

- Orange underside, **and**
- No distinct rib-like folds and grooves on side of body

NO

YES

Roughskin Newt *Taricha granulosa*

STATUS Yellow List (B.C.) ●

DESCRIPTION *Adults:* Robust, medium-sized salamander with total length up to about 185 mm; adult body length to 80 mm. Back solid brown; underside bright yellowish orange. Sides lack folds and associated furrows (costal grooves). Skin of terrestrial forms rough and dry but smooth and slippery in breeding adults. *Eggs:* About 2 mm in diameter, surrounded by a thin layer of jelly, attached singly to submerged vegetation. *Aquatic larvae:* Translucent tan, underside with orange tint; 2 to 3 distinct rows of yellow dots on the sides of older larvae. Head small with a narrow, blunt snout. Eyes look forward (top view); gills ragged with tips drooping downward (side view).



NATURAL HISTORY Semi-aquatic; found in and around ditches, ponds and wetlands during the breeding season and in forest, often far from water, when not breeding. During the mating season, males scramble for the attention of females and may form "mating balls" of many individuals. Females lay their eggs singly on aquatic vegetation in ditches, ponds, or weedy lakes in early spring. Larvae usually metamorphose before their first winter. Young spend several years in the forest before returning to aquatic habitat to breed. At some sites, adult males are aquatic year-around, whereas female leave the water after breeding and forage in the forest. Newts are bold and often active during the day. Their skin and tissues contain potent toxins that help protect them from predators. They pose a threat to humans only if ingested.

VULNERABILITY AND THREATS Vulnerable to habitat fragmentation and loss, and to roadkill during breeding migrations.

- Large and robust, **and**
- Prominent oval poison (parotoid) gland on each cheek, behind the eye

NO

YES

Northwestern Salamander *Ambystoma gracile*

STATUS Yellow List (B.C.) ●

DESCRIPTION *Adults:* Robust, large salamander with total length up to 250 mm; adult body length to 105 mm. Large distinct swelling containing poison glands (parotoid gland) on each cheek, behind the eye. Colour solid dark brown but lighter in areas with concentrations of poison glands on cheeks, folds along sides, and tail ridge; light yellowish specks sometimes present on back and sides. *Eggs:* Egg mass firm, globular, and about the size of a grapefruit, often attached to a submerged stem or twig. Individual eggs large (about 2 mm in diameter), surrounded by jelly layer. Symbiotic algae often grow in the jelly layer around the eggs, giving them a greenish tint. *Aquatic larvae:* Olive brown with large dark spots; yellowish poison glands evident in larger larvae, concentrated in parotoid glands and along tail ridge. Head large and with broad snout. External gills full and plume-like; side filaments along entire length of the gill stalk.



NATURAL HISTORY Semi-aquatic; found in and around ponds, wetlands and in the surrounding forest. Terrestrial adults and young are secretive and shelter under decaying logs or in piles of sloughed-off bark, rodent burrows, or other moist hollows or crevices on the forest floor. In early spring, the female lays a cluster of about 50 eggs in permanent or semi-permanent water. Larvae metamorphose into terrestrial forms in 1 to 2 years; they often over-winter before metamorphosis and hence require permanent water. At some localities, the salamanders retain larval characteristics into adulthood and never leave water.

VULNERABILITY AND THREATS Eggs are particularly susceptible to UV-B damage. Vulnerable to habitat fragmentation and to roadkill during breeding migrations. Contamination from agricultural runoff, logging, and introduced sport fish are potential threats to populations.

- Yellowish or greenish stripe with ragged edges along mid-back and tail, often broken into blotches, **and**
- Tail keeled (ridged)

NO

YES

Long-toed Salamander *Ambystoma macrodactylum*

STATUS Yellow List (B.C.) ●

DESCRIPTION *Adults:* Medium-sized salamander with total length up to about 165 mm; adult body length to 85 mm. Broad yellow or greenish stripe with irregular edges extends from the neck to near the tail tip; may be broken into blotches. Sides black or dark grey with light flecking. Exceptionally long fourth toe (second from the outside) on each hind foot. *Eggs:* Eggs in small clusters of 10 to 30 eggs, often attached to aquatic vegetation or sticks; individual eggs 2 mm in diameter and surrounded by a thick, soft jelly coat, making eggs appear wide apart. *Aquatic larvae:* Brownish grey or tan with fine darker flecking. Head large and with broad snout. External gills appear orderly with side filaments gradually shortening towards the tip; long spike near tip of the gill stalk often present.



NATURAL HISTORY Semi-aquatic; found in and around ponds and wetlands and surrounding forest. Adults and young forage in forest or meadows, seldom far from water. They are secretive and shelter under decaying logs or in piles of sloughed-off bark, rodent burrows, or other moist hollows or crevices. In early spring, the female lays small clusters of 10 to 30 eggs in temporary or permanent ponds or shallow edges of lakes. Larvae usually metamorphose in late summer of the same year when hatched. At some localities they retain larval characteristics into adulthood and never leave water (neotenic populations).

VULNERABILITY AND THREATS Vulnerable to habitat fragmentation and loss. Introduced fish are considered a threat, especially to neotenic populations in higher elevation lakes.

- Reddish or orange (rarely greenish or grey) stripe with even edges along mid-back and tail, **and**
- Tail rounded rather than keeled (ridged)

NO

YES

Western Redback Salamander *Plethodon vehiculum*

STATUS Yellow List (B.C.) ●

DESCRIPTION *Adults:* Small, slender salamander with total length up to 115 mm; adult body length 40 to 65 mm. Broad reddish or orange (rarely greenish or grey) stripe with well-defined edges along mid-back, extending to tip of the tail. Sides black or dark grey, grading into lighter grey with white flecking on the underside. Very dark, melanistic individuals with no distinct stripe are sometimes found. *Eggs:* In grape-like clusters of 7 to 11 eggs, attached to the nesting chamber on forest floor by a broad gelatinous base. Individual eggs large (4 to 5 mm in diameter) and yellowish-cream. Eggs are best identified by the presence of the female, often curled around the eggs. *Hatchlings:* Small, (about 20 mm in total length), and very slender.



NATURAL HISTORY Completely terrestrial with no aquatic eggs or larvae. Adults and young can be found under decaying logs, in sword fern bases, within the litter layer, or in other moist locations in a variety of forest types. Eggs are well hidden under rocks or within decaying logs on the forest floor and are seldom found. The female lays her eggs in late spring-early summer and attends them until hatching in autumn. Individual salamanders may live 10 or more years.

VULNERABILITY AND THREATS Requires moist, shady forest floor conditions and sheltered micro-sites, such as coarse woody debris or stable talus. Vulnerable to any activities that result in drying of the forest floor.

- Colour solid pinkish-brown, sometimes mottled, **and**
- Constriction at base of tail

NO

YES

Common Ensatina *Ensatina eschscholtzii*

STATUS Yellow List (B.C.) ●

DESCRIPTION *Adults:* Slender, small salamander with total length up to 120 mm; adult body length 50 to 60 mm. Uniform pinkish brown; base of legs and digits often with a yellow tinge; yellow or brown flecking sometimes present on sides. Head and eyes large. Limbs relatively long. Narrow constriction at base of tail, may be difficult to see in small individuals. *Eggs:* Large (5 to 8 mm in diameter), whitish or cream-coloured when newly laid and in clusters of up to about 25 eggs. Eggs are best identified by the presence of the female, often curled around the eggs. *Hatchlings:* Small (25 mm in total length) and very slender. Mottled with black or dark grey, with lighter flecking; base of each leg bright yellow.



NATURAL HISTORY North of the Sunshine Coast, this species is known from only a few isolated locations. Ensatinas inhabit a broad range of forest types, where they spend their entire life from egg to adult on the forest floor. They shelter under or within decaying logs, stumps, or piles of sloughed-off bark, in rodent burrows, or in other moist crevices. The female lays 8-10 eggs in a moist location on the forest floor in the spring and remains with them until they hatch in the autumn. Eggs are well hidden and seldom found. There is no aquatic larval stage, and newly hatched young resemble miniature adults in body form. Ensatinas take 3-4 years to mature and may live 15 years or more.

VULNERABILITY AND THREATS Northern distributional limits of this species are very poorly known, and virtually nothing is known of the status of populations in B.C. These salamanders are vulnerable to changes to their forest habitat from logging or other human activities. However, they can tolerate some habitat disturbance, provided that moist forest floor conditions and coarse woody debris are retained.

- Colour mottled grey, often with bronze tinge, **and**
- Square-tipped digits

YES

Wandering Salamander *Aneides vagrans*

STATUS Blue List (B.C.) ●

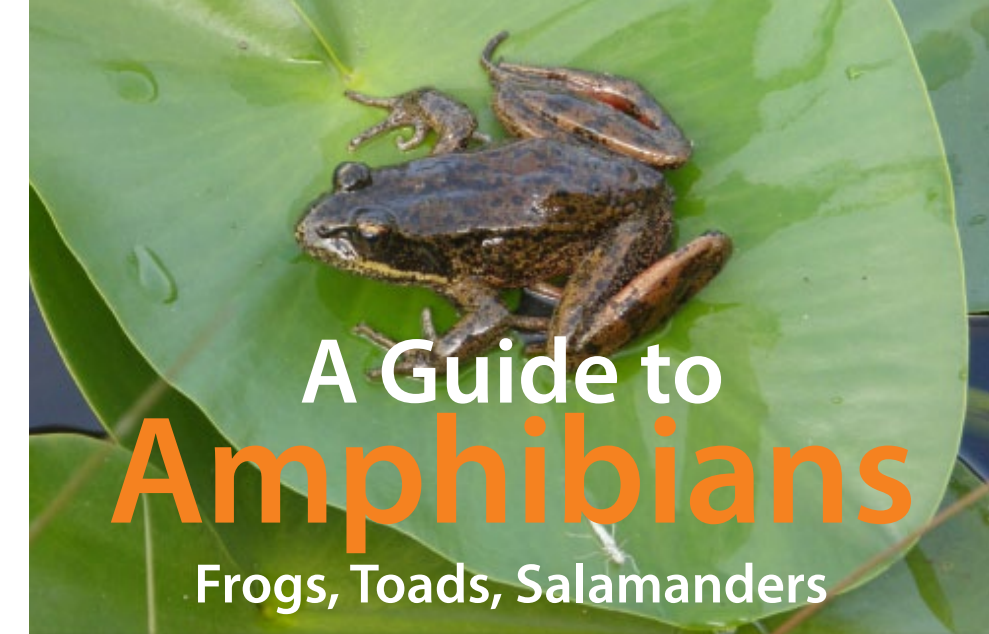
DESCRIPTION *Adults:* Small but relatively robust salamander with total length up to 110 mm; adult body length 50 to 65 mm. Back and sides mottled with grey and black, often overlain with a bronze tinge; subadults sometimes very dark with only a hint of mottling. Limbs and digits relatively long; toe-tips square-shaped rather than rounded. *Eggs:* Large (5 to 6 mm in diameter), cream-coloured when newly laid, and occur in a grape-like cluster of 3 to 28 eggs; suspended from roof of the nesting chamber by long, gelatinous strands that often twist together. Eggs are best identified by the presence of the female, often curled around the eggs. *Hatchlings:* Small (about 25 mm in total length), and slender. Lighter, bronze- or copper-coloured patch on snout and base of each leg is diagnostic; the back may contain similar bright mottling.



NATURAL HISTORY Completely terrestrial with no aquatic eggs or larvae. These salamanders are closely associated with coarse woody debris and often occur under loose bark or cracks in fallen logs; in some areas they shelter under beach logs or in burrows of other animals. They are nimble climbers and in moist forests can occur high up in large trees under moss mats or bark crevices. The female lays her eggs in a crevice within a decaying log or under bark and remains with them until hatching. Females appear to select large logs (over 50 cm in diameter) for nest sites. Nests have been occasionally found within firewood.

VULNERABILITY AND THREATS Requires moist shelter sites, including large decaying logs for nesting. Short forest harvesting rotations are likely to diminish availability of large coarse woody debris over the long term, once decaying old-growth legacy logs are depleted. Sometimes appears to persist in residential areas, where they may have been inadvertently introduced with firewood transport.

REMARKS Formerly known as Clouded Salamander (*Aneides ferreus*), a name that now refers to a sister species in southern Oregon and northern California.



A Guide to Amphibians

Frogs, Toads, Salamanders

of Vancouver Island & the Gulf Islands

HOW TO USE THIS GUIDE

This brochure provides a quick and easy identification key to adult amphibians of Vancouver Island and the Gulf Islands of British Columbia, with separate keys for salamanders and for frogs and toads.

- Read the statements in the boxes at the top of the page as questions.
- If your answer to **all questions** is **yes**, proceed to read down the page to learn more about the species.
- If the answer is **no**, proceed to the next page and onwards, until you reach a box where you answer **yes** to all the questions.
- Refrain from handling amphibians. Amphibian skin is very sensitive to the dryness of our hands, and to contaminants such as sunscreen or insect repellent.
- If possible, take photographs and confirm with BC Frogwatch contact.

Nearly one third (32%) of the approximately 5,750 amphibian species are at risk worldwide, compared to about 12% of birds and 23% of mammals. The situation in British Columbia is equally bleak: 44% of the salamanders and 64% of the frogs and toads are species of conservation concern. The causes of the declines are incompletely understood, but habitat loss, emerging diseases and introduced species have been identified as important factors.

Vancouver Island supports 6 native salamander, 3 native frog, and 2 introduced frog species. Species distribution on the Gulf Islands is poorly known. The objective of this guide is to encourage documentation of distribution and trends of amphibian populations. This is particularly important on islands where suitable habitats are often limited and where expanding human populations continue to modify wetlands and forests. A better understanding of distribution, status, and threats facing amphibian populations is needed for management and conservation efforts to be effective.

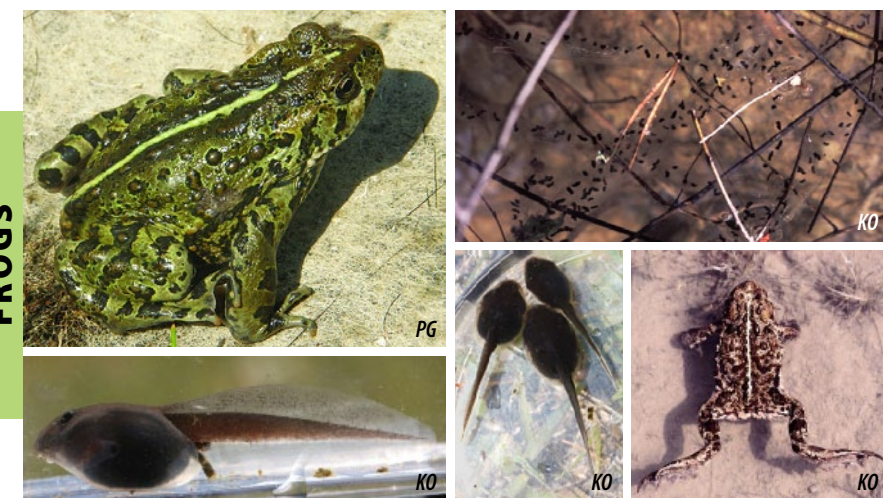
- Skin “warty”, and
- Pronounced oval poison (parotoid) gland on each cheek, behind the eye

NO

Western Toad *Anaxyrus (Bufo) boreas*

STATUS Special Concern (Canada); Blue List (B.C.) ●

DESCRIPTION *Adults:* Robust, large frog with adult body length 60 to 125mm; newly metamorphosed young 6 to 13 mm long. Readily identified by warty, rough skin and a pronounced, oval poison (parotoid) gland on each cheek behind the eye. Colour of back and sides variable, ranging from greenish to tan, brown, grey, or black; may be mottled. Underside light with darker flecks. Whitish line along mid-back is diagnostic but may be indistinct in small toadlets. Raised poison glands (“warts”) on the body often reddish brown and surrounded by a dark ring. *Eggs:* In long strings, often entwined with each other and submerged vegetation. Individual eggs small (1.5 mm in diameter) and black. *Tadpoles:* Small, up to about 25 mm in body length. Body and tail musculature jet black; tail fin rounded and translucent with black flecking.



NATURAL HISTORY Forages in wetlands, meadows, or forest, where they shelter under decaying logs, in rodent burrows, or in loose soil. Sometimes found far from water. Breeds in ponds, slow portions of streams, and shallow edges of lakes with sandy bottoms. Females lay eggs when the water starts warming up, usually in April or May in our area. Adults return to nearly the exact same location to breed year after year, and females often deposit their eggs communally, on top of each other, forming huge masses that may contain hundreds of thousands of eggs. Tadpoles often form large, dense aggregations in shallow, warm water. Metamorphosed toadlets disperse en masse from breeding sites in mid- to late summer.

VULNERABILITY AND THREATS This species has undergone drastic declines in southern B.C. and in U.S.A. Vulnerable to a fungal pathogen (*Batrachochytrium dendrobatidis*) and to road mortality, barriers to movement, and pesticide applications during mass migrations.

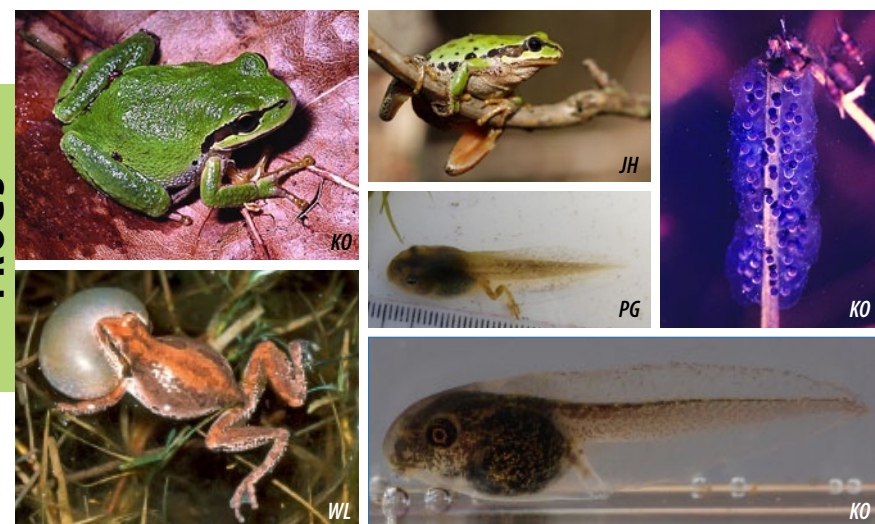
- Skin smooth, without longitudinal folds, and
- Enlarged adhesive toe-pad at the end of each digit

NO

Pacific Chorus Frog *Pseudacris (Hyla) regilla*

STATUS Yellow List (B.C.) ●

DESCRIPTION *Adults:* Small frog with adult body length 25 to 50 mm; newly metamorphosed young only about 10 mm long. Each digit ends in an enlarged adhesive toe-pad. Body relatively smooth, lacking longitudinal folds on sides. Colour highly variable, ranging from green to brown to black and from solid to mottled to striped. Dark facial stripe extends from each nostril, across eye, to shoulder. *Eggs:* In small, very soft, oblong clusters, (usually 5 cm or less in diameter) attached to submerged vegetation or debris. Individual eggs small (1.5 mm or less in diameter) and surrounded by a thin jelly coat, making eggs seem closely packed. *Tadpoles:* Colour variable, from greenish to tan and dark brown with indistinct mottling and brassy flecking on the back and sides; sides often with metallic bluish tint. Underside whitish or silvery and unmarked. Body somewhat square in shape; eyes at sides of head, protruding beyond dark outline of head (top view).



NATURAL HISTORY Breeds in a variety of temporary and permanent ponds and wetlands with emergent vegetation. It is the frog most often heard in our area in spring, as males loudly announce their presence to potential mates and competitors. Females lay their eggs, 10 to 80 eggs per cluster, from early spring to early summer during a prolonged breeding season. A female may lay multiple clusters within one season. These frogs are nimble climbers and often forage among shrubs and bushes and may be found climbing walls of buildings. While on land, males produce a short “dry-land” call.

VULNERABILITY AND THREATS Loss of breeding and foraging sites to development, contamination by pesticides and pollution, and invasion by introduced Bullfrogs pose threats.

- Longitudinal fold on each side of the body, extending along the entire length of the body, and
- Red tint to underside of legs and lower abdomen

NO

Northern Red-legged Frog *Rana aurora*

STATUS Special Concern (Canada); Blue List (B.C.) ●

DESCRIPTION *Adults:* Large, long-legged frog with adult body length up to 70 to 100 mm; newly metamorphosed young about 18 to 40 mm long. Longitudinal fold (dorsolateral fold) on each side of body. Back and sides brown with black flecking or irregularly shaped spots. Underside of hind legs translucent red with red often extending to lower abdomen; upper surface of legs with dark barring. Red colouration intensifies with maturity and may be indistinct in small juveniles. Groin mottled with yellowish green and black (seen when the hind leg extended). Dark facial mask usually prominent. *Eggs:* In large globular clusters (about 10 to 15 cm diameter) of soft jelly, each containing up to about 2000 eggs. Individual eggs large (up to 3 mm in diameter) and surrounded by a thick layer of jelly. During later development, the clusters often spread out and float on the surface. *Tadpoles:* Tan or greenish brown with light and dark flecks and gold or brass-coloured mottling on sides; underside pinkish or off-white with small metallic flecks. Eyes not protruding beyond outline of head (top view). Dorsal fin high and rises from the middle of back. Tail short, rarely more than 1.5 times the length of the body. Tadpoles up to about 70 mm in total length (35 mm in body length).



NATURAL HISTORY Occurs in a variety of forest types; often found along stream banks or pools but sometimes far from water in moist situations. Breeds in marshes, ponds, lakes, and slow-moving sections of streams. While vocal during the breeding season, these frogs are seldom heard, as males usually call while submerged under water. Females lay their eggs very early (February to March). Breeding season may last only 1 to 2 weeks. Larvae metamorphose from mid to late summer.

VULNERABILITY AND THREATS Vulnerable to epidemic disease, pollution, and habitat loss and fragmentation from development and logging. Bullfrogs and sport fish introductions also pose threats to populations.

- Longitudinal fold on each side of the body, extending along the partial length of the body, and
- Prominent eardrum

NO

Bronze (Green) Frog *Lithobates (Rana) clamitans*

STATUS Introduced (B.C.) ●

DESCRIPTION *Adults:* Large, long-legged frog with body length up to 100 mm. Prominent fold on each side of the body (dorsolateral fold) extends from behind the eye to about ¾ of the body length. Colour of back green or bronze with irregular dark spots or flecks. Underside whitish or yellow, occasionally with grey mottling on the upper portion. Upper lip and side of face from jaw line to shoulder light green. Males with yellow throat. Eardrum large, about diameter of the eye in females and larger in males. *Eggs:* In loose, floating masses containing up to about 5000 eggs. Egg masses less than 30 cm in diameter, smaller than otherwise similar Bullfrog egg masses. Individual eggs small (1.5 mm in diameter). *Tadpoles:* Olive green or brownish with numerous small dark dots with blurry edges. Tail long with massive trunk musculature; dorsal fin low and starts behind the body and tail-trunk boundary. Tadpoles resemble Bullfrog tadpoles but are smaller (up to 30 mm in body length, 90 mm in total length), have oval shaped body (widest behind eyes in top view), have spots with blurry edges, and lack any yellow colouration.



NATURAL HISTORY Usually found close to water but may forage in fields and meadows during wet weather. Breeds in ditches, ponds, and marshes with permanent water and abundant aquatic vegetation. Females lay their eggs in warm water from late spring to summer during a prolonged breeding season. Tadpoles usually overwinter before transforming into froglets and hence require permanent water.

REMARKS Native to eastern North America and introduced to southwestern B.C., where it has become established in many areas.

- Large and robust, and
- Skin-fold following the shape of the prominent eardrum

NO

Bullfrog *Lithobates catesbeianus (Rana catesbeiana)*

STATUS Introduced (B.C.) ●

DESCRIPTION *Adults:* Robust and very large, up to 230 mm in body length. Prominent fold extending from behind the eye and around upper portion of eardrum to shoulder. No longitudinal folds (dorsolateral folds) along sides of body. Back ranges from green to greenish brown, often with dark speckles. Abdomen whitish and often mottled with grey; undersides of thighs also mottled. Eardrum large, about diameter of the eye in females and larger in males. *Eggs:* In loose, floating masses containing 12,000 to 20,000 eggs; egg masses over 30 cm in diameter, larger than otherwise similar Bronze Frog egg masses. Individual eggs small (1.5 mm in diameter). *Tadpoles:* Greenish brown with numerous black dots and light flecks on back and sides; underside often yellowish. Tail long with massive trunk musculature; dorsal fin low and starts behind the body and tailtrunk boundary. Tadpoles resemble Bronze Frog tadpoles but are larger (up to 60 mm in body length, 135 mm in total length), have arrow-shaped body (widest at the rear in top view), have spots with clearly defined edges, and often have yellowish underside.



NATURAL HISTORY Seldom found away from water courses. Breeds in permanent ponds and lakes with abundant aquatic vegetation, where its presence can be readily detected by low-pitched, bellowing calls of males, as they announce their presence to potential mates and competitors. Females lay their eggs in warm water from late spring through the summer during a prolonged breeding season. Tadpoles always overwinter before transforming into froglets and hence require permanent or semi-permanent water to complete development. When disturbed, juveniles produce a squeak-like alarm call before jumping into the water.

REMARKS Native to eastern North America and introduced to southwestern B.C. Bullfrogs are expanding their distribution here and are a threat to native amphibians.

CONSERVATION OF AMPHIBIANS ON VANCOUVER ISLAND & THE GULF ISLANDS

All frogs and three of six salamanders found on Vancouver Island and the Gulf Islands depend on wetlands for breeding and often gather in large numbers at suitable sites. Wetland drainage, modification or contamination can reduce amphibian numbers over a wide area. Many amphibians are unable to breed successfully in water bodies with introduced fish. Water quality in wetlands can be degraded due to sedimentation and chemical pollution from herbicides, pesticides and fertilizers. Fertilizers, including natural fertilizers like manure, increase the nutrients available for algal growth causing dense algal growth (blooms). When the algae die back and decay in the pond bottom, they use up oxygen that is essential for amphibian survival. Dredging of temporary wetlands and converting them into permanent ponds can also change water temperature and other conditions, making the wetlands unsuitable for many native amphibians. Loss of shoreline vegetation can also make a wetland unsuitable for Northern Red-legged Frog and Western Toad, among other species.

Amphibians forage in the forest and shrub areas surrounding breeding sites and some wander far from water. Loss of trees and shrubs changes the moisture and temperature conditions on the ground and can also make amphibians more vulnerable to predation. Amphibians are vulnerable to mortality when roads intersect their migration path from upland foraging and hibernation sites to the breeding sites. Protecting the integrity of both habitats on land and wetland breeding sites is important for the survival of amphibians. Three salamander species, Ensatina, Western Redback Salamander, and Wandering Salamander, complete their life cycles on the forest floor and do not use wetlands for breeding. Maintenance of moist, shady forest floor conditions is important for their survival.



Introduced Bullfrogs are a threat to native amphibians on Vancouver Island and Gulf Islands, although Bullfrogs and native frogs can coexist under some conditions. Removal of shoreline vegetation, introduction of sports fish, a change in the hydro-period (seasonal wet-dry cycle of a wetland), and conversion of temporary ponds to permanent ponds all favour Bullfrog establishment. The photo on the left shows a pond where native amphibians coexist with Bullfrogs and the photo on the right shows a pond where arrival of Bullfrogs extirpated a breeding population of Pacific Chorus Frogs. The range of the Bullfrog continues to expand to new locations due to human aided transport and habitat modification that favours Bullfrogs. Garden and irrigation ponds also serve as stepping stones for the range expansion of Bullfrogs.

Bullfrog control can be successful when the number and size of ponds is small, and there is a barrier to migration and colonization. Eradication of widespread Bullfrog populations is cost-prohibitive and impossible in many situations. Prevention of Bullfrog establishment, together with habitat protection and restoration to favour native species, are often the most cost-effective methods to conserve native amphibians.

WHAT CAN YOU DO?

- Join BC Frogwatch and report occurrences to help better understand amphibian distributions. When possible, document observations with photographs. (<http://www.env.gov.bc.ca/wld/frogwatch/frogwatching/report/>)
- Establish a network of amphibian monitoring sites in your neighbourhood and join efforts to provide baseline information on population trends. (<http://www.env.gov.bc.ca/wld/frogwatch/frogwatching/how.htm>)
- Record and report road-kill observations to help identify amphibian movement corridors and problem areas. (<http://www.env.gov.bc.ca/wld/frogwatch/contact.htm>)
- Record and report observations of dead or dying frogs that may indicate epidemic disease, contamination, or other catastrophic events. (http://www.env.gov.bc.ca/wld/frogwatch/amphibian_disease.htm)
- Take precautions such as cleaning boots, boats, nets and other field gear to avoid inadvertently spreading pathogens and diseases to amphibian habitats. (http://www.env.gov.bc.ca/wld/frogwatch/amphibian_disease.htm)
- Identify and protect aquatic breeding sites and associated terrestrial habitats during resource, agricultural and urban development. Apply best management practices for amphibians. (http://www.env.gov.bc.ca/wld/BMP/herptile/HerptileBMP_final.pdf)

WHERE TO REPORT OBSERVATIONS?

- British Columbia FrogWatch Program
<http://www.env.gov.bc.ca/wld/frogwatch/>
- Salt Spring Island Conservancy (for Salt Spring Island observations)
<http://www.saltspringconservancy.ca>

Cover Photo: Northern Red-Legged Frog (PG).

Photography by Barb Beasley (BB), Suzanne Collins (SC), Ted Davis (TD), Purnima Govindarajulu (PG), Jared Hobbs (JH), Fred Lang (FL), Mark Leppin (ML), William Leonard (WL), Gary Nafis (GN), Kristiina Ovaska (KO), Stephen Price (SP), Julie Tyson (JT), Diane Williamson (DW), and Elke Wind (EW).

Brochure design and layout by Annie Weeks and Pauline Huregtse.

This project was developed by Kristiina Ovaska and Purnima Govindarajulu, and was produced by B.C. FrogWatch of British Columbia Ministry of Environment and Salt Spring Island Conservancy.

May 2011

QP 450023238

