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STUDY ON AQUATIC PLANT BIODIVERSITY IN SHIV GANGA CANAL, BITS PILANI IN JHUNJHUNU (RAJ.) INDIA

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Abstract:

Aquatic plants are important componants of aquatic ecosystem. They are cosmopolitan. The present study was carried out at Shiv Ganga Canal, Bits Pilani in Jhunjhunu district of Rajasthan in India. A total of 11 aquatic plants are identified in study site. They represent 11 different families. The present study is an attempt to highlight biodiversity account of aquatic plants species.

Keywords: *Aquatic plant, biodiversity, ecosystem, conservation.*

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INTRODUCTION

Aquatic plants enhance the beauty of nature. They are natural filtration and essential components for healthy aquatic ecosystem. They are widely distributed around the world and provide habitat for other forms of aquatic life. They have unique features for aquatic environment such as presence of air sacs for flotation; stem is short, thick, stoloniferous and spongy. Cuticle poor developed root hair and root cap absent in mostly plants. Flowers and seeds are form in very few numbers. Reproduction is mainly by vegetative type. The aquatic plants are of various types, some are free floating on water surface, some are emergent type, some are submerged without root and some have rooted submerged. Aquatic plants help anchor soft sediments, stabilize underwater slopes, remove suspended particles, and remove nutrients from overlying waters [1, 2, 3]. Different parts of these plants have been studied by many researchers to look for alternative less expensive sources of nutritive feed [4, 5].

During the last few decades considerable studies on aquatic plants from different freshwater bodies of India and abroad have been carried out by researchers like Unni [6], Zutshi et al. [7], Jullian [8], Ghosai et al. [9], Kumar and Pandit [10], Ghavzan et al. [11], Verma and Khan [12]. The aim of present study to provide basis for further investigation on aquatic biodiversity and to protect the water bodies for maintain the aquatic ecosystem.

STUDY AREA

BITS Pilani is located between $28^{0}21'21''$N latitude and $75^{0}35'18''$E longitude in Jhunjhunu district of Rajasthan. It is a part of the sub arid regions of the Thar desert. The area is susceptible to continuous droughts for consecutive years. It is a birth place of Ghanshyam Das Birla. Shiv Ganga Canal is located in the center of Bits campus.

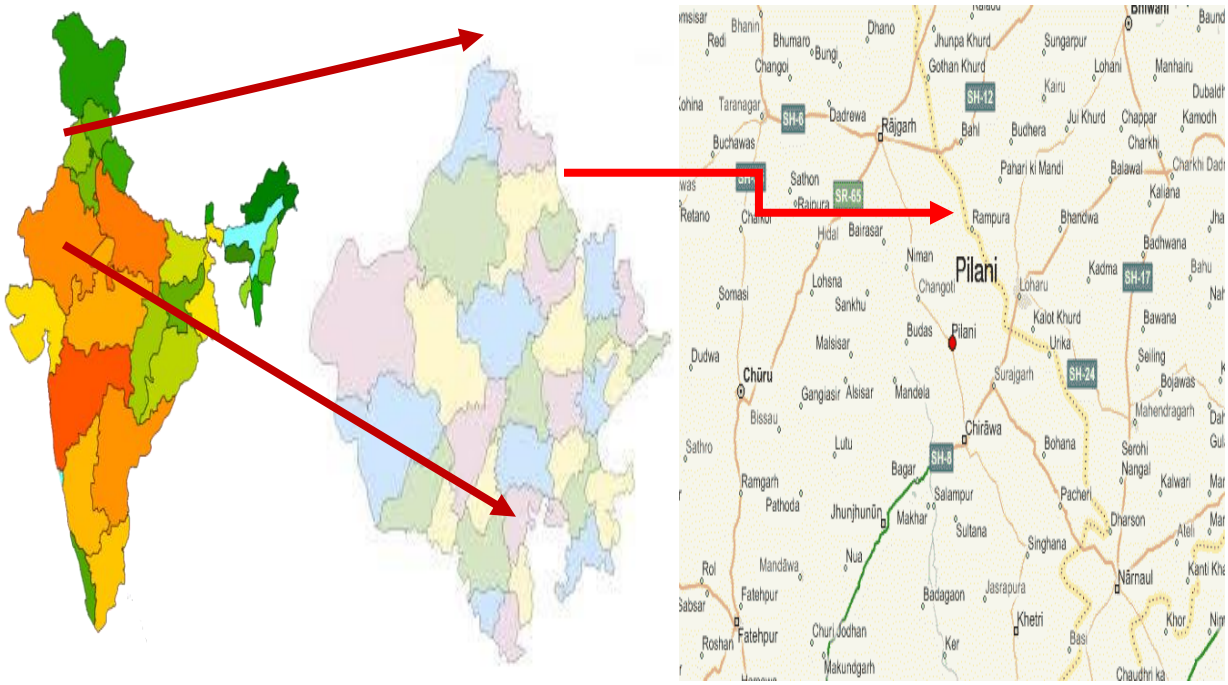

Fig 1: Map of study area (BITS Pilani) in Jhunjhunu district of Rajasthan (India)

Fig 2: Study Site (Shiv Ganga Canal) in Bits Pilani

METHODOLOGY:

The aquatic plants were collected for the period from July 2012 to June 2013. Plants were collected directly and after the collection of specimen were thoroughly washed, excess water soaked with filter paper, kept in polythene bags with filter paper and immediately brought to the laboratory and preserved in 10% formalin and observed.

RESULT AND DISCUSSION:

The present study conducted on aquatic biodiversity of Shiv Ganga Canal in BITS, Pilani of Jhunjhunu district in Rajasthan. After carefully screenings following aquatic plants have been recognized. For each species botanical name, family name, descriptions were provided. Few important plant species are featured in Figures 3.

1. **Botanical name**: *Alternenthera philoxeroides*
   Family name: Amaranthaceae
   Description: Vegetative growth occurs at the apical stem buds and axillary stem and root buds. Stems are succulent and fleshy. The leaves are ranged from 5-10 cm, opposite in pair and have distinctive midrib. Flowers are white and appear from December to April month. Reproduction is predominantly by vegetative (through fragmentation), rarely produce seeds or produce non viable seed.
2. **Botanical name**: *Bacopa monnieri*
   Family name: Scrophulariaceae
   Description: It is a creeping and perennial herb, stem is glabrous and succulent, rooting at the nodes, with numerous prostrate branches (10-30 cm long). Leaves are succulent, sessile, oppositely arranged on the stem, entire, punctuate, obtuse. Flowers are appear in May-October. Flowers are blue or white they are axillary or solitary. Seeds are ellipsoid, truncate, longitudinally ribbed with transverse striations in between the ribs.
3. **Botanical name**: *Centella asiatica*
   Family name : Apiaceae
   Description: It is a creeping and evergreen perennial herb. Stem are slender and prostrate. Leaves are kidney shaped and alternately arranged in cluster at the nodes. Flowers are pink and white. They are appear in August to September.
4. **Botanical name**: *Hydrilla verticillata*
   Family name: Hydrocharitaceae
   Description: It is a submerged and perennial herb. The plants have both a monoecious and a dioecious form. The leaves are whorlled (3-8 leaves per whorl) around the stem. The leaves have a midrib which is reddish in color. Flowers are short stalked and floating to the water surface. Vegetative reproduction possible by stem tuber(turions) are produced along the stems of the plant. It is a bud-like structures and from dark green to whitish colour.
5. **Botanical name**: *Ipomoea aquatica*
   Family name: Convolvulaceae

Description: *Ipomoea aquatica* is a trailing vine, annual or perennial. Stems are hollow, branched and succulent or solid, wide. Leaves are alternate, glabrous and arrowhead in shape. The flowers are white to pink in colour, solitary or in clusters at leaf axils. Flowers are in pink colour.

6. **Botanical name**: *Nelumbo nucifera*
Family name: Nelumbonaceae

Description: *Nelumbo nucifera* is a national flower in India. It is an aquatic and perennial herb with submerged horizontal stems. The leaves have long stalks and float on the surface. The flowers are white to red in colour and spirally arranged.

Fig 3: [A] Alternenthera Philoxeroides [B] Hydrilla Verticillata [C] Azolla Pinnata [D] Nelumbo Nucifera

7. **Botanical name**: *Phragmites communis*
   Family name: Poaceae
   Decription: *Phragmites australis* is a grass. The stems are smooth and glabrous. The leaves are green and acuminate in shape. The spiklets have 3-7 flowers and appear from July to September. The flowers are covered by silky white hairs. The seeds are brown in colour and light weight.
8. **Botanical name**: *Potamogeton crispus*
   Family name: Potamogetonaceae
   Description: *Potamogeton crispus* is a submersed aquatic and perennial herb.The leaves are sessile and linear. The turions are spindle-shaped and located terminal or axillary. The stems of this plant are flattened. Flowers are brown and green in colour.
9. **Botanical name**: *Azolla pinnata*
   Family name: Azollaceae
   Description: It is very small water fern and evergreen plant. It is found in stagnant water. It is floating on water surface. Roots have a feathery appearance in the water. Leaves minute, brownish green or reddish in colour.
10. **Botanical name**: *Marsilea quadrifolia*
    Family name: Marsileaceae
    Description: *Marsilea quadrifolia* is an aquatic fern. The leaves are glabrous and triangular-obovate in shape. They float on the surface of water. The reproduction by means of sporocarps. They are oval to elliptical in shape.
11. **Botanical name**: *Lemna polyrhizza*
    Family name: Araceae
    Description: It is a aquatic perennial plant.Vegetative reproduction by turion. Turions are rootless structure and dark green in colour. Flowers are white in colour. Each flower have 2 stamen and single style.

CONCLUSION:

The main goal of conservation is to preserve as much of the Earth's biodiversity as possible, with emphasis on those elements that are most critically threatened by anthropogenic activities [13]. The major threats to aquatic biodiversity include their natural habitats destruction, air and water pollution, urban development and industries, sedimentation and erosion and climate change. So, the aquatic plants and their habitats should be conserved.

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