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Cover: Green Sea Turtle *Chelonia mydas* watercolour by Elakshi Mahika Molur.



this plant. The data collected on these aspects were examined to know the value of this plant as a forage source for visiting insect species during wet season in areas of human disturbance.

OBSERVATIONS AND DISCUSSION

Antigonon leptopus is an elegant creeper which grows and flowers vigorously during rainy season from June to October (Image 1a). The inflorescence is a compound umbellate cyme which produces several flowers daily during 0630–0830h (Image 1b). The flowers are hermaphroditic, small, showy, pink in color and cup-like. They close back by 1500 h on the first day and re-bloom on the next day along with the new flowers but close back again by 1500 h and remain so until they fall off. They are staminate on the first day with the downward curling of stigmas and pistillate on the second day with complete pollen shedding from the anthers. The flowers produce nectar in day 1 flowers only indicating that day 1 flowers provide both pollen and nectar while day 2 flowers provide left over nectar to insect foragers.

A variety of taxonomically different insects consisting of bees, a wasp and butterflies foraged on the flowers of *A. leptopus* daily during daylight hours from morning to evening. The bees were *Apis dorsata*

(Image 1c), *A. cerana* (Image 1d), *A. florea* (Image 1e), *Trigona iridipennis* (Image 1f), *Xylocopa latipes* (Image 2a), and *X. pubescens*. The wasp included only one species of the genus *Rhynchium* (Image 2b). The butterflies were *Pachliopta aristolochiae*, *P. hector*, *Graphium agamemnon*, *Catopsilia pomona* (Image 2c), *C. pyranthe*, *Eurema hecabe*, *Acraea violae*, *Euthalia aconthea*, *Precis iphita*, *Danaus chrysippus*, *Euploeia core*, *Hypolimnas bolina* (Image 2d), *Junonia lemonias* (Image 2e), *Jamides celeno* (Image 2f), and *Euchrysops cnejus* (Image 2g) (Table 1). The insects visited day 1 and day 2 flowers indiscriminately to collect pollen and/or nectar. Bees obtained both pollen and nectar from day 1 flowers and only left over nectar from day 2 flowers; the nectar availability in day 2 flowers depended on the utilization level of nectar by insects in day 1 flowers. The wasp and butterflies collected only nectar and use day 1 and day 2 flowers as nectar sources. Since flowers are small and cup-like with sex organs well exposed characterizing unspecialized floral syndrome, all foraging insects reached pollen and/or nectar easily and while collecting the forage they contacted the sex organs and pollinated the stigmas automatically (Burkill 1916; van der Pijl 1937). Raju et al. (2001) reported that since the flowers display temporal dioecy with



Image 1. *Antigonon leptopus*: a—Habit | b—Umbellate cyme with mature buds and flowers | c—*Apis dorsata* | d—*Apis cerana* | e—*Apis florea* | f—*Trigona iridipennis*. © A.J. Solomon Raju.

Table 1. List of flower visitors feeding on pollen/nectar of *Antigonon leptopus*.

Order/ Family	Scientific name	Common name	Forage collected	Foraging time
Hymenoptera				
Apidae	<i>Apis dorsata</i> F.	Rock Honey Bee	Pollen and Nectar	0730–1700
	<i>Apis cerana</i> F.	Asian Honey Bee	Pollen and Nectar	0730–1700
	<i>Apis florea</i> F.	Dwarf Honey Bee	Pollen and Nectar	0730–1700
	<i>Trigona iridipennis</i> Smith	Stingless honey bee	Pollen and Nectar	0800–1630
	<i>Xylocopa latipes</i> Drury	Carpenter bee	Nectar	0800–1700
	<i>Xylocopa pubescens</i> Spinola	Carpenter bee	Nectar	0800–1700
Vespidae	<i>Rhynchium</i> sp.	Potter wasp	Nectar	0830–1630
Lepidoptera				
Papilionidae	<i>Pachliopta aristolochiae</i> F.	Common Rose	Nectar	0830–1530
	<i>P. hector</i> L.	Crimson Rose	Nectar	0830–1530
	<i>G. agamemnon</i> L.	Tailed Jay	Nectar	0830–1530
Pieridae	<i>Catopsilia pomona</i> F.	Common Emigrant	Nectar	0830–1530
	<i>C. pyranthe</i> L.	Mottled Emigrant	Nectar	0830–1530
	<i>Eurema hecabe</i> L.	Common Grass Yellow	Nectar	0830–1530
Nymphalidae	<i>Acraea violae</i> F.	Tawny Coster	Nectar	0830–1530
	<i>Euthalia aconthea</i> Cr.	Common Baron	Nectar	0830–1530
	<i>A. merione</i> Cr.	Common Castor	Nectar	0830–1530
	<i>Junonia lemonias</i> L.	Lemon Pansy	Nectar	0830–1530
	<i>Precis iphita</i> Cr.	Chocolate Pansy	Nectar	0830–1530
	<i>Danaus chrysippus</i> L.	Plain Tiger	Nectar	0830–1530
	<i>Euploea core</i> Cr.	Common Indian Crow	Nectar	0830–1530
	<i>Hypolimnas bolina</i> L.	Blue Moon	Nectar	0830–1530
Lycaenidae	<i>Jamides celeno</i> Cr.	Common Cerulean	Nectar	0900–1500
	<i>Euchrysops cnejus</i> F.	Gram Blue	Nectar	0900–1500

**Image 2.** *Antigonon leptopus*: a—Carpenter Bee *Xylocopa latipes* | b—Wasp *Rhynchium* sp. | c—*Catopsilia pomona* (Pieridae) | d—*Hypolimnas bolina* (Nymphalidae) | e—*Junonia lemonias* (Nymphalidae) | f—*Jamides celeno* (Lycaenidae) | g—*Euchrysops cnejus* (Lycaenidae). © A.J. Solomon Raju.

either male or female phase at any given day, there is no possibility for self-pollination within the flower but facilitate self-pollination (geitonogamy) within the plant. The plant with intense flowering during wet season and unspecialized flowers is a key source of pollen and nectar for bees and of nectar for wasps and butterflies in habitats disturbed by humans.

CONCLUSION

The study indicates that *A. leptopus* with flowers opening twice is a key forage source for insects during wet season in areas where human disturbance results in decimation of plant cover and reduced species diversity.

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