

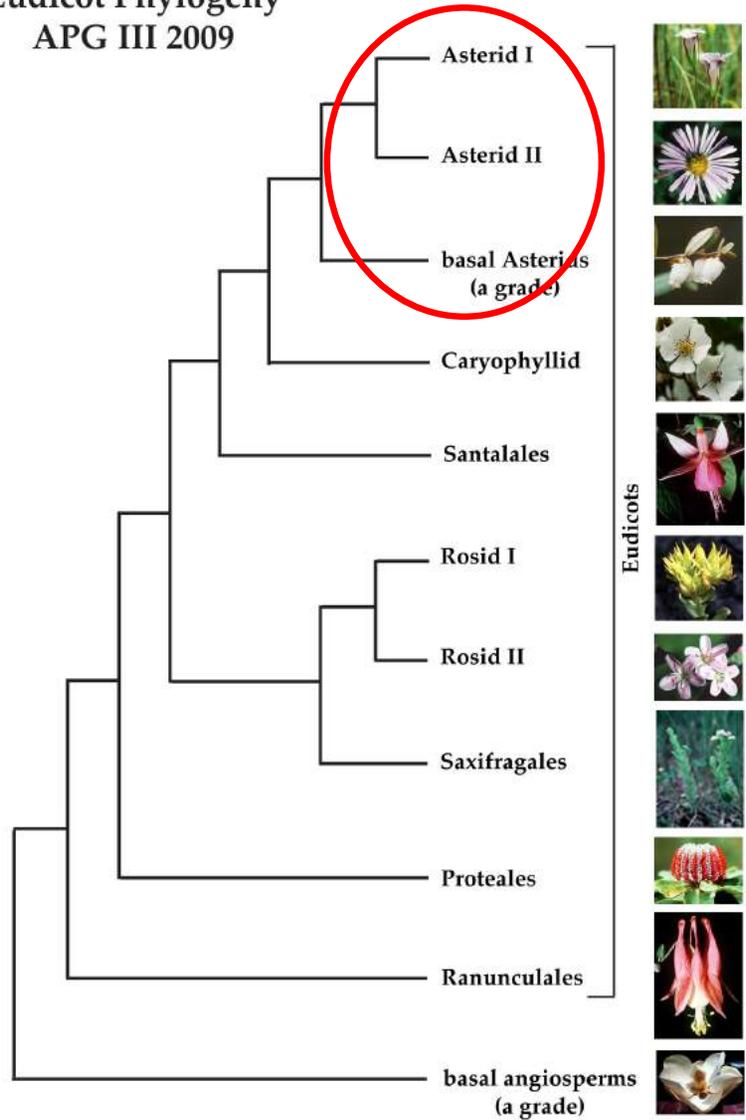
The background of the slide features two vibrant pink flowers with five petals each, set against a backdrop of lush green leaves. The leaves are covered in small, clear water droplets, suggesting a recent rain or dew. The overall scene is bright and natural.

Diversity of Wisconsin Asterids

. . . milkweeds, nightshades, and
morning glories . . .

Asterids

Eudicot Phylogeny
APG III 2009



- (1) fused petals
- (2) stamens = or less than number of petals
- (3) stamens fused to petals
- (4) pistil of 2 (rarely more) carpels

*Gentianaceae - gentian family

Cosmopolitan family of 80 genera and nearly 900 species. Herbs to small trees (in the tropics) with opposite leaves.

CA (4-5) CO (4-5) A 4-5 G (2)

Flowers 4 or 5 merous; pistil superior of 2 carpels; parietal placentation; fruit capsular



*Gentianaceae - gentian family



Gentiana andrewsii - Bottle
gentian

Gentiana is 5 merous, with
plaits between each petal lobe



Gentiana puberulenta - Prairie
gentian

*Gentianaceae - gentian family



Gentianopsis is 4 merous with fringed petals



Gentianopsis virgata - fringed gentian

*Gentianaceae - gentian family



Gentianella is 4-5 merous, without fringe, and without plaits between petal lobes

Gentianella quinquefolia - stiff gentian

**Apocynaceae - dogbane family



Mainly tropical family of trees and vines with opposite leaves. Milky latex commonly poisonous and source of medicinal drugs.



Vinca minor - periwinkle

Introduced ground cover, often spreading

**Apocynaceae - dogbane family

CA (5) CO (5) A 5 G 2

Flowers 5 merous, small, and with
2 separate carpels.



Apocynum androsaemifolium

Spreading dogbane

Apocynum sibiricum

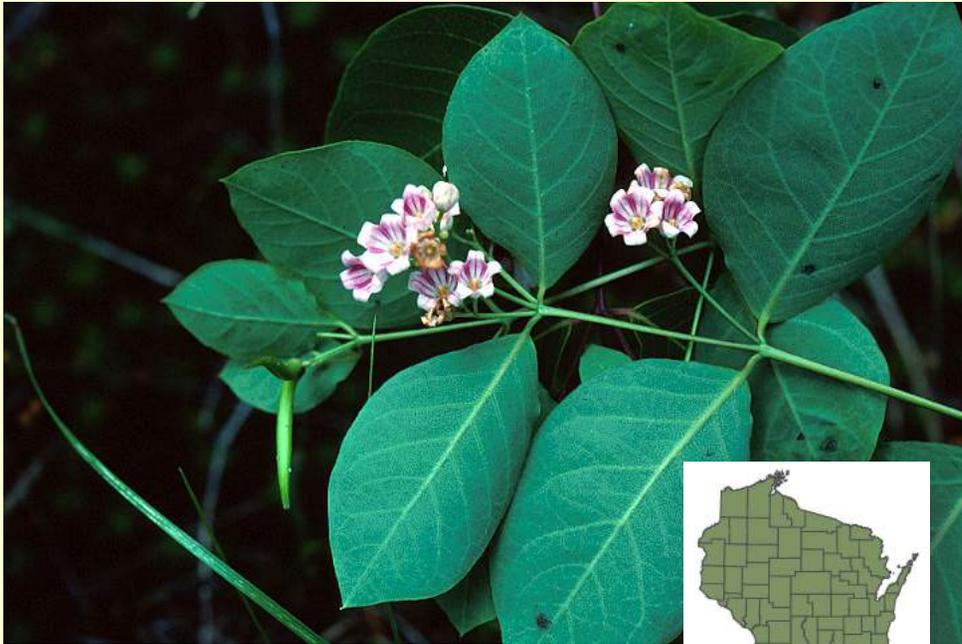
Hemp dogbane



**Apocynaceae - dogbane family

CA (5) CO (5) A5 G2

Fruits are follicles with cottony seeds for wind dispersal.



Apocynum androsaemifolium

Spreading dogbane

Apocynum sibiricum

Hemp dogbane



**Apocynaceae - dogbane family



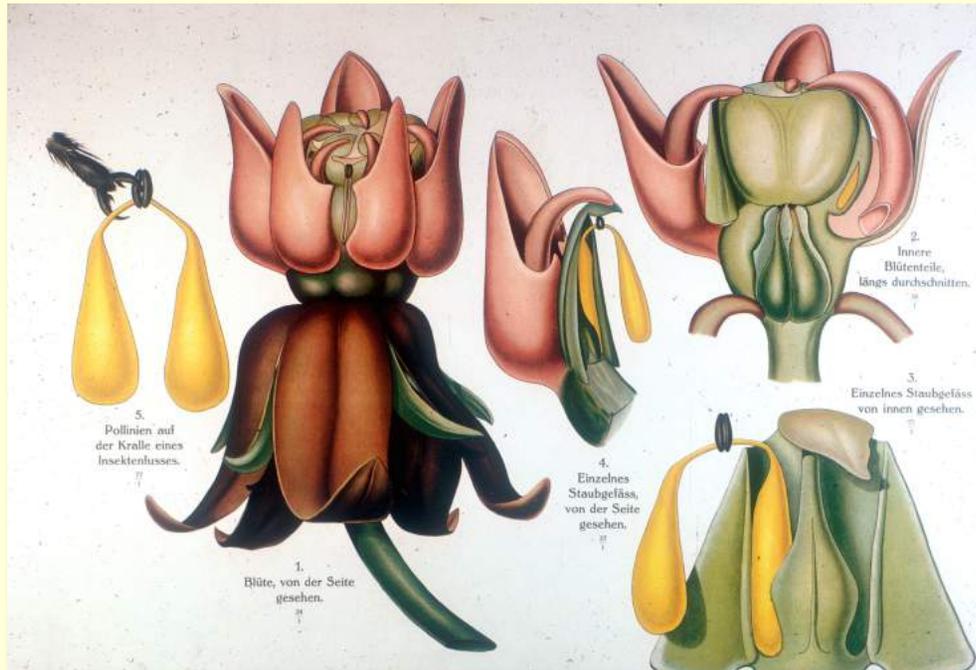
Asclepias - milkweeds

Milkweeds different!

Flowers are highly modified for specialized insect pollination.



**Apocynaceae - dogbane family



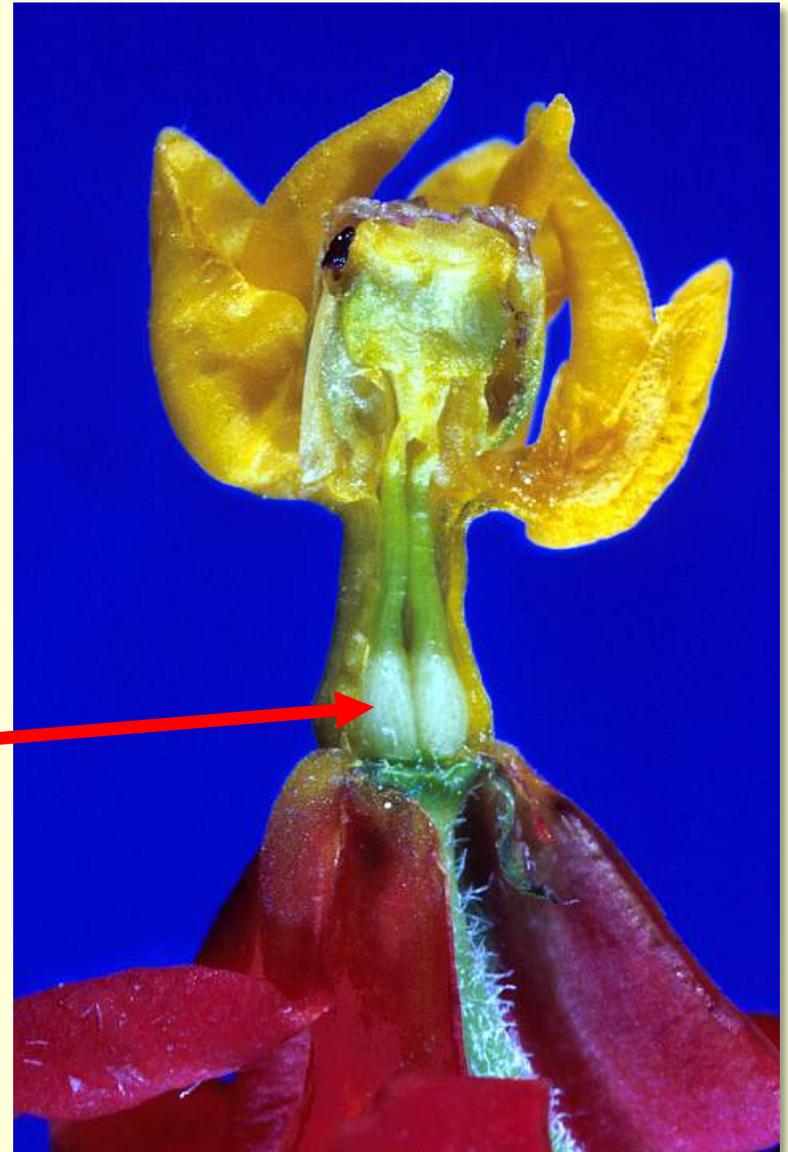
Note 2 free carpels slightly fused at top

CA (5) CO (5) $\overline{X 5}$ A 5 G 2

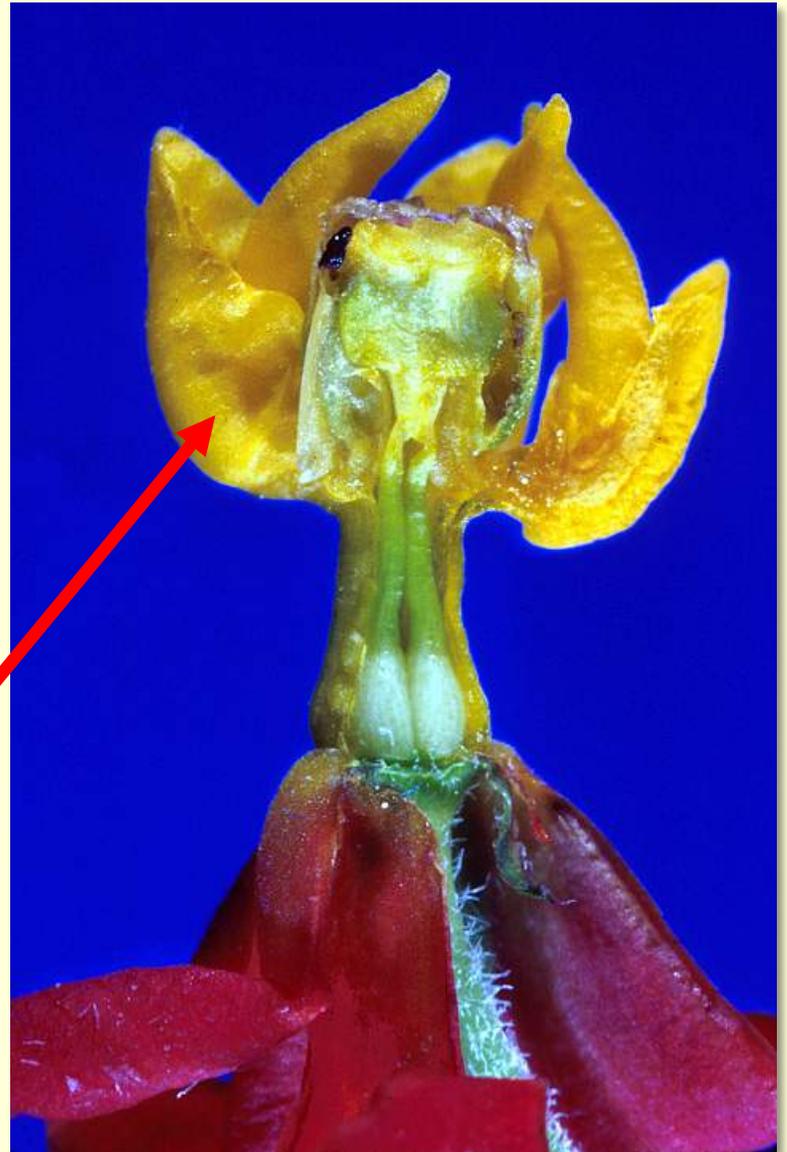
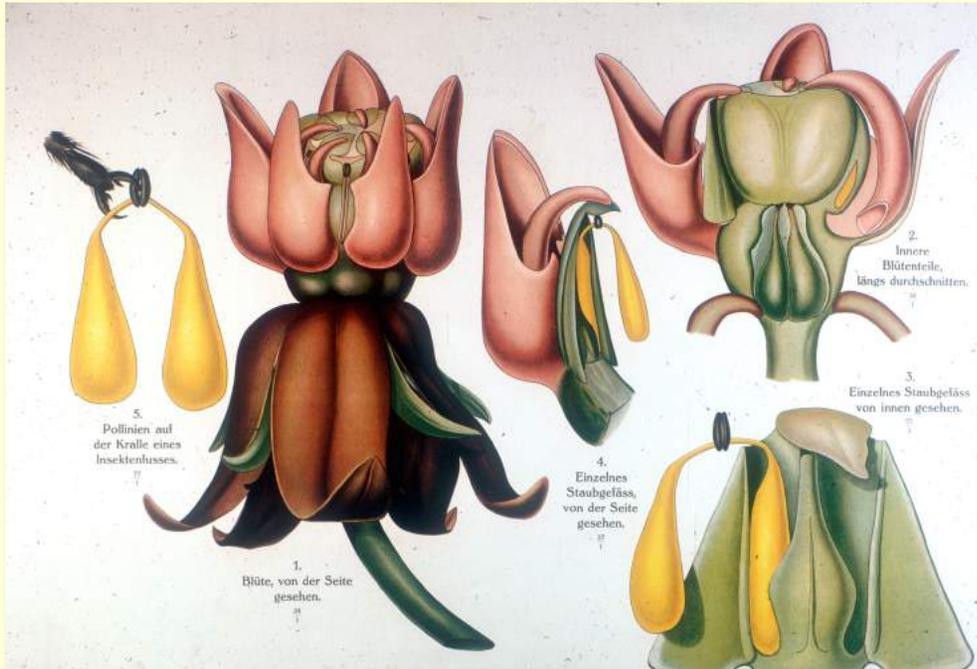
Corona = hood + crest

Gynoestegium = A + G

Pollinia = pollen mass



**Apocynaceae - dogbane family

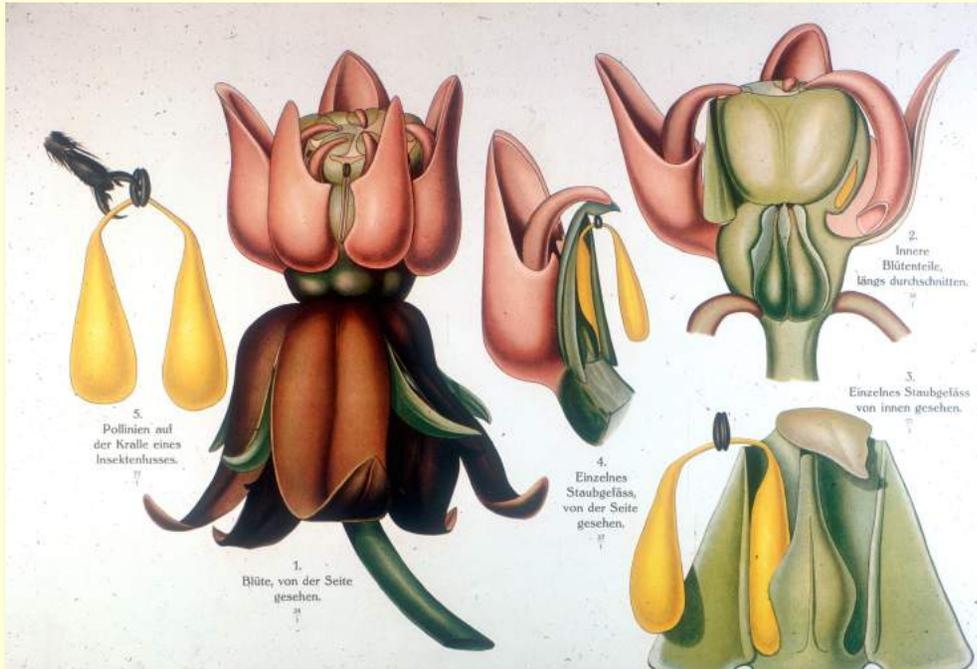


Unusual corona structure for nectar reward

CA (5) CO (5) $\overline{X 5 A 5}$ G 2

Corona = hood + crest
Gynoestegium = A + G
Pollinia = pollen mass

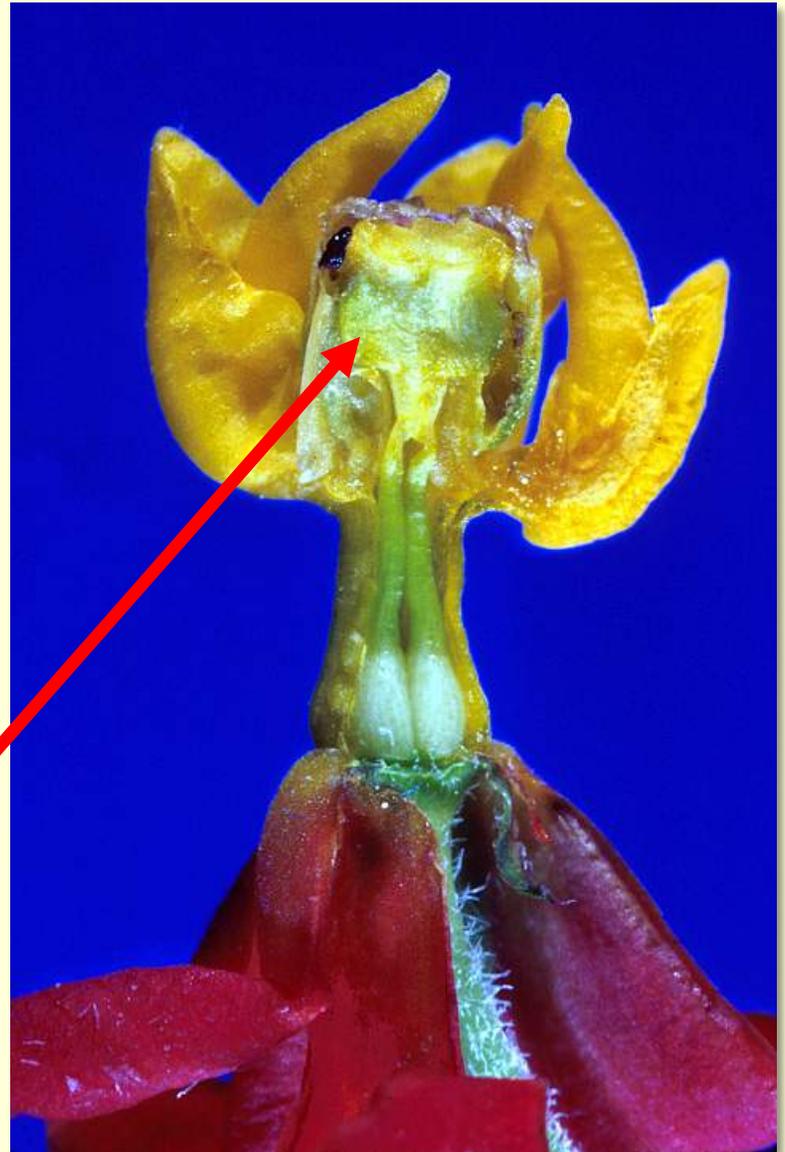
**Apocynaceae - dogbane family



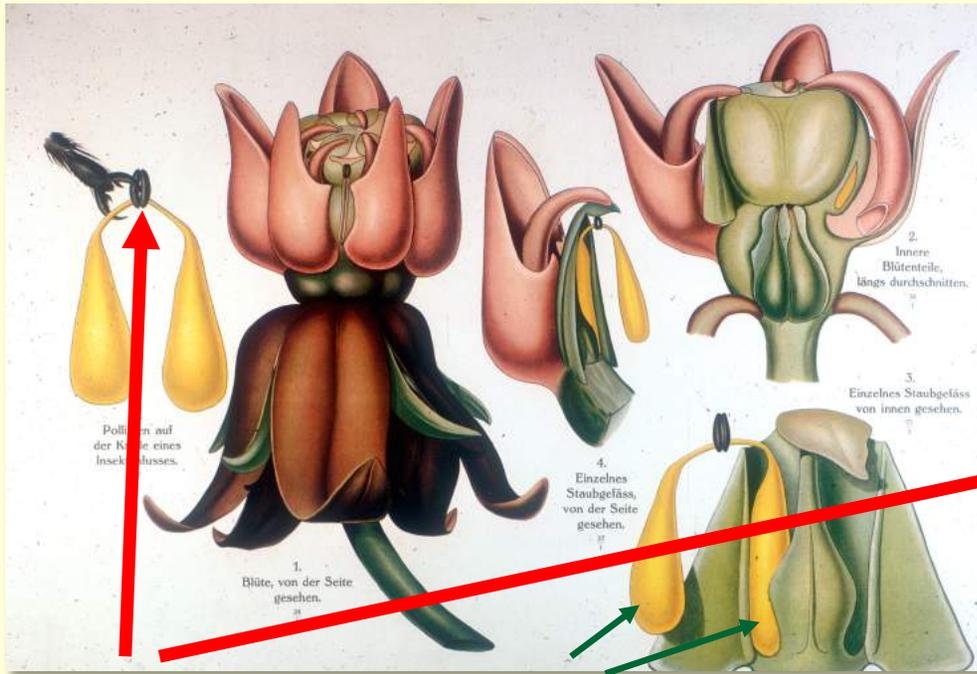
Fusion of 5 stamens and top of gynoecium

CA (5) CO (5) $\overline{X5 A5}$ G 2

Corona = hood + crest
Gynoestegium = A + G
Pollinia = pollen mass



**Apocynaceae - dogbane family

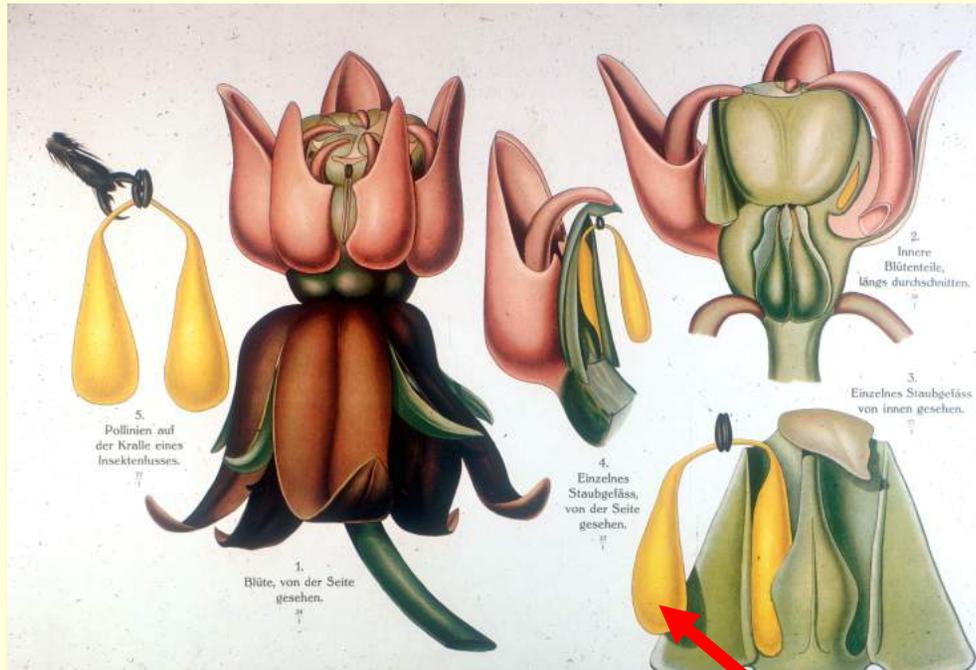


Gland is attached to two **pollinia**

CA (5) CO (5) X 5 A 5 G 2

Corona = hood + crest
Gynoestegium = A + G
Pollinia = pollen mass

**Apocynaceae - dogbane family



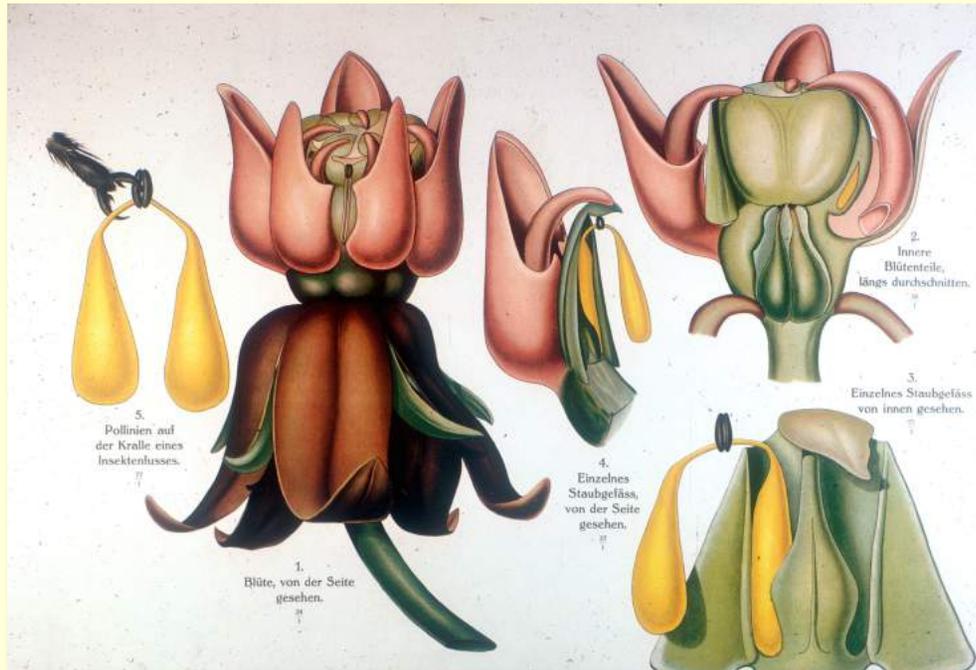
CA (5) CO (5) $\overline{X5}$ $\overline{A5}$ $\underline{G}2$

Corona = hood + crest

Gynoestegium = A + G

Pollinia = pollen mass

**Apocynaceae - dogbane family



Bee removing pollinia or inserting pollinia into stigmatic cleft

CA (5) CO (5) $\overline{X5}$ A5 G2

Corona = hood + crest

Gynoestegium = A + G

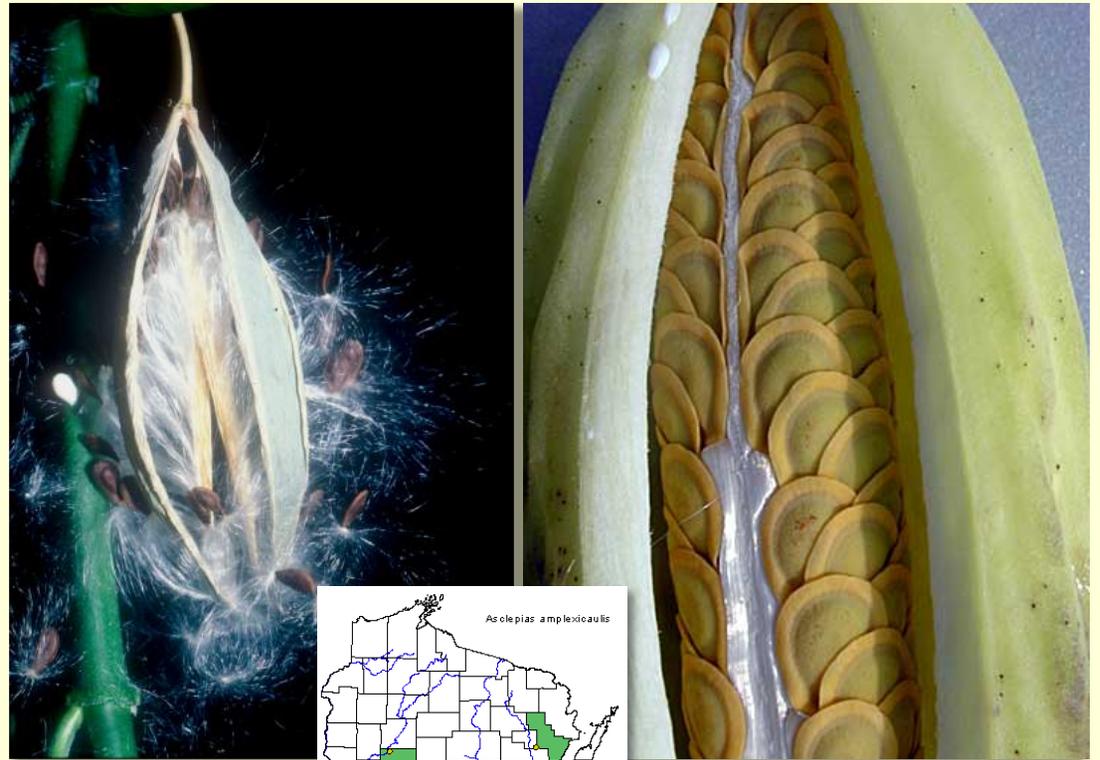
Pollinia = pollen mass



**Apocynaceae - dogbane family



“Las Vegas” strategy of pollination; but when occurs, all ∞ ovules are fertilized. Typically few follicles are produced per plant. Note seeds with coma attached for wind dispersal.



Asclepias amplexicaulis - Clasp milkweed

**Apocynaceae - dogbane family



Asclepias syriaca - Common milkweed

Asclepias incarnata - Swamp milkweed



Asclepias tuberosa - Butterfly weed



**Rubiaceae - coffee family

Important & large family of trees/shrubs in the pantropics



Opposite or whorled leaves
Inter-petiolar stipules

All species in Wisconsin
are 4 and in the tropics
are 5-merous



Coffea arabica - coffee

Galium - Bedstraw

**Rubiaceae - coffee family



Opposite or whorled leaves
Inter-petiolar stipules

All species in Wisconsin
are 4 and in the tropics
are 5-merous



CA (4) CO (4) A 4 \overline{G} (2)

The family has inferior ovary.

Galium - Bedstraw

**Rubiaceae - coffee family



Galium aparine - cleavers

Cleavers and bedstraws are numerous; separated by number of whorled leaves and fruit type

**Rubiaceae - coffee family



Galium obtusum
Wild madder



Galium lanceolatum - wild licorice



**Rubiaceae - coffee family

Cephalanthus occidentalis - buttonbush

Only shrub in Wisconsin; restricted to riparian forest or lake edges. Note “heads” of tiny flowers.



**Rubiaceae - coffee family



Houstonia caerulea- azure bluets
Special concern

**Rubiaceae - coffee family



Mitchella repens
Partridge berry, twin-berry



Note: paired flowers above
with connate pistils;
“twin” berry to right



*Solanaceae - nightshade family

- Large cosmopolitan family of alternate-leaved herbs, vines, or shrubs with cyme inflorescences
- Important family for nasty compounds (and drugs)
- Important for source of foods (potato, tomato, pepper)

Solanum dulcamara
Bittersweet



*Solanaceae - nightshade family



edible fruits include . . .

Capsicum - pepper

Solanum - tomato & eggplant



*Solanaceae - nightshade family

drug plants include . . .



Nicotiana tabacum

Atropa belladonna

Brugmansia

Datura innoxia



*Solanaceae - nightshade family

CA (5) CO (5) A 5 G (2)

- 5- merous flowers
- **axile** placentation
- **berry** fruited



Capsicum - pepper



Solanum dulcamara
Bittersweet



Solanum carolinense -
Horse nettle



*Solanaceae - nightshade family

CA (5) CO (5) A 5 G (2)

- stamens often **terminal pored** for buzz pollination by bees



Solanum carolinense -
Horse nettle



*Solanaceae - nightshade family

CA (5) CO (5) A 5 G (2)

- berry fruited - often with persistent calyx



Physalis alkekengi - Japanese lantern

*Solanaceae - nightshade family



Solanum dulcamara - bitterweet

*Solanaceae - nightshade family



Solanum carolinense - Horse nettle

*Solanaceae - nightshade family



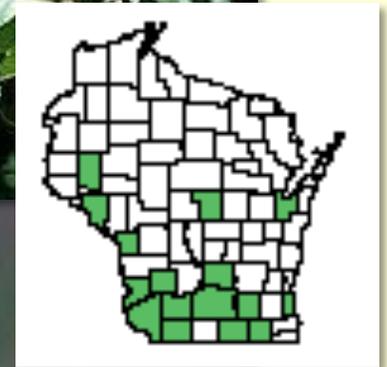
Physalis virginiana

Ground cherry

Note: calyx surrounding berry



*Solanaceae - nightshade family



Datura stramonium
Jimson-weed (Jamestown weed)

Introduced, hallucinogenic
roadside weed
. . . also called thorn-
apple



*Solanaceae - nightshade family



Datura stramonium

Jimson-weed (Jamestown weed)

Introduced, hallucinogenic
roadside weed

. . . also called thorn-
apple

CASE REPORT

Jimson Weed Intoxication in Five Adolescents

Steven N. Soneral, DO; Neil P. Connor, MD

INTRODUCTION

Datura stramonium (jimson weed) is a poisonous shrub that grows wildly throughout the United States with a high potential for abuse. The plant possesses potent anticholinergic properties, and ingestion can cause serious illness or death. Intentional ingestions may result in unintended poisonings for people who attempt to experience the anticholinergic-induced delirium that typically manifests after ingesting the leaves, stem, seeds, or tea brewed from the leaves. We report 5 cases of *D. stramonium* intoxication seen within a 3-day span as well as recent data regarding anticholinergic plant exposures.

Wisconsin Medical Journal 2005

*Solanaceae - nightshade family



Datura stramonium

Jimson-weed (Jamestown weed)

Introduced, hallucinogenic
roadside weed

. . . also called thorn-apple

Case 3

A 16-year-old male presented with slurred, unintelligible speech and severe restlessness. Blood pressure was 130/67, and pulse was 85 beats per minute. Activated charcoal was administered. Shortly after admission to the PICU, he became aggressive, combative, and even attempted to stand on a bedside table and fly to escape from the room. Subsequently, he was sedated with intravenous lorazepam. Discharge occurred after 24 hours with normal vital signs and mental status.

Case 4

A 15-year-old male was brought to the ED by the police after he had been found crawling down a busy street into an intersection. He was picking at objects on his body that were not present. His only comprehensible words were obscenities. Blood pressure was 119/44, and pulse was 154 beats per minute. Skin was dry and flushed. Urine toxicology screen was negative. Activated charcoal was administered. Blood pressure and temperature remained stable. Pulse ranged from 40 to 109 beats per minute with sinus rhythm. He was sedated as necessary and discharged 40 hours later with normal vital signs and mental status.

Wisconsin Medical Journal 2005

*Solanaceae - nightshade family



also called “moonflower”

**Convolvulaceae - morning-glory family



Convolvulus - bindweed

CA 5 CO (5) A 5 G (2)

Flowers strongly funnellform with plicate corolla tube (with fold lines). Fruit usually capsular.

Largely tropical family of 55 genera and nearly 2000 spp. Twining herbs with alternate leaves.



Ipomoea purpurea
Morning-glory: cultivated

**Convolvulaceae - morning-glory family



Calystegia sepium

Hedge bindweed

Note: 2 large bracts below calyx

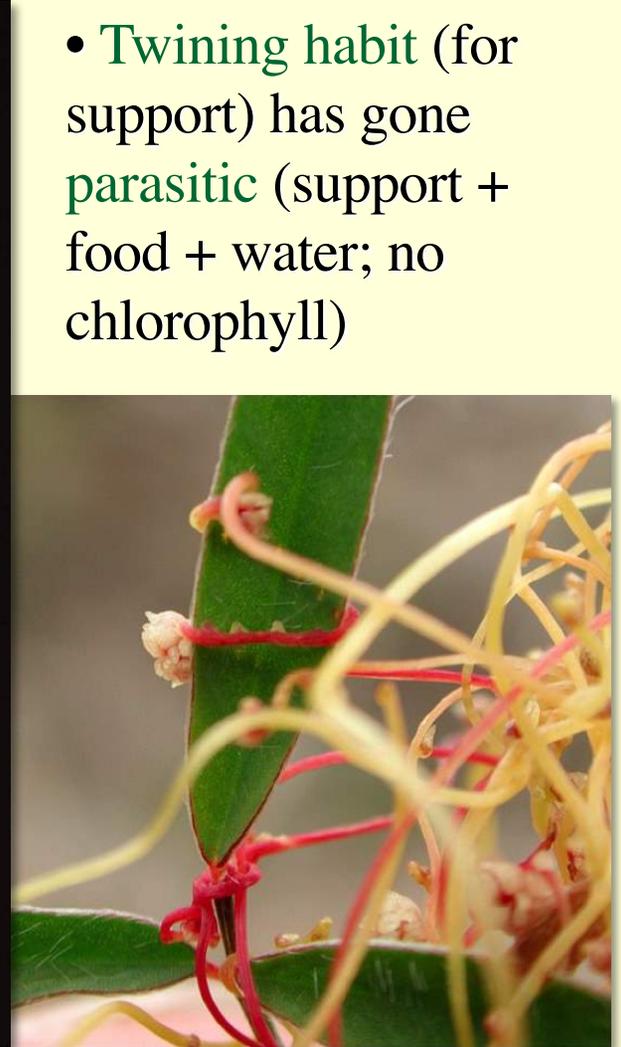
Convolvulus arvensis

Field bindweed

Note: no floral bracts

*Convolvulaceae - morning-glory family

Cuscuta (Cuscutaceae) is actually part of the Convolvulaceae!



- Twining habit (for support) has gone parasitic (support + food + water; no chlorophyll)

Cuscuta spp. - dodder

*Cuscutaceae - dodder family



Cuscuta gronovii
Common dodder

Cuscuta glomerata
Rope dodder

