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Anthony Dean Stefan* (stefanamp@yahoo.com), 111 Lake Hollingsworth Dr., Lakeland, FL 33801, and **Zachary David Fralish** and **Thomas Bernard Tyson**. *Using Differential Equations to Model Predator-Prey Relations as Part of SCUDEM Modeling Competition*. Preliminary report.

In the spring of 2018, for the SCUDEM modeling competition in St. Petersburg, Florida, we received outstanding distinction for designing a mathematical model to estimate how kinetic, spatial, auditory, electrical, and tensive output from a predator are accumulated to trigger a neural response in prey. Furthermore, the propagation of the resultant action potential and the physical flight of the prey from the predator were modelled through the analysis of larval zebrafish as a model organism. In our presentation, we will present how we developed our model and learned how to apply differential equations. The specific aspects of our modelling process we will discuss include our preparation methods for the competition, integrating knowledge from fields outside of mathematics, how assumptions contributed to the success of our model, and techniques we used to refine our presentation. Beyond our assumptions necessary for the models, we also discuss limitations and future directions for our work. (Received September 19, 2018)