OVERVIEW OF NEW BUTTERFLY RECORDS (LEPIDOPTERA: PAPILIONOIDEA) FOR NEPAL SINCE SMITH (2010)

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INTRODUCTION

In Lepidoptera of Nepal (2010), Colin Smith listed 661 butterfly species. Among these, there were two "new" species. *Tagiades japetus* (Stoll, [1781]) had not been reported from Nepal before, and *Arhopala khamti* Doherty, 1891 had been listed as a ssp. of *A. oenea* (Hewitson, [1869]) in Smith (1994). Both were not listed as species or ssp. in Smith's (2011) Illustrated Checklist, which was largely a reprint of the 2006 edition. In 2017, Smith removed several species from his database. These species were listed in an unpublished document, of which the following table is a summary.

Species	Common name	Reason	Remarks
<i>Ixias marianne</i> (Cramer, [1779])	White Orange Tip	Identification doubtful	Reported as common by Gough (1935). Maintained.
<i>Colias berylla</i> Fawcett, 1904	Everest Clouded Yellow	Location doubtful (N. side of Everest)	Reported to Smith by Dierl in a name list in (1974), without data.
<i>Chrysozephyrus</i> <i>zoa</i> (de Nicéville,1889)	Powdered Green Hairstreak	Listed in error	Reported by Shirozu (1956) probably in Japanese), no data.
<i>Arhopala</i> <i>bazaloides</i> (Hewitson, 1878)	Tamil Oakblue	Record doubtful	Reported to Smith by Dierl in a name list in (1974), without data.
<i>Ionolyce helicon</i> (C. Felder, 1860)	Pointed Lineblue	Record doubtful	Reported to Smith by Dierl (1974), without data. The specimen in ZSM, Munich. Maintained.
<i>Neurosigma siva</i> (Westwood, [1850])	Leopard	Record doubtful	Reported by Butler, (1868), no data, except "Nepal". However, Westwood mentioned "Assam".
<i>Ensipe euthymius</i> (Doubleday, 1845)	Red Caliph	Record doubtful	Described from Nepal based on a specimen of Bailey; No

			data. Maintained as tentative species.
Hyponephele lupines cheena (Moore, 1865) = H. cheena	Banded Meadow- brown= Branded Meadowbrown	Record doubtful	(Listed for Nepal by Moore in 1890); No data.
Cephrenes chrysozona Plötz, 1883	Plain Palm Dart	Record doubtful	Reported to Smith by Dierl in 1974 without data. Photographed in 2019 & reported in 2020.
<i>Erionota thrax</i> (Linnaeus, 1767)	Palm Red-eye	Record (Gough, 1935) was very likely <i>E. torus</i>	Removed earlier. <i>E. torus</i> was described after Gough's record. Reported for Nepal in 2022.

Doubtful species were removed from the Excel database of Colin Smith (unpublished list).

For various reasons, some of these removals were considered insufficiently justified or were subsequently proven to be wrong. These species are listed in normal font (not bold) in the table above. Later in 2017, Smith removed some more species from his database, but reasons for removal were not written down anywhere as far as we know. One of these was a species that was recognized as a separate species, but was never formally described: Issoria annapurnae Annapurna Silverspot. Other doubtful species that were removed were Heliophorus bakeri Evans, 1927 Western Blue Sapphire (also not listed by Van Gasse (2018)), and Lasionmata menava Moore, 1865 Dark Wall, for which there appears to be no specimen. Between 2011 and 2017, Smith reported several new species for Nepal in his unpublished "Butterfly Updates". All of these that were correctly identified were reported in later articles by various authors.

METHODS

In 2019, the first author discussed with Peter Smetacek the need to update the

butterfly species list of Nepal. Smetacek encouraged a couple of students, who copied names and authors of species and sub-species known from Nepal from "A Synoptic Catalogue of the Butterflies of India" (Varshney & Smetacek, 2015) to the new Draft Nepal Catalogue. The information to be included in the new Catalogue was discussed with several people in Nepal. Most of the participants in the discussion wanted to include most of the information of Colin Smith's Excel database, while also adding information on characteristics and similar species, which to some degree Colin Smith had done in his Field Guide (Smith, 1994) and his Pictorial Guidebook (Smith, 2015). Thus, it became a much more ambitious project than was originally envisaged.

The data from Colin Smith's Excel database was transferred to the Nepal Catalogue file and checked for data entry errors. Published and unpublished documents of Colin Smith were searched for new records and records in new zones, at higher or lower elevations or in different months of the year. New species which had been reported in Colin Smith's unpublished Butterfly Updates were officially published. Information for species photographed by the authors

extended the distribution in space and time of many species in Nepal. Some of the scrutinized pictures were of species not earlier reported for Nepal. Literature was searched for species that were reported for Nepal, but had been overlooked or dismissed. Various publications were searched for new zones, elevations or months by Shristee Panthee, who forwarded these. For records of seldom seen species or those of which the area or elevation were possibly questionable, the authors were asked to provide pictures of the reported records. In a fair number of cases, the identification proved to be wrong or doubtful, while for other observations no pictures were provided. These unproven records were not included in the Nepal Catalogue. For some doubtful records, specimens in the Annapurna or Kathmandu Natural History Museums answering were examined, certain questions, but also creating new questions.

In early 2021, a first draft was ready and sent to some people for comments. Due to COVID and other delays, the updating process came to standstill for a while. Eventually, it was picked up again late in 2021, by which time a lot of new species for Nepal had been reported, especially by the second author. The catalogue is presently being edited.

RESULTS

Apart from the nine species listed in the introduction as removed or not counted (tentative), three other species were removed in the new Catalogue. These were *Celaenorrhinus maculicornis* Elwes & Edwards, 1897, which became a ssp. of *C. munda* (Moore, 1884), *Iraota maecenas*, which was a synonym of *I. timoleon* (Stoll,

[1790]) and *Neptis yerburyi tamur* Fujioka 1970, believed to be *N. nata adipala* Moore, 1872 (although Van Gasse (2018) believed it to be *N. capnodes pandoces* Eliot, 1969, based on Huang (2001).

A total of 43 new species were reported for Nepal. They can be grouped in different ways. By family, there were 17 Hesperiidae, 14 Nymphalidae, 9 Lycaenidae, 1 Riodinidae, 1 Pieridae and 1 Papilionidae. Grouped by year of publication as new species for Nepal, there were 7 overlooked species reported between 1971 and 2007 (4 of which in 1997-98), 6 species which were earlier treated as ssp. of another species which also fly in Nepal, 2 species reported in 2011 and 27 species in 2019-2022. One species is tentatively reported as new, here.

The latter is Caprona ransonnetii (Felder, 1868), which was photographed (see 1.) by Surendra Pariyar in Figure Kanchanpur in West Nepal and was wrongly reported in 2016 by Colin Smith in grey literature as having been reported by Evans. Evans (1932) listed Caprona ransonnettii [sic] saraya from Kumaon & Nepal. However, Evans (1949) listed ssp. saraya as a synonym of C. agama agama (Moore, [1858]). It was also reported as a new species in a publication with an unreliable list of 18 "new" species for Nepal. At the time of this publication C. ransonnetii was believed to have been reported for Nepal by Evans (1932). Of the other 17 listed "new" species, several were already reported for Nepal, and several others were wrong identifications and for the rest no photographic evidence was provided. The following table lists all the 43 new species reported in the Catalogue of Nepal, as compared with Smith (2010).



Figure 1. Caprona ransonnetii ©Surendra Pariyar

Species	Common name	Reported by	Remarks
<i>Graphium garhwalica</i> (Katayama, 1988)	Western Spectacle Swordtail	Hu et al. (2018)	Split from <i>G. mandarinus</i> (which is now <i>G. paphus</i>)
<i>Burara anadi</i> (de Nicéville, [1884])	Plain Orange Awlet	KC (2020)	
Burara gomata (Moore, [1866])	Pale Green Awlet	Morishita & Inomata (1998)	Confirmed by Tamang <i>et al.</i> (2019)
Hasora taminatus (Hübner, 1818)	White-banded Awl	KC & Sapkota (2022)	
Hasora vitta (Butler, 1870)	Plain Banded Awl	KC & Sapkota (2022)	
<i>Celaenorrhinus</i> <i>nigricans</i> (de Nicéville, 1885)	Small-banded Flat	Smith (2011)	Reported in more detail by KC and Pariyar (2019)
<i>Celaenorrhinus pyrrha</i> de Nicéville, 1889	Double-spotted Flat	KC & Sapkota (2022)	
Pseudocoladenia fatih (Kollar, [1844])	Himalayan Pied Flat	KC & Neupane (2022) reported <i>fatih</i> as a species for Nepal and <i>fabia</i> as new spp of <i>P. dan</i> .	Huang (2021) raised ssp. <i>P. dan fatih</i> to species rank <i>.P. dan</i> remained a species in Nepal, because ssp. <i>fabia</i> was found in East Nepal.
Pseudocoladenia fatua (Evans, 1949)	Sikkim Pied Flat	KC & Neupane (2022)	
Coladenia agni (de	Brown Pied Flat	KC & Sapkota	1 dead individual

NT: (11 - F100 41)		(2022)	
Nicéville, [1884])		(2022)	
Seseria sambara (Moore, [1866])	Sikkim White Flat	KC & Sapkota (2022)	
<i>Gerosis sinica</i> (C. & R. Felder, 1862)	White Yellow- breast Flat	Van der Poel (2020b)	Record by Thapa (1998, no details) was noted in Smith (2010) as: "mistake"
<i>Caprona ransonnetii</i> (Felder, 1868)	Golden Angle	Here, and in unreliable list (Subedi <i>et al.</i> , 2021)	Based on photographs of 1 individual by S. Pariyar
<i>Halpe arcuata</i> Evans, 1937	Overlapped Ace	KC (2020)	
Halpe aucma Swinhoe, 1893	Gold-spotted Ace	KC (2021b)	
Notocrypta paralysos (Wood-Mason & de Nicéville, 1881)	Common Banded Demon	Gurung <i>et al.</i> (2022)	
Scobura isota (Swinhoe, 1893)	Swinhoe's Forest Bob	KC (2021a)	
Caltoris bromus (Leech, 1894)	Extra-spot Swift	KC (2022)	
<i>Eurema andersoni</i> (Moore, 1886)	One-spot Grass Yellow	Van der Poel (2020a)	Reported by Thapa (1998), but not in Smith (2010) who noted: "Foreign not Nepal".
<i>Abisara chela</i> de Nicéville, 1886	Spot Judy	Van der Poel <i>et al.</i> (2020)	
Heliophorus forficatus Yago & Nakanashi, 2003	Similar Blue Sapphire	Yago and Nakanishi (2003)	Similar to <i>H. oda</i> and indistinguishable in the field
Chrysozephyrus vittatus (Tytler, 1915)	Tytler's Green Hairstreak	Koiwaya (2007)	Zhuang <i>et al.</i> (2018), listed it with coordinates, that place it in Parsa some 170 km SE of its actual location
Shirozuozephyrus triloka (Hannyngton, 1910)	Kumaon Hairstreak	Saito (2011)	
<i>Ahlbergia haradai</i> Igarashi, 1973	Prickly Ash Elfin	Igarashi (1973)	Detailed report by Van der Poel & Limbu (2019).
Nacaduba berenice (Herrich-Schäffer, 1869)	Rounded Sixline Blue	KC (2022)	Reported from Dhankuta with photographic and male genitalia evidence
<i>Tarucus balkanicus</i> (Freyer, 1844)	Black-spotted Pierrot	KC & Sapkota (2022)	Reported as abundant near Koshi Tappu in Sunsari District in August
<i>Agriades kurtjohnsoni</i> Bálint, 1997	Nepal Argus Blue	Bálint, in Bálint & Johnson (1997)	
<i>Albulina arcaseia</i> Fruhstorfer, 1916	Kamba Mountain Blue	Van der Poel & Bálint (2021)	From Hreblay collection in the Hungarian NHM

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Albulina pharis	Fawcett's	Van der Poel &	
(Fawcett, 1904)	Mountain Blue	Bálint (2021)	the Hungarian NHM
Calinaga buddha	Freak	Tamang & Panthee	
Moore, [1858]		(2021)	
Charaxes psaphon	Plain Tawny	Van Gasse (2018)	Listed as Ch. bernardus
Westwood, 1847	Rajah		imna in Smith (2010)
Discophora timora	Great Duffer	Tamang & Limbu	
Westwood, [1850]		(2021)	
Lethe dakwaniaTytler,	Garhwal	Van der Poel	Based on 2012 pictures
1939	Woodbrown	(2020a)	Based on 2012 pictures
Lethe distans Butler,	Scarce Red	Van der Poel et al.	Regularly seen in 2020
1870	Forester	(2020)	Regularly seen in 2020
Lethe dura (Marshall,	Scarce Lilacfork	Van der Poel et al.	First photographed and
1882)	Scarce Litaciork	(2020)	ID'ed by M.S. Limbu
Latha alwari (Maara	West Himalayan		Listed as Zophoessa
<i>Lethe elwesi</i> (Moore, [1892])	Small Silverfork	Das et al. (2020)	jalaurida elwesi in Smith
[1692])	Small Shvenork		(2010)
Lethe ramadeva (de	Single	Tamang and Saito	
Nicéville, 1887)	Silverstripe	(2020).	
Mycalesis adamsoni	Watson's	Panthee <i>et al.</i>	Frequently seen nowadays
Watson, 1897	Bushbrown	(2019)	in forests near Pokhara
Ypthima methora	Variegated	Morishita &	
Hewitson, 1865	Fivering	Inomoto (1998)	
Ypthima nikaea Moore,	Moore's Fivering	Akram <i>et al.</i> (2018)	Mentioned as a ssp. of Y.
[1875]			sakra in Smith (1994).
Pantoporia sandaka	Б. Т	Sapkota <i>et al.</i>	· · · · ·
(Butler, 1892)	Extra Lascar	(2020)	
Athyma orientalis	Oriental Canadant		Split off from A. opalina
Elwes, 1888	Oriental Sergeant	Van Gasse (2018)	orientalis
Euthalia alpheda	Streaked Baron	Morishita	
(Godart, [1824])	Streaked Baron	&Inomoto (1998)	

Recently, two species that were listed in Smith (2010) but were removed from the Nepal list by Colin Smith in 2017 (unpublished) have been reported as "new" species for Nepal. The first was Cephrenes acalle (Höpffer, 1874) Plain Palm Dart, which was listed in Smith (2010) based on a list of species of Nepal without any details, provided to him by W. Dierl in 1974. In 2020 ZSM, Munich, Germany, reported not having any specimen of this species from Nepal in their collection. Van der Poel (2020b) wrongly assumed that Dierl's list contained only species collected by the 5 German zoological

expeditions to Nepal between 1955 and 1973. Thus, he reported his observation of 7-8 individuals in 2019 in Astam as the discovery of this "new" species for Nepal. Recently, Dierl's list was found among papers in Colin Smith's office and it was concluded that the list most likely also included species reported in other documents. No old document reporting *C. acalle* from Nepal has been found yet.

The second one was *Erionota thrax* Palm Redeye, which was listed in Smith (2010), but removed soon afterwards. Smith reported that the specimen reported as *E*. *thrax* was collected in Nepal (Gough, 1935) and named before *Erionota torus* was described. He believed that this specimen and any subsequently reported *Erionota* species from Nepal were all *E. torus*. But Smith (1994) reported that the species was likely to fly in East Nepal. Thus, he kept it listed for a long time, as likely to occur. Recently, it was reported with photographic evidence by KC & Sapkota (2022) from Dhankuta in East Nepal in August 2021.

DISCUSSION

After the reported shake-up, Nepal has now 661 - 12 + 43 = 692 species of butterflies, a considerable increase from the long-time fairly static number of around 660 species. One may wonder about the explanation of this sudden increase in number of species. The best answer is that it is probably due to more people photographing and identifying butterflies and discussing their unusual finds in butterfly or Lepidoptera groups on the internet. A second factor is Sajan KC started dissecting specimens of hard to identify species and comparing the genitalia with those of known species. Moreover, the process of updating the butterfly information for Nepal in preparation of the new Catalogue also vielded a few new species, usually hiding among photographs of unidentified or misidentified species.

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