



Pygmy Slug

Photo: © Kristina Ovaska



Scientific name
Kootenaia burkei

Taxon
Molluscs

COSEWIC Status
Special Concern

Canadian range
British Columbia

Reason for Designation

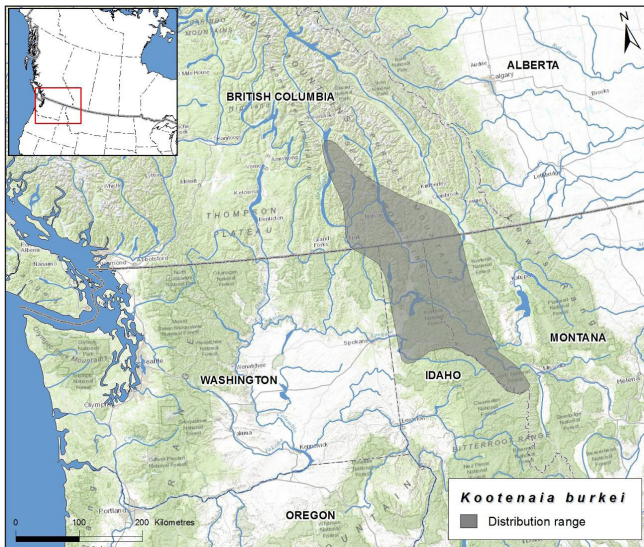
In Canada, this small slug is confined to the moist forests of the northern Columbia basin of British Columbia. It is found in moist mixed-wood and coniferous forests and commonly associated with riparian habitats along small creeks. Key habitat requirements include high substrate moisture with abundant woody debris and leaf litter for shelter. Threats include: existing and new roads resulting in fragmentation, increased edge effects, and barriers to dispersal; predation and competition from invasive species; damage to riparian areas associated with livestock grazing; habitat loss and degradation associated with logging activities; and, projected consequences of climate change, including an increase in drought conditions and an increase in both the number and severity of wildfires.

Wildlife Species Description and Significance

Pygmy Slug is the sole member of the newly described genus *Kootenaia*. As its common name implies, Pygmy Slug is very small with adults usually 9 – 14 mm long. The colour is from dark grey to tan with dense bluish flecking covering the mantle and tail; dark mottling is often present on the mantle. The tail is rounded (lacking a keel) with a series of parallel and oblique longitudinal grooves, which may resemble thin dark stripes. Pygmy Slug is a regional endemic to moist forests of the northern Columbia Basin, an area that contains many unique plants and animals.

Distribution

The global distribution of Pygmy Slug extends from southeastern British Columbia through the Idaho Panhandle to northwestern Montana. In Canada, Pygmy Slug occurs in the Selkirk and Purcell sub-ranges within the Columbia Mountains in southeastern British Columbia. The species is known from 44 sites in the province; the number of sites may continue to expand with increasing search effort. Approximately 36% of the species' distribution is in Canada.



Global distribution of Pygmy Slug (*Kootenaia burkei*), based on distribution records from 2009 – 2015. Map prepared by Lennart Sopuck and Jenny Wu.

Habitat

In British Columbia, the slugs occur mostly within the Interior Cedar-Hemlock biogeoclimatic zone, which is among the wettest areas in the interior of the province. The slugs have been found in moist mixed-wood and coniferous forests from low to mid-elevations (580 m – 1585 m), where they are commonly associated with riparian habitats along small tributary creeks. High substrate moisture and abundant shelter, such as provided by coarse woody debris or pockets of deep leaf litter, appear to be key habitat requirements. The slugs have been found from 40 – 50-year-old second growth to old growth (>200 years old) stands. Common trees at occupied sites included Western Redcedar and Black Cottonwood; the understory often contained moisture-loving plants, such as Thimbleberry, Devil's Club, and Lady Fern.

Biology

The natural history of Pygmy Slug is poorly known. The slugs are hermaphroditic, but the exchange of sperm with other individuals rather than self-fertilization is probably the norm. The slugs lay small clutches of eggs, which are relatively large

(10% or more of parent body length). The slugs are known to feed on lichens and fungi and probably also consume decaying organic matter in the duff layer. Most observations in British Columbia and the United States have taken place in autumn, when the slugs are active on the forest floor. Juveniles and an unknown proportion of adults probably overwinter. The generation time is approximately 1 year. The small size of the slugs may enable them to exploit small habitat patches provided that their requirements for moisture and shelter are met. Slugs in general are poor dispersers if not aided by humans or by wind or water; no such passive means of dispersal are known for Pygmy Slug, exacerbating the effects of habitat fragmentation on its distribution within the landscape.

Population Sizes and Trends

Population sizes and trends of Pygmy Slug are unknown. Survey efforts have focused on elucidating the distribution of Pygmy Slug rather than on obtaining abundance estimates. Records for the species from British Columbia are from 2007 – 2015, precluding information on population trends.

Threats and Limiting Factors

The Canadian distribution of Pygmy Slug most likely reflects post-glacial expansion from refugia farther south. Its present distribution is probably limited by a short growing season and/or long and cold winters to the north, and drier forest types to the east and west. Low dispersal ability and requirements for moist habitats limit the speed at which the slugs can colonize new habitats.

Pygmy Slug populations are threatened by extreme events associated with climate change, introduced invasive species, fire and fire suppression, logging, roads, and livestock farming and ranching. The greatest threats to the slugs across their Canadian range are deemed to be from droughts and flood events, the frequency and severity of which are predicted to continue to increase under climate change scenarios. Invasive, non-native species that threaten slug populations include introduced gastropods, which are inadvertently spread by humans and which prey on

or compete with native species, and other invertebrate predators such as ground beetles, which can be aggressive predators of slugs. Frequency and severity of wildfires is projected to increase with climate change. Due to their low mobility, gastropods are both unable to escape fire events by moving away and are slow to recolonize burnt areas. Logging is prevalent throughout the Pygmy Slug's range and continues to modify and fragment habitats. The effects of logging on slugs may be mitigated to some degree by riparian buffers, which are required along larger water courses containing fish, or which logging companies may leave voluntarily along small, fishless streams where they are not required. Logging roads and other resource roads also continue to fragment habitats.

Protection, Status, and Ranks

Pygmy Slug has no official protection or status under the federal *Species at Risk Act*, B.C. *Wildlife Act*, or other legislation. Pygmy Slug is ranked by NatureServe as follows: Global status - G2 (imperilled); United States - N2 (imperilled); Canada - N1 (critically imperilled); Idaho: S2 (imperilled);

Montana - S1S2 (critically imperilled to imperilled); BC:S1? (possibly critically imperilled). In British Columbia, the species is on the provincial red list of species at risk.

Across the Pygmy Slug's Canadian range, protected lands comprise approximately 20% of the land base and include several provincial parks, provincial Wildlife Habitat Areas established for other species, and other conservation lands. Pygmy Slug has not been recorded from any of the above areas with the exception of one site within a small conservation area. Most of the range and known sites are within provincial forestry lands.

Source: COSEWIC. 2016. COSEWIC assessment and status report on the Pygmy Slug *Kootenaia burkei* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 53 pp.

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