The Little Red Flying Fox (*Pteropus scapulatus*) is native to large coastal areas of northern and eastern Australia. A primary food source for this species is the nectar from *Eucalyptus* and *Corymbia* blossoms. There is only partial understanding of their roosting locations (known as “camps”) and movement, being semi-nomadic in nature to move between flowering events and camps. This creates a complexity in modelling the Little Red Flying Fox population. However, through satellite imaging data giving monthly estimates of blossom availability, we can begin to understand how the bats move with these events. To investigate the population dynamics, we use a metapopulation model, coupling the spatial data of average monthly nectar availability through a radiation model for movement between camps. We couple the $\approx 1 \times 1$km spatial nectar data using Voronoi diagrams based on known camp locations. We compare our modelled population based on caloric needs with historic camp survey data of population estimates. This metapopulation model based on nectar availability will form the basis of further work exploring infectious diseases risks, such as Hendra and/or Leptospirosis. Our model can be extended to consider other resource availability, such as fresh water, vegetation coverage, and other environmental factors (temperature, humidity, aridity, etc.).