MAXIMUM WEIGHT CAPACITY OF LEAVES USED BY TENT-ROOSTING BATS: IMPLICATIONS FOR SOCIAL STRUCTURE AND PLANT SPECIES USAGE

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The theory that maximum weight capacity of leaves limits the maximum social group size of tent-roosting bats is frequently discussed yet untested. This limitation could impact bat mating, foraging, and roosting social behavior. This study determined maximum weight capacities for three plant species whose leaves are used by tent-roosting bats in Tirimbina Biological Reserve (TBR), Sarapiquí, Costa Rica, in March and April 2012. These maximum weight capacities were then used to examine the relation between plant maximum weight capacity and existing information on maximum and mean group sizes of *Dermanura watsoni* and *Ectophylla alba* utilizing these plant species. This study also examined the preferences of *D. watsoni*, which uses these three plant species at TBR. I determined maximum weight capacities by adding weight hourly and daily to new leaves. Abundances were determined by systematic-random plot sampling along main paths in the reserve and tents were surveyed systematically along the same paths. *Philodendron fragrantissimum* and *Heliconia imbricata* had the greatest maximum weight capacities (44.0±13.8 g and 42.2±16.4 g), and *Asterogyne martiana* the lowest (33.3±10.5 g). There was no difference between adding weight hourly or daily (*P. fragrantissimum*: P=0.092, *H. imbricata*: P=0.68, *A. martiana*: P=0.21). This study supported the theory that tent leaf maximum weight capacity limits social group size, since the maximum "ideal" social group weight for *D. watsoni* and *E. alba* in these three species was larger than the maximum weight capacities (P=0.016) and therefore limited, while the mean "normal" social group weight was related to maximum weight capacities (P=0.073, R^2=85.9). *Dermanura watsoni* showed almost significant preferences overall (P=0.087), with a potential preference for *A. martiana* and complete avoidance of *H. imbricata*. *Dermanura watsoni* did not show a preference for plant species that support a greater maximum weight capacity. This is likely due to the many complicating factors on both a micro and macro scale involved in tent leaf preferences and individual variation of plant maximum weight capacity.