

*Introduction*

Lymphatic Filariasis (LF) caused by *Wuchereria bancrofti* (Cobbold 1877) is a major public health problem in India and many other third world countries with more than 1.1 billion people worldwide estimated to be at risk. Bangladesh, India, Nigeria and Myanmar are among the world's most endemic countries. In these 4 countries, the population at risk is estimated to be over 607 million, i.e., almost half of the population at risk in the 80 endemic countries identified worldwide (WHO Weekly Epidemiological Record 2002). In India a total of 454 million people in 261 districts are currently estimated to be at risk of LF. Although a variety of mosquito species have been incriminated as vectors and play a role in the transmission of filariasis in different endemic foci of the world, *Culex quinquefasciatus* (Say 1823), the tropical house mosquito, is the most important vector. More than 50% of persons with LF receive their infections from the bites of *Cx. quinquefasciatus* (Southgate 1984), which is the principal vector in India (Das 1976) also. The disease is endemic in all parts of India except in the states of Jammu and Kashmir, Himachal Pradesh, Punjab, Haryana, Rajasthan, Sikkim, Mizoram, Nagaland, Manipur, Meghalaya, Tripura and Arunachal Pradesh and the Union Territories of Chandigarh and Delhi (Rao *et al.* 1976; Sharma *et al.* 1983).

LF is a disease afflicting the poor, which serves as an indicator of underdevelopment. It is a debilitating disease with serious economic and social consequences as it affects all age classes of both sexes. Generally the disease is more among the older people. The chronic manifestations, in the form of lymphoedema, elephantiasis and hydrocele, inflict social stigma upon the persons affected.

The parasite needs an intermediate mosquito host and a definitive human host to complete its life cycle.

In *W. bancrofti*, three races with different microfilarial periodicity in their appearance in the peripheral blood have been recognized. These are I) nocturnally periodic race distributed widely throughout tropical and sub-tropical zones of the world II) a diurnally subperiodic race restricted to the Polynesian sub-

region and III) a nocturnally subperiodic race reported in the sylvan areas of West Thailand (Nair and Chayabejara 1961; Harinasuta *et al.* 1970a; Harinasuta *et al.* 1970b). The nocturnally periodic and the diurnally subperiodic forms of LF are prevalent in India. While the nocturnal form is transmitted by *Cx. quinquefasciatus* and prevalent in many parts of India, the diurnal form is transmitted by *Ochlerotatus niveus* and prevalent only in the Nicobar group of Andaman and Nicobar Islands (Wilcock 1944; Basu 1958; Kalra 1974; Russel *et al.* 1975; Das *et al.* 1975; Tewari *et al.* 1995) where a population of about 25,000 is at the risk of acquiring this infection.

The involvement of *Oc. niveus* in the transmission of the diurnally subperiodic form of filariasis was recognized recently (Tewari *et al.* 1995). Although the members of *Aedes scutellaris* sub group, known vectors of subperiodic form of filariasis elsewhere (Gould *et al.* 1982) are prevalent in these islands (Tewari *et al.* 1995), their role in the transmission of subperiodic form of filariasis is yet to be verified. All the earlier entomological investigations were based on short-term point prevalence surveys. But, round the year systematic studies are necessary to elucidate the population dynamics, biology and ecology of the vector mosquitoes. Such studies are of paramount importance not only to understand the transmission but also to quantify the transmission parameters for diurnally subperiodic form of filariasis. The present study highlights the results of year long entomological investigations undertaken in the Nancowry group of islands to determine various transmission related parameters and to quantify the transmission dynamics using appropriate entomological indices.

The objectives of the present study are as follows:

1. To carry out a cross sectional filariasis survey incorporating parasitological and clinical aspects to understand the relationship between microfilaraemia and clinical disease and its effect on age and gender and examine the frequency distribution of mf counts

2. To study the changes in population dynamics of *Oc. niveus*
3. To assess the infection and infectivity rates in *Oc. niveus* and to know the host efficiency of the vector species.
4. To determine various transmission related parameters and to quantify the transmission dynamics of subperiodic form of filariasis.
5. To delve into the biting activity of *Oc. niveus* with particular reference to transmission.
6. To study the age structure and natural survival of *Oc. niveus* during different seasons.
7. To study the developmental process and mortality of various filarial stages in vector and infection related mortalities in vector.