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Multi-century reconstruction of Pacific salmon abundance and river discharge in west central British Columbia, Canada

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A multi-species network of tree ring-width and ring-density measurements from new and archived tree-ring chronologies collected in west central British Columbia. Using this network, models were constructed allowing for reconstructions of Pacific salmon abundance and July-August mean runoff for the Skeena and Atnarko rivers. Our models describe intervals of below-average runoff during the early to mid-1700s and parts of the early, mid- and late 1900s, with above-average discharge during the late 1600s, the early 1700s and 1800s, and parts of the early and mid-1900s. Our reconstructions of salmon abundance extend from 1400 AD, 1536 AD and 1638 AD to present. Similar to the long-term discharge records, salmon abundance varied throughout the past six centuries. Significant collapses in the proxy records of Pacific salmon stocks were noted during the early 1400s, the late 1500s, the mid-late 1600s, the early 1700s, the early-mid-1800s and parts of the 1900s.

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Macroanatomy of compartmentalization in fire scars of three western conifers

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Fire scars are visible evidence of compartmentalization and closure processes that contribute to tree survival after fire injury. Preliminary observations of dissected fire scars from trees injured within the last decade showed centripetal development of wound-initiated discoloration (WID) through 2-3 decades of former sapwood in Larix occidentalis and Pseudotsuga menziesii. Although the WID reached and was apparently confluent with the visually similar heartwood, WID lacked the decay and insect resistance characteristics of heartwood. In contrast, development of WID in Pinus ponderosa, was limited to fewer than 5 rings of former sapwood with healthy sapwood retained between the WID and heartwood. The healthy sapwood has the potential to actively resist the spread of infection and further loss of wood function. For wound closure, all three species produced wide rings of woundwood from the margin of the killed vascular cambium in the growing season following fire injury.