

"WATER SPROUTS" ON SITKA SPRUCE

Sitka spruce is one of the species that develops water sprouts, or epicormic branches, along its stem under certain conditions. Trees whose boles were once devoid of live limbs frequently develop a new set of branches from the main crown down almost to the ground. Even trees in the dense woods have such water sprouts, but they are not as numerous or luxuriant as on trees which have been exposed to light by the cutting of their neighbors. This phenomenon is present in both thrifty and suppressed individuals.

An opportunity was afforded along the Coast Highway on the Cascade Head Experimental Forest near Otis, Oregon, to study the effect of light on the development of water sprouts on a stand of spruce and hemlock about 90 years old. This dense stand was cut through 15 years prior to the study, since when the marginal trees have been exposed to side light.

To get facts as to the effect of side light on epicormic branch formation, all Sitka spruce trees on sample strips from the edge of the right-of-way clearing into the forest for 150 feet were examined and their water sprouts described; the trees on each 30-foot segment of the strip were recorded separately.

The new limbs were classified as "developing" - thrifty new limbs on the trunk, "stationary" - limbs alive but not thrifty, "disappearing" - needles getting thin and small twigs dropping off, and "none" - trunk practically without any living water sprouts.

Character of water sprouts on Sitka spruce in
relation to distance from timber's edge

Distance from timber's edge	Developing	Stationary	Disappearing	None	Total
	(No. Trees)	(No. Trees)	(No. Trees)	(No. Trees)	(No. Trees)
0 to 30 ft.	71	6	0	2	79
31 to 60 ft.	18	22	6	7	53
61 to 90 ft.	0	14	22	11	47
91 to 120 ft.	0	0	19	39	58
121 to 150 ft.	0	0	8	51	59
Total	89	42	55	110	296

The table clearly shows the difference of trend in limb development from the edge of timber into the forest. Out of a total of 296 trees tallied, 89 were listed as "developing" a new set of limbs and all of these were within the first 60 feet from the cutting edge. Forty-two were listed as "limbs stationary" or just holding their own, and all of these were within the first 90 feet. Fifty-five were listed as "limbs disappearing" from the trunks and none of these were in the first 30 feet, 6 were in the second 30 feet, and the remaining 49 were beyond the 60-foot point from the timber's edge. A total of 110 trees had no living water sprouts; 2 of these were in the first 30 feet, 7 in the second, 11 in the third, 39 in the fourth, and 51 in the fifth 30 feet from the timber's edge.

No water sprouts were noted on the western hemlocks mixed with the spruce. Observations at other points indicate that old Sitka spruce stands do not produce water sprouts as readily as do stands of this 90-year age class or younger.

This study, supplemented by general observations elsewhere, indicates that caution must be exercised in thinning or selectively cutting Sitka spruce stands of this age if quality material is to be grown. Apparently water sprouts, if given enough light, will clothe the bole with a new set of limbs which preclude the formation of clear, high-quality lumber.