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**Rocio Marilyn Caja Rivera\*** (rcajariv@nd.edu), 100 Galvin Life Science Center, Notre Dame, IN 46556. *Vector Feeding Preference in a Periodic Environment: Modeling The Andean Cutaneous Leishmaniasis in Peru.*

Vector-borne diseases, such as leishmaniasis, dengue, yellow fever transmitted by microparasites show periodic fluctuations in their transmission dynamic. The novelty in this research is about that the presence of vector feeding preference for infectious host causes a periodic environment. Parameters for the Andean cutaneous leishmaniasis in Peru are estimated. Numerical simulations illustrate that by increasing the vector feeding preference value in a periodic environment, the oscillations are accentuated and the endemic equilibrium average increases in sandfly and human populations. While increasing the vector feeding preference value, the amplitude increases for infectious human and sandfly populations. This periodic behavior shows a similar pattern with the Peruvian incidence data from 2000 to 2016 for Andean cutaneous leishmaniasis provided by the Ministry of Health of Peru. Using the Floquet theory, the time average method and the linear operator method provides for first time that  $\mathcal{R}_0$  depends explicitly on the vector feeding preference for infectious host. Vector feeding preference is an important factor that should be considered by public health and veterinarian health for vector management control. (Received August 13, 2018)