

# FLORAL DIVERSITY CONSERVATION THROUGH SACRED GROVES IN KORAPUT DISTRICT, ODISHA, INDIA: A CASE STUDY

*\*Panda Debabrata\*, Bisoi Sidhanta Sekhar and Palita Sharat K.*

*Centre for Biodiversity and Conservation of Natural Resources, Central University of Orissa, Koraput-764 020, INDIA*

## **Abstract**

The tribal dominated Koraput district of Odisha has rich tradition of nature conservation through cultural and religious practices. Though maximum number of sacred groves has been reported from Koraput, there is hardly any scientific documentation of plant species in them. The present study has documented floral diversity and uses of 94 sacred plant species distributed in 63 genera belonging to 43 different families from 6 different sacred groves in a systematic manner. Most of the plant species are distributed under Caesalpiniaceae followed by Asteraceae and Combretaceae. The plant species are distributed in 48 trees, 26 shrubs and 21 herbs. Many of the plant species are used as herbal medicines (39%) by the tribals followed by religious importance (23 %), and food (13 %) plants. Some existing threats related to the sacred groves as well as plants under threat categories have also been recorded. While only plant species *Pterocarpus santalinus* comes under IUCN endangered category and 3 species of plants *Shorea robusta*, *Buchanania lanzan* and *Woodfordia fruticosa* comes under low risk and least concern categories whereas 6 species are under least concern category. The plants under vulnerable categories are *Ageratum conyzoides*, *Dalbergia latifolia*, *Delonix regia*, *Pterocarpus marsupium*, *Santalum album* and *Saraca asoca*. Thus, for assessing the ecological role of sacred groves and formulating strategies for their conservation, a holistic understanding of their structure and function as well as their current status is essential.

Keywords: Biodiversity conservation, herbal medicines, floral diversity, sacred groves.

**(Source: Available online at: [www.isca.in](http://www.isca.in), [www.isca.me](http://www.isca.me) Received 26<sup>th</sup>, July 2014, revised 27<sup>th</sup> August 2014, accepted 18<sup>th</sup>, September 2014)**

# AQUATIC PLANT DIVERSITY OF SIMILIPAL BIOSPHERE RESERVE, ORISSA, INDIA

**A. Mohapatra<sup>1</sup>, C. Sudhakar Reddy<sup>2</sup> and A.K. Biswal<sup>3</sup>**

1. P.G. Department of Biotechnology, North Orissa University, Baripada, Orissa

2. Forestry & Ecology Division, NRSA, Balanagar, Hyderabad

3. P.G. Department of Botany, North Orissa University, Baripada, Orissa

[akashbaripada@yahoo.co.in](mailto:akashbaripada@yahoo.co.in), [anilkbiswal@yahoo.com](mailto:anilkbiswal@yahoo.com), [drsudhakarreddy@gmail.com](mailto:drsudhakarreddy@gmail.com)

## Abstract

Aquatic plants have been used for diverse purposes since historical times and are used often particularly for the purpose of food, fibre and medicine. Similipal Biosphere Reserve (SBR) is located in Mayurbhanj district of Orissa comprising of an area about 5569 km<sup>2</sup>. It has varied topographical, edaphic and climatic conditions. The present study on aquatic plants of Similipal Biosphere Reserve report as many as 149 aquatic species, which include 79 species of dicotyledons belonging to 51 genera under 30 families, 69 species of monocotyledons belonging to 45 genera under 14 families and 4 species of Pteridophytes belonging to 4 genera under 4 families. Some of the useful aquatic plants in the study area include *Bacopa monnieri*, *Centella asiatica*, *Hygrophila auriculata* as medicine, *Echinochloa colona*, *Hygrophiza aristata*, *Oryza meyeriana* ssp. *granulata* as fodder grasses, *Oryza rufipogon* as a wild relative of *Oryza sativa*, *Ludwigia adscendens* and *Nymphaea nouchali* as food plants for migratory birds.

**Keywords:** Wetlands, Aquatic Plants, Similipal Biosphere Reserve, Orissa.

## DICOTYLEDONS (MAGNOLIOPSIDA)

### RANUNCULACEAE

1. *Ranunculus pennsylvanicus* L.f. Suppl. Pl. 272.1781; Saxena & Brahmam, Fl. Orissa 1:6.1995. Rare, along streams and water courses in wet places in the hills.

### NYMPHACEAE

2. *Nymphaea nouchali* Burm.f. Fl. Ind., 120.1768; Saxena & Brahmam, Fl. Orissa 1:44.1995. Frequent in ponds and water bodies.

### POLYGALACEAE

3. *Salmonia cantoniensis* Lour. Fl. Cochinch. 1:14.1790; Saxena & Brahmam, Fl. Orissa 1:94.1995. In moist lands.

### CARYOPHYLLACEAE

4. *Drymaria cordata* (L.) Willd. ex Roem. & Schult., subsp. *diandra* (Bl.) Duke, Ann. Missouri Bot. Gard. 48:253.F.18D-E.1961; Saxena & Brahmam, Fl. Orissa 1:98.1995. *D. cordata* Sensu Edgew. & Hook F. in Hook F. Fl. Brit. India 1;224;1874. Found in moist and shady places.

### MALPIGHIACEAE

5. *Aspidopterys tomentosa* (Bl.) Juss. A. Juss. var. *hutchinsonii* (Haines). Srivastava, J. Bombay. Nat. Hist. Soc. 81:728.1984; Saxena & Brahmam, Fl. Orissa 1:212.1995. *A. hutchinsonii* Haines, Kew Bull. 1920:66-67.1920. Found in moist places.

### BALSAMINACEAE

6. *Impatiens kleinii* Wt. and Arn. Prod. 140. 1834; Saxena & Brahmam, Fl. Orissa 1:225.1995. Occasional in moist and shady places

## FABACEAE

7. *Aeschynomene indica* L.Sp.Pl.713.1753; Saxena & Brahmam, Fl. Orissa 1:448.1995. Common in wet places. Pantropical weed.
8. *Alysicarpus vaginalis* (L.) DC.Prod.2:353.1825 var.vaginalis; Saxena & Brahmam, Fl. Orissa 1:453.1995. *Hedysarum vaginalis* L.Sp.Pl.746.1753. Common weed in cultivated land, along ponds etc.
9. *Smithia conferta* J.E.Sm.in Rees, Cyclop. 33:n.2. 1819; Saxena & Brahmam, Fl. Orissa 1:590.1995. *S.geminiflora* Roth, Nov.Pl.Sp.352.1821. Common in open wet places and along rice field.
10. *Smithia sensitiva* Ait. Hort.Kew ed. 1.3:496.1789; Saxena & Brahmam, Fl. Orissa 1:591.1995. Common in open wet places along, rice field etc.

## DROSERACEAE

11. *Drosera burmannii* Vahl.Symb.Bot.3:50.1794; Saxena & Brahmam, Fl. Orissa 2:643.1995. Occasional in open, wet ground, mostly among grasses near streams.

## LYTHRACEAE

12. *Ammania baccifera* L.Sp. Pl. 120. 1753; Saxena & Brahmam, Fl. Orissa 2:707.1995. Common in rice fields and wet places.
13. *Rotala densiflora* (Roth ex Roem. & Schultes) Koehne, Bot. Jahrb.1:164.1880; Saxena & Brahmam, Fl.Orissa 2:715.1995. *Ammannia densiflora* Roth ex Roem & Schultes Syst. Veg. 3:304.:1818; Haines, Bot. Bihar & Orissa 2:378(395).1922. Common in wet places.
14. *Rotala indica* (Willd.) Koehne in Engl. Bot. Jahrb. Syst. 1:172.1881; Saxena & Brahmam, Fl. Orissa 2:718.1995. *Peplis indica* Willd.Sp.Pl. 2:244.1799. Common in rice fields and wet places.
15. *Rotala mexicana* Cham. & Schlecht. Linnaea 5:567.1830; Saxena & Brahmam, Fl. Orissa 2:718.1995. *R. pygmaea* (Kurz) Raja. & Ramayya, Kew Bull. 23:465.1969. Common on damp ground close to rice fields and water courses.
16. *Rotala rotundifolia* ( Buch.-Ham. ex Roxb.) Koehne, Bot. Jahrb. 1:175.1880; Saxena & Brahmam, Fl. Orissa 2:720.1995. *Ammannia rotundifolia* Buch.-Ham. Ex Roxb. Fl. Ind. 1:446.1820. Common along streams and water courses, in wet or marshy places.

## ONGRACEAE

17. *Ludwigia adscendens* (L.) Hara in J. Jap. Bot. 28:290.1953; Saxena & Brahmam, Fl. Orissa 2:726.1995. *Jussiaea adscendens* L. Mart., Pl. 1:69.1767. Common in ponds and ditches.
18. *Ludwigia hyssopifolia* (G.Don) Exell, Garcia de Orta 5:471.1957; Saxena & Brahmam, Fl. Orissa 2:726.1995. *Jussiaea hyssopifolia* G.Don, Gen. Syst. 2:693.1832. Common in wet places along tanks, streams, rice fields etc.
19. *Ludwigia octovalvis* (Jacq.) Raven, Kew Bull. 15:476.1962; Saxena & Brahmam, Fl. Orissa 2:728.1995. *Oenothera octovalvis* Jacq. Enum. Syst Pl. 19.1760. Common in wet places along tanks, streams, rice fields etc.
20. *Ludwigia prostrata* Roxb.Fl.Ind. 1:441.1820; Saxena & Brahmam, Fl. Orissa 2:729.1995. *Jussiaea prostrata* (Roxb.) Leveille, Fedde Report. 8:138.1910. On wet ground near stream.

## TRAPACEAE

21. *Trapa natans* L. var. *bispinosa* (Roxb.) Makino in linuma, Somoku-Dzusetzu ed.3.1:137.1907. Saxena & Brahmam, Fl. Orissa 2:731.1995. Common in ponds.

## AIZOACEAE

**22. *Trianthema portulacastrum*** L. Sp. Pl. 223.1753; Saxena & Brahmam, Fl. Orissa 2:773.1995. Common weed.

## APIACEAE

**23. *Centella asiatica*** (L.) Urban in Mart. Fl. Bras. 11:287.t.78.f. 1. 1879; Saxena & Brahmam, Fl. Orissa 2:778.1995. *Hydrocotyle asiatica* L.Sp.Pl.234.1753. Common in wet places.

## RUBIACEAE

**24. *Dentella repens*** (L.) J.R. & G. Forst.Char.Gen.26.t.13.1776; Saxena & Brahmam, Fl. Orissa 2:818.1995. *Oldenlandia repens* L. Mant.Pl.40.1767.

Fairly Common in damp places along river beds, ponds, rice field etc.

**25. *Hedyotis corymbosa*** (L.) Lam. Encycl. 1:272.1792; Saxena & Brahmam, Fl. Orissa 2:832.1995.

*Oldenlandia corymbosa* L. Sp. Pl.119.1753. Fairly Common weed.

**26. *Hedyotis diffusa*** Willd.Sp.Pl. 1:566.1798; Saxena & Brahmam, Fl. Orissa 2:833.1995.

*Oldenlandia diffusa*(Willd.) Roxb. Fl. India 1:444.1820. Common in wet places near rivers, ponds, rice fields etc.

**27. *Neanotis tubulosa*** (G.Don) Mabberley in Manilal, Bot. Hist. Hort. Malab.92. 1980; Saxena & Brahmam, Fl. Orissa 2:859.1995. *Oldenlandia tubulosa* G.Don, Gen. Syst. 3:531.1834, pro parte.

In open grassland under partial shade.

## ASTERACEAE

**28. *Caesulia axillaris*** Roxb.Pl. Corom. 1:64.t.93.1798; Saxena & Brahmam, Fl. Orissa 2:913.1995.

Common in marshy places.

**29. *Cyathocline purpurea*** (Buch.- Ham. Ex D.Don) Kuntze, Rev. Gen.Pl. 1:333.1891; Saxena & Brahmam, Fl. Orissa 2:923.1995. *Tanacetum Purpureum* Buch.-Ham. Ex D.Don, Prod.181.1825.

Occasional in moist places often near streams.

**30. *Eclipta prostrata*** (L.) L. Mart. Pl. 286. 1771; Saxena & Brahmam, Fl. Orissa 2:926.1995.

*Verbesina prostrata* L. Sp. Pl. 902.1753. Frequent in moist places along streams, borders of rice fields, cultivated land etc.

**31. *Enydra fluctans*** Lor. Fl. Cochinch 511.1790; Haines, BBO 2:479.1988; Saxena & Brahmam, Fl. Orissa 2:930.1995.

Common along edges of ponds and ditches.

**32. *Gnaphalium luteo-album*** L. subsp. *affine* (D.Don)Koster, Blumea 4:484.1941; Saxena & Brahmam, Fl. Orissa 2:935.1995. *G.affine* D.Don, Prod.173.1825. Common in moist places, often along streams, especially in hills.

**33. *Lobelia heyniana*** Roem. & Schult. in L.Syst..Veg. 5:50. 1819-20; Saxena & Brahmam, Fl. Orissa

2:988.1995. *L. trialata* Buch.-Ham. Ex D.Don, Prod. 157.1825. Common in moist and shady places.

## PRIMULACEAE

**34. *Anagallis pumila*** Sw.Nov.Gen.Pl.40.1788; Saxena & Brahmam, Fl. Orissa 2:996.1995. *Centunculus tenellus* Duby in DC. Prod. 8:72.1844. Common in open damp places.

## GENTIANACEAE

**35. *Centaurium centaurioides*** (Roxb.) Rao & Hemadri; Saxena & Brahmam, Fl. Orissa 2:1124.1995.

*Chironia centaurioides* Roxb. Fl. Ind. 1:584.1820.

Abundant in the muddy black soil of the river bank and also in the crevices of rocks and boulders.

**36. *Hoppea dichotoma*** (Griseb.) C.B.Cl. in Hook.f.Fl.Brit. India4:100.1883; Saxena & Brahmam, Fl. Orissa 2:1128.1995. Occasional in moist places.

**37. *Swertia angustifolia*** Buch.-Ham. Ex D.Don, Prod. 127.1825; Saxena & Brahmam, Fl. Orissa

2:1129.1995. *S.pulchella* Buch.-Ham. Ex D.Don, Prod. 127.1825. Rare in moist places.

## MENYANTHACEAE

**38. *Nymphoides hydrophylla*** (Lour.) Kuntze, Revis. Gen. Pl. 2:429.1891. Saxena & Brahmam, Fl. Orissa 2:1131.1995. *Menyanthes hydrophylla* Lour. Fl. Cochinch. 1:129.1790. Common in ponds and lakes.

## HYDROPHYLLACEAE

**39. *Hydrolea zeylanica*** (L.) Vahl, Symb. Bot. 2:46.1791; Saxena & Brahmam, Fl. Orissa 2:1133.1995. Occasional in wet places in lower elevation.

## BORAGINACEAE

**40. *Coldenia procumbens*** L.Sp.Pl. 125.1753; Saxena & Brahmam, Fl. Orissa 2:1142.1995. Common weed in cultivated land, wastelands, near ponds.

**41. *Heliotropium indicum*** L. Sp. Pl. 130.1753; Saxena & Brahmam, Fl. Orissa 2:1146.1995. *Tiaridium indicum* Lehm.Pl.Asperif.Nucif.14.1818. Common weed.

## CONVOLVULACEAE

**42. *Ipomoea aquatica*** Forssk.Fl. Aegypt.-Arab. 44.1775; Saxena & Brahmam, Fl. Orissa 2:1171.1995. Common in and on the margins of tanks.

**43. *Ipomoea carnea*** Jacq. Enum. Syst. Pl. 13.1760; Saxena & Brahmam, Fl. Orissa 2:1175.1995.

Fairly Common and naturalized in wastelands, roadsides, near water courses etc.

## SCROPHULARIACEAE

**44. *Angelonia salicariifolia*** Hembs & Bonpl. Aequin 2:92.t.1812; Saxena & Brahmam, Fl. Orissa

2:1271.1995. Planted in gardens and often escaped.

**45. *Bacopa monnieri*** (L.) Penell, Proc. Acad. Nat. Sci. Philadelphia 98:94.1946; Saxena & Brahmam, Fl.Orissa 2:1229.1995. *Lysimachia monnieri* L., Cent. Pl. 11:9.1756. Common in wet places near water courses.

**46. *Centranthera indica*** (L.) Gamble, Fl. Madras 2:971(683).1924; Saxena & Brahmam, Fl. Orissa

2:1231.1995. *Rhinanthus indica* L.Sp.Pl.603.1753. Frequent in grassland and open moist places.

**47. *Limnophila connata*** (Buch.-Ham. Ex D.Don) Handb.-Mazz. Symb.Sin. 7:837.1936; Saxena & Brahmam, Fl. Orissa 2:1237.1995. *Cybbanthera connata* Buch.-Ham. Ex D.Don, Prod.87.1825.

Occasional along stream and ponds.

**48. *Limnophila heterophylla*** (Roxb.) Benth. Scroph. Ind. 25.1835; Saxena & Brahmam, Fl. Orissa

2:1237.1995. *Columnea heterophylla* Roxb. Fl.Ind. 3:97.1832. In shallow stagnant water.  
**49. *Limnophila indica*** (L.) Druce, Bot. Exch.Club Soc. Brit. Isles. 3:420.1914; Saxena & Brahmam, Fl.Orissa 2:1238.1995. *Hottonia indica* L.Syst.Nat. (ed.10) 919.1759. Common along borders of ponds, flooded paddy fields, wet low lands.

**50. *Limnophila rugosa*** (Roth) Merr. Interpr.Herb.Amboin. 466.1917; Saxena & Brahmam, Fl. Orissa

2:1239.1995. *Herpestis rugosa* Roth, Nov.Pl.290.1821. In wet ground along the stream.

**51. *Limnophila sessiliflora*** (Vahl) Bl. Bijdr.849.1826; Saxena & Brahmam, Fl. Orissa 2: 1240. 1995.

Occasional along streams and ponds.

**52. *Lindernia anagallis*** (Burm.f.) Pennell.J. Arnold Arbor.24.252.1943; Saxena & Brahmam, Fl. Orissa 2:1244.1995. *Ruellia anagallis* Burm.f.Fl. Ind. 135.1768. Common in moist and marshy places.

**53. *Lindernia antipoda*** (L.) Alston in Trimen, Fl. Ceylon 6:214.1931; Saxena & Brahmam, Fl. Orissa

2:1245.1995. *Ruellia antipoda* L.Sp.Pl. 635.1753. Common in wet places.

**54. *Lindernia caespitosa*** (Bl.) Panig. Taxon 33.320.1984; Saxena & Brahmam, Fl. Orissa 2:1246.1995. *Diceros caespitosus* Bl. Bijdr.753.1826. Occasional in moist and shady places.

**55. *Lindernia ciliata*** (Colsm.) Pennell, Brittonia 2:182.1936; Saxena & Brahmam, Fl. Orissa 2:1248.1995. *Gratiola ciliata* Colsm. Prod.Descr.Gratiol.14.1793. Common in moist places.

**56. *Lindernia crustacea*** (L.) F.V. Muell. Syst Census Austral.Pl.97.1882; Saxena & Brahmam, Fl. Orissa 2:1248.1995. *Capraria crustacean* L. Mant.Pl.87.1767.

Common in moist places.

**57. *Lindernia hookeri*** (C.B.Cl.) Wett. In Engl. & Prantl. Pflanzenf. 4(36):80.1891; Saxena & Brahmam, Fl. Orissa 2:1249.1995. *Vandellia hooeri* C.B.Cl. in Hook.f.Fl.Brit.India 4:280.1884. Common in moist and shady places.

**58. *Lindernia nummularifolia*** (D.Don) Wettst. in Engl. & Prantl. Pflanzenf.4(36):79.1891; Saxena &

Brahmam, Fl. Orissa 2:1251.1995. *Vendelia nummularifolia* D.Don., Prod. 86.1825. Common in moist and shady places.

#### LENTIBULARIACEAE

**59. *Utricularia aurea*** Lour.Fl. Cochinch. 26.1790; Saxena & Brahmam, Fl. Orissa 2:1277.1995. Common; floating in ponds, lakes and still water.

#### ACANTHACEAE

**60. *Hemidelfhis polysperma*** (Roxb.) Nees in Wall. Pl. As. Rar. 3:80.1832; Saxena & Brahmam, Fl. Orissa

3:1348.1995. *Justicia polysperma* Roxb.Fl.Ind.1:119.1832.

Common in wet places along the river banks.

**61. *Hygrophila auriculata*** (Schum.) Heine, Kew Bull. 16:172.1962; Saxena & Brahmam, Fl. Orissa

3:1352.1995. *Barleria auriculata* Schum. In Schum. & Tonn. Beskr.Guin.Pl.285.1827.

Common along water courses.

**62. *Hygrophila salicifolia*** (Vahl) Nees in Wall. Pl. As. Rar. 3:81.1832; Saxena & Brahmam, Fl. Orissa

3:1355.1995. *Ruellia salicifolia* Vahl, Sym. Bot. 3:84.1794.

Common in marshy places.

**63. *Justicia gendarussa*** Burm.f. Fl.Ind.10.1768; Saxena & Brahmam, Fl. Orissa 3:1362.1995. Present along the stream.

#### VERBENACEAE

**64. *Lippia javanica*** (Burm.f.) Spreng. Syst. Veg. 2:752.1824; Saxena & Brahmam, Fl. Orissa 3:1414.1995.

*Verbena javanica* Burm.f.Fl.Ind. 12.t.6.f.2.1768.

Frequent near water courses.

**65. *Phyla nodiflora*** (L.) Greene, Pittonia 4:46.1899; Saxena & Brahmam, Fl. Orissa 3:1415.1995. *Verbena nodiflora* L. Sp.Pl. 20.1753.

Frequent in open moist places.

#### LAMIACEAE

**66. *Pogostemon auricularius*** (L.) Hassk.

Tijdschr.Natuurl.Gesch.Physiol.10:127.1843; Saxena & Brahmam, Fl. Orissa 3:1480.1995.

*Mentha auricularia* L.Mant.Pl.81.1767. Along the margins of pond.

#### AMARANTHACEAE

**67. *Alternanthera sessilis*** (L.) R. Br. ExDC.Cat. Pl. Hort. Monosp. 4:77.1813; Saxena & Brahmam, Fl.

Orissa 3:1506.1995. *Gompherna sessilis* L., Sp. Pl. 225.1753.

Common weed.

#### POLYGONACEAE

**68. *Polygonum barbatum*** L. Sp.Pl.362.1753; Saxena & Brahmam, Fl. Orissa 3:1533.1995.

Common along rivers and streams.

**69. *Polygonum barbatum* var. *stagninum*** (Buch.-Ham. Ex Meissn) Steward, Contr.Gray Herb.88.54.1930;

Saxena & Brahmam, Fl. Orissa 3:1533.1995. *P. stagninum* Buch.-Ham. ex Meissn. In Wall.Pl. As. Rar.

3:56.1832.

Common along rivers and streams.

**70. *Polygonum chinense*** L. Sp.Pl.363.1753; Saxena & Brahmam, Fl. Orissa 3:1535.1995.

Occasional along streams.

**71. *Polygonum dichotomum*** Bl. Bijdr. var. *angustissima* (Hook.f.) Chandrasek. In Henry, Kumari &

Chitra, Fl. Tamil Nadu 2:197.1987; Saxena & Brahmam, Fl. Orissa 3:1535.1995.

Occasional along the stream.

**72. *Polygonum glabrum*** Willd. Sp. Pl. 2:447.1799; Saxena & Brahmam, Fl. Orissa 3:1535.1995.

Common along streams, rivers and water courses.

**73. *Polygonum hydropiper* L.ssp *microcarpum*** Danser var. *triquetrum* Danser; Saxena & Brahmam, Fl.

Orissa 3:1535.1995. *P. flaccidum* Meissn. in DC.Prod.14:107.1856.

Common along water courses.

**74. *Polygonum plebeium*** R.Br.Prod. 420.1810; Saxena & Brahmam, Fl. Orissa 3:1539.995.

*P.indicum*

Heyne in Roth,Nov.Pl.Spec.208.1821.

Fairly common weed in moist places.

**75. *Polygonum strigosum*** R.Br. Prod. 420.1810; Saxena & Brahmam, Fl. Orissa 3:1541.1995.

Present in wet places along the stream and pond.

#### EUPHORBIACEAE

**76. *Euphorbia thymifolia*** L.Sp.Pl.454.1753; Saxena & Brahmam, Fl. Orissa 3:1640.1995.

Common weed.

**77. *Homonoia riparia*** Lour. Fl. Cochinch.637.1790; Saxena & Brahmam, Fl. Orissa 3:1649.1995. *Adelia*

*neriifolia* Roth, Nov. Pl.Spec.375.1821;Wight, Icon.t.1868.1852.

Common along stream and river.

#### **CERATOPHYLLACEAE**

**78. *Ceratophyllum demersum*** L. Sp. Pl. 992. 1753; Saxena & Brahmam, Fl. Orissa 3:1753.1995.

Common in still waters.

#### **MONOCOTYLEDONS (LILIOPSIDA)**

#### **HYDROCHARITACEAE**

**79. *Hydrilla verticillata*** (L.f.) Royle, III.Himal.t.376.1839; Saxena & Brahmam, Fl. Orissa 3:1759.1995.

*Serpicula verticillata* L.f.Suppl.p1.416.1781.

Common submerged weed in still-fresh water ponds, tanks and lakes.

**80. *Ottelia alismoides*** (L.) Pers.Syn.Pl. 1:400.1805; Saxena & Brahmam, Fl. Orissa 3:1761.1995.

Common submerged weed in slow streams.

**81. *Vallisneria natans*** (Lour.) Hara, J.Jap. Bot. 49:136.1974; Saxena & Brahmam, Fl. Orissa 3:1762.1995.

*Physkium natans* Lour.Fl.Cochinch.663.1790.

Common aquatic herb at the bottom of ponds, lakes and slow running river.

#### **BURMANNIACEAE**

**82. *Burmannia coelestis*** D.Don, Prod. 44. 1825; Saxena & Brahmam, Fl. Orissa 3:1764.1995.  
B.

*pusilla*(Miers) Thw. Enum. Pl. Zeyl. 325.1864.

In wet grassy glades, rice fields, along ponds and streams.

#### **AMARYLLIDACEAE**

**83. *Crinum defixum*** Ker-Gawl.Sci.Arts(London) 3:105, 1817; Saxena & Brahmam, Fl. Orissa 3:1921.1995.

Along muddy banks of rivers and often immersed.

#### **PONTEDERIACEAE**

**84. *Eichhornia crassipes*** (Mart.) Solms in A.DC. Monogr. Phan. 4:527.1883; Saxena & Brahmam, Fl. Orissa

3:1974.1995.

Fairly common in stagnant water.

**85. *Monochoria vaginalis*** (Burm.f.) Presl, Reliq.Haenk.1:128.1827; Saxena & Brahmam, Fl. Orissa

3:1977.1995.

Common in swampy places.

#### **COMMELINACEAE**

**86. *Aneilema ovalifolium*** (Wight) Hook.f.ex C.B.Cl. in A.& DC.Monogr.Phan.3:218. 1881; Saxena &

Brahmam, Fl. Orissa 3:1981.1995.

Occasional in damp places in forests.

**87. *Commelina erecta*** L.Sp.Pl.41.1753.; Saxena & Brahmam, Fl. Orissa 3:1986.1995.

*C.undulata*

R.Br.Prod.270.1810.

Common in forest and moist shady places.

**88. *Commelina longifolia*** Lamk.Encyl.1.129.1791; Haines, BBO 3:1076.1988; Saxena & Brahmam, Fl.

Orissa 3:1988.1995.

Fairly common weed.



**89. *Murdannia nudiflora*** (L.) Brenan, Kew Bull. 7:189.1952; Saxena & Brahmam, Fl. Orissa 3:1997.1995.

*Commelina nudiflora* L.Sp.Pl.41.1753, pro parte. Fairly common weed.

**90. *Murdannia spirata*** (L.) Brueck. In Engl. & Prantl. Pflanzenf.(ed.2) 15a:173.1930; Saxena & Brahmam,

Fl. Orissa 3:1999.1995. *Commelina spirata* L. Mant.Pl.176.1767.

Fairly common weed.

**91. *Murdannia vaginata*** (L.) Brueck. In Engl. & Prantl. Pflanzenf.(ed.2) 15a:173.1930; Saxena & Brahmam,

Fl. Orissa 3:1999.1995. *Commelina vaginata* L. Mant.Pl.177.1771. Fairly common in wet places along water

courses.

**92. *Tonningia axillaris*** (L.) Kuntze, Rev.Gen.Pl.2:721.1891; Saxena & Brahmam, Fl. Orissa 3:2000.1995.

*Commelina axillaris* L.Sp.Pl.42.1753.

Common in damp places.

**93. *Cyanotis cristata*** (L.) D.Don, Prod. 46.1825; Saxena & Brahmam, Fl. Orissa 3:1991.1995.

*Commelina*

*cristata* L.Sp.Pl.42.1753.

Common in damp and shady places.

#### **JUNCACEAE**

**94. *Juncus prismatocarpus*** R.Br.Prod.259.1810; Saxena & Brahmam, Fl. Orissa 4:2011.1996.

Fairly

common in wet places.

#### **TYPHACEAE**

**95. *Typha angustata*** Bory & Chaub. Exp. Sci. Moore Bot. 1:338.1833; Saxena & Brahmam, Fl.

Orissa

4:2032.1996. Common in wet places & Rice fields

#### **ARACEAE**

**96. *Alocasia fornicata*** (Roxb.) Schott, Oesterr.Bot. Wochenbl.4:410.1854; Saxena &

Brahmam, Fl. Orissa

4:2035.1996. *Arum fornicatum* Roxb.Fl.Ind.3:501.1832; Wight, Icon.t.792.1844. Along streams under shade.

**97. *Colocasia esculenta*** (L.) Schott in Schott & Endl.Melet.Bot.18.1832; Saxena & Brahmam, Fl. Orissa

4:2041.1996. *Arum esculentum* L.Sp.Pl.965.1763. Common in damp and shady places.

**98. *Lasia spinosa*** (L.) Thw. Enum.336.1864; Saxena & Brahmam, Fl. Orissa 4:2044.1996.

*Dracontium*

*spinosum* L.Sp.Pl.967.1753. Along muddy stream under shade.

**99. *Pistia stratiotes*** L.Sp.Pl.963.1753; Saxena & Brahmam, Fl. Orissa 4:2046.1996. Common in ponds and

stagnant water.

**100. *Tenagocharis latifolia*** (D.Don) Buchen., Abh. Naturw. Ver. Bremen 2;2,3,6,1968; Saxena & Brahmam,

Fl. Orissa 4:2061.1996. *Butomus latifolius* D.Don, Prod. 22.1825. Fairly common in wet places.

#### **POTAMOGETONACEAE**

**101. *Potamogeton nodosus*** Poir in Lam. Encycl. (suppl.4):535. 1861; Saxena & Brahmam, Fl. Orissa

4:2068.1996. Submerged aquatic, in fresh water with upper or all leaves floating.

#### **APONOGETONACEAE**

**102. *Aponogeton natans*** (L.) Engl. & Krause in Engl. Pflanzenr.24(IV.13):11.1906; Saxena & Brahmam, Fl. Orissa 4:2071.1996. *Saururus natans* L. Mant.Pl.2:227.1771. Common in stagnant and shallow water courses.

#### **ERIOCAULACEAE**

**103. *Eliocaulon ritchieanum*** Ruhl.in Engl.Pflanzenr. 13:73.1903; Saxena & Brahmam, Fl. Orissa 4:2086.1996. *E. horsleykondae* Fyson, J. Indian Bot. Soc. 3:13.t.43.1924. Common along streams.

**104. *Eliocaulon truncatum*** Buch.-Ham. In Wall.Pl.As. Rar.3:29.1832; Saxena & Brahmam, Fl. Orissa 4:2089.1996. Common along streams and rivers.

**105. *Eliocaulon xeranthum*** Mart.in Wall.Pl.As.Rar.3:29.1832; Saxena & Brahmam, Fl. Orissa 4: 2089.1996. Frequent in wet places.

#### **CYPERACEAE**

**106. *Carex phacota*** Spreng.Syst.3:826.1826; Saxena & Brahmam, Fl. Orissa 4:2101.1996. Along streams in the forest.

**107. *Cyperus brevifolius*** (Rottb.) Hassk.Cat.Bogor 24.1844; Saxena & Brahmam, Fl. Orissa 4:2115.1996.

*Kyllinga brvifolia* Rottb. Descr.Icon.Rar.Pl. 13.t.4.f.3.1773. Common along streams and moist places.

**108. *Cyperus compactus*** Retz. Obs. Bot. 5:10.1788; Saxena & Brahmam, Fl. Orissa 4:2117.1996. *Mariscus compactus* (Retz.) Bold. Zakfl. Java 77.1916. Frequent in wet places along streams.

**109. *Cyperus compressus*** L.Pl. 46.1753; Saxena & Brahmam, Fl. Orissa 4:2118.1996. Common in moist places, cultivated lands etc.

**110. *Cyperus cuspidatus*** H, B & K, Nov. Gen. Pl. 1:204.1815; Saxena & Brahmam, Fl. Orissa 4:2320.1996. Frequent in moist places.

**111. *Cyperus difformis*** L.Cent. Pl. 2:6.1756; Saxena & Brahmam, Fl. Orissa 4:2123.1996. Common in wet places.

**112. *Cyperus distans*** L.f.Suppl.Pl.103.1781; Saxena & Brahmam, Fl. Orissa 4:2126.1996. Common in wet places near water courses.

**113. *Cyperus flavidus*** Retz. Obs.Bot.5:13.1788; Saxena & Brahmam, Fl. Orissa 4:2130.1996. *C.capillaris* Koenig ex Roxb. Fl. Ind. 1: 198.1820. Common in wet places.

**114. *Fimbristylis aestivalis*** (Retz.) Vahl, Enum, Pl. 2:288.1806; Saxena & Brahmam, Fl. Orissa 4:2169.1996. *Scirpus aestivalis* Retz. Bot. 4:12.1768. Common in ditches.

**115. *Fimbristylis littoralis* var. *littoralis*** Gaudich. In Freye.Voy. Uranie 413.1826; Saxena & Brahmam, Fl. Orissa 4:2179.1996. *F.miliacea* Vahl, Enum.Pl. 2:287.1805. Common in wet places.

**116. *Fimbristylis miliacea*** (L.) Vahl, Enum.Pl.2:287.1806; Saxena & Brahmam, Fl. Orissa 4:2180.1996. *Scirpus miliaceus* L.Syst.Nat.(ed.10)868.1759. Common in moist and wet places.

- 117. *Fimbristylis schoenoides*** (Retz.) Vahl, Enum. Pl. 2:286.1806; Saxena & Brahmam, Fl. Orissa 4:2185.1996. *Scirpus schoenoides* Retz. Obs. Bot. 5:14.1788. Common in wet places.
- 118. *Indocourtoisia cyperoides*** (Roxb.) Bennet & Raizada, Indian For.107:432.1981; Saxena & Brahmam, Fl. Orissa 4:2193.1996. *Kyllinga cyperoides* Roxb. Fl. Ind. 1:187. 1820. Frequent in rice field and other wet places.
- 119. *Lipocarpa chinensis*** (Osbeck) Kern, Blumea (suppl.) 4:167.1958 & in Steenis, Fl. Males. I. 7:521.1974; Saxena & Brahmam, Fl. Orissa 4:2195.1996. *Scirpus chinensis* Osbeck, Degb. Ostind. Resa 220.1757. Frequent in wet places near water courses.
- 120. *Lipocarpa sphacelata*** (Vahl) Kunth, Enum.Pl. 2:267.1837; Saxena & Brahmam, Fl. Orissa 4:2196.1996. *Hypaelyptum sphacelatum* Vahl, Enum.Pl. 2:283.1806. In marshy places along water courses.
- 121. *Scirpus articulatus*** L.Sp.Pl. 47.1753; Saxena & Brahmam, Fl. Orissa 4:2203.1996. *Schoenoplectus articulatus* (L.) Palla, Bot. Jahrb. Syst. 10:299.1889. Common in rice fields.
- 122. *Scirpus grossus*** L.f.Suppl.Pl. 104.1781; Saxena & Brahmam, Fl. Orissa 4:2202:1996. *Schoenoplectus grossus* (L.f) Palla, Allg. Bot.Z.Syst. 17:Beibl.3.1911. Common in ditches.
- 123. *Scirpus juncooides var. juncooides*** Roxb.Fl. Ind. 1:218.1820; Saxena & Brahmam, Fl. Orissa 4:2205.1996. *S. erectus* auct. Non Poir. 1829. Frequent in marshy land.
- 124. *Scirpus mucronatus*** L.Sp.Pl.50.1753; Saxena & Brahmam, Fl. Orissa 4:2209.1996. *Schoenoplectus mucronatus* (L.) Palla, Verh. K.K. Zool. Bot. Ges. Wien 38.Sitzb:49.1988. Frequent in wet places.
- 125. *Scirpus squarrosus*** L. Mart.Pl. 181.1771; Saxena & Brahmam, Fl. Orissa 4:2210.1996. *Rikliella squarrosus* (L.) Raynal, Adansonia (Ser.2) 13:154.1973. Common in shallow water and ditches.
- 126. *Scleria terrestris*** (L.) Fassett, Rhodora 26: 159.1924; Saxena & Brahmam, Fl. Orissa 4:2221.1996. *Zizania terrestris* L.Sp.Pl. 991.1753. Common in moist places.
- POACEAE**
- 127. *Arundo donax*** L. Sp. Pl. 81.1753; Saxena & Brahmam, Fl. Orissa 4:2262.1996. Present along streams.
- 128. *Echinochloa colona*** (L.) Link, Hort. Berol. 2:209.1833; Saxena & Brahmam, Fl. Orissa 4:2345.1996. *Panicum colonum* L., Syst. Nat.ed. 10.2:870.1759. Common in stagnant water and rice fields.
- 129. *Echinochloa stagnina*** (Retz.)P.Beauv. Ess. Agrost. 53, 161, 171.1812; Saxena & Brahmam, Fl. Orissa 4:2348.1996. *Panicum stagnium* Retz. Observ.Bot. 5:17.1789. Common in stagnant water.
- 130. *Eragrostis japonica*** (Thunb.) Trin. Mem. Acad.Imp. Sci.St. Petersburg (Ser. 6) 1:405.1831; Saxena & Brahmam, Fl. Orissa 4: 2363.1996. *Poa japonica* Thunb. Fl. Jap. 51.1784. Common in moist places along streams.

- 131. *Garnotia tenella*** (Arn.ex Miq.) Janawaski, Repert. Spec. Nov. Regni Veg. 17:86.1921; Saxena & Brahmam, Fl. Orissa 4:2379.1996. *Berghausia tenella* Arn. ex Miq. Nieuwe Verh. Eerste Kl. Ned.Inst. Wetensch Amsterdam 3:34.1851. Frequent in moist places.
- 132. *Hackelochloa granularis*** (L.) Kuntze, Rev. Gen. Pl. 2:776.1891; Saxena & Brahmam, Fl. Orissa 4:2383.1996. *Manisuris granularis* (L.) L.F. Nov. Gram. Gen. 40.1779. Common in rice field.
- 133. *Hygroryza aristata*** (Retz.) Nees ex Wight & Arn. Edinburgh New Philos. J. 15:380.1833; Saxena & Brahmam, Fl. Orissa 4:2389:1996. *Pharus aristatus* Retz. Obs. Bot. 5:23.1789. Occasional aquatic grass.
- 134. *Isachne globosa*** (Thunb.) Kuntze, Rev. Gen. Pl. 2:778.1891; Saxena & Brahmam, Fl. Orissa 4:2396.1996. *Milium globosum* Thunb Fl. Jap 49. 1784. Frequent in marshy ground, rice field etc.
- 135. *Ischaemum hirtum*** Hack. In A. & C. DC. Monog. Phan. 6:220.1889; Saxena & Brahmam, Fl. Orissa 4:2399.1996. Present along streams and ponds.
- 136. *Iseilema laxum*** Hack. In A. & C. DC. Mong. Phan. 6:682.1889; Saxena & Brahmam, Fl. Orissa 4:2404.1996. Present in moist places near water courses.
- 137. *Leersia hexandra*** Sw. Nov. Gen. Pl.21.1788; Saxena & Brahmam, Fl. Orissa 4:2407.1996. Frequent in tanks, lakes and marshes.
- 139. *Oplismenus compositus*** (L.) P.Beauv. Essai Agrostogr. 54:168 & 169.1812; Saxena & Brahmam, Fl. Orissa 4:2419.1996. *Panicum compositum* L.Sp.Pl.57.1753. Common in damp forests.
- 140. *Oryza meyeriana* ssp. *granulata*** (Zoll. & Mor.) Baill. Var. *granulate* (Nees & Arn. ex Watt) Duist. Blumea 32:185.1987.; Saxena & Brahmam, Fl. Orissa 4:2423.1996. *O. granulata* Nees & Arn. ex Watt, Dict. Econ. Prod. India 5:500.1891. Found along streams.
- 141. *Paspalum scrobilatum*** L. Mart. Pl. 29.1767; Saxena & Brahmam, Fl. Orissa 4:2445.1996. Fairly common in moist and wet places.
- 142. *Saccharum spontaneum*** L. Mant. Pl. 183.1771; Saxena & Brahmam, Fl. Orissa 4:2474.1996. Common in open wastlands along streams and rivers.
- 143. *Sacciolepis indica*** (L.) Chase, Proc. Biol. Soc. Wash. 21: 8. 1908; Saxena & Brahmam, Fl. Orissa 4:2476.1996. *Aira indica* L.Sp. Pl. 63.1753 & in errata 63.n.1. Frequent in open wet places.
- 144. *Sacciolepis interrupta*** (Wild.) Stapf in prain, Fl. Trop. Africa 9:757.1920; Saxena & Brahmam, Fl. Orissa 4:2477:1996. *Panicum interreptum* Wild. Sp. Pl. 1:341.1797. Common in marshy places or sub-aquatic lakes and ponds.
- 145. *Sporobolus indicus*** (L.) R.Br. Var. *Fertilis* (Steud.) Jovet & Guedes, Taxon 22:163.1973; Saxena &

Brahmam, Fl. Orissa 4:2497.1996. *Agrostis fertilis* Steud. Syn. Pl. Glum. 1:170.1854. Common in wet places.

**PTERIDOPHYTA**  
**EQUISETACEAE**

**146. *Equisetum ramosissimum*** Desf. Subsp. debile (Roxb. Ex Vouch.) Hanke, Amer. Fern J. 52:33.1962;

Saxena & Brahmam, Fl. Orissa 4:2548.1996. *E. debile* Roxb.ex Vauch. Mem. Soc. Phys. Hist Nat. Geneve

1:387.1822. In open or shady places close to stream.

**PARKERIACEAE**

**147. *Ceraptoteris thalictroides*** (L.) Brongn. Bull. Sci. Soc. Philom. Paris 1821:186.1822; Saxena &

Brahmam, Fl. Orissa 4:2591.1996. *Acrostichum thalictroides* L.Sp.Pl.1070.1753. In marshy ground near water courses.

**MARSILEACEAE**

**148. *Marsilea minuta*** L. Mant. Pl. 308.1771; Saxena & Brahmam, Fl. Orissa 4:2593.1996. Common in wet places.

**SALVINIACEAE**

**149. *Salvinia cucullata*** Roxb. Ex Bory, Bel. Voy Bot. 2:6.1833; Saxena & Brahmam, Fl. Orissa 4:2653.1996.

Floating aquatic.

**Table -1: List of some aquatic macrophytes and their utility**

Sl No.	Species	Family	Utility
1.	<i>Centella asiatica</i>	Apiaceae	Medicinal
2.	<i>Swertia angustifolia</i>	Gentianaceae	Medicinal
3.	<i>Hygrophila auriculata</i>	Acanthaceae	Medicinal
4.	<i>Echinochola colona</i>	Poaceae	Fodder Grass
5.	<i>Hygroryza aristata</i>	Poaceae	Fodder Grass
6.	<i>Oryza meyeriana ssp. granulata</i>	Poaceae	Fodder Grass
7.	<i>Paspalum scrobilatum</i>	Poaceae	Fodder Grass
8.	<i>Saccharum spontaneum</i>	Poaceae	Thatching Grass
9.	<i>Sacciolepis interrupta</i>	Poaceae	Fodder Grass

## Prioritisation of Taxa for Conservation in Orissa

**A.K. Biswal<sup>1</sup> and C. Sudhakar Reddy\***

1. P.G. Department of Botany, North Orissa University, Takatpur, Baripada, Orissa

2. Forestry and Ecology Division, National Remote Sensing Agency, Hyderabad

E-mail: [anilkbiswal@yahoo.com](mailto:anilkbiswal@yahoo.com), [drsudhakarreddy@gmail.com](mailto:drsudhakarreddy@gmail.com)

### **Abstract**

*Red lists of threatened taxa form a significant component in the formulation of appropriate schemes for any given area. Regional Red lists prepared in accordance with the guidelines given by the IUCN make globally acceptable and comparable databases. We observed that a large number of threatened species of Orissa were not mentioned in Indian Red Data Books. The present communication inventoried 129 threatened taxa for Orissa based on published literature, herbarium records and field studies. Assignment of threat categories in respect of some of the taxa requires critical evaluation.*

**Table 1: Prioritisation of taxa for conservation in Orissa**

S.No.	BOTANICAL NAME	FAMILY	HABIT	THREAT STATUS
1	<i>Acacia donaldii</i> Haines	Mimosaceae	T	VU
2	<i>Acacia sinuata</i> (Lour.) Merr.	Mimosaceae	C	DD
3	<i>Acampe rigida</i> (Buch.-Ham. ex Sm.) Hunt	Orchidaceae	H	VU
4	<i>Acanthephippium bicolor</i> Lindl.	Orchidaceae	H	VU:OR
5	<i>Acrostichum aureum</i> L.	Acrostichaceae	F	NE
6	<i>Aegle marmelos</i> (L.) Correa	Rutaceae	T	VU: AP, KA, KL, TN
7	<i>Aerides crispum</i> Lindl.	Orchidaceae	H	NE
8	<i>Aglaia cucullata</i> (Roxb.) Pellegrin	Meliaceae	T	DD
9	<i>Albizia lebbek</i> (L.) Benth.	Mimosaceae	T	NE
10	<i>Albizia orissensis</i> Sahni & Bennet	Mimosaceae	T	NE
11	<i>Alphonsea ventricosa</i> (Roxb.) Hook f. & Thoms.	Annonaceae	T	DD
12	<i>Amorphophallus paeoniifolius</i> (Dennst.) Nicolson var. <i>campanulatus</i> (Decne) Sivadasan	Araceae	H	NE
13	<i>Andrographis paniculata</i> (Burm.f.) Wall.ex Nees	Acanthaceae	H	VU: CH; MP: LC: MH
14	<i>Angiopteris evecta</i> (Forst.) Hoffm.	Marrattiaceae	F	EN:AP, CH, MP
15	<i>Anodendron paniculatum</i> A.DC.	Apocynaceae	C	EN: AP
16	<i>Aphanamixis polystachya</i> (Wall.) Parker	Meliaceae	T	VU: KA, KL, OR
17	<i>Aristolochia tagala</i> Cham.	Aristolochiaceae	C	DD: OR
18	<i>Asparagus racemosus</i> Willd.	Liliaceae	C	NT: CH, MP
19	<i>Atalantia monophylla</i> (L.) Corr.	Rutaceae	S	NT:OR
20	<i>Atylosia cajanifolia</i> Haines	Fabaceae	S	DD: OR
21	<i>Azima tetracantha</i> Lam.	Salvadoraceae	C	DD: OR
22	<i>Balanophora polyandra</i> Griff.	Balanoporaceae	H	DD
23	<i>Blepharispermum subsessile</i> DC.	Asteraceae	H	EN:OR
24	<i>Boswellia serrata</i> Roxb. ex Colebr	Burseraceae	T	VU: CH, MP
25	<i>Brucea mollis</i> Wall. ex Kurz	Simaroubaceae	T	EN: ARP, AS
26	<i>Bruguiera gymnorrhiza</i> (L.) Sav.	Rhizophoraceae	T	NT
27	<i>Caesalpinia digyna</i> Rottl.	Caesalpinaceae	S	VU:CH, OR
28	<i>Casearia rubescens</i> Dalz.	Flacourtiaceae	S	DD
29	<i>Celastrus paniculatus</i> Willd.	Celastraceae	C	VU: OR, KL, CH, MP
30	<i>Cerbera odollam</i> Gaertn.	Apocynaceae	S	VU: OR
31	<i>Chlorophytum arundinaceum</i> Baker	Liliaceae	H	EN: MH, AP
32	<i>Chlorophytum tuberosum</i> (Roxb.) Baker	Liliaceae	H	VU: CH, MP
33	<i>Chukrasia tabularis</i> A. Juss	Meliaceae	T	DD: OR
34	<i>Clausena excavata</i> Burm.f.	Rutaceae	S	NT: OR
35	<i>Clerodendrum serratum</i> (L.) Moon	Verbenaceae	S	EN: CH, MP
36	<i>Cochlospermum religiosum</i> (L.) Alston	Cochlospermaceae	T	VU: CH, MP
37	<i>Cordia macleodii</i> (Griff.) Hook.f. & Thoms.	Ehretiaceae	T	EN: OR
38	<i>Costus speciosus</i> (Koenig) Sm.	Costaceae	H	VU: CH, MP; NT: AP
39	<i>Crataeva magna</i> (Lour.) DC	Capparaceae	T	VU: CH, MP, OR
40	<i>Cryptocarya amygdalina</i> Nees	Lauraceae	T	DD: OR
41	<i>Curculigo capitulata</i> (Lour.) Kuntze	Hypoxidaceae	H	NE
42	<i>Curculigo orchiooides</i> Gaertn.	Hypoxidaceae	H	NE
43	<i>Cycas sphaerica</i> Roxb.	Cycadaceae	T	VU: OR
44	<i>Cynometra iripa</i> Kostel.	Caesalpinaceae	T	NT:OR
45	<i>Dendrobium nobile</i> Lindl.	Orchidaceae	H	EN: AS; VU: ARP, SK
46	<i>Dendrobium cathcartii</i> Hook.f.	Orchidaceae	H	NT
47	<i>Dendrobium nobile</i> Lindl.	Orchidaceae	H	EN: AS, VU: ARP

				CH; NT: KL; NE: KA DD
97	<i>Pittosporum wightii</i> A.K. Mukherjee	Pittosporaceae		DD
98	<i>Polyathia simiarum</i> (Buch-Ham.) Hook.f.& Thoms.	Annonaceae	S	VU: OR
99	<i>Psilotum nudum</i> P.	Psilotaceae	H	CR: MP
100	<i>Psoralia corylifolia</i> L.	Fabaceae	S	NE
101	<i>Pterocarpus marsupium</i> Roxb.	Fabaceae	T	VU:MH, CH, MP, EN: OR
102	<i>Pueraria tuberosa</i> (Willd.) DC.	Fabaceae	C	VU: OR
103	<i>Radermachera xylocarpa</i> (Roxb.) Schum.	Bignoniaceae	T	DD
104	<i>Rhaphidophora decursiva</i> (Roxb.) Sch.	Araceae	C	EN: AP
105	<i>Rauvolfia serpentina</i> (L.) Benth. ex. Kurtze	Apocynaceae	H	CR: AP, MH, CH, ARP, HP EN:KA,KL,TN,OR VU: MP, AS, JK, UTA
106	<i>Rubia cordifolia</i> L.	Rubiaceae	C	VU: AP, MH, CH, MP
107	<i>Salacia reticulata</i> Wight	Celastraceae	S	EN: KA DD: KL
108	<i>Salvadora persica</i> L.	Salvadoraceae	S	VU: OR
109	<i>Saraca asoca</i> (Roxb.) de Wilde	Caesalpiaceae	T	EN: KA, AP, MH, DD: KL,TN, CR: OR
110	<i>Schrebera swietenoides</i> Roxb.	Oleaceae	T	VU: KA,OR
111	<i>Scindapus officinalis</i> (Roxb.) Schott.	Araceae	C	VU: OR
112	<i>Sonneratia griffithii</i> Kurz	Sonneratiaceae	T	NE
113	<i>Sophora glauca</i> Lesch. ex DC.	Fabaceae	S	NE
114	<i>Sterculia urens</i> Roxb.	Sterculiaceae	T	VU: AP
115	<i>Stemona tuberosa</i> Lour.	Roxburghiaceae	C	VU: AP, OR
116	<i>Stereospermum suaveolens</i> (Roxb.) DC.	Bignoniaceae	T	EN:OR
117	<i>Strychnos nux-vomica</i> L.	Loganiaceae	T	VU: CH
118	<i>Strychnos potatorum</i> L.f.	Loganiaceae	T	VU:OR
119	<i>Swertia angustifolia</i> Buch.-Ham.ex.D.Don	Gentianaceae	H	DD: OR
120	<i>Symplocos racemosa</i> Roxb.	Symplocaceae	T	VU: KA, MH NT: TN DD:KL CR:OR
121	<i>Tamarix troupii</i> Hole	Tamaricaceae	S	NE
122	<i>Terminalia arjuna</i> (Roxb.) Wight & Arn.	Combretaceae	T	NT:KA,KL,MH,CH , MP
123	<i>Thalictrum foliolosum</i> DC.	Ranunculaceae	H	VU:CH, MP,OR
124	<i>Tinospora sinensis</i> (Lour.) Merr.	Menispermaceae	C	VU:KA NT:KL,MH
125	<i>Tylophora fasciculata</i> Buch.Ham.ex.Wight	Asclepiadaceae	H	DD
126	<i>Uria picta</i> (Jacq.) Desv. ex DC.	Fabaceae	H	VU:CH, MP: EN:OR
127	<i>Xylocarpus granatum</i> Koenig	Meliaceae	T	EN:OR
128	<i>Zanthoxylum armatum</i> DC.	Rutaceae	C	EN:HP VU:JK,UTA,OR
129	<i>Zanthoxylum rhetsa</i> (Roxb.) DC.	Rutaceae	T	EN:AP, VU:OR

**Habit:** C=Climber; H=Herb, T=Tree, F=Fern, S= Shrub

**THREAT STATUS:** CR= Critically Endangered, EN= Endangered, VU=Vulnerable. NT= Near Threatened, LC= Least Concern, DD= Data Deficient & NE= Not Evaluated,

**States:** AP= Andhra Pradesh, ARP= Arunachal Pradesh, AS= Assam, CH= Chahattisgarh, HP= Himachal Pradesh, JK= Jammu & Kashmir, KA=Karnataka, KL=Kerala, MH=Maharashtra, MP=Madhya Pradesh, OR=Orissa, TN=Tamil Nadu, UTA=Uttaranchal.

**(Source: Proc. National Seminar on Conservation of Eastern Ghats)**



## **NEED FOR CONSERVATION OF FAST DWINDLING BIODIVERSITY OF EASTERN GHATS**

The Eastern Ghats or Eastern Ghauts, are a discontinuous range of mountains along India's eastern coast. The Eastern Ghats run from West Bengal state in the north, through Orissa and Andhra Pradesh to Tamil Nadu in the south passing some parts of Karnataka. They are eroded and cut through by the four major rivers of southern India, the Godavari, Mahanadi, Krishna, and Kaveri. The highest mountain peak in the state of Orissa is Deomali (1672 m), which is situated in Koraput district in southern Orissa. It is also the tallest peak of the Eastern Ghats. It is part of the Chandragiri-Pottangi mountain system. The region covers about three-fourth of the entire Orissa State. Geologically it is a part of the Indian Peninsula which was a part of the ancient landmass of Gondwanaland.

It is reported that forest biodiversity in the Eastern Ghats is undergoing a tremendous change. Experts at the department of environmental sciences, Andhra University, believe that the hilly slopes in the district are changing for the worse. The department of environmental sciences estimates that over 80,000 acres of forest land has been permanently destroyed in the last 32 years alone (from 1980-2012). In addition to this, biodiversity in the deciduous forests on the hilly slopes of the Eastern Ghats in the district has virtually gone for a toss. Experts say that intrusive non-native species are taking over the forest cover and artificial block plantations in many pockets of our reserve are threatening the existence of seasonal native plants in many 'forested' areas.

Over a period of time, many block plantations of tree species like Eucalyptus and timber trees such as Cashew rina have been introduced in the reserve area, resulting in erosion of endemic species peculiar to the Eastern Ghats like Native Basil, Fida, Justicia, Borreria and Merremia that help in soil conservation, increase moisture level and produce organic matter which helps trap carbon. Senior biotechnologist from Andhra University said that the introduction of foreign species in a specific and sensitive ecosystem must be done carefully and care must be taken to ensure that they are friendly towards the ecosystem and not intrusive.

According to experts, the forests in Eastern Ghats are unique, in the sense that they are the most ancient forest cover in the subcontinent. More importantly, thanks to the solid bedrock, they house a vast number of tree species. The three-tier structure of the forest is predominantly tree based and supported by shrub and herbaceous cover which is conducive to supporting life forms of great variance. The undulating and gentle sloping nature of the Ghats makes it ideal to support a three-tier forest, said sources at the environmental sciences department. Experts opine that the very sloping nature of the Ghats makes a three-tier forest absolutely necessary. The seasonal herbaceous species such as Hyptis and Ocymm are extremely eco-friendly, in the sense that they not only help bind the soil and absorb rain water but also act as generators of organic matter that help the forest sustain.

Moreover, the sub-tropical nature of the climate ensures that species found in different climatic zones can make a home in the Eastern Ghats. However, experts fear that the very existence of forests in the Eastern Ghats is being threatened due to various reasons today.

The introduction of non-friendly species such as Eucalyptus and Cashew, Casurina is spelling doom for the ethnic nature of the forest, even as illegal mining, excessive urbanisation and shifting cultivation in addition to illegal logging could actually wipe out the forest cover for good, experts pointed out.

Field findings reveal that almost three species of butterflies have been wiped out and honey bees too are a threatened lot. If we do not act today and protect our forest cover, the implications would be serious as pollination itself could be affected. This means that food production would be drastically affected in the long run.

Forest department officials, as per media reports, defend the decision to opt for quick growing plantations of Acacia, Cashew rina, Eucalyptus, Prosopis (Thumma) and Coffee because the focus was on regenerating tree and land cover in completely denuded areas. The need to take into consideration the fact that these trees have a commercial value, taking into consideration of locals, are the reasons put forth. Departmental agencies opine that these block plantations will be taken over by natural forests.

But the question is how? Time has come when all the state governments need to ensure that the conservation of the Eastern Ghats, and regeneration of all its biodiversity, is accorded top priority.

Arguably there has been efforts by the government. Governments have taken many initiatives to protect biodiversity of the Eastern Ghats. Seshachalam hill ranges of Andhra Pradesh have been designated as Biosphere Reserve. Several Wildlife Sanctuaries established in the Eastern Ghats to preserve its Biodiversity. These include Gundla Brahmeswaram, Kambalakonda, Kaundinya, Nagarjunsagar-Srisailam, Papikonda, Pocharam, Rollapadu, Sri Lankamalleswaram, Sri Peninsula Narasimha and Sri Venkateswara Wildlife Sanctuaries. Botanical Survey of India (BSI) has published several floras to document the biodiversity of Eastern Ghats. These are Flora of Tamilnadu (including districts of Eastern Ghats), Flora of Nallamalais, Flora of Visakhapatnam, Flora of Nellore, Flora of Venkateshwara Wildlife Sanctuary, Flora of Araku Valley, Flora of Nagarjuankonda, Flora of Maredumalai, Flora of Medak and Flora of Chittor District. Zoological Survey of India (ZSI) has taken steps to document the faunal resources in the Eastern Ghats. It has published under State Fauna series the Fauna of Andhra Pradesh in 8 volumes and the Fauna of Tamilnadu (part I published and part II in press), both of which contain the fauna of Eastern Ghats also.

In the end we need to focus on the whole ghat system and ensure that positive fallouts from these protected areas percolate to the degraded areas of the ghats.

(Source: <https://www.facebook.com/wildorissa/posts/506808232683094>, 3-February 2016)