

CONSERVATION MALAYSIA

A Bulletin Supporting Plant and Animal Conservation in Malaysia

Issue No 35 (2022)



ISBN
1823-7975



Plate 1. Juvenile Jerdon's Baza *Aviceda jerdoni*, Fraser's Hill, Pahang, Peninsular Malaysia, 9 December 2020 (Photo credit: Mohd Syafiq Sivakumaran).

Jerdon's Baza *Aviceda jerdoni* at Fraser's Hill, Pahang, Peninsular Malaysia: A New Altitudinal Record

Mohd Syafiq Sivakumaran (syafiq6311@yahoo.com)

Jerdon's Baza *Aviceda jerdoni* is a medium sized raptor, and its distribution within the Indomalayan region is "extensive but discontinuous range, and generally local and uncommon to rare" (Ferguson-Lees & Christie, 2001). Ferguson-Lees & Christie (2001) also go on to note that Jerdon's Baza is "Usually considered sedentary,... and occasional movement, perhaps mainly by juveniles, into northwest Thailand and Peninsular Malaysia (where recorded only in northern winter)".

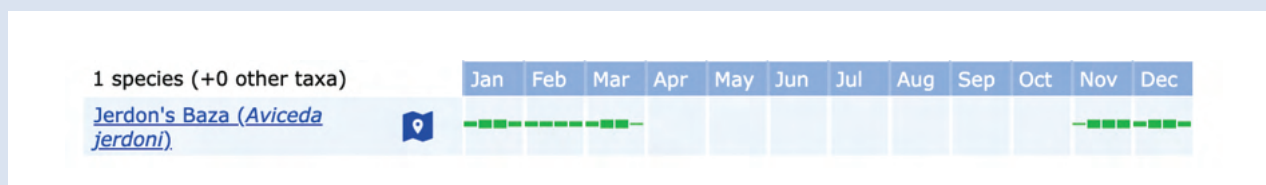


Figure 1. Singapore eBird Species Occurrence Bar Chart from 2010-2021 for Jerdon's Baza.

On 9 December 2020 at Fraser's Hill in an area known as the Telekom Loop which is between 1200 and 1300 m in altitude, a juvenile Jerdon's Baza, "upper breast white, heavily streaked black" (Naoroji, 2006) was spotted perched on a bare branch with its long lanceolate white tipped black crest flopping in the wind (Plate 1). As King *et al.* (1975) notes, "Broad white tips on black crest feathers often separate from Blyth's and Wallace's Hawk-eagles". This is a new altitudinal record for Jerdon's Baza in Peninsular Malaysia.

Jerdon's Baza is a rarely recorded bird in Peninsular Malaysia (Chia, 2011), and is totally absent from the Fraser's Hill bird checklists of Strange (2004), and Davison *et al.* (2019).

In Puan *et al.* (2020) Jerdon's Baza's known habitat, and altitudinal limits is stated as "Broadleaf evergreen forest and freshwater swamp forest, chiefly in lowlands, to 500 m on Peninsula". Jeyarajasingam (2012) also notes Jerdon's Baza's status as "Rare and localized resident at low elevations, south to Singapore", while in Wells (1999), "All traceable records have been from canopy or edge of tall lowland forest, mature and logged, at plains level and on lower slopes, with one of birds using relic trees in a swidden clearing".

This first altitudinal record during winter passage at Fraser's Hill rewrites previous documented elevation records related to Jerdon's Baza in Peninsular Malaysia.

In using eBird's species occurrence bar chart from the years 2010 to 2021 for Singapore (Figure 1), Jerdon's Baza sightings have been recorded annually from November to March at lowland forested areas and urban parks making Singapore its migration terminus.

This is in tandem to records from Thailand where Jerdon's Baza has been "recorded annually since 2010, with a well-defined passage taking place from 10 October

to at least mid-November" Limparungpatthanakij *et al.* (2019), and could be well enough for it to be accepted as a winter migrant through the Thai-Malay Peninsula.

Acknowledgements

I thank Allen Jeyarajasingam for his comments on the draft version of this article. My thanks also go to Lee Oon Teik.

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A note on the use of *Arytera littoralis* (Sapindales: Sapindaceae) as a nectaring source for butterflies

Liew Nyok Lin (liewnyoklin@ipgm.edu.my)



Above picture of a *Rapala pheretima*, bees and beetles sharing the same nectaring source.

The Family *Sapindaceae* is a cosmopolitan group of angiosperms which includes many well-known fruiting trees including the *Rambutan* and *Longan* trees of South East Asia. In Peninsular Malaysia, *Arytera littoralis* Blume is vernacularly known as *Bidara Emping* (MyBIS, 2022). The small to medium-sized tree appears to be locally common along the forested parcels of the Selangor River estuary at Kuala Selangor as well as the exposed ridge line near the light house at Bukit Jugra in Kuala Langat. The inflorescences are produced at the tips of the branches much like those of the common *Rambutan* tree. The small flowers are off-white in colour and exude a strong jasmine-like odour which attracts a multitude of insects including (those observed by the author) beetles, carpenter bee, small moths, small bees, flies and butterflies (see illustration below). To date, there is little or no literature on the use of this plant as a nectaring source for insects in Peninsular Malaysia.

Bukit Jugra Forest Reserve is a fragmented small coastal lowland hill forest near the estuary of Langat River in Banting, Selangor. The hill is visibly the only hill on a flat delta surrounded by oil palm estates and other cash crops in small holdings. The highest point is just over 230 metres above sea level and the peak is dominated by an abandoned army camp. Flanking the ridge of the

hills are parcels of intact coastal lowland hill forests with mature crowns, covering 40 hectares in total. It is the one of two remaining virgin forest reserves at the Kuala Langat district (LUAS, 2022). Bukit Jugra houses a functional lighthouse at an altitude of 120 metres above sea level. The tarmac road leading to the lighthouse and the trail beyond it is a popular jogging and cycling trail for the general public.

In March 2022, the author had a few occasions to visit a small parcel of forest along the ridge line of Bukit Jugra. The visits coincided with the mass flowering season of *Arytera littoralis*. Observations of butterfly nectaring activities were made from 09:30 to 13:00 for three man-days over 2 weeks in March 2022 and the records show a surprising number of species of butterflies that frequented the flowering trees. Five of the 6 known families of butterflies in Peninsular Malaysia were represented, totalling 63 species as summarised in the table below:

Family	Number of species	%
Papilionidae	4	6.35
Pieridae	4	6.35
Nymphalidae	17	27.00
Lycaenidae	18	28.60
Hesperiidae	20	31.70
Total	63	100.00

The high number of nymphalids, lycaenids and hesperiids in relation to papilionids and pierids was an expected outcome due to their natural occurrence ratio in the general population of butterflies in Peninsular Malaysia. However, it was interesting to note here that less common hesperiids like *Quedara* was relatively common on the flowers on each visit. The abundance of wild palms and rattans along the ridge line could have served as suitable host plants for hesperiids in the *Plastingia* group which were well represented in this brief survey (40% of the total species of hesperiids observed).

Other highlights include the observations of uncommon nectaring lycaenids such as *Tajuria cippus*, *Arhopala selta* and *Arhopala centaurus* on the flowers of *Arytera*

littoralis. Large danaiids like *Euploea phaenareta* and *Euploea aglea* were also observed to use the flowers as a nectaring source but they tend to shy away as the flowers on the higher canopies started to fade towards the latter part of the observation period. Due to the seasonal flowering characteristics of *Arytera littoralis*, it was thought that the nectaring activities observed could mostly be opportunistic in nature: the usually poor soil conditions of the coastal lowland hill forests may offer little choice of nectar-source plants to the insects and they may seize any available options presented to them naturally. The topographical condition of the

observation site is also an important factor to consider as many species of butterflies indulge in hilltopping activities (Skevington, 2008) whereby males congregate at vantage points on exposed hill tops to attract mates. The presence of the flowering tree merely serves to increase the frequencies of observable behaviours, funnelling the hilltopping males to a few low flowering canopies instead of the usual high perches. It has to be noted here that this brief observation record certainly has gaps to be filled. It is hoped that this information can offer a valuable glimpse into the often-unrecorded behaviour of the butterfly fauna in Peninsular Malaysia.

Table 1. A checklist of the butterflies observed nectaring on *Arytera littoralis* during the month of March 2022 at Bukit Jugra, Banting, Selangor in 3 man-days. Identification of the butterflies was done in reference to Corbet & Pendlebury (2020).

Species	Family	Subfamily	Tribe
<i>Pachliopta aristolachiae asteris</i>	Papilionidae	Papilioninae	Troidini
<i>Graphium sarpedon luctatus</i>	Papilionidae	Papilioninae	Leptocircini
<i>Graphium agamemnon agamemnon</i>	Papilionidae	Papilioninae	Leptocircini
<i>Graphium antiphates itamputi</i>	Papilionidae	Papilioninae	Leptocircini
<i>Eurema blanda snelleni</i>	Pieridae	Coliadinae	-
<i>Eurema andersonii andersonii</i>	Pieridae	Coliadinae	-
<i>Gandaca harina distant</i>	Pieridae	Coliadinae	-
<i>Delias hyparete metarete</i>	Pieridae	Pierinae	Pierini
<i>Danaus melanippus hegesippus</i>	Nymphalidae	Danainae	Danaini
<i>Euploea phaenareta castelnaui</i>	Nymphalidae	Danainae	Danaini
<i>Euploea algea menetriesii</i>	Nymphalidae	Danainae	Danaini
<i>Euploea mulciber mulciber</i>	Nymphalidae	Danainae	Danaini
<i>Ideopsis vulgaris macrina</i>	Nymphalidae	Danainae	Danaini
<i>Ideopsis similis persimilis</i>	Nymphalidae	Danainae	Danaini
<i>Parantica agleoides agleoides</i>	Nymphalidae	Danainae	Danaini
<i>Parantica aspasia aspasia</i>	Nymphalidae	Danainae	Danaini
<i>Ypthima baldus newboldi</i>	Nymphalidae	Satyrinae	Satyrini
<i>Hypolimnas bolina jacintha</i>	Nymphalidae	Nymphalinae	Junoniini
<i>Phaedyma columella singa</i>	Nymphalidae	Limenitidinae	Neptini
<i>Neptis hylas papaja</i>	Nymphalidae	Limenitidinae	Neptini
<i>Athyma pravara helma</i>	Nymphalidae	Limenitidinae	Limenitidini
<i>Athyma kanwa kanwa</i>	Nymphalidae	Limenitidinae	Limenitidini
<i>Athyma nefte subrata</i>	Nymphalidae	Limenitidinae	Limenitidini
<i>Moduza procris milonia</i>	Nymphalidae	Limenitidinae	Limenitidini
<i>Euthalia monina monina</i>	Nymphalidae	Limenitidinae	Adoliadini
<i>Catochrysops panormus exiguus</i>	Lycaenidae	Polyommatainae	Polyommataini
<i>Megisba malaya sikkima</i>	Lycaenidae	Polyommatainae	Polyommataini
<i>Chilades pandava pandava</i>	Lycaenidae	Polyommatainae	Polyommataini
<i>Acytolepis puspa lambi</i>	Lycaenidae	Polyommatainae	Polyommataini
<i>Anthene emolus goberus</i>	Lycaenidae	Polyommatainae	Polyommataini
<i>Jamides celeno aelianus</i>	Lycaenidae	Polyommatainae	Polyommataini
<i>Nacaduba sanaya elioti</i>	Lycaenidae	Polyommatainae	Polyommataini
<i>Nacaduba berenice icena</i>	Lycaenidae	Polyommatainae	Polyommataini
<i>Prosotas nora superdates</i>	Lycaenidae	Polyommatainae	Polyommataini
<i>Arhopala centaurus nakula</i>	Lycaenidae	Theclinae	Arhopalini
<i>Arhopala selta</i>	Lycaenidae	Theclinae	Arhopalini

Species	Family	Subfamily	Tribe
<i>Tajuria cippus maxentius</i>	Lycaenidae	Theclinae	Iolaini
<i>Rapala dienece dienece</i>	Lycaenidae	Theclinae	Deudorigini
<i>Rapala pheretima sequiera</i>	Lycaenidae	Theclinae	Deudorigini
<i>Rapala manea chozeba</i>	Lycaenidae	Theclinae	Deudorigini
<i>Rapala scintilla scintilla</i>	Lycaenidae	Theclinae	Deudorigini
<i>Rapala varuna orseis</i>	Lycaenidae	Theclinae	Deudorigini
<i>Hypolycaena erylus teatus</i>	Lycaenidae	Theclinae	Hypolycaenini
<i>Hasora schoenherr chuzza</i>	Hesperiidae	Coeliadinae	-
<i>Tagiades</i> sp.	Hesperiidae	Pyrginae	-
<i>Halpe</i> sp. (<i>pelethronix</i> group)	Hesperiidae	Hesperiinae	<i>Halpe</i> group
<i>Halpe ormenes vilasina</i>	Hesperiidae	Hesperiinae	<i>Halpe</i> group
<i>Ancistroides nigrita maura</i>	Hesperiidae	Hesperiinae	<i>Ancistroides</i> group
<i>Iambrix salsala salsala</i>	Hesperiidae	Hesperiinae	<i>Ancistroides</i> group
<i>Psolos fuligo fuligo</i>	Hesperiidae	Hesperiinae	<i>Ancistroides</i> group
<i>Suastus everyx everyx</i>	Hesperiidae	Hesperiinae	<i>Plastingia</i> group
<i>Cupitha purreea</i>	Hesperiidae	Hesperiinae	<i>Plastingia</i> group
<i>Quedara monteithi monteithi</i>	Hesperiidae	Hesperiinae	<i>Plastingia</i> group
<i>Hyarotis adrastus praba</i>	Hesperiidae	Hesperiinae	<i>Plastingia</i> group
<i>Zographetus doxus</i>	Hesperiidae	Hesperiinae	<i>Plastingia</i> group
<i>Isma iapis iapis</i>	Hesperiidae	Hesperiinae	<i>Plastingia</i> group
<i>Pyrroneura latoia latoia</i>	Hesperiidae	Hesperiinae	<i>Plastingia</i> group
<i>Pemara pugnans</i>	Hesperiidae	Hesperiinae	<i>Plastingia</i> group
<i>Cephrenes acalles niasicus</i>	Hesperiidae	Hesperiinae	<i>Taratrocera</i> group
<i>Telicota augias augias</i>	Hesperiidae	Hesperiinae	<i>Taratrocera</i> group
<i>Potanthus</i> sp.	Hesperiidae	Hesperiinae	<i>Taratrocera</i> group
<i>Pelopidas agna agna</i>	Hesperiidae	Hesperiinae	<i>Pelopidas</i> group
<i>Baoris oceia</i>	Hesperiidae	Hesperiinae	<i>Pelopidas</i> group

Table 2. Checklist of butterflies observed at the locality of Bukit Jugra Forest Reserve but not nectaring on *Arytera littoralis* in March 2022 (3-man days).

Species	Family	Subfamily	Tribe
<i>Papilio polytes romulus</i>	Papilionidae	Papilioninae	Papilionini
<i>Papilio demolion demolion</i>	Papilionidae	Papilioninae	Papilionini
<i>Cepora iudith malaya</i>	Pieridae	Pierinae	Pierini
<i>Appias libythea olferna</i>	Pieridae	Pierinae	Pierini
<i>Leptosia nina malayana</i>	Pieridae	Pierinae	Pierini
<i>Elymnias hypermnestra beatrice</i>	Nymphalidae	Satyrinae	Elymniini
<i>Mycalesis janardana sagittaria</i>	Nymphalidae	Satyrinae	Satyrini
<i>Mycalesis mineus micromalayana</i>	Nymphalidae	Satyrinae	Satyrini
<i>Orsotriane medus cinerea</i>	Nymphalidae	Satyrinae	Satyrini
<i>Ypthima pandocus corticoria</i>	Nymphalidae	Satyrinae	Satyrini
<i>Junonia hedonia ida</i>	Nymphalidae	Nymphalinae	Junoniini
<i>Junonia almana javana</i>	Nymphalidae	Nymphalinae	Junoniini
<i>Junonia orithya wallacei</i>	Nymphalidae	Nymphalinae	Junoniini
<i>Ariadne ariadne ariadne</i>	Nymphalidae	Biblidinae	-
<i>Neptis harita harita</i>	Nymphalidae	Limenitidinae	Neptini
<i>Zizula hylax pygmaea</i>	Lycaenidae	Polyommatainae	Polyommataini
<i>Nacaduba pactolus odon</i>	Lycaenidae	Polyommatainae	Polyommataini
<i>Taratrocera archias quinta</i>	Hesperiidae	Hesperiinae	<i>Taratrocera</i> group

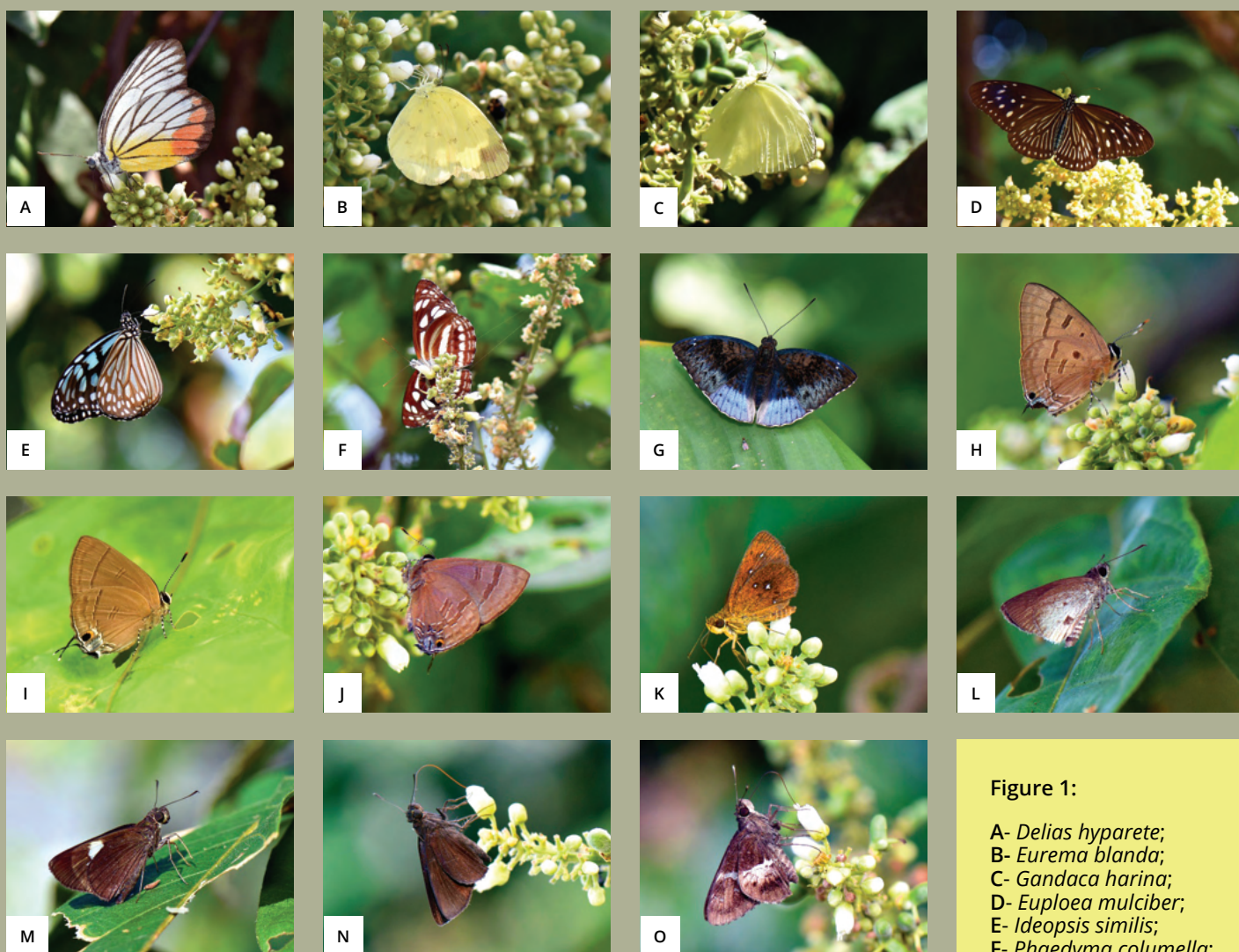


Figure 1:

A- *Delias hyparete*;
 B- *Eurema blanda*;
 C- *Gandaca harina*;
 D- *Euploea mulciber*;
 E- *Ideopsis similis*;
 F- *Phaedyra columella*;
 G- *Euthalia monina*;
 H- *Rapala pheretima*;
 I- *Rapala manea*;
 J- *Rapala varuna*;
 K- *Iambrix salsala*;
 L- *Suastus everyx*;
 M- *Quedara monteithi*
 (female);
 N- *Quedara monteithi*
 (male);
 O- *Hyarotis adraustus*.

Acknowledgement

The author would like to thank Dr Laurence G. Kirton on the discussions of the host plant as well as on the butterfly activities. Sincere appreciation to Dato' Dr Saw Leng Guan of FRIM for the identification of *Arytera littoralis*.

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Notes on the elusive hemiparasitic plant, *Centranthera tranquebarica* (Orobanchaceae)

Rafidah Abdul Rahman, Nik Faizu Nik Hassan & Ruth Kiew



Centranthera tranquebarica (Spreng.) Merr. is a hemiparasite herbs in the same family as *rumpot jarum mas*, *Striga asiatica* (L.) Kuntze. Although *C. tranquebarica* is widely distributed from India, Sri Lanka, Thailand, Laos, Cambodia, Vietnam, S. China, Peninsular Malaysia, Singapore, Borneo and south to Australia, in Peninsular Malaysia it is rare or probably overlooked and has only been recorded from a few localities. The first records from 1890 were collected by Griffith from Chabau, Melaka, and by Ridley from Ayer Panas, Negeri Sembilan and then in 1934 from Pulau Langkawi including Selat Panchur by Henderson (SFN 29057). According to Kiew (2021), no specimen has been collected since 1934. Several intensive botanical collecting trips to Pulau Langkawi were conducted from 2007 under the Flora of Peninsular Malaysia project but to no avail. Because of the unavailability of a flowering and fruiting specimen, no botanical drawing or photograph of the species was provided in the Flora of Peninsular Malaysia Vol 8 (2021). In Peninsular Malaysia, the species was assessed as Data Deficient based on the IUCN Red List of Threatened Species categories and criteria.

Why has this species been so rarely collected or probably overlooked? And why has it not been re-collected since 1934? One reason may be because *C. tranquebarica* is hard to spot when sterile because it has tiny, narrow green leaves about



Centranthera tranquebarica growing among the grasses.

5 mm long that look just like grass. Recently, this hemiparasite was discovered growing in the Forest Research Institute Malaysia (FRIM) campus, near the Kepong Botanic Garden (KBG) and FRIM field area, near tennis court (Field 13) with less than 10 individuals. This root parasite was spotted in flowers and fruits growing in a grassy mat in open places and along roadsides. Seeds of the species might have been dispersed through the fertilizer or compost mix used in those fields, and buried by soil compaction during field operations.

As a hemiparasite, it relies on its host plant for maximum performance. What is its host species? Do they need a specific host species? From the observations, it was found among the grasses (Poaceae) and other weeds such as *Grona triflorum* (Leguminosae), *Justicia procumbens* (Acanthaceae), *Striga asiatica* (Orobanchaceae) and *Lindernia* sp. (Scrophulariaceae). In previous studies, to investigate the host specificity of Orobanchaceae, it includes counting of root connections between parasites and hosts or haustoria and DNA barcoding and fingerprinting of the parasites (for example *Rhinanthus* sp.) (Wesselingh & van Groenendael, 2005; Holá *et al.*, 2017). For *C. tranquebarica* we still do not have answers to these questions.

Most hemiparasitic Orobanchaceae are short-lived monocarpic species with requirement of specific insect pollination, usually by bees and produces a few heavy seeds per fruit that limit dispersal potential (Bekker & Kwak, 2005). Sometimes species have very specific conditions for germination and attachment to the host species, and those characteristics make the life history of these species extremely risky (Wesselingh & van Groenendael, 2005). For example, in *Striga* species, seeds will only germinate when stimulated by exudate from grass roots. Without the host plant, its seeds do not germinate. Most Orobanchaceae have potential to affect plant community structure such as in crop agriculture and plantations, however *C. tranquebarica* has not yet been reported in Malaysian plant communities or to parasitise commercial crops. In Peninsular Malaysia, it remains a rare and enigmatic species until further discovery.

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Flowers of *Centranthera tranquebarica*.



Fruits of *Centranthera tranquebarica*.

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The Editor,
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Funded by the Ministry of Energy and Natural Resources. Editorial team: Dr. Lillian Chua, Ms. Ong Su Ping and Mr. Lau Kah Hoo.