



GNA Technical Summary #2



VEGETATION PLOTS IN THE GORDON NATURAL AREA

(Funded by: USDA Forest Service)

Beginning in 2002 we began to install what would be by 2004 a series of 18 forest health monitoring (see map on web site) plots in the Gordon Natural Area. The plots were established and measured by following a protocols used by the USDA Forest Service and their state partners in all 50 states (http://www.fia.fs.fed.us/library/field-guides-methods-proc/docs/2006/core_ver_3-0_10_2005.pdf).

In 2004 the total vegetation component was added. This baseline data set will allow us to evaluate how the total vegetation component of the GNA is changing over time. Procedures can be found at: http://www.fia.fs.fed.us/library/field-guides-methods-proc/docs/2006/p3_3-0_sec13_10_2005.pdf.

The 2004 survey found 362 separate plant species. On average there were 71 plants on each plot. The high was 119 (Plot 1) and the low was 52 (Plot 18). The 11 most common plants recorded on the most plots (17 or 18) can be seen below. White ash is found everywhere. Unless a tree pathogen (ash yellows), or insect pest (Emerald ash borer), express themselves, the white ash will become the most dominant tree species in the GNA. Five of the 11 species listed are invasives, and along with other invasives, have begun to dominate the ecosystem and their occurrence and impacts are expected to intensify.

Common Name	#plots	% cover (0-2ft)	% cover (2-16ft)	% cover (+ 16ft)
White ash	18	0.1	0.3	12.4
Frost grape	18	0.2	0.5	0.8
Japanese honeysuckle	18	3.3	0.3	0.0
Poison-ivy	18	0.0	0.1	0.7
spicebush	18	2.2	1.0	0.1
Jack-in-the-pulpit	18	0.0	0.0	0.0
Garlic mustard	17	1.3	0.0	0.0
Oriental bittersweet	18	2.9	1.0	2.2
Virginia creeper	18	0.1	0.0	0.0
Low smartweed	18	1.4	0.0	0.0
Japanese stiltgrass	17	8.6	0.0	0.0

The invasive species of concern in Pennsylvania are very common on the GNA except for the beefstake plant and the princess tree. The most common species are: Japanese honeysuckle, garlic mustard, oriental bittersweet, Japanese stiltgrass and multiflora rose. Norway maple, Japanese stilt grass, tree-of-heaven and oriental bittersweet top the coverage list.

Common name	# plots	% plots	% coverage
Norway maple	14	78	10.1
Tree-of-heaven	14	78	3.5
Garlic mustard	17	94	0.5
Japanese barberry	9	50	0.2
Oriental bittersweet	18	100	3.0
Autumn olive	8	44	1.7
Winged burning bush	10	55	0.1
Mile-a-minute	7	39	0.3
Border privet	16	89	0.3
Japanese honeysuckle	18	100	3.5
Amur honeysuckle	14	78	2.2
Japanese stiltgrass	17	94	8.6
Princess tree	3	17	0.6
Beefstake plant	1	6	0.0
Multiflora rose	17	94	0.7
Wine raspberry	18	100	0.4

Example of one non-native invasive species:

Japanese stilt grass was first introduced into the United States in Tennessee around 1919 and likely escaped as a result of its use as a packing material for porcelain. Japanese stilt grass threatens native understory vegetation in full sun to deep shade. Stilt grass readily invades disturbed shaded areas, like floodplains that are prone to natural scouring, and areas subject to mowing, tilling and other soil-disturbing activities including white-tailed deer traffic. It spreads opportunistically following disturbance to form dense patches, displacing native wetland and forest vegetation as the patch expands. A single plant can produce 100 to 1,000 seeds that remain viable in the soil for at least three years, ensuring its persistence. Stilt grass seed germinates readily following soil disturbance. Although dispersal is not fully understood, seeds are probably transported by movement of water (e.g. surface runoff, streams, and floodwaters), soil, plants and on the feet of other animals including people.

Plot #	% coverage (0-2ft)
1, 3, 4, 11, 12, 13, 14, 16	0
2, 10	.5
5	1.5
6	15.7
7	43.5- farm field in 1968
8	12
9	43.5- farm field in 1968
14	1
15	10.5
17	1.3
18	25.3
average	8.7