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Research Article

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Biodiversity of Saltpans of Naigaon, Mumbai, Maharashtra: A Study on Microflora and Faunal Communities

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Abstract

Salt pans are hypersaline ecosystems that represent a unique ecological niche supporting diverse biological communities. Despite their ecological and economic significance, the biodiversity of Indian salt pans remains poorly explored. The present study focuses on the biodiversity of salt pans in Naigaon, Maharashtra, with an emphasis on phytoplankton, zooplankton, birds, fish, insects, reptiles, arthropods, and worms. A wide range of microflora such as Pleurosigma, Nitzschia, Oscillatoria, and Thalassiosira were identified along with protists like Paramecium. Avifaunal diversity included migratory and resident bird species such as flamingos (Phoenicopterus), painted storks (Mycteria leucocephala), and pond herons (Ardeolagrayii). The findings highlight that salt pans are crucial habitats that support rich biodiversity and serve as feeding and breeding grounds for migratory birds. The study underscores the urgent need to conserve these fragile ecosystems, which face increasing threats from urbanization and habitat loss (Kamath &Kerkar, 2011).

Keywords: Salt pans, biodiversity, phytoplankton, migratory birds, hypersaline ecosystems, Naigaon.

Introduction

Salt pans are shallow, rectangular basins created to harvest salt through evaporation of seawater or estuarine water. These ecosystems are characterized by extreme physicochemical conditions such as fluctuating salinity, temperature, and dissolved oxygen, which create selective pressures favoring unique microbial and faunal communities. While salt production remains their primary economic function, salt pans also serve as important ecological niches that contribute to global nutrient cycling, including Oxygen, Sulphur, Carbon, and Nitrogen fixation (Kamath & Kerkar, 2011).

Globally, salt pans are increasingly being recognized for their biodiversity and potential biotechnological applications. For instance, halophilic microorganisms from salt pans have shown promise for secondary metabolite production and pharmaceutical potential (Kamath &Kerkar, 2011). However, in India, most studies have focused on salt production, with limited attention given to the biological diversity of these habitats. The present study investigates the biodiversity of Naigaon salt pans, documenting representative taxa of phytoplankton, zooplankton, protists, birds, fish, insects, reptiles, and arthropods.

Materials and Methodology

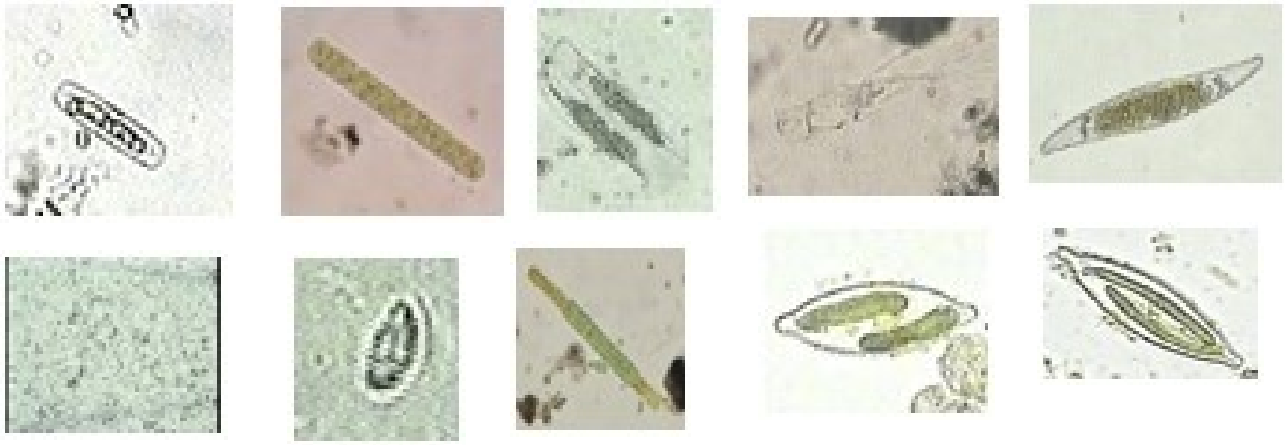
Salt pan samples were randomly collected from different locations at Naigaon, Maharashtra. Phytoplankton samples were preserved in Lugol's iodine, while zooplankton samples were preserved in 10% formalin for further analysis. Morphological identification of microflora and fauna was conducted

using standard taxonomic keys and field guides (Yamaguchi & Bell, 2007; Sheil, n.d.). Birds were identified by direct observation and photographic documentation. Other faunal groups such as fish, insects, and reptiles were recorded based on field sightings.

Observations

Phytoplankton Diversity

Sr. No.	Family	Scientific Name	Sr. No.	Family	Scientific Name
1	Naviculoideae	*Pleurosigma angulatum*	9	Naviculoideae	*Gyrosigmabalticum*
2	Naviculoideae	*Pleurosigma carinatum*	10	Coscinodiscaceae	*Cytotella sp.*
3	Naviculoideae	*Nitzschia longissimi*	11	Ulotrichaceae	*Ulothrix sp.*
4	Naviculoideae	*Pleurosigma normnii*	12	Soleniae	*Schroederelladelicatula*
5	Naviculoideae	*Trachyneisantillarum*	13	Naviculaceae	*Naviculamonmouthiana*
6	Achnanthoideae	*Cocconeislittoralis*	14	Oscillatoriaceae	*Oscillatoria sp.*
7	Naviculoideae	*Amphora lineolata*	15	Soleniae	*Leptocylindrusdanicus*
8	Coscinodiscaceae	*Thalassiosira subtilis*			



Protists			Fish		
Sr. No.	Family	Scientific Name	Sr. No.	Common Name	Scientific Name
1	Parameciidae	*Paramecium*	1	Mudskipper	*Oxudercinae*

Avifauna

Sr. No.	Common Name	Scientific Name	Sr. No.	Common Name	Scientific Name
1	Painted Stork	*Mycteria leucocephala*	7	Large Egret	*Ardea alba*
2	Pond Heron	*Ardeolagrayii*	8	Pariah Kite	*Milvus migrans*
3	Scaly Breasted Munia	*Lonchurapunctulata*	9	Brahminy Kite	*Haliasturindus*
4	Lesser Egret	*Egrettagarzetta*	10	Grey Heron	*Ardea cinerea*
5	Cormorant	*Phalacrocorax melanoleucos*	11	Sandpiper	*Scolopacidae spp.*
6	Stonechat	*Saxicola torquata*	12	Flamingo	*Phoenicopterus spp.*



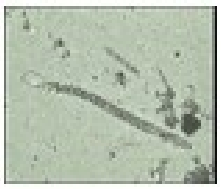





Insects			Reptiles		
Sr. No.	Family	Scientific Name	Sr. No.	Common Name	Scientific Name
1	Yellow Peacock Pansy	*Junoniaalmana*	1	Garden Lizard	*Calotes versicolor*
2	Common Pierrot	*Castaliusrosimon*	2	Skink	*Scincella lateralis*




Worms			Arthropods		
Sr. No.	Common Name	Scientific Name	Sr. No.	Common Name	Scientific Name
1	Polychaete larvae & others	-	1	Brown Widow Spider	*Latrodectus geometricus*
			2	Silverfish	*Lepisma saccharina*




Discussion

The biodiversity of Naigaon salt pans highlights their ecological significance as dynamic habitats capable of supporting organisms across multiple trophic levels. Phytoplankton and cyanobacteria form the base of the food web, sustaining zooplankton, fish, and higher vertebrates. Migratory birds, particularly flamingos and painted storks, utilize these salt pans as feeding grounds, emphasizing their importance in global avian migratory routes (Yamaguchi & Bell,2007).

The study also demonstrates that despite extreme salinity and fluctuating conditions, salt pans harbor diverse taxa, showcasing remarkable ecological adaptations. Such microbial communities are also known to be potential sources of enzymes, pigments, and bioactive compounds with industrial and pharmaceutical applications (Kamath & Kerkar, 2011). However, rapid urbanization, land reclamation, and pollution pose significant threats to these fragile ecosystems. Conservation strategies, such as ecological monitoring, wetland protection policies, and community awareness, are essential to safeguard biodiversity and ecosystem services.

Conclusion

Naigaon salt pans represent a unique hypersaline ecosystem with rich biodiversity, including phytoplankton, protists, invertebrates, vertebrates, and migratory birds. These findings underscore the ecological and conservation importance of salt pans in India. Further research on microbial communities and their biotechnological applications could reveal novel resources of agricultural and pharmaceutical relevance (Kamath & Kerkar, 2011). Protecting salt pan biodiversity is crucial not only for ecological balance but also for sustaining migratory bird populations and local livelihoods.

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