Abstract of proposed student project (1 page limit. This should mirror the aims page of a grant and <u>CLEARLY indicate the student's role</u>.)

Rationale: How we humans see the world is very different from all other animal species. Each species has a a set of components that create a very different visual system, all of which are specifically fit for their ecological needs. The Argentine black and white tegu is an invasive species in Florida, and has a particular predeliction for egg predation. This is of conservation concern for sea turtles and other species. In order to better undetstand their ecology and how they hunt, we propose to study their visual system, specifically, the retinal ganglion cells (RGCs). Retinal ganglion cells are the bottleneck to central vision, meaning they are a great proxy for visual acuity. Their retinal distribution is heterogenous, and thus some regions of the retina provide high visual acuity compared to others. But evaluating and mapping the RGC density across the retina, we can understand when in their visual fields exits high acuity vision for such tasks as predation, and thus we can better understand their visual behaviors that may relate to predator of endangered species eggs.

Study objectives: The objective of this study is to determine the retinal topography of the Argentine black and white tegu (Salvator merianae). Visual acuity will be calculated, and the retinal cell densities will be projected out into their visual space to determine which regions of their visual fields are viewed with high resolution. This will provide information about the way they interact visually with their environment to help us understand their visual behaviors.

Study design and methods: Formalin-fixed eyes will be hemi-sected and retinae extracted for wholemounting. The wholemounted retina will be stained for retinal ganglion cells, which will then be counted and a topographical map created. The topographical map will then be oriented within the visual fields to determine where in visual space regions of different visual acuity project.

Preliminary data: Eyes have been extracted and fixed. Visual fields have been measured and data is currently being analyzed.

Student role: The student will practice and learn how to performed retinal wholemounts, will be trained on the microscope system used to capture, count, and make cell density topographical maps. They will perform statistical analysis on the data with guidance and supervision from Dr. Moore. With the results, the student will prepare a manuscript for publication and a poster.