

<b>Lesson Title: The Effect of Urbanization on the endangerment of the Salt Creek Tiger Beetle in Lancaster County, Nebraska</b>		
<b>Grade Level:</b> 10-12	<b>Scale:</b> Local with global ramifications in terms of species extinction	<b>Keywords:</b> Salt Creek, Tiger Beetle, Lancaster County
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<b>Time Requirement:</b> Four 40 class periods	<b>Overview:</b> There are fewer than 200 Salt Creek Tiger Beetles remaining in the entire world and all 200 can be found along a saline creek bank that runs through two small counties in Nebraska. The Salt Creek runs through the northern part of Lincoln, Nebraska which is a growing city looking to expand its tax base. With the growing urban population, the habitat of the Salt Creek Tiger Beetle has been encroached upon and has hastened the demise of this one-of-a-kind beetle.	
<b>Required Materials:</b> *Assignment Sheet & Grading Rubric *Provided reading materials for initial classroom debate * Computers for research and map construction *Esri/ARCGIS software *Guest Speaker Joel Sartore if available *Guest Speaker from the UNL Entomology Department if available *Guest Speaker Jeff McReynolds if available to help explain Story Map story telling	<b>Objectives:</b> *Students will be able to study both sides of a decisive issue for not only our city and state but for the entire global world. *After an initial introduction to the topic and some provided reading material, the students will be able to form an opinion on the subject so as to participate in a classroom debate about the pros and cons of spending tax payer money to ensure the future of this species. *Students will expand their research to include hard data to map and tell a story about the demise of the habitat of the Salt Creek Tiger Beetle. *Students will be able to expand on their premise by using the data (taxes collected from new construction and the projected tax base versus the projected cost of maintaining and enhancing the habitat including taxes lost due to the preservation of the habitat) as well as ARCGIS imaging to show the loss of habitat through time due to urbanization. *Students will be able to construct an ARCGIS Story Map illustrating their premise and their support of either expanding our urban boundaries for economic reasons or stopping the encroachment of the city limits in order to save a species which some find to be insignificant and others believe to be invaluable. *Student will be able to present their findings to the class and perhaps at a statewide Story Map Competition in defense of their findings and attitude pertaining to this decisive issue.	

**Nebraska State Social Studies Standards:**

Location and Place SS HS.3.1 Evaluate where (spatial) and why people, places, and environments are organized on the Earth's surface.

Regions SS HS.3.2 Evaluate how regions form and change over time.

Human-Environment Interactions SS HS.3.3 Analyze how the natural environment and cultural landscape are transformed by natural and human forces and interpret how humans adapt to their surroundings.

Movement SS HS.3.4 Compare and contrast patterns of human populations and culture over space and time on a local, national, and global scale.

Geospatial Skills and Geo-literacy SS HS.3.5 Evaluate issues and/or events using geographic knowledge and geospatial skills to make informed decisions.

**Suggested Procedure:** *Day One: introduction to the project including a short power point as to what the Salt Creek Tiger Beetle is and why it is important to us as Lincolinites, Nebraskans and Global Citizens. An assignment sheet with a grading rubric for the project will be handed out. Short articles will be perused so a classroom discussion about the subject can ensue and questions can be asked and pondered. As tax payers one day, the students will be supporting this habitat through their tax dollars. How do they feel about that? Do they think this beetle is worth the money is it going to take to attempt to save it? Does the "purpose" of the beetle have a bearing upon the amount of resources we will need to employ to ensure its survival? Is the land better used for economic development? Students will be instructed to read and think about the ramifications of this dilemma in preparation for computer lab research and a classroom debate. If guest speakers are available, this would be the day that I would invite professionals to come and educate us on this issue.*

*Day Two: Students will make use of school iPads or computers to conduct research and gather hard statistics to support their position on this issue. The last 20 minutes of class time will be used to divide the class into two groups: those that support the effort to preserve the habitat of the Salt Creek Tiger Beetle to prevent extinction and those that think spending millions of dollars to save a beetle is a waste of tax payer money and the land should be used to increase the tax base of Lincoln.*

*Day Three: Using the research gathered, students will spend time in our computer lab constructing a story map which will illustrate their view point on the issue of the Salt Creek Tiger Beetle. Any work that is not completed during the class period will be assigned as homework. The students will be given several days to perfect their story maps before an assigned due date.*

*Day Four: Presentations. Each student will present their story map to the class in a professional and prepared manner. I will evaluate and grade the final product, the quality of research, the effort put forth and the presentation according to a rubric handed out on Day One. I will advise on any changes and/or improvements to the project and encourage the students to consider submitting to the Nebraska Story Map Competition.*

**Additional Resources:**

\*<http://outdoornebraska.gov/saltcreektigerbeetle/>  
\*<https://xerces.org/endangered-species/species-profiles/at-risk-beetles/salt-creek-tiger-beetle>  
\*<https://www.bing.com/videos/search?q=salt+creek+tiger+beetle&docid=608025312711213943&mid=03531ACBFA0AB1850E4D03531ACBFA0AB1850E4D&view=detail&FORM=VIRE>  
\*<http://netnebraska.org/article/news/salt-creek-tiger-beetle-part-recovery-project>  
\*[https://www.omaha.com/special\\_sections/outlook/little-bug-from-salt-creek-is-a-big-project-for/article\\_6e0d8400-b53b-5d07-bc0b-215418fc8dd6.html](https://www.omaha.com/special_sections/outlook/little-bug-from-salt-creek-is-a-big-project-for/article_6e0d8400-b53b-5d07-bc0b-215418fc8dd6.html)  
\*[https://journalstar.com/news/local/salt-creek-tiger-beetle-featured-in-goodall-s-book-on/article\\_ead3cc0a-b13d-11de-bdfb-001cc4c002e0.html](https://journalstar.com/news/local/salt-creek-tiger-beetle-featured-in-goodall-s-book-on/article_ead3cc0a-b13d-11de-bdfb-001cc4c002e0.html)  
\* Jane Goodall book – “Hope for Animals and their World”  
\* Joel Sartore - Photo Ark Project - <https://www.joelsartore.com/photo-ark/>  
\*[https://journalstar.com/news/local/zoo-group-gives-tiger-beetles-a-boost/article\\_01aa28b3-e26b-5e7f-9a4a-2d683cc118e1.html](https://journalstar.com/news/local/zoo-group-gives-tiger-beetles-a-boost/article_01aa28b3-e26b-5e7f-9a4a-2d683cc118e1.html)  
\*[https://journalstar.com/news/local/tiger-beetle-s-numbers-alarming/article\\_57b5a075-0e8d-58e7-974b-281f033b7cd1.html](https://journalstar.com/news/local/tiger-beetle-s-numbers-alarming/article_57b5a075-0e8d-58e7-974b-281f033b7cd1.html)

**Assessment:** *Students will be assessed in the following manner for this 100 point project:*  
10 Points – *Participation in Day One discussion. Engaged and thoughtful questions and comments with both their instructor and any guest speakers that may present.*  
10 Points – *Good use of time in Day Two research. Focused and real data is obtained.*  
10 Points – *Participation in the Day Two classroom debate.*  
40 Points – *Story Map. Well-constructed map. Accurate and up-to-date data. Pleasing aesthetic. Convincing points. Minimum of five slides. Variety of resources and media used to complete the story.*  
30 Points – *Presentation. Well Prepared (I can tell you have practiced!) Professional. Good voice quality. Passion in the premise presented. Open to answering questions.*

**Additional Information:** *I have old Lincoln Journal Star Newspaper articles and opinion editorials (dating back more than a decade) from the community which I like to share as this really gives an impression of the range of opinions coming from the citizens regarding this issue.*