

# **Medicinally important unexplored plants growing near water bodies in Bonai Forest Division, Sundargarh, Odisha**

**Kartik Chandra Guchhait<sup>1</sup>, Anita N. Dharasurkar<sup>2</sup>, Bhagwati Prashad Sharma<sup>3</sup>, Zahoor Ahmad<sup>4</sup>, Rukmani Hansdah<sup>5</sup> and Sugimani Marndi<sup>5</sup>**

<sup>1</sup>Senior Research Fellow, Department of Human Physiology Vidyasagar University, Paschim Medinipur, West Bengal, India

<sup>2</sup>Professor, Department of Botany, Vasantdada Patil College Patoda, Maharashtra

<sup>3</sup>Associate Professor and head, Department of Botany, NSCBM Government College Hamirpur, Himachal Pradesh

<sup>4</sup>Research Scholar, Government (Model Autonomous) Holkar Science College, Indore

<sup>5</sup>Biodiversity and Conservation Lab., Ambika Prasad Research Foundation, Cuttack, Odisha, India

## **Abstract**

This paper reports on important unexplored medicinal plants growing near water bodies from Bonai, Sundergarh district of Odisha that can be used to treat and cure a number of ailments. Data were collected through series of questionnaire with elderly experienced people residing in that region. A list of 30 unexplored plant species along with their botanical names, local names, family, parts used and medicinal uses has been discussed. Most of the plant species from this region belong to the family Acanthaceae, Polygonaceae and Moraceae. Different parts of these unexplored plants such as fruits, roots, leaves, bark is used to treat and cure different human disorders and diseases. Thus there is a need to carry out medicinal study for these unexplored plant species.

**Keywords:** Unexplored aquatic plants, Diseases, Bonai, Sundergarh, Odisha, India

## **Introduction**

Odisha is a homeland for lots of indigenous people. Majority of the population resides in rural areas. Bonaigarh, also locally known as Bonai, is a subdivision of Sundergarh district of the Indian state of Odisha. It is located at 21.75° N latitude and 84.97° E longitude. The town is surrounded by the river Brahmani and the Khandadhar and Singsardei Hills. This district falls under Peninular Sal type and dry deciduous mixed forest. From last decades, we are losing the potentials of medicinal agents due to anti-microbial resistance and at the same time needed novel agents to fight against novel pathogenic microbes. Both are serious problems in health care systems. A lot of information regarding aquatic plants remains unexplored, unnoticed and undocumented due to lack of communication. Local inhabitants traditionally use aquatic plants

in their day to day life because it has many medicinal uses. People utilize the plant parts like leaves, roots, fruits etc. that are useful in treating many health disease such as respiratory problems, diabetes, skin infections etc. The scientists throughout the world screening new agents from plant wealth. For the screening, the unexplored plant species are more suitable. Among the plant wealth, the aquatic plants are more important and unexplored. The conservation of these species through sustainable uses is also needed. Aquatic plants are recognised as biological indicators, climate change indicators, food plants, water pollution indicators and medicinal plants. They are very important to maintain the wetland ecology. Therefore, an attempt has been made to gather the information on medicinally important aquatic plants through literature survey. The paper highlights 30 common medicinally important aquatic plants.

### Methodology

The survey was carried out in the year of 2019-2022 to collect information from traditional people on the use of medicinal plants that are unexplored in Bonai, Sundergarh district of Odisha. A series of questionnaire and personal interview was conducted during field trips to collect the data. The plant species were identified by Dr. Sanjeet Kumar and Flora of Odisha with the help of local people.

Table 1: Medicinal uses of unexplored aquatic plants

Plant Name	Local Name	Family	Parts Used	Uses
<i>Nymphaea nouchali</i>	Nila kain	Nymphaeaceae	Root	Root decoction is used to cure food poisoning.
<i>Drosera indica</i>	Konkikhai	Droseraceae	Apical part	Apical part is used to treat respiratory problems.
<i>Grangea maderaspatana</i>	Painjari	Asteraceae	Leaves	Powdered dry leaves or wet-leaf compress are applied to contusions.
<i>Canscora diffusa</i>	Burrurria	Gentianaceae	Leaves	Leaves are used as leafy vegetable against stomach pain.
<i>Nymphoides hydrophylla</i>		Menyanthaceae	Leaves	Leaf juice is used as an antidote for scorpion sting and snake bite.
<i>Nymphoides indica</i>	Panisiuli	Menyanthaceae	Root	Root is used against ageing.

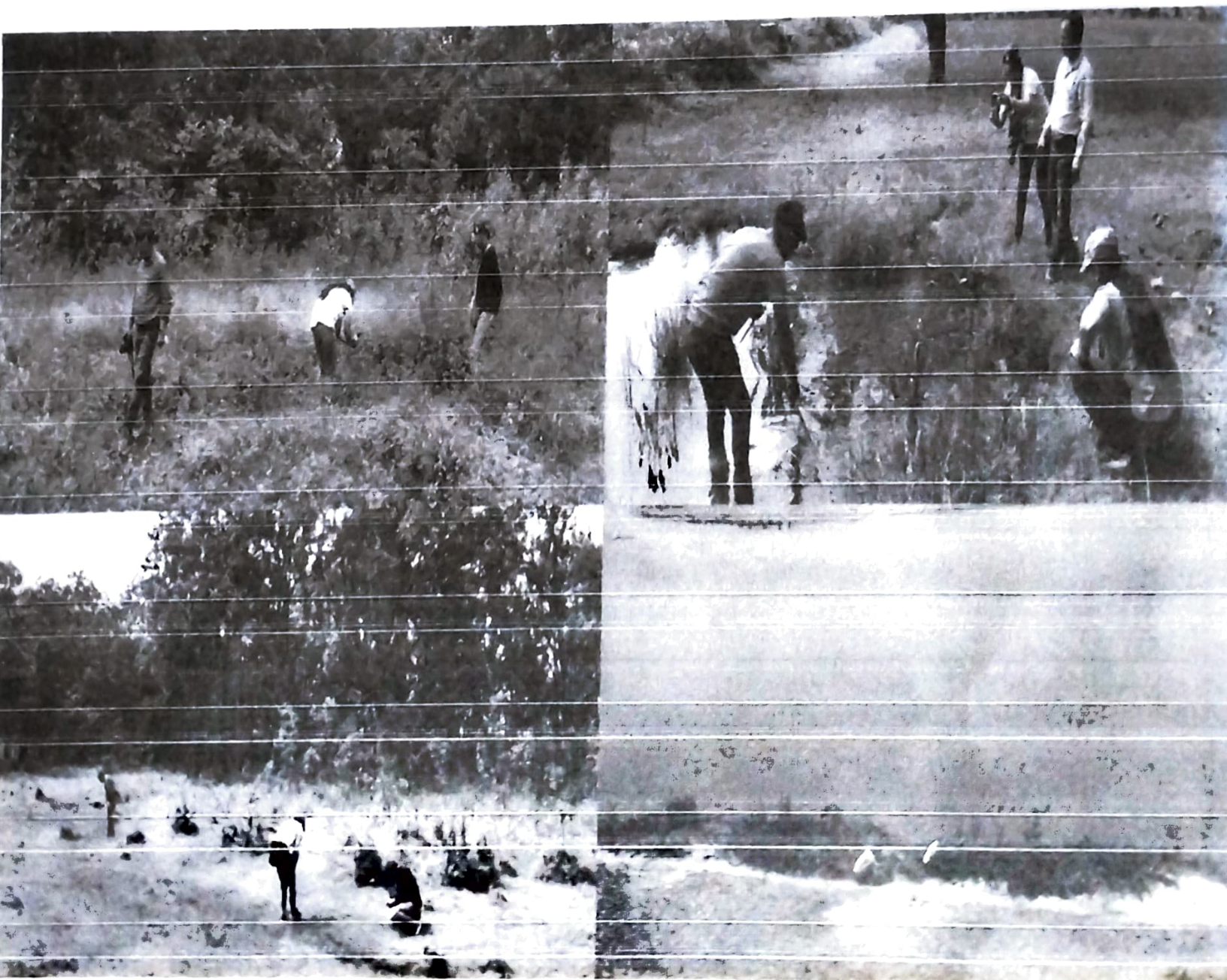
<i>Coldenia procumbens</i>	Gondhrilata	Boraginaceae	Leaves	Fresh leaves are pulped-up and applied as a poultice to areas of rheumatic swelling.
<i>Rotula aquatica</i>	Jamchi	Boraginaceae	Root tuber	Root tuber is used to treat blood disorders.
<i>Merremia tridentata</i>	Budhi nai	Convolvulaceae	Root	Root decoction is used to cure diabetes.
<i>Lindernia antipoda</i>	Shavel saag	Linderniaceae	Leaves	Decoction of leaves . is used as dewormer.
<i>Limnophila indica</i>	Keralata	Plantaginaceae	Leaves	Infusion of leaves is used in the treatment of diarrhoea.
<i>Limnophila repens</i>	Amra	Plantaginaceae	Leaves	Consumed leafy vegetable as food.
<i>Utricularia aurea</i>	Bhaturidala	Lentibulariaceae	Apical part	Apical part is used to treat respiratory problems.
<i>Utricularia striatula</i>	Nil	Lentibulariaceae	Apical part	Apical part is used to treat respiratory problems.
<i>Hygrophila auriculata</i>	Koilikhia	Acanthaceae	Leaves	Leaves are burnt and the smoke is used to treat corneal ulcers.
<i>Justicia gendarussa</i>	Nila nirgundi	Acanthaceae	Leaves	Leaves are used to treat gonorrhoea.
<i>Thunbergia fragrans</i>	Chakrakedar	Acanthaceae	Leaves	Leaves are used as poultice in skin diseases.
<i>Strobilanthes auriculatus</i>	Painya	Acanthaceae	Leaves	Leaves paste is used in skin infection.
<i>Stachytarpheta cayennensis</i>	Sapura	Verbenaceae	Leaves	Tea of the leaves help to control diabetes.
<i>Lippia javanica</i>	Nagdabana	Verbenaceae	Leaves	Consumed leafy vegetable as food.
<i>Persicaria glabra</i>	Sukuripota	Polygonaceae	Leaves	Consumed leafy vegetable as food.
<i>Persicaria stagnina</i>	Garaara	Polygonaceae	Leaves	Leaves are used in indigestion,
<i>Polygonum plebeium</i>	Chanti saga	Polygonaceae	Seed	Crushed seeds are cooked and eaten as remedy for bowel complaints.
<i>Homonoia riparia</i>	Pani begunia	Euphorbiaceae	Root	Root decoction used in the treatment of piles.
<i>Mallotus nudiflorus</i>	Pani gambhari	Euphorbiaceae	Root	Root decoction is used to relieve gout.

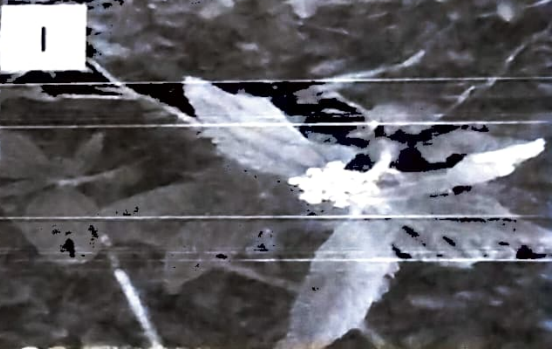
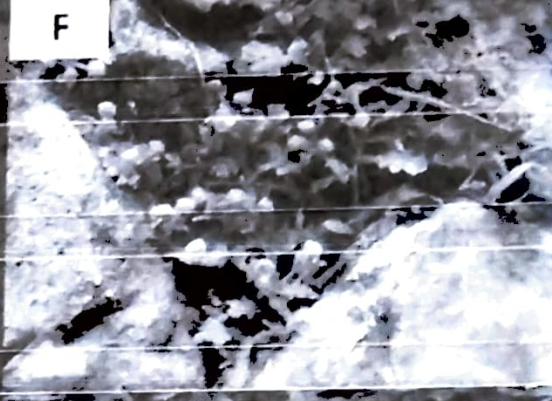
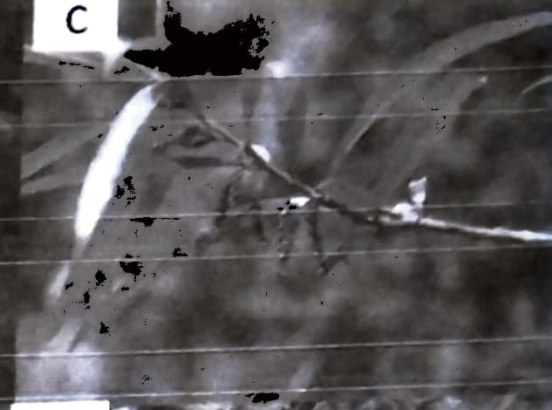
<i>Ficus hispida</i>	Baidimiri	Moraceae	Root	Consuming root powder with buttermilk to improve digestion.
<i>Ficus nervosa</i>	Pakhad dimri	Moraceae	Fruit	Fruit is used to prevent indigestion.
<i>Streblus asper</i>	Sahada	Moraceae	Bark	Bark is used for constipation.
<i>Ottelia alismoides</i>	Pani kundri	Hydrocharitaceae	Leaves	Leaves are applied to the arms and legs as poultice against fever.
<i>Monochoria hastata</i>	Dumdum	Pontederiaceae	Root	Rhizomes are powdered with charcoal and used as scurf.

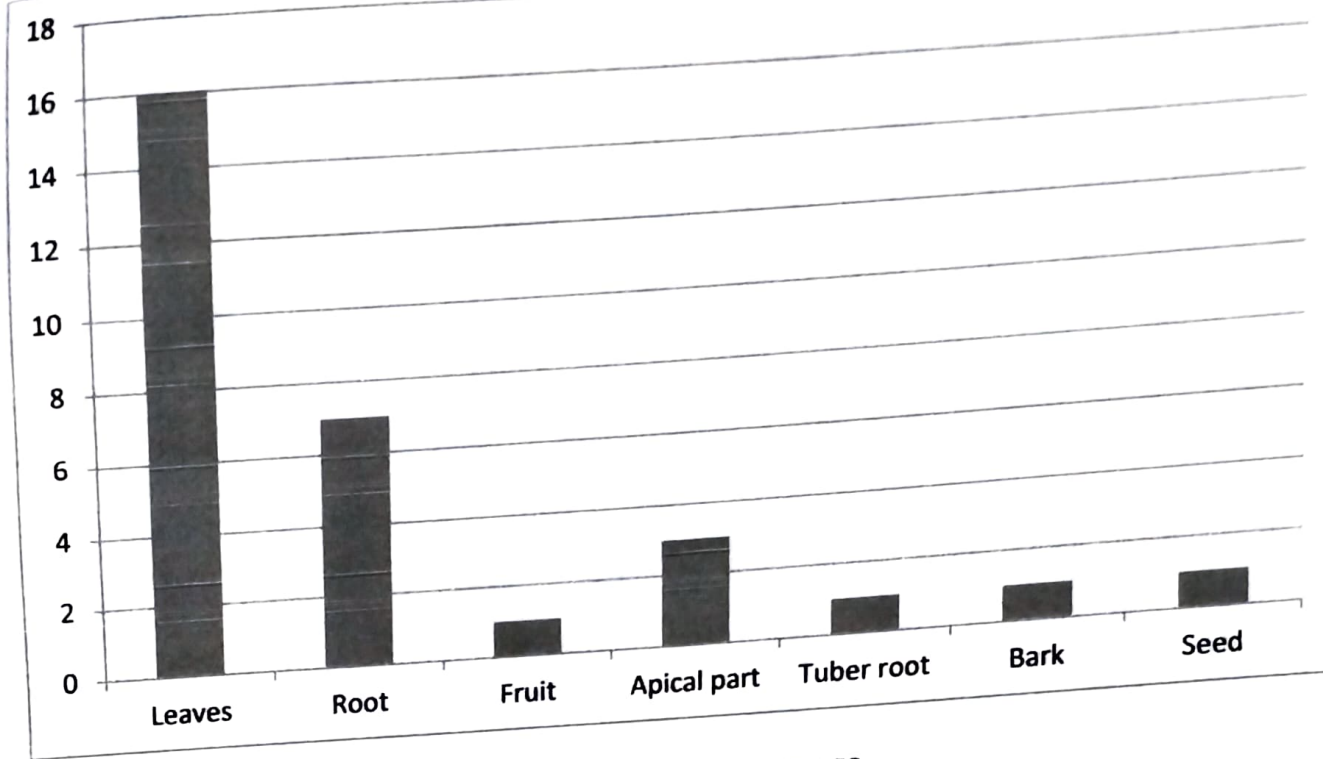
## Results and discussion

The result enumerated 30 medicinally important unexplored plant species that grows near water bodies. Out of 30 plant species, it was found that the table contained 17 families. Acanthaceae family has majority of four plant species. Polygonaceae and Moraceae family has three plant species. Menyanthaceae, Boraginaceae, Plantaginaceae, Lentibulariaceae, Verbenaceae and Euphorbiaceae has two plant species. And rest others belongs to the family of Nymphaeaceae, Droseraceae, Asteraceae, Gentianaceae, Convolvulaceae, Lindemiaceae, Hydrocharitaceae and Pontederiaceae. All these plant species were identified for having various medicinal uses from their parts (leaves, root, fruit, bark and apical parts). Three plant species i.e., *Limnophila repens*, *Lippia javanica* and *Persicaria glabra* are used for consumption as leafy vegetable. Root decoction of *Nymphaea nouchali* is used to cure food poisoning. Apical parts of *Utricularia aurea*, *Utricularia striatula* and *Drosera indica* is good for respiratory problems. Leaves of *Grangea maderaspatana* are used to heal from contusions. Leaf juice of *Nymphoides hydrophylla* is used as an antidote against scorpion sting and snake bite. Root decoction of *Merremia tridentate* and leaves of *Stachytarpheta cayennensis* as tea is used to cure and control diabetes. Root tuber of *Ratula aquatica* is used to blood disorders. Jain et al. (2007) reported 42 species of aquatic/semiaquatic plants which are used as herbal remedies by the ethnic communities. They have explained about 18 families and 25 genera. Das et al. (2016) reported 26 aquatic plants having medicinal uses. They explained about free-floating hydrophytes, rooted hydrophytes with floating leaves, submerged floating hydrophytes, rooted submerged hydrophytes and wetland hydrophytes. Sen and Behera (2018) reported 32 aquatic plants having ethno-medicinal uses. They explained the medicinal values of *Ludwigia octovalvis*, *Commelina benghalensis*, *Drosera burmannii*, *Marselia quadrifolia*, *Nelumbo nucifera*. Misra, Panda and Sahu (2018) reported 25 wetland plant species which are consumed as food as leafy vegetable. They have explained about *Alternanthera sessilis*, *Aponogeton undulates*, *Hydrolea zeylanica*, *Ginus oppositifolius*, *Polugonum barbatum*. Bhagyaleena and Gopalan (2018) reported 38 aquatic plants having medicinal values. They have explained about *Aeschenomene aspera*,

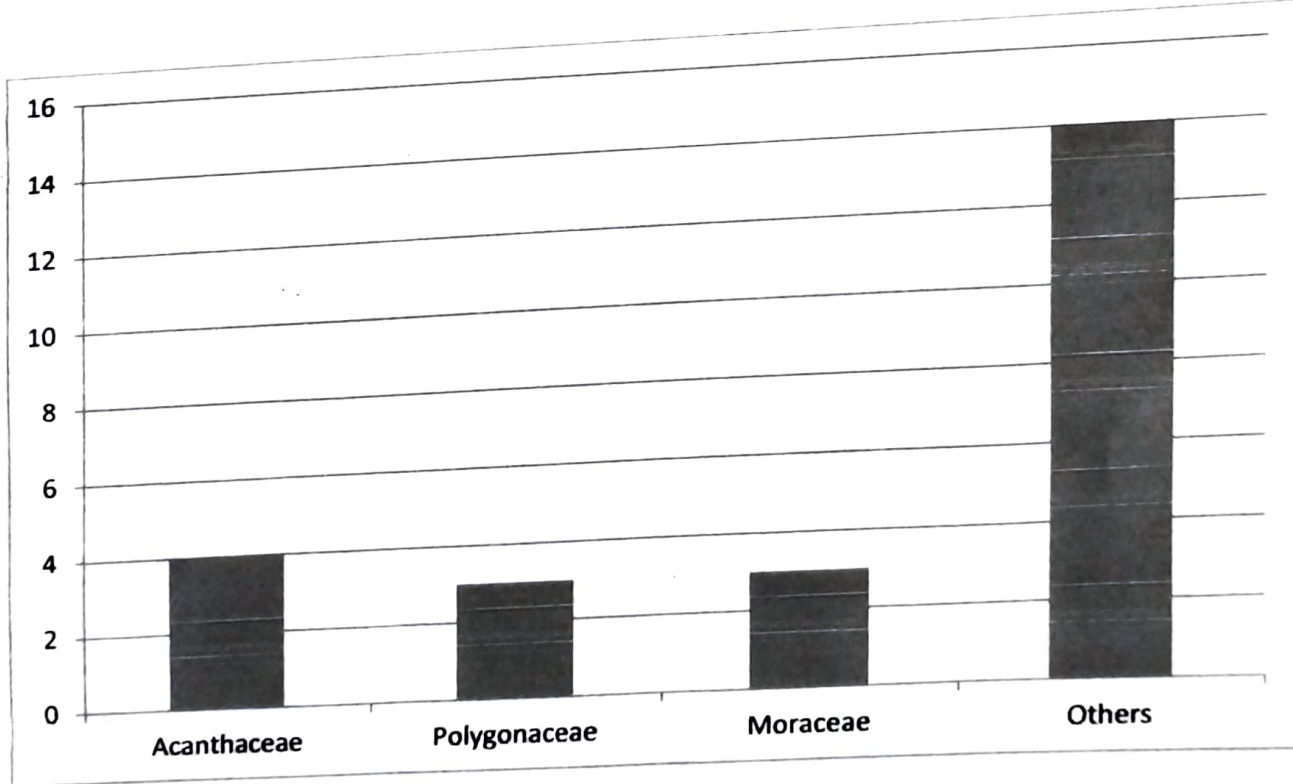
*Contella asiatica*, *Eclipta prostrate*, *Hygroryza aristata*. Patel (2018) reported 18 aquatic and wetland medicinal plants. He explained about the ethnomedicinal uses of *Bacopa monnieri*, *Typha domingensis*, *Ricinus communis*, *Ipomaea fistulosa*, *Cynodon dactylon*. Ali et al. (2019) reported 42 aquatic plants having ethno-medicinal uses. They explained about *Alisma trivale*, *Trapa natans*, *Phyla modiflora*, *Lemna minor*, *Mentha spicata*. Manokari (2019) reported 33 aquatic and semi aquatic plants having medicinal uses. He explained about *Acorus calamus*, *Ammannia baccifera*, *Biophytum sensitivum*, *Canna indica*, *Kaemferia rotunda*. Aasim et al. (2019) reported 27 aquatic and semi aquatic plants having multiple medicinal uses. They explained about *Alternanthera philoxeroides*, *Centipeda minima*, *Coix lacryma*, *Hedychium coronarium*, *Pistia stratiotes*. Jha (2020) reported 18 aquatic plants with their ethno-medicinal uses. He explained about *Monochoria vaginalis*, *Scirpus grosus*, *Jussiaea repens*, *Vallisneria spiralis*.







Graph 1: Parts of plant that are used for medicine purpose

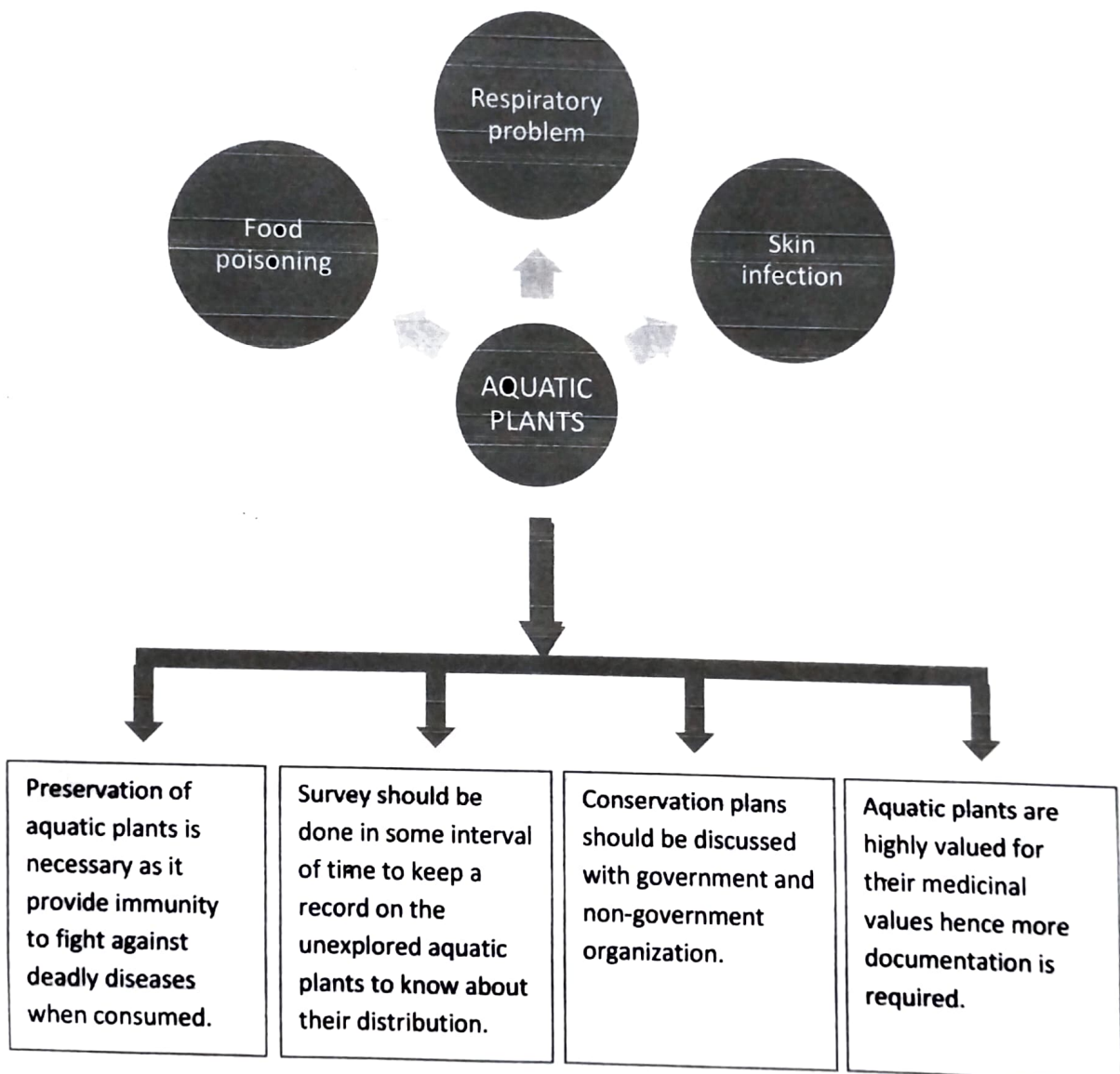


Graph 2: Family of Aquatic plants which were found more in numbers

## Conclusion

Aquatic bioresources are not explored well in the past and presently water bodies are vanishing rapidly due to various reasons hence it is important to document such vital and valuable knowledge about the plant species for the future generation as this knowledge found to be unexplored. Therefore measures for conservation of unexplored medicinally important aquatic plants should be taken up on priority by different government and non-government organizations for the benefit of biological life.

## Illustration





## Reference

- Aasim M, Khawar KM, Ahmed SI and Karatas M. (2019). Multiple Uses of Some Important Aquatic and Semiaquatic Medicinal Plants. *Plant and Human Health*. 2: 541-571.
- Ali M, Iqbal IM, Shabbir A, Khan ZUD, Khan MTA (2019). Ethnomedicinal studies on aquatic plants of tehsil Shakargarh, Punjab, Pakistan. *Journal of Medicinal Plants studies*.
- Bhagyaleena P and Gopalan R. (2012). Aquatic Medicinal Plants in Ponds of Palakkad, Kerala, India. *Journal of Pharmacy and Biological Sciences*.
- Das D, Mondal S and Mandal S (2016). Studies on some Economically Important Aquatic Plants of Katwa Subdivision of Burdwan District, West Bengal, India. *International Journal of Current Microbiology and Applied Sciences*.
- Jain A, Roshnibala S, Kanjilal PB, Singh RS and Singh HB (2007). Aquatic/semiaquatic plants used in herbal remedies in the wetlands of Manipur, Northeastern India, *Indian Journal of Traditional Knowledge*, 2007.
- Manokari M and Subramanian MPS (2019). Herbal Remedies from Aquatic and Semi-aquatic Plants Conserved at Siddha Medicinal Plants Garden (CCRS), Mettur Dam, Salem District, Tamil Nadu. *Journal of Research in Siddha Medicine*.
- Misra MK, Panda A and Sahu D (2012). Survey of useful wetland plants South Odisha, India. *Indian Journal of Traditional Knowledge*.
- Patel MM (2018). Some aquatic and wetland medicinal plants in Aravalli district of Gujarat. *Journal of Medicinal Plants Studies*.
- Sen SK and Behera LM (2018). Ethnomedicinal uses of some aquatic plants in Bargarh district of Western Odisha (India). *World Journal of Pharmaceutical and medical research*.