

## KGS Quarterly Spotlight – Stephan Oborny

I joined the Kansas Geological Survey Team in August 2019, upon returning to Lawrence with my wife, Anna. Prior to this, I worked as a Chronostratigrapher within the Paleozoic Earth History Group at the University of Iowa while pursuing my PhD in Geology. In this role, my primary objective was to establish relative depositional ages to rock-strata at increasingly high-resolution that could be reliably correlated both regionally and around the globe. Using recently improved techniques which examine the rock stable isotope chemistry combined with the fossil record, ancient sea-level fluctuations preserved in the rock succession, and more, I was able to hone my skills to more reliably correlate and apply relative depositional ages to single meters of rock strata. During this time, I was given an opportunity to focus my efforts on historically challenging Silurian aged strata located in the Appalachian and Michigan basins, a region which encompasses 14 states. Utilizing the tools outlined above, I determined that the accuracy of the historically accepted correlations of rock units throughout these regions could be improved upon with new data, and that any given exposure of these rock units in fact varied by up to 7 million years in depositional age therein requiring revision to previous correlations. It became evident through this work that significant changes in basin development can occur within this duration of time, therein affecting where and how freshwater aquifers, and hydrocarbon and mineral resources are located within these strata throughout these regions.

*Stephan leading a K-12 fieldtrip of the Devonian Fossil Gorge near Iowa City.*



*Stephan looking at the Castile Formation evaporite succession in the Delaware Basin, Texas, while co-teaching a trip to the Guadalupe*

In addition to this, I have also assisted the mining industry in Kansas to resolve the complex stratigraphic nature of strategic aggregate resources utilized in road construction in and around the metropolitan Kansas City area. This work has the potential to eliminate the State's need to import aggregates from surrounding areas, resulting in lower construction costs and significant savings for taxpayers and general consumers in the coming years. With my new position at the KGS I am again directing my attention on the issue of aggregate resources, but have broadened my inquiry into modeling the development and dynamics of the Forest City and northern Cherokee basins in eastern Kansas, areas with historical hydrocarbon resources, and more recently discovered Rare Earth Element deposits (REE). These REE are currently under-evaluated and it is my belief that these resources could be of economic importance for Kansas and the surrounding states in the future.

The most rewarding aspects of my work are the opportunities to conduct research on topics I feel are of both economic and academic importance for the general public and the field more broadly, and in particular, endeavors in which I can assist in the resolution of complex stratigraphic issues critical to regional and national economic vitality. I greatly look forward to my future service here at the KGS.