

Species Predicted Distribution Maps Qualifications and Limitations

There are three ways of expressing or mapping species distributions: 1) *actual distribution*, which is based on exhaustive, long-term surveys that are very rare; 2) *known distribution*, which is based on current knowledge of where the species has been found and is usually incomplete, and 3) *predicted distribution*, which combines known distributions with quantitative or qualitative models of species-habitat associations to extrapolate to unsampled areas where the species is expected to occur (Csuti and Crist 1998). It is simply impractical to map the distribution of hundreds of species through intensive field surveys across entire states, regions, or nations (Scott et al. 1996). For instance, the nearly 7,000 fish, mussel, and crayfish collection records we compiled for our project only cover 0.03% of the total stream miles in Missouri.

The purpose of our predicted distribution maps is to provide more precise information about the historic and current distribution of individual native and nonnative species within their general ranges. With this information, better estimates can be made about the amount of available habitat for each species, how much has been lost, how much is currently represented within the existing matrix of public lands, and where are the best management options for conserving a particular species. The underlying assumption of our predicted distribution maps is that a species has a relatively high probability of occurring in appropriate habitat types that fall within its known or predicted geographic range (Csuti and Crist 1998).

Most rivers and streams and their associated biological assemblages have been altered by local and watershed disturbances such as impoundments, channelization, urban and agricultural runoff, point-source pollution, and the introduction of exotic species. Even with the significant advancements in our understanding of species-habitat relations over the last 50 years, we still lack the necessary understanding of how these and other human activities act individually or cumulatively to specifically alter instream habitat and local biological assemblages (Poff 1997). We also lack the necessary geospatial data for some of these human disturbances. Consequently, it is currently impossible to accurately predict the present-day distribution of the vast majority of riverine biota. Due to these and other confounding factors, our predictive distributions reflect the biological potential of a given stream segment and not necessarily the present-day assemblage of species. This means that the assemblage we predict to occur in a given segment of stream will in some instances (e.g., highly disturbed streams) be quite different from the present-day assemblage. However, in relatively undisturbed locations our predictions should be relatively accurate provided our models are accurate.

Our species distribution maps were produced at 1:100,000 and are intended for applications at relatively broad spatial scales (homogeneous areas generally covering 1,000 to 1,000,000 ha and stream segments ranging from 10 to 1000 km, which are made up of multiple local biotic communities). Applications of these data to local site-level analyses are likely to be compromised by finer-grained patterns of environmental heterogeneity not captured within our models. The models presented in this report should be viewed as testable hypotheses as their suitability will vary with each given application.

Because of these and other qualifications and limitations it is imperative that individuals, interested in using these distribution maps for personal or professional means, read Chapter 4 of the Missouri Aquatic GAP Final Report. The USGS Biological Resources Division or the University of Missouri shall not be held liable for improper or incorrect use of these data.



Belted Crayfish
Orconectes harrisoni



Native: Yes

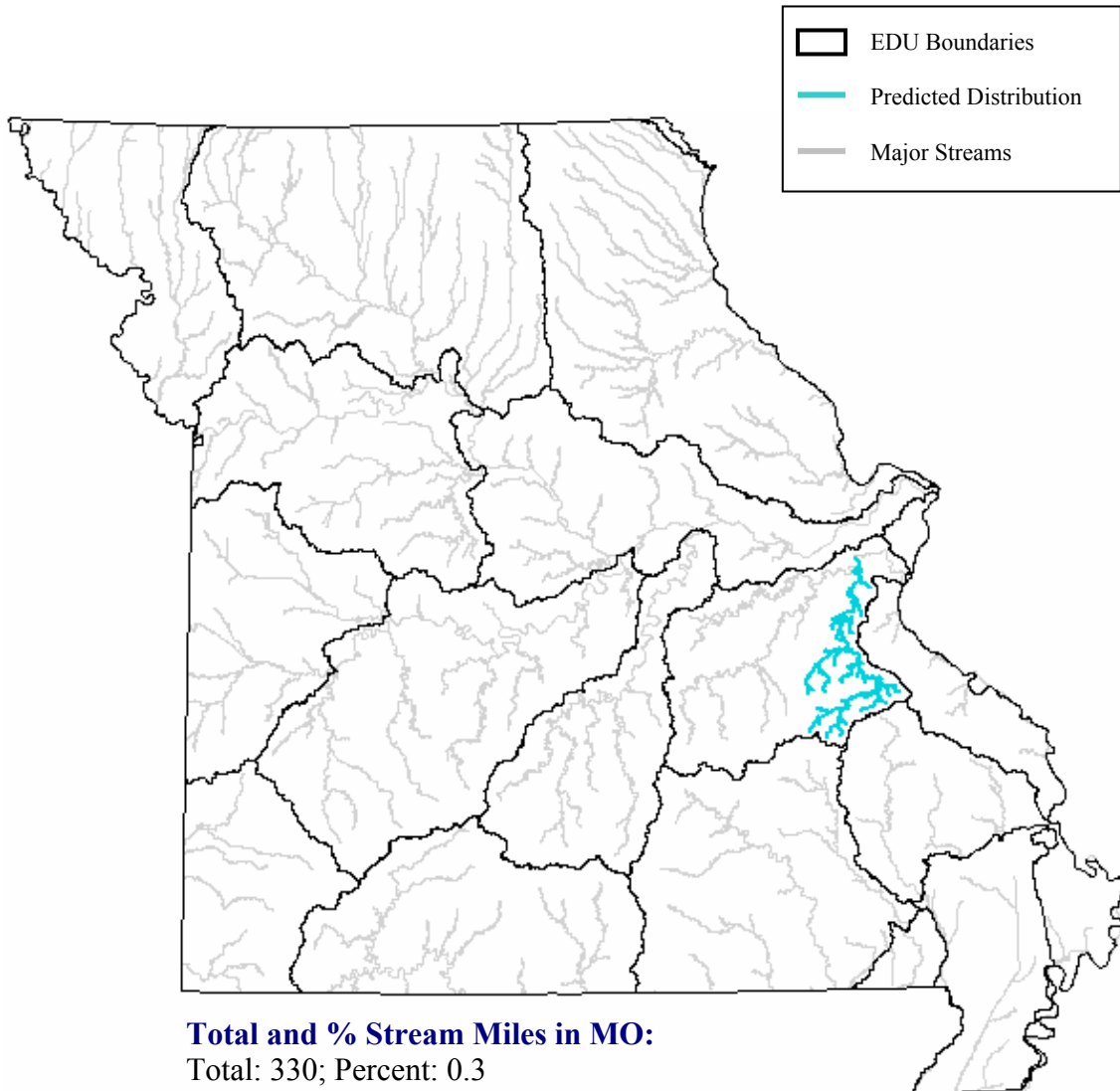
Endemism: EDU

State Rank: S3

ITIS Code: 97441

Global Rank: G3

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



State Range:

This species is endemic to the Ozark/Meramec Ecological Drainage Unit (EDU). Within this EDU it occurs widely within the Big River watershed and within the mainstem of the Meramec River below the confluence of the Big River (Pflieger 1996). In 1987 three specimens were collected from the St. Francis River near Sam A. Baker State Park, but these are likely part of an introduced population since this species has not been collected elsewhere in this drainage (Pflieger 1996).

Habitat Affinities:

The belted crayfish occurs in streams ranging in size from medium-sized creeks to large rivers (Pflieger 1996). It is most abundant in stream segments having permanent flow, an absence of strong current and coarse rock substrates (Pflieger 1996).

Predictive Model(s):*Ozark Model*

([Flow] = 1) and ([Temp_code] = 2)
([Linkr] >= 3) and ([Gradsegr] >= 1) and ([Gradsegr] <= 8)

References:

- Crandall, K. A. 1998. Conservation phylogenetics of ozark crayfishes - assigning priorities for aquatic habitat protection. *Biological Conservation*. 84(2):107-117.
- Hobbs, H. H. Jr. 1989. An Illustrated Checklist of the American Crayfishes (Decapoda: Astacidae, Cambaridae and Parastacidae). Smithsonian Institution Press, Washington, D.C. 236 pp.
- Pflieger, W. L. 1996. The Crayfishes of Missouri. Missouri Department of Conservation. Jefferson City, MO. 152 pp.
- Taylor, Christopher A., M. L. Warren, Jr., J. F. Fitzpartick, Jr., H. H. Hobbs III, R.F. Jezerinac, W. L. Pflieger, and H. W. Robison. 1996. Conservation status of crayfishes of the United States and Canada. *Fisheries* 21(4): 25-38.

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Big Creek Crayfish

Orconectes peruncus



Native: Yes

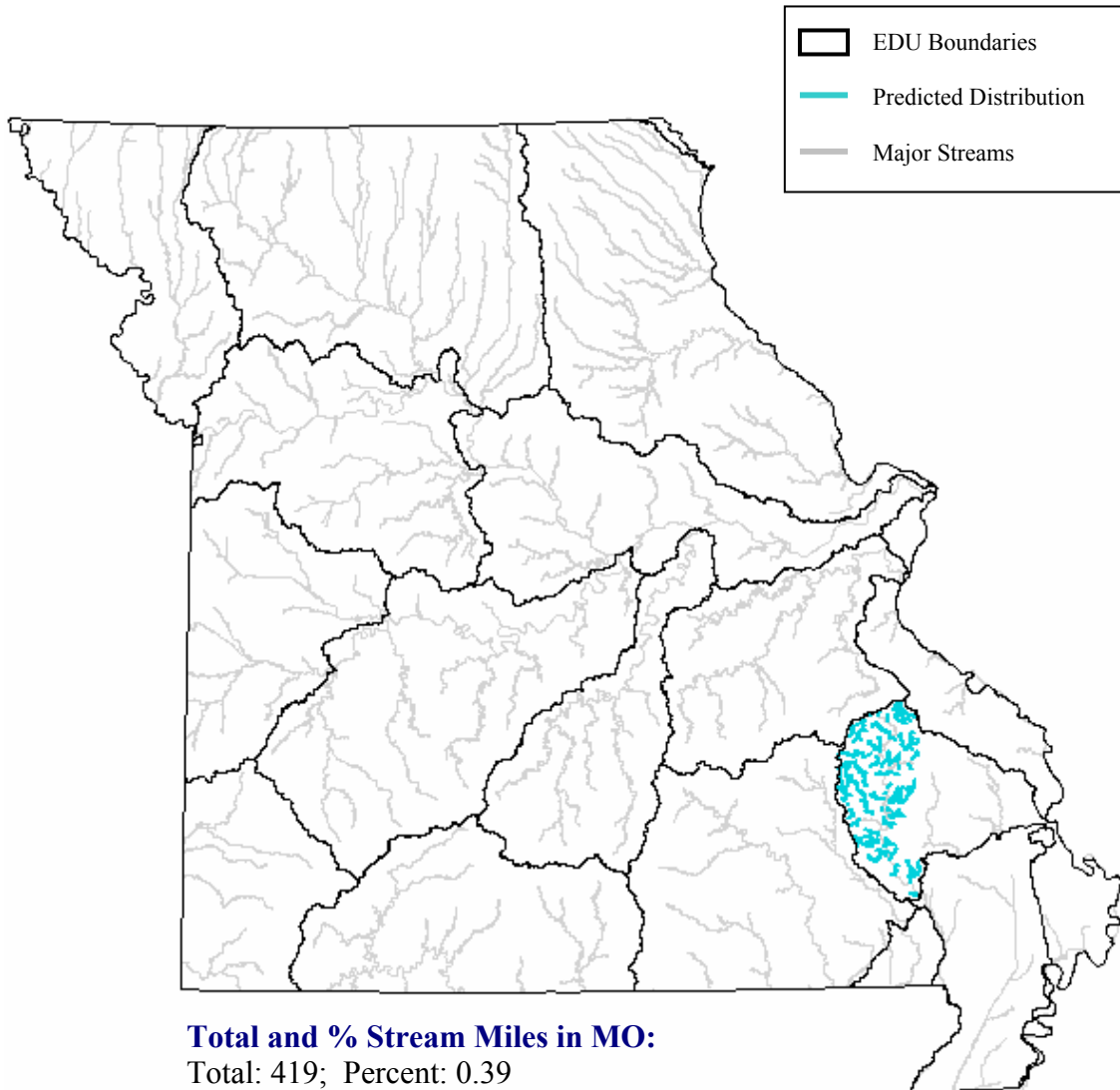
Endemism: Ecological Drainage Unit

State Rank: S2

ITIS Code: 97471

Global Rank: G2

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



State Range:

This species only occurs in Missouri (Pflieger 1996) and is only known from the Ozark/Upper St. Francis/Castor Ecological Drainage Unit.

Habitat Affinities:

The big creek crayfish is a decidedly headwater species occurring only in small, high-gradient rocky creeks. Within these habitats it lives in cavities beneath rocks, within riffles or in shallow silt-free ponds (Pflieger 1996).

Predictive Model(s):*Ozark Model*

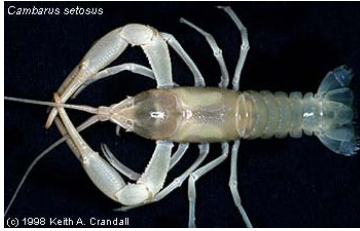
([Flow] = 1) and ([Linkr] >= 1) and ([Linkr] <= 3)

References:

- Crandall, K. A. 1998. Conservation phylogenetics of ozark crayfishes - assigning priorities for aquatic habitat protection. *Biological Conservation*. 84(2): 107-117.
- Hobbs, H. H. Jr. 1989. *An Illustrated Checklist of the American Crayfishes (Decapoda: Astacidae, Cambaridae and Parastacidae)*. Smithsonian Institution Press, Washington, D.C. 236 pp.
- Pflieger, W. L. 1996. *The Crayfishes of Missouri*. Missouri Department of Conservation. Jefferson City, MO. 152 pp.
- Taylor, Christopher A., M. L. Warren, Jr., J. F. Fitzpartick, Jr., H. H. Hobbs III, R.F. Jezerinac, W. L. Pflieger, and H. W. Robison. 1996. Conservation status of crayfishes of the United States and Canada. *Fisheries* 21(4): 25-38.
- Williams, A. B. 1954. Speciation and distribution of the crayfishes of the Ozark Plateaus and Ouachita Provinces. *University of Kansas Science Bulletin* 36: 803-918.

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Bristly Cave Crayfish
Cambarus setosus



Native: Yes

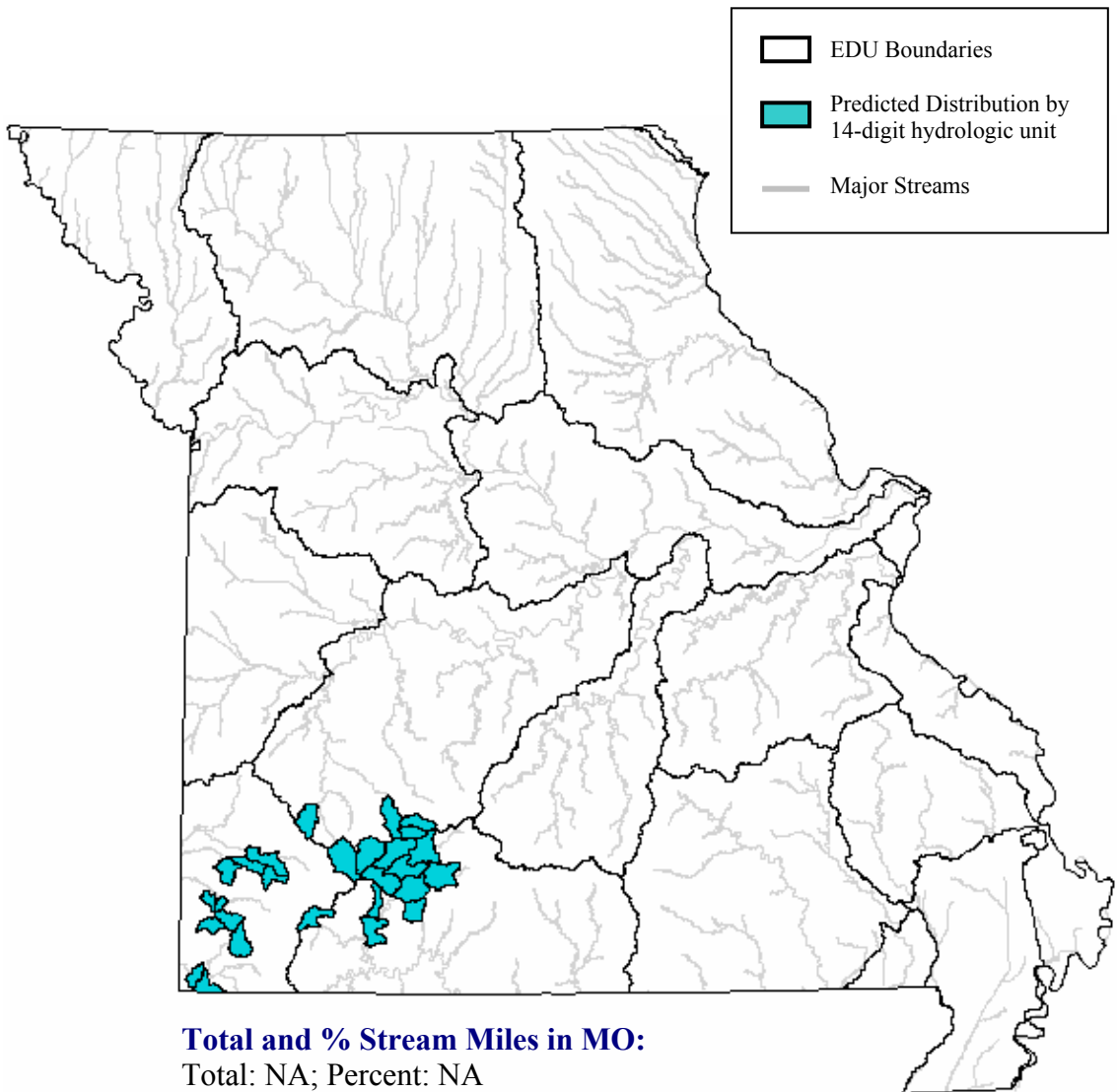
Endemism: Ecological Drainage Unit

State Rank: S3

ITIS Code: 97404

Global Rank: G2

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



State Range:

This species is largely restricted to the Springfield Plateau section of the Ozark Highlands in southwestern Missouri and northeastern Oklahoma (Pflieger 1996). Populations have been found in three Ecological Drainage Units; the Neosho, White, and eastern Osage. Its range appears widely separated from the Salem cave crayfish (*Cambarus hubrichti*), but future sampling may reveal this to be an artifact of limitations in existing sampling data (Pflieger 1996).

Habitat Affinities:

Most records for this blind crayfish species are from cave streams in the zone of perpetual darkness (Pflieger 1996). But it has also been collected from the twilight zone of caves, the outflow of springs and from shallow wells exposed to daylight. It has primarily been collected over substrates of sand, silt, and scattered rock (Pflieger 1996). Gardner (1986) observed concentrations of the Bristly cave crayfish near guano piles associated with roosting bats. This species is generally found in smaller underground rivers than those used by the Salem cave crayfish (Marquart 1979).

Predictive Model(s):*Ozark Model*

The distribution is based upon existing collection records and professional review.

References:

- Crandall, K. A. 1998. Conservation phylogenetics of ozark crayfishes - assigning priorities for aquatic habitat protection. *Biological Conservation*. 84(2):107-117.
- Creaser, E.P., & A.I. Ortenburger. 1993. The decapod crustaceans of Oklahoma. *Publications of the University of Oklahoma Biological Survey* 5: 14-47.
- Gardner, J. E. 1986. Invertebrate fauna from Missouri caves and springs. Missouri Department of Conservation Publication, 72 pp.
- Hobbs, H. H. Jr. 1989. An Illustrated Checklist of the American Crayfishes (Decapoda: Astacidae, Cambaridae and Parastacidae). Smithsonian Institution Press, Washington, D.C. 236 pp.
- Marquart, D. 1979. The troglobitic crayfish of Missouri. M.S. Thesis, Central Missouri State University-Warrensburg. 39 pp.
- Pflieger, W. L. 1996. The Crayfishes of Missouri. Missouri Department of Conservation. Jefferson City, MO. 152 pp.
- Reimer, R.D. 1969. A report on the crawfishes (Decapoda, Astacidae) of Oklahoma. *Proceedings of the Oklahoma Academy of Sciences* 48: 49-65.

Taylor, Christopher A., M. L. Warren, Jr., J. F. Fitzpartick, Jr., H. H. Hobbs III, R.F. Jezerinac, W. L. Pflieger, and H. W. Robison. 1996. Conservation status of crayfishes of the United States and Canada. *Fisheries* 21(4): 25-38.

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Cajun Dwarf Crayfish

Cambarellus puer



Native: Yes

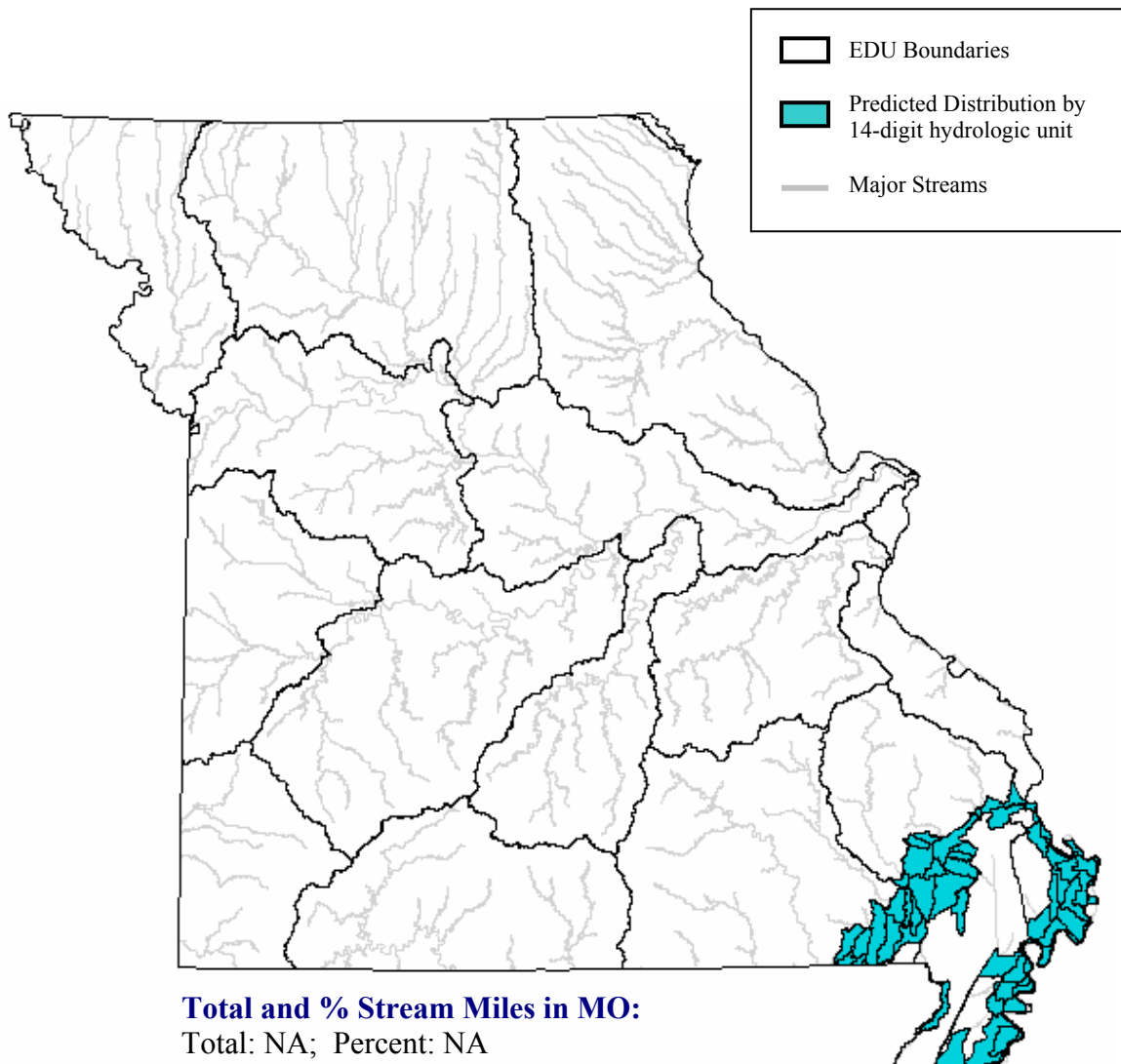
Endemism: Region

State Rank: S3?

ITIS Code: 97623

Global Rank: G3G4

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



State Range:

In Missouri the distribution of this species is largely restricted to the margins of the Mississippi Alluvial Basin aquatic subregion. This species avoids the central, intensively drained and ditched, portions of this subregion and was likely more widespread and abundant in pre-settlement times when shallow, standing-water habitats were more extensive (Pflieger 1996).

Habitat Affinities:

Like most *Cambarellus* species the Cajun dwarf crayfish burrows for at least part of its life cycle (Pflieger 1996). In Louisiana this species was found most frequently in roadside ditches, ponds, and cypress swamps with some occurrence in slow-flowing bayous and creeks (Penn 1950; Pflieger 1996). These locations generally had mud bottoms with luxuriant growths of aquatic vegetation and water having clear permanent flow and that is exposed to sunlight (Penn 1950). Observations on the habitat of this species in Missouri are generally in agreement with those in Louisiana (Pflieger 1996). However, many locations where this species was collected in Missouri were subject to widely fluctuating water levels or were entirely dry from midsummer to early fall (Pflieger 1996).

Predictive Model(s):*Ozark/ Mississippi Alluvial Basin Model*

The distribution is based upon existing collection records and professional review.

References:

- Albaugh, D.W. and J.B. Black. 1973. A new crayfish of the genus *Cambarellus* from Texas, with new Texas distributional records for the genus (Decapoda: Astacidae). *Southwestern Naturalist*, 18(2): 177-185.
- Chambers, C.L., J.F. Payne, and M.L. Kennedy. 1979. Geographic variation in the Dwarf Crayfish *Cambarellus puer* Hobbs (Decapoda: Cambaridae). *Crustaceana* 36(1): 39-55.
- Fitzpatrick, J.F. Jr. 1983. A revision of the Dwarf Crayfishes (Cambaridae, Cambarellinae). *Journal of Crustacean Biology* 3(2): 266-277.
- Hobbs, H.H. Jr. 1945. Two new species of crayfishes of the genus *Cambarellus* from the gulf coastal states, with a key to the species of the genus (Decapoda: Astacidae). *American midland Naturalist* 34(2): 466-474.
- Hobbs, H.H. Jr. 1989. An Illustrated Checklist of the American Crayfishes (Decapoda: Astacidae, Cambaridae and Parastacidae). Smithsonian Institution Press, Washington, D.C. 236 pp.

Page, L. M. 1985. The crayfishes and shrimps (Decapoda) of Illinois. Illinois Natural History Survey Bulletin 33(4): 335-448.

Penn, G.H., Jr. 1950b. The genus *Cambarellus* in Louisiana (Decapoda: Astacidae). American Midland Naturalist 44(2): 421-426.

Pflieger, W. L. 1996. The Crayfishes of Missouri. Missouri Department of Conservation. Jefferson City, MO. 152 pp.

Taylor, Christopher A., M. L. Warren, Jr., J. F. Fitzpartick, Jr., H. H. Hobbs III, R.F. Jezerinac, W. L. Pflieger, and H. W. Robison. 1996. Conservation status of crayfishes of the United States and Canada. Fisheries 21(4): 25-38.

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Coldwater Crayfish

Orconectes eupunctus



Native: Yes

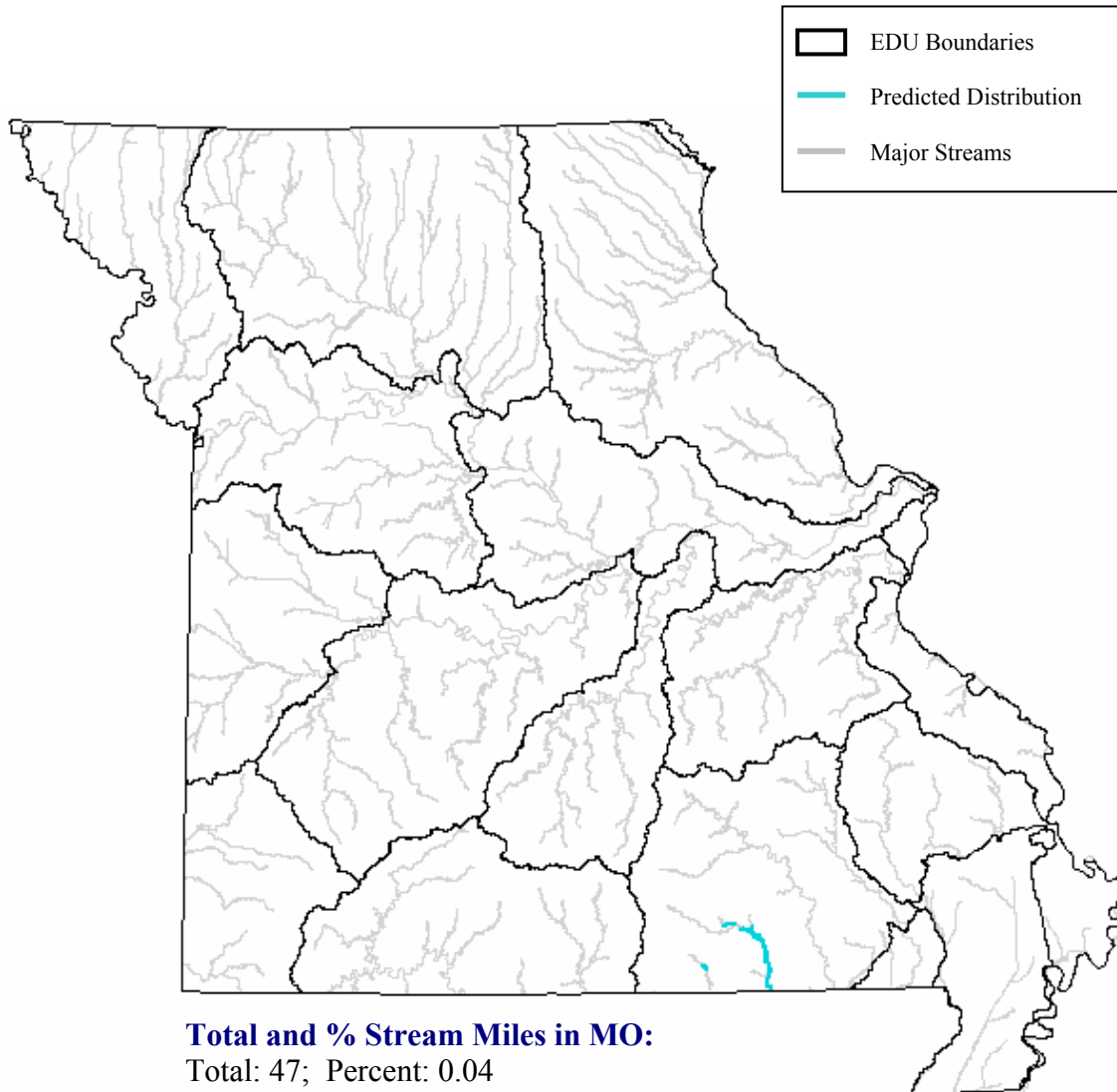
Endemism: Ecological Drainage Unit

State Rank: S3

ITIS Code: 97439

Global Rank: G2

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



State Range:

The coldwater crayfish has a very localized distribution in the Eleven Point River and Spring River drainages of the Ozark Aquatic Subregion. These two rivers are fed by Greer and Mammoth springs, two of the largest Ozark springs. This species does not inhabit any tributaries of the Eleven Point River and does not ascend much above Greer Spring (Pflieger 1996).

Habitat Affinities:

This species becomes most abundant over coarse gravel and rock substrates in swift shallow water (Pflieger 1996). It is often found beneath rocks and in cavities that it excavates in sand and gravel.

Predictive Model(s):

Ozark Model

([Flow] = 1) and ([Temp_code] = 1)

References:

- Bouchard, R.W. & H.W. Robison. 1980. An inventory of the decapod crustaceans (crayfishes and shrimps) of Arkansas with discussion of their habitats. Arkansas Academy of Sciences Proceedings. 34: 22-30.
- Creaser, E. P. 1933. Descriptions of some new and poorly known species of North American crayfishes. Occasional Papers of the Museum of Zoology, University of Michigan. 275, 21 pp.
- Fitzpatrick, J. F., Jr. 1987a. The subgenera of the crawfish genus *Orconectes* (Decapoda: Cambaridae). Proceedings of the Biological Society of Washington. 100(1): 44-74.
- Hobbs, H. H. Jr. 1989. An Illustrated Checklist of the American Crayfishes (Decapoda: Astacidae, Cambaridae and Parastacidae). Smithsonian Institution Press, Washington, D.C. 236 pp.
- Pflieger, W. L. 1996. The Crayfishes of Missouri. Missouri Department of Conservation. Jefferson City, MO. 152 pp.
- Taylor, Christopher A., M. L. Warren, Jr., J. F. Fitzpartick, Jr., H. H. Hobbs III, R.F. Jezerinac, W. L. Pflieger, and H. W. Robison. 1996. Conservation status of crayfishes of the United States and Canada. Fisheries 21(4): 25-38.

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Devil Crayfish
Cambarus diogenes



Native: Yes

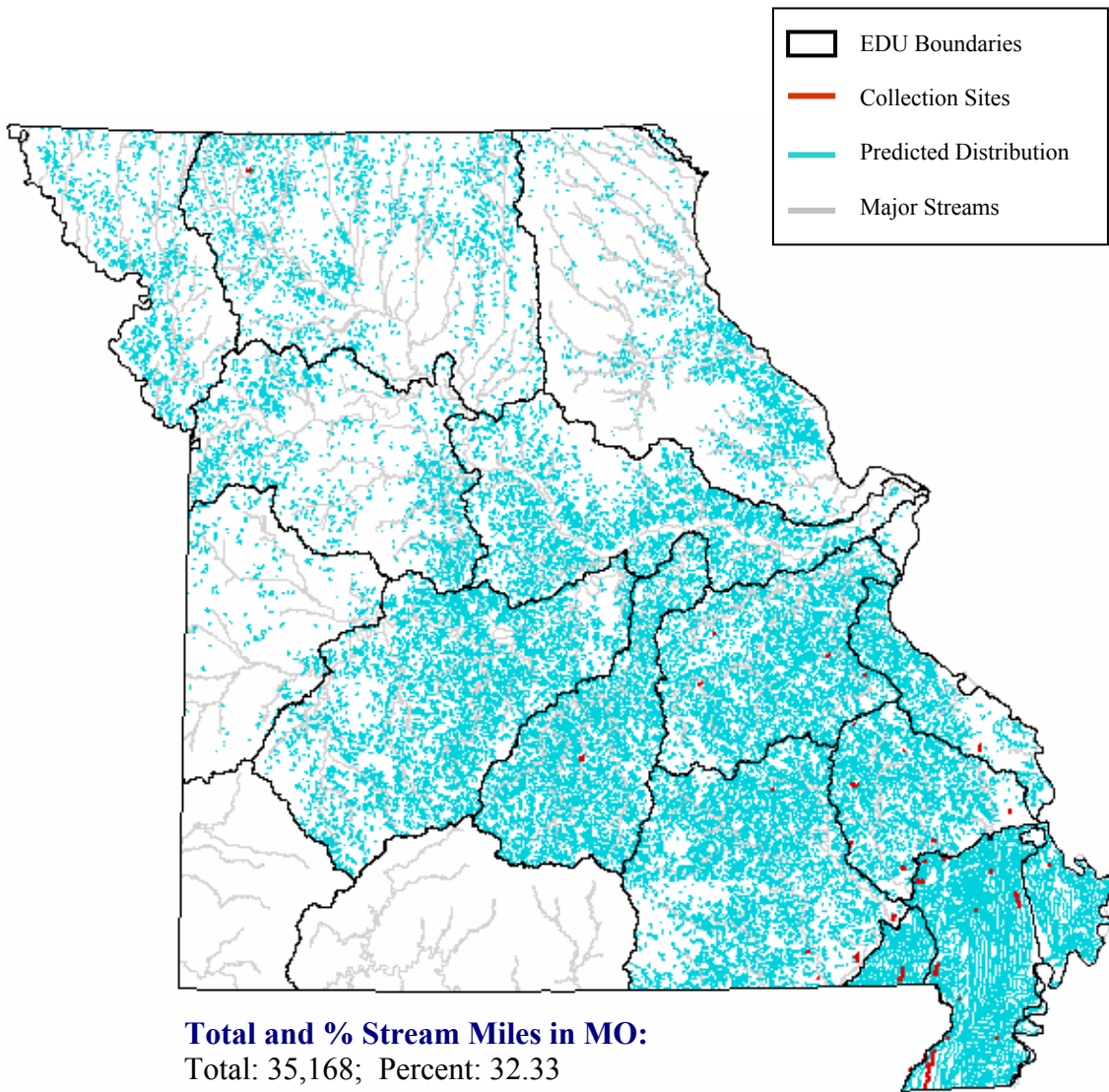
Endemism: Subzone

State Rank: S4

ITIS Code: 97338

Global Rank: G5

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



Total and % Stream Miles in MO:
Total: 35,168; Percent: 32.33

State Range:

In Missouri this species has a nearly statewide distribution, but is apparently absent from the Ozark/Neosho and Ozark/White Ecological Drainage Units. Since this burrowing species is difficult to collect it is almost certainly more widely distributed than collection records suggest, especially in north and west Missouri (Pflieger 1996).

Habitat Affinities:

The devil crayfish typically occurs in burrows constructed in timbered and formerly timbered areas along streams and ditches (Pflieger 1996). These burrows are most often found along the banks of streams, but also occur in other low, swampy areas of the state. Because of its burrowing habit, the devil crayfish does not occur in close association with any other species of crayfish.

Predictive Model(s):

Central Plains/Ozark Model

([Ssize_code] >= 1) and ([Ssize_code] <= 2) and ([Gradsegr] >= 9) and ([Gradsegr] <= 10)

Mississippi Alluvial Basin Model

([Core_crowley] = 0) and ([State] = "MO") and ([Ssize_code] >= 1) and ([Ssize_code] <= 4)

Mississippi Alluvial Basin Crowley's Ridge Model

([Core_crowley] = 1) and ([State] = "MO") and ([Ssize_code] = 1)

References:

Girard, C. 1852. A revision of the North American Astaci, with observations on their habits and geographical distribution. Proceedings of the Academy of Natural Science 6:87-91.

Grow, L. 1981. Burrowing behavior in the crayfish, *Cambarus diogenes diogenes* (Girard). Animal Behavior 29:351-356.

Grow, L. 1982. Burrowing/soil texture relationships in the crayfish, *Cambarus diogenes diogenes* Girard (Decapoda, Astacidae). Crustaceana 42(2):150-157.

Grow, L. and H. Merchant 1980. The burrowing habit of the crayfish, *Cambarus diogenes diogenes* (Girard). American Midland Naturalist 103(2): 231-236.

Hobbs, H. H., III and J. P. Jass. 1988. The crayfishes and shrimp of Wisconsin (Cambaridae, Palaemonidae). Milwaukee Public Mus. Spec. Publ. Biol. and Geol. No. 5:1-177.

- Hobbs, H. H. Jr. 1989. An Illustrated Checklist of the American Crayfishes (Decapoda: Astacidae, Cambaridae and Parastacidae). Smithsonian Institution Press, Washington, D.C. 236 pp.
- Page, L. M. 1985. The crayfishes and shrimps (Decapoda) of Illinois. Illinois Natural History Survey Bulletin 33(4): 335-448.
- Pflieger, W. L. 1996. The Crayfishes of Missouri. Missouri Department of Conservation. Jefferson City, MO. 152 pp.
- Tarr, R. S. 1884. Habits of burrowing crayfishes of the United States. Nature 30:127-128.
- Taylor, Christopher A., M. L. Warren, Jr., J. F. Fitzpartick, Jr., H. H. Hobbs III, R.F. Jezerinac, W. L. Pflieger, and H. W. Robison. 1996. Conservation status of crayfishes of the United States and Canada. Fisheries 21(4): 25-38.
- Williams, A. B. and A. B. Leonard. 1952. The crayfishes of Kansas. University of Kansas Science Bulletin 34(15): 961-1012.

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Digger Crayfish
Fallicambarus fodiens



Native: Yes

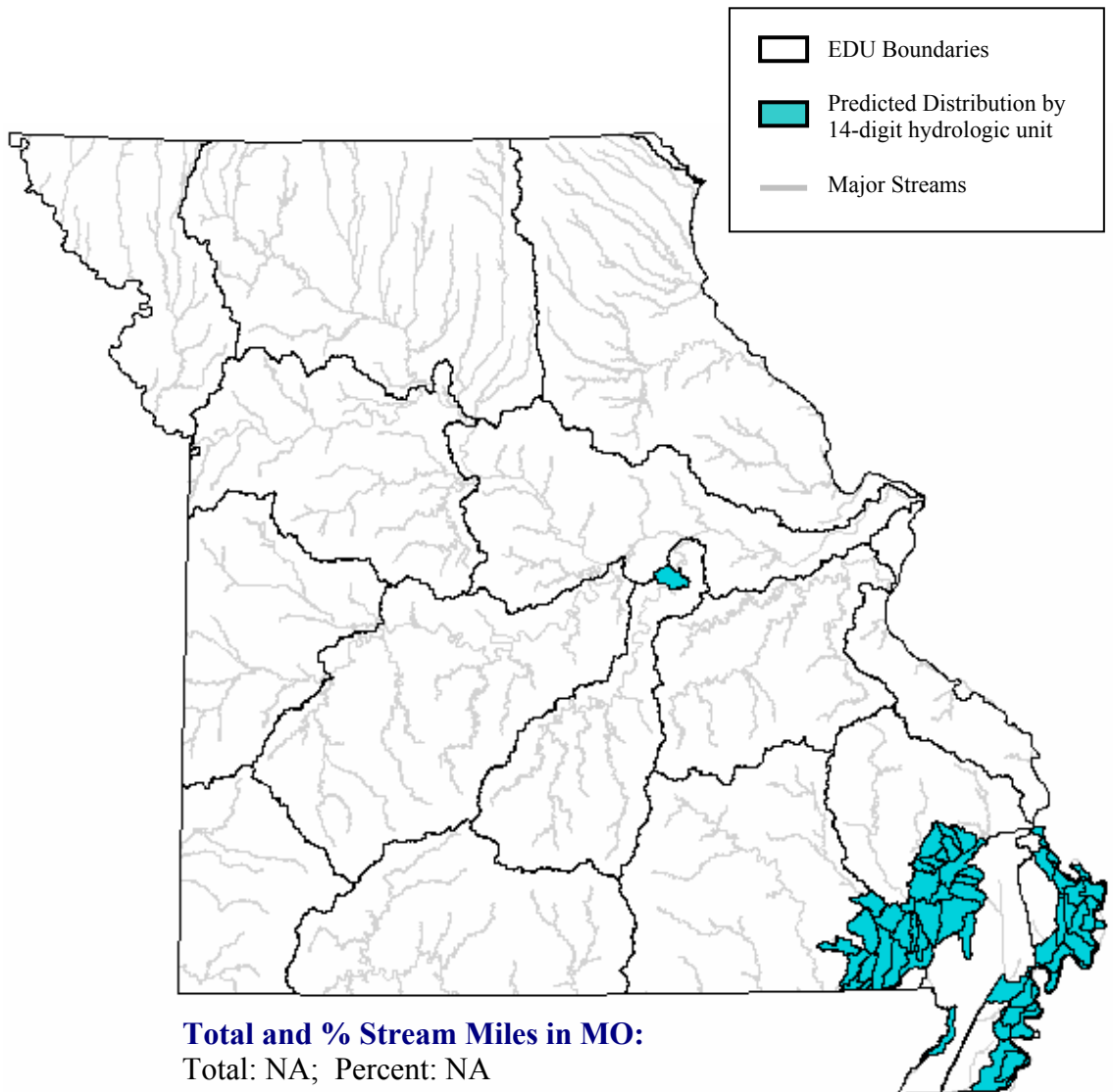
Endemism: Subzone

State Rank: S2S3

ITIS Code: 97608

Global Rank: G5

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



State Range:

In Missouri this species is only known from a few localities along the boundary of the Mississippi Alluvial Basin and the Ozark Aquatic Subregions and also a widely separated population along the lower Gasconade River. Because this burrowing species is so hard to collect, it may be much more widely distributed in eastern Missouri than existing collection records would suggest (Pflieger 1996).

Habitat Affinities:

All collections for this species in Missouri occurred in seasonally flooded areas in lowlands and along the floodplains of streams (Pflieger 1996). Although the digger crayfish spends most of its life in burrows it has been collected in surface waters from January to May. In Illinois this species is largely found on wooded or formerly wooded floodplains and also floodplain ponds mainly during floods (Page 1985). Because of the relatively deep burrows constructed by this species, Crocker and Barr (1968) suggest that this species likely requires soils having high clay content.

Predictive Model(s):

Ozark/ Mississippi Alluvial Basin Model

The distribution is based upon existing collection records and professional review.

References:

- Cottle, T. J. 1863. On the two species of *Astacus* found in Upper Canada. *Canadian Journal of Industry, Science, and Arts, new series.* 45:216-219.
- Creaser, E. P. 1931. The Michigan Decapod Crustaceans. *Papers of the Michigan Academy of Science, Arts, and Letters.* 13:257-276.
- Crocker, D. W. and D. W. Barr. 1968. *Handbook of the Crayfishes of Ontario.* Toronto: Royal Ontario Museum, University of Toronto Press. 158 pp.
- Faxon, W. 1884. Descriptions of new species of *Cambarus*, to which is added a synonymical list of the known species of *Cambarus* and *Astacus*. *Proceedings of the American Academy of Arts and Sciences.* 20: 107-158.
- Fowler, H. W. 1912. The Crustacea of New Jersey. Pages 29-650 *In: Annual Report of the New Jersey State Museum for 1911.*
- Hart, D. G. and C. W. Hart, Jr. 1974. The Ostracod Family Entocytheridae. *Academy of Natural Sciences of Philadelphia Monograph.* 18. 238 pp.
- Hobbs, 1969. On the distribution and phylogeny of the crayfish genus *Cambarus*. *In: P. C. Holt, R. L. Hoffman, and C. W. Hart, Jr., eds. The Distributional History of the Biota of the Southern Appalachians, Part I: Invertebrates.* Virginias Polytechnic Institute, Research Division Monograph. 1:93-178.

- Hobbs, 1973. New species and relationships of the members of the genus *Fallicambarus*. *Proceedings of the Biological Society of Washington*. 86(40):461-481.
- Hobbs, H. H., Jr. 1975. New crayfishes (Decapoda: Cambaridae) from the southern United States and Mexico. *Smithsonian Contributions to Zoology*. 201:1-34.
- Hobbs, H. H. Jr. 1989. An Illustrated Checklist of the American Crayfishes (Decapoda: Astacidae, Cambaridae and Parastacidae). Smithsonian Institution Press, Washington, D.C. 236 pp.
- Huntsman, A. G. 1915. The fresh-water Malacostraca of Ontario. *Contributions to Canadian Biology* 1911-1914:145-163, figures 1-13.
- Jezerinac, R. F. 1983. Possible correlations of present distributions of Ohio crayfishes (Decapoda: Cambaridae) with Teays-Age drainages. *In*: Anonymous, Teays-Age Drainage Effects on Present Distributional Patterns of Ohio Biota - an Ohio Biogeography Conference. [Abstracts and supplements]. Ohio Biological Survey Informative Circular. 11: 4-5.
- Ortmann, A. E. 1905. The mutual affinities of the species of the genus *Cambarus*, and their dispersal over the United States. *Proceedings of the American Philosophical Society*. 44(180):91-136.
- Page, L. M. 1985. The crayfishes and shrimps of Illinois (Decapoda: Cambaridae). *Illinois Natural history Survey Bulletin*. 33(4): 335-448.
- Pflieger, W. L. 1996. *The Crayfishes of Missouri*. Missouri Department of Conservation. Jefferson City, MO. 152 pp.
- Taylor, Christopher A., M. L. Warren, Jr., J. F. Fitzpartick, Jr., H. H. Hobbs III, R.F. Jezerinac, W. L. Pflieger, and H. W. Robison. 1996. Conservation status of crayfishes of the United States and Canada. *Fisheries* 21(4): 25-38.
- Williamson, E. B. 1907. Notes on the crayfish of Wells County, Indiana, with description of new species. pages 749-763 *In*: 31st Annual Report of the Department of Geology and Natural Resources, Indiana (1906).

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Freckled Crayfish
Cambarus maculatus



Native: Yes

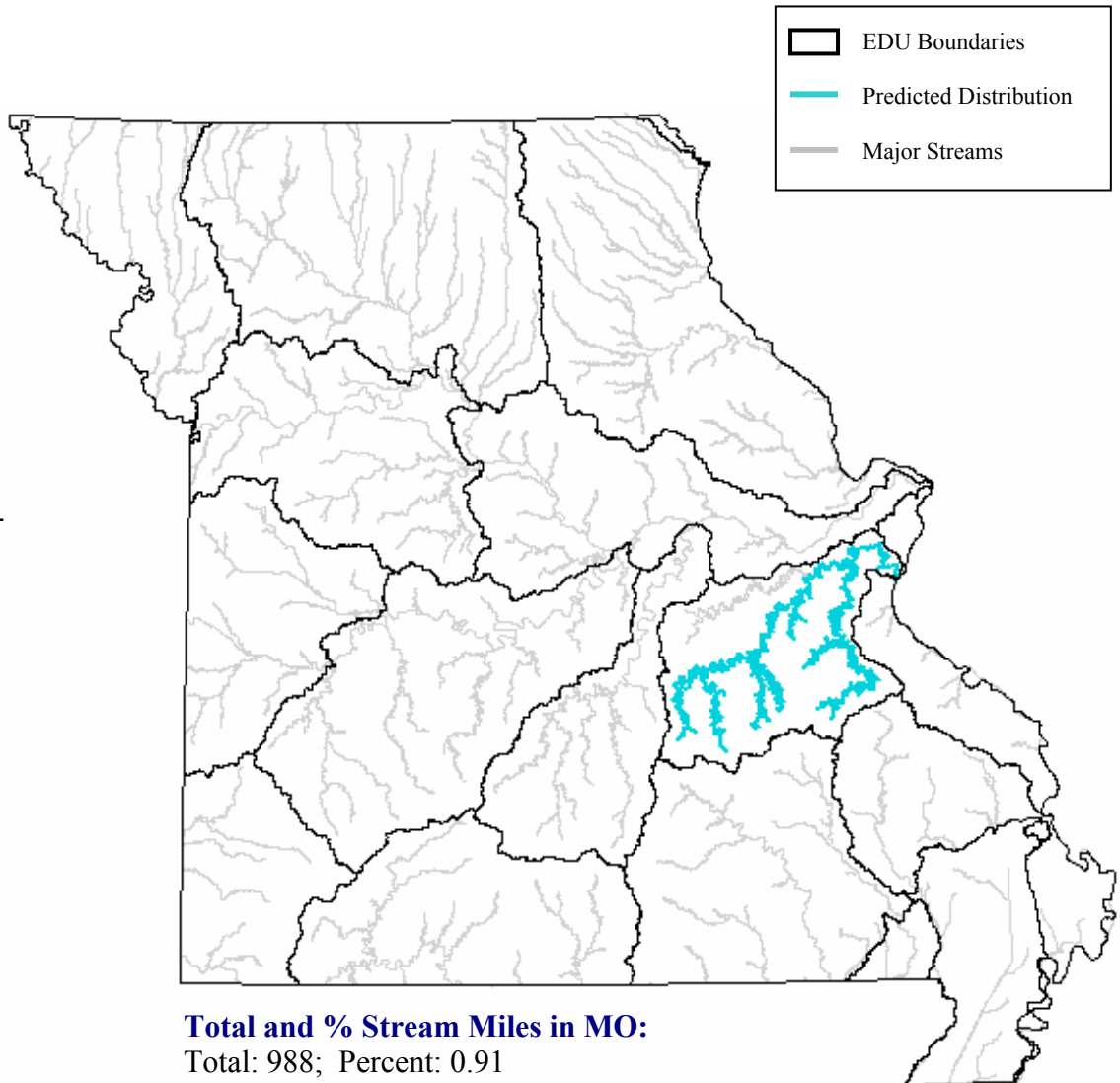
Endemism: Ecological Drainage Unit

State Rank: S3

ITIS Code: 11001

Global Rank: G4

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



State Range:

This species is only known to occur in the Meramec Ecological Drainage Unit (EDU) in the Missouri Ozarks. However, it has never been collected from the Bourbuese river watershed, which is one of the principle subdrainages of this EDU (Pflieger 1996).

Habitat Affinities:

The freckled crayfish is usually found in streams that are very clear with relatively high gradients where well-sustained baseflows are maintained by numerous springs (Pflieger 1996). It is most abundant in creeks and small rivers and occurs only occasionally in small headwater streams or large rivers. This species is nearly always collected from beneath rocks and boulders that are situated in areas of predominantly gravel substrates (Pflieger 1996).

Predictive Model(s):*Ozark Model*

(([Linkr] >= 1) and ([Linkr] <= 3) and ([Sdiscr_2c] = 1) and ([Rgrad_subr] >= 2)) or (([Linkr] >= 4))

References:

- Crandall, K. A. 1998. Conservation phylogenetics of ozark crayfishes - assigning priorities for aquatic habitat protection. *Biological Conservation*. 84(2):107-117.
- Hobbs, H. H. Jr. 1989. *An Illustrated Checklist of the American Crayfishes (Decapoda: Astacidae, Cambaridae and Parastacidae)*. Smithsonian Institution Press, Washington, D.C. 236 pp.
- Pflieger, W. L. 1996. *The Crayfishes of Missouri*. Missouri Department of Conservation. Jefferson City, MO. 152 pp.
- Taylor, Christopher A., M. L. Warren, Jr., J. F. Fitzpartick, Jr., H. H. Hobbs III, R.F. Jezerinac, W. L. Pflieger, and H. W. Robison. 1996. Conservation status of crayfishes of the United States and Canada. *Fisheries* 21(4): 25-38.

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Golden Crayfish

Orconectes luteus



Native: Yes

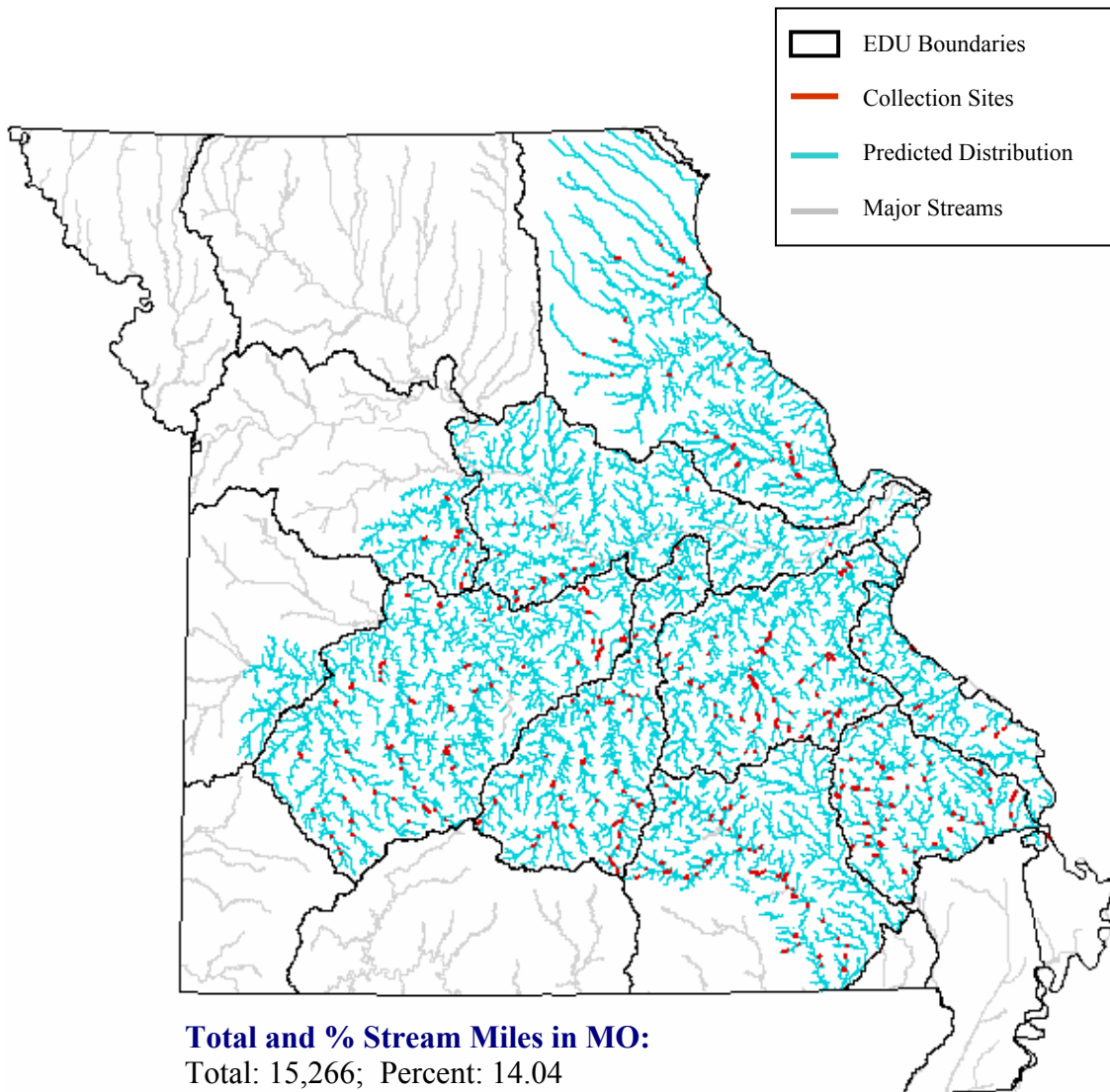
Endemism: Subregion

State Rank: S?

ITIS Code: 97456

Global Rank: G5

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



State Range:

The golden crayfish occurs throughout much of the Ozark Aquatic Subregion. However, it is conspicuously absent from many of the south flowing drainages, including the Neosho, White, Spring, Eleven Point, and Black. Within the Central Plains Aquatic Subregion it occurs in the Lamine River watershed and all of the principle drainages to the Mississippi River between the Fabius River and Missouri River in the northeast (Pflieger 1996).

Habitat Affinities:

This species occurs in all stream sizes provided they contain rocky and gravelly substrates and relatively permanent flow. It is generally collected within rocky riffles or along the shores of rocky pools. It is also often associated with beds of water willow (*Justica spp.*) (Pflieger 1996).

Predictive Model(s):

Central Plains Model in Hydrologic Units 07110001, 07110002, 07110003, 07110005 and 07110006.

([Flow] = 1) and ([Ssize_code] >= 3) and ([Ssize_code] <= 4)

Central Plains/Ozark Model

(([Linkr] >= 2) and ([Linkr] <= 3)) or (([Linkr] >= 4) and ([Linkr] <= 6) and ([Flow] = 1)) or (([Linkr] >= 7))

References:

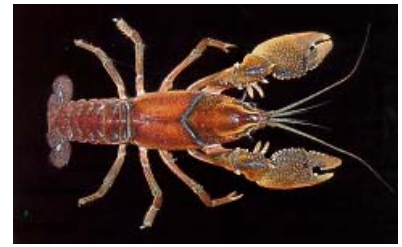
- Crandall, K. A. 1998. Conservation phylogenetics of ozark crayfishes - assigning priorities for aquatic habitat protection. *Biological Conservation*. 84(2):107-117.
- Hobbs, H. H. Jr. 1989. *An Illustrated Checklist of the American Crayfishes (Decapoda: Astacidae, Cambaridae and Parastacidae)*. Smithsonian Institution Press, Washington, D.C. 236 pp.
- Pflieger, W. L. 1996. *The Crayfishes of Missouri*. Missouri Department of Conservation. Jefferson City, MO. 152 pp.
- Taylor, Christopher A., M. L. Warren, Jr., J. F. Fitzpartick, Jr., H. H. Hobbs III, R.F. Jezerinac, W. L. Pflieger, and H. W. Robison. 1996. Conservation status of crayfishes of the United States and Canada. *Fisheries* 21(4): 25-38.
- Williams, A.B., & A.B. Leonard. 1952. The crayfishes of Kansas. *University of Kansas Science Bulletin* 34: 961-1012.

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Grassland Crayfish
Procambarus gracilis



Native: Yes

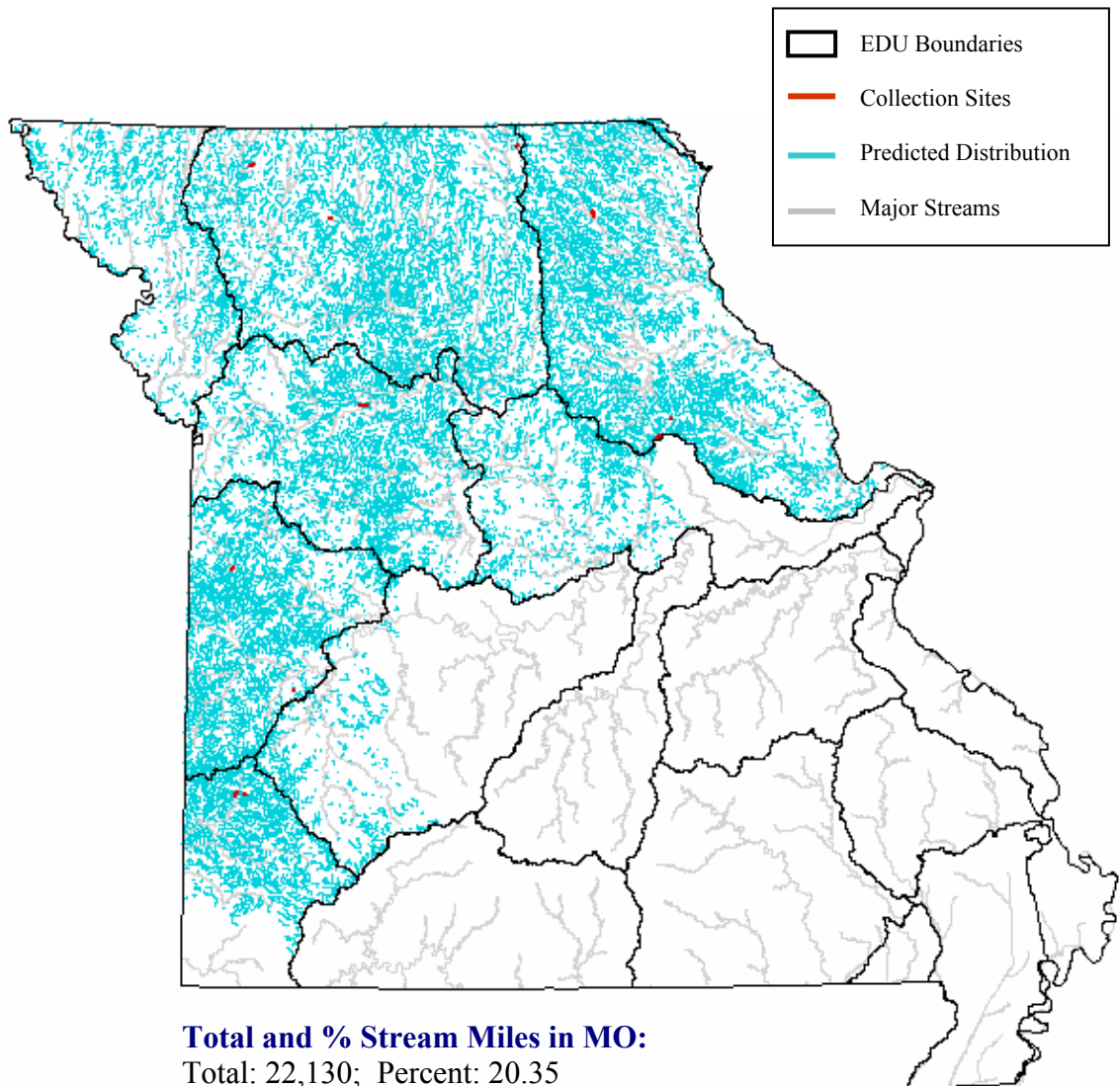
Endemism: Subregion

State Rank: S?

ITIS Code: 97518

Global Rank: G5

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



State Range:

The grassland crayfish occurs throughout the Central Plains Aquatic Subregion of Missouri and barely penetrates the Ozark Aquatic Subregion along the southwestern border of its range in Missouri (Pflieger 1996).

Habitat Affinities:

This species occurs in grasslands or areas that were formerly native grasses. Its burrows, which are up to six feet in depth, are often found long distances from permanent water. Juveniles and occasional adults of this species occur in temporary wetlands, ditches and streams channels during seasons when the water table is high (Pflieger 1996).

Predictive Model(s):*Central Plains/Ozark Model*

([Flow] = 2) and ([Temp_code] = 2) and ([Linkr] >= 1) and ([Linkr] <= 4) and ([Gradsegr] >= 1) and ([Gradsegr] <= 7)

References:

- Brown, P.L. 1955. The biology of the crayfishes of central and southeastern Illinois. Ph.D. dissertation. University of Illinois, Urbana-Champaign.
- Creaser, E. P. 1932. The decapod crustaceans of Wisconsin. Transactions of the Wisconsin Academy of Science, Arts and Letters 27: 321-338.
- Creaser, E. P. and A.I. Ortenburger. 1993. The decapod crustaceans of Oklahoma. Publications of the University of Oklahoma Biological Survey 5: 14-47.
- Eberly, W. R. 1955. Summary of the distribution of Indiana crayfishes, including new state and county records. Proceedings of the Indiana Academy of Science 64: 281-283.
- Hobbs, H. H. Jr. 1989. An Illustrated Checklist of the American Crayfishes (Decapoda: Astacidae, Cambaridae and Parastacidae). Smithsonian Institution Press, Washington, D.C. 236 pp.
- Hobbs H. H., III. and J. P. Jass. 1988. The crayfishes and shrimps of Wisconsin. Milwaukee Public Museum, Milwaukee, WI.
- Page, L. M. 1985. The crayfishes and shrimps (Decapoda) of Illinois. Illinois Natural History Survey Bulletin 33: 335-448.
- Penn, G. H. and H. H. Hobbs, Jr. 1958. A contribution toward a knowledge of the crawfishes of Texas (Decapoda: Astacidae) Texas Journal of Science 10: 452-483.

Pflieger, W. L. 1996. The Crayfishes of Missouri. Missouri Department of Conservation. Jefferson City, MO. 152 pp.

Reimer, R. D. 1969. A report on the crawfishes (Decapoda, Astacidae) of Oklahoma. Proceedings of the Oklahoma Academy of Sciences 48: 49-65.

Taylor, Christopher A., M. L. Warren, Jr., J. F. Fitzpartick, Jr., H. H. Hobbs III, R.F. Jezerinac, W. L. Pflieger, and H. W. Robison. 1996. Conservation status of crayfishes of the United States and Canada. Fisheries 21(4): 25-38.

Williams, A. B. and A. B. Leonard. 1952. The crayfishes of Kansas. University of Kansas Science Bulletin 34: 961-1012.

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Upper left: Photo courtesy of Keith Crandall; Copyright © 1998 by Keith Crandall.

Gray-speckled Crayfish

Orconectes palmeri



Native: Yes

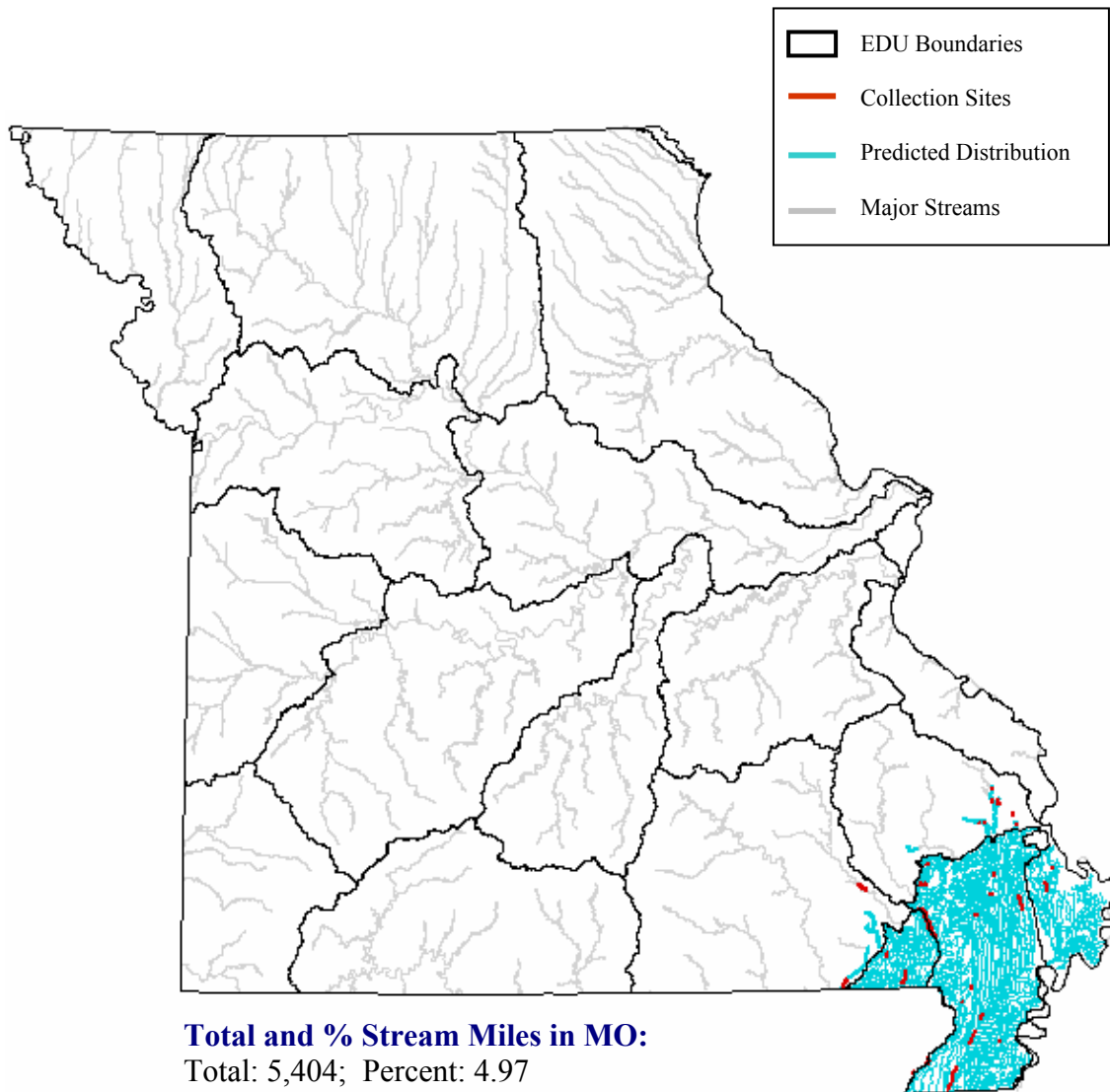
Endemism: Region

State Rank: S?

ITIS Code: 97468

Global Rank: G5

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



State Range:

This species occurs in southeastern Missouri mainly in the Mississippi Alluvial Basin Aquatic Subregion but is also found in several Ozark streams along the border between these two subregions.

Habitat Affinities:

The gray-speckled crayfish is widely distributed within the Mississippi Alluvial Basin Aquatic Subregion. Within this subregion it is confined to flowing waters of ditches and streams. It has never been recorded from swamps, sloughs, or natural lakes. It is generally found under rocks or around logs, sticks and other submerged debris and among submerged roots of trees along the stream bank. It occasionally constructs short burrows into the bottom or banks of streams (Pflieger 1996).

Predictive Model(s):*Ozark Model*

([Temp_code] = 2) and ([Rgrad_subr] = 1) and ([Linkr] >= 4) and ([Linkr] <= 5)

Mississippi Alluvial Basin Model

([Core_crowley] = 0) and ([State] = "MO") and ([Ssize_code] >= 1) and ([Ssize_code] <= 4)

Mississippi Alluvial Basin Crowley's Ridge Model

([Core_crowley] = 1) and ([State] = "MO") and ([Ssize_code] = 1)

References:

- Bouchard, R. W. 1972. A contribution to the knowledge of Tennessee crayfish. Ph.D. dissertation. University of Tennessee, Knoxville.
- Bouchard, R. W. and H. W. Robison. 1980. An inventory of the decapod crustaceans (crayfishes and shrimps) of Arkansas with discussion of their habitats. Arkansas Academy of Sciences Proceedings 34: 22-30.
- Creaser, E. P., and A.I. Ortenburger. 1993. The decapod crustaceans of Oklahoma. Publications of the University of Oklahoma Biological Survey 5: 14-47.
- Fitzpatrick, J. F., Jr. 1987. The subgenera of the crawfish genus *Orconectes* (Decapoda:Cambaridae). Proceedings of the Biological Society of Washington 100: 44-74.
- Hobbs, H. H. Jr. 1989. An Illustrated Checklist of the American Crayfishes (Decapoda: Astacidae, Cambaridae and Parastacidae). Smithsonian Institution Press, Washington, D.C. 236 pp.

- Penn, G. H. 1952. The genus *Orconectes* in Louisiana (Decapoda: Astacidae) *American Midland Naturalist* 47: 743-748.
- Penn, G. H. 1959. An illustrated key to the crayfishes of Louisiana with a summary of their distribution within the state. *Tulane Studies in Zoology* 7: 3-20.
- Penn, G. H. and H. H. Hobbs, Jr. 1958. A contribution toward a knowledge of the crayfishes of Texas (Decapoda: Astacidae) *Texas Journal of Science* 10: 452-483.
- Pflieger, W. L. 1996. *The Crayfishes of Missouri*. Missouri Department of Conservation. Jefferson City, MO. 152 pp.
- Reimer, R.D. 1969. A report on the crayfishes (Decapoda, Astacidae) of Oklahoma. *Proceedings of the Oklahoma Academy of Sciences* 48: 49-65.
- Rhoades, R. 1944. The crayfishes of Kentucky, with notes on variation, distribution, and descriptions of new species and subspecies. *American Midland Naturalist* 31: 111-149.
- Taylor, Christopher A., M. L. Warren, Jr., J. F. Fitzpartick, Jr., H. H. Hobbs III, R.F. Jezerinac, W. L. Pflieger, and H. W. Robison. 1996. Conservation status of crayfishes of the United States and Canada. *Fisheries* 21(4): 25-38.
- Walls, J. G. and J. B. Black. 1991. Distributional records for some Louisiana crayfishes (Decapoda: Cambaridae). *Proceedings of the Louisiana Academy of Sciences* 54: 23-29.

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Hubbs' Crayfish

Cambarus hubbsi



Native: Yes

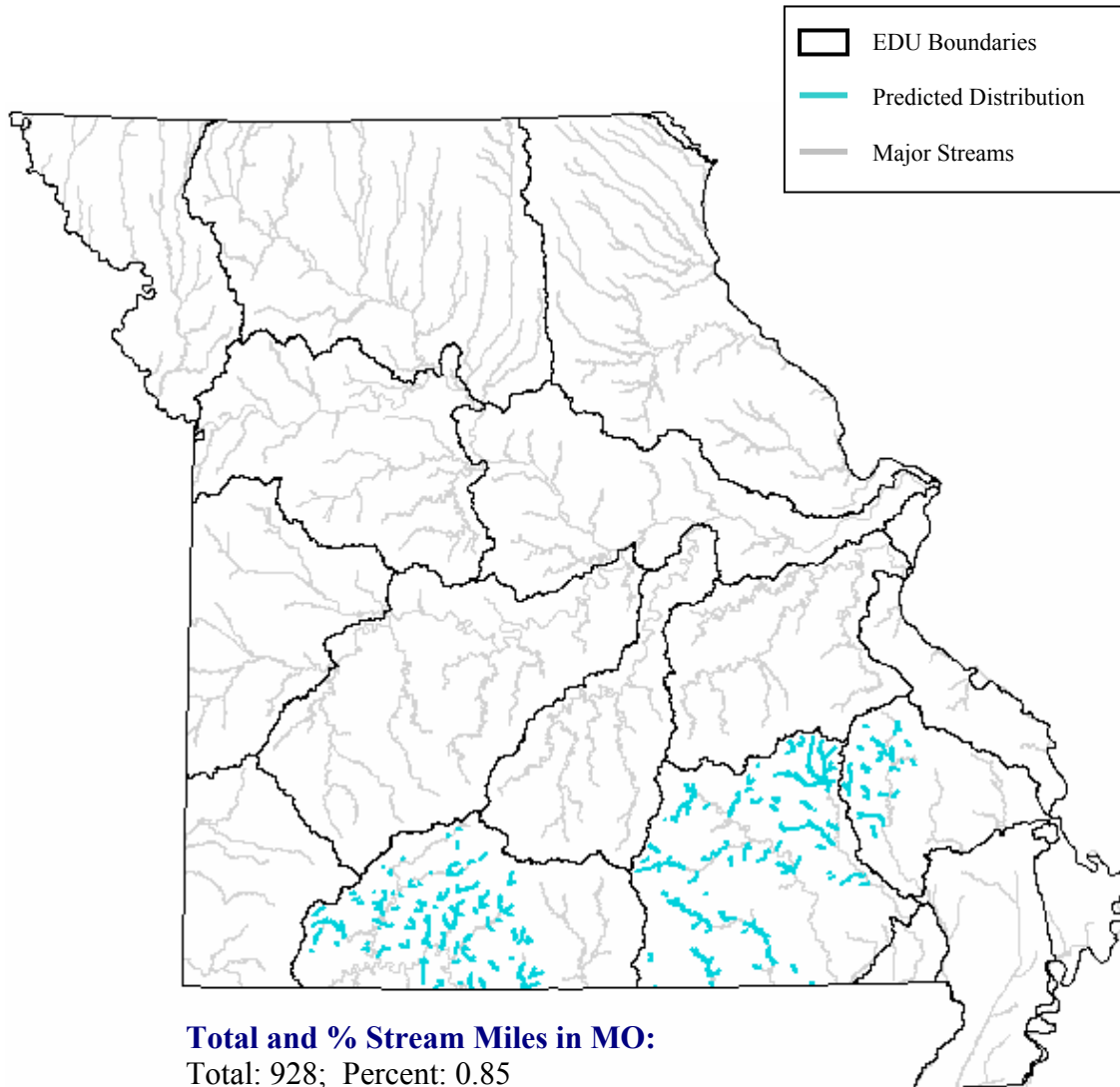
Endemism: Subregion

State Rank: S3

ITIS Code: 97377

Global Rank: G5

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



State Range:

The Hubbs' crayfish has a limited geographical distribution in the southern Ozarks of Missouri and northern Arkansas. It occurs in three Ecological Drainage Units (EDU) in Missouri; 1) Upper St. Francis/Castor, 2) Black/Current, and 3) White. It is far less common in the White River EDU than the other two (Pflieger 1996).

Habitat Affinities:

This species occurs in permanent, clear, high-gradient rocky streams ranging in size from small creeks to moderate-sized rivers (Pflieger 1996). The Hubbs' crayfish is nearly always collected from beneath large rubble and boulders situated in sand and gravel substrates. Although not specifically documented, it is presumed that this species emerges from underneath these larger rubble and boulder substrates at night to forage over the stream bottom (Pflieger 1996).

Predictive Model(s):*Ozark Model*

([Flow] = 1) and ([Rgrad_subr] = 3) and ([Linkr] >= 2) and ([Linkr] <= 6)

References:

- Crandall, K. A. 1998. Conservation phylogenetics of ozark crayfishes - assigning priorities for aquatic habitat protection. *Biological Conservation*. 84(2):107-117.
- Hobbs, H. H. Jr. 1989. *An Illustrated Checklist of the American Crayfishes (Decapoda: Astacidae, Cambaridae and Parastacidae)*. Smithsonian Institution Press, Washington, D.C. 236 pp.
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- Taylor, Christopher A., M. L. Warren, Jr., J. F. Fitzpartick, Jr., H. H. Hobbs III, R.F. Jezerinac, W. L. Pflieger, and H. W. Robison. 1996. Conservation status of crayfishes of the United States and Canada. *Fisheries* 21(4): 25-38.

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Longpincered Crayfish

Orconectes longidigitus

Native: Yes

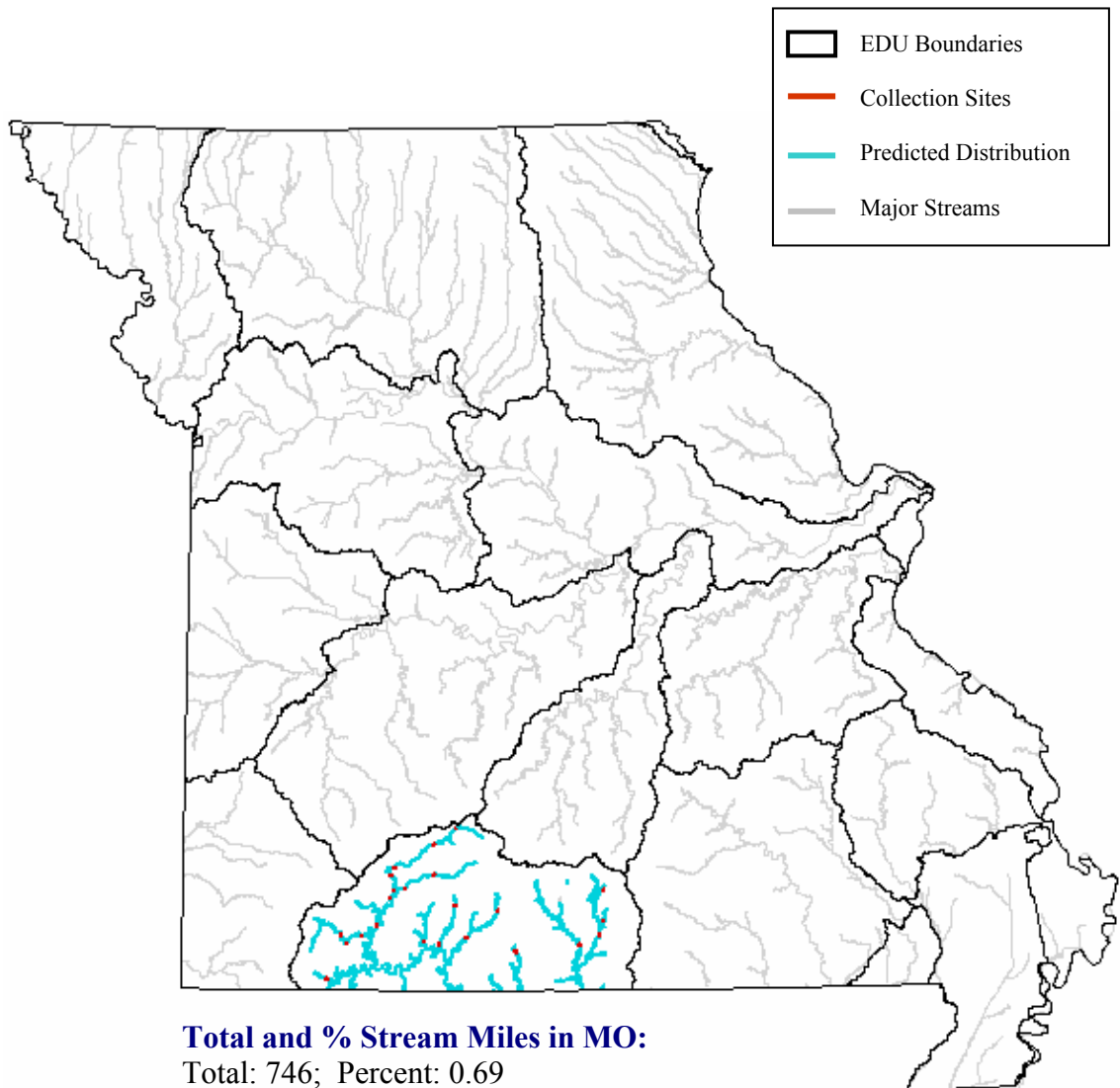
Endemism: Ecological Drainage Unit

State Rank: S?

ITIS Code: 97455

Global Rank: G4

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



State Range:

In Missouri this species is restricted to and occurs throughout the Ozark/White Ecological Drainage Unit (Pflieger 1996).

Habitat Affinities:

This species occurs in clear medium-sized to large Ozark streams with permanent strong flow and predominantly silt-free substrates (Pflieger 1996). It generally prefers moderately deep pools along bluffs where rock slabs and large rubble provide crevices for hiding (Pflieger 1996).

Predictive Model(s):*Ozark Model*

([Flow] = 1) and ([Linkr] >= 4)

References:

- Bouchard, R.W. & H.W. Robison. 1980. An inventory of the decapod crustaceans (crayfishes and shrimps) of Arkansas with discussion of their habitats. Arkansas Academy of Sciences Proceedings 34: 22-30.
- Hobbs, H. H. Jr. 1989. An Illustrated Checklist of the American Crayfishes (Decapoda: Astacidae, Cambaridae and Parastacidae). Smithsonian Institution Press, Washington, D.C. 236 pp.
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- Taylor, Christopher A., M. L. Warren, Jr., J. F. Fitzpartick, Jr., H. H. Hobbs III, R.F. Jezerinac, W. L. Pflieger, and H. W. Robison. 1996. Conservation status of crayfishes of the United States and Canada. Fisheries 21(4): 25-38.

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Mammoth Spring Crayfish

Orconectes marchandi



Native: Yes

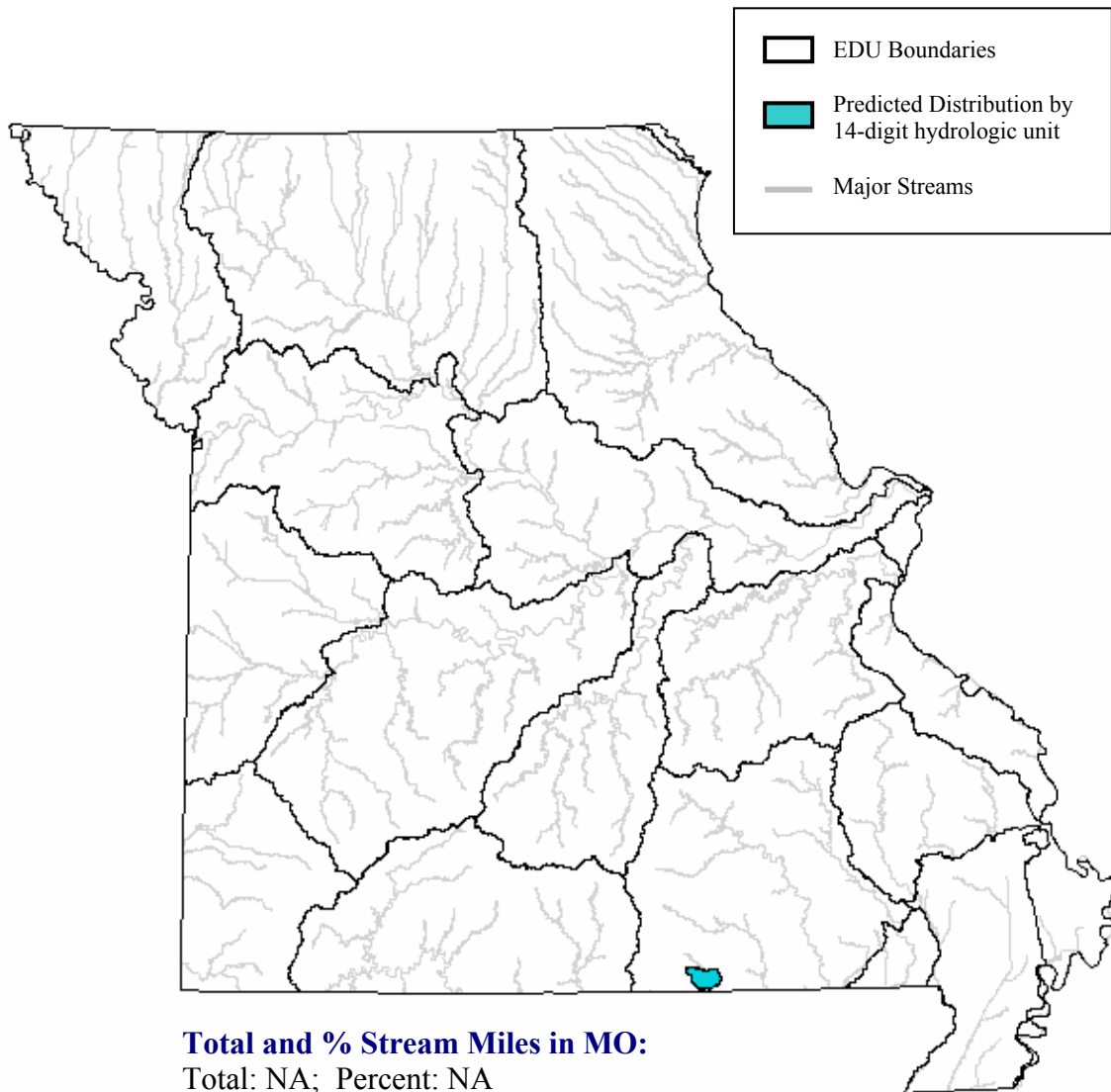
Endemism: Ecological Drainage Unit

State Rank: S1S2

ITIS Code: 97458

Global Rank: G2

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



State Range:

This species has a very localized distribution in the Spring River and its tributaries in Arkansas and Missouri (Pflieger 1996). In Missouri it has only been collected from a short stretch of the Warm Fork of the Spring River.

Habitat Affinities:

The mammoth spring crayfish inhabits clear, medium-sized, Ozark streams with well-defined riffles and runs. It is generally found in riffles over gravel or rubble substrate (Pflieger 1996).

Predictive Model(s):*Ozark Model*

The distribution is based upon existing collection records and professional review.

References:

- Bouchard, R.W. & H.W. Robison. 1980. An inventory of the decapod crustaceans (crayfishes and shrimps) of Arkansas with discussion of their habitats. Arkansas Academy of Sciences Proceedings 34: 22-30.
- Crandall, K. A. 1998. Conservation phylogenetics of ozark crayfishes - assigning priorities for aquatic habitat protection. Biological Conservation. 84(2): 107-117.
- Fitzpatrick, J. F., Jr. 1967. The propinquus group of the crawfish genus *Orconectes* (Decapoda: Astacidae). Ohio Journal of Science 67(3): 129-172.
- Fitzpatrick, J. F., Jr. 1987. The subgenera of the crawfish genus *Orconectes* (Decapoda:Cambaridae). Proceedings of the Biological Society of Washington 100: 44-74.
- Hobbs, H. H. Jr. 1989. An Illustrated Checklist of the American Crayfishes (Decapoda: Astacidae, Cambaridae and Parastacidae). Smithsonian Institution Press, Washington, D.C. 236 pp.
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- Taylor, Christopher A., M. L. Warren, Jr., J. F. Fitzpartick, Jr., H. H. Hobbs III, R.F. Jezerinac, W. L. Pflieger, and H. W. Robison. 1996. Conservation status of crayfishes of the United States and Canada. Fisheries 21(4): 25-38.

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Meek's Crayfish

Orconectes meeki



Native: Yes

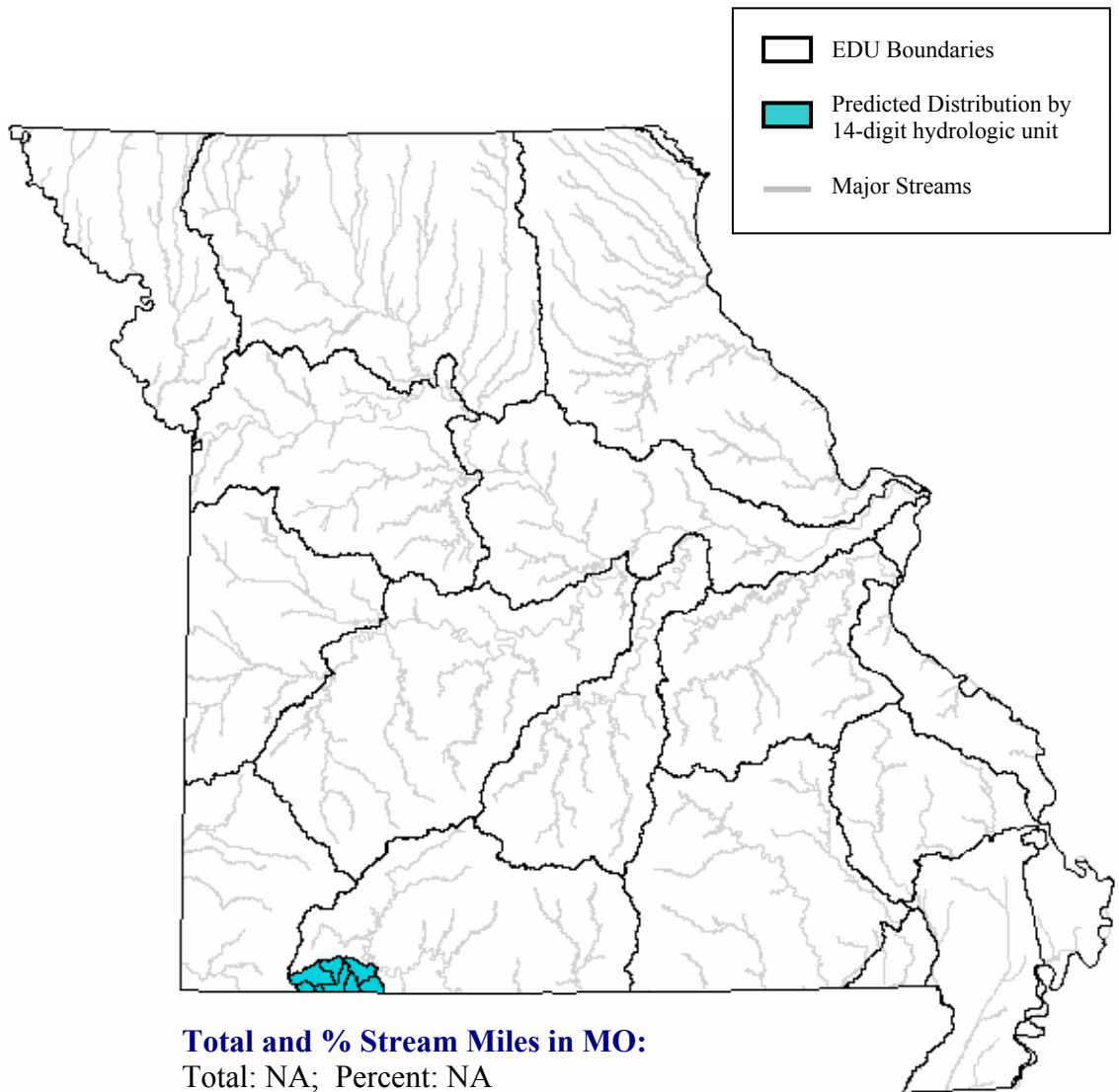
Endemism: Ecological Drainage Unit

State Rank: S1

ITIS Code: 97460

Global Rank: G4

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



State Range:

This species occurs in extreme southern Missouri and northern Arkansas. Within Missouri it has only been collected from a few tributaries of Table Rock Lake and is one of the rarest crayfish species in the state (Pflieger 1996).

Habitat Affinities:

Meek's crayfish occurs in small clear creeks with stable substrates of bedrock, rubble and coarse gravel. Within these habitats it excavates cavities beneath rocks and has been reported from beneath on-shore rocks or logs buried into the water table (Pflieger 1996).

Predictive Model(s):*Ozark Model*

([Linkr] >= 2) and ([Linkr] <= 4)

References:

- Bouchard, R.W. & H.W. Robison. 1980. An inventory of the decapod crustaceans (crayfishes and shrimps) of Arkansas with discussion of their habitats. Arkansas Academy of Sciences Proceedings 34: 22-30.
- Crandall, K. A. 1998. Conservation phylogenetics of ozark crayfishes - assigning priorities for aquatic habitat protection. Biological Conservation. 84(2): 107-117.
- Fitzpatrick, J. F., Jr. 1987. The subgenera of the crawfish genus *Orconectes* (Decapoda:Cambaridae). Proceedings of the Biological Society of Washington 100: 44-74.
- Hobbs, H. H. Jr. 1989. An Illustrated Checklist of the American Crayfishes (Decapoda: Astacidae, Cambaridae and Parastacidae). Smithsonian Institution Press, Washington, D.C. 236 pp.
- Pflieger, W. L. 1996. The Crayfishes of Missouri. Missouri Department of Conservation. Jefferson City, MO. 152 pp.
- Taylor, Christopher A., M. L. Warren, Jr., J. F. Fitzpartick, Jr., H. H. Hobbs III, R.F. Jezerinac, W. L. Pflieger, and H. W. Robison. 1996. Conservation status of crayfishes of the United States and Canada. Fisheries 21(4): 25-38.
- Williams, A. B. 1952. Six new crayfishes of the genus *Orconectes* (Decapoda: Astacidae) from Arkansas, Missouri, and Oklahoma. Transactions of the Kansas Academy of Science 55:330-351.
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Neosho Midget Crayfish

Orconectes macrus



Native: Yes

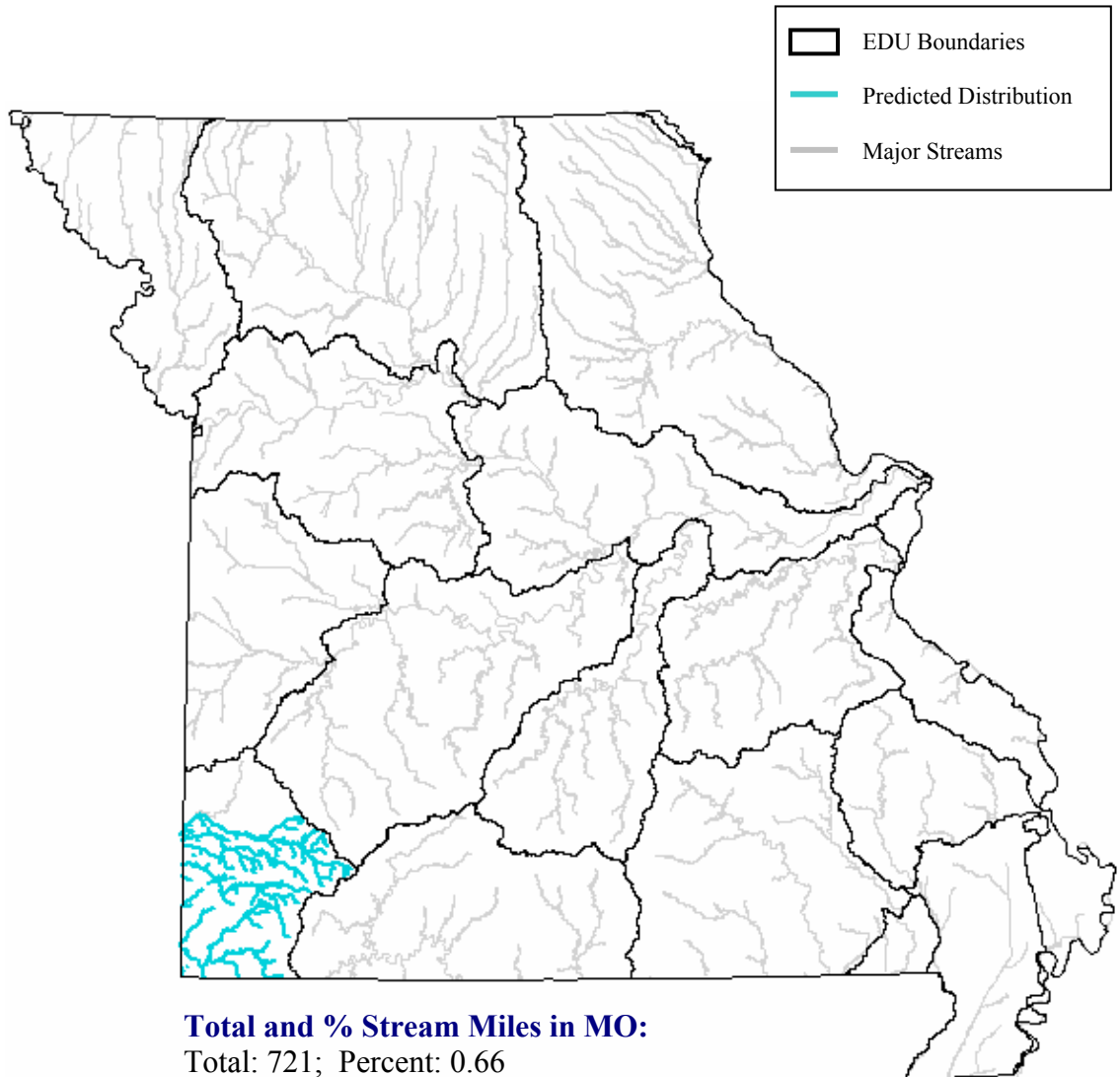
Endemism: Ecological Drainage Unit

State Rank: S3?

ITIS Code: 97457

Global Rank: G4

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



State Range:

This species occurs in the Neosho Ecological Drainage Unit of southwestern Missouri and northwestern Arkansas (Pflieger 1996).

Habitat Affinities:

The Neosho Midget Crayfish inhabits clear, permanent Ozark streams. It is usually found in association with firm, gravelly or rocky substrate in swift, shallow water. It digs short tunnels in areas of small gravel or beneath rubble or boulders (Pflieger 1996).

Predictive Model(s):*Ozark Model*

([Gradsegr] >= 1) and ([Gradsegr] <= 5)

References:

- Bouchard, R.W. & H.W. Robison. 1980. An inventory of the decapod crustaceans (crayfishes and shrimps) of Arkansas with discussion of their habitats. Arkansas Academy of Sciences Proceedings 34: 22-30.
- Crandall, K. A. 1998. Conservation phylogenetics of ozark crayfishes - assigning priorities for aquatic habitat protection. Biological Conservation. 84(2):107-117.
- Creaser, E.P., & A.I. Ortenburger. 1993. The decapod crustaceans of Oklahoma. Publications of the University of Oklahoma Biological Survey 5: 14-47.
- Hobbs, H. H. Jr. 1989. An Illustrated Checklist of the American Crayfishes (Decapoda: Astacidae, Cambaridae and Parastacidae). Smithsonian Institution Press, Washington, D.C. 236 pp.
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- Taylor, Christopher A., M. L. Warren, Jr., J. F. Fitzpartick, Jr., H. H. Hobbs III, R.F. Jezerinac, W. L. Pflieger, and H. W. Robison. 1996. Conservation status of crayfishes of the United States and Canada. Fisheries 21(4): 25-38.

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Ozark Crayfish

Orconectes ozarke



Native: Yes

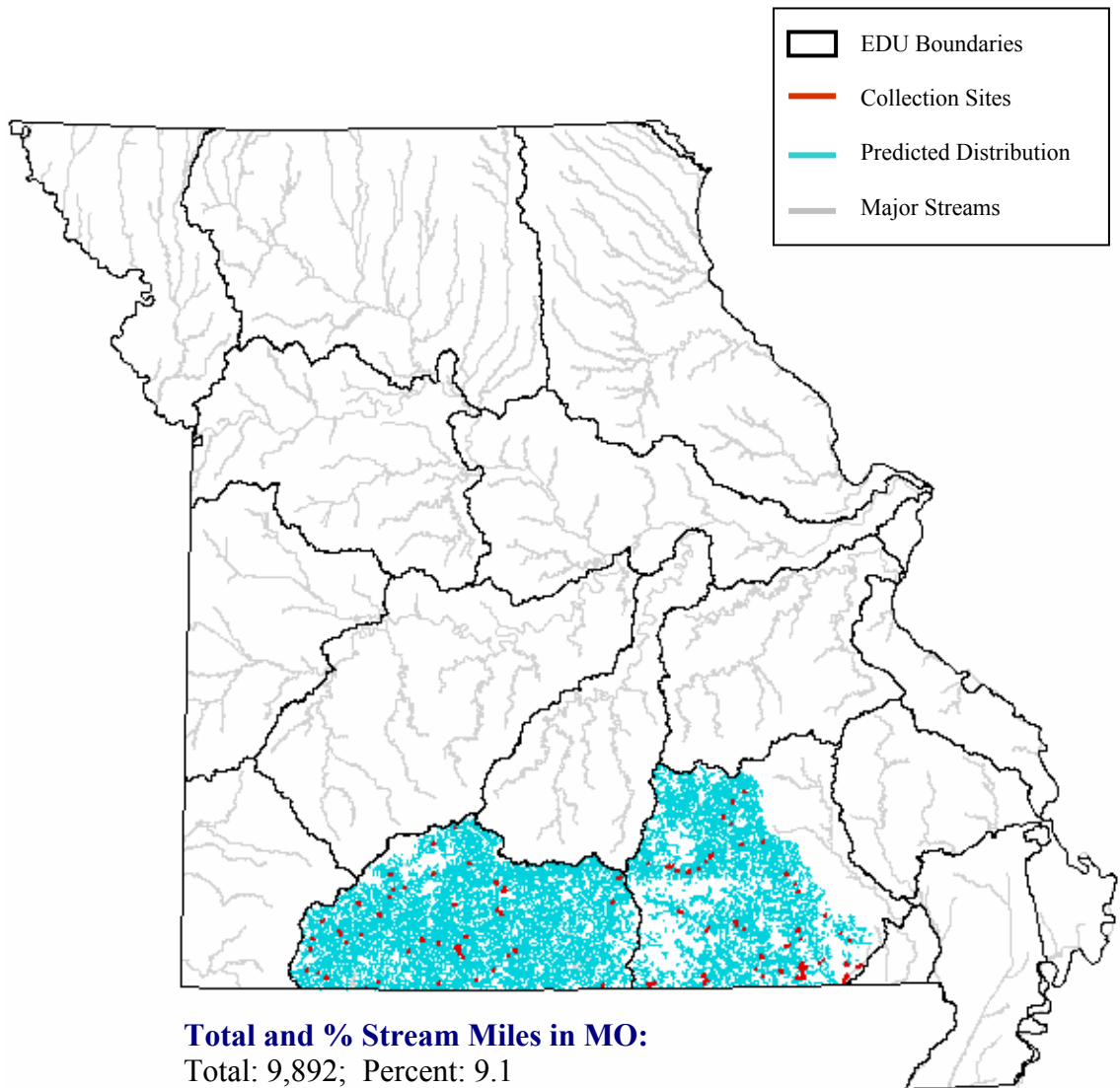
Endemism: Ecological Drainage Unit

State Rank: S?

ITIS Code: 97467

Global Rank: G4

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



State Range:

This species occurs in the southcentral Ozark Aquatic Subregion of Missouri and Arkansas (Pflieger 1996). Within Missouri it occurs in the Ozark/White and Ozark/Black/Current Ecological Drainage Units.

Habitat Affinities:

This species is invariably found in streams over silt-free rocky substrates, in cavities beneath rocks and boulders, or along margins of dense beds of water willow (*Justica spp.*) adjacent to swift riffles and runs (Pflieger 1996). Hobbs (1989) also reported finding this species from moist burrows under deeply-seated rocks in dry stream beds.

Predictive Model(s):

Ozark Model

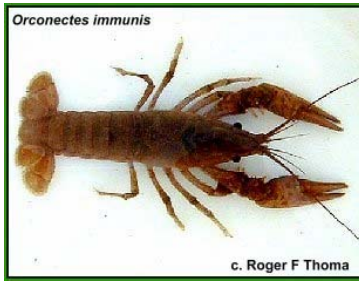
([Rgrad_subr] >= 2)

References:

- Bouchard, R.W. & H.W. Robison. 1980. An inventory of the decapod crustaceans (crayfishes and shrimps) of Arkansas with discussion of their habitats. Arkansas Academy of Sciences Proceedings 34: 22-30.
- Crandall, K. A. 1998. Conservation phylogenetics of ozark crayfishes - assigning priorities for aquatic habitat protection. Biological Conservation. 84(2): 107-117.
- Fitzpatrick, J. F., Jr. 1987. The subgenera of the crawfish genus *Orconectes* (Decapoda:Cambaridae). Proceedings of the Biological Society of Washington 100: 44-74.
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- Williams, A. B. 1954. Speciation and distribution of the crayfishes of the Ozark Plateaus and Ouachita Provinces. University of Kansas Science Bulletin 36: 803-918.

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Papershell Crayfish

Orconectes hylas



Native: Yes

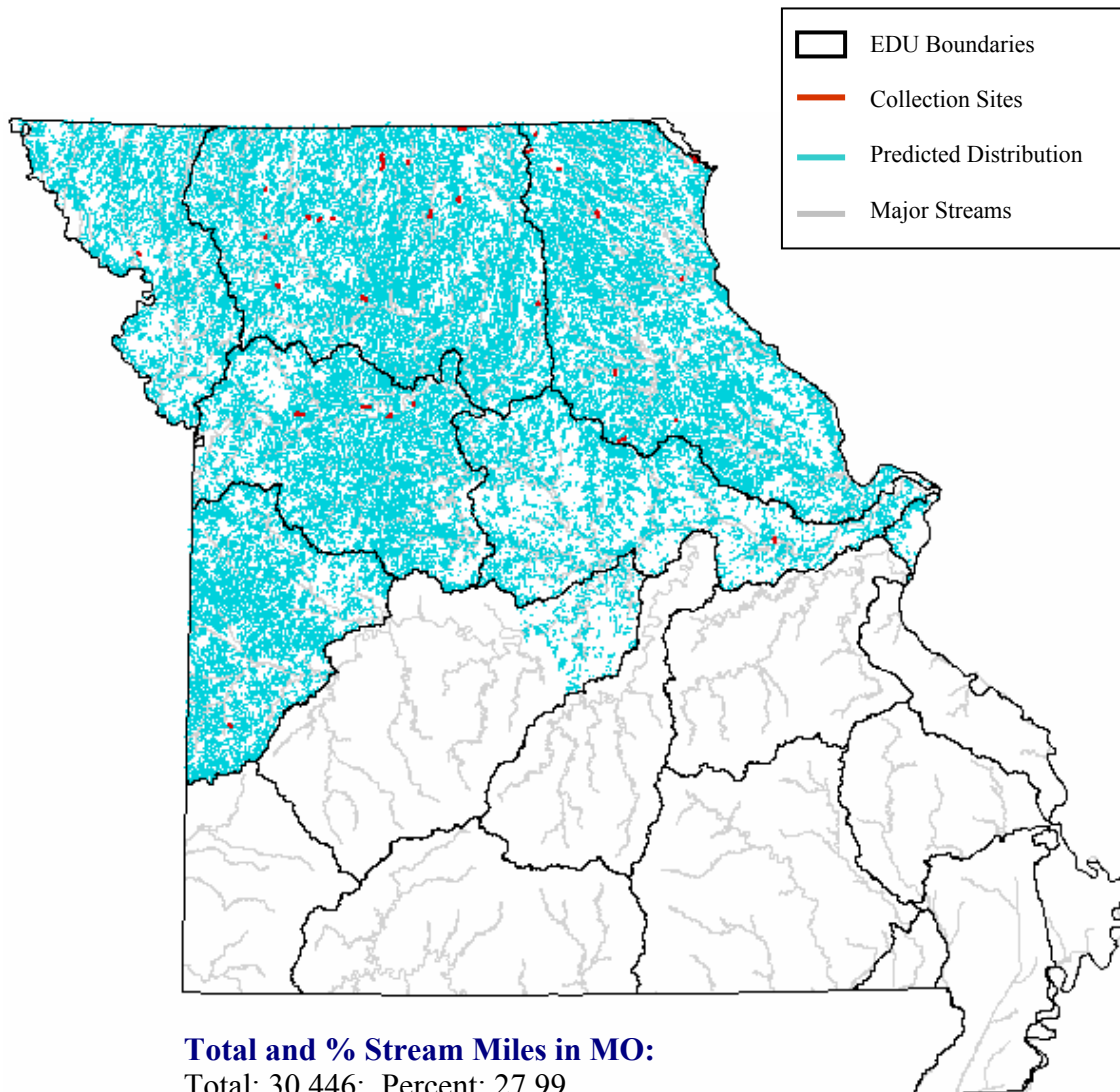
Endemism: Subzone

State Rank: S?

ITIS Code: 97446

Global Rank: G5

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



Total and % Stream Miles in MO:

Total: 30,446; Percent: 27.99

State Range:

In Missouri this species is almost exclusively restricted to the Central Plains Aquatic Subregion. It also occurs along the floodplains of the Missouri and upper Mississippi Rivers (Pflieger 1996).

Habitat Affinities:

Within its range in Missouri this species is one of most abundant and generally distributed species of crayfish. It generally occurs in shallow ditches and sloughs and on the broad, flat floodplains of large to medium sized rivers. It also occurs in isolated pools of intermittent headwater streams draining upland prairies. It prefers wide seasonal fluctuations in water area and depth and streams with deep mud bottoms and an absence of strong flow or current. It is often associated with cover provided by extensive stands of aquatic vegetation, flooded terrestrial vegetation, thick deposits of water soaked tree leaves, or other plant debris. It also occurs in habitats where high turbidity provides the only cover. It tends to be most abundant in areas where predatory fish and other crayfish are scarce or absent (Pflieger 1996).

Predictive Model(s):*Central Plains/Ozark Model*

(([Floodp_cod] = 1)) or (([LinkR] >= 1) and ([LinkR] <= 4) and ([Flow] = 2) and ([Gradsegr] >= 2) and ([Gradsegr] <= 8))

References:

- Bouchard, R. W. 1972. A contribution to the knowledge of Tennessee crayfish. Ph.D. dissertation. University of Tennessee, Knoxville.
- Creaser, E.P. 1931. The Michigan decapod crustaceans. Papers of the Michigan Academy of Science, Arts and Letters 13: 257-276.
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- Creaser, E.P., & A.I. Ortenburger. 1993. The decapod crustaceans of Oklahoma. Publications of the University of Oklahoma Biological Survey 5: 14-47.
- Eberly, W.R. 1955. Summary of the distribution of Indiana crayfishes, including new state and county records. Proceedings of the Indiana Academy of Science 64: 281-283.
- Hubert, W.A. 1988. Survey of Wyoming crayfishes. Great Basin Naturalist 48: 370-372.

- Hobbs, H. H. Jr. 1989. An Illustrated Checklist of the American Crayfishes (Decapoda: Astacidae, Cambaridae and Parastacidae). Smithsonian Institution Press, Washington, D.C. 236 pp.
- Hobbs III, H.H. & J.P. Jass. 1988. The crayfishes and shrimps of Wisconsin. Milwaukee Public Museum, Milwaukee, WI.
- Page, L.M. & G.B. Mottes. 1995. The distribution and status of the Indiana crayfish, *Orconectes indianensis*, with comments on the crayfishes of Indiana. Proceedings of the Indiana Academy of Science 104: 103-111.
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- Reimer, R.D. 1969. A report on the crawfishes (Decapoda, Astacidae) of Oklahoma. Proceedings of the Oklahoma Academy of Sciences 48: 49-65.
- Rhoades, R. 1944a. The crayfishes of Kentucky, with notes on variation, distribution, and descriptions of new species and subspecies. American Midland Naturalist. 31: 111-149.
- Rhoades, R. 1944b. Further studies on distribution and taxonomy of Ohio crayfishes and the description of a new subspecies. Ohio Journal of Science 44: 95-99.
- Taylor, Christopher A., M. L. Warren, Jr., J. F. Fitzpartick, Jr., H. H. Hobbs III, R.F. Jezerinac, W. L. Pflieger, and H. W. Robison. 1996. Conservation status of crayfishes of the United States and Canada. Fisheries 21(4): 25-38.
- Turner, C.L. 1926. The crayfishes of Ohio. Ohio State University Bulletin 30: 144-195.
- Williams, A.B., & A.B. Leonard. 1952. The crayfishes of Kansas. University of Kansas Science Bulletin 34: 961-1012.

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Red Swamp Crayfish

Procambarus clarkii



Native: Yes

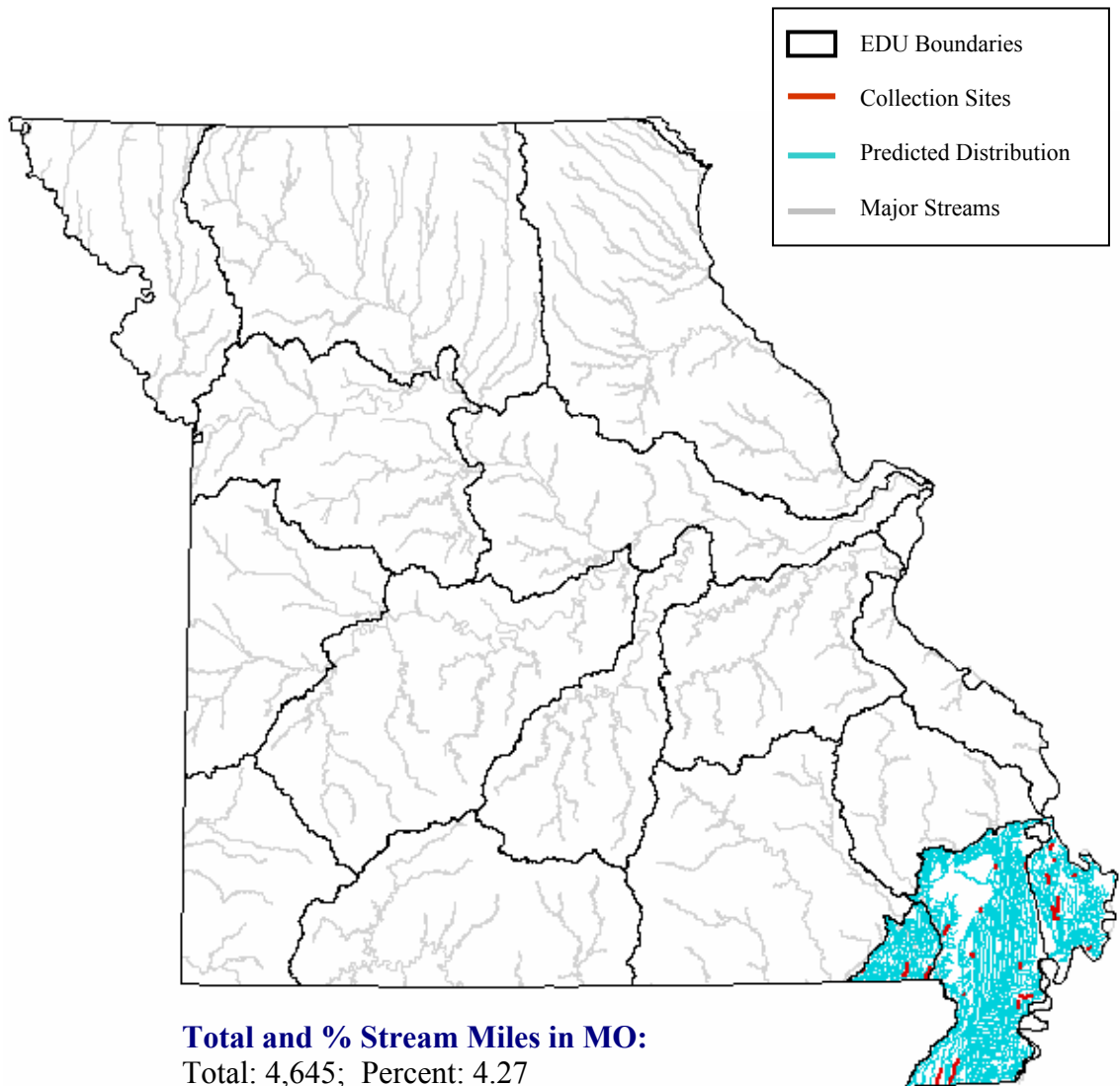
Endemism: Region

State Rank: S?

ITIS Code: 97491

Global Rank: G5

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



State Range:

The red swamp crayfish occurs throughout the Mississippi Alluvial Basin Aquatic Subregion (Pflieger 1996).

Habitat Affinities:

Contrary to most published references, collections from Missouri most often occurred in flowing water. Sixty-one percent of Missouri occurrences were from lowland streams and ditches and 79% of these habitats had noticeable current or flow. Other habitats in which this species occurred were swamps, sloughs and roadside pools. This species was invariably found over mud or sand bottoms often where there were considerable amounts of organic debris such as logs, sticks or water-soaked tree leaves. Fifty-two percent of the occurrences were in habitats with no aquatic vegetation (Pflieger 1996).

Predictive Model(s):*Mississippi Alluvial Basin Model*

([Core_crowley] = 0) and ([State] = "MO") and ([Ssize_code] >= 1) and ([Ssize_code] <= 3)

References:

- Bouchard, R. W. 1972. A contribution to the knowledge of Tennessee crayfish. Ph.D. dissertation. University of Tennessee, Knoxville.
- Bouchard, R. W. and H. W. Robison. 1980. An inventory of the decapod crustaceans (crayfishes and shrimps) of Arkansas with discussion of their habitats. Arkansas Academy of Sciences Proceedings 34: 22-30
- Brown, P.L. 1955. The biology of the crayfishes of central and southeastern Illinois. Ph.D. dissertation. University of Illinois, Urbana-Champaign.
- Hobbs, H. H., Jr. 1942. The Crayfishes of Florida. University of Florida Publications, Biological Science Series. 3, 179 pp.
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- Page, L. M. 1985. The crayfishes and shrimps (Decapoda) of Illinois. Illinois Natural History Survey Bulletin 33: 335-448.
- Penn, G. H. 1956. The genus *Procambarus* in Louisiana (Decapoda: Astacidae). American Midland Naturalist 56: 406-422.

Penn, G. H. 1959. An illustrated key to the crayfishes of Louisiana with a summary of their distribution within the state. *Tulane Studies in Zoology* 7: 3-20.

Penn, G. H. and H. H. Hobbs, Jr. 1958. A contribution toward a knowledge of the crayfishes of Texas (Decapoda: Astacidae) *Texas Journal of Science* 10: 452-483.

Pflieger, W. L. 1996. *The Crayfishes of Missouri*. Missouri Department of Conservation. Jefferson City, MO. 152 pp.

Rhoades, R. 1944. The crayfishes of Kentucky, with notes on variation, distribution, and descriptions of new species and subspecies. *American Midland Naturalist* 31: 111-149.

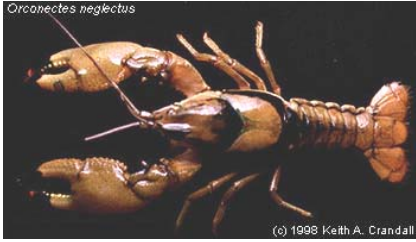
Taylor, Christopher A., M. L. Warren, Jr., J. F. Fitzpartick, Jr., H. H. Hobbs III, R.F. Jezerinac, W. L. Pflieger, and H. W. Robison. 1996. Conservation status of crayfishes of the United States and Canada. *Fisheries* 21(4): 25-38.

Walls, J. G. and J. B. Black. 1991. Distributional records for some Louisiana crayfishes (Decapoda: Cambaridae). *Proceedings of the Louisiana Academy of Sciences* 54: 23-29.

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Ringed Crayfish
Orconectes neglectus



Native: Yes

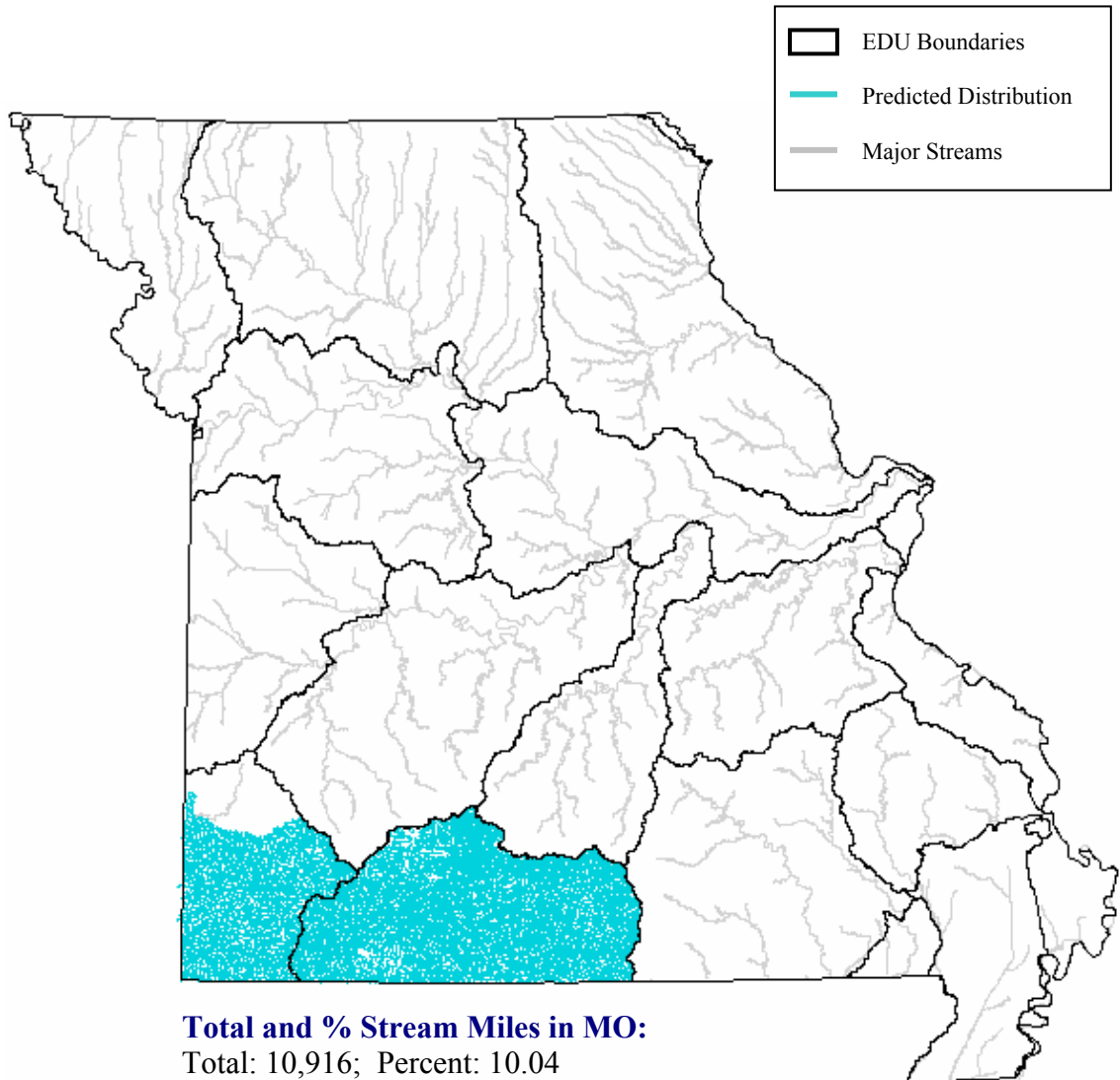
Endemism: Ecological Drainage Unit

State Rank: S3?

ITIS Code: 97465

Global Rank: G5

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



Total and % Stream Miles in MO:
Total: 10,916; Percent: 10.04

State Range:

This species occurs in the southwestern Ozark Aquatic Subregion of Missouri, Arkansas and Oklahoma with isolated populations in central Kansas, southwestern Nebraska and northeastern Colorado (Pflieger 1996). Within Missouri it occurs in the Ozark/ Neosho and Ozark/White Ecological Drainage Units.

Habitat Affinities:

This species occurs in clear, rocky, permanent-flowing streams ranging in size from small creeks to large rivers. It is generally found in rocky riffles and shallow pools having sufficient current to keep the bottom free of silt (Pflieger 1996).

Predictive Model(s):

Ozark Model Excluding the North Fork of the Spring River.
([Ssize_code] >= 1)

References:

- Bouchard, R.W. & H.W. Robison. 1980. An inventory of the decapod crustaceans (crayfishes and shrimps) of Arkansas with discussion of their habitats. Arkansas Academy of Sciences Proceedings 34: 22-30.
- Creaser, E.P., & A.I. Ortenburger. 1993. The decapod crustaceans of Oklahoma. Publications of the University of Oklahoma Biological Survey 5: 14-47.
- Crandall, K. A. 1998. Conservation phylogenetics of ozark crayfishes - assigning priorities for aquatic habitat protection. Biological Conservation. 84(2): 107-117.
- Fitzpatrick, J. F., Jr. 1987. The subgenera of the crawfish genus *Orconectes* (Decapoda:Cambaridae). Proceedings of the Biological Society of Washington 100: 44-74.
- Hobbs, H. H. Jr. 1989. An Illustrated Checklist of the American Crayfishes (Decapoda: Astacidae, Cambaridae and Parastacidae). Smithsonian Institution Press, Washington, D.C. 236 pp.
- Pflieger, W. L. 1996. The Crayfishes of Missouri. Missouri Department of Conservation. Jefferson City, MO. 152 pp.
- Reimer, R.D. 1969. A report on the crawfishes (Decapoda, Astacidae) of Oklahoma. Proceedings of the Oklahoma Academy of Sciences 48: 49-65.
- Taylor, Christopher A., M. L. Warren, Jr., J. F. Fitzpartick, Jr., H. H. Hobbs III, R.F. Jezerinac, W. L. Pflieger, and H. W. Robison. 1996. Conservation status of crayfishes of the United States and Canada. Fisheries 21(4): 25-38.

Unger, P.A. 1978. The crayfishes (Crustacea: Cambaridae) of Colorado. Natural History Inventory of Colorado 3:1-19.

Williams, A. B. 1954. Speciation and distribution of the crayfishes of the Ozark Plateaus and Ouachita Provinces. University of Kansas Science Bulletin 36: 803-918.

Williams, A.B., & A.B. Leonard. 1952. The crayfishes of Kansas. University of Kansas Science Bulletin 34: 961-1012.

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Saddlebacked Crayfish

Orconectes medius



Native: Yes

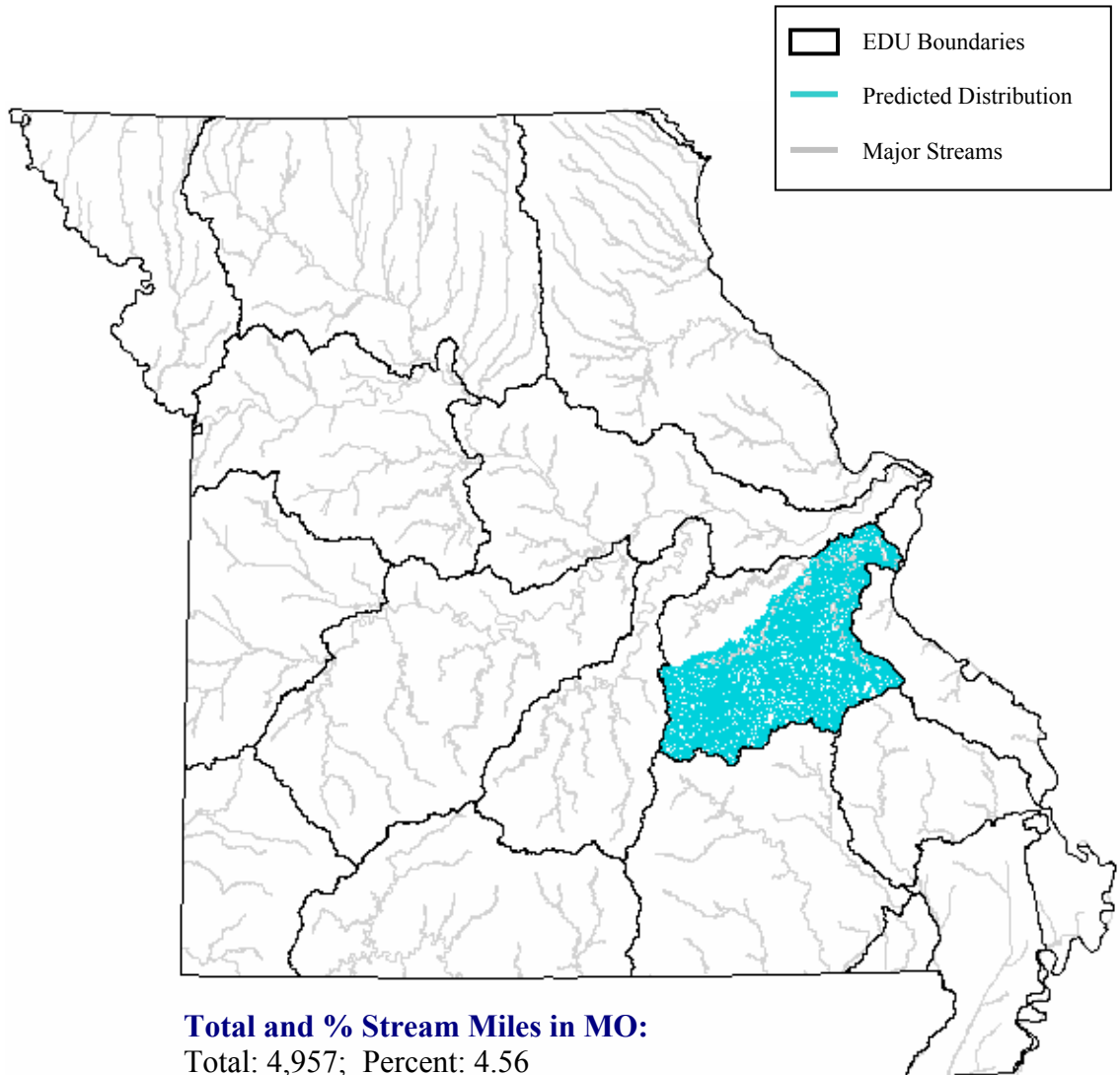
Endemism: Ecological Drainage Unit

State Rank: S3?

ITIS Code: 97459

Global Rank: G4

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



State Range:

This species is only found in the Ozark/Meramec Ecological Drainage Unit (EDU) in Missouri. However, it has never been collected from the sandstone dominated Bourbuese River watershed within this EDU.

Habitat Affinities:

The saddlebacked crayfish is the most abundant crayfish in many of the small creeks within its range. It occurs in small to medium-sized creeks with clear, permanent flow and stable, rocky bottoms. It lives in cavities that it excavates beneath rocks within these habitats (Pflieger 1996).

Predictive Model(s):*Ozark Model*

([Linkr] >= 1) and ([Linkr] <= 5)

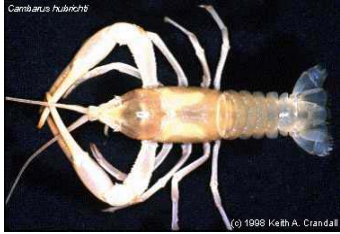
References:

- Crandall, K. A. 1998. Conservation phylogenetics of ozark crayfishes - assigning priorities for aquatic habitat protection. *Biological Conservation*. 84(2): 107-117.
- Hobbs, H. H. Jr. 1989. An Illustrated Checklist of the American Crayfishes (Decapoda: Astacidae, Cambaridae and Parastacidae). Smithsonian Institution Press, Washington, D.C. 236 pp.
- Pflieger, W. L. 1996. The Crayfishes of Missouri. Missouri Department of Conservation. Jefferson City, MO. 152 pp.
- Taylor, Christopher A., M. L. Warren, Jr., J. F. Fitzpartick, Jr., H. H. Hobbs III, R.F. Jezerinac, W. L. Pflieger, and H. W. Robison. 1996. Conservation status of crayfishes of the United States and Canada. *Fisheries* 21(4): 25-38.
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Salem Cave Crayfish

Cambarus hubrichti



Native: Yes

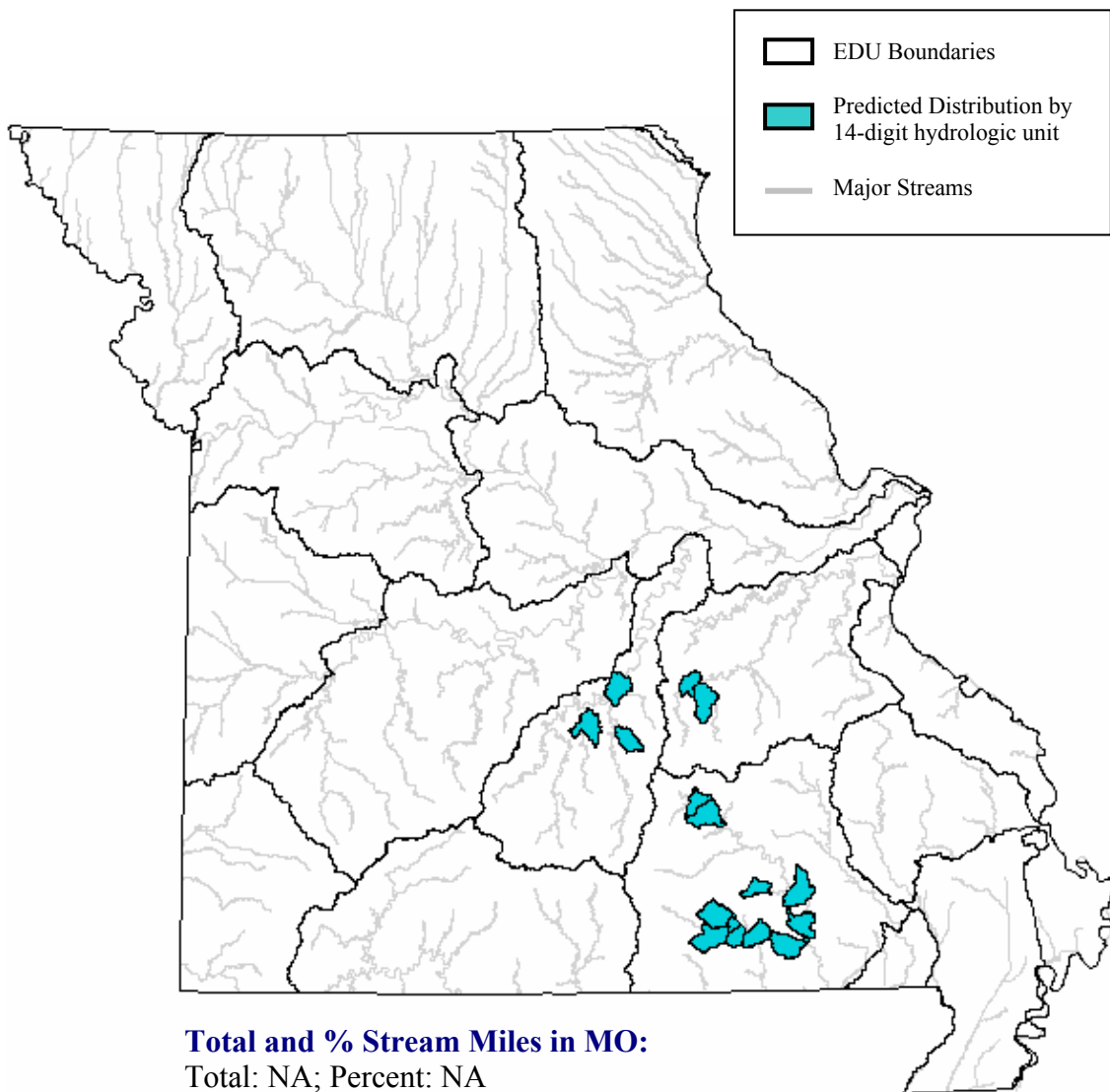
Endemism: Subregion

State Rank: S3

ITIS Code: 97378

Global Rank: G2

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



State Range:

This species is found in both north and south flowing drainages of the east-central Ozarks in Missouri (Pflieger 1996).

Habitat Affinities:

The salem cave crayfish has been collected from a wide range of habitats, including, cave streams over rock, sand, mud, and bat guano substrates, margins of deep, subterranean lakes over organic debris, and also near the orifices of large springs near the limit of daylight (Pflieger 1996).

Predictive Model(s):*Ozark Model*

The distribution is based upon existing collection records and professional review.

References:

- Hobbs, H. H. Jr. 1989. An Illustrated Checklist of the American Crayfishes (Decapoda: Astacidae, Cambaridae and Parastacidae). Smithsonian Institution Press, Washington, D.C. 236 pp.
- Pflieger, W. L. 1996. The Crayfishes of Missouri. Missouri Department of Conservation. Jefferson City, MO. 152 pp.
- Taylor, Christopher A., M. L. Warren, Jr., J. F. Fitzpartick, Jr., H. H. Hobbs III, R.F. Jezerinac, W. L. Pflieger, and H. W. Robison. 1996. Conservation status of crayfishes of the United States and Canada. Fisheries 21(4): 25-38.

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Shield Crayfish

Faxonella clypeata



Native: Yes

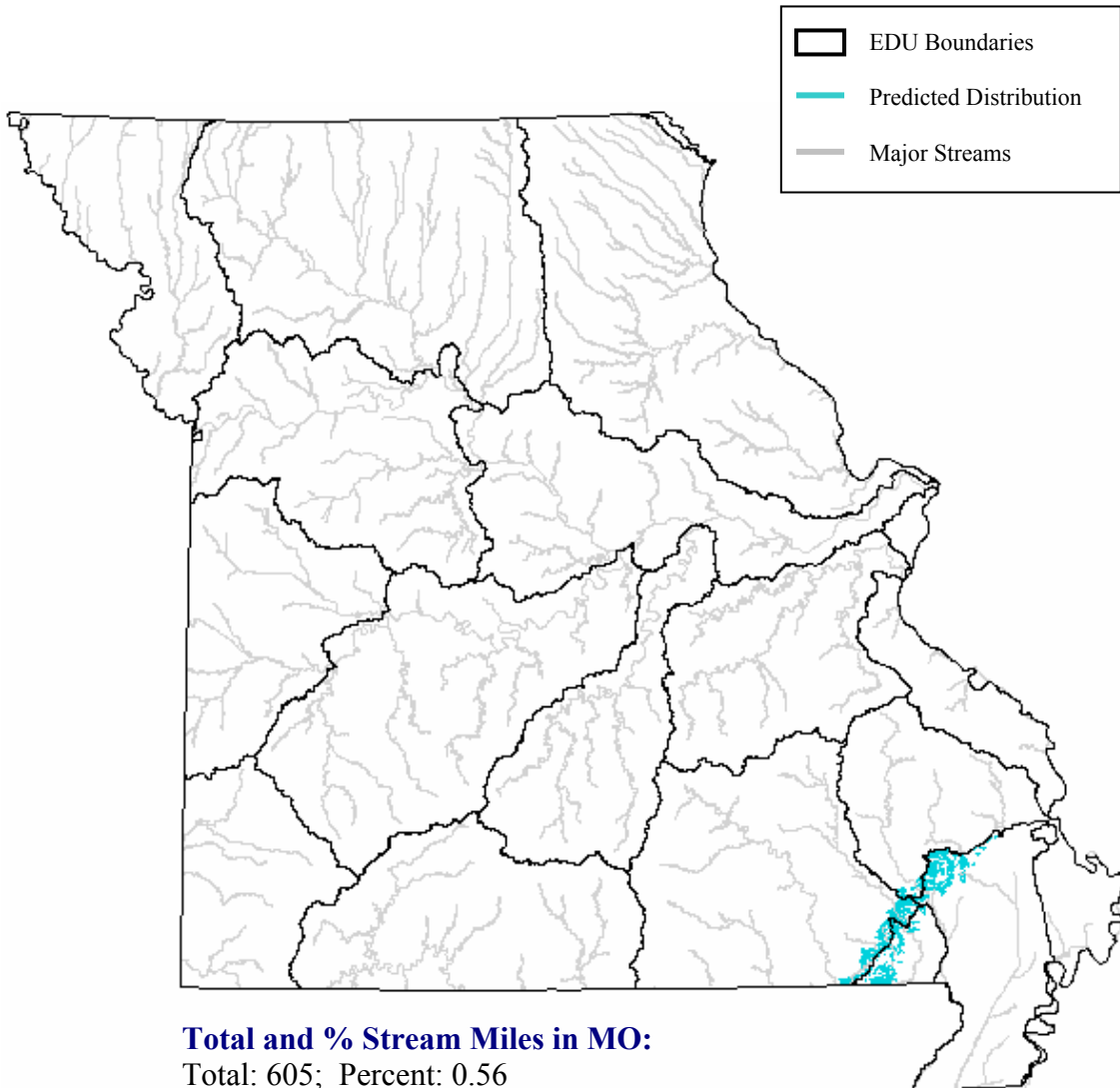
Endemism: Region

State Rank: S2S3

ITIS Code: 97417

Global Rank: G5

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



State Range:

In Missouri this species is only known from a few localities along the boundary of the Mississippi Alluvial Basin and the Ozark Aquatic Subregions (Pflieger 1996).

Habitat Affinities:

All collections came from small intermittent creeks and shallows of seasonally flooded sloughs and swamps (Pflieger 1996). This species was probably more widely distributed in southeastern Missouri before this area was ditched and drained. Most of the year this species is sequestered in burrows (Pflieger 1996).

Predictive Model(s):

Ozark/ Mississippi Alluvial Basin Model

([Flow] = 2) and ([Ssize_code] >= 1) and ([Ssize_code] <= 2)

References:

- Creaser, E. P. 1933. Descriptions of some new and poorly known species of North American crayfishes. Occasional Papers of the Museum of Zoology, University of Michigan. 275, 21 pp.
- Creaser, E.P., & A.I. Ortenburger. 1993. The decapod crustaceans of Oklahoma. Publications of the University of Oklahoma Biological Survey 5: 14-47.
- Fitzpatrick, J. F., Jr. 1963. Geographic variation in the crawfish *Faxonella clypeata* (Hay) with the definition and defense of the genus *Faxonella* Creaser (Decapoda, Astacidae). Tulane Studies in Zoology. 10(1): 57-79.
- Hay, W. P. 1899. Description of two new species of crayfish. Proceedings of the United States National Museum. 22(1187):121-123.
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American Midland Naturalist 44(2): 421-426.

Pflieger, W. L. 1996. *The Crayfishes of Missouri*. Missouri Department of
Conservation. Jefferson City, MO. 152 pp.

Taylor, Christopher A., M. L. Warren, Jr., J. F. Fitzpartick, Jr., H. H. Hobbs III, R.F.
Jezerinac, W. L. Pflieger, and H. W. Robison. 1996. Conservation status of
crayfishes of the United States and Canada. *Fisheries* 21(4): 25-38.

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Shrimp Crayfish
Orconectes lancifer



Native: Yes

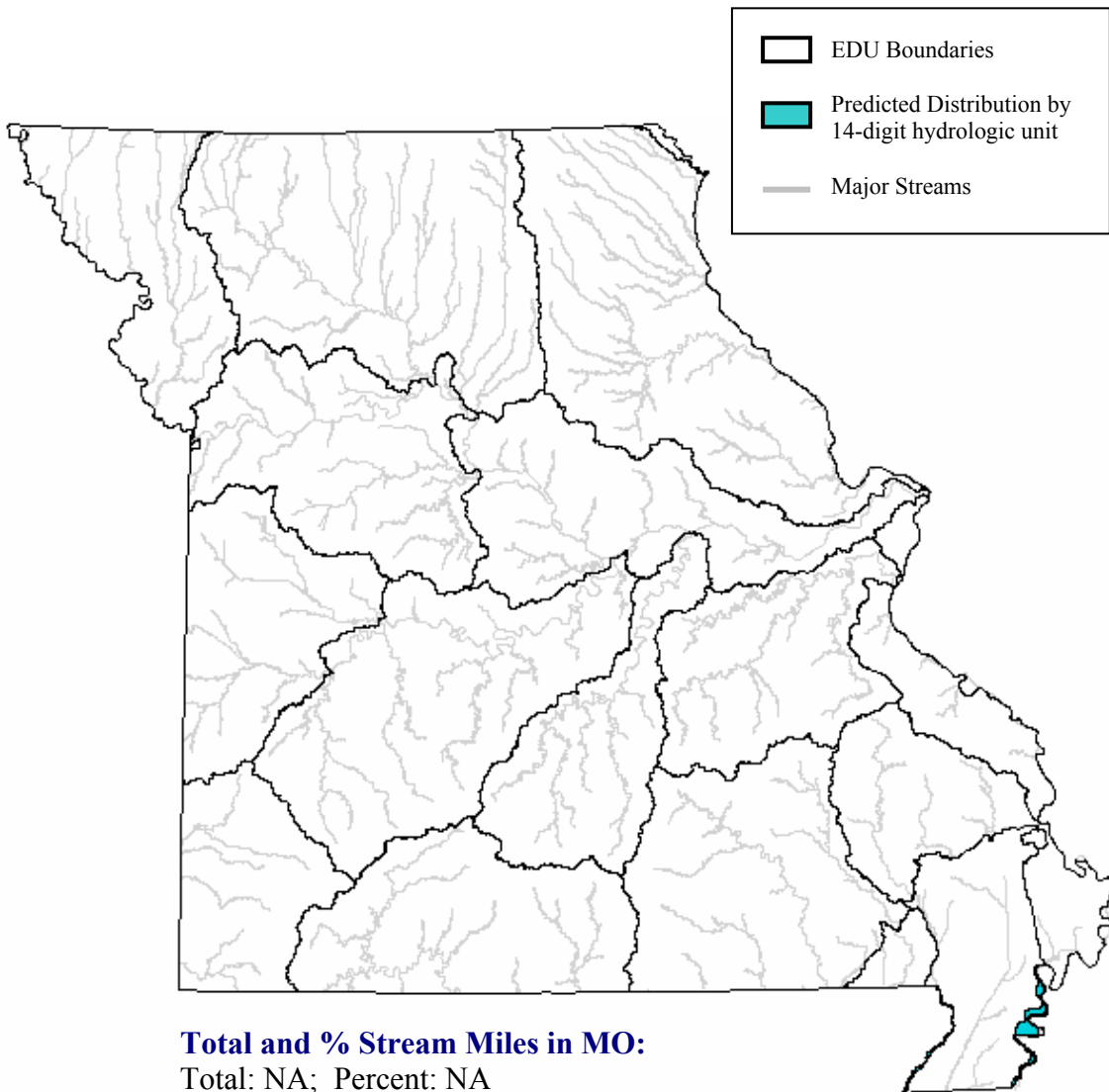
Endemism: Subregion

State Rank: S1S2

ITIS Code: 97453

Global Rank: G5

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



Total and % Stream Miles in MO:
Total: NA; Percent: NA

State Range:

In Missouri this species has only been collected from Wolf Bayou in Pemiscot County and the St. Francis River in Dunklin County (Pflieger 1996).

Habitat Affinities:

This species is generally found in deep oxbow lakes and large slow-flowing lowland rivers (Pflieger 1996). It has been collected from open water and also from tree roots and other cover along the shoreline.

Predictive Model(s):

Mississippi Alluvial Basin Model

([Core_crowley] = 0) and ([State] = "MO") and ([Ssize_code] = 4)

References:

- Bouchard, R.W. & H.W. Robison. 1980. An inventory of the decapod crustaceans (crayfishes and shrimps) of Arkansas with discussion of their habitats. Arkansas Academy of Sciences Proceedings 34: 22-30.
- Hobbs, H. H. Jr. 1989. An Illustrated Checklist of the American Crayfishes (Decapoda: Astacidae, Cambaridae and Parastacidae). Smithsonian Institution Press, Washington, D.C. 236 pp.
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- Penn, G.H. 1959. An illustrated key to the crawfishes of Louisiana with a summary of their distribution within the state. Tulane Studies in Zoology 7: 3-20.
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Photo Credits:

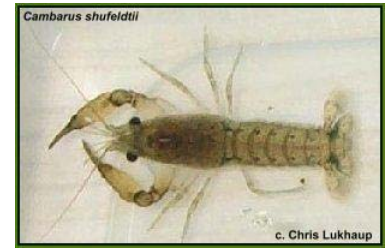
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Shufeldt's Dwarf Crayfish

Cambarellus shufeldtii



Native: Yes

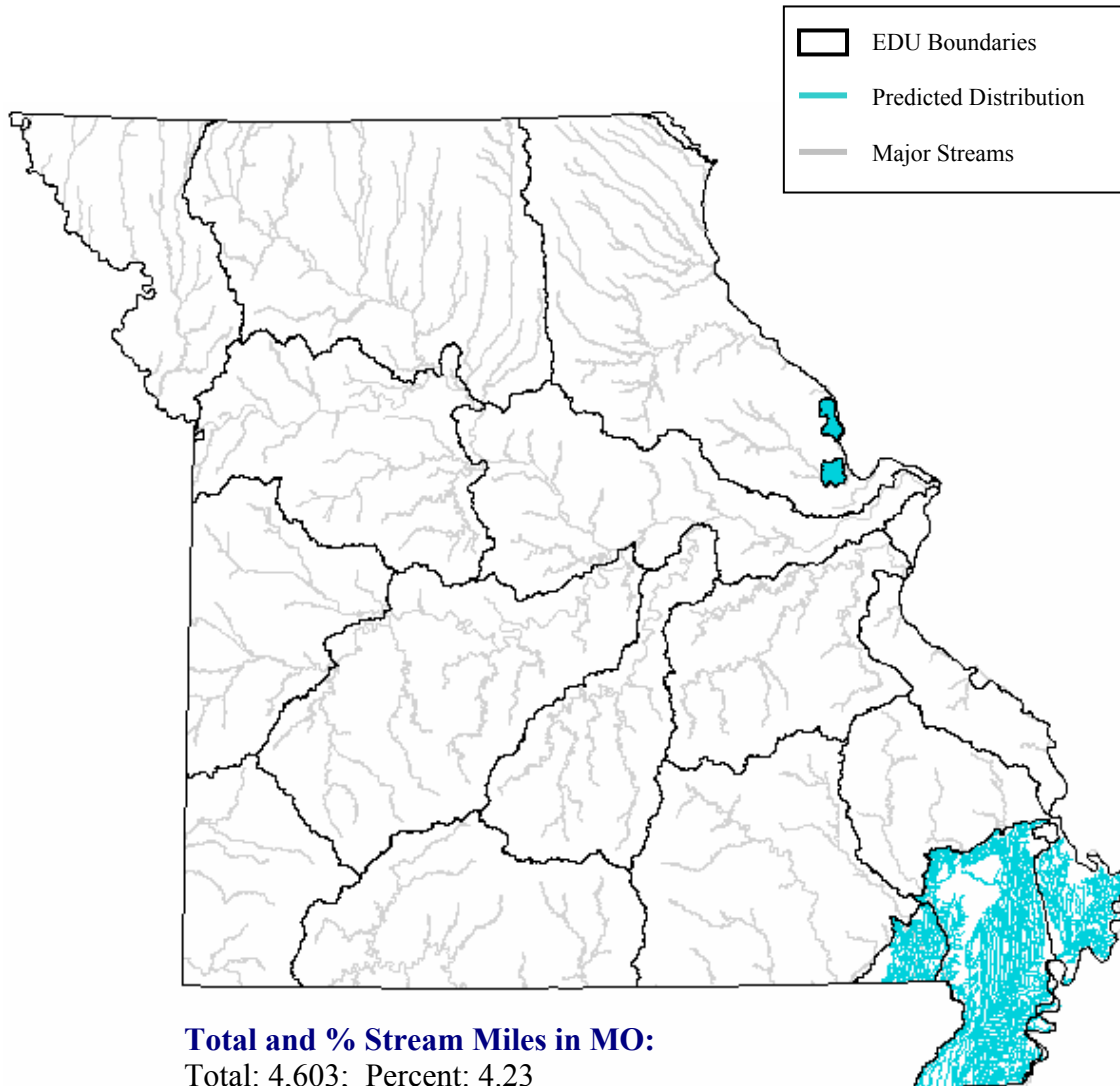
Endemism: Region

State Rank: S3?

ITIS Code: 97625

Global Rank: G5

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



State Range:

This species is largely restricted to the Mississippi Alluvial Basin (MAB) Aquatic Subregion of Missouri, however, it has also been collected in the Central Plains Aquatic Subregion at two localities from the Mississippi River floodplain just above the mouth of the Missouri River. Populations at these two localities appear to be disjunct from those in the MAB. Within the MAB subregion collection records are clustered along the lower Black and St. Francis drainages and smaller direct tributaries to the Mississippi River (Pflieger 1996).

Habitat Affinities:

This species is not a burrower, but survives dry seasons in “cells” that have no surface connection (Pflieger 1996). These cells are hollowed out in the mud as water levels recede. In Tennessee this species occurred among decaying leaves and twigs in protected waters less than six inches deep along the edges of sloughs (Hobbs and Marchand 1943). Rooted and floating plants were common in the specific areas where this crayfish was collected. In Missouri this species occurs in swamps, sloughs and roadside ditches that are shallow without noticeable current and choked with aquatic vegetation (Pflieger 1996).

Predictive Model(s):*Central Plains Model*

The distribution is based upon existing collection records and professional review.

Mississippi Alluvial Basin Model

([Core_crowley] = 0) and ([State] = "MO") and ([Ssize_code] >= 1) and ([Ssize_code] <= 3)

References:

- Black, J. B. 1966. Cyclic male reproductive activities in the dwarf crayfishes *Cambarellus shufeldti* (Faxon) and *Cambarellus puer* (Hobbs). American Microscop. Soc. Trans. 85(2):214-232.
- Hobbs, H.H. Jr. and L. L. Marchand. 1943. A contribution toward a knowledge of the crayfishes of the Reelfoot Lake area. Journal of the Tennessee Academy of Science 8(1): 6-35.
- Hobbs, H.H. Jr. 1989. An Illustrated Checklist of the American Crayfishes (Decapoda: Astacidae, Cambaridae and Parastacidae). Smithsonian Institution Press, Washington, D.C. 236 pp.
- Lowe, M. E. 1956. Dominance-subordinance relationships in the crawfish *Cambarellus shufeldti*. Tulane Studies in Zoology 4:139-170.

- Lowe, M. E. 1961. The female reproductive cycle of the crayfish *Cambarellus shufeldti*: the influence of environmental factors. *Tulane Studies in Zoology* 8:157-176.
- Page, L. M. 1985. The crayfishes and shrimps (Decapoda) of Illinois. *Illinois Natural History Survey Bulletin* 33(4): 335-448.
- Penn, G. H. 1942. Observations on the biology of the dwarf crayfish *Cambarellus Shufeldti* (Faxon). *American Midland Naturalist* 28(3):644-647.
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Spothanded Crayfish

Orconectes punctimanus



Native: Yes

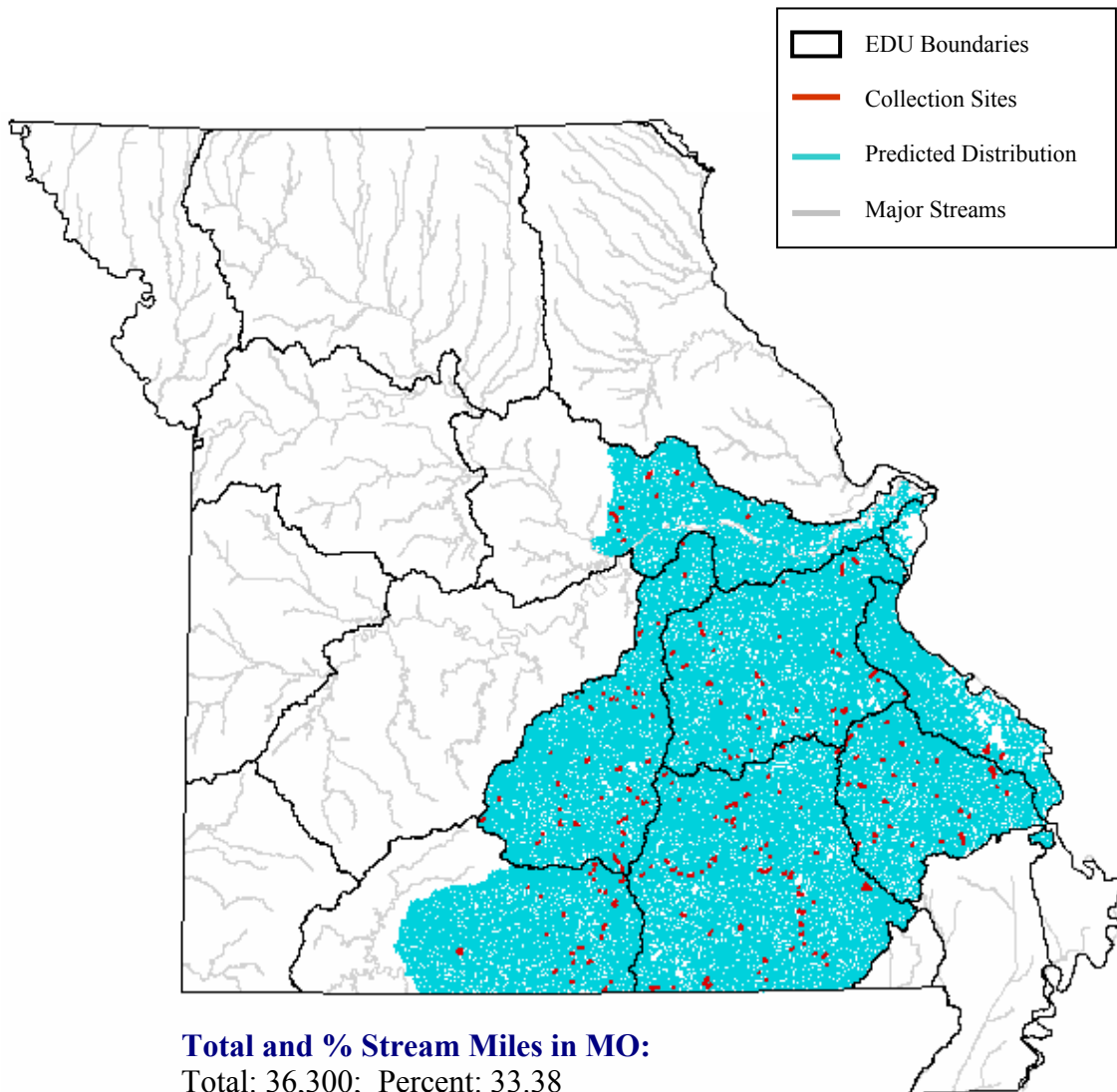
Endemism: Subregion

State Rank: S?

ITIS Code: 97474

Global Rank: G4G5

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



State Range:

This species occurs in most of the eastern half of the Missouri Ozark Aquatic Subregion and also in northern Arkansas (Pflieger 1996).

Habitat Affinities:

The spothanded crayfish is common in streams of all sizes from headwater creeks to large Ozark rivers and spring branches. It is generally found where there is abundant cover in the form of aquatic vegetation, detritus or large rocks (Pflieger 1996).

Predictive Model(s):

Ozark Model

([Ssize_code] >= 1)

References:

- Bouchard, R.W. & H.W. Robison. 1980. An inventory of the decapod crustaceans (crayfishes and shrimps) of Arkansas with discussion of their habitats. Arkansas Academy of Sciences Proceedings 34: 22-30.
- Crandall, K. A. 1998. Conservation phylogenetics of ozark crayfishes - assigning priorities for aquatic habitat protection. Biological Conservation. 84(2): 107-117.
- Hobbs, H. H. Jr. 1989. An Illustrated Checklist of the American Crayfishes (Decapoda: Astacidae, Cambaridae and Parastacidae). Smithsonian Institution Press, Washington, D.C. 236 pp.
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- Williams, A. B. 1954. Speciation and distribution of the crayfishes of the Ozark Plateaus and Ouachita Provinces. University of Kansas Science Bulletin 36: 803-918.

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St. Francis River Crayfish

Orconectes quadruncus



Native: Yes

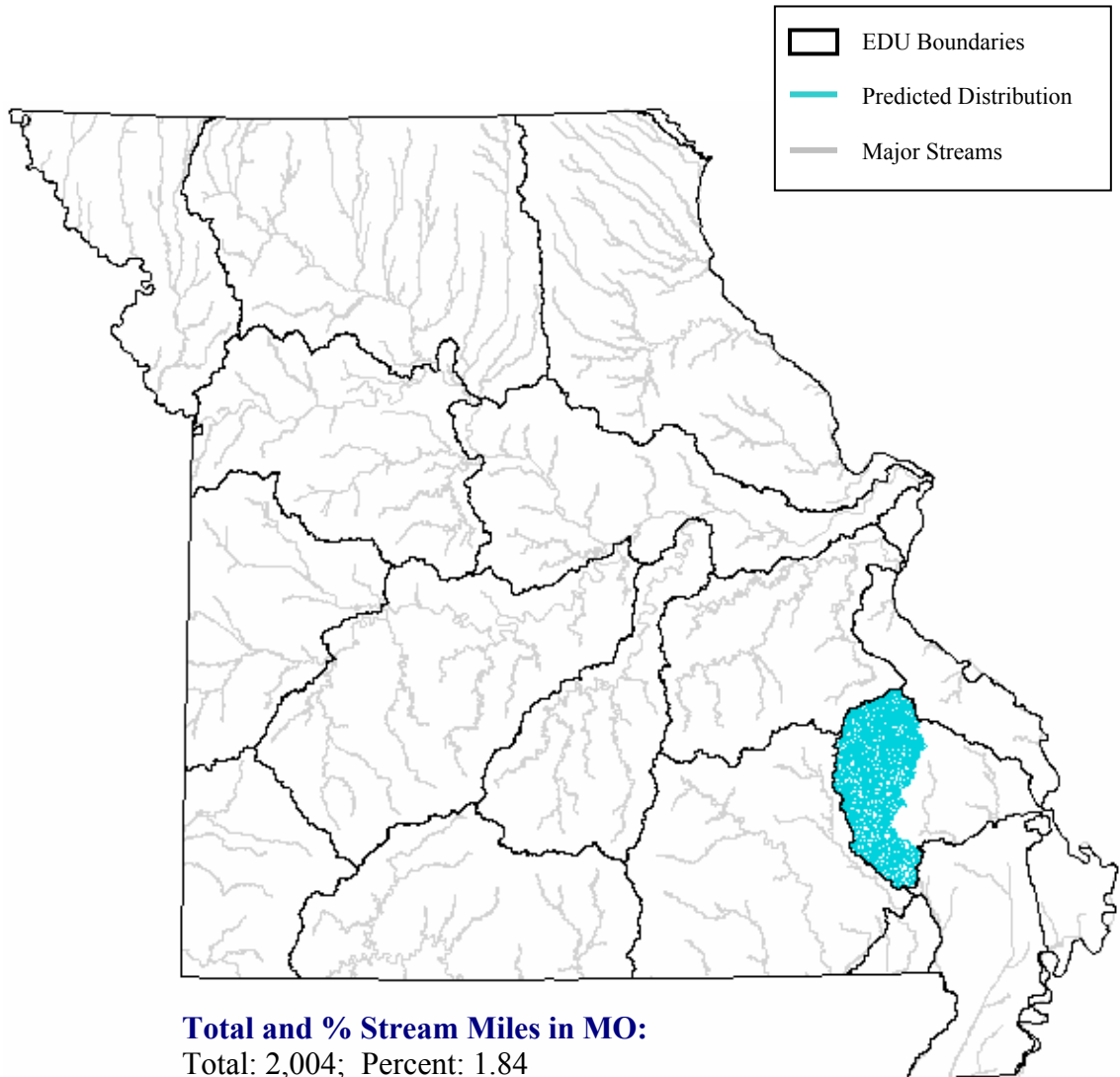
Endemism: Ecological Drainage Unit

State Rank: S2

ITIS Code: 97476

Global Rank: G2

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



State Range:

This species only occurs in Missouri (Pflieger 1996) and is only known from the Ozark/Upper St. Francis/Castor Ecological Drainage Unit.

Habitat Affinities:

The St. Francis River crayfish inhabits clear, rocky streams ranging in size from small headwater creeks to moderately large rivers. It is generally found over silt-free bottoms near or beneath dense beds of water willow (*Justica spp.*) or boulders (Pflieger 1996).

Predictive Model(s):

Ozark Model

([Ssize_code] >= 1)

References:

- Crandall, K. A. 1998. Conservation phylogenetics of ozark crayfishes - assigning priorities for aquatic habitat protection. *Biological Conservation*. 84(2): 107-117.
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Vernal Crayfish
Procambarus viaeveridus



Native: Yes

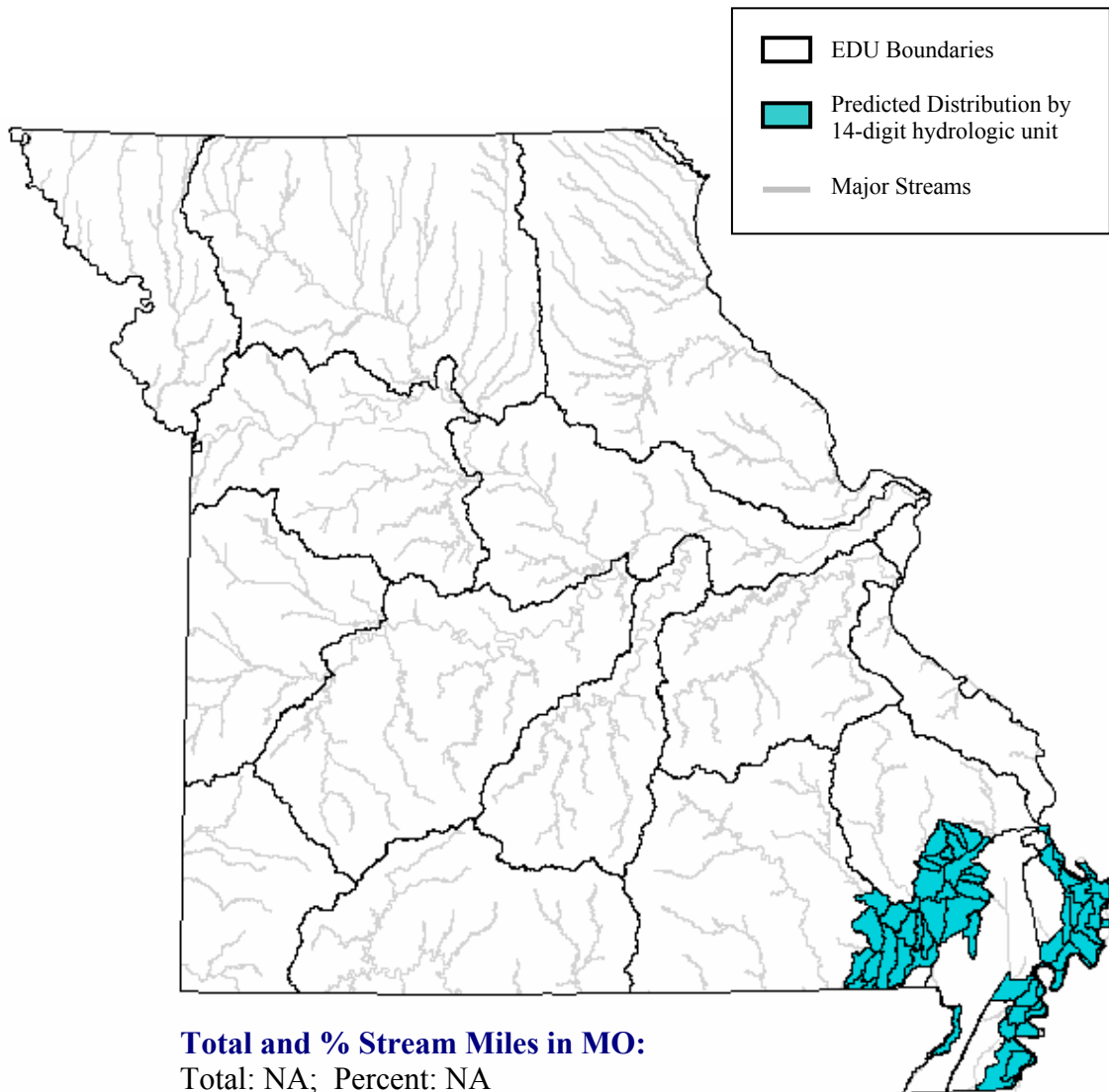
Endemism: Subregion

State Rank: S3?

ITIS Code: 97575

Global Rank: G5

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



State Range:

The vernal crayfish occurs mainly within the Mississippi Alluvial Basin Aquatic Subregion of Missouri, but most records are concentrated along the border of this subregion and the Ozarks (Pflieger 1996).

Habitat Affinities:

This species exhibits an affinity for shallow seasonally flooded swamps and sloughs and avoids flowing-water habitats. Its present distribution is centered in the least disturbed areas of the Mississippi Alluvial Basin Aquatic Subregion, which indicates that this species was likely much more widely distributed before this subregion was extensively ditched and drained (Pflieger 1996).

Predictive Model(s):*Ozark/ Mississippi Alluvial Basin Model*

The distribution is based upon existing collection records and professional review.

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Virile Crayfish

Orconectes virilis



Native: Yes

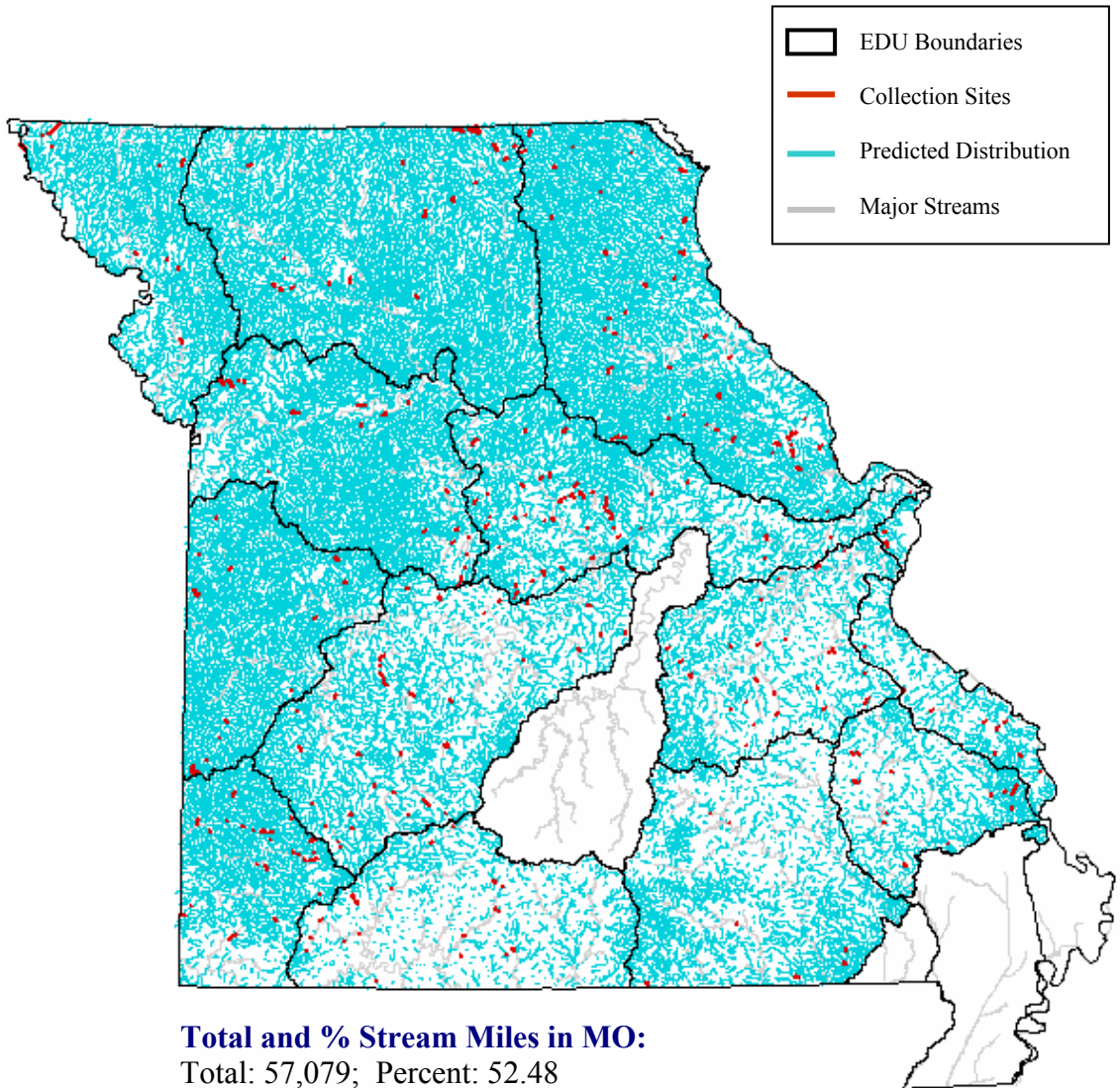
Endemism: Subzone

State Rank: S?

Global Rank: G5

ITIS Code: 97425

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



State Range:

The virile crayfish (formerly the northern crayfish) is the most widely distributed crayfish species in Missouri (Pflieger 1996). It occurs over the entire state except the Mississippi Alluvial Basin Aquatic Subregion and the Gasconade Ecological Drainage Unit within the central Ozarks. In the central and southern parts of the Ozarks it occurs as widely scattered populations likely resulting from bait bucket introductions. In the Central Plains Aquatic Subregion it is the most abundant crayfish.

Habitat Affinities:

This species occurs primarily in streams and is most abundant in water that is fertile, warm, and moderately turbid without strong base flows and with abundant cover in the form of slab rock, logs, and organic debris. It is often collected in the open or around rocks, logs, or deposits of organic debris. It is also abundant in some artificial ponds with relatively stable water levels and lacking populations of predatory fish. In prairie creeks and sloughs having intermittent flow, deep mud bottoms and wide seasonal fluctuations in area and depth, the virile crayfish is often replaced by the papershell crayfish (*Orconected immunis* (Pflieger 1996).

Predictive Model(s):

Central Plains/Ozark Model

(([Linkr] = 1) and ([GradsegR] >= 1) and ([GradsegR] <= 8)) or (([Linkr] = 2)) or (([Linkr] = 3) and ([GradsegR] >= 1) and ([GradsegR] <= 5)) or (([Linkr] >= 4) and ([Linkr] <= 6) and ([GradsegR] >= 1) and ([GradsegR] <= 2) and ([Temp_code] = 2))

References:

- Bouchard, R. W. 1972. A contribution to the knowledge of Tennessee crayfish. Ph.D. dissertation. University of Tennessee, Knoxville.
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White River Crayfish

Procambarus acutus



Native: Yes

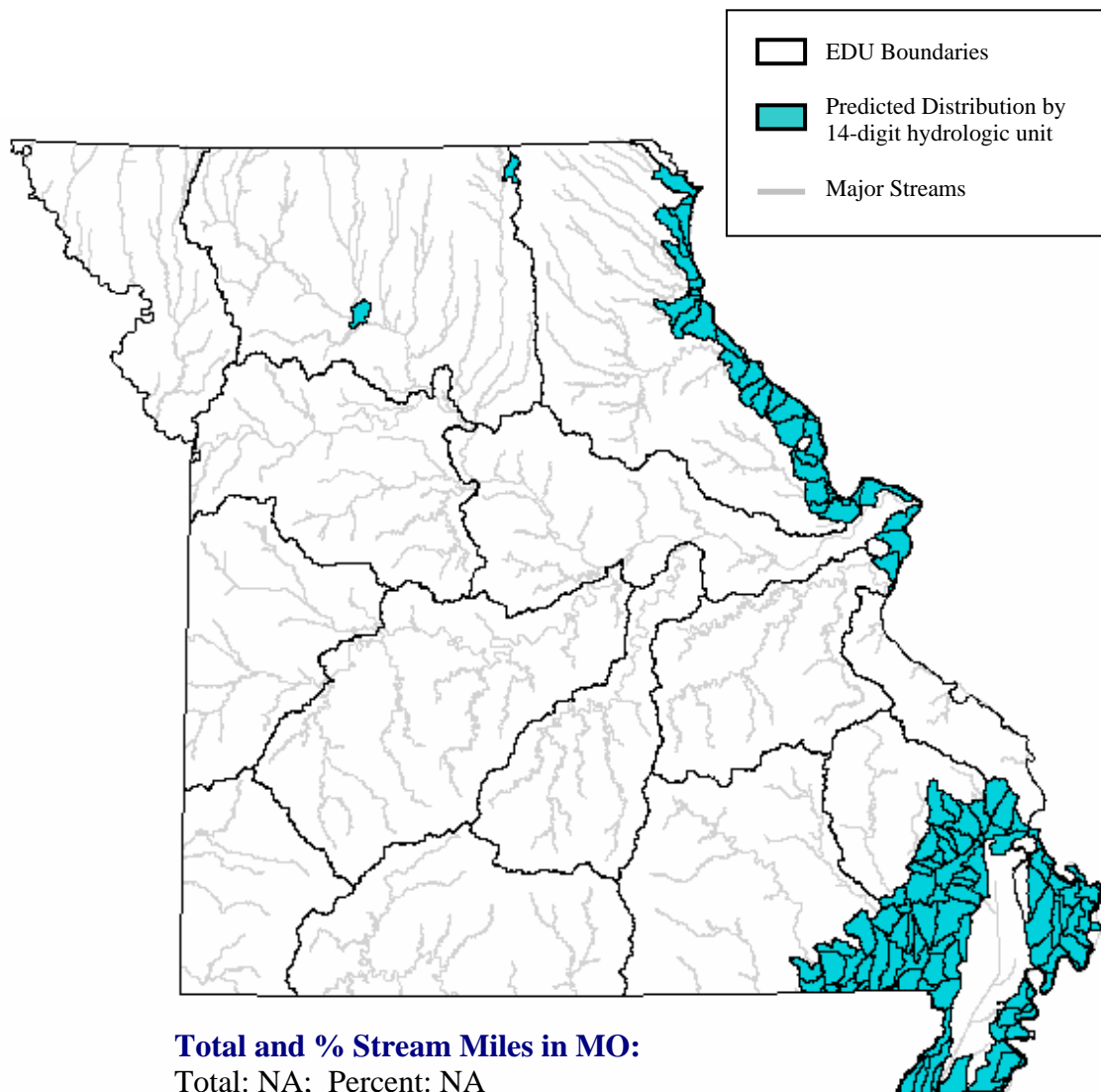
Endemism: Subzone

State Rank: S?

ITIS Code: 97492

Global Rank: G5

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



State Range:

The White River crayfish occurs throughout the Mississippi Alluvial Basin Aquatic Subregion penetrating a short distance into the Ozark Aquatic Subregion (Pflieger 1996). It also occurs in northern Missouri along the Mississippi River flood plain and in isolated populations within the Grand and Chariton River watersheds.

Habitat Affinities:

This species is most often found in sloughs, marshes and natural lakes along the flood plains of streams. Seventy percent of the occurrences in Missouri came from standing water, 19% from ditches and 11% from small to medium-sized streams. None of the collections came from open channels of rivers (Pflieger 1996).

Predictive Model(s):*Central Plains/Ozark/Mississippi Alluvial Basin Model*

The distribution is based upon existing collection records and professional review.

References:

- Bouchard, R. W. 1972. A contribution to the knowledge of Tennessee crayfish. Ph.D. dissertation. University of Tennessee, Knoxville.
- Bouchard, R. W. and H. W. Robison. 1980. An inventory of the decapod crustaceans (crayfishes and shrimps) of Arkansas with discussion of their habitats. Arkansas Academy of Sciences Proceedings 34: 22-30
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Williams' Crayfish
Orconectes williamsi



Native: Yes

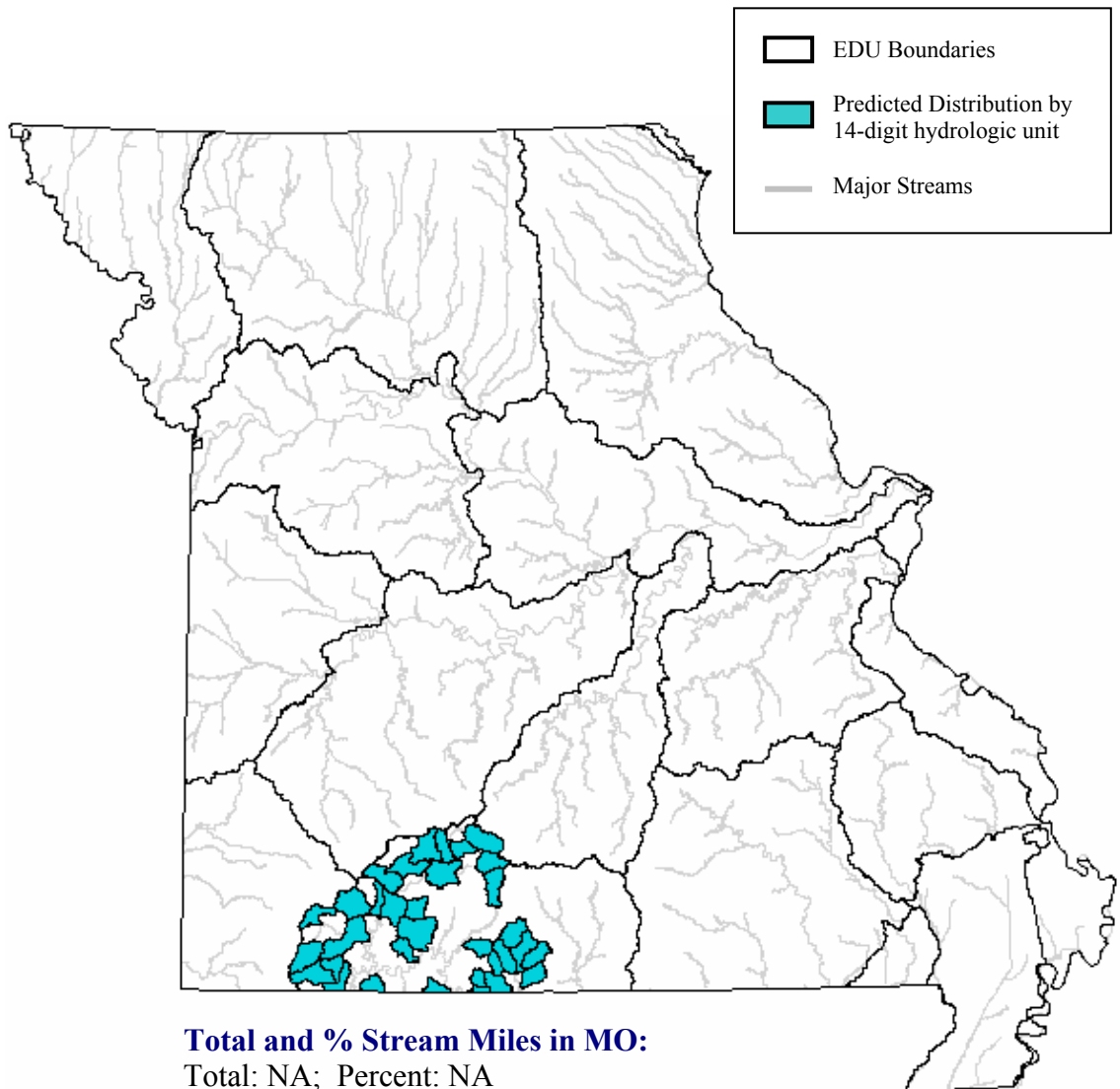
Endemism: Ecological Drainage Unit

State Rank: S1?

ITIS Code: 97488

Global Rank: G2

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



Total and % Stream Miles in MO:

Total: NA; Percent: NA

State Range:

The Williams' crayfish has a very localized distribution in the Ozark/White Ecological Drainage Unit of Missouri and Arkansas (Pflieger 1996).

Habitat Affinities:

Most specimens from Missouri were collected from clear, rocky and gravelly headwater creeks, spring branches and cave streams (Pflieger 1996). In Arkansas this species was found under very large stones in pool areas (Fitzpatrick 1966) and in the smallest mountain seepage areas (Bouchard and Robison 1980). This species lives in cavities under stones situated in well-seated in gravel.

Predictive Model(s):*Ozark Model*

([Flow] = 1) and ([GradsegR] = 5) and ([Linkr] >= 3) and ([Linkr] <= 4)

References:

- Bouchard, R.W. & H.W. Robison. 1980. An inventory of the decapod crustaceans (crayfishes and shrimps) of Arkansas with discussion of their habitats. Arkansas Academy of Sciences Proceedings 34: 22-30.
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Woodland Crayfish

Orconectes hylas



Native: Yes

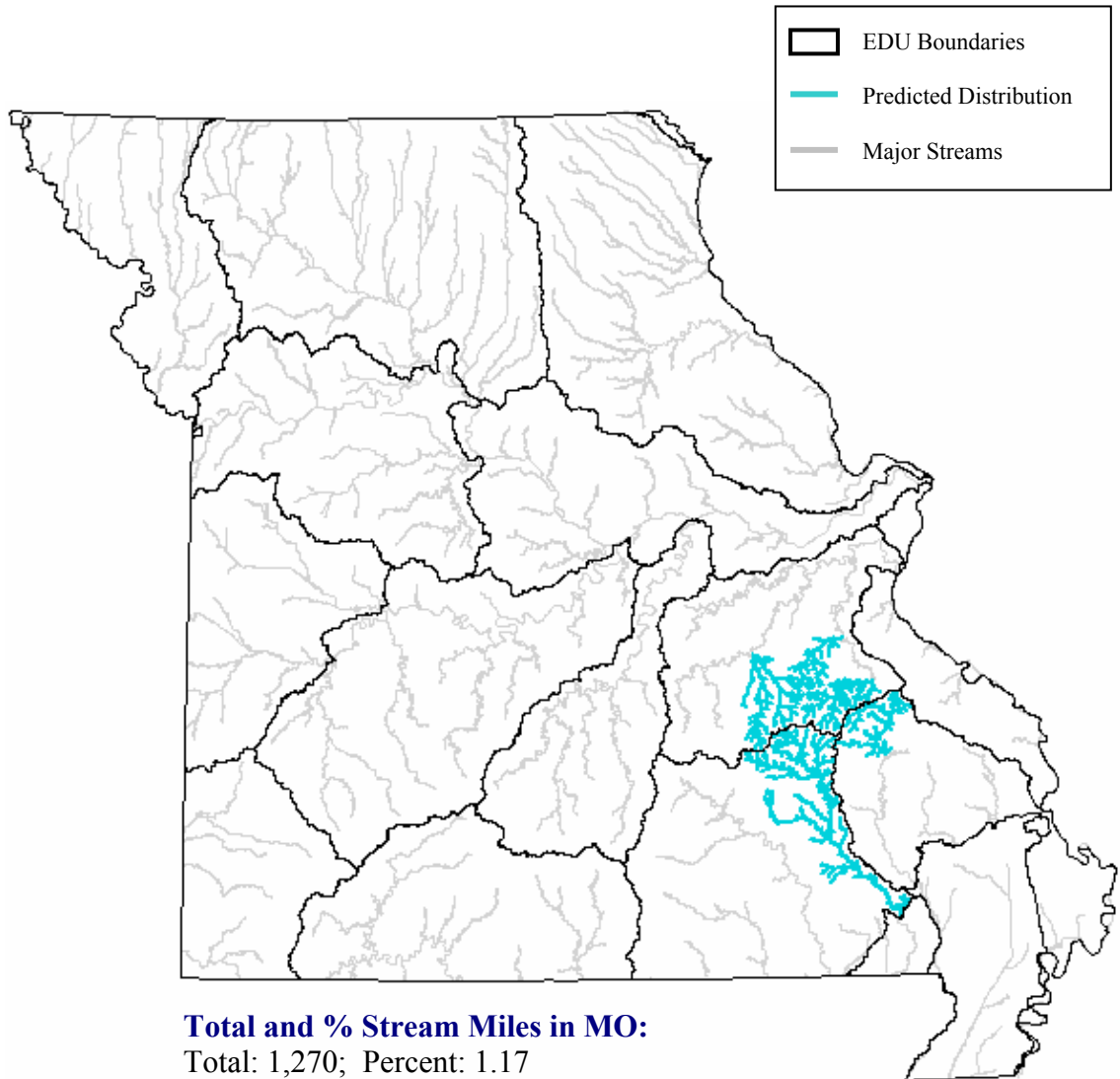
Endemism: EDU

State Rank: S3?

Global Rank: G4

ITIS Code: 97444

Modeled By: Gust Annis, Pam Haverland,
Michael Morey, Scott Sowa,
John Stanovick



State Range:

This species is endemic to the Ozark/Meramec and the Ozark/Black/Current Ecological Drainage Units (EDU). It is the most abundant and generally distributed crayfish species within the Black River watershed and occurs sparingly in the Meramec and Big River watersheds (Pflieger 1996). It has also been introduced into Stouts Creek, a tributary to the St. Francis River, where it appears to have replaced the St. Francis (*Orconectes quadruncus*) crayfish (Pflieger 1996).

Habitat Affinities:

The woodland crayfish occurs in streams of all sizes, from the smallest headwater creeks to largest Ozark rivers (Pflieger 1996). It is most abundant in creeks and small rivers having permanent flow with low turbidity and with silt-free, rocky and gravelly substrates (Pflieger 1996). This species lives in cavities that it excavates beneath rocks and boulders within riffles and runs and silt-free rocky or gravelly pools.

Predictive Model(s):

Ozark Model
([Flow] = 1)

References:

- Crandall, K. A. 1998. Conservation phylogenetics of ozark crayfishes - assigning priorities for aquatic habitat protection. *Biological Conservation*. 84(2):107-117.
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