



MSU'S URBAN TREE CARBON SEQUESTRATION OFFSETS

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Abstract

- Michigan State University (MSU) holds voluntary membership in the Chicago Climate Exchange (CCX)
- This research quantified carbon sequestered in MSU's campus plantings
- MSU was established as "the first CCX urban forestry project to be validated." (CCX Offsets Report Vol1 #5 2009)

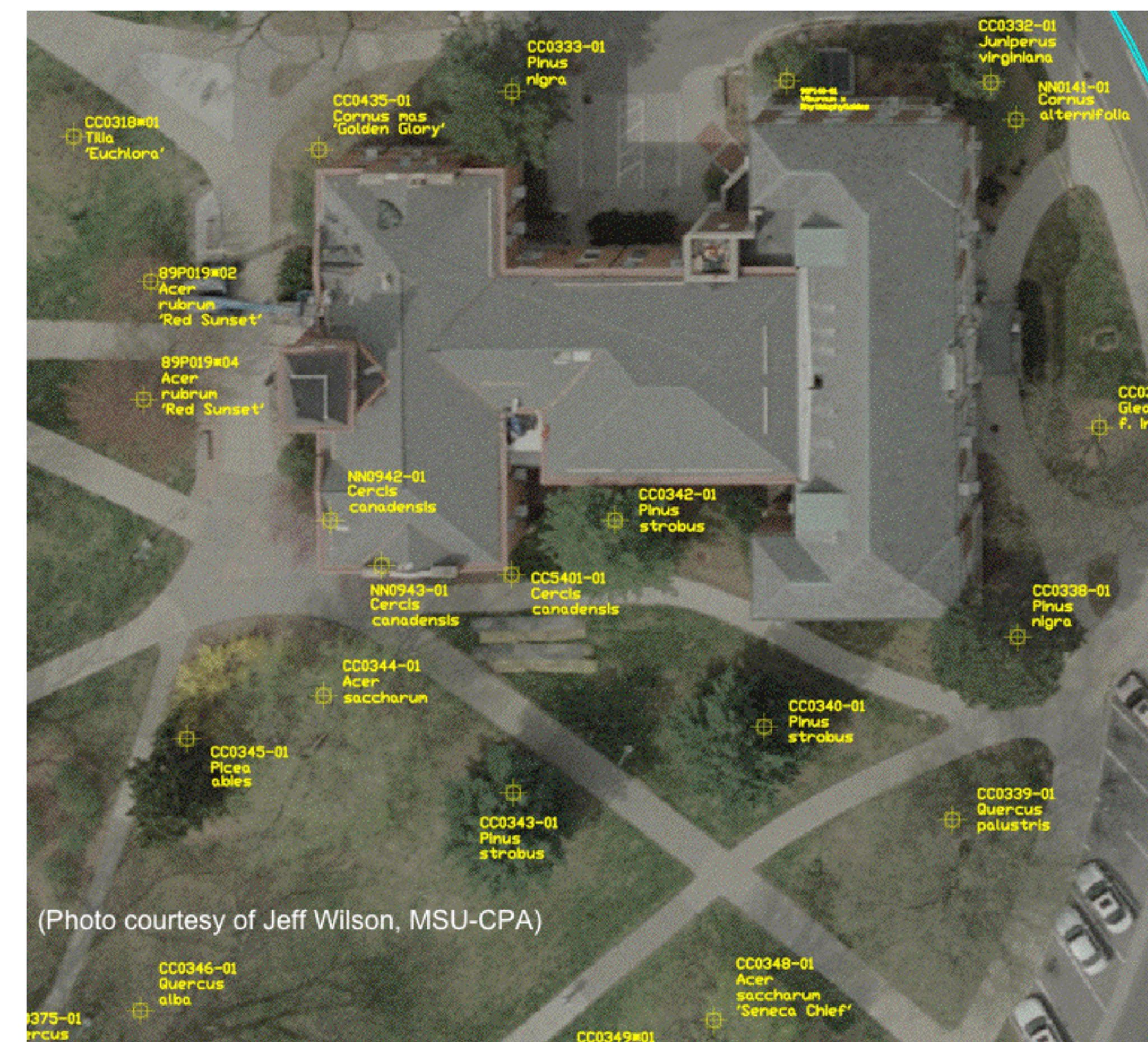
Methods

- MSU's Campus Planning and Administration (CPA) plantings database was analyzed to determine which woody stems might be eligible to be included in a CCX approved carbon offset project.
- Trees had to be at least 1" diameter at breast height and planted on or after Jan 1, 1990
- Only carbon sequestered during the CCX contract period (2003 to present) was eligible for credit
- For purposes of this analysis only those trees in fair or better health condition were included

- The original CCX look-up tables included 100 tree species representing 43 genera; the MSU CPA database contained many more tree species.

Using M. A. Dirr's *Manual of Woody Landscape Plants* University extension websites, and other sources, the original CCX lookup tables were expanded.

- Each woody stem was assigned a growth rate dependent upon its age & membership in one of six classes:
 - Fast, Medium or Slow-growing
 - Hardwoods or Softwoods



(Photo courtesy of Jeff Wilson, MSU-CPA)

MSU's nearly 2,100 acre campus showcases over 2,300 species of flora from around the globe.

Results

- For 2009, 4987 eligible trees representing 361 unique species within 75 genera were identified.
- These stems sequestered 46.1 metric tons of Carbon Dioxide.
- That's equivalent to the Annual Emissions from 9 vehicles epa.gov/OMS/climate/420f05004.htm



Photo: TreeHugger

CCX	mT Co2	MSU	mT Co2	CCX	mT Co2	MSU	mT Co2
Abies	0.5432	Abies	0.5432	Larix	0.1757	Larix	0.1757
Acer	5.5962	Acer	5.5962	Liquidambar	1.0213	Liquidambar	1.0213
Aesculus	0.2401	Aesculus	0.2401	Liriodendron	0.3228	Liriodendron	0.3228
Ailanthus	0.0450	Ailanthus	0.0450			Maackia	0.0566
Alnus	0.2922	Alnus	0.2922			Maackia	0.0047
		Amelanchier	0.1094	Magnolia	0.2013	Magnolia	0.2013
		Araucaria	0.0052	Malus	4.4058	Malus	4.4058
Betula	1.2082	Betula	1.2082			Metasequoia	0.0613
		Carpinus	0.1572			Nyssa	0.6166
Carya	0.0128	Carya	0.0128	Ostrya	0.0697	Ostrya	0.0697
		Castanea	0.0346			Paulownia	0.0063
Catalpa	0.0318	Catalpa	0.0318			Phellodendron	0.1476
		Cedrus	0.0036	Picea	3.1694	Picea	3.1694
Celtis	0.4977	Celtis	0.4977	Pinus	2.1713	Pinus	2.1713
		Cercidiphyllum	0.4961	Platanus	1.0595	Platanus	1.0595
Cercis	0.6904	Cercis	0.6904	Populus	0.0138	Populus	0.0138
		Chamaecyparis	0.3937	Prunus	0.2655	Prunus	0.2655
		Chionanthus	0.0240			Pseudotsuga	0.0051
		Cladrastis	0.0701	Pseudotsuga	0.3190	Pseudotsuga	0.3190
Cornus	1.0715	Cornus	1.0715			Pyrus	0.9452
		Corylus	1.0499	Quercus	4.0883	Quercus	4.0883
		Cotinus	0.1131			Rhus	0.0919
		Cotoneaster	0.4809	Salix	0.4383	Salix	0.4383
Crataegus	0.0641	Crataegus	0.0641	Sassafras	0.0830	Sassafras	0.0830
		Cryptomeria	0.0633			Sequoiadendron	0.0132
		Diospyros	0.0061			Sophora	0.1656
		Eucommia	0.1704	Sorbus	0.2004	Sorbus	0.2004
Fagus	0.1138	Fagus	0.1138			Stewartia	0.0077
Fraxinus	3.6788	Fraxinus	3.6788			Styrax	0.0253
Ginkgo	0.8092	Ginkgo	0.8092			Syringa	0.1393
Gleditsia	0.4533	Gleditsia	0.4533	Taxodium	0.6981	Taxodium	0.6981
Gymnocladus	0.2505	Gymnocladus	0.2505			Taxus	0.0493
		Halesia	0.1749	Thuja	1.9123	Thuja	1.9123
Ilex	0.0064	Ilex	0.0064			Thuopsis	0.0019
Juglans	0.1065	Juglans	0.1065	Tilia	2.3108	Tilia	2.3108
Juniperus	0.0504	Juniperus	0.0504	Tsuga	0.1459	Tsuga	0.1459
		Koeleruteria	0.1129	Ulmus	0.9982	Ulmus	0.9982
						Zelkova	0.5332
				CCX Sum	39.8325	MSU Sum	46.1687