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: : Coastal Giant Salamander (*Dicamptodon tenebrosus*), Family Dicamptodontidae
Status Global: G5 Provincial: S2 SARA: 1-Threatened BC List: Red - Identified Wildlife

This species is a member of the family Dicamptodontidae ('giant salamanders'), a family whose only genus is Dicamptodon. Endemic to the Pacific Northwest, 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. Larger adults are capable of delivering a painful bite.

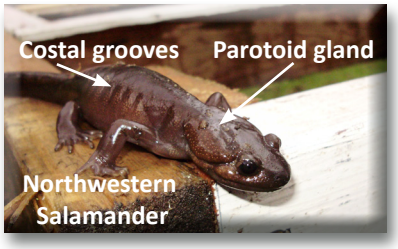

Coastal Giant Salamander

Characteristics (things to look for)


Aquatic larva/Neotine

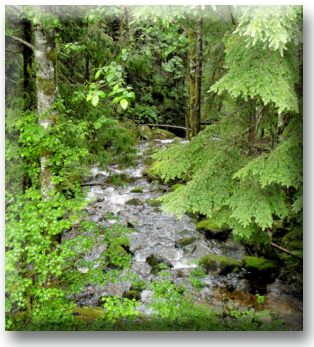
Snout to vent length 6.25 – 17 cm, Adults up to 35 cm total length including the tail. This is the largest salamander in BC (and possibly the southeast). The plump body has a wide, wedge-shaped head and fleshy legs. Skin is smooth, dark brown to dark grey usually with brown or tan marbling on the dorsal 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.

Looks like (Similar)



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.

Habitat



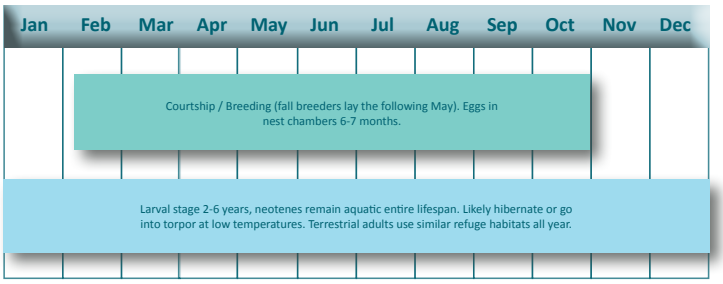
Life history includes an aquatic and terrestrial component. Larvae and neotenes are found in cold, unsilted streams with structures for hiding (logs, boulders, undercut banks). Abundance is higher in streams at higher elevation and in steeper slopes. Terrestrial adults are found primarily in mature to old-growth 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 old-growth 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. Coastal Giant Salamander). Larvae are nocturnal foragers, feeding on aquatic invertebrates, Tailed Frog tadpoles, small fish, and occasionally each other.

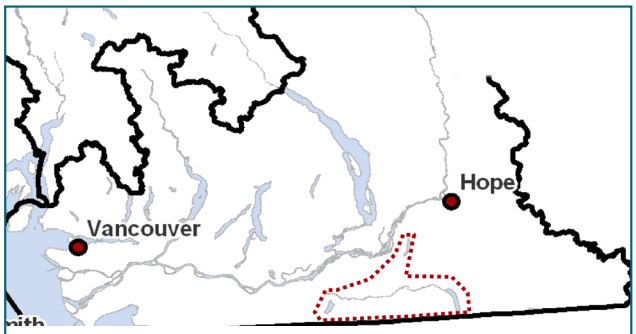
Life Cycle

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.



Range

Elevations: 0-2160 m, usually <1200 m in BC. Coastal Giant Salamander are 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.



Distribution on South Coast BC

Threats

- Habitat loss and alteration due to urbanization 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 in 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/ Management

Apply conservation and management objectives as set-out in the "Recovery Strategy for the Pacific Giant Salamander (*Dicamptodon tenebrosus*) in BC, and "Develop with Care's BMP's for Amphibians and Reptiles in Urban and Rural Environments in British Columbia". Integrate objectives, recommendations and assessment methods 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.

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

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