British Columbia's Coast Region Species and Ecological Communities of Conservation Concern

SOUTH COAST CONSERVATION PROGRAM

Protecting and Restoring at Risk species and Ecological Communities on BC's South Coast

SPECIES PROFILE: Oregon Spotted Frog (*Rana pretiosa*), Family Ranidae "true frogs"
Status Global: G2 Provincial: S1 SARA: 1-Endangered BC List: Red

The family Ranidae ("true frogs"), has the widest distribution of any frog family. Most members of this family have smooth, moist skin, large, powerful legs and extensively webbed feet. Oregon Spotted Frog was originally grouped with its close relative, Columbia Spotted Frog, a much more common and widely distributed species, however the two distinct species were recognized in 1979. Neither species has overlapping ranges in BC. While Columbia Spotted Frog populations appear somewhat stable, Oregon Spotted Frog have shown significant declines across their entire Pacific Northwest range in North America.


Oregon Spotted Frog

Characteristics (things to look for)


Ventral colouration

Snout to vent length 6-9 cm, females larger than males. Dorsal colour of adults ranges from reddish-brown to tan or olive with irregular-shaped black spots with light centers. An extensive, light- coloured stripe down extends along the upper lip to the shoulder. Light brown to orange "dorsolateral" folds extend from behind the eyes to the middle of back. Hind legs have black, mottled striping or blotching. Ventral colouration ranges from cream on the lower jaw transitioning to a rust orange colour on the chest, belly, upper and lower legs all the way to tips of the toes. Some individuals have heavy olive mottling throughout the ventral areas with only small amounts of rust colouration on the ventral area of each leg. No mottling is found in the groin areas. Webbing on the hind feet is extensive, extending to almost the tip of each toe. Oregon Spotted Frog have relatively short hind legs. Males develop a "nuptial pad" on each thumb to assist in gripping females ("amplexus") during breeding. The snout is pointed and eyes are turned upward laterally. Juveniles are olive-green or light brown and lack the bright ventral colouration, large spots and blotches on the hind legs. The olive-brown tadpoles have a tail about twice the length of the body, with a colourless tailfin containing scattered flecks. Belly is white or slate in colour and small raised bumps on the side.

Looks like (Similar)

Oregon Spotted Frog share distribution with other "Ranid" frogs including Northern Red-legged Frog, Green Frog and Bullfrog. Coloured ventral area on Northern Red-legged Frog tends to be a distinct bright red while Oregon Spotted Frog is more of a dark, rust-orange colour. Northern Red-legged Frog tadpoles have yellow to washed out red bellies with gold flecks while Oregon Spotted Frog tadpoles have white or slate coloured bellies. Oregon Spotted Frog tends to sit with its belly low to the ground while most other Ranid species sit upright. The upturned eyes and extensive webbing on the hind feet are key diagnostics for Oregon Spotted Frog. Skin on legs is opaque, as opposed to Northern Red-legged Frog where skin is transparent with muscles / bones visible through skin.


Northern Red-legged Frog

Habitat

Oregon Spotted Frog is typically associated with medium to large wetlands (>4 ha), that are shallow, slow moving and support abundant native emergent vegetation (e.g. grasses, sedge and rush). Slow moving streams and sloughs with sufficient vegetation attributes may also be used. Mixed forests are often found in association with upland perimeter areas. In Washington, frogs moved to deeper permanent pools during dry periods. During cold periods or when ice cover occurs, frogs will burrow into soft substrate at the base of vegetation. Oregon Spotted Frog may venture into adjacent forests or shrub thickets when water

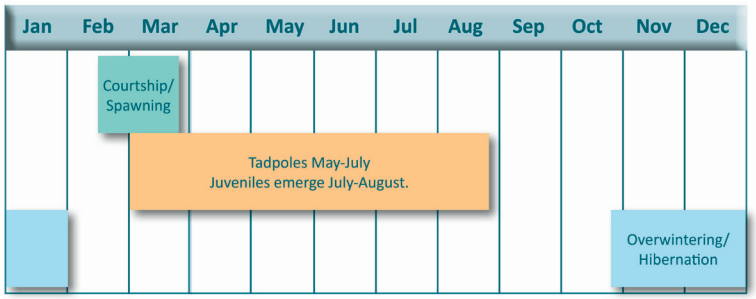
levels are high and surrounding areas have moist saturated soils. While shallow wetlands are often subject to seasonal fluctuations in inundation levels, those that support Oregon Spotted Frog populations typically have a component of permanent water. Water Temperature is a key factor in habitat use, most populations are found in wetland complexes that warm substantially during periods when frogs are most active at the surface (spring through fall), though activity may begin in late winter at temperatures as low as -5°C. Wetlands that cover larger areas tend to support larger frog populations. Different areas within a wetland appear to be used for breeding and non-breeding. Breeding sites are generally associated with seasonally flooded, shallowly sloping benches that are vegetated with the previous year's emergent vegetation and have low shade.

Diet

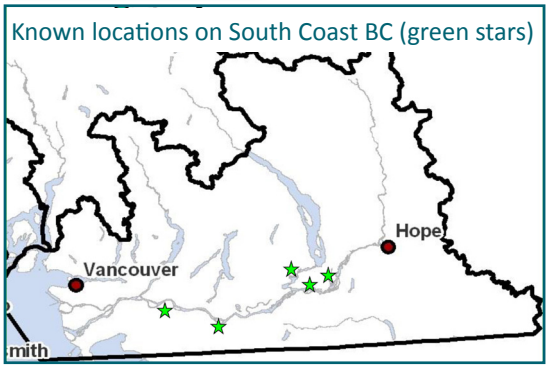
An opportunistic feeder, this species feeds while floating at the surface, consuming a wide variety of insects as well as snails, freshwater shrimp, spiders. In Oregon adults have been known to predate on juvenile Western Toad. Tadpoles graze on algae, organic debris and plant tissue.

Life Cycle

Adult females lay a single egg mass per year with up to 1500 eggs. Eggs are laid communally during mid-afternoon and at night, sometimes on top of each other.



Range



Elevation: <50 m (unlikely to occur over 200 m in BC, found up to 1700 m in Oregon). Oregon Spotted Frog populations have declined 70-90% across their range OR, WA, southwest BC, and are extirpated from California. In BC, there is a handful of disjunct populations and at least 50% of populations have become extirpated. This may be closer to 90% as many populations may have gone unreported historically. Sithings are from the Salmon River headwaters area (Langley/Aldergrove), Maria Slough (Seabird Island), Matsqui Prairie (north Abbotsford), Mountain Slough (District of Kent), and Morris Valley (District of Kent). Three known extirpated populations occurred in Campbell Valley Regional Park (Langley), Nicomen Island and Sumas Prairie (Chilliwack). Captive breeding programs have been underway for a number of years in Langley and Aldergrove. Release programs to existing and restored sites on Seabird Island and Aldergrove have been ongoing since 2003 with goals to establish approximately 20 viable populations in BC.

Threats

- Habitat loss from draining and infilling of wetlands, and hydrological disruption of surface and groundwater due to urbanization.
- Egg mortality from vulnerability of breeding sites (large shallow wetlands) to fluctuating water levels causing stranding and washing away of egg masses. May become an increasing issue with climate change.
- Population isolation and reduced dispersal of remaining populations.
- Disturbance of hydrological processes and isolation of populations due to roadways.
- Predation by introduced Bullfrog and potential competition impacts from Green Frog
- Habitat alteration from invasion of non-native plant species (e.g. species of Reed Canary Grass).
- Cumulative impacts from disease. Chytridiomycosis, caused by the chytrid fungus *Batrachochytrium dendrobatidis*, has been linked to dramatic population declines or even extinctions of amphibian species in western North America and has been found to occur widely in US Oregon Spotted Frog populations, especially those at lower elevations.
- Sensitivity to water chemistry (i.e. conductivity), especially during embryonic development. This species may require specific conditions for optimal reproductive success.
- Direct mortality or sub-lethal impacts throughout all life history phases from fertilizer and pesticide applications in urban and agricultural areas as well as for silviculture management.

Conservation/ Management

Apply conservation and management objectives as set-out in the "Recovery Strategy for the Oregon Spotted Frog *Rana pretiosa* in BC", and "Develop with Care's BMP's for Amphibians and Reptiles in Urban and Rural Environments in British Columbia". Integrate complementary objectives, recommendations and assessment methods found in "A Conservation Assessment for the Oregon Spotted Fropg R*ana pretiosa*" through the USDA Forest Service Region 6 and USDI Bureau of Land Management, Oregon and Washington. Where appropriate, measures as set out in RISC Standards # 37. "Inventory Methods for Pond-breeding Amphibians and Painted Turtle (Version 2.0)" should be applied, "Measuring and Monitoring Biological Diversity - Standard Methods for Amphibians", "Suitability of Amphibians and Reptiles for Translocation" and amphibian survey methodologies developed for the "Wetlandkeepers Handbook". For further details on conservation and management objectives for this species, please consult the above noted resources, references provided or contact provincial and federal agencies.

This species is listed under the Federal Species At Risk Act (SARA) and is Identified Wildlife in BC and is subject to protections and prohibitions under the BC Wildlife Act. Habitat for this species may also be governed under provincial and federal regulations including the Fish Protection Act and Federal Fisheries Act as well as Regional and local municipal bylaws.

Sources

BC Conservation Data Centre. [Internet] [Updated December 15 2010] Conservation Status Report: *Rana pretiosa*. BC MoE. - BC Frogwatch Program. [Internet] Environmental Stewardship Division. BC Ministry of Environment. - BC Ministry of Environment. [Internet] Canadian Oregon Spotted Frog Recovery Team. 2012. Recovery strategy for the Oregon Spotted Frog (*Rana pretiosa*) in British Columbia. Victoria, BC. 59 pp. - BC Ministry of Environment Lands and Parks. Resources Inventory Branch 1998. [Internet] Inventory Methods for Pondbreeding Amphibians and Painted Turtle (Version 2.0). Standards for Components of British Columbia's Biodiversity No. 38. - California Herps. com 2011. [Internet] Oregon Spotted Frog *Rana pretiosa*. - COSEWIC. 2011. COSEWIC assessment and status report on the Oregon Spotted Frog *Rana pretiosa* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 47 pp. - Cushman, Kathleen. A and Christopher A. Pearl. 2007. [Internet] A Conservation Assessment for the Oregon Spotted Frog (*Rana pretiosa*). March 2007, USDA Forest Service region 6. - Environment Canada. 2014. Recovery Strategy for the Oregon Spotted Frog (*Rana pretiosa*) in Canada [Proposed]. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. 21 pp. + Appendix. - Germano, J.M. and P.J. Bishop. 2008. [Internet] Suitability of Amphibians and Reptiles for Translocation. Conservation Biology 23:7-15. - Hayes, Mark P. et al. 2009. [Internet] Amphibian Chytridiomycosis in the Oregon Spotted Frog (*Rana pretiosa*) in Washington state USA. Northwestern Naturalist 90:148–151. - Hayes, Mark P. et al. 2005. [Internet] Exploratory Evaluation of Nutrient Enrichment and Frog Response at Conboy Lake National Wildlife Refuge. Environmental Contaminants On-Refuge Investigation Project ID: 1N56. - Heyer, W.R., et al. 1994. Measuring and Monitoring Biological Diversity. Standard Methods for Amphibians. Smithsonian Institution Press, Washington. - Matsuda, B.M. 2002. [Internet] The Wetlandkeepers Handbook: Section 5, Module 2.4. Conducting an Amphibian Inventory. BC Wildlife Federation, Surrey, BC. - McKibbin R, et al. 2008. The influence of water quality on the embryonic survivorship of the Oregon Spotted Frog (*Rana pretiosa*) in British Columbia, Canada. Science of the Total Environment. 395: 28-40. - Nathan, D. et al. 2007. [Internet] Oregon Spotted Frog (*Rana pretiosa*) Movement and Demography at Dilman Meadow: Implications for Future Monitoring. USGS Forest and Rangeland Ecosystem Science Center. - Olson, D.H., Leonard, W.P., Bury, R.B. 1997. Sampling Amphibians in Lentic Habitats: Methods and Approaches for the Pacific Northwest. Northwest Fauna Number 4. Society for Northwestern Vertebrate Biology, Olympia, WA. - Oregon Fish and Wildlife Office. 2011. [Internet] Species Fact Sheet Oregon spotted frog *Rana pretiosa*. - Ovaska, Kristiina et al. 2004. [Internet] Best Management Practices for Amphibians and Reptiles in Urban and Rural Environments in British Columbia. BC Ministry of Water, Land and Air Protection. Nanaimo. - Pearson, Monica. 2010. [Personal comm.] South Coast Oregon Spotted Frog Recovery Project. BC Conservation Foundation. - Sielecki, Leonard E. 2010. [Internet] Wildlife identification field guide: red and blue listed amphibians and reptiles in British Columbia. - Pearl, C. A, and M. P. Hayes. 2004. [Internet] Habitat associations of the Oregon spotted frog (*Rana pretiosa*): A literature review. Final Report. Washington Department of Fish and Wildlife, Olympia, Washington, USA. - Proulx, Gilbert et al. 2003. A Field Guide to Species at Risk in the Coast Forest Region of British Columbia. Published by International Forest Products and BC Ministry of Environment. Victoria (BC). - Washington Herp Atlas, 2009. [Internet] Oregon Spotted Frog *Rana pretiosa*. Washington Natural Heritage Program, Washington Dept. of Fish & Wildlife, U.S.D.I. Bureau of Land Management and US Forest Service.

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Every effort has been made to ensure content accuracy. Comments or corrections should be directed to the South Coast Conservation Program: info@sccp.ca. Content updated March 2015.