

Local jumping spiders living on introduced cacti in Karnataka

David E. Hill¹ and Abhijith A. P. C.²

¹213 Wild Horse Creek Drive, Simpsonville SC 29680, USA, *email* platycryptus@yahoo.com

²Indraprastha Organic Farm, Kalalwadi Village, Udboor Post, Mysuru-570008, Karnataka, India, *email* abhiapc@gmail.com

Introduced plants may have a negative impact on the diversity of herbivores, but they can also provide more niches and thus increase the diversity of predatory species (Litt et al. 2014; Padovani et al. 2020). The cacti (Cactaceae) are an almost exclusively American family of succulent plants that have been introduced into many parts of the world, often as ornamental plants. Cacti rely on their spines for protection against larger herbivores, but they are also vulnerable to herbaceous insects. At the same time their spines can also protect predatory arthropods that feed on those insects and, as a result, many species of spiders live on cacti (e.g., Polis & Hurd 1995; Mendes et al. 2018). To increase the density of protective, predatory arthropods, many cacti have also evolved extrafloral nectaries (Figure 1; Mauseth et al. 2016). In addition, cactus stems can provide not only protection, but also access to prey for a jumping spider.



Figure 1. Many cacti, like these Mexican *Ferocactus latispinus*, have extrafloral nectaries (arrows) that produce a copious supply of nectar for ants and other predatory arthropods. In the absence of these predators, cacti may be vulnerable to a host of herbivorous insects. The formidable spines of these cacti can protect them from the larger (vertebrate) herbivores, but not from the smaller (arthropod) ones.

Here (Figures 2-3) we document the use of introduced cactus microhabitats by three salticid species living at the Indraprastha Organic Farm of one of the authors (Abhijith) at Kalawadi Village, Mysuru, Karnataka.

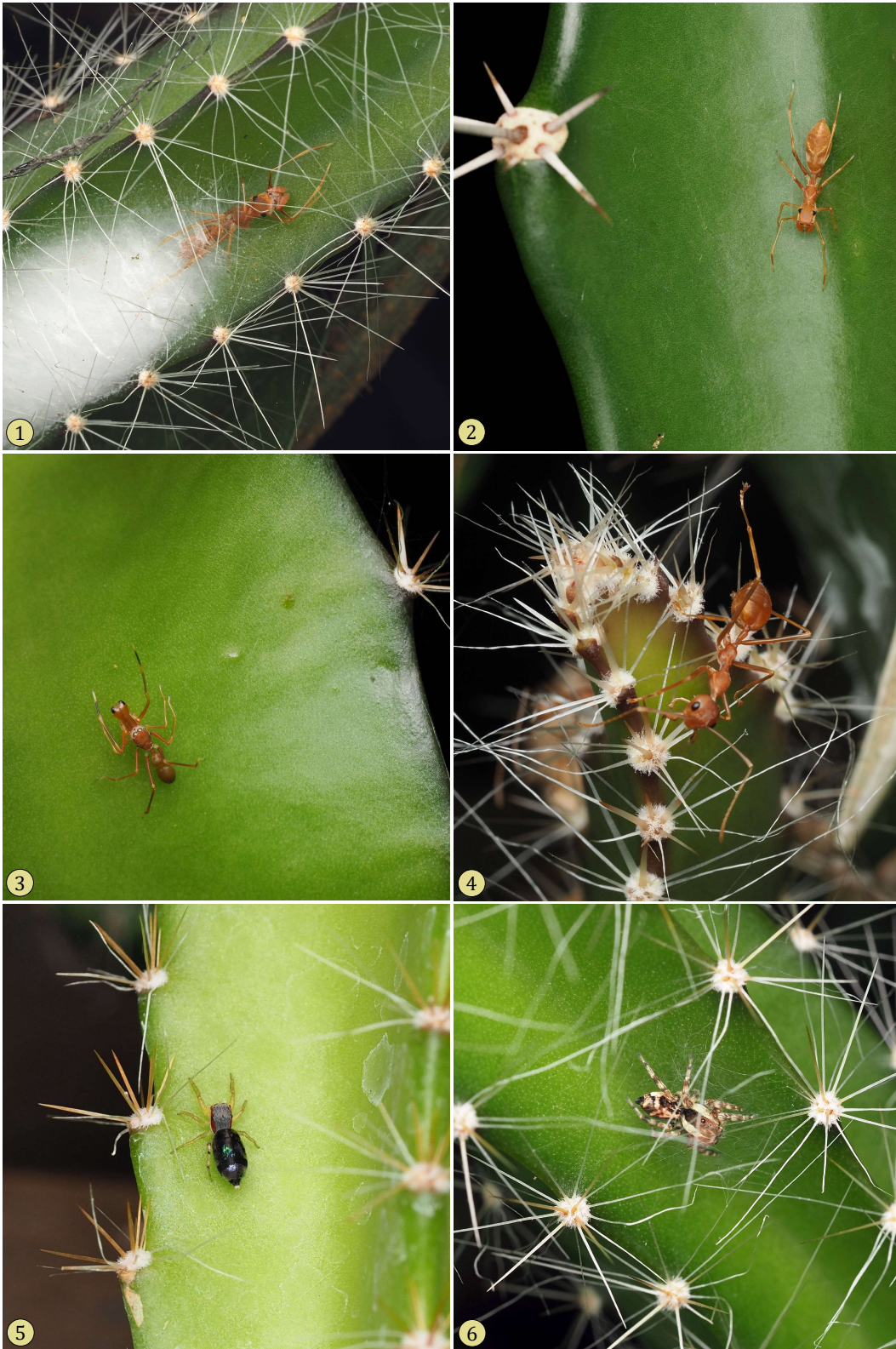


Figure 2. Arthropods living on introduced cacti in Karnataka, mostly (1, 4-6) on the elongated stems of the mat-forming ornamental *Echinocereus pentalophus*, native to San Luis Potosi state in Mexico and the southern Rio Grande Valley in Texas. **1**, Nesting ♀ *Myrmarachne plataleoides* (O. Pickard-Cambridge 1869). **2-3**, Foraging ♀ (2) and ♂ (3) *M. plataleoides*. **4**, Ant associate that is mimicked by *M. plataleoides* across its entire range in south and southeast Asia, the green tree ant *Oecophylla smaragdina* (Fabricius 1775). These ants are fierce predators. **5**, *Chrysilla volupe* (Karsch 1879). **6**, Unknown salticid species on silk retreat below a protective layer of cactus spines.



Figure 3. Jumping spiders on *Echinocereus*. **1-2**, Two different male *M. plataleoides* tending two different penultimate females. Note the difference in coloration of the two males. **3**, Dead female *M. plataleoides* (arrow) inside of her nest. **4**, Opening the nest (3) revealed the presence of a pupating hunchback fly (arrow; Diptera: Acroceridae). These are *endopredators* of spiders, and this one has apparently eaten the female *M. plataleoides* that occupied this nest. **5-6**, Recently molted juvenile *Carrhotus* in its shelter, with some other invertebrates that share this microhabitat.

References

- Litt et al. 2014.** Andrea R. Litt, Erin E. Cord, Timothy E. Fulbright and Greta L. Schuster. Effects of invasive plants on arthropods. *Conservation Biology* 28 (6): 1532-1549.
- Mauseth et al. 2016.** James D. Mauseth, Jon P. Rebman and Silvia Rodrigues Machado. Extrafloral nectaries in cacti. *Cactus and Succulent Journal* 88 (4): 156-170.
- Mendes et al. 2018.** Zedenil Rodrigues Mendes, Antonio Domingos Brescovit, Maria Margarida Rocha Fiuza de Mello and Maria das Graças Lapa Wanderley. 12 APR 2018. Spider communities in two plant architectures of epiphytic cacti in the Brazilian Atlantic forest. *Studies on Neotropical Fauna and Environment* 53 (3): 184-193.
- Padovani et al. 2020.** Roberto J. Padovani, Andrew Salisbury, Helen Bostock, David B. Roy and Chris D. Thomas. Introduced plants as novel Anthropocene habitats for insects. *Global Change Biology* 26: 971-988.
- Polis & Hurd 1995.** Gary A. Polis and Stephen D. Hurd. MAY 1995. Extraordinarily high spider densities on islands: Flow of energy from the marine to terrestrial food webs and the absence of predation. *Proceedings of the National Academy of Sciences, USA* 92: 4382-4386.