

INVESTIGATION OF AVIAN MALARIA IN HAWAI'I'S NATIONAL PARKS¹

Charles van Riper III, Sandra van Riper,
M. Lee Goff², and Melvin Laird
Cooperative National Park Resources Studies Unit
University of California at Davis
Davis, California

Early and recent ornithological workers in Hawai'i have implied that the extirpation of the native Hawaiian avifauna has come about as a result of the birds' susceptibility to introduced diseases. However, no study to date has conclusively shown this to be true. The primary thrust of this work was to determine the impact of introduced avian malaria upon the native avifauna of Hawai'i's National Parks.

Five basic questions were asked in this study:

1. How many species of malaria are present in Hawai'i?
2. How susceptible are Hawaiian birds to introduced malarial parasites?
3. What is the overall percentage of birds affected today, and is there any temporal variance in parasite levels within host species?
4. How is the malarial parasite transmitted to birds within Hawai'i's National Parks?
5. What management steps need to be taken by NPS managers to protect their avian resources?

The results obtained on each of these five questions will be discussed, showing that:

1. Only one species of avian malaria is believed to be present in Hawai'i's National Parks.
2. Some of the native bird species tend to be more susceptible to introduced diseases than others.
3. There is a temporal as well as elevational difference in levels of infection in the birds.
4. Malaria is transmitted primarily by the introduced night biting mosquito, Culex quinquefasciatus.
5. With elimination of unnecessary standing water and introduced avian and mammalian species, park managers can better protect their avian resources.

¹ Abstract

² Department of Entomology, Bernice Pauahi Bishop Museum, Honolulu, Hawaii 96819.