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DEPLETION STATUS OF BIODIVERSITY OF CHITRAKOOT IN LAST TWO DECADES

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ABSTRACT: Chitrakoot is a prehistorical and mythological place lies between 800 51" - 800 52" longitude and 250 10" - 250 12" latitude on the border of Madhya Pradesh and Uttar Pradesh in Satna and Chitrakoot district respectively. In the study authors were reported the 343 plant species belongs to 78 families in 1990 and 263 plant species belongs to 78 families in 2015. Overall 80 plant species were lost in 25 years. In the last two decades 23.32% biodiversity were lost, which includes so many agricultural races. In this Scenario 20 plant species were critical endangered, 14 species endangered and 18 species extinct in Chitrakoot region

KEYWORDS: Biodiversity, Depletion, Species, Endangered, and Extinct.

INTRODUCTION:-

Chitrakoot, a well-known place for the natural beauty the heaven of love lorn "Yaksha" of Kalidas and above all is a famous place of immense religious importance, where lord "Rama" along with Sita and Laxman lived during exile. Chitrakoot is a prehistorical and mythological place lies between 80° 51" – 80° 52" longitude and 25° 10"- 25° 12" latitude on the border of Madhya Pradesh and Uttar Pradesh in Satna and Chitrakoot district respectively. The forest areas are mainly concentrated towards Madhya Pradesh comprising of about 3 lakh acres of land. Topographically the area is undulating and hilly varying from 500 ft to 2354 ft in Gidhola block of Satna range. Geologically the area consists of Vindhyan sediment and Bundelkhand granite and Gneisses. The soil in the area is mainly yellowish, red and blackish with varying colours comprising of sandy loam/ gravel and sandy β type of varying depth. The climate in general is hot with distinctly four seasons.

Early agriculturists selected crop plants from wild species on the basis of reproductive potential, adaptation to climatic vagaries and the traits associated with production. During domestication, a small number of gene combinations accumulated in crop species resulting in narrow genetic diversity. The search for genetic diversity in economic plants is a constant goal for the breeders. This diversity can be broadened by the utilization of wild relatives of crop plants (WRCPs). Adaptation to biotic and abiotic stresses has made the local landraces and wild relatives extremely useful in various breeding programmes.

Plant genetic resources (PGR), one of the crucial components of agro-biodiversity, are extremely valuable for present and future generations of human kind. The genes for various traits stored in the wild gene pool have been extensively used in improvement of many crops. Interestingly, in some crops they are the only available genetic resources (Arora and Pandey, 1996). The augmented facts necessitate urgent measures for collection and conservation of this diversity (Larest and Jackson, 1996).

Indian region is a major centre of domestication and diversity of crop plants (Zeven and de Wet, 1982; Arora, 1991). About 33 per cent of the cultivated plant species have their, origin in this region (Damania, 2002). This, being one of the twelve mega- centres of biodiversity, has more than 47,000 plant species including lower plants (bacteria, algae, fungi, bryophytes, pteridophytes, gymnosperms, etc. (Nayar, 1997). The vascular plants, a dominant component of vegetation, represent over 17,000 species of higher plants, i.e. angiosperms. These constitute about 7 per cent of the total flowering species of world. Out of 511 families, 315 are represented in this region (Brummit, 1992). The Indian gene centre ranks first in the eastern Hemisphere and forth in Asia having remarkably rich plant diversity (Zeven de wet, 1982; Groqrnbridge, 1992).

The Indian gene centre harbours about 166 species of native cultivated plants. The crops with primary, secondary and regional centres of diversity represent a part of native and introduced species which account for over 480 species (Nayar et. al., 2003). Diverse agro-climate and agricultural practices have led to rich diversity of crop species in the form of landraces and cultivars. The floristic diversity in wild relatives of cultivated, weedy types and related taxa constitutes a useful gene pool. Endemism and intra- specific variation in Indian species are unparalleled to those found in any

other part of the world (Seeni and Sabu, 1997). The three major phyto-geographical areas having endemic and floristic diversity are: the Himalaya (3,471 species), the Andman and Nicobar Islands (239 species), and the peninsular India (2,015 species). Chitrakoot is having rich biodiversity (343 species) which is 17 % of total peninsular floristic diversity.

OBSERVATION:-

Chitrakoot with its forested hills is not well explored botanically few workers have worked on the flora of Chitrakoot district covering part of Chitrakoot Uttar Pradesh. The area towards Madhya Pradesh has only been explored by a few workers (Agrawal, 1986; Bhalla et. al., 1992, Billore and Singh, 2002) in the form of stray papers. The present attempt of study on the erosion of agro biodiversity of Chitrakoot region provide a materials for the publication of detailed work on conservation of floristic, medicinal and agro biodiversity of the region.

The floral diversity of Chitrakoot is very rich because 343 species belongs to the 78 families which is the 24% of the total no. of families (315) reported from India, and 15% of total no. of families (511) reported from world. In the table 1, 343 plant species were reported in 1990 which belongs to 78 families, in this maximum 6.70% species belongs to leguminaceae family and 0.29% species were found in about 10 families.

After the 25 years (2015), 263 species were found which belongs to 78 families. The maximum and minimum percentage of species was recorded in Leguminaceae and Annonaceae respectively. In the last 25 years 80 species were eroded which is the 23.32% of total available species (Table 2). The present status of the species is presented in table 4, critically endangered species 20, (7.60%), endangered 14 (5.32%) and 18 (6.84%) species were extinct.

Table 1 Available plant species belongs to families (1990)

S. No.	Name of families	No .of species	Percentage
1	Acanthaceae	01	0.29%
2	Adiantaceae	01	0.29%
3	Amaranthaceae	01	0.29%
4	Anacardiaceae	04	1.16%
5	Annonaceae	01	0.29%
6	Apiaceae	06	1.74%
7	Apocynaceae	05	1.45%
8	Agaveaceae	01	0.29%
9	Araceae	03	0.87%
10	Archidaceae	01	0.29%
11	Arecaceae	05	1.16%
12	Asclepiadaceae	02	0.58%
13	Asparaceae	15	4.37%
14	Beauv.	01	0.29%
15	Bignoniaceae	02	0.58%
16	Bombacaceae	02	0.58%
17	Boragianaceae	03	0.29%
18	Borseraceae	01	0.29%
19	Brassicaceae	04	1.16%
20	Cactaceae	01	0.29%
21	Cannaceae	01	0.29%
22	Capparaceae	05	1.45%
23	Casuarinaceae	01	0.29%
24	Celastraceae	02	0.58%
25	Ceratopsyllaceae	01	0.29%
26	Ceasalpiniaceae	10	2.91%
27	Chenopodiaceae	03	0.87%
28	Combritaceae	05	1.45%
29	Cucurbetaceae	06	1.74%
30	Convolvulaceae	06	1.74%
31	Euphorbiaceae	18	5.24%

32	Fabaceae	23	6.70%
33	Ficoidaceae	01	0.29%
34	Gentineaceae	01	0.29%
35	Hydrocharitaceae	03	0.87%
36	Lamiaceae	10	2.91%
37	Lamnaceae	01	0.29%
38	Liliaceae	06	0.87%
39	Linaceae	01	0.29%
40	Lythrceae	03	0.87%
41	Malvaceae	09	2.62%
42	Meliaceae	02	0.58%
43	Menispermaceae	03	0.58%
44	Mimosaceae	02	0.58%
45	Mynosaceae	08	2.33%
46	Moraceae	03	0.87%
47	Morsliaceae	01	0.29%
48	Musaceae	01	0.29%
49	Myrtaceae	01	0.29%
50	Nelumbonaceae	01	0.29%
51	Nyclaginaceae	04	1.16%
52	Nymohaceae	01	0.29%
53	Oliaceae	03	0.87%
54	Orbonchaceae	01	0.29%
55	Pandanaceae	01	0.29%
56	Papaveraceae	01	0.29%
57	Pedoliaceae	02	o.58%
58	Periplocaceae	01	0.29%
59	Poaceae	22	6.41%
60	Pyphoceae	01	0.29%
61	Rhamnaceae	03	0.87%
62	Rubiaceae	08	2.33%
63	Rutaceae	04	0.58%
64	Samidaceae	01	0.29%
65	Santalaceae	01	0.29%
66	Sapotaceae	01	0.29%
67	Schizacaceae	01	0.29%
68	Scrophulariaceae	06	1.745
69	Simaronbaceae	01	0.29%
70	Solanaceae	06	1.74%
71	Stearculianceae	02	0.58%
72	Stercoliaceae	02	0.58%
73	Tiliaceae	06	1.74%
74	Trapaceae	01	0.29%
75	Ulmaceae	01	0.29%
76	Verbenaceae	10	2.045
77	vitaceae	04	1.16%
78	Zingiberaceae	06	1.45%
Total		**343**	

Table 2 Available plant species belongs to families (2015)

S. No.	Name of families	No .of Family	% of Plants Available
1	Acanthaceae	1	0.38%
2	Adiantaceae	1	0.38%
3	Agaveaceae	1	0.38%
4	Amaranthaceae	1	0.38%
5	Ampelidaceae	3	1.14%
6	Anacordiaceae	4	1.49%
7	Annonaceae	1	0.38%
8	Apiceae	2	0.76%
9	Apocynaceae	7	2.66%
10	Araceae	4	1.52%
11	Arecaceae	4	1.49%
12	Asclepiadaceae	5	1.90%
13	Asteraceae	1	0.38%
14	Bignoniaceae	5	1.90%
15	Bixaceae	2	0.76%
16	Bombaceae	1	0.38%
17	Boraginaceae	3	1.14%
18	Buseraceae	3	1.14%
19	Cactaceae	1	0.38%
20	Caesalpiniaceae	5	1.90%
21	Capparaceae	3	1.14%
22	Celastraceae	2	0.76%
23	Combritaceae	9	3.42%
24	Compositeae	2	0.76%
25	Convolvulaceae	2	0.76%
26	Cornaceae	1	0.38%
27	Costaceae	2	0.76%
28	Crassulaceae	1	0.38%
29	Cucurbitaceae	1	0.38%
30	Dilleniaceae	3	1.14%
31	Dioscoreoceae	3	1.14%
32	Dipterocarpaceae	1	0.38%
33	Ebenaceae	1	0.38%
34	Ehrctiaceae	1	0.38%
35	Euphorbiaceae	8	3.04%
36	Fabaceae	8	3.04%
37	Gentianaceae	1	0.38%
38	Hypoxidaceae	1	0.38%
39	Labiateae	3	1.14%
40	Laouraceae	2	0.76%
41	Leguminaceae	24	9.12%
42	Liliaceae	7	2.66%
43	Lythraceae	2	0.76%
44	Magnoliaceae	1	0.38%
45	Malvaceae	3	1.14%
46	Menispermaceae	3	1.14%
47	Meliaceae	5	1.90%
48	Mimasaceae	4	1.49%
49	Mimosaceae	3	1.14%

50	Moraceae	4	1.49%
51	Moringaceae	1	0.38%
52	Myrsinaceae	1	0.38%
53	Myrtaceae	4	1.49%
54	Nyctagenaceae	2	0.76%
55	Oleaceae	2	0.76%
56	Orchidaceae	3	1.14%
57	Oxalidaceae	1	0.38%
58	Palmeae	1	0.38%
59	Papaveraceae	2	0.76%
60	Papilionaceae	3	1.14%
61	Pedaliaceae	1	0.385
62	Plumbaginaceae	2	0.76%
63	Poaceae	19	7.22%
64	Rhamnaceae	5	1.90%
65	Rubiaceae	17	6.46%
66	Rutaceae	3	1.14%
67	Samydaceae	2	0.76%
68	Sapindaceae	1	0.38%
69	Sapotaceae	1	0.38%
70	Saxifigaceae	1	0.38%
71	Simarubaceae	1	0.38%
72	Solanaceae	3	1.14%
73	Steruliaceae	3	1.14%
74	Tilliaceae	2	0.76%
75	Ulmaceae	1	0.38%
76	Verbinaceae	4	1.49%
77	Zingiberaceae	8	3.04%
78	Zygophyllaceae	3	1.14%
Total		**263**	

Table 3 Showing plants type available in field

S. No.	Plant types	No. of species
1	Trees	104
2	Herbs and shrubs	60
3	Climbers	22
4	Epiphytes	04
5	Grasses	21
	Total	**211**

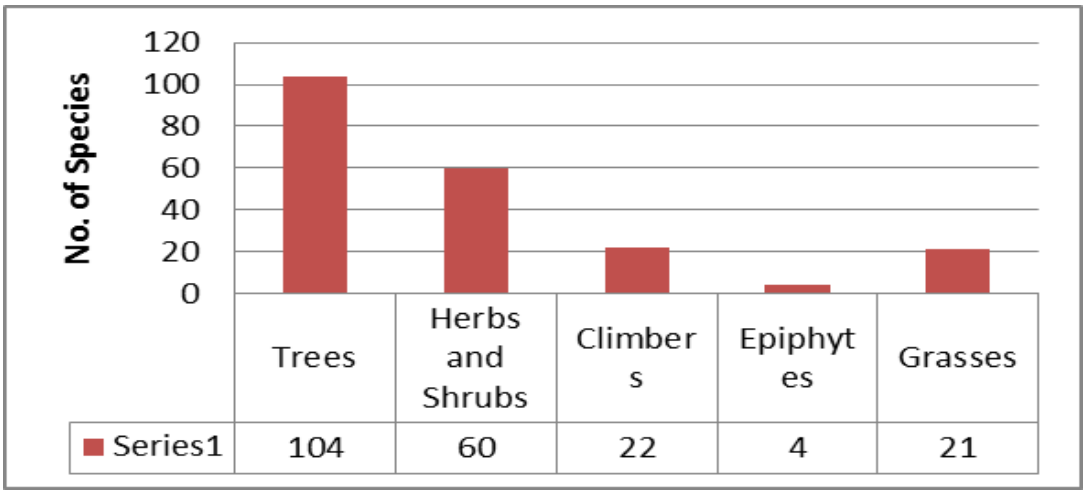

Figure 1. Showing plants type available in field

Table 4. Showing the plant species existence.

S. No.	Description	No. of species
1	Critically endangered	20
2	Endangered	14
3	Extinct	18
	Total	**52**

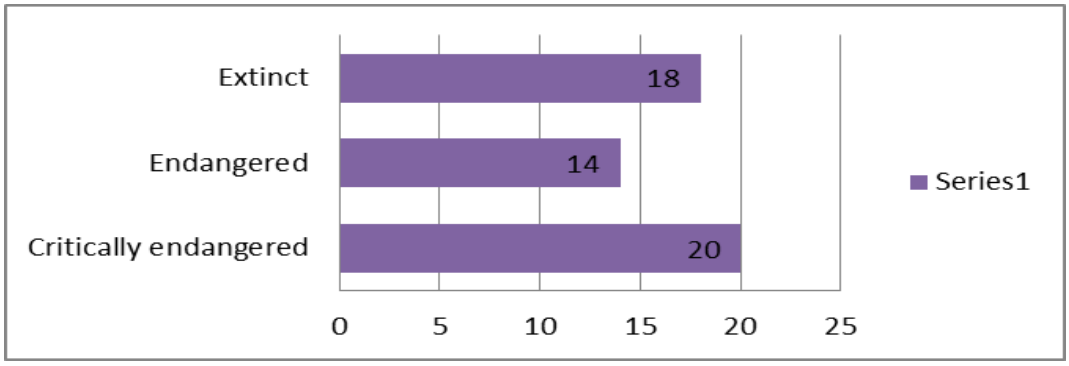

Figure 2. Showing the plant species existence

CONCLUSION:-

Planning of the study on erosion of agro biodiversity conducted with a view to provide basic information about the agro biodiversity of the region. It is hoped that it will be useful to the students, teachers, researchers and planners who is working on the conservation of agro biodiversity of Chitrakoot region.

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