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MEMO

PROJECT TITLE: Impacts of Channel Restoration on Birds within the Squamish Estuary

PREPARED FOR: Squamish River Watershed Society, Box 1791, Squamish, BC, V0N 3G0

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Introduction

The Squamish River Watershed Society along with the Department of Fisheries and Oceans Canada and the Squamish Nation are participating in re-establishing channels for fish passage in the Squamish River Estuary. The current project involves extending a channel in what is referred to as "Site A" at the northern end of the Central Estuary. Since the works involve disturbance to a cattail marsh, potential impacts to migratory and breeding birds may occur. As such, Gebauer & Associates Ltd. was retained by Squamish River Watershed Society to conduct an overview assessment of the estuary, describe bird activity in the proposed disturbance area, particularly bird species of special concern, make recommendations to avoid or mitigate impacts, and provide revegetation options for maximizing habitat for migratory and breeding birds.

Field Survey Results

Habitat Description

Site A of the Central Estuary is characterized by areas of open water, large areas of cattail (*Typha latifolia*) marsh, wet grasslands, and shrub-dominated borders. Rare plant species, including Henderson's Checker-Mallow (*Sidalcea hendersonii*; Blue) and Vancouver Island Beggarticks (*Bidens amplissima*; Blue, Special Concern), have been identified in the vicinity and have the potential to occur on the site. Common shrub species in riparian areas include Nootka Rose (*Rosa nutkana*), hawthorn (*Crataegus* spp.), Pacific Crabapple (*Malus fusca*), Pacific Ninebark (*Physocarpus capitatus*), Sweet Gale (*Myrica gale*) and Salmonberry (*Rubus spectablis*). Tree species including Sitka Spruce (*Picea sitchensis*) and Red Alder (*Alnus rubra*) are present in areas of higher ground.

Wildlife Description

The study area was visited on 21 March and 18 April 2006. Foot traverses of the proposed disturbance area were conducted and information on habitat conditions and wildlife occurrence was collected.

Site A of the Central Estuary provides a high diversity of habitats for wildlife. The combination of open wetlands, shrubby riparian borders and cattail marsh are attractive foraging and breeding habitats for a number of bird species. A total of 21 bird species was recorded on the two short field visits to the site in spring 2006 (see Table 1 below). Depuis (2004) reported a total number of 86 bird species using 'Site A' of which 14 species were waterbirds.

Table 1: Bird species observed at Site A of the Central Estuary on 21 March and 18 April 2006.

Common Name	Scientific Name	Status	21 March	18 April
American Robin	*Turdus migratorius*		1	4
Black-capped Chickadee	*Poecile atricapilla*		2	
Canada Goose	*Branta canadensis*		2	56
Cackling Goose	*Branta hutchinsii*			1
Common Raven	*Corvus corax*		1	
Golden-crowned Kinglet	*Regulus satrapa*		1	
Great Blue Heron	*Ardea herodias* ssp. *fannini*	Blue Special Concern	2	
Green-winged Teal	*Anas crecca*		3	3
Mallard	*Anas platyrhynchos*		2	4
Northern Flicker	*Colaptes auratus*		2	
Northwestern Crow	*Corvus caurinus*		5	1
Pine Siskin	*Carduelis pinus*		2	
Purple Finch	*Carpodacus purpureus*		2	
Red-winged Blackbird	*Agelaius phoeniceus*		3	5
Ruby-crowned Kinglet	*Regulus calendula*		1	2
Rufous Hummingbird	*Selasphorus rufus*			1
Song Sparrow	*Melospiza melodia*		2	1
Spotted Towhee	*Pipilo maculatus*		2	
Steller's Jay	*Cyanocitta stelleri*		3	
Varied Thrush	*Ixoreus naevius*		2	
Winter Wren	*Troglodytes troglodytes*		3	
Number of Species			**19**	**10**

Recommendations to Minimize Impacts

The most significant potential impact to breeding birds is disturbance of active nest sites. Because of the early timing of the operations, most breeding birds are unlikely to have initiated nesting. Nevertheless, removal of all cattail stalks within the proposed area of disturbance will reduce the suitability of the area for nesting birds such as Red-winged Blackbird and greatly minimize the potential that nesting birds are encountered during channel construction. In addition, the proposed disturbance area should be walked on a regular basis during construction to ensure that no other nesting birds (e.g., Canada Goose) are establishing nest sites within the area.

Recommendations for minimizing impacts to breeding bird habitat include: 1) avoiding removal of riparian shrub communities; 2) minimizing the area of cattail marsh that needs to be covered by side cast material; and 3) establishing slightly raised berm areas along the channel where riparian shrub vegetation such as hawthorn and crabapple can become established. These recommendations will ensure that biodiversity of the area is maintained and enhanced.

Revegetation Options

Most of the disturbed area adjacent to the new channel will quickly become recolonized by a variety of plant species. Where elevations are similar to pre-construction levels, cattail will likely become established. On raised areas resulting from the side cast of materials, grasses and other herbs will become established naturally. Over time, naturally occurring shrub species such as hawthorn, crabapple, ninebark, salmonberry and rose will become established in suitable areas. To facilitate the regrowth of vegetation in disturbed areas, native species such as Nootka Rose, Pacific Crabapple, and Black Hawthorn (*Crataegus douglasii*) should be obtained from a reliable source and planted along the channel. Clustering of these plants in groups of three along the channel is recommended.

References

Depuis, L. 2004. Conservation priorities in the Squamish River Estuary. Unpublished report prepared for the Squamish River Conservation Society.