

Published on *South Coast Conservation Program* (<http://sccp.ca>)

Coastal (Pacific) Giant Salamander

Dicamptodon tenebrosus

A member of the family Dicamptodontidae (“giant salamanders”). The family was originally grouped with Ambystomatidae, the “mole salamanders.” Coastal Giant Salamander are one of the few vocal salamanders, capable of issuing a low barking or croaking sound when startled.



Terrestrial form William Flaxington



"Neotene" / larval form William
Flaxington



"Neotene" / larval form Pierre Fidenci
Wikimedia



Terrestrial form Jeffrey Marsten
Wikipedia



Terrestrial form Hugh Griffiths



Terrestrial form (consuming mouse)
Harry Greene McGill U.



Adult US National Parks Service



Adult anon

Characteristics

Snout to vent length 6.25 – 17 cm, Adults up to 35 cm total length including the tail. This is the largest salamander in BC (and possibly the southeast). The plump body has a wide, wedge-shaped head and fleshy legs. Skin is smooth, dark brown to dark grey usually with brown or tan marbling on the dorsal area from head to tail and upper parts of the legs. The chin and belly is pale grey or cream, eyes vary in colour, often similar to the marbling colouration. Older adults may lose the marbling on the body. Once in terrestrial form, adults have 12-13 indistinct lateral “costal grooves” (vertical indents that look like ribs). Larvae, which are totally aquatic, can reach 20 cm and start out in a somewhat tadpole-like state with only a tail, small forelimbs and external gills. Larval colour is somewhat a monotone light brown with indistinct mottling and lighter ventral areas than adults. Gills are bushy and reddish-brown. Neotenes (aquatic individuals which retain larval physiology but are capable of breeding) may reach full adult size (35 cm). Under some conditions (possibly due to lowered riparian habitat complexity), neotenes can outnumber terrestrial individuals. *This species is sometime referred to as the Pacific Giant Salamander.

Status

Global Status:	G5
Provincial Status:	S2
SARA Status:	Threatened
BC List Status:	Red (Candidates for- Extirpated, Endangered, or Threatened status)

Similar Species

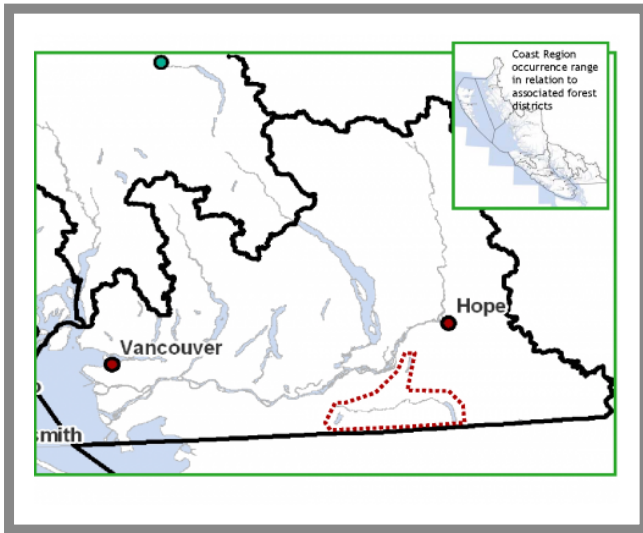


Northwestern Salamander 'the high fin sperm whale'
wikipedia

Coastal Giant Salamander can be mistaken for the more common Northwestern Salamander. This species can reach lengths of 10 cm or more and also exhibits neotenic behavior. Northwestern Salamander are generally a uniform brown dorsally and ventrally without any marbling and have prominent costal grooves. Adults have noticeable parotoid glands behind each eye which produce a toxic, creamy substance when threatened.

Ecology

Range



Elevations: 0-2160 m, usually <1200 m in BC. Coastal Giant Salamander is generally found in watersheds on the west side of the Cascades from northern California through Oregon, Washington State (absent from the Olympic Peninsula), and north into the extreme southwest of the Coast Region in the Fraser Lowlands. Distribution in BC is confined to the Chilliwack River watershed and a handful of immediate adjacent smaller watersheds. Known occurrences range from the east side of Chilliwack Lake, side channels and tributaries of the Chilliwack River to the west side of Vedder Mountain. Inventory efforts to date have not been exhaustive and the species may have a wider occurrence range in other tributaries in the Chilliwack Watershed where suitable habitat conditions exist. The population on the west side of Vedder Mountain may now be isolated because of modifications to the drainage system of this area. In the US, historical populations have probably not declined, though localized extirpations from urbanization and some fragmentation within the range, mostly due to forestry practices have likely occurred.

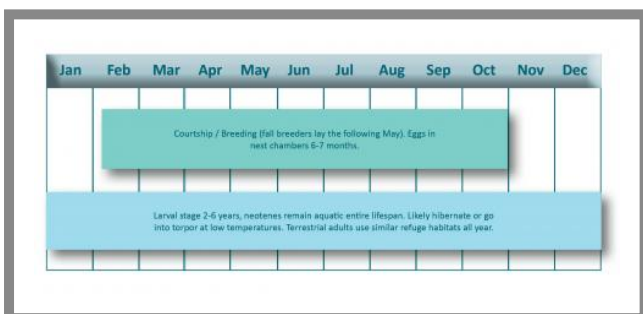
Habitat

Life history includes an aquatic and terrestrial component. Larvae and neotenes are found in cold, unsilted streams with structures for hiding (logs, boulders, undercut banks). Abundance is higher in streams at higher elevation and in steeper slopes. Terrestrial adults are found primarily in mature to oldgrowth forests adjacent to streams. Larvae, and adults prefer habitat with substantial cover for hiding, to keep moist and avoid desiccation. This species has been known to occur in younger riparian and upland forests, and in small seasonally intermittent stream systems. Adults use refuges such as burrows and decomposing downed wood and other moist cover within 50 m of streams. Under appropriate conditions adults can disperse significant distances from waterbodies (up to 400 m in Oregon populations). Terrestrial adults appear to be predominantly nocturnal and most active during periods of rain. In BC neotenes tend to be at higher elevations than terrestrial adults and in larger more permanent waterbodies. Larvae are sedentary showing low dispersal within natal streams. While adults may utilize clearcuts or younger forests, studies indicate a long-term decline in populations after logging of oldgrowth forests. This species is far more abundant in unsilted streams than in streams that have become silted due to logging or other alteration of the land above the stream. Creek sedimentation eliminates access to cover under rocks in the streambed which is critical habitat. Availability of nest chambers and moist microclimate refuges are critical for sustaining populations.

Diet

Fully metamorphosed adults are generally terrestrial foragers, and will consume any prey items that can be overpowered and fit in the mouth including beetles, spiders, slugs, shrews, mice, and other salamanders (incl. C. Giant Salamander). Larvae are nocturnal foragers, feeding on aquatic invertebrates, Tailed Frog tadpoles, small fish, and occasionally each other.

Life Cycle



Reproduction is aquatic. In BC courtship occurs in hidden, water-filled nest chambers beneath logs and stones mostly in spring, usually in May, but eggs can be found into the fall. Females remain near egg clutches until they hatch and larvae disperse. Clutch size ranges from 83 to 200 eggs each approximately 6.5 mm in diameter. Time period for metamorphosis to terrestrial adults from larval stage varies depending on environmental conditions and the size and

permanence of the stream; BC populations appear to take longer (4-6 years) than in the US (2-3 years in Oregon). Recently metamorphosed juveniles move out of streams to the surrounding habitat during wet periods. Lifespan may be up to 25 years. Rates of successful maturation to adult stage is low as is reproductive potential in females.

Threats

- Habitat loss and alteration due to urbanisation and forest activities. Distribution coincides with areas undergoing rapid development. Disturbance, clearing and fragmentation of upland terrestrial habitat reduces adult survival.
- Alteration of microclimate regimes in riparian and upland forest areas, and increase of water temperatures and siltation rates in streams due to forestry and other resource extractive activities.
- Changes in flow regimes as well as increase barriers to dispersal due to inadequately designed or perched stream crossings (e.g. culverts).
- Alteration of flow regimes or channel structure and seasonal wetted areas due to hydroelectric projects.
- 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.
- Effects from climate change and natural events (e.g., mudslides/avalanches, storms, flooding) that increase stream temperatures and siltation, droughts, or decrease water flows.
- Combined with a low dispersal rate, slow development, and low reproductive capacity, the species is highly vulnerable to local extirpation where its habitat is being encroached by human activities.

Conservation and Management

Please consult the Recovery strategy for the Pacific Giant Salamander (*Dicamptodon tenebrosus*) in British Columbia. Integrate complimentary measures found in Accounts and Measures for Managing Identified Wildlife – Accounts V.2 Coastal Giant Salamander *Dicamptodon tenebrosus*” and “Best Management Practices for Amphibians and Reptiles in Urban and Rural Environments in British Columbia.” Inventory and monitoring resources include standardized methods (Resource Information Standards Committee) # 39 Inventory Methods for Tailed Frogs and Pacific Giant Salamanders (Version 2.0), “Measuring and Monitoring Biological Diversity - Standard Methods for Amphibians”, “Suitability of Amphibians and Reptiles for Translocation”. 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.

Resources

Species Are Sacred - A Stó:l? World View on Species at Risk in the Fraser Valley

Pacific Giant Salamander (Tsuyeeuxh) factsheet. Content and original artwork by Carrielyn Victor (for the SCCP).

For further information see

Develop With Care 2014 Factsheet # 19 Pacific Giant Salamander

Scroll down to bottom of DWC site to access factsheet

BC Species and Ecosystems Explorer: Species and Ecosystems Search

A source for authoritative conservation information on thousands of plants and animals and hundreds of ecological communities in BC. From here connect to all provincial and federal recovery plans (including the SARA Registry), COSEWIC (Committee on the Status of Endangered Wildlife in Canada), Identified Wildlife guidance and conservation requirements for specific species and ecological communities of conservation concern impacted by forestry activities) and links to E-Flora and E-Fauna (the Electronic Atlas of the Plants and Wildlife of British Columbia).

British Columbia's Coast Region Species & Ecosystems of Conservation Concern

A joint venture resource providing comprehensive information on a range of species and ecological communities specific to the

Coast Region of BC (including the South, Central and North Coast, Vancouver Island and Haida Gwaii).

Develop With Care Guidelines (see Lower Mainland Region section and factsheet)

Environmental guidelines for urban and rural land development in BC.

Species at Risk & Local Governments a Primer for BC

Learn what species are at risk in your area, search by name, habitat type, regional district and forest district.

Sources

B.C. Conservation Data Centre. [Internet] [Updated December 15 2010]. Conservation Status Report: *Dicamptodon tenebrosus*. B.C. MoE. - BC Ministry of Environment. 2014.

Develop with Care Factsheet #19 Coastal Giant Salamander. BC MoE region II Surrey. -

CaliforniaHerps.com. 2010. [Internet]. *Dicamptodon tenebrosus* -

Coastal Giant Salamander. - Cannings, S.G., L.R. Ramsay, D.F. Fraser, and M.A. Fraker. 1999. Rare amphibians, reptiles, and mammals of British Columbia. Wildl. Branch and Resour. Inv. Branch, B.C. Minist. Environ., Lands and Parks, Victoria, BC. 198pp. -

Curtis, Janelle, M.R. and Eric B. Taylor. 2003. [Internet] The genetic structure of coastal giant salamanders (*Dicamptodon tenebrosus*) in a managed forest. *Biological Conservation* 115 (2003) 45–54. -

Ferguson, Heather M. 2000. [Internet] Larval colonisation and recruitment in the Pacific giant salamander (*Dicamptodon tenebrosus*) in British Columbia. *Can. J. Zool.* 78: 1238–1242. -

Germano, J.M. and P.J. Bishop. 2008. [Internet] Suitability of Amphibians and Reptiles for Translocation. *Conservation Biology* 23: 7-15. -

Hossack, Blake R. et al. 2010. [Internet] Low Prevalence of Chytrid Fungus (*Batrachochytrium dendrobatidis*) in Amphibians of U.S. - Headwater Streams. *Journal of Herpetology*, Vol. 44, No. 2, pp. 253–260. -

Heyer, W.R., et al. 1994. *Measuring and Monitoring Biological Diversity. Standard Methods for Amphibians*. Smithsonian Institution Press, Washington. -

Johnston, Barbara and Leonardo Frid. 2002. [Internet] Clearcut logging restricts the movements of terrestrial Pacific giant salamanders (*Dicamptodon tenebrosus* Good) *Can. J. Zool.* 80: 2170–2177. -

Johnston, Barbara E. 2004. [Internet] Accounts and Measures for Managing Identified Wildlife – Accounts V. 2004. Coastal Giant Salamander *Dicamptodon tenebrosus*.

Ministry of Environment, Lands and Parks. 1999. [Internet]. Inventory Methods for Tailed Frogs and Pacific Giant Salamanders (Version 2.0) for Components of British Columbia's Biodiversity No.39. -

Ovaska, K, S. Lennart, C Engelstoft, L. Matthias, E. Wind and J. MacGarvie. 2004. *Best Management Practices for Amphibians and Reptiles in Urban and Rural Environments in British Columbia*.

Ministry of Water Land and Air Protection, Ecosystems Standards and Planning, Biodiversity Branch Pacific Giant Salamander Recovery Team. 2010. Recovery strategy for the Pacific Giant Salamander (*Dicamptodon tenebrosus*) in British Columbia. Prepared for the B.C. Ministry of Environment, Victoria, BC. 42pp. -

Proulx, Gilbert et al. 2003. *A Field Guide to Species at Risk in the Coast Forest Region of British Columbia*. Published by InternationalForest Products and BC Ministry of Environment. Victoria (BC). -

Richardson, J.S. and W.E. Neill. 1998. [Internet] Headwater amphibians and forestry in British Columbia: Pacific giant salamanders and tailed frogs. *Northwest Science* 72: 122-123. - Richardson, John S. et al. 2005. [Internet]

Credits

Original Species Profile prepared by: Pamela Zevit, RPBio with Brent Matsuda, RPBio for the South Coast Conservation Program (SCCP) in partnership with: International Forest Products (Interfor), Capacity Forestry (CapFor). Original funding for this project was made possible through the Sustainable Forestry Initiative(SFI): <http://www.sfiprogram.org/>

Updated and revised by: Isabelle Houde, RPBio in consultation with the SCCP. Part of the National Conservation Plan, this project was undertaken with the financial support of the Government of Canada. Dans le cadre du Plan de Conservation National, ce projet a été réalisé avec l'appui financier du Gouvernement du Canada. 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 October 2015.

Image Credits: : Pacific Giant Salamander: Jeffery Marsten Wikipedia, Pacific Giant Salamander larva/neotene: Pierre Fidenci Wikimedia, Northwestern Salamander: High fin sperm whale Wikipedia. Habitat: Pamela Zevit. Images from “creative commons” sources (e.g. Wikipedia, Flickr, U.S. Government) can be used without permission and for non-commercial purposes only. All other images have been contributed for use by the SCCP and its partners/funders only.

Source URL: <http://sccp.ca/species-habitat/coastal-pacific-giant-salamander>

Links

- [1] <http://www.env.gov.bc.ca/wld/documents/bmp/devwithcare/index.html>
- [2] <http://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/conservation-data-centre/explore-cdc-data/species-and-ecosystems-explorer>
- [3] <http://www.geog.ubc.ca/biodiversity/factsheets/>
- [4] <http://www.speciesatrisk.bc.ca/>
- [5] <http://www.sfiprogram.org/>
- [6] <mailto:info@sccp.ca>