Feeding behaviour of the bat *Phyllostomus hastatus* (Pallas 1767) in jackfruit *Artocarpus heterophyllus* Lamarck (Moraceae), in Ilha Grande, Rio de Janeiro State, Brazil

Daniel Santana Lorenzo Raíces¹, Flávia Soares Pessôa¹, Julia Lins Luz², Tássia Jordão-Nogueira³, Carlos E. L. Esbérard² & Helena de Godoy Bergallo¹

1 Pós-graduação em Ecologia e Evolução. Universidade do Estado do Rio de Janeiro. Rua São Francisco Xavier, 524, Maracanã, CEP 20559-900- Rio de Janeiro, RJ – Brazil. danielraices@ig.com.br; flaviaspessoa@gmail.com; bergallo@uerj.br
2 Pós-graduação em Biologia Animal, Universidade Federal Rural do Rio de Janeiro, Caixa Postal 74507, CEP 23890-000, Seropédica, RJ, Brazil. julialinsluz@yahoo.com.br; cesberard@superig.com.br
3 Pós-graduação em Ecologia, Universidade Federal do Rio de Janeiro, Departamento de Ecologia, CCS, Ilha do Fundão, Rio de Janeiro, RJ, Brasil. tassiajordao@yahoo.com.br

Abstract. *Artocarpus heterophyllus* fruit is the largest tree fruit, weighing up to 36 kg and was introduced in Brazil during the XVIII century. During a mammalian diversity research developed at Ilha Grande at least five *Phyllostomus hastatus* bats were observed eating jackfruit. Jackfruit availability is high almost all year long at Ilha Grande and it is possible that *P. hastatus* restricts the use of this fruit during low availability periods of other food resources. Although seed carrying was not observed, the disperser role of *P. hastatus* on *A. heterophyllus* can not be neglected.

Key words: exotic species, diet, jackfruit, *Phyllostomus hastatus*.

Resumo:

Feeding experiments in captive bats show that feeding behaviour varies significantly with fruit hardness both within and between frugivorous species (DUMONT, 1999). Fig-eating fruit bats, as *Artibeus jamaicensis* Leach, 1821 and *Dermanura phaeotis* Miller, 1902 are behaviorally specialized for feeding area, carrying them to a feeding roost and return to diurnal roost, and bats must select fruits that fit well into their mouth (DUMONT & O'NEILL, 2004). Bigger fruits are also consumed, but usually piece by piece, with the bat sitting over the fruit (e.g. JIMBO & SCHWASSMANN, 1967).
feeding on relatively hard fruits. In contrast, understory fruit bats, such as Carollia perspicillata (Linnaeus, 1758), must be restricted to soft fruits (Dumont, 1999). Hardness and size of fruits limit the use by Phyllostomid bats to small and medium size fruits. No observations of feeding behaviour of extra large fruits are available until now for Phyllostomid bats.

Jackfruit, Artocarpus heterophyllus, is a species of tree of the Moraceae Family, native to Southeastern India and Sri Lanka (Chaves et al., 1967; Ferrão, 1993). In its native habitat, jackfruit is typical of advanced successional stages and is observed in the understory tropical humid forests (Khan, 2004). Artocarpus heterophyllus fruit is the largest tree fruit, weighing up to 36 kg. One tree can produce up to 100 fruits per year. The average seed size and weight are 1.5 cm and 14 g, respectively. Monkeys, rodents and wild pigs are known to be native dispersers of the seeds (Khan, 2004).

Jackfruit was introduced in Brazil during the XVIII century and nowadays it distribution encompasses almost all the Brazilian territory (Lorenzi et al., 2006). It colonizes forests, edges and open areas associated with anthropomorphic environments (Abreu et al., 2003; Abreu, 2005). In Rio de Janeiro State, jackfruit can be found inside most of the conservation units, such as, Tijuca National Park, Pedra Branca State Park, Poço das Antas Reserve, União Biological Reserve and Tinguá Biological Reserves and Ilha Grande State Park.

During a mammalian diversity research developed at Ilha Grande (23º 10’ 33,5"S; 44º 12’ 27,8" W), Rio de Janeiro State, Brazil, it was observed an unusual feeding behaviour by P. hastatus. In September 08th 2006, at least five bats approached to a mature jackfruit (5 m height) and chewed the fruit shell, until they were able to enter the fruit (Fig.1). More than one bat was observed removing the shell at the same time, and pieces of the shell could be found fallen near the tree.

The bats entered the hole, one by one, and ate the soft parts. Intense activity was observed, suggesting a group feeding behavior (as described for this species by Wilkinson, 1995). No seed carrying was observed.

Jackfruit availability is high almost all year long at Ilha Grande (D.S. Raices, unpublished data). Although P. hastatus is one of the most generalist bat (Fabian et al., 2007), it is possible that P. hastatus restricts the use of this fruit during low availability periods of other food resources. Other species of bats change their main feeding plant species in periods of scarcity (e.g. Melo et al., 2004). Being the second species in size in neotropical region, P. hastatus, could be the sole bat species able to open the jackfruit and therefore eat it when the fruit is still hanged on the trunk. Although seed carrying was not observed, the disperser role of P. hastatus on A. heterophyllus can not be neglected.

**References**


Consume of jackfruit by Phyllostomus hastatus

Figure 1. Photo showing Phyllostomus hastatus approaching the jackfruit. The arrow shows the hole made on the shell with a bat inside the fruit.


