

Final Activity Report – GUMO-00183 & BIBE 00547

Edwards Lab Project: “*Identifying the causes of variation in color polymorphism and its role in speciation*”

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3/28/2018

Purpose:

To date, no studies have conclusively identified the causes of geographic variation in polymorphism, making explicit predictions about its role in speciation difficult. Our goal is to understand if historical or adaptive processes can explain the patterns of geographic variation in color polymorphic species, and if this variation in polymorphism plays a role in speciation. We will leverage two widespread, co-distributed, and geographically variable polymorphic lizards, the side-blotched lizard (*Uta stansburiana*) and the ornate tree lizard (*Urosaurus ornatus*), that each display repeated changes in the number, type and frequency of color morphs to explicitly study the causes and consequences of variation in a comparative context. We will use this comparative system to ask the following questions:

- 1) What mechanisms explain geographic variation in polymorphism?
- 2) Does geographic variation in polymorphism result in speciation?

By answering these questions, we will provide a solid foundation for understanding the evolution and maintenance of polymorphism across a combination of unique species, which will allow me to substantially contribute to our understanding of the processes by which new species evolve.

Project Timeline:

Spring 2017 - field work and collect samples

Fall 2017-Summer 2019 compile genetic and phenotypic data with broader sampling across the western US.

Names of researchers:

Danielle Edwards (PI), Kinsey Brock (grad student)

General overview of work completed:

Members of the Edwards Lab, including postdoctoral research Dr. Justin Yeager, graduate students Megha Suswaram and Kinsey Brock, and myself (PI, Assist. Prof. Danielle Edwards) travelled to TX from UC Merced CA to undertake field work from March 13th - April 3rd 2017. Our

work focused on sampling two common species of lizard found across western TX, the side-blotched lizard (*Uta stansburiana*) and the tree lizard (*Urosaurus ornatus*).

GUMO-00183

The Edwards lab team visited Guadalupe Mountain National Park 4/5-4/6/2017. We caught, measured, photographed and collected a DNA sample (tail-tip as per IACUC approval in association with the permit) from 15 males and 15 females of *U. stansburiana* – no *Ur. ornatus* were located at this location. Individuals were then immediately released. Data (that have been processed thus far) associated with this project were forwarded to Dr. Jonena Hearst (Guadalupe Mountain National Park Office). Data yet to be processed as part of the broader study will be forwarded in due course. We are, for the moment, finished with our activities in TX.

BIBE-00547

No activities were undertaken for this project given approval for the work was not granted until 4/28/17, which was after our activities had ceased.