

Avian malaria and tropical birds

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As the recipient of the **Stephen Mitchell Doyle Scholarship in Tropical Ecology**, I spent the spring months in Gamboa, Panama with the Smithsonian Tropical Research Institute (STRI), collecting data for my project: *Disease pressure and maternal antibody allocation: Avian malaria and tropical birds*. With the field assistance of Jorge Herrera (University of Panama), Ruby Zambrano (STRI) and Lisa Miller (Oregon State University), I collected pilot data on disease pressure in different habitats around and in the tropical lowland rainforest, and egg yolk for analysis of maternally derived antibodies from more than 15 common bird species. My study of disease pressure involved using domestic quail as sentinels of avian malaria, by keeping the birds in different locations in the forest. This method of disease sampling is similar to the kind of disease monitoring formerly carried out by the Panama Canal authority, in the early days of canal construction and use. The quail sentinels thoroughly enjoyed living in the forest where there were plenty of insects to eat, and showed no sign of illness during the monitoring. Results from molecular analysis of the small blood samples collected will tell how prevalent avian malaria disease is in the area, and how the sentinels fought off infection. Collection of egg yolks was difficult, as unusual environmental conditions seemed to lower breeding propensity in many species in Gamboa this year. Nonetheless, these data present the first comparative look at yolk antibody levels. Mother birds are known to put antibodies into their egg yolks during egg formation. These antibodies help the chicks to combat disease early in life, but the long-term consequences of yolk antibodies are not well understood, and nothing is known about how ecological factors influence yolk antibody levels. This study aims to fill in these knowledge gaps, and we hope these data will give us the first clues.