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**General notes on Ciha property**

**T-81-N, R-5-W N.W. 1/4 of N.W. 1/4 of section 13**

**Cedar Township, Johnson County, Iowa**

**Ownership:** Howard and Phyllis Ciha, Rt. Lisbon

**Location:** One mile south, 1/4 mile east of Sutliff

**Soil classification:** Chelsea loamy fine sand, slopes ranging from 2 to 18 percent

**Description:** Approximately 40 acres. West 1/4; gently sloping n.w. to s.e., highest and driest, open pasture. East edge; gently sloping north to south, lowest, moist with shallow drainage ditch, lightly timbered around wet area, scattered oaks in remainder. North edge; medium slope west to east, well drained on west to poorly drained wetland 1/3 distance from east border. Remaining central region; rolling well drained uplands to wet depressions, two of which are ponds, lightly timbered east to medium timber west.

**Vegetation:** This area was historically oak timber (from original survey notes 1836-1840). Today, the forested area is predominantly white oak (*Quercus alba*) with gooseberry (*Ribes missouriense*), prickly ash (*Zanthoxylum americanum*) and red cedar (*Juniperus virginiana*) dominating the shrub zone. Columbine (*Aquilegia canadensis*), bedstraw (*Galium sp.*) and stinging nettle (*Urtica dioica*) are the common forbs. Very little grass is present in the more heavily timbered areas. In more open areas, multiflora rose (*Rosa multiflora*) and pasture rose (*Rosa carolina*) add to the undergrowth.

In the distinctly savanna-like areas, wild strawberry (*Fragaria virginiana*), early crowfoot (*Ranunculus fascicularis*), prairie ragwort (*Senecio plattensis*), pussytoes (*Antennaria spp.*) and bird's foot violet (*Viola pedata*) prevail with more grass present. Corydalis (*Corydalis micrantha*) is found on the south facing slope along the south fence line.

The open pasture is predominantly non-native blue grasses (*Poa spp*), with a

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poor representation of native grasses. More forbs are present in these open areas, notably; cleft phlox (*Phlox bifida*), whitlow-grass (*Draba reptans*), mock pennyroyal (*Hedidoma hispida*), puccoons (*Lithospermum spp.*) and vervain (*Verbena spp.*).

The wet depressions offer a sharp contrast to the overall sand prairie/savanna character of the area. Three major and distinctly different areas of wetlands are present.

The most unique wetland is the south-most and highest pond. Total water area is about 1-1/2 acres. Water depth varies to the middle where it is 30-36 inches deep, except on the eastern half which has been artificially dredged for a more reliable stock watering source (depth unknown). This dredging occurred when the pond went dry in 1988. Two tests by Dr. Robert Black of Cornell College, Mt. Vernon, Iowa, in August of 1992 and January of 1993 showed a water pH value of 4.4-4.6 and 5.7-5.8 respectively.

This pond is ringed with river birch (*Betula nigra*) and button bush (*Cephalanthus occidentalis*) which is predominant on the north shore. A poor nutrient fen occupies the south edge, from the deepened area to the west end. This fen is about 3/8 acre in size, with a peat layer approaching three feet in depth, a muck layer up to ten feet in depth, and a dense sandy clay bottom of at least ten inches in thickness. The central part of the fen is a floating mat over the deepest portion of the pond. Mature button bush grows on this floating mat, as well as on portions that are submerged one foot or more (in the center of the pond). Small river birch also grow on the floating mat. The mat itself consists primarily of sedges. Around the base of some button bush can be found sphagnum (*Sphagnum subsecundum*) and moss (*Aulacomnium palustre*). Bladderwort (*Utricularia vulgaris*) is found in openings in the floating mat. Near shore, where the mat is submerged, literally thousands of mosquito fern (*Azolla mexicana*) are floating on the water. Cutgrass (*Leersia oryzoides*) borders the fen shoreline.

Directly north and slightly down hill is another 3/4 acre pond. The water is about one foot deep during wet periods and had a pH value of 7 in February 1992. A totally different plant community exists in this pond. It is ringed with a few river birch, but button bush is almost absent. Pickerelweed (*Pontederia cordata*) dominates the center of the pond with a healthy component of arrowhead (*Sagittaria latifolia*), bur-

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reed (*Sparganium americanum*) and softstem bulrush (*Scirpus validus*). In the shallower open water around this dense growth are hundreds of watershield (*Brasenia schreberi*), an endangered species in Iowa. The northeast-quarter of the pond has a nice population of water starwort (*Callitriche heterophylla*). There is no peat in this pond. This pond maintained a good reserve of water throughout the dry summer of 1991, but dried up in June of 1992.

The third wetland of significance is north of this second pond and further downhill. Its depth probably never exceeds about six inches. It dried to solid mud in the summer of 1991 and in June of 1992, but was very wet the rest of that year. Little plant growth occurs in the center of this area. Mousetail (*Myosurus minimus*) occurs in abundance around the drier edges as well as three species of water horehound (*Lycopus spp.*). This area receives the most damage from livestock of the three wetlands.

A moist area is present along the east border of the study area, but it is not distinctive.

**Vertebrates:** This area provides some limited benefits to deer and other common Iowa mammals, but lacks heavy cover. The fen mat always shows flattened areas of vegetation that can be attributed to raccoon activity. A study of small rodents conducted by Greg Wilson and Justin Van Zee (in association with Central College and the Iowa DNR) June 3-5, 1991 resulted in the capture of five western harvest mice (*Reithrodontomys megalotis dychei*) and one white-footed mouse (*Peromyscus leucopus noveboracensis*) in the brome field north of the study area. No specimens were caught in the grazed study area. The study skins are located at the Natural History Museum in Iowa City.

Mallards, blue-winged teal, green-winged teal, shovelers, gadwall, ringneck, wood ducks and Canada geese utilize the vegetation and animals in the ponds as an important migration food source. At least 10 female red-winged blackbirds have been seen nesting at one time among the button bush on the fen mat.

Both ponds abound in frogs, notably the bull frog (*Rana catesbeiana*), the leopard frog (*Rana pipiens*), Blanchard's cricket frog (*Acris crepitans blanchardii*) and the western chorus frog (*Pseudacris triseriata triseriata*).

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Six-lined racerunners (*Cnemidophorus sexlineatus sexlineatus*) have been observed just across the west boundary fence in similar non-pastured ground. There is probably not enough cover for them on the Ciha property.

Ornate box turtles (*Terrapene ornata ornata*) are found throughout this area, but have not been observed by me on this property. Almost all of my trips have been in the afternoon, which is probably not ideal for locating this species. A carapace of the red-eared turtle (*Chrysemys scripta elegans*) was found on the shore of the south most pond. This is the extreme north limit for this species in Iowa. Painted turtles (*Chrysemys picta*) and Blanding's turtles (*Emydoidea blandingi*) have been observed in the south pond in healthy numbers. A snapping turtle (*Chelydra serpentina*) was observed in the north pond in April of 1992.

Trapping for salamander larvae in June of 1991 resulted in the capture of one eastern tiger salamander (*Ambystoma tigrinum tigrinum*) in the south-most pond, and one as yet unidentified specimen from the northern pond. Additional trapping (February 25 through March 9, 1992) resulted in the capture and release of adult tiger salamanders. Four were caught in the north pond on March 3, and two on March 4. Four were caught in the south pond on March 5, two on March 6, and one on March 8. Tiger salamander larvae were also trapped in the south-most pond on May 24, July 7 and July 9, 1992. These were raised until adults to confirm their identities and released.

**Fen Data:** A few points make this a unique fen. It has a pH of about 4.4-5.8 (slightly acidic). It has a floating mat that will support people. It is in a pond. It is the only known fen in Johnson County, and may be only the second known poor fen in Iowa, (Dead Man's Lake in Pilot Knob State Park, Hancock Co., being the other). A comparison between my plant list and a combination of Marten L. Grant and Robert F. Thorne's 1955 list and William C. Watson's 1989 list of the plants in Dead Man's Lake fen, produced a similarity index of .19, disregarding the sedges which are unidentified and not included in my list. Given that a few of the sedges may be common to both areas, the similarity index is still likely to be less than .25. This would indicate that this fen is even more unique in Iowa.

Temperature readings taken through the fen mat in February 1992 are as

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follows.

Air Temperature - 27 F

6" depth - 36.6 F

12" depth - 37 F

18" depth - 37.4 F

24" depth - 39.7 F

36" depth - 42.5 F

Temperature readings through the mat on August 10, 1992 were as follows:

Air Temperature - 68.1 F

Surface water - 71.9 F

6" depth - 71.2 F

12" depth - 71.5 F

18" depth - 71.4 F

24" depth - 71.3 F

30" depth - 63.6 F (probably below the mat proper)

36" depth - 62.0 F

42" depth - 61.6 F

It is my conclusion that the decomposition of vegetation is responsible for the elevated temperature of the mat interior in the winter.

**Current Management Practice:** This property has been and continues to be managed as a pasture for both sheep and cattle (in different years). Generally, they are introduced in early June and remain until the grass and forbs are depleted. In 1991, this was about a two week period. The cattle were then moved to an adjoining pasture, with access to the study area for shade and water. Usage of the study area by cattle was quite limited when better pasture was available. The grasses did not recover enough to provide attractive forage after the initial two week period in 1991. However, in July and August of 1992 rains promoted enough additional growth that the cattle spent a lot of time in this pasture, with a corresponding degradation to both the pasture and wetlands.

A cattle enclosure (approximately 25 feet square) was installed at the west edge of the timbered area. The grasses inside the enclosure grew to about 6-8 inches tall in

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1991, and were anything but luxurious. This plot was burned on February 27, 1992 as a demonstration of fire management. Two previously unidentified species of dropseed appeared within the enclosure (*Sporobolus aspera*, *S. cryptandrus*). Hairy grama (*Bouteloua hirsuta*) was also discovered along the north fence line. A second burn was conducted on March 14, 1993.

It would appear from the species list that delaying pasturing has benefited the early spring species by allowing them to mature and go to seed, and possibly by limiting grass competition. However, there is a poor early summer species representation in the list. The summer list consists of many species that normally increase with disturbance (*Verbena* spp., *Erigeron* spp., *Plantago purshii*, *Rumex acetosella*, *Taraxacum officinale*). The shrub component has been selected for those species that can defend themselves with thorns and prickles. The native grasses that survive are severely depressed (*Sporobolus* spp.), unpalatable (*Panicum* spp., *Paspalum* spp.), early maturing (*Koeleria cristata*), exist only on the fence border (*Stipa spartea*) or in the ponds (*Leersia oryzoides*).

Damage to the wetlands is most evident in the hummock nature of the north-most wet area and by the deepening of the southern pond. The two deeper ponds are apparently soft enough on the bottom to discourage deep incursions by livestock, but suffer great disturbances around the edges. It is uncertain whether the dredging operation destroyed any of the fen, because nobody recognized it for what it was at the time of dredging. However, reference to aerial photographs dated July 1937 and 1979 show a much more extensive mat that extends well into the dredged area and may have covered three-fourths of the total surface area. It is also unknown whether the hydrology has been altered and what effect that might have in the long term. It is fairly certain that additional dredging will damage the fen.

Some logging has occurred in the past for barn beams, etc., and dead oaks are still being cut for firewood. The remaining oaks contain some magnificent specimens, including one with a 15 foot circumference on the south fence line. They vary in stature from tall and straight to low branched and spreading. Little or no oak reproduction has taken place in decades although small oak seedlings can be found until they gain the notice of the livestock. New woody growth has been undesirable in terms of historical restoration (*Acer negundo*, *Prunus virginiana*, *Gleditsia triacanthos*,

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*Juniperus virginiana and Morus rubra*).

An aggressive spraying campaign in the summers of 1991 and 1992 against the multiflora rose bushes appears to have checked their advances. Management of the red cedar invasion would also be justified.

**Rental Agreement 1993:** Paul Christiansen and myself entered a rental agreement with Howard and Phyllis Ciha from March 1, 1993 through February 28, 1994. This agreement is for approximately 30 acres of land west of a line starting 244 feet west of the property's north-east corner, running south-south-east to a post supporting a wood duck nest box in the east central part of the south-most pond, and hence due south to the south fence line. This line will be electric fenced by the Ciha's to prevent cattle from going west of said line, but will allow access to the dredged end of the south-most pond for livestock watering. Access to the west of this line will be permitted for the Ciha's to saw dead timber for firewood.

Botanical survey of Ciha property  
T-81-N, R-5-W N.W. 1/4 of N.W. 1/4 of Section 13  
Cedar Township, Johnson County, Iowa

Compiled by Aaron Basten

<u>Scientific Name</u>	<u>Common Name</u>	<u>Comments</u>
<b><u>BRYOPHYTES</u></b>		
<b>AMBLYSTEGIACEAE</b>		
Campyllum cf. radicale	Moss	
<b>AULACOMNIACEAE</b>		
Aulacomnium palustre	Moss	Center of S. pond. Probable county record
<b>BRACHYTHECIACEAE</b>		
Brachythecium oxycladon	Moss	
<b>BRYACEAE</b>		
Pohlia nutans	Copper Wire Moss	
<b>DITRICHACEAE</b>		
Ditrichum pallidum	Moss	
<b>FUNARIACEAE</b>		
Funaria hygrometrica	Moss	
<b>LEUCOBRYACEAE</b>		
Leucobryum glaucum	Cushion Moss	
<b>MNIACEAE</b>		
Plagiomnium cuspidatum	Moss	
<b>POLYTRICHACEAE</b>		
Atrichum altecristatum	Moss	
Polytrichum commune	Hair-cap Moss	
<b>RICCIACEAE</b>		
Riccia fluitans	Liverwort	Floating on south side of fen mat and n. pond
Ricciolepis natans	Liverwort	On wet mud shoreline south side of fen mat, floating n. pond
<b>SPHAGNACEAE</b>		
Sphagnum subsecundum	Sphagnum	Center of S. pond. Probable county record
<b>THUIDIACEAE</b>		
Thuidium delicatulum	Moss	
<b><u>PTERIDOPHYTES</u></b>		
<b>AZOLLACEAE</b>		
Azolla mexicana	Mosquito Fern	S. pond
<b><u>GYMNOSPERMS</u></b>		
<b>CUPRESSACEAE</b>		
Juniperus virginiana	Red Cedar	
<b><u>DICOTYLEDONS</u></b>		
<b>ACANTHACEAE</b>		
Ruellia humilis	Wild Petunia	
<b>ACERACEAE</b>		
Acer negundo	Box Elder	



<u>Scientific Name</u>	<u>Common Name</u>	<u>Comments</u>
<b>AIZOACEAE</b>		
Mollugo verticillata	Carpetweed	Non-native
<b>AMARANTHACEAE</b>		
Froelichia floridana	Cottonweed	
<b>APIACEAE</b>		
Sanicula gregaria	Common Snakeroot	
Sanicula marilandica	Black Snakeroot	
<b>ASCLEPIADACEAE</b>		
Asclepias verticillata	Whorled Milkweed	
<b>ASTERACEAE</b>		
Achillea millefolium	Yarrow	
Antennaria neglecta	Pussytoes	
Antennaria plantaginifolia	Pussytoes	
Artemisia ludoviciana	Dark Leaved Mugwort	
Aster laterifloris	Starved Aster	
Aster parviceps	Small Headed Aster	
Bidens cernua	Bur-marigold	S. pond. Fen mat
Erigeron annuus	White-top	
Erigeron canadensis	Horseweed	weedy
Erigeron philadelphicus	Philadelphia Fleabane	
Eupatorium perfoliatum	Boneset	Also on fen mat
Gnaphalium obtusifolium	Sweet Everlasting	s.e. shore of n. pond
Helenium autumnale	Sneezeweed	
Hieracium canadense	Canada Hawkweed	South bank of south pond - rare
Krigia biflora	Twin-flowered Cynthia	
Lactuca canadensis	Wild Lettuce	
Senecio plattensis	Prairie Ragwort	
Taraxacum officinale	Dandelion	Non-native
Tragopogon pratensis	Common Goat's Beard	Non-native
Vernonia fasciculata	Western Ironweed	
<b>BERBERIDACEAE</b>		
Berberis Thunbergii	Japanese Barberry	
<b>BETULACEAE</b>		
Betula nigra	River Birch	Pond borders
<b>BORAGINACEAE</b>		
Lithospermum caroliniense	Hairy Puccoon	
Lithospermum incisum	Narrow-leaved Puccoon	
Myosotis verna	Early Scorpion Grass	Infrequent to rare
<b>BRASSICACEAE</b>		
Capsella bursa-pastoris	Shepherd's Purse	Non-native
Descurainia pinnata	Tansy-mustard	
Draba reptans	Whitflow-grass	

<u>Scientific Name</u>	<u>Common Name</u>	<u>Comments</u>
Rorippa palustris	Marsh Yellow Cress	N. pond
<b>CALLITRICHACEAE</b>		
Callitriche heterophylla	Water Starwort	Northeast quarter of north pond. Threatened in Iowa
<b>CAMPANULACEAE</b>		
Lobelia inflata	Indian Tobacco	
Lobelia spicata	Lobelia	
Triodanis perfoliata	Venus' Looking-glass	
<b>CARYOPHYLLACEAE</b>		
Cerastium vulgatum	Mouse-ear Chickweed	
Dianthus armeria	Deptford Pink	Non-native
Silene antirrhina	Sleepy Catchfly	
Silene noctiflora	Night-flowering Catchfly	Non-native
Silene stellata	Starry Campion	
<b>CHENOPODIACEAE</b>		
Cycloloma atriplicifolium	Winged Pigweed	western north fence line - open sand area
<b>CISTACEAE</b>		
Helianthemum sp.	Frostweed	western north fence line - open sand area
<b>COMMELINACEAE</b>		
Tradescantia ohiensis	Spiderwort	
<b>CONVOLVULACEAE</b>		
Cuscuta sp.	Dodder	
<b>EUPHORBIACEAE</b>		
Euphorbia corollata	Flowering Spurge	
<b>FABACEAE</b>		
Amorpha canescens	Leadplant	
Chamaecrista fasciculata	Partridge Pea	
Crotalaria sagittalis	Rattlebox	western north fence line - open sand area
Desmodium illinoense	Illinois Tick Trefoil	
Gleditsia triacanthos	Honey Locust	
Lespedeza capitata	Prairie Bushclover	
Medicago sativa	Alfalfa	Seeded
Robinia pseudoacacia	Blacklocust	
Strophostyles leiosperma	Small Wild Bean	
Trifolium repens	White Clover	
<b>FAGACEAE</b>		
Quercus alba	White Oak	Predominant Quercus species
Quercus velutina	Black Oak	
<b>GERANIACEAE</b>		
Geranium carolinianum	Wild Cranesbill	
<b>HYPERICACEAE</b>		
Triadenum fraseri	Marsh St. John's-wort	S. pond fen mat. Probable county record - rare
<b>JUGLANDACEAE</b>		

<u>Scientific Name</u>	<u>Common Name</u>	<u>Comments</u>
<i>Carya ovata</i>	Shagbark Hickory	Single tree near s.e. corner
<i>Juglans nigra</i>	Black Walnut	
<b>LAMIACEAE</b>		
<i>Hedioma hispidum</i>	Mock Pennyroyal	
<i>Leonurus cardiaca</i>	Motherwort	Non-native
<i>Lycopus americanus</i>	Cut-leaved Water Horehound	
<i>Lycopus unillorus</i>	Water-horehound	
<i>Lycopus virginicus</i>	Water Horehound	Infrequent to rare
<i>Monarda punctata</i>	Horsemint	
<i>Nepata cataria</i>	Catnip	
<i>Prunella vulgaris</i>	Heal-all	
<i>Pycnanthemum pilosum</i>	Hairy Mountain Mint	
<i>Pycnanthemum tenuifolium</i>	Slender Mountain Mint	
<i>Scutellaria lateriflora</i>	Skullcap	
<i>Teucrium canadense</i>	Germander	
<b>LENTIBULARIACEAE</b>		
<i>Utricularia vulgaris</i>	Bladderwort	Center of S. pond
<b>MORACEAE</b>		
<i>Cannabis sativa</i>	Hemp	
<i>Morus rubra</i>	Mulberry	
<b>NYCTAGINACEAE</b>		
<i>Mirabilis nyctaginea</i>	Four-o'clock	
<b>NYMPHAEACEAE</b>		
<i>Brasenia schreberi</i>	Watershield	N. pond. Endangered in Iowa
<b>ONAGRACEAE</b>		
<i>Circaea lutetiána</i>	Enchanter's Nightshade	
<i>Oenothera biennis</i>	Common Evening Primrose	
<i>Oenothera laciniata</i>	Cut-leaved Evening Primrose	Slope facing road
<b>OXALIDACEAE</b>		
<i>Oxalis stricta</i>	Yellow Wood-sorrel	
<b>PAPAVERACEAE</b>		
<i>Corydalis micrantha</i>	Corydalis	Probable county record
<b>PHYTOLACCACEAE</b>		
<i>Phytolacca americana</i>	Pokeweed	
<b>PLANTAGINACEAE</b>		
<i>Plantago major</i>	Common Plantain	Non-native
<i>Plantago patagonica</i>	Salt-and-pepper Plant	
<b>POLEMONIACEAE</b>		
<i>Phlox bifida</i>	Cleft Phlox	Abundant but rare statewide
<i>Phlox divaricata</i>	Blue Phlox	
<b>POLYGALACEAE</b>		
<i>Polygala sanguinea</i>	Milkwort	

<u>Scientific Name</u>	<u>Common Name</u>	<u>Comments</u>
<i>Polygonum pensylvanicum</i>	Common Smartweed	S. pond
<i>Polygonum punctatum</i>	Dotted Smartweed	S. pond
<i>Polygonum sagittatum</i>	Tear Thumb	
<i>Rumex acetosella</i>	Sorrel Rumex	
<i>Rumex altissimus</i>	Pale Dock	
<i>Rumex crispus</i>	Curly Dock	Non-native
<b>PRIMULACEAE</b>		
<i>Androsace occidentalis</i>	Androsace	
<i>Lysimachia radicans?</i>	Creeping Loosestrife	N. pond. Probable county record. Needs verification
<i>Lysimachia thyriflora</i>	Tufted Loosestrife	Center of S. pond. Good population - rare statewide
<b>RANUNCULACEAE</b>		
<i>Aquilegia canadensis</i>	Columbine	
<i>Myosurus minimus</i>	Mousetail	Probable county record - infrequent
<i>Ranunculus abortivus</i>	Kidneyleaf Buttercup	
<i>Ranunculus fascicularis</i>	Early Crowfoot	Abundant
<i>Ranunculus rhomboideus</i>	Prairie Buttercup	Infrequent to rare
<b>ROSACEAE</b>		
<i>Fragaria virginiana</i>	Wild Strawberry	
<i>Potentilla arguta</i>	Prairie Cinquefoil	
<i>Potentilla norvegica</i>	Rough Cinquefoil	
<i>Potentilla simplex</i>	Common Cinquefoil	
<i>Prunus virginiana</i>	Choke Cherry	
<i>Rosa carolina</i>	Pasture Rose	
<i>Rosa multiflora</i>	Multiflora Rose	Sprayed in 1991,92 - Non-native
<i>Rubus occidentalis</i>	Black Raspberry	
<b>RUBIACEAE</b>		
<i>Cephalanthus occidentalis</i>	Button Bush	Dominant Shrub esp. S. pond
<i>Galium</i> sp.	Bedstraw	
<i>Hedyotis crassifolia</i>	Bluets	Abundant - infrequent statewide
<b>RUTACEAE</b>		
<i>Zanthoxylum americanum</i>	Prickly Ash	
<b>SALICACEAE</b>		
<i>Populus deltoides</i>	Cottonwood	
<b>SANTALACEAE</b>		
<i>Comandra umbellata</i>	Bastard-toadflax	
<b>SAXIFRAGACEAE</b>		
<i>Heuchera richardsonii</i>	Alum Root	
<i>Penthorum sedoides</i>	Ditch Stonecrop	N. pond
<i>Ribes missouriense</i>	Gooseberry	
<b>SCROPHULARIACEAE</b>		
<i>Agalinis tenuifolia</i>	Slender Gerardia	
<i>Gratiola neglecta</i>	Hedge Hyssop	

<u>Scientific Name</u>	<u>Common Name</u>	<u>Comments</u>
<i>Gratiola virginiana</i>	Hedge Hyssop	N. pond - rare non-native
<i>Scrophularia lanceolata</i>	Early Figwort	
<i>Verbascum thapsus</i>	Mullein	Non-native
<i>Veronicastrum virginicum</i>	Culver's Root	
<b>SOLANACEAE</b>		
<i>Solanum americanum</i>	Black Nightshade	
<i>Solanum carolinense</i>	Horse Nettle	
<i>Solanum rostratum</i>	Buffalo-bur	weedy
<b>ULMACEAE</b>		
<i>Celtis occidentalis</i>	Hackberry	Single tree in s.e. corner
<i>Ulmus americana</i>	American Elm	
<b>URTICACEAE</b>		
<i>Pilea pumila</i>	Clearweed	spoil area of s. pond
<i>Urtica dioica</i>	Stinging Nettle	
<b>VERBENACEAE</b>		
<i>Phyla lanceolata</i>	Fogfruit	Moist n.w. edge of s. pond
<i>Verbena hastata</i>	Blue Vervain	
<i>Verbena stricta</i>	Hoary Vervain	
<i>Verbena urticifolia</i>	White Vervain	
<i>Verbena x blanchardi</i>	Vervain	
<b>VIOLACEAE</b>		
<i>Viola lanceolata</i>	White Violet	Rare
<i>Viola pedata</i>	Bird's Foot Violet	Large population esp. between ponds
<i>Viola pratincola</i>	Violet	
<i>Viola sagittata</i>	Purple Violet	Infrequent to rare
<b>VITACEAE</b>		
<i>Parthenocissus inserta</i>	Virginia Creeper	
<i>Parthenocissus quinquefolia</i>	Virginia Creeper	
<b>MONOCOTYLEDONS</b>		
<b>ALISMATACEAE</b>		
<i>Alisma plantago-aquatica</i>	Water-plantain	
<i>Sagittaria latifolia</i>	Arrowhead	N. pond
<b>CYPERACEAE</b>		
<i>Dulichium arundinaceum</i>	Three-way Sedge	S. pond - rare
<i>Scirpus cyperinus</i>	Wool Grass	
<i>Scirpus validus</i>	Softstem bulrush	N. pond
<b>LEMNACEAE</b>		
<i>Lemna minor</i>	Duckweed	
<b>LILIACEAE</b>		
<i>Hypoxis hirsuta</i>	Yellow Stargrass	
<i>Polygonatum biflorum</i>	Small Solomon's Seal	
<i>Smilacina sp.</i>	False Solomon's Seal	

<u>Scientific Name</u>	<u>Common Name</u>	<u>Comments</u>
Smilax sp.	Catbriar	
<b>POACEAE</b>		
Agrostis perennans	Upland Bent Grass	
Alopecurus aequalis	Marsh Foxtail	Infrequent to rare
Alopecurus carolinianus	Foxtail	Pond edges - infrequent to rare
Bouteloua hirsuta	Hairy Grama	Probable county record
Dactylis glomerata	Orchard Grass	Non-native
Dichanthelium acuminatum	Hairy Panicum	
Dichanthelium oligosanthes	Scribner's Panicum	
Echinochloa muricata	Barnyard Grass	South pond edge in water
Koeleria macrantha	June Grass	
Leersia oryzoides	Cutgrass	South pond between fen and bank
Panicum dichotomiflorum	Fall Panicum	Weedy grass
Paspalum setaceum	Ciliate leaved Paspalum	Infrequent to rare
Poa compressa	Blue Grass	Non-native
Poa pratensis	Blue Grass	Non-native
Sporobolus asper	Tall Dropseed	Probably abundant if allowed to grow
Sporobolus cryptandrus	Sand Dropseed	Probably abundant if allowed to grow
Stipa spartea	Spear Grass	
<b>PONTERIACEAE</b>		
Pontederia cordata	Pickerelweed	N. pond - infrequent to rare
<b>SPARGANIACEAE</b>		
Sparganium americanum	Bur-reed	N. pond - infrequent to rare

Natural Areas Inventory

Map 4 (Solon Quad) Site 3: Restored Prairie

This is the property of Aaron Basten, reported by Aaron Basten. He has a site list.