

# **RESTORING OPTIONS FOR CAVITY NESTING BIRDS ALONG THE FAIRMONT REACH OF THE COLUMBIA RIVER, B.C.; SUMMER 2010.**



**For: Fairmont Resorts and the Columbia Wetland Stewardship Partners.**

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## EXECUTIVE SUMMARY

In 2009, The Fairmont Hot Springs Resort and the Columbia Wetlands Stewardship Partners agreed to pursue the restoration of the riparian zone along the Columbia River where it flows through the Riverside Golf Course. Lewis's woodpecker, a listed species, and a variety of other riparian species presently use the large cottonwood and birch found along this reach. The objective is to maintain options for cavity nesting birds by planting cottonwood and birch seedlings and saplings to maintain old age trees and snags along this reach over a 100-200 year time frame. In May and June of 2010, 1000 cottonwood seedlings were planted along point bars along the river at several sites through the golf course. A variety of other shrub and trees species were also planted, using elementary school children to plant one site and hired high school students to plant the remainder. These plants were monitored informally in the fall of 2010 and survival was high on all sites.

The objective of raising awareness of the importance of riparian habitats within the community was accomplished. The staff at the resort and visitors to the golf course are now aware of the program and have developed a significant interest in the project. Future plans include:

1. Monitoring of the survival of the seedlings over the next 3 years. There are concerns that browsing by deer and beaver may have a major impact on the plantings over time.
2. Developing a nest box program to provide alternatives for cavity nesting birds, and other species in the midterm.
3. Working with the resort to provide signage along the golf cart pathways describing the project and its impacts.

A total of \$8,750.00 of Columbia Valley Local Conservation Funds was budgeted for this project. Due to the unavailability of pole stage cottonwood saplings, much of this funding was not expended. Total CVLCF expenditures on the project were \$3,620.30.

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# **RESTORING OPTIONS FOR CAVITY NESTING BIRDS ALONG THE FAIRMONT REACH OF THE COLUMBIA RIVER, B.C.**

## **1.0 INTRODUCTION**

In the early 1980's the Fairmont Resort developed the Riverside Golf Course with the golf course fairways and strata title private lots laid out along the Columbia River. Conifers and some cottonwood, birch and shrub species, including some old cottonwoods and birch trees with dead tops, were retained along the river bank and in portions of the golf course. In 2009 Lewis' Woodpecker were observed nesting in snags adjacent to the river and along the edge of the golf course. This woodpecker is a listed species that is uncommon in the East Kootenay Trench. It is a grassland species that generally uses snags in grassland areas, or snags in low to mid elevation post fire seral grasslands (Cooper and Beauchesne 2000). However, in this area they have adapted to using snags on the golf course and feeding on insects along the river and on the fairways. Discussions between the Columbia Wetland Stewardship Partners and the resort lead to an agreement to initiate a program of riparian habitat restoration along the river to maintain Lewis's woodpecker and the range of other species that use riparian habitats in this area. Most of the cottonwoods and birch that are present along the river are from 50 to 120 years of age. These older trees and snags are providing sites for cavity nesting birds, however many of these trees will rot and collapse over the next few decades. There are relatively few younger deciduous trees developing along the river. In a more natural condition, spring floods in a river like the Columbia would create conditions for recruitment of these tree species through natural channel change and flood events. These processes no longer occur in this reach of the river; thus the need to provide plantings to maintain cottonwood and birch in the riparian zone along the river.

## **2.0 OBJECTIVES**

**The objectives of this program are to:**

1. Maintain, to the extent possible, the snags and older trees presently used by Lewis' Woodpecker, on the resort lands along the river.
2. Maintain the present riparian vegetation along the river, to maintain habitat values for the entire range of fish and wildlife species that occur in the Upper Columbia River system.
3. Enhance the present riparian vegetation in some areas using plantings of fast growing deciduous trees to maintain an age class of older trees and snags over the very long term (100-200 years).
4. Provide shade trees and aesthetic conditions along the river for the benefit of visitors and residents using the golf course and provide shade for the river channel to reduce stream temperature. (This reach is a very important spawning area for kokanee salmon).

## **3.0 PLANNING APPROACH**

### **2.1 PLANNING APPROACH**

This plan was developed based on a literature review of riparian management strategies, carried out recently at a local, regional and provincial scale and two short surveys of the site looking at riparian condition and the presence of deciduous species of trees. The project is expected to span 4-5 years. In the spring and summer of 2010 a relatively small test planting of cottonwood seedling was carried out.

### **2.2 PROJECT TEAM**

Bob Jamieson is a professional ecologist and land use planner with some 40 years of experience working on resource issues in the East Kootenay. He has worked extensively on riparian management issues both in Canada and the USA. (Jamieson and Braatne, 2001, Jamieson et al. 2001). He recently completed work on species at risk issues in the Upper Columbia area (Jamieson et al. 2009). Andy Dzilums and Jocelyn MacGregor are employees of the resort who run nature based tours in and around the resort. They took on organizing the planting event for kids and acting as liaison with the resort. Richard Haworth, VP for Development assisted in designing the project. Peter Smith, the Maintenance Supervisor for the Riverside Golf Course supplied vehicles and support.

## 4.0 RESTORATION AREA

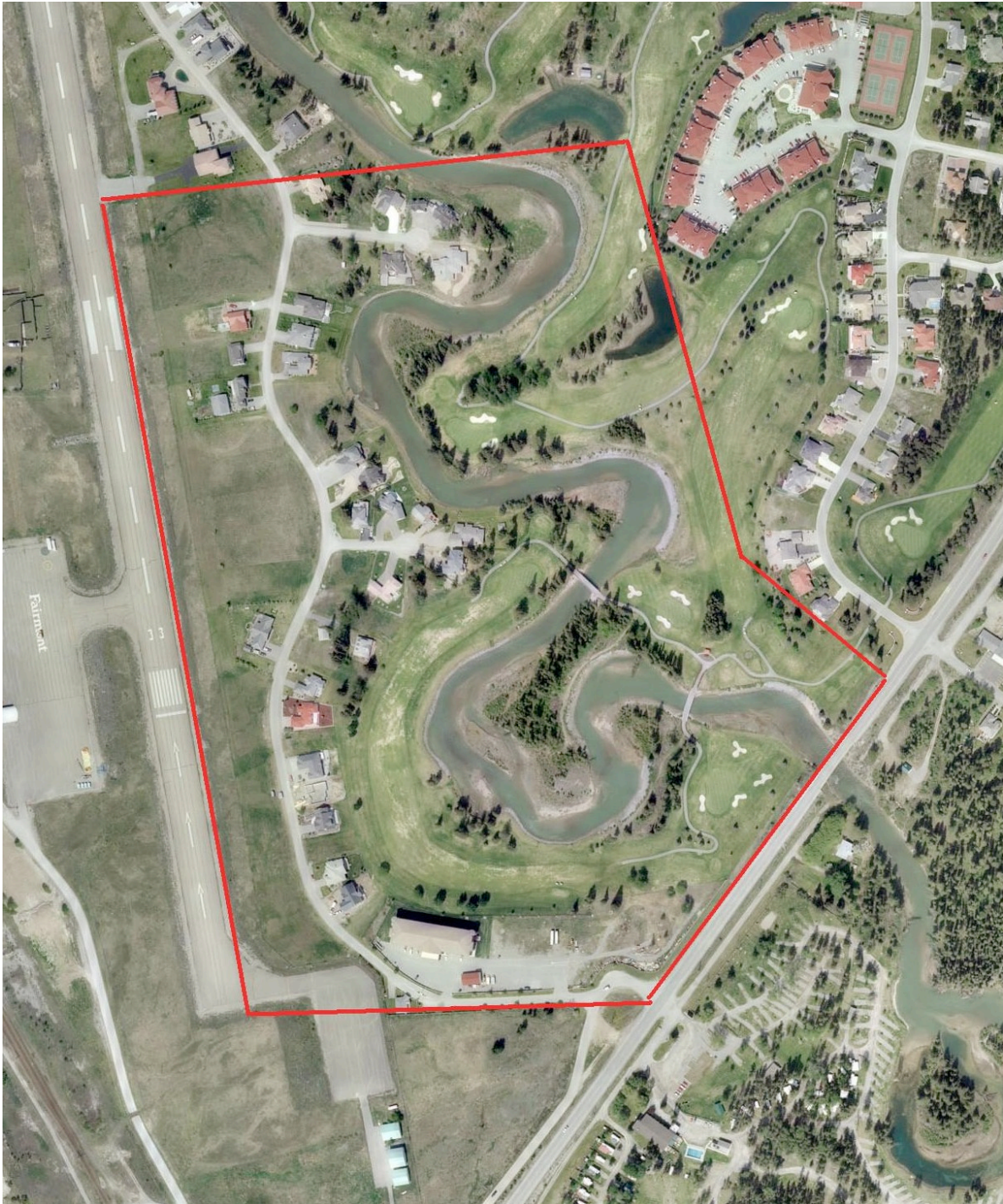
### 4.1 OVERVIEW AND LAND OWNERSHIP

The project area is made up of an upstream (southern) unit (Figure 1), middle (Figure 2) and a downstream (northern) unit (Figure 3). In the south and middle units, the river corridor is primarily crown (below the high water mark), with the resort owning the east side of the river as part of the Riverside Golf Course. On the west side, most of the west side of the river has been developed as private lots and a condo development. Conifers (Douglas Fir and White Spruce), some cottonwoods and birch, and shrub communities have been maintained along portions of the riverbank. In the north unit (figure 3), on the west side of the river there is undeveloped marshland area owned by the resort. On the east side of the river, there is an older subdivision along the river and some open fields away from the river. These lands adjoin the lands of the Columbia Lake Indian Reserve further north, on the east side of the river and provincial lands on the west side. These provincial lands are part of the Columbia Wetlands Wildlife Management Area.

### 4.2 HABITAT ATTRIBUTES

**CLIMATE:** The lands are located in a very dry portion of the Rocky Mountain Trench. Mean annual precipitation for the Invermere weather station (Environment Canada 2008) is 30 cm, with a peak in June of 4.2 cm and a minimum in March of 1.1 cm. The extreme range of temperatures recorded is from 37°C to -42°C, and mean daily temperature averages range from overnight lows of -15.7°C in January to daytime highs of 26.1°C in July.

**GEOLOGICAL HISTORY:** The site is located on the floodplain of the Columbia River. It is made up of post glacial outwash gravels from Dutch Creek (5 km upstream) and silts laid down by flood events over the post glacial period. This mix of gravel, sand and silts make for good growing conditions for cottonwood, spruce and other species.



**Figure 1. The south portion of the study area.**





**Figure 2.** The middle portion of the study area.





**Figure 3. North portion of the study area.**

**VEGETATION:** The property lies within a vegetation zone called the "very dry, cool subzone of the Interior Douglas-fir biogeoclimatic zone (IDF<sub>fxk</sub>)". It occurs on the valley floor from Canal Flats to Edgewater. The riparian zone within this unit is dominated by White Spruce and Black Cottonwood in undisturbed conditions. Details on the vegetative cover in such riparian zones can be found in Jamieson et al. 2001. The dominant features in this reach are small stands of Douglas Fir and White Spruce on the upper margin of the river bank with alder and other shrub species developing adjacent to these sites.

### 4.3 FISH AND WILDLIFE USE

Three types of riparian habitat occur, as below.

1. Isolated conifers, large birch and cottonwood trees located on the golf course lands and along the lower portions of the reach.
2. Small areas of conifers located on the higher portions of point bars along the river.
3. Small dense stands of conifers, cottonwood and alder, as closed canopy forest in two small areas.

All of these habitats support a wide range of migratory birds during the nesting period. Such sites are also of major importance for migrating song birds that stop on migration at such sites to feed and develop fat reserves for their long flight south (Jamieson et al 2001). Several owl and hawk species use such sites, as do some species of bats (Jamieson et al. 2009). Pileated Woodpecker and other primary cavity nesters are critical since in creating nesting cavities for themselves they also provide cavity nesting sites for a variety of other species (cavity nesting ducks, other bird species, pine marten, squirrels, bat sp. , etc. (Jamieson et al. 2001a, Ohanjanian 1991). Sites such as this along water are of special importance since they tend to have good soils and thus develop over time into larger diameter trees. Such sites provide nesting options for water dependent species that are cavity nesters such as mergansers and tree nesting ducks (Bufflehead). Any strategy for maintaining these species must include the maintenance of snags and primary evacuators in the long term.

One listed species is known to occur along this reach. Lewis' Woodpecker (*Melanerpes lewis*) is a woodpecker species that nests in cavities in snags on the edge of grassland areas. The Riverside Golf Course has created good habitat conditions for this species by maintaining snags adjacent to the golf course runways. The golf course and the large snags along the river effectively mimic the natural conditions where this species occurs elsewhere. The habitat required by this species is grassland areas (where they forage for flying insects) with adjacent large diameter deciduous and conifer snags (>50cm) for nesting. Cooper and Beauchesne (2000) indicate that 100-150 pairs of Lewis's woodpecker are found in the East Kootenay, with larger populations in the Okanagan and other grassland areas in the province. There were significant populations west of this site on the Dutch Creek burn (7 pairs) and on the Findlay Creek burn (31 pairs) in 2000. They also identified the small population (6 pairs in 2000) that occur on the Riverside Golf Course. Beauchesne and Cooper 2007 identify one recording in the 1990's from the Radium Hot Springs area. Recent surveys (Gillies 2009) found no evidence of this species on the Shuswap Indian



Reserve just to the north. At least two pairs occurred on the Riverside Golf Course in the summer of 2010 (J. MacGregor, pers.comm.).

This reach of the Columbia River is very important kokanee spawning habitat, with 250,000 fish spawning in this reach (from Columbia Lake to Mud Lake) in most years (Oliver 1995). This is a spectacular event, as indicated in Figure 5. Prior to the building of the Grand Coulee dam in 1936, this reach was a major spawning area for very large (20 kg/44 lbs) Columbia River Chinook Salmon (Green 1995, Jamieson et al. 2009). Maintaining riparian cover along this reach is important to maintaining high quality spawning conditions in this reach. The presence of kokanee and several native trout, char and other species in this reach make this an important site for Osprey and Bald Eagles, especially in the fall spawning period. Otter are also present and beaver occur at the north end of the reach.

## 5.0 RESTORATION ACTIONS

### 5.1 RESTORATION SITES

The long term objective of a restoration plan for this reach will be the maintenance of good quality snags and cavity nesting sites over the next 100 years. Conifers will provide snag sites eventually, but only in the very long term, since these are relatively slow growing trees compared to cottonwood and birch.

The approach that was taken is described below.

#### **1. Maintain, to the extent possible, the snags and older trees presently used by Lewis' Woodpecker, on the resort lands along the river.**

The resort and the maintenance staff for the Riverside Golf Course have agreed to make all possible efforts to maintain the present snags on the golf course and areas adjacent to the river. The snags presently being used are dead top cottonwood and birch. These snags will likely last another 20-40 years. Beaver are present in the river. On one site on private land cottonwood trees have been protected using wire mesh. This may be required on other large cottonwoods along the river. The trees used by the Lewis' Woodpeckers are actually located out in the fairways 100m plus from the river and this seems to be keeping the beaver from girdling these trees. It may be useful to use wire mesh to protect these trees as a safety precaution.

#### **2. Maintain, where possible, the present riparian vegetation along the river, to maintain habitat for the range of fish and wildlife species that occur in the Upper Columbia River system.**

The resort and golf course have no plans to alter most of the riparian areas along the river. Conifers will continue to grow in these areas and will eventually provide some snags and cavity nesting conditions.

#### **3. Enhance the present riparian vegetation in some areas along the river, using plantings of fast growing deciduous trees to maintain an age class of older trees and snags over the very long term.**

In 2010 we established test plantings of cottonwood seedlings on resort and crown lands (below the high water mark) along the river below and north of the highway bridge at seven sites, using seedling plugs from Tipi Mountain Native Plants. They were planted on point bars .5 m above and below the mean annual high water mark. They were planted in a variety of sites conditions, from gravel areas to silt and sand sites. Some seedlings were also planted in areas dominated by grasses and other early seral plant communities where they occurred close to the high water mark (or the point with permanent vegetation in place).

We also established test plantings of whip shoots (.5 m long) of cottonwood, black birch, aspen and some riparian shrubs to mark the cottonwood seedling sites. The plants used were all from local East Kootenay stock. Our choice of species mix was limited by the lateness of funding decisions, so we basically worked with what Tipi Mountain Native Plants had available. We originally planned to also plant some pole stage trees (1-3 m tall) of cottonwood and birch but we were not able to find any stock that was based on local genetic stock.

Figures 4 and 5 indicate the areas where plantings were carried out in this first stage in the project. The seedlings and whips were planted by hand. We planted a total of 1000 cottonwood seedlings (as plugs) and 100 whips (one and two years old) of the following species:

|                                                 |    |
|-------------------------------------------------|----|
| Aspen ( <i>Populus tremuloides</i> )            | 20 |
| Water Birch ( <i>Betula occidentalis</i> )      | 10 |
| Paper Birch ( <i>Betula papyrifera</i> )        | 20 |
| Mtn Alder ( <i>Alnus incana</i> )               | 25 |
| Black Hawthorn ( <i>Crataegus douglasii</i> )   | 20 |
| Red Osier Dogwood ( <i>Cornus stolonifera</i> ) | 5  |

#### **4. Testing for seedling and whip survival into the following years.**

On August 22 of 2010 we completed an informal visual survey of survival on the planted sites. We found good survival, about 90% on most sites. There was some evidence of pruning by deer. We expect to carry out more formal surveys in future years.





**Figure 4. Planting sites 1-3, south end of the study area.**





**Figure 5. Planting sites, middle section of the study area.**

## **5. Planting program along the lower portion of the river.**

In future years plantings could be established along the west side of the river in the north portion (Figure 3). Discussions with the land owners in this area will be required to see if they would prefer to see the present extensive and unobstructed view across the river, or would like to see cottonwoods along the river as part of their view.

## **7. Identify options for installing bird boxes for riparian birds.**

If successful, the tree planting program will provide nesting opportunities for cavity nesters in the long term. However, there may be a gap between the time the present old trees and snags fall over and the time when the new trees are large enough to provide nesting opportunities. We contracted Dr. Cam Gillies, a local ornithologist to do a survey of bird box options for the range of bird species using riparian areas, with a view to developing a bird box program in the future.

## **8. Riprap sites along the river.**

There are several sites along the river that have been riprapped to maintain bank stability, at some sites conifers have established. Deciduous whips could be planted along the upper margin of the riprap area. Seedlings would require drip irrigation or irrigation from the fairway watering system to survive on these sites.

## **9. Explore options for maintaining native trees on private lands (strata title properties) along the river.**

Many native trees have been retained by land owners as part of their landscaping, including one large cottonwood snag. However, the land owners have concerns about the sticky buds and cotton produced by cottonwood, dropping branches and the risks associated with large, older trees and snags. Some native and domestic trees are being planted on some properties (mostly aspen). If cottonwoods are planted from private nurseries, this may result in the introduction of Plains Cottonwood, a related species found in Alberta. This is a concern in the long term and has already occurred on the Bonner's Ferry- Creston reach of the Kootenay River (Jamieson and Braatne 2001). These issues will need to be discussed with the strata title owners, along with a description of the benefits of this proposed restoration project.

## **10. Develop options for explaining the benefits of the restoration program.**

A brochure should be developed to explain to land owners and visitors the reasoning behind this program. A meeting and presentation might also be considered with local land owners. Another option would be to name the 8th hole where the Lewis Woodpeckers live, the "Little Lewis' Hole" and provide some signage explaining the project. The resort is also considering running guided trips that would feature the Lewis' woodpeckers and the project. These opportunities will be pursued in future years.

## 5.2 Long term monitoring and funding

Once the test phase of the project is complete, we will pursue funding sources for the project over the longer term. Funding options include:

- Columbia Basin Fish and Wildlife Compensation Program
- Wildlife Habitat Canada
- Wildlife Habitat Trust Fund of B.C.
- RDEK Columbia Valley Local Conservation Fund.

As we proceed, if there is interest on the part of land owners along the river, contributions could be made by to the Wetland Stewardship Partners (which has charitable status) for the project. Total project cost for the entire reach, over the next 5 years, would be in the order of \$30,000.00 to \$50,000.00.

## 6.0 CONCLUSIONS

Restoration of this river reach will provide an excellent example of public/private cooperation on habitat restoration and the stewardship of the Columbia River system.



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