

ONAGRACEAE OF OHIO.

ROSE GORMLEY.

ONAGRACEAE. Evening-primrose Family.

Annual or perennial herbs, rarely shrubs, with alternate or opposite leaves without stipules, and with axillary, spicate or racemose, bisporangiate, epigynous flowers often with an hypanthium; sepals 2-6 (usually 4) rarely none; stamens as many or twice as many as the petals; ovularly with 1-6 cavities, styles united; ovules indefinite, usually anatropous; fruit, a capsule or small nut; seeds, small; endosperm little or none; embryo straight.

Synopsis.

- I. Fruit a many-seeded capsule opening by valves or pores; cavities 6-4.
 - A. Floral parts not on an hypanthium.
 1. Seeds naked; calyx persistent.
 - a. Leaves alternate. *Ludwigia* (1).
 - b. Leaves opposite; petals none or very small; stems creeping or floating. *Isnardia* (2).
 2. Seeds with a tuft of silky hairs; calyx deciduous. *Chamaenerion* (3).
 - B. Floral parts on a prominent epigynous hypanthium.
 1. Seeds with a tuft of silky hairs. *Epilobium* (4).
 2. Seeds naked or sometimes tuberculate.
 - a. Stamens equal in length.
 1. Ovules and seeds horizontal and prismatic-angled. *Oenothera* (5).
 2. Ovules and seeds ascending, not angled. *Raimannia* (6).
 - b. Stamens unequal in length, one set longer.
 1. Ovules and seeds many. *Kneiffia* (7).
 2. Ovules and seeds few. *Lavauxia* (9).
- II. Fruit indehiscent; cavities 4-1.
 - A. Floral whorls 4-parted. *Gaura* (10).
 - B. Floral whorls 2-parted. *Circaea* (11).

Key.

1. Floral whorls with 4 or more parts. 2.
1. Floral whorls 2 parted. *Circaea* (11).
2. Without an hypanthium. 3.
2. Floral parts on a prominent hypanthium. 5.
3. Leaves alternate. 4.
3. Leaves opposite; stamens 4; flowers axillary. *Isnardia* (2).
4. Flowers in terminal racemes, purple or white. *Chamaenerion* (3).
4. Flowers axillary in ours, yellow or green. *Ludwigia* (1).
5. Plants acaulescent, stamens unequal in length; flowers in our species white or pink. *Lavauxia* (9).
5. Plants caulescent. 6.
6. Flowers yellow. 7.
6. Flowers white, pink or red. 9.
7. Stamens all of the same length; flowers nocturnal. 8.
7. Alternate stamens longer; flowers diurnal. *Kneiffia* (7).

8. Leaves undulate or toothed; ovules and seeds horizontal prismatic-angled. *Oenothera* (5).
8. Leaves sinuate or pinnatifid; ovules and seeds ascending not angled. *Raimannia* (6).
9. Leaves pinnatifid or laciniate, flowers 1½-3 in. broad; buds drooping. *Hartmannia* (8).
10. Ovules numerous, ovulary narrow, elongated. *Epilobium* (4).
10. Ovules usually 4, one in each cavity, ovulary clubshaped, narrowed below, anther filaments with scales at the base. *Gaura* 10.

1. *Ludwigia* L.

Herbs, perennial or annual with alternate entire leaves, flowers, terminal or axillary; sepals usually 4, persistent; petals 4; stamens usually 4; capsule winged or with basal bracelets, dehiscent or opening by a terminal pore.

1. Flowers inconspicuous, sessile in the axis of the leaves, with small greenish petals; capsules not prominently ribbed or winged, valves separating from the terminal disk. *L. polycarpa*.
1. Flowers showy, peduncled, with large yellow petals; capsules prominently ribbed and winged, opening by an apical pore. *L. alternifolia*.

1. *Ludwigia polycarpa* S. & P. Many-fruited *Ludwigia*. Plants 1-3 ft. tall with entire, sessile, narrowly lanceolate leaves, ¾-3½ in. long; flowers small with minute greenish petals and acute triangular sepals; capsules, top shaped, with linear bractlets at the base, the valves separating from the terminal disk. Hocking, Cuyahoga, Auglaize, Lucas.

2. *Ludwigia alternifolia* L. Seed-box. Stems erect, 2-4 ft. high with short-petioled, entire, lanceolate, leaves 1-3½ in. long, flowers showy, with large ovate sepals and yellow petals of about equal length with the sepals; capsules, winged, opening by a pore in the apex. Lake, Fairfield, Cuyahoga, Muskingum, Erie, Defiance, Hocking, Lucas, Adams, Gallia, Brown.

2. *Isnardia* L.

Annual or perennial, prostrate or decumbent, herbs, creeping or floating, often rooting at the nodes; leaves opposite, entire, narrowed at the base; flowers axillary, sessile, often without petals; calyx top-shaped, 4-parted, persistent; petals 4 or none; stamens 4; ovulary with 4 cavities; stigma 4 lobed; capsule 4 angled; seeds numerous.

1. *Isnardia palustris* L. Marsh Purslane. Procumbent or floating herbs, glabrous, branched 4-15 in. long; leaves ovate, narrowing at the base ½-1½ in. long; flowers solitary in the axils of the leaves, about ⅓ in. broad; sepals 4, acute; petals, if present, reddish. Crawford, Summit, Ottawa, Knox, Hancock, Stark, Wayne, Madison, Lucas, Wyandot, Licking, Lorain, Lake, Franklin, Defiance, Geauga, Huron, Warren, Erie, Belmont.

3. **Chamaenerion** (Tourn.) Adans.

Perennial herbs with alternate, entire leaves, densely set on the stem; flowers showy, in terminal racemes; sepals 4, purple, linear, deciduous; petals 4 ovate, stamens 8, stigma 4-parted; capsule angled, dehiscent opening longitudinally, seeds tufted.

1. **Chamaenerion angustifolium** (L.) Scop. Fire-weed. Erect herbs 1½-8 ft.; leaves lanceolate, entire, 1½-5 in. long; flowers purple or white about 1 in. broad, capsules 1½-2 in. long, slender, white pubescent. Ashtabula, Stark, Lake, Medina, Erie, Cuyahoga, Williams, Summit, Geauga, Lorain, Defiance, Fulton.

4. **Epilobium** L.

Herbs with opposite or alternate leaves; flowers solitary, spicate, or racemose; calyx deciduous, 4 parted; petals 4, stamens 8, capsule long, slender 4-sided dehiscent longitudinally; seeds tufted with hairs.

1. Leaves entire, margins revolute. 2.

1. Leaves denticulate or serrulate; margins not revolute. 3.

2. Leaves narrowly linear, less than ¼ in. wide, veins obscure; entire plant covered with white incurved hairs giving it a gray green appearance. *E. lineare*.

2. Leaves lanceolate ¼ in. or more wide, veins evident; glandular pubescent hairs spreading. *E. strictum*.

3. Leaves narrowly lanceolate, 2-6 in. long; seeds obconic, beakless; coma red-brown. *E. coloratum*.

3. Leaves ovate-lanceolate, rarely over 2½ in. long; seeds ellipsoid, short-beaked; coma white. *E. adenocaulon*.

1. **Epilobium lineare** Muhl. Linear-leaf Willow-herb. Erect, perennial, much branched herbs 1-2 ft. high, the entire plant covered with white incurved hairs; leaves linear ½-1½ in. long, opposite or alternate, entire, margin revolute; flowers pink or white in the axils of upper leaves of the branches; capsules about 2 in. long. Erie, Clarke, Portage, Ottawa.

2. **Epilobium strictum** Muhl. Downy Willow-herb. Erect herbs 1-3 ft. high, pubescent with white spreading hairs; leaves sessile, lanceolate, ½-2 in. long, opposite or alternate, entire, flowers in the axils of the upper leaves of branches, ¼ in. broad, pink or white; capsules about 2 in. long. Licking County.

3. **Epilobium coloratum** Muhl. Purple Willow herb. Erect, branched herb, 1-3 ft. tall, somewhat canescent, often purplish; leaves narrow lanceolate, sharply dentate 2-6 in. long; flowers many, axillary, pink and white about ¼ in. broad, seeds obconic, beakless; coma reddish-brown. General.

4. **Epilobium adenocaulon** Haussk. Northern Willow-herb. Resembling the above species but leaves broader and rarely exceeding 2½ in. in length; seeds obovoid, short-beaked; coma white. Cuyahoga, Ashtabula, Defiance, Erie, Medina, Ottawa, Summit, Franklin.

5. **Oenothera** L.

Annual or biennial herbs, leaves alternate with sinuate or toothed margin; flowers yellow, in terminal spikes, hypanthium long and slender; petals and sepals 4; stamens 8; ovulary with 4 cavities; capsule 4-angled, opening longitudinally.

1. Hirsute-pubescent; upper bracts shorter than the ovulary, deciduous.
O. biennis.
1. Velvety-pubescent; upper bracts longer than the ovulary, persistent.
O. oakesiana.

1. **Oenothera biennis** L. Common Evening-primrose. Tall, erect, branched biennial herb, hirsute pubescent, 1-6 ft. high; leaves lanceolate, acute, denticulate 1-6 in. long; flowers yellow, borne in leafy bracts, 1-2 in. broad, capsule about $\frac{3}{4}$ in. long, hirsute, narrowed at the top. General.

2. **Oenothera oakesiana** Robb. Oakes' Evening-primrose. Plant resembling the preceding species but with velvety appressed hairs; leaves narrow, oblanceolate, dentate; flowers yellow 1-1½ in. broad. Erie County.

6. **Raimannia** Rose.

Annual, biennial or perennial herbs with prostrate or erect stems; leaves alternate sinuate or pinnatifid; flowers, yellow axillary or sometimes in terminal spikes, nocturnal; hypanthium long, sepals 4; petals 4; stamens 8; ovulary with 4 cavities; capsule dehiscent longitudinally.

1. **Raimannia laciniata** (Hill.) Rose. Cutleaf Evening-primrose. Stem decumbent or erect, 4 in. to 2½ ft. tall; leaves deeply sinuate-dentate or pinnatifid; $\frac{3}{4}$ -2 in. long; flowers usually axillary, yellow; capsule linear $\frac{3}{4}$ -1½ in. long, hirsute-pubescent. Cuyahoga County.

7. **Kneiffia** Spach.

Shrubby, annual or perennial herbs with alternate, linear, entire or dentate leaves, flowers yellow in terminal spikes or racemes; sepals and petals 4; stamens 8; stigma 4-cleft; capsules oval or clubshaped, 4 winged or angled, opening longitudinally.

1. Flowers $\frac{1}{2}$ in. broad or less; hypanthium equal to or less than ovulary.
K. pumila.
1. Flowers more than $\frac{1}{2}$ in. broad; hypanthium longer than the ovulary. 2.
2. Plant hirsute with spreading hairs; capsule club-shaped. *K. pratensis.*
2. Plant softly pubescent; capsule oblong, not club-shaped. *K. fruticosa.*

1. **Kneiffia pratensis** Small. Meadow Sundrops. Erect, perennial, hirsute herbs 1½-3½ ft. high; leaves oblong-lanceolate or elliptic-lanceolate; flowers in terminal leafy-bracted spikes; capsules clubshaped, sessile. No specimens.

2. **Kneiffia pumila** (L.) Spach. Small Sundrops. Erect puberulent herbs, leaves oblanceolate to oblong; flowers, yellow, in terminal, leafy-bracted, spikes; capsules clavate, sessile or short stalked. Franklin, Ashtabula, Cuyahoga, Madison, Carroll, Washington.

3. **Kneiffia fructicosa** (L.) Raim. Common Sundrops. Erect pubescent herbs; leaves lanceolate to ovate, denticulate or nearly entire; capsule sessile or short stalked, oblong with prominent wings. Fairfield, Lake, Jackson, Wayne, Lucas, Muskingum, Trumbull, Cuyahoga, Belmont, Carroll, Stark, Portage, Crawford, Harrison, Hocking, Clarke, Lorain, Summit, Richland.

8. **Hartmannia** Spach.

Annual or perennial, erect or decumbent herbs with alternate pinnatifid or lyrate leaves; flowers in terminal spikes or racemes, drooping in the bud, white, purple or red; sepals 4, deciduous, petals 4, large; stamens 8; ovulary with 4 cavities; capsules clavate, 4 winged.

1. **Hartmannia speciosa** (Nutt.) Small. White Evening-primrose. More or less branched puberulent herbs, $\frac{1}{2}$ -3ft. tall; leaves lanceolate, pinnatifid or sinuate, 1-2 in. long, flowers white or pink, 2 in. broad; capsules $\frac{1}{2}$ - $\frac{3}{4}$ in. long. Franklin County.

9. **Lavauxia** Spach.

Low herbs usually acaulescent sometimes with a short stem, basal leaves pinnatifid; flowers bisporangiate, white, pink, or pale yellow; sepals and petals 4; stamens 8; ovulary 4-angled, stigma 4-cleft; capsules sometimes winged above.

1. **Lavauxia triloba** (Nutt.) Spach. Three-lobed Evening-primrose. Perennial, nearly glabrous herbs; leaves, petioled pinnatifid or sinuate, oblong lanceolate, 1-8 in. long; flowers pink or white; hypanthium slender, 2-4 in. long; capsule as wide as long, about $\frac{1}{2}$ in. long. Montgomery County.

10. **Gaura** L.

Annual, biennial, or perennial herbs, rather woody at the base, leaves, alternate, sessile; flowers bisporangiate, white, pink or red, in terminal spikes or racemes; hypanthium prolonged beyond the ovulary deciduous, sepals 4; petals 4 (sometimes 3); stamens 8; stigma 4 lobed; fruit resembling a nut, ribbed or angled, indehiscent.

1. **Gaura biennis** L. Biennial Gaura. Erect hairy or softly pubescent herbs, 2-5 ft. tall with lanceolate, acute or acuminate leaves; flowers white, turning pink, in long slender spikes; fruit sessile, $\frac{1}{4}$ - $\frac{3}{8}$ in. long, 4-angled. Stark, Paulding, Montgomery,

Warren, Auglaize, Clinton, Adams, Union, Franklin, Shelby, Clarke, Richland, Madison, Green, Gallia, Clermont, Champaign, Fayette, Highland, Wayne.

11. *Circaea* (Tourn.) L.

Perennial herbs; leaves opposite, dentate; flowers white in terminal and lateral racemes; hypanthium extended beyond the ovularly, sepals 2; petals 2; stamens 2; ovulary with 1 or 2 cavities; fruit obovoid, indehiscent, bristly with hooked hairs.

1. Leaves firm, rounded at the base, slightly toothed; bracts none.

C. lutetiana.

1. Leaves thin, cordate, strongly toothed; with minute bracts. 2.

2. Petals as long as the calyx; fruit 2-locular, bristly. *C. intermedia.*

2. Petals not so long as the calyx, fruit 1-locular, the hairs soft and tender.

C. alpina.

1. *Circaea lutetiana* L. Common Enchanter's-nightshade. Erect finely pubescent herbs 1-2 ft. tall; leaves 1-4 in. ovate, acuminate, rounded at the base; flowers about $\frac{1}{8}$ in., broad; fruit $\frac{1}{8}$ in. long, bilocular, covered with hooked hairs. General.

2. *Circaea intermedia* Ehrh. Intermediate Enchanter's-nightshade. Plants 8-16 in. tall; leaves thin, ovate, middle and upper ones cordate, teeth salient; minute bracts usually present; petals as long as the calyx; fruit as in the above species. No specimens.

3. *Circaea alpina* L. Small Enchanter's-nightshade. Plant small 4-12 in. high, glabrate or pubescent, with ovate, coarsely dentate, leaves, usually cordate at the base, $\frac{1}{2}$ - $2\frac{1}{2}$ in. long; flowers about $\frac{1}{16}$ in. broad; fruit $\frac{1}{16}$ in. long with soft, hooked hairs, unilocular. Lorain, Summit, Hocking, Cuyahoga, Clarke, Ashtabula.