

**REPORT TO REGIONAL WATER SUPPLY COMMISSION  
MEETING OF WEDNESDAY, JUNE 16, 2021**

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**SUBJECT**     **Greater Victoria Water Supply Area Wildlife Program**

**ISSUE SUMMARY**

To provide the Regional Water Supply Commission (Commission) with an update on the Greater Victoria Water Supply Area (GVWSA) wildlife program.

**BACKGROUND**

As with all GVWSA programs in the Watershed Protection division, the wildlife management program is centered on mitigating risk to source water quality, and regulatory compliance.

Wildlife and domestic animals can carry disease-causing organisms and faecal coliform bacteria that pose a risk to human health, and act as a vector for introducing these organisms in the water supply reservoirs. The impetus for a program to manage wildlife and domestic animals in the GVWSA was the *Toxoplasmosis* outbreak in 1995 (that affected 110 Greater Victoria residents) that was linked to Humpback Reservoir<sup>1,2</sup> prior to adding ultraviolet disinfection to the water treatment process. It was not determined whether it was domestic or feral cats, or cougars that caused the contamination of the Humpback Reservoir drinking water.

Beyond managing domestic and wildlife species of concern for drinking water quality, the Capital Regional District (CRD) has an obligation to ensure water supply and watershed management activities meet wildlife regulatory requirements in terms of fish and fish habitat (federal *Fisheries Act*), streams and aquatic habitat (provincial *Water Sustainability Act*), protection of birds and nests (international *Migratory Birds Convention Act* and BC *Wildlife Act*), rare and endangered species (federal *Species at Risk Act* and provincial *Wildlife Act*) and provincial guidelines.

**Management of Undesirable Wildlife**

**Canada Geese**

Each spring a number of Canada geese leave the agricultural, institutional lands and marine shoreline areas where they overwinter to nest on waterbodies in the GVWSA. A second pulse of geese arrive in June seeking large waterbodies where they can safely reside while they are molting their flight feathers. The wildlife management objective is to minimize Canada geese faecal material entering reservoirs by controlling the total number of geese on reservoirs and keeping geese away from the Sooke Lake Intake Tower. This is achieved by:

1. Locating nests and adding the eggs (shaking the egg to prevent it hatching) in spring;
2. Hazing (scaring and potential kill of a few) geese out of and away from the southern basin of Sooke Lake Reservoir

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<sup>1</sup> Canada Communicable Disease Report Vol 21-18, 30 September 1995. [e-2118.pdf \(cdc.gov\)](#);

<sup>2</sup> Bowie WR et al. 1997: Outbreak of toxoplasmosis associated with municipal drinking water. The Lancet 350: 173-177. [Outbreak of toxoplasmosis associated with municipal drinking water - ScienceDirect](#)

All methods must be conducted under Environment Canada permits that are secured annually. While there is no ability to stop geese from arriving from outside of the GVWSA each year, the egg addling program appears to be successful in keeping the total number of geese seeking to breed in the GVWSA low and over time reducing the number (geese look to nest where they were raised). Appendix A shows the trend in Canada geese nests and eggs found and addled annually.

### **Beaver**

While beaver may have been present in the GVWSA historically, staff who have worked in the GVWSA for several decades had never seen a beaver on the water supply reservoirs. This changed in 2006 when signs of beaver feeding were detected on Sooke Lake Reservoir. In discussion with Island Health, the Chief Medical Health Officer issued a letter to the CRD directing it to not allow beaver to establish in the GVWSA (Appendix B).

When consistent beaver sign is detected, a licensed trapper with the required provincial *Wildlife Act* permits traps the beaver. Over the past 15 years, 15 beavers have been trapped and removed or killed, and one beaver was found dead (average of one beaver trapped per year). All beavers trapped in the GVWSA are sent to the provincial animal health laboratory for testing for disease-causing organisms. To date none of the beaver tested have been carrying a disease of concern, but continued testing is considered a prudent risk management approach.

### **Bullfrogs**

The purpose of the American bullfrog control program is to prevent this introduced invasive species from spreading into the GVWSA and Sooke Hills Wilderness Regional Park (SHWRP). A 2009 study completed by the Centre for Coastal Health concluded that there was negligible risk to public health from bullfrogs, however there is a potentially very large risk to native and endangered amphibian species that should continue to be considered. The strategy that has been implemented since 2007 is to remove bullfrogs from a control corridor outside of the GVWSA within Langford and Colwood. To date the program has been successful in keeping bullfrogs out of the GVWSA and SHWRP however efforts to push the population further away outside the corridor have not been realized. Appendix B shows the number of bullfrogs captured in the corridor per year. The work is conducted by a contractor and funded 50% by Regional Parks and 50% Regional Water Supply Service. The Watershed Protection biologist monitors water bodies on CRD lands to provide additional assurance that bullfrogs have not moved beyond the control corridor. New technology “eDNA” to look for bullfrog DNA in water samples as a simpler method to detect bullfrog presence in waterbodies was field tested in collaboration with University of Victoria in 2017. Unfortunately the results were not reliable enough to replace the current in person methods of detecting bullfrogs.

### **Domestic Animals and Sick Wildlife**

Domestic animals (e.g. cats, dogs) are not allowed to be brought in or released in the GVWSA under CRD Bylaw 2804. Where domestic animals are found within catchment areas, Watershed Protection staff will work with CRD Animal Control to capture and remove them. If wildlife that is found to be sick or suffering are found, the Wildlife Conservation Officer Service is called for assistance. This occurs only rarely. Conservation Officers also patrol the GVWSA on occasion during hunting season.

### Wildlife Regulatory Compliance

The GVWSA is a contiguous 20,610 hectare (ha) forested natural area on southern Vancouver Island close to Victoria (see Appendix C overview photography). Along with regional and provincial parks, the area provides important habitat for wildlife on southern Vancouver Island. Given the lack of public access, the GVWSA may provide an even greater refuge for wildlife as a large protected area in otherwise relatively developed, busy and noisy forests near Victoria.

The regulatory environment regarding wildlife in BC is complex with overlapping acts and regulations at provincial and federal levels, as well as gaps. The following is a summary of the pertinent legislation, how operational compliance is being achieved and other best management practices.

**Migratory Birds Convention Act** – International (matching federal legislation in Canada and the US)

<i>What is Protected/Required</i>	<i>CRD's Management</i>
<ul style="list-style-type: none"><li>• Migratory birds, their nests and eggs</li><li>• Includes many birds present in the GVWSA including common birds like the robin</li></ul>	<ul style="list-style-type: none"><li>• Up until 2019 chance find management of nests</li><li>• Adoption of GVWSA marbled murrelet mapping provided by provincial researchers, attention to large trees in those areas and avoiding disturbance during nesting season (May – August)</li><li>• Starting in 2020, migratory bird nesting and habitat surveys ahead of projects that create noise or disturb vegetation e.g. gravel crushing, forest fuel management, drainage structure upgrades. Where active bird nests are found, projects are delayed until after the birds have left the nest.</li><li>• Exclusion netting on the Sooke Lake Intake Tower to avoid birds (swallows) nesting on the tower/bridge.</li></ul>

**Canadian Fisheries Act – Federal**

<i>What is Protected/Required</i>	<i>CRD's Management</i>
<ul style="list-style-type: none"> <li>• Fish, fish eggs, fish habitat<sup>3</sup></li> <li>• Fisheries &amp; Oceans fish protection measures are fully implemented during instream projects or a Request for Review must be submitted.</li> <li>• Instream works are only allowed when stream conditions are dry or during regional timing windows of least risk to fish and fish habitat (cutthroat and rainbow trout: August 15 – September 15)</li> <li>• Prior to replacing/upgrading/removing stream drainage structures, CRD must assess the stream for fish presence and fish habitat. The requirements for fish passage are determined by a qualified professional biologist and incorporated into structure design.</li> </ul>	<ul style="list-style-type: none"> <li>• Fish inventories have been conducted in the main lakes/reservoirs in the GVWSA.  The primary fish species found in the GVWSA are cutthroat trout and stickleback. Dolly varden, kokanee and sculpin are present in Sooke Lake Reservoir. Rainbow trout were introduced to a number of lakes by the Province in the 1990's. Brown bullheads were introduced to water supply reservoirs when the original dams were constructed.</li> <li>• Water releases to Sooke River and Goldstream River during the summer to supplement flows for fish and aquatic ecology. A 10 year study of fish and fish habitat in Sooke River was conducted with T'Sou-ke First Nation after reservoir expansion.</li> <li>• 2017 – 2020, Under a capital project, \$280,257 has been spent assessing fish and fish habitat in all streams subject to road crossings in the GVWSA. The results are used to inform replacement, upgrade and deactivation of stream crossings.</li> <li>• Careful management of instream works including worksite isolation techniques, fish salvage and exclusion, wastewater management, sediment and erosion control, and use of a qualified environmental monitor on larger projects.</li> </ul>

<sup>3</sup> The protection of all fish is a federal responsibility, however the management of freshwater (non-anadromous) fish has been devolved to the provinces. The *Water Sustainability Act* is the main method for protection of freshwater fish habitat on private land.

**Water Sustainability Act – Provincial**

<i>What is Protected/Required</i>	<i>CRD's Management</i>
<ul style="list-style-type: none"> <li>Streams, aquatic ecosystems, riparian areas</li> <li>No work within streams is allowed without provincial notification or approval</li> <li>Instream works only when stream conditions are dry or during regional timing windows</li> <li>Compliance with required design elements for stream crossing structures (e.g. design capacity, fish passage, stream stability etc.)</li> <li>Compliance with additional protection measures for Sensitive Streams as defined in the Regulation (i.e., Goldstream River)</li> <li>Compliance with additional measures required by the Habitat Officer during the review process.</li> </ul>	<ul style="list-style-type: none"> <li>An application for a Change Approval or Notification of Instream Work under the <i>Water Sustainability Act</i> is submitted each year by a professional forester for all instream works in the GVWSA. The application relies on fisheries biologist stream assessments and established CRD Best Management Practices. Any conditions or issues are discussed with the provincial Habitat Officer. In 2021 application was submitted for instream work in 32 crossings.</li> <li>Stream crossing structures are being upgraded based on a priority matrix that considers the degree to which a structure is deteriorated, undersized (including climate change projections), a risk to water quality, a barrier to fish passage, and other factors.</li> <li>Significant investments are being made to ensure fish passage for crossing structures and stream restoration projects. These efforts include the involvement of a hydrologist and qualified registered professional biologist during project planning and construction phases.</li> </ul>

### Species-at-Risk Act (SARA) (Federal)

<i>What is Protected/Required</i>	<i>CRD's Management</i>
<ul style="list-style-type: none"> <li>Species-at-risk (SAR) must not be killed, harmed, harassed, captured or possessed.</li> <li>The residence of one or more individuals must not be damaged or destroyed</li> <li>No part of critical habitat for a listed species may be destroyed.</li> <li>Listed species-at-risk under SARA include fish, birds, animals, plants and molluscs. There are a total of approximately 262 SARA listed species in BC.</li> <li>There are thought to be approximately 28 SARA listed species in the GVWSA (see Appendix D for a listing)</li> <li>Technically SARA only applies to migratory birds and fish on private land in BC. This means 11 bird species are legally protected in the GVWSA under SARA.</li> <li>The most common listed species in the GVWSA are: northern goshawk, western screech owl, olive-sided flycatcher, northern red-legged frog and western toad.</li> </ul>	<ul style="list-style-type: none"> <li>Collation of information on GVWSA species-at-risk (SAR) and species of concern into species accounts (2019)</li> <li>Field studies in 2019 and 2020 found key indicator species preferred old forest but also younger forest with structural diversity</li> <li>SAR habitat mapping of marbled murrelet, northern goshawk, and western screech owl in the GVWSA (2020)</li> <li>SAR habitat assessment prior to ground or vegetation disturbing projects.</li> <li>Exclusion fencing to avoid western toads (species of concern) taking up residence in burn piles or crossing Sooke Main.</li> </ul>

### Wildlife Act (Provincial)

<i>What is Protected/Required</i>	<i>CRD's Management</i>
<ul style="list-style-type: none"> <li>Any active bird nest</li> <li>Nests of eagles, falcons, osprey and herons whether occupied or not</li> <li>Any egg or bird from injury, molestation or destruction</li> <li>All vertebrates from direct harm</li> </ul>	<ul style="list-style-type: none"> <li>As above for other bird species</li> <li>Mapping of significant wildlife habitat features – e.g. bear dens, stick nests</li> <li>Chance find reporting and management</li> <li>Recording wildlife sightings and notifying staff and contractors of wildlife activities in order to avoid human-wildlife conflicts.</li> </ul>

### Provincial Species-at-Risk Information

<i>What is Protected/Required</i>	<i>CRD's Management</i>
<ul style="list-style-type: none"><li>• BC maintains a species-at-risk listing which includes all the SARA listed species as well as additional species and plant communities; in red, blue and yellow categories. The red list alone contains 782 species and plant communities.</li><li>• A BC <i>Endangered Species Act</i> is under development</li><li>• Professional staff and consultants (e.g. foresters, forest technicians, biologists) must consider the relevant wildlife and species-at-risk in their work (plans, prescriptions, strategies and policies).</li></ul>	<ul style="list-style-type: none"><li>• As above.</li></ul>

The Watershed Protection division has had one professional wildlife biologist to manage and implement a wide variety of the GVWSA wildlife program functions since 2000. A greater emphasis in ensuring breeding birds are not disturbed on their nests during the bird breeding window (March 26 to August 17), as well as assessing work sites for species-at-risk prior to operations, is increasing the workload in the wildlife program. For the first time in 2021, a Canada Summer Jobs grant was applied for to help fund an assistant to the program for the summer season.

### Looking Forward

Expectations for the wildlife program are increasing as the large grey areas within the wildlife regulatory environment become more defined in BC (provincial endangered species legislation in development) and with increasing social expectations for protecting wildlife while operating in a natural environment. The division will continue to require field assistance and contract subject matter experts to assess and advise the CRD on fish, wildlife and species-at-risk issues relating to operational work in the GVWSA.

Continuing the effort to map high value habitat for species-at-risk and of special concern will help staff better integrate wildlife management into operational projects and will be a key element in the eventual development of a wildlife management plan for the GVWSA. As capabilities in these areas build, chance finds of species, nests or critical habitat before or during operations will continue to need to be accommodated.

Fish and wildlife are an integral part of the forested watershed ecosystem that sustains Greater Victoria's source water and provides biodiversity to the region. Beyond a mandate to protect source water, the guiding principles of management of the GVWSA call for stewardship of biodiversity, species, populations and their habitat.<sup>4</sup> Despite a gap in legislation for the GVWSA

<sup>4</sup> 1999 Strategic Plan for Water Management, volume 3. Watershed Management.

in terms of species-at-risk, the wildlife program is working to establish and follow best management practices to ensure operations mitigate risks to breeding birds, fish and fish habitat, biodiversity and species-at-risk.

## **CONCLUSION**

The wildlife program of the Greater Victoria Water Supply Area (GVWSA) provides management of undesirable species that may pose a risk to water quality, as well as the conservation of fish, wildlife, species-at-risk and habitat according to a complex provincial and federal regulatory environment.

The GVWSA is a refuge for wildlife in an increasingly developed southern Vancouver Island. Most southern Vancouver Island wildlife species are likely represented in the GVWSA and the area is prized by residents for these ecological values as well as the high quality drinking water it provides for Greater Victoria.

## **RECOMMENDATION**

That the Regional Water Supply Commission receive the report for information.

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## **ATTACHMENTS**

- Appendix A: Canada Goose and American Bullfrog Figures
- Appendix B: Letter from Chief Medical Health Officer Regarding Beaver
- Appendix C: GVWSA Protected Lands on Southern Vancouver Island
- Appendix D: SARA Listed Species Expected in the GVWSA