

**COLLECTION AND INTRODUCTION OF BRITISH  
COLUMBIAN NATIVE PLANTS TO THE NURSERY  
INDUSTRY**

**BRUCE MACDONALD**

*The Botanical Garden  
6804 S.W. Marine Drive  
University of British Columbia  
Vancouver, B.C. V6T 1Z4 CANADA*

A new phase of the University of British Columbia Botanical Garden Plant Introduction Scheme (PISBG) has now commenced and will concentrate on selecting and introducing relatively unknown, as well as superior forms, of native species into commercial production for use in the urban landscape. With over 2000 species in the province, there is a rich and varied flora from which to select. The current commercial success of *Arctostaphylos uva-ursi* 'Vancouver Jade', with over one million a year being propagated, has shown the value of selecting improved forms of native plants. Also, there is an increasing interest in using native plants in the landscape as replacements for some non-native species and cultivars.

With support from the B.C. Nursery Trades Association, the Botanical Garden was fortunate in receiving funding of \$136,000 (Can.) for a three year project, commencing in 1988, to systematically collect plants showing potential from various areas in the Province. This funding came from the Canadian ARDSA project, a joint federal-provincial program to stimulate new agricultural and horticultural projects showing direct commercial potential. Dr. Wilf Nichols came on staff to undertake this work.

The first objective was to work with industry to determine "target species" of both woody and herbaceous perennial plants—particularly where there is known to be significant genetical variation. These include *Arctostaphylos*, *Cornus*, *Anemone*, *Aquilegia*, *Balsamorhiza*, *Draba*, *Eriogonum*, *Fragaria*, *Geranium*, *Lupinus*, *Penstemon*, *Lilium*, *Phlox*, *Ribes*, *Mitella*, *Rosa*, and *Polemonium*. There is an increasing demand for perennials in North America and particular emphasis will be given to collecting and selecting superior forms of such plants.

This program has a monitoring committee consisting of members from nursery growers, Agriculture Canada, and the Provincial Ministry of Agriculture. However, it is the advice being received by the committee from the B.C. Department of Highways that could be a major factor in its success. This department is a large user of landscape plants, and it is vital that they are included in the

program. The advice they provide is on plants to select, where plants would be used and, more important, the estimation of numbers which would be required in future years. This information is invaluable for growers in planning their production schedules.

Well over 1,000 documented collections have been made from diverse locations in the province. These include northern and eastern B.C., coastal mountains, Vancouver Island and the Gulf Islands, and the Okanagan and Kootenay areas.

Following collection, the plants, cuttings, or seeds are returned to the Botanical Garden's nursery for evaluation and propagation. Among the criteria for selection and potential introduction are:

(1) Overall market potential across North America and for overseas export.

(2) Hardiness, particularly for broadleaved evergreens.

(3) Pest and disease resistance.

(4) Ability to successfully establish and grow under nursery conditions, e.g., to respond to fertilization programs, potting mix, and overhead irrigation. Two very promising plants, *Lupinus lepidus* and *Douglasia laevigata*, have not responded well, thus more research is required as to their cultural requirements. Many species, particularly some herbaceous perennials, come from dry arid areas and are unable to respond to the extremes of climatic conditions in coastal nurseries.

(5) Appearance at point of sale, e.g., herbaceous perennials need to be floriferous particularly during April-May (the major period for retail sales) and compact and tidy after flowering. Clean foliage and compactness are other major considerations.

(6) Successful establishment in the landscape, particularly in areas where water is a limiting factor. Also, they should not become invasive and weedy, which can occur when introducing a dryland plant into moister coastal situations.

The current plant introduction scheme has some seven test sites in Canada and six in the United States. These test sites will provide invaluable information for the performance of ARDSA plants in cold winter conditions and in hot-dry and warm-humid summers.

## CLONAL SELECTION AND PLANT BREEDING

Clonal selection is being shown to be an important aspect of this program. The benefit of this was previously shown with *Arctostaphylos uva-ursi* 'Vancouver Jade' which was selected for its vigor, flower and leaf quality, tolerance to foliage diseases, hardiness, and ease of rooting. Prior to this introduction, B.C. nurseries were selling variable quality material obtained by collecting cuttings or saving seed from plants in the wild—the percentage success of rooting was particularly variable.

*Vaccinium ovatum* is another plant with great variation. Selection is being made on color intensity of the reddish-brown new growth, profusion of flowers and habit. Similarly, *Paxistima myrsinites*, another native evergreen shrub, is being selected for habit and leaf color. Two golden forms and one variegated form have resulted as part of this program. The variable *Rosa woodsii* is a popular shrub for highway planting—an interesting, relatively compact, large, bright pink-flowered form shows considerable promise. The two native *Phlox*, *P. diffusa* and *P. douglasii*, generate considerable color variation from seed, so distinct colored forms will be selected and named for future vegetative propagation.

A number of hybridization programs will develop under the coordination of Dr. Gerald B. Straley, Research Scientist and Curator of Collections. One cross already carried out has been the native *Philadelphus lewisii* with *P. delavayi* f. *calvescens*, the latter noted particularly for its attractive purple calyxes.

*Penstemon fruticosus* 'Purple Haze'. Part of the ARDSA program agreement was that the Botanical Garden had to ensure the release of a plant for introduction to its participator nurseries within the three year term of the project. To achieve this, it was necessary to utilize a selection from existing collections in the Native Garden component. With the current enthusiasm for compact, evergreen, purple-blue, spring-flowering container plants, a priority selection was that of *Penstemon fruticosus*, which has received wide acclaim from visitors and growers. Its ease of production and growth habit meant that it was a "natural" for the program's first release. This is now being readily propagated in British Columbia nurseries and will be available for public release on March 1st, 1992. (See Appendix A for botanical description, propagation, culture, uses in the landscape, and sales potential.)

In conclusion, the success of this project will largely depend on the Botanical Garden staff working with industry and seeking advice from other interested parties. Increasing awareness of the environment means that native plants for landscape use will become ever more important. Part of the marketing plans is that great emphasis will be placed on packaging and labeling at retail garden centres which, combined with media promotion, will encourage the home gardener to use these plants for their gardens as alternatives for the more standard items. In addition to these collections being important for the Botanical Garden's Native Garden, they will provide a source of valuable genetic material for plant breeding and other related research programs.

## REFERENCES

1. Straley, G B 1988 British Columbia's alpine and subalpine flora. *Proc Inter Plant Prop. Soc.* 38.130-134
2. Bluhm, W L 1988 Native herbaceous perennials of the Pacific Northwest worthy of commercial introduction *Proc. Inter Plant Prop Soc* 38 135-137
3. Macdonald, B 1988 Successfully introducing plants from botanical collections into the nursery and landscape industries *Proc Inter Plant Prop. Soc* 38.97-103

## APPENDIX A

### *PENSTEMON FRUTICOSUS* 'PURPLE HAZE'

**BOTANICAL NAME:** *Penstemon fruticosus* (Accession #11772-284-75)

**CULTIVAR:** 'Purple Haze'

**FAMILY:** Scrophulariaceae

**COMMON NAME:** shrubby penstemon

**ORIGIN:**

The original plant was collected in 1975 at Nairn Falls, near Pemberton, B.C. by Al Rose, former curator of the B.C. Native Garden, UBC Botanical Garden. It is a common and variable species of dry parts of southern B.C. to Oregon, Montana, and Wyoming.

**SOIL REQUIREMENTS:** Average, well-drained, slightly acid soils.

**GENERAL DESCRIPTION:**

An evergreen or partially evergreen sub-shrub to 20 cm tall and 60 cm wide. Opposite pairs of dark green toothed leaves are 2 to 3 cm long and 0.5 to 1 cm wide. Plants are covered with mauve-purple tubular flowers 3 to 4 cm long in late spring, forming a solid mound of colour for several weeks. The mounded form of the plant is attractive throughout most of the year.

**EXPOSURE REQUIREMENTS:** Full sun. Tolerant of extended summer drought.

**PRUNING:**

Little needed, but may be lightly pruned from time to time to keep more compact. Should be sheared following flowering during the nursery production schedule.

**USE IN THE LANDSCAPE:**

Excellent for cascading over rock walls, on well-drained, sunny banks, and in alpine gardens. Useful with other spring-flowering perennial ground-covers such as *Aurinia*, *Aubretia*, *Arabis*, and *Iberis*. Should be planted 20 to 30 cm apart when massed in the urban landscape.

**HARDINESS:** Hardy to USDA (Canadian) Zone 3-4

**PROPAGATION:**

Readily roots from softwood and semi-hardwood cuttings from June through September. Rooting hormone not necessary, but if rooting should prove erratic, then 0.3% IBA in talc will be beneficial. Use a well-drained rooting medium, e.g., 1:1 peat and perlite. Avoid excessive misting and also remove from propagation facility as soon as rooted to avoid cutting deterioration.

**SALES POTENTIAL:**

This plant will be an excellent product for impact retail sales during spring, particularly in one gallon containers and upwards. Its hardiness means it will have appeal in many locations in North America. Also, when massed it will provide instant appeal for the urban landscape and on arid roadside conditions. Its mauve-purple flower color is particularly effective with associated yellow or white flowering plants.

VOICE: This is to David Verity. In your talk about *Diplacus*, you explained some of the dwarfing due to short internodes. Did you also include in your work *Diplacus aridus*, which is naturally dwarfed?

DAVID VERITY: This species occurs in the desert here in San Diego county and in Baja California. It is naturally dwarfed and is a very drought tolerant plant. I did make some crosses with it and the results are being grown at the Tree of Life Nursery, San Juan Capistrano, California. *Diplacus aridus* is a species that should be used more for its many good characters.

VOICE: Bruce, about the *Penstemon fruticosus* 'Purple Haze' that you showed, do you think it would grow well in Southern California?

BRUCE MACDONALD: It is difficult for me to say. It would do well in Washington and Oregon. This selection came from Pemberton in British Columbia. It might just burn up in Southern California, but I really don't know.

VOICE: Question for David Verity. Do you know of any species of *Diplacus* that do not have the sticky leaves that tend to limit their use?

DAVID VERITY: I do not know of any species that do not have glutinous leaves. I was hoping to find one. I have grown all the species and they all have it. One could search through all the *Diplacus* plants growing in the wild and possibly find one, then select from that. This is the only way I can think of to get rid of that character.

VOICE: Bruce, How long do you leave your new introductions in the ground for trialling? Secondly, have you had any new plants escape and become a weedy problem?

BRUCE MACDONALD: We like our native plants to be in our collection for seven years, unless there is something unique about it, and we already know quite a bit about it, and the nursery industry wants it. On your second question; yes, we had one *Rubus* from China that became a problem; the birds like the berries and move it around so it can tend to become weedy.

VOICE: My question is to Kathy. What is your connection with the people in Australia so that you can bring in plants?

KATHY: There are a variety of ways that we use. The University of California Santa Cruz Arboretum has been one of the major routes in bringing in plants. Then we introduce them to Southern California. There are other people doing this also. We also get plants directly from Roger and Gwynn Elliott from near Melbourne in Australia. They have their own nursery, the Australian Tube Plant Nursery. Their's is one of the main nurseries promoting Australian plants, especially for overseas trade. Many plants I get are from seed exchange lists from botanical gardens. We have also had plants sent to us from commercial nurseries in Australia. So there are many good sources of plants from Australia.

(Ed. Note — One can contact IPPS Australian Region officers as to sources and contacts for obtaining starts of Australian plants).

ANN KYTE: My question is to Dr. Verity. You said you were treating some of the *Diplacus* (or *Mimulus*) as annuals. By implication, are all of the *Diplacus*, and *Mimulus*, annuals or perennials?

DAVID VERITY: *Diplacus* plants are perennials. I treat them as annuals so as to make more rapid progress in breeding. But they will live for 10 or 15 years. With *Mimulus*, some species are annuals and some perennials.