

Herbs; leaves alternate, palmately compound, petioled; flowers hypogynous, bisporangiate, zygomorphic, in racemes; receptacle bearing a gland; sepals 4; petals 4, clawed; stamens 6 to many, rarely fewer than 6, filaments elongate; carpels 2, united; locule 1, style 1; placentae 2, parietal; fruit an elongate capsule; seeds many, reniform. (Capparidaceae).

- a Stamens 8 to many; fruit hardly stipitate in the calyx. **2. POLANISIA**
a' Stamens usually 6, rarely fewer; fruit long-stipitate in the calyx. **1. CLEOME**

1. CLEOME L. Spider Flower

Leaflets 3-7, lanceolate or oblong; bracts subtending flowers smaller than the leaves; flowers long-stalked; petals white or pink; filaments very long.

- 1. **Cleome hassleriana* Chodat**
Naturalized (native of tropical America)

Spider-flower

Plants viscid-pubescent; leaves palmately compound, leaflets 5-7; bracts subtending flowers smaller than the leaves; spines usually at base of petioles, along petioles, and midrib beneath leaf blade; petals white to pink; stamens 6, filaments very long; fruit long stipitate from calyx attachment. Syn.: *C. spinosa* L., misapplied
HERBARIUM RECORDS: Jul 1891—OSU grounds, cult., *Werner* (CLM); 13 Jul 1893—escape on University grounds [OSU], *Cols., Selby*; 16 Aug 1898—OSU Bot. Garden, cult., *J. H. Schaffner*; 25 Jul 1923—*Cols., J. H. Schaffner*; 18 Sep 1989—Highbanks Metro Park (Delaware Co.), ¼ mi. N of Franklin/Delaware Co. line, at large bend in Olentangy R. near large sycamores, *Watts 505*.

2. POLANISIA Raf. Clammy-weed

Viscid-pubescent; leaflets 3, oblong, entire; petals emarginate at tip, white or nearly so; stamens several, filaments purple; at least the lower flowers of raceme subtended by leaflike bracts.

- 1. *Polanisia dodecandra* (L.) DC.**

Clammy-weed

Plants viscid-pubescent; leaflets 3, oblong, entire; petals emarginate at tips, nearly white; stamens 8 or more; fruit hardly stipitate from the calyx attachment. Syn.: *P. graveolens* Raf.
REFERENCES: Riddell 1834:117 (denuded river banks); Selby & Craig 1890:8; Kellerman & Werner 1893:228 (near Chemical Laboratory, 5 Aug 1890, Aug 1892, E side of Neil Ave., near the brook, Sep 1891, the last locality is now obliterated).
HERBARIUM RECORDS: 1840—*Cols., Sullivan*; 26 Sep 1936—*Cols., waste ground, many plants, J. H. Schaffner*.

BRASSICACEAE, Mustard Family

Herbs; leaves alternate or rarely opposite or whorled, simple or compound, without stipules; flowers hypogynous, bisporangiate, in racemes or corymbs; perianth regular or rarely zygomorphic; sepals 4, separate; petals 4, separate, rarely none; stamens 6, 2 shorter than the others, or rarely stamens 4 or 2; carpels united, style 1, stigma usually 2-lobed; ovary 2-loculed; placentae parietal; fruit linear and much longer than wide (a silique) or short (a silicle); seeds 1 or 2 to many, when several, attached in 2 rows in each locule but lying in either 1 or 2 rows. (Cruciferae, nom. altern.)

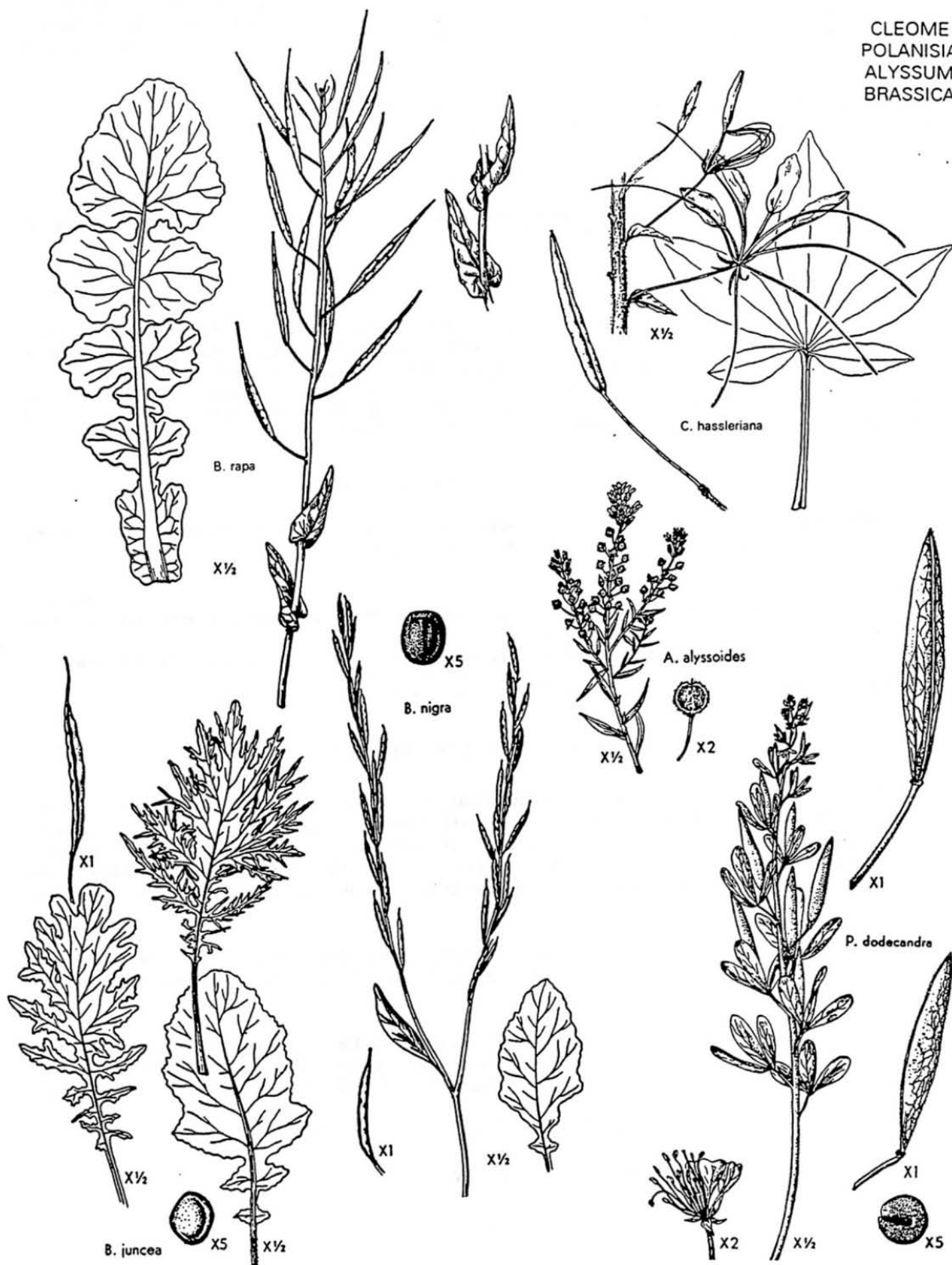
Approximate size of flowers is indicated in keys and descriptions as follows: small, petals 4 mm long or less; medium, petals 5-8 mm long; large, petals 9 mm long or more. The term beak, as used here, refers to the terminal projection beyond tip of valves of fruit.

Alyssum alyssoides (L.) L. (*Alyssum*) is frequently planted in gardens and sometimes escapes. An attractive annual with stellate pubescence; stems usually branched at base; leaves oblanceolate or linear, obtuse, entire; flowers very small; sepals persistent; petals yellow or whitish; fruit circular, flattened parallel to septum; 2 seeds in each locule.

KEY TO PLANTS WITH BOTH FLOWERS AND FRUITS

- a Fruit (exclusive of beak) less than 3 times as long as wide.

CLEOME
POLANISIA
ALYSSUM
BRASSICA



- b Fruit flattened parallel to septum which is as wide as fruit.
- c Fruit 1.5 cm wide or more; corolla pink to purple; flowers large; lower leaves opposite or nearly so.
11. LUNARIA
- c' Fruit less than 1.5 cm wide; leaves alternate or all basal.
- d Sepals persistent in fruit; fruit circular; plant stellate-pubescent. **ALYSSUM L.**
- d' Sepals deciduous in fruit.
- e Stem less than 3 dm tall, sometimes scapose; seeds wingless; rosette present at anthesis.
13. DRABA
- e' Stem taller, leafy; seeds narrowly winged; plant canescent; no well-developed rosette present at anthesis. **12. BERTEROA**
- b' Fruit not, or slightly, flattened, or flattened at right angle to narrow septum.
- f Fruit rough and wrinkled or reticulate and pitted, indehiscent. **7. CORONOPUS**
- f' Fruit not rough and wrinkled, not reticulate and pitted.
- g Fruit flattened.
- h Fruit triangular at maturity (oblong to globose when young), emarginate at apex, narrowed to base; plant with forked hairs. **10. CAPSELLA**
- h' Fruit circular, ovoid, or obovoid.
- i More than 1 seed in each locule of fruit. **9. THLASPI**
- i' One seed in each locule of fruit.
- j Fruit broadly ovoid or heart-shaped, tapering to short point and beaked at apex; cauline leaves clasping. **8. CARDARIA**
- j' Fruit almost circular, notched at apex, style, if present, within the notch; leaves clasping or not. **6. LEPIDIUM**
- g' Fruit not, or only slightly, flattened.
- k Plant with stellate or forked hairs; petals yellow or cream; stem-leaves sagittate-clasping.
27. CAMELINA
- k' Plants glabrous or hairs simple.
- l Petals purple, pink, or white.
- m Petals white, small; basal leaves 1-2 dm long, or plant aquatic with dissected leaves; fruit ellipsoid. **14. ARMORACIA**
- m' Petals pink-purple to white, large; fruit oblong, ending in conical beak, 0.5-1 cm thick. **4. RAPHANUS**
- l' Petals yellow.
- n Fruit with flattened beak about as long as pubescent body; flowers large.
2. SINAPIS
- n' Fruit ovoid, ellipsoid, or short-cylindric, beak small; flowers small or medium.
18. RORIPPA
- a' Fruit (exclusive of beak) 3 to many times as long as wide.
- o Cauline leaves clasping by cordate, auricled, or sagittate bases.
- p Petiole-base clasping; blades acuminate, sharply dentate, sometimes with 1-2 small basal lobes on each side; petals purple. **20. IODANTHUS**
- p' Blades without petioles.
- q Petals yellow.
- r Blades entire, rounded at apex; plant glabrous; petals pale yellow; fruit 4-angled, to 1 dm long. **5. CONRINGIA**
- r' At least the lower blades incised or pinnatifid.
- s Essentially glabrous; beak of fruit not more than 3 mm long; leaves of basal rosette lyrate-pinnatifid, terminal lobe large and rounded. **19. BARBAREA**
- s' Glabrous or pubescent; beak of fruit more than 3 mm long, usually 8 mm or more; rosette leaves not as above or absent at anthesis. **1. BRASSICA**
- q' Petals white, greenish, or cream yellow; plant glabrous or pubescent, usually some hairs, when present, forked; fruits 1.5-10 cm long, appressed or spreading; seeds often winged. **17. ARABIS**
- o' Cauline leaves absent or not clasping; if sessile, then bases not cordate, auricled, or sagittate.
- t Petals purple, pink, white, or creamy-white.
- u Leaves, at least the lower, compound, deeply cleft, or lobed.

- v Leaves palmately compound or palmately cleft (*Dentaria*). **15. CARDAMINE**
- v' Leaves, or some of them, pinnately compound or pinnately cleft or lobed.
- w Petals 1-2 cm long; fruit 5-10 mm thick, with conical pointed beak, indehiscent, or fruit more slender and cross-septate. **4. RAPHANUS**
- w' Petals and fruit not as above.
- x Blades, at least the lower, 2-3 times pinnate. **28. DESCURAINIA**
- x' Blades once pinnate or only lobed or cleft.
- y Aquatic; leaves pinnately compound, leaflets oval to circular; fruiting pedicels spreading; 2 rows of seeds in each locule (*Nasturtium*). **18. RORIPPA**
- y' Not aquatic; if leaves actually compound, then pedicels ascending; 1 row of seeds in each locule.
- z Cauline blades not pinnatifid or pinnate; fruit pendent, curved, flattened, 7-10 cm long, petals creamy-white, or, fruit 2-5 cm long, spreading or ascending, petals white, pink, or purple. **17. ARABIS**
- z' Cauline blades pinnatifid or pinnate.
- aa Seed narrowly winged; fruit 1.5-2 mm wide; petals 3 mm long. **16. SIBARA**
- aa' Seed wingless; either fruit more slender or petals much longer. **15. CARDAMINE**
- u' Leaves simple, not lobed or cleft (or, rarely, with 1-2 small basal lobes on each side).
- bb Foliage with odor of onion; stem-blades triangular-ovate. **24. ALLIARIA**
- bb' Foliage not with odor of onion; blades not triangular-ovate.
- cc Basal rosettes present at anthesis.
- dd Fruits long, recurved, and flattened, or fruits 2-5 cm long and petals 5-8 mm long. **17. ARABIS**
- dd' Fruits not more than 2 cm long; petals smaller.
- ee Fruit not more than 5 times as long as wide, flattened parallel to septum; seeds in 2 rows in each locule. **13. DRABA**
- ee' Fruit much more than 5 times as long as wide; seeds in 1 row in each locule. **26. ARABIDOPSIS**
- cc' Basal rosettes not present at anthesis but some long-petioled basal leaves may be present.
- ff Fruit with beak 1 cm long or more, at maturity constricted and cross-septate at intervals; petals large, blue-purple. **21. CHORISPORA**
- ff' Fruit with short beak or none, not cross-septate.
- gg Fruit at maturity 2-5 mm long and about 1 mm wide; plant small. **13. DRABA**
- gg' Fruit larger than above.
- hh Cauline blades entire, undulate, or remotely toothed; fruit elastically dehiscent; glabrous or hairs simple. **15. CARDAMINE**
- hh' Cauline leaves sharply, sometimes doubly, toothed; fruit not elastically dehiscent.
- ii Glabrous or hairs simple; blades sometimes with small lobes at base. **20. IODANTHUS**
- ii' At least some of the hairs forked; blades not lobed at base. **22. HESPERIS**
- t' Petals yellow or rarely orange.
- jj Pubescence at least partly of forked or stellate hairs.
- kk Blades pinnately compound or decomposed. **28. DESCURAINIA**
- kk' Blades simple, sometimes pinnatifid. **23. ERYSIMUM**
- jj' Pubescence of only simple hairs, or plants glabrous.
- ll Raceme bracted with leaflike pinnatifid bracts. **3. ERUCASTRUM**
- ll' Racemes bractless or bracted only at very base.

- mm Beak of fruit 5 mm long or more, sometimes half as long as body or more; flowers large.
- nn Petals 1.5-2 cm long; fruit with transverse septa. **4. RAPHANUS**
- nn' Petals about 1 cm long; fruit without transverse septa, each valve strongly 3-nerved, or strongly 1-nerved with anastomosing side nerves. **2. SINAPIS**
- mm' Beak of fruit less than 5 mm long.
- oo Fruits closely appressed to axis at maturity.
- pp Petals about 3 mm long; fruit 1.5 cm long, tapering from base to tip. **25. SISYMBRIUM**
- pp' Petals about 1 cm long; body of fruit not tapering, each valve with 1 prominent midvein and anastomosing side veins. **1. BRASSICA**
- oo' Fruits not closely appressed to axis at maturity.
- qq Fruit linear to ellipsoid, 1.5 cm long at most, sometimes curved, valves nerveless or obscurely nerved; flowers small; seeds in 2 irregular rows or in 1 row in each locule. **18. RORIPPA**
- qq' Fruit linear, 1-10 cm long, valves 3-nerved; flowers medium to large; seeds in 1 row. **25. SISYMBRIUM**

1. BRASSICA L. Mustard

Coarse; at least the lower leaves incised or pinnatifid, the upper usually entire or dentate; flowers large; sepals usually erect to ascending; petals yellow; fruits terete or angled, often constricted between the seeds, tipped with a slender, terete to angular, beak; seeds globose, wingless, 1 row in each locule; valves of fruit with 1 strong nerve; beak of fruit not 2-edged, 1-nerved on each half or nerveless, without a seed.

- a Upper leaves not clasping.
- b Plant glaucous, glabrous; pedicels spreading, fruits ascending. **1. B. juncea**
- b' Plant green, pubescent; pedicels and fruits appressed. **2. B. nigra**
- a' Upper leaves clasping; lower ones pubescent; biennial; root thickened. **3. B. rapa**

1. **Brassica juncea* (L.) Czern. Naturalized (native of Asia)

Indian Mustard

Plant glaucous, glabrous; cauline leaves not clasping, petiolate; beak of fruit slender, each valve with 1 strong nerve; pedicels spreading.

HERBARIUM RECORD: 9 Aug 1990—E side of Rt. 104, just S of Hiner Rd. intersection, open field, Jackson Twp., Lowden 4531.

2. **Brassica nigra* L. Naturalized (European)

Black Mustard

Plant green, pubescent; cauline leaves not clasping; beak of fruit with 1 strong nerve; pedicels and fruits usually appressed.

REFERENCES: Riddell 1834:117 (*Sinapis nigra*, bottomland); Sullivant 1840:11 (*Sinapis nigra* L.); Craig 1890:53, 56, 67 (very common along fences and roadsides, also in fields and waste places near the barn, 2 Jun 1883, 25 May 1884, 28 May 1885, 7 May 1887, 28 May 1888; University Farm Sep & Oct 1887 and 4, 12, 21 Nov 1888); Selby & Craig 1890:7 (introduced).

HERBARIUM RECORDS: 9 Oct 1890—Cols., *Bogue*; 10 Jul 1990—jct. of Lazelle Rd. & Flint Rd., along RR tracks, Sharon Twp., Lowden 4438.

3. **Brassica rapa* L. Naturalized (Eurasian)

Turnip, Field Mustard

Plants glabrous or nearly so; upper cauline leaves clasping; mature fruits 3-5 cm long, beak 8-15 mm. Syn.: *B. campestris* L.

REFERENCE: Riddell 1834:117 (naturalized).

HERBARIUM RECORDS: May 1889—Cols., *Craig*; 14 Jun 1989—OSU Campus, near B&Z bldg., 1735 Neil Ave., Cols., Clinton Twp., Lowden 4150 & 4190; 9 Apr 1991—OSU Campus, small oval behind Enarson Hall, W. 12th Ave., Lowden 4565; 25 Apr 1991—OSU Campus, small oval behind Enarson Hall, W. 12th Ave., *Stuckey*; 11 May 1991—Hoover Dam Park, W of Cabbage Rd. entrance, edge of open woods, Blendon Twp., Lowden 4609.

NOTE: All of the cited specimens are glabrous, none pubescent. There is a specimen labeled *B. napus* L. (Rape, Rutabaga) that appears to be the same collection of Moses Craig's *B. rapa* (May 1899—Cols.). I cannot tell the difference between these meager specimens.

2. SINAPIS L.

Much like *Brassica*, but valves of the fruit with 3 prominent nerves; beak of fruit flat or 4-angled, 2-edged, 3 nerved on each half, sometimes 1-3-seeded, almost half to as long as body of fruit; sepals spreading to reflexed.

- a Fruit glabrous or sparsely pubescent; beak somewhat 4-angled, much shorter than body of fruit. 1. *S. arvensis*
a' Fruit hispid-pubescent; beak flat, as long as body of fruit. 2. *S. alba*

1. **Sinapis arvensis* L.

Yellow Mustard

Cultivated fields (European)

Cauline leaves not clasping; petals yellow, about 1 cm long; beaks of fruit more than 5 mm long, 4-angled, much shorter than body of fruit; fruit glabrous, each valve 3-nerved. Syn.: *Brassica kaber* (DC.) L.C.Wheeler, *B. sinapistrum* Boiss.

REFERENCES: Craig 1890:53, 67 (*Brassica arvensis* L. & *Brassica sinapistrum*, occurs in cultivated fields W of the barn but is not nearly so common as the Black Mustard, 6 Jun 1882, 28 May 1883, 24 May 1887, University Farm Sep 1887); Selby & Craig 1890:7 (introduced).

HERBARIUM RECORD: 23 May 1963—Dublin, edge of oats field along Rt. 33, A. Brooks 3514.

2. **Sinapis alba* L.

White Mustard

Naturalized (European)

Syn.: *Brassica alba* (L.) Rabenh., *B. hirta* Moench

REFERENCES: Riddell 1834:117 (naturalized); Craig 1890:67 (very rare, a few specimens grow near a small frog pond just S of the dike, 20 May 1883); Selby & Craig 1890:7 (introduced).

NOTE: No specimens seen from Franklin Co.

3. ERUCASTRUM C.Presl

Stem pubescent, hairs simple; leaves pinnatifid or bipinnatifid; racemes leafy; flowers of medium size; petals yellow; pedicels and fruits ascending; fruit somewhat curved, as much as 3 cm long, each valve 1-nerved; seeds many, 1 row in each locule.

1. **Erucastrum gallicum* (Willd.) O.E.Schulz

Dog-mustard

Naturalized (European)

Stem pubescent, hairs simple; leaves deeply pinnatifid; cauline leaves progressively reduced; racemes bracted with leaflike pinnatifid bracts; petals yellow; fruits somewhat curved upward, approx. 2.5 cm long, beaks approx. 2 mm long. Waste places.

HERBARIUM RECORD: 30 Jul 1992—I-71 (between mi. 91-92 signs) going NE along roadside, disturbed open hillside, W of Harrisburg, Pleasant Twp., Lowden 5012.

4. RAPHANUS L. Radish

Erect; at least the lower leaves lyrate-pinnatifid; flowers large; petals purple, white, or yellow, obovate, clawed; fruit indehiscent, long-beaked, actually with transverse septum near base, separating it into 2 parts, the lower abortive or small and usually seedless, the upper spongy or constricted between the seeds.

1. **Raphanus sativus* L.

Garden Radish

Cultivated (introduced from Europe)

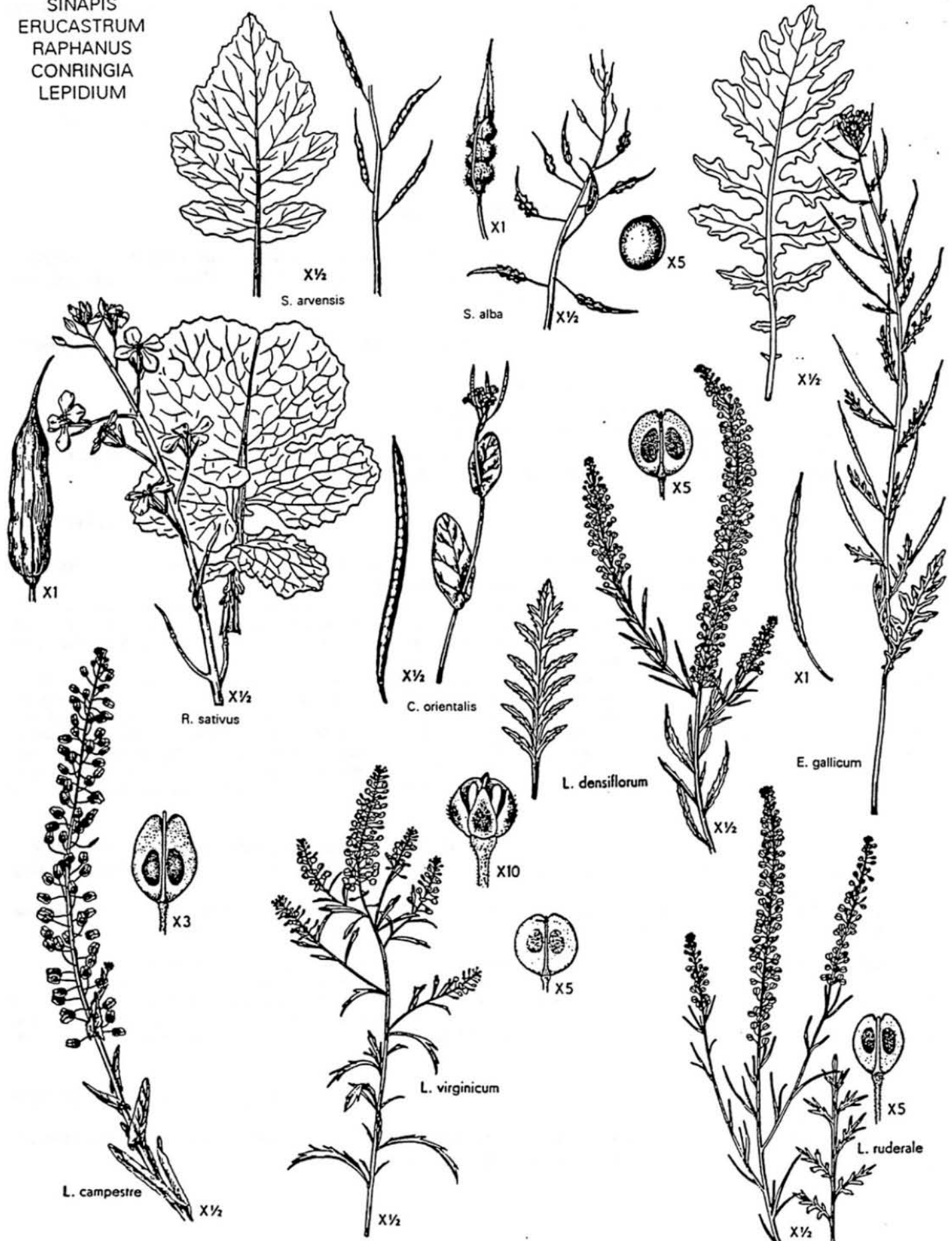
Fruits 5-10 mm thick, spongy, hardly constricted between the few seeds; petals pink or pale purple.

REFERENCES: Craig 1890:56, 68 (found last summer growing along Woodruff Ave. NW of Holmes house, in rich moist soil, it had probably escaped from cultivation, but as it has been noticed in this locality for several years it was thought best to insert it with this explanation, 9 Jun 1887, University Farm 5 & 11 Nov 1888); Selby & Craig 1890:8 (introduced).

HERBARIUM RECORDS: 4 Sep 1890—Alum Creek, Cos., Selby (in fruit); 6 Jun 1927—Westerville, garden, K. Long.

5. CONRINGIA Heist. Hare's-ear mustard

SINAPIS
ERUCASTRUM
RAPHANUS
CONRINGIA
LEPIDIUM



Glabrous, somewhat succulent, annual with erect stem; leaves entire, the upper elliptic or oblong and cordate-clasping, the lower tapering to base; flowers medium to large; petals pale yellow; fruit slender, 4-angled, 4-12 cm long, ascending; seeds many, 1 row in each locule.

1. **Conringia orientalis* (L.) Andr.
Naturalized (native of Eurasia)

Hare's-ear Mustard

Stem erect, glabrous; leaves oblong, broadly rounded at apex, entire, cordate-clasping; petals pale yellow; fruit elongate, slender, 4-angled.

HERBARIUM RECORD: 26 May 1919—Cols., J. H. Schaffner.

6. *LEPIDIUM* L. Pepper-grass

Glabrous or pubescent with simple hairs; leaves entire to pinnatifid; flowers small; petals white, yellow, or green, sometimes none; stamens 6, 4, or 2; style short or none; fruit circular or slightly elongate, flattened at right angle to septum, wingless or somewhat winged; 1 seed in each locule.

- a Stem-leaves sagittate-clasping, lanceolate or oblong, many, crowded; basal leaves entire to pinnatifid; stamens usually 6. 1. *L. campestre*
- a' Stem-leaves not clasping by sagittate bases; stamens 4 or 2.
- b Petals present, about as long as sepals. 2. *L. virginicum*
- b' Petals absent or rudimentary and shorter than sepals.
- c Plants nearly scentless; basal leaves toothed or pinnatifid; petals none or rudimentary. 3. *L. densiflorum*
- c' Plants fetid; basal leaves bipinnatifid; petals none. 4. *L. rudernale*

1. **Lepidium campestre* (L.) R.Br.
Naturalized (native of Europe)

Field Pepper-grass, Field-cress

Stem-leaves lanceolate or oblong, sessile, many, crowded, clasping by sagittate bases; basal leaves entire to pinnatifid; one seed in each locule of fruit; petals white; stamens usually 6.

REFERENCES: Riddell 1836:4 (*Thlaspi campestre* L., Worthington, river banks); Craig 1890:68 (Yellow-seed; this weedy plant is very abundant in the NE corner of the woods-meadow where it is spreading rapidly, it is one of our recently introduced plants, six years ago there was scarcely any to be found there; it now covers the N half of the field, and is becoming common in other places, 24 May 1882, 28 May 1883, 26 May 1884, 6 May 1887, 12 May 1888, 29 Apr 1889); Selby & Craig 1890:8.

HERBARIUM RECORDS: Jun 1888—Cols., Craig; Spring 1890—OSU grounds, Cols., Selby (WOOS); 4 May 1890—OSU Farm, Cols., Selby; 27 May 1892—near Cols., E. M. Wilcox; 25 May 1896—Cols., M. Wright; 16 May 1903—OSU Campus, Cols., Morse; 5 May 1922—Westerville, Big Walnut, waste fields, Camp; 24 May 1922—Westerville, field near Alum Creek, Camp; 4 Jun 1923—Westerville, open field, Carlson; 20 May 1924—Westerville, open places, troublesome weed, W. Blausen; 17 Jun 1940—D. Brown; 28 Jun 1968—E side of Dublin Rd., ¼ mi. N of intersection with Fishinger Rd., abandoned field, Norwich Twp., Moser; 3 May 1970—Clintonville, in rocks along Olentangy R. in Northmoor Park, W. Owen 113; 7 May 1970—Groveport, Main Rd. & Mohr Rd., dry open field, Boone 171; 10 May 1986—Highbanks Metro Park (Delaware Co.), Witsberger 904 (OS, OWU); 26 May 1988—OSU, SE of Lincoln Tower, Cannon Dr., Chinery 55; 15 May 1989—along RR tracks on Highland Dr., W of Olentangy River Rd. & S of Henderson Rd., Cols., Clinton Twp., Lowden 4058.

2. *Lepidium virginicum* L.

Virginia Pepper-grass, Wild Pepper-grass, Poor-man's Pepper

Stem-leaves not sagittate-clasping, oblanceolate to linear, dentate to entire; petals white, well-developed, as long or longer than sepals.

REFERENCES: Riddell 1834:117 (roadsides); Sullivant 1840:11; Craig 1890:53, 55-56, 68 (a bad weed quite common in pasture fields, meadows and along roadsides, 24 May 1882, 2 Jun 1884, 21 May 1885, 1 Jun 1887, 20 May 1888; University Farm 1 Jun & Sep-Nov 1887 and 5, 12, 21 Nov & 1 Dec 1888); Selby & Craig 1890:8.

HERBARIUM RECORDS: Oct 1890—Cols., vacant lots, Selby; 29 May 1891—Cols., Bogue; 14 Jul 1892—Cols., Bogue; 15 Jun 1894—Cols., W. Kellerman; 18 May [ca. 1920s]—Westerville, Otterbein campus, H. Miller; 6 Jul 1968—385 Arcadia Ave., Cols., Clinton Twp., Moser; 9 May 1970—Charing Rd., Upper Arlington, frequent along roadsides, Boone 132; 19 May 1974—OSU Botany Garden, Cols., D. Johnson; 10 Jul 1986—OSU Campus, banks of the Olentangy R., E. King 9; 7 Jun 1987—Highbanks Metro Park (Delaware Co.), field, Morawetz; 16 May 1989—along Highland Dr. RR tracks, W of Olentangy River Rd. & S of Henderson Rd., Cols., Clinton Twp., Lowden 4065; 14 Jun 1989—OSU Campus, around the B&Z Bldg., Cols., Lowden 4148.

3. **Lepidium densiflorum* Schrad.
Naturalized (NW U.S.)

Pepper-grass, Prairie-pepperweed

Stem-leaves not sagittate-clasping, tips acute; basal leaves toothed or pinnatifid; petals none or rudimentary, shorter than sepals; fruits approx. 3.0 mm long, 9-13 fruits per cm of raceme.

HERBARIUM RECORDS: 15 May 1911—Cols., *B. Wells*; 27 May 1933—Red Hills, *Hicks*; 9 Jul 1987—OSU Campus, bare spot in bluegrass turf on W bank of the Olentangy R., at jct. of Campus Loop Rd. & Olentangy River Rd., Cols., *T. Lammers & Lewis 6173*; 20 May 1991—OSU, dormitory in front of B&Z Bldg., Neil Ave., Cols., *Stuckey*.

4. **Lepidium ruderalis* L.

Pepper-grass, Stinking Pepperweed

Naturalized (native of Europe)

Ill-scented; lower cauline leaves usually pinnatifid, the upper entire or dentate, tips rounded or obtuse; basal leaves commonly bipinnately lobed; flowers small, petals none; fruits approx. 2.0 mm long, 7-9 fruits per cm of raceme.

REFERENCES: Craig 1890:68 (growing with *Lepidium virginicum* but is very rare, it grows taller and is less branched); Selby & Craig 1890:8 (introduced).

HERBARIUM RECORDS: 9 Jul 1987—OSU Campus, bare spot in bluegrass turf on W bank of the Olentangy R., at jct. of Campus Loop Rd. & Olentangy River Rd., only a few plants seen, *T. Lammers & Lewis 6174*; 17 Jun 1990—berm of Olentangy River Rd., just S of W. North Broadway, common, NW Cols. Quad., *Cusick 28943*; 1 May 1992—jct. of Rt. 317 & Alum Creek Dr., NE of Lockbourne, Lockbourne Quad., *Cusick 30168*.

7. CORONOPUS Zinn Wart-cress

Diffuse, stem decumbent or spreading; leaves once to twice pinnatifid; flowers small; petals white; fruit rugose, notched at base and apex, indehiscent, wider than high, style and stigma shorter than notch, 1 seed in each locule.

1. **Coronopus didymus* (L.) Sm.

Wart-cress, Swine-cress

Adventive (native of South America)

Stems decumbent-spreading; leaves 1-2 pinnatifid; petals small, white; fruits coarsely wrinkled, notched at apex.

HERBARIUM RECORDS: 28 May 1980—OSU campus, W end of lower Oval, E of Mirror Lake Hollow, weed under shrubs, *W. Carr 2835* (KE); 10 Jun 1991—at Piedmont Rd. & Torrence Rd., weedy treelawn, E of N. High St., NW Cols. Quad., *Cusick 29636*.

8. CARDARIA Desv. Hoary-cress

Leaves oblong, usually dentate, the cauline auricled, clasping; flowers small, racemes several; petals white; fruit ovoid, somewhat cordate or reniform, tapering at top to persistent style about 1 mm long; seed 1 in each locule.

1. **Cardaria draba* (L.) Desv.

Heart-podded Hoary Cress

Introduced (native of Middle East & E Mediterranean region)

Stem short-hairy below; leaves oblong, toothed or entire, sessile, the cauline auricled and clasping; flowers small, petals white, approx. 2.5 mm long; fruit cordate at base, style about 1 mm long.

HERBARIUM RECORD: 19 May 1931—Cols., *Blaydes*.

9. THLASPI L. Penny-cress

Cauline leaves sessile or clasping, with sagittate bases; flowers small; petals white; fruit circular, obovate or obcordate, winged, flattened at right angle to septum; seeds 2-several in each locule.

1. **Thlaspi arvense* L.

Field Penny-cress

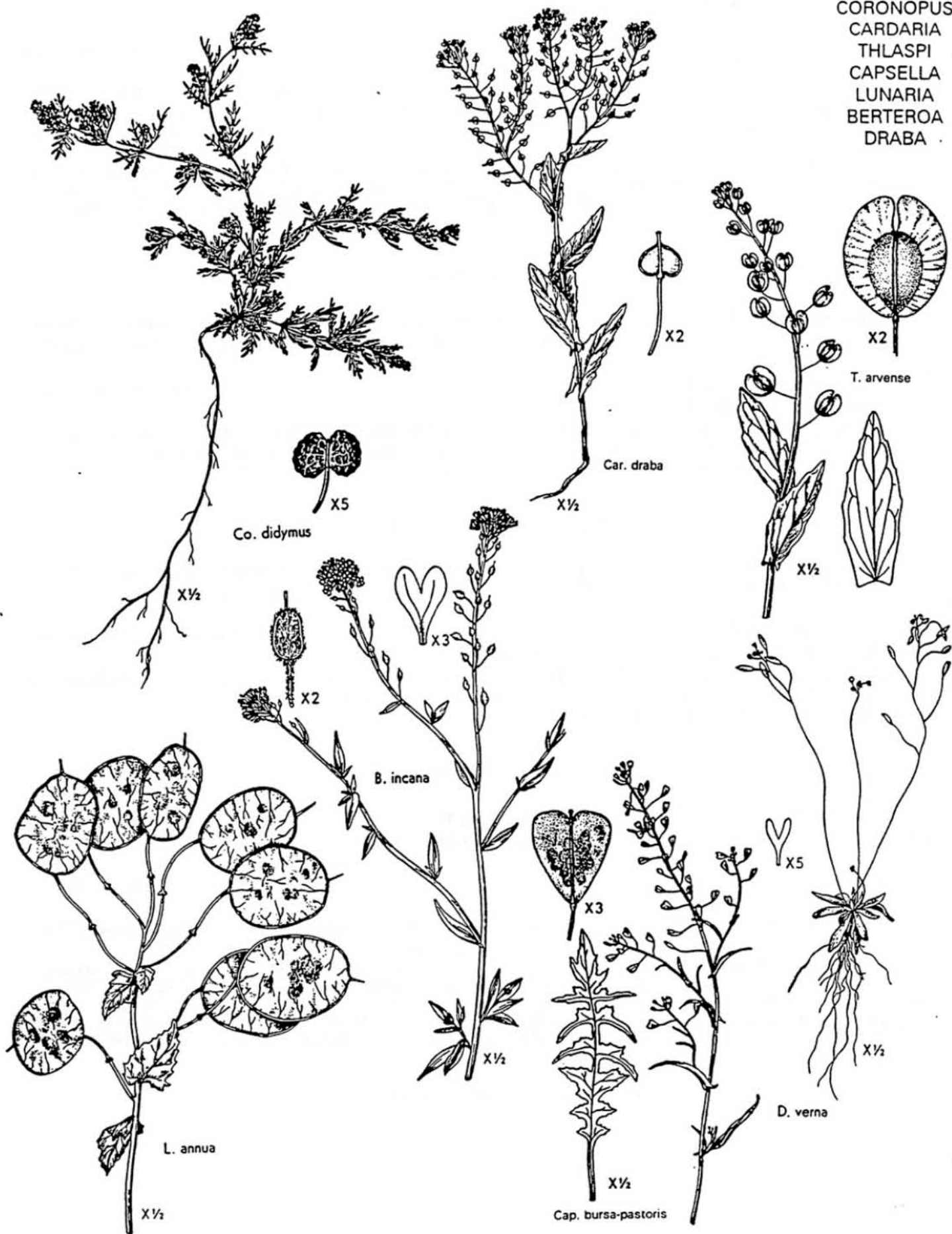
Naturalized (native of Europe)

Plants glabrous; stem to 5 dm tall; stem-blades oblong or lanceolate, auricles acute; fruits winged all around, 10-14 mm long, several seeds in each locule, the distal notch deeper than wide.

HERBARIUM RECORDS: Summer 1919—Cols., *Willard*; 8 Jun 1925—Cols., first collected in 1918, *Willard*; 18 Jun 1925—Cols., first collected in 1918, *Willard*; 14 May 1970—behind Research & Development Center on Kinnear Rd., open fields, *Boone 142*; 17 Apr 1982—OSU Agric. Campus, field off Kenny Rd., between Lane & Ackerman Rd., common weed, *Kromer 8*; 25 Apr 1989—Highbanks Metro Park (Delaware Co.), field, Big Meadow picnic area, *Watts 411* (OS, OWU); 16 May 1989—along Highland Dr. RR tracks, W of Olentangy River Rd. & S of Henderson Rd., Cols., Clinton Twp., *Lowden 4063 & 4064*; 6 Jun 1990—OSU Campus, NW corner of Women Field House, Cols., *Lowden 4375*.

10. CAPSELLA Medik. Shepherd's Purse

CORONOPUS
CARDARIA
THLASPI
CAPSELLA
LUNARIA
BERTEROA
DRABA .



Hairs forked; rosette leaves oblong, toothed or pinnatifid; cauline leaves lanceolate or linear, sessile with auricled bases; flowers small; petals white; fruits triangular, emarginate or obcordate, flattened at right angle to septum, several seeds in each locule.

1. **Capsella bursa-pastoris* (L.) Medik.

Shepherd's Purse

Naturalized (native to S Europe)

Plant with forked hairs; rosette leaves oblong, toothed or pinnatifid, cauline leaves lanceolate or linear, sessile with auricled bases; fruit triangular at maturity (oblong to globose when young), flattened at right angle to narrow septum. REFERENCES: Riddell 1834:117 (*Thlaspi bursa-pastoris*, roadsides); Sullivant 1840:10 (naturalized); Craig 1890:53, 55-56, 67 (vile weed far too common, growing everywhere in all sorts of soils and crowding out other plants, 15 Apr 1882, 28 Apr 1883, 19 Apr 1884, 28 Apr 1885, 13 Apr 1886, 20 Apr 1887, 5 Apr 1888, 20 Mar 1889; University Farm 20 Apr & Sep-Nov 1887, 5 & 12 Nov 1888); Selby & Craig 1890:7 (introduced).

HERBARIUM RECORDS: May 1888—Cols., Craig; 3 May 1888—Cols., Craig; 1889—Cols., Craig; 1890—Cols., Selby; 15 Jul 1892—Georgesville, Bogue; 9 May 1896—Worthington, M. Wright; 13 May 1901—OSU farm, Eckman; 19 May 1902—OSU farm, McClintock; 16 May 1903—Cols., Morse; 25 Apr 1921—Otterbein campus, Westerville, Halderman; 27 May 1922—Otterbein campus, Westerville, J. Hall; 6 Jun 1927—N Westerville, K. Long; 18 Apr 1966—Kenny Rd., Battelle Greenhouse, margin of orchard, Clinton Twp., Anderson (KE, OS); 19 May 1969—Park of Roses, Cols., Wiley 1; 18 Apr 1970—Charing Dr., Upper Arlington, common beside roadsides, Boone 22; 3 May 1970—Clintonville, common along Olentangy R. in Northmoor Park, W. Owen 111; 19 May 1974—OSU Botany Garden, Cols., D. Johnson; 30 Apr 1977—Neil Ave. near 9th Ave. corner, lawn, Swanson 26; 10 May 1980—OSU Campus, Lane Ave., Cols., common weed, H. Liu 2205; 13 May 1980—OSU, parking lot outside B&Z bldg., Davault; 4 Apr 1983—ODNR parking lot, Owens; 18 Apr 1986—NE corner of 12th Ave. & High St., Cols., Hollander 006; 10 May 1986—OSU Campus, outside B&Z bldg. on Neil Ave., lawn edge, Yang 122; 16 Apr 1987—OSU Campus, S side of Postle Hall, Cols., T. Lammers 6072; 18 Apr 1988—OSU campus, S of Kottman Hall, Gerberick 52; 30 Apr 1988—Highbanks Metro Park (Delaware Co.), disturbed field, Morawetz (OS, OWU); 15 May 1988—corner of E. Patterson & Indianola Ave., Cols., Kelly 11; 15 May 1989—OSU Campus, W side of Neil Hall, 1634 Neil Ave., Cols., DeBaz 17; 8 May 1989—Overbrook Drive Ravine, E of N. High St. & S of E. Cooke Rd., Cols., Clinton Twp., Lowden 4013; 15 May 1989—Highland Dr. RR crossing, W of Olentangy River Rd. & S of Henderson Rd., Cols., Clinton Twp., Lowden 4056.

11. LUNARIA L. Honesty

Lower leaves sometimes opposite; blades ovate, cordate, dentate; petals large, pink-purple; fruit broadly elliptic, flat, rounded at ends, to 5 cm long, about two-thirds as wide; silvery septum persistent after valves have fallen.

1. **Lunaria annua* L.

Honesty

Adventive (native of SE Europe)

Erect, pubescent, hairs simple; lower leaves sometimes opposite; blades ovate, cordate, dentate; flowers large, approx. 1.5-2.0 cm long; petals pink to purple; fruits broadly elliptic, flat, 1.5 cm or more wide; silvery septum persistent after valves have fallen.

HERBARIUM RECORDS: 1 Jun 1925—Westerville, vacant lot, escaped from cultivation, Locke & Camp; 24 May 1963—along N. High St., just N of Dodridge St., waste place, Cols., Cusick; 1 May 1970—OSU, field SW corner of Kenny Rd. & Ackerman Rd., occasional in clumps in open field, Boone 99.

12. BERTEROA DC. Hoary Alyssum

Plant gray-green, canescent, the pubescence stellate; blades entire, lanceolate, acute; flowers small; petals white, bifid; fruit ellipsoid, 5-8 mm long, about half as wide, somewhat flattened parallel to septum; seeds several in each locule.

1. **Berteroa incana* (L.) DC.

Hoary Alyssum

Naturalized (native of Europe)

Plants tall, gray-green, canescent, pubescence stellate; blades lanceolate, entire; flowers small; petals white, bifid; fruit ellipsoid somewhat flattened parallel to septum; seeds several in each locule.

HERBARIUM RECORDS: 7 Jul 1966—OSU, bank of Olentangy R., SW of French Field House, Naskali; 25 Jun 1992—Oakland Nursery, uncommon weed, Oakland Park Ave., NE Cols. Quad., Cusick 30388.

13. DRABA L. Whitlow-grass

Low plants; hairs stellate, forked, or simple or of more than one type; blades entire or dentate; flowers usually small; petals white to yellow, bifid, emarginate, or entire, sometimes lacking; fruit oval or oblong, flattened parallel to the broad septum; seeds in 2 rows in each locule, wingless.

1. **Draba verna* L.

Early Whitlow-grass

Naturalized (native of Eurasia)

Scapose; leaves all basal, rosette present at anthesis; petals white, bifid to the middle. Syn.: *Erophila verna* (L.)

Besser

REFERENCE: Selby 1891a:111a (introduced).

HERBARIUM RECORDS: Mar 1891—Westerville, *Whitney*; 27 Apr 1891—Westerville, first noted by E. V. Wilcox 2 years ago, *Whitney*; May 1891—Westerville, *Whitney*; 29 Apr 1901—Cols., *Mead*; May 1901—Cols., *Miss. Herrick*; 16 May 1903—Cols., open field, *Morse*; 5 May 1911—2½ mi. E of Westerville, *Hanawalt*; 8 May 1933—Linworth, *Hicks*; 1 Apr 1967—abandoned limestone quarry along E bank of the Scioto R., approx. 1 mi. S of Dublin, *Stuckey 3351*; 27 Mar 1971—along Scioto R. near limestone quarries, abundant in waste around quarry, *Roberts & D. Keil K6941*; 10 Apr 1971—Perry Twp., approx. 1 mi. S of Dublin on Scioto River Rd., old limestone quarry along E side of river, locally abundant in dry gravel, Perry Twp., *Roberts 909*; 2 May 1983—Blendon Woods, *Owens*; 22 Apr 1987—intersection of Olentangy River Rd. & Stinchcomb Dr., Cols., *T. Lammers 6077*; 15 Apr 1988—between 5921-5945 N. High St., Worthington, 1 mi. S of Rt. 161 & Rt. 23 intersection, *M. Hoffman 18*; 16 Apr 1988—3 mi. N of Rt. 161 & Rt. 33, open field, *Kelly 8*; 15 May 1989—along RR tracks on Highland Dr., just W of Olentangy River Rd. & S of Henderson Rd., Cols., Clinton Twp., *Lowden 4053*; 15 Apr 1990—Highbanks Metro Park (Delaware Co.), walkways in Oak Coves Picnic Area, ½ mi. W of Rt. 23, *Watts 533*; 9 Apr 1991—Antrim Lake, open lawn area at N end of lake, 1 mi. N of Bethel Rd. & E of Rt. 315, Sharon Twp., *Lowden 4567*.

14. ARMORACIA Gaertn., B.Mey. & Scherb.

Glabrous; aquatic with dissected submersed leaves and oblong emerged ones, or terrestrial with oblong toothed to pinnatifid leaves; flowers of medium size; petals white; seeds in 2 rows in each locule.

a Aquatic; submersed leaves pinnately dissected into filiform segments; emerged leaves, if present, lanceolate to oblong, to 8 cm long; persistent style half as long as body of fruit or longer. 1. *A. lacustris*

a' Terrestrial; basal leaves with blades as much as 3 dm long, toothed to pinnatifid; fruits seldom formed; style short. 2. *A. rusticana*

1. †*Armoracia lacustris* (A.Gray) Al-Shehbaz & V.M.Bates

Lake-cress

Syn.: *A. aquatica* (Eaton) Wiegand, *Nasturtium lacustre* A.Gray, *N. natans* DC. var. *americanum* A.Gray

REFERENCES: Sullivant 1840:11; Selby & Craig 1890:8.

NOTE: No specimens seen from Franklin Co.

2. **Armoracia rusticana* Gaertn., B.Mey. & Scherb.

Horse-radish

Naturalized (native of SE Europe & W Asia)

Plants terrestrial, glabrous or with simple hairs; basal blades as much as 3 dm long; petals white; fruit seldom formed, ellipsoid, less than 3 times as long as wide. Syn.: *A. lapathifolia* Gilib.

REFERENCES: Riddell 1834:117 (*Cochlearia armoracia*, naturalized); Selby & Craig 1890:8 (*Nasturtium armoracia* Fr., introduced).

HERBARIUM RECORDS: 21 Jun 1893—near Cols., cult., *A. Wilcox*; 1 Jun 1899—Darby Rd., Cols., *Helfrich*; 30 Apr 1910—Canal Winchester, *Hedrick*; Jul 1911—½ mi. E of Westerville, fence row along garden, *Hanawalt*; 14 May 1972—near Gahanna, old Erie & Ohio Canal, *Bartley* (BHO).

15. CARDAMINE L. Bitter-cress, Toothwort

Glabrous or pubescent with simple hairs; stems erect or sometimes decumbent; leaves entire to pinnately compound; flowers small to large; siliques linear, elastically dehiscent from the base; seeds in 1 row in each locule. (*Dentaria* L.)

a Leaves palmately 3-5-cleft or compound; flowers large, 1-2 cm long. 1. *C. concatenata*

a' Leaves entire to pinnately compound; flowers small to large.

b Blades entire or dentate, or rarely with 1 or 2 small lobes at base.

c' Stem erect from tuberous base; basal leaves petioled, blades circular, cauline leaves shorter-petioled and narrower upward, upper sessile.

d Petals white; stem glabrous; flowering later. 2. *C. rhomboidea*

ARMORACIA
CARDAMINE



- d' Petals purple or purple-tinged; stem pubescent, especially above, purple; flowering in early April.
3. *C. douglassii*
- c' Stem decumbent or erect, without tuberous base; blades of basal and stem-leaves circular or somewhat angled, sometimes with 1 or 2 small lobes at base. 4. *C. rotundifolia*
- b' Leaf-blades pinnately divided or pinnately compound.
- e Petioles of cauline leaves glabrous; leaves and stem usually glabrous (stem sometimes hispidulous, especially toward base).
- f Stem, when emerged, pubescent at base; rachis of cauline leaves winged, terminal leaflet usually much broader than lateral ones. 5. *C. pensylvanica*
- f' Stem glabrous; rachis of cauline leaves little or not winged, terminal leaflet little broader than lateral ones. 6. *C. parviflora* var. *arenicola*
- e' Petioles of cauline leaves hirsute-ciliate; leaf blades and often stem up to the inflorescence also \pm hispidulous.
- g Stem glabrous nearly or quite to the base, straight and unbranched above; stamens usually 4. 7. *C. hirsuta*
- g' Stems \pm hispidulous up to the inflorescence, usually flexuous and branched above; stamens 6. 8. *C. flexuosa*

1. *Cardamine concatenata* (Michx.) O.Schwarz Five-parted Toothwort, Pepper-root, Cut-leaved Toothwort

Rhizome constricted at intervals; basal and cauline leaves similar, the former usually absent at anthesis, the latter typically in a whorl of 3 above the middle of the stem, each with 3 toothed, incised, or variously cleft leaflets; leaves appear palmately divided and 5-parted; flowers large, approx. 1.0-2.0 cm long, petals lavender; rachis of inflorescence more or less pubescent. Syn.: *Dentaria laciniata* Muhl.

REFERENCES: Riddell 1834:117 (dense and shady woods); Sullivant 1840:11; Craig 1890:65 (Pepper-root; rather common along the river bank S of the brook, occasionally a specimen is found in the woods, it prefers a damp soil, 27 Apr 1882, 11 Apr 1883, 17 Apr 1884, 5 May 1885, 16 Apr 1886, 12 Apr 1887, 11 Apr 1888, 22 Mar 1889); Selby & Craig 1890:7.

HERBARIUM RECORDS: 1840—Cols., Sullivant; May 1888—Cols., Craig; Spring 1889—Cols., Craig; Apr 1889—near Cols., Craig; May 1890—Cols., Selby (OS, WOOS); 11 Apr 1893—Cols., Bogue; 26 Apr 1894—Cols., W. Kellerman; 27 Jun 1895—Scioto R., Osburn; 15 Apr 1899—Blendon, Helfrich; 5 May 1911—3/4 mi. NE Westerville, Hanawalt; 6 May 1924—Westerville, woods on Alum Creek, T. Nichols; 29 Apr 1927—Alum Creek, Swanner; 24 May 1927—Westerville, G. Hedges; 9 Apr 1967—common in woods along S bank of Darby Creek, approx. 1/2 mi. SW of Darbydale, Pleasant Twp., Stuckey 3411; 14 Apr 1967—common on broken limestone rocky slope, E bank of Scioto R., approx. 1/4 mi. S of Dublin, Perry Twp., Stuckey 3424; 18 Apr 1970—Blendon Woods Park, common in woods on hillsides, Blendon Twp., Roberts 139; 19 Apr 1970—common along E side of Scioto R., 1/2 mi. S of Dublin, floodplain & on hillside, Roberts 145; 26 Apr 1970—Clintonville, along stream in Whetstone Park, W. Owen 099; 17 Apr 1983—Blendon Woods, Owens; 13 Apr 1986—Whetstone Park, Cols., Di Sabato-Aust 9; 13 Apr 1986—creek parallel to Canyon Dr., near intersection with High St., Cols., Taylor-Lehman 17; 18 Apr 1986—Highbanks Metro Park (Delaware Co.), loop trail, Watts 284 (OWU); 8 May 1989—Overbrook Drive Ravine, E of N. High St. & S of E. Cooke Rd., Clinton Twp., Cols., Lowden 4023; 9 & 11 Apr 1991—Antrim Park, woods between lake and W bank of Olentangy R., Sharon Twp., Lowden 4572 & 4582; 18 Apr 1991—Hoover Dam Park, woods W of entrance off Cubbage Rd., Blendon Twp., Lowden 4591; 12 Apr 1992—Whetstone Park, W of High St., Clintonville, Condit; 16 Apr 1992—Northmoor Park, woods along E bank of Olentangy R., Cols., Clinton Twp., Lowden 4909.

2. *Cardamine rhomboidea* (Pers.) DC. Bulbous Bitter-cress, White Spring-cress

Stem erect from tuberous base, glabrous; petals white; sepals green; flowering later than April. Syn.: *C. bulbosa* (Schreb.) Britton, Sterns & Poggenb.

REFERENCES: Riddell 1834:117 (*Arabis rhomboidea*, open woods); Craig 1890:66 (sparingly in a small peat bog W of the large dormitory, and has not been found elsewhere, it is more common than the var. *purpurea* [*Cardamine douglassii* Britton], and usually blooms a little later, 27 Apr 1882, 11 May 1883, 20 Apr 1884, 29 Apr 1885, 17 Apr 1887, 16 Apr 1888, 14 Apr 1889); Selby & Craig 1890:7.

HERBARIUM RECORDS: 1839—Worthington, J. Paddock Collection (ILL); 1840—Cols., Sullivant; 16 May 1882—Olentangy R., Devo; May 1888—Cols., Craig; Apr 1911—3/4 mi. NE of Westerville, moist rich woods, Hanawalt; 19 May 1990—just S of the Plain/Jefferson Twp. line, intersection of Blacklick Creek with Morse Rd., Jefferson Twp., Lowden 4316.

3. *Cardamine douglassii* Britton Pink Spring-cress, Purple Bitter Cress

Stem erect from tuberous base, pubescent; basal leaves petioled, circular, cauline shorter-petioled, entire or remotely dentate, and narrower upward, uppermost sessile; petals and sepals purple-tinged; flowering in early April.

REFERENCES: Craig 1890:66 (*Cardamine rhomboidea* DC. var. *purpurea* Torr., Purple Spring-cress; this var. was found along the river by Mr. W. J. Green in the spring of 1882; I found a few specimens this spring growing with *Cardamine rhomboidea*, 13 Apr 1882, 20 Apr 1884, 17 Apr 1887); Selby & Craig 1890:7 (*Cardamine rhomboidea* DC. var. *purpurea* Torr.).

HERBARIUM RECORDS: 1840—Cols., Sullivant; 13 Apr 1882—Olentangy R., W. Green; 20 Apr 1890—Scioto R., Cols., Selby; 20 Apr 1890—Cols., Selby (OS, WOOS); 25 Apr 1899—Blendon, Helfrich; [ca. 1925]—Westerville, Camp; Apr 1933—Clint [Flint] Ravine, Dambach; 29 Apr 1961—Flint Ravine, woods, Cusick; 18 Apr 1980—1/4 mi. N of Rt. 161, 1/2 mi. E of Ulry Rd., wet woods just E of Blendon Twp. line, Plain Twp., W. Carr 2624; 23 Apr 1982—Blendon Woods, Owens; 5 Apr 1986—Highbanks Metro Park (Delaware Co.), open forest, Witsberger 880 (OS, OWU);

11 Apr 1991—Antrim Park, woods between lake and W bank of Olentangy R., Sharon Twp., Lowden 4580; 21 Apr 1992—Hoover Dam Park, in woods SW of entrance off Cubbage Rd., Blendon Twp., Lowden 4922.

NOTE: Based on the W. J. Green specimen and other specimen labels the references to *Cardamine rhomboidea* DC. var. *purpurea* Torr. were placed here.

4. †*Cardamine rotundifolia* Michx.

Trailing Bitter-cress, Round-leaf Bitter-cress, Mountain-Watercress

REFERENCES: Sullivant 1840:11; Selby & Craig 1890:7.

NOTE: No specimens seen from Franklin Co. Probably not in Franklin Co. since both Paddock's and Sullivant's specimens labeled with this name are actually *Cardamine rhomboidea*, and Sullivant's was a mixed collection with *Cardamine douglassii*.

5. *Cardamine pensylvanica* Muhl.

Pennsylvania Bitter-cress

Stems erect or spreading, pubescence present or absent at base; leaf-blades pinnately divided or pinnately compound; basal leaves present or absent at anthesis; rachis of cauline leaves winged, terminal leaflet usually much broader than lateral ones; petals small, white.

HERBARIUM RECORDS: 1840—Cols., Sullivant; May 1890—Central College, Cols., Selby; 17 May 1890—Central College, Cols., Selby (WOOS); 15 Jun 1896—Cols., W. Kellerman; 14 May 1970—University woodlot at corner of Kenny Rd. & Ackerman Rd., edge of damp woods, Boone 145; 3 & 6 Nov 1984—Gahanna Woods State Nature Preserve, swampy area along woodland pond trail (II) & buttonbush swamp in SW corner of preserve, Tyrrell; 10 May 1986—Highbanks Metro Park (Delaware Co.), open farm area, Powell Rd., 2/3 mi. W of Rt. 23, 1/3 mi. E of Rt. 315, Witsberger 906 (OS, OWU); 7 Jun 1991—Boyer Park, end of Park St., E of Rt. 3, Westerville, Blendon Twp., Lowden 4676.

NOTE: It is worth mentioning that there are no early references. The Sullivant specimen was labeled *Cardamine hirsuta*, meaning his reference to this species might belong here.

6. *Cardamine parviflora* L. var. *arenicola* (Britton) O.E.Schulz

Dry-land Bitter-cress

Stem glabrous; rachis of cauline leaves little or not winged; leaf-blades pinnately divided or pinnately compound, terminal leaflet little broader than the lateral ones; petals small, approx. 2.0-3.0 mm long, white.

REFERENCE: Riddell 1834:117 (*Cardamine virginica*, the bed of small rivulets).

HERBARIUM RECORDS: 27 Apr 1882—Niels Run, Cols., W. Green; 20 Apr 1930—Red Hills region opposite Central College, Gordon & Chapman; 27 Apr 1983—Blendon Woods, Owens.

NOTE: Riddell's *Cardamine virginica* probably belongs here based on Gordon & Chapman's specimen from the Red Hills labeled *Arabis virginica*. Also Riddell's habitat applies better to this species than to the resembling aspect of *Sibara virginica*.

7. **Cardamine hirsuta* L.

Hoary Bitter-cress

Naturalized (European)

Stem glabrous; stem-leaves relatively few, basal leaves many at anthesis; leaf-blades pinnately divided; petioles ciliate; petals small, approx. 1.5-3.0 mm long, white.

REFERENCES: Sullivant 1840:11; Craig 1890:66 (occurs rather sparingly in the woods not far from the W fence, although usually found in wet places I have sometimes met it in dry pastures, 27 Apr 1882, 24 May 1885, 8 Apr 1889); Selby & Craig 1890:7; Kellerman & Werner 1893:227.

HERBARIUM RECORDS: 1 May 1980—common in open disturbed gravelly bottom of Glen Echo ravine, just E of Olentangy R., 0.3 km N of Dodridge St., SE corner NW Cols. Quad., W. Carr 2660; 12 Apr 1987—Highbanks Metro Park (Delaware Co.), mowed field, Morawetz; 9 Apr 1991—Antrim Park, open area N end of lake, Sharon Twp., Lowden 4566; 16 Apr 1991—OSU Campus, Oval, Cols., Stuckey.

NOTE: Perhaps the Sullivant reference might be questioned here since there is a specimen labeled with this name that is actually *Cardamine pensylvanica*.

8. **Cardamine flexuosa* With.

Naturalized (European)

Stems usually branched above, hairy up to inflorescence; leaf petioles hirsute-ciliate; stamens 6.

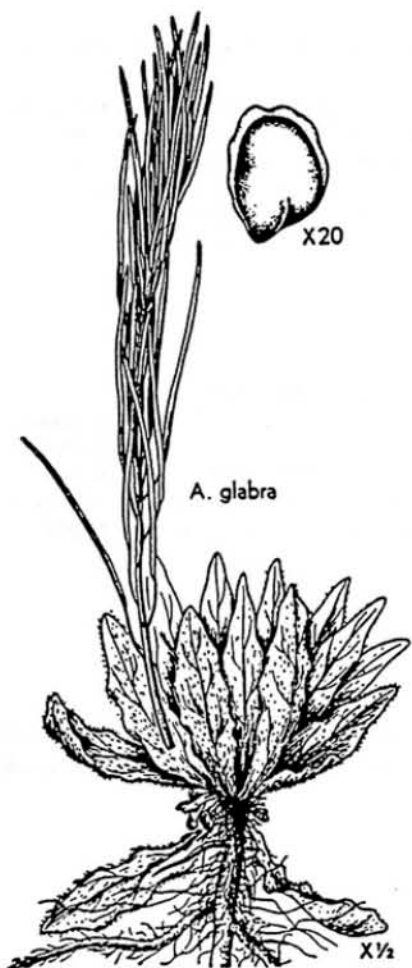
HERBARIUM RECORDS: 189—Cols., W. Green; 11 Jul 1898—Cols., J. H. Schaffner; 14 Dec 1959—OSU Horticulture Garden, cult. ground, Cols., Cusick; 17 May 1981—Oakland Nursey, weed, NW of Atwood Terrace & Oakland Park Ave., NE Cols. Quad., Cusick 20658A (MU, OS); 5 May 1990—Oakland Nursey, weed, NE of Atwood Terrace & Oakland Park Ave., NE Cols. Quad., Cusick 28791; 27 Sep 1990—W bank of Olentangy R., open mudflat 1/3 mi. N of Lane Ave., Clinton Twp., NW Cols. Quad., McCormac 3340; 20 Oct 1990—nursery between Olentangy R. & Olentangy River Rd., weed, N of Union cemetery, NW Cols. Quad., Cusick 29306; 23 Nov 1990—Piedmont Rd. between N. High St. & Indianola Ave., NW Cols. Quad., Cusick 29332.

NOTE: This species is not always easily distinguished from *C. hirsuta* and *C. pensylvanica*.

16. *SIBARA* Greene Virginia Rock Cress

Leaves deeply pinnatifid, the basal ones with many segments; flowers small; petals white or pinkish; pedicels somewhat spreading; fruit linear, flattened, nerveless or faintly nerved, usually ascending; seeds narrowly winged, nearly circular, 1 row in each locule.

CARDAMINE
SIBARA
ARABIS



1. *†*Sibara virginica* (L.) Rollins

Virginia Rock Cress

Adventive (SW U.S.)

Leaves deeply pinnatifid; flowers small; petals white, approx. 2 mm long; fruit linear, flat, 1.5-2.0 mm wide; seeds narrowly winged, circular, 1 row in each locule. Syn.: *Arabis virginica* (L.) Poir.

REFERENCE: Roberts & Cooperrider 1982:76 (adventive lawn weeds); Cusick 1994:75.

HERBARIUM RECORDS: 21 May 1963—OSU, horticulture gardens, scattered back of greenhouse, Cusick; 24 May 1963—behind Boulevard Gardens, a nursery on Olentangy River Rd., a few plants in waste place, Cusick; Spring 1964—OSU Campus, behind horticulture greenhouse, a weed, Weishaup; 5 May 1965—OSU Campus, behind horticulture greenhouse, a weed, Cols., Weishaup; 24 May 1996—Norwich St., Hilliard, mowed, wet SW corner of fairgrounds, Hilliard Quad., Cusick 33076.

NOTE: See note about Riddell's *Cardamine virginica* under *Cardamine parviflora* var. *arenicola*.

17. ARABIS L. Rock Cress

Leaves entire, or dentate to pinnatifid; pubescence, when present, of simple, of forked, or of stellate hairs; flowers small or of medium size; petals white, pink, pale purple, or pale yellow; fruits linear, usually flattened; seeds flattened, winged or wingless, in 1 or 2 rows in each locule.

a Cauline leaf-blades narrowed to base, not clasping; seeds in 1 row in each locule. 4. *A. canadensis*.

a' Cauline leaf-blades clasping with auricled or sagittate bases.

b Fruits erect or appressed at maturity.

c Upper and middle cauline leaves and stem glabrous, usually base of stem and lowest leaves pubescent; fruit 4-9 cm long.

d Fruit not flattened, about 1 mm wide, seeds in 1 or 2 rows, beak thick, 2-lobed. 1. *A. glabra*

d' Fruit flattened, 1.5-2.5 mm wide, seeds in 2 rows. 3. *A. drummondii*

c' Stem and leaves more or less pubescent or upper leaves glabrous; hairs of stem appressed, mostly forked; fruits flattened, 3-5 cm long, about 1 mm wide, seeds in 1 row, winged. 2. *A. hirsuta* var. *adpressipilis*

b' Fruit ascending, spreading, or curved downward at maturity.

e Middle and upper stem and blades glabrous; lower stem and blades sometimes pubescent; fruit 3-10 cm long; seeds winged. 5. *A. laevigata*

e' Stem and blades pubescent; fruits 1.5-4 cm long, seeds in 1 row.

f Pedicels of fruits 1 cm long or more; hairs of leaf-blades mostly simple. 6. *A. patens*

f' Pedicels of fruits 5 mm long or less; hairs of upper surface of blades mostly simple, of lower surface mostly stellate. 7. *A. shortii*

1. *Arabis glabra* (L.) Bernh.

Tower-mustard

Upper stem and leaves glabrous; cauline leaf-blades clasping with auricled or sagittate bases; fruits nearly terete, about 1.0 mm wide, erect or appressed at maturity; beak thick, 2-lobed.

REFERENCES: Craig 1890:66 (*Turritis glabra* L., abundant on the river bank near the island at the head of the lagoon, but sparingly in other localities, a specimen is occasionally found on the campus or in the woods, 3 May 1887, 29 Apr 1888, 11 Apr 1889); Selby & Craig 1890:7 (*Arabis perfoliata* Lam.).

HERBARIUM RECORDS: 1840—Cols., Sullivant; Jun 1891—OSU campus, Cols., Bogue; 20 May 1892—Scioto R., Cols., Selby; 1893—Cols., Werner (CLM); Sep 1893—OSU grounds, Cols., Werner (CLM).

2. †*Arabis hirsuta* (L.) Scop. var. *adpressipilis* (M.Hopkins) Rollins

Hairy Rock Cress

Stem and leaves more or less pubescent; stem hairs appressed, mostly forked; cauline leaf-blades clasping with auricled or sagittate bases; fruits flattened, about 1 mm wide, erect or appressed at maturity, 3-5 cm long.

REFERENCES: Riddell 1834:117 (calcareous ravines); Sullivant 1840:10; Craig 1890:66 (specimen in the university herbarium collected by Mr. Devol in the spring of 1882, which bears this name); Selby & Craig 1890:7; Selby 1891a:111a (#51 Re-collected); Kellerman & Werner 1893:225. HERBARIUM RECORDS: 189—Cols., Selby; May 1891—Scioto R., Cols., Selby; 3 May 1891—Franklin Co., Selby; 31 May 1891—Scioto R., Cols., Selby; Sep 1893—OSU grounds, Cols., Werner; 18 May 1895—Scioto R., Parker; 5 Jun 1895—Cols., W. Kellerman.

3. †*Arabis drummondii* A.Gray

Drummond's Rock Cress

Upper stems and leaves glabrous; cauline leaf-blades with auricled or sagittate bases; fruit flattened, about 2 mm wide, erect or nearly so at maturity.

REFERENCES: Craig 1890:66 (*Turritis stricta* Graham & *Arabis confinis* Watson, rare, a few plants have been found on the river bank near the island); Selby & Craig 1890:7 (*Arabis confinis* Watson); Jones 1943:86.

HERBARIUM RECORD: Sep 1893—OSU grounds, Werner.

NOTE: The literature references to *Arabis confinis* only appear to apply here.

4. *Arabis canadensis* L.

Sickle-pod

Stems mostly 3-10 dm high; cauline leaf-blades narrowed to both ends, hairy, toothed, not auricled or sagittate at base; basal blades dentate or lobed; fruits flattened, 2-3 mm wide, recurved, becoming pendulous, 5-8 mm long; seeds broadly winged.

REFERENCES: Sullivant 1840:10; Selby & Craig 1890:7.

HERBARIUM RECORDS: 1840—Cols., Sullivant; 1 Jul 1891—Georgesville, Werner (CLM, OS); 27 May 1933—Red Hills, Hicks; 1 Aug 1990—E side of Hoover Dam Park, woods just W of Cabbage Rd. entrance & S of Walnut St., Blendon Twp., Lowden 4488.

5. *Arabis laevigata* (Muhl.) Poir.

Rock Cress, Smooth Tower Mustard

Upper stem and leaf blades glabrous, lower ones sometimes pubescent; cauline leaf-blades clasping with auricled or sagittate bases; fruits 3-10 cm long, eventually curved downward; seeds in 1 row.

REFERENCES: Riddell 1834:117 (slaty ravines); Riddell 1835:12 (Worthington, rocky situations); Sullivant 1840:10; Craig 1890:66 (Prof. Lazenby has seen this growing near the river. I have never seen it and think it must be quite rare, 30 Apr 1882, 5 May 1884, 24 May 1885); Selby & Craig 1890:7.

HERBARIUM RECORDS: 1840—Cols., Sullivant; 8 May 1883—Cols., Devo; 189—Olentangy Villa, Cols., Selby; Apr 189—Scioto R., Cols., Selby; 24 Apr 1890—Neil's Run, Cols., H. Richardson; May 1891—Central College, Selby (WOOS); 30 May 1896—Cols., McCall; 22 May 1899—Big Darby, Selby; 1 May 1901—Cols., Mead; 7 May 1924—Westerville, along stream, W. Blausen; 21 May 1924—Westerville, swamp, Blott; 24 May 1963—E bank of Olentangy R., wooded slope of ravine N of Dodridge St. dam, Cusick; 30 Apr 1980—common on wooded limestone cliffs on N side of Hayden Run Ravine, between Scioto R. & waterfall, Norwich Twp., WC edge NW Cols. Quad., W. Carr 2655; 6 May 1983—Blendon Woods, Owens; 22 Apr 1987—Tuttle Park, E bank of Olentangy R., between Lane Ave. & Dodridge St. bridges, mesic woods on floodplain, Cols., T. Lammers 6075; 9 May 1988—Highbanks Metro Park (Delaware Co.), mound bluffs, Watts 415 (OS, OWU); 8 May 1989—Overbrook Drive Ravine, between N. High St. & E. Cooke Rd., Cols., Clinton Twp. Lowden 4015; 11 Apr 1991—Antrim Park, woody area between W bank of Olentangy & E side of lake, Sharon Twp., Lowden 4577; 3 May 1991—E bank of Scioto R. off Rt. 257 just N of Rt. 161, limestone cliffs, Perry Twp., Lowden 4599.

6. †*Arabis patens* Sull.

Spreading Rock Cress

Stems and leaf-blades pubescent with mostly simple hairs, also sometimes forked ones present; cauline blades rounded to the broadly clasping base; fruits widely ascending or spreading, 1.5-4.0 cm long, pedicels 1 cm long or more.

REFERENCES: Sullivant 1842:49 (Type locality, rocky banks of the Scioto R., near Cols.); Selby & Craig 1890:7; Jones 1943:86; Roberts & Cooperrider 1982:53 (only in Delaware & Franklin Cos., the type locality is in the latter); McCance 1984:A-203; Nature Conservancy 1991:7; ODNr-DNAP 1996.

HERBARIUM RECORDS: 1840—Cols., Sullivant; 1889—Cols., Craig; Spring 1890—Cols., Selby; Spring 1890—banks of Scioto, Cols., Selby; Apr-May 1890—rocky banks of Scioto, Cols., Selby (OS, WOOS); May 1890—rocky banks of Scioto R., Cols., Selby; 10 May 1890—Scioto R., Cols., W. Baker; 11 May 1890—Scioto R. near Cols., Selby; 24 May 1891—Scioto R., Werner (CLM); 24 May 1891—Cols., Werner; May 1892—near Cols., E. M. Wilcox; 20 May 1892—near Cols., E. M. Wilcox; 11 May 1893—Cols., E. M. Wilcox (BGSU); 20 May 1893—Scioto R., Cols., W. Kellerman; 18 May 1895—Scioto R., Parker; 1899—Scioto R., near Cols., W. Kellerman, Fullmer & Selby (KE, OS); 15 May 1979—common on limestone cliffs above Hayden Run, between its mouth and waterfall, Norwich Twp., Reinking 610; 24 May 1979—S side of Indian Run, 0.1-0.3 mi. W of Rt. 315 [745], Dublin, Washington Twp., NW Cols. Quad., Cusick 19258 (KE, MU); 24 May 1979—unnamed stream entering Scioto R., E of Rt. 257, 0.2 mi. S of Bright Rd., limestone cliff, Perry Twp., NW Cols. Quad., Cusick 19260; 1 Jun 1983—limestone rubble slope, on E bank of Scioto R., abandoned quarry on W side of Rt. 33, 0.8 mi. S of Rt. 161, Perry Twp., NW Cols. Quad., W. Carr 4888 (KE, OS); 3 May 1991—E bank of Scioto R. W of Rt. 257 & N of Rt. 161, limestone cliffs, Perry Twp., Lowden 4602; 23 May 1991—N side of Hayden Run, limestone cliffs, just W of Scioto R., S side of Hayden Run Rd., Norwich Twp., NW Cols. Quad., McCormac 3573.

7. *Arabis shortii* (Fernald) Gleason

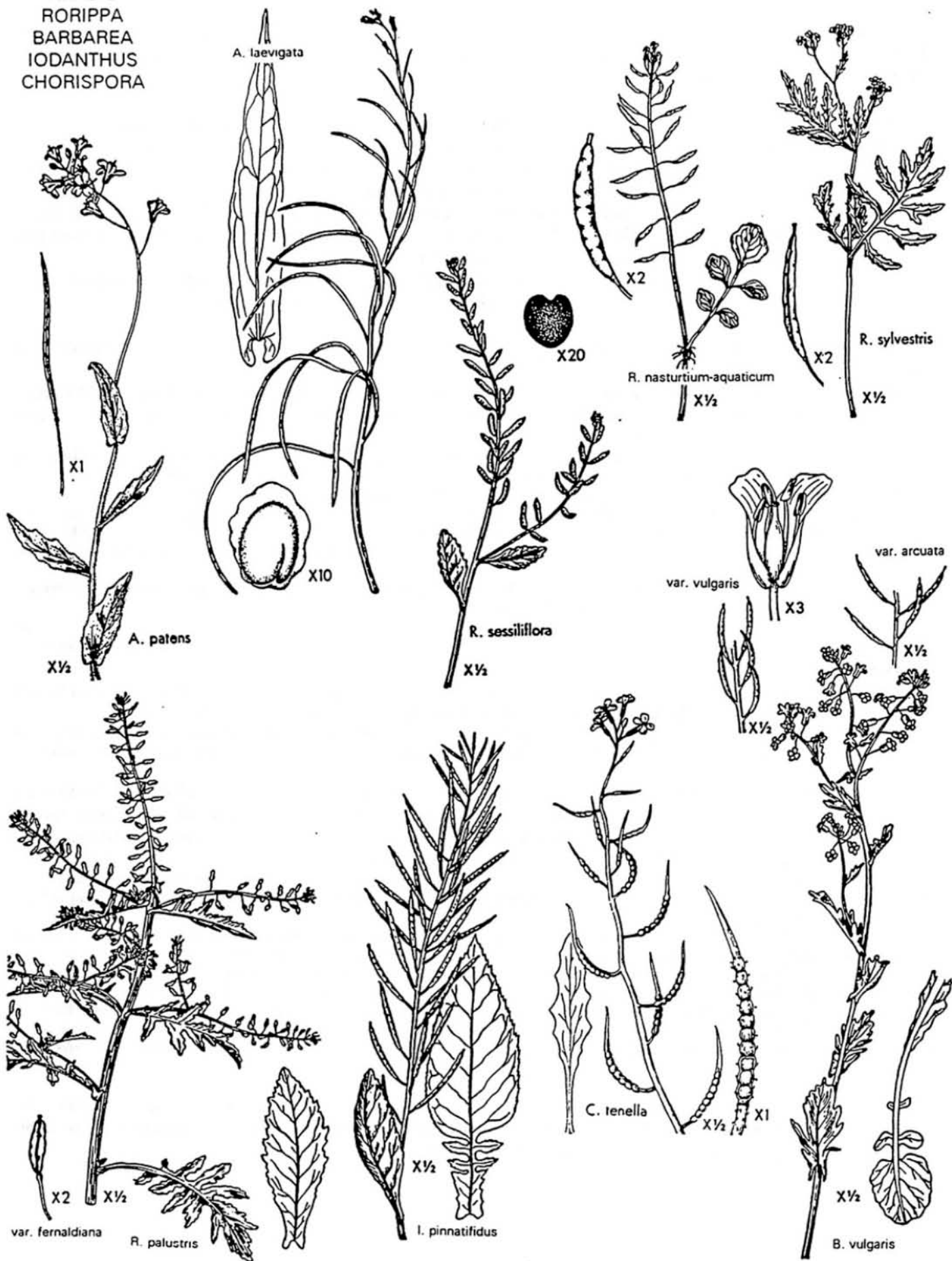
Toothed Rock Cress

Stem and blades pubescent; hairs of upper surface of blades mostly simple, of lower surface mostly stellate; cauline leaf-blades clasping with auricled or sagittate bases; fruits widely spreading, 1.5-4.0 cm long, pedicels 5 mm long or less. Syn.: *A. dentata* (Torr.) Torr. & A. Gray, *A. perstellata* E.L. Braun var. *shortii* Fernald

REFERENCES: Sullivant 1840:10; Craig 1890:66 (#36, the stellate hairs are abundant on it and the leaves are toothed, 6 May 1884; #39, this is quite abundant along the river bank, from the dike on the N boundary of the farm to the line fence on the S, 19 Apr 1889); Selby & Craig 1890:7; Kellerman & Werner 1893:225.

HERBARIUM RECORDS: 1840—Cols., Sullivant; 20 Apr 1890—Wyandotte Grove, Cols., Selby (OS, WOOS); 25 & 29 Apr 1890—Olentangy R., Cols., H. Richardson; May 1890—near Cols., E. M. Wilcox; May 1891—Cols., Werner (CLM); 2 May 1894—OSU campus, Cols., W. Kellerman; 25 Apr 1925—Westerville, Camp; 14 May 1961—woods N of Big Bear Supermarket, along Olentangy R., Cols., Cusick; 19 May 1967—broken limestone rocky slope approx. 0.25 mi. S of Dublin on E bank of Scioto R., Stuckey 3776; 4 May 1968—E floodplain bank of Alum Creek, S side of Rt. 161 at YWCA Camp, approx. 5 mi. E of Worthington, Stuckey 6418; 8 May 1970—Fishing Rd., 1 blk. E of Rt. 33, along roadside, Boone 123; 9 May 1977—banks of stream above Hayden Falls, Cusick (MU); 28 Apr 1987—Tuttle Park, E bank of Olentangy R., between Lane Ave. & Dodridge St. bridges, mesic woods on floodplain, Cols., T. Lammers 6081; 8 May 1989—Overbrook Drive Ravine, E of N. High St. & S of E. Cooke Rd., Clinton Twp., Cols., Lowden 4014; 23 May 1991—N side of Hayden Run, just W of Scioto R., S side of Hayden Run Rd., Norwich Twp., NW Cols. Quad., McCormac 3574.

ARABIS
RORIPPA
BARBAREA
IODANTHUS
CHORISPORIA



18. RORIPPA Scop. Yellow-cress

Aquatic to terrestrial; stems branching; leaves dentate to pinnatifid or pinnately compound; glabrous or pubescent with simple hairs; flowers small or of medium size; petals yellow or white; fruits globose, ovoid, or linear-cylindric; seeds many, 2 irregular rows in each locule or rarely 1 row.

- a Petals white; leaves pinnately compound; plants rooting from lower nodes. 1. *R. nasturtium-aquaticum*
- a' Petals yellow (rarely white); leaves dentate to pinnatifid; plants usually not rooting from the lower nodes.
 - b Pedicels 1-3 mm long; mature fruits usually 7-10 mm long, mostly 4 or more times as long as pedicels; upper leaves entire to crenate, lower sometimes pinnatifid. 4. *R. sessiliflora*
 - b' Pedicels longer than above; mature fruits varying from twice as long as pedicels to shorter than pedicels.
 - c Fruits linear-cylindric, mostly about 1.5 cm long; leaves deeply pinnatifid; stems spreading or ascending; petals longer than sepals; with rhizomes. 2. *R. sylvestris*
 - c' Fruits mostly 3-6 mm long, 2-3 times as long as thick; leaves coarsely toothed or pinnatifid; petals shorter than sepals; stem and leaves glabrous or nearly so. 3. *R. palustris* var. *fernaldiana*

1. *Rorippa nasturtium-aquaticum* (L.) Hayek

Water Cress

Naturalized (native of Eurasia)

Glabrous, growing in water or mud, rooting from lower nodes; leaves pinnately compound, leaflets 3-11 circular to oval, entire; flowers small; petals white; fruits broadly linear, on spreading pedicels; seeds many, 2 rows in each locule. Syn.: *Nasturtium officinale* R.Br.

REFERENCES: Craig 1890:67 (rather rare, specimens may be found in the swamp NE of the island, the only locality on the farm, the plants grow in the muddy soil along the bank or in the water, above which the stem and flowers rise while most of the leaves are immersed, 10 May 1882, 2 Jun 1884, 6 May 1887, 12 May 1888, 19 Apr 1889); Selby & Craig 1890:8 (introduced); Kellerman & Werner 1893:227.

HERBARIUM RECORDS: May 1890—Hayden's Falls, Cols., Selby (OS, WOOS); 4 Jul 1890—valley of Hayden Run, S of Hayden Run Rd., 0.1-0.2 mi. E of jct. with Dublin Rd., shallow water in moist bottom, NE corner of Norwich Twp., NW Cols., Quad., Shelly 52 (MU); Summer 1888—along Big Darby Creek between I-70 & Little Darby Creek, Delong; 15 Jul 1888—Highbanks Metro Park (Delaware Co.), sandbars & rocky shallow areas along Olentangy R., Watts.

NOTE: Not sure if Riddell's reference belongs here. Kellerman & Werner (1893) imply that Craig's (1890) and Selby & Craig's (1890) reference to *Nasturtium officinale* was based on specimens of *Cardamine hirsuta*.

2. *Rorippa sylvestris* (L.) Besser

Creeping Yellow-cress

Naturalized (native of Eurasia)

Plants spreading or ascending, with rhizomes; leaves deeply pinnatifid; petals becoming twice as long as sepals; pedicels longer than 3 mm, widely divergent or somewhat deflexed; fruits about 1.5 mm long.

HERBARIUM RECORDS: 13 Aug 1924—Franklin Co., Henning (OWU); 6 Jun 1960—OSU Campus, near Cyclotron Laboratory, Cusick; 15 Jul 1988—Highbanks Metro Park (Delaware Co.), sandbar in Olentangy R., ¼ mi. N of county line at bend in river near giant sycamore, Watts 452.

3. *Rorippa palustris* (L.) Besser var. *fernaldiana* (Butters & Abbe) Stuckey

Common Yellow-cress

Plants glabrous or nearly so; stem stout, mostly over 3 mm thick; lower leaves pinnatifid, upper ones merely toothed, bases sagittate-clasping; fruiting pedicels 3.0 mm or more long; fruits 2.5-5.0 mm long, constricted at the middle. Syn.: *R. islandica* (Oeder) Borbás var. *fernaldiana* Butters & Abbe

REFERENCES: Sullivant 1840:11 (*Nasturtium palustre* DC.); Craig 1890:67 (*Nasturtium palustre* DC., Marsh-cress, common in damp waste places along the river, several fine specimens were found last summer near the W stile of the brook pasture, 21 May 1884, 10 Jun 1887); Selby & Craig 1890:8 (*Nasturtium palustre* DC.).

HERBARIUM RECORDS: 1840—Cols., Sullivant; Aug 1890—Cols., my own door yard, Selby; 11 Aug 1890—University Farm, Cols., Hine; Sep 1890—Cols., Selby (WOOS); Aug 1892—Cols., Werner; 22 Jan 1893—Cols., Werner (CLM); 20 Aug 1893—Cols., Werner (CLM); 3 Jul 1925—Worthington, R. Crane (OWU); 2 Oct 1987—W bank of the Olentangy R., just N of Lane Ave. bridge & S of the Fawcett Center for Tomorrow, open mudflat, Cols., T. Lammers & Stuckey 6190; Summer 1988—along Big Darby Creek between I-70 & Little Darby Creek, Galloway Quad., Delong; 30 May 1990—½ mi. W of Rt. 104 on Borror Rd., wet roadside ditch, Jackson Twp., Lowden 4355; 7 Jun 1991—Boyer Park, end of Park St., E of Rt. 3, Westerville, Blenden Twp., Lowden 4675; 13 Jun 1991—Friendship Park, jct. of Big Walnut Creek with Rocky Fork Creek, S of Rt. 317, Gahanna, Mifflin Twp., Lowden 4690; 23 Sep 1991—Scioto R., gravel bars, just N of I-270, Hamilton Twp., SW Cols. Quad., McCormac 4359.

4. *Rorippa sessiliflora* (Nutt.) Hitchc.

Sessile or Southern Yellow-cress

Erect, glabrous, taprooted; upper leaves entire to crenate, lower sometimes pinnatifid; petals wanting or none; fruits 7-10 mm long, pedicels 1-3 mm long; seeds approx. 100 or more.

HERBARIUM RECORDS: 17 Jul 1989—OSU Campus, only 1 plant in flower bed NW corner of Ohio Union, first record for Franklin Co., *Stuckey* 1989-1; 7 May 1990—OSU Campus, NW corner of Lazenby Hall, 2 of 4 plants seen, Cols., *Stuckey*; 23 Sep 1991—Scioto R. at I-270, fairly common on exposed gravel bars, Hamilton Twp., SW Cols. Quad., *McCormac* 4358; 19 Aug 1992—Oakland Nursery, weedy ground, Oakland Park Ave. & Atwood Terrace, NE Cols. Quad., *Cusick* 30452.

19. BARBAREA R.Br. Winter Cress

Plants glabrous or nearly so; stems striate; basal leaves lyrate-pinnatifid, with 1-4 pairs of lateral leaflets, cauline leaves entire to pinnatifid, bases clasping; flowers large or of medium size; petals yellow; fruits linear, terete or somewhat 4-angled; seeds in 1 row in each locule.

1. **Barbarea vulgaris* R.Br.

Yellow Rocket, Winter Cress

Naturalized (native of Eurasia)

Fruits 1.5-3.0 cm long, somewhat 4-angled; beaks less than 3 mm long.

REFERENCES: Riddell 1834:117 (denuded river banks); Craig 1890:67 (occurs on the river bank near the island spring and in pasture fields, not common; there were several plants found W of the woods near Woodruff Ave. this spring, 15 May 1883, 6 May 1884, 30 May 1887, 8 May 1889); Selby & Craig 1890:7 (introduced).

Two varieties are recognized:

var. *vulgaris*

Fruits erect or appressed.

HERBARIUM RECORDS: 1890—Cols., *Selby* (OS, WOOS); 7 Jul 1892—Cols., *Bogue*; 9 May 1896—Alum Creek, *McCall*; 5 May 1925—Westerville, *Camp*; 3 Jul 1925—Worthington, *R. Crane* (OWU); 29 May 1933—Westerville, *Hicks*; 30 May 1938—Brown Twp., *J. H. Schaffner*; 27 Apr 1986—Highbanks Metro Park (Delaware Co.), open field, *Witsberger* 887 (OS, OWU); 10 Jul 1986—OSU Campus, banks of the Olentangy R., *E. King* 10.

var. *arcuata* (Opiz) Fr.

Fruits spreading or ascending.

HERBARIUM RECORDS: 25 May [yr.?]—Cols., *Carter*; 26 May 1922—Westerville, open woods, *I. Hall*; 28 Jun 1968—SW corner of Kenny Rd. & Trouville Pl. intersection, weed lot, Perry Twp., *Moser*; 19 May 1969—Park of Roses, Cols., *Wiley* 15; 8 May 1989—Overbrook Drive Ravine between N. High St. & E. Cooke Rd., Clinton Twp., *Lowden* 4012; 15 May 1989—RR crossing on Highland Dr., W of Olentangy River Rd. & S of Henderson Rd., Clinton Twp., *Lowden* 4057; 9 May 1991—OSU Campus, *Stuckey*; 11 May 1991—Hoover Dam Park, W of Cubbage Rd. entrance, open woods, Blendon Twp., *Lowden* 4608; 2 May 1992—Highbanks Metro Park (Franklin Co.), open area near service line, Sharon Twp., *Lowden* 4929.

20. IODANTHUS Torr. & A.Gray Purple Rocket

Erect, glabrous; cauline leaves ovate to lanceolate, dentate, doubly dentate, or pinnately lobed, tapering to winged petiole, base usually auricled; flowers large or of medium size; petals purple, long-clawed; fruits linear, spreading; seeds wingless, 1 row in each locule.

1. *Iodanthus pinnatifidus* (Michx.) Steud.

Purple Rocket

Erect, glabrous or hairs simple; cauline leaves ovate to lanceolate, doubly toothed or pinnately lobed; blades sometimes with small lobes at base, tapering to a clasping winged petiole, frequently auriculate around the stem; flowers large or medium size; petals purple, approx. 8 mm long.

REFERENCES: Riddell 1834:117 (*Hesperis pinnatifida*, slaty ravines); Sullivant 1840:11 (*Cheiranthus hesperidoides* Torr. & A.Gray, Wild Rocket); Craig 1890:67 (*Thelypodium pinnatifidum* Watson, False Rocket; along the N bank of the brook from the barn W nearly to the river and around the island, also in the woods, but is not very common, 31 May 1884, 24 May 1887, 7 Jun 1888, 30 Apr 1889); Selby & Craig 1890:8 (*Thelypodium pinnatifidum* Watson).

HERBARIUM RECORDS: 1840—Cols., *Sullivant*; May 1888—Cols., *Craig*; 10 Jun 1888—Alum Creek, *Selby*; 20 May 1892—near Cols., *E. M. Wilcox*; 1 Jun 1894—OSU woods, Cols., *E. M. Wilcox*; May 1896—Cols., *E. M. Wilcox* (BGSU); 23 May 1896—Worthington, *M. Wright*; 25 May 1896—Cols., *M. Wright*; 30 May [yr.?]—Cols., *Scully*; 24 May 1922—Devil's Half Acre, creek bottom, *Callahan*; 24 May 1922—Alum Creek bottom, Westerville, *Eastman*; 26 May 1922—Westerville, open woods, *I. Hall*; 2 Jun 1922—Westerville, *Elliott*; 16 Jun 1931—Cols., *Hicks*; 4 Jun 1960—along Olentangy R. about ¼ mi. N of OSU Stadium, *Cusick*; 5 Jun 1977—Hayden Run Ravine, woods at bottom of ravine, W side of Scioto R., N of Cols., *W. Carr* 328; 10 Jun 1980—Blendon Woods Metro Park, Brookside Trail, Blendon Twp., NE Cols. Quad., *Cusick* 20114 (MU); 28 May 1982—500 yards N of Ackerman Rd., 30 yards W of Olentangy, Cols., *Paulson* 61; 31 May 1982—Blendon Woods, along Brookside Trail, *Owens*; 31 May 1990—Tuttle Park, along E bank of Olentangy R., N of Hudson St., Cols., Clinton Twp., *Lowden* 4369; 25 May 1991—woods along E bank of Olentangy R., between Whetstone & Northmoor Parks, Cols., Clinton Twp., *Lowden* 4636; 29 May 1993—Camp Mary Orton, woodland trail E of Olentangy R., W of Rt. 23, N of Worthington, Sharon Twp., *Lowden* 5048.

21. CHORISPORA R.Br.

Branched annual, somewhat glandular; blades lanceolate or oblanceolate, undulate-toothed or the lower incised; petals blue or purple, large; fruit 3-4 cm long, cross-septate and constricted, beak 1 cm long or more.

1. **Chorispora tenella* (Pall.) DC.

Blue Mustard

Adventive (native of C Asia)

Plants glandular; blades lanceolate-oblanceolate, toothed; petals blue-purple; fruit constricted, beak 1 cm long. HERBARIUM RECORD: 5 Jun 1980—in cinders along RR track, 1 blk. E of N. 4th St., at end of 18th Ave., SW corner of NE Cols. Quad., W. Carr 2879 (KE).

22. HESPERIS L. Dame's Rocket

Tall; pubescence of simple and of branched hairs; leaves entire or toothed, lanceolate, acuminate; flowers large, fragrant; petals purple, pink, or white; fruits spreading, 5-10 cm long, linear; seeds many, oblong, somewhat angled in cross section, 1 row in each locule.

1. **Hesperis matronalis* L.

Dame's Rocket

Naturalized (introduced from Europe)

Tall; pubescence of simple and of branched hairs; leaves lanceolate, acuminate, denticulate; flowers medium to large, fragrant; petals purple, pink or white, 1.5-2.0 cm long; fruits linear, 5-10 cm long.

REFERENCE: Selby & Craig 1890:8 (introduced).

HERBARIUM RECORDS: 18 May 1898—OSU, Cols., J. H. Schaffner; 16 May 1930—roadside at Cols., Hicks; 27 May 1933—OSU, Cols., waste ground, J. H. Schaffner; 19 May 1969—Park of Roses, Cols., Wiley 11; 15 Apr 1977—W of OSU West Campus, woody area, Watson 27; 1 Jul 1982—Blendon Woods, trail to Thoreau Lake, Owens; 25 Apr 1986—1 blk. E & 4 blks. N of Worthington High School Environmental Bldg. off Rt. 161, Benkowski 17; 11 May 1986—woodland next to the Graceland Shopping Center & Olentangy R., Yang 131; 12 May 1986—Highbanks Metro Park (Delaware Co.), floodplain, Watts 302 (OS, OWU); 24 May 1986—Worthington, ravine N of Colonial Hills Elem. School, Hollander 047; 12 May 1988—Worthington, bike path, ½ mi. N of Rt. 161, 1 mi. W of Rt. 23, M. Hoffman 60; 22 May 1988—E bank of Olentangy R. near Dodridge St., Cols., Kelly 21; 8 & 23 May 1989—Overbrook Drive Ravine, between N. High St. & E. Cooke Rd., Cols., Clinton Twp., Lowden 4008 & 4083; 24 May 1990—Dublin, ½ mi. S of Rt. 161 off Dublin Rd., Riverview St., Washington Twp., Lowden 4349.

23. ERYSIMUM L.

Pubescent with 2- or 3-parted hairs; leaves lanceolate, entire or toothed; flowers medium to large; petals yellow or orange, long-clawed; fruit linear, 4-sided, each valve with prominent nerve; stigma lobed; 1 row of seeds in each locule.

a Sepals about 1 cm long; petals 1.5 cm long or more, orange-yellow or bright yellow. 1. *E. asperum*

a' Sepals and petals smaller; petals yellow.

b Fruit 1-3 cm long, not more than about twice as long as the slender pedicels; pedicels spreading, fruit erect or ascending; petals bright yellow, 3-6 mm long. 2. *E. cheiranthoides*

b' Fruit much more than twice as long as pedicels; petals pale yellow, 6-10 mm long.

c Divergently branched; axis of inflorescence zigzag; fruits divergent, to 1 dm long, somewhat constricted between seeds at maturity; pedicels as thick as fruits. 3. *E. repandum*

c' Unbranched or branches mostly ascending; fruits ascending, to 4 cm long, not constricted between seeds; pedicels more slender than fruits. 4. *E. inconspicuum*

1. †*Erysimum asperum* (Nutt.) DC.

Wild Wall-flower, Western Wallflower

Erect, pubescence at least partly of forked or stellate hairs; leaves linear to oblanceolate, entire or with a few low teeth; sepals about 1 cm long; petals approx. 2.5 cm long, orange-yellow or bright yellow; fruits 5-8 cm long. Syn.: *E. arkansanum* Nutt., *E. capitatum* (Doubt.) Greene

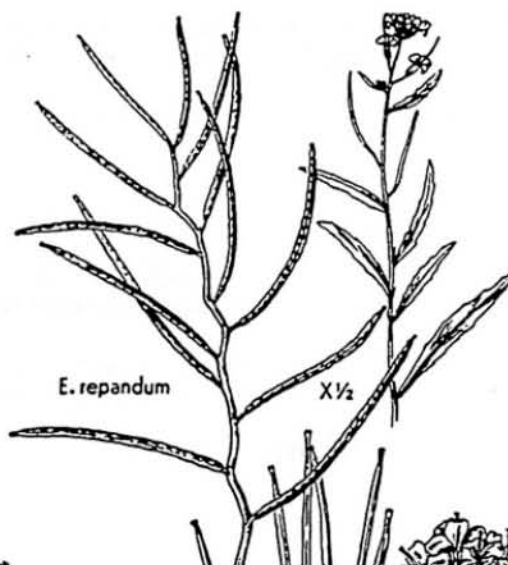
REFERENCES: Sullivant 1840:11, 57 (this beautiful cruciferous plant was first detected in this county in the summer of 1838, by my brother, J. Sullivant, grows on limestone cliffs of the Scioto, 4 mi. N of Cols., immediately above O'Harra's sawmill); Selby & Craig 1890:7; Selby 1891a:111a (#66 Re-collected); Jones 1943:94; Roberts & Cooperrider 1982:53; McCance 1984:A-208.

HERBARIUM RECORD: 1840—Cols., Sullivant.

HESPERIS
ERYSIMUM
ALLIARIA
SISYMBRIUM



H. matronalis



E. repandum



E. cheiranthoides



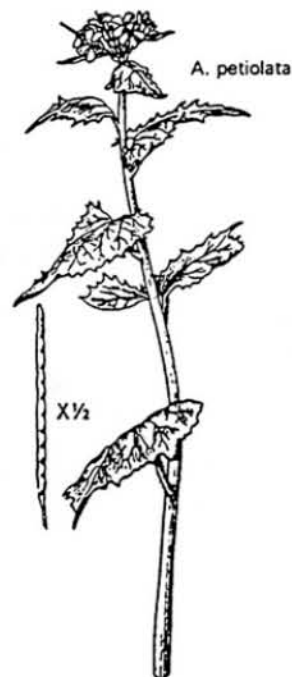
E. asperum



S. officinale



S. altissimum



A. petiolata



E. inconspicuum

2. *Erysimum cheiranthoides* L.

Wormseed-mustard

Naturalized (originally European, now circumboreal)

Erect, pubescence at least partly of forked or stellate hairs; leaves linear to oblanceolate, entire or barely sinuate; petals bright yellow, approx. 3 mm long; fruits 1-3 cm long, not more than about twice as long as the slender pedicels. HERBARIUM RECORDS: 15 Oct 1934—OSU Farm, Cols., J. H. Schaffner; 8 Nov 1934—OSU Botanic Garden, weed, J. H. Schaffner; 7 Oct 1978—N side of Rt. 161, E of I-71, weed in motel flowerbed, NE Cols. Quad., Cusick 18938.

3. *Erysimum repandum* L.

Treacle-mustard, Bushy Wallflower

Adventive (native of Europe)

Stem often much-branched, pubescence at least partly of forked or stellate hairs; leaves linear to narrowly lanceolate or oblanceolate; axis of mature inflorescence zigzag; petals pale yellow, 6-10 cm long; fruits divergent, to 1 dm long, much more than twice as long as pedicels, somewhat constricted between seeds at maturity; pedicels as thick as fruits; anthers about 1 mm long.

HERBARIUM RECORDS: May 1929—Cols., Willard; 30 Apr 1958—OSU Farm, Weishaupt; 21 May 1963—OSU horticulture garden, uncommon, bank of greenhouses, Cusick; 1 May 1987—OSU Campus, S side of University Hall, 230 N. Oval Mall, T. Lammers 6086.

4. *Erysimum inconspicuum* (S.Watson) MacMill.

Treacle Mustard

Adventive (NW U.S.)

REFERENCE: Furlow (1991).

NOTE: No specimens seen from Franklin Co.

24. *ALLIARIA* Heist. Garlic-mustard

Tall; glabrous or slightly pubescent with simple hairs; with odor of garlic; leaves petioled; cauline blades deltoid-ovate, dentate, bases cordate or rounded, lower blades reniform; flowers of medium size; petals white; fruits up to 6 cm long, linear, spreading, 4-angled, on thick pedicels, each valve with 1 strong nerve; seeds short-cylindric, 1 row in each locule.

1. *Alliaria petiolata* (M.Bieb.) Cavara & Grande

Garlic Mustard

Naturalized (native of Europe)

Leaves simple, petioled, with odor of garlic; stem-blades triangular-ovate, dentate, basal blades reniform; petals white; fruits linear, up to 6 cm long, 4-angled; pedicels thick. Syn.: *A. officinalis* Andr.

HERBARIUM RECORDS: 24 May 1963—common in thickets along E bank of Olentangy R., N of Lane Ave., Cusick; 19 May 1969—Park of Roses, Cols., Wiley 16; 3 May 1970—Clintonville, very common on Olentangy R. floodplain in Northmoor Park, W. Owen 114; 20 Apr 1973—quarry ½ mi. S of Dublin, extremely abundant on limestone talus & floodplain woods, E side of Scioto R., Perry Twp., Bourdo & Roberts 3300; 16 Apr 1974—Park of Roses, 3875 N. High, Krock; 24 Apr 1981—E side of Olentangy R., along bike path just S of Whetstone Park playing fields, common, wet floodplain woods, Cols., Shelly 204 (MU); 27 Apr 1986—Highbanks Metro Park, open field, Witsberger 886 (OS, OWU); 29 Apr 1988—5428 Linworth Rd., Chinery 23; 8 May 1989—Overbrook Drive Ravine, between N. High St. & E. Cooke Rd., Clinton Twp., Lowden 4039.

25. *SISYMBRIUM* L.

Tall annuals with pinnatifid leaves; flowers small or medium-sized; petals yellow; fruits terete, rather short and tapering to a point, or linear-cylindric; seeds oblong, 1 row in each locule.

a Petals small; fruits 1½ cm long, closely appressed, almost sessile, tapering from base to tip. 1. *S. officinale*

a' Petals of medium size; fruits linear, spreading or ascending. 2. *S. altissimum*

1. *Sisymbrium officinale* (L.) Scop.

Hedge-mustard

Naturalized (native of Eurasia)

Erect, hairs simple; upper leaves merely dentate, lower ones deeply pinnatifid and petioled; flowers small; petals light yellow; fruits 8-15 mm long, tapering from base to tip, closely appressed.

REFERENCES: Riddell 1834:117 (roadsides); Sullivant 1840:11; Craig 1890:53, 67 (not common, pasture E of woods and in waste places, 3 Jun 1884, 10 Jun 1887, University Farm Sep 1887); Selby & Craig 1890:8 (introduced).

HERBARIUM RECORDS: 11 Jul 1892—Cols., Bogue; Sep 1911—Westerville, gardens, Hanawalt; 7 Jul 1972—alley behind Forsythe Ave., Cols., D. Keil 9361; 19 May 1974—OSU botanical garden, Cols., D. Johnson.

2. **Sisymbrium altissimum* L.

Tumble-mustard

Naturalized (native of Eurasia)

Erect, much-branched above, pubescence of simple hairs; leaves pinnatifid, upper with linear or filiform segments, lower with serrate segments; petals yellow, medium size, approx. 7-8 mm long; fruits linear, widely spreading, 5-10 cm long, 5-10 times as long as the thick pedicels, valves 3-nerved, seed in 1 row.

HERBARIUM RECORDS: 6 Jun 1922—Cols., *Gordon*; 20 Jul 1923—Cols., *J. H. Schaffner*; 8 Jun 1980—along Maple Ave., 1 blk. W of Neil Ave., just S of Conrail yard, common in cinders, NE ¼ SW Cols. Quad., *W. Carr*.

26. ARABIDOPSIS Heynh. Mouse-ear Cress

Stem erect, slender, rather low, often much branched; hairs forked; leaves mostly in basal rosette, entire or toothed, oblong or oblanceolate, sessile, up to 5 cm long; petals white, small; fruits slender, about 1.5 cm long, pedicels spreading or ascending; seeds many, 1 row in each locule.

1. **Arabidopsis thaliana* (L.) Heynh.

Mouse-ear Cress

Naturalized (native of Europe)

Stems erect, often much branched; hairs simple or forked to stellate; leaves mostly in basal rosette, entire or toothed, sessile, up to 5 cm long, petals white, 2-3 mm long; fruits slender, about 1.0-1.5 cm long; seeds many, 1 row in each locule. Disturbed habitats and RR tracks.

HERBARIUM RECORDS: 24 May 1963—waste place behind Boulevard Garden Nursery on Olentangy River Rd., Cols., *Cusick*; 22 Apr 1980—OSU campus, E bank of Olentangy R., disturbed soil behind electrical power station, S of Drake Union, Cols., *W. Carr* 2631; 16 May 1980—common in cinders along RR tracks, S of Goodale Ave. at end of Northwest Blvd., NE ¼ SW Cols. Quad., *W. Carr* 2753; 18 May 1980—common in cinders along RR right-of-way N of McKinley Ave., just E of Yale St., NE ¼ SW Cols. Quad., *W. Carr* 2768 (MU); 16 Apr 1987—OSU campus, among foundation plantings on S side of Postle Hall, Cols., *T. Lammers* 6071; 15 May 1989—along RR tracks on Highland Dr., just W of Olentangy River Rd. & S of Henderson Rd., Cols., Clinton Twp., *Lowden* 4048; 1 Jun 1990—OSU campus, front of right front door of Hamilton Hall along Neil Ave., disturbed construction area, Cols., *Lowden* 4373.

27. CAMELINA Crantz False-flax

Cauline leaves linear to lanceolate, sagittate-clasping, basal ones spatulate, entire or repand; flowers small; petals yellow; fruit obovoid; style persistent, conspicuous in fruit; seeds many, 2 rows in each locule.

a Stem and leaves rough-pubescent with shorter stellate hairs and longer simple ones. 1. *C. microcarpa*

a' Stem glabrous or pubescent with short stellate and simple hairs. 2. *C. sativa*

1. **Camelina microcarpa* Andr.

Small-seed False Flax

Naturalized (native of Old World)

Stem and leaves roughly pubescent, the short stellate hairs conspicuously exceeded by simple hairs 1-2 mm long; fruits 4-7 mm long; seed 1 mm long.

HERBARIUM RECORDS: 15 Jun 1895—Cols., *W. Kellerman*; 20 May 1896—Cols., *E. M. Wilcox*; Jun 1902—Cols., *W. Kellerman*; 14 Jun 1955—along Penn. RR N of Cols. and NE of Worthington, *Blaydes*; 15 May 1989—along Highland Dr. RR tracks, W of Olentangy River Rd. & S of Henderson Rd., Cols., Clinton Twp., *Lowden* 4049.

2. **Camelina sativa* (L.) Crantz

Large-seed False Flax

Naturalized (native of Old World)

Stem and leaves glabrous to sparsely pubescent; fruits 7-9 mm long; seeds 2 mm long.

REFERENCES: Sullivant 1840:10 (Wild Flax, naturalized); Craig 1890:66 (I found 4 specimens 22 May, in the wheat-field near the river and a little N of the fence which runs W from the seed barn to the river, several specimens were found in the same field in 1883); Selby & Craig 1890:7 (introduced); Kellerman & Werner 1893:225.

HERBARIUM RECORD: Jun 1889—Cols., coll.?

28. DESCURAINIA Webb & Berthel. Tansy-mustard

Stems erect; leaves 1-3 times pinnate; pubescence of branched or of both branched and simple hairs; flowers small; petals yellow, sometimes pale; fruits linear or clavate, each valve with prominent midnerve.

ARABIDOPSIS
CAMELINA
DESCURAINIA
RHODODENDRON



- a Seeds in 2 rows; fruits clavate, 1-2 mm wide; axis of raceme often glandular. 1. *D. pinnata*
- a' Seeds in 1 row in each locule; fruit linear, about 1 mm wide; axis of raceme usually finely pubescent but not glandular. 2. *D. sophia*

- 1. †*Descurainia pinnata* (Walter) Britton var. *brachycarpa* (Richardson) Fernald Tansy-mustard
- Stem erect, pubescence at least partly of branched hairs; leaf-blades pinnately compound or decomposed; petals yellow, sometimes pale; fruits clavate, 1-2 mm wide; seeds in 2 rows in each locule; axis of raceme glandular. Syn.: *Sisymbrium canescens* Nutt.

REFERENCES: Sullivant 1840:11; Selby & Craig 1890:8.

HERBARIUM RECORDS: 1840—Cols., Sullivant; 15 May 1989—OSU, Towns[h]end Hall, in flowerbed, Neil Ave., SW Cols. Quad., Cusick 28049; 16 May 1989—along Highland Dr. RR tracks, W of Olentangy River Rd., & S of Henderson Rd., Clinton Twp., Lowden 4060; 30 May 1990—OSU Campus, parking lot near Campbell & Lazenby Halls, Cols., Clinton Twp., Stuckey; 30 Apr 1992—OSU campus, W of library, weedy flowerbeds, SW Cols. Quad., Cusick 30167; 13 May 1992—OSU Campus, Women's Field House behind Campbell Hall, Cols., Stuckey.

- 2. **Descurainia sophia* (L.) Webb Herb-sophia
- Naturalized (native of Eurasia)

Stem erect, canescent throughout with branched hairs; leaf blades pinnately compound or decomposed; petals pale yellow; fruits linear, about 1 mm wide; seeds in 1 row in each locule; axis of raceme finely pubescent, not glandular.

HERBARIUM RECORD: 18 May 1980—about 5 plants in cinders along RR right-of-way behind (N of) Conrail Bldg. on N side of McKinley Ave., just E of Yale St., NE ¼ SW Cols. Quad., W. Carr 2767.

ERICACEAE, Heath Family

Woody plants, mostly shrubs; leaves alternate or rarely some of them opposite or whorled, deciduous or evergreen; flowers hypogynous or epigynous, bisporangiate or rarely monosporangiate; calyx lobes 4 or 5, rarely sepals separate; corolla regular or slightly zygomorphic, petals 4 or 5, usually united; stamens usually as many or twice as many as petals, anthers sometimes awned, usually opening by terminal pores which are often at ends of slender tubes; carpels 4-10, united, locules as many or rarely twice as many by false septation; style and stigma 1; placentae axile; fruit a capsule, berry, or drupe.

- a Flower hypogynous.
 - b Corolla funnelform, salverform, campanulate, or bowl-shaped, lobes at least 1/3 as long as tube or, if lobes are shorter, then anthers inserted in pockets of corolla during early anthesis.
 - c Prostrate, pubescent, somewhat shrubby; corolla salverform with slender tube; anthers opening lengthwise. 6. **EPIGAEA**
 - c' Upright shrubs; anthers opening by terminal pores.
 - d Corolla campanulate or funnelform, without pockets. 1. **RHODODENDRON**
 - d' Corolla bowl-shaped, with 10 pockets in which anthers are inserted at early anthesis. 2. **KALMIA**
 - b' Corolla urn-shaped, cylindric, or globose, somewhat narrowed at tip, teeth or lobes short.
 - e Deciduous small trees and shrubs. 3. **OXYDENDRUM**
 - e' Evergreen shrubs.
 - f Lower leaf-surface covered with small scales; anthers awnless. 4. **CHAMAEDAPHNE**
 - f' Leaf-surface without scales; anthers awned or appendaged. 5. **GAULTHERIA**
- a' Flower wholly or partly epigynous.
 - g Corolla 5-toothed or -lobed; upright shrubs.
 - h Corolla campanulate; leaves not resin-dotted. 7. **VACCINIUM**
 - h' Corolla urn-shaped, cylindric, or globose, teeth short.
 - i Blades resin-dotted. 8. **GAYLUSSACIA**
 - i' Blades not resin-dotted. 7. **VACCINIUM**
 - g' Corolla with 4 divisions; 2 small bracts remote from flower; stems slender, trailing. 7. **VACCINIUM**

1. **RHODODENDRON** L. Rhododendron, Azalea