

Original Research Paper

# New Northern Record of the Red-eared Slider (*Trachemys scripta elegans* Wied-Neuweid, 1838) in the Lower Peninsula of Michigan, USA

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**Abstract:** We report an update to the distribution of Red-eared Sliders (*Trachemys scripta elegans*) in Michigan. The species is presumed to be native to some parts of the state but invasive in others. The occurrence is based on skeletal remains of a Red-eared Slider recovered in Oscoda County, which is the first record for the county. This finding extends the known range of the species in Michigan and suggests that human-made structures like oil and gas well pads may be useful for finding evidence of both native and non-native species.

**Keywords:** turtles, non-native species, conservation, biogeography, federal lands.

## Introduction

The distribution of the Red-eared Slider (*Trachemys scripta elegans* Wied-Neuweid, 1838) within the United States shows a pattern of native presence in certain regions and invasive status in others. Red-eared Sliders in North America have a distinctive duality to the way they interface with local ecosystems (Somma et al., 2024). While native to many areas, they have become invasive in others, leading to variations in their spread, impact, and management on a regional basis. While this species is widespread as a presumed non-native taxon in the southern portion of Michigan's lower peninsula, often in proximity to major urban centers, it has been reported far less frequently in the northern areas. This distributional contrast has spurred scientific interest, prompting investigations into the factors influencing this expansion and geographic divide, where climate change, decline of native turtles, and expansion of urban land use are all considered (Spear et al., 2018).

The northward range extension of Red-eared Sliders throughout the Great Lakes Region, including Michigan, has followed a trajectory of apparently isolated appearances during much of the 20th

century. The species has an uneven presence across different parts of the state (Holman, 2012; Harding and Mifsud, 2017; Spear et al., 2018). Historically, northern Michigan (the northern portion of Michigan's Lower Peninsula) has relatively fewer occurrences of Red-eared Sliders compared to other parts of the state, and the rest of the Great Lakes Basin. Here, we report a new occurrence from the northern part of the Lower Peninsula in the Huron-Manistee National Forest, which is also the first record in Oscoda County. This occurrence is from a landlocked rural county, which differs from other records in the region such as iNaturalist accounts from Charlevoix County and Grand Traverse County, and an unphotographed report from Charlevoix County that was reported to the Michigan Department of Natural Resources' Herp Atlas. A similarly unphotographed report from Emmett County in the Herp Atlas lists an occurrence of *T. s. scripta*, but a lack of photography means that this cannot be verified as *T. s. scripta* vs *T. s. elegans*. The only comparable occurrence of this turtle in the northern part of Michigan's Lower Peninsula is a Michigan DNR Herp Atlas photograph from Clare County, though Clare and Oscoda Counties are not geographically adjacent.

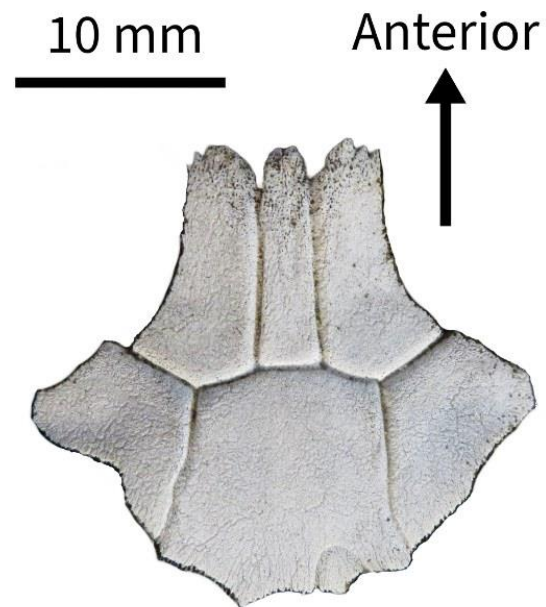
## Materials and Methods

On 28 September and 20 October 2021, R. C. Shell collected skeletonized remains during routine oil and gas well and facility inspections of a site on behalf of the United States Forest Service (USFS), which administers the land where these remains were recovered. The disassociated skeletal remains (twenty-two carapace and plastron bones and three scutes: one left anal, 2 indeterminate) were recovered over several square meters across a soil exposure on a natural gas well pad: a flat, square feature created by bulldozing and earthwork construction which allows for service and access to a petroleum or natural gas well located at the center (Shell et al., 2023). The well pad is in an opening in a Jack and Red pine forest with oak, approximately 600 m west of Deckerville Road, and 400 m north of the nearest wetland, on sandy soil derived from Pleistocene tills and glacial outwash located in Huron-Manistee National Forest, in Mentor Township (44.51521, -84.06691 WGS 84) in Oscoda County, Michigan. The material was held under Scientific Collector's Permit #FSCP11282022144925 issued to RCS by the Michigan Department of Natural Resources and is now deposited in the Daniel M. Fisk Museum of Natural History at Hillsdale College, Hillsdale, Michigan (DMF 6772.1 through 6772.12).

## Results

The scattered skeletal elements were found to articulate to one another and were reassembled and determined to represent the anterior third of the carapace (maximal nuchal width 2.54 cm) and approximately 70% of the plastron of a single individual (with a plastron length of 13.3 cm). The skeletal remains did not have substantial evidence of aging or degradation, which suggests a recent deposition. Identification as *T. scripta elegans* was made by authors through comparison of the nuchal bone to known specimens of this species (University of Florida 8200, MSB:Herp:51957, GCVP 12957, Potomac State College unnumbered teaching specimens) and verified through photographs of the material by a turtle specialist (Steven Jasinski, Harrisburg University of Science and Technology, Pennsylvania). Nuchal morphology is highly diagnostic within emydid turtles and readily permits generic assignment (Weems and George, 2013). The morphology of the nuchal is consistent with *T. scripta* compared to other native Michigan emydids

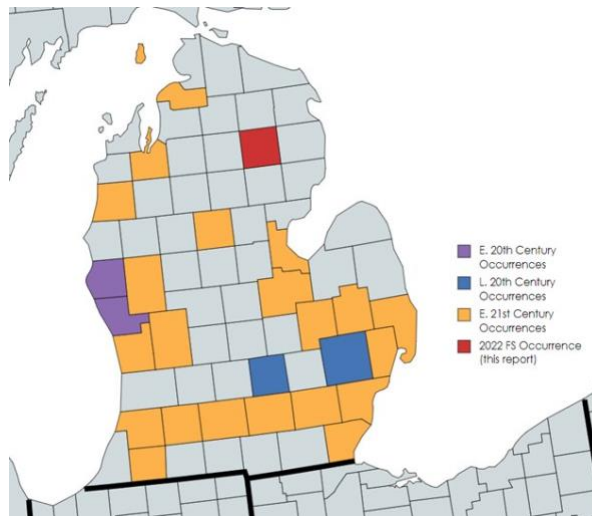
or other species of *Trachemys*, particularly the absence of a rugose or ornamented dorsal surface (Hay, 1908; Meylan et al., 2001; Weems and George, 2013) (Fig. 1). The shell and scute morphology permitted identification as *T. scripta elegans* (Vamberger et al., 2020; El-Sharnobey et al., 2023). There is an absence of carapacial or plastral features that are associated with other Michigan emydid turtles.



**Figure 1.** Nuchal of the USFS *Trachemys scripta elegans* from Oscada County, Michigan (DMF 6772.1 through 6772.12). The articulated preserved carapacial elements were imaged by RCS using a Canon SX720 HS point and shoot camera and all non-nuchal elements were digitally removed using Pixlr Editor ([www.pixlr.com](http://www.pixlr.com)).

## Discussion

The established range of Red-eared Sliders in Michigan has drawn attention from researchers and herpetologists, as their presence or absence within specific counties carries broader implications for ecological dynamics. The significance of this observation lies not only in its contribution to the understanding of the species' distribution in Michigan but also for other states where this species has a mixed non-native/native distribution. The absence of prior observations in the Oscada County or contiguous counties underscores the significance of this discovery (Fig. 2).



**Figure 2.** Known county level occurrences of *T. scripta elegans* by name in Michigan's Lower Peninsula (Harding and Mifsud, 2017; citizen scientist reports on HerpMapper, iNaturalist, and Michigan Herp Atlas; collections reports in VertNet). Occurrences are categorized by their earliest known report in the county. Map created using MapChart ([www.mapchart.net](http://www.mapchart.net)).

This report represents the first record for Oscoda County (Holman, 2012; Harding and Mifsud, 2017; Spear et al., 2018). No prior observations existed on HerpMapper ([www.herpMapper.org](http://www.herpMapper.org); 9 Jan 2024), iDigBio ([www.idigbio.org](http://www.idigbio.org); 9 Jan 2024), iNaturalist ([www.inaturalist.org](http://www.inaturalist.org); 9 Jan 2024), or VertNet ([www.vertnet.org](http://www.vertnet.org); 9 Jan 2024) for the county or its contiguous counties. The nearest observation on iNaturalist for the region is over 100 km west-northwest near Boyne Falls, Charlevoix County, Michigan (#22479956) on 8 May 2014, and is more than 300 km north of established populations elsewhere in the state (Spear et al. 2018, op. cit.). A more recent northern sighting was made near Manistee, southwestern Manistee County, Michigan on 28 August 2022 (iNat #132853444) approximately 180 km WSW of Mentor Township. Other sightings reported on the Michigan Herp Atlas (which do not provide specifics beyond the county level) include 20 June 2015 in Charlevoix County (#12104 – no photograph supplied), 16 July 2019 in Grand Traverse County (#25385 – a road killed specimen in a very urban county), and 1 May 2021 in Clare County (#29198 – a living individual as per supplied photograph).

In summary, the distribution of Red-eared Sliders in the United States showcases a complex interplay between native and invasive roles. The

species' history of expansion throughout the Great Lakes Region, exemplified by the recent finding in Michigan's northern area, contributes valuable insights to the ongoing discourse surrounding its distribution, ecological impact, and broader implications for conservation efforts. Recovery of skeletal material across other petroleum and natural gas well pads (see Shell et al., 2023) along with this sighting suggest that these human-constructed structures may be valuable for finding evidence of both native and non-native species and suggests faunal observations on-site during inspections of heavily modified portions of these landscapes may be useful to science.

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