

Alternative Front Yard Groundcover Promoting Native Vegetation

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Introduction

The central area of Long Island, New York is traversed by an irregular rising moraine oriented NEE-SWW. To the north is a watershed that feeds the Nissequogue River. Positioned here is the town of Hauppauge, which overlies the northern slope of the moraine and encompasses a fair share of the watershed of the north-flowing Nissequogue River. Historically, the area in and about Hauppauge was an oak-hickory-chestnut deciduous forest with sporadic and temporal meadows. These short-lived minor fields were conceived as consequences of naturally occurring lightning, fires, storms and erosion. The vegetation of the fields of herbaceous sun-loving wildflowers and bunch grasses ultimately yielded to the repeated ecological successions of woody shrubs and coniferous and hardwood trees of the reclaiming forest.

While early modest European settlement encroached upon the forest matrix of Hauppauge in the seventeenth century, blanket suburbanization during the last hundred years has dramatically altered the natural forested landscape. Steadily, the remaining isolated large oaks and hickories are expiring due to suffocation from covering pavements and are taken down. The chestnut trees have all but disappeared during the last century due to an introduced Asiatic blight. Open space areas are either replanted, decked, gravelled or cemented. Modern day vegetation, outside of protected preserve parkland, is, by and large, introduced ornamental nursery stock bordering sodded or seeded front lawns of hybridized fescue grasses.

It was an objective of the Paumanok Project to remove the nonnative introduced vegetation of a front yard of a typical suburban residential property and monitor and guide a recuperation of its historic native vegetation.

Methods

The study site consisted of a suburban front yard lawn. The land sloped downward from the face of the house toward the curb in an archlike fashion. In the fall of 2002, the removal of the front lawn was initiated. Iron rakes and forked weed pickers were used to pry the turfgrass loose from the soil. The constituent soil was shaken from the removed portions of turf and allowed to fall in place on the corresponding terrain. Small particles of humus, seeds and other decaying organic matter likewise fell to place. Before temperatures dropped to freezing in mid-December, 100 square meters of turfgrass were removed. The midsection of the front yard consisted primarily of fine quartz sand. This was due to the previous excavation of two large circular areas to accommodate a septic tank and overflow concrete tank for household sewerage as Hauppauge has no municipal sewer treatment. The elevated portion of the front yard closer to the house demonstrated a fine layer of topsoil above the sand. The turf was transported away from the site and the exposed soil was left fallow. No further seeding or planting was done. Only seeds that were latent in the soil or arrived wind-borne were allowed to germinate. Additional seeds deposited by avian species were also included in the allowance.

During the spring of 2003, a mix of native and nonnative herbaceous plants began sprouting. The nonnative herbaceous plants were identified and removed with a weed picker, taking care to minimize further disturbance to the soil while extracting the nonnative stems and roots intact. This selective weeding continued throughout the summer and autumn of 2003. Additional turf was removed during the 2003 growing season enlarging the study site to 200 square meters. No intervention took place during the cold winter months.

Again in the spring of 2004, sprouting nonnative plants were removed individually. As an array of seeds initiated growth during the changing seasons, it was necessary to weed continuously from April through December. While many plants, both native and nonnative did take advantage of warm winter days and sunlight exposure advancing germination, there was no weeding performed during this time as the soil was frozen and roots would be torn and left behind in the soil. For the most part, winter snow covered the soil and stilled photosynthetic activity. In addition, another 100 square meters of soil surface were removed during the 2004 growing season bringing the total exposed soil surface to 300 square meters.

At no time during the project was there supplementation of water, fertilizers or herbicides. The preexisting lawn irrigation system was removed during the turf elimination process. Any vegetation appearing would rely solely upon available rainwater. The sandy portion of the yard was nutrient poor, while the upper and border areas had preexistent constituent topsoil.

Results

The initial appearance of the front yard landscape in the area of the project was simply that of bare sandy soil. It remained as such through the autumn and winter of 2002.

During the spring of 2003, a faint green hue was cast on portions of the soil. Upon close examination, this was due to minute mosses growing in the shaded shallow depressions of the uneven contour of the study site. Towards April and May, a number of herbaceous plants germinated consisting of a variety of native and nonnative wildflowers, grasses, mosses and occasional tree sprouts from seeds of a nearby mature red maple and acorns from a proximal black oak that were planted by squirrels.

By July, native horseweed (*Erigeron canadensis*) grew to a height of three to four feet and to avoid objections of uneasy neighbors, it was removed. At this point, only native plants growing to a mature height of six inches were tolerated to assume some semblance of conformity to neighborhood format.

The blonde sandy soil was taking on a green overcoat. Sporadic individual plants of native orange grass (*Hypericum gentanoides*), path rush (*Juncus tenuis*) and three-seeded mercury (*Acalypha rhomboidea*) grew interposed between a plethora of nonnative crabgrass (*Digitaria sanguinalis*), silvery cinquefoil (*Potentilla argentia*), corn spurrey (*Spergula arvensis*), common purslane (*Portulaca oleracea*) and prostrate knotweed (*Polygonum aviculare*). After the removal of the predominance of nonnative weeds, much of the sand substrate was again apparent.

Temptation soon wielded a number of exceptions to the self imposed height restrictions. The "spontaneous" appearance of gray goldenrod (*Solidago nemoralis*), hyssop-leaved Boneset (*Eupatorium hyssopifolium*), blue-eyed grass (*Sysyrrinchium angustifolium*), and sweet everlasting (*Gnaphalium obtusifolium*) was too significant to ignore.

August and September bore the flowers of the asters and a unique unexpected volunteer: *Agalinis setacea*. Fourteen of these plants presented with a frail skeletal framework of maroon branches with bellowing purple flowers. By autumn's end they all went to seed.

The following growing season of 2004 proffered an explosive growth of orange grass. Asters and goldenrods abounded as well. By the close of the second growing season the scale was tilted in favor of the native flora. Weedy nonnative species still needed to be removed, but the groundcover due to native species was much greater. Six plants of *Agalinis setacea* emerged and flowered in autumn of 2004. All six plants grew downslope of the position of the *Agalinis setacea* of 2003.

Discussion

The variety of floral speciation provided continuous ecological transition from spring through autumn. Many of the plants that appeared were predictable. The crabgrass, corn spurrey, purslane, and prostrate knotweed were visible in the turfgrass that was removed. Seeds were cast from them that would last a number of growing seasons. So, it is not surprising that they would be found germinating.

But the appearance of the native hyssop-leaved boneset, blue-eyed grass and orange grass begged further explanation. They were not growing in the discarded lawn. And even if they were, the lawn was mowed annually to a height that would have prevented flowering and seed cast.

The presence of nearby unmanicured border areas of larger properties along with birds visiting and delivering seeds in their droppings could also help account for this native seed stock.

The appearance of *Agalinis setacea* was particularly notable. There was no indication of this species in the proximal environs. The house was constructed in 1965 and a lawn was established that persisted for the ensuing forty year period. Could *Agalinis setacea* have waited for four decades in a latent state in the soil for this opportunity?

The natural history cycle in Hauppauge of forest to field to forest to field over decades or centuries would warrant wildflower capabilities of producing long lasting seeds. Such seeds would need to lie dormant for long periods of time and the ability to be readily prompted to engage the proper conditions of soil disturbance, sunlight and water availability.

While there is no assurance as to the source of these native seeds or the future of their progeny, the wildflower resurgence is a remarkable sight to behold in the midst of a nursery stocked neighborhood.



Fig. 1 The status of the study plot as of September 2003



Fig. 2 Status of the study plot as of August 2004



Fig. 3 Status of the study plot as of September 2004



Fig. 4 *Agalinis setacea* on study plot. September 2004



Fig. 5 Orange Grass growing on bare sand