A total of 126 species of bats are reported within the political boundary of India ((Douangboubpha et al., 2011; Ruedi et al., 2012a, b; Senacha and Dookia, 2013, Saikia et al, 2017; Kuo et al., 2017; Thong et al. 2018). At least 32 species of bats in 18 genera and six families have been recorded from Assam (Boro et al, 2018). However, considering the nearly non existant filed studies in recent times, this reported diversity is apparently an underestimate. Out of these 32 species, the present study reveals the confirmed occurrence of 13 species of bats in 10 genera and four families in the study area. Considering the geographic spread of Baksa district (about 3.12 percent of the geographic area of Assam), this constitutes a significant 42 percent of the total bat species inventory of Assam state. Family Vespertilionidae is the most diverse with 7 species followed by Pteropodidae (3 spp.) and Emballonuridae (2 spp) and Megadermatidae (1sp) Among the six families of bats known from the state, Rhinolophidae and Hipposideridae are found to be absent from the study area. It is
probable that a few species in these families could be present in the area and could not be recorded due to inadequate sampling efforts. However, a vast majority of these bats (Horseshoe and Leaf-nosed bats) are dwellers of cave, caverns or other subterranean habitats which are not abundant in the study area. Therefore, it is also likely that these bats are genuinely absent in the study area.

Interestingly, a number of species recorded from the study area are first report from the state of Assam. These include *Saccolaimus saccolaimus*, *Myotis horsfieldi*, *Tylonycteris fulvida* (Boro et al. 2013; Boro and Saikia, 2015, Boro et al, 2018). For *M. horsfieldi*, the record from Barangabari area of Baksa district constitutes second report from the entire northeastern India. This underscores the lack of field studies and grossly inadequate knowledge on the diversity and distribution of the chiropteran fauna of Assam. It may be mentioned that, the occurrence lesser false vampire bat *Megaderma spasma* was noted during field surveys around Manas National Park although no vouchers could be obtained and hence not included in the present inventory. It is quite certain that with more intensive and robust sampling techniques, the chiropteran inventory of the study area will increase further.

Out of the thirteen species of bats recorded from the study area, most of the species have settled taxonomic status except for lesser Asiatic yellow house bat *Scotophilus kuhlii* and Bamboo bat *Tylonycteris fulvida*. Ellerman and Morrison Scott (1951) synonymized *S. kuhlii* with *S. heathii*. However, most of the recent workers consider it as a distinct species (Corbet and Hill, 1992; Bates and Harrison, 1997; Simmons, 2005). It is now opined that *S. kuhlii* may represent a species complex with several species clumped under this name (Bates et al., 2008). Even in the present study,
significant colour variations amongst individuals of this species were noted. However, deciphering this complex will require representative samples from all parts of its distribution range and application of modern taxonomic tools. The taxonomy of Bamboo bats of genus *Tylonycteris* is complex because of similar habit and fairly conservative morphology. Classically, two species namely *T. robustula* and *T. pachypus* are thought to be occurring in the Indian Subcontinent. However, recent integrative taxonomic analyses of these bats have proved that both are indeed species complexes with at least four distinct species (Tu *et al.*, 2017). They split *T. pachypus* into two species with distribution of *T. pachypus* limited to Sunda Islands and *T. fulvida* distributed in the mainland Southeast Asia. Therefore, all the records of *T. pachypus* from the northeastern India (including the present material) are here by referred to *T. fulvida*.

A total of 44 localities in the study area were surveyed. Bats were recorded from all these localities. However, the species diversity was found to be higher in certain areas for eg. in and around Balahati village, a staggering 11 species were recorded. This may reflect unequal sampling efforts as Balahati area was most intensively sampled. Possibly, presence of a variety of vegetation types provides foraging and roosting opportunities to a number of bat species. Since, many of the study sites have similar environ and bats being highly mobile creatures comparable species diversity can be expected from other sites too.

Most of the species in the present study are widely distributed species in India and also reported from several localities of Assam. Besides they are adaptable to anthropogenic environment besides specific habitat requirement. Therefore, their
occurrence in the study area is quite expected. However, species like *Tylonycteris fulvida* have particular roosting requirements like the presence of bamboo groove. Although Bamboo is widely grown in most parts of Assam, the occurrence of this bat in other parts of the state has not been recorded. This may more likely reflect undersampling rather than the absence altogether. Likewise *Myotis horsfieldii* and *Saccolaimus saccolaimus* are also uncommon species. Although favourable habitat for these species certainly exist elsewhere in the state, they have not been reported from these areas. This might also reflect their relative rarity too.

Like many part of the world, bats in India are facing catastrophic loss of habitat, which decreases foraging areas, reduces prey populations, and often forces them to live in and around human habitations making them more vulnerable (Mistry, 2003). In the study area too, the quality of habitat for many of the bat species in this area is also deteriorating gradually. A majority of the species recorded are caught in the human periphery including houses indicating their adaptation to the anthropogenic environment. However, a few like *Myotis horsfieldii* are not generally encountered near human settlement and it is critical that their roosting sites remain free from human interventions. Likewise the existence of Bamboo bats hinges on the presence of bamboo growths. However, in many of the places it was noticed that bamboo growths are being cleared to make way for housing or agricultural activities.

However, one positive sign is that people showed little annoyance at the presence of bats in their vicinity and are happy to live with them (Saikia *et al.*, 2015). The study area is inhabited by various indigenous communities. However, except for occasional killing of larger fruit bat species, hunting is not a serious threat to the survival of bat population.
Summary

Being a part of the Indo-Burma biodiversity hotspots, the state of Assam is very rich in animal species richness including bats. Chiroptera constitute one of the largest components of mammalian diversity. But they also remain one of the least studied mammalian group and diversity and distributional information of the bat fauna of Assam state is hugely lacking. The present study was initiated to generate diversity and spatial distribution information of bat species in Baksa district of western Assam.

Based on extensive field surveys, the present study documents the presence of 13 species of bats in 10 genera and four families in the study area. Another bat species *Megaderma spasma* was encountered in the field but since no vouchers could be retained, provisionally it has not been included in the present account. Compared to the geographic spread of Baksa District (% of total area of Assam), this constitutes an impressive 44 percent of the bat fauna of Assam (34 species). Among the 13 species recorded from the study area, three species namely *Saccolaimus saccolaimus*, *Myotis horsfieldi* and *Tylonycteris fulvida* are recorded for the first time from Assam state and the report of *M. horsfieldi* is only the second record from north eastern India. Considering the availability of various habitat types, with intensive surveys the bat inventory of the district is expected to rise further.

It may be mentioned that a majority of the species recorded from the study area are recorded from human periphery and thus are commensal species. However, a few species like *Myotis horsfieldi* and *Tylonycteris fulvida* are forest
dependent species. This implies the availability of a variety of roosting habitat and also foraging opportunities in the study area. Although there has been gradual decline in the habitat quality especially conversion of forest habitat for agriculture and human habitation, it may not be immediately very detrimental for the existence of the bat species in the study area. It may be mentioned that unlike in many parts of the north eastern India, hunting of bats for bushmeat is not prevalent among the tribal communities in the study area. In fact they are willing to live in harmony with them.