



Diversity of Wisconsin Rosids

... mustards, mallows, maples ...

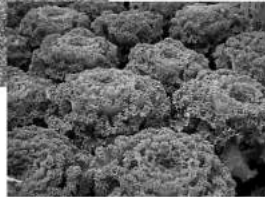
1

**Brassicaceae - mustard family

Large, complex family of mustard oil producing species
(broccoli, brussel sprouts, cauliflower, kale, cabbage)





Brassica spp.
mustard
broccoli
kale



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**Brassicaceae - mustard family



CA 4 CO 4 A 4+2 G (2)


- Flowers “cross-like” with 4 petals - “Cruciferae” or “cross-bearing”
- Common name is “cress”
- 6 stamens with 2 outer ones shorter

Cardamine concatenata - cut leaf toothwort

Wisconsin has 28 native or introduced genera - many are spring flowering


Herbs with alternate, often dissected leaves

Cardamine pratensis - cuckoo flower




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**Brassicaceae - mustard family



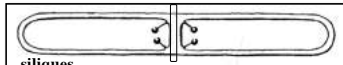
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- 2 fused carpels separated by thin membrane – **septum**
- Capsule that peels off the two outer carpel walls exposing the septum attached to the persistent **replum**

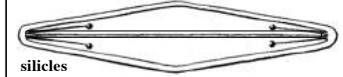


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****Brassicaceae - mustard family**



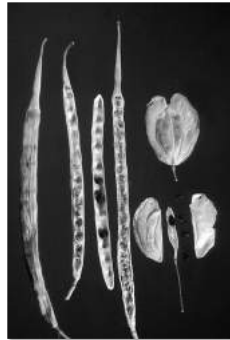
siliques



silicles

Two types of flattening of fruits of the Mustard Family, one flattened contrary to the septum the other flattened parallel to the septum.

CA 4 CO 4 A 4+2 G (2)



Fruits are called **siliques** or **silicles** based on how the fruit is flattened relative to the septum

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****Brassicaceae - mustard family**



Cardamine concatenata - cut leaf toothwort



Cardamine douglasii - purple spring cress

Common spring flowering woodland herbs

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****Brassicaceae - mustard family**



Boechera laevigata - smooth rock cress (old *Arabis*)



Arabidopsis lyrata - rock or sand cress (old *Arabis*)

Common spring flowering woodland herbs

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****Brassicaceae - mustard family**



Nasturtium officinale - water cress



edible aquatic native with a mustard zing

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****Brassicaceae - mustard family**



Hesperis matronalis - Dame's rocket

Barbarea vulgaris - yellow rocket, winter cress

Introduced or spreading

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****Brassicaceae - mustard family**



Alliaria petiolata - garlic mustard

European invasive - biennial; at a Botany 401 final exam site in Marquette County

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Cleomaceae – spider plant family



Polanisia dodecandra - clammy weed



CA 4 CO 4 A 6+ G (2)

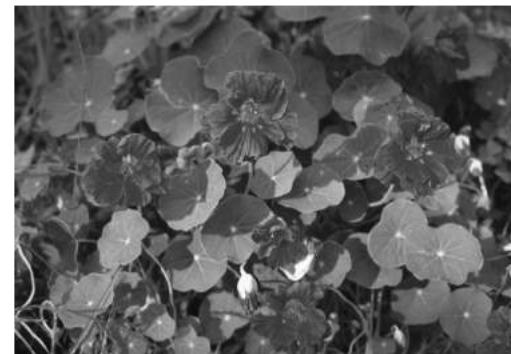
Related to the mustard family and with their own distinctive mustard oil compounds

Compound leaves common

Flowers similar to Brassicaceae but with more stamens

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Trapaeolaceae - nasturtium family



Trapaeolum - garden nasturtium (with long floral spurs)

Another mustard oil family

The South American garden nasturtium commonly grown in Wisconsin as an edible salad plant

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***Malvaceae - mallow family**

Important family that includes horticultural and economically important hibiscus, cotton, chocolate, cola, marsh mallow, okra

Some severe weed pests - velvet leaf, mallows

Mainly herbaceous in Wisconsin with palmate venation, lobing, or compounding leaves



Hibiscus



Malva

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***Malvaceae - mallow family**

Important family that includes horticultural and economically important hibiscus, cotton, chocolate, cola, marsh mallow, okra

Some severe weed pests - velvet leaf, mallows



Hibiscus



Napaea

CA 5 CO 5 A(∞) G(5-∞)

- Flowers 5 merous
- Stamens fused into staminal tube
- Pistil of many fused carpels
- Capsule fruit

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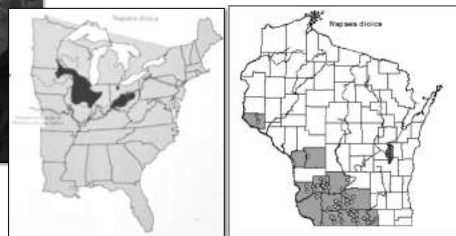
***Malvaceae - mallow family**



Napaea dioica - glade mallow

Special concern species

Perhaps only Midwestern endemic genus



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***Malvaceae - mallow family**



Hibiscus laevis - rose mallow



Malva neglecta - mallow



Hibiscus trionum - flower of the hour

native and introduced species

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*Malvaceae - mallow family



Once considered its own family Tiliaceae

Basswood one of the most dominant of our mesic forest species - distinctive in multiple trunks and cordate leaves with palmate venation



Widespread!

Tilia americana - basswood

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*Malvaceae - mallow family

Flowers born on leaf-like bracts
∞ stamens in bundles

"linden" tree from Europe ('linn' in Sweden) basis of Carolus Linnaeus' name



Tilia americana - basswood

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*Anacardiaceae - sumac family



Woody family with alternate, compound leaves and pungent, often nasty, volatiles

Flowers are small, congested, variously unisexual or perfect. One-seeded drupes (mango, pistachio, cashew).

Rhus glabra - smooth sumac

Rhus are our 4 non-poisonous species



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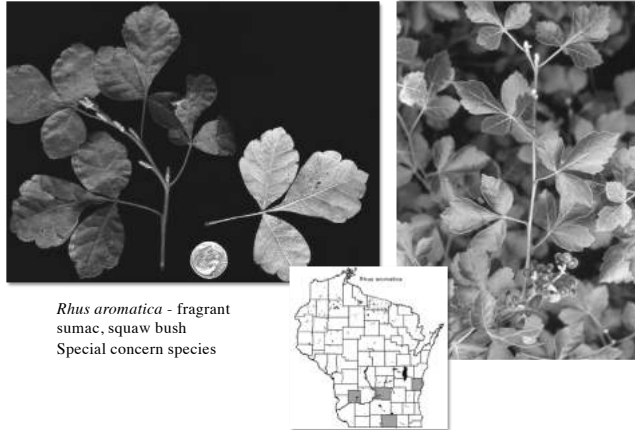
*Anacardiaceae - sumac family



Rhus typhina - staghorn sumac

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*Anacardiaceae - sumac family



Rhus aromatica - fragrant sumac, squaw bush
Special concern species

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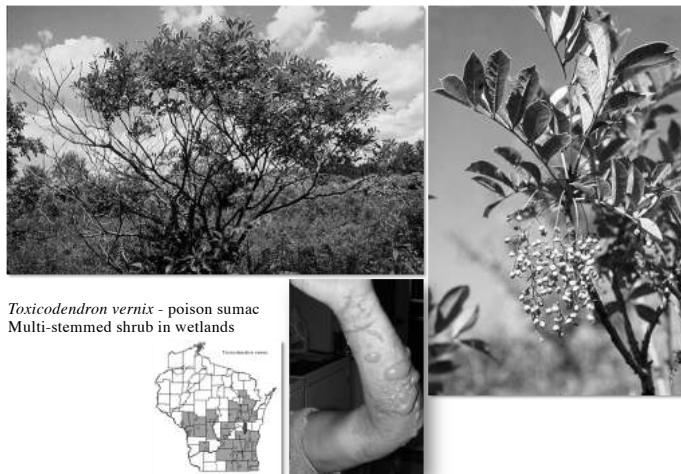
*Anacardiaceae - sumac family



Toxicodendron radicans / rydbergii - poison ivy: variable in habit
Toxicodendron includes our 3 poisonous species

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*Anacardiaceae - sumac family



Toxicodendron vernix - poison sumac
Multi-stemmed shrub in wetlands

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**Sapindaceae - maple family

- Trees – now include old families Aceraceae and Hippocastanaceae
- Includes 2 important species of our forest - sugar maple and red maple
- Simple, palmately lobed, veined or palmately compound leaves that are opposite in arrangement



Acer saccharum - sugar maple

Acer rubrum - red maple

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**Sapindaceae - maple family

CA 4-5 CO 0 or 4-5 A 8

CA 4-5 CO 0 or 4-5 G (2)

- Unisexual flowers by abortion
- Perianth often 5 merous in our species, but petals lacking in sugar and silver maples and boxelder.
- Nectariferous **disk** is often present in the whorl associated with stamens



Acer platanoides - Norway maple
Introduced ornamental

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**Sapindaceae - maple family

CA 4-5 CO 0 or 4-5 A 8

CA 4-5 CO 0 or 4-5 G (2)

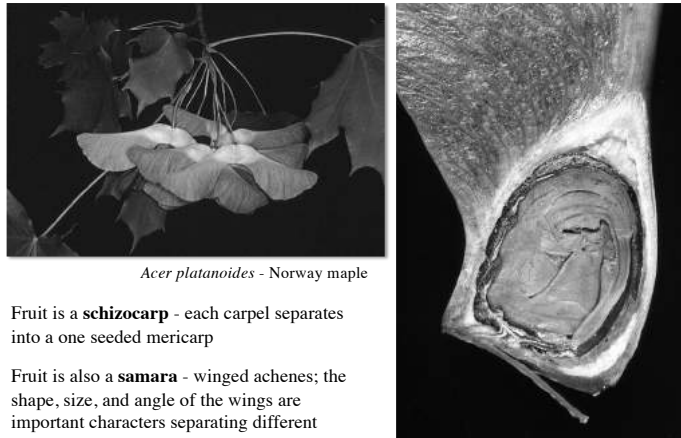
- Superior pistil composed of 2 carpels and 2 extended styles
- Note reduced and probably non-functional stamens



Acer platanoides - Norway maple
Introduced ornamental

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**Sapindaceae - maple family



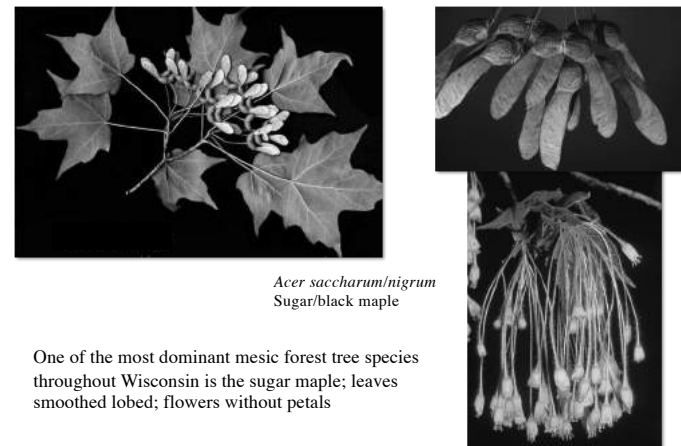
Acer platanoides - Norway maple

Fruit is a **schizocarp** - each carpel separates into a one seeded mericarp

Fruit is also a **samara** - winged achenes; the shape, size, and angle of the wings are important characters separating different species of maple

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**Sapindaceae - maple family



Acer saccharum/nigrum
Sugar/black maple

One of the most dominant mesic forest tree species throughout Wisconsin is the sugar maple; leaves smoothed lobed; flowers without petals

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****Sapindaceae - maple family**



Acer rubrum
Red maple

Another dominant hydric-xeric forest tree species throughout Wisconsin and eastern North America is the red maple; leaves serrately lobed

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****Sapindaceae - maple family**



Acer saccharinum - silver maple

Silver maple is characteristic of wet conditions, fast growing, and with whitish underside to leaves; like sugar maple has no petals

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****Sapindaceae - maple family**



Acer negundo - boxelder

Only dioecious maple and only one with compound leaves

Males occupy harsher environments, females usually moister sites



Acer negundo
Three Leaves from the Same Tree

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****Sapindaceae - maple family**



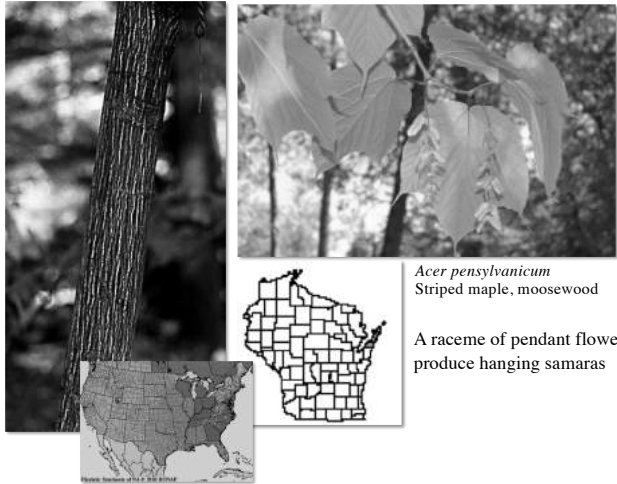
Acer pensylvanicum
Striped maple, moosewood



Distinctively barked and leaved eastern boreal species only occurring in Door Co., but throughout the region north of the tension zone in Michigan

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****Sapindaceae - maple family**

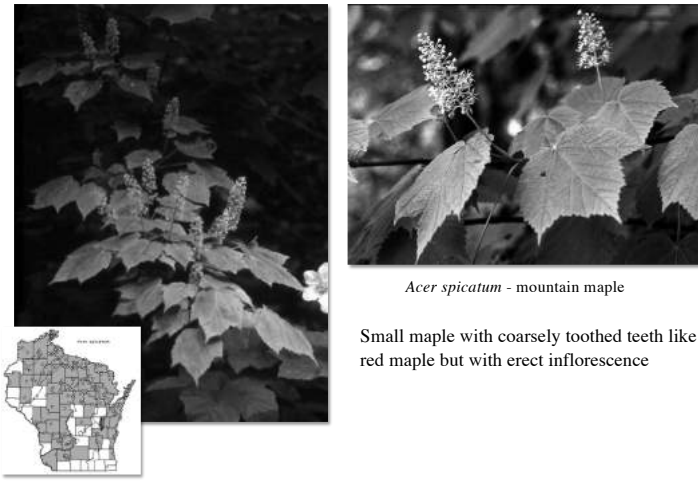


Acer pensylvanicum
Striped maple, moosewood

A raceme of pendant flowers
produce hanging samaras

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****Sapindaceae - maple family**

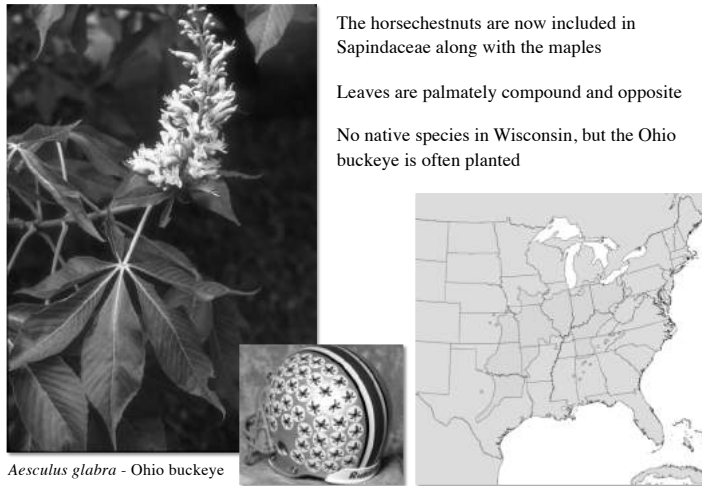


Acer spicatum - mountain maple

Small maple with coarsely toothed teeth like
red maple but with erect inflorescence

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****Sapindaceae - maple family**



The horsechestnuts are now included in
Sapindaceae along with the maples

Leaves are palmately compound and opposite

No native species in Wisconsin, but the Ohio
buckeye is often planted

Aesculus glabra - Ohio buckeye

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****Sapindaceae - maple family**



Aesculus glabra - Ohio buckeye

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**Sapindaceae - maple family



Outside Birge Hall is the European species, *Aesculus hippocastanum* (horse chestnut)



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Simaroubaceae - tree-of-heaven



Tropical family of alternate, pinnately-compound leaved trees. The tree-of-heaven is originally from Asia, widely planted, and somewhat naturalized

Like most members of the family, the tree has a strong (pungent) odor



Ailanthus altissima - tree of heaven

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Rutaceae - citrus family



Largely alternate, compound leaved family (except oranges and relatives) with 2 genera in Wisconsin

Family is well known for its volatile compounds that the leaves emit

Ptelea trifoliata (hop tree, wafer-ash)

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Rutaceae - citrus family



Largely alternate, compound leaved family (except oranges and relatives) with 2 genera in Wisconsin


Family is well known for its volatile compounds that the leaves emit

Ptelea trifoliata (hop tree, wafer-ash)
Long used by Native Americans as important medicinal tree



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Rutaceae - citrus family



Zanthoxylum americanum
Prickly-ash

Native clonal and spiny armed shrub with pinnately compound leaves; flowers reduced

Potentially invasive shrub in drier habitats



Szechuan pepper is from two Asian species of *Zanthoxylum*

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