Recovery of a Rare Shrew in a Highly Urbanized Environment—A Model Process for the Lower Mainland of B.C.

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Extended Abstract: The Pacific water shrew (*Sorex bendirii*) is a small, semi-aquatic mammal that is found in the lower Fraser Valley of British Columbia (B.C.). The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) listed this species as Threatened in 1994 due to threats from rapid urbanization in the Vancouver area and nearby forestry activities on Crown land, and because of the species' restricted range and apparent rarity on the landscape (Galindo-Leal and Runciman 1994). This paper summarizes recovery progress for the Pacific water shrew (including planning and implementation), and proposes the use of this process as a model for future recovery efforts for other species.

A Pacific Water Shrew Recovery Team was formed in 2002 and has produced a recovery strategy which has the ambitious goal of achieving downlisting of the species to Special Concern status within 10 years. Action planning is scheduled for completion in 2004 after public consultations have been held with local governments and other stakeholders. The recovery strategy was produced separately from the action plan. This allowed for quick production of the science-based recovery strategy which then provided interim guidance for conservation activities while the formal action plan was being drafted. In the current regulatory climate, cooperative actions to achieve species recovery on private land are preferred over legislated actions. For this reason, the conservation strategy for the Pacific water shrew relies on Best Management Practices (BMPs), education of landowners and local governments through science-based reports and workshops, and cooperation with local governments to facilitate recovery. On Crown land, this species can be protected using tools available under the Identified Wildlife Management Strategy.

The Best Management Practices for the Pacific water shrew were designed to facilitate environmental assessments, offer advice on habitat protection, and provide data for monitoring of the recovery process. The BMPs use a habitat suitability/capability model derived from data collected at capture locations to assess habitat. A simple flow chart then guides users as to whether or not an environmental assessment is necessary and how that assessment and relevant

[1]NatureServe Explorer (version 4.0, July 2004) lists only the water shrew (*Sorex palustris*), as occurring in British Columbia.

habitat protection guidelines should be implemented. Habitat assessment, inventory, and management results are sent to the recovery team, and provide the basis for monitoring of the recovery process. Information from environmental assessments will be summarized every five years. Because cooperative actions are promoted in the BMPs, extensive information is also included on stewardship actions to protect habitat, relevant stewardship groups, and habitat restoration guidelines.

A primary challenge to Pacific water shrew recovery is the apparent rarity of this animal. Standard pitfall trapping is too labor intensive for efficient inventory (only three individuals were captured in 19,000 trap nights in a 1994 study), and entails a significant risk of mortality to this relatively frenetic species. For these reasons, a new capture method using bait tubes is currently being assessed. Small tubes baited with mealworms are left in potential water shrew habitat for two weeks, and feces are then collected and identified to determine which species or taxa are present. This method has been used successfully for water shrews in Europe (Churchfield et al. 2000). Students at the British Columbia Institute of Technology conducted a limited trial of this method in 2003. Preliminary results look promising in that feces from a number of species appear to have distinct characteristics; however, feces differentiation will likely be more difficult where Pacific water shrew occurrence overlaps with that of the common water shrew (*Sorex palustris*). A larger study is being planned to formally test this inventory method, and will utilize invertebrate experts to identify prey species and DNA testing to assist in species identification.

The Pacific water shrew's rarity also makes determination of its critical habitat difficult, although it is hoped that further inventory and refinement of the habitat suitability/capability model for this species will help in making a credible assessment possible. To assist with this task and to document available habitat patches, assess their suitability, and prioritize them for stewardship actions, a mapping exercise is currently being conducted across the Lower Mainland region using GIS modeling and GPS mapping techniques. Habitat patches are identified using orthoimagery, forest cover, patch size, slope, elevation, and drainage characteristics. Habitat suitability and capability will be examined for a sample of identified patches by conducting vegetation surveys in the field. Sites will be prioritized for recovery actions based on size, current suitability, connectivity to other patches, and development pressure. This project is being conducted by the Community Mapping Network (www.shim.bc.ca) and the B.C. Conservation Foundation through funds awarded by the B.C. Habitat Conservation Trust Fund.

The recovery process for the Pacific water shrew is serving as a model for other species in the region. Specifically, the separation of the development of the recovery strategy from the action plan facilitated speedy production of the science-based recovery strategy, which then provided interim guidance for conservation actions while action planning was ongoing. Further, the production of science-based BMPs provided clear guidance to development proponents for assessing and mitigating their impacts. Other species with ongoing or soon-to-be implemented recovery processes based on this model include the coastal giant salamander (*Dicamptodon*

tenebrosus), Townsend's mole (*Scapanus townsendii*), tall bugbane (*Cimicifuga elata*), and phantom orchid (*Cephalanthera austiniae*).

References

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