



Botanical notes

Basic elements for the study and recognition of wild plants by Marina Cerra

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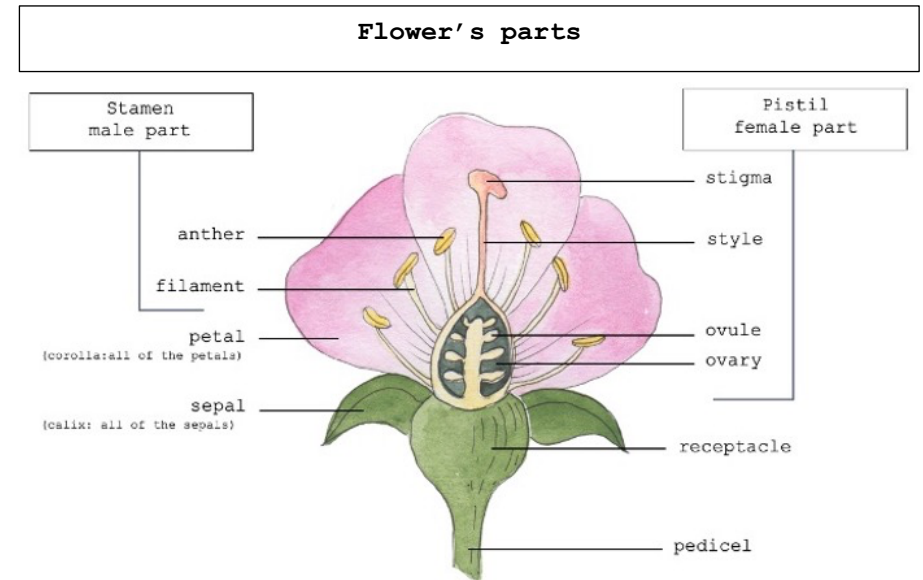
Recognizing a wildflower or a plant is not an easy task, it can be a challenge, sometimes even for an expert botanist.

From personal experience, since I am not a botanist, a good starting point is to identify the morphological characters of the plant.

Learning to recognize these characteristics allows, first of all, to observe and describe the plant accurately, but it also gives you the basic tools for identifying the botanical family to which the species belongs. In fact, in the majority of the wildflowers' guides, the plants are grouped by families whose characteristic features are similar. By training the eye, and the memory, it is possible to recognize similarities and differences between plants belonging to the same family. This represents the first step in the plants' identification process, followed by the recognition of the genus and species.

Starting from the main parts of the plant, flowers and leaves, let's identify the basic elements to observe and to take note of.

FLOWER



It is important to know the names of the flower's parts in order to describe a flower correctly.

The flower is supported by the pedicel which ends with an enlargement called the receptacle or thalamus. It forms the basis on which the floral organs are inserted. Externally there is the calix, formed by a set of green "leaves" called sepals. Internally there is the corolla, formed by "leaves" of different colours called petals. The male part of the flower consists of the stamens formed by the filament and the anther. The female part of the flower is made up of pistils (consisting of ovary, stylus and stigma). The ovary houses the ovules.



Flower shape and dimensions

The shape of the corolla, i.e. all of the petals, defines what we commonly call "the shape of the flower".

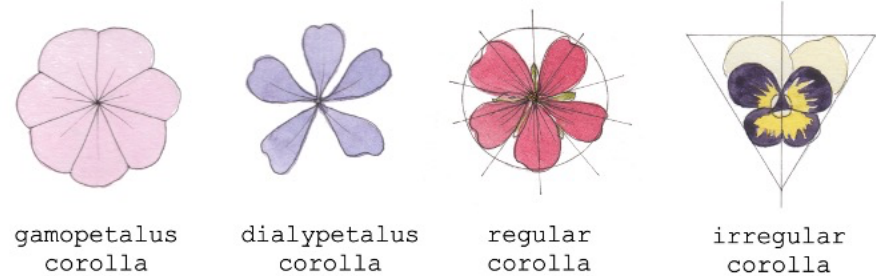
The **corolla** can take two forms:

- **gamopetalus** consisting of petals joined together to create a recognisable shape, for example a trumpet shape, like narcissus, or funnel or saucer, like convolvulus.
- **dialypetalus** formed by free petals.

There are some flowers that have petals arranged in a very complex way and for this reason well recognisable, such as snapdragons, sweet peas, irises, honeysuckles, cyclamen, lupins, foxglove, wisteria; they all have rather unusual shapes.

The corolla, based on the arrangement of the petals, can be classified as:

- **regular** when it presents infinite planes of symmetry passing through the center and the flower can be inscribed in a circle. For example, primroses, almond blossoms, poppies and carnations have regular corollas.
- **irregular** when it only has one plane of symmetry. In this case, the flower can be inscribed in an isosceles trapezoid or other figure with bilateral symmetry. Violets, orchids, rosemary and sage flowers have an irregular corolla.
- **asymmetrical** when it has no plane of symmetry.



gamopetalus
corolla

dialypetalus
corolla

regular
corolla

irregular
corolla

Petals

Other elements to take note of are the **number of petals**, in case of dialypetalus corollas, and the **number of lobes** in case of gamopetalus corollas. The number and arrangement of the petals, in fact, represent characteristic elements for the purpose of classification. For example, all roses have petals in multiples of 5 and there are some plants that have 4 petals arranged in a cross and for this reason are called cruciferous/brassicacae.

We can then look at the **petals and their shape**. For example, long and narrow petals, called "ligules", are typical of daisies and in general of all plants belonging to the composite/asteraceous family.

The petals can have small points, or unusual shapes (for example heart-shaped) or small protuberances.

We can also ask ourselves, what are the petals like? Light, translucent, heavy, papery, wrinkled, fleshy? Each of these characters must be observed, noted and possibly remembered.



Some families take their name from the **arrangement** of the petals (as "composite") or from their **shape** (as "labiate", with a two-lipped corolla).

Start looking at the center of the corolla. What does it look like? Does it have a nice tuft of golden stamens? If so, are they long, short, what color? Is there a stem column (a sort of long central tuft), or a button? Is it like a throat, like a trumpet, or maybe like an opening? Is there a capsule where the seeds will form? The oleander, for example, has a pentagonal-shaped center, a clear indication of belonging to the apocinaceae family, which also includes the periwinkle and the false jasmine.

Inflorescences

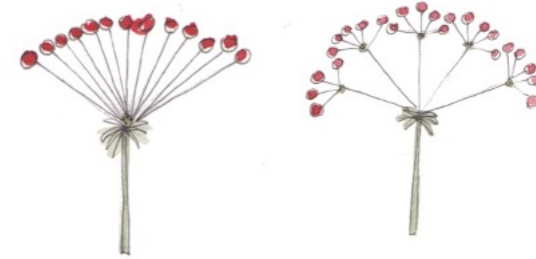
The arrangement of the flowers on a plant is called **inflorescence** and can be formed by a **single element** (solitary flower), or by **groups of variously arranged flowers** that branch off from a single peduncle in such a way as to appear as a single flower.

In this last case, what are the inflorescences like (long and thin, like flowering spikes, or fan-shaped, or ball-shaped? Inflorescences are different and can be **simple** or **complex**.

Some families have a predilection for certain types of inflorescences, for example the apiacea/umbelliferae (the celery and parsley family) take their name from the typical umbrella inflorescence.

The flowers can be turned up or down, carried in erect or loose stems. How are they attached to the stem (with the sepals, in a direct and evident way, sometimes forming small knots or thickening and swellings? Observe where the flowers are positioned along the stem: near or far from the leaves? Are they so close that they look almost

attached to the leaves? Do they have a long stalk or are close to the stems? And how are the sepals wrapped up?



Umbel

Compound
umbel

EXAMPLES

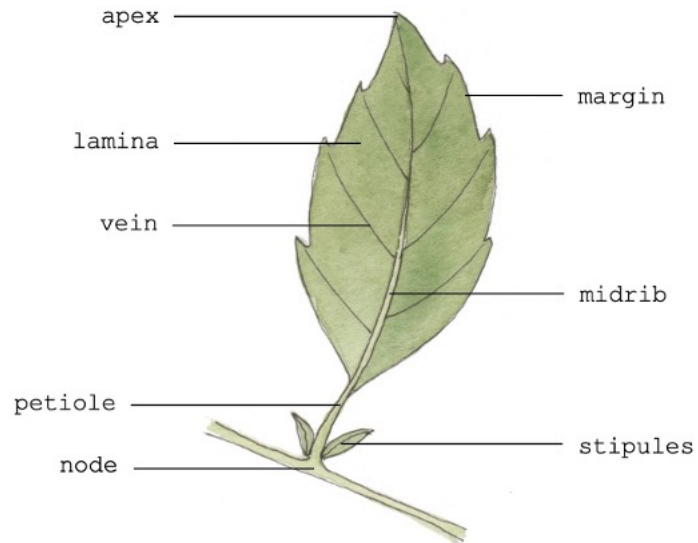
UMBEL - cherry, geranium, garlic, onion.

COMPOUND UMBEL - It is an umbrella of umbrellas. Examples: parsley, anise, fennel.



LEAVES

Leaf parts

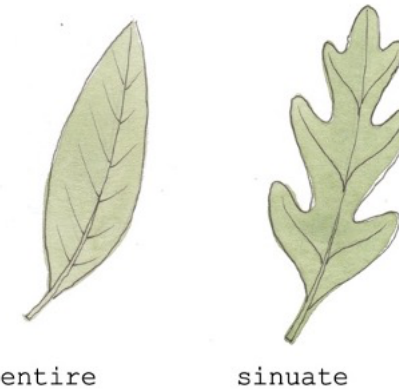


Leaves have very different sizes and shapes, but in general they consist of four main parts:

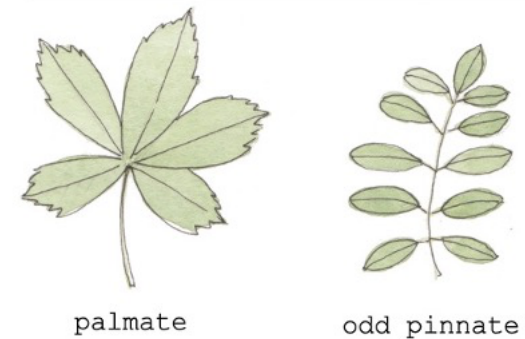
- **lamina:** the extended part of the leaf;
- **petiole:** the part that connects the leaf to the branch;
- **node:** the point of attachment of the petiole to the branch;
- **stipules:** laminar expansions at the base of the petiole, sometimes absent or deciduous (more or less small accessory leaves).

Type of leaves

Simple leaves



Compound leaves





A leaf is called **simple** when it has only one leaf blade. In this case, the lamina may appear:

- **whole**, i.e., without lobes or incisions, or with lamina incisions that do not reach half the distance between the central rib and the outline of the leaf;
- **sinuate**, i.e., with incisions greater than the distance between the central rib and the contour of the leaf.

If, on the other hand, the blade is divided into smaller and separate parts called "leaflets", the leaf is said to be **composed**. Among the compound leaves the most common ones are the **palmate**, with the leaflets all inserted in the same point at the end of the petiole (for example horse chestnut) and the **pinnate** when the leaflets are arranged in pairs along a supporting axis (robinia, walnut). Pinnate leaves can be **odd pinnate** or **even pinnate** if they end with 1 or 2 leaflets, respectively. There are also doubly pinnate leaves, common for example among ferns.

Phyllotaxy

Phyllotaxy describes the arrangement of the leaves along the stem.



The most common arrangements are:

- **opposite leaves**, two leaves per node (basil).
- **alternate leaves**, only one leaf per node (elm).
- **whorled leaves**, three or more leaves per node (verbena)

Leaf attachments

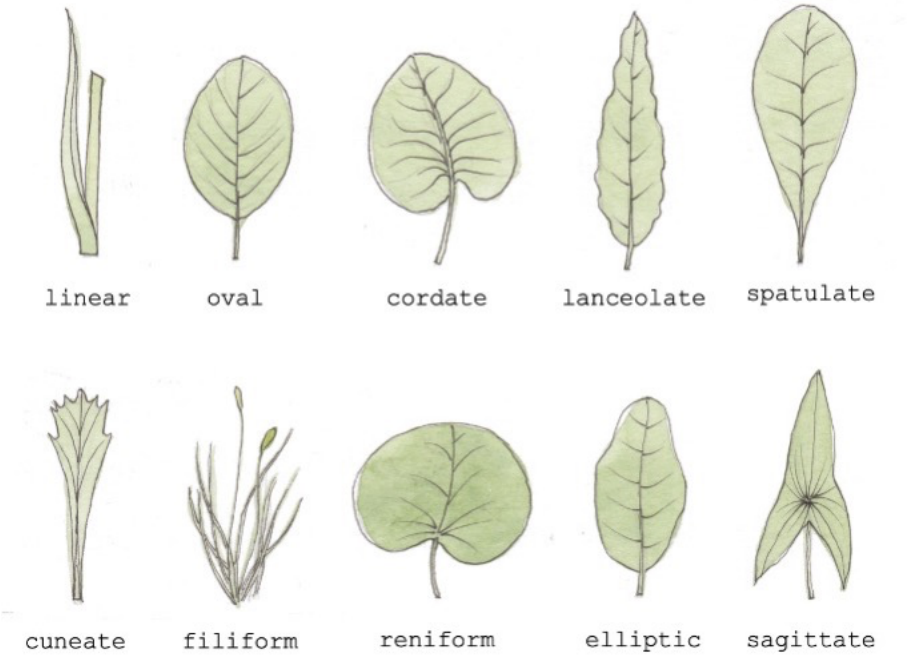




Leaf shapes and margins

There's a lot of variability regarding leaf shapes and margins, each with its own correct botanical term. Some of the more common types are listed below.

Leaf shapes

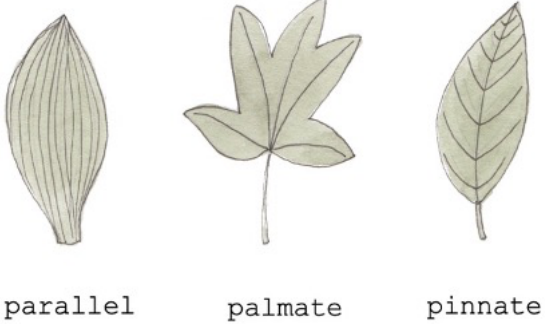


Leaf margins



Leaf venation

Another characteristic elements of the leaves are the veins and their arrangement. There are primary and secondary veins that can be arranged axially, parallel to each other (parallel) or form a dense network (reticulate). In the latter case, the most common are the pinnate leaves, with the secondary veins paired oppositely on the sides of the main vein or the palmate, with several primary veins diverging from the base of the leaf like the fingers of a hand from the same point of origin.





STEM

Based on the stem's development and the texture of its tissues, a plant can be:

Herbaceous, if its tissues are not lignified, and it can be called:

- Stem, if it bears leaves and flowers and it is typical of herbs;
- Culm, if the stem is hollow inside at the level of the internodes, but very resistant, with many knots and is typical of Graminaceae (cereals);
- Scape, if it's without leaves and branches, it bears only the terminal flowers (Tulip).

Woody, which in turn can be:

- suffruticose if it is branched from the base but its branches are lignified only at the base, while the upper ones remain herbaceous (Rose);
- shrubby or bushy if it is branched up from the base and does not reach 5 m in height (Hawthorn);
- arboreal if it has branches that start at a certain height and exceed 5 m (Chestnut, Beech, etc.).

FRUITS AND SEEDS

A simple and useful feature that can help us recognize a plant is the presence of seeds and fruits.

Fruits can easily be divided into two categories:

- fleshy fruits
- dried fruits

Unlike fleshy fruits, dry ones, when ripe, open to release the seeds.

OTHER CHARACTERISTIC ELEMENTS

There are many more features and characteristic elements to take note of in order to recognize a flower: the flowering period, the environment in which it grows (wet, dry, in the shade, in full sun, rocky, sandy, etc.), the height, the posture (creeping, climbing, bushy), the color of the leaves and the stem, the presence of thorns and hairs, seeds and fruits and much more.