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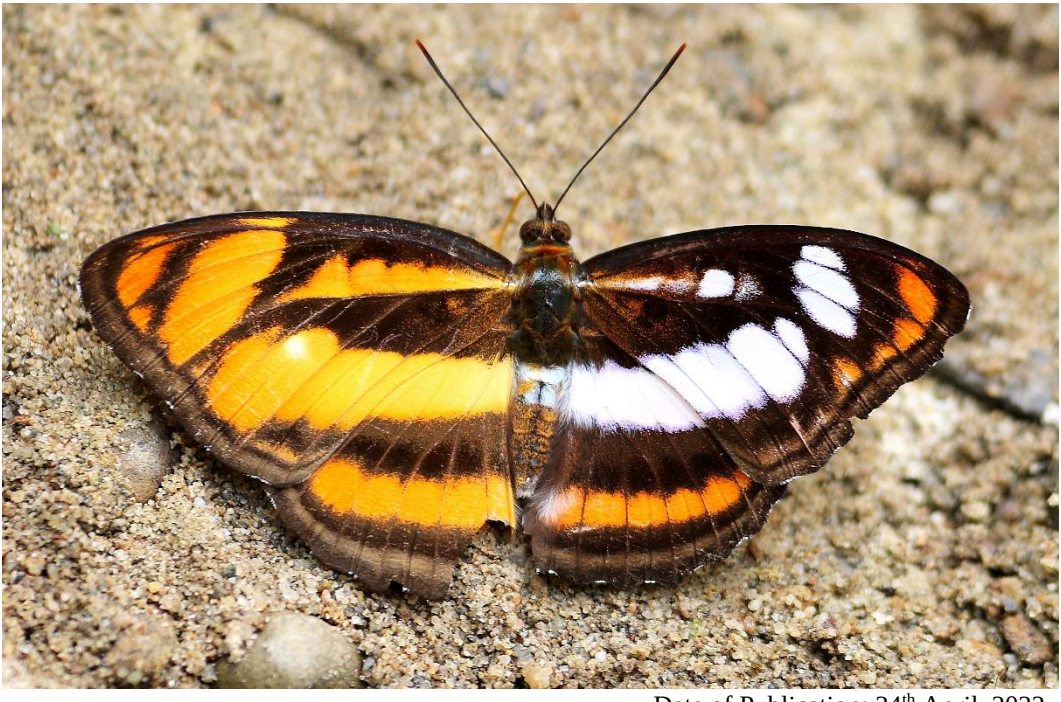

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On Any Aspect Related with Life Forms

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Cover Photo of *Athyma nefte* by Rajib Dey

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EDITORIAL COMMENT ON BUTTERFLIES PROPOSED TO BE INCLUDED IN THE SCHEDULES OF THE INDIAN WILDLIFE (PROTECTION) AMENDMENT BILL, 2021

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Glyphosate [N-(phosphonomethyl)glycine] was discovered in 1950. In 1970, Monsanto, a multinational chemical giant, created an herbicide based on glyphosate, in its laboratory. In 1974, it was introduced in the market as Roundup (Benbrook, 2016). In 1976, a spate of indignant letters to the editor of *The Times* regarding butterfly collecting resulted in what Matthew Oates (2015) described as "a watershed year in our attitudes towards butterflies. Thereafter, collectors converted to photography, switched to collecting abroad, went undercover and became paranoid, or simply gave up- most of the collectors I encountered in 1976 were never heard of again." By the early 1980s, legislation was introduced in European countries banning insect collection. In 1986, butterflies were included in the Schedules of the Wildlife (Protection) Act, 1972. It is to be noted that no studies were carried out in the matter, but the banning of butterfly collection appears to have been based as a reaction to indignation amongst the public expressed as letters to the editors of newspapers.

Between 1989 and 2016, there was a more than 82% drop in summer-flying insect biomass inside protected areas in Germany (Hallman *et al*., 2017). This research was conducted by a group of private individuals. There were no equivalent studies anywhere else in the world monitoring insect populations.

The Zoological Survey of India was tasked with compiling a list of threatened butterflies that required "protection". Since there were no known threatened butterflies, they conducted a paper exercise wherein every species, subspecies or form that was assigned a status of 'Very Rare' by W.H. Evans in his 1932 book, The Identification of Indian Butterflies, was placed on Schedule 1 and every taxon with the status of 'Rare' was placed on Schedule 2. This included some crop pests like the Pea Blue (*Lampides boeticus* (Linnaeus, 1767)) and Gram Blue (*Euchrysops cnejus* (Fabricius, 1798)), which were included since they were 'Rare' in the Andaman and Nicobar Islands, although crop pests on the mainland. On page 28, Evans (1932) noted, "The designations Common, Rare, etc. have been assigned as the result of long experience, but a butterfly may be very common in one area and very rare in another, rare some years, common others or perhaps only to be found commonly for a very short period in a very restricted locality." The terms 'very rare' and 'rare' are a measure of our ignorance about the insect rather than an assessment of its status in nature.

Although insect collecting was banned in many countries in the wake of the indignant letters of 1976, there is not a single study worldwide examining the effectiveness or failure of the legislative bans. What is evident is that collecting stopped, pesticide and herbicide use increased and insect populations declined globally. There seems to have been a method to the madness, to silence potential whistle-blowers. Insect collectors would have been the first to notice a drop in insect populations globally.

Although the Wildlife (Protection) Amendment Bill, 2021 has reduced the

number of legally protected butterflies from 455 species to 120, the choice appears to have been based on equally bad advice. Five of the 63 butterfly species on Schedule 1 have not been recorded from India. These are: *Parnassius delphius* Eversmann, 1843, which occurs from Pakistan to Central Asia; *Parnassius hannyngtoni* (=*P. hunnyngtoni* Avinoff, 1916) which occurs in Tibet; *Pararge maera* Linnaeus, 1758, which occurs in Europe and the Middle East; *Lethe ocellata* (Poujade, 1885), known from China to Vietnam and *Clossiana erubescens haberhaueri* Hemming, 1933, which occurs in Kazakhstan and Kyrgyzstan. In addition, someone has taken the liberty of deleting the name of a form from a widespread and in no way threatened species, reducing *Chilasa clytia clytia* form *commixtus* to *Chilasa clytia clytia* Linnaeus, 1758 (the species is included under the genus *Papilio* Linnaeus, 1758 at present). There does not seem to be anything threatening or endangering *Papilio clytia* and it is entirely unclear why a rare genetic abberation, which would survive less than a month in the adult stage, should be afforded protection under any law.

The new version of Schedule 2 contains several additions: widespread and abundant species like the White Dragontail *Lamproptera curius* (Fabricius, 1787), Common Banded Peacock *Papilio crino* Fabricius, 1793, Paris Peacock *Papilio paris* Linnaeus, 1758, Golden Birdwing *Troides aeacus* (C.& R. Felder, 1860), Southern Birdwing *Troides minos* (Cramer, [1779]), Great Mormon *Papilio memnon* Linnaeus, 1758, Common Map *Cyrestis thyodamas* Boisduval, 1846, Orange Oakleaf *Kallima inachus* (Boisduval, 1846), Blue Mormon *Papilio polymnestor* Cramer, [1775] which, incidentally, is a crop pest in southern India, Crimson Rose "*Atrophaneura*" *hector* (= *Pachliopta hector* (Linnaeus, 1758)), the Danaid Eggfly (or Six-Continent Butterfly) *Hypolimnas misippus* (Linnaeus, 1764), Leopard Lacewing *Cethosia cyane* (Drury, [1773]); Queen of Spain Fritillary *Issoria lathonia* (Linnaeus, 1758), etc. etc. It is not possible to conceive of any justification for including these butterflies in the Schedule, unless it is with a view to harass vehicle drivers, since most of these butterflies are so common that they often are crushed under the tyres of moving vehicles. In fact, these common butterflies should form the basis of attracting children to know more about butterflies, since the Orange Oakleaf, Common Map, the Birdwings and Crimson Rose and other members of the family are colourful, have special stories attached to them and are easy to breed. If they are included in the schedules, even handling them will be illegal and trying to photograph them will come under the definition of 'hunting' (if the butterfly flies off when approached it can be interpreted as 'driving' which is included in the definition of hunting in the existing Act) and be illegal.

Nymphalis antiopa (Linnaeus, 1758) occurs in Bhutan and Tibet and has not been recorded from India; nor has *Lasippa ebusa ebusa* (C. & R. Felder, 1863), which occurs in Myanmar.

Out of 120 species included in the Schedules of the Wildlife (Protection) Amendment Bill 2021, seven have never been recorded from India!

Arhopala arata, which is included on Schedule 2, does not exist. If one believes the common name, Tytler's Rosy Oakblue, that refers to *Arhopala allata*; if one passes this off as a typographical error, then one is confronted with the Hybrid Sapphire and Watson's Hairstreak, both of which are paired with scientific names that refer to other butterfly species, i.e. *Heliophorus brahma* (Moore, [1858]) and *Chrysozephyrus disparatus pseudoletha* (Howarth, 1957). Which is the species meant to be 'protected'?

In conclusion, there is no justification for extending legal protection to any Indian butterfly. Nor is there any evidence to suggest

that 35 years of being legally protected has in any way helped the species included. The lists themselves are examples of such shoddy work that it is embarrassing that such scientific imbecility exists in the country. If this is the quality of government expertise in butterflies, one fears to think of what contradictions and errors the remaining lists on the Schedules contain.

If butterflies or any other insects actually require protection, it is completely useless to ban their study. Most of the species included are so rare that there are only sporadic records from the pre-Independence period and no specimens in any Indian collection. A much better way of conserving insects is to discover populations of the target species and protect and monitor the habitat and population. But that will not serve the purpose of insecticide manufacturers.

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Post Script

Subsequent to writing the above, the Bill has now been sent by the Standing Committee of Parliament to the MoEFCC for final consideration. It is a relief to note that some of the inconsistencies noted above have been resolved.

Of the 120 butterfly species proposed by the MoEFCC, only 90 species have been proposed in the Bill returned by the Standing Committee. Note that the word "proposed" was used, not "retained", since there are some new entrants in the Bill now.

Among the astounding entrants are the Common Bluebottle (*Graphium sarpedon*) and the Glassy Bluebottle (*Graphium cloanthus*). Both of these are very common butterflies along the Himalaya and it is difficult to imagine a reason why they can be believed to require legal protection. Also, the White Dragontail (*Lamproptera curius*) has been replaced by the Green Dragontail (*Lamproptera meges*): the reason for the substitution is not at all clear, since both are locally common across their known range.

It is noted that the current provisions continue to hamper research on the subject in the country with unnecessary legal constraints. This matter will be examined in forthcoming issues.

TRIUMFETTA RHOMBOIDEA (MALVACEAE) AS NEW LARVAL HOST PLANT FOR THE GREAT EGGFLY BUTTERFLY *HYPOLIMNAS BOLINA* (LEPIDOPTERA: NYMPHALIDAE)

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Reviewer: Piet van der Poel

The Bombay Natural History Society (BNHS) Nature Reserve is a forested area spread over 33 acres and is nestled between Dadasaheb Phalke Chitra Nagari (aka Film City) and Sanjay Gandhi National Park (SGNP) in Mumbai, Maharashtra, India. The Reserve also has a small butterfly garden spread over an area of around quarter of an acre.

The Great Eggfly *Hypolimnas bolina* (Linnaeus, 1758) (Insecta: Lepidoptera: Nymphalidae) is a common butterfly, seen during the monsoon months in the forests of SGNP and BNHS Nature Reserve, Mumbai.

On 20.viii.2021, while searching for butterfly caterpillars near the butterfly garden, the authors found a large dark brown caterpillar on a Burr Bush *Triumfetta rhomboidea* (Malvaceae) plant, locally known as *Jhinjhardi*. The caterpillar was identified as that of the Great Eggfly using Bhakare & Ogale (2018). It can be differentiated from the similar looking caterpillar of the Blue Oakleaf *Kallima horsfieldii* by the orange head. The caterpillar was collected and kept in a container for rearing. The caterpillar was fed with leaves of the same plant. It was a voracious feeder. The rearing container was cleaned every day.

After 10 days, on 30.viii.2021, the caterpillar pupated on a branch of the same plant (see images) in the container. On 8.ix.2021, after a diapause of 8 days, an adult male butterfly of *Hypolimnas bolina* eclosed. The butterfly was released immediately. Identification of the larval host plant was confirmed again once it flowered after 15.Ix.2021.

The previously reported larval host plants of *H. bolina* were summarised by Robinson *et al.* (2010) and later by Nitin *et al.* (2018) as *Phaulopsis imbricata* (Acantahceae), *Alternanthera sessilis* (Robinson *et al.* 2010) (Amaranthaceae); *Sida rhombifolia* (Malvaceae), *Portulaca oleracea* (Portulacaceae), *Solanum torvum* (Solanaceae), *Elatostema cuneatum*, and *Laportea interrupta* (Urticaceae). *Rajagopalan (2005)*, reported *Triumfetta pentandra* as a new food plant of the Great Eggfly. Wikipedia (Dec, 2021) reports that *H. bolina* caterpillars also feed on *Urtica dioica* and *Malva* species. *Triumfetta rhomboidea* belongs to the last group, but it can be considered as a new Indian larval host plant record for *H. bolina*.

Acknowledgements

Thanks to Dr. Rajdeo Singh (Botanist, St. Xavier's College, Mumbai), and Ms. Kiran Thumma (Education Officer, BNHS CEC) for help in identification of the plant.

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Fig.1: Great Eggfly LHP caterpillar

Fig.2: Great Eggfly pupa

Fig.3: Great Eggfly male freshly eclosed

Fig.4: *Triumfetta rhomboidae* plant

Fig.5: *Triumfetta rhomboidea* flowers

NEW DISTRIBUTIONAL RECORD OF *EUASPA* MOORE, 1884 (LEPIDOPTERA: LYCAENIDAE: THECLINAE) FROM SIKKIM, INDIA

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Reviewer: Peter Smetacek

The Lycaenid genus *Euaspa* Moore, 1884, commonly known as hairstreak butterflies, is distributed across the Himalayan range to southeastern Asia (Wangchuk *et al*., 2021). According to Das *et al*., (2019), there are 14 species of *Euaspa* worldwide. Koiwaya (2002) described six new species of *Euaspa* from different countries of southeast Asia such as Laos, Myanmar, India and Vietnam, of which two were described from India, namely: *E. miyashitai* Koiwaya, 2002 from Darjeeling in West Bengal and *E. mikamii* Koiwaya, 2002 from Arunachal Pradesh. Sidhu (2007) reported *E. milionia* from Uttarakhand and Himachal Pradesh. Koiwaya (2007) recognized 12 species under *Euaspa* genus. Recently, *E. uedai* was described from China (Koiwaya 2014). Huang (2016) described *E. zhengi* from China.

Five species of *Euaspa* are reported from India till date, namely: *Euaspa milionia milionia* (Hewitson, [1869]), *E. pavo* (de Nicéville, 1887), *E. mikamii* Koiwaya, 2002, *E. miyashitai* Koiwaya, 2002 (Varshney & Smetacek 2015) and *E. motokii* Koiwaya 2002 (Das *et al*., 2019). Gupta and Mondal (2005) mentioned *E. pavo* (de Nicéville, 1887) from Assam (Margherita) and Nagaland. Recently, Das *et al*. (2019) reported the first record of *E. motokii* Koiwaya, 2002 from India and a new distribution record of *E. mikamii* Koiwaya, 2002 from Dihing-Dibang Biosphere Reserve of Arunachal Pradesh, India. More recently, Wangchuk *et al*., (2021) recorded *E. pavo* and *E. motokii* from Bhutan. This paper contributes a new locality to the known distribution range of *E. pavo* from the state of Sikkim, India.

Observation

On 09.xi.2021, a single individual of *E. pavo* was photographed (Image 1, 2) at around 15:34 hr near Lingdem, Upper Dzongu, North Sikkim, India and the elevation is approximately 3614 m. The individual was sighted in a dry basement besides agroforestry land, where the species was basking in the sun. Since the original description of *E. pavo* by de Nicéville from Bhutan, de Nicéville (1890) mentioned that a male specimen of this species was also collected from Margherita in Upper Assam by Mr. Doherty and later Tytler (1915) also reported male and female specimens from Naga Hills (Nagaland).

The present report extends the known distribution of the species westwards to Sikkim.

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The authors are grateful to Tarun Karmakar for identifying the species and Bhubakanta Sharma, Sagarmani Rasaily, Silendra Dewan for providing us with valuable information. Our sincere thanks to Mr. Nosang Muringla Limbo for his immense guidance.

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Fig.1 & 2: *Euaspa pavo* (de Nicéville, 1887)

ARECA PALM *DYPSIS LUTESCENS* (ARECACEAE) AS NEW LARVAL HOST PLANT FOR THE INDIAN PALM BOB *SUASTUS GREMIUS* (FABRICIUS, 1798) (INSECTA: LEPIDOPTERA: HESPERIIDAE)

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Keywords: *Suastus gremius*, *Dypsis lutescens*, Arecaceae

Since September 2020, the author (RK) has been rearing caterpillars of butterflies in the Mumbai area and especially in the Bombay Natural History Society (BNHS) Nature Reserve, which is a forested area spread over 33 acres nestled between Dadasaheb Phalke Chitra Nagari (aka Film City) and Sanjay Gandhi National Park in Mumbai City of Maharashtra, India. The Reserve also has a small butterfly garden spread over an area of around quarter of an acre. The second author (GM) is rearing caterpillars in Borivali urban area in Mumbai.

Eggs and caterpillars of Indian Palm Bob *Suastus gremius* (Fabricius, 1798) were found on multiple occasions since September 2020 in the BNHS Nature Reserve as well in Goregaon and Borivali urban areas of Mumbai on ***Dypsis lutescens*** plants on the upperside of leaf blades. One such caterpillar found on 01.x.2020 was reared. The caterpillar pupated in the morning of 7.x.2020. An adult butterfly eclosed on 18.x.2020 at around 6.30 am. RK has a photograph of an egg clicked on as early as 21.ix.2017 on this plant.

After hatching out of a pink dome-shaped egg, the caterpillar partially eats the eggshell. The caterpillar prepares a cell, on the upperside of the same leaf or on an adjacent leaf blade by folding a small piece of the leaf and fixing it using silken threads. The caterpillar changes colour from wine red when hatched to greenish with a dark head in the fifth instar.

The caterpillar was observed coming out only at night to feed and is very sensitive to any threat and slides backwards into the cell to hide. It pupates in a cell made of a leaf fold till eclosion. Sometimes the pupal cell may hang just on the mid-rib as the leaf is eaten, leaving the mid-rib.

The complete list of larval host plants reported till date for *Suastus gremius* includes the Arecaceae: *Borassus flabellifer*, *Calamus*, *Caryota urens*, *Cocos nucifera*, *Corypha umbraculifera*, and *Phoenix sylvestris* (; and *Tamarindus indica* (Fabaceae) and *Licuala chinensis* (Robinson *et al.*, 2021; Nitin *et al.*, 2018).

Conclusion

The repeated sightings of eggs and caterpillars of *Suastus gremius* on *Dypsis lutescens* (Family Arecaceae) plants and its rearing till eclosion of an adult butterfly clearly indicates the regular use of the plant as a larval host.

Looking at the cited list of larval host plants reported previously, this is clearly a new record of this larval host plant for *S. gremius*. Also, the plantation of this plant as ornamental plant in cities like Mumbai could be helping it spread in the urban areas on Mumbai.

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Fig.1: *Indian Palm Bob laying egg of D lutescens*

Fig.2: Indian Palm Bob laying egg

Fig.3: Egg hatching

Fig.4: First instar preparing cell

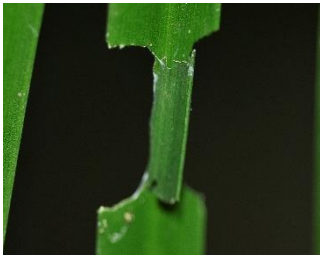

Fig.5: First instar cell

Fig.5: Caterpillar

Fig.6: Caterpillar

Fig.7: Pupal cell

Fig.8: Freshly eclosed adult

MALLOTUS PHILIPPINENSIS (EUPHORBIACEAE): A NEW LARVAL HOST PLANT FOR LOBSTER MOTH *STAUROPUS ALTERNUS* WALKER, 1855 (LEPIDOPTERA: NOTODONTIDAE)

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The Bombay Natural History Society (BNHS) Nature Reserve is a forested area spread over 33 acres and is nestled between Dadasaheb Phalke Chitra Nagari (aka Film City) and Sanjay Gandhi National Park (SGNP) in Mumbai City of Maharashtra, India. The Reserve also has a small butterfly garden spread over an area of around quarter of an acre.

On 25.viii.2021, while searching for butterfly caterpillars near the butterfly garden, the authors found three caterpillars on branches of *Mallotus philippinensis* (Euphorbiaceae) locally known as Kumkum tree. These caterpillars mimicked carpenter ants *Camponotus* spp. The caterpillars were collected and kept in a container for rearing. The caterpillars were provided with fresh leaves of the same plant every day. The rearing container was cleaned of frass every day.

One caterpillar pupated in a silk cocoon between two leaves on 26.viii.2021 and the adult moth eclosed on 8.ix.2021. The remaining two caterpillars pupated in silk cocoons between two leaves on 30.viii.2021. An adult moth eclosed from one of these two on 07.ix.2021. Thus, the moths took 13- and 7-days in pupal diapause before eclosion. However, in the third cocoon, three parasitoid pupae were seen on 31.viii.2021. A parasitic fly (resembling a House Fly) eclosed from one of these three pupae on 8.ix.2021. The adult moths were identified as Lobster Moths *Stauropus alternus* Walker, 1855 (Lepidoptera: Noctuoidea: Notodontidae) from images.

On 30.ix.2021, we also found four eggs on the same *M. philippinensis* plant. The eggs hatched on 4.x.2021. The caterpillars were provided with leaves of *M. philippinensis* to feed on. They pupated in silk cocoons between two leaves, three on 24.x.2021 (one eclosing on 3.xi.2021, and two on 4.xi.2021) and the fourth on 28.x.2021 (eclosing on 8.xi.2021). These also were *Stauropus alternus* moths.

Thus, it took 21-22 days to complete the caterpillar stage and 10-11 days of pupal diapause before eclosion.

Stauropus alternus has been mentioned as an occasional and minor pest of Red Gram (*Cajanus indicus*), Tamarind (*Tamarix indica* L.), tea (*Camellia sinensis*), *Mangifera indica*, *Mangifera* sp., *Theobroma cacao*, *Xylia dolabriformis* (Syn. *X. xylocarpa*) and *Terminalia panicululata* (Ayyar, 1960; Mathur & Singh, 1959, 1960). Siddappanji *et al*. (1974) reported it to be pest on Sapota grafts (*Achras sapota*). In a recent publication,

Vaylure (2018) has mentioned *Flacourtia indica*, *Ricinus* sp., *Careya* sp., *Cajanus* sp., *Cassia* sp., *Ougeinia* sp., *Pithecllobium* sp., *Wagatea* sp. as the larval host plants of *S. alternus*. It is clear that *Mallotus philippinensis* (Euphorbiaceae) has not been reported as a larval host plant for *S. alternus* and is a new record. Occurrence of eggs and caterpillars and rearing of the caterpillars on the leaves of *M. philippinensis* till eclosion of adult moths proves it to be a larval host plant of *S. alternus*.

Acknowledgement

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Fig.1: Lobster Moth eggs on *Mallotus philippensis* leaf

Fig.2: Lobster Moth caterpillar

Fig.3: Lobster Moth Caterpillar

Fig.4: Lobster Moth Caterpillar

Fig.5: Lobster Moth Caterpillar

Fig.6: Lobster Moth cocoon

Fig.7: Lobster Moth pupa

Fig.8: Freshly eclosed Lobster Moth

Fig.9: Freshly eclosed Lobster Moth

AN ADDITION TO THE BUTTERFLIES OF ARUNACHAL PRADESH: VEINED PALMER *HIDARI BHAWANI*

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Reviewer: Piet van der Poel

Abstract: The Veined Palmer *Hidari bhawani* was only known to occur in Assam in India. In this note, we report its presence in Namdapha National Park & Tiger Reserve, Miao, Arunachal Pradesh. The record is however not surprising as Changlang district shares borders with Assam in the west and Myanmar in the south-east, where this species has been reported, but very rarely.

Introduction and Discussion

Arunachal Pradesh is the largest among the North-east Indian states and is located at the foothills of Eastern Himalaya. Namdapha National Park & Tiger Reserve (Namdapha NP & TR), located in the eastern Arunachal Pradesh, is one of the oldest and largest (1985 km^2) protected areas and known for an exceptional biological diversity. Among the 700 butterfly species found in Arunachal Pradesh (Singh *et al*., 2016), 410 of them have been recorded in Namdapha NP & TR (Society for Education & Environmental Development, 2020), which makes it a global butterfly diversity hotspot. Here we report the occurrence of the Veined Palmer *Hidari bhawani* from Namdapha NP & TR, an addition to the butterfly fauna of Arunachal Pradesh.

The genus *Hidari* Distant, 1886 comprises three species: *H. irava* (Moore, [1858]), *H. bhawani* de Nicéville, [1889] and *H. doesoena* Martin, 1895. In India, only *H. bhawani* is found while the other two are found in South-east Asia. We recorded *H. bhawani* twice in Miao town of Changlang district which is a part of the Buffer Zone of Namdapha NP & TR. First, an adult was photographed at Miao Police Station (27°29'9.51"N 96°12'19.55"E) at 270 m amsl elevation on 27.ix.2019 (Fig. 1) and another adult was photographed at the Urban Shopping Complex, Miao (27°28'59.74"N 96°12'5.80"E) at 261 m amsl elevation on 19.ii.2021 (Fig. 2).

Previously, *H. bhawani* has been documented from the Koh Kong province, Cambodia (Chartier, 2019), Arakan Coast, Toungoo, Myanmar, Langkawi Island in Malaysia (Evans, 1949), Rayong Province, Thailand (Ek-Amnuay, 2012), Dong Nai Province, Vietnam (Inou S. & A. Kawazo, 1970) and

Lakhimpur, Jorhat, Sivasagar, Tinsukia and Golaghat districts of Assam state, India (Evans, 1949; Norman, 1953; Singh, 2015). *H. bhawani* is rare in Thailand and very rare in Peninsular Malaysia and India (Chartier, 2019; Singh, 2015).

No reports of *H. bhawani* from Arunachal Pradesh were found in a thorough search of the cited literature. Though we did not find the early stages of the species, the time period between our two recent sightings (nearly 17 months) indicates that the species may have a stable resident population in Miao area, where host plants are abundant. However, it is worth noting that the Changlang district borders Assam in the west and Myanmar to the south-east (where this species has been reported, but very rarely), hence this additional report is not very surprising, especially considering the lack of research on Lepidoptera in and around eastern Arunachal Pradesh. Interestingly, these recent observations from Namdapha NP & TR represent an extension to the known distribution of *H. bhawani* to the north-east.

Acknowledgement

We are thankful to Mr. Tajum Yomcha, Research Officer, Namdapha National Park & Tiger Reserve for his guidance and valuable inputs.

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Fig.1: *Hidari bhawani* de Nicéville, [1888]

Fig.2: Recent sightings of *Hidari bhawani* at Namdapha National Park & Tiger Reserve

RECORD OF THE WHITE-PATCH SERGEANT *ATHYMA PUNCTATA* (INSECTA: LEPIDOPTERA: NYMPHALIDAE) FROM ANINI, ARUNACHAL PRADESH, INDIA

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Reviewer: Piet van der Poel

Abstract: *Athyma punctata* was first reported from the Indian subcontinent in 2019. We report a sighting of the species from Anini, Dibang valley, India.

Introduction & Discussion

We report the sighting of a White-Patch Sergeant *Athyma punctata* Leech, 1890 from Dibang valley, Arunachal Pradesh based on a male photographed on 26.vi.2021. The butterfly is rare in montane forest at moderate elevation (alt.1500m - 1700m).

The species was considered to be restricted to SE Tibet, S. China, N. Myanmar, Thailand and Vietnam by earlier workers (Ek-Amnuay, 2012; Inayoshi, 2010; Io, 2000). However, in recent times it was recorded from Zhemgang (South Bhutan) (Fig. 1), at around 1500m in 2017 which was the first record of the species from the Indian subcontinent (Saito *et al*., 2019).

The species differs in facies from other species of the genus in having prominent oval white patches on the discal and subapical areas of the forewing. The hindwing has a large oval white discal patch (Seitz, 1906; Ek-Amnuay, 2012). There is an additional gray cell streak as well as a triangular spot beyond the cell on the forewing and a narrow postdiscal band on the hindwing (Ek-Amnuay, 2012). The female is yellowish/orangish in colour.

The species was recorded from Acheso, Dembuen circle, Dibang valley district at an elevation of 1500 mt on 26.vi.2021, at 1.06 PM which confirms that the species occurs across a wide range of the Eastern Himalaya (Fig. 2). The species is extremely rare and not recorded in recent surveys from the Dibang valley (Gogoi, 2012; Singh, 2015; Singh & Das, 2016; Chandra *et al*., 2019) and the species being found in the temperate zone, it is probably restricted to the higher elevations of the Dibang valley.

Our record suggests that *Athyma punctata* is widely distributed in the Eastern Himalaya although rarely recorded, being reported in recent times from Zhemgang inSouth Bhutan and from Arunachal Pradesh. It is also known to occur in the Kachin area of N. Myanmar which also suggests that the species should occur at mid-elevations of the Namdapha National Park in India. Hence, in future more surveys are needed in the Eastern Himalaya to ascertain its distribution and status on the sub-continent.

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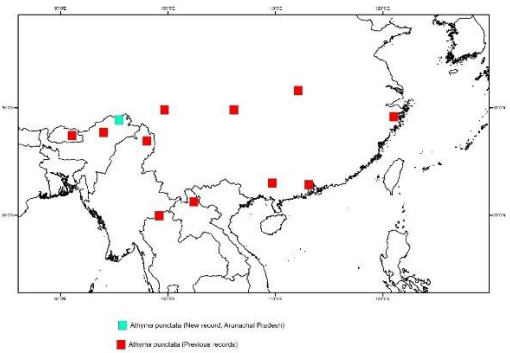

Fig.1: Map showing the present sighting of *Athyma punctata* from Arunachal Pradesh along with past records

Fig.2: *Athyma punctata* at Anini, Dibang valley, Arunachal Pradesh, India

FIRST RECORD OF DESERT BATH WHITE BUTTERFLY *PONTIA GLAUCONOME* (KLUG, 1829) (LEPIDOPTERA: PIERIDAE) FROM RAJASTHAN, INDIA

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Reviewer: Piet van der Poel

Abstract
The Desert Bath White butterfly *Pontia glauconome* is reported for the first time from Rajasthan, India.

Introduction
The Desert Bath White *Pontia glauconome* (Klug, 1829) is widely distributed across arid zones from Cape Verde, across northern Africa, Kenya, Somalia, Sudan, Chad, to the Arabian Peninsula, Israel, Iran, Iraq, Jordan, Lebanon, Syria, and eastwards to Afghanistan, Pakistan, northern India, and northwards into Tajikistan, Uzbekistan and Turkmenistan (Winhard, 2000, van Gasse, 2013, Varshney & Smetacek, 2015, John *et al*. 2020).

Observation
The authors conducted a four-day (20.x.2021 to 23.x.2021) opportunistic field visit at Desert National Park, Rajasthan, India. A single individual was observed perching on a wild desert plant around 5.45 P.M. (GMT+5.30) at the coordinates of 26°49' N and 70°30' E. SM photographed the butterfly using a Nikon D500 camera with Nikkor 200-500mm f/5.6 ED VR lens on 20.x.2021. SB confirmed the species as *Pontia glauconome* (Klug, 1829) using Evans (1932). The species was sighted once at the mentioned location. The authors did not observe it during subsequent field visits in the same area.

Discussion
The location is a part of the Great Thar Desert, with an arid and subtropical climate. The area receives an annual rainfall of 100-500 mm with extreme seasonal temperature fluctuations, such as from 50º C in summer to near freezing in winter (Sharma & Mehra, 2009). *Pontia glauconome* is a desert and semi-desert species that thrives in dry and arid climatic areas (Winhard, 2000). The underside of the species is similar to *Pontia daplidice.* However, it differs in the forewing apical and marginal region, which is traversed by short white lines extending to the margin and is faintly lined with yellow. Considerably restricted green coloration of the hindwings, a dusky cell basal area with large white pyriform spots in the cell and interspace 7 are some characteristic features of *Pontia glauconome* (Bingham, 1907).

Conclusion
The current record from the Great Thar Desert establishes the presence of this species in Rajasthan, India. The species has been recorded from Baluchistan, Karachi, Chitral and Punjab in Pakistan, so the occurrence of this species is not highly unexpected (Winhard, 2000).

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Fig.1: *Pontia glauconome* from Desert National Park, Rajasthan, India

SIGHTINGS OF THE TAILLESS LINEBLUE *PROSOTAS DUBIOSA* (INSECTA: LEPIDOPTERA: LYCAENIDAE) IN DELHI, INDIA

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Reviewer: Piet van der Poel

The floristic composition of Delhi has changed significantly during past one and half centuries (Maheshwari, 1963; Anonymous, 1991). Several non-native plant species have been introduced for afforestation and beautification of gardens and parks (Maheshwari, 1963). In addition, the city has also witnessed an increased plantation of vegetable and fruit plants (Maheshwari, 1963). Factors such as change in floristic characteristics, appearance of new microhabitats, change in land use and climate change, alone or in combination can cause an alteration to the butterflies species diversity in a geographical area (Kwon *et al*., 2021; Mukherjee *et al*., 2019).For instance, in Delhi, a few species of butterflies,such as Common Jay (*Graphium doson* C. & R. Felder, 1864), Red Pierrot (*Talicada nyseus* Guérin-Méneville, 1843) and Plains Cupid (*Chilades pandava* Horsfield, 1829),that are fairly common at present, werenot recordedby previous workers (Donahue, 1967; Larsen,2002). These butterfly species are thought to have been introduced in Delhi duringthe last two decades along with their host plants, which have ornamental value. Also, species which were once considered extremely rare in Delhi such as the Common Lineblue (*Prosotas nora* C. Felder, 1860) and the Dark Cerulean (*Jamides bochus* Stoll, 1782) have been sighted more often during the last three years, and possibly breed (in the case of Dark Cerulean) in the city (Chaudhary *et al.,* 2019; 2020).Besides these, there is a recent record of the Common Grass Dart (*Taractrocera maevius*) (Madan & Dey, 2018) that had not been reported previously from Delhi.In the present communication, we report sightings of the Tailless Lineblue (*Prosotas dubiosa*) from various parts of Delhi and its vicinity.

Two individuals of the Tailless Lineblue were sighted in the Sanjay Van area (28° 31′ 48″N, 77° 10′ 15″E) of South Delhi during thelate morning on2.x.2021 (Figure 1).Both the individuals were found puddling together on a footpath. These were observed for about 10 minutes and photographed. Another individual of this species was sighted and photographed on the morning of 13.x.2021, basking on a tree inthe R. K. Puram area (28° 33′ 20″N, 77° 10′ 49″E) of New Delhi. It is noteworthy that this butterfly species was also sighted by us on 14.x. and 16.x.2021 (two individuals each day) in Aravalli Biodiversity Park, Gurugram, Haryana (28° 28′ 56″N, 77° 06′ 39″E).Therefore, it islikely that the Tailless Lineblue is present in other parts of Delhi-NCR as well.

To the best of our knowledge, the Tailless Lineblue has not been reported previously from Delhi (Donahue, 1967; Larsen, 2002) or its immediate vicinity. Thus, this butterfly is a new addition to the checklist of butterflies of Delhi.

The frequent sighting of Tailless Lineblue in Delhi and its immediate vicinity might be a case of occasional migration of this butterfly from the foothills of the Himalaya or Peninsular India. It would, however, be interesting to confirm whether this butterfly is attaining the status of a regular migrant to Delhi, or if it attains breeding status in the area.

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Fig.1**:** Tailless Lineblue (*Prosotas dubiosa*) photographed in Sanjay Van area of New Delhi, India.

RUMEX MARITIMUS L. (POLYGONACEAE): A NEW LARVAL HOST PLANT FOR *EUREMA HECABE* (INSECTA: LEPIDOPTERA: PIERIDAE)

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Abstract
Rumex maritimus L. is reported as a new larval host plant for *Eurema hecabe.*
Keywords: *Rumex maritimus*, *Eurema hecabe*, larval host plant, Tripura, India.

Introduction

Eurema hecabe (Linnaeus, 1758), a polyphagous pierid (https://butterflycircle.blogspot.com), is widely distributed in Thailand, Japan, China, Indo-China, India, Indonesia and New Guinea to Australia (Yata, 1995). Many authors expressed the importance of the knowledge of the early stages of insects and food plants (Bortamuly & Dey, 2021), but no comprehensive study was conducted in Tripura state till now (Deb & Mandal, 2021).

Materials and Methods

On 02.v.2021, AK observed an *Eurema hecabe* butterfly laying eggs singly on both sides of the leaves, fruits and seeds of *Rumex maritimus* at Gomati riverbank, Chhanban, Udaipur, Tripura (23°32'43" N 91°29'05" E). An egg was collected by AK and put into a properly ventilated plastic box. It grew into an adult butterfly by feeding on the Rumex leaves provided. It eclosed on 19.v.2021. The adult butterfly (Figure No. 1) and all early stages (Table No. 1) were compared with Kehimkar (2016) and Bell (1913) respectively. During this opportunistic survey, no parasites were observed. Additionally, immature stages of other individuals of the species were observed in the natural environment.

Rumex maritimus, commonly known as Golden Dock, is an annual herb which generally grows on the banks of rivers, lakes and ponds. It is distributed across India, China, North America, Pakistan etc. (https://indiabiodiversity.org/species/show/266389).

Results

RD diligently reviewed the previously published literature (if available). *Leguminosae, Apocynaceae, Rhamnaceae, Euphorbiaceae, Cucurbitaceae, Theaceae, Rubiaceae, Guttiferae, Osmundaceae, Santalaceae, Compositae, Verbenaceae* families were earlier reported as its host plants (Robinson *et al*., (2001; Nitin *et al*., 2018), but the family *Polygonaceae* as well as *Rumex maritimus* were unreported till this record.

Table 1. Mean sizes of the life-history parameters of *Eurema hecabe* when reared on *Rumex maritimus*

Date	Length in mm	Metamorphosis
02.v.2021	1.2 ± 0.05	Laid eggs (10:00 am)
04.v.2021	2.0 ± 0.2	Egg hatched (5:00 pm)

06.v.2021	3.7 ± 0.2	Dormant prior to its 1st moult (12:00 pm)
07.v.2021	7.0 ± 0.2	Dormant prior to its 2nd moult (7:30 pm)
09.v.2021	14.0 ± 0.5	Dormant prior to its 3rd moult (1.00 am)
10.v.2021	17.0 ± 0.5	Dormant prior to its 4th moult (12:30 pm)
13.v.2021	19.0 ± 0.5	Pupa (8.00 am)
’19.v.2021	-	Eclosed into adult butterfly (7:31 am)

The successful breeding and emergence of *Eurema hecabe* on *Rumex maritimus* confirms the extension of its dietary choice which provides potential to adapt to the various habitats in its distribution.

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Fig.1: *Eurema hecabe* laying egg on *Rumex maritimus*

Fig.2: *Eurema hecabe* egg on *Rumex maritimus*

Fig.3: *Eurema hecabe* caterpillar on *Rumex maritimus*

Fig.4: *Eurema hecabe* caterpillar on *Rumex maritimus*

Fig.5: *Eurema hecabe* pupa

Fig.6: *Eurema hecabe* adult

SOCIO-ECONOMIC SURVEY IN RELATION TO TRADE OF TURTLES IN TWO DISTRICTS OF UTTAR PRADESH, INDIA

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Reviewer: Indraneil Das

Abstract

Hunting and trafficking of wildlife, especially turtles, has increased many fold during the last few years in Uttar Pradesh. The Uttar Pradesh Forest Department, Special Task Force and Police Department are constantly keeping a close surveillance on illegal activities related to wildlife. Under this, two villages, Gandhinagar and Pakri of Amethi and Sultanpur districts respectively were identified as the centres for turtle trafficking in the state. People from Kanjar community live in both the villages. It was also pointed out that there is no alternative mode of employment and the skills they have make them dependent on wildlife for their livelihood. Due to this dependence, these people got involved in wildlife crime. The results of the survey and investigation show that during the last four years (2017-2020), Amethi district has reported the highest number of turtle smuggling cases (70%). The most trafficked species of turtles recorded were Indian Softshell Turtle (*Nilssonia gangetica* (Cuvier, 1825)) and Indian Flap-shell Turtle (*Lissemys punctata* (Lacepede, 1788)). Indian Flap-shell turtles are confiscated more often than the Indian softshell turtle.

Keywords: Amethi, Sultanpur, *Kanjar* community, turtles, wildlife trafficking

Introduction

India is known to be a mega biodiversity country. Being a peninsular country, India is home to many amphibians and reptilian species. Turtles are 'keystone species' which illustrates that they are an important part of their surroundings and influence other species around them (Aguirre *et al*., 2002). In India, 29 species of freshwater turtles and tortoises are found. 25 out of 29 species of freshwater turtles and tortoises of India have been included in the IUCN/SSC category and also included under the Indian Wildlife Protection Act (1972), indicating an action plan is needed for the protection of the species. In continuation with the habitat loss due to development encroachment in natural habitats, wildlife trade has become a severe threat in a developing country like India. All Indian turtle and tortoise species are also placed under the CITES appendices to prohibit and control international trade. Unfortunately, half of the total 29 species of turtles of India are harvested for local meat consumption and illegal trade worldwide (Mendiratta *et al*., 2017).

Turtles of India are broadly demarcated in five turtle priority areas which are (a) Indo-Gangetic plains – included the plains of Northern India, the Brahmaputra valley and Mahanadi; (b) Plains of Indus; (c) Moist forests of North-eastern India; (d) The rain

forest of Western Ghats and (e) Hill ranges and riverine plains of east coast (Buhlmann *et al*., 2009). The Indo-Gangetic belt supports 15 out of 29 species of freshwater turtles and tortoises of India (Dijk & Paul, 2000; Chaudhary, 2019). It is well known that freshwater turtles and tortoises have been historically harvested for meat consumption (Zhao, 1995). Until the 1970s, the trade of freshwater turtles and tortoises in India was not threatening populations but with the development of organized fisheries practices, turtles as an associates species came into greater demand which resulted in the trade reaching a peak in the early 1980s (Choudhury& Bhupathy, 1993).

In India, there are three major routes of turtle trade which are identified by local enforcement agencies (1) Primarily trade of tortoises collected from western India for foreign pet trade via Mumbai (2) Trade from southern India both as pet and meat *via* two routes, the first from Chennai to Singapore and the second from Chennai to Cambodia, Sri Lanka and then to Singapore and (3) Trade in Central and North India mainly for the food markets of south western China from Kolkata to Singapore and Hong Kong (Bhupathy *et al*., 2000).In Uttar Pradesh, there has been a great increase in the poaching and trade of turtles in the last 10 years. From the point of view of poaching and trade, Uttar Pradesh can be divided into 4 areas. Hunting and smuggling of turtles in Etawah, Mainpuri, Amethi and Sultanpur districts of Central Uttar Pradesh has skyrocketed rapidly. In the past few years cases of confiscation in Uttar Pradesh have surpassed recovery in the rest of the country. In the Indo-Gangetic plains, softshell turtles are mostly harvested for meat consumption and for international trade. While on the other hand, hard shell turtles are usually harvested for the pet trade. Two softshell species of turtles named Indian Softshell Turtle (*Nilssonia gangetica*) and Indian Flap Shell Turtle (*Lissemys punctata*) were mainly poached for meat consumption by low-income groups (*Kanjar*). Indian Softshell Turtle and other species named Narrow-headed Softshell Turtle (*Chitra indica* (Gray, 1831)) are now poached and killed for the soft cartilaginous part of plastron, which is first dried (calipee) and then transferred to the international market because of high demand in China (Khan *et al*., 2016). Uttar Pradesh forest department has been continuously monitoring the illegal activities of *Kanjar* community and in last few years some culprits have been arrested and punished under Wildlife Protection Act 1972. Two villages named Gandhinagar and Pakri from Amethi and Sultanpur districts respectively were identified where individuals belonging to the *kanjar* community were involved in most of the turtle trade done in the region.

Based on the forest department confiscation and followed investigation regarding the wildlife offences carried out by the *Kanjar* community of these two districts Amethi and Sultanpur, a joint approach of Turtle Survival Alliance –India and Uttar Pradesh Forest department was taken to understand the root cause which influence the *Kanjar* community's involvement in the wildlife offence in the state.

Materials and Methods

Study area

Based on the forest department record of wildlife offences and other information available in print and on social media, two villages of Uttar Pradesh in Amethi and Sultanpur districts named Gandhinagar and Pakri were selected for the survey-based study. Gandhinagar is a small village in Amethi district. There are 200 houses in the village with a population around 500 persons. Pakri is also a small village of Sultanpur district with 150 houses and a population of 450. In both the villages there are *Kanjar* community who live nomadic lives. They are socially neglected, due to which they could not connect themselves with the mainstream society.

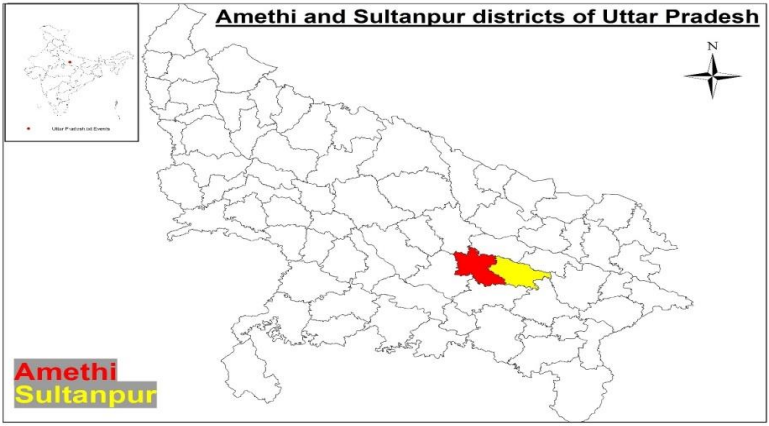

Fig.1. Showing the study site Amethi and Sultanpur district of Uttar Pradesh

Methods

Uttar Pradesh Forest department, Special Task Force (STF) and the police department are agencies preventing wildlife related offences in the state. Turtle Survival Alliance –India an organization working for the conservation of endangered turtles also provides help to the departments during the operation. A team was formed of forest department and TSA staff for the survey of turtle trade abundance area in Amethi and Sultanpur district.

A team of TSA-India members along with forest department officials have surveyed Gandhinagar village of Amethi district, identified as a turtle-smuggling prone area. As villager were very reluctant to share any information with outsiders, forest department officers suggested that the team should be in uniform as people might misbehave; however, a few staff members remained in mufti in order to blend in with people. This visit was undertaken to overcome the tense situation and build a connection with villagers in order to get more information. In the end a walk was undertaken in the village to understand the condition and infrastructure of the village. Similarly, Pakri village of Sultanpur was visited the next day.

During the visit, the team members engaged with every age group to discuss their problems, to understand why they are involved in this work, what kind of alternative work they were thinking of in the near future, especially youth.

Result and Discussion

Result

The people of this community gradually gather the turtles in one place and then sell them to the buyer. These people do it especially during winter for smuggling of large number of turtles as the turtles are easily be found due to low water and most of them bury in sand substrate along the edges and its fairly easy to detect them using iron probe etc. In winter, turtles don't feed and show less physical activity which makes them more prone to poaching. It is also seen here that they use different methods for smuggling according to the need such as filling the live turtles in the sack and also by drying their cartilage. We further report smuggling and confiscation of soft-shell turtle meat for the first time within the state. Apart from the survey and interaction with the villagers, the investigation done by department shows methods, technique of the offence. Every family member is involved in the operation. The greatest number of cases related to turtle trade in last four years (2017–

2020) were reported from Amethi district (see Fig. 3).

Gandhinagar- the condition of houses was terrible and 2-3 families were residing in single hut/house. In the entire village, there were only two toilets, of which one is not in a condition to use. There were only four water connections and the condition of the roads in the entire village was very bad.

At the same time, villagers had a positive attitude, the women of the community were concerned about the future of their children. Young and middle-aged people did not want to participate in the illegal trade for running and earning daily bread. All the people of the village wanted to work together with the main society. Women seek employment opportunities in the village itself. The parents had a positive thinking about the education of the children, and children also have some dreams about their future.

Pakri- The condition of the houses in Pakri was better compared to Gandhinagar. There were public as well as private toilets in the village. The village had good water supply and roads were also in good condition. Women were concerned about the education of their children and the youngsters wanted to work with the main society. All the people of the village want a system of employment. Youngsters of the village also had some dreams about their future, such as to become an engineer, doctor, soldier, sports person or air hostess.

They have always been neglected from society due to the fact that the ancestors of community have no permanent residence due of which, people could never connect with the main society. People of both the villages use wild animals as a primary source of food on a daily basis, which is the main reason why people of this community are getting involved in various types of wildlife crime.

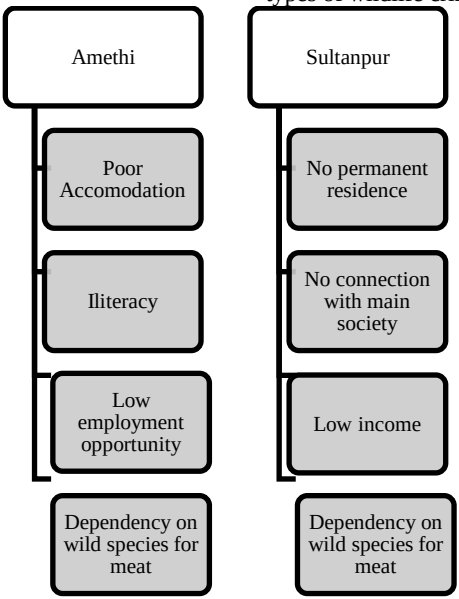

Fig.2: reasons stated for participation in illegal wildlife trade by people of both regions i.e. Amethi and Sultanpur

Evaluating the data statistically, species wise confiscation from 2017-2020 of *L. punctata* is about 9 and *N. gangetica* is approximately 3.4 (Figure 2). The maximum confiscation was from Amethi (about 70%) and the remaining from Sultanpur district (Figure 3). In addition, the confiscation of the species is mainly done by the police and forest departments (Table 1).

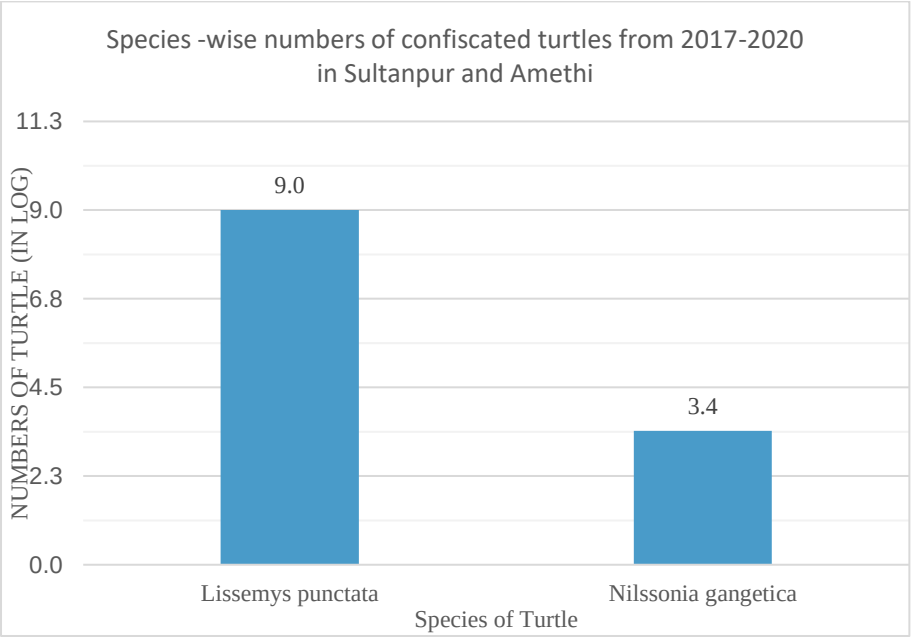

Fig.3. Graph showing the species wise numbers of turtle confiscated from 2017-2020 in Sultanpur and Amethi

Table 1. Case study data of three years (2017-2020) showing the numbers of turtles confiscated and Villagers Involved

Sr. No.	Date	Village/Block of Culprit	Department Involved	Numbers and Species of Turtle Confiscated
1	10.01.2017	Chatripur/Amethi	STF and forest department	6334 turtles (6332 *L. punctata* and 2 *N. gangetica)*
2	17.02.2018	Gandhinagar/Amethi	Forest department	8 *L. punctata*
3	05.06.2018	Gandhinagar/Amethi	Police department	125 *L. punctata*

4	24.07.2018	Gandhinagar/Amethi	Police and forest departments	10 *L. punctata*
5	17.11.2018	Mhesuva/Sultanpur	Police department	73 turtles (72 *L. punctata* and 1 *Nilssonia gangetica*)
6	02.01.2019	Gandhinagar/Amethi	Police and forest departments	825 *L. punctata*
7	10.01.2019	Chatripur/Amethi	Forest department	78 turtles *L. punctata*
8	11.01.2019	Pakri/Sultanpur	Police department	159 *L. punctata*
9	13.01.2019	Mhesuva/Sultanpur	Police and forest departments	162 *L. puncata*
10	12.08.2020	Gandhinagar/Amethi	Forest department	502 turtles (475 *L. punctata* and 27 *N. gangetica)*

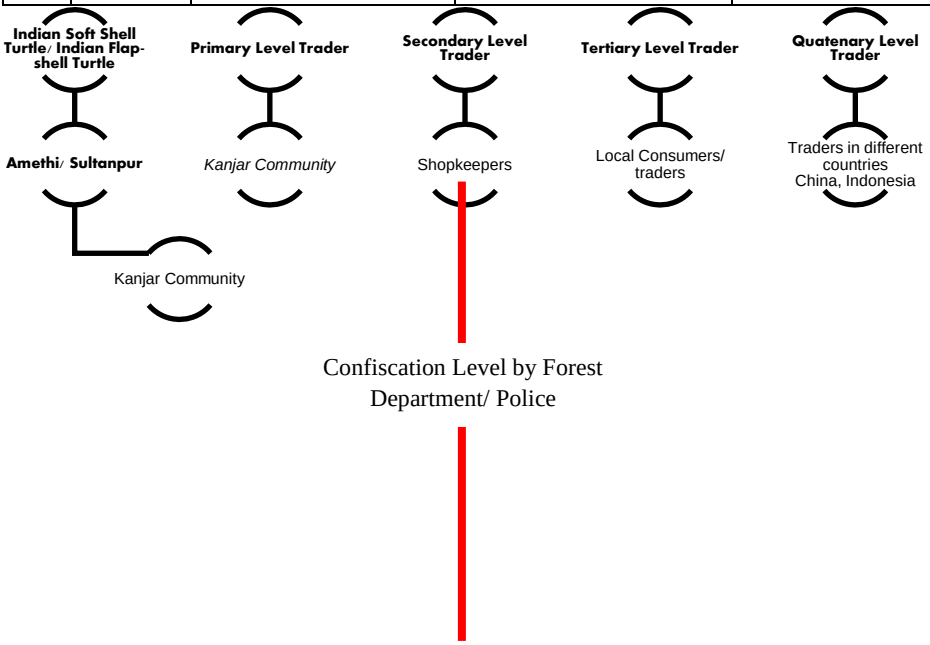

Plate 1: Confiscated turtle species

Discussion

After the survey and interaction with people of *Kanjar* community, it is clear that due to not having any working skills and separation from the mainstream of society, the *Kanjar* community has been involved in wildlife offences. Elders of the villages are changing their perception: they want to live a life of honesty and want the younger generation to lead an honest, upright life.

It should be noted that the community is historically a hunter/gatherer community and changing wildlife laws meant that today their traditional way of life is criminalized. The reason for diminishing wildlife has largely to do with reduction of habitat and pollution of waterways rather than the activities of tribal communities, yet they are seen as the cause of diminishing wildlife while the real reason, the evolution of an industrial society with a vast appetite for natural resources, is seen as legitimate. That the *Kanjars* and other similar communities and tribes hold a vast store of valuable knowledge of natural history is overlooked in the. For the first time this community has been seen from this perspective.

The survey result suggests that giving them alternative livelihood and more chance to work and interaction with society can change their thinking and their situation can be improved. In order to get out of their criminal image of the *Kanjar* community, the thinking and mind-set of government departments and the mainstream society should be changed, and they will have to behave positively and sympathetically towards the marginalized community.

The people of the *Kanjar* community gradually gather the turtles in one place and

then sell them to the buyer. These people do it especially during winter, as the turtles are easily found due to their sluggish behavior due to the cold. In winter, turtles do not feed, which also helps the *Kanjars* to accumulate turtles in large numbers. It is also seen here that they use different methods for smuggling according to need, such as stuffing the live tortoises into sacks or by drying their fat. Apart from the survey and interaction with the villagers, the investigation done by the forest department showed methods and technique of the process. Every family member is involved in the operation. Maximum number of cases related to turtle trade during the last four years (2017-2020) were reported from Amethi district, amounting to 70% of the total.

Recommendations

On the basis of survey and investigations, steps can be taken to connect the *Kanjar* community with the main society. Basic facilities such as roads, water, lights and toilet facilities can be made available. Medical camps should be organized from time to time for them. Under the skill development scheme of the central and state governments, employment can be provided to the village women, men and youth. Various training such as making bags, sewing clothes, making candles, mobile repairing, etc. can be provided. In both villages, the people of *Kanjar* community are the majority, whose main ability is to cut stones, so they can also be trained to make stone sculptures under this scheme. According to the rules of Uttar Pradesh Biodiversity Board, an attempt can be made to link people with biodiversity conservation programmes by forming a biodiversity management committee in both villages. In order to provide alternative means of livelihood to the people of both villages, as well as to provide alternative means of livelihood, forest department itself or by making a micro plan with the help of a qualified organization which can prepare micro-development projects for the villages for employment and development.

Acknowledgement

We would like to acknowledge Dr. Janmejay Sethy, Assistant Professor and Dr. Randeep Singh, Assistant Professor, Amity University for continuous guidance and technical support. We are thankful to Shri Amitabh Yash, IPS, ADG, STF, U.P and Pratyaksha Singh for continuously adding insightful thoughts and knowledge. We are also thankful to Forest Department, U.P. for providing technical support and also villagers, communities who were very co-operative while providing data for the study.

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THE GENUS *XANDRAMES* MOORE, 1867 (INSECTA: LEPIDOPTERA: GEOMETRIDAE) IN INDIA

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Reviewer: Jatishwor Irungbam

The genus *Xandrames* Moore, 1867 includes a group of large Asian Geometridae, with a distinctive broad white medial band across the forewing. The genus is found in India, Nepal, Bhutan, Indonesia, Thailand, Malaysia, Myanmar, China and Japan. The species are found in dense broadleaf forest at moderate elevation in the Himalaya and hills of northeastern India.

Both sexes are never occur in numbers, and usually are attracted to artificial light before 10 pm.

Hampson (1895) reported two taxa from India, namely *X. latiferaria* (Walker, 1860) and *X. albofasciata* Moore, [1868]. He treated several taxa under his concept of *X. latiferaria*, namely *X. dholaria* Moore, [1868], *X. sericea* Butler, 1881 and *X. curvistriga* Warren, 1894. Although the type of the genus was originally *X. dholaria*, Hampson (1895) changed this to *X. latiferaria* since he had synonymised *dholaria* with *latiferaria*. Wehrli (1954), Yazaki (1992) and Kirti *et al*. (2019) treated *X. dholaria*, *X. latiferaria* and *X. albofasciata* as good species, treating *sericea* as a subspecies of *X. dholaria* and *curvistriga* as a subspecies of *X. latiferaria*.In the present paper, *X. xanthomelanaria* Poujade, 1895 is reported from Arunachal Pradesh, India which was earlier reported only from China (Wehrli, 1954). Following is an account of the four species of the genus in the Himalaya and northeastern India:

Xandrames Moore, 1867

Proc. zool. Soc. Lond. 1867: 634. TS. *Xandrames dholaria* Moore, 1867. *Proc. zool. Soc. Lond.*: 634.

Xandrames dholaria Moore, [1868] Plate 1 & 2, figures 3 & 4

Xandrames dholaria Moore, [1868]; *Proc. zool. Soc. Lond*. 1867: 634; TL: Darjeeling.

Forewing length: 37 – 44 mm.

Material examined: 6 males.: 15.vii.1990 Jones Estate, Bhimtal, Uttarakhand, India 1500 m; 19.vi.1990 Jageshwar, Almora, Uttarakhand, India 1700 m; 13.v.2021 Walong, Anjaw, Arunachal Pradesh 1300 m. (Leg. et Coll. P. Smetacek, Bhimtal); 25.vii.2019, Shirui Hills, Ukhrul, Manipur, India, 2835m; 13.ix.2019, Shirui Hills, Ukhrul, Manipur, India 2036m (Leg. et Coll. Jatishwor Irungbam, Imphal).

Distribution: Himachal Pradesh to Arunachal Pradesh and Manipur (Shirui Hills), north to Mongolia and Japan.

Distinctive features: The broad white medial band on the forewing is joined by an obscure pale streak from near the apex, unlike *X. albofasciata*, where this band is prominent. The outer edge of the white discal band is diffuse, and there is no yellow on the forewing or hindwing, unlike *X. latiferaria* and *X. xanthomelanaria*.

Habitat: in the west Himalaya, it occurs in humid oak forest (*Quercus leucotrichophora*) above 1600 m elevation, although stragglers

occasionally descend to 1500 m. It is found at lower elevation in the eastern Himalaya and as high as 2835 m in the hills of Northeastern India.

Remarks: Wehrli (1954) reported that Leech recorded it in June and July in China and Prout reported it in the first half of August in Japan.

Xandrames latiferaria Walker, 1860

Pachyodes ? latiferaria Walker, 1860; *List Spec. Lepid. Insects Colln Br. Mus.* 21: 445. TL. China (North).

Xandrames latiferaria curvistriga Warren, 1894 Plate 1 & 2, figure 1

Xandrames curvistriga Warren, 1894. *Novit. zool.* 1 (2): 431; TL: Khasia Hills

Forewing length: 31 mm.

Material examined: 1 male: 31.x.2019 Hmuifang, Mizoram, 1600 m. Leg. B. Lalnghahpuii, Coll. P. Smetacek, Bhimtal

Distinctive features: Sexes similar. Females lack a fovea on the forewing. The smallest known member of the genus. The white discal band on the forewing is broad and relatively sharply defined on the outer edge, reaching the outer margin at vein 4. In *X. dholaria*, *X. xanthomelanaria* and *X. albofasciata*, this pale forewing band has a diffuse outer edge.

On the hindwing of *X. latiferaria*, there is a sharply defined submarginal pale line from the apex to the tornus, angled at vein 4. None of the other three species has this.

Distribution: Nepal to Meghalaya, Mizoram to Borneo.

Habitat: it occurs in humid broadleaf forest above 1400 m.

Remarks: Yazaki (1992) reported 7 specimens collected from Godavari, Nepal in March, April, May, July and September. The present record extends the known flying time of the species. A rather rare moth, which we have so far not recorded from Arunachal Pradesh. The nominotypical subspecies *X. latiferaria latiferaria* has also been erroneously reported from India (N.W. Himalayas) by Kirti *et al*., (2019).

Xandrames xanthomelanaria Poujade, 1895 Plates 1 & 2 Figure 5

Xandrames xanthomelanaria Poujade 1895. Ann. Soc. Ent. Fr. 309. T. L.: West China.

Forewing length: 55 mm.

Material examined: 3 exs.: 1 female: 29.iv.-10.v.2019 Km 65 Roing-Anini road, Arunachal Pradesh 2200 m. (Leg. et Coll. P. Smetacek, Bhimtal); 2 males: 13.ix.2019, Shirui Hills, Ukhrul, Manipur, India 2036 m (Leg. et Coll. Jatishwor Irungbam, Imphal).

Distinctive features: the upperside forewing lacks the white sub-apical band which is prominent in *X. albofasciata* and present in *X. dholaria*. There is a broad patch of yellow below vein 4. Both *X. dholaria* and *X. latiferaria* lack this while the yellow patch is smaller in *X. albofasciata*.

On the upperside hindwing, there is a prominent yellow marginal band expanding towards the apex. This yellow band is narrow and of even width in *X. albofasciata* and is whitish in *X. latiferaria* while in *X. dholaria* it consists of a few irregular white spots near the apex.

Distribution: India (Arunachal Pradesh, Manipur) to China.

Habitat: the female was recorded in dense broadleaf evergreen forest in the Mishmi Hills.

Remarks: a new record for India. The species is noted to be very rare by Wehrli (1954), who illustrated a male from Tse-Ku. The type specimen was from Moupin and one specimen each was known from Omei-Shan, Chia-kou-ho and Tien-tsuen. It was recorded only in the month of July. The present records extend the known distribution and flying time of the species.

Xandrames albofasciata Moore, [1868] Plates 1 & 2, figure 2

Xandrames albofasciata Moore, [1868]; *Proc. Zool. Sco. Lond.* 1867(3): 634. TL. Darjeeling, India.Forewing length: 42 mm.

Material examined: 1 female: 2-9.vii.2019 Km. 65, Roing-Anini road, Arunachal

Pradesh, India 2200 m. (Leg. et Coll. Peter Smetacek, Bhimtal)

Distinctive features: on the upperside forewing, the discal white band is joined at vein 4 by a prominent white band originating near the apex. This sub-apical white band is lacking in *X. xanthomelanaria* and *X. latiferaria*, while it is indistinct in *X. dholaria*. On the forewing below vein 4, there is a yellow area. This is prominent in *X. xanthomelanaria* and entirely lacking in both *X. dholaria* and *X. latiferaria*.

On the hindwing, there is a narrow yellow marginal band, extending from the apex to vein 3. In *X. xanthomelanaria*, this band expands towards the costa. In *X. dholaria*, the yellow is replaced with white and is in the form of some suffusion rather than a sharply defined band. In *X. latiferaria*, there is a sharply defined submarginal pale line from the apex to the tornus.

Distribution: The type locality is Darjeeling. It is also reported from Godavari and Mt. Phulchoki (2750 m) in Nepal in April, May, July and September (Yazaki, 1992). The distribution extends to Tibet and western China.

Habitat: This appears to be found at higher elevation than the remaining three species. We recorded it in dense broadleaf evergreen forest.

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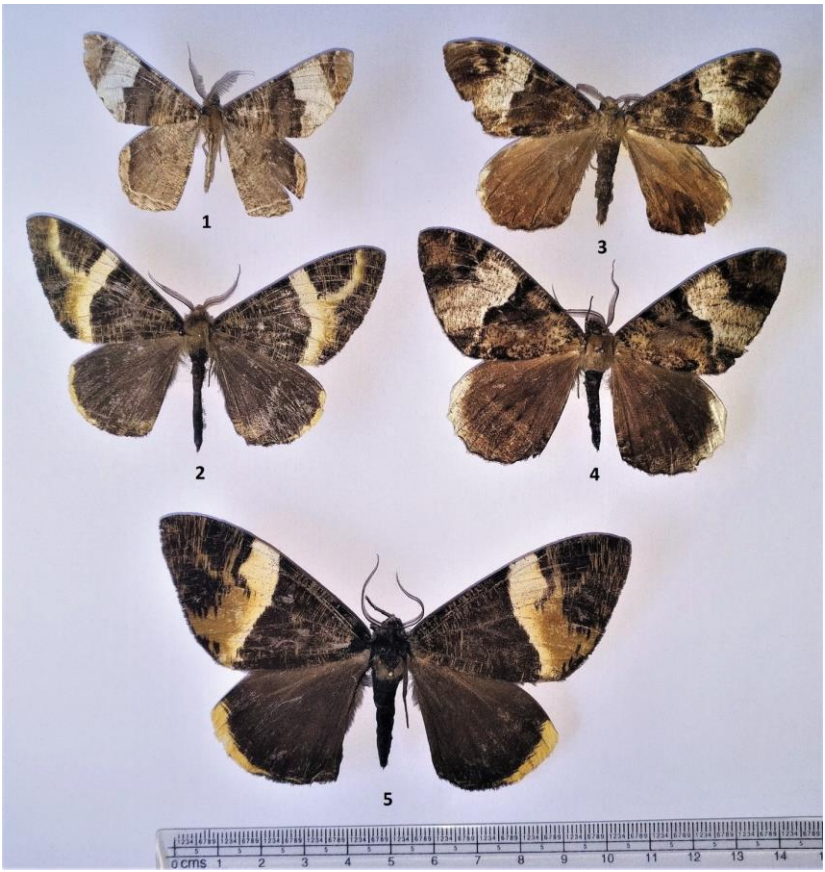

Fig.1: 1. *X. latiferaria curvistriga*, 2. *X. albofasciata*, 3 & 4. *X. dholaria* and 5. *X. xanthomelanaria*

Fig.2: 1. *X. latiferaria curvistriga*, 2. *X. albofasciata*, 3 & 4. *X. dholaria* and 5. *X. xanthomelanaria*

OCCURRENCE OF ANOMALOUS NAWAB *POLYURA AGRARIUS* (INSECTA: LEPIDOPTERA: NYMPHALIDAE) CONFIRMED IN UTTAR PRADESH, INDIA

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Reviewer: Peter Smetacek

Abstract: Anomalous Nawab *Polyura agrarius* (Swinhoe, 1887) is reported for the first time from Uttar Pradesh, India.

Introduction

The Anomalous Nawab, *Polyura agrarius* (Swinhoe,1887) is a widely distributed species. On the Indian subcontinent, it has been reported from Gujarat to Madhya Pradesh and Kerala; Himachal Pradesh to Northeast India (Varshney & Smetacek, 2015). Smith (2006) reported it only from western Nepal, but it is likely that it is more widespread in that country.

Since this species was treated as the southern Indian subspecies of *P. athamas* (Drury, [1773]) by Evans (1932) and Wynter-Blyth (1957), older records of the larval hostplants were grouped under those of *P. athamas* and it is no longer clear which plants the two species feed on in the early stages in north India.

Methodology

On 26.vii.2021 at 1:20 pm, two individuals of this species were observed settled on animal dung in the Kukrail Reserve Forest of Lucknow (N 26º54'45.5" E080º59'32.0"), Uttar Pradesh, India. In the photos, both individuals can be separated by the condition of the hindwing tails.

Discussion

This is the first record of *P. agrarius* from Lucknow district as well as from Uttar Pradesh. Kukrail Reserve Forest is a sub-tropical dry deciduous forest with *Acacia auriculiformis*, *Acacia nilotica*, *Albizia lebbeck*, *Ficus glomerata*, *Dalbergia sissoo* etc. *P. agrarius*is a forest species.

Bhakare & Ogale (2018) report *Acacia catechu* and *Albizia chinensis* as larval host plants of *P. agrarius* in southern India. As mentioned above, the north Indian larval host plants are not known.

Acknowledgement

The authors are grateful to the PCCF Wildlife, Uttar PradeshMr. Pawan Kumar Sharma and DFO, Lucknow Dr. Ravi Kumar Singh for permission to work in Kukrail Reserve Forest and also thankful to all Forest Department staff at Kukrail for their support in this survey. We would like to express our sincere gratitude to our friends Aakash Singh, Abhishek Pandey, Apoorv Trivedi and Ritwik Prakash for their generous help during the surveys.

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Fig.1 & 2: *Polyura agrarius*

CONFIRMATION OF THE PRESENCE OF *MATAPA ARIA* (INSECTA: LEPIDOPTERA: HESPERIIDAE) IN UTTAR PRADESH

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Reviewer: Peter Smetacek

Abstract: Confirmatory records of *Matapa aria* from Barabanki, Uttar Pradesh are reported.

Introduction

The Common Redeye *Matapa aria* Moore (1866) is a widespread Asian Hesperiid. On the Indian sub-continent, it has been reported from Gujarat to West Bengal and southward to Kerala; Delhi; to Northeast India (Varshney & Smetacek, 2015). It is also reported from Bangladesh, Myanmar and Sri Lanka (Kehimkar, 2016). Although the species has been recorded from Delhi, Madhya Pradesh and West Bengal (Varshney & Smetacek, 2015) it had not been recorded from Uttar Pradesh. It was, therefore, uncertain whether the Himalayan and Peninsular Indian populations were geographically isolated or not, since the species was only reported from a single locality, Delhi on the Gangetic Plain. Robinson *et al*. (2001) report seven species of bamboos as larval host plants for *M. aria* out of which two are present in Barabanki, *Bambusa arundinacea* and *Dendrocalamus strictus*. There are no previous records of *M. aria* from Uttar Pradesh.

Methodology

On 5.x.2021, the first two authors photographed the butterfly in the forest of Ram Sanehi Ghat, district Barabanki, Uttar Pradesh (N26º47'14.0'' E081º32'05.1''); 123 m above sea level. These photos were identified using Kehimkar (2016) and Bhakare & Ogale (2018). Two days later, on 7.x.2021, near Bani Konder Road of tehsil Ram Sanehi Ghat, the authors collected 5 male specimens of *M. aria*. The collected specimens were deposited in the collection of the Butterfly Research Centre, Bhimtal, Uttarakhand.

Material Examined: 5 ♂♂: Bani Konder Road, Ram Sanehi Ghat Tehsil, Barabanki, Uttar Pradesh. 7.x.2021. Leg. Sushmita & Babita Sharma. Coll. Butterfly Research Centre, Bhimtal, Uttarakhand.

Forewing length: 19 – 20 mm.

Discussion

This is the first time that the Common Redeye *M. aria* was recorded from Uttar Pradesh. The presence of this butterfly confirms that this species is established on the Gangetic plain and there is no actual gap in the distribution between the populations in Gujarat to West Bengal, Delhi & Uttrakhand to Northeast India.

Conclusion

There is no previous record of *M. aria* from Uttar Pradesh, India. Since it has been recorded from Delhi (Varshney & Smetacek, 2015), it was expected from the neighbouring state, Uttar Pradesh and the present report is a confirmatory record rather than a notable range extension.

Acknowledgement

Authors are thankful to the Principal Chief Conservator of Forest Mr. Pawan Kumar

Sharma and the DFO of Barabanki, Mr. N.K Singh. We are also grateful to the forest department staff of Ram Sanehi Ghat range for helping us in the field work. We express our gratitude to our family and friends for their support and encouragements for this study.

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Figs. 1 & 2: *Matapa aria* in Barabanki, Uttar Pradesh

EARTHWORM (ANNELIDA: OLIGOCHAETA) DIVERSITY AT SAGAR ISLAND, SOUTH 24 PARGANAS DISTRICT, WEST BENGAL

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Reviewer: Peter Smetacek

Earthworms belong to Megadrili oligochaetes and correspond to the orders Moniligastrida and Haplotaxida excluding suborder Tubificina. Perrier (1872) was first to report an earthworm species *Perichaeta houlleti* Perrier, 1872 from West Bengal. Thereafter, Beddard (1901), Michaelsen (1907) and Stephenson (1923) had contributed to the taxonomic studies of earthworms from West Bengal. Later, considerable work was done by Gates (1937, 1938a, b), Julka (1988), Soota & Halder (1981), Halder (1998), Chowdhury & Hazra (2009), Chowdhury *et al.* (2010, 2011).

A study was conducted between June 2017 and October, 2018. The aim of this study was to document the diversity of earthworm fauna in some habitats of Sagar Island. Specimens were collected from Rudranagar, Manasdwip (near Ramakrishna Mission Ashram), Ganga Sagar, Chemaguri, Kaylapara, Phoolbari and Beguakhali.

The study area i.e., Sagardwip is situated in the Ganges delta near the confluence of the Ganges and the Bay of Bengal, which is nearly 100 km south of Kolkata in the district of South 24 Parganas of West Bengal. It is surrounded by the Muriganga river to the north and east and Hooghly to the west. It is popularly known as Gangasagar. This island faces severe threat from soil erosion, breach of embankments, loss of landmass and rising sea level. The flora mainly consists of betel vine, paddy, sunflower, *Mangifera indica*, *Cocos nucifera*, and *Musa paradisiaca*. Other notable vegetations are *Bombax ceiba*, *Terminalia arjuna*, *Albizzia lebbeck*, *Bambusa tulda*, *Colocasia esculenta*, *Cynodon dactylon*, *Solanum nigrum*, *Centella asiatica*, *Coccinia cordifolia*, *Marsilea minuta* etc. Soil of this site is alluvial in nature and clay silt loam in texture. Some areas are muddy with a large content of organic matter and salt on the seashore and margins of estuaries. Collection, narcotisation and preservation of earthworm samples were carried out following Julka (1988) and the specimens were deposited in the collection of the East Calcutta Girls' College at the address above.

In the present study, 15 species of earthworms belonging to 5 families were recorded (Table 1). Out of 15 species, 6 species belong to family Megascolicidae, 5 species belong to family Octochaetidae, 2 species belong to family Moniligastridae and family Acanthodrilidae and Almidae each is represented by a single species. Among the earthworm population *Metaphire posthuma* were most numerous, whereas *Glyphidrilus tuberosus* were fewest. Population peak was observed during monsoon and post-monsoon season.

Table 1. List of earthworm species observed.

Sl. No.	Species	Family	Abundance during monsoon and post monsoon seasons
1.	*Pontodrilus bermudensis* Beddard	Acanthodrilidae	15-19/m^2
2.	*Glyphidrilus tuberosus* Stephenson	Almidae	1-3/m^2
3.	*Lampito mauritii* Kinberg	Megascolecidae	8-15/m^2
4.	*Metaphire posthuma* (Vaillant)	Megascolecidae	19-22/ m^2
5.	*Metaphire houlleti* (Perrier)	Megascolecidae	6-8/m^2
6.	*Perionyx excavatus* Perrier	Megascolecidae	10-15/m^2
7.	*Polypheretima elongata* (Perrier)	Megascolecidae	4-6/m^2
8.	*Amynthas corticis* (Kinberg)	Megascolecidae	4-6/m^2
9.	*Drawida nepalensis* Michaelsen	Moniligastridae	7-11/m^2
10.	*Drawida papillifer papillifer* Stephenson	Moniligastridae	9-12/m^2
11.	*Eutyphoeus incommodus* (Beddard)	Octochaetidae	5-6/m^2
12.	*Eutyphoeus nicholsoni* (Beddard)	Octochaetidae	3-6/m^2
13.	*Eutyphoeus orientalis* (Beddard)	Octochaetidae	6-9/m^2
14.	*Octochaetona beatrix* (Beddard)	Octochaetidae	2-7/m^2
15.	*Octochaetona surensis* (Michaelsen)	Octochaetidae	2-5/m^2

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DIVERSITY OF TUSSOCK MOTHS BELONGING TO TRIBE NYGMIINI HOLLOWAY,1999 (LYMANTRIINAE: EREBIDAE: LEPIDOPTERA) FROM CHITTAGONG UNIVERSITY, BANGLADESH WITH THREE NEW RECORDS

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Reviewer: Peter Smetacek

Abstract

A total of 08 Nygmiini species belonging to 06 genera have been recorded from Chittagong University, Bangladesh during 2018-2021. Of them *Arna bipunctapex* (Hampson, 1891); *Sphrageidus xanthorrhoea* (Kollar,1848) & *Nygmia hanuman* Kishida, 2020 have been reported for the first time from Bangladesh.

Keywords: Chittagong, Bangladesh, Nygmiini, *Nygmia hanuman*

Introduction

Tribe Nygmiini (Lymantriinae: Erebidae) was first erected by Holloway in 1999 which is characterized by the presence of corethrogyne at the abdominal tip of the females which is used to protect the egg mass. Other defining features include the following characteristics: the seventh abdominal segment is expanded and membranous, sometimes with basal margin stiffened as a sclerotised ring, diverse features in male and female genitalia etc. (Holloway, 1999).

The moths are diverse in the Oriental Region and the caterpillars often cause allergic reaction in human (Liao, 2010 & Wang, 2011). Hampson (1892) reported 53 species from erstwhile India, all within the polyphyletic (Liao, 2010) genus *Euproctis* Hübner, [1819] which later has been studied extensively by various authors like Holloway (1999) and many new genera were erected. The tribe has been proven to be not a monophyletic group in cladistic analysis by morphological characteristics (Liao, 2010).

Of the 53 species reported from India by Hampson (1892), only one species, *Euproctis rana* Moore, [1866] was reported from Bangladesh (Sylhet) and following 08 species may have possible distribution in Bangladesh as they are said to be present throughout erstwhile India (Hampson, 1892): *Artaxa digramma* (Boisduval, 1844), *Artaxa guttata* Walker, 1855, *Euproctis flavinata* Walker, 1865, *Euproctis fraterna* Moore, 1883, *Euproctis lunata* Walker, 1855, *Euproctis semisignata* Walker, 1865, *Euproctis varians* Walker, 1855 and *Somena scintillans* Walker,1856 respectively.

Previously, one Nygmiini species, *Euproctis* sp. was reported from the Chittagong University campus (Mazumdar, 2021).

Materials and Methods

Moths were observed routinely from various opportunistic locations of the Chittagong University campus, Bangladesh during 2018-2021 both during day and night time. The moths were photographed using a smartphone camera. Identification was based on Hampson (1892), Holloway (1999) & Kishida (2020).

Result and Discussion

A total of 08 species belonging to 06 genera were recorded during the study period. Of them, five moths have been identified up to species level and three moths have been kept as genus level pending further confirmation.

Table 1. List of the species

Serial Number	Scientific Name	Comment
01	*Arna bipunctapex* (Hampson,1891)	New Record
02	*Artaxa guttata* Walker,1855	
03	*Artaxa* sp. 1	
04	*Euproctis* sp. 1	
05	*Euproctis* sp. 2	
06	*Somena scintillans* (Walker,1856)	
07	*Sphrageidus xanthorrhoea* (Kollar,1848)	New Record
08	*Nygmia hanuman* Kishida,2020	New Record

***Arna bipunctapex* (Hampson, 1891)**

Somena bipunctapex Hampson, 1891. *Illust. typical Specimens lepid. Heterocera Colln. Br. Mus*., 8: 57, pl. 140:13.

The species occurs in China, Myanmar, India (Kangra, Nagas, Nilgiris), Taiwan, Sundaland (Hampson, 1892 & Holloway, 1999). It was first sighted in Chittagong University on 29.iii.2018.

***Sphrageidus xanthorrhoea* (Kollar, [1848])**

Liparis xanthorrhoea Kollar, [1848]. *in Hugel, Kaschmir und das Reich der Siek*, 4(2):470.

The species occurs in China, Indonesia, Java, Nepal, Sri Lanka & India (Jammu & Kashmir, Himachal Pradesh, Uttarakhand) (Kishida, 1993 & Kaleka, 2020). It is found adjacent to paddy field areas in Chittagong University campus.

***Nygmia hanuman* Kishida, 2020**

Nygmia hanuman Kishida, 2020. *Lymantriidae* in Y. Kishida (ed.),2020 *Moths of Laos Part 1. Tinea Vol.25 (Supplement 2)*:120, pl. 55:10.

An individual was sighted on 10.xii.2019 which was formerly identified as *Nygmia* sp. 1 and has subsequently been identified as *Nygmia hanuman* Kishida, 2020. The species was described from Laos (Luang Prabang, Phou Khoun). The presence of this species outside the type locality will add further to the known distribution of this newly described taxon.

Conclusion

The findings of this study will help in developing the knowledge on Lepidopteran insects from Bangladesh. The newly recorded *Nygmia hanuman* Kishida, 2020 is the first sighting of the species after it's description as well as is the first report of the presence of this moth outside Laos.

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Figs.1-4: 1. *Arna bipunctapex*, 2 - 3. *Sphrageidus xanthorrhoea* and 4. *Nygmia hanuman*

FIRST RECORD OF KING CROW *EUPLOEA KLUGII* (INSECTA: LEPIDOPTERA: NYMPHALIDAE) FROM THE KUMAON HIMALAYA, INDIA

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Reviewer: Peter Smetacek

The King Crow *Euploea klugii* (Moore, 1858), is a butterfly belonging to the Nymphalideae family. It has a wingspan of about 8-10 cm. There are two forms, a brown and a blue form: both forms occur together in N.E. India but only the brown form occurs in southern India. In the caterpillar stage, the insect feeds on toxic plants like milkweed (*Asclepias* spp.) or milk sap releasing plants. The tribe Danininae is known for having evolved protection against predation by storing cardenolide toxins in the body. *E. klugii* is reported to occur from Central Nepal to Northeast India, Gujarat, West Bengal, Sri Lanka, Bihar and Thailand (Smetacek, 2017). The butterfly was recently reported from Katerniaghat Wildlife Sanctuary of Uttar Pradesh (Mishra *et al*., 2016).

On 16.xi.2021 a butterfly survey was conducted in Bhujiyaghat ($29^0$18.45"N; $79^0$31.41"E), situated at 624 m elevation in Uttarakhand. The area has subtropical evergreen forests and lies in between Haldwani and Jeolikote in the Shivalik range which forms the foothills of the Himalaya. The area is surrounded by mountains and lies in a valley, therefore it has a humid and warm climate suitable for tropical flora and fauna. While conducting the butterfly survey, a male *E. klugii* was photographed around 1 p.m. The butterfly was not reported earlier from Uttarakhand. The is an addition to the known butterflies of Uttarakhand and extends the known distribution of the butterfly further westwards from Uttar Pradesh and Bihar.

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Figs.1 & 2: *Euploea klugii*

BIBASIS SENA AND *PORITIA HEWITSONII* (INSECTA: LEPIDOPTERA: HESPERIIDAE & LYCAENIDAE) RECORDED FROM UTTAR PRADESH, INDIA

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Reviewer: Peter Smetacek

Abstract
Two butterfly species, *Bibasis sena* (Moore, [1866]), *Poritia hewitsoni* Moore, [1866] were observed in Dudhwa Tiger Reserve, the first records from Uttar Pradesh.

Introduction
The Orange Tailed Awl *Bibasis sena* (Moore, 1866) was reported from Sri Lanka, India, Andaman Islands, Indo-China to Malay Archipelagos, only recorded from Hainan Island in China (Evans, 1949). Within India, it was reported from Maharashtra to Madhya Pradesh and south to Kerala, Himachal Pradesh to N.E. India; Andaman & Nicobar Is. (Varshney & Smetacek, 2015).
The Common Gem *Poritia hewitsoni* Moore (1866) was reported from Uttarakhand to N.E. India (Varshney & Smetacek, 2015).

Methodology
Butterflies were observed routinely as a part of duties in Dudhwa Tiger Reserve.
On 5.ix.2020, at Bhadi beat of Belrayan range, Dudhwa Tiger Reserve, a single Orange-tailed Awl (*B. sena*) was observed on a shrub at 06:40 am, ÷28° 25' 46.19" N; 80° 49' 59.66"E. It was photographed. It was later confirmed that this butterfly was not yet reported in Uttar Pradesh and the identity was confirmed by Peter Smetacek, Butterfly Research Centre, Bhimtal.
On 25.ix.2021 at Dudhwa campus of Dudhwa range, Dudhwa Tiger Reserve a Common Gem (*P. hewitsoni*) was observed at 13:32 hrs after heavy rainfall, at 28°29'23.4"N; 80°38'51.0"E. it was photographed using a DSLR camera (Canon 200D). The identity was confirmed by Peter Smetacek, Butterfly Research Centre, Bhimtal.

Discussion
Dudhwa Tiger Reserve lies in the Terai region of northern Uttar Pradesh and has North Indian moist deciduous forest with a mosaic of numerous wetlands and grasslands. The Shivalik range of the Himalayan chain lies a few kilometers north.

Conclusion
There were no previous records of *B. sena* and *P. hewitsoni* in Uttar Pradesh. The present records confirm their presence in the state.

Acknowledgement
I would like to thank Mr. Sanjay Pathak, Director and CCF Dudhwa Tiger Reserve, Mr. Manoj Sonkar, former Deputy Director, Dudhwa and Mr. Kailash Prakash, DeputyDirector, Dudhwa, for providing me permission and support in the field.

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Figs. 1 & 2: Orange Tailed Awl and Common Gem at Dudhwa Tiger Reserve

ANIMAL RIGHTS IDEOLOGY AND ANIMAL WELFARE PHILOSOPHY IN THE INDIAN CONTEXT

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Reviewer: Peter Smetacek

Abstract

This paper explores definitions, context and impact of Animal Rights ideology versus animal welfare philosophy in the Indian context, with regard to wildlife management, the welfare of people and animals and the Indian Constitution.

Introduction

Today, in many countries of the developing world, there seems to exist relentless and repeated attempts by animal rights activists and organizations, in court cases, to equate animals and humans and allow for their "equal" consideration. In India their efforts are directed towards giving animals the same rights promised to humans by the Constitution, particularly under Article 21, that guarantees citizens the Fundamental Right to Life, livelihood and freedom of movement.

Many of these legal efforts are funded and carried out by animal rights non-government organisations (NGOs) in India, themselves often funded by animal rights groups abroad like People for Ethical Treatment of Animals (PETA) and Humane Society International (HSI), that are actively seeking to extend their ideological animal rights agenda, whose expressions are often illegal in their home countries. For example, the maintenance and feeding of unowned dogs on the streets and public places is illegal in the United States of America but promoted and funded in India by USA-based animal rights organisations.

Animal Rights is a doctrine that seeks to abolish all animal uses by man and believes that man has no right whatsoever to use any animal for his own benefit in any way. While there are some variations in belief between groups, the Animal Rights ideology believes it is not acceptable to kill any animal even if it is rabid, a man eater or for the sake of developing life-saving drugs. The Animal Rights doctrine seeks to remove all categorizations of value given to animal species by man and believes in the total 'liberation' of animals.

Animal rightists philosophically oppose the concept of animals being the property of anyone – whether they are held as a public trust resource/property, or privately owned. In short, Animal Rights ideology believes that animals require 'equal' consideration by human society i.e. the same consideration applicable to a human being by human society. The ideology instinctively sounds good and caters to a human being's innate sense of justice that the word 'equal' stokes.

Conversely, the 'Animal Welfare' philosophy accepts that animals provide useful benefits to humankind; that civilization would be seriously diminished if society was denied the right to avail themselves of those uses and calls for, as far as possible, the humane usage of animals including for consumption, entertainment, tradition, companionship and work. Committed animal welfare organisations, therefore, oversee man's civilised standards in his treatment of the animals that he owns, uses and manages.

Animal rights and wildlife management principles

The provisions of the World Conservation Strategy – 1980 (WCS), revised 1991 and renamed: Caring for the Earth, A Strategy for Sustainable Living form a protocol, declared to be the official Mission Statement, and is reflected the principal policy, of the International Union for the Conservation of Nature and Natural Resources (IUCN). In 1980, the WCS was hailed by world society as being the blueprint for the symbiotic survival of man and nature on earth. The WCShas since been the 'go-to' document for implementation of conservation measures all over the world and highlights the "intellectual framework and practical guidelines" for conservation measures.

India became a State Member of IUCN in 1969, through the Ministry of Environment, Forest and Climate Change (MoEFCC) and obligated itself to model India's National Conservation Strategies (NCSs) on the WCS template; and to write its provisions into national laws. The WCS proposed and promoted, *inter alia*, an integrated approach to development and sustainable natural resource management. The three principles objectives of what the WCS describes as living resource conservation (*sic*) are:

1. To preserve genetic diversity (the range of genetic material found in the world's organisms), on which depend the functioning of many of the above processes and life-support systems, the breeding programs necessary for the protection and improvement of cultivated plants, domesticated animals and microorganisms, as well as much scientific and medical advancement, technical innovation, and the security of the many industries that use living resources.
2. To maintain essential ecological processes and life support systems (such as soil regeneration and protection, the recycling of nutrients, and the cleansing of waters), on which human survival and development depend; and
3. To ensure the sustainable utilization of species and ecosystems (notably fish and other wildlife, forests and grazing lands), which support millions of rural communities as well as major industries.

The Wildlife Protection Act of India is a central Statute that protects wildlife wherever wildlife may be found. The Act came into force in 1972, eight years prior to the date when India became a signatory to the World Conservation Strategy in 1980 (WCS, 1980). After the promulgation of the WCS, all those responsible sovereign states who were members of the IUCN at that time, including India, obligated themselves to model their National Conservation Strategies (NCSs) on the WCS template; and to write its provisions into their national laws.

Animal right agendas are not and cannot be conservation agendas and the philosophy of animal rights is incompatible with science-based wildlife management because conservation works at the population and ecosystem levels. Animal rights work at the individual animal level. What might be good in the short term for an individual or a collection of individuals might not be good for the long-term survival of animal populations, biodiversity, human interests and/or ecosystems. Animal rights activism exists in direct contradiction to the principles and definitions of the WCS (IUCN, UNEP, WWF, 1980) as it does not recognise that man is an integral part of the natural world; of the food chains, food webs and ecosystems. An understanding of wildlife management is integral to understanding this.

Wildlife management is the action that man takes to achieve a man-desired objective. There is nothing natural *per se* about wildlife management. It is a man-invented plan of action to achieve a desired and planned-for result. It is necessitated because the fragmentation of the landscape over most of the habitable world is an accomplished fact. Given that what used to be undivided natural

habitat is now divided into various forms of land use like agriculture, forestry, mining, urban and rural and degraded lands, managing wildlife is required to preclude man-animal conflicts, zoonotic disease outbreaks, animal population outbreaks and other unforeseen situations and for the allowing of natural resources to be used sustainably and wisely by mankind.

Wildlife management is, therefore, man conceived, designed, implemented and manipulated and man is the principal beneficiary. Even when particular flora or fauna benefit from man's wildlife management, such advantages occur only because that was part of man's predetermined and wanted results. So, in terms of the various results that sometimes emanate from a single man-conceived wildlife management program, the biggest accomplishment of them all is the attainment of man's own primary goal. The World Conservation Strategy has set this goal via its 3 protocols mentioned above.

Wildlife management has its origins in ecology which is the study of living organisms (plants and animals) and their environment; and their interaction with other living organisms with which they share that environment. Studies produce results. Wildlife management, therefore, is simply applied ecology to achieve a man-made objective.

Wildlife Management has two main functions – Conservation Management and Preservation or Protection Management. The objective of Conservation Management is to use safe wildlife populations sustainably and wisely. The objective of Preservation or Protection Management is to render unsafe wildlife populations safe. Once they are rendered safe, the wildlife population in that particular context may be transferred to the Conservation Management function.

The priorities of wildlife management are:

The soil: Society's most important wildlife management priority is for the protection and/or wise use of the soil – because without soil no plants can grow; and without plants most life on planet Earth would cease to exist.

Plants: Society's next wildlife management responsibility is for the protection and/or wise use of plants. Plants appear second on the priority list – before animals – because those plants that contain the green pigment called chlorophyll are the only primary food producers on planet Earth. Simply put without green plants life, in most dimensions, would be impossible. The chlorophyll in green plants is the only biological mechanism that can change amorphous energy from the sun into tangible carbohydrates that animals can eat. Besides being our primary producers of food, plants play a number of very important roles in the environment.

Animals: Society's third, and last, wildlife management responsibility is for the protection and/or wise use of animals (both domesticated and wild). The fact that animals appear last on the wildlife management priority list is not because they are unimportant, but because they are "less important" in the ecological sense, i.e. than the soil and plants upon which animals depend upon for survival.

Therefore, what is considered a conservation success in some national parks with, for example, large tiger numbers, is not necessarily a success as (in some contexts) the tiger population is likely inflated because of large numbers of free roaming cattle that give tigers easy food and larger litter survival rates. Tigers then exceed the carrying capacity of the protected area and since they are territorial, young, weaker or old tigers are pushed out into human occupied lands by other tigers and kill people and owned cattle. This is not a conservation success as per WCS protocols as people suffer and stray cattle also compete with and displace natural tiger prey, compromising biodiversity. Conservation thus is as much about people as it is about wildlife.

The most important wildlife management objective in all nature reserves and national

parks is the maintenance of a sanctuary's species diversity. No other more important wildlife management priority consideration exists. Maintaining large mammal numbers (like tigers and elephants alone) to attract tourists is particularly not a worthwhile option in keeping with WCS protocols. Tourism should never be allowed to undermine the maintenance of a healthy, biodiverse and stable environment; to change the natural physiognomy (general visual appearance) of a PA; or to detract from or destroy the natural attractions that brought visitors to such areas in the first place. General ecosystem management in a national park or protected area, therefore, should prevail over all else.

All animals are prolific and given protection and ample food, they will breed and expand their population indefinitely in the short term. In India, excessive wildlife populations that have exceeded carrying capacities of particular areas are only managed when farmers agitate, file court petitions and after years of loss and suffering, wildlife is then slaughtered by culling. Excessive animal populations, whether in protected or other areas, can and should be utilized sustainably, both to maintain biodiversity and to provide benefits to mankind. The management objective here must be to maintain the desired biological diversity and stability of the chosen area in as profitable, sustainable and effective a way as possible.

Public consensus or sentiment has nothing to do with applied ecology as maintenance of biodiversity is of paramount importance for both humans and wildlife, ensuring the environment within which humanity survives. Thus, public emotion or sentiment cannot be taken into consideration in the formulation of wildlife management policy, any more than it can be given importance in respect of national territorial defense.

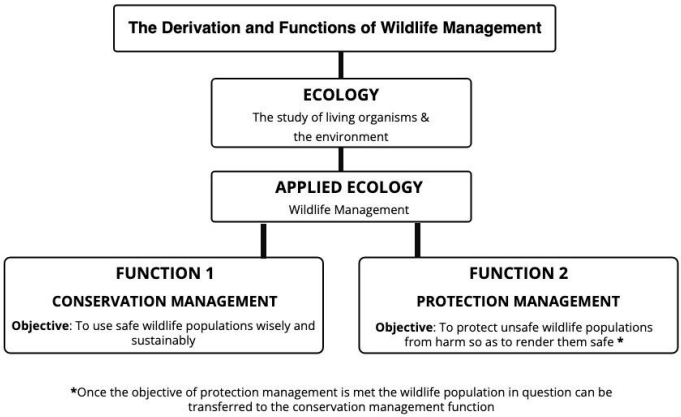


Fig.1: Graph re-made and inspired from the www.mahohboh.com website page on 'Wildlife Management'.

The animal rights viewpoint insists that mankind should subsist on vegetable diets alone but does not consider the land use alterations that would be necessary to feed the world's human population on vegetarian foods alone; or the number of animals that have to be displaced or killed to grow, protect crops and store harvests; or the reduction in value to people of biodiversity on fertile land or potential livestock grazing lands; or varying environmental or cultural contexts that allow for different usages of land, animals and wildlife.

Blanket bans on killing and animal rights *per se*, do not elevate the value of animal life, but devalue both human and paradoxically animal life, because if you do not look after the interests of humans who live alongside wildlife, you reduce the value of wildlife to those same people, with resultant conflict and negative consequences.

Animal rights do not take into consideration the inter-relatedness of flora, fauna and human and wildlife communities within functioning ecosystems. To an animal rights believer, the 'rights' of individual animals are more important to uphold than the maintenance of biodiversity, the health of wildlife populations and ecosystems, or the rights, traditions and livelihoods of indigenous and rural human populations, as supported by the WCS protocols.

Animal Rights and the Indian Judiciary

In India, judgments dealing with 'animal rights' cover diverse issues, concerning stray dogs and their feeding in public places, cattle trespass, caged birds, Jallikattu (bull jumping), bull races, cart-horses, animal sacrifice, temple elephants, elephant rides, crop protection etc., and are a discourse on the emotional, moral 'legal rights' of animals. Nearly all these cases have been put forth by animal rights groups or individuals, in many cases from organizations funded by animal rights NGOs in the USA like PETA and Humane Society International, to change policy and law in the direction of 'animal rights' ideology and some judgements seem to be examples of judicial overreach in direct contradiction to Indian constitutional values.

Several of these Indian High Court judgements are worthy of deeper investigation. In Maya D. Chablani *vs*. Smt. Radha Mittal & Others, the Delhi HC stated that stray dogs have "a right to be fed in their territory". The judgment discounts the fact that dogs are domesticated animals and therefore cannot have any "territory" on the streets or public places. The judgment also states that Indians must "change their perception of stray dogs", in this case, about 60 million (Gompper, 2014) potential disease-carrying, toxic faeces depositing canine predators roaming public spaces that kill up to 20,000 people from rabies alone every year in India (Sudarshan, 2017) and bite about 17.4 million people every year in India (Gogtay *et al.*, 2014).

Additionally, the judgement lays down "rights of stray dog feeders" that seem to suggest that a Fundamental Duty confers a right on a citizen to perform the duty, a concept not applicable in the constitutional sense. A Fundamental Duty is just that - a duty. It is neither a right nor does it confer any rights. Moreover, Fundamental Rights under the Indian Constitution do not envisage the extension of these rights to animals in any way and Indian laws relegate animals to the status of property. Even welfare legislation like the Prevention of Cruelty to Animals Act, 1960, authored by acclaimed animal welfarist Rukmini Devi Arundale, is based on the idea of ownership and does not give animals any legal rights or status equal to human beings.

This is contradicted by another High Court Judgement that stands until it is challenged, that states, "Thus it is suggested that the inclusion of animals in the community of legal persons will dignify them by forcing humans to see and value animals for themselves, rather than seeing them simply as the object of

property rights, or as something for humans to use and abuse."

Interestingly, three notable cases dealing with 'animal rights' in India - the 2014 ban on Animal Sacrifice in Himachal Pradesh (CWP No. 5076 of 2012, CWP No. 9257 of 2011, No. 4499 of 2012), the granting of 'legal personhood' to animals (Karnail Singh & Others vs State of Haryana, 2019) and against 'cow slaughter' in Haryana (2019) all took an 'animal rights' stand. In K. Muniasamythevar *vs*. Dy. Superintendent of Police & Others, the judgement on Jallikattu (a case filed by PETA) was passed by unilaterally expanding the scope of the case where the petitioner was only seeking permission for a ban on a bullock cart race, and not 'Jallikattu' *per se*. The judgement resulted in the banning of an ancient festival practised by millions of farmers. A 2021 judgement from the Allahabad High Court, against a man accused of slaughtering a cow, stated, inexplicably, that "scientists believe that the cow is the only animal that inhales oxygen and exhales oxygen too" and that "Jesus Christ has said that killing a cow or a bull is tantamount to killing a man". More recently, in E. Seshan *vs*. The Secretary, 2021, the Madras High Court ordered authorities to avoid artificial insemination of animals as "denying and depriving the right to copulate amounts to cruelty to animals under the Prevention of Cruelty to Animals Act" even though the Animal Birth Control policy contrarily sterilizes stray dogs thereby "denying them mating rights."

These judgements liberally quote figures like Buddha and M.K. Gandhi, including misinterpretations and falsehoods. The Vedas are often quoted, despite them describing horses, buffaloes, rams and goats as sacrificial animals or Vedic gods and their different preferences for animal meat. One judgment even misrepresents Emmanuel Kant, despite Kant's view that humanity should only refrain from pointless cruelty to animals and that since animals exist to serve man alone, causing animal suffering is justified whenever it suits human interests.

The Haryana judgment states, in direct opposition to both Supreme Court positions and the Constitution that "The entire animal kingdom including avian, and aquatic are declared as legal entities having a distinct *persona* with corresponding rights, duties and liabilities of a living person. All the citizens throughout the State of Haryana are hereby declared persons *in loco parentis* as the human face for the welfare/protection of animals." An Uttarakhand High Court judgment in 2017 gave "living entity status" to the rivers Ganga and Yamuna (later stayed by the Supreme Court on the State government's challenge) and Sukhna Lake.

These judgements indicate interpretations by judges of what the law should be based on their subjective preferences and predilections towards animal rights, rather than a carrying out of the actual law, keeping in mind constitutional values and articles.

At the receiving end of the above judgements, the sufferers are mostly marginalized communities, mainly of tribal, farming and animist origin, whose traditions and cultures, practised for thousands of years, are banned and livelihoods compromised, making the case that an imported animal rights philosophy which exists anathema to Indian constitutional values, is used against citizens of India.

These judgments, however, are contrary to the stand of the Indian Supreme Court which has stated: "Every species has a right to life and security, subject to the law of the land, which includes depriving its life, out of human necessity. The well-being of animals and their welfare have been statutorily recognised under Sections 3 and 11 of the Prevention of Cruelty to Animals Act (PCAA) and the rights framed under the Act. Right to live in a healthy and clean atmosphere and right to get protection from human beings against inflicting unnecessary pain or suffering is a right guaranteed to the animals under Sections

3 and 11 of the Prevention of Cruelty to Animals Act read with the unenforceable directive principle or Article 51A(g) of the Constitution. Right to get food, shelter is also a guaranteed right under Sections 3 and 11 of the PCA Act and the Rules framed thereunder, especially when the animals are domesticated."

The Apex Court clearly makes the case that human and animal 'life' are both protected under relevant laws under the Constitution. However, the court also clearly lays down that, unlike humans, animals derive their 'right to life' from the Prevention of Cruelty to Animals Act, 1960. And this is meant to protect them from "torture, 'unnecessary' pain and suffering", as envisaged under relevant sections of the Prevention of Cruelty to Animals Act, 1960. It is not in any way meant to grant them the same rights given to humans and Article 21 of the Indian Constitution is not applicable to animals as it is to citizens.

Thus, the idea as per the Indian Constitution is not to vest animals with 'rights', but to vest humans with the duty to protect animals, importantly, within the principles of animal welfare and not animal rights. Individual beliefs, personal preferences, inclinations and 'interpretations' of what the law should be, have nothing to do with the Constitution, existing laws or even natural law.

The Animal Welfare philosophy is followed globally in the constitutional sense, including by India where the Indian Constitution views animals as property and via a welfare-based framework, in opposition to an animal rights-based view.

Animal Rights: Historical view

The Roman jurist Gaius came up with the phrase '*hominum causa omneius constitutum*: all law was established for man's sake.' Gaius' statement still holds 1,500 years later: humans alone possess legal rights, while animals are denied legal rights, including rights of personal bodily integrity or personal liberty or the right to life. Gaius' proclamation offers a phrase that encapsulates a key distinction between humans and all other animals, as well as a core inquiry *i.e.*to whom does "law" belong? (Duckler, 2008). The distinctions between humans and all other animals affect the development and characterization of legal rights.

American philosopher Carl Cohen (1986) hypothesizes that animal do not have rights and cannot be given rights as rights arise, and can be intelligibly defended, only among beings who actually do, or can, make moral claims against one another. Human beings have specific attributes that give rise to their ability to make moral claims against others and these attributes are lacking in animals. These attributes are intellectual and include the ability to understand ethical principles and guide one's actions accordingly. The holders of rights must have the capacity to comprehend rules of duty, governing all including themselves. In applying such rules, the holders of rights must recognize possible conflicts between what is in their own interest and what is just. While humans have such moral capabilities, Cohen postulates that non-human animals do not.

Of importance is that Cohen (1986) says, "It does not follow from this, however, that we are morally free to do anything we please to animals. Certainly not. In our dealings with animals, as in our dealings with other human beings, we have obligations that do not arise from claims against us based on rights. Rights entail obligations, but many of the things one ought to do are in no way tied to another's entitlement. Rights and obligations are not reciprocals of one another, and it is a serious mistake to suppose that they are."

Contrarily, most current chapters of animal rights activism are inspired by a belief system engineered by the philosopher Peter Singer (1975) who postulates that all life has 'equal value'. He propagated the idea of anti – speciesism i.e. against the idea of a prejudice in favour of the interests of members of one's

own species. Peter Singer (1975) and his book, *Animal Liberation*, have had a profound influence on animal rights activism.

"Surely there will be some nonhuman animals whose lives, by any standards, are more valuable than the lives of some humans" (Singer, 1990).

Raising the consideration for animal life to be equal or even greater than human life as per Singer's (1990) postulations has the effect of reducing the 'sanctity' of human life i.e. reducing the consideration of human life to that of animals.

Singer is a utilitarian, a follower of the philosophers Jeremy Bentham and J.S. Mill, who formulated the theory that the best moral good was the happiness of the greatest number. They identified the good with pleasure and held that we ought to maximize the good, that is, bring about 'the greatest amount of good for the greatest number' (Driver, 2014). In utilitarianism, an action is judged not by its intrinsic nature, but by its consequences (Toolis, 1999), so murder, extinction of species, attacks on individual rights or worse can be justified if it leads to the happiness of the greatest number.

Peter Singer has rationalised discrimination against the unborn, infants, the infirm and elderly (Toolis, 1999) and believes killing of babies can be justified and that parents should have the right to decide if they might wish to kill their children within a time frame beyond which their 'sentience' and thus greater right to live, is assumed. Peter Singer (2001) argues that new-borns lack the essential characteristics of personhood—"rationality, autonomy, and self-consciousness"—and therefore "killing a new-born baby is never equivalent to killing a person, that is, a being who wants to go on living".

"Killing them [infants], therefore, cannot be equated with killing normal human beings, or any other self-conscious beings. No infant - disabled or not - has as strong a claim to life as beings capable of seeing themselves as distinct entities existing over time," (Singer, 1979). Singer even proposed a post-natal 28-day qualification period during which human babies, non-persons at that stage in his estimation, could be killed.

Peter Singer is currently active with various animal rights organizations including being on the advisory board of the Federation of Indian Animal Protection Organizations (FIAPO). In May, 2021 the former Minister of the Ministry of Women and Child Development in India, Maneka Sanjay Gandhi, received the 6th Peter Singer award for her animal rights activism from Peter Singer, who ironically, publicly supports human infanticide.

According to Dr. Gregory Stanton of 'Genocide Watch', there are various non-linear stages to genocide and one stage is that a group denies the humanity of the other, and for this, human beings are equated with animals (Stanton, 1996). Stanton (1996) argues that dehumanization overcomes the normal human revulsion against murder. Thus, equating animal and human life 'dehumanizes' a population to become as 'good' or 'bad' as animals in the eyes of fellow citizens, the State and law. The majority group or a group in power is taught to regard the other group as "less than human" and are indoctrinated to believe that "We are better off without them."

Animal rights, in the regard that it calls for equal consideration to be given to both humans and animals does not elevate the value of animals *per se* but devalues human life, to being worth as much as animal life.

Today, social media is rife with talk of human overpopulation, imminent environmental crises, apocalyptic climate change and mass extinctions of animals. Simultaneously, animal rights groups fund efforts, including legal efforts, in the developing world that are patently illegal in their own countries, seeking to elevate the value of animal life to humans, often with consequences seriously detrimental to human society and ecosystems.

"It is no wonder, then that with all this obsession to push society towards "a duty to die" mindset, more palatably and euphemistically propounded as "the right to die" and euthanasia for the most vulnerable members of our society (Faria, 2016) – not necessarily respecting individual autonomy as it is claimed by some as "the right to die," but more pragmatically for utilitarian reasons, the conservation and redistribution of resources – moral philosopher Wesley Smith has pointedly called the bioethics movement a "culture of death." (Smith, 2000).

The bioethics movement significantly includes the animal rights movement.

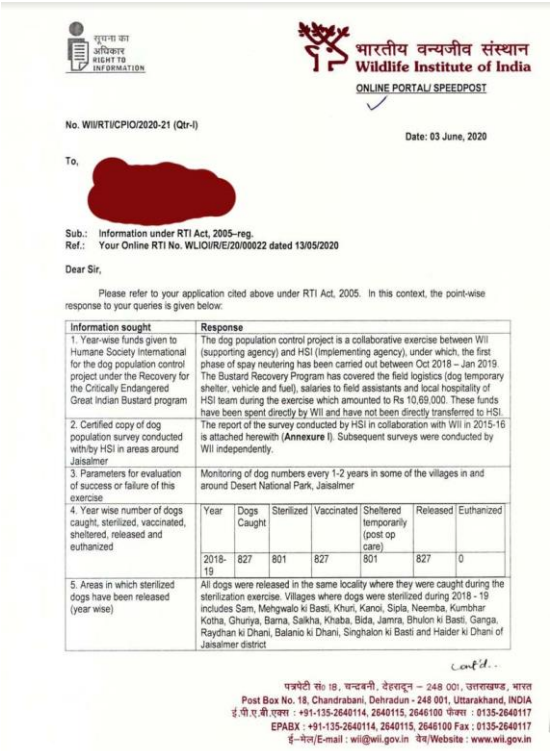
For example, in India, the annual estimated number of animal bites is 17.5 million (John, *et al*., 2021) leading an to estimated 18,000-20,000 cases of human rabies per year (Gongal & Wright, 2011). Most of these bites come from free-ranging dogs, which kill about 20,000 people a year via rabies transmission (Sudarshan, 2017). As rabies is a non-notifiable disease, it is postulated by a WHO survey that the real number is ten times higher than reported (Sudarshan, 2005). Free-ranging dogs are also a massive threat to the survival of India's wildlife including critically rare species like the Great Indian Bustard (*Ardeotis nigriceps)*, The Tibetan Wolf (*Canis lupus chanco*) (Henelly, 2015) and Black Necked Cranes (*Grus nigricollis*) (Parvaiz, 2018). They also threaten big cat populations with canine distemper virus and actively prey on a host of other species across the country both within and outside protected areas (Home, *et al*., 2017).

The animal rights inspired Animal Birth Control (ABC) policy was promoted and funded by the Animal Welfare Board of India (AWBI) and notified in 2001 by the Union Ministry of Culture, a ministry that has nothing to do with public health or wildlife issues. The Union Ministry of Culture was then under the purview of animal rights activist, Maneka Sanjay Gandhi. The policy has been used for the last 20 years to ostensibly manage India's massive and growing stray dog population. The national ABC policy requires maintaining free roaming unowned dogs in public places, contrary to nearly all other countries that euthanize unwanted and feral dogs. The ABC policy recommends sterilization of "street dogs" to reduce dog populations despite the WHO's "Guidelines for dog population management" (Bogel *et al*., 1990) recommending sterilization of 70 percent of the total dog population and euthanasia, not sterilization, of unowned dogs. As per the AWBI's own internal reviews it has only sterilized up to 6 percent of India's dogs over 20 years at massive cost to both the exchequer, people and wildlife and about 59 million dogs (Gompper, 2014), most rendered homeless, diseased and in daily conflict with citizens in public places. Two internal reviews of the ABC program by the Ministry of Environment, Forests and Climate Change (1999; 2008) have documented the abysmal failure of the ABC policy, as well as noting the gross misappropriation and mismanagement of taxpayer funds.

The animal rights inspired Animal Birth Control (Dogs) Rules, 2001 and 'revised module for street dog population management, rabies eradication and reducing Man-Dog conflict" is also currently the solution suggested in the 'Standard Operating Procedure to deal with emergency arising due to Stray and Feral Dogs in Tiger Reserves,' set up by the National Tiger Conservation Authority. This is despite the fact that this is not about 'street dogs' and despite the fact that camera traps recorded more dogs than tigers in 17 of India's Tiger Reserves and despite the NTCA admission that "dogs are a threat to both ungulates (which they hunt) and to carnivores, since they carry infectious diseases like rabies." Despite claiming that dogs are dangerous to large and potentially dangerous animals like tigers, and large herbivores, the NTCA still recommends via the ABC policy,

that feral dogs captured from national parks be released after being vaccinated, in 'suitable locations', which would include areas frequented by people and wildlife.

Similarly, the Great Indian Bustard, a Schedule I species, is a critically rare species with only about 150 individuals left in India. Free-ranging dogs are one of the most serious threats to the bird and hunt and kill them and prey on their eggs and hatchlings. Free ranging dogs are currently abundant in the last few habitats of the Great Indian Bustard. HSI (Humane Society International), an animal rights organization based out of the USA, is carrying out a Neuter-Release program of dogs along with the Wildlife Institute of India (WII) in Rajasthan. Replies under the Right to Information Act reveal over 800 feral and predatory dogs have been released, including within territory occupied by the critically endangered Great Indian Bustard, already under immense threat from free ranging dogs, power lines and habitat loss. This endangering of the GIB by releasing species designated as invasive species by the IUCN into Great Indian Bustard habitat, likely leading it to its imminent extinction is being done by a known animal rights organization with the active collaboration and support of the Wildlife Institute of India.



सूचना का अधिकार
RIGHT TO INFORMATION

भारतीय वन्यजीव संस्थान
Wildlife Institute of India

ONLINE PORTAL/ SPEEDPOST

No. WII/RTI/CPIO/2020-21 (Qtr-I) Date: 03 June, 2020

To,

[redacted]

Sub.: Information under RTI Act, 2005–reg.
Ref.: Your Online RTI No. WLIOI/R/E/20/00022 dated 13/05/2020

Dear Sir,

Please refer to your application cited above under RTI Act, 2005. In this context, the point-wise response to your queries is given below:

Information sought	Response
1. Year-wise funds given to Humane Society International for the dog population control project under the Recovery for the Critically Endangered Great Indian Bustard program	The dog population control project is a collaborative exercise between WII (supporting agency) and HSI (implementing agency), under which, the first phase of spay neutering has been carried out between Oct 2018 – Jan 2019. The Bustard Recovery Program has covered the field logistics (dog temporary shelter, vehicle and fuel), salaries to field assistants and local hospitality of HSI team during the exercise which amounted to Rs 10,69,000. These funds have been spent directly by WII and have not been directly transferred to HSI.
2. Certified copy of dog population survey conducted with/by HSI in areas around Jaisalmer	The report of the survey conducted by HSI in collaboration with WII in 2015-16 is attached herewith (**Annexure I**). Subsequent surveys were conducted by WII independently.
3. Parameters for evaluation of success or failure of this exercise	Monitoring of dog numbers every 1-2 years in some of the villages in and around Desert National Park, Jaisalmer
4. Year wise number of dogs caught, sterilized, vaccinated, sheltered, released and euthanized	Year: 2018-19 — Dogs Caught: 827 — Sterilized: 801 — Vaccinated: 827 — Sheltered temporarily (post op care): 801 — Released: 827 — Euthanized: 0
5. Areas in which sterilized dogs have been released (year wise)	All dogs were released in the same locality where they were caught during the sterilization exercise. Villages where dogs were sterilized during 2018 - 19 includes Sam, Mehgwalo ki Basti, Khuri, Kanoi, Sipla, Neemba, Kumbhar Kotha, Ghuriya, Barna, Salkha, Khaba, Bida, Jamra, Bhulon ki Basti, Ganga, Raydhan ki Dhani, Balanio ki Dhani, Singhalon ki Basti and Haider ki Dhani of Jaisalmer district

cont'd..

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RTI excerpt regarding release of free ranging dogs into GIB habitat in Rajasthan, by HSI and WII.

These methodologies go completely against the IUCN issues brief regarding invasive alien species (IAS) (IUCN, 2018). According to The IUCN Red List of Threatened Species™, IAS (which include free ranging dogs) are one of the top causes of biodiversity loss and the second most common cause of species extinctions after habitat loss**.** The brief states, "the most cost-effective measure to address the impacts from IAS is to prevent their introduction". The brief also supports the extermination of invasive alien species. The Wildlife Institute of India, the NTCA and HSI have done precisely the opposite.

These efforts to equate people and animals and to remove categorizations of value between species and ensure 'animal liberation', are directed at the developing world by animal rights organizations from developed regions like the United States and Europe. Besides propagating paranoid visions of environmental disaster and animal suffering, efforts to spread animal rights ideology are directed via the funding of animal rights organizations in countries in Asia, Africa and Latin America, which push to allow for equal consideration for both animal life and humans life, in various contexts, regardless of consequences to both human beings and animals.

Animal Rights Activism in India

Animal rights activism is today an 'ideological' movement' pushed and funded by a global cabal of animal rights groups and is a confidence industry that often uses propaganda, falsehoods and sentiment to change policy to proselytize followers. The inherent goodness of people is often exploited. It could be considered as evangelizing and dogmatic as any colonially imposed religion with opponents to the belief system treated as heretics to be destroyed. Tens of millions of dollars are spent on funding groups violently oppressing and denigrating indigenous people, opposing their dietary choices and traditional practices like temple elephants, elephant rides, Jallikattu and buffalo racing or the pushing of policies that allow and result in huge numbers of people, livestock and wildlife being killed due to free roaming unowned dogs that are ensured 'protection' no matter the tremendous cost to both people and wildlife. Many animal rights organizations sensationalize and sentimentalize acts of cruelty or animal suffering and use the material to raise funds, helped along by policy they help or try to help create via court judgements and lobbying, often under the guise of 'compassion' and 'conservation'.

In India, most animal rights activists come from the more educated and wealthier sections of society that likely consume far more in terms of natural resources yet attack the customs and traditions of the poorest and least powerful via their animal rights activism. From the looks of many of the current cases, these efforts seem to embody attempts to syncretize and/ or take over aspects of traditional belief and culture.

The animal rights lobby seems to knowingly create false expectations for animal population management and continues to persistently falsify, misrepresent and creates dishonest and biased 'research' so as to further an animal rights agenda of 'no kill' and 'animal liberation' over any practical agenda to truly manage animal populations or manage wildlife. If anything, animal rights activist inspired policies keep animals in daily conflict with people, offering neither protection nor rights to either.

Narratives of 'killing is always bad' are financed and propagated by international animal rights organisations with double standards. For example, in India, PETA condemns the killing of man-eaters and crop raider species and promotes the public maintenance of unowned dogs as national policy, while not promoting the same in the USA where PETA kills up to 97% of the dogs

and other animals they take into their care (VDACS report, Peta 2006).

Conclusion

As evidenced by history, the Animal Rights ideology has not been about the rights of animals but about human power and its expressions. Globally, a new generation of animal rights activism is spreading its wings, fuelled by social media that ensures easy access to impressionable youth and demographics.

The danger is that animal rights ideology seeks to devalue the sanctity of human life and mimics a colonial and/or a racist view. This can be seen by the actions of animal rights groups which seek to extend their agenda and push strategies in the tropics, patently illegal in their home countries as well as attacking traditional, religious and cultural aspects of a society involving animals.

Animal rights NGOs, sometimes masquerading as Wildlife NGOs or 'Conservation' NGOs have become well versed in judicial activism, often using the Indian judicial system to attack religion and culture, seize animals from temples and ensure animal 'liberation' no matter the human, social, cultural and ecological cost.

India is the focus of massive funding by foreign Animal Rights organizations, especially from the United States via organizations like PETA and Humane Society International (HSI) who see India as a soft target in terms of spreading ideology and the takeover or influence over the management of natural and animal resources.

The animal rights ideology contradicts principles, practices and protocols of successful wildlife or animal management as practised globally via animal welfare principles and instead promotes destructive choices within society regarding desirable and potential human-wildlife relationships. It creates false expectations for wildlife and other animal population management and erodes society's confidence in the scientific study of wildlife / animal/ habitat management. Animal rights ideology is most often financially, socially, environmentally and governmentally destructive and profoundly misdirects human energies.

To achieve their agenda, animal rights activists will have to force radical changes in human society, including in traditions, beliefs, religious practice, diets, agriculture, industry and livelihoods. They also cannot achieve their goal to abolish all animal uses by mankind, without violating the rights of most of humankind or ecological principles used in the management of wildlife. They also do not (or do) consider the incredible negative economic, ecological and social consequences that their agenda could have on civilization, economies, indigenous peoples' rights, ecosystems and animals themselves. Animal rights activists undermine mankind's efforts to achieve WCS objectives and negate the actions that sovereign states undertake to achieve their economic goals and conservation strategies.

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The aspects regarding wildlife management in this paper have, in part, been inspired and informed by various writings of Ron Thomson on wildlife management from the True Green Alliance website www.mahohboh.com which publishes wildlife management protocols and their explanations online. Some of the writing above, including the last two paragraphs have been inspired and informed by his online essays on wildlife management and animal rights conundrums in Africa.

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REPORT ON A LIVE GYNANDROMORPH OF THE COLOR SERGEANT BUTTERFLY *ATHYMA NEFTE INARA* (INSECTA: LEPIDOPTERA: NYMPHALIDAE) FROM INDIA

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Abstract
A gynandromorph of *Athyma nefte inara* (Westwood, 1850) was photographed in West Bengal, India. Gynandromorphism in *Athyma nefte* inara was first reported by Wankhar (2020), based on a single, unlabelled museum specimen from India. The present study confirms gynandromorphism in *Athyma nefte inara* in India.
Keywords: *Athyma nefte*, Colour Sergeant, developmental architecture, gynandromorphism, India.

Introduction
Gynandromorphism is an abnormal architecture, resulting in chimeric individuals, which combine patches of both genetically male and female type tissues (Narita *et al.*, 2010). Based on an unlabelled museum specimen, Wankhar (2020) reported gynandromorph specimens of *Athyma nefte inara* (Westwood, 1850) and *Ixias pyrene* (Linnaeus, 1764) from the Wankhar Memorial Museum of Entomology at Riatsamthiah, Shillong, Meghalaya, India. Prior to this, Chaturvedi (1992) reported a gynandromorphy of *Curetis thetis* from India.
To date, multiple papers have enlarged the knowledge of the occurrence throughout the world of butterfly individuals presenting phenotypically male and female parts (Emmel & Boender, 1990; Narita *et al.*, 2007; Bolino & Padron, 2016).

An opportunistic field survey was undertaken from 21.xi.2021 to 23.xi.2021 in low elevation dense forest of the Jayanti area in West Bengal, India. A single basking half female-half male *A. nefte inara* was sighted and photographed by all authors at the Indo-Bhutan Asiatic Elephant Corridor (26°42´ N; 89°36´ E), Jayanti river bed, West Bengal, India on 22.xi.2021 at about 12:30 PM. It was observed for more than two hours at the same place. This identity was confirmed using Kehimkar (2016).

Results
The sex-related traits of the gynandromorph of *A. nefte inara* examined in the study, show that all distinguishing characteristics (Forewing (Fw) cell streak, Fw spot beyond cell, Fw and Hw discal band) of the left wing are female (bright orange), while all those of the right wing are male.

The authors observed that the female wings are rather larger than the male wings, as is normal for the species. Thus, the present record confirms the presence of gynandromorphism in *Athyma nefte inara* in India.

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Fig.1: Gynandromorph butterfly of *Athyma nefte inara* from Jayanti riverbed, West Bengal, India.