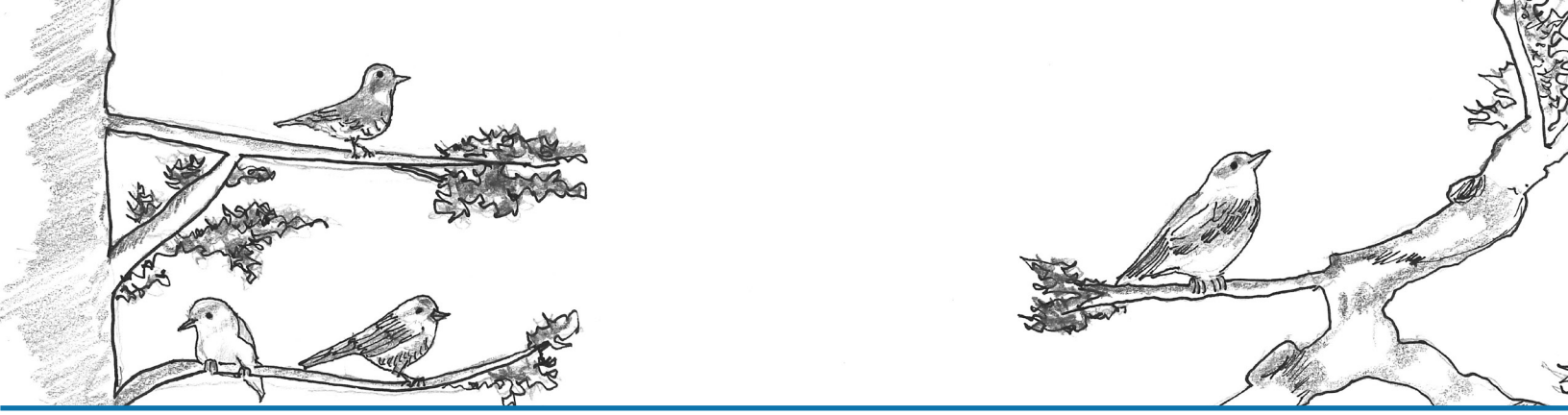


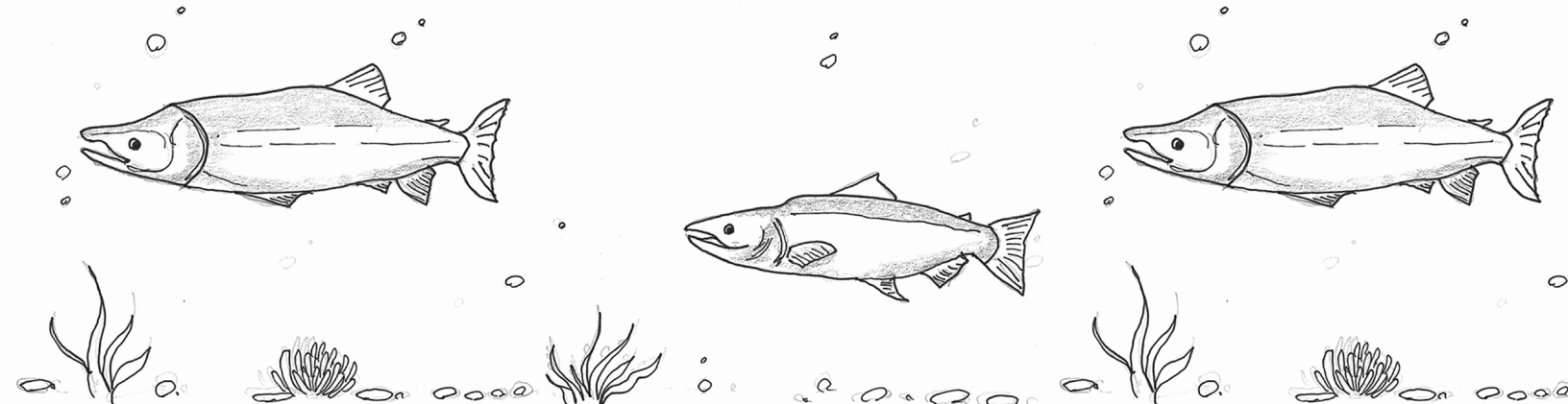
Time Environmental Work for Least Risk and Damage

Extended Version

City of Campbell River

VANCOUVER ISLAND UNIVERSITY

2020



Planning an Outdoor Project?

These general environmental work windows are a good place to start. Timing work within these periods of least risk can help to: minimize harm to habitat, fish and wildlife, keep the project in compliance with environmental laws and reduce project complexity and costs. Best work, or least risk, windows are when fish, birds and mammals are not spawning, nesting or raising young.

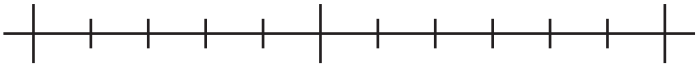
= Best Work Windows

Note: Even when work can be carried out within the "best work window," permits or notifications to the relevant government agencies may still be required, including a City of Campbell River Environmental Development Permit. Sometimes, projects have a number of environmental features and there is no ideal best time. A Qualified Environmental Professional can help to minimize damage, ensure the right permits are in place and keep your project on track.

- Intertidal work

Surf Smelt*

Jan. Feb. Mar. Apr. May Jun. Jul. Aug. Sep. Oct. Nov. Dec.

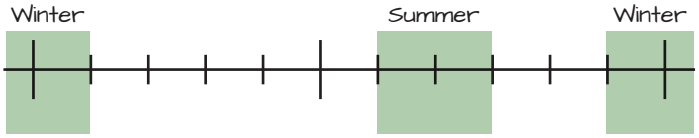


*There is no best work window.

Surf smelt spawn year-round on gravel and sand beaches near the high tide line. Works proposed in suitable habitat should first test the sands for the presence of eggs and embryos. Surf smelt and Pacific sand lance are important forage fish to humpback and killer whales, marbled murrelets, Chinook and coho.

Summer and Winter Marine Windows

Jan. Feb. Mar. Apr. May Jun. Jul. Aug. Sep. Oct. Nov. Dec.

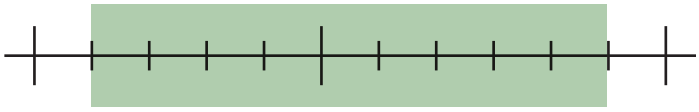


The Department of Fishers and Oceans recommends both a summer and winter timing window for projects occurring in near-shore marine waters in the Campbell River area (excluding the Campbell River estuary).
Note: Forage fish such as Pacific sand lance and surf smelt have their own timing windows.

- Intertidal work

Pacific Sand Lance

Jan. Feb. Mar. Apr. May Jun. Jul. Aug. Sep. Oct. Nov. Dec.

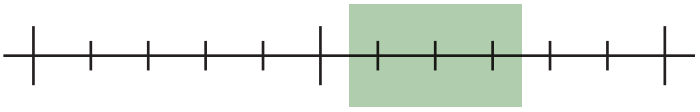


This forage fish lives near the shore year-round and spawns near the high tide line. Sand lance make up at least 50% of the diet of adult Chinook salmon.

- Instream work

Salmon, General

Jan. Feb. Mar. Apr. May Jun. Jul. Aug. Sep. Oct. Nov. Dec.

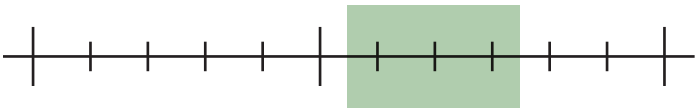


This is the general fisheries timing window for instream work on Vancouver Island, including ditches where salmon are often found. Depending on the species of fish present, this work window can sometimes be adjusted. Any land disturbance within 30 metres of a watercourse triggers the City's streamside development permit process outlined in the Official Community Plan.

- Dam removals

Beaver

Jan. Feb. Mar. Apr. May Jun. Jul. Aug. Sep. Oct. Nov. Dec.

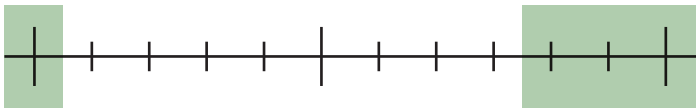


Removing or breaching beaver dams to reduce nuisance flooding is generally regulated by the Province. Emergency works outside of the timing window can result in beaver and fish death. Consultation with regulators and professionals is recommended. Stream keepers and Greenways Land Trust work with the Department of Fisheries and Oceans to determine if fish passage is blocked by beaver dams.

- Work near nest trees

Great Blue Heron

Jan. Feb. Mar. Apr. May Jun. Jul. Aug. Sep. Oct. Nov. Dec.

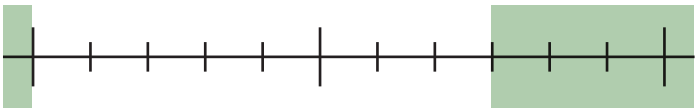


Herons are particularly susceptible to disturbance and construction noise early in the nesting season. Their nests are protected year-round under the provincial *Wildlife Act*. The City is working to establish development permit areas around heron nest sites and colonies to reduce habitat loss and disturbance. Both the provincial and federal government consider herons at at-risk species.

- Work near nest trees

Bald Eagle

Jan. Feb. Mar. Apr. May Jun. Jul. Aug. Sep. Oct. Nov. Dec.

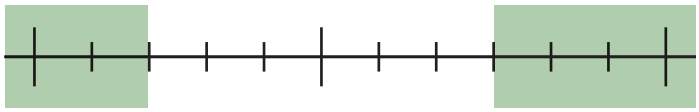


Eagle nests are protected year-round under the provincial *Wildlife Act*. In Campbell River, the City's Official Community Plan has also established 60-metre development permit areas that are meant to remain as a naturally vegetated buffer. Development permit areas apply to all bald eagle nest trees whether or not the nest is currently active. They also apply to known nest trees where the nest has fallen.

- Vegetation removals

Breeding Birds

Jan. Feb. Mar. Apr. May Jun. Jul. Aug. Sep. Oct. Nov. Dec.

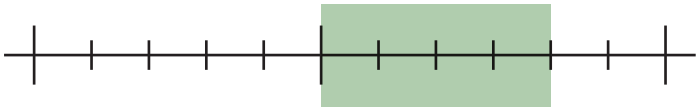


This general window covers all small birds from thrushes to warblers and vireos. Many perching birds have more than one brood in a season, and all bird nests while occupied are protected by provincial and federal laws. If vegetation must be removed during the nesting window, the City recommends that a qualified professional completes a nest search prior to the work to ensure that active nests are not destroyed.

- Instream work

Pond Breeding Amphibians

Jan. Feb. Mar. Apr. May Jun. Jul. Aug. Sep. Oct. Nov. Dec.



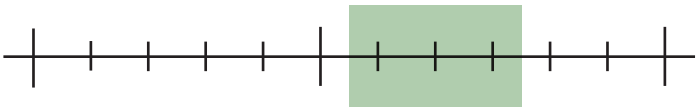
Amphibians are highly variable as there are a number of sensitive periods including breeding and migration times from water to land. Some species remain in the water all year round, complicating best work windows. This document focuses on the least sensitive period: after breeding and before fall migration. A provincial permit is required before catching or salvaging amphibians. Note that salvage is not permitted in the winter during hibernation. Modifications to amphibian habitat may also require authorization under the *Water Sustainability Act* and trigger the City of Campbell River's Streamside Development Permit process.

Additional Terrestrial & Freshwater Best Work Windows

- Instream work

Steelhead

Jan. Feb. Mar. Apr. May Jun. Jul. Aug. Sep. Oct. Nov. Dec.

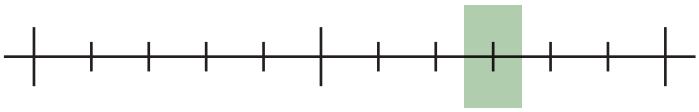


Steelhead are not common in local creeks, but they can be found in the Campbell River. They are an anadromous coastal rainbow trout that usually returns to fresh water to spawn after living two to three years. They can spawn up to three times before they die and on average, live four to six years.

- Instream work

Rainbow Trout & Cutthroat Trout

Jan. Feb. Mar. Apr. May Jun. Jul. Aug. Sep. Oct. Nov. Dec.

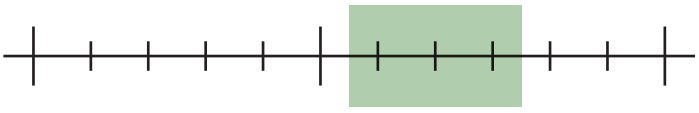


Rainbow trout are a land-locked freshwater steelhead and they are not common in local urban streams. Cutthroat are very common and are often found in the same areas as coho. Larger cutthroat can eat young coho, eggs and fry. Cutthroat are popular gamefish, and their common name refers to the distinctive red coloration on the underside of the lower jaw. They spawn in the spring, usually in small to moderately large, clear, well-oxygenated shallow rivers with gravel bottoms. Their average maximum lifespan is 10 years.

- Instream work

Coho

Jan. Feb. Mar. Apr. May Jun. Jul. Aug. Sep. Oct. Nov. Dec.

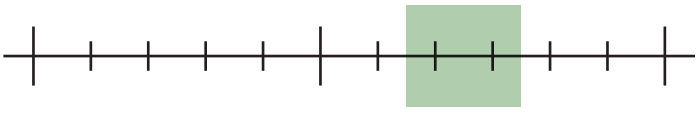


Coho salmon are in all of Campbell River's urban streams throughout the year, and they are very sensitive to habitat changes and stormwater pollution. Returning adults can be hard to see as they migrate very far up small steams and even into ditches. Juveniles rear in creeks/rivers for more than a full year before they migrate downstream to smolt in estuaries before they enter the ocean in the spring. Winters are often spent in slow-flowing off-channel sections of the river or creeks. Where there is water in the summer in a small creek, there will likely be coho. Coho are enhanced by the Department of Fisheries and Oceans with 2,500 fish released in the fall by local stream keepers into Simms, Nunns, Mohun and Menzies Creeks.

- Instream work

Chinook

Jan. Feb. Mar. Apr. May Jun. Jul. Aug. Sep. Oct. Nov. Dec.

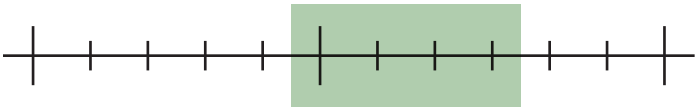


This is our local Tyee! (when over 30 pounds). Also known as spring salmon, Chinook are a favourite in the Campbell River. Chinook require large systems and larger diameter gravel to spawn although a few have been found in Simms Creek. They typically head to sea in the spring after hatching, however in larger systems that have a lake and colder waters, they can rear for over a year in freshwater before they head to salt water. Campbell River's Tyee pool is world-renowned for producing huge fish. Chinook often have an average life span of up to five years, but can live to eight years.

- Instream work

Chum

Jan. Feb. Mar. Apr. May Jun. Jul. Aug. Sep. Oct. Nov. Dec.

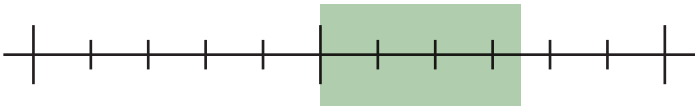


Sometimes called dog salmon. Chum typically spawn in the lower reaches of water systems and their young migrate to the ocean quickly upon emergence in the early spring. Chum are found primarily in the Campbell River as well as in Simms, Nunns, Kingfisher and Menzies Creeks. Adults are easily distinguished by large size and stripes on the sides of their bodies. They are often the last salmon to spawn in the fall although some systems have early runs. Chum generally live three to five years, but can live up to seven years.

- Instream work

Sockeye & Kokanee

Jan. Feb. Mar. Apr. May Jun. Jul. Aug. Sep. Oct. Nov. Dec.

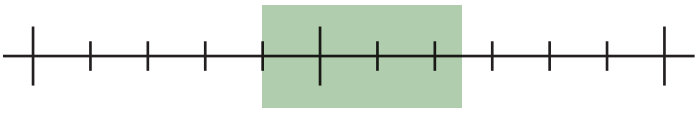


Sockeye and kokanee are very uncommon in Campbell River streams and creeks although there was a run of sockeye on Quadra Island and kokanee are reported to be in the Village Bay Lake system. The majority of sockeye spawn in rivers near lakes and juveniles will spend one to two years in the lake before migrating to the ocean, although some populations will migrate to saltwater in their first year. Kokanee are the land-locked form of sockeye salmon. They spawn in streams with young migrating to a lake to spend most of their adult lives. Kokanee live for four years in the lake before heading back upstream to spawn and die.

- Instream work

Pink Salmon

Jan. Feb. Mar. Apr. May Jun. Jul. Aug. Sep. Oct. Nov. Dec.

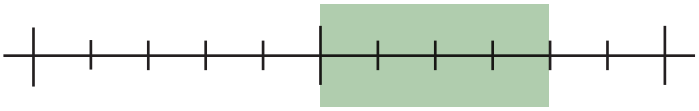


Pink salmon are usually the first salmon to return to freshwater to spawn in August or early September. Many people enjoy catching them alongside the Campbell River in late summer as they make their way up to the Quinsam River to spawn. Pinks are sometimes found in Simms and Willow Creeks, especially during years when too many return to the Campbell River and they spill over to other systems. Pinks typically spawn in areas of smaller gravel, and their young migrate to the ocean quickly upon emergence in the early spring. Pinks are the smallest and most abundant of the Pacific salmon and they have a two year life span.

- Instream work

Northwestern Salamander

Jan. Feb. Mar. Apr. May Jun. Jul. Aug. Sep. Oct. Nov. Dec.

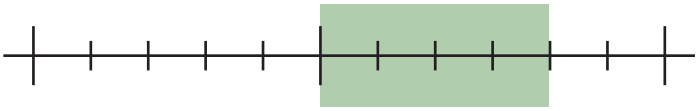


Larvae and neotenic adults (adults retaining larval characteristics) hibernate underwater and are present in water year round (salvage needed; but salvage not permitted in winter). Eggs masses can be the size of a small grapefruit. Each egg is individually covered in jelly and the entire mass is covered in another protective layer of jelly. Aquatic larvae are variable in appearance but often blunt nosed. Neotenic adults remain in ponds while metamorphosed adults live in moist forests and wooded areas.

- Instream work

Rough-skinned Newt

Jan. Feb. Mar. Apr. May Jun. Jul. Aug. Sep. Oct. Nov. Dec.

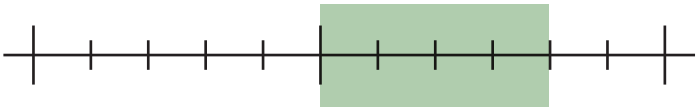


Some adults hibernate underwater so this species may be present in water year round (salvage needed; but salvage not permitted in winter). Although very toxic if ingested (hence the bright warning coloration on the underside), these newts rarely release their poison. Eggs are laid singly in ponds and are usually well hidden. Hatchlings and larvae are aquatic while most adults live in moist forests. This is a relatively common newt that is sometimes seen out and about even in daylight.

- Instream work

Long-toed Salamander

Jan. Feb. Mar. Apr. May Jun. Jul. Aug. Sep. Oct. Nov. Dec.

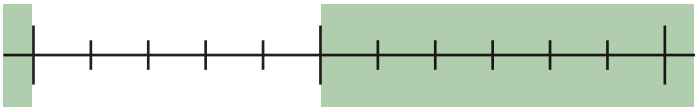


Hibernates on land although larvae may overwinter in water at high elevations so may be present in water year round (salvage needed; but salvage not permitted in winter). This salamander is regarded as one of the most versatile in the Pacific Northwest in terms of habitat, which spans grasslands and woods to disturbed areas. Eggs laid in seasonal pools and shallow lake edges can be single or in small clusters, with a very thick layer of jelly. Adults stay underground and can be found under rocks and logs in the rainy season.

- Instream work

Western Toad

Jan. Feb. Mar. Apr. May Jun. Jul. Aug. Sep. Oct. Nov. Dec.

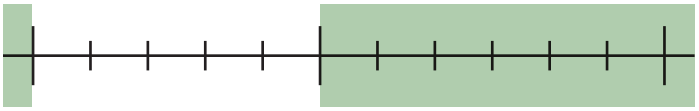


Hibernates on land. Eggs are laid in long thin strips of jelly on the bottom of ponds less than 0.5 metres deep with tadpoles living in the shallowest warmest areas of water. This warty amphibian has notable oval shaped glands behind the eyes, even in toadlets, which excrete a mildly toxic substance. Here, toads are from a non-calling population. This species is known for moving extensively between aquatic breeding sites and terrestrial habitats for foraging and hibernating, making them particularly vulnerable to habitat fragmentation and road kill. Combined with fungal skin disease, they are considered a Species at Risk.

- Instream work

Northern Red-legged Frog

Jan. Feb. Mar. Apr. May Jun. Jul. Aug. Sep. Oct. Nov. Dec.

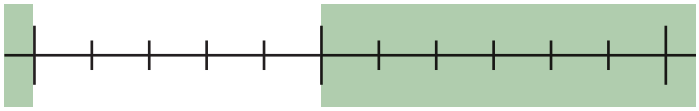


Individual eggs are surrounded by a wide layer of jelly, and the egg masses range in size from a grapefruit to a cantaloupe. This is our big frog of the Pacific Northwest lowlands and it gets its name from the translucent red skin on the underside of its hind legs. It prefers cool breeding conditions in winter or early spring. Leaving shade trees around ponds and slow streams helps maintain these cool water conditions. Adults live in moist forests and forested wetlands sometimes far from water and hibernate on land. Sensitivity to pollution, American bullfrog predation, fungal skin disease and urbanization are the reasons this is a Species at Risk.

- Instream work

Pacific Treefrog

Jan. Feb. Mar. Apr. May Jun. Jul. Aug. Sep. Oct. Nov. Dec.



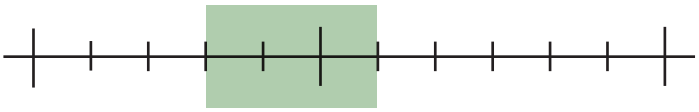
Hibernates on land. Eggs have a thin layer of jelly, and they are packed in small clusters. The big-bellied tadpoles can be variable in colour and they prefer the warmest shallowest water. Treefrogs are our smallest frogs. They are abundant, come in a variety of colours and are very vocal for long periods of time in the spring. One male usually acts as a chorus master beginning the calls, with others chiming in. Adults live in wet meadows, riparian areas and even well away from water in brush and woods.

Invasive Plant Removal Timing Windows

- Control efforts

Scotch Broom

Jan. Feb. Mar. Apr. May Jun. Jul. Aug. Sep. Oct. Nov. Dec.

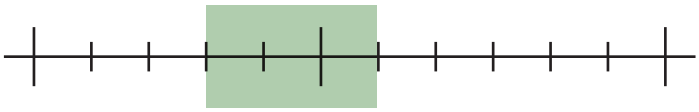


Scotch broom is a common invasive yellow-flowered shrub that readily spreads in disturbed soils. It crowds out native vegetation creating a monoculture that is of little value to wildlife, and older bushes are particularly flammable adding to the risk of wildfire. In spring, broom channels its energy into flowering and this is the best time to cut it because it is less likely to re-sprout. Given that broom produces extensive seeds that can remain viable in the soil for decades and that it is already well established in the region, volunteers generally focus control efforts in high-value environmentally-sensitive areas and along major road corridors. The City of Campbell River Environmental Protection Bylaw requires that land owners make every effort to control broom on their property.

- Control efforts

Yellow Flag Iris

Jan. Feb. Mar. Apr. May Jun. Jul. Aug. Sep. Oct. Nov. Dec.

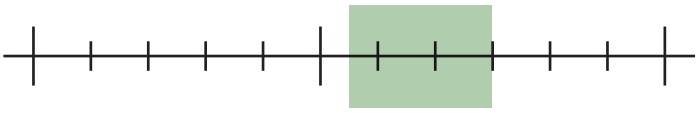


This is the only yellow iris that likes to get its feet wet. It is commonly found in garden ponds where it readily escapes when rhizome fragments and seeds are carried by water, when plants are traded amongst gardeners and through yard waste dumping and improper disposal. Yellow flag spreads rapidly, creating dense stands in wet areas where it crowds out a variety of native plants valuable to wildlife. Hand pulling and digging is the best method of control, but it is hard work and rhizome fragments often persist. Efforts to control yellow flag in the Campbell River estuary, especially on Baikie Island, have been ongoing for years and have included hand and machine digging, flower removal and covering it to prevent photosynthesis. The City of Campbell River Environmental Protection Bylaw requires that land owners make every effort to control this iris on their property, and it is a listed noxious weed under the provincial BC *Weed Control Act Regulation*, which also imposes a duty on every land owner to control it.

- Control efforts

Knotweed

Jan. Feb. Mar. Apr. May Jun. Jul. Aug. Sep. Oct. Nov. Dec.



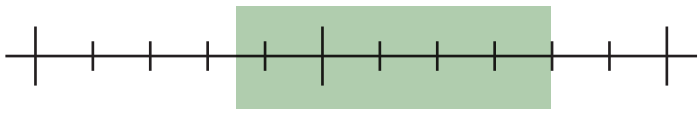
There are four species of knotweed. Japanese knotweed is the most common in Campbell River, but all four have been recorded locally. Knotweeds are one of the 100 worst invasive species as identified by the International Union for Conservation of Nature and a top-ten invasive species for eradication in BC. Knotweed grows very rapidly, forming dense monocultures that crowd out native plants. Once established, it can thrive in riparian areas, but its lack of fine root hairs does little to help secure streambanks that are more easily eroded when knotweed takes over. Eradication typically requires a dedicated, multi-year approach using herbicides. Follow-up monitoring and treatments are required with all treatment options.

The City of Campbell River runs a chemical control program with its conservation partners. As of 2020, more than 180 knotweed sites are on the monitoring list. The City of Campbell River Environmental Protection Bylaw requires that land owners make every effort to control knotweed on their property, and it is a listed noxious weed under the provincial BC *Weed Control Act Regulation*, which also imposes a duty on very land owner to control it.

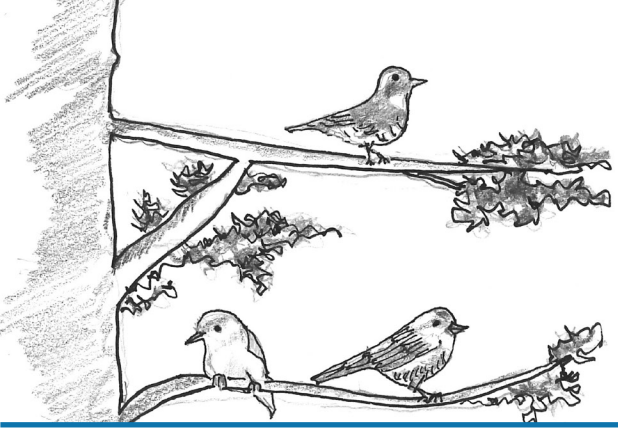
- Control efforts

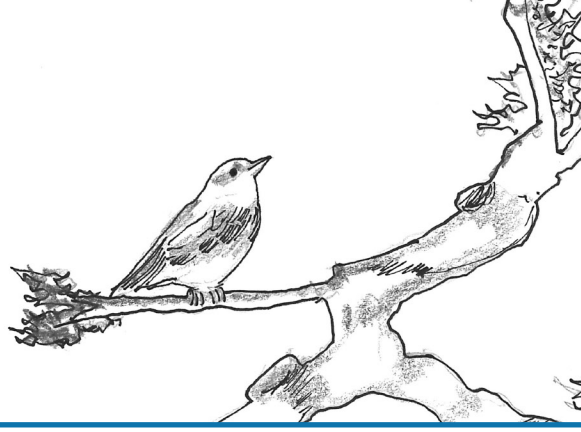
Giant Hogweed

Jan. Feb. Mar. Apr. May Jun. Jul. Aug. Sep. Oct. Nov. Dec.



Giant hogweed is an invasive perennial in the carrot family introduced as an ornamental garden plant. **Note**: *WorkSafe BC has issued a Toxic Plant Warning for this plant and requires all workers to wear heavy, water-resistant gloves and water-resistant coveralls or clothing that leaves no skin exposed when handling the plants.* The leaves and stems contain a clear, watery, highly toxic sap that can cause hypersensitivity to sunlight, and skin burns, blisters, and scarring. This very large plant grows vigorously and is a prolific seed producer (an average of 20,000 per plant) that can quickly take over riparian areas. Their shallow roots provide poor bank stability, which can lead to bank erosion. Control strategies include digging up young plants, flower stem removal and herbicides. Fortunately, Campbell River has few instances of this plant and any new sightings on public lands are treated promptly by City staff. The City of Campbell River Environmental Protection Bylaw requires that land owners make every effort to control giant hogweed on their property, and it is a listed noxious weed under the provincial BC *Weed Control Act Regulation*, which also imposes a duty on every land owner to control it.





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