GOLDEN HILLS RC&D presents
NATIVE MINTS IDENTIFICATION
Photo by Tom Rosburg
Online class via Zoom
Monday, February 15
7:00-8:00pm
Learn how to identify common species in several genera in the family Lamiaceae (mints)
with Dr. Tom Rosburg
Pre-registration required. $5 registration fee. Learn more and sign up at
goldenhillsrcd.org/plantID
Open to the public. Project made possible through a grant from Gilchrist Foundation

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Characteristics of Lamiaceae

- Square stems
- Opposite simple leaves
- Corollas zygomorphic and 2-lipped
- Primary inflorescence axillary verticils
- Calyx actinomorphic, or zygomorphic
- 4 or 2 stamens, epipetalous
- Aromatic oils
- Gynobasic style
- 4-lobed ovary
- Fruits \( \rightarrow \) 4 nutlets

**Figure 15-34** Features of Lamiaceae. A. Stem and inflorescences of *Marrubium vulgare* illustrating opposite leaves and axillary verticils of flowers. B. Branch of *Monarda* with verticils aggregated into a terminal head-like cluster. C. Bilabiate flower of *Stachys* (l.s.). D. Gynoecium with deeply lobed ovary and gynobasic style (l.s.). E. Calyx and nutlets of *Stachys bullata*. F. Floral diagram of *Stachys*. G. Floral diagram of *Salvia* showing the two fertile stamens each with only one fertile anther-sac and a hinged connective. H. Generalized floral formula.
Fig. 868  Floral characters of skullcap. a) Flowering branch. b) Flower. c) LS of flower. *Scutellaria incana*

Fig. 870  Floral characters of horsemint. a) Flowering branch. b) Inflorescences in pseudowhorls. c) Flower showing pistil with slender style branches. *Monarda punctata*
Patterns of the Mint Family

Horehound
- opposite leaves
- square stalk

Self Heal

4 stamens (2 long, 2 short)
5 united petals (2 lobes up, 3 down)
5 united sepals

flower matures into a seed capsule containing four nutlets

schizocarp
Agastache

calyx lobes glabrous, green, pale gray; lower leaf blades green, if pubescent hairs

→ lower leaf pubescent over entire surface, corollas yellowish yellow giant-hyssop

→ lower leaf pubescent mainly on veins, corolla rosy purple giant-hyssop

calyx lobes pubescent, deep blue like the corolla; lower leaf blades whitened due to tomentose pubescence blue giant-hyssop
Largest leaves with blades 1.5-11 mm wide; stems glabrous or pubescent on angles
→ leaf blades glabrous, linear, 1.5-5.5 mm wide; stems glabrous or sparsely pubescent on angles  **slender mountain mint**
→ lower leaf blades mostly pubescent along the veins, blades lanceolate, 5-11 mm wide; stems pubescent only on the angles (or nearly so)  **VA mountain mint**
**Blephilia, Hedeoma, Salvia (2 stamens)**

Inflorescences terminal

- 5 or less, dense axillary verticils, terminal verticil headlike; connective between anthers very short, both anthers fertile; leaf petioles 10-30 mm
- spikes or racemes with 6 or more few-flowered nodes, open; connective between anthers slender and elongate, only 1 anther fertile; leaves short petiolate

Inflorescences axillary; Leaf blades linear, narrowly elliptic, margins entire; lobes of the upper lip of the calyx linear, bristly hairy on margins

- rough pennyroyal
- hairy wood mint
- Rocky Mt sage

5-hairy wm
6-hairy wm
7-hairy wm
8-RM sage
9-RM sage
10-RM sage
11-RM sage
3-rough pennyroyal
2-rough pennyroyal
<table>
<thead>
<tr>
<th>Mentha, Physostegia, Teucrium (4 stamens)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stamens strongly exserted</strong></td>
</tr>
<tr>
<td>→ corolla actinomorphic, 4 lobes; calyx glabrous; axillary verticils marsh mint</td>
</tr>
<tr>
<td>→ corolla zygomorphic, upper lip missing, lower lip 5 lobed; calyx pubescent; terminal racemes American germander</td>
</tr>
<tr>
<td>1-obedient plant</td>
</tr>
<tr>
<td>2-obedient plant</td>
</tr>
<tr>
<td>3-obedient plant (abaxial)</td>
</tr>
<tr>
<td>4-obedient plant</td>
</tr>
<tr>
<td>5-marsh mint</td>
</tr>
<tr>
<td>6-marsh mint</td>
</tr>
<tr>
<td>7-marsh mint</td>
</tr>
<tr>
<td>8-marsh mint</td>
</tr>
<tr>
<td>9-American germander</td>
</tr>
<tr>
<td>10-Am germander</td>
</tr>
<tr>
<td>11-Am germander</td>
</tr>
<tr>
<td>12-Am germander</td>
</tr>
<tr>
<td><strong>Stamens not exserted; Leaf blade margins sharply serrate, blades 10-40 mm wide obedient plant</strong></td>
</tr>
</tbody>
</table>
Lycopus

Calyx 1-2 mm, lobes broadly triangular, apices rounded or bluntly acute; nutlets extending beyond the calyx tube at maturity
- corolla and calyx 5 lobed; stamens slightly exserted  [northern bugleweed]
- corolla and calyx 4 lobed; stamens not exserted  [VA bugleweed]

Calyx 1.8-4.5 mm, lobes narrowly triangular, apices sharply acute; nutlets shorter than the calyx tube at maturity
- lower leaf blades deeply pinnately lobed, bases tapered concavely to a winged petiole  [American bugleweed]
- all leaf blades unlobed, but margins sharply serrate bases angled, leaves sessile or subsessile  [rough bugleweed]
nutlets of northern bugleweed
Monarda

Inflorescences consisting of 2-7 terminal and compacted “verticils” (due to large pale pink to pinkish bracts); corollas cream-colored to pale yellow, the lips with maroon to purplish-brown spots

1-dotted horsemint
2-dotted horsemint
3-dotted horsemint
4-dotted horsemint
5-dotted horsemint

Inflorescences consisting of 1 (or at most 2) terminal flower clusters (a pseudoverticil); corollas pale lavender to pink densely hairy on the outer surface, lips long hairy toward the tips

6-wild bergamot
7-wild bergamot
8-wild bergamot
9-wild bergamot
10-wild bergamot
12-wild bergamot
Inflorescences of axillary and/or terminal racemes

→ racemes axillary; corolla tubes nearly straight (not S-shaped)  blue skullcap

→ racemes all or mostly terminal; corolla tubes noticeably S-shaped  heart-leaved skullcap

→ leaf blade margins entire, 0.5-2.0 cm long  small skullcap

→ blades of larger leaves serrate, 2-10 cm long
  * petioles 5-30 mm; corolla tubes nearly straight  blue sk
  * petioles 0-4 mm; corolla tubes noticeably S-shaped  marsh skullcap
Stachys

Stem internodes pubescent on sides and angles; calyx pubescent throughout
→ pubescence of stem angles and sides mostly spreading  marsh h-n
→ pubescence of stem angles and sides mostly retrorse  hairy h-n

Stem internodes glabrous or pubescent only on the angles; calyx pubescent primarily on the nerves and ciliate margins
→ main stem leaves sessile to short petiolate (< 8 mm); widest leaves 1.2-1.8 cm wide  rough h-n
→ main stem leaves petiolate (8-30 mm); widest leaves 1.5-4.2 cm wide
  * petioles and leaf blades pubescent with stiff, bristly, stout hairs; most longer petioles 8-15 mm  hispid h-n
  * petioles and leaf blade glabrous or glabrescent; longer petioles 13-30 mm  smooth h-n
<table>
<thead>
<tr>
<th>Genera</th>
<th>stem</th>
<th>leaf attach &amp; margin</th>
<th>inflorescence</th>
<th>calyx</th>
<th>corolla</th>
<th>stamens</th>
<th>diagnostic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agastache</td>
<td>strongly 4-angled; glabrous or pubescent</td>
<td>petiolate; serrate</td>
<td>terminal dense spike (compact verticils)</td>
<td>± actinomorphic, cylindric, 5 lobes</td>
<td>zygomorphic, weakly 2 lipped, up 2 lobes, low 3 lobes</td>
<td>4 strongly exserted</td>
<td>stamens and inflorescence</td>
</tr>
<tr>
<td>Blephilia</td>
<td>strongly 4-angled; pubescent</td>
<td>sessile or petiolate; serrate</td>
<td>mostly terminal, 2-5 dense axillary verticils, headlike</td>
<td>zygomorphic, cylindric, 2 lipped</td>
<td>strongly zygomorphic weakly 2 lipped, up 2 lobes, low 3 lobes</td>
<td>2 ± exserted</td>
<td>calyx, corolla 8-14 mm</td>
</tr>
<tr>
<td>Hedeoma</td>
<td>strongly 4-angled; pubescent</td>
<td>sessile to short petiolate; entire to serrulate</td>
<td>axillary verticils of 8-12 flowers with pedicels</td>
<td>zygomorphic, ± cylindric, 2 lipped</td>
<td>zygomorphic, weakly 2 lipped, up 1 lobe (sn), low 3 lobes</td>
<td>2 not exserted</td>
<td>stamens, calyx, flowers with pedicels &gt; 1 mm, 8/node</td>
</tr>
<tr>
<td>Lycopus</td>
<td>weakly to strongly 4-angled; glabrous or pubescent</td>
<td>sessile to short petiolate; entire to serrulate</td>
<td>axillary verticils of many flowers mostly sessile</td>
<td>± actinomorphic, cylindric to campanulate, 5 lobes</td>
<td>± actinomorphic, 4 or 5 lobes</td>
<td>2 not exserted to slightly exserted</td>
<td>inflorescence, stamens, corolla 2-5 mm</td>
</tr>
<tr>
<td>Mentha</td>
<td>strongly 4-angled; glabrous or pubescent</td>
<td>sessile to long petiolate; serrate</td>
<td>axillary verticils of 8 to numerous flowers,</td>
<td>± actinomorphic, cylindric to campanulate, 5 lobes</td>
<td>± actinomorphic, 4 lobes</td>
<td>4 long exserted</td>
<td>stamens, corollas 2-7 mm</td>
</tr>
<tr>
<td>Monarda</td>
<td>weakly to strongly 4-angled; mostly pubescent</td>
<td>sessile or petiolate; strongly serrate</td>
<td>terminal, up to 7 dense, compact verticils (headlike)</td>
<td>± actinomorphic, cylindric</td>
<td>strongly zygomorphic 2 lipped, up 1 lobe (sn), low 3 lobes (or ± 1)</td>
<td>2 not exserted to slightly exserted</td>
<td>stems and leaves glabrous, 2 flowers/node</td>
</tr>
<tr>
<td>Physostegia</td>
<td>weakly to strongly 4-angled; glabrous</td>
<td>mostly sessile, low becoming petiolate; entire to serrate</td>
<td>terminal elongate raceme</td>
<td>± actinomorphic, campanulate, 5 lobes</td>
<td>zygomorphic, 2 lipped, up 1 lobe (sn), low 3 lobes</td>
<td>4 not exserted</td>
<td>stamens, leaves, calyx, corolla</td>
</tr>
<tr>
<td>Pycnanthemum</td>
<td>weakly to strongly 4-angled; glabrous to pubescent</td>
<td>sessile to short petiolate; entire to serrate</td>
<td>terminal headlike clusters; secondary flat-topped panicles</td>
<td>actinomorphic, 5 lobes or zygomorphic and 2 lipped</td>
<td>zygomorphic, 2 lipped, up 1 lobe, low 3 lobes</td>
<td>4 mostly exserted</td>
<td>inflorescence, stamens, corolla</td>
</tr>
<tr>
<td>Salvia</td>
<td>weakly to strongly 4-angled; glabrous to pubescent</td>
<td>mostly petiolate; entire to serrate</td>
<td>terminal spikes or racemes with more than 5 nodes</td>
<td>zygomorphic, campanulate, 2 lipped</td>
<td>zygomorphic, 2 lipped, up 1 lobe (sn), low 3 lobes</td>
<td>2 not exserted to slightly exserted</td>
<td>stamens, calyx, inflorescence</td>
</tr>
<tr>
<td>Scutellaria</td>
<td>weakly to strongly 4-angled; glabrous to pubescent</td>
<td>sessile or petiolate; entire to serrulate</td>
<td>axillary or terminal raceme, 2 flowers per node</td>
<td>zygomorphic, prominent transverse projection, 2 lobes</td>
<td>strongly zygomorphic, 2 lipped, up 1 lobe, low 3 lobes</td>
<td>4 not exserted</td>
<td>calyx</td>
</tr>
<tr>
<td>Stachys</td>
<td>weakly to strongly 4-angled; glabrous to pubescent</td>
<td>sessile or petiolate; serrulate</td>
<td>terminal spikes</td>
<td>actinomorphic, campanulate, 5 lobes</td>
<td>zygomorphic, 2 lipped, up 1 lobe (sn), low 3 lobes</td>
<td>4 not exserted</td>
<td>stamens, calyx, 4-6 flowers/node</td>
</tr>
<tr>
<td>Teucrium</td>
<td>weakly to strongly 4-angled; pubescent retrorse hairs</td>
<td>short petiolate; serrulate</td>
<td>terminal dense racemes (spike-like)</td>
<td>zygomorphic, up lip missing, lower lip 5 lobed</td>
<td>strongly zygomorphic, 2 lipped, up 1 lobe, low 3 lobes</td>
<td>4 strongly exserted</td>
<td>corolla</td>
</tr>
</tbody>
</table>
Table 2. Iowa Lamiaceae Reference Table. Data compiled by Dr. Thomas Rosburg (see References for sources).

<table>
<thead>
<tr>
<th>Flora of North America</th>
<th>Eilers and Roosa 1994</th>
<th>Habitat</th>
<th>Iowa Biogeography (IPP)</th>
<th>BONAP Biogeography</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status: Endangered</td>
<td>Agastache foeniculum</td>
<td>blue giant-hyssop anise giant-hyssop</td>
<td>dry upland woodland and forest, prairie edges, scrubby barrens, thickets</td>
<td></td>
</tr>
<tr>
<td>Iowa CC: 7 to 10 L</td>
<td></td>
<td></td>
<td></td>
<td>INAI</td>
</tr>
<tr>
<td>Status: native</td>
<td>Agastache nepetoides</td>
<td>yellow giant-hyssop</td>
<td>open woodland, mesic woodland and forest edges; lowland forests, savanna</td>
<td></td>
</tr>
<tr>
<td>Iowa CC: 4 to 5 H</td>
<td></td>
<td></td>
<td></td>
<td>BONAP</td>
</tr>
<tr>
<td>Status: native</td>
<td>Agastache scrophulariifolia</td>
<td>purple giant hyssop</td>
<td>mesic woodland and forest edges and canopy gaps; mesic prairie swale</td>
<td></td>
</tr>
<tr>
<td>Iowa CC: 5 to 6 H</td>
<td></td>
<td></td>
<td></td>
<td>BONAP</td>
</tr>
<tr>
<td>Status: native</td>
<td>Blephilia hirsuta</td>
<td>wood mint</td>
<td>mesic woodland and forest, forest edges, slopes and bluffs; lowland forests, alluvial soils and streambanks; limestone glades, thickets</td>
<td></td>
</tr>
<tr>
<td>Iowa CC: 6 to 6 H</td>
<td></td>
<td></td>
<td></td>
<td>BONAP</td>
</tr>
<tr>
<td>Status: native Iowa CC: 2 to 2 H</td>
<td><em>Hedeoma hispidum</em></td>
<td>rough pennyroyal</td>
<td>dry prairie, savanna, or rocky open woodland; bluffs, pastures, roadsides; early successional habitats</td>
<td></td>
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<td>----------------------------------</td>
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<td></td>
</tr>
<tr>
<td>[Mentha canadensis]</td>
<td><em>Mentha arvensis</em> var. <em>villosa</em> var. <em>glabrata</em></td>
<td>marsh mint</td>
<td>shallow marshes, wet to wet-mesic prairie, sedge meadows, shorelines, wet pastures and roadsides, early successional habitats with wet soils</td>
<td></td>
</tr>
<tr>
<td>Status: native Iowa CC: 4 to 4 H</td>
<td><em>Physostegia virginiana</em></td>
<td>obedient plant false dragonhead</td>
<td>wet-mesic to mesic prairies, savanna and open woodland woodland edges, mesic meadows, streambanks and shorelines, seeps, fens, open moist habitats</td>
<td></td>
</tr>
<tr>
<td>Status: native Iowa CC: 6 to 6 H</td>
<td><em>Teucrium canadense</em> var. <em>virginicum</em> var. <em>boreale</em></td>
<td>American germander wood sage</td>
<td>mesic to wet-mesic soils in prairie, savanna and woodland; alluvial soils</td>
<td></td>
</tr>
<tr>
<td>Status: native</td>
<td>Pycnanthemum pilosum</td>
<td>hairy mountain mint</td>
<td>dry woodland, savanna, mesic prairie, rocky upland forests, woodland edges and canopy gaps, thickets, limestone glades, abandoned fields, roadsides</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Iowa CC: 5 to 5 H</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Status: native</th>
<th>Pycnanthemum tenuifolium = P. flexuosum</th>
<th>slender mountain mint narrow-leaf mountain mint</th>
<th>dry-mesic to wet-mesic prairie, mesic meadows, seeps, open woodlands, glades, bluffs, pastures, abandoned fields</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iowa CC: 6 to 5 H</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Status: native</th>
<th>Pycnanthemum virginianum</th>
<th>Virginia mountain mint common mountain mint</th>
<th>mesic to wet-mesic prairie, moist sand prairies, wet meadows, fens, swamps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iowa CC: 4 to 5 H</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Status: native</th>
<th>Salvia reflexa</th>
<th>Rocky Mountain sage</th>
<th>dry to wet-mesic prairie; edges and canopy gaps in mesic upland and lowland forests; pastures, roadsides and early successional sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iowa CC: 0 to 1 M</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

BONAP
<table>
<thead>
<tr>
<th>Status: native Iowa CC: 4 to 5 H</th>
<th><strong>Lycopus americanus</strong></th>
<th>American bugleweed</th>
<th>shallow marshes, sedge meadows, wet prairies, prairie swales and sloughs, open floodplain and bottomland woodlands, wet thickets, fens, stream and pond riparian habitats, wet ditches, often in degraded wetlands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status: native Iowa CC: 4 to 6 M</td>
<td><strong>Lycopus asper</strong></td>
<td>rough bugleweed</td>
<td>disturbed shorelines and shallow marshes</td>
</tr>
<tr>
<td>Status: native Iowa CC: 7 to 7 M</td>
<td><strong>Lycopus uniflorus</strong></td>
<td>northern bugleweed</td>
<td>shorelines, shallow marshes, wet prairies, fens, bogs, wet thickets and meadows, swamps, streambanks</td>
</tr>
<tr>
<td>Status: native Iowa CC: 7 to 7 M</td>
<td><strong>Lycopus virginicus</strong></td>
<td>Virginia bugleweed</td>
<td>streambanks, disturbed wet soils, alluvial habitats, floodplain forests, marshes, shorelines and streambanks, seeps, wet meadows, ditches</td>
</tr>
<tr>
<td>Status: native Iowa CC: 2 to 3 H</td>
<td>Monarda fistulosa</td>
<td>wild bergamot</td>
<td>dry-mesic to mesic prairies and savannas, hill prairies, open oak woodlands, dry open forests, glades, pastures, roadsides</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>------------------</td>
<td>---------------</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>Status: native Iowa CC: 6 to 7 H</td>
<td>Monarda punctata</td>
<td>dotted horsemint</td>
<td>sand and hill prairie, sandy savanna, sand dunes, dry grassland, sandy fields</td>
</tr>
<tr>
<td>Status: native Iowa CC: 6 to 8 H</td>
<td>Scutellaria galericulata</td>
<td>marsh skullcap hooded skullcap</td>
<td>shallow marshes, pond and stream riparian habitats, bogs, openings in swamps, wet thickets</td>
</tr>
<tr>
<td>Status: native Iowa CC: 6 to 6 L</td>
<td>Scutellaria lateriflora</td>
<td>blue skullcap mad-dog skullcap</td>
<td>shallow marshes, shorelines, alluvial soils, sedge meadows, open floodplain woodlands, wet thickets, swamps, bogs, seeps and springs, edges of vernal pools and ponds</td>
</tr>
</tbody>
</table>

BONAP
| Status: native Iowa CC: 7 to 8 M | **Scutellaria ovata**  
heart-leaved skullcap | dry-mesic to mesic woodland and forest, shaded rocky slopes and bluffs, bottomland forest, edges of limestone glades, thickets, usually in higher quality habitats where the native flora is still intact |
| Status: native Iowa CC: 7 to 7 H | **Scutellaria parvula**  
small skullcap | dry-mesic soils in prairie or open woodland, sand and gravel prairie, hill prairies, dry savannas, thinly wooded bluffs and slopes, rock ledges, limestone glades, and abandoned fields |
| **Stachys aspera**  
(Flora MI)  
Status: native Iowa CC: 6 to 6 L | *Stachys aspera*  
= *S. hyssopifolia*  
var. *ambigua*  
rough hedge-nettle | marsh shorelines, floodplain forest edges, open swamps, streambanks, wet meadows and pastures |
| **Stachys arenicola**  
(Flora MI)  
= *S. pilosa*  
var. *arenicola*  
Status: native Iowa CC: none to 4 H | New species  
hairy hedge-nettle | wet-mesic prairies, shallow marshes, sedge and wet meadows, open wet woodland, floodplain savannas and woodlands, swamps, prairie swales, streambanks and shorelines, wet ditches |
| **Stachys hispida**  
(Flora MI) | **Stachys tenuifolia**  
var. **hispida**  
= **S. hispida** | woodland alluvial soils, shallow marshes, wet-mesic prairie, streambanks and shorelines | Not Available | Not Available |
| --- | --- | --- | --- | --- |

**Stachys pilosa**  
(Flora MI)  
**Stachys palustris**  
var. **pilosa**  
var. **homotricha**  
var. **phaneropoda**  
marsh hedge-nettle | shallow marshes, sedge meadows, wet-mesic prairie, streambanks | ![BONAP](image1) | ![BONAP](image2) |

**Stachys tenuifolia**  
(Flora MI)  
New species  smooth hedge-nettle | floodplain forests, wet-mesic forest edges, swamps, shallow marshes, shaded streambanks and shorelines, thickets, seeps | ![BONAP](image3) | ![BONAP](image4) |

**References**

- Iowa Natural Areas Inventory (INAI)
Plant Glossary

A. Needlelike
B. Scalelike
C. Linear
D. Oblong
E. Lanceolate
F. Elliptic
G. Oblanceolate
H. Ovate
I. Broadly elliptic
J. Obovate
K. Orbicular
L. Reniform

A. Glabrous
B. Pliose
C. Villous
D. Strigose
E. Hispid
F. Hirsute
G. Scabrous
H. Puberulent
I. Tormentose
J. Stellate
K. Sessile Glandular
L. Sessile Glandular

A. Entire
B. Crenate
C. Cronulate
D. Serrate
E. Gerculate
F. Doubly serrate
G. Dentate
H. Denticulate

A. Petiolate
B. Sessile
C. Perfoliate
D. Clasping
E. Sheathing
Reproductive Terms

**Achene** – a single seeded indehiscent dry fruit with the seed free from the pericarp except at the funicule (the stalk of an ovule attaching it to the placenta of the ovary)

**Actinomorphic** – radially symmetrical, regular; referring to a perianth with 2 or more lines of symmetry

**Bilabiate** – shape of a sympetalous corolla or synsepalous calyx with its lobes oriented into two groups; two lipped

**Calyx** – collective term for the sepals of a flower, the lower and outermost (or first) whorl of flower parts

**Corolla** – collective term for the petals of a flower, the second whorl of flower parts

**Corona** – an apparent third sterile whorl of a perianth derived from appendages of either petals or filaments

**Cypsella** – a certain type of achene characteristic of the Asteraceae, developed from an inferior ovary and usually bearing a pappus; dry, one-seeded, indehiscent

**Epipetalous** – referring to stamens that are individually adnate to the corolla

**Follicle** – a dry, dehiscent fruit derived from a single carpel that dehisces either along the suture or along the midrib but not both (1 line of dehiscence)

**Gynobasic style** – a style that appears to arise directly from the receptacle or the base of the ovary rather than from the apex of the ovary (e.g., Lamiaceae, Boraginaceae)

**Gynostegium** – a structure in Apocynaceae and some Aristolochiaceae formed from adnation of the stamens to the stigma; fusion of the androecium and gynoecium

**Inflorescence** – the part of a shoot above the uppermost node with foliage leaves that bears flowers, also, the groupings or arrangements in which these flowers are borne

**Involucre** – one or more whorls of bracts immediately subtending a flower or inflorescence, often forming a cup-like structure

**Nutlet** – a very small nut, an indehiscent, usually 1-seeded fruit with a hard, bony pericarp (fruit wall)

**Pappus** – specialized and modified calyx consisting of scales, bristles, or awns characteristic of the Asteraceae

**Pedicel** – the stalk of an individual flower

**Perianth** – the collective term for all of the outer (lower) sterile parts of a flower, comprising the calyx and corolla when both are present

**Pericarp** – the wall of a ripened, mature ovary; the wall of a fruit

**Phyllary** – one of the involucral bracts present in the involucre of a head (or capitulum) inflorescence in Asteraceae

**Pollinium** – a coherent mass of pollen shed as a unit in some Apocynaceae and Orchidaceae

**Primary inflorescence** – the arrangement of individual flowers or florets

**Raceme** – an unbranched indeterminate inflorescence with a rachis and pedicellate flowers

**Radial head** – inflorescence in the Asteraceae bearing disk flowers in the center and ray flowers around the periphery

**Schizocarp** – a fruit derived from a compound ovary that breaks apart into indehiscent 1-carpellate units (=mericarps), each containing 1 or more seeds

**Secondary inflorescence** – the arrangement of the primary inflorescences

**Spike** – an unbranched indeterminate inflorescence with sessile flowers attached directly to a rachis

**Verticil** – a whorl of flowers (inflorescence in many Lamiaceae)

**Zygomorphic** – bilaterally symmetrical, irregular; referring to a perianth divisible into equal halves only along one plane

Vegetative Terms

**Areole** – the non-vascularized spaces or tissue between the veins and veinlets of a net-veined leaf

**Cauline** – describing leaves borne on an aerial stem, usually separated by elongated internodes

**Caulescent** – possessing a stem visible above the ground

**Clasping** – a sessile leaf with lobes of blade tissue projecting around either side of the stem

**Crenate** – margin with regular rounded teeth making a scalloped margin

**Crenulate** – minutely crenate, with very small rounded teeth

**Entire** – margin that is smooth or of unbroken outline, without teeth

**Glabrous** – surface smooth or lacking trichomes (plant hairs, or epidermal outgrowths)

**Glaucous** – a bluish-green, pale gray/whitish waxy surface covering

**Hispid** – pubescent with stiff bristle-like hairs

**Involute** – the margins of a flat surface rolled inward toward the upper surface

**Node** – the joint (or transverse plane) of a stem at which one or more leaves and associated axillary buds arise

**Petiolate** – a leaf possessing a stalk or petiole, attached by a leaf stalk
Puberulent – pubescent with very short hairs, minutely pubescent
Pubescent – surface with trichomes present
Retrose – bent or turned backward or downward, used to describe prickles or hairs
Scabrous – pubescent with short, stout hairs making the surface feel like sandpaper
Serrate – sawtooth margin with sharp teeth bent toward the leaf apex
Serrulate – minutely serrate, with very small teeth bent toward the leaf apex
Sessile – a leaf blade attached directly to a node, lacking a petiole; a flower lacking a pedicel
Sheathing – a modified petiole that is prolonged into a tube that partially or completely surrounds the stem above the node to which the leaf is attached
Striate – with several parallel longitudinal lines or ridges, often rather fine and close, usually separated by grooves
Strigose – pubescent with short hairs that lie flat against the surface
Subentire – nearly or almost entire
Subsessile – a leaf with a very short, or barely perceptible petiole

Adnate – fusion of unlike parts (e.g., stamens adnate to petals)
Connate – fusion of two or more structures of the same kind (e.g., a sympetalous corolla results from the fusion of petals to one another)
Distal – remote from the point of origin or attachment (e.g., in regard to leaves near the top of the stem)
Distinct – not fused to parts of the same type or whorl
Free – not fused to other kinds of structures
Proximal – near to the point of origin or attachment (e.g., in regard to leaves near the base of the stem)