

BUTTERFLY MIGRATION IN MELGHAT REGION

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ABSTRACT

*A Countless mass migration of mottled emigrant (*Catopsilia pyranthe*), Common emigrant (*Catopsilia pomona*) and Lime butterfly (*Papilio demoleus*) were seen from north Melghat to south, southwest, southeast plain regions of Paratwada, Achalpur, Amravati and other regions during 21 July 2025 in monsoon season. This survey is done by visual observation methods and density of swarm is extreme high. This extreme precipitation causes physical damage, watch out flower pollen and nectars, extreme cold, habitat destruction therefore they travel towards the safer habitat for food, breeding place. Migration is the only way to escape from heavy rainfall in Melghat, due to heavy rainfall they are not survived therefore they were migrating seasonally towards the near plain areas. Their migration act as key indicator of heavy rainfall and alarm for other organisms.*

KEYWORDS: *Butterfly, Migration, Catopsilia Pyranthe, Catopsilia Pomona, Papilio Demoleus, Achalpur, Paratwada, Amravati*

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INTRODUCTION

Butterfly are most colourful insect and great economic importance for pollination in flowering plants. Some main families of butterfly exhibit migratory behaviour, they are Papilionidae, Pieridae, Danaidae, Rhopalocera and Nymphalidae [5]. Their routes and direction of migration depend on different environmental factors [3]. This divergence helps to prevent direct competition for food, space and mating, conserve energy to increase chance of survival and fitness.

Butterflies are one of the groups of insects they exhibit long distance and short distance migratory behaviour [3]. The migration is remarkable phenomenon for survival of butterflies to avoid unfavourable climatic factors, including heavy rainfall, food scarcity, cold temperature and habitat destruction [1]. Heavy rainfall in mountain region is trigger to butterfly migration and their movement from higher altitude to plain areas [2]. Monarch travel between 1,200 and 2,800 miles or more from the north United States and southwest Canada to the mountain forest in central Mexico [4] and east-west, South-west migration of Nymphalidae family members such as *Tirumala limniace*, *T. septentrionis*, *Euploea Sylvester* and *E. core* with their large swarms [5]. Most of the studies on butterfly migration have been undertaken in western ghat of India [2,5,6] but Melghat region of Amravati and other area of Vidarbha are poorly studied. The maximum studies in Melghat are done on diversity of butterfly [7]. Melghat and around regions have great floral and faunal diversity therefore huge opportunity for researcher to explore the diversity of animals in Satpuda ranges. This investigation

generates base line data to helps researchers, conservators, for further research and conservation purposes.

MATERIALS AND METHODS

Study Area

Near Sant Gadge Baba Sansthan library Achalpur, Paratwada and other areas of Amravati is located near the foothill of Melghat Tiger Reserve (MTR), it belongs to Amravati District Maharashtra, India. Melghat Tiger Reserve is rich in biodiversity of flora and fauna and surrounding region of Paratwada, Achalpur and Amravati are vast diversity of flowering crops, fruits and plants like Tur (Red Gram), Cotton, Santra (Mandarin orange), Pomegranate, Guava, Custard apple, Papaya and other fruits and Roses, Hibiscus (Jaswand), Marigolds, Jasmine, Bougainvillea.

Field Survey

The migratory behaviour of butterflies was recorded by direct visual observation methods near to the Sant Gadge Baba Sansthan library Achalpur, other regions of Paratwada and Amravati, Maharashtra. These three were migrating in countless warm to forming large band of several kilometres during 21 July 2025. The peak of migratory period hours were 9.00 am to 1.00 pm in the day then it sharply starts to declines. Butterfly is flying at height of 1.30 meter to 6.10 meter above from ground levels. Specially, this butterfly migration is before to the approximately two to three days prior to an intense heavy rainfall event in the Melghat mountain, Paratwada, Achalpur and Amravati.

RESULT

Species Composition

A mass migration of mottled emigrant (*Catopsilia pyranthe*), Common emigrant (*Catopsilia pomona*) and Lime butterfly (*Papilio demoleus*) were from Melghat to south, southwest, southeast adjacent plain regions of Paratwada, Achalpur, Amravati during 21 July 2025 in monsoon season. *Catopsilia pyranthe* and *Catopsilia Pomona* belong to family Pieridae and *Papilio demoleus* is in Papilionidae.

Patterns of Migration

The migration of butterfly mainly in monsoon season and they migrated in several kilometres large band. They are preferring to flying at the height of 1.30 meter to 6.10 meter above from ground levels along with winds. During 21 July 2025, the butterfly shows differential migratory movements at different time frame. The migration initiated in day at 7 am but the earlier was slow in lag phases and vigorous active migrating period was between 9 am to 11 am and then it starts slowly declines up to 1.00 pm. Intensity of migration is influence by light intensity; in figure 1 shows the exponential activities forming a bell-shaped curve. Migratory responses were before the 2 to 3 days of heavy precipitation in Melghat region.

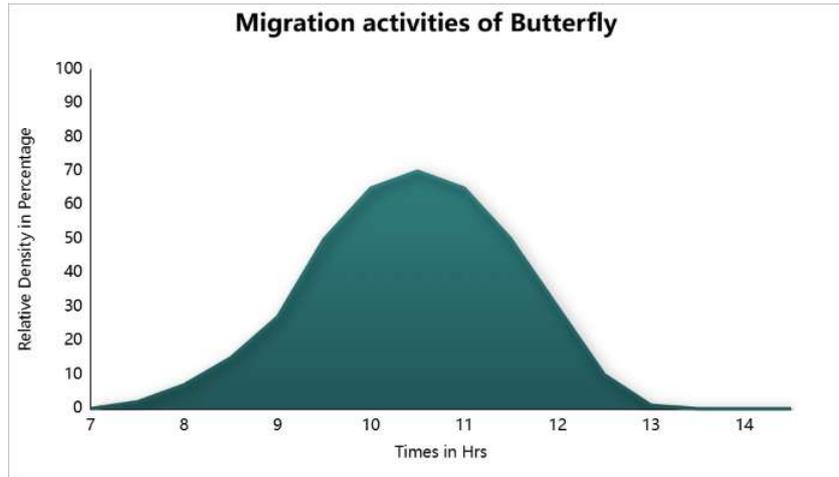


Figure 1

Correlation between Migration Density and Rainfall

The migration of butterfly is closely link with climatic factors such as rainfall, temperature, wind and humidity. The direct relationship between rainfall and migration of butterfly, the butterfly migrated after two to three days of low rainfall and priorto the two to three days of heavy rainfall. The Figure 2 clearly indicates relation between migratory activity and rainfall intensities.

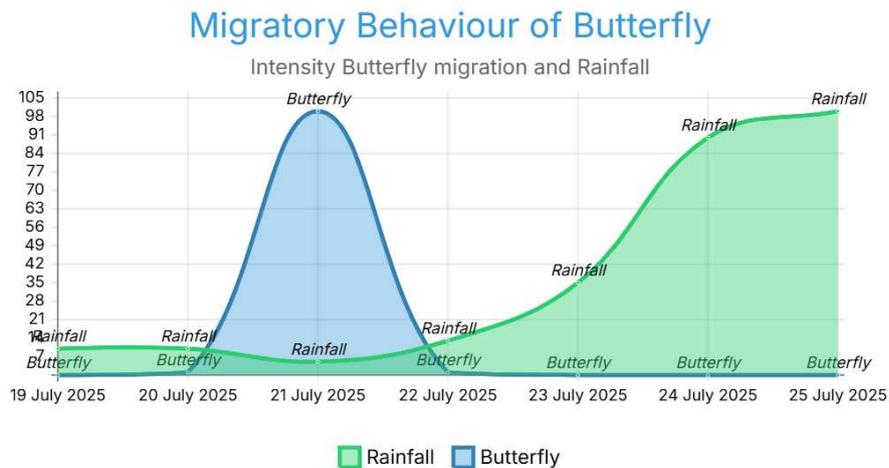


Figure 2

DISCUSSION

The *Catopsilia pyranthe*, *Catopsilia pomona* and *Papilio demoleus*, all these three species were migrated before the heavy rainfall in monsoon season comes from Southwest. The large countless swarm was migrated from Melghat mountain region to adjust plain areas of Paratwada, Achalpur and other regions of Amravati, Maharashtra. The purpose of this migration was to avoid intense rainfall at higher altitudes, it causes physical damage, watch out pollen and flower nectars, extreme cold, habitat destruction. Same these three species of butterfly’s shows bi-directional tremendous migration from North-South was seen at coastal areas of Kalpakkam in the months of October and July. The butterfly migration was enormous during October (2009) and relatively less in July (2010) [3], but in our investigation, large swarm migration in the month of July. Migration of danaine butterflies takes place across the plains of southern India to the Western Ghats

during October-November, and towards the plains, about April-May [2]. Monarch butterflies undergo a stunning long-distance migration to reach their overwintering grounds in Mexico [4].

Two species viz, *T. septentrionis* and *Euploea* shows bi-directional migration of butterfly from north-east and south-west migration respectively during March-April and September to November months in Western Ghats of south-western Karnataka [5] and these species shows variation in migration during different hours in the day [5]. The migration of butterfly from mountain region towards plain areas [2,3,4], and the same result was obtained in these findings but the limitation of this finding is to density did not counted. Butterfly diversity and migration was extensively explored in Western Ghat of India but very limited studies on migration conducted in Amravati region, therefore researchers have opportunity to explore it. The study aims to provide fundamental knowledge to academics, researchers and students.

CONCLUSION

This study provides a butterfly's responses to the climatic factors. Their migrative response was earlier to the two to three days before of extreme precipitation and this finding play a crucial role for conservation. More depth of study is required for analysis, either the migration is one-way or bi-directional and the origin, final destination. They serve main important role in food web, pollination in environment.

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