INTRODUCTION

Wetlands are areas where water is the primary factor controlling the environment and the associated plant and animal life. They occur where the water table is at or near the surface of the land, or where the land is covered by shallow water. They include a wide spectrum of habitats including fresh water lakes, ponds, marshes, flood plains, swamps, estuaries, coastal salt marshes etc.

The convention on wetlands signed in Ramsar, Iran, in 1971, is an intergovernmental treaty which provides the frame work for national action and international cooperation for the conservation and wise use of wetlands and their resources. According to the Ramsar Convention (Article 1.1), wetlands are defined as: "areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water, the depth of which at low tide does not exceed six meters". In addition, the article 2.1 provides that wetlands to be included in the Ramsar list of Internationally important wetlands: "may incorporate riparian and coastal zones adjacent to the wetlands, and islands or bodies of marine water deeper than six meters at low tide lying within the wetlands". Presently there are 157 contracting parties to the convention, with 1702 wet land sites, totaling 153 million hectares, designated for inclusion in the Ramsar List of wetlands of International importance.

Wetlands are among the world's most productive environments. They are cradles of biological diversity, providing the water and primary productivity upon which countless species of plants and animals depend for survival. They provide tremendous socio-economic benefits and act as reservoirs, which maintain the quantity and quality of surface and ground water.

It is estimated that global fresh water consumption rose six fold between 1900 and 1995 – more than double the rate of population growth. One third of the world's population today lives in countries already experiencing moderate to high water stress. By 2025, two out of every three people on Earth may well face life in water stress conditions. This signifies the need to protect and conserve wetlands.

The functions, values and attributes of wetlands can only be maintained if the ecological processes of wetlands are allowed to continue functioning. Unfortunately wetlands continue to be among the world's most threatened ecosystems mainly due to population explosion and related developmental activities. The misuse / destruction of wetlands coupled with the indiscriminate utilization of ground water resulted in severe water scarcity along with salinity intrusion all over the World.

Mahe, coming under Pondicherry administration, occupies a unique geographical location near to Arabian Sea. Over a period of time, the wetlands of this unique ecosystem have been experiencing ecological stress of various kinds. This resulted in the depletion of the quantity and quality of natural resources, especially water. The gravity of the issue is further accelerated in certain pockets, due to salinity intrusion.

It is now imperative to undertake an integrated study, incorporating all the above mentioned aspects. A review of the available literature revealed that such an integrated study has not been carried out in this area. Hence the present study encompassing wetland habitats, ground water quality and salinity intrusion has been proposed. This will help in formulating strategies for sustainable utilization, conservation and management of water and water resources.

Annexure – I. Objectives of the present study

The present study is proposed with the following objectives:

1 **Evaluation and assessment of wetland habitats, which include:**

- Survey of various wetland habitats and selection of perennial ones for detailed study.
- Assessment of morphometric parameters.
- Assessment of water quality and associated vegetation (riparian and aquatic including phytoplanktons).
- Assessment of the impact of wetlands on ground water recharge.
- Assessment of anthropogenic pressures including pollution.

2 **Evaluation and assessment of ground water, which include:**

- Survey and evaluation of the existing groundwater source and use pattern.
- Analysis of ground water quality (physical, chemical and biological).
- Assessment of salinity intrusion and its impact on groundwater quality.
- Assessment of existing water conservation practices, identification of innovative technologies and water budgeting.
- Assessment of various anthropogenic pressures including pollution.

3 Formation of "Core Group" and organization of awareness / training programmes for imparting knowledge pertaining to effective and sustainable utilization of water and water resources

Annexure II. Likely benefits of the Project

The project on completion will generate authentic information pertaining to:

- Perennial wetland habitats and their present status.
- Ground water quality of the region.
- Salinity intrusion and its impact on ground and surface water quality and
- Strategies for the sustainable utilization, conservation and management of water and water resources, including wetlands and abatement of salinity intrusion.

This will be of immense help to the people of Mahe and also to managers and policy makers of the area.

Moreover the trained "Core Group" can help the people and authorities in regular monitoring and management of the system.

Annexure III. Methodology

- Preparation of a detailed map of the study area for the convenience of field survey, sample collection and documentation.
- Extensive field survey for the identification and documentation of perennial wetlands.
- Assessment of morphometric parameters such as area, depth etc. of selected wetlands.
- Collection of water samples and their analysis (physical, chemical and biological).
- Collection, identification and documentation of riparian and aquatic vegetation.
- Assessments of the impact of wetlands on ground water recharge using standard techniques.
- Assessment of the anthropogenic pressures, including pollution, operating in and around wetlands.

- Evaluation of the ground water regime of the area.
- Collection and analysis of ground water samples (Physical, Chemical and Biological).
- Evaluation of the extent of salinity intrusion and its impact on ground water quality using standard techniques.
- Assessment of various anthropogenic pressures including pollution, influencing ground water quality.
- Assessment of the existing water conservation practices and identification of modern technologies ideal to Mahe.
- Formation of "Core Group", representing people from all regions of Mahe, for imparting first hand information regarding effective and sustainable utilization of water, conservation and management of water and water resources including wet lands.
- Preparation of strategies for the effective and sustainable utilization of ground and surface water resources.
- Preparation of a detailed project report