

Succession after logging on moderately well-drained upland (till-mantled bedrock). Block diagrams are 1-acre, ~200 feet on a side; a 100-foot tree is half as tall as the block is wide. Spruces are pale blue-green; hemlocks darker.



A A few years after logging. Rapid growth of blueberry and strong release of pre-existing hemlock saplings. Spruces seed-in on soil exposed by uprooted trees.



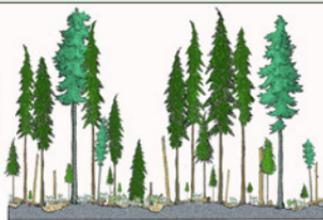
B Hemlocks and a few spruces close canopy, killing the understory shrubs and forbs with deep shade.



C Toward the end of stand's first century, most of the down wood has rotted. Understory is still shady and depauperate.



D Gradually the shrub and forb layers return. Subcanopy hemlocks grow very slowly. Spruces, though few in number, are the tallest trees in the overstory.



E After 3 or 4 centuries mortality produces gappy old-growth mosaic. Abundant deer forage; standing and down dead wood for cavity nesters; decomposing fungi and invertebrates.

Multiple pathways to old growth

Succession on alluvium after a stand-replacing flood. Overbank floods continue to sweep the forest swales until stage **D**. Note that forest structure begins to converge by stage **E** in these 2 series. Tree growth remains more vigorous on alluvium, along with >% spruce. But both forest types are now gappy with abundant dead wood and diverse understory.



A Channels still braid through active alluvium. On higher microsites, cottonwood, willow, alder and occasional spruce take hold.



B Temporary reprieve from flooding allows devil's club, salmonberry and stink current to blanket the site. Alders or cottonwoods shoot up at 3 feet per year.



C Overflow reactivated but forest thrives. Spruces top deciduous trees but are widely spaced. Forest never experiences closed-canopy, depauperate understory.



D Sitka spruces on alluvium can grow 200 feet in 200 years. Shade-intolerant cottonwood, alder & willow waning, but near-continuous berry-thicket of remains.



E River incision has removed old forest from further flooding. Flood-intolerant blueberry & hemlock. Logging has reduced D and E to a fraction of former extent in SE AK.