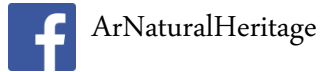




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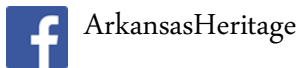
501.324.9619



THE DEPARTMENT OF ARKANSAS
HERITAGE

www.arkansasheritage.com

501-324-9150



Protecting Arkansas's Aquatic Heritage

presented to

Arkansas Chapter of the American Fisheries Society

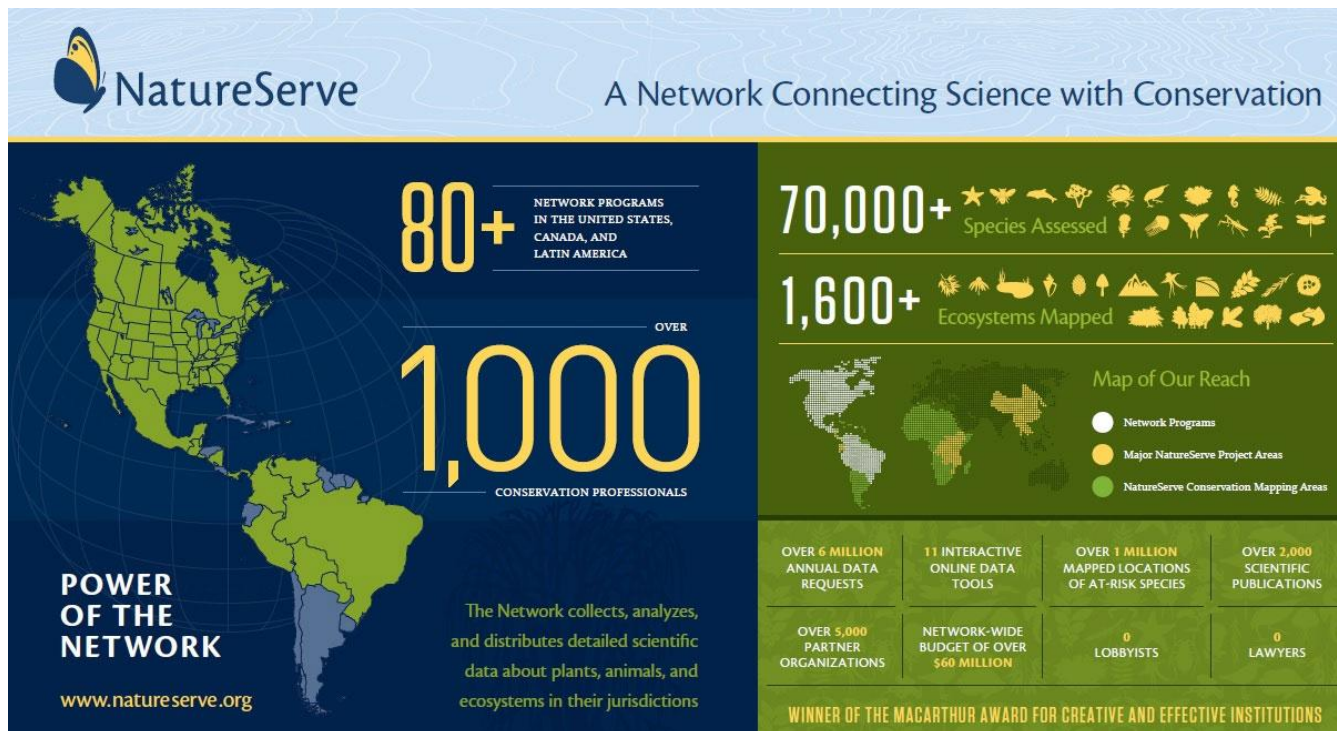
January 24, 2018

Dustin Lynch

ANHC Aquatic Ecologist

The Natural Heritage Network

- Network of 98 Heritage Units (AKA Conservation Data Centers)
- All 50 states, Canada, Latin America, and Caribbean countries



The Natural Heritage Network

- Continually updated database of rare and threatened species and communities
- World's most comprehensive, frequently consulted source of biodiversity information
- Used for natural resource and development planning, land use and management decisions, etc.
- Clients: government agencies, non-profit organizations, researchers, corporations, and private landowners



The Natural Heritage Network

- Methodology developed by The Nature Conservancy in the 1970s
- Track element occurrences – populations of plants, animals, or natural communities
- Ranks species or communities based on relative rarity
- Creates lists prioritizing rarest species for protection
- Standardized methodology across member organizations
 - Heritage Data Management System
 - Natureserve



NatureServe[®]

A Network Connecting Science With Conservation

The Natural Heritage Network

- Affiliated with state government agencies, universities or Nature Conservancy state offices
- The Arkansas Natural Heritage Commission
 - Division of the Department of Arkansas Heritage
 - Established in 1973
 - State general revenue and federal grants.
 - Mission: to preserve the Natural Diversity of Arkansas for future generations



THE DEPARTMENT OF ARKANSAS
HERITAGE

Natureserve Ranking System

- Global ranks
 - G1 = Critically Imperiled Globally
 - G2 = Imperiled globally
 - G3 = Vulnerable globally
 - G4 = Apparently secure globally
 - G5 = Secure globally
- State ranks
 - S1 = Critically Imperiled in AR
 - S2 = Imperiled in AR
 - S3 = Vulnerable in AR
 - S4 = Apparently secure in AR
 - S5 = Secure in AR



Natureserve Ranking System

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Determining Ranks

- Rarity
 - Range Extent
 - Number of Occurrences
 - Population Size
 - Viability/Ecological Integrity
 - Environmental Specificity
- Trends
 - Short Term
 - Long Term
- Threats
 - Threat Impact
 - Intrinsic Vulnerability




<i>Ursus maritimus</i> (Polar Bear)	
RARITY	
<i>Range Extent</i>	>2,500,000 sq km
<i>Area of Occupancy</i>	> 20,000 sq km
<i>Number of Occurrences</i>	19 occurrences
<i>Population Size</i>	20,000–25,000 individuals
<i>Environmental Specificity</i>	Narrow – specialist, key requirement polar sea ice
TRENDS	
<i>Short-term Trend</i>	Decline of <30% to relatively stable
THREATS	
<i>Intrinsic Vulnerability</i>	Highly vulnerable
<i>Primary Threat</i>	Global warming
<i>Threat – Scope</i>	Pervasive – affects 71-100% total population or occurrences
<i>Threat – Severity</i>	Serious – likely to reduce total population by 31-70% within 3 generations
<i>Threat – Impact</i>	High
<i>Overall Threat</i>	Substantial, imminent
NatureServe Conservation Status Rank: G3 - Vulnerable	

Imperiled Aquatic Species in Arkansas

- 972 total species of tracked plants and animals in AR
- 291 species (~30%) primarily aquatic all or part of life cycle
 - 52 of 573 tracked plants (~9%)
 - 239 of 399 tracked animals (~60%)
 - 146 of 240 invertebrates (~61%)
 - 27 of 44 amphibians and reptiles (~61%)
 - 66 of 66 fishes! 100% aquatic!

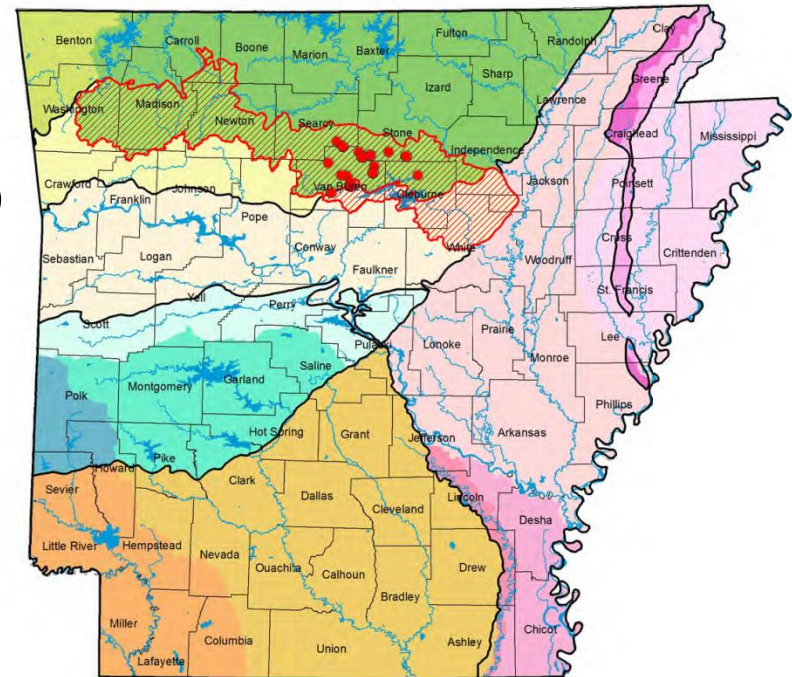


Globally Rare Fish in Arkansas

- G1 species – 2
 - Yellowcheek Darter (*Etheostoma moorei*)
 - Caddo Madtom (*Noturus taylori*)
- G2 species – 7
 - e.g., Leopard Darter (*Percina pantherina*)
- G3 species – 10
 - e.g., Ozark Cavefish (*Troglichthys rosae*)

Yellowcheek Darter (*Etheostoma moorei*)

- G1 – critically imperiled
- Endemic to Little Red River
- Riffle-specialist; vulnerable to drought
- Fragmented Range – Greers Ferry Lake



Legend

- *Etheostoma moorei*
- ▨ Occupied Ecobasin

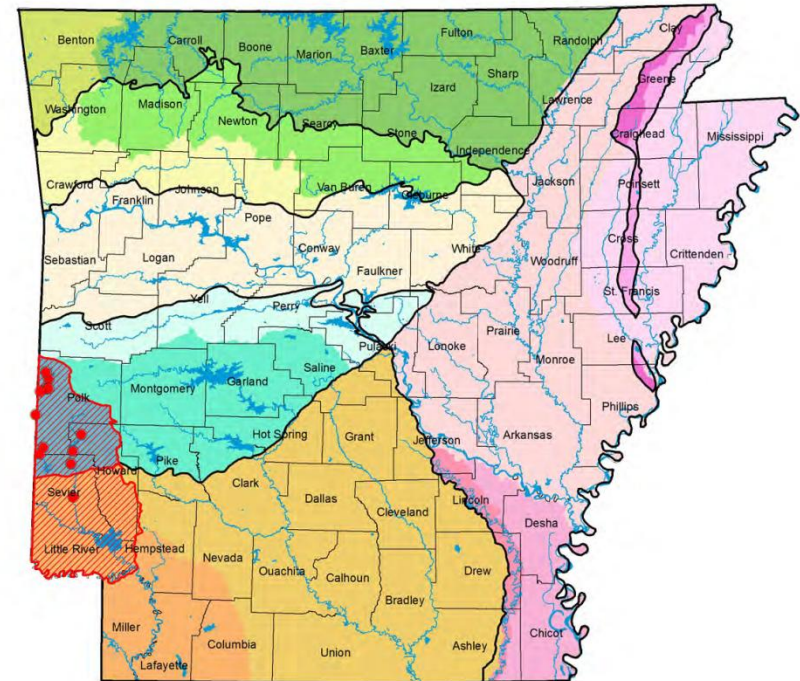
Ecobasins

- | | |
|--|--|
| Arkansas Valley - Arkansas River | Mississippi River Loess Plains - St. Francis River |
| Arkansas Valley - White River | Mississippi River Loess Plains - White River |
| Boston Mountains - Arkansas River | Ouachita Mountains - Arkansas River |
| Boston Mountains - White River | Ouachita Mountains - Ouachita River |
| Miss R. Alluv. Pin (Bayou Bartholomew) - Ouachita R. | Ouachita Mountains - Red River |
| Mississippi R. Alluvial Plain - Arkansas River | Ozark Highlands - Arkansas River |
| Mississippi R. Alluvial Plain - St. Francis River | Ozark Highlands - White River |
| Mississippi R. Alluvial Plain - White River | South Central Plains - Ouachita River |
| Mississippi R. Alluv. Pin (L. Chicot) - Miss. River | South Central Plains - Red River |





Leopard Darter (*Percina pantherina*)

- G2 –imperiled
- Endemic to the Little River drainage
- Pool species, limited by temperature, declining
- Recent survey efforts



Legend

 Occupied Ecobasin

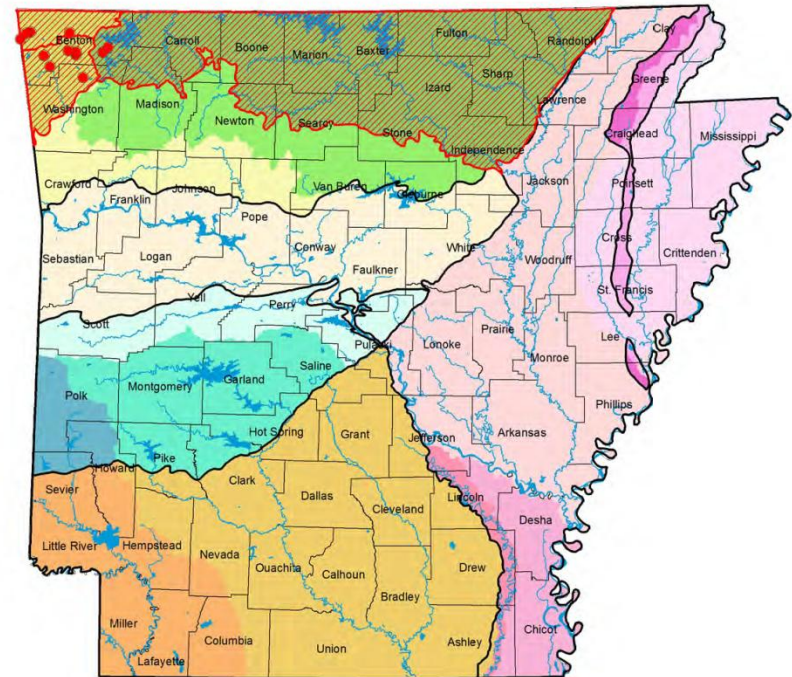
 *Percina pantherina*

Ecobasins

 Arkansas Valley - Arkansas River	 Mississippi River Loess Plains - St. Francis River
 Arkansas Valley - White River	 Mississippi River Loess Plains - White River
 Boston Mountains - Arkansas River	 Ouachita Mountains - Arkansas River
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	 South Central Plains - Red River

Ozark Cavefish (*Troglichthys rosae*)

- G3 – vulnerable
- Confined to cave systems of the Springfield Plateau
- Cave obligate
- Sensitive to water quality/quantity issues



Legend

- Occupied Ecobasin
- Troglichthys rosae*

Ecobasins

- | | |
|--|--|
| Arkansas Valley - Arkansas River | Mississippi River Loess Plains - St. Francis River |
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Other Aquatic Taxa

- Mussels – 22 tracked species
- Crayfish – 24 tracked species
- Salamanders (fully aquatic or w/aquatic larvae) – 11 tracked



Speckled Pocketbook
(*Lampsilis streckeri*)



Hell Creek Cave Crayfish
(*Cambarus zophonastes*)



Ouachita Streambed
Salamander (*Eurycea
subfluvicola*)

ANHC Data is used for....

- ~800 reviews or data requests per year
- Inter-agency review teams
- Stream mitigation
- Stream impacts
- State water planning process
- AWAP

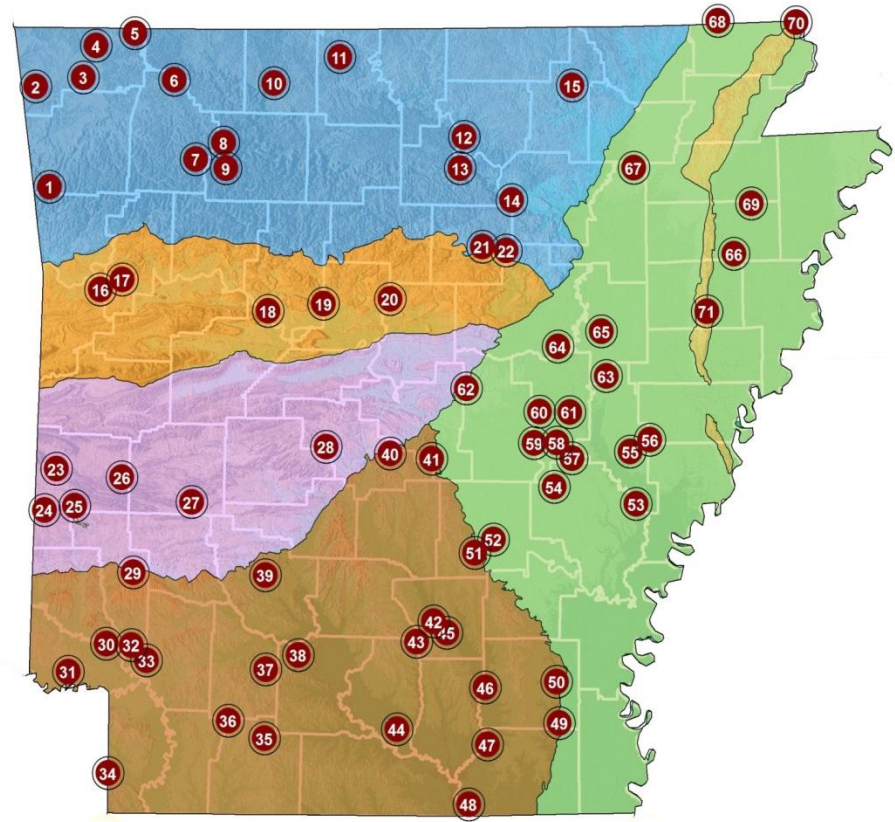


Send us your observations!

- Help us improve our database!
- Send us your observations, photos, species lists
- Aquatic Ecologist: Dustin Lynch
dustin.lynch@arkansas.gov
- Data Manager/Environmental Review Coordinator:
Cindy Osborne
- Cindy.osborne@arkansas.gov
- Rare Species Search Engine:
<http://www.naturalheritage.com/Research-and-Data/rare-species-search>

System of Natural Areas

- 72 Natural Areas
- All ecoregions
- Best of the last remaining vestiges of the state's natural communities
- Managed to preserve and restore rare natural communities



Aquatic biological inventories are currently underway!



Any Questions?



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