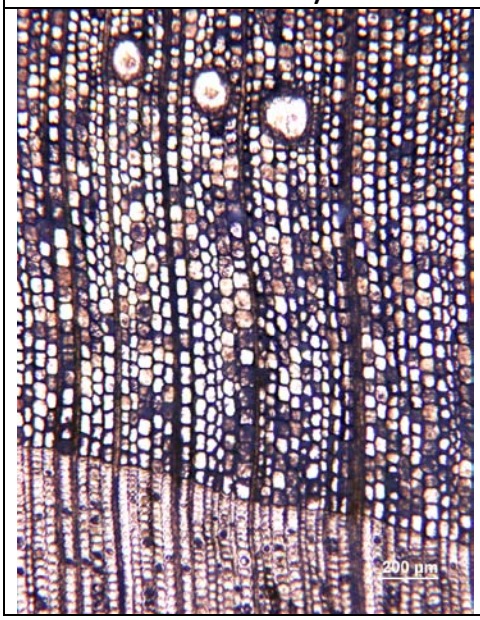
***Picea tertiarum* (spruce)**

Family: Pinaceae

Synonym: *Piceoxylon tertiarum* Prakash 1968

Naming reference: Wheeler, E.A. & T.A. Dillhoff. 2009. The Middle Miocene wood flora of Vantage, Washington, USA. IAWA Journal, Supplement 7. 101p.

Additional reference: Prakash, U. 1968. Miocene fossil woods from the Columbia basalts of central Washington, III. Palaeontographica Bd. 122, 183-200.

Transverse section (with three axial resin canals)	Radial section	Tangential section (showing fusiform ray with resin canal)
		

Photos courtesy Dr. E.A. Wheeler

Diagnostic features: Growth rings distinct with gradual transition from earlywood to latewood. Both axial and radial resin canals are present, surrounded by thick walled epithelial cells. Axial resin canals usually occur in central portion of growth ring, may be solitary or in small tangential groups. Radial resin canals occur in multiseriate fusiform rays. Other rays typically uniseriate (some may be partly biseriate). In radial section, rays can be seen to have marginal rows of ray tracheids with small teeth (the bottom row of cells in the radial section figured above consists of ray tracheids). Axial parenchyma and spiral thickenings absent.

Discussion: Beck (1945) reports this as a common wood type from the Vantage wood deposits. Under a hand lens, it can look very similar to *Pseudotsuga* (Douglas fir). In his publications, Beck typically referred to wood of the undifferentiated spruce/Douglas fir type as *Piceoxylon.* In cross section view, *Pseudotsuga* typically has a more abrupt transition from earlywood to latewood. There is some overlap in features though, so any hand lens identifications should be taken with a grain of salt. In thin section, *Pseudotsuga* has spiral thickenings in axial and ray tracheids that clearly distinguish it from *Picea*.

The spruces have a long history in the Pacific Northwest, from the Eocene of Washington and British Columbia all the way up to modern times. Characteristic foliage, cones, and seeds are common elements in many fossil deposits.

Fossil spruce cone from the Miocene Mascall flora of Oregon