

**ECOLOGICAL ASSESSMENT OF CORNISH STATE GAME AREA AND KINNEY WATERFOWL
PRODUCTION AREA, VAN BUREN COUNTY, MICHIGAN**



PREPARED BY:

BRADFORD S. SLAUGHTER

MICHIGAN NATURAL FEATURES INVENTORY

PO Box 13036

LANSING, MI 48901-3036

FOR:

MICHIGAN DEPARTMENT OF NATURAL RESOURCES, WILDLIFE DIVISION

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Cover photograph: Grass Lake, Cornish SGA, Van Buren Co., Mich., July 29, 2015. All photographs in report by B.S. Slaughter.

Executive Summary

In 2014, Michigan Natural Features Inventory contracted with Michigan Department of Natural Resources, Wildlife Division, to conduct ecological assessments at two state game areas, including the recently acquired Cornish State Game Area and adjacent, federal Kinney Waterfowl Production Area in southeastern Van Buren County, Michigan. MNFI conducted surveys in June and July 2015. The primary natural feature of interest is Grass Lake, which supports an extensive submergent marsh community supporting several waterfowl species and other birds. Populations of *Phragmites australis* subsp. *australis* (common reed) and *Phalaris arundinacea* (reed canary grass) were identified as threats to this area. Although no state-listed plant or animal species were confirmed on either property, the state special concern American Bittern (*Botaurus lentiginosus*) may be present. Invasive species control and additional marsh bird surveys are recommended.

Introduction

In summer 2014, Michigan Natural Features Inventory (MNFI) contracted with Michigan Department of Natural Resources (MDNR), Wildlife Division (WLD) to conduct ecological assessments and targeted species surveys of selected recent or proposed land acquisitions. These surveys were envisioned to address strategies identified in the MDNR Managed Public Land Strategy, namely prioritizing and informing land acquisitions that may support (1) key state and federal threatened and endangered species (Division Land Acquisition Strategy 2.5), and (2) representative natural communities (Division Land Acquisition Strategy 2.6). The surveys were proposed to address Objective 3.3 identified in the MDNR WLD Guiding Principles and Strategies (GPS) strategic plan, namely, updating strategic guidance for WLD's land acquisition.

In spring 2015, two areas were identified for ecological assessments and targeted species surveys: Cornish State Game Area (and the adjacent federal Kinney Waterfowl Production Area) in southeastern Van Buren County (addressed in this report) and three parcels constituting the Pierce Road Unit of the Sharonville State Game Area in southeastern Jackson County (addressed in a separate report).

Survey Site

Cornish State Game Area (SGA) and Kinney Waterfowl Production Area (WPA) are located in southeastern Van Buren County, encompassing portions of Sections 21, 22, and 28, T04S R13W and totaling 462 acres (Figure 1). The most notable natural feature of the property is Grass Lake, a shallow, spring-fed lake that is largely covered by floating-leaved vegetation during the growing season (Figure 2). Historically, the vicinity of this property supported oak openings and mixed oak forest on upland soils and numerous kettle depression supporting marsh and bog communities (Albert and Comer 2008). An isolated area of beech – sugar maple forest occurred northwest of Grass Lake.

Methods

The August 2015 master plan for the Cornish SGA and Kinney WPA identifies two goals: (1) provide quality spring, summer, and fall habitat for mallards and wood ducks; and (2) provide habitat for ring-

necked pheasants (Mills 2015). Field surveys focused on the vegetation and bird community of Grass Lake and environs, primarily addressing the first goal of the master plan.

Bird Surveys

Visual and aural surveys of the bird community in the vicinity of Grass Lake were conducted during morning hours on May 22, June 2, and July 29, 2015. In addition to visual and aural surveys, recorded calls were played the morning of June 2, 2015 at three locations along the lakeshore following procedures detailed in Conway (2009) (Figure 3). Calls for five bird species were played at each location: American Bittern (*Botaurus lentiginosus*, state special concern), Least Bittern (*Ixobrychus exilis*, state threatened), King Rail (*Rallus elegans*, state endangered), Virginia Rail (*Rallus limicola*), and Sora (*Porzana carolina*). At each location, a five-minute quiet listening period was followed by a one-minute broadcast period for each of the five species (Monfils and Cuthrell 2013).

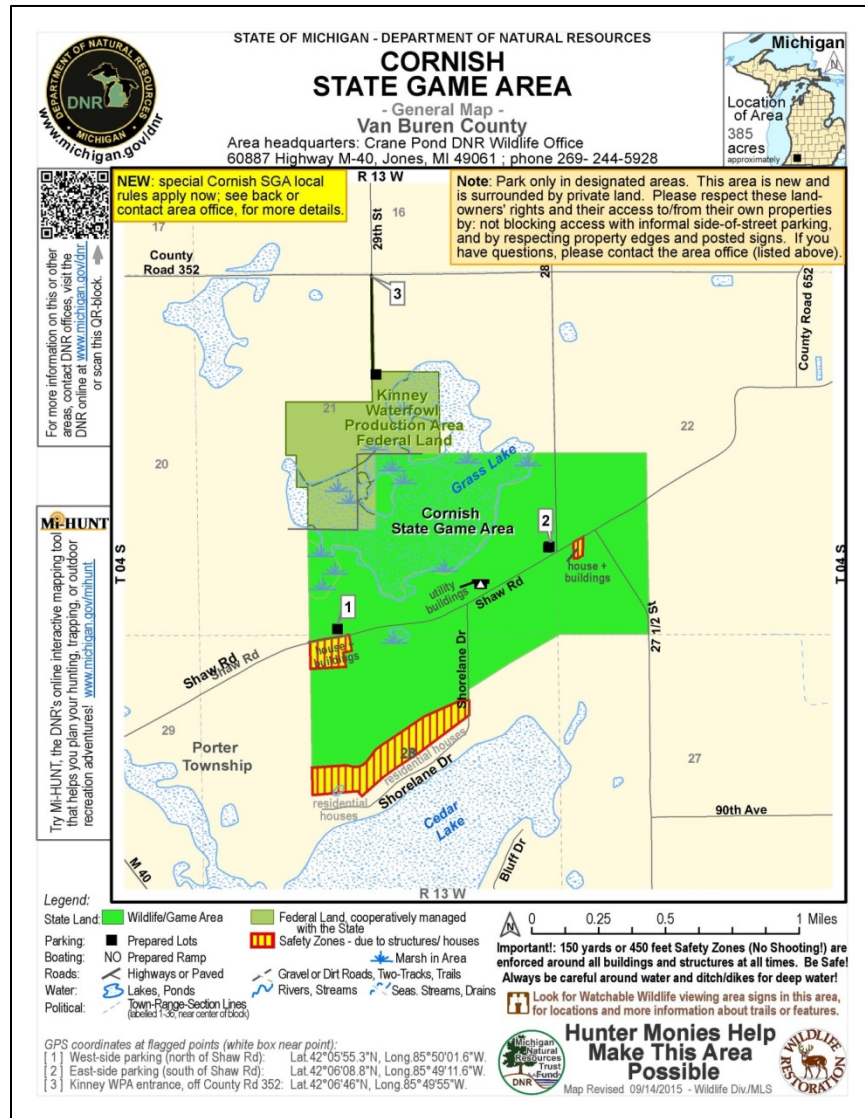


Figure 1. Map of Cornish State Game Area and Kinney Waterfowl Production Area, Van Buren Co., Mich.



Figure 2. Submergent marsh with *Nuphar advena* (yellow-pond lily) characterizes Grass Lake.

Ecological Assessments

Meander surveys of potential natural communities were conducted May 22, June 2, and July 29, 2015. Lists of characteristic or common vascular plants were taken, and threats to the ecological integrity of these areas (e.g., invasive plant species) were noted. Species lists were entered into the Universal FQA Calculator (Freyman and Masters 2013) following the Michigan Floristic Quality Assessment Database (Reznicek et al. 2014). Natural communities were identified following Kost et al. (2007).

Results

Bird Surveys

Among primary and secondary marsh bird target species (Monfils and Cuthrell 2013), only *Grus canadensis* (Sandhill Crane) and *Podilymbus podiceps* (Pied-billed Grebe) were confirmed (Table 1). However, the state special concern *Botaurus lentiginosus* (American Bittern) was potentially detected responding a single time to a broadcast call played at Point 08:07 (Figure 3).

Table 1. List of bird species detected in the vicinity of Grass Lake. *Primary marsh bird target species; **Secondary marsh bird target species.

Species	Common Name
<i>Agelaius phoeniceus</i>	Red-winged Blackbird
<i>Aix sponsa</i>	Wood Duck
<i>Anas platyrhynchos</i>	Mallard
<i>Archilochus colubris</i>	Ruby-throated Hummingbird
<i>Ardea herodias</i>	Great Blue Heron
<i>Branta canadensis</i>	Canada Goose
<i>Cardinalis cardinalis</i>	Northern Cardinal
<i>Cathartes aura</i>	Turkey Vulture
<i>Colaptes auratus</i>	Northern Flicker
<i>Corvus brachyrhynchos</i>	American Crow
<i>Cyanocitta cristata</i>	Blue Jay
<i>Dumetella carolinensis</i>	Gray Catbird
<i>Empidonax traillii</i>	Willow Flycatcher
<i>Grus canadensis**</i>	Sandhill Crane**
<i>Icterus galbula</i>	Baltimore Oriole
<i>Meleagris gallopavo</i>	Wild Turkey
<i>Melospiza melodia</i>	Song Sparrow
<i>Molothrus ater</i>	Brown-headed Cowbird
<i>Myiarchus crinitus</i>	Great Crested Flycatcher
<i>Podilymbus podiceps*</i>	Pied-billed Grebe*
<i>Quiscalus quiscula</i>	Common Grackle
<i>Setophaga petechia</i>	Yellow Warbler
<i>Spinus tristis</i>	American Goldfinch
<i>Tachycineta bicolor</i>	Tree Swallow
<i>Turdus migratorius</i>	American Robin
<i>Tyrannus tyrannus</i>	Eastern Kingbird

Ecological Assessments

The primary area of natural vegetation at Cornish SGA and Kinney WPA is Grass Lake itself, which supports an extensive submergent marsh dominated by *Nuphar advena* (yellow pond-lily), associated with *Pontederia cordata* (pickerel-weed), *Nymphaea odorata* (sweet-scented waterlily), *Sagittaria latifolia* (common arrowhead), *Persicaria amphibia* (water smartweed), and scattered *Cephalanthus occidentalis* (buttonbush). The periphery of the submergent marsh supports narrow bands of emergent marsh, southern wet meadow, and southern shrub-carr, with *Phalaris arundinacea* (reed canary grass), *Calamagrostis canadensis* (blue-joint), *Cornus sericea* (red-osier), *Salix petiolaris* (slender willow), *Spiraea alba* (meadowsweet), and a variety of *Carex* spp. (sedges). Most of these areas are degraded by previous land use activities and support several invasive plants, including the aforementioned reed canary grass, *Rosa multiflora* (multiflora rose), *Elaeagnus umbellata* (autumn olive), and *Phragmites australis* subsp. *australis* (common reed), which also occurs as scattered patches in the submergent

marsh in the southern part of Grass Lake. The lakeshore also supports narrow bands of early successional forest, with *Populus tremuloides* (quaking aspen) and *Acer rubrum* (red maple) especially characteristic. A partial list of species from the wetland habitats is provided in Appendix 1.

Away from Grass Lake, remnant natural habitats are restricted to a few small fragmented woodlots. North of Grass Lake, a small woodlot in the Kinney WPA supports dry-mesic southern forest characterized by mixed hardwoods (primarily oaks), with trends towards mesophytic conditions indicated by the prevalence of *Acer saccharum* (sugar maple) and *Asimina triloba* (pawpaw) (Figure 3; Appendix 2). A similar forested island occurs in the northern part of Grass Lake. The eastern portion of the Cornish SGA property supports the far western margin of a wetland known locally as Sullivan Swamp (P. Cornish, pers. comm.). East of the property line, this wetland is characterized by a bog dominated by highbush blueberry (*Vaccinium corymbosum*) that is a documented site for the state threatened *Isotria verticillata* (whorled pogonia) and state endangered *Platanthera ciliaris* (orange fringed orchid) (MNFI 2015). A portion of this area is owned by Michigan Nature Association (Bankson Lake Bog Nature Sanctuary).

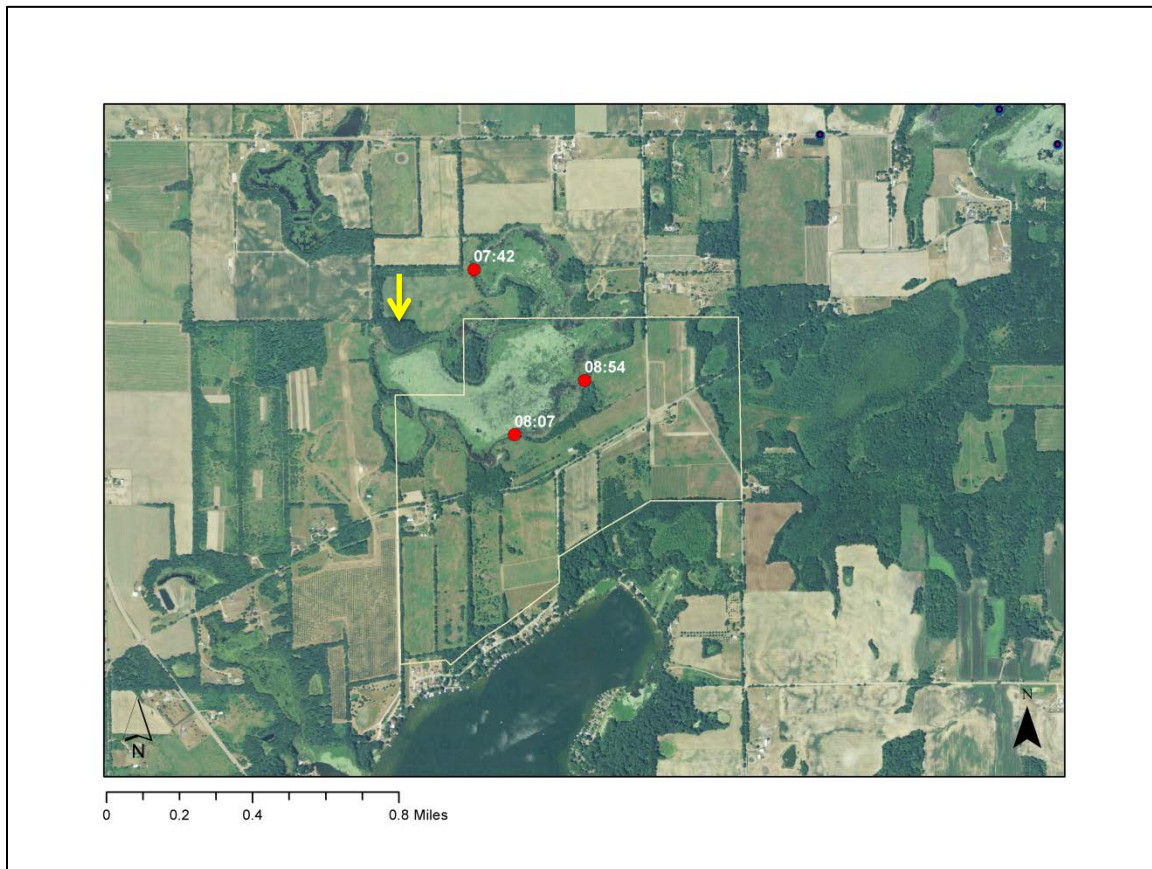


Figure 3. Bird point survey locations including eastern standard time (AM) of surveys. Yellow arrow indicates location of dry-mesic southern forest described in results.

Discussion

As mentioned above, this work primarily supports the conservation goal of providing quality spring, summer, and fall habitat for mallards and wood ducks (Mills 2015). In particular, WLD plans to maintain Grass Lake as an open water/marsh complex, in part by identifying and treating invasive plant species. The 2015 surveys found two non-native species were particularly prevalent in the Grass Lake environs: reed canary grass, which occurs in dense colonies at the open margins of Grass Lake, and common reed, which forms scattered colonies in and adjacent to the submergent marsh in the southern part of the lake. Common reed occurs in fairly discrete patches and can be managed and controlled with spot herbicide treatment. Reed canary grass, on the other hand, is widespread and locally dominant in moist open areas along the lakeshore. Because reed canary grass is unlikely to significantly expand into unsuitable submergent marsh habitat within Grass Lake proper, it is unlikely to have significant negative impacts to marsh waterfowl. Therefore, the best management strategy may be to target any colonies extending into the lake and to limit its spread into upland fields away from Grass Lake.

The majority of the upland habitats in both Cornish SGA and Kinney WPA is comprised of old agricultural (tilled) land that now supports old field and upland shrub habitats. Upland natural communities are restricted to small woodlots that support dry-mesic southern forest and the westernmost portions of a bog complex occurring mostly east of Cornish SGA. Conversion of the old field and upland shrub habitats to grassland habitat appropriate for ring-necked pheasants and other grassland birds is not anticipated to have any deleterious impacts on the ecological integrity of the site, and may improve habitat for a variety of wildlife species, including grassland specialist birds.

Recommendations

- Treat and monitor populations of common reed
- Monitor reed canary grass for encroachment into critical habitats (i.e., submergent marsh). Widespread treatment may be costly and ineffective.
- Identify survey point locations and engage with volunteers to conduct annual systematic marsh bird point counts during three periods: May 1-14, May 15-31, and June 1-15 (Monfils and Cuthrell 2013)
- Engage with volunteers to conduct grassland bird surveys immediately prior to, during, and after conversion of upland habitats to grassland

Acknowledgments

Several individuals provided valuable assistance on this project. Jennifer Olson and Valerie Frawley (WLD) developed the project and identified target survey sites; Mark Mills and Nate DeVries (WLD) and Pete Cornish provided background information and a property tour to assist with the ecological assessments and bird surveys; Mike Monfils and Dave Cuthrell (MNFI) provided guidance and references on marsh bird surveys; and Brian Klatt, Nancy Toben, and Sue Ridge (MNFI) provided administrative support.

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Appendix 1. Floristic Quality Assessment for Cornish State Game Area wetlands.

06/02/2015

Cornish SGA

Van Buren
MI
USA

FQA DB Region: Michigan

FQA DB Publication Year: 2014

FQA DB Description: Reznicek, A.A., M.R. Penskar, B.S. Walters, and B.S. Slaughter. 2014. Michigan Floristic Quality Assessment Database. Herbarium, University of Michigan, Ann Arbor, MI and Michigan Natural Features Inventory, Michigan State University, Lansing, MI. <http://michiganflora.net>

Practitioner: Brad Slaughter

Latitude: 42.101026

Longitude: -85.828636

Weather Notes:

Duration Notes:

Community Type Notes: Submergent marsh (primarily); emergent marsh; southern wet meadow; southern shrub-carr [this report]. Also early successional forest; old field. Small area of dry-mesic southern forest, inundated shrub swamp on E portion of property.

Other Notes: Additional survey 29 July 2015. Also noted: Carex sp., Persicaria sp.

Private/Public: Private

Conservatism-Based Metrics:

Total Mean C:	3
Native Mean C:	3.5
Total FQI:	21
Native FQI:	22.7
Adjusted FQI:	32.4
% C value 0:	16.3
% C value 1-3:	38.8
% C value 4-6:	36.7
% C value 7-10:	8.2

Native Tree Mean C: 2.3
 Native Shrub Mean C: 2.9
 Native Herbaceous Mean C: 3.8

Species Richness:
 Total Species: 49
 Native Species: 42 85.70%
 Non-native Species: 7 14.30%

Species Wetness:
 Mean Wetness: -2.2
 Native Mean Wetness: -3

Physiognomy Metrics:
 Tree: 3 6.10%
 Shrub: 9 18.40%
 Vine: 1 2%
 Forb: 25 51%
 Grass: 3 6.10%
 Sedge: 8 16.30%
 Rush: 0 0%
 Fern: 0 0%
 Bryophyte: 0 0%

Duration Metrics:
 Annual: 2 4.10%
 Perennial: 44 89.80%
 Biennial: 3 6.10%
 Native Annual: 2 4.10%
 Native Perennial: 40 81.60%
 Native Biennial: 0 0%

Species:
Scientific Name **Family** **Acronym** **Native?** **C** **W** **Physiognomy** **Duration** **Common Name**

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name
Acer rubrum	Sapindaceae	ACERUB	native	1	0	tree	perennial	red maple
Anemone canadensis	Ranunculaceae	ANECAN	native	4	-3	forb	perennial	canada anemone
Boehmeria cylindrica	Urticaceae	BOEYCYL	native	5	-5	forb	perennial	false nettle
Calamagrostis canadensis	Poaceae	CALCAN	native	3	-5	grass	perennial	blue-joint
Carex comosa	Cyperaceae	CXCOMO	native	5	-5	sedge	perennial	sedge
Carex hystericina	Cyperaceae	CXHYST	native	2	-5	sedge	perennial	sedge
Carex pellita; c. lanuginosa	Cyperaceae	CXPELL	native	2	-5	sedge	perennial	sedge
Carex scoparia	Cyperaceae	CXSCOP	native	4	-3	sedge	perennial	sedge
Carex stipata	Cyperaceae	CXSTIP	native	1	-5	sedge	perennial	sedge
Carex stricta	Cyperaceae	CXSTRI	native	4	-5	sedge	perennial	sedge
Centaurea stoebe; c. maculosa	Asteraceae	CENSTO	non-native	0	5	forb	biennial	spotted knapweed
Cephalanthus occidentalis	Rubiaceae	CEPOCC	native	7	-5	shrub	perennial	buttonbush
Circaea canadensis; c. lutetiana	Onagraceae	CIRCAN	native	2	3	forb	perennial	enchanters-nightshade
Cirsium arvense	Asteraceae	CIRARV	non-native	0	3	forb	perennial	canada thistle
Cornus sericea; c. stolonifera	Cornaceae	CORSER	native	2	-3	shrub	perennial	red-osier
Daucus carota	Apiaceae	DAUCAR	non-native	0	5	forb	biennial	queen-annes-lace
Dulichium arundinaceum	Cyperaceae	DULARU	native	8	-5	sedge	perennial	three-way sedge
Elaeagnus umbellata	Elaeagnaceae	ELAUMB	non-native	0	3	shrub	perennial	autumn-olive
Eleocharis obtusa	Cyperaceae	ELEOBT	native	3	-5	sedge	annual	spike-rush
Eupatorium perfoliatum	Asteraceae	EUPPER	native	4	-3	forb	perennial	boneset
Euthamia graminifolia	Asteraceae	EUTGRA	native	3	0	forb	perennial	grass-leaved goldenrod
Impatiens capensis	Balsaminaceae	IMPCAP	native	2	-3	forb	annual	spotted touch-me-not
Iris virginica	Iridaceae	IRIVIR	native	5	-5	forb	perennial	southern blue flag
Juncus effusus	Juncaceae	JUNEFF	native	3	-5	forb	perennial	soft-stemmed rush
Lemna minor	Araceae	LEMMIN	native	5	-5	forb	perennial	common duckweed
Mentha canadensis; m. arvensis	Lamiaceae	MENCAS	native	3	-3	forb	perennial	wild mint
Nuphar advena	Nymphaeaceae	NUPADV	native	8	-5	forb	perennial	yellow pond-lily
Nymphaea odorata	Nymphaeaceae	NYMODO	native	6	-5	forb	perennial	sweet-scented waterlily
Parthenocissus quinquefolia	Vitaceae	PARQUI	native	5	3	vine	perennial	virginia creeper
Persicaria amphibia; polygonum a.	Polygonaceae	PERAMP	native	6	-5	forb	perennial	water smartweed
Phalaris arundinacea	Poaceae	PHAARU	native	0	-3	grass	perennial	reed canary grass
Phragmites australis var. australis	Poaceae	PHRAUU	non-native	0	-3	grass	perennial	reed
Pontederia cordata	Pontederiaceae	PONCOR	native	8	-5	forb	perennial	pickerel-weed

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name
Populus tremuloides	Salicaceae	POPTRE	native	1	0	tree	perennial	quaking aspen
Rosa multiflora	Rosaceae	ROSMUL	non-native	0	3	shrub	perennial	multiflora rose
Rubus occidentalis	Rosaceae	RUBOCC	native	1	5	shrub	perennial	black raspberry
Sagittaria latifolia	Alismataceae	SAGLAT	native	4	-5	forb	perennial	common arrowhead
Salix discolor	Salicaceae	SALDIS	native	1	-3	shrub	perennial	pussy willow
Salix nigra	Salicaceae	SALNIG	native	5	-5	tree	perennial	black willow
Salix petiolaris	Salicaceae	SALPET	native	1	-3	shrub	perennial	slender willow
Solidago altissima	Asteraceae	SOLALT	native	1	3	forb	perennial	tall goldenrod
Sparganium emersum; s. chlorocarpum	Typhaceae	SPAEME	native	6	-5	forb	perennial	green-fruited bur-reed
Spiraea alba	Rosaceae	SPIALB	native	4	-3	shrub	perennial	meadowsweet
Symphotrichum firmum; aster puniceus	Asteraceae	SYMFIR	native	4	-3	forb	perennial	smooth swamp aster
Typha latifolia	Typhaceae	TYPLAT	native	1	-5	forb	perennial	broad-leaved cat-tail
Urtica dioica	Urticaceae	URTDIO	native	1	0	forb	perennial	stinging nettle
Verbascum thapsus	Scrophulariaceae	VERTHA	non-native	0	5	forb	biennial	common mullein
Verbena hastata	Verbenaceae	VERHAS	native	4	-3	forb	perennial	blue vervain
Viburnum lentago	Adoxaceae	VIBLEN	native	4	0	shrub	perennial	nannyberry

Appendix 2. Floristic Quality Assessment for Kinney Waterfowl Production Area Woodlot.

05/22/2015

Kinney WPA

Van Buren

MI

USA

FQA DB Region:

Michigan

FQA DB Publication Year:

2014

FQA DB Description:

Reznicek, A.A., M.R. Penskar, B.S. Walters, and B.S. Slaughter. 2014. Michigan Floristic Quality Assessment Database. Herbarium, University of Michigan, Ann Arbor, MI and Michigan Natural Features Inventory, Michigan State University, Lansing, MI. <http://michiganflora.net>

Practitioner:

Brad Slaughter

Latitude:

42.105136

Longitude:

-85.834938

Weather Notes:

Duration Notes:

Community Type Notes:

Dry-mesic southern forest

Other Notes:

Also: Agrimonia sp., Crataegus sp.

Private/Public:

Private

Conservatism-Based Metrics:

Total Mean C:

3.6

Native Mean C:

4

Total FQI:

30.1

Native FQI:

31.7

Adjusted FQI:

37.9

% C value 0:

14.3

% C value 1-3:

21.4

% C value 4-6:

57.1

% C value 7-10:

7.1

Native Tree Mean C:

4.4

Native Shrub Mean C: 3.4
 Native Herbaceous Mean C: 4

Species Richness:

Total Species: 70
 Native Species: 63 90%
 Non-native Species: 7 10%

Species Wetness:

Mean Wetness: 2.2
 Native Mean Wetness: 2.2

Physiognomy Metrics:

Tree: 18 25.70%
 Shrub: 10 14.30%
 Vine: 4 5.70%
 Forb: 33 47.10%
 Grass: 2 2.90%
 Sedge: 2 2.90%
 Rush: 0 0%
 Fern: 1 1.40%
 Bryophyte: 0 0%

Duration Metrics:

Annual: 3 4.30%
 Perennial: 62 88.60%
 Biennial: 5 7.10%
 Native Annual: 3 4.30%
 Native Perennial: 58 82.90%
 Native Biennial: 2 2.90%

Species:

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name
Acer negundo	Sapindaceae	ACENEG	native	0	0	tree	perennial	box-elder

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name
<i>Acer rubrum</i>	Sapindaceae	ACERUB	native	1	0	tree	perennial	red maple
<i>Acer saccharum</i>	Sapindaceae	ACESAU	native	5	3	tree	perennial	sugar maple
<i>Ageratina altissima</i> ; <i>eupatorium rugosum</i>	Asteraceae	AGEALT	native	4	3	forb	perennial	white snakeroot
<i>Alliaria petiolata</i>	Brassicaceae	ALLPET	non-native	0	3	forb	biennial	garlic mustard
<i>Amelanchier arborea</i>	Rosaceae	AMEARB	native	4	3	tree	perennial	juneberry
<i>Antennaria parlinii</i>	Asteraceae	ANTPAL	native	2	5	forb	perennial	smooth pussytoes
<i>Arctium minus</i>	Asteraceae	ARCMIN	non-native	0	3	forb	biennial	common burdock
<i>Arisaema triphyllum</i>	Araceae	ARITRI	native	5	0	forb	perennial	jack-in-the-pulpit
<i>Asimina triloba</i>	Annonaceae	ASITRI	native	9	0	tree	perennial	pawpaw
<i>Barbarea vulgaris</i>	Brassicaceae	BARVUL	non-native	0	0	forb	biennial	yellow rocket
<i>Botrypus virginianus</i>	Ophioglossaceae	BOTVIR	native	5	3	fern	perennial	rattlesnake fern
<i>Campanulastrum americanum</i> ; <i>campanula a.</i>	Campanulaceae	CAMAME	native	8	0	forb	biennial	tall bellflower
<i>Carex pensylvanica</i>	Cyperaceae	CXPENS	native	4	5	sedge	perennial	sedge
<i>Carex radiata</i> ; <i>c. rosea</i>	Cyperaceae	CXRADI	native	2	0	sedge	perennial	straight-styled wood sedge
<i>Carya cordiformis</i>	Juglandaceae	CARCOR	native	5	0	tree	perennial	bitternut hickory
<i>Carya ovata</i>	Juglandaceae	CAROVA	native	5	3	tree	perennial	shagbark hickory
<i>Celtis occidentalis</i>	Cannabaceae	CELOCC	native	5	0	tree	perennial	hackberry
<i>Circaea canadensis</i> ; <i>c. lutetiana</i>	Onagraceae	CIRCAN	native	2	3	forb	perennial	enchanters-nightshade
<i>Cornus alternifolia</i>	Cornaceae	CORALT	native	5	3	tree	perennial	alternate-leaved dogwood
<i>Cornus foemina</i>	Cornaceae	CORFOE	native	1	0	shrub	perennial	gray dogwood
<i>Elaeagnus umbellata</i>	Elaeagnaceae	ELAUMB	non-native	0	3	shrub	perennial	autumn-olive
<i>Elymus hystrix</i> ; <i>hystrix patula</i>	Poaceae	ELYHYS	native	5	3	grass	perennial	bottlebrush grass
<i>Eurybia macrophylla</i> ; <i>aster m.</i>	Asteraceae	EURMAC	native	4	5	forb	perennial	big-leaved aster
<i>Fagus grandifolia</i>	Fagaceae	FAGGRA	native	6	3	tree	perennial	american beech
<i>Floerkea proserpinacoides</i>	Limnanthaceae	FLOPRO	native	7	0	forb	annual	false mermaid
<i>Fraxinus americana</i>	Oleaceae	FRAAME	native	5	3	tree	perennial	white ash
<i>Galium aparine</i>	Rubiaceae	GALAPA	native	0	3	forb	annual	annual bedstraw
<i>Galium circaezans</i>	Rubiaceae	GALCIR	native	4	3	forb	perennial	white wild licorice
<i>Galium pilosum</i>	Rubiaceae	GALPIL	native	6	5	forb	perennial	hairy bedstraw
<i>Geranium maculatum</i>	Geraniaceae	GERMAC	native	4	3	forb	perennial	wild geranium
<i>Geum canadense</i>	Rosaceae	GEUCAN	native	1	0	forb	perennial	white avens
<i>Hackelia virginiana</i>	Boraginaceae	HACVIR	native	1	3	forb	biennial	beggars lice
<i>Helianthus strumosus</i>	Asteraceae	HELSTR	native	4	5	forb	perennial	pale-leaved sunflower

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name
<i>Impatiens pallida</i>	Balsaminaceae	IMPPAL	native	6	-3	forb	annual	pale touch-me-not
<i>Laportea canadensis</i>	Urticaceae	LAPCAN	native	4	-3	forb	perennial	wood nettle
<i>Lonicera morrowii</i>	Caprifoliaceae	LONMOR	non-native	0	3	shrub	perennial	morrow honeysuckle
<i>Luzula multiflora</i>	Juncaceae	LUZMUL	native	5	3	forb	perennial	common wood rush
<i>Maianthemum racemosum</i> ; <i>smilacina</i> r.	Convallariaceae	MAIRAC	native	5	3	forb	perennial	false spikenard
<i>Osmorhiza claytonii</i>	Apiaceae	OSMCLI	native	4	3	forb	perennial	hairy sweet-cicely
<i>Ostrya virginiana</i>	Betulaceae	OSTVIR	native	5	3	tree	perennial	ironwood; hop-hornbeam
<i>Parthenocissus quinquefolia</i>	Vitaceae	PARQUI	native	5	3	vine	perennial	virginia creeper
<i>Persicaria virginiana</i> ; <i>polygonum</i> v.	Polygonaceae	PERVIR	native	4	0	forb	perennial	jumpseed
<i>Phryma leptostachya</i>	Phrymaceae	PHRLEP	native	4	3	forb	perennial	lopseed
<i>Poa compressa</i>	Poaceae	POACOM	non-native	0	3	grass	perennial	canada bluegrass
<i>Podophyllum peltatum</i>	Berberidaceae	PODPEL	native	3	3	forb	perennial	may-apple
<i>Polygonatum pubescens</i>	Convallariaceae	POLPUB	native	5	5	forb	perennial	downy solomon seal
<i>Prunus serotina</i>	Rosaceae	PRUSER	native	2	3	tree	perennial	wild black cherry
<i>Quercus alba</i>	Fagaceae	QUEALB	native	5	3	tree	perennial	white oak
<i>Quercus rubra</i>	Fagaceae	QUERUB	native	5	3	tree	perennial	red oak
<i>Quercus velutina</i>	Fagaceae	QUEVEL	native	6	5	tree	perennial	black oak
<i>Ranunculus abortivus</i>	Ranunculaceae	RANABO	native	0	0	forb	perennial	small-flowered buttercup
<i>Ribes cynosbati</i>	Grossulariaceae	RIBCYN	native	4	3	shrub	perennial	prickly or wild gooseberry
<i>Rosa carolina</i>	Rosaceae	ROSCAR	native	4	3	shrub	perennial	pasture rose
<i>Rosa multiflora</i>	Rosaceae	ROSMUL	non-native	0	3	shrub	perennial	multiflora rose
<i>Rubus allegheniensis</i>	Rosaceae	RUBALL	native	1	3	shrub	perennial	common blackberry
<i>Rubus occidentalis</i>	Rosaceae	RUBOCC	native	1	5	shrub	perennial	black raspberry
<i>Sanguinaria canadensis</i>	Papaveraceae	SANCAA	native	5	3	forb	perennial	bloodroot
<i>Smilax hispida</i> ; <i>s. tamnoides</i>	Smilacaceae	SMIHIS	native	5	0	vine	perennial	bristly greenbrier
<i>Thalictrum thalictroides</i> ; <i>anemonella</i> t.	Ranunculaceae	THATHA	native	8	3	forb	perennial	rue-anemone
<i>Tilia americana</i>	Malvaceae	TILAME	native	5	3	tree	perennial	basswood
<i>Toxicodendron radicans</i>	Anacardiaceae	TOXRAD	native	2	0	vine	perennial	poison-ivy
<i>Trillium grandiflorum</i>	Trilliaceae	TRIGRA	native	5	3	forb	perennial	common trillium
<i>Triosteum aurantiacum</i>	Caprifoliaceae	TRIAUN	native	5	5	forb	perennial	horse-gentian
<i>Ulmus americana</i>	Ulmaceae	ULMAME	native	1	-3	tree	perennial	american elm
<i>Vaccinium pallidum</i>	Ericaceae	VACPAL	native	7	5	shrub	perennial	hillside blueberry
<i>Viburnum acerifolium</i>	Adoxaceae	VIBACE	native	6	5	shrub	perennial	maple-leaved viburnum

Scientific Name	Family	Acronym	Native?	C	W	Physiognomy	Duration	Common Name
Viola affinis	Violaceae	VIOAFF	native	2	-3	forb	perennial	le contes violet
Viola pubescens	Violaceae	VIOPUB	native	4	3	forb	perennial	yellow violet
Vitis riparia	Vitaceae	VITRIP	native	3	0	vine	perennial	river-bank grape