There is no other available data on bat density and biomass related to altitude, which could be used also for comparison; so, additional studies on bat community are needed (see Humphrey and Bonaccorso, 1979). However, we can contrast our results and discern several explanations for the observed patterns in this study, based on studies done in other groups, mainly birds. There are at least three lines for explanation of the observed results that can be summarized as follows:

Food Resources

Food availability is a strong alternative explanation for the abundance of frugivores in lowlands, and a lack of members of this trophic guild at higher elevations, as had been previously suggested by Graham (1983). Pratt and Stiles (1985) demonstrated that fruit size and structure influence the composition of assemblages of birds. Food availability has been suggested as an important factor for other organisms as well, including small rodents (Brown, 1973) and squirrels (Emmons, 1980). At higher elevations, the plant components of the pine forest found in the highlands produce types of fruits not edible for bats. Pines produce a type of fruit which can be classified as structurally protected (Janson, 1983), and bats are very unlike to exploit this type of resource.

The lack of adequate food supply can be also a factor in Santa Inés, with an oak forest containing half of the number of species found in the xerophyll scrub of Peña Miller located on the dry slope of the mountain. The bat density and biomass were also low in the oak forest site.

The nectarivore bat species increased in biomass in May, during the dry season, which might be associated with a massive bloom of flowers, as observed in birds (Wolf, et al., 1976; Bell, 1982); however, little data is available.

The seasonality in the climate provokes a differential response in the bat insectivore fauna, which translates also in the non-linear altitudinal patterns observed in this study. Insectivore bats are apparently more seasonal and this is possibly a pattern more generalized, as reported by Karr (1976) for insectivorous birds, and Pizzimenti and De Salle (1981) for rodents, probably related to insect density (Janzen and Schoener, 1968). A higher density and biomass was observed at mid-elevation sites, which is probably explained by an increase in insect density at these altitudes. There is no available data to support this observation, but the few studies on insect productivity in other tropical areas suggest an increase of insect density and biomass at intermediate elevation sites (Janzen, 1973).

Thermoregulatory Abilities of Bats

The lower temperatures correlated with increasing elevation may affect the pattern and timing of food production, as seen in the previous paragraphs. The environmental changes associated with elevation, however, also involve the physiological abilities of bats to tolerate colder conditions. Several studies have indicated that bat species can enter into torpor as a response to low ambient temperatures and that most of the tropical