

# Dendroclimatological Investigations in the Queen Charlotte Islands: A Preliminary Report of Research Activities, 1999

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*Prepared for:*

Research Group on Introduced Species

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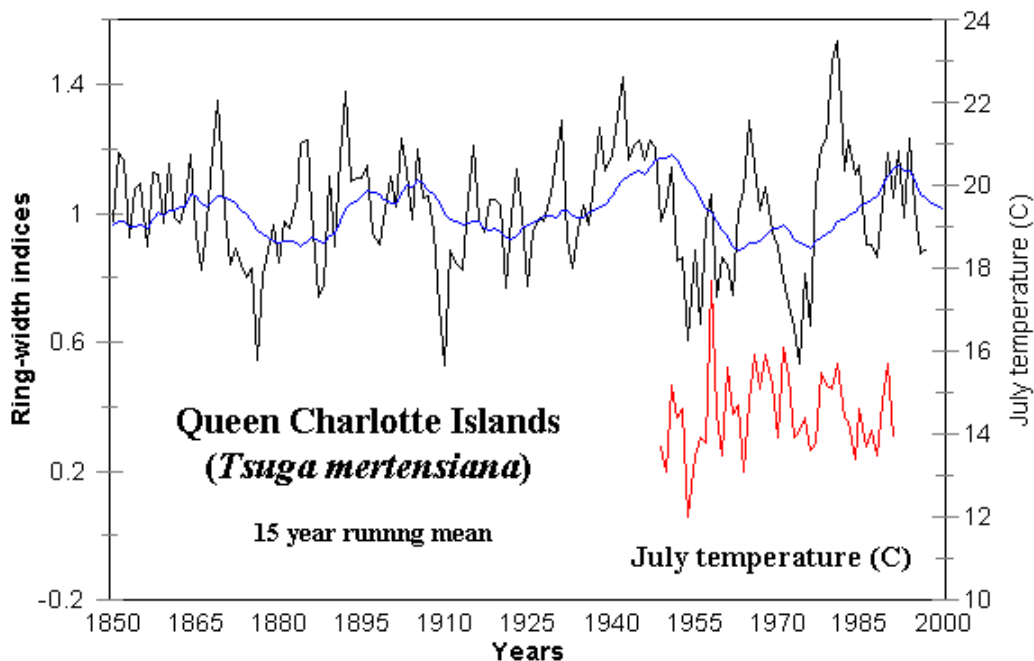
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## Summary

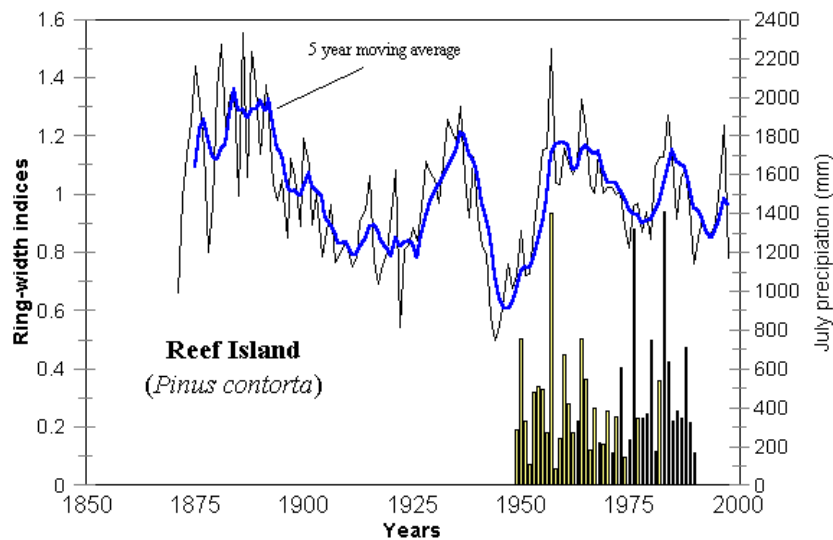
In 1999, Sonya Larocque and Dan Smith focused their attention on reconstructing an historical climate database for the Reef Island area from tree-rings. The goal of this activity was to construct an historical proxy record of summer air temperature and precipitation variation using standardized dendroclimatological research techniques. This information is considered essential for developing an understanding of historical forest dynamics within the region.

Research activities in 1999, followed reconnaissance sampling in 1998 that established the disparate climate sensitivity of two tree species:

- Mountain hemlock trees growing at treeline on Graham and Moresby Island were shown to be sensitive to growing season temperature (June-July). Given the strength of this relationship, a preliminary record of July air temperature variations was developed that spanned the duration of the chronology (1599-1998). The tree-ring chronology site on Sleeping Beauty above Queen Charlotte City was resampled in 1999 in an attempt to extend this reconstruction backwards.



- Shore pines sampled on the southern shoreline of Reef Island in 1998 were shown to be extremely sensitive to seasonal precipitation. Based on a comparison with historical climate data from the Sandspit meteorological station, 82% of the annual variation in ring-width (1950-1990) was shown to directly associated to variations in precipitation. Based on this finding, a preliminary precipitation reconstruction was constructed extending backwards to 1875. Several notable droughts in this record are shown, with the dry years of the late 1940s and early 1950s likely having the largest influence of tree growth throughout the region. In an attempt to extend the duration of this reconstruction further backwards in time, numerous shore pine stands located on both Reef and Haswell Islands were sampled. A preliminary examination of these data indicates it should be possible to build a 200 year proxy record of precipitation variation for the region.



These preliminary reconstructions emphasize the dynamic character of climates in the Queen Charlotte Islands. While many of the forests in this region will have a complex growth response to these climate variations, it seems likely that existing old growth forest structure is due in part to the influence of these unexpected climatic limitations.