Chapter V

CONCLUSION
5.0. Conclusion

The important findings of the present work can be enumerated as follows:

1. The physico-chemical parameter analysis showed that many values of the parameters varied significantly in between the seasons.
   a. The parameters such as temperature, turbidity and TSS are found to be high during wet season in comparison to dry season, throughout the study period in all wetlands.
   b. The values of the parameters like sodium, potassium (except s1 and s2), bicarbonate, total alkalinity, sulphate, chloride (except s4), nitrate, phosphate, oil and grease and hardness are found to be high during dry season in comparison to wet season.

   The seasonal variations among the values of the physico-chemical parameters may be primarily attributed to reduction of volume of water during dry season and increase in volume of water due to inflow of water during wet season caused by monsoon rain and surface run off.

2. Some of the parameters in all the wetlands of the study area showed the values favourable for the growth of beel fisheries and safe for the survival of the other aquatic lives. The values of parameters which showed conducive aquatic environment in the wetlands of the study area include pH, alkalinity, total hardness, DO, and BOD.
3. In terms of pollution level, the values of some of the parameters such as electrical conductance, BOD, COD, nitrate and sulphate level suggest presence of low pollution load in all the wetlands of the study area.

4. The record of high values of oil and grease as contaminant in all wetlands of study area is a matter of concern for the conservationist, planners and managers of these natural habitats.

5. The level of chloride is found to be higher than the WHO acceptable limit during dry season in majority of the wetlands, suggesting widespread use of these wetlands as sink for garbage. The people living in the vicinity of these wetlands should be made aware of the consequences of chloride pollution.

6. The values of calcium and magnesium also favour healthy environment for the propagation of aquatic life. The concentrations of cations and anions are in natural order in most of the wetlands. Similarly, in all wetlands sodium is found to be higher than the potassium in both the seasons.

7. The values of iron in all the wetlands exceeded the WHO permissible limit for drinking water. This is off course, from natural sources as the record of high iron content in water and soil is prevalent in all over the state of Assam.

8. Among the toxic metals some of the wetlands have recorded higher values than WHO permissible limit such as, mercury (s3, s6, s5, s8, s10 & s11), manganese (neuro-toxic property), arsenic (in few wetlands-s1, s2, s7 & s11), lead and nickel. Similarly, in majority of the wetlands the mean values of nickel and manganese were also found greater than the safe limit for irrigation water standard (Ayers and Westcot, 1994). The practice of dumping of solid waste, cultivation in the wetland proper and in adjoining areas, use of fertilizers,
pesticides and surface runoff as non point source of pollution have lead to the higher concentration of these metals.

9. Water analysis showed highest mean value for iron and lowest mean value for arsenic in majority of wetlands in the total dry and wet seasons of the present study.

10. The chlorophyll content of the wetlands suggest the existence of favourable condition in terms of source of natural food for the growth of aquatic life specially the fishes during wet seasons in comparison to dry season.

11. The sediment analysis showed that the values of iron were found to be at lower level in the surface sediment of all the wetlands in comparison to its concentration in the water.

12. In majority of the wetlands covered under the present study, comparatively among the heavy metals, manganese recorded the highest value and mercury recorded the lowest value in the sediment analysis section.

13. All the heavy metals of sediments covered under the present study were found at lower level than the Canadian sediment quality guideline standard values.

14. Recorded mean values of some of the heavy metals such as copper and zinc in the sediments of major wetlands of Barpeta district, Assam are in agreement with the findings of Deka and Sharma (2012) recording similar values in their works in the selected wetlands of Assam. However, observed mean values of heavy metals such as lead in the sediments of the present study are found to be higher than the findings of Deka and Sharma (2012) and observed mean values of iron are found to be lower than the findings of Deka and Sharma (2012).
15. Inter parameter correlation study reflect that many of the observed variables show the degree of associationship with others as presumed with few exceptions. The variables which show high degree of positive correlation might have came from the same source in the wetlands of the study area.

16. The ANOVA test of physico-chemical parameters of water, heavy metals of water and heavy metals of sediment of the present study showed marked spatial variation. The temporal variation in terms of season as factor is also found in almost all parameters except a few. But year wise comparison showed that the values do not vary significantly over the years in the wetlands of the study area. Variation in the locations of the wetlands with different land use pattern, size, water cover area and other local conditions have contributed for marked spatial variation but since changes are slow and gradual over the years, the temporal variation in terms of year as a factor is not vary significant; although season as factor show significant variation due to changes in the surrounding climatic conditions.