

## Taxonomic Studies on the Family Asteraceae (Compositae) of the Rajshahi Division

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**Abstract:** Taxonomic investigation of the family Asteraceae (Compositae) growing throughout the Rajshahi division was carried out. A total of 36 species under 29 genera of the family Asteraceae were collected and identified. Eight (8) genera of the family Asteraceae are cultivated in the study area which included 8 species. A brief taxonomic description of each species is given with local name and valid name. About the total number of species *Ageratum conyzoides*, *Blumea lacera*, *Eclipta alba*, *Tridax procumbens*, *Vernonia patula* and *Xanthium indicum* are much populated and found in sandy roadside areas of Rajshahi, Naogaon, Nawabgong, Natore, Bogra and Joypurhat. *Mikania cordata* is only one climbing species all over the study area and *Perthenium hysterophorus* is new record for Bangladesh.

**Key words:** Taxonomic studies, Asteraceae, Rajshahi Division

### INTRODUCTION

Asteraceae (Compositae) is an advanced and botanically highly specialized family of mainly herbaceous plants. They are widely distributed in the tropics and warm temperate regions of South, South-East and East-Asia, Africa including Madagascar and central South America. The family is represented by about 950 genera and 20000 species over the globe<sup>[15]</sup>.

Some of the genera of this family *Aster*, *Helianthus*, *Chrysanthemum*, *Tagetes* etc. are ornamentals and most of them have medicinal values. Many species of this family are the sources of medicine. Some are widely cultivated in the field for vegetable and food.

The Compositae are the largest family of vascular plants, and the genera are estimated to number about 950 genera and the species probably 20000. They are distributed over most of the earth and in almost all habitats. The greater proportion are herbaceous, although about 2 percent are trees or shrubs<sup>[9]</sup>.

The order Asterales consists of a single family, the Compositae or sunflower family, the largest of all plant families, including perhaps 20000 species. The Compositae are not only a large family abundant everywhere but, as may be expected, a diverse one. Evolution has produced in many directions and the principal developmental lines are summarized by grouping of related genera into tribes<sup>[1]</sup>.

### MATERIALS AND METHODS

Taxonomic investigation on the family Asteraceae (Compositae) growing throughout the Rajshahi division was carried out. The study area include six districts of the Rajshahi division and these are Rajshahi (Boalia, Motihar), Nawabgonj (Sadar, Sibgonj), Naogaon (Atrai, Raninagar), Joypurhat (Akkelpur, Khetlal), Bogra (Adamdighi, Dupchachia) and Natore (Sadar, Lalpur). A total of 36 species under 29 genera of the family Asteraceae were collected and identified. All the species were noted and time to time the areas were visited to see when they flower. For the morphological study, different types of species were examined again and again in order to see if there was any variation or not. They were collected at flowering stages and herbarium specimens were prepared as vouchers. In this practice standard method was followed. To compare their flower shape and colour, photograph were taken. In this regard different types of plant species were collected from different habitats. Herbarium sheets were made from the collected plants, all the collected plant specimens were kept in the laboratory herbarium, Department of Botany, Rajshahi University, Bangladesh.

The collected specimens were identified studying related taxonomic books and booklets from the library of Rajshahi University. The major collected materials were identified and described up to species with the help of Hooker<sup>[5]</sup>; Prain<sup>[13]</sup>; Cronquist<sup>[2]</sup>; Kirtikar and

Basu<sup>[8]</sup>; and Sharma<sup>[15]</sup>. In some cases Lawrence<sup>[9]</sup>; Heywood<sup>[4]</sup>; Roxburgh<sup>[14]</sup>; Sinclair<sup>[16]</sup>; Chakravarty<sup>[3]</sup>; Pandey<sup>[11]</sup>; Naik<sup>[10]</sup> and Sambamurty<sup>[17]</sup> were consulted. For the current name and up to date nomenclature Huq<sup>[6,7]</sup> and Pasha<sup>[12]</sup> were consulted.

## RESULTS AND DISCUSSION

From this study 36 species under 29 genera of the family Asteraceae (Compositae) were collected and identified. Most of the wild species are grown all districts in the study area. Some of the species which are sometimes cultivated and sometimes wild are grown in particular area. Most of the species are distributed all over the study area, i.e. *Ageratum conyzoides*, *Blumea lacera*, *Dahlia hybrida*, *Eclipta alba*, *Enhydra fluctuans*, *Helianthus annuus*, *Tagetes patula*, *Tridax procumbens*, *Vernonia patula*, *Mikania cordata*, *Wedelia chinensis* and *Xanthium indicum*. Some species were very rare, i.e. *Blumea laciniata*, *Caesulia axillaris*, *Gnaphalium indicum*, *Sonchus asper*, *Vernonia cinerea* and *Wedelia calendulacea*. The check list of collected specimens are placed alphabetically as follows:

***Ageratum conyzoides* Linn. (Local name: Oochunti):** Annual herbs, 30-90 cm. high; stem erect, branched, terete, more or less hairy. Leaves opposite or the upper alternate, 5-7.5 by 2.5-5 cm., broadly ovate, subacute, crenate and with ciliate margins, more or less hairy on the both sides, base cuneate; petiole 2.5-3.2cm., long, hairy. Heads small, in dense terminal corymbos; flowers pale blue or white, malodourous. Achenes 2-2.5mm. long, sharply angled, sometimes glandular, attenuated at the base, black.

**Specimens Examined:** M.R. 01 Motihar, Rajshahi 06-04-05; M.R.36 Sadar, Natore 07-05-05; M.R. 61 Sadar, Nawabgonj 01-06-05; M.R. 86 Adamdighi, Bogra 02-07-05; M.R. 111 Atrai, Naogaon 04-08-05; M.R. 136 Akkelpur, Joypurhat 08-09-05.

***Blumea lacera* (Burm. f.) DC. (Local name: Kukurmata, kukursunga):** Annual, with a strong odour of turpentine; stem erect, 0.3-0.9m. high, ash-coloured, usually densely glandular-pubescent. Leaves 3.8-12.5 by 2.2-6.3cm., the lower petioled, often incised or lyrate, the upper sessile, elliptic-oblong or obovate, obtuse or subacute. Heads 6-8mm. diam., numerous in short axillary cymes and terminal spiciform panicles; flowers yellow. Receptacle glabrous. Pappus white. Achenes not ribbed, small, oblong, sub-4-gonous.

**Specimens Examined:** M.R. 02 Motihar, Rajshahi 08-04-05; M.R.37 Sadar, Natore 08-05-05; M.R. 62 Sadar,

Nawabgonj 02-06-05; M.R. 87 Adamdighi, Bogra 03-07-05; M.R. 112 Atrai, Naogaon 05-08-05; M.R. 137 Akkelpur, Joypurhat 10-09-05.

***Blumea laciniata* DC:** An erect, usually stout, pubescent or laxly tomentose, stem branched, leaves usually large membranous runcinate lyrate or subpinnatifid and toothed, heads usually in broad open corymbs, involucre bracts lanceolate acuminate villous, recept, pubescent corolla yellow. Achenes ribbed silky.

**Specimens Examined:** M.R. 10 Boalia, Rajshahi 25-04-05; M.R.45 Sadar, Natore 15-05-05; M.R. 72 Sadar, Nawabgonj 05-06-05; M.R. 90 Dupchachia, Bogra 05-07-05; M.R. 116 Raninagar, Naogaon 07-08-05; M.R. 140 Khetlal, Joypurhat 11-09-05.

***Callistephus chinensis* Linn. (Local name: Aster):** A beautiful annual erect and lateral branching herb, herbaceous, angular, sericeous hairy. Leaves alternate, simple, dorsiventral, exstipulate, sessile, erose, area covered (4.6cm L x 1.6cm. B), attenuate, acuminate, lobed, hispid hairy, membranous, reticulate and deep green colours. Inflorescence solitary capitulum peduncle and sessile. Hermaphrodite, florets connate in regular tubular corollas with a cylindric shortly 5-fed limb, 0.6cm. long basifixed, linear, carpel 1, style of hermaphrodite florets with under, 0.7cm long, stigma bilobate linnet, ovary inferior one loculi one ovule, basal placentation.

**Specimens Examined:** M.R. 35 Motihar, Rajshahi 15-09-07; M.R.39 Sadar, Natore 05-05-05; M.R. 80 Sibgonj, Nawabgonj 11-10-07; M.R. 101 Adamdighi, Bogra 17-11-07; M.R. 117 Raninagar, Naogaon 09-09-07; M.R. 159 Akkelpur, Joypurhat 25-11-07.

***Calendula officinalis* Hook. (Local name: Calendula):** A erect annual herb, lateral branched, herbaceous, many angular, hairy. Leaves alternate, simple, exstipulate, sessile, linear, area covered (4.6cm. L x 1.4cm.B) cordate, apiculate, entire, puberulous hairy, membranous, dorsiventral, reticulate and light green colour. Inflorescence solitary capitulum. Hermaphrodite florets connate in regular tubular corolla, with a cylindric shortly 5 fed limb, 0.5cm. long, stamens 5, syngenesious, filament 0.5cm. free anther basifixed and linear, carpel 2, style 0.6cm. rounded, stigma capitate, ovary inferior one ovule basal placentation.

**Specimens Examined:** M.R. 03 Motihar, Rajshahi 08-04-05; M.R.58 Sadar, Natore 25-11-07; M.R. 79 Sadar, Nawabgonj 12-10-07; M.R. 104 Adamdighi, Bogra 17-11-07.

***Chrysanthemum coronarium* Hook. (Local name: Chandramollica):** A annual herb, weak and lateral, branching, herbaceous, angular and woolly present. Leaves alternate, simple, dorsiventral, extipulate, petiole 2.5-3.1cm. long, libitum, 5-7 lobed, area covered (7.1cm L x 4.6cm. B), attenuate, acute, dentate, hairy membranous, reticulate and deep green colour. Inflorescence capitulum, flower-heads large, corymbose. Hermaphrodite florets connate in regular tubular corollas, with cylindric or less campanulate, 4-5 lobed limb, 0.6cm. long, stamens, linear, carpel 1, style of hermaphrodite florets with arms truncate and pennicillate at their tips, ovary superior, 1-loculi and 1 ovule, Style 0.5cm.long linnet stigma and basal placentation.

**Specimens Examined:** M.R. 33 Motihar, Rajshahi 25-12-07; M.R.52 Sadar, Natore 22-11-07; M.R. 109 Dupchachia, Bogra 18-11-07.

***Cosmos caudatus* Cav. (Local name: Cosmos):** A showy flowered, tall and annual herb, lateral, herbaceous, round, glabrous with some hairy. Leaves opposite, compound bipinnate, exstipulate, petiole 3.5cm. long lobed or 2-3 pinnatisect, area covered (7.8cm. L x 7.6cm. B), attenuate, acuminate, entire, hairy, membranous, dorsiventral, reticulate and green colour. Inflorescence solitary or loosely corymbose. Hermaphrodite florets with slender arms thickened upwards, hirsute, with short, acute appendages, receptacle concev, ovary inferior, 1-ovule, basal placentation.

**Specimens Examined:** M.R. 12 Motihar, Rajshahi 10-10-06; M.R.48 Lalpur, Natore 20-09-06; M.R. 65 Sadar, Nawabgonj 05-07-06; M.R. 110 Adamdighi, Bogra 19-11-07.

***Circium arvense* (L.) Scop. (Local name: Silkanta):** An erect, perennial herb, stem not winged cobwebby tomentose above, leaves sessile sinuate or pinnatifid, lobes divergent and tips spinescent tomentose beneath, heads solitary fascicled or corymbose, involucre bracts glabrate or cobwebby outer most short ovate or triangular-ovate ending in a short spine, inner gradually longer with undulate often recurved tips, innermost narrow linear-lanceolate scarious.

**Specimens Examined:** M.R. 04 Motihar, Rajshahi 09-04-05; M.R.49 Sadar, Natore 21-09-06; M.R. 85 Sadar, Nawabgonj 17-12-07.

***Dahlia variabilis* Roez. (Local name: Dahlia):** A long erect annual herb, lateral, herbaceous, round, glabrous. Leaves opposite, compressed, extipulate, pinnate, area

covered (6.5cm L x 3.2cm. B), short (7.5cm. L x 4.3cm. B), large, attenuate, acute, dentate, scabrous hairy, dorsiventral, reticulate, green colour. Inflorescence cymose capitulum, sessile, incomplete. Hermaphrodite florets connate in regular tubular corollas with a tubular shortly 5-fed limb, 1.2cm long. Stamens syngenesious; filaments short anther basifixed and linear, carpel 2, style 0.9cm rounded, stigma bilobate and linnet hairy, ovary inferior, 1 locule, 1 ovule, basal placentation.

**Specimens Examined:** M.R. 05 Motihar, Rajshahi 10-05-05; M.R.50 Sadar, Natore 21-09-06; M.R. 69 Sadar, Nawabgonj 06-07-06; M.R. 91 Adamdighi, Bogra 17-11-06; M.R. 135 Atrai, Naogaon 20-12-07; M.R. 158 Khetlal, Joypurhat 23-12-07.

***Eclipta alba* (L.) Hassk. (Local name: Kalokeshi):** Annual, erect or prostrate, branched, often rooting at the nodes; stem and branches strigose with appressed white hairs. Leaves sessile, 2.5-7.5cm. long, variable in breadth, usually oblong-lanceolate, subentire, acute or subacute. Heads 6-8mm. diam., solitary. Ray-florets ligulate, the ligule small, spreading, scarcely as lon as the bracts, not toothed, white. Disc-florets tubular, the corollas often 4-toothed, pappus 0, except occasionally very minute teeth on the top of the achene. Achenes cuneate, compressed and with a narrow wing, covered with warty excrescences.

**Specimens Examined:** M.R. 06 Motihar, Rajshahi 11-05-05; M.R.51 Sadar, Natore 22-09-06; M.R. 70 Sibgonj, Nawabgonj 07-07-06; M.R. 106 Adamdighi, Bogra 09-11-07; M.R. 134 Atrai, Naogaon 20-12-07; M.R. 138 Akkelpur, Joypurhat 28-07-06.

***Enhydra fluctuans* Lour. (Local name: Hincha, Halencha):** A pubescent or glabrous herb. Stems elongate, simple or divaricatingly branched, rooting at the nodes. Leaves opposite, linear-oblong, acute or obtuse, base narrowed or truncate, variable in breadth, sessile. Inflorescence a sessile head, axillary and terminal; ray florets female, many-seriate, fertile; disk-florets with a 5-fid campanulate limb. Cypsela oblong; enclosed in the rigid pales. pappus 0.

**Specimens Examined:** M.R. 16 Boalia, Rajshahi 15-12-06; M.R.43 Lalpur, Natore 23-10-05; M.R. 71 Sadar, Nawabgonj 08-07-06; M.R. 103 Adamdighi, Bogra 20-11-07; M.R.113 Raninagar, Naogaon 19-06-06; M.R. 139 Akkelpur, Joypurhat 29-07-06.

***Caesulia axillaris* Roxb. (Local name: Golphuli):** A glabrous marsh herb; leaves alternate, serrulate. Flower-heads in sessile, axillary, involucrate balls, each sessile

on a broad, convex common receptacle, and each 1-flowered. Cypselas included in the laterally compressed bracts; pappus 0.

**Specimens Examined:** M.R. 08 Motihar, Rajshahi 15-06-05; M.R.84 Sibgonj, Nawabgonj 16-11-07; M.R. 108 Adamdighi, Bogra 24-12-7.

***Eupatorium odoratum* Linn. (Local name: Oochunti):** A herb, ascending, branching, glabrous. Leaves subsessile, opposite, lanceolate, 3-nerved, acuminate, subtire, glabrous. Inflorescence a lax few-headed corymb, heads pedicellate about 20-flowered; bracts subuniseriate linear, acuminate, unequal puberulous on the back. Flowers slaty blue, corollas all equal regular, tubular, tube slender, anthers appendaged, base obtuse, style-arms long, obtuse. Achenes truncate 5-angled, pappus-hairs uniseriate, many, rigid, scabrid.

**Specimens Examined:** M.R. 07 Motihar, Rajshahi 12-05-05; M.R.44 Sadar, Natore 25-10-05; M.R. 73 Sadar, Nawabgonj 10-07-06; M.R. 105 Adamdighi, Bogra 22-11-07.

***Gnaphalium polycaulon* Pers. (Local name: Oochunti):** An erect, slender, softly cottony, stems many from the root ascending leafy, leaves linear-obovate or spatulate apiculate, heads 0.31cm. diam. in simple or branched leafy spike or racemose clusters, involucre bracts linear oblong acute pale reddish-brown or yellowish, achenes minutely papillose, pappus-hairs not coherent at the base.

**Specimens Examined:** M.R. 09 Boalia, Rajshahi 16-06-05; M.R.114 Atrai, Naogaon 17-07-06; M.R. 160 Akkelpur, Joypurhat 23-12-07.

***Gnaphalium pulvinatum* DC. (Local name: Oochunti):** An annual herb, woolly stems very much spreading from the root short prostrate, leaves small spatulate, heads minute 0.21cm. hidden amongst the bases of the crowded spreading terminal leaves and immersed in wool, involucre bracts slender linear recurved green with acute hyaline tips, achenes slender minutely papillose.

**Specimens Examined:** M.R. 34 Motihar, Rajshahi 13-12-07; M.R.59 Sadar, Natore 05-11-07; M.R. 83 Sadar, Nawabgonj 29-10-07; M.R. 157 Akkelpur, Joypurhat 23-12-07.

***Gnaphalium indicum* Linn. (Local name: Oochunti):** A softly cottony, stems many from the root ascending leafy, leaves linear-obovate or spatulate apiculate, heads simple or branched leafy spikes or racemose

clusters, involucre bracts linear-oblong acute pale reddish-brown or yellowish, achenes minutely papillose, pappus hairs not coherent at the base.

**Specimens Examined:** M.R. 11 Motihar, Rajshahi 15-06-05; M.R. 88 Adamdighi, Bogra 21-08-06; M.R. 115 Atrai, Naogaon 20-06-06.

***Grangea maderaspatana* Poir. (Local name: Namuti):** Annual; stems many, prostrate, spreading from the centre, 10-30cm. long, hairy with soft white hairs. Leaves numerous, sessile, 2.3-6.6cm. long, sinuately pinnatifid with 2-4 pairs of opposite or subopposite. Heads globose, 6.5-8.5mm. diam.; solitary or 2-nate, on short leaf-opposed peduncles; flowers yellow. Achenes glandular, 2.5cm. long including the pappus tube.

**Specimens Examined:** M.R. 13 Motihar, Rajshahi 17-06-06; M.R.38 Sadar, Natore 26-07-06; M.R. 63 Sibgonj, Nawabgonj 25-08-06; M.R. 89 Dupchachia, Bogra 15-07-06; M.R. 133 Raninagar, Naogaon 19-12-07; M.R. 148 Khetlal, Joypurhat 22-09-07.

***Helianthus annuus* Linn. (Local name: Surjamukhi):** A tall annual erect herb, lateral branching, solid herbaceous, angular and surface is very hairy. Leaves alternate, simple, dorsiventral, petiole, 3.4cm long, ovate, area covered (12.5cm. L x 8.9cm. B), mucronulate, entire, sericeous hairy, membranous, reticulate venation and light green colour. Inflorescence solitary capitulum. Ray florets unisexual female 1-seriate, disk florets hermaphrodite all fertile; zygomorphic, hypogynous calyx modified pappus. Stamens syngenesious. Basal placentation.

**Specimens Examined:** M.R. 14 Motihar, Rajshahi 16-11-05; M.R.40 Lalpur, Natore 20-12-05; M.R. 64 Sadar, Nawabgonj 27-12-06; M.R. 107 Adamdighi, Bogra 19-07-05; M.R. 129 Raninagar, Naogaon 14-12-05; M.R. 156 Akkelpur, Joypurhat 11-12-07.

***Launaea asplinifolia* Hook. f. (Local name: Tikdana):** Biennial or perennial, glabrous. Leaves sessile or shortly petioled, 7.5-15cm. long, narrowly obovate, sinuate-lobed or pinnatifid, lobes minutely toothed. Flowering stems 15-45cm. long, many from the root, almost naked, branches dichotomously divericating. Heads 1.3cm.; terminal, paniculate. Involucre bracts quite glabrous; outer small, inner linear, margins membranous. Achenes 2 mm., columnar, angled and ribbed, ribs rough. Pappus 8 mm., deciduous.

**Specimens Examined:** M.R. 32 Motihar, Rajshahi 07-04-06; M.R.57 Sadar, Natore 03-03-06; M.R. 66 Sadar,

Nawabgonj 29-07-06; M.R. 102 Adamdighi, Bogra 17-12-07; M.R. 132 Atrai, Naogaon 23-12-07; M.R. 141 Akkelpur, Joypurhat 05-04-06.

***Lactuca sativa* Linn. Roxb. (Local name: Lettuse):** Erect glaucescent annual or biennial, about 0.3-0.9m. high or sometimes up to 2 m. stem simple up to the inflorescence, usually aculeate-setose below, terete, striate above. Stem-leaves erect-patent, obovate-oblong, undivided, sinuate-toothed or runcinate, sagittate-amplexicaul, sessile, subentire or aculeate-denticulate, 2.9cm. long or more. Capitula 8-15mm. long, on very short pedicels, in a cyme with spreading brances. Flowers about 11, yellow. Achenes striate, dark brown or greyish brown.

**Specimens Examined:** M.R. 15 Motihar, Rajshahi 16-11-05; M.R.60 Sadar, Natore 12-12-07; M.R. 155 Khetlal, Joypurhat 05-12-07.

***Mikania cordata* (Burm. f.) Robinson. (Local name: Assamlata):** A climbing herb, glabrous or puberulous, leaves long-petioled ovate acute or acuminate base rounded cordate or truncate crenate or angled, sometimes villous beneath, heads 4-flowered corymbose terminating lateral branches, achenes glabrous glandular, pappus reddish.

**Specimens Examined:** M.R. 17 Motihar, Rajshahi 17-11-05; M.R.41 Lalpur, Natore 06-10-05; M.R. 67 Sibgonj, Nawabgonj 30-07-06; M.R. 92 Dupchachia, Bogra 18-05-06; M.R. 118 Atrai, Naogaon 24-10-06; M.R. 154 Akkelpur, Joypurhat 24-12-07.

***Perthenium hysterophorus* Linn. (Local name: Gandi Booti):** An erect rphemeral herb known for its vigorous growth. It is light green with branching stems, finely lobed leaves and grows up to 1.5 meters, occasionally reaching 2 m in deep rich soils. Young plants form a basal rosette of strongly dissected leaves that are up to 30 cm in length. Once stem elongation is initiated, smaller leaves are produced and the plant becomes much-branched in its extremities.

**Specimens Examined:** M.R. 31 Motihar, Rajshahi 07-04-06; M.R.56 Sadar, Natore 06-07-06; M.R. 68 Sadar, Nawabgonj 11-12-06; M.R. 100 Adamdighi, Bogra 05-11-07; M.R. 131 Atrai, Naogaon 02-11-07; M.R. 153 Akkelpur, Joypurhat 24-12-07.

***Sonchus asper* (L.) Hill. (Local name: Banpalang):** Annual, glabrous or sparsely glabrous above; stem branched. Leaves sessile, slightly rugose; the cauline elliptic-oblong entire, or runcinale or pinnatifid. Heads crowded in an irregular umbel; flowers yellow.

Achenes 3mm. long much compressed, elliptic in outline, longitudinally steriate by fine distant ribs, not transversely muriculate.

**Specimens Examined:** M.R. 18 Boalia, Rajshahi 18-06-05; M.R.55 Sadar, Natore 25-11-07.

***Sonchus arvensis* Linn. (Local name: Banpalang):** A rootstock creeping herb, stem glabrous tall umbellately branched above, leaves runcate pinnatifid spinous-toothed, heads and peduncles glandular-hispid, achenes narrow subcompressed with thick regular ribs on each face.

**Specimens Examined:** M.R. 19 Motihar, Rajshahi 16-11-05; M.R.42 Sadar, Natore 08-10-06; M.R.82 Sadar, Nawabgonj 30-10-07; M.R. 93 Adamdighi, Bogra 19-05-06; M.R. 130 Raninagar, Naogaon 30-10-07; M.R. 142 Khetlal, Joypurhat 10-05-06.

***Sonchus winghtianus* DC. (Local name: Banpalang):** A tall perennial; rootstock with long slender creeping stolons which send up small tufts of radical leaves; stems glabrous, more or less angular, 0.7-1.7m. high, hollow below. Leaves 16-32cm. long, green and shining above. Heads few, 2.4-4.5cm. across, umbellately corymbose; peduncles glandular- hairy; flowers bright yellow. Achenes scarcely compressed, longitudinally ribbed and trnasversely rugose.

**Specimens Examined:** M.R. 81 Sibgonj, Nawabgonj 29-10-07; M.R. 152 Akkelpur, Joypurhat 24-12-07.

***Spilanthus paniculata* Wall ex. DC. (Local name: Spilanthus):** An annual herb, erect or ascending; stem and branches more or less hairy. Leaves opposite, 2.6-5.3 by 1.4-3.7cm., ovate, acute or subobtuse, irregularly crenate-serrate or sometimes entire, glabrous. Heads 0.5-1.4cm. long, ovoid, solitary or subpanicled. Achenes oblong or slightly obovoid, truncate, much compressed, nearly glabrous.

**Specimens Examined:** M.R. 20 Motihar, Rajshahi 17-11-05; M.R.46 Sadar, Natore 14-11-06; M.R. 74 Sadar, Nawabgonj 04-05-07; M.R. 94 Adamdighi, Bogra 02-01-07; M.R. 119 Atrai, Naogaon 07-10-06; M.R. 151 Khetlal, Joypurhat 17-11-06.

***Syndrella nodiflora* (L.) Gaertn. (Local name: Marhatitiga):** An erect dichotomously branched herb; stem and branched terete, glabrous. Leaves ovate-lanceolate, shortly petioled, serrate, scaberulous, 3-nerved, heads sessile, axillary and terminal; inner involucre bracts linear-lanceolate, shining. Achenes slender, black, spines 2-3 times as long, erect, very stout.

**Specimens examined:** M.R.30 Motihar, Rajshahi 06-03-06; M.R.47 Sadar, Natore 12-11-06; M.R.75 Sadar, Nawabgonj 11-12-07; M.R. 95 Adamdighi, Bogra 20-05-06; M.R. 120 Atrai, Naogaon 30-05-07; M.R. 143 Akkelpur, Joypurhat 13-05-06.

***Tagetes patula* Linn. (Local name: Genda):** A showy-flowered annual erect herb, lateral branch, herbaceous, angular, 4-6 angled, glabrous. Leaves opposite, compound, dorsiventral, exstipulate, petiole 3.5 cm. long, pinnately divided, imparipinnate, area covered (7.3cm. L x 3.6cm. B), acuminate, serrulate, glabrous with glandular, reticulate, green colour. Inflorescence capitulum, yellow. Basal placentation.

**Specimens Examined:** M.R. 21 Boalia, Rajshahi 18-10-06; M.R.53 Sadar, Natore 03-01-07; M.R. 76 Sadar, Nawabgonj 11-12-07; M.R. 96 Adamdighi, Bogra 22-06-06; M.R. 121 Atrai, Naogaon 30-05-07; M.R. 150 Khetlal, Joypurhat 17-11-06.

***Tridax procumbens* Linn. (Local name: Tridhara):** A weak straggling herb. 12-24cm. long with few leaves 6-8cm. long and very long slender solitary peduncles a foot long and more. Leaf simple, opposite, exstipulate, ovate, acute, inflorescence capitulum. Flower: two types, ray-florets and disk-florets. Basal placentation, fruit cypsela.

**Specimens Examined:** M.R. 29 Motihar, Rajshahi 02-03-06; M.R.54 Sadar, Natore 05-02-07; M.R.77 Sadar, Nawabgonj 11-12-07; M.R.97 Dupchachia, Bogra 30-05-06; M.R. 122 Atrai, Naogaon 30-05-07; M.R. 149 Akkelpur, Joypurhat 15-10-06.

***Vernonia patula* (Dryand) Merril. (Local name: Oochunti):** Annual, erect, 12-45 cm. high; stem stiff, cylindric, striate, more or less pubescent, slightly branched. leaves petioled, 2.6-6 by 2-3.9 cm.; variable in shape, broadly-elliptic or lanceolate, obtuse or acute. Heads small, about 20-flowered, flowers pinkish violet. Pappus white, the exterior row short, about 0.5 mm. long. Achenes 1.25 mm. long, oblong, terete, slightly narrowed at the base, clothed with appressed white hairs.

**Specimens Examined:** M.R. 22 Motihar, Rajshahi 22-10-06; M.R.161 Sadar, Natore 27-11-07; M.R.78 Sadar, Nawabgonj 11-12-07; M.R. 98 Adamdighi, Bogra 02-06-06; M.R. 123 Atrai, Naogaon 30-05-07; M.R. 144 Akkelpur, Joypurhat 14-09-06.

***Vernonia cinerea* Less (Local name: Oochunti):** A branches woody herb, pubescent, leaves petioled ovate or lanceolate obtuse or acute obscurely or deeply

obtusely or acutely toothed, heads about 20-flowered in loose corymbs, involucre bracts linear-lanceolate tips awned glabrous, pappus white or dirty white outer hairs short.

**Specimens Examined:** M.R. 28 Motihar, Rajshahi 02-03-06.

***Wedelia chinensis* Huq. (Local name: Mohavringaraj):** A perennial herb 0.35-0.9.5 m high; stem procumbent at the base and rooting at the lower nodes, terete, more or less appressedly hairy. Leaves opposite, subsessile, 2.6-7.6 by 1-2.9 cm.; lanceolate-oblong, entire or irregularly crenate-serrate, scabrous with short white hairs. Heads 2-3.3 cm. diam.; solitary. Achenes of the ray tapering, slightly pubescent.

**Specimens Examined:** M.R. 23 Motihar, Rajshahi 25-10-06; M.R.162 Lalpur, Natore 29-11-07; M.R.166 Sibgonj, Nawabgonj 18-10-07; M.R.99 Adamdighi, Bogra 02-06-06; M.R.126 Raninagar, Naogaon 20-06-07; M.R. 145 Khetlal, Joypurhat 13-11-06.

***Wedelia calendulacea* Less. (Local name: Mohavringaraj):** A procumbent herb, leaves subsessile linear-oblong or oblanceolate acute or obtuse entire or sub-cuneate scaberulous above 3-nerved, heads solitary on long slender axillary peduncles, outer involucre bracts large oblong obtuse herbaceous much longer than the disk floret achenes of the ray 3-quetrous tip truncate.

**Specimens Examined:** M.R. 27 Boalia, Rajshahi 15-01-08.

***Xanthium indicum* Linn. (Local name: Banokra, Ghagra):** Annual, unarmed; stem short, stout, slightly branched, rough with short hairs. Leaves numerous, broadly triangular ovate or suborbicular, acute. Heads in terminal and axillary racemes, the barren heads rather numerous, crowded at the top of the stem, the fertile heads fewer, axillary. Achenes 1.3 cm. long, oblong-ovoid, compressed, glabrous.

**Specimens Examined:** M.R. 24 Motihar, Rajshahi 25-10-06; M.R.163 Sadar, Natore 08-01-08; M.R.167 Sadar, Nawabgonj 15-01-08; M.R.171 Adamdighi, Bogra 19-01-08; M.R.127 Atrai, Naogaon 17-12-07; M.R. 147 Akkelpur, Joypurhat 15-12-06.

***Yongia japonica* (L.) DC. (Local name: Oochunti):** An annual, glabrous or puberulous, radical leaves obovate sinuate-toothed or runcinate-pinnatifid flowering stems slender erect nearly naked, heads slender bracteolate peduncles, involucre bracts 6-8

narrowly oblong glabrous fruiting with a strong basal midrib, achenes narrowly fusiform hardly beaked compressed ribbed equalling or shorter than the white soft pappus.

**Specimens Examined:** M.R. 25 Motihar, Rajshahi 03-01-08.

***Zinnia pauciflora* Linn. (Local name: Zinnia):** An annual erect herb, all body covered with white hair. Leaves opposite, simple, dorsiventral, exstipulate, sessile. Inflorescence solitary capitulum. Stamens 5, 0.8 cm. long, filaments 0.4 cm.; symgenesious; anthers, entire at base, basifixed linear, carpel 1, style with elongated, 0.9 cm. long, white, rounded, ovary inferior, or loculi one ovule, basal placentation.

**Specimens Examined:** M.R. 26 Motihar, Rajshahi 03-01-08.

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