



The Dawes Arboretum

Trees ∞ History ∞ Nature

The Dawes Arboretum Conifer Report 2003

Introduction

The Conifer Report is an annual report of conifers at The Dawes Arboretum in Newark, Ohio. It is intended for people interested in the culture of these plants, from homeowners to the professional. In this report we attempt to give the reader an overview of our collection, its composition and environmental conditions that prevailed over the course of the reporting year. It includes a summary of specimens that have been added to and removed from the collection in the last year, and five- and ten-year growth reports which evaluate plants that have been on grounds for that time. This report period extends from July 1, 2003 through June 30, 2004.

The Conifer Collection at The Dawes Arboretum

At the time of this report, The Arboretum's conifer collection consists of 6,792 recorded specimens. Among these are 1,636 unique taxa that include 225 species, hybrids or infraspecific taxa. One of the collection's strengths lies in the number of taxa represented; another is the wide range of plants from temperate climate zones of the world, with a particularly strong representation of those from Asia and the Pacific Northwest.

Although conifers are located throughout the grounds, the primary collection is concentrated in an easily accessible, naturalistic 5.54 hectare (13.7 acre) area. The Conifer Glen is punctuated by a creek, complete with a rugged, man-made waterfall and gentle slopes (mostly between 2-7%) rising to the north and south. Total relief is approximately 15 meters (50 ft.), with the highest elevation at 310 meters (1,017 ft.) above mean sea level. This relief, in combination with the creek valley, provides stunning vistas of the collection from both the north and south slopes. Although the collection is rather young, boulders and fallen trees have been placed strategically in plant beds to give the appearance of natural permanence. Two bridges have been installed recently over the creek to provide guests with greater accessibility. New labels were attached to plants in the Conifer Glen last summer, making identification in the field much easier.

Underneath the beauty, the collection area's soils are primarily Amanda and Centerburg series, the former being well-drained, the latter moderately well-drained, both formed in glacial till. Most conifers grow best in well-drained soil, possibly more well-drained than our conditions provide. See Explanation of Soil Types at the end of the report for a more in-depth discussion.

Size Characteristics of Conifers

Size is relative throughout the plant kingdom, conifers included. Plants outside their native habitat seldom attain the stature of those in their native habitat. Factors (other than genetics) affecting the size and habit of plants can include one or more of the following: age, temperature, snow cover, exposure to wind and sun, soil type, moisture, nutrient availability, exposure to insects or disease, whether the plant was a rooted cutting or grafted, from what part of the mother plant a cutting or scion was taken, or the understock used when grafted.

The term “dwarf” is also relative when discussing plants. A plant is considered dwarf if it is one-twentieth of the species' normal size. Therefore, a 24 meter (80 ft.) tall eastern white pine would have a dwarf representative approximately 1.2 m. (4 ft.) tall. "Semi-dwarf" refers to plants whose growth is about one-tenth of normal size. A semi-dwarf eastern white pine would be approximately 2.4 m. (8 ft.) tall. Dwarf and semi-dwarf conifers may or may not produce needles and cones of dwarf and semi-dwarf proportions – these features vary by species and cultivar.

Many dwarf and semi-dwarf selections have not been growing long enough in cultivation to determine their mature size. Some nursery catalogs advertise smaller sizes for plants than their actual mature sizes. By measuring plants on a regular basis over time (in the 5- and 10-year reports), we will be able to predict more accurately the growth rates and mature sizes of these plants in a USDA Zone 5b setting.

Growing Conditions During 2003-2004

The Dawes Arboretum is located five miles south of Newark in Licking County in central Ohio. Licking County's climate is humid, temperate. The area usually experiences cold winters (30-year mean temperature of -3.4°C (25.8°F) in January) and hot, humid summers (30-year mean temperature in July of 22.59°C (72.7°F)). Conifers typically thrive in cooler, less humid summers than those of central Ohio. The 30-year annual average precipitation level for Licking County is 105.7 cm. (41.62 in.).

More than any other climatological statistic, precipitation levels deviated from normal during the period from July 1, 2003 through June 30, 2004. During this time, Newark received 129.64 cm. (51.04 in.) of precipitation, 23.93 cm. (9.42 in.) above normal. Almost all of this fell in late summer (August-September 2003) and spring (April-June 2004) when 13.4 cm. (5.28 in.) and 11.02 cm. (4.34 in.) above normal, respectively, were received. Temperatures were fairly normal except for a sustained period from January 16th through February 3rd, 2004 during which minimum temperatures fell below the normal of -8.17°C (17.3° F) for all but two days. From January 20th through 26th minimum temperatures were below -12.22°C (10° F). During this same period, however, maximum temperatures did not deviate nearly so much from normal.

The additional rainfall eliminated the need for any supplemental watering during the report period. The Curator of the Conifers found that plants sited in already moist areas and *Pseudotsuga menziesii*, in particular, did not fare well with the added precipitation. To avoid any additional moisture retention, pine needles were used instead of hardwood mulch in the Conifer Glen almost exclusively.

Problems such as sawfly and scale did not disappear due to winter cold as the Curator had hoped. Perhaps the high precipitation levels resulted in more vegetative growth and more food upon which pests could feast. Staff members have found pine false webworm on 2-needle pines with some regularity this summer for the first time. At this point, these are simply being hand-picked off for control. Because of earlier spray treatments, bagworm did not pose much of a problem during this reporting period.

Maintenance Practices in the Collection

The Conifer Collection is regularly maintained throughout the year, for the most part by its Curator two days per week. No irrigation system exists in this collection area. As a result, the only plants that receive supplemental water during dry weather are new plants in the ground less than a year and firs, hemlocks, larch and some *Chamaecyparis* which require more water; during the reporting period no irrigation was required. Most of the conifers are mulched with pine needles except for the aforementioned plants for which composted mulch is used to help retain moisture. A side benefit to using pine needles as mulch is that it seems to help control weeds. Plants are thinned during the winter, both to eliminate crossing branches and for artistic effect. Where thinning is difficult (such as tightly formed brooms), staff members try to remove dead needles to improve air circulation and minimize disease and insect problems.

During the reporting period, composted gardener's mulch was added to the soil surrounding *Chamaecyparis*, *Abies*, *Larix* and *Tsuga*, both as a top dressing and to add nutrients to the soil. Deer damage, both from browsing and rubbing, has increased to a level that 50-75% of the collection's plants have individual fences around them for protection during the fall and winter months. Overall the collection is performing well; so well that many plants will need to be transplanted or otherwise removed from the collection in the upcoming years because they have outgrown their sites.

New Specimens in the Collection

The following list contains conifer species, cultivars and selections new to our collection that were planted during this reporting period. Their measurements and conditions will be reported in five years.

- *Abies concolor* 'Masonic Broom'
- *Abies fraseri* 'Wingle's Dwarf'
- *Abies koreana* 'Nanaimo'
- *Abies recurvata*
- *Chamaecyparis obtusa* 'Drath', 'Kojolcohiba', 'Lemon Twist', 'Mariesii'
- *Chamaecyparis thyoides* 'Blue Sport', 'Emily', 'Glauca Pendula'
- *Juniperus chinensis* 'Loree Dawn', 'Winter Gold'
- *Juniperus communis* 'Pendula', 'Vase'
- *Juniperus conferta* 'Blue Lagoon'
- *Juniperus sabina* 'Knap Hill', 'Monard'
- *Juniperus virginiana* 'Blue Cloud', 'Reptans'
- *Metasequoia glyptostroboides* 'Jack Frost'
- *Picea abies* 'Eagle Point', 'Roanoke No. 1', 'Weeping Blue'
- *Picea asperata* var. *aurantiaca*
- *Picea bicolor* 'Prostrata'
- *Pinus banksiana* 'Geneso Prairie', 'Meridosa No. 2', 'Potters'
- *Pinus bungeana* 'Diamant'
- *Pinus cembra* 'Blue Mound', 'Chamolet'
- *Pinus densiflora* 'Glitzer's Weeping', 'Green Diamond'
- *Pinus flexilis* 'Elmwood'
- *Pinus koraiensis* 'Winton'
- *Pinus monticola* 'Pendula'
- *Pinus mugo* 'Gnom', 'Iseli White Bud', 'Mayfair Dwarf', 'Spaan'
- *Pinus nigra* 'Crapo', 'Oregon Green', ssp. *laricio*
- *Pinus parviflora* 'Al Fordham', 'Dai-ho', 'Hillier', 'Janome Goyo', 'Kagami', 'Kanrico', 'Kimagame', 'Koru', 'Shikishima', 'Shin Sho'
- *Pinus strobus* 'Diggy', 'Elkins Dwarf', 'Old Softie'
- *Pinus sylvestris* 'Beacon Hill', 'Repens', 'Tremba'
- *Pinus uncinata* 'Gallica'
- *Pinus wallichiana* 'Morton'
- *Pseudotsuga menziesii* 'Nana Compacta', 'Wycoff's Big Blue'
- *Sciadopitys verticillata* 'Wavecrest'
- *Taxus × media* 'Lutea'
- *Thuja occidentalis* 'Alba', 'Bail John', 'Durant', 'Green Midget', 'Meinecke's Zwerg'
- *Thuja plicata* 'Can Can', 'Doone Valley', 'Grune Kugel', 'Hillieri', 'Winter Pink'
- *Thuja standishii* 'Wakehurst'
- *Thujopsis dolabrata* var. *hondae*

- *Tsuga canadensis* 'Burketts White Tip', 'Creamey', 'Minima', 'Sherwood Compact', 'Silver Bridge'
- *Xanthocyparis nootkatensis* 'Pendula Glauca', 'Van den Akker'
- ×*Cupressocyparis leylandii* 'Gold Rider'

5-Year Growth Report

The following conifers were planted between July 1, 1998 and June 30, 1999. This list does not include all conifers planted during this time frame, but rather those previously unreported, uncommon specimens and those whose growth rates are questionable. Moreover, we have not included those plants that have been pruned substantially to alter their typical habit or size, or those whose identification is suspect. In cases where plants of the same type are grouped together or are in close proximity to each other, their listings here are also grouped unless site, measurements or observations varied considerably from one plant to another.

Each plant's scientific name is indicated in the first column along with designations we use to uniquely identify it (accession number). "WKO" also appears in this cell to designate plants collected in the wild of known origin. In the next columns, sizes at the time of planting and at 5-years are listed. (See Measurement Notes to see how measurements are taken.) From these numbers, an average annual growth rate has been calculated. In the last column, site conditions and plant health observations are noted. See Explanation of Soil Types for more details about soils.

Scientific Name Accession No. (Collection Area)	Size at Planting		Size at 5 Years		Annual Growth		Observations	
	m.	ft.	m.	ft.	m.	ft.		
<i>Abies fraseri</i> [Reeseville Ridge selection] D1995-0140.001 (CON)	Height:	0.81	2.66	1.70	5.58	0.18	0.58	Site: part sun/shade with protection from wind; on north/northwest slope Soil: AmC2, cultivated Other: very narrow, fastigate form; blue-green foliage
	Width:	0.25	0.82	0.45	1.48	0.04	0.13	
<i>Abies fraseri</i> 'Wingle's Blue Bonnet' (syn. <i>Abies fraseri</i> 'Blue Bonnet') D1996-0424.001 (CON)	Height:	0.37	1.21	0.64	2.10	0.05	0.18	Site: part sun/shade on north slope Soil: AmC2, cultivated Other: a broad, spreading plant with somewhat irregular form; light blue foliage; pruned for scion wood
	Width:	0.32	1.05	0.92	3.02	0.12	0.39	
<i>Abies koreana</i> 'Blue Cones' D1996-0237.001 (CON)	Height:	0.56	1.84	1.58	5.18	0.20	0.67	Site: part sun/shade on north-facing slope Soil: AmC2, cultivated Other: blue-silver foliated plant; more branching on south side
	Width:	0.32	1.05	1.08	3.54	0.15	0.50	
<i>Abies lasiocarpa</i> 'Martha's Vineyard' D1996-0185.001 (BCA)	Height:	0.53	1.74	1.08	3.54	0.11	0.36	Site: on slight, south-facing slope; part sun/shade Soil: CeC2, cultivated Other: rounded pyramid; silvery, light blue foliage
	Width:	0.48	1.57	1.01	3.31	0.11	0.35	

<i>Chamaecyparis obtusa</i> f. <i>breviramea</i> D1995-1047.001 (JPG)	Height:	NA	NA	1.48	4.85	NA	NA	Site: shade with filtered sun on west-facing slope Soil: CeB, cultivated Other: wide base, slender top and sparse branching; deer rubbed in winter '04; many small, dead branches
	Width:	NA	NA	0.97	3.18	NA	NA	
<i>Chamaecyparis obtusa</i> 'Coralliformis' D1995-0242.001 (CON)	Height:	0.60	1.97	1.14	3.74	0.11	0.35	Site: mostly sun Soil: CeB, cultivated Other: has contorted, short, whiplike foliage; olive-green color of needles contrasts with contorted, rust-colored branches
	Width:	0.55	1.80	1.23	4.04	0.14	0.45	
<i>Chamaecyparis obtusa</i> 'Dainty Doll' D1998-0656.001 (CON)	Height:	0.56	1.84	0.56	1.84	0.0	0.0	Site: part sun/part shade on south-facing slope Soil: CeB, cultivated Other: asymmetrical form has short, yellow-green foliage; some tips of foliage dead
	Width:	0.61	2.00	0.82	2.69	0.04	0.14	

<i>Chamaecyparis</i> <i>pisifera</i> 'Gekko' D1996-0492.001 (NEN)	Height:	0.44	1.44	0.95	3.12	0.10	0.33	Site: part sun/shade on slight northeast-facing slope Soil: AmC2, uncultivated Other: squat pyramid with double leader; whitish, cream-green foliage
	Width:	0.59	1.94	1.02	3.35	0.09	0.28	
<i>Chamaecyparis</i> <i>pisifera</i> 'Gold Spangle' D1996-1189.002 (CON)	Height:	0.46	1.51	2.24	7.35	0.36	1.17	Site: mostly sun on southwest slope Soil: CeB, cultivated Other: narrow pyramid with yellow, almost chartreuse, exterior; green interior foliage
	Width:	0.68	2.23	1.76	5.77	0.22	0.71	
<i>Chamaecyparis</i> <i>pisifera</i> 'Gold Spangle' D1996-1189.001 (CON)	Height:	0.61	2.00	3.08	10.11	0.49	1.62	Site: mostly sun on northwest-facing slope Soil: AmC2, cultivated Other: narrow pyramid with yellow, almost chartreuse, exterior; green, interior foliage
	Width:	0.80	2.62	2.35	7.71	0.31	1.02	
<i>Chamaecyparis</i> <i>pisifera</i> 'Hakko Hibi' D1996-0495.001 (NEN)	Height:	0.35	1.15	0.68	2.23	0.07	0.22	Site: shade/filtered sun on northeast-facing slope Soil: AmC2, uncultivated Other: squat pyramid; cream, white and light green variegated foliage; tips whiter than 'Gekko'
	Width:	0.47	1.54	0.67	2.20	0.04	0.13	
<i>Chamaecyparis</i> <i>pisifera</i> 'Lutescens' D1996-0489.001 (CON)	Height:	1.08	3.54	2.07	6.79	0.20	0.65	Site: part sun/shade on south slope Soil: CeB, cultivated Other: broad, pyramidal form; soft, yellow-green foliage
	Width:	1.03	3.38	2.32	7.61	0.26	0.85	

<i>Chamaecyparis pisifera</i> 'Nana' D1996-0249.001 (NEN)	Height:	0.85	2.79	1.09	3.58	0.05	0.16	Site: filtered sunlight on north-facing slope Soil: AmC2, uncultivated Other: squat pyramid with some open branching; shiny, dark green foliage
	Width:	0.76	2.49	1.23	4.04	0.09	0.31	
<i>Chamaecyparis pisifera</i> 'Plumosa Aurea Compacta' D1999-0123.001 (NEN)	Height:	0.50	1.64	0.72	2.36	0.04	0.14	Site: shade, filtered sunlight on northwest-facing slope Soil: AmC2, uncultivated Other: low, rounded form; yellowish light-green foliage; dead inner foliage
	Width:	0.45	1.48	0.78	2.56	0.07	0.22	
<i>Chamaecyparis pisifera</i> 'Spann's Cannonball' D1996-0491.001 (CON)	Height:	0.30	0.98	0.73	2.40	0.09	0.28	Site: mostly sun on south slope Soil: CeB, cultivated Other: rounded form with vigorous, medium green, thick foliage
	Width:	0.43	1.41	0.69	2.26	0.05	0.17	
<i>Chamaecyparis thyoides</i> 'Pomona' D1996-1003.001 (EDU)	Height:	NA	NA	0.57	1.87	NA	NA	Site: shade/filtered sunlight on slight northeast slope Soil: BrE, cultivated Other: feathery, light green foliage, but at least half of plant is dead
	Width:	NA	NA	0.31	1.02	NA	NA	
<i>Chamaecyparis thyoides</i> 'Qiana' D1997-0249.001 (NEN)	Height:	0.91	2.99	1.66	5.45	0.15	0.49	Site: filtered sunlight on north slope Soil: CeB, uncultivated Other: narrow pyramid; slight winter burn; foliage thicker on north side of plant
	Width:	0.78	2.56	1.09	3.58	0.06	0.20	
<i>Cryptomeria japonica</i> 'Jindai-sugi' D1999-0125.001 (HAW)	Height:	0.54	1.77	1.09	3.58	0.11	0.36	Site: in full sun on southwest-facing slope Soil: BrD, cultivated Other: irregular pyramid; medium green foliage with lighter, yellowish tips; some burn damage from winter '04
	Width:	0.36	1.18	0.77	2.53	0.08	0.27	
<i>Cupressus arizonica</i> var. <i>glabra</i> (syn. <i>Cupressus glabra</i>) D1996-0188.001-.002 (UJC) (average of 2 plants)	Height:	1.17	3.84	3.37	11.06	0.44	1.44	Site: mostly sun on southwest slope Soil: AmC2, cultivated Other: narrow form with blue-green foliage; has many cones
	Width:	0.56	1.84	1.28	4.20	0.14	0.47	
<i>Cupressus arizonica</i> var. <i>nevadensis</i> (syn. <i>Cupressus nevadensis</i>) D1992-0293.001 (UJC)	Height:	0.98	3.22	1.99	6.53	0.20	0.66	Site: mostly sun on western slope Soil: AmC2, cultivated Other: narrow, conical form; plant leans toward northeast; blue-green foliage; sparse foliage on lower half of plant
	Width:	0.31	1.02	0.60	1.97	0.06	0.19	

<i>Cupressus bakeri</i> D1995-0338.001 (UJC)	Height:	1.15	3.77	1.82	5.97	0.13	0.44	Site: mostly sun on southwestern slope Soil: AmC2, cultivated Other: narrow pyramid shape; blue-green foliage; some dead foliage on southwest side
	Width:	0.59	1.94	0.83	2.72	0.05	0.16	
<i>Ginkgo biloba</i> 'Chi-chi' D1997-0496.001 (GIN)	Height:	1.07	3.51	1.24	4.07	0.03	0.11	Site: part sun/shade on southeast slope Soil: AmC2, cultivated Other: curved trunk with somewhat irregular branching; fall foliage is mustard-yellow
	Width:	0.69	2.26	0.58	1.90	-0.02	-0.07	
<i>Ginkgo biloba</i> 'Golden Girl' D1995-0037.001 (GIN)	Height:	0.78	2.56	0.85	2.79	0.01	0.05	Site: in full sun on south-facing slope Soil: AmC2, cultivated Other: compact branching; little fall color in late October
	Width:	0.36	1.18	0.27	0.89	-0.02	-0.06	
<i>Ginkgo biloba</i> [Mahalic selection] D1995-0281.001 (GIN)	Height:	1.12	3.67	1.44	4.72	0.06	0.21	Site: mostly sun with some wind protection; south-facing slope Soil: AmC2, cultivated Other: curved central leader; irregular, sparse branching; vivid, almost neon yellow, fall color; old deer rub wound
	Width:	0.61	2.00	0.52	1.71	-0.02	-0.06	
<i>Ginkgo biloba</i> 'San Jose' D1996-0330.001 (GIN)	Height:	1.54	5.05	1.40	4.59	-0.03	-0.09	Site: in full sun on northeast slope Soil: AmD2, cultivated Other: central leader is curved, somewhat irregular branching; mustard-yellow fall color
	Width:	1.04	3.41	0.60	1.97	-0.09	-0.29	
<i>Juniperus chinensis</i> 'Columnaris' D1996-1205.001 (UJC)	Height:	1.07	3.51	2.33	7.64	0.25	0.83	Site: full sun on west-facing slope Soil: AmC2, cultivated Other: very narrow, conical; clean, vibrant, green foliage; multiple leaders; foliage on lower ¼ blue-green
	Width:	0.41	1.35	0.69	2.26	0.06	0.18	
<i>Juniperus chinensis</i> 'Mac's Golden' D1995-1183.001 (CON)	Height:	0.87	2.85	2.63	8.63	0.35	1.15	Site: mostly sun Soil: CeB, cultivated Other: narrow pyramidal form with yellow-green foliage; open spot ³ / ₄ way up on trunk
	Width:	0.49	1.61	1.19	3.90	0.14	0.46	
<i>Juniperus chinensis</i> 'Obelisk' D1995-0238.002 (CON)	Height:	0.97	3.18	2.95	9.68	0.40	1.30	Site: part sun/shade on northwest slope Soil: AmC2, cultivated Other: somewhat narrow, columnar form; gray-green foliage
	Width:	0.49	1.61	1.64	5.38	0.23	0.75	

<i>Juniperus chinensis</i> 'Sea Spray' D1994-0941.001 (GCJ)	Height:	0.37	1.21	1.00	3.28	0.13	0.41	Site: mostly sun on slight southeast-facing slope Soil: AmC2, cultivated Other: rounded form with branches emerging radially from center and arching; gray-green foliage
	Width:	0.52	1.71	3.05	10.01	0.51	1.66	
<i>Juniperus chinensis</i> 'Shoosmith' D1997-0123.001 (UJC)	Height:	0.48	1.57	0.98	3.22	0.10	0.33	Site: mostly sun on west-facing slope Soil: AmC2, cultivated Other: dense, vibrant-green foliage; oval shaped plant
	Width:	0.35	1.15	0.70	2.30	0.07	0.23	
<i>Juniperus horizontalis</i> 'Watnong' D1997-0216.001 (GCJ)	Height:	0.09	0.30	0.12	0.39	0.01	0.02	Site: mostly sun on southeast slope Soil: AmB2, cultivated Other: irregular, low spreader with muted blue-green foliage
	Width:	0.34	1.12	1.02	3.35	0.14	0.45	
<i>Juniperus rigida</i> 'Hikari' D1998-0346.001 (CON)	Height:	0.82	2.69	1.38	4.53	0.11	0.37	Site: mostly sun on north-facing slope Soil: AmC2, cultivated Other: irregular, spreading branches with bluish and olive needles, yellow winter color; tips burned
	Width:	0.48	1.57	1.8	5.91	0.26	0.87	
<i>Juniperus virginiana</i> 'Blue Mountain' D1997-0124.001 (UJC)	Height:	0.50	1.64	1.35	4.43	0.17	0.56	Site: full sun on west-facing slope Soil: AmC2, cultivated Other: broad, spreading plant with soft, blue-green foliage; plentiful, dark blue cones
	Width:	0.78	2.56	1.62	5.32	0.17	0.55	
<i>Juniperus virginiana</i> 'Harmony' D1994-1007.002 (UJC)	Height:	0.66	2.17	1.47	4.82	0.16	0.53	Site: mostly sun on southwest-facing slope Soil: AmC2, cultivated Other: narrowly conical specimen; dense, gray-green foliage
	Width:	0.41	1.35	0.70	2.30	0.06	0.19	
<i>Juniperus virginiana</i> 'Pendula' D1995-0073.001 (UJC)	Height:	0.75	2.46	2.40	7.87	0.33	1.08	Site: mostly sun on southwest slope Soil: AmC2, cultivated Other: narrow, semi-weeping form; yellowish green foliage (4/04) turning vibrant, yellowish green in summer; exfoliating bark
	Width:	0.64	2.10	1.44	4.72	0.16	0.52	
<i>Larix gmelinii</i> var. <i>olgensis</i> D1994-0692.004 (AZA)	Height:	1.26	4.13	2.06	6.76	0.16	0.52	Site: part sun/shade on west slope Soil: AmC2, uncultivated Other: a wide-spreading pyramid; leaves emerging in late March; light green foliage and unremarkable wheat-yellow fall color; susceptible to rust
	Width:	0.92	3.02	2.45	8.04	0.31	1.00	

<i>Larix kaempferi</i> 'Pendula' D1998-0368.001 (HAM)	Height:	0.29	0.95	0.74	2.43	0.09	0.30	Site: part sun/shade Soil: AmB2, cultivated Other: weeping with blue-green summer foliage, vibrant rust fall color; thinned, pruned in late winter '04
	Width:	0.75	2.46	1.42	4.66	0.13	0.44	
<i>Metasequoia glyptostroboides</i> 'Sheridan Spire' D1997-0131.001 (CON)	Height:	1.33	4.36	5.54	18.18	0.84	2.76	Site: mostly sun on south-facing slope Soil: CeB, cultivated Other: very narrow form with rust colored fall foliage; double leader pruned out
	Width:	0.76	2.49	2.90	9.51	0.43	1.40	

<i>Metasequoia glyptostroboides</i> 'Sheridan Spire' D1997-0131.004 (AZA)	Height:	2.62	8.60	7.10	23.30	0.90	2.94	Site: part sun/shade on southern slope Soil: AmC2, uncultivated Other: very narrow, upright branching; vigorous grower; reddish brown exfoliating bark on lower part of trunk
	Width:	1.03	3.38	3.20	10.5	0.43	1.42	
<i>Picea abies</i> 'Cranstonii' D1994-0964.001 (HAW)	Height:	0.63	2.07	1.67	5.48	0.21	0.68	Site: on west facing slope in full sun Soil: BrD, cultivated Other: open, irregular pyramid with snakelike branches; slight deer browse damage
	Width:	0.61	2.00	1.66	5.45	0.21	0.69	
<i>Picea abies</i> 'Cruenta' (syn. <i>Picea abies</i> 'Cruista') D1996-0154.001 (CON)	Height:	0.45	1.48	1.8	5.91	0.27	0.89	Site: mostly sun on northwest slope Soil: AmC2, cultivated Other: narrow pyramidal form with very open branching; new growth red, otherwise olive-green foliage
	Width:	0.27	0.89	0.96	3.15	0.14	0.45	
<i>Picea abies</i> 'Echiniformis' D1995-1178.001 (CON)	Height:	0.22	0.72	0.40	1.31	0.04	0.12	Site: mostly sun Soil: AmC2, cultivated Other: irregularly mounded, spiny foliage
	Width:	0.21	0.69	0.44	1.44	0.05	0.15	
<i>Picea abies</i> 'Finland' D1996-0012.001 (CON)	Height:	0.38	1.25	0.93	3.05	0.11	0.36	Site: in full sun on slight western slope Soil: AmC2, cultivated Other: oval form; medium green needles
	Width:	0.25	0.82	0.75	2.46	0.10	0.33	
<i>Picea abies</i> 'Hornbrookii' D1995-1164.001 (CON)	Height:	0.47	1.54	0.90	2.95	0.09	0.28	Site: mostly sun on west/southwest-facing slope Soil: AmC2, cultivated Other: wide with rounded habit; dark, shiny-green, clean foliage; branches arch upward
	Width:	0.41	1.35	1.52	4.99	0.22	0.73	

<i>Picea abies</i> 'Parsonsii' (syn. <i>Picea abies</i> 'Gregoryana Parsonsii') D1995-1174.001 (CON)	Height:	0.31	1.02	0.60	1.97	0.06	0.19	Site: part sun/shade Soil: CeB, cultivated Other: a somewhat angular, tight, irregular plant with spiny, dark green foliage; more branching on north side than on south
	Width:	0.15	0.49	0.49	1.61	0.07	0.22	
<i>Picea abies</i> 'Parsonsii' (syn. <i>Picea abies</i> 'Gregoryana Parsonsii') D1992-0685.001 (CON)	Height:	0.25	0.82	0.48	1.57	0.05	0.15	Site: mostly shade on northwest slope Soil: AmC2, cultivated Other: shiny green, spiny foliage; somewhat irregular, pyramidal form
	Width:	0.34	1.12	0.53	1.74	0.04	0.12	
<i>Picea abies</i> 'Sherwoodii' D1997-0048.001 (CON)	Height:	0.32	1.05	0.98	3.22	0.13	0.43	Site: part sun/shade on northeast slope Soil: AmC2, cultivated Other: irregularly rounded plant; outstretching new growth; dark green foliage
	Width:	0.27	0.89	1.33	4.36	0.21	0.70	
<i>Picea balfouriana</i> (syn. <i>Picea likiangensis</i> var. <i>balfouriana</i>) D1996-0338.002 (HED)	Height:	0.40	1.31	0.95	3.12	0.11	0.36	Site: part sun/shade on western slope Soil: AmC2, cultivated Other: small pyramidal form; very short, dark, glossy green needles, partially defoliated
	Width:	0.48	1.57	0.75	2.46	0.05	0.18	
<i>Picea engelmannii</i> D1991-0193.001 (OAK)	Height:	0.49	1.61	0.96	3.15	0.09	0.31	Site: part sun/shade on slight north-facing slope Soil: AmB2, cultivated Other: fairly healthy; thinned triple leaders to one
	Width:	0.21	0.69	0.95	3.12	0.15	0.49	
<i>Picea glauca</i> 'Rainbow's End' D1999-0512.001 (CON)	Height:	0.68	2.23	0.82	2.69	0.03	0.09	Site: part sun/shade with protection from wind, south-facing slope Soil: CeB, cultivated Other: pyramidal form with yellow-green foliage; 2nd flush of growth in summer is yellow
	Width:	0.40	1.31	0.60	1.97	0.04	0.13	
<i>Picea omorika</i> 'Berliner's Weeping' D1996-0242.001 (CON)	Height:	0.40	1.31	1.15	3.77	0.15	0.49	Site: mostly sun Soil: AmC2, cultivated Other: a wide spreading, open-branched plant; silver-blue foliage; multiple leaders
	Width:	0.29	0.95	1.30	4.27	0.20	0.66	
<i>Picea omorika</i> 'Frohnleiten' D1996-0505.001 (CON)	Height:	0.11	0.36	0.35	1.15	0.05	0.16	Site: morning shade, afternoon sun; on slight north-facing slope Soil: AmC2, cultivated Other: very tight, flat-topped mound; blue-green foliage, bluish white beneath
	Width:	0.19	0.62	0.57	1.87	0.08	0.25	

<i>Picea omorika</i> 'Pendula Bruns' D1996-0825.001 (CON)	Height:	0.31	1.02	0.77	2.53	0.09	0.30	Site: mostly sun on north-facing slope Soil: AmC2, cultivated Other: slender pyramid form with limbs curving upward at ends; silver-blue foliage
	Width:	0.28	0.92	0.68	2.23	0.08	0.26	
<i>Picea orientalis</i> 'Gowdy' D1995-0302.002 (CON)	Height:	0.40	1.31	1.43	4.69	0.21	0.68	Site: morning shade, afternoon sun; southwest-facing slope Soil: AmC2, cultivated Other: a dark, shiny, tiny-needled (approx. 11 mm. (.43 in.)) plant; narrow, pyramidal form with open branching; removed competing leader
	Width:	0.40	1.31	1.20	3.94	0.16	0.52	
<i>Picea pungens</i> 'Fat Albert' D1993-0733.001 (CON)	Height:	0.50	1.64	1.54	5.05	0.21	0.68	Site: mostly sun on north-facing slope Soil: AmC2, cultivated Other: broad pyramid with gray-blue foliage
	Width:	0.34	1.12	1.42	4.66	0.22	0.71	
<i>Picea pungens</i> 'Glauca Pendula' D1992-0127.002 (HAW)	Height:	0.35	1.15	0.57	1.87	0.04	0.14	Site: in full sun on gentle western slope Soil: BrD, cultivated Other: low growing, partially weeping form; light blue, spiny foliage
	Width:	0.35	1.15	1.18	3.87	0.17	0.54	
<i>Picea pungens</i> 'Green Spire' D1996-0290.001 (CON)	Height:	0.55	1.80	1.48	4.86	0.19	0.61	Site: mostly shade on north-facing slope Soil: AmC2, cultivated Other: broad, oval form; gray-green foliage
	Width:	0.47	1.54	1.17	3.84	0.14	0.46	
<i>Picea pungens</i> 'Hillside' D1995-0294.001 (CON)	Height:	0.33	1.08	0.59	1.94	0.05	0.17	Site: in full sun Soil: CeB, cultivated Other: a globose plant with spiny, light blue foliage
	Width:	0.34	1.12	0.90	2.95	0.11	0.37	
<i>Picea pungens</i> 'Teton Tower' D1998-0789.001 (CON)	Height:	0.29	0.95	0.57	1.87	0.06	0.18	Site: in full sun on southwest-facing slope Soil: AmC2, cultivated Other: a procumbent, partially weeping spruce with very spiny, blue-green foliage
	Width:	0.77	2.53	1.57	5.15	0.16	0.52	
<i>Picea pungens</i> 'Weeping Blue' D1996-0161.001 (EDU)	Height:	0.54	1.77	0.58	1.90	0.01	0.03	Site: part sun/shade on northwest-facing slope Soil: AmC2, cultivated Other: foliage more dark green than blue; severe deer damage
	Width:	0.54	1.77	0.74	2.43	0.04	0.13	

<i>Picea retroflexa</i> D1992-0015.001 (CRA)	Height:	0.34	1.12	0.61	2.00	0.05	0.18	Site: mostly sun Soil: CeB, cultivated Other: squat, somewhat irregular form; muted, light blue-green short needles; no central leader
	Width:	0.22	0.72	0.68	2.23	0.09	0.30	
<i>Pinus bungeana</i> 'Rowe Arboretum' D1995-0083.001 (RAR)	Height:	0.70	2.30	1.70	5.58	0.20	0.66	Site: lower portion shaded, upper in part sun/shade Soil: AmB2, cultivated Other: narrow pyramid with shiny, green foliage; deer browse damage; bark starting to exfoliate at base
	Width:	0.45	1.48	0.75	2.46	0.06	0.20	

<i>Pinus cembra</i> 'Egli' D1996-0360.001 (CON)	Height:	0.58	1.90	1.39	4.56	0.16	0.53	Site: mostly sun on south-facing slope Soil: CeB, cultivated Other: flat-topped pyramid; long (approx. 86 mm. (3.38 in.)), medium green needles; interior thinned 2/04
	Width:	0.35	1.15	1.61	5.28	0.25	0.83	
<i>Pinus cembra</i> 'Stricta' D1996-0299.001 (CON)	Height:	0.36	1.18	0.63	2.07	0.05	0.18	Site: mostly sun on south-facing slope Soil: CeB, cultivated Other: slender pyramidal form with bright, green-blue needles; dead branch removed in summer '04 and more is dying, possibly from pine tip moth
	Width:	0.20	0.66	0.44	1.44	0.05	0.16	
<i>Pinus contorta</i> var. <i>latifolia</i> 'Taylor's Sunburst' D1996-0280.002 (CON)	Height:	0.29	0.95	0.37	1.21	0.02	0.05	Site: part sun/shade on northwest-facing slope Soil: AmC2, cultivated Other: compact, irregularly branched, thick-needled, medium green plant; new foliage is yellow; prone to scorch; weak plant
	Width:	0.17	0.56	0.33	1.08	0.03	0.10	
<i>Pinus contorta</i> var. <i>latifolia</i> 'Taylor's Sunburst' D1996-0280.001 (VCA)	Height:	0.44	1.44	0.67	2.20	0.05	0.15	Site: mostly sun Soil: AmB2, cultivated Other: narrow, sparse, windswept-looking plant; new foliage is yellow; prone to scorch and sawfly; partially defoliated
	Width:	0.33	1.08	0.51	1.67	0.04	0.12	
<i>Pinus densata</i> (syn. <i>Pinus tabulaeformis</i> var. <i>densata</i>) D1996-0169.002 (HAM)	Height:	0.97	3.18	2.04	6.69	0.21	0.70	Site: mostly shade Soil: AmB2, uncultivated Other: open branching; foliage tips burnt on south side; has sawfly problem
	Width:	0.42	1.38	1.55	5.09	0.23	0.74	

<i>Pinus densiflora</i> 'Globosa'	Height:	0.43	1.41	0.98	3.22	0.11	0.36	Site: mostly sun on slight southwest-facing slope Soil: BrD, cultivated Other: irregularly rounded plant with open branching; clean, medium green foliage; attractive brown buds in early April
	D1996-0201.001 (HAW)	Width:	0.44	1.44	1.19	3.90	0.15	
<i>Pinus densiflora</i> 'Low Glow'	Height:	0.33	1.08	0.53	1.74	0.04	0.13	Site: mostly sun Soil: AmC2, cultivated Other: low, mounded plant; lime-green foliage with reddish-brown buds; dead spots from summer '03; needs to be cleaned out annually
	D1996-0125.001 (CON)	Width:	0.43	1.41	1.33	4.36	0.18	

<i>Pinus flexilis</i>	Height:	0.60	1.97	0.79	2.59	0.04	0.12	Site: part sun/shade on slight west-facing slope Soil: CeB, cultivated Other: very slow growing and weak
	D1990-0774.001 (NWF), WKO	Width:	0.46	1.51	0.47	1.54	0.00	
<i>Pinus flexilis</i>	Height:	0.68	2.23	1.24	4.07	0.11	0.37	Site: in full sun Soil: AmC2, cultivated Other: plant scheduled for removal; foliage dying from base upward for unknown reason
	D1990-0773.002 (CRA), WKO	Width:	0.56	1.84	0.99	3.25	0.09	
<i>Pinus flexilis</i>	Height:	0.51	1.67	1.42	4.66	0.18	0.59	Site: mostly sun with some wind protection; northwest-facing slope Soil: AmC2, cultivated Other: open, somewhat irregular form with blue-green foliage; pruned out double leader and lowest branches
	D1990-0773.001, D1990-0775.001, D1990-0777.001 (NWF & CRA) (average of 3 plants), WKO	Width:	0.40	1.31	1.19	3.90	0.16	
<i>Pinus flexilis</i> 'Extra Blue'	Height:	0.51	1.67	1.97	6.46	0.29	0.96	Site: part sun/shade and wet soil Soil: AmC2, cultivated Other: blue-green foliage on 4/9/04; dead by 10/31/04
	D1996-0038.001 (MAG)	Width:	0.47	1.54	0.72	2.36	0.05	
<i>Pinus flexilis</i> 'Glenmore Silver' (syn. <i>Pinus flexilis</i> 'Glenmore')	Height:	0.26	0.85	0.80	2.62	0.11	0.35	Site: in full sun Soil: AmC2, cultivated Other: slender, oval form with medium green foliage
	D1997-0210.001 (CRA)	Width:	0.22	0.72	0.51	1.67	0.06	
<i>Pinus flexilis</i> 'Riverbend'	Height:	0.51	1.67	1.69	5.54	0.24	0.77	Site: in full sun on slight western slope Soil: AmC2, cultivated Other: narrow pyramidal form with open branching; blue-green foliage
	D1996-0039.002 (CRA)	Width:	0.37	1.21	1.06	3.48	0.14	

<i>Pinus flexilis</i> 'Shadowlake' D1996-0316.002 (MAG)	Height:	0.54	1.77	1.74	5.71	0.24	0.79	Site: mostly sun, wet soil Soil: AmC2, cultivated Other: green-blue foliage on pyramidal form; needle packets very distinct from one another on branches
	Width:	0.36	1.18	1.26	4.13	0.18	0.59	
<i>Pinus</i> 'Greenlace' (suspected name <i>Pinus x schwerinii</i> 'Greenlace') D1997-0046.001 (OAK)	Height:	0.93	3.05	2.59	8.50	0.33	1.09	Site: in full sun with some wind protection; north-facing slope Soil: AmB2, cultivated Other: needles eaten heavily by sawfly, but otherwise healthy; unremarkable form and light green needles
	Width:	0.85	2.79	1.76	5.77	0.18	0.60	
<i>Pinus leucodermis</i> 'Shira' (syn. <i>Pinus heldreichii</i> var. <i>leucodermis</i> 'Shira') D1994-1017.002 (CON)	Height:	0.37	1.21	0.57	1.87	0.04	0.13	Site: part sun/shade on south-facing slope Soil: CeB, cultivated Other: grass-green foliated plant, somewhat irregular in form; northeast portion damaged in 2003 from sawfly larvae infestation
	Width:	0.27	0.89	0.78	2.56	0.10	0.33	
<i>Pinus monticola</i> 'Rigby's Weeping' D1996-0091.001 (CON)	Height:	0.46	1.51	1.40	4.59	0.19	0.62	Site: part sun/shade on southern slope Soil: CeB, cultivated Other: weeping plant with long, drooping, blue-green needles; thinned in winter 2004
	Width:	0.56	1.84	2.08	6.82	0.30	1.00	
<i>Pinus mugo</i> 'Allen' D1995-1177.001 (VCA)	Height:	0.28	0.92	0.27	0.89	0.00	-0.01	Site: part sun/shade Soil: AmB2, cultivated Other: very tight, medium-green, flat-topped mound; has appearance of soft-needed porcupine
	Width:	0.36	1.18	0.45	1.48	0.02	0.06	
<i>Pinus mugo</i> 'Big Tuna' D1994-0974.002 (HAM)	Height:	0.36	1.18	0.72	2.36	0.07	0.24	Site: part sun/shade Soil: AmB2, uncultivated Other: oval form with somewhat open branching; thick, clean foliage; has recovered from sawfly damage
	Width:	0.24	0.79	0.53	1.74	0.06	0.19	
<i>Pinus mugo</i> 'Gold Spire' D1996-0289.001 (CON)	Height:	0.34	1.12	0.44	1.44	0.02	0.07	Site: mostly sun on south-facing slope Soil: CeB, cultivated Other: spreading plant (no spire) that is only slightly gold
	Width:	0.21	0.69	0.77	2.53	0.11	0.37	
<i>Pinus mugo</i> 'Green Candle' D1993-0726.001 (CON)	Height:	0.27	0.89	0.41	1.35	0.03	0.09	Site: mostly sun Soil: AmC2, cultivated Other: flattened, grass-green mound; candles reddish brown 4/04
	Width:	0.26	0.85	0.59	1.94	0.07	0.22	

<i>Pinus mugo</i> 'Miss Cesarini' D1998-0132.001 (VCA)	Height:	0.31	1.02	0.35	1.15	0.01	0.03	Site: part sun/shade Soil: AmB2, cultivated Other: very low, irregularly rounded with medium-green foliage
	Width:	0.54	1.77	0.73	2.40	0.04	0.12	
<i>Pinus mugo</i> 'Mops' D1994-0971.002 (VCA)	Height:	0.42	1.38	0.48	1.57	0.01	0.03	Site: mostly sun Soil: AmB2, cultivated Other: mounded form with clean, green foliage
	Width:	0.45	1.48	0.56	1.84	0.02	0.07	

<i>Pinus mugo</i> 'Sherwood Compact' D1994-0979.001 (CON)	Height:	0.21	0.69	0.36	1.18	0.03	0.10	Site: mostly sun on southwest slope Soil: CeB, cultivated Other: open mound with medium-green, yellow-tipped needles; damage from sawfly in summer '03
	Width:	0.20	0.66	0.61	2.00	0.08	0.27	
<i>Pinus mugo</i> 'Slow Mound' D1995-1181.001 (VCA)	Height:	0.30	0.98	0.44	1.44	0.03	0.09	Site: mostly sun Soil: AmB2, cultivated Other: mounded plant with grass-green foliage and open branching; south side partially defoliated but otherwise healthy
	Width:	0.41	1.35	0.67	2.20	0.05	0.17	
<i>Pinus mugo</i> 'Valley Cushion' D1994-0650.001 (VCA)	Height:	0.62	2.03	0.84	2.76	0.04	0.14	Site: mostly sun Soil: AmB2, cultivated Other: very tight, round form; medium-green foliage; some sawfly damage in '03
	Width:	0.62	2.03	0.93	3.05	0.06	0.20	
<i>Pinus mugo</i> 'Winter Gold' D1996-0052.001 (CON)	Height:	0.48	1.57	0.67	2.20	0.04	0.12	Site: mostly sun on south-facing slope Soil: CeB, cultivated Other: irregularly rounded form; yellow-green color, more pronounced in winter; sawfly damage in summer '04
	Width:	0.31	1.02	0.75	2.46	0.09	0.29	
<i>Pinus mugo</i> 'Winter Gold' D1996-0301.001 (HAW)	Height:	0.43	1.41	0.62	2.03	0.04	0.12	Site: mostly shade with some protection from wind on gentle, south-facing slope Soil: BrD, cultivated Other: greenish yellow color; full, wide habit; similar to, but slightly less vigorous than, previous plant
	Width:	0.32	1.05	0.81	2.66	0.10	0.32	
<i>Pinus nigra</i> 'Compacta' D1996-0329.001 (CON)	Height:	0.49	1.61	1.22	4.00	0.15	0.48	Site: in full sun on west-facing slope Soil: AmC2, cultivated Other: medium green, thick foliage; globose form with branches arching upward; large, whitish buds
	Width:	0.50	1.64	1.40	4.59	0.18	0.59	

<i>Pinus nigra</i> 'Globosa Dark Green' D1996-0354.001 (EDU)	Height:	0.41	1.35	0.72	2.36	0.06	0.20	Site: part sun/shade on northern slope Soil: AmC2, cultivated Other: rounded plant with open branching; severe sawfly damage
	Width:	0.31	1.02	0.86	2.82	0.11	0.36	
<i>Pinus nigra</i> 'Monstrosa' D1994-0015.002 (NWF)	Height:	0.92	3.02	3.18	10.43	0.45	1.48	Site: mostly sun Soil: AmC2, cultivated Other: a sparsely-branched tree with long, thick, olive-green needles
	Width:	0.30	0.98	1.60	5.25	0.26	0.85	
<i>Pinus nigra</i> 'Obelisk' D1996-0024.001 (CON)	Height:	0.50	1.64	1.69	5.54	0.24	0.78	Site: mostly sun on south/southwest-facing slope Soil: CeB, cultivated Other: fastigiate, narrow, oval-shaped plant; medium green, long, thick foliage
	Width:	0.26	0.85	0.87	2.85	0.12	0.40	
<i>Pinus nigra</i> 'Pygmaea' D1996-0205.001 (CON)	Height:	0.40	1.31	0.82	2.69	0.08	0.28	Site: part sun/shade on south-facing slope Soil: CeB, cultivated Other: round specimen with thick, long (approx. 103 mm. (4 in.)) needles; yellowish green in color
	Width:	0.33	1.08	1.33	4.36	0.20	0.66	
<i>Pinus parviflora</i> 'Ei-konishiki' D1996-0115.002 (JPG)	Height:	0.62	2.03	1.01	3.31	0.08	0.26	Site: part sun/shade on gentle, southwest-facing slope Soil: CeB, cultivated Other: arching, narrow, irregular pyramid with blue-green foliage
	Width:	0.37	1.21	0.62	2.03	0.05	0.16	
<i>Pinus parviflora</i> 'Glauca Brevifolia' D1996-0018.001 (CON)	Height:	0.34	1.12	1.50	4.92	0.23	0.76	Site: part sun/shade on south-facing slope Soil: CeB, cultivated Other: very open form with layered branches; bluish green foliage; numerous cones present
	Width:	0.20	0.66	1.10	3.61	0.18	0.59	
<i>Pinus parviflora</i> 'Petersen' D1996-0361.001 (CON)	Height:	0.63	2.07	1.26	4.13	0.13	0.41	Site: part sun/shade Soil: CeB, cultivated Other: narrow, vase-shaped plant with blue-green foliage; more foliage along trunk than other parvifloras; numerous cones present
	Width:	0.25	0.82	0.53	1.74	0.06	0.18	
<i>Pinus parviflora</i> 'Shiobara-goyo' D1996-0275.001 (CON)	Height:	0.41	1.35	1.61	5.28	0.24	0.79	Site: part sun/shade Soil: CeB, cultivated Other: open branching; light blue-green foliage; some cones
	Width:	0.21	0.69	1.03	3.38	0.16	0.54	

<i>Pinus parviflora</i> 'Watnong' D1996-0502.001 (MAG)	Height:	0.40	1.31	1.65	5.41	0.25	0.82	Site: mostly sun and wet soil Soil: AmC2, cultivated Other: sparsely branched; yellow-green foliage; light gray, mottled bark
	Width:	0.36	1.18	1.00	3.28	0.13	0.42	
<i>Pinus peuce</i> 'Miss Cesarini' D1998-0131.001 (CON)	Height:	0.50	1.64	0.87	2.85	0.07	0.24	Site: mostly sun on south-facing slope Soil: CeB, cultivated Other: blue-green foliage takes on yellowish cast late in season; narrow, oval form
	Width:	0.27	0.89	0.51	1.67	0.05	0.16	

<i>Pinus ponderosa</i> 'Pendula' D1994-0097.001 (NWF)	Height:	0.47	1.54	1.29	4.23	0.16	0.54	Site: in full sun on west-facing slope Soil: CeB, cultivated Other: staked upright; slightly weeping form with long, thick, sage-green needles
	Width:	0.30	0.98	0.94	3.08	0.13	0.42	
<i>Pinus pumila</i> 'National Arboretum' D1994-1012.001 (CON)	Height:	0.31	1.02	0.45	1.48	0.03	0.09	Site: mostly sun on west-facing slope Soil: AmC2, cultivated Other: bluish green foliage; upright plant; slight scale infestation
	Width:	0.22	0.72	0.40	1.31	0.04	0.12	
<i>Pinus pumila</i> 'Yes-Alpina' D1996-0044.001 (CON)	Height:	0.45	1.48	1.39	4.56	0.19	0.62	Site: mostly sun on southwestern slope Soil: CeB, cultivated Other: a wide-spreading, open plant with irregular branching; blue-green needles are gently curved
	Width:	0.45	1.48	2.21	7.25	0.35	1.15	
<i>Pinus resinosa</i> 'Quinobequin' D1996-0258.002 (CON)	Height:	0.43	1.41	0.70	2.30	0.05	0.18	Site: mostly sun on western slope Soil: AmC2, cultivated Other: a rounded plant with thick, yellowish green, soft foliage
	Width:	0.38	1.25	0.91	2.99	0.11	0.35	
<i>Pinus strobus</i> 'Alba' D1996-0288.001 (OAK)	Height:	0.63	2.07	1.49	4.89	0.17	0.56	Site: in full sun on north-facing slope Soil: BrE, cultivated Other: irregular, vase shape caused by deer rub; light blue-green foliage
	Width:	0.46	1.51	1.03	3.38	0.11	0.37	
<i>Pinus strobus</i> 'Bennett Clump Leaf' D1996-0283.001 (OAK)	Height:	0.50	1.64	1.30	4.27	0.16	0.52	Site: part sun/shade with some wind protection; north-facing slope Soil: AmB2, cultivated Other: weak looking plant, mostly defoliated
	Width:	0.36	1.18	0.78	2.56	0.08	0.28	
<i>Pinus strobus</i> 'Billow' D1996-0059.001 (CON)	Height:	0.35	1.15	0.63	2.07	0.06	0.18	Site: mostly sun on southwest-facing slope Soil: CeB, cultivated Other: irregularly rounded; gray-green foliage
	Width:	0.32	1.05	0.82	2.69	0.10	0.33	

<i>Pinus strobus</i> 'Cedar Ridge Broom' D1996-0272.001 (CON)	Height:	0.24	0.79	0.53	1.74	0.06	0.19	Site: part sun/shade Soil: AmC2, cultivated Other: a very congested, wide plant with blue-green foliage
	Width:	0.29	0.95	1.04	3.41	0.15	0.49	

<i>Pinus strobus</i> [Foxwillow Pines selection] D1994-1023.001 (CON)	Height:	0.39	1.28	0.58	1.90	0.04	0.12	Site: in full sun on southwestern slope Soil: CeB, cultivated Other: irregularly rounded; slight winterburn on foliage
	Width:	0.38	1.25	0.62	2.03	0.05	0.16	

<i>Pinus strobus</i> 'Horsford' (syn. <i>Pinus strobus</i> 'Horsford Dwarf') D1997-0041.001 (CON)	Height:	0.23	0.75	0.44	1.44	0.04	0.14	Site: mostly sun on northeast-facing slope Soil: AmC2, cultivated Other: miniature; tight, low-mounded with blue-green foliage
	Width:	0.18	0.59	0.70	2.30	0.10	0.34	

<i>Pinus strobus</i> 'Louie' D1996-0311.001 (CON)	Height:	0.52	1.71	2.20	7.22	0.34	1.10	Site: part sun/shade on southwestern slope Soil: CeB, cultivated Other: a narrow form with yellowish green foliage
	Width:	0.36	1.18	1.14	3.74	0.16	0.51	

<i>Pinus strobus</i> 'Paul Waxman' D1996-0122.002 (EDU)	Height:	0.40	1.31	0.63	2.07	0.05	0.15	Site: part sun/shade on north-facing slope Soil: AmC2, cultivated Other: tight, rounded form with green and whitish needles; deer browsed
	Width:	0.26	0.85	0.82	2.69	0.11	0.37	

<i>Pinus strobus</i> 'Soft Touch' D1996-0121.002 (EDU)	Height:	0.38	1.25	0.62	2.03	0.05	0.16	Site: part sun/shade on northern slope Soil: AmC2, cultivated Other: mostly rounded form with very tight blue-green foliage; deer browsed
	Width:	0.30	0.98	0.72	2.36	0.08	0.28	

<i>Pinus strobus</i> 'Stonybrook' D1996-0315.001 (CON)	Height:	0.52	1.71	0.99	3.25	0.09	0.31	Site: part sun/shade on south-facing slope Soil: CeB, cultivated Other: open branching with chlorotic needles; site may be too wet
	Width:	0.57	1.87	1.07	3.51	0.10	0.33	

<i>Pinus strobus</i> 'Verkade's Broom' D1996-0251.001 (CON)	Height:	0.41	1.35	1.01	3.31	0.12	0.39	Site: mostly sun Soil: CeB, cultivated Other: tight, rounded, upright growing plant; bright green foliage; slightly winter burned
	Width:	0.42	1.38	1.18	3.87	0.15	0.50	

<i>Pinus sylvestris</i> 'Bergman' D1996-0245.001 (CON)	Height:	0.42	1.38	0.94	3.08	0.10	0.34	Site: in full sun on west-facing slope Soil: BrD, cultivated Other: broad, oval form with clean, tight, blue-green foliage; reddish buds 4/04
	Width:	0.37	1.21	0.91	2.99	0.11	0.35	
<i>Pinus sylvestris</i> 'Frensham' D1996-0058.001 (CON)	Height:	0.35	1.15	0.95	3.12	0.12	0.39	Site: on south-facing slope Soil: CeB, cultivated Other: irregularly rounded with open branching; new foliage whitish, turned yellowish green, possibly by sun scalding; plenty of new growth buds
	Width:	0.41	1.35	1.14	3.74	0.15	0.48	
<i>Pinus sylvestris</i> 'Girard Dwarf' D1996-1200.001 (CON)	Height:	0.50	1.64	1.70	5.58	0.24	0.79	Site: part shade/mostly sun on west-facing slope Soil: AmC2, cultivated Other: open, oval form with sturdy branches and medium green needles
	Width:	0.33	1.08	1.57	5.15	0.25	0.81	
<i>Pinus sylvestris</i> 'Helms' D1996-0046.001 (CON)	Height:	0.41	1.35	1.37	4.49	0.19	0.63	Site: part sun/shade on southwest-facing slope Soil: AmC2, cultivated Other: a somewhat open, pyramidal plant with light-to-medium-green needles
	Width:	0.33	1.08	1.15	3.77	0.16	0.54	
<i>Pinus sylvestris</i> 'Moseri' D1996-0355.001 (CON)	Height:	0.35	1.15	0.71	2.33	0.07	0.24	Site: mostly sun on south-facing slope Soil: CeB, cultivated Other: rounded, pyramidal form; bright yellow foliage in winter; foliage is dense
	Width:	0.39	1.28	0.86	2.82	0.09	0.31	
<i>Pinus sylvestris</i> 'Nana Compacta' D1996-0157.001 (CON)	Height:	0.33	1.08	0.68	2.23	0.07	0.23	Site: mostly sun on south-facing slope Soil: CeB, cultivated Other: round form with dense, sage-green foliage
	Width:	0.34	1.12	0.96	3.15	0.12	0.41	
<i>Pinus tabulaeformis</i> D1995-0199.001 (RAR), WKO	Height:	0.77	2.53	1.48	4.86	0.14	0.47	Site: part sun/shade on southwest-facing slope Soil: AmB2, cultivated Other: wide, spreading plant; trunk curves to south; sawfly damaged in summer '03; canker problem on trunk killed 2 large branches
	Width:	0.55	1.80	1.60	5.25	0.21	0.69	
<i>Pinus uncinata</i> 'Silver Candles' (syn. <i>Pinus mugo</i> var. <i>rostrata</i>) 'Silver Candles' D1995-0455.001 (CON)	Height:	0.33	1.08	0.58	1.90	0.05	0.16	Site: mostly sun on slight, south-facing slope Soil: CeB, cultivated Other: a rounded plant with resinous, silvery, new candles; about ½ defoliated from sawfly
	Width:	0.28	0.92	0.67	2.20	0.08	0.26	

<i>Pinus virginiana</i> 'Bernie' D1996-0295.001 (EDU)	Height:	0.51	1.67	1.12	3.67	0.12	0.40	Site: part sun/shade on slight north-facing slope Soil: AmC2, cultivated Other: a strong performer with an open, wide-spreading form and vigorous medium-green foliage; sawfly damage noted
	Width:	0.78	2.56	2.11	6.92	0.27	0.87	
<i>Platycladus orientalis</i> 'Sanderi' D1996-0368.001 (CON)	Height:	0.33	1.08	1.44	4.72	0.22	0.73	Site: part sun/shade with protection from wind; northwest-facing slope Soil: AmC2, cultivated Other: narrow pyramid with delicate, blue-green, mosslike foliage; removed branch reversion in 4/04
	Width:	0.23	0.75	0.82	2.69	0.12	0.39	
<i>Pseudotsuga menziesii</i> 'Big Flats' D1994-0011.001 (CON)	Height:	0.65	2.13	1.31	4.30	0.13	0.43	Site: mostly sun on slight southwest-facing slope Soil: CeB, cultivated Other: broad, pyramidal form with grayish green needles
	Width:	0.38	1.25	1.04	3.41	0.13	0.43	
<i>Taxodium distichum</i> 'Mickelson' D1995-0144.002 (DAL)	Height:	1.77	5.81	2.75	9.02	0.20	0.64	Site: mostly sun/part shade on slight south-facing slope Soil: AmD2, cultivated Other: narrow, oval canopy; rusty yellow fall color
	Width:	1.04	3.41	1.47	4.82	0.09	0.28	
<i>Taxodium distichum</i> 'Monarch of Illinois' D1995-0286.002 (DAL)	Height:	1.26	4.13	1.24	4.07	0.00	-0.01	Site: mostly sun/part shade on slight south-facing slope Soil: AmD2, cultivated Other: somewhat curved central leader; muted, rust-colored fall color
	Width:	0.62	2.03	0.81	2.66	0.04	0.12	
<i>Taxus chinensis</i> D1993-0094.003 (CON)	Height:	0.91	2.99	1.37	4.49	0.09	0.30	Site: shade/some filtered sun on south-facing slope Soil: CeB, cultivated Other: healthy, glossy, dark-green needles; narrow, columnar form
	Width:	0.80	2.62	0.67	2.20	-0.03	-0.09	
<i>Taxus cuspidata</i> 'Prostrata' D1994-0890.004 (AZA)	Height:	0.38	1.25	0.47	1.54	0.02	0.06	Site: shade on south-facing slope Soil: AmC2, uncultivated Other: wide-spreading plant with dark green foliage
	Width:	0.67	2.20	2.58	8.46	0.38	1.25	
<i>Thuja koraiensis</i> D1997-0119.001 (RAR)	Height:	0.76	2.49	.85	2.79	0.02	0.06	Site: mostly shade on slight, west-facing slope Soil: AmC2, cultivated Other: spreading, irregular form with sparse branching; deer rubbed in winter '04; seems to tolerate very moist conditions
	Width:	0.59	1.94	1.04	3.41	0.09	0.30	

<i>Thuja occidentalis</i> 'Asplenifolia' D1994-0229.002 (HAW)	Height:	0.67	2.20	1.12	3.67	0.09	0.30	Site: part sun/shade with some protection from wind; on south slope Soil: BrD, cultivated Other: squat, semi-pyramid; very full, clean foliage
	Width:	0.58	1.90	1.36	4.46	0.16	0.51	
<i>Thuja occidentalis</i> 'Douglasii Aurea' D1996-1233.001 (HAM)	Height:	0.36	1.18	1.34	4.40	0.20	0.64	Site: mostly sun Soil: AmB2, cultivated Other: pyramidal shape; bright, yellow-green foliage; multiple leaders
	Width:	0.34	1.12	0.73	2.40	0.08	0.26	
<i>Thuja occidentalis</i> 'French Pyramid' D1995-1145.002 (CRA)	Height:	0.54	1.77	1.31	4.30	0.15	0.51	Site: wet soil, mostly sun Soil: CeB, cultivated Other: short, oval plant with yellow-green foliage; some cones; fair amount of dried, brown foliage
	Width:	0.40	1.31	0.69	2.26	0.06	0.19	
<i>Thuja occidentalis</i> 'Hancei' D1995-1148.001 (CON)	Height:	0.44	1.44	0.82	2.69	0.08	0.25	Site: part sun/shade Soil: CeB, cultivated Other: rounded form; medium-green foliage
	Width:	0.37	1.21	0.78	2.56	0.08	0.27	
<i>Thuja occidentalis</i> 'Hoseri' D1995-1151.001 (CON)	Height:	0.20	0.66	0.48	1.57	0.06	0.18	Site: part sun/shade on north-facing slope Soil: AmC2, cultivated Other: a miniature; rounded plant with full, medium-green foliage
	Width:	0.20	0.66	0.43	1.41	0.05	0.15	
<i>Thuja occidentalis</i> 'Linesville' D1995-0949.002 (EDU)	Height:	0.33	1.08	0.72	2.36	0.08	0.26	Site: part sun/shade on north-facing slope Soil: AmC2, cultivated Other: rounded form; light, greenish blue, heatherlike foliage; browsed by deer
	Width:	0.45	1.48	0.92	3.02	0.09	0.31	
<i>Thuja occidentalis</i> 'Little Elfie' D1995-1157.002 (EDU)	Height:	0.38	1.25	0.84	2.76	0.09	0.30	Site: part sun/shade on north-facing slope Soil: AmC2, cultivated Other: oval form with full, medium-green foliage; browsed by deer
	Width:	0.25	0.82	0.70	2.30	0.09	0.30	
<i>Thuja occidentalis</i> 'Sherwood Plumespire' D1995-1153.001 (HAM)	Height:	0.82	2.69	2.26	7.42	0.29	0.94	Site: part sun/shade Soil: AmB2, uncultivated Other: narrow pyramid with delicate foliage; single leader; narrow top widens to broad skirt at base
	Width:	0.40	1.31	0.96	3.15	0.11	0.37	
<i>Thuja occidentalis</i> 'Snow Tip' D1996-0065.001 (CON)	Height:	0.57	1.87	2.57	8.43	0.40	1.31	Site: part sun/shade on northwest-facing slope Soil: AmC2, cultivated Other: narrow, conical plant; yellow tips in winter, white in summer
	Width:	0.36	1.18	1.10	3.61	0.15	0.49	

<i>Thuja plicata</i> D1994-0299.001 (JPG)	Height:	NA	NA	3.21	10.53	NA	NA	Site: part sun/shade Soil: CeB, cultivated Other: unremarkable form and medium-green foliage; rather sparse branching
	Width:	NA	NA	1.31	4.30	NA	NA	
<i>Thuja plicata</i> 'Collyer's Gold' D1994-1004.001 (CON)	Height:	0.64	2.10	2.07	6.79	0.29	0.94	Site: part sun/shade on slight, north-facing slope Soil: AmC2, cultivated Other: narrow pyramid; yellow-green foliage
	Width:	0.59	1.94	1.09	3.58	0.10	0.33	
<i>Thuja plicata</i> 'Virescens' D1994-1003.002 (CON)	Height:	1.00	3.28	2.26	7.42	0.25	0.83	Site: mostly shade on northwest-facing slope Soil: AmC2, cultivated Other: tight, narrow pyramid; bluish, medium-green foliage
	Width:	0.41	1.35	0.73	2.40	0.06	0.21	
<i>Thuja plicata</i> 'Watnong Green' D1995-1111.001 (CON)	Height:	1.37	4.49	2.27	7.45	0.18	0.59	Site: part sun/shade; very moist site on northwest-facing slope Soil: AmC2, cultivated Other: narrow pyramid; very glossy, clean, medium-green foliage
	Width:	0.48	1.57	0.94	3.08	0.09	0.30	
<i>Tsuga canadensis</i> 'Bennett' D1992-0690.002 (CON)	Height:	0.29	0.95	0.28	0.92	0.00	-0.01	Site: part sun/shade in wind protected area on south-facing slope Soil: CeB, cultivated Other: flat-topped plant with glossy green foliage; undersides of needles very light green
	Width:	0.75	2.46	0.77	2.53	0.00	0.01	
<i>Tsuga canadensis</i> 'Cole's Prostrate' D1992-0691.003 (EDU)	Height:	0.07	0.23	0.08	0.26	0.00	0.01	Site: shade/filtered sun on north-facing slope Soil: BrE, cultivated Other: damaged from being stepped on; irregular form with matte green needles; performing poorly in current location
	Width:	0.53	1.74	0.52	1.71	0.00	-0.01	
<i>Tsuga canadensis</i> 'Devil's Fork' D1996-0195.001 (CON)	Height:	0.62	2.03	0.78	2.56	0.03	0.10	Site: part sun/shade; wind protected site on south-facing slope Soil: CeB, cultivated Other: weak plant with yellow-green color
	Width:	1.53	5.02	0.72	2.36	-0.16	-0.53	
<i>Tsuga canadensis</i> 'Stockman's Dwarf' D1992-0692.002 (VCA)	Height:	0.10	0.33	0.29	0.95	0.04	0.12	Site: shade Soil: AmC2, cultivated Other: low and spreading; tiny (approx. 12 mm. (0.47 in.)), olive-green, clean foliage; tips slightly burnt by winter cold
	Width:	NA	NA	0.58	1.90	NA	NA	

<i>Tsuga caroliniana</i> 'LaBar Weeping' D1997-0774.001 (CON)	Height:	0.32	1.05	0.35	1.15	0.01	0.02	Site: mostly shade/filtered sunlight; south-facing slope near stream bank Soil: AmC2, cultivated Other: a petite, weeping plant; coned heavily last year; yellow-green foliage; poor performer
	Width:	0.44	1.44	0.49	1.61	0.01	0.03	
<i>Xanthocyparis</i> <i>nootkatensis</i> 'Aureovariegata' (syn. <i>Chamaecyparis</i> <i>nootkatensis</i> 'Aureovariegata') D1997-0339.001 (CON)	Height:	0.59	1.94	1.51	4.95	0.18	0.60	Site: full sun on slight southwest slope Soil: AmC2, cultivated Other: broad pyramid; grayish green foliage with pale yellow tips; some tips slightly burned by cold; leader is off-center
	Width:	0.35	1.15	1.16	3.81	0.16	0.53	

The following conifers were planted between July 1, 1993 and June 30, 1994. Plants included in this report follow the same criteria indicated in the 5-year report.

Scientific Name Accession No. (Collection Area)	Size at Planting m. ft.	Size at 5 Years m. ft.	Annual Growth m. ft.	Observations				
<i>Abies alba</i> D1993-0632.001 (CON)	Height:	0.76	2.5	3.91	12.83	0.31	1.03	Site: near stream edge on slight southwest-facing slope; part sun/shade Soil: AmC2, cultivated Other: pyramidal shape; very dark green, lustrous foliage
	Width:	NA	NA	2.95	9.68	NA	NA	
<i>Chamaecyparis</i> <i>lawsoniana</i> D1990-0645.001 (CON)	Height:	0.91	3.0	4.58	15.03	0.37	1.20	Site: part sun/shade on southeast- facing slope Soil: CeB, cultivated Other: narrow, conical specimen; clean, medium-green foliage
	Width:	NA	NA	2.4	7.87	NA	NA	
<i>Chamaecyparis</i> <i>pisifera</i> 'Filifera Aurea' D1993-0557.001 (CON)	Height:	0.46	1.5	3.04	9.97	0.26	0.85	Site: mostly sun on northwest- facing slope Soil: AmC2, cultivated Other: very narrow pyramid; neon- yellow foliage throughout; slightly thinned out in summer 2003
	Width:	NA	NA	1.87	6.14	NA	NA	

<i>Chamaecyparis pisifera</i> 'Plumosa'	Height:	0.91	3.00	5.12	16.80	0.42	1.38	Site: mostly sun on south-facing slope Soil: CeB, cultivated Other: very vigorous specimen with multiple leaders; delicate, light-green foliage; shaggy, medium-brown exfoliating bark
	Width:	NA	NA	4.85	15.91	NA	NA	
D1990-0087.001 (CON)								

<i>Chamaecyparis pisifera</i> 'Plumosa'	Height:	1.07	3.50	4.48	14.70	0.34	1.12	Site: full sun on southwest-facing slope Soil: AmC2, cultivated Other: large plant with exfoliating, brown bark
	Width:	NA	NA	3.59	11.78	NA	NA	
D1990-0087.002 (CON)								

<i>Chamaecyparis pisifera</i> 'Plumosa Compacta'	Height:	0.76	2.5	3.59	11.78	0.28	0.93	Site: mostly sun on slight, north-facing slope Soil: AmC2, cultivated Other: conical with feathery foliage
	Width:	NA	NA	3.90	12.80	NA	NA	
D1990-0733.002 (CON)								

<i>Chamaecyparis pisifera</i> 'Plumosa Compacta'	Height:	1.07	3.50	3.30	10.83	0.22	0.73	Site: part sun/shade on south-facing slope Soil: AmC2, uncultivated Other: feathery foliage; crossing branches in interior; has some open spots that reveal cinnamon-colored bark
	Width:	NA	NA	4.40	14.44	NA	NA	
D1990-0733.001 (AZA)								

<i>Chamaecyparis thyoides</i> 'Andelyensis'	Height:	0.46	1.5	2.36	7.74	0.19	0.62	Site: part sun/shade on north-facing slope Soil: AmC2, cultivated Other: narrow, oval shape with blue-green foliage and many cones; one-third of plant broke several years ago but seems to be recovering well
	Width:	NA	NA	1.42	4.66	NA	NA	
D1991-0075.001 (ORC)								

<i>Cryptomeria japonica</i> 'Elegans Nana'	Height:	0.30	1.0	1.07	3.51	0.08	0.25	Site: mostly shade Soil: AmC2, cultivated Other: irregularly rounded plant with medium-green foliage; yellow-green, immature cones in fall
	Width:	NA	NA	1.84	6.04	NA	NA	
D1990-0837.001 (VCA)								

<i>Juniperus chinensis</i> 'Gold Coast'	Height:	NA	NA	1.17	3.84	NA	NA	Site: part sun/shade on southeast-facing slope Soil: AmB2, cultivated Other: very rounded plant; yellow-green foliage
	Width:	NA	NA	2.58	8.46	NA	NA	
D1985-0297.003 (GCJ)								

<i>Juniperus chinensis</i> 'Old Gold'	Height:	0.46	1.5	1.16	3.81	0.07	0.23	Site: mostly sun on southeast-facing slope Soil: AmB2, cultivated Other: rounded, wide-spreading plant; clean, yellow-green foliage
	D1994-0337.001 (GCJ)	Width:	NA	NA	2.45	8.04	NA	

<i>Juniperus communis</i> 'Berkshire'	Height:	0.20	0.67	0.72	2.36	0.05	0.17	Site: part sun/shade on north-facing slope Soil: AmC2, cultivated Other: light blue foliage; plant died out by one-third last year; pruned out dead
	D1993-0481.001 (CON)	Width:	NA	NA	1.54	5.05	NA	

<i>Juniperus communis</i> var. depressa 'Effusa'	Height:	0.23	0.75	0.87	2.85	0.06	0.21	Site: morning shade/afternoon sun on north-facing slope Soil: AmC2, cultivated Other: mounded, flat-topped plant with gray-green foliage
	D1993-0482.001 (CON)	Width:	NA	NA	3.10	10.17	NA	

<i>Juniperus communis</i> 'Nana Aurea'	Height:	0.30	1.0	1.25	4.10	0.09	0.31	Site: mostly sun on south-facing slope Soil: CeB, cultivated Other: spiny, green-blue foliage, golden at ends of limbs; rust and gold emphasized in winter
	D1991-0452.001 (CON)	Width:	NA	NA	3.45	11.32	NA	

<i>Juniperus communis</i> 'Prostrata'	Height:	0.23	0.75	0.89	2.92	0.07	0.22	Site: part sun/shade on west-facing slope Soil: AmC2, cultivated Other: wide spreader with upward arching limbs; tips orange in winter, yellow in summer
	D1991-0454.002 (CON)	Width:	NA	NA	4.90	16.08	NA	

<i>Juniperus communis</i> 'Repanda'	Height:	0.23	0.75	0.60	1.97	0.04	0.12	Site: mostly sun on southeast-facing slope Soil: AmB2, cultivated Other: rounded plant; silvery gray-green foliage
	D1988-1256.001 (GCJ)	Width:	NA	NA	3.2	10.50	NA	

<i>Juniperus horizontalis</i> 'Blue Chip'	Height:	0.30	1.00	0.49	1.61	0.02	0.06	Site: mostly sun on southeast-facing slope Soil: AmB2, cultivated Other: silvery blue-green foliage; high mound in center tapers out to wide, near-circular form
	D1993-0560.001 (GCJ)	Width:	NA	NA	2.3	7.55	NA	

<i>Juniperus horizontalis</i> 'Prince of Wales'	Height:	0.18	.58	.29	0.95	0.01	0.04	Site: mostly sun with protection from wind; southeast-facing slope Soil: AmB2, cultivated Other: very low, rounded plant mounded off-center; gray-green foliage
	D1993-0561.004 (GCJ)	Width:	NA	NA	1.98	6.50	0.20	

<i>Juniperus sabina</i> 'Monna' D1988-1257.004 (GCJ)	Height:	0.30	1.0	0.43	1.41	0.01	0.04	Site: part sun/shade with protection from wind; southeast-facing slope Soil: AmB2, cultivated Other: resembles <i>Microbiota</i> foliage; rounded plant with clean, green foliage
	Width:	NA	NA	2.40	7.87	NA	NA	
<i>Juniperus squamata</i> 'Blue Carpet' D1994-0336.001 (GCJ)	Height:	0.30	1.0	1.76	5.77	0.15	0.48	Site: mostly sun with protection from wind; southeast-facing slope Soil: AmB2, cultivated Other: large! silvery, aqua foliage; wide spreading; overall habit is rounded
	Width:	NA	NA	4.85	15.91	0.49	1.59	
<i>Larix decidua</i> D1991-0594.002 (HAM)	Height:	1.52	5.00	5.28	17.32	0.38	1.23	Site: mostly sun Soil: AmB2, cultivated Other: foliage still green in late October; needs to be thinned to correct crossing branches; no cones
	Width:	NA	NA	4.45	14.60	NA	NA	
<i>Larix decidua</i> D1991-0594.003 (CON)	Height:	1.37	4.5	7.29	23.92	0.59	1.94	Site: part sun/shade on slight, south-facing slope Soil: AmC2, cultivated Other: strong performer; plentiful cones; thinned out in 2003
	Width:	NA	NA	4.6	15.09	NA	NA	
<i>Larix decidua</i> 'Varied Directions' D1993-0576.001 (CON)	Height:	1.37	4.5	1.93	6.33	0.06	0.18	Site: part sun/shade on slight south-facing slope Soil: AmC2, cultivated Other: weeping plant with irregular branching; mustard-yellow fall color
	Width:	NA	NA	3.65	11.98	NA	NA	
<i>Larix occidentalis</i> D1992-0060.001 (NEN)	Height:	NA	NA	2.76	9.06	0.28	0.91	Site: filtered sun on northeast-facing slope Soil: AmC2, uncultivated Other: very narrow, sparsely branched; early to leaf out in spring and defoliate in autumn; unremarkable, wheat-colored foliage
	Width:	NA	NA	1.05	3.45	0.11	0.34	
<i>Picea abies</i> 'Acrocona' D1993-0608.001 (CON)	Height:	1.37	4.5	3.04	9.97	0.17	0.55	Site: part sun/shade Soil: AmC2, cultivated Other: broad pyramid with upward arching limbs; muted, medium-green foliage; new cones reddish purple
	Width:	NA	NA	4.2	13.78	NA	NA	
<i>Picea abies</i> 'Procumbens' D1990-0048.002 (CON)	Height:	0.46	1.50	1.53	5.02	0.11	0.35	Site: full sun on south slope Soil: CeB, cultivated Other: round habit with flat top; glossy green foliage; plant outgrowing area
	Width:	NA	NA	3.38	11.09	NA	NA	

<i>Picea abies</i> 'Procumbens' D1990-0048.001 (PKW)	Height:	0.46	1.50	1.43	4.69	0.10	0.32	Site: filtered sunlight on slight, northwest-facing slope Soil: AmB2, uncultivated Other: wide with glossy dark-green foliage
	Width:	NA	NA	2.08	6.82	NA	NA	
<i>Picea abies</i> 'Pumila' D1993-0572.001 (CON)	Height:	0.20	0.67	0.58	1.90	0.04	0.12	Site: part sun/mostly shade Soil: AmC2, cultivated Other: slow spreading with clean, shiny, dark green needles
	Width:	NA	NA	1.64	5.38	NA	NA	
<i>Picea crassifolia</i> D1988-0267.002 (HED)	Height:	0.46	1.50	1.09	3.58	0.06	0.21	Site: mostly sun on slight, southwest-facing slope Soil: CeB, cultivated Other: wide, oval shaped; trying to develop central leader; congested, blue-green foliage; needs to be thinned and cleaned out
	Width:	NA	NA	1.21	3.97	NA	NA	
<i>Picea jezoensis</i> D1988-0248.001 (JPG)	Height:	1.83	6.00	6.08	19.95	0.43	1.39	Site: part sun/shade on south-facing slope Soil: CeB, cultivated Other: a vigorous, open pyramid with dark green foliage
	Width:	NA	NA	4.10	13.45	NA	NA	
<i>Picea likiangensis</i> var. <i>montigena</i> D1989-0033.004 (CON)	Height:	0.61	2.00	1.98	6.50	0.14	0.45	Site: in full sun on slight, west-facing slope Soil: AmC2, cultivated Other: pyramidal shape; muted, medium-green foliage
	Width:	NA	NA	2.50	8.20	NA	NA	
<i>Picea likiangensis</i> var. <i>montigena</i> D1989-0033.003 (CON)	Height:	0.76	2.5	3.16	10.37	0.24	0.79	Site: mostly sun on southwest-facing slope Soil: CeB, cultivated Other: broad, dense, pyramid with shiny, bright green, new foliage turning to blue-green; has bagworm
	Width:	NA	NA	3.4	11.16	NA	NA	
<i>Picea likiangensis</i> var. <i>montigena</i> D1989-0033.002 (HED)	Height:	NA	NA	3.19	10.47	NA	NA	Site: mostly shade on west-facing slope Soil: CeB, cultivated Other: wide pyramid with dark green, glossy, new foliage turning to muted blue-green; needs to be thinned and cleaned out
	Width:	NA	NA	2.95	9.68	NA	NA	
<i>Picea orientalis</i> 'Nana' D1990-0046.001 (CON)	Height:	0.30	1.00	1.59	5.22	0.13	0.42	Site: mostly sun Soil: CeB, cultivated Other: pyramidal plant with central leader; glossy, dark green, very short needles (approx. 10 mm (0.39 in.))
	Width:	NA	NA	1.78	5.84	NA	NA	

<i>Picea wilsonii</i> D1988-0542.001 (PKW), WKO	Height:	0.46	1.50	2.55	8.37	0.21	0.69	Site: part sun/shade Soil: AmB2, uncultivated Other: dark green foliated pyramid
	Width:	NA	NA	1.8	5.91	NA	NA	
<i>Pinus banksiana</i> D1987-0048.001 & .004 (CON) (average of 2 plants)	Height:	0.84	2.76	4.59	15.05	0.37	1.23	Site: mostly sun on slight, west-facing slope Soil: AmC2, cultivated Other: open branched, rather spindly; top damaged by sawfly in summer '03
	Width:	NA	NA	5.50	18.05	NA	NA	
<i>Pinus banksiana</i> D1987-0048.005 (CON)	Height:	0.91	3.00	3.60	11.81	0.27	0.88	Site: mostly sun on south-facing slope Soil: CeB, cultivated Other: wide-spreading, rounded shape; plentiful cones
	Width:	NA	NA	5.50	18.05	NA	NA	
<i>Pinus mugo</i> 'Compacta' D1991-0050.001 (CON)	Height:	0.46	1.5	1.66	5.45	0.12	0.39	Site: mostly sun/part shade Soil: CeB, cultivated Other: rounded, somewhat open plant; has minor sawfly problems annually
	Width:	NA	NA	1.7	5.58	NA	NA	
<i>Pinus parviflora</i> 'Glauca' D1991-0049.001 (CON)	Height:	0.91	3.00	3.34	10.96	0.24	0.80	Site: mostly sun on southwest-facing slope Soil: CeB, cultivated Other: good performer with somewhat irregular form; blue and olive-green foliage
	Width:	NA	NA	3.00	9.84	NA	NA	
<i>Pinus ponderosa</i> D1991-0116.002 (NWF)	Height:	0.76	2.50	2.39	7.84	0.16	0.53	Site: mostly sun on slight, north-facing slope Soil: AmC2, cultivated Other: pyramidal form with long, medium-green needles; branching sparse on northeastern side
	Width:	NA	NA	1.75	5.74	NA	NA	
<i>Pinus ponderosa</i> D1991-0116.001 (NEN)	Height:	0.61	2.00	2.21	7.25	0.16	0.52	Site: mostly shade on gentle, northwest-facing slope Soil: AmC2, uncultivated Other: pyramidal with sparse branching and foliage; almost no branches on northeastern side; sawfly damage annually, mostly defoliated 10/04
	Width:	NA	NA	1.70	5.58	NA	NA	

<i>Pinus ponderosa</i> D1991-0116.003 (CON)	Height:	0.61	2.00	3.46	11.35	0.29	0.94	Site: full sun on slight, west-facing slope Soil: AmC2, cultivated Other: north and west sides damaged by sawfly in summer '03; south branches much more developed than those on north
	Width:	NA	NA	3.10	10.17	NA	NA	
<i>Pinus resinosa</i> 'Wissota' D1991-0058.002 (CON)	Height:	0.46	1.50	1.56	5.12	0.11	0.36	Site: part sun/shade on south-facing slope Soil: CeB, cultivated Other: tight, rounded habit with bright, yellow-green foliage; slight sawfly damage
	Width:	NA	NA	1.85	6.07	NA	NA	
<i>Pinus strobus</i> 'Torulosa' D1990-0042.001 (CON)	Height:	0.91	3.0	4.94	16.21	0.40	1.32	Site: mostly sun on south-facing slope Soil: CeB, cultivated Other: somewhat irregular form with twisted, blue-green needles
	Width:	NA	NA	4.2	13.78	NA	NA	
<i>Pinus strobus</i> 'Umbraculifera' D1992-0200.001 (CON)	Height:	0.46	1.50	1.25	4.10	0.08	0.26	Site: part sun/shade on northwest-facing slope Soil: AmC2, cultivated Other: tight, globose form with blue and green needles; needs to be cleaned of old needles annually
	Width:	NA	NA	1.92	6.30	NA	NA	
<i>Thuja occidentalis</i> 'Douglasii Pyramidalis' D1988-0153.001 (HAM)	Height:	2.29	7.50	4.16	13.65	0.19	0.61	Site: mostly sun Soil: AmB2, cultivated Other: narrow pyramid with full, medium green foliage; tips are tinged with rust color in fall
	Width:	NA	NA	2.43	7.97	NA	NA	
<i>Thuja occidentalis</i> 'Nigra' D1990-0379.002 (VCA)	Height:	1.22	4.0	4.95	16.24	0.37	1.22	Site: on north-facing slope in partial shade Soil: BrE, cultivated Other: narrow, pyramidal form; medium green foliage
	Width:	NA	NA	2.13	6.99	0.21	0.70	
<i>Thuja occidentalis</i> 'Spiralis' D1990-0191.001-.005, .009-.012 (AZA) (average of 9 plants)	Height:	0.30	1.0	4.23	13.88	0.39	1.29	Site: filtered sun with protection from wind; northwest-facing slope Soil: AmB2, uncultivated Other: open, very narrow pyramids; slight amount of dead foliage on tips
	Width:	NA	NA	1.58	5.18	NA	NA	
<i>Thuja occidentalis</i> 'Spiralis' D1990-0191.006-.008 (CON) (average of 3 plants)	Height:	0.91	3.00	3.70	12.14	0.28	0.91	Site: mostly sun on south-facing slope Soil: CeB, cultivated Other: narrow pyramid forms with multiple leaders; medium-green, full, foliage; bagworm problems in past
	Width:	NA	NA	1.84	6.04	NA	NA	

<i>Thuja occidentalis</i> 'Sunkist'	Height:	0.61	2.00	3.35	10.99	0.27	0.90	Site: mostly sun on slight, west-facing slope Soil: AmC2, cultivated Other: narrow, pyramidal shape; more yellow color on south side
	D1990-0741.001-.002 (CON)	Width:	NA	NA	1.65	5.41	NA	

Removals in 2003-2004

The following conifers were removed from the collections during the report period either because they failed to establish or were misidentified when originally planted. Those followed by an asterisk (*) are no longer represented on our grounds.

- *Abies borisii-regis* 'Hillside' *
- *Abies concolor*, 'Pyramidalis', 'Sherwood Blue', 'Violacea' *
- *Abies fraseri* 'Julian Potts' *
- *Abies nephrolepsis*
- *Chamaecyparis obtusa*, 'Erika'
- *Chamaecyparis pisifera* 'Plumosa Argentea'
- *Chamaecyparis thyoides* 'Pomona', 'Webb Gold' *
- *Cupressus bakeri*
- *Juniperus chinensis* 'Gold Coast'
- *Juniperus communis* 'Compressa', 'Laxa', var. *depressa*
- *Juniperus horizontalis* 'Blue Forest', 'Youngstown'
- *Juniperus rigida* *
- *Juniperus sabina* 'Broadmoor', 'Tamariscifolia' *
- *Juniperus scopulorum* 'Blue Heaven'
- *Larix decidua*
- *Metasequoia glyptostroboides*
- *Picea abies* 'Highlandia', 'Swanson's Unknown', [undetermined cultivar]
- *Picea engelmannii*
- *Picea pungens* f. *glauca* [Dawes selection] *
- *Pinus albicaulis* 'Glauca'
- *Pinus cembra*, 'Looney' *, var. *bolanderi* 'Spain's Dwarf' *
- *Pinus densiflora*, 'Little Christopher'
- *Pinus flexilis* 'Reflexa' *
- *Pinus x hakkodensis* 'Compacta'
- *Pinus mugo*, 'Rock Garden'
- *Pinus nigra* 'Candlewood' *
- *Pinus parviflora* 'Baldwin'
- *Pinus ponderosa*
- *Pinus pumila* 'Dwarf Blue' *
- *Pinus resinosa* 'Morel' *
- *Pinus strobiformis* 'Coronado'
- *Pinus strobus* 'Bennett Clump Leaf', 'Hillside Winter Gold', 'Kane', 'Macopin' *, 'Saybrook Globe', 'Saybrook Weeper', 'Squirrel's Nest' *
- *Pinus sylvestris* 'Aurea', 'Cutty Sark', 'Geneseo Broom'

- *Pinus virginiana* 'Bernie', 'Marlton' *
- *Pseudotsuga menziesii* 'Cedar Ridge Curly Weeper' *, 'Floyd Hill' *, 'Glauca Pendula' *, 'Graceful Grace' *, 'Little Jon', var. *glauca*
- *Taxus baccata* f. *aurea* *
- *Taxus cuspidata* 'Bright Gold'
- *Taxus x media*, 'Citation', 'Emerald'
- *Thuja koraiensis* 'Glauca Prostrata'
- *Thuja occidentalis* 'Batemani Witch Broom' *, 'Ellwangeriana'
- *Thuja plicata* 'Whipcord'
- *Tsuga canadensis*, 'Albospica', 'Green Cascade' *, 'Green Giant' *

Explanation of Soil Types

ABBREVIATION	SOIL NAME/SLOPE	FAMILY	DESCRIPTION
AmB2	Amanda silt loam/2-6% slope	Fine-loamy, mixed, Typic Hapludalfs	Formed in glacial till, this soil is located on low knolls and ridges with 2-6% slopes. The soil is well-drained and has moderately slow permeability.
AmC2	Amanda silt loam/6-12% slope	Fine-loamy, mixed, Typic Hapludalfs	This soil is primarily found on knolls, ridges and dissected slopes of the area. It is considered to be well-drained and has moderately slow permeability.
AmD2	Amanda silt loam/12-18% slope	Fine-loamy, mixed, Typic Hapludalfs	Soil characteristics for AmD2 are similar to the other Amandas, but this soil type is primarily found on some knolls and steeper dissected slopes along drainage channels.
BrD	Brownsville channery silt loam/12-18% slope	Loamy-skeletal, mixed, mesic Typic Dystrochrepts	BrD is usually found on unglaciated hillsides but occasionally also on knolls and ridgetops. It is considered to be well-drained. Its water capacity is low, making it only moderately suitable for growing trees.
BrE	Brownsville channery silt loam/18-25% slope	Loamy-skeletal, mixed, mesic Typic Dystrochrepts	This soil can be found primarily on unglaciated hillsides. Considered to be well-drained, permeability is moderately-rapid to rapid. Its water capacity is low, making it only moderately appropriate for growing trees.
CeB	Centerburg silt loam/2-6% slope	Fine-loamy, mixed, mesic Aquic Hapludalfs	Formed in glacial till, this soil is found on low knolls and ridges. It is moderately well-drained with moderately slow permeability.
CeC2	Centerburg silt loam/6-12% slope	Fine-loamy, mixed, mesic Aquic Hapludalfs	Formed in Wisconsin glacial till, CeC2 is formed on ridges, knolls and the dissected slopes along waterways. It is characterized as being moderately well-drained with moderately slow permeability.

After the soil type designation in the 5- and 10-year reports is an indication of whether a particular area has been cultivated or not. The Arboretum lies mostly on property that was once farmland. To the best of our knowledge, areas shown as being uncultivated have not been in cultivation for at least 75 years, or the time for which Arboretum records have been kept.

Measurement Notes

Since May of 1998, height, width and caliper/diameter at breast height (dbh) measurements have been taken in metric units for every plant on grounds. Prior to 1998, only height measurements were taken. As a result, only height comparisons between the time of planting and the tenth anniversary are made in the reports above. The 5-year report additionally contains width measurements at the time of planting and at the 5-year point, allowing us to calculate annual growth averages for both width and height.

Height and width measurements are taken in the following manner:

- **Height** is taken from ground level to the highest living point of a plant, using either measuring stick (for small plants) or laser rangefinder mounted on a tripod for plants taller than 1.5 meters (4.92 ft).
- **Width** is taken as close to the trunk as possible across the tree's crown spread using either measuring stick or tape. Where form is generally circular, one measurement is taken. Where an irregular form exists, two measurements are taken perpendicular to each other. These are averaged to obtain a final width measurement.