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INFESTATION OF AQUATIC WEEDS: A SERIOUS THREAT

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The present paper deals with infestation of aquatic weeds in different aquatic habitat of Jamtara district in Jharkhand state which is rich reservoir of thick forest cover and large number of water bodies like ponds, rivers, dams, canals and ditches. These water bodies harbors a number of aquatic plants which are important to maintain the aquatic ecosystem. But gregarious and excessive growth of such plants adversely influences physical, chemical and biological properties of water bodies affecting the environment and aesthetic value. Among a number of weedy flora, the infestation of water hyacinth extends the largest area in association with some other plant species like *Hydrilla* sp., *Ipomoea* sp., *Pistia* sp., *Nymphaea* sp., *Nelumbo* sp., *Ceratophyllum* sp. and several marginal grasses and sedges adversely affecting the fish pond and agricultural field. The present work includes compilation and documentation of 41 aquatic weeds belonging to 29 families along with their floristic study.

Keywords: Aquatic weeds, Infestation, Jamtara, Water hyacinth.

Aquatic weeds are persistent and challenging environmental threat all over India. They are useless, unwanted, injurious, pernicious and troublesome plants. They are largely variable in shape and size i.e. ranging from microscopic phytoplanktonic forms to large vascular plants. They are mostly herbaceous in nature having natural tendency to grow fast causing hazardous and troublesome effects both on aquatic habitat and agricultural fields. The global scenario of aquatic weeds includes wide population of aquatic vegetation in different aquatic ecosystem. They produce certainly large number of seeds that spread through aquatic migratory birds, duck, water currents, insects etc. They also spread during irrigation and through fishing nets. Aquatic weeds grow and complete their life cycle in water and in the process cause harm to aquatic environment directly.

The rapid growth of weed infestations has been both spectacular and frightening, and the publicity devoted to several of these problems in the past decade has made us aware of their severe impacts. Aquatic weeds obstruct water flow, increase evapotranspiration, and prevent proper drainage on land. Aquatic weeds may interfere with navigation preventing fishing and recreation; depress real estate values, and present health hazards.

Aquatic plants are natural part of the aquatic ecosystem, used by many different animals either as food or as a hiding place. Many people find aquatic plants interesting and attractive. However, as with any naturally occurring organisms, they may interfere with people's activities either by their over-abundance or by their mere presence. When this occurs the plants are considered "weeds" and some control is desired. Dense growth of aquatic plants may provide ideal habitat for development of mosquitoes causing malaria, elephantiasis and filaria. They also serve as vectors for various disease causing organisms and reduce the aesthetic value of water bodies from recreational points. The survival and utilizing capacity of nutrients by these plants check the growth of other economically important plants by covering the entire space.

A number of aquatic weeds like *Eichhornia*, *Monochoria* and several species of *Cyperus* cause huge reduction in paddy and other crops production. Floating mats of aquatic weeds like water hyacinth and water lettuce cover vast area of water surface. They prevent normal gaseous exchange between the atmosphere and water and adversely change the limnology of water. They also deplete amount of nutrients in aquatic habitat. They cover the entire surface of water resources and prevent light penetration causing problems for all submerged plants.

During this present work, it was observed that the tropical climate of Jharkhand state in general and Jamtara district in particular is the favourable climatic conditions for ideal growth of these weedy floras which have been proved to be economic drains in so many ways.

MATERIALS AND METHODS

Jamtara is a newly formed district of Jharkhand state being situated at a lower altitude of Chotanagpur plateau between 23°10' and 24°05' north latitudes and 86°30' and 87°15' east longitudes respectively. The present work is based on regular survey of the studied area during 2014-2016, mostly twice in every seasons to trap the plants in flowering and fruiting conditions. Some of the local people were also interviewed to know different kinds of problems due to severe infestation of weedy aquatic plants. During the survey, plants were collected, photographed and identified as per the rules and guidelines of Botanical Survey of India. They were dried and preserved by using standard herbarium techniques. Botanical names, common names, families, and floral characters were also recorded.

OBSERVATION

During my present work, the range of infestation of aquatic weeds can be seen in table I and II, where table I shows occurrence of common aquatic weeds in the sampling areas and table II shows occurrence of some of the invasive aquatic weeds.

Out of above mentioned weeds, some are even invasive or alien one which has been infested in such a large scale that the original or native plants sometimes face the danger of extinction like water hyacinth totally covers the entire water surface vanishing all other plants. Some of the invasive aquatic weeds have been listed in table II

RESULT AND DISCUSSION

The detailed observation clearly shows occurrence of 41 weedy plants belonging to 29 families in different water bodies of Jamtara district of Jharkhand state. It was also seen that invasive aquatic weeds created more problems than the native ones because biological invasions by alien plant species are considered one of the important factors in the way of loss of biodiversity. It has been most frequent due to ineffectiveness of bio-geographical barriers as a result of globalization. This has resulted in an exponential increase in the movements of organisms from one part of globe to another through trade, transport, travel and tourism. The present work shows abundance of 7 invasive aquatic weeds interfering native vegetation and creating a lot of ecological problems.

Infestation of aquatic weeds is serious threat to mankind in addition to limnetic habitat and aquatic biodiversity. Verma and Pandey (2008) have also quoted aquatic weeds to be serious problem for water bodies in the state of Jharkhand. These have been proved to be a persistent and expensive environmental problem costing millions of rupees to control and uncounted millions more to correct the damage in the environment. Mukherjee (2015) has enumerated that Eichhornia crassipes and the species of Alternanthera spread over the whole water bodies disturbing the biodiversity of water bodies and suppressing the growth of other aquatic vegetation. The water bodies aquatic plants are not properly cared, resulting the threatened condition of some of the aquatic species. There is an urgent need to take measure to conserve the aquatic flora.

CONCLUSION

Infestation of aquatic weeds has become the most threatened threat for the native biodiversity and it is mostly regulated and supported by the geographical and climatic factors like tropography, depth of the water bodies, water qualities etc. The great loss faced by such kind of infestation is by fish farmers and sailors. There is need to utilize these weeds in so many ways like production of biogas, composting, fuel, in the field of medicines and vegetables etc. The Government should take proper initiative in this field for proper

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SI.	Name of the Plant	Family	Flowering Period
No.			
1.	Ranunculus scleratus Linn.	Ranunculaceae	November - February
2.	Nymphaea naychali Burm. f.	Nymphaeaceae	August - November
3.	Nymphaea stellata Wild.	Nymphaeaceae	August - November
4.	Nelumbo nucifera Geartn.	Nelumbonaceae	July - November
5.	Ludwigia adsendens L.	Onagraceae	Throughout the year
6.	Trapa natans L.	Trapaceae	September- January
7.	Enhydra fluctuans Lour.	Asteraceae	December - March
8.	Spillanthes acmella L	Asteraceae	September - March
9.	<i>Eclipta prostrate</i> L.	Asteraceae	Throughout the year
10.	Nymphoids indicum (L) Kuntze	Menyanthaceae	Throughout the year
11.	Ipomoea aquatic Forsk.	Convolvulaceae	August - February
12.	Utricularia stellaris L.	Lentibulariaceae	September - December
13.	Utricularia aurea Lour.	Lentibulariaceae	September - December
14.	Ceratophyllum demersum L.	Ceratophyllaceae	September - December
15.	Polygonum plabejum L.	Polygonaceae	September - March
16.	Rumex dentatus L.	Polygonaceae	December - June
17.	Hydrilla verticillata (L.f.) Royle	Hydrocharitaceae	October - February
18.	Vallisnaria spirallis L.	Hydrocharitaceae	October - February
19.	Ottelia alismoides L.	Hydrocharitaceae	October - February
20.	Oxalis corniculata L.	Oxalidaceae	October - July
21.	Oldenlandia corymbosa L.	Rubiaceae	July - January

Table I: Common Aquatic Weeds collected from the study Area

22.	<i>Hygrophila auriculata</i> (Schumach.) Heine.	Acanthaceae	September - February
23.	Alternanthera philoxeroides (Mart.) Griseb.	Amaranthaceae	Throughout the year
24.	Ammannia baccifera L.	Lythraceae	July - January
25.	<i>Centella asiatica</i> L.	Apiaceae	December - March
26.	Eichhornia crassipes Mart.	Pontederiaceae	April - November
27.	Monochoria vaginalis Burm.	Pontederiaceae	July - November
28.	<i>Monochoria hastate</i> L.	Pontederiaceae	July - November
29.	<i>Commelina benghalensis</i> L.	Comelinaceae	July - November
30.	Typha angustata Borey Chaub.	Typhaceae	April - June
31.	Aponogeton natans L.	Aponogetonaceae	July - November
32.	Sagittaria sagittifolia L.	Alismataceae	October - March
33.	Potamogeton nodosus Lamk.	Potamogetonaceae	October - March
34.	Eriocaulon cinerum R.Br.	Eriocaulaceae	August - November
35.	Colocasia esculenta (L.) Schott.	Araceae	July - November
36.	Pistia stratiotes L.	Araceae	May - October
37.	Cyperus iria Linn.	Cyperaceae	August - January
38.	Cyperus difformis Linn.	Cyperaceae	August - January
39.	Cyperus rotundus Linn.	Cyperaceae	June - January
40.	Hygrorhhiza aristata Nees	Poaceae	October - January
41.	Marselia minuta L.	Marseliaceae	October - February

Sl. No.	Name of Plant	Habit	Nativity
1.	Alternanthera philoxeroides (Mart.) Griseb	Herb	Trop. America
2.	Cyperus difformis Linn	Herb	Trop. America
3.	Cyperus iria Linn.	Herb	Trop. America
4.	<i>Eclipta prostrate</i> L.	Herb	Trop. America
5.	Eichhornia crassipes Mart.	Herb	Trop. America
6.	Oxalis corniculata L.	Herb	Europe
7.	Typha angustata Borey Chaub.	Herb	Trop. America

management through utilization.

REFERENCES

Christopher C 2006 Study on the diversity of the aquatic vascular plants in Karikkakom, Thiruanantpuram *Ecol Env & Conc* **12(4)** 661-663.

Cook C D K 1996 Aquatic and Wetland plants of India Oxford University Press, New York.

Gupta O P 1979 Aquatic weeds their menace and control-A text book and manual Today & tomorrow's Printers & Publisher, New Delhi.

Haines H H 1921-1925 *The Botany of Bihar & Orissa* Allard & Son & West Newman Ltd, London.

Jha U N 1965 Hydrophytes of Ranchi *Trop Ecol* **6**96 - 105.

Maheshwari J K 1960 The vegetation of marshes, swamps and riversides in Khandwa District (Madhya Pradesh) *J Bombay Nat Hist Soc* **51** 371-387.

Majumdar N C 1965 Aquatic and semiaquatic flora of Calcutta and adjacent localities *Bull Bot Soc Bengal* **19**:10-17.

Mooney H F 1950 *A supplement to the Botany* of *Bihar & Orissa* Catholic Press, Ranchi.

Mukherjee P 2015 Aquatic and semi-aquatic angiospermic flora of Lohardaga (Jharkhand)*Phytotaxonomy* **15**,134-145.

Mukherjee P 2015 Invasive alien plant species in some hilly region of Dumka district and their effects on biodiversity *The Biobrio* 2 (1 & 2) 83 - 89.

Naskar 1990 The Aquatic & Semi Aquatic Plants of Lower Ganga delta Daya Publishing House Delhi.

Verma S K and Pandey P K 2008 Aquatic weeds: A serious problem for water bodies in Jharkhand *J Phytol Res* **21(1)** 143-145.