Commensalism in Microhylid frogs and mygalomorph spiders

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A commensalism is a relationship between two species, where one is benefited and other is neither harmed nor benefited with this association. A few common examples of commensalism are epiphytes and host tree; clownfishes and sea anemone; hermit crab and gastropod. Some of these relationships are difficult to understand. We observed one such interesting incident of a tarantula and a frog.

During our surveys in a private plantation on Rameshwaram Island, we saw a microhylid frog (*Kaloula taprobranica* Parker, 1934) and a mygalomorph spider (*Poecilotheria hanumavilasumica* Smith, 2004) sharing a tree hole in a tamarind tree. *Poecilotheria* spiders are solitary and aggressive by nature. They have been observed to attack any organism coming close to them, including other individuals of same species. Both, frog and mygalomorph spiders are insectivores, though there have been records of mygalomorph spiders feeding on small snakes, lizards and frogs. In a situation, where spiders and frog sharing a tree hole, could it be a commensal relationship?

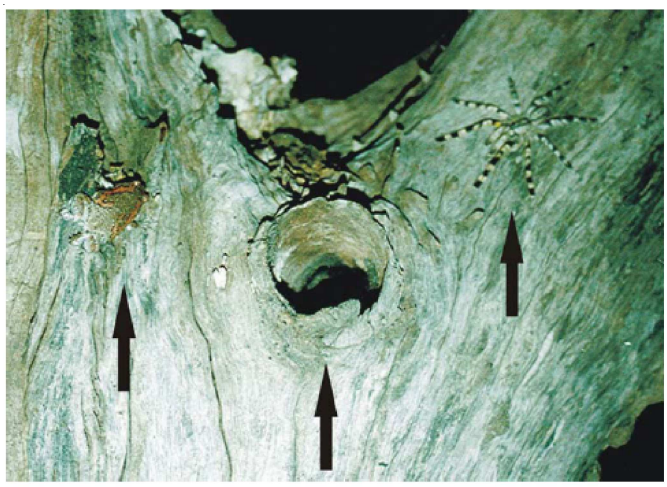

Figure 1. A spider (*Poecilotheria hanumavilasumica*) and a microhylid frog (*Kaloula taprobanica*) near their tree hole on a tree trunk.

The first observations of a frog sharing a mygalomorph burrow was that of a microhylid frog (*Microhyla* sp.) in a ground tarantula (*Haploclastus kayi* Gravely, 1915) burrow in Parambikulam in September 2001 (Sanjay Molur, pers. comm.). The second observation was of a microhylid frog (*Kaloula taprobranica*) entering a tree hole (at 0500hrs, September 2004), which was already occupied by a tarantula (*P. hanumavilasumica*) just few minutes before.

The following evening, we saw the frog and spider coming out of the same tree hole but at different times (Fig. 1). The spider came out at dusk (around 1900hrs), whereas the frog came out of the tree hole at around 2100hrs. At many instances during our night surveys, we observed *Poecilotheria* spiders not attacking *Kaloula* even at close proximity (5-10cm distance). After this, we were curious to know about the reasons behind this sharing of space.

On scanning literature, we found that there have been records of a commensal relationship between ground burrowing tarantulas and microhylid frogs. Csakany (2002) carried out studies on commensal relationship between ground theraphosid and microhylid frogs in Peru. She reported that tarantulas recognize frogs with some chemical clues, which also prevents them from attacking the frog. The frog in this relationship is benefited by getting food from decaying prey of spider, which attracts insects and staying in burrow during day time reduces risk of desiccation from the day heat and in return, the frog prevents the burrow and an eggsac of spider from ant attack (Foelix, 1982; Crocroft and Hambler, 1989; Csakany, 2002).

We need further studies in India to establish the reasons for this commensalistic relationship.

References:

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