

Plant Collections Report December, 2019

Living Collections

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| Accessions | 12,716 | Total Accessions: 12,466 garden-origin; 250 wild-origin |
| Taxa | 8,088 | Total Taxa (species, subspecies, varieties, cultivars) |
| | 585 | Species-at-risk (listed as vulnerable, threatened or endangered taxa) |
| | 206 | Plant Families |
| | 1,108 | Genera |
| Taxa : | 7,553 | Angiosperm taxa (flowering plants): 1,520 Monocots; 6,033 Eudicots |
| | 187 | Gymnosperm taxa (conifers, cycads, <i>Ginkgo</i> , gnetophytes) |
| | 159 | Pteridophyte taxa (ferns and fern allies) |
| | 6 | Lycophyte taxa (club mosses and allies) |

NEW to the Collections in 2019

| | |
|-------|----------------------------|
| 118 | New Taxa (see list on p.4) |
| 287 | New Accessions |
| 8,964 | New Plants |

Research in the Garden 2018-2019

The following scientific studies and collaborations were either conducted at VanDusen Botanical Garden or were supported by VanDusen contributing germplasm from the living collections and/or plant collections data.

Canadian National Collection of Insects, Arachnids and Nematodes at Agriculture and Agri-Food Canada (AAFC). Aphid research and phylogenetics. Cho-Kai Chan and Bryan Brunet, Research Scientist, Ottawa Research and Development Centre, Agriculture and Agri-Food Canada, Ottawa. Aphid collections made at VanDusen throughout the year for the national collection and associated plant species noted for each collection.

The Changing Role of Ornamental Horticulture in Alien Plant Invasions. Van Kleunen, Mark *et al.* *Biological Reviews. Cambridge Philosophical Society* (2018). 93(3):1421-1437. VanDusen Botanical Garden contributed plant collections data to this study. Abstract link: <https://onlinelibrary.wiley.com/doi/abs/10.1111/brv.12402>

The Chilean Garden. An exhibit by Victor Ballesteros. Supported by the BC Arts Council 2019 Arts Award, the artist is developing an exhibit on VanDusen's Chilean Garden, consisting of ultra-high definition video projections to be exhibited in a local gallery or museum (to be announced). The main subject is a collection of fifty native Chilean plants growing in VanDusen's collections. As a visiting artist, Victor has conducted research in the garden's library and archives, consulted with the Curator and head gardener of the Chilean Garden, and produced film, photographs and soundscape recordings in the garden. This visual investigation explores connections among the disciplines of plant collections, art history, botany, ethnobotany and the history of exhibitions and museum studies.

Conservation Gap Analysis of U.S. Native Oaks. Beckman, Emily *et al.* 2019. The Morton Arboretum. VanDusen Botanical Garden contributed its *Quercus* collections data to this study. Publication available here: <https://www.mortonarb.org/files/conservation-gap-analysis-of-native-US-oaks.pdf>

Decoupled macroevolution of metabolic and morphological traits in vascular plants. Barbara M. Neto-Bradley, MSc. Candidate. Department of Botany, University of British Columbia. Photosynthesis rates were measured and compared among plant species at VanDusen to shed light on the evolution of photosynthesis in the plant kingdom.

Environment and Climate Change Canada's Climate Change DNA reference library for plants. Lisa Yeung, FSWEF Forensic Analyst Assistant, Science and Technology Branch, Environment and Climate Change Canada, North Vancouver. VanDusen contributed germplasm for DNA sequencing from multiple species from the living collections in contribution to Canada's Climate Change DNA reference library. This repository of DNA represents the major evolutionary groups of plants on Earth and can be used to study the impacts of climate change on plant species.

European fire ant (*Myrmica rubra*) research program (ongoing). Dr. Robert Higgins, Entomologist, Thompson Rivers University. Dr. Higgins has conducted several research studies on European fire ants and control of this invasive species since 2013, in collaboration with VanDusen staff and the Invasive Species Council of Metro Vancouver.

Hummingbird Monitoring Citizen Science Project. Vancouver Avian Research Centre (VARC) and VanDusen Botanical Garden. From April to September, 2019 Vancouver Botanical Garden Association (VBGA) education staff worked with VARC, giving VanDusen members a chance to contribute to citizen science and collect important data on our native hummingbirds. www.birdvancouver.com/workshop_banding_intro.html

Novel *Neidium* Pfitzer species from western Canada based upon morphology and plastid DNA sequences. Hamilton, Paul. B, Amanda M. Savioe, Cynthia M. Sayre, Oliver Skibbe, Jonas Zimmerman & Roger Bull. 2019. *Phytotaxa* 419 (1):039-062. Five new species of diatoms (microscopic, unicellular algae) were discovered in VanDusen's Livingstone Lake and are described in this publication. One species is named for VanDusen, *Neidium vandusenense*. This work was a collaboration between the Canadian Museum of Nature and curatorial staff at VanDusen Botanical Garden.

Red List of *Nothofagus*. Balwin, Harry, Megan Barstow & Malin Rivers. 2018. BGCI. VanDusen Botanical Garden contributed its *ex situ Nothofagus* plant collections data to this study. Publication available at: globaltrees.org/wp-content/uploads/2019/02/NothofagusMedRes.pdf

A Road Map for Bumble Bees to Nest Boxes (publication pending). Elana Varner, Kayla Mark, Hanna Jackson, Kendal Singelton. Dept. of Biological Sciences, Simon Fraser University. Bumble bees across North America have declined by 87%, largely due to habitat loss. Pollinator gardens provide important supplementary habitat but they lack a vital part of the conservation picture; nesting sites. Bumble bee nest boxes generally have low occupancy rates as queens have difficulty finding the small entrance opening. The researchers hypothesize a scent component (pheromone) added to nest boxes will help guide the queens to the nest box opening. 38 nest boxes were installed at VanDusen and Queen Elizabeth Park and monitored in 2019. Preliminary results revealed 28 bumble bee colonies in scented nest boxes versus 10 colonies in boxes without pheromones. A follow-up study is planned for 2010.

A Stimulated Interest in Growing your own (Chinese Herb Garden). Jacob Larmour, International College of Traditional Chinese Medicine. *Medicinal Root Magazine*, Summer 2018:19-22. VanDusen Botanical Garden curatorial staff worked with Jacob Larmour to develop and contribute seeds and plant labels to the International College of Traditional Chinese Medicine's Chinese herb Garden. www.medicinalrootsmagazine.com/uploads/6/9/2/2/692250/medicinalrootsmagazine_sum18.pdf

Living Plant Collections

Total Collections: 70

Cultural Collections: 4

Ecological and Biological Collections: 4

Geographical Collections: 23

Taxonomic and Evolutionary Collections: 24

Ornamental and Landscape Collections: 16

Cultural Collections

Canadian Medicinal Garden (Canadian Heritage Garden)

Medicine Wheel (Canadian Heritage Garden)

Meditation Garden

Vegetable Garden

Ecological and Biological Collections

Alpine Troughs

Backyard Bird Garden

BC Habitat Garden

Stanley Smith Rock Garden

Geographical Collections

Australia & New Zealand Garden

Canadian Heritage Garden

- Acadian Forest
- Alpine Floral Region
- Aspen Parkland
- Boreal Forest
- Canadian Cultivars
- Canadian Medicinal Garden
- Carolinian Forest
- Great Lakes – St. Lawrence Forest
- Heritage Orchard
- Pacific Coast Coniferous Forest
- Pacific Rainshadow Forest
- Prairie Grassland and Medicine Wheel
- Western Montane Region

Cascadia Garden

Chilean Garden

Eastern North America Garden

Japanese Collection

Mediterranean Garden

Sino-Himalayan Garden

South African Garden

Southern Hemisphere Garden

Taxonomic and Evolutionary Collections

Ashes (*Fraxinus*)

Azaleas (Deciduous)

Azaleas (Evergreen)

Beeches (*Fagus*)

Camellias (*Camellia*)

Conifers

Cypress Family (Cupressaceae)

Fern Dell

Ginkgoes

Honorable David C. Lam Cherry Grove

Hydrangeas (*Hydrangea*)

Japanese Maples

Laburnum Walk

Lindens (*Tilia*)

Magnolias (APGA Plant Collections Network (PCN) Magnolia Collection)

Maples (*Acer*)

Meconopsis Dell

Mountain Ashes (*Sorbus*)

Oaks (*Quercus*)

Rhododendron Walk (including Loderi hybrids)

Roses – Formal Rose Garden

Roses – Heritage Rose Garden

Tree Peonies

Witch hazels (*Hamamelis*)

Ornamental and Landscape Collections

Alma VanDusen Garden

Alma VanDusen Meadow

Astilbe Collection

Autumn Stroll (fall colour arboretum)

Black Garden

Fragrance Garden

Heather Garden

Herb Garden

Maze

North American Cultivars

Ornamental Grasses

Perennial Garden

Phyllis Bentall Garden (Perennials)

Stone Garden

Winter Walk

Woodland Garden

Water Features

Alma VanDusen Stream

Cascade Bend
 Cascadia Garden stream
 Forest Lake
 Heather Pond
 Heritage Pond
 Heron Lake
 Livingstone Lake

Water Features cont...

Meadow Ponds
 R. Roy Forster Cypress Pond
 Shaughnessy Lake
 Waterfall

Garden Features

Bee Hives
 Floating Bridge (R. Roy Forster Cypress Pond)
 Gazebo
 Korean Pavilion
 Lathhouse

Maze
 Scottish Shelter
 Zigzag Bridge (Heron and Livingstone Lakes)

Buildings

- Floral Hall Pavilion (includes Cedar Room, Floral Hall)
- MacMillan Bloedel Place (formerly Education Centre) – not open to public
- Service Yard (includes service building; greenhouses)
- Shaughnessy Pavilion (Magnolia Room, Shaughnessy Restaurant)
- Visitor Centre (BMO Great Hall, Classroom, Garden Shop, Library, Truffles Café, Volunteer Lounge, Woodland Hall A and B)

NEW Taxa in the Living Collections

The following species, subspecies and varieties are new to VanDusen's collections in 2019.

| Botanical name | Common name | Collection in the Garden |
|--|----------------------------------|--------------------------|
| <i>Acer palmatum</i> 'Edna Bergman' | Japanese maple | Japanese Maples |
| <i>Acer palmatum</i> 'Shojomomura' | Japanese maple | Japanese Maples |
| <i>Aeonium</i> 'Blushing Beauty' | tree houseleek | Succulent Collection |
| <i>Aeonium</i> 'Cyclops' | tree houseleek | Succulent Collection |
| <i>Aeonium</i> 'Green Ripples' | tree houseleek | Succulent Collection |
| <i>Aeonium</i> 'Mardi Gras' | tree houseleek | Succulent Collection |
| <i>Agastache</i> 'Black Adder' | hyssop, hummingbird mint | North American Cultivars |
| <i>Agastache</i> 'Kudos Ambrosia' (Kudos™ Series) | hyssop, hummingbird mint | North American Cultivars |
| <i>Agastache</i> 'Mango Tango' | hyssop, hummingbird mint | North American Cultivars |
| <i>Albuca spiralis</i> 'Frizzle Sizzle' | corkscrew albuca | Succulent Collection |
| <i>Allium senescens</i> subsp. <i>glaucum</i> | German garlic | Woodland Garden |
| <i>Alstroemeria</i> 'Majestic Henri' | lily-of-the-incas, Peruvian lily | |
| <i>Amsonia</i> 'Blue Ice' | blue star | North American Cultivars |
| <i>Aristolochia kaempferi</i> | Dutchman's pipe | Fern Dell |
| <i>Asplenium scolopendrium</i> Cristatum Group | hart's-tongue fern | Fern Dell |
| <i>Astilbe</i> 'Straussenfeder' OSTRICH PLUME | hybrid astilbe | Astilbe Collection |
| <i>Astilbe chinensis</i> 'Vision in Red' | Chinese astilbe | Astilbe Collection |
| <i>Astilbe x arendsii</i> 'Beauty of Lisse' [COLOR FLASH™] | hybrid astilbe | Astilbe Collection |

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| LIME] | | |
| <i>Astilbe</i> × <i>arendsii</i> 'Brautschleier' | hybrid astilbe | Astilbe Collection |
| <i>Astilbe</i> × <i>arendsii</i> 'Bumalda' | hybrid astilbe | Astilbe Collection |
| <i>Astilbe</i> × <i>arendsii</i> 'Chocolate Shogun' | hybrid astilbe | Astilbe Collection |
| <i>Astilbe</i> × <i>arendsii</i> 'Ice Cream' | hybrid astilbe | Astilbe Collection |
| <i>Astilbe</i> × <i>arendsii</i> 'Weisse Gloria' | hybrid astilbe | Astilbe Collection? |
| <i>Baptisia</i> 'Lunar Eclipse' [Prairieblues™ Series] | false indigo | North American Cultivars |
| <i>Begonia grandis</i> 'Heron's Pirouette' | hardy begonia | Astilbe Collection |
| <i>Bergenia cordifolia</i> 'Bressingham Beauty' | heartleaf bergenia, pigsqueak | Astilbe Collection |
| <i>Calycanthus</i> × <i>raulstonii</i> 'Hartlage Wine' | sweetshrub | North American Cultivars |
| <i>Camassia leichtlinii</i> 'San Juan' | Leichtlin's camas, great camas | North American Cultivars |
| <i>Camassia leichtlinii</i> 'Semplena' | Leichtlin's camas, great camas | North American Cultivars |
| <i>Carex oshimensis</i> 'Everillo' | Japanese sedge | Astilbe Collection |
| <i>Ceanothus</i> 'Blue Sapphire' | California lilac | North American Cultivars |
| <i>Cestrum newellii</i> 'Ruby Clusters' | | North American Cultivars |
| <i>Codonopsis grey-wilsonii</i> | bonnet bell flower | |
| <i>Codonopsis meleagris</i> | bonnet bell flower | |
| <i>Codonopsis ovata</i> | bonnet bell flower | |
| <i>Colocasia gigantea</i> 'Thailand Giant Strain' | giant elephant's ear | Phyllis Bentall Garden pool |
| <i>Crassula capitella</i> var. <i>thyrsoiflora</i> | red pagoda, red flames | Succulent Collection |
| <i>Crocus chrysanthus</i> 'Cream Beauty' | golden crocus | |
| <i>Crocus</i> 'Yellow Mammoth' | Dutch hybrid crocus | |
| <i>Cyrtomium falcatum</i> 'Rochfordianum' | holly fern | Astilbe Collection |
| <i>Deinantha bifida</i> | false hydrangea | |
| <i>Dendroseris litoralis</i> | cabbage tree | seasonal collections |
| <i>Dierama argyreum</i> | angel's fishing rod | |
| <i>Dierama</i> 'Blackberry Bells' | angel's fishing rod | |
| <i>Dierama</i> Plant World Jewels | angel's fishing rod | |
| <i>Diervilla rivularis</i> [Honeybee] 'Diwibru01' | bush honeysuckle | North American Cultivars |
| <i>Echeveria agavoides</i> 'Ebony' | hens and chicks | Succulent Collection |
| <i>Echeveria</i> 'Ruffled Red' | hens and chicks | Succulent Collection |
| <i>Echinacea</i> 'Elegance' (Supreme Series) | coneflower | North American Cultivars |
| <i>Echinacea purpurea</i> 'Greenline' | coneflower | North American Cultivars |
| <i>Eragrostis spectabilis</i> | purple love grass | North American Cultivars |
| <i>Euonymus japonicus</i> [Paloma Blanca] 'Lankveld03' | Japanese spindle tree | Garden entrance |
| <i>Fascicularia bicolor</i> | crimson bromeliad | Seasonal collections |
| <i>Fritillaria persica</i> 'Ivory Bells' | Persian fritillary | |
| <i>Gentiana lutea</i> | great yellow gentian | |
| <i>Gentiana rubicunda</i> var. <i>purpurata</i> | | |
| <i>Geranium</i> 'Azure Rush' | cranesbill | |
| <i>Helenium autumnale</i> Mariachi™ ('Sombbrero') | common sneezeweed | BC Habitat Garden |
| <i>Hesperaloe parviflora</i> | redflower false yucca | Succulent Collection |

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| <i>Heuchera</i> 'Grape Soda' | coralbell | Astilbe Collection |
| <i>Heuchera</i> 'Silver Gumdrop' | coralbell | Astilbe Collection |
| <i>Heuchera</i> 'Timeless Glow' | coralbell | Astilbe Collection |
| <i>Hibiscus moscheutos</i> Amaretto (Summer Spice Series) | common rose mallow | Seasonal collections |
| <i>Hibiscus moscheutos</i> Crepe Suzette (Summer Spice Series) | common rose mallow | Seasonal collections |
| <i>Hosta</i> 'Dancing Queen' | | Astilbe Collection |
| <i>Hosta</i> 'Venus' | | Astilbe Collection |
| <i>Kniphofia</i> 'Lemon Popsicle' | red hot poker, torch lily | Garden entrance |
| <i>Lilium</i> 'Early Bird' | martagon hybrid lily | |
| <i>Lilium mackliniae</i> | Manipur lily, Shirui lily | |
| <i>Lilium rubellum</i> | maiden lily, otome-yuri | |
| <i>Manfreda</i> 'Jaguar' | spotted false agave | Succulent Collection |
| <i>Manfreda undulata</i> 'Cherry Chocolate Chip' | false agave | Succulent Collection |
| <i>Meconopsis punicea</i> | Asiatic poppy | Meconopsis Dell |
| <i>Meconopsis wilsonii</i> subsp. <i>australis</i> | blue poppy | Meconopsis Dell |
| <i>Meconopsis</i> × <i>setifera</i> | Himalayan poppy | Meconopsis Dell |
| <i>Miscanthus sinensis</i> 'Little Zebra' | maiden grass | |
| <i>Monarda didyma</i> 'Pink Frosting' | bee balm, bergamot | North American Cultivars |
| <i>Monarda didyma</i> 'Rockin' Raspberry' | bee balm, bergamot | North American Cultivars |
| <i>Moraea huttonii</i> | large golden vlei iris | |
| <i>Nandina domestica</i> 'Lemon-Lime' | heavenly bamboo | Garden entrance |
| <i>Nepeta goviana</i> | catmint | Woodland Garden |
| <i>Nepeta goviana</i> | catmint | Woodland Garden |
| <i>Osmanthus heterophyllus</i> 'Purpureus' | false holly | Woodland Garden |
| <i>Pachysandra terminalis</i> 'Green Sheen' | Japanese spurge | Woodland Garden |
| <i>Phyllostachys aureosulcata</i> f. <i>spectabilis</i> | yellow-groove bamboo | Bamboo Collection |
| <i>Phyllostachys aureosulcata</i> 'Harbin' | yellow-groove bamboo | Bamboo Collection |
| <i>Primula vulgaris</i> subsp. <i>sibthorpii</i> | Sibthorp primrose | Mediterranean Garden |
| <i>Rosa</i> Easy Elegance® Coral Cove ('BALove') | hybrid tea rose | Formal Rose Garden |
| <i>Rosa</i> Easy Going™ ('Harflow') | floribunda rose | Formal Rose Garden |
| <i>Rosa</i> Pinkerbelle™ ('Meivanae') | hybrid tea rose | Formal Rose Garden |
| <i>Rosa</i> Sweet Mademoiselle™ ('Meinostair') | hybrid tea rose | Formal Rose Garden |
| <i>Rosa</i> Sweet Spirit™ ('Meithatie') | hybrid tea rose | Formal Rose Garden |
| <i>Rosa</i> 'Indian Head' | hedge rose | Canadian Heritage Roses |
| <i>Rosa</i> 'Kakwa' | hardy shrub rose (Canadian cultivar) | Canadian Heritage Roses |
| <i>Rosa</i> 'Prairie Peace' | shrub rose (Canadian cultivar) | Canadian Heritage Roses |
| <i>Rubus idaeus</i> subsp. <i>strigosus</i> | wild red raspberry | BC Habitat Garden |
| <i>Salvia</i> Love and Wishes ('Serendip6') | sage | North American Cultivars |
| <i>Salvia glutinosa</i> | sticky sage | Woodland Garden |
| <i>Salvia</i> 'Madeline' | sage | North American Cultivars |

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| <i>Saxifraga porophylla</i> | | |
| <i>Scoliopus bigelovii</i> | Bigelow's adderstongue, slinkpod | Woodland Garden |
| <i>Scopolia carniolica</i> 'Zwanenburg' | Russian belladonna | Mediterranean Garden |
| <i>Sedum</i> 'Firecracker' | stonecrop | Succulent Collection |
| <i>Sedum palmeri</i> | Palmer's sedum | Succulent Collection |
| <i>Sedum</i> 'Thunderhead' | stonecrop | Succulent Collection |
| <i>Sempervivum</i> Berry Bomb™ (Chick Charms Series) | houseleek | Succulent Collection |
| <i>Sempervivum</i> Cosmic Candy™ (Chick Charms Series) | houseleek | Succulent Collection |
| <i>Sempervivum</i> Fringed Frosting™ (Chick Charms Series) | houseleek | Succulent Collection |
| <i>Sempervivum</i> Plum Parfait™ (Chick Charms Series) | houseleek | Succulent Collection |
| <i>Sempervivum</i> 'Silver Thaw' | houseleek | Succulent Collection |
| <i>Stachys spathulata</i> | betony | Southern Hemisphere |
| <i>Stenanthium gramineum</i> | eastern featherbells | |
| <i>Styrax americanus</i> | American snowbell | ENA |
| × <i>Mangave</i> 'Bad Hair Day' | (<i>Agave</i> × <i>Manfreda</i>) hybrid succulent | Succulent Collection |
| × <i>Mangave</i> 'Macho Mocha' | (<i>Agave</i> × <i>Manfreda</i>) hybrid succulent | Succulent Collection |
| × <i>Mangave</i> 'Moonglow' | (<i>Agave</i> × <i>Manfreda</i>) hybrid succulent | Succulent Collection |
| × <i>Mangave</i> 'Spotty Dotty' | (<i>Agave</i> × <i>Manfreda</i>) hybrid succulent | Succulent Collection |
| × <i>Mangave</i> 'Tooth Fairy' | (<i>Agave</i> × <i>Manfreda</i>) hybrid succulent | Succulent Collection |

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Canada

www.vandusengarden.org

<http://vancouver.ca/parks-recreation-culture/vandusen-botanical-garden.aspx>