

Technical Addendum
Statistical Analysis and Revision of Endangered Karst Species Distribution,
Austin Area, Texas

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Summary

In July of 2018, Dr. George Veni and the National Cave and Karst Research Institute (NCKRI) were awarded a Cooperative Agreement Award (F18AC00957) for federal financial assistance for the project titled “Assessment and Revision of Karst Fauna Regions for Karst Invertebrates in Travis and Williamson Counties, Texas”. The findings of this project were published in April 2021 in the NCKRI report titled “Statistical Analysis and Revision of Endangered Karst Species Distribution, Austin Area, Texas” (Veni & Jones 2021).

In brief, the objectives of this project were to redefine the boundaries of Karst Zones (areas in which predict where federally listed species are most and least likely to occur) and Karst Fauna Regions (hypothesized distinct ecological regions where subterranean-associated animals occur). Previous versions of the Karst Zones and Karst Regions had been developed in 1992 and 2007 (George Veni & Associates 1992; Veni & Martinez 2007). The full 2021 report can be reviewed and referenced at the following link: <https://nckri.org/wp-content/uploads/2021/08/NCKRI-RI-10-final.pdf>.

Data and Data Limitations

Owing to a lack of fine-scale geologic maps covering the defined study area of Veni & Jones (2021), this study utilized the Geologic Atlas of Texas (2014) digitized dataset to infer where cavernous geologic units are located, which is comprised of the following published sheets: Austin (Barnes 1974), Llano (Barnes 1981), San Antonio (Barnes 1983), Seguin (Barnes 1979), and Waco (Barnes 1990). This dataset is depicted at a 1:250,000 scale.

Following project completion and report publication, the Service solicited external review to identify potential issues and recommendations for dataset implementations. Despite the robustness of the study in identifying putative species biogeographic barriers, the coarse scale of the data was a prominent concern among reviewers that may utilize these datasets for consultation purposes or to reference them when deploying field investigations.

Data Release and Versioning

In an effort to provide higher resolution depictions of both Karst Zones and Karst Fauna Regions, the Service will batch release versions of the Veni & Jones (2021) original dataset as additional geologic mapping efforts become available. Variable scaling may be introduced into each dataset version (i.e., some locations may exhibit higher accuracy and others maintain the original scale of Veni & Jones (2021)), although the core boundaries of species distributions and Karst Fauna Regions are maintained. The latest version of the dataset will be publicly accessible via the Terrestrial Karst Invertebrates Library Collection (<https://www.fws.gov/library/collections/terrestrial-karst-invertebrates>). The version history is described below.

Version 1.0 [ORIGINAL]

Description:

Original dataset published with Veni & Jones (2021).

Digital Geologic Maps:

Geologic Atlas of Texas (2014) [1:250,000 scale]

References:

Barnes VE. 1974. Geologic Atlas of Texas, Austin sheet. Bureau of Economic Geology, The University of Texas, Austin, 11 p. + 1 sheet

Barnes VE. 1979. Geologic Atlas of Texas, Seguin sheet. Bureau of Economic Geology, The University of Texas, Austin, 8 p. + 1 sheet.

Barnes VE. 1981. Geologic Atlas of Texas, Llano sheet. Bureau of Economic Geology, The University of Texas, Austin, 15 p. + 1 sheet.

Barnes VE. Geologic Atlas of Texas, San Antonio sheet. Bureau of Economic Geology, The University of Texas, Austin, 9 p. + 1 sheet.

Barnes VE. 1990. Geologic Atlas of Texas, Waco sheet. Bureau of Economic Geology, The University of Texas, Austin, 9 p. + 1 sheet.

Version 1.1 [CURRENT]

Description:

Combination of original dataset of Veni & Jones (2021) and digital geologic map data provided by the Bureau of Economic Geology and the City of Austin. Additionally, the western portion of the Jollyville Plateau KFR has been extended north of Defeat Hollow to account for a cavernous portion of the Walnut Formation.

Digital Geologic Maps:

Geologic Atlas of Texas (2014) [1:250,000 scale]

Geologic Map of the West Half of the Taylor, Texas, 30 x 60 Minute Quadrangle: Central Texas Urban Corridor Encompassing Round Rock, Georgetown, Salado, Briggs, Liberty Hill, and Leander [1:100,000 scale]

Lower Lake Travis and Lake Austin Vicinity, Texas [1:50,000 scale]

City of Austin Geologic Mapping Dataset [1:50,000 scale]

References:

Barnes VE. 1974. Geologic Atlas of Texas, Austin sheet. Bureau of Economic Geology, The University of Texas, Austin, 11 p. + 1 sheet

Barnes VE. 1979. Geologic Atlas of Texas, Seguin sheet. Bureau of Economic Geology, The University of Texas, Austin, 8 p. + 1 sheet.

Barnes VE. 1981. Geologic Atlas of Texas, Llano sheet. Bureau of Economic Geology, The University of Texas, Austin, 15 p. + 1 sheet.

Barnes VE. Geologic Atlas of Texas, San Antonio sheet. Bureau of Economic Geology, The University of Texas, Austin, 9 p. + 1 sheet.

Barnes VE. 1990. Geologic Atlas of Texas, Waco sheet. Bureau of Economic Geology, The University of Texas, Austin, 9 p. + 1 sheet.

Collins, E. 2005. Southern portion of scanned and georeferenced version of Collins, E., 2005, Geologic Map of the West Half of the Taylor, Texas, 30 x 60 Minute Quadrangle: Central Texas Urban Corridor Encompassing Round Rock, Georgetown, Salado, Briggs, Liberty Hill, and Leander, Oversize color map, scale 1:100,000.

Woodruff CM, Collins EW. 2019. Geology of the Lower Lake Travis and Lake Austin Vicinity, Texas: The University of Texas at Austin, Bureau of Economic Geology, Miscellaneous Map No. 53, map scale 1:50,000, and accompanying text booklet.

Hauwert NM. 2009. Groundwater flow and recharge within the Barton Springs segment of the Edwards Aquifer, southern Travis and northern Hays counties, Texas. The University of Texas at Austin.

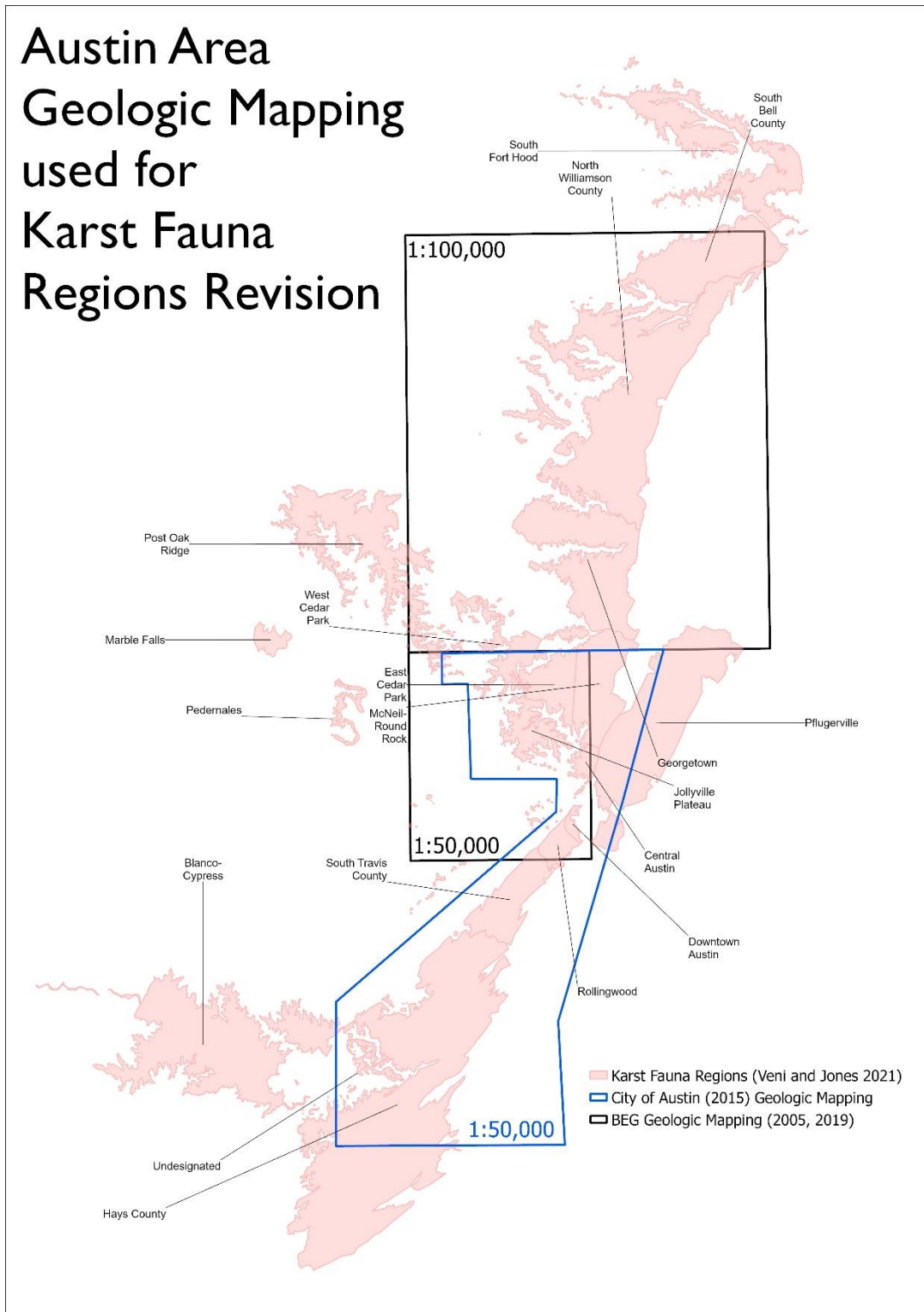


Figure 1: Geologic map scale associated with data release Version 1.1.