The Endangered Banff Springs Snail

This little mollusc could become an ambassador for species at risk once overshadowed by more conspicuous flora and fauna. Many visitors to Banff National Park of Canada first learn about the snail at the Cave and Basin National Historic Site of Canada — birthplace of Canada's national park system and location of some of the last remaining Banff springs snail habitat. In 1997, the snail made history as the first living mollusc listed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). The Banff springs snail is considered endangered and could disappear altogether, unless we continue our efforts to protect its habitat.

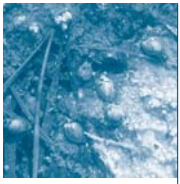

Photo: Dwayne Lepitzki

The largest Banff springs snails are about 1 cm long. In their natural habitat, they can sometimes be seen near their eggs (clear, jelly-like mass) and pine needles (about 5 cm long).

Les plus grands individus de la physe des fontaines de Banff ont à peu près 1 cm de long. Dans leur habitat naturel, on peut parfois les apercevoir près de leurs oeufs (masse gélatineuse transparente) et d'aiguilles de pin (environ 5 cm de long).

Photo: Mary Dahmer (Parks Canada, Prairie Canada)

Sulphur Mountain is the only place where the right chemical, biological and geological forces combined to give rise to the Banff springs snail.

Le mont Sulphur est le seul endroit au monde où forces chimiques, biologiques et géologiques se sont combinées pour donner lieu à la physe des fontaines de Banff.

A Snail Like No Other

Discovered in 1926, this enigmatic species has yet to reveal many of its secrets. Research and recovery efforts began in the mid-1990s, when Dr. Dwayne Lepitzki, lead scientist of the Banff springs snail Research and Recovery Team, pressed for the species' recognition and protection. At the time, the only thing he and other scientists knew for sure about the snail was that it inhabited five warm mineral springs on Sulphur Mountain, in Banff National Park — and nowhere else. So, they initiated a research program to learn more about the biology of the snail and its habitat.

Studying this species is no easy task, since the largest snails are about the size of a kernel of corn. Most easily spotted clinging to algae, sticks or rocks at the water's surface, these black-eyed molluscs must be seen up close to appreciate their finer features. Their shells are particularly unusual, with armour coiling to the left. Most other freshwater snails coil to the right. The Banff springs snail feeds on algae, bacteria and other micro-organisms. As the seasons change, snail populations in one thermal spring can seesaw from highs of 7,000 to lows of 30. Other characteristics, like its lifespan and breeding behaviour, are still being studied.

What makes the snail most unique among molluscs is its choice of habitat. It congregates mainly where warm water gurgles up from the ground, preferring temperatures from 30% to 36% Celsius. Survival in this harsh environment, with abundant dissolved minerals and hydrogen sulphide gas, slight radioactivity, scant oxygen, and unique algae and bacteria, requires extraordinary adaptations.

Threats Past and Present

Several factors have contributed to the snail becoming endangered: its distribution is very limited (only five populations exist, each in a thermal spring), its populations fluctuate dramatically, and human activities threaten the species.

Human activities that most endanger the snail are now understood. By bathing or dipping their hands in warm springs, people have unknowingly disturbed or killed snails and their eggs. Chemicals like deodorants and insect repellents on people's skin can also be harmful. Other threats to the species include changes in water levels. Four of the five remaining snail populations are located in historically significant built environments, where water flows are regulated. These habitat disturbances, especially when snail populations are at their lowest, weaken the chances of the species' survival.

Fast-track Recovery

Parks Canada is working with other partners to protect the snail. The Canadian Wildlife Service of Environment Canada, World Wildlife Fund Canada, Canadian Millennium Partnership Program, Friends of Banff National Park, and Bow Valley Naturalists have all contributed to efforts seeking to help the Banff springs snail recover.

Recovery efforts are under way to maintain and enhance current populations and re-establish others in springs where they historically thrived. They include:

- protection from human disturbance through the closure of some sites to the public, stepped-up surveillance, law enforcement and fines;
- research into the snail's reproductive biology, ecological role, population dynamics and distribution;
- research to understand the thermal spring ecosystems and their flora and fauna;
- captive-breeding to restore extirpated populations; and
- education and awareness initiatives to inform local residents, park staff and visitors about the snail.

Everyone who visits the area can contribute to recovery efforts by learning more about the species and its plight, respecting the unique thermal spring ecosystems, and reporting threats to the snail or its habitat to park officials.

A Leap in Conservation Consciousness

Nowhere but in Banff National Park have the right chemical, biological and geological forces combined to give rise to this remarkable species. Like other molluscs, it plays a fundamental role in the web of life. As a key part of the thermal spring ecosystem, it may nourish species like ducks, as well as other life forms, by being both prey and provider of essential nutrients.

Our realization that the Banff springs snail is as worthy of recovery efforts as any other species represents a leap in conservation consciousness. Just as healthy grizzly bear populations reflect the integrity of Rocky Mountain ecosystems, healthy snail populations reflect the integrity of thermal spring ecosystems. It's all a matter of scale.

Photo: Hal Dogan Leith Dogan

Dwayne and Brenda Lepitzki monitor snail numbers and measure water chemistry at one of the thermal springs on Sulphur Mountain.

Dwayne et Brenda Lepitzki effectuent le suivi des populations de physe en les comptant et mesurent la composition chimique de l'eau à l'une des sources thermales du mont Sulphur.

What can you do to help?

Parks Canada and partners are working hard to protect the Banff springs snail. You can help them: don't swim in snail habitat; avoid touching thermal spring water; and refrain from throwing coins, removing or disturbing objects in the springs. If you see someone engaging in such activities, please report them to the nearest Parks Canada staff member or call Wildlife Watch at

1-888-WARDENS (927-3367) or

1- 800-0-Canada (622-6232)

You can also suggest actions that could better protect the habitat of this endangered species. For more information, visit Parks Canada's web site on species at risk at:

www.parkscanada.gc.ca/speciesatrisk/