

Occurrence of Three Algal Species in the Silery Gaon, Kalimponghills. West Bengal, India

S. N. Sinha^{1*}, S. Majumder², S. Ghosh³ and N. Halder⁴

¹ Professor, Dept. of Botany, University of Kalyani, Kalyani 741235, West Bengal, India.

² Research Scholar, Dept. of Botany, University of Kalyani, Kalyani 741235, West Bengal, India

³ Research Scholar, Dept. of Botany, University of Kalyani, Kalyani 741235, West Bengal, India

⁴ Assistant professor, Department of Botany, Raja Pearymohan College, West Bengal, India.

*Corresponding authors e mail : sinhasn62@yahoo.co.in

ABSTRACT

This is the part of the taxonomic study of algal flora of Eastern Himalayan region of West Bengal. The present paper deals with three genera (*Hydrodictyon reticulatum*, *Pseudorhizoclonium africanum* and *Zygnema globosum*). All the species were first time isolated and reported from this hilly region mentioned above.

Key words: Algal flora, *Hydrodictyonreticulatum*, *Pseudorhizocloniumafricanum*, *Zygnemaglobosum*, Silerygaon, Kalimpong hills

INTRODUCTION

Hilly environments are characterized by altitudinal zonation of habitat types. They are home to a multitude of terrestrial green algae, who have to resist with abiotic conditions specific to high elevation, e.g., high UV irradiance, alternating desiccation, extreme diurnal variations in temperature, precipitation of rain and snow and chronic scarceness of nutrients. Although photosynthetic green algae are primary producers colonizing open areas and significant markers of climate change, their overall biodiversity in the Alps has been poorly studied so far, in particular in soil, where algae have been shown to be key components of microbial communities. Here, we investigated the occurrence of green algae.

MATERIALS AND METHODS

Samples were collected from the swampy area of Kalimpong hills, Sylerigaon (22.232°N, 88.036°E), Kalimpong district, West Bengal during March, 2019. All the collected samples were preserved according to standard method APHA, 1985 [1]. Algal samples were kept in 4 % formaldehyde solution (Mason, 1967). The samples were thoroughly washed to remove adhering soil particles and were preserved in 3% formalin solution in small glass container, numbered and labeled according to their habitat. Samples were brought to laboratory for analysis. One drop from each sample was taken with the help of micropipette on the slide and covered with cover slip and observed under the light microscope BH-2 Olympus, (Japan). The eyepiece was fitted with ocular micrometer. The specimens were identified with the help of available literature to the level of species by comparison with published information on taxonomy of taxonomic identification of algae [2-4].

RESULTS AND DISCUSSION

The taxonomic study for three algal species was conducted on the basis of their morphological features for identification up to species level. On the basis of their morphological characteristics the following three species of algae was characterized. The taxonomical characters are given below.

key to the genera

- 1a. Plant colonial and hexagonal forming net like structure-----1. *Hydrodictyon*
- b. Plant not so----- (2)
- 2a. Plant filamentous, greenish, cell wall thick and chloroplast reticulate --2. *Pseudorhizoclonium*
- b. Plant filamentous, greenish, cell wall thin and chloroplast star shaped----3. *Zygnema*

Genus: 1. *Hydrodictyon* Roth

Order: Chlorococcales

Family: Hydrodictyaceae

Genus: 1. *Hydrodictyon* Roth

1. *Hydrodictyonreticulatum* (L.)BoryinFilet à réseaux. Bot. Crypt. (Confervées.) 506, 1824& in Dict. Class. d'Hist. Nat.8:422, 1825;(Fig1;a,b)

Lagerh. in Öfvers. Kongl. Vetensk.-Akad.Förh. 40(2):71, 1883; Biswas, Rec. Bot. Surv. India 15 (5): 68, Pl. 3, fig. 29, 1949; Philipose, Chlorococcales 134, fig.48, 1967; Tiwari et al. in Phycol. 19: 80-82, figs.4, 1980;Kant& Gupta, Algal Fl. Ladakh 81, pl.19, fig.6, 1998.

Conferva reticulata L. 1753.

Description

Plant macroscopic and colonial,grass green and free floating;six cells of colony adjoined to each other at the end walls repeatedly forming hexagonal net like structure; net may vary in sizes; cells elongated, cylindrical, 35-38 µm long and 10-12 µm broad; cell wall smooth, two layered; chloroplast reticulate; pyrenoids many; each cell of the net can produces again a net asexually.

Habitat

Grows at high altitude (above 5000ft height)

Collection No

Date

20.03.06, 03.01.11

Ecological Notes

Grows at high altitude (above 5000ft height)

Indian distribution: Uttar Pradesh, Uttarakhand, Jammu and Kashmir, Himachal Pradesh, Punjab, New Delhi, Maharashtra, Tamil Nadu, Andhra Pradesh, Arunachal Pradesh, Jharkhand, odisha, West Bengal (Sunderban)

Genus: 2. *Pseudorhizoclonium* Boedek.

Order: Cladophorales

Family: Cladophoraceae

Genus:1.*Pseudorhizoclonium*Boedek.

2.*Pseudorhizoclonium africanum* (Kütz.)Boedeker in J.Phycol.52(6): 905-928,2016; (Fig2)

*Rhizocloniumhookeri*Kütz. in Species Plantarum 383,1849; Chadha and D.C. Pandey in Biblioth. Phycol. 66:170, 1984; Santra and U.C. Pal in Indian Biologist 20(2): 38, 1988; R.Khare and Suseela in Phytotaxonomy 4:21, 2004.

Basionym:*Rhizocloniumafricanum*Kütz.

Synonym:*Rhizocloniumhookeri*Kütz.

Description

Thallus filamentous, aquatic or terrestrial; filaments wiry tangled or show angled bend, crisp (brittle & fragile), rough in texture (coarse), branched; branches diameter almost same as main axis; rhizoid thick lamellate and wavy; basal cell shape variable; branches 378-390 µm long and 73-75 µm broad; cells cylindrical or irregularly flattened, 375-385 µm long and 72-74 µm broad; cell wall thick; chloroplast reticulate; nucleus more than 10; pyrenoids 3-4.

Habitat

Grows at high altitude (above 5000ft height)

Collection No

390, 702, 814, 816

Date

20.12.06, 18.04.10, 03.01.11

Ecological Notes

Indian distribution: Uttar Pradesh, Uttarakhand, Himachal Pradesh, West Bengal (Sunderban)

Genus: 2. *Zygnema* C. Agardh

Order: Conjugales

Family: Zygnemaceae

Genus: *Zygnema* C. Agardh

3. *Zygnema globosum* Czurda in Süßwasserfl. Mittel. 9: 109, fig.110, 1932; **(Fig3)**

Randhawa, Zygnemaceae 222. figs. 152, a-b, 1959.

Description

Plant filamentous, free floating, grass green; vegetative cells 33.0-38.0 µm long and 25.0-28.0 µm broad; chloroplasts two, compact as rounded bodies; conjugation scalariform; a single zygospore is formed in the conjugation tube; zygospore globose or ovoid, 35.0-45.0 µm in diameter; median spore wall yellow-blue, thick with pits; pits about 1.5-1.8 µm in diameter.

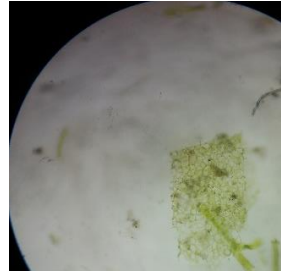


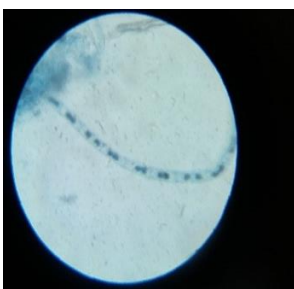
Habitat Grows at high altitude (above 5000ft height)

Collection No

Date

Ecological Note

Indian distribution: Uttar Pradesh, West Bengal.

			
<p>a.</p>	<p>b.</p>	<p>Fig2:<i>Pseudorhizoclonium africanum</i></p>	<p>Fig3: <i>Zygnema globosum</i></p>
<p>Fig1: <i>Hydrodictyon reticulatum</i></p>			

CONCLUSION

The occurrence of these three algal species in this high altitude of this hill is the first-time report.

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