

Lepidoptera – Moths

ANUJ JAIN, JEROME CHUA, GAN CHEONG WEEI

Scientific Name:

Avitta guttulosa

Common Name:

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Order/Family:

Lepidoptera: Erebidæ

National Status: Vulnerable (VU)

Habitat and Ecology: Records of this species are restricted to the Central and Western Catchments and areas abutting it. The genus heavily utilises Menispermaceae. With the type species *A. subsignans* being reared on plants of genus *Stephania* and *Cyclea* and the locality habits of *A. guttulosa* taken into account, it is reasonable to assume that *A. guttulosa* also utilises *Stephania capitata* and *Cyclea laxiflora*, both of which are native and critically endangered (Lindsay et al. 2022) in Singapore. So far, these plant species are only known from Bukit Timah and Nee Soon forests. However, the occurrence of the moth in Western Catchment alludes to the potential existence of the above host plant species here as well.

Photo: Jerome Chua



Distribution: Indonesia, Malaysia, Singapore.

Threats: Likely rare due to rarity of the larval host plants that may have suffered from early deforestation prior to the 1950s. Increasing light pollution due to urban development also likely impacts the species.

Scientific Interest and Potential Value: Not yet ascertained.

Conservation Measures: Bukit Timah and Central Catchment Nature Reserves are legally protected. The species would benefit from targeted planting of larval host plants in restoration programs around the island.

Scientific Name:

Borbotana nivifascia

Common Name:

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Order/Family:

Lepidoptera: Noctuidæ

National Status: Vulnerable (VU)

Habitat and Ecology: Ecology poorly understood but the distribution in Singapore seems to be close to fresh and/or saltwater bodies.

Photo: Alexey Yakovlev



Distribution: The species is widely distributed globally from the North-East Himalayas to Sundaland.

Threats: Rare and occurring in managed and only partially protected areas. Substantial loss of water-dependent and riparian habitat in the past.

Scientific Interest and Potential Value: Under the precondition of quality habitat, Noctuids usually represent the bulk of Noctuoidea biodiversity at light sampling activities. Conversely, they are usually the first to take statistical drops by course of human development, experiencing untimely expirations at

a rate which far exceeds their reproduction ability. Species that manage to adapt become adapted to background light pollution, rendering light sampling as a means of monitoring biodiversity and population density ineffective in the long run.

Conservation Measures: Water bodies have largely been kept pollution free which should benefit the larval host plants and the herbivores dependent on it. Protection of other water bodies, and to ensure the native riparian vegetation is accorded protection as well. Additionally, there is a harrowing need for light control.

Scientific Name:
Chrysocraspeda phlogaea

Common Name:
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Order/Family:
Lepidoptera: Geometridae

National Status: Vulnerable (VU)

Habitat and Ecology: Young secondary and old growth forest; known to feed on Combretaceae, Myrtaceae - *Syzygium*, *Terminalia*. Highly polyphagous genus.

Distribution: In Singapore it is known from the central forested area and from some unprotected localities in western Singapore.

Threats: Likely rare due to the rarity of the larval host plant that may have suffered from early deforestation prior to 1950s. Increasing light pollution due to urban development also likely impacts the species.

Scientific Interest and Potential Value: This hyper diverse genus is relatively well represented in Singapore, with at least 17 species recorded. At least half of these are moderately frequent in lowland biotopes. Several



Photo: Albert Kang

species appear to tolerate heavy background light pollution. A number of these species are suspected either to be more loyal to specific hosts or to have a lower tolerance to light.

Conservation Measures: No targeted interventions known. At the habitat level, site protection in Upper Seletar has led to safeguarding of populations at least at one site. Protection of unprotected sites in Mandai and Bukit Batok area. Species will benefit from life history documentation and targeted planting of larval host plants in restoration programs around the island.

Scientific Name:
Cultripalpa lunulifera

Common Name:
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Order/Family:
Lepidoptera: Erebiidae

National Status: Vulnerable (VU)

Habitat and Ecology: Old growth forest; host plant in Singapore unknown. In Borneo, it is known from old growth forest, coastal and secondary forest.

Distribution: This species ranges from India to Australia but is rare across its range.

Threats: This species is infrequent at light throughout its range. Likely rare due to the rarity of the larval host plant that may have suffered from early deforestation prior to 1950s. Distribution includes one partially protected site



which is subject to potential risk of clearing, leading to habitat loss.

Scientific Interest and Potential Value: Not yet ascertained.

Conservation Measures: No species-targeted interventions have been undertaken. Species will benefit from life history documentation and planting of larval host plants in restoration programs around the island. Targeted moth surveys may find that the species may be known from more localities particularly in Bukit Batok and Bukit Timah areas.

Scientific Name:
Cultripalpa partita

Common Name:
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Order/Family:
Lepidoptera: Erebiidae

National Status: Endangered (EN)

Habitat and Ecology: Closely associated with coastal and mangrove forests where they may appear to be locally abundant; occasionally individuals can be observed congregating around taller isolated treelets by the dozens at night.

Distribution: The Sunda region.

Threats: Likely rare due to habitat preference towards coastal and mangrove habitats and rarity of host plant in that habitat. Distribution includes two clusters



(western Singapore and Pulau Ubin), and it is found in two partially protected or unprotected sites that are at the risk of clearing, leading to habitat loss and with it the loss of larval host plants.

Scientific Interest and Potential Value: Not yet ascertained.

Conservation Measures: Protection of mangrove habitat at the sites. The species will benefit from life history documentation and targeted planting of larval host plants in restoration programs at other mangrove

sites in Singapore. surveys may find that the species may be known from more localities particularly in Sungei Buloh and Pasir Ris areas.

Scientific Name:
Elibia dolichus

Common Name:
Large Banded Hawkmoth

Order/Family:
Lepidoptera: Sphingidae

National Status: Endangered (EN)

Habitat and Ecology: Coastal and mangrove habitats.

Distribution: The species has a wide distribution in Asia from southern China to southeast Asia including Sundaland. Given the limited distribution in Singapore, it is hypothesized that the species is associated with mangroves or associated vegetation.

Threats: Likely rare due to habitat preference towards coastal and mangrove habitats and rarity of host plant in that habitat. Increasing light pollution due to urban development also likely impacts the species. In Singapore it is only known from Pulau Ubin, which is currently managed as a natural area.

Scientific Interest and Potential Value: First found in Singapore by A.R. Wallace in 1854. Across its range, the larvae are known to feed on plants of the family Vitaceae (*Leea*, *Cayratia*, *Tetrastigma*) but the exact larval host plants in Singapore remain unknown.

Photo: Lena Chow



Four species of *Cayratia* are known from Singapore – all threatened. Similarly, four species of *Tetrastigma* are known from Singapore – all listed as Critically Endangered. Four species of *Leea* occur in Singapore – 2 threatened, 1 common and another (*Leea indica*) commonly planted in landscaping around Singapore. It appears unlikely that the moths use these *Leea* species as host plants in Singapore, despite various instances of the larvae utilising *L. indica* in Malaysia.

Conservation Measures: Species will benefit from life history documentation and targeted planting of larval host plants in restoration programs at other mangrove sites in Singapore. Surveys may find that the species occurs in more localities particularly other coastal/mangrove habitats in Singapore.

Scientific Name:
Eublemma ignefusa

Common Name:
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Order/Family:
Lepidoptera: Erebidae

National Status: Endangered (EN)

Habitat and Ecology: In Singapore, only known from selected secondary forest patches; local larval host plant remains unknown. It is unclear why the species is missing from the Bukit Timah and Central Catchment forests.

Distribution: The species is known from east India to Thailand, Sumatra, Peninsular Malaysia, Singapore, Borneo. Sightings include mature and secondary forested habitats, forest edges.

Threats: Likely rare due to rarity of the larval host plant that may have suffered from early deforestation prior



Photo: Can Cheong Wee

to 1950s. Large scale habitat loss has ceased, but part of the current habitat is in an unprotected or partially protected site. Its clearance can lead to further declines. Increasing light pollution due to urban development also likely impacts the species.

Scientific Interest and Potential Value: Singapore is the type locality, from which it was described in 1910.

Conservation Measures: Species will benefit from life history documentation and the planting of larval host plants (once these are identified) in restoration programs around the island. Surveys might find the species in more localities, particularly in protected areas.

Scientific Name:
Nothomiza xanthocolona

Common Name:
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Order/Family:
Lepidoptera: Geometridae

National Status: Vulnerable (VU)

Habitat and Ecology: Lowland mature and secondary forest. In Borneo, the species has been infrequently recorded in lowland kerangas forest and in lower montane forest of Gunung Mulu and Gunung Api.

Distribution: The Sunda region.

Threats: Precise threats are unknown, but members of the tribe are highly susceptible to light pollution. Another reason could be the rarity of a larval host plant that



Photo: Jerome Chua

may have suffered from early deforestation prior to the 1950s.

Scientific Interest and Potential Value: This species is rarely taken at lights; most individuals are taken opportunistically under mid-canopy. Outside Singapore, the closely related species *N. formosa* has been successfully reared on several species of *Ilex*, though it may use host plants beyond Aquifoliaceae for congeneric taxa. Adults are known to visit the inflorescences of *Syzygium formosum* (syn. *pseudoformosum*), *S. paraiense* (syn. *filiforme*) and *S. singaporense*.

Conservation Measures: In Singapore it is known from Mandai, Bukit Timah Nature Reserve and environs of Bukit Panjang. The species would benefit from the protection of sites, life history documentation and, once

the host plant can be identified, targeted planting of larval host plants in restoration programs around the island.

Scientific Name:
Psaphis camadeva

Common Name:
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Order/Family:
Lepidoptera: Zygaenidae

National Status: Critically Endangered (CR)

Habitat and Ecology: Primary forests, with a preference for hill dipterocarp forests. Members of this genus are hilly canopy dwellers, rarely descending to the understorey.

Distribution: Distributed through Sundaland in Indonesia, Malaysia and Singapore. Locally known only from Bukit Timah Nature Reserve where it was last recorded in 2007.

Threats: Likely rare due to affinity to old growth forest which significantly declined from early deforestation prior to 1950s. Large scale loss of old growth forest has ceased but these patches continue to be disturbed through anthropogenic pressure from trails, surrounding urban development and highways that bring light and sound.

Scientific Interest and Potential Value: In Singapore, first collected by A.R. Wallace.

Photo: Cheong Weng Chun



Conservation Measures: Disturbance to the nature reserve should be minimized. Surveys may find that the species may be known from more localities (such as the primary forest patches in the Central Catchment). The species would benefit from life history documentation and possibly from planting of larval host plants if these can be identified.

Scientific Name:

Tamba basiscripta

Common Name:

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Order/Family:

Lepidoptera: Erebiidae



Photo: Gan Cheong Weei

National Status: Vulnerable (VU)

Habitat and Ecology: Known from lowland forests, maturing secondary forest, dry forest as well as coastal forest.

Distribution: Cambodia, Indonesia, Philippines, Singapore and Thailand. In Singapore known only from Pulau Ubin and the vicinity of the Central Catchment.

Threats: Species of the genus *Tamba* are known from a variety of habitats, so direct habitat loss does not appear to be a key factor of decline. The species is likely rare due to rarity of the larval host plant, whatever it may be, that has likely suffered from early deforestation. Increasing light pollution due to urban development also likely impacts the species but most *Tamba* species appear to be accustomed to heavy background light pollution.

Scientific Interest and Potential Value: The genus is relatively well represented in Singapore with

ten known species, at least half of them moderately frequent in lowland biotopes. *Tamba* is known outside Singapore to be a polyphagous genus, with congeners utilising *Barringtonia* (Lecythidaceae), *Aporosa* (Phyllanthaceae), *Sandoricum* (Meliaceae) and *Symphorema* (Lamiaceae). Larval host plants for *Tamba basiscripta* are not known from Singapore but are hypothesized to be rare. Except for *Barringtonia* species that are planted in parks for landscaping purposes, all other plant species in genus *Barringtonia*, *Aporosa*, *Sandoricum* and *Symphorema* are threatened.

Conservation Measures: Recorded from Pulau Ubin (Outward Bound Singapore area) which is managed as a nature area, Bukit Timah Nature Reserve which is legally protected, and surrounding unprotected locations in Bukit Panjang. Surveys may find that the species occurs in more localities. The species would benefit from life history documentation and targeted planting of larval host plants in restoration programs around the island.

The authors for the Lepidoptera – Moths chapter would like to thank the following people who gave invaluable advice in developing the Moth Red List assessment. These included Roger Kendrick, Hwang Wei Song, Geoffrey Davison, James Gan and Kang Min Ngo.

The following people (apart from the authors) provided raw data or directly contributed to the curation and analysis of datasets – Raymond Karam, Jun Hien Chong, Lynn Koh, Kah Ming Teo, Saloni Swaminathan, Steven Chong, Wan FA Jusoh, Wan Teng and Richard White.

We would like to thank the Nature Society (Singapore) for providing funding to hire interns who helped with photographing archived moth specimens at the Lee Kong Chian Natural History Museum and partially supported Jerome Chua's time with moth identifications.

Apart from primary and secondary data from past moth surveys, we relied heavily on iNaturalist and GBIF to assess the distribution of moths. We thank the many hundreds of citizen scientists who have contributed moth data on iNaturalist and GBIF which made the Red List assessment possible.

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Odonata – Dragonflies and Damselflies

ROBIN NGIAM WEN JIANG, MARCUS F.C. NG

Scientific Name:

Agriocnemis nana (Laidlaw, 1914)

Common Name:

Dwarf Wisp

Order/Family:

Odonata: Coenagrionidae

Photo: Robin Ngiang Wen Jiang



National Status: Endangered (EN)

Habitat and Ecology: Found around small streams, shallow, weedy ponds and open grassy marshes close to forests. May occur in disturbed habitats. Minuscule damselfly that is possibly overlooked due to its inconspicuous size and habits. Perches very low amid dense waterside vegetation.

Distribution: Western end of MacRitchie Reservoir in Central Catchment Nature Reserve, but also recorded in the Singapore Botanic Gardens in 2011.

Threats: Restricted and very rare. Habitat disturbance from overzealous removal of marsh-edge vegetation.

Scientific Interest and Potential Value: It is part of Singapore's indigenous biological heritage and of general educational value and interest to the public and nature enthusiasts.

Conservation Measures: Continued protection of CCNR and appropriate habitat management whereby grassy vegetation along the reservoir is pruned sparingly.

Scientific Name:

Archibasis rebecca Kemp, 1989

Common Name:

Rebecca's Sprite

Order/Family:

Odonata: Coenagrionidae

Photo: Marcus F.C. Ng



National Status: Critically Endangered (CR)

Habitat and Ecology: Occurs at small, shaded forest streams with bottoms of fine sand and silt. When active, it usually flies low along the stream bank. At rest, typically perches at leaf tips in sunlit spots whereby it will fly rapidly upwards to a higher perch when disturbed.

Distribution: Found only in Central Catchment Nature Reserve.

Threats: Restricted distribution and very rare. Hydrological change in streams resulting from climate change and developments outside protected areas which may adversely impact the waterways.

Scientific Interest and Potential Value: It is part of Singapore's indigenous biological heritage and of general educational value and interest to the public and nature enthusiasts.

Conservation Measures: Continued protection of Central Catchment Nature Reserve and waterways in buffer parks.

Scientific Name:
Ceriagrion chaoi Schmidt, 1964

Common Name:
Fiery Coraltail

Order/Family:
Odonata: Coenagrionidae

National Status: Vulnerable (VU)

Habitat and Ecology: Found in ponds and slow flowing streams with rich aquatic submerged plants and dense vegetation surrounding the water body. Males are very conspicuous with fiery red abdomen, including appendages. Can be abundant where it occurs. During the hottest part of the day, females with males in tandem, may oviposit en masse into submerged plants.

Distribution: Known only from a few localities, including MacRitchie Reservoir, Windsor Nature Park, Ulu Sembawang and past records from a pond in Dover Forest. Stronghold population is in a forest off Turf Club Avenue. Previously recorded in Bishan-Ang Mo Kio Park, but the population has been extirpated following a change in its pond-management regime.

Photo: Zick Soh



Threats: Restricted distribution, and rare. Although its preferred habitat of weedy ponds and open streams are not uncommon in Singapore, it appears to be highly sensitive to habitat change brought about by human intervention.

Scientific Interest and Potential Value: It is part of Singapore's indigenous biological heritage and of general educational value and interest to the public and nature enthusiasts.

Conservation Measures: Conservation of known sites with minimal human disturbance, example over-zealous removal to aquatic and waterside vegetation.

Scientific Name:
Mortonagrion aborense (Laidlaw, 1914)

Common Name:
Blue Midget

Order/Family:
Odonata: Coenagrionidae

Photo: Marcus F.C. Ng



National Status: Critically Endangered (CR)

Habitat and Ecology: Found at shady pools in swampy forest, forages along sunny trails and clearings around midday whereby they actively glean prey from leaves. Has a habit of perching low in undergrowth inconspicuously. Retreats into dense vegetation or towards the canopy when disturbed. Females oviposit into floating vegetation like leaves or root mass.

Distribution: Currently known from a single site in the southern part of the island.

Threats: Restricted distribution within which it is rare. The site is not protected as a conservation area

hence it is vulnerable to development pressures and human disturbance.

Scientific Interest and Potential Value: Currently it appears there are two morphospecies in the region that are treated as *M. aborensis*. This requires further investigation in addition to a review of the taxonomic relationship between the genera *Mortonagrion*, *Agriocnemis* and *Argiocnemis*.

Conservation Measures: Accord protected status to its only known site and implement habitat conservation management.

Scientific Name:

Mortonagrion arthuri Fraser, 1942

Common Name:

Arthur's Midget

Order/Family:

Odonata: Coenagrionidae

National Status: Vulnerable (VU)

Habitat and Ecology: Found in mangrove forests and creeks. Highly stenotopic species restricted to sheltered pools and rivulets in the landward zones of mangroves as well as nearby freshwater pools. Inconspicuous due to slim build and muted colours, but adults can be found perched low on tip of pneumatophores of mangrove trees that rise from the mud. Males, which are more visible due to their blue 'tail-lights', guard tiny muddy pools that are subject to tidal influence.

Distribution: Recorded in back mangrove habitats in Admiralty Park, Loyang Mangroves, Pulau Semakau, Pulau Tekong, Pulau Pawai and Pulau Ubin.



Photo: Robin Ngiam Wen Jiang

Threats: Restricted distribution within which it is rare. Habitat loss due to projected sea level rise from climate change.

Scientific Interest and Potential Value: It is part of Singapore's indigenous biological heritage and of general educational value and interest to the public and nature enthusiasts.

Conservation Measures: Continued protection and climate change mitigations for the last few mangrove habitats in Singapore.

Scientific Name:

***Pseudagrion pruinosum* (Burmeister, 1839)**

Common Name:

Grey Sprite

Order/Family:

Odonata: Coenagrionidae

National Status: Vulnerable (VU)

Habitat and Ecology: Found at fast-flowing streams and slower channels with grassy banks in open areas near forests. A stream dependent, open-country species that is fairly common in the region but less so in Singapore, where rural habitats are now scarce. Where present, it can be abundant. Males perch very close to the water and are conspicuous by their pruinosed colour as they dart about after prey or rivals. After copulation, pairs in tandem perch above the water and slowly crawl backwards to a depth of about 10cm. Male often remains in tandem as female oviposits by inserting eggs into aquatic vegetation.

Distribution: Recorded in suitable stream from Mandai, Bukit Brown, Nee Soon Swamp Forest, Tuas (an old record) and a few locations in the Central Catchment Nature Reserve.

Photo: Robin Ngiam Wen Jiang



Threats: Restricted distribution within which it is common. Loss of habitat from climate change related prolonged drought, and human intervention when natural streams are concretised into drains.

Scientific Interest and Potential Value: It is part of Singapore's indigenous biological heritage and of general educational value and interest to the public and nature enthusiasts.

Conservation Measures: Protection of natural and naturalised streams in rural, open areas with appropriate riparian buffers. May be introduced into more urban areas with naturalisation of drains and vegetation restoration along stream banks.

Scientific Name:

***Tetracanthagyna plagiata* (Waterhouse, 1877)**

Common Name:

Giant Hawker

Order/Family:

Odonata: Aeshnidae

Photo: Dillen Ng



National Status: Vulnerable (VU)

Habitat and Ecology: Found at forest streams and swampy forests. Forages at dawn or dusk high up in the canopy; perches in the shade of trees and shrubs by day. Females may be active throughout the day, seeking out suitable branches and logs overhanging or beside forest streams. When a suitable site is found, female uses her ventral spines to probe and pierce the wood before inserting an egg, repeating this action along the length of the branch. Larva is nocturnal and semiterrestrial. Older larvae emerging at night to cling to a twig just above the water from which they ambush prey. Faeces are projected forcefully out of water. When threatened, larva exhibits thanatosis (feigning death).

Distribution: Mostly recorded in the Central Catchment Nature Reserve. Occasionally occurring in buffer parks like Thomson and Rifle Range Nature Parks.

Threats: Restricted distribution within which it is uncommon. Hydrological change in forest streams resulting from climate change may cause habitat loss.

Scientific Interest and Potential Value: Adult female is one of the world's largest living true dragonflies by wingspan and weight. Larva was first described from Singapore.

Conservation Measures: Continued protection of conservations areas with appropriate climate change mitigation measures.

Scientific Name:
Vestalis gracilis (Rambur, 1842)

Common Name:
Plain Flashwing

Order/Family:
Odonata: Calopterygidae

National Status: Critically Endangered (CR)

Habitat and Ecology: Inhabits clear, shaded and sluggish forest streams with ample bankside vegetation. Can be locally abundant. Males establish and defend territories by perching at leaves or branches overhanging suitable stream habitats. Individuals, especially females, can be found foraging along forest trails some distance away from streams.

Distribution: Recorded at a single and publicly restricted site in the northern part of the island, where it was first recorded in 2012 and is locally abundant.

Threats: Restricted distribution but within which it is common. Stream degradation due to potential developments in the surrounding environment.



Photo: Robin Ngiam Wen Jiang

Scientific Interest and Potential Value: It is part of Singapore's indigenous biological heritage and of general educational value and interest to the public and nature enthusiasts.

Conservation Measures: Stream protection with riparian buffer along the entire watercourse, with stringent oversight on potential developments in the vicinity.

Scientific Name:
Libellago aurantiaca (Selys, 1859)

Common Name:
Fiery Gem

Order/Family:
Odonata: Chlorocyphidae

National Status: Critically Endangered (CR)

Habitat and Ecology: Found at sluggish streams with sandy or silty substrate, or quieter sections of swift, clear streams, in shaded forests. Males establish small territories and engage in spectacular aerial displays in sunlit spots whereby they display their iridescent apical wingspots but without making physical contact. During courtship, male flies before a female with his abdomen arched upwards to display his colours, while extending and shaking his legs to show off the pruinescent surfaces. Female oviposits on partially submerged branches and leaves, while the male guards against other males.

Distribution: Found only in Nee Soon Swamp Forest.



Photo: Robin Ngiam Wen Jiang

Threats: Restricted distribution within which it is common. Hydrological change in Nee Soon Swamp Forest resulting from climate change.

Scientific Interest and Potential Value: It is part of Singapore's indigenous biological heritage and of general educational value and interest to the public and nature enthusiasts.

Conservation Measures: Continued protection of Nee Soon Swamp Forest with climate change mitigation.

Scientific Name:
Devadatta argyroides (Selys, 1859)

Common Name:
Malayan Grisette

Order/Family:
Odonata: Devadattidae

National Status: Endangered (EN)

Habitat and Ecology: Found at well-shaded streams in dense, often hilly forests. Inconspicuous and usually perched very low. Males guard small cascading portions of forest streams, keeping very close to the water and mainly avoiding sunlit spots. Both sexes may also forage by gleaning passing prey at shaded parts of trails or around large fallen trunks not far from streams. Seldom flies far when disturbed, and often holds wings open for a short while right after landing.



Photo: Marcus F.C. Ng

Distribution: Recorded mainly in Bukit Timah Nature Reserve and Dairy Farm Nature Park. Also found from Rifle Range and Windsor Nature Parks.

Threats: Prolonged droughts or wet season from climate change may drastically affect the hydrology of hill streams in Bukit Timah Nature Reserve.

Scientific Interest and Potential Value: Type specimens were collected in Singapore by Alfred Wallace.

Conservation Measures: Continued protection of conservation areas with climate change mitigation measures.

Scientific Name:
Leptogomphus risi Laidlaw, 1932

Common Name:
Ris' Clubtail

Order/Family:
Odonata: Gomphidae

National Status: Vulnerable (VU)

Habitat and Ecology: Occurs at forest streams. Adults are canopy dwelling, coming down to breeding sites very briefly on sunny days. On rare occasions can be encountered at sunlit spots along forest trails or in clearings but will fly straight up to canopy when disturbed. Larva lives buried quite deep in a substrate of sand and leaf litter, usually at swifter flowing sections of streams.

Distribution: Recorded in the Bukit Timah and Central Catchment Nature Reserves; also Dairy Farm Nature Park.

Threats: Restricted distribution within which it is rare. Soil erosion along waterways would degrade breeding sites with heavy sedimentation.



Scientific Interest and Potential Value: It is part of Singapore's indigenous biological heritage and of general educational value and interest to the public and nature enthusiasts.

Conservation Measures: Habitat rehabilitation of eroded streams. Stringent environmental and monitoring of developments in the vicinity of conservation areas to prevent sedimentation in forest streams.

Scientific Name:
Paragomphus capricornis (Förster, 1914)

Common Name:
Banded Hooktail

Order/Family:
Odonata: Gomphidae



National Status: Endangered (EN)

Habitat and Ecology: Found around clear, shallow, low-gradient streams with sandy or gravelly bottoms in semi-open country near forests. Also in denser forests with some open canopies if suitable streams exist. Towards midday, males come down to streams, resting on gravel beds or low rocks next to the water where their larvae are known to breed buried in sand. When not at breeding sites, forages from the canopy of nearby forest trees and occasionally lower at forest clearings.

Distribution: Recorded in the Bukit Timah and Central Catchment Nature Reserves, and the forest off Mandai Road.

Threats: Restricted distribution within which it is rare. Habitat degradation due to soil erosion arising from improper management or developments near waterways. Heavy sedimentation of stream is severely detrimental to larval survival.

Scientific Interest and Potential Value: It is part of Singapore's indigenous biological heritage and of general educational value and interest to the public and nature enthusiasts.

Conservation Measures: Establish riparian buffers. Stringent stream management regime, and environmental management and monitoring of developments near waterways to prevent soil erosion.

Scientific Name:

Brachygonia oculata (Brauer, 1878)

Common Name:

Pixie

Order/Family:

Odonata: Libellulidae

National Status: Endangered (EN)

Habitat and Ecology: Found around shaded or semi-shaded pools and very sluggish streams in swampy forests or forest edges. Males guard small territories at pools filled with leaf litter and other detritus, perching for long periods. Both sexes may also feed by forest trails near swampy areas.

Distribution: Currently known from two populations in the Western Catchment. Single vagrant male was recorded from swampy forested areas in Admiralty Park in 2015 and again in 2023.

Threats: Restricted distribution and uncommon. Lack of conservation oversight of known populations in Western Catchment may lead to unintended habitat loss.

Photo: Robin Ngiam Wen Jiang



Scientific Interest and Potential Value: If translocation project (see below) is successful, the best practices may be scalable to other threatened species. Larva of this genus is first described from Singapore.

Conservation Measures: Conservation of swamp habitats in Western Catchment. Species is part of NParks Species Recovery Programme to improve its threatened status by introducing the dragonfly to suitable locations that have protection status. Its appearance in Admiralty Park indicates the potential for successful translocation outside of its stronghold in Western Catchment.

Scientific Name:

Indothemis carnatica (Fabricius 1798)

Common Name:

White-tipped Demon

Order/Family:

Odonata: Libellulidae

National Status: Critically Endangered (CR)

Habitat and Ecology: Occurs at well-vegetated ponds, lakes and marshes in open country or near forests. Males active at breeding sites towards noon, flying rapidly over the water in pursuit of rivals, or perching on waterside vegetation. Females can be found foraging some distance away from water.

Distribution: First recorded on Pulau Ubin in 2018 but has since spread to a few other locations (see below) on mainland Singapore.

Threats: Restricted distribution, within which it is rare. Poor management of wetlands which may lead to habitat degradation or loss.



Photo: Robin Ngiam Wen Jiang

Scientific Interest and Potential Value: It is part of Singapore's indigenous biological heritage and of general educational value and interest to the public and nature enthusiasts.

Conservation Measures: Assessed as critically endangered due to single location in Pulau Ubin. However, in late 2022 it rapidly established populations in East Coast Park and Rifle Range Nature Park. This species exemplifies how ecologically sensitive wetland creation and habitat management are crucial to the conservation of threatened species that are more adaptable to urban environment. Conservation of urban wetlands would greatly benefit species like White-tipped Demon.

Scientific Name:

Lyriothemis cleis Brauer, 1868

Common Name:

Bombardier

Order/Family:

Odonata: Libellulidae

National Status: Endangered (EN)

Habitat and Ecology: Occurs in mature secondary and dipterocarp forests. Breeds in phytotelmata such as large bamboo stumps and buttress pans and cavities of large trees. Males guard such breeding sites religiously and mate with visiting females. Both sexes may be seen along forest trails close to areas with mature trees or bamboo groves.



Photo: Robin Ngiam Wen Jiang

Distribution: Bukit Timah and Central Catchment Nature Reserves, and adjacent nature parks such as Dairy Farm and Windsor Nature Parks.

Threats: Restricted distribution within which it is rare. As a stenotopic species which requires very specific breeding conditions, habitat loss is the most existential threat. For example, severe drought from climate change may vastly reduce the availability of phytotelmata.

Scientific Interest and Potential Value: It is a good candidate for applied research in the use of artificial phytotelmata.

Conservation Measures: Protection of big trees in nature reserves for water cavities. Also non-removal

of fallen trees or large branches to allow formation of natural water receptacles. Provision of artificial phytotelmata which has been successful (albeit serendipitously) for another cavity breeding dragonfly, *Cratilla metallica*.

Scientific Name:
Risiphlebia dohrni (Krüger, 1902)

Common Name:
Pot-bellied Elf

Order/Family:
Odonata: Libellulidae

National Status: Endangered (EN)

Habitat and Ecology: Inhabits very dense inundated swampy forests where males guard small pools for long period under a dense canopy, illuminated by narrow shafts of sunlight. Females oviposit in these sites, guarded by males. Generally perches very low and due to small size, inconspicuously, on emergent vegetation. May occasionally bask at edges of swampy forests.

Distribution: Recorded regularly in Nee Soon Swamp Forest only. A single male sighting at Thomson Nature Park in 2016.

Threats: Restricted distribution within which it is rare. Prolonged drought in Nee Soon Swamp Forest resulting from climate change will cause loss of breeding habitats.

Photo: Robin Ngiam Wen Jiang



Scientific Interest and Potential Value: Larva of genus is still unknown to science. With sustained searching, it could be discovered in the known locality.

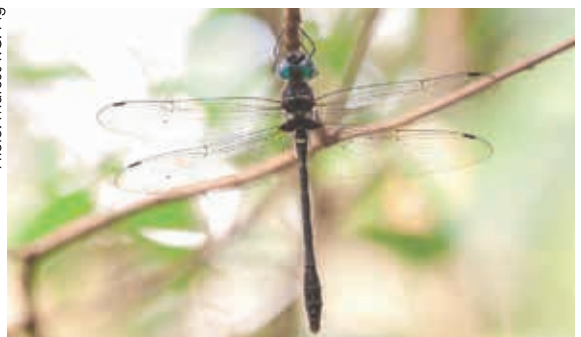
Conservation Measures: Continued protection of Nee Soon Swamp Forest with climate change mitigation. Conservation of swampy habitats in buffer parks may facilitate range extension so that the species is more widely distributed.

Scientific Name:
Macromia cincta Rambur, 1842

Common Name:
Stream Cruiser

Order/Family:
Odonata: Macromiidae

Photo: Marcus F.C. Ng



National Status: Endangered (EN)

Habitat and Ecology: Occurs at slow-flowing streams in swampy forests. Males patrol streams and shaded portions of trails and may also dart about over the canopy at high speeds, chasing rivals. During overcast weather both sexes may descend to perch sedentarily on lower vegetation. Individuals may hunt along shaded trails near swamps, flying in a regular loop. Females oviposit alone in shaded streams in swampy forests, hovering near the streambank while repeatedly stabbing the abdomen into the water to release batches of eggs. Larva is benthic and found amid decaying vegetation.

Distribution: Recorded in the Central Catchment Nature Reserve, Windsor and Dairy Farm Nature Parks.

Threats: Restricted distribution within which it is rare. Soil erosion along waterways would degrade breeding sites with heavy sedimentation.

Scientific Interest and Potential Value: It is part of Singapore's indigenous biological heritage and of general educational value and interest to the public and nature enthusiasts.

Conservation Measures: : Habitat rehabilitation of eroded streams. Stringent environmental and monitoring of developments in the vicinity of conservation areas to prevent sedimentation in forest streams.

Scientific Name:

Copera vittata (Selys, 1863)

Common Name:

Variable Featherlegs

Order/Family:

Odonata: Platycnemididae

National Status: Vulnerable (VU)

Habitat and Ecology: Found at sluggish channels and shallow pools in swampy forests. Younger 'ghost' forms may forage in undergrowth further from the water. Perches very low and keeps to the shade. Larvae live among detritus at bottom of swampy pools.

Distribution: Rare and local in Singapore. Recorded from swampy forests in the Western Catchment, Admiralty Park, Nee Soon Swamp Forest, Pulau Ubin and Pulau Tekong and a scattering of small remnant forests slated for development.

Threats: Restricted distribution, and rare. Development of unprotected remnant forests will result in habitat loss.

Scientific Interest and Potential Value: It is part of Singapore's indigenous biological heritage and of general educational value and interest to the public and nature enthusiasts.

Photo: Robin Ngiam Wen Jiang



Conservation Measures: Conservation and habitat rehabilitation of swampy forests in green spaces as part of development planning and design.

Scientific Name:
Prodasineura interrupta (Selys, 1860)

Common Name:
Interrupted Threadtail

Order/Family:
Odonata: Platycnemididae

National Status: Critically Endangered (CR)

Habitat and Ecology: Found at sluggish streams and rivulets in shaded swampy forests where the stream substrate is a mix of mud/sand with ample packs of leaf litter and detritus. Males guard small territories in sunlit spots. The females are very seldom encountered.

Distribution: Only in Nee Soon Swamp Forest where they are very localised.

Threats: Restricted distribution within which it is uncommon. Hydrological change in Nee Soon Swamp Forest resulting from climate change which may cause habitat disruption.



Photo: Robin Ngiam Wen Jiang

Scientific Interest and Potential Value: Type specimens collected by Alfred Wallace in Singapore, supposedly from Bukit Timah where it is no longer found.

Conservation Measures: Continued protection of Nee Soon Swamp Forest with climate change mitigation.

Scientific Name:
Drepanosticta quadrata (Selys, 1860)

Common Name:
Singapore Shadowdamsel

Order/Family:
Odonata: Platystictidae

National Status: Vulnerable (VU)

Habitat and Ecology: Found at deeply shaded streams mainly in hilly forests but also swamp forests. As the name implies, prefers very dim spots by small streams and seepages, where it is inconspicuous except for the blue 'tail-light' on the abdomen. Perches very low, and when disturbed, hovers briefly before settling on vegetation nearby. Females have been observed ovipositing on twigs above fast-flowing, shaded streams. Larva found among plant debris or under stones in well-shaded small streams and seepages.



Photo: Robin Ngiam Wen Jiang

Distribution: Recorded in Bukit Timah and Central Catchment Nature Reserves, Dairy Farm and Windsor Nature Parks.

Threats: It has a restricted distribution within which it is common. Prolonged droughts or wet season from climate change may drastically affect the hydrology of hill streams in Bukit Timah Nature Reserve where the species is most commonly found.

Scientific Interest and Potential Value: Type specimens were collected in Singapore by Alfred Wallace. IUCN global red list status is Vulnerable as its recorded with certainty only from Singapore and Johor, Peninsula Malaysia.

Conservation Measures: Continued protection of conservation areas with climate change mitigation measures.

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Orthoptera – Crickets and Katydid

TAN MING KAI

Scientific Name:

Asiophlugis temasek Gorochov & Tan, 2011

Common Name:

Temasek Crystal Predatory Katydid

Order/Family:

Orthoptera: Tettigoniidae



National Status: Endangered (EN)

Habitat and Ecology: Recorded from lowland forest.

Distribution: Apparent endemic to Singapore. Found in the Bukit Timah Nature Reserve (BTNR), Dairy Farm Nature Park as well as the Central Catchment forest.

Threats: Loss of habitat and a restricted distribution.

Scientific Interest and Potential Value: This species was mentioned in the 2nd edition of the Singapore Red Data Book as the common relative of Missing Marvellous Katydid *Asiophlugis thaumasia* (Davison et al., 2008), but it remained undescribed until 2011 (Gorochov & Tan, 2011; Tan, 2011). The males produce ultrasonic sounds reaching 57 kHz (Tan et al., 2018).

Conservation Measures: Forest conservation whereby damage to forest and loss of habitats is ceased will help.

Scientific Name:

Svistella chekjawa Tan & Robillard, 2013

Common Name:

Chek Jawa's Mangrove Sword-tailed Cricket

Order/Family:

Orthoptera: Trigonidiidae



National Status: Critically Endangered (CR)

Habitat and Ecology: Recorded only from the canopy of mangrove forest.

Distribution: Apparent endemic to Singapore. Recorded from mangrove forests around Singapore.

Threats: Loss of habitat and a restricted distribution.

Scientific Interest and Potential Value: This species is an obligatory mangrove species and appears to favour the leaves and stems of *Bruguiera cylindrica* (Tan, 2013).

Conservation Measures: Forest conservation whereby intact forest is protected as well as poaching prevention would be helpful.

Scientific Name:
Gryllotalpa fulvipes
(Saussure, 1877)

Common Name:
Yellow-legged Mole Cricket

Order/Family:
Orthoptera: Gryllotalpidae

National Status: Vulnerable (VU)

Habitat and Ecology: A soil burrower, recorded from and believed to be confined to primary forest. Specimens collected in 2011 at Dairy Farm Loop provided evidence that they also occur in secondary forest.

Distribution: Recorded from Peninsular Malaysia and Singapore. Found at Bukit Timah Nature Reserve (BTNR) as well as in the Central Catchment forest.

Threats: Habitat degradation.

Photo: Tan Ming Kai



Scientific Interest and Potential Value: This species was mentioned in the 2nd edition of the Singapore Red Data Book. The males, while hidden under ground, produce a low-frequency call to attract females only during a short period of time around dusk (and/or dawn) (Tan, 2012a; Tan & Kamaruddin, 2016). Human disturbance during this period may hinder mating opportunities and reproductive behaviours.

Conservation Measures: Forest conservation whereby intact forest is protected as well as poaching prevention would be helpful.

Scientific Name:
Singapuriola separata Gorochov
& Tan 2012

Common Name:
Singapore's Feather-winged
Cricket

Order/Family:
Orthoptera: Gryllidae

National Status: Vulnerable (VU)

Habitat and Ecology: Found in primary and secondary forest.

Distribution: Endemic from Singapore. Found in the Bukit Timah Nature Reserve (BTNR) and also from the Central Catchment forest.

Photo: Tan Ming Kai



Threats: Loss of habitat and a restricted distribution.

Scientific Interest and Potential Value: This monotypic genus is endemic to and named after Singapore. Males hide among dead leaves or hollow branches and call for females.

Conservation Measures: Forest conservation whereby damage to forest and loss of habitats is halted will help.

Scientific Name:

Glenophisis singapura Tan, 2012

Common Name:

Spectacular Spider-legged Katydid

Order/Family:

Orthoptera: Tettigoniidae

National Status: Critically Endangered (CR)

Habitat and Ecology: Found in primary and secondary lowland forest.

Distribution: Endemic to Singapore, recorded only from a few locations within the Central Catchment forest.

Threats: Loss of habitat and a restricted distribution.

Scientific Interest and Potential Value: This brightly coloured, endemic predatory species is very rarely encountered, with fewer than 10 specimens in

Photo: Tan Ming Kai



the LKCNHM (Tan, 2012b). There are only five species from this genus, all of them are found within a small distributional range of Indochina, Malay Peninsula, Sumatra and Borneo (Tan, 2012).

Conservation Measures: Forest conservation whereby damage to forest and loss of habitats is halted will help. Being charismatic, this katydid may be subject to disturbance by overzealous night macro-photographers.

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Phasmida – Stick Insects

FRANCIS SEOW-CHOEN

There is an urgent need to implement conservation measures in Singapore for the smaller less “loveable” or less charismatic creatures. Conservation measures can start by first understanding the ecology of these animals.

Tay and Seow-Choen (1996, pp. 181–190) were the first to discuss the relationships of plant families and stick-insects in Peninsular Malaysia and Singapore. This enabled the captive breeding and made possible the detailed observations of many species of stick-insects. The extinction of insect species carries consequences to humans. Insects are needed for the continued presence of a multitude of plant and animal species.

Even as the people in Singapore learn to live in harmony together and to work and play together for the common good, humans must learn to live in harmony with nature too. Our continued transformation into a City in Nature depends on the continued survival of insects as well.

Four books and numerous papers have been published on the stick insects of Singapore and Peninsular Malaysia to date (Brock 1999, Seow-Choen 2000, Seow-Choen 2005). Seow-Choen published two books (1997, 2017a) on stick insects of Singapore. Seow-Choen, Brock and Seow-En (1994) and Seow-Choen (1997a, 2011, 2012, 2019) published species lists or general write-ups on stick insects of Singapore.

Seow-Choen (2008) published a list of rare and threatened phasmids for Singapore in the second edition of the Singapore Red Data Book. It was stated in the introduction to the chapter that habitat destruction was a more severe threat to the survival of insects than that posed through collecting by hobbyists or even commercial collecting. The disturbance of primary forests, felling of trees, damming and concretisation of rivers as well as the introduction of alien invasive species such as rats have been well documented as major threats to phasmids and other wildlife.

Phasmids tend to be elusive and well-hidden even when they are abundant. Many species are nocturnal and are almost impossible to find during the day. Some species which are very specialised feeders on only a few plant species are rare because their host plants are also rare. Other phasmid species are rare as they are canopy dwellers or leaf-litter species and are therefore difficult to find unless they are actively searched for. The abundance or rarity of insects such as phasmids cannot be determined in the same way as for mammals or birds. The lifespan of all phasmid species is very short and is measured in terms of months. Some so-called common phasmid species in Singapore are sighted at most two or three times a year in some years and yet can appear in higher numbers in other years. Rare species may be seen as frequently as once in several years. Some species which have not been seen for at least 30 years are listed as presumed nationally extinct and brief mention has been made of these species below. For all practical purposes, most stick insects are rarely seen and there are only a few species which can be clearly listed as common. Some of the species which were listed as threatened by Seow-Choen (2008) have since been found to be more common and not threatened when their preferred habitats were uncovered. These common species are not dealt with in this chapter which is for threatened species.

As for presumed Nationally Extinct (NEx) stick insects, a recent review of the collection in the Sarawak Museum Department revealed a female of *Anarchodes annulipes* (Gray, 1835) labelled as having been collected in Singapore in May 1905. This beautiful species is common in the lowlands as well as the mid-montane regions of Peninsular Malaysia. *Calvisia* (*Calvisia*) *sangarius* (Westwood 1859) is only known from historical records. It is a very specialized feeder eating only the leaves of *Scorodocarpus borneensis*, a tree which is native to Singapore but is now Critically Endangered (this volume).

Seow-Choen (1997) published the finding of the first and only specimen of *Diacanthoidea diacanthos* (Haan 1842) in Singapore. No other individual has been seen or specimen collected since that time. A female *Diacanthoidea*

malaccensis (Kirby 1904), found at Ulu Pandan on 5 August 1920, is in the Naturalis Biodiversity Centre Netherlands (NBCN), Leiden. This species has not been recorded in Singapore since that time. In 1920 there would have been significant areas of swamp forest near Ulu Pandan but it now has only a remnant wooded regenerated forest called Clementi Woods.

There are two males of *Marmessoidea rosea* (Fabricius 1793) collected in Singapore deposited in the Natural History Museum, United Kingdom (NHMUK), London. The foodplant of this phasmid is plentiful in Singapore. The species therefore has potential to be successfully re-introduced back into Singapore.

The author has only ever seen two specimens of *Phobaeticus serratipes* (Gray 1835) in Singapore. A pilot experiment with NParks to re-introduce this species into the forests at Bukit Timah Hill did not meet with success as Long-tailed Macaques were observed to predate on the re-introduced individuals. No progeny was ever observed. Two specimens of the large and impressive *Heteropteryx dilatata* (Parkinson 1798) caught in Singapore were deposited in the Natural History Museum in Vienna. Seow-Choen (2017) suggested that they might have been feral. In any case this species is now thought to be extirpated in Singapore. Seow-Choen (2008), however, noted that photographs were taken subsequently of an adult male around MacRitchie Reservoir. No other sightings have been recorded since.

Scientific Name:

Baculofractum insigne (Brunner 1907)

Common Name:

Broken Twig

Order/Family:

Phasmida / Lonchodidae

National Status: Critically Endangered

Habitat and Ecology: The main threat must surely be the restriction of host-plants of this species and the degradation of their natural habitat. This species feeds on *Ixora* in captivity. This species is unusual because it is the only example in the subfamily Lonchodinae where the male possesses wings. All other genera within Lonchodinae lack wings in both sexes.

Distribution: Only a few specimens of this species have so far been found in a small patch of forest around the live-firing area of Mandai Track 7.

Threats: Habitat loss.

Scientific Interest and Potential Value: Commercial breeding as pets.

Photo: Francis Seow-Choen



Mating pair of *Baculofractum insigne*.

Conservation Measures: Habitat restoration is required.

Scientific Name:

Calvisia (Conocalvisia) virbius virbius (Westwood 1859)

Common Name:

Green Knob-Neck

Order/Family:

Phasmida / Lonchodidae

National Status: Critically Endangered

Habitat and Ecology: The original host plant of this species is unknown. In captivity, this species feeds on *Mangifera indica*.

Photo: Francis Seow-Choen



Mating pair of *Calvisia (Conocalvisia) virbius virbius*.

Distribution: Two female individuals recorded at Mandai Track 7. Males have not been found so far.

Threats: Habitat loss.

Scientific Interest and Potential Value: This beautiful species is plentiful in the Tapah Hills, Perak, but rare in Singapore. Its ecology needs to be better elucidated.

Conservation Measures: Habitat restoration.

Scientific Name:
Diardia battak Redtenbacher
1908

Common Name:
Thin-Spine Neck Stick

Order/Family:
Phasmida / Lonchodidae

National Status: Critically Endangered

Habitat and Ecology: The original host plant of this species is unknown. This species feeds on *Stachytarpheta indica* in captivity.

Distribution: Only a few female specimens had been sighted in 2011 near the life firing range of Nee Soon Swamp Forest. No males have been found so far in Singapore.



Adult female *Diardia battak*.

Threats: Habitat loss.

Scientific Interest and Potential Value: This beautiful species is common in Peninsular Malaysia and Sumatra but is rare in Singapore. Its ecology needs to be better elucidated.

Conservation Measures: Habitat restoration.

Scientific Name:
Lobonecrosia subflava Brock &
Seow-Choen 2000

Common Name:
Lobe-legged Stick

Order/Family:
Phasmida / Lonchodidae

National Status: Critically Endangered

Habitat and Ecology: Feeds on Rengas and therefore the survival of this species depends on the survival of this plant.

Distribution: Only a few specimens of this species had, so far, been found in a small patch of forests around the live-firing area of Mandai Track 7 as well as along MacRitchie Trail.



Mating pair of *Lobonecrosia subflava*.

Threats: Habitat loss.

Scientific Interest and Potential Value: Currently, almost nothing is known of its ecology.

Conservation Measures: Habitat restoration.

Scientific Name:

Phaenopharos struthioneus
(Westwood 1859)

Common Name:

Small-Red-Wings

Order/Family:

Phasmida / Lonchodidae

National Status: Critically Endangered

Habitat and Ecology: Threats to this species is not known but the degradation of their natural habitat is thought to be important. This species is common in Peninsular Malaysia. In captivity, this species feeds on *Psidium guajava*, *Mangifera indica* and *Rubus moluccanus*.

Distribution: Only a few specimens have been encountered at Terentang Trail and at Mandai Track 7. The first specimen was rediscovered in 2015.



Photo: Francis Seow-Choen

Adult female *Phaenopharos struthioneus*.

Threats: Habitat loss.

Scientific Interest and Potential Value: Commercial breeding as pets.

Conservation Measures: Habitat restoration.

Scientific Name:

Planososibia tommykoi Seow-Choen 2017

Common Name:

Tommy's Sosibia

Order/Family:

Phasmida / Lonchodidae

National Status: Critically Endangered

Habitat and Ecology: Only the female holotype and a male paratype of this species had ever been found.

Distribution: The female specimen was found in Nee Soon Swamp Forest. The male specimen was found in Upper Peirce Reservoir Road, next to Nee Soon Swamp Forest.

Threats: Habitat loss.



Photo: Francis Seow-Choen

Adult female *Planososibia tommykoi*.

Scientific Interest and Potential Value: Nothing of its ecology is known currently.

Conservation Measures: Habitat restoration and research into this species.

Scientific Name:

Kerabistus (Kerabistus) murphyi
Seow-Choen 2017

Common Name:

Murphy's Kerabistus

Order/Family:

Phasmida / Aschiphasmatidae

National Status: Critically Endangered

Habitat and Ecology: Nothing is currently known of its ecology.

Distribution: Only a few individuals of this species have so far been found in Bukit Timah and the Upper Peirce area.

Threats: Habitat loss.

Photo: Francis Seow-Choen



Mounted specimen of female *Kerabistus (Kerabistus) murphyi*.

Scientific Interest and Potential Value: Nothing of its ecology is known.

Conservation Measures: Habitat restoration and research into this species.

Scientific Name:

Haaniella mecheli macroptera
Hennemann, Conle, Brock &
Seow-Choen 2016

Common Name:

Spiny Brown Stick

Order/Family:

Phasmida / Heteropterygidae

National Status: Critically Endangered

Habitat and Ecology: This bulky and spiny species lays eggs which the female pushes into damp soil. *Haaniella* species are very popular as pets in Europe and in the USA due to their very attractive spines and behaviour.

Distribution: This species is only found in and around Nee Soon Swamp Forest.

Threats: Habitat loss.

Scientific Interest and Potential Value: This species was first described as *Haaniella macroptera* Hennemann, Conle, Brock & Seow-Choen 2016.

Photo: Francis Seow-Choen



A pair of *Haaniella mecheli macroptera*.

Seow-Choen (2020) showed that it is a subspecies of *Haaniella mecheli* (Redtenbacher 1906). Further study of its ecology is needed. This species has potential as a pet.

Conservation Measures: Habitat restoration.

Scientific Name:

Planispectrum bengalense
(Redtenbacher 1906)

Common Name:

Pygmy Stick

Order/Family:

Phasmida / Heteropterygidae

National Status: Vulnerable

Habitat and Ecology: Hardly anything is known about this species. It is currently thought that this species feeds on decaying leaves but this is still unconfirmed.

Distribution: Widely distributed from Peninsular Malaysia, Sumatra and Java.

Threats: Habitat loss.

Photo: Francis Seow-Choen



Parthenogenic female *Planispectrum bengalense*.

Scientific Interest and Potential Value: This seems to be a parthenogenetic species and males have never been found. Research into why and how this came about may help with understanding the issues that single sex species face.

Conservation Measures: Research into species ecology and on its rearing.

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