

# Plant species found in and around Sidpahari black stone mining area and its impact on plants

Archana Kumari Jha and Dr. Prasanjit Mukherjee,

Plant Taxonomy and Ecological Research Laboratory, Department of Botany, KKM College, Pakur

Corresponding author: archana.sumanpriya@gmail.com

## ABSTRACT

A survey conducted in the year 2018-2020 in and around the Sidpahari Black Stone Mining area of Hiranpur Block, Pakur reveals the presence of 82 species belonging to 33 families and 71 genera. Out of 33 families 30 families belongs to dicotyledons, whereas only 3 families belongs to monocotyledons.

**Key words:** Plant species, Black stone mining, Sidpahari.

## INTRODUCTION

The district Pakur is situated in the north – eastern part of the Jharkhand state. It is bounded in the north by the Sahebganj district, in the east by West Bengal, in the south by Dumka district and part of West Bengal state and in the west by Dumka and Godda districts. The district is situated between 24° 49' 45" North and 24° 14' 00" North latitude and 87° 24' 00" East and 87°

55' 00" East longitude, having an area of 686.21 km<sup>2</sup>. Pakur is very famous for black stone mining industry. There are 246 mines and 255 crushers in operation where around one lakh labourers are engaged. (District Mining Survey, 2016).

Due to rapid urbanization the construction and real estate sector is at its boom. Which requires cement, concrete, sand and stone chips. The increasing demand of the stone chips for road as well building construction is putting pressure on black stone mining activities. Pakur being very famous for stone chips and bolders in the country as the quality of the black stone is of superior, the pressure to mine the black stone is much more. Hence in the district the mining is going on in a rapid pace. The same is putting pressure on the local environment. Removal of the top soil for mining, deforestation is a regular phenomena.

Sidpahari of Hiranpur block of Pakur district is one such mining area.

The floristic study is carried out in India by a number

of authors like Flora of Delhi, Flora of Presidency of Madra, Botany of Bihar and Orissa, Bengal Plants, Flora of Tamilnadu etc. Discussing about the regional floras of Jharkhand, some of the important floristic works by Ghosh 1971, Mukherjee and Ghosh, 2015, Paria and Chattopadhyay, Mukherjee and Dutta, 1918, Bressers, 1951, Kumar and Pandey 1998, Sinha and Pandey, 1991, Singh *et al.* 2000, Singh, 2003, Verma, 1981, Verma Jha and Pandey, 1989, Verma and Singh, 1990, Mukherjee and Kumar, 2020. However some of the work on impact of mining were done by Amishaebal, 2017, Anderswiderland and Bjornohlander, 2014, Bhargava, D.N. 2001, Church *et al* 2016, Kumar, A. and R. Pande, 1998, Mahalik G. Satapathy K.B., 2016, Nelson Julia & Schuchard R. 2009, Pawan kumar, 2013, Karmakar & Das, 2012 etc. The current paper is the pioneer in the floristic studies and impact of black stone mining in the area.

## Materials and Methods

The study area i.e. the Sidpahari Black stone mining area of Hiranpur block of District Pakur was visited at least twice or thrice in every season to trap the maximum plants in their flowering and fruiting season. The floral characters of the species concerned were noted in the field in field note book. The plants were collected, brought in the laboratory, dissected and identified with the help of local available flora.

The impact of black stone dust was physically observed in the field on leaf and stem surface. The

nuisance caused to generation of dust and due to black stone mining and its transport were also physically observed and studied.

### Result and Discussion

A total of 82 species belonging to 33 families 72 genera and 82 species. Out of 33 families 30 families belongs to dicotyledons, whereas only 3 families belongs to monocotyledons. As far genera is concerned out of 70 genera 61 belongs to dicotyledons and 9 genera belongs to monocot. Whereas out of 82 species 72 belongs to dicotyledons and 10 species belongs to monocotyledons. Fabaceae is the largest family with 16 species followed by Poaceae with 6 species, Moeraceae, Lamiaceae and Apocyanaceae with 5 species each, Anacardiaceae with 4 species, Asteraceae and Combretaceae with 3 species each. Whereas Asparagaceae, Meliaceae, Araceae, Euphorbeaceae, Myrtaceae, Liliaceae, Rhymaceae, Solanaceae and Rubiaceae with 2 species each. And Amaranthaceae, Simarubiaceae, Cornaceae, Acanthaceae, Malvaceae, Boraginaceae, Ebenaceae, Phyllanthaceae, Verbenaceae, Sapotaceae, Moringaceae, Cactaceae, Bignonoaceae, Sapindaceae and Dipterocarpaceae have 1 species each.

A list of total no of species with their family, local name, Habitat and their belonging to Dicotyledons or monocotyledons have been given in table -1. And Total No. of Families with No. of species is given in Table-2.

Out of 82 species, 50 species falls under tree category, 17 species under the categories of herb, 12 under shrubs and 1 species falls under climber.

It was observed in the field that the stone causes nuisance for the common people residing in the vicinity of the mining areas as well as the people crossing through highways. The stone dust gives the foggy impression. The dust gets accumulated on the leaves and stem surfaces of the plants chocking the physiological functions resulting into the stunted growth of the concerned plant. Even the

accumulation of the dust causes early death of the plants. The stone mines directly or indirectly causing the lung diseases to the people working in mines and residing in the vicinity of mines. The occurrence of silicosis is at its high.

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**Table-1. Total No. of plant species reported from in and around the Sidpahari Black Stone Mining area of Hiranpur Block, Pakur.**

1	<i>Acacia arabica</i>	Babul	Fabaceae	Tree	D
2	<i>Acacia catechu / Senegalia catechu</i>	Khair	Fabaceae	Tree	D
3	<i>Achyranthus aspara</i>	Chirchiri	Amaranthaceae	Herb	D
4	<i>Adina cordifolia</i>	Karam	Rubiaceae	Tree	D
5	<i>Aegle marmelos</i>	Bel	Rutaceae	Tree	D
6	<i>Agave americana</i>	Moraba	Asparagaceae	Shrub	M
7	<i>Ailanthus excelsa</i>	Ghorkaranj	Simaroubaceae	Tree	D
8	<i>Alangium salvifolium</i>	Dhela	Cornaceae	Small tree	D
9	<i>Albizia lebbek</i>	Indian Siris	Fabaceae	Tree	D
10	<i>Alstonia scholaris</i>	Saptaparni	Apocyanaceae	Tree	D
11	<i>Andrographis paniculata</i>	Kalmegh	Acanthaceae	Herb	D
12	<i>Anacardium occidentale</i>	Kaju	Anacardiaceae	Tree	D
13	<i>Anogeissus latifolia</i>	Dhautha	Combretaceae	Tree	D
14	<i>Arotocarpus heterophyllous</i>	Kathal	Moraceae	Tree	D
15	<i>Artocarpus lakoocha</i>	Barhar	Moraceae	Tree	D
16	<i>Asparagus racemosus</i>	Satawar	Asparagaceae	Climber	M
17	<i>Azadirachta indica</i>	Neem	Meliaceae	Tree	D
18	<i>Bambusa arundinacea</i>	Bara bans	Poaceae	Tree	M
19	<i>Bauhinia purpurea</i>	Koelar	Fabaceae	Tree	D
20	<i>Bauhinia variegata</i>	Kachnar	Fabaceae	Tree	D
21	<i>Bombax ceiba</i>	Semal	Malvaceae	Tree	D
22	<i>Borassus flabellifer</i>	Tar	Arecaceae	Tree	M
23	<i>Buchanania lanzan</i>	Piar	Anacardiaceae	Tree	D
24	<i>Butea monosperma</i>	Palas	Fabaceae	Tree	D
25	<i>Caldenia procumbens</i>	Tripungkee	Boraginaceae	Herb	D
26	<i>Calotropis gigantea</i>	Akaon	Apocyanaceae	Shrub	D
27	<i>Calotropis procera</i>	Akwan	Apocyanaceae	Shrub	D
28	<i>Cassia fistula</i>	Amaltas	Fabaceae	Tree	D
29	<i>Cassia tora/Senna tora</i>	Chakor	Fabaceae	Herb	D
30	<i>Chrysopogon aciculatus</i>	Chorkanta	Poaceae	Herb	M
31	<i>Clerodendron infortunatum</i>	Bhant	Lamiaceae	Shrub	D
32	<i>Chromolena odorata</i>	Saitin	Astraceae	Shrub	D

34	<i>Cynodon dactylon</i>	Doob	Poaceae	Herb	M
35	<i>Dalbergia latifolia</i>	Kala Shisham	Fabaceae	Tree	D
36	<i>Dalbergia sissoo</i>	Shisham	Fabaceae	Tree	D
37	<i>Dendrocalamus strictus</i>	Bans/Bamboo	Poaceae	Tree	M
38	<i>Deris pinnata</i>	Karanj	Fabaceae	Tree	D
39	<i>Diospyros melanoxylon</i>	Tend/Kend/Tiril	Ebenaceae	Tree	D
40	<i>Emblica officinalis</i>	Amla	Phyllanthaceae	Tree	D
41	<i>Eucalyptus procera</i>	Eucalyptus	Myrtaceae	Tree	D
42	<i>Euphorbia hirta</i>	Dudhi	Euphorbiaceae	Herb	D
43	<i>Ficus benghalensis</i>	Banyan	Moraceae	Tree	D
44	<i>Ficus hispida</i>	Hairy Fig	Moraceae	Tree	D
45	<i>Ficus religiosa</i>	Pipal	Moraceae	Tree	D
46	<i>Flemingia chappar</i>	Galphuli	Fabaceae	Shrub	D
47	<i>Gmelina arborea</i>	Gamhar	Lamiaceae	Tree	D
48	<i>Indigofera pulchra</i>	Jirhul	Fabaceae	Herb	D
49	<i>Lagerostroemia parviflora</i>	Sidha	Lythraceae	Tree	D
50	<i>Lantana camara</i>	Putus	Verbanaceae	Shrub	D
51	<i>Leucas aspera</i>	Thumba	Lamiaceae	Herb	D
52	<i>Madhuca latifolia</i>	Mahua	Sapotaceae	Tree	D
53	<i>Mangifera indica</i>	Mango	Anacardiaceae	Tree	D
54	<i>Melia azedarach</i>	Bakain	Meliaceae	Tree	D
55	<i>Mimosa pudica</i>	Lajwanti	Fabaceae	Herb	D
56	<i>Morinda tinctoria</i>	Aal	Rubiaceae	Tree	D
57	<i>Moringa oleifera</i>	Drumstick Tree	Moringaceae	Tree	D
58	<i>Nerium odorum</i>	Coti kanail	Apocyanaceae	Shrub	D
59	<i>Opuntia dilleni</i>	Nagphani	Cactaceae	Shrub	D
60	<i>Oroxylum indicum</i>	Sonapatta	Bignoniaceae	Tree	D
61	<i>Phoenix dactylifera</i>	Date Palm	Arecaceae	Tree	M
62	<i>Saccharum munja</i>	Munj	Poaceae	Herb	M
63	<i>Saccharum officinarum</i>	Kas	Poaceae	Herb	M
64	<i>Schleichera oleosa</i>	Kusum	Sapindaceae	Tree	D
65	<i>Semecarpus anacardium</i>	Bhelwa	Anacardiaceae	Tree	D
66	<i>Shorea robusta</i>	Sal	Dipterocarpaceae	Tree	D
67	<i>Solanum nigrum</i>	Makoi	Solanaceae	Herb	D
68	<i>Solanum Xanthocarpum</i>	Rengni	Solanaceae	Herb	D

70	<i>Syzygium Cumini</i>	Jamun	Myrtaceae	Tree	D
71	<i>Tamarindus indica</i>	Imli	Fabaceae	Tree	D
72	<i>Tectona grandis</i>	Sagwan/Teak	Lamiaceae	Tree	D
73	<i>Tephrosia purpurea</i>	Sarpuka	Fabaceae	Herb	D
74	<i>Theuvetia pruviana</i>	Kanail	Apocyanaceae	Tree	D
75	<i>Terminalia arjuna</i>	Arjun	Combretaceae	Tree	D
76	<i>Terminalia tomentosa</i>	Asan	Combretaceae	Tree	D
77	<i>Tridax procumbens</i>	Coat buttons	Asteraceae	Herb	D
78	<i>Vitex negundo</i>	Sindwar	Lamiaceae	Shrub	D
79	<i>Wendlandia exerta</i>	Tilia/Tiril	Rubiaceae	Tree	D
80	<i>Woodfordia fruticosa</i>	Dhawai	Lythraceae	Shrub	D
81	<i>Zizyphus jujuba</i>	Katber	Rhymaceae	Tree	D
82	<i>Zizyphus mauritiana</i>	Ber	Rhymaceae	Shrub	D

Table-2. Total No. of Families with No. of species

1.	Acanthaceae	Dicot	01
2.	Amaranthaceae	Dicot	01
3.	Anacardiaceae	Dicot	04
4.	Apocyanaceae	Dicot	05
5.	Arecaceae	Monocot	02
6.	Asparagaceae	Monocot	02
7.	Asteraceae	Dicot	02
8.	Bignoniaceae	Dicot	01
9.	Boraginaceae	Dicot	01
10.	Cactaceae	Dicot	01
11.	Combretaceae	Dicot	03
12.	Cornaceae	Dicot	01
13.	Dipterocarpaceae	Dicot	01
14.	Ebenaceae	Dicot	01
15.	Euphorbiaceae	Dicot	02
16.	Fabaceae	Dicot	15
17.	Lamiaceae	Dicot	05
18.	Lythraceae	Dicot	02
19.	Malvaceae	Dicot	01
20.	Meliaceae	Dicot	03

21.	Moraceae	Dicot	05
22.	Moringaceae	Dicot	01
23.	Myrtaceae	Dicot	02
24.	Phyllanthaceae	Dicot	01
25.	Poaceae	Monocot	06
26.	Rhymaceae	Dicot	02
27.	Rubiaceae	Dicot	03
28.	Rutaceae	Dicot	01
29.	Sapindaceae	Dicot	01
30.	Sapotaceae	Dicot	01
31.	Simaroubaceae	Dicot	01
32.	Solanaceae	Dicot	02
33.	Verbanaceae	Dicot	01

**PLATE -1SHOWING PIC OF SIDPAHARI BLACK STONE MINING AREA**



**Removal of Top Soil, for mining at Sidpahari**



**Black Stone Mines at Sidpahari**



**An abundant black stone mines at Sidpahari, turned into water reservoir**