

CLEVELAND METROPARKS Plant Community Assessment Program: Quality Control Form



Project Label:

PCAP

Plot No:

3380

Date Sampled:

8-19-15

Lead:

Eysenbach

Comment required if item answer is NO

Parking/Access outside of Park Boundaries:	Y <input checked="" type="radio"/> N <input checked="" type="radio"/>	If yes, write details in Comments section below
Field journals completed	<input checked="" type="radio"/> Y <input type="radio"/> N	
Site sketch made on 1:3000 map?	<input checked="" type="radio"/> Y <input type="radio"/> N	
Check cover page	<input checked="" type="radio"/> Y <input type="radio"/> N	
X-axis Bearing of plot recorded	<input checked="" type="radio"/> Y <input type="radio"/> N	
GPS coords. Recorded	<input checked="" type="radio"/> Y <input type="radio"/> N	
North direction recorded	<input checked="" type="radio"/> Y <input type="radio"/> N	
Photographs taken?	<input checked="" type="radio"/> Y <input type="radio"/> N	
Relocated Pins Mapped	Y <input type="radio"/> N <input type="radio"/>	None found
Plot No., Date agreement on all pages?	<input checked="" type="radio"/> Y <input type="radio"/> N	
Header data completed all pages?	<input checked="" type="radio"/> Y <input type="radio"/> N	
Cover classes recorded in all Intensive modules	<input checked="" type="radio"/> Y <input type="radio"/> N	
Browse Level By Species	<input checked="" type="radio"/> Y <input type="radio"/> N	
Woody stem quality control check	<input checked="" type="radio"/> Y <input type="radio"/> N	Check every line and cross check with the Tree Cover Sheet
Invasive plant quality control check	Y <input type="radio"/> N <input type="radio"/>	N/A
Ash trees mapped	Y <input type="radio"/> N <input type="radio"/>	N/A
Completed Forest Pest/Pathogen Datasheet	<input checked="" type="radio"/> Y <input type="radio"/> N	
Cover by Strata? (confirm cover type)	<input checked="" type="radio"/> Y <input type="radio"/> N	
Soil samples collected with matching plot #.	Y <input type="radio"/> N <input type="radio"/>	N/A
Cross check 2010 information	<input checked="" type="radio"/> Y <input type="radio"/> N	Highlight any changes from 2010 information
Vouchers labeled on datasheet with initials and number	Y <input type="radio"/> N <input type="radio"/>	NONE
Vouchers labeled on collection bag	Y <input type="radio"/> N <input type="radio"/>	
Pink flags removed	<input checked="" type="radio"/> Y <input type="radio"/> N	
Data sheet QA before leaving site?	<input checked="" type="radio"/> Y <input type="radio"/> N	
Common equipment returned to tub.	Y <input type="radio"/> N <input type="radio"/>	
Data sheets scanned?		Enter date to left
Final data sheets scanned?		Enter date to left
Buffer Widths measured?	Y <input type="radio"/> N <input type="radio"/>	
Web Soil Survey	Y <input type="radio"/> N <input type="radio"/>	
Voucher Location	Refrigerator Y <input type="radio"/> N <input type="radio"/>	
(# vouchers collected)	Press (#)	Enter number to left
None	Drier	Y <input type="radio"/> N <input type="radio"/>
	Identified	Y <input type="radio"/> N <input type="radio"/>
	Mounted	Y <input type="radio"/> N <input type="radio"/>
	Thrown away	Y <input type="radio"/> N <input type="radio"/>

GRTS point verification: Is plot sampleable?

<input checked="" type="checkbox"/> Yes	Original GRTS point is sampleable
<input type="checkbox"/> No	Original GRTS point lands in a non-sampleable area (fill in category below)
	<input type="checkbox"/> Point falls in a water (i.e. river, lake)
	<input type="checkbox"/> Managed mowed area (i.e. golf course, picnic area, right-of-way)
	<input type="checkbox"/> Paved area (i.e. parkinglot, road)
	<input type="checkbox"/> Unsafe to sample (i.e. steep slope)
	<input type="checkbox"/> Other

Additional Comments:

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CLEVELAND METROPARKS Plant Community Assessment Program - Background Data Sheet

GENERAL INFORMATION

Project Label: **PCAP**

Project Name: **07B02015**

Plot Name: **Blacey Sun Day**

Plot No.: **3380**

☐ Level 4 (no nested corners sampled)

☒ Level 5 (nested corners sampled)

Date (mm/dd/yyyy): **8/19/2015**

End date (if > 1 day): **/ /**

Party: **S. Fyfebach** Role: **Plot leader**

LOCATION

State: **OH** County: **Cuyahoga**

Quadrangle: **Shaker Heights**

Local Place Names: **Emerald Circle**

Landowner: **CM**

Data Confidentiality: ☒ Public data ☐ Private Data

Check one: ☒ Fuzz 100m ☐ Fuzz 250m ☐ Fuzz 500m

Reason: **Pond**

If data not public why?

Source of coordinates: ☐ MAP ☒ GPS

Coordinate system: ☐ Lat/Long ☐ UTM ☐ StatePlane ☒ deg ☐ deg min ☐ Other (specify)

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: **41.38253**

Longitude: **81.56783**

Coord. Accuracy: **4m** ☐ ft ☐ m ☐ s

GPS File Name: **3380A**

Plot size for cover data: **0.1** (hectares) **[12]**°

X-axis Bearing of plot: **[12]**°

Depth: (1-5) **4**

Intensive modules: **2, 3, 8, 9** **1, 2, 3, 4** (EDIT IF MODIFIED)

Camera No.: **02**

Photo Nos.: **024619-22**

Plot placement: ☒ GRIS ☐ Representative

☐ Random ☐ Stratified Random ☐ Transect component

☐ Systematic (grid) ☐ Capture specific feature ☐ Other

Diagram

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: 1x4 No pins found

Location: Park at the end of Button Rd

Walk approx 500m to the west past the pond. Plot is located Near 2013 meadow plot! Plot is between Pond and Bluestem planting on mound

Rationale: GRIS vs Resample

Veg Char: No canopy or shrub layer

Herb: Goldenrod, Fox, Red Top, Bromus

W/lets of R. aspernatus intermixed

Indium grass

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

Project Name: 02802015

Plot No.: 3380

Project Label: PCAP

Page 2 of 2

MODIFIED NATURESERVE CLASS*

CODE (on separate form):

Fit=

Conf=

COMMUNITY NAME:

V04c

Old Field - Old

HOMOGENEITY

☒ Homogeneous
☐ Compositional trend across the plot

☐ Conspicuous inclusions
☐ Irregular/pattern mosaic

DISTURBANCES

type*	severity**	yrs ago	% of plot	description
Human				
Natural				
Fire	VH	3	100	Fire - Set unintentionally
Cut				
Animal	M	0	100	Browse / trail
Other				

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

Current Land Use: Park

Former Land Use:

SALINITY*

☐ Saltwater
☐ Brackish
☐ Fresh

☒ Upland (n/a)

(by default unless plot is a wetland)

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

HYDROLOGIC REGIME*

☒ Upland (seldom flooded)
☐ 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

- Pins were impossible to find - Set up as best lined up w/plot photo and species

- Deer browse seemed medium

- Very hot and lots of ticks

- I believe this plot was burned by arson back in 2013/2012

- Old pink flags from 2013 plot exist! No. not confused!

2x2

w/Jessica

15CM PCAP Background Data Sheet Page 2_ver 2.xls last revised 5/29/2012 osh

Natural Resources Management FORM NR/2010-01b

CLEVELAND METROPARKS Plant Community Assessment Program Species Cover Data Sheet

Page 1 of 2

Project Label: PCAP
Total modules: 4

Project name: 0262015
Intensive modules: 4

Plot no.: 3380
Plot configuration: 1x4

Plot area (ha): 0.04



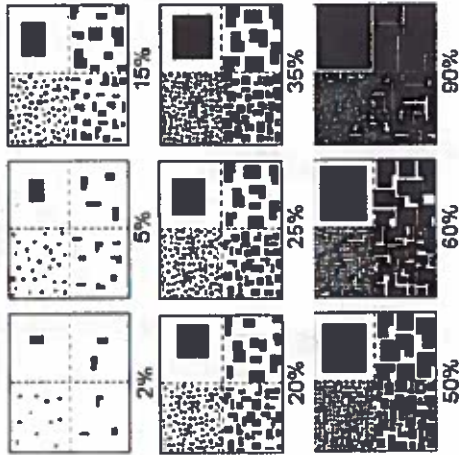
Cleveland Metroparks

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

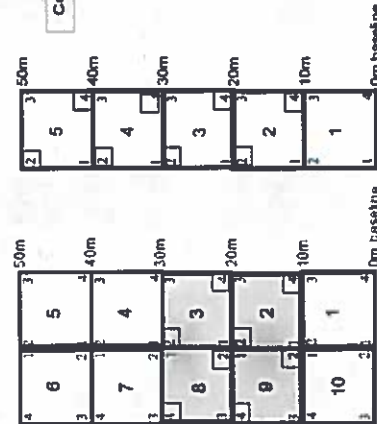
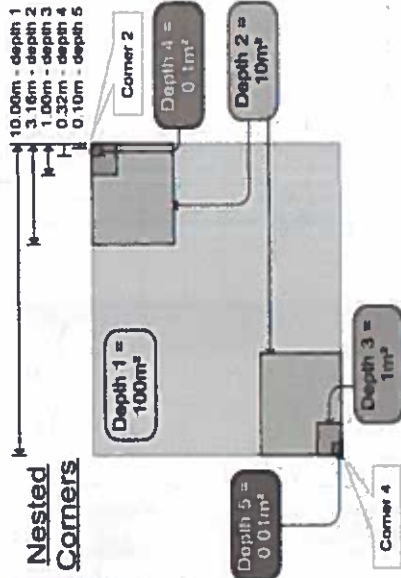
S	H	(F)	(A)	Br	Species	C	Voucher #	Estimate for each intensive module:				%unvegetated open water				%unveg. litter (bare litter)			
								mod	corner	mod	corner	mod	corner	mod	corner	mod	corner	mod	corner
								depth	cov	depth	cov	depth	cov	depth	cov	depth	cov	depth	cov
8					<i>Rosa pratinensis</i>			4	4	4	4								
3					<i>Apocynum cannabinum</i>			4	2										
2					<i>Carex sp.</i>			4	2										
5					<i>Cirsium arvense</i>			2	4										
7					<i>Agrostis gigantea</i>			4	7	3									
3					<i>Juncus effusus</i>			2	3										
3					<i>Festuca arundinacea</i>			2	3										
3					<i>Asclepias syriaca</i>			3	2										
3					<i>Eupatorium serotinum</i>			2	2										
6					<i>Rubus altissimus pensylvanicus</i>			4	8	4									
8					<i>Solidago canadensis</i>				8	4									
4					<i>Liatris graminifolia</i>			1	3										
2					<i>Aster latiflorus</i>			1	2										
5					<i>Rosa multiflora</i>			1	2										
2					<i>Carex annectans</i>			1	2										
2					<i>Vernonia altissima altissima</i>			1	2										
2					<i>Aster nove-angliae</i>			1	2										
2					<i>Carex stricta stricta</i>			1	2										
1					<i>Euphorbia corollata</i>			1	1										
1					<i>Agrostis parviflora</i>			1	1										
2					<i>Dipsacus fulgens</i>			1	2										
2					<i>Verbena hastata</i>			1	2										
2					<i>Carex tribuloides</i>			1	2										
2					<i>Andropogon glaberrimus</i>			3	2										
2					<i>Phlox patula</i>			2	2										

EXAMPLES OF PERCENT OF AREA COVERED

The following graphic can be used for various data elements to convey "Amount" or "Density". NOTE: Within any given box, each quadrant contains the same data area covered, but different visual 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.

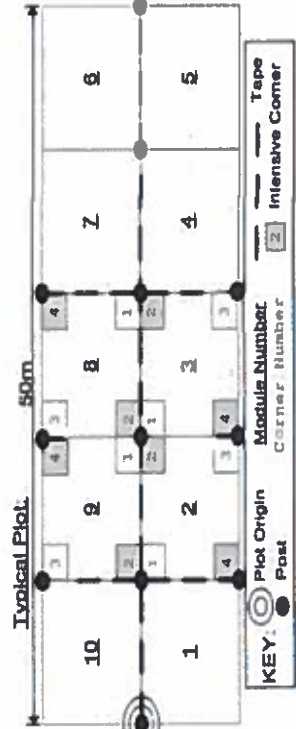
MEDIUM LOW values include evidence of browse at about 10 percent of the stems with no significant impact to plant reproduction evident. In this rating, plants are browsed but preferential species are observed to be reproducing in numbers that appear normal or near-normal in comparison to low browse areas. 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 special 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.

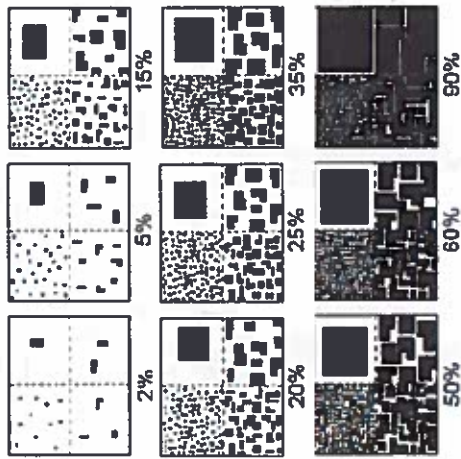
HIGH: greater than 25 percent of the stems of plants in the 1 m2 nested quadrat and intensive module AND a browse line is evident.

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.



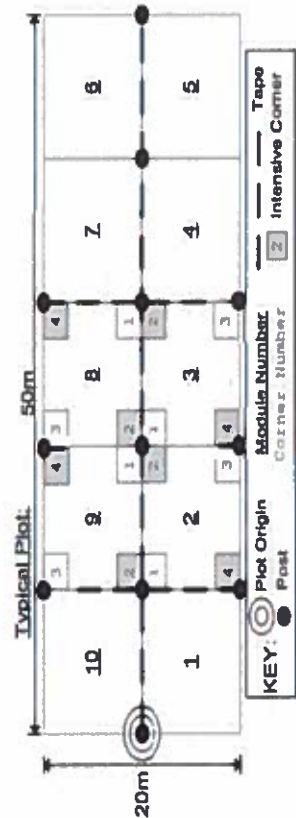
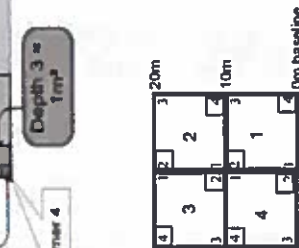
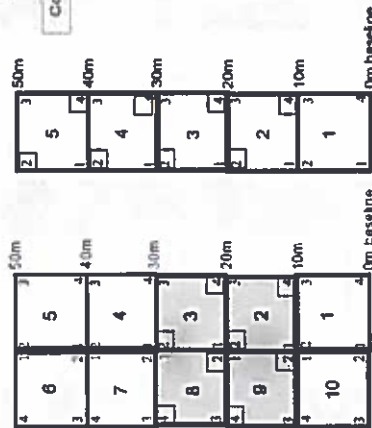
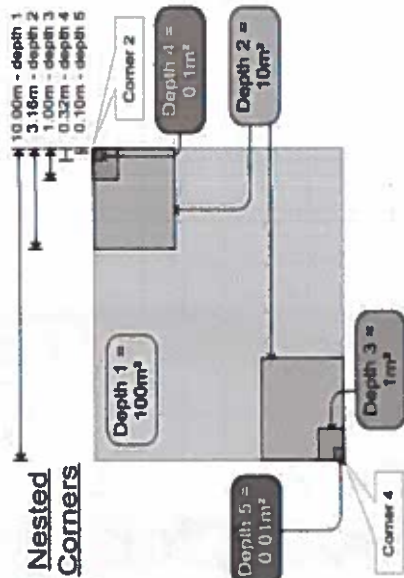
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1	solitary or few	0.0001
2	0-1%	0.005
3	1-2%	0.015
4	2-5%	0.035
5	5-10%	0.075
6	10-25%	0.175
7	25-50%	0.375
8	50-75%	0.625
9	75-95%	0.850
10	95-100%	0.975

Nested Corners



BROWSE RATING NARRATIVE DESCRIPTION

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Page 1 of 1

Page 1 of 1

[illegible]

Page of

Plot no.:

SRE_CM_PCAP_TREE_Species_Cover_Data_sheet.xls last revised 8/10/2015 jjm

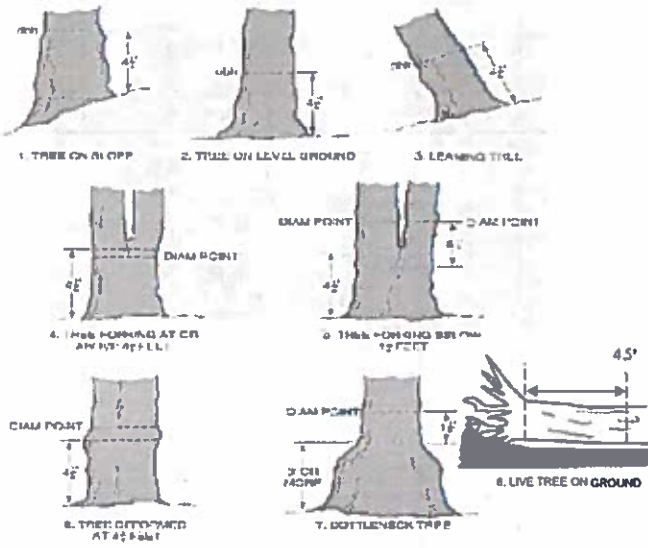
Cleveland Metropolitan

Page: 1 of 1

Cleveland Metropolitan

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



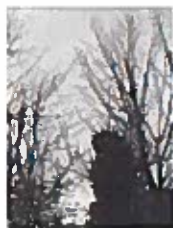
4



5

ASH CANOPY CONDITION

- 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.

Project Label: PCAP

Project Name: _____

Plot No.: 3380

Date: _____

Tree Module ID	Species	Tree C	Voucher #	DBH (cm)	Ht @ DBH	Ash condition	Dead condition	# Exit holes	Epicormic present	Woodpecker holes
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										

ASH ONLY



*** Change intensive module numbers when necessary

Baseline	
9	8
2	3

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 1.25m² x 21.5m
 Woodpecker and epicormic marked present (1) or absent (0)

CLEVELAND METROPARKS Plant Community Assessment Program: Invasive Species Survey



Tier 1: Early detection/ Rapid response		Presence				GPS	Presence X: yes
		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	# of Plants
		NE	SE	SW	NW		
Acer platanoides	Norway Maple						1: 1-10
Ailanthus altissima	Tree of Heaven						2: 11-50.
Lonicera japonica (vine)	Japanese Honeysuckle						3: 51-100
Lythrum salicaria (wetland)	Purple Loosestrife						4: 101-1,000
Aegopodium podagraria (G-cover)	Bishop's Goutweed						5: >1,000
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	# of Plants
		NE	SE	SW	NW		
Convallaria majalis (G-cover)	Lily of the Valley						1: 1-10
Coronilla varia (G-cover)	Crown Vetch						2: 11-50.
Eleutherococcus pentaphyllus	Five-leaf Aralia (shrub)						3: 51-100
Pachysandra terminalis (G-cover)	Japanese Pachysandra						4: 101-1,000
Philadelphus coronarius	Mock Orange (shrub)						5: >1,000
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	# of Plants
		NE	SE	SW	NW		
Alliaria petiolata	Garlic Mustard						1: 1-10
Ligustrum vulgare	Common Privet (shrub)						2: 11-50.
L. morrowii, L. tatarica	Bush Honeysuckles (shrub)						3: 51-100
Phalaris arundinacea	Reed Canarygrass						4: 101-1,000
Phragmites australis (wetland)	Phragmites						5: >1,000
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						

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

Project Label: PCAPProject Name: 01Bx2015Plot No.: 3380Page: 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														
2														
3														
4														
5														
6														
7														
8														
9														
10														

No trees

* 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:

Beech (Fungus)	Asian Longhorned Beetle
Hemlock (HWA)	Other Pest or Pathogen
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

STANDING BIOMASS (required for emergent wetland) collected in 0.1m clip plots (32x32 cm) from corners 1 and 3 in each intensive module. Required for VIB-E score calculation. C7=check when collected

Module #	C7	Corner	Corner

CLASSIFICATION

FTT - excellent, F and Confidence

Hydrogeomorphic class (WETLANDS ONLY)

DEPRESSION

IMPOUNDMENT ☐ Beaver ☐ Human

RIVERINE ☐ Headwater ☐ Mainstem ☐ Channel

SLOPE (ground water boundary or on a physical slope)

FRINGING ☐ Reservoir ☐ Natural Lake

COASTAL (specify subclass)

BOG (strongly, moderately, weakly ombrotrophic)

Other EPA VIB (LTM) Community Class (WETLANDS ONLY)

FOREST ☐ swamp forest ☐ bog forest ☐ forest seep

EMERGENT ☐ marsh ☐ wet meadow ☐ open bog

SHRUB ☐ shrub swamp ☐ tall sh. bog ☐ tall sh. fen

Fit = Conf =

Fit = Conf =

Fit = Conf =

Fit = Conf =

Fit = Conf =

Fit = Conf =

Fit = Conf =

Fit = Conf =

Fit = Conf =

Fit = Conf =

Fit = Conf =

McNAB INDICES (degrees) + for up - for down

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

Aspect	N	NE	E	SE	S	SW	W	NW
LT1*								
TS1**								

LT1 is angle of plot to the horizon. TS1 is angles formed by local slopes. For TS1 measure angle from recorder eye to top of person standing ~10 m away.

* Landform Index (position within landscape)

** Terrain Shape Index (also microtopographic shape)

MICROTOPOGRAPHIC FEATURE COUNTS - Intensive modules only

Rankings 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 (1-2) to begin + any features present

Slope 1 = slight elevational grade across module (0%)

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									
no. of baserocks		no. of hummocks		no. macro depressions		(2-12 cm)		(12-40cm)	
depth 3	depth 2	depth 1	depth 1	depth 1	depth 1	depth 1	depth 1	depth 1	depth 1
1x1m	3 16x3 16m	10x10m	10x10m	10x10m	10x10m	10x10m	10x10m	10x10m	10x10m
mod#	corner	(count)	(count)	(count)	(count)	(count)	(count)	(count)	(count)
1		0	0	0	0	0	0	0	0
2		0	0	0	0	0	0	0	0
3		0	0	0	0	0	0	0	0
4		0	0	0	0	0	0	0	0
5		0	0	0	0	0	0	0	0
6		0	0	0	0	0	0	0	0
7		0	0	0	0	0	0	0	0
8		0	0	0	0	0	0	0	0
9		0	0	0	0	0	0	0	0
10		0	0	0	0	0	0	0	0

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

CROWN COVER (DIMENSIONAL) Male 4
readings per module being N, S, E, W. Place dot count in corresponding space. (1 dots per grid square)

Module	N	S	E	W
1	96	96	96	96
2	96	96	96	96
3	96	96	96	96
4	96	96	96	96

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.

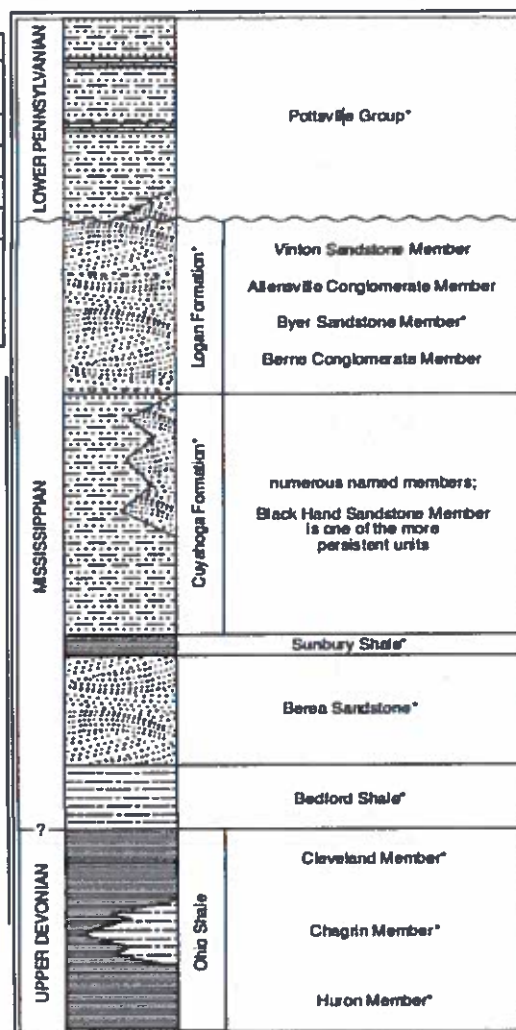
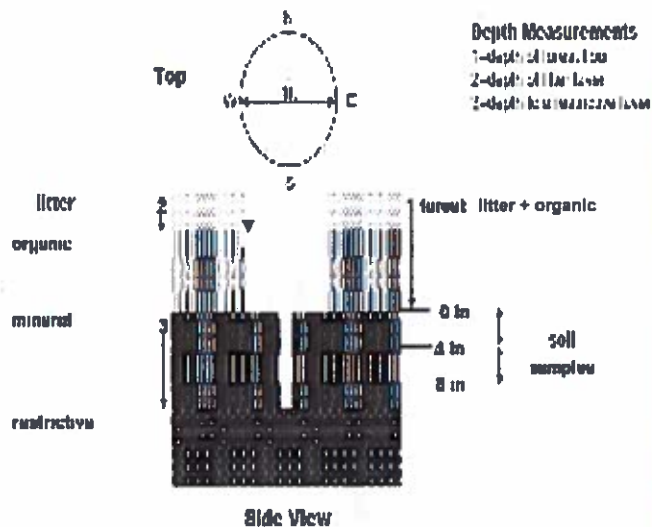


FIGURE 3-20.—Generalized section of Upper Devonian, Mississippian, and Lower Pennsylvanian formations in northeastern Ohio. Asterisks indicate units that are fossiliferous. This composite section represents about 400 meters of rock exposed across the area. The section is not to scale, but the thicknesses 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 (1978) for more information on Mississippian rocks in Ohio. See figure 3-18 for explanation of rock types.

SOIL PIT DESCRIPTION: Excavate 20 cm plug with 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 pH module # ____ (one per entire plot)

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

Soil Collection Module	Horizon (A, B, C)
2.2, 9 cm pit depth	A
Soil Survey Information	
Soil Series Type:	
Soil Series Source:	Ohio Soil Survey
Landform type:	
Depth to root layer:	
Parent Material:	
DETAILED*	
<input type="checkbox"/> Excessively dr. <input type="checkbox"/> Somewhat excessively <input type="checkbox"/> Well drained <input type="checkbox"/> Moderately well dr. <input type="checkbox"/> Somewhat poorly dr. <input type="checkbox"/> Very poorly dr. <input type="checkbox"/> Impermeable surface	

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

module	1 liter+ organic depth (cm)	2 liter depth (cm)	water depth (cm)	depth soil (cm)
1	0.2	0.2		
2	0.2	0.2		
3	0.2	0.2		
4	0.2	0.2		

1, 2, 3, 4
 No evidence
 of earthworms
 castings or middens

EARTH SURFACE & GROUND COVER

Underlying Earth Surface*	Ground Cover	percent
Sum = 100%	Each ≤ 100%	
Histosol	Coarse Woody Debris***	0
Mineral Soil	Fine Woody Debris****	0
Gravel-Cobble*	Litter	1
Boulder**	Duff (Ferm. + Illumus)	0
Bedrock	Bryophyte-Lichen	2
Gravel-Cobble = 1/16-10"	Water	0
Boulder = ≥ 10 in	Bare Soil	1
** > 5 cm in diameter	Rock/Trail	6
*** < 5 cm in diameter	Other	

COVER BY STRATA

estimate using midpoints of 5, ex: 3, 8, 13

Strata	Height Range (m)	Total Cover (%)
Tree	7.5	0
Shrub	2.5	0
Herb	4.2	98
(Floating)*	-	
(Aquatic)*	-	

* rooted and floating or slightly emerged
 ** submersed, most plant mass below surface

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

TRAIL INFORMATION:

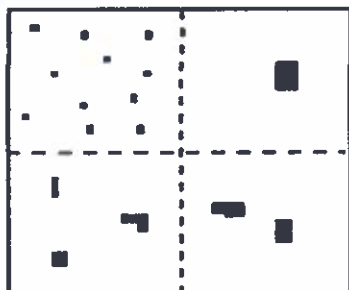
record type and cover for each	% Cover
Type	
All Purpose	
Bridge	
Hiking sanctioned	
Boatleg unsanctioned	
Gravel	6
Other	

STAND SIZE

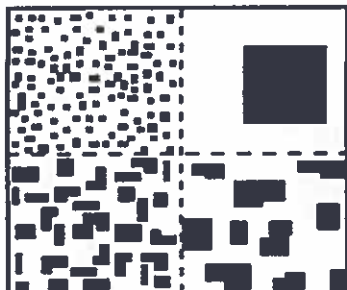
- ☐ > 600 x plot size
- ☒ > 100 x plot size
- ☐ 10-100 x plot size
- ☐ 3-10 x plot size
- ☐ 1-3 x plot size
- ☐ < plot size

PERCENT MOTTLES (USE CLASS CODES):

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



2%



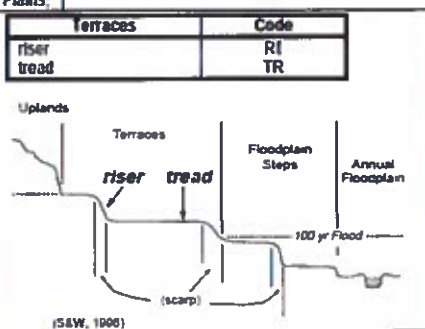
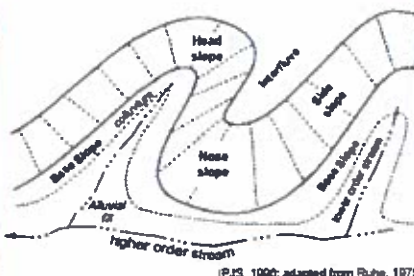
20%

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

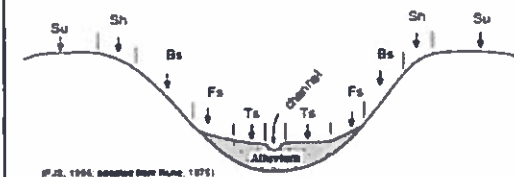
Geomorphic Component - Three-dimensional descriptors of parts of landforms or microfeatures that are best applied to areas. Unique descriptors are available for Hills, Terraces, Mountains, and Flat Plains; e.g., (for Hills) nose slope or NS.

Hills	Code	NASIS
interfluvial	IF	IF
head slope	HS	HS
nose slope	NS	NS
side slope	SS	SS
base slope	BS	BS



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/SEMPERMANENTLY 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.

SEMPERMANENTLY 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.