

InsideWood web site (10 Oct. 2009)

5,811 descriptions extant dicots

1,595 descriptions fossil dicot

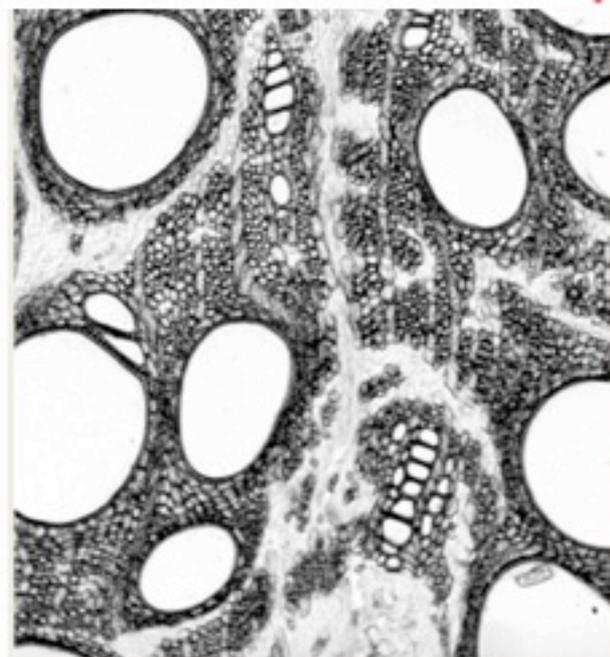
33,974 images extant dicots

1,876 images fossil dicots

NCSU LIBRARIES



<http://insidewood.lib.ncsu.edu/search/>



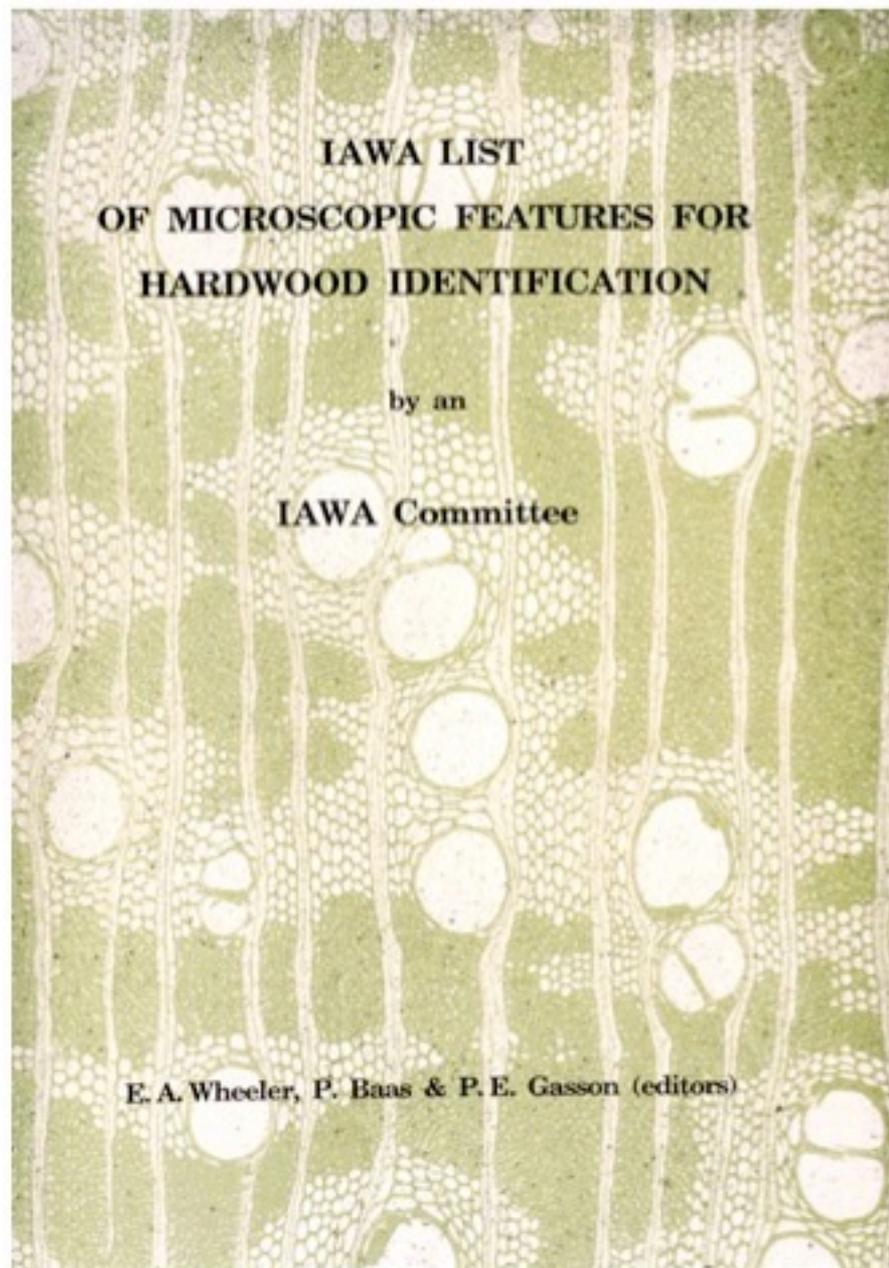
Elisabeth Wheeler, Shirley Rodgers & Kathy Brown [PIs], Cristyn Kells, Programmer

Support from NSF

BRC July 1, 2003 -- June 30, 2005

DBI August 1, 2005 - December 31, 2008





Descriptions in InsideWood are based on the IAWA Hardwood List

Caution: Anatomical features are coded, geographic source is given, **but** information on the non-anatomical features is incomplete.

Order form at International Association of Wood Anatomists (IAWA) Web Site

<http://bio.kuleuven.be/sys/iawa>

“Constraints” or Compromises

Maybe there is a controlled vocabulary for describing wood (e.g. IAWA Hardwood List), **BUT**

Although appearing docile, wood anatomists are not controlled, so interpretations of features and completeness of descriptions may vary

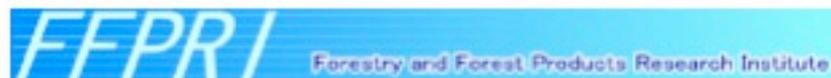


Images important
For independent
assessment of
characters

Lydia White and Peter Gasson

Authors of Mahogany. Kew Publishing. Royal Botanic Gardens, Kew

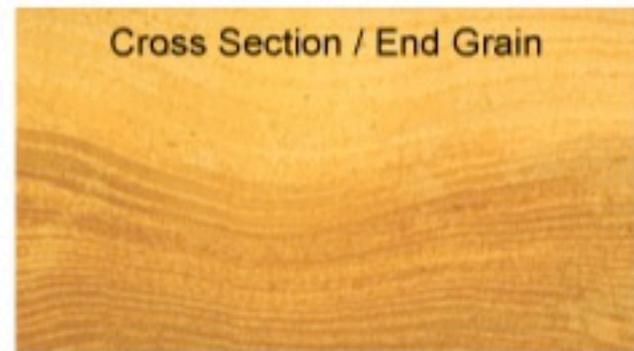
Collaborative Effort



Bep Mennega

Contributions from Pieter Baas, Hans Beeckman, Sherwin Carlquist, Pierre Détienne, Peter Gasson, Jugo Ilic, Jessica Lee, Frederic Lens, *Alberta Mennega*, Regis Miller, Shuichi Noshiro, Imogen Poole, H.G. Richter, Lubbert Westra.

WHITE ASH- *Fraxinus americana* – Paratracheal parenchyma present, in beginning of latewood usually vascentric, then to aliform, then confluent 'late' in the latewood



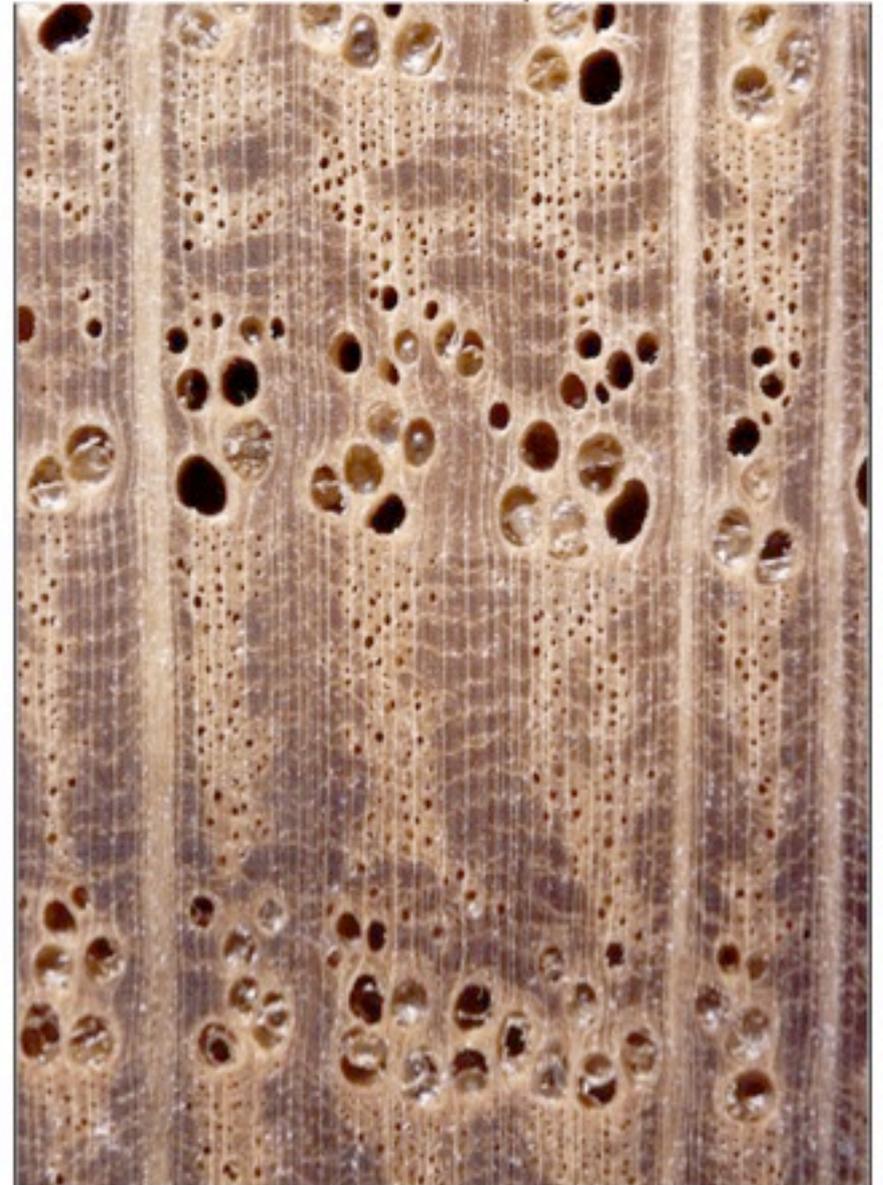
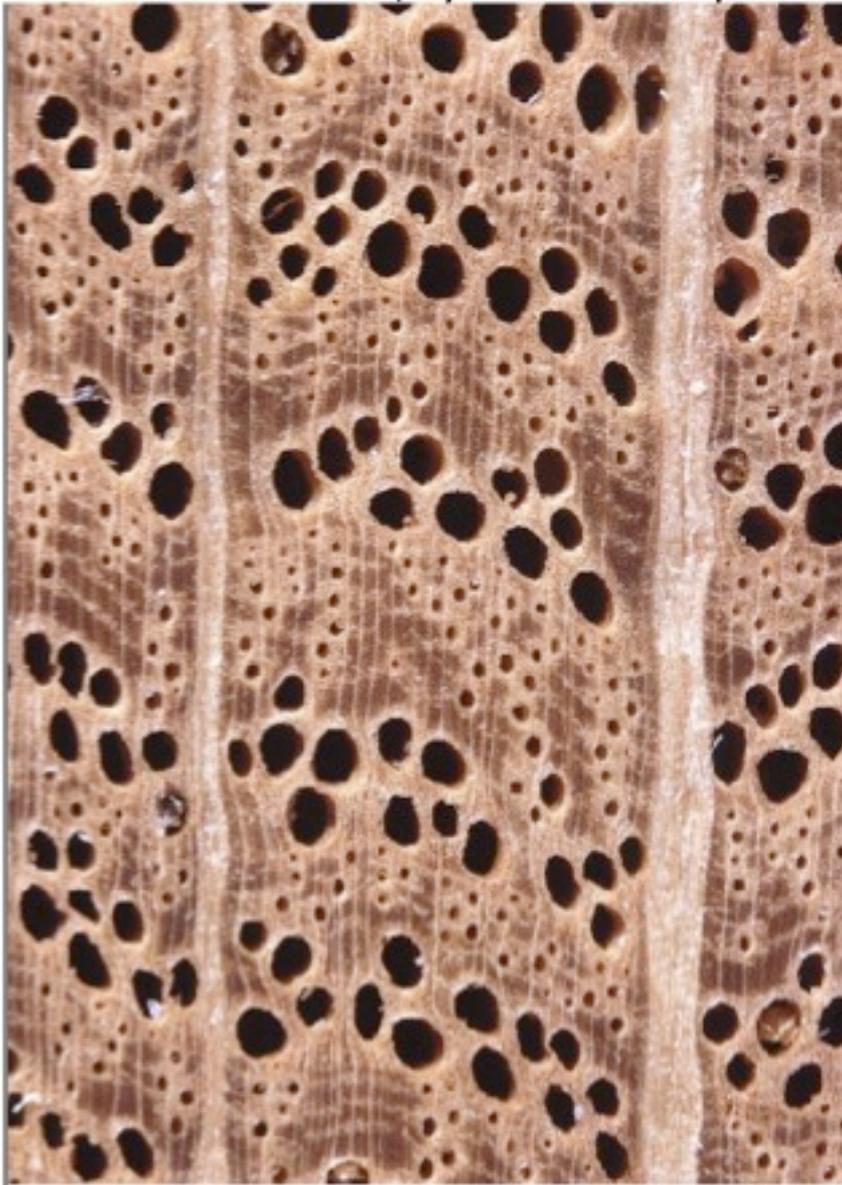
E.A. Wheeler photo

R. Hough samples, NCSU Library Special Collections

Red Oaks – latewood pores rounded in outline, usually easy to see with handlens

White Oaks – latewood pores, thin-walled and angular in outline, narrow -difficult to see with handlens, tyloses often present.

L.Y.T. Westra photos



Red Oaks – “Tallest rays less than 1 inch” (Hoadley, p. 103)

White Oaks – “Tallest [rays}] greater than 1 ¼ inch” (Hoadley, p. 103).

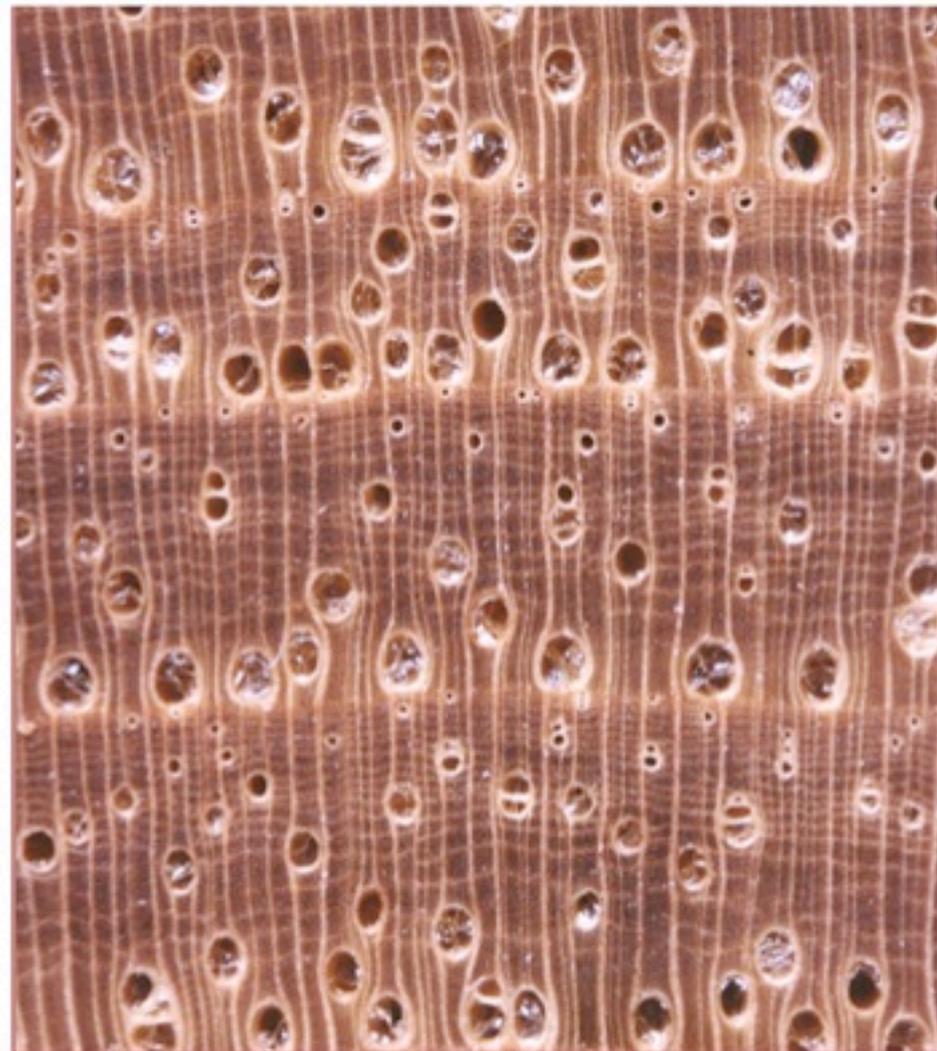
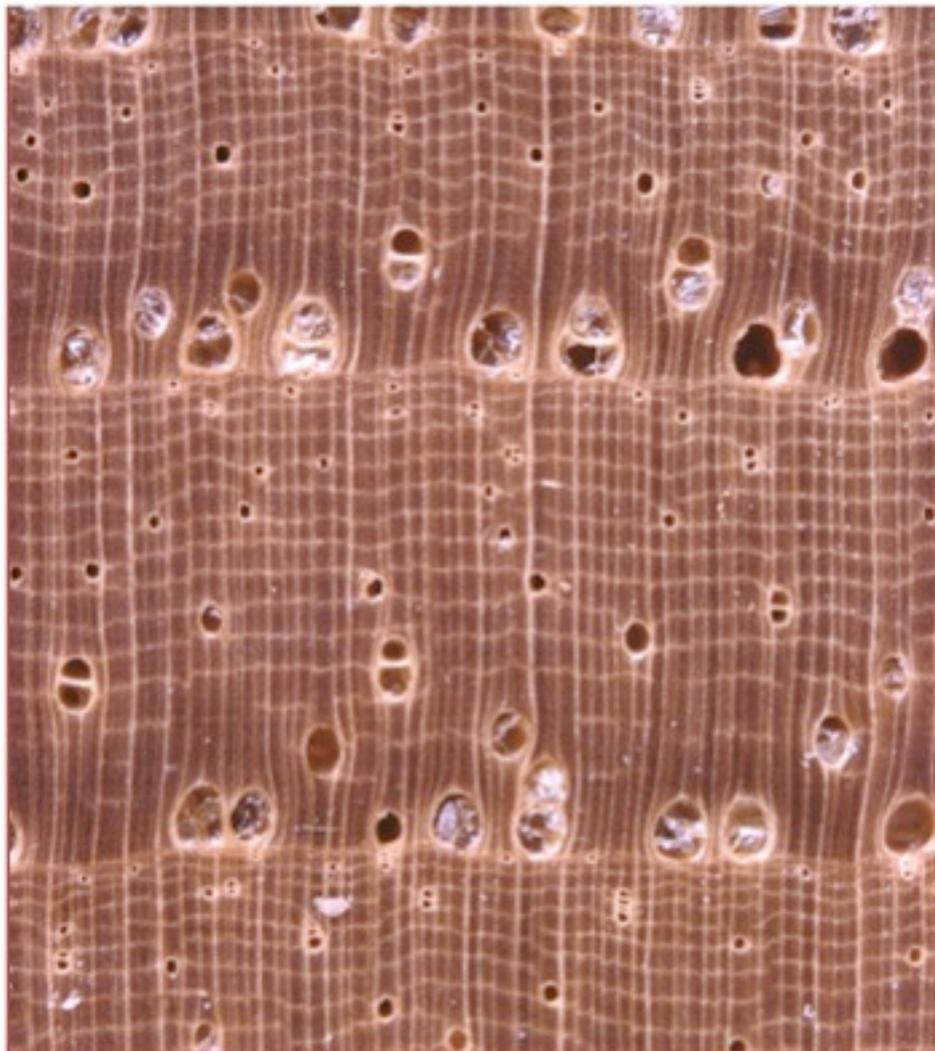


True Hickories

“True hickories are more distinctly ring porous than the pecan hickories, which tend to be semi-ring porous to diffuse porous. Axial parenchyma lines not in earliest earlywood in True Hickories” (Stark, 1953).

L.Y.T. Westra photos

Pecan



True Hickories vs Pecan Hickories



E. A. Wheeler photos

True Hickories vs Pecan Hickories

Carya glabra

Pignut Hickory

Carya illinoensis

Pecan hickory

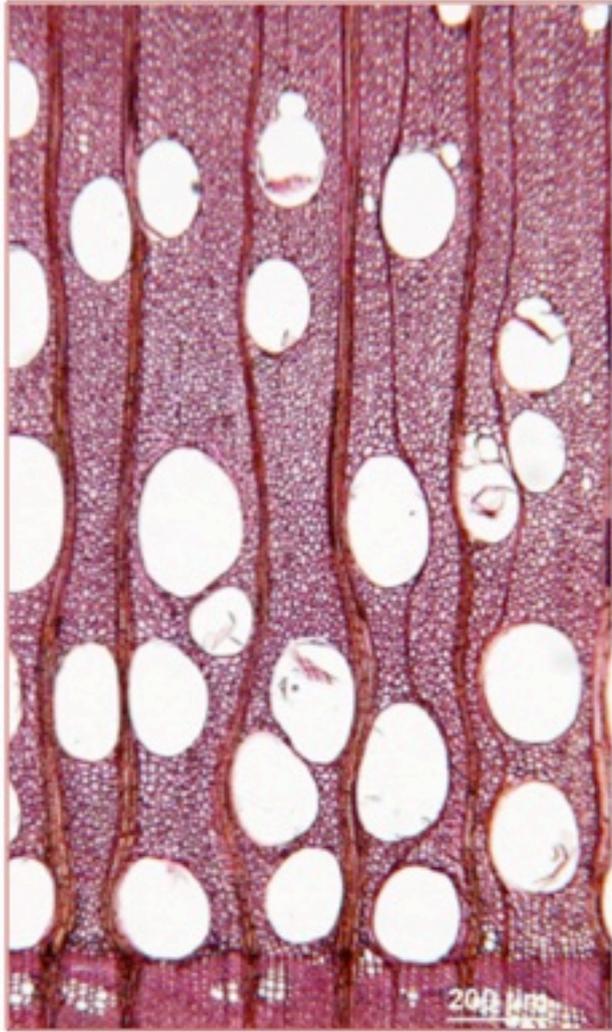
Cross

Radial

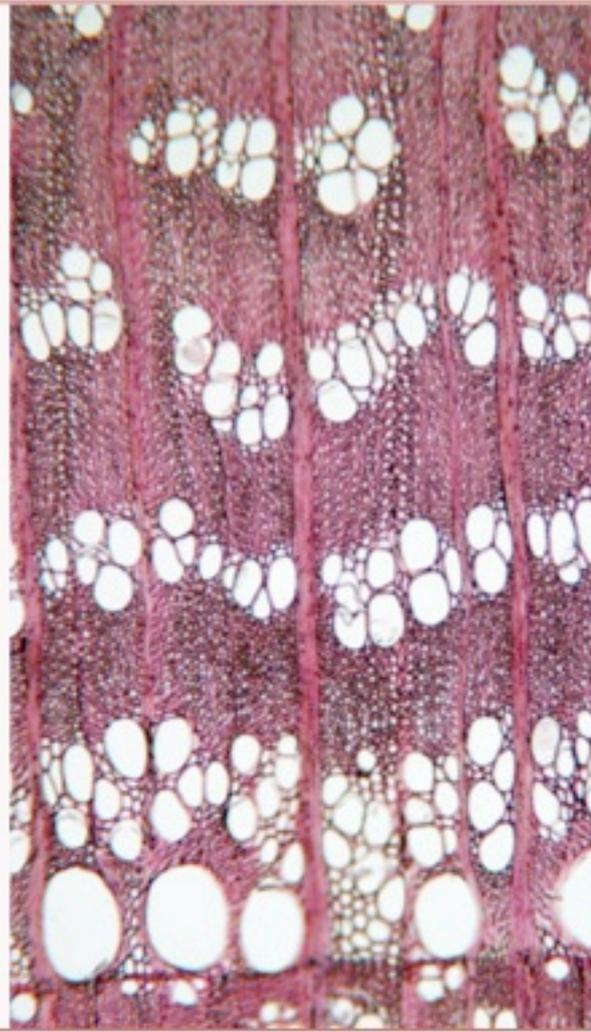
Tangential

R. Hough samples
NCSU Library Special Collections

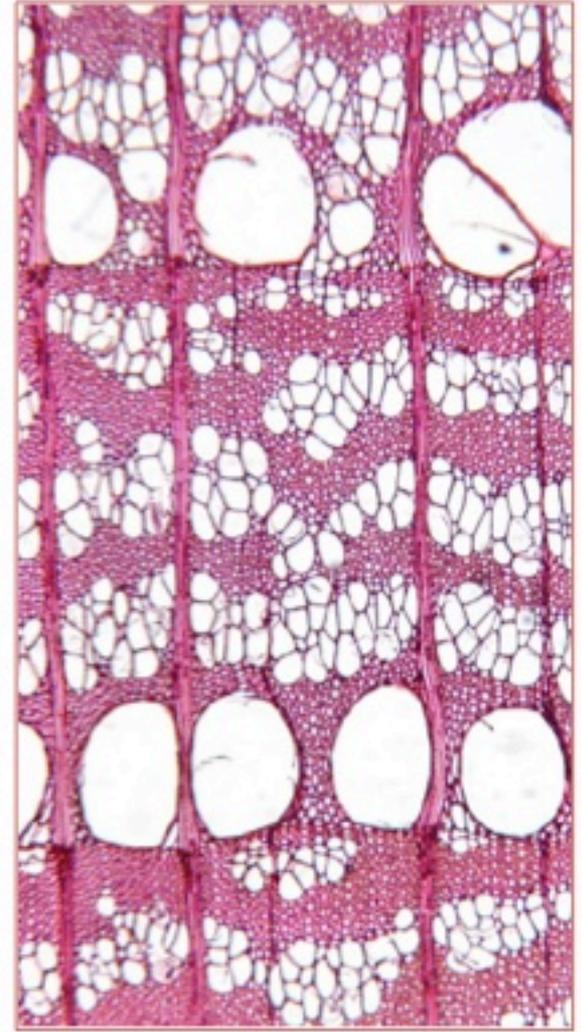
In some ring porous woods, e.g., species of *Ulmus* (Elm)
Characteristics of earlywood useful for distinguishing species groups.



Red Elm, Slippery Elm:
Ulmus rubra

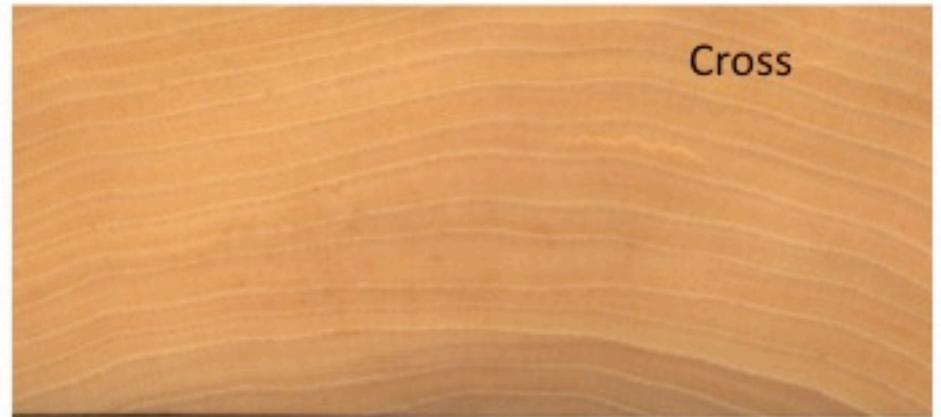


Rock Elm (a Hard Elm).
Ulmus thomasi



American Elm
Ulmus americana
Photos: E.A. Wheeler, NCSU

Ulmus americana. American Elm

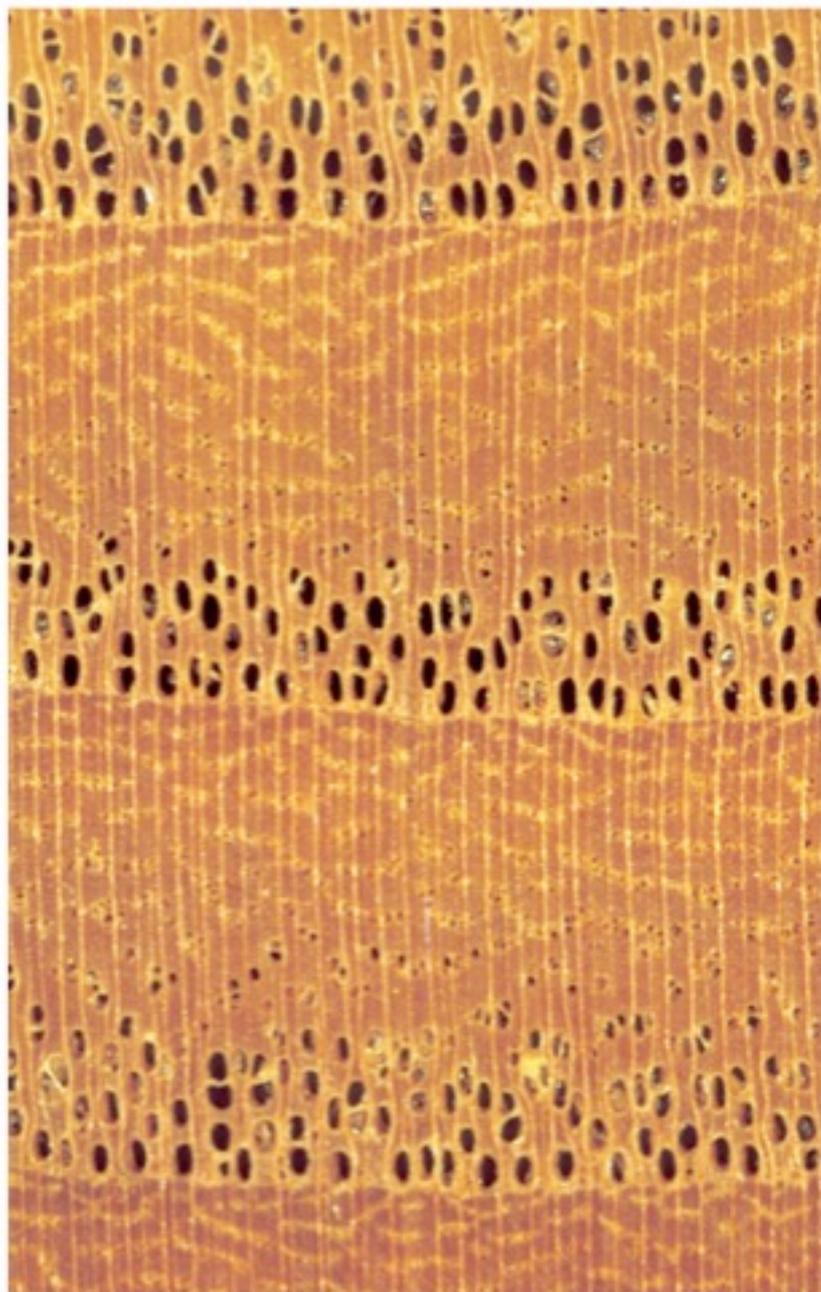


R. Hough samples
NCSU Library Special Collections

Ulmus alata. Winged elm (A Hard Elm)



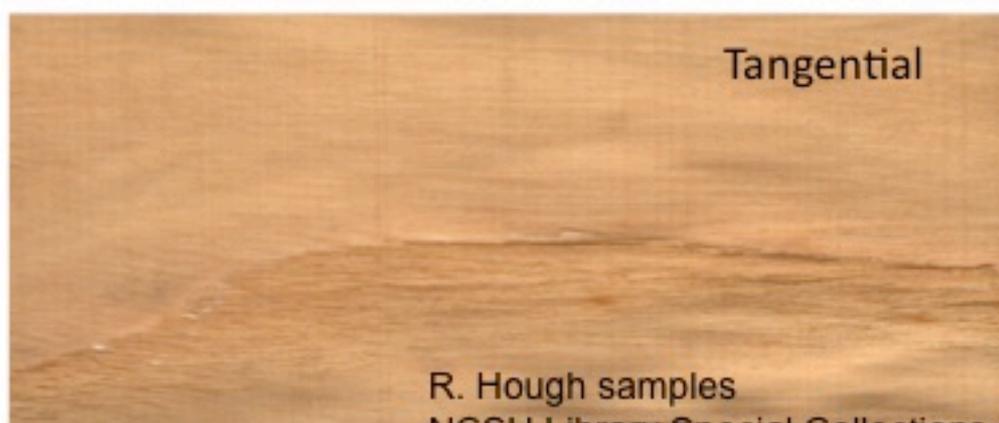
Ulmus rubra. Slippery Elm



Cross



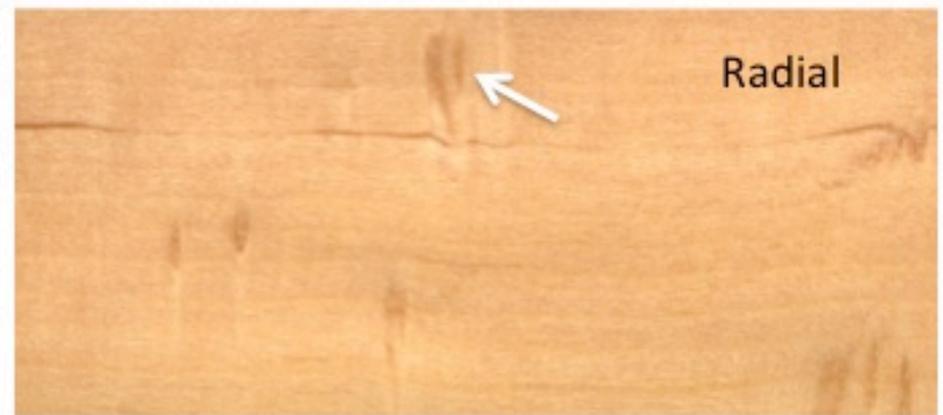
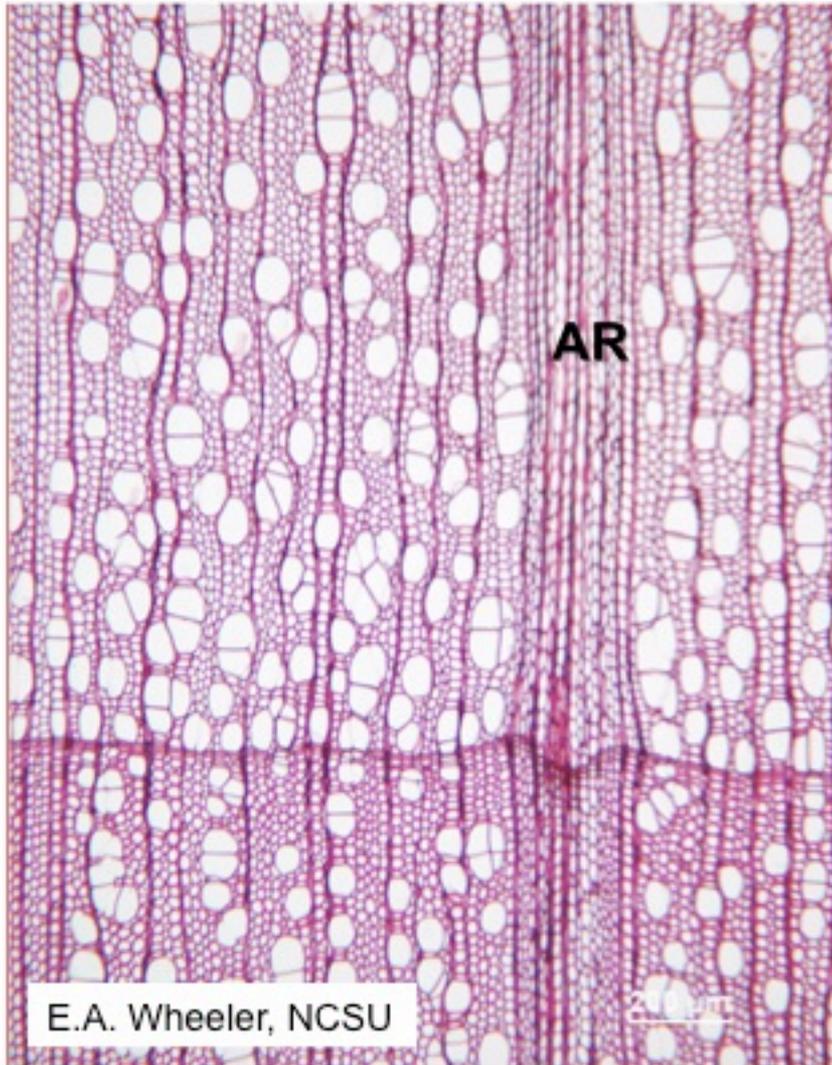
Radial



Tangential

Alders - *Alnus* (Betulaceae – Birch Family) Arrows point to aggregate rays (AR)

Aggregate Ray = “a number of individual rays so closely associated with one another that they appear macroscopically as a single large ray”



R. Hough samples
NCSU Library Special Collections

SWEETGUM, RED GUM *Liquidambar styraciflua*. Vessels narrow and numerous. Narrow rays. Macroscopically very uniform appearing.

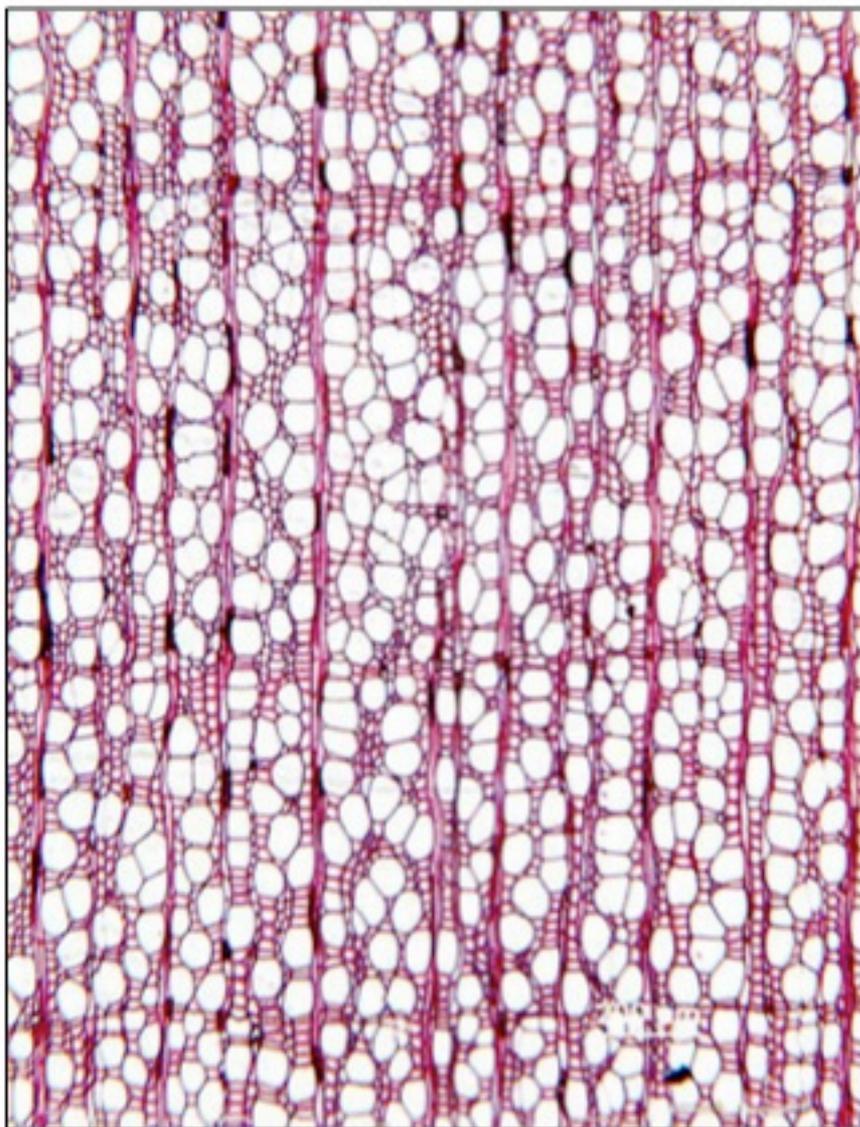
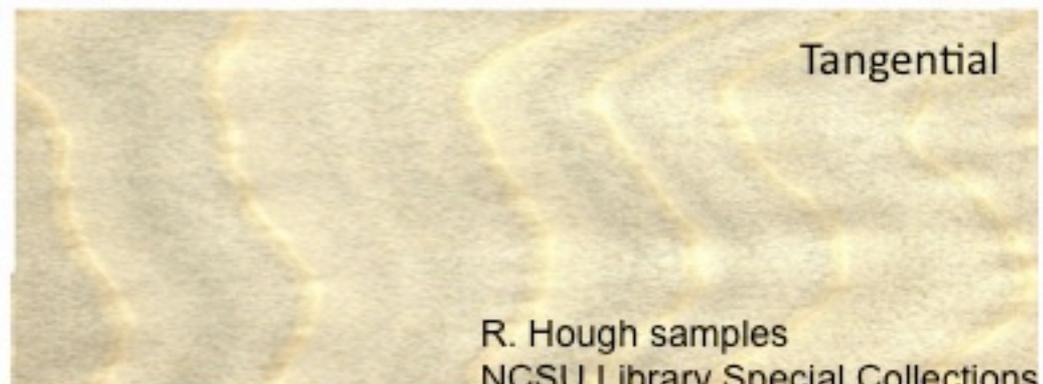
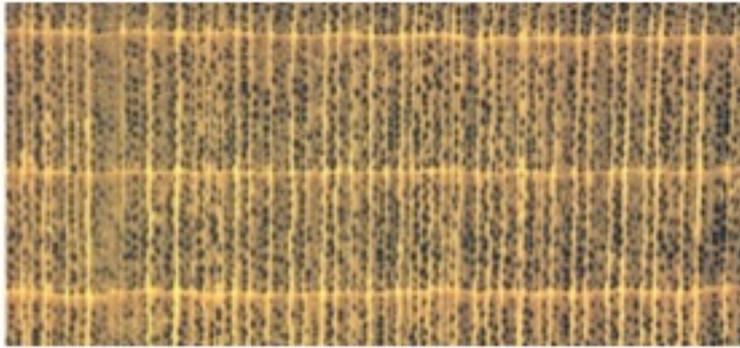


Photo: E.A. Wheeler, NCSU

R. Hough samples
NCSU Library Special Collections

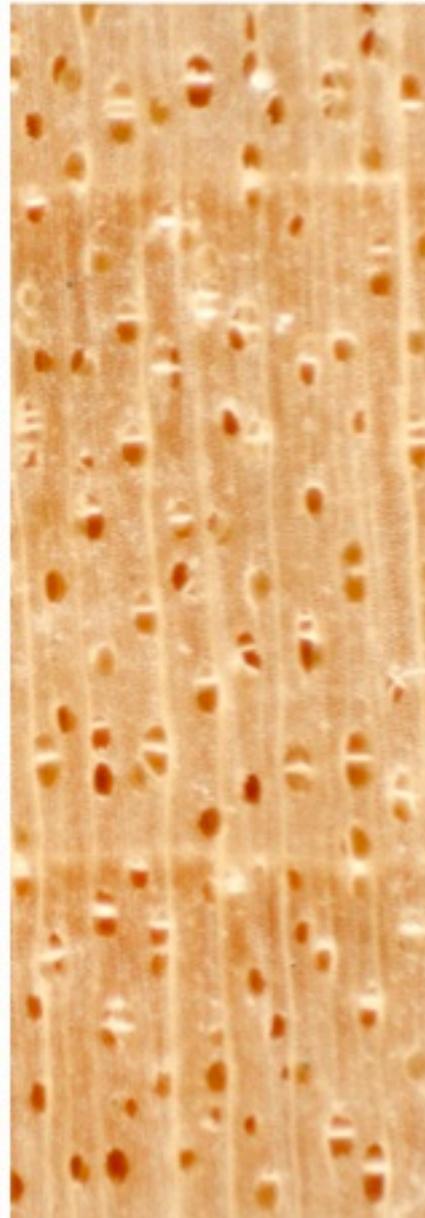
Liriodendron tulipifera – Yellow Poplar, Tulip Poplar. Diffuse porous, numerous narrow vessels, narrow rays, marginal parenchyma present.



R. Hough samples
NCSU Library Special Collections

E.A. Wheeler, NCSU

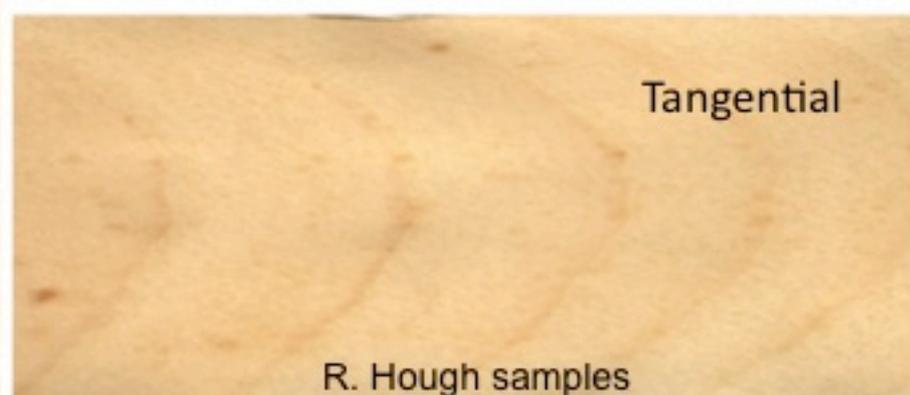
Betula papyrifera– Paper birch. Diffuse porous, vessels solitary and in radial multiples, narrow rays, some diffuse parenchyma – not visible with handlens



Cross



Radial



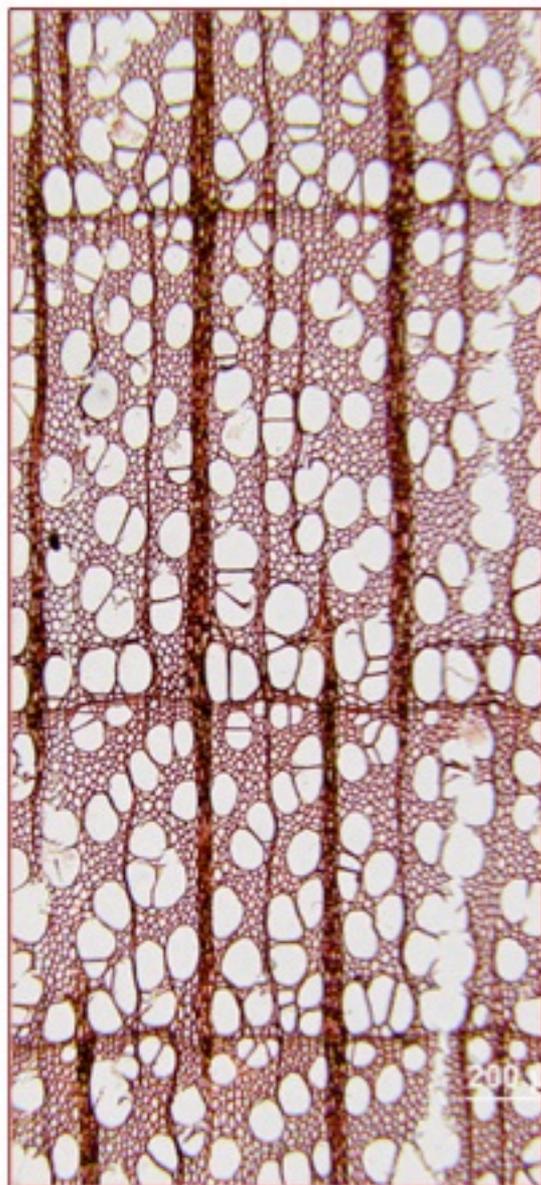
Tangential

E.A. Wheeler, NCSU

Jugo Ilic, CSIRO

R. Hough samples
NCSU Library Special Collections

Cherry – *Prunus serotina*– groups of vessels



E.A. Wheeler photo

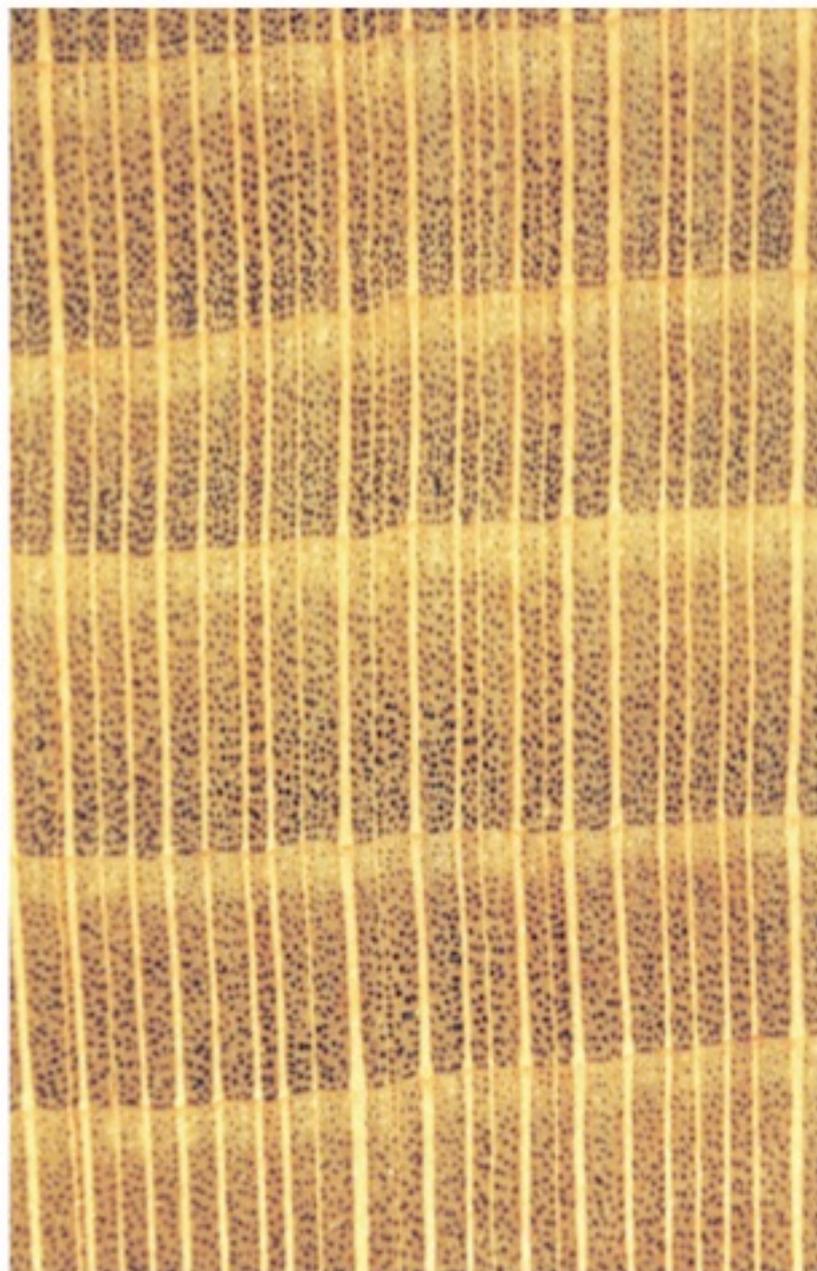


L.Y.T. Westra photo



R. Hough samples
NCSU Library Special Collections

SYCAMORE – *Platanus americana* – Wide rays evenly distributed



R. Hough samples
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Fagus – Beech

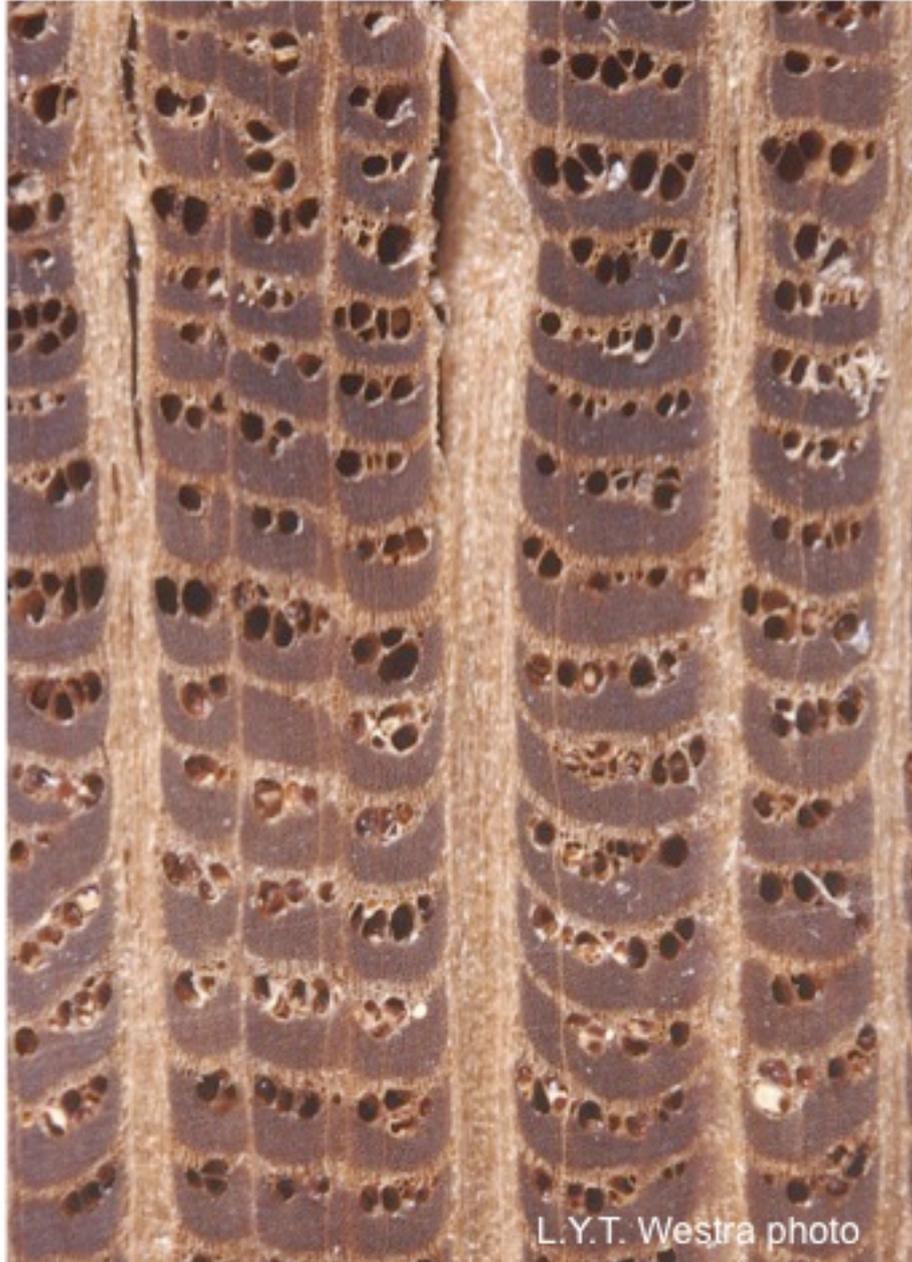
Some wide and tall rays, irregularly spaced



L.Y.T. Westra photo



Silky-Oak - *Grevillea robusta* – Native to Australia. Vessels tangentially arranged, 2 size classes of rays, some rays tall and wide. Note axial parenchyma in bands.



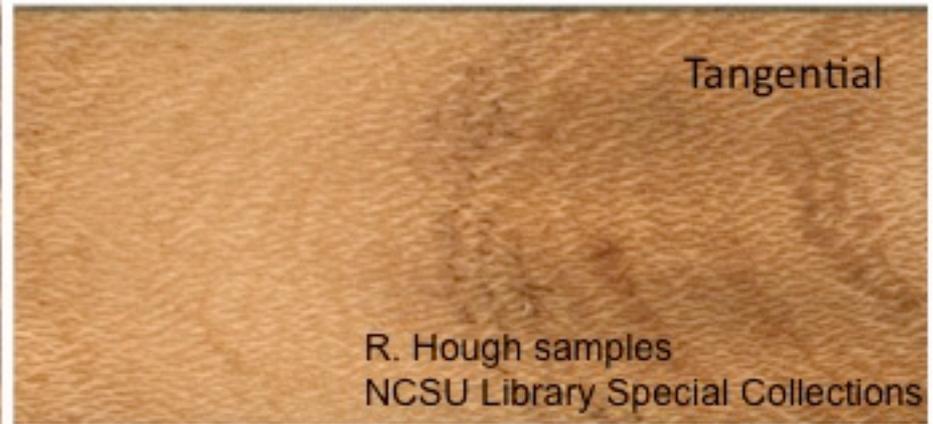
L.Y.T. Westra photo



Cross



Radial



Tangential

R. Hough samples
NCSU Library Special Collections