Botanical Identification Steps

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The following questions form a preliminary examination for identifying a plant species. Draw comparative samples from a few places on the same plant and from nearby plants to avoid making an error due to individual aberrations.

1. **Monocotyledon or Dicotyledon**
   - Two major subdivisions of plants
   - Are the flowers in parts of 3: potentially a monocotyledon
   - Are the flowers in parts of 4 or 5: a dicotyledon
   - Are the veins in the leaf parallel: potentially a monocotyledon
   - Are the veins in the leaf net-veined: a dicotyledon
2. **Flower: Regular or Irregular**
   - Is the flower regular, radially symmetrical and evenly divisible through two opposite planes
   - Or is it irregular-asymmetrical with at least one set of opposite halves unalike
3. **Flower: Corolla Polypetalous or gamopetalous**
   - Are the petals separate and distinct (except for being attached at the base)-polypetalous
   - Are the petals fused together-gamopetalous
   - If the perianth is of only one series (indistinct petals and sepals) the parts are now called tepals or sepals (not petals or corolla)
4. **Flower: Corolla Petals**
   - If the petals are separate (polypetalous)-how many petals per flower
   - If the petals are attached to each other (gamosepalous)-how many lobes to the individual flower
   - Do not count the ray flowers of the Asteraceae as individual petals
5. **Flower: Calyx Polysepalous or gamosepalous**
   - Are the sepals separate and distinct (except for being attached at the base)-polysepalous
   - Are the sepals fused together-gamosepalous
6. **Flower: Calyx**
   - If the sepals are distinct (polysepalous)- how many sepals per flower
   - If the sepals are fused (gamosepalous)- how many lobes per flower
   - Be sure the calyx subtends an individual flower (rather than an inflorescence, which would make it a bract)

7. **Flower: Stamen**
    - How many stamen per flower (a pistillate flower will not have any stamen)
    - Where does the stamen attach to the flower; on the petal, sepal or elsewhere
    - Do the stamen appear fertile, or vestigial
8. **Flower: Pistil**
    - How many pistils per flower
    - How many styles, stigma, and ovaries per pistil
    - Note-pistils can be complex structures, it can be hard to figure out individual versus joined parts
9. **Flower: Ovary Placement**
    - Where is the ovary located in relation to the perianth (petals and sepals)
    - Is the ovary; superior (hypogynous), inferior (epigynous), or partially so (perigynous)
10. **Inflorescence: Placement/Type**
    - Are the flowers individually placed, or clustered together
    - If individual, where are they located on the plant, terminal (top of stems), axillary (where leaf meets stem), basal (directly from the ground) or otherwise
    - If the flowers are grouped together in an inflorescence are they terminal, axillary, umbel, capitate or otherwise
11. **Leaves: Placement**
    - Where and how are the leaves placed on the plant
    - Basal, alternate, opposite, whorled, or absent
    - Do the individual leaves have leaf stems (petioles) or is the leaf blade directly attached to the stem (sessile)
12. **Leaves: Simple or compound**
    - Telling simple from compound leaves can be difficult
    - If the leaves are compound, are the leaves pinnate or palmate
    - If pinnate, are they an even number (even pinnate) or an odd number of leaflets (there is a leaflet terminating the leaf in odd pinnate)
13. **Bracts or bract-like parts**
    - Bracts are often leaflike structures subtending a leaf or inflorescence
    - Bracts are a major identification feature for the Asteraceae (where they are called an involucre)
    - Not all plants have bracts
    - Important to distinguish between bracts and calyxes
    - A calyx subtends an individual flower, bracts subtend two or more flowers