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DISTRIBUTION OF THE CRUCIFERAE
IN MICHIGAN

Thesis for Degree of M. S.

B. A. Walpole

1925

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Distribution of the Cruciferae
in Michigan

Thesis Presented for the Degree of
Master of Science,
Michigan State College.

By
B. A. Walpole 1791—

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Acknowledgments

The writer is very grateful to Dr. E. A. Bessey and to Dr. H. T. Darlington for advice and suggestions given throughout this study and for the criticism and correction of the manuscript.

DISTRIBUTION OF THE CRUCIFERAE IN MICHIGAN

My purpose in this contribution is to make a survey of the mustards found in Michigan. This survey is made to correlate with contributions made by Dr. H. T. Darlington upon the "Orchidaceae in Michigan", Miss Bertha E. Thompson's "Violaceae of Michigan", and Dr. Kenoyer's "Umbellales in Michigan". I have followed the plan and the organization of these excellent contributions because they will be used as the bases of a new Michigan flora.

In preparation of this report, the writer has made a careful study of all available herbarium material. The author has consulted the herbaria of the University of Michigan, Michigan Agricultural College, the Michigan State Normal College, the Michigan Western State Normal College, the Grand Rapids Historical Museum, the Field Museum in Chicago, the private herbaria of Messrs. C. Billington of Detroit and C. W. Fallass of Petoskey, and the author's personal collections. All available distribution lists were used in compiling the information gathered in this paper.

The nomenclature of the second edition of Britton and Brown's "Illustrated Flora of United States and Canada" is followed except for the genus *Brassica* which is covered by L. H. Bailey's "The Cultivated Brassicas"

published in 1922.

The writer is indebted to Dr. E. A. Bessey and Dr. H. T. Darlington for many helpful suggestions in preparing this distribution list.

Few families of plants are of such great economic importance as the Mustard family, not only from the large number of troublesome weeds it contains, but also from the fact that not a single unwholesome plant is found in it. Many species form well known and excellent articles of food. Some of our worst weeds, however, most of which have been introduced into Michigan, belong to this family.

There have been reported in Michigan thirty-four genera, including eighty-one species. We have forty-nine species coming from Europe, twenty-eight native to America, and four from Asia.

A study of the distribution for the members of this family shows that the greatest number of mustards are found in the area of the state under cultivation. Southern Michigan has by far the most species represented. This is easily accounted for by the number of European species in this section of the state, the introduced species coming in by the importation of farm seeds and supplies. The writer believes many more species could be found in the Upper Peninsula if the territory could be investigated. Reports upon plants from this region are meager and those that have been made often lack specimens

to verify the finding.

The striking feature of this family is the almost complete lack of forest species. The family as a whole inhabits the open fields, roadsides, banks of streams, or cliffs. A few species are shade tolerant.

Draba nemorosa, Draba aurea, Erucastrum nasturtiifolium, Hymenophyssa pubescens, and Lunaria rediviva are rare local species. It is not very likely that these plants will spread rapidly to other similar parts of the state. The writer has never seen a specimen of Draba nemorosa though it has been reported by two reliable botanists.

The typical species for the northern part of the state are Arabis holboellii, Draba arabisans, Draba nemorosa, Draba aurea, Cardamine parviflora, Arabidopsis novae-angliae, Sophia pinnata, Sophia incisa, and Sophia sophia.

Cakile edentula is a plant of the sandy beaches. It is found along the entire coast line of the Great Lakes. Lepidium perfoliatum represents a species coming into the state from the west. Draba verna appears from the states to the southwest.

The outstanding point is the recent arrival of so many species of mustards within the state's boundaries and such a wide distribution of these newcomers in our state. From the standpoint of actual value or harm, the family is one of the most important of those

represented in the state.

CRUCIFERAE B. Juss. (MUSTARD FAMILY)

Annual, biennial, or perennial herbs, sometimes with woody base, and with watery acrid (or pungent) sap. Leaves alternate. Flowers perfect, racemose or corymbose; sepals 4, deciduous; petals 4 or rarely wanting, alternating with the sepals. Stamens 6, rarely only 2 or 4; the outer shorter, opposite the inner sepals. Ovary 2-celled by a septum which stretches across from the placentae, rarely 1-celled; style undivided or wanting; stigma entire or 2-lobed. Fruit a capsule, often greatly elongated, technically called a silique or, if short, a silicle. Seeds attached to both sides of the septum.

*Artificial key to the genera represented in Michigan.

I. Pod dehiscent into 2 valves to the base.

A. Pods orbicular, globose, or oblong,
or but little more than twice as
long as wide, therefore silicles.

B. Silicles globose or flattened
parallel with the septum; pods
a little longer than wide.

C. Silicle not compressed.

D. Silicle obovoid or pear-
shaped, many seeded;
flowers yellow.....5. *Camelina*.

D. Silicle globose or

* The key is written to fit only those genera and species known to occur in Michigan and must not be expected to fit localities where other genera

terete-oblong.

Petals 2-cleft,

silicles pubescent.....2. Berteroa.

Petals not 2-cleft,

silicles glabrous.

Flowers yellow.....8. Radicula.

Flowers white.

Terrestrial; style

short, less than

2mm. long; pods

globular.....10. Armoracia.

Aquatic; submersed

leaves finely

dissected; style

2mm. long; pods

ovoid.....11. Neobeckia.

C. Silicle compressed or flat.

E. Silicle many seeded.....1. Draba.

E. Silicle 2-8 seeded.

Flowers yellow.....4. Alyssum.

Flowers white.....3. Koniga.

B. Silicle flattened at right angles
to the septum.

F. Seeds several in each cell of
the silicle.

G. Silicle triangular,

cuneate, wingless; plants

- with branched hairs.....6. Bursa.
- G. Silicle oblong or
orbicular, winged all
around; plants with
hairs simple or none....15. Thlaspi.
- F. Seeds solitary in each cell.
 - H. Silicle glabrous, winged
all around or at the
apex, rarely wingless.
Petals small, equal
in size.....12. Lepidium.
Petals small, unequal
in size.....13. Iberis.
 - H. Silicle pubescent,
wingless.....14. Hymenophyssa.
- A. Pod elongated to linear, at least
twice as long as wide, therefore a
silique.
- I. Silique tipped with a short style
or with style lacking.
- J. Seeds globose or oblong,
wingless.
- K. Seeds in 2 rows in each
cell.
Flowers white;
pubescence of simple
hairs or wanting.....9. Sisymbrium.

Flowers yellow;

pubescence of forked

hairs.....16. Sophia.

K. Seeds in 1 row in each
cell.

L. Leaves dentate,
dissected, or
pinnatifid.

Pods appressed,

narrowly conic....18. Erysimum.

Pods divergent,

linear-cylindric...19. Norta.

L. Leaves entire or
slightly toothed.

Flowers yellow.

Stems glabrous;

sessile, clasping.20. Conringia.

Stems appressed

pubescent;

leaves not

clasping.....17. Cheirinia.

Flowers purple,

purplish-white, or

white.

Flowers purple,

large, 15-20mm.

broad.....21. Hesperis.

Flowers white or

pink, small,

3mm. broad.....22. Arabidopsis.

J. Seeds flat, winged or

wingless.

M. Silique 4-angled; valves

keeled; flowers yellow..23. Barbarea.

M. Siliques flat or flattish;

flowers white, pink,

violet or purple.

N. Valves of the silique

nerveless; seeds

wingless; pods

elastically

dehiscent.

Stem 2-3 leaved,

naked below;

rootstocks covered

with scales or

teeth.....26. Dentaria.

Stem leafy below;

rootstocks without

scales or teeth...25. Cardamine.

N. Valves of the silique

1-nerved or veiny;

seeds winged or

winged-margined; pods

not elastically

dehiscent.....24. Arabis.

I. Siliques produced into a beak
beyond the valves.

O. Beak conic or filiform,
seedless.

P. Silique terrete, flowers
yellow.

Seeds in 1 row.....31. Brassica.

Seeds in 2 rows.....32. Diplotaxis.

P. Silique much compressed,
flowers violet.....27. Lunaria.

O. Beak flat, 4-angled or
2-edged, containing 1 seed.

Q. Valves of the pod with 1
strong nerve.

Plants glabrous; seeds
in 2 rows in each
cell; pods long
beaked.....29. Eruca.

Plants more or less
pubescent; seeds
almost always 1-rowed
in each cell; pods
short beaked.....30. Erucastrum.

Q. Valves of the pod with
3 strong nerves.....28. Sinapis

II. Pods indehiscent, short or elongated.

R. Pods globose and reticulated.....7. *Neslia*.

R. Pods elongated.

S. Pods of 2 joints, separating at
maturity; maritime herbs.....34. *Cakile*.

S. Pods not jointed but constricted
between the seeds; not maritime
herbs.....33. *Raphanus*.

1. DRABA (Dill.) L. Whitlow-grass.

(Greek name for some plant of the family)

Flowers white.

Petals deeply 2-cleft.....1. *D. verna*.

Petals entire, toothed, or emarginate.

Flowering stems leafy only below; pods
broadly linear and straight; winter
annual.....2. *D. caroliniana*.

Flowering stems leafy throughout; pods
elliptic-lanceolate and twisted;
perennial.....3. *D. arabisans*.

Flowers yellow, sometimes fading to white.

Pods glabrous; style none; petals notched
and slightly exceeding the calyx;
pedicels divaricately spreading
in fruit; winter annual.....4. *D. nemorosa*.

Pods pubescent; style stout; petals twice
the length of the calyx, entire or
emarginate; pedicels erect; perennials.....5. *D. aurea*.

1. Draba verna L. (of spring)

Spring Whitlow-grass.

Restricted to the southern counties. Sandy hillsides. Naturalized from Europe.

February - May.

Specimens examined:- VanBuren Co. (H. S. Pepoon, 1903); Ingham Co. (W. J. Beal, 1886, and C. F. Wheeler, 1894); Ionia Co. (B. A. Walpole, 1924).

Reported from Wayne Co. (Dr. Lyons, 1904); Ionia Co. (I. W. Stacy).

2. Draba caroliniana Walt.

Carolina Whitlow-grass.

Restricted to the southern counties. Sandy fields. Native. May - June.

Specimens examined:- St. Clair Co. (C. K. Dodge, 1900); Clinton Co. (C. F. Wheeler, 1890); Kent Co. (E. J. Cole, 1892); St. Joseph Co. (G. D. Crossman, 1911); Kent Co. (C. W. Fallass, 1894).

Reported from Ionia Co. (W. J. Beal, 1904).

3. Draba arabisans Michx. (like arabis)

Rock-cress; Rock Whitlow-grass.

Restricted to Mackinac Island and Isle Royale.

Apparently native. June - August.

Specimens examined:- Mackinac Island (C. F. Wheeler, 1897, G. H. Hicks, 1889, and J. H. Ehlers, 1920); Isle Royale (G. A. Marr, 1868).

4. Draba nemorosa L. (of the woods)

Wood Whitlow-grass.

A northern species, not examined by the writer.

Native. Summer.

Reported from Gratiot Co. (Dr. Pitcher, 1904); Ingham Co. (W. J. Beal, 1904).

5. Draba aurea Vahl. (golden)

Golden Whitlow-grass.

Apparently rare in Michigan. Native. Summer.

Specimen examined:- Mackinac Island (J. H. Ehlers, 1920).

2. BERTEROA DC.

(in honor of C. G. Bertero, botanist of Piedmont)

Berteroa incana (L.) DC. (hoary)

Hoary Alyssum.

All over the state in waste places. Adventive from Europe. June - September.

Specimens examined:- Iosco Co. (W. J. Beal, 1902); Washtenaw Co. (J. W. Howlett, 1904); Genesee Co. (P. J. Vandercook, 1900); Ingham Co. (C. F. Wheeler, 1902); Ingham Co. (H. T. Darlington, 1916); Washtenaw Co. (B. A. Walpole, 1918); Livingston Co. (C. H. Kauffman, 1923); Oakland Co. (C. Billington, 1915); Sanilac Co. (H. F. Ogden, 1917); Manistee Co. (Frank Sandhammer, 1916); Jackson Co. (S. M. Isbell, 1915); Lenawee Co. (Jesse Mayer, 1912); Oceana Co. (R. H. Burton, 1915); Grand Traverse Co. (W. H. Pease, 1915); Newaygo Co. (Joe Endt, 1911); Emmet Co. (Wilbur Smith, 1911); Muskegon Co. (B. A. Walpole, 1924);

Ionia Co. (B. A. Walpole, 1924); Eaton Co. (B. A. Walpole, 1924); Lenawee Co. (B. A. Walpole, 1924).

Reported from Kalamazoo Co. (M. A. C., 1913); Midland Co. (M. A. C., 1919); Hillsdale Co. (M. A. C., 1918); Monroe Co. (M. A. C., 1919); Shiawassee Co. (M. A. C., 1913); Montmorency Co. (M. A. C., 1917); Iron Co. (M. A. C., 1914); Branch Co. (M. A. C., 1920); Ionia Co. (M. A. C., 1920); Kent Co. (M. A. C., 1920); Luce Co. (M. A. C., 1921); Isabella Co. (M. A. C., 1921); Mecosta Co. (M. A. C., 1922); Charlevoix Co. (M. A. C., 1922); Clare Co. (M. A. C., 1924); Saginaw Co. (M. A. C., 1924); Oakland Co. (O. A. Farwell, 1910); Houghton Co. (O. A. Farwell, 1921); Macomb Co. (O. A. Farwell, 1922).

3. KONIGA Adans.

(in the honor of Charles Konig, Curator of the
British Museum)

Koniga maritima (L.) R. Br. (seaside)

Lobularia maritima (L.) Desv.

Sweet Alyssum; Seaside Koniga; Madwort.

Occasional throughout the state in sandy waste places.

Summer. Introduced from Europe.

Specimens examined:- Washtenaw Co. (M. W. Harrington, 1874); Gratiot Co. (C. A. Davis, 1893); Kent Co. (C. W. Fallas, 1894); St. Clair Co. (C. K. Dodge, 1911); Ingham Co. (B. A. Walpole, 1922).

Reported from Wayne Co. (O. A. Farwell, 1900); Keweenaw Co. (O. A. Farwell, 1904).

4. ALYSSUM (Tourn.) L.

(Greek, curing madness)

Alyssum alyssoides L. (like Alyssum)

Yellow Alyssum.

Distributed throughout the state in sandy waste places.

Naturalized or adventive from Europe. Summer.

Specimens examined:- Gratiot Co. (C. A. Davis, 1904);
St. Clair Co. (C. K. Dodge, 1896); Genesee Co. (D. Clark,
1887); Ingham Co. (W. J. Beal, 1871); Washtenaw Co. (B. A.
Walpole, 1918); Livingston Co. (J. H. Ehlers, 1920);
Jackson Co. (A. J. Pieters, 1892); St. Clair Co. (C.
Billington, 1915); Ionia Co. (B. A. Walpole, 1924); Eaton
Co. (B. A. Walpole, 1922); Kent Co. (E. J. Cole, 1894);
Emmet Co. (C. W. Fallass, 1918).

Reported from Schoolcraft Co. (C. K. Dodge, 1915);
Chippewa Co. (C. K. Dodge, 1914); Tuscola Co. (C. K. Dodge,
1908); Wayne Co. (O. A. Farwell, 1900); Ionia Co. (C. F.
Wheeler, 1904); Clinton Co. (C. F. Wheeler, 1890); Bay Co.
(G. M. Bradford, 1904); Oakland Co. (O. A. Farwell, 1912);
Washtenaw Co. (O. A. Farwell, 1891); Keweenaw Co. (O. A.
Farwell, 1895); Allegan Co. (O. A. Farwell, 1923).

5. CAMELINA Crantz.

(Greek, low flax)

Glabrous or nearly so; flowering racemes several,

slightly elongated; valves much swollen;

Pods 6-8mm. long.....1. C. sativa.

Pubescent; flowering racemes isolated; valves

slightly swollen; pods 4-6 mm. long.....2. C. microcarpa.

1. Camelina sativa. (L.) Crantz. (sown or planted)

False Flax.

Introduced as a weed in many parts of the state.

From Europe. June - July.

Specimens examined:- Washtenaw Co. (E. C. Allmendinger, 1867); St. Clair Co. (C. K. Dodge, 1912); Keweenaw Co. (O. A. Farwell, 1884); Washtenaw Co. (L. A. Osband, 1893); Wayne Co. (Steven Pearl, 1914); Cheboygan Co. (C. W. Fallass, 1918); Emmet Co. (C. W. Fallass, 1918).

Reported from VanBuren Co. (H. S. Pepoon, 1907); Kent Co. (E. J. Cole, 1901); Schoolcraft Co. (C. K. Dodge, 1915); Tuscola Co. (C. K. Dodge); Wayne Co. (O. A. Farrell, 1900); Genesee Co. (W. J. Beal, 1904); Macomb Co. (W. J. Beal, 1904); St. Joseph Co. (W. J. Beal, 1904); Bay Co. (W. J. Beal, 1904); Oakland Co. (O. A. Farwell, 1912); Lenawee Co. (M. A. C., 1914); Chippewa Co. (M. A. C., 1920); Ionia Co. (I. W. Stacy); Washtenaw Co. (O. A. Farwell, 1891).

2. Camelina microcarpa Andr. (small-fruited)

Small-fruited False-flax.

Distributed throughout the state in waste places.

Naturalized or adventive from Europe. May - July.

Specimens examined:- Washtenaw Co. (C. D. LaRue, 1915); Cheboygan Co. (J. H. Ehlers, 1917); Washtenaw Co. (B. A. Walpole, 1919); Wayne Co. (Howard Colby, 1915); Isabella Co. (C. E. Smithers, 1914); Lapeer Co. (E. A. Bessey, 1912);

Oakland Co. (E. M. Ordway, 1912); Oakland Co. (C. Billington, 1914); Kent Co. (George Hannah, 1894); Clare Co. (B. A. Walpole, 1924); Ingham Co. (B. A. Walpole, 1921); Muskegon Co. (B. A. Walpole, 1924); Allegan Co. (B. A. Walpole, 1924); Eaton Co. (B. A. Walpole, 1922); Clinton Co. (B. A. Walpole, 1924).

Reported from Oakland Co. (O. A. Farwell, 1912); Alger Co. (M. A. C., 1917); Kalamazoo Co. (M. A. C., 1913); Livingston Co. (M. A. C., 1918); Branch Co. (M. A. C., 1918); Saginaw Co. (M. A. C., 1913); Montcalm Co. (M. A. C., 1913); Genesee Co. (M. A. C., 1912); Gratiot Co. (M. A. C., 1918); Alcona Co. (M. A. C., 1915); Clare Co. (M. A. C., 1917); Jackson Co. (M. A. C., 1911); Tuscola Co. (M. A. C., 1911); Barry Co. (M. A. C., 1920); Clinton Co. (M. A. C., 1920); Monroe Co. (M. A. C., 1921); Gladwin Co. (M. A. C., 1922); Chippewa Co. (M. A. C., 1922); Huron Co. (M. A. C., 1924); Allegan Co. (O. A. Farwell, 1923).

6. BURSA (Siegesb.) Weber.

(Latin, meaning purse)

Bursa bursa-pastoris (L.) Britton.

Capsella Bursa-pastoris (L.) Medico.

Shepherd's Purse.

Winter annual, very common in fields and gardens

throughout the entire state, often becoming a bad

weed. Naturalized from Europe. April - October.

7. NESLIA Desv.

(in honor of J. A. N. de Nesle, French botanist)

Neslia paniculata (L.) Desv. (a tuft)

Ball Mustard.

Rarely found in the state. Adventive from Europe.

May - September.

Specimens examined:- Washtenaw Co. (B. A. Walpole, 1919);
Iron Co. (G. S. Butler, 1914).

8. RADICULA Hill.

(Latin, meaning root)

Plant perennial by creeping or subterranean
branches; leaf segments acute, the terminal
one lanceolate.

Segments of the leaves toothed; style

very short, 2mm. long.....1. R. sylvestris.

Segments of the leaves entire; style

slender, 5mm. long.....2. R. sinuata.

Plants annual or biennials, with fibrous
roots; leaf segments obtuse, the terminal
one broadly oblong to ovate.

Stems glabrous or nearly so; pods linear
to linear-oblong.

Pedicels shorter than the pods; stems

diffusely spreading.....3. R. obtusa.

Pedicels equalling or longer than the

pods; stems erect.....4. R. palustris.

Stems hispid-pubescent; pods globose or

oval.....5. R. hispida.

1. Radicula sylvestris (L.) Druce. (growing in the woods)

Creeping Yellow Water-cress.

Wet places, mostly restricted to the southern counties.

Adventive or naturalized from Europe. Summer.

Specimens examined:- Wayne Co. (C. F. Wheeler, 1892); Washtenaw Co. (B. A. Walpole, 1919); Alger Co. (C. K. Dodge, 1916); Wayne Co. (C. Billington, 1916); Ingham Co. (B. A. Walpole, 1923); Kent Co. (C. W. Fallass, 1899).

Reported from Wayne Co. (O. A. Farwell, 1904); Roscommon Co. (M. A. C., 1920); Isabella Co. (M. A. C., 1921); Huron Co. (M. A. C., 1923).

2. Radicula sinuata (Nutt.) Greene. (curved)

Spreading Yellow Water-cress.

Rare in the state. Native. June-September.

Specimen examined:- Marquette Co. (Bronson Barlow, 1901).

3. Radicula obtusa (Nutt.) Greene. (blunt)

Blunt-leaved Yellow Water-cress.

Rare in the state. Native. April - August.

Specimens examined:- Keweenaw Co. (O. A. Farwell, 1887); Oceana Co. (C. W. Fallass, 1909).

Reported from VanBuren Co. (M. A. C., 1921).

4. Radicula palustris (L.) Moench. (swampy)

Marsh Water-cress.

Throughout the state in swampy places. Naturalized from Europe. May - August.

Specimens examined:- Missaukee Co. (H. T. Darlington, 1916);

VanBuren Co. (H. S. Pepoon, 1905); Cheboygan Co. (C. F. Wheeler, 1890); Keweenaw Co. (O. A. Farwell, 1888); Calhoun Co. (W. J. Beal, 1898); Genesee Co. (D. Cooley, 1840); Macomb Co. (D. Cooley); Marquette Co. (Bronson Barlow, 1901); Gogebic Co. (H. T. Darlington, 1919); St. Clair Co. (C. K. Dodge, 1896); Washtenaw Co. (B. A. Walpole, 1918); Emmet Co. (J. H. Ehlers, 1923); Livingston Co. (J. H. Ehlers, 1923); Kent Co. (H. M. Bailey, 1891); Allegan Co. (C. H. Kauffman, 1910); Chippewa Co. (C. K. Dodge, 1914); Oakland Co. (Mary Wilkerson, 1895); Shiawassee Co. (C. B. Cook, 1912); Wayne Co. (C. Billington, 1915); Genesee Co. (E. E. Sherff, 1907); Keweenaw Co. (F. E. Wood, 1884); Kent Co. (E. J. Cole, 1901); Kent Co. (C. W. Fallass, 1882); Emmet Co. (C. W. Fallass, 1923).

Reported from Schoolcraft Co. (C. K. Dodge, 1915); Tuscola Co. (C. K. Dodge, 1908); Wayne Co. (O. A. Farwell, 1900); St. Joseph Co. (F. P. Daniels, 1902); Manistee Co. (F. P. Daniels, 1902); Hillsdale Co. (M. A. C., 1914); Clinton Co. (M. A. C., 1911); Ottawa Co. (M. A. C., 1923); Ionia Co. (I. W. Stacey); Muskegon Co. (C. D. McLouth, 1896); Washtenaw Co. (O. A. Farwell, 1892); Macomb Co. (O. A. Farwell, 1924).

5. Radicula hispida (Desv.) Britton. (bristly)

Hispid Yellow Water-cress.

In wet places throughout the state. Naturalized from Europe. Summer.

Specimens examined:- Cass Co. (H. S. Pepoon, 1904); Osceola Co. (H. T. Darlington, 1916); Montcalm Co. (C. F. Wheeler, 1900); Cheboygan Co. (F. C. Gates, 1911); St. Clair

Co. (C. K. Dodge, 1903); Washtenaw Co. (B. A. Walpole, 1919); Emmet Co. (J. H. Ehlers, 1916); Allegan Co. (C. H. Kauffman, 1910); Kent Co. (C. W. Fallass, 1881); Kent Co. (E. J. Cole, 1901); Emmet Co. (C. W. Fallass, 1918).

Reported from Wayne Co. (O. A. Farwell, 1900); Gratiot Co. (C. A. Davis, 1904); Midland Co. (M. A. C., 1923); Ionia Co. (I. W. Stacey); Muskegon Co. (C. D. McLouth, 1896); Dickinson Co. (G. H. Coons, 1909); Keweenaw Co. (O. A. Farwell, 1892); Macomb Co. (O. A. Farwell, 1924).

9. SISYMBRIUM (Tourn.) L.

(Ancient Greek name)

Sisymbrium nasturtium-aquaticum L. (twisted nose, aquatic)

Radicula nasturtium (L.) Britton & Rendle.

True Water-cress.

Common throughout the state along streams.

Naturalized from Europe. April - November.

Specimens examined:- Cass Co. (H. S. Pepoon, 1905); VanBuren Co. (H. S. Pepoon, 1906); Crawford Co. (G. H. Hicks, 1888); Kent Co. (E. J. Cole, 1895); Montcalm Co. (C. F. Wheeler, 1900); Ingham Co. (W. J. Beal, 1886); Muskegon Co. (W. J. Beal, 1898); Macomb Co. (D. Cooley); Isabella Co. (C. A. Davis, 1889); Genesee Co. (D. Cooley); Alger Co. (C. F. Wheeler, 1900); Washtenaw Co. (B. A. Walpole, 1918); Kent Co. (C. W. Fallass, 1896); Wayne Co. (C. Billington, 1914); Schoolcraft Co. (A. B. Burgess, 1903); Emmet Co. (C. W. Fallass, 1918).

Reported from Schoolcraft Co. (C. K. Dodge, 1915);

Chippewa Co. (C. K. Dodge, 1914); Ionia Co. (W. J. Beal, 1904); Gratiot Co. (C. A. Davis, 1904); Mackinac Island (C. K. Dodge, 1912); Oakland Co. (O. A. Farwell, 1912); Muskegon Co. (C. D. McLouth, 1896); Monroe Co. (O. A. Farwell, 1910); Macomb Co. (O. A. Farwell, 1897); Wayne Co. (O. A. Farwell, 1897); Washtenaw Co. (O. A. Farwell, 1896).

10. ARMORACIA Gaertn.

(Celtic, meaning saline or salty)

Armoracia armoracia (L.) Britton.

Radicula Armoracia (L.) Robinson.

Horse-radish.

Occasional escape from gardens throughout the state.

Adventive from Europe. Summer.

Specimens examined:- Cass Co. (H. S. Pepoon, 1906); Ingham Co. (W. J. Beal, 1887); Ingham Co. (H. T. Darlington, 1916); St. Clair Co. (C. K. Dodge, 1893); Washtenaw Co. (B. A. Walpole, 1918); Gogebic Co. (H. T. Darlington, 1920); Lapeer Co. (C. K. Dodge, 1916); Kent Co. (C. W. Fallass, 1896); Wayne Co. (C. Billington, 1915); Jackson Co. (E. J. Cole, 1893); Ionia Co. (B. A. Walpole, 1924); Allegan Co. (B. A. Walpole, 1924); Clinton Co. (B. A. Walpole, 1923); Grand Traverse Co. (B. A. Walpole, 1924); Eaton Co. (B. A. Walpole, 1924); Kent Co. (E. J. Cole, 1901).

Reported from Schoolcraft Co. (C. K. Dodge, 1915); Tuscola Co. (C. K. Dodge, 1908); Wayne Co. (O. A. Farwell, 1900); St. Joseph Co. (F. P. Daniels, 1902); Manistee Co. (F. P. Daniels, 1900); Oakland Co. (O. A. Farwell, 1912);

Emmet Co. (C. W. Fallass, 1918); Ionia Co. (I. W. Stacey).

11. NEOBECKIA Greene.

(honor of L. C. Beck, American botanist)

Neobeckia aquatica (Eaton) Britton. (water)

Radicula aquatica (Eat.) Robinson.

Lake Water-cress.

Rare in the state. Native. Summer.

Specimens examined:- Mason Co. (Miss Noppin, 1878);
Kent Co. (E. J. Cole, 1901).

Reported from Ingham Co. (W. J. Beal, 1904).

12. LEPIDIUM (Tourn.) L.

(Greek, a little scale)

Stems leaves clasping by an auriculate
base.

Pods winged; broadly ovate, deeply notched;

branches of the inflorescence densely

and finely pubescent.....1. L. campestre.

Pods wingless, pointed; branches of the

inflorescence glabrous.....2. L. draba.

Stems leaves petioled, sessile, or perfoliate,
not clasping.

Pods slightly winged above, orbicular or
oval.

Petals present and broadly spatulate,

as long as the calyx; cotyledons

accumbent.....3. L. virginicum.

Petals none or minute; cotyledons

incumbent.....4. L. densiflorum.

Pods winged all around; oblong or ovate.

Lower leaves pinnatifid, upper entire

and perfoliate; flowers yellow.....5. L. perfoliatum.

Leaves all pinnatifid, flowers white

or pink.....6. L. sativum.

1. Lepidium campestre (L.) R. Br. (growing in fields)

Field Cress.

In fields and waste places throughout the state.

Naturalized from Europe. May - July.

Specimens examined:- St. Clair Co. (C. K. Dodge, 1897);
Ingham Co. (C. F. Wheeler, 1892); VanBuren Co. (H. S.
Pepoon, 1906); Washtenaw Co. (B. A. Walpole, 1919);
Cheboygan Co. (J. H. Ehlers, 1922); Emmet Co. (J. H. Ehlers,
1917); Livingston Co. (F. L. Travis, 1916); Clare Co.
(W. H. Kennedy, 1917); Ionia Co. (H. B. Webber, 1915);
Wayne Co. (I. R. Waterbury, 1915); Alcona Co. (J. F. Barry,
1915); Saginaw Co. (A. R. Wheeler, 1919); Shiawassee Co.
(A. F. Goodell, 1914); Tuscola Co. (J. C. Buchringer, 1912);
Clinton Co. (I. R. Waterbury, 1912); Muskegon Co. (R. S.
Brown, 1919); Allegan Co. (B. A. Walpole, 1924); Emmet Co.
(C. W. Fallass, 1923); Wayne Co. (C. Billington, 1915);
Genesee Co. (E. E. Sherff, 1909); Ionia Co. (B. A. Walpole,
1924); Eaton Co. (B. A. Walpole, 1924); Clinton Co.
(B. A. Walpole, 1924); Lenawee Co. (B. A. Walpole, 1924).

Reported from Bay Co. (G. M. Bradford, 1904); Macomb Co.

(W. J. Beal, 1901); Wayne Co. (O. A. Farwell, 1901); Jackson Co. (E. A. Bessey, 1913); Genesee Co. (M. A. C., 1919); Roscommon Co. (M. A. C., 1919); Huron Co. (M. A. C., 1924); Cass Co. (M. A. C., 1924); Leelanau Co. (M. A. C., 1924); Lenawee Co. (M. A. C., 1924); Ottawa Co. (M. A. C., 1924); Hillsdale Co. (M. A. C., 1923); Eaton Co. (M. A. C., 1923); Oakland Co. (O. A. Farwell, 1917); Monroe Co. (O. A. Farwell, 1921).

2. Lepidium draba L.

Hoary Cress.

Waste grounds; rare. Fugitive from Europe.

April - June.

Specimen examined:- Washtenaw Co. (B. A. Walpole, 1919).

3. Lepidium virginicum L.

Wild Pepper-grass.

Throughout the state. Native. May - November.

Specimens examined:- Cheboygan Co. (F. C. Gates, 1911); Genesee Co. (D. Cooley, 1871); Ingham Co. (W. J. Beal, 1887); Lenawee Co. (W. J. Beal, 1866); Gratiot Co. (C. A. Davis, 1890); VanBuren Co. (H. S. Pepoon, 1905); Washtenaw Co. (B. A. Walpole, 1918); Kent Co. (W. E. Mulliken, 1895); Washtenaw Co. (E. C. Allmendinger, 1861); St. Clair Co. (C. K. Dodge, 1895); Wayne Co. (Wm. Smith, 1897); St. Joseph Co. (Miss Noppin, 1869); Calhoun Co. (E. C. Phelps, 1915); Allegan Co. (B. A. Walpole, 1924); Wayne Co. (C. Billington, 1915); Schoolcraft Co. (A. B. Burgess, 1903); Mason Co. (Wilbur Smith, 1911); Jackson Co. (S. H. and

D. R. Camp, 1898); Eaton Co. (B. A. Walpole, 1924); Oakland Co. (O. A. Farwell, 1924); Emmet Co. (C. W. Fallass, 1918); Kent Co. (E. J. Cole, 1889).

Reported from Schoolcraft Co. (C. K. Dodge, 1915); Chippewa Co. (C. K. Dodge, 1914); Tuscola Co. (C. K. Dodge, 1908); Wayne Co. (O. A. Farwell, 1900); Lenawee Co. (F. L. Stearns, 1905); Charity Island (C. K. Dodge, 1910); Mackinac Island (C. K. Dodge, 1912); Isle Royale (W. S. Cooper, 1910); Calhoun Co. (M. A. C., 1915); Gratiot Co. (M. A. C., 1922); Ottawa Co. (M. A. C., 1922); Allegan Co. (M. A. C., 1924); Muskegon Co. (M. A. C., 1924); Ionia Co. (I. W. Stacey); Muskegon Co. (C. D. McLouth, 1896); Dickinson Co. (G. H. Coons, 1909); Washtenaw Co. (O. A. Farwell, 1891); Keweenaw Co. (O. A. Farwell, 1895).

4. Lepidium densiflorum Schrad. (thick-flowered)

Lepidium intermedium A. Gray.

Wild Pepper-grass.

Distributed throughout the state. Naturalized from Europe. May - August.

Specimens examined:- Gogebic Co. (H. T. Darlington, 1919); St. Clair Co. (C. K. Dodge, 1895); Washtenaw Co. (L. S. Osband, 1887); Keweenaw Co. (O. A. Farwell, 1889); Marquette Co. (Bronson Barlow, 1901); Alger Co. (C. F. Wheeler, 1900); Otsego Co. (E. A. Bessey, 1912); St. Clair Co. (C. K. Dodge, 1900); Ingham Co. (E. J. Cole, 1895); Bay Co. (C. F. Wheeler, 1901); Kent Co. (H. M. Bailey, 1892); Wayne Co. (C. Billington, 1915); Oakland Co. (C. Billington, 1918); Kent Co. (E. J. Cole, 1894); Ionia Co. (L. H. Bailey, 1878); Eaton Co. (B. A.

Walpole, 1924); Muskegon Co. (B. A. Walpole, 1924); Grand Traverse Co. (B. A. Walpole, 1924); Clare Co. (B. A. Walpole, 1924); Lenawee Co. (B. A. Walpole, 1924); Barry Co. (B. A. Walpole, 1924); Jackson Co. (B. A. Walpole, 1924); Emmet Co. (C. W. Fallass, 1918).

Reported from St. Joseph Co. (F. P. Daniels, 1902); Manistee Co. (F. P. Daniels, 1902); Schoolcraft Co. (C. K. Dodge, 1915); Tuscola Co. (C. K. Dodge, 1914); Gratiot Co. (C. A. Davis, 1904); Wayne Co. (O. A. Farwell, 1900); Charity Island (C. K. Dodge, 1910); Cheboygan Co. (F. C. Gates, 1911); Jackson Co. (M. A. C., 1911); Saginaw Co. (M. A. C., 1920); Clinton Co. (M. A. C., 1920); Antrim Co. (E. A. Bessey, 1920); Charlevoix Co. (E. A. Bessey, 1922); Montcalm Co. (E. A. Bessey, 1915); Kalamazoo Co. (M. A. C., 1913); Midland Co. (M. A. C., 1923); Ionia Co. (I. W. Stacey); Washtenaw Co. (O. A. Farwell, 1892).

5. Lepidium perfoliatum L. (through the leaf)

Perfoliated-leaved Mustard.

Parely along railroad tracks. Adventive from Europe. May - July.

Specimens examined:- Emmet Co. (C. W. Fallass, 1918); Washtenaw Co. (B. A. Walpole, 1920).

6. Lepidium sativum L. (cultivated)

Garden Cress.

Escape from gardens. Native of Europe. May - August. Specimen examined:- St. Clair Co. (C. K. Dodge, 1897).

13. *IBERIS* L.

(from Iberia, old name of Spain)

Flowers small, 6mm. wide, raceme elongated;

stem usually under 12 inches tall.....1. *I. amara*.

Flowers large, 8-12 mm. wide, dense clusters;

stems usually over 12 inches tall.....2. *I. coronaria*.

1. *Iberis amara* L. (bitter)

Candy-tuft.

Escape from gardens. Adventive from Europe.

Specimens examined:- Ingham Co. (E. A. Bessey, 1924).

Reported from Keweenaw Co. (O. A. Farwell, 1904);

Washtenaw Co. (O. A. Farwell, 1892).

2. *Iberis coronaria* D. Don. (crowning)

Rock Candy-tuft.

Rare escape from gardens.

Specimen examined:- St. Clair Co. (C. K. Dodge, 1914).

14. *HYMENOPHYSA* C. A. Meyer.

Hymenophyssa pubescens C. A. Meyer.

Found along the Michigan Central tracks near Ypsilanti.

Specimen examined:- Washtenaw Co. (B. A. Walpole, 1919).

15. *THLASPI* (Tourn.) L.

(Greek, to flatten)

Thlaspi arvense L. (of ploughed land)

Field Penny-cress.

In cultivated fields throughout the southern peninsula.

Naturalized from Europe. June - August.

Specimens examined:- St. Clair Co. (C. K. Dodge, 1904); Ingham Co. (W. J. Beal, 1887); Washtenaw Co. (B. A. Walpole, 1918); Wayne Co. (Lewis Foote, 1863); Marquette Co. (C. A. Davis, 1906); Hillsdale Co. (N. S. Fields, 1915); Alcona Co. (G. A. McClatchy, 1915); Eaton Co. (B. A. Walpole, 1922); Wayne Co. (C. Billington, 1914); Kent Co. (E. J. Cole, 1895); Emmet Co. (C. W. Fallass, 1912).

Reported from Schoolcraft Co. (C. K. Dodge, 1915); Tuscola Co. (C. K. Dodge, 1914); Monroe Co. (C. A. Davis, 1904); Manistee Co. (F. P. Daniels, 1900); Isle Royale (W. S. Cooper, 1910); Gladwin Co. (M. A. C., 1917); Eaton Co. (M. A. C., 1916); Cass Co. (M. A. C., 1919); Lapeer Co. (M. A. C., 1917); Huron Co. (M. A. C., 1920); Bay Co. (M. A. C., 1920); Gratiot Co. (M. A. C., 1922); Newaygo Co. (M. A. C., 1923); Ionia Co. (I. W. Stacey); Wayne Co. (O. A. Farwell, 1908); Monroe Co. (O. A. Farwell, 1921).

16. SOPHIA Adans.

(Name for reputed medicinal value)

Pods narrowly linear, curved upwards.....1. S. sophia.

Pods linear-oblong, straight.

Pedicels equalling or longer than silique;

 pods compressed; seeds distinctly in

 2-rows in the cell.....2. S. pinnata.

Pedicels shorter than the silique; pods

 swollen; seeds distinctly 1-row in the

 cell.....3. S. incisa.

1. Sophia sophia (L.) Britton.

Sisymbrium sophia L.

Flix-weed; Herb Sophia.

Rare in the northern part of the state.

Naturalized from Europe. June - August.

Reported from Keweenaw Co. (O. A. Farwell, 1904);
Emmet Co. (C. W. Fallass, 1918).

2. Sophia pinnata (Walt.) Howell. (a feather)

Sisymbrium canescens Nutt.

Tansy Mustard.

Apparently rare. Native. May - July.

Specimens examined:- Emmet Co. (C. F. Wheeler, 1897);
Kent Co. (E. J. Cole, 1897); Thunder Bay Island (C. F.
Wheeler, 1908); Emmet Co. (C. W. Fallass, 1918).

Reported from Wayne Co. (O. A. Farwell, 1900); Barry Co.
(L. H. Bailey, 1904); Muskegon Co. (C. D. McLouth, 1896).

3. Sophia incisa (Engelm.) Greene. (cut into)

Sisymbrium incisum Engelm.

Western Tansy Mustard.

Native. May - August.

Specimen examined:- Cheboygan Co. (J. H. Ehlers, 1920).

17. CHEIRINIA Link.

(Greek, similar to Cheiri)

Petals less than 1 cm. long.

Pedicels slender, spreading; petals 4-5mm.

long.....1. C. cheiranthoides

Pedicels stout and short; petals 6-10mm. long.

- Perennials; pods ascending.....2. C. inconspicua.
Annuals; pods spreading.....3. C. repanda.
Petals more than 1 cm. long.....4. C. aspera.

1. Cheirinia cheiranthoides (L.) Link. (like Cheirinia)

Erysimum cheiranthoides L.

Worm-seed Mustard.

Found throughout the state in waste places.

Adventive from Europe. June - August.

Specimens examined:- Muskegon Co. (C. D. McLouth, 1901);
St. Clair Co. (C. K. Dodge, 1896); Ingham Co. (H. T.
Darlington, 1916); Alger Co. (C. F. Wheeler, 1900); Marquette
Co. (Bronson Barlow, 1901); Houghton Co. (O. A. Farwell,
1887); Otsego Co. (E. A. Bessey, 1912); Washtenaw Co. (D. R.
Sharp, 1867); Cheboygan Co. (J. H. Ehlers, 1917); Keweenaw Co.
(O. A. Farwell, 1884); Shiawassee Co. (L. Grant, 1915); Ionia
Co. (H. B. Webber, 1915); Lapeer Co. (Martha MacArthur, 1914);
Wayne Co. (C. Billington, 1915); Oakland Co. (C. Billington,
1914); Emmet Co. (E. J. Cole, 1894); Kent Co. (E. J. Cole,
1896); Eaton Co. (B. A. Walpole, 1924); Clinton Co. (B. A.
Walpole, 1924); Ionia Co. (B. A. Walpole, 1924).

Reported from Schoolcraft Co. (C. K. Dodge, 1915);
Chippewa Co. (C. K. Dodge, 1914); Tuscola Co. (C. K. Dodge,
1908); Wayne Co. (O. A. Farwell, 1900); Manistee Co. (F. P.
Daniels, 1900); Gratiot Co. (C. A. Davis, 1904); Crawford
Co. (G. H. Hicks, 1904); Charity Island (C. K. Dodge, 1910);
Mackinac Island (C. K. Dodge, 1912); Isle Royale (W. S.
Cooper, 1910); Gogebic Co. (H. T. Darlington, 1920);

Saginaw Co. (M. A. C., 1916); Clinton Co. (M. A. C., 1920); Charlevoix Co. (M. A. C., 1922); Mackinac Co. (M. A. C., 1920); Monroe Co. (M. A. C., 1919); Allegan Co. (M. A. C., 1920); Muskegon Co. (M. A. C., 1920); Genesee Co. (M. A. C., 1924); Midland Co. (M. A. C., 1923); Ionia Co. (I. W. Stacey); Muskegon Co. (C. D. McLouth, 1899); Emmet Co. (C. W. Fallass, 1918).

2. Cheirinia repanda (L.) Link. (wavy)

Erysimum repandum L.

Rarely found in the state. Adventive from Europe.

May - July.

Specimens examined:- St. Clair Co. (C. K. Dodge, 1900); St. Clair Co. (C. Billington, 1915).

Reported from Monroe Co. (O. A. Farwell, 1921).

3. Cheirinia inconspicua (S. Wats.) Britton. (inconspicuous)

Erysimum parviflorum Nutt.

Small-flowered Prairie-rocket.

A perennial of dry soil; occasionally adventive from the west. July - August.

Specimens examined:- St. Clair Co. (C. K. Dodge, 1900).

Reported from Keweenaw Co. (O. A. Farwell, 1904); Isle Royale (W. S. Cooper, 1910); Wayne Co. (O. A. Farwell, 1922).

4. Cheirinia aspera (DC.) Britton. (rough)

Erysimum asperum DC.

Western Wall-flower.

Specimen examined:- Kent Co. (E. J. Cole, 1901).

18. ERYSIMUM (Tourn.)

(Greek for some garden plant)

Erysimum officinale L. (officinal)

Sisymbrium officinale (L.) Scop.

Hedge Mustard.

Distributed throughout the state. Annual or winter annual. Naturalized from Europe. May - November.

Specimens examined:- Ingham Co. (W. J. Beal, 1872); Van Buren Co. (H. S. Pepoon, 1905); Macomb Co. (D. Cooley, 1843); St. Clair Co. (C. K. Dodge, 1896); Washtenaw Co. (B. A. Walpole, 1919); Gogebic Co. (H. T. Darlington, 1919); Wayne Co. (C. Billington, 1918); Oakland Co. (C. Billington, 1918); Eaton Co. (B. A. Walpole, 1924); Clinton Co. (B. A. Walpole, 1924); Lenawee Co. (B. A. Walpole, 1924); Muskegon Co. (B. A. Walpole, 1924); Allegan Co. (B. A. Walpole, 1924); Jackson Co. (B. A. Walpole, 1924); Barry Co. (B. A. Walpole, 1924); Kent Co. (E. J. Cole, 1893).

Reported from Schoolcraft Co. (C. K. Dodge, 1915); Chippewa Co. (C. K. Dodge, 1914); Tuscola Co. (C. K. Dodge, 1908); Wayne Co. (O. A. Farwell, 1900); St. Joseph Co. (F. P. Daniels, 1902); Manistee Co. (F. P. Daniels, 1900); Charity Island (C. K. Dodge, 1910); Mackinac Island (C. K. Dodge, 1912); Oakland Co. (O. A. Farwell, 1912); Isabella Co. (E. A. Bessey, 1912); Antrim Co. (E. A. Bessey, 1912); Jackson Co. (E. A. Bessey, 1915); Montcalm Co. (M. A. C., 1915); Genesee Co. (M. A. C., 1920); Charlevoix Co. (M. A. C., 1920); Ottawa Co. (M. A. C., 1922); Allegan Co.

(M. A. C., 1924); Leelanau Co. (M. A. C., 1923); Ionia Co. (I. W. Stacey); Muskegon Co. (C. D. McLouth, 1896); Emmet Co. (C. W. Fallass, 1896); Keweenaw Co. (O. A. Farwell, 1890); Washtenaw Co. (O. A. Farwell, 1891).

19. NORTA Adans.

Pods stiff and divergent; short thick pedicels...1. N. altissima.

Pods soft and ascending; slender pedicels.....2. N. irio.

1. Norta altissima (L.) Britton. (tall)

Sisymbrium altissimum L.

Tall Mustard.

Scattered throughout the state. Naturalized from Europe. Summer.

Specimens examined:- St. Clair Co. (C. K. Dodge, 1902); Alger Co. (C. F. Wheeler, 1900); Eaton Co. (H. L. Clark, 1900); VanBuren Co. (C. F. Wheeler, 1896); Otsego Co. (E. A. Bessey, 1912); Missaukee Co. (H. T. Darlington, 1916); Washtenaw Co. (B. A. Walpole, 1918); Cheboygan Co. (J. H. Ehlers, 1923); Mackinac Co. (C. K. Dodge, 1914); Cass Co. (H. S. Pepoon, 1907); Antrim Co. (B. J. Rauch, 1914); Wayne Co. (C. Billington, 1914); Midland Co. (R. R. Dreisbach, 1914); Emmet Co. (F. C. Gates, 1917); Menominee Co. (C. F. Milsbaugh, 1913); Clinton Co. (B. A. Walpole, 1924); Clare Co. (B. A. Walpole, 1924); Roscommon Co. (B. A. Walpole, 1924); Wexford Co. (B. A. Walpole, 1924); Emmet Co. (C. W. Fallass, 1918); Ingham Co. (B. A. Walpole, 1924); Lenawee Co. (B. A. Walpole, 1924); Allegan Co. (B. A. Walpole, 1924); Muskegon Co. (B. A.

Walpole, 1924); Barry Co. (B. A. Walpole, 1924).

Reported from Schoolcraft Co. (C. K. Dodge, 1915); Chippewa Co. (C. K. Dodge, 1914); Tuscola Co. (C. K. Dodge, 1908); Berrien Co. (C. F. Wheeler, 1896); Wayne Co. (O. A. Farwell, 1904); Cheboygan Co. (F. C. Gates, 1911); Oakland Co. (O. A. Farwell, 1914); Isle Royale (W. S. Cooper, 1910); Gogebic Co. (H. T. Darlington, 1919); Lenawee Co. (E. A. Bessey, 1916); Ogemaw Co. (M. A. C., 1919); Tuscola Co. (M. A. C., 1916); Montcalm Co. (E. A. Bessey, 1915); Lapeer Co. (E. A. Bessey, 1917); Sanilac Co. (M. A. C., 1917); Gratiot Co. (M. A. C., 1919); Montmorency Co. (M. A. C., 1919); Oakland Co. (M. A. C., 1920); Huron Co. (M. A. C., 1920); Oceana Co. (M. A. C., 1920); Alcona Co. (E. A. Bessey, 1920); Jackson Co. (M. A. C., 1922); Mecosta Co. (M. A. C., 1922); Livingston Co. (M. A. C., 1924); Genesee Co.

2. Nortia irio (L.) Britton.

Sisymbrium irio L.

Sporadic in waste grounds. Fugitive from Europe.

Summer.

Specimen examined:- Kent Co. (E. J. Cole, 1900).

20. CONRINGIA (Heist.) Adans.

(in honor of Hermann Conring)

Conringia orientalis (L.) Dumort. (oriental)

Hare's-ear Mustard.

Occasionally found in waste places and along railroads.

Adventive from the northwest. May - August.

Specimens examined:- Keweenaw Co. (O. A. Farwell, 1890); Washtenaw Co. (B. A. Walpole, 1920); St. Clair Co. (C. K. Dodge, 1917); Wayne Co. (C. Billington, 1915).

Reported from Tuscola Co. (C. K. Dodge, 1908); Wayne Co. (O. A. Farwell, 1917); Oakland Co. (O. A. Farwell, 1917).

21. HESPERIS (Tourn.) L.

(Hesperus, evening, when the flowers are fragrant)

Hesperis matronalis L. (pertaining to mother)

Dame's Rocket.

Found only in the southern part of the state. Native of Europe. May - August.

Specimens examined:- Macomb Co. (D. Cooley, 1842); Muskegon Co. (C. D. McLouth, 1900); Cass Co. (C. F. Wheeler, 1890); Washtenaw Co. (B. A. Walpole, 1918); Ingham Co. (B. A. Walpole, 1922); Ionia Co. (B. A. Walpole, 1924); Eaton Co. (B. A. Walpole, 1923); Washtenaw Co. (M. W. Harrington, 1870); Oakland Co. (M. J. Whiting, 1868); St. Clair Co. (C. K. Dodge, 1913); Allegan Co. (B. A. Walpole, 1924); Kent Co. (C. W. Fallass, 1896).

Reported from Wayne Co. (O. A. Farwell, 1900); Berrien Co. (C. F. Wheeler, 1904); Keweenaw Co. (O. A. Farwell, 1904); Ionia Co. (I. W. Stacey); Oakland Co. (O. A. Farwell, 1924).

22. ARABIDOPSIS (DC.) Schur.

(because it resembles Arabis)

Annual; pods linear, slightly 4 sided,

pedicels spreading.....1. A. thaliana.

Perennial; pods cylindric, pedicels erect.....2. A. novae-angliae.

1. Arabidopsis thaliana (L.) Br.

Sisymbrium thalianum (L.) J. Gay.

Mouse-ear Cress.

Found in the southwestern part of the state.

Naturalized from Europe. April - May.

Specimens examined:- Cass Co. (H. S. Pepoon, 1906); Berrien Co. (Mrs. Ralph Ballard, 1901).

2. Arabidopsis novae-angliae (Rydb.) Britton. (New England)

Brava humilis (C. A. Mey.) Robinson.

Northern Rock Cress.

Found occasionally in northern part of the state.

Native. July.

Reported from St. Clair Co. (C. K. Dodge, 1913); Isle Royale (Gillman, 1904); Keweenaw Co. (O. A. Farwell, 1904); Mackinac Co. (G. M. Hicks, 1904); Macomb Co. (W. J. Beal, 1904); Mackinac Island (C. K. Dodge, 1912).

23. BARBAREA R. Br.

(named from St. Barbara)

Pods obtusely 4 angled, slender pedicelled;

leaf segments 1-4 pairs.

Pods divergent or ascending.....1. B. barbarea.

Pods erect, appressed.....2. B. stricta.

Pods sharply 4 angled, stout pedicelled;

leaf segments 4-8 pairs.....3. B. verna.

1. Barbarea barbarea (L.) MacM.

Barbarea vulgaris R. Br.

Yellow Rocket.

Found throughout the state. Naturalized from

Europe. April - June.

Specimens examined:- Muskegon Co. (C. D. McLouth, 1899); VanBuren Co. (H. S. Pepoon, 1906); St. Clair Co. (C. K. Dodge, 1893); Washtenaw Co. (B. A. Walpole, 1918); Wayne Co. (C. K. Dodge, 1913); Benzie Co. (A. C. Demerly, 1915); Livingston Co. (C. N. Frolin, 1915); Jackson Co. (B. L. Smith, 1915); Saginaw Co. (G. H. Bennett, 1915); Ingham Co. (B. A. Walpole, 1921); Oakland Co. (C. Billington, 1916); Grand Traverse Co. (Agnes Maher, 1911); Eaton Co. (B. A. Walpole, 1922); Washtenaw Co. (C. Billington, 1919); Wayne Co. (C. Billington, 1914); Muskegon Co. (L. M. Umback, 1898); Grand Traverse Co. (B. A. Walpole, 1924); Clinton Co. (B. A. Walpole, 1924); Kent Co. (E. J. Cole, 1894); Emmet Co. (C. W. Fallass, 1918).

Reported from Chippewa Co. (C. K. Dodge, 1914); Macomb Co. (W. J. Beal, 1904); Gratiot Co. (C. A. Davis, 1904); Clinton Co. (C. F. Wheeler, 1904); Bay Co. (G. M. Bradford, 1904); Oakland Co. (O. A. Farwell, 1912); Isle Royale (W. S. Cooper, 1910); Gogebic Co. (H. T. Darlington, 1920); Lapeer Co. (M. A. C., 1917); Sanilac Co. (M. A. C., 1916); Ionia Co. (M. A. C., 1915); Manistee Co. (M. A. C., 1916); Barry Co. (M. A. C., 1916); Benzie Co. (M. A. C., 1915); Kalamazoo Co. (M. A. C., 1914); Lenawee Co. (M. A. C., 1913); Calhoun Co.

(M. A. C., 1918); Genesee Co. (M. A. C., 1911); Clinton Co. (M. A. C., 1911); Tuscola Co. (M. A. C., 1920); Hillsdale Co. (M. A. C., 1921); Jackson Co. (M. A. C., 1922); Cass Co. (M. A. C., 1922); Shiawassee Co. (M. A. C., 1922); Branch Co. (M. A. C., 1924); Midland Co. (M. A. C., 1923); Ionia Co. (I. W. Stacey); Houghton Co. (O. A. Farwell, 1915); Keweenaw Co. (O. A. Farwell, 1884).

2. Barbarea stricta Andrz. (erect)

Erect-fruited Winter Cress.

Frequently found with the preceding species.

Naturalized from Europe. April - June.

Specimens examined:- St. Clair Co. (C. K. Dodge, 1900); Wayne Co. (W. S. Cooper, 1902); Washtenaw Co. (B. A. Walpole, 1918); Wayne Co. (B. Gladowitz, 1915); Emmet Co. (C. W. Fallass, 1920); Oakland Co. (C. Billington, 1918); Ingham Co. (B. A. Walpole, 1921); Clinton Co. (B. A. Walpole, 1924); Eaton Co. (B. A. Walpole, 1924); Kent Co. (E. J. Cole, 1900).

Reported from Wayne Co. (O. A. Farwell, 1900); Keweenaw Co. (O. A. Farwell, 1898).

3. Barbarea verna (Mill.) Aschers. (spring)

Early Winter Belle Isle Cress.

Rarely found in the state. Adventive from Europe.

April - June.

Reported from St. Clair Co. (C. K. Dodge, 1904); Oakland Co. (O. A. Farwell, 1917); Monroe Co. (O. A. Farwell, 1921).

24. ARABIS L.

(named from Arabia)

Stem leaves cordate or sagittate at the base
and sessile, more or less clasping.

Seeds in 2 rows in each cell of the pod.

Calyx pubescent; the pods reflexed.....1. A. holboellii.

Calyx glabrous; pods spreading or erect.

Basal leaves densely pubescent with

three pointed hairs; pods spreading..2. A. brachycarpa.

Basal leaves smooth or nearly so; pods

erect.....3. A. drummondii.

Seeds in 1 row in each cell of the pod....4. A. laevigata.

Stem leaves sessile or somewhat petioled,
but not clasping. Seeds in 1 row in
each cell of the pod.

Basal leaves pinnatifid; pods ascending;

petals much longer than calyx.....5. A. lyrata.

Basal leaves merely dentate or lyrate;

petals scarcely exceeding the calyx.

Seeds minute, oblong, and wingless.

Plants pubescent; flowers greenish

white.....6. A. dentata.

Plants glabrous; flowers yellowish

white.....7. A. glabra.

Seeds larger, winged or winged
margined.

Pods nearly erect; pedicels

glabrous.....8. A. hirsuta.

Pods recurved-spreading; pedicels

hairy.....9. A. canadensis.

1. Arabis holboellii Hornem. (name for Holboel)

Holboel's Rock-cress.

Found in the northern part of the state. Native.

Summer.

Specimens examined:- Alpena Co. (C. F. Wheeler, 1897); Alpena Co. (C. K. Dodge, 1907); Emmet Co. (J. H. Ehlers, 1917); Delta Co. (C. K. Dodge, 1893); Cheboygan Co. (C. K. Dodge, 1917).

Reported from Mackinac Island (C. K. Dodge, 1913).

2. Arabis brachycarpa (T. & G.) Britton. (short carpels)

Purple Rock-cress.

Found mostly in the northern part of the state.

Native. June - July.

Specimens examined:- Keweenaw Co. (O. A. Farwell, 1888); Alpena Co. (C. A. Davis, 1891); Mackinac Island (G. H. Hicks, 1889); Cheboygan Co. (J. H. Ehlers, 1920); Marquette Co. (C. K. Dodge, 1916); Montcalm Co. (C. W. Fallass, 1881); Muskegon Co. (C. W. Fallass, 1899); Emmet Co. (M. F. and F. C. Gates, 1917); Cheboygan Co. (M. F. and F. C. Gates, 1917).

Reported from Kent Co. (E. J. Cole, 1901); Clinton Co. (C. F. Wheeler, 1904); Isle Royale (W. S. Cooper, 1910); Gogebic Co. (H. T. Darlington, 1920); Ionia Co. (I. W. Stacey); Muskegon Co. (C. D. McLouth, 1897); Emmet Co. (C. W. Fallass,

1918).

3. Arabis drummondii A. Gray. (named for Drummond)

Drummond's Rock-cress.

Found in the west-central and northern part of the state. Native. May - August.

Specimens examined:- St. Clair Co. (C. K. Dodge, 1897); St. Joseph Co. (C. F. Wheeler, 1890); Oscoda Co. (C. F. Wheeler, 1888); Alpena Co. (C. F. Wheeler, 1895); Muskegon Co. (C. F. Wheeler, 1900); Cheboygan Co. (J. H. Ehlers, 1917); Berrien Co. (G. L. Ames, 1868); Allegan Co. (L. H. Pennington, 1910); Kent Co. (A. J. Pieters, 1893); Allegan Co. (C. H. Kaufman, 1910); Alcona Co. (C. K. Dodge, 1912); Keweenaw Co. (O. A. Farwell, 1884); Kent Co. (C. W. Fallass, 1897); Mackinac Island (E. J. Cole, 1898); Thunder Bay Island (E. J. Cole, 1895); Kent Co. (E. J. Cole, 1893); Allegan Co. (W. E. Mulliken, 1897); Mackinac Island (G. H. Hicks, 1889); Mackinac Island (T. E. Boyce, 1881).

Reported from Charity Island (C. K. Dodge, 1910); Isle Royale (W. S. Cooper, 1910); St. Joseph Co. (M. A. C., 1916).

4. Arabis laevigata (Muhl.) Poir. (slippery or smooth)

Smooth Rock-cress.

Throughout the state. Native. April - June.

Specimens examined:- Macomb Co. (D. Cooley, 1843); St. Clair Co. (C. K. Dodge, 1892); Ingham Co. (H. T. Darlington, 1916); VanBuren Co. (H. S. Pepoon, 1906); Gratiot Co. (C. A. Davis, 1891); Washtenaw Co. (B. A. Walpole, 1924); Washtenaw Co. (A. J. Pieters, 1892); Menominee Co. (C. K. Dodge, 1905);

Eaton Co. (C. F. Wheeler, 1890); Lenawee Co. (C. Billington, 1918); Kent Co. (W. E. Mulliken, 1897); Ingham Co. (H. C. Skeels, 1895); Ottawa Co. (W. E. Mulliken, 1895); Allegan Co. (B. A. Walpole, 1924); Grand Traverse Co. (B. A. Walpole, 1924); Clinton Co. (B. A. Walpole, 1924); Eaton Co. (B. A. Walpole, 1924); Kent Co. (E. J. Cole, 1897).

Reported from Tuscola Co. (C. A. Davis, 1908); Manistee Co. (F. P. Daniels, 1900); Charity Island (C. K. Dodge, 1910); Oakland Co. (O. A. Farwell, 1912); Allegan Co. (M. A. C., 1919); Muskegon Co. (N. C. Gage, 1919); Ionia Co. (I. W. Stacey); Muskegon Co. (C. D. McLouth, 1896); Keweenaw Co. (O. A. Farwell, 1884).

5. Arabis lyrata L. (lute or lyre)

Lyre-leaved Rock-cress.

Distributed throughout the state. Native.

April - September.

Specimens examined:- Isle Royale (O. A. Farwell, 1886); Muskegon Co. (W. J. Beal, 1898); Huron Co. (C. A. Davis, 1896); St. Clair Co. (C. K. Dodge, 1900); Grand Traverse Co. (C. F. Wheeler, 1898); Alpena Co. (C. F. Wheeler, 1895); Shiawassee Co. (C. F. Wheeler, 1890); Macomb Co. (D. Cooley, 1842); Benzie Co. (L. H. Bailey, 1888); Clinton Co. (C. F. Wheeler, 1889); Genesee Co. (D. Clark, 1888); Muskegon Co. (C. F. Wheeler, 1900); Washtenaw Co. (B. A. Walpole, 1919); Emmet Co. (J. H. Ehlers, 1922); Berrien Co. (G. L. Ames, 1867); Kent Co. (H. M. Bailey, 1892); Alger Co. (C. K. Dodge, 1916); Schoolcraft Co. (C. K. Dodge, 1916); Oakland

Co. (C. Billington, 1916); St. Clair Co. (C. Billington, 1915); Kent Co. (C. W. Fallass, 1896); Kent Co. (G. D. Sones, 1897); Emmet Co. (M. F. and F. C. Gates, 1917); Ionia Co. (B. A. Walpole, 1921); Ingham Co. (B. A. Walpole, 1921); Muskegon Co. (B. A. Walpole, 1924); Clare Co. (B. A. Walpole, 1924); Roscommon Co. (B. A. Walpole, 1924); Emmet Co. (C. W. Fallass, 1899); Kent Co. (E. J. Cole, 1901).

Reported from VanBuren Co. (H. S. Pepoon, 1907); Chippewa Co. (C. K. Dodge, 1914); Tuscola Co. (C. K. Dodge, 1908); Manistee Co. (F. P. Daniels, 1900); Charity Island (C. K. Dodge, 1910); Isle Royale (W. S. Cooper, 1910); Newaygo Co. (E. A. Bessey, 1920); Ionia Co. (I. W. Stacey); Muskegon Co. (C. D. McLouth, 1896); Keweenaw Co. (O. A. Farwell, 1884); Oakland Co. (O. A. Farwell, 1896); Macomb Co. (O. A. Farwell, 1916).

6. Arabis dentata T. and G. (toothed)

Toothed Rock-cress.

Rarely found in the state. Native. April - June.

Specimens examined:- Kent Co. (C. F. Wheeler, 1895); St. Clair Co. (C. K. Dodge, 1910); Kent Co. (C. W. Fallass, 1897); Kent Co. (E. J. Cole, 1895).

Reported from Ingham Co. (W. J. Beal, 1904).

7. Arabis glabra (L.) Bernh. (smooth)

Tower Mustard.

Distributed throughout the state. Probably indigenous. May - August.

Specimens examined:- Ingham Co. (C. F. Wheeler, 1897);

Gogebic Co. (H. T. Darlington, 1919); St. Clair Co. (C. K. Dodge, 1897); Cheboygan Co. (F. C. Gates, 1911); Ingham Co. (W. J. Beal, 1887); Montmorency Co. (C. F. Wheeler, 1895); Muskegon Co. (C. D. McLouth, 1899); Washtenaw Co. (B. A. Walpole, 1919); Allegan Co. (C. H. Kaufman, 1910); Bay Co. (C. K. Dodge, 1912); Osceola Co. (E. Gustafson, 1915); Wayne Co. (C. Billington, 1915); Emmet Co. (Wilbur Smith, 1911); Eaton Co. (B. A. Walpole, 1924); Emmet Co. (C. W. Fallass, 1894).

Reported from VanBuren Co. (H. S. Pepoon, 1907); Kent Co. (E. J. Cole, 1901); Schoolcraft Co. (C. K. Dodge, 1915); Tuscola Co. (C. K. Dodge, 1908); Wayne Co. (O. A. Farwell, 1900); Gratiot Co. (C. A. Davis, 1904); Ogemaw Co. (E. A. Bessey, 1922); Keweenaw Co. (O. A. Farwell, 1895); Newaygo Co. (O. A. Farwell, 1921); Eaton Co. (O. A. Farwell, 1923); Monroe Co. (O. A. Farwell, 1918).

8. Arabis hirsuta (L.) Scop. (hairy)

Hairy Rock-cress.

Locally found throughout the state. Probably native. May - September.

Specimens examined:- Ingham Co. (C. F. Wheeler, 1895); Thunder Bay Island (C. F. Wheeler, 1895); Clinton Co. (C. F. Wheeler, 1890); Keweenaw Co. (O. A. Farwell); Ingham Co. (W. J. Beal, 1866); Emmet Co. (C. F. Wheeler, 1890); VanBuren Co. (H. S. Pepoon, 1905); Ingham Co. (E. J. Cole, 1895); Ingham Co. (W. J. Beal, 1887); Washtenaw Co. (B. A. Walpole, 1918); Kent Co. (C. W. Fallass, 1899); Oakland Co. (C. Billington, 1917); Kent Co. (H. C. Skeels,

1895); Ingham Co. (W. E. Mulliken, 1895); VanBuren Co. (L. H. Bailey, 1880); Kent Co. (E. J. Cole, 1895).

Reported from Bay Co. (G. M. Bradford, 1904); Mackinac Island (C. K. Dodge, 1912); Isle Royale (W. S. Cooper, 1910); Ionia Co. (I. W. Stacey); Emmet Co. (C. W. Fallass, 1918); Oakland Co. (O. A. Farwell, 1913); Mackinac Co. (O. A. Farwell, 1895).

9. Arabis canadensis L. (from Canada)

Sickle-pod.

Found throughout the southern half of the state.

Native. June - August.

Specimens examined:- Genesee Co. (D. Clark, 1872); Newaygo Co. (E. A. Bessey, 1916); St. Clair Co. (C. K. Dodge, 1903); Macomb Co. (D. Cooley, 1837); VanBuren Co. (H. S. Pepoon, 1905); Washtenaw Co. (B. A. Walpole, 1919); Kent Co. (H. M. Bailey, 1892); Kent Co. (C. W. Fallass, 1896); Wayne Co. (C. Billington, 1915); Lenawee Co. (C. Billington, 1914); Ingham Co. (G. D. Sones, 1898); Kent Co. (W. E. Mulliken, 1896); Muskegon Co. (B. A. Walpole, 1924); Ionia Co. (B. A. Walpole, 1924); Eaton Co. (B. A. Walpole, 1924); Kent Co. (E. J. Cole, 1901).

Reported from Wayne Co. (O. A. Farwell, 1900); Ionia Co. (I. W. Stacey); Muskegon Co. (C. D. McLouth, 1897); Livingston Co. (O. A. Farwell, 1905).

25. CARDAMINE (Tourn.) L.

(Greek, heart strengthening)

Flowers purple.

- Leaves pinnately divided.....1. C. pratensis.
Leaves not pinnately divided.....2. C. douglassii.
Flowers white.
Having tubers or tuberous-rooted.....3. C. bulbosa.
Having no tubers or tuberous roots.
Hirsute pubescence.....4. C. hirsuta.
Glabrous or nearly so.
Plants of dry rocky places; flowers
4-5 mm. wide.....5. C. parviflora.
Plants of wet places; flowers
2-3 mm. wide.....6. C. pennsylvanica.

1. Cardamine pratensis L. (meadow)

Meadow Bitter-cress.

Found in wet places in the southern peninsula.

Apparently native. April - May.

Specimens examined:- Ingham Co. (W. J. Beal, 1871);
Hillsdale Co. (D. A. Pelton, 1885); Alcona Co. (W. J. Beal,
1888); Clinton Co. (C. F. Wheeler, 1890); Macomb Co. (D.
Cooley, 1845); Washtenaw Co. (B. A. Walpole, 1918); Cheboygan
Co. (J. H. Ehlers, 1923); Washtenaw Co. (E. C. Allmendinger,
1862); Livingston Co. (J. H. Ehlers, 1920); St. Clair Co.
(C. K. Dodge, 1896); Kent Co. (C. W. Fallass, 1895); St.
Clair Co. (C. Billington, 1915); Oakland Co. (C. Billington,
1914); Genesee Co. (H. N. Patterson, 1900); Kalamazoo Co.
(G. H. Tuthill, 1873); Jackson Co. (S. H. and D. R. Camp,
1897); Kent Co. (E. J. Cole, 1895); Emmet Co. (C. W.
Fallass, 1918).

Reported from Chippewa Co. (C. K. Dodge, 1914); Tuscola Co. (C. K. Dodge, 1908); St. Joseph Co. (F. P. Daniels, 1902); Oakland Co. (O. A. Farwell, 1912); Calhoun Co. (M. A. C., 1922); Ionia Co. (I. W. Stacey); Muskegon Co. (C. D. McLouth, 1896).

2. Cardamine douglassii (Torr.) Britton. (named for Douglas)

Purple Cress.

Throughout the southern peninsula. Native.

April - May.

Specimens examined:- St. Clair Co. (C. K. Dodge, 1897); Cass Co. (H. S. Pepoon, 1905); Ingham Co. (W. J. Beal, 1865); Kent Co. (E. J. Cole, 1895); Washtenaw Co. (B. A. Walpole, 1918); Washtenaw Co. (E. C. Allmendinger, 1867); Emmet Co. (C. W. Fallase, 1896); Wayne Co. (C. Billington, 1914); Kent Co. (G. D. Sones, 1889); Jackson Co. (S. H. and D. R. Camp, 1897); Eaton Co. (B. A. Walpole, 1924); Ionia Co. (B. A. Walpole, 1924); Barry Co. (B. A. Walpole, 1924); Clinton Co. (B. A. Walpole, 1924).

Reported from Tuscola Co. (C. K. Dodge, 1908); Wayne Co. (O. A. Farwell, 1900); St. Joseph Co. (F. P. Daniels, 1902); Ionia Co. (I. W. Stacey); Washtenaw Co. (O. A. Farwell, 1891); Oakland Co. (O. A. Farwell, 1914).

3. Cardamine bulbosa (Schreb.) B. S. P. (bulbous or ball-like)

Bulbous Cress.

Throughout the southern peninsula. Native.

April - June.

Specimens examined:- St. Clair Co. (C. K. Dodge, 1895);

Ingham Co. (W. J. Beal, 1887); Kent Co. (E. J. Cole, 1895); Muskegon Co. (W. J. Beal, 1898); Washtenaw Co. (B. A. Walpole, 1918); Wayne Co. (W. J. Gillespie, 1897); Wayne Co. (C. Billington, 1914); Oakland Co. (C. Billington, 1914); Emmet Co. (C. W. Fallass, 1918).

Reported from VanBuren Co. (H. S. Pepoon, 1907); Tuscola Co. (C. K. Dodge, 1908); St. Joseph Co. (F. P. Daniels, 1902); Manistee Co. (F. P. Daniels, 1900); Oakland Co. (O. A. Farwell, 1912); Sanilac Co. (M. A. C., 1923); Ionia Co. (I. W. Stacey); Muskegon Co. (C. D. McLouth, 1897); Washtenaw Co. (O. A. Farwell, 1891); Wayne Co. (O. A. Farwell, 1893); Ingham Co. (O. A. Farwell, 1905); Monroe Co. (O. A. Farwell, 1920).

4. Cardamine hirsuta L. (hairy)

Hairy Bitter-cress.

Infrequently found in the state. Probably native.

March - May.

Specimens examined:- Keweenaw Co. (O. A. Farwell, 1884); Washtenaw Co. (Avis Gray Chapel, 1896); Montcalm Co. (C. W. Fallass, 1881); Kent Co. (C. W. Fallass, 1897); St. Clair Co. (C. K. Dodge, 1895); Kent Co. (E. J. Cole, 1901).

Reported from Wayne Co. (O. A. Farwell, 1900); Berrien Co. (C. F. Wheeler, 1904); Cheboygan Co. (W. J. Beal, 1904); Gratiot Co. (C. A. Davis, 1904); Ingham Co. (W. J. Beal, 1904); Ionia Co. (I. W. Stacey); Muskegon Co. (C. D. McLouth, 1896).

5. Cardamine parviflora L. (small flower)

Small-flowered Bitter-cress.

Rarely found in the state. Probably native.

April - May.

Specimens examined:- Marquette Co. (C. K. Dodge, 1917).

Reported from Kent Co. (E. J. Cole, 1901); Berrien Co. (C. F. Wheeler, 1904); Cheboygan Co. (W. J. Beal, 1904); Keweenaw Co. (O. A. Farwell, 1904); St. Clair Co. (I. W. Stacey); Gogebic Co. (H. T. Darlington, 1920).

6. Cardamine pennsylvanica Muhl. (from Pennsylvania)

Pennsylvania Bitter-cress.

Found throughout the state. Native. April - June.

Specimens examined:- St. Clair Co. (C. K. Dodge, 1895); Marquette Co. (Bronson Barlow, 1901); Ingham Co. (C. F. Wheeler, 1900); VanBuren Co. (H. S. Pepoon, 1906); Alger Co. (C. F. Wheeler, 1900); Keweenaw Co. (O. A. Farwell, 1884); Calhoun Co. (C. W. Fallass, 1910); Wayne Co. (C. Billington, 1915); Eaton Co. (B. A. Walpole, 1924); Washtenaw Co. (B. A. Walpole, 1919); Kent Co. (E. J. Cole, 1895); Emmet Co. (C. W. Fallass, 1918).

Reported from Schoolcraft Co. (C. K. Dodge, 1915); Chippewa Co. (C. K. Dodge, 1914); Tuscola Co. (C. K. Dodge, 1908); Wayne Co. (O. A. Farwell, 1900); St. Joseph Co. (F. P. Daniels, 1902); Bay Co. (G. M. Bradford, 1904); Cheboygan Co. (F. C. Gates, 1911); Isle Royale (W. S. Cooper, 1910); Gogebic Co. (H. T. Darlington, 1920); Oakland Co. (O. A. Farwell, 1923).

26. DENTARIA (Tourn.) L.

(Greek, tooth)

Stem glabrous.

Rootstocks continuous, prominently toothed;

stem leaves 2, opposite or close

together.....1. D. diphylla.

Rootstocks interrupted by distinct constrictions;

stem leaves 2-5, alternate.....2. D. maxima.

Stems pubescent, at least above; rootstocks

readily separable, obtusely toothed.....3. D. laciniata.

1. Dentaria diphylla Michx. (two-leaved)

Two-leaved Toothwort.

Probably found throughout the state. Native. May.

Specimens examined:- St. Clair Co. (C. K. Dodge, 1895); Ingham Co. (G. H. Hicks, 1893); Macomb Co. (D. Cooley, 1839); Ingham Co. (W. J. Beal, 1864); Ingham Co. (F. J. Sleeper, 1868); Marquette Co. (Bronson Barlow, 1901); Keweenaw Co. (O. A. Farwell, 1888); Cass Co. (H. S. Pepoon, 1906); Gratiot Co. (C. A. Davis, 1888); Washtenaw Co. (B. A. Walpole, 1918); Kent Co. (H. M. Bailey, 1891); Oakland Co. (O. A. Farwell, 1897); Oakland Co. (C. Billington, 1915); Gratiot Co. (C. A. Davis, 1895); Kent Co. (E. J. Cole, 1892); Emmet Co. (C. W. Fallass, 1918).

Reported from Schoolcraft Co. (C. K. Dodge, 1915); Tuscola Co. (C. K. Dodge, 1908); Manistee Co. (F. P. Daniels, 1900); Mackinac Island (C. K. Dodge, 1912); Gogebio Co. (H. T. Darlington, 1920); Ionia Co. (I. W. Stacey).

2. Dentaria maxima Nutt. (largest)

Large Toothwort.

Rarely found in the state. Native. May

Specimens examined:- St. Clair Co. (C. K. Dodge, 1898);
Washtenaw Co. (Lewis Foote, 1863).

3. Dentaria laciniata Muhl. (irregularly cut)

Cut-leaved Toothwort.

Found throughout the state. Native. April - June.

Specimens examined:- St. Clair Co. (C. K. Dodge, 1898);
Ingham Co. (C. F. Wheeler, 1893); Keweenaw Co. (O. A. Farwell,
1888); Ingham Co. (E. J. Cole, 1895); Gratiot Co. (C. F.
Wheeler, 1880); Genesee Co. (D. Cooley, 1840); Cass Co.
(H. S. Pepoon, 1905); Clinton Co. (G. H. Hicks, 1889);
Marquette Co. (Bronson Barlow, 1901); Washtenaw Co. (B. A.
Walpole, 1918); Kent Co. (H. M. Bailey, 1891); Schoolcraft
Co. (C. K. Dodge, 1917); Kent Co. (C. W. Fallass, 1897);
Wayne Co. (C. Billington, 1914); Montcalm Co. (C. W.
Fallass, 1881); Washtenaw Co. (C. Billington, 1918); Kent Co.
(G. D. Sones, 1889); Jackson Co. (S. H. and D. R. Camp,
1897); Eaton Co. (B. A. Walpole, 1924); Lenawee Co. (B. A.
Walpole, 1924); Kent Co. (E. J. Cole, 1896); Emmet Co.
(C. W. Fallass, 1918).

Reported from Tuscola Co. (C. K. Dodge, 1908); Wayne Co.
(O. A. Farwell, 1900); Manistee Co. (F. P. Daniels, 1900);
Charity Island (C. K. Dodge, 1910); Gogebic Co. (H. T.
Darlington, 1920); Ionia Co. (I. W. Stacey); Oakland Co.
(O. A. Farwell, 1907); Monroe Co. (O. A. Farwell, 1920).

27. LUNARIA (Tourn.) L.

(Latin, moon)

Pods oblong-lanceolate, acute or pointed at

both ends; leaves all petioled; perennial...1. L. rediviva.

Pods broad elliptic, obtuse or rounded at

both ends; upper leaves sessile; annual.....2. L. annua.

1. Lunaria rediviva L. (renewed)

Perennial Satin-pod.

Rare. Found near Cross Village bluffs near Lake Michigan. Escape from gardens. Fugitive from Europe. May - July.

Specimen examined:- Emmet Co. (C. W. Fallass, 1916).

2. Lunaria annua L. (annual)

Satin-flower.

Rare. Escape from gardens. Native of Europe. May - June.

Specimen examined:- Ionia Co. (H. S. Greenloe, 1916).

28. SINAPIS L.

(Greek, meaning turnip)

Leaves lyrate-pinnatifid; pedicels 8-10 mm.

long; seeds yellowish; beak as long or

longer than the valves.....1. S. alba.

Leaves dentate or lobed; pedicels 4-6 mm.

long; seeds blackish-brown; beak shorter

than valves.....2. S. arvensis.

1. Sinapis alba L. (white)

Brassica alba (L.) Boiss.

White Mustard.

Occasional escape from cultivation. Adventive
from Europe. Summer.

Specimens examined:- Washtenaw Co. (B. A. Walpole, 1920);
Kent Co. (C. W. Fallass, 1894); Ingham Co. (B. A. Walpole,
1923); Kent Co. (E. J. Cole, 1898).

Reported from Wayne Co. (O. A. Farwell, 1900); Berrien Co.
(M. A. C., 1920); Ionia Co. (I. W. Stacey); Keweenaw Co.
(O. A. Farwell, 1888); Macomb Co. (O. A. Farwell, 1923);
Marquette Co. (O. A. Farwell, 1895).

2. Sinapis arvensis L. (inhabiting ploughed fields)

Brassica arvensis (L.) Ktze.

Found throughout the state. Adventive from Europe.
May - November.

Specimens examined:- Cheboygan Co. (F. C. Gates, 1911);
Otsego Co. (E. A. Bessey, 1912); St. Clair Co. (C. K. Dodge,
1894); Keweenaw Co. (O. A. Farwell, 1888); St. Joseph Co.
(C. F. Wheeler, 1890); Ingham Co. (C. F. Wheeler, 1900);
Washtenaw Co. (B. A. Walpole, 1918); Midland Co. (E. A.
Bessey, 1915); Saginaw Co. (I. P. Robinson, 1914); Kent Co.
(C. W. Fallass, 1897); Wayne Co. (C. Billington, 1915);
Clare Co. (B. A. Walpole, 1924); Eaton Co. (B. A. Walpole,
1924); Emmet Co. (C. W. Fallass, 1897).

Reported from VanBuren Co. (H. S. Pepoon, 1907); Kent Co.
(E. J. Cole, 1901); Schoolcraft Co. (C. K. Dodge, 1915);
Chippewa Co. (C. K. Dodge, 1914); Tuscola Co. (C. K. Dodge,

1908); Wayne Co. (O. A. Farwell, 1900); Manistee Co. (F. P. Daniels, 1900); Mackinac Island (C. K. Dodge, 1912); Oakland Co. (O. A. Farwell, 1912); Isle Royale (W. S. Cooper, 1910); Shiawassee Co. (E. A. Bessey, 1914); Antrim Co. (M. A. C., 1913); Midland Co. (M. A. C., 1915); Genesee Co. (M. A. C., 1914); Mecosta Co. (M. A. C., 1916); Sanilac Co. (M. A. C., 1917); Calhoun Co. (M. A. C., 1914); Gogebic Co. (H. T. Darlington, 1919); Charlevoix Co. (M. A. C., 1922); Berrien Co. (Charles Brown, 1896); Manistee Co. (M. A. C., 1914); Ionia Co. (I. W. Stacey); Muskegon Co. (C. D. McLouth, 1896).

29. ERUCA (Tourn.) L.

(Latin for some crucifer)

Eruca eruca (L.) Britton.

Garden Rocket.

Frequently in waste places. Adventive from Europe.

May - October.

Specimens examined:- Allegan Co. (H. Y. Finch, 1902); Washtenaw Co. (C. Billington, 1919); Calhoun Co. (W. G. Shepherd, 1912); Jackson Co. (W. W. Brown, 1912); St. Clair Co. (C. K. Dodge, 1910); Tuscola Co. (E. A. Bessey, 1912); Otsego Co. (E. A. Bessey, 1912); Lapeer Co. (E. A. Bessey, 1912); Lenawee Co. (E. A. Bessey, 1912).

Reported from Manistee Co. (M. A. C., 1912); Oscoda Co. (M. A. C., 1911); Sanilac Co. (M. A. C., 1911); St. Joseph Co. (M. A. C., 1911); Mason Co. (M. A. C., 1911); Oakland Co. (O. A. Farwell, 1913).

30. ERUCASTRUM

(resembling Eruca)

Erucastrum nasturtiifolium (Poiret.) Schultz. (nasturtium-
leaved)

Brassica erucastrum Vill.

Locally found along railroads. Fugitive from Europe.

June.

Specimen examined:- Washtenaw Co. (O. A. Farwell, 1922).

31. BRASSICA (Tourn.) L.

(Latin for cabbage)

Upper leaves sessile, none clasping the stem;

plants essentially green; leaves mostly

thin; flowers small.

Pods appressed, slender, erect; 1-2.5 cm.

long, beak 3-4 mm. long.....1. B. nigra.

Pods not appressed, divergent; 2-5 cm.

long; beak 5 mm. long or none.....2. B. juncea.

Upper leaves clasping the stem by auricled

base; plants blue-green or glaucous-blue;

leaves usually thick; flowers large.

Root large fleshy; lower leaves hairy

not glaucous, upper glaucous and

glabrous.....3. B. rapa.

Root not enlarged.

Root a straight tap root; flowers

1.5-2 cm. across, light yellow;

young radical leaves sparsely

setose-hairy; leaves deeply

- scalloped; sepals not appressed,
not saccate.....4. B. napus.
Root fusiform or branched; flowers
larger-1.5-2.5 cm. long, white or
whitish yellow; young radical
leaves glabrous; leaves less deeply
scalloped; sepals appressed,
saccate.....5. B. oleracea.

1. Brassica nigra (L.) Koch. (black)

Black Mustard.

This plant is much more common in the state than
the number of plants in the herbaria shows.

Naturalized from Europe. June - November.

Specimens examined:- Washtenaw Co. (E. C. Allmendinger,
1860); Jackson Co. (A. J. Pieters, 1888); St. Clair Co.
(C. K. Dodge, 1912); Wayne Co. (C. Billington, 1915);
Oakland Co. (C. Billington, 1916); Emmet Co. (Wilbur Smith,
1911); Kent Co. (E. J. Cole, 1901); Emmet Co. (C. W. Fallass,
1918).

Reported from VanBuren Co. (H. S. Pepoon, 1907);
Schoolcraft Co. (C. K. Dodge, 1915); Tuscola Co. (C. A.
Davis, 1908); Wayne Co. (O. A. Farwell, 1900); St. Joseph Co.
(F. P. Daniels, 1902); Manistee Co. (F. P. Daniels, 1900);
Antrim Co. (M. A. C., 1913); Mecosta Co. (M. A. C., 1913);
Ionia Co. (I. W. Stacey).

2. Brassica juncea (L.) Cosson. (rush-like)

Indian Mustard.

Infrequently found in the state. Naturalized
from Asia. May - July.

Specimens examined:- Gogebic Co. (H. T. Darlington, 1919);
Washtenaw Co. (B. A. Walpole, 1919); Emmet Co. (C. W. Fallass,
1923).

Reported from Kent Co. (E. J. Cole, 1901); Lapeer Co.
(Mrs. M. Owen, 1904); St. Clair Co. (W. S. Cooper, 1904);
Wayne Co. (O. A. Farwell, 1900); Midland Co. (M. A. C., 1923);
Muskegon Co. (C. D. McLouth, 1897).

3. Brassica rapa L. (turnip)

Brassica campestris L.

Turnip.

Escape from cultivation throughout the state.

Native of Europe. Summer.

Specimens examined:- Macomb Co. (D. Clark, 1878); VanBuren
Co. (H. S. Pepoon, 1905); Jackson Co. (S. H. Camp, 1894);
Ingham Co. (C. D. Smith, 1898); Washtenaw Co. (B. A. Walpole,
1918); Cheboygan Co. (J. H. Ehlers, 1917); Gratiot Co. (C. A.
Davis, 1892); St. Clair Co. (C. K. Dodge, 1913); Emmet Co.
(C. W. Fallass, 1884); Washtenaw Co. (C. Billington, 1919);
Oakland Co. (C. Billington, 1916); Genesee Co. (E. E. Sherff,
1909); Kent Co. (E. J. Cole, 1901).

Reported from Keweenaw Co. (O. A. Farwell, 1904); Wayne
Co. (O. A. Farwell, 1900); St. Joseph Co. (F. P. Daniels,
1902); Manistee Co. (F. P. Daniels, 1900); Montcalm Co.
(M. A. C., 1913).

4. Brassica napus L. (turnip)

Rape.

Occasional escape in the state. Fugitive from Europe. April - October.

Specimens examined:- Ingham Co. (C. F. Wheeler, 1891); Washtenaw Co. (B. A. Walpole, 1919); St. Clair Co. (C. K. Dodge, 1916); Wayne Co. (C. Billington, 1918).

Reported from VanBuren Co. (H. S. Pepoon, 1907); Ionia Co. (M. A. C., 1917); Osceola Co. (M. A. C., 1917); Sanilac Co. (M. A. C., 1913); Mecosta Co. (M. A. C., 1917).

5. Brassica oleracea L. (pot herb)

Cabbage.

Occasional escape from cultivation. Native of Europe. May - September.

Specimens examined:- Macomb Co. (D. Cooley, 1848); St. Clair Co. (C. K. Dodge, 1912); Washtenaw Co. (B. A. Walpole, 1919).

32. DIPLLOTAXIS DC.

(Greek, meaning double rows)

Pods stipitate; stems leafy to the inflorescence; pedicels 2-3 times as long as the flowers.....1. D. tenuifolia.

Pods not stipitate; stems leafy at the base; pedicels as long or slightly longer than the flower.....2. D. muralis.

1. Diplotaxis tenuifolia (L.) DC. (slender leaved)

Wall Rocket.

Adventive from Europe. June - August.

Specimen examined:- St. Clair Co. (C. K. Dodge, 1912).

2. Diplotaxis muralis (L.) DC. (pertaining to walls)

Sand Rocket.

Adventive from Europe. June - August.

Specimens examined:- St. Clair Co. (C. K. Dodge, 1916);
Sanilac Co. (E. A. Bessey, 1913); Washtenaw Co. (C.
Billington, 1917).

Reported from Kent Co. (E. J. Cole, 1901); Wayne Co.
(O. A. Farwell, 1900).

33. RAPHANUS (Tourn.) L.

(Greek, quick appearing)

Flowers yellow, fading to white; pods 4-10

seeded; longitudinally grooved.....1. R. raphanistrum.

Flowers pink or white; pods 2-3 seeded; not

longitudinally grooved.....2. R. sativus.

1. Raphanus raphanistrum L. (radish-like)

Wild Radish.

Infrequently found in waste places of the state.

Naturalized from Europe. Summer.

Specimens examined:- Washtenaw Co. (C. D. LaRue, 1916);
St. Clair Co. (C. K. Dodge, 1899); Kent Co. (E. J. Cole,
1898); Mason Co. (R. Chaney, 1910); Ingham Co. (B. A. Walpole,
1923); Washtenaw Co. (B. A. Walpole, 1918).

Reported from Dickinson Co. (G. H. Coons, 1909); Tuscola
Co. (C. A. Davis, 1908); Wayne Co. (O. A. Farwell, 1900);
Genesee Co. (M. A. C., 1911).

2. Raphanus sativus L. (cultivated)

Garden Radish.

Escape from gardens occasionally. Native of
Asia. June - October.

Specimens examined:- Macomb Co. (D. Cooley, 1848);
Washtenaw Co. (B. A. Walpole, 1918); Cheboygan Co. (J. H.
Ehlers, 1917); Emmet Co. (C. W. Fallass, 1923); Kent Co.
(E. J. Cole, 1892).

Reported from VanBuren Co. (H. S. Pepoon, 1907).

34. CAKILE (Tourn.) Mill.

(Old Arabic name)

Cakile edentula (Bigel.) Hook. (toothless)

American Sea-rocket.

Found along the entire lake coast of Michigan. Native.
Summer.

Specimens examined:- Muskegon Co. (E. A. Bessey, 1916);
St. Clair Co. (C. K. Dodge, 1893); Berrien Co. (C. F.
Wheeler, 1890); Emmet Co. (C. F. Wheeler, 1890); Arenac Co.
(C. F. Wheeler, 1900); Huron Co. (C. A. Davis, 1896);
Ottawa Co. (E. J. Cole, 1895); Muskegon Co. (Miss Noppin,
1870); Ottawa Co. (C. Billington, 1918); Ottawa Co. (G. D.
Sones, 1889); Emmet Co. (E. J. Cole, 1898); Wayne Co.
(Mary Fallass, 1893); Mason Co. (Ralph Chaney, 1910);
Berrien Co. (C. F. Milspaugh, 1914); VanBuren Co. (F. W.
Johnson, 1914); Monroe Co. (B. A. Walpole, 1920); Allegan Co.
(B. A. Walpole, 1924); Grand Traverse Co. (B. A. Walpole,

1924); Emmet Co. (C. W. Fallass, 1893).

Reported from Schoolcraft Co. (C. K. Dodge, 1915);
Chippewa Co. (C. K. Dodge, 1914); Tuscola Co. (C. K. Dodge,
1908); Manistee Co. (F. P. Daniels, 1900); Charity Island
(C. K. Dodge, 1910); Sanilac Co. (M. A. C., 1920); Allegan
Co. (M. A. C., 1922); Muskegon Co. (C. D. McLouth, 1896).

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