

## BC's Coast Region: Species & Ecosystems of Conservation Concern

Olympic Shrew (*Sorex rohweri*) Global: G4G5, Provincial S1, COSEWIC: N/A BC List: Red

Trowbridge's Shrew (*Sorex trowbridgii*) Global: G4, Provincial: S1S2, COSEWIC: E BC List: Red

Trowbridge's Shrew



Olympic Shrew



Notes on *Sorex rohweri* and *Sorex trowbridgii*: Of the 12 species of the family Soricidae (shrews), in BC, *S. rohweri* (right<sup>1</sup>), also referred to as “Rohwer’s Shrew”, is the most recent to be identified (2006), while *S. trowbridgii* (left) is perhaps the least studied. Both species are rare and restricted to the extreme southwest of the Coast Region where they are at the northern end of their North American range. While divergent from one another genetically they share much of the same habitat preferences and potential distribution in BC.

### Description

*S. Trowbridgii* Length 11.8cm, including 5.6 cm tail. Trowbridge’s Shrew is uniformly dark grey, slightly browner in summer than in winter, with distinctly white feet. Vibrissae (whiskers) are numerous and the skull and rostrum (snout) are shorter, giving this species a rounder face and head than other shrews. Juveniles have hairy tails that become naked like a rat’s as they mature. The third unicuspid is smaller than fourth and the teeth are pigmented a dark reddish-brown<sup>2</sup>. *S. rohweri* Length 9.3-11.3 cm, including 3.2-5.5 cm tail. The dorsal pelage (fur) is brownish-grey, somewhat paler ventrally. The tail is bi-coloured, and tapers uniformly to the tip without a terminal hair tuft. The skull is relatively long, with a narrow rostrum. Central (medial) tines (points) of the incisors are very small, slightly projecting; situated above or near the outer margin of pigmentation on incisors, with little or no pigmentation.

### Diet

Both species are terrestrial insectivores, major foods include insects, spiders, centipedes and worms. Little is known about any specific dietary requirements of Olympic Shrew, however Trowbridge’s Shrew has been reported to eat the seeds of Douglas-fir, and will eat a variety of seeds in captivity as well as animal foods. Shrews have extremely high metabolic rates and must eat constantly to maintain energy levels. Foraging takes place continually day or night among leaf litter, under downed wood and burrows on the forest floor.

### Look’s Like?

Cinereus and Olympic Shrew are nearly identical and easily confused with one another (see Footnote below). Trowbridge’s Shrew is typically much darker than other shrews (e.g. Vagrant and Dusky Shrew), but its grey pelage could be mistaken for the considerably larger American Water Shrew. Given both these species occur in habitats potentially utilized by a range of terrestrial and aquatic shrew species, reliable identification of live animals observed in the wild is difficult. As with most shrew species, identification is best done through DNA analysis (preferably utilizing hair or feces) or measuring morphological characteristics (i.e. dentition).



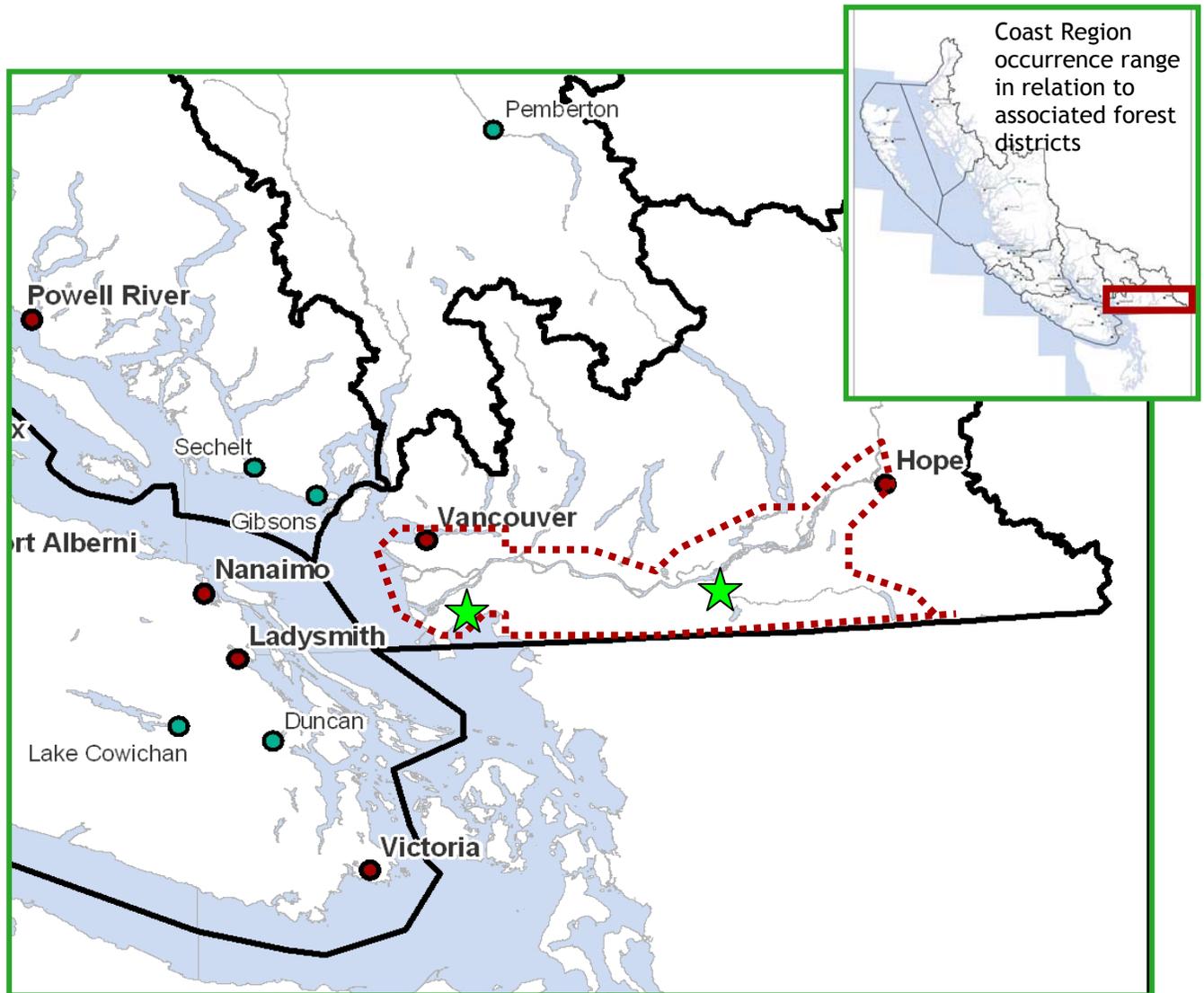
American Water Shrew

<sup>1</sup> Due to lack of adequate photo documentation for Olympic Shrew an image of the virtually identical Cinereus Shrew has been used at top.

<sup>2</sup> In shrews dentition patterns, shape and number are a key identification tool

## Distribution

Olympic Shrew is a species of shrew generally misidentified as the more common Cinereus or “Masked” Shrew. Identified from several sites in the Fraser Lowlands (Burns Bog, Delta and Vedder Mountain/Sumas area near Chilliwack) as part of recent genetic studies, *S. rowheri* is likely restricted to the Olympic Peninsula and southwest Cascades (near the Columbia River) north into areas south of the Fraser River. This limited distribution is likely an artefact of areas that may have been glacial refugia (ice free areas) during the last glaciation period. However the misidentification as Cinereus Shrew may mean it is more widely distributed. Trowbridge’s Shrew is distributed from California through western Oregon and Washington into the extreme southwest of BC. Restricted to low elevation forests and wetlands of the Fraser Lowlands and the Fraser Canyon north to Boston Bar. *S. trowbridgii* is generally rare in upland areas north of the Fraser River.



Trowbridge's (*Sorex trowbridgii*, red-dotted line) potential occurrence range and Olympic Shrew (*Sorex rowheri* - green stars) known occurrences for the Coast Region

**Habitat Preferences**

Both shrew species are associated with a wide variety of low elevation forest communities, preferring habitats with dry, loose soil and deep litter that provide a source of cover and food. While coniferous forests are preferred, deciduous or mixed forests are also utilized. Within their overlapping ranges, Olympic Shrew may be more associated with riparian zones in and around streams and wetlands. Trowbridge’s Shrew prefers upland areas away from water where litter and soils are drier and easier to forage in. Both species may also utilize transitional grassland or disturbed areas. Olympic Shrew has been collected in grass and shrub communities in close proximity to forest cover.



**Critical Features**

Trowbridge’s Shrew is closely associated with forested communities with well-developed litter layer and ground cover of shrubs and herbaceous plants. These features are used to establish runway systems and burrows. Nests can be constructed in cavities of downed wood, under logs or in shallow holes. Occurrences for Olympic Shrew indicate strong associations for similar forested areas and cover types. Home range (i.e. for *S. trowbridgii*) may be up to .04 ha supporting 1-12 shrews. Populations tend to be scattered and though locally abundant are potentially susceptible to local extirpation from fragmentation.



Key habitat components include high levels of structural diversity, deep organic layers on the forest floor and proximity to water.

**Seasonal Life Cycle**

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<p>Trowbridge’s breeding period Feb-May. Olympic Shrew unknown (likely similar, i.e. late winter to fall). Litter size 1-6 pups, 2-3 litters per year. Breeding may be influenced by degree of sun exposure in nesting sites.</p>											
<p>Active all year, rarely lives more than one year</p>											

**Threats**

- ◆ Knowledge gaps in occurrence, population, and abundance contribute to ongoing conservation and management challenges for these species.
- ◆ Distribution coincides with areas undergoing rapid development and land use conversion.
- ◆ Damage or disruption to nests, litter abandonment and possibly extirpation of local populations may occur where logging or land clearing, removal of standing, dead and downed wood and loss of other critical features from extractive resource activities occur.
- ◆ Roadways that cut through core habitat areas and lack wildlife passage structures increase vehicle mortality impacts and population fragmentation.
- ◆ While this species can swim, major waterbodies in ice-free areas can be a barrier to dispersal.
- ◆ Predation by feral or free ranging domestic pets (i.e. cats) may impact local populations.

**Conservation & Management Objectives**

- ◆ Apply conservation and management recommendations as set out in the review of *S. trowbridgii* in “Rare amphibians, reptiles, and mammals of British Columbia and “Distribution and Abundance of Four Species of Small Mammals at Risk in a Fragmented Landscape”. Application of recovery objectives and IWMS measures such as those described for species of water shrew or other forest dependent small mammal species would likely provide improved conservation for these two shrew species.
- ◆ At present the inventory standards should follow methodologies as set out in the RISC standards # 31 Inventory Methods for Small Mammals: Shrews, Voles, Mice & Rats (Version 2.0). However given their potential rarity, measures found in

“Best Management Practices Guidelines For Pacific Water Shrew In Urban And Rural Areas” should be considered until any revisions to inventory approaches for these or other shrew species are developed. While identification may be difficult, retaining numerous vouchers for analysis could impact local populations. Genetic analysis using hair and/or feces is recommended to reduce need for retaining actual specimens.

#### Specific activities should include:

- ◆ The issue of *S. rohweri* species taxonomic differences with previously identified *S. cinereus* needs to be further explored through modern DNA analysis. Inventories specifically aimed at the *trowbridgii* and *rohweri* shrew species is needed to determine extent and habitat preferences. Gaps in conservation and management needs will continue until the status and distribution of both these shrew species is known.
- ◆ Riparian buffers imposed to protect fish habitat are likely insufficient for protecting the complete range of foraging and refugia requirements of either shrew species. Buffers similar to those proposed for Pacific Water Shrew (100 meters from top of bank on both sides of the watercourse) may be necessary to protect the broadest range of habitat features and functions.
- ◆ Wildlife underpasses are preferred and should be installed at appropriate intervals where high road densities and potential for vehicle interactions occur. Terrestrial shrews will swim short distances. Clear-span crossings are preferred. Culvert crossings should be a minimum 2 m diameter with open bottoms with natural substrate, no longer than 30 m and should not have large drops that would impede small mammal (or fish) movement. On long culverts that are dark in the middle, consider the use of grates that will allow light and rain to enter.
- ◆ Implement agricultural land set-asides and stewardship agreements, work towards covenant and acquisition opportunities to maintain forest patches and connectivity corridors.
- ◆ Education and outreach regarding free ranging and feral domestic pet impacts should form part of overall conservation approaches.
- ◆ Apply integrated pest management programs to reduce and avoid the need for rodent pest control methods that may impact native wildlife.

Trowbridge's Shrew is listed under the Federal Species At Risk Act (SARA) and Olympic shrew is under review. Both species are subject to protections and prohibitions under the BC Wildlife Act. Habitat for these two 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.

#### Content for this Factsheet has been derived from the following sources

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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](mailto:info@sccp.ca). Content updated August 2010.

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