

On the layering of white spruce

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In the November 1971 issue of *Tree Planters' Notes*, G. B. Katzman (7) described layering of the branches of white spruce *Picea glauca* (Moench) Voss. He noted that this observation contradicts "Silvics of Forest Trees of the United States" (3) which states (p. 321) that there is no evidence of white spruce reproducing naturally by layering.

Actually, Cooper (2) in 1911 described the reproduction of white spruce by layering on shallow soils of Isle Royale, Minnesota. Fuller (4) and Bannan (1) considered layering of white spruce as rare in the localities investigated, though indicating that instances were found. Reproduction by layering also occurs in the open stands of the Hudson Bay region as reported by Hustich (6), Maycock (8) and, recently, Payette and Boudreau (9). The latter emphasize that, in the sub-arctic, regeneration by this mode is widespread and abundant, giving rise to candelabra-form clumps, just as in black spruce. Deposition of wind-blown sand facilitates layering in some coastal areas. They also noted layering in a dwarfed, mountain-top stand in the Gaspé.

We also have observed layering in a 35- to 40-year-old plantation near Russia, N.Y., and an old-field stand near Lake Ainslie, Cape Breton, Nova Scotia. In both instances stocking was low, allowing long retention of the lower branches, but only occasional trees rooted abundantly. Development of a surrounding clonal clump was especially marked when the upper central stem had been killed or damaged.

Free-hand sections of branches from the Russia site indicate that Bannan's (1) description of root origin in black spruce, *Picea mariana* (Mill.)B.S.P., applies equally to white spruce. The usual location is just outward (distal) of old terminal bud scars at the site of the "medullary crown" or "collenchyma plate" in the pith, that marks the terminal bud base.

Thus the origin is not identical with roots found in 1-year cuttings. Possibly similar individual-tree differences in rooting ability (5) occur, however, with ready layering having an evident survival value in habitats where regeneration by seed is infrequent. Within much of its southward range, white spruce, unlike black, occurs chiefly in closed forests. Here persistence of live lower branches in contact with soil is uncommon, and opportunities for reproduction by layering only sporadic.

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