

## **BUTTERFLY DIVERSITY AND THEIR HOST NECTAR PLANTS OF PERMUDE VILLAGE IN DAKSHINA KANNADA**

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**Abstract—** Permude, a village in Mangaluru Taluk located in Dakshina Kannada district, Karnataka (latitude: 12.9989, longitude: 74.8828) has a total area of 742 hectares and is notified by the Government of India under Mangaluru Special Economic Zone (SEZ). It has a population of 2,242 with untouched biodiversity. Since it has been notified under Mangaluru Special Economic Zone (SEZ) there is a threat for the loss of biodiversity. More over there is no record of above mentioned work. A study on butterfly diversity was carried out during July, August and September 2016 in three sites of the village (Subayyakodi, Nayak farm house and Devathakodi) to prepare an inventory. A total of 45 species of butterflies belonging to 5 families were recorded. The family Nymphalidae were found to be dominant with 21 species followed by Hesperiidae (12 species), Papilionidae (4 species), Lycaenidae (4 species) and Pieridae (4 species). The species endemic to Western Ghats and Sri Lanka such as *Cethosia nietneri* is recorded in Permude village. The schedule species found in the region are *Hypolimnas bolina*, *Euploea core*, *Tanaecia lepidea*, *Hypolimnas misippus*, *Euthalia aconthea* and *Kallima horsfieldi*.

**Keywords—** Butterflies, Permude, checklist, conservation.

### **INTRODUCTION:**

Insects are the most diverse group of animals. They include 16,823 species of butterflies from all over the world (Goankar. H, 1996) and about 1,800 species in India (Kunte. K, 2014). The number of Indian butterflies amount to one-fifth of the world species (Kunte. K, 2000). Butterflies are insects with brightly coloured wings and conspicuous fluttering flight. Butterflies are the indicators of healthy ecosystem (Padhye. A *et al.*, 2006). They provide a wide range of environmental benefits, including pollination and natural pest control. Butterflies pollinate more than fifty economically important crops (Borges. R. M *et al.*, 2003). They are important element of food chain and are prey for birds, bats and others insectivorous animals. Minor changes in their habitat may lead to either migration or local extinction (Blair. R. M, 1999; Kunte. K, 1997; Mennechez. G, Schtickzelle. N and Baguette .M, 2003). Thus conserving butterflies will improve our environment and enrich the lives of people. Because of their dependence on the plants, butterfly diversity may reflect overall plant diversity in the given area (Padhye. A *et al.*, 2006). Tiple. A. D *et al.*, (2007) have stated that plant species which act as rich nectar source influence the occurrence of butterfly species. The main aim of this

work is to list the butterflies of different regions of Permude village and to highlight the threat to diversity due to the developmental activity in this area.

### **STUDY SITE:**

Permude is a village in Mangaluru Taluk located in Dakshina Kannada district, Karnataka (latitude: 12.9989 longitude: 74.8828). It has a total area of 742 hectares and it is notified by the Government of India under Mangaluru Special Economic Zone (SEZ) (Figure1). It has a population of 2,242 with untouched biodiversity. Since it is been notified under Mangaluru Special Economic Zone (SEZ) there is a threat for the loss of biodiversity.

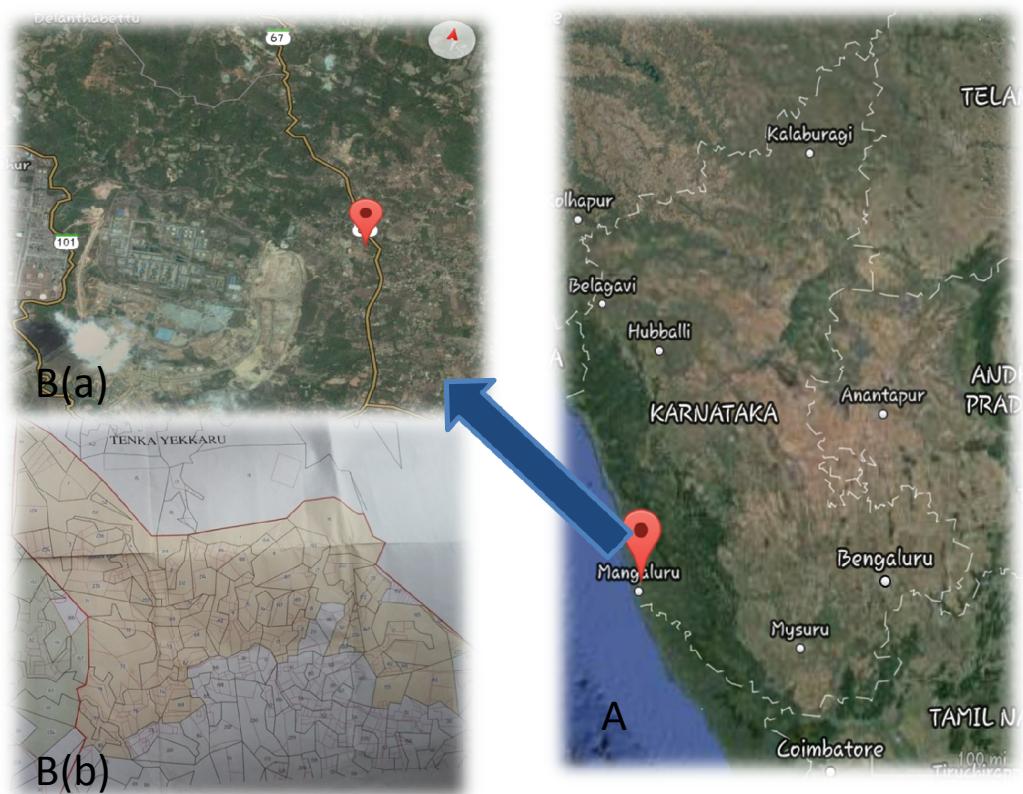
### **MATERIALS AND METHODS:**

The field survey was carried out in three different regions (Subayyakodi, Nayak farm house and Devasthakodi) during July, August, September 2016. Data of butterfly fauna was collected by conducting random surveys by all out search method during the mornings. The butterflies were observed in natural habitats and were not collected or preserved as dead specimens. The butterflies and nectar plants were identified. (Kunte. K, 2000; Bhat. K. G, 2003). The photographs were taken for documentation.

### **RESULTS AND DISCUSSION:**

A total of 45 species of butterflies belonging to 5 families were recorded (Table 1). The family Nymphalidae were found to be dominant with 21 species (46%) followed by Hesperiidae (12 species), Papilionidae (4 species), Lycaenidae (4 species) and Pieridae (4 species) (Figure 2). The species endemic to western ghats and Sri Lanka such as *Cethosia nietneri* was recorded in Permude village. The schedule species found in the region are *Hypolimnas bolina*, *Euploea core*, *Tanaecia lepidea*, *Hypolimnas misippus*, *Euthalia aconthea*. Naik. D *et al.*, (2016) reported a total of 172 species of butterflies with family Nymphalidae having 57 species (33.13%) which was the dominant. In another study a total of 96 species of butterflies belonging to 68 genera and five families were recorded, during this course it was observed that the family Nymphalidae represented by 23 genera and 34 species was the most dominant (Bora. A *et al.*, 2014). The Alagarhills surveyed for two years had representatives of 101 species, which included the five families and Nymphalidae was the

dominant family with 32 species (Sharmila. E. J *et al.*, 2013).

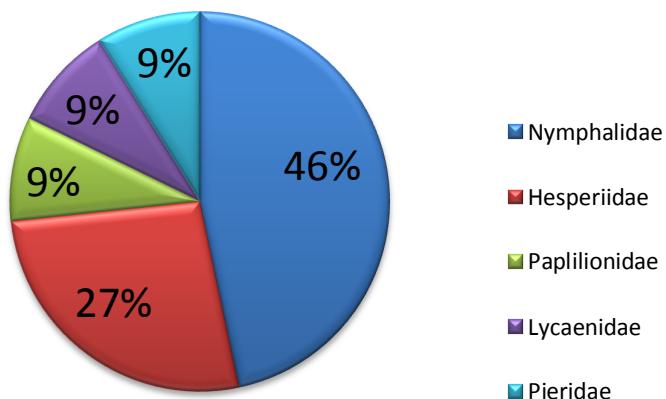


**Figure 1: STUDY AREA – MAP OF (A) KARNATAKA (B) PERMUDE (a & b)**

Predominance of Nymphalidae had been reported by earlier workers also such as Kunte. K *et al.*, 1999; Dolio. J *et al.*, 2008. Our study also shows the similar results. Nymphalidae exhibited maximum species diversity, which may be due to the dominance of larval food plants (Balasubramaniam. P *et al.*, 2001) and a varied assemblage of floral species in that region (Nair. D *et al.*, 2014). The study area is dominated by plant species namely *Ficus sp*, *Calotropis sp*, *Tridax sp*, *Polyalthia longifolia*, *Tabernaemontana sp*, *Alstonia scholaris*, *Ixora sp*, *Lantana camara*, *Cleome viscosa*, *Psidium guajava*, *Areca catechu*, *Cocos nucifera*, *Mangifera indica*, *Hibiscus sp*, *Zizyphus*

*jujuba*, *Justicia sp*, *Sida sp*, *Mussaenda frondosa*, *Bougainvillea sp* (Table 2) and grasses which provide diverse habitat, food and breeding sites for butterflies. The similar report of plant species was also given by Nair *et al.*, (2014) who got 49 species of butterflies representing five families and Nymphalidae showed the maximum species richness, comprising of 20 species (41%). Hence a very strong relationship can be drawn between the butterfly species and the nectar plants in the study area. The proposal of SEZ including the study area may remove these important nectar plants which in turn will decrease the diversity of butterflies of this region.

**Figure 2: THE SPECIES PERCENTAGE OF FIVE BUTTERFLY FAMILIES IN PERMUDE VILLAGE**



**Table 1: CHECKLIST OF BUTTERFLIES RECORDED IN PERMUDE VILLAGE**

Sl. No.	Common Name	Scientific Name
FAMILY: Nymphalidae		
1	Common Indian crow	<i>Euploea core</i> Cramer
2	Great Eggfly	<i>Hypolimnas bolina</i> Linnaeus
3	Tamil Lacewing	<i>Cethosia nietneri</i> C. & R. Felder
4	Common Palmfly	<i>Elymnias hypermnestra</i> Linnaeus
5	Blue Tiger	<i>Tirumala limniace</i> Cramer
6	Peacock Pansy	<i>Junonia almana</i> Linnaeus
7	Grey Pansy	<i>Junonia atlites</i> Linnaeus
8	Chocolate Pansy	<i>Precis iphita</i> Cramer
9	Danaid Eggfly	<i>Hypolimnas misippus</i> Linnaeus
10	Common Baron	<i>Euthalia aconthea</i> Cramer
11	Commander	<i>Limenitis procris</i> Cramer
12	Grey count	<i>Tanaecia lepidea</i> Butler
13	Common Sailer	<i>Neptis hylas</i> Linnaeus
14	Tawny Coster	<i>Acraea violae</i> Fabricius
15	Medusa Brown	<i>Orsotriaena medus</i> Fabricius
16	Rustic	<i>Cupha erymanthis</i> Drury



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17	Common Fivering	<i>Ypthima baldus</i> Fabricius
18	Common Evening Brown	<i>Melanitis leda</i> Linnaeus
19	Common Bushbrown	<i>Mycalesis perseus</i> Fabricius
20	Common Fourring	<i>Ypthima heubnera</i> Kirby
21	Plain Tiger	<i>Danaus chrysippus</i> Linnaeus
FAMILY :Hesperiidae		
22	Common Small Flat	<i>Sarangesa dasahara</i> Moore
23	Chestnut Bob	<i>Iambrix salsala</i> Moore
24	Indian Skipper	<i>Spialia galba</i> Fabricius
25	Dark Palm Dart	<i>Telicota ancilla</i> Herrich-Schaffer
26	Common Dartlet	<i>Oriens goloides</i> Moore
27	Water Snow Flat	<i>Tagiades litigiosa</i> Moschler
28	Common Banded Awl	<i>Hasora chromus</i> Cramer
29	Indian Dusky Part Wing	<i>Psolos fuligo</i> Mabille
30	Tricolour Pied Flat	<i>Cogia indrani</i> Moore
31	Common Grass Dart	<i>Taractrocera maevius</i> Fabricius
32	Rice Swift	<i>Barbo cinnara</i> Wallace
33	Dart Sp.	<i>Potanthus</i> sp.
FAMILY: Papilionidae		
34	Tailed Jay	<i>Graphium agamemnon</i> Linnaeus
35	Common Mormon	<i>Papilio polytes</i> Linnaeus
36	Blue Mormon	<i>Papilio polymnestor</i> Cramer
37	Common Rose	<i>Pachliopta aristolochiae</i> Fabricius
FAMILY: Lycaenidae		
38	Common Pierrot	<i>Castalius rosimon</i> Fabricius
39	Yam Fly	<i>Loxura atymnus</i> Cramer



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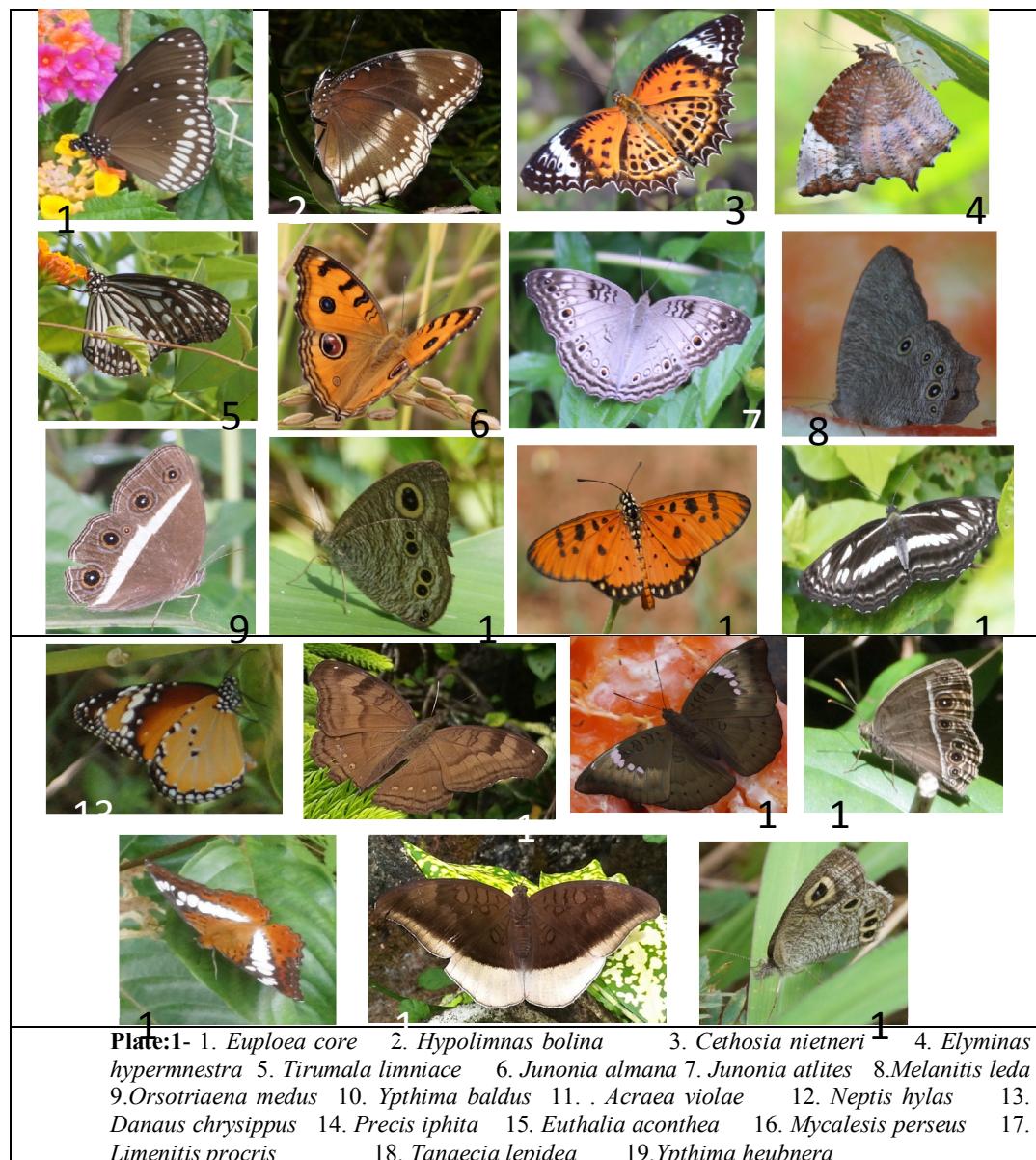
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40	Monkey Puzzle	<i>Rathinda amor</i> Fabricius
41	Centaur Oakblue	<i>Arhopala pseudocentaurus</i> Doubleday
FAMILY: Pieridae		
42	Psyche	<i>Leptosia nina</i> Fabricius
43	Common Grass Yellow	<i>Eurema hecabe</i> Linnaeus
44	Common Emmigrant	<i>Catopsilia pomona</i> Fabricius
45	Three Spot Grass Yellow	<i>Eurema blanda</i> Boisduval

**Table 2: NECTAR PLANTS THAT ARE DOMINANT IN PERMUDE VILLAGE**

Sl.No.	Common Name	Scientific Name
1	Fig Tree	<i>Ficus sp</i>
2	Crown Flower	<i>Calotropis sp</i>
3	Coatbuttons	<i>Tridax sp</i>
4	False Ashoka	<i>Polyalthia longifolia</i>
5	MilkWood	<i>Tabernaemontana sp</i>
6	Devil tree	<i>Alstonia scholaris</i>
7	Jungle Flame	<i>Ixora sp</i>
8	Wild Sage	<i>Lantana camara</i>
9	Asian Spiderflower	<i>Cleome viscosa</i>
10	Common Guava	<i>Psidium guajava</i>
11	Arecaut Palm	<i>Areca catechu</i>
12	Coconut Tree	<i>Cocos nucifera</i>
13	Mango Tree	<i>Mangifera indica</i>
14	Shoe Flower	<i>Hibiscus sp</i>
15	Indian Date	<i>Zizyphus jujuba</i>
16	Water Willow	<i>Justicia sp</i>
17	Fanpetals	<i>Sida sp</i>
18	Wild Mussaenda	<i>Mussaenda frondosa</i>
19	Paper Flower	<i>Bougainvillea sp</i>

**PICTURES OF BUTTERFLIES FOUND IN PERMUDA VILLAGE :**





**Plate:2-** 20. *Sarangesa dasahara* 21. *Iambrix salsala* 22. *Tagiades litigiosa*  
 23. *Cogia indrani* 24. *Hasora chromus* 25. *Barbo cinnara* 26. *Psolos fuligo* 27. *Taractrocera maevius* 28. *Potanthus* spp. 29. *Telicota ancilla* 30. *Graphium agamemnon* 31. *Papilio polytes* 32. *Pachliopta aristolochiae* 33. *Papilio polymnestor* 34. *Castalius rosimon* 35. *Arhopala pseudocentaurus* 36. *Loxura atymnus* 37. *Rathinda amor* 38. *Leptosia nina* 39. *Eurema hecabe* 40. *Catopsilia pomona*

**PICTURES OF NECTAR PLANTS OF PERMUDE VILLAGE:**



**Plate:3 -** 1. *Tridax sp.* 2. *Calotropis sp.* 3. *Lantana camara* 4. *Justicia sp.* 5. *Hibiscus sp*  
6. *Ixora sp.* 7. *Cleome viscosa* 8. *Areca catechu*

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