

Journal of Emerging Investigators

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FOR IMMEDIATE RELEASE

Hemet high school student publishes article on exploring genetic diversity to assess the health of a California ecosystem

Krystal Horton, a student at Western Center Academy in Hemet, CA, recently published a scientific manuscript titled, "Using DNA Barcodes to Evaluate Ecosystem Health in the SWRCMS Reserve" in the *Journal of Emerging Investigators*.

Horton's article, published on September 27, 2018, explores the use of DNA barcodes to study the genetic diversity within the Southwestern Riverside County Multi-Species Reserve (SWRCMSR), which is home to at least 8 sensitive bird, animal, and plant species. Additionally, Horton worked to better understand how human influence can affect differences in population genetics in species of insects by analyzing genetic data from insects on the campus of Mt. San Jacinto College (Menifee), and comparing the data from insects in areas where human activity is lesser. Although nature reserves are focused on sustaining species, little is known about how well genetic diversity is maintained. Genetic diversity (or the presence of different alleles in a population), is essential for evolution to occur, and for populations to overcome disease and changes in the environment.

Horton used DNA barcodes (segments of approximately 600 base pairs that is highly variable between species) to assess genetic differences in insects from SWRCMSR and Mt. San Jacinto's campus. After insects were collected, DNA was extracted and uploaded to the Barcode of Life Database (BOLD), which allowed Horton to analyze trends within populations of the same species. Horton found gene patterns in the nature reserve population that suggest the population is relatively young, and there appears to be a mechanism of gene flow from a different population of the same species. On the other hand, Horton found that the insect population from Mt. San Jacinto appears to be older and more isolated, with less gene flow occurring.

The *Journal of Emerging Investigators (JEI)* is a non-profit scientific journal operated by graduate students at Harvard University. JEI is dedicated to mentoring young scientists in middle and high school and publishing their research through the online journal. Articles submitted to JEI pass through a rigorous editorial and scientific review process by several PhD-level scientists before they are accepted and published.

Link to the full article: <https://emerginginvestigators.org/articles/using-dna-barcodes-to-evaluate-ecosystem-health-in-the-swrcms-reserve>

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