



AQUATIC PLANT DIVERSITY OF FIVE LAKES IN NAGZIRANAVEGAON (NN) CORRIDOR, GONDIA DISTRICT OF MAHARASHTRA STATE, INDIA

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ABSTRACT:

Nagzira Navegaon(NN) corridor covers an area of about 620 km distributed in three Tahsil viz. Sadak Arjuni, Deori and Goregaon in Gondia district of Maharashtra state. The corridor was studied into five blocks and wetlands were selected from each blocks; Putli lake from Ghat section block, Naktya lake from Alebedar block, Umarzari lake from Jambhadi block, Rengepar lake from Sasekaran hills block and Chulbandh lake from Mundipar block. The present work was carried out from October 2014 to September 2016, it showed 70 species of aquatic plants belonging to 34 families. The dominant families were Asteraceae with 8 species followed by Poaceae with 6 species and 4 species each of Alismataceae and Lamiaceae. Based on the existence of aquatic plants in lake, 41 species were peripheral, 14 species were shore, 11 species were floating and 4 species were categorized as submerged. As per the IUCN status, 54 species were not assessed by IUCN and 16 species were under the least concern status out of the 70 species observed during the study period. The present study mainly deals with the identification, documentation and conservation needs of aquatic plants species in lakes of NN corridor.

Key words: - Aquatic plants, Diversity, Corridor, Conservation

INTRODUCTION:

Wetland biodiversity provides a variety of environmental services from its species that are essential at the global, regional and local level (Rao *et al.*, 2017). A wetland ecosystem is a complex independent system of plants, animals and microorganisms along with physical environment in which they live (Bhagyaleena *et al.*, 2012). Wetland are highly valuable, yet the most threatened ecosystems (Murphy *et al.*, 2003).The available freshwater is not evenly distributed throughout either at local or global level. It now rests on man to properly manage this ecosystem (Ukaet. *al.*, 2009).Biological science has attempted to classify living organism and categorized the variability in nature for over a century. This has led to an understanding of its organization into communication about the plants and animals. Planning for environmentally sound and

biodiversity friendly development has in recent years emerged as an important concern. Minimizing the loss of biodiversity is one of the key objectives in planning for such sustainable development (Pramod *et al.*, 1997).Wetlands are capable of performing various functions as a result of physical, chemical and biological processes (Ramachandra *et al.*,2002). Wetlands have been shown to improve water quality by filtering out fertilizers and pesticides. There are around 7084 wetlands recorded in Gondia distict of which 66 wetlands under the jurisdiction of Irrigation department, 1266 wetlands under the jurisdiction of Zilla Parisad and 5752 others (Laxman *et al.*, 2015).The corridor between Nagzira Wildlife Sanctuary and Navegaon National Park situated in Gondia district of Maharashtra provides an excellent habitat for avifauna in the form of water bodies with marshy plant growth, terrestrial

platforms having thick as well as scattered trees and bushy vegetation (Bahuguna *et al.*, 2010). Wild animals widely use this corridor for their movement between Nagzira and Navegaon. The wetlands situated in the corridor fulfill the water requirement of wild animals during their movement and lean season. NN corridor has number of wetlands and other pocket of water bodies distributed in the whole study area, but water bodies have been decreasing continuously in the corridor. 182.76 sq. km. area in 1990, under wetlands in the corridor was reduced to 137.62 sq. km. in 1999; and to 104.35 sq. km. in 2009 (Yadav *et al.*, 2012). Aquatic plants maintain the habitat of various wetland dependent species, documentation of these wetland plant species is at the utmost importance. Therefore, the present study was undertaken to document the aquatic biodiversity of NN corridor.

MATERIAL AND METHODS:-

The investigation on wetland plants of the corridor was carried out in all three different seasons; winter (October to January), summer (February to May) and monsoon (June to September) from October 2014 to September 2016. Observed plants were photographed and plant specimens were identified as per Ugemuge (1986), Kodarkar, (1992), Cook(1996) and Fasset (2000). The aquatic plants were categorized on the basis of their existence in lake as submerged, floating, shore plants and peripheral plants. Conservation needs of the aquatic plants were assessed on the basis of IUCN red list status.

RESULT AND DISCUSSION

In the present investigation, 70 species of aquatic plants belonging to 34 families were observed from 5 wetlands viz. Putli, Naktya, Umarzari, Rengepar and Chulbandh lake of NN corridor. Among the 34 families the Asteraceae were reported 8 species followed by Poaceae with 6 species and 4 species each of Amaranthaceae and Lamiaceae, 3 species each of Cyperaceae, Euphorbiaceae, Fabaceae, Hydrocharitaceae, Malvaceae, Convolvulaceae and

Solanaceae, 2 species each of Acanthaceae, Alismataceae, Nymphaeaceae and Onagraceae and a single species was reported from family Apocynaceae, Aponogetonaceae, Araceae, Arecaceae, Boraginaceae, Capparaceae, Ceratophyllaceae, Characeae, Commelinaceae, Meliaceae, Menyanthaceae, Nelumbonaceae, Oxalidaceae, Papaveraceae, Polygonaceae, Phyllanthaceae, Trapaceae, Typhaceae and Verbenaceae. In the present study majority of the aquatic plants 77% were not assessed followed by 23 % aquatic plants were under least concern as per the IUCN red list status observed in NN corridor. Alien invasive plants pose a major threat to wetland species. In the present investigation aquatic invaders such as *Ipomoea carnea* (Beshram) was observed at the peripheral area at all 5 lakes viz. Putli, Naktya, Umarzari, Rengepar and Chulbandh lake

Aquatic plants with 16 number of species in NN corridor has been classed as Least Concern (LC) and 54 number of species were data deficient as per the IUCN red list status out of the 70 species observed in NN corridor. The number of plant species assessed as data deficient reflects the low level of knowledge of many wetland plants as it has not been assessed by IUCN. The species assessed here also represent only from five selected wetlands from NN corridor. Should an attempt have been made to assess all known aquatic plants (perennial and non-perennial) from all other lakes then the proportion of species assessed as data deficient would undoubtedly have been significantly higher than present investigation. The diversity and status of aquatic plants at 5 lakes during the present study was done to generate quantitative information about wetland plants diversity, the result shows the position of wetlands in corridor was not satisfactory as the aquatic plants are vanishes gradually and again invasive species invades the lake area. If present scenario of degradation of wetlands continue, the corridor existence would be severely threatened it can

affects the wetland biodiversity and movement of wild animal through this corridor. The ninety villages located in the corridor and people are directly dependent on these wetland resources for fish, water for agriculture and others so it was felt that the success of reconnecting people with their ecosystem lies within the people themselves and their empowerment. They must feel a sense of ownership of conservation or restoration sites. All stakeholders like neighborhoods, Government (up to lowest level), and private agencies or NGO's must have participative approach in planning, implementation and evaluating of the restoration work as equals.

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Table 1- Diversity and status of aquatic plants during study period

Sr. No.	Local name	Scientific name	Family	IUCN status	Name of lakes					
					Putli	Naktya	Umazari	Rengepar	Chubhandh	Location of plants in lake
1	Talimkhan	<i>Hygrophylaschulli</i>	Acanthaceae	NA		√	√	√	√	P
2	Katekorsa	<i>Asteracanthalongifolia</i>	Acanthaceae	NA			√	√	√	S
3	Jirapan	<i>Sagittariatrifolia</i>	Alismataceae	LC	√	√	√	√		S
4	Kadukand	<i>Sagittariasagittifolia</i>	Alismataceae	LC		√		√	√	F
5	Bhaspatur	<i>Alternatherasessilis</i>	Amaranthaceae	NA		√	√	√	√	S
6	Chavli	<i>Amaranthusblitum</i>	Amaranthaceae	NA	√	√	√	√	√	P
7	Kutri	<i>Achyranthesaspera</i>	Amaranthaceae	NA	√	√	√	√	√	P
8	Silari	<i>Celosia argentea</i>	Amaranthaceae	NA	√	√	√	√	√	P
9	Rui	<i>Calatropisgigantea</i>	Apocynaceae	NA		√	√	√	√	P
10	panz	<i>Aponogetonnatans</i>	Aponogetonaceae	LC		√	√	√		F
11	Jalkumbha	<i>Pistia stratiotes</i>	Araceae	LC	√	√		√		F
12	Shindi	<i>Phoenix sylvestris</i>	Arecaceae	NA		√		√	√	P
13	PivliGodurli	<i>Grangeamaderaspatena</i>	Asteraceae	NA		√	√	√	√	P
14	Godurli	<i>Sphaeranthusindicus</i>	Asteraceae	LC	√	√	√	√		P
15	Kambarmodi	<i>Tridaxprocumbens</i>	Asteraceae	NA	√	√	√	√	√	P
16	MajviLendurli	<i>Xanthium strumarium</i>	Asteraceae	NA		√		√		P
17	Pandhrasambhar	<i>Vernoniacinerea</i>	Asteraceae	NA		√	√	√		P
18	Chatkachandani	<i>Blumealacera</i>	Asteraceae	NA		√	√	√	√	P
19	Akkalkada	<i>Acmella paniculata</i>	Asteraceae	LC	√	√	√	√	√	P
20	Dhondurli	<i>Blumeaeriantha</i>	Asteraceae	NA	√		√	√	√	P
21	Bhurundi	<i>Heliotopiumindicum</i>	Boraginaceae	NA	√		√	√	√	P
22	Waghatichikna	<i>Cappariszeylanica</i>	Capparaceae	NA		√		√		P
23	Vanarpushtyachila	<i>Ceratophyllumsubmersum</i>	Ceratophyllaceae	LC				√		Sb
24	Gobryachila	<i>Charaglobularis</i>	Characeae	NA			√	√		Sb
25	Chipli	<i>Merremiaemarginata</i>	Convolvulaceae	LC	√		√	√	√	P
26	KarambuBhaji	<i>Ipomoea aquatica</i>	Convolvulaceae	LC		√		√		F
27	Sadafuli/Beshram	<i>Ipomoea carnea</i>	Convolvulaceae	NA	√	√	√		√	P
28	Bhaskena	<i>Cyanotis cristata</i>	Commelinaceae	LC	√	√	√	√	√	S
29	Pongli Gad	<i>Schoenoplectusarticulatus</i>	Cyperaceae	NA		√		√	√	S
30	Shikara	<i>Kyllinga triceps</i>	Cyperaceae	LC		√	√	√	√	S

31	Nagarmotha	<i>Cyperusrotundus</i>	Cyperaceae	LC	√	√	√	√	√	S
32	Botri	<i>Chrozophorarottleri</i>	Euphorbiaceae	NA	√	√	√	√	√	P
33	Dudheli	<i>Euphorbia hirta</i>	Euphorbiaceae	NA	√		√	√	√	P
34	MothiLendurli	<i>Ricinuscommunis</i>	Euphorbiaceae	NA	√	√		√	√	P
35	Harduli	<i>Crotolariamosissima</i>	Fabaceae	NA	√	√	√	√		S
36	Tarota	<i>Cassia tora</i>	Fabaceae	NA	√	√	√	√	√	P
37	Palas	<i>Butea monosperma</i>	Fabaceae	NA	√		√	√	√	P
38	Chiul	<i>Vallisneria spiralis</i>	Hydrocharitaceae	NA	√	√	√	√		F
39	Katerichila	<i>Najas minor</i>	Hydrocharitaceae	NA		√		√	√	F
40	Sakhryachila	<i>Hydrillaverticillata</i>	Hydrocharitaceae	LC		√	√	√	√	Sb
41	Astha	<i>Ocimumamericanum</i>	Lamiaceae	NA	√	√	√	√	√	P
42	Tulsi	<i>Ocimumtenuiflorum</i>	Lamiaceae	NA		√	√	√		P
43	KateriZandu	<i>Leonotisnepetifolia</i>	Lamiaceae	NA	√		√	√	√	P
44	Bhutganjya	<i>Hyptissuaveolens</i>	Lamiaceae	NA	√		√	√	√	P
45	Chikna	<i>Common sida</i>	Malvaceae	NA	√	√	√	√	√	P
46	Dhendurli	<i>Urenalobata</i>	Malvaceae	NA	√	√	√	√	√	P
47	Bhendi	<i>Abelmoschusesculentus</i>	Malvaceae	NA	√		√	√	√	P
48	Kadunimb	<i>Azadirachtaindica</i>	Meliaceae	NA			√	√	√	P
49	Chaura	<i>Nymphoideshydrophylla</i>	Menyanthaceae	LC		√	√	√		F
50	Powan	<i>Nelumbonucifera</i>	Nelumbonaceae	NA			√			F
51	Kamal	<i>Nymphaenouchali</i>	Nymphaeaceae	NA			√	√		F
52	Kamalful	<i>Nymphae pubescence</i>	Nymphaeaceae	NA		√		√		F
53	Panlavang	<i>Ludwigiaoctovalvis</i>	Onagraceae	NA		√	√	√		S
54	Rajoli	<i>Ludwigiaadscendens</i>	Onagraceae	NA		√	√	√	√	S
55	Tipani	<i>Oxalis corniculata</i>	Oxalidaceae	NA	√			√	√	F
56	Utati	<i>Argemonemexicana</i>	Papaveraceae	NA	√		√	√	√	P
57	Devdhan	<i>Oryzarufipogon</i>	Poaceae	NA		√	√	√		S
58	Ursudi	<i>Vetiveriazizanioides</i>	Poaceae	NA		√	√	√	√	S
59	Harari	<i>Cynodondactylon</i>	Poaceae	NA	√	√	√	√		S
60	Ghonyad	<i>Themedatriandra</i>	Poaceae	NA	√		√	√	√	P
61	Lahanasera	<i>Aristidiasetaceae</i>	Poaceae	NA	√	√	√	√	√	P
62	Mothaasera	<i>Aristidiaadscensionis</i>	Poaceae	NA	√		√	√		P
63	Siruli	<i>Polygonumglabrum</i>	Polygonaceae	LC	√		√	√	√	P
64	Bhuiamla	<i>Phyllanthusniruri</i>	Phyllanthaceae	NA			√	√	√	P
65	KateriVanguli	<i>Solanum surrattense</i>	Solanaceae	NA	√		√	√	√	P
66	Phopondra	<i>Physalis minima</i>	Solanaceae	NA		√	√	√	√	P
67	Ranvanga	<i>Solanum xanthocarpum</i>	Solanaceae	NA	√	√	√	√	√	S
68	Shingada	<i>Trapanatans</i>	Trapaceae	NA		√				Sb

69	Kongasi	<i>Typhaprovincialis</i>	Typhaceae	NA	√	√	√	√		P
70	Ghaneri	<i>Lantana camara</i>	Verbenaceae	NA	√		√	√	√	P
Total					3	4	5	6	4	
					8	8	7	7	7	

IUCN status:LC- Least Concern, NA- Not Assessed, **Location status:** P - Peripheral, S - Shore, F - Floating, Sb – Submerged and √ = Present

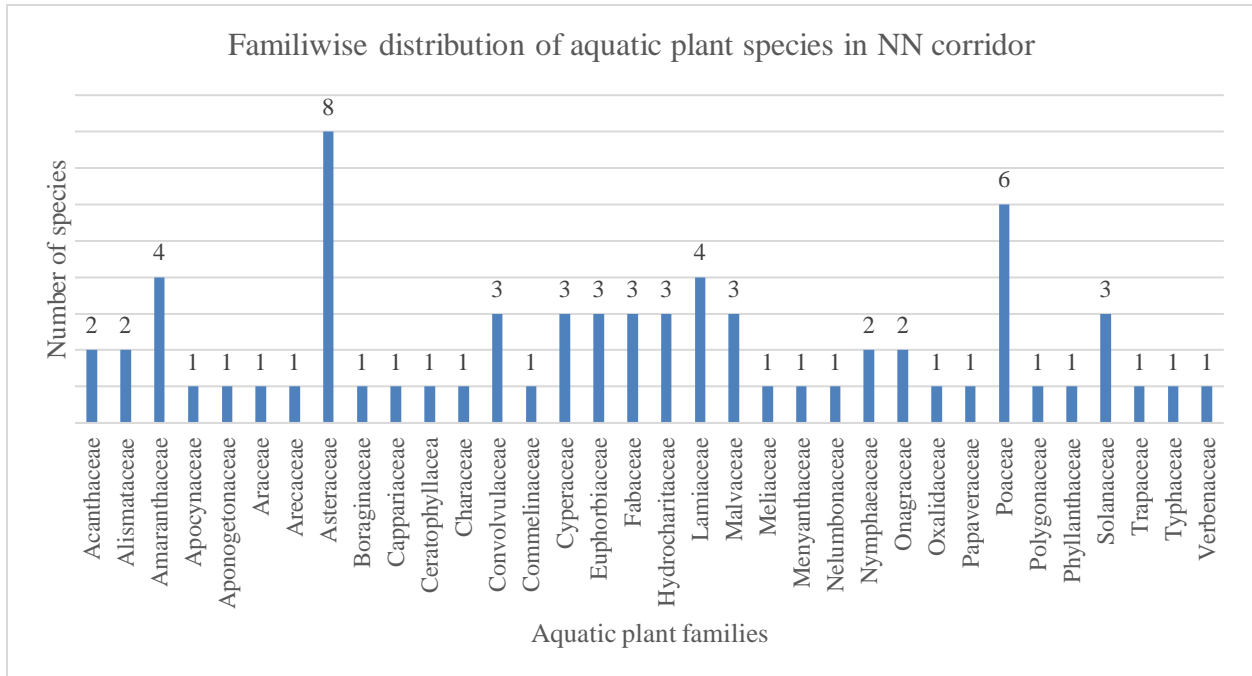


Figure 1- Number of aquatic plant species under different families in NN corridor

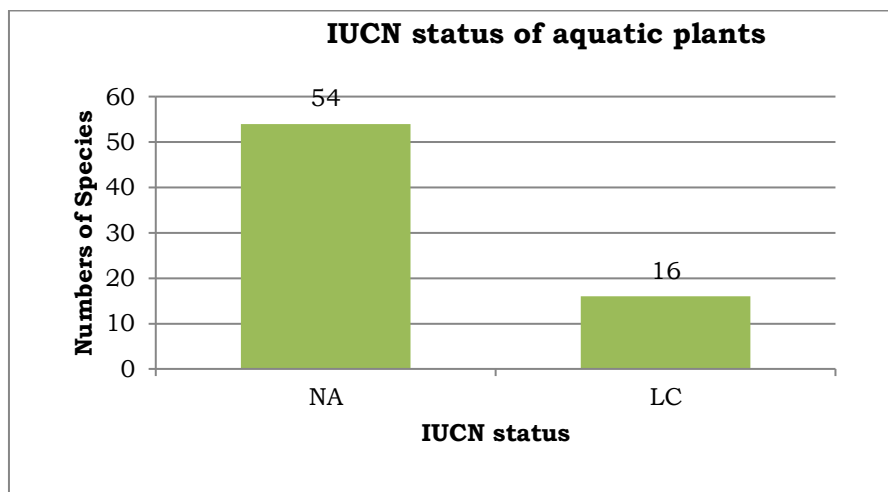


Figure 2- IUCN status of aquatic plants during study period