

Exotic Floristic Composition of Peddagattu, the proposed site for Uranium mining, Nalgonda district, Telangana state, India

A. Baleeshwar Reddy^{1*}, V. Hanumantha Rao² V. Vasudeva rao²
and A. Vijaya Bhasker Reddy¹

¹ Department of Botany, Osmania University, Hyderabad-500 007, Telangana state, India.

² AINP on Vertebrate Pest Management, Prof. Jayasanker Telangana state Agricultural University, Rajendranagar, Hyderabad- 500030, Telangana state, India.

Corresponding author e-mail: baleeshwarreddy@gmail.com*

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ABSTRACT

The present investigation reflects the findings of exotic floristic composition at Peddagattu, Nalgonda district, Telangana State, India. A total of 125 exotic species of taxa belonging to 101 genera and 44 families were recorded in the study. Leguminosae is the most dominant family representing with 21 species, followed by Compositae (14 species), Apocynaceae, Convolvulaceae and Poaceae (7 species each). As per the nativity of exotic species representation in the study area are mostly from belongs to tropical America followed by tropical Africa and South America at Peddagattu.

1. INTRODUCTION

A flora refers to the 'Systematic enumeration of plants of a given region'. Flora is divided in to two categorized i.e. native flora and exotic flora. Species introduced into habitats where they are not native are referred as exotic species. Indo- Gangetic plains and the Thar Desert regions of India are rich in exotic flora while Himalayan and Peninsular regions are poor in exotic flora (Ahmad. 1999). Many exotic species have been purposefully introduced for food, fiber, erosion control, as agricultural crops, ornamental and landscape plants. Exotic species have tolerant of a wide range of soil and weather conditions, produce abundant amount of seed that disperse easily, grows insistent root systems, long flowering and fruiting periods. These are free from parasites, pathogens, predators and competitors. They can be thought of as biological pollutants are considered to be the most damaging agents of habitat alternation (Westbrooks, 1999). Infestations by exotic species may lead to great conservation concern (Wilcove et al. 1998). Invasive non- native species inflict harmful ecological and economic impacts upon ecosystems in non native regions (Pimentel *et al.*, 2005; Meyeron and Mooney 2007). Several studies have been conducted to explore the exotic floristic composition of a particular region in India (Nagar *et al.*, 2001; Tomar *et al.*, 2008; Singh. 2011, 2012). The main objective of the present study is to explore the exotic flora of Peddagattu, Nalgonda district, Telangana state.

2. MATERIALS AND METHODS

Study area: Peddagattu in Nalgonda district (Telangana State) lies between 16.53889 and 16.72140 North latitude and 79.40643 and 79.09033 East longitude and covers 30 km radius (Fig. 1). The annual rainfall varies between 56 and 62 cm with the annual mean temperature of 34^oc. Physiographically Peddagattu consist of flat topped hills composed of proterozoic sediments. It is in close proximity to Nagarjunasagar canal system. The rocky exposures at the bottom of the hills generally are composed of granitic rocks. The general drainage pattern is dendritic indicating homogeneous nature of formations. The general elevation of the hills is about 300m and the ground is 215m. Majority of the land area is under cultivation. The crops raised in the area are rice, sorghum, cotton and chilies along with sweet lime and mangoes orchards.

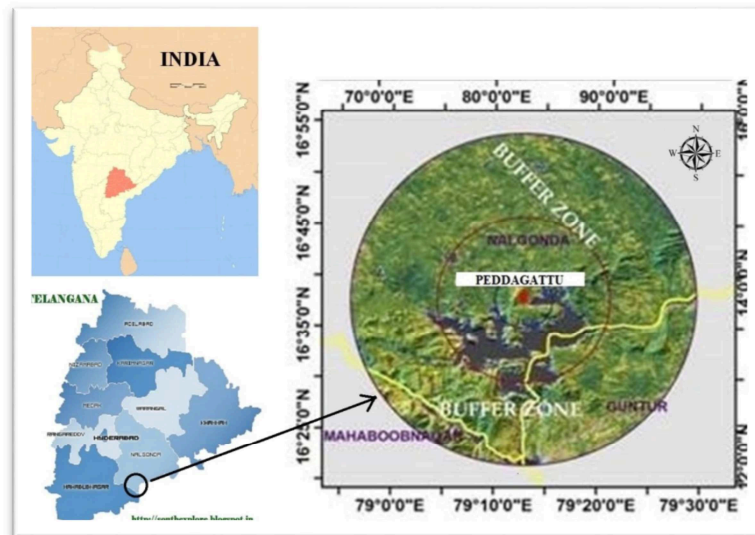


Figure. 1 Map of Study area

Methodology: The field work was carried out from April 2010 to December 2013. Floral exploration trips were regularly conducted on pre and post monsoon seasons to get the maximum list of exotic species in each habitat. The specimens were identified from their key vegetative and reproductive features using the Flora of Nalgonda district (Rao *et al.*, 2001), Flora of Guntur district (Pullaiah *et al.*, 2000) and Flora of the Presidency of Madras (Gamble and Fischer, 1915-1935). The plant species collected were processed and mounted on herbarium sheets. The native ranges of each species were recorded from Internet, Invasive Alien Flora of India (Reddy *et al.*, 2008) and catalogue of invasive alien flora of India (Reddy .2008). The collected specimens were pressed and deposited at the AINP on Vertebrate Pest Management, Prof. Jayashanker Telangana State Agricultural University, Rajendranagar, Hyderabad.

3. RESULTS AND DISCUSSION

A total of 125 exotic species belonging to 101 genera and 44 families are reported from the study area (Table.1). Similar to the present study, Singh *et al.*, (2012) reported, 198 exotic plant species in exotic floristic composition of the Varanasi district of Uttara Pradesh and also Tomar *et al.*, (2008) reported 76 exotic species in flora of Baghpat district of Western Utter Pradesh. Habit wise analysis showed that herbs are predominant with 70 species followed by Trees (25), shrub (13) and Climbers (4). The family Leguminosae (21) contribution was maximum in number of exotic flora, followed by Compositae (14 species), Apocynaceae, Convolvulacea and Poacea with 7 species each. Contrary to the result of Present study, Singh *et al.*, (2012) reported the dominance of Fabaceae, Asteracea and Poaceaceae families of the exotic floristic Composition of the Varanasi district.

Representative of Tropical America exotic species composition was high in the study area with 47 species followed by representative of Tropical Africa and South America with 14 &12 species respectively. The other regions such as Australia, Brazil, Madagascar, Mediterranean region, Mexico, Srilanka and West Indies representative are very low. Other studies also revealed at different locations the dominance of the flora of Tropical American origin in India (Reddy. 2008; Tomer *et al.*, 2008; Singh, 2011, 2012).

4. CONCLUSION

The present study shows that the area was rich in exotic species. The Leguminosae and Compositae are the dominant families of the study area. The flora of Tropical America origin dominates the exotic floristic composition of the Peddagattu, Nalgonda district, Telangana State, India.

Table. 1 Exotic floral of Peddagattu, Nalgonda district, Telangana State, India

S. No	Scientific Name	Family	Growth form	Nativity
1	<i>Acacia auriculiformis</i> Benth.	Leguminosae	Tree	Australia
2	<i>Acanthospermum hispidum</i> DC.	Compositae	Herb	Brazil
3	<i>Agave americana</i> L.	Asparagaceae	Shrub	Central America
4	<i>Ageratum conyzoides</i> (L.) L.	Compositae	Herb	Central America
5	<i>Albizia saman</i> (Jacq.) Merr.	Leguminosae	Tree	Mediterranean region
6	<i>Aloe vera</i> (L.) Burm.f.	Asparagaceae	Herb	Trop. America
7	<i>Alternanthera pungens</i> Kunth	Amaranthaceae	Herb	Trop. America
8	<i>Alternanthera sessilis</i> (L.) R.Br. ex DC.	Amaranthaceae	Herb	Trop. America
9	<i>Amaranthus spinosus</i> L.	Amaranthaceae	Under shrub	America
10	<i>Anacardium occidentale</i> L.	Anacardiaceae	Tree	West Indies & Brazil
11	<i>Annona squamosa</i> L.	Annonaceae	Tree	Trop. America
12	<i>Antigonon leptopus</i> Hook. & Arn	Polygoniaceae	Herb	South America
13	<i>Argemone mexicana</i> L.	Papaveraceae	Herb	Ethiopia
14	<i>Asparagus racemosus</i> Willd.	Asparagaceae	Climber	Srilanka
15	<i>Bauhinia purpurea</i> L.	Leguminosae	Tree	West Indies
16	<i>Biden pilosa</i> L.	Compositae	Herb	Trop. America
17	<i>Blainvillea acmella</i> (L) Philipson	Compositae	Herb	Trop. America
18	<i>Borassus flabellifer</i> L.	Arecaceae	Tree	Trop. America
19	<i>Calotropis gigantea</i> (L.) Dryand.	Apocynaceae	Shrub	Trop. Africa
20	<i>Calotropis procera</i> (Aiton) Dryand.	Apocynaceae	Shrub	Trop. Africa
21	<i>Canna indica</i> L.	Cannaceae	Shrub	Africa
22	<i>Carica papaya</i> L.	Caricaceae	Tree	Mexico
23	<i>Carissa carandas</i> L.	Apocynaceae	Shrub	South Africa
24	<i>Casuarina equisetifolia</i> L.	Casuarinaceae	Tree	Australia
25	<i>Catharanthus pusillus</i> (Murray) G. Don	Apocynaceae	Herb	Trop. America
26	<i>Catharanthus roseus</i> (L.) G. Don	Apocynaceae	Herb	Madagascar
27	<i>Celosia argentea</i> L.	Amaranthaceae	Herb	Trop. Africa
28	<i>Chamaecrista absus</i> (L.) H.S. Irwin & Barneby	Leguminosae	Herb	Trop. America

29	<i>Chamaecrista pumila</i> (Lam.) K.Larsen	Leguminosae	Herb	Trop. America
30	<i>Chloris barbata</i> Sw.	Poaceae	Herb	Trop. America
31	<i>Chrozophora rottleri</i> (Geis.) Spreng.	Euphorbiaceae	Herb	Trop. Africa
32	<i>Cleome gynandra</i> L.	Cleomaceae	Herb	Trop. America
33	<i>Cleome monophylla</i> L.	Cleomaceae	Herb	Trop. Africa
34	<i>Cleome viscosa</i> L.	Cleomaceae	Herb	Trop. America
35	<i>Corchoru aestuans</i> L.	Malvaceae	Herb	Trop. America
36	<i>Corchorus trilocularis</i> L.	Malvaceae	Herb	Trop. Africa
37	<i>Corchorus tridens</i> L.	Malvaceae	Herb	Trop. Africa
38	<i>Croton bonplandianus</i> Baill.	Euphorbiaceae	Herb	South America
39	<i>Cryptostegia grandiflora</i> R.Br.	Apocynaceae	Shrub	Trop. America
40	<i>Cuscuta chinensis</i> Lam.	Convolvulaceae	Parasite	Mediterranean
41	<i>Cynodon dactylon</i> (Linn.) Pers	Poaceae	Herb	Trop. America
42	<i>Cyperus rotundus</i> L.	Cyperaceae	Herb	Eurasia
43	<i>Cyperus difformis</i> L.	Cyperaceae	Herb	Trop. America
44	<i>Cyperus iria</i> L.	Cyperaceae	Herb	Trop. America
45	<i>Datura innoxia</i> Mill.	Solanaceae	Shrub	Trop. America
46	<i>Datura metel</i> L.	Solanaceae	Herb	Trop. America
47	<i>Delonix regia</i> (Hook.) Raf.	Leguminosae	Tree	Madagascar
48	<i>Dicoma tomentosa</i> Cass	Compositae	Herb	Trop. Africa
49	<i>Digera muricata</i> (L.) Mart.	Amaranthaceae	Herb	SW Asia
50	<i>Dinebra retroflexa</i> (Vahl)Panz	Poaceae	Herb	Trop. America
51	<i>Echinochloa colona</i> (L.) Link	Poaceae	Herb	Trop. S. America
52	<i>Echinochloa crusgalli</i> (L) Beauv	Poaceae	Herb	Trop. S. America
53	<i>Echinops echinatus</i> Roxb.	Compositae	Herb	Afghanistan
54	<i>Eclipta prostrata</i> (L.) L.	Compositae	Herb	South America
55	<i>Eichornia crassipes</i> Solms	Pontederiaceae	Hydrophyte	Brazil
56	<i>Eragrostis tenella</i> (L.) Beauv. & Schult.	Poaceae	Herb	Africa
57	<i>Eucalyptus globulus</i> Labill.	Myrtaceae	Tree	Australia
58	<i>Euphorbia heterophylla</i> L.	Euphorbiaceae	Herb	Trop. America
59	<i>Euphorbia hirta</i> L.	Euphorbiaceae	Herb	Trop. America
60	<i>Euphorbia pulcherrima</i> Willd. ex Klotzsch	Euphorbiaceae	Herb	Mexico
61	<i>Gomphrena serrata</i> L.	Amaranthaceae	Herb	Trop. America
62	<i>Grangea maderaspatana</i> (L.) Desf.	Compositae	Herb	Trop. S. America
63	<i>Heliotropium indicum</i> L.	Boraginaceae	Herb	South America
64	<i>Holoptelea grandis</i> (Hutch.) Mildbr.	Ulmaceae	Tree	Pacific Islands
65	<i>Hyptis suaveolens</i> (L.) Poit.	Lamiaceae	Herb	Trop. America
66	<i>Indigofera astragalina</i> DC.	Leguminosae	Herb	Trop. America
67	<i>Indigofera linifolia</i> (L.f.) Retz.	Leguminosae	Herb	Trop. Africa

68	<i>Ipomoea carnea</i> Jacq.	Convolvulaceae	Shrub	Trop. America
69	<i>Ipomoea hederifolia</i> L.	Convolvulaceae	Herb	Trop. America
70	<i>Ipomoea pes-tigridis</i> L.	Convolvulaceae	Herb	Trop. E. Africa
71	<i>Ipomoea quamoclit</i> L.	Convolvulaceae	Climber	Trop. America
72	<i>Ipomoea obscura</i> (L.) Ker Gawl.	Convolvulaceae	Herb	Trop. Africa
73	<i>Jatropha curcas</i> L.	Euphorbiaceae	Shrub	Trop. America
74	<i>Lagascea mollis</i> Cav.	Compositae	Herb	Trop. C. America
75	<i>Lantana camara</i> L.	Verbenaceae	Shrub	America
76	<i>Lawsonia inermis</i> L.	Lythraceae	Tree	Northern Africa
77	<i>Leonotis nepetifolia</i> (L.) R.Br.	Lamiaceae	Herb	Trop. Africa
78	<i>Leucaena leucocephala</i> (Lam.) de Wit	Leguminosae	Tree	Trop. America
79	<i>Ludwigia adscendens</i> (L.) Hara	Onagraceae	Herb	Trop. America
80	<i>Ludwigia perennis</i> L.	Onagraceae	Herb	Trop. Africa
81	<i>Manilkara zapota</i> (L.) P.Royen	Sapotaceae	Tree	South America
82	<i>Martynia annua</i> L.	Martyniaceae	Shrub	Mexico
83	<i>Merremia aegyptia</i> (L.) Urb.	Convolvulaceae	Herb	Trop. America
84	<i>Mimosa pudica</i> L.	Leguminosae	Herb	Brazil
85	<i>Opuntia elatior</i> Mill.	Cactaceae	Shrub	South America
86	<i>Oxalis corniculata</i> L.	Oxalidaceae	Herb	Northern America
87	<i>Parkinsonia aculeata</i> L.	Leguminosae	Tree	Mexico
88	<i>Parthenium hysterophorus</i> L.	Compositae	Herb	Trop. America
89	<i>Passiflora foetida</i> L.	Passifloraceae	Climber	South America
90	<i>Pedaliium murex</i> L.	Pedaliaceae	Herb	Trop. America
91	<i>Peltophorum pterocarpum</i> (DC.) K.Heyne	Leguminosae	Tree	Srilanka & Malaysia
92	<i>Phoenix sylvestris</i> (L.) Roxb.	Arecaceae	Tree	West Asia
93	<i>Physalis angulata</i> L.	Solanaceae	Herb	South America
94	<i>Pistia stratiotes</i> L.	Araceae	Herb	Trop. America
95	<i>Pithecellobium dulce</i> (Roxb.) Benth.	Leguminosae	Tree	Central & South America
96	<i>Plumeria rubra</i> L.	Apocynaceae	Tree	South America
97	<i>Portulaca oleracea</i> L.	Portulacaceae	Herb	Northern Africa & Europe
98	<i>Prosopis julifera</i> (Molina) Stuntz	Leguminosae	Tree	Central America
99	<i>Psidium guajava</i> L.	Myrtaceae	Shrub	South America
100	<i>Punica granatum</i> L.	Lythraceae	Tree	Iran, Afghanistan
101	<i>Ruellia tuberosa</i> L.	Acanthaceae	Herb	Trop. America
102	<i>Saccharum spontaneum</i> L.	Poaceae	Herb	Trop. W. Asia
103	<i>Scoparia dulcis</i> L.	Plantaginaceae	Herb	Trop. America
104	<i>Senna obtusifolia</i> (L.) H.S.Irwin & Barneby	Leguminosae	Under Shrub	Trop. America
105	<i>Senna occidentalis</i> (L.) Link	Leguminosae	Under Shrub	Trop. America

106	<i>Senna siamea</i> Lam.	Leguminosae	Tree	Myanmar
107	<i>Senna tora</i> (L.) Roxb.	Leguminosae	Under shrub	South America
108	<i>Senna uniflora</i> (Mill.) H.S.Irwin & Barneby	Leguminosae	Herb	Trop. South America
109	<i>Sida acuta</i> Burm.f.	Malvaceae	Herb	Trop. America
110	<i>Solanum americanum</i> L.	Solanaceae	Herb	Trop. America
111	<i>Sonchus oleraceus</i> (L.) L.	Compositae	Herb	Mediterranean
112	<i>Spermacoce neohispida</i> Govaerts	Rubiaceae	Herb	Mediterranean
113	<i>Sphaeranthus indicus</i> Linn.	Compositae	Herb	Africa
114	<i>Tamarindus indica</i> L.	Leguminosae	Tree	Trop. Africa
115	<i>Tecoma stans</i> (L.) Juss. ex Kunth	Bignoniaceae	Tree	America
116	<i>Terminalia catappa</i> L.	Combretaceae	Tree	Malaysia
117	<i>Tribulus terrestris</i> L.	Zygophyllaceae	Herb	Trop. America
118	<i>Tridax procumbens</i> (L.) L.	Compositae	Herb	Mexico
119	<i>Triumfetta pentandra</i> Rich.	Malvaceae	Herb	Trop. America
120	<i>Typha domingensis</i> Pers.	Typhaceae	Herb	Trop. America
121	<i>Urena lobata</i> L.	Malvaceae	Shrub	Trop. Africa
122	<i>Waltheria indica</i> L.	Malvaceae	Herb	Trop. America
123	<i>Withania somnifera</i> (L.) Dunal	Solanaceae	Herb	Mediterranean
124	<i>Xanthium strumarium</i> L.	Compositae	Herb	Trop. America
125	<i>Ziziphus Jujuba</i> Mill.	Rhamnaceae	Tree	China

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References

- [1] Ahmad A (1999). *India: A general Geography*. (N.C.E.R.T. Publications, New Delhi, Indi) 66-76.
- [2] Gamble, J.S. and C. E. C. Fischer. (1915-1935). *Flora of the Presidency of Madras (repr. ed. 1957. Calcutta)*.
- [3] Meyerson LA, Mooney HA (2007) Invasive alien species in an era of globalization. *Frontiers in Ecology and Environment* 5(4): 199-208
- [4] Nagar PS, SJ Pathak and SM Pandya (2004). The alien flora of the Barda hills and surroundings in Gujarat, India. *Indian Journal of Forestry* 27(1)25-38.
- [5] Pimentel D, Zuniga R, Morrison D (2005) Update on the environmental and economic costs associated with alien invasive species in the United States. *Ecological Economics* 52: 273-288, <http://dx.doi.org/10.1016/j.ecolecon.2004.10.002>
- [6] Pullaiah, T. Ramakrishnaiah V. Sadhya Rani, S. and Rao, P. N. (2000). *Flora of Guntur district, Andhra Pradesh, India*. Regency Publications.

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- [7] Rao, P.N. Raghava Swamy, B.V and Pullaiah T. (2001). *Flora of Nalgonda district Andhra Pradesh, India*. ShipraPublications.
- [8] Reddy C.S., Bagyannarayana G., Reddy K.N and Raju V.S. (2008). Invasive Alien Flora of India.
- [9] Reddy C.S., Catalogue of Invasive alien species flora of India. (2008). *Life science journal* 5(2): 85-87
- [10] Singh A (2011). Exotic flora of the Banaras Hindu University main campus, India. *Journal of Ecology and the Natural Environment* 3(10)337-343.
- [11] Singh A (2012). Exotic flora of the Chandauli district Utter Pradesh, India: An Overview. *India Journal of Forestry* 35 (1)79-89.
- [12] Tomar A, H Singh and V Singh (2008). Exotic elements in the flora of Baghpat district, Utter Pradesh. *Indian Journal of Forestry* 31(3) 463-471.
- [13] Westbrooks R (1991). Plant protection issues I. A commentary on new weeds in the United States. *Weed Technology* 5 232-237.
- [14] Wilcove Ds, Rothstein D, Dubow J, Phillips A, Losos E (1998) Quantifying threats to imperiled species in the United States. *BioScience* 48: 607-615. <http://dx.doi.org/10.2307/1313420>.

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