

**ASTERACEOUS FLORA OF TERAI REGION OF EASTERN UTTAR PRADESH,
INDIA****KANCHAN LATA**

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ABSTRACT

The systematic identification of 78 species belonging to 51 genera reported from Terai region of Eastern Uttar Pradesh, India. The present paper provides key to genera, list of plant with their habit, phenology and voucher number of each species.

Figure : 00

References : 15

Table : 01

KEY WORDS : Asteraceae, Flora, Terai region, Uttar Pradesh**Introduction**

The northern part of the Upper Gangetic Plain adjacent to Nepal is known as Terai region. It extends from north-west district of Gonda to the eastern most district of Kushinagar including districts of Balrampur, Maharajganj, Siddarthnagar and a part of Basti, Deoria, Gonda and Gorakhpur. The soil is rich in humus content which has high water retaining capacity. Many wetlands, lakes and ponds are present. The whole area is interspersed with numerous rivers and streams. This area has rich plant diversity and geographically it is a part of great belt of sal forest which extends almost without interruption throughout the region. The forest nearest to Gorakhpur is Ramgarh and Tilkonia reserves which are 10 km to the east. The Tikri forest range is situated in the north-east region of Gonda. The reserve forest of Sohalwa wild life sanctuary, situated in Balrampur district comprises of Tulsipur, Bhabhar and Birpur forest ranges. The

northern most part of terai region is within a few miles of the foot hills of Himalayas. The whole region is almost flat and the drainage is slow, therefore the large rivers, a large number of ponds, swamps and small depressions, which flow through the forests have generally broad, low-lying valley, which inundate every year during the rains, thus a very large area of low-land is liable to submergence.

Asteraceae is one of the largest plant family of angiosperm with over 25,000 species and 1600 genera distributed throughout the world^{1,2}. In India, the family is represented by 1052 species under 161 genera³. In Terai region of eastern Uttar Pradesh the family Asteraceae was explored by a number of workers^{4,5}. The author has collected 78 species and 51 genera from Terai region of eastern Uttar Pradesh. The collected species were identified with published flora¹. All the species are provided with upto date nomenclature, habit, phenology, locality

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106

with their voucher numbers (Table 1). All the specimens collected have been deposited in the Duthie Herbarium, Botany Department, University of Allahabad, Allahabad (U.P.) India.

Key to Genera

- 1a. Heads unisexual, flowers in male and female head on same plant.....2
- 1b. Heads bisexual3
- 2a. Filaments fused, anther free, pappus absent..... *Xanthium*
- 2b. Filaments free, anther fused, pappus hairs feathery*Breca*
- 3a. Heads with ligulate or tubular florets4
- 3b. Heads with both ligulate and tubular florets19
- 4a. Florets ligulate5
- 4b. Florets tubular9
- 5a. Head axillary, solitary, terminal. Ligule bluish*Cichorium*
- 5b. Head fascicled. Ligule yellow6
- 6a. Cypselas distinctly beaked*Lactuca*
- 6b. Cypselas not beaked7
- 7a. Cypselas compressed*Sonchus*
- 7b. Cypselas subcompressed, truncate at both the ends.....8
- 8a. Cypselas 4-5 ribbed, inner involucre bracts with scarious margin.....*Launaea*
- 8b. Cypselas 10-20 ribbed, inner involucre bracts without scarious margin*Youngia*
- 9a. Involucre bracts cottony*Saussurea*
- 9b. Involucre bracts not cottony10
- 10a. Leaf margin spinous11
- 10b. Leaf margin without spines14
- 11a. Heads one flowered, crowded into involucre, globose ball.....*Echinops*
- 11b. Heads many flowered, separate12
- 12a. Involucre bracts leafy and spinous*Carthamus*
- 12b. Involucre bracts not leafy and spinous13
- 13a. Leaves white veined, filament fused forming a tube*Silybum*
- 13b. Leaves white tomentose below, filament free*Cirsium*
- 14a. Heads sessile in the axil of inflated auriculate leaf base.....*Caesulia*
- 14b. Heads peduncled not sunken in auriculate leaf base15
- 15a. Leaves opposite16
- 15b. Leaves alternate.....17
- 16a. Pappus of 10 or more capillary bristles *Eupatorium*
- 16b. Pappus of 3-5 scales like *Ageratum*
- 17a. Head in glomerules, three bracts enclosing four florets.....*Elephantopus*
- 17b. Head distinct, many bracts enclosing many flower.....18
- 18a. Cypselas 5 ribbed*Emilia*
- 18b. Cypselas 10 ribbed*Vernonia*
- 19a. Receptacle flat and densely bristly *Amberboa*
- 19b. Receptacle naked or pitted20
- 20a. Plants woolly*Gnaphalium*
- 20b. Plants not woolly.....21
- 21a. Head disciform22
- 21b. Head radiate32
- 22a. Pappus present23
- 22b. Pappus absent27
- 23a. Anther base tailed24
- 23b. Anther base obtuse25
- 24a. Involucre bracts broad and scaly. Cypselas cylindrical. Pappus strigose, bristly hairy.....*Pluchea*
- 24b. Involucre bracts narrow and scaly. Cypselas oblong. Pappus slender, hairs barbellate...*Blumea*
- 25a. Pappus forming short tube with fimbriate or cupular mouth*Grangea*
- 25b. Pappus not tubular26
- 26a. Pappus hairs 1-seriate, all equal*Conyza*
- 26b. Pappus hairs 2-seriate, outer few and short *Erigeron*
- 27a. Stoloniferous, corolla of outer florets absent *Soliva*
- 27b. Not stoloniferous, corolla of outer florets present28

KANCHAN LATA

ASTERACEOUS FLORA OF TERAI REGION OF EASTERN UTTAR PRADESH, INDIA

107

TABLE-1: Asteraceous plants of Terai region of Eastern Uttar Pradesh, India

S.No	Botanical Name	Habit	Locality & Voucher Specimen	Phenology
1.	<i>Acanthospermum hispidum</i>	Herb	Gonda, 19195; Gorakhpur, 19322	November-April
2.	<i>Ageratum conyzoides</i>	Herb	Gonda, 19023; Balrampur, 19048; Gorakhpur, 19040	Throughout year
3.	<i>Ageratum haustinianum</i>	Herb	Gonda, 19023; Gorakhpur, 19452	Throughout year
4.	<i>Amberboa ramosa</i>	Herb	Gonda, 19104; Gorakhpur, 19411	January-April
5.	<i>Anthemis cotula</i>	Herb	Kushinagar, 19461	April-June
6.	<i>Artemisia japonica</i>	Herb	Maharajanj, 19440; Gorakhpur, 19302; Kushinagar, 19115	July-January
7.	<i>Bidens pilosa</i>	Herb	Gonda, 19239; Balrampur, 19312; Maharajanj, 19311; Gorakhpur, 19438; Kushinagar, 19439	November-January
8.	<i>Blainvillea acmella</i>	Herb	Gonda, 19392; Balrampur, 19330; Gorakhpur, 19325; Kushinagar, 19340	September-January
9.	<i>Blumea fistulosa</i>	Herb	Gonda, 19165	December-May
10.	<i>Blumea laciniata</i>	Herb	Maharajanj, 19364; Gorakhpur, 19087	March-January
11.	<i>Blumea lacera</i>	Herb	Gonda, 19164	February-June
12.	<i>Blumea membranacea</i>	Herb	Balrampur, 19429	January-May

13.	<i>Blumea mollis</i>	Herb	Gorakhpur, 19373; Kushinagar, 19374	January-November
14.	<i>Breea arvensis</i>	Herb	Kushinagar, 19347	January-May
15.	<i>Caesulia axillaris</i>	Herb	Gonda, 19143; Balrampur, 19377 Maharajganj, 19353; Gorakhpur, 19240; Khushinagar, 19140	July-January
16.	<i>Carthamus tinctorius</i>	Herb	Gorakhpur, 19352; Kushinagar, 19139	February-April
17.	<i>Carthamus oxyacantha</i>	Herb	Gorakhpur, 440	February-May
18.	<i>Centipeda minima</i>	Herb	Gorakhpur, 19244	December-March
19.	<i>Chrysanthellum americanum</i>	Herb	Gonda, 19272; Gorakhpur, 19243; Khushinagar, 19271	September-January
20.	<i>Cichorium intybus</i>	Herb	Gonda, 19194; Gorakhpur, 19281	March-September
21.	<i>Cirsium verutum</i>	Herb	Gonda, 19433; Gorakhpur, 19071; Khushinagar, 19070	September-January
22.	<i>Conyza aegyptica</i>	Herb	Gorakhpur, 19441	September-May
23.	<i>Conyza bonariensis</i>	Herb	Maharajganj, 19098; Kushinagar, 19264	September-February
24.	<i>Conyza canadensis</i>	Herb	Balrampur, 19322; Gorakhpur, 19161	August-February
25.	<i>Conyza japonica</i>	Herb	Gonda, 19445; Balrampur, 19265; Gorakhpur, 19450; Khushinagar, 19085	April-July

ASTERACEOUS FLORA OF TERAI REGION OF EASTERN UTTAR PRADESH, INDIA

26.	<i>Conyza stricta</i>	Herb	Gonda, 19430; Gorakhpur, 19446; Khushinagar, 19432	October-January
27.	<i>Cotula anthemoides</i>	Herb	Gonda, 19068; Gorakhpur, 19247; Maharajganj, 19249; Khushinagar, 19245	December-April
28.	<i>Cotula hemispherica</i>	Herb	Gonda, 19067; Balrampur, 19065; Gorakhpur, 19248; Khushinagar, 19246	December-April
29.	<i>Cyathocline purpurea</i>	Herb	Gonda, 19205; Maharajganj, 19215; Khushinagar, 19375	December-March
30.	<i>Echinops echinatus</i>	Herb	Gonda, 19213	January-April
31.	<i>Eclipta prostrata</i>	Herb	Gonda, 19200; Balrampur, 19002	Throughout year
32.	<i>Elephantopus scaber</i>	Herb	Gonda, 19334; Gorakhpur, 19304; Khushinagar, 19263	September-November
33.	<i>Emilia sonchifolia</i>	Herb	Gonda, 19046; Maharajganj, 19351	July-October
34.	<i>Enhydra fluctuans</i> Lour.	Herb	Gorakhpur, 19227; Khushinagar, 19236	January-April
35.	<i>Erigeron sublyratus</i>	Herb	Kushinagar, 19114	April-July
36.	<i>Eupatorium adenophorum</i>	Herb	Gonda, 19315; Gorakhpur, 19235; Khushinagar, 19116	January-June
37.	<i>Eupatorium odoratum</i>	Herb	Gorakhpur, 19228; Khushinagar, 19237	November-May
38.	<i>Eupatorium riparium</i>	Herb	Gorakhpur, 19278; Khushinagar, 19117	January-May

39.	<i>Galinsoga quadriradiata</i>	Herb	Gonda, 19314; Gorakhpur, 19150; Khushinagar, 19465; Maharajganj, 19277	December-May
40.	<i>Glossocardia bosvallea</i>	Herb	Basti, 19241	August-October
41.	<i>Glossogyne bidens</i>	Herb	Gorakhpur, 35	September-November
42.	<i>Gnaphalium luteo-album subsp. affine</i>	Herb	Gonda, 19381; Basti, 19382; Maharajganj, 19172; Khushinagar, 19170	January-May
43.	<i>Gnaphalium luteo-album subsp. luteo-album</i>	Herb	Gorakhpur, 19385, Basti, 19398	January-May
44.	<i>Gnaphalium pensylvanicum</i>	Herb	Balrampur, 19182, Basti, 19034; Kushinagar, 19183	December- May
45.	<i>Gnaphalium polycaulon</i>	Herb	Gonda, 19189, Basti, 19036, Gorakhpur, 19178	November-December
46.	<i>Gnaphalium pulvinatum</i>	Herb	Balrampur, 19177; Maharajganj, 19253; Khushinagar, 19185	December-May
47.	<i>Grangea maderaspatana</i>	Herb	Maharajganj, 19254; Khushinagar, 19179	December-May
48.	<i>Lactuca sativa</i>	Herb	Gorakhpur, 732	February-May
49.	<i>Launaea asplenifolia</i>	Herb	Gonda, 19107; Basti, 19012; Gorakhpur, 19072	March-October
50.	<i>Launaea procumbens</i>	Herb	Basti, 19003; Maharajganj, 19166	March-September
51.	<i>Matricaria recutita</i>	Herb	Kushinagar, 19302	August-september

ASTERACEOUS FLORA OF TERAI REGION OF EASTERN UTTAR PRADESH, INDIA

52.	<i>Parthenium hysterophorus</i>	Herb	Balrampur, 19372	May-March
53.	<i>Pentanema indicum</i>	Herb	Gonda, 19371;; Gorakhpur, 19300	November-March
54.	<i>Pluchea lanceolata</i>	Herb	Maharajganj, 19198	February-June
55.	<i>Pulicaria angustifolia</i>	Herb	Gonda, 19273; Basti, 19146; Gorakhpur, 19343	November-May
56.	<i>Pulicaria crispa</i>	Herb	Basti, 19017	November-May
57.	<i>Pulicaria foliolosa</i>	Herb	Maharajganj, 19148	February-May
58.	<i>Saussurea heteromella</i>	Herb	Gorakhpur, 769	February-May
59.	<i>Senecio linifolia</i>	Herb	Gorakhpur, 888	January-July
60.	<i>Silybum marianum</i>	Herb	Gorakhpur, 19138; Khushinagar, 19209	May-September
61.	<i>Solidago canadensis</i>	Herb	Gorakhpur, 1196	October-January
62.	<i>Soliva anthemifolia</i>	Herb	Gonda, 19207; Gorakhpur, 19270; Maharajganj, 19309	December-April
63.	<i>Sonchus asper</i>	Herb	Gonda, 19260; Basti, 19103	October-February
64.	<i>Sonchus brachyotus</i>	Herb	Gonda, 19009, Basti, 19005; Balrampur, 19259	October-February
65.	<i>Sonchus oleraceus</i>	Herb	Gonda, 19262; Basti, 19336	October-February

66.	<i>Sphaeranthus senegalensis</i>	Herb	Gonda, 19282	December-April
67.	<i>Spilanthes ciliata</i>	Herb	Maharajganj, 19414	October-March
68.	<i>Spilanthes oleracea</i>	Herb	Gonda, 19413; Gorakhpur, 19410; Khushinagar, 19120	October- February
69.	<i>Spilanthes radicans</i>	Herb	Maharajganj, 19109; Gorakhpur, 19075; Khushinagar, 19412	October-January
70.	<i>Synedrella vialis</i>	Herb	Gorakhpur, 19118; Khushinagar, 19220	August-December
71.	<i>Tridax procumbens</i>	Herb	Gorakhpur, 19422	Throughout year
72.	<i>Vernonia cinerea</i>	Herb	Gonda, 19044; Basti, 19006; Kushinagar 19224	July-February
73.	<i>Vernonia divergens</i>	Shrub	Gorakhpur, 19112; Khushinagar, 19221	December-January
74.	<i>Vernonia elliptica</i>	Climber	Gonda, 19307; Maharajganj, 19423	January-April
75.	<i>Wedelia chinensis</i>	Herb	Maharajganj, 19407; Gorakhpur, 19426; Khushinagar, 19291	December-April
76.	<i>Wedelia trilobata</i>	Herb	Gorakhpur, 19408; Kushinagar, 19234	September-February
77.	<i>Xanthium indicum</i>	Herb	Kushinagar, 19409; Gorakhpur, 19023	March-May
78.	<i>Youngia japonica</i>	Herb	Gorakhpur, 760	February-May

ASTERACEOUS FLORA OF TERAJ REGION OF EASTERN UTTAR PRADESH, INDIA

113

- 28a. Head sessile, leaves toothed or entire*Centipeda*
- 28b. Head peduncled, leaves pinnatisect29
- 29a. Receptacle with contracted base and naked concave top.....*Cyathocline*
- 29b. Receptacle naked, flat or convex.....30
- 30a. Anther base obtuse*Cotula*
- 30b. Anther base oblong31
- 31a. Head aggregated into globose or compact cylindrical mass*Sphaeranthus*
- 31b. Head recemose or paniced*Artemisia*
- 32a. Head usually in scorpioid panicles*Solidago*
- 32b. Head not in scorpioid panicles33
- 33a. Receptacle palaeaceous34
- 33b. Receptacle epalaeaceous48
- 34a. Heads sessile, style in disc floret undivided. Achene covered by hooked spines*Acanthospermum*
- 34b. Heads pendunculate, style in disc flower divided. Achene not covered by hooked spines35
- 35a. Cypsela of disc florets bearing pappus of bristles or scales36
- 35b. Cypsela of disc florets without pappus or bearing minute horns or scales.....47
- 36a. Pappus in the form of flattened scales.....*Galinsoga*
- 36b. Pappus in the form of bristles or awns37
- 37a. Pappus Bristles retrorsely barbed38
- 37b. Pappus Bristles without retrorsely barbed.....39
- 38a. Small herbs, Leaves basal, rosulate, style branches with long villous appendages, pappus bristles divergent*Glossogyne*
- 38b. Medium sized or tall herbs, Leaves mostly cauline, style branches subulate, pappus bristles erect *Bidens*
- 39a. Ray flowers white or cream coloured 40
- 39b. Ray flowers yellow41
- 40a. Decumbent herb, receptacular paleae linear-lanceolate, pappus bristles numerous, plumose..... *Tridax*
- 40b. Erect herb, Receptacular paleae oblong, fimbriate at apex, pappus bristles 2-3, smooth*Blainvillea*
- 41a. Heads sessile43
- 42b. Heads pedunculate46
- 43a. Cypsela dorsally compressed, pappus 2, robust.....*Synedrella*
- 43b. Cypsela laterally compressed, pappus 1-2, weak or absent44
- 44a. Aquatic herb, pappus absent*Enhydra*
- 44b. Terrestrial herb, pappus of 2 short scale, caducous45
- 45a. Receptacle conical, Cypsela ciliate*Spilanthes*
- 45b. Receptacle flat or convex, Cypsela eciliate.....*Wedelia*
- 46a. Corolla of disc florets 5-lobed, anther 5, pappus absent.....*Chrysanthellum*
- 46b. Corolla of disc florets 4-lobed, anther 4, pappus of 2 smooth stiff awns*Glossocardia*
- 47a. Cypsela 4-5 ribbed and obconical*Anthemis*
- 47b. Cypsela not ribbed and oblong *Eclipta*
- 48a. Pappus hairy, involucre calyculate*Senecio*
- 48b. Pappus scale like, involucre ecalyculate49
- 49a. Leaves deeply lobed50
- 49b. Leaves simple51
- 50a. Cypsela obcompressed, with 2 broad reflexed pappus awn.....*Parthenium*
- 50b. Cypsela ribbed, pappus absent or reduced *Matricaria*
- 51a. Pappus 1-seriate and many *Pentanema*
- 51b. Pappus in 2-rows, outer pappus forming cup, inner hairy like*Pulicaria*

Conclusion

During the floristic survey of Terai region of Eastern Uttar Pradesh, 78 species of 51 genera belonging to family Asteraceae has been collected. Out of 78 species *Vernonia divergens* and *Vernonia elliptica* are only shrub and climber respectively while 76 species are herbs. Among 76 herbaceous

plants only one species *Enhydra fluctuans* is aquatic and rest 75 species are terrestrial. Among dominant genera *Blumea*, *Conyza* and *Gnaphalium* represented by maximum 5 species

followed by *Eupatorium*, *Pulicaria*, *Sonchus*, *Spilanthes* and *Vernonia* with 3 species, *Ageratum*, *Carthamus*, *Cotula*, *Launaea* and *Wedelia* have 2 species and rest 38 species with only one species.

References

1. DUTHIE, J.F. (1903-1929) *Flora of Upper Gangetic Plain and of the adjacent Siwalik and Sub-Himalayan Tracts*. Calcutta.
2. GALIGARI, P. D. S. AND HIND, D. J. N. (EDS) (1996) Asteraceae: Biology and utilization. Vol. II. *Proceedings of the International Asteraceae Conference*, Kew.
3. HAJRA, P. K., RAO, R. R., SINGH, D. K. AND UNIYAL, B. P. (1995) Asteraceae. *Flora of India* Vol. **12-13**.
4. HIND, D. J. N. AND BEENTJ, H. J. (EDS) (1996) Compositae: Systematics vol. I. *Proceedings of the International Asteraceae Conference*. Kew.
5. KHANNA, K. K. (2001) Endemic plants of Uttar Pradesh (Angiosperm). *Phytotaxonomy*, **1** : 71-75.
6. KHANNA, K. K. (2002) Unreported ethnomedicinal uses of plants from the tribal and rural folklores of Gonda district, Uttar Pradesh. *Ethnobotany*, **14**: 52-56.
7. KHANNA, K. K., MUDGAL, V. AND UNIYAL, B. P. (1999) *Dicotyledonous plants of Uttar Pradesh (A checklist)*. Bishen Singh Mahendra Pal Singh, Dehradun.
8. KUMAR, ANIL (2016) Forest ecology of Gautam Buddha wild life sanctuary of Bihar, India. *Flora and Fauna* **22** (1) : 93-96.
9. LATA, KANCHAN (2011) Ecological studies of family Asteraceae of Eastern Uttar Pradesh, India. *J. Phytol. Res.* **24**(1): 61-65.
10. MALVIYA, S. D. AND SINGH, S. M. (2004) Diversity of aquatic and wetland macrophytes vegetation of Uttar Pradesh (India). *J. Econ. Taxo. Bot.* **28** (4) 935-975.
11. MISHRA, S. AND NARAIN, S. (2014) Aquatic & Marshy angiospermic diversity of eastern Uttar Pradesh. *Indian Journal of Plant Sciences* **3**(2): 63-75.
12. NARAIN, K. AND LATA, K. (2006) Addition to the family Asteraceae in the flora of Gorakhpur. *Indian For.* **132**(11) : 1504-1508.
13. RAIZADA, M. B. (1976) *Supplement to Duthie's flora of Upper Gangetic plains & of adjacent Siwalik and Sub-Himalayan tracts*. Bishen Singh Mahendra Pal Singh, Deherdun.
14. SINGH, N. P. AND SRIVASTAVA, R. C. (2000) Diversity and economic importance on wetland flora of Eastern Uttar Pradesh. *Bull. Bot. Surv. India* **42** (1-4): 91-108.
15. SRIVASTAVA, S. K. (2004) Floristic diversity in Uttar Pradesh. An overview. *J. Econ. Taxo. Bot.* **28** (2) : 92-334.