ABSTRACT OF THE THESIS ENTITLED

STUDIES ON PLANT DIVERSITY OF NATHSAGAR

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TO

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GUIDE

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About 50 kms away from Aurangabad, Jayakwadi project is constructed on River Godavari near town Paithan. The water body of the dam known as “Nathsagar”, is about 55 kms in length and 27 kms in width. Except the main stream of the river, the water is shallow in the dam. The sunlight reaches up to the bottom of the dam in most of the area at the banks; and therefore, the biomass productivity of the water body is high at these places. The water reservoir has plants, fishes and other aquatic animals in good number. Every year during winter, migratory birds of nearly 250 different types visit the dam. Taking this fact into consideration, the Government of Maharashtra has declared the water reservoir as "Jayakwadi Bird Sanctuary" on 10\textsuperscript{Th} October, 1986.

The migratory birds arriving at Nathsagar have different food habits. They show varying degree of adaptation for the food they consume. Some birds are chiefly herbivorous, while others are chiefly carnivorous. However, some species are omnivorous and do not show any specialization for any particular type of food. Some birds like humming bird, are highly adapted to their particular food.

In Nathsagar water reservoir, a large number of algae and some aquatic plants are present. These serve as food for the fishes and the migratory birds. It appears that, the aquatic vegetation is primary producer in this water body. Therefore, the study of aquatic flora of the water reservoir is felt essential. Hence, the present topic has been selected for the research work. The investigations carried out from the years 2008 – 2011 have been presented in the thesis.
The thesis is divided in ten chapters. Chapter-I is ‘Introduction’ of the research work carried out on ‘Plant diversity of Nathsagar.’ In this chapter general information about bird sanctuary and Jayakwadi dam is included.

The chapter-II ‘Review of literature’ includes the research work carried out by earlier workers on different taxa and related aspects. It also includes a list of Bird Sanctuaries of India; a list of birds observed at the Jayakwadi Bird Sanctuary and a list of fishes recorded at the reservoir.

Chapter-III includes the data of important physico-chemical parameters of the water body.

Chapter-IV is ‘Material and Methods’, which are used during the present investigation. The studies were performed at four selected sites of Nathsagar reservoir viz. Sonewadi, Dahiphal, Ramdoh and Pravara Sangam. On nearby land of the Nathsagar, trees are scanty, however a small number of plants like Prosopis juliflora, Parkinsonia aculeata, Mangifera indica, Azadirachta indica, Acacia nilotica, Cocos nucifera, Bauhinia variegata etc. are observed. Some of the birds might be using these trees for their shelter.

A large number of algal species are recorded in the water body. They include members of Chlorophyta (170 spp. belonging to 46 genera), some of which are unicellular viz. Euastrum, Pediastrum etc.; some epiphytic forms like Oedogonium and desmids are recorded; some filamentous viz. Cladophora, Debarya, Mougeotia, Pithophora, Spirogyra, Zygnema etc. are recorded; while some are heterotrichous viz. Chara, Nitella. Diatoms (46 spp. belonging to 18
genera) were also recorded, including species of *Amphora, Cyclotella, Eunotia, Nitzschia, Pinnularia, Surirella* etc. were recorded. Cyanophycean members (48 spp. belonging to 19 genera) observed during the investigation include *Aphanocapsa, Cylindrospermum, Gloeocapsa, Lyngbya, Microcystis, Oscillatoria, Spirulina, Scytonema* etc. All these algal species have been described in Chapter-V - ‘The algal flora of Nathsagar water reservoir’.

Two aquatic pteridophytes *viz. Azolla* and *Marsilea* were observed at certain locations, which are described in Chapter-VI.

In addition to above mentioned vegetation, 11 aquatic angiospermic plants observed at the Nathsagar water reservoir, are described in Chapter-VII. These include species of *Hydrilla, Ipomoea, Limnophilla, Typha, Spirodela, Potamogeton, Ottelia, Phyla, Vallisneria* etc.

A report on physico-chemical parameter of the water body reveal that the parameters reported are within the permissible limit. The report on algal studies reveal that 70 species of green algae are reported for the first time from Marathwada.

An attempt has been made to suggest the food chain of the birds at the bird sanctuary on the basis of present study. The aquatic vegetation, including algae, pteridophytes, and angiosperms, is reported to be used as food by herbivorous birds and fishes. The fishes in turn form the food for the carnivorous birds.

It is felt that the migratory birds are using the site of Nathsagar water reservoir, during months of October to February, possibly because of abundant
availability of the flora and fauna, which is used by them as food. On the basis of
the available data, it is inferred that the ecological conditions at the reservoir are
favorable for the migratory birds, during the period of their visit.

Summary of the work is given in Chapter- IX and the references are
included in Chapter- X of the thesis.

The present study is of immense importance, because the aquatic flora
serves as food for herbivorous birds and for some of the aquatic animals. Some of
these aquatic animals serve as food for carnivorous birds. Therefore, it is essential
that efforts be taken for the conservation of the aquatic flora of Nathsagar
reservoir.

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