3. Study area

3.1. Topography

Pondicherry is a former French colony located between 11 46' and 12 15' north latitude and between 79 36' and 79 53' eastern longitude and situated on the Coromandel coast of Peninsular India. This Union Territory is divided into four regions i.e., Pondicherry, Karaikal, Mahe and Yanam, which are located far apart from each other. Pondicherry is the largest among four and is bounded by the South Arcot district of Tamil Nadu on all sides except east, where it is bordered by the Bay of Bengal. The total area of Pondicherry urban agglomeration and its enclaves in neighbouring state, Tamil Nadu, is about 290 sq.km., with a total population of 444,130 (1981 census).

Pondicherry has an average elevation of about 15 metres above sea level and is intersected by deltaic channels of river Gingee and Poonaiyar and interspersed with lagoons, lakes and tanks. All the rivers remain dry in most of their course except during rainy season.

Based on the nature of soil, the area could be divided into four parts. The northern part is characterized by red ferralitic soil, whereas the eastern part is with sand dunes of coastal alluvium type.
The southern and western parts are with alluvial soil. The soil is highly porous and with low retention capacity. The water table is high.

3.2. Climate

The climate of Pondicherry is homogeneous and of tropical type, characterized by small daily range of temperature, humid weather and moderate rain fall. There is no clear cut demarcation of seasons in Pondicherry as in many parts of north India. However, the period from the month of March to June is considered as summer. The summer months are followed by southwest monsoon which lasts up to September and the northeast monsoon starts from October and ends in November. The latter period forms the principal rainy season. The period from December to February is relatively cool and could be considered as winter season.

As per the earlier records of climatological data (1960-1987) the period from last week of February to second week of June was observed to have gradual increase in temperature. May and June are the hottest months of the year, with the daily mean maximum temperature ranging from about 29°C to 41°C and the daily mean minimum temperature from about 16.5°C to 27.4°C. Being a coastal region the relative humidity is very high and it ranges from 70% to 90%.
The southwest monsoon (June to September) is very strong only on the west coast and it brings less and scattered rains on the east coast. Whereas the rain is heavy during northeast monsoon season (October to December). But the rain-fall is mainly due to the depressions in the Bay of Bengal. November receives the highest rain-fall and accounts even up to 30% of the annual rain-fall. It is evident from earlier records that the annual rain-fall on an average was about 1194.4 mm.

3.3. Crops

The area under cultivation in Pondicherry is about 16,700 hectares. The sources of irrigation are tanks, tube wells, ordinary wells and canals. Both wet and dry land cultivation are being practiced in this region.

Paddy (Oryza sativa), raqi (Eleusine coracana), sugar cane (Saccharum officinarum) and banana (Musa spp.) are the major crops. In addition to these, tapioca, chillies and pulses are also grown in rural areas. Coconut and casuarina are also being cultivated extensively along the coast.

3.4. Population

The population of Pondicherry as per the census of 1981 was
444,130, of which 2.04 lakhs live in urban area and the remaining in rural areas. The urban area increased from 6.21 sq.km. in 1971 to 59 sq.km in 1981. This rapid urbanization is due to the establishment of many industries, as Pondicherry being Union Territory, offers substantial subsidies to entrepreneurs. This resulted in the unplanned expansion of the town with lack of basic amenities, which leads to proliferation of various vector insects.

3.5. Occupations

Majority of the people are engaged in agriculture. Others are employed in textile mills and industries. Fishing is an important occupation in coastal villages.

3.6. Housing

The dwellings are of thatched huts or tiled and terraced houses. Terraced houses are common in urban localities, while thatched huts and tiled houses are in suburban and rural areas. Majority of the rural population live in single roomed huts made of mud plastered walls and palm leave roofs. The walls and floor of these huts are leveled with alluvial soil and smeared with cow dung frequently. Cattle are also domesticated by most of the villagers for agricultural as well as milching purposes.
3.7. Description of study villages

The prevalence, distribution and abundance of any insect population will be influenced by various ecological factors, which may not be similar in urban and rural situations. Therefore four ecologically distinct villages viz., Thuthipet, Sethurapet, Arumparthapuram and Vazhakulam were selected to study the ecology and population dynamics of sandflies. The description of these villages are given below.

3.7.1. Thuthipet

This is an interior rural village, situated 15 km. away from western end of Pondicherry town. The population of the village is about 500 and they live in 60 households. Majority of the people in this area live in single room thatched huts made of mud walls. A few of them also live in pucca houses made of concrete walls. The villagers are mainly engaged in cultivating dry land crops in most of the months and paddy during rainy season. No industry was established in this village. About 50 cattle were domesticated by a few of the villagers. The village is surrounded by dry land and bushes. Termite mounds and tree holes in dry lands; rat burrows and cracks and crevices in mud plastered huts; and cattle feeding troughs containing moist fodder and putrefying organic materials in cattle shed and loose soils with capillary water are the major breeding sources for
sandflies.

3.7.2. Sethurapet

This is also a rural village but surrounded by paddy fields on one side and industrial establishments on the other and situated 13 km. away from western end of Pondicherry town. The population of this village is about 1000. A few of them own cattle for milching purpose. The dwellings are of tiled or concrete houses and thatched huts. The inhabitants are employed in agriculture and industries. The possible breeding sources of sandflies are the cracks and crevices of mud plastered huts, rat burrows and termite mounds.

3.7.3. Arumparthapuram

This Harijan colony, located 8 km. away from the town, has a population of about 400 living in 40 households. This village is surrounded by paddy fields on all sides. Majority of them are agricultural labourers and no cattle in domesticated. The major sources of sandfly breeding are the cracks and crevices in human dwellings.

3.7.4. Vazhakulam

This is one of the suburban areas of Pondicherry with
population of about 2,500. Most of the people live in pucca houses and only a few in huts which are made of brick walls and is surrounded by congested residential quarters. Poultries, and cattle farms are being maintained by private owners. Feeding troughs, animal burrows and loose soil in cattle sheds are the favourable breeding places of sandflies.