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AMBIENT APPRAISAL

Butterfly Species Diversity in Udanti Wildlife Sanctuary Gariaband: an Additions of Two Species to State Faunal Records of Chhattisgarh, India

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Study Area: Udanti Wildlife Sanctuary, Chhattisgarh, India
Coordinates: 20°0'N-20°15'N & 80°30'E-82°0'E

Abstract

A comprehensive butterfly survey was conducted within the Udanti Wild Life Sanctuary (UWLS), Chhattisgarh, India. A total of 76 species of butterflies were observed across 10 study sites. Lycaenidae was the most prevalent family, with 27 species, closely followed by Nymphalidae with 24 species. Hesperiidae presented 14 species, Pieridae had 6 species, Papilionidae featured 4 species from a single genus, and the Riodinidae family included a single species. Notably, two previously unreported butterfly species in Chhattisgarh have been found in the present survey: *Hyarotis adrastus*, Tree Flitter and *Pareronia ceylanica*, Dark Wanderer. These findings represent new additions to the state's butterfly fauna of Chhattisgarh. A total of 216 plant species were simultaneously documented of which 61 are known to be hosts of different butterflies.

Key words: Alpha diversity, Biodiversity, Pareronia ceylanic, Hyarotis adrastus, Host Plants.

Introduction:

Butterflies, diverse and captivating insects, evolved alongside plants and spread globally due to geological events (Kawahara, 2023). They resemble flying flowers, captivating with their vibrant wings and flying patterns. Butterflies are day-flying, colourful, and multivoltine insects with a four-stage lifecycle: Egg, Larvae, Pupa, and Adult (Pohl *et al.*, 2018). Butterflies are highly sensitive indicators of climate change, habitat loss, and fragmentation (Goodden, 1974; Warren *et al.*, 2001; Ramana, 2010; Wilson & Maclean, 2011; Fox, 2013; Belitz *et al.*, 2018; Maurer *et al.*, 2018; Ellis *et al.*, 2019). Additionally, they play a crucial role as pollinators worldwide.

In the early 20th century, Copinear (2008) documented around 17,950 species, while India stands out with its 1,641 butterfly species, accounting for 9.50% of the world's total (Varshney, 2006). The reported butterfly species count in India varies from 1,400 to 1,500 species (Gaonkar, 1996; Smetacek, 1992; Roy *et al.*, 2010; Kunte, 2018). Chhattisgarh state is home to 170 butterfly species, continuously updated through surveys. Initially, Chandra *et al.* (2014) reported 137 species, later increased to 174 species by subsequent studies (Dubey *et al.*, 2015; Sisodia, 2019; Sisodia & Kshirsagar, 2020; Tandan *et al.*, 2020; Nihalani *et al.*, 2021; Tandan *et al.*, 2021a,b; Chand *et al.*, 2022, Jangde *et al.*, 2023), enhancing the state's butterfly fauna. However, the Udanti-Sitanadi Tiger Reserve and other habitats in Chhattisgarh remain less explored due to resource and expertise limitations. Earlier, only 35 butterfly species were documented in the Udanti – Sitanadi Tiger Reserve (Chandra & Boaz, 2018).

The present study investigated the butterfly species in Udanti Wildlife Sanctuary (UWLS) within Udanti-Sitanadi Tiger Reserve (USTR), as previous research offered only limited insights into butterflies in the region. Despite the sanctuary's rich variety of flora and fauna, it has received relatively little exploration. The collected data on faunal diversity can be effectively utilized to enhance the conservation of valuable regional fauna resources.

Methodology

Study area: The Udanti Wildlife Sanctuary, in the southeastern part of Gariaband district, covers an area of approximately 275.77 square kilometres. It is named after the Udanti River that flows through the region. The topography of Gariaband district is mainly hilly with some plains, and the forest covers around 50.41% of the area, comprising Teak forest (0.37%), Saal forest (22.66%), and

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RESEARCH ARTICLE

Butterflies and Their Conservation Status on the Campus of Sant Guru Ghasidas Government P.G. College Kurud, Chhattisgarh, India

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ABSTRACT

Chhattisgarh state has a rich diversity of butterflies with a total of 170 species in its diver's habitat as hilly terrain, plateaus, plains, and agroforest land, including the campuses & backyards in between human colonies. The present study has been carried out in an academic campus of Sant Guru Ghasidas Government Post Graduate College Kurud; district Dhamtari, Chhattisgarh, India. We observed 56 species of butterflies taxonomically placed under five families in which the family Lycaenidae and Nymphalidae have been dominated over the rest three as family Pieridae, Hesperiidae and Papilionoidae. Out of 56 species, nine species were legally protected under Wildlife Protection Act – 1972, with six listed under schedule – II and three under schedule-I.

Introduction

Butterflies are brightly colored and day-flying insects (Pohl, et al. 2018) widely spread all over the world, ranging from tropical to polar regions. Worldwide, the estimated number of butterfly species is about 19,238 (Heppner, 1998), with approximately 17,950 species documented in the early 20th century (Copinear, 2000). India possesses a rich diversity of butterflies, with 1,641 species which accounts for aproximately 9.50% of the world's butterflies species (Varshney 2006).

The Centrally located Indian state, Chhattisgarh also hosts a rich diversity of butterfly, approximately 171 species, documented over the past two decades (Chandra *et al.*, 2007; Chandra and Sharma, 2009; Chandra et al., 2014; Dubey et al. 2015; Sisodia, 2019; Sisodia and Kshirsagar, 2020; Tandan et al. 2020, 2021a & b; Nihalani, 2021; Chand et al. 2022; Nihlani et al. 2022; Jangde et al. 2023). This diversity is found across various habitats, including college campuses and residential aeras. The Present study also evidences the richness of butterflies within campus of Sant Guru Ghasidas Government Post Graduate College (Fig. – 1) from 2018 to 2022.the study compiled a checklist of 56 butterfly species of five families.

The college campus covers an area of about 15 Acres of plain land located at an altitude of 305m above sea level, with a Latitude 20.82720 and Longitude 81.713037. It is positioned to the south-east of Kurud city, aproximately 1.5 km away from National Highway 30, & at a distance of 55 km from the Raipur.

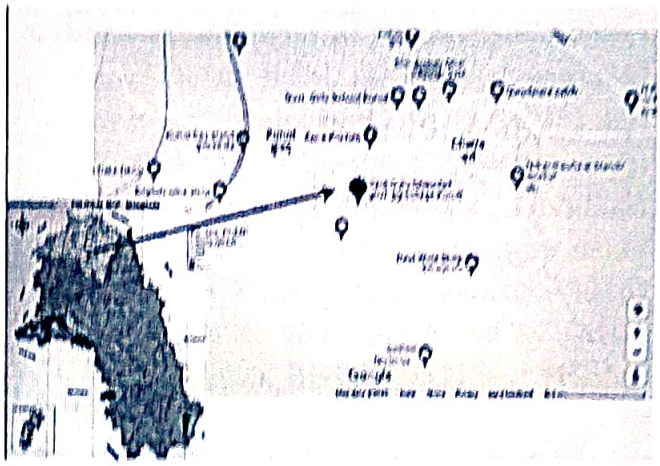

Figure- 1: The Study area

Methodology

We used Cannon D-1300, Nikon D-7000 and mobile camera to documenting butterflies on the college campus. Field guides authored by Smetacek (2016) and Kehimkar (2016) aided in thefield identification, and the species were further identified with the help of Evans (1932); Wynter Blyth (1957); Haribal (1992) & Smetacek (2017). Confirmation were made through online assistance from the Butterflies of India website www.ifoundbutterflies.org.

ADDITION OF THE RED PIERROT BUTTERFLY *TALICADA NYSEUS NYSEUS* TO THE BUTTERFLY FAUNA OF CHHATTISGARH, INDIA

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Due to diverse habitats and its rich floral diversity, Chhattisgarh has a rich diversity of butterflies. The latter have been regularly surveyed from Sarguja to Bastar divisions by the authors. The state Chhattisgarh has five revenue divisions as Surguja, Bilaspur, Durg, Raipur and Bastar, which comes under the Deccan Plateau (Rodgers *et al.*, 2002); geologically, it is a part of the Gondwana Plateau (Chandra & Singh, 2004); and climate is tropical, hot and humid in the state. Jashpur (22.8763590N, 84.1569230E) district is situated in the North-East of Chhattisgarh, bordering Orissa state and Bastar division (19.0969125N, 81.9965469E) is the South-East part, also bordering Orissa at lower Chhattisgarh.

For the present report and observation of butterflies, Saurabh Singh with Ashwini Chouhan & Rohit Kalyari visited the Jashpur District office in the morning hours while Gulab Sahu visited Jagdalpur city and photographed the butterflies. The Red Pierrot was first photographed on 22.ii.2022, and frequently seen in the urban environment of the Jashpur District office. Gulab Sahu encountered the Red Pierrot in Jagdalpur city on 11.ii.2023 and 5.iii.2023 and frequently observed them in the same place. Photographed individuals were identified by field characters using Smetacek (2016) and Kehimkar (2016) and the species were confirmed by Evans (1932), Wynter Blyth (1957) and Haribal (1992).

Observation: These are the first recorded observations of this species from Chhattisgarh. The known distribution of the subspecies T. n. nyseus in India was Maharashtra to Kerala, eastward to Andhra Pradesh; Himachal Pradesh, Uttarakhand; Uttar Pradesh; Delhi (Varshney & Smetacek, 2015).

3.3.2

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Tutelage of Traditional Forest Management in Public Policy: Excerpts from a Case of Dhurwa in Bastar

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Abstract

Agriculture becomes the major source of livelihood for the majority of the forest-dwelling communities in India. Traditional livelihoods such as hunting and gathering, fishing, and shifting cultivation have come down due to shrinking forest coverage and reservation for commercial purposes in the name of scientific forestry. Most of the forest dwellers are displaced for the cause of mining, big dams, and other multi-purpose developmental projects. It made them to depend on agriculture to a great extent. However, the lack of irrigation facilities, modern farming methods, low technology, and undulating landholdings led to low yields for *Adivasi* and hence they rely on forests for alternative livelihood. Thus, forests play an important role not only in employment but the supply of timber and non-timber forest produce for domestic use, nutritional supplements, medicinal herbs, etc. Due to its significance, *Adivasi* communities maintain a symbiotic relationship with their surrounding forest ecology and conserve them through the worship of sacred groves. Collection of seasonal fruits, Bamboo, *Mahuwa*, and *Tendu* leaves are initiated only after appeasing the presiding deities in the form of first fruit ceremonies. However, the entry of commercialization and comodification of forests led to its ruthless exploitation and forced forest dwellers to migrate to urban centers for wage labor. More than fifteen policies were made during colonial and post-colonial people that curtailed the rights of forest dwellers in many ways. However, the recently made amendment to the Forest Conservation Act 1980 is detrimental to the interests of these forest dwellers by putting forest lands to non-forest uses for economic gains. With this backdrop, the present paper highlights the traditional management of Dhurwa for its tutelage in policy formulation. The study found that traditional management of forest resources has resorted to an adaptive strategy in difficult times. The present study is a micro-level one that employed traditional anthropological methods i.e., observation, key informant interviews, group discussions, and questionnaires to collect empirical data