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*Symbrenthia silana*



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# Rediscovery of the federally protected Scarce Jester Butterfly *Symbrenthia silana* de Nicéville, 1885 (Nymphalidae: Nymphalinae) from the Eastern Himalaya and Garo Hills, northeastern India

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**Abstract:** *Symbrenthia silana*, the Scarce Jester Butterfly (Nymphalidae: Nymphalinae), is legally protected under Schedule-I of India's Wildlife (Protection) Act, and listed as Vulnerable to extinction following IUCN's Red List Categories and Criteria in the Red Data Book of Indian butterflies. However, the species is so rare that it has not been seen for ca 90 years and nothing is known about its status, habitat and populations. Here I report rediscovery of the species from Sikkim, Namdapha Tiger Reserve and Nokrek National Park in the Eastern Himalaya and Garo Hills of northeastern India. The first pictures of live butterflies are presented along with information on the habits and habitat of the species, and a discussion of its status as a vulnerable species.

**Keywords:** Biodiversity hotspots, Eastern Himalaya, Garo Hills, *Symbrenthia*, Wildlife Protection Act, wildlife conservation

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## INTRODUCTION

The Oriental butterfly genus *Symbrenthia* Hübner, 1819 (Nymphalidae: Nymphalinae: Nymphalini) is represented by *S. hippoclus* Cramer, 1779 as its type species (Hemming 1967). The genus includes 10-15 species distributed from the Western Himalaya in India to southern China, and southward to Sundaland, the Philippines and New Guinea (Smith 1989; Corbet et al. 1992; Huang 1998; Bascombe et al. 1999; Huang 1999, 2000; Fric et al. 2004; Huang & Xue 2004). Seven currently recognized subspecies, classified among five species, occur in the Himalaya and in the Patkai mountain ranges in northeastern India (the Garo-Khasi-Jaintia Hills, Patkai-Bum, and the Lushai Hills) (see Table 1 & Image 1). Some of these species and subspecies are very rare and endemic to these mountain ranges. Among these, *S. silana* de Nicéville, 1885, is endemic to the Eastern Himalaya (Evans 1932; Wynter-Blyth 1957). It is the rarest member of the genus and has not been seen in the past 90 years (see below). In this paper I report the rediscovery of this species from Sikkim, Namdapha Tiger Reserve (Arunachal Pradesh) and Nokrek National Park (Meghalaya) in northeastern India. *Symbrenthia silana* is legally protected under Schedule-I of India's Wildlife (Protection) Act (Anonymous 1997) and listed in the Red Data Book of Indian Butterflies (Gupta & Mondal 2005), which makes this rediscovery especially significant.

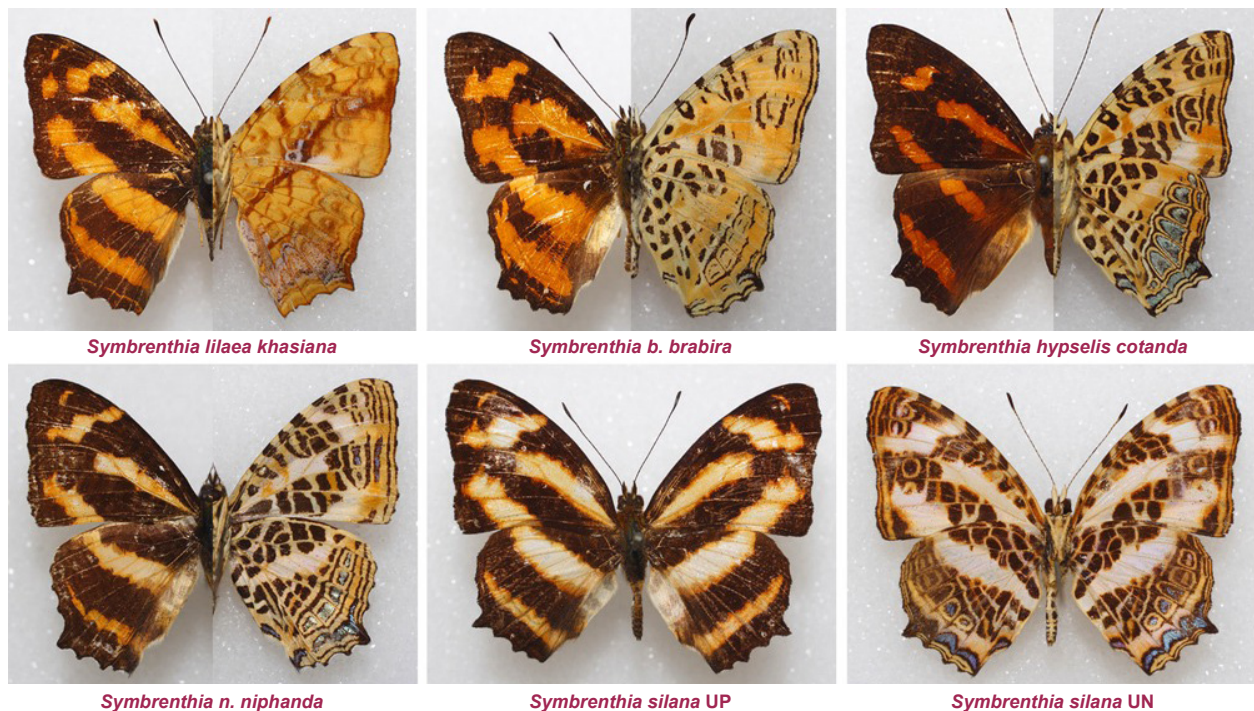
## MATERIALS AND METHODS

To document current populations, distributions and status of butterflies in the Himalaya, a globally recognized biodiversity hotspot (<http://www.biodiversityhotspots.org/xp/hotspots/himalaya/Pages/default.aspx>), I have been extensively surveying butterflies throughout the Eastern Himalaya and northeastern India for the past three years. As part of this long-term butterfly diversity inventory and monitoring program I conducted preliminary surveys at Nampridkang (North Sikkim) from 16 to 19 April 2008, and at Pabung Bridge (near Tarku, West Sikkim) on 7-8 November 2009, sighting *S. silana* at both locations. Since my first sighting of *S. silana* at Nampridkang three



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**Image 1. Species of Indian *Symbrenthia*. Shown on the left are dorsal and on the right ventral wing surfaces for each specimen except *S. silana*, in which upper and under sides are illustrated separately. Sexes are similar. Identification key is given by Evans (1932). (Photographs: Krushnamegh Kunte; © President and Fellows of Harvard College)**

colleagues have photographed three more specimens at Namprikdang, Namdapha Tiger Reserve (Arunachal Pradesh) and Nokrek National Park (Meghalaya). Details of all these sightings are provided below.

While searching the literature for records of this species I realized that it had not been reported in ca 90 years, hence nothing was known about its habitat or current populations. The sparse information on this species has also been scattered, often in journals that are not easily accessible to average lepidopterists and conservationists. Here I present a summary of background information on the species, discuss its taxonomic status, present its distributional map and compare its distributional range with ranges of other Indian *Symbrenthia* species (Image 2). This map was generated from previous literature and unpublished personal observations.

## RESULTS AND DISCUSSION

### I. Species description and distinguishing characters:

Taxonomic status and identity of some of the Indian *Symbrenthia* species and subspecies have been debated (see the next section and Table 1). Hence, it is important to define *S. silana* and to distinguish it from closely similar species. de Nicéville (1885, pp. 117-118) described *S. silana* as follows:

“*Symbrenthia silana*, n. sp., Pl. II, Fig. 9, male.

Male: Upperside black, *forewing* with a very regular streak from the base to beyond the cell extending slightly below the median but not touching the subcostal nervure, a subapical irregular streak not quite reaching to the costa or the outer margin, beyond which is a curved narrow lunular line; a broad band placed obliquely from the second median nervule to the inner margin. *Hindwing* with a broad discal band, a submarginal one less than half the width of the discal band becoming attenuated anteriorly, an obsolete (hardly traceable) very fine marginal line; all these markings bright ochreous paler in the middle. Underside with the markings as above but glossy opaline white, the black ground-colour replaced by prominent black and yellow tessellations. *Hindwing* with a discal series of five imperfect somewhat cone-shaped ocelli of moderate size, the three nearest the anal angle centred with brilliant metallic blue; three lunules of that colour at the anal angle. *Both wings* with the margin black, a submarginal fine line defined with yellow on both sides.

Female: Larger, the *forewing* broader, the outer margin evenly curved. Markings throughout paler, except the blue ones on the underside of the hindwing, which are larger and more prominent. The subapical streak on the upperside of the *forewing* touching the costa, and a small narrow spot just within it”.

de Nicéville did not specify collection dates of the specimens, but his description seems to fit the wet season form, judging by the dry season form subsequently described by Tytler (1915, p. 511): “The d.s.f. of *S. silana*

**Table 1: Taxonomic diversity (species and subspecies), status and distribution of Indian *Symbrenthia*<sup>1</sup> (de Nicéville 1885, 1886; Evans 1932; Wynter-Blyth 1957; Smith 1989; Huang 1998; Huang & Xue 2004).**

1. *Symbrenthia brabira* Moore, 1872 (Himalayan Jester): Rare. Himalaya, SE Tibet, S. & E. China, Taiwan.
  - i. *S. b. brabira* Moore, 1872<sup>2</sup> (Himalayan Jester): Rare. Himalaya, SE Tibet, S. China.
  - ii. *S. b. doni* Tytler, 1940<sup>3</sup> (Naga Jester): Rare; NE India (Naga Hills), N. Myanmar, SE Tibet. Endemic to E. Himalaya.
2. *Symbrenthia lilaea* Hewitson, 1864 (Common Jester): Common. Eastern Ghats, Himalaya, NE India, Indo-China, SE Asia.
  - i. *S. l. khasiana* Moore, 1874 (Khasi Common Jester): Common. Eastern Ghats, Himalaya, NE India, Myanmar.
3. *Symbrenthia niphanda* Moore, 1872 (Blue-tail Jester): Rare. Himalaya, NE India, SE Tibet, northern Indo-China, S. China.
  - i. *S. n. niphanda* Moore, 1872 (Blue-tail Jester): Rare. E. Himalaya, NE India, SE Tibet, northern Indo-China, S. China.
  - ii. *S. n. hysudra* Moore, 1874 (Kumaon Blue-tail Jester): Rare. W. Himalaya.
4. *Symbrenthia hypselis* Godart, 1823 (Spotted Jester): Uncommon. Himalaya, NE India, S. China, Indo-China, SE Asia.
  - i. *S. h. cotanda* Moore, 1874 (Himalayan Spotted Jester): Uncommon. Himalaya, NE India, S. China.
5. *Symbrenthia silana* de Nicéville, 1885 (Scarce Jester): Extremely rare. Endemic to E. Himalaya. Legally protected in India.

<sup>1</sup> Here *Symbrenthia* includes the newly erected genus *Brensymthia* Huang, 2000, which is based on weak characters (see below under section "II. Taxonomic status of *S. silana*").

<sup>2</sup> Two taxa from W. Himalaya, *S. sivokana* Moore, 1899 and *S. asthala* Moore, 1874 have been listed as subspecies of *S. brabira* in the past. However, now they are often considered to be synonyms of *S. brabira brabira* (Evans 1932, Huang 1998), although Smith (1989) listed *S. b. sivokana* separately. If *sivokana* is deemed a separate subspecies, it comprises the Western Himalayan populations of *S. brabira*.

<sup>3</sup> Tytler originally described *doni* as a subspecies of *brabira*, distinguishing it from ssp *brabira* as follows: upperside with ochreous bands slightly broader; the underside ground color not uniformly dark yellow, but with paler patches; the black markings on the underside heavier; post-discal band of ocelli on the hindwing underside without blue centers (Tytler 1940). This is the only subspecies of Indian *Symbrenthia* that was described after Evans's landmark volume (Evans 1932); hence, not included in his identification key. The geographical separation between the subspecies *doni* and *brabira* has never been studied. I have not seen any specimens of *doni* in nature or in museums. Huang & Xue (2004) elevated *doni* to a species level without adequate justification, with *S. dalailama* Huang, 1998, as a synonym of *S. doni*. From Tytler's original description and Huang's various discussions of the genus, I do not think that *doni* is sufficiently differentiated to demand a species status; if at all it is a valid taxon. Especially, *S. brabira* is very variable in its subspecific and seasonal forms, and naming geographic variation is challenging. These issues would, unfortunately, remain unresolved until a more careful and comprehensive analysis of all the *Symbrenthia* species and subspecies is available.

only differs from the w.s.f. in being rather smaller and in having the rufous bands on the *upperside* if anything slightly broader. On the *underside* the green of the subterminal cones on the hindwing is carried on to the forewing, being distinct in interspaces 3 and 4, less so in 2, 5 and 6. On the *upperside* hindwing there is also sometimes a distinct fine reddish terminal line". de Nicéville described the metallic discal cones and tornal lunules on the hindwing underside as "brilliant metallic blue" whereas Tytler described them as "green". This might seem to stem from real variation in the species: "The type which is in the de Nicéville collection has the cones and lunules on the *underside* of the hindwing *metallic blue*, but it is aberrant in this respect, the remainder of the specimens in the collection and all my specimens have it very dark bluish-green" (Tytler 1915). While these markings may be bluish-green, Tytler's description of "green" markings seems erroneous. This is because in all the seven specimens that I have seen, representing specimens from widely scattered localities and from different seasons, the tornal and discal markings were some shade of metallic blue.

*Symbrenthia silana* is most similar to *S. niphanda*, with which it flies at least in some areas (Image 2). Due to the close similarity, *S. silana* was considered by many authors to be either a subspecies of *S. niphanda* or its dry season form (see detailed discussion below). However,

the two species may be distinguished by the following characters (compare in Images 1 & 3): (i) *S. niphanda* (and also *S. brabira* and *S. hypselis*) has on the underside of the fore-wing "always a black spot base 1 under the spot in the cell near the base", which is missing in *S. silana* (Evans 1932), (ii) both *niphanda* and *silana* have metallic submarginal markings on the hindwing underside, running from tornus to the short tail at v.4 ("the anal angle" in de Nicéville's description). However, in *S. silana* these markings are either cerulean or dark metallic blue (or bluish green), very prominently conical in spaces 2 and 3, making their inner margin very wavy. In *S. niphanda* these markings are much greener and not conical, with their inner margin much more even. Also, these markings are contiguous from tornus to v.4 in *S. silana*, but sharply and widely broken at v.2 in *S. niphanda*, (iii) in *S. silana*, the paler ochreous bands on the upperside of the wings are much broader, (iv) the imperfect post-discal ocelli on the underside hindwing of *S. silana* are almost half the size of that in *S. niphanda*, although this seems to be variable, and (v) the yellow-ringed black spot in space 3 on the forewing underside, which is part of the post-discal series and is placed centrally in the black and yellow tessellations in this wing area, is also characteristic. In *S. silana* this spot is round, whereas in *S. niphanda* it is laterally compressed (de Nicéville 1885; Tytler 1915; Evans 1932).





**Image 2.** Distribution of Indian *Symbrenthia*. Each spot on the map, color-coded with subspecies name, represents a single spot record. Data are from old literature (de Nicéville 1885, 1886; Moore 1899-1900; Tytler 1915) and unpublished observations.

A more detailed key to distinguishing *S. silana* from other species is given by Evans (1932), which will work very well with image 1 in this paper.

## II. Taxonomic status of *S. silana*

Taxonomic assignments of many *Symbrenthia* species and subspecies have changed substantially since de Nicéville's description of *S. silana* (Moore 1899-1900; Bingham 1905; Evans 1932; Smith 1989; Huang 1998, 1999, 2000; Fric et al. 2004; Huang & Xue 2004). Hence, I have summarized in Table 1 the taxonomic diversity of Indian *Symbrenthia*. Although the species and subspecies assignments may have changed, the identification key given by Evans (1932) is still valid (also refer to Image 1 and notes under Table 1).

The specific status of *S. silana* had been a matter of debate. de Nicéville himself later retained it as a distinct species (de Nicéville 1886), as did Moore in *Lepidoptera Indica* (Moore 1899-1900). Once the concept of subspecies was applied to butterflies, three important volumes treated *S. silana* as a subspecies of *S. niphanda* (Bingham 1905; Fruhstorfer 1912; Antram 1924). However, based on wing pattern variation across *S. silana* and *S. niphanda*, Tytler felt that *S. silana* was a good species (Tytler 1915) and Evans subsequently treated it as one (Evans 1932). Finally, the substantial differences between male genitalia in *S. silana* and *S. niphanda* firmly established the specific status of *S. silana* (Gillham 1956).

Recently, both *niphanda* and *silana* were moved into a

newly erected genus, *Brensymthia* Huang, 2000 (Huang 2000). The creation of this genus should be rejected because Huang did not give any distinctive characters for the genus, so the genus was not defined. The species included under *Brensymthia* are not distinctive enough in any morphological trait to justify a generic status. Moreover, a preliminary phylogeny of *Symbrenthia* and allied genera does not support *Brensymthia*; *Symbrenthia* being paraphyletic with respect to *Brensymthia* (Fric et al. 2004). Hence, *Brensymthia* should be discarded, and *silana* and *niphanda* should stand as members of *Symbrenthia*.

## III. Historical records, status and distributional range of *S. silana*

*S. silana* has been considered a very rare species by all previous authors who covered it in any detail (de Nicéville 1885, 1886; Elwes 1888; Tytler 1915; Evans 1932; Wynter-Blyth 1957); and rightly so, since less than 40 specimens have ever been collected. There are 11 specimens, all collected from "Sikkim-Buxa", in the National Zoological Collection of Zoological Survey of India, Kolkata (ZSI), and one specimen in the entomological collection at the Forest Research Institute, Dehra Dun (Gupta & Mondal 2005). de Nicéville's collection at the Indian Museum in Kolkata, where he was a curator, is now part of the ZSI. It is likely that de Nicéville's species description was based on these very 11 specimens since his specimens were collected by the museum-appointed collector Moti Ram from "Buxa, Bhutan", and by Otto Möller in "Sikkim"

(de Nicéville 1885). Exact localities of Möller's Sikkim specimens are unknown, although they were collected at ca 600m asl in May (Elwes 1888). Moti Ram's specimens from "Buxa, Bhutan" could either be from the present Buxa Tiger Reserve in northern West Bengal, bordering Bhutan to the north and Sikkim to the north-west, or they could be from the Bhutan part of this forest (I am unable to determine how the boundary between India and Bhutan has changed since de Nicéville's species description, and whether Moti Ram's specimens are likely to have come from West Bengal Buxa or from Bhutan, as originally reported). The 12 specimens mentioned above are the only ones known in Indian research collections. There are no specimens in the Madras Government Museum (Satyamurti 1966). A recent exhaustive book on Sikkim butterflies listed three *Symbrenthia* species: *S. lillaea khasiana*, *S. hypselis cotanda*, and *S. n. niphanda*, but did not even mention *S. silana* (Haribal 1992). Haribal's color plates were based on specimens deposited in the Bombay Natural History Society's collection, so presumably there are no specimens there.

The second set of *S. silana* specimens were collected in Nagaland and Manipur, and were deposited in the British Natural History Museum (now Natural History Museum), London (Tytler 1915). Tytler collected seven males and two females of the wet season form from July-October at ca 1,800m asl at Kirbari, Naga Hills. Kirbari is near Phesima, lying below Mt. Paona (25°30'N & 93°39'E), District Kohima, Nagaland. Tytler also collected 13 males of the dry season form from Sebong, eastern Manipur Hills, and "on the Irang River, Western Manipur Hills". The exact locality of his "Irang River" specimens cannot be determined. Sebong (=Sibong; approximately, 24°20'N & 94°16'E) is situated in Chandel District, Manipur, on the Myanmar-India border.

As far as I know, Tytler's report of *S. silana* was the last record of the species. All subsequent mention of the species has been a repetition of information given by de Nicéville (1885) and Tytler (1915). Gillham (1956) reported new information – genitalic differences between *S. silana* and *S. niphanda* – although the specimen he examined was previously collected at "Sivoke, Sikkim", and deposited in the U.S. National Collection (the Smithsonian Institution National Museum of Natural History) (Gillham 1956). Sivoke (=Sivoke), near Siliguri, was previously part of Sikkim but is now in northern West Bengal. Gillham did not specify the original collector and collection date.

Apart from these specimens reported in literature, some more specimens may be found in various museums if their collections are carefully examined. For example, I found a single *S. silana* specimen, incorrectly labeled *S. niphanda*, in the butterfly collections at Harvard University's Museum of Comparative Zoology (illustrated in Fig. 1). Currently this specimen has four labels on it: "S. NIPHANDA. M. Sikkim", "3736", "Sikkim", and "AG

Weeks Collection". The original collector and collection date of this specimen are unknown.

Thus, *S. silana* has rarely been collected, is considered very rare, and its distributional range is known only from four specific localities (Sevoke, Buxa, Kirbari and Sibong) and two general areas ("Sikkim", and "Irang River, western Manipur Hills"). These localities are scattered over the entire span of the Eastern Himalaya (Image 2), although the known distribution is very patchy. The species had not been reported from Arunachal Pradesh, upper Assam and rest of Bhutan, which together cover most of the E. Himalaya, where surveys are needed. The species also has the narrowest range among all its Indian congeners.

#### IV. Rediscovery of *S. silana*:

**(A) Recent sightings with locality and habitat information:** *S. silana* was rediscovered from Namprikdang in North Sikkim, approximately 90 years after Tytler's collection of the species. The first sighting was most likely a male that I photographed mud-puddling at noon on 16 April 2008 outside the Namprikdang Forest Rest House (Image 3a). The second sighting was an unsexed individual photographed nearby by Ullasa Kodandaramaiah on 19 April 2008 (Image 3b). Namprikdang (27°31.213'N & 88°31.905'E; elevation ca 1,000m) is near the village of Mangan in North Sikkim. It is a mosaic of sparse, disturbed mixed deciduous and semi-evergreen forests and small settlements of the native Lepcha people (Image 5). The trees are 15-20 m tall, and *Pandanus* plants are common.

Subsequently, Arjan Basuroy and Rudraprasad Das photographed two specimens in Namdapha Tiger Reserve in eastern Arunachal Pradesh (27°37.48'N & 96°05.57'E, elevation ca 550m asl) (Images 3e & 3f). The first specimen was mud-puddling at 1100hr on 17 March 2009 in a wide, open stream flowing out of the subtropical evergreen forest at Chidiapung. The second specimen was also mud-puddling in a similar stream at 1042hr on 25 March 2009, 5km from the Deban Rest House. These two dry season forms were differently marked than other specimens recently sighted, which were all wet season forms. They were much more ochreous on the underside, with dark ochreous cones masking portions of the metallic blue tornal cones in space 1 and 2 around v.2. Because of these dark ochreous cones the tornal blue coloration seemed interrupted. In the wet season forms the ochreous markings and cones were greatly reduced, thus the blue tornal cones seemed uninterrupted (compare in Image 3). These dry season forms, however, did not have blue scaling on the underside extended to the forewing, as described by Tytler (1915; see above).

I made the fifth sighting of a male *S. silana* mud-puddling at Pabung Bridge in western Sikkim at 1140hr on 8 November 2009 (27°14.296'N & 88°26.948'E; elevation ca 1,000m asl) (Images 3c & 3d). Pabung Bridge has a small patch of dense remnant subtropical evergreen

forest, where the trees are 15-20 m tall. A small perennial stream cuts through the narrow, steep valley.

The last sighting was by Kedar Tokekar, who photographed a worn specimen mud-puddling along a densely wooded stream through an evergreen forest (Images 3g & 3h). This sighting was made at 1103hr. on 9 November 2009 in Nokrek National Park, Garo Hills, Meghalaya (25°28.30'N & 90°18.25'E; elevation 1,074m).

**(B) Revised distributional range, populations and status of *S. silana*:** This report adds the states of Arunachal Pradesh (Namdapha Tiger Reserve) and Meghalaya (Nokrek National park) to the previously known distributional range of *S. silana*. The Nokrek record is remarkable because the species had not been previously reported from the Garo Hills. Due to border realignment, the old Sevoke record now adds this species to the butterfly fauna of West Bengal. Thus, from the old records and the newly reported sightings here, *S. silana* is now known to occur all over the E. Himalaya from Sikkim (Namprikdang and Pabung Bridge) and West Bengal (Sevoke and Buxa) through Bhutan (? Buxa) to Arunachal Pradesh (Namdapha); and in the Patkai Range covering the hills of Manipur and Nagaland, and the Garo Hills in Meghalaya. The species has been reported from low-lying and mid-elevation (600-1,800 m) evergreen forests, but the full range of its habitat is poorly understood.

The recent sightings show that Sikkim, Namdapha and Nokrek presently support populations of *S. silana*. Of these, Sikkim populations may be most vulnerable to local extinction. The Sikkim Government is building numerous large dams, including one near Namprikdang, to feed India's growing hunger for electricity. These dams will most likely destroy or disturb habitat of *S. silana* and other federally protected species. Both Namprikdang and Pabung Bridge are outside any major protected areas, so the long-term persistence of forests and *S. silana* populations there is doubtful. There has also been widespread deforestation in the states of Nagaland and Manipur. Most of the forests near Siliguri and other areas in northern West Bengal have either been cut or degraded and are increasingly under greater human pressure. Hence, the status of populations in these areas, if they can be located, is also uncertain.

Under this scenario, only the populations in Namdapha Tiger Reserve and Nokrek National Park are secure, since both are in protected areas administered by the Indian central government. Buxa, if it still has any *S. silana*, would also be secure since the forests there are protected under the Buxa Tiger Reserve by the Indian government. Buxa is flanked by Bhutanese forests to the north, and in the east, by the Manas Tiger Reserve and its reserve forests in Assam. The priority now should be to locate populations of this very rare and legally protected species at the specific localities mentioned in older literature, and in new places where it may be found.

**(C) Description of habits:** My observations on the habits of *S. silana* are limited, but I report them here since little else is known. All except Ullasa Kodandaramaiah's sighting were of mud-puddling individuals (Image 3). The specimens held wings open once in a while, slowly moving them up and down as they turned around their mud-puddling spots. The individuals were somewhat wary and, if approached, would fly for several meters near the ground. Their flight was similar to that of *S. lilaea* and *S. hypselis*: strong, with rapid wing beats, interspersed with short glides. However, the butterflies settled frequently, often on low vegetation. If disturbed while mud-puddling, the butterflies returned to the same or nearby mud-puddling spots shortly afterward. The butterflies had the tendency to perch with wings closed when they landed on vegetation, but rested with wings spread flat soon afterwards, until they moved on again.

The specimen spotted at Pabung Bridge was mud-puddling not only on wet soil but also on very dry stones at the edge of the stream. In the latter case, it would bend its abdomen and deposit a drop of water on the rock, which apparently quickly dissolved minerals. The butterfly would then suck back the drop of water with its proboscis, and repeat the process several times (Image 4). Similar behavior is also common in many hesperiids and lycaenids.

#### V. Legal protection and conservation of *S. silana*

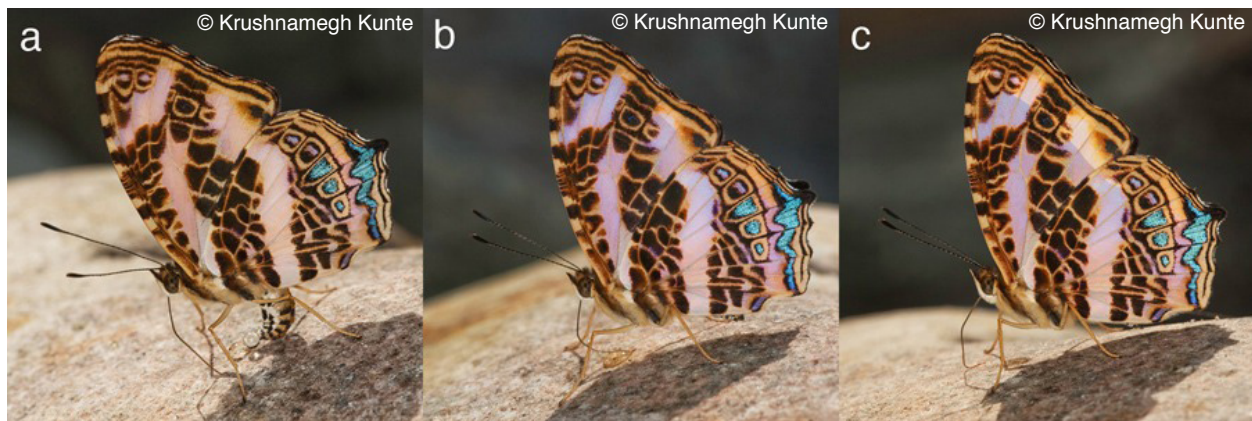
*S. silana* has been included in Schedule-I of India's Wildlife (Protection) Act, henceforth WPA (Anonymous 1997). This listing ties it with such iconic species as the tiger, snow leopard and great pied hornbill, which receive the highest level of legal protection in India (Anonymous 1997). The listing was made in 1972, before a formal framework to list species under various WPA Schedules was available (such as that provided by the International Union for Conservation of Nature and Natural Resources (IUCN) Red List Categories and Criteria (IUCN 2001)). When the listings were initially made, apparently the sole, remarkably subjective criterion used to list butterfly species under Schedule-I was that the species had been listed as "very rare" in Evans's 1932 monograph on Indian butterflies (Gupta & Mondal 2005, p. 19). Gupta & Mondal (2005) later rationalized the inclusion of *S. silana* in the WPA Schedule-I based on its narrow endemism and rarity. They classified its status as "Vulnerable (Vu A1c, B1 2bc)" following IUCN's Red List Categories and Criteria (Gupta & Mondal 2005). This classification translates as: the fear of a high risk of extinction of the species in the wild from: (a) an estimated population size reduction of  $\geq 50\%$  over the last 10 years from a decline in area of occupancy, extent of occurrence and/or quality of habitat ("Vu A1c"), and (b) an estimated geographic range of  $\leq 20,000$  km<sup>2</sup> with the habitat/populations being severely fragmented, where the populations are continuing to decline at a rapid rate ("B1 2bc") (IUCN 2001; Gupta & Mondal 2005). This





**Image 3. Recent *S. silana* sightings:** (a) Namprikdang Rest House, North Sikkim, 16/04/2008; (b) Namprikdang Rest House, North Sikkim, 19/04/2008; (c) and (d) same individual, Pabung Bridge, West Sikkim, 08/11/2009; (e) and (f) same individual, Chidiapung, Namdapha Tiger Reserve, eastern Arunchal Pradesh, 17/03/2009; (g) and (h) same individual, Nokrek National Park, Garo Hills, Meghalaya, 09/11/09. (e) and (f) are dry season forms, others are wet season forms.





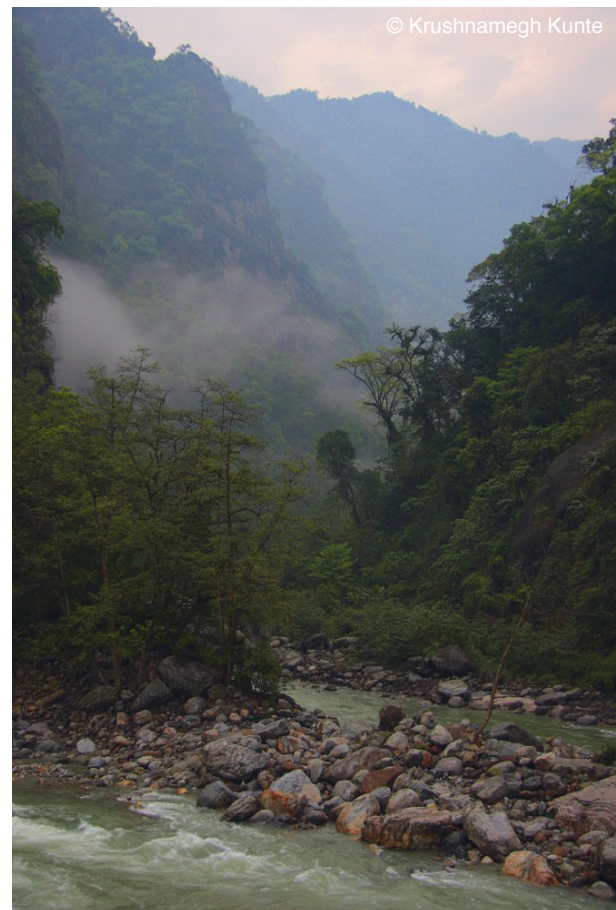
**Image 4. Mud-puddling behavior of *S. silana*:** (a) the butterfly deposits a drop of water on the dry rock through the end of its abdomen, (b) it starts sucking the water back with its proboscis once the salts accumulated on the rock dissolve in water, and (c) the water drop has been completely imbibed.

classification is probably useful but there is no evidence that the habitat and populations of *S. silana* have either declined or been fragmented at such an alarming rate during any time in history. In the absence of any sightings or detailed surveys of the area for several decades, no such information had been available on this species.

I hope that the recent sightings and the information provided above will spur interest in the ecology and conservation of *S. silana*. The first step would be to intensively survey its populations, delineate its current distribution and determine its status in various areas. Generating information on seasonal population dynamics, the early stages and host plant use would also be very important. This information will be critical in protecting this species. Based on my recent sightings, at the closing of the Forest Centenary on 12 December 2009, Department of Forest, Environment and Wildlife Management, Government of Sikkim, presented *S. silana* to the state of Sikkim as its “centennial butterfly”. I hope that the beauty and rarity of this species will generate further enthusiasm within the Sikkim and West Bengal State Forest Departments. Such enthusiasm may be capitalized upon to facilitate creation of butterfly sanctuaries in the currently unprotected forest fragments at Pabung Bridge, Namprikdang and near Sevoke. Previous observations have shown that butterfly populations can persist even in very small forest fragments for decades (Larsen 2008; Larsen et al. 2009). Hence, the creation of such butterfly sanctuaries in remnant forests across the Eastern Himalaya may help to connect and protect populations of *S. silana* and other WPA-scheduled butterfly species. This will also conserve the overall butterfly diversity of this important biodiversity hotspot.

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**Image 5. Remnant forest along the Namprikdang River, North Sikkim, one of the few last refuges of *S. silana*.**

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