

Twinned Watersheds Project:

Riparian Vegetation Assessment in the Chemainus and Koksilah Watersheds



Prepared for:

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Executive Summary

The Twinned Watersheds Project of the Chemainus River and Koksilah River in the Cowichan Region of southern Vancouver Island assessed salmonid habitat, water flow regimes, and riparian habitat within the lower reaches of the main rivers. The fish habitat information is presented in a separate report. This part of the Twinned Watersheds Project focused on the terrestrial part of the riparian ecosystems. The main goal was to determine if and to what extent riparian areas are contributing to the health of fish habitat. Specific study objectives were to assess current riparian conditions, describe occurrence of culturally significant plants for First Nations, identify riparian restoration opportunities, and initiate restoration treatments at specific sites. Here we report on the results of the study and provide recommendations for maintaining and improving the integrity of riparian zones within the Project Area. The report is divided into five main parts.

In Part 1 we start by developing an understanding of the concept of riparian ecosystems within the Chemainus and Koksilah Watersheds. We describe typical vegetation composition and structure as well as important ecological functions provided by riparian areas for both aquatic and terrestrial habitats. We include a description of local terrestrial wildlife species and their riparian habitats. With respect to culturally-significant plants, our analysis specifically addresses western redcedar and its important role as a keystone species in Indigenous culture. Finally, a description of ecologically-appropriate sizes of riparian reserves or buffers compared with policy driven protection zones leads into a review of the appropriateness of applicable riparian legislation.

In Part 2 we present the results of a GIS analysis that describes the distribution of land ownership, land use zones, and land cover classes within the Project Area. In order to address specific ecological functions and the size of legislated riparian reserves, we stratified the Project Area into three different Riparian Evaluation Areas (REAs): 0 - 30 m, 30 - 50 m, and 50 - 100 m. To further focus on the current level of riparian functionality (or ecological health) within the REAs, we grouped the set of applicable land cover classes into three types of ecological functionality: *Higher Functionality* (e.g., coniferous forest, shrub, salt marsh), *Lower Functionality - Natural* (i.e., bare rock), and *Lower Functionality - Disturbed* (e.g., agricultural field, regenerating forest, roads). The GIS analysis showed that 76% and 85% of land area in the Chemainus and Koksilah REAs are Agriculture/Forestry, and Private/First Nations lands, respectively. Overall a high degree of *Higher Functionality* exists within the REAs along both rivers, especially within the 0 - 30 m REAs.

Part 3 of this report presents the results from the fieldwork within the REAs (i.e., plot sampling and reconnaissance surveys). Opportunities for timely and comprehensive field sampling were limited during the 2021 season. Nonetheless, field results confirmed most land cover polygon designations obtained from the GIS analysis. Results also indicate that while old forests dominated the landscape before European settlement, now after 160 years of land clearing and logging, extremely few old trees or old forest patches remain. While general vegetation cover appears adequate for many riparian functions, the lack of large, old structures has reduced habitat suitability for many wildlife species. In addition, anthropogenic disturbances such as invasive plants and soil erosion due to recreation activities are widespread in the REAs. Five

restoration sites were identified in the Koksilah watershed for vegetation planting, three of which were planted in fall 2021. Two sites identified for invasive plant removal were also treated in 2021.

In Parts 4 and 5 of the report we conclude that the lower reaches of the Chemainus and Koksilah Rivers have relatively high riparian functionality, although lacking old forest structure. This result suggests that possible causes for the documented decline of local fish populations may not be found along the lower reaches of the mainstems of the two rivers, but rather upslope throughout the two watersheds. We provide a series of recommendations aimed at addressing this open question, including policy changes or adjustments for riparian protection, watershed level assessments, and site level restoration projects.