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KRUMITHURU

INSECTS OF SRI LANKA

OCTOBER, 2018
VOLUME 01
ISSUE 02



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Editing staff

Chief editor

Anushamalee De Soysa

Editors

Imaduwa Priyadarshana
Chinthaka Wijesinghe
Ruwangika Gunawardana
Narmadha Dangampola
Dushan Muthunayake

Subject editors

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Himesh Jayasinghe
Tharindu Ranasinghe
Nuwan Chathuranga

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What is BCSSL

“
Butterfly Conservation Society of Sri Lanka is a non-government, non-profit organization that has been established to create awareness and connection between insect fauna and humans, mainly specializing about the Lepidoptera species of the island. The society consists of scientists, as well as enthusiasts who are spread around the country and throughout the world, spreading knowledge and awareness in conservation of Lepidoptera, other insect fauna and the flora groups related with their ecosystems.

”

විලෝපිකයා හා ගොදුරු අතර අතේ අතේ හුස්මකටත් වඩා අඩු පරතරයකි. දිනුම අත්වන්නේ වඩා ඉක්මනින් වන්නා හටම පමණි. ශක්තිවන්තයාම දිනන්නායැයි පැවසෙන ලොවක, කපිසරකම හා උපායශීලීත්වය, දුබලයා හට බොහෝවිට සහජයෙන්ම ලැබී ඇති දායාද වේ. මෙය මනිසා හට පමණක් නොව, ලොව පුරා සිටිනා සියලුම ජීවී කොට්ඨාශ සඳහා පොදු ධර්මතාවයකි.

තණ බිම් වලත්, අතුපතරත්, පිණි වසිරි, හිරු එළියට දිලෙන, මකුළුදැල, හිඟා හා දිවා සැරි කෘමි සතුන් සඳහාම මැවූ මාරකයකි. මෙවැනි වූ ද, ඊට හාත්පසින්ම වෙනස් වූ මාරක, දිවා රූ නොමැතිව, අහසේ ද, ගොඩබිම සහ ජලයේ ද සැඟවී කෘමි ලොව සමධරතාවය එකලෙස පවත්වා ගැනීමට උදව් වේ.

ශරීර ප්‍රමාණය; විලෝපිකයා ගොදුරු බවටත්, ගොදුරු විලෝපිකයා බවටත්, පත්වීමට හේතුසාධකයක් නොවන අතර, වේගය, හා විස යනු ධනාත්මක අනුවර්තනයන් වේ. මෙම කෘමි අනුවර්තන, මනිස් තාක්ෂණික මෙවලම් ලෙසට ගොඩනැගීම, තාක්ෂණය අතින් ලබාගන්නා විශාල ජයග්‍රහණයක් වුවත් මානුෂීයව එය අප සමඟේ පරාජයකි.

විලෝපිකයා කොතරම් දරුණු වුවත්, එය අප විසින් ලොව දකින කෝණය අනුව වෙනස් වේ. විලෝපිකයා හා ගොදුරු යන ජීවීන් දෙදෙනා හටම, ඔවුන්ට වෙන් වූ විචිත්‍රාකාර ජීවන රටා පිහිටයි.

එම ජීවන රටා තුළ සිය වර්ගයා රැකබලාගැනීම, බෝකිරීම, හා පෝෂණය කිරීම යන කාර්යභාරය අනිවාර්ය වේ. සියළු කෘමියන්ගේ හැසිරීම් හිඟාචාර අධ්‍යයනය කල යුතු ස්වභාවධර්මයේ විශ්මිත නිර්මාණයන් වේ. එනිසා, අප සමඟ එක් වී, කවුළු දොරින් ඔබ්බෙහි ඇති, ලෝකය දෙස බලන්න...

There is only a thin line between predator and prey. In this world full of competition, only the fittest would survive. This common law applies not only for humans but also to every living thing in this planet, it is not an exception to the insect world.

The spiders that are living all around us have special tactics of their own in catching prey. The beautiful yet annoying, weavings of cobwebs are one of Mother Nature's booby traps, thus making the grass fields and trees sprinkled with dew drops that mirror the sun's ray, a deathly invitation for the small insects and other invertebrate animals that linger too long to see the devils that hide in them.

The predators, spread their dark clouds of doom across sky, earth and the waters conquering every inch they can. When you are an insect, wherever you look, there is death. Size doesn't estimate the number of prey, venom does. Speed, venom and aggressiveness come hand in hand as destructive mechanisms. These adaptations since have been inspired the minds of humans in making weapons of chaos and mass destructions. Even though these mechanisms are an action for survival in the insect world, for humans, it is a failure from the side of conscience to destroy one another in the name of wealth and power.

Eventhough they are dangerous to be either the predator or a prey, they all are living beings, who has decorative lifestyles of their own while they eat, breed, and live among us. And, it's with an open, inviting mind in to the nature of this heavenly planet, one must see beyond the coloured looking glass.

MEET THE LOCALS

A meeting with a butterfly *Psyche* (*Leptosia nina*)

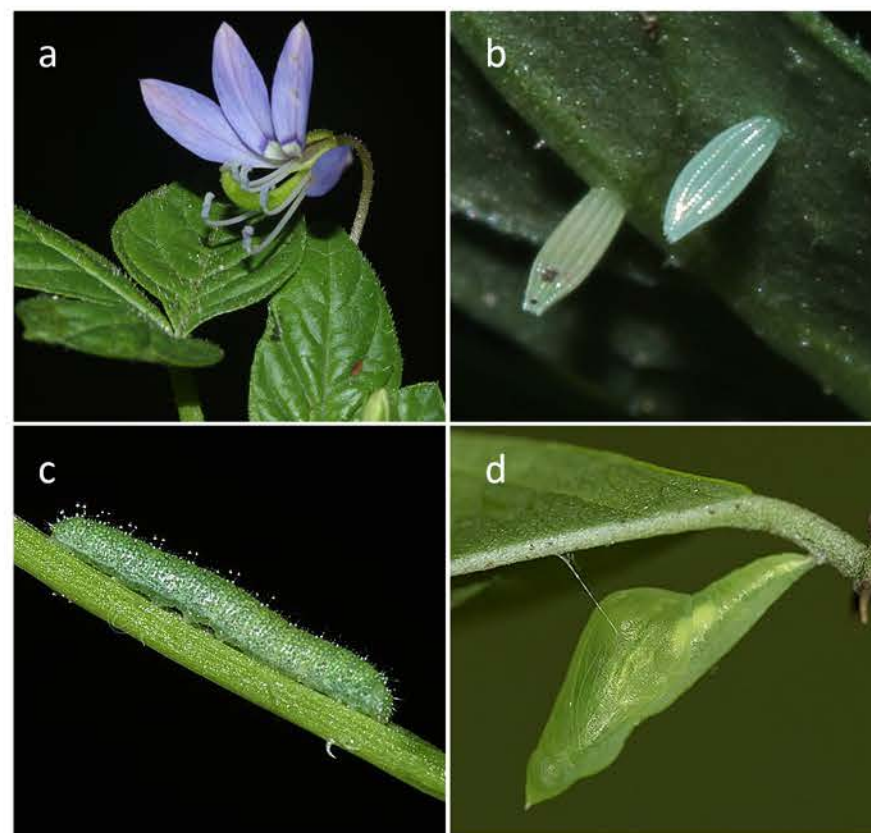
Leptosia nina nina (Fabricius, 1793), “Psyche” is one of the commonest butterflies in our gardens with a slow motion flutter. Widely distributed due to the abundance and wide spreading of the larval food plants. Psyche flies all year around in the wet zone while showing a seasonal abundance after inter-monsoonal and monsoonal rains in the dry zone. According to the National Red List 2012 of Sri Lanka (Moe 2012), the species conservation status has been described under the least concern.

Rounded wings of both male and female look similar in color, which is chalky white on upperside with a clear black irregular patch at the forewing apex with a black spot at the edge of the cell. These patches are faintly visible through the underside, especially against the light. Network of finely speckled lines are visible on the underside of the hind wing and apical part of the fore wing mostly in newly emerged individuals. The wingspan of this delicate beauty is about 35-45 mm. There are no other species similar to psyche on the island.



Image Source : <http://yutaka.it-n.jp/pie/20010010.html>

Adult flies less than half a meter above the ground and loves to spend time in herby weed growths under dappled light patches in shady areas. Feeds on nectar of small herbaceous plants having small corolla tubes like, *Cyanthillium cinereum*, *Rungia repens*, *Justicia procumbens*, *Spermacoce* sp. and *Oldenlandia* sp..



(a) . Psyche Feeding Plant (b) . Psyche Eggs (c) . Psyche Larva (d) Psyche Pupa © Sujeeva Gunasena

Adult females lay eggs singly on the underside of leaves near the ground. The common larval food plant in wet and intermediate zones is *Cleome rutidosperma*, while in dry zone they are *Cadaba fruticosa*, *Capparis roxburghii*, *Capparis sepiria*, *Capparis zelanica*, *Cleome gynandra* and *Crateva adansonii*.

Small size, cryptic colors and little movements make the larvae unnoticeable. Larvae feed on young flushes of leaves and pupate on the same plant not far from the last feeding place. The pupae can be green to light brown in color depending on the immediate surroundings.

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Feeding plant of the Psyche Larvae

There are several feeding plants of Psyche butterfly larvae in the family Cleomaceae that belong to the genus *Cleome* and commonly known as spider flowers, spider plants, spider weeds or bee plants while “wal aba - වල් අබ” in Sinhala.

There are eight native *Cleome* species found in Sri Lanka. From those, only four species have been recorded as host plants of Psyche. Those are....

a. *Cleome aspera* - Rough Spider Flower
Habit: Annual Herb
Flowering and fruiting: Throughout the year
General Habitat: Deciduous forests, also in the plains

b. *Cleome gynandra* - African cabbage
Habit: An erect annual herb, up to 1 m tall.
Flower: In corymbose racemes, pink or white.
Flowering throughout the year.
C. gynandra is used as a green vegetable.

c. *Cleome rutidosperma* - Fringed spider flower
Habit: Annual, erect or decumbent herb, to 1 m high
Flowering and fruiting: May-November
This species is an invasive weed throughout most lowland wet tropical areas of Asia and Australia.

d. *Cleome viscosa* - Asian spiderflower
Habit: Erect profusely branched .
woody annual herbs
Flowering and fruiting: March-July
The leaves are used as external application to wounds and ulcers. The seeds are anthelmintic and carminative. Juice of leaves is used as remedy against discharge of pus from the ear.



Photographs by Himesh Dilruwan Jayasinghe

Early stages of Psyche have been recorded in the following plants as well

Cadaba fruticosa (Capparaceae)
Capparis roxburghii (Capparaceae)
Capparis sepiaria (Capparaceae)
Capparis zeylanica (Capparaceae)
Crateva adansonii (Capparaceae)
Cardamine hirsuta (Brassicaceae)
Nasturtium officinale (Brassicaceae)

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EYES, EYES, BABY

Anatomy of Insect Eyes and Future of Technology



Image credit: Chinthaka Wijesinghe

If you've ever seen a macro photograph of the eyes of a dragonfly or a house fly, certainly you would have been amazed by it. Big, bizarre eyes, with hundreds of tiny facets reflecting light in a wholly different way. This is because they are compound eyes. Even though the basic functionality is the same, anatomy of eyes in different species vary in many ways. The structure of an animal's eye is determined by the environment in which it lives, and the behavioural tasks it must fulfil to survive.

Humans have simple eyes; eyes which are composed of a single lens that collects and focuses light onto a layer of light sensitive cells on the retina. In contrast, compound eyes are made up of a large number of subunits that work as separate photoreceptors, i.e. light sensitive units. The majority of arthropods fashion compound eyes while some have ocelli. Ocelli are the simplest type of eyes, consisting of a single lens and several sensory cells. So arthropods have both compound eyes and ocelli.

As the word itself suggests, a compound eye is comprised of hundreds of repeating units called the ommatidia, each of which functions as a separate visual receptor. The final image perceived is a combination of inputs from a number of these units. Ommatidia are located on a convex surface, each one pointing at a different direction. Therefore, compound eyes possess a very large view angle and can also detect fast movement. Powerful insect predators such as dragonflies and robber flies make use of this feature in hunting. However, as the individual lenses are very small, the resolution of the perceived image might be very low. A dragonfly has an average of 30000 ommatidia in each eye. In moths, these structures are covered by a water-repellent coating that minimizes light reflection on the eye surface.

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This helps them to see better in the dark by reducing glare and makes it difficult for predators to spot them by looking for the twinkle in their eyes.

Scientists are conducting thorough research on this fascinating area- the anatomy of insect eyes and have come up with interesting findings where it could help improvise new technologies that were only dreamt of a couple of years ago.

A team of scientists in the US and Taiwan has developed a fabrication technique using nanoparticles that resemble the structure of the anti-reflective coating in moths' eyes. Another group of researchers has developed a process enabling the production of a two-millimetre flat camera for smartphones. This camera, aptly named 'facet VISION', has a lens that is partitioned into 135 tiny facets, like in compound eyes. Each facet receives only a small section of its surroundings. In this age where the need is to make every bit of hardware smaller, this could be a perfect solution for smartphone manufacturers.

Another breakthrough finding was using the scaffolding structure of a fly's eye for perovskite solar cells. Perovskites are crystal structures, some of which absorb light and produce charge carriers. They've been known for their ability to efficiently harness solar power, but have been dismissed until recently due to their unstable nature. The fragile ommatidia in a fly's eye are protected by a scaffold. Building the perovskite solar cells within such a hexagonal scaffolding made using a durable polymer seemed to be an intriguing solution for this instability problem.

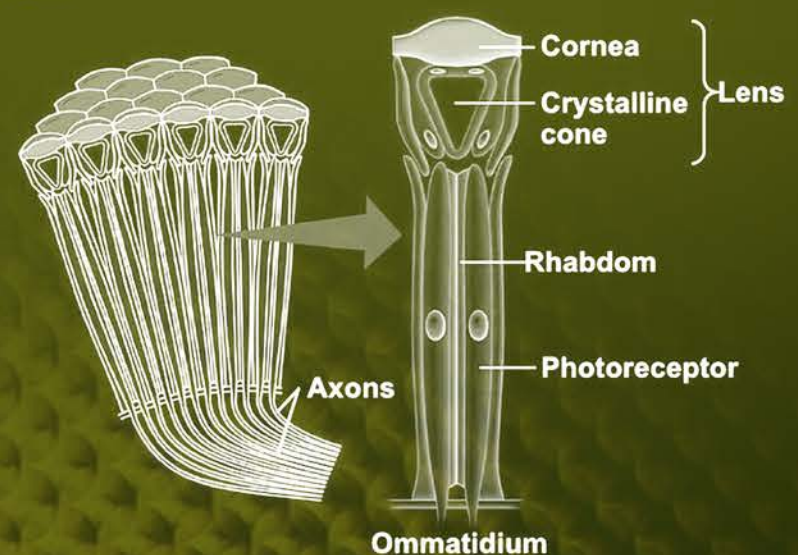


Image source : <https://www.slideshare.net/jayswan/ohhs-ap-biology-chaper-50-presentation>

Like most of the things that were invented through the times by mankind, future innovations will keep being inspired by mother nature, and it suffices to say that insect eyes will be playing a remarkable part in it.

LOCAL SIGHTINGS

Recent observations of Shiva Sunbeam *Curetis siva* Evans, 1954 (Lycaenidae) from Sri Lanka

By Himesh Jayasinghe

Shiva Sunbeam, a mystery butterfly has been flying in Sri Lankan Jungles without being noticed by anyone until it was correctly identified by eminent lepidopterist Dr. George van der Poorten in 2017.

Prior to very recent observations of a female of this species, that was found at Makandawa forest reserve (6.9851 N, 80.4030 E) on 2018 July 23 that was flying at the edge of an abandoned paddy field, another experienced lepidopterist, Mr. Sarath Rajapakshe had reared a sunbeam on *Pericopsis mooniana* (නැදුන්) at Sinharaja (6.4267 N, 80.4009 E) in 2007 during his final year research of the University and now we think that would also be a Shiva Sunbeam.

It is worth to mention that this species has also been recorded from Meethirigala forest reserve (6.9967 N, 80.1733 E) as well.

The new butterfly was recently found during the last field visit conducted by BCSSL to rainforests of Galle district. One female was seen at Kanneliya forest reserve (6.2534 N, 80.3462 E) on 11th August, 2018 and again another female was seen at Dediyaigala forest reserve (6.1767 N, 80.4154 E) on 12th August 2018. The latter was observed laying eggs.

Although the Indian Sunbeam and Shiva Sunbeam are quite similar in appearance, both sexes of the latter can be distinguished by having a thick, distinct brownish distal band on under side. This band consists of diffused rectangular sections and it is mostly distinct in the fore wing and shades towards the tornus of the hind wing.

According to the data that we've got at the moment, Shiva Sunbeam is a widespread species in lowland rain forests and adjacent villages, especially there are *Pericopsis mooniana* trees at the hedges of paddy fields. Although its abundance is yet to be determined.

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BCSSL PAST EVENTS

Butterfly & Dragonfly Race and Kids' Program - 2018

Two annual programs of BCSSL, "Butterfly and Dragonfly Race 2018" and Kids' Program "Grow With Nature 2018" were concluded successfully on 19th May, 2018.

Team NatBeHo-A from Horizon Campus won the first place in B&D Race while Team Great Orange Tip from University of Moratuwa was the runner-up.



Student Workshop on Butterfly Identification and Ecology - 2018

A workshop on Butterfly Identification and Ecology was conducted by BCSSL from 14th to 17th of June 2018 in the Knuckles Mountain Range. The event was sponsored by "Adventure Birding". There were 24 participants with three instructors, where Mr. Himesh was the chief trainer and Mr. Amila and Ms. Nimalka were the supporting trainers for the entire group. The first two days were spent around Rambukoluwa area where the Rambukoluwa Forest bungalow was reserved as the camp site but on 16th the team had to move to Illukkumbura where the Jay's site was chosen as the camping site.

The workshop covered numerous subject areas including introduction to butterflies, field ethics, disciplines and field notes, field identification methods of butterflies, habitat utilization and behaviors of butterflies, identification of flowering plants, interaction between butterflies and plants, research methods, conservation of butterflies in Sri Lanka. Field sessions, lectures, discussions and nature walks were conducted to observe, identify and study butterflies in the Knuckles mountain range.

Team managed to observe nearly 90 species of butterflies and several number of eggs and caterpillars on feeder plants during field sessions around both these areas.



BCSSL PAST EVENTS

BCSSL Field Trip to Pitadeniya, Sinharaja Rain Forest

On 6th of April, 2018, the BCSSL members started their journey to Pitadeniya area which is situated in the upper catchment of Gin Ganga basin at the southern border of the Sinharaja Rain Forest.

It took a long way for us to reach the area via Baddegama, Udugama and finally about 19 km ride from Neluwa to Pitadeniya via Lankagama road. Suddenly, the rain started and we had to leave the vehicle near the “Aranuwa Dola” river bridge and take on a walk to reach the Forest Department Dormitory, Pitadeniya Conservation Center. That was a scenic place just close to Gin Ganga where we arranged to stay for the next two days. After the rain, the group crossed the Aranuwa Bridge and took the route towards Kekuna Ella falls. Because of the persisted rain we didn't observe much fauna except a Hump nosed-lizard on a lichen covered tree trunk, few giant millipedes and pill millipedes on leaf litter.

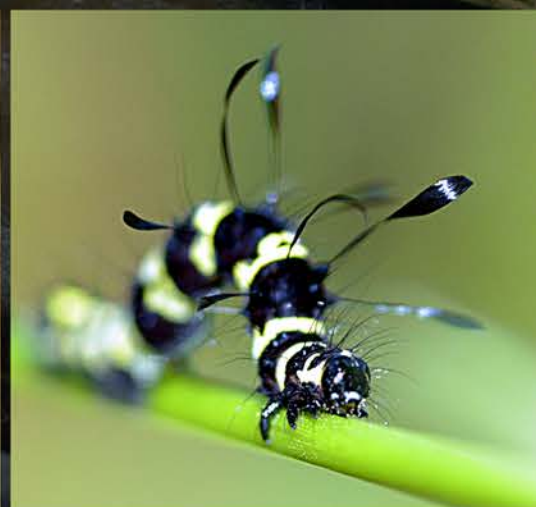
On the same day, we had a night discussion, led by Mr. Himesh Jayasinghe where he mentioned that in late 60s' the government started to log the Rain Forest to extract timber and with the involvement of researchers and public, subsequently, the Sinharaja was declared as a Man and Biosphere Reserve (MBA) and later on as a World Heritage Site by UNESCO.

On the following day, a couple of Sri Lanka Spurfowl and a Layard's Palm Squirrel was seen at the backyard of the kitchen at the Conservation Center. Soon after the breakfast, we took the trail towards Mederipitiya village. There, the most interesting encounters were the Sri Lanka Cingalese Bushbrown, dozens of Lycaenid species and a Five-bar Swordtail larva which was on the ground having its last breaths as it was infested by parasites.

And we spotted several astonishing species of butterflies such as Sri Lankan Blue Oak-Leaf, Common Lascar and Clipper at a tree fall gap where sunlight penetrated through an opening of the forest canopy. Also we were lucky enough to observe some endemic avifauna such as Sri Lanka Chestnut-backed owlet. In the mid of heavy rain we reached Mederipitiya ticketing counter and as soon after the rain stopped we observed plenty of bird species at the forest edge in fair weather.

On the very last day, we left from Pitadeniya and walked towards Lankagama village. Though the sporadic rain disturbed the journey we observed nearly 30 species of butterflies during our stay.

An extract from a full trip report submitted by Vidura Pihillanda.



BCSSL PAST EVENTS

BCSSL Field Trip to Kottawa, Kanneliya and Dediyaigala Rain Forests

The BCSSL had their field visit to Kanneliya Forest Reserve from 10th to 12th August, 2018. On our way, we stopped at Kottawa Conservation Forest for exploring wildlife. Our team spread out into two directions but mainly stuck to a path that was running parallel to the motorway next to one of the boundaries of the forest. We managed to observe a good number of butterflies as well as few dragonflies along with a Green vine snake and several species of Lizards including *Otocryptis wiegmanni*, the Sri Lankan kangaroo lizard.

We reached our ultimate destination by afternoon on the same day and stayed in Kanneliya Forest Reserve Bungalow. The team managed to visit the Anagimala Ella waterfall, which was nearly about 7km walk and back. Visiting a subterranean cave full of bats and several types of aquatic species which were in the stream that was running through the cave was a treat for the explorers as well as for our keen photographers. The forest hosted many floral as well as faunal treasures. The Gray Slender Loris was one of them who is a nocturnal cryptic species that we were lucky enough to hear during both nights of our stay there.

Third and last day of the journey, the group visited the small forest patch along the Digili oya, a smaller tributary of the mighty Nilwala river, all the way up to Dediyaigala Buddhist monastery where we spotted the latest observational addition to Sri Lankan butterfly fauna, the Shiva Sunbeam.

All in all we had managed to observe around 50 butterfly species along with number of dragonfly species among many other faunal as well as floral records during the three day visit to the South Western part of the Island.



වන්දිවුකිලා ට පිස්සු !

පීග්මේ බේසාර් නමගෙයිල වන්දිවුකි කියනින්දේ අපේ අසල්වැසි භූතානගේ රජ්ජරුවෝ ය. රජ්ජරුවෝ කිව්වට එයාට අති රජ “ගතිගක්” නැත. මැරෙනකම් රජකමේ ඉන්න හැකියාව තිබුනත්, අළුත් ව්‍යවස්ථාවක් සාදා, “රජ කෙනෙක් වුවත් අවුරුදු 65න් විශ්‍රාම යා යුතු යැ” යි නීතියක් ගෙනාවේ වන්දිවුකි ගේ සමයේ ය. “මරලා හරි ගන්න” ඕන රජකම එහෙමත් අත අරිනවද? පිස්සු !

පීග්මේ බේසාර් ගේ පියා, භූතානගේ හතර වැනි රජු, පීග්මේ සිංග්ගේ වන්දිවුකි ඊට වඩා පිස්සෙකි. “රටේ දළ දේශීය නිෂ්පාදිතයට වඩා දළ දේශීය සතුව වැදගත්” යන අදහසක් ඉදිරිපත් කලේ ඔහු ය. භූතානගේ අධ්‍යාපනය හා සෞඛ්‍යය නිදහස් සේවාවන් බවට පත් වුනේ ඔහුගේ කාලයේ ය. ඒ ජනතාවගේ සතුව වඩා වැදගත් යැයි සලකා ය. දළ දේශීය සතුව ? ඒ මොකද්ද ? පිස්සු !!

පීග්මේ සිංග්ගේ ගේ කාලයේ හදුන්නට පටන් ගත්, පීග්මේ බේසාර් ගේ කාලයේ සමමත වුනු භූතානගේ ව්‍යවස්ථාව පිස්සු ව්‍යවස්ථාවකි. එක් ව්‍යවස්ථාවේ සෑහෙන පිස්සු වගන්ති තිබේ. ඒවාගෙනුත් දැකින විට සිනා යන පිස්සු වගන්තිය නම් “සෑම කල්හි ම, භූතානගේ සමස්ත ව්‍යාප්තර වැස්ම මුළු භූමි ප්‍රමාණයෙන් සියයට හැටක් විය යුතු ය” යන්නයි. රටේ මුළු භූමියෙන් 60% ක් ව්‍යාප්තර.....? එහෙම කොහොමද රටක් දියුණු කරන්නෙ.....? පිස්සු !!!

ශ්‍රී ලංකාව මෙන් හරි අඩක් පමණ භූමි ප්‍රමාණයක් අති භූතානගේ, ලොව අති එකම කාබන්-සාණ රටයි. එනම්, වාර්ෂික ව භූතානගේ නිපදවෙන කාබන් ඩයොක්සයිඩ් වායු ප්‍රමාණය ට වඩා වැඩි කාබන් ඩයොක්සයිඩ් ප්‍රමාණයක් භූතානගේ වන වැස්ම විසින් වාර්ෂික ව උරා ගනු ලබයි. අසල් වැසි රටවල් වල කාබන් සොරොච්චක් ලෙස භූතානගේ ක්‍රියා කරයි. අනුන්ගේ රටවල් වල හදුන කාබන් ඩයොක්සයිඩ් තමන්ගේ රටෙන් අයිති කරන්නෙ.....? පිස්සු !!!!

අපේ වාසනාවට හා රටේ වාසනාවට අපිට එවන් පිස්සු “රජවරු” වත් “මොලකාර” හෝ “සරල” පාලකයන් වත් ලැබුනේ නැත. ලැබුනා නම් අපටත් භූතානගේ උන් මෙන් පිස්සුවෙන් පීවත් වන්නට සිදුවන්නට ඉඩ තිබුනි..... පිස්සු !!!!!

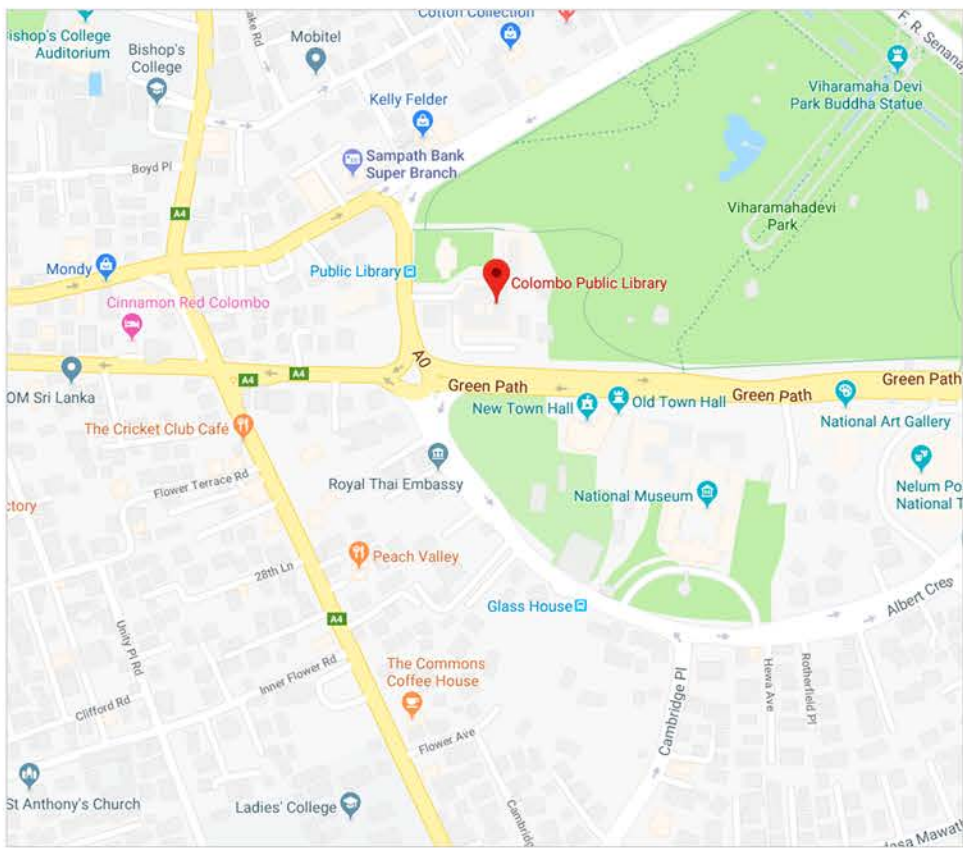
ප.ලි.:

භූතානගේ යනු ලොව සතුවන් ම වසනා මනිසුන් සිටිනා රටවල් වලින් එකකි. ශ්‍රී ලංකාව ඒම දුර්ගතයේ..... එක්කෝ ඕනිනෙ..... පිස්සු !!!!!

- රසීනියාදුකාරයා -



Important notice to all members as well as non members. Please be aware that the venue for our monthly lecture has been temporarily moved to the auditorium in Public Library in Colombo 07 due to an unavoidable situation. Date & time: To be notified in each month prior to the lecture.



Next field visit to Meethirigala will be organised in November and exact date and the rest of the vital information will be notified via an email to all members.



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Butterfly Conservation Society of Sri Lanka is open to anyone interested in butterflies and other insect fauna. BCSSL members can actively participate and share their abilities and knowledge during activities organized by the society such as monthly lectures, field visits, workshops and annual events. Join hands with us to help aware and create a world rich in butterflies and other fauna and flora for future generations to enjoy.

You could become a member of the BCSSL in several categories.

- General membership (anyone interested in joining BCSSL)
- School membership (school children from age (15 – 19)
- Overseas membership (non-Sri Lankan natives and foreigners)
- Both General and Overseas categories have long term membership facility (membership extends up to 5 years)

BCSSL membership and details can be obtained

- Directly at the monthly lecture sessions
- Via social media (Facebook, Twitter, Instagram)
- By sending an email request to butterflycssl@gmail.com
- By visiting BCSSL website <http://www.bcssl.lk/>

SHOP AROUND THE BLOCK

BOOKS & PUBLICATIONS



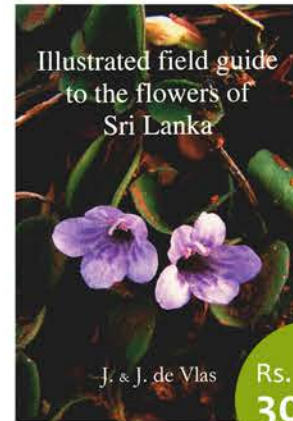
A Pocket Guide to the Butterflies of Sri Lanka

Second Edition

By : Himesh Dilruwan Jayasinghe
Sarath Sanjeewa Rajapakshe
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BCSSL
BUTTERFLY CONSERVATION SOCIETY
OF
SRI LANKA

No :762/A, Yatihena, Malwana, Sri Lanka
(094)-71818 1225 / (094)-71563 9774
butterflycssl@gmail.com
Butterfly Conservation Society of Sri Lanka

