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Taxonomic studies on the family asteraceae (Compositae) of Hajjah governorate, West of Yemen

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Abstract

Taxonomic investigation of the family Asteraceae (Compositae) in Hajjah governorate was taken for two consecutive seasons in the period between 2016-2018. A total of 35 species under 28 genera of the family Asteraceae were collected and identified, the dominant genera was *Pulicaria* which represented by three species, followed by the genera *Kleinia*, *Senecio*, *Tagetes* and *Xanthium*, which followed by two species each.

Keywords: Taxonomic studies, asteraceae, hajjah governorate

1. Introduction

The family Asteraceae or Compositae (known as the aster, daisy, or sunflower family) is the largest family of flowering plants, in terms of number of species. The name 'Asteraceae', is derived from the type genus *Aster*, while 'Compositae', an older but still valid name, means Compositae and refers to the characteristic inflorescence, a special type of pseudanthium found in only a few other angiosperm families [9]. The Family Asteraceae (Compositae, alternate name) is one of the largest families of the flowering plants with a world-wide distribution [12]. It comprises more than 1,600 genera and over 25,000 species [7] belonging to 17 tribes and three subfamilies [11], and occur on all continents except Antarctica [5]. Most members of Asteraceae are herbaceous, subshrubs or shrubs, vines, or rarely trees [2, 4, 10]. Shrubs and trees were represented by around 2% [6]. One of every 10 flowering plant species is in the family Compositae [3], species in this family grow in nearly every type of habitat, and has the largest number of described species of any plant family in the world [1]. The family Asteraceae considered to be one of the most economically important families, some species that considered important as food such as lettuce, sunflower for oil and seeds, artichokes, sweetening agents, coffee substitutes and herbal teas, and also those having medicinal importance such as *Artemisia herba-alba*, *Helichrysum stoechas* and *Chamomilla aurea*, while some are cultivated as ornamental such as *Dahlia*, *Calendula*, *Centaurea* and *Aster* [8]. In Yemen, it represented by about 216 species. Out of them 45 endemic species [13].

2. Study area

Hajjah governorate is located in the west of Yemen; it is approximately 123 kilometers away from the northwest of Yemeni capital, Sana'a, it is also regarded as the fifth largest city in the Republic of Yemen in terms of population as its population is estimated to be 1,480,897 people and with an accumulative percentage of (7.5 %) out of the total population of the country. Hajjah, according to the latest administrative division, is divided into thirty one districts, and its area is estimated to be 8228 kilometers.

Hajjah is boarded by Saddah governorate to the north-eastern, Jizan governorate, which belong to Saudi Arabia to the north-west, Mahweet governorate to the south, Amman governorate to the east, and Hodeidah governorate and the Red Sea to the west.

Hajjah is characterized by various terrains in which it is surrounded by highly mountainous series from different directions, i.e. east, north and south. These series are classified within the western highlands region of the Republic of Yemen. Yet, there are large areas of flat lands and steppe regions in the western side of the city, which are classified within Tihamah region. Moreover, there are many troughs, plateaus, and valleys which are distributed in different parts of the governorate.

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Fig 1: Map of Yemen Location (modified after Central Statistical Organization (2012) & Yemen (Orthographic Projection). Svg, (2012)).

3. Results and Discussion

Systematic investigation on the family Asteraceae (Compositae) growing throughout in the region of Hajjah was carried out. A total of 34 species under 28 genera of the family Asteraceae were collected and identified. Most of the wild species grow in all districts in the study area. Some of the species which was sometimes cultivated and sometimes wild grow in particular area.

3.1 *Anthemis cotula* L.

Morphological description

Annual, 10-40 cm, short-hairy or almost glabrous. Stems erect or ascending branched from above base, corymbose above. Leaves short-petiolate or sessile, obovate-oblong in outline, finely 2-3-pinnatisect; lobes linear-oblongate, entire or shortly 2-3-dentate. Ray-florets sterile, usually 12, sometimes few or absent; corolla-tube of disc-florets terete. Achenes readily deciduous at maturity, 1-1.5 mm, obconical-turbinate, ribbed and tuberculate, epappose, the ribs sometimes forming a crenulate rim at apex.

3.2 *Artemisia abyssinica*

Sch. Bip. ex A.Rech., Tent. Fl. Abyss. 1: 420, (1848).

Local Name: *boitheran*.

Morphological description: Erect, aromatic, woody annual or short-lived perennial to 2 m, the stems sparingly branched, grey-green, deeply bipinnatisect with linear segments, 4-10 cm long. Inflorescence a long narrow racemose panicle with numerous, small dull yellow flower-heads; involucre bracts in several rows, ovate, scarious-margined; all florets tubular. Achenes small, cylindrical, without pappus.

3.3 *Bidens biternata* (Lour.) Merr. & Sherff in Sherff, Bot. Gaz. 88: 293, (1929).

Local Name: Depes.

Morphological description: Erect annual branched herb,

almost glabrous, up to 1 m. A plant with simply pinnate leaves. Flower-heads distinctly longer than wide, yellow-rayed or without rays. Achenes black with 3-4 bristles.

3.4 *Calendula tripterocarpa*

Rupr. 231, (1856).

Local Name: *Aghoan*.

Morphological description: Annual, 5-30 (-40) cm, branched from base, mostly glandular-pubescent. Stems erect or decumbent. Leaves 0.5-1 cm broad, oblong to lanceolate, entire, repand or minutely denticulate; lower leaves tapering to a petiole; cauline leaves sessile and often auriculate. Flowering heads 1-1.5 cm in diameter. Florets concolorous, yellow or orange, or in some strains disc-florets maroon. Fruiting heads with the following (2-) 3-4 achene types: (a) elongate, with a narrow erect or incurved beak; (b) elongate, beaked and with lacinate wings; (c) cymbiform; (d) annulate; often achenes acuminate at back; rarely no beaked achenes present.

3.5 *Centaurea pallescens*

Del., FJ. Eg. 278, t.49 f. I (1813-1814); Plitmann, Israel Jour. Bot. 22: 53 (1973); Plitmann, ibid. 24: 22, (1975).

Local Name: *Snafh*.

Morphological description: Annual, 20-60 cm, diffusely and divaricately branched, with sparse crisped hairs and partly cobwebbed. Heads small to medium sized, shortly pedunculate to sessile, subtended by upper leaves; flowering heads 1.5-2 cm. Involucre subglobose to ovoid, 6-13 mm broad; involucre bracts slightly cobwebbed to glabrous, leathery, narrowly white-margined. Florets longer than involucre, cream to yellow or pink to purplish. Achenes 2-2.5 × 1 mm. Pappus as long as achene or slightly longer, rarely shorter.

3.6 Centaurothamnus maximus

(Forssk.) Wagenitz & Dittrich. In Candollea 37:111, (1982).

Local Name: *Piath*.**Morphological description:** Sparingly branched shrub to 2 m the stems densely white-tomentose. Leaves alternate, petiolate, lanceolate to narrowly elliptic, green above, densely white-tomentose below, 8-15 cm long 2-6 cm wide. Flower-heads solitary at the ends of the branches, 3-4 cm long; involucre campanulate with many rows of bracts, florets purple, all tubular, Achenes glabrous, pappus of bristles.**3.7 Cirsium vulgare**

(Savi) Ten., Fl. Napol. 5, 209, (1835).

Morphological description: Spear Thistle. Spiny, cottony-hairy biennial herb producing a basal rosette in the first year from which arises an erect stem to 1½ m in the second year. Stem leaves alternate, sessile with the base decurrent as spiny wings on the stem, oblong, deeply pinnatifid with spiny lobes 3-12 cm long. Flower-heads in small clusters, sometimes solitary; involucre bell-shaped with many rows of spine-tipped bracts; florets all tubular, purple. Achenes c 3 mm long, yellowish, with a pappus of long, plumose, silky hairs.**3.8 Conyza pyrrophappa** Sch. Bip. ex A. Rich. Tent. Fl. Abyss. 1. 389, (1847).**Local Name:** *Sadaf*.**Morphological description:** Undershrub, erect up to 2m tall, branched, pubescent. Leaves simple, alternate, sessile or shortly petiolate dolanceolate to narrowly elliptic, entire or obscurely toothed, mucronate at apex, 3-5.5 c, long. Inflorescence a dense terminal corymb with many small flower head; involucre bracts subulate, pubescent, 2-3 mm long. Achenes flattened, pappus of minutely scabrid hairs.**3.9 Echinops spinosissimus**

Turra., 13, (1765).

Local Name: *Buri, Jirdab, Chouk Al-Hmir*.**Morphological description:** Erect perennial with grooved, bristly stems; up to 2 m. Leaves Concentrated in a basal rosette, with white midribs, deeply toothed margins and white spines. Flowers Terminal, large spherical heads, pale blue with spiny bracts pointing downwards. immature flower heads have radiating spines. Fruit, seed Achenes. with short scales.**3.10 Eclipta prostrata (L.)**

L., Mant. 2: 286, (1771).

Morphological description: Annual herb, erect or decumbent, up to 40 cm tall, scabrous, covered with appressed hairs. Leaves opposite, sub sessile, elliptic-lanceolate, 1-5 x 0.5-1.5 cm, apex acute, entire to obscurely denticulate. Heads solitary or paired on elongate axillary peduncles, 1 cm in diameter, hemispherical. Involucre bracts thin, green-herbaceous, ovate, acute, in one row. Florets white, ligulate and tubular. Achenes compressed or 3-angled, tuberculate, with apex truncate, 3 mm long, blackish, somewhat pubescent, with or without pappus of 2 small

bristles.

3.11 Erigeron bonariensis L.

Sp. Pl.: 863, (1753).

Local Name: *Cewikh*.**Morphological description:** Annual herb, erect, woody, up to 1 m tall. Stem very leafy, ridged, hairy with long and short hairs mixed. Leaves dark green, sessile, linear, pubescent upto 4 cm long and 0.4 cm wide. Heads numerous, solitary at branch apices, in a raceme or a somewhat corymbose panicle. Involucre bracts subulate, pilose. Florets pale yellowish. Achenes 0.1 - 0.2 cm long with yellowish to brownish pappus well exceeding the achene.**3.12 Flaveria trinervia**

(Spreng.) Mohr Contr. U. S. Natl. Herb. 6 810, (1901).

Local Name: *Sber Al-Hamir, Ward Al-Hamir*.**Morphological description:** Annual herb, erect, 1m tall, glabrous, somewhat diffusely branched. Leaves opposite, petiolate, elliptical-oblong, 3-7 cm long, apex acute, more or less serrate, 3-nerved below. Inflorescence terminal dense, clusters of small, yellow flower heads, 2 cm in diameter, each with a single rayed floret and 1-3 tubular florets. Involucre a tube formed of the fused bracts. Achenes cylindrical, 2 mm long, 10-12 striate, black, without pappus.**3.13 Glebionis coronaria (L.)**

Cass. ex Spach., Hist. Nat. Veg. (Spach) 10: 181. 1841; 181, (1841).

Local Name: *Sadh*.**Morphological description:** Annual, 30-80 cm or taller, glabrous, sometimes many-stemmed. Stems erect, striate, very leafy, corymbosely branched above. Leaves 2-pinnatifid or -sect into oblong acute lobules; rachis broad, dentate in its lower part; lower leaves petiolate or tapering at base; upper leaves sessile. Heads 3-6 cm in diameter. Involucre bracts in 2-3 rows, ovate-oblong, obtuse, nearly glabrous, with brownish membranous margins. Ligules oblong, 2-3-lobed or -dentate. Achenes ribbed, minutely glandular between ribs; marginal achenes triquetrous and 3-winged; inner achenes obpyramidal, somewhat compressed and provided with a wing obliquely narrowed downwards on adaxial side.**3.14 Helichrysum foetidum L.,** Cass., Dict. Sci. Nat. 25: 469, (1822).**Morphological description:** Erect, sparingly branched perennial to 1 m, the stems densely grey-tomentose and very leafy to the bottom of the inflorescence. Leaves sessile, oblong-lanceolate, apiculate, dull green above but grey-tomentose on the midrib, margins and the undersurface, 4-8cm long, 7-15 mm wide. Inflorescence a compact corymb or head of about 5-12 large flower-head, each 10-20 mm broad; involucre bracts yellowish, 6-8 mm long.**Genus: Kleinia;- Key to the species**

1. Flower-heads red, solitary, long pedunculate; leaves reduced to small scales; trailing or pendulous plant.
..... K. pendula

2. Flower-heads umbellate, white; leaves flat, succulent; erect plant. K. odora

3.15 Kleinia odora (Forssk.) DC, Prodr. vi: 339, (1838).

Local Name: *Khthra*.

Morphological description: Glabrous leafless plant with thick, branched, cylindrical stems which are decumbent or pendulous on cliffs. Leaves reduced to subulate scales up to 3 cm long, these arising from wart-like outgrowths on the stem. Inflorescence of solitary, terminal, long-pedunculate, rer flower-heads 2-4 cm wide. Achenes villous.

3.16 Kleinia pendula

Forssk. DC. Prod., 6: 339, (1838).

Local Name: *Ethkhr*.

Morphological description: Glabrous leafless plant with thick, branched, cylindrical stems which are decumbent or pendulous on cliffs. Leaves reduced to subulate scales up to 3 cm long, these arising from wart-like outgrowths on the stem. Inflorescence of solitary, terminal, long-pedunculate, rer flower-heads 2-4 cm wide. Achenes villous.

3.17 Lactuca serriola L.

Cent. PI. 2:29, no. 189, (1756).

Local Name: *Cese Al-Hemar*.

Morphological description: Biennial, nearly glabrous woody herb with an erect, sparingly branched stem to 1¹/₂ m. Leaves oblong, entire or deeply pinnatifid, often sagittate at the base, glaucous, glabrous but with bristly spines on the margins and veins below, 10-30 cm long. Inflorescence pyramidal with rather few, small, untidy, yellow flower-heads. Achenes olive- grey, prominently, ribbed. Bristly at the apex, with a slender white beak.

3.18 Parthenium hysterophorus L, Sp. PI. 988, (1753).

Morphological description: Annual aromatic herb. up to 120 cm, diffusely branched. Leaves ovate to oblong in outline. 1-2-pinnatifid into linear or lanceolate, dentate or pinnatifid, obtuse segments. Heads about 5 mm broad, in lax panicles on slender peduncles. Involucre saucer-shaped, of 2 mm ovate bracts. Florets white. Achenes 2 mm, broadly obovoid, black, bearing persistent ray-florets on the summit.

3.19 Phagnalon stenolepis Chiov. in Ann. Bot. (Roma) 9: 71, (1911).

Morphological description: Annual undershrub with ascending appressed white tomentose stems up to 50 cm, densely leafy. Leaves shortly petiolate, obovate-lanceolate, 2-5 cm long, shortly and distantly denticulate, apex subacute or rounded, base attenuate, glabrous above, grey tomentose beneath. Flower heads yellow, 1.5 cm in diameter, on 2-8 cm long peduncles. Florets all tubular. Involucral bracts yellow-green, scarious towards the tips, spreading or erect. Achenes cylindrical, pubescent.

3.20 Psiadia punctulata (DC.) Vatke, in Oestr. Bot. Zeitschr. XXVII: 196, (1877).

Local Name: *Futah*.

Morphological description: Shrub, erect, up to 1.5 m tall, branched, glabrous. Leaves alternate, lanceolate, acuminate or cuspidate at the apex, narrowed to the base, 4-7.5 cm long, margin entire or distantly serrulate, younger leaves resinous-glistening and marked with minute glandular dots. Inflorescence of dense corymbs; flower heads yellow. Involucre with several rows of pale bracts. Ray florets absent. Achenes thinly pubescent, 1 mm long, ribbed.

Genus: Pulicaria Gaertn;- **Key to the species**

1. Leaves petiolate, lanceolate to ovate, dentate. Achenes brown very sparsely hairy..... P. petiolaris
2. Leaves sessile, linear, oblanceolate. Achenes not as above.2
3. Achenes thinly hairy..... P. jaubertii
4. Achenes cylindrical, glabrous..... P. undulata

3.21 Pulicaria jaubertii Gamal-Eldin. **Pulicaria: 143, (1981).**

Local Name: *Khawah, Munas, Ansif*.

Morphological description: Perennial herb, erect, 30-50 cm tall, much branched, strongly aromatic, tomentose, grey-green, woody. Leaves sessile, oblong or oblanceolate, 1.5 - 4.5 x 0.4 -2 cm, margin toothed, apex obtuse. Inflorescence with few flower heads; flower heads yellow, 1-2 cm wide. Involucral bracts oblanceolate, villous. Rays 3-5 mm long. Achenes setulose, obscurely ribbed.

3.22 Pulicaria undulata (L.) C. A. Mey., Verz. Pfl. Casp. Meer: 79, (1831).

Local Name: *Gthgath*.

Morphological description: Low shrub, often cushion, or perennial with woody base. Leaves sessile, linear-oblanceolate with an undulat, toothed margin. Heads heterogamous, radiate, yellow, solitary; rays very short. Involucre pubescent, acuminate or cuspidate. Achenes cylindrical, brown, glabrous. Pappus 2-2.5 mm long.

3.23 Pulicaria petiolaris Jaub & Spach, III. Pl. Orient. 4:69, t. 344, (1852).

Local Name: *Cetap*.

Morphological description: Perennial undershrub, erect, up to 50 cm tall, much branched, aromatic, glandular-pubescent and shortly appressed-pubescent. Leaves petiolate, lanceolate or elliptic to ovate, 1-4 cm long, dentate, cuneate or truncate at the base. Inflorescence loosely corymbose. Flower-heads 1 cm in diameter. Involucral bracts linear, glandular. Rays short, 1-2 mm long. Achenes thinly pubescent.

Genus: Senecio L;- **Key to the species**

1. Inflorescence a dense, many-flowered terminal corymb, flower-heads rayed, 5-10 mm wide S. hadiensis
2. Inflorescence a loose terminal panicle; flower-heads rayed, 8-15 mm wide. S. lyratus

3.24 Senecio hadiensis Forssk. Fl. Aegypt.-Arab.: 149, (1775).**Local Name***Khidhrabah, Sala Al-Bgr.*

Morphological description: Glabrous, succulent undershrub with numerous decumbent or ascending stems 1-2 m long arising from a woody base. Leaves sessile, broadly lanceolate to elliptic, entire or dentate but never pinnatifid, 8-18 cm long. Inflorescence a dense, many-flowered terminal corymb with a strong, unpleasantly sweet smell; flower-heads rayed, 5-10 mm wide. Achenes shortly pubescent.

3.25 Senecio lyratus Forssk., Fl. Aegypt.-Arab.: 148, (1775).**Morphological description**

Perennial, thinly pubescent herb, up to 25 cm high. Stem ridged, decumbent. Leaves sessile, auriculate; lobes 1-2 pairs; terminal lobes large, deltoid-ovate, margin dentate. Heads in corymbose panicles, radiate, golden yellow. Individual head 8-15 x 10 mm. Disc flowers tubular, limb narrowly campanulate, 5-lobed. Achenes fusiform, 5-10-ribbed, shortly pubescent, c. 2 mm long. Pappus white.

3.26 Sonchus oleraceus L., Sp. Pl. 794, (1753).**Local Name:** *Dalb.*

Morphological description: Annual herb, erect, up to 1 m tall, glabrous, usually few branched above. Leaves oblong in outline, 10-15 cm long, runcinate-pinnatifid with an acute or rounded apex and more or less triangular lobes, sharp-dentate at margins, those below tapering at base, the stem leaves sessile, amplexicaul, with pointed, dentate auricles. Inflorescence an umbel-like cyme of small yellow flower heads. Involucral bracts glabrous, long triangular to linear-lanceolate. Florets yellow, all ligulate. Achenes compressed, oblanceolate to linear-elliptical, 3 mm long, distinctly rugose, especially on the ribs, brown with a pappus, twice as long as the achene.

Genus: Tagetes L.;- Key to the species

1. Erect, glabrous, pungent-aromatic woody annual to 1 ½ m. T. minuta
2. Annual herb, occasionally reaching 0.5 m by 0.3 m. T. erecta

3.27 Tagetes erecta L., Sp. Pl. 887, (1753).**Local Name:** *Nergse.*

Morphological description: Annual herbs, strongly aromatic. Leaves opposite, pinnately divided; leaflets serrulate glandular punctate. Flowers in solitary long peduncled heads, heterogamous, rayed, 2-4 cm across. Ray-florets 1- seriate, female. Disk florets hermaphrodite, fertile. Involucre campanulate. Petals of ray florets connate in a ligulate corolla. Petals of disk florets connate in a corolla tube, with a 5 fid limb. Cypsela linear, base narrowed. Pappus of 5 - 6 scales.

3.28 Tagetes minuta L., Sp. Pl., ed. 1, 887, (1753).**Local Name***Nergse, Shegr Al-Hamer.***Morphological description**

Annual to perennial herbs, aromatic, glabrous. Heads heterogamous and radiate or rarely homogamous and discoid. Involucral bracts uniseriate, connate to near the apex and each

with prominent gland dots. Receptacle flat naked, usually small. Ray florets if present pistillate, fertile, few, yellow or orange, rarely white. Disk florets tubular, 5-lobed hermaphrodite. Achenes linear, slightly compressed, 4-angled, pubescent. Pappus of 3-10 very unequal, more or less connate scales.

3.29 Taraxacum campyloides

G. E. Haglund. "in Nytt Mag. Naturvidensk., Oslo lxxxvi. 56, (1948).

Local Name: *Tarkshgon.*

Morphological description: Almost glabrous perennial. Leaves oblong, pinnatifid (rarely entire), 5-18cm long. Flower-heads large, 2-4cm wide; involucral bracts green, the inner erect, c 15mm long, the outer reflexed to ± spreading. Achenes usually brown, 2-3 times shorter than the beak.

3.30 Tridax procumbens L.

Sp. Pl. 900, (1753).

Morphological description: Perennial herb, procumbent; stems more or less hirsute. Leaves simple, opposite, incised or incised-lobed, ovate 1.5-3.5 cm long, acute at apex, cuneate at the base, densely setulose. Flower heads yellow to cream, solitary on peduncles 25 cm long; involucral bracts in 2 rows, outer florets ray, inner florets tubular, yellow interspersed with numerous long scarious scales. Achenes 2 mm long, cylindrical, usually pubescent.

3.31 Tripteris vaillantii Decne. 260, (1834).**Local Name:** *Mahng.*

Morphological description: Chamaephyte, 30-50 cm, scabrous, branched from base. Stems erect, corymbosely branched. Leaves oblong or oblanceolate, remotely dentate or entire; lower leaves opposite, petiolate; cauline leaves alternate, the upper ones sessile. Heads long pedunculate, yellow-flowered, later nodding. Involucral bracts 5 mm, linear-lanceolate, acute, scabrous, about as long as disc-florets, Ray-florets twice as long as involucre or longer. All achenes 3-winged, oblong to obovate in outline, about 1 cm; wings membranous, equal, broad, longer than the seed-containing sparsely tuberculate central part of the achene.

3.32 Vernonia leopoldi (Sch. Bip. ex Walp.) Vatke. Linnaea 39: 478, (1875).

Morphological description: Much-branched undershrub to 1 m, the stems striate, white-tomentellous. Leaves petiolate, oblong-elliptic, acute, serrate, green on the upper surface, white-tomentellous below, 6-15 cm long. Inflorescence a large terminal corymb; flower-heads 5-7 mm wide, purple; involucral bracts often purple-tipped, the outer obtuse, mucronate. Achenes glabrous, strongly ridged; pappus white, of two kinds, the outer very short.

3.33 Volutaria abyssinica (Sch. Bip. ex A. Rich.) C. Jeffrey ex Cuf., "in Bull. Jard. Bot. Nat. Belg. xxxvii. Suppl., 1176, (1967).

Erect, branched perennial herb to 50cm, the whole plant covered in thin cottony indumentum. Leaves sessile, pinnatifid, 3-8cm long, the lobes oblong, entire or (rarely)

with 1-2 teeth, Flower-heads mauve, solitary, terminal on long peduncles; involucre much shorter than the florets, the bracts with a dark hardened apex.

Genus: Xanthium L;- Key to the species

1. Plant with 1-2 trifid spines at the base of each leaf.
..... X. spinosum
2. Plant unarmed except on the fruit. X. strumarium

3.34 Xanthium spinosum L., Sp. Pl. 987, (1753); Boiss., Fl. 3: 252; Post, Fl 2: 43.

Local Name: *Shok Torky, Hask.*

Morphological description: Annual, 30-100 cm. Stems erect, sparsely short-hairy, later glabrescent. Spines at base of leaf 3-fid, yellow, 1-3 cm; leaves short-petiolate, densely appressed-hairy and canescent on lower face, green on upper face except along the canescent veins, oblong-lanceolate or rhombic in outline, cuneate at base, undivided or 3-lobed; middle lobe longest. Fruiting involucre nodding, ellipsoid, about 1 cm, somewhat pubescent, with a single beak or beakless; prickles slender, nearly glabrous, hooked at tip.

3.35 Xanthium strumarium L., Sp. Pl. 987, (1753).

Local Name: *Lyzeeg.*

Morphological description: Annual, 30-100 cm, scabridulous, with appressed short hairs. Stem erect. Leaves unarmed, triangular, irregularly lobed and dentate, cordate or cuneate at base; petiole about as long as blade. Staminate racemes axillary and terminal, pedunculate. Fruiting involucre ovoid or oblong, 1.5-2 cm, covered with prickles up to the tip; prickles straight, short-pubescent for about 2/3 of their length, hooked at tip; beaks straight, spinescent, about as long as prickles.

Family: Asteraceae



Artemisia abyssinica Sch. Bip.



Bidens biternata (Lour.) Merr.



Anthemis cotula L.



Calendula tripterocarpa Rupr.



Centaurothamnus maximus Forssk.



Echinops spinosissimus Turra.



Centaurea pallescens Del.



Conyza pyrhopappa Sch. Bip.



Cirsium vulgare (Savi) Ten.



Eclipta prostrata (L.) L.



Conyza bonariensis (L.) Cronquist.



Erigeron bonariensis L.



Flaveria trinervia (Spreng.) Mohr Contr.



Lactuca serriola L.



Glebionis coronaria (L.) Cass.



Kleinia pendula Forssk. DC.



Helichrysum foetidum L.



Parthenium hysterophorus L.



Kleinia odora (Forssk.) DC.



Phagnalon stenolepis Chiov.



Psidium punctulata (DC.) Vatke.



Senecio hadiensis Forssk.



Pulicaria jaubertii Gamal-Eldin.



Senecio lyratus Forssk.



Pulicaria petiolaris Jaub & Spach.



Sonchus oleraceus L.



Pulicaria undulata (L.) C. A. Mey.



Tagetes erecta L.



Tagetes minuta L.



Vernonia leopoldi (Sch. Bip. ex Walp.) Vatke.



Taraxacum campyloides G. E. Haglund.



Volutaria abyssinica (Sch. Bip. ex A. Rich.) C.



Tridax procumbens L.



Xanthium spinosum L.



Tripteris vaillantii Decne.



Xanthium strumarium L.

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