

**Kansas Department of Wildlife, Parks & Tourism  
2023 Species Listing Review**

Species being reviewed: Northern Map Turtle (*Graptemys geographica*)

Reviewer: [REDACTED]

Date: January 4, 2024

(Using your experience and knowledge, please indicate the most appropriate number in each category to help with our evaluation process.)

**Species status:**

1) Populations and Trends

a) Kansas populations in relation to global populations.

- Kansas population constitutes <10% of global population and not geographically isolated. 2
- Kansas population constitutes 10-25% of global population and not geographically isolated. 4
- Kansas population is geographically isolated and constitutes <25% of global population. 5
- Kansas population constitutes 25-50% of global population. 6
- Kansas population constitutes >50% of global population. 8
- Kansas population is total global population. 10

b) Population trend within **Kansas** during the past 35 years.

- Population increasing. 0
- Population stable or cyclic (within 10% of stable mean). 1
- Population reduced 10-29%. 3
- Population reduced 30-59%. 6
- Population reduced 60-90%. 9
- Population reduced >90%.

c) Population trend within **global range** during the past 35 years.

- Population increasing. 0
- Population stable or cyclic (within 10% of stable mean). 1
- Population reduced 10-29%. 3
- Population reduced 30-59%. 6
- Population reduced 60-90%. 9
- Population reduced near 100%. 10

2) Rarity (density within current range). When considering a migratory species, the evaluation should apply to that period while the animal is within the state.

a) Within **Kansas**.

- Common, easily found throughout range. 0
- Frequently found at many points. 2
- Frequently found at few points. 4

- Infrequently found at many points. 6
  - Infrequently found at few points. 8
  - Rarely found at any point, never concentrated. 10
- b) Within **global range**.
- Common, easily found throughout range. 0
  - Frequently found at many points. 2
  - Frequently found at few points. 4
  - Infrequently found at many points. 6
  - Infrequently found at few points. 8
  - Rarely found at any point, never concentrated. 10
- 3) Current Breeding Biology.
- a) Residency status.
- Peripheral or casual (no breeding population). 0
  - Regular migrants that do not winter in KS. 3
  - Migrants wintering but not breeding in KS. 4
  - Migrants breeding in Kansas. 8
  - Year-round resident. 10
- b) Reproduction within Kansas.
- Normal number of young per brood or litter (or does not breed in KS). 0
  - Slight reduction from normal reproduction. 3
  - Reproduction severely decreased from normal. 7
  - Reproduction near zero. 10
- 4) Distribution change during the past 35 years.
- a) Distribution within Kansas.
- Distribution unchanged or increasing. 0
  - Distribution reduced up to 30%. 3
  - Distribution reduced 30 to 59%. 6
  - Distribution reduced 60 to 90%. 9
  - Distribution reduced >90%. 10
- b) Global range distribution.
- Distribution unchanged or increasing. 0
  - Distribution reduced up to 30%. 3
  - Distribution reduced 30 to 59%. 6
  - Distribution reduced 60 to 90%. 9
  - Distribution reduced >90%. 10

**Habitat Status**

- 5) Loss of suitable habitat during the past 35 years.
- a) Within Kansas.

- No habitat loss or habitat increasing. 0
  - Habitat loss up to 30%. 3
  - Habitat loss 30-59%. 6
  - Habitat loss 60-90%. 9
  - Habitat loss >90%. 10
- b) Within global range.
- No habitat loss or habitat increasing. 0
  - Habitat loss up to 30%. 3
  - Habitat loss 30-59%. 6
  - Habitat loss 60-90%. 9
  - Habitat loss >90%. 10

### Vulnerability

- 6) Specialization.
- No limiting specialization, highly adaptable. 0
  - Slightly limiting specialization, moderately adaptable. 4
  - Moderately specialized (narrow niche in regard to habitat or food). 7
  - Highly specialized (very narrow niche, extremely low adaptability). 10
- 7) Sensitivity to Environmental Contaminants.
- No problems associated with pollutants or pesticides. 0
  - Slight sensitivity to pollutants or pesticides. 4
  - Moderate sensitivity to pollutants or pesticides. 6
  - High sensitivity to pollutants or pesticides. 8
  - Pollutants or pesticides known to be suppressing population. 10
- 8) Exploitation within Kansas.
- a) Species vulnerability to consumptive uses.
- None current or anticipated. 0
  - Low. 3
  - Moderate. 7
  - High. 10
- b) Habitat exploitation threat.
- None current or anticipated. 0
  - Low. 3
  - Moderate. 7
  - High. 10
- 9) Recovery capacity.
- Recovery not needed, species not in jeopardy. 0
  - Recovery potential excellent as species responds well to management. 2
  - Recovery potential good; some management difficulty. 4
  - Recovery potential fair due to habitat or management problems. 6

- Recovery potential poor due to habitat or management problems. 8
- Recovery potential impossible due to unsolvable population, habitat, or management problems. 10

Using the following definitions and using your best scientific judgment, which category does this species best fit:

Endangered Species: any species of wildlife whose continued existence as a viable component of the state's wild fauna is determined to be in jeopardy (KSA 32-958c).

Threatened Species: any species of wildlife which appears likely, within the foreseeable future, to become an endangered species (KSA 32-958f).

Species-in-Need-of-Conservation: (SINC) those species which are highly specialized, whose habitat is very limited in Kansas, or show population declines that warrant data collection concerning its status in Kansas. Conservation efforts focused on these species can prevent future listing as threatened or endangered.

Unlisted: This species population does not have the characteristics that qualify it for one of the above categories. It has a healthy or recovered population that is either stable or increasing or it no longer can be considered a viable component of the Kansas fauna.

Recommended listing (check one)

Endangered in Kansas

Threatened in Kansas

Species-in-need-of-conservation

Unlist (is not or is no longer a viable component of the Kansas fauna)

Unlist (species status is stable to increasing and considered healthy or recovered)

Please provide comments to support recommended listing and any other information you think is pertinent that may have been omitted from the petition (use as much space as needed).

Recent (2017-2019) survey was well done, and its results should be considered reliable and used for management purposes.

Signature [REDACTED] Date January 4, 2024

Return by January 31, 2024 to: [Jordan.Hofmeier@ks.gov](mailto:Jordan.Hofmeier@ks.gov)

**Kansas Department of Wildlife, Parks & Tourism  
2023 Species Listing Review**

Species being reviewed: Northern Map Turtle

Reviewer: [REDACTED] Date: 1/26/2024

(Using your experience and knowledge, please indicate the most appropriate number in each category to help with our evaluation process.)

**Species status:**

1) Populations and Trends

- a) Kansas populations in relation to global populations.
- Kansas population constitutes <10% of global population and not geographically isolated. 2 X
  - Kansas population constitutes 10-25% of global population and not geographically isolated. 4
  - Kansas population is geographically isolated and constitutes <25% of global population. 5
  - Kansas population constitutes 25-50% of global population. 6
  - Kansas population constitutes >50% of global population. 8
  - Kansas population is total global population. 10

- b) Population trend within **Kansas** during the past 35 years.
- Population increasing. 0
  - Population stable or cyclic (within 10% of stable mean). 1 X
  - Population reduced 10-29%. 3
  - Population reduced 30-59%. 6
  - Population reduced 60-90%. 9
  - Population reduced >90%.

- c) Population trend within **global range** during the past 35 years. ???
- Population increasing. 0
  - Population stable or cyclic (within 10% of stable mean). 1
  - Population reduced 10-29%. 3
  - Population reduced 30-59%. 6
  - Population reduced 60-90%. 9
  - Population reduced near 100%. 10

2) Rarity (density within current range). When considering a migratory species, the evaluation should apply to that period while the animal is within the state.

- a) Within **Kansas**.
- Common, easily found throughout range. 0
  - Frequently found at many points. 2 X
  - Frequently found at few points. 4
  - Infrequently found at many points. 6
  - Infrequently found at few points. 8
  - Rarely found at any point, never concentrated. 10

- b) Within **global range.** **???**
- Common, easily found throughout range. 0
  - Frequently found at many points. 2
  - Frequently found at few points. 4
  - Infrequently found at many points. 6
  - Infrequently found at few points. 8
  - Rarely found at any point, never concentrated. 10
- 3) Current Breeding Biology.
- a) Residency status.
- Peripheral or casual (no breeding population). 0
  - Regular migrants that do not winter in KS. 3
  - Migrants wintering but not breeding in KS. 4
  - Migrants breeding in Kansas. 8
  - Year-round resident. **10 X**
- b) Reproduction within Kansas.
- Normal number of young per brood or litter (or does not breed in KS). **0 X**
  - Slight reduction from normal reproduction. 3
  - Reproduction severely decreased from normal. 7
  - Reproduction near zero. 10
- 4) Distribution change during the past 35 years.
- a) Distribution within Kansas.
- Distribution unchanged or increasing. **0 X**
  - Distribution reduced up to 30%. 3
  - Distribution reduced 30 to 59%. 6
  - Distribution reduced 60 to 90%. 9
  - Distribution reduced >90%. 10
- b) Global range distribution. **???**
- Distribution unchanged or increasing. 0
  - Distribution reduced up to 30%. 3
  - Distribution reduced 30 to 59%. 6
  - Distribution reduced 60 to 90%. 9
  - Distribution reduced >90%. 10

### Habitat Status

- 5) Loss of suitable habitat during the past 35 years.
- a) Within Kansas.
- No habitat loss or habitat increasing. **0 X**
  - Habitat loss up to 30%. 3
  - Habitat loss 30-59%. 6

- Habitat loss 60-90%. 9
  - Habitat loss >90% . 10
- b) Within global range. ???
- No habitat loss or habitat increasing. 0
  - Habitat loss up to 30%. 3
  - Habitat loss 30-59%. 6
  - Habitat loss 60-90%. 9
  - Habitat loss >90% . 10

## Vulnerability

- 6) Specialization.
- No limiting specialization, highly adaptable. 0
  - Slightly limiting specialization, moderately adaptable. 4
  - Moderately specialized (narrow niche in regard to habitat or food). 7 X
  - Highly specialized (very narrow niche, extremely low adaptability). 10
- Sensitivity to Environmental Contaminants. ???
  - No problems associated with pollutants or pesticides. 0
  - Slight sensitivity to pollutants or pesticides. 4
  - Moderate sensitivity to pollutants or pesticides. 6
  - High sensitivity to pollutants or pesticides. 8
  - Pollutants or pesticides known to be suppressing population. 10
- 7) Exploitation within Kansas.
- a) Species vulnerability to consumptive uses.
- None current or anticipated. 0 X
  - Low. 3
  - Moderate. 7
  - High. 10
- b) Habitat exploitation threat.
- None current or anticipated. 0 X
  - Low. 3
  - Moderate. 7
  - High. 10
- 8) Recovery capacity.
- Recovery not needed, species not in jeopardy. 0 X
  - Recovery potential excellent as species responds well to management. 2
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  - Recovery potential impossible due to unsolvable population, habitat. 10  
or management problems.

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Endangered in Kansas

Threatened in Kansas

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Unlist (is not or is no longer a viable component of the Kansas fauna)

Unlist (species status is stable to increasing and considered healthy or recovered)

Please provide comments to support recommended listing and any other information you think is pertinent that may have been omitted from the petition (use as much space as needed).

The last four years Alexis Powell and I have done visual surveys with a spotting scope all over eastern Kansas. Northern map turtles can be very common within their range in Kansas. We have probably observed more than 100 individuals. Even though habitat destruction and pollution would probably affect this species, we have no evidence of this because these were visual surveys. This species preys on mollusks, which may be affected by pollution. Even though I have observed Northern map turtles in at least six other states, I do not want to make any judgement regarding any global status regarding abundance, distribution, or pollution effects. I am torn between listing them as a species in need of conservation or to totally unlist them. In the last four years the Kansas population has gone from about 10 known locations to over 100 locations. This is due to our visual surveys instead of trying to trap them. I do not feel the population is growing, it is just that now we know how to survey for them. They probably have always existed at all known locations. (Although there is no data to support this.)

Date 1/26/2024

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**Kansas Department of Wildlife, Parks & Tourism  
2023 Species Listing Review**

Species being reviewed: **Northern Map Turtle (*Graptemys geographica*)**

Reviewer: [REDACTED] Date: 1/31/24

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- c) Population trend within **global range** during the past 35 years.
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  - a) Residency status.
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    - **Year-round resident.** 10
  
  - b) Reproduction within Kansas.
    - **Normal number of young per brood or litter (or does not breed in KS).** 0
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  - b) Global range distribution.
    - **Distribution unchanged or increasing.** 0
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**Habitat Status**

- 5) Loss of suitable habitat during the past 35 years.
  - a) Within Kansas.
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- 8) Exploitation within Kansas.
- a) Species vulnerability to consumptive uses.
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- 9) Recovery capacity.
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Recommended listing (check one)

Endangered in Kansas

Threatened in Kansas

Species-in-need-of-conservation

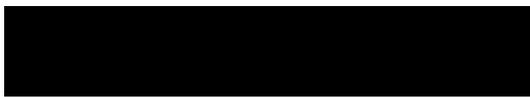
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Unlist (species status is stable to increasing and considered healthy or recovered)

Please provide comments to support recommended listing and any other information you think is pertinent that may have been omitted from the petition (use as much space as needed).

This is a cosmopolitan species throughout much of its range and its lack of records in the KS herp atlas and collections likely reflects a generally range-wide difficulty in catching them with traditional turtle sampling approaches. Future work needs to be done to better understand their demographics within the state, but they are not as rare as first thought. We catch hundreds of *Trachemys scripta* for every *Graptemys ouachitensis* sampling with traditional turtle trapping approaches (fyke and hoop nets which are often baited). However, we commonly see *Graptemys* in the adjacent river using binoculars or spotting scopes.

Signature



Date 1/31/24

Return by January 31, 2024 to: [Jordan.Hofmeier@ks.gov](mailto:Jordan.Hofmeier@ks.gov)



- b) Within **global range**.
- Common, easily found throughout range. 0
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  - Infrequently found at few points. 8
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**Habitat Status**

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### Vulnerability

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  - Slight sensitivity to pollutants or pesticides. 4
  - **Moderate sensitivity to pollutants or pesticides.** 6
  - High sensitivity to pollutants or pesticides. 8
  - Pollutants or pesticides known to be suppressing population. 10
- 8) Exploitation within Kansas.
- a) Species vulnerability to consumptive uses.
- **None current or anticipated.** 0
  - Low. 3
  - Moderate. 7
  - High. 10
- b) Habitat exploitation threat.
- None current or anticipated. 0
  - **Low.** 3
  - Moderate. 7
  - High. 10
- 9) Recovery capacity.
- **Recovery not needed, species not in jeopardy.** 0
  - Recovery potential excellent as species responds well to management. 2
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  - Recovery potential fair due to habitat or management problems. 6
  - Recovery potential poor due to habitat or management problems. 8
  - Recovery potential impossible due to unsolvable population, habitat, or management problems. 10

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Recommended listing (check one)

Endangered in Kansas

Threatened in Kansas

**Species-in-need-of-conservation**

Unlist (is not or is no longer a viable component of the Kansas fauna)

Unlist (species status is stable to increasing and considered healthy or recovered)

Please provide comments to support recommended listing and any other information you think is pertinent that may have been omitted from the petition (use as much space as needed).

Please understand that most of my answers are guesswork, based on some experience in KS and MO and by discussing w/ colleagues plus reading about the species elsewhere. When in doubt, I often went with the more conservative (protection warranted) answer.

I've spent a lot of time conducting visual surveys of turtles in eastern and central KS from 2018-present. In that effort, which has not targeted Northern Map Turtle exclusively, I've personally seen and photographically documented 121 individuals at ~85 locations. My students, David Edds, and I caught 6 individuals in 2017-2018 in an extensive trapping survey. Subsequently, in 2019, my students documented another 26 individuals w/ photographs. I have also gathered photo records of a handful of other individuals from other observers. As far as I know, the **only** other documented records of this species in KS are the 12 specimens at KU and David Edds' et al. observations of another 8 captured individuals in 1990 that were not vouchered. **Note that the total of 267 records shown in the KS Herp Atlas is misleadingly high because it includes double-counts of most of my observations.** Those records appear in the atlas as both

literature records (from Michael Mahr's thesis) and as museum vouchers (from the photos that I submitted to the archive at KU). Almost all of the above records have been submitted to KU, to the KS Herpetofaunal Atlas, and to KDWP. **Some new records from 2022-2023 will be submitted to a journal in the next month or so** (including some notable new records from Dragoon Creek in Osage County, Cedar Creek in Johnson County—some of which, from other observers, are shown on the KS Herp Atlas—and from a different Cedar Creek in Anderson County, among others). Most of the records from 2017-2021 have been published. See the following two articles, as well as my graduate student Michael Mahr's thesis at Emporia State University (submitted in 2020):

Powell, A. F. L. A., M. S. Mahr, J. L. Buchanan, J. J. Autz. 2021. New records of the Northern Map Turtle (*Graptemys geographica*) redefine its known distribution and abundance in Kansas, USA. *Herpetological Review* 52:737–742.

Powell, A. F. L. A. and G. Sievert. 2022. New distributional records of turtles in eastern Kansas and western Missouri, USA. *Herpetological Review* 53:265–271.

The first of these two articles **contains most of my thoughts on the status of the species in Kansas. I will not repeat everything that is in that paper here**, but I will comment on some of my answers to the questions in this evaluation.

In **question 1(a)**, I marked the Kansas populations as **isolated**. I don't really believe that they are **totally** isolated, but I still think that they are quite isolated in a practical sense. The population in the Spring River is scarce outside of Shoal Creek, which enters KS from MO and exits KS as the Spring River to OK. That population is likely least isolated, because turtles almost certainly enter KS from MO, but I doubt that OK is much of a source of immigrants if at all. The populations in the Marmaton and Little Osage rivers are likely reasonably well-connected to populations in the Osage drainage in MO, however, in my experience, the species is **far** more common on the KS side of the state line than in MO in those rivers, so we may be supplying more dispersing turtles to MO than vice-versa. The same is true of the population in the Marais des Cygnes River drainage, where the species is **much** more abundant in headwaters in e.g. Lyon and Osage counties than it is in the mainstem of the river or in subdrainages in KS counties adjacent to MO. The populations in that drainage above Pomona and Melvern lakes are likely cut off from the population below those reservoirs. Most isolated, I would guess, is the population in Johnson County in parts of the KS and MO river drainages. I found some individuals in the Blue River on the MO side of the line, but no other records exist for hundreds of miles. Have Northern Maps been overlooked despite being abundant, or are they at low density in western MO? I suspect the latter, but the only way to know for sure is to do surveys there. If I have opportunity, I will do that in the future.

In **question 2(a)**, I marked that individuals are frequently found at **few** points. What is few and what is many? I went with few because there are vast areas within the e.g. Marais des Cygnes drainage (in fact, in most of that drainage) where the species is

absent or at extremely low density. Sure, possible anywhere, but only really easy to find in a handful of creeks, mostly in headwaters where the best conditions only persist for a few miles before the stream becomes too small upstream or too large downstream.

In **question 3(b)**, I marked that reproduction is happening at normal levels in KS. That is an educated guess, based on the inference that the population is roughly similar to what it was in 1990 (since our 2017-2018 trapping survey results were similar to those of the Edds et al. 1990 survey) and based on the fact that I've seen individuals of all ages at many locations.

In **question 5(a)**, I marked no habitat loss in the past 35 yrs because I don't know that rivers and creeks in eastern KS, or the condition of their banks (where turtles nest), have changed very much. Some loss has occurred, but perhaps some gain as well.

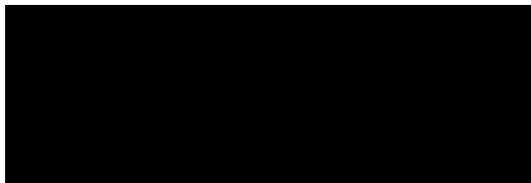
In **question 6**, I marked N Map as moderately specialized since it supposedly relies on snails and other mollusks to a great extent. Certainly, they are not attracted to the usual baits used for turtles. We didn't do stomach contents analyses. Also, w/regard to habitat specialization, they seem to need rocky bottoms or areas lacking lots of mud and silt, in the upper parts of drainages. They are usually much more common where rangeland surrounds creeks rather than plowed ground.

In **question 7**, I consider them moderately sensitive to pollutants/pesticides because of the sensitivity of their food snails/mussels to water quality, as well as my perception that the turtles are not found in stretches of creeks with lots of mud/silt.

In **question 8(b)**, I marked habitat exploitation threat as "low" but the concern that I have is that significant habitat loss would result from conversion of rangeland or hayfields to cropland or to manicured development, as is happening in some areas.

I think the species is quite low density in most areas but that it is too widely distributed in too many drainages to be considered threatened. I think **SINC** status would be a good listing to encourage further study of the species. We've learned a lot in the past few years, but it's only a start. Whatever its ranking, if we want N Map Turtles in KS, we have to protect populations here, because they aren't pouring in from MO. Our populations are also interesting because they are the westernmost for the species.

Signature



Date 31 January 2024

Return by January 31, 2024 to: [Jordan.Hofmeier@ks.gov](mailto:Jordan.Hofmeier@ks.gov)