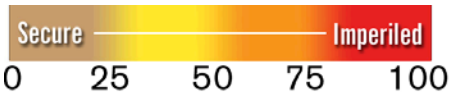
Ambystoma annulatum

Ringed Salamander

Class: Amphibia
Order: Caudata
Family: Ambystomatidae

Priority Score: 19 out of 100



Population Trend: Unknown

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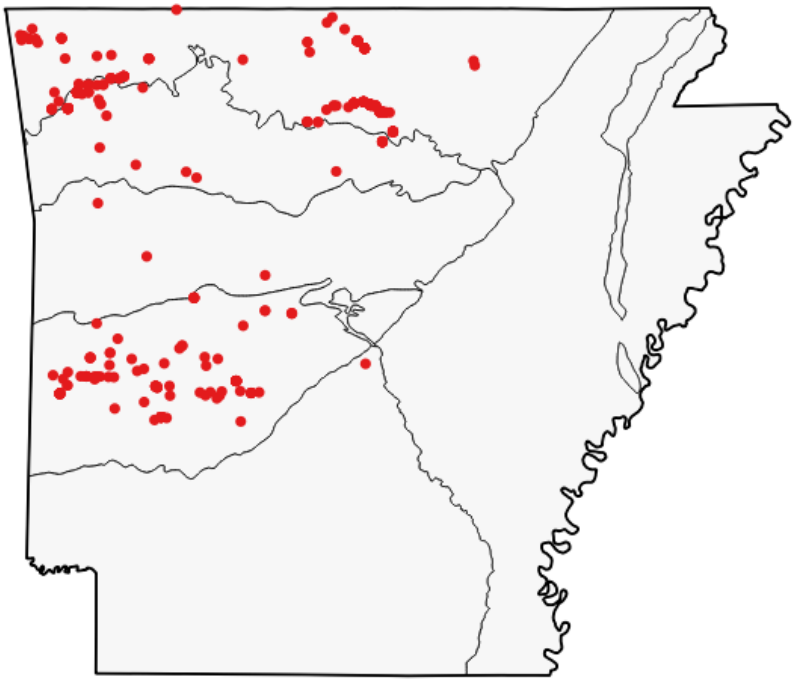
Global Rank: G4 — Apparently secure species

State Rank: S3 — Vulnerable in Arkansas

Distribution

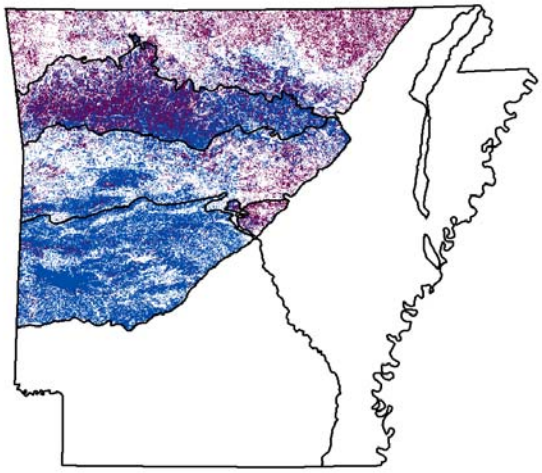
Occurrence Records



Ecoregions where the species occurs:

- Ozark Highlands ☑
- Boston Mountains ☑
- Arkansas Valley ☑
- Ouachita Mountains ☑
- South Central Plains ☐
- Mississippi Alluvial Plain ☐
- Mississippi Valley Loess Plain ☐

Habitat Map



Habitats

Habitats	Weight
Caves, Mines, Sinkholes and other Karst Features	Optimal
Ozark-Ouachita Forested Seep	Suitable
Ozark-Ouachita Mesic Hardwood Forest	Optimal
Ozark-Ouachita Pine/Bluestem Woodland	Suitable
Ozark-Ouachita Pine-Oak Forest/Woodland	Suitable
Ozark-Ouachita Riparian	Suitable

Problems Faced

Forestry practices and associated negative impacts pose greatest problem.	Threat: Habitat destruction Source: Forestry activities

Data Gaps/Research Needs

Current distribution and abundance data are lacking.

Conservation Actions

	Importance	Category
More data are needed to determine conservation actions.		

Monitoring Strategies

Conduct breeding site surveys.

Comments

Populations have responded well to the creation of wildlife ponds in the Ouachita-Ozark National Forests for use as breeding sites. Recent rangewide surveys for distribution and abundance are lacking. Populations within the national forests are considered stable. (ANHI 2003, Anderson, J.D. 1965, Anderson, P. 1965, Black and Dellinger 1938, Brussock and Brown 1982, Conant and Collins 1991, Cope 1886, Cope 1887, Crump 2003, Crump and others 2003A, 2003C, 2003D, 2003F, 2003P, Dowling 1956, Hurter and Strecker 1909, Hutcherson and others 1989, Johnson 1977, McAllister and others 1995d, McDaniel 1975, McDaniel and Saugey 1977, Noble and Marshall 1929, Nyman and others 1993, Peterson and others 1992, Petranka 1998, Reagan 1974a, Schmidt 1953, Spotila and Beumer 1970, Stejneger and Barbour 1917, Strecker 1924, Taylor 1935, Tihen 1958, Trapp 1956 (1957), Trapp 1959, Trauth and others 2004, Trauth 1980b, Trauth 2000, Trauth and others 1989b, Trauth and Cartwright 1989, Turnipseed and Gallagher 1991, USDA FS 1999, Wilson 1995).

Taxa Association Team and Peer Reviewers

AGFC Kelly Irwin, UCA Don Shepard, Kory Roberts

Ambystoma talpoideum

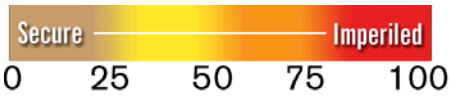
Mole Salamander

Class: Amphibia

Order: Caudata

Family: Ambystomatidae

Priority Score: **15** out of 100



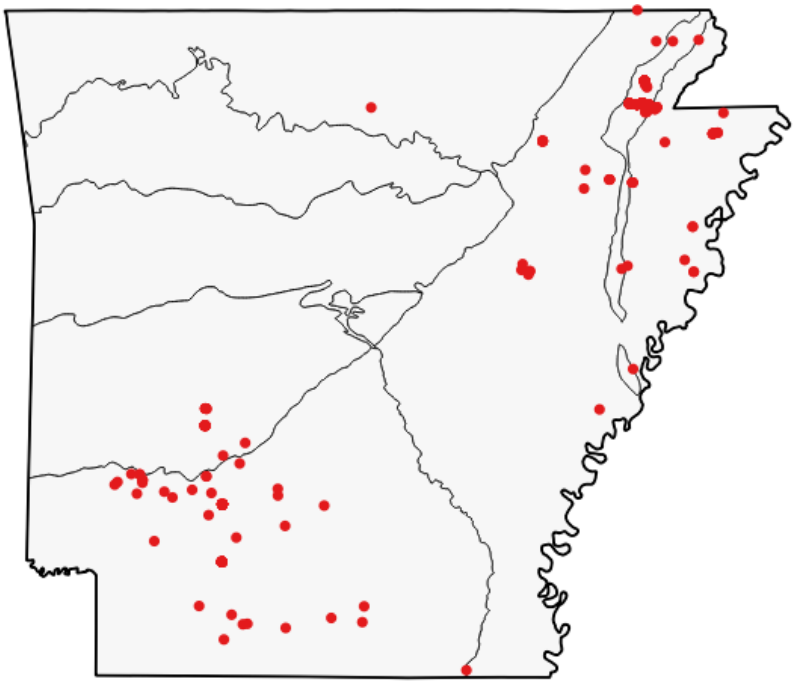
Population Trend: Unknown

Global Rank: G5 — Secure

State Rank: S3 — Vulnerable in Arkansas

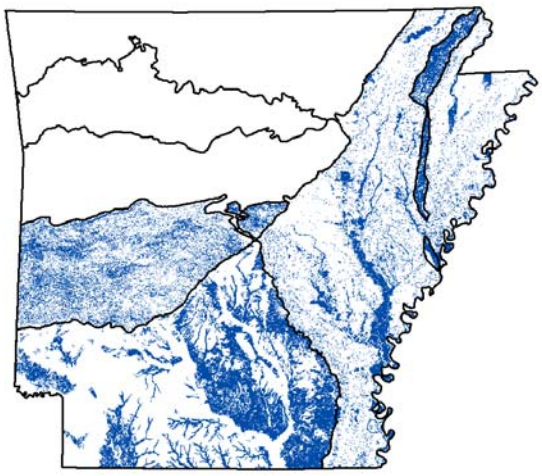
Distribution

Occurrence Records



Ecoregions where the species occurs:

- Ozark Highlands ☐
- Boston Mountains ☐
- Arkansas Valley ☐
- Ouachita Mountains ☑
- South Central Plains ☑
- Mississippi Alluvial Plain ☑
- Mississippi Valley Loess Plain ☑



Habitat Map

Habitats	Weight
Crowley's Ridge Loess Slope Forest	Suitable
Lower Mississippi River High Bottomland Forest	Suitable
Lower Mississippi River Low Bottomland Forest	Suitable
Lower Mississippi River Riparian Forest	Suitable
Ouachita Mountain Forested Seep	Suitable
Ozark-Ouachita Dry-Mesic Oak Forest/Woodland	Suitable
Ozark-Ouachita Mesic Hardwood Forest	Suitable
Ozark-Ouachita Pine-Oak Forest/Woodland	Suitable
Ozark-Ouachita Riparian	Suitable
West Gulf Coastal Plain Small Stream/River Forest	Suitable
West Gulf Coastal Plain Wet Hardwood Flatwoods	Suitable

Ambystoma talpoideum
Mole Salamander

Problems Faced

Local populations have been lost as forests with seasonal pools have been converted to agricultural and urban uses.	Threat: Habitat destruction or conversion Source: Urban development
Local populations have been lost as forests with seasonal pools have been converted to agricultural and urban uses.	Threat: Habitat destruction or conversion Source: Agricultural practices
Loss and degradation of forest habitat surrounding breeding ponds.	Threat: Habitat destruction Source: Forestry activities

Data Gaps/Research Needs

Additional distribution data are needed.

Conservation Actions

	Importance	Category
More information is needed to determine conservation actions.		

Monitoring Strategies

Conduct breeding site surveys at known localities.

Comments

Recent occurrence data suggest that this species may have a wider range in the state than was previously thought (Fulmer and Fulmer 2010, 2013). However, this species is not frequently encountered. (ANHI 2003, Bishop 1943, Boyd and Vickers 1963, Carr and Goin 1943, Conant and Collins 1991, Crump 2003, Crump and others 2003A, 2003C, 2003D, 2003F, 2003P, Dundee and Rossman 1989, Hardy and Raymond 1980, McAllister and Trauth 1996a, Meshaka and McLarty 1988, Mount 1975, Parker 1947, Patterson 1978, Plummer and Dye 1992, Raymond and Hardy 1990, Raymond and Hardy 1991, Reagan 1974a, Robison and Winters 1978, Semlitsch 1985, Semlitsch 1987a, Semlitsch 1987b, Shoop 1960, Shoop 1964, Smith 1961, Smith and others 1984, Sutton and Paige 1980, Trauth and others 1993a, Trauth and others 1995b, Trauth and others 2004, USDA FS 1999, Wilson 1995).

Taxa Association Team and Peer Reviewers

AGFC Kelly Irwin, UCA Don Shepard, Kory Roberts

Ambystoma tigrinum

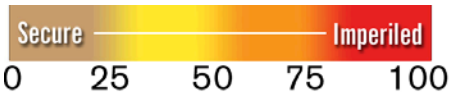
Eastern Tiger Salamander

Class: Amphibia

Order: Caudata

Family: Ambystomatidae

Priority Score: **15** out of 100



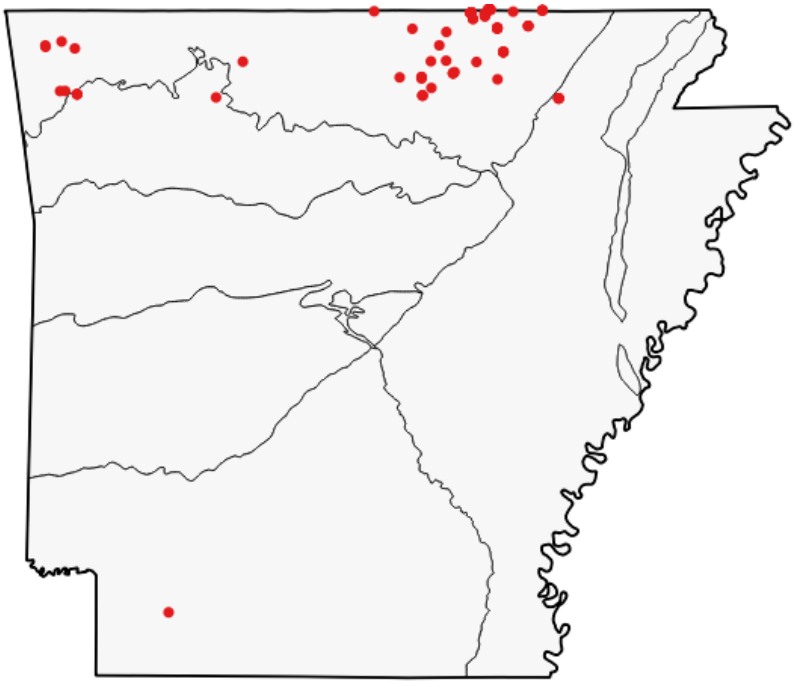
Population Trend: Unknown

Global Rank: G5 — Secure

State Rank: S3 — Vulnerable in Arkansas

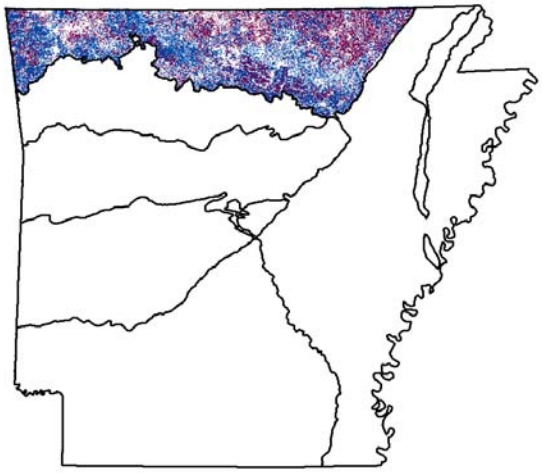
Distribution

Occurrence Records



Ecoregions where the species occurs:

- Ozark Highlands ☑
- Boston Mountains ☐
- Arkansas Valley ☐
- Ouachita Mountains ☐
- South Central Plains ☐
- Mississippi Alluvial Plain ☐
- Mississippi Valley Loess Plain ☐



Habitat Map

Habitats

	Weight
Caves, Mines, Sinkholes and other Karst Features	Optimal
Ozark-Ouachita Mesic Hardwood Forest	Suitable
Ozark-Ouachita Pine-Oak Forest/Woodland	Suitable
Ozark-Ouachita Prairie and Woodland	Optimal
Pasture Land	Suitable

Problems Faced

Loss and degradation of prairie and forest habitat surrounding breeding.	Threat: Habitat destruction Source: Forestry activities
Loss and degradation of prairie and forest habitat surrounding breeding.	Threat: Habitat destruction Source: Urban development

Data Gaps/Research Needs

Additional distribution and abundance survey data are needed.

Conservation Actions

	Importance	Category
Protect habitat.	High	Habitat Protection

Monitoring Strategies

Conduct surveys at known breeding sites.

Comments

Trauth and others (2004) summarized the literature and biology of this species. Local populations in northwest Arkansas have been lost to suburban development within the past 10 years.

Taxa Association Team and Peer Reviewers

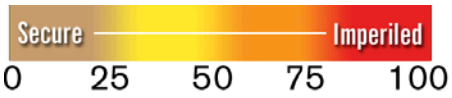
AGFC Kelly Irwin, UCA Don Shepard, Kory Roberts

Cryptobranchus alleganiensis bishopi

Ozark Hellbender

Class: Amphibia
Order: Caudata
Family: Cryptobranchidae

Priority Score: **71** **out of 100**



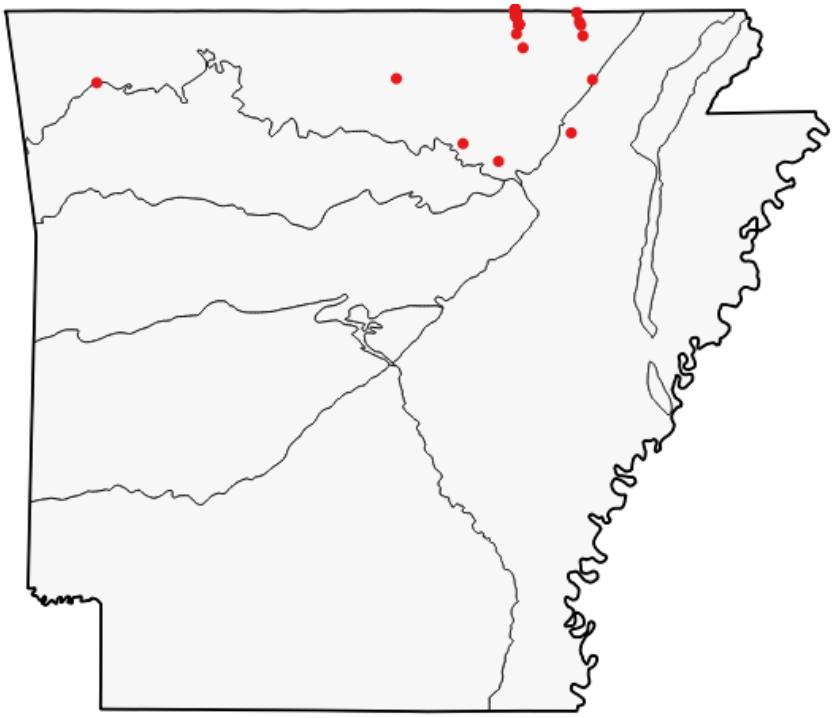
Population Trend: Decreasing

Gobal Rank: G3G4T2Q — Vulnerable (uncertain rank, imperiled subspecies) questionable taxonomy

State Rank: S1 — Critically imperiled in Arkansas

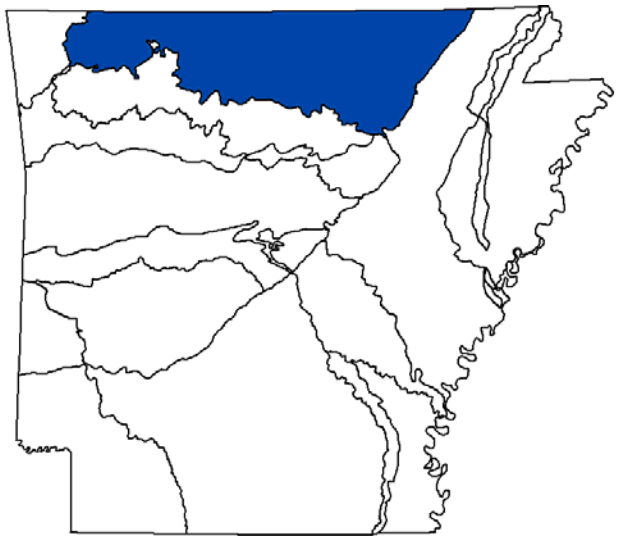
Distribution

Occurrence Records



Ecoregions where the species occurs:

- [x] Ozark Highlands
- [ ] Boston Mountains
- [ ] Ouachita Mountains
- [ ] Arkansas Valley
- [ ] South Central Plains
- [ ] Mississippi Alluvial Plain
- [ ] Mississippi Valley Loess Plains



Ecobasins where the species occurs

Ecobasins

Ozark Highlands - White River

Habitats

	Weight
Natural Riffle: - Medium - Large	Optimal
Natural Run: - Medium - Large	Optimal

Problems Faced

Threat: Extraordinary predation/parasitism/disease
Source: Parasites/pathogens

Threat: Nutrient loading
Source: Confined animal operations

Threat: Nutrient loading
Source: Grazing/Browsing

Threat: Riparian habitat destruction
Source: Grazing/Browsing

Threat: Sedimentation
Source: Forestry activities

Threat: Sedimentation
Source: Grazing/Browsing

Threat: Sedimentation
Source: Road construction

Data Gaps/Research Needs

Assess survivorship of head-start releases.

Conservation Actions

Conservation Actions	Importance	Category
Develop and implement landscape level watershed protection program.	High	Habitat Restoration/Improvement
Develop public relations program to educate fishermen and women to release hellbenders caught on hook and line and not to gig hellbenders during sucker gigging season.	Medium	Public Relations/Education
Exclude livestock from rivers.	High	Habitat Restoration/Improvement
Propagation and restocking of head start animals.	High	Population Management
Restore riparian forests.	High	Habitat Restoration/Improvement

Monitoring Strategies

Continue established long-term population monitoring of Eleven Point River population by AGFC herpetologist.

Comments

Population Trend: Almost extinct in the Spring River, Fulton County. Unprecedented declines have occurred in this population in the last 20 years, likely due to combined effects of water quality degradation, habitat loss, and commercial collection. This is extremely difficult to determine without empirical data. The Spring River population is only known hellbender population in the U.S. with animals exhibiting cancerous tumors. Populations in the Eleven Point River may be stable but we lack long-term population monitoring data to accurately assess this at this time. Intensive habitat restoration work should be focused on the Eleven Point River basin to insure long term survival of this species in Arkansas. Two records from the White River have not led to discovery of identifiable populations.

Trauth and others (2004) summarized the literature and biology of this species. (Mayasich and others 2003, Nickerson and others 2002, Wheeler and others 2003, Wheeler and others 2005, Wheeler and Trauth 2002a, 2002b)

Taxa Association Team and Peer Reviewers

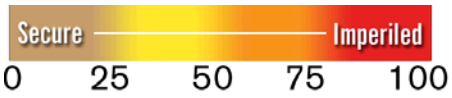
AGFC Kelly Irwin, UCA Don Shepard, Kory Roberts

Desmognathus conanti

Spotted Dusky Salamander

Class: Amphibia
Order: Caudata
Family: Plethodontidae

Priority Score: **23** out of 100



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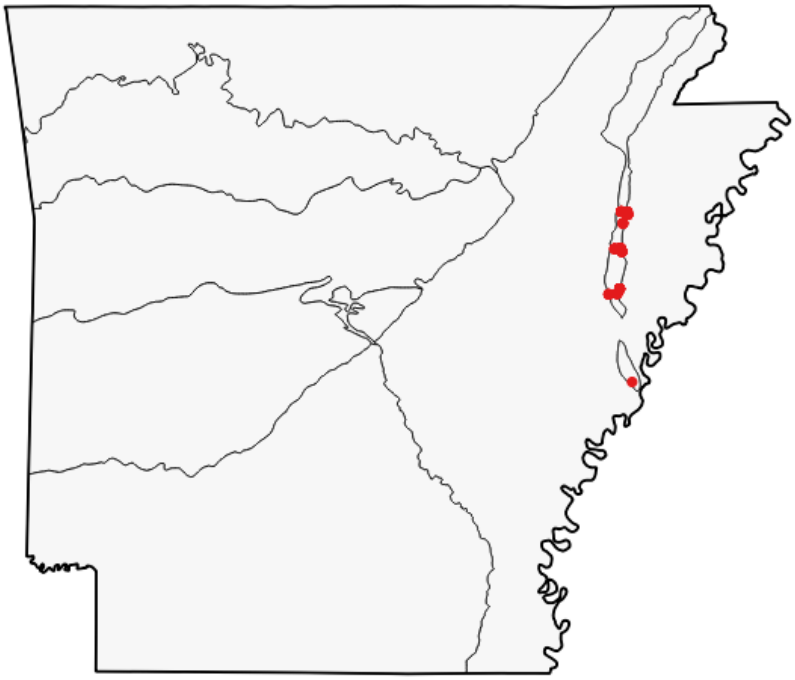
Population Trend: Unknown

Global Rank: G5 — Secure

State Rank: SH — Historic record. Possibly extirpated in Arkansas

Distribution

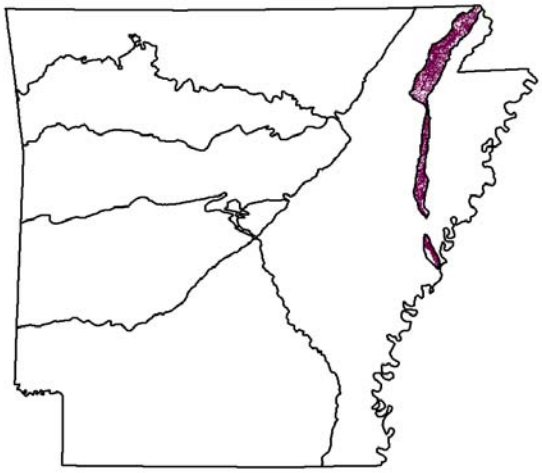
Occurrence Records



Ecoregions where the species occurs:

- Ozark Highlands ☐
- Boston Mountains ☐
- Arkansas Valley ☐
- Ouachita Mountains ☐
- South Central Plains ☑
- Mississippi Alluvial Plain ☐
- Mississippi Valley Loess Plain ☑

Habitat Map



Habitats

	Weight
Crowley's Ridge Loess Slope Forest	Optimal

Problems Faced

POTENTIAL PROBLEMS: Hydrologic alteration.	Threat: Hydrological alteration Source: Resource extraction
POTENTIAL PROBLEMS: Loss of habitat due to forestry practices.	Threat: Habitat destruction Source: Forestry activities
POTENTIAL PROBLEMS: Toxins due to agricultural water.	Threat: Toxins/contaminants Source: Agricultural practices
POTENTIAL PROBLEMS:Habitat destruction due to gravel mining.	Threat: Habitat destruction Source: Resource extraction

Data Gaps/Research Needs

Specimens are needed for genetic sequencing to determine: (1) species boundaries between the Spotted Dusky and Ouachita Dusky salamanders in the Coastal Plain and (2) the specific status of the Crowley's Ridge population.
Survey work is needed to determine if populations exist in the Coastal Plain and Crowley's Ridge.

Conservation Actions

	Importance	Category
Genetic assessments would direct conservation actions.	Medium	Data Gap

Monitoring Strategies

More information is needed to develop a monitoring strategy.

Comments

This species may be extirpated in Arkansas because no individuals have been observed on Crowley's Ridge in over 20 years. This species is restricted to springs and seepage habitats along the base of the eastern slope of Crowley's Ridge and at scattered locations in the Coastal Plain. Some localities assigned to this species in the Coastal Plain by Trauth and others (2004) are actually Desmognathus brimleyorum and not Desmognathus conanti (R. Bonnett, pers. com. 2005) as determined by molecular DNA tests. Additional specimens and data are needed from the Coastal Plain to resolve this situation. Trauth and others (2004) summarized the literature and biology of this species.

Taxa Association Team and Peer Reviewers

AGFC Kelly Irwin, UCA Don Shepard, Kory Roberts

Eurycea quadridigitata

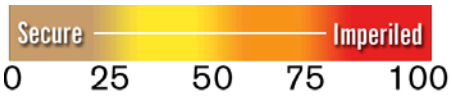
Dwarf Salamander

Class: Amphibia

Order: Caudata

Family: Plethodontidae

Priority Score: **15** out of 100



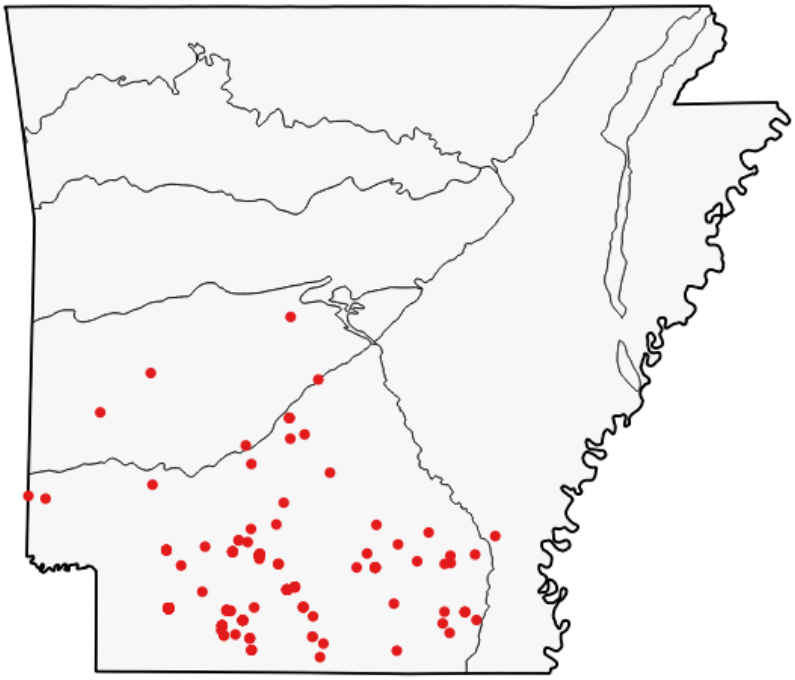
Population Trend: Unknown

Global Rank: G5 — Secure

State Rank: S3 — Vulnerable in Arkansas

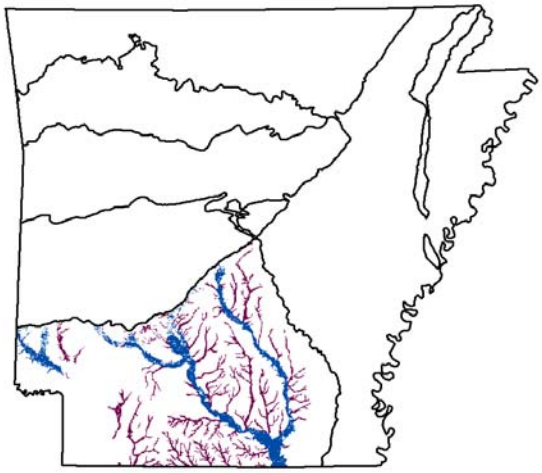
Distribution

Occurrence Records



Ecoregions where the species occurs:

- Ozark Highlands ☐
- Boston Mountains ☐
- Arkansas Valley ☐
- Ouachita Mountains ☐
- South Central Plains ☑
- Mississippi Alluvial Plain ☑
- Mississippi Valley Loess Plain ☐



Habitat Map

Habitats

	Weight
West Gulf Coastal Plain Large River Floodplain Forest	Suitable
West Gulf Coastal Plain Seepage Swamp and Baygall	Optimal
West Gulf Coastal Plain Small Stream/River Forest	Optimal

Problems Faced

POTENTIAL PROBLEMS: Habitat destruction due to forestry practices.	Threat: Habitat destruction Source: Forestry activities
POTENTIAL PROBLEMS: Habitat destruction due to forestry practices.	Threat: Habitat destruction or conversion Source: Conversion of riparian forest

Data Gaps/Research Needs

Genetic research is needed to assess the species status of Dwarf Salamanders by examining differences among populations in Arkansas and comparison with lineages from outside the state. Such work could reveal the presence of previously unrecognized species.

Conservation Actions

	Importance	Category
More data are needed to determine conservation actions.	Medium	Data Gap

Monitoring Strategies

More information is needed to develop a monitoring strategy.

Comments

Trauth and others (2004) summarized the known literature and biology of this salamander.

The Dwarf Salamander is part of a multiple species complex that occurs across the coastal plain of the southeastern U.S. and into the Edwards Plateau of central Texas (Lamb and Beamer, 2012). To date, very little genetic data are available for Dwarf Salamanders in Arkansas, and additional research is needed to test for genetic differences among populations in Arkansas and for comparison with lineages from outside the state. This will allow for the assessment of the species status of Dwarf Salamanders in Arkansas as well as test for the occurrence of other similar species within the state.

Taxa Association Team and Peer Reviewers

AGFC Kelly Irwin, UCA Don Shepard, Kory Roberts, U Tulsa Ron Bonett

Eurycea spelaea eastern

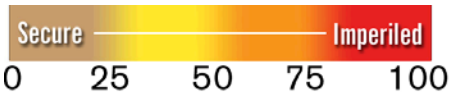
Grotto Salamander "eastern clade"

Class: Amphibia

Order: Caudata

Family: Plethodontidae

Priority Score: **15** out of 100



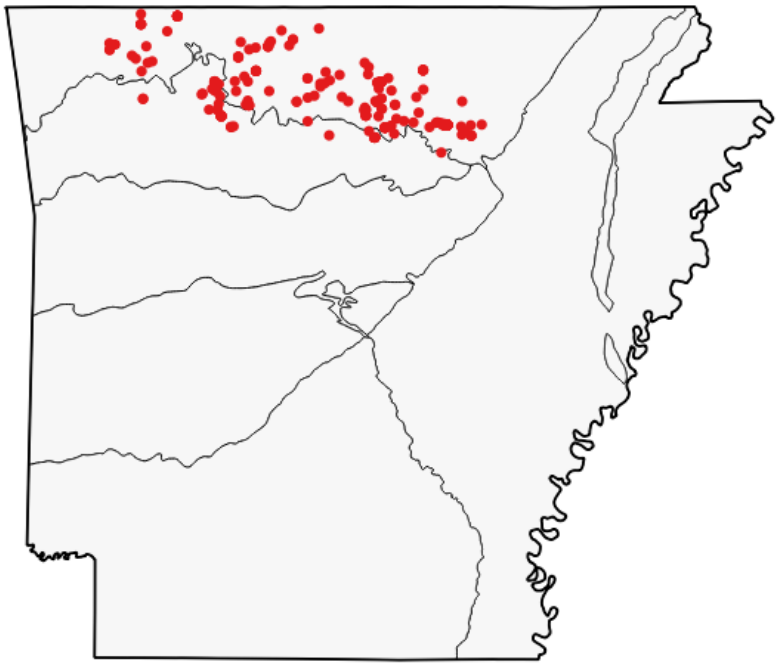
Population Trend: Unknown

Global Rank: GNR — Not yet ranked

State Rank: S3 — Vulnerable in Arkansas

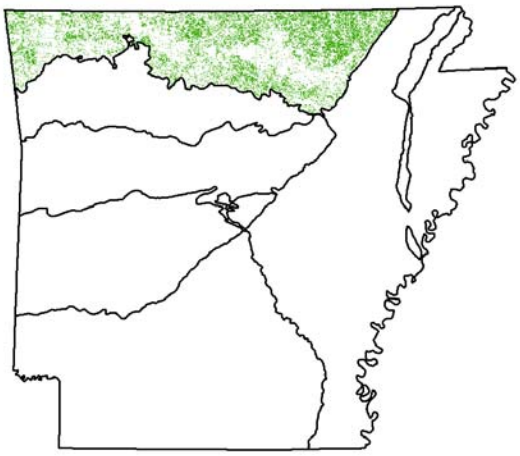
Distribution

Element Occurrence Records

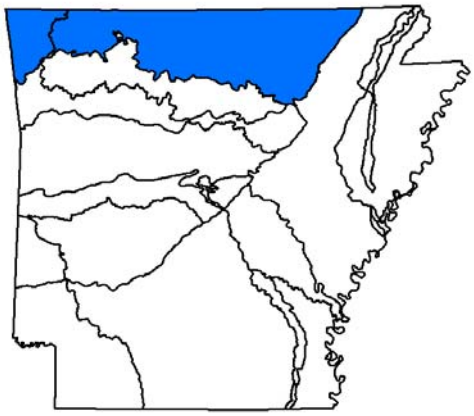


Ecoregions where the species occurs:

- [x] Ozark Highlands
- [ ] Boston Mountains
- [ ] Arkansas Valley
- [ ] Ouachita Mountains
- [ ] South Central Plains
- [ ] Mississippi Alluvial Plain
- [ ] Mississippi Valley Loess Plains



Terrestrial Habitats



Ecobasins where this species occurs

Ecobasins

Ozark Highlands - Arkansas River
Ozark Highlands - White River

Terrestrial Habitats

Caves, Mines, Sinkholes and other Karst Features	Obligate

Aquatic Habitats

Natural Cave Stream: Headwater - Small	Obligate
Natural Groundwater: Headwater - Small	Obligate
Natural Spring Run: Headwater - Small	Obligate

Eurycea spelaea eastern
Grotto Salamander "eastern clade"

Problems Faced

Threat: Chemical alteration
Source: Confined animal operations

Threat: Chemical alteration
Source: Urban development

Threat: Groundwater depletion
Source: Excessive groundwater withdrawal

Threat: Hydrological alteration
Source: Urban development

Threat: Nutrient loading
Source: Confined animal operations

Threat: Nutrient loading
Source: Grazing/Browsing

Threat: Nutrient loading
Source: Urban development

Threat: Sedimentation
Source: Road construction

Data Gaps/Research Needs

Additional genetic research is needed to delineate boundaries between each of the Grotto Salamander clades. The "eastern clade" of Grotto Salamanders has presumed boundaries with the "western clade" in the vicinity of Madison, Benton, Carroll, and Washington Counties. The "eastern clade" of Grotto Salamanders has presumed boundaries with the "northern clade" in the vicinity of Baxter, Fulton, Izard, and Sharp Counties. The distribution of these boundaries is unclear. Further surveys and genetic analyses are needed in these regions to evaluate the distributions of these clades and test if these clades warrant species recognition.

Conservation Actions

	Importance	Category
More data are needed to determine conservation actions.	Medium	Data Gap

Monitoring Strategies

More information is needed to develop a monitoring strategy.

Comments

Trauth et al. (2004) summarized the literature and biology of the Grotto Salamander, referred to at the time as Typhlotriton spelaeus. Subsequent genetic research (Bonnett and Chippendale 2004) resulted in the taxonomic reassignment of Typhlotriton to the genus Eurycea, which also required changing the specific epithet to spelaea for proper gender agreement. Hence, the Grotto Salamander is currently referred to as Eurycea spelaea. Current phylogeographic research has identified several distinct clades within the “spelaea” group (Phillips et al., in prep) which may warrant taxonomic revision.

Taxa Team and Peer Reviewers

AGFC Kelly Irwin, UCA Don Shepard, Kory Roberts, U-Tulsa John Phillips, U-Tulsa Ron Bonett

Eurycea spelaea northern

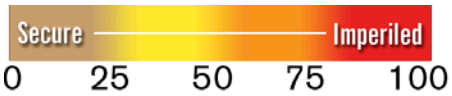
Grotto Salamander "northern clade"

Class: Amphibia

Order: Caudata

Family: Plethodontidae

Priority Score: **19** out of 100



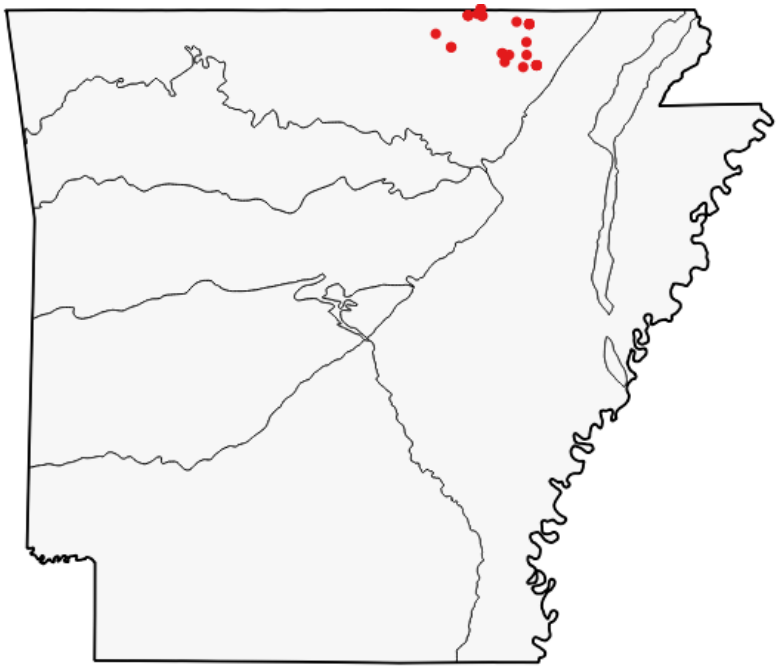
Population Trend: Unknown

Global Rank: GNR — Not yet ranked

State Rank: S2 — Imperiled in Arkansas

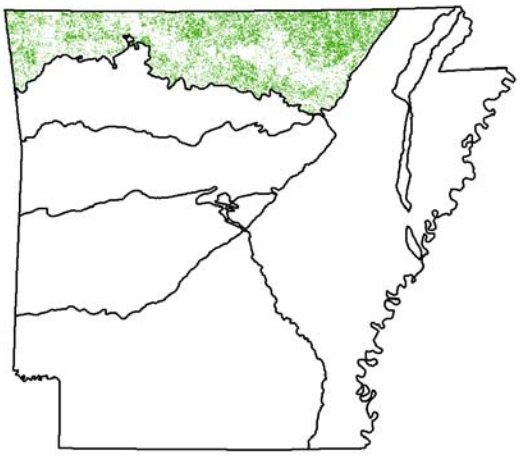
Distribution

Element Occurrence Records

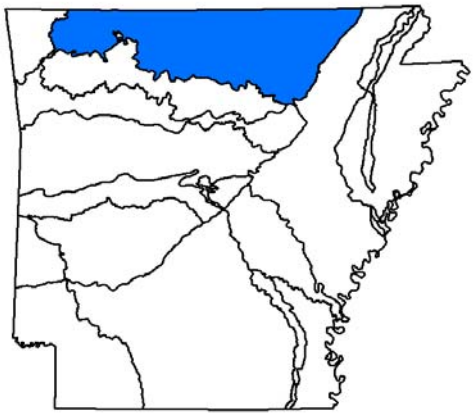


Ecoregions where the species occurs:

- [x] Ozark Highlands
- [ ] Boston Mountains
- [ ] Arkansas Valley
- [ ] Ouachita Mountains
- [ ] South Central Plains
- [ ] Mississippi Alluvial Plain
- [ ] Mississippi Valley Loess Plains



Terrestrial Habitats



Ecobasins where this species occurs

Ecobasins

Ozark Highlands - White River

Terrestrial Habitats

Caves, Mines, Sinkholes and other Karst Features	Obligate

Aquatic Habitats

Natural Cave Stream: Headwater - Small	Obligate
Natural Groundwater: Headwater - Small	Obligate
Natural Spring Run: Headwater - Small	Obligate

Eurycea spelaea northern
Grotto Salamander "northern clade"

Problems Faced

Threat:
Source: Urban development

Threat: Chemical alteration
Source: Confined animal operations

Threat: Chemical alteration
Source: Urban development

Threat: Groundwater depletion
Source: Excessive groundwater withdrawal

Threat: Nutrient loading
Source: Confined animal operations

Threat: Nutrient loading
Source: Grazing/Browsing

Threat: Nutrient loading
Source: Urban development

Threat: Sedimentation
Source: Road construction

Data Gaps/Research Needs

Additional genetic research is needed to delineate boundaries between each of the Grotto Salamander clades. The “western clade” of Grotto Salamanders is currently known only from the northwestern counties of Benton and Washington. The “western clade” has presumed boundaries with the “eastern clade” in the vicinity of Madison, Benton, Carroll, and Washington counties, yet the distribution of these boundaries is unclear. Further surveys and genetic analyses are needed in this region to evaluate the distributions of these clades and test if these clades warrant species recognition.

Conservation Actions

	Importance	Category
More data are needed to determine conservation actions.	Medium	

Monitoring Strategies

More information is needed to develop a monitoring strategy.

Comments

Trauth et al. (2004) summarized the literature and biology of the Grotto Salamander, referred to at the time as Typhlotriton spelaeus. Subsequent genetic research (Bonnett and Chippendale 2004) resulted in the taxonomic reassignment of Typhlotriton to the genus Eurycea, which also required changing the specific epithet to spelaea for proper gender agreement. Hence, the Grotto Salamander is currently referred to as Eurycea spelaea. Current phylogeographic research has identified several distinct clades within the “spelaea” group (Phillips et al., in prep) which may warrant taxonomic revision.

Taxa Team and Peer Reviewers

AGFC Kelly Irwin, UCA Don Shepard, Kory Roberts, U-Tulsa John Phillips, U-Tulsa Ron Bonett

Eurycea spelaea western

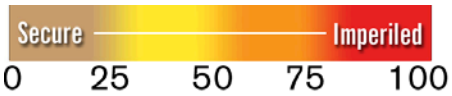
Grotto Salamander "western clade"

Class: Amphibia

Order: Caudata

Family: Plethodontidae

Priority Score: **19** out of 100



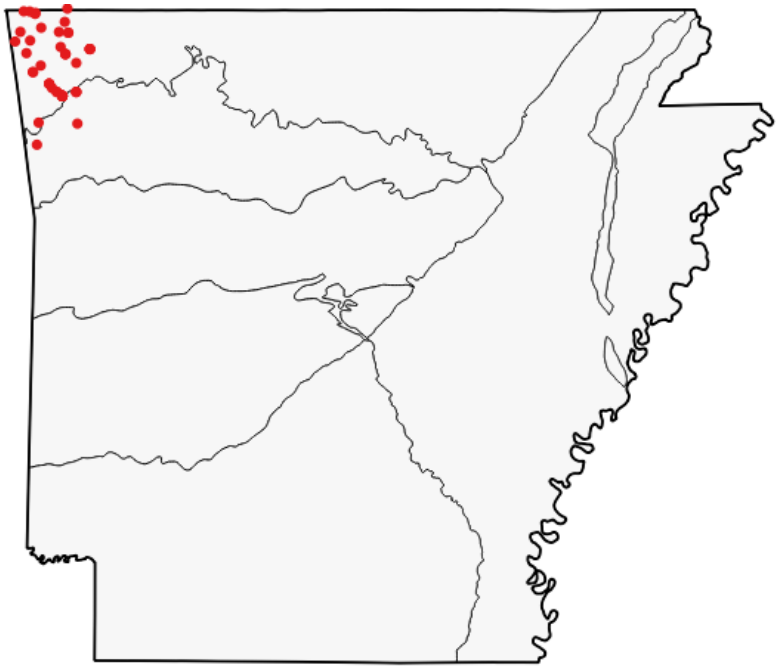
Population Trend: Unknown

Global Rank: G4 — Apparently secure species

State Rank: S3 — Vulnerable in Arkansas

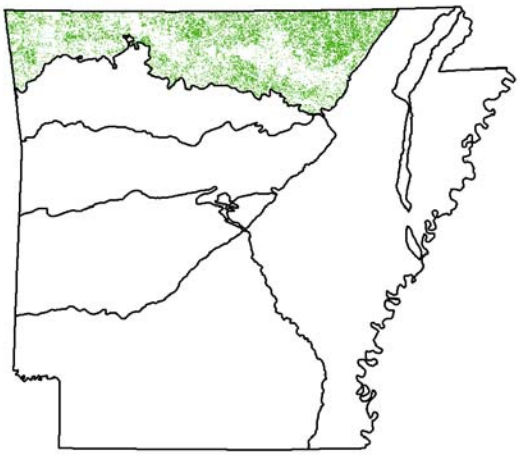
Distribution

Element Occurrence Records

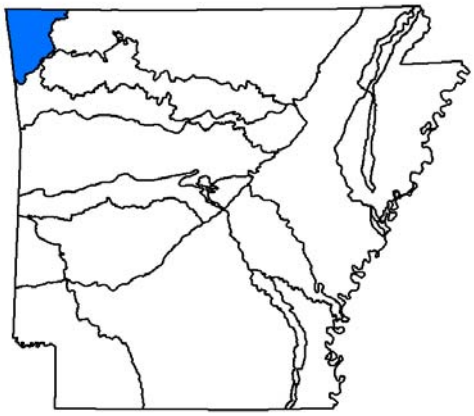


Ecoregions where the species occurs:

- [x] Ozark Highlands
- [ ] Boston Mountains
- [ ] Arkansas Valley
- [ ] Ouachita Mountains
- [ ] South Central Plains
- [ ] Mississippi Alluvial Plain
- [ ] Mississippi Valley Loess Plains



Terrestrial Habitats



Ecobasins where this species occurs

Ecobasins

Ozark Highlands - Arkansas River

Terrestrial Habitats

Caves, Mines, Sinkholes and other Karst Features	Obligate

Aquatic Habitats

Natural Cave Stream: Headwater - Small	Obligate
Natural Groundwater: Headwater - Small	Obligate
Natural Spring Run: Headwater - Small	Obligate

Eurycea spelaea western
Grotto Salamander "western clade"

Problems Faced

Threat:
Source: Urban development

Threat: Chemical alteration
Source: Confined animal operations

Threat: Chemical alteration
Source: Urban development

Threat: Groundwater depletion
Source: Excessive groundwater withdrawal

Threat: Nutrient loading
Source: Confined animal operations

Threat: Nutrient loading
Source: Grazing/Browsing

Threat: Nutrient loading
Source: Urban development

Threat: Sedimentation
Source: Road construction

Data Gaps/Research Needs

Additional genetic research is needed to delineate boundaries between each of the Grotto Salamander clades. The western clade of Grotto Salamanders is currently known only from the northwestern counties of Benton and Washington. The “western clade” has presumed boundaries with the “eastern clade” in the vicinity of Madison, Benton, Carroll, and Washington counties, yet the distribution of these boundaries is unclear. Further surveys and genetic analyses are needed in this region to evaluate the distributions of these clades and test if these clades warrant species recognition.

Conservation Actions

	Importance	Category
More data are needed to determine conservation actions.	Medium	

Monitoring Strategies

More information is needed to develop a monitoring strategy.

Comments

Trauth et al. (2004) summarized the literature and biology of the Grotto Salamander, referred to at the time as Typhlotriton spelaeus. Subsequent genetic research (Bonnett and Chippendale 2004) resulted in the taxonomic reassignment of Typhlotriton to the genus Eurycea, which also required changing the specific epithet to spelaea for proper gender agreement. Hence, the Grotto Salamander is currently referred to as Eurycea spelaea. Current phylogeographic research has identified several distinct clades within the “spelaea” group (Phillips et al., in prep) which may warrant taxonomic revision.

Taxa Team and Peer Reviewers

AGFC Kelly Irwin, UCA Don Shepard, Kory Roberts, U-Tulsa John Phillips, U-Tulsa Ron Bonett

Eurycea subfluvicola

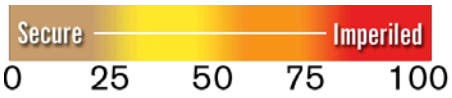
Ouachita Streambed Salamander

Class: Amphibia

Order: Caudata

Family: Plethodontidae

Priority Score: **23** **out of 100**



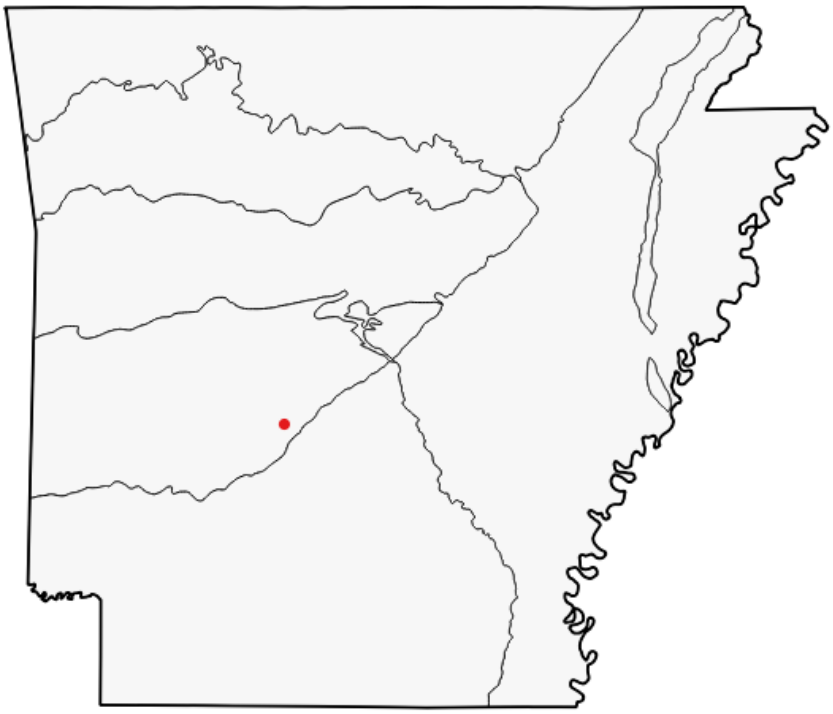
Population Trend: Unknown

Gobal Rank: GNR — Not yet ranked

State Rank: S1 — Critically imperiled in Arkansas

Distribution

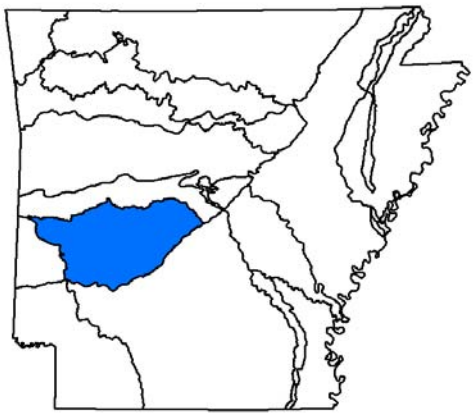
Occurrence Records



Ecoregions where the species occurs:

- ☐ Ozark Highlands
- ☐ Boston Mountains
- ☑ Ouachita Mountains
- ☐ Arkansas Valley
- ☐ South Central Plains
- ☐ Mississippi Alluvial Plain
- ☐ Mississippi Valley Loess Plains

Ecobasins where the species occurs



Ecobasins

Ouachita Mountains - Ouachita River

Habitats

	Weight
Natural Groundwater:	Obligate
Natural Riffle: Headwater - Small	Obligate

Problems Faced

Threat: Habitat destruction
Source: Forestry activities

Threat: Sedimentation
Source: Forestry activities

Threat: Sedimentation
Source: Road construction

Threat: Toxins/contaminants
Source: Non-point source pollution

Data Gaps/Research Needs

Assess genetic diversity of known populations.

Conduct life history and ecology study.

Conduct population estimate surveys at known and newly discovered sites.

Distribution and abundance survey work is needed throughout the Novaculite outcrops of the southern Ouachita Mountains.

Conservation Actions

	Importance	Category
Identify known populations and review land management practices that could pose potential threats to these populations.	High	Habitat Protection

Monitoring Strategies

More data are needed to determine monitoring strategies.

Comments

Steffen and others (2014) discovered and described this unique salamander, the only known paedomorphic plethodontid salamander from the Ouachita Mountains. It is currently restricted to the type locality making this the smallest known range of any North American vertebrate. More work is needed to expand the known range and elucidate the ecology and natural history of this species.

Taxa Association Team and Peer Reviewers

AGFC Kelly Irwin, UCA Don Shepard, U-Tulsa Ron Bonett, U-Tulsa Mike Steffen

Eurycea tynerensis

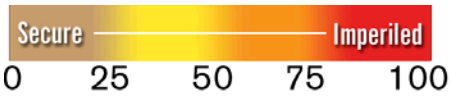
Oklahoma Salamander

Class: Amphibia

Order: Caudata

Family: Plethodontidae

Priority Score: **23** **out of 100**



Population Trend: Unknown

Gobal Rank: G3 — Vulnerable species

State Rank: S4 — Apparently secure in Arkansas

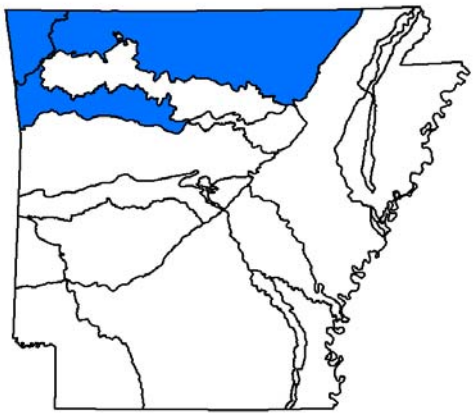
Distribution

Occurrence Records

Ecoregions where the species occurs:

- [x] Ozark Highlands
- [x] Boston Mountains
- [ ] Ouachita Mountains
- [x] Arkansas Valley
- [ ] South Central Plains
- [ ] Mississippi Alluvial Plain
- [ ] Mississippi Valley Loess Plains

Ecobasins where the species occurs



Ecobasins

Boston Mountains - Arkansas River
Ozark Highlands - Arkansas River
Ozark Highlands - White River

Habitats	Weight
Natural Cave Stream: Headwater - Small	Obligate
Natural Riffle: Headwater - Small	Obligate
Natural Spring Run: Headwater - Small	Obligate

Problems Faced

Threat: Groundwater depletion Source: Urban development
Threat: Hydrological alteration Source: Urban development
Threat: Nutrient loading Source: Confined animal operations
Threat: Nutrient loading Source: Grazing/Browsing
Threat: Nutrient loading Source: Urban development
Threat: Sedimentation Source: Grazing/Browsing
Threat: Sedimentation Source: Road construction
Threat: Sedimentation Source: Urban development
Threat: Toxins/contaminants Source: Resource extraction
Threat: Toxins/contaminants Source: Urban development

Data Gaps/Research Needs

Additional genetic research is needed to delineate boundaries between each of the three Oklahoma Salamander clades. The “eastern clade” of the Oklahoma Salamander has a presumed boundary with the “western clade” in Baxter, Marion, Pope, and Searcy, counties. The “western clade” has a presumed boundary with the “southwestern clade” close to Crawford and Washington counties. Further surveys and genetic analyses are needed in these regions to evaluate the distributions of these clades and to test if these clades warrant taxonomic revision.
The “eastern” clade contains only metamorphic populations, whereas the “western” and “southwestern” clades of the Oklahoma Salamander have both metamorphic (aquatic larvae and terrestrial adults) and paedomorphic (fully aquatic) populations. Therefore, further surveys and genetic analyses are needed to define the distribution of these two life history modes.

Conservation Actions

	Importance	Category
More data are needed to determine conservation actions.	Medium	Data Gap

Monitoring Strategies

Comments

Trauth and others (2004) summarized the literature and biology of this species.

Recent studies by Bonett and Chippindale (2004, 2006) and Emel and Bonett (2011) have identified several distinct divergent clades within the “tynerensis” group. Further genetic analysis and surveys are needed to better define clade boundaries, assess taxonomic status, and define distributions of populations with differing life history modes (metamorphic vs paedomorphic).

Taxa Association Team and Peer Reviewers

AGFC Kelly Irwin, UCA Don Shepard, Kory Roberts, U-Tulsa Ron Bonett

Gastrophryne olivacea

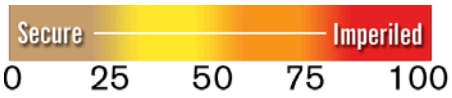
Great Plains Narrowmouth Toad

Class: Amphibia

Order: Anura

Family: Microhylidae

Priority Score: **19** **out of 100**



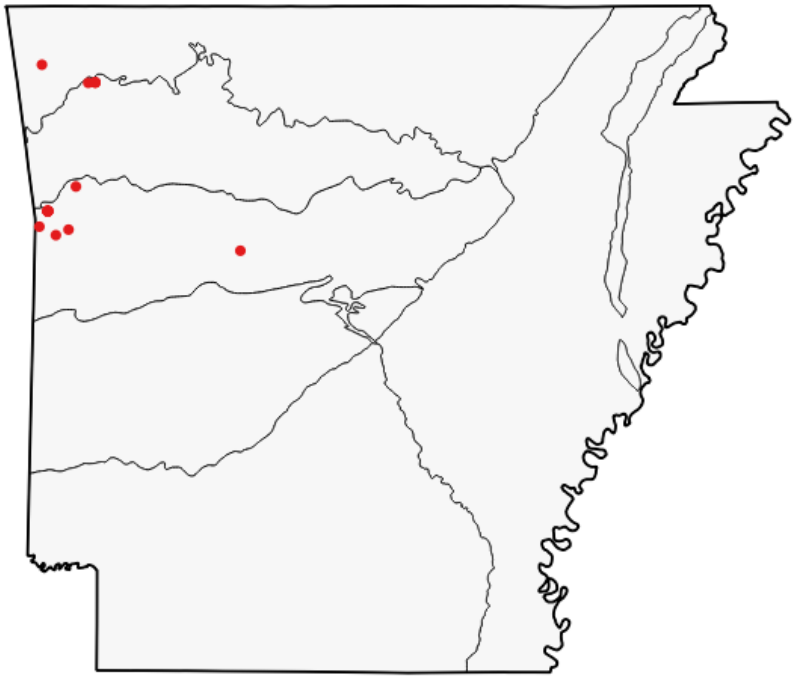
Population Trend: Unknown

Global Rank: G5 — Secure

State Rank: S2 — Imperiled in Arkansas

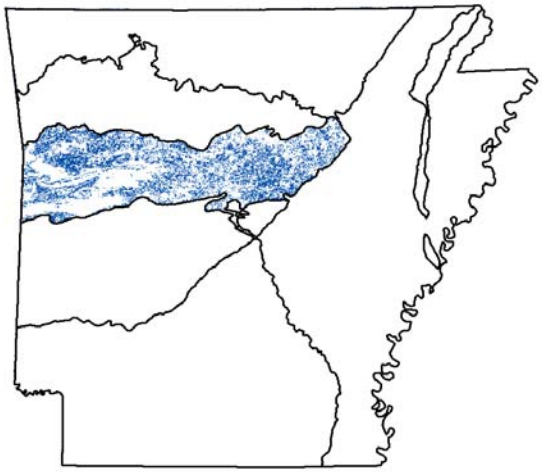
Distribution

Occurrence Records



Ecoregions where the species occurs:

- Ozark Highlands ☐
- Boston Mountains ☐
- Arkansas Valley ☑
- Ouachita Mountains ☐
- South Central Plains ☐
- Mississippi Alluvial Plain ☐
- Mississippi Valley Loess Plain ☐



Habitat Map

Habitats

	Weight
Ozark-Ouachita Prairie and Woodland	Optimal
Pasture Land	Suitable

Problems Faced

POTENTIAL PROBLEMS: Agricultural practices, habitat destruction/alteration.	Threat: Habitat destruction Source: Agricultural practices

Data Gaps/Research Needs

Distribution and abundance surveys are needed.

Conservation Actions

	Importance	Category
More data are needed to determine conservation actions.	Medium	Data Gap

Monitoring Strategies

More information is needed to develop a monitoring strategy.

Comments

Trauth and others (2004) state that there are no published records for this species in Arkansas and map seven localities in the Arkansas Valley and Coastal Plain. These authors also summarized the biology of this frog based on information from outside Arkansas.

To date (March 2015) no records of this species have been published. However, K. Roberts (pers. comm. 2015) has found this species in Sebastian County in recent years and will be publishing that record in the near future. Records plotted for museum vouchered specimens within the Arkansas Valley ecoregion should be considered valid. The localities as plotted in Trauth et al. (2004) for Columbia, Montgomery, and Ouachita counties are spurious at best, and are likely the result of misidentification of the similar Eastern Narrowmouth Toad Gastrophryne carolinensis or some other museum curation error, if indeed specimens do exist in museum collections. The only potential range for G. olivacea in southern Arkansas would be the Red River floodplain in Little River, Hempstead, Miller, and Lafayette counties. This is supported by records of this species in northeast Texas for those counties bordering the Red River and the southwest corner of Arkansas.

Taxa Association Team and Peer Reviewers

AGFC Kelly Irwin, UCA Don Shepard, Kory Roberts

Hemidactylium scutatum

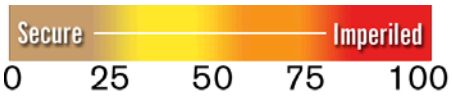
Four-toed Salamander

Class: Amphibia

Order: Caudata

Family: Plethodontidae

Priority Score: 19 out of 100



Population Trend: Unknown

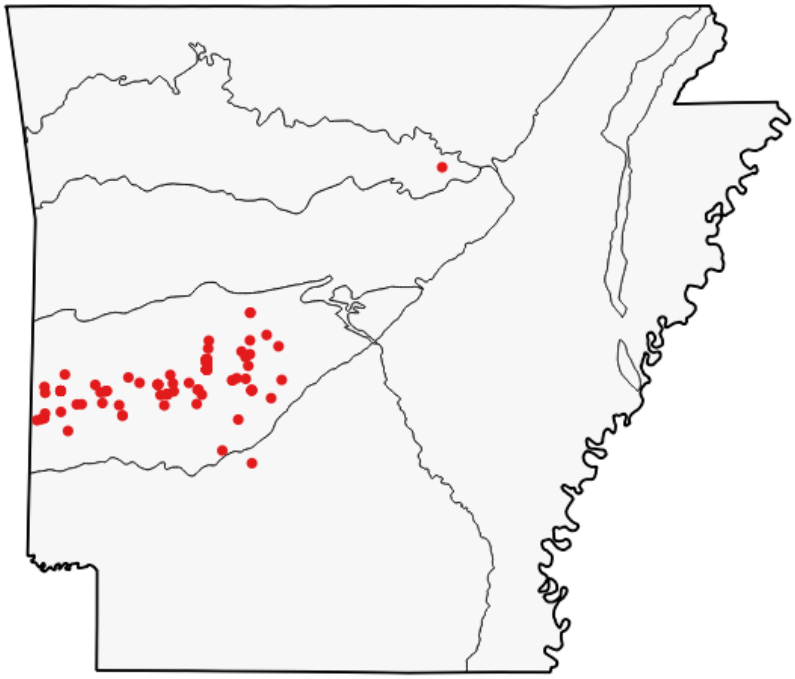
©Suzanne L. Collins

Global Rank: G5 — Secure

State Rank: S2 — Imperiled in Arkansas

Distribution

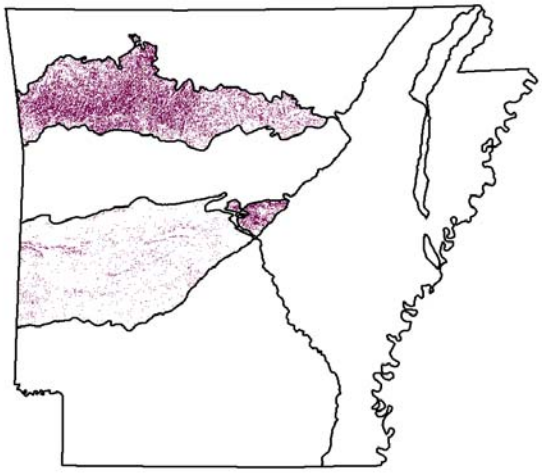
Occurrence Records



Ecoregions where the species occurs:

- Ozark Highlands ☐
- Boston Mountains ☑
- Arkansas Valley ☐
- Ouachita Mountains ☑
- South Central Plains ☐
- Mississippi Alluvial Plain ☐
- Mississippi Valley Loess Plain ☐

Habitat Map



Habitats

	Weight
Caves, Mines, Sinkholes and other Karst Features	Optimal
Ozark-Ouachita Forested Seep	Obligate

Problems Faced

POTENTIAL PROBLEMS: Habitat destruction due to forestry practices.	Threat: Habitat destruction Source: Forestry activities

Data Gaps/Research Needs

Distribution and abundance surveys are needed.

Conservation Actions

	Importance	Category
More data are needed to determine conservation actions.	Medium	Data Gap

Monitoring Strategies

More information is needed to develop a monitoring strategy.

Comments

Populations are spottily distributed, likely due to habitat preference. Curiously, only one population has been recorded from the Ozark Highlands of Arkansas, yet the Missouri Ozarks has many known populations. Two genetic lineages have been identified in the state, one each in the Ouachita Mountains and the Ozark Highlands (Herman 2009).

(ANHI 2003, Bishop 1943, Bleakney and Cook 1957, Carter 1968, Conant and Collins 1998, Crump 2003, Crump et al. 2003A, 2003C, 2003D, 2003F, 2003P, Dellinger and Black 1938, Dowling 1957, Dundee 1968, Dunn 1926, Harris and Gill 1980, Hurter and Strecker 1909, Martof 1955, Neill 1963, ONHI 2003, Reagan 1974a, Saugey and Trauth 1991, Smith et al. 1984, Strecker 1924, Trauth and Caldwell 1986, Trauth and Cochran 1991, Trauth et al. 2004, USDA FS 1999, Wilson 1995, Wood 1955)

Taxa Association Team and Peer Reviewers

AGFC Kelly Irwin, UCA Don Shepard, Kory Roberts

Hyla avivoca

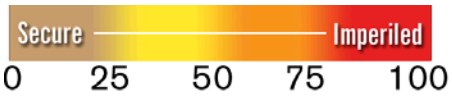
Bird-voiced Treefrog

Class: Amphibia

Order: Anura

Family: Hylidae

Priority Score: **15** out of 100



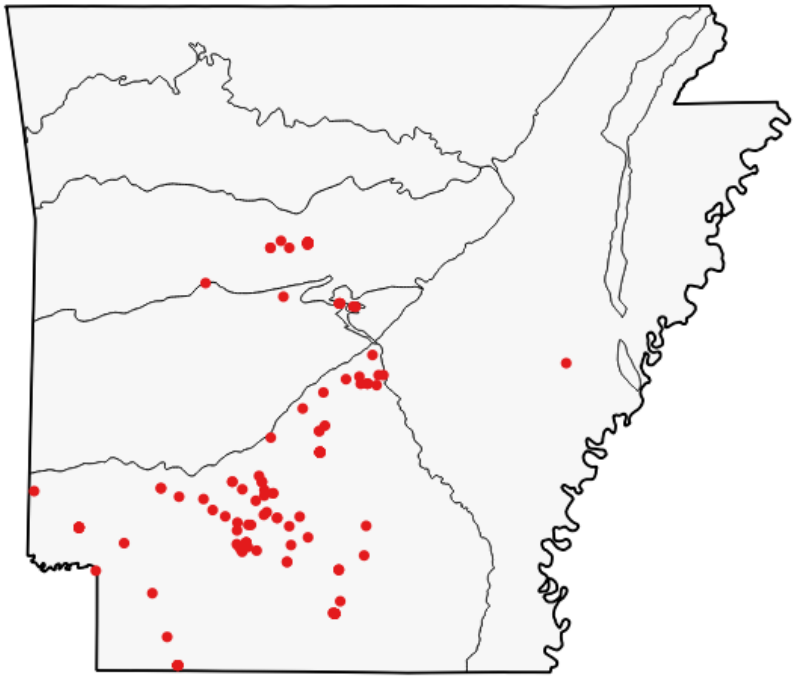
Population Trend: Unknown

Global Rank: G5 — Secure

State Rank: S3 — Vulnerable in Arkansas

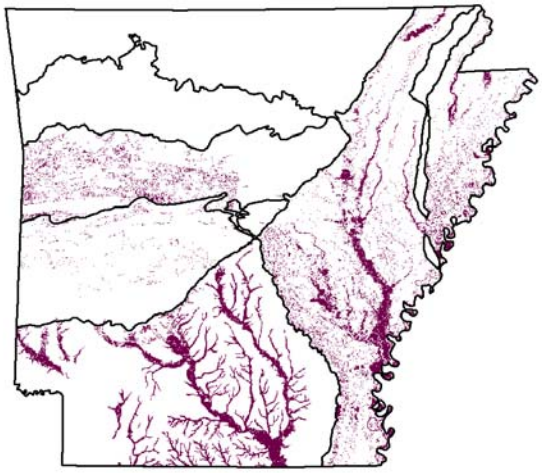
Distribution

Occurrence Records



Ecoregions where the species occurs:

- Ozark Highlands ☐
- Boston Mountains ☐
- Arkansas Valley ☑
- Ouachita Mountains ☑
- South Central Plains ☑
- Mississippi Alluvial Plain ☑
- Mississippi Valley Loess Plain ☐



Habitat Map

Habitats

Habitats	Weight
Lower Mississippi River Low Bottomland Forest	Optimal
Ozark-Ouachita Large Floodplain	Optimal
West Gulf Coastal Plain Large River Floodplain Forest	Optimal
West Gulf Coastal Plain Seepage Swamp and Baygall	Optimal
West Gulf Coastal Plain Small Stream/River Forest	Optimal

Problems Faced

POTENTIAL PROBLEMS: Loss of wetland and swamp habitat.	Threat: Habitat destruction Source: Forestry activities

Data Gaps/Research Needs

Conduct distribution and abundance surveys.

Conservation Actions

Conservation Actions	Importance	Category
Restore wetlands.	High	Habitat Restoration/Improvement

Monitoring Strategies

More information is needed to develop a monitoring strategy.

Hyla avivoca
Bird-voiced Treefrog

Comments

(ANHI 2003, Conant and Collins 1998, Crump 2003, Crump and others 2003A, 2003C, 2003D, 2003F, 2003P, Davis and Hollenback 1978, Fulmer and Tumlison 2002, Jamieson and others 1993, McAllister and others 1993b, Mount 1975, ONHI 2003, Secor 1988, Smith 1966b, Trauth 1992b, Trauth and others 2004, Trauth and Robinette 1990a, Trauth and Robinette 1990b, Turnipseed 1976, Turnipseed 1980b, USDA FS 1999, Volpe and others 1961, Wilson 1995).

Trauth and others (2004) summarized the literature and biology of this species.

Taxa Association Team and Peer Reviewers

AGFC Kelly Irwin, UCA Don Shepard, Kory Roberts

Hyla squirella

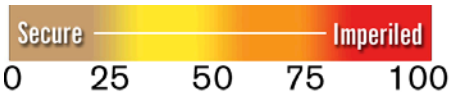
Squirrel Treefrog

Class: Amphibia

Order: Anura

Family: Hylidae

Priority Score: **23** **out of 100**



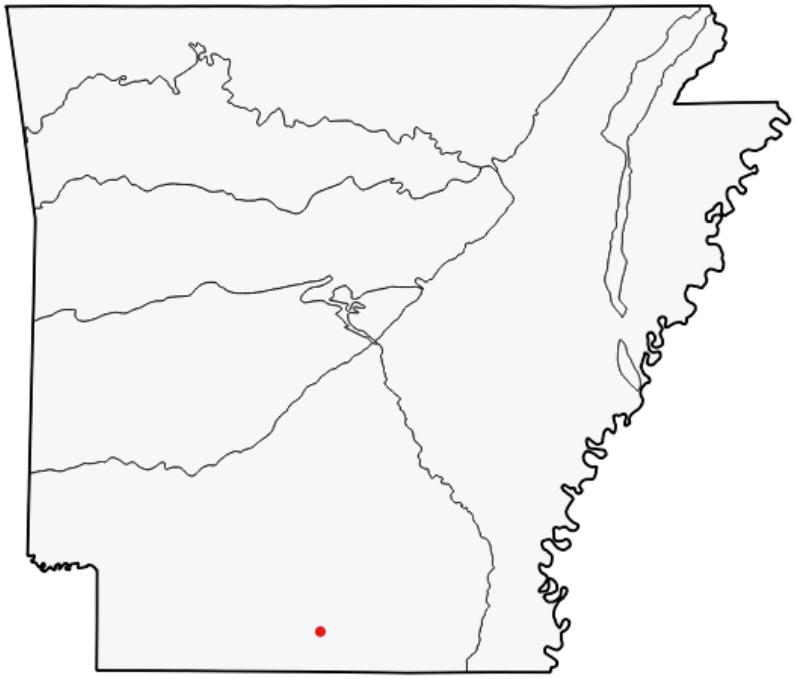
Population Trend: Unknown

Global Rank: G5 — Secure

State Rank: S1 — Critically imperiled in Arkansas

Distribution

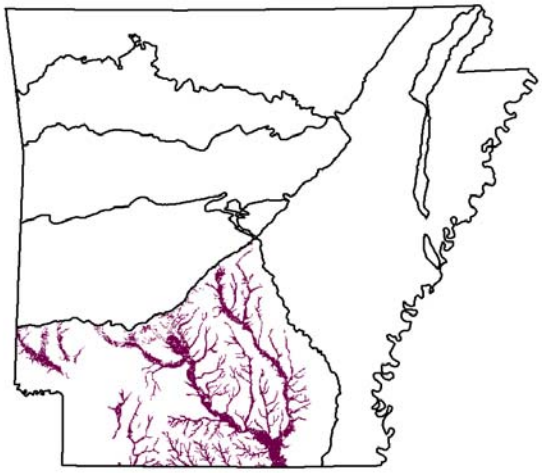
Occurrence Records



Ecoregions where the species occurs:

- Ozark Highlands ☐
- Boston Mountains ☐
- Arkansas Valley ☐
- Ouachita Mountains ☐
- South Central Plains ☑
- Mississippi Alluvial Plain ☐
- Mississippi Valley Loess Plain ☐

Habitat Map



Habitats

Habitats	Weight
Lower Mississippi River Low Bottomland Forest	Optimal
Ozark-Ouachita Large Floodplain	Optimal
West Gulf Coastal Plain Large River Floodplain Forest	Optimal
West Gulf Coastal Plain Seepage Swamp and Baygall	Optimal
West Gulf Coastal Plain Small Stream/River Forest	Optimal

Problems Faced

POTENTIAL PROBLEM: Loss of wetland and swamp habitat.	Threat: Habitat destruction Source: Forestry activities

Data Gaps/Research Needs

Conduct distribution and abundance surveys.

Conservation Actions

Conservation Actions	Importance	Category
More data are needed to determine conservation actions.	Medium	

Monitoring Strategies

More information is needed to develop a monitoring strategy.

Hyla squirella
Squirrel Treefrog

Comments

The Squirrel Treefrog is a common, wide-ranging species of the Gulf and Atlantic coastal plains, from Texas to Virginia. Apparently viable populations of this species were recently discovered in Union County (Fulmer 2013).

(ANHI 2003, Conant and Collins 1998, Crump 2003, Crump et al. 2003A, 2003C, 2003D, 2003F, 2003P, Davis and Hollenback 1978, Fulmer and Tumlison 2002, Jamieson et al. 1993, McAllister et al. 1993b, Mount 1975, ONHI 2003, Secor 1988, Smith 1966b, Trauth 1992b, Trauth et al. 2004, Trauth and Robinette 1990a, Trauth and Robinette 1990b, Turnipseed 1976, Turnipseed 1980b, USDA FS 1999, Volpe et al. 1961, Wilson 1995).

Taxa Association Team and Peer Reviewers

AGFC Kelly Irwin, UCA Don Shepard, Kory Roberts

Lithobates areolatus

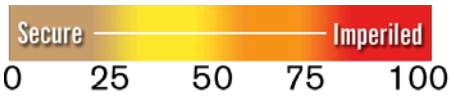
Crawfish Frog

Class: Amphibia

Order: Anura

Family: Ranidae

Priority Score: 23 out of 100



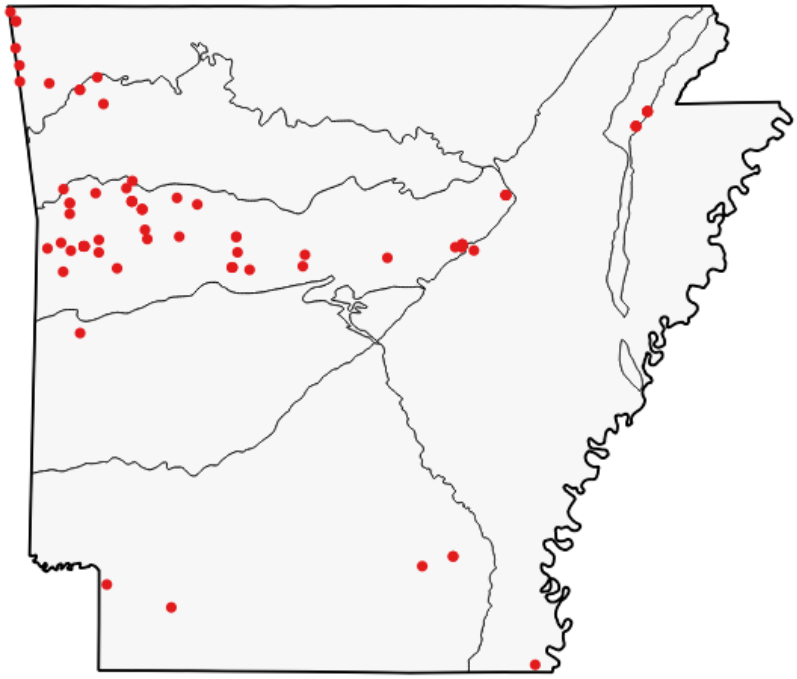
Population Trend: Unknown

Global Rank: G4 — Apparently secure species

State Rank: S2 — Imperiled in Arkansas

Distribution

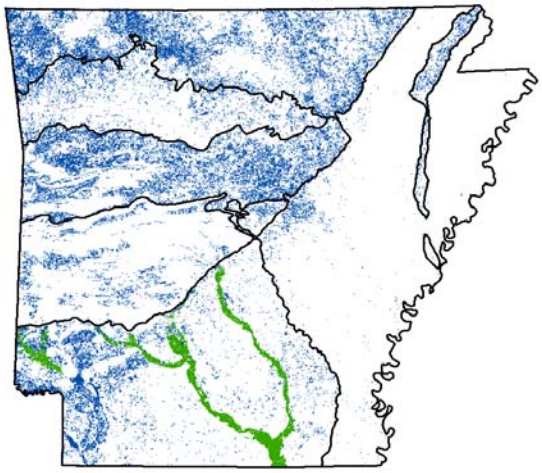
Occurrence Records



Ecoregions where the species occurs:

- Ozark Highlands ☑
- Boston Mountains ☑
- Arkansas Valley ☑
- Ouachita Mountains ☑
- South Central Plains ☑
- Mississippi Alluvial Plain ☑
- Mississippi Valley Loess Plain ☑

Habitat Map



Habitats	Weight
Ozark-Ouachita Prairie and Woodland	Optimal
Pasture Land	Suitable
West Gulf Coastal Plain Large River Floodplain Forest	Obligate
West Gulf Coastal Plain Red River Floodplain Forest	Suitable

Problems Faced

POTENTIAL PROBLEMS: Habitat destruction.	Threat: Habitat destruction Source: Forestry activities
POTENTIAL PROBLEMS: Habitat destruction.	Threat: Habitat destruction Source: Agricultural practices

Data Gaps/Research Needs

Further distribution and abundance surveys are needed.
Genetic assessment of the currently recognized subspecies is needed to determine if divergent lineages are present and to what degree, and if so, is subspecific recognition warranted.

Conservation Actions	Importance	Category
More data are needed to determine conservation actions.	Medium	Data Gap

Monitoring Strategies

More information is needed to develop a monitoring strategy.

Comments

Two subspecies are currently recognized, Lithobates areolatus areolatus (Southern Crawfish Frog) and L. a. circulosus (Northern Crawfish Frog). The previous AWAP contained separate accounts for each subspecies; however, these were combined for the 2015 revision. When assessed separately, the Southern Crawfish Frog has a rank of S1, critically imperiled, as only two historic records are known (Trauth and others 2004). The combined subspecies assessment produced the same S2 rank as independently established for the Northern Crawfish Frog. A phylogeographic analysis is needed to ascertain whether a species complex exists within L. areolatus. Such an analysis could reveal that formal recognition of subspecies is no longer warranted.

This species was historically associated with floodplain prairie systems and open uplands throughout its range. Trauth and others (2004) summarized the literature and biology of this species.

(ANHI 2003, Bacon and Anderson 1976, Black and Dellinger 1938, Byrd and Hanebrink 1974, Collins 1974, Conant and Collins 1991, Conant and Collins 1998, Crump 2003, Crump et al. 2003a, 2003c, 2003d, 2003f, 2003p, Dowling 1957, Johnson 1977, Plummer 1977f, Plummer and White 1992, Taylor 1935, Trauth et al. 1990, Trauth et al. 2004, USDA FS 1999, Wilson 1995).

Taxa Association Team and Peer Reviewers

AGFC Kelly Irwin, UCA Don Shepard, Kory Roberts

Lithobates sylvaticus

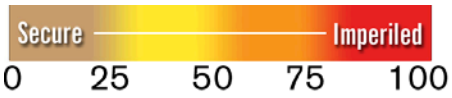
Wood Frog

Class: Amphibia

Order: Anura

Family: Ranidae

Priority Score: **15** out of 100



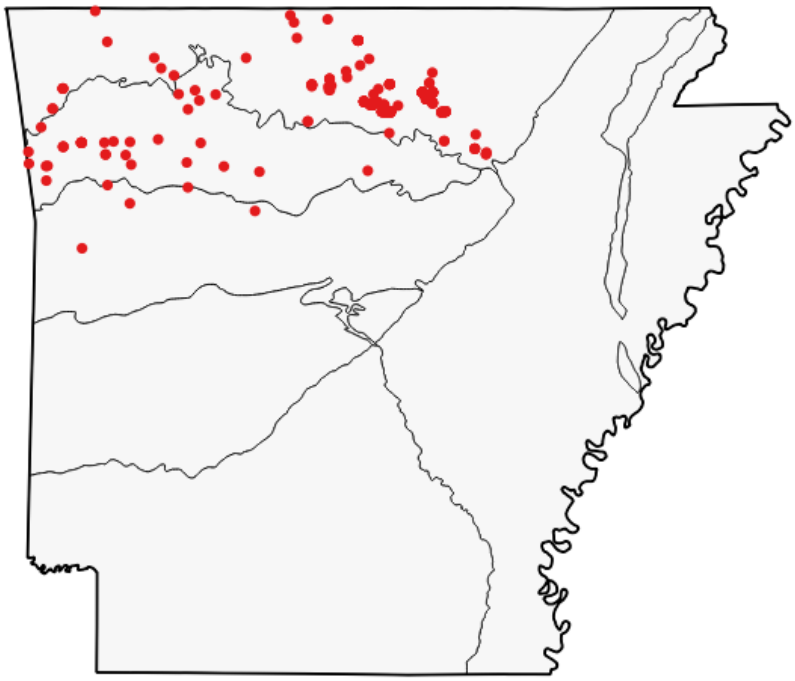
Population Trend: Unknown

Global Rank: G5 — Secure

State Rank: S3 — Vulnerable in Arkansas

Distribution

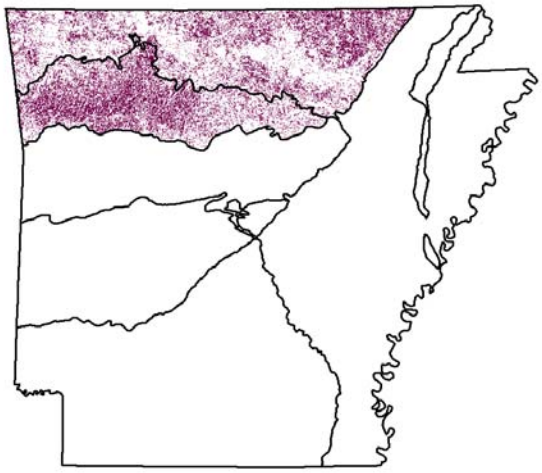
Occurrence Records



Ecoregions where the species occurs:

- Ozark Highlands ☑
- Boston Mountains ☑
- Arkansas Valley ☐
- Ouachita Mountains ☐
- South Central Plains ☐
- Mississippi Alluvial Plain ☐
- Mississippi Valley Loess Plain ☐

Habitat Map



Habitats

	Weight
Caves, Mines, Sinkholes and other Karst Features	Optimal
Ozark-Ouachita Mesic Hardwood Forest	Optimal

Problems Faced

KNOWN PROBLEM: Mass mortality events at breeding sites (possibly due to ranavirus pathogen).	Threat: Extraordinary predation/parasitism/disease Source: Parasites/pathogens
POTENTIAL PROBLEMS: Loss of habitat.	Threat: Habitat destruction Source: Forestry activities

Data Gaps/Research Needs

Determine cause(s) of breeding site mass mortality.

Conservation Actions

	Importance	Category
More data are needed to determine conservation actions.	Medium	Data Gap

Monitoring Strategies

Monitor breeding sites for mass mortality events and changes in local population dynamics.

Comments

Trauth and others (2004) summarized the literature and biology of this frog. Mass mortality events were reported at breeding sites in relatively undisturbed areas within the Ozark National Forest over a decade ago. However, no cause for these events has been unequivocally determined to date (March 2015). It has been suggested that an emerging disease (Ranavirus) may be the culprit, based on the external appearance (petechial hemorrhaging of venter and thighs) of dead or dying frogs (Kelly J. Irwin, pers. obs.).

(McCallum and others 2003a)

Taxa Association Team and Peer Reviewers

AGFC Kelly Irwin, UCA Don Shepard, Kory Roberts

Plethodon caddoensis

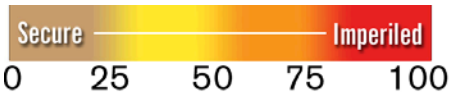
Caddo Mountain Salamander

Class: Amphibia

Order: Caudata

Family: Plethodontidae

Priority Score: **46** out of 100



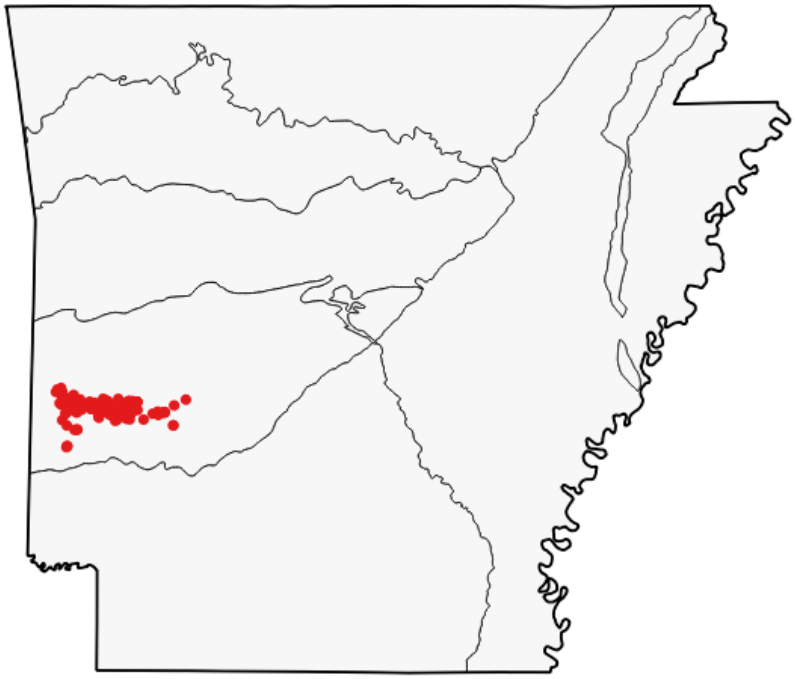
Population Trend: Unknown

Global Rank: G2 — Imperiled species

State Rank: S2 — Imperiled in Arkansas

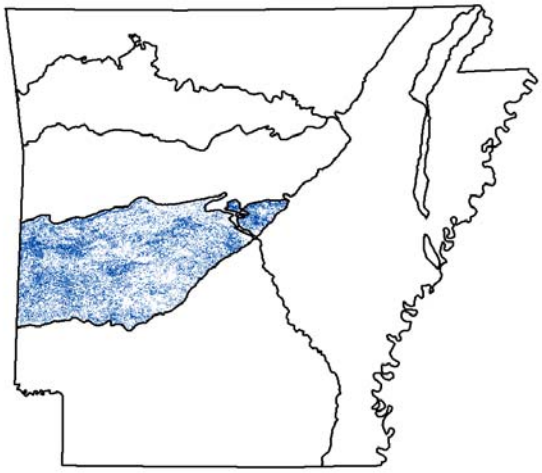
Distribution

Occurrence Records



Ecoregions where the species occurs:

- Ozark Highlands ☐
- Boston Mountains ☐
- Arkansas Valley ☐
- Ouachita Mountains ☑
- South Central Plains ☐
- Mississippi Alluvial Plain ☐
- Mississippi Valley Loess Plain ☐



Habitat Map

Habitats

	Weight
Caves, Mines, Sinkholes and other Karst Features	Suitable
Ozark-Ouachita Dry-Mesic Oak Forest/Woodland	Suitable
Ozark-Ouachita Mesic Hardwood Forest	Optimal
Ozark-Ouachita Pine-Oak Forest/Woodland	Suitable
Ozark-Ouachita Riparian	Suitable

Problems Faced

POTENTIAL PROBLEMS: Habitat destruction, forestry practices.

Threat: Habitat destruction or conversion
Source: Forestry activities

Data Gaps/Research Needs

Determination of species status, based on nuclear genetic testing, and gene flow between the various lineages identified by Shepard and Burbrink (2011) is needed.

Conservation Actions

Conservation Actions	Importance	Category
Conduct controlled burns.	Medium	Fire Management
Eliminate timber harvest within range.	High	Habitat Restoration/Improvement
Eliminate timber harvest within range.	High	Habitat Protection
Reduce/eliminate all-terrain vehicle use in areas where the species occurs.	High	Habitat Protection
Set aside wilderness areas where species occurs to insure long term survival.	High	Habitat Protection

Monitoring Strategies

Establish long-term monitoring plots to assess population trends.

Comments

This species is locally common, with most known localities occurring within the Ouachita National Forest. Forest management activities via conversion of land to pine plantations have likely reduced the amount of historically suitable habitat for this species. Shepard and Burbrink (2011) identified four highly divergent and geographically distinct clades.

(ANHI 2003, Anthony 1993, Anthony et al. 1994, Atwill and Trauth 1988, Blair and Lindsay 1965, Blair 1957, Conant and Collins 1991, Crump 2003, Crump et al. 2003a, 2003c, 2003d, 2003f, 2003p, Dowling 1956, Duncan and Highton 1979, Highton 1962a, McAllister et al. 2002, Palmer 1924, Plummer 1982, Pope 1964, Pope and Pope 1951, Reagan 1974a, Saugey et al. 1985, Spotila 1972, Taylor et al. 1990, Trauth et al. 2004, Trauth et al. 2000a, Trauth and Wilhide 1999, USDA FS 1999, Wilson 1995, Winter et al. 1986).

Taxa Association Team and Peer Reviewers

AGFC Kelly Irwin, UCA Don Shepard, Kory Roberts

Plethodon fourchensis

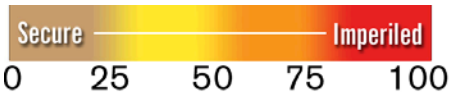
Fourche Mountain Salamander

Class: Amphibia

Order: Caudata

Family: Plethodontidae

Priority Score: **46** out of 100



Population Trend: Unknown

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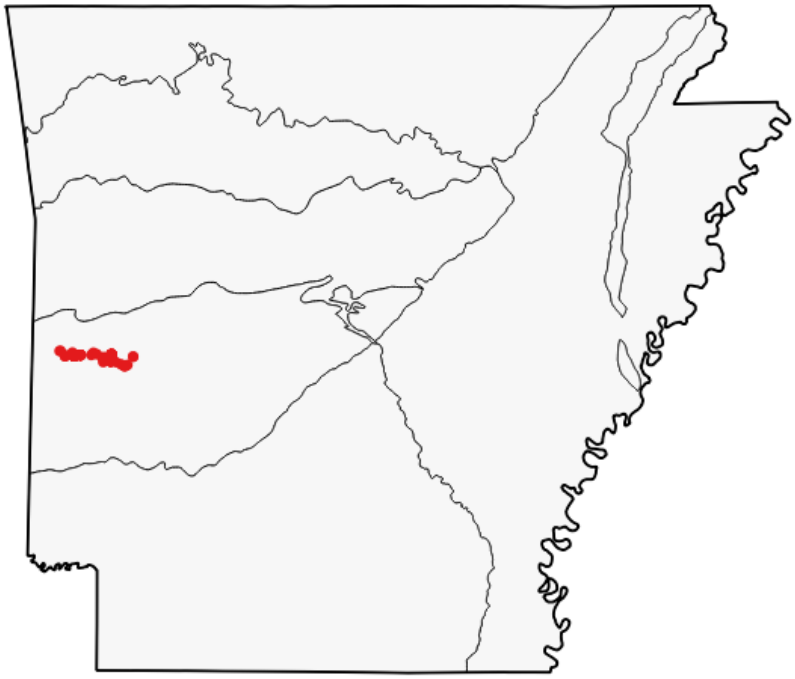
Global Rank: G2Q — Imperiled (questionable taxonomy)

State Rank: S2 — Imperiled in Arkansas

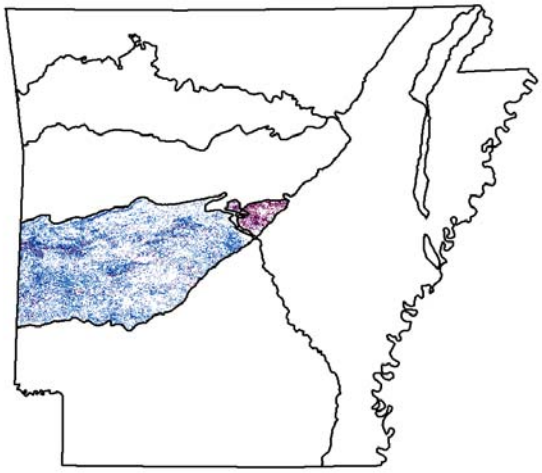
Distribution

Occurrence Records



Ecoregions where the species occurs:

- Ozark Highlands ☐
- Boston Mountains ☐
- Arkansas Valley ☐
- Ouachita Mountains ☑
- South Central Plains ☐
- Mississippi Alluvial Plain ☐
- Mississippi Valley Loess Plain ☐



Habitat Map

Habitats

Habitats	Weight
Ouachita Montane Oak Forest	Optimal
Ozark-Ouachita Dry Oak and Pine Woodland	Suitable
Ozark-Ouachita Dry-Mesic Oak Forest	Suitable
Ozark-Ouachita Mesic Hardwood Forest	Optimal
Ozark-Ouachita Pine-Oak Forest/Woodland	Suitable

Problems Faced

POTENTIAL PROBLEMS: Habitat destruction, forestry practices.	Threat: Habitat destruction or conversion Source: Forestry activities

Data Gaps/Research Needs

No research needs are identified at this time.

Conservation Actions

Conservation Actions	Importance	Category
Conduct controlled burns.	Medium	Fire Management
Eliminate timber harvest within known range.	High	Habitat Restoration/Improvement
Reduce/eliminate all-terrain vehicle use in areas where this species occurs.	High	Habitat Protection
Set aside wilderness areas where species occurs to insure long term survival.	High	Habitat Protection

Plethodon fourchensis
Fourche Mountain Salamander

Monitoring Strategies

Establish long-term monitoring plots to assess population trends.

Comments

This salamander is endemic to the Fourche/Irons Fork Mountain chain, including Shut-In Mountain on the northwestern end of the range, to the high ridge east of Grapevine Mountain on the eastern end. This species' range is entirely within the ownership of the Ouachita National Forest. Based on mtDNA sequence analysis, Shepard and Burbrink (2009) identified four distinct lineages within this species. Shepard et al. (2011) showed that significant morphological differences existed between the two sister species, Plethodon fourchensis and P. ouachitae, further supporting the genetic evidence between these divergent species. These two species have a narrow zone of hybridization on West Fourche Mountain, phenotypically fourchensis, genotypically ouachitae.

(ANHI 2003, Blair and Lindsay 1965, Conant and Collins 1998, Crump 2003, Crump et al. 2003a, 2003c, 2003d, 2003f, 2003p, Duncan and Highton 1979, Lohoefener and Jones 1991, ONHI 2003, Plummer 1982, Robison and Allen 1995, Taylor et al. 1990, Trauth et al. 2004, Trauth and Wilhide 1999, USDA FS 1999, Wilson 1995).

Taxa Association Team and Peer Reviewers

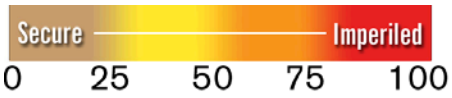
AGFC Kelly Irwin, UCA Don Shepard, Kory Roberts

Plethodon kiamichi

Kiamichi Slimy Salamander

Class: Amphibia
Order: Caudata
Family: Plethodontidae

Priority Score: **50** out of 100



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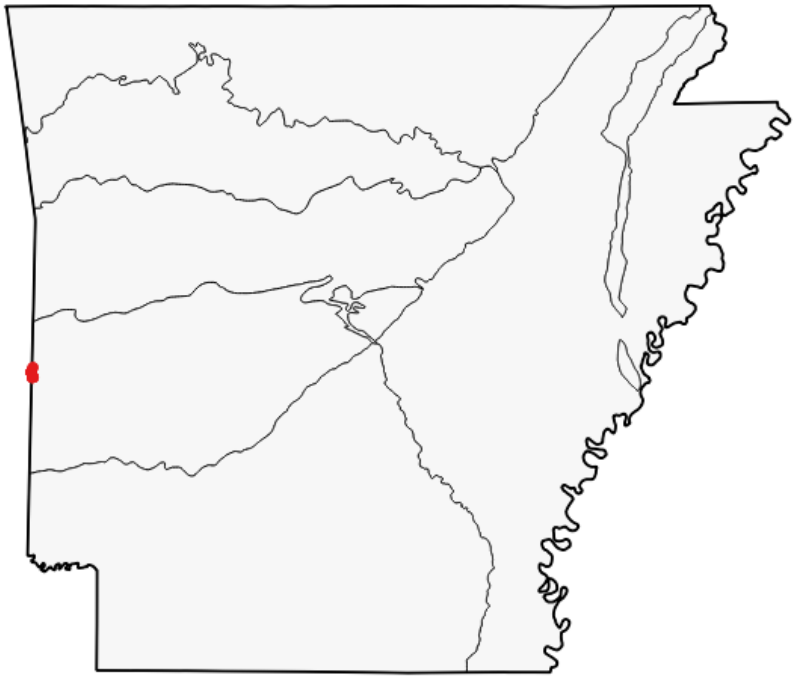
Population Trend: Unknown

Global Rank: G2 — Imperiled species

State Rank: S1 — Critically imperiled in Arkansas

Distribution

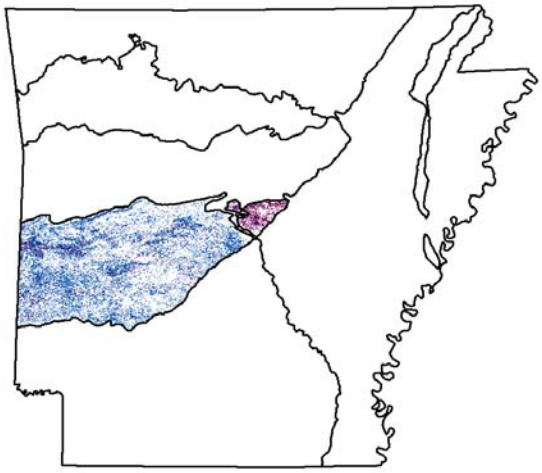
Occurrence Records



Ecoregions where the species occurs:

- Ozark Highlands ☐
- Boston Mountains ☐
- Arkansas Valley ☐
- Ouachita Mountains ☑
- South Central Plains ☐
- Mississippi Alluvial Plain ☐
- Mississippi Valley Loess Plain ☐

Habitat Map



Habitats

	Weight
Ouachita Montane Oak Forest	Optimal
Ozark-Ouachita Dry Oak and Pine Woodland	Optimal
Ozark-Ouachita Dry-Mesic Oak Forest/Woodland	Suitable
Ozark-Ouachita Mesic Hardwood Forest	Optimal
Ozark-Ouachita Pine-Oak Forest/Woodland	Suitable

Problems Faced

POTENTIAL PROBLEMS: Habitat destruction, forestry practices.	Threat: Habitat destruction or conversion Source: Forestry activities

Data Gaps/Research Needs

Conduct distribution surveys using genetic analysis, due to similarity of appearance to other members of the species complex.

Genetic assessment of species boundaries in the Plethodon albagula-kiamichi-kisatchie complex.

Conservation Actions

	Importance	Category
Acquire habitat.	Medium	Land Acquisition
Conduct controlled burns.	Medium	Fire Management
Eliminate timber harvest within known range.	High	Habitat Restoration/Improvement

Monitoring Strategies

More information is needed to develop a monitoring strategy.

Comments

This species is currently recognized as endemic to the Kiamichi Mountains within the greater Ouachita Mountain ecoregion.

(ANHI 2003, Blair and Lindsay 1965, Crump 2003, Crump et al. 2003a, 2003c, 2003d, 2003f, 2003p, Duncan and Highton 1979, Highton 1989, McAllister et al. 2002, ONHI 2003, Trauth et al. 2004, USDA FS 1999, Wilson 1995).

Taxa Association Team and Peer Reviewers

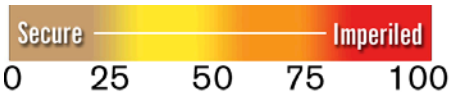
AGFC Kelly Irwin, UCA Don Shepard, Kory Roberts

Plethodon kisatchie

Louisiana Slimy Salamander

Class: Amphibia
Order: Caudata
Family: Plethodontidae

Priority Score: 27 out of 100



Population Trend: Unknown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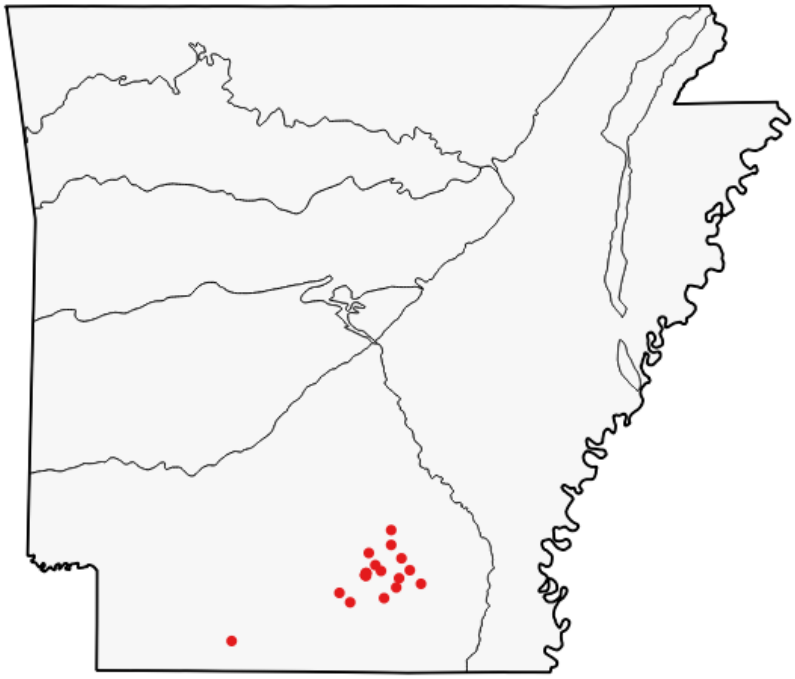
Global Rank: G3G4 — Vulnerable (uncertain rank)

State Rank: S2 — Imperiled in Arkansas

Distribution

Occurrence Records



Ecoregions where the species occurs:

- Ozark Highlands ☐
- Boston Mountains ☐
- Arkansas Valley ☐
- Ouachita Mountains ☐
- South Central Plains ☑
- Mississippi Alluvial Plain ☐
- Mississippi Valley Loess Plain ☐

Habitat Map

Habitats

	Weight
West Gulf Coastal Plain Pine-Hardwood Forest	Optimal

Problems Faced

POTENTIAL PROBLEMS: Habitat destruction, forestry practices.	Threat: Habitat destruction Source: Forestry activities

Data Gaps/Research Needs

Conduct distribution surveys using genetic analysis, due to similarity of appearance to other members of the species complex.

Genetic assessment of species boundaries in the Plethodon albagula-kiamichi-kisatchie complex.

Conservation Actions

	Importance	Category
Acquire habitat.	High	Land Acquisition
Conduct controlled burns.	Medium	Fire Management
Eliminate timber harvest within known range.	High	Habitat Restoration/Improvement

Monitoring Strategies

More information is needed to develop a monitoring strategy.

Comments

The range is limited to the South Central Coastal Plain where recent specimens have been associated with remnant old growth beech-hardwood/ pine forest stands. The bulk of historically favorable habitat has likely been converted to pine plantation monocultures.

Taxa Association Team and Peer Reviewers

AGFC Kelly Irwin, UCA Don Shepard, Kory Roberts

Plethodon ouachitae

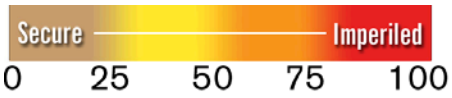
Rich Mountain Salamander

Class: Amphibia

Order: Caudata

Family: Plethodontidae

Priority Score: **38** out of 100



Population Trend: Unknown

Global Rank: G2G3 — Imperiled (uncertain rank)

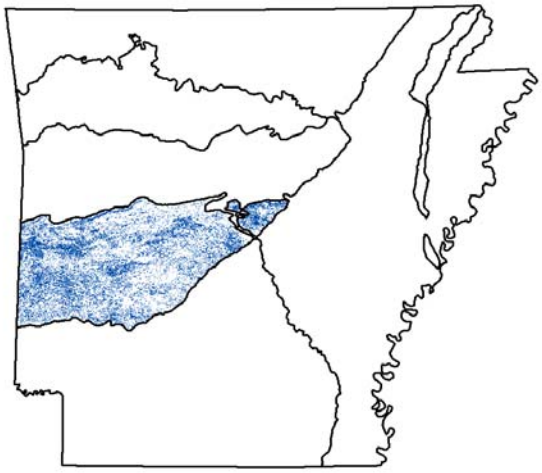
State Rank: S2 — Imperiled in Arkansas

Distribution

Occurrence Records

Ecoregions where the species occurs:

- Ozark Highlands ☐
- Boston Mountains ☐
- Arkansas Valley ☐
- Ouachita Mountains ☑
- South Central Plains ☐
- Mississippi Alluvial Plain ☐
- Mississippi Valley Loess Plain ☐



Habitat Map

Habitats

	Weight
Ouachita Montane Oak Forest	Optimal
Ozark-Ouachita Dry Oak and Pine Woodland	Suitable
Ozark-Ouachita Dry-Mesic Oak Forest/Woodland	Suitable
Ozark-Ouachita Mesic Hardwood Forest	Optimal
Ozark-Ouachita Pine-Oak Forest/Woodland	Suitable

Problems Faced

POTENTIAL PROBLEMS: Habitat destruction, forestry practices.	Threat: Habitat destruction or conversion Source: Forestry activities

Data Gaps/Research Needs

No research needs are identified at this time.

Conservation Actions

	Importance	Category
Conduct controlled burns.	Medium	Fire Management
Eliminate timber harvest within known range.	High	Habitat Restoration/Improvement
Reduce/ eliminate ATV use where this species occurs.	High	Habitat Protection

Monitoring Strategies

Establish long-term monitoring plots to assess population trends.

Comments

Shepard and Burbrink (2008) identified seven distinct lineages within the Plethodon ouachitae complex in Arkansas and Oklahoma. Three of these lineages occur in Arkansas on Rich, Black Fork, and West Fourche mountains, and the eastern end of the Kiamichi Mountain range on Cedar, Little Round, and Cow Creek mountains.

(ANHI 2003, Anthony 1993, Anthony 1995, Anthony et al. 2002, Anthony and Wicknick 1993, Atwill and Trauth 1988, Black and Dellinger 1938, Blair and Lindsay 1965, Burt 1935, Crump 2003, Crump et al. 2003a, 2003c, 2003d, 2003f, 2003p, Duncan and Highton 1979, Dunn and Heinze 1933, McAllister et al. 2002, ONHI 2003, Petranka 1998, Pope and Pope 1951, Reagan 1974a, Sievert 1986, Taylor et al. 1990, Thurow 1976, Trauth et al. 2004, Trauth and Wilhide 1999, USDA FS 1999, Wilson 1995)

Taxa Association Team and Peer Reviewers

AGFC Kelly Irwin, UCA Don Shepard, Kory Roberts

Plethodon sequoyah

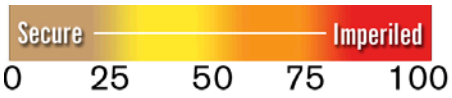
Sequoyah Slimy Salamander

Class: Amphibia

Order: Caudata

Family: Plethodontidae

Priority Score: **50** out of 100



Population Trend: Unknown

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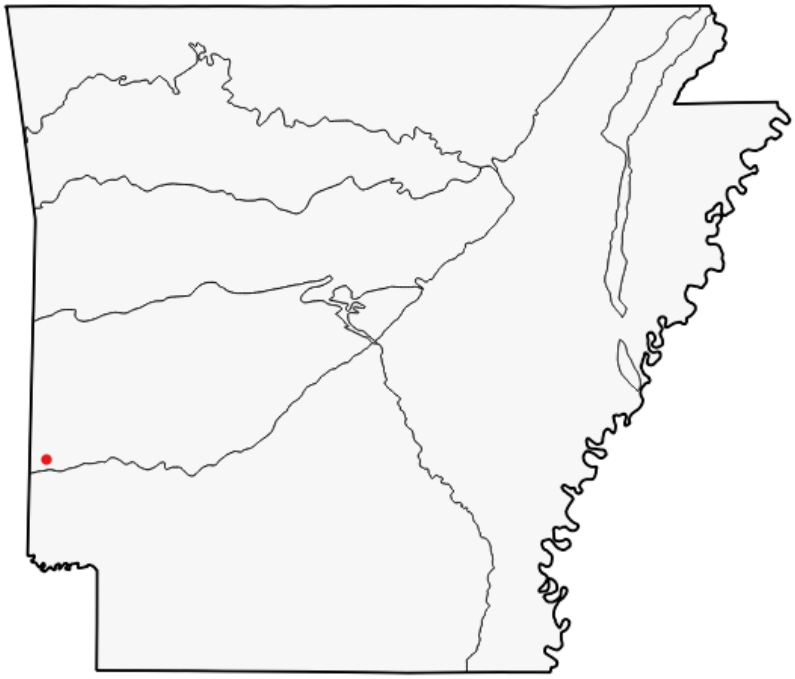
Global Rank: G2 — Imperiled species

State Rank: S1 — Critically imperiled in Arkansas

Distribution

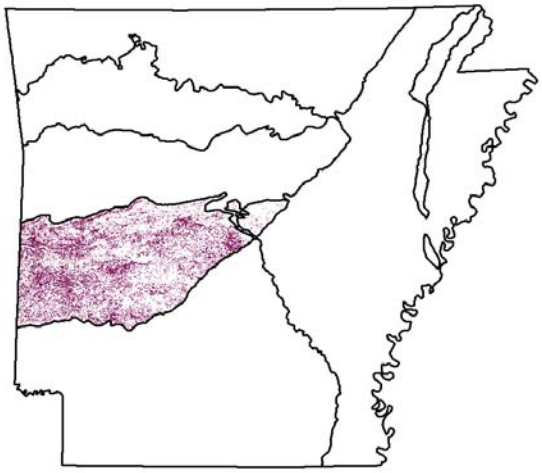
Occurrence Records



Ecoregions where the species occurs:

- Ozark Highlands ☐
- Boston Mountains ☐
- Arkansas Valley ☐
- Ouachita Mountains ☑
- South Central Plains ☐
- Mississippi Alluvial Plain ☐
- Mississippi Valley Loess Plain ☐

Habitat Map



Habitats

	Weight
Ozark-Ouachita Pine-Oak Forest/Woodland - Forest Condition	Suitable
West Gulf Coastal Plain Pine-Hardwood Forest/Woodland	Optimal

Problems Faced

POTENTIAL PROBLEMS: Habitat destruction, forestry practices.	Threat: Habitat destruction or conversion Source: Forestry activities

Data Gaps/Research Needs

Assess genetic composition of species boundaries in the Plethodon albagula-kiamichi-kisatchie complex.
Conduct distribution surveys using genetic analysis, due to similarity of appearance to other members of the species complex.

Conservation Actions

	Importance	Category
Acquire habitat.	High	Land Acquisition
Conduct controlled burns.	Medium	Fire Management
Eliminate timber harvest within known range.	High	Habitat Restoration/Improvement

Monitoring Strategies

More information is needed to develop a monitoring strategy.

Comments

The Sequoyah Slimy Salamander, as currently recognized, has a small range in southeastern Oklahoma and was reported from Sevier County, AR by Trauth and others (2004). Unpublished genetic data (D. Shepard, 2013) suggests that this may not be a valid taxon, and additional genetic sequence analysis is needed to resolve taxonomic status.

(ANHI 2003, Black and Sievert 1989, Highton 1989, Huntington and Stuhlman 1993, ONHI 2003, Trauth et al. 2004).

Taxa Association Team and Peer Reviewers

AGFC Kelly Irwin, UCA Don Shepard, Kory Roberts

Pseudacris illinoensis

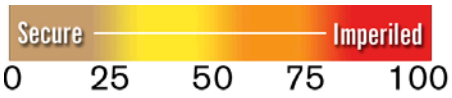
Illinois Chorus Frog

Class: Amphibia

Order: Anura

Family: Hylidae

Priority Score: **43** out of 100



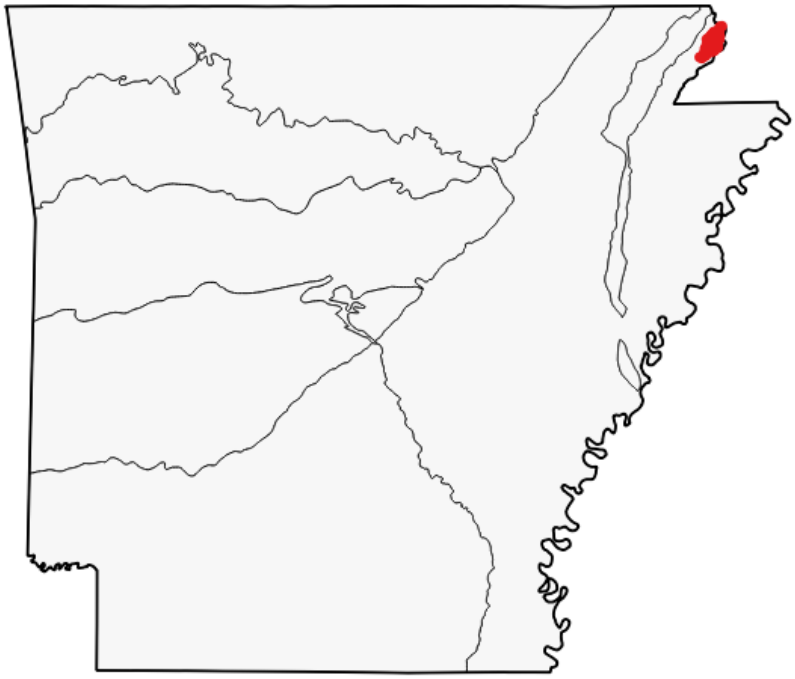
Population Trend: Decreasing

Global Rank: G3 — Vulnerable species

State Rank: S1 — Critically imperiled in Arkansas

Distribution

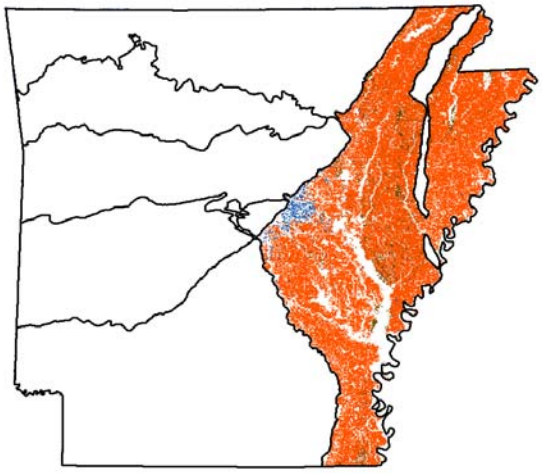
Occurrence Records



Ecoregions where the species occurs:

- Ozark Highlands ☐
- Boston Mountains ☐
- Arkansas Valley ☐
- Ouachita Mountains ☐
- South Central Plains ☐
- Mississippi Alluvial Plain ☑
- Mississippi Valley Loess Plain ☐

Habitat Map



Habitats

	Weight
Crop Land	Marginal
Lower Mississippi Flatwoods Woodland and Forest	Data Gap
Pasture Land	Suitable

Problems Faced

KNOWN PROBLEMS: Habitat destruction, agricultural practices.	Threat: Habitat destruction Source: Agricultural practices
KNOWN PROBLEMS: Habitat destruction, agricultural practices.	Threat: Chemical alteration Source: Agricultural practices
Sustained laser leveling and well drilling accelerates habitat destruction and loss.	Threat: Habitat destruction Source:

Data Gaps/Research Needs

Reassess current population.

Conservation Actions

	Importance	Category
Acquire land.	High	Habitat Restoration/Improvement
Restore ephemeral wetlands and sand prairie habitat.	High	Habitat Restoration/Improvement

Monitoring Strategies

Establish and implement long term monitoring protocol.

Pseudacris illinoensis
Illinois Chorus Frog

Comments

Trauth and others (2004) summarized the literature and biology of this species. The extremely limited range (found only in extreme eastern Clay County), coupled with extensive habitat loss (conversion of former alluvial sand prairie to intensive agricultural practices) threatens the continued existence of this frog in Arkansas.

(Johnson and others 2007, McCallum and Trauth 2001a, 2001b, McCallum and others 2001, McCallum and Trauth 2002, Moriarity and Cannatella 2004, Trauth and others 2004, Trauth and others 2007, Tucker 2000)

Taxa Association Team and Peer Reviewers

AGFC Kelly Irwin, UCA Don Shepard, Kory Roberts

Pseudacris maculata

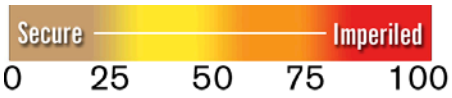
Boreal Chorus Frog

Class: Amphibia

Order: Anura

Family: Hylidae

Priority Score: **19** out of 100



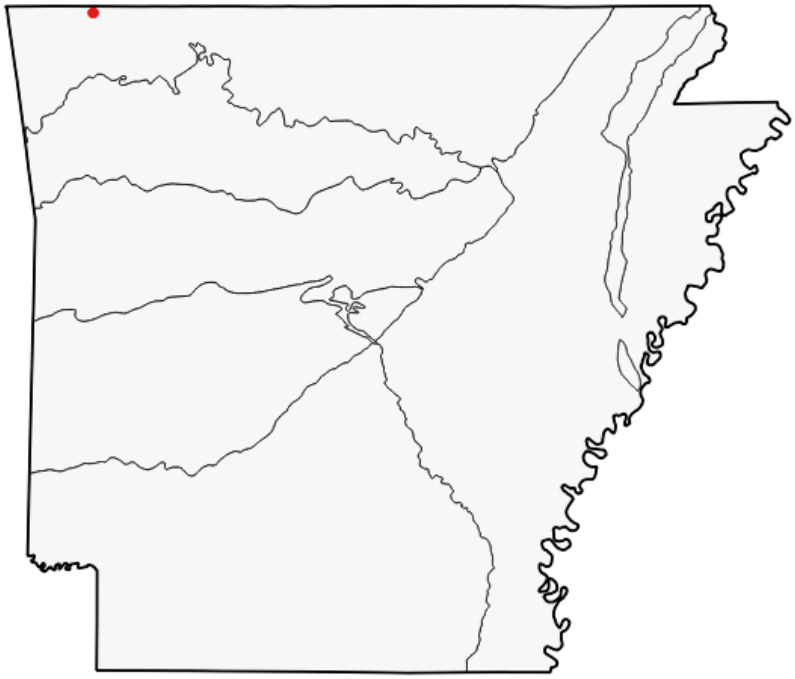
Population Trend: Unknown

Global Rank: G5 — Secure

State Rank: S2 — Imperiled in Arkansas

Distribution

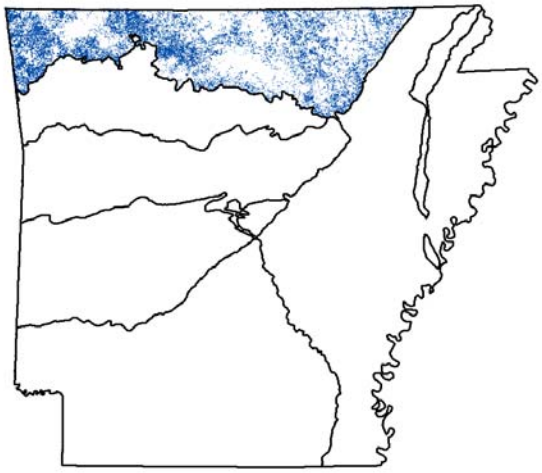
Occurrence Records



Ecoregions where the species occurs:

- Ozark Highlands ☑
- Boston Mountains ☐
- Arkansas Valley ☐
- Ouachita Mountains ☐
- South Central Plains ☐
- Mississippi Alluvial Plain ☐
- Mississippi Valley Loess Plain ☐

Habitat Map



Habitats

	Weight
Ozark-Ouachita Prairie and Woodland	Optimal
Pasture Land	Suitable

Problems Faced

POTENTIAL PROBLEM: Habitat loss.	Threat: Habitat destruction or conversion Source: Urban development
POTENTIAL PROBLEM: Habitat loss.	Threat: Habitat destruction or conversion Source: Fire suppression

Data Gaps/Research Needs

Further distribution and abundance survey work needed.

Conservation Actions

	Importance	Category
Restore prairie habitat.	High	Habitat Restoration/Improvement
Use prescribed fire to improve prairie habitat.	High	Habitat Restoration/Improvement

Monitoring Strategies

More information is needed to develop a monitoring strategy.

Comments

This species was recently discovered in northwest Arkansas in Benton County.

(Collins 1993, Johnson 2000, Moriarity et al. 2007)

Taxa Association Team and Peer Reviewers

AGFC Kelly Irwin, UCA Don Shepard, Kory Roberts

Pseudacris streckeri

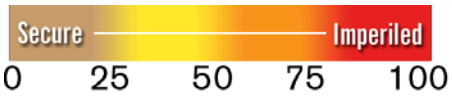
Strecker's Chorus Frog

Class: Amphibia

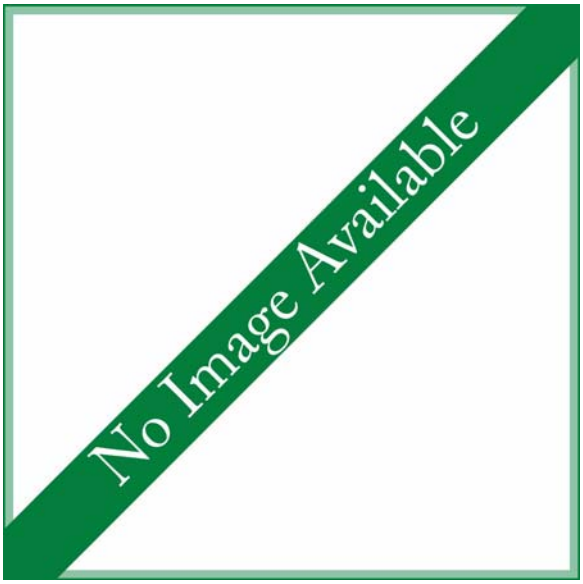
Order: Anura

Family: Hylidae

Priority Score: 19 out of 100



Population Trend: Unknown

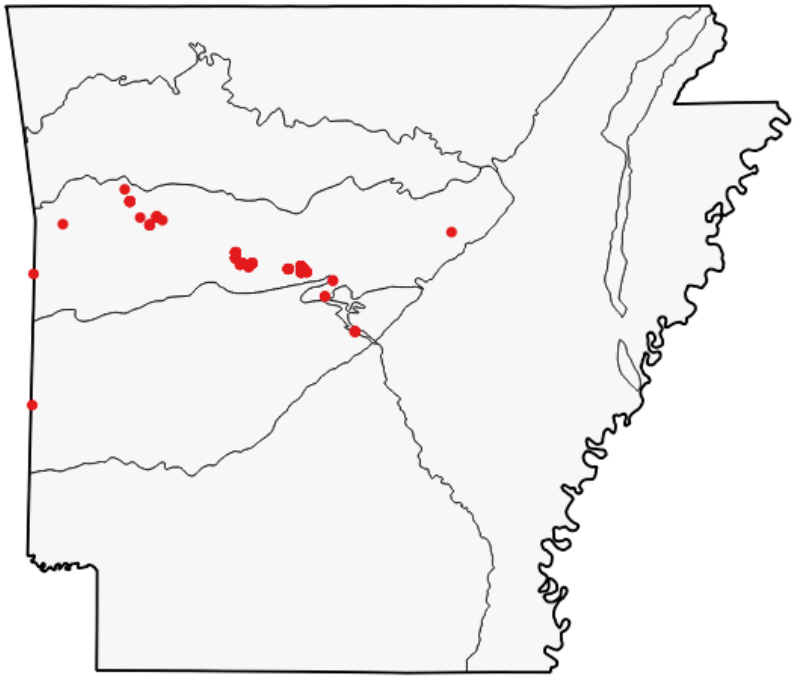


Global Rank: G5 — Secure

State Rank: S2 — Imperiled in Arkansas

Distribution

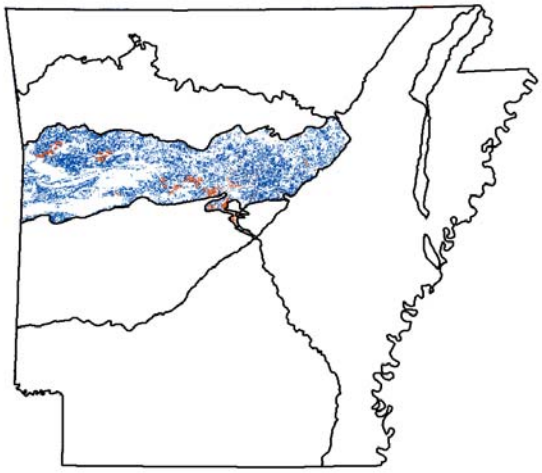
Occurrence Records



Ecoregions where the species occurs:

- Ozark Highlands ☐
- Boston Mountains ☐
- Arkansas Valley ☑
- Ouachita Mountains ☐
- South Central Plains ☐
- Mississippi Alluvial Plain ☐
- Mississippi Valley Loess Plain ☐

Habitat Map



Habitats

Habitats	Weight
Crop Land	Marginal
Ozark-Ouachita Prairie and Woodland	Optimal
Pasture Land	Suitable

Problems Faced

KNOWN PROBLEMS: Habitat destruction, agricultural practices.	Threat: Habitat destruction Source: Agricultural practices

Data Gaps/Research Needs

Further distribution and abundance survey work is needed.

Conservation Actions

Conservation Actions	Importance	Category
Acquire habitat.	High	Land Acquisition
Restore ephemeral wetlands and sand prairies.	High	Habitat Restoration/Improvement

Monitoring Strategies

More information is needed to develop a monitoring strategy.

Comments

Inhabits sandy soil prairies of the Arkansas Valley and surrounding uplands. In spite of extensive loss of former alluvial valley prairie habitat, populations still persist along the Arkansas River Valley.

(ANHI 2003, Black and Dellinger 1938, Bragg 1942, Burt 1935, Butterfield et al. 1989, Conant and Collins 1998, Crump 2003, Crump et al. 2003a, 2003c, 2003d, 2003f, 2003p, Dowling 1957, Fesperman 1986, Hurter and Strecker 1909, Irwin and Irwin 2001, Parker 1947, Smith 1966a, Taylor 1935, Trauth et al. 1990, Trauth et al. 2004, Turnipseed and Shepherd 1985, USDA FS 1999, Wilson 1995)

Taxa Association Team and Peer Reviewers

AGFC Kelly Irwin, UCA Don Shepard, Kory Roberts

Scaphiopus holbrookii

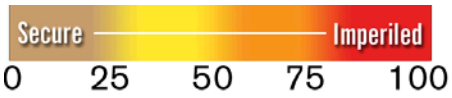
Eastern Spadefoot

Class: Amphibia

Order: Anura

Family: Scaphiopodidae

Priority Score: **19** **out of 100**



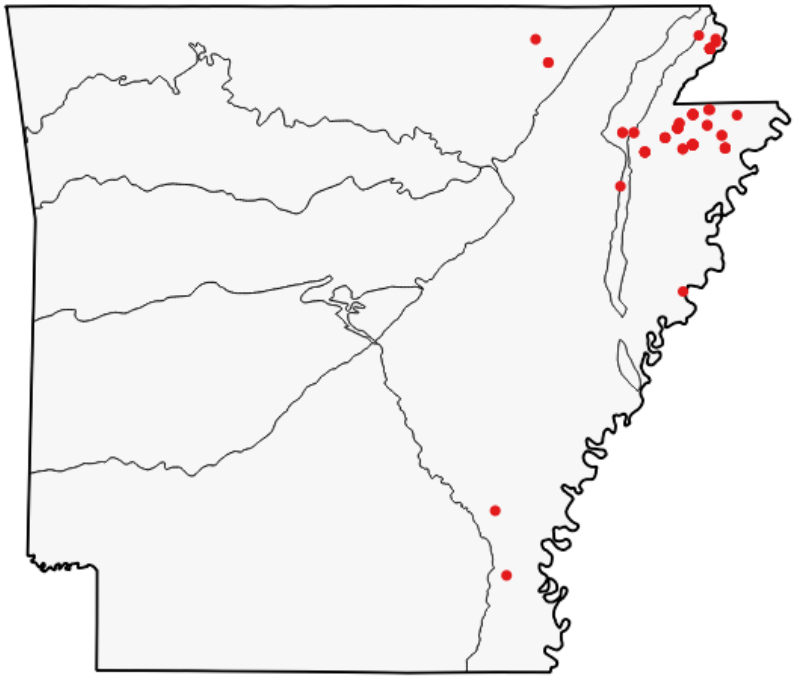
Population Trend: Unknown

Global Rank: G5 — Secure

State Rank: S2 — Imperiled in Arkansas

Distribution

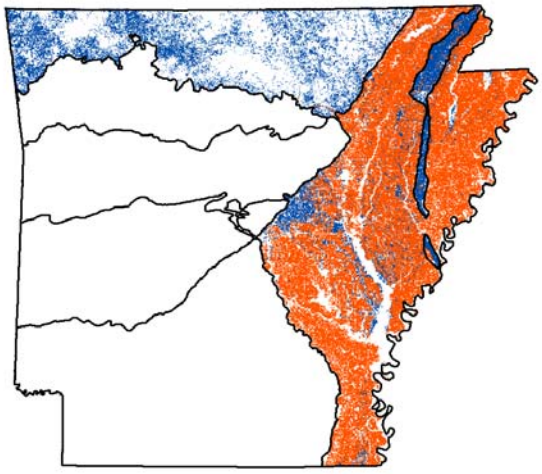
Occurrence Records



Ecoregions where the species occurs:

- Ozark Highlands ☑
- Boston Mountains ☐
- Arkansas Valley ☐
- Ouachita Mountains ☐
- South Central Plains ☐
- Mississippi Alluvial Plain ☑
- Mississippi Valley Loess Plain ☑

Habitat Map



Habitats

	Weight
Crop Land	Marginal
Crowley's Ridge Loess Slope Forest	Suitable
Lower Mississippi Alluvial Plain Grand Prairie	Suitable
Lower Mississippi Flatwoods Woodland and Forest	Suitable
Pasture Land	Suitable

Problems Faced

POTENTIAL PROBLEMS: Habitat destruction, agricultural practices.	Threat: Habitat destruction Source: Agricultural practices

Data Gaps/Research Needs

Further distribution and abundance survey work needed.

Conservation Actions

	Importance	Category
More data are needed to determine conservation actions.	Medium	Data Gap

Monitoring Strategies

More information is needed to develop a monitoring strategy.

Comments

Trauth and others (2004) summarized the literature and biology of this frog.

Taxa Association Team and Peer Reviewers

AGFC Kelly Irwin, UCA Don Shepard, Kory Roberts

Scaphiopus hurterii

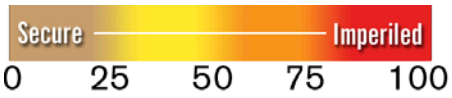
Hurter's Spadefoot

Class: Amphibia

Order: Anura

Family: Scaphiopodidae

Priority Score: **19** out of 100



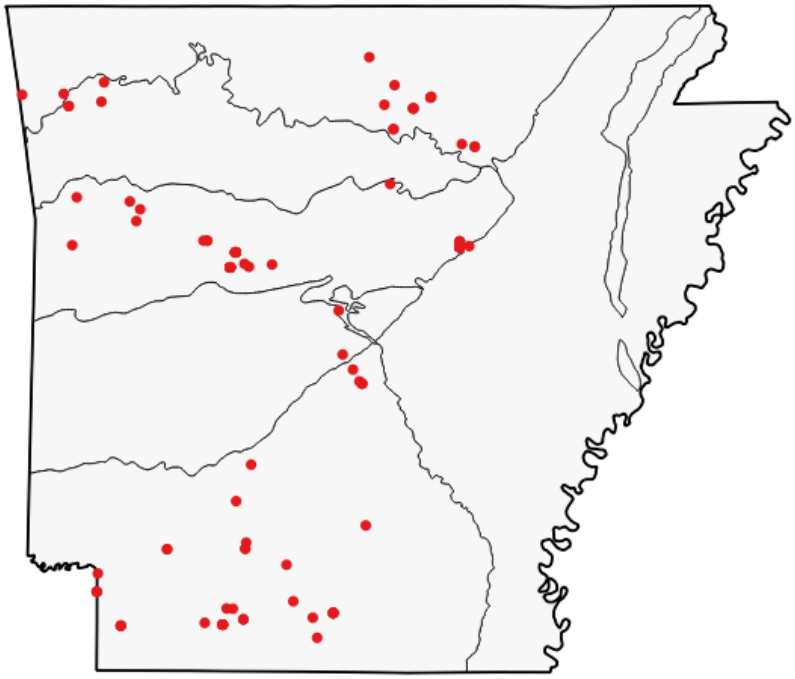
Population Trend: Unknown

Global Rank: G5 — Secure

State Rank: S2 — Imperiled in Arkansas

Distribution

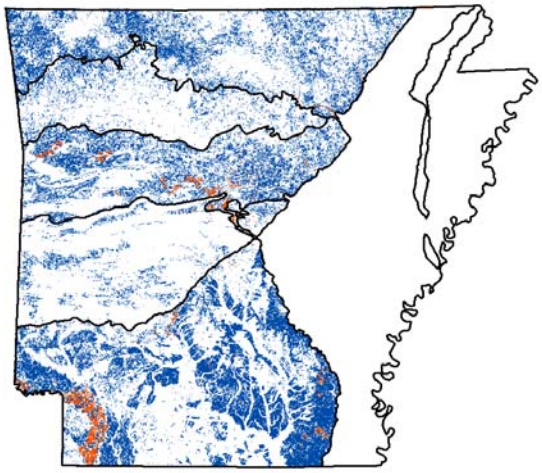
Occurrence Records



Ecoregions where the species occurs:

- Ozark Highlands ☑
- Boston Mountains ☑
- Arkansas Valley ☑
- Ouachita Mountains ☑
- South Central Plains ☑
- Mississippi Alluvial Plain ☐
- Mississippi Valley Loess Plain ☐

Habitat Map



Habitats

	Weight
Crop Land	Marginal
Ozark-Ouachita Prairie and Woodland	Optimal
Pasture Land	Suitable
West Gulf Coastal Plain Pine-Hardwood Flatwoods	Suitable
West Gulf Coastal Plain Sandhill Oak and Shortleaf Pine Forest and Woodland	Suitable

Problems Faced

POTENTIAL PROBLEMS: Habitat destruction.	Threat: Habitat destruction Source: Agricultural practices
POTENTIAL PROBLEMS: Habitat destruction.	Threat: Habitat destruction Source: Forestry activities

Data Gaps/Research Needs

Further distribution and abundance survey work needed.

Conservation Actions

	Importance	Category
More data are needed to determine conservation actions.	Medium	Data Gap

Monitoring Strategies

More information is needed to develop a monitoring strategy.

Comments

Trauth and others (2004) summarized the literature and biology of this frog.

Taxa Association Team and Peer Reviewers

AGFC Kelly Irwin, UCA Don Shepard, Kory Roberts

Spea bombifrons

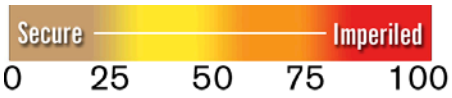
Plains Spadefoot

Class: Amphibia

Order: Anura

Family: Scaphiopodidae

Priority Score: **23** **out of 100**



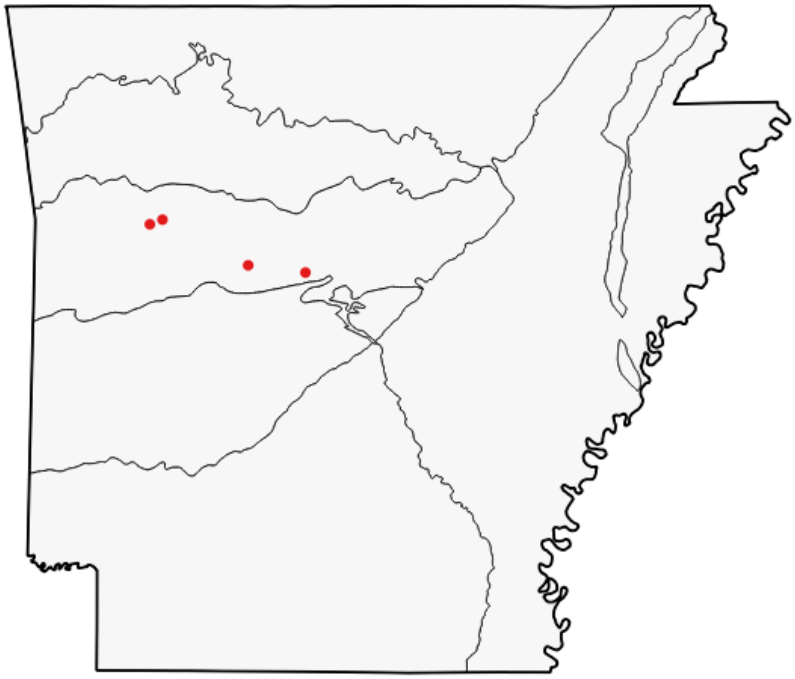
Population Trend: Unknown

Global Rank: G5 — Secure

State Rank: S1 — Critically imperiled in Arkansas

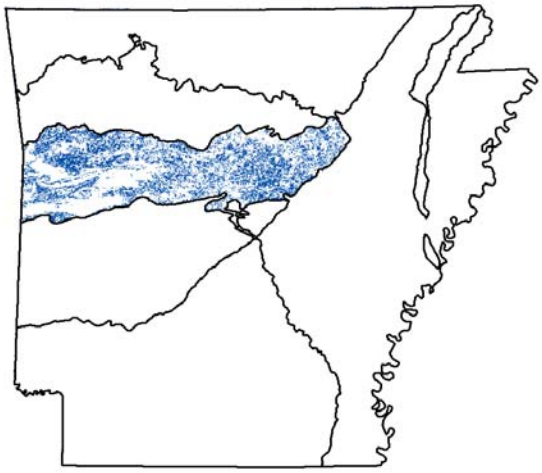
Distribution

Occurrence Records



Ecoregions where the species occurs:

- Ozark Highlands ☐
- Boston Mountains ☐
- Arkansas Valley ☑
- Ouachita Mountains ☐
- South Central Plains ☐
- Mississippi Alluvial Plain ☐
- Mississippi Valley Loess Plain ☐



Habitat Map

Habitats

	Weight
Ozark-Ouachita Prairie and Woodland	Optimal
Pasture Land	Suitable

Problems Faced

Threat: Habitat destruction
Source: Agricultural practices

Data Gaps/Research Needs

Further distribution and abundance survey work needed.

Conservation Actions

	Importance	Category
Acquire habitat.	Medium	Land Acquisition
Restore ephemeral wetlands.	Medium	Habitat Restoration/Improvement

Monitoring Strategies

More information is needed to develop a monitoring strategy.

Comments

Trauth and others (2004) summarized the literature and biology of this frog. An inhabitant of the former alluvial prairie of the Arkansas River floodplain, this species is restricted to a few known sites in an agriculturally dominated landscape.

Taxa Association Team and Peer Reviewers

AGFC Mr. Kelly Irwin, ASU Dr. Stan Trauth