Is It Pine, Spruce, or Fir?

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Figure 1. Common conifers: Austrian pine (Pinus nigra), Colorado blue spruce (Picea pungens), and white fir (Abies concolor). Photos by author.

Pine (Pinus spp.), spruce (Picea spp.), and fir (Abies spp.) are all types, or genera, of medium to tall (60-200 feet), evergreen, needle-bearing, cone-producing trees that have a conical or pyramidal shape. Collectively, they are called conifers because of their cone production. Conifers are commonly found growing in Ohio landscapes and several species are used as Christmas trees. To the casual observer, these trees look similar, but they belong to different genera. Homeowners, landowners, and consumers often get these trees confused and even some well-versed gardeners have difficulties keeping them straight. And yet, it is very important to be able to identify these trees to understand where they will grow well, how to take good care of them, and when needed, how to diagnose why they might be ailing.

Identification—Where to Begin

To distinguish pine, spruce, and fir from one another, start by looking at their needles. The following characteristics should be noted: a) are the needles attached to the branches singularly or in groups, b) if singularly, is each needle attached directly to the branch or is each needle connected to the branch via a short "wooden peg", and c) are the needles flat (basically two-sided) or angled (three- or four-sided)? Additional needle characteristics (e.g., needle length,
sharpness, flexibility, scent, and color) are needed when separating tree species from one another within the genera (pines, spruces, and firs).

**Pines (Pinus spp.)**

Pines have slender needles (leaves) arranged in bundles of two, three or five with a permanent or deciduous papery wrap or sheath at their bases called a fascicle (Fig. 2). This characteristic of having needles in bundles is unique to pines and immediately separates them from the spruces and firs, which present their needles on the branches singularly.

![Figure 2](image)

**Figure 2.** Pine needles are produced in bundles or clusters of two, three, or five needles with papery fascicle at base (inset). The examples being Virginia pine (two-needled), loblolly pine (three-needled), and eastern white pine (five-needled). Photos by author.

**Spruce (Picea spp.)**

Spruces have needles attached individually to the branches via short wooden, peg-like structures called pulvini (Fig. 3). Spruces retain their needles for four to 10 years before shedding them. When the needles are shed, the pegs remain attached to the branches making the spruce branches feel rough after the needles are gone. Spruce needles tend to be stiff and sharply pointed making them somewhat unpleasant to work around when doing yardwork, pruning or removal, or decorating. Spruce needles easily roll between one’s fingers and have a distinctive square (four-sided) shape.

![Figure 3](image)

**Figure 3.** Individual spruce needles attach to branches via a short, wooden, peg-like structure (inset). These “wooden pegs” remain behind after the needle drops. Conifer images are of Colorado blue spruce (P. pungens) and Norway spruce (P. abies). Photos by author.
Fir (*Abies* spp.)

Firs also have needles attached individually to the branches. However, fir needles lack pegs and thus the branches are not rough after the needles are shed. The base of the fir needle is expanded into a round base giving the needle the appearance of a suction-cup tipped dart. When the needle is pulled off the branch or is naturally shed, a small, circular leaf scar is left behind. Fir needles are soft, flat (two-sided) and cannot be rolled between one's fingers. Fir needles give off a citrusy scent when crushed, which is a desirable aroma for candles.

![Fir needles](image)

**Figure 4.** Individual white fir (*Abies concolor*) needles attach directly to branches. The base of the fir needle looks like a suction cup (inset). The entire needle drops from the fir branch when shed, leaving a smooth round leaf scar. Photos by author.

Cones

Beyond the needle characteristics of pines, spruces, and firs, the next characteristic for identification are the female cones or strobili that each genera produces. These characteristics include position in which the mature cone is held, flexibility of the cone, and whether the cone remains intact at maturity.

Female cones of pine, spruce, and fir start development pointing upward. Mature pine and spruce cones are pendulant or hang downward from their point of attachment to the branch. Fir cones on the other hand remain upright or erect (figures 5-7).

Cones consist of scales attached to a central stalk. At maturity, the scales of pine and spruce remain attached to the central stalk and the entire cone frequently falls to the ground intact after most of the winged seeds are dispersed from between the scales. The scales and seeds of fir cones break loose and crumble away from the central stalk while it is still attached to the tree. Fir cones are seldom found intact on the ground.

The thickness or woodiness of the scales of the cones determines how flexible the cone may be. Pine cone scales tend to be thicker and woodier than spruce cone scales which are more papery in texture. As a result, pine cones tend to be more rigid than spruce cones. Many species of pine have cone scales that are armed with spines or prickles. The length, sharpness, and persistence of these spines can help to identify the pines.
Figure 5. Pine cones from a Virginia pine (*P. virginiana*) (mature) and eastern white pine (*P. strobus*) (mature and immature). Photos by author.

Figure 6. Colorado (*P. pungens*) and Norway (*P. abies*) spruce cones with thin, papery, cone scales. Photos by author.

Figure 7. Canaan fir (*A. balsamea var phanerolepis*) and white fir (*A. concolor*) cones. Photos by author.

**Which Pine, Spruce, or Fir?**

Additional, more detailed characteristics are used to separate the different species of these three groups of coniferous evergreens. Some of these characteristics include needle length, needle color, bark characteristics, and additional cone characteristics. These characteristics are detailed in many field guides for field identification of trees. Below are commonly found pines, spruces, and firs in Ohio.

Common spruces in Ohio include Colorado spruce, Norway spruce, and white spruce (including dwarf Alberta spruce). Another spruce sometimes found in arboreta, parks, and cemeteries is Serbian spruce (it is also becoming a more regular choice for landscapes).

Fir trees are not nearly as common in Ohio as spruce and pine. However, they are often grown as Christmas trees. The most common firs in Ohio include balsam fir (including Canaan fir), Fraser fir, and white fir.

References


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