



Banff National Park of Canada



HERPWATCH

Welcome to Herpwatch, a survey for amphibians and reptiles in Banff, Kootenay, Yoho National Parks and Rocky Mountain House National Historic Site. Herptiles, meaning both amphibians and reptiles, are an important link in the global web of life and are part of the precious biodiversity in the Canadian mountain national parks.

However, they are disappearing from around the world. We need to know more about the distribution of these animals in the Canadian mountain national parks. Participate in this survey and help us see the mountain herptile picture more clearly.

Why Survey Amphibians and Reptiles?

Colourful, secretive, shape shifting creatures, both aquatic and terrestrial – who isn't fascinated by these first vertebrates to come ashore well before the age of dinosaurs!

Amphibians and reptiles have survived on the planet for some 350 million years, but world-wide populations have declined just in the last two decades. Even in Alberta, previously abundant species like the leopard frog have rapidly vanished. In many locations, scientists lack the information needed to identify and understand the causes and implications of these declines.

Parks Canada is responsible for maintaining a healthy environment in our national parks, which includes all the living things like plants and animals, and continuing natural processes like fire and flood. People who visit and use the mountain national parks play an essential role in taking care of this environment and ensuring its health.

Parks Canada needs more information about the health of the amphibians and reptiles found in Banff, Yoho, Kootenay National Parks and Rocky Mountain House National Historic Site. This survey will provide important information on the distribution of resident amphibians and reptiles in the mountains and will become part of the global database, and is the first step in focussing efforts on amphibian and reptile conservation. Amphibian and reptile populations may fluctuate naturally. Long term monitoring will help distinguish short-term or local population fluctuations from a catastrophic event.

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Click on this link to the Banff National Park website for more information on the Herpwatch Program: www.pc.gc.ca/banff

Why are amphibians and reptiles important?

Amphibians and reptiles can tell us a lot about the health of the environments they live in, because of their life history and biology. Frogs, toads, and salamanders have no protective covering on their skin like fur, feathers, or scales. Their permeable skins are sensitive to water quality, and to environmental conditions on land. Reptiles survive in the mountains only where the climate and denning conditions meet their needs. Amphibians and reptiles are ectothermic or cold-blooded, meaning their body temperature varies with the environment's temperature.

Amphibians and reptiles are important parts of the food webs of many natural communities, and therefore are necessary for ecosystem balance. They are prey for, and predators of, many other species. Eggs and larvae of amphibians are a rich food source for birds and fish. In turn, frogs and toads eat countless insects. Reptiles are also a food source for birds and mammals, and will feed on rodents, fish and insects. Amphibians may make up a large portion of the weight (biomass) of vertebrates where they are found in Alberta, outweighing the combined biomass of birds and mammals. Although they may be small, they are of great significance to the ecosystem.



Why Have They Vanished?

Amphibian and reptile declines may indicate both local and global environmental change. Although population declines have been documented in areas close to human activities, even more alarming is that populations have also disappeared from pristine wilderness areas.

National parks protect the natural environment and encompass undeveloped wilderness areas, but amphibians and reptiles living within the national parks are not free from harm. Many factors can affect these sensitive animals, such as chemical contamination from across the world has been found in park glaciers and lakes. As these factors are identified, and as we learn the distribution, abundance, and critical habitats of park amphibians and reptiles, then we can move to modify these factors and decrease their negative effects.

What is known to cause amphibian and reptile declines around the world?

Those factors identified so far are: human use; persecution; habitat loss, habitat fragmentation; introduction of non-native competitors and predators; disease; chemical contamination; ultraviolet (UV-B) radiation; and global climate change. That's quite a list. Let's look at each of them to understand how they affect amphibians and reptiles.

Human Use:

Humans collect amphibians and reptiles for food, for use in biological laboratories, for their skins, and for the pet trade. Amphibians and reptiles are collected on a large scale in many parts of the world to fuel these industries. It is illegal for anyone to handle or collect amphibians or reptiles in Canadian national parks.

Persecution:

Many people dislike reptiles. All over the world, people fear snakes and kill them on sight. Species have been eliminated by deliberate persecution. The reptiles living in the mountain national parks are harmless to humans. It is illegal in the national parks to harass or harm any wildlife, including reptiles.

Habitat loss:

Expanding human population and resulting urban sprawl, tourism facilities, agricultural and hydro development, and logging, may alter or destroy wetlands and other habitats needed by amphibians and reptiles. Populations decline as remaining habitat becomes fragmented and unable to support displaced individuals.

Habitat fragmentation:

Fragmentation of habitat either makes that habitat unavailable to reptiles and amphibians, or reduces the quality of the habitat for the animals. Structures like highways and golf courses can divide important areas for amphibians and reptiles, and are formidable obstacles during their migration. Automobiles can kill large numbers of migrating amphibians in a very short time. Individuals may be prevented from repopulating an area from a source population because of habitat fragmentation. The species' range is reduced as well as the number of populations in an area. Safe movement corridors between habitats are critical.

Introduced Species:

Humans have introduced animals and plants not native to an area for many reasons, including for food and sport, and the release of unwanted pets. Non-native species often take advantage of a new

environment, compete with native species for food and living space, and win. Introduced species may prey on the native species. In the mountain national parks, the introduction of fish to previously fish-free ponds and wetlands for sport fishing resulted in the local extinction of long-toed salamanders. Fish will eat amphibian eggs, larvae, and adults. Unintentional introductions of foreign micro-organisms and parasites may also cause massive die-offs. The release of pets, although illegal, has occurred in the national parks. It is difficult, if not impossible, to undo the damage that results from introductions of novel species.

Disease:

Disease organisms such as viruses, fungi, and bacteria have been implicated in amphibian die-offs around the globe. Is this just a recent occurrence? Are they native or introduced pathogens? We need more information. Scientists think that amphibians and reptiles already under some stress may be more susceptible to disease than unstressed animals.

Chemical and Thermal Contamination:

Airborne and waterborne pollutants such as pesticides, road salt, and acid precipitation arrive in wetlands from both local and distant sources. These alter the quality of the water and soil in which amphibians and reptiles live and feed. Chemicals may affect animal health directly by poisoning, or they may act indirectly by altering hormones, affecting breeding success, and causing body deformations. Siltation of wetlands can affect the survival of amphibian eggs and larvae.

Thermal contamination occurs when the temperature of a water body changes. Logging near ponds and wetlands that increases sunlight exposure in turn increases water temperature, and ultraviolet radiation, beyond the range tolerated by amphibians requiring cool, clean water for breeding.

Ultraviolet Radiation:

Depletion of the earth's protective ozone layer has allowed more ionizing radiation (UV-B) to reach the surface of the earth. This ultraviolet radiation causes skin cancer in humans and is known to kill amphibian eggs.

Global Climate Change:

Many amphibians rely on temporary vernal ponds and wetlands for breeding. Eggs and larvae must develop before the water body dries up, and adults prefer shady and moist environments. Amphibians usually survive occasional dry spells, but several

years of drought may result in reproductive failure. Populations could vanish if the climate warms even by a few degrees and droughts become frequent. Any one of these factors may cause local extinction of an amphibian or reptile population. More likely, though, more than one factor affects a population at once, and the factors may interact and compound their effects. When one population disappears, the distance between remaining populations may increase so much that migration ceases. Inbreeding reduces the genetic variability needed to deal with environmental changes, which then increases the chance of the isolated populations dying out.

What Has Been Done?

In 1991 in response to global concern for amphibians, the International Union for Conservation of Nature established the Declining Amphibian Populations Task Force. This is a network of over 3000 scientists and conservationists from more than 90 countries around the world. They oversee research, and exchange information about the extent and causes of declines of amphibians around the world. The group also promotes work towards stopping and reversing amphibian population declines.

Canada established the Task Force on Declining Amphibian Populations in Canada (DAPCAN) in 1991. Out of this grew the Canadian Amphibian and Reptile Conservation Network. This group of scientists works towards the conservation of amphibians and reptiles in Canada.

Alberta has a volunteer amphibian monitoring project, established in 1992 and run by the Alberta Fish and Wildlife Division of Alberta Environment. British Columbia's Ministry of Water, Land and Air also has a volunteer amphibian survey program.

The Bow Valley Naturalists, a local conservation group, have been surveying the lower Bow Valley in Banff National Park since 1992. Sightings have also been reported from some parts of Kootenay and Yoho National Parks in past years. The distribution and abundance of amphibians and reptiles for much of the mountain parks is unknown.

Visitors and residents alike can take an active role in amphibian and reptile research by getting involved in surveys like this one. Not only will survey participants benefit from a closer connection to the natural environment, but the information will become part of the valuable provincial and national database.

How to Survey

Use the Species Descriptions

Read through our descriptions for each species' distinguishing features. You should be able to narrow down your choice quickly by accepting or eliminating the features. Try using one of the suggested field guides as well. The more you see amphibians and reptiles in various poses, colour variations, and conditions, the more familiar you will become with their unique features, and the easier it will be to identify them accurately.

Vocalizations are different for each species.

Familiarize yourself with the local amphibian calls before you go out. Other websites that have recordings are Canadian Amphibian and Reptile Conservation Network and Canadian Nature Federation's Frogwatch, and see our list "To Find Out More".

Egg masses are easiest to identify when they are fresh. Embryos will soon start to grow, and as egg masses break apart they are harder to identify.

Hatchlings may be difficult to identify on their own, so look at the shape of the egg mass from which they have come. Frog and toad hatchlings will have small gills, so don't assume they're salamanders! They will transform into tadpoles fairly quickly, in 1 - 4 days. Frog and toad tadpole gills are covered and invisible, whereas salamander gills are large and visible.

If you are having problems identifying eggs or tadpoles, try to identify the adults in the area by looking or listening. Write down a good description of the unknown eggs or tadpoles, and note the difficult features. If there is an accurate site description, someone returning to the site later may see juveniles.

Survey Safely!

There are basic precautions to take wherever you survey, but especially in the national parks.

- Always let someone know where you are going and when you expect to return, and dress for all possibilities of weather.
- You are in herptile habitat, but you are also in carnivore country. It is your responsibility to be aware of carnivore activity and your safety around these predators. Amphibians will call in late afternoon and evenings, so for safety, survey during daylight. Always survey with another person, and observe your surroundings. Make noise as you enter an area and if you are near running water.

- You will have more success if you leave your dog at home. Dogs will frighten amphibians and reptiles and could attract carnivores.

If you are unsure of the safety of your survey area, do not continue. Please make a note on the survey form if you end the survey for safety reasons.

Survey Carefully!

Careful observation and listening for vocalizations are good ways to survey for amphibians and reptiles in the mountain national parks. Even chance sightings are important to report.

- Intrusive methods, like wading in wetlands or tramping more than necessary along the shoreline, may harm habitat and animal alike. Siltation and other forms of habitat disturbance may affect survival of eggs, tadpoles and juveniles. Wading can be dangerous, and you could scare the amphibians.
- Amphibians and reptiles should not be handled. Amphibian skin is fragile and may absorb toxins from mosquito repellent or sun screen from your hands. Reptiles may bite and some amphibians may secrete an irritating poison from their skin or from special glands.

When and Where to Survey

Amphibians begin calling in the early spring in small and large wetlands. Some begin to call even before the ice is completely gone from the water. The first spring rains trigger others to begin calling.

Amphibians and reptiles generally are more active later in the day, when the air and water have warmed.

If you are actively searching, slowly walk and scan the area. Although not necessary, ideally you would record the start and stop time and distance travelled for your active search. This standardizes information so we can compare sites, and the same site over time. You may have a random amphibian or reptile sighting as you are hiking or exploring an area. Report these sightings because they are important too.

Binoculars will help you to identify amphibians and reptiles without disturbing them. If your approach to an area frightens the animals, they will stop calling or move away. If you remain still and silent, they may begin calling or become visible again.

If you can, measure the air and water temperature with a waterproof thermometer. Look in habitats where you would expect to see amphibians or reptiles. See the species accounts for habitat information.

Amphibian and Reptile Species Descriptions

Although the mountain climate is harsh, amphibians and reptiles do survive in Banff, Kootenay, and Yoho National Parks, and Rocky Mountain House National Historic Site. There are four families of amphibians, represented by three frog species, two toad, and two salamander species in these areas. Two documented snake species represent the two reptile families here. One frog species has disappeared from these areas and is considered extirpated (locally extinct).

Species:	Banff	Kootenay	Yoho	Jasper	Rocky Mtn House NHS
Wood frog	√				
Columbia spotted frog	√				
Boreal or striped chorus frog					
Northern leopard frog		<i>extirpated</i>			
Boreal toad	√				
Canadian toad					
Long-toed salamander	√				
Tiger salamander					
Wandering garter snake	√				
Rubber boa		√			



Wood Frog *Rana sylvatica*
Family Ranidae: True Frogs
Species Code: WOFR

Habitat:

Wood frogs actively hunt far from water for insects, worms, and other invertebrates. Adults breed in wooded wetlands, wet meadows, and shallow clear ponds, from the valley bottoms to 2500 metres elevation. These wetlands may be temporary in the springtime, or permanent. Breeding wood frogs prefer well-vegetated wetlands. The males begin calling day or night as soon as the ice begins to melt, from mid-April to June. In the lower Bow Valley they are the first amphibians to call in the spring. Wood frogs are very cold-tolerant and are the most northerly amphibian in the western hemisphere, crossing the Arctic Circle.

Adults:

- call is a series of duck-like quacks in early spring
- obvious black face mask runs from nose through eye to behind ear, with a white lip line below the mask
- length of body and head is 3 - 6 cm -- a small frog. Eyes look outward.
- body colour varies from brown to green, sometimes with a white stripe down the back; belly is white. Skin is smooth; back has two obvious skin folds on either side

Eggs:

- clusters of many egg masses are common; ball-sized (5 - 7cm diameter) mass of eggs is laid near the water surface, often attached to sticks or plants or may float freely, sometimes exposed above the water
- eggs are laid in deeper water than Boreal toad's, but not as deep as long-toed salamander's
- individual eggs are small, about 1.6 mm diameter, with a narrow layer of jelly between eggs so they appear closely packed within the mass

- 2000 - 3000 eggs in each mass, many more than in a spotted frog's egg mass
- eggs take 3 weeks or longer to hatch, depending on water temperature, much longer than spotted frog eggs



Tadpoles:

- body is round and short, coloured brownish-greenish with speckles, underside white with a pinkish tinge, eyes are near the top of the body
- tail is up to about 1.5 times the body length, shorter than a spotted frog tadpole's, with white underneath and only a few speckles; tail arches and has a pointed tip
- they travel singly and do not congregate in large numbers
- transform into young frogs 6.5 - 12 weeks after hatching



Columbia Spotted Frog
Rana luteiventris
Family Ranidae: True Frogs
Species Code: SPFR

Habitat:

Spotted frogs have been found in only a few places in the mountain national parks. Although they will hunt for invertebrates away from water, they are very aquatic. They require permanent water bodies with abundant aquatic vegetation, such as slow streams, beaver ponds, and marshes in regions with montane to subalpine forests. They will breed in the same ponds as wood frogs. Spotted frogs must reach 4 to 6 years of age before breeding.

Adults:

- call is a series of low-pitched, rapid hollow clicks, like a distant helicopter
- eye mask is only faint if present at all, have a white lip line
- head and body 4.5 - 10 cm long, larger than a wood frog
- belly and thighs are red to orange-pinkish, mottled
- eyes are upturned and golden
- body is dark brown to olive, with black spots with light centres on the back
- skin with slight bumps
- skin folds on the back are not obvious

Eggs:

- egg masses are usually single, sometimes a few are clustered atop each other
- ball-sized (5 - 7 cm) mass of eggs, loosely attached to submerged vegetation or sometimes a flat, loose, plate-sized mass floating at the water surface

- individual eggs are about 5 - 8 mm diameter, larger than wood frog's, with a narrow layer of jelly between eggs
- egg mass can look loosely packed compared to wood frog's
- 700 - 1500 eggs are laid in each mass, fewer than in a wood frog's egg mass
- eggs hatch quickly, in about 4 days, depending on water temperature.

Tadpoles:

- body is light brown or grey above, flecked with gold, underside is bronze
- tail is about twice the body length, longer than a wood frog's, and is speckled
- tail fin is tall and arching, banner-like
- transform into young frogs at summer's end or may over-winter as tadpoles



photo not available

Boreal or Striped Chorus Frog
Pseudacris maculata triseriata
Family Hylidae: Tree Frogs
Species Code: CHFR

Habitat:

This small frog is found on the eastern slopes of the Rocky Mountains, usually at low elevations, so look for them in the eastern mountain national parks. They breed in shallow standing water, in marshes, ponds, and grassy streams. Boreal chorus frogs have a loud call and are active mostly at night. The males call using their expandable throat pouches. They hunt insects and other invertebrates in damp woods and can climb into low vegetation. They overwinter in dry areas, even underground in burrows of other animals.

Adults:

- call is a high-pitched trill, like a finger rubbed over a comb
- three dark stripes sometimes broken into spots run down the back, with two lateral stripes through eyes and down each side of the body
- back is smooth without folds of skin, unlike the wood frog's
- length of body and head is 2 - 4 cm, a very small frog, females are slightly larger than males
- body colour brown to green, and individuals can lighten or darken their colour
- toes have very small discs and hind feet lack webbing

Eggs:

- eggs are laid in long soft masses, mass usually less than 2.5 cm in diameter, strongly attached along vegetation, 5 to 12 cm below the water surface, in water less than 50 cm deep
- 150 to 1500 eggs are laid over a few days in bunches of 30 - 75
- eggs are tiny, and measure about 1.0 mm in diameter, and are densely packed
- egg masses are usually inconspicuous

Tadpoles:

- body is small, up to 3 cm
- eyes are set at the edges of the head, unlike wood frog's or spotted frog's
- body is grey to dark brown with gold flecks
- the dorsal fin is very arched with moderate to light pigmentation

Northern Leopard Frog
Rana pipiens
Family Ranidae: True Frogs
Species Code: LEFR

The northern leopard frog has declined rapidly in recent years and is considered recently extirpated (locally extinct) from the areas this Herpwatch program covers. Information is included in case of a chance sighting. If a sighting occurs, detailed information would be very valuable and welcomed by Herpwatch (see the Herpwatch data form).

Habitat:

The cold-tolerant northern leopard frog occurred in Alberta on the eastern slopes of the Rocky Mountains at low elevation and in the foothills. In British Columbia, they were found in moist open forests, marshes, wet meadows, and riparian areas on the western slopes of the Rockies in Kootenay National Park. They breed from April to June in permanent water bodies with dense aquatic vegetation, even when ice is still present. They are active mainly at night, and may hunt for food far from water. They hibernate in mud or under rocks at the bottom of springs, streams, and standing water.

Adults:

- call is a series of varied low grunts and chuckles or sounds like wet hands rubbing a balloon
- body is bright green to light brown, skin smoother and lighter than the Columbia Spotted Frog, with regular oval or round brown or black spots bordered with a lighter halo, spots often creating bars on legs, underneath is white
- spots may be lacking in young frogs
- two conspicuous, light, white or cream folds of skin, from behind each eye down the sides of the back, and a white lip line from the nose to above the front leg
- medium size, head and body 5 - 10 cm, with a long nose, large eyes, and obvious ear drum behind and below each eye
- legs are long, and hind feet are webbed partly to the toe tips





Boreal or Western Toad
Bufo boreas
Family Bufonidae: True Toads
Species Code: BOTO

Habitat:

Toads are very terrestrial amphibians. In the mountain national parks, boreal toads are found at different elevations and prefer damp conditions, from meadows to forests. They are active in spring around lakes, ponds, streams, and rivers. They lay their eggs in very shallow water (4 to 15 cm deep) in temporary or permanent ponds, and lake edges. Boreal toads have short legs and will walk as well as hop.

Adults:

- call is a rapid, high-pitched peeping
- large oval poisonous parotid glands are located behind the eyes
- skin is dry, rough, with round, often reddish warts
- skin between the eyes is flat with no cranial crests
- body is wide and large, 5.5 - 12.5 cm body and head length, males are smaller than females
- body is green to brown with blotches of brown, grey, green or red, with a light stripe down the back, underside is pale with dark mottling, colour is variable between males and females
- hind feet have tubercles for digging

Eggs:

- eggs are laid single file, in long strings, often entwined together and with submerged vegetation to form a large, loose mat, often on the bottom of the water body
- individual eggs are small, about 1.5 - 1.7 mm diameter, surrounded by two jelly layers
- egg laying at a site is synchronized with all females laying eggs within a week, each female

laying as many as 16,500 eggs, which hatch in 3 - 12 days.

- **Tadpoles**
- body is rounded with square snout projecting forward
- body is black, underside is lighter



Picture not available

Canadian Toad
Bufo hemiophrys
Family Bufonidae: True Toads
Species Code: CATO

Habitat:

The Canadian toad is an eastern species in Alberta. However, they may range into lower elevation aspen parkland and boreal forest found on the eastern slopes of the Rocky Mountains, north and east of the Bow River. The Canadian toad prefers aquatic habitats more than other toads and breeds in shallow water that is permanent or temporary, such as ditches, marshes, and pond edges. They are active from April to September, usually during the day, and they burrow at night except when the night temperature is high. They breed from May to July and males may be active and call in temperatures as low as 5°C. Canadian toads may over-winter in large groups together at one site.

Adults:

- call is a harsh, rapid trill
- the skin between the eyes forms an obvious crest
- a small toad, 3.7 - 7.5 cm body and head length, darker body colour than Boreal toad
- body grey, green, to brown, with small reddish warts with dark edges, with belly white to pale yellowish along the sides
- males have a dark throat, females have a light throat matching the belly
- a light stripe runs down the back but doesn't reach the head, and is duller than Boreal toad's
- quick to jump in water and are good swimmers
- have large kidney-shaped or oval parotid glands behind the eyes
- hind feet have two prominent tubercles for digging, the inner one large, outer one small

Eggs:

- eggs are laid single file in a long string
- egg diameter 1.0 mm, smaller than a Boreal toad's, surrounded by one jelly layer
- up to 16,500 eggs laid per female

Tadpoles:

- tadpoles are small, and are dark brown to black, lighter underneath, with a transparent region in front of where tail starts
- tail fin is lightly pigmented



Long-toed Salamander
Ambystoma macrodactylum
Family Ambystomatidae: Mole Salamanders
Species Code: LTSA

Habitat:

Long-toed salamanders are secretive and live under debris or underground near shallow montane to alpine ponds, ditches, lake shorelines, and streams. Although they are mostly active at night, adults may be seen in daylight in the spring as they migrate to breeding sites, and in the fall with juveniles migrating to hibernating sites. They prefer shallow, permanent water bodies, but will breed in temporary pools. Often they breed in the same well-vegetated ponds as wood frogs. They begin breeding early, before the ice disappears. For successful breeding, the water body must be free of fish. Long-toed salamanders disappeared from waters in the mountain national parks where sport fish were stocked.

Adults:

- body is slender, 8-14 cm long
- fourth toes on hind feet are elongated
- tail makes up half the body length
- body is greenish-grey to black, with a yellow or green dorsal stripe, often irregular, running from nose to tail, with white flecks on sides and feet
- no call

Eggs:

- eggs are laid singly or in a small mass or short string
- eggs are attached to vegetation, twigs, or on the bottom, and may be scattered widely
- eggs laid in deeper (30 - 60 cm) water

- individual eggs are large and with their thick jelly layer measure about 1 cm diameter, they look widely spaced if they are in a small mass
- small mass may have a dozen or more eggs
- eggs hatch in about three weeks depending on water temperature



Larvae:

- external gills are large, bend out from the body and above the head
- body is long and tapered, with a large head about one-third the total body length
- eyes are to the side
- body is greenish-grey or light brown, underside is pale, dark flecks on the tail
- aquatic larvae with legs retain their gills and may over-winter before metamorphosing



Tiger Salamander *Ambystoma tigrinum*

Family Ambystomatidae: Mole Salamanders

Species Code: TISA

Habitat:

Tiger salamanders may be found in the eastern mountain national parks, living on the eastern slopes of the Rocky Mountains, from the prairies and aspen parkland to subalpine boreal forests up to 2800 m elevation. They are secretive and usually are seen only after spring rains or during migrations to breeding or wintering areas. At these times, many salamanders may be killed on roads, which run through their habitat. Tiger salamanders leave hibernation sites in the spring to move to semi-permanent or permanent ponds, dugouts, and small lakes where they breed.

Adults are active at night and can tolerate dry conditions, hunting on land for earthworms and insects. In early fall they seek underground burrows for hibernation. Tiger salamanders may retain their larval gills and remain in the water to become breeding aquatic adults, never changing to the typical adult salamander form. At high elevations they may seek out the warmest areas of the habitat.

Adults:

- body is large and robust, 14 - 18 cm long from nose to tail, larger than a long-toed salamander
- toes are short and have tubercles underneath the feet
- body is dark, from olive green to dark brown, usually blotched or barred with light brown, green, yellow or white, belly is grey
- young adults may have bright markings, and older adults may become uniformly olive, brown or black
- tails are rounded, males have longer tails and longer hind legs than females
- no call

Eggs:

- up to 20 eggs laid singly, but so close that they may touch, not widely scattered like long-toed salamander's. An individual female may lay as many as 7000 eggs; eggs hatch after 2 - 4 weeks.
- laid in shallow water and attached to substrates like vegetation, stones, and sticks
- eggs have a thin jelly layer, usually the egg and jelly layer are less than 1 cm diameter

Larvae:

- head to tail length from 8 - 18 cm
- head large, with tiny eyes
- large and obvious gills sweep out and along the body, gill stalks are very wide and longer than the head, with short filaments all the way to the tips
- larvae grow front legs first before hind legs
- tail with a fin or ridge
- body is olive green or dull yellow to dark brown, pale underneath
- metamorphosis to adult stage may take place from 3 months to 2 years, or may never occur, with mature breeding salamanders retaining gills and aquatic lifestyle, called neotony. Neotenic adult may be as large as a metamorphosed adult, up to 18 cm long nose to tail



Wandering or Terrestrial Garter Snake
Thamnophis elegans vagrans
Family Colubridae: Typical Snakes
Species Code: WASN

Habitat:

Wandering garter snakes are only scattered in the mountain national parks. They live near streams, ditches, ponds and lakes, although they are not restricted to water. Most favourable areas for these snakes are places in the valley bottoms in direct sunlight, but they can be found up to 2000 m in elevation. They feed on amphibians, fish, invertebrates, rodents, small birds, and carrion. In winter they hibernate in communal dens or hibernacula. Large numbers may be seen together in the spring as they emerge from dens.

Adults:

- body is grey, olive-green to brown, with pale yellow or brown stripes on the sides and back, with dark spots checkered between the stripes
- lower sides and belly are grey to bluish, sometimes with dark markings, underside of head is white
- usually have 8 upper labial scales above the mouth from the nose to behind the eye
- body is slender, about 45 -107 cm total length, it is a small snake
- females are usually larger than males, bear their young live
- young of the year are 17 - 23 cm total length

Rubber Boa
Charina bottae utahensis
Family Boidae: Boa Constrictor
Species Code: RUBO

Habitat:

The Rubber Boa is known to live in the southwest part of Kootenay National Park. This snake inhabits wet meadows and forests of the western slopes of the Rocky Mountains and may range as far north in the Columbia Mountains as Golden (so far unrecorded). Unlike other snakes, they are cold tolerant, mostly active at night, and move slowly, so are not noticeable. Many aspects of this snake's life history are poorly understood. They hunt primarily for small rodents, but also salamanders and invertebrates in loose, moist forest litter and soil, often burrowing. Rubber boa will also climb trees in search of birds and eggs and they also swim in nearby streams. The rubber boa kills prey in typical constrictor fashion by squeezing and suffocation. They are active spring through fall and hibernate in rodent burrows or rock crevices.

Adults:



- body looks rubbery, is shiny brown to pinkish tan or olive green, creamy or yellow underneath, with no patterning
- body is thick, with a blunt, rounded tail, similar in size, shape and colour to the head
- have small spurs on either side of the body near the vent which are vestigial limbs, larger on males than on females
- scales are small and smooth
- eyes have vertical pupils
- a medium sized snake, measuring 30 - 80 cm, males are smaller than females but have relatively longer tails

Juveniles:

- young are born live, about 22 cm in length
- 2 - 8 individuals born at one time, in the fall
- body is brown to brownish pink
- their eyes and scales distinguish them from earthworms of the same size and colour

To Find out More

Websites:

North American Amphibian Monitoring Program:
<http://www.pwrc.usgs.gov/naamp/>

Society for the Study of Amphibians and Reptiles
<http://www.ssarherps.org/>

Partners in Amphibian and Reptile Conservation
<http://www.parcplace.org/>

Canadian Amphibian and Reptile Conservation
Network (English & French) <http://www.carcnet.ca/>

Canadian Nature Federation, Frogwatch Program
http://www.naturewatch.ca/english/select_province.html

British Columbia Ministry of Environment, Lands &
Parks, Frogwatch Program
<http://www.elp.gov.bc.ca/wld/frogwatch/>

Alberta Environment, Amphibians of Alberta
Monitoring Project
<http://www.srd.gov.ab.ca/fishwildlife/wildlifeinalberta/amphibiansalberta/default.aspx>

FrogWeb
<http://www.frogweb.gov/>

Tadpole Identification Key
<http://www.pwrc.usgs.gov/tadpole/>

Fun Sites:

Frogland <http://www.allaboutfrogs.org/frogInd.shtml>

The Case of the Disappearing Frogs
<http://www.aquarium.org/disappearingfrogs/corepage.htm>

Status Reports:

For species status reports, visit the web sites for the Canadian Amphibian Conservation Network and Alberta Environment's Amphibians of Alberta Monitoring Project, both listed above.

Books:

The Amphibians and Reptiles of Alberta, 1st ed. 1993, 2nd ed. 2000 by Anthony P. Russell and Aaron M. Bauer, University of Calgary Press, Calgary Alberta.

Amphibians of Oregon, Washington and British Columbia, 1996, by Charlotte C. Corkran and Chris Thoms, Lone Pine Publishing, Edmonton, 175 pp.

The Amphibians of British Columbia, British Columbia Provincial Museum Handbook No. 45, 1984, by David M. Green and R. Wayne Campbell.

Amphibians of Canada, 1982, by Barbara Froom, McClelland and Stewart, Toronto Ontario. 120 pp.

Introduction to Canadian Amphibians and Reptiles, 1984, by Francis R. Cook, National Museums of Canada.

Handbook of the Canadian Rockies, Second Edition, 1995, by Ben Gadd, Corax Press, Jasper Alberta, 831 pp.

A Field Guide to Western Reptiles and Amphibians, Second Edition, 1985, by Robert C. Stebbins, Peterson Field Guide Series # 16, Houghton Mifflin Company, Boston Mass.

HERPWATCH DATA FORM

Fill out the data form or forms as fully as possible; all of the information is necessary for an effective survey program. Feel free to record more information if you have it (comments on habitat, etc.).

Mail your completed data form to Aquatics, Banff National Park Warden Office, Post Office Box 900, Banff Alberta, T1L 1K2

Or, fax your completed data form to: (403) 762-3240 Or, e-mail it to: **Banff.aquatics@pc.gc.ca**

Survey Date: (DD)____ (MM)____ (YYYY) _____ Observer(s): _____

Phone/email: _____ Mailing Address: _____

Site Name: _____

UTM:(Map, Easting, Northing) _____ GPS or Map? M (circle)

Temp. Air: _____ °C Water: _____ °C

Sky (please circle): clear partly cloudy broken cloud overcast fog smoke drizzle showers snow

Wind (please circle): calm drifts felt on face extends a light flag raises dust sways trees

Waterbody (please circle): lake pond marsh/bog river/creek spring/seep reservoir other: _____

Maximum depth: <5m >5m unknown

Fish: absent/present, Species: _____

Distance (m/km) to road/railway/other: _____

Search type: active searching/ random/ other: _____

Active search time: start : _____ (am, pm) stop: _____ (am, pm) Distance (m) searched: _____

of searchers: _____

Use a separate row for each individual sighting or vocalization

Species code*	Call code**	# Adults	# Juveniles (toadlet)	# Larvae (tadpole)	# Egg Masses	Microsite Descriptions, Comments***
<i>i.e.</i> WOFR	2					<i>Water surface, 2m from shore in veg</i>

* **Species** codes: **BOTO** Boreal Toad **LTSA** Long-toed Salamander **WOFR** Wood Frog

SPFR Spotted Frog **WASN** Wandering Garter Snake **UNKN** unknown herptile (describe)

** Call codes: **1** = one; **2** = a few; **3** = several overlapping calls; **4** = large number in a chorus.

*** **Describe microsite using:** Water: bottom/middle/surface Land: under log/rock/debris/ inside log/ in open/other: **Herptile distance:** from shore/inland: _____ m/km. Other comments:

For more information on the Herpwatch Program in our mountain national parks, please contact:

Aquatics, Banff National Park Warden Office

Post Office Box 900, Banff Alberta, T1L 1K2

Fax : (403) 762-3240 or email: Banff.aquatics@pc.gc.ca