

# **Studies on distribution and morphotaxonomy of *Ludwigia adscendens* L. growing in Jharkhand, India**

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## **ABSTRACT**

*Ludwigia adscendens* is free floating perennial aquatic herb. The plant spreads free fast in the water surface as due to having prostrate or ascending stem carrying pink spongy roots at the nodes. The spongy roots are in cluster that provides buoyancy to the plants. A study on aquatic angiospermic plants in the state of Jharkhand from the year 1914 to 1919 has revealed that this species is spreading in rapid pace in almost all the water bodies of the state. However luxuriant growths have been observed in the nutrient rich water bodies. In the present paper the morpho taxonomy and spread of *Ludwigia adscendens* in the state of Jharkhand has been discussed.

**Key words:** *Ludwigia adscendens*, *Jharkhand*, Morpho taxonomy.

## **INTRODUCTION**

*Ludwigia adscendens* is a species of flowering plant in the evening primrose family. This family include about 650 species of herbs, shrubs, and trees in 17 genera. The family is widespread, occurring on every continent from boreal to tropical regions. *Ludwigia adscendens* is a common weed of rice paddies and ponds.

The genus *Ludwigia* Linnaeus, is a cosmopolitan and distributed 90 species and 13 infraspecific taxa that belongs to family Onagraceae and generally covers herbaceous perennial flowering plants also known as Willo-herb family, which comprise 832 species and 158 taxa throughout the world under 45 genera. In India the genus is represented by eight species. The species *Ludwigia adscendens* is a mesophytic herb, predominantly aquatic, and grows in wet places. Another importance of this species is that this is a herbaceous creeping weed of cultivated and marshy lands; while in aquatic conditions, it is usually a floating decumbent weed with nodal aerial-parenchyma. A comprehensive taxonomic description with colour photographs and distribution are illustrated for quick identification.

**Jharkhand** state of India is divided into five

Administrative Divisions namely *South Chhotanagpur*, *North Chhotanagpur*, *Kolhan*, *Palamu* and *Santhal Parganas*. All the five divisions include a total of 24 districts and the same are mentioned as under along with the name of their administrative divisions. All these districts have ample numbers of water bodies which harbours a variety of aquatic and semi aquatic plants. Presently, 24 districts of Jharkhand are grouped in to 5 divisions. These divisions are:

1. Palamu division - 3 Districts: Palamu, Garhwa, Latehar - Headquarters:
2. North Chotanagpur division - 7 Districts: Chatra, Hazaribagh, Koderma, Giridih, Ramgarh, Bokaro, Dhanbad - Headquarters: Hazaribagh
3. South Chotanagpur division - 5 Districts: Lohardaga, , Simdega, Ranchi, Khunti - Headquarters: Ranchi
4. Kolhan division - 3 Districts: West Singhbhum, Saraikela Kharsawan, East Singhbhum - Headquarters: Chaibasa
5. Santhal Pargana division - 6 Districts: Jamtara, Deoghar, Dumka, Pakur, Godda, Sahebganj - Headquarters: Dumka

## Materials and Methods

Regular field surveys were conducted to observe the current status and spread of *Ludwigia adscendens* in all the 24 districts of Jharkhand from the year 2014 to 2019. For the morphological study of *Ludwigia adscendens* morphological observation was made, examined and data were recorded. The various qualitative characters considered were of root, stem, leaf, flower, capsule and seed.

**Common names:** Bengali: Keshardam, Mulcha, Muli, Hindi; Mochi, Pokal panlawang;

**English:** water-primrose, creeping water-primrose, floating primrose-willow, red ludwigia; India: keshandam; keshara; Japanese: mizukinbai; Nepal: Jadelo; Philippines: Sigangdagat

## Result and Discussion

### Distribution in Jharkhand

*Ludwigia adscendens* grows better around the ponds, dams or marshy areas it floats on water by means of white-cellular floats formed in whorls at the nodes of prostrate stem. The plant is villous with white hairs while grown on marshy areas. During the survey it was found in almost all districts.

In Ranchi the Ranchi lake, Kanke dam, Tiril pond, Pond near RIMS, Rukka Dam, Joda talab, etc are highly infested with this species. In Lohardaga the Victoria lake, Bucha talab, Bauli talab, Thakurain talab etc. Is covered by the same. Nandan Pahar Pond, Jamunia Bandh, Siwaria Bandh in Deoghar this species was very common. In Dumka Bakshi bandh, Pond, Gopikandhar pond, Ramulal pond Dudhani, Pokhra Chowk, Kutha Bandh, Karua park, Baskichak, Lal Pokhra this species was present in abundance. Its presence is seen in the rivers and ponds of Godda Mullers Tank, Ponds in Mehrama, Mandir Pond, Mordiha Pokhar Thakur Gnagti, Sundar Dam this species was observed. In the District of Sahibgang the ponds in Barhet, Pond behind Hemlal's house, Rani Dighi Ganwa boriyo, Sakrugadh, pond in front of St. Xavier School and the parts of Udhwa lake, Gumani Barage Barhet, Parts of River Ganges, Pond of Pheri Ghat Road *Ludwigia adscendens* was seen in abundance. In Pakur the Kura Para Pond, Ponds of

Tilbhitta, College road ponds, Raja para Pond, Durgapur Dam, Mohanpur pond, Kalibhasan Pokhar, Rani Dighi pond, Raddipur pond, Bostom talab, Ambedkar Nagar Pond etc. this species was observed. In Jamtara Sahana Fishries ponds and other ponds like Mandir Talab Sarkeldih, Chhath Talab, Bena Pokhar, Duladih talab, Bara talab Duladih, Sarkar Bandh, Rajabandh, Taal Pokhar there is a presence of *Ludwigia adscendens*. In Koderma Tilaiya dam and Charadih talab this is reported. In Medini Nagar *Ludwigia adscendens* has also been observed in Sonar Bandh and other ponds too like sandas talab, Kachaerwa dam, Irrigation Talab, Pokhaha, In Latehar this was reported from Chatnahi Lalmatia, Jharia, Ponds of Matasya bibhag, Banpur Malay Dam, etc.. In Garhwa this was reported from Sonpurwa pond, fishery ponds near bus stand this species was seen, In Dhnbad Bekar Bandh, Rani Talab, Sinidih Katras ponds, Topchanchi Dam, Parts of Maithon Dam, Ponds in Katras, Sinidih, Sijua Kapuria this was also reported. In Hazaribag the same was reported from Hazaribag lake, Kaharwa lake, Burhwa mahadeo pond, Pond beside Haji colony etc. Some of the water bodies in Ramgarh like Bhaura dam, Patratu Dam and In Bokaro the same was reported from Telo Nawadih, Garga dam, City Park Pond *Ludwigia adscendens* was observed. In Chatra this was reported from Giddar talab, Phansi talab Chhath talab, Jatrahibagh pond, Ganori Talab, Check dam at Hetu River etc.. In Giridih Pond in Rajendra Nagar, Gaddi Mohalla, Budhwa Talab Pachamba, Nawabandh Dumri, Mansarovar Pokhar Police line, Mangti Di Talab, Telia talab, Khandoli dam this species was reported. In Gumla Tiril Pond Basia, Masaria dam Gumla, Fishery Ponds, Nawadih Talab Ghaghra etc. In Simdega Kela ghagh, Plakot Talab, Datli Dam etc. this species was reported. East Singhbhum this was reported from Company talab, Musabani, Kasidih Ghatsila, Burudih Dam, Bhitia Bahragoda, Dimna lake, Jubilee park Sarovar, Chandil dam, Hudco lake, Chauka talab. In Saraikela this was reported from Kandra, Kukru Latemda etc. And in Khunti this was also reported from Kamta Dam, Palwal Dam etc. This was also seen in the ponds of West Singhbhum of Chaibasa Joda Talabs namely

Captain Talab and Ranitalab aswell , Dhobi Talab, Roro river, Mehul Sai, Madhukam Sai, Martin talab, Shiva talab,

### Morphotaxonomy

Aquatic or semi-aquatic, semi-erect or floating, well branched herbs with adventitious roots, 10-16 cm high; stems terete, glabrous or villous. Leaves oblong-elliptic 1.6-3cm, at base narrowly cuneate, margin, at apex rounded or broadly acute, subcoriaceous, glabrous, glossy above, often slightly glaucous below. Milky white with yellow base Flowers arise in upper leaf axils, 2.6-3 cm, 5-merous; pedicels. 2.15 cm long; Sepals 5, Stamens 10, 2-whorled, white; filaments of outer stamen opposite petals 2.25 mm long; filaments of inner stamens c. 2.88 mm long; anthers 0.7 – 1 mm long, yellowish or cream-coloured. V-shaped nectary, depressed, with adpressed white hairs, surrounding the base of each petaliferous stamen. Ovary terete, as narrow as pedicel, villous or glabrous, 5-loculed; ovules 2 per locule; style 4.5 mm long with hairs, white; stigma subglobose, 1.5 mm across, obscurely 5-partite, green or yellow. Long green capsules 1cm, thick-walled, , very late and irregularly dehiscent; cream to white seeds uniseriate in each locule of the capsule, ellipsoid to oblong-ellipsoid, with a distinct papillae and narrow linear raphe that often widen at one end; raphe. *Flowering and fruiting* occurs almost throughout the year but better grows on the surface of water.

### Conclusion

*Ludwigia adscendens* having enormous range of morphological characters, and vast range of growth in study area, but there are less studies in this field. The morphological characters of this species were carried out with the focus of diagnostic characters and attempt to document informations. It will be helpful in proper identification and equitable biological resources. It is concluded that owing to its spread potential it is important to, check its spread and control measures to be taken. Same time economic importance of the species concerned to be explored.

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**Morpho Taxonomy of *Ludwigia adscendens* L.**



**Spread of *Ludwigia adscendens* in a pond of Ranchi**



**Spread of *Ludwigia adscendens* in Kanke Dam**



**Spread of *Ludwigia adscendens* in Pond of Jamtara**



**Spread of *Ludwigia adscendens* in Pond of Dumka**