

**South Asian Taxa in the Book by Eliot & Kawazoe (1983)
on *Lycaenopsis* Blue Butterflies
(Lepidoptera : Lycaenidae)**

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Lycaenid or blue butterflies make up 30-40% of all butterfly species. In a comparatively recent head count, 144 genera of Lycaenidae were reported occurring in India and neighbouring countries (Varshney, 1997) [cited as 'Index' below]. Eliot & Kawazoe (1983) have revised its *Lycaenopsis* Group of taxa elaborately. Most of these are commonly referred to as the 'Hedge Blues'. From South Asian region 11 genera are reported in it.

Notes on these South Asian genera, species and subspecies, along with last's distribution in region, are reported here verbatim, since Eliot & Kawazoe is not available to many workers in the region. The nomenclature and distribution have been checked in notes, against a few other recent studies for the region, namely :

1. Protected Invertebrates - Butterflies, by Gunathilagaraj et al. (2000) [referred to as 'Prot. Invert.'].
2. Lepidoptera of Nepal, by Smith (2010) ['Lep. Nepal'].
3. Subspecies Catalogue - Lycaenidae, by Gupta & Majumdar (2012, 2013) ['Subsp. Cat.'].
4. Synoptic Catalogue - Butterflies of India, by Varshney & Smetacek (2015) ['Synop. Cat.'].
5. Naturalist's Guide - Butterflies of India, by Smetacek (2017) ['Natur. Guide'].

The account in Eliot & Kawazoe and then present author's notes for each genus follow.

Tribe POLYOMMATINI

Subtribe LYCAENOPTITI

[emended here as LYCAENOPTINA]

(1) Genus *Oreolyce* Toxopeus

1. *O. dohertyi* (Tyt.) - Naga Hills.
2. *O. vardhana* (M.)
- i. *O. v. vardhana* (M.) - NW. Himalaya: Kashmir to Naini Tal.

Notes : Index (1997: 101) reports it from Pakistan and Central and Eastern Nepal. Besides *O. vardhana nepalica* Forster, 1980, is reported from "SPK : Gusum Bng" (Lep. Nepal).

Lycaenopsis quadriplaga dohertyi is listed in the Wildlife Protection Act, 1972, which is referred as *Celastrina dohertyi dohertyi* in Prot. Invert.

(2) Genus *Neopithecops* Distant

1. *N. zalmora* (But.)
- i. *N. z. dharma* (M.) - South India (Nilgiris, Orissa).
- ii. *N. z. zalmora* (But.) - Kashmir to Bengal, Assam and Orissa.
- iii. *N. z. andamanus* Eliot & Kawazoe - Andaman Is. (widely), Nicobar Is. (Kar Nicobar).

Notes : Index shows *Neopithecops* occurring in Sri Lanka and Myanmar also. Natur. Guide gives distribution of *N. zalmora* as Sri Lanka to Gujarat, Odisha and Jammu & Kashmir to North-East India. Synop. Cat. records *N. z. dharma* from Gujarat to Kerala.

(3) Genus *Megisba* Moore

1. *M. malaya* (Horsfield)
- i. *M. m. thwaitesi* M. - South India as far north as Bombay and Poona.
- ii. *M. m. sikkima* M. - North India to N. E. India (Sikkim).
- iii. *M. m. presbyter* Fruh. - Andaman Is.

Notes : Index reports the genus in Sri Lanka, Kumaon, Orissa, Bengal and Nepal as well. Lep. Nepal shows *M. m. sikkima* in Sikkim and Nepal.

Subsp. Cat. gives distribution of *M. m. presbyter* in Andaman & Nicobar Is., and of *M. m. thwaitesi* in Orissa, W. Bengal (Kolkata) and Sikkim as well.

(4) Genus *Lestranicus* Eliot & Kawazoe

1. *L. transpectus* (M.) - NE. India (Assam, Khasi Hills).
- Notes : This genus is proposed as new in this book itself. *Lestranicus* is shown in Sikkim, Meghalaya, Nagaland, Manipur, Bangladesh, Nepal and Myanmar (Tenasserim Valley) in the Index. Range in Myanmar extends to Dawna Mountains and Ataran Valley.

Lep. Nepal spells the species as *L. iranspecta*.

(5) Genus *Udara* Toxopeus

1. *U. dilecta* (M.)
- i. *U. d. dilecta* (M.) - NW. Himalaya, North India.
2. *U. placidula* (Druce)
- i. *U. p. howarthi* (Cantlie & Norman) - NE. India (Assam : Sibsagar and Manipur).
3. *U. singalensis* (Fd.) - South India.
4. *U. akasa* (Horsfield)

i. *U. a. mavisa* (Fruh.) - South India.

5. *U. selma* (Druce)

i. *U. s. cerima* (Corbet) - Assam.

6. *U. albocaerulea* (M.)

i. *U. a. albocaerulea* (M.) - Central Himalaya through NE. India (Dehra Dun).

Notes : *Udara* is the yet largest genus of *Lycaenopsis* Group. It ranges from Sri Lanka, India (throughout), Nepal, Myanmar and beyond, *vide* Index. Lep. Nepal has shown two species, *dilecta* and *albocaerulea*, in Nepal.

Subspp. Cat. has not included genus *Udara* and its species. Synop. Cat. has shown *akasa* in Kerala, Karnataka and Tamil Nadu; *albocaerulea* and *dilecta* in Himachal Pradesh to NE India; and *selma* in Assam to Arunachal Pradesh.

(6) Genus *Acytolepis* Toxopeus

1. *A. puspa* (Horsfield)

i. *A. p. felderi* Toxopeus - South India to as north as Bombay.

ii. *A. p. gisca* (Fruh.) - Northern India, Sikkim, and Andaman Is.

iii. *A. p. cyanescens* (de N.) - Car Nicobar and Central Nicobar Is.

iv. *A. p. prominens* (de N.) - South Nicobar Is.

2. *A. lilacea* (Hampson)

i. *A. l. lilacea* (Hampson) - South India, upto Nilgiris 3000'.

Notes : Index shows distribution of genus in Sri Lanka, Pakistan, India, Bangladesh, Myanmar and beyond. Lep. Nepal includes *A. p. gisca* in Nepal. Natur. Guide gives distribution of *puspa* in Afghanistan, Sri Lanka to Maharashtra, W. Bengal, Uttarakhand to NE. India. Synop. Cat. shows *lilacea lilacea* in Karnataka, Kerala and Tamil Nadu; and *puspa felderi* in Gujarat to Kerala.

Subspp. Cat. looks incomplete. It does not include *Acytolepis* and its species.

(7) Genus *Celatoxia* Eliot & Kawazoe

1. *C. marginata* (de N.)

i. *C. m. marginata* (de N.) - Central Himalaya to NE India (Sikkim, Darjeeling, Khasi Hills).

Notes : *Celatoxia* is described as a new genus in this book itself. Index shows the distribution of genus in South India: Nilgiris, Palni and Annamalai Hills and in Himalaya and NE. India: Kumaon, Sikkim, Darjeeling and Meghalaya; Nepal and Upper Myanmar: Karen Hills.

Synop. Cat. gives distribution of additional species *albidisca* (Moore) in Karnataka, Kerala and Tamil Nadu; and of *marginata* in Uttarakhand to NE. India. Lep. Nepal includes *marginata* in Nepal.

(8) Genus *Celastrina* Tutt

1. *C. argiolus* (L.)

i. *C. a. kollari* (Wd.) - W. Himalaya : Chitral to Kumaon (Kashmir).

ii. *C. a. iyneteana* (de N.) - Southern slopes of Himalaya, from Central region eastwards and on highlands of NE. India (Sikkim, Assam, Khasi Hills: Shillong).

2. *C. hersilia* (Leech)

i. *C. h. vipia* Cantlie & Norman - From Eastern Nepal to Sikkim, Assam (Mishmi and Naga Hills) 2-13000'.

3. *C. huegelii* (M.)

i. *C. h. huegelii* (M.) - W. Himalaya (Mussoorie, Naini Tal).

ii. *C. h. oreoides* (Evans) - Eastern Himalaya (Subansiri river).

4. *C. oreas* Leech

i. *C. o. oreana* (Swinhoe) - Assam : Khasi and Jaintea Hills (Cherrapunji, 4000').

5. *C. lavendularis* M.

i. *C. l. lavendularis* M. - Mountains of south and southwest India (Western Ghats).

ii. *C. l. limbata* (M.) - North to NE. India, Central Himalaya (Sikkim, Darjeeling, Parasnath Hill 4477').

Notes : Index includes two more species, *gigas* Hemming and *morsheadi* Evans in it. Prot. Invert. lists '*puspa lavendularis*' and *dohertyi dohertyi* in this genus [see *Oreolyce* above].

Lep. Nepal shows '*jyneteana*' and not *iyneteana* of Eliot & Kawazoe; besides *kollari*, *vipia*, *gigas*, *oreoides* and *limbata* in Nepal.

Synop. Cat. includes *gigas* and *huegelii* from Jammu & Kashmir to Uttarakhand; *lavendularis* from Karnataka, Kerala and Tamil Nadu; and *limbata* from Jharkhand as well.

Subspp. Cat. erroneously has not included *Celastrina* and its species.

It seems *argiolus jyneteana* Auct. should be considered valid and not '*iyneteana*' which is given by Eliot & Kawazoe. Name *jyneteana* is formed after the place of occurrence, that is 'Jyntia Hills' in Meghalaya. International Commission of Zoological Nomenclature should take notice of it.

(9) Genus *Callenya* Eliot & Kawazoe

1. *C. melaena* (Doherty)

i. *C. m. melaena* (Doherty) - Manipur, (Cachar River).

Notes : *Callenya* is also proposed as a new genus in this book by Eliot & Kawazoe.

Synop. Cat. reports *melaena* from Assam and Meghalaya, besides Manipur. Index shows *minima* Evans as a syn. of *melaena*. Also an additional species, *lenya* Evans, is shown in this genus from the region (Lenya Valley, South Myanmar), *vide* Index. Subspp. Cat. has not included this genus and its species, although it mentions to have consulted

Elliot & Kawazoe (1983).

(10) Genus *Notarthrinus* Chapman

1. *N. binghami* Chapman - NE. India (Assam : Shillong).

Notes : *Notarthrinus* is a monotypic genus. Index shows its distribution in Assam and North Myanmar.

Synop. Cat. shows *binghami* in Manipur and Meghalaya.

(11) Genus *Monodontides* Toxopeus

1. *M. musina* (Snellen)

i. *M. m. musinoides* (Swinhoe) - NE. India (Shillong).

Notes : The citation '*Celastrina musina*' is shown as a syn. of *Monodontides musina* in Subsp. Cat. and shows occurrence of *musinoides* in NE. India : Assam and Sikkim.

Synop. Cat. also shows it as Sikkim to NE. India.

A last word about '*Lycaenopsis haraldus ananga* Fd.', which is a stray occurrence at the Victoria Point, South Myanmar, and so reported in Prot. Invert. However, Index has clarified earlier that *Lycaenopsis* Felder & Felder, with type-species *ananga* Fd. & Fd. (syn. *Papilio haraldus ananga* Fd. & Fd.) occurs (rarely) in South Myanmar, but its main range is restricted to Sundaland (Indonesia).

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ISRO to geo-tag all agri infra in the country

In order to keep a track of agricultural assets in the country through online recording and monitoring, the Centre has decided geotag all such infrastructure in a phased manner. The agriculture minister will sign a memorandum of understanding (MoU) with the Indian Space Research Organisation (ISRO) to do this particular job.

ISRO has assigned this task to the National Remote Sensing Centre (NRSC), Hyderabad. The NRSC will geotag (add latitude, longitude and location-specific information to photo/video) all the assets, using its 'Bhuvan' platform in association with states and Union Territories (UTs). 'Bhuvan' is the geo-platform of the country's space agency ISRO.

"The NRSC has already given training to the states / UT's Officials of Bihar, Karnataka, Odisha and Maharashtra on a pilot basis. Officials of other states / UT's are also being trained on specified dates, keeping in mind the upcoming MoU", said an official.

Under the MoU, the NRSC will geo-tag all agriculture assets which are created under the 'Rashtriya Krishi Vikas Yojna' (National Agriculture Development Plan), in different parts of the country. Such assets include seed processing units, seed farms, soil testing labs, bio-fertiliser production units, seed storage godowns, seed certification infrastructure, labs for production of bio control agents, state pesticide/residue testing labs, machinery to reduce post-harvest losses, poly houses / shade-nets and orchards among lakhs of such facilities across the country.

Besides monitoring of assets, the application of technology will also help in planning and execution of new agriculture infrastructure projects in a transparent manner. "The data collected could also be used by the farmers/entrepreneurs in planning their activities including best utilisation of available resources of a cluster, pack houses and cold storage among others in a particular district or region", said the official.

All information will be available on the Bhuvan mobile platform so that the geo-tagged assets can be monitored anytime from anywhere. The decision to geo-tag the assets is a testimony of how the space technology is increasingly being used in the country for not only visualisation of the assets but also for terrain mapping to undertake other developmental works like watershed and drought-proofing measures.

The NRSC is currently also geo-tagging the assets created under the MGNREGA in each gram panchayat. The move will not only check leakages but also help in effective mapping of terrain for future developmental works. Around 30 lakh assets are created annually across the country under the rural job scheme.