

Conserving Our Native Orchids in Canada's National Seed Bank

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In the spring of 2006, Native Orchid Conservation Inc (NOCI) began a new project to conserve native orchid species. This involved the long-term storage of orchid seed capsules in Canada's national seed bank (Plant Gene Resources of Canada) at Saskatoon.

Although we believe the *in situ* conservation of native orchids within protected habitats is the primary means of protection, we also believe that *ex situ* preservation in a cryogenic seed bank provides some additional insurance. Long-term storage may improve our ability to respond to rapid environmental changes that may be harmful to native orchids.

Since 25% of Canada's vascular plants are considered rare and there are many native orchids among them, we believe that it is important to conserve their genetic biodiversity by storing some of their seeds in an appropriate facility.

In March 2006, when we became aware that the national seed bank was expanding to include Canadian wild plants in its storage system, we approached Dr Richard St-Pierre, who is head of wild plant conservation, about storing seeds from Manitoba's 36 orchid species in that facility. He agreed to help us with this project, developed the appropriate protocol for the collection and handling of the seeds, and supplied us with seed envelopes and data forms to fill out for each sample.



Moccasin-flower-Pods. Photo: Richard Reeves



Showy Lady's-slipper in protective cage. Photo: Peggy Bainard Acheson

The first major concern we had was how to protect the plants and seed capsules from predation notably by white-tailed deer. Dr St-Pierre and his graduate student Nancy constructed some cages out of chicken wire consisting of 25mm wire mesh approximately 30cm in diameter and 30cm high. The cages would be put over the plant and held in place with 4 bamboo stakes. NOCI members later constructed another few dozen similar wire cages; some taller ones with 2" holes for tall *Cypripediums* and *Platanthera* species with their bee and Lepidoptera pollinators, and some smaller ones with 1" holes for smaller orchids like *Listera cordata* with small pollinators like fungus gnats, and for those orchids that are self-pollinating.

In June, Dr. St-Pierre came to Manitoba to help us initiate the project and we took him to several locations that had orchid populations suitable for sampling. We slipped cages over the selected plants and used bamboo stakes to hold the cages in place. We tried to select plants from as many species and different locations as we could. We carefully recorded their location and other data, photographed them and marked the cages with flagging tape to help us find them more easily when the bushes leafed out.

After August 15th, we began to collect the seed samples. We learned a lot about how to judge when the seed capsules are ripe enough so that they won't rot in storage but before they have burst open and dehisced. Plants have to be checked very frequently during the collection period in late summer and fall. Sometimes the predators got to them first. They were eaten by animals such as white-tailed deer, sandhill cranes, meadow voles, and possibly others.

2006 was not a very good year for orchid growth. Many of the *Cypripediums* especially *C. acaule* were severely damaged by a late spring frost and even though they flowered nicely in some areas they produced almost no viable seed capsules. The drought and extremely hot weather last summer took its toll on all the orchid species.

We managed to collect seed capsules from 17 species of orchids at 15 different locations between August 15 and September 15th, which we sent off, by courier, to the seed bank in Saskatoon.

In December of 2006, NOCI board member Peggy Bainard Acheson visited the national seed bank laboratory in Saskatoon. Dr. St-Pierre took her on a tour of the facility and showed her just what happened to the orchid seeds we had sent to him. After being examined under a microscope and cleaned in the laboratory they were put into vacuum-packed foil packages and put into the intermediate cold storage vault where they are being held at -4°C. After tests for viability are made on them, the viable seeds will be transferred to the long-term storage vault and held at -20°C. Peggy took many interesting photos of the facility and Dr. St-Pierre sent along some additional ones. If you would like to see more photos of this project please attend Seedy Saturday at the Assiniboine Park Conservatory on February 24th. We have been asked to give a slide-show presentation on this project at that time.

We expect this project to last 3 to 5 years, as we need to collect seed capsules from the rest of the 36 orchid species in Manitoba. There are also many more locations and kinds of habitat where orchids grow. We have applied for permits to remove orchid seeds from plants in protected areas and are also applying for a permit to collect a small amount of seeds from the three endangered orchid species in Manitoba each year. That way over five years we should be able to collect a reasonable amount of seed from each species and location.

This is an exciting project and one that is filled with hope for the future. I would like to encourage people who are interested in collecting seeds from other rare native plant species and medicinal plants to contact Dr. St-Pierre. A collection of seeds from the rare native plant species in Manitoba will be a fine legacy to leave for future generations.

For more information, you can e-mail the author at doriseames@shaw.ca, or visit the NOCI website at www.nativeorchid.org. The website for Plant Gene Resources of Canada is pgrc3.agr.gc.ca.