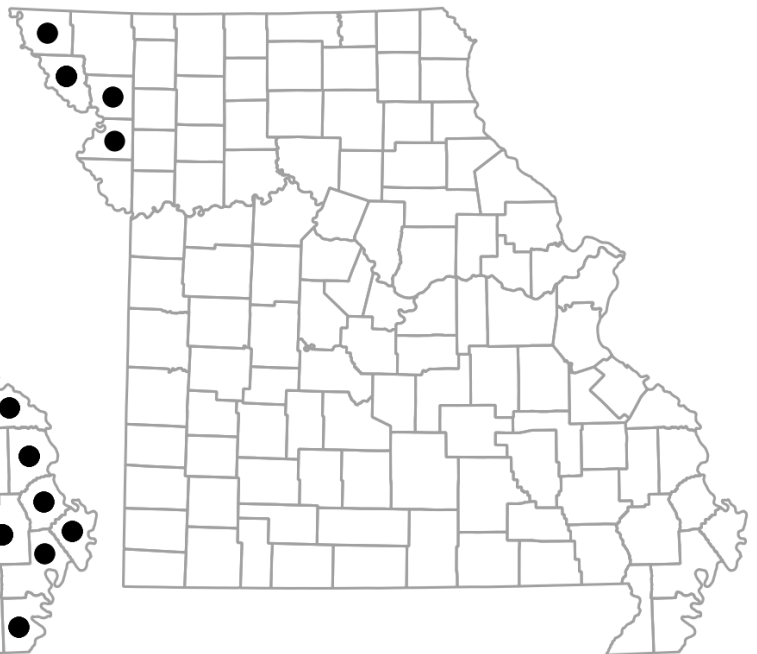
Opheodrys vernalis
Smooth Greensnake



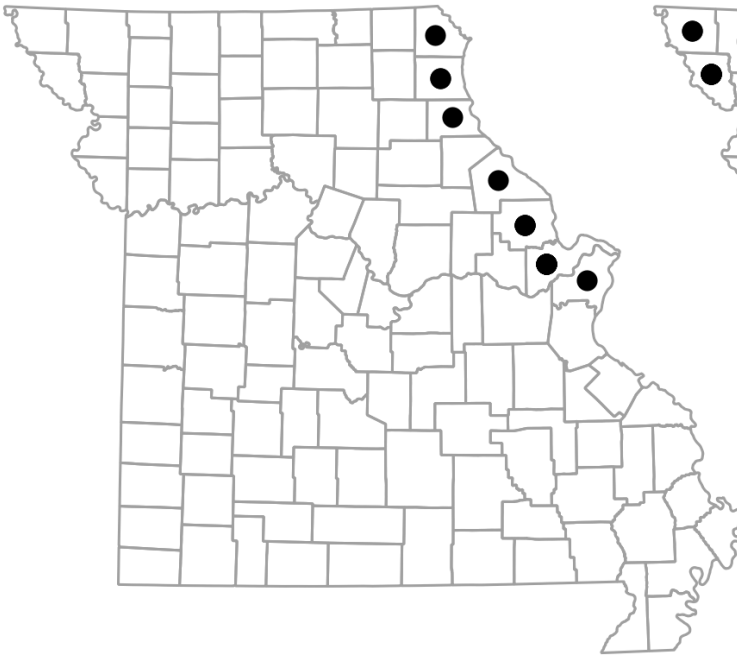
Pantherophis emoryi
Great Plains Ratsnake



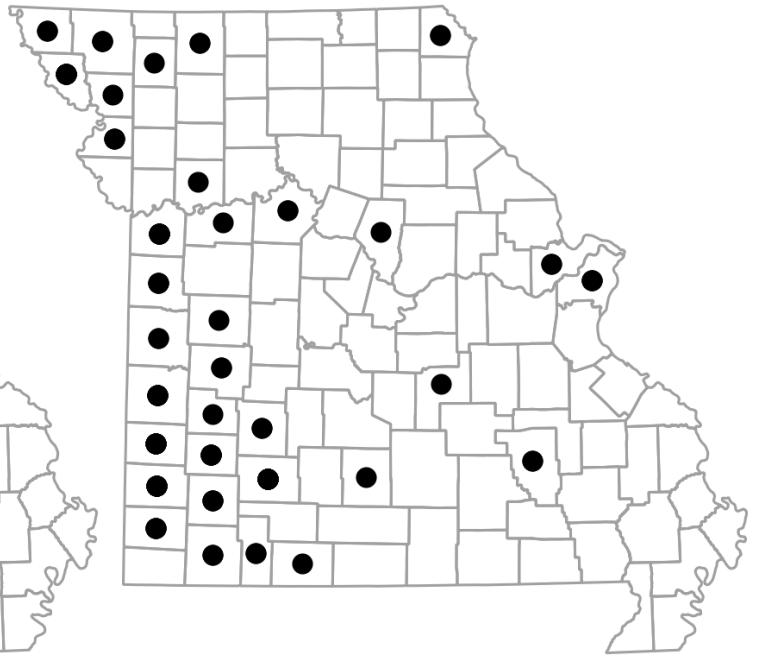
Pantherophis obsoletus
Western Ratsnake



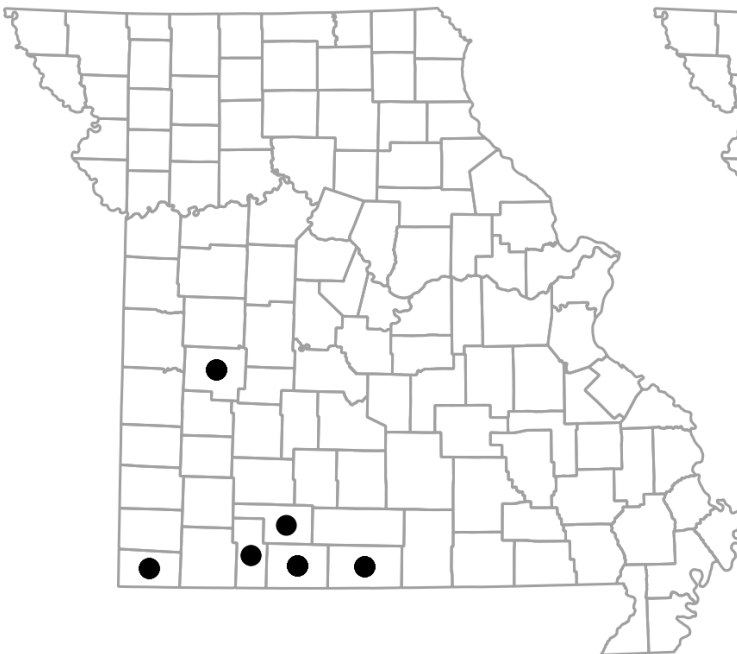
Pantherophis ramspotti
Western Foxsnake



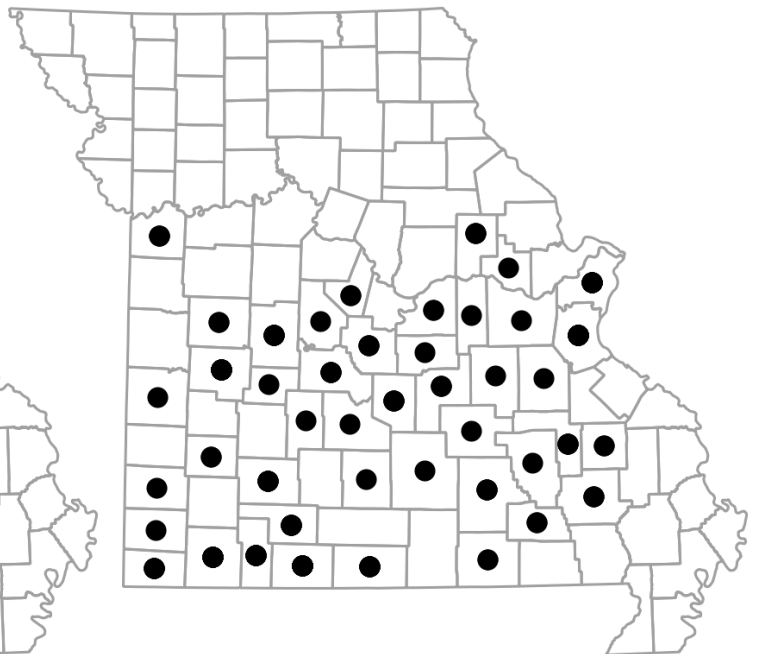
Pantherophis vulpinus
Eastern Foxsnake



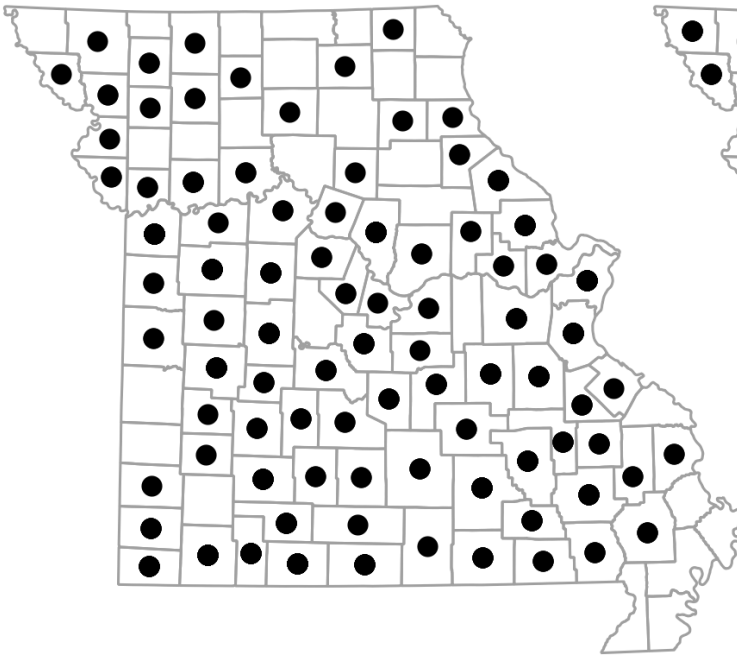
Pituophis catenifer
Bullsnake



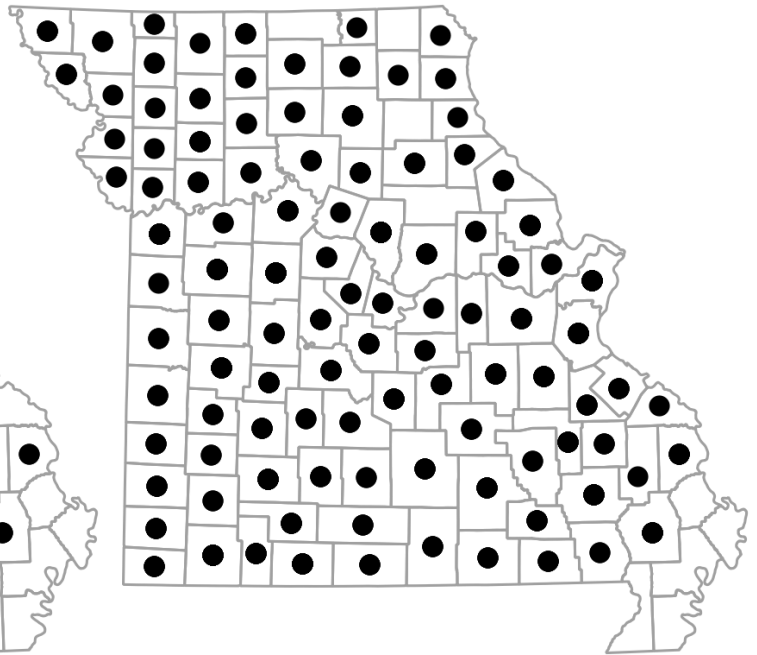
Sonora episcopa
Great Plains Groundsnake



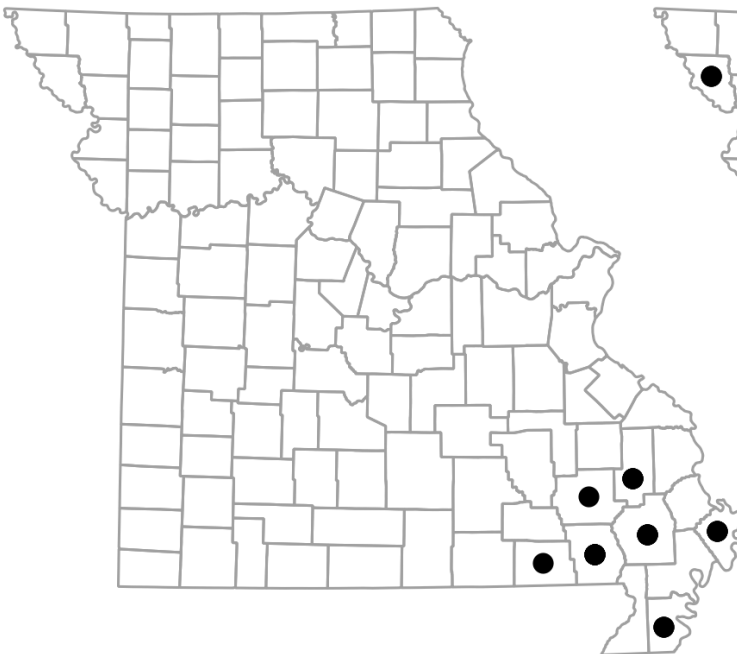
Tantilla gracilis
Flat-headed Snake



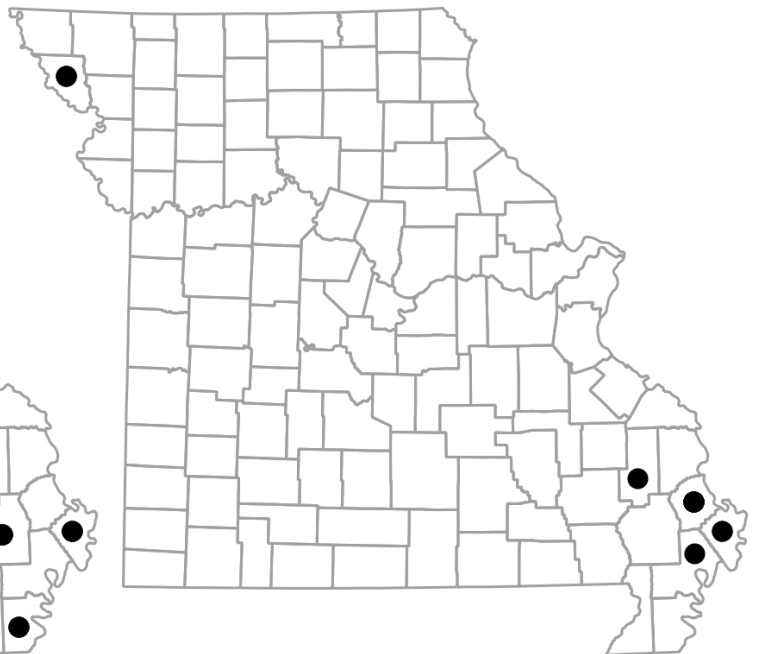
Carphophis vermis
Western Wormsnake



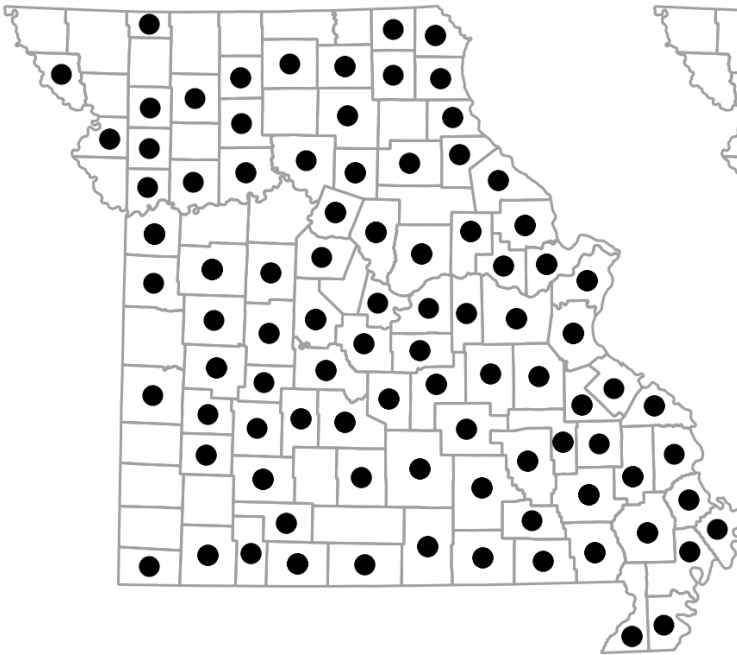
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Ring-necked Snake



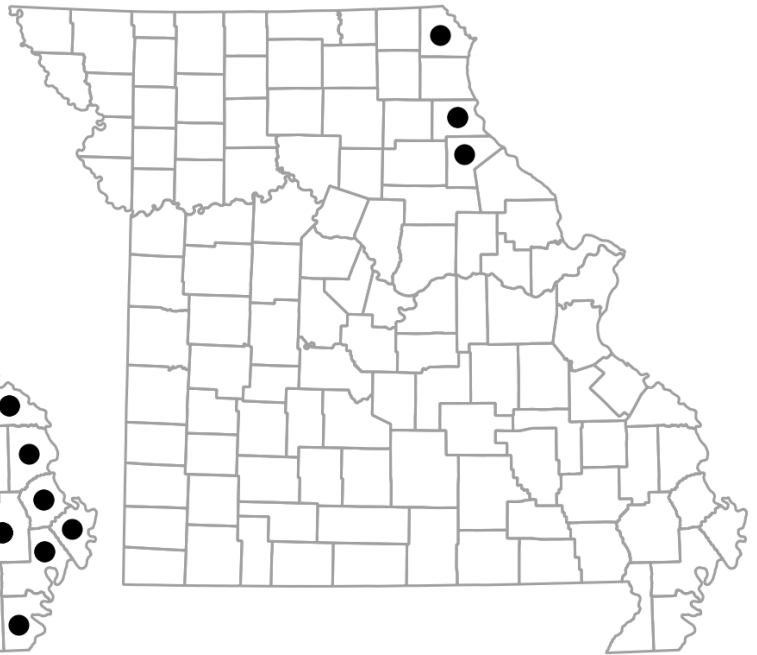
Farancia abacura
Western Mudsnake



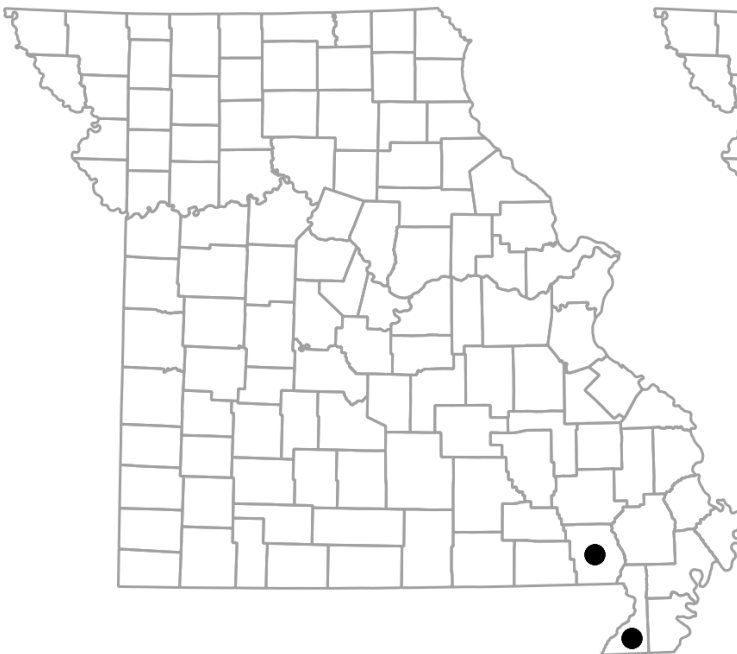
Heterodon nasicus
Western Hog-nosed Snake



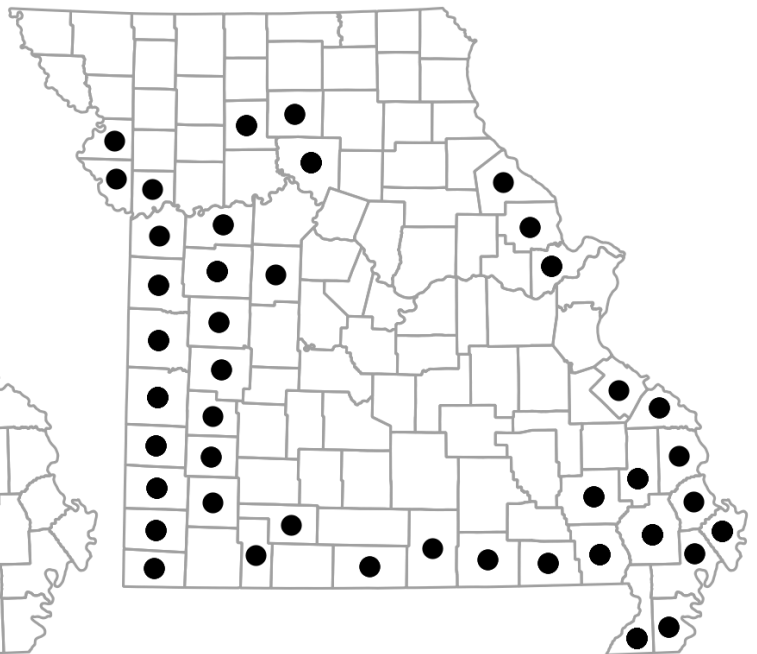
Heterodon platirhinos
Eastern Hog-nosed Snake



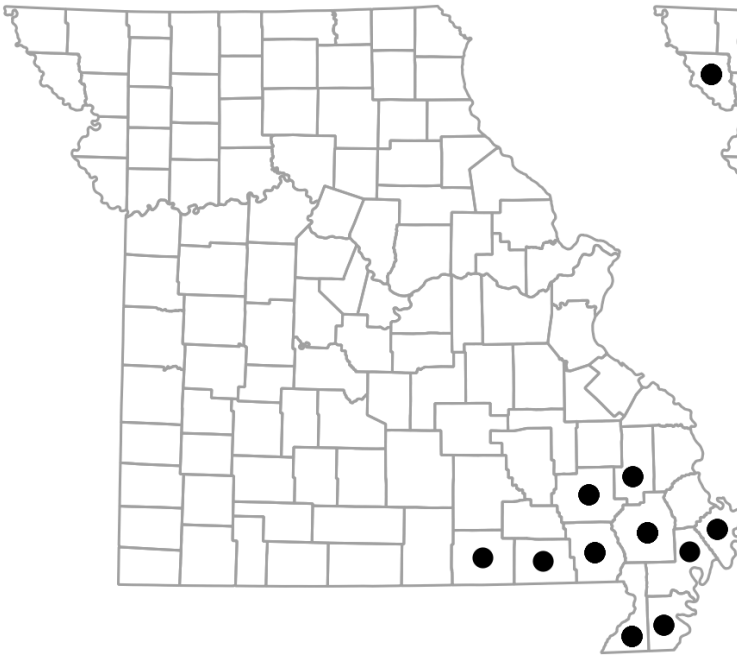
Clonophis kirtlandii
Kirtland's Snake



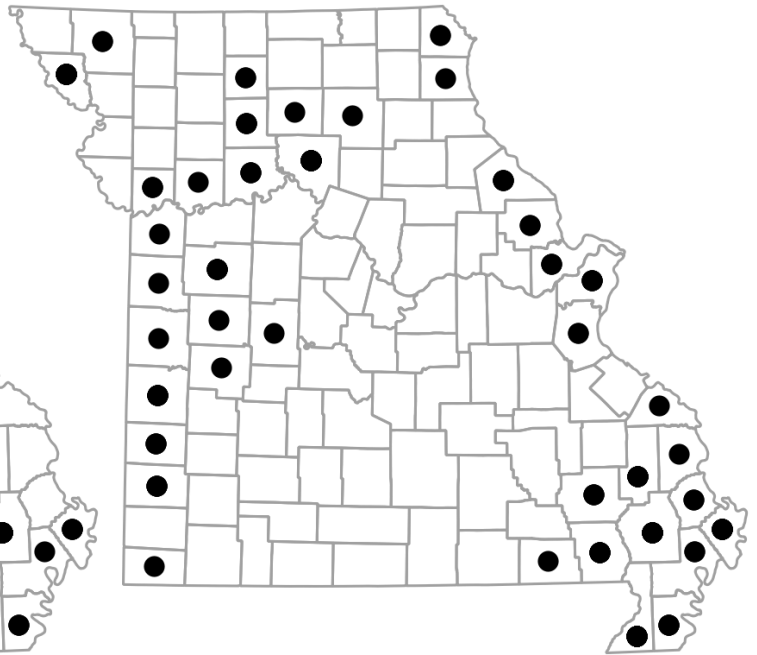
Nerodia cyclopion
Mississippi Green Watersnake



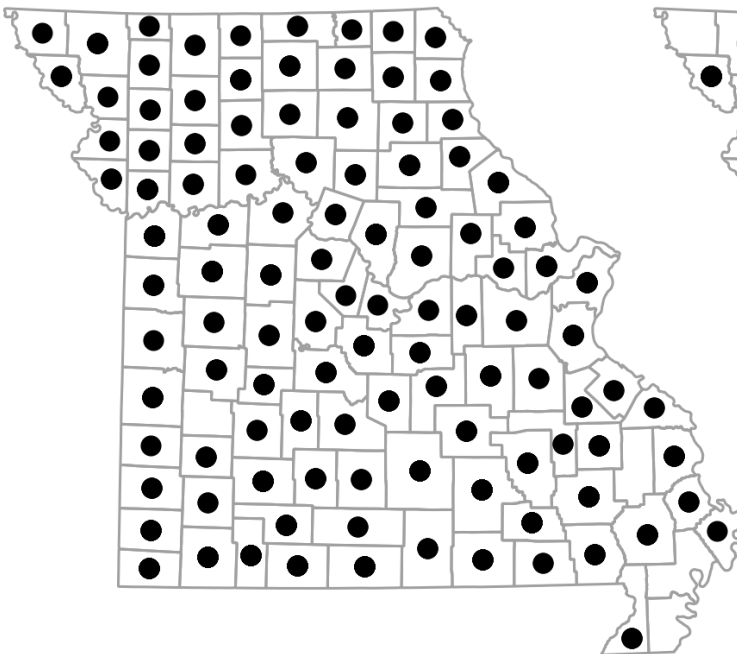
Nerodia erythrogaster
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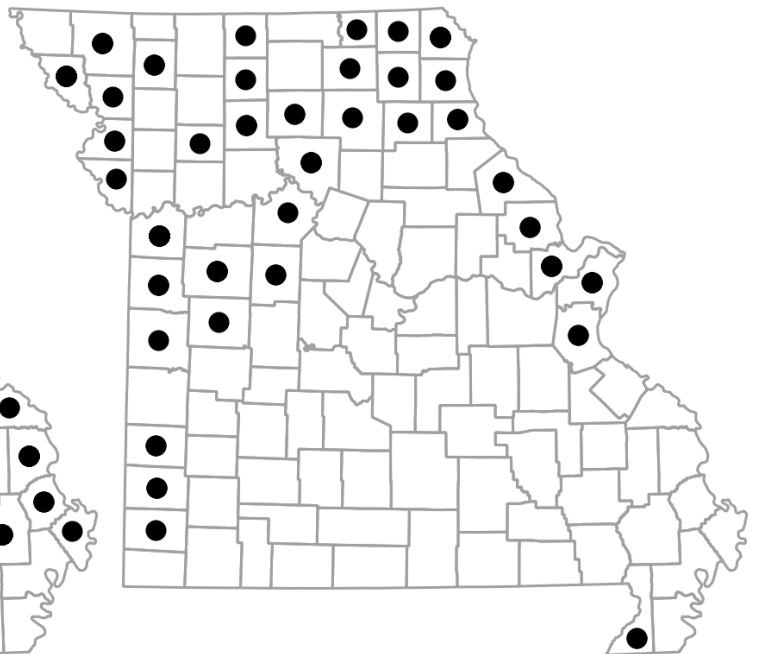
Nerodia fasciata
Broad-banded Watersnake



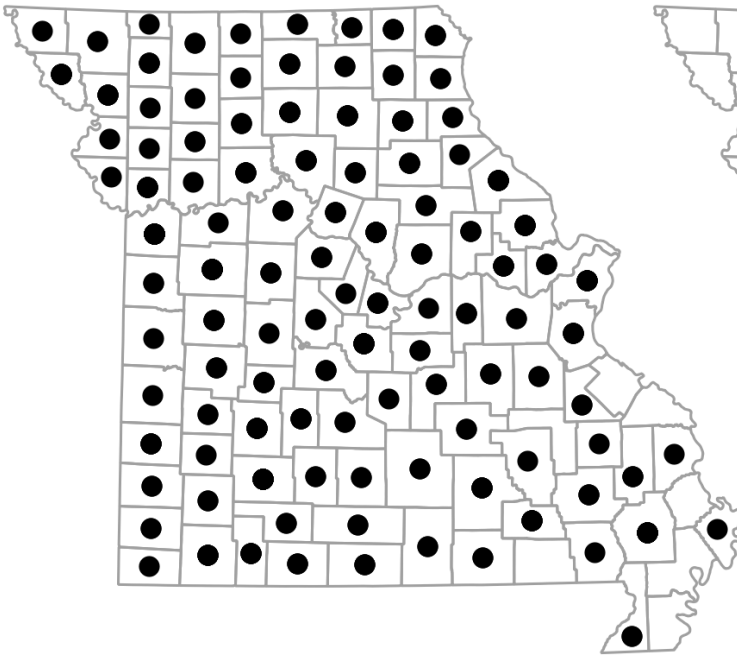
Nerodia rhombifer
Northern Diamond-backed Watersnake



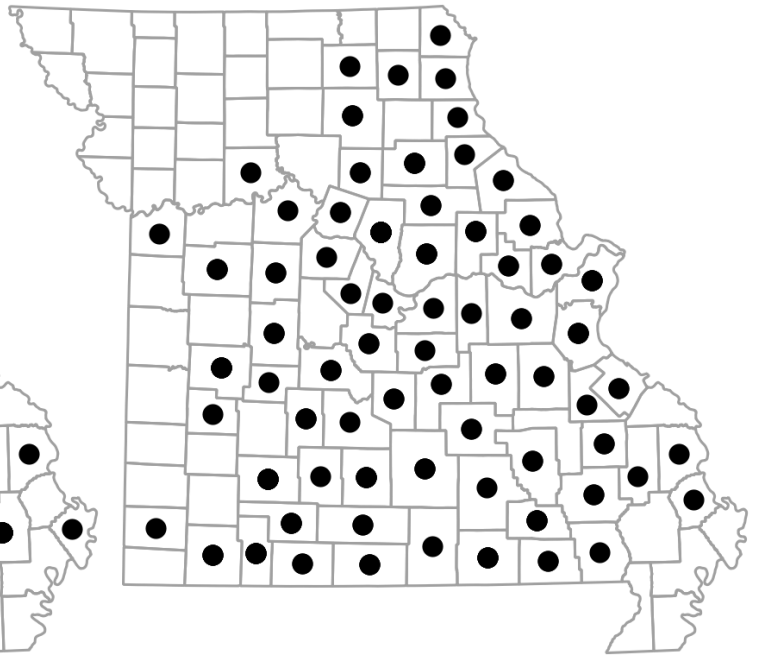
Nerodia sipedon
Common Watersnake



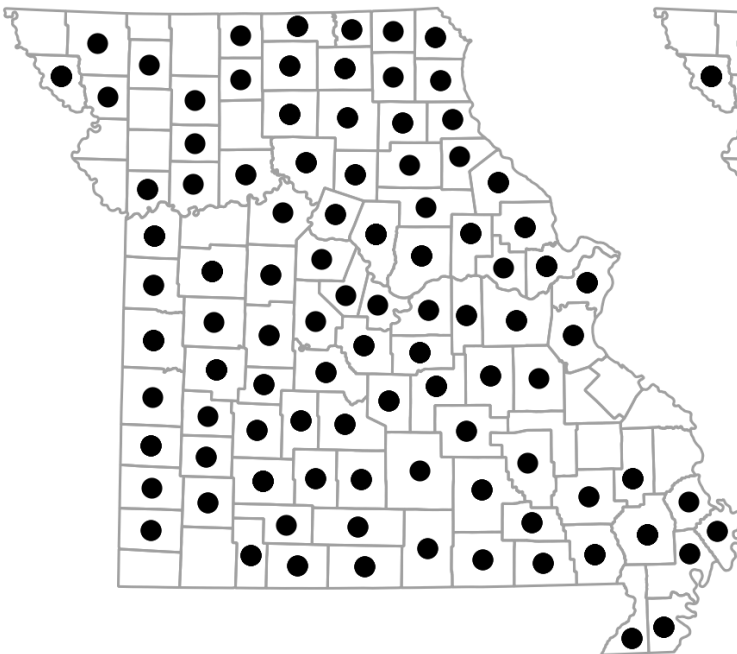
Regina grahamii
Graham's Crawfish Snake



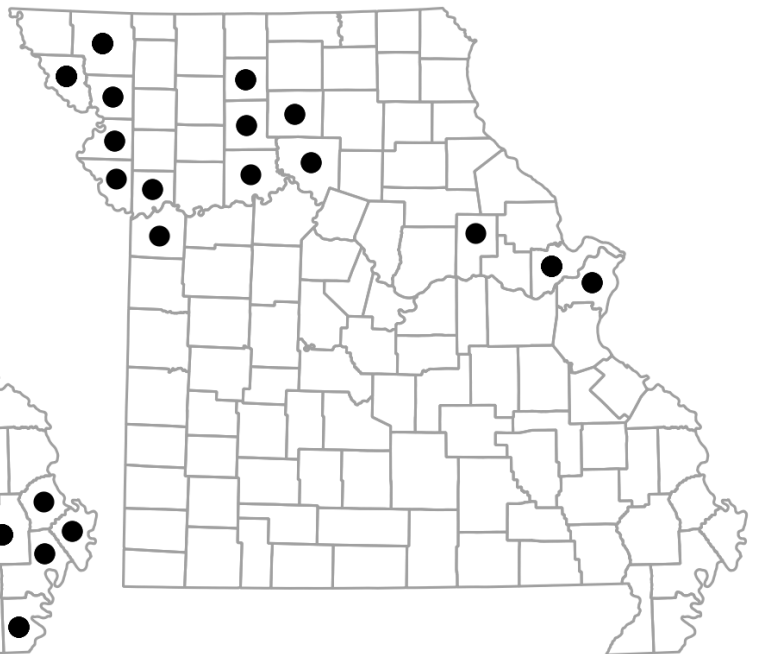
Storeria dekayi
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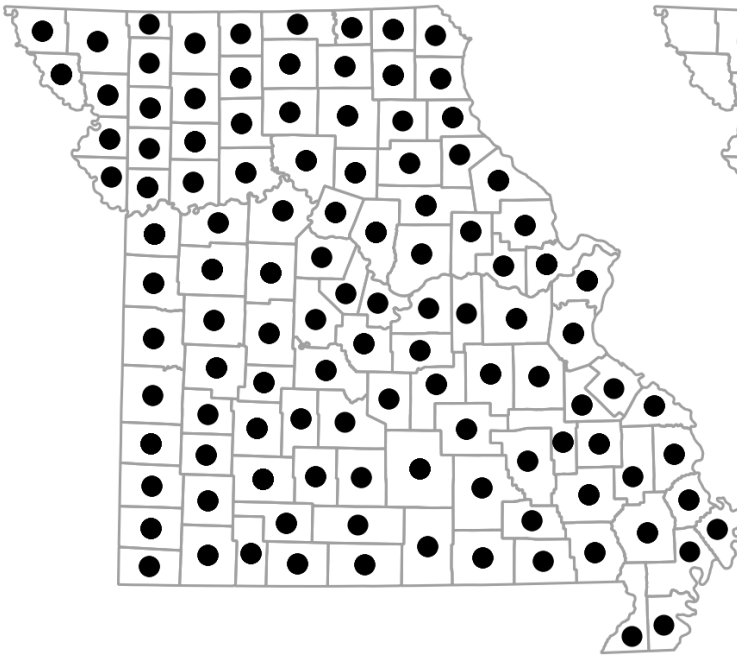
Storeria occipitomaculata
Red-bellied Snake



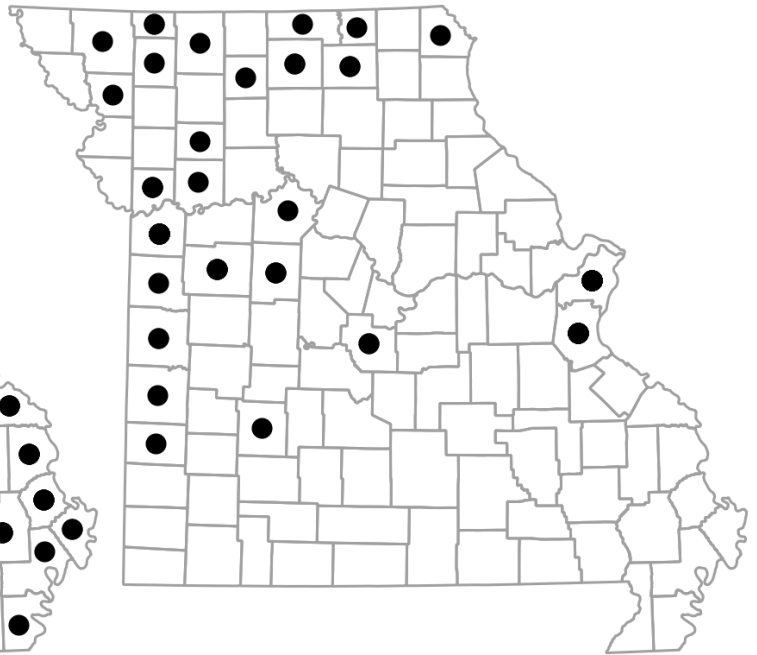
Thamnophis proximus
Orange-striped Ribbonsnake



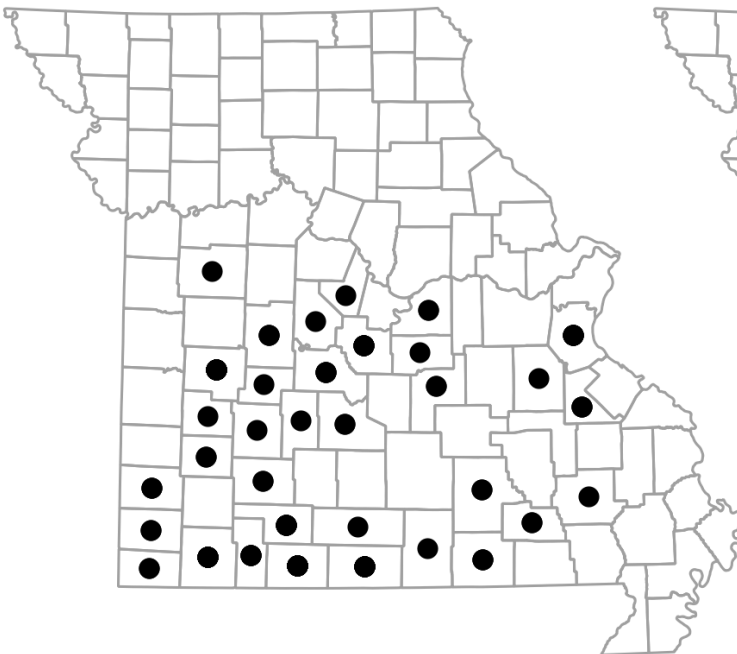
Thamnophis radix
Plains Gartersnake



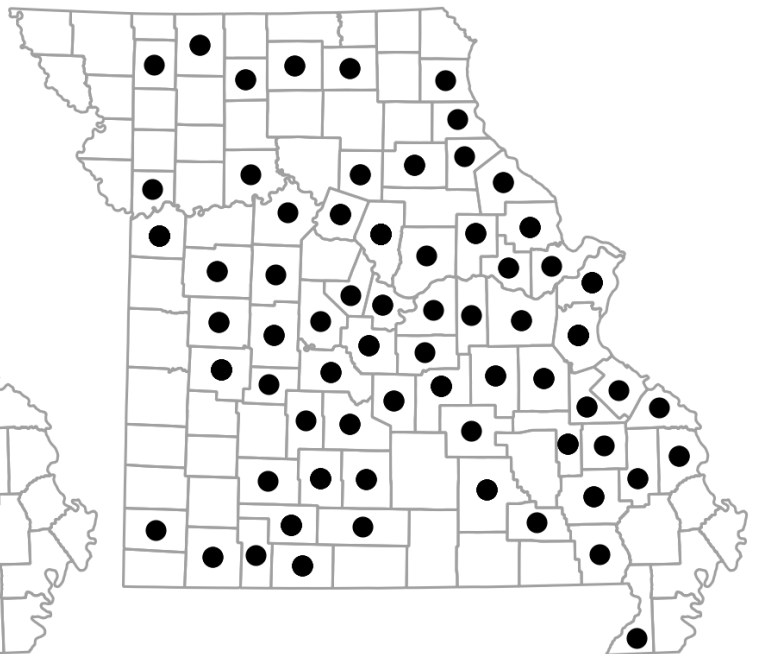
Thamnophis sirtalis
Common Gartersnake



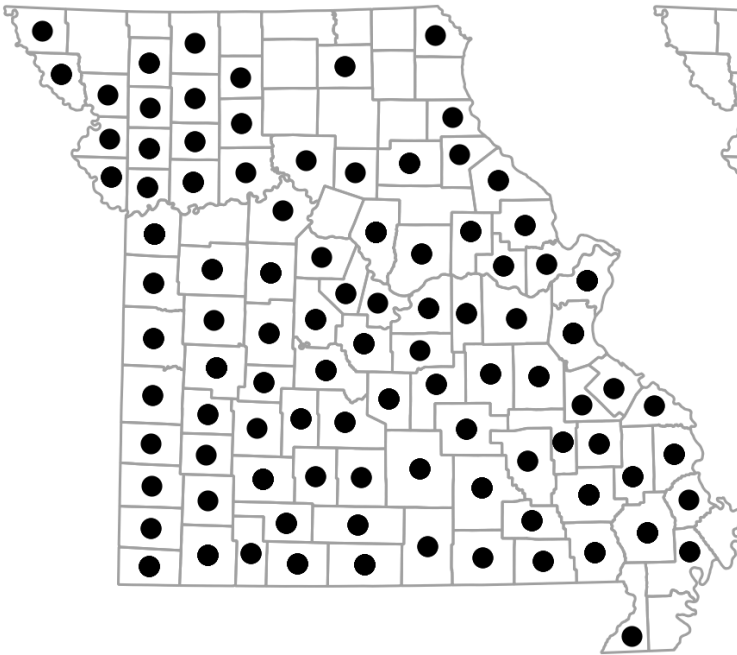
Tropidoclonion lineatum
Lined Snake



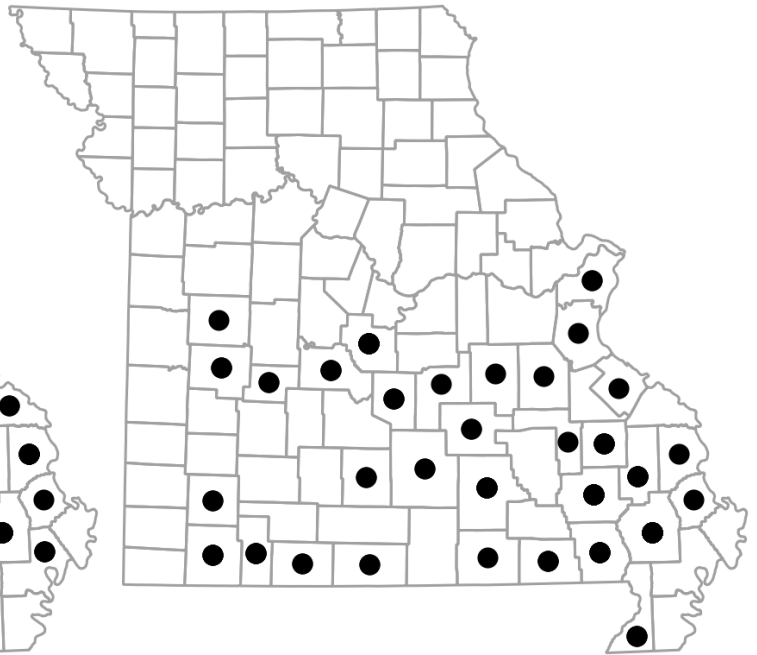
Virginia striatula
Rough Earthsnake



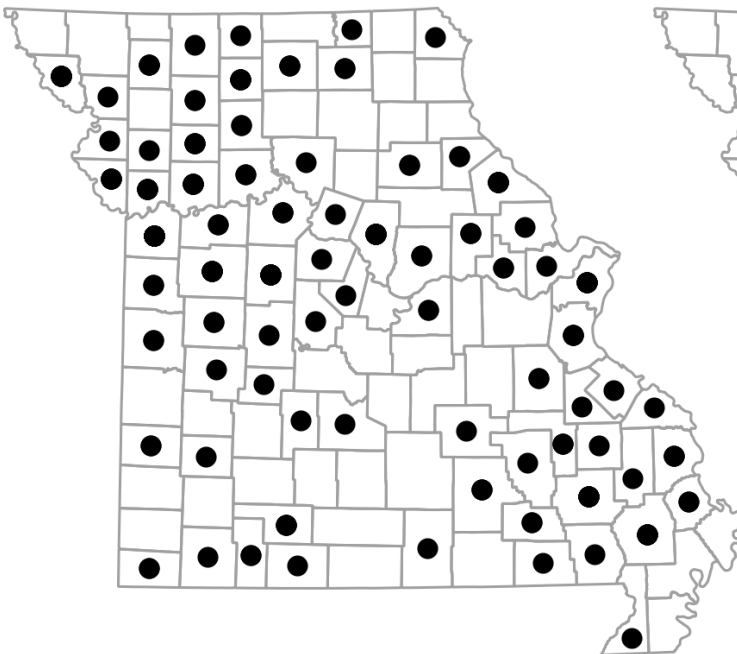
Virginia valeriae
Western Smooth Earthsnake



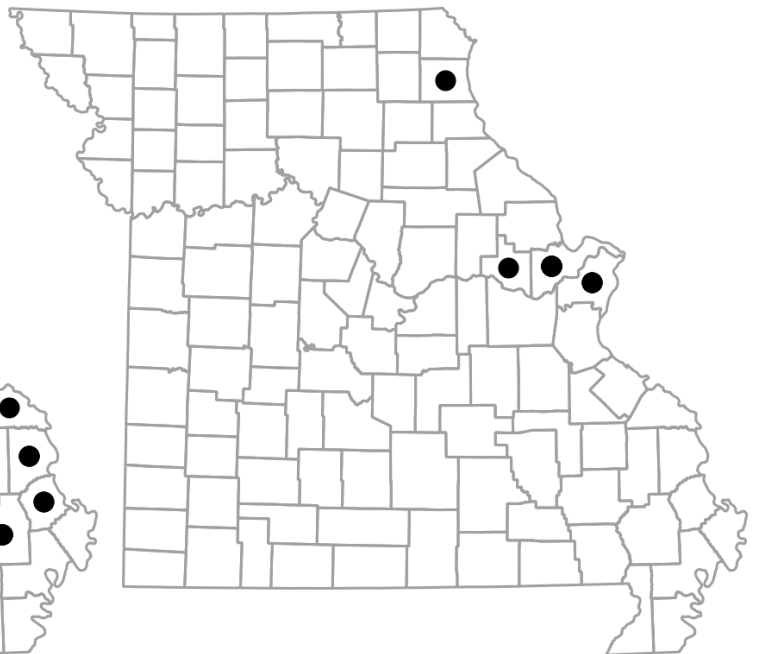
Agkistrodon contortrix
Eastern Copperhead



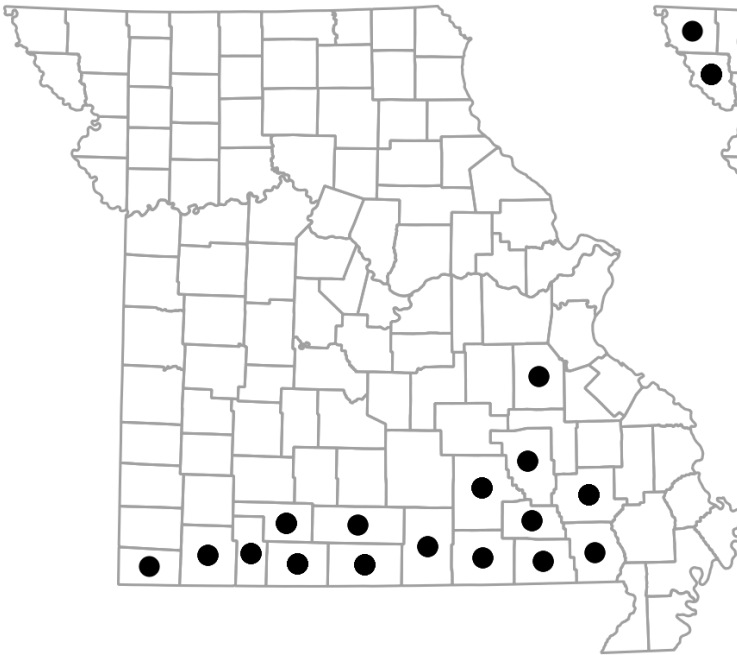
Agkistrodon piscivorus
Northern Cottonmouth



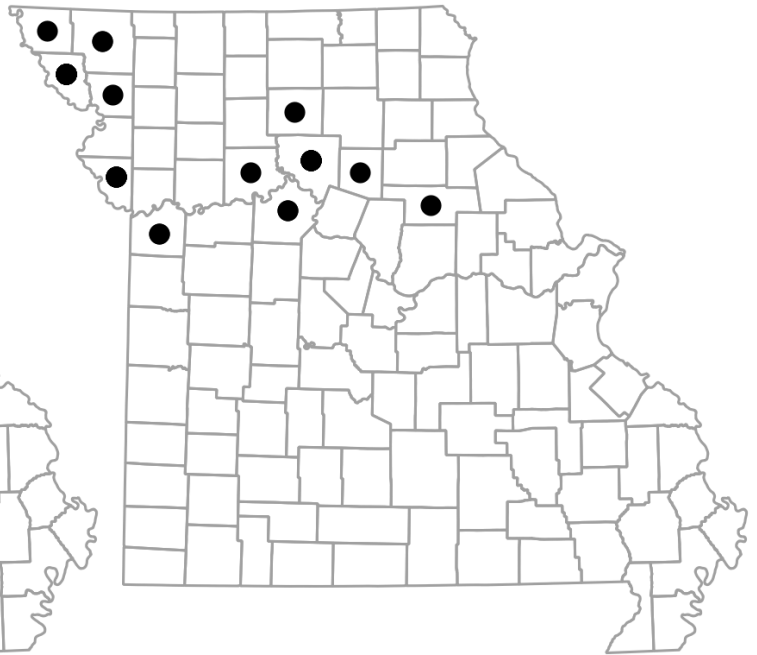
Crotalus horridus
Timber Rattlesnake



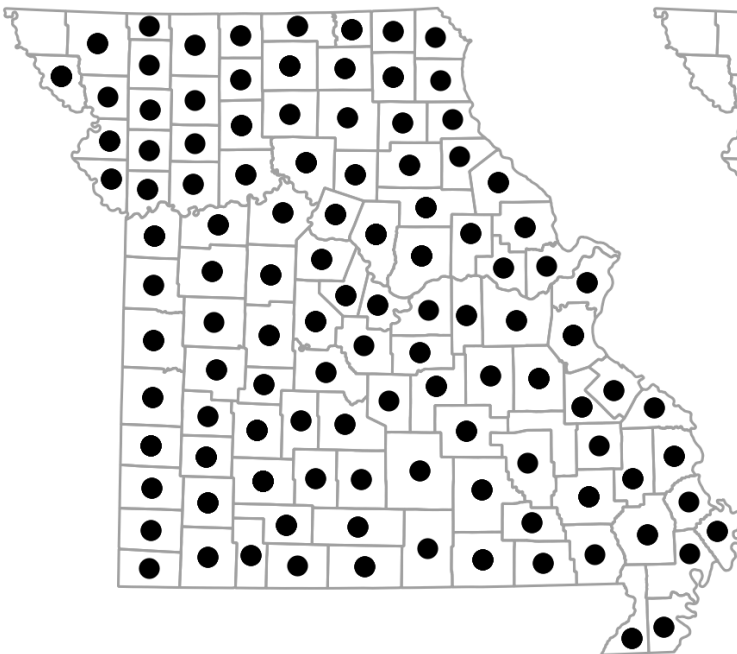
Sistrurus catenatus
Eastern Massasauga



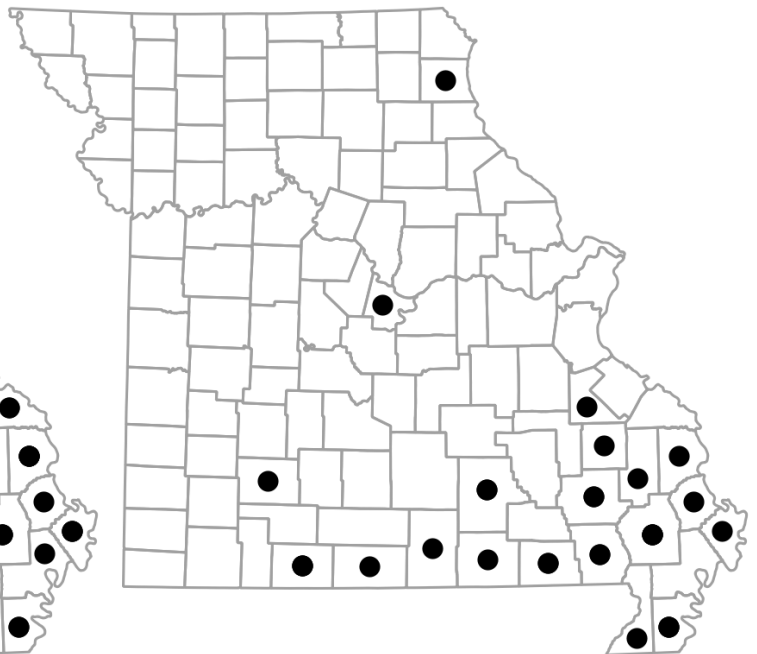
Sistrurus miliarius
Western Pygmy Rattlesnake



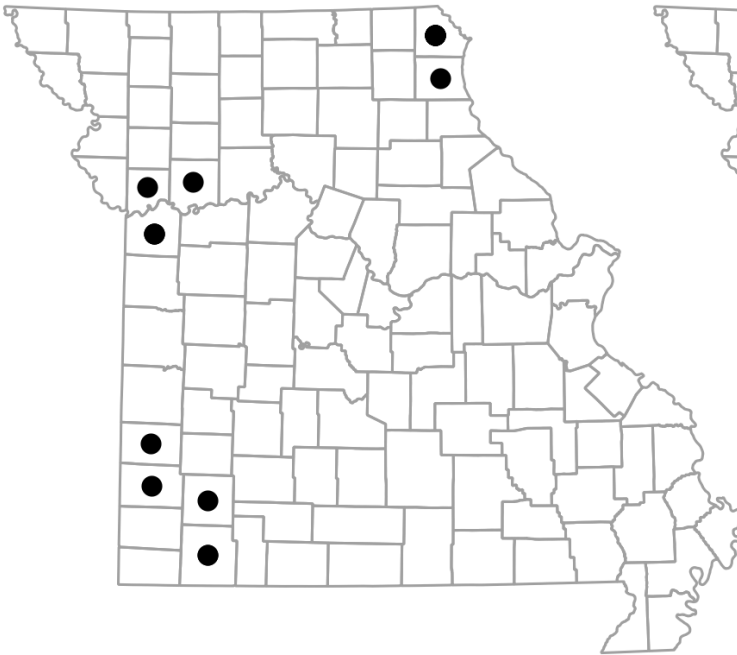
Sistrurus tergeminus
Prairie Massasauga



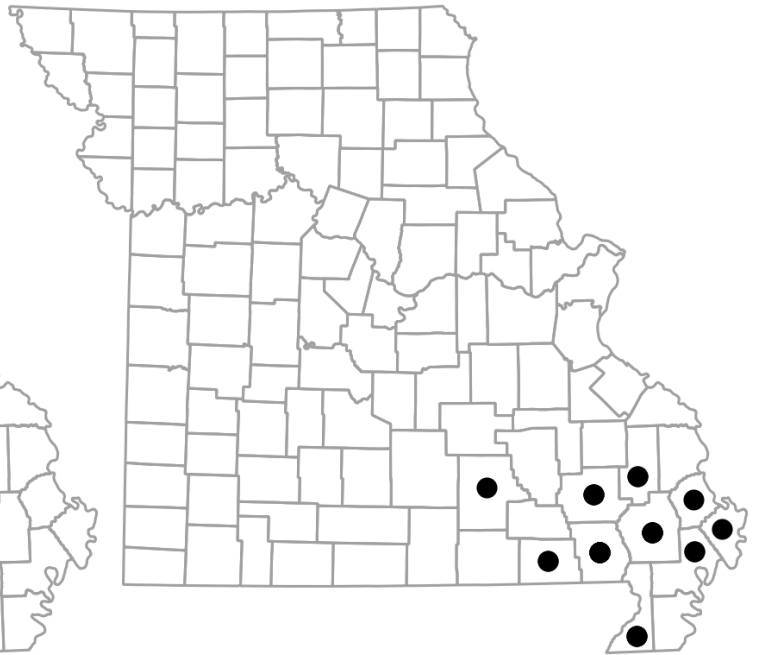
Chelydra serpentina
North American Snapping Turtle



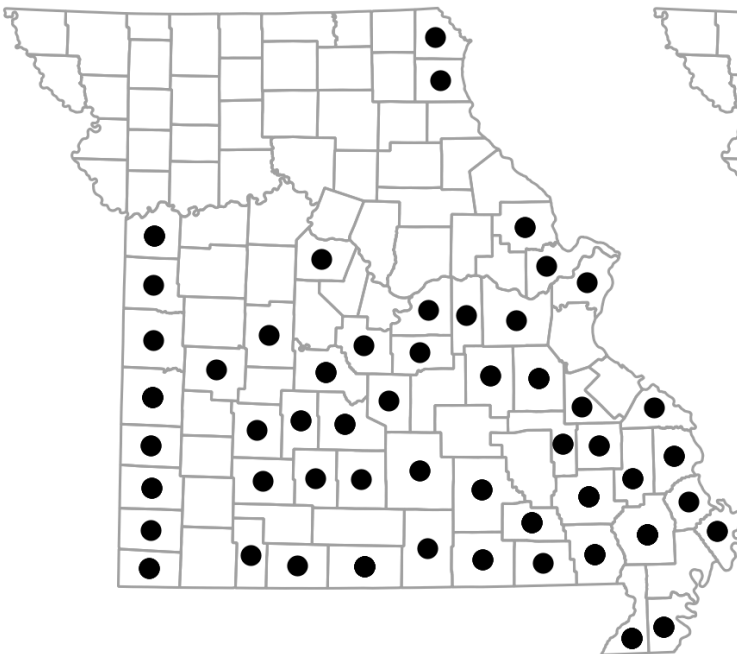
Macrochelys temminckii
Western Alligator Snapping Turtle



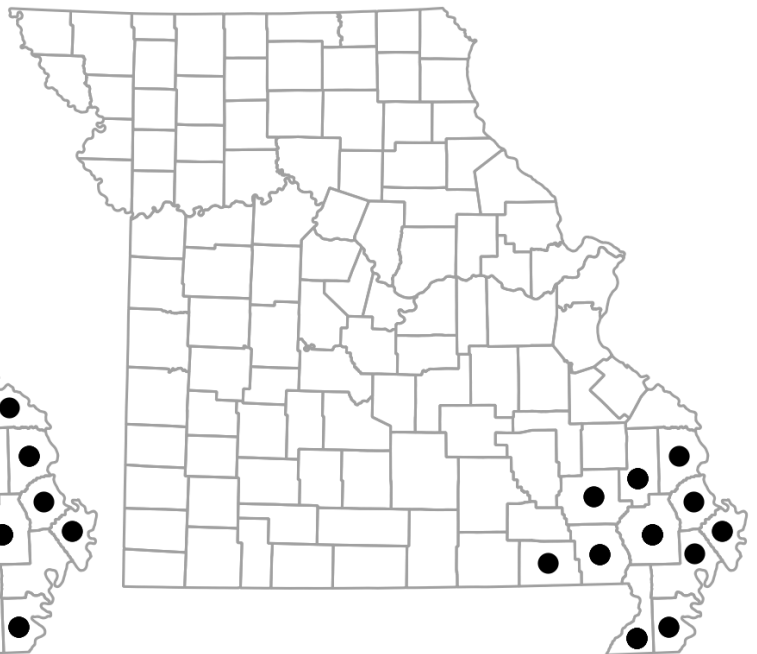
Kinosternon flavescens
Yellow Mud Turtle



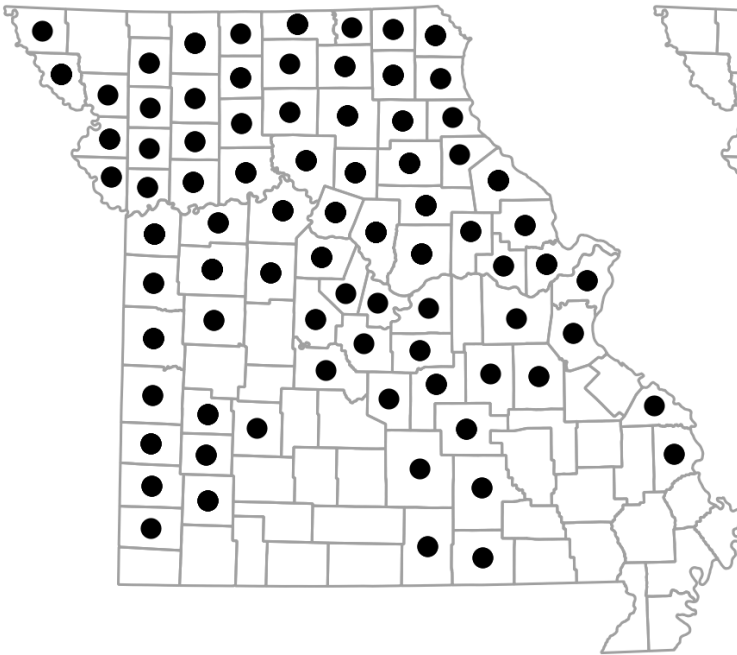
Kinosternon subrubrum
Mississippi Mud Turtle



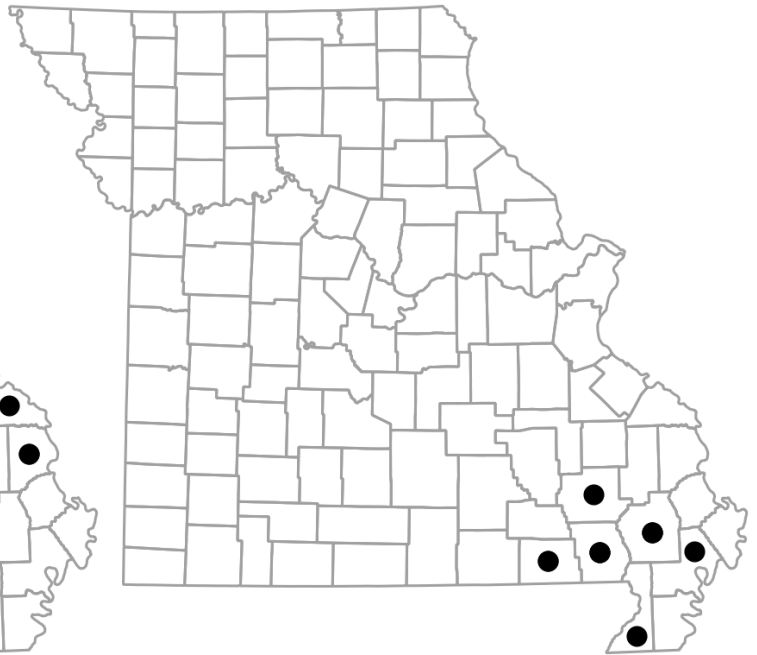
Sternotherus odoratus
Eastern Musk Turtle



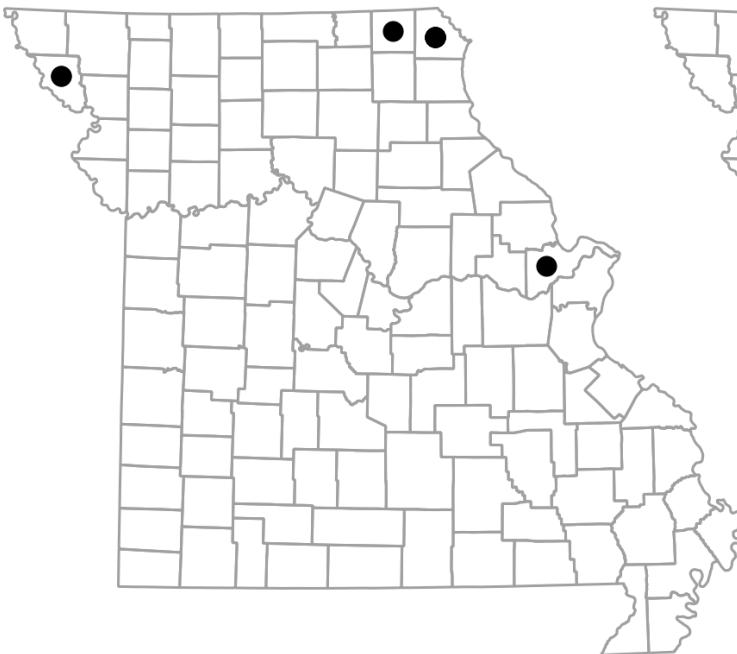
Chrysemys dorsalis
Southern Painted Turtle



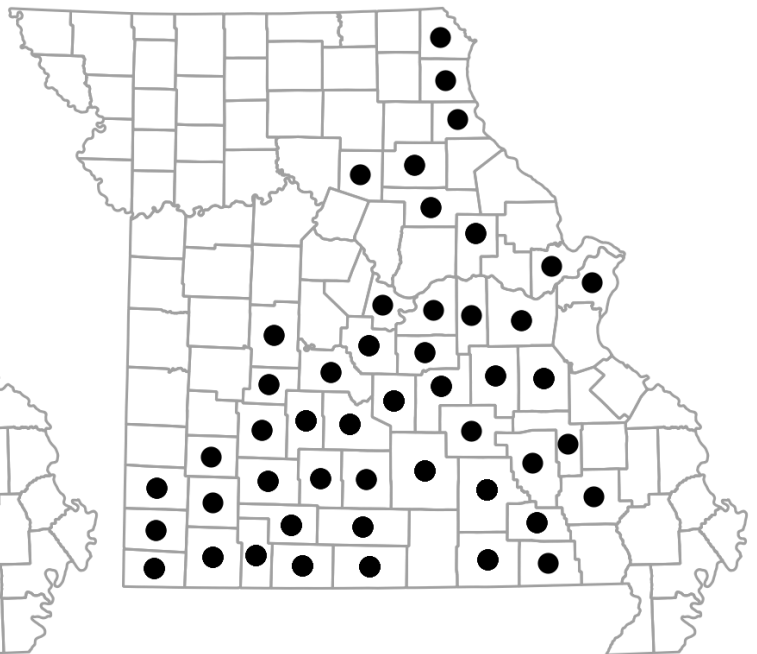
Chrysemys picta
Western Painted Turtle



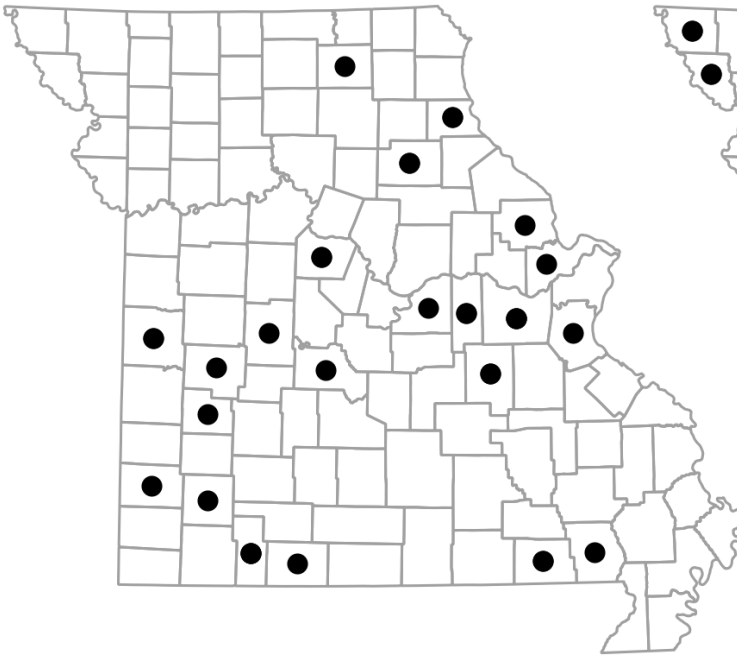
Deirochelys reticularia
Western Chicken Turtle



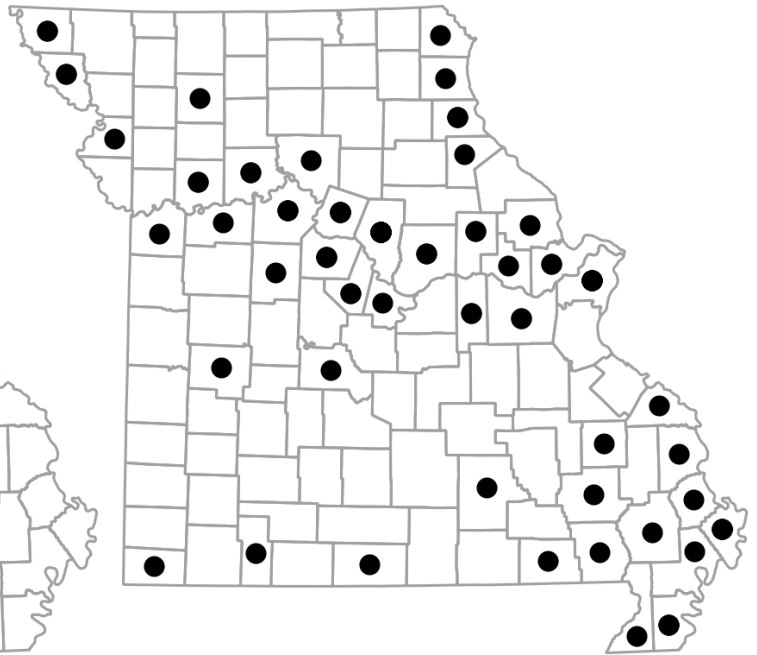
Emydoidea blandingii
Blanding's Turtle



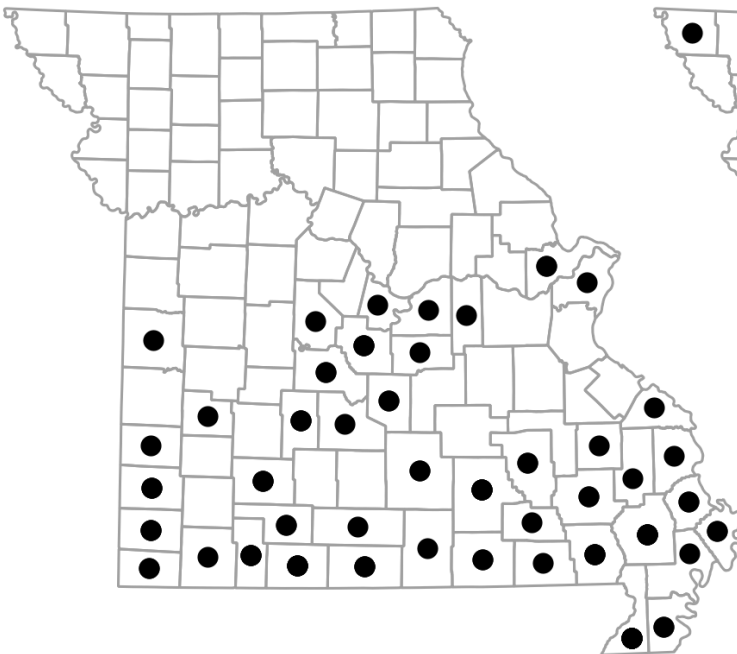
Graptemys geographica
Northern Map Turtle



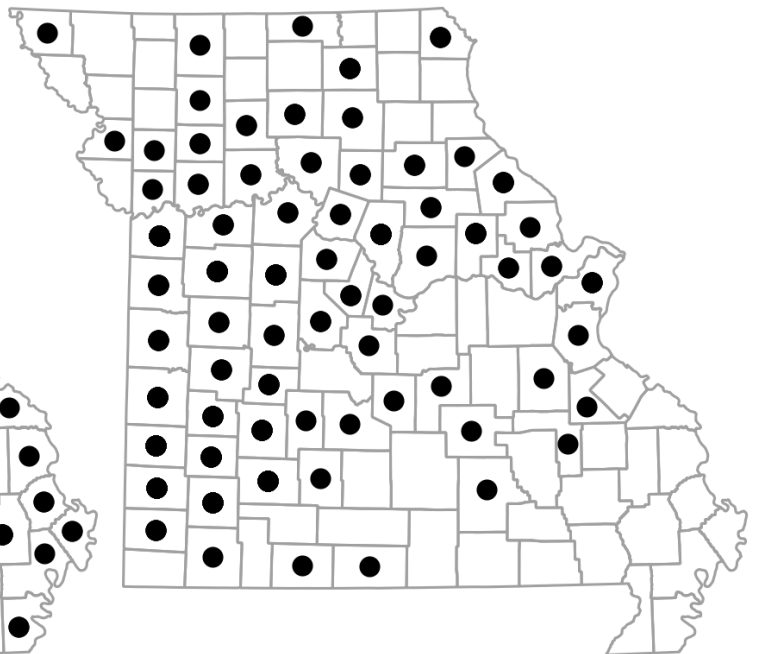
Graptemys ouachitensis
Ouachita Map Turtle



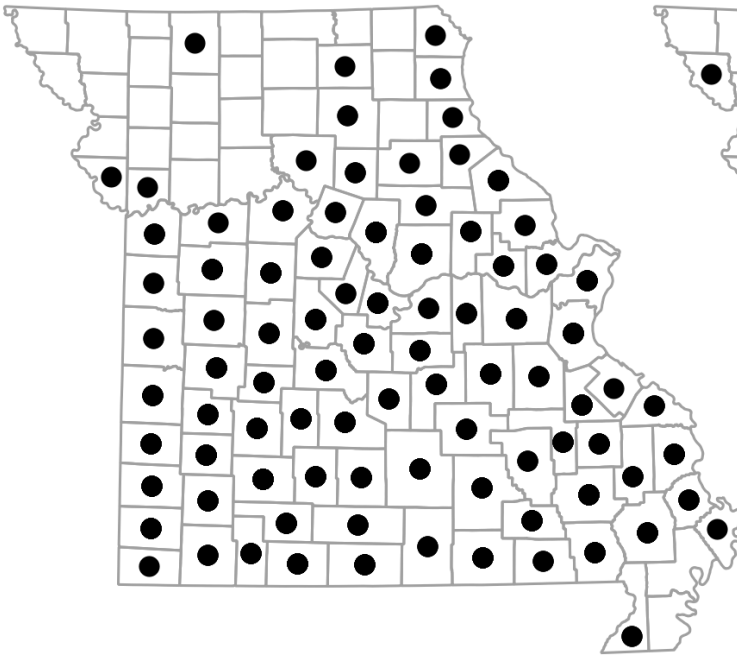
Graptemys pseudogeographica
False Map Turtle



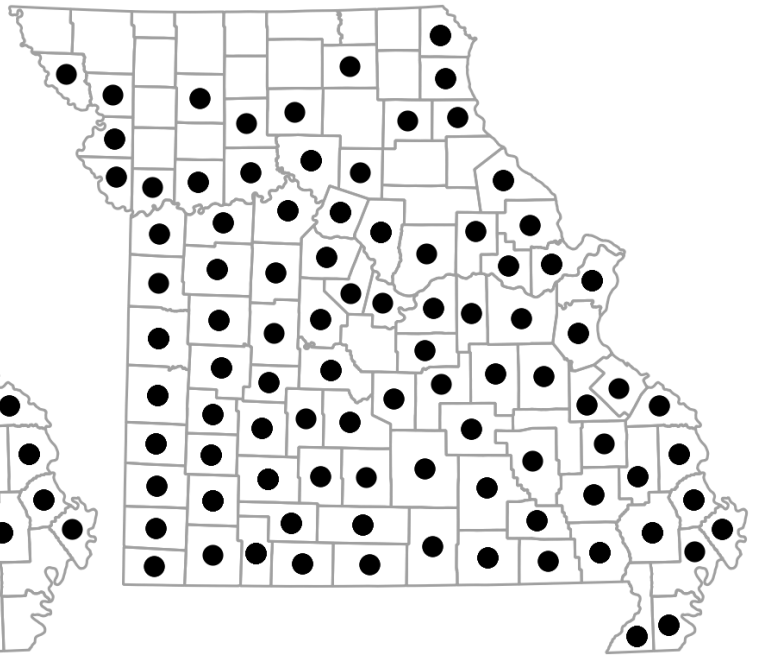
Pseudemys concinna
Eastern River Cooter



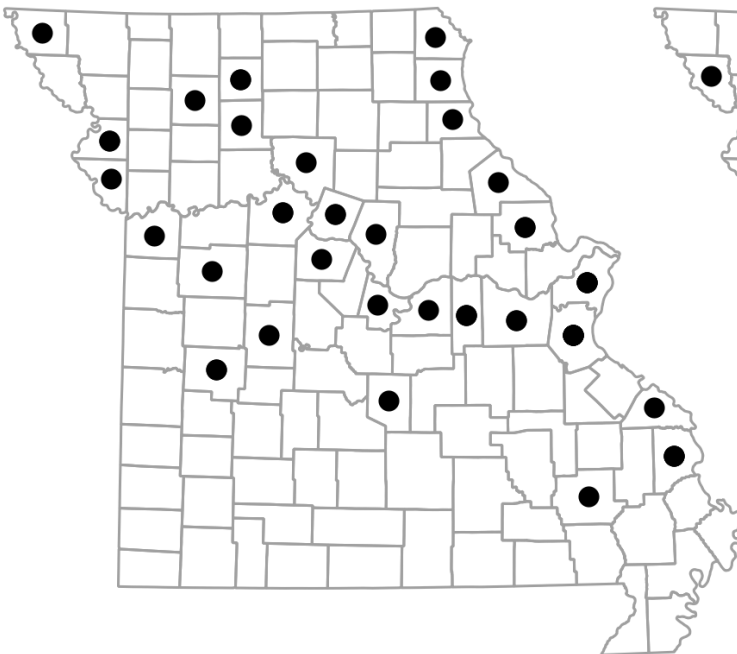
Terrapene ornata
Ornate Box Turtle



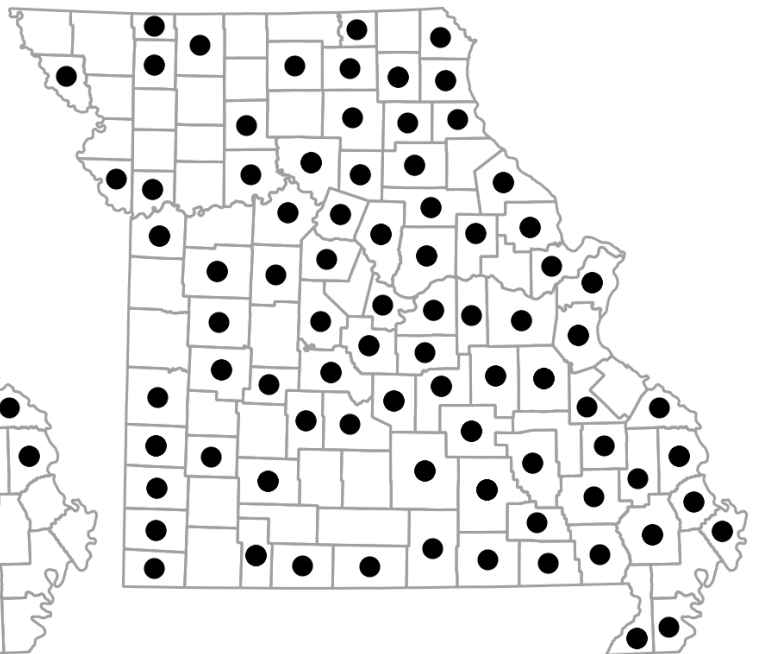
Terrapene triunguis
Three-toed Box Turtle



Trachemys scripta
Red-eared Slider



Apalone mutica
Midland Smooth Softshell



Apalone spinifera
Northern Spiny Softshell

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Data for the base county maps for the locality and county distributions, the labeled county map, and the ecological drainage units and aquatic subregions were generously provided by the Missouri Spatial Data Information Service (MSDIS 2009a, 2009b, 2009c). Data for the major rivers were provided by the United States Geological Survey (USGS 1994) and supplemented with data from the Missouri Department of Conservation (MDC 2007). Data for Missouri natural divisions and sections (based on Thom and Wilson (1980)) were generously provided by the Missouri Department of Conservation (MDC 2007). Data for watershed boundaries were provided by the Natural Resources Conservation Service (NRCS 2002). Data for ecoregions were provided by the US Environmental Protection Agency (EPA 2003). Base map data for surrounding states were provided by the National Atlas of the United States (National Atlas 2001).

All technology-related aspects of the Missouri Herpetological Atlas Project are supported by a suite of open source software that is both *gratis* (free as in beer) and *libre* (free as in speech). Kubuntu Linux is used as the operating system to host and execute all processes related to the project. Atlas, checklist, and GIS data are stored in a PostgreSQL database, which has been spatially enabled using PostGIS. Project documentation and database scripts are written with PHP and displayed using an Apache web server. QGIS is used to produce all base maps, distribution, county records, and other maps. The programming language Python is used to create GIS plug-ins for map exports. The open source Python library, ReportLab, is used to create the final *Atlas* publication in portable document format (PDF), an ISO standard.

Most importantly, a project of this magnitude cannot be accomplished without the contributions of many individuals. We would like to thank the following for specimen information, feedback, and technical assistance on the project:

Nathan Aaron, Jamie Alford, Scott Altnether, Tom Anderson, Richard Andrews, Jonathan Ashley, Ralph Axtell, D. Baker, Jason Baker, Stephanie Bartlett, Ben Barton, Neil Bass, Derek Bateman, Tom Beauvais, Bill Becker, Don Becker, Melissa Bedford, Ruth Ann Berry, Adam Beston, Beth Blaisdell, Tyler Blake, Josiah Boothe, Aaron Bossert, Michelle Bowe, Mark Bower, Jeff Bowman, Andrew Braun, Jeff Briggler, Chris Brooks, Christina Brown, Danny Brown, Sara Bruce, Josh Bruegge, Kevin Brunke, Carol Bryant, Steve Buback, Jenny Bunch, Frank Burbrink, Nick Burrell, John Cadle, Eldon Cain, T. Carpenter, Gary Casper, Robert Caviness, Ellen Censky, Candy Chambers, Doug Clark, Clint Coffey, Shayla Coffey, Skyler Collins, Matt Coombs, Wayne Corse, Danny Counts, Christopher Crabtree, Mike Cravens, Joe Criddlebaugh, Wyatt Criddlebaugh, Mary Crowell, R. Dames, Charles Dardin, Jeffrey Dawson, B. Day, Bob Dealey, Brandon DeCavele, Jacob Decker, C. Decoske, Michael Dickey, Angel DiMercurio, Drew Dittmer, Brandon Dix, Evan Dixon, Scott Doherty, Ryan Douglas, Joseph Douglass, D. Drake, Frank Drummond, Joe Duenwald,

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Woolery, Reese Worthington, Patricia Yates, Nico Yoch, Elizabeth Yohe

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Appendix A: Collection Sources

American Museum of Natural History
Anderson, P. 1965. *The Reptiles of Missouri*. University of Missouri Press, Columbia, Missouri. xxiii + 330p.
Arkansas State University
Austin Peay State University *
Bobby Witcher Memorial Collection, Avila College (KU)
Carnegie Museum of Natural History
Chicago Academy of Sciences
Cornell University Museum of Vertebrates
Culver-Stockton College
Dallas Museum of Natural History *
Field Museum of Natural History
H. Carl Gerhardt Audio Recording Collection (Cornell)
Hurter, J. 1911. Herpetology of Missouri. *Transactions of the Saint Louis Academy of Science* 20(5): 59-274.
Illinois Natural History Survey
Milwaukee Public Museum
Missouri Department of Conservation *
Missouri State University
Museum of Comparative Zoology, Harvard University
Museum of Natural Science, Louisiana State University
Museum of Southwest Biology (New Mexico) *
National Museum of Natural History
Natural History Museum of Los Angeles County *
Pittsburg State University
Saint Louis Academy of Sciences
Southeast Missouri State University
Southern Illinois University--Carbondale
Southern Illinois University--Edwardsville
Sternberg Museum of Natural History, Fort Hays State University
Texas Natural History Collection *
University of Arkansas--Fayetteville
University of California--Berkeley Museum of Vertebrate Zoology
University of Central Missouri
University of Florida at Gainesville *
University of Georgia, Museum of Natural History
University of Illinois Natural History Museum
University of Kansas, Museum of Natural History
University of Michigan, Museum of Zoology
University of Missouri--Columbia Dean E. Metter Memorial Herpetology Collection
William Jewell College

* Collection sources marked with an asterisk (*) are included from published accounts only and are presumed to represent only a portion of that collection's Missouri material.

Appendix B: Literature Sources

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