A new nectar plant of the swamp tiger, *Danaus affinis*

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IT WAS a very hot day, a half-hour past noon on 22nd March 2018, and the first and second authors were conducting a site survey for a research project on fireflies at Beting Beras Basah in Bagan Datuk, Perak. The area is surrounded by mangroves and located near the mouth of the Perak River. While we were walking on a raised concrete walkway, we saw two or three milkweed butterflies (the subfamily Danainae) flying around shrubs beside the walkway. When we got closer to the butterflies, we were able to identify them as the swamp tiger (*Danaus affinis malayanus*).

The butterflies were observed to be feeding on small shrubs about 1.5m to 2m tall, with pale purple flowers. They were seen to fly a lot under the hot sun and land for a few seconds at a time on the flowers, feeding on the nectar. They fluttered slowly as they landed. Occasionally, they landed for longer periods on flowers that were under the shade. They were sensitive and flew away when we approached closer. The butterfly was also photographed feeding on the flowers of this shrub by B. Y. Ooi at the same place two months later.

The purple-flowered shrubs were identified as *Pluchea indica* (Asteraceae), by T. L. Yao and R. Kiew of the Forest Research Institute Malaysia (FRIM). This plant is the Indian camphorweed, known locally as *beluntas* – a native common in tidal swamps (Kiew, 2014), but can be invasive in countries where it is non-native (CABI, 2018). A quick search on YouTube suggests that the flowers of this plant attract several other butterfly species, such as the common mormon (*Papilio polytes*), plain tiger (*Danaus chrysippus*), blue tiger (*Tirumala limniace*) and common tiger (*Danaus genutia*).

Swamp tiger feeding from the flowers of the Indian camphorweed at Beting Beras Basah, Bagan Datuk, Perak (Credit: Ooi Beng Yean)

A project conducted by FRIM with the support of the Malaysian Nature Society from 1996 to 2001 in Kuala Selangor Nature Park studied the swamp tiger's host plant, life history, habitat needs and nectar plants (Kirton & Azmi, 1996; Cheang, 2005). Indian camphorweed was not used by the swamp tiger as a nectar plant in this site. Instead, the study found that the swamp tiger fed only on the nectar of the yellow-flowered sea ox-eye, *Melanthera biflora* (Asteraceae), previously known as *Wedelia biflora* (Kirton & Azmi, 2004). This was the only flowering plant used in that locality despite the presence of other flowering plant species that were used by other milkweed butterfly species. Sea ox-eye was not seen in Beting Beras Basah. Clearly, the swamp tiger has adapted to taking nectar from at least two plant species. Perhaps other flower species may provide nectar to this butterfly species in other parts of its range. Alkaloids are found in both *Melanthera biflora* (Biswas *et al*., 2013) and *Pluchea indica* (Widyawati *et al*., 2014), and both plants belong to the family Asteraceae. It could be that alkaloids occur in their nectar too.

Milkweed butterflies are known to use alkaloids from their host plants for protection from predators (Pelletier, 1992). It is also known that the nectar of some flowering plants contains alkaloids that are ingested by milkweed butterflies, such as the large tree-nymph (*Idea leuconoe*), which feeds on pyrrolizidine-alkaloid-containing nectar of *Parsonsia alboflavescens* (Echiteae) (Livshultz *et al*., 2018).

The swamp tiger is restricted to coastal areas and associated with mangrove swamps. Apart from Kuala Selangor Nature Park, the butterfly has also been recorded from Kuala Kurau, Perak (Cheang, 2005). It has also been seen at Sungai Mawar in Teluk Sari on the east coast of Johor, and in Juru, near Bukit Juru, Seberang Perai (C. Y. Chong, personal communication, based on observations made in 1994). Another population is known to occur in Kuala Muda, Kedah, a site hit by the tsunami of 2004 (M. Azmi, personal communication, and field notes made in 2004). He described his sighting as *melambak*, which means "numerous" in Malay. During his survey, many specimens of its host plant, the milkweed creeper, *Ischnostemma selangorica* (Asclepiadaceae) were found in the area.

The butterfly has a very localised distribution in Peninsular Malaysia and is affected by a shrinking habitat as mangroves are cleared for agriculture, aquaculture, drainage projects and river widening. We hope these observations on the nectar plants and distribution of the butterfly will help in understanding its plant-associations and habitat and enable better conservation of this magnificent arthropod.

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