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A catalogue of exotic plants that are in use by locals

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ABSTRACT: Based on a combination of literature reviews and interviews with locals, this research synthesizes the ways in which an exotic plant is used by the inhabitants of the Sambalpur area in the Indian state of Odisha. Fifty different species of herbs were found in the research region, representing 43 different genera and 26 different families. Ten species came from the Asteraceae family (20%), six from the Amaranthaceae (12%), four from the Poaceae (8%), three from the Onagraceae (6%), two from the Capparaceae (4%), the Euphorbiaceae (4%), theLamiaceae (4%), the Malvaceae (4%) and the Portulacaceae (4%) and one from the remaining 17 families. About 82% were annuals, while the rest were perinnials. Thirty-three (69%) of the 50 species are indigenous to the Tropics, while two (5% each) are from the Americas and Europe. This article also discusses the many ways in which locals have been known to put exotic herbs to use. To aid in the preservation of indigenous flora and fauna, this research gives a complete and up-to-date inventory of the plant species found in Sambalpur district.

KEYWORDS: Nativity,Invasivespecies,biodiversity,Sambalpur

I. INTRODUCTION

According to the International Union for the Conservation of Nature and Natural Resources (IUCN), an invasive species is any non-native organism that has successfully colonized a new ecosystem or habitat, posing a danger to the local biodiversity. Many invasive species exist today because they were unintentionally transported or introduced on purpose for trade, profit, or human well-being[1]

Exotic or alien species are those that have been intentionally introduced to a new ecosystem[2]. After the foreign species have acclimated to their new habitat, they invade. They can thrive in a variety of climates and are very invasive in their natural habitats.environment. The cultivation of invasive alien plant species (IAPs) makes them much more of a threat to long-term sustainability [3]. This has led to the worldwide problem of biodiversity decline. These plant communities are the primary culprits in the decline of native species. Non-native ecosystems are shown to have varying impacts on the environment and economy.

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The economic advantages of exotic or alien plant species far outweigh any costs associated with them. During the ongoing alien invasion, local populations raise alien species for use as food, medicine, fuel, or fodder [4]. International commerce facilitates the spread of these alien invasive organisms. The widespread use of IAPs causes serious difficulties for human health, including respiratory illnesses like asthma [5]. The primary production, hydrology, geomorphology, and biogeochemical cycle are only some of the ecological activities that invasive plants disrupt [6]. These species do not help preserve native plant variety by competing with natives for scarce resources; rather, they change the rules of survival for all life on Earth [7]. These invasive species' litter decayed much more slowly than native plant community litter [8,9,10]. The structure, composition, and function of natural ecosystems are all disturbed by plant invasions [11]. Invasive plants have a number of features, including a fast rate of reproduction and development, a capacity for rapid spread, the ability to adjust physiologically to new circumstances, and the resilience to thrive in a wide range of environments. Invasive alien plants (IAPs) are plants that may readily form relationships with humans and spread to other regions, altering the local ecosystem and soil composition as they do so. Crop seeds, garden plants, and wind breakers are all believed to be major vectors of IAP introduction to agricultural fields [12,13].

Collectionofbaselinedataabouttheirinvasionstatus, growth form and life cycle are the first andmostimportantstepforeffectiveandpropermanagementofIAPs.Preciselydistinguishingbetween native and alien species is necessary notonly when developing conservation and vegetationmanagementplansbutalsoforimprovingourunderstandingofthedifferentcomponentsofbiodiversity. Sambalpur district is one of the tendistricts of western Odisha. This district is locatedin the Mahanadi river basin. It has a total area of6702km^{2}and60%ofthedistrictiscoveredbydenseforest.Sambalpurdistrictislocatedat21.466°N83.983°E.ItisboundedbyDeogarhdistrict to the east, Jharsuguda district to the west,Sundargarh district to the north and Subarnapur andAngul district in the south. The economy of thisdistrictismainlydependingonagricultureandforest.

livelihoods of the people who live in the surrounding areas. There was an alphabetical list of medicinal plants that included their scientific names, families, common names, native regions, and common applications. Local flora books were used for species identification [14], and established results were consulted when creating nativities.

II. MATERIALSANDMETHOD

Extensive floristic surveys were conducted from January 2013 to April 2020 in the Sambalpur district, allowing for a comprehensive look at the environment at all times of year. One of western Odisha's 10 districts, Sambalpur is located in the city of the same name. The Mahanadi River flows through this area. The district is 6702 km2 in size and is mostly forested (60%). The coordinates 21.4666°N 83.9833°E pinpoint the Sambalpur district. Towards the east is Deogarh, to the west is Jharsuguda, to the north is Sundargarh, and to the south are Subarnapur and Angul. According to data from the 2011 census, the area has a total population of 1,041,099 people. The literacy rate of Sambalpur is 76.91%, and there are 973 females for every 1000 men. According to the 2011 Indian Census, the majority of the locals spoke Odia; 4.98 percent spoke Kisan; 3.98 percent spoke Hindi; 3.42 percent spoke Munda; and 1.49 percent spoke Kharia. The agricultural and forestry industries are vital to the economy of this area. The forest is vital to the economy of this area. Sambalpur Forest Division's protected woods are vital to the

Sambalpur, a district in Odisha, is home to 50 endemic and exotic plant species (43 genera) that belong to 26 families. Herbs were shown to have both annual and perennial growth patterns. The displayed animals' native cultures come from all across the globe. People in the region ate, burned, cooked, grew, decorated, medicated, poisoned, and otherwise made use of the plants listed in Table 1. Contributions from the 26 associated plant families range from 20% for Asteraceae to 8% for Poaceae and 6% for Onagraceae, with the other families contributing 4% each: Capparaceae, Euphorbiaceae, Lamiaceae, Malvaceae, and Portulacaceae. The remaining households all chip in 2% (Table 2). Eighty-two percent of the herb species are annuals, whereas the remaining eighteen percent are perennials (Figure 1). Fourteen separate nations may claim birthright to the 50 documented plants. Sixty-nine percent are indigenous to the tropical Americas, followed by five percent from the Americas and three percent from Europe. The remaining 2% comes from the rest of the species in those nations (Figure 2). Even though most plants are now far from their original habitat, they continue to perform vital roles in human existence. As a result, 38% of these species are employed for medicinal purposes, while 36% are put to some other use. Feed, flowers, veggies, weeds, and poisonous plants all chip in 4%. Only 2% of species are utilized as soil binders, another 2% are used as soil thatchers, and the other 4% have unknown economic use (Figure 3).

III. DISCUSSION

In the current article, we reported finding fifty different kinds of exotic plants in the

Sambalpurarea of Odisha, belonging to twenty-six different families. Different researchers have distinguished between naturalized and harmful alien species [15,16]. There are several examples of exotic species that have turned toxic after being naturalized. Invasive species identified in the research included Ageratum conyzoides L., Argemonemexicana L., Blumealacera (Burm.f.) DC., Cassia tora L., Hyptissuaveolens (L.) Poit.,Partheniumhysterophorus L., Xanthium indicum L., and Xanthium strumarium L. In addition to Ageratum conyzoides L., Partheniumhysterophorus L. was also among the most pervasive and poisonous weeds. According to the taxonomical research, the Asteraceae family was the most pervasive invasive family, outcompeting all other species by a wide margin.

seed adaptability to climate change. The plant species have a high reproductive capacity, allowing for the rapid production of tiny seeds that are carried to new locations by the wind, air, and water. The literature review revealed that the Asteraceae family is much more invasive in other parts of India [17]. Asteraceae were also shown to be the most common weed family by Mallick et al. (2019) [18]. Another poisonous member of this family that might spread black fever was Partheniumhysterophorus L. Its fast-growing, invasive seeds quickly spread to new areas and spread swiftly once there. Since annuals finish their life cycles and generate seeds to propagate in a short time of a year, they exhibited dominance among invasive species (82% vs. 18%). It is the capacity of herbs to thrive in adverse conditions and adapt to new environments that has contributed to their invasiveness.

IV. CONCLUSION

Inthispresentpaperwehadreportedaboutth euseof50exoticherbsbelongto43genera and 26 families from the Sambalpur districtof Odisha. It is a first attempt to prepare a checklistofinvasiveherbspecieswhichwillhelptoun derstandthepresence,distributionandreproduction ofherbsinSambalpurdistrictofOdisha. Present work will provide a better way toplanforearlydetectionofinvasionandestablishme ntofroutinemonitoringofinvasiveplant by land managers, taxonomist, agriculturist,botanist andecologist**.** One of the advantagesofthis work is that a few species have a great medicalimportance.

Table:1.Listofexoticherbs,theirfamilies, habit,nativityanduses.

Sl. no	PlantSpecies	Family	Habit	Nativity	Uses
1	Aervalanata(L.)Juss.ex. Schult.	Amaranthaceae	P	Madagascar	M
2	AeschynomeneindicaL.	Fabaceae	A	NorthAmerica	Fu
3	AgeratumconyzoidesL.	Asteraceae	A	Trop.America	Nox
4	Alternanthera sessilis (Linn)DC.	Amaranthaceae	P	Trop.America	V,M
5	AmaranthusspinosusL.	Amaranthaceae	A	Trop.America	V
6	ArgemonemexicanaL.	Papaveraceae	A	S. America (Seventeenthcent.)	M,Nox
7	BidenspilosaL.	Asteraceae	A	Trop.America	M,Fo
8	Blumealacera(Burm.f.) DC.	Asteraceae	A	Trop.America	Nox,M
9	Cardiospermum halicacabumL.	Sapindaceae	A	Trop.America	M
10	Cassiatora L.	Caesalpiniaceae	A	S.America(1824)	V, Nox, M
11	CelosiaargenteaL.	Amaranthaceae	A	Trop.America	V,M
12	ChenopodiumalbumL.	Chenopodiaceae	A	Europe	V
13	ChlorisbarbataSw.	Poaceae	P	Trop.America	Fo,Fu
14	ChromolaenaodorataL.	Asteraceae	A	Trop.America	M
15	CleomegynandraL.	Capparaceae	A	Trop.America	M
16	CleomeviscosaL.	Capparaceae	A	Trop.America	V,M
17	CuscutareflexaRoxb.	Cuscutaceae	A	Mediterranean	M
18	Cynodon dactylon (L.) Pers.	Poaceae	P	Trop.America	M
19	Echinochloa colona(L.) Link	Poaceae	A	Trop.America	Fo
20	EcliptaprostrataL.	Asteraceae	A	Trop. America (Bf1824)	M
21	Eichhornia crassipes (Mart.)Solm.	Pontederiaceae	P	Trop.America	St
22	Euphorbia heterophylla auct.NonL.	Euphorbiaceae	A	Trop.America	O
23	EuphorbiahirtaL.	Euphorbiaceae	A	Trop.America	M
24	EvolvulusnummulariusL.	Convolvulaceae	P	Trop.America	M
25	Gomphrena celosioides Mart.	Amaranthaceae	A	S.America	Fo
26	GomphrenaglobosaL.	Amaranthaceae	A	America	O
27	HeliotropiumindicumL.	Boraginaceae	A	S.America	M
28	Hyptis suaveolens (L.) Poit.	Lamiaceae	A	Trop.America	M,Nox
29	Ludwigiaadscendens(L.) Hara	Onagraceae	A	Trop.America	Sb
30	Ludwigiaoctovalvis(Jacq.) Raven	Onagraceae	A	Trop.America	M,Sb
31	Ludwigiaperennis L.	Onagraceae	A	Trop.America	M,Sb
32	MelochiacorchorifoliaL.	Sterculiaceae	A	Trop.America	NK

33	MimosapudicaL.	Mimosaceae	P	Brazil	M
34	OcimumcanumSims	Lamiaceae	A	Trop.America	M
35	OxaliscorniculataL.	Oxalidaceae	A	Europe	M
36	Partheniumhysterophorus L.	Asteraceae	A	Trop.America	Nox
37	Phylanodiflora(L.)Greene	Verbenaceae	A	Trop.America	M
38	PistiastratiotesL.	Araceae	P	Trop.America	M,St
39	PortulacaoleraceaL.	Portulacaceae	A	Trop.S.America	M,V
40	PortulacaquadrifidaL.	Portulacaceae	A	Trop.America	M,V
41	RuelliatuberosaL.	Acanthaceae	A	Trop.America	NK
42	ScopariadulcisL.	Scrophulariaceae	A	Trop.America	M
43	SidaacutaBurm.f.	Malvaceae	A	Trop.America	M
44	SolanumnigrumL.	Solanaceae	A	Trop.America	M
45	TridaxprocumbensL.	Asteraceae	P	Mexico	M
46	UrenalobataL.	Malvaceae	A	Trop.Africa	Fib,Fu
47	VernoniacinereaL.	Asteraceae	A	S.America	M
48	XanthiumindicumL.	Asteraceae	A	Trop.America	M,Nox
49	XanthiumstrumariumL.	Asteraceae	A	Trop.America	M, Fu, Nox
50	Zeamays L.	Poaceae	A	America	F,Fu,Fo

Note: F, food; FT, fruit; O, ornamental; NK, not known; M, medicinal; Fu, fuel; V, vegetable; Sp, species;Nox, noxious; Sa, sacred plant; Sb, soil binder; Ch, chemical compounds; Ave, avenue; T, thatching; A, annual;P,perennial.

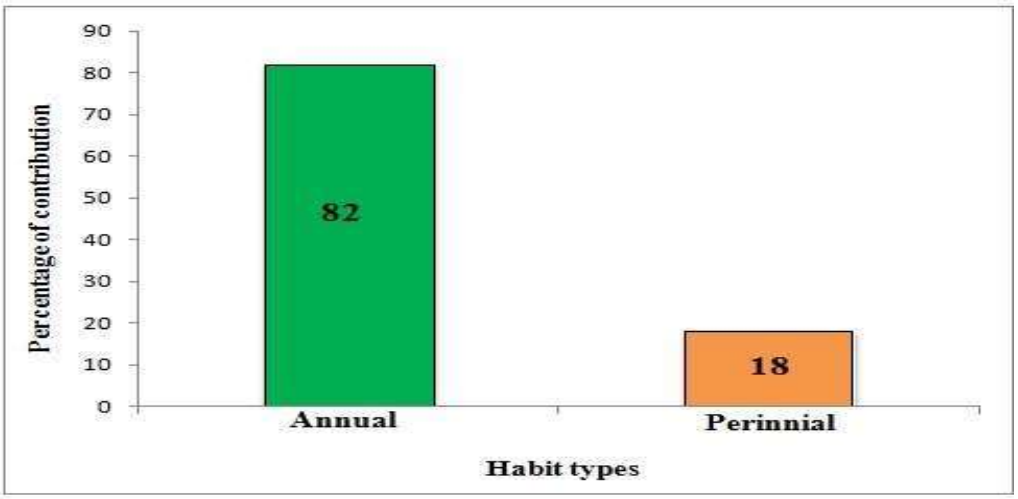

Figure1:Percentageofcontributionofannualandperennialexoticherbs

Table2: Percentageofcontributionoffamiliesamongtherecorded herbs

Sl.no	Family	Percentageofcontribution
1	Acanthaceae	2
2	Amaranthaceae	12
3	Araceae	2
4	Asteraceae	20
5	Boraginaceae	2
6	Caesalpiniaceae	2
7	Capparaceae	4
8	Chenopodiaceae	2
9	Convolvulaceae	2
10	Cuscutaceae	2
11	Euphorbiaceae	4
12	Fabaceae	2
13	Lamiaceae	4
14	Malvaceae	4
15	Mimosaceae	2
16	Onagraceae	6
17	Oxalidaceae	2
18	Papaveraceae	2
19	Poaceae	8
20	Pontederiaceae	2
21	Portulacaceae	4
22	Sapindaceae	2
23	Scrophulariaceae	2
24	Solanaceae	2
25	Sterculiaceae	2
26	Verbenaceae	2

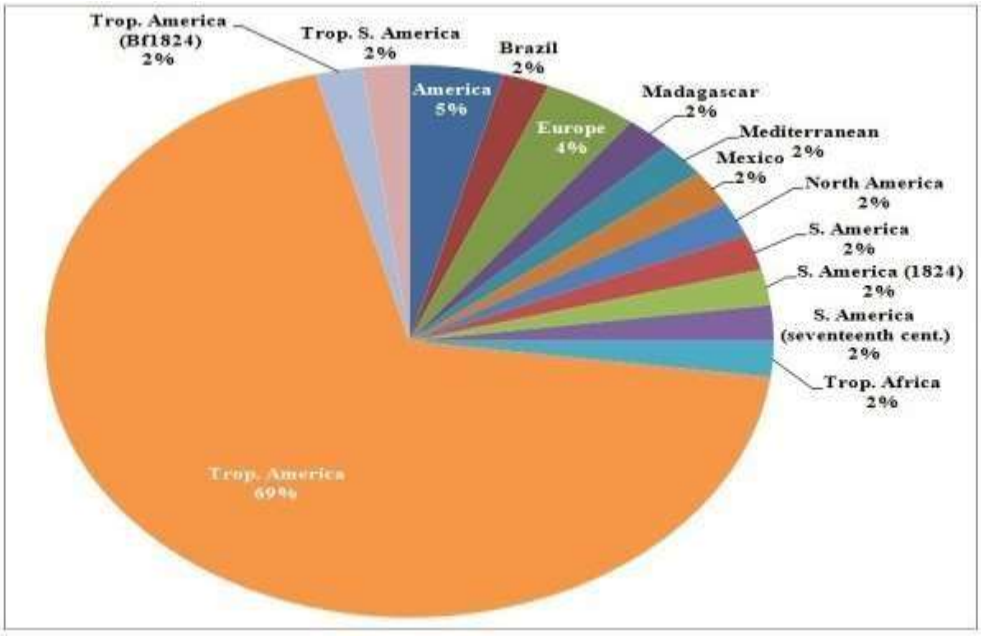

Figure2:Percentageofcontributionofcountries fromwheretheherbs haveits origin

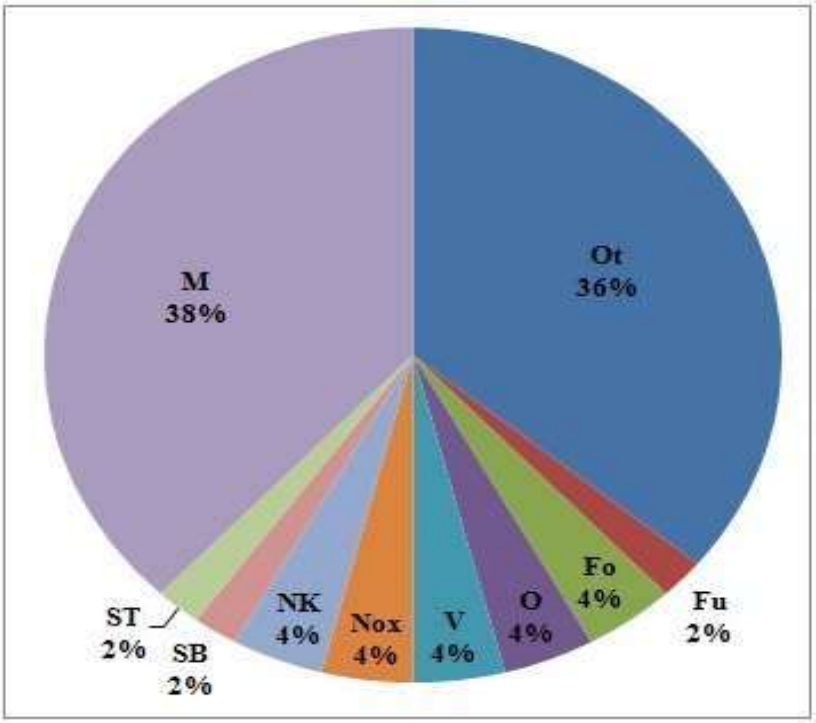

Figure3:Percentageofcontributionofexoticherbsforvarious uses

REFERENCES

[1]. Located in northern Andhra Pradesh, India, the Eastern Ghats are home to a wide variety of economically important plant species.Indian Forester. neighbors (Sundargarh municipality) — 2015 141(4):428-432.Journal of Applied and Pure Sciences in Odisha

[2]. SK Nayak& KB Satapathy. Application, varietyBotany/Biological Sciences. 29(2010):53-57.and their roots in alien invasions in [2].Reported by: Das K, Duarah P. Dhenkanal district in Odisha, India, is home to an invasive alien plant.species along Jorhat's roadways, International Research Journal of Biological Sciences, Volume 4, Issue 2, Pages 21–27 (2015). a worldwide engineering publication with ISSN [13].PS Negi& PK Hajra. Researchers in the Doon valley in the northwest Himalaya have discovered several exotic plants.Science 358 today; 92(7,):968-978.

[3]. Carla, J.D., Ewel, J.J., Dennis, J.O., Joy B., and Curtis CD.S. Panda & A. P. Das. Alan (J.H.), Richard (J.H.), Doria (RG), and Luis (MD) DG Flora of Sambalpur, Orissa. Sir/Madam Bishen Singh Singh, Mahendra Pal, Keith RHCEH, Marcy LH, Roger RBL, and Roger S. Singh. 2004.Svata GL, William GL, Lloyd LL, David HL

,[4]. Preston, G.; Williams, L. Water programme case study: ML, Ariel EL, Peter BM, David M.R., and Peter discussing potential dangers and mitigation strategies. Successes of species introduction projects.Service Delivery Review. Research needs. BioScience 49.8 2003;2(2):66-69. (1999):619–630. Rao RR, Murugan R. The effect of rare

The effects of adventive weeds on native biodiversity during terrestrial plant invasions: a systematic review

[5]. Heywood, V. Patterns, extents, and modes. India: Conservation Implications, by John Drake et al. Publishes in Rai et al. The Threat of Alien Species Editors: LC Global and JP Gaur. The View from Here: Invading Species. Biodiversity in India. New York: Wiley, 1989. Hindu University Press, Banaras, India, 2006. p. 93–109.

[6]. Betla national park, Palamu, India: Rastogi J, Rawat DS, Chandra S. Invasive alien species in Pantnagar's flora: a case study.2015;2(3):282-287 in Tropical Plant Research.In Jharkhand, India, scientists study tropical vegetation.Reddy CS, Bagyanarayana G, and Reddy KN (2016) 3:592-599.

[7].India's Invasive Species of Flora vs. Raju.

U.S. National Biological Survey, Lal HS, Singh S., Kumar A., Mishra PK, USGS, USA.Mishra K. Study of Invasive and Non-Native Species on Information Technology Infrastructure in Jharkhand, India. 2008.CS Reddy, M. Rangaswamy, C. Pattanaik, and C. S. Jha. The Journal of Ethnobiology and the Environment.Traditional Medicine. 2012;117:167-177. ofSamaspur bird sanctuary, Uttar Pradesh, India. Invasion of alien species in wetland areas.

In India, Mallick SC, Ekka NJ, Kumar S, and Sahu SC

[8]. Journal of Water, Environment, and Pollution in Asian Countries 2009;6(3):43-50.Area, Diversity, and Ecology of Invasive Alien Flora in India.

[9]. Reddy CS.India's Invasive Plants, by Sahu SC and Kumar S. IntechOpen, 2019;DOI:10.5772/intechopen.8.8725 cites Life Science Journal, 2008, 5, 85–87.According to Richardson DM, Pyek P, Rejmánek M,Preliminary list of invasive alien species .

[10]. Maslo, S.Naturalization and invasion of exotic plants in Bosnia and Herzegovina: a study by Margaret G. Barbour, Francesca Dane Panetta, and Christopher J. West. 2016;16(1):1-14 in Herbologia.Definitions and conceptualizations. Moktan, S., and Das, A.P., Diversity and Distributions, 2000, Volume 6, Number 2, Pages 93–107 .

[11].Roder W, Dorji K, Wangdi K. Implications of White Clover Introduction in East India. Altitudinal Gradient in the Darjeeling Himalaya. 2013;7(2):305–313. Pleione.The Himalayan steppes. Study of the Mountains

Mooney HA, Hobbs RJ (eds.)

[12]. 2007;27:268-273 in Invasive and Emerging Pests and Diseases.Life forms in a dynamic environment. Washington,

[13]. Rothstein D.E., M.V. Peter, and L.S. Breana. Island Press, Washington, D.C., 2000.An alien tree may affect nutrient cycling and waste breakdown

[14].Bicycling in the Hawaiian Montane Forest. Naidu NT, OA Kumar, and M. Venkaiah.Plants from other planets that have become established in tropical ecosystems might cause serious problems.

[15].Manipur and the regime that rules there. International Invasive alien plants of Uttarakhand Himalaya: A Journal of Cutting-Edge Research in the Natural Sciences. Engineering and Technology Conference Proceedings.Institute of Indian Science 2015, Part B, 1(2), pp. 616-626.2012;82(3):375-383 in the journal Biological Sciences.Srivastava S, A. Dvivedi, and R. V. Shykla.

Invasive alien plants on the Indian subcontinent: a survey of the diversity and implications .

[16] SekarK.greenery in Uttar Pradesh's far northeastern corner.International Journal of Forest Research 2012;3:177-184 American Journal of Plant Sciences.2014;2014:1-9.

GP Sharma, JS Singh, and AS Raghubanshi.Plant Invasions: New Patterns and the Future of Invasive Alien Flora in Thiruvallur District, by M. Udaykumar, E. Bharathidasan, and T. Sekar. 88(726):726-Tamil Nadu, India, Current Science, 2005. Journal of Biosciences 2014;2(4):295-306. Scholars' Academic 734.

Sheikh D.K. and A.K. Dixit. The appearance of

[17].Plant invasion in three geographical regions: a meta-analysis by Vitousek PM, Carla MD, Lloyd LL, and MarcelIntroduced species: the Bilaspur district in

Chhattisgarh. R., Randy W.major contributor to human-causedScientific Journal of Plant Research 2017;6(12):The world shifted in 1872.
[18] New Zealand Journal of 1878, Ecology, Vol.21, No.1, pp.1-16 (1997).Singh, K. P.; Shukla, A. N.; Singh, J. S. Compilation of a list of noxious weeds in each state and information about