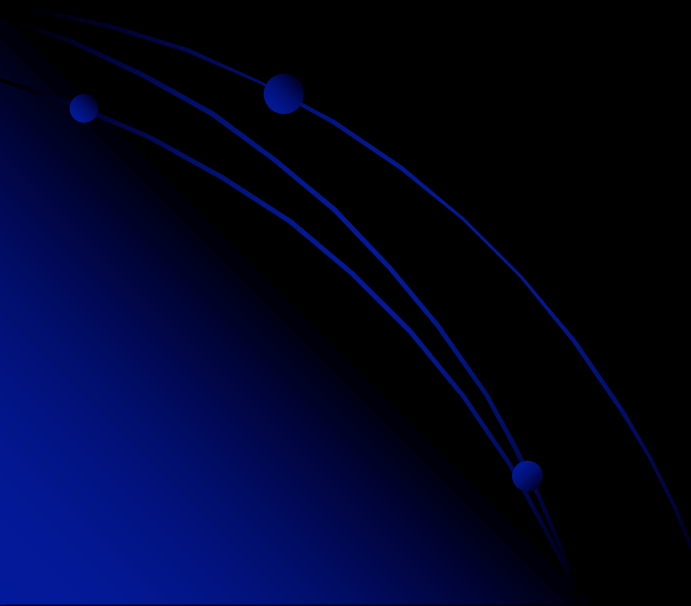


2-THE CHARACTERISTICS OF PINACEAE, TAXACEAE FAMILIES



1- PINACEAE FAMILY (The Pine Family)

Pinaceae family is the largest extant conifer family in species diversity, with between **220 and 250 species** in **11 genus**, but the second-largest family (after **Cupressaceae**) in geographical range, found in most of the northern hemisphere.

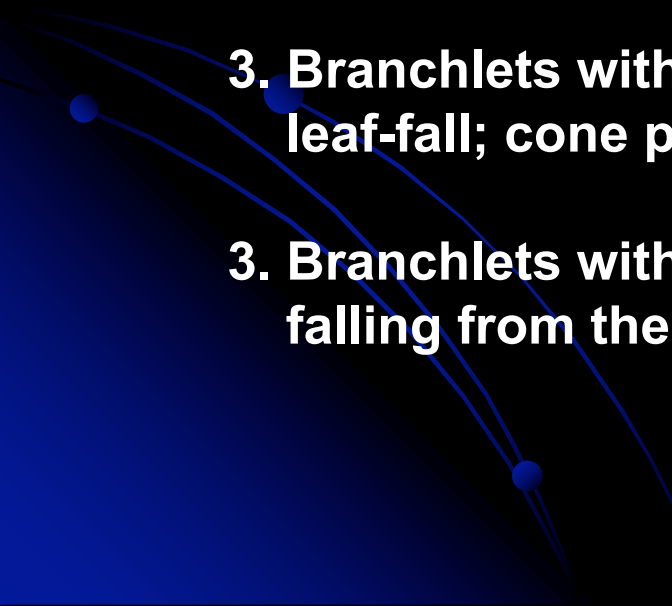
Pinaceae family includes **11 genus** in World (e.g. *Abies*, *Cedrus*, *Cathaya*, *Picea*, *Keteleeria*, *Larix*, *Nothotsuga*, *Pinus*, *Pseudolarix*, *Pseudotsuga*, and *Tsuga*)

Pinaceae includes **4 genus** in Turkey (e.g. *Abies*, *Cedrus*, *Picea*, and *Pinus*)

A-CHARACTERISTICS

1. Members of the *Pine family* are mostly evergreen with a few deciduous taxa and monoecious trees or rarely shrubs.
2. It have the **resin canals** in **wood** and **leaves**.
3. Branches are **opposite** or **whorled**, and rarely **spirally** arranged
4. Leaves linear or needle-like, borne in fascicles (2 to 5) or whorls on the short shoots, or singly on long shoots.
5. Large female cones with numerous, spirally-arranged scales and small male cones; pollen dispersal by wind; pollen usually with two appendages.
6. Pines are among the most commercially important of tree species.

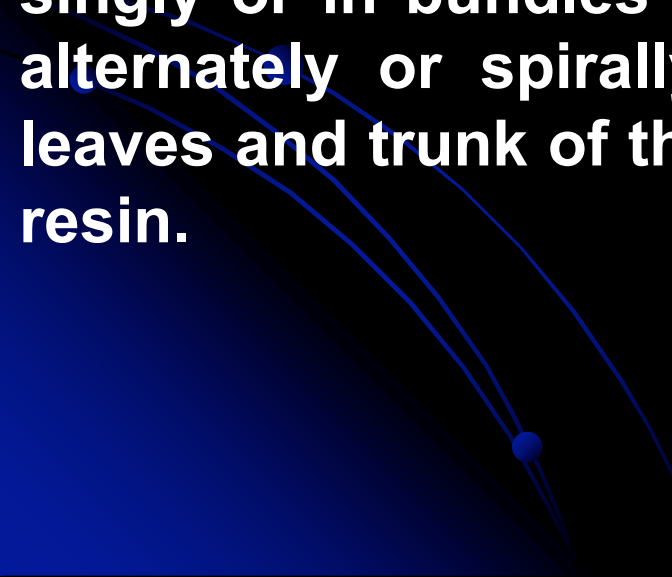
The Genus Identification key of Turkish Pine (*Pinaceae*) Family

1. Mature leaves borne on short shoots, in whorls or fascicles of two
 2. Leaves in fascicles of two, each fascicle surrounded by a sheath at the base.....**Pinus**
 2. Leaves in whorls, without sheaths at the base.....**Cedrus**
 1. Mature leaves borne spirally on long shoots; short shoots absent
 3. Branchlets with numerous peg-like projections persisting after leaf-fall; cone pendulous, falling as a whole.....**Picea**
 3. Branchlets without such projections; cones erect, the scales falling from the persistent axis**Abies**
- 

THE LEAVES MORPHOLOGY OF GYMNOSPERM

1. PINACEAE

The leaves of the *Pinaceae* are evergreen needles which grow singly or in bundles on the short shoots, They are typically alternately or spirally arranged, on the short shoots. The leaves and trunk of the tree are aromatic and contain a sticky resin.



1. GENUS ABIES

Leaves linear to linear-oblong, flattened, acute to emarginate, often appearing 2-ranked. Leaf scars circular, disciform.

The leaves are significantly flattened, sometimes even looking like they are pressed (*A. sibirica*). The leaves have two whitish lines on the bottom, each of which is formed by wax-covered stomatal bands. In most species, the upper surface of the leaves is uniformly green and shiny, without stomata or with a few on the tip, visible as whitish spots.

Other species have the upper surface of leaves dull, gray-green or bluish-gray to silvery (glaucous), coated by wax with variable number of stomatal bands, and not always continuous.



2. GENUS PICEA

Leaves radiating, Leaves dark green, adpressed, quadrangular, obtuse at the apex. The leaves are needle-like, the shortest of any spruce, rhombic in cross-section, dark green with inconspicuous stomatal lines.



3. GENUS CEDRUS

Long shoots bearing scattered leaves, short shoots bearing leaves in whorls. Leaves needle-like, persistent.



4. GENUS PINUS

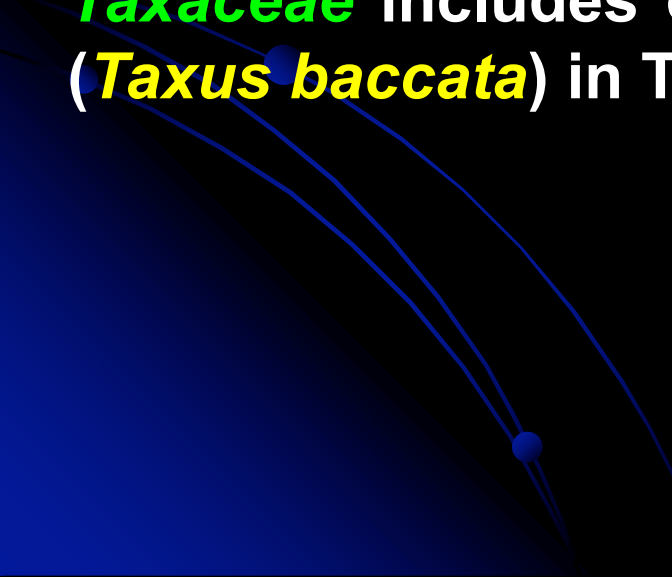
Leaves dimorphic, spirally arranged; foliage leaves (needles) (1)2-5(6) per fascicle, persisting 2-12 or more years, terete or 2-3-angled and rounded on abaxial surface, sessile, sheathed at base by 12-15 overlapping scale leaves, these persisting for life of fascicle or shed after first season; resin canals mostly 2 or more.



2. TAXACEAE FAMILY

Taxaceae contains 6 genera (e.g. *Amentotaxus*, *Austrotaxus*, *Cephalotaxus*, *Pseudotaxus*, *Taxus*, *Torreya*) and 30 species of evergreen trees and shrubs, distributed mainly in the Northern Hemisphere in World.

Taxaceae includes only one genus (*Taxus*) and species (*Taxus baccata*) in Turkey.



Characteristics;

1. Usually neither resinous nor aromatic dioecious or monoecious evergreen trees or shrubs.
2. Leaves simple, alternate arranged, linear to linear-lanceolate, appearing 2-ranked, have pale green or white stomatal bands on the undersides and without resin canals.
3. The male cones sheds pollen in the early spring and solitary or clustered, axillary on year-old branches, globose to ovoid, sporophylls bearing 2 - 16 microsporangia.
4. The female cones are highly reduced, with just one ovuliferous scale and one seed. When the seed is mature, the ovuliferous scale develops into a **fleshy aril** partly enclosing the seed.

GENUS TAXUS

Leaves without resin canals, appearing 2-ranked. Leaves spirally arranged, but appearing 2-ranked, linear, acute.



Thanks...

