Habitat Restoration for the Endangered Sharp-tailed Snake

CHRISTIAN ENGELSTOFT[1] AND KRISTIINA OVASKA[2]

[1]Alula Biological Consulting, 1967 Nicholas Road, Saanichton, BC, V8M 1X8, Canada, email alula.bc@telus.net
[2]Biolinx Environmental Research Ltd., 4180 Clinton Place, Victoria, BC, V8Z 6M1, Canada

Key Words: sharp-tailed snake, sharptail snake[1], *Contia tenuis*, snake-friendly landscaping, naturescape gardening, public outreach, artificial hibernaculum, British Columbia

Extended Abstract: Habitat loss, alteration, and fragmentation are the main factors that threaten the endangered sharp-tailed snake (*Contia tenuis*) throughout its Canadian range, which occurs on the southern Gulf Islands and southern Vancouver Island, British Columbia. Although the species can tolerate some degree of disturbance and can coexist with humans, intensified urban development associated with an expanding human population, threatens its survival. For example, a property next to a site known to be used by sharp-tailed snakes was cleared to the bedrock before housing construction took place; as a result no sharp-tailed snake habitat remains there. In this paper, we outline proactive, 'snake-friendly' land management practices and summarize small-scale restoration projects that we have initiated.

As part of a stewardship project, and in collaboration with the Sharp-tailed Snake Recovery Team, we developed a brochure that encourages residents within the sharp-tailed snake's range to adopt snake-friendly landscaping and gardening practices. This brochure informs landowners and land managers about design, maintenance, and proactive measures that will benefit this and other species of reptiles, all of which are harmless to humans. Both the sharp-tailed snake and the northwestern garter snake (*Thamnophis ordinoides*) feed extensively on slugs, and may help control garden pests. This helps make our approach of promoting snake-friendly practices attractive to gardeners. Examples of recommendations outlined in the brochure include providing cover for snakes by leaving fallen logs, bark, and snags on the landowner's property; adding vegetated borders and hedges; building dry-stack rock walls; constructing brush and rock piles or compost piles; minimizing the distance between habitat patches; and maximizing the size of non-manicured areas. The brochure also encourages landowners and managers to leave a portion of their property in a natural state, where possible.

To restore sharp-tailed snake habitat on private lands, we used the following five-step approach: (1) establishing contacts with landowners by delivering a presentation for community groups that were interested in learning about the sharp-tailed snake and its habitats (see Engelstoft and Ovaska 2005), (2) establishing a relationship with landowners who approached us, and visiting sites to learn about restoration opportunities and desires of the landowner and to seed ideas about restoration, (3) developing a restoration plan that provided the landowner with a clear

[1]NatureServe Explorer (version 4.0, July 2004) lists *Contia tenuis* as the sharptail snake.

understanding of what the project entailed. The action on the ground started only after the landowner signed off on the plan. This approach was crucial to ensuring that everything went smoothly during construction, and that any misunderstandings were avoided, (4) building structures in accordance with the plan with the help of volunteers who were recruited from workshop participants and local conservation groups, and (5) monitoring the snakes' use of the restored habitat.

In 2003, we conducted three sharp-tailed snake habitat restoration projects on private properties. A fourth project was undertaken by Laura Matthias in 2002 as a student project for a diploma in Restoration Biology at the University of Victoria. That project, conducted in an area previously used by the sharp-tailed snake, consisted of creating a multi-layered structure in a large hole left by a fallen tree (all material above the bedrock had been removed when the tree fell). In the three projects undertaken in 2003, we attempted to incorporate different experimental structures (hibernacula and egg-laying structures) into retaining walls that we built. The artificial hibernacula consisted of a frost-free and moist environment in a core area that was covered with an insulating layer. Because little is known about the sharp-tailed snake's requirements for hibernation sites, we incorporated rocks of different coarseness (sand, gravel, cobble, and boulder) and wood into the structure, and carefully positioned larger rocks to provide a moisture gradient. These different materials and rock sizes were used to provide a variety of microhabitats within the structure. To investigate whether the snakes were using the structures, we incorporated several 3.8 cm pipes into the structures to provide camera access to the core of the hibernacula. The insulating layers over the hibernacula were created by placing up to 1 m of soil on top of the structures. Two of the hibernacula were built on a slope and were retained by a dry-stack wall of flat rocks that offered many crevices for the snakes to access the core. The other hibernaculum was built behind a retaining wall that bordered the end of a driveway.

The sharp-tailed snake is the only egg-laying reptile in southwestern British Columbia, but little is know about its requirements for egg-laying sites. At one location, we constructed an artificial egg-laying site within a retaining wall on a south-facing, exposed slope. Gravel and soil made up the core of the egg-laying site, which was covered by 15–30 cm of loose soil. Cover objects (flat rocks and pieces of roofing asphalt for the snakes to hide under) were placed on the structure to monitor the species' presence in the area, but we had no access to the interior of the structure where eggs would be deposited. In another ongoing project, we incorporated structures into an egg-laying site which will allow us to monitor the use of the interior by snakes. We did this by constructing a pit behind the top of a retaining wall, and placing a stack of six open trays made of 1.2 cm mesh hardware cloth in the pit. The plan is to fill these trays with different materials such as compost, sphagnum, or decomposing wood to experiment with substrate preferences of the snakes. The trays can then be lifted for inspection.

In 2004, we will begin monitoring the use of the restored structures by sharp-tailed snakes. We encourage landowners to become involved in this activity to maintain their continued interest in the project.

References

Engelstoft, C., and K. Ovaska. 2005. Sharp-tailed snake stewardship initiatives. In T.D. Hooper, editor. Proceedings of the Species at Risk 2004 Pathways to Recovery Conference. March 2–6, 2004, Victoria, British Columbia. Species at Risk 2004 Pathways to Recovery Conference Organizing Committee, Victoria, British Columbia.