Exploring Solutions for
SUSTAINABLE GARDENING

Prepared by
The Conservation Committee of the New Canaan Garden Club

Earth on Our Hands
A GCA Flower Show

June 4–5, 2009

Exploring Solutions for
SUSTAINABLE GARDENING

An exhibit to educate the public about healthy gardening practices that not only enhance the beauty of our landscapes, but foster the biodiversity of habitats, save native species and protect our natural resources

Go Native!

Add a variety of native plants, feed and protect your soil and minimize the use of chemicals such as fertilizers and pesticides, to create the natural habitats for beneficial creatures that bring balance and sustainability to the garden.

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THE CONSERVATION COMMITTEE OF THE NEW CANAAN GARDEN CLUB
FOR *EARTH ON OUR HANDS* – A GCA FLOWER SHOW
NCGC CENTENNIAL YEAR – 1909 - 2009
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Printed on recycled paper

Contents

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Staged in the

Waveny Walled Garden

Waveny Walled Garden is located within Waveny Park and adjacent to Waveny House. Originally designed for the Lapham Family by the firm of Frederick Law Olmsted in 1917, the entire park is now owned by the Town of New Canaan. In 1995, the New Canaan Garden Club, a member of the Garden Club of America, undertook a complete restoration of the garden and tea house and has continued to rejuvenate and maintain this large garden. Originally, a formal rose garden was planned inside the tall brick walls, and the design today incorporates roses in a long rose border along one side. The remaining three sides, bordered by brick walks, showcase deep herbaceous borders which include perennials, small trees, flowering shrubs, bulbs and annuals, all overlooking a meadow leading to a pond. The garden includes native plants among the ornamentals planted for display and is maintained with sustainable gardening practices. The garden, now included in the *The Garden Conservancy's Open Days Directory*, serves as a quiet contemplative space for visitors and as a venue for weddings and other special events.

Sustainable Gardening

A sustainable garden should be able to adapt and continue indefinitely without requiring external inputs. A sustainable garden must not leave its environment depleted, but restored and in balance. A sustainable garden should be easy on the gardener, requiring low maintenance and little demand on the budget.

In the garden our natural resources include the sun, soil, water, plants, pollinators (insects and birds), etc. Sustainability means recognizing their value and preserving and/or renewing these resources through healthy gardening practices. Sustainability is achieved when a "closed system" is created – a system that produces, then uses and finally recycles, which, in turn, minimizes the loss of energy and nutrients.

Sustainable gardening practices are environmentally responsible, nature-loving and healthy. Many are preventative in nature, acknowledging and following the laws of the natural world. They account for the scientific principles of sustainability—reliance on solar energy, biodiversity, population control and nutrient recycling—and thereby, protect our natural resources. Key practices include:

- **Choosing a *variety* of pest resistant plants** – **Native plants** (biodiversity) which have already adapted to local conditions tend to be hardier and more resistant to pests and disease, allowing for minimal to no use of pesticides.
- **Incorporating a *variety* of plants that sustain wildlife – Indigenous native plants (**biodiversity**)** provide food for local insect life which becomes food for birds and mammals.
- **Improving the soil** (nutrient recycling)– Using compost instead of fertilizers adds to the health of the soil and, thereby, to the health of the plants and eliminates the need for chemicals, detrimental to the soil microorganisms and groundwater.
- **Removing invasive plants** (population control) – Invasive plants can upset the balance of a local ecosystem by dominating and often out-competing native plants to the point of extinction. With the extinction of these native plants comes the extinction of other species.
- **Conserving water** (resource protection and recycling) – Mulching, drip irrigation, capturing rainwater, planting the right plant in the right place, and downsizing lawns all aid in minimizing the need for additional water.
- **Refraining from the use of chemicals** on your property (resource protection and biodiversity) – Pesticides, herbicides and commercial fertilizers will kill the bacteria, fungus and earthworms essential for healthy and productive soil and eliminate the non-target beneficial insects and birds so critical to the natural processes of pollination and predation.

Sustainable landscapes are planted with a *variety* of tree, shrub and plant species that are well suited to the existing light, moisture and soil conditions. Ideally, plants that meet the criteria for sustainability are 1) great garden plants, 2) hardy, 3) drought resistant, 4) pest resistant, 5) long lived, 6) not invasive, 7) adaptive to low fertilization and 8) deer resistant.

Native plants are more likely to meet the criteria of sustainability than alien plants. Native plants are those naturally occurring in a region—without introduction by humans. The value of using native plants in your garden is that they have already adapted to the regional conditions of soil, light and water and therefore, by nature, are low maintenance—requiring less input, causing less pollution. Native plants are great for the local ecology, supporting a more balanced diversity of insects which, in turn, keep pest populations in check and supply food and sanctuary for wildlife, especially birds.

Native Plants

Choose the "Right Plant" for the "Right Place"

Learn about the various **micro climates** on your property. Micro climates are affected by **temperature, moisture, light, soil, terrain** and **topography** as well as **wind exposure**. Be aware that fixtures (your house, trees, fences, walls, rocks) can affect micro climates. Match your plantings to the natural conditions of your gardens.

Research carefully the cultural requirements of the plants you wish to use. They may need **sun**, **partial shade** or **shade**. You need to know other needs as well - pH, soil preferences (especially drainage), water and fertility as well as the plants' preference for **wet**, **moist**, or **dry** conditions. Determine the winter hardiness of your plants, too.

Use a wide ***variety*** of plants in your garden for ***maximum benefit to the environment***. Do not plant mono cultures for if you do get a plant pest, you can lose your entire garden bed. Group plants that have similar cultural requirements. This practice will minimize maintenance and conserve water.

Plants properly selected for their location tend to be healthier plants, having fewer insect and disease problems and requiring less maintenance long-term.

Go Native!

"The Federal Plant Conservation Alliance defines a native plant species as one that occurs naturally in a particular region, ecosystem, and/or habitat without direct or indirect human intervention."
Native Alternatives to Invasive Plants – C. Colston Burrell

- Native plants can flourish without pesticides – most have natural resistance to many pests.
- Native plants need little watering – once established they develop a healthy root system because they have adapted over thousands of years to the local moisture conditions.
- Native plants, adapted to the soil of their region, have no need for fertilizers which means the garden is free of chemicals.
- Native plants provide food and habitat for wildlife. These plants support a more balanced diversity of insects which, in turn, pollinate, keep populations of insect herbivores in check, aerate and enrich the soil and provide food directly or indirectly to animals.
- Native plants are beautiful.

For the purposes of the New Canaan Garden Club Flower Show Conservation Exhibit we have defined "native" to include plants that were indigenous to the eastern portion of the United States before European settlement. If one wishes to research plants native to a smaller region, for instance, the State of Connecticut, we recommend this excellent source: **USDA PLANTS Database Web site** – ***http://plants.usda.gov***.

All the plants highlighted in the temporary exhibit bed are native. The permanent beds in the Waveny Walled Garden demonstrate the integration of natives among other non-invasive perennials, a recommended and very manageable practice in suburban gardens. Interest in native plants is growing; for the widest selection, buy early in the season and encourage your nursery to stock a large variety of native plants.

In several cases, we include a **cultivar** of the native species for its aesthetic value in our design. **A cultivar is a plant selected for cultivation because of particular attribute or group of attributes (e.g., a particular flower or leaf color).** According to C. Colston Burrell, in Native Alternatives to

Invasive Plants, to ensure these special characteristics are retained, the cultivars are typically cloned through rooted cuttings. A cultivar produced by cloning a wild plant may be described as native, but it is not necessarily of local provenance. For benefit of the garden creatures who depend on native plants for food, selecting cultivars of native species that have been propagated from local plant stock is a good idea. Indigenous native plants grown from local seed are best, as they maintain the maximum genetic diversity, ensuring that they will attract the insects dependent upon them.

Following the lead of nature, **native plants are more likely to be compatible with your existing micro climates**. They have already adapted to the regional conditions of temperature, soil, light and moisture. However, do not fall prey to common myths about "wildflowers" or native plants – they are not totally maintenance-free. They do need particular attention in the first year or two – especially proper watering, mulching and weeding. One must also tend the garden soil and make sure that plants are placed properly for the soil type.

Plants are the most basic building block for the food chain on land. The best estimate of the number of plant species worldwide, according to Botanic Gardens Conservation International, is 400,000. Each species has an unique genetic makeup which allows it to adapt to its environment. As we know from the theory of evolution, those with the best adaptive abilities survive.

There is an interconnectedness in nature that must be recognized for species survival. In the food chain next we have the consumers – in the garden that means the insects, birds, amphibians and mammals, including humans. To ensure sustainability in the garden we must consider food sources and the balance between the consumers.

According to Doug Tallamy, in Bringing Nature Home, 90% of our insects, the first level of consumers in the garden, are "specialists"; in other words, they need particular native plants for food. His work provides strong data to suggest that native plants can support almost twice the amount of insect biomass than can alien plants. These insects, in turn, provide food for other insects and birds.

Thus, gardens created with a *variety* of native plants are more stable and self regulating than gardens of only insect-free aliens. The more biodiversity we have in the garden the more balanced it will be. Planting many different native species contributes to a healthy and sustainable garden.

Please see *"Recommended Native Plants for Landscaping in Connecticut"* on pages 12-14.

Soil Testing, Soil Care and Composting

Know Your Soil

Your garden will benefit from your first-hand knowledge of the soil. **Determine the characteristics of your soil through soil testing.** Sample your garden soil and test it for texture, pH and other nutrients.

- **Test for pH** – pH affects the ability of plants to take up food from the soil - most plants respond well to soil with a neutral pH (i.e. 6-7).
- **Test for nutrient availability** – all plants need key elements – **nitrogen**, **phosphorus** and **potassium**, among others.
- **Test for percentage of organic material in the soil and the aggregate composition** – composition and texture influence drainage; compaction influences the amount of air available to plant roots.

You may need to amend your soil. We recommend adding humus, or well decomposed compost, which will ensure your soil is healthy—fertile, well-draining and absorbent. Healthy soil feeds your plants and maintains natural protections against pests and disease.

In the State of Connecticut, **the Connecticut Agricultural Experiment Station** provides soil-testing services. Visit the State of Connecticut's website for detailed instructions and information about soil testing: ***www.ct.gov/caes/cwp/view.asp?a=2336&q=378202*** .

Take Care of Your Soil

Soil conservation is very important for a sustainable garden and involves a variety of practices to reduce soil erosion and maintain fertility. The following are key steps:

- **Minimize disruption of the soil. No tilling!**
  There are two reasons for disturbing the soil in your garden as little as possible. The first is that there are dormant weed seeds that are awakened when you till. Secondly, tilling disturbs the microorganisms so necessary for healthy soil; soil stabilizes over time if these organisms are left to do their work, creating a network of large and small channels that allow air and water to reach the plant roots.

- **Avoid soil compaction.**
  Plant roots need air to function and compacted soil prevents air from reaching them. Designate areas to plant and areas to walk – stone or mulched paths through your garden beds give you a place to stand while you are working in the garden. Regularly adding a weed-free, organic matter will help to make sure that your soil remains uncompacted and full of the fungus and bacteria that help plants absorb nutrients and thrive.

- **Protect your soil surface. Mulch!**
  Mulch, applied 2-3 inches thick, protects the soil by a) keeping the surface loose which helps water get through the soil, b) insulating the soil from temperature changes and c) smothering new weeds. Mulch should be kept 4 inches from the trunks of trees. Recommended mulches include compost, leaf mold, bark or pine fines. Be aware that dyed mulches can contain chemicals that leach into the soil.

Feed Your Soil

Adding nutrients to your soil is key to a successful garden. Thinking back to the basic concept of the closed system for sustainability, we recognize that as plants grow they take nutrients from the soil or deplete the soil, so we must replenish soil fertility if we are to protect this valuable resource and maintain balance in the garden.

Healthy, fertile soil prevents problems. We must recognize that soil is alive with organisms which give it the structure to support healthy plant life. One teaspoon of healthy soil has 500-1000 feet of fungus strings and 1 billion bacteria, which literally stick to organic matter creating clumps and critical channels for water and air, maintaining the soil structure and helping plants absorb the nutrients.

Composting is an important tool in maintaining a sustainable garden. **Compost, an organic material created from recycled yard waste and/or vegetable and fruit food scraps, acts as a *natural* slow-release fertilizer, providing nutrients, enzymes and vitamins critical to healthy plants.**

- Mature compost, also known as humus, improves the texture of the soil which, in turn, ensures moisture retention and good drainage. In clay soil, compost loosens it, letting water and oxygen get to the roots. In sandy soil, the ability to retain moisture is enhanced by compost.
- Compost actually feeds the micro-organisms, increasing the plants' ability to use the nutrients in the soil.
- Compost attracts earthworms which further enrich the soil and improve its structure.
- Compost use saves money by limiting the need for chemicals and extra water; in fact, compost also is known to prevent erosion, clean storm water runoff and treat contaminants in the soil.
- Spread compost evenly on your garden beds once a year. You should cover with at least 2 inches. Take a rake or garden fork to spread it, rocking back and forth gently to break the crust of garden soil. It is unnecessary to dig in your compost.

Make Your Own Compost?

Why Not?
It's free.
It requires no trips to the store (good for the environment and your pocketbook).
It avoids adding nutritious food and yard waste to the local landfill.

Learn the simple steps to conducting this valuable process in your own backyard. For more detailed information, instructions and recommendations, visit ***www.homecompostingmadeeasy.com*** or ***http://vegweb.com/composting/***. Other comprehensive sources can be found in the bibliography.

Buy Your Compost?

Manufacturers of organic composts include Fafard, Coast of Maine and McEnroe.

Invasive Plants

Remove the Invasives

An invasive species is one **"that is not native to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health."**

Most invasives are exotics transplanted by humans to a location outside their native or natural range. Invasive species display rapid growth and spread, establish over large areas, and persist. Invasiveness is characterized by robust vegetative growth, high reproductive rate, abundant seed production, high seed germination rate, and longevity.

Colston Burrell explains in *Native Alternatives to Invasive Plants*, "Simple physics dictates that two plants cannot occupy the same spot, so when a nonnative plant settles into a new ecosystem, it displaces a native. Invasive plants may grow faster, taller, or wider and shade out native species. Many stay green later into the season or leaf out earlier, giving them an advantage over natives. Nonnative plants can change the vertical and horizontal structure of ecosystems, alter hydrology and disrupt nutrient cycles – all with devastating effects on native plants and animals."

- **Learn to identify your region's most common invasive species.**
  Some of the most common invasives in CT are: Autumn Olive (*Elaeagnus umbellata*), Common Reed (*Phragmites australis*), Garlic Mustard (*Alliaria petiolata*), Multiflora Rose (*Rosa multiflora*), Japanese Knotweed (*Poygonum cuspidatum* or *Fallopia japonica*), Japanese Barberry (*Berberis thunbergii*), Japanese Honeysuckle (*Lonicera japonica*), Morrow's Honeysuckle (*Lonicera morrowii*), Asiatic Bittersweet (*Celastrus orbiculatus*), Winged Euonoymus or Burning Bush (*Euonymus alatus*), Purple Loosestrife (*Lythrum salicaria*), Tree of Heaven (*Ailanthus altissima*) and Norway Maple (*Acer platanoides*).
  Go to ***http://nbii-nin.ciesin.columbia.edu/ipane/ctcouncil/CT_Invasive_Plant_List.htm*** or ***http://www.hort.uconn.edu/cipwg/*** for a comprehensive list of invasives **banned for sale** in CT.

- **Remove any existing invasive plants from your property.** Invasives can be very detrimental to successful gardening – particularly sustainable gardening. In a favorable habitat, they will crowd out native species and reduce biodiversity because they:
  - replace complex plant communities with single species mono cultures;
  - compete for pollinators and repel or poison native insects;
  - alter soil characteristics and hydrological conditions;
  - displace rare plant species and interfere with natural succession.

  Weeding out invasives by hand and disposing of them in plastic garbage bags at the dump is the most effective removal process for home gardening. Go to ***http://www.newenglandwild.org/protect/invasive-plants/removal*** for more instructions.

- **Garden *only* with native species or non-invasive ornamental plants. Learn about the many native substitutes for commonly found invasive non-native plants.** Prevention is a key concept in sustainable gardening.With new plants be particularly careful about non-native species bearing fleshy fruits that will be attractive to birds and will be easily dispersed. Consider woody natives that bear beautiful flowers and fruits and provide shelter and food for insects, birds and other important wildlife. Visit: ***http://www.newenglandwild.org/protect/invasive plants/alernatives-to-invasives-in-the-landscape*** or ***http://www.newfs.org/docs/docs/invalt2.pdf*** for native plant substitutions.

Water Conservation

Save Your Water!

The importance of water is indisputable – it keeps all creatures alive, moderates climate, creates the topography of our land, dilutes wastes and pollutants and moves continuously through a basic natural cycle. At this moment, water is not a well-managed natural resource. **We regularly waste and pollute our water.**

While irrigation for crops is the biggest use of water worldwide, residences do use 10% of the water withdrawn each year from rivers, lakes and aquifers. Much of this water is wasted through evaporation, leaks and other losses.

Water conservation is extremely important and a key component of sustainability in the garden. As individuals we can have a positive impact everyday on water quality and water depletion through the ways in which we garden.

- **Capture rainwater in a rain barrel for use in your garden.** The benefits will include water availability if there are water restrictions, savings if you pay for water, less demand on your well if you don't and less storm water runoff which causes erosion and pollution. It also represents the healthy practice of recycling for sustainability.
- **Eliminate some lawn and resist daily watering of your grass and gardens**. Your lawn will survive without a sprinkler system; you can let it go dormant in the summer and it will revive in cooler, damper conditions. When you water, your grass benefits from **less frequent, deep watering**. Deep watering encourages deeper roots. **Water early in the morning** to avoid evaporation from heat and to prevent fungus growth which occurs when water remains on the plants.
- **Use drip irrigation *only* in your beds and borders as it is the most efficient means of watering** by pinpointing the roots of the plants. All plants benefit from less frequent, deep watering rather than frequent, short spurts of watering. This efficient means of watering ensures much less water waste.
- **Mulch not only to suppress weeds, but to balance temperature shifts and conserve moisture.** Adding crucial organic matter over time improves the soil structure, protects plants in a drought and feeds the plants naturally and efficiently which, in turn, minimizes stress and ensures healthier plants.
- **Plant the right plant in the right place to lower the need for supplemental watering in the garden.** While all plants need special attention, including watering, in the first year of planting, plants correctly situated in the right micro climates within your yard should adapt easily to the conditions. To find plants that like your region's typical water distribution pattern, start with natives. Choose ornamentals from bioregions most similar to yours.

Chemicals in the Garden

Choose Non-toxic Land Care

For a sustainable landscape, one must refrain from using synthetic herbicides and insecticides. These materials interrupt the natural cycle of production, consumption and recycling by killing the essential and beneficial organisms in the soil and the insects and birds needed for pollination and natural pest control.

The statistics for the impact of chemicals used yearly in our yards are staggering and chilling. The National Audubon Society (2002) estimates that homeowners apply themselves as much as 66 million pounds of herbicides and insecticides annually, not including applications by professional pest control and lawn-care companies. Pesticides are routinely found in surface and ground water throughout the country. It is believed that 7 million birds die from exposure each year. Children are at particular risk which was confirmed in a recent study where 99% of those tested had traces of garden chemicals in their systems. To learn more go to ***www.grassrootsinfo.org*** or ***www.beyondpesticides.org***.

On your property, **do *not* use synthetic products for pest control or feeding your garden plants and lawn.** There are many other healthy (and less expensive) techniques which will yield a beautiful landscape:

Practice prevention to avoid infestations. Bugs, weeds or other issues in your lawn or gardens usually are symptoms rather than sources of the problems.

- **Remove all potential pest hiding and breeding places**. Keep all outdoor areas clean – no trash or standing water. Remove shipping pallets and materials immediately to avoid the import of foreign insect pests. Remove all infested plant material as quickly as possible.
- **Keep your plants and soil healthy.** Feed your soil with humus which, in turn, will feed your plants; remember that native flowers, shrubs, and trees tend to thrive with little assistance.
- **Use diverse plantings** to prevent disease and pest infestations.
- **Invite in natural pest enemies** such as toads, dragonflies, lady bugs, bats and other creatures including birds by planting plants that provide them food and shelter. They will feed on the unwanted insects and keep populations under control.
- **Mow your lawn higher (2 ½ -3") and mulch your flower beds (2-3")** to crowd out weeds.
- **Rotate crops in your vegetable garden** to break the cycle of pests that live in the soil.

Use other, non-toxic methods for removing pests in your garden.

- **Physical methods** – pluck bugs off, pull weeds by hand, mulch
- **Heat and nontoxic substances** – boiling water or white vinegar on weeds in driveways and terraces, corn gluten meal on lawn in early spring
- **Traps** – Yellow sticky cards for aphids or white flies; beer for slugs; bottles of apple juice for yellow jackets
- **Horticultural oils and soaps** – useful for controlling aphids, mites, scale insects, white flies

For more detailed information, consult ***www.audubon.org/bird/at_home/alternatives.html* or *www.eartheasy.com.***

Recommended Native Plants for Suburban Landscaping in Connecticut

Trees

Common Name	Scientific Name	Bloom Period	Wildlife Value	Bloom Color	Light Preference	Moisture Preference	Height	Notes
Red Maple	Acer rubrum	March - April	High	Red	Sun - Partial sun	Dry- Moist- Wet	40-60 ft	Best native maple for widest range of growing conditions, fab fall color
Sugar Maple	Acer saccharum	April - May	Very High	Yellow	Sun - Shade	Dry-Moist	60-75+ ft	Spring: yellow flower; fall: yellow, orange, red color; Maple Syrup!
River Birch	Betula nigra		Very High		Sun - Partial shade	Dry- Moist- Wet	70+ ft	Fast growing; exceptional exfoliating bark display; shiny, green leaves turn yellow in fall.
Shagbark Hickory	Carya ovata	May - June	Very High	Green	Sun - Partial sun	Dry-Moist	60-80+ ft	Adapted to very dry soil; attractive bark; yellow/gold in fall; tasty nuts for homeowner and wildlife.
Eastern Redbud	Cercis canadensis	April - May	Moderate	White, Pink, Purple	Sun - Shade	Dry- Moist	15 - 25 ft	Exceptional small, ornamental tree for shade.
Flowering Dogwood	Cornus florida	April - June	Very High	White/pink	Partial sun - Partial shade	Moist	15 - 25 ft	Lovely white or pink flowers in spring; red berries in fall.
American Holly	Ilex opaca	June	Very High	White	Sun - Partial shade	Dry- Moist	30 - 50 ft	Evergreen; provides habitat; fragrant flowers; red berries; among the finest woody landscape plants in the Northeast Region.
Eastern Red Cedar	Juniperis virginiana	May	Very High	Green	Sun	Dry- Moist	15 - 40 ft	Evergreen; provides cover; lovely blue berries for the birds
Eastern White Pine	Pinus strobus		Very High		Sun - Partial sun	Dry- Moist- Wet	7- 100+ ft	Evergreen; provides habitat; most beautiful of all pines.
Black Cherry	Prunus serotina	May - June	Very High	White	Sun - Shade	Dry- Moist	30 - 50 ft	Spring: nectar for butterflies; fall: copius berries for birds.
Pin Cherry / Fire Cherry	Prunus pensylvanica	May - June	Very High	White	Sun	Very Dry- Moist	20 - 30 ft	Lovely white flowers; red berries in summer; great fall color; interesting bark.
White Oak	Quercus alba	May	Very High	Green	Sun - Partial shade	Dry- Moist	50 - 80 ft	Majestic form; slow-growing, very long-lived; very valuable source of food and habitat for birds and animals
Northern Red Oak	Quercus rubra	April - May	Very High	Green	Sun - Partial shade	Moist	50 - 75 ft	Faster growing than white oak; nice fall color; very valuable source of food and habitat for birds and animals

Shrubs & Small Trees

Common Name	Scientific Name	Bloom Period	Wildlife Value	Bloom Color	Light Preference	Soil Moisture	Height	Notes
Serviceberry/ Shadblow	Amelanchier arborea	March - April	Very High	White	Sun - Shade	Dry- Moist	15 - 20 ft	White flowers in early spring followed by edible berries turning from red to purple; great fall colors of red, orange, and yellow.
Red Chokeberry	Aronia arbutifolia	April	High	White	Sun - Shade	Dry- Wet	3 - 8 ft	Glossy red fruit appears in September; birds enjoy it in early winter.
Sweet Pepper Bush	Clethra alnifolia	June - Aug.	High	White/Pink	Sun - Partial shade	Moist- Wet	8 - 10 ft	Very fragrant flowers; yellow fall color.
Red-osier Dogwood	Cornus sericea	May - June	Very High	White	Sun - Shade	Moist- Wet	7 - 9 ft	White flowers and berries; stunning red or yellow stems in winter.
Winterberry	Ilex verticillata	June	High	White	Sun - Shade	Moist- Wet	8 - 10 ft	Red berries all winter; birds eat berries in late winter
Virginia Sweet Spire	Itea virginica	June	Low	White	Sun - Shade	Dry- Wet	8 ft	Fragrant, bottlebrush shaped white flower blooms when few other shrubs bloom; flaming autumn colors: red, purple, yellow, gold.
Mountain Laurel	Kalmia latifolia	May - June	Low	White/pink	Sun - Shade	Dry- Moist	6 - 10 ft	CT state flower; gorgeous color selections available.
Northern Bayberry	Myrica pensylvanica	May - July	High	Yellow	Sun - Partial shade	Dry- Wet	8 ft	Fixes atmospheric nitrogen; waxy berries persist into winter; aromatic twig, leaves, and bark.
Eastern Ninebark	Physocarpus opulifolius	May - June	Moderate	White- Pink	Sun - Partial shade	Dry- Wet	4- 8 ft	Abundant creamy white to pinkish flower clusters; exfoliating bark; yellow to orange autumn color.
Mountain Andromeda	Pieris floribunda	May	Low	White	Sun - Partial shade	Moist	5 ft	An underused gem; fragrant white bell-shaped flowers; glossy evergreen foliage.
Pinxter Azalea	Rhododendron periclymenoides	May	Moderate	Pink	Sun - Partial shade	Dry- Wet	8 ft	Very showy pink blossoms; an underutilized beauty.
Swamp Azalea	Rhododendron viscosum	July	Low	White	Sun - Partial shade	Moist- Wet	8 ft	Very fragrant; honeysuckle-like scent
Staghorn Sumac	Rhus typhinia	July - Aug.	Moderate	Yellow/ Green	Sun - Partial sun	Dry- Moist	6 - 15 ft	Tight clusters of yellow flowers in spring; dark red fruit in pyramidal clusters in fall.
American Elderberry	Sambucus canadensis	June - July	Very High	White	Sun - Partial sun	Dry- Wet	10 ft	Arching multi-stems; large clusters of white flowers; birds love the delicious black berry.
Highbush Blueberry	Vaccinium corymbosum	May - June	Very High	Red/White	Sun - Partial shade	Moist- Wet	6 - 10 ft	Edible bluish-black berries with waxy white surface; great fall color
Arrowwood Viburnum	Vibrunum dentatum	May - June	High	White	Sun - Partial shade	Dry- Moist	10 - 15 ft	Multi-stemmed; edible berries; fall color; blue berries in fall.

Perennials

Common Name	Scientific Name	Bloom Period	Wildlife Value	Bloom Color	Light Preference	Soil Moisture	Height	Notes
Common Bluestar	Amsonia tabernaemontana	May - June	High	Pale blue	Sun - Partial Shade	Dry- Moist	3+ ft	Dense, pale-blue star-shaped flower clusters are a nectar source for spring butterflies; glossy foliage turns yellow to orange in fall.
Wild Columbine	Aquilegia canadensis	April – June	Very High	Red/Yellow	Sun - Partial shade	Moist	1 - 3 ft	Deer-resistant; attracts butterflies and hummingbirds; spreads by seed
Swamp Milkweed	Asclepias incarnata	June - Aug.	Very High	Pink	Sun - Partial shade	Moist- Wet	2 -4 ft	Larvae of Monarch butterflies eat the foliage of both Asclepias.
Butterfly Weed	Asclepias tuberosa	July - Sept.	Very High	Orange/ Red	Sun	Dry	1 - 3 ft	Hummingbirds are attracted to both Asclepias; many other insects also feed on their nectar.
New England Aster	Aster novae-angliae	Aug. - Oct.	Very High	Purple	Sun - Partial Sun	Moist	2 - 5 ft	Showy; attracts butterflies
New York Aster	Aster novi-belgii	July - Oct.	Very High	Violet	Sun - Partial Sun	Moist- Wet	1 - 3 ft	Showy; attracts butterflies
Blue False Indigo	Baptisia australis	May - June	High	Violet/Blue	Sun - Partial Sun	Dry-Moist	3 - 4 ft	Shrub-like habit; lovely blue flowers; attracts butterflies.
Turtlehead	Chelone glabra	Aug. - Sept.	High	White/Pink	Partial Sun - Shade	Moist - Wet	2 - 3 ft	Larvae of Baltimore Checkerspot eat the foliage; has long-bloom time.
Purple Coneflower	Echinacea purpurea	July-Aug.	High	Dark rose	Sun - Partial Shade	Moist	2 - 3 ft	Excellent nectar for many butterflies; goldfinches eat seeds from late summer into fall; used for popular herbal remedy
Joe-Pye Weed	Eupatorium purpureum	Aug. - Sept.	Very High	Purple	Sun	Moist-Wet	3 - 6 ft	Large, showy butterflies like the monarch and swallowtails are attracted to Joe-Pye nectar.
White Snakeroot	Eupatorium rugosum	Aug. - Sept.	Very High	White	Sun - Partial Shade	Moist	2 - 3 ft	Attractive burgundy-colored leaves in full sun; large, flat clusters of flowers attractive to pollinators
Wild Geranium	Geranium maculatum	April - June	Moderate	Pink	Partial Sun - Partial Shade	Moist	1 - 2 ft	Good for naturalizing in open woodlands and shady meadows; long bloom time
Rose Mock Vervain	Glandularia canadensis	June - Aug.	Low	Rose/White/ Purple	Sun - Partial Shade	Dry- Moist	.5 - 2 ft	Showy groundcover; can be sheared for repeat bloom
Forest Sunflower	Helianthus decapetalus	Aug.- Sept.	High	Yellow	Partial Shade - Partial Sun	Dry-Moist	2 - 5 ft	New England native with cheerful, bright 2-3" wide yellow flowers.
Sharp-Lobed Hepatica	Hepatica acutiloba	March - April	Moderate	White/Pink/ Bluish	Partial Shade - Partial Sun	Moist	.5 - 1 ft	Attracts pollinators
Blue Flag Iris	Iris versicolor	May	Moderate	Blue violet	Sun - Partial Shade	Moist-Wet	2 - 3 ft	Clump forming woodland plant; attractive foliage
Cardinal Flower	Lobelia cardinalis	Aug - Sept.	High	Red	Sun - Partial shade	Moist- Wet	2 - 4 ft	Attracts hummingbirds and many different butterflies.
Trumpet Honeysuckle	Lonicera sempervirens	May- Sept.	High	Red/Yellow	Sun - Partial shade	Dry- Moist	12 - 20 ft	This vine offers gorgeous flowers attractive to hummingbirds, followed by small red berries in the fall for the birds.
Bee Balm	Monarda didyma	July - Aug.	Very High	Red/Pink	Sun	Dry- Moist	2 - 4 ft	Aromatic; showy; attracts hummingbirds, butterflies, native bees.
Tall White Beardtongue	Penstemon digitalis	May - July	Moderate	White	Sun - Partial Shade	Moist	2 - 4 ft	Thrives in shallow standing water; tiers of flowers above foliage.
Solomon's Seal	Polygonatum biflorum	May	Moderate	Creamy white	Partial - Full Shade	Moist	3 ft	White bell flowers hang below arching stems; deep blue berries follow; tolerates high heat/humidity.

Perennials (continued)

Common Name	Scientific Name	Bloom Period	Wildlife Value	Bloom Color	Light Preference	Moisture Preference	Height	Notes
Indian Physic	Porteranthus trifoliatus	May-June	Low	White	Sun - Partial Shade	Dry- Moist	2 - 3 ft	Star-shaped flowers; rich dark green foliage
Eastern Coneflower	Rudbeckia fulgida	July - Aug.	High	Yellow	Sun - Partial Sun	Moist- Average	2 - 3 ft	Long bloom-time; attracts native bees and butterflies for nectar.
Blue-stem Goldenrod	Solidago caesia	Aug. - Oct.	High	Yellow	Sun - Shade	Moist- Average	1 - 3 ft	Great in woodland; not aggressive; important source of nectar for native bees and butterflies.
Zig-Zag Goldenrod	Solidago flexicaulis	Aug. - Oct.	High	Gold	Sun - Shade	Dry- Moist	1 - 4 ft	Native to woodlands; 'Variegata' cultivar has green/yellow leaves
Golden Alexanders	Zizia aurea	April - June	High	Gold	Sun - Partial Shade	Moist - Wet	1 - 3 ft	Plentiful sunny yellow flowers in the Spring; food source for Swallowtail butterflies; perfect in a sunny, moist meadow.

Ferns

Marginal Wood Fern	Dryopteris marginalis		Moderate		Partial - Full Shade	Moist-Average	2 - 3 ft	Evergreen; forms clumping arching fronds
Ostrich Fern	Matteuccia struthiopteris		Moderate		Partial Sun - Full Shade	Moist- Wet	2 - 4 ft	Large fern that forms lovely vase-shaped clumps
Cinnamon Fern	Osmunda cinnamomea		Moderate		Partial Sun - Full Shade	Moist- Wet	2 - 4 ft	Elegant vase-like habit of green fronds surrounding "cinnamon- stick" fertile fronds.
Royal Fern	Osmunda regalis		Moderate		Partial Sun - Full Shade	Moist- Wet	2 - 4 ft	Delicate, finely divided fronds, loose branching.
Christmas Fern	Polystichum acrostichoides		Moderate		Partial Sun - Full Shade	Dry- Moist	1 - 2 ft	Dark green fronds; evergreen; grows in clumps.

Grasses

Big Bluestem	Andropogon gerardii	June - Sept.	High		Sun	Dry - Average	4 - 6 ft	The blue-green leaves of summer turn red and purple in the Fall; leave standing for Winter interest.
Sedge	Carex laxiculmis		Low		Shade	Dry - Average	.5 - 1 ft	Tolerates dry, deep shade; grass-like foliage is narrow, long and bluish-green
Switchgrass	Panicum virgatum	Aug.- Sept.	High	Purple	Sun	Dry - Moist	3 - 5 ft	Grows in tall, stately clumps; delicate purple flower heads provide seeds for birds; also provides shelter.
Little Bluestem	Schizachyrium scoparium	July - Sept.	High		Sun	Dry	2 - 4 ft	Steel blue foliage in Summer changes to red/copper-orange in the Fall; food plant for Skipper caterpillar.
Indian Grass	Sorghastrum nutans	Aug.- Sept.	Moderate		Sun	Dry	2 - 9 ft	Striking tall grass for a dry meadow; lovely in Fall and Winter.
Northern Dropseed	Sporobolus heterolepis	Aug .- Sept.		Yellow	Sun	Dry - Average	2 ft	Endangered in CT; trouble-free; fragrant flower in late Summer; Bright green Summer foliage turns stunning deep orange in Fall.

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THE NEW CANAAN GARDEN CLUB

The Conservation Committee has taken care to ensure that as many exhibit elements as possible are reused/reuseable or recycled/recyclable.