

VegBank

A Permanent, Open-Access Archive for Vegetation Plot Data

Michael T. Lee 15 April 2013 Kraków, Poland



What is VegBank?

- VegBank is a public online vegetation plots data archive: http://vegbank.org
- Currently contains about 73,000 plots from North America; but no geographic limitations.
- Includes interlinked databases of plots, plants, and communities.
- VegBank has a comprehensive, user-friendly website for searching, viewing, annotating, and downloading data.





HOME SUBMIT DATA

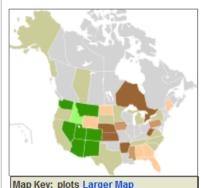
FAQ ABOUT

MY ACCOUNT

SITE MAP

Find Plots

Browse plots Simple search Search with a map Advanced plot search



Map Key: plots <u>Larger Map</u>							
1-49	50-99	100-249					
250-999	1,000-3,000	> 3,000					

Recently Added Plots

Project (view all)	Added
Bays and wet depressions	28-Mar-13
High Calcium coastal plain	28-Mar-13
Longleaf - Coastal SC & GA	28-Mar-13
Longleaf - Fall-line Sandhills	28-Mar-13

Plant Taxa

What is a plant concept? Browse plants Search plants Submit plants

go

Plant Communities

What is a community? Search communities Submit communities

Supplemental Data

People Stratum methods

Cover methods

Projects

References

Search supplemental data

Data in VegBank

Plots	73,842
Classified Plots	60,899
to NVC communities	6,160
Plant Concepts	185,110
accepted by USDA	48,620
and on plots	7,961
Community Concepts	16,250
in the NVC	8,390
and on plots	921

News

» Map plots: Example | Datacart | Multiple Datasets (Requires Login)

» Save Your Datacart | Edit Datasets

» Create a Constancy Table

My VegBank Account

Edit profile information Manage datasets

Learn About VegBank

What is VegBank?

What is a plot? FAQ

Tutorial

Cite or link to VegBank

Terms of use

Site map

Contact

Contribute Plot Data

Submit plots Annotate plots

Tools

Vegetation Classification Map your own plots VegBranch client database Data matrix normalizer



Who developed VegBank?

Produced at:

The National Center for Ecological Analysis and Synthesis (NCEAS), Santa Barbara, California, USA

Principal Investigators:

Robert K. Peet, University of North Carolina Michael D. Jennings, U.S. Geological Survey Dennis Grossman, NatureServe Marilyn D. Walker, USDA Forest Service

Primary collaborators:

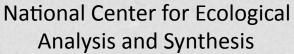
Don Faber-Langendoen, NatureServe Michael Lee, University of North Carolina Mark Anderson, NCEAS Gabriel Farrell, NCEAS John Harris, NCEAS



Partners and Support















National Biological Information Infrastructure





Where do the data come from?

- Many online databases simply store and deliver data from a single organization
- VegBank provides a generic data framework to house most kinds of vegetation ecology data.
- Anyone is free to provide data*
- Major data providers: research institutions, governmental agencies, non-profit organizations

^{*}We require certification before submitting plots to filter out spam and non-serious users.



Other plots databases exist (NPS-PLOTS, TurboVeg, Biotics, etc.)

- Public data access, architecture, and plot submission
- Confidentiality protection for sensitive data
- Longevity data lasts beyond a single project
- Search, View, Download not a single dump of data
- Citable any plot(s) may be cited with a unique link
- Flexible plot design including user defined data
- Flexible plant taxonomy / community not one list
- NVC Compliant designed for classification plots
- Annotations supported supports different versions of plots
- True archive nothing is deleted, can reconstruct earlier views



How does it work?

- To provide a generic data framework that is capable of supporting most types of vegetation plot data, we must:
 - Solve problems of ambiguous plant names
 - Handle rare and sensitive species
 - Offer intellectual property assurances
 - Require full metadata documentation of methods
 - Provide solutions for ongoing data improvements, taxonomic changes, user annotations



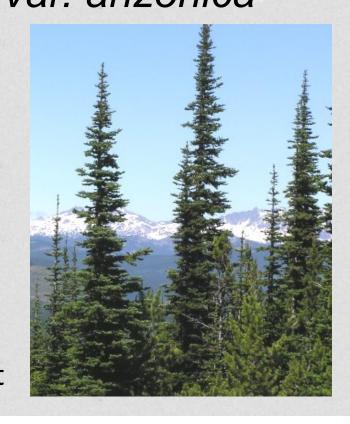
Ambiguous Plant Names

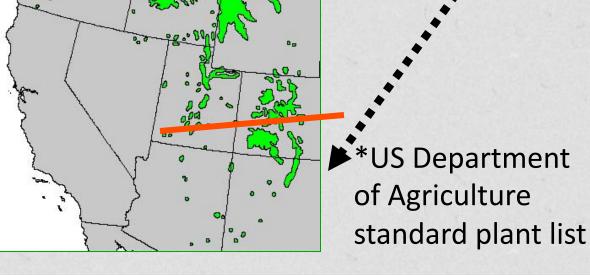
- Plant names, though standardized, do not precisely identify the same set of individual plants at:
 - different places,
 - different times,
 - and according to different taxonomic authorities.

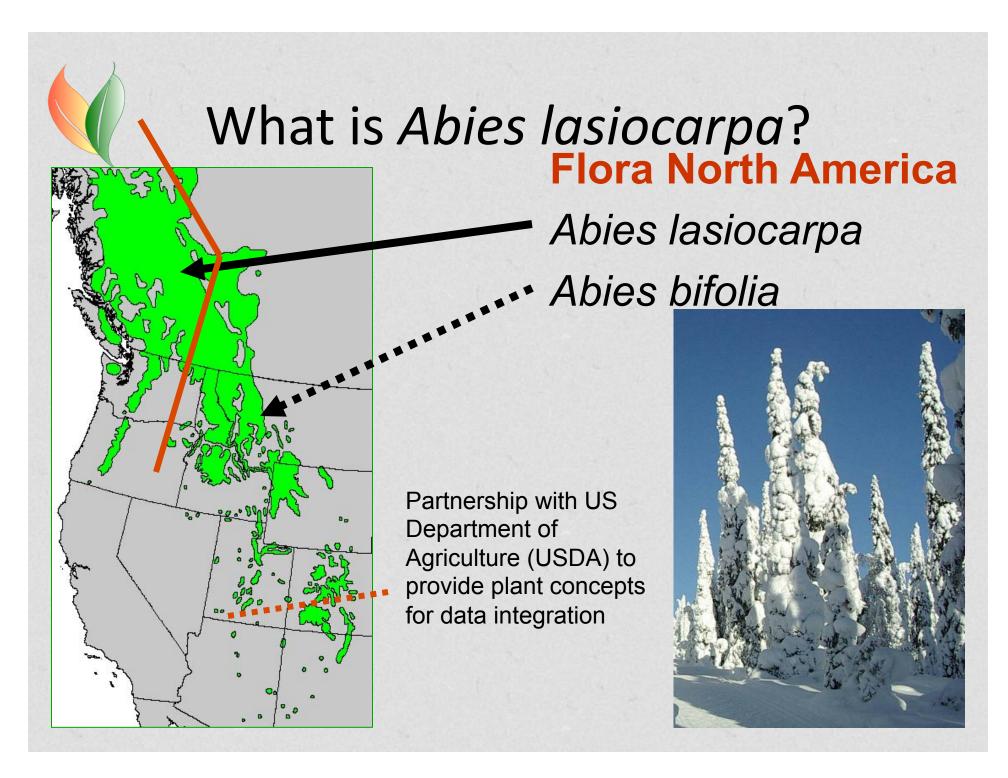
What are the fir trees of western US?

USDA* Plants & ITIS

Abies lasiocarpa var. lasiocarpa var. arizonica





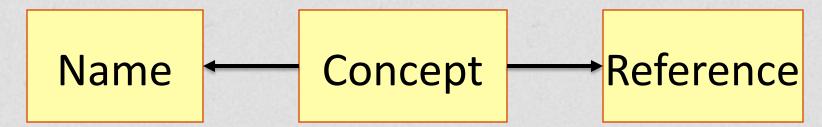




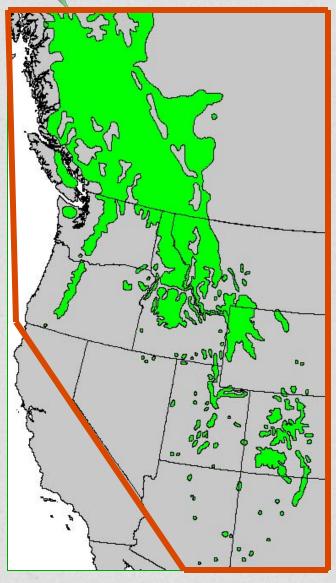
Taxonomic Concepts: Plant Name + Reference

 A taxon concept represents a unique combination of a name and a reference

"Taxon concept" roughly equivalent to
 "Potential taxon" & "assertion"

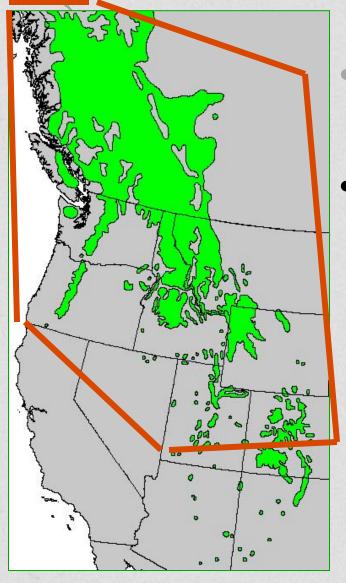






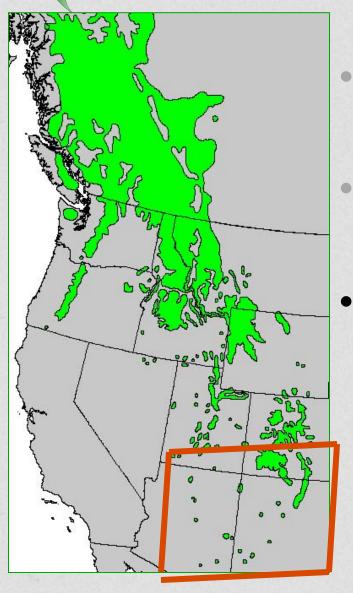
 Abies lasiocarpa sec. USDA Plants





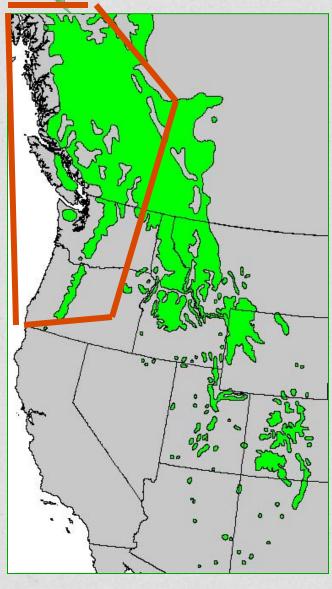
- Abies lasiocarpa sec. USDA Plants
- Abies lasiocarpa var.
 lasiocarpa sec. USDA Plants





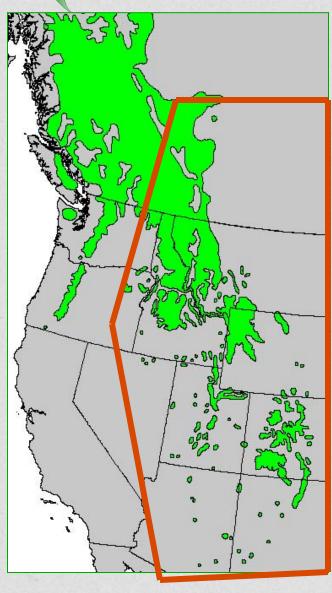
- Abies lasiocarpa sec. USDA
 Plants
- Abies lasiocarpa var.
 lasiocarpa sec. USDA Plants
- Abies lasiocarpa var.
 arizonica sec. USDA Plants





- Abies lasiocarpa sec. USDA
 Plants
- Abies lasiocarpa var.
 lasiocarpa sec. USDA Plants
- Abies lasiocarpa var.
 arizonica sec. USDA Plants
- Abies lasiocarpa sec. Flora North America





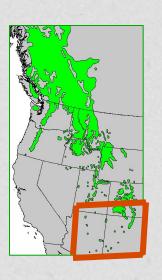
- Abies lasiocarpa sec. USDA Plants
- Abies lasiocarpa var. lasiocarpa sec. USDA Plants
- Abies lasiocarpa var. arizonica sec. USDA Plants
- Abies lasiocarpa sec. Flora North America
- Abies bifolia sec. Flora North America



Plant Concept Relationships



Abies bifolia sec. Flora North America Abies
lasiocarpa var.
arizonica sec.
USDA Plants





Abies
lasiocarpa
sec. Flora
North
America

Abies

| lasiocarpa var. |
| arizonica sec. |
| USDA Plants





Plant Concept Implications

- Not always tidy to sort out which names apply to which concepts
 - Not always geographically distinguishable
 - Original name often is just a name, not a concept
- Different people may have different opinions as to which concepts map onto other concepts
 - VegBank handles this with a "party perspective"
 where are person states their taxonomic opinions



Andropogon virginicus

in just one state in the U.S.A. has between 1 and 9 taxa, with 17 different concepts variously applied by 8 important authors.

Weakley 2005	C. Campbell (1983, FNA 2003)	Godfrey & Wooten 1979	RAB 1968	Hitchcock & Chase 1950	Blomquist 1948	Small 1933	Hackel 1889	finest entity	=
Andropogon capillipes var. capillipes	A. virginicus var. glaucus "drylands variant"	A. capillipes	A. virginicus	A. capillipes	A. capillipes	A. capillipes	A. virginicus var. glaucus subvar. glaucus	capillipes entity	capillipes + dealbatus entity
Andropogon capillipes var. dealbatus (in prep.)	A. virginicus var. glaucus "wetlands variant"	A. capillipes	A. virginicus	A. capillipes	A. capillipes	A. capillipes	A. virginicus var. glaucus subvar. dealbatus	dealbatus entity	virginious entity
Andropogon virginicus var. virginicus	A. virginicus var. virginicus "old-field variant"	A. virginicus var. virginicus	A. virginicus	A. virginicus var. virginicus	A. virginicus var. virginicus	A. virginicus	A. virginicus var. viridis subvar. genuinus	"old-field" entity	"glom 4" entity
Andropogon virginicus var. virginicus	A. virginicus var. virginicus "smooth variant"	A. virginicus var. virginicus	A. virginicus	A. virginicus var. virginicus	A. virginicus var. virginicus	A. virginicus	A. virginicus var. viridis subvar. genuinus	"smooth" entity	"glom 2a" entity
Andropogon virginicus var. decipiens	A. virginicus var. decipiens	A. virginicus var. virginicus	A. virginicus	A. virginicus var. virginicus	A. virginicus var. virginicus	A. virginicus	A. virginicus var. viridis subvar. genuinus	decipiens entity	"glom 2b" entity
Andropogon glaucopsis	A. glomeratus var. glaucopsis	A. glaucopsis	A. virginicus	A. virginicus var. glaucopsis	A. virginicus var. glaucopsis	A. glomeratus	A. macrourus var. glaucopsis	glaucopsis entity	"glom 3" entity
Andropogon glomeratus var. hirsutior	A. glomeratus var. hirsutior	A. virginicus var. abbreviatus	A. virginicus	A. virginicus var. hirsutior	?	A. glomeratus	A. macrourus var. hirsutior	hirsutior entity	"latissimo" entity
Andropogon glomeratus var. glomeratus	A. glomeratus var. glomeratus	A. virginicus var. abbreviatus	A. virginicus	A. glomeratus	A. glomeratus	A. glomeratus	A. macrourus var. abbreviatus	glomeratus entity	"old-field" + "smooth" entity
Andropogon tenuispatheus	A. glomeratus var. pumilus	A. virginicus var. abbreviatus	A. virginicus	A. glomeratus	A. virginicus var. tenuispatheus	A. glomeratus	A. macrourus var. genuinus	tenuispatheus entity	
5 species, 8 ∨ars.	2 species, 7 vars (+ 2 informal "variants")	3 species, 4 vars.	1 species	3 species, 5 vars.	3 species, 5 vars.	3 species, 3 vars.	2 species, 7 vars.		

T&E Species, Intellectual Property

- Threatened and endangered species may be more vulnerable if their precise locations are revealed on the web.
 - These are protected by reducing precision of geocoordinates to the nearest 10, 100, or 1000 km.
 - More ecologically useful than removing the species from the public report.
- Projects and plots may be "embargoed" temporarily until after project's initial publication.



Metadata

- VegBank provides extensive opportunities to describe the plot methodology:
 - Stratum Method (if applicable, not required)
 - Cover Method (what percent scale?)
 - Vascular plant, Bryophyte, Lichen sampling effort (or were they ignored?)
 - Plot size, shape, subplots
 - Stem sampling method (if applicable)



Annotations into the future

- Most databases allow one taxon name for each occurrence record
- VegBank allows multiple annotations for each taxon occurrence, on order to handle:
 - Different opinions from different people
 - Changing taxonomic concepts in the future
 - Error correction
- No annotations are removed a full record is maintained to ensure a "perfect archive"

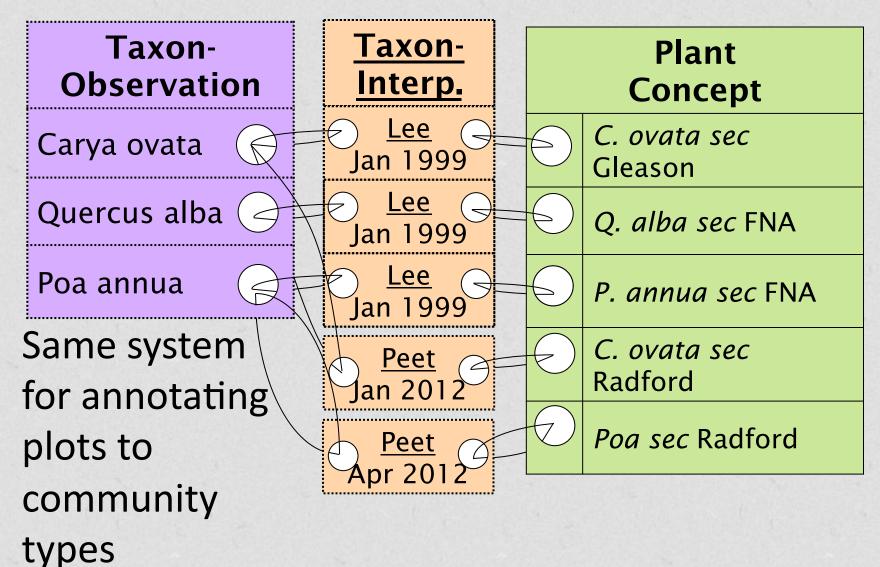


Plant Occurrence Annotations

Taxon- Observation	Taxon- Interp.	Plant Concept		
Carya ovata	<u>Lee</u> Jan 1999		<i>C. ovata sec</i> Gleason	
Quercus alba	<u>Lee</u>		Q. alba sec FNA	
Poa annua	<u>Lee</u> Jan 1999		P. annua sec FNA	



Plant Occurrence Annotations





Future Directions

- Currently we are building on VegBank to form VegBIEN, a tropical occurrence database of herbarium specimen-type data.
- Starting revision our client tool, VegBranch, and would like to help make VegBank more AVA-compatible if necessary.
- Support for emerging plot-data exchange standard called "VegX."







http:/vegbank.org



Find Plots

What is a plot? Browse plots Simple search Advanced plot search



		80111				
Map Key: plots Larger Map						
1-49	50-99	100-249				
250-999	1,000-3,000	> 3,000				

Recently Added Plots

•	
Project	Added
Vegetation of the east slope	05-Apr- 06
Cherokee National Forest	17-Nov- 05
<u>Talladeqa-Oakmulqee</u> <u>National</u>	17-Nov- 05
Osceola National Forest	17-Nov- 05

Plant Taxa

What is a plant concept? Browse plants Search plants

Submit plants

Plant Communities

What is a community? Search communities Submit communities

Supplemental Data

People Stratum methods Cover methods Projects References Search supplemental data

Data in VegBank

Plots:	21540
Classified Plots:	15191
to NVC communities:	4996
Plant Concepts:	91984
accepted by USDA:	43753
and on plots:	6887
Community Concepts:	15111
in the NVC:	8390
and on plots:	868

Learn About VegBank

What is VegBank? FAQ Tutorial Cite or link to VegBank Terms of use Site map Contact

Contribute Plot Data

Submit plots Annotate plots

Tools

Vegetation Classification Firefox toolbar VegBranch client database Data matrix normalizer

My VegBank Account

Edit profile information Manage datasets

News

- » Map plots: Example | Datacart | Multiple Datasets (Requires Login)
- » Save Your Datacart | Edit Datasets
- » Create a Constancy Table



Plots

VegBank Plots

You searched for plots: In WEST VIRGINIA

Add/Drop	Author Code Plot Location	Plants Found on Plot Change plant label: Current Interpretation, Scientific Name without authors	Plot Communities
Plot #21	HAFE.22 West Virginia, United States » PLOT DETAIL	» Betula lenta (25%) » Quercus velutina (20%) Click Plot Detail. » Sussantas disidam (15%)	No data
Plot #22	HAPE.21 West Virginia, United States » PLOT DETAIL	» Lindera benzoin (50%) » Celtis occidentalis (40%) » Platanus occidentalis (20%) » Lonicera japonica (20%) » Fraxinus pennsylvanica (20%)	No data
Plot #23	HAFE.20 West Virginia, United States » PLOT DETAIL	 » Liriodendron tulipifera (30%) » Acer rubrum (25%) » Quercus velutina (20%) » Fagus grandifolia (20%) » Betula lenta (20%) 	No data
Plot #24	HAFE.19 West Virginia, United States » PLOT DETAIL	» Carya alba (40%) » Quercus alba (25%) » Acer rubrum (25%) » Quercus velutina (20%) » Quercus prinus (15%)	No data

«previous | 1 | 2 | page 3 | next» records 21 through 24 of 24

Plot Detail

5 %

15 %

0 %

0 %

0 %

contiguous

full census

Thorough

yes

Percent Wood

Percent Litter Percent Bare Soil

Percent Water

Percent Other

Project

Methods Fields:

Cover Method

Stratum Method

Stem Size Limit

Cover Dispersion

Values are

Automatically

Calculated?

Overall Taxon Cover

Stem Sample Method

Plot quality Fields: Effort Level

Floristic Quality

Soil Observations:

Top

Soil Depth Soil Depth

Bottom

Soil

Horizon

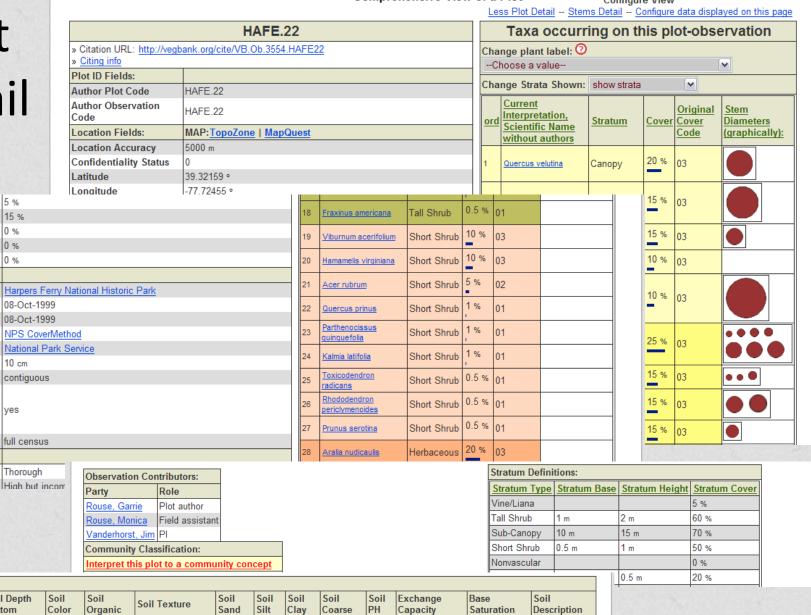
unknown

Observation Start Date

Observation End Date

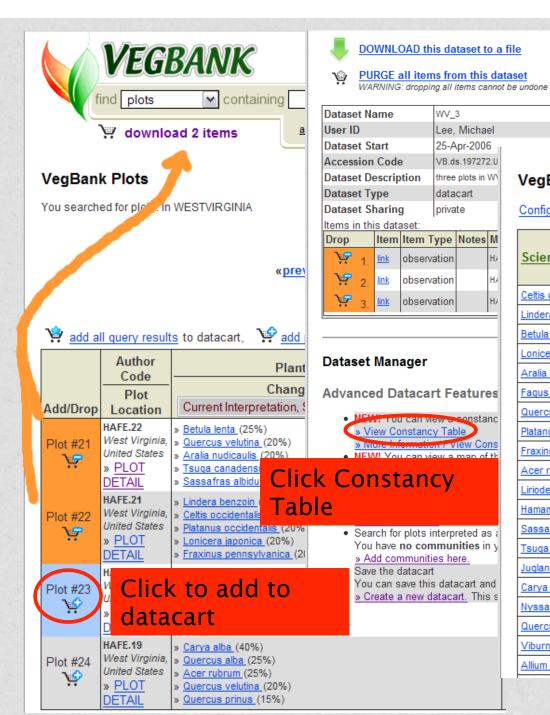
Comprehensive View of a Plot

Configure View



						Candy Loann		
Disturbance Data:								
Disturbance	е Туре	Distu	irbance Intens	ity Distu	rbance Com	ment		
unknown				Hemloo	k dying, possibl	y due to infestation of w	ooly adelgi	d.

Sandy Loams:



Datacart & Constancy

VegBank Constancy Table Table

Configure data displayed on this page

Scientific Without Authors	Plots Dataset: WV 3 Total: 3	Average Cover Dataset: WV 3
Celtis occidentalis	1	40.000
Lindera benzoin	2	30.000
Betula lenta	2	22.500
Lonicera japonica	1	20.000
Aralia nudicaulis	1	20.000
Fagus grandifolia	1	20.000
Quercus velutina	2	20.000
<u>Platanus occidentalis</u>	1	20.000
Fraxinus pennsylvanica	1	20.000
Acer rubrum	2	20.000
Liriodendron tulipifera	2	20.000
Hamamelis virginiana	1	15.000
Sassafras albidum	1	15.000
Tsuga canadensis	1	15.000
Juglans nigra	1	10.000
Carya qlabra	1	10.000
Nyssa sylvatica	1	10.000
Quercus prinus	2	10.000
Viburnum acerifolium	1	10.000
Allium vineale	1	10.000

Plot Query:

State/Province, Country:

Choose a state, province, and/or country to find plots located there.

Note that you may select more than one value at a time. To select multiple choices, hold down the ctrl or apple key and then select each state/province/country you want to query.

Plot Query

State/Province (plot count)

VI	
Nevada (1061)	^
New York (325)	
North Carolina (86)	
North Dakota (172)	ر
Oregon (797)	~

Country (plot count)	
ANY	^
Canada (330)	

United States (19641)

Plant Taxa:

Enter a plant name to find plots with that plant. You may also include criteria about other attributes that apply to that plant. Plots will be returned that match ALL criteria for a row. Plots will be returned that match all rows.

Use % for the wildcard. Examples: White oak, Carex%

Dow	Diant Name search	Cover (%)	
ROW	Row Plant Name <u>search</u>	Min	Max
1			
2			

Vegetation Community:

Enter part of a community name to find plots classified to that community. This section functions much like the plant section above. Plots will be returned that match ALL criteria for a row. Plots will be returned that match all rows.

Use % for the wildcard. Example: Acer%Forest

Community Name search Liriodendron%

Search VegBank Plots

search

reset

VegBank Plots

You searched for plots: in District of Columbia, Georgia, Maine, New York, North Carolina, Pennsylvania, South Carolina, Tennessee, Virginia, West Virginia AND NOT including subplots AND Community Name is Liriodendron%

Adding many plots to datacart

«previous | page 1 | 2 | 3 | 4 | 5 | next» records 1 through 10 of 41

add all query results to datacart, 🦃 add plots on page to datacart, 📜 drop plots on page from datacart

Add/Drop	Author Code Plot Location	Plants Found on Plot Change plant label: Current Interpretation, Scientific Name without authors	Plot Communities			
Plot #1	CHER.54 Tennessee, » PLOT DETAIL	» <u>Liriodendron tulipifera</u> (62.5%) » <u>Acer saccharum</u> (62.5%) » <u>Lindera benzoin</u> (37.5%)	» <u>Liriodendron tulipifera - Tilia americana</u> var. heterophylla - (Aesculus flava) / Actaea racemosa Forest			
Plot #2	GRSM.222 Tennessee, United States » PLOT DETAIL	» <u>Liriodendron tulipifera</u> (62.5%) » <u>Acer saccharum</u> (37.5%) » <u>Acer rubrum</u> (37.5%)	» CEGL007219			
Plot #3	GRSM.79 Tennessee, United States » PLOT DETAIL	» <u>Liriodendron tulipifera</u> (85%) » <u>Toxicodendron radicans ssp. radicans</u> (17.5%) » <u>Cornus alternifolia</u> (17.5%)	» CEGL007219			
Plot #4	GRSM.221 Tennessee, United States » PLOT DETAIL	» <u>Liriodendron tulipifera</u> (62.5%) » <u>Tsuqa canadensis</u> (37.5%) » <u>Acer saccharum</u> (37.5%)	» Liriodendron tulipifera - Aesculus flava - (Fraxinus americana, Tilia americana var. heterophylla) / Actaea racemosa - Laportea canadensis Forest » CEGL007710			

()			LOGIN DATASETS LOGOUT	
	VEGBANK		Jump to	~
	find plots containing	go	HOME	HELP
•	go go		SUBMIT DATA	ABOUT
	🤛 download 41 items	advanced search browse data	MY ACCOUNT	SITE MAP

Map of your plots

This page shows you a Google Map of your datasets selected. However, it is not compatible with all browsers, though most of the major modern browsers are satisfactory. Firefox/Mozilla and Internet Explorer are fine. See the help pages Google's Website for more on browser compatibility. Links on this page will open in a new window (except the built in Google links), as you can move the map around, and zoom in and out, but if you use the back button to get to this page, the map will be

Dataset Key:

Acer in East (29 plots)

Iiriodendron in East (41 plots)

Initial location of larger map outlined here:



Mapping several datasets

