

Kootenay Connect: Columbia Wetlands
Restoration of Habitats and Species at Risk in the Columbia Valley
Year 7 (2025-2026) and Summary Report (2019-2026)



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Executive Summary

From 2019 to 2026, the Columbia Wetlands Stewardship Partners, through the Kootenay Connect initiative, implemented multi-species conservation actions across the Columbia Valley to protect Species at Risk, secure critical habitat, and improve landscape connectivity. These efforts combined targeted habitat inventories, regulatory habitat protection, stewardship actions, and infrastructure assessments to support long-term species persistence in one of British Columbia's most ecologically significant valley-bottom landscapes.

Between 2021 and February 2026, a total of 13 Wildlife Habitat Areas (WHAs), representing 718.1 hectares, and 1,258 Wildlife Habitat Features (WHFs)—including 1,255 functional American Badger burrow clusters and three Mountain Goat mineral licks—were approved or submitted to the Province of British Columbia. These habitat protection measures represent a major expansion in formally recognized Species at Risk habitat on provincial Crown land in the region. However, not all WHAs have been legally established to date, and advancement from proposal to formal designation is dependent on provincial review processes and administrative capacity. American Badger WHA proposals account for 237.6 hectares of burrow habitat across Rushmere, Steamboat Mountain, Dry Gulch, and Findlay Creek. In addition, 480.5 hectares of rare Alkali Saltgrass ecological communities were formally reviewed and incorporated into the provincial proposed WHA layer, representing a significant step toward long-term protection of these sensitive and rare ecosystems.

American Badger inventory efforts conducted between 2022 and 2025 documented 6,178 burrows, including 4,593 functional burrows clustered at 1,351 locations, with 1,255 functional burrow clusters eligible for protection as Wildlife Habitat Features. At Findlay Creek alone, inventories conducted in 2024 and 2025 documented 3,319 burrows, including 2,525 functional burrows clustered at 728 locations, confirming the site as the most significant badger habitat area known in the study region. Two WHAs totaling 82.2 hectares were developed, which if approved, will help to protect this high-density burrow network and associated habitat.

To address habitat fragmentation and road mortality risk to badger, 54 culverts along Highway 93/95 were assessed, resulting in 106 individual culvert-end evaluations. Only 45 culvert ends (42%) were fully open, while nearly 60% were partially or fully blocked, limiting wildlife movement. Six culverts were identified as high priority and 17 as medium-to-high priority for wildlife crossing potential. Remote wildlife cameras deployed at five culverts confirmed American Badger use at three of those culverts, documenting repeated crossings and confirming that existing infrastructure can facilitate safe wildlife movement. Cameras also recorded multiple additional wildlife species, including coyote, river otter, striped skunk, snakes, and Columbian ground squirrel. This demonstrates the broader ecological importance of maintaining functional and permeable culverts to reduce wildlife road mortality and highlights a cost-effective alternative to constructing new and costly wildlife crossing structures.

Western Painted Turtle conservation efforts between 2020 and 2025 included installation and maintenance of predator-exclusion fencing, artificial nesting habitat, basking structures, and effectiveness monitoring. In 2025, remote cameras documented 199 turtle observations, including 8 confirmed nesting events, several prospecting events at created nesting beds, and 76 road crossings, demonstrating use of enhanced nesting areas while highlighting ongoing road mortality risks. Nesting enhancements supported continued recruitment and improved population structure at monitored sites.

Lewis's Woodpecker monitoring conducted between 2020 and 2025 documented 47 active nests at 31 unique locations, improving understanding of nesting distribution within the Columbia Valley. The maximum number of active nests recorded in a single year was 13 (2024), exceeding the threshold of 12 nests required to trigger Key Biodiversity Area designation. Of the 31 unique nesting locations, 9 occurred outside federally designated Critical Habitat, highlighting gaps in existing habitat protection. Six nesting occurrences were documented in three individual hydro poles, underscoring the importance of coordinating with infrastructure providers to retain nesting substrate where feasible. These actions represent an important opportunity to mitigate infrastructure-related habitat loss for this threatened species.

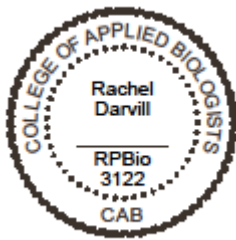
Osprey monitoring conducted between 2020 and 2025 documented 76 nests in 2025, including 45 occupied nests during the early breeding season (59% occupancy) and 25 nests with confirmed chick production, demonstrating continued reproductive success and the importance of artificial nesting platforms. Monitoring also identified nesting platforms requiring repair or replacement, allowing targeted maintenance needed to support ongoing nesting success.

Collectively, if all WHA applications are approved, this project will have secured protectionary measures for over 718 hectares of at-risk habitat, in addition to 1,258 discrete WHFs. The project has also documented extensive use of protected habitats and wildlife crossing structures, and generated one of the most comprehensive datasets on American Badger habitat and connectivity in the Columbia Valley to date. Additionally, nesting locations were documented for Lewis's Woodpecker; documented and enhanced for Osprey and Western Painted Turtle. These outcomes represent a substantial advancement in Species at Risk conservation in the Columbia Valley and provide a strong scientific and regulatory foundation for future habitat protection, stewardship, and connectivity initiatives, while highlighting the importance of continued provincial capacity to advance habitat protection proposals to formal legal designation.

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Cover photos by Rachel Darvill. American Badger captured on camera in a monitored culvert, and Western Painted Turtles basking on a log installed in Spillimacheen.

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1.0 Introduction

Since 2019, the Kootenay Conservation Program (KCP) has been spearheading Kootenay Connect, a long-term initiative focused on implementing conservation actions to protect species at risk in priority landscapes (Proctor & Mahr, 2019). The Columbia Valley Wetlands was identified as a key priority area within Kootenay Connect, with the Columbia Wetlands Stewardship Partners (CWSP) playing a central role in advancing conservation efforts in the region. Formed in 2006, the CWSP leads conservation and stewardship initiatives throughout the Columbia Valley. Comprised of over 30 diverse partners—including community organizations, Indigenous communities, and government agencies—the CWSP collaborates to design and implement effective habitat stewardship activities for the Columbia Wetlands and Upper Columbia River. In addition to on-the-ground conservation, the CWSP works to raise public awareness, and partners with multiple levels of government to support a coordinated approach to managing and protecting the Columbia River and its wetlands.

Through Kootenay Connect, the CWSP has been implementing species-at-risk conservation initiatives in the Columbia Wetlands since 2019. Annual reports are available (Darvill, 2020a; Darvill, 2021; Darvill, 2022; Darvill, 2023; Darvill, 2024; Darvill, 2025) and supported by accompanying videos summarizing conservation actions that are available on the Kootenay Connect website. Additional complementary work in the Columbia Wetlands has also been completed under Kootenay Connect (e.g., Durand, 2020; Lausen, Gates, Low & Rae, 2023; Milions et al., 2025; Remmer, Rooney, Bayley & Leven, 2024).

The 2025–2026 field season represents the seventh and final year of this Species at Risk suite of projects delivered by contractor Goldeneye Ecological Services, administered by the CWSP under Kootenay Connect. Conservation actions undertaken during this final year included the continuation of multi-species inventories [Lewis’s Woodpecker (*Melanerpes lewis*), American Badger (*Taxidea taxus jeffersonii*, eastern population), Western Painted Turtle – Intermountain – Rocky Mountain population (*Chrysemys picta* pop. 2), and Osprey (*Pandion haliaetus*)]; installation, monitoring, and repair of Western Painted Turtle enhancement structures; and, Wildlife Habitat Feature (WHF) designations at American Badger burrows and progress toward previously submitted and new Wildlife Habitat Area (WHA) proposals. This final report also includes a dedicated section summarizing and synthesizing the conservation outcomes, lessons learned, and cumulative achievements from the full seven-year project.

2.0 Study Area

The Columbia Valley (UTM: 535767; 5649168) is located within the Rocky Mountain Trench in southeastern British Columbia, Canada (Figure 1). The valley encompasses a diverse mosaic of habitat types, including riparian areas and wetlands, grasslands, montane and subalpine forests, as well as freshwater rivers and lakes. Spanning approximately 55,000 hectares, the Columbia Valley provides important habitat for a wide range of species, including at least 65 species at risk (SAR) and 21 ecological communities at risk, as documented in a 2020 literature review (Darvill, 2020a).

A defining feature of the study area is the Columbia Wetlands, a large, contiguous wetland complex occupying the valley bottom. Following an application by Wildsight in 2004, the Columbia Wetlands were designated as a Ramsar Wetland of International Importance in 2005 under the Ramsar Convention. This designation recognizes the international significance of the wetlands for their ecological values, including their role in supporting wetland-dependent species and migratory birds.

Approximately two-thirds of the study area is located within the Regional District of East Kootenay (RDEK), primarily within Electoral Areas F and G, with the remaining one-third situated in the Columbia Shuswap Regional District (CSRD), Electoral Area A. Several communities are located within the study area, including Fairmont, Invermere, Radium Hot Springs, Edgewater, Brisco, Spillimacheen, Parson, Nicholson, and Golden. This work is being conducted within the unceded traditional territories of the Ktunaxa Nation, including the ʔAqam and ʔAkisq̓nuk communities, the Secwépemc Nation, including the Shuswap Band, and within the homeland of the Métis Nation Columbia River.



Figure 1. The study area depicted in the Columbia Valley within British Columbia, Canada.

3.0 Western Painted Turtle

3.1. Introduction

The Western Painted Turtle (WPT) – Intermountain–Rocky Mountain population (*Chrysemys picta*, population 2) is blue-listed in British Columbia (B.C.) and is classified as a species of Special Concern by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). The species is also listed under the federal *Species at Risk Act* (SARA) due to ongoing population declines and persistent threats across its Canadian range (Government of Canada, 2016; B.C. Ministry of Environment, 2017). The WPT is the only native freshwater turtle species in B.C., and populations in the province have experienced long-term declines associated primarily with habitat loss, fragmentation, and mortality related to human activities.

Habitat degradation resulting from wetland loss, agricultural development, urban expansion, and road construction continues to be a primary threat to WPT persistence (B.C. Ministry of Environment, 2017). Road mortality remains a significant concern, as adult turtles frequently cross roads to access nesting areas, while habitat fragmentation can isolate populations, limit movement between aquatic and nesting habitats, and reduce genetic connectivity. These threats are particularly pronounced in peripheral populations, such as those found in the Columbia Valley.

Since 2020, the Columbia Wetlands Stewardship Partners (CWSP) (contracting Goldeneye Ecological Services), through Kootenay Connect, have been actively engaged in identifying and protecting critical WPT nesting and basking habitats within the Columbia Valley. Annual conservation initiatives have focused on reducing key threats, including nest predation, habitat degradation, and road-related mortality, through a combination of habitat enhancement, monitoring, stewardship, and landowner collaboration (Darvill, 2021; Darvill, 2022; Darvill, 2023; Darvill, 2024; Darvill, 2025).

The Western Painted Turtle relies on both aquatic and terrestrial habitats to complete its life cycle. Individuals are typically associated with slow-moving or still waterbodies such as wetlands, ponds, and lakes, and require adjacent upland areas with suitable substrates for nesting. Nesting generally occurs in late spring and early summer, with hatchlings emerging in the fall or overwintering at the nest site and emerging the following spring. The species' long generation time—females typically reach sexual maturity at 10–15 years—means that population recovery is slow and highly dependent on the long-term protection of adult females and successful recruitment of juveniles.

The 2025 field season represented the sixth and final year of WPT conservation actions implemented by CWSP under the suite of Species at Risk subprojects. During this final year, efforts focused on nest maintenance and monitoring at enhanced nesting sites at Zehnder Farm (Invermere) and Stewart's Farm (Spillimacheen), effectiveness monitoring using remote cameras at the Spillimacheen site, vegetation management, and continued landowner stewardship. Results from 2025, along with an overall 6-year project summary (see Section 7.1) and resulting stewardship recommendations, are provided.

3.2 Results of effectiveness monitoring at WPT enhancements in 2025

3.2.1 Zehnder Farm (Invermere)

3.2.1.1 Summary of conservation actions implemented at Zehnder Farm (2021–2024)

The Western Painted Turtle (WPT) project at Zehnder Farm began in 2021, with the project biologist working collaboratively with a landowner to enhance turtle nesting habitat. In 2021, a predator-exclusion fence was installed around a key nesting area on a small dam to address chronic nest predation.

Monitoring by the landowner in 2022 documented nesting activity within the enclosure and, for the first time in many years, observations of hatchlings indicated successful emergence from protected nests. Evidence such as emergence holes inside the enclosure and continued predation of nests outside the fence further demonstrated the effectiveness of the fencing in reducing nest loss.

In 2023, hatchlings were again observed in an adjacent pond, marking the second consecutive year of successful recruitment after nearly a decade without any hatchling sightings. These repeated observations provided strong support that the fenced nesting area was functioning as intended. Building on these successes, nesting habitat was expanded in May 2024 through the addition of approximately 32 yards of substrate to create two new nesting beds within the fenced enclosure. Weed removal was conducted prior to substrate placement, and multiple hatchling emergence holes were recorded. During the 2024 nesting season, turtle use of the new beds was evident, including direct observation of nesting activity. Hatchlings were again observed nearby later that summer, while nests outside the enclosure continued to experience predation, reinforcing the value of the enhanced and protected nesting habitat.

To address a lack of basking opportunities at the site, four basking logs were installed near the nesting area in January 2025 by the Lake Windermere District Rod and Gun Club with assistance from the landowner.

3.2.1.1 Conservation outcomes at Zehnder Farm in 2025

Effectiveness monitoring conducted in 2025 at Zehnder Farm indicated that, despite significant predation pressure and new challenges related to burrowing mammals and predation, the nesting bed enhancements and predator-exclusion fencing continue to support population-level benefits for WPT.

In early spring 2025, prior to hatchling emergence, the landowner observed that nests laid within the fenced enclosure during the 2024 nesting season had been predated. At least ten nests were estimated to have been excavated, likely by badger and/or skunk (due to claw marks from digging and their prevalence in the area). Fence repairs that had not been completed in fall 2024, combined with delayed spring access due to snow cover and priority agricultural activities, likely contributed to predator access to the nesting area. Eggshell fragments were observed within the enclosure, and no hatchling emergence holes or hatchlings were detected inside or outside the fence during spring monitoring. While this represented a setback for annual recruitment, the number of predated nests confirmed high nesting effort by adult females at the enhanced nesting beds in 2024.

On May 25, 2025, maintenance activities were completed at the site, including collaborative weeding of the nesting beds by project contractors and the landowner. Following this maintenance, the nesting beds were observed to be in good condition and suitable for use during the upcoming nesting season. In early June 2025, adult WPT were observed using the nesting beds within the fenced enclosure and active nesting behaviour was documented (Figure 2). The landowner recorded multiple nesting attempts within the enclosure, with an estimated six to ten nests laid by mid-June, confirming continued selection and use of the enhanced nesting habitat despite early spring predation.

By mid-June 2025, ground squirrel activity was documented for the first time at the site, with individuals tunneling beneath the predator-exclusion fence and excavating newly laid turtle nests within the enclosure. This behaviour had not been observed prior to 2024. In response, the landowner undertook intensive fence maintenance, including sealing tunnel entrances with rocks and gravel, repairing the fence perimeter, and removing ground squirrels from the nesting area. These actions reduced tunneling activity

later in the season and will be implemented proactively by the landowner in future years as part of adaptive management.

Although 2025 represented a year of reduced nesting success due to unexpected predation pressures, the nesting bed enhancements and predator-exclusion fence have been effective in increasing recruitment and improving population structure at the site. In 2025, turtles of multiple size and age classes were observed using the dam and basking structures, including small and medium-sized individuals that were absent prior to implementation of conservation actions. Historically, landowner observations at the site were limited to mature adults, with no evidence of juvenile recruitment.

Basking habitat enhancements installed in January 2025 were also confirmed to be effective. The installed logs were regularly used by turtles, particularly those placed in shallower water, and a total of 13 turtles of varying sizes were observed basking throughout the site in spring 2025. Additional basking logs were installed following spring fence repairs to further support thermoregulation and habitat use.

Overall, the 2025 field season highlighted the importance of ongoing maintenance, timely fence repairs, and adaptive responses to emerging predator pressures. While nest predation reduced annual recruitment in 2025, observations of multiple age classes provide strong evidence that the nesting beds and predator-exclusion fencing implemented since 2021 have contributed to increased recruitment and population resilience at Zehnder Farm.



Figure 2. Turtle nesting at the enhanced nesting beds at Zehnder Farm on June 4, 2025.

3.2.2 Stewart's Farm (Spillimacheen)

3.2.2.1 Summary of Conservation Actions Implemented at Stewart's Farm (2021–2024)

Beginning in 2021, Western Painted Turtle (WPT) conservation efforts in Spillimacheen focused on addressing high nest predation and road mortality risks at a nesting hotspot identified on private land at Stewart's Farm in 2020 (Darvill, 2021). This site was identified through public outreach and landowner reporting, with observations indicating frequent nest predation and adult females crossing Westside Road next to Stewart's Farm to access traditional nesting habitat.

In 2022, an alternative nesting site was established on private land to try and reduce road crossings and predation risk. Nesting substrate was delivered and placed to create an elevated nesting area above the high-water mark (Darvill, 2022). A predator-exclusion fence was subsequently installed around the nesting substrate, using galvanized mesh fencing, ground-level horizontal fencing, and embedded rock ballast to deter predators from digging underneath. Fence alignment was designed to extend into the water where possible, reducing predator access to the enclosure. Additional conservation actions in 2022 included public outreach to recruit volunteers for basking log monitoring at nearby sites, collaboration with the Ministry of Transportation and Transit (MoTT) to install wildlife signage on Westside Road in Spillimacheen, and the development of WPT educational materials (Darvill, 2022).

In 2023, conservation actions were expanded and refined based on effectiveness monitoring and field observations. Fence alignment at the Stewart Farm nesting enclosure was modified so that both ends extended toward the water to further deter mammalian predators. Seasonal "Slow Down Turtle Crossing" sandwich-board signs were deployed at Westside Road and other priority crossing locations to reduce road mortality during the nesting season. Nesting habitat was improved through the addition of suitable nesting substrate to the original nesting mound, creating a raised, solar-exposed nesting bed. A small second nesting bed was also created along the south side of Westside Road, adjacent to the traditional nesting area, with MoTT permission, to assess whether turtles would select nesting habitat that did not require road crossings. Animex wildlife fencing was installed alongside existing mesh fencing to improve turtle movement, reduce visual barriers, and prevent turtles from becoming trapped on the wrong side of the fence. One-way escape doors were retrofitted into the fencing to maintain connectivity between nesting habitat and wetlands while limiting predator access. Effectiveness monitoring using wildlife cameras was implemented in 2023 to assess turtle use of nesting beds, road crossings, fence modifications, and predator activity. Cameras were deployed at the traditional nesting area, newly created nesting beds, and fencing features, providing information on turtle behaviour, nesting attempts, and site use (Darvill, 2024).

In 2024, nesting habitat enhancements continued with the expansion of the linear roadside nesting bed created in 2023 (along Westside Road in front of the traditional nesting area). Additional fencing was installed around this new nesting bed, and Animex wildlife fencing was added to improve turtle guidance and reduce entrapment risk. Vegetation management was conducted at all enhanced nesting areas to maintain substrate quality and reduce root intrusion. Seasonal turtle crossing signage was redeployed, and effectiveness monitoring continued using multiple wildlife cameras to assess turtle use of nesting features, road crossings, and fencing modifications. Regular site visits were conducted to maintain equipment and manage vegetation (Darvill, 2025).



Figure 3. Roadside turtle nesting bed in Spillimacheen on May 25, 2025, after weeding.

3.2.2.2 Conservation actions and results at Stewart's Farm in 2025

The objective of the 2025 field season was to complete the final year of effectiveness monitoring at the Spillimacheen WPT enhancement sites using four wildlife cameras, and to conduct vegetation management at the enhanced nesting areas. Fence repairs and extensive weed management at both artificial nesting beds were completed by four individuals on May 21 and 25, 2025 (Figures 3 and 4). This date was selected to allow for intensive vegetation removal during the brief window between spring hatchling emergence and the onset of the nesting season, when the use of hand tools such as spades would not pose a risk to turtles.

Additional vegetation maintenance was conducted more carefully throughout the season—without the use of shovels and with limited trampling—on five occasions (June 5 and 26, July 4 and 11, and August 7, 2025). By August 7, extensive weed growth was again observed at both nesting beds (Figure 5). Wildlife camera footage was reviewed to identify areas where nesting activity may have occurred, and vegetation removal was deliberately focused on areas where no nesting was observed, in order to minimize the risk of disturbing incubating eggs.

Fence repairs were required throughout the season, with repair work completed on five occasions. Domestic goats continued to breach the wire fencing, contributing to repeated damage and disturbance at the nesting beds, as well as several fence repairs. A CWSP staff member visited the Spillimacheen site on October 3, 2025, primarily to conduct fence repairs rather than formal monitoring. During this visit, incidental observations related to nesting activity were recorded. Sixteen holes with visible eggshell fragments were observed on the slope on the opposite side of Westside Road within the historical nesting area. An additional four holes with eggshell fragments were documented on the slope at the edge of the field adjacent to the artificial nesting mound. It was not possible to determine conclusively whether these holes reflected successful hatchling emergence or nest predation. Typically, eggshell fragments visible at the surface are associated with predation events, whereas successful emergence usually leaves eggshells buried beneath the substrate. Some of the observed holes were narrow and consistent with potential hatchling emergence pathways, while others appeared more disturbed and suggestive of predator excavation (Catriona Leven, personal communication, October 3, 2025).



a) *Figure 4. Turtle nesting bed at Stewart's Farm a) before removing weeds, and b) after removing weeds.*



a) *Figure 5. By 7 August 2025, extensive weed growth was observed at the nesting bed in the field, and b) at the roadside nesting bed.*

Camera Results by Location

North Bank – Historical Nesting Area and Road Crossing (Reconyx Camera)

The North Bank Reconyx camera was positioned above Westside Road and oriented toward the historical nesting area and turtle road-crossing location. During most of the peak nesting period, the camera captured mostly the road and very little of the nesting area. The camera captured images every minute, 24 hours per day, and recorded three additional images when motion was detected. Footage was available from May 21 to June 24, 2025. A total of 116 turtle observations were documented, including five confirmed nesting events (Appendix 1, Table 1). Most turtles detected were crossing the road to get to their historical nesting area, but the majority of nesting events were not captured due to long grass blocking view, or the camera orientation not capturing most of the nesting area. Turtle activity occurred throughout the monitoring period, with notable peaks in late May and during the second week of June. Vehicle traffic was recorded between June 9 and June 24, with daily volumes ranging from 29 to 95 vehicles. On nine occasions, vehicles were closely passing turtles on the road (Figure 6a/b). Other species recorded were coyote, several dogs, domestic goats and sheep, humans, horses and squirrel. Ground squirrel, coyote, and domestic goats were seen on the nesting area. Most recorded activity was limited to the road.

Southwest (SW) Structure – Field Nesting Mound (Reconyx Camera)

The SW Structure Reconyx camera was mounted outside the nesting area fence and oriented toward the south-facing side of the nesting mound. The camera recorded images every minute between 05:00 and 23:59, and footage was reviewed from May 21 to July 11, 2025. During this period, 26 turtle observations on the nesting mound were recorded, including two confirmed nesting events (e.g., Figure 7). Domestic goats and sheep were observed on or near the nesting mound on May 23, June 27, June 30, and July 7 (Figure 8). Fence breaches by the goats were identified three times during the nesting season, and two more times after the cameras were taken down as well. A ground squirrel was observed on the nesting mound once; ground squirrels are known predators of turtle eggs.

North Structure – Field Nesting Mound (Muddy Camera)

The North Structure camera was installed inside the nesting area fence and oriented to capture events on the north-facing side of the nesting mound. Initially, the camera captured images every 30 seconds between 06:00 and 21:59. On June 11–12, the settings were adjusted to capture six photos per minute, 24 hours per day. Footage was reviewed between May 21 and July 8, 2025. Eight turtle observations were recorded, indicating that multiple turtles were prospecting the nesting mound. No confirmed nesting behaviour was observed, though the entire nesting mound was not always captured by the camera. Camera performance was limited by moisture accumulation on the lens during morning hours, resulting in reduced image clarity and only partial coverage of the mound. Goats and sheep were observed on or near the nesting mound on three occasions, and ground squirrels were documented twice.

Lower Road – Roadside Nesting Bed (Muddy Camera)

The Lower Road camera was placed at the roadside nesting bed, facing west toward the newly added nesting substrate. The camera captured images every 30 seconds between 06:00 and 23:59. Footage was reviewed from May 22 to July 6, 2025; some date information was missing during the final review period. A total of 49 turtle observations were recorded, including three confirmed nesting events and three prospecting events (Figure 9). Turtles were frequently observed walking along the inside of the fence and facing it, suggesting attempts to cross but difficulty locating an exit point. Ground squirrels

were observed inside the nesting area on 12 occasions, and three burrows were documented extending beneath the fence. Vegetation increased within the nesting bed as the season progressed; however, turtles continued to nest in areas with sparse vegetation, reinforcing the importance of maintaining open substrate through regular weeding.



Figure 6 a/b. Vehicles seen passing close to turtles on the road in Spillimacheen.

*Note – Turtles are circled in red.

Table 1. Number and type of species recorded on wildlife cameras at various enhancement features at Stewart's Farm in 2025.

Species	Feature with camera installed				Totals
	Lower Road	N Structure	North Bank	SW Structure	
Bird	54	8		15	77
Bird (x2)	2				2
Coyote			8		8
Dog			4		4
Dog (x2)			1		1
Dog (x3)			1		1
Goat		2		5	7
Goat (x13), Sheep (x8)			1		1
Goat (x15)			1		1
Goat (x20)			1		1
Goat (x4)			1		1
Goat, Sheep		1		1	2
Goat, Sheep (x11)			2		2
Goat, Sheep (x8)			2		2
Goat/Sheep (x7)			1		1
Goat/Sheep/Dog/Human			2		2
Goat, Sheep (x27)			2		2
Goat, Sheep (x3)			2		2
Ground Squirrel	13	2	14	1	30
Ground Squirrel (x2)			1		1
Horse			10		10
Human		1	10		11
Human (x2)			6		6
Human (x3)		1	4		5
Human (x4)			1		1
Human (x6)			1		1
Human, Sheep			1		1
Mammal	1		1		2
Sheep			3		3
Sheep (x3)		1	1	1	3
Squirrel	1				1
Turtle	49	8	115	26	198
Turtle, Human (x2)			1		1
Unknown	2	1	2		5
Totals	122	25	200	49	396



Figure 7. Turtle nesting in 2025 on a nesting bed built at Stewart's Farm in 2022-2023.



Figure 8. Domestic goats that broke the fence, fed on vegetation and played on the nesting mound on three occasions in 2025.



Figure 9. Two turtles at the roadside turtle bed at Stewart's Farm, nesting and prospecting, on June 10, 2025.

3.2.2.3 Discussion

The 2025 monitoring season at Spillimacheen confirms that artificial nesting beds are being increasingly used by Western Painted Turtles. Across all four camera locations, a total of 199 turtle observations were recorded, including multiple confirmed nesting events and numerous prospecting events. These results indicate a positive response to habitat enhancements. However, rapid vegetation growth that can threaten eggs and hatchlings underscores the importance of ongoing weed management to maintain suitable nesting conditions. Although predation risk and disturbance from goats, sheep, and ground squirrels were documented, the overall level of turtle activity suggests that reproduction continues at the site.

Despite improvements to nesting habitat, turtles continued to cross Westside Road to access historical nesting areas. A total of 76 road crossings were recorded in 2025, and road mortality remains a significant concern. A site visit was conducted with the project biologist and Ministry of Transportation and Transit (MOTT) to assess the feasibility of installing a box culvert to facilitate safe turtle movement beneath the road. However, topographic constraints and regulatory limitations currently preclude the installation of a crossing structure. This section of Westside Road is classified as a Section 42 roadway, meaning MOTT owns only the road surface and not the adjacent shoulder (Ian Kirschner, personal communication, August 2025). As a result, installation of a culvert would require the involvement and consent of adjacent landowners, whose ownership status is uncertain and may be changing at the time of writing.

Overall, artificial nesting beds are demonstrating effectiveness by increasing the availability of nesting habitat, distributing nesting pressure across multiple locations, and reducing predation risk relative to historical sites. Long-term success, however, depends on continued site maintenance (including fence repairs and vegetation management), ongoing monitoring for disturbance and predation, and sustained cooperation with landowners, particularly with respect to vegetation management and site access. Continued use of temporary signage during peak nesting periods and exploring other road-crossing mitigation measures is recommended to further reduce the risk of road mortality.

3.2.2.4 Conclusion

Results from the 2025 field season demonstrate that CWSP's habitat enhancement efforts at Spillimacheen are meeting their objective of attracting WPT to new and safer nesting areas. Use of artificial nesting beds continues to increase, indicating that turtles are responding positively to these interventions. Nevertheless, persistent challenges remain, including road-crossing mortality risk, predator access, fence damage from livestock, and rapid vegetation growth. Continued monitoring, maintenance, and landowner engagement are essential for sustaining these conservation gains. However, the long-term future of this site remains uncertain given the conclusion of this multi-year initiative, emphasizing the importance of securing ongoing stewardship, funding, and management support.

4.0 American Badger

4.1 Introduction

The American Badger (*Taxidea taxus jeffersonii*, Eastern population) is a species of conservation concern in B.C. and remains red-listed under provincial conservation rankings. It has been recognized as Endangered by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC, 2012) and identified under the federal Species at Risk Act (SARA) as requiring targeted conservation action (Government of Canada, 2018). In December 2025, COSEWIC reassessed the American Badger's status across Canada. The previously recognized Eastern population of *Taxidea taxus jeffersonii* is now included within a broader Kootenay/Prairies/Rainy River population that has been designated as Special Concern at the national level, reflecting evidence of genetic connectivity and a more extensive range than previously understood. However, this status change won't be implemented for 2-3 years (Karina Lamay, personal communication, February 3 2026). The population still continues to face substantial threats, and localized populations in B.C. remain vulnerable due to habitat fragmentation, low population density, and high mortality risk (COSEWIC, 2012).

Several interacting threats contribute to ongoing population declines, including habitat loss and degradation associated with forest succession, agricultural expansion, urban development, and infrastructure corridors. Direct mortality from vehicle collisions, trapping, and persecution continues to be a significant concern, particularly in valley-bottom landscapes where highways intersect suitable badger habitat (Adams & Kinley, 2004; COSEWIC, 2012). In the East Kootenay region, the badger population has been estimated at fewer than 100 mature individuals, making even small increases in mortality or habitat loss consequential for long-term persistence (COSEWIC, 2012).

American Badgers occur at naturally low densities and maintain large home ranges that encompass extensive burrow networks. Individual burrows and burrow complexes may be reused over multiple years, including for maternal denning, foraging, and refuge, making both active and inactive burrows important conservation features (Newhouse, 2001). Habitat suitability is strongly influenced by soil texture and stability, prey availability—particularly Columbian ground squirrels (*Urocitellus columbianus*)—and landscape connectivity between foraging areas, denning habitat, and seasonal movement routes (Kinley & Newhouse, 2008; Adams, 2011). In the Upper Columbia Valley, suitable badger habitat is largely concentrated at lower elevations, where it overlaps extensively with agricultural lands and transportation corridors, but some use at higher elevations is also known.

In British Columbia, the American Badger is designated as a species at risk under the Forest and Range Practices Act (FRPA), which provides regulatory mechanisms for habitat protection through the establishment of Wildlife Habitat Features (WHFs) and Wildlife Habitat Areas (WHAs). Once documented and submitted to the provincial Wildlife Species Inventory (WSI), badger burrows may be legally protected as WHFs, requiring tenure holders to avoid disturbance and implement mitigation measures where necessary. WHAs provide an additional level of protection by conserving larger, contiguous areas that support burrowing habitat, prey populations, and movement across the landscape, with General Wildlife Measures designed to reduce impacts from forestry, road construction, and other land-use activities (Kinley, 2009). WHA applications need to be submitted to the province. When American Badger conservation work was initiated under the Kootenay Connect Priority Places initiative, only a single WHA

for American Badger had been established in the Upper Columbia Valley, located near Canal Flats. Since 2022, the badger component of the CWSP–Kootenay Connect species-at-risk program has focused on identifying additional important habitats, documenting burrow networks, improving understanding of habitat connectivity, and advancing formal habitat protection through burrow documentation for WHF establishment and WHA submissions.

The 2025 American Badger subproject built upon this foundation by expanding burrow inventories at Findlay Creek, advancing WHA development, and assessing the permeability of major transportation corridors—particularly Highway 93/95 between Brisco and Wycliffe. This work started to address site-level habitat concerns and broader landscape connectivity, with a specific focus on evaluating priority highway culverts as potential wildlife underpasses and identifying opportunities to reduce barrier effects and road-related mortality. The American Badger conservation program described in this report was developed and delivered by Goldeneye Ecological Services, working in partnership with the Columbia Wetlands Stewardship Partners, the Kootenay Conservation Program, provincial agencies [Ministry of Transportation and Transit (MoTT), Ministry of Water, Lands and Resource Stewardship (WLRS)], and local landowners under the broader Kootenay Connect Priority Places initiative.

4.2 Methods

The 2025 American Badger subproject focused on the Findlay Creek area and a section of valley-bottom highway (Hwy 93/95) between Brisco and Wycliffe in the Columbia Valley, B.C. Field work targeted the completion of burrow inventory work at Findlay Creek, as well as highway infrastructure that influences landscape connectivity for American Badgers.

4.2.1 Badger burrow inventories and ground-truthing

Field inventories for American Badger burrows that began at Findlay Creek in 2024 were completed during the 2025 field season. This built on inventories completed in previous years, which resulted in WHF establishment and WHA applications at Dry Gulch, Rushmere and Steamboat. Surveys focused on identifying active (in current year) and inactive (but functional) burrows, and potential maternal denning sites. Burrow searches were completed through systematic ground surveys. Burrows were identified and classified in the field based on physical characteristics consistent with American Badger excavation, including burrow size, shape, soil mounds, and associated tracks or sign where present. Burrow locations were recorded using handheld GPS units, and site attributes such were documented where relevant. All confirmed badger burrow locations were prepared for submission to the provincial Wildlife Species Inventory (WSI) database to support Wildlife Habitat Feature (WHF) designation under the Forest and Range Practices Act (FRPA).

Due to the large spatial extent of suitable habitat and the very high density of badger burrows at Findlay Creek, it was not feasible to complete a ground-based inventory of all burrows within the proposed Wildlife Habitat Area during the 2025 field season. Thousands of burrows are present across the site, and survey effort was therefore focused on representative areas to confirm whether burrows were present or not. To supplement ground surveys and better understand burrow distribution at the northern extent of the proposed Findlay Creek WHA, a targeted drone survey was conducted.

4.2.2 Culvert prioritization for field assessment

Using MOTT culvert point data obtained from the BC Data Catalogue, all culverts with a diameter greater than or equal to 450 mm were identified for analysis. Culverts measuring 450–599 mm were categorized

as lower priority for potential badger use based on provincial input (K. Lamay, personal communication, 2025), while culverts ≥ 600 mm were considered more desirable for badger passage. The analysis was restricted to culverts located along Highways 3, 93, 95, and 95A. Six spatial data sources were used to identify culverts with higher priority for field inspection. Each data source included attributes that were assigned a numeric priority value based on their relative importance in identifying culverts that could potentially be used by American Badgers moving near or across highways. Lower numeric values indicated higher priority, while attributes considered less influential were assigned higher values (e.g., 4 or 5).

A provincial dataset containing road mortality locations was reviewed; however, because most mortality points were located more than 200 m from culverts, these data were not included in the priority calculation. An attribute field was retained to indicate whether a culvert occurred within 200 m of a road mortality location (true/false). The six data sources and associated attributes used for culvert prioritization included:

1. Culvert type, categorized as roadway, entrance/other, down drain, or flume
2. Culvert diameter, categorized as ≥ 600 mm or < 600 mm
3. Habitat suitability according to the badger resource section function (RSF) model, classified as very high, high, low, or very low (Kinley, Whittington, Dibb & Newhouse, 2014)
4. Distance to known badger burrow locations
5. Distance to documented badger observation points
6. Slope at the culvert location, classified as < 30 degrees or ≥ 30 degrees

Roadway culverts were assigned the highest priority value (1), entrance or “other” culverts were assigned a value of 2, down drains a value of 3, and flumes a value of 4. Consistent with recommendations (T. Kinley, personal communication, 2025) flumes and down drains were considered unlikely to be used by badgers and were excluded from further analysis. All culverts smaller than 450 mm were excluded, but this should be revisited with any future prioritization exercises. Culverts measuring 450–599 mm were assigned a priority value of 2, while culverts ≥ 600 mm were assigned a priority value of 1.

Culverts located within very high suitability habitat (according to the RSF model) (Kinley, Whittington, Dibb & Newhouse, 2014), were assigned a value of 1. Those culverts in high suitability habitat a value of 2, low suitability habitat a value of 3, and very low suitability habitat a value of 4. Culverts located within 200 m of a known badger burrow were assigned a priority value of 1; culverts located more than 200 m from a burrow were assigned a value of 5. For badger observation points, culverts within 50 m received a value of 2, those within 100 m a value of 3, within 200 m a value of 4, and beyond 200 m a value of 5. Culverts located in areas with slopes between 0–29 degrees were assigned a value of 1, while culverts in areas with slopes ≥ 30 degrees were assigned a value of 2. All priority values were summed into a single field using ArcGIS. Lower total scores indicated higher priority culverts for field inspection based on the combined attributes and data sources used in the analysis.

4.2.3 Highway culvert assessments and landscape connectivity

Field assessments of the prioritized culverts were conducted along Highway 93/95 between Brisco and Wycliffe following provincial highway wildlife culvert assessment protocols (Figures 10 a-c). A provincial field app was used to collect standardized data at each culvert. Data recorded included: a question about whether machine excavation was required, seasonal flow conditions, passable openness (%), visibility through the underpass, moisture conditions, water depth, structure size and type, local landscape

connectivity, perceived potential underpass priority, and evidence of wildlife use. Wildlife sign data included tracks or sign observed within or near the culvert. Each culvert end was assessed independently, recognizing that entrance conditions and suitability for wildlife may differ between sides of the highway. Assessors recorded the perceived potential underpass priority based on field observations, along with notes on habitat and human disturbance. Suitability for remote wildlife camera installation was evaluated and preliminary considerations for potential ecosystem enhancements or culvert clear-outs, to improve badger permeability across the highway, were documented. A course assessment of broader landscape level connectivity was also completed.



a)

b)



c)



Figure 10. Culvert assessment at different types of culverts that were all assessed with high prioritization; a) large 1800 mm diameter culvert, b) small elevated culvert above a pool, c) 600 mm culvert partially blocked with substrate.

4.2.4 Remote wildlife camera monitoring in culverts

Remote wildlife cameras were deployed following culvert assessments at a subset of culverts perceived as having potential to function as underpasses for badgers. Eight Reconyx cameras were installed at five culverts, with two cameras placed at opposite ends of each structure. Two cameras were initially launched at a culvert, but later moved to another thought to have greater permeability for badgers. Following provincial guidance, cameras were configured and positioned to capture culvert entrances and were programmed to record motion-triggered images. Cameras were checked periodically throughout the monitoring period to replace batteries and memory cards and to ensure continued functionality. Images were subsequently and coarsely reviewed (due to funding limitations) to identify American Badgers and other wildlife species using the culverts.

4.2.5 Spatial analysis and WHF / WHA development

Spatial data collected during burrow inventories and culvert assessments were compiled and analyzed using GIS software and done by Vivid Consulting. To select the boundaries for Findlay Creek Badger WHAs, cluster sites with multiple burrow counts were broken up into even groups up to 45 burrows to determine the following buffer sizes: 1 burrow= 20 m, 2-9 burrows= 45 m, 10-18 burrows= 70 m, 19-27 burrows = 90 m, 28-36 burrows= 100 m, 37-45 burrows= 120 m. Then all the buffers were dissolved into a single buffer for delineation of the WHA. When a single count burrow was outside, but relatively close to the buffer area, the WHA polygon was brought to the outer edge of the 20 m buffer to include it in the WHA boundary. Burrow locations were used to develop spatial files to support two proposed Wildlife Habitat Area (WHA) applications at Findlay Creek for submission in 2026. All spatial products and supporting data were prepared for submission to provincial agencies to support conservation planning and reporting.

4.3 Results

4.3.1 Badger burrow inventories and WHA development

Field inventories conducted in 2024 and 2025 confirmed extensive and concentrated use of the Findlay Creek area by American Badgers. A total of 749 burrows in functional condition were documented in 2025, clustered at 204 discrete locations. These clustered locations represent functional burrow complexes and form the basis for Wildlife Habitat Features (WHFs) submitted to the provincial Wildlife Species Inventory (WSI) database (Figure 11).

Due to the exceptionally high density of burrows and the large spatial extent of the Findlay Creek site, a complete ground inventory of all burrows was not feasible within available time and resources. To address this limitation, a drone survey was conducted at the northern extent of the proposed WHA, revealing hundreds of additional burrows beyond the area inventoried on the ground (Figure 12), indicating that burrow density and habitat use extend farther north than we could cover by ground. Information from the drone survey was incorporated into spatial analyses, and the proposed Findlay WHA boundaries were adjusted conservatively to reflect the broader extent of suitable habitat and burrow presence identified through this combined approach (Figure 11). These findings confirmed that badger use extends farther north than previously documented and informed the spatial extent of the proposed WHA boundaries. Based on combined ground and drone-based data, applications were submitted for two American Badger Wildlife Habitat Areas at Findlay Creek, designed to encompass high-density burrow clusters, adjacent suitable soils, and contiguous foraging habitat for badgers.

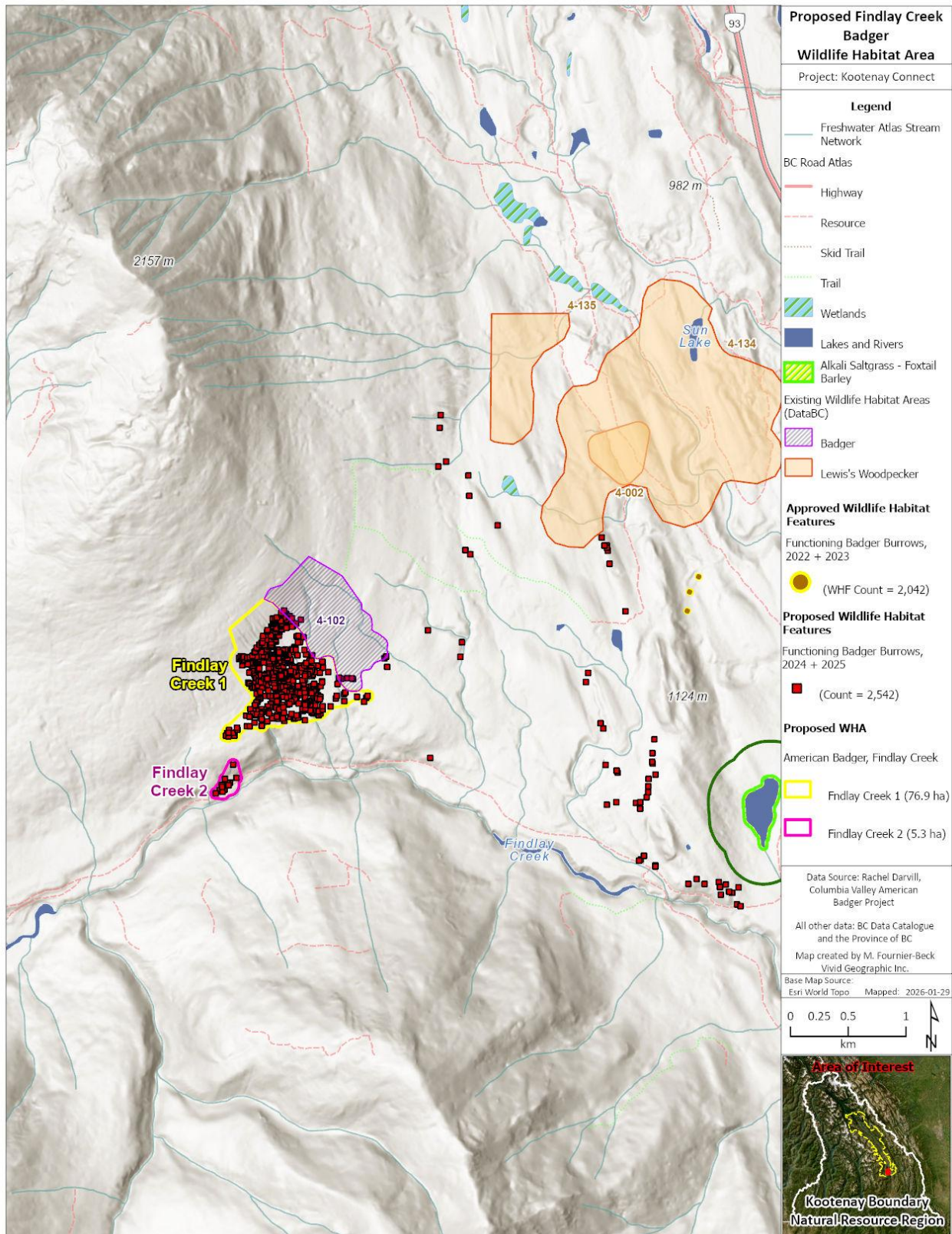


Figure 11. Proposed Findlay Creek badger WHA boundaries incorporating ground-inventoried burrows, and results of a drone survey at the northern extent of Findlay Creek 1.



Figure 12. Drone imagery of the northern extent of the proposed Findlay Creek 1 WHA, showing a high density of American Badger burrows below the road.

4.3.2 Culvert assessments and highway crossing potential

Culvert assessments were completed along Highway 93/95 between Brisco and Wycliffe to evaluate the potential for existing structures to function as highway crossing opportunities for American Badgers. In total, 54 culverts were assessed, with 106 individual culvert-end assessments conducted. Most culverts were evaluated at both ends, but some ends could not be located (Figure 13).

A subset of culverts identified during the spatial prioritization process could not be assessed in the field. Four high-priority culverts could not be located during site visits and may have been buried by substrate, although their status could not be confirmed. An additional three culverts were not assessed because the structures were located approximately one metre below highway grade with minimal slope on both sides, indicating that badgers were more likely to cross the highway surface rather than use the culvert. A further four priority culverts were not assessed because they were not the culvert type indicated in the MOTT spatial database (e.g., they were down drains rather than roadway culverts) and were therefore considered unsuitable for badger use.

Of the 106 culvert-end assessments, only 45 assessments indicated that culverts were 100% open. The remaining assessments documented partial or complete blockages within the culvert, conditions that would partially or completely restrict or prevent passage by larger wildlife species such as American Badgers. Only six culverts were classified as having high 'Perceived Potential Underpass Priority'. Of these, three of them were fully blocked at one end and require machine clean-outs to restore functionality (for drainage and wildlife crossings).

In addition to the high priority culverts, 17 culverts were classified as having medium-to-high 'Perceived Potential Underpass Priority' based on structural characteristics, surrounding habitat, and evidence of wildlife use. These high and medium-to-high priority culverts collectively represent locations where targeted maintenance, enhancement, or further monitoring could substantially improve highway permeability for American Badgers and other wildlife species in future years.

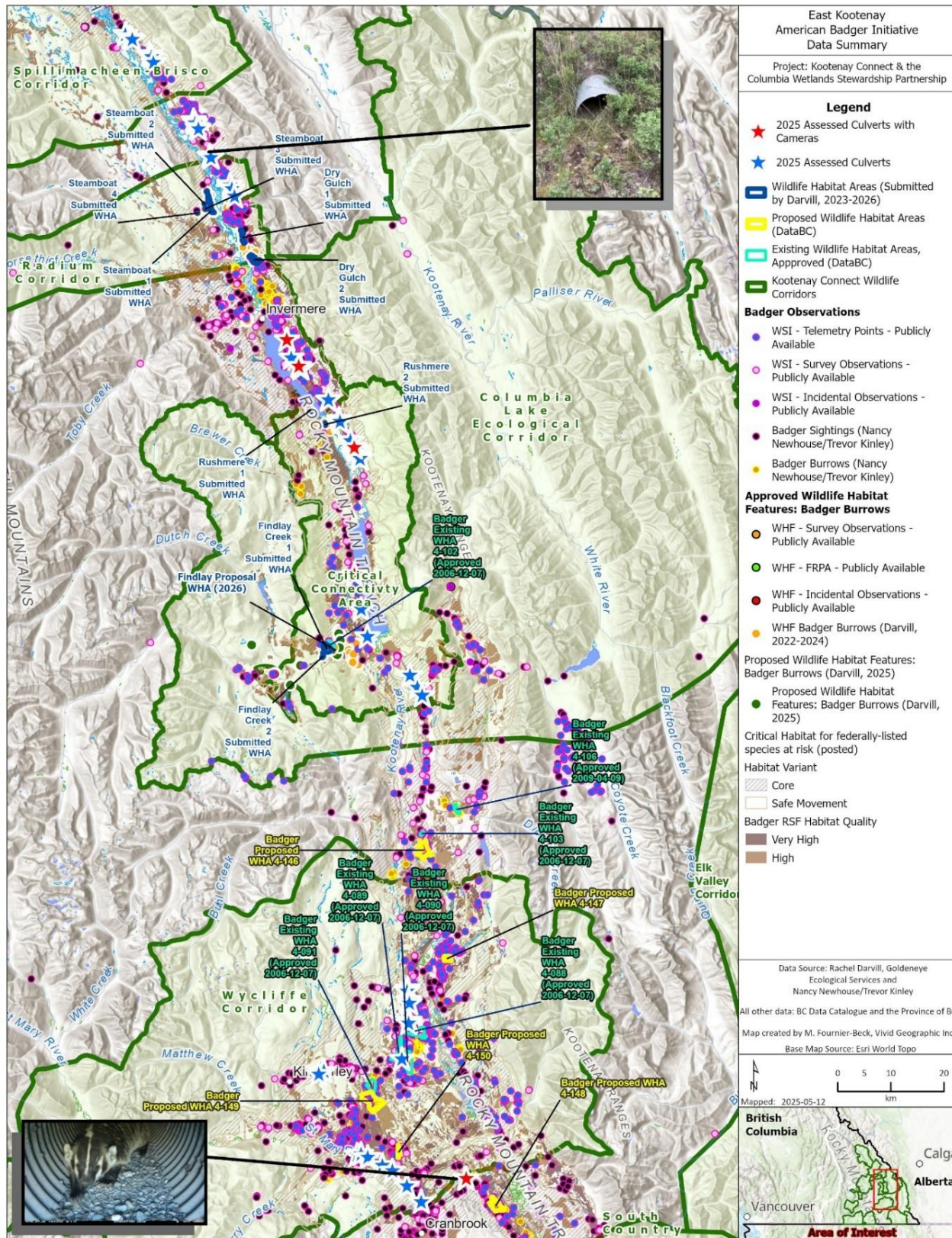


Figure 13. Spatial overview of assessed culverts in the Highway 93/95 study area, as well as historical badger data, badger burrows, proposed and approved WHAs and WHFs.

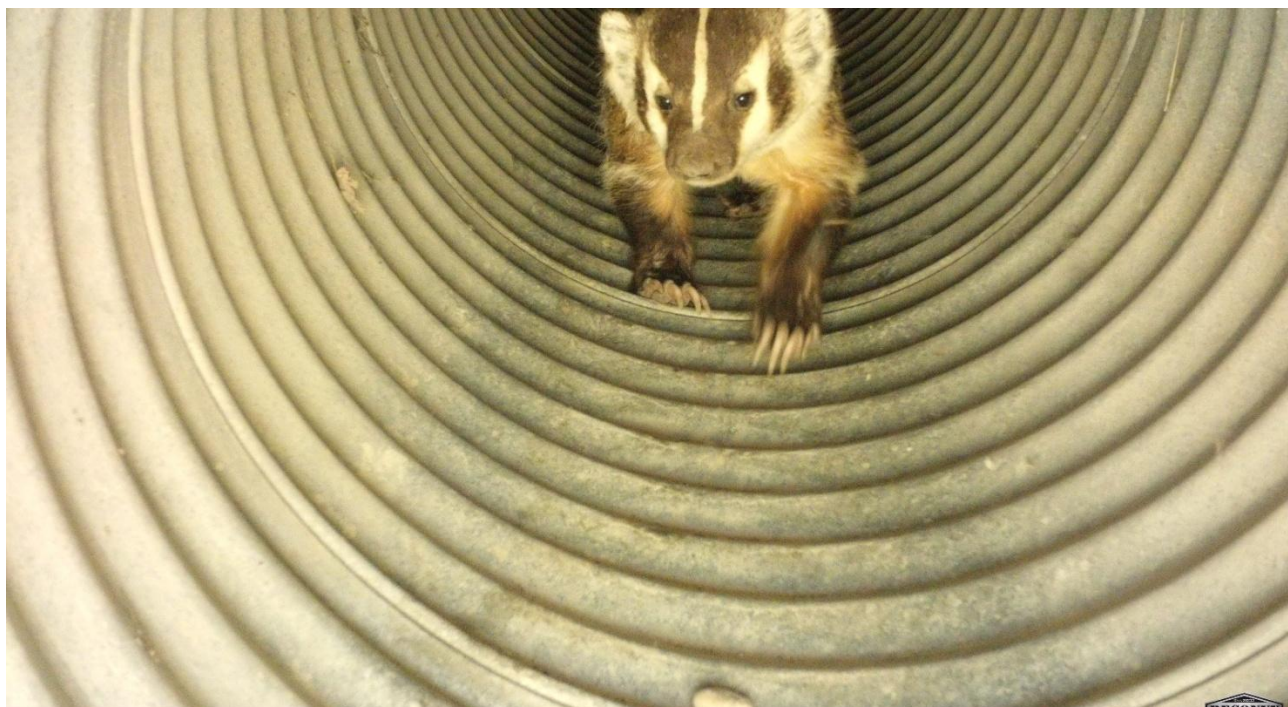
4.3.3 Remote Wildlife Camera Monitoring

Remote wildlife cameras were deployed following culvert assessments to evaluate wildlife use at sites that were perceived to have potential use by badgers. In total, eight Reconyx cameras were deployed across five culverts, with cameras placed at both ends of each structure. Two cameras were initially installed at a culvert identified as having high landscape connectivity value for wildlife generally, but limited structural suitability for badgers due to a hanging culvert entrance. Cameras deployed there from 19 June to 18 July 2025 detected small rodents and river otter, confirming use of the structure by other wildlife species. Surprisingly, data review in January 2026 revealed that a badger also crossed under the highway using the hanging culvert on six different occasions. The two cameras were relocated, where they remained deployed at a medium-to-high underpass priority site, from 18 July to 19 October 2025.

The remaining six cameras were installed at three culverts on 1 August 2025 and were retrieved on 19 October 2025. These three culverts included two high underpass priority sites and one low perceived Potential Underpass Priority sites identified through the culvert assessment process. Camera maintenance visits were conducted on 13 August, 22 August, and 23 September 2025. During these visits, memory cards were exchanged, and batteries were checked; battery replacement was not required during the deployment period.

American Badgers were detected at three of five culverts monitored with cameras (Figure 13). One of these culverts was classified as having high 'Perceived Potential Underpass Priority', while the other two were classified as medium-to-high priority, confirming that culverts across a range of priority classes can function as effective highway crossing structures, even those with elevated culvert ends. Multiple badger crossings were documented at all three locations, indicating repeated use of these structures rather than isolated events. Cameras recorded a suite of other wildlife species as well, including coyote, river otter, striped skunk, Columbian ground squirrel, snakes, and small rodents (Figure 14).

Camera deployments were designed to confirm use of selected culverts by badgers and other wildlife rather than to provide a comprehensive quantitative analysis of crossing frequency, seasonal patterns, or species-specific behaviour. While all images were reviewed at a screening level to confirm species presence, a full image-processing and analytical summary was beyond the scope of the 2025 work. As a result, detailed metrics such as detection rates, timing of crossings, or comparative use among culverts are not reported here. Despite this, the repeated detection of American Badgers at three culverts, and for several other species at all culverts, provides strong qualitative evidence that existing and functioning highway structures are facilitating movement across Highway 93/95 and highlights the value of targeted camera monitoring to inform future connectivity-focused work.



b) 2025-08-11 12:55:37 M 5/5 HYPERFIRE HP4K 20°C RECONYX



a) 2025-08-04 08:48:08 M 1/5 HYPERFIRE HP4K 12°C RECONYX

Figure 13. American Badger detections recorded at two monitored culverts.



Figure 14. Examples of additional wildlife species recorded at monitored culverts; a) skunk and, b) coyote.

4.4 Discussion

4.4.1 Advancing American Badger conservation in the upper Columbia Valley

The 2025 American Badger subproject represents a significant step forward in understanding and conserving badger habitat and connectivity in the Upper Columbia Valley. Building on foundational work completed in previous years (Darvill 2023; Darvill 2024), this year's efforts focused on three complementary objectives: expanding and refining burrow inventories at Findlay Creek to complete a dataset needed for WHA development, assessing the role of highway culverts in reducing road mortality and facilitating landscape connectivity, and integrating spatial data to support long-term conservation planning. Together, these components provide both site-specific conservation outcomes and broader insight into how American Badgers use and move through the Columbia Valley landscape.

4.4.2 Findlay Creek: burrow density and habitat protection

Field inventories conducted at Findlay Creek in 2024 and 2025 confirmed extensive and concentrated use of the area by American Badgers. Due to the exceptionally high density of burrows and the large spatial extent of the site, a complete ground inventory was not feasible within available time and resources. To address this limitation, a drone survey was conducted at the northern extent of the proposed Wildlife Habitat Areas (WHAs), revealing hundreds of additional burrows beyond the ground-surveyed area. Information from the drone survey was incorporated into spatial analyses, and WHA boundaries were conservatively adjusted to reflect the broader extent of suitable habitat and burrow presence identified through this combined ground- and aerial-based approach.

Findlay Creek has emerged as a critical area for American Badgers in the East Kootenay region. Burrow inventories conducted between 2024 and 2025 documented a total of 2,525 functional burrows at 728 cluster sites, including 1,776 functional burrows recorded in 2024, and 749 functional burrows recorded in 2025. Functional burrow clusters form the basis for Wildlife Habitat Feature (WHF) designations under the Forest and Range Practices Act, as they represent currently usable habitat structures essential for breeding, shelter, and overwintering. These numbers do not include hundreds of additional burrows identified through drone imagery north of the surveyed area, nor the 794 additional burrows documented to be in non-functional condition.

The scale and distribution of burrow clusters at Findlay Creek supported the development and submission of two Wildlife Habitat Areas (Findlay Creek 1 = 76.9 ha; Findlay Creek 2 = 5.3 ha) totaling 82.2 hectares. These WHAs are designed to protect high-density burrow concentrations as well as the surrounding soils, prey base, and habitat conditions required for long-term badger persistence. WHA boundaries were informed by both ground surveys and drone reconnaissance, ensuring that the full extent of badger activity was considered. This combined survey approach allowed for a more comprehensive and precautionary delineation of habitat protection areas and highlights the value of integrating emerging technologies, such as drone surveys, into Species at Risk inventory and conservation programs.

4.4.3 Highway infrastructure and connectivity

Highway infrastructure and resulting road mortality represents one of the most significant threats to American Badgers in the Upper Columbia Valley, where suitable habitat is concentrated in a valley-bottom landscape bisected by major transportation corridors. Culvert assessments conducted in 2025 along Highway 93/95 between Brisco and Wycliffe provide important insight into how existing structures influence badger movement and landscape permeability.

While assessments confirmed that some culverts already function as wildlife underpasses, including for badger, nearly 60% of assessed culverts were found to be partially or fully blocked, limiting their effectiveness for larger-bodied species such as badgers. Only 45 of the 106 culvert assessments indicated structures that were fully open, with the remainder exhibiting varying degrees of blockage. These findings suggest that highway permeability for badgers (and multiple other wildlife species) is currently constrained in numerous locations, even where suitable structures are present.

Six culverts were identified as having high perceived potential to function as wildlife underpasses, and an additional 17 were classified as medium-to-high potential. Repairing and enhancing these structures represent priority opportunities for restoring connectivity through targeted machine maintenance or minor enhancements, such as sediment removal or vegetation management. Importantly, several occur in areas where badger use is already well established, reinforcing their relevance for connectivity-focused conservation actions.

4.4.4 Wildlife camera monitoring and evidence of culvert use

Remote wildlife camera monitoring provided direct evidence that American Badgers are actively using some highway culverts within the study area. Badgers were detected at three culverts, one rated as high potential and two rated as medium to high potential, confirming that these structures can facilitate safe movement across the highway corridor. Although the camera dataset was limited in scope and duration, multiple detections at these sites indicate repeated use rather than incidental crossings. In addition to badgers, cameras recorded a suite of other wildlife species. These observations highlight the broader ecological value of culverts as movement pathways for multiple taxa, particularly in fragmented valley-bottom environments.

Due to project scope and funding priorities, a comprehensive quantitative analysis of camera imagery was not completed in 2025. Nevertheless, the detections documented to date provide strong justification for continued monitoring and more detailed analysis in future years. Notably, the clarity of badger images suggests that individual identification based on facial stripe patterns may be feasible, presenting an opportunity for future work to explore relative abundance, site fidelity, or population trends using non-invasive methods.

4.4.5 Landscape connectivity and spatial integration

When viewed collectively, the burrow inventories, WHF and WHA proposals, culvert assessments, and wildlife detections contribute to an increasingly coherent picture of American Badger connectivity in the Upper Columbia Valley (Figure 13). The spatial integration of these datasets emphasizes the valley bottom as both a core movement corridor and a critical pinch point, where high-quality habitat coincides with elevated mortality risk from highways. Maintaining functional valley-bottom crossings is therefore essential for sustaining landscape connectivity between habitats on either side of the Columbia Valley. The results of this project demonstrate that relatively small, targeted actions—such as clearing blocked culverts or maintaining open structures—could yield substantial benefits for badger movement and survival, and at a low cost relative to building new wildlife crossing structures.

Beyond the valley bottom, the combined spatial datasets are beginning to highlight specific higher-elevation benchlands and upland areas that may play a role in dispersal or seasonal habitat use. While these areas were not the focus of the 2025 field program, they represent logical priorities for future

inventory and connectivity assessments, building on the foundational work completed to date. This may lead to additional opportunities to higher-elevation enhancement projects in grassland habitats.

4.4.6 Collaboration, standardization, and future direction

This project also demonstrates the value of collaborative, standardized approaches to species-at-risk conservation. Culvert assessments conducted using provincial protocols and field applications contribute to datasets that can be more readily integrated into regional planning and infrastructure management. This approach complements and builds upon previous efforts undertaken by other groups in B.C. (e.g., Simpcw Badger Monitoring Program) and aligns with provincial objectives to improve information sharing between the WLRS and MOTT (Badgers in BC, n.d.; Simpcw Resources Group, n.d.).

The 2025 project strengthened relationships that will support continued progress beyond the life of Kootenay Connect. Collaboration with the ʔakisq̓nuk First Nation and ongoing engagement with MOTT—including commitments to implement culvert clear-outs and consider assessment results in regional planning—position culvert work to transition from assessment to action. The proposed 2026–27 East Kootenay American Badger Initiative, by Goldeneye Ecological Services in collaboration with Columbia Wetlands Stewardship Partners, represents a direct extension of this foundation, expanding both the geographic scope and the depth of analysis.

5.0 Conclusion

Overall, the 2025 American Badger subproject demonstrates how integrated field surveys, spatial analysis, and applied infrastructure assessments can advance both immediate conservation outcomes and long-term landscape connectivity goals. By protecting high-density burrow habitats, identifying functional and potential highway crossings, and synthesizing spatial data across the valley, this work contributes meaningfully to the recovery and persistence of American Badgers in the Upper Columbia Valley. Continued investment in these approaches will be essential for translating assessment findings into durable conservation gains in the years ahead.

5.0 Lewis's Woodpecker

5.1 Introduction

Lewis's Woodpecker (*Melanerpes lewis*) is a species of conservation concern in British Columbia (B.C.) and across Canada. In B.C., it is blue-listed, and at the national level, COSEWIC designated the species as Threatened in 2010, followed by its inclusion on Schedule 1 of the Species at Risk Act (SARA) in 2012. In B.C., *M. lewis* is also covered under the Forest and Range Practices Act's Wildlife Management Strategy, which requires special management measures to protect critical habitat. These measures include the establishment of Wildlife Habitat Areas (WHAs) with associated General Wildlife Measures (GWMs) and integration into higher-level forest and land-use planning. In 2010, the B.C. Ministry of Environment designated three WHAs in the southern portion of the study area near Canal Flats to conserve critical habitat for the species (Environment Canada, 2014).

The breeding range of *M. lewis* in Canada is highly restricted, confined to five regions in southern British Columbia, with the northernmost populations occurring in the East Kootenay Trench (B.C. CDC, 2022; Cooper et al., 1998). The species faces multiple threats, including urban and agricultural expansion, firewood harvesting, removal of snags, mountain pine beetle outbreaks, fire suppression, and competition for nest sites with European Starlings (*Sturnus vulgaris*) (Environment Canada, 2014). To mitigate these risks, critical habitat designations under the Recovery Strategy have been part of national recovery efforts. In 2017, based on habitat suitability models and known nesting locations, Environment and Climate Change Canada identified three key critical habitat areas within our study region—Dutch Creek, Findlay Creek, and the Wilmer area (Environment and Climate Change Canada, 2017).

Historical surveys highlight the importance of the East Kootenay region for Canadian Lewis's Woodpecker populations. Surveys conducted in 1997–1998 documented substantial breeding activity, with Cooper and Beauchesne (2000) estimating that up to one-fifth of the Canadian population nested in this region, particularly at Dutch Creek. However, by 2007, no active nests were found at Dutch Creek, likely due to the decay of previously suitable wildlife trees (Beauchesne & Cooper, 2007). In contrast, the Findlay Creek burn area maintained more consistent nesting, with three nests recorded in 1997, 31 in 1998, and 26 in 2007 (Beauchesne & Cooper, 2007).

In the final year of the CWSP/Kootenay Connect multi-species initiative, Lewis's Woodpecker work was limited and strategic in scope. The primary objective was to assess whether nesting distribution had shifted beyond the boundaries of existing WHAs and to evaluate accessible portions of federally designated Critical Habitat at Findlay Creek Forest Service Road for current occupancy. As the final project year prioritized habitat protection, enhancement, and restoration actions, limited targeted surveys were intended to identify opportunities where documented nesting activity could inform potential expansion or refinement of existing Critical Habitat or WHA boundaries.

5.2 Methods

Targeted surveys were conducted over two field days during the 2025 breeding season. Walking surveys were completed along portions of the western perimeter of WHA 4-135 polygons to assess whether nesting activity had shifted beyond existing WHA boundaries into adjacent suitable habitat. Some 15-minute point count surveys were conducted when high value habitat areas were located. In addition, 15-minute point counts were conducted at accessible locations along the Findlay Creek Forest Service Road within the broader Critical Habitat polygon, focusing counts in areas exhibiting open forest structure and

snag availability with nesting cavities, consistent with Lewis's Woodpecker nesting habitat. Opportunistic observations of Lewis's Woodpeckers were also recorded during concurrent fieldwork conducted for American Badger and Osprey subprojects.

5.3 Outcomes from 2025

No active Lewis's Woodpecker nests were detected during targeted surveys conducted along the WHA perimeters or within surveyed portions of the Findlay Creek Critical Habitat area. Suitable habitat characteristics were present in several locations; however, no nesting activity was confirmed within the areas surveyed during the 2025 field season.

Five active nests were documented incidentally during fieldwork for other species-at-risk projects (badger and osprey) (Figure 15). Four of these nests were previously known locations, indicating continued reuse of established nesting sites. Two nests were located in wooden BC Hydro utility poles at the Thunderhill and Marion Creek sites, and three nests were located on undeveloped private land at Ponderosa Heights near the southwest end of Columbia Lake.

The occurrence of active nests in wooden hydro poles highlights the continued importance of anthropogenic cavity structures in landscapes where suitable large snags are limited. As BC Hydro is planning to replace these wooden poles with steel infrastructure, nest locations were formally communicated to the utility. In coordination with the Lake Windermere District Rod and Gun Club and The Nature Trust of British Columbia, a request has been made to retain and reinstall the removed wooden nest poles as close as possible to their original locations to support continued nesting use. This engagement represents an applied conservation outcome of the 2025 field season and reflects the stewardship-focused nature of the final year of the program.

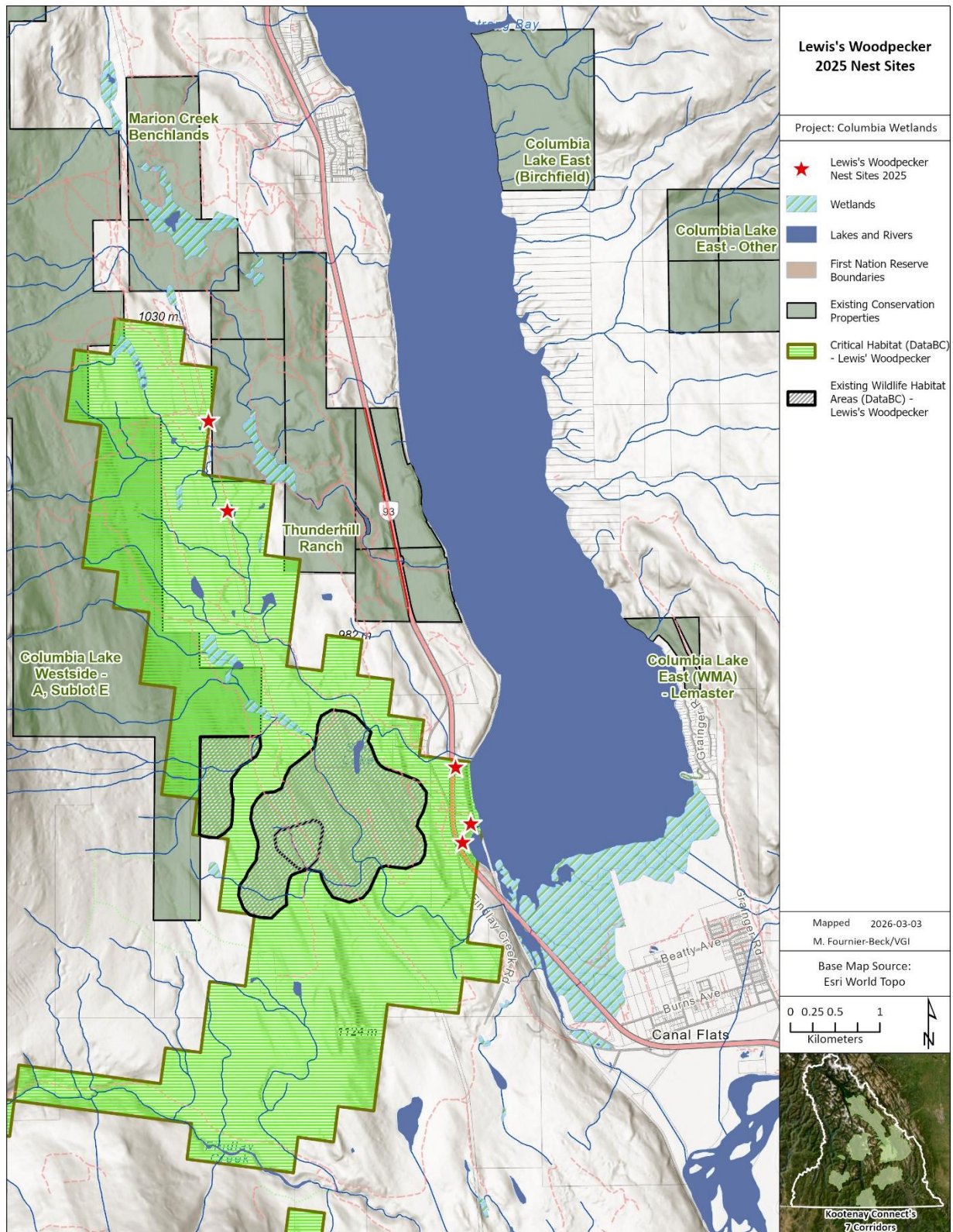


Figure 15. Lewis's Woodpecker active nest locations in 2025.



Figure 16. Active nesting cavity in Hydro pole which is being removed in 2026 and replaced with a metal pole.

6.0 Osprey

6.1 Introduction

Osprey (*Pandion haliaetus*) are not an at-risk species, but are culturally significant raptors and important indicators of the health of aquatic ecosystems. As apex predators, they feed primarily on fish, and their populations can reflect the availability of healthy prey and the condition of wetland and riparian habitats. Ospreys are sensitive to disturbances from human activities, including recreational use, land development, water pollution, and changes to water management practices. They are also vulnerable to nest-related threats, such as entanglement in discarded plastics or twine, predation, electrocution and fires from nests close to live electrical wires (Krupp, 2019), and displacement by other bird species.

Monitoring osprey nests provides critical information about their occupancy, reproductive success, and habitat use, which can inform conservation and management decisions. In the Columbia Valley, systematic monitoring of osprey nests has been ongoing since 2020, covering the area from Canal Flats to Donald. This work, initiated as part of the Columbia Wetlands Waterbird Survey in 2019, established baseline data for osprey populations in the region (Darvill, 2020b). Prior to these efforts, osprey nests had not been consistently tracked, making this long-term dataset particularly valuable.

The 2025 field season continued monitoring efforts from 2020-2024 with specific goals to:

- Track occupancy of existing osprey nesting platforms.
- Propose additional poles and platforms for installation at suitable sites to enhance nesting opportunities.
- Repair current nesting platforms that are in unusable condition for nesting osprey.

Ongoing monitoring of osprey nests is essential to understand population trends, guide habitat enhancement and protection, and support management of nest sites to reduce threats from predation and displacement.

6.2 Methods

Most osprey nest monitoring was conducted on May 22 and August 15, 2025, consistent with the survey schedule used since monitoring began in 2019. However, due to limited resources and logistical constraints, monitoring dates at some nests varied. For example, nests located farther from the central study area—such as those near Donald or the Marion benchlands—were visited opportunistically when work on other species-at-risk projects occurred in the region. Additionally, volunteer participants focused on nests at the south end of the study area, which also influenced survey timing.

Not all nests could be visited twice during the breeding season, and certain sites were inaccessible due to logistical limitations (e.g., requiring a boat to access the Columbia Lake site). Despite these constraints, each nest check lasted at least five minutes. This duration aligns with research indicating that chicks generally move within the nest at intervals of approximately five minutes, and that detecting movement is the most reliable method for confirming nest occupancy (Moore & Arndt, 2016). During each visit, the following information was recorded: observation date and time of day, UTM coordinates (for new nests only), number of chicks in the nest (if known), general nest observations (e.g., adult presence, calling behavior, number of chicks observed), notes on any threats to the nest including repairs needed at the platform. This approach allowed for consistent, comparable data across the study area while accommodating resource limitations and volunteer participation.

6.3 Results – 2025 Osprey Nest Monitoring

6.3.1 Nest Inventory and Monitoring Coverage

In 2025, a total of 76 osprey nests were monitored within the Columbia Valley study area between Canal Flats and Donald (Table 2). Of these, 69 nests were located on artificial platforms installed on hydro poles, and seven were tree nests. Four new osprey nests were documented in 2025 and incorporated into the monitoring program.

Table 2. Comparison of Osprey nest data (2020-2025).

Year	# of Osprey Nests Recorded	# of Nests Surveyed	# of Occupied Nests	# of Nests Known or Presumed to Produce Fledglings*
2020	65	65	43	19
2021	72	72	39	27
2022	71	68	38	28
2023	76	73	45	31 (+ 10 unknown)
2024	72	72	43	29 (+8 unknown)
2025	76	76	45	25 (+11 unknown)

**Observations on the final visit that were insufficient to confidently determine whether chicks had been produced or successfully fledged were classified as 'unknown.'*

6.3.2 Nest Occupancy

Of the 76 nests monitored in 2025, 45 nests (59%) were confirmed as occupied by osprey during at least one monitoring visit (Table 2) (Figure 17). Occupancy was determined based on the presence of adult osprey, incubation or brooding behaviour, territorial calling, or other clear indicators of nest use. The remaining 31 nests showed no evidence of occupancy during the monitoring visits conducted in 2025.

6.3.3 Reproductive Activity and Nest Success

Evidence of reproductive activity—defined as the presence of chicks or fledglings observed in or near the nest—was recorded at 25 occupied nests during the final monitoring visit (Table 2). An additional 11 occupied nests were classified as having unknown nesting success (Table 2). In keeping with current monitoring protocols, nests without direct evidence of chicks or fledglings were not classified as presumed successful. Nests were visited only twice during the breeding season, and while occupancy was confirmed during the first monitoring window, observations on the final visit at those 11 nests were insufficient to confidently determine whether chicks had been produced or successfully fledged and were classified as 'unknown' (Table 2).

6.3.4 Chick Observations

Chick counts were recorded opportunistically and only when chicks were clearly visible during nest observations. Determining precise brood size was not a primary objective of the 2025 monitoring program, and chick counts were not obtained for all nests where reproduction was suspected or

confirmed. Limited visibility, nest height, and limited number of observations constrained the ability to reliably quantify chick numbers at some sites.



Figure 17. Two osprey chicks on a nest platform in Edgewater, preparing to fledge.

6.4 Discussion

The 2025 osprey monitoring program documented continued use of nesting platforms and natural nest sites throughout the Columbia Valley, with more than half (59%) of known nests confirmed as occupied. Observations of chicks or fledglings at multiple sites indicate that the region continues to provide suitable foraging habitat and nesting opportunities for osprey. At the same time, results from 2025 emphasize the importance of nesting platform condition, placement, and ongoing maintenance in influencing nest occupancy and reproductive success.

Reproductive activity was confirmed at 25 occupied nests, while 11 nests were classified as having unknown nesting success due to reduced monitoring frequency and access constraints. In years 2020-2022 when a third, mid-season monitoring visit was included in the protocol, this additional visit enabled observers to determine whether large chicks were present during the peak of the breeding season (Figure 17), rather than relying solely on early-season occupancy and late-season observations when chicks may have fledged early. In 2025, with monitoring generally limited to two visits, the current protocol emphasizes caution by limiting success classifications to nests with direct evidence of chicks or fledglings. This approach avoids overestimating reproductive output in years with fewer site visits.

Platform condition and effectiveness emerged as key management considerations in 2023 and continued into 2025 (Darvill, 2024; Darvill 2025). Recommendations identifying platforms in need of repair were provided to BC Hydro in 2023, 2024, and 2025, reflecting sustained coordination between monitoring

efforts and utility maintenance planning. As a result of these recommendations, platforms at two locations were replaced in 2024 ahead of the breeding season; both were used by osprey in 2024.

Platforms identified as requiring repairs in 2024 were not addressed by BC Hydro before the start of the 2025 breeding season. At the first nest, located 28 km south of Golden (UTMs 520577; 5661857), the platform continues to exhibit a heavy lean (Figure 18a). This site represents the first year since monitoring began in 2019 that osprey did not nest at this historically occupied location, suggesting that platform instability may have contributed to site abandonment. Repair of this platform ahead of the next breeding season will likely restore nesting opportunities at this site.

Similarly, the platform at the McKeeman's site was not repaired prior to the 2025 season (Figure 18b). Although adult osprey were present early in the breeding period, no fledglings were produced, marking the first year in several seasons without confirmed reproductive success at this location. While reproductive outcomes can be influenced by multiple factors, the condition of the nesting platform remains a plausible contributing factor and supports the need for timely maintenance. The platform located in Radium at Forester's Landing Road also remains unsuitable for nesting due to its condition and was not replaced in 2025 (Figure 18c). Continued deterioration limits its effectiveness as nesting habitat in an area otherwise suitable for osprey. In addition, an additional platform in Fairmont (UTMs 580100; 5575164) was identified in 2025 as requiring repairs. In January 2026, confirmation was received that a BC Hydro work order was being prepared to allow crews to complete maintenance on three additional poles flagged in early 2025, with the intention of completing this work prior to the 2026 nesting season.

The discovery of four new nests in 2025 demonstrates continued nesting activity and adaptability of osprey within the study area. An actively constructed nest was observed in late July on a newly installed metal pole near Columbia Lake (Pole 54-03). This site represents a strong candidate for installation of a nesting platform (recommendation sent to BC Hydro), unless nesting directly on metal poles is determined by BC Hydro to not pose a threat to human or osprey safety. Proactive installation at this location could reduce the risk of nest instability and improve future breeding success.

6.5 Conclusion

In 2025, 76 osprey nests were monitored across the Columbia Valley, with 45 confirmed occupied and 25 confirmed to have produced chicks or fledglings (11 more unknown). Results demonstrate continued, widespread use of artificial platforms, while also highlighting the influence of platform condition and timely maintenance on nesting success. The documentation of four new nests and continued occupancy of repaired platforms underscore the adaptability of osprey and the effectiveness of proactive infrastructure management. As part of the 2020–2025 monitoring program, the 2025 data contribute to a growing evidence base that supports continued annual monitoring, early-season maintenance, and strategic installation of platforms as practical, cost-effective tools for sustaining osprey nesting opportunities in the Columbia Valley. Future monitoring and maintenance efforts should prioritize nesting platforms that have demonstrated consistent use throughout the duration of the project (Appendix 2). These historically productive sites represent the highest conservation value and should receive priority for inspection, repair, and pre-season maintenance to ensure continued nesting success.

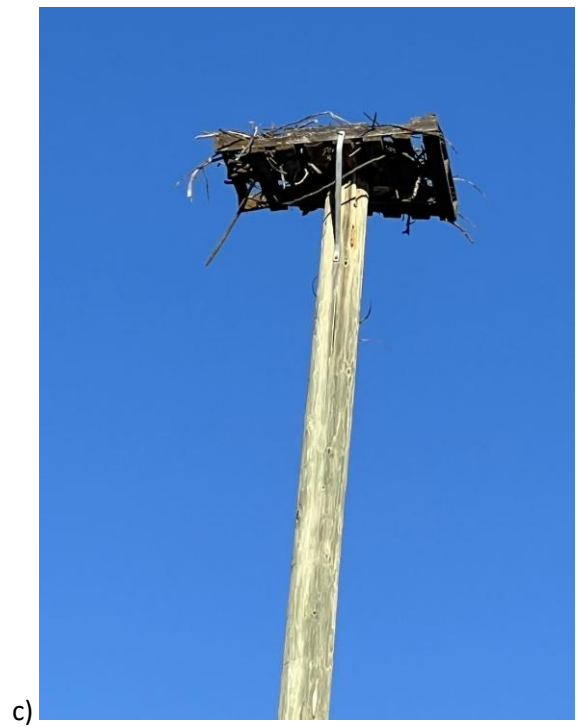
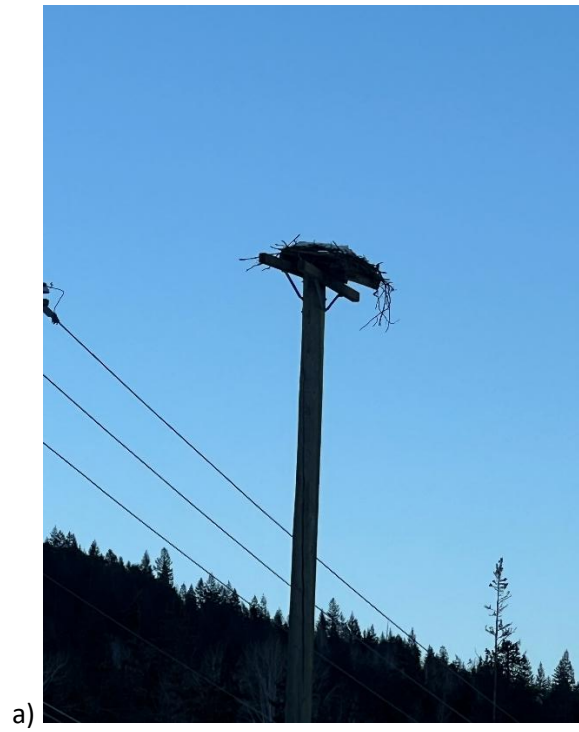


Figure 18. Platforms recommended to be replaced in 2025/2026 at a) 28 km south of Golden, b) McKeeman's, and c) Radium.

7.0 Project Summaries

This section provides a synthesis of outcomes, lessons learned, and management implications from subprojects implemented between 2019 and 2026 under the Kootenay Connect / Columbia Wetlands Species at Risk initiative. In the first year of Kootenay Connect (2019-2020) the Columbia Wetlands Stewardship Partners (CWSP) completed the first literature review of species at risk produced for the Columbia Valley (Darvill, 2020). The summaries to follow are intended to complement the detailed results, outcomes and discussions presented earlier in this report, as well as in all previous year end reports (Darvill, 2021; Darvill, 2022; Darvill, 2023; Darvill, 2024; Darvill, 2025). They are also intended to capture the cumulative value of multi-year monitoring, stewardship, and habitat enhancement efforts.

7.1 Western Painted Turtle Subproject Summary (2019–2025)

Overview

The Western Painted Turtle (*Chrysemys picta bellii*) subproject addressed long-standing concerns affecting this at-risk species, related to high nest predation and road-related mortality in the Columbia Valley. The project focused on locating critical habitat (breeding and basking sites) and on enhancing areas where turtles either lacked suitable habitat or where their habitat was threatened (e.g., road mortality, high levels of predation). Sustained effort was required to evaluate whether targeted habitat enhancements could measurably reduce these risks over time.

Monitoring and Conservation Actions

Between 2020 and 2025, project activities included soliciting public turtle sightings, the construction and maintenance of fenced artificial nesting beds, roadside nesting enhancements, deployment of wildlife cameras to document nesting behaviour and threats, installation of basking structures, repeated vegetation management, and adaptive fence repairs. Habitat actions were implemented primarily at Zehnder Farm (Invermere) and Stewart's Farm (Spillimacheen), and were carried out in collaboration with private landowners, stewardship groups, and volunteers. Monitoring approaches evolved over time in response to observed predation patterns and site conditions.

Key Outcomes

At both nesting sites (Zehnder Farm and Stewart Farm) and across years, adult turtles consistently selected enhanced nesting habitats, confirming that substrate enhancement and predator exclusion fencing can successfully attract nesting females. Repeated documentation of nesting activity and hatchling emergence at Zehnder Farm provided strong evidence that protected nesting beds can support recruitment in areas with otherwise high predation pressure. At Stewart's Farm, camera data documented nesting activity at enhancement sites and at historical nesting areas, the continuation of frequent road crossings and persistent predation, highlighting both the importance of intervention and the limits of site-based mitigation in high-risk landscapes.

Key Lessons Learned

- **Protected nesting beds increase recruitment:** Fenced and substrate-enhanced nesting areas attracted nesting behaviour and supported hatchling emergence.

- **Predation pressure is persistent and dynamic:** Badgers, skunks, and ground squirrels remain significant threats to turtle nests, requiring ongoing adaptive management.
- **Vegetation management is critical:** Open, weed-free substrates are essential for successful nesting and emergence.
- **Road-crossing mortality remains unresolved:** Despite enhancements, turtles continue to cross the road at a nesting hotspot in Spillimacheen to access traditional nesting areas.
- **Landowner engagement is essential:** Long-term success depends on sustained cooperation and stewardship on private lands.

Management Implications and Recommendations

Future efforts should prioritize continued maintenance of existing enhancements, predator management adaptation planning, evaluation of additional road-mitigation options, and formalized long-term stewardship arrangements to ensure persistence of conservation gains beyond the life of the project.

Value of Long-Term Monitoring

Multi-year monitoring was essential for distinguishing short-term outcomes from longer-term trends and for informing adaptive responses to changing threat dynamics.

Conclusion

Overall, the Western Painted Turtle subproject demonstrates that sustained, site-specific habitat enhancements—supported by long-term monitoring and strong landowner collaboration—can meaningfully reduce reproductive risks and improve recruitment potential, even within highly modified landscapes (e.g., linear transportation and agricultural areas).

7.2 American Badger Subproject Summary (2022–2026)

Between 2022 and 2026, the American Badger subproject developed into one of the most comprehensive and applied badger conservation efforts undertaken in the Columbia Valley to date. The subproject was led by the Columbia Wetlands Stewardship Partners, with Goldeneye Ecological Services leading project design and field implementation, and was carried out in collaboration with a broad network of Indigenous, community, conservation, and provincial government partners. Over four years, this work progressed from foundational burrow inventories looking towards landscape connectivity starting with applied road-mortality mitigation (assessing culverts use for underpasses), contributing directly to the protection, understanding, and long-term viability of this species at risk.

Building a Foundation: Burrow Inventories and Habitat Protection (2022–2024)

Initial work in 2022 and 2023 focused on identifying and documenting American Badger burrows on provincial Crown land, where conservation tools under the Forest and Range Practices Act (FRPA) can be applied. Through public outreach, targeted field surveys, and inventories in high-suitability habitat, badger burrows were documented across multiple sites in the Columbia Valley. This work resulted in the identification of hundreds of burrow clusters representing thousands of individual burrow entrances, the majority of which were determined to be in functioning condition and therefore eligible for protection as Wildlife Habitat Features (WHFs).

These inventories directly supported the development and submission of Wildlife Habitat Area (WHA) applications, designed to protect not only burrow locations but also the surrounding habitat required to sustain prey availability, soil conditions, and long-term use. Between 2023 and 2024, WHA applications with proposed spatial boundaries were developed and submitted for three key areas: Rushmere (7.4 ha), Dry Gulch (95 ha), and Steamboat (53 ha). Collectively, these areas represent significant progress toward securing core badger habitat in the Columbia Valley and provide a framework for implementing General Wildlife Measures to mitigate ongoing threats.

Scaling Up: Findlay Creek and Landscape Context (2024–2025)

In 2024 and 2025, work increasingly focused on Findlay Creek, where historical telemetry data suggested badger use beyond existing WHA boundaries. Field inventories conducted in 2024 documented 1,776 burrows, revealing far greater activity than anticipated and prompting expanded surveys in 2025. Fieldwork in 2025 documented an additional 749 functional burrows, bringing the combined total to 2,525 burrows recorded across the site over two years.

These burrows, clustered at 732 discrete locations, form the basis for Findlay Creek WHFs under FRPA. Due to the exceptionally high density of burrows and the large spatial extent of suitable habitat, a complete ground-based inventory of all burrows was not feasible. To address this limitation and better understand the northern extent of badger use, a targeted drone survey was conducted in 2025 and revealed hundreds of additional burrows beyond the area covered by ground inventories.

Information from both ground-based and drone surveys informed the spatial boundaries of two proposed WHAs at Findlay Creek, encompassing a combined area of 82.2 hectares (Figure 11). These WHAs are intended to protect high-density burrow clusters, adjacent suitable soils, prey resources, and contiguous foraging habitat.

Addressing Road Mortality: Culvert Assessments and Connectivity (2025)

Road mortality is recognized as a significant source of population decline for American Badgers. To begin addressing this threat, the 2025 subproject expanded beyond burrow protection to assess highway permeability and cross-valley connectivity along Highway 93/95 between Brisco and Wycliffe. A spatial prioritization framework was developed to identify culverts with the highest potential to function as wildlife underpasses for badgers, integrating culvert size and type, habitat suitability, proximity to known burrows and observations, and local terrain characteristics.

Field assessments were completed at 54 culverts, resulting in 106 individual culvert-end assessments, as most culverts were evaluated at both ends (if both ends could be found). Results demonstrated substantial variability in culvert condition and suitability. Only 45 of 106 assessments indicated culverts that were fully open, while the remainder exhibited partial or complete blockages that would restrict passage by American Badger or other larger wildlife species. Six culverts were identified as having high perceived potential to function as badger underpasses (half of those were completely blocked at one end), and an additional 17 culverts were rated as medium-to-high priority. Together, these findings provide a clear, spatially explicit foundation for prioritizing culvert maintenance, clean-outs, and future enhancements to improve highway permeability and reduce road-related mortality risk.

Confirming Use: Remote Wildlife Camera Monitoring (2025)

To complement culvert assessments, remote wildlife cameras were deployed at selected priority sites to confirm wildlife use. Eight Reconyx cameras were installed at five culverts between June and October 2025, following provincial guidance. Camera deployments confirmed American Badger use at three of five culverts monitored—including one high-priority site and two medium-to-high priority sites—with repeated detections indicating regular use rather than isolated crossing events.

In addition to badgers, cameras recorded a diversity of species including coyote, river otter, striped skunk, Columbian ground squirrel, snakes, and small rodents, demonstrating the broader ecological value of these structures. While a full quantitative analysis of camera data was beyond the scope of this phase of work, detections clearly confirm that existing infrastructure can facilitate wildlife movement when appropriately maintained and sited.

Advancing Learning and Partnerships

Across five years, this subproject progressed from site-level inventories to a more integrated understanding of badger habitat use, movement, and landscape connectivity. By combining burrow inventories, habitat protection tools, and highway crossing assessments, the work has begun to identify cross-valley movement routes and important habitat areas where connectivity is vulnerable to agriculture, unauthorized recreation, fragmentation, and forest ingrowth. This work also strengthened partnerships essential for long-term conservation success. Collaboration with Ministry of Water, Lands and Resource Stewardship improved data integration, while relationships developed with Indigenous partners and the Ministry of Transportation and Transit laid the groundwork for future implementation of road-mortality mitigation and connectivity enhancements. The use of standardized provincial field tools ensures that results from this project can directly inform regional planning, maintenance priorities, and capital upgrades.

Looking Forward

The American Badger subproject under Kootenay Connect concludes in 2026 with a strong foundation in place. 6,178 burrows have been documented, 4,593 in functional condition which will lead to Wildlife Habitat Feature designations at 1,351 central points in four areas (Table 3), ten Wildlife Habitat Area complexes totaling over 247 hectares have been proposed, and key highway crossing locations have been identified and validated through field assessments and camera monitoring. Collectively, this work represents a significant contribution to American Badger conservation in the Columbia Valley. Future efforts should build on this foundation by advancing culvert enhancements at high priority locations, refining landscape-scale connectivity mapping—including higher-elevation habitat linkages—and strengthening Indigenous-led stewardship initiatives. Together, these next steps will help translate assessment and planning into sustained, landscape-scale conservation outcomes for this species at risk.

Table 3. Number of badger burrows recorded across years of inventory effort.

Metric	Year 4 (2022)	Year 5 (2023)	Year 6 (2024)	Year 7 (2025)	Totals
# areas inventoried for burrows	4	3	4	1	5*
# burrows recorded	983	1848	2392	955	6178
# functional burrows (unknown and non-functional burrows removed)	790	1253	1801	749	4593
# burrow cluster sites	300	313	532	206	1351
# of burrow clusters (functional condition only) - WHFs	233	290	528	204	1255

* Five different areas were inventoried for badger burrows; some areas were revisited more than one year.

7.3 Lewis’s Woodpecker Subproject Summary (2020–2025)

Overview

The Lewis’s Woodpecker (*Melanerpes lewis*) subproject was designed to document nesting distribution and identify opportunities to support habitat conservation through regulatory mechanisms and stewardship actions. A primary objective was to determine where nesting occurred relative to federally designated Critical Habitat under the Species at Risk Act (SARA), WHAs, and other land designations, and to assess where additional conservation measures—such as Critical Habitat refinement—could strengthen long-term habitat protection within the Columbia Valley. Conducted within a broader multi-species conservation initiative, this work relied on targeted, purpose-driven surveys rather than a comprehensive regional census. Survey effort focused on revisiting known or suspected nesting locations and evaluating spatial context relative to existing designations. WHAs were not systematically inventoried, nor were entire Critical Habitat polygons surveyed in full. Given the species’ dependence on disturbance-maintained open forests and large cavity-bearing snags—and the inherently dynamic nature of those habitats—multi-year monitoring was used to understand nesting persistence, reuse, and spatial variability over time.

Monitoring and Conservation Actions

Targeted surveys were conducted in 2020, 2022, 2024, and 2025. Survey intensity varied among years depending on project objectives, which included evaluating boundary adequacy relative to Critical Habitat and WHAs, documenting nests relevant to Key Biodiversity Area (KBA) criteria, and informing stewardship and planning discussions. In 2020, the most intensive survey year, 76-point counts were completed across the Columbia Valley, including surveys at BC Conservation Data Center reported occurrences, and at all 57 Lewis’s Woodpecker nest boxes installed by the Lake Windermere District Rod and Gun Club between 2014–2016. Although no nest boxes were occupied by Lewis’s Woodpeckers, 13 active nests were documented, including: 10 nests in natural tree cavities, one nest in a human-constructed “LEWO condo,” and two nests in wooden hydro poles (Darvill, 2021).

Monitoring of nest boxes saw some occupation by European Starlings and other cavity-nesting species, reinforcing concerns regarding nest box effectiveness and interspecific competition for these boxes. These findings informed recommendations to prioritize retention of natural snags and consider alternative cavity substrates over traditional nest boxes. During 2022 and 2024, surveys revisited known nesting sites and assessed potential nesting in adjacent suitable habitat. Habitat attributes and nesting substrates were recorded to better understand factors influencing nest persistence or relocation. In 2025, opportunistic detections during other species-at-risk surveys supplemented formal point count efforts.

Key Outcomes

Across four survey years, 47 active nests were documented at 31 unique nesting locations, with many sites exhibiting repeated use across multiple years (Figure 19). The maximum number of active nests recorded in a single year was 13 (2024), exceeding the threshold of 12 sites required to qualify Lewis's Woodpecker as a trigger species under the Key Biodiversity Areas (KBA) framework and contributing directly to the formal proposal of the Upper Columbia Key Biodiversity Area.

Several important spatial and management patterns emerged:

- **Hydro poles as nesting substrate:**
Six active nest occurrences were documented across three individual hydro poles.
 - One pole supported nesting in 2020 and 2024.
 - A second pole supported nesting in 2020, 2024, and 2025.
 - A third pole was active in 2025.These repeated nesting events demonstrate the importance of anthropogenic cavity structures in landscapes where large snag availability is limited.
- **Critical Habitat distribution:**
Of the 31 unique nesting locations, 22 occurred within federally designated Critical Habitat, while nine occurred outside Critical Habitat boundaries, indicating that nearly one-third of documented nesting locations fall beyond currently recognized areas under the federal recovery strategy.
- **Private land importance:**
The majority of nesting locations occurred on private land, underscoring the importance of stewardship engagement and conservation approaches beyond Crown land.
- **Nest box effectiveness:**
Traditional nest boxes were not occupied by Lewis's Woodpeckers during monitoring, whereas a naturalistic "LEWO condo" installed in Fairmont was successfully occupied shortly after installation (Darvill, 2021). This suggests that cavity substrates more closely resembling natural tree sections may provide greater conservation value than standard nest boxes in this region.

Stewardship and Regulatory Engagement

The subproject extended beyond monitoring to include applied conservation and regulatory engagement. In Fairmont, removal of suitable nesting trees within federally defined Critical Habitat and an Environmentally Sensitive Area under the RDEK Official Community Plan prompted discussion of potential

compensatory actions. Based on monitoring findings indicating limited effectiveness of traditional nest boxes, naturalistic cavity structures were recommended as a more appropriate mitigation measure.

Engagement with BC Hydro followed documentation of active nests in wooden hydro poles. Best management guidance was shared in 2020, and further coordination occurred in 2025 when poles supporting nesting were being considered for replacement with metal poles. Recommendations were made to retain and reinstall removed wooden nesting poles where feasible to support continued nesting activity and avoid inadvertent loss of active nesting substrate.

Key Lessons Learned

- Private land stewardship is essential: A substantial proportion of nesting habitat occurs outside Crown land and formal protected areas.
- Nesting distribution is spatially dynamic: Some nesting locations exhibit repeated use, while others shift over time in response to habitat changes.
- Retention of natural cavity trees remains critical: Large snags and decay-stage trees are foundational to long-term nesting habitat.
- Traditional nest boxes were not effective in this system: Alternative cavity substrates more closely resembling natural snags showed greater success.
- Infrastructure coordination is important: Hydro poles can function as significant nesting substrate and require proactive management.
- Multi-year monitoring provides necessary context: Targeted, repeated surveys are essential to accurately interpret nesting distribution and avoid mischaracterizing short-term variability.

Management Implications and Recommendations

Findings support periodic reassessment of Critical Habitat boundaries using updated nesting data and continued integration of monitoring results into regional and provincial planning tools. A full assessment within current Critical Habitat boundaries would also be useful to help guide boundary changes. Stewardship engagement with private landowners remains critical for sustaining nesting habitat across the landscape. Coordination with infrastructure providers should continue to prevent avoidable loss of nesting substrate, particularly where poles have supported repeated nesting activity. Where mitigation or compensation is required, naturalistic cavity structures may provide more effective conservation value than traditional nest boxes.

Conclusion

While not designed as a comprehensive regional census, the Lewis's Woodpecker subproject documented 47 active nests at 31 unique nesting locations (Figure 19), identified gaps in federally designated Critical Habitat, contributed to Key Biodiversity Area qualification, and strengthened stewardship and infrastructure coordination efforts. Collectively, this multi-year, targeted approach has provided a robust, evidence-based foundation for adaptive, landscape-scale conservation of Lewis's Woodpecker in the Columbia Valley.

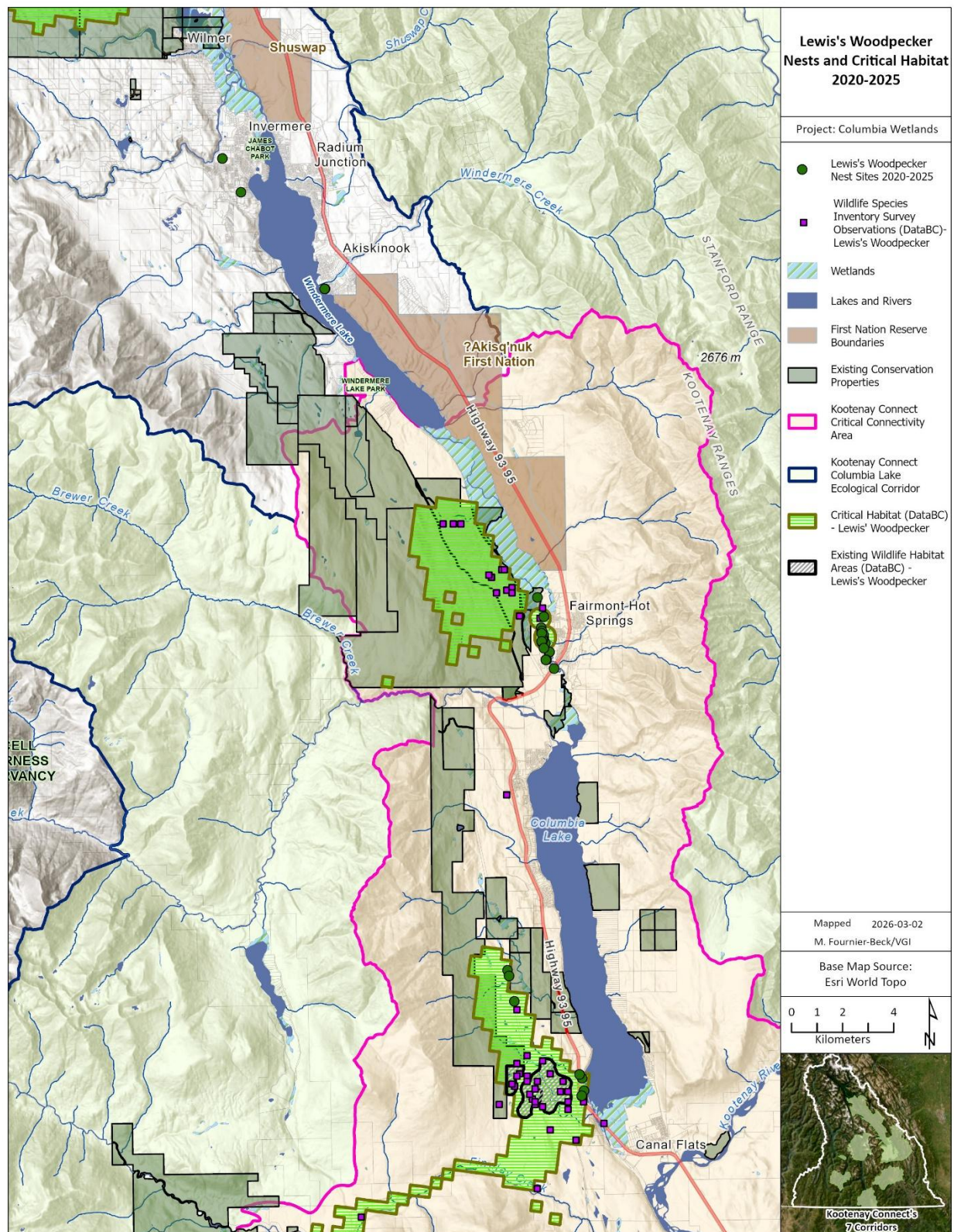


Figure 19. Lewis's Woodpecker active nest locations between 2020-2025, established Wildlife Habitat Areas and designated federal Critical Habitat.

7.4 Osprey Subproject Summary (2020–2025)

Overview

Osprey (*Pandion haliaetus*) nest monitoring was conducted annually from 2020 to 2025 throughout the Columbia Valley to assess occupancy, reproductive success, and the effectiveness of artificial nesting platforms. Although not a species at risk, osprey are culturally significant and serve as important indicators of aquatic ecosystem health. The subproject emphasized applied management, particularly collaboration with BC Hydro to maintain and improve nesting infrastructure.

Monitoring Effort and Nest Inventory

The number of monitored nests increased from 65 in 2020 to 76 by 2025 (Table 2), reflecting both the discovery of previously undocumented nests and the installation of new platforms. In total, 84 nesting locations were monitored during the project; some nests were lost or removed over time (Appendix 2). Annual monitoring achieved near-complete coverage of the valley bottom, with some access limitations in remote or privately owned locations. Changes in monitoring frequency over time influenced the level of certainty regarding reproductive outcomes in later years.

Key Outcomes

Nest occupancy remained relatively stable, with 38–45 occupied nests recorded annually. Between 2020 and 2025, more than 160 nests were successful in at least one year, and several platforms supported fledgling production in most years, identifying them as high-value sites. In contrast, deteriorating or poorly sited platforms were associated with reduced use or nest failure.

Platform Use and Effectiveness

Osprey consistently responded positively to platforms placed near water and free of surrounding tall vegetation. Newly installed or repaired platforms were often occupied shortly after osprey returned in spring. Thirteen platforms had never been used by osprey, suggesting suboptimal placement or site conditions and highlighting opportunities for relocation or redesign.

Management Implications and Recommendations

- Prioritize maintenance of historically productive platforms.
- Complete repairs prior to the breeding season.
- Use long-term data to guide new platform placement.
- Re-evaluate unused platforms for relocation or modification.
- Maintain consistent monitoring, including mid-season visits where feasible,

Value of Long-Term Monitoring

This multi-year program provided actionable evidence to guide infrastructure maintenance, strengthen collaboration with BC Hydro, and support adaptive management of nesting sites.

Conclusion

From 2020 to 2025, osprey monitoring demonstrated that targeted, evidence-based management of nesting infrastructure is an effective conservation action. Protecting and maintaining historically productive platforms will be key to sustaining osprey breeding success in the Columbia Valley.

7.5 Wildlife Habitat Areas and Wildlife Habitat Features Summary (2021-2026)

Between 2021 and February 2026, a total of 13 Wildlife Habitat Area (WHA) applications representing 718.1 hectares, and 1,258 Wildlife Habitat Features (WHFs)—including 1,255 functional American Badger (*Taxidea taxus*) burrow clusters and three Mountain Goat (*Oreamnos americanus*) mineral licks—have been approved or submitted to the Province of B.C. to protect critical habitat for Species at Risk and sensitive ecological communities within the Columbia Valley (Figure 20; Appendix 3). These habitat protection tools are provided under the Forest and Range Practices Act (FRPA), which provides regulatory mechanisms for conserving important wildlife habitat on provincial Crown land (Government of British Columbia, 2002).

Three WHAs were proposed at Findlay Creek to protect Alkali Saltgrass Foxtail Barley, an at-risk ecological community, totaling 480.5 hectares (210.7 ha, 238.2 ha, and 31.6 ha). These WHA proposals were formally reviewed and recognized by the province and incorporated into the provincial proposed WHA spatial layer in March 2024, representing a significant milestone toward formal habitat protection. These ecological communities are provincially rare and vulnerable to disturbance and habitat loss. Although not yet legally designated, their inclusion in the provincial WHA layer ensures they are recognized in provincial land-use planning processes and positions them for future legal establishment, subject to provincial administrative capacity and approval processes. Once established, WHAs provide regulatory protection through General Wildlife Measures, which require forest and range tenure holders to modify practices to avoid or mitigate impacts to protected habitat (Government of B.C., 2004).

A total of 10 WHAs, representing 237.6 hectares, were established or submitted to protect American Badger burrow concentration habitats. These WHAs occur at Rushmere (2 WHAs; 7.4 ha), Steamboat Mountain (4 WHAs; 53.0 ha), Dry Gulch (2 WHAs; 95.0 ha), and Findlay Creek (2 WHAs; 82.2 ha) (Figure 20; Appendix 3). These areas encompass high densities of functional and historical burrow clusters and protect the soil conditions, prey availability, and habitat characteristics required to support breeding, foraging, and shelter habitat for badgers. WHAs provide landscape-level habitat protection and are an important regulatory mechanism for implementing species recovery objectives under FRPA (Government of B.C., 2002).

In addition to WHAs, 1,258 WHFs have been approved or submitted, including 1,255 functional American Badger burrow clusters identified during inventories conducted between 2022 and 2025, and three Mountain Goat mineral licks. WHFs receive legal protection under FRPA and associated regulations. Section 70 of the Forest Planning and Practices Regulation identifies WHFs as resource features, and Section 37(1) of the Range Planning and Practices Regulation requires that agreement holders ensure their activities do not damage or render features ineffective (Government of B.C., 2004). These provisions place a legal obligation on forest and range tenure holders to avoid damaging identified habitat features during operational activities.

WHFs are spatially defined point locations, and management guidance is provided through provincial field guides, including the Wildlife Habitat Feature Field Guide for the Kootenay Boundary Region, which

outlines recommended management practices such as protective buffers and timing considerations to maintain habitat functionality (Government of B.C., 2006). Although specific buffer distances are not prescribed in legislation, tenure holders remain legally responsible for ensuring that activities do not damage or render WHFs ineffective. As a result, WHFs provide an important regulatory tool for protecting critical habitat structures such as American Badger burrows, which are essential for breeding, shelter, thermoregulation, and overwinter survival.

The spatial distribution of approved and proposed WHAs and WHFs provides conservation coverage across key ecological areas on provincial Crown land, including Findlay Creek, Dry Gulch, Steamboat Mountain, and Rushmere (Figure 20). While 1,258 WHFs are (in theory) legally recognized upon submission to the B.C. Conservation Data Center, all 13 WHAs remain proposed and have not yet been formally designated. Advancement of these WHAs to full legal status requires provincial review, approval, and implementation of associated General Wildlife Measures. Once formally established, WHAs protect landscape-scale habitat complexes, while WHFs secure discrete habitat features essential for species survival. For American Badger, protection of functional burrow clusters safeguards critical denning, foraging, and shelter sites that may be reused for multiple generations. Similarly, protection of Mountain Goat mineral licks conserves essential seasonal habitat features required for population health. Together, these regulatory tools contribute to maintaining habitat availability, reducing fragmentation, and supporting provincial recovery objectives by helping ensure that critical habitat elements are protected from disturbance and incompatible land use activities.

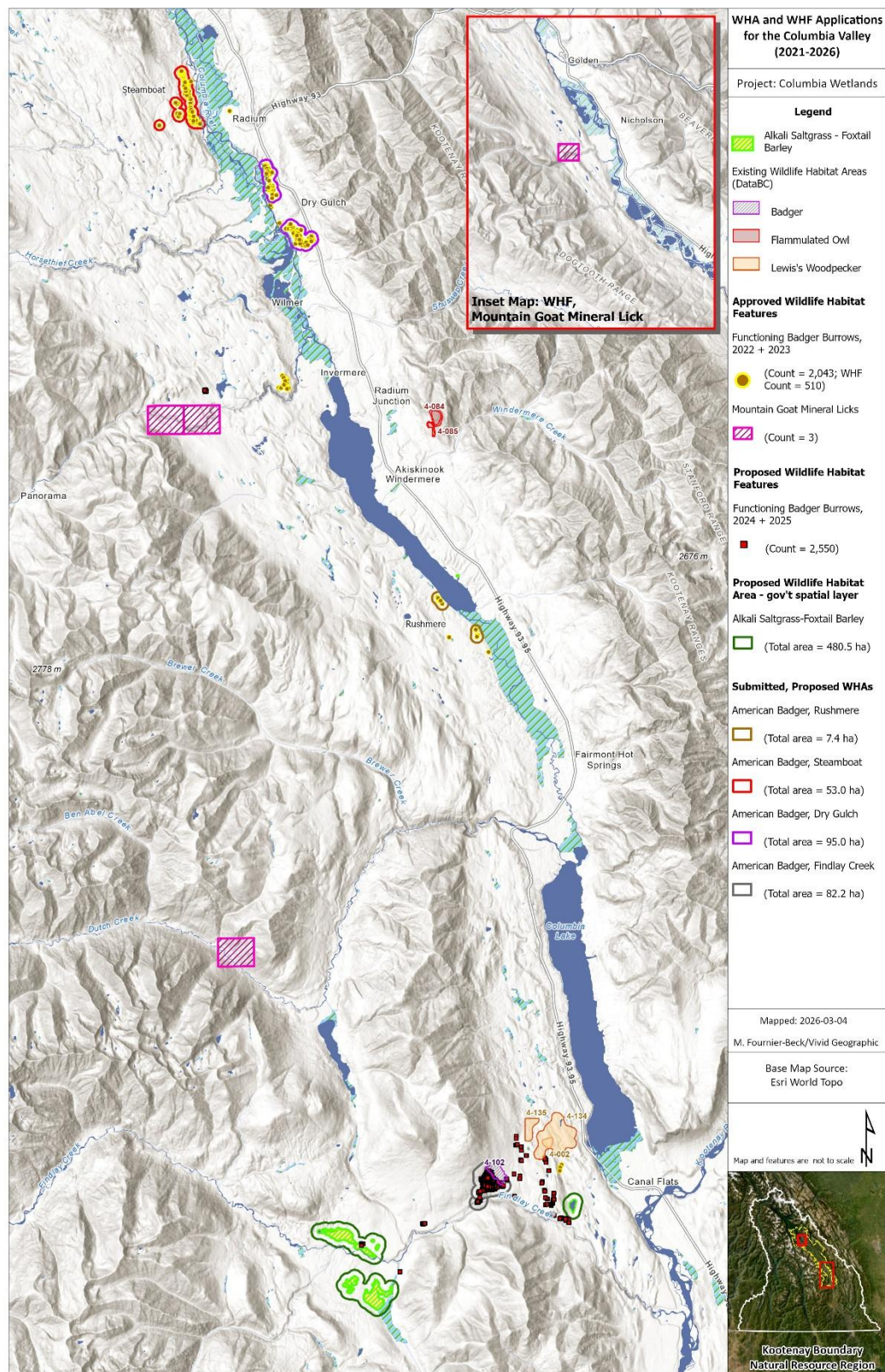


Figure 20. Distribution of Wildlife Habitat Areas and Wildlife Habitat Features established or proposed for Species at Risk protection in the Columbia Valley (2021–2026).

8.0 Acknowledgements

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9.0 References

- Adams, I. (2011). Connecting the Upper Columbia Valley III: habitat criteria and conditions. Prepared for Columbia Wetlands Stewardship Partners. Available: <https://wetlandstewards.eco/wpcontent/uploads/2019/10/UCV-Corridors-III-Habitat-Criteriaand-Conditions.pdf>
- Adams, I., & T.A. Kinley. (2004). Badger. Accounts and Measures for Managing Identified Wildlife – Accounts V. 2004. Available: https://www.env.gov.bc.ca/wld/frpa/iwms/documents/Mammals/m_Badger.pdf
- B.C. Conservation Data Centre. (2022). Conservation status report: *Melanerpes lewis*. B.C. Minist. of Environment. Available: <https://a100.gov.bc.ca/pub/eswp/esr.do?id=20006> (accessed March 7, 2025).
- B.C. Ministry of Environment. (2017). Management plan for the Painted Turtle – Intermountain– Rocky Mountain Population (*Chrysemys picta* pop. 2) in British Columbia. B.C. Ministry of Environment, Victoria, BC. 31 pp.
- Beauchesne, S.M., & J.M. Cooper. (2007). Lewis’s woodpecker (*Melanerpes lewis*) survey in the East Kootenay Trench, British Columbia, 2007. Prepared for: Kevin Fort, Canadian Wildlife Service, Delta BC.
- Cooper, J.M., et al. (1998). Status of the Lewis’s woodpecker (*Melanerpes lewis*) in British Columbia. B.C. Minist. Environ., Lands and Parks, Wildl. Branch. Working Report WR-91. 34pp.
- Cooper, J.M., & S. M. Beauchesne. (2000). Inventory of Lewis’s woodpecker breeding population and habitat in the East Kootenay. B.C. Ministry of Environment, Lands and Parks, Wildlife Branch. Working Rep. WR-100. 38pp.
- COSEWIC. (2012). COSEWIC assessment and status report on the American Badger *Taxidea taxus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. iv + 63 pp.
- COSEWIC. (2016). COSEWIC assessment and status report on the Western Painted Turtle *Chrysemys picta bellii*, Pacific Coast population, Intermountain – Rocky Mountain population and Prairie/Western Boreal – Canadian Shield population, in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxi + 95 pp. (<http://www.registrelepszaregistry.gc.ca/default.asp?lang=en&n=24F7211B-1>).
- Darvill, R. (2020a). Kootenay Connect: Columbia Wetlands. Literature review of species at risk in the Columbia Valley- Final report. Prepared for the Columbia Wetlands Stewardship Partners and Kootenay Connect, a project facilitated by the Kootenay Conservation Program.
- Darvill, R. (2020b). 2015-2019 Columbia wetlands waterbird survey. Prepared for Wildsight Golden. Available: https://wildsight.ca/wp-content/uploads/2016/01/CWWS-2015_2019-Final-Report_Jan-2-2020.pdf

- Darvill, R. (2021). Kootenay Connect: Columbia Wetlands, Year 2 (2020-2021). Conservation planning for species at risk in the Columbia Wetlands – Final report. Prepared for the Columbia Wetlands Stewardship Partners and Kootenay Connect, a project facilitated by the Kootenay Conservation Program.
- Darvill, R. (2022). Kootenay Connect: Columbia Wetlands, Year 3 (2021-2022). Conservation action for species at risk in the Columbia Wetlands – Final report. Prepared for the Columbia Wetlands Stewardship Partners and Kootenay Connect, a project facilitated by the Kootenay Conservation Program.
- Darvill, R. (2023). Kootenay Connect: Columbia Wetlands. Restoration of habitats and species at risk in the Columbia Valley. Year 4. Final Report – Species at Risk. Prepared for the Columbia Wetlands Stewardship Partners and Kootenay Connect, a project facilitated by the Kootenay Conservation Program.
- Darvill, R. (2024). Kootenay Connect: Columbia Wetlands restoration of habitats and species at risk in the Columbia Valley. Year 5 (2023-2024). Final Report. Prepared for the Columbia Wetlands Stewardship Partners and Kootenay Connect, a project facilitated by the Kootenay Conservation Program.
- Darvill, R. (2025). Kootenay Connect. Columbia Wetlands: Restoration of habitats and species at risk in the Columbia Valley. March 31, 2025 - Year 6. Final Report - Species at Risk. Report for the Columbia Wetlands Stewardship Partners and Kootenay Connect.
- Durrand, R. (2020). Summary of vegetative community mapping. Columbia Wetlands Stewardship Partners. <https://kootenayconservation.ca/wp-content/uploads/2022/11/CWSP-Summary-of-vegetative-community-mapping-April-3-final-2020.pdf>
- Environment Canada. (2014). Management Plan for the Lewis's woodpecker (*Melanerpes lewis*) in Canada. Species at Risk Act Management Plan Series. Environment Canada, Ottawa. iii + 23 pp.
- Environment and Climate Change Canada. (2017). Recovery Strategy for the Lewis's woodpecker (*Melanerpes lewis*) in Canada. Species at Risk Act Recovery Strategy Series. Environment and Climate Change Canada, Ottawa. vi + 40 pp.
- Government of British Columbia. (2002). Forest and Range Practices Act, S.B.C. 2002, c. 69. https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/02069_01
- Government of British Columbia. (2004). Forest Planning and Practices Regulation, B.C. Reg. 14/2004. https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/14_2004
- Government of British Columbia. (2006). Wildlife habitat feature standards for the Kootenay Boundary Region: Field guide. Ministry of Environment, Province of British Columbia.
- Government of Canada. (2016). Western Painted Turtle (*Chrysemys picta bellii*) - Western population (Status report). Committee on the Status of Endangered Wildlife in Canada. Retrieved from https://www.registrelep-sararegistry.gc.ca/virtual_sara/files/cosewic/sr_Western%20Painted%20Turtle_2016_e.pdf

- Kinley, T. A. (2009). Effectiveness monitoring of Badger wildlife habitat area: Summary of current areas and recommendations for developing and applying protocols. Prepared for Forest and Range Evaluation Program –Wildlife Resource Value Ministry of Environment (Ecosystems Branch) and Ministry of Forests and Range (Forest Practices Branch), Victoria, BC.
- Kinley, T.A. & N. J. Newhouse. (2008). Ecology and translocation-aided recovery of an endangered Badger population. *Journal of Wildlife Management*. 72(1):113-122. DOI: 10.2193/2006-406. Available: <https://s3-us-west-2.amazonaws.com/epscwsp/Kinley%202006.pdf>
- Kinley, T.A., Whittington, J., Dibb, A.D. & N.J. Newhouse. (2014). Badger resource selection in the Rocky Mountain Trench of British Columbia. *Journal of Ecosystems and Management*. 14(3): 1-22. <http://jem-online.org/index.php/jem/article/viewFile/566/500>
- Krupp, L. (2019). As ospreys recover, their nests are sparking fires and power outages. National Audubon Society. <https://www.audubon.org/news/as-ospreys-recover-their-nests-are-sparking-fires-and-power-outages>
- Lausen, C., Gates, H., Low, E., & J. Rae. 2023. Kootenay Connect: Bat Conservation in Kootenay Connect Focal Areas Year 4. Prepared for Kootenay Connect.
- Millions, E. L., MacDonald, R. J., Braaten, M., Chernos, M., & Plews, R. (2025). Characterizing the vulnerability of the Columbia River floodplain wetlands to climate change. Prepared for Columbia Wetlands Stewardship Partners. MacDonald Hydrology Consultants Ltd.
- Moore, E., & J. Arndt. (2016). Monitoring *Pandion haliaetus* aka osprey. Prepared for Friends of Kootenay Lake Stewardship Society. Retrieved from: <https://www.friendsofkootenaylake.ca/news/ospreynest-monitoring/>
- Newhouse, N. (2001). Management and protection of Badgers in the East Kootenay of British Columbia. Prepared for Columbia Basin Fish & Wildlife Compensation Program. <http://trench---er.com/public/library/files/Badger---management---protection---2001.pdf>
- Proctor, M. & M. Mahr. (2019). Kootenay connect: Riparian wildlife corridors for climate change. A preliminary report. Prepared for Kootenay Conservation Program. Available: http://transbordergrizzlybearproject.ca/pdf/Proctor_and_Mahr_2019.pdf
- Remmer, C. R., Rooney, R., Bayley, S., & Leven, C. (2024). The importance of groundwater to the upper Columbia River floodplain wetlands. *Canadian Water Resources Journal/Revue canadienne des ressources hydriques*, 49(2), 204-218.

10.0 Appendices

Appendix 1. Description of turtle observations from wildlife cameras in 2025.

Feature	Date	Time range	Total time captured on camera (minutes)	Species	Observed Behavior (e.g., laid nest, prospecting, predating nest, etc.)	Description
SW Structure	June 8, 2025	19:52	1	Turtle	Walking	On nesting bed
SW Structure	June 10, 2025	19:41-19:46	5	Turtle	Walking	Walked around the bottom left of the photos before going up and over the nesting bed.
SW Structure	June 11, 2025	18:34-18:36	2	Turtle	Walking	Walked from top left to bottom left. As turtle was first walking it made a trail in the sand.
SW Structure	June 11, 2025	18:38-18:40	2	Turtle	Walking	Walked from bottom to top right before disappearing from view.
SW Structure	June 11, 2025	19:43-19:46	3	Turtle	Walking	Walked from bottom to top of hill and then back down again, streaking the sand.
SW Structure	June 11, 2025	19:50-19:52	2	Turtle	Walking	Walked from bottom of hill, up, and over the nesting bed.
SW Structure	June 11, 2025	20:00-20:13	13	Turtle	Walking, prospecting	From 20:02 to 20:12 it looked like the turtle might have been digging a hole as it stopped, before leaving again. It entered the photo from the top left and stopped fairly close. Turtle left again the same way it came.
SW Structure	June 11, 2025	20:17-22:53	156	Turtle	Nesting	Nest laid near top center. Turtle came from bottom middle to the nesting site. Looked like eggs laid before she covered them up.
SW Structure	June 12, 2025	16:47-16:54	7	Turtle	Prospecting	Could see 3 mounds so maybe turtle dug 3 holes. Turtle came from top left and dug near the top middle.
SW Structure	June 12, 2025	17:03	1	Turtle	Walking	Bottom left walked up slightly and then down again.
SW Structure	June 12, 2025	17:08-17:10	2	Turtle	Walking	Walked at the top of the hill.
SW Structure	June 12, 2025	17:14	1	Turtle	Walking	Could see the top part of the turtle as it moved to the left behind the nesting bed hill.
SW Structure	June 12, 2025	17:19-17:24	5	Turtle	Prospecting	Dug a hole at the left part of the nesting hill.
SW Structure	June 12, 2025	17:46-20:25	159	Turtle	Nesting	Dug a hole at the top left part of the nesting hill and nested there, leaving from the top once she was done nesting.
SW Structure	June 13, 2025	16:39-16:40	1	Turtle	Walking	Walked from bottom to top of hill and beyond.

SW Structure	June 13, 2025	17:52-17:53	1	Turtle	Walking	From right to left.
SW Structure	June 17, 2025	21:12-21:13	1	Turtle	Walking	From right to left.
SW Structure	June 24, 2025	18:23-18:25	2	Turtle	Walking	From bottom right up the hill a bit and exiting on the right
SW Structure	June 24, 2025	18:31	1	Turtle	Walking	Bottom right corner there and gone.
SW Structure	June 24, 2025	18:36-18:37	1	Turtle	Walking	Seen on right side of photo moving away.
SW Structure	June 24, 2025	18:55	1	Turtle	Walking	Bottom right corner there and gone.
SW Structure	June 24, 2025	19:05-19:07	2	Turtle	Walking	Left part of the photo
SW Structure	June 24, 2025	19:18-19:19	1	Turtle	Walking	From top left to bottom right
SW Structure	June 24, 2025	19:21	1	Turtle	Walking	Middle of nesting hill and then gone
SW Structure	June 27, 2025	17:23-17:25	2	Turtle	Walking	From left to top right of hill
SW Structure	June 27, 2025	18:09-18:10	1	Turtle	Walking	Down to the left from center of hill. Left a trail behind it when going downhill.
North Bank	May 24, 2025	20:27-20:29	2	Turtle	Walking	Along road going west
North Bank	May 24, 2025	20:51	1	Turtle	Walking	Along side of hill on road going west
North Bank	May 24, 2025	21:10-21:16	6	Turtle	Crossed Road	Walked along side of road at bottom of road and then across road heading west toward wetland
North Bank	May 24, 2025	21:19-21:21	2	Turtle	Crossed Road	Walked across road from wetland to bottom of hill and disappeared
North Bank	May 24, 2025	21:27-21:32	5	Turtle	Crossed Road	Walked across road from wetland to bottom of hill and disappeared
North Bank	May 24, 2025	21:44-21:49	5	Turtle	Walking	Walked along side of road at bottom of hill west
North Bank	May 27, 2025	17:40-17:43	3	Turtle	Crossed Road	Across road from wetland side to hill side. Can't see after time this due to deep shadow on hill.
North Bank	May 27, 2025	18:54	1	Turtle	Walking	On side of road by hill
North Bank	May 27, 2025	19:03-19:06	3	Turtle	Crossed Road	Across road from wetland side to hill side and then walked along hill side on road but hill is in shadow so don't know what happened after.
North Bank	May 27, 2025	19:20-19:22	2	Turtle	Walking	Walked across hill.

North Bank	May 27, 2025	19:25-21:30	125	Turtle	Nesting	Walked on right side of hill, dug hole, and presumably nested.
North Bank	May 27, 2025	19:58-20:01	3	Turtle	Crossed Road	From hill across road to wetland
North Bank	May 27, 2025	20:58-21:06	8	Turtle	Crossed Road	Walked along bottom of hill from west to center and then across to wetland
North Bank	May 27, 2025	21:19-21:21	2	Turtle	Walking	Walked west through bottom part of hill and then disappeared in grass.
North Bank	May 27, 2025	21:29-21:31	2	Turtle	Walking	Walked along bottom of hill from east
North Bank	May 27, 2025	21:33-21:34	1	Turtle	Walking	On wetland side of road from west to middle
North Bank	May 27, 2025	21:34	1	Turtle	Sitting	On west side of hill close to bottom
North Bank	May 27, 2025	21:40-22:26	46	Turtle	Walking	Walked along side of hill, to the road and back to the hill
North Bank	May 27, 2025	22:38-22:39	1	Turtle	Crossed Road	Walked across road from hill to wetland
North Bank	May 27, 2025	22:40-3:18	278	Turtle	Nesting	Saw turtle go to site on hill and could see movement until it left.
North Bank	May 28, 2025	19:27-19:33	6	Turtle	Walking	Along edge of road by hill from west to east
North Bank	May 28, 2025	20:07	1	Turtle	Walking	Along edge of road by hill
North Bank	May 28, 2025	20:18-20:22	4	Turtle	Walking	Along edge of road by hill from west to east
North Bank	May 28, 2025	20:20-20:27	7	Turtle	Walking	Along edge of road by hill to west from middle. Two turtles on road at the same time.
North Bank	May 28, 2025	20:32-20:34	2	Turtle	Walking	Along edge of road by hill towards west
North Bank	May 28, 2025	20:41-20:42	1	Turtle	Walking	Along edge of road by hill towards west
North Bank	May 28, 2025	20:44-20:48	4	Turtle	Walking	Along edge of road by hill moving east
North Bank	May 28, 2025	20:45-20:46	1	Turtle	Walking	Along edge of road by hill towards west (both turtles seen in photo)
North Bank	May 28, 2025	20:55-20:59	4	Turtle	Walking	Along edge of road by hill moving west
North Bank	May 28, 2025	20:19-00:23	244	Turtle	Nesting	Along edge of road by hill
North Bank	May 28, 2025	3:18	1	Turtle	Walking	On side of road by hill

North Bank	May 29, 2025	16:03-16:06	3	Turtle	Crossed Road	From wetland to hill
North Bank	May 29, 2025	18:13-18:16	3	Turtle	Crossed Road	From wetland to hill
North Bank	May 29, 2025	20:06	1	Turtle	Walking	Along road by hill going west
North Bank	May 29, 2025	20:29-20:33	4	Turtle	Crossed Road	Across road to wetland. Car stopped and driver side opened in same frame as turtle almost across road and then slowly drove by. Turtle didn't move until car was gone but it was closer to wetland side at this point
North Bank	May 29, 2025	21:46-21:51	5	Turtle	Crossed Road	Across road to wetland
North Bank	May 30, 2025	20:37-20:39	2	Turtle	Crossed Road	Across road from wetland to hill
North Bank	May 30, 2025	21:12-01:25	193	Turtle	Nesting	At bottom of hill on edge of road
North Bank	May 30, 2025	23:45-23:46	1	Turtle	Crossed Road	Bottom of hill to wetland across road
North Bank	May 31, 2025	18:53-18:56	3	Turtle	Walking	At bottom of hill from west to east
North Bank	May 31, 2025	19:00-19:02	2	Turtle	Walking	At bottom of hill from east to west
North Bank	May 31, 2025	19:23-19:29	6	Turtle	Crossed Road	From wetland to hill
North Bank	May 31, 2025	19:39-19:40	1	Turtle	Walking	On hill
North Bank	May 31, 2025	19:46-19:53	7	Turtle	Crossed Road	From top of hill to wetland
North Bank	May 31, 2025	20:04-20:11	7	Turtle	Crossed Road	From hill across road to wetland
North Bank	May 31, 2025	21:24-21:31	7	Turtle	Crossed Road	From edge of hill across road to wetland
North Bank	June 2, 2025	17:31-17:33	2	Turtle	Crossed Road	From wetland to hill. Couldn't see beyond edge of hill because of hill in deep shadow
North Bank	June 2, 2025	18:33	1	Turtle	Sitting	On edge of road by hill
North Bank	June 2, 2025	18:39-20:39	120	Turtle	Nesting	Just above road on hill
North Bank	June 2, 2025	19:00	1	Turtle	Crossed Road	Cross road from hill to wetland. Two turtles in photo.
North Bank	June 2, 2025	19:04	1	Turtle	Sitting	On edge of road by hill near nesting turtle

North Bank	June 2, 2025	20:52-20:54	2	Turtle	Crossed Road	From edge of hill across road to wetland. A car went by as it was crossing the road and managed to not hit the turtle even though it didn't slow down.
North Bank	June 4, 2025	17:35-17:39	4	Turtle	Crossed Road	From wetland to hill across road and then walked along edge of road west
North Bank	June 4, 2025	18:41-18:49	8	Turtle	Crossed Road	From wetland to hill and then disappeared in grass of hill.
North Bank	June 4, 2025	21:05-21:12	7	Turtle	Crossed Road	From wetland across road to edge of hill
North Bank	June 4, 2025	21:44-21:47	3	Turtle	Walking	To wetland from the road
North Bank	June 5, 2025	18:39-18:40	1	Turtle	Crossed Road	Cross road from wetland to hill area
North Bank	June 5, 2025	19:48-19:52	4	Turtle	Crossed Road	Cross road from wetland to hill area. When turtle first was on wetland side about to cross the road, two vans drove by and the turtle didn't cross until the vehicles were gone.
North Bank	June 5, 2025	19:54-19:55	1	Turtle	Crossed Road	Cross road from wetland towards hill but unfortunately the photo was cut off partway across the road due to the camera angle. On the way across, a car slowed down and watched the turtle cross.
North Bank	June 5, 2025	22:05-22:07	2	Turtle	Crossed Road	Cross road from hill area to wetland.
North Bank	June 7, 2025	18:52	1	Turtle	Crossed Road	Across road to wetland
North Bank	June 7, 2025	19:40-19:41	1	Turtle	Crossed Road	Across road to wetland
North Bank	June 8, 2025	17:44	1	Turtle	Crossed Road	Starting to walk across the road from wetland.
North Bank	June 8, 2025	18:10-18:14	4	Turtle	Crossed Road	Crossing road from wetland towards hill.
North Bank	June 8, 2025	18:54	1	Turtle	Crossed Road	Across road to wetland.
North Bank	June 8, 2025	19:19-19:20	1	Turtle	Crossed Road	Across road to wetland.
North Bank	June 8, 2025	19:54	1	Turtle	Crossed Road	Across road to wetland.
North Bank	June 8, 2025	20:26-20:27	1	Turtle	Crossed Road	Across road from wetland.
North Bank	June 8, 2025	22:42-22:43	1	Turtle	Crossed Road	Across road to wetland.
North Bank	June 9, 2025	17:53	1	Turtle	Sitting	On side of road by wetland as truck drives by next to it with a lot of dust.
North Bank	June 9, 2025	17:56-17:57	1	Turtle	Crossed Road	Across road to wetland.

North Bank	June 9, 2025	18:40-18:43	3	Turtle	Crossed Road	Across road from wetland to hill
North Bank	June 9, 2025	18:52-18:53	1	Turtle	Crossed Road	Across road to wetland.
North Bank	June 9, 2025	18:58-18:59	1	Turtle	Crossed Road	Across road from wetland.
North Bank	June 9, 2025	19:05-19:07	2	Turtle	Crossed Road	Across road to wetland.
North Bank	June 9, 2025	19:28-19:29	1	Turtle	Crossed Road	Across road to wetland.
North Bank	June 9, 2025	20:07-20:08	1	Turtle	Crossed Road	Across road from wetland.
North Bank	June 9, 2025	22:03-22:06	3	Turtle	Crossed Road	Across road from wetland.
North Bank	June 9, 2025	22:14-22:15	1	Turtle	Crossed Road	Across road to wetland.
North Bank	June 9, 2025	23:17-23:27	10	Turtle	Crossed Road	Across road to wetland.
North Bank	June 10, 2025	18:50-18:52	2	Turtle	Crossed Road	Across road from wetland. At the beginning a truck drove by while the turtle was still at the side of the road by a wetland.
North Bank	June 10, 2025	19:09-19:12	3	Turtle	Crossed Road	Across road from wetland.
North Bank	June 11, 2025	17:30-17:34	4	Turtle	Crossed Road	Across road from wetland. At the beginning a car drove by while the turtle was still at the side of the road by a wetland.
North Bank	June 11, 2025	20:27-20:29	2	Turtle	Crossed Road	Across road from wetland.
North Bank	June 11, 2025	21:46-21:49	3	Turtle	Crossed Road	Across road from wetland in rain.
North Bank	June 11, 2025	17:45-17:46	1	Turtle, Human (x2)	Moved turtle	Could see a van at the west end of the road and a turtle on the road behind it. Two men went back to the turtle, picked it up and then walked over to the wetland side. Where the turtle had been was a wet spot. Don't know if they ran over the turtle or were rescuing it. One of the men looked like he had it in one hand before he left the vicinity of the photo and it almost looked like he might be throwing it down the hill, but couldn't be sure.
North Bank	June 12, 2025	17:36	1	Turtle	Sitting	At edge of road on hill side
North Bank	June 12, 2025	20:22-20:23	1	Turtle	Crossed Road	Across road to wetland.
North Bank	June 12, 2025	16:28	1	Turtle	Crossed Road	Across road from wetland.
North Bank	June 13, 2025	18:12-18:14	2	Turtle	Crossed Road	Across road from wetland.

North Bank	June 13, 2025	18:34-18:36	2	Turtle	Crossed Road	Across road to wetland.
North Bank	June 14, 2025	18:57-19:03	6	Turtle	Crossed Road	Across from wetland to hill side, back to wetland side and back to hill side.
North Bank	June 14, 2025	19:05-19:06	1	Turtle	Crossed Road	On bottom left of photo by base of hill
North Bank	June 15, 2025	18:22-18:24	2	Turtle	Crossed Road	Across road from wetland to hill
North Bank	June 16, 2025	19:24	1	Turtle	Crossed Road	Across road from wetland towards hill
North Bank	June 17, 2025	20:56-20:57	1	Turtle	Crossed Road	Across road from hill towards wetland
North Bank	June 18, 2025	16:17-16:23	6	Turtle	Crossed Road	Across road from wetland to hill
North Bank	June 18, 2025	16:50	1	Turtle	Sitting	On hill side but disappeared when car went by.
North Bank	June 18, 2025	16:51-16:52	1	Turtle	Crossed Road	Across road from wetland towards hill
North Bank	June 18, 2025	17:48-17:50	2	Turtle	Crossed Road	Across road from hill to wetland
North Bank	June 18, 2025	17:51-17:53	2	Turtle	Crossed Road	Across road from wetland towards hill
North Bank	June 18, 2025	17:59	1	Turtle	Crossed Road	Across road to wetland
North Bank	June 18, 2025	18:18-18:21	3	Turtle	Tried crossing road	Tried crossing the road from wetland until vehicle came by and then turned around and walked back to wetland.
North Bank	June 19, 2025	16:14-16:15	1	Turtle	Crossed Road	Across road from wetland towards hill
North Bank	June 19, 2025	16:54	1	Turtle	Sitting	On side of road by hillside base
North Bank	June 19, 2025	17:37-17:39	2	Turtle	Crossed Road	Across road from wetland towards hill
North Bank	June 19, 2025	18:47	1	Turtle	Walking	Near hill on road
North Bank	June 19, 2025	20:24	1	Turtle	Walking	On road but not sure in which direction it was going.
North Bank	June 19, 2025	20:51-20:55	4	Turtle	Crossed Road	Across road from wetland towards hill
North Bank	June 19, 2025	20:59-21:01	2	Turtle	Crossed Road	Across road from wetland towards hill
North Bank	June 22, 2025	17:23-17:24	1	Turtle	Crossed Road	From hillside area to wetland

North Bank	June 23, 2025	10:45-10:47	2	Turtle	Crossed Road	From hillside area to wetland
North Bank	June 24, 2025	16:16	1	Turtle	Standing	On side of road by wetland
North Bank	June 24, 2025	16:45-16:46	1	Turtle	Walking	On side of road by hillside base
North Bank	June 24, 2025	16:51-16:52	1	Turtle	Crossed Road	Across road from hill side area to wetland
North Bank	June 24, 2025	19:47-19:49	2	Turtle	Crossed Road	Across road from wetland towards hillside. A car went along the road as the turtle was crossing
N Structure	June 10, 2025	19:54-19:55	1	Turtle	Walking	Top of hill to bottom facing camera
N Structure	June 11, 2025	18:39-18:42	3	Turtle	Walking	From bottom right up to top of hill and over to other side
N Structure	June 11, 2025	18:47-18:48	1	Turtle	Walking	From top left of hill to bottom into grass
N Structure	June 11, 2025	19:59-20:03	4	Turtle	Walking	From mid top to bottom of hill and along edge until right bottom of hill
N Structure	June 11, 2025	20:08-20:20	12	Turtle	Prospecting	Very hard to see turtle as it is on the other side of hill but can see a small part of the top of it.
N Structure	June 11, 2025	23:01	1	Turtle	Walking	What looked like a turtle on the left of the hill although it was fairly dark out so hard to tell for sure.
N Structure	June 17, 2025	18:30-18:31	1	Turtle	Walking	From central part of hill to top and over.
N Structure	June 27, 2025	17:25-17:27	2	Turtle	Walking	On top of hill
Lower Road	May 28, 2025	18:22-18:33	11	Turtle	Walking	From west end wetland, along fence towards east and then back again into wetland.
Lower Road	May 30, 2025	20:56-21:05	9	Turtle	Walking	Along fence from west wetland to east along fence.
Lower Road	May 30, 2025	21:13-21:23	10	Turtle	Walking	Along fence from east to west along fence and then back again.
Lower Road	May 30, 2025	21:26	1	Turtle	Walking	Along fence from east to partway along fence and then back again.
Lower Road	May 30, 2025	21:31-21:37	6	Turtle	Walking	Along fence from east to west and then into wetland
Lower Road	May 30, 2025	21:42-21:47	5	Turtle	Walking	Along fence from west wetland to east along fence.
Lower Road	May 30, 2025	21:50-21:53	3	Turtle	Walking	Along fence from east to partway along fence and then back again. Turtle kept looking at fence for many of these tries recent walks.
Lower Road	June 1, 2025	16:50-17:05	15	Turtle	Walking	Came out from east side wetland and walked to fence then went west and back again along fence.

Lower Road	June 5, 2025	19:25-19:28	3	Turtle	Walking	Came out from east side of wetland and walked along wetland to west side, where it went into wetland again
Lower Road	June 5, 2025	19:32-19:38	6	Turtle	Walking	Out of west side of wetland along fence to east side
Lower Road	June 5, 2025	19:42-19:46	4	Turtle	Walking	From east side along fence to west side into wetland
Lower Road	June 5, 2025	19:55-19:59	4	Turtle	Walking	From east side along fence to west side
Lower Road	June 9, 2025	19:35-19:47	12	Turtle	Walking, Prospecting	From east side of wetland to fence, headed west to the end and then on its way back stopped for two minutes closer to wetland, looked like it was digging, and then went east along the fence.
Lower Road	June 9, 2025	19:50	1	Turtle	Walking	Peaked out from east side close to fence before going back
Lower Road	June 10, 2025	19:50-21:33	103	Turtle	Nesting	From east along fence partway down and then to wetland and up a bit before she started nesting
Lower Road	June 10, 2025	20:14-20:28	14	Turtle	Walking	Came out from east part of wetland, walked along wetland all the way west and then along fence east.
Lower Road	June 10, 2025	20:39-20:54	15	Turtle	Prospecting, Walking	From east along fence down to just beyond nesting turtle and then back up to fence, sat in hole about 10 minutes, sat briefly in another hole and then went back along fence east.
Lower Road	June 10, 2025	20:58-21:04	6	Turtle	Walking	From east along fence to west and then to wetland
Lower Road	June 11, 2025	17:46	1	Turtle	Standing	Peaked out from east side close to fence before going back
Lower Road	June 11, 2025	20:34-20:47	13	Turtle	Walking	From east to west along the fence. Stopped briefly in a hole along the way and kept going slightly away from and to the fence.
Lower Road	June 11, 2025	20:55-21:16	21	Turtle	walking	East halfway between wetland and fence, to fence, walked along fence. Dug hole but left right away about half way along fence, walked up and down hill to west end of fence before turning around and coming back east along fence.
Lower Road	June 11, 2025	20:58-21:10	12	Turtle	Prospecting	Both turtles were next to each other at one point and it was hard to tell who was whom but one of them dug a hole for about 4 minutes before leaving
Lower Road	June 11, 2025	21:18-at least 22:07	at least 49	Turtle	Nesting	From east side along fence to end and then came back a bit and nested. Kept trying to get through fence before nesting. Looked like it started raining partway through. Once it got dark, could no longer see nesting turtle as it was in the distance so don't know how long the nesting went on for. *The end time was the time that the turtle could still be seen before it got completely dark.
Lower Road	June 12, 2025	15:58-15:59	1	Turtle	Walking	East side of fence a few steps along and then back again.
Lower Road	June 12, 2025	16:02-16:04	2	Turtle	Walking	East end of wetland a bit, to fence and then back again.

Lower Road	June 12, 2025	16:06-16:12	6	Turtle	Walking	East end of wetland to fence, headed west, back towards wetland heading east, up to fence going east
Lower Road	June 12, 2025	16:16-16:29	13	Turtle	Walking	From east by fence wandered along west along fence and wetland and then back again
Lower Road	June 12, 2025	16:35-16:38	3	Turtle	Walking	From east by fence wandered along west along fence about halfway down and then to and along wetland back to east end
Lower Road	June 13, 2025	15:27-16:31	64	Turtle	Nesting	About halfway down the fenceline coming from the east by the fence
Lower Road	June 15, 2025	17:43-17:47	4	Turtle	Walking	From east to west along fence.
Lower Road	June 15, 2025	17:51-17:54	3	Turtle	Walking	From west to east along fence.
Lower Road	June 19, 2025	18:42-18:43	1	Turtle	Walking	Tried walking towards road from east side of wetlands but got stopped by the fence and so walked east along the fence
Lower Road	June 19, 2025	18:44-18:48	4	Turtle	Walking	Walked along fence east to west and then got stopped by other fence and so walked south into wetlands
Lower Road	June 19, 2025	18:54-18:59	5	Turtle	Walking	Came out from west end of wetlands and walked along fence until it hit the fence by the road and walked west to east, occasionally stopping and looking at the fence.
Lower Road	June 19, 2025	19:03-19:04	1	Turtle	Walking	Walked along fence east to west a bit and then walked back
Lower Road	June 19, 2025	19:06-19:11	5	Turtle	Walking	Walked along fence east to west and then got stopped by other fence and so walked south into wetlands
Lower Road	June 19, 2025	19:12-19:15	3	Turtle	Walking	From west end wetland heading north towards road and back along fence
Lower Road	June 25, 2025	U	U	Turtle	Walking	Along fence from bottom right to about 3/4s of the way across fence and then to the wetland
Lower Road	June 25, 2025	U	U	Turtle	Walking	from wetland to fence and along fence towards east (lower right)
Lower Road	June 26, 2025	U	U	Turtle	Walking	Walked from bottom middle to end of fence and then back along fence to middle and then disappeared. the photos were hard to see as the lens was hazy with light streaked throughout.
Lower Road	June 26, 2025	U	U	Turtle	Walking	From bottom right of photo to end of fence and back
Lower Road	July 1, 2025	U	U	Turtle	Walking	Walking around in bottom area
Lower Road	July 1, 2025	U	U	Turtle	Walking	Along fence west and back
Lower Road	July 1, 2025	U	U	Turtle	Walking	Along bottom right
Lower Road	July 2, 2025	U	U	Turtle	Walking	East along fence

Lower Road	July 2, 2025	U	U	Turtle	Walking	East along fence
Lower Road	July 5, 2025	U	U	Turtle	Walking	Walked from top wetland along fence to bottom (west to east).
Lower Road	July 5, 2025	U	U	Turtle	Walking	Walked from bottom wetland along fence to top and then back into wetland
Lower Road	July 5, 2025	U	U	Turtle	Nesting	Walked from top wetland to near bottom and nested close to wetland (west to east)

Appendix 2. Osprey nest occupancy and success (2020-2025).

Nest #	Location	Easti ng	Northi ng	2019 Occup ied Nest	2019 Nest Success (Fledglings) (Y/N/Presu med)	2020 Occup ied Nest	2020 Nest Success (Fledglings) (Y/N/Presu med)	2021 Occup ied Nest	2021 Nest Success (Fledglings) (Y/N/Presu med)	2022 Occup ied Nest	2022 Nest Success (Fledglings) (Y/N/Presu med)	2023 Occup ied Nest	2023 Nest Success (Fledglings) (Y/N/Presu med)	2024 Occup ied Nest	2024 Nest Success (Fledglings) (Y/N/Presu med)	2025 Occup ied Nest	2025 Nest Success (Fledglings) (Y/N/Presu med)	Summary of nest success using 2019-2025 data
1	Old Mill in Donald	4875 68	57041 45	Y	Presumed	Y	Presumed	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Produced fledglings most years.
2	Bottom of Hartley Road, top of cell tower	4982 38	56927 06	Y	N	N	N	N	N	NA	NA	NA	NA	NA	NA	NA	NA	Nest removed in 2019; Not surveyed after 2021.
3	Golden CVSE Inspection Station	4895 83	57031 75	NA	NA	NA	NA	NA	NA	Y	Y	Y	Y	Y	unknown	Y	unknown	Produced fledglings most years.
4	Golden - LP Mill north end	5012 18	56849 27	NA	NA	N	N	N	N	N	N	N	N	N	N	NA	NA	No nest use. Could not locate in 2025; volunteer mill worker checked previous yrs.
5	Golden - LP Mill south end	5012 77	56843 79	NA	NA	NA	NA	N	N	N	N	N	N	N	N	N	N	No nest use.
6	13th Street S and 7th Ave in Town of Golden	5020 28	56823 96	Y	N	Y	N	Y	N	N	N	N	N	N	N	N	N	Some nest occupancy (2019-2021), no nest occupancy since two dead fledglings seen dangling from platform and later removed by fire truck.
7	Hwy 95 S, at CP Railway Pond across	5048 96	56799 31	Y	N	Y	Presumed	Y	Presumed	Y	Presumed	Y	Y	Y	Y	Y	Y	Produced fledglings most years.

	from Day Road																	
8	Hwy 95 S, Champagne Road off Hwy 95S	505039	5679727	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No nest use.
9	Hwy 95 S, near Lou's Feed Store	506900	5676032	Y	Presumed	Y	N	Y	Presumed	Y	N	Y	Y	Y	N	Y	N	Nest failure past 2 years, successful previously.
10	Hwy 95 S at Horse Creek North end, Austin Rd	507395	5673513	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No nest use.
11	Horse Creek rock quarry site	507213	5673280	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	Never used, except in 2020 when early use (no chicks) observed on platform.
12	Hwy 95 S at Horse Creek South end	508317	5672306	Y	Presumed	N	N	Y	Presumed	Y	Y	Y	Y	Y	Y	Y	Y	Produced fledglings most years.
13	Hwy 95 S, South of Nine Mile Slough	509511	5671022	N	N	Y	N	Y	N	N	N	N	N	N	N	N	N	Never used, except in 2020-2021 when early use observed on platform.
14	Hwy 95 S North of Judy's house; Hydro pole near VGSW colony at about 16kms	510210	5670318	Y	N	N	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Successful since 2022.
15	Dickson Downs Rd at	510846	5669517	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	Never used, except in 2020 when early

	Judy Malones home																	use observed on platform.
16	Hwy 95 S tree nest in Columbia Wetlands near Birchland s Creek	512774	5667948	Y	Presumed	N	N	N	N	NA	NA	NA	NA	NA	NA	NA	NA	Not surveyed since 2021 when nest fell down.
17	Canadian Timberframes	513969	5667201	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No nest use.
18	Hwy 95 S at McMurdo Slough	515333	5666384	N	N	Y	N	Y	N	N	N	Y	Y	Y	Y	Y	Y	Successful since 2023.
19	Hwy 95 S, on east side of McMurdo Slough	515360	5666382	Y	Y	N	N	N	N	Y	Y	N	N	N	N	N	N	Fledglings in 2019 and 2022.
20	Columbia Valley B&B	515760	5665939	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No nest use.
21	Hwy 95 S, 1km south of Mons Road (25kms south of Golden)	517394	5664998	Y	N	Y	N	Y	N	N	N	N	N	Y	N	Y	unknown	No fledglings produced, limited early season nest use.
22	Hwy 95S, ~26kms south of Golden (2677 Hwy95)	518702	5663866	NA	NA	Y	N	Y	N	N	N	N	N	N	N	N	N	Never used, except in 2020-2021 when early use observed on platform.
23	Hwy 95 S, ~28kms south of Golden	520568	5661842	Y	Presumed	Y	Presumed	Y	Presumed	Y	Y	Y	Y	Y	Y	Y	N	Platform leaning quite heavily. Was reported to BC Hydro for repairs early 2025, but it was not repaired. 2025

																		the only year without fledglings. BC Hydro is scheduled to repair platforms ahead of 2026 breeding season.
24	Hwy 95 S, just north of Parson Store	522450	5659924	Y	Presumed	Y	Y	Y	Presumed	Y	Y	Y	Y	Y	unknown	Y	Y	Produced fledglings most or all years.
25	Hwy 95 S, Timber Inn, Parson (MRC Lodge)	524531	5658477	Y	Presumed	Y	N	Y	Y	N	N	N	N	Y	N	Y	N	Not successful since 2021.
26	Hwy 95 S, south of Timber Inn, beside Wilfred's place	524988	5658171	Y	Presumed	Y	Presumed	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Produced fledglings most or all years.
27	Hwy 95 S, South of Parson School	526207	5657242	Y	Presumed	Y	Y	Y	Presumed	Y	N	Y	Y	Y	Y	Y	Y	Produced fledglings most years.
28	Hwy 95 S near Hildegards house, about 250m east of Hwy in field.	527816	5655758	Y	Presumed	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Produced fledglings each year since 2022.
29	Hwy 95 - south end of cattle pasture	530818	5653701	NA	NA	NA	NA	N	N	NA	NA	NA	NA	NA	NA	NA	NA	Start of a new nest in 2021 with sticks on hydro pole. Nest was not present only in 2021.
30	Hwy 95 S - 1	530941	5653663	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No nest use.

31	Hwy 95 S, Quinn Creek Campground	531948	5653113	Y	N	Y	Presumed	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Produced fledglings most or all years.
32	Hwy 95 S, McKeeman's	534149	5651579	Y	Presumed	Y	N	Y	Presumed	Y	N	Y	Y	Y	unknown	Y	N	Varying levels of success between years. Leaning platform needs to be replaced. BC Hydro is scheduled to repair platforms ahead of 2026 breeding season.
33	Hwy 95 S - 2	536073	5650604	Y	Presumed	Y	Presumed	Y	N	Y	Y	Y	Y	Y	Y	Y	unknown	Produced fledglings most years.
34	Hwy 95 S, Ben Hynes Loop Rd	537904	5648337	Y	Presumed	Y	N	Y	Presumed	Y	Y	Y	Y	Y	Y	Y	Y	Produced fledglings most or all years.
35	Near Westside Rd xing in Spilli - up hill off Hwy 95 S ~400m	544800	5639788	Y	Presumed	Y	N	Y	N	Y	Y	Y	N	N	N	Y	unknown	Varying levels of success between years.
36	Spill xing east end	544566	5639534	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No nest use.
37	Brisco Pole Treatment Facility	550969	5630693	Y	Presumed	Y	Presumed	Y	Presumed	Y	Y	Y	Y	Y	Y	Y	Y	Produced fledglings most or all years.
38	Trescher's Field near barn	549912	5630945	Y	Presumed	Y	N	Y	Presumed	Y	N	Y	Y	Y	Y	Y	Y	Produced fledglings most years.
39	Trescher's Field west, on hydro line	549749	5630689	Y	N	Y	N	Y	Presumed	Y	N	Y	N	Y	N	Y	N	No confirmed nest success, but often incubating eggs. A dead chick was found near the nest in 2024.

40	Edgewater	561204	5615921	NA	NA	NA	NA	N	N	N	N	N	N	Y	Y	Y	unknown	2024 was the only year with known fledglings/successful nest.
41	Edgewater - across Sewage Treatment Plant	559515	5616360	NA	NA	NA	NA	NA	NA	NA	NA	N	N	N	N	N	N	No nest use.
42	Radium xing	563761	5608098	Y	N	Y	N	N	N	N	N	N	N	Y	N	N	N	No known nest success. Platform needs replacing. BC Hydro is scheduled to repair platforms ahead of 2026 breeding season.
43	Shuswap Band - Eagle Ridge	569234	5598417	NA	NA	NA	NA	NA	NA	NA	NA	Y	Y	N	N	N	N	Success only known from 2023.
44	Athalmer - Pete's marina	569469	5596354	N	N	N	N	N	N	N	N	N	N	N	N	N	N	No nest use.
45	James Chabot Provincial Park	569268	5596096	N	N	Y	Y	Y	Presumed	N	N	Y	Unknown	N	N	N	N	Not successful since fledglings in 2021. No Osprey use since 2022. Very busy with humans during summer months.
46	Between Rona and wetlands	569192	5596455	NA	NA	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Produced fledglings all years since platform was discovered.
47	Panorama Drive	568306	5596632	NA	NA	NA	NA	NA	NA	NA	NA	Y	Unknown	Y	unknown	N	N	Presumed success, new platform in 2023. Used first year after install.

48	Near Rona in Invermer e - off 7th Ave	568847	5596040	Y	Presumed	Y	Y	Y	Y	Y	Y	Y	Unknown	N	N	Y	unknown	Produced fledglings most years.
49	Nest pole near LWA office/pro v gov't offices	568907	5595772	NA	NA	NA	NA	N	N	Y	Y	Y	Unknown	Y	unknown	N	N	Only one year with known fledglings.
50	Nest pole south of LWA office/pro v gov't offices	569014	5595633	NA	NA	NA	NA	N	N	N	N	N	N	N	N	N	N	No nest use.
51	Downtown Invermer e, behind arena	569141	5595225	N	N	Y	Y	Y	N	Y	Y	Y	Unknown	Y	Y	Y	unknown	Produced fledglings most years.
52	Dorothy Lake	569084	5594499	Y	Presumed	Y	Presumed	Y	Y	Y	N	Y	Y	N	N	N	N	Has not been used since 2023. Was active prior to that but the pair relocated to a nearby pole (#52) in 2024, where they have been successful since. It is very busy with humans at pole #50.
53	Dorothy Lake - NE end	569135	5594673	NA	NA	NA	NA	N	N	N	N	Y	Unknown	Y	Y	Y	Y	Successful since 2024; pair from nearby pole moved here in 2024.
54	Invermer e - 15th Ave	568000	5594151	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Y	Y	Y	Y	Successful since located in 2024.
55	Invermer e Community Gardens	567859	5595055	NA	NA	NA	NA	NA	NA	NA	NA	Y	Y	N	N	N	N	Only one year with known fledglings.

56	RDEK offices - Windermere Loop Rd	5726 50	55938 79	Y	Presumed	Y	Presumed	Y	Presumed	Y	N	N	N	N	N	N	N	Not known to have produced fledglings since 2020. Canada Geese occupied this nest in some years.
57	North of Winderberry Nursery	5721 82	55914 59	Y	Presumed	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Fledglings produced since 2022.
58	Behind Winderberry Nursery	5722 23	55907 66	Y	Presumed	Y	N	N	N	Y	Y	N	N	Y	Y	Y	unknown	Varying levels of success between years.
59	Akisqnuq Offices - across the street	5730 56	55904 59	Y	Presumed	Y	Presumed	Y	Presumed	N	N	Y	Y	Y	Y	Y	Y	Only one year with no Osprey seen.
60	1858 Victoria Avenue	5721 31	55898 34	NA	NA	Y	N	N	N	N	N	N	N	N	N	N	N	No nest use.
61	Wilmai Place	5723 87	55899 95	NA	NA	N	N	Y	Presumed	Y	N	N	N	N	N	N	N	Two years with Osprey use.
62	Windermere Creek mouth	5715 59	55899 36	Y	Y	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	unknown	Varying levels of success between years. Pole was washed out in 2020 and replaced in 2021.
63	Akisqnuq Lakeshore Resort	5752 80	55872 20	Y	Presumed	Y	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Fledglings since 2022.
64	Old tree nest, west side of Hwy	5764 55	55868 35	N	N	N	N	Y	N	Y	Y	Y	Unknown	NA	NA	NA	NA	Varying levels of success until nest fell out of tree in late 2023/early 2024.
65	~400m N of #3 Rd, on Hwy 95	5768 20	55863 40	N	N	Y	N	N	N	Y	Y	N	N	NA	NA	NA	NA	Varying levels of success until nest fell out of tree in late 2022/early 2023; nest

																		was gone by early survey in 2023.
66	#3 Rd on east side of Hwy 95 - Akisqnuk lands	5771 47	55858 38	Y	Presumed	Y	Y	Y	Presumed	Y	N	Y	Unknown	Y	unknown	Y	unknown	Fledglings only known from 2020, but assumed to have fledged early 2021, 2023-2025.
67	North of Funtasia, west side of Hwy 95	5781 67	55839 67	Y	N	Y	N	Y	Presumed	N	N	Y	Y	Y	Y	Y	Y	Successful since 2023.
68	Funtasia mini golf course	5813 31	55772 84	Y	Presumed	Y	Presumed	Y	Presumed	Y	Y	Y	Y	Y	Y	Y	Y	Produced fledglings most or all years.
69	Across from Fairmont Resort Sign	5813 43	55764 94	NA	NA	NA	NA	NA	NA	N	N	Y	N	N	N	N	N	No nest use.
70	Fairmont Airport 1	5801 21	55748 69	N	N	Y	N	N	N	Y	Y	N	N	N	N	Y	Y	Fledglings in 2022 and 2025.
71	Fairmont Airport 2	5801 00	55751 64	NA	NA	NA	NA	Y	Presumed	N	N	Y	Y	N	N	N	N	Fledglings known from 2023 only.
72	Downey Farm	5801 26	55742 94	NA	NA	NA	NA	NA	NA	NA	NA	Y	Y	Y	unknown	N	N	Fledglings known from 2023 only.
73	Columere marina - Columbia Lake	5803 25	55714 80	Y	Y	N	N	N	N	N	N	Y	N	Y	unknown	Y	N	Limited use, possibly fledglings produced in 2024.
74	Lot 48 Nest 2	5819 33	55704 26	N	N	N	N	Y	N	N	N	N	N	Y	Y	Y	Y	Fledglings in 2024 and 2025. Only a few sticks observed in nests in years prior.
75	Lot 48 Nest 1	5820 17	55701 20	Y	Presumed	Y	N	N	N	Y	N	Y	Unknown	NA	NA	Y	Y	Fledglings confirmed in 2025 only.
76	South of Lot 48	5826 29	55690 05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Y	N	Nest in 2025.

77	Private property - SW end Columbia Lk - boat access only for viewing	581153	5563175	NA	NA	N	N	N	N	N	N	Y	Unknown	NA	NA	N	N	Early nest in 2023 only.
78	Pole 53-02 Hydro Line above west side of Columbia Lk	580828	5565189	N	N	Y	Presumed	Y	Presumed	N	N	NA	NA	Y	Y	Y	unknown	Limited data available due to inaccessibility of nest site.
79	Pole 54-03 Hydro Line above west side of Columbia Lk	579707	5559795	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Y	N	Adult osprey seen bringing sticks to nest on metal pole late in 2025 season. Recommendation made to BC Hydro Jan 2026 to add nest pole/platform here. New nest in 2025.
80	Pole 54-04 Hydro Line above west side of Columbia Lk: 1	580912	5559630	N	N	N	N	Y	Presumed	NA	NA	NA	NA	Y	N	NA	NA	Nest pole replaced with metal pole late 2024/early 2025; nest was not present during 2025 monitoring.
81	Pole 53-04 Hydro Line above west side of Columbia Lk	580941	5557777	Y	N	N	N	N	N	NA	NA	NA	NA	NA	NA	NA	NA	Nest pole replaced with metal pole late 2024/early 2025; nest was not present during 2025 monitoring.
82	Canal Flats north	585268	5556139	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Y	N	New nest in 2025.

83	Canal Flats	585723	5555701	Y	Presumed	Y	Presumed	Y	Presumed	Y	Y	Y	Y	Y	Y	Y	Y	Produced fledglings most or all years.
84	Hwy 93/Col. Lk Rd.	579064	5571946	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	N	N	New nest in 2025.

Appendix 3. Summary of Wildlife Habitat Areas and Wildlife Habitat Features approved and submitted for Species at Risk and sensitive ecological communities in the Columbia Valley, 2020–2026.

Species/Ecological Community (EC)	General Location	Zone	Easting	Northing	Date application submitted	Designation	Feature Type	Feature Area (ha)	WHA tag	WHA polygon name in BC data	Status (as of Feb 2026)	Comments
Alkali saltgrass EC	Findlay Creek FSR	11	570524	5553321	2/21/2021	WHA	ecological community	101.4	4-379	Findlay Creek North - 14066	In gov't WHA proposal layer	Livestock grazing and use by ATVS are causing damage the sites. This community is rapidly declining in BC. Management actions (e.g., fencing, restoration, signage) should be put in place to halt the damage.
Alkali saltgrass EC	Findlay Creek FSR	11	571605	5550362	2/21/2021	WHA	ecological community	119.7	4-380	Findlay Creek South - 14067	In gov't WHA proposal layer	Livestock grazing and use by ATVS are causing damage the sites. This community is rapidly declining in BC. Management actions (e.g., fencing, restoration, signage) should be put in place to halt the damage.
Alkali saltgrass EC	Findlay Creek FSR	11	581333	555140	1/7/2022	WHA	ecological community	12.7	4-381	Findlay Creek East - 14068	In gov't WHA proposal layer	
Mountain Goat	Canyon Creek	11	502483	5675354	2020	WHF	mineral lick	242.8			approved	
Mountain Goat	Toby Creek	11	562017	5593736	2020	WHF	mineral lick	493.2			approved	
Mountain Goat	Dutch Creek	11	564134	5567817	2/16/2024	WHF	mineral lick	246.6			approved	
American Badger	Rushmere 1	11	574763	5584971	4/5/2023	WHA	concentration of burrows	4.1			submitted	Gov't requested WHA boundaries be adjusted to include soil classification polygons in boundary delineation. Soil classification data wasn't used since soils data did not align with the badger burrows located through ground-truthing.

American Badger	Rushmere 2	11	576513	5583335	4/5/2023	WHA	concentration of burrows	3.3			submitted	
American Badger	Steamboat 1	11	562634	5608561	3/30/2024	WHA	concentration of burrows	46.7			re-submitted	All Steamboat WHAs boundaries submitted in Feb 2023 were expanded and resubmitted in 2024 due to many additional burrows discovered in 2023.
American Badger	Steamboat 2	11	561647	5609511	3/30/2024	WHA	concentration of burrows	1.6			re-submitted	
American Badger	Steamboat 3	11	561822	5608911	3/30/2024	WHA	concentration of burrows	4.1			re-submitted	
American Badger	Steamboat 4	11	560861	5608392	3/30/2024	WHA	concentration of burrows	0.6			re-submitted	
American Badger	Dry Gulch 1	11	566320	5605328	3/30/2024	WHA	concentration of burrows	34.7			submitted	
American Badger	Dry Gulch 2	11	567408	5603224	3/30/2024	WHA	concentration of burrows	60.3			submitted	
American Badger	Findlay Creek 1	11	577080	5556383	February 2026	WHA	concentration of burrows	76.9			Submitting Feb 2026	
American Badger	Findlay Creek 2	11	576614	5555452	February 2026	WHA	concentration of burrows	5.3			Submitting Feb 2026	
American Badger	Columbia Valley	11	n/a	n/a	February 2023	WHFs	burrows	n/a			approved	510 of the 614 burrow locations submitted for 2022 and 2023 were approved as WHFs.
American Badger	Columbia Valley	n/a	n/a	n/a	February 2024	WHFs	burrows	n/a			approved	
American Badger	Columbia Valley	n/a	n/a	n/a	February 2026	WHFs	burrows	n/a				Data collected in 2025. 206 points with multiple burrows at many points; 2 points are non-functioning features. Total WHF Count (functioning burrows) = 749.
American Badger	Columbia Valley	n/a	n/a	n/a	February 2026	WHFs	burrows	n/a				Data collected in 2024. 532 points total with multiple burrows at many points; 4 points non-functioning features. Total WHF Count (functioning burrows) = 1,801.