Prepared by the Darts Hill Guides, volunteers of the
Darts Hill Garden Conservancy Trust Society

DARTS HILL
· Garden Park ·

BIODIVERSITY in Darts Hill Garden Park: SELF-GUIDED TOUR- best viewed June to September

Maps available from the Welcome Table or www.dartshill.ca: Summer or Fall Highlights Maps

Examples of nature's amazing biodiversity abound in Darts Hill Garden Park. From tiny lichen, colourful insects, mini-beasts (centipedes and others) and increasing in size to the majestic **Sierra redwood- *Sequioadendron giganteum*** in **Bed 8w** (the world's largest tree), all of these thrive in the garden. Biodiversity is the key to a healthy environment. Biodiverse ecosystems provide "natural services" like clean water, fertile soil to grow our food, and attractive outdoor spaces like Darts Hill Garden Park to walk in. Learn more at- Biodiversity Conservation in Surrey | City of Surrey

1. Coast Redwood- Nature's Colossus!

From the Welcome Table, begin your tour by locating **BED 1** on the left or south of Shady Lane. The **coast redwood (*Sequoia sempervirens*),** which is approximately 50 metres from the wooden pergola, is an example of one of the tallest trees on earth! Coast redwoods are also very long lived -how long do you think this tree can live? 200 years? 1,200 years? 2,200 years? What kinds of animals, birds and insects might live among its lofty branches?

2. Marvellous Magnolias!

Walk west past the South Service Gate to Magnolia Walk South. Francisca Darts was passionate about magnolias. She began planting magnolias in Darts Hill Garden Park in the early 1960's. Mrs. Darts began both Magnolia Walk West and Magnolia Walk South in the late 1990's. The magnolias are now maturing in this part of the garden.

Mrs. Darts envisioned the Magnolia Walks as becoming showy avenues of magnolia trees displaying the diversity and beauty of this group of primarily deciduous trees. Today, the trees along the Magnolia Walks grace the garden with their small, often large, white, yellow, rosy pink or purple blooms each spring. The walks exhibit a wide range of leaf size and shape, too. Magnolia flowers, fragrant and full of nectar, attract beetles and flies, which pollinate them. Once pollinated, showy pinkish, red or orange fruits, resembling contorted cucumbers, ripen in the fall. Did you know squirrels eat magnolia seeds?

March through June, there are magnolias in bloom here. A beautiful parade of magnolias- sumptuous flowers and fabulous leaves! Darts Hill Garden Park boasts a significant collection with 70 different magnolia species and cultivated varieties planted in the garden.

3. Darts Hill Nut Orchard Replanted

Continue to Magnolia Walk West, turning right at Bed 36. Cross the grass to the Nut Orchard adjacent to **BED 41**. Edwin and Francisca Darts planted a large hazelnut orchard in the early 1950's on this south facing slope. A productive nut orchard was a prominent feature of the garden for many years.

Unfortunately, the hazelnut trees became infected with Eastern Filbert blight (EFB) and began to decline. In 2016, all of the trees were removed. In preparation for replanting, a new drainage system was installed and the slope regraded with a swale. Do you know what a swale is? In 2020, a new nut

orchard was planted with several different types of edible nuts. The nut orchard is now home to **dwarf chestnut trees**, **(*Castanea pumila*)**, **yellowhorns, (*Xanthoceras sorbifolium*)** and two types of blight resistant hazelnuts.

4. Pines- Food for Many

Walk north from the Nut Orchard to Hellebore Drive, which is paved. About 45 meters from the black entry gate on 168th street, look up on the right of Hellebore Drive. Can you see the pine cones of the **Japanese white pine (*Pinus parviflora* Glauca Group)** in **BED 25**? When the cones are ripe they open and the tiny seeds are blown far away from the parent tree. Pine seeds are a favorite food for non-native grey squirrels and our native Douglas squirrels. Blue jays and many other birds and animals love pine seeds, too. Did you know there are nine different pine species in Darts Hill Garden Park? A few pine species produce large edible seeds called pine nuts which are used in a variety of cuisines. The Italian stone pine **(*Pinus pinea*)** in **BED 43**, which is located in the Pasture, for example, produces delicious ivory-colored seeds which are featured in French and Italian dishes.

5. This is a Food Forest!

Carry along east on Hellebore Drive. Turn left at the brown Garage to access the Maple Meadow. The Food Forest is north of the Maple Activity Centre in **BEDS 97w and n**. Food forests are a form of productive ecological landscape that mimics the function of a healthy natural ecosystem. There are seven layers in the Darts Hill Garden Park food forest: a tall tree canopy, a lower tree canopy, a shrub layer, herbaceous plants, ground covers at the soil surface, the root layer, including bulbs and climbing plants. Can you find seven layers?

As an alternative to conventional agriculture, food forests contain diverse species of plants that provide food, medicine, fiber, fuel and shelter. Flowering herbaceous plants are very important too as they attract pollinators such as bees, butterflies, and wasps that are responsible for pollination and seed production in the food forest. A food forest, by increasing biodiversity and mimicking the structure of a healthy forest ecosystem improves the wider ecosystem's health and resilience. It also provides a source of harvestable food.

Did you know that even weeds play a role in biodiversity? Weeds are sources of food for all kinds of creatures in Darts Hill Garden Park!

6. Pollinator Garden- Bees are Beautiful!

The Pollinator Garden in **BED 97e** is adjacent to the Food Forest. This garden provides food, nesting, and resting for pollinators. Many of the trees and plants in Darts Hill Garden Park attract pollinators. Did you know that bees visit thousands of flowers every day to sip nectar and then return to the hive to make honey? When bees (bumblebees, honey bees, mason bees and many other kinds of bees) visit a plant they also carry tiny pollen grains from flower to flower. This leads to pollination and helps the plants make seeds and fruit, which we like to eat. If there were no bees and other pollinators what would happen?

Which pollinators are busy in Darts Hill Garden Park? Bees (Did you know that there are more than 800 species of native bees in Canada?), wasps, butterflies, moths, beetles, flies, and even hummingbirds are important pollinators here. At home, we can have a positive impact by providing the essential habitat

requirements for pollinators. These include food, water, shelter, and enough space to raise their young. Learn how to make your own pollinator garden at Bees & Pollinators | City of Surrey. Pollinators are needed for the reproduction of 90% of flowering plants and one third of human food crops. We depend on pollinators to provide us with a wide range of foods. In addition, pollinators are part of the intricate web that supports the biological diversity in natural ecosystems that help sustain our quality of life.

7. Giant Rhubarb- Sometimes an Invasive Thug!

Now walk south of Darts House, down the concrete steps beside the Heritage Buartnut tree whose large branches are being held by metal support beams. At bottom of the stairs, turn left. Make your way to **BED 11** to find the **giant rhubarb** (***Gunnera manicata)*** on Gunnera Walk. Stand for a moment under the umbrella-sized leaves of this plant! This robust plant is not native to B.C. and has no predators. Do you think the deer, rabbits and slugs that live in the garden eat the tough, spiny leaves? Large non-native species, like this one, can grow very quickly and can become invasive, changing the environment they live in and taking the space and resources needed by our native plants. Did you know that cyanobacteria live in the leaf cells of this plant? The cyanobacteria synthesize nitrogen allowing the ***Gunnera*** to grow in nitrogen-poor swampy soils. This gives this plant an ecological advantage over our native flora growing in the same habitat.

8. The Pond- Frog Splash Central!

Next stop is the Darts Hill Garden pond, which is surrounded by **BED 49**. Many insects, birds, small mammals and plants live in or around the pond. Now is your chance to be a biodiversity detective! Look at all the living things around you. Can you spot a frog? Not today? When do you think is the best time to see frogs in the pond, or birds and squirrels nearby? Did you know 28 different bird species were spotted in the garden on just one day in May? eBird Canada Checklist - 19 May 2022 - Darts Hill Garden Park, Surrey CA-BC - 28 species. Keep an eye out for an iridescent dragonfly but make sure to stay back from the water's edge! How many different types of insects can you find here?

9. Wollemi Pine and the IUCN Red List

Head to the north end of the pond where the stream begins. Now, cross the Tractor Road to Redwood Walk. Stop to admire the **Wollemi pine (*Wollemia nobilis*)** on the right side of the path in **BED 8w**. Did you know it is an endangered species? This tree is classified as critically endangered according to the International Union for Conservation of Nature's (IUCN) Red List of Threatened Species. Today, Wollemi pine is restricted to less than 100 trees in Wollemi National Park, Australia.

The IUCN Red List is the world's most comprehensive information source on the global extinction risk status of animals, fungi and plants. This list is a critical indicator of the health of the world's biodiversity. It is a powerful tool to inform and catalyse action for biodiversity conservation and policy change, both critical to protecting natural resources. There are more than 150,300 species on the Red List, with more than 42,100 species threatened with extinction. For more information: visit www.iucnredlist.org

10. Lovely Lichens and Magnificent Moss

At the next path crossing, closely examine the three large **red alder** trees **(*Alnus rubra*)**. Can you see the grey and pale green patches on the trunks of the alder trees? These patches are lichens: small communities of biodiversity- fungi, tiny plants called algae, sometimes bacteria, which live together and

help each other survive. These miniature communities thrive on the trunks of many trees in Darts Hill and in lots of other places including exposed rocks on the shores of the Salish Sea and even in the cold north of our vast province. The bright green moss at the base of the alder trunks is an example of one of the many different moss species found in Darts Hill Garden.

11. Native Plant Demonstration Garden and Loop

The Native Plant Demonstration Garden, **BED 7w** is on your left. Talk a walk on the wild side. Turn left and up the path and tour the Native Loop- **BED 7n.** Take a moment to sit and enjoy the view from one of the two log benches.

Native gardens help to maintain biodiversity and provide important habitat- shelter and food for insects, birds and animals. Did you know that coyotes hunt in this garden for mice and voles? Fallen logs, the coarse woody debris and the plants in the Native Plant Loop provide homes for many different animals such as newts, salamanders, wasps, frogs and garter snakes. There is a wide variety of mini-beasts here, such as beetles, millipedes, and centipedes that do a great job of breaking down dead plants and transforming them into fertile soil. Does your own garden provide shelter for these special creatures?

This area is a transition between the historic garden planted by Mrs. Darts and the native forest beyond, which she envisioned remaining in its natural state. The area shows the beauty of a garden planted entirely with trees, shrubs, ferns, wildflowers, vines and ground covers that are native to the Coastal Douglas-fir ecosystem. Native plants are naturally low-maintenance – they are designed by nature to survive in our environment. Once established, they demand little attention. Fertilizers, herbicides, and constant watering are not needed.

12. The Garry Oak Woodland, an Ecosystem in Peril!

The last stop on your way back to the Welcome Table and the exit and is the developing Garry oak woodland in **BED 7w** on the left side of Cedar Lane. Did you know that Garry oak ecosystems are among the most rare and endangered ecosystems in Canada? This developing woodland in Darts Hill Garden Park is comprised of species that are characteristic of Garry oak ecosystems: **Garry oak, (*Quercus garryana*)**, **arbutus, (*Arbutus menziesii*)**, **camas (*Camassia quamash***, and ***C. leichtlinii*)**, **shooting star (*Primula hendersonii*** syn**. *Dodecatheon hendersonii*)** and other beautiful native plants.

Garry oak ecosystems are a sub-component of the Coastal Douglas-fir ecosystem. Although they were once fairly common on southeast Vancouver Island, the Gulf Islands, and the Fraser Valley, they have been reduced by development, agriculture, and encroachment of non-native invasive species. Now, just three percent of this Garry oak zone remains in its natural state, occupying only a tiny bit of the Coastal Douglas-fir zone. Garry oak ecosystems may have a special role to play in British Columbia's adjustment to global warming. It is predicted that our climate will become similar to California's. With Douglas-fir ecosystems retreating from their current range, Garry oak vegetation may become important in the management of future landscapes. Garry oak ecosystems are incredibly diverse! How many different species can you see today?

Darts Hill Garden Park is a treasure trove of biodiversity. The garden contains a diverse collection of over 4,500 labelled plants! It is home to a myriad of insects, birds, mammals, mosses, lichen, fungi and mini-beasts! Wow!

We hope you have enjoyed this self-guided tour of Darts Hill Garden Park. Please visit again, for more information about the Darts Hill Garden Conservancy Trust Society visit www.dartshill.ca.