Spider nectivory by *Phintella vittata* Koch (Araneae: Salticidae) from the extrafloral nectaries of *Urena lobata* L. from the Indian region

Spiders in nature are generally thought to be prey-limited[1–6]. Their prey consists of chiefly insects as well as spiders, and occasional feeding on small birds, fishes and small mammals has been recorded[7–10]. Although uncommon, spiders include nectar in their diet, primarily from various floral sources and in some cases extrafloral nectarines (EFNs)[11].

Experiments have been done to justify the reason and benefits behind the importance of nectar intake by the spiders. Taylor and Pfannenstiel[12] showed that floral nectar can help a spider reach sexual maturity and increase its number of offspring. Added to a marginal diet of prey, nectar allowed maintenance, growth and reproduction, which the diet of prey alone could not. Further experiments were done to determine the importance of floral nectar as an energy and water source and its effect on male longevity. Nectar feeding may thus have evolved because of the selective advantage of increased longevity for male reproductive success[13]. Louda[14] reported that more flower heads survived on *Haplopappus* plants (Asteraceae) with spiders. Jumping spiders (Araneae: Salticidae) enhance the seed production of a plant with EFNs[15]. Surprisingly, these were intensely observed and experimented in floral nectaries. EFNs act as a potential nectar supplement for spiders, as has been discussed here.

Phintella vittata Koch, a salticid spider (Araneae: Salticidae) was observed taking nectar from EFNs of *Urena lobata* L. (Malvaceae) in the Chintamoni Kar Bird Sanctuary (lat. 22°27′N; long. 88°22′E) at Narendrapur in the South 24 Parganas District, West Bengal, India. The spider was initially observed on the under surface of a *U. lobata* leaf, and was mistaken as a predator of the ants coming for the nectar oozing from EFNs located at the base of each leaf. Upon prolonged observation, it was noted that the spider waited till the ants left and then consumed the nectar. Such an 'approach–retreat–approach' event was repeated at least four times, switching among the three adjoining EFNs. EFNs in *U. lobata* are elongated pits that are barely visible and occur as slits 1.5 mm long, near the base on the abaxial surface of the midrib and 2–3 lateral veins (Figure 1). A vertical section of such an EFN shows the longitudinal slit at the centre of the gland, where secretory cells occur[16]. In all the instances observed, the spider positioned itself nearly at right angles to the axis of each EFN slit and with its mouthparts close to the gland. *In situ* close-up photographs (Figure 2) revealed the spider mouthparts probing into EFN for acquiring nectar. Such a phenomenon, although not previously reported from the Indian subcontinent, seems to be widespread, if not routine, in salticid spiders.

Nectivory by spiders thus places them in multitrophic levels in the food web operating therein, thereby strengthening their role in the maintenance and stability of the food webs. More detailed field observations are necessary to gather records of spider nectivory and associated behavioural and ecological phenomena from the Indian region, so as to correctly illustrate their position and role in an ecosystem.

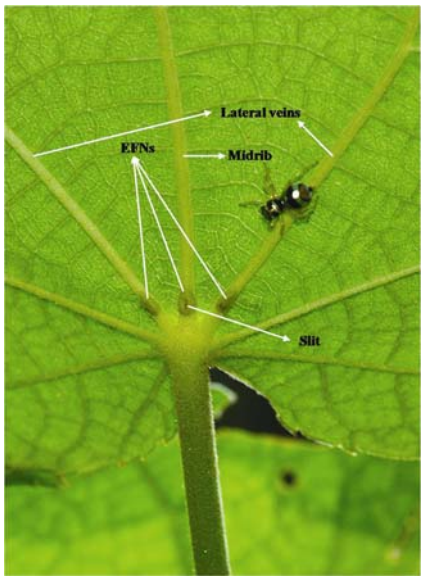

Figure 1. Details of the abaxial surface of an *Urena lobata* leaf showing the three extrafloral nectaries (EFNs, with their glandular slits), luring *Phintella vittata* towards them for the nectar.

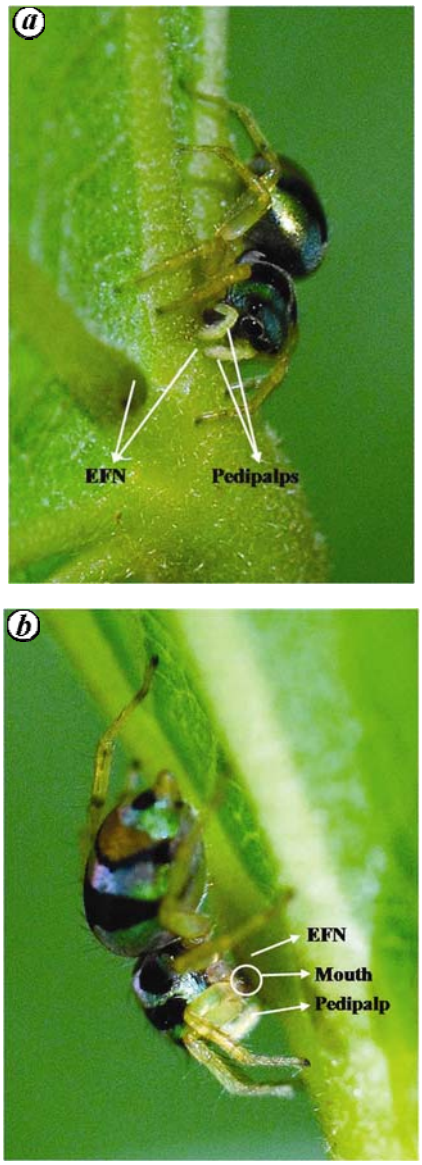

Figure 2. Nectivory by *P. vittata* from *U. lobata* EFN, showing its mouthparts in close proximity to the latter. ***a***, Frontal view and ***b***, Lateral view.

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