CLEVELAND METROPARKS Plant Community Assessment Program: Quality Control Form Cleveland Metroparks

Project Label: PCAP **Plot No:** 1076 **Date Sampled:** 7/30/15 **Lead:** CKM

				Comment required if item answer is NO
Parking/Access outside of Park Boundaries:		Y	(N)	If yes, write details in Comments section below
Field journals completed		(Y)	N	
Site sketch made on 1:3000 map?		(Y)	N	
Check cover page	X-axis Bearing of plot recorded	(Y)	N	
	GPS coords. Recorded	(Y)	N	
	North direction recorded	(Y)	N	
	Photographs taken?	(Y)	N	
	Relocated Pins Mapped	(Y)	N	
Plot No., Date agreement on all pages?		(Y)	N	
Header data completed all pages?		(Y)	N	
Cover classes recorded in all Intensive modules		(Y)	N	
Browse Level By Species		(Y)	N	
Woody stem quality control check		(Y)	N	Check every line *and* cross check with the Tree Cover Sheet
Invasive plant quality control check		Y	N	NA
Ash trees mapped		(Y)	N	
Completed Forest Pest/Pathogen Datasheet		(Y)	N	
Cover by Strata? (confirm cover type)		(Y)	N	
Soil samples collected with matching plot #.		Y	N	NA
Cross check 2010 information		(Y)	N	Highlight any changes from 2010 information
Vouchers labeled on datasheet with initials and number		(Y)	N	
Vouchers labeled on collection bag		(Y)	N	
Pink flags removed		~~(Y)~~	(N)	Right side flags left on ground
Data sheet QA before leaving site?		(Y)	N	SRE 10-21-15
Common equipment returned to tub.		Y	N	
Data sheets scanned?				Enter date to left
Final data sheets scanned?				Enter date to left
Buffer Widths measured?		Y	N	
Web Soil Survey		Y	N	
Voucher Location	Refrigerator	Y	N	
(# vouchers collected) CKM 286-306	Press (#)			Enter number to left
	Drier	Y	N	
	Identified	Y	N	
	Mounted	Y	N	
	Thrown away	Y	N	

GRTS point verification: Is plot sampleable?	
☐ Yes	Original GRTS point is sampleable
☐ No	Original GRTS point lands in a non-sampleable area (fill in category below)
	☐ Point falls in a water (i.e. river, lake)
	☐ Managed mowed area (i.e. golf course, picnic area, right-of-way)
	☐ Paved area (i.e. parkinglot, road)
	☐ Unsafe to sample (i.e. steep slope)
	☐ Other

Additional Comments:

All pins found, plus one at origin-baseline-right side (0m)
Center line and Rightside flags left on ground

CLEVELAND METROPARKS Plant Community Assessment Program - Background Data Sheet

GENERAL INFORMATION

Project Label: PCAP

Project Name: OZNC2015

Plot Name: Red Cross Donation Site

Plot No.: 1076

- ☐ Level 4 (no nested corners sampled)
- ■ Level 5 (nested corners sampled)

Date (mm/dd/yyyy): 7/30/2015

End date (if > 1 day): / /

Party	Role**
C. Minney	Plot leader
M. Geitgey	Bot. Asst.
T. Cochran	Woody Tech
E. Knauss	Woody Tech

** Roles: Co-leader, Asst., Guide, Owner, Taxonomist, etc.

PLOT NOT SAMPLED: ☐ Other

☐ Perm. water ☐ Paved ☐ Slope ☐ Safety

SAMPLING QUALITY*

Effort Level:

- X Very thorough
- ☐ Accurate
- ☐ Hurried

subjective evaluation of how much effort put into sampling. Hurried plots may still provide good data

TAXONOMIC ACCURACY

	high	modera.	low	not smpl
vascul.	X			n/a
bryo			X	
lichen				X

TAXONOMIC STANDARD

Authority: G&C **Pub Date:** 1998

LOCATION

State: OH **County:** Cuyahoga

Quadrangle: Mayfield Hts.

Local Place Names: Oxbow Lane, Chagrin River Rd.

Landowner: CMP

Data Confidentiality:

Check one: X Public data ☐ Private Data

☐ Fuzz 100m ☐ Fuzz 250m ☐ Fuzz 500m

Reason:

If data not public why?

Source of coordinates ☐ MAP ■ GPS

Coordinate system:	Coord. Units
■ Lat/Long ☐ UTM ☐ StatePlane	■ deg ☐ deg min
☐ Other (specify)	■ m ☐ ft ☐

Datum: ■ NAD83/WGS84 ☐ NAD27

GPS location in plot x=0 to 5, y=-1,0,+1):

x = 0 y = 0 (base of plot x=0, y=0)

Latitude: 41.56741

Longitude: 81.42065

Coord. Accuracy: X m ☐ ft +- 2

GPS File Name: 1076 A

Plot size for cover data: .1 (hectares)

X-axis Bearing of plot: 43 °43

Depth: (1-5): 4

Intensive modules: 2, 3, 8, 9 (EDIT IF MODIFIED)

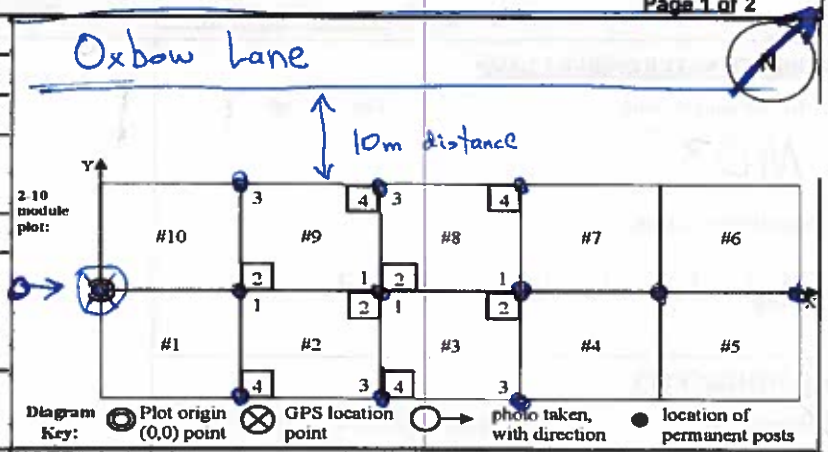
Camera No.: 4

Photo Nos.: C4698

Plot placement: X GRTS ☐ Representative

☐ Random ☐ Stratified Random ☐ Transect component

☐ Systematic (grid) ☐ Capture specific feature ☐ Other



NOTES: Include **Layout** (any unusual shape details), **Location** (directions and landscape content), **Rationale** (why here), and **Veg Characterization** (description of community, dominants, strata, BROWSE). Additional notes in space on back.

Layout: 2 x 5

Location: Park at horse trailer gravel parking lot near intersection of Oxbow Lane and Chagrin River Rd. Or park ~200m south of gravel area on Oxbow Lane. Plot is 10m off road on south side.

Rationale: GRTS

Veg Characterization: The canopy is very sparse dominated by Red Maple and American Elm. Many trees have died. The shrub layer is thick with many things common in herb layer, ascending into it ~~crossing into the herb layer~~. The herb layer is also thick with many graminoids, wet-footed species and rose bushes. Tearthumb and Leersia oryzoides.

Minimum required fields in Bold and Underlined

*Definitions and values in CM PCAP FOM v. 1.0 and CVS Field Guide

OVER

CLEVELAND METROPARKS Plant Community Assessment Program - Background Data Sheet ClevelandMetroparks

Project Label: PCAP Project Name: OZ NC 2015 Plot No.: 1076

MODIFIED NATURERESERVE CLASS*

CODE (on separate form): Fit=___ Conf=___

M03

COMMUNITY NAME:

Maple-Ash-Elm Wet Flatwoods

DISTURBANCES

type*	severity**	yrs ago	% of plot	description
Human	M	0	15	Trampling grasses.
Natural				
Fire				
Cut	L	5+	1	A single large tree cut near road
Animal	MH	0	100	Deer Browse
Other				

**L=low, ML=med low, M=med, MH=med high, H=high, VH=very high

Current Land Use: CMP

Former Land Use:

HOMOGENEITY

- [x] Homogeneous
- [ ] Compositional trend across the plot
- [ ] Conspicuous inclusions
- [ ] Irregular/pattern mosaic

SALINITY*

- [ ] Saltwater
- [ ] Brackish
- [x] Fresh
- [x] Upland (n/a)

(by default unless plot is a wetland)

10-26-15 SLE

HYDROLOGIC REGIME*

- [ ] Upland (seldom flooded)
- [x] Intermittently/seasonally saturated (seldom flooded)
- [ ] Permanently/Semipermanent. saturated (dry <1/yr, seldom flooded)
- [ ] Occasionally flooded (<1/yr)
- [ ] Temporarily flooded
- [ ] Intermittently flooded
- [ ] Semipermanently flooded
- [ ] Permanently flooded
- [ ] Tidal/Seiche flooded daily
- [ ] Tidal/Seiche flooded monthly
- [ ] Tidal/Seiche flooded irregular (e.g. wind, storms)
- [ ] Unknown

Additional notes & diagrams: (Representativeness of plot to the stand, successional status, maturity, etc.)

The plot itself is even-aged mostly, though some surrounding areas are more mature and un-even-aged. A lot of canopy trees are dying out. Mods 7+6 are more wet than other areas and have large populations of Leersia oryzoides. As close as the plot is to the road there are only a few weedy invaders on the margins of the left side. Many Lindera clumps are in decline. Ligustrum has a strong foothold. Some bad smell from the mucky soil. The plot uniform with mostly graminoids in the beginning was significantly trampled. These will most likely recover fully.

CLEVELAND METROPARKS Plant Community Assessment Program Species Cover Data Sheet Page 1 of 3

Project Label: PCAP Project name: 02NC2015 Plot no.: 1076

Total modules: 10 Intensive modules: 4 Plot configuration: 2x5 Plot area (ha): .1

Cleveland Metroparks

Br = Browse Level. Use cover classes to describe amount of browse per species over entire plot

Strata - Cov. entire plot

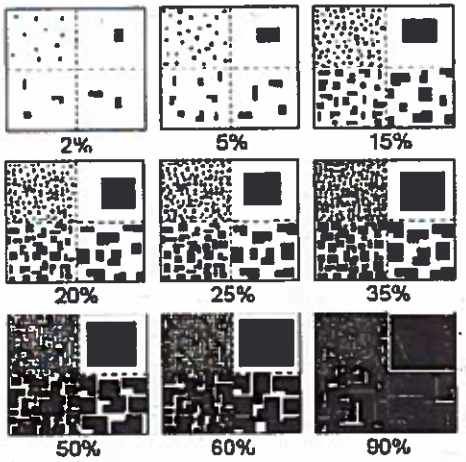
Estimate for each intensive module:

	mod	corner	mod	corner	mod	corner	mod	corner	mod	corner	mod	corner	mod	corner	mod	corner	mod	corner	mod
	2	4	2	2	3	4	3	2	8	4	8	2	9	4	9	12	R		
	depth	cov	depth	cov	depth	cov	depth	cov	depth	cov	depth	cov	depth	cov	depth	cov	depth	cov	depth
%open water	1	0			1	0			1	0			1	0					
%unvegetated open water	1	0			1	0			1	0			1	0					
%unveg. ground (bare soil)	1	2			1	2			1	2			1	2					
%unveg. litter (bare litter)	1	2			1	2			1	2			1	2					

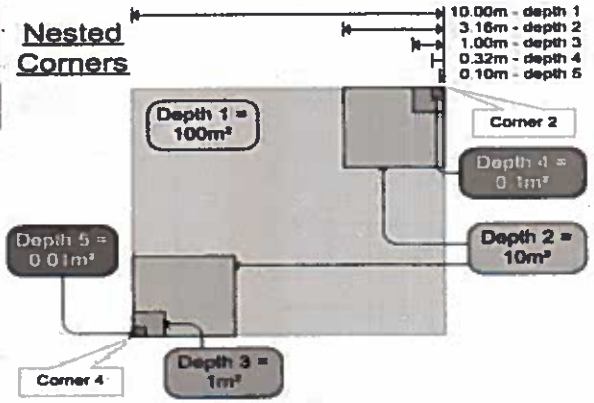
S	H	(F)	(A)	Br	Species	c	Voucher #	depth	cov	depth	cov	depth	cov	depth	cov	depth	cov	depth	cov	depth	cov	depth	cov	depth	cov	depth
6	5			9	ROSA MULTIFLORA			4	7	4		2	4	2			4	4			7	4				
5	4				Onoclea sensibilis			4	5	3		2	2	2		2	5	3			7	2				
5	7			5	Impatiens capensis			4	7	4		4	6	4		4	7	4		3	8	2				
6	7				Polygonum *1 arifolium		CKM286	4	7	4		4	6	3		3	7	4		3	7	2				
2	3				Moss sp			4	4	3		3	4	2		4	3	3			4	2				
5	6				Glyceria striata			4	5	4		4	7	4		4	7	4			6	2				
	7				Leersia virginica			4	6	4		2	8	2		2	8	4			6	4				
	5				Geum canadense			4	4	3		3	4			4	4	2		4	4	3				
2	2				Mimulus ringens			3	3	2							2	2		1	2					
	2				Epilobium coloratum SRE		CH699	3	2							4	2	2								
2	4			5	LONICERA JAPONICA		SRE 7-16-15	3	3												5	2				
	3				Aster lateriflorus		Pratensis	3	3			3	3			2	3	2		4	3	2				
	7				~~Poaceae~~ *1 Poa ~~trivialis~~	X	CKM290	3	4	3		4	6	2		4	7	2			6	2				
	5				Potentilla simplex		CH700-701	2	3			2	3	2		1	4			4	4					
	2				Dryopteris carthusiana			2	2							1	3									
	4				Carex *1 vulpinoidea	X	CKM287	2	3				5	3			5	2		3	3					
2	5			6	Toxicodendron radicans			2	3	4		4	3	3		2	5	4		4	5	2				
3	3				Cinna arundinacea			2	4			2	4	2		2	4	2		4	5					
4	3			7	Lindera benzoin			2	5			4	3			2	4	2		4	5					
2	3				Polygonum virginianum			2	3			4	3								3	2				
5	4			6	Fraxinus pennsylvanica			2	5			2	4			2	4			4	4	2				
5	3			4	LIGUSTRUM VULGARE			2	5			2	2			1	4			1	4	4				
	4				Carex *2 tribuloides	X	CKM288	2	3			1	2			1	3									
3					Solidago canadensis			2	2				2	3						1	3					
	3			6	Parthenocissus quinquefolia			2	1			1	2			2	3				3	2				

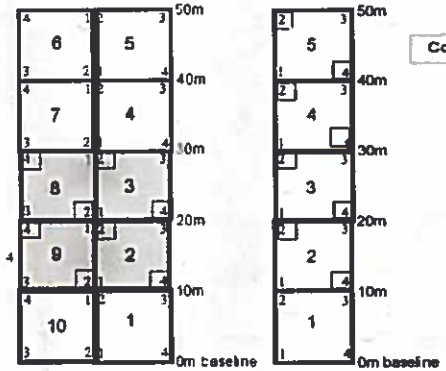
EXAMPLES OF PERCENT OF AREA COVERED

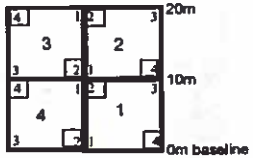
The following graphic can be used for various data elements to convey "Amount" or "Quantity". *NOTE:* Within any given box, each quadrant contains the same total area covered, just different sized objects.

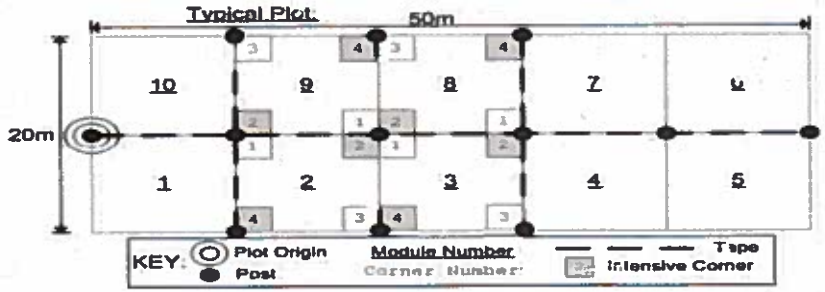


cover class	% cover	midpoint
1	solitary or few	0.0001
2	0-1%	0.005
3	1-2%	0.015
4	2-5%	0.035
5	5-10%	0.075
6	10-25%	0.175
7	25-50%	0.375
8	50-75%	0.625
9	75-95%	0.850
10	95-100%	0.975









BROWSE RATING NARRATIVE DESCRIPTION

LOW OR NONE: there is no measurable browse line AND there are very few or no plants 1-m nested quadrat and intensive module. In general, low values relate to less than 10 percent, by numbers of stems browsed.

MEDIUM LOW values include evidence of browse at about 10 percent of the stems with no significant impact to plant reproduction evident. In this rating, plants are browsed but preferential species are observed to be reproducing in numbers that appear normal or near-normal in comparison to low browse areas. For example, trilliums may flower and fruit, but jewelweed and arrowwood viburnum exhibit browse.

MEDIUM: browse affects greater than 10 percent and less than 25 percent of stems in the 1 m2 nested quadrat and intensive module. A browse line is usually not evident or obvious for all classes and species of vegetation, but careful examination may show preferential browse and/or browse lines for some species of plants.

MEDIUM HIGH values include evidence of a browse line and 25 percent of stems browsed with very little vegetation regeneration evident. In this rating, for some species of plants, reproduction does not appear to occur or it is very severely limited.

HIGH: greater than 25 percent of the stems of plants in the 1 m2 nested quadrat and intensive module AND a browse line is evident.

VERY HIGH values include extensive browse conditions, where the browse line is very evident AND almost all seedlings and herbs are severely browsed or missing. Browse line may be 5 to 6 feet in height with no or little green growth beneath.

CLEVELAND METROPARKS Plant Community Assessment Program Species Cover Data Sheet — Page 2 of 3

Project Label: PCAP — Project name: OZNC2015 — Plot no.: 1076

Total modules: 10 — Intensive modules: 4 — Plot configuration: 2x5 — Plot area (ha): .1

Cleveland Metroparks

Br = Browse Level. Use cover classes to describe amount of browse per species over entire plot

Strata - Cov. entire plot

Estimate for each intensive module:

	mod	corner	mod	corner	mod	corner	mod	corner	mod	corner	mod	corner	mod	corner	mod	corner	mod
	2	4	2	2	3	4	3	2	8	4	8	2	9	4	9	2	R
	depth	cov	depth	cov	depth	cov	depth	cov	depth	cov	depth	cov	depth	cov	depth	cov	depth
%open water	1				1				1				1				
%unvegetated open water	1				1				1				1				
%unveg. ground (bare soil)	1				1				1				1				
%unveg. litter (bare litter)	1				1				1				1				

S	H	(F)	(A)	Br	Species	c	Voucher #	depth	cov	depth	cov	depth	cov	depth	cov	depth	cov	depth	cov	depth	cov	depth	cov	depth	cov	depth
	4				Carex ~~crus~~ lupulina CRUS	X	CKM289	2	3			1	4													
4	2			8	Rubus pensylvanicus			2	4	4		4	4			3	3	2		4	5					
	2				Aster lanceolatus				2	4			2	2												
	2				Circaea lutetiana				2	3		2	2													
	2			6	Quercus sp. (seedling)				1	3		1	2							2	2					
3	2			7	Liriodendron tulipifera				1	2		2	2	2		2	2			2	2	2				
	6				Leersia ~~oryzoides~~ oryzoides				7	2		1	2													
	2				Solidago rugosa				1	2																
	2			6	Lysimachia ~~ciliata~~ ciliata				2	2						2	2									
	2			8	Hypericum punctatum CS	X	CKM291	1	2			1	1													
	3			6	Fraxinus sp. (seedling)			1	2	M						1	3			2	2	2				
	2				Oxalis stricta			1	1			2	1													
	1			7	Ulmus sp. (seedling)			1	1																	
	2			5	RHAMNUS FRANGULA			1	2												2	2				
	1				Arisaema triphyllum var triphyllum							2	1													
	4				Juncus ~~*~~ effusus	X	CKM292						3	3		1	4	3		2	4					
	2				Panicum ~~*~~ lanuginosum var. fasciculatum	X	CKM294						3	2												
2	2				Scirpus ~~*~~ atrovirens	X	CKM293/300						3	2												
	2				BERBERIS THUNBERGII								3	2												
2	2				Euthamia graminifolia var. hutteliana	X	CKM295						4	2						2	3					
	4				Juncus tenuis	X	CKM296						3	2		2	3				3	2				
	4				Agrimonia parviflora								3	2			3	2		3	3					
	2				Fragaria virginiana		CK702-703					1	2	M												
	2				Rosa sp		CK704					1	2			2	2									
	2			6	Pyrus sp.							1	1													

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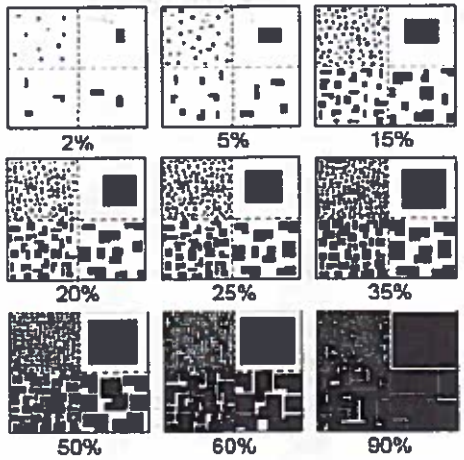

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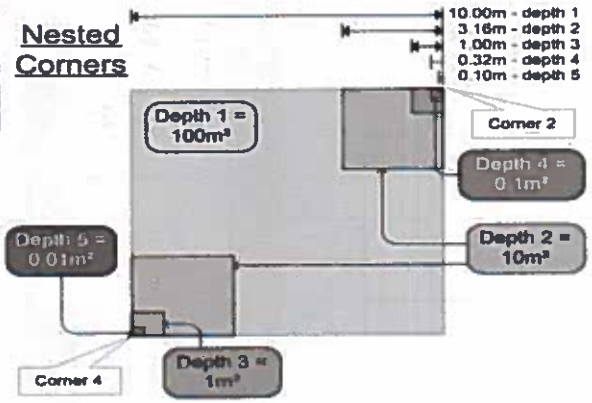
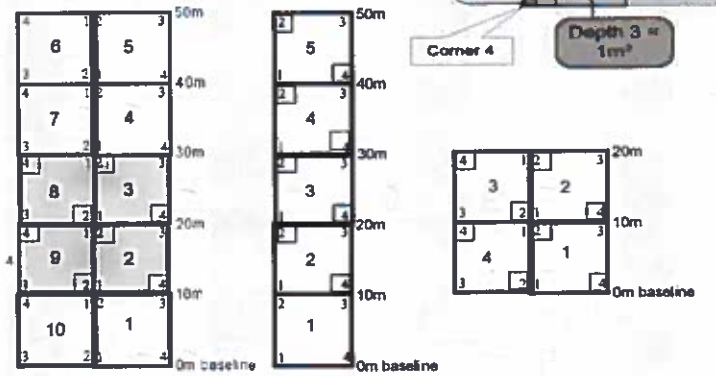
7	25-50%	0.375
8	50-75%	0.625
9	75-95%	0.850
10	95-100%	0.975

Nested Corners





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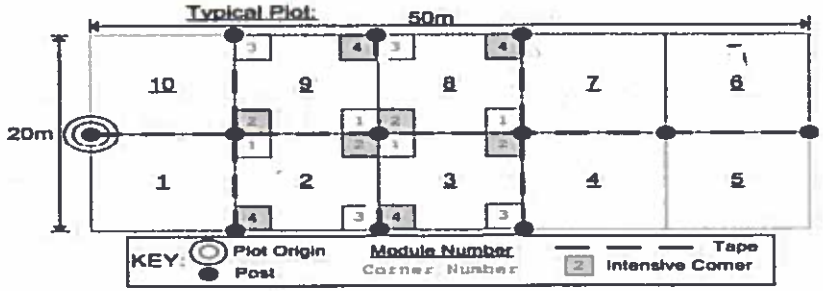

CLEVELAND METROPARKS Plant Community Assessment Program Species Cover Data Sheet Page 3 of 3

Project Label: PCAP Project name: OZNC2015 Plot no.: 1076

Total modules: 10 Intensive modules: 4 Plot configuration: 2x5 Plot area (ha): .1

Cleveland Metroparks

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	depth	cov	depth	cov	depth	cov	depth	cov	depth	cov	depth	cov	depth	cov	depth	cov	depth		
%open water	1				1				1				1						
%unvegetated open water	1				1				1				1						
%unveg. ground (bare soil)	1				1				1				1						
%unveg. litter (bare litter)	1				1				1				1						

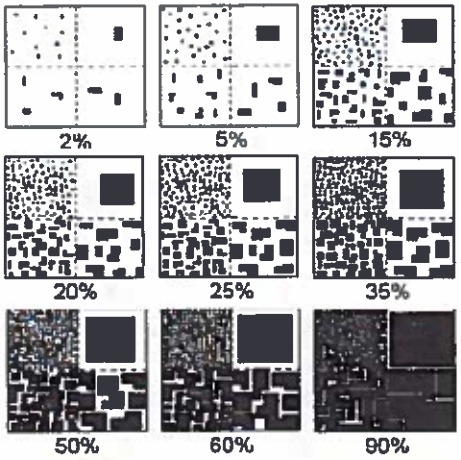
S	H	(F)	(A)	Br	Species	c	Voucher #	depth	cov	depth	cov	depth	cov	depth	cov	depth	cov	depth	cov	depth	cov	depth	cov	depth
2					Acer saccharum					1	2													
4	2				Fagus grandifolia ckm									4	4									
2	2				Agrimonia gryposepala ckm	X	CKM297							4	2									
	2				TARAXACUM OFFICINALE									1	2				2	2				
3	3			9	Rosa #1			1	2	1	2			1	2									
4					Ulmus americana													2	4					
3					Acer rubrum													1	4					
	4				LYSIMACHIA NUMMULARIA													1	5					
2	2				Rumex obtusifolius ckm		CKM298											1	2					
	2				Cornus sp racemosa ckm	X	CKM301											1	1					
	2				PRUNELLA VULGARIS VAR VULGARIS																			2
	2			7	Populus alba ckm		CKM300																	2
	2			10	Viburnum dentatum ckm	X	CKM299																	2
	1				Verbena hastata ckm																			1
	2				Carex radiata ckm	X	CKM302																	2
	2				Poaceae #2 Anthoxanthum odoratum	X	CKM303																	2
	2				Carex virescens	X	CKM304																	2
2					Viburnum plicatum	X	CKM305																	2
	2				Solanum dulcamara ckm																			2
	1				Erechtites hieracifolia																			1
	2				LONICERA MORROWII																			2
2					Scirpus #2 atrovirens	X	CKM306																	2 - combined SRE 12-16-15
	2				Ranunculus hispidus																			3

SRE_CM PCAP Species Cover Data .xls last revised 6/10/2015 jjm

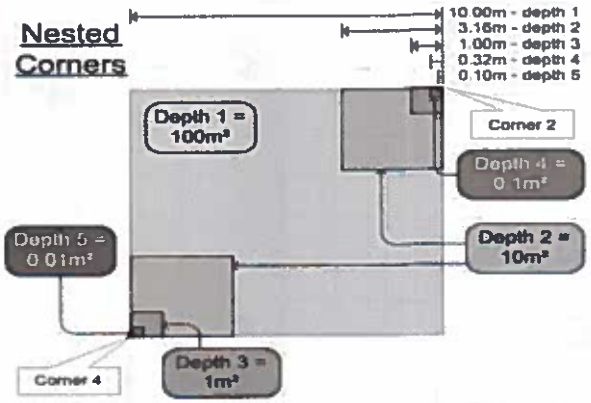
Natural Resource Management FORM NR/2010-02a

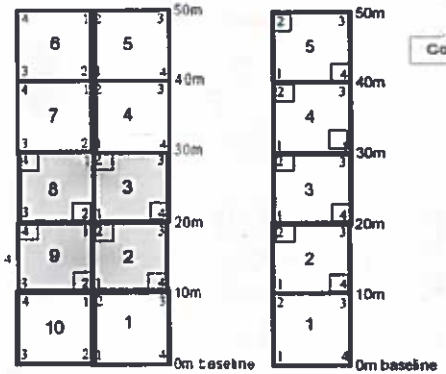
EXAMPLES OF PERCENT OF AREA COVERED

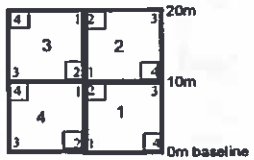
The following graphic can be used for various data elements to convey "Amount" or "Quantity". *NOTE:* Within any given box, each quadrant contains the same total area covered, just different sized objects.



cover class	% cover	midpoint
1	solitary or few	0.0001
2	0-1%	0.005
3	1-2%	0.015
4	2-5%	0.035
5	5-10%	0.075
6	10-25%	0.175
7	25-50%	0.375
8	50-75%	0.625
9	75-95%	0.850
10	95-100%	0.975







BROWSE RATING NARRATIVE DESCRIPTION

LOW OR NONE: there is no measurable browse line AND there are very few or no plants 1-m nested quadrat and intensive module. In general, low values relate to less than 10 percent, by numbers of stems browsed.

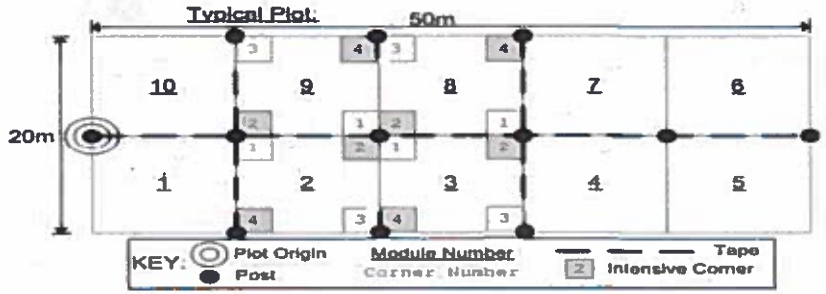
MEDIUM LOW values include evidence of browse at about 10 percent of the stems with no significant impact to plant reproduction evident. In this rating, plants are browsed but preferential species are observed to be reproducing in numbers that appear normal or near-normal in comparison to low browse areas. For example, trilliums may flower and fruit, but jewelweed and arrowwood viburnum exhibit browse.

MEDIUM: browse affects greater than 10 percent and less than 25 percent of stems in the 1 m2 nested quadrat and intensive module. A browse line is usually not evident or obvious for all classes and species of vegetation, but careful examination may show preferential browse and/or browse lines for some species of plants.

MEDIUM HIGH values include evidence of a browse line and 25 percent of stems browsed with very little vegetation regeneration evident. In this rating, for some species of plants, reproduction does not appear to occur or it is very severely limited.

HIGH: greater than 25 percent of the stems of plants in the 1 m2 nested quadrat and intensive module AND a browse line is evident.

VERY HIGH values include extensive browse conditions, where the browse line is very evident AND almost all seedlings and herbs are severely browsed or missing. Browse line may be 5 to 6 feet in height with no or little green growth beneath.



CLEVELAND METROPARKS Plant Community Assessment Program Tree Cover Data Sheet Page 1 of 1

Project Label: PCAP Project name: 02NC2015 Plot no.: 1076

% COVER Strata - Cov. entire plot				Prensence of tree species (X)	mod 2	mod 3	mod 8	mod 9	R R
T	Br	Species	c	Voucher #					
6		Ulmus americana			X		X	X	X
7		Acer rubrum			X	X	X	X	X
5		Acer saccharum							X
4		Liriodendron tulipifera							X

CLEVELAND METROPARKS Plant Community Assessment Program Tree Cover Data Sheet *Page ___ of ___*

Project Label: PCAP Project name: _____ Plot no.: _____

% COVER Strata - Cov. entire plot				Prensence of tree species (X)	mod	mod	mod	mod	R R
T	Br	Species	c	Voucher #					

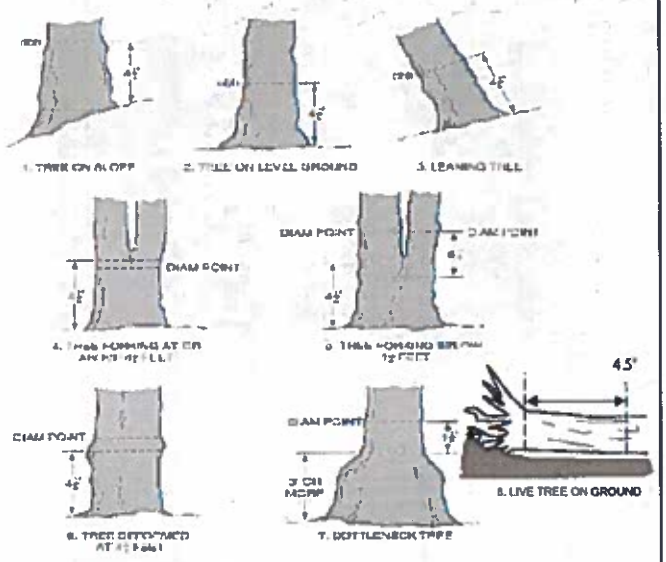
CLEVELAND METROPARKS Plant Community Assessment Program Natural Woody Stem Data Sheet

Project Label: PCAP Project Name: 02NC2015 Plot No.: 1076 Page: 1 of 5

Explain subsample (additional room on back):

mod #	species	c	voucher#	# stems 0-1.4m browsed	% sub or super sample	# shrub clumps	size class (cm) woody stems >1.4m 1 0-<1	2 1-<2.5	3 2.5-<5	4 5-<10	5 10 - <15	6 15 - <20	7 20 - <25	8 25 - <30	9 30 - <35	10 35 - <40	11 >40 (record each tree)
1	Standing dead																
1	Liriodendron tulipifera																
1	Rubus pensylvanicus																
1	Fraxinus pennsylvanica																
1	Crataegus sp.																
1	Parthenocissus quinquefolia																
1	Acer saccharum																
1	Fraxinus sp. seedling																
1	Ligustrum vulgare																
1	Rosa multiflora																
1	Lonicera japonica																
1	Lindera benzoin																
1	Rosa sp.																
2	Rubus pensylvanicus																
2	Lindera benzoin																
2	Rosa multiflora																
2	Parthenocissus quinquefolia															X	
2	Standing dead																17.5
2	Fraxinus pennsylvanica																
2	Ligustrum vulgare																
2	Ulmus americana																
3	Acer rubrum								X								41.6
3	Fraxinus pennsylvanica																
3	Lindera benzoin																

DBH Measurement Rules



Woody Stem Deer Browse

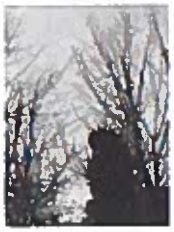
Record the number of stems/plants between 0.5-1.0 meters tall that exhibit evidence of this years deer browse.

Record using the tally system from 1 to 10

1 2 3 4 5

ASH CANOPY CONDITION

1. **Healthy, full canopy:** A healthy ash canopy is normally thinner than many other trees such as maple.
2. **Thinning canopy:** There aren't as many leaves as there ought to be, but all top branches exposed to sunlight have leaves.
3. **Dieback:** Canopy is thinning and some top branches exposed to sunlight are dead (have no leaves). Lower branches, not exposed to sunlight, die naturally and are not considered.
4. **>50% Dieback:** The canopy has less than half of the leaves that should be there and/or half of the top branches are dead.
5. **Dead canopy:** No leaves remain in the canopy portion of the tree. It still counts as a 5 even if there are epicormic sprouts below the canopy (lowest branch) on the trunk.



A B C D E

ASH CANOPY BREAKUP CONDITION (for dead trees):
(If an ash receives a score of 5 (dead) under canopy condition it must also receive a breakup condition rank as described below)

A: All main branches contain fine twigs (newly dead).
B: Over 50% of main branches have fine twigs.
C: Less than 50% of main branches have fine twigs.
D: Stem still standing and tertiary main branches present.
E: Central stem still standing.

CLEVELAND METROPARKS Plant Community Assessment Program Natural Woody Stem Data Sheet

Cleveland Metroparks

Project Label: PCAP Project Name: 2015 Plot No.: 1076 Page: 2 of 5

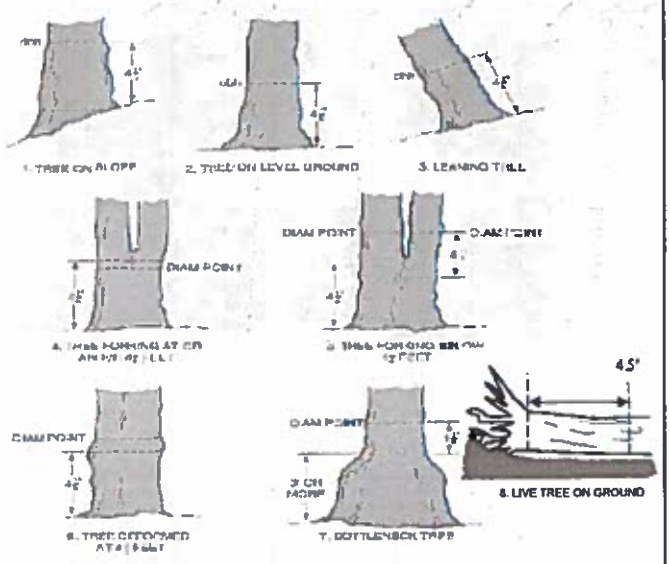
Explain subsample (additional room on back):

mod #	species	c	voucher#	# stems 0-1.4m browsed	% sub or super sample	# shrub clumps	size class (cm) woody stems >1.4m 1 0-<1	2 1-<2.5	3 2.5-<5	4 5-<10	5 10-<15	6 15-<20	7 20-<25	8 25-<30	9 30-<35	10 35-<40	11 >40 (record each tree)
3	Standing dead					••			••			X					
3	BERBERIS THUNBERGII					••											
3	Rosa multiflora			5		••											
3	Rubus pensylvanicus			8		••											
3	~~Toxicodendron radicans~~			X			X										
3	~~Ligustrum~~			X													
3	~~Ribes~~ Pyrus sp.			•													
3	Acer saccharum								•			X					
3	Liriodendron tulipifera			••													
4	Standing dead							•	••		•	•					~~41.0~~
4	Acer saccharum							••				•					
4	Rosa multiflora			••		•											
4	Acer rubrum												•	•		•	58.9
4	Rhamnus frangula			•													
4	Fraxinus pennsylvanica			••													
4	Parthenocissus quinquefolia						•										
4	Liriodendron tulipifera			••													
4	Lindera benzoin			•													
4	Rosa #1			•		•											
5	Standing dead					•			•	••	••	•	••				
5	Rosa multiflora			8		1											
5	Acer rubrum														•		43.0
5	Viburnum #1 dentatum var			•													
5	Liriodendron tulipifera																57.3

MD + 35-40 previously called saccharum

Thicker

DBH Measurement Rules



Woody Stem Deer Browse

Record the number of stems/plants between 0.5-1.0 meters tall that exhibit evidence of this years deer browse.

Record using the tally system from 1 to 10

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ASH CANOPY CONDITION

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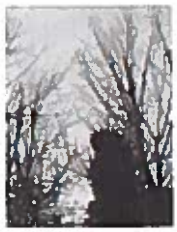

A B C D E

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CLEVELAND METROPARKS Plant Community Assessment Program Natural Woody Stem Data Sheet

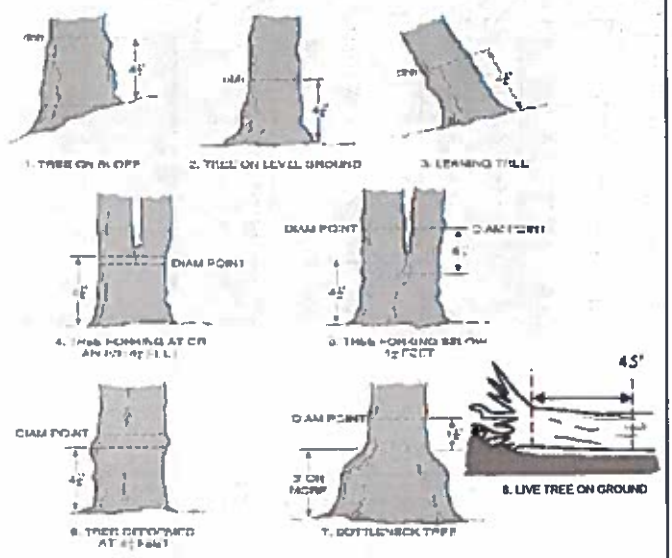
Cleveland Metroparks

Project Label: PCAP Project Name: 02NC2015 Plot No.: 1076 Page: 3 of 5

Explain subsample (additional room on back):

mod #	species	c	voucher#	# stems 0-1.4m browsed	% sub or super sample	# shrub clumps	size class (cm) woody stems >1.4m 1 0-<1	2 1-<2.5	3 2.5-<5	4 5-<10	5 10 - <15	6 15 - <20	7 20 - <25	8 25 - <30	9 30 - <35	10 35 - <40	11 >40 (record each tree)
V5	Acer saccharum								1								
V5	Rubus pensylvanicus			2		2											
V5	Fraxinus pennsylvanica			1													
V6	Standing dead								1								
V6	Rosa multiflora			1		1											
V6	Lindera benzoin			1		1											
V6	Fraxinus pennsylvanicus							1									
V6	Rubus pensylvanicus			1													
V6	Liriodendron tulipifera							1	1								
V6	Rhamnus frangula			1												1	
V7	Rosa multiflora			2		1											
V7	Pyrus sp.			1			1										
V7	Acer rubrum																46.0
V8	Standing dead							2	1	1	1						
V7	Fraxinus pennsylvanica			1													
V7	Acer saccharum							1									
V7	Ligustrum vulgare					1											
V7	Lindera benzoin			1		1											
V7	Rubus pensylvanicus			1		1											
V7	Ulmus americana										1						
V8	Ligustrum vulgare					2											
V8	Lindera benzoin			2		2											
V8	Acer rubrum												1				
V8	Rosa #1			1													

DBH Measurement Rules



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A B C D E

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E: Central stem still standing.

CLEVELAND METROPARKS Plant Community Assessment Program Natural Woody Stem Data Sheet

Project Label: PCAP Project Name: 02WC2015 Plot No.: 1076 Page: 4 of 5

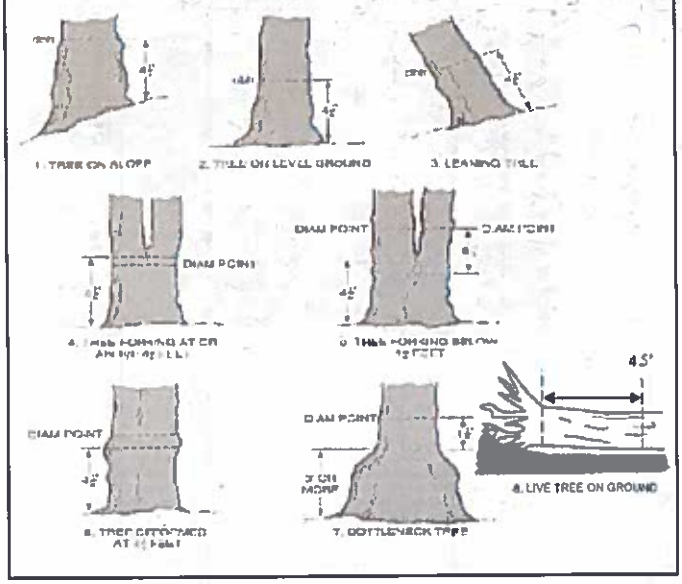
Cleveland Metroparks

Explain subsample (additional room on back):

mod #	species	c	voucher#	# stems 0-1.4m browsed	% sub or super sample	# shrub clumps	size class (cm) woody stems >1.4m 1 0-<1	2 1-<2.5	3 2.5-<5	4 5-<10	5 10 - <15	6 15 - <20	7 20 - <25	8 25 - <30	9 30 - <35	10 35 - <40	11 >40 (record each tree)
8	Toxicodendron radicans			•			•										
8	Standing dead											•		•			
8	Ulmus americana										••						
8	Fagus grandifolia									•							
8	Fraxinus pennsylvanica			••										o			
8	Rosa multiflora			::													
8	Rubus pensylvanicus			⁝		•											
8	Parthenocissus quinquefolia			•													
9	Lindera benzoin			⊓		⊠											
9	Rosa multiflora			⊠ ⊠		⊓											
9	Standing dead													•		•X	
9	Toxicodendron radicans			•			::										
9	Rubus pensylvanicus			⊓		•											
9	Ulmus sp.			•			•X	•									
9	Acer rubrum									•	••						
9	Ulmus americana									•		•					
9	Quercus sp.			•													
9	Ligustrum vulgare					••											
9	Lonicera japonica			•													
9	Fraxinus sp. standing			•										o			
10	Lindera benzoin			::		⊓											
10	Acer rubrum									•			•				
10	Standing dead						•		•	••							41.1
10	Acer saccharum								••								

:5-30 not in VIL data

DBH Measurement Rules



Woody Stem Deer Browse

Record the number of stems/plants between 0.5-1.0 meters tall that exhibit evidence of this years deer browse.

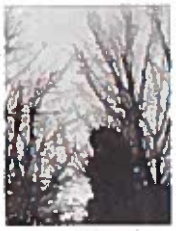
Record using the tally system from 1 to 10

1

2

3

4



5

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A

B

C

D

E

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CLEVELAND METROPARKS Plant Community Assessment Program Natural Woody Stem Data Sheet

Project Label: PCAP Project Name: 02NC2015 Plot No.: 1076 Page: 5 of 5

Cleveland Metroparks

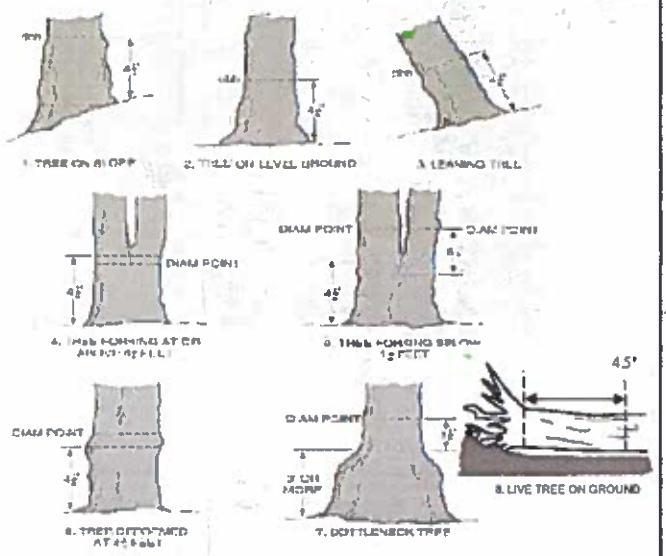
Explain subsample (additional room on back):

rmod #	species	c	voucher#	# stems 0-1.4m browsed	% sub or super sample	# shrub clumps	size class (cm) woody stems >1.4m 1 0-<1	2 1-<2.5	3 2.5-<5	4 5-<10	5 10 - <15	6 15 - <20	7 20 - <25	8 25 - <30	9 30 - <35	10 35 - <40	11 >40 (record each tree)
10	Ulmus americana								4								
10	Rosa multiflora			☒		F.											
10	Liriodendron tulipifera			F.			••										
10	Fraxinus sp. seedling			••													
10	Fraxinus pennsylvanica			••			•										
10	Ulmus americana								•	•							60.9
10	Rubus pensylvanicus			5:		••											
10	Lonicera japonica			•													
10	Populus alba			•													
10	Parthenocissus quinquefolia			-													

3aCM PCAP Natural Woody Stem Data Sheet ver 2.0.xls last revised 5/29/2012 jjm

Natural Resources Management FORM NR/2010-03a

DBH Measurement Rules



Woody Stem Deer Browse

Record the number of stems/plants between 0.5-1.0 meters tall that exhibit evidence of this years deer browse.

Record using the tally system from 1 to 10

1 2 3 4 5

ASH CANOPY CONDITION

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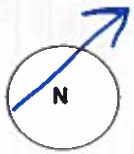
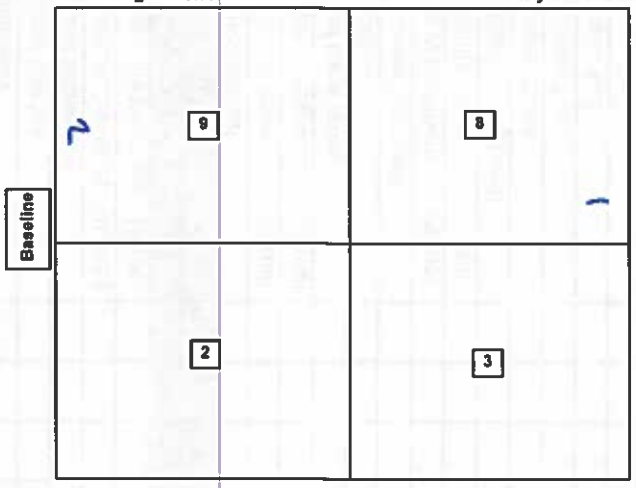
CLEVELAND METROPARKS Emerald Ash Borer - Fraxinus Sheet — *INTENSIVE MODULES ONLY* — *TREES ≥ 10CM ONLY*

Project Label: PCAP Project Name: 02NC2015 Plot No.: 1076 Date: 7/31/15 Page: 1 of 2

Module	Tree ID.	Species	Dead	C	Voucher #	DBH (cm)	Ht @ DBH	ASH Only: Ash condition	*Dead condition	# Exit holes	Epicormic present	Woodpecker holes
8	1	Fraxinus pennsylvanica				28.4		5	E	5	0	0
9	2	Fraxinus sp.				29.7		5	E	2	0	0
	3											
	4											
	5											
	6											
	7											
	8											
	9											
	10											
	11											
	12											
	13											
	14											
	15											
	16											
	17											
	18											
	19											
	20											
	21											
	22											
	23											
	24											
	25											



*** Change intensive module numbers when necessary



Map all ash trees ≥10cm in each module using Tree ID number

* If Ash Condition scores 5 (dead) provide breakup score (A-E)
Count EAB exit holes 1.25m≥ x ≥1.5m
Woodpecker and epicormic marked present (1) or absent (0)

CLEVELAND METROPARKS Plant Community Assessment Program: Invasive Species Survey

Cleveland Metroparks

Tier 1: Early detection/ Rapid response		Presence				GPS
		NE	SE	SW	NW	
Microstegium vimineum	Japanese stiltgrass					
Ranunculus ficaria	Lesser Celandine					
Cynanchum louiseae (vine)	Black Swallow-wort					
Butomus umbellatus (wetland)	Flowering Rush					
Heracleum mantegazzianum	Giant Hogweed					
Tier 2: Assess as Needed		**# of Plants**				**comments**
		NE	SE	SW	NW	
Acer platanoides	Norway Maple					
Ailanthus altissima	Tree of Heaven					
Lonicera japonica (vine)	Japanese Honeysuckle					
Lythrum salicaria (wetland)	Purple Loosestrife					
Aegopodium podagraria (G-cover)	Bishop's Goutweed					
Celastrus orbiculatus (vine)	Asian Bittersweet					
Torilis sp.	Hedgeparsley					
Conium maculatum	Poison Hemlock					
Rhamnus cathartica	Common Buckthorn (shrub)					
Berberis thunbergii	Japanese Barberry (shrub)					
Alnus glutinosa	European Alder					
Dipsacus laciniatus	Cut-leaf Teasel					
Elaeagnus umbellata	Autumn Olive (shrub)					
Lonicera maackii	Amur Honeysuckle (shrub)					
Euonymus fortunei	Wintercreeper					
Tier 3: Presence is of interest		**# of Plants**				**comments**
		NE	SE	SW	NW	
Convallaria majalis (G-cover)	Lily of the Valley					
Coronilla varia (G-cover)	Crown Vetch					
Eleutherococcus pentaphyllus	Five-leaf Aralia (shrub)					
Pachysandra terminalis (G-cover)	Japanese Pachysandra					
Philadelphus coronarius	Mock Orange (shrub)					
Pulmonaria officinalis (G-cover)	Lungwort					
Rubus phoenicolasius	Wineberry					
Iris pseudacorus (wetland)	Yellow Flag Iris					
Ornithogalum umbellatum	Star of Bethlehem					
Viburnum opulus var. opulus	European Cranberry (shrub)					
Viburnum plicatum	Doublefile Viburnum (shrub)					
Tier 4: Widespread and abundant		**Presence**				**comments**
		NE	SE	SW	NW	
Alliaria petiolata	Garlic Mustard					
Ligustrum vulgare	Common Privet (shrub)					
L. morrowii, L. tatarica	Bush Honeysuckles (shrub)					
Phalaris arundinacea	Reed Canarygrass					
Phragmites australis (wetland)	Phragmites					
Polygonum cuspidatum	Japanese Knotweed					
Frangula alnus	Glossy Buckthorn (shrub)					
Rosa multiflora	Multiflora Rose (shrub)					
Typha angustifolia, T. x.glauca	Cattails (wetland)					
Cirsium arvense	Canada thistle					
Dipsacus fullonum	Common Teasel					
Hesperis matronalis	Dame's Rocket					
Vinca minor (G-cover)	Periwinkle					

Presence
X: yes

of Plants
1: 1-10
2: 11-50.
3: 51-100
4: 101-1,000
5: >1,000

of Plants
1: 1-10
2: 11-50.
3: 51-100
4: 101-1,000
5: >1,000

of Plants
1: 1-10
2: 11-50.
3: 51-100
4: 101-1,000
5: >1,000

Note: For Ground-cover plants record "stem #" but in comment field describe # of colonies and patch size (S,M, L)

CLEVELAND METROPARKS Plant Community Assessment Program Forest Pest and Pathogens Data Sheet

Cleveland Metroparks

Project Label: PCAP Project Name: 02NC2015 Plot No.: 1076 Page: 1 of 1

mod #	species	voucher#	# shrub clumps	size class (cm) woody stems >1m 1 0-<1	2 1-<2.5	3 2.5-<5	4 5-<10	5 10 - <15	6 15 - <20	7 20 - <25	8 25 - <30	9 30 - <35	10 35 - <40	11 >40 (record each tree)
1	None present													
2														
3														
4														
5														
6														
7														
8														
9														
10														

* IF EVIDENCE OF PEST OR PATHOGEN RECORD TOTAL SPECIES POPULATION IN THE PLOT EVEN THE NOT INFECTED

Strata	# of stem infected	Severity (H,M, or L)
Tree (size class 3 or above)		
Shrub (size class 2 or below including shrub clumps)		

* Write **None Present** if no evidence:

NONE PRESENT

~~None~~ Beech (Fungus)

None present Asian Longhorned Beetle

~~None~~ Hemlock (HWA)

None present Other Pest or Pathogen

~~None~~ Walnut (Thousand Canker)

Severity
High = more than 50% of leaf/needle cover exhibiting symptoms
Medium = Less than 50% of leaf/needle cover exhibiting symptoms
Low = Only a few leaves or branches are exhibiting symptoms

CLEVELAND METROPARKS Plant Community Assessment Program - Plant Cover and Earth Surface

Project Label: PCAP Project Name: OZW C2015 Plot No.: 1076

Cleveland Metroparks

STANDING BIOMASS (required for emergent wetlands): collected in 0.1m clip plots (32x32 cm) from corners 1 and 3 in each intensive module. Required for VIBI-E score calculation. C?=check when collected

Module #	C?	Corner	Corner

CLASSIFICATION

QFT = excellent, g Fit and Confidence

Hydrogeomorphic class (WETLANDS ONLY):

☐ DEPRESSION	Fit=___	Conf=___
☐ IMPOUNDMENT ☐ Beaver ☐ Human	Fit=___	Conf=___
☐ RIVERINE ☐ Headwater ☐ Mainstem ☐ Channel	Fit=___	Conf=___
☑ SLOPE (ground water hydrology or on a physical slope	Fit=___	Conf=___
☐ FRINGING ☐ Reservoir ☐ Natural Lake	Fit=___	Conf=___
☐ COASTAL (specify subclass)	Fit=___	Conf=___
☐ BOG (strongly, moderately, weakly ombrotrophic)	Fit=___	Conf=___

Ohio EPA VIBI Plant Community Class (WETLANDS ONLY):

☑ FOREST ☐ swamp forest ☐ bog forest ☐ forest seep	Fit=___	Conf=___
☐ EMERGENT ☐ marsh ☐ wet meadow ☐ open bog	Fit=___	Conf=___
☐ SHRUB ☐ shrub swamp ☐ tall sh. bog ☐ tall sh. fen	Fit=___	Conf=___

McNAB INDICES (degrees) + for up - for down

(FILLED OUT USING GIS PROGRAM - DO NOT FILL OUT IN FIELD)

		LFI*	TSI**
At aspect	N		
+45 degrees	NE		
+90 degrees	E		
+135 degrees	SE		
+180 degrees	S		
+225 degrees	SW		
+270 degrees	W		
+315 degrees	NW		

LFI is angle of plot to the horizon. TSI is angles formed by local slopes. For TSI measure angle from recorders eye to eye of person standing ~10 m away.

* Landform Index (position within landscape)

** Terrain Shape Index (site microtopographic shape)

MICROTOPOGRAPHIC FEATURE COUNTS - Intensive modules only

Ranks for microhabitat features. Select one or select two and average the score.NOTE: If mod falls on a slope automatically gets ranked based on steepness (1-3) to begin + any features present

Slope 1 = slight elevational grade across module (hill) Slope 2 = falls on slope ~20° Slope 3 = maximum steepness that can be safely sampled ~45°

0 feature is absent or functionally absent from the wetland

3 feature is present in the wetland in very small amounts or if more common, of low quality

7 feature is present in moderate amounts, but not of highest quality, or in small amounts of highest quality

10 feature is present in moderate or greater amounts and of highest quality

c.w.d. - count for pieces with minimum 1m length

mod#	corner	no. of tussocks depth 3 1x1m (count)	no. of hummocks uplands (Tip-Ups) depth 2 3.16x3.16m (count)	no. macro. depressions depth 1 10x10m (count)	c.w.d (2-12 cm) depth 1 10x10m (count)	c.w.d (12-40cm) depth 1 10x10m (count)	c.w.d >40 cm depth 1 10x10m (count)	microhab. interspers. depth 1 10x10m (rank)	microhab. SLOPE 10x10m (rank)
2		0	0	1	8	3	0	3	1
3		0	0	0	5	4	0	3	1
8		0	0	0	7	7	0	3	1
9		0	0	0	9	3	0	3	1

NOTE: tussock and hummocks are counted in BOTH nested quadrat corners but counts are aggregated.

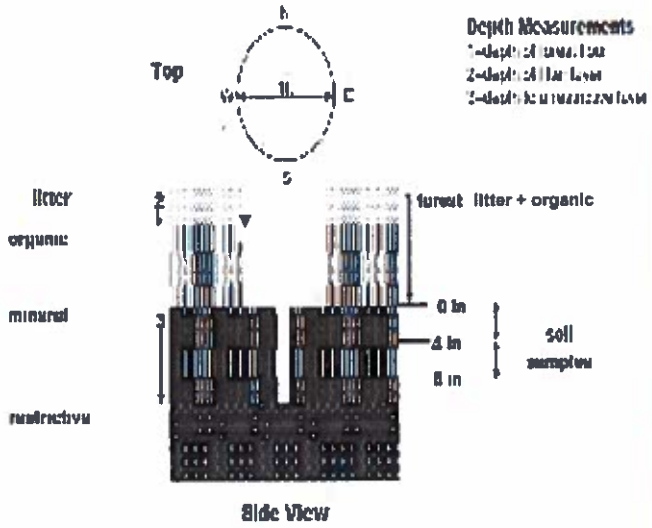
CROWN COVER (DENSIOMETER). Make 4 readings per module facing N, S, E, W. Place dot count in corresponding space. (4 dots per grid square)

Module	N	S	E	W
2	20			
3	11	15	2	10
8	8	13	11	4
9	8	12	11	13

COVER BY STRATA

STRATUM	GENERAL FORM
Tree (generally >5 m)	Tree (overstory), very tall shrubs*, liana, epiphyte)
Shrub (generally 0.5 to 5 m)	Tree (sapling), shrub, liana, epiphyte)
Herb (Field)	Herb, dwarf-shrub**, tree (seedling***)
Floating	Floating
Aquatic (submerged)	Submerged

*Very tall shrubs are sometimes included in the tree stratum
**Can also include seedlings of shrubs, i.e. all shrubs <0.5m
***Tree seedlings are often defined as up to 1.4 m height or as <2.5 cm DBH in which case they would span the herb and shrub layers.



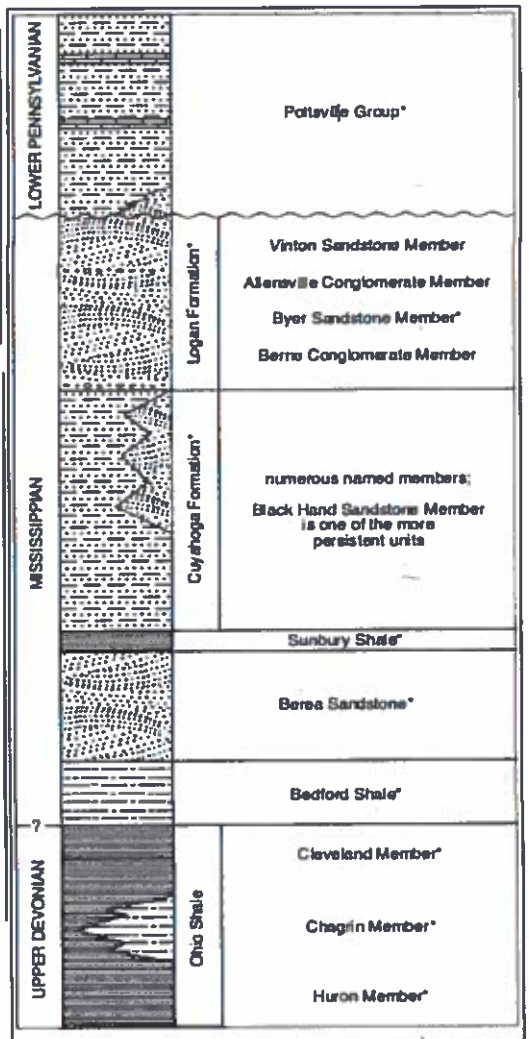


FIGURE 3-20.—Generalized section of Upper Devonian, Mississippian, and Lower Pennsylvanian formations in northeastern Ohio. Asterisks indicate units that are fossiliferous. This composite section represents about 400 meters of rock exposed across the area. The section is not to scale, but the thicknesses indicated are proportional. The term "Waverly" is used in the older literature to refer to Mississippian rocks in Ohio. Some geologists use the European term "Carboniferous," which encompasses the Mississippian and Pennsylvanian Periods of the U.S. Many units have been named within the Cuyahoga Formation, but most units are local and cannot be traced over great distances. The Black Hand Member is a spectacular massive sandstone that is fairly widespread but discontinuous. See Hyde (1953), Hoover (1960), and Collins (1979) for more information on Mississippian rocks in Ohio. See figure 3-18 for explanation of rock types.

CLEVELAND METROPARKS Plant Community Assessment Program - Soils, Crown Cover, Standing Biomass Data Sheet 6a

Project label: PCAP Project Name: 62NC2015 Plot No.: 1076

Cleveland Metroparks

SOIL PIT DESCRIPTION: Excavate 20 cm plug wih shovel. Describe using Munsell chart, visual exam, texture, and odor

SOIL SAMPLES Standard procedure: collect a soil sample of the top 10 cm of soil from center of each intensive module and composite the sample

Soil pit module # ____ (one per entire plot)

5 cm	matrix color				
	mottle color				
	%mottle				
	oxid roots	Y		N	
	texture*				
	redox features**	Y		N	
	hydr. cond.***	I	S	M	D
20 cm	matrix color				
	mottle color				
	%mottle				
	oxid roots	Y		N	
	texture*				
	redox features**	Y		N	
	hydro. cond.***	I	S	M	D

* refer to texture classes on reverse side

** e.g. hydrogen sulfide odor, gleying, etc.

*** Circle one:
I=indundated S=saturated M=most D=dry

Notes: include evidence of earthworms (worms, castings, middens)

2 - castings present
3 - castings present
8 - castings present
9 - castings present

Soil Collection Module	Horizon (A, B, C)
2,3,8,9 composited	A
Web Soil Survey Information:	
Soil Series/Type:	
Soil Series Source: Ohio Soil Survey	
Landform type:	
Depth to rest. Layer:	
Parent Material:	

DRAINAGE*

- ☐ Excessively dr.
- ☐ Somewhat excessively
- ☐ Well drained
- ☐ Moderately well dr.
- ☐ Somewhat poorly dr.
- ☐ Very poorly dr.
- ☐ Impermeable surface

SOIL DEPTH MEASUREMENT: Measure to the nearest 0.1 cm in center of intensive modules. If >30.5 cm, record as >30

mod#	1 litter+ organic depth (cm)	2 litter depth (cm)	water depth (cm)	depth sat soil (cm)
2	0.2	0.2	0	0
3	0.9	0.9	0	0
8	0.7	0.7	0	0
9	0.9	0.9	0	0

EARTH SURFACE & GROUND COVER

Underlying Earth Surface* (Sum = 100%)	percent	Ground Cover (Each ≤ 100%)	percent
Histosol	—	Coarse Woody Debris***	7%
Mineral Soil	100%	Fine Woody Debris****	3%
Gravel-Cobble*	—	Litter	2%
Boulder**	—	Duff (Ferm.+ Humus)	0%
Bedrock	—	Bryophyte- Lichen	4%
		Water	0%
		Bare Soil	1%
		Road/Trail	4%
		Other	

* Gravel-Cobble = 1/16-10"
** Boulder = > 10 in
*** >5 cm in diameter
**** <5 cm in diameter

TRAIL INFORMATION:

record type and cover for each

Type	%Cover
☐ All Purpose	
☐ Bridle	
☐ Hiking sanctioned	
☐ Bootleg unsanctioned	
☐ Gravel	
☑ Deer	4%

COVER BY STRATA %
estimate using midpoints of 5,ex:3, 8, 13

Strata	Height Range (m)	Total Cover (%)
Tree	5 -	68%
Shrub	0.5 - 5	63%
Herb	0 - 0.5	88%
(Floating)*	-	
(Aquatic)*	-	

* rooted and floating or slightly emersed

** submersed, most plant mass below surface

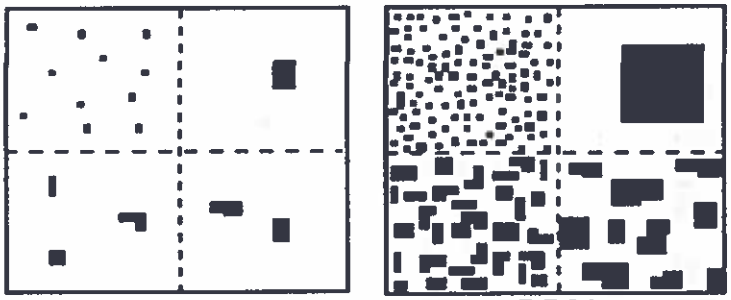
SEE BACK OF PAGE FOR "TYPICAL"STRATA DESCRIPTIONS. STRATA CAN VARY BY COVER TYPE.

STAND SIZE

- ☐ >600 x plot size
- ☐ > 100 x plot size
- ☑ 10-100 x plot size
- ☐ 3-10 x plot size
- ☐ 1-3 x plot size
- ☐ < plot size

PERCENT MOTTLES (USE CLASS CODES):

Class	Code		Criteria: % of Surface Area Covered
	Conv.	NASIS	
Few	f	#	< 2
Common	c	#	2 to < 20
Many	m	#	≥ 20

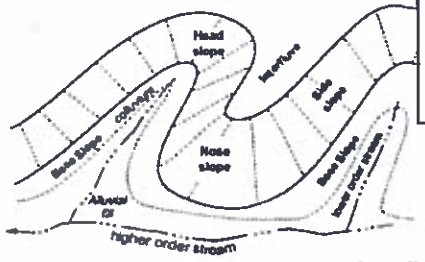


SOIL TEXTURE: Record the code for the soil texture of the 5 cm and 20 cm layers. To estimate texture, collect a soil sample from the appropriate layer and moisten it with water to the consistency of modeling clay/wet newspaper; the sample should be wet enough that all of the particles are saturated but excess water does not freely flow from the sample when squeezed. Attempt to roll the sample into a ball. If the soil will not stay in a ball and has a grainy texture, the texture is either sandy or coarse sandy. If the soil does form a ball, squeeze the sample between your fingers and attempt to form a self-supporting ribbon. Samples which form both a ball and a ribbon should be coded as clayey; samples which form a ball but not a ribbon should be coded as loamy.

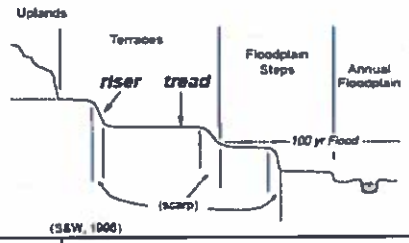
0= Organic
1= Loamy
2= Clayey
3= Sandy
4= Coarse Sand
9= Not measured - make plot note

Geomorphic Component - Three-dimensional descriptors of parts of landforms or microfeatures that are best applied to areas. Unique descriptors are available for Hills, Terraces, Mountains, and Flat Plains; e.g., (for Hills) *nose slope* or *NS*.

Hills	Code	
	PDP	NASIS
interfluve	IF	IF
head slope	HS	HS
nose slope	NS	NS
side slope	SS	SS
base slope	—	BS

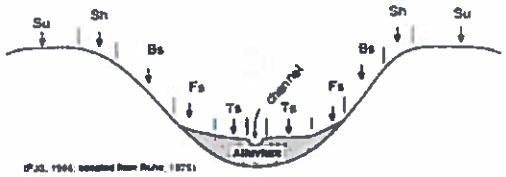


Terraces	Code
riser	RI
tread	TR



Hillslope - Profile Position (Hillslope Position in PDP) - Two-dimensional descriptors of parts of line segments (i.e., slope position) along a transect that runs up and down the slope; e.g., *backslope* or *BS*. This is best applied to transects or points, not areas.

Position	Code
summit	SU
shoulder	SH
backslope	BS
footslope	FS
toeslope	TS



HYDROLOGIC REGIME Modified from Grossman et al 1998. (Frequency and duration of flooding.)

UPLAND: Not a wetland. Very rarely flooded.

INTERMITTENTLY/SEASONALLY SATURATED: Dry at least once per year. Surface water is seldom present, but substrate is saturated to surface for extended periods during the growing season.

PERMANENTLY/SEMIPERMANENTLY SATURATED: Dry less than once per year. Surface water is seldom present, but substrate is saturated to surface for extended periods during the growing season. Equivalent to Cowardin's Saturated modifier.

OCCASIONALLY FLOODED: Surface water can be present for brief periods during growing season, but not in most years. Often characterizes flood-plain upper terraces.

TEMPORARILY FLOODED: *Surface water present for brief periods during growing season*, but water table usually lies well below soil surface. Often characterizes flood-plain levees and lower terraces. Equivalent to Cowardin's Temporary modifier.

INTERMITTENTLY FLOODED : Substrate is usually exposed, but surface water can be present for variable periods without detectable seasonal periodicity. Inundation is not predictable to a given season and is dependent upon highly localized rain storms. This modifier was developed for use in the arid West for water regimes of Playa lakes, intermittent streams, and dry washes but can be used in other parts of the U.S. where appropriate. This modifier can be applied to both wetland and non-wetland situations. Equivalent to Cowardin's Intermittently Flooded modifier.

SEMIPERMANENTLY FLOODED (exposed <1/year): Surface water persists throughout the growing season in most years. Land surface is normally saturated when water level drops below soil surface. Includes Cowardin's Intermittently Exposed and Semipermanently Flooded modifiers.

PERMANENTLY FLOODED: Water covers the land surface at all times of the year in all years. Equivalent to Cowardin's "permanently flooded".

UNKNOWN: The hydrologic regime cannot be determined from the available information.