CHAPTER 7
SUMMARY AND CONCLUSION

The freshwater fishes are the most diverse vertebrate taxa, yet the least studied group because of their complex life history patterns. However, the freshwater fishes are also the most threatened group after amphibians because of constant pressure on their habitats by human activities. Therefore it would be important to inventory and to ascertain status of fish species for conservation efforts. It would be also interesting to understand the relationship between fish and habitat particularly in oceanic islands.

Our study showed that Andaman Islands freshwater fish diversity was depauperate with moderate levels of endemism. Similar patterns of fish diversity were found in other oceanic islands such as Hawaiian Islands and Reunion Islands. These indicate that freshwater fish diversity in oceanic islands is determined by deterministic processes relating to island biogeography and climate rather than local processes.

However, our results showed that the species richness of fishes was strongly influenced by stream size. The larger streams had more number of species than the small streams. As a result, North and South Andaman with large streams had higher species richness and alpha diversity. On the other hand, the Rutland had lower alpha diversity because of the small streams. In general, habitat diversity increases with the increase of habitat size, providing more niches and therefore supporting more species. Therefore, the species richness and composition of fishes in each island was more influenced by local processes than the factors that operate on regional level such as climate.
Geographically, majority of Andaman freshwater fishes were distributed in Asia and few in Africa and Australia. These species have congenerics in Asia and Indo-Pacific Islands. These fishes showed similar morphology and feeding habits similar to the fishes in India and other Asian regions. It showed that Andaman fishes had wide geographical range indicating all these species had common ancestors and in time dispersed to attain the current distributions.

The discovery of two new gobies and new report from Andaman freshwater streams indicate that these islands were not surveyed completely by previous studies. Therefore, there are high possibilities of finding new species in remote islands and protected areas particularly tribal reserves.

Three of the fish species were habitat specialists, preferred pools, sandy substrate and fast flowing streams. Whereas three other species were generalists had wide range of habitat preferences. It is therefore important to understand relationship between the environment and the fish to mitigate strategies for conservation. This is very important in case of Andaman freshwater fishes because these fishes and their habitats are under tremendous pressure from human activities. In our study we identified introduced invasive species, habitat alteration and pollution as major threats to freshwater fishes. Although we have not assessed the impacts of these threats on Andaman fishes, several studies in other regions indicate these impacts have negative effects on fish diversity and abundance. Therefore strict protection of streams in tribal reserves, Rutland should be overseen along with proper management and if necessary removal of invasive species. Special management efforts for the conservation of rare and threatened endemics would
be important for the long term conservation of Freshwater fish diversity in the Andaman Islands.