An Amphipod ***Stygobromus vitreus***

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
N	S	G4	S1	G4	S1

G-Trend Unknown

G-Trend Comment Unknown

S-Trend Unknown

S-Trend Comment Unknown

Habitat/Life History Small drip and seep pools in caves, but occasionally is found in surface seeps in the Mammoth Cave area (Holsinger 1976).

Key Habitat Sensitive

Guilds Terrestrial - Caves, rock shelters, and clifflines

Statewide Map Stygobromus_vitreus.pdf

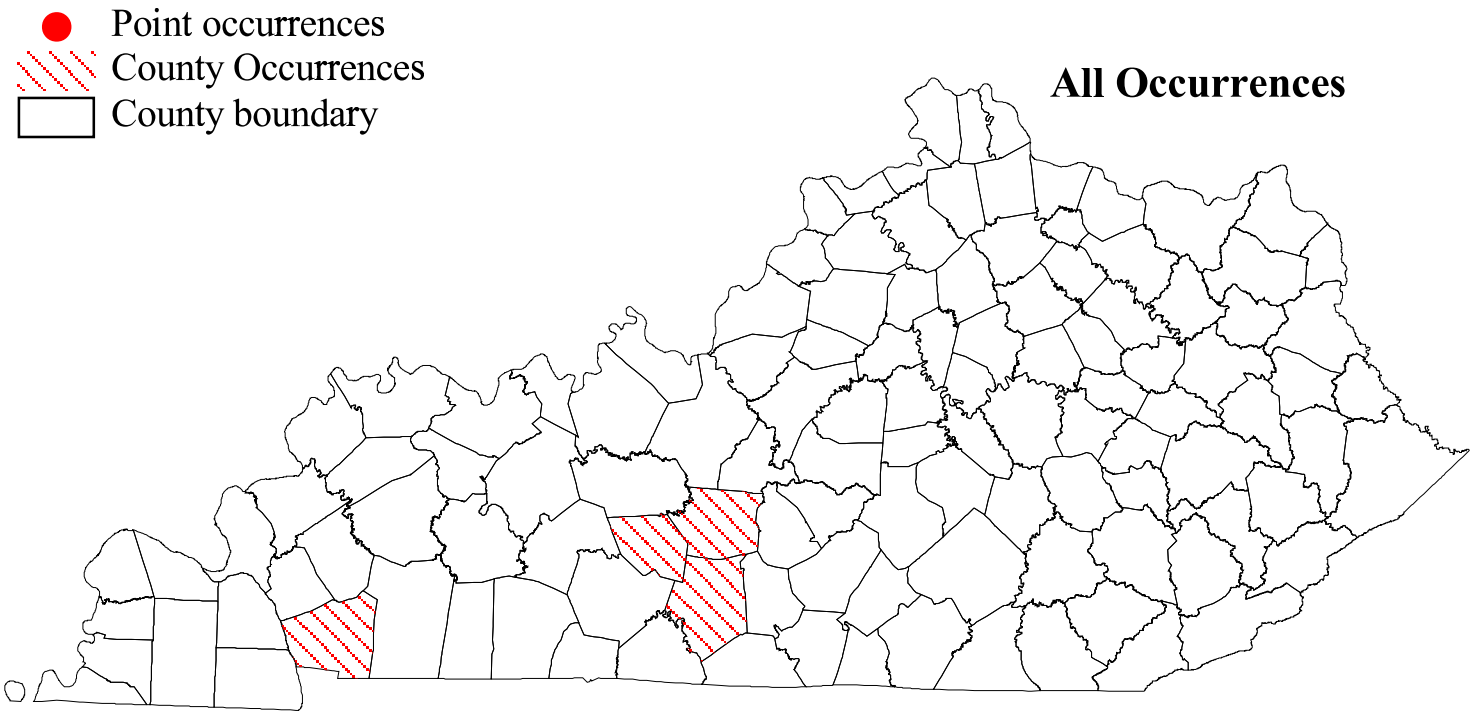
Conservation Issues

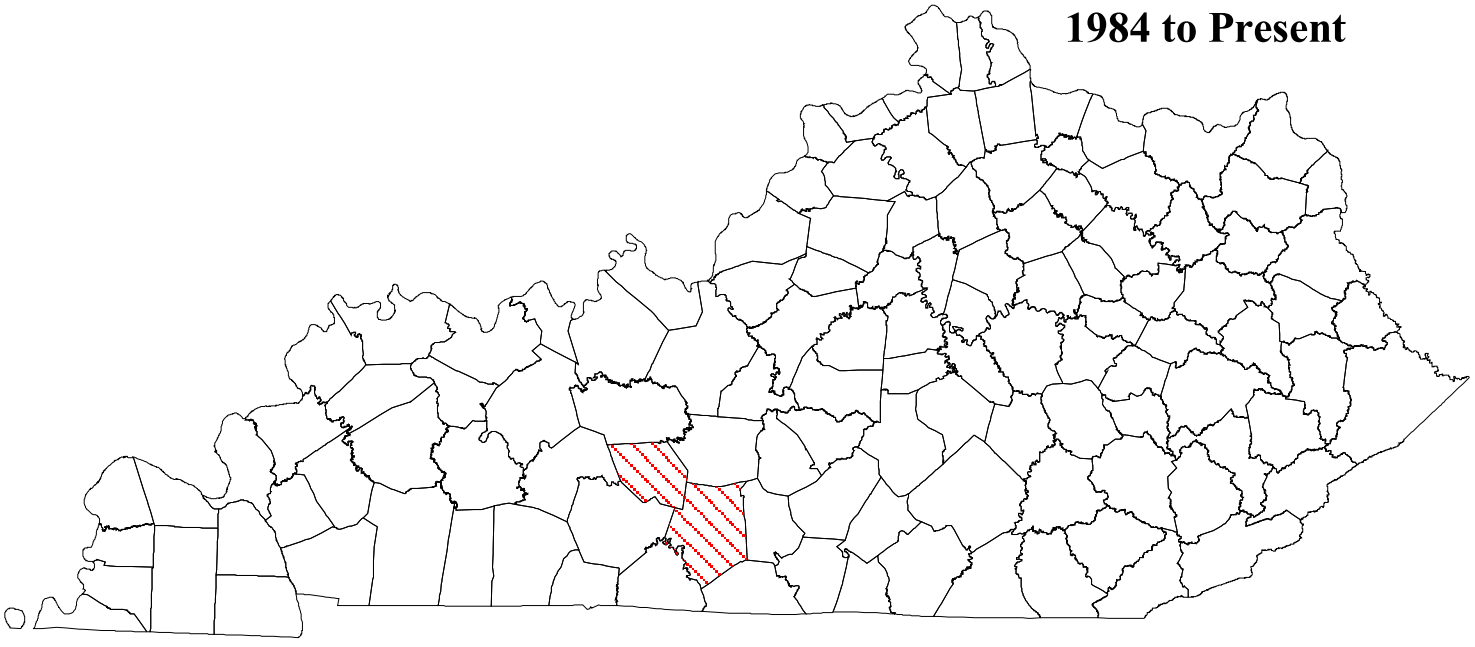
- Aquatic habitat degradation
  - 2J - Alteration of surface runoff patterns (flow/temp regimes)
- Biological/consumptive uses
  - 5H - Isolated populations (low gene flow)
- Miscellaneous mortality factors
  - 6G - Stochastic events (droughts, unusual weather, pine beetle damage, flooding, etc.)

An Amphipod

Stygobromus vitreus

(Data current as of April 28, 2009)





Appalachian Cave Crayfish *Orconectes packardi*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
N	T	G2	S2S3	G2	S2

G-Trend Unknown

G-Trend Comment Unknown

S-Trend Unknown

S-Trend Comment Unknown

Habitat/Life History Occurs in subterranean streams and pools (Hobbs 1989). Probably circadian, responding more to seasonal variations than to light regimens. Probably purely opportunistic and able to respond to sudden influx of abundance followed by long periods of deprivation.

Key Habitat Sensitive

Guilds Aquatic - Cave streams

Statewide Map AppalachianCaveCrayfish.pdf

Conservation Issues

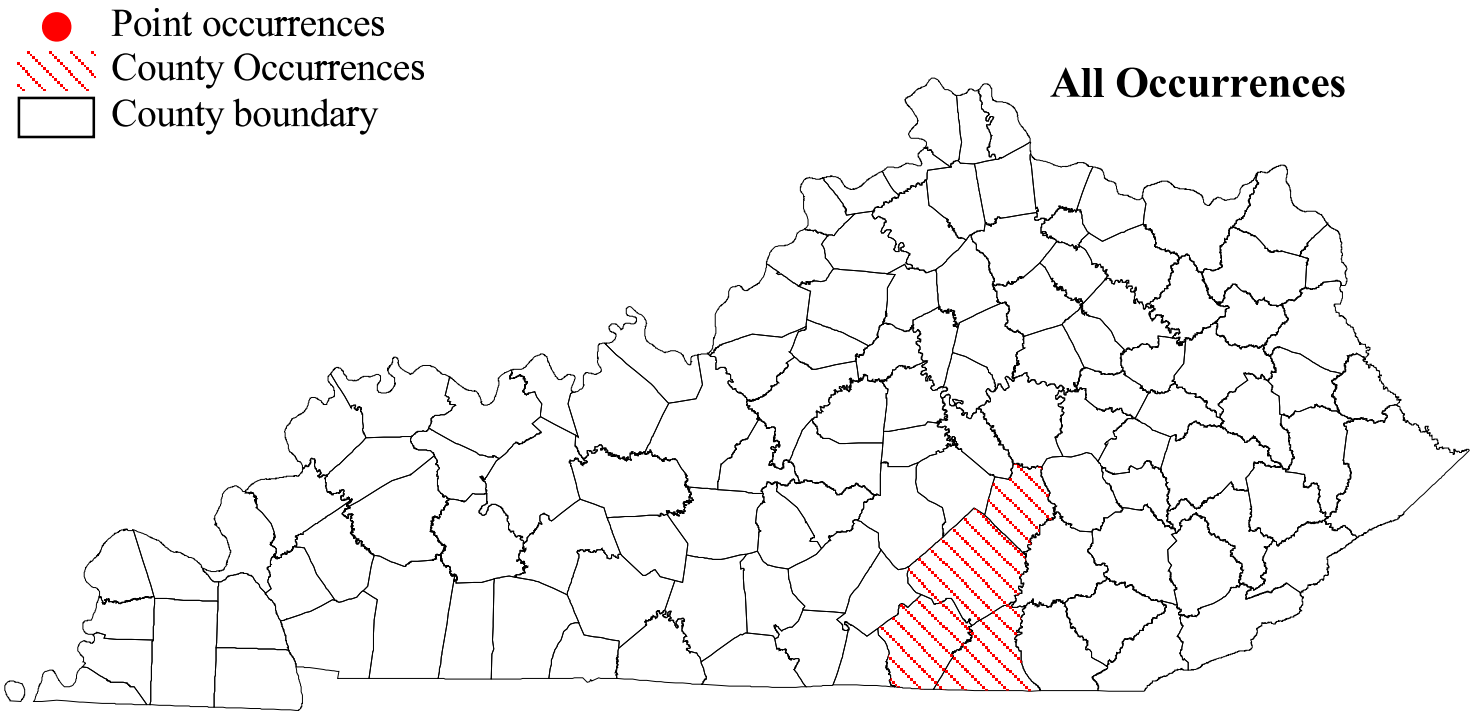
Point and non-point source pollution

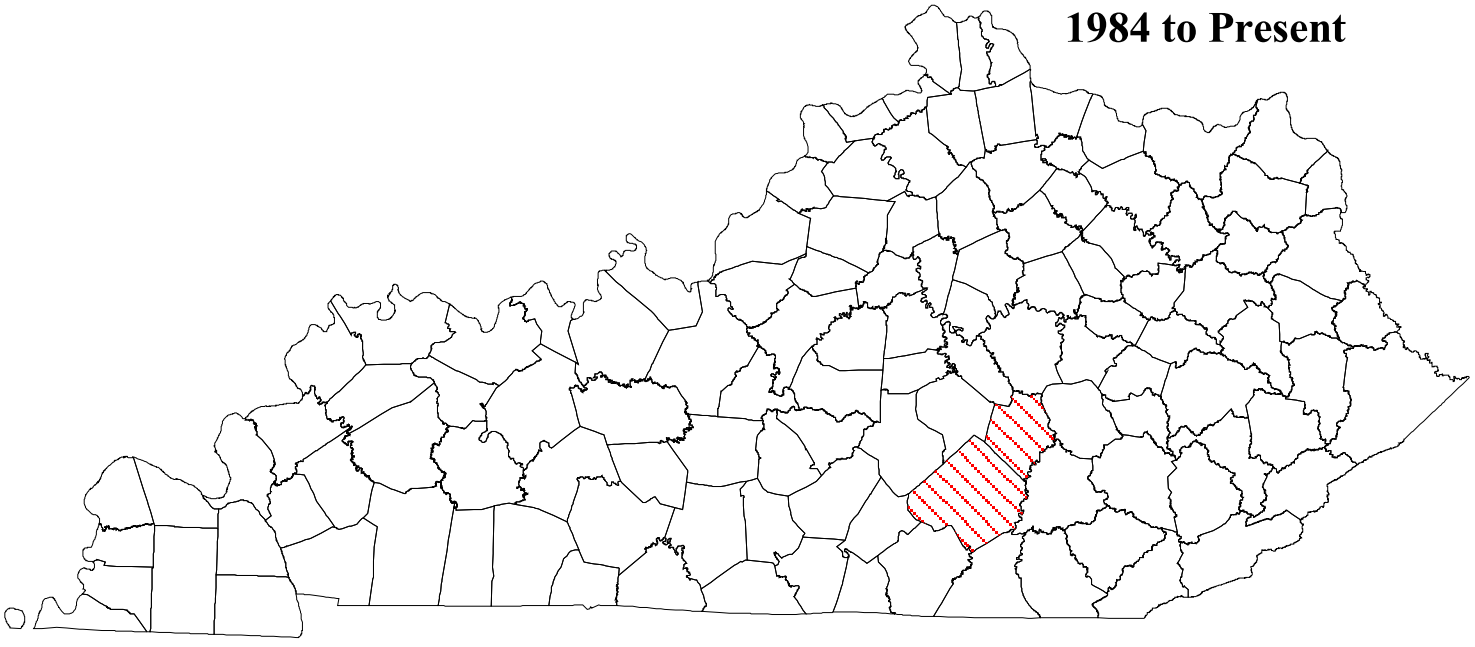
- 4B - Waste water discharge (e.g., sewage treatment)
- 4C - Toxic chemical spills
- 4D - Oil and gas drilling operations associated runoff
- 4E - Agricultural runoff - including fertilizers/animal waste, herbicides, pesticides
- 4F - Urban runoff
- 4G - Chemical spills and contaminants (applied and accidental)
- 4I - Runoff from transportation routes (deicing salt, gas, others)
- 4K - Industrial waste discharge/runoff

Appalachian Cave Crayfish

Orconectes packardi

(Data current as of April 28, 2009)





Big Sandy Crayfish *Cambarus veteranus*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
SOMC	S	G3	S1	G3	S1

G-Trend Stable (unchanged or within +/- 10% fluctuation in population, range, area occupied, and/or number or condition of occurrences)

G-Trend Comment Unknown

S-Trend Unknown

S-Trend Comment Current status is uncertain as few collections have been made. Typically collections are only of a few individuals.

Habitat/Life History Typically encountered under large flat boulders in riffles and pools of medium creek and rivers (Taylor and Schuster 2005). Inhabits moderately sized streams (10-20 meters wide) with bedrock, cobble, boulder, and sand substrate and permanent, fast-flowing water.

Key Habitat Russell Fork of Big Sandy River

Guilds Aquatic - Medium to large streams
Aquatic - Small to medium streams

Statewide Map BigSandyCrayfish.pdf

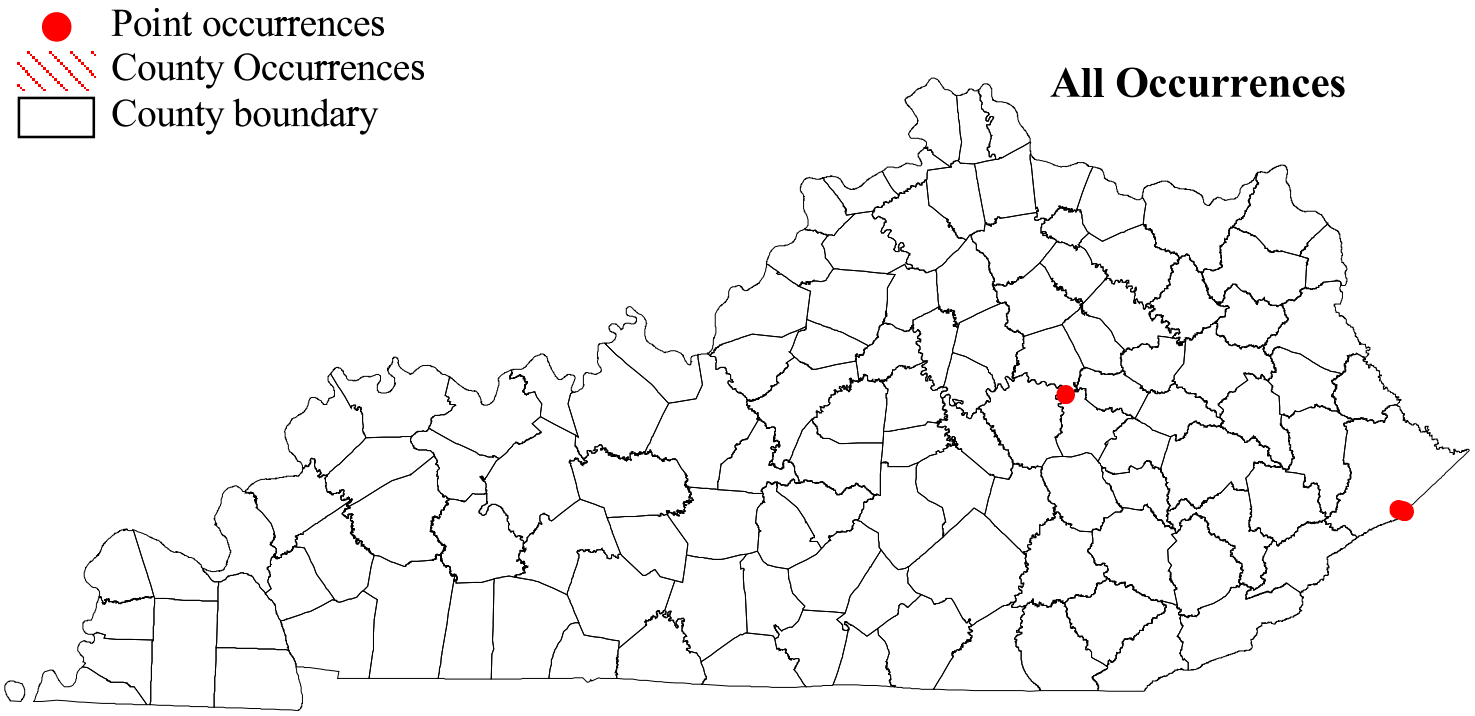
Conservation Issues

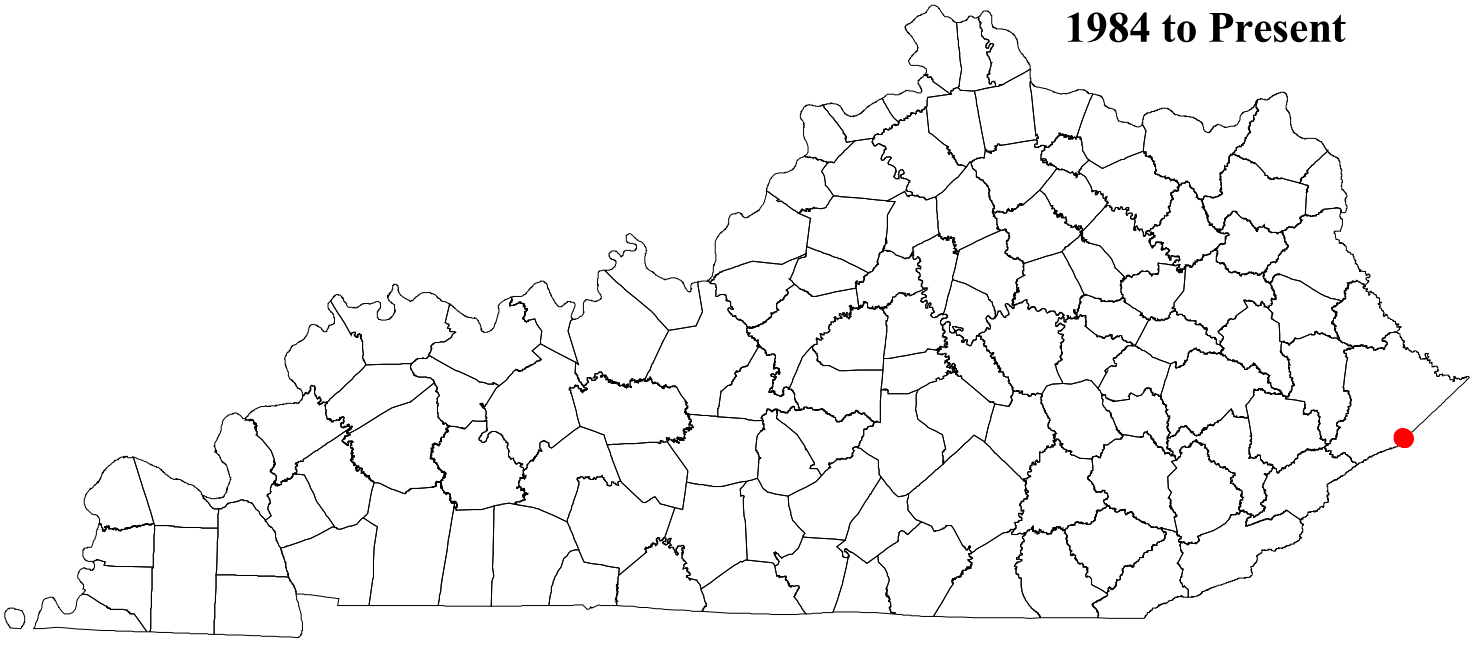
- Aquatic habitat degradation
  - 2B - Gravel/sand removal or quarrying (e.g., mineral excavation)
  - 2E - Stream channelization/ditching
  - 2F - Riparian zone removal (Agriculture/development)
- Point and non-point source pollution
  - 4A - Acid mine drainage other coal mining impacts
  - 4G - Chemical spills and contaminants (applied and accidental)

Big Sandy Crayfish

Cambarus veteranus

(Data current as of April 28, 2009)





Big South Fork Crayfish *Cambarus bouchardi*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
N	E	G2G3	S1S2	G2	S1

G-Trend Increasing (increase of >10%)

G-Trend Comment Unknown

S-Trend Stable (unchanged or within +/- 10% fluctuation in population, range, area occupied, and/or number or condition of occurrences)

S-Trend Comment Presumably stable; the species was regularly distributed at 21 sites in the watershed in a study by O' Bara (1988) and new records continue to be located

Habitat/Life History Habitat highly variable, including boulder runs, and silty pools of streams with moderate current and vegetation clumps in heavily silted areas from the headwaters to the stream mouth. Probably nocturnal and opportunistic feeder.

Key Habitat Roaring Paunch Creek

Guilds
Aquatic - Upland streams in riffles
Aquatic - Upland streams in pools
Aquatic - Upland headwater streams in pools
Aquatic - Small to medium streams
Aquatic - Medium to large streams
Aquatic - Lowland Streams in slackwater
Aquatic - Lowland Streams in riffles

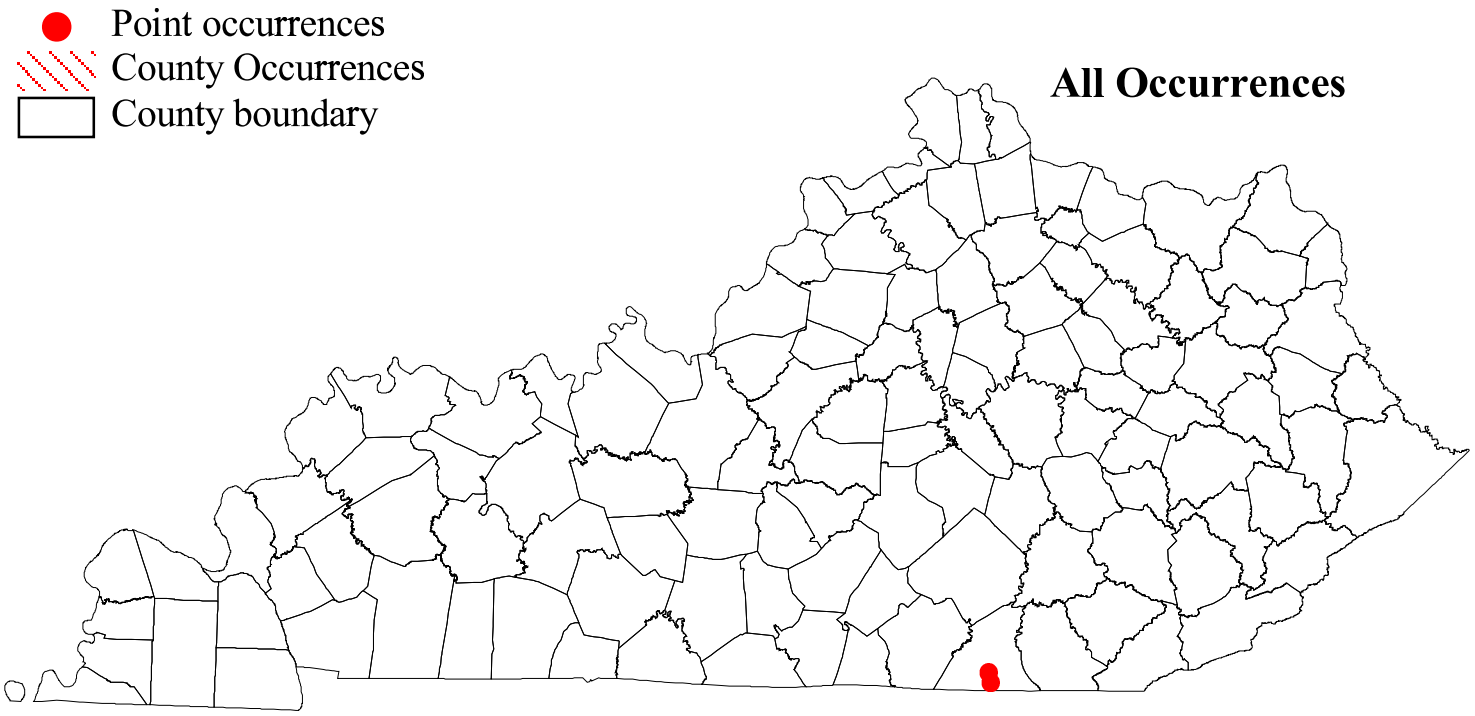
Statewide Map BigSouthForkCrayfish.pdf

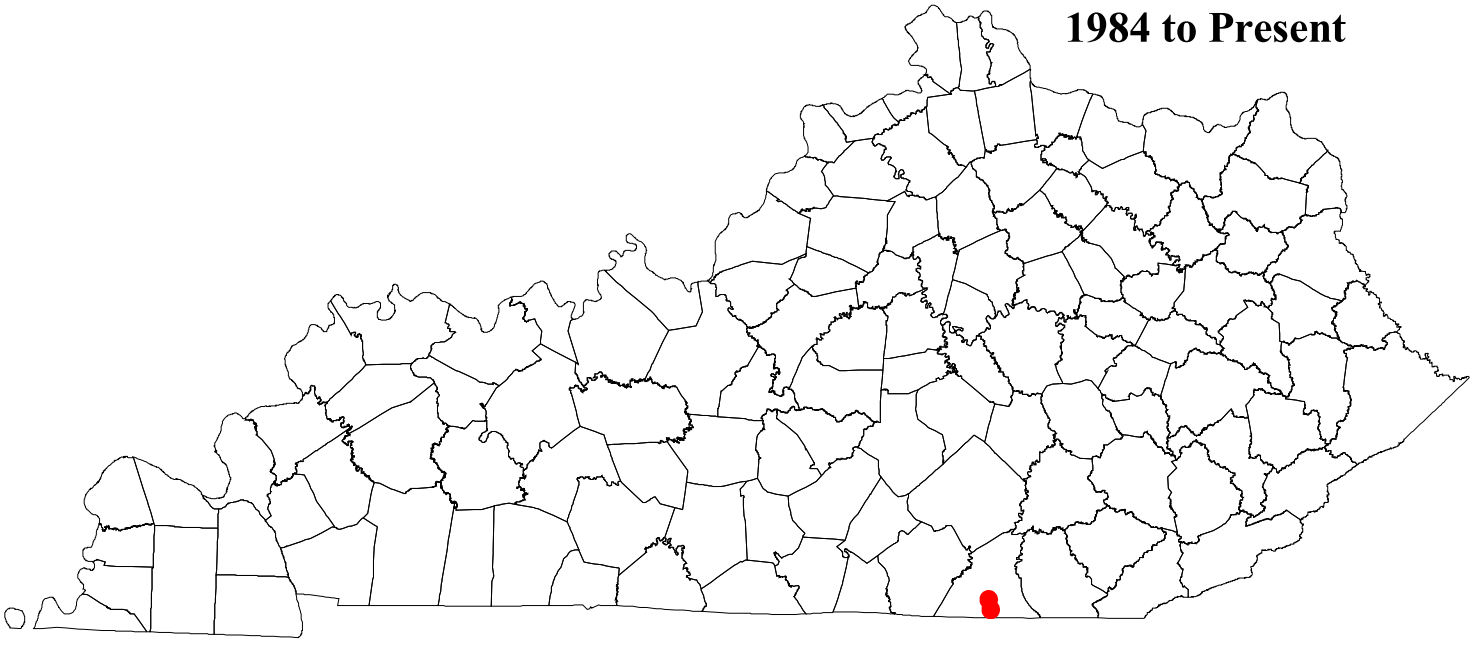
Conservation Issues
- Aquatic habitat degradation
  - 2M - Valley fills
- Biological/consumptive uses
  - 5H - Isolated populations (low gene flow)
- Point and non-point source pollution
  - 4A - Acid mine drainage other coal mining impacts
  - 4C - Toxic chemical spills
  - 4D - Oil and gas drilling operations associated runoff
  - 4G - Chemical spills and contaminants (applied and accidental)

Big South Fork Crayfish

Cambarus bouchardi

(Data current as of April 28, 2009)





Blood River Crayfish *Orconectes burri*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
N	T	G1	S2	G1	S2

G-Trend Stable (unchanged or within +/- 10% fluctuation in population, range, area occupied, and/or number or condition of occurrences)

G-Trend Comment Unknown

S-Trend Stable (unchanged or within +/- 10% fluctuation in population, range, area occupied, and/or number or condition of occurrences)

S-Trend Comment New streams with occurrence records within the Blood River watershed have been recently located (KSNPC, 2008).

Habitat/Life History Inhabits small to medium-sized streams with sand and gravel substrates, most commonly in woody debris piles or woody vegetation root masses along stream banks (Taylor and Sabaj 1998, KSNPC 2008). Form I males have been collected in March, April, May, and October (Taylor and Sabaj 1998, Taylor and Schuster 2004, KSNPC 2008). Ovigerous females have been collected in April (KSNPC 2008).

Key Habitat Grindstone Creek.

Guilds Aquatic - Lowland Streams in riffles
Aquatic - Small to medium streams

Statewide Map BloodRiverCrayfish.pdf

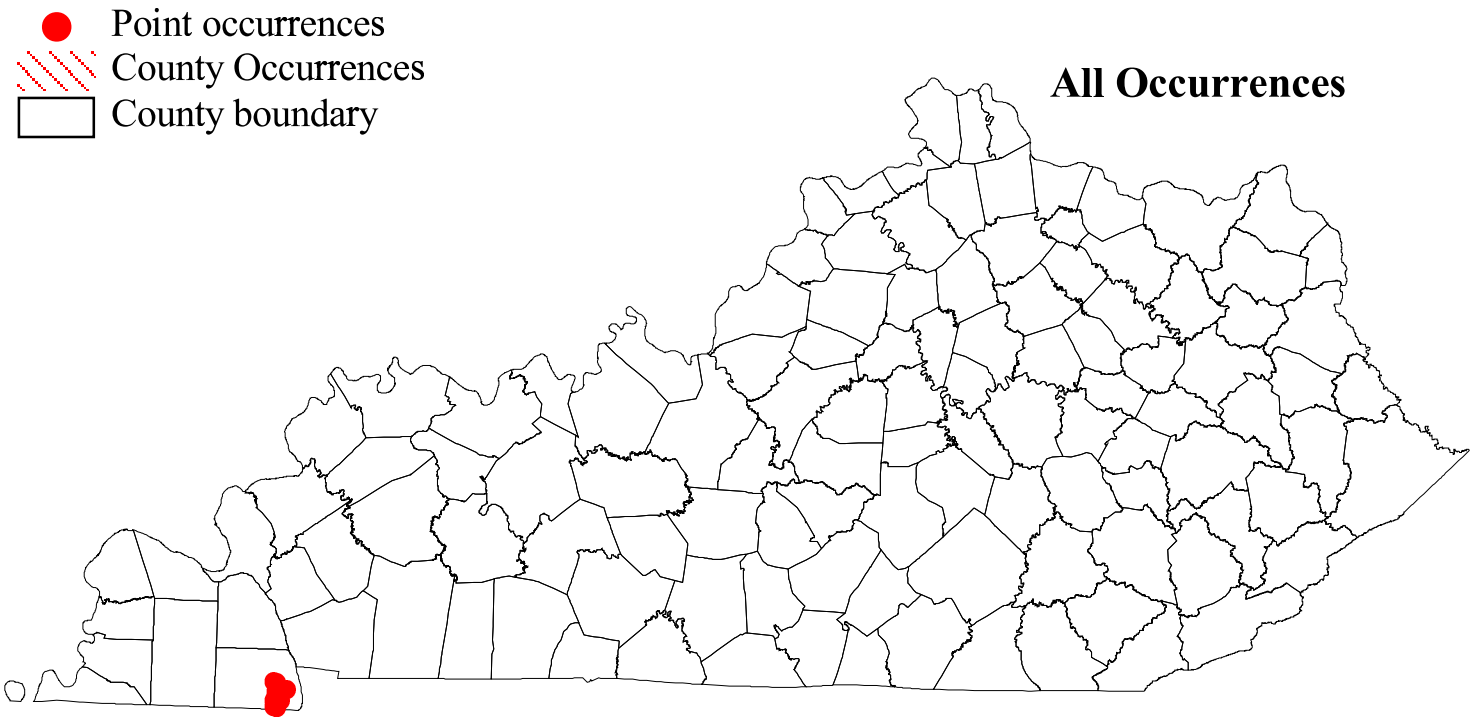
Conservation Issues

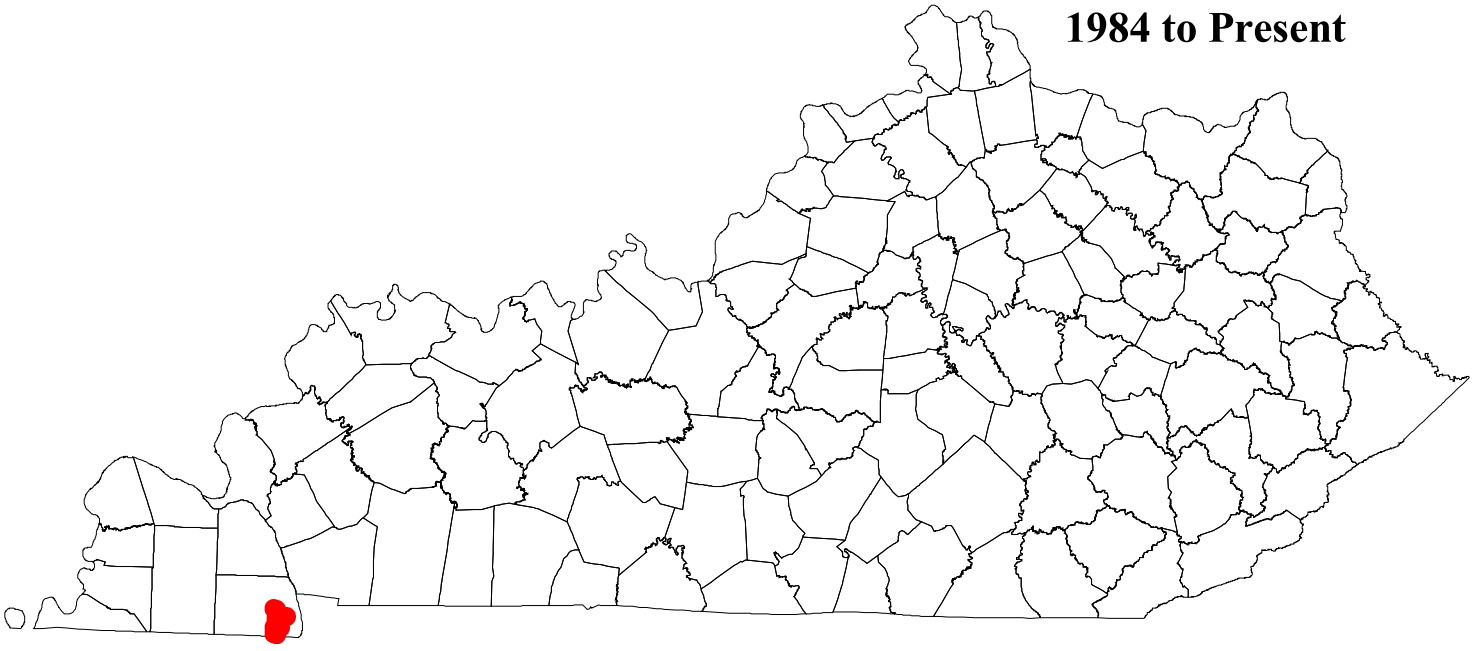
- Aquatic habitat degradation
  - 2E - Stream channelization/ditching
  - 2H - Wetland loss/drainage/alteration
- Point and non-point source pollution
  - 4C - Toxic chemical spills
  - 4G - Chemical spills and contaminants (applied and accidental)

Blood River Crayfish

Orconectes burri

(Data current as of April 28, 2009)





Bottlebrush Crayfish *Barbicambarus cornutus*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
N	S	G4	S2	G4	S2

G-Trend Stable (unchanged or within +/- 10% fluctuation in population, range, area occupied, and/or number or condition of occurrences)

G-Trend Comment Unknown

S-Trend Stable (unchanged or within +/- 10% fluctuation in population, range, area occupied, and/or number or condition of occurrences)

S-Trend Comment Unknown

Habitat/Life History Lives under or near large, flat cobbles or boulders in streams (Taylor and Schuster 2005). Juveniles less demanding of large rocks. No empirical data on home range, but usually only 1 or 2 large adults found under stone of 4-5 m diameter. Adults rarely observed in open water during daylight hours; therefore, most feeding, etc. probably at night. Probably, like most crawfishes, opportunistic feeder; can hunt small fishes and other aquatic animals efficiently if available; diet principally detritis; but no firm empirical data available.

Key Habitat Russell Creek or Little Barren River.

Guilds Aquatic - Small to medium streams
Aquatic - Medium to large streams

Statewide Map BottlebrushCrayfish.pdf

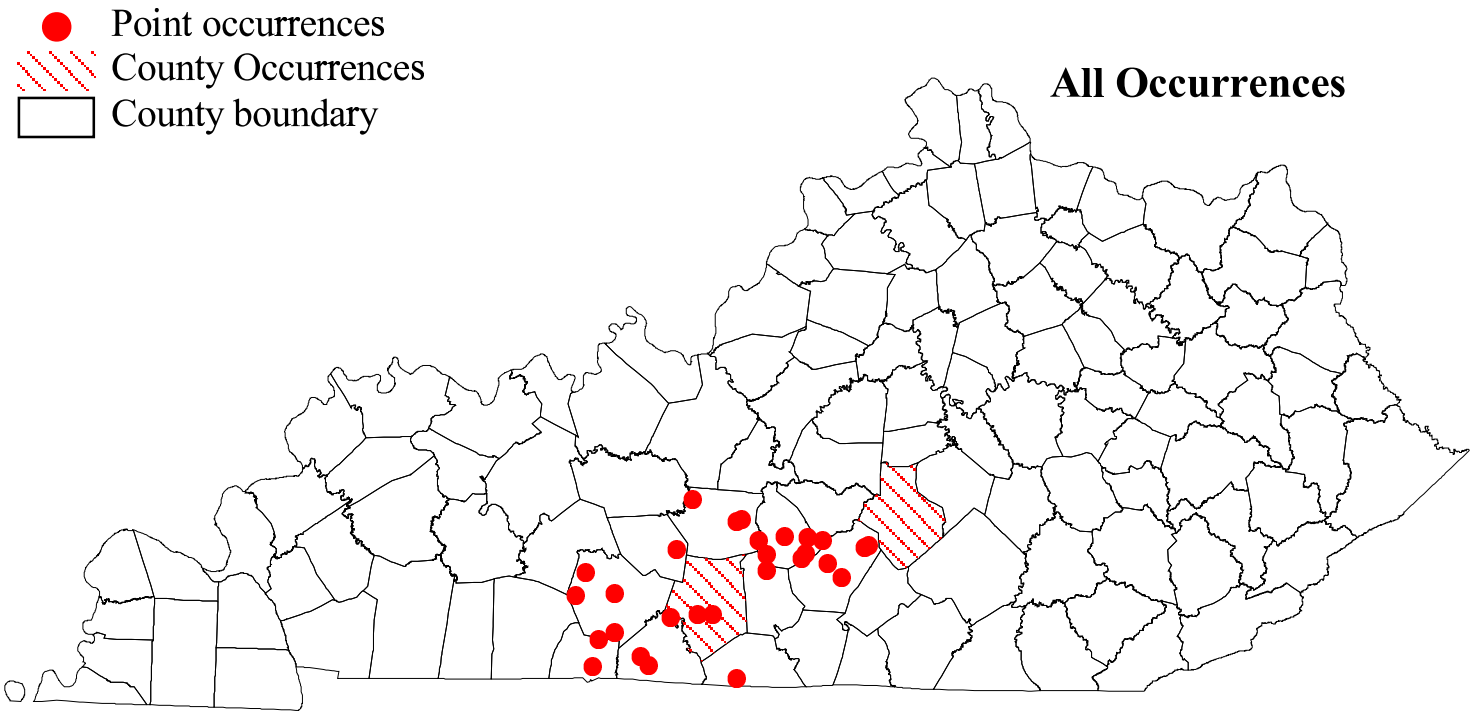
Conservation Issues

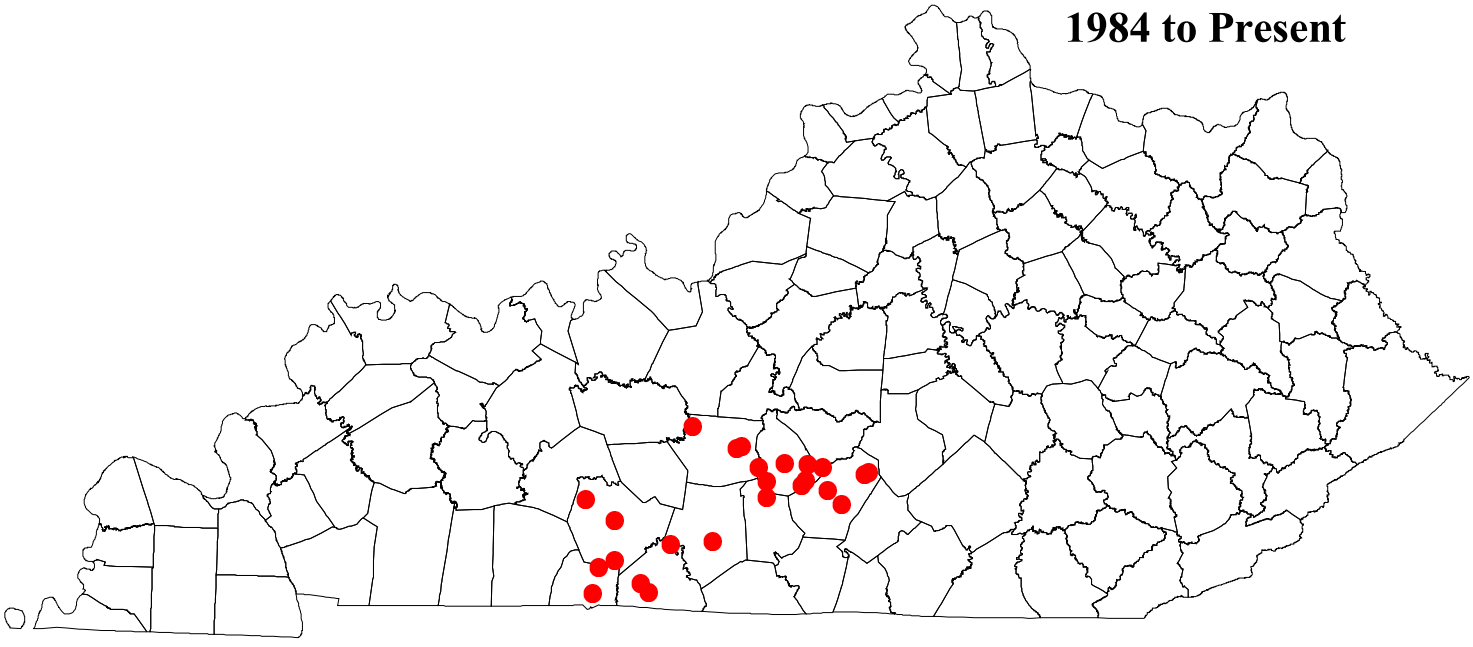
- Aquatic habitat degradation
  - 2B - Gravel/sand removal or quarrying (e.g., mineral excavation)
  - 2C - Construction/Operation of impoundments (migration barrier)
  - 2E - Stream channelization/ditching
  - 2F - Riparian zone removal (Agriculture/development)
- Point and non-point source pollution
  - 4C - Toxic chemical spills
  - 4D - Oil and gas drilling operations associated runoff
  - 4G - Chemical spills and contaminants (applied and accidental)
  - 4I - Runoff from transportation routes (deicing salt, gas, others)
- Terrestrial habitat degradation
  - 3F - Urban/residential development
  - 3K - Surface mining

Bottlebrush Crayfish

Barbicambarus cornutus

(Data current as of April 28, 2009)





Bousfield's Amphipod *Gammarus bousfieldi*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
SOMC	E	G1	S1	G1	S1

G-Trend Unknown

G-Trend Comment Unknown

S-Trend Unknown

S-Trend Comment Monitoring is needed to assess the health of this species.

Habitat/Life History Inhabits pools or areas with little current, deep mud-detritus bottoms, and beds of emergent vegetation (Cole and Minckley 1961).

Key Habitat Doe Run.

Guilds
Terrestrial - standing water
Terrestrial - forested wetland
Terrestrial - Emergent and shrub-dominated wetlands
Aquatic - Lowland Streams in slackwater
Aquatic - Large rivers in current

Statewide Map Bousfield'sAmphipod.pdf

Conservation Issues

Aquatic habitat degradation
- 2B - Gravel/sand removal or quarrying (e.g., mineral excavation)
- 2E - Stream channelization/ditching
- 2F - Riparian zone removal (Agriculture/development)
- 2J - Alteration of surface runoff patterns (flow/temp regimes)

Biological/consumptive uses
- 5H - Isolated populations (low gene flow)

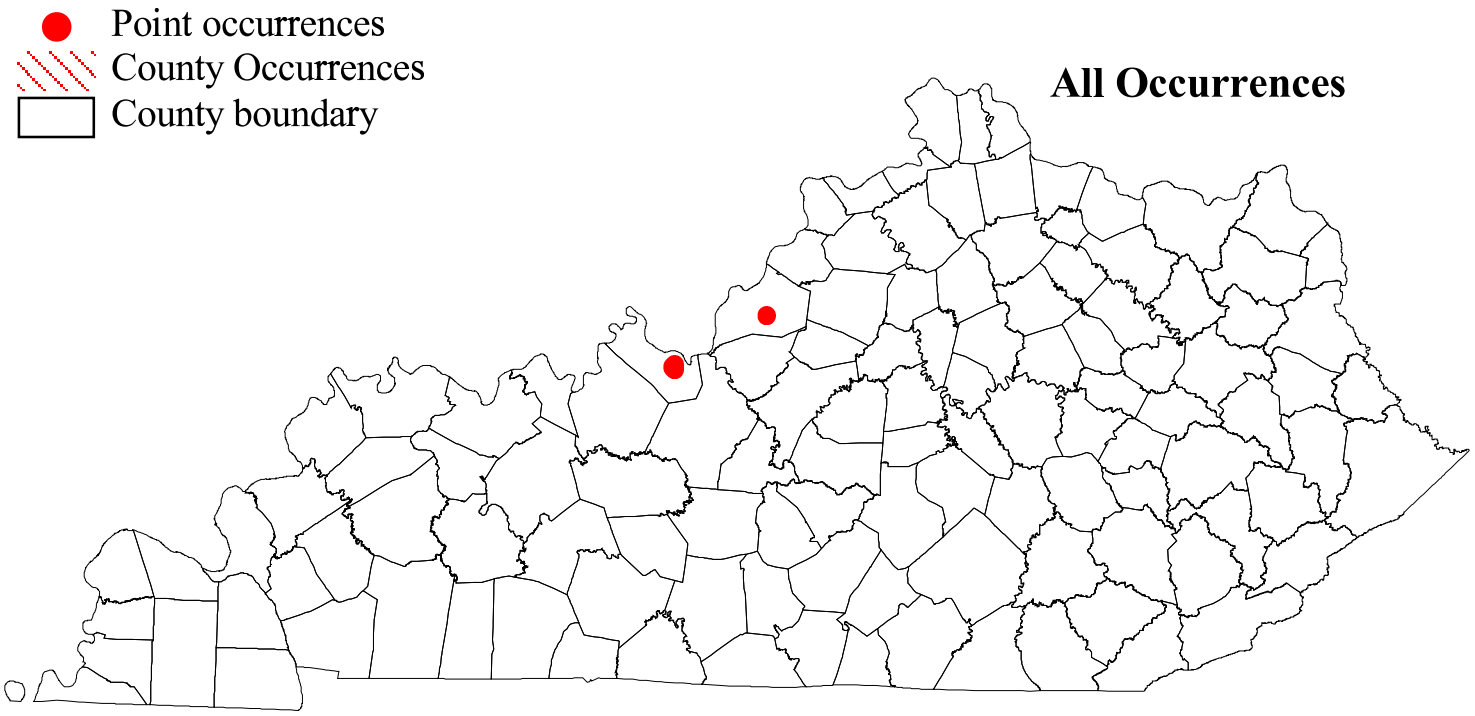
Point and non-point source pollution
- 4B - Waste water discharge (e.g., sewage treatment)
- 4C - Toxic chemical spills
- 4G - Chemical spills and contaminants (applied and accidental)
- 4I - Runoff from transportation routes (deicing salt, gas, others)

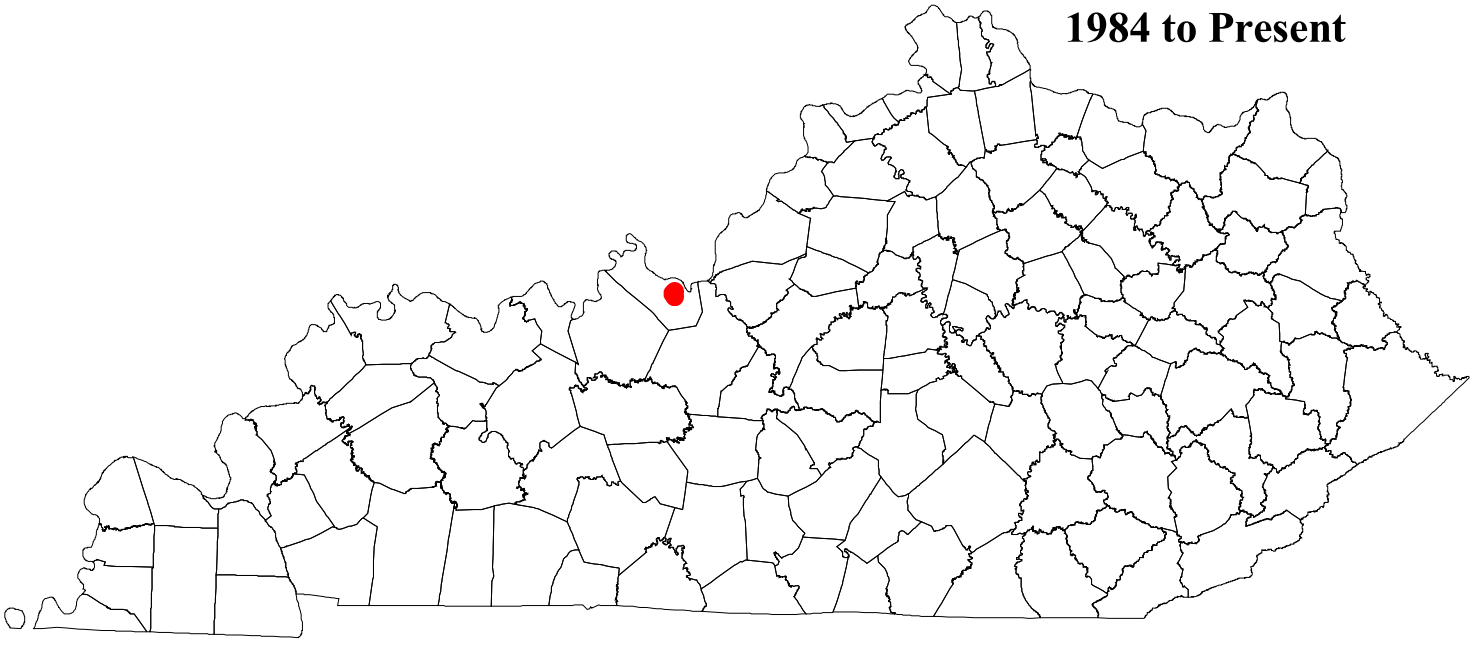
Siltation and increased turbitity
- 1D - Urbanization/Development General Construction
- 1F - Recreational activities (atv, horseback riding)

Bousfield's Amphipod

Gammarus bousfieldi

(Data current as of April 28, 2009)





Cajun Dwarf Crayfish *Cambarellus shufeldtii*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
N	S	G5	S2	G5	S2

G-Trend Stable (unchanged or within +/- 10% fluctuation in population, range, area occupied, and/or number or condition of occurrences)

G-Trend Comment Currently believed to be stable across range (Taylor et al, 2007)

S-Trend Unknown

S-Trend Comment Largely unknown as many records have not been searched for in some time; one locality is believed by KSNPC to be extirpated in the state in Carlisle County.

Habitat/Life History Inhabits swamps, sloughs, ditches, lakes, ponds, sluggish streams (Hobbs 1989) and floodplains of rivers on the coastal plain, and may burrow to survive droughts (Page 1985). The species prefers sluggish to standing water and is tolerant of elevated temperatures. In Louisiana, *C. shufeldti* survives drying periods by forming a subterranean chamber sealed at the top with mud (Penn 1950). Very aggressive species; dominant in hierarchy when other *Cambarellus* species present; has displaced other members of the genus in modern times (Penn & Fitzpatrick 1963). Probably opportunistic, but primarily feeding on detritus.

Key Habitat Murphy's Pond.

Guilds
Terrestrial - standing water
Terrestrial - forested wetland
Terrestrial - Emergent and shrub-dominated wetlands
Aquatic - Lowland Streams in slackwater
Aquatic - Large rivers in slackwater

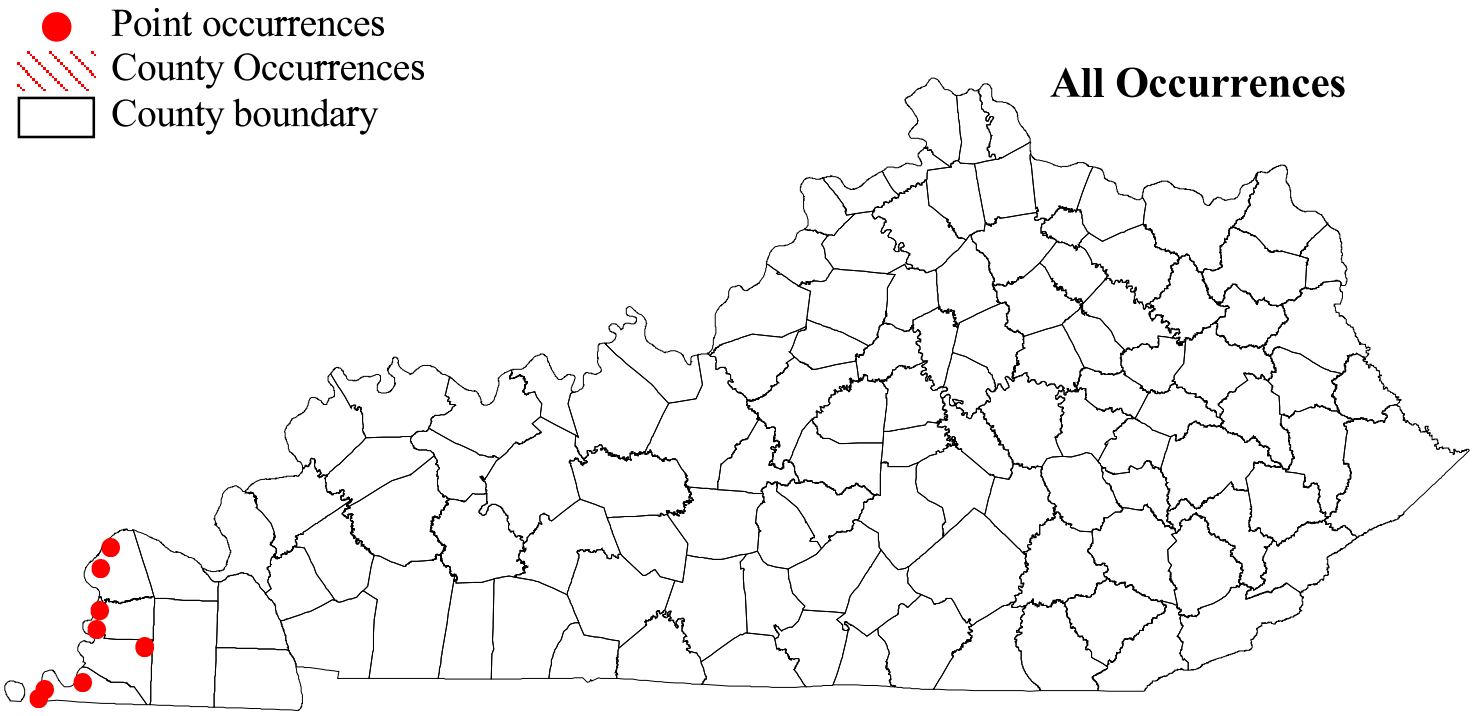
Statewide Map CajunDwarfCrayfish.pdf

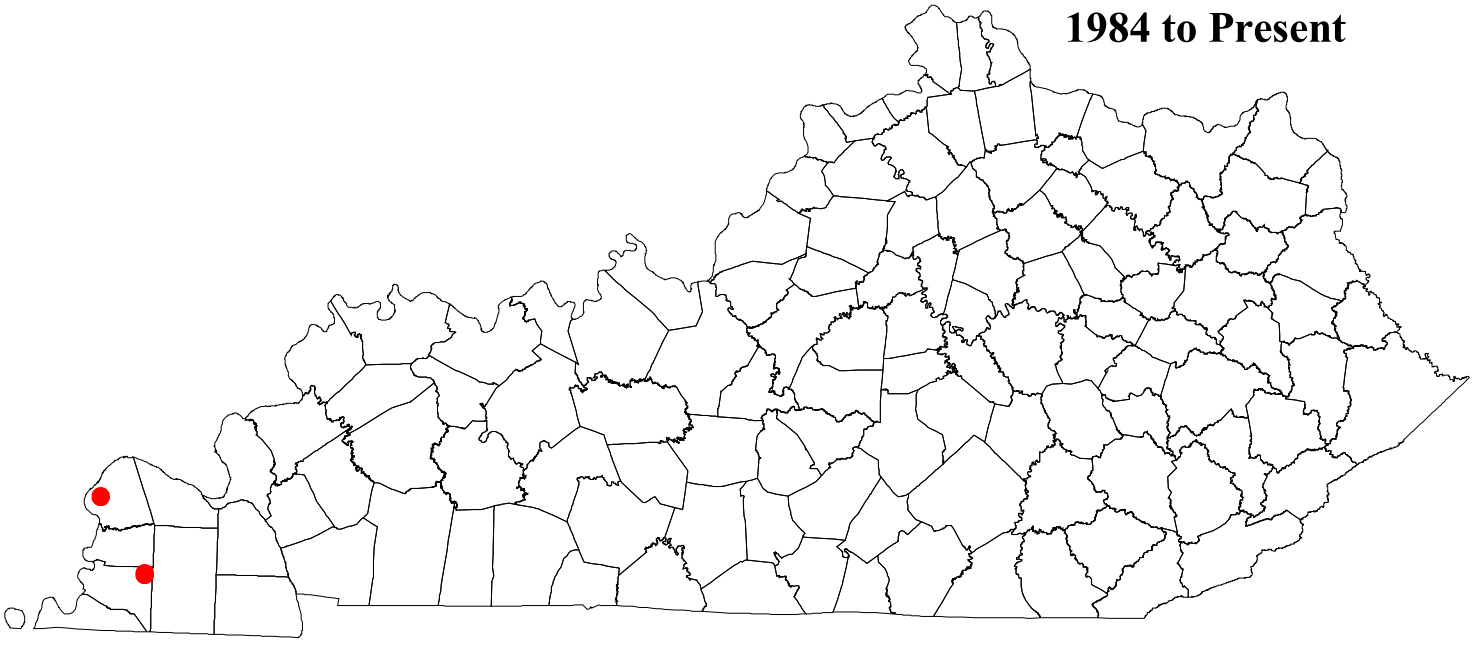
Conservation Issues
- Aquatic habitat degradation
  - 2E - Stream channelization/ditching
  - 2F - Riparian zone removal (Agriculture/development)
  - 2H - Wetland loss/drainage/alteration
  - 2N - Eutrophication (e.g. of wetlands)

Cajun Dwarf Crayfish

Cambarellus shufeldtii

(Data current as of April 28, 2009)





Clifton Cave Isopod *Caecidotea barri*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
SOMC	E	G1	S1	G1	S1

G-Trend Unknown

G-Trend Comment Unknown

S-Trend Unknown

S-Trend Comment No access is available to cave opening, so this cannot be assessed.

Habitat/Life History Found in small subterranean streams and pools.

Key Habitat Sensitive

Guilds Aquatic - Cave streams

Statewide Map CliftonCaveIsopod.pdf

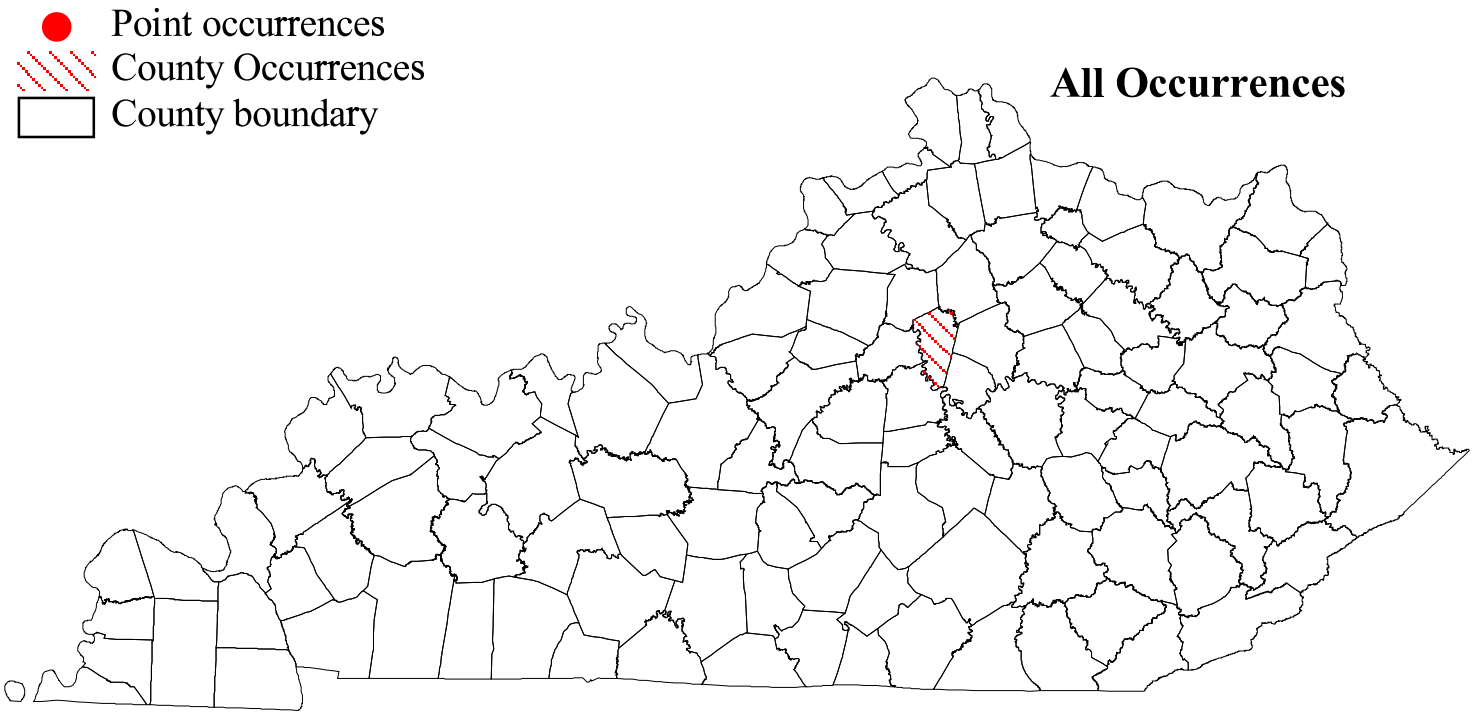
Conservation Issues

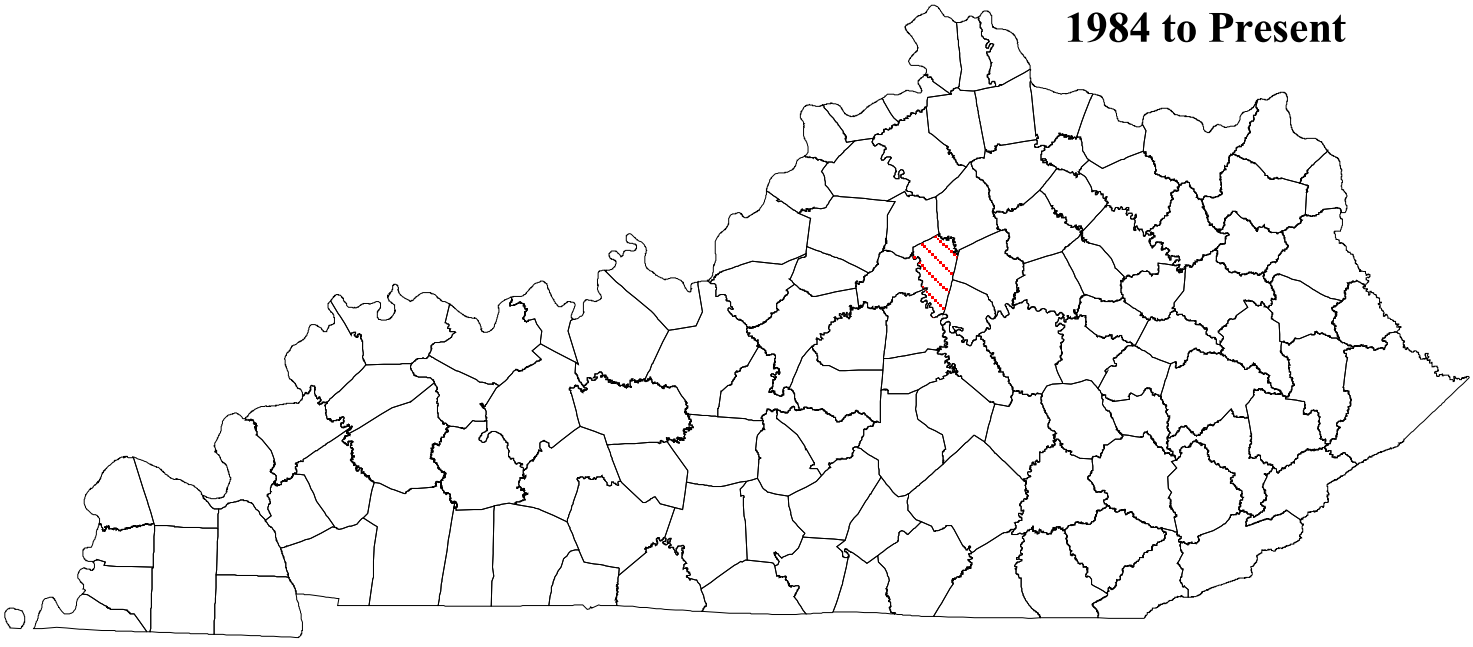
- Biological/consumptive uses
  - 5F - Low population densities
  - 5H - Isolated populations (low gene flow)
- Point and non-point source pollution
  - 4C - Toxic chemical spills
  - 4G - Chemical spills and contaminants (applied and accidental)
  - 4I - Runoff from transportation routes (deicing salt, gas, others)
- Terrestrial habitat degradation
  - 3P - Pollution/toxicity (e.g., heavy metals, pesticides, herbicides, acid rain)
  - 3U - Loss, lack and degradation of special and unique microhabitats

Clifton Cave Isopod

Caecidotea barri

(Data current as of April 28, 2009)





Crittenden Crayfish *Orconectes bisectus*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
SOMC	T	G1	S1	G1	S1

G-Trend Unknown

G-Trend Comment Unknown

S-Trend Unknown

S-Trend Comment Unknown

Habitat/Life History Inhabits medium-sized streams in Crittenden County (Hobbs 1974,1989) with gravelly bottom and detritus. At the type locality (Brushy Fork), specimens were collected from a mud and rubble bottom (Rhoades 1944). Probably a nocturnal opportunistic feeder. Form I males have been collected from January and March through May, with ovigerous females collected in March and May (Taylor and Schuster 2005). Two ovigerous females carried 134 and 146 eggs in March (Taylor and Schuster 2005).

Key Habitat Crooked Creek.

Guilds Aquatic - Small to medium streams

Statewide Map CrittendenCrayfish.pdf

Conservation Issues

- Aquatic habitat degradation
  - 2B - Gravel/sand removal or quarrying (e.g., mineral excavation)
  - 2E - Stream channelization/ditching
- Point and non-point source pollution
  - 4C - Toxic chemical spills
  - 4E - Agricultural runoff - including fertilizers/animal waste, herbicides, pesticides
  - 4G - Chemical spills and contaminants (applied and accidental)
  - 4K - Industrial waste discharge/runoff

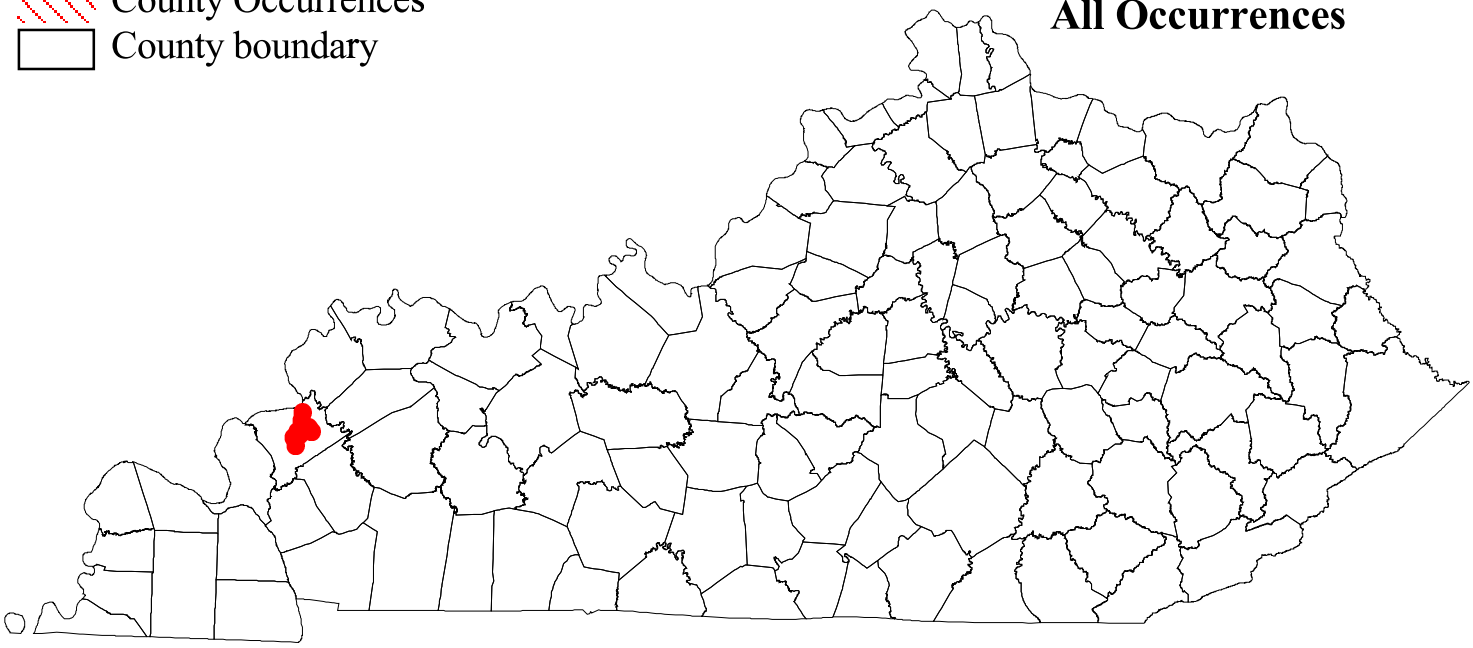
Crittenden Crayfish

Orconectes bisectus

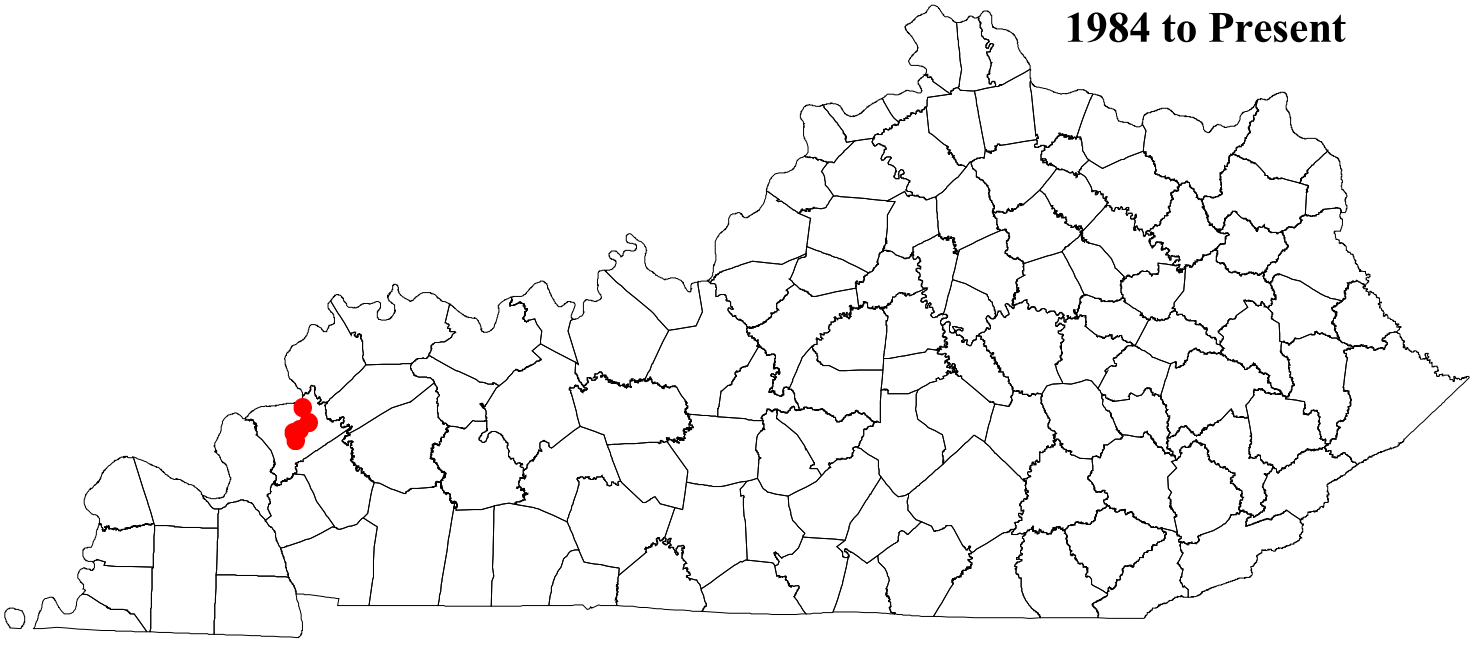
(Data current as of April 28, 2009)

Point occurrences
County Occurrences
County boundary

All Occurrences



1984 to Present



Cumberland Plateau Cave Crayfish *Orconectes barri*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
N	T	G2	S2S3	G2	S2

G-Trend Unknown

G-Trend Comment Unknown

S-Trend Stable (unchanged or within +/- 10% fluctuation in population, range, area occupied, and/or number or condition of occurrences)

S-Trend Comment Recently elevated from *Orconectes australis* complex; appears to be stable.

Habitat/Life History Inhabits underground streams and pools. *Orconectes packardi* and *Orconectes australis*, closely related taxa, were typically found along edges of cave streams. This is likely the same behavior for *O. barri*. In a study of a similar species, ovigerous females were located in January (Hobbs and Barr 1972). Detailed information on habitat and life history Kentucky populations are virtually unknown.

Key Habitat Sensitive

Guilds Aquatic - Cave streams

Statewide Map CumberlandPlateauCaveCrayfish.pdf

Conservation Issues

- Aquatic habitat degradation
  - 2G - Water level fluctuations
  - 2J - Alteration of surface runoff patterns (flow/temp regimes)
- Biological/consumptive uses
  - 5F - Low population densities
  - 5H - Isolated populations (low gene flow)
- Point and non-point source pollution
  - 4B - Waste water discharge (e.g., sewage treatment)
  - 4C - Toxic chemical spills
  - 4D - Oil and gas drilling operations associated runoff
  - 4E - Agricultural runoff - including fertilizers/animal waste, herbicides, pesticides
  - 4F - Urban runoff
  - 4G - Chemical spills and contaminants (applied and accidental)

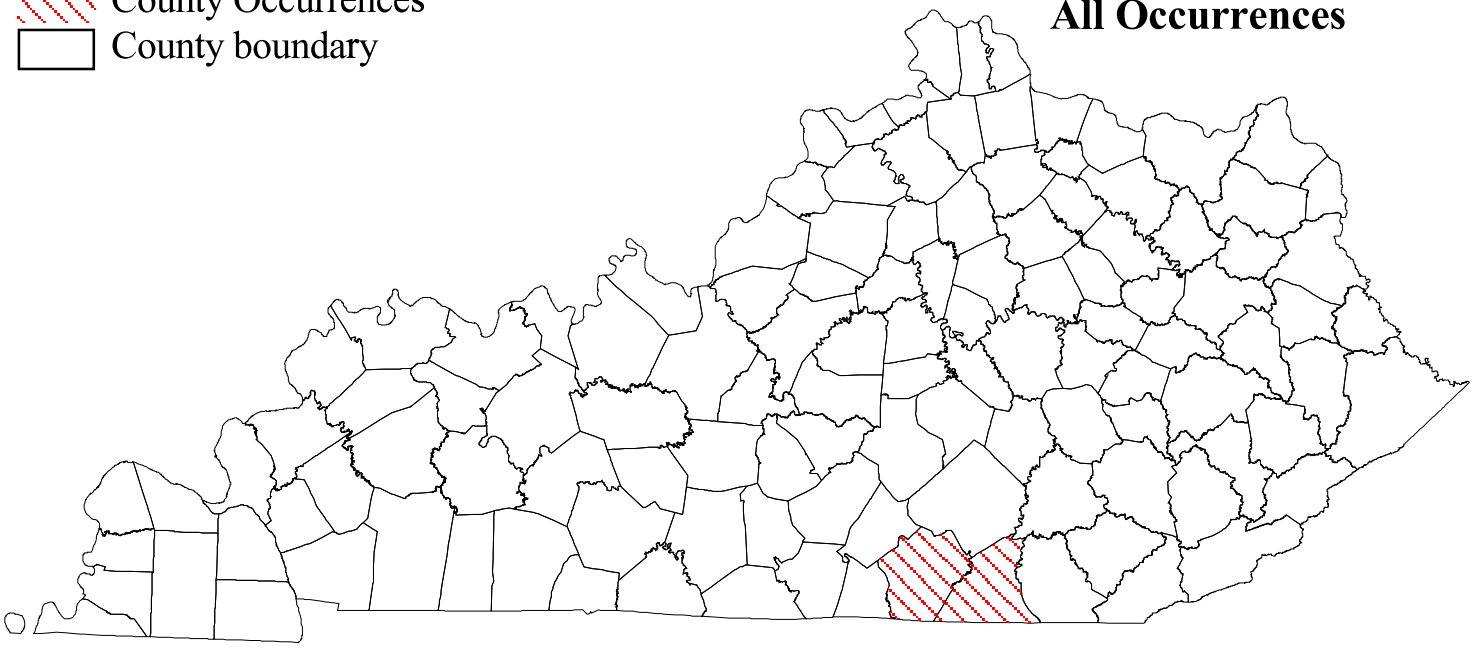
Cumberland Plateau Cave Crayfish

Orconectes barri

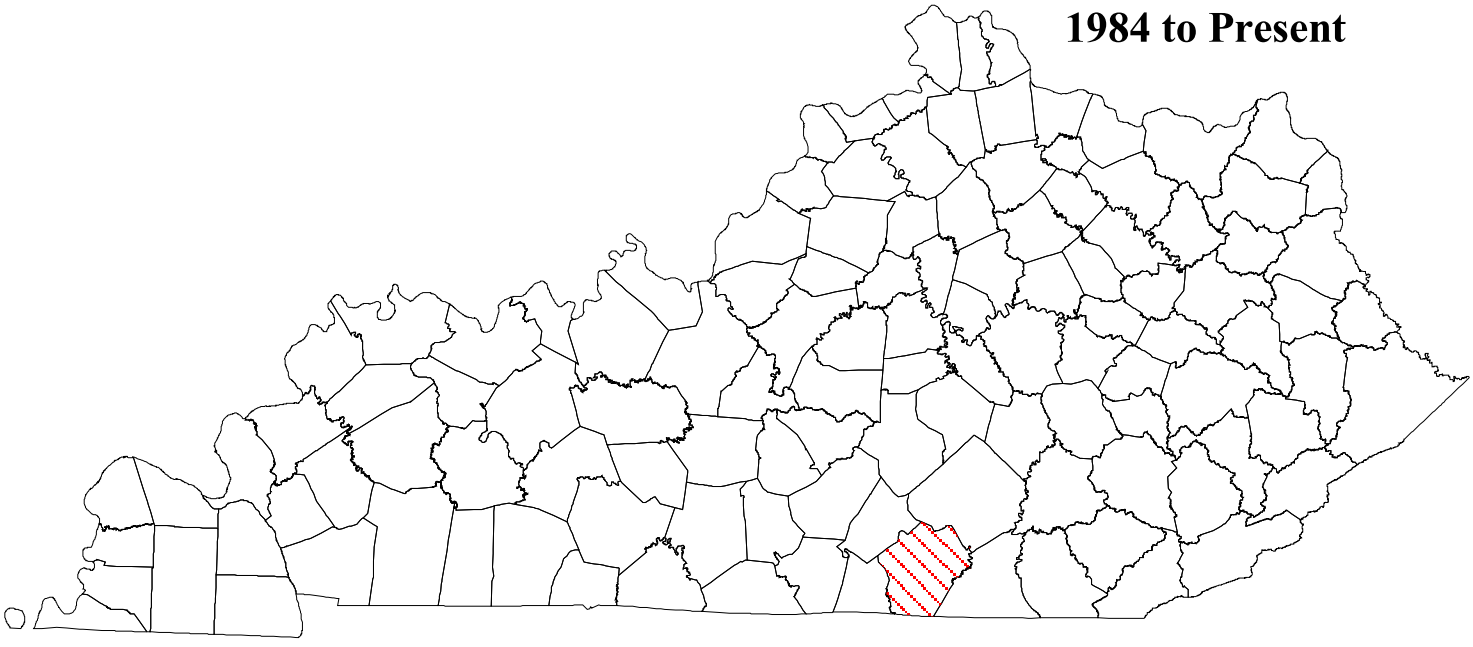
(Data current as of April 28, 2009)

Point occurrences
County Occurrences
County boundary

All Occurrences



1984 to Present



Ghost Crayfish ***Orconectes inermis inermis***

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
N	S	G5T4	S3	T4	S3

G-Trend Stable (unchanged or within +/- 10% fluctuation in population, range, area occupied, and/or number or condition of occurrences)

G-Trend Comment Unknown

S-Trend Unknown

S-Trend Comment Unknown

Habitat/Life History Occurs in subterranean waters (Hobbs 1989) in cave streams. This species is often found in larger base-level pools where mud and silt substrates predominate (Taylor and Schuster 2005). Prefers a rocky-gravel substrate in shallow pools where flow gradient is minimal, but freely leaves desired areas in search of food (Hobbs III 1973). No specific data, but seem to respond more to food availability cycles than to light regimens. Hobbs, Hobbs, and Daniel (1977) state that "one must conclude that *O. i. inermis* is not a strict carnivore, nor is its diet limited to plant material; rather, it is an opportunist that feeds upon virtually any available organic matter, living or dead, including individuals of its own species".

Key Habitat Sensitive

Guilds Aquatic - Cave streams

Statewide Map GhostCrayfish.pdf

Conservation Issues

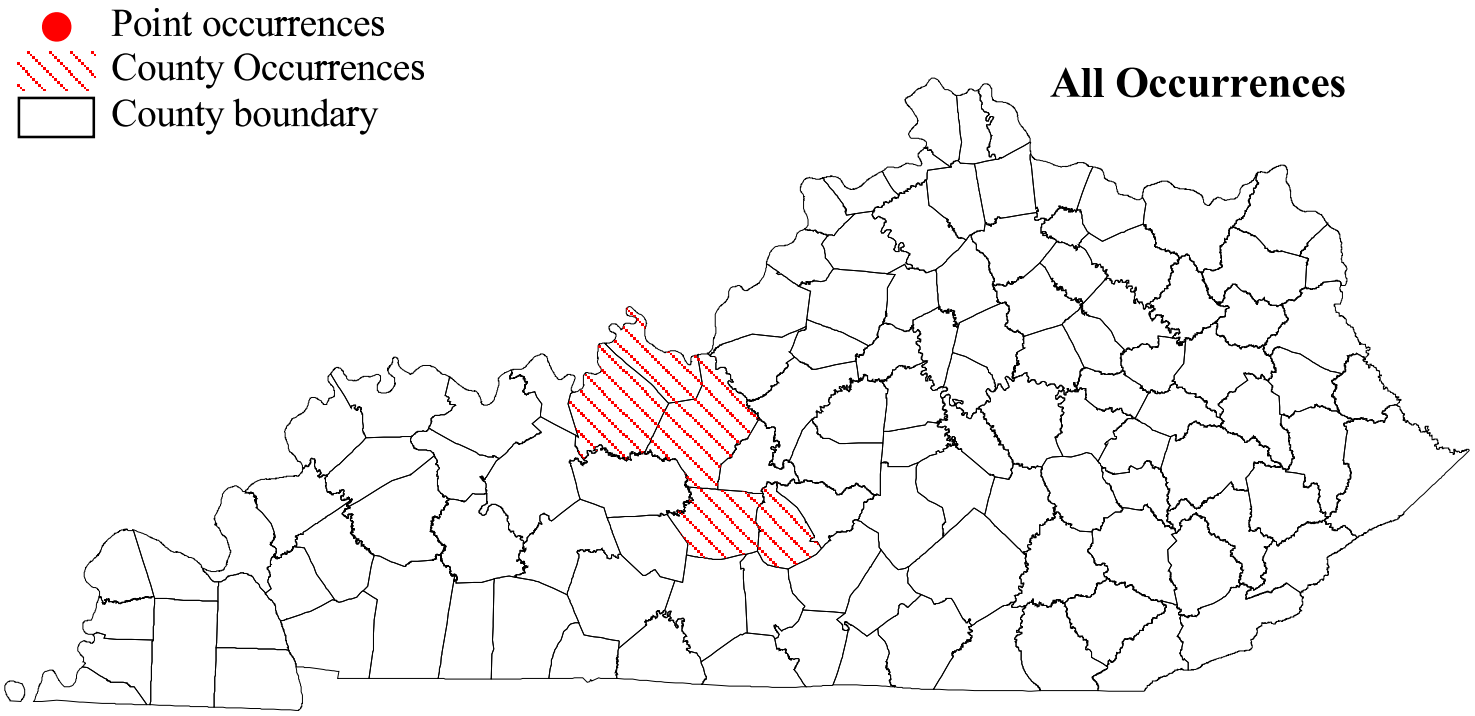
Point and non-point source pollution

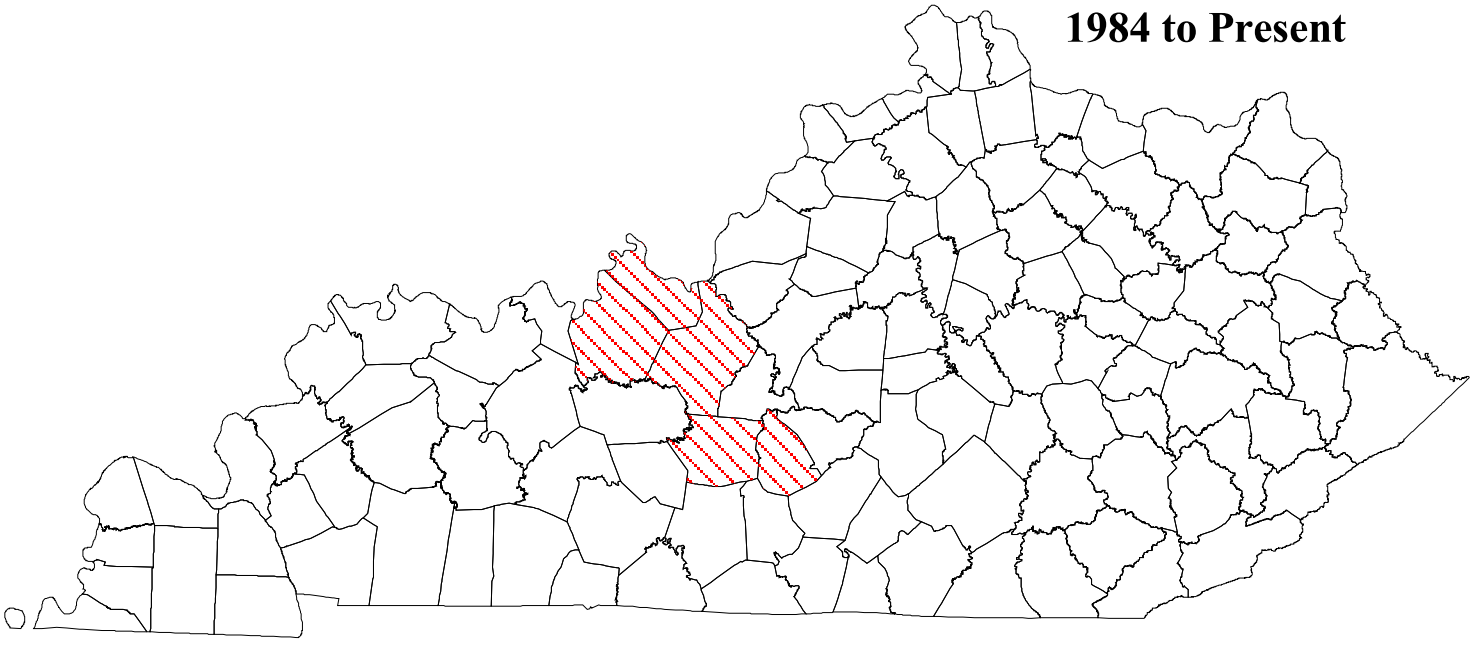
- 4B - Waste water discharge (e.g., sewage treatment)
- 4C - Toxic chemical spills
- 4D - Oil and gas drilling operations associated runoff
- 4E - Agricultural runoff - including fertilizers/animal waste, herbicides, pesticides
- 4F - Urban runoff
- 4G - Chemical spills and contaminants (applied and accidental)
- 4I - Runoff from transportation routes (deicing salt, gas, others)
- 4K - Industrial waste discharge/runoff

Ghost Crayfish

Orconectes inermis inermis

(Data current as of April 28, 2009)





Gray-Speckled Crayfish *Orconectes palmeri palmeri*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
N	E	G5T5	S1	T5	S1

G-Trend Stable (unchanged or within +/- 10% fluctuation in population, range, area occupied, and/or number or condition of occurrences)

G-Trend Comment Unknown

S-Trend Unknown

S-Trend Comment There is only one recent record for this species, little is known of its status.

Habitat/Life History Found in swift, debris-filled streams in riffles over mixed sand, mud, and gravel bottoms (Burr and Hobbs 1984, Hobbs 1989). Form I males have been located in October and November but no ovigerous females have yet been collected (Taylor and Schuster 2005). In Missouri, Pflieger (1996) reported form I males from October though February, with ovigerous females collected in March. Mating was reported in Tennessee to begin in October (Payne and Price 1983).

Key Habitat Obion Creek.

Guilds Aquatic - Small to medium streams
Aquatic - Large rivers in slackwater

Statewide Map Gray-SpeckledCrayfish.pdf

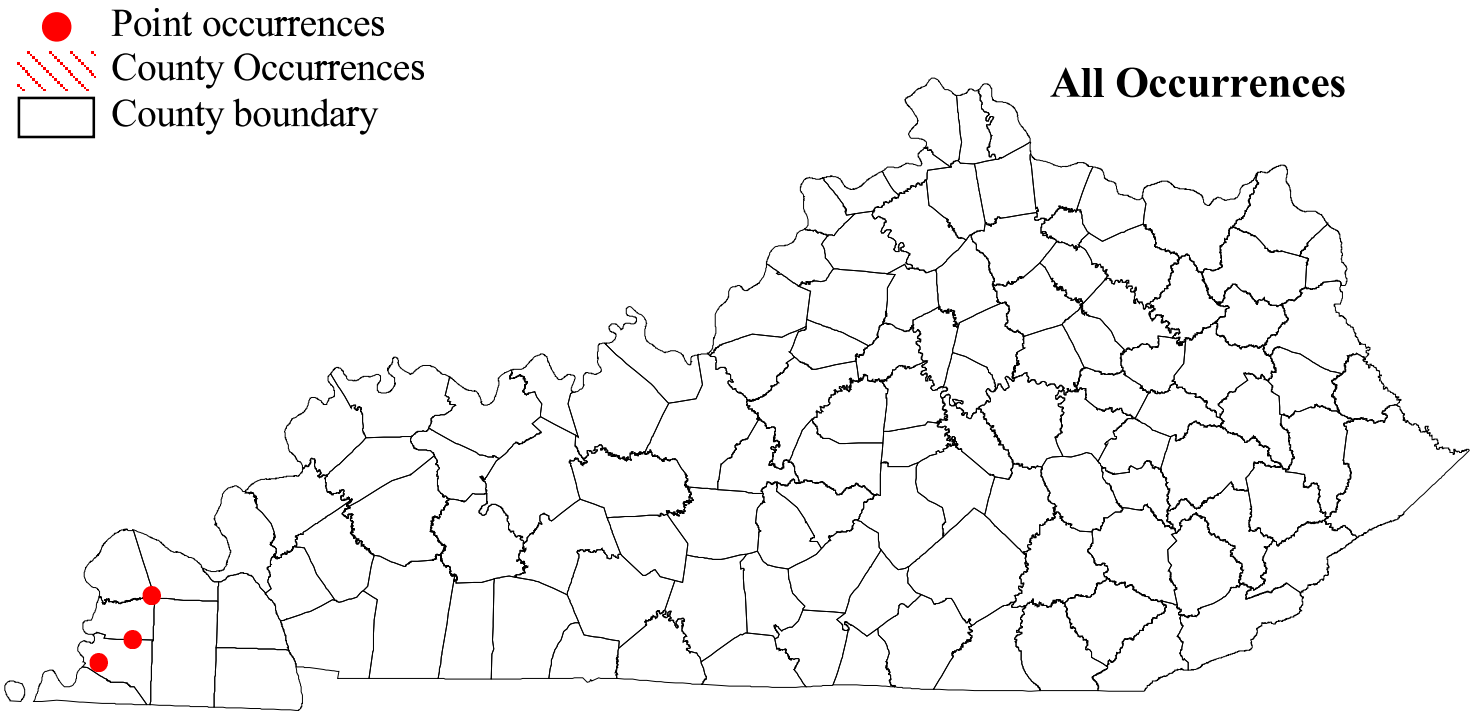
Conservation Issues

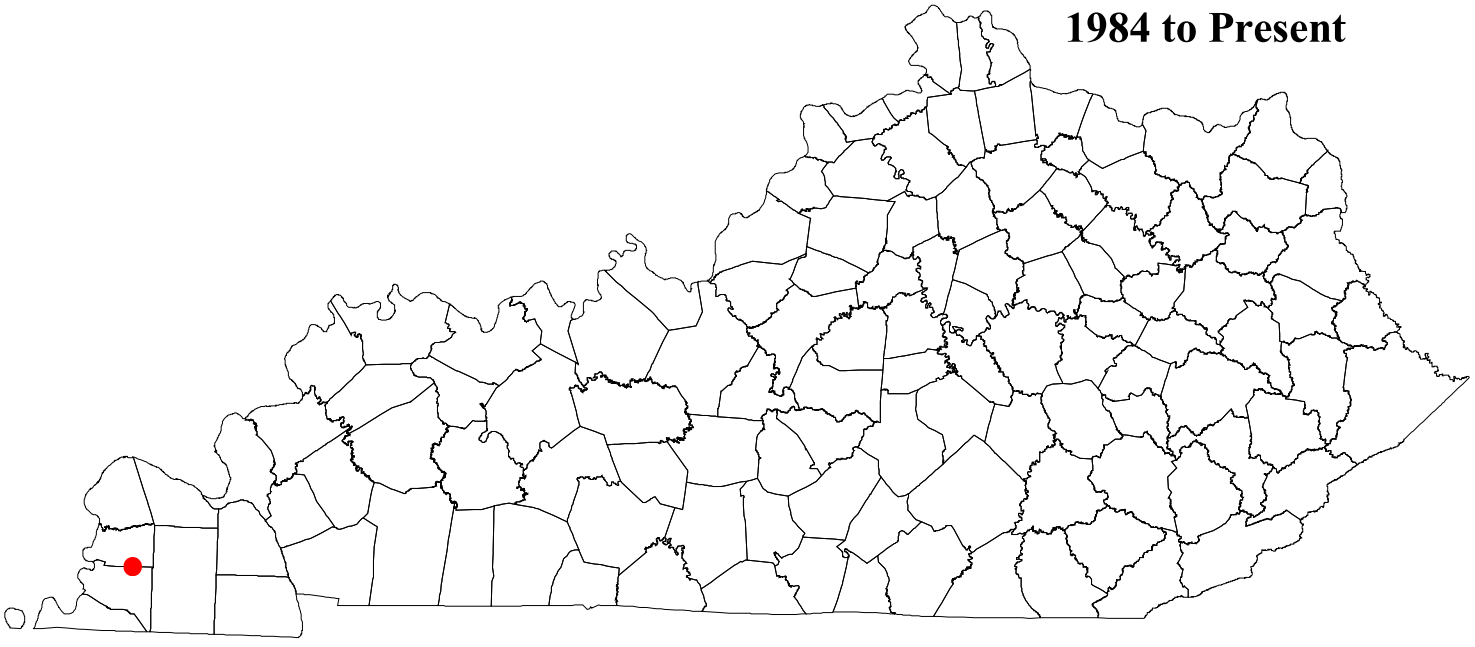
- Aquatic habitat degradation
  - 2E - Stream channelization/ditching
  - 2H - Wetland loss/drainage/alteration
  - 2J - Alteration of surface runoff patterns (flow/temp regimes)
- Point and non-point source pollution
  - 4A - Acid mine drainage other coal mining impacts
  - 4C - Toxic chemical spills
  - 4D - Oil and gas drilling operations associated runoff
  - 4E - Agricultural runoff - including fertilizers/animal waste, herbicides, pesticides
  - 4F - Urban runoff
  - 4G - Chemical spills and contaminants (applied and accidental)
  - 4I - Runoff from transportation routes (deicing salt, gas, others)

Gray-Speckled Crayfish

Orconectes palmeri palmeri

(Data current as of April 28, 2009)





Hairy Crayfish *Cambarus friaufi*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
N	S	G4	S3S4	G4	S3

G-Trend Stable (unchanged or within +/- 10% fluctuation in population, range, area occupied, and/or number or condition of occurrences)

G-Trend Comment Unknown

S-Trend Unknown

S-Trend Comment Few available records and no comprehensive monitoring has been done throughout the species' range in Kentucky.

Habitat/Life History Swift sections of small streams with substrates ranging from cobble to chert gravel (Taylor and Schuster 2005). Form I males have been obtained in April and May, while ovigerous females have been collected from late March through early May. Average clutch size was 32 eggs (Taylor and Schuster 2005).

Key Habitat Unknown

Guilds Aquatic - Small to medium streams

Statewide Map HairyCrayfish.pdf

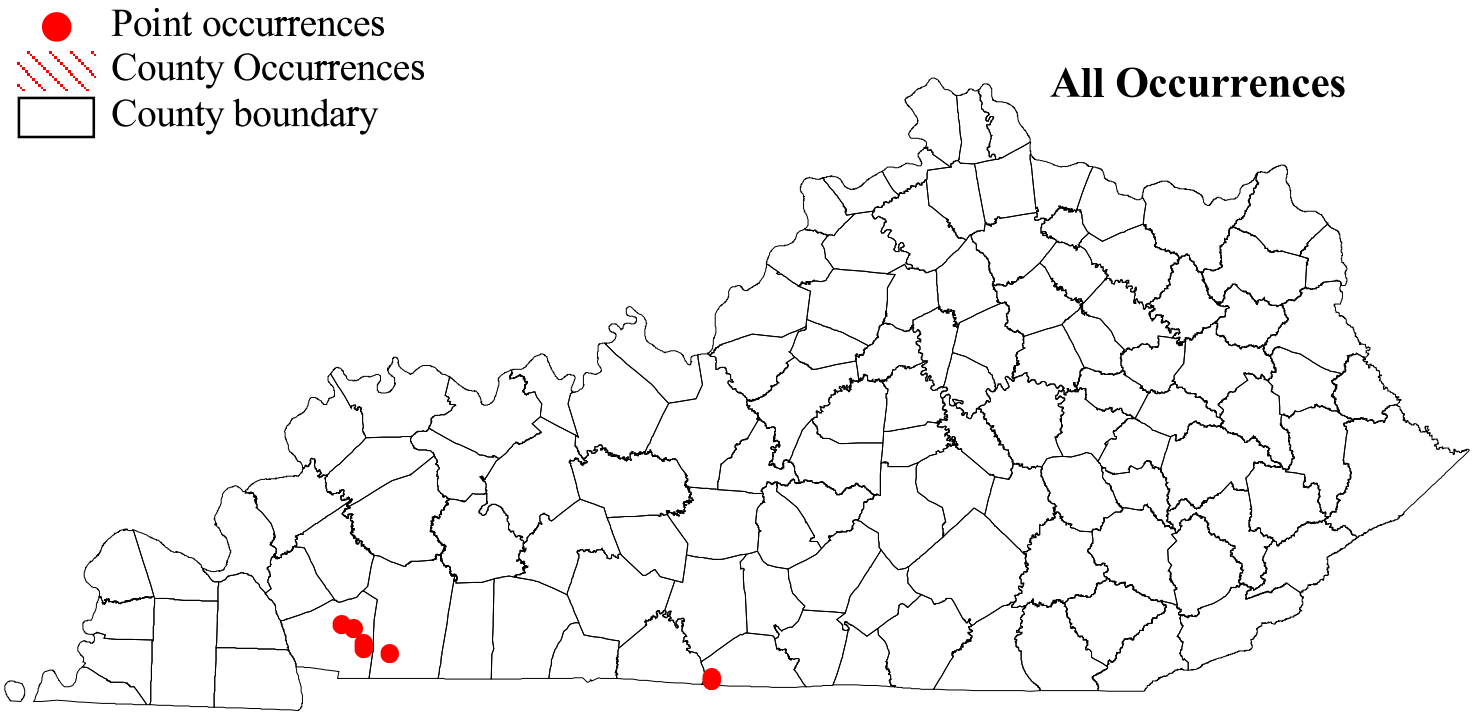
Conservation Issues

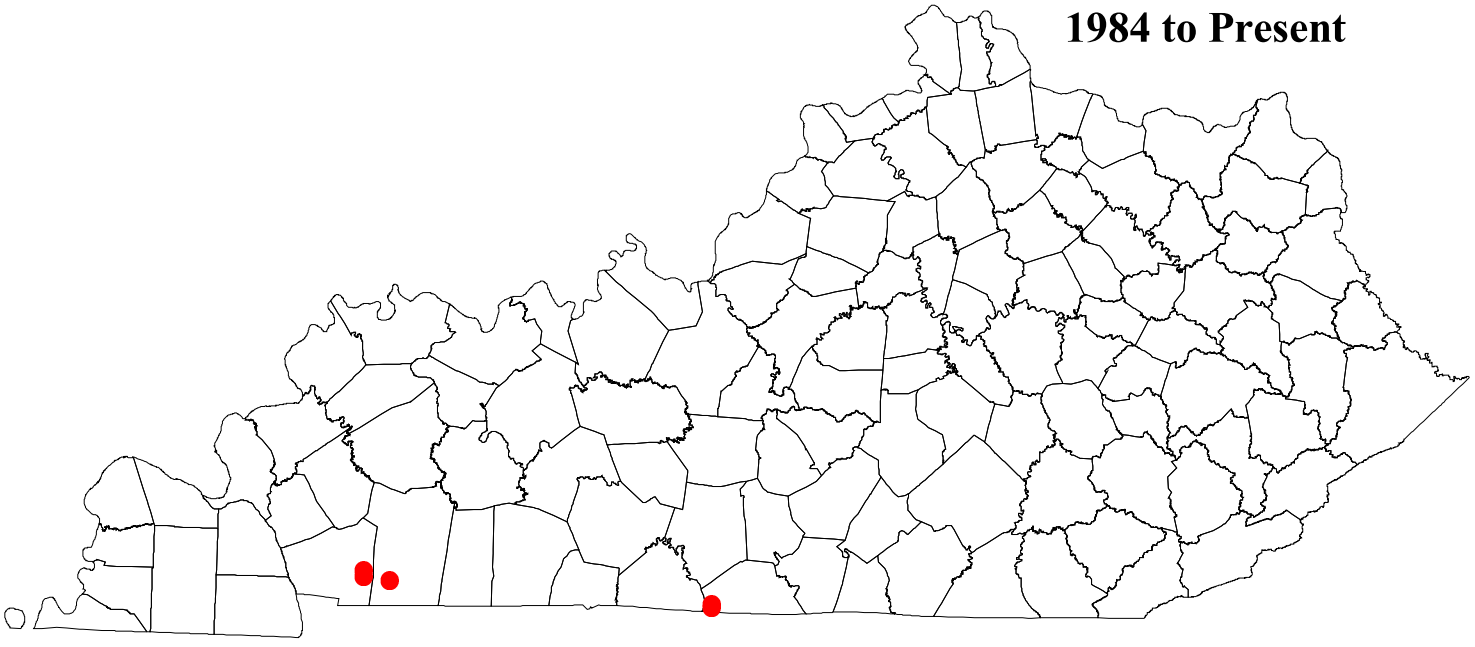
- Aquatic habitat degradation
  - 2B - Gravel/sand removal or quarrying (e.g., mineral excavation)
  - 2F - Riparian zone removal (Agriculture/development)
- Point and non-point source pollution
  - 4G - Chemical spills and contaminants (applied and accidental)
- Terrestrial habitat degradation
  - 3G - Shoreline development

Hairy Crayfish

Cambarus friaufi

(Data current as of April 28, 2009)





Livingston Crayfish *Orconectes margorectus*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
N	T	G2	S2	G2	S2

G-Trend Unknown

G-Trend Comment newly described

S-Trend Unknown

S-Trend Comment Unknown

Habitat/Life History Inhabits medium-sized creeks ranging from 2 to 10 meters in width (Taylor and Schuster 2005). Occurs in small streams with substrates of cobble and gravel intermixed with mud; most commonly found under flat cobble in areas of moderate flow (Taylor 2002). Form I males have been reported from Jan - April, June, and September through October, with ovigerous females collected in March and April (Taylor and Schuster, 2005). As a result of a broad reproductive period, juveniles are seen in collections throughout the year.

Key Habitat Ferguson Creek.

Guilds Aquatic - Small to medium streams

Statewide Map LivingstonCrayfish.pdf

Conservation Issues

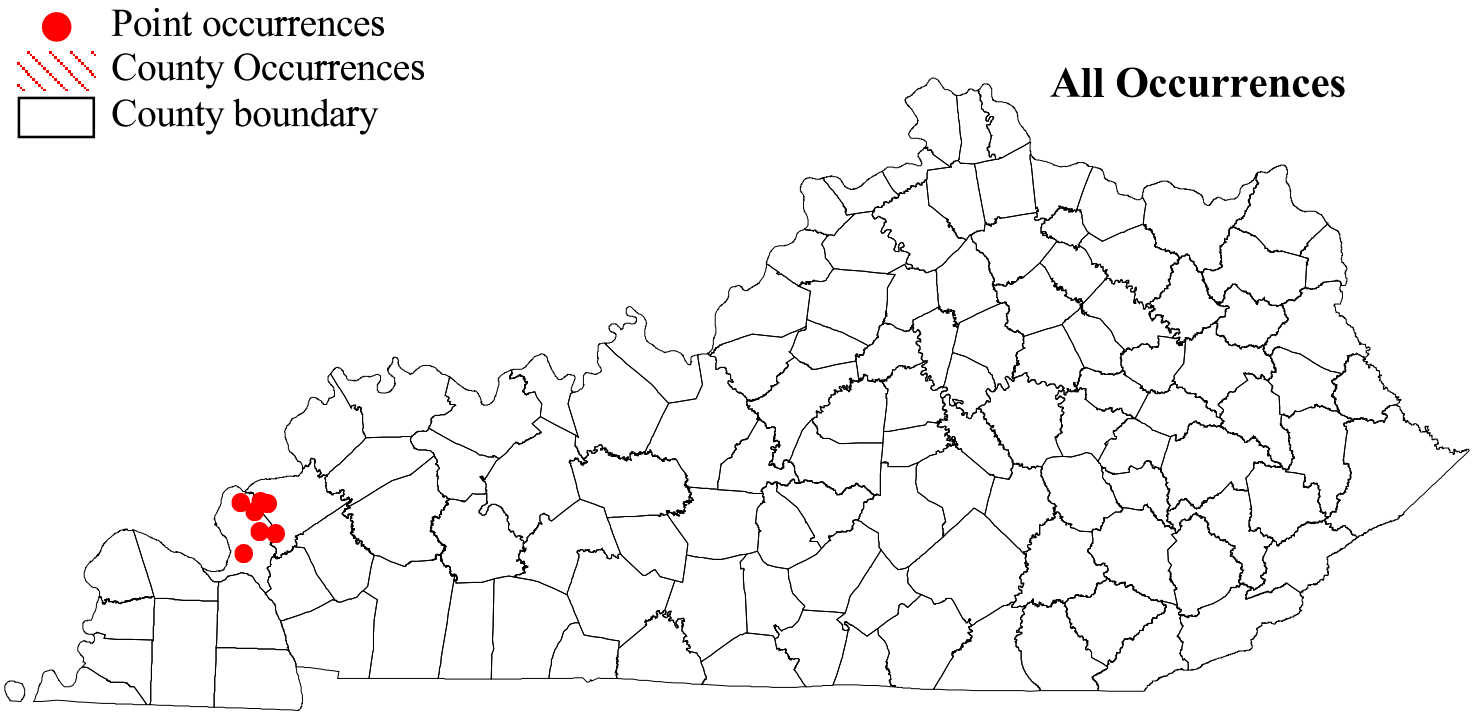
Point and non-point source pollution

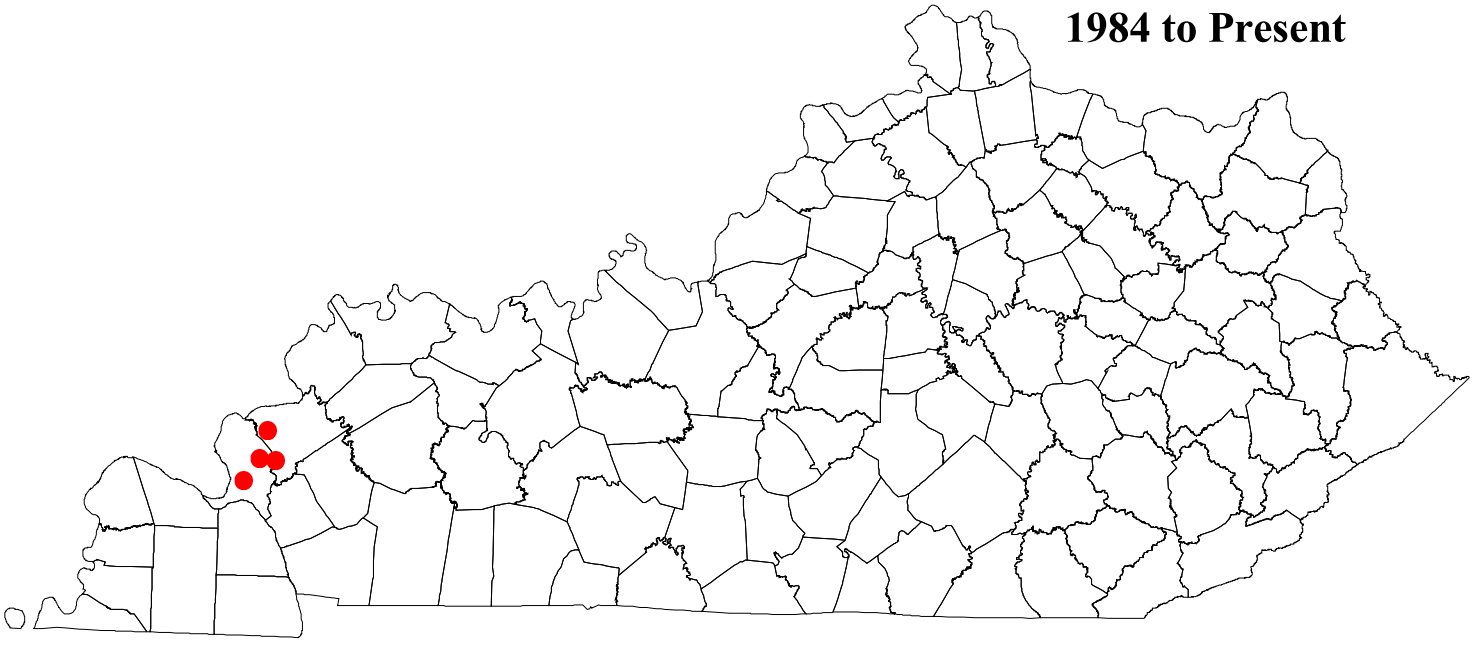
- 4C - Toxic chemical spills
- 4G - Chemical spills and contaminants (applied and accidental)
- 4K - Industrial waste discharge/runoff

Livingston Crayfish

Orconectes margorectus

(Data current as of April 28, 2009)





Longclaw Crayfish *Cambarus buntingi*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
N	S	G4	S3S4	G4	S3

G-Trend Unknown

G-Trend Comment Unknown

S-Trend Stable (unchanged or within +/- 10% fluctuation in population, range, area occupied, and/or number or condition of occurrences)

S-Trend Comment Presumed stable across its range in Kentucky, although increased mining activities in localized areas may be a threat especially in streams where blackside dace may have declined or been eliminated as a result of those activities.

Habitat/Life History Inhabits medium to large creeks with clean cobble substrate where it is found under large slab boulders (Taylor and Schuster 2005). Form I males have been collected in April, August, and September; no ovigerous females have been collected.

Key Habitat Unknown

Guilds
Aquatic - Upland streams in riffles
Aquatic - Upland streams in pools
Aquatic - Upland headwater streams in pools
Aquatic - Small to medium streams
Aquatic - Medium to large streams
Aquatic - Lowland Streams in slackwater
Aquatic - Lowland Streams in riffles

Statewide Map LongclawCrayfish.pdf

Conservation Issues

Aquatic habitat degradation
- 2B - Gravel/sand removal or quarrying (e.g., mineral excavation)
- 2E - Stream channelization/ditching
- 2F - Riparian zone removal (Agriculture/development)
- 2M - Valley fills

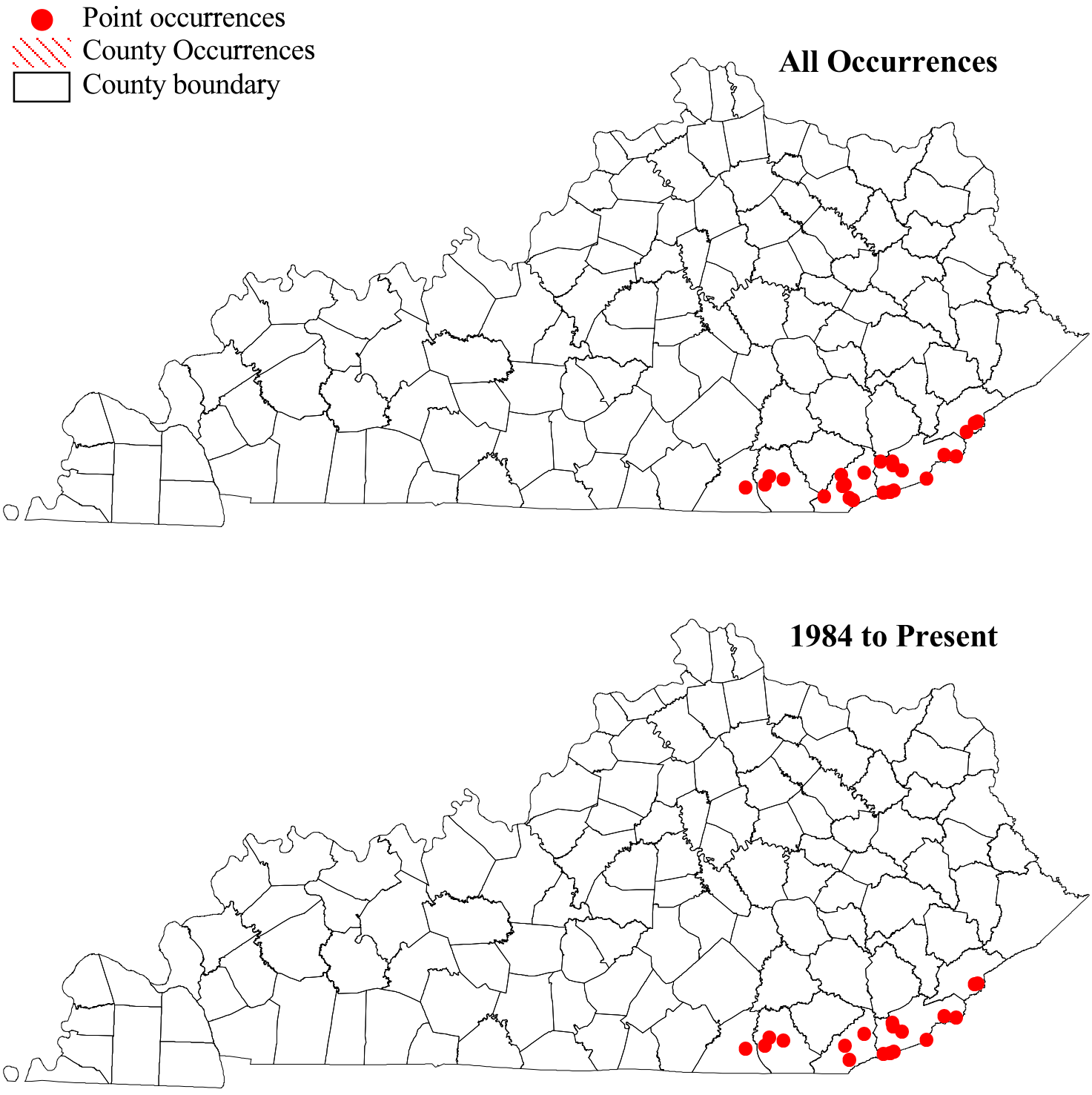
Point and non-point source pollution
- 4A - Acid mine drainage other coal mining impacts
- 4C - Toxic chemical spills
- 4D - Oil and gas drilling operations associated runoff
- 4F - Urban runoff
- 4G - Chemical spills and contaminants (applied and accidental)

Siltation and increased turbitity
- 1D - Urbanization/Development General Construction

Longclaw Crayfish

Cambarus buntingi

(Data current as of April 28, 2009)



Louisville Crayfish *Orconectes jeffersoni*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
SOMC	E	G1	S1	G1	S1

G-Trend Unknown

G-Trend Comment Unknown

S-Trend Stable (unchanged or within +/- 10% fluctuation in population, range, area occupied, and/or number or condition of occurrences)

S-Trend Comment Recent sampling has shown that populations appear to be stable and that the species is still found across historically documented range (Z. Couch, pers comm, 2009).

Habitat/Life History Occurs in small to medium-sized flat cobble and boulder strewn streams ranging in width from 2 to 10 m. One of the overall limiting factors appears to be substrate availability (Z. Couch, pers com 2009). In bedrock streams it is dependent on fissures and cracks. In pools, large substrates are needed. It also uses trash and manmade retaining walls (Couch, pers com 2009). It is usually encountered under flat cobble in areas with flow or among woody debris along creek edges. Found in small stream tributaries to the Ohio River, but not in the river proper. It is tolerant of habitat alteration and can be found commonly in creek reaches flowing through heavily urbanized regions of the Louisville metropolitan area (including residential neighborhoods, golf courses, and shopping mall parking lots) (Taylor and Schuster 2005). Observational data suggest that species is relatively intolerant of siltation and heavy organic pollution. Probably a nocturnal opportunistic feeder.

Key Habitat Harrods or Knob Creeks.

Guilds Aquatic - Small to medium streams

Statewide Map LouisvilleCrayfish.pdf

Conservation Issues

- Aquatic habitat degradation
  - 2G - Water level fluctuations
  - 2J - Alteration of surface runoff patterns (flow/temp regimes)
- Point and non-point source pollution
  - 4C - Toxic chemical spills
  - 4G - Chemical spills and contaminants (applied and accidental)

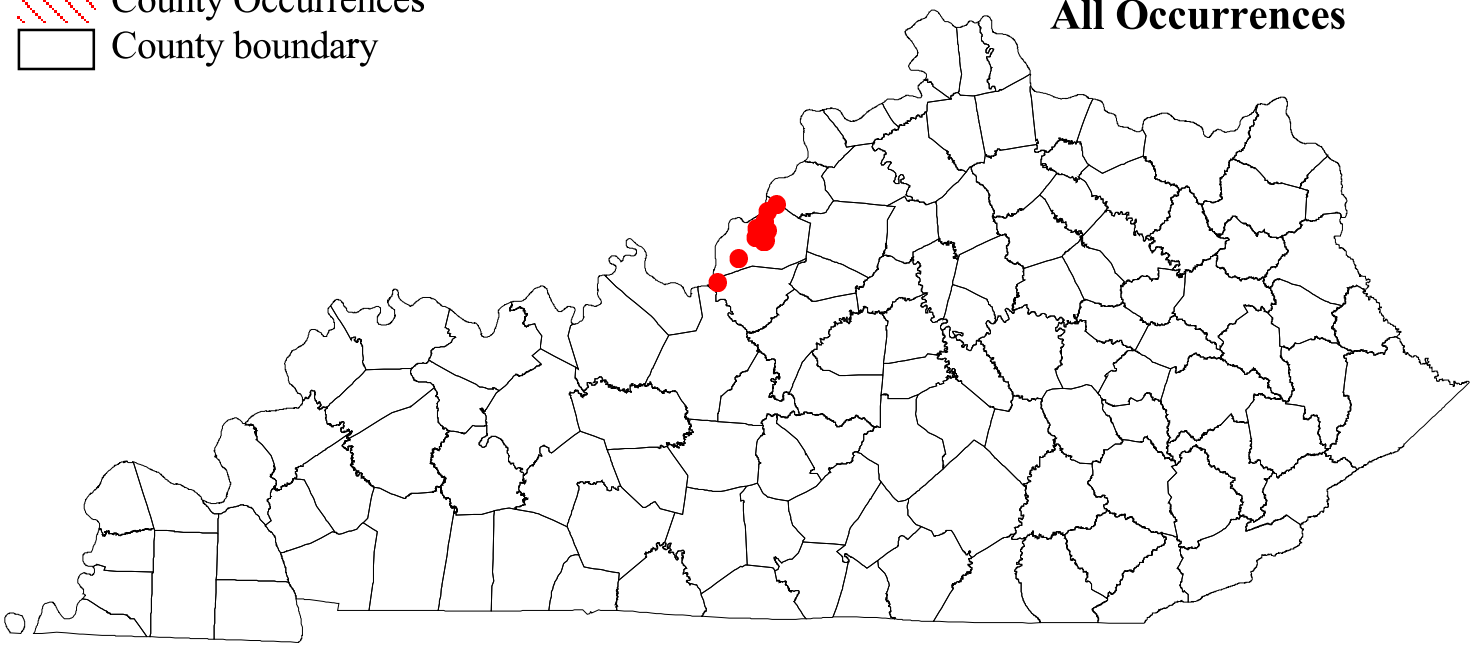
Louisville Crayfish

Orconectes jeffersoni

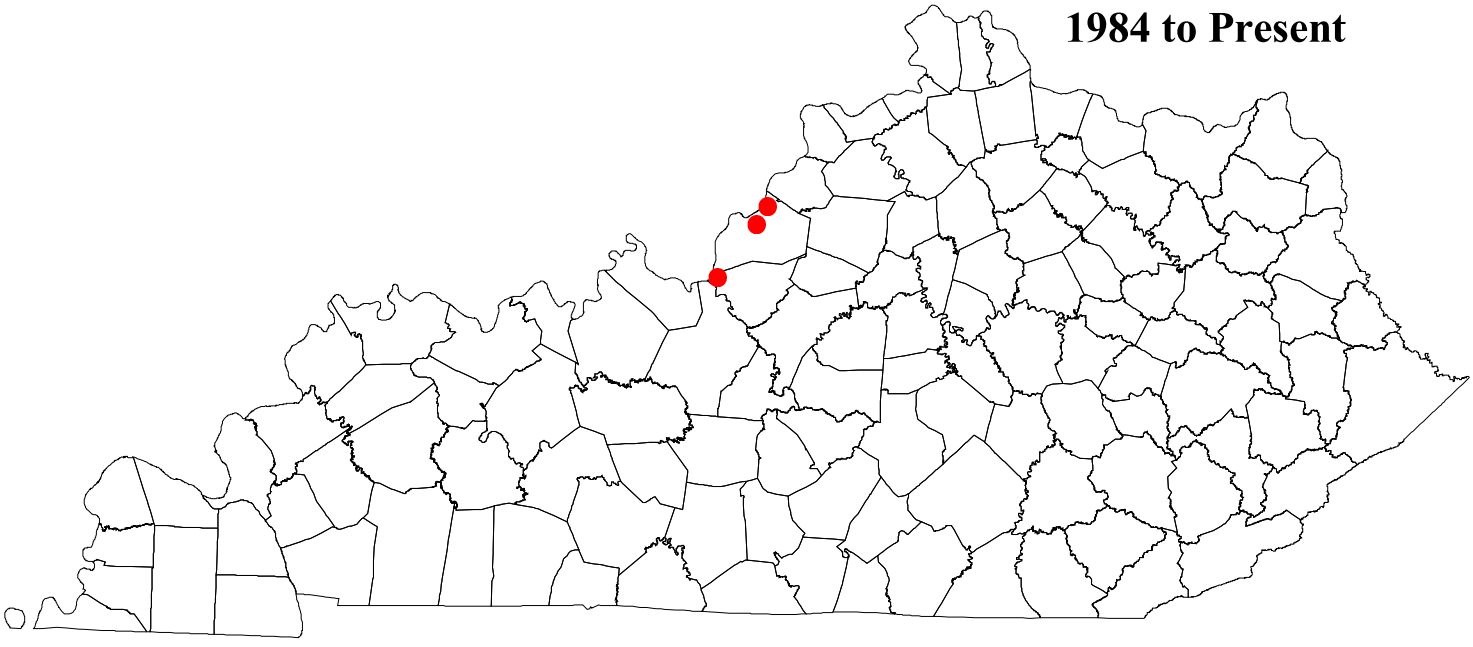
(Data current as of April 28, 2009)

Point occurrences
County Occurrences
County boundary

All Occurrences



1984 to Present



Mammoth Cave Crayfish *Orconectes pellucidus*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
SOMC	S	G4	S3	G4	S3

G-Trend Stable (unchanged or within +/- 10% fluctuation in population, range, area occupied, and/or number or condition of occurrences)

G-Trend Comment Although there are no current status surveys, it is presumed to be stable

S-Trend Unknown

S-Trend Comment Presumably secure across its Kentucky range but monitoring work is needed in order to determine current status.

Habitat/Life History Lives in subterranean waters (Hobbs 1976). Multilevel watercourses and regular flooding lead to isolation and dessication of individuals, with high mortality among those so stranded. Hydrologic and limnological data collected for the Mammoth- Flint Ridge Cave system is among the very few detailed data on cave systems. Probably circadian, responding more to seasonal stimuli than to light regimens. Like many cave crayfishes, opportunistic (Hobbs, Hobbs, and Daniel 1977), likely feeds on various items ranging from detritus to other small cave organisms.

Key Habitat Sensitive

Guilds Aquatic - Cave streams

Statewide Map MammothCaveCrayfish.pdf

Conservation Issues

- Aquatic habitat degradation
  - 2G - Water level fluctuations
- Point and non-point source pollution
  - 4B - Waste water discharge (e.g., sewage treatment)
  - 4C - Toxic chemical spills
  - 4D - Oil and gas drilling operations associated runoff
  - 4E - Agricultural runoff - including fertilizers/animal waste, herbicides, pesticides
  - 4F - Urban runoff
  - 4G - Chemical spills and contaminants (applied and accidental)
  - 4I - Runoff from transportation routes (deicing salt, gas, others)

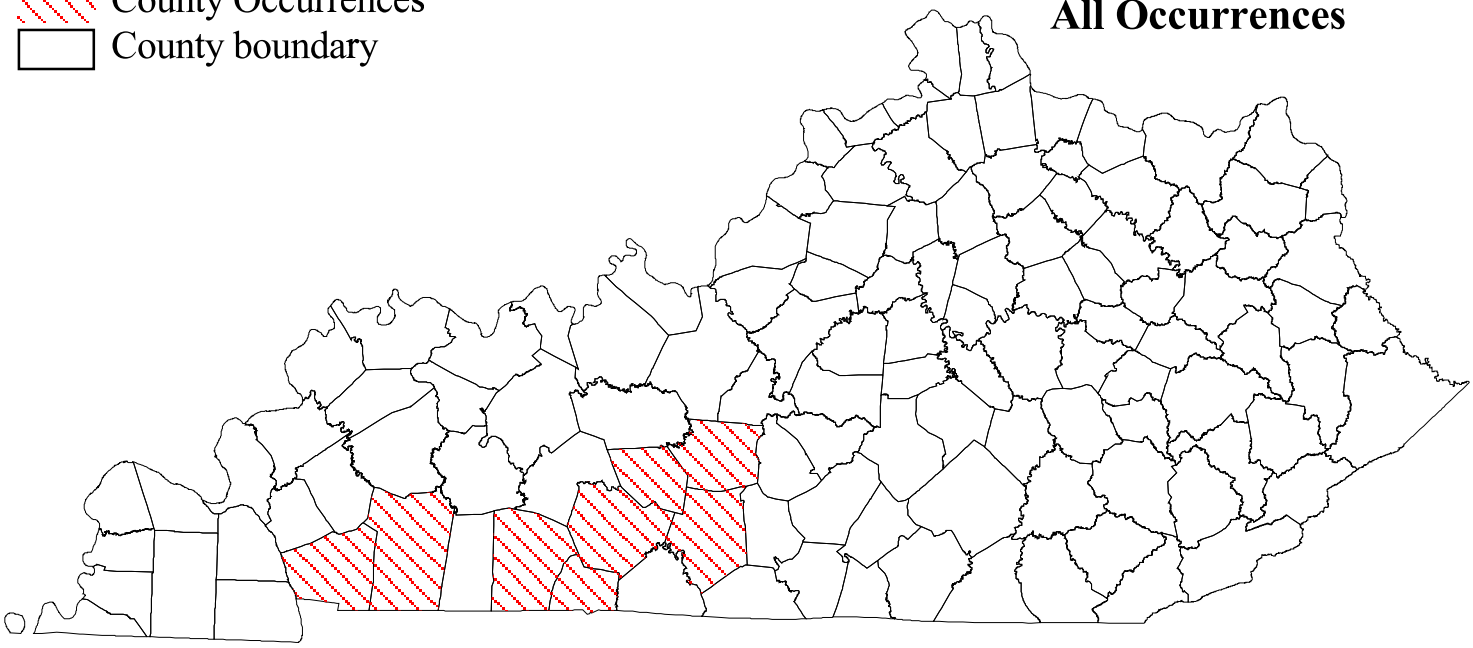
Mammoth Cave Crayfish

Orconectes pellucidus

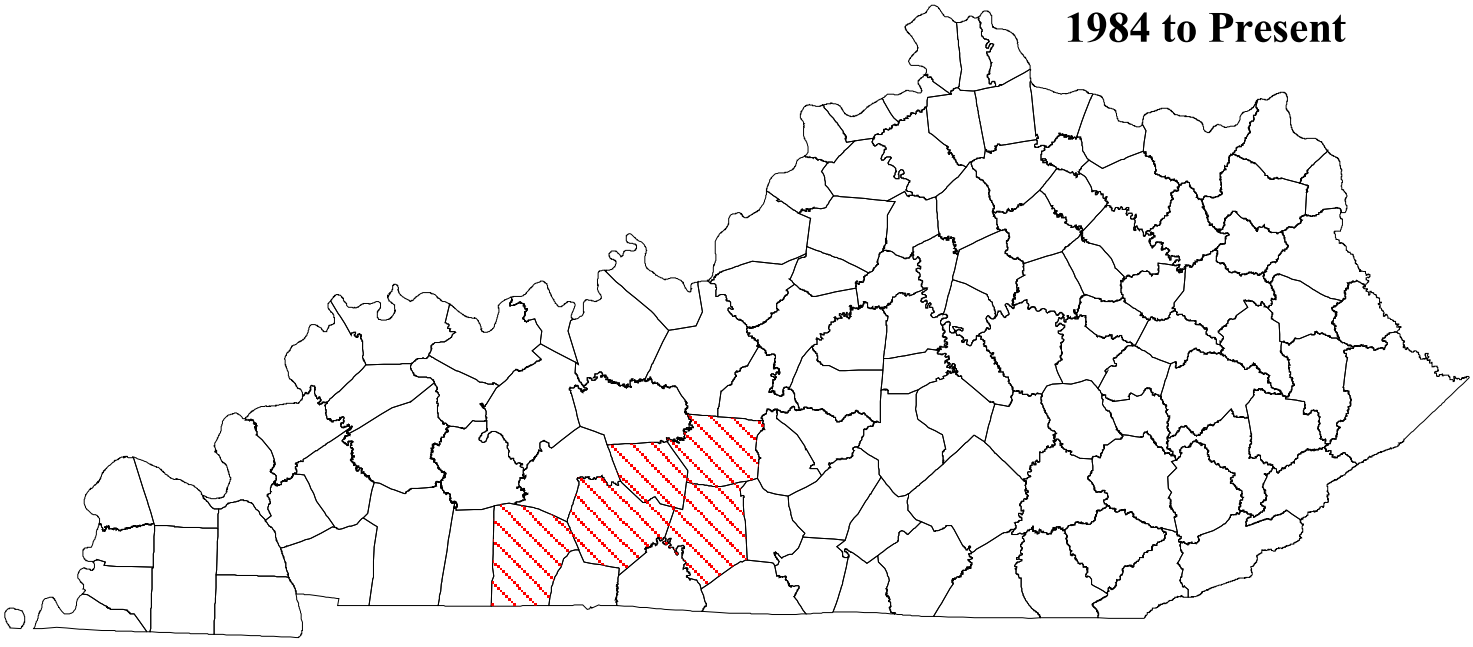
(Data current as of April 28, 2009)

Point occurrences
County Occurrences
County boundary

All Occurrences



1984 to Present



Mammoth Cave Shrimp *Palaemonias ganteri*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
LE	E	G1	S1	G1	S1

G-Trend Unknown

G-Trend Comment Unknown

S-Trend Unknown

S-Trend Comment Pearson and Boston (1995) noted *Palaemonias* at only 7 survey sites; > 25 individuals were reported at 3 of those localities. It has been noted in studies of the Kentucky cave shrimp that records from overflow passages may be represented by only a few individuals due to high flows. Monitoring to compare to earlier studies is needed as it is unclear as to what the trend is. It appears that known occupied locations may vary depending on flow regimes.

Habitat/Life History Inhabits large base level stream passages (i.e., lowest level) and associated tributaries characterized by slow flow, coarse to fine grain sand and coarse silt sediments, and abundant quantities of organic material. Apparently changing specific localities as a function of water levels and seasonal sediment deposition. Despite much study in Mammoth Cave ecosystem, data on this species are scant. Lives in permanent darkness. Rhythms seem more keyed to energy input than anything else. Apparently sifts sediments. Barr (1968) postulates diet of *Paramecium*, *Peranema*, *Halteria*, *Phacus*, and *Difflugia*.

Key Habitat Sensitive

Guilds Aquatic - Cave streams

Statewide Map MammothCaveShrimp.pdf

Conservation Issues

- Aquatic habitat degradation
  - 2G - Water level fluctuations
- Biological/consumptive uses
  - 5F - Low population densities
- Point and non-point source pollution
  - 4B - Waste water discharge (e.g., sewage treatment)
  - 4C - Toxic chemical spills
  - 4D - Oil and gas drilling operations associated runoff
  - 4E - Agricultural runoff - including fertilizers/animal waste, herbicides, pesticides
  - 4F - Urban runoff
  - 4G - Chemical spills and contaminants (applied and accidental)
  - 4I - Runoff from transportation routes (deicing salt, gas, others)

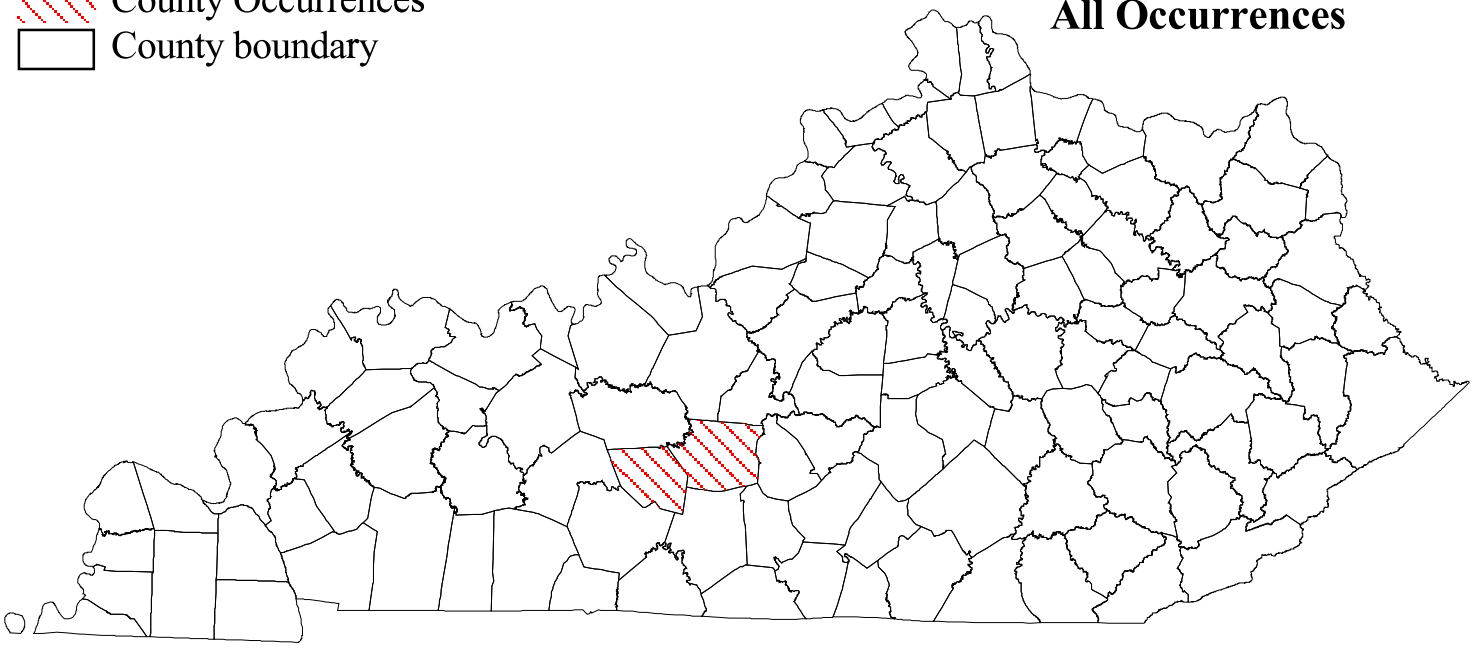
Mammoth Cave Shrimp

Palaemonias ganteri

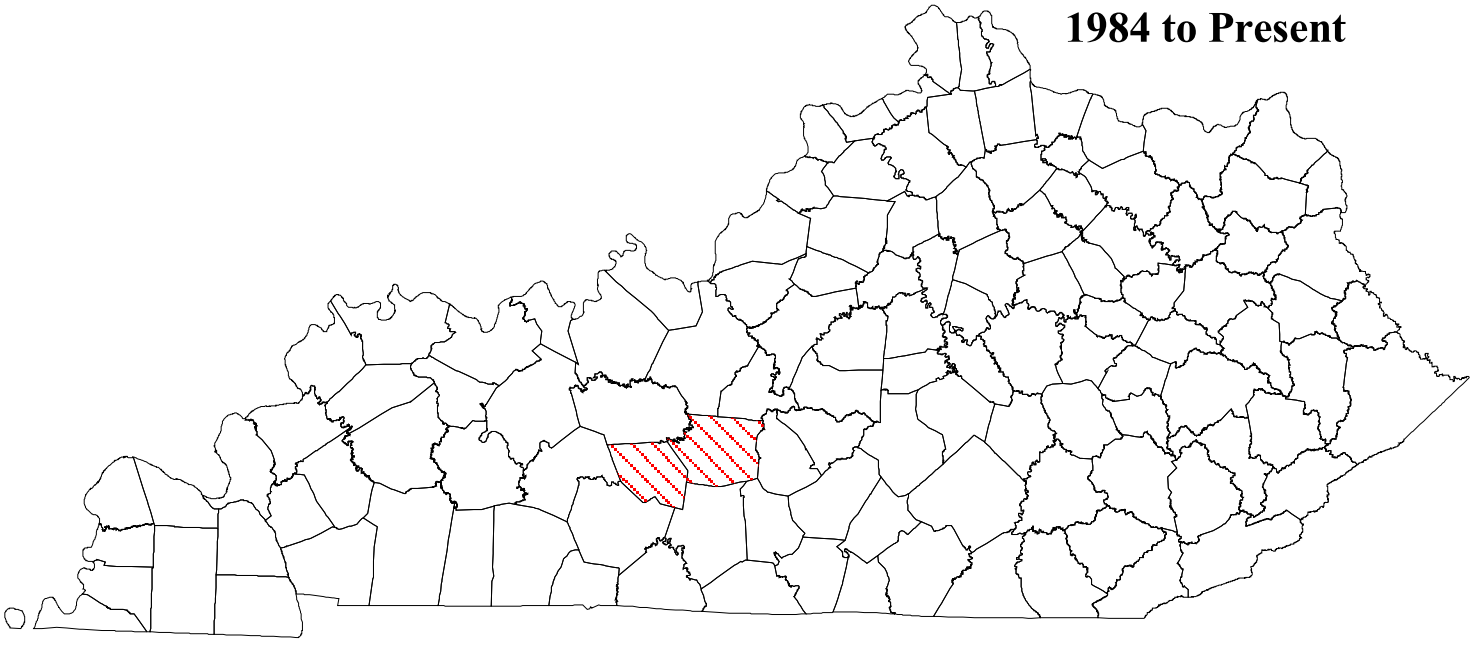
(Data current as of April 28, 2009)

Point occurrences
County Occurrences
County boundary

All Occurrences



1984 to Present



Mountain Midget Crayfish *Cambarus parvoculus*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
N	T	G5	S2	G5	S2

G-Trend Stable (unchanged or within +/- 10% fluctuation in population, range, area occupied, and/or number or condition of occurrences)

G-Trend Comment Unknown

S-Trend Unknown

S-Trend Comment Unknown

Habitat/Life History Rocky streams (Hobbs 1989) and small headwater creeks, seepages, and springs (Taylor and Schuster 2005). Under stones in lotic situations. Likely opportunistic but possibly a significant predator especially in fishless headwater streams. This is an area needing more research. Hobbs (1981) reported form I males in April, September and November and ovigerous females in April and May in Georgia.

Key Habitat Youngs Creek.

Guilds
Aquatic - Upland streams in riffles
Aquatic - Upland streams in pools
Aquatic - Upland headwater streams in pools
Aquatic - Small to medium streams
Aquatic - Medium to large streams
Aquatic - Lowland Streams in slackwater
Aquatic - Lowland Streams in riffles

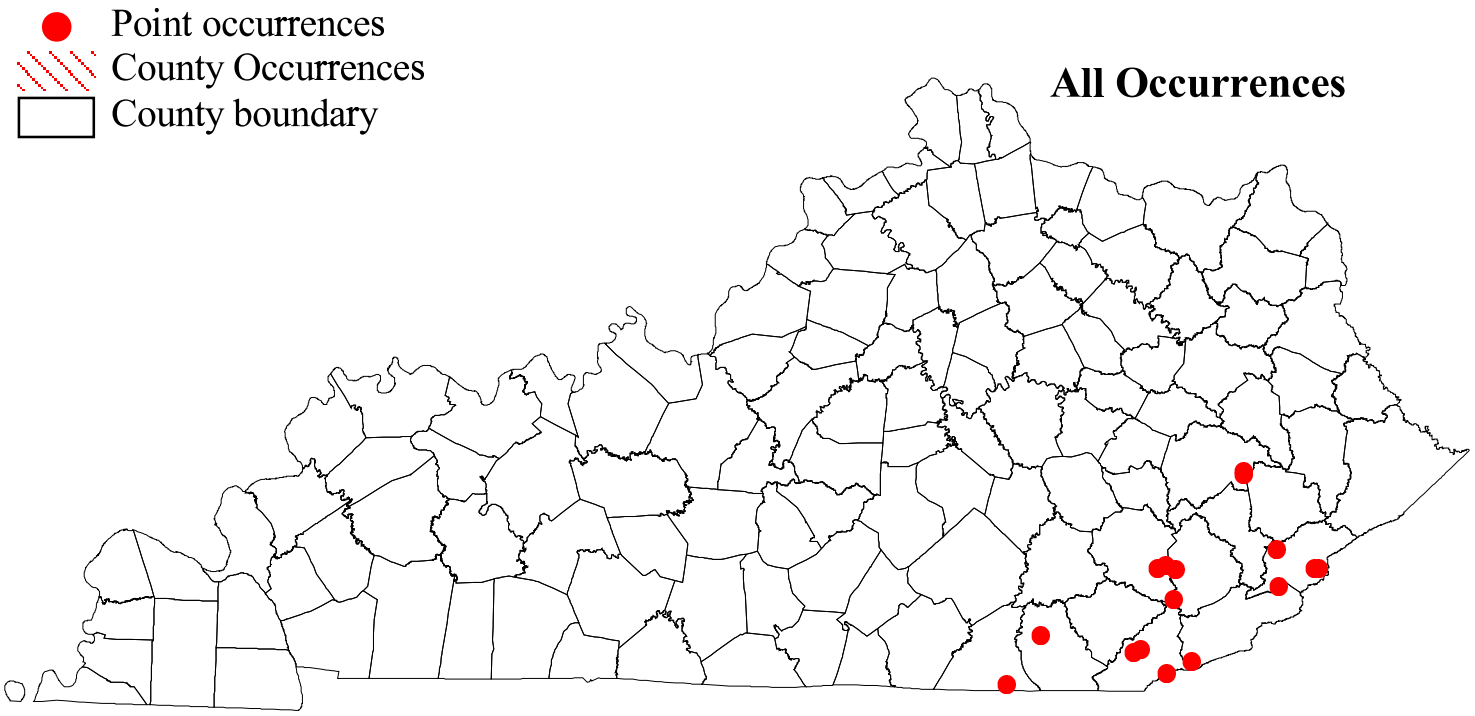
Statewide Map MountainMidgetCrayfish.pdf

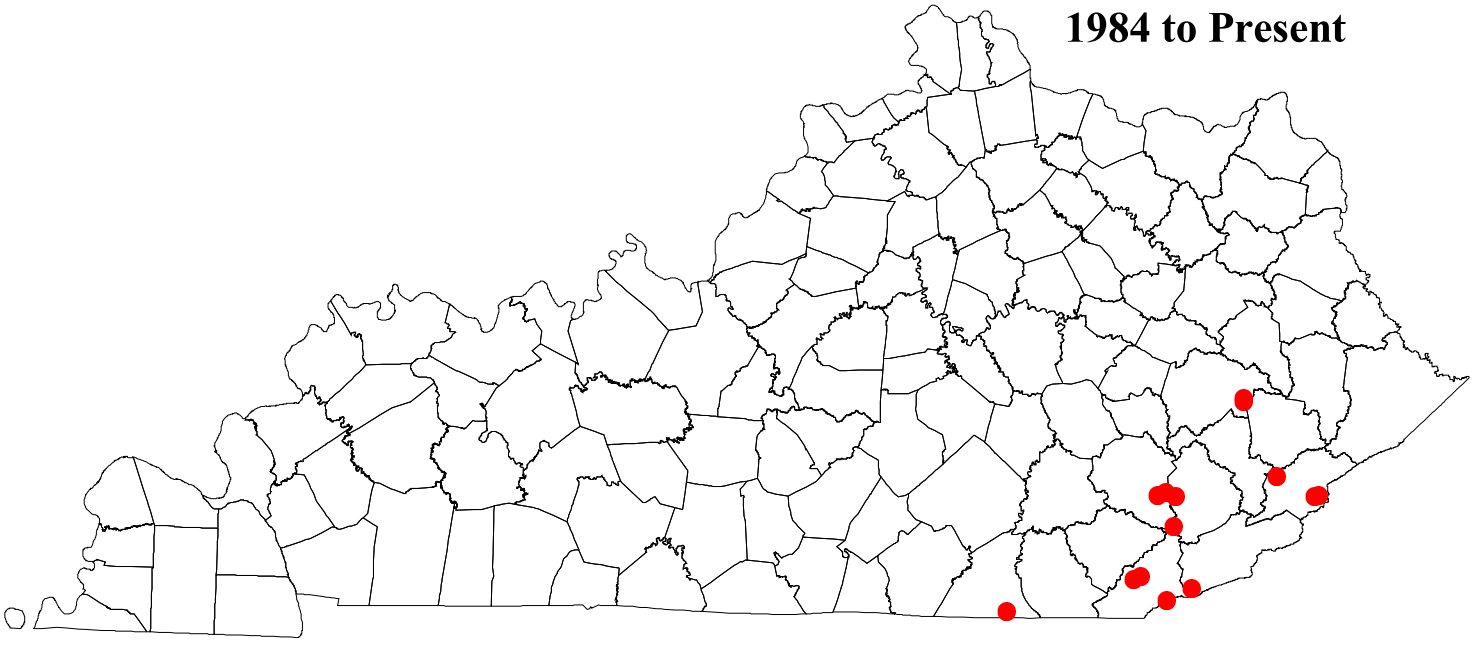
Conservation Issues
- Aquatic habitat degradation
  - 2F - Riparian zone removal (Agriculture/development)
  - 2M - Valley fills
- Point and non-point source pollution
  - 4A - Acid mine drainage other coal mining impacts

Mountain Midget Crayfish

Cambarus parvoculus

(Data current as of April 28, 2009)





Mud River Crayfish *Orconectes ronaldi*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
N	T	G3	S2S3	G3	S2

G-Trend Unknown

G-Trend Comment Unknown

S-Trend Stable (unchanged or within +/- 10% fluctuation in population, range, area occupied, and/or number or condition of occurrences)

S-Trend Comment Unknown

Habitat/Life History Occurs in creeks and small rivers with cobble, gravel, and mud substrates; most commonly encountered in shallow riffle areas or among woody debris in slower moving areas (Taylor 2000).

Key Habitat Mud River.

Guilds Aquatic - Small to medium streams

Statewide Map MudRiverCrayfish.pdf

Conservation Issues

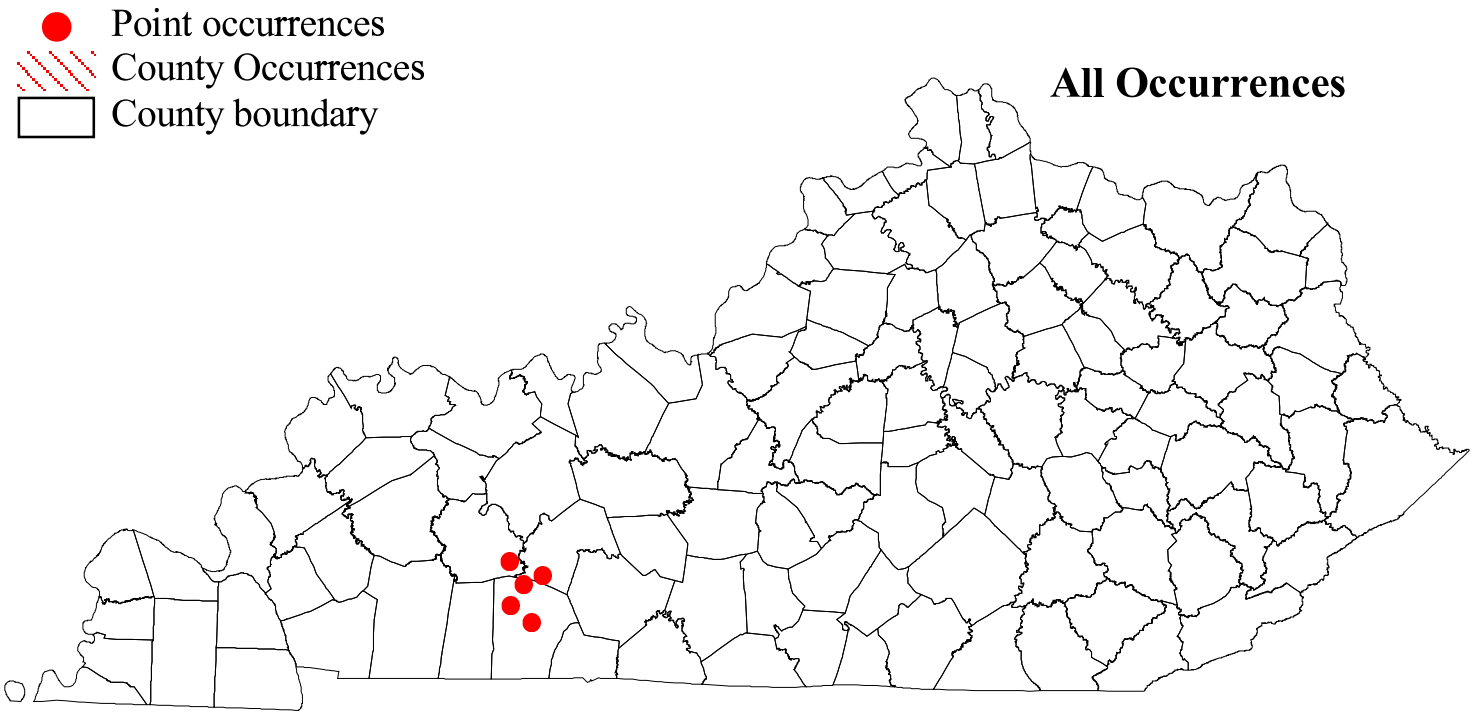
Point and non-point source pollution

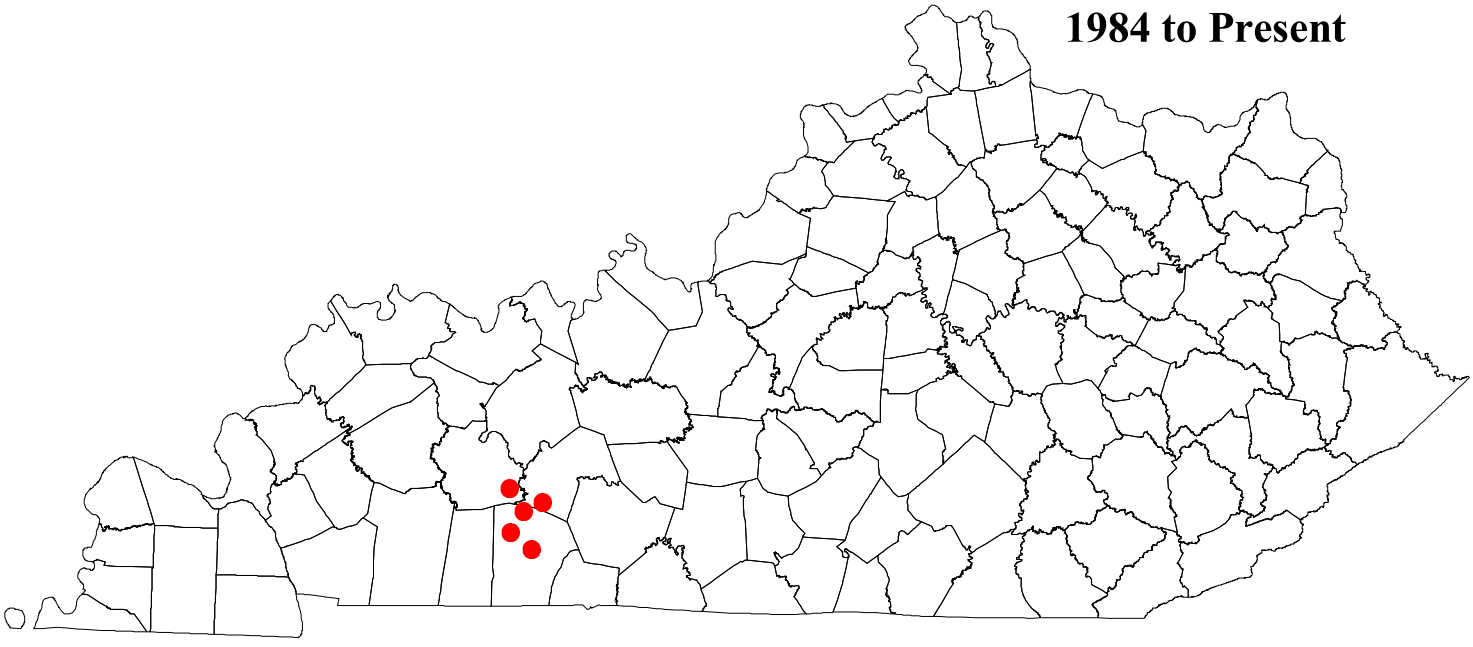
- 4A - Acid mine drainage other coal mining impacts
- 4C - Toxic chemical spills
- 4G - Chemical spills and contaminants (applied and accidental)

Mud River Crayfish

Orconectes ronaldi

(Data current as of April 28, 2009)





Ohio Shrimp *Macrobrachium ohione*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
N	E	G4	S1	G4	S1

G-Trend Unknown

G-Trend Comment Unknown

S-Trend Unknown

S-Trend Comment Unknown

Habitat/Life History Inhabits large rivers (Page 1985). Probably associated with aquatic vegetation or organic debris. Reported to feed on leaves (Page 1985) and other plant and animals detritus (Truesedale and Mermilliod 1979).

Key Habitat Ohio or Mississippi Rivers.

Guilds Aquatic - Large rivers in slackwater

Statewide Map OhioShrimp.pdf

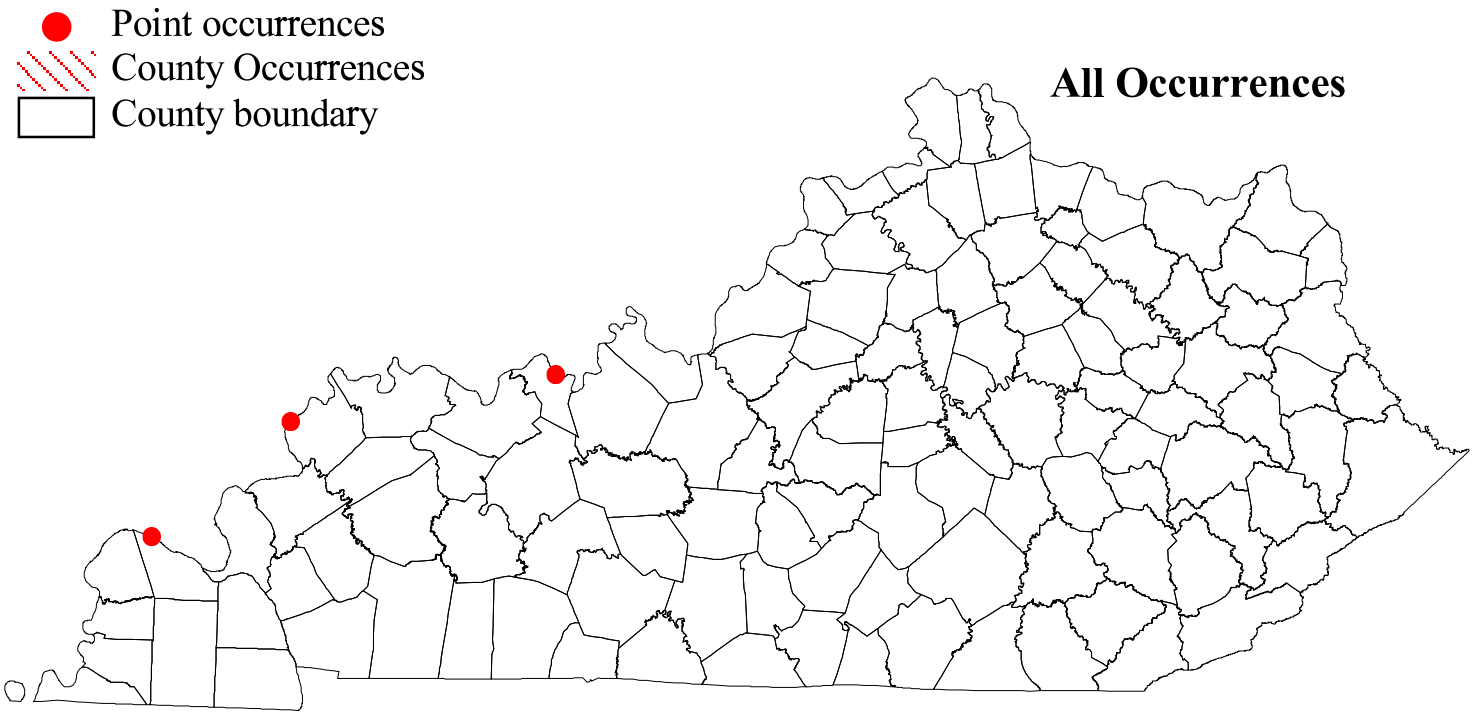
Conservation Issues

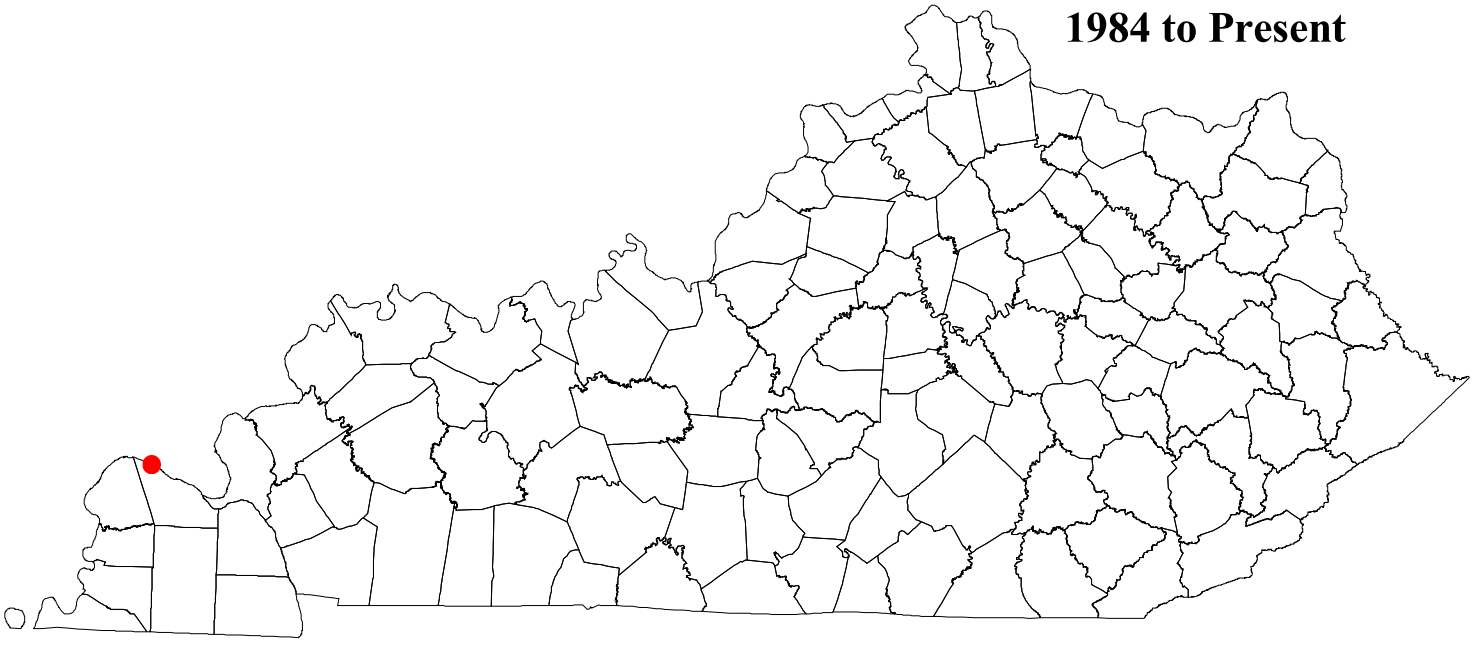
- Aquatic habitat degradation
  - 2E - Stream channelization/ditching
  - 2G - Water level fluctuations
  - 2L - Levee construction
- Point and non-point source pollution
  - 4G - Chemical spills and contaminants (applied and accidental)
  - 4K - Industrial waste discharge/runoff

Ohio Shrimp

Macrobrachium ohione

(Data current as of April 28, 2009)





Shrimp Crayfish *Orconectes lancifer*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
N	E	G5	S1	G5	S1

G-Trend Unknown

G-Trend Comment Unknown

S-Trend Unknown

S-Trend Comment Very few collections of this species, so a viability assessment isn't possible at this time.

Habitat/Life History Occurs in oxbow lakes and streams on the Gulf Coastal Plain (Page 1985), where it lives among organic debris, usually near bald cypress (Burr and Hobbs 1984). Generally found in deep water of stiller sections of large streams or lakes but also in roadside ditches. Probably mostly active nocturnally. Feeds opportunistically, but primarily on detritus. No form I males or ovigerous females have been collected in Kentucky (Taylor and Schuster 2005).

Key Habitat Metropolis Lake.

Guilds
Terrestrial - standing water
Terrestrial - forested wetland
Aquatic - Large rivers in slackwater

Statewide Map ShrimpCrayfish.pdf

Conservation Issues

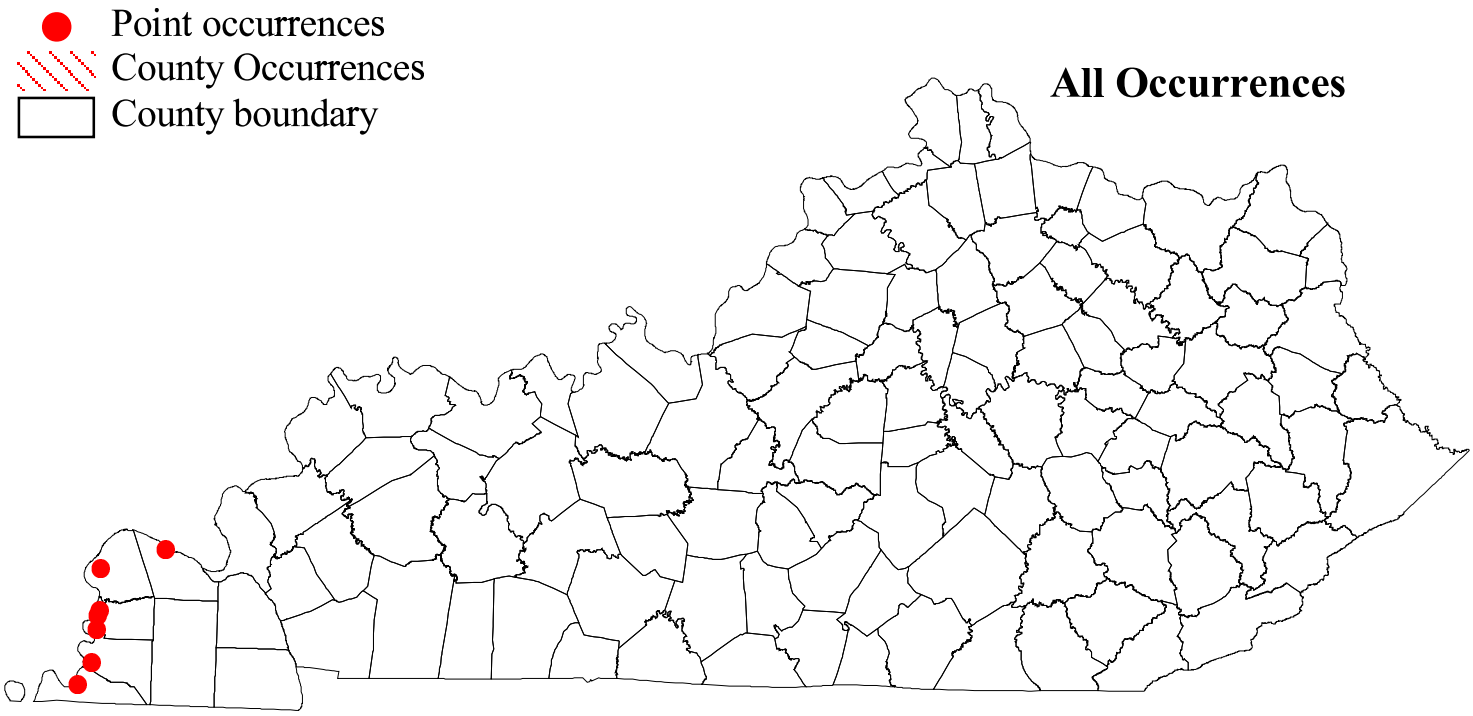
Aquatic habitat degradation

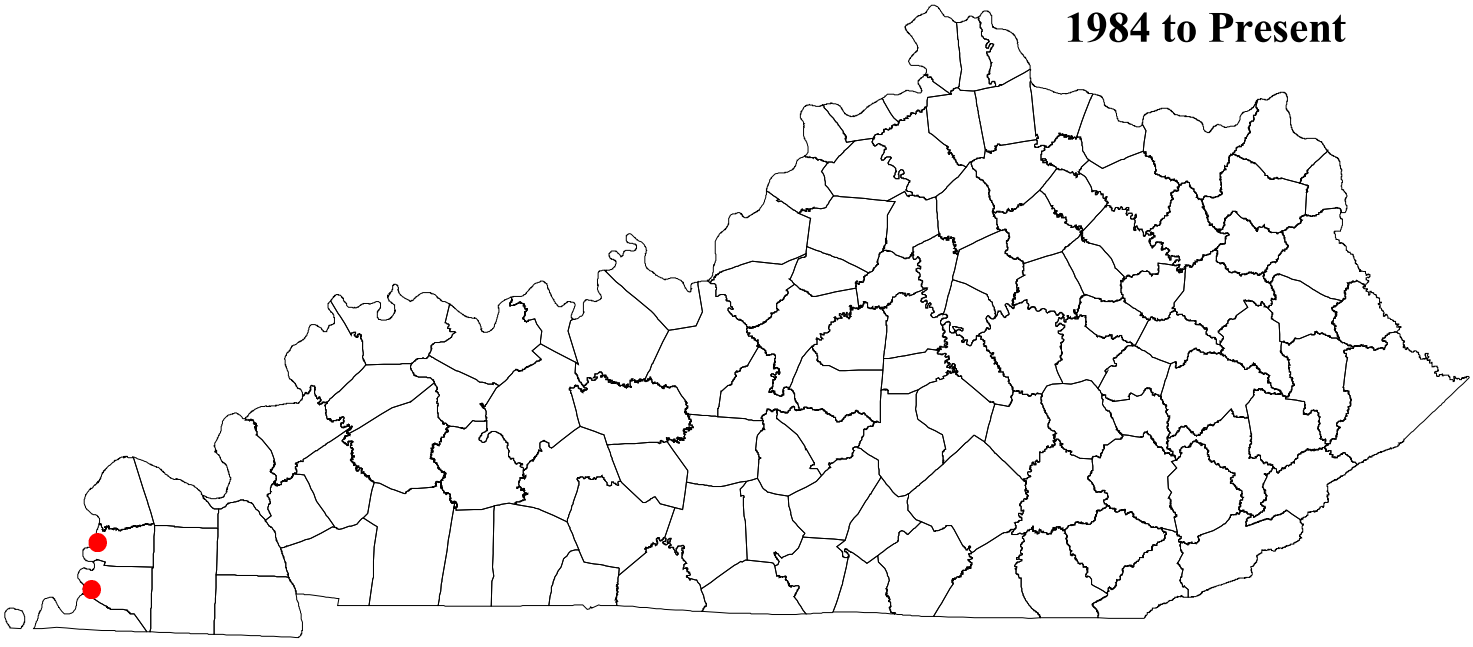
- 2E - Stream channelization/ditching
- 2F - Riparian zone removal (Agriculture/development)
- 2H - Wetland loss/drainage/alteration
- 2J - Alteration of surface runoff patterns (flow/temp regimes)

Shrimp Crayfish

Orconectes lancifer

(Data current as of April 28, 2009)





Swamp Dwarf Crayfish *Cambarellus puer*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
N	E	G5	S1	G5	S1

G-Trend Stable (unchanged or within +/- 10% fluctuation in population, range, area occupied, and/or number or condition of occurrences)

G-Trend Comment Unknown

S-Trend Unknown

S-Trend Comment Very few collections have been made of Cambarellus puer in KY; this information is unknown.

Habitat/Life History Occurs in cypress swamps, sloughs, sluggish streams, roadside ditches and lowlands (including drained wetlands) on the Mississippi Alluvial Plain, usually among living or dead vegetation (Page 1985). Will burrow during dry periods. Is tolerant of warm water, and low dissolved oxygen levels, but seems to require submergent vegetation. Probably opportunisitic, feeding mostly on detritus.

Key Habitat Mayfield Creek Swamp.

Guilds
Terrestrial - standing water
Terrestrial - forested wetland
Terrestrial - Emergent and shrub-dominated wetlands
Aquatic - Lowland Streams in slackwater
Aquatic - Large rivers in slackwater

Statewide Map SwampDwarfCrayfish.pdf

Conservation Issues

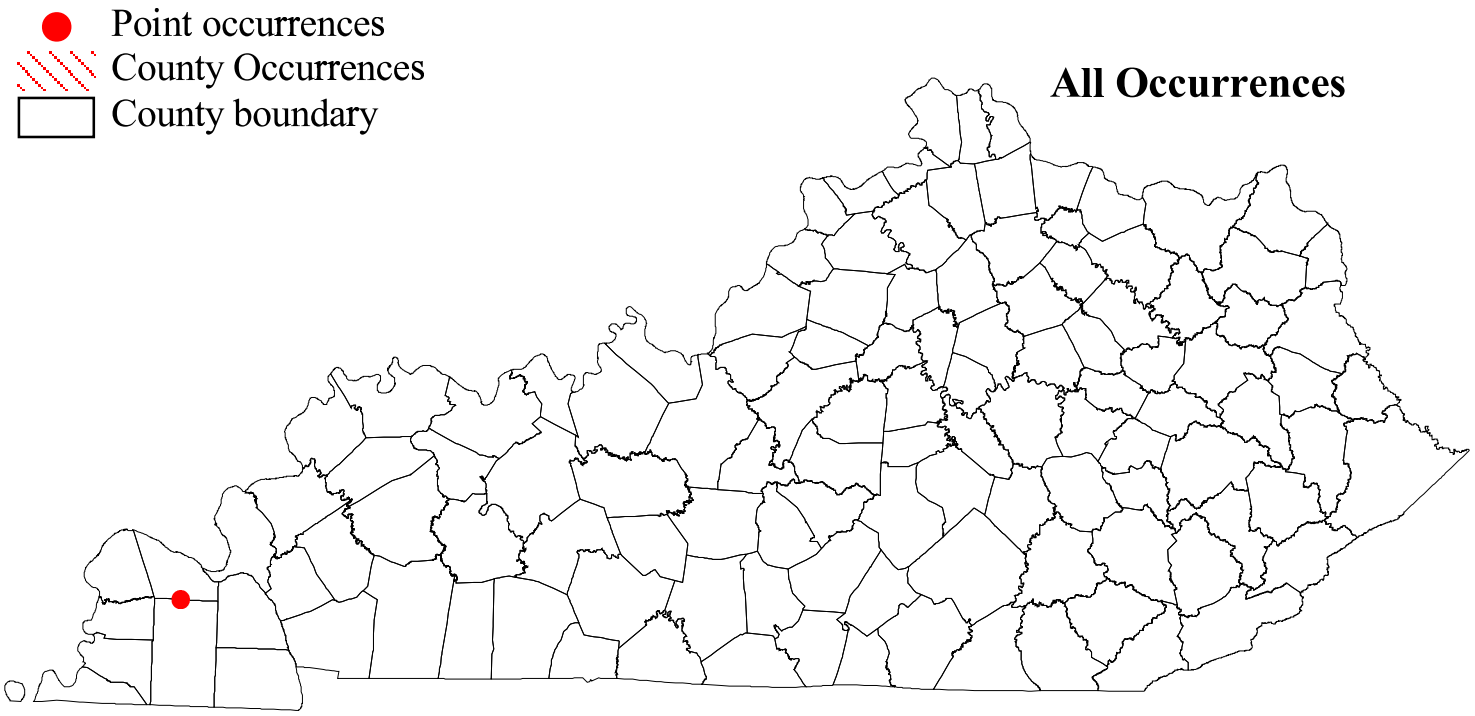
Aquatic habitat degradation

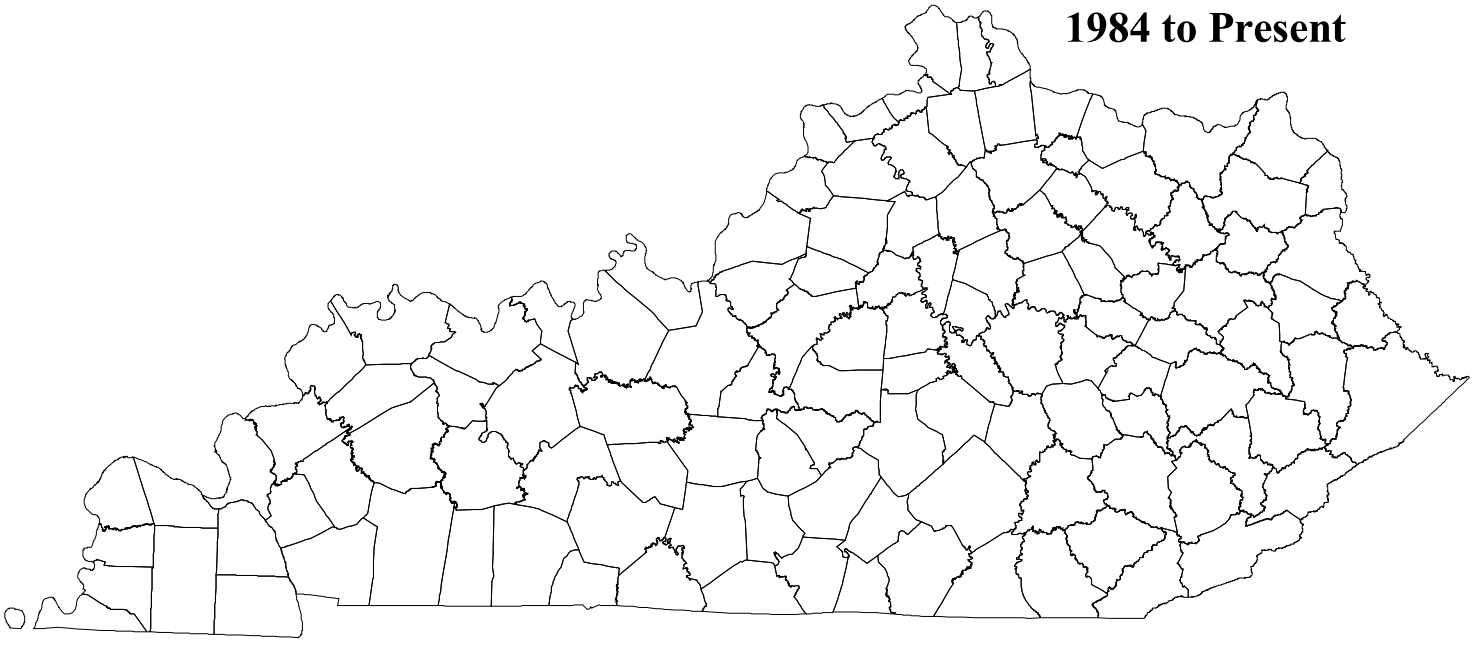
- 2E - Stream channelization/ditching
- 2F - Riparian zone removal (Agriculture/development)
- 2H - Wetland loss/drainage/alteration
- 2N - Eutrophication (e.g. of wetlands)

Swamp Dwarf Crayfish

Cambarellus puer

(Data current as of April 28, 2009)





Vernal Crayfish *Procambarus viaeviridis*

Federal Status	Heritage Status	GRank	SRank	GRank (Simplified)	SRank (Simplified)
N	T	G5	S1	G5	S1

G-Trend Unknown

G-Trend Comment Currently stable across its entire range (Taylor et al, 2007)

S-Trend Unknown

S-Trend Comment Unknown

Habitat/Life History Occurs in cypress swamps, floodplain streams and lentic situations on the coastal plain (Page 1985). Burr and Hobbs (1984) collected specimens from debris-filled pools in Gulf Coastal Plain streams. Tolerant of heat and low oxygen levels. Opportunistic feeder; immatures perhaps more so than adults. From I males collected during January and May in Illinois, with smaller specimens found in January and February (Page 1985). Egg laying is likely in late spring or fall in Kentucky (Taylor and Schuster 2005). Ovigerous females have not been reported from studies in Illinois, Missouri, or Kentucky.

Key Habitat Possibly East Fork Clarks River.

Guilds
Terrestrial - standing water
Terrestrial - forested wetland
Terrestrial - Emergent and shrub-dominated wetlands
Aquatic - Lowland Streams in slackwater

Statewide Map VernalCrayfish.pdf

Conservation Issues

Aquatic habitat degradation

2E - Stream channelization/ditching

2H - Wetland loss/drainage/alteration

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