

Determining the Presence of Wolbachia in the Speyeria Genus: A Model for Examining Endangered Populations through a Related Species at Fort Indiantown Gap Military Reservation

Gallagher, Kaitlyn (School: Dundas Valley Secondary School)

The experiment explored whether Wolbachia bacteria are present in populations of *Speyeria cybele* at the Fort Indiantown Gap Military Reservation. This species is closely related to the near-endangered *Speyeria idalia*, and the organisms share a habitat and food sources. Therefore, it is plausible to infer that this population of *S. idalia* would be infected if *S. cybele* are, due to the nature of pathogen transmission. This process of testing a related species to avoid sacrificing rare populations creates a model for studying endangered species around the world. To carry out experimentation, one collects *S. cybele* specimens. Samples are used for PCR with *S. cybele* and Wolbachia primers. The PCR product is applied to a gel for electrophoresis. Bands that appear are analyzed against the DNA ladder and a control trial on the gel that contains no specimen DNA. Any markings at 430 base pairs signify Wolbachia, while bands at 800 base pairs represent *S. cybele* DNA and further serve as a control. It was hypothesized that bands would appear at both 430 and 800 base pairs to represent the presence of both organisms' DNA, as Wolbachia are found in many arthropods and *S. cybele* was directly sampled.