



Two rare butterfly species observed from two isolated forest patches in Kalutara District, Sri Lanka

Butterflies are a group of charismatic insects, which forms a major component of Sri Lankan biodiversity (D'abrera, 1998). The total butterfly species recorded in Sri Lanka consists of 244 species and among them 20 (8.1%) are endemic to the island (D'abrera, 1998; Perera & Bambaradeniya, 2006). Overall, 22 butterfly species are critically endangered, 29 endangered and 15 vulnerable and insufficient data are available for rating the status of 29 species (IUCN & MENR, 2007). The distribution and ecology of butterflies, as well as of other insects, has been underestimated or neglected over the last few decades in Sri Lanka. Here we extend the distribution of two endangered butterflies in Sri Lanka.

The Southern Duffer, *Discophora lepida* Moore, 1857 (Lepidoptera: Nymphalidae) from Aduragala forest: The Southern Duffer, *Discophora lepida*, is the only member of its genus found in Sri Lanka and rated as endangered by IUCN. This rare butterfly inhabits the lowland wet zone forest of Sri Lanka and some areas of Southern India (Woodhouse, 1950) but the subspecies *D. l. ceylonica* is endemic to Sri Lanka. According to Woodhouse (1950) this species had been recorded from Awissawella, Balangoda, Galle, Labugama, Ratnapura and considered this butterfly a common insect in hilly areas and probably in all bamboo jungle habitats in the south-west of the island. Additionally, this species has been recorded from Madakada Mukalana, Dombagaskanda and Yagirala forest during the last decade by several researchers (Chamikara & Sumanarathna, 1998; Jayasinghe, 2004).

Aduragala forest is situated in the low country wet zone of Sri Lanka, between 6° 44' – 6° 46' N and 80° 06' – 80° 08' E. It is located in an altitude range of 200 to 300 m approximately 10 km away from Horana town and Panadura-Ratnapura main road

crosses through the forest. Part of the Aduragala forest remains in a relatively undisturbed condition and is controlled by the Forest Department while another part is managed as a rubber plantation. The average annual rainfall is about 3660 mm (mainly during the South-west monsoon from June to September). The average annual temperature is 29°C (IUCN/FAO, 1997). The Aduragala forest contains large trees including *Schumacheria castaneifolia*, *Artocarpus nobilis*, *Calophyllum inophyllum*, *Mangifera zeylanica*, *Humboldtia laurifolia*, *Oncosperma fasciculatum*, and *Canarium zeylanicum*. The undergrowth is occupied by bamboo trees. According to Gunatilleke & Gunatilleke (1990) the Aduragala forest vegetation can be categorized as a lowland evergreen rain forest.

An observation on one individual of the Southern Duffer was made by the naked eye, while standing only 2 m away from the butterfly during 15:10 hr to 15:46 hr. During this period a male Southern Duffer (fig. 1) was observed on 13th May 2006 while it was perched on a leaf of a *Schumacheria castaneifolia* (kekiriwara in Sinhala) tree about 3 m above ground level. The temperature and the humidity at the time was 28.4 °C and 68 %. The weather was sunny but inside of the forest was dark. During the 36-minute period the butterfly did not fly beyond the dark area of the forest and we never saw it land on a dead leaf, branch or leaf litter. It only landed on the upper side of leaves. During 20 days we only recorded one individual in the study area. The Southern Duffer has been recorded previously from eight small isolated forest patches in Sri Lanka. Many of these forest patches are also threatened by manmade fire, illegal logging, chena cultivations and using pesticides in surrounding areas.

The Common Imperial, *Cheritra freja* Fabricius, 1793 (Lepidoptera: Lycaenidae) from Atwelthota forest: The members of Lycaenidae represent 34.8% (85 species) of all known butterfly species in Sri Lanka. But yet the ecology of their amazing relationships is not understood. The genus

Cheritra in Sri Lanka is represented by a single species (*Cheritra freja*, Fabricius, 1793). Woodhouse (1952) caught 25 individuals during three week-ends in February and March, adjoining the low country wet zone, at Deniyaya and adjoining the central hills Madugoda and were not rare. According to the IUCN Red list (IUCN & MENR, 2007) this species is endangered. However, the Common Imperial is not common now and it has been recorded in only a few isolated forest patches. This species is also now absent from many areas recorded 50 years back.

Atwelthota Proposed Forest Reserve (APFR) is a typical wet zone forest (8° 07' 03.41" N and 79° 44' 21.44" E). The APFR is approximately 3 km from the south of Atwelthota junction, Kalutara District in Western Province. The area is currently protected because of its ecological, hydrological and cultural importance. It covers an area of approximately 500 km², with an average annual rainfall of about 3500 mm. The floral community of the APFR is classified as tropical lowland evergreen rainforest (Gunatilleke & Gunatilleke, 1990). Most of the APFR remains undisturbed by any large scale forest clearance. However, this important forest is threatened by manmade fire, encroachments, illegal logging and chena cultivations.

On 19th February 2010 at 13:45 hr we spotted a male Common Imperial (Fig. 2), locally known as 'Digu-penda Gas-nilaya', perched on a *Cinnamomum* sp. leaf about 2 m above ground level. The butterfly was observed from a distance of about 3 m.

Conservation

Even though Sri Lanka harbors 244 butterfly species, very little knowledge exist regarding their ecology. Large-scale habitat deforestation and fragmentation has led to the decline of various butterfly species of the island, and many species were believed to be common during the early 19th century (see D'abrera, 1998; Ormiston, 1924; Woodhouse, 1950) but now are rare and endangered. Agricultural plantations have replaced indigenous vegetation with monoculture plantations and it has been found that butterfly species diversity is considerably lower than in natural forests. This is probably due to both destruction of natural habitat and extensive use of insecticide and other agrochemicals. Hence restoring of host plants and nectar sources in the boundary plantations and maintaining isolated natural forest patches would be very useful for butterfly conservation.



Fig. 1: *Discophora lepida ceylonica* male



Fig. 2: *Cheritra freja* male

Conservation efforts are hindered by a lack of academic research on butterflies and also there is no up-to-date available published information or baseline data on them. Although inventories exist for several faunal groups in protected areas there are no comprehensive checklists for butterflies. Moreover, only a handful of ecological studies on the butterflies of the island have been undertaken and thus very little technical information is available for conservation managers and policy makers to take steps for effective butterfly conservation. A new generation of research scientists should be trained and supported in the development of projects to protect the future of Sri Lanka's butterflies and other aspects of its natural heritage. Ultimately, conservation of butterflies will need to be accepted through awareness and participation of the general public, commercial interests, and government, in particular school children, undergraduates, farmers and villagers.

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Literature Cited

- Chamikara, S. S. and B. S. Sumanarathna, 1999. "Aduragala kanda hewath Mayura handu kanda" (text in sinhala). *Parisara Sangrahaya* (August – Desember), Society for Environmental Education.
- D'abrera, B., 1998. *The butterflies of Ceylon*. Wildlife Heritage Trust, Colombo, Sri Lanka: 224.
- Gunasekara, S., 2002. Over-exploitation of endangered species. *Sri Lanka Naturalist*. 5 (1): 11-15.
- Gunatilleke, I. A. U. N. and C. V. S. Gunatilleke, 1990. Distribution of floristic richness and its conservation in Sri Lanka. *Conservation Biology*, 4 (1): 21-31.
- IUCN/FAO, 1997. *Designing an optimum protected areas system for Sri Lanka's Natural Forest*. Vol. 2, IUCN and FAO, Sri Lanka: 487.
- IUCN and MENR, 2007. *The 2007 red list of threatened fauna and flora of Sri Lanka*. Colombo, Sri Lanka: 148.
- Jayasinghe, H. D., 2004. Observation of endangered butterfly - Southern Duffer (*Discophora lepida*) at two wet zone lowland forests. *Sri Lanka Naturalist*, 6 (1&2): 24-25.
- Ormiston W., 1924. *The butterflies of Ceylon*. H. W. Cave & Company, Colombo: 143+VIII Pls.
- Perera, W. P. N. and C. N. B. Bambaradeniya, 2006. Species richness, distribution and conservation status of butterflies in Sri Lanka. In: Bambaradeniya, C. N. B (Ed.), *Fauna of Sri Lanka: status of taxonomy, research and conservation*, IUCN Sri Lanka: 53-64.
- Woodhouse, L. G. O., 1950. *The butterfly fauna of Ceylon*. Ceylon Government Press, Colombo: 133+XLVIII pls.

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