

Hematology and Blood Parasites in Avian Communities Along an Altitudinal Gradient of One Kilometer in the Sub-Montane Zone of Sri Lanka

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Abstract

Parasites thrive by consuming host resources, causing a decline in host fitness. This burden drives host evolution, exerting selective pressure on both. The main objective of the study was to investigate parasitic profile and host immune responses in avian hosts along altitudinal gradients in Sri Lanka. This research took place in the Issengard Biosphere Reserve, located in Belihuloya, Sri Lanka. which features a 1 km altitudinal gradient from 480 - 1420 m. A total of 49 adult birds representing 18 species from 13 families, were mist netted and blood samples were collected to assess the host response against blood parasites in avian communities at 100 m intervals along this altitudinal gradient. The research employed weight-normalized seven parameters to evaluate host response in birds at each elevation, which included Red Blood Cell (RBC) count, hemoglobin concentration, White Blood Cell (WBC) count, WBC differential count, thrombocyte count, RBC shape index, and body temperature. Blood parasites were found in 26.53% (13/49) of the birds from 6 different species when blood smears were examined. *Microfilaria* larvae were found in 12.24% (6/49) of the birds from 3 species, while *Haemoproteus* sp. was found in 14.28% (7/49) of the birds from 4 species. The multiple multivariate linear regression findings reveal a notable inverse association between total WBC count and elevation, while body temperature increases significantly with elevation. Moreover, as elevation increases, there is a significant rise in the elongation ratio of RBCs, particularly in response to higher intensity of *Haemoproteus* infection.

Keywords: *Avian hematology, Altitudinal gradient, Host fitness*