

Notes on some rare and elusive butterflies from Namdapha National Park, Arunachal Pradesh, India with rediscovery of two subspecies (Lepidoptera: Papilionoidea)

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Abstract

Namdapha National Park is situated in Changlang district of Arunachal Pradesh, roughly at the intersection of Palearctic and Indo-Malayan biogeographic realms. On account of its peculiar geographic position and diversity of vegetation and habitat types it encompasses, Namdapha is home to a wide variety of flora and fauna. Here we report the occurrence of eight rare and elusive species or subspecies of butterflies namely *Capila pieridoides* (Moore, 1878), *Plastingia naga* (de Nicéville, [1884]), *Salanoemia noemi* (de Nicéville, 1885), *Lotongus sarala* (de Nicéville, 1889), *Pieris naganum* (Moore, 1884), *Erites falcipennis* Wood-Mason & de Nicéville, 1883, *Coelites nothis adamsoni* Moore, 1891, *Bassarona durga splendens* (Tytler, 1915) in Namdapha National Park. The subspecies *C. nothis adamsoni* and *Pieris naganum naganum* are being reported for the first time after a gap of more than a century and we provide first ever photographs of live individuals of these subspecies. *E. falcipennis* is being reported for the first time from the country after its description in 1883. These findings emphasize the significance of Namdapha National Park as a crucial protected area for butterflies in North east India.

KEY WORDS: Lepidoptera, Papilionoidea, new records, distribution, *Coelites nothis adamsoni*, *Pieris naganum*, *Erites falcipennis*, India.

Notas sobre algunas mariposas infrecuentes y escurridizas del Parque Nacional de Namdapha, Arunachal Pradesh, India con el redescubrimiento de dos subspecies (Lepidoptera: Papilionoidea)

Resumen

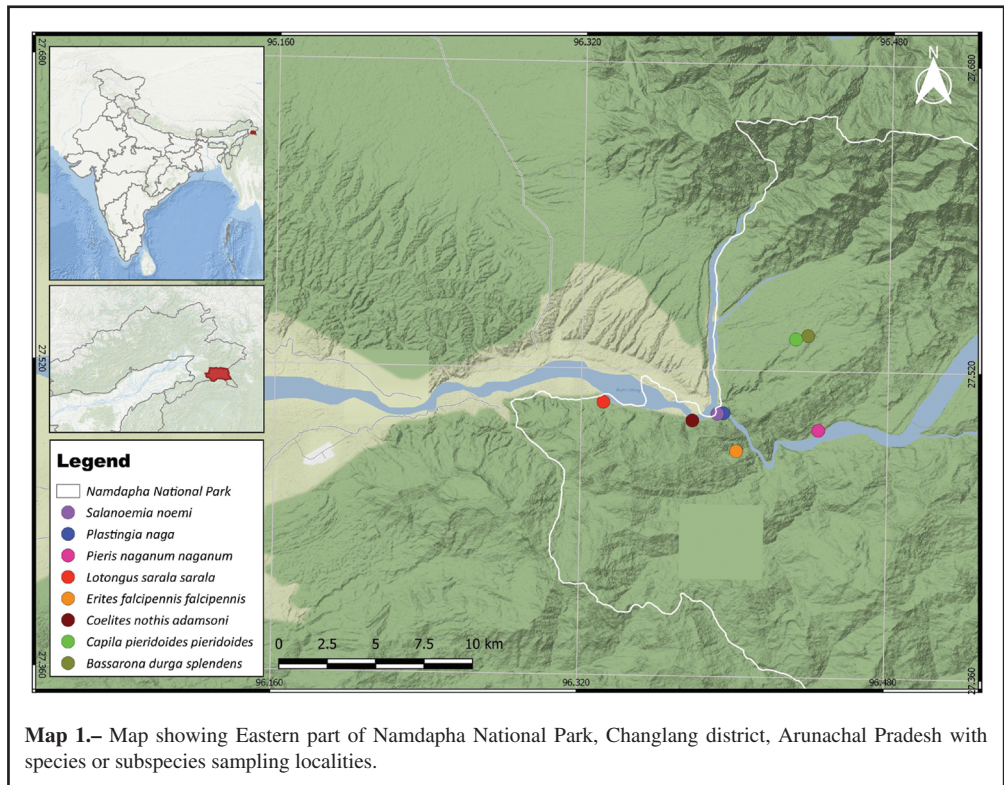
El Parque Nacional de Namdapha está situado en el distrito de Changlang de Arunachal Pradesh, en la intersección de la zona de influencia biogeográfica Paleártica e Indo-Malaya. Por su puesto de esta peculiar posición abarca una vegetación y tipos de hábitats geográficos raros, Namdapha tiene una gran variedad de flora y fauna. Aquí informamos sobre la presencia ocho especies o subspecies infrecuentes y escurridizas en el Parque Nacional de Namdapha, concretamente *Capila pieridoides* (Moore, 1878), *Plastingia naga* (de Nicéville, [1884]), *Salanoemia noemi* (de Nicéville, 1885), *Lotongus sarala* (de Nicéville, 1885), *Pieris naganum* (Moore, 1884), *Erites falcipennis* Wood-Mason & de Nicéville, 1883, *Coelites nothis adamsoni* Moore, 1891, *Bassarona durga splendens* (Tytler, 1915). La subespecie *C. nothis adamsoni* y *Pieris naganum naganum* se citan por primera vez, después de un espacio de más de un siglo y suministramos fotografías por primera vez, de individuos vivos de estas subspecies. *E. falcipennis* se registra por primera vez para el país después de su descripción en 1883. Estas conclusiones enfatizan la trascendencia del Parque Nacional de Namdapha como un área crucial protegida para las mariposas en el nordeste de la India.

PALABRAS CLAVE: Lepidoptera, Papilionoidea, nuevos registros, distribución, *Coelites nothis adamsoni*, *Pieris naganum*, *Erites falcipennis*, India.

Introduction

Namdapha National park (27.391667°N-27.661111°N, 96.250556°E-96.975833°E, 200 m-4571 m) is in Changlang district of Arunachal Pradesh state in North east India and spans over an area of 1985.25 km². The park shares its boundary with Myanmar in the South and East and Kamlang Wildlife Sanctuary of Lohit district, Arunachal Pradesh in the North. The region experiences a tropical climate and annual precipitation varies between 1400-2500 mm, 75% of which falls between April and October. Temperature varies between 5°C-35°C at lower altitudes and reaches below 0°C at higher elevations. Relative humidity varies between 47-93% annually (ARUNACHALAM *et al.*, 2004).

Namdapha National Park lies at the intersection of Himalaya and Indo-Burma global biodiversity hotspots (MYERS *et al.*, 2000; MITTERMEIER *et al.*, 2011). Biogeographically, it falls under Eastern Himalaya (2D) biotic province which lies at the junction of Indo-Malayan (Oriental) and Palearctic biogeographic realms (RODGERS & PANWAR, 1988). The park has a rugged topography with steep hills and narrow valleys and harbours a wide range of vegetation and habitat types (DEB & SUNDRIYAL, 2007). It has all major forest types of the region and with increasing elevation there is a transition in habitat from tropical wet evergreen forests to subtropical broad-leaved forests, subtropical pine forests, temperate broad-leaved forests, alpine meadows and perennial snow (DUTTA *et al.*, 2008). The region has faunal and floral affinities with adjoining forests of South east Asia (MANI, 1974). A total of 1119 species of plants belonging to 639 genera and 215 families are reported from Namdapha National Park (CHAUHAN *et al.*, 1996). It is also rich in its faunal assemblage with over 1399 species recorded so far (GHOSH, 1987).



One of the first inventory of butterfly fauna of the region after independence was undertaken by VARSHNEY & CHANDA (1971) where they documented butterflies from Tirap and Changlang districts. In their publication, 'Butterflies of the North-Eastern India' they reported six species of Pieridae, two species of Nymphalidae and one species of Lycaenidae from Arunachal Pradesh. BHATTACHARYA (1985) recorded a total of 84 species of butterflies from Namdapha National Park belonging to the family Papilionidae (21), Nymphalidae (42), Lycaenidae (10) and Pieridae (11). KUNTE (2010) rediscovered *Symbrenthia silana* de Nicéville, 1885 from North-east India where the species was reported from several localities including Namdapha National Park. SETHY *et al.* (2014) reported 113 species of butterflies under 73 genera from South-eastern part of Namdapha Tiger Reserve. Recently, a new species of *Hypolycaena*, *Hypolycaena narada* Kunte, 2015 was described from Namdapha National Park (KUNTE, 2015). THOMBRE & KEHIMKAR (2015) recorded *Ideopsis similis persimilis* (Moore, 1879) from Namdapha National Park, which was first record of the subspecies from mainland India. More recently, Zoological Survey of India (ZSI) conducted extensive surveys in Namdapha NP from 2016-2018 as part of a National Mission on Himalayan Studies (NMHS) project which has led to several interesting findings. Here we report the occurrence of eight rare and elusive species or subspecies of butterflies from Namdapha National Park (Map 1), including rediscovery of two subspecies after a gap of more than a century. Some of these findings significantly extend the known ranges of subspecies/species further North and all of them are new distributional records for the state of Arunachal Pradesh.

Notes on species

Family Hesperidae Latreille, 1809
Subfamily Pyrginae Burmeister, 1878
Tribe Tagiadini Mabille, 1878

Capila pieridoides (Moore, 1878)

Calliana pieridoides Moore, 1878; *Proc. zool. Soc. Lond.*, **1878**(3): 687

Type Locality: "NE Bengal" (West Bengal, India).

Distribution: NE India, China, Myanmar, N. Thailand, Malaysia, N. Vietnam.

The genus *Capila* Moore, [1866] consists of 13 species and is distributed throughout the Oriental region (SAVELA, 2019), ranging from India, China, Myanmar, Thailand and Vietnam up to Sundaland (CORBET & PENDLEBURY, 1978). In India, it is represented by six species (VARSHNEY & SMETACEK, 2015) among which *Capila pieridoides* (Moore, 1878) is the only species confined to Indo-Chinese subregion (EVANS, 1932). Within *C. pieridoides* three distinct subspecies are recognized, namely *Capila pieridoides chinensis* Evans, 1932 which occurs in China (EVANS, 1932; GOGOI *et al.*, 2016), *Capila pieridoides sofa* Evans, 1934 distributed from Thailand to Vietnam and *Capila pieridoides pieridoides* (Moore, 1878) ranging from NE India and Burma (Myanmar) to Vietnam (EVANS, 1949). *C. pieridoides pieridoides* is the only subspecies recorded from India and is characterised by prominent orange in head extending up to the abdomen (GOGOI *et al.*, 2016). Subspecies *C. pieridoides chinensis* can be distinguished from *C. pieridoides pieridoides* in having pointed forewing apex and a black spot at mid space 1b on upper forewing, these being absent in the latter. Subspecies *C. pieridoides sofa* can be distinguished from *C. pieridoides pieridoides* in having darker cell and veins at apex of upper forewing (EVANS, 1932; 1949).

There are few known records of *C. pieridoides pieridoides* from mainland India. The species was described by MOORE (1878) based on a male specimen from NE Bengal (type locality was doubtfully marked as per SWINHOE, (1911-1912)) under the genus *Calliana*. Later DE NICÉVILLE (1891) described female of the species from Khasi Hills based on collection of Mr. H. J. Elwes. Subsequently, SWINHOE (1893) also recorded several males and a female from Khasi hills. As per SWINHOE (1911-1912), "Elwes and Doherty record it from Margherita in Upper Assam, and Leech from China also". EVANS (1949), in his revision of Oriental Hesperidae listed 31 specimens from Khasi Hills, one

from Manipur, one from Lushai Hills (Mizoram) and one from Ataran (Myanmar). Recently, GHOSH & CHAUDHURY (1998) listed two specimens from Khasi Hills, Meghalaya (based on material collected earlier). More recently GOGOI *et al.* (2016) recorded it as “very rare” in Barail Range of Cachar, Assam although it is treated as rare by EVANS (1932).

A single individual (Male) of *C. pieridoides pieridoides* was spotted and captured on 4th November 2016 at 13:50 hrs from Hornbill Camp (27.538500°N, 96.437817°E, 658 m) of Namdapha NP (Figure 2a-b). It was found mudpuddling along the banks of a small stream with other species such as *Appias nero galba* (Wallace, 1867) and *Appias indra* (Moore, 1857). The habitat was characterized by dense canopy cover with sunlight sparsely reaching the forest floor. As we were observing the individual, a wasp (Family Vespidae) ambushed on it and killed it.

Remark: The current sighting of *C. pieridoides* from Namdapha is first record of this rare species from the state of Arunachal Pradesh.

Family Hesperidae Latreille, 1809
Subfamily Hesperinae Latreille, 1809
Tribe Aeromachini Tutt, 1906

Plastingia naga (de Nicéville, [1884])

Hesperia naga de Nicéville, [1884]. *J. Asiat. Soc. Bengal*, **52** (Pt II) (2/4): 89

Type Locality: “Sibsagar, Upper Assam” (India)

Distribution: NE India, Myanmar, W Malaysia, Thailand, Laos, Indonesia, Borneo and Philippines.

Genus *Plastingia* Butler, 1870 is widely distributed from North-east India to Sundaland, Philippines and Sulawesi, with seven species described (CORBET & PENDLEBURY, 1978; SAVELA, 2019). Two species of *Plastingia* Butler, 1870 are known to occur in mainland India, *P. naga* (de Nicéville, [1884]) and *P. pellowia* (Fruhstorfer, 1911) (KEHIMKAR, 2016). Previously *P. pellowia* was considered a synonym of *P. naga* (EVANS, 1932) but was removed from synonymy by EVANS (1949) based on external morphology and genital structure. *P. naga* (de Nicéville, [1884]) is one of India’s poorly known species of *Plastingia* group (DAS *et al.*, 2016). *P. naga* can be distinguished from *P. pellowia* in having white under hindwing markings instead of yellow (EVANS, 1949). It is a widely distributed species that occurs from North-east India to Philippines (EVANS, 1932, 1949). Earlier it was known only from India (Assam) from a total of eleven male and five female specimens (EVANS, 1949). *P. naga* was described from Sibsagar (upper Assam) by DE NICÉVILLE (1884) as *Hesperia naga*. Later, in 1912-1913 a few samples were collected by Moore & Swinhoe from Khasi and Jaintia hills, Meghalaya. The species was not recorded for next 100 years from mainland India. On October 2014, a solitary individual was recorded from central Assam (DAS *et al.*, 2016). Subsequently, it was recorded from South Garo Hills in 2015 (KARMAKAR, 2019) and again in the same year from Barail Range, Assam (GOGOI *et al.*, 2016). However, this species is rare in North-east India (EVANS, 1932).

On 20th October 2016, at 14:15 hrs a single individual of *P. naga* was spotted near Noah Dehing Riverbed, Deban (27.497467°N, 96.394267°E, 350 m) of Namdapha NP (Figure 3a). The individual was mudpuddling along a small stream adjacent to a densely vegetated patch into which it flew away after few minutes.

Remark: The present sighting of *P. naga* from Namdapha adds a rare species to butterfly fauna of state of Arunachal Pradesh.

Family Hesperidae Latreille, 1809
Subfamily Hesperinae Latreille, 1809
Tribe Aeromachini Tutt, 1906

Salanoemia noemi (de Nicéville, 1885)

Plastingia noemi de Nicéville, 1885. *J. Asiat. Soc. Bengal*, **54** (Pt. II) (2): 120

Type Locality: “Sikkim” (India)

Distribution: Sikkim to NE India, Thailand, Vietnam.

ELIOT (1978) split the genus *Plastingia* into four genera, namely *Plastingia* Butler, 1870, *Salanoemia* Eliot, 1978, *Pemara* Eliot, 1978 and *Pyroneura* Eliot, 1978 (CORBET & PENDLEBURY, 1978). The genus *Salanoemia* can easily be differentiated from rest of the group in having rounded post discal spots and veins concolorous with ground colour (CORBET & PENDLEBURY, 1978). *Salanoemia* is a widely distributed genus and occurs from India to Sundaland with six known species (CORBET & PENDLEBURY, 1978; SAVELA, 2019) among which four are found in India; namely *S. fuscicornis* (Elwes & Edwards, 1897) (Assam and Myanmar to Borneo), *S. noemi* (de Nicéville, 1885) (Sikkim to NE India, Thailand and Vietnam), *S. sala* (Hewitson, [1866]) (Karnataka, Assam, Myanmar to Bali) and *S. tavoyana titei* Cantlie & Norman, 1960 (Manipur) (EVANS, 1949; VARSHNEY & SMETACEK, 2015; INAYOSHI, 2019).

Salanoemia noemi (de Nicéville, 1885) was described from Sikkim, under the genus *Plastingia* (DE NICÉVILLE, 1885). *S. noemi* differ from closely related species *S. tavoyana* (Evans, 1926) in having solid black spots on under hindwing compared to ring like spots of the latter. It differs from *Salanoemia similis* (Elwes & Edwards, 1897) another closely allied species from Malaya and Borneo (CORBET & PENDLEBURY, 1978) in having unequal cell spots on upper forewing compared to lack of cell spots or presence of a tiny dot in *S. similis* (EVANS, 1949). *S. noemi* was recently recorded from Kaziranga by GOGOI (2009). Subsequently there haven't been any report of the species from India. As per de Nicéville, the species appears to be rare and flew from May to August (DE NICÉVILLE, 1894).

A single individual of *S. noemi* was photographed on 21st October 2016 near Deban (27.497150°N, 96.391117°E, 345 m) along Miao-Vijoyanagar road (Figure 4). The individual was sighted at 09:00 hours, basking on a rock about 0.5 m above the ground. The site was characterized by dense canopy cover with sunlight barely reaching the ground.

Remark: First record of the species from Arunachal Pradesh and extends the known distribution range of the species by at least 200 km.

Family HesperIIDae Latreille, 1809
Subfamily HesperIIDae Latreille, 1809
Tribe Aeromachini Tutt, 1906

Lotongus sarala (de Nicéville, 1889)

Parnara sarala de Nicéville, 1889. *J. Bombay Nat. Hist. Soc.*, 4(3): 173

Type Locality: “Khasi Hills” (Meghalaya, India)

Distribution: NE India.

Genus *Lotongus* Distant, 1886 is mostly confined to lowland forests of Indo-Malayan region and is represented by 3 species (SAVELA, 2019). Among these, *Lotongus sarala* (de Nicéville, 1889) is the only species that occurs in India (EVANS, 1949). *L. sarala* is very similar to *Lotongus avesta* (Hewitson, 1868) but can be distinguished from each other based on eye colour which is black in *L. sarala* whereas brownish red in *L. avesta* (CORBET & PENDLEBURY, 1978). *L. sarala* (de Nicéville, 1889) is represented by four subspecies: *Lotongus sarala sarala* (de Nicéville, 1889) (Northeast India), *Lotongus sarala conjuncta* Evans, 1932 (North Myanmar), *Lotongus sarala chinensis* Evans, 1932 (Myanmar, Thailand, Laos, China and North Vietnam) and *Lotongus sarala quinquepunctata* Joicey & Talbot, 1921 (Hainan) (EVANS, 1949; VARSHNEY & SMETACEK, 2015). *L. sarala sarala* differs from *L. sarala chinensis* and *L. sarala quinquepunctata* in having a yellow central band on upper hindwing, this being white in *L. sarala chinensis* and pale obsoleted in *L. sarala quinquepunctata* (EVANS, 1949). It differs from *L. sarala conjuncta* in having conjoined cell spots and spots in space 2 and 3 being overlapped whereas these spots are separate in *L. sarala conjuncta* (EVANS, 1949).

The species was described based on a female specimen under genus *Parnara* Moore, [1881] (as *Parnara sarala*) from Khasi hills by DE NICÉVILLE (1889). Later, SWINHOE (1912-1913) described the male specimen also from Khasi hills and regarded it as rare. Tytler reported it from Gasapani (current name Medziphema), Naga Hills and noted it as very rare (TYTLER, 1915b). After these earlier

records, it was not reported from India for a long time. Recently *L. sarala sarala* was photographed from Neora Valley National Park, Darjeeling, West Bengal in 2010 (SARKAR *et al.*, 2019) and from Panbari Reserve Forest, Central Assam (GOGOI, 2013). GOGOI (2013) stated that the species was sighted around 20 times during the study period and is not a rare butterfly in Panbari Reserve Forest. However, this species is regarded as rare by EVANS (1932).

On 6th October 2016 at 14:05 hrs, a single individual of *L. sarala sarala* was sighted near 10th mile (27.502367°N, 96.331517°E, 319 m), Namdapha NP (Figure 5). The weather was sunny, and the individual was seen resting on ground along Miao-Vijoyagar road. After few minutes, it flew into dense forest surrounding the area.

Remark: This sighting of *L. sarala sarala* is first record of the species from Arunachal Pradesh. It also extends the known distribution range of this species to South east Arunachal Pradesh, at least 200 km away from its previous locality records (in Assam and Nagaland).

Family Pieridae Swainson, 1820
Subfamily Pierinae Swainson, 1820
Tribe Pierini Swainson, 1820

Pieris naganum (Moore, 1884)

Mancipium naganum Moore, 1884. *J. Asiat. Soc. Bengal*, **53** (Pt. II) (1): 45

Type Locality: "Naga Hills, Assam" [Nagaland, India]

Distribution: NE India, N Myanmar.

The Holarctic genus *Pieris* Schrank, 1801 is widely distributed across Himalayan region and Northeast India with 10 species known from India (MANI, 1986; VARSHNEY & SMETACEK, 2015) among which *Pieris naganum* (Moore, 1884) is restricted to Nagaland within the country (VARSHNEY & SMETACEK, 2015). *P. naganum* was described based on a single male specimen from Naga Hills under the genus *Mancipium* Hübner, [1806] (MOORE, 1884). There are four subspecies of *P. naganum*, namely, *Pieris naganum naganum* (Moore, 1884) (Nagaland, N. Burma), *Pieris naganum cisseis* (Leech, 1890) (China), *Pieris naganum karumi* (Ikeda, 1973) (Taiwan) and *Pieris naganum pamsi* (Vitalis de Salvaza, 1921) (N. Thailand, Laos, Vietnam) (INAYOSHI, 2019; SAVELA, 2019). *P. naganum naganum* has a broad black band at apex of upper forewing; the inner border of which is slightly curved and more regular compared to other subspecies and narrowing at vein 3 (MOORE, 1884; TALBOT, 1939). After description, the subspecies has only been recorded from Sadon, N. Myanmar, based on Watson's collection of a male specimen (MOORE, 1903-1905). This subspecies is treated as very rare by EVANS (1932) and as one of the rarest of Indian butterflies by TALBOT (1939).

On 21st October 2016, more than 10 individuals of *P. naganum* were observed near 27th Mile (27.48916°N, 96.44388°E, 370 m), Namdapha NP (Figure 6a). They were seen mudpuddling near an open fast-flowing stream, along with other species of butterflies such as *Appias lycida eleonora* (Boisduval, 1836), *Cepora nadina* (Lucas, 1852), *Cyrestis thyodamas* Boisduval, 1846, *Caleta elna noliteia* (Fruhstorfer, 1918) and *Prosotas nora* (C. Felder, 1860) (Figure 6b).

Remark: *P. naganum naganum* has never been seen in at least 111 years, prior to the present record. The sighting of *P. naganum naganum* from Namdapha is only third record of the subspecies from anywhere in the world and the photographs presented (Figure 6) are first ever photographs of live individuals. It also extends the known distribution range of the species further North and is at least 200 km away from closest known locality (Naga hills)

Family Nymphalidae Rafinesque, 1815
Subfamily Satyrinae Boisduval, 1833
Tribe Satyrini Boisduval, 1833

Erites falcipennis Wood-Mason & de Nicéville, 1883

Erites falcipennis Wood-Mason & de Nicéville, 1883. *Butts India Burmah Ceylon*, **1**(2): 237

Type Locality: “Cachar” (Assam, India)

Distribution: NE India, Myanmar, Thailand, Laos, Vietnam.

Erites Westwood, [1851] is a relatively small Indo-Malayan genus represented by five species, (MARSHALL & DE NICÉVILLE, 1882-1883) viz. *Erites angularis* Moore, 1878 (Myanmar to Sumatra); *Erites argentina* Butler, 1868 (Malaya Peninsular, Java, Sumatra, Borneo); *Erites elegans* Butler, 1868 (Malaya Peninsular, Sumatra, Borneo); *Erites falcipennis* Wood-Mason & de Nicéville, 1883 (India to Vietnam) and *Erites medura* (Horsfield, [1829]) (Myanmar, Thailand, Laos, Malaya Peninsular, Java) (SAVELA, 2019). Among these only *Erites falcipennis* Wood-Mason & de Nicéville, 1883 is known from mainland India (EVANS, 1932). *E. falcipennis* was described based on a male specimen, from Wood-Mason’s collection from Cachar, Assam, India (WOOD-MASON & DE NICÉVILLE, 1883). Its distribution ranges from Assam in India to Myanmar, Thailand, Laos and Vietnam (INAYOSHI, 2019). It differs from closely allied species in having a prominent falcate shaped forewing (EVANS, 1932). According to MARSHALL & DE NICÉVILLE (1882-1883), *E. falcipennis* “appear to be local but not common even where they occurred”. EVANS (1932) also considered it as rare and the species is protected under Schedule II of Indian Wildlife (Protection) Act, 1972.

On 24th December 2017 at 10:30 hrs, two individuals of *Erites falcipennis* were observed (Figure 7) near 19th Mile (27.477750°N, 96.401200°E, 467 m), Namdapha NP. They were resting along the road at an open and sunny spot. Occasionally, they flew close to the ground in a peculiar erratic manner.

Remark: The current sighting is first record of the species from India after its description from Cachar, Assam in 1883 and hence confirms its presence in the country. It also extends the known distribution range of the species further North, at East 400 km from Cachar, its closest previously recorded locality.

Family Nymphalidae Rafinesque, 1815

Subfamily Satyrinae Boisduval, 1833

Tribe Satyrini Boisduval, 1833

Coelites nothis adamsoni Moore, 1891

Coelites adamsoni Moore, 1891. *Lep. Ind.*, 1: 229-230

Type Locality: “Bhamo, Burma” [Myanmar]

Distribution: NE India, Myanmar, N. Thailand (?).

Coelites Westwood, [1850] is a small Indo-Malayan genus (MARSHALL & DE NICÉVILLE, 1882-1883) with 3 species, namely *Coelites nothis* Westwood, [1850] (NE India to N. Vietnam, Hainan); *Coelites epiminthia* Westwood, [1851] (S. Myanmar to Borneo); *Coelites euptychioides* C. & R. Felder, [1867] (Peninsular Malaya, Sumatra) (SAVELA, 2019). *Coelites nothis* Westwood, [1850] has four subspecies namely, *Coelites nothis adamsoni* Moore, 1891 (India, Myanmar, N. Thailand (?)), *Coelites nothis nothis* Westwood, [1850] (Burma, Thailand, Laos), *Coelites nothis sylvanum* Fruhstorfer, 1902 (N. Vietnam) and *Coelites nothis hainanensis* Gu, 1994 (Hainan) (SAVELA, 2019).

Coelites nothis adamsoni Moore, 1891 was described based on the collections of Major Adamson from Bhamo in Myanmar. According to MOORE (1891), *C. nothis adamsoni* is a shade loving forest species and generally flew in the month of September and October. Its distribution ranges from Nagaland (in India) to Myanmar (EVANS, 1932; SAVELA, 2019) along with two doubtful records from N. Thailand (INAYOSHI, 2019). *C. nothis adamsoni* is very close to *C. nothis nothis* in appearance but smaller in size (MOORE, 1891). It also differs from the nominotypical subspecies in having more prominent, distinct and narrower discal and marginal lines on underside of both wings (MOORE, 1891). The subspecies *adamsoni* is treated as very rare (EVANS, 1932) and is also protected under Schedule I of the Indian Wildlife (Protection) Act, 1972.

A single individual of *C. nothis adamsoni* was spotted (Figure 8) along the roadside near Anamika waterfalls (27.493383°N, 96.378067°E, 413 m), Deban on 10th October 2016 around 12: 10 hrs. It was seen perched on a shrub in an area with dense canopy cover.

Remark: Apart from two doubtful records from North Thailand (INAYOSHI, 2019), *C. nothis*

adamsoni has never been seen in last 125 years since its description. The sighting of *C. nothis adamsoni* from Namdapha is only second record of the subspecies from India and the photographs presented (Figure 8) are first ever photographs of live individuals.

Family Nymphalidae Rafinesque, 1815
Subfamily Limenitidinae Behr, 1864
Tribe Adoliadini Doubleday, 1845

Bassarona durga splendens (Tytler, 1915)

Dophla durga splendens Tytler, 1915. *J. Bombay Nat. Hist. Soc.*, **23**: 504

Type Locality: "Foot of the Hills on the Ukral Road, about 28 miles east of Imphal" (Manipur, India)

Distribution: NE India (Arunachal Pradesh, Manipur, Nagaland).

Genus *Bassarona* Moore, [1897] is widely distributed from India to Sundaland and Philippines and is represented by eight species. Out of these, four species are known to occur in India and are primarily restricted to North-eastern part of the country with just one species, *Bassarona teuta teutoides* (Moore, 1877) distributed up to Andaman Islands (CORBET & PENDLEBURY, 1978; SAVELA, 2019). *Bassarona durga* (Moore, [1858]) can clearly be distinguished from its congeners in having outwardly black edged white discal band. The species has two subspecies viz. and *Bassarona durga durga* (Moore, [1858]) and *Bassarona durga splendens* (Tytler, 1915) (EVANS, 1932).

B. durga splendens was described based on a single male specimen collected near Imphal (Manipur) (YOKOCHI, 2010). *B. durga splendens* is recorded from Nagaland and Manipur, whereas nominotypical *B. durga durga* ranges from Sikkim to Arunachal Pradesh (EVANS, 1932). The subspecies *B. durga splendens* differs from *B. durga durga* in having a complete series of blue lunule marking on the outer edge of discal band of upper hindwing (TYTLER, 1915; EVANS, 1932). There are very few published records of the species from India. Recently it was recorded from Kuwari in Chizami, Nagaland (NARO & SONDHI, 2014). The subspecies *splendens* is legally protected under Schedule I of the Indian Wildlife (Protection) Act, 1972. It is noted as a very rare species by EVANS (1932).

A single individual of *Bassarona durga splendens* was photographed on 1st November 2016 at 09:00 hrs near Hornbill camp (27.538500°N, 96.437817°E, 658 m), Namdapha NP (Figure 9). The individual was observed basking on small shrubs near to the ground.

Remark: The current sighting of *B. durga splendens* from Namdapha, extends its known distribution range by at least 150 km and is first record for the state of Arunachal Pradesh.

Most of the sightings detailed above are northern most distribution records of the species/subspecies studied. Species tend to occur in lower abundances at their range limits (SAGARIN & GAINES, 2002). This is perhaps why the species/subspecies recorded in the current study are rarely encountered in Namdapha and other parts of Eastern Himalayas and North east hills. Two of them namely, *Coelites nothis adamsoni* and *Bassarona durga splendens* are protected under schedule I and *Erites falcipennis* under Schedule II of Indian Wildlife (Protection) Act, 1972 while others are not protected legally in India. Rarity (with respect to abundance) and limited range of distribution of these species within the country warrants the need for legal protection. Forests of Namdapha NP is considered as the northern limit of lowland evergreen tropical rainforests in the world (PROCTOR & HARIDASAN, 1998). The forests here are largely intact compared to other regions of North east India and probably act as a refugia for forest butterfly species with Indo-Chinese and Malayan affinities at their range periphery. Thus, Namdapha National Park may not only be a significant Protected Area for mammals and others charismatic vertebrates but also for lesser known invertebrates like butterflies in north eastern extremity of the country.

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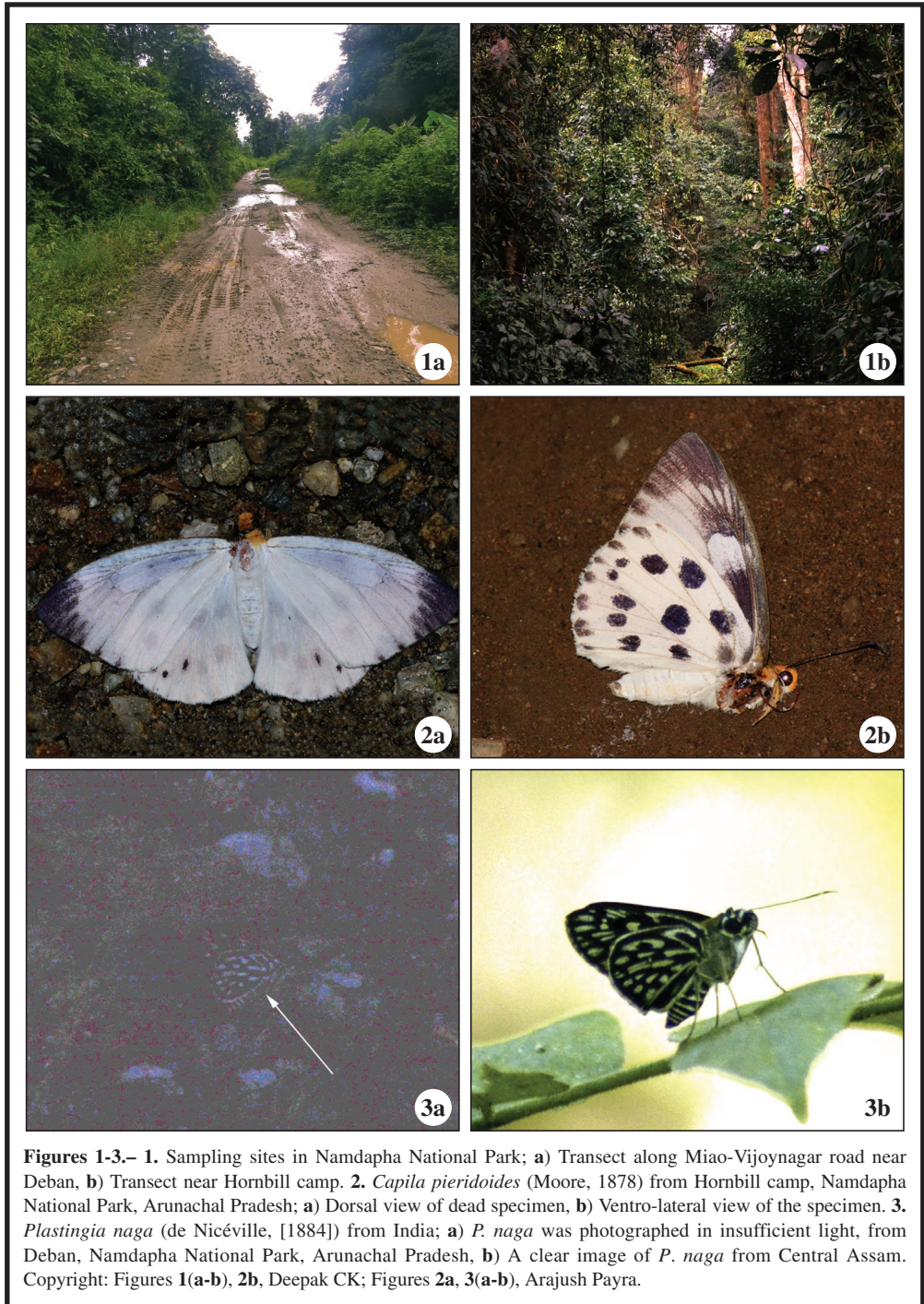
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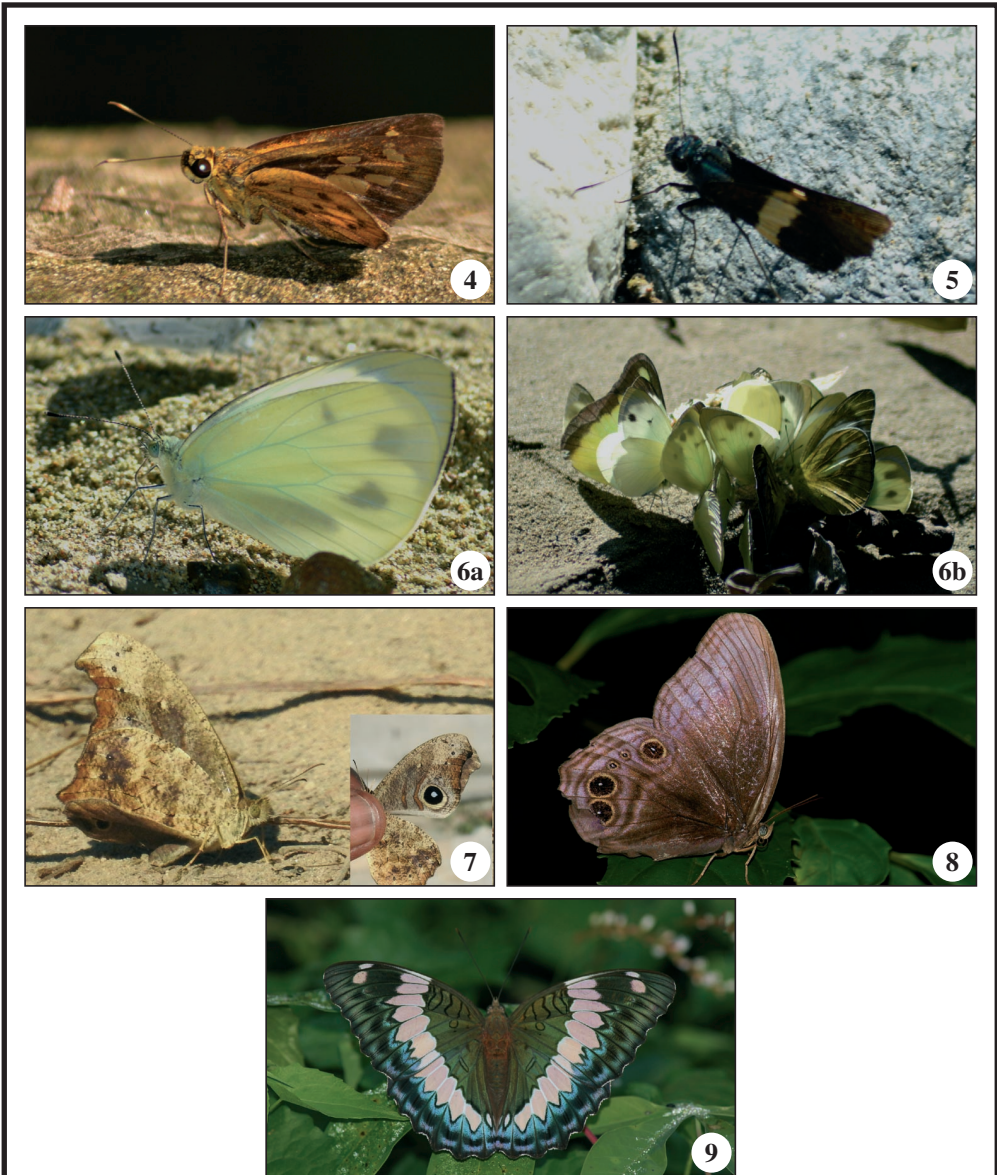
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Figures 1-3.– **1.** Sampling sites in Namdapha National Park; **a)** Transect along Miao-Vijoyanagar road near Deban, **b)** Transect near Hornbill camp. **2.** *Capila pieridoides* (Moore, 1878) from Hornbill camp, Namdapha National Park, Arunachal Pradesh; **a)** Dorsal view of dead specimen, **b)** Ventro-lateral view of the specimen. **3.** *Plastingia naga* (de Nicéville, [1884]) from India; **a)** *P. naga* was photographed in insufficient light, from Deban, Namdapha National Park, Arunachal Pradesh, **b)** A clear image of *P. naga* from Central Assam. Copyright: Figures **1(a-b)**, **2b**, Deepak CK; Figures **2a**, **3(a-b)**, Arajush Payra.



Figures 4-9.– 4. *Salanoemia noemi* (de Nicéville, 1885) from Deban, Namdapha National Park, Arunachal Pradesh. 5. *Lotongus sarala* (de Nicéville, 1889) from 10th Mile, Namdapha National Park, Arunachal Pradesh. 6. *Pieris naganum naganum* (Moore, 1884) from 27th Mile, Namdapha National Park, Arunachal Pradesh; **a)** An individual of *P. naganum naganum* showing mudpuddling behaviour, **b)** Aggregation of butterflies mudpuddling near a stream bed. 7. *Erites falcipennis* Wood Mason & de Nicéville, 1883 from 19th Mile, Namdapha National Park, Arunachal Pradesh. 8. *Coelites nothis adamsoni* Moore, 1891 from Anamika waterfalls, Deban, Namdapha National Park, Arunachal Pradesh. 9. *Bassarona durga splendens* (Tytler, 1915) from Hornbill camp, Namdapha National Park, Arunachal Pradesh. Copyright: Figures 4-7, Arajush Payra; Figures 8-9, Deepak CK.