National capitals in the member countries of the World Health Organisation, South East Asia Region (SEAR) have been facing rapid growth of population. This has been due to natural population growth and internal migration resulting from the development of commerce and trade (WHO, 1983a). According to United Nations 21.5% of the total population in SEAR was urban population in 1980, and it will reach 52% of the total population by 2025 AD (Bang and Shah, 1988). Amongst ten metropolitan cities of India, population growth rate was 30.4% in Calcutta, between the year 1971 and 1981 (Padmanabha, 1981). Growth of urban population and rapid unplanned growth of residential areas create great pressure on the existing ecosystem, specially on sanitation, water supply, health services and power supply etc; the prerequisites of a housing project (Gratz, 1973). As a result urban areas in the tropical zone accompanied by inadequate sewage treatment condition are ideal for proliferation of Culex quinquefasciatus. No other species of mosquito has benefited more from these acute sanitary problems; than has Culex quinquefasciatus for its oviposition and immature development in water with high degree of organic pollution (Hayes, 1975). The open sewage drains in SEAR, urban areas are prolific breeders of Culex quinquefasciatus, an efficient vector of bancroftian filariasis and nuisance mosquito of the tropic.

For many of the vector borne diseases there is as yet no effective chemotherapy, immunisation or vaccine available. Most of the disease endemic countries must therefore undertake substantial vector control programmes aimed at controlling insect and other arthropod vectors (Bang, 1985).

Recent trends in insect control have shown that single methods are frequently inadequate and integrated control programmes are needed to regulate population over time. A basic understanding of the dynamics of natural populations and their growth characteristic, understanding seasonal changes, in population dynamics. In addition it is desirable to learn which weather factors are most related to production of eggs and subsequent immature stages for undertaking of an integrated control programme (Hayes and Hsi, 1975).

The struggle between man and mosquitoes began a long time ago and it will continue as long as human race endures. We have never exterminated and probably
never will exterminate a single mosquito species. Mosquito borne diseases are also of concern in industrialized countries and the great discomfort caused by mosquitoes cannot be overlooked (Maramorosch, 1985).

The expansion of urban area is unplanned in the sense that none of the new colonies have any sewage or waste water disposal arrangements and the urbanization has led to the creation of highly mosquitogenic conditions. Because of the close proximity of breeding place and human habitations, a vast majority of the mosquitoes can be expected to feed on humans (Menon and Rajagopalan, 1980).

A reduction of at least 90% in reproductive success was necessary to maintain a reduction in density of *Culex fatigans* (=*Culex quinquefasciatus*) population, because 90% of the females emerging into the population did not become involved in egg laying (Weidhaas et al. 1973). Base line data, namely occurrence, distribution and relative importance of different types of breeding places of *Culex p. fatigans* (=*Culex quinquefasciatus*) are required for the control. Interestingly eradication or effective control of a species like *Culex p. fatigans* (=*Culex quinquefasciatus*) is impossible due to several reasons like the ubiquitous breeding habits and high reproductive potential of the vector and the prevailing insanitary conditions. It would therefore be more practical to have the modest aim of reducing the density at human acceptable level (Menon and Rajagopalan, 1980).

The urban area is essentially a man made environment, where the economic activities of the majority of the people are non agricultural. *Culex quinquefasciatus* is widely distributed for its high dispersal activity and breeding potential. Both public health and vector control programmes are seriously defective in some countries, where the rapid growth in urban areas has outstripped the ability of the traditional health services to meet basic needs and public complaints regarding the presence of mosquitoes. An environmental, non chemical control method is best utilized as part of integrated control strategy that would also include the use of biological method of control. Chemical control, however will remain for the foreseeable future the principal method of urban vector control. Community participation in vector control must be linked up with health education activities (WHO, 1992).

Bidhannagar (Salt Lake City) a newly built satellite township is situated in the eastern side of the city of Calcutta (12.52 sq. km. area and about 7.5 km. from the heart of the city). It has been built up on the reclaimed part of the salt water swamp. Reclamation was started from 1965, and urban population and area have been increasing (due to internal migration, striking by the poverty of the people and natural
population growth and over all bulk migration from the then East Pakistan) in the boundary of this city. In the old cities, there were problems in water drainage system, water supply etc. due to lack of newer scientific ideas. But it is expected that in the newly built township, these problems should be minimised. To know the actual situation in newly (scientifically) built township this study was carried out in Bidhannagar (Salt Lake City).

The present study has been carried out in 3 parts, namely

A) **Mosquito fauna of the area**

B) **Physico chemical factors associated with Culex quinquefasciatus breeding and survival of guppy (Poecilia reticulata) fishes**

C) **Integrated Control Approach**

For effective control management base line data of mosquito fauna, breeding habits, seasonal prevalence etc. are required

A) **Mosquito fauna of the area**

i) Larval surveillance

ii) Association of *Culex quinquefasciatus* immature and water hyacinth (*Elchhornia crassipes*)

iii) Adult surveillance in indoor resting habitats

iv) Adult surveillance in outdoor resting habitats.

Amongst different factors influencing the breeding of *Culex quinquefasciatus* in a particular time of the year, that is longitudinally for one year have been studied in following headings.

B) **Physico chemical factors associated with Culex quinquefasciatus breeding and survival of guppy (Poecilia reticulata) fishes**

i) Physical factors

   a) Temperature

   b) Water current

ii) Chemical factors

   a) Salinity

   b) Dissolved Oxygen

   c) pH

After collection of all those base line data, in the 2nd year, integrated control approach has been undertaken under following headings.
C) **Integrated Control Approach**

1) Chemical control by Larvicide

2) Biological control by guppy (Poecilia reticulata) fishes

3) Environmental and physical control

4) Community participation, health education and awareness

5) Integrated control management.

a) All larvicidal and b) adulticidal impact on adult population.

The entire experience of a project work conducted in these lines scientifically guided by existing knowledge and modified suitably for practical application to control the mosquitoes in a satellite town will actually be narrated.