INVENTORY, ASSESSMENT, AND RANKING OF NATURAL AREAS OF WALPOLE ISLAND

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Abstract. A two-year study was begun in 1985 to document and assess the highly significant natural history features of the Walpole Island Indian Reserve in southwestern Ontario, Canada. The northern part of the island complex, where extensive prairie, savannah, and hardwood communities remain, was divided into 30 areas. The southern part, consisting of agricultural lands and wetlands was not examined. Through intensive field study and literature search, over 800 vascular plant species have been recorded from Walpole. Of the total, 12% (97) are rare in Ontario, and 1% (8) are not known elsewhere in Canada. Ninety-two species of birds have been confirmed as breeding, including 27 rare and one threatened species. An additional 44 species are probable breeders. Twenty-six species of herptiles were recorded including five of which are rare or declining. Twenty-four species of mammals have been recorded, including one rare species. Fifty-nine species of butterflies are known from Walpole Island, six of which are rare in Ontario. The results of this study confirm that Walpole Island contains the most significant tallgrass prairie and oak savannah, and associated flora and fauna remaining in Canada. Using six criteria, the 30 areas of the Island were priortized to provide the native people with a rationale for future conservation strategies.

Key Words. prairie, savannah, prairie/forest transition, inventory, Walpole Island, Ontario

INTRODUCTION

Walpole Island is part of a large delta island complex situated at the mouth of the St. Clair River at the north end of Lake St. Clair (Figure 1). Approximately one-third of the delta complex is made up of more than a dozen islands on the United States side of the border. The remaining two-thirds are made up of six islands on the Canadian side, with the St. Clair International Seaway being the main dividing line between Canada and the United States.

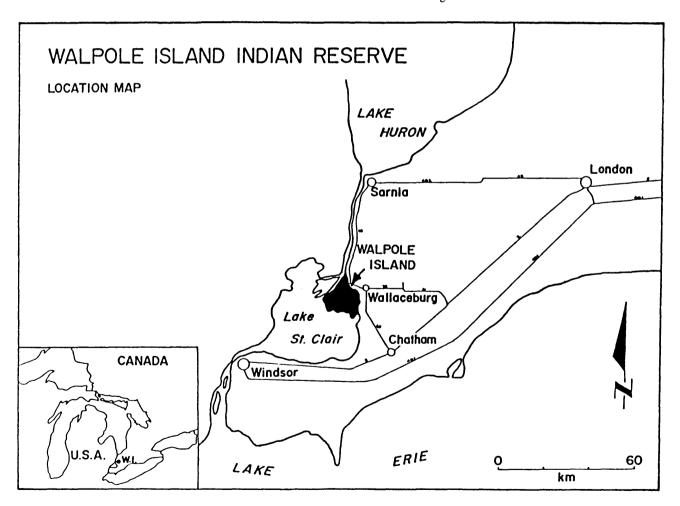


FIG. 1. Regional setting of Walpole Island Indian Reserve (from Hildebrand 1985).

The Canadian islands are wholly occupied by the Walpole Island Indian Reserve and cover approximately 24,000 ha. Almost 16,000 ha of the reserve are wetland, consisting of marshes, sloughs, channels, and the adjacent waters of Lake St. Clair. The remaining 8,000 ha, almost one-half of which are in agriculture, also include prairie, savannah, and hardwood forest. The Walpole Island Reserve is under the jurisdiction of the Walpole Island First Nation. All territory within the Reserve with the exception of public areas (ie. roads, waterways, beaches, buildings, etc.) are not generally open to the public unless otherwise posted. As a result, off-road sightseeing is strictly prohibited unless authorized by the Walpole Island Council and/or by individual private landowners.

Walpole Island has long been known for a rich mosaic of natural history features, including wetlands, wet woods, oak forest, oak savannah, and tallgrass prairie. It has been noted by the Carolinian Canada Identification Subcommittee as one of the top 36 unprotected natural areas in the Carolinian life zone of Canada (Eagles and Beechy 1985), and it was the only natural area which fulfilled all ten criteria used for selection.

Although Walpole Island is famous for its resources, no extensive surveys or documentation have taken place. Visits by naturalists have been sporadic over the decades due to the relative inaccessibility owing to its Indian Reserve status. In 1985, a two-year study was begun to carry out a natural history inventory of the terrestrial natural areas of Walpole Island was begun.

METHODS

The majority of the north one-half of Walpole Island could be considered a single natural area, the exceptions being land utilized for agriculture or residential development. However, for ease of documentation, the area was subdivided into 30 natural areas, each being separated by some distinct feature of the landscape such as a road or drainage channel. Each of these 30 natural areas contained some combination of prairie, savannah, and woodland. Original field data were collected for five different biotic groups: vegetation, birds, herptiles, mammals, and butterflies. In addition to data collection, efforts were made to search the literature, make contact with field naturalists or residents who had personal knowledge and information regarding Walpole Island, and to access the breeding bird atlas data.

Vegetation

Aerial photos were used to determine initially the variety of vegetative communities likely to be encountered in each natural area. At least two ground searches were then carried out in each community, to document both early to mid season and mid to late season species. Community descriptions were then written up. Community boundaries and significant species (i.e. those species listed in the most recent Atlas of the Rare Vascular Plants of Ontario) were noted on aerial photos and in field notes. A voucher specimen was collected for most significant or difficult to identify species. Photographic documentation was taken of significant flora and communities.

Several references were utilized for scientific names, in order to make use of recent taxonomic work. Lycopodiaceae to Dryopteridoideae followed Britton (1984 and 1985), Taxaceae to Iridaceae followed Voss (1972), except for the genus *Dichanthelium* which followed Gould and Clark (1978), and the family Orchidaceae which followed Luer (1975). Saururaceae to Cornaceae followed Voss (1975). Pyrolaceae to Compositae followed Gleason and Cronquist (1963), except for *Solidago* and *Euthamia* which followed Semple and Ringius (1983).

Birds

Aerial photos were used initially to determine the communities likely to be encountered in each natural area. Morning ground searches were then conducted at random in each natural area at least once during the breeding season. In the more significant areas,

visits were made on two or more occasions in order to further document bird activity and confirm breeding. Additional observations were made during casual site visits and visits for other purposes. All species encountered were recorded with locations of significant species noted on aerial photos and in field notes. The level of breeding activity was recorded on standard atlas cards using the standard activity codes (Cadman *et al.* 1987). Most of the data were collected in 1986 only.

Herptiles

Field visits to each natural area to search for herptiles were made in conjunction with those made for vegetation and birds. Specific searches such as turning over logs and boards were made along with casual observations during field visits. Road-kills were also noted. All species were recorded with significant species being noted on air photos and in field notes.

Mammals

Field visits to each natural area to search for mammals were made in 1986 only. Trap lines using pitfall traps, snap traps, and live traps were employed to inventory small mammals. Other evidence (tracks, scats, and direct observations) were also noted during these and other field visits.

Butterflies

Each natural area was surveyed by volunteer lepidopterists primarily during the flight season in 1986 only. Random searches were made through each natural area. Efforts were also made to concentrate on some of the more significant plant host species, especially those suspected of being host to uncommon or rare butterflies. Casual observations were made on other field visits during the study. Specimens were caught and recorded.

RESULTS

Vegetation

More than 800 species of vascular plants are now known from Walpole Island. Of the total, 12% (97) are rare in Ontario (Argus et al. 1982-87) and 1% (8) are not known elsewhere in Canada (Table 1). A complete listing of the flora of Walpole Island is on file with the author.

Birds

A total of 138 species of birds are now known to be breeding or potentially breeding on Walpole Island. Of these, 92 species have been confirmed as breeding. Twenty-eight species (Table 2) are considered rare in Ontario, and 14 of these have been confirmed as breeding. One species, Henslow's sparrow (Ammodramus henslowii), is considered threatened by the Committee on the Status of Endangered Wildlife in Canada. A complete listing of the birds of Walpole Island is on file with the author.

Herotiles

A total of 26 species of reptiles and amphibians are now known from Walpole Island (Table 3). Of these, five species, queen snake (*Regina septemvittata*), eastern fox snake (*Elaphe vulpina*), Butler's garter snake (*Thamnophis butleri*), eastern spiny softshell turtle (*Trionyx spinifera*), and spotted turtle (*Clemmys guttata*), are considered to be rare or declining in Ontario (Ontario Ministry of Natural Resources 1983).

Mammals

A total of 24 species of mammals have been recorded for Walpole Island (Table 4). Of these, only the southern flying squirrel (*Glaucomys volans*) is considered rare in Ontario (Committee on the Status of Endangered Wildlife in Canada 1988).

Butterflies

A total of 59 species of butterflies were noted during the study. Of these, six species were considered to be at least rare in Ontario (Table 5). A complete listing of the butterflies of Walpole Island are on file with the author.

ular plants of Walnole Island Indian Pasarve (Allen and Oldham 1987, from Arous et al. 1982-97)

Table 1. Rare vascular plants of Walpole Island Indian Reserv	ve (Allen and Oldham 1987, from Argus et al	. 1982-87).
Scientific Name	Common Name	Habitat
Eragrostis capillaris (L.) Nees¹ Koeleria cristata (Ledeb.) Schultes Leptoloma cognatum (Schultes) Chase Dichanthelium clandestinum (L.) Gould & Clark Dichanthelium leibergii (Vasey) Freckmann	Lace grass June grass Fall witch grass Broadleaf panic grass Leiberg's panic grass	sandpit prairie/savannah prairie woods prairie
Dichanthelium praecocius Hitchcock & Chase Dichanthelium meridionale Ashe¹ Dichanthelium sphaerocarpon (Ell.) Gould Sphenopholis obtusata (Michx.) Scribn. Stipa spartea Trin.	Early-branching panic grass Panic grass Panic grass Early bunchgrass Needle grass	prairie prairie prairie/savannah prairie/savannah prairie/savannah
Bulbostylis capillaris (L.) Clarke Carex bicknellii Britton Carex conoidea Willd. Carex emoryi Dewey Carex formosa Dewey	Hair-like bulbostylis Sedge Sedge Sedge Sedge	disturbed area prairie prairie/savannah prairie prairie/woods
Carex gracilescens Steudel Carex meadii Dew. Carex muskingumensis Schw. Carex suberecta (Olney) Britt. Carex swanii (Fern.) Mack.	Sedge Sedge Sedge Sedge Sedge	prairie prairie wet woods prairie savannah
Carex tetanica Schkuhr Cyperus erythrorhizos Muhl. Fimbristylis spadicea (L.) Vahl¹ Scirpus clintonii Gray Scleria triglomerata Michx.	Sedge Red-rooted cyperus Fimbristylis Clinton's club-rush Tall nut-rush	prairie savannah prairie prairie prairie
Scleria verticillata Muhl. ex Willd. Tradescantia ohiensis Raf. Juncus acuminatus Michx. Juncus greenei Oakes & Tuckerm. Aletris farinosa L.	Low nut-rush Ohio spiderwort Sharp-fruited rush Rush Colic-root	prairie prairie/savannah prairie/disturbed area prairie/savannah prairie/savannah
Hypoxis hirsuta (L.) Cov. Sisyrinchium albidum Raf. Aplectrum hyemale (Muhl. ex Willd.) Nutt Cypripedium candidum Muhl. ex Willd. Platanthera blephariglottis (Willd.) Hooker	Yellow star-grass Blue-eyed grass Putty-root Small white lady's-slipper White-fringed orchid	prairie prairie woods prairie roadside ditch
Platanthera leucophaea (Nutt.) Lindl. Spiranthes lacera Raf. var. gracilis (Bigel.) Luer Spiranthes magnicamporum Sheriak Spiranthes ochroleuca (Rydb. ex Britt.) Rydb. Spiranthes ovalis Lindley1	Prairie white-fringed orchid Southern slender ladies'-tresses Great Plains ladies'-tresses Yellow ladies'-tresses Oval ladies'-tresses	prairie prairie prairie/savannah savannah] prairie
Carya laciniosa (Michx. f.) Loud. Quercus palustris Muenchh. Polygonum tenue Michx. Cerastium velutinum Raf. Hydrastis canadensis L.	Big shellbark hickory Pin oak Knotweed Chickweed Golden-seal	woods/savannah woods/savannah] roadside/savannah savannah woods
Thalictrum revolutum D.C. Liriodendron tulipifera L. Agrimonia parviflora Ait. Geum vernum (Raf.) Torr & Gray Rosa setigera Michx.	Waxy meadow-rue Tulip-tree Agrimony Spring avens Prairie rose	savannah woods prairie prairie prairie/savannah
Baptisia tinctoria (L.) R. Br. Desmodium rotundifolium (Michx.) DC. Gymnocladus dioica (L.) K. Koch Lupinus perennis L. Vicia caroliniana Walt	Wild indigo Prostrate tick-trefoil Kentucky coffee-tree Wild lupine Carolina vetch	prairie/savannah woods wood edge savannah prairie/savannah
Ptelea trifoliata L. Polygala incarnata L' Aesculus glabra Willd.' Lechea pulchella Raf. Lechea villosa Ell.	Hop-tree Pink milkwort Ohio buckeye Pinweed Hairy pinweed	shorelines prairie woods savannah savannah

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Scientific Name	Common Name	Habitat
Hibiscus moscheutos L. Lythrum alatum Pursh Nyssa sylvatica Marsh. Ludwigia polycarpa Short & Peters Bartonia virginica (L.) BSP.	Swamp rose mallow Wing-angled loosestrife Black gum Many-seeded ludwigia Virginia bartonia	marshes prairie roadsides woods/disturbed woods/disturbed areas
Gentiana alba Muhl. Gentiana puberulenta Pringle Gentianella quinquefolia (L). Small Asclepias purpurascens L. Asclepias sullivantii Engelm.	White gentian Downy gentian Stiff gentian Purple milkweed Sullivant's milkweed	savannah N/A prairie/savannah prairie/savannah prairie
Cuscuta cephalanthi Engelm. Cuscuta coryli Engelm. Phyla lanceolata Michx. Blephilia ciliata (L.) Benth. Lycopus rubellus Moench	Dodder Dodder Fog fruit Downy wood-mint Stalked water-horehound	prairie prairie/savannah prairie woods
Agalinis gattingeri (Small) Small Agalinis skinneriana (Wood) Britt. Aureolaria pedicularia (L.) Raf. Veronicastrum virginicum (L.) Farw. Aster dumosus L. var. strictior T. & G.	Gattinger's agalinis Skinner's agalinis Fern-leaved false foxglove Culver's-root Bushy aster	prairie prairie savannah prairie/savannah prairie/savannah
Aster praealtus Poir. var. praealtus Bidens coronata (L.) Britt Cirsium hillii (Canby) Fern Coreopsis tripteris L. Eupatorium purpureum L. Hieracium longipilum Torr.	Willow aster Southern tickseed Hill's Thistle Tall coreopsis Purple-jointed joe-pye weed Long-bearded hawkweed	prairie/savannah wetlands prairie prairie/savannah woods N/A
Krigia biflora (Walt.) Blake Liatris aspera Michx. Liatris spicata (L.) Willd. Ratibida pinnata (Vent.) Barnh. Silphium terebinthinaceum Jacq.	Two-flowered cynthia Rough blazing star Dense blazing star Gray-headed coneflower Prairie dock	prairie/savannah savannah prairie/savannah prairie prairie
Solidago riddellii Frank Solidago rigida L. Solidago speciosa Nutt. Vernonia gigantea (Walt.) Trel. ex Banner & Coville	Riddell's goldenrod Stiff-leaved goldenrod Showy goldenrod Tall ironweed	prairie prairie/savannah prairie/savannah prairie/savannah

Only known Canadian location.

Table 2. Significant breeding birds of Walpole Island Indian Reserve.

Species	Breeding Status	Source ¹	Species	Breeding Status	Source ¹
Horned grebe	(+)	ORBB	Acadian flycatcher	+	ORBBP, MNR
Least bittern	*	ORBBP, MNR	Tufted titmouse	*	ORBBP
Great egret	(*)	ORBBP	Eastern bluebird	*	COSEWIC
Cattle egret Cooper's hawk	+	ORBBP MNR, COSEWIC	White-eyed vireo	+	ORBBP
Cooper's nawk	+	MINK, COSEWIC	Prothonotary warbler	+	ORBBP, MNR, COSEWIC
Bald eagle	+	ORBBP, MNR, COSEWIC	Louisiana waterthrush	+	ORBBP, MNR
Northern bobwhite	*		Hooded warbler	+	ORBBP, MNR
Canvasback	(*)	ORBBP, MNR	Yellow-breasted chat	+	ORBBP
Redhead Northern shoveler	(*) (+)	MNR MNR	Yellow-headed blackbird	(+)	ORBBP, MNR
	` '		Orchard oriole	*	ORBBP
Ruddy duck	(+)	MNR	Henslow's sparrow		ORBBP, MNR, COSEWIC
Sandhill crane King rail Little gull Forster's tern	(*) (*) (*) (*)	ORBBP ORBBP, MNR, COSEWIC ORBBP, MNR ORBBP, MNR	 Confirmed breeding in study are (*) Confirmed breeding on Walpo + Possible/probable breeding in s (+) possible/probable breeding or 	le Island, but i tudy area	•
Caspian tern Black tern	(+) (*)	ORBBP, MNR, COSEWIC MNR		ngered Wildli	of Natural Resources 1983), COSEWIC fe in Canada 1988), and ORBBP (Ontario

Table 3. Reptiles and amphibians of Walpole Island Indian Reserve.

Scientific Name	Common Name
Notophtalmus viridescens Ambystoma tremblayi Ambystoma laterale Bufo americanus Hyla crucifer	Eastern newt Tremblay's salamander Blue-spotted salamander American toad Spring peeper
Hyla versicolor Pseudacris triseriata Rana pipiens Rana catesbeiana Chelydra serpentina	Tetraploid gray treefrog Striped chorus frog Northern leopard frog Bullfrog Common snapping turtle
Chrysemys picta Graptemys geographica Emydoidea blandingi Clemmys guttata Trionyx spiniferus	Painted turtle Map turtle Blanding's turtle Spotted turtle Spiny softshell
Eumeces fasciatus Thamnophis sirtalis Thamnophis butleri Nerodia sipedon Regina septemvittata	Five-lined skink Common garter snake Butler's garter snake Northern water snake Queen snake
Storeria dekayi Opheodrys vernalis Elaphe vulpina Lampropeltis triangulum Sistrurus catenatus	Brown snake Smooth green snake Fox snake Milk snake Massasauga

Table 4. Mammals of the Walpole Island Indian Reserve.

Scientific Name	Common Name		
Sorex cinereus	Masked shrew		
Blarina brevicauda	Short-tailed shrew		
Eptesicus fuscus	Big brown bat		
Lasiurus borealis	Red bat		
Lepus europaeus	European hare		
Sylvilagus floridanus	Eastern cottontail		
Tamias striatus	Eastern chipmunk		
Marmota monax	Woodchuck		
Sciurus carolinensis	Grey squirrel		
Tamiasciurus hudsonicus	American red squirrel		
Glaucomys volans	Southern flying squirrel		
Castor canadensis	Beaver		
Peromyscus maniculatus	Deer mouse		
Peromyscus leucopus	White-footed mouse		
Microtus pennsylvanicus	Meadow vole		
Ondatra zibethica	Muskrat		
Canis latrans	Coyote		
Vulpes vulpes	Red fox		
Procyon lotor	Raccoon		
Mustela erminea	Short-tailed weasel		
Mustela vison	Mink		
Taxidea taxus	Badger		
Mephitis mephitis	Striped skunk		
Odocoileus virginianus	White-tailed deer		

Table 5. Significant butterfly species of Walpole Island (From Kulon et al 1987)

Scientific Name	Common Name	
Erynnis baptisiae	Wild indigo duskywing	
Erynnis horatius	Horace's duskywing	
Erynnis martialis	Mottled duskywing	
Erynnis persius	Hairy duskywing	
Poanes massasoit	Mulberry wing	
Libytheana bachmanii	Snout	

DISCUSSION

This study confirmed that outstanding natural areas remain on Walpole Island. A majority of the rare flora and fauna are directly or indirectly associated with prairie or savannah communities. These communities are generally in superb condition, due to the regular practice of setting fire to these areas by the island residents. Fully one-third of the flora is made up of grasses, sedges, and composites. This assemblage of rare and more common prairie and savannah species, combined with the excellent overall condition of the communities which they make up, gives Walpole Island undoubtedly the distinction of harboring the most significant tallgrass prairie and oak savannah vegetation remaining in Canada.

As a result of this study, the best sites have been identified and ranked in order of priority. Six hundred and thirty-eight ha of portions of the original 30 natural areas have been selected to represent the areas in most need of protection. The majority of these areas are tallgrass prairie and oak savannah communities. A feasibility study is presently underway to investigate the possibility of conserving these significant properties through leasing or other arrangements with their respective landowners.

ACKNOWLEDGEMENTS

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