APPENDIX A:

ENDANGERED, THREATENED, AND RARE SPECIES LIST

GRIFFY LAKE MASTER PLAN 2008
MONROE COUNTY, INDIANA

Endangered, Threatened and Rare Species, and High Quality Natural Communities from Griffy Lake area, Monroe County, Indiana

TYPE	SPECIES NAME	COMMON NAME	FED	STATE	TRS	LASTOBS	COMMENTS
GRIFFY LAKE							
Vascular Plant	Potamogeton pusillus	Slender Pondweed		WL	009N001W 22	2000-05-11	
Vascular Plant	Zannichellia palustris	Horned Pondweed		SR	009N001W 21	2000-05-11	
Vascular Plant	Zannichellia palustris	Horned Pondweed		SR	009N001W 21 SWQ NEQ & NWQ SEQ	2002-06-28	
GRIFFY WOODS NATURE PRESERVE							
High Quality Natural Community	Forest - upland dry-mesic	Dry-mesic Upland Forest		SG	009N001W 21 NEQ SEQ	1988	
High Quality Natural Community	Forest - upland mesic	Mesic Upland Forest		SG	009N001W 22 SWQ	1988	
Vascular Plant	Juglans cinerea	Butternut		WL	009N001W 22	1927-09-26	
Vascular Plant	Linum striatum	Ridged Yellow Flax		WL	009N001W 22	1927-09-26	
Vascular Plant	Malaxis unifolia	Green Adder's-mouth		SE	009N001W 22	1886-06-30	

Fed: LE = listed federal endangered; C = federal candidate species

State: SE = state endangered; ST = state threatened; SR = state rare; SSC = state species of special concern; SG = state significant; WL = watch list; no rank = not ranked but tracked to monitor status

Grank: Heritage Global Rank: G1 = critically imperiled; G2 = imperiled; G3 = rare or uncommon; G4 = widespread but with long term concerns; G5 = widespread and secure; GU = unranked

Srank: State Heritage Rank: S1 = critically imperiled; S2 = imperiled; S3 = rare or uncommon; S4 = widespread but with long term concerns SNR = not ranked; B = breeding rank; SNA = not resident in state in non-breeding season

Indiana County Endangered, Threatened and Rare Species List

County: Monroe

Species Name	Common Name	FED	STATE	GRANK	SRANK
Diplopoda					
Conotyla bollmani	A Millipede		SR	G5	S2
Scytonotus granulatus	Granulated Milliped			G5	S2
Crustacean: Malacostraca					
Caecidotea jordani	Jordan Cave Isopod		SE	G2G3	S2
Orconectes inermis testii	Troglobitic Crayfish		ST	G5T3T4	S2
Crustacean: Ostracoda					
Sagittocythere barri	Barr's Commensal Cave Ostracod		WL	G5	S3
Mollusk: Bivalvia (Mussels)					
Villosa lienosa	Little Spectaclecase		SSC	G5	S2
Mollusk: Gastropoda					
Carychium exile	Ice Thorn		ST	G5	S2
Ellipluran: Collembola					
Pseudosinella fonsa	Fountain Cave Springtail		ST	G3G4	S2
Insect: Coleoptera (Beetles)					
Aleochara lucifuga	A Beetle		SE	GNR	S1
Nicrophorus americanus	American Burying Beetle	LE	SX	G2G3	SH
Pseudanophthalmus shilohensis mayfieldensis	Cave Beetle		SE	G1G2T1T2	S1
Pseudanophthalmus tenuis blatchleyi	Cave Beetle		SE	G3T1T2	S1
Quedius spelaeus	Spelean Rove Beetle		ST	GNR	S2
Insect: Lepidoptera (Butterflies & Moths)					
Celastrina nigra	Sooty Azure		ST	G4	S2
Insect: Odonata (Dragonflies & Damselflies)					
Aeshna mutata	Spatterdock Darner		ST	G4	S1S2
Insect: Tricoptera (Caddisflies)					
Agapetus gelbae	An Agapetus Caddisfly		ST	G3	S2
Diplectrona metaqui	A Diplectronan Caddisfly		ST	G4G5	S2
Goera stylata	A Northern Casemaker Caddisfly		SE	G5	S1
Homoplectra doringa	A Homoplectran Caddisfly		SE	G5	S1
Arachnida					
Dolomedes scriptus	Lined Nursery Web Spider			GNR	S1?
Nesticus carteri	Carter's Cave Spider			GNR	S1
Fish					
Amblyopsis spelaea	Northern Cavefish		SE	G4	S1
Amphibian					
Hemidactylium scutatum	Four-toed Salamander		SE	G5	S2
Rana areolata circulosa	Northern Crawfish Frog		SE	G4T4	S2
Reptile					
Clonophis kirtlandii	Kirtland's Snake		SE	G2	S2
Crotalus horridus	Timber Rattlesnake		SE	G4	S2
Opheodrys aestivus	Rough Green Snake		SSC	G5	S3
Thamnophis proximus	Western Ribbon Snake		SSC	G5	S3
Bird					
Accipiter striatus	Sharp-shinned Hawk	No Status	SSC	G5	S2B
Aimophila aestivalis	Bachman's Sparrow			G3	SXB
Ardea alba	Great Egret		SSC	G5	S1B
Ardea herodias	Great Blue Heron			G5	S4B
Bartramia longicauda	Upland Sandpiper		SE	G5	S3B
Buteo lineatus	Red-shouldered Hawk		SSC	G5	S3
Buteo platypterus	Broad-winged Hawk	No Status	SSC	G5	S3B
Coragyps atratus	Black Vulture			G5	S1N,S2B
Dendroica cerulea	Cerulean Warbler		SSC	G4	S3B
Dendroica virens	Black-throated Green Warbler			G5	S2B

Indiana Natural Heritage Data Center
Division of Nature Preserves
Indiana Department of Natural Resources
This data is not the result of comprehensive county surveys

Fed: LE = Endangered; LT = Threatened, C = candidate, PDL = proposed for delisting

State: SE = state endangered, ST = state threatened, SR = state rare, SSC = state species of special concern, SX = state extirpated, SG = state significant, WL = watch list

GRANK: Global Heritage Rank. G1 = critically imperiled globally, G2 = imperiled globally, G3 = rare or uncommon globally, G4 = widespread and abundant globally but with long term concerns, G5 = widespread and abundant globally, G? = unranked, GX = extinct; Q = uncertain rank, T = taxonomic subunit rank

SRANK: State Heritage Rank. S1 = critically imperiled in state, S2 = imperiled in state, S3 = rare or uncommon in state, G4 = widespread and abundant in state but with long term concern, SG = state significant, SH = historical in state, SX = state extirpated, B = breeding status; S? = unranked; SNR = unranked; SNA = nonbreeding status unranked

Indiana County Endangered, Threatened and Rare Species List

County: Monroe

Species Name	Common Name	FED	STATE	GRANK	SRANK
Haliaeetus leucocephalus	Bald Eagle	LT,PDL	SE	G5	S2
Helmitheros vermivorus	Worm-eating Warbler		SSC	G5	S3B
Ixobrychus exilis	Least Bittern		SE	G5	S3B
Mniotilta varia	Black-and-white Warbler		SSC	G5	S1S2B
Wilsonia citrina	Hooded Warbler		SSC	G5	S3B
Mammal					
Lutra canadensis	Northern River Otter			G5	S2
Lynx rufus	Bobcat	No Status		G5	S1
Mustela nivalis	Least Weasel		SSC	G5	S2?
Myotis sodalis	Indiana Bat or Social Myotis	LE	SE	G2	S1
Neotoma magister	Eastern Woodrat		SE	G3G4	S2
Taxidea taxus	American Badger			G5	S2
Vascular Plant					
Acalypha deamii	Mercury		SR	G4?	S2
Armoracia aquatica	Lake Cress		SE	G4?	S1
Castanea dentata	American Chestnut		WL	G4	S3
Catalpa speciosa	Northern Catalpa		SR	G4?	S2
Epigaea repens	Trailing Arbutus		WL	G5	S3
Hydrastis canadensis	Golden Seal		WL	G4	S3
Juglans cinerea	Butternut		WL	G3G4	S3
Linum striatum	Ridged Yellow Flax		WL	G5	S3
Lithospermum incisum	Narrow-leaved Puccoon		SE	G5	S1
Malaxis unifolia	Green Adder's-mouth		SE	G5	S1
Oryzopsis racemosa	Black-fruit Mountain-ricegrass		SR	G5	S2
Oxalis illinoensis	Illinois Woodsorrel		WL	G4Q	S2
Panax quinquefolius	American Ginseng		WL	G3G4	S3
Potamogeton pusillus	Slender Pondweed		WL	G5	S2
Rubus centralis	Illinois Blackberry		SE	G2?Q	S1
Zannichellia palustris	Horned Pondweed		SR	G5	S2
Zizia aptera	Golden Alexanders		SR	G5	S2
High Quality Natural Community					
Forest - floodplain mesic	Mesic Floodplain Forest		SG	G3?	S1
Forest - upland dry-mesic	Dry-mesic Upland Forest		SG	G4	S4
Forest - upland mesic	Mesic Upland Forest		SG	G3?	S3
Primary - cave aquatic	Aquatic Cave		SG	GNR	SNR
Primary - cliff limestone	Limestone Cliff		SG	GU	S1

APPENDIX B:

2007 PLANT COMMUNITY INVENTORY

GRIFFY LAKE MASTER PLAN 2008
MONROE COUNTY, INDIANA

Site: Griffy Lake Nature Preserve
Locale: Monroe County, Indiana
Date: May 1, 2007 12.00 hours (NG, SN, DR, KT)
May 2, 2007 10.00 hours (NG, SN, DR, KT)
May 3, 2007 4.50 hours (NG, SN, DR, KT)
July 25, 2007 11.25 hours (BB, SN)
July 26, 2007 8.50 hours (BB, SN)
September 12, 2007 13.00 hours (NG, SN, DR, KT)
September 13, 2007 12.25 hours (NG, SN, DR, KT)
September 14, 2007 3.50 hours (NG, SN, DR, KT)
By: Bruce Behan (BB), Nick Gressick (NG), Scott Namestnik (SN), Debra Rose (DR), Katarina Topalov (KT)
File: s:\Walkerton\PROJECTS\07\070331_GriffyLakeNaturePreserve\FieldSurveys\Botanical\inventory as of September 14, 2007.inv
Notes: Vascular Plant Species Inventory, ~1100 Acre Site
Does not include lake plants, as lake survey being performed by others
RIBAUV substituted for Myrica pensylvanica
CXACUT substituted for Cyperus amuricus

FLORISTIC QUALITY DATA		Native			Adventive	
465 NATIVE SPECIES	Tree	55	9.8%	Tree	5	0.9%
564 Total Species	Shrub	34	6.0%	Shrub	12	2.1%
3.9 NATIVE MEAN C	W-Vine	12	2.1%	W-Vine	1	0.2%
3.2 W/Adventives	H-Vine	5	0.9%	H-Vine	0	0.0%
84.8 NATIVE FQI	P-Forb	205	36.3%	P-Forb	27	4.8%
77.0 W/Adventives	B-Forb	14	2.5%	B-Forb	12	2.1%
1.1 NATIVE MEAN W	A-Forb	46	8.2%	A-Forb	20	3.5%
1.3 W/Adventives	P-Grass	39	6.9%	P-Grass	11	2.0%
AVG: Faculative (-)	A-Grass	4	0.7%	A-Grass	10	1.8%
	P-Sedge	30	5.3%	P-Sedge	1	0.2%
	A-Sedge	4	0.7%	A-Sedge	0	0.0%
	Fern	17	3.0%	Fern	0	0.0%

ACRONYM	C	SCIENTIFIC NAME	W	WETNESS	PHYSIOGNOMY	COMMON NAME
ABUTHE	0	ABUTILON THEOPHRASTI	4	FACU-	Ad A-Forb	BUTTONWEED
ACADEA	5	Acalypha deamii	5	UPL	Nt A-Forb	LARGE-SEEDED MERCURY
ACAGRA	3	Acalypha gracilens	5	UPL	Nt A-Forb	SLENDER THREE-SEEDED MERCURY
ACARHO	0	Acalypha rhomboidea	3	FACU	Nt A-Forb	THREE-SEEDED MERCURY
ACAVIR	0	Acalypha virginica	3	FACU	Nt A-Forb	THREE-SEEDED MERCURY
ACENEG	1	Acer negundo	-2	FACW-	Nt Tree	BOXELDER
ACERUR	5	Acer rubrum v. rubrum	0	FAC	Nt Tree	RED MAPLE
ACESAI	1	Acer saccharinum	-3	FACW	Nt Tree	SILVER MAPLE
ACESAN	6	Acer saccharum s. nigrum	5	UPL	Nt Tree	BLACK MAPLE
ACESAS	4	Acer saccharum s. saccharum	3	FACU	Nt Tree	SUGAR MAPLE
ACHMIL	0	Achillea millefolium	3	FACU	Nt P-Forb	COMMON MILFOIL
ACTPAC	7	Actaea pachypoda	5	UPL	Nt P-Forb	DOLL'S-EYES
ADIPED	7	Adiantum pedatum	1	FAC-	Nt Fern	MAIDENHAIR FERN
AESGLA	5	Aesculus glabra	-1	FAC+	Nt Tree	OHIO BUCKEYE
AGATET	4	Agalinis tenuifolia v. tenuifolia	0	FAC	Nt A-Forb	SLENDER FALSE FOXGLOVE
AGEALT	2	Ageratina altissima	3	FACU	Nt P-Forb	WHITE SNAKEROOT
AGRGRY	2	Agrimonia gryposepala	2	FACU+	Nt P-Forb	TALL AGRIMONY
AGRPAR	4	Agrimonia parviflora	-1	FAC+	Nt P-Forb	SWAMP AGRIMONY
AGRPUB	5	Agrimonia pubescens	5	UPL	Nt P-Forb	SOFT AGRIMONY
AGRROS	5	Agrimonia rostellata	3	FACU	Nt P-Forb	WOODLAND AGRIMONY
AGRALA	0	AGROSTIS GIGANTEA	-3	FACW	Ad P-Grass	RED TOP
AGRPER	2	Agrostis perennans	1	FAC-	Nt P-Grass	AUTUMN BENT GRASS
AILALT	0	AILANTHUS ALTISSIMA	5	UPL	Ad Tree	TREE-OF-HEAVEN
ALISUB	2	Alisma subcordatum	-5	OBL	Nt P-Forb	COMMON WATER PLANTAIN
ALLPET	0	ALLIARIA PETIOLATA	0	FAC	Ad B-Forb	GARLIC MUSTARD
ALLCAN	1	Allium canadense	3	FACU	Nt P-Forb	WILD GARLIC
ALLTRB	6	Allium tricoccum v. burdickii	2	FACU+	Nt P-Forb	WILD LEEK
ALLVIN	0	ALLIUM VINEALE	3	FACU	Ad P-Forb	FIELD GARLIC
ALOPRA	0	ALOPECURUS PRATENSIS	-3	FACW	Ad P-Grass	MEADOW FOXTAIL
AMBARE	0	Ambrosia artemisiifolia v. elatior	3	FACU	Nt A-Forb	COMMON RAGWEED
AMBTRI	0	Ambrosia trifida	-1	FAC+	Nt A-Forb	GIANT RAGWEED
AMPBRB	5	Amphicarpaea bracteata v. bracteata	0	FAC	Nt H-Vine	HOG PEANUT
ANAARV	0	ANAGALLIS ARVENSIS	5	UPL	Ad A-Forb	POOR MAN'S WEATHERGLASS
ANDGER	5	Andropogon gerardii	1	FAC-	Nt P-Grass	BIG BLUESTEM GRASS
ANDVIR	1	Andropogon virginicus	1	FAC-	Nt P-Grass	BROOM SEDGE
ANEACU	8	Anemone acutiloba	5	UPL	Nt P-Forb	SHARP-LOBED HEPATICA
ANEVIR	4	Anemone virginiana	5	UPL	Nt P-Forb	TALL ANEMONE
ANTNEG	3	Antennaria neglecta	5	UPL	Nt P-Forb	CAT'S FOOT
ANTPLA	3	Antennaria plantaginifolia	5	UPL	Nt P-Forb	COMMON PUSSY TOES
APLHYE	7	Aplectrum hyemale	1	FAC-	Nt P-Forb	ADAM-AND-EVE
APOCAN	2	Apocynum cannabinum	0	FAC	Nt P-Forb	DOGBANE
APOSIB	2	Apocynum sibiricum	-1	FAC+	Nt P-Forb	INDIAN HEMP
ARALAE	5	Arabis laevigata	5	UPL	Nt B-Forb	SMOOTH ROCK CRESS

ARARAC	8	Aralia racemosa	5	UPL	Nt	P-Forb	AMERICAN SPIKENARD
ARCMIN	0	ARCTIUM MINUS	5	UPL	Ad	B-Forb	COMMON BURDOCK
ARIDRA	5	Arisaema dracontium	-3	FACW	Nt	P-Forb	GREEN DRAGON
ARITRI	4	Arisaema triphyllum	-2	FACW-	Nt	P-Forb	INDIAN TURNIP
ARIDIC	2	Aristida dichotoma	3	FACU	Nt	A-Grass	POVERTY GRASS
ARISER	8	Aristolochia serpentaria	5	UPL	Nt	P-Forb	BIRTHWORT
ASACAN	5	Asarum canadense	5	UPL	Nt	P-Forb	CANADA WILD GINGER
ASCINC	4	Asclepias incarnata	-5	OBL	Nt	P-Forb	SWAMP MILKWEED
ASCSYR	1	Asclepias syriaca	5	UPL	Nt	P-Forb	COMMON MILKWEED
ASCTUB	4	Asclepias tuberosa	5	UPL	Nt	P-Forb	BUTTERFLYWEED
ASITRI	6	Asimina triloba	0	FAC	Nt	Tree	PAPAW
ASPPLA	3	Asplenium platyneuron	3	FACU	Nt	Fern	EBONY SPLEENWORT
ATHFIN	6	Athyrium filix-femina s. angustum	0	FAC	Nt	Fern	LADY FERN
ATHFIS	6	Athyrium filix-femina s. asplenioides	0	FAC	Nt	Fern	SOUTHERN LADY FERN
AURFLA	7	Aureolaria flava	5	UPL	Nt	P-Forb	SMOOTH FALSE FOXGLOVE
AVESAT	0	AVENA SATIVA	5	UPL	Ad	A-Grass	OATS
BARVUL	0	BARBAREA VULGARIS	0	FAC	Ad	B-Forb	YELLOW ROCKET
BERTHU	0	BERBERIS THUNBERGII	4	FACU-	Ad	Shrub	JAPANESE BARBERRY
BETNIG	2	Betula nigra	-3	FACW	Nt	Tree	RIVER BIRCH
BIDBIP	0	Bidens bipinnata	-2	FACW-	Nt	A-Forb	SPANISH NEEDLES
BIDCER	2	Bidens cernua	-5	OBL	Nt	A-Forb	NODDING BUR MARIGOLD
BIDCOM	2	Bidens comosa	-5	OBL	Nt	A-Forb	SWAMP TICKSEED
BIDFRO	1	Bidens frondosa	-3	FACW	Nt	A-Forb	COMMON BEGGAR'S TICKS
BLECIL	7	Blephilia ciliata	5	UPL	Nt	P-Forb	OHIO HORSE MINT
BLEHIR	5	Blephilia hirsuta	4	FACU-	Nt	P-Forb	WOOD MINT
BOECYC	3	Boehmeria cylindrica	-5	OBL	Nt	P-Forb	FALSE NETTLE
BOTDIS	3	Botrychium dissectum	0	FAC	Nt	Fern	BRONZE FERN
BOTVIR	4	Botrychium virginianum	3	FACU	Nt	Fern	RATTLESNAKE FERN
BRAERE	6	Brachyelytrum erectum	5	UPL	Nt	P-Grass	LONG-AWNED WOOD GRASS
BRANIG	0	BRASSICA NIGRA	5	UPL	Ad	A-Forb	BLACK MUSTARD
BROINE	0	BROMUS INERMIS	5	UPL	Ad	P-Grass	HUNGARIAN BROME
BROLAT	6	Bromus latiglumis	5	UPL	Nt	P-Grass	EARLY-LEAVED BROME
BROPUB	4	Bromus pubescens	2	FACU+	Nt	P-Grass	WOODLAND BROME
CALSEP	1	Calystegia sepium	0	FAC	Nt	P-Forb	AMERICAN BINDWEED
CAMAME	4	Campanulastrum americanum	0	FAC	Nt	A-Forb	AMERICAN BELLFLOWER
CAMRAD	1	Campsis radicans	0	FAC	Nt	W-Vine	TRUMPET CREEPER
CAPBUR	0	CAPSELLA BURSA-PASTORIS	1	FAC-	Ad	A-Forb	SHEPHERD'S PURSE
CARANG	5	Cardamine angustata	5	UPL	Nt	P-Forb	SLENDER TOOTHWORT
CARCON	4	Cardamine concatenata	4	FACU	Nt	P-Forb	TOOTHWORT
CARDOU	5	Cardamine douglassii	-3	FACW	Nt	P-Forb	NORTHERN BITTER CRESS
CARHIR	0	CARDAMINE HIRSUTA	3	FACU	Ad	A-Forb	HAIRY BITTER CRESS
CARPEN	2	Cardamine pensylvanica	-4	FACW+	Nt	B-Forb	PENNSYLVANIA BITTER CRESS
CXALBA	6	Carex albicans v. albicans	5	UPL	Nt	P-Sedge	BLUNT-SCALED OAK SEDGE
CXALBU	7	Carex albursina	5	UPL	Nt	P-Sedge	BLUNT-SCALED WOOD SEDGE
CXBLAN	1	Carex blanda	0	FAC	Nt	P-Sedge	COMMON WOOD SEDGE
CXCARE	9	Carex careyana	5	UPL	Nt	P-Sedge	CAREY'S WOOD SEDGE
CXFRAN	2	Carex frankii	-5	OBL	Nt	P-Sedge	BRISTLY CATTAIL SEDGE
CXGLAU	3	Carex glaucodea	5	UPL	Nt	P-Sedge	BLUE SEDGE
CXGRNG	2	Carex granularis	-4	FACW+	Nt	P-Sedge	PALE SEDGE
CXGRIS	3	Carex grisea	5	UPL	Nt	P-Sedge	WOOD GRAY SEDGE
CXHIRS	3	Carex hirsutella	4	FACU-	Nt	P-Sedge	HAIRY GREEN SEDGE
CXJAME	4	Carex jamesii	5	UPL	Nt	P-Sedge	GRASS SEDGE
CXLXLA	7	Carex laxiculmis v. laxiculmis	5	UPL	Nt	P-Sedge	WEAK-STEMMED WOOD SEDGE
CXLUPN	4	Carex lupulina	-5	OBL	Nt	P-Sedge	COMMON HOP SEDGE
CXLURI	4	Carex lurida	-5	OBL	Nt	P-Sedge	BOTTLEBRUSH SEDGE
CXNORM	3	Carex normalis	-3	FACW	Nt	P-Sedge	SPREADING OVAL SEDGE
CXPENP	5	Carex pensylvanica	5	UPL	Nt	P-Sedge	PENNSYLVANIA OAK SEDGE
CXPICT	7	Carex picta	5	UPL	Nt	P-Sedge	PAINTED SEDGE
CXPLAY	10	Carex platyphylla	5	UPL	Nt	P-Sedge	BROAD-LEAVED WOOD SEDGE
CXPROJ	7	Carex projecta	-5	OBL	Nt	P-Sedge	LOOSE-HEADED OVAL SEDGE
CXRADI	4	Carex radiata	3	FACU	Nt	P-Sedge	STRAIGHT-STYLED BRACTED SEDGE
CXSPAR	4	Carex sparganioides	0	FAC	Nt	P-Sedge	LOOSE-HEADED BRACTED SEDGE
CXSWAN	4	Carex swanii	3	FACU	Nt	P-Sedge	DOWNY GREEN SEDGE
CXTRBT	5	Carex tribuloides v. tribuloides	-4	FACW+	Nt	P-Sedge	BROAD-LEAVED OVAL SEDGE
CXVIRE	8	Carex virescens	3	FACU	Nt	P-Sedge	SLENDER GREEN SEDGE
CXVULP	2	Carex vulpinoidea	-5	OBL	Nt	P-Sedge	BROWN FOX SEDGE
CARPCA	5	Carpinus caroliniana s. virginiana	0	FAC	Nt	Tree	BLUE BEECH
CARCOR	5	Carya cordiformis	0	FAC	Nt	Tree	BITTERNUT HICKORY
CARGLA	4	Carya glabra	3	FACU	Nt	Tree	PIGNUT HICKORY
CARLAC	8	Carya laciniosa	-3	FACW	Nt	Tree	BIG SHELLBARK HICKORY
CAROVA	4	Carya ovata	3	FACU	Nt	Tree	SHAGBARK HICKORY
CARTOM	6	Carya tomentosa	5	UPL	Nt	Tree	MOCKERNUT HICKORY
CATSPE	0	Catalpa speciosa	3	FACU	Nt	Tree	CIGAR TREE
CAUTHA	8	Caulophyllum thalictroides	5	UPL	Nt	P-Forb	BLUE COHOSH
CELSCA	2	Celastrus scandens	3	FACU	Nt	W-Vine	CLIMBING BITTERSWEET
CELOCC	3	Celtis occidentalis	1	FAC-	Nt	Tree	HACKBERRY

CEPOCC	5	Cephalanthus occidentalis	-5	OBL	Nt Shrub	BUTTONBUSH
CERGLO	0	CERASTIUM GLOMERATUM	5	UPL	Ad P-Forb	CLAMMY CHICKWEED
CERCAN	3	Cercis canadensis	3	FACU	Nt Tree	EASTERN REDBUD
CHAPRP	2	Chaerophyllum procumbens v. procumbens	-1	FAC+	Nt A-Forb	COMMON STREAMBANK CHERVIL
CHANIC	2	Chamaecrista nictitans	4	FACU-	Nt A-Forb	WILD SENSITIVE PLANT
CHAMAC	0	Chamaesyce nutans	4	FACU-	Nt A-Forb	NODDING SPURGE
CHALAT	4	Chasmanthium latifolium	-3	FACW	Nt P-Grass	INDIAN WOOD OATS
CHEALB	0	CHENOPODIUM ALBUM	1	FAC-	Ad A-Forb	LAMB'S QUARTERS
CHIMAC	4	Chimaphila maculata	5	UPL	Nt Shrub	SPOTTED WINTERGREEN
CICINT	0	CICHORIUM INTYBUS	5	UPL	Ad P-Forb	CHICKORY
CINARU	4	Cinna arundinacea	-3	FACW	Nt P-Grass	COMMON WOOD REED
CIRLUC	2	Circaea lutetiana s. canadensis	3	FACU	Nt P-Forb	ENCHANTER'S NIGHTSHADE
CIRARV	0	CIRSIUM ARVENSE	3	FACU	Ad P-Forb	FIELD THISTLE
CIRDIS	3	Cirsium discolor	5	UPL	Nt B-Forb	PASTURE THISTLE
CIRVUL	0	CIRSIUM VULGARE	4	FACU-	Ad B-Forb	BULL THISTLE
CLAVIR	2	Claytonia virginica	3	FACU	Nt P-Forb	SPRING BEAUTY
COLCAN	8	Collinsonia canadensis	0	FAC	Nt P-Forb	CITRONELLA HORSE BALM
COMCOM	0	COMMELINA COMMUNIS	0	FAC	Ad A-Forb	COMMON DAY FLOWER
COMDIF	0	COMMELINA DIFFUSA	-3	FACW	Ad A-Forb	CLIMBING DAY FLOWER
CONMAC	0	CONIUM MACULATUM	-3	FACW	Ad B-Forb	POISON HEMLOCK
CONCOE	2	Conoclinium coelestinum	-1	FAC+	Nt P-Forb	MISTFLOWER
CONAME	8	Conopholis americana	5	UPL	Nt P-Forb	CANCER ROOT
CONARV	0	CONVOLVULUS ARVENSIS	5	UPL	Ad P-Forb	FIELD BINDWEED
CORODO	3	Corallorhiza odontorhiza	5	UPL	Nt P-Forb	FALL CORAL ROOT
CORFLO	4	Cornus florida	4	FACU-	Nt Tree	FLOWERING DOGWOOD
COROBL	5	Cornus obliqua	-5	OBL	Nt Shrub	PALE DOGWOOD
CORRAC	2	Cornus racemosa	-2	FACW-	Nt Shrub	GRAY DOGWOOD
CORVAR	0	CORONILLA VARIA	5	UPL	Ad P-Forb	CROWN VETCH
CORFLA	3	Corydalis flavula	2	FACU+	Nt B-Forb	PALE CORYDALIS
CRAPUN	2	Crataegus punctata	5	UPL	Nt Tree	DOTTED HAWTHORN
CRYCAN	3	Cryptotaenia canadensis	0	FAC	Nt P-Forb	HONEWORT
CUSCAM	1	Cuscuta campestris	5	UPL	Nt A-Forb	FIELD DODDER
CUSGRO	2	Cuscuta gronovii	-3	FACW	Nt A-Forb	COMMON DODDER
CYNLAE	1	Cynanchum laeve	0	FAC	Nt W-Vine	BLUEVINE
CYNVIV	5	Cynoglossum virginianum v. virginianum	5	UPL	Nt P-Forb	COMMON WILD COMFREY
	0	CYPERUS AMURICUS		OBL	Ad A-Sedge	ASIAN FLATSEDGE
CYPBIP	3	Cyperus bipartitus	-5	OBL	Nt A-Sedge	SHINING FLAT SEDGE
CYPESL	0	Cyperus esculentus v. leptostachyus	-3	FACW	Nt P-Sedge	FIELD NUT SEDGE
CYPODO	1	Cyperus odoratus	-5	OBL	Nt A-Sedge	COMMON RUSTY NUT SEDGE
CYPSTR	0	Cyperus strigosus	-3	FACW	Nt P-Sedge	LONG-SCALED NUT SEDGE
CYSPRO	4	Cystopteris protrusa	3	FACU	Nt Fern	COMMON FRAGILE FERN
DACGLO	0	DACTYLIS GLOMERATA	3	FACU	Ad P-Grass	ORCHARD GRASS
DANSPI	3	Danthonia spicata	5	UPL	Nt P-Grass	POVERTY OAT GRASS
DAUCAR	0	DAUCUS CAROTA	4	FACU-	Ad B-Forb	QUEEN ANNE'S LACE
DELTRI	5	Delphinium tricorne	5	UPL	Nt P-Forb	DWARF LARKSPUR
DEPACR	8	Deparia acrostichoides	0	FAC	Nt Fern	SILVERY SPLEENWORT
DESCIL	3	Desmodium ciliare	5	UPL	Nt P-Forb	HAIRY TICK TREFOIL
DESNUD	5	Desmodium nudiflorum	5	UPL	Nt P-Forb	BARE-STEMMED TICK TREFOIL
DESOBT	3	Desmodium obtusum	5	UPL	Nt P-Forb	STIFF TICK TREFOIL
DESPER	3	Desmodium perplexum	5	UPL	Nt P-Forb	PERPLEXING TICK TREFOIL
DESROT	5	Desmodium rotundifolium	5	UPL	Nt P-Forb	ROUND-LEAVED TICK TREFOIL
DIAARM	0	DIANTHUS ARMERIA	5	UPL	Ad A-Forb	DEPTFORD PINK
DICCAN	7	Dicentra canadensis	5	UPL	Nt P-Forb	SQUIRREL CORN
DICCUC	6	Dicentra cucullaria	5	UPL	Nt P-Forb	DUTCHMAN'S BREECHES
DICBOS	4	Dichanthelium boscii	5	UPL	Nt P-Grass	BEARDED PANIC GRASS
DICCLA	3	Dichanthelium clandestinum	-3	FACW	Nt P-Grass	DEER-TONGUE GRASS
DICCOC	7	Dichanthelium commutatum s. commutatum	0	FAC	Nt P-Grass	VARIABLE PANIC GRASS
DICDID	5	Dichanthelium dichotomum s. dichotomum	1	FAC-	Nt P-Grass	FORKED PANIC GRASS
DICLAX	5	Dichanthelium laxiflorum	1	FAC-	Nt P-Grass	LOOSE-FLOWERED PANIC GRASS
DICPOL	5	Dichanthelium polyanthes	5	UPL	Nt P-Grass	SMALL-FRUITED PANIC GRASS
DICSPH	5	Dichanthelium sphaerocarpon	3	FACU	Nt P-Grass	ROUND-FRUITED PANIC GRASS
DIGISC	0	DIGITARIA ISCHAEMUM	3	FACU	Ad A-Grass	SMOOTH CRAB GRASS
DIGSAN	0	DIGITARIA SANGUINALIS	3	FACU	Ad A-Grass	HAIRY CRAB GRASS
DIOTER	2	Diodia teres	3	FACU	Nt A-Forb	BUTTONWEED
DIOVIL	4	Dioscorea villosa	1	FAC-	Nt H-Vine	COMMON WILD YAM
DIOVIN	2	Diospyros virginiana	0	FAC	Nt Tree	PERSIMMON
DIPPYC	9	Diplazium pycnocarpon	1	FAC-	Nt Fern	GLADE FERN
DIPFUL	0	DIPSACUS FULLONUM	5	UPL	Ad B-Forb	COMMON TEASEL
DIRPAL	8	Dirca palustris	0	FAC	Nt Shrub	LEATHERWOOD
DRAVER	0	DRABA VERNA	5	UPL	Ad A-Forb	MOUSE-EARED WHITLOW CRESS
DRYMAR	8	Dryopteris marginalis	3	FACU	Nt Fern	MARGINAL SHIELD FERN
ECHCRU	0	ECHINOCHLOA CRUS-GALLI	-3	FACW	Ad A-Grass	BARNYARD GRASS
ECHLOB	3	Echinocystis lobata	-2	FACW-	Nt H-Vine	WILD CUCUMBER
ECLPRO	3	Eclipta prostrata	-3	FACW	Nt A-Forb	YERBA DE TAJO
ELAUMB	0	ELAEAGNUS UMBELLATA	3	FACU	Ad Shrub	AUTUMN OLIVE
ELEACI	2	Eleocharis acicularis	-5	OBL	Nt P-Sedge	NEEDLE SPIKE RUSH

ELEOBT	1	Eleocharis obtusa	-5	OBL	Nt	A-Sedge	BLUNT SPIKE RUSH
ELECAR	5	Elephantopus carolinianus	1	FAC-	Nt	P-Forb	ELEPHANT'S FOOT
ELEIND	0	ELEUSINE INDICA	3	FACU	Ad	A-Grass	CROWFOOT GRASS
ELYCAN	5	Elymus canadensis	1	FAC-	Nt	P-Grass	CANADA WILD RYE
ELYHYS	5	Elymus hystrix	5	UPL	Nt	P-Grass	BOTTLEBRUSH GRASS
ELYREP	0	ELYMUS REPENS	3	FACU	Ad	P-Grass	QUACK GRASS
ELYRIP	5	Elymus riparius	-3	FACW	Nt	P-Grass	RIVERBANK WILD RYE
ELYVIL	4	Elymus villosus	3	FACU	Nt	P-Grass	HAIRY WILD RYE
ELYVIR	3	Elymus virginicus	-2	FACW-	Nt	P-Grass	VIRGINIA WILD RYE
ENEBIT	5	Enemion biternatum	0	FAC	Nt	P-Forb	FALSE RUE ANEMONE
EPIVIR	8	Epifagus virginiana	5	UPL	Nt	P-Forb	BEECH DROPS
EPICOL	3	Epilobium coloratum	-5	OBL	Nt	P-Forb	CINNAMON WILLOW HERB
EQUARV	1	Equisetum arvense	0	FAC	Nt	Fern	COMMON HORSETAIL
EQUHYA	2	Equisetum hyemale s. affine	-2	FACW-	Nt	Fern	TALL SCOURING RUSH
ERAFRA	2	Eragrostis frankii	-3	FACW	Nt	A-Grass	SANDBAR LOVE GRASS
ERAHYP	3	Eragrostis hypnoides	-5	OBL	Nt	A-Grass	CREEPING LOVE GRASS
ERASPE	3	Eragrostis spectabilis	5	UPL	Nt	P-Grass	PURPLE LOVE GRASS
EREHIE	2	Erechtites hieracifolia	3	FACU	Nt	A-Forb	FIREWEED
ERIBUL	5	Erigenia bulbosa	5	UPL	Nt	P-Forb	HARBINGER-OF-SPRING
ERIANS	0	Erigeron annuus	1	FAC-	Nt	B-Forb	ANNUAL FLEABANE
ERIPHI	3	Erigeron philadelphicus	-3	FACW	Nt	P-Forb	MARSH FLEABANE
ERISTR	2	Erigeron strigosus	1	FAC-	Nt	P-Forb	DAISY FLEABANE
ERYAME	5	Erythronium americanum	5	UPL	Nt	P-Forb	YELLOW ADDER'S TONGUE
EUOALA	0	EUONYMUS ALATA	5	UPL	Ad	Shrub	WINGED EUONYMUS
EUOAME	8	Euonymus americana	1	FAC-	Nt	Shrub	STRAWBERRY BUSH
EUOATR	5	Euonymus atropurpurea	1	FAC-	Nt	Shrub	WAHOO
EUOFOR	0	EUONYMUS FORTUNEI	5	UPL	Ad	Shrub	WINTERCREEPER
EUOOBO	7	Euonymus obovata	5	UPL	Nt	Shrub	RUNNING STRAWBERRY BUSH
EUPMAC	5	Eupatoriadelphus maculatus	-5	OBL	Nt	P-Forb	SPOTTED JOE PYE WEED
EUPPER	4	Eupatorium perfoliatum	-4	FACW+	Nt	P-Forb	COMMON BONESET
EUPSER	0	Eupatorium serotinum	-1	FAC+	Nt	P-Forb	LATE BONESET
EUPDEN	0	Euphorbia dentata	5	UPL	Nt	A-Forb	TOOTHED SPURGE
EUTGRA	3	Euthamia graminifolia	-2	FACW-	Nt	P-Forb	GRASS-LEAVED GOLDENROD
FAGGRA	8	Fagus grandifolia	3	FACU	Nt	Tree	AMERICAN BEECH
FALSCS	0	Fallopia scandens v. scandens	0	FAC	Nt	H-Vine	CLIMBING FALSE BUCKWHEAT
FESSUB	4	Festuca subverticillata	2	FACU+	Nt	P-Grass	NODDING FESCUE
FIMAUT	3	Fimbristylis autumnalis	-4	FACW+	Nt	A-Sedge	AUTUMN SEDGE
FLOPRO	5	Floerkea proserpinacoides	-1	FAC+	Nt	A-Forb	FALSE MERMAID WEED
FRAALN	0	FRANGULA ALNUS	-1	FAC+	Ad	Shrub	GLOSSY BUCKTHORN
FRAAME	4	Fraxinus americana	3	FACU	Nt	Tree	WHITE ASH
FRAPEL	1	Fraxinus pennsylvanica v. lanceolata	0	FAC	Nt	Tree	GREEN ASH
FRAQUA	7	Fraxinus quadrangulata	5	UPL	Nt	Tree	BLUE ASH
GALSPE	7	Galearis spectabilis	5	UPL	Nt	P-Forb	SHOWY ORCHIS
GALAPA	1	Galium aparine	3	FACU	Nt	A-Forb	ANNUAL BEDSTRAW
GALCIC	7	Galium circaezans v. circaezans	4	FACU-	Nt	P-Forb	SMOOTH WILD LICORICE
GALCIH	5	Galium circaezans v. hypomalacum	5	UPL	Nt	P-Forb	HAIRY WILD LICORICE
GALCON	5	Galium concinnum	3	FACU	Nt	P-Forb	SHINING BEDSTRAW
GALTIN	6	Galium tinctorium	-5	OBL	Nt	P-Forb	STIFF BEDSTRAW
GALTRL	5	Galium triflorum	2	FACU+	Nt	P-Forb	SWEET-SCENTED BEDSTRAW
GAUBIE	3	Gaura biennis	4	FACU-	Nt	B-Forb	BIENNIAL GAURA
GAYBAC	7	Gaylussacia baccata	3	FACU	Nt	Shrub	BLACK HUCKLEBERRY
GERMAC	4	Geranium maculatum	3	FACU	Nt	P-Forb	WILD GERANIUM
GEUCAN	1	Geum canadense	0	FAC	Nt	P-Forb	WHITE AVENS
GEUVER	1	Geum vernum	1	FAC-	Nt	P-Forb	SPRING AVENS
GLEHED	0	GLECHOMA HEDERACEA	3	FACU	Ad	P-Forb	GROUND IVY
GLETRI	1	Gleditsia triacanthos	0	FAC	Nt	Tree	HONEY LOCUST
GLYSTR	4	Glyceria striata	-5	OBL	Nt	P-Grass	FOWL MANNA GRASS
GOOPUB	5	Goodyera pubescens	0	FAC	Nt	P-Forb	RATTLESNAKE PLANTAIN
GYMDIO	4	Gymnocladus dioica	5	UPL	Nt	Tree	KENTUCKY COFFEE TREE
HACVIR	0	Hackelia virginiana	1	FAC-	Nt	P-Forb	STICKSEED
HAMVIR	5	Hamamelis virginiana	3	FACU	Nt	Shrub	WITCH HAZEL
HEDPUL	3	Hedeoma pulegioides	5	UPL	Nt	A-Forb	AMERICAN PENNYROYAL
HELDIV	5	Helianthus divaricatus	5	UPL	Nt	P-Forb	WOODLAND SUNFLOWER
HELTUB	2	Helianthus tuberosus	0	FAC	Nt	P-Forb	JERUSALEM ARTICHOKE
HELHEL	4	Heliopsis helianthoides	5	UPL	Nt	P-Forb	FALSE SUNFLOWER
HEUAME	7	Heuchera americana	4	FACU-	Nt	P-Forb	TALL ALUMROOT
HIBLAE	4	Hibiscus laevis	-5	OBL	Nt	P-Forb	HALBERD-LEAVED ROSE MALLOW
HIBMOM	4	Hibiscus moscheutos v. moscheutos	-5	OBL	Nt	P-Forb	SWAMP ROSE MALLOW
HIEGRO	5	Hieracium gronovii	5	UPL	Nt	P-Forb	HAIRY HAWKWEED
HIESCA	5	Hieracium scabrum	5	UPL	Nt	P-Forb	ROUGH HAWKWEED
HOUPUR	6	Houstonia purpurea	5	UPL	Nt	P-Forb	LARGE HOUSTONIA
HYBCON	6	Hybanthus concolor	2	FACU+	Nt	P-Forb	GREEN VIOLET
HYDARB	7	Hydrangea arborescens	4	FACU-	Nt	Shrub	WILD HYDRANGEA
HYDCAS	7	Hydrastis canadensis	5	UPL	Nt	P-Forb	GOLDEN SEAL
HYDAPP	6	Hydrophyllum appendiculatum	5	UPL	Nt	P-Forb	GREAT WATERLEAF
HYDCAE	8	Hydrophyllum canadense	-2	FACW-	Nt	P-Forb	CANADA WATERLEAF

HYDMAC	7	Hydrophyllum macrophyllum	5	UPL	Nt P-Forb	LARGE-LEAF WATERLEAF
HYDVIR	4	Hydrophyllum virginianum	-2	FACW-	Nt P-Forb	VIRGINIA WATERLEAF
HYPHYM	4	Hypericum hypericoides s. multicaule	3	FACU	Nt Shrub	ST. ANDREW'S CROSS
HYPMUT	4	Hypericum mutilum	-3	FACW	Nt P-Forb	DWARF ST. JOHN'S WORT
HYPPUN	3	Hypericum punctatum	-1	FAC+	Nt P-Forb	SPOTTED ST. JOHN'S WORT
ILEOPA	0	ILEX OPACA	5	OBL	Ad Shrub	AMERICAN HOLLY
IMPCAP	2	Impatiens capensis	-3	FACW	Nt A-Forb	SPOTTED TOUCH-ME-NOT
IMPPAL	4	Impatiens pallida	-3	FACW	Nt A-Forb	PALE TOUCH-ME-NOT
IODPIN	6	Iodanthus pinnatifidus	-3	FACW	Nt P-Forb	VIOLET CRESS
IPOHED	0	IPOMOEA HEDERACEA	0	FAC	Ad A-Forb	IVY-LEAVED MORNING GLORY
JEFDIP	7	Jeffersonia diphylla	5	UPL	Nt P-Forb	TWINLEAF
JUGCIN	5	Juglans cinerea	2	FACU+	Nt Tree	BUTTERNUT
JUGNIG	2	Juglans nigra	3	FACU	Nt Tree	BLACK WALNUT
JUNACU	4	Juncus acuminatus	-5	OBL	Nt P-Forb	SHARP-FRUITED RUSH
JUNBIF	4	Juncus biflorus	-3	FACW	Nt P-Forb	TWO-FLOWERED RUSH
JUNDUD	2	Juncus dudleyi	0	FAC	Nt P-Forb	DUDLEY'S RUSH
JUNEFF	3	Juncus effusus	-5	OBL	Nt P-Forb	COMMON RUSH
JUNTEN	0	Juncus tenuis	0	FAC	Nt P-Forb	PATH RUSH
JUNVIR	2	Juniperus virginiana	3	FACU	Nt Tree	EASTERN RED CEDAR
JUSAME	6	Justicia americana	-5	OBL	Nt P-Forb	WATER WILLOW
KRIBIF	5	Krigia biflora v. biflora	3	FACU	Nt P-Forb	TWO-FLOWER FALSE DANDELION
LACCAN	2	Lactuca canadensis	2	FACU+	Nt B-Forb	WILD LETTUCE
LACFLO	5	Lactuca floridana	1	FAC-	Nt B-Forb	BLUE LETTUCE
LACSAL	0	LACTUCA SALIGNA	3	FACU	Ad B-Forb	WILLOW-LEAVED LETTUCE
LACSER	0	LACTUCA SERRIOLA	0	FAC	Ad B-Forb	PRICKLY LETTUCE
LAMAMP	0	LAMIUM AMPLEXICAULE	5	UPL	Ad A-Forb	HENBIT
LAPCAN	2	Laportea canadensis	-3	FACW	Nt P-Forb	CANADA WOOD NETTLE
LEEORY	2	Leersia oryzoides	-5	OBL	Nt P-Grass	RICE CUT GRASS
LEEVIR	4	Leersia virginica	-3	FACW	Nt P-Grass	WHITE GRASS
LEMMIR	3	Lemna minor	-5	OBL	Nt A-Forb	SMALL DUCKWEED
LEPVIR	0	Lepidium virginicum	4	FACU-	Nt A-Forb	COMMON PEPPER GRASS
LESCUN	0	LESPEDEZA CUNEATA	5	UPL	Ad P-Forb	SILKY BUSH CLOVER
LESFRU	5	Lespedeza frutescens	5	UPL	Nt P-Forb	WAND-LIKE BUSH CLOVER
LESHIR	7	Lespedeza hirta	5	UPL	Nt P-Forb	HAIRY BUSH CLOVER
LESPRO	6	Lespedeza procumbens	5	UPL	Nt P-Forb	TRAILING BUSH CLOVER
LESVIO	5	Lespedeza violacea	5	UPL	Nt P-Forb	VIOLET BUSH CLOVER
LEUVUL	0	LEUCANTHEMUM VULGARE	5	UPL	Ad P-Forb	OX-EYE DAISY
LEUMUL	3	Leucospora multifida	-4	FACW+	Nt A-Forb	OBE-WAN-CONOBEA
LIGVUL	0	LIGUSTRUM VULGARE	5	UPL	Ad Shrub	COMMON PRIVET
LINBEN	5	Lindera benzoin	-5	OBL	Nt Shrub	HAIRY SPICEBUSH
LINDUA	3	Lindernia dubia v. anagallidea	-5	OBL	Nt A-Forb	SLENDER FALSE PIMPERNEL
LINDUD	3	Lindernia dubia v. dubia	-5	OBL	Nt A-Forb	FALSE PIMPERNEL
LINMET	4	Linum medium v. texanum	3	FACU	Nt P-Forb	SMALL YELLOW FLAX
LINVIR	4	Linum virginianum	-3	FACW	Nt P-Forb	SLENDER YELLOW FLAX
LIPLIL	3	Liparis liliifolia	4	FACU-	Nt P-Forb	PURPLE TWAYBLADE
LIQSTY	4	Liquidambar styraciflua	-3	FACW	Nt Tree	SWEET GUM
LIRTUL	4	Liriodendron tulipifera	2	FACU+	Nt Tree	TULIP POPLAR
LOBINF	3	Lobelia inflata	4	FACU-	Nt A-Forb	INDIAN TOBACCO
LOBSIP	3	Lobelia siphilitica	-4	FACW+	Nt P-Forb	GREAT BLUE LOBELIA
LOLPER	0	LOLIUM PERENNE	3	FACU	Ad P-Grass	PERENNIAL RYE GRASS
LONDIO	8	Lonicera dioica	3	FACU	Nt W-Vine	LIMBER HONEYSUCKLE
LONJAP	0	LONICERA JAPONICA	3	FACU	Ad W-Vine	JAPANESE HONEYSUCKLE
LONMAA	0	LONICERA MAACKII	5	UPL	Ad Shrub	AMUR HONEYSUCKLE
LONMOR	0	LONICERA MORROWII	5	UPL	Ad Shrub	MORROW'S HONEYSUCKLE
LOTCOR	0	LOTUS CORNICULATUS	1	FAC-	Ad P-Forb	BIRDSFOOT TREFOIL
LUDALT	3	Ludwigia alternifolia	-5	OBL	Nt P-Forb	SEEDBOX
LUDPAL	3	Ludwigia palustris	-5	OBL	Nt P-Forb	MARSH PURSLANE
LUDPEG	2	Ludwigia peploides s. glabrescens	-5	OBL	Nt P-Forb	CREEPING PRIMROSE WILLOW
LUZECH	6	Luzula echinata	3	FACU	Nt P-Forb	COMMON WOOD RUSH
LYCDIG	2	Lycopodium digitatum	5	UPL	Nt Fern	TRAILING GROUND PINE
LYCAME	3	Lycopus americanus	-5	OBL	Nt P-Forb	COMMON WATER HOREHOUND
LYCUNI	5	Lycopus uniflorus	-5	OBL	Nt P-Forb	NOTHERN BUGLE WEED
LYCVIR	5	Lycopus virginicus	-5	OBL	Nt P-Forb	BUGLE WEED
LYSLAN	7	Lysimachia lanceolata	0	FAC	Nt P-Forb	LANCE-LEAVED LOOSESTRIFE
LYSNUM	0	LYSIMACHIA NUMMULARIA	-4	FACW+	Ad P-Forb	MONEYWORT
MACPOM	0	MACLURA POMIFERA	3	FACU	Ad Tree	HEDGE APPLE
MAIRAC	4	Maianthemum racemosum	3	FACU	Nt P-Forb	FEATHERY FALSE SOLOMON SEAL
MALCOR	5	Malus coronaria	3	FACU	Nt Tree	WILD SWEET CRAB
MEDVIR	7	Medeola virginiana	5	UPL	Nt P-Forb	INDIAN CUCUMBER ROOT
MEDLUP	0	MEDICAGO LUPULINA	1	FAC-	Ad A-Forb	BLACK MEDICK
MELOFC	0	MELILOTUS OFFICINALIS	3	FACU	Ad B-Forb	YELLOW SWEET CLOVER
MENCAN	3	Menispermum canadense	-1	FAC+	Nt W-Vine	MOONSEED
MENARV	4	Mentha arvensis v. villosa	-3	FACW	Nt P-Forb	WILD MINT
MENSPI	0	MENTHA SPICATA	-4	FACW+	Ad P-Forb	SPEARMINT
MENPIP	0	MENTHA × PIPERITA	-5	OBL	Ad P-Forb	PEPPERMINT
MERVIR	6	Mertensia virginica	-3	FACW	Nt P-Forb	VIRGINIA BLUEBELLS

MICVIM	0	MICROSTEGIUM VIMINEUM	0	FAC	Ad A-Grass	NEPALESE BROWNTOP
MIMALA	4	Mimulus alatus	-5	OBL	Nt P-Forb	WINGED MONKEY FLOWER
MITREP	8	Mitchella repens	2	FACU+	Nt Shrub	PARTRIDGE BERRY
MITDIP	7	Mitella diphylla	2	FACU+	Nt P-Forb	BISHOP'S CAP
MONFIS	3	Monarda fistulosa	3	FACU	Nt P-Forb	WILD BERGAMOT
MONPUV	4	Monarda punctata v. villicaulis	5	UPL	Nt P-Forb	HORSEMINT
MONUNI	7	Monotropa uniflora	3	FACU	Nt P-Forb	INDIAN PIPE
MORALB	0	MORUS ALBA	0	FAC	Ad Tree	WHITE MULBERRY
MUHFRO	3	Muhlenbergia frondosa	-3	FACW	Nt P-Grass	COMMON SATIN GRASS
MUHMEX	4	Muhlenbergia mexicana	-3	FACW	Nt P-Grass	LEAFY SATIN GRASS
MUHSCH	0	Muhlenbergia schreberi	0	FAC	Nt P-Grass	NIMBLEWILL
MUHSOB	5	Muhlenbergia sobolifera	5	UPL	Nt P-Grass	ROCK SATIN GRASS
MUHTEN	7	Muhlenbergia tenuiflora	5	UPL	Nt P-Grass	SLENDER SATIN GRASS
MYOSCO	0	MYOSOTIS SCORPIOIDES	-5	OBL	Ad P-Forb	COMMON FORGET-ME-NOT
	0	MYRICA PENSYLVANICA			Ad Shrub	NORTHERN BAYBERRY
MYRHET	7	Myriophyllum heterophyllum	-5	OBL	Nt P-Forb	VARIOUS-LEAVED WATER MILFOIL
MYRSPI	0	MYRIOPHYLLUM SPICATUM	-5	OBL	Ad P-Forb	EUROPEAN WATER MILFOIL
NYSSYS	5	Nyssa sylvatica	5	UPL	Nt Tree	BLACK GUM
OBOVIR	4	Obolaria virginica	5	UPL	Nt P-Forb	PENNYWORT
OENBIE	0	Oenothera biennis	3	FACU	Nt B-Forb	COMMON EVENING PRIMROSE
ONOSEN	4	Onoclea sensibilis	-3	FACW	Nt Fern	SENSITIVE FERN
ORNUMB	0	ORNITHOGALUM UMBELLATUM	1	FAC-	Ad P-Forb	COMMON STAR-OF-BETHLEHEM
OSMCLI	3	Osmorhiza claytonii	4	FACU-	Nt P-Forb	HAIRY SWEET CICELY
OSTVIR	5	Ostrya virginiana	4	FACU-	Nt Tree	HOP HORNBEAM
OXAILL	9	Oxalis illinoensis	5	UPL	Nt P-Forb	ILLINOIS WOOD SORREL
OXASTR	0	Oxalis stricta	3	FACU	Nt P-Forb	TALL WOOD SORREL
OXAVIO	7	Oxalis violacea	5	UPL	Nt P-Forb	VIOLET WOOD SORREL
PACAUR	4	Packera aurea	-3	FACW	Nt P-Forb	GOLDEN RAGWORT
PACGLA	0	Packera glabella	-5	OBL	Nt A-Forb	BUTTERWEED
PACOBO	7	Packera obovata	4	FACU-	Nt P-Forb	ROUND-LEAVED RAGWORT
PANQUI	7	Panax quinquefolius	5	UPL	Nt P-Forb	GINSENG
PANDIC	0	Panicum dichotomiflorum	-2	FACW-	Nt A-Grass	FALL PANICUM
PANVIR	4	Panicum virgatum	-1	FAC+	Nt P-Grass	PRAIRIE SWITCH GRASS
PARFAS	6	Paronychia fastigiata	5	UPL	Nt A-Forb	LOW FORKED CHICKWEED
PARQUI	2	Parthenocissus quinquefolia	1	FAC-	Nt W-Vine	VIRGINIA CREEPER
PASSEM	3	Paspallum setaceum v. muhlenbergii	5	UPL	Nt P-Grass	HAIRY LENS GRASS
PASLAE	2	Paspalum laeve	5	UPL	Nt P-Grass	SMOOTH LENS GRASS
PASLUT	7	Passiflora lutea	5	UPL	Nt H-Vine	SMALL PASSION FLOWER
PASSAT	0	PASTINACA SATIVA	5	UPL	Ad B-Forb	WILD PARSNIP
PENSED	2	Penthorum sedoides	-5	OBL	Nt P-Forb	DITCH STONECROP
PERFRU	0	PERILLA FRUTESCENS	0	FAC	Ad A-Forb	BEEFSTEAK PLANT
PERCAE	0	PERSICARIA CAESPITOSA	5	UPL	Ad A-Forb	CREEPING SMARTWEED
PERHYS	3	Persicaria hydropiperoides	-5	OBL	Nt P-Forb	MILD WATER PEPPER
PERPEN	0	Persicaria pensylvanica	-4	FACW+	Nt A-Forb	PINKWEED
PERPUN	3	Persicaria punctata	-5	OBL	Nt A-Forb	SMARTWEED
PERSAG	4	Persicaria sagittata	-5	OBL	Nt A-Forb	ARROW-LEAVED TEAR-THUMB
PERVUL	0	PERSICARIA VULGARIS	-3	FACW	Ad A-Forb	LADY'S THUMB
PHABIP	6	Phacelia bipinnatifida	5	UPL	Nt B-Forb	LEAFY PHACELIA
PHAARU	0	PHALARIS ARUNDINACEA	-4	FACW+	Ad P-Grass	REED CANARY GRASS
PHEHEX	7	Phegopteris hexagonoptera	1	FAC-	Nt Fern	BROAD BEECH FERN
PHLDIV	5	Phlox divaricata	3	FACU	Nt P-Forb	BLUE PHLOX
PHRLEP	4	Phryma leptostachya	5	UPL	Nt P-Forb	LOPSEED
PHYLAN	2	Phyla lanceolata	-5	OBL	Nt P-Forb	FOG FRUIT
PHYHET	3	Physalis heterophylla	5	UPL	Nt P-Forb	CLAMMY GROUND CHERRY
PHYAME	0	Phytolacca americana	1	FAC-	Nt P-Forb	POKEWEED
PILPUM	2	Pilea pumila	-3	FACW	Nt A-Forb	CANADA CLEARWEED
PINSTR	5	Pinus strobus	0	FAC	Nt Tree	WHITE PINE
PINSYL	0	PINUS SYLVESTRIS	5	UPL	Ad Tree	SCOTCH PINE
PINVIR	5	Pinus virginiana	5	UPL	Nt Tree	SCRUB PINE
PLALAN	0	PLANTAGO LANCEOLATA	0	FAC	Ad P-Forb	ENGLISH PLANTAIN
PLAMAJ	0	PLANTAGO MAJOR	-1	FAC+	Ad P-Forb	COMMON PLANTAIN
PLARUG	0	Plantago rugelii	0	FAC	Nt A-Forb	RED-STALKED PLANTAIN
PLAOCC	3	Platanus occidentalis	-3	FACW	Nt Tree	SYCAMORE
POAANN	0	POA ANNUA	1	FAC-	Ad A-Grass	ANNUAL BLUE GRASS
POACOM	0	POA COMPRESSA	2	FACU+	Ad P-Grass	CANADIAN BLUE GRASS
POAPRA	0	POA PRATENSIS	1	FAC-	Ad P-Grass	KENTUCKY BLUE GRASS
POASYL	5	Poa sylvestris	0	FAC	Nt P-Grass	WOODLAND BLUE GRASS
PODPEL	3	Podophyllum peltatum	3	FACU	Nt P-Forb	MAY APPLE
POLREP	5	Polemonium reptans	0	FAC	Nt P-Forb	JACOB'S LADDER
POLSAN	4	Polygala sanguinea	3	FACU	Nt A-Forb	FIELD MILKWORT
POLBIF	4	Polygonatum biflorum	3	FACU	Nt P-Forb	SMALL SOLOMON'S SEAL
POLPUB	8	Polygonatum pubescens	5	UPL	Nt P-Forb	DOWNY SOLOMON'S SEAL
POLAVA	0	POLYGONUM AVICULARE v. AVICULARE	1	FAC-	Ad A-Forb	COMMON KNOTWEED
POLCAN	3	Polymnia canadensis	5	UPL	Nt P-Forb	PALE LEAFCUP
POLACR	5	Polystichum acrostichoides	5	UPL	Nt Fern	CHRISTMAS FERN
POPDEL	1	Populus deltoides	-1	FAC+	Nt Tree	EASTERN COTTONWOOD

POPGRA	4	Populus grandidentata	3	FACU	Nt	Tree	BIG-TOOTH ASPEN
POPTRE	2	Populus tremuloides	0	FAC	Nt	Tree	QUAKING ASPEN
POTCRI	0	POTAMOGETON CRISPUS	-5	OBL	Ad	P-Forb	BEGINNER'S PONDWEED
POTSIM	2	Potentilla simplex	4	FACU-	Nt	P-Forb	COMMON CINQUEFOIL
PREALB	5	Prenanthes alba	3	FACU	Nt	P-Forb	LION'S FOOT
PRUVLA	1	Prunella vulgaris s. lanceolata	0	FAC	Nt	P-Forb	SELFHEAL
PRUSER	1	Prunus serotina	3	FACU	Nt	Tree	WILD BLACK CHERRY
PSEOBT	2	Pseudognaphalium obtusifolium	5	UPL	Nt	B-Forb	OLD-FIELD BALSAM
PYCTEN	4	Pycnanthemum tenuifolium	0	FAC	Nt	P-Forb	SLENDER MOUNTAIN MINT
QUEALB	5	Quercus alba	3	FACU	Nt	Tree	WHITE OAK
QUEBIC	7	Quercus bicolor	-4	FACW+	Nt	Tree	SWAMP WHITE OAK
QUECOC	7	Quercus coccinea	5	UPL	Nt	Tree	SCARLET OAK
QUEMAC	5	Quercus macrocarpa	1	FAC-	Nt	Tree	BURR OAK
QUEMIC	7	Quercus montana	5	UPL	Nt	Tree	MOUNTAIN CHESTNUT OAK
QUEMUH	4	Quercus muhlenbergii	5	UPL	Nt	Tree	CHINKAPIN OAK
QUERUB	4	Quercus rubra	3	FACU	Nt	Tree	NORTHERN RED OAK
QUEVEL	4	Quercus velutina	5	UPL	Nt	Tree	BLACK OAK
RANABO	0	Ranunculus abortivus	-2	FACW-	Nt	A-Forb	LITTLE-LEAF BUTTERCUP
RANHIH	7	Ranunculus hispidus v. hispidus	0	FAC	Nt	P-Forb	ROUGH BUTTERCUP
RANREC	5	Ranunculus recurvatus	-3	FACW	Nt	A-Forb	HOOKED BUTTERCUP
RHUCOL	3	Rhus copallina v. latifolia	5	UPL	Nt	Shrub	DWARF SUMAC
RHUGLA	1	Rhus glabra	5	UPL	Nt	Shrub	SMOOTH SUMAC
RHUTYP	2	Rhus typhina	5	UPL	Nt	Shrub	STAGHORN SUMAC
RIBCYN	4	Ribes cynosbati	5	UPL	Nt	Shrub	PRICKLY WILD GOOSEBERRY
ROBPSE	1	Robinia pseudoacacia	4	FACU-	Nt	Tree	BLACK LOCUST
ROSMUL	0	ROSA MULTIFLORA	3	FACU	Ad	Shrub	JAPANESE ROSE
ROSPAL	5	Rosa palustris	-5	OBL	Nt	Shrub	SWAMPY ROSE
ROSSET	4	Rosa setigera	2	FACU+	Nt	Shrub	ILLINOIS ROSE
ROTRAM	2	Rotala ramosior	-5	OBL	Nt	A-Forb	WHEELWORT
RUBABA	5	Rubus abactus	1	FAC-	Nt	Shrub	YANKEE BLACKBERRY
RUBALL	2	Rubus allegheniensis	2	FACU+	Nt	Shrub	COMMON BLACKBERRY
RUBOCC	1	Rubus occidentalis	3	FACU	Nt	Shrub	BLACK RASPBERRY
RUDHIH	2	Rudbeckia hirta v. hirta	3	FACU	Nt	P-Forb	BLACK-EYED SUSAN
RUMCRI	0	RUMEX CRISPUS	-1	FAC+	Ad	P-Forb	CURLY DOCK
RUMOBT	0	RUMEX OBTUSIFOLIUS	-3	FACW	Ad	P-Forb	BITTER DOCK
SABANG	3	Sabatia angularis	-1	FAC+	Nt	B-Forb	ROSE GENTIAN
SAGLAT	3	Sagittaria latifolia	-5	OBL	Nt	P-Forb	COMMON ARROWHEAD
SALDIS	3	Salix discolor	-3	FACW	Nt	Shrub	PUSSY WILLOW
SALINT	1	Salix interior	-5	OBL	Nt	Shrub	SANDBAR WILLOW
SALNIG	3	Salix nigra	-5	OBL	Nt	Tree	BLACK WILLOW
SAMNIC	2	Sambucus nigra s. canadensis	4	FACU-	Nt	Shrub	COMMON ELDERBERRY
SAMVAL	5	Samolus valerandi	-5	OBL	Nt	P-Forb	WATER PIMPERNEL
SANCAD	5	Sanguinaria canadensis	4	FACU-	Nt	P-Forb	BLOODROOT
SANCAC	2	Sanicula canadensis	2	FACU+	Nt	B-Forb	CANADIAN BLACK SNAKEROOT
SANODO	2	Sanicula odorata	-1	FAC+	Nt	P-Forb	CLUSTERED BLACK SNAKEROOT
SASALB	1	Sassafras albidum	3	FACU	Nt	Tree	SASSAFRAS
SCHARU	0	SCHEDONORUS ARUNDINACEUS	2	FACU+	Ad	P-Grass	TALL FESCUE
SCHSCO	4	Schizachyrium scoparium	4	FACU-	Nt	P-Grass	LITTLE BLUESTEM GRASS
SCIATR	4	Scirpus atrovirens	-5	OBL	Nt	P-Sedge	DARK-GREEN BULRUSH
SCICYP	4	Scirpus cyperinus	-5	OBL	Nt	P-Sedge	WOOL GRASS
SCIPEN	2	Scirpus pendulus	-5	OBL	Nt	P-Sedge	RED BULRUSH
SCRMAR	5	Scrophularia marilandica	4	FACU-	Nt	P-Forb	LATE FIGWORT
SCUINC	4	Scutellaria incana	5	UPL	Nt	P-Forb	DOWNY SKULLCAP
SCULAT	4	Scutellaria lateriflora	-5	OBL	Nt	P-Forb	MAD-DOG SKULLCAP
SCUOVA	7	Scutellaria ovata	3	FACU	Nt	P-Forb	HEART-LEAVED SKULLCAP
SEDTER	8	Sedum ternatum	5	UPL	Nt	P-Forb	THREE-LEAVED STONECROP
SENHEB	4	Senna hebecarpa	-3	FACW	Nt	P-Forb	WILD SENNA
SETFAB	0	SETARIA FABERI	2	FACU+	Ad	A-Grass	GIANT FOXTAIL GRASS
SETPUM	0	SETARIA PUMILA	0	FAC	Ad	A-Grass	PIGEON GRASS
SETVIV	0	SETARIA VIRIDIS v. VIRIDIS	5	UPL	Ad	A-Grass	GREEN FOXTAIL GRASS
SILSTE	5	Silene stellata	5	UPL	Nt	P-Forb	STARRY CAMPION
SILVIR	7	Silene virginica	5	UPL	Nt	P-Forb	FIRE PINK
SISANG	3	Sisyrinchium angustifolium	-2	FACW-	Nt	P-Forb	STOUT BLUE-EYED GRASS
SMIHIS	3	Smilax hispida	0	FAC	Nt	W-Vine	BRISTLY GREEN BRIER
SMIILL	6	Smilax illinoensis	5	UPL	Nt	P-Forb	ILLINOIS CARRION FLOWER
SMIROT	4	Smilax rotundifolia	0	FAC	Nt	W-Vine	CAT BRIER
SOLCAR	0	Solanum carolinense	4	FACU-	Nt	P-Forb	HORSE NETTLE
SOLPTY	0	Solanum ptycanthum	4	FACU-	Nt	A-Forb	BLACK NIGHTSHADE
SOLALT	0	Solidago altissima	3	FACU	Nt	P-Forb	TALL GOLDENROD
SOLCAE	7	Solidago caesia	3	FACU	Nt	P-Forb	BLUESTEM GOLDENROD
SOLFLE	6	Solidago flexicaulis	3	FACU	Nt	P-Forb	BROAD-LEAVED GOLDENROD
SOLGIG	4	Solidago gigantea	-3	FACW	Nt	P-Forb	LATE GOLDENROD
SOLJUN	3	Solidago juncea	5	UPL	Nt	P-Forb	EARLY GOLDENROD
SOLNEM	3	Solidago nemoralis	5	UPL	Nt	P-Forb	OLD-FIELD GOLDENROD
SOLULM	5	Solidago ulmifolia	5	UPL	Nt	P-Forb	ELM-LEAVED GOLDENROD
SORNUT	4	Sorghastrum nutans	2	FACU+	Nt	P-Grass	INDIAN GRASS

SORHAL	0	SORGHUM HALEPENSE	3	FACU	Ad	P-Grass	JOHNSON GRASS
SPHNIT	8	Sphenopholis nitida	5	UPL	Nt	P-Grass	SHINING WEDGE GRASS
SPIOVE	3	Spiranthes ovalis v. erostellata	0	FAC	Nt	P-Forb	OVAL LADIES' TRESSES
STATET	4	Stachys tenuifolia v. tenuifolia	-5	OBL	Nt	P-Forb	STREAMBANK HEDGE NETTLE
STATRI	5	Staphylea trifolia	0	FAC	Nt	Shrub	BLADDERNUT
STEMEM	0	STELLARIA MEDIA s. MEDIA	3	FACU	Ad	A-Forb	COMMON CHICKWEED
STEPUB	7	Stellaria pubera	5	UPL	Nt	P-Forb	GREAT CHICKWEED
STRUMB	4	Strophostyles umbellata	3	FACU	Nt	P-Forb	CLUSTERED WILD BEAN
STYDIP	7	Stylophorum diphyllum	5	UPL	Nt	P-Forb	CELANDINE POPPY
SYMORB	1	Symphoricarpos orbiculatus	3	FACU	Nt	Shrub	CORALBERRY
SYMCOR	5	Symphyotrichum cordifolium	5	UPL	Nt	P-Forb	HEART-LEAVED ASTER
SYMLAN	3	Symphyotrichum lanceolatum	-5	OBL	Nt	P-Forb	PANICLED ASTER
SYMLAT	3	Symphyotrichum lateriflorum	-2	FACW-	Nt	P-Forb	SIDE-FLOWERING ASTER
SYMPII	0	Symphyotrichum pilosum v. pilosum	4	FACU-	Nt	P-Forb	HAIRY ASTER
SYMSHO	6	Symphyotrichum shortii	5	UPL	Nt	P-Forb	SHORT'S ASTER
SYMURO	4	Symphyotrichum urophyllum	5	UPL	Nt	P-Forb	ARROW-LEAVED ASTER
SYNHIS	5	Synandra hispidula	0	FAC	Nt	B-Forb	SYNANDRA
TAROFF	0	TARAXACUM OFFICINALE	3	FACU	Ad	P-Forb	COMMON DANDELION
TEUCAC	3	Teucrium canadense v. canadense	-2	FACW-	Nt	P-Forb	AMERICAN GERMANDER
THATHA	7	Thalictrum thalictroides	5	UPL	Nt	P-Forb	RUE ANEMONE
THENOV	5	Thelypteris noveboracensis	-1	FAC+	Nt	Fern	NEW YORK FERN
TILAMA	5	Tilia americana v. americana	3	FACU	Nt	Tree	AMERICAN LINDEN
TIPDIS	4	Tipularia discolor	4	FACU-	Nt	P-Forb	CRANE-FLY ORCHID
TOVVIR	3	Tovara virginiana	0	FAC	Nt	P-Forb	VIRGINIA KNOTWEED
TOXRAR	1	Toxicodendron radicans s. radicans	3	FACU	Nt	W-Vine	POISON IVY
TRASUB	4	Tradescantia subaspera	5	UPL	Nt	P-Forb	BROAD-LEAVED SPIDERWORT
TRAVIR	7	Tradescantia virginiana	5	UPL	Nt	P-Forb	VIRGINIA SPIDERWORT
TRIDIC	4	Trichostema dichotomum	5	UPL	Nt	A-Forb	BLUE CURLS
TRIFLA	1	Tridens flavus	5	UPL	Nt	P-Grass	COMMON PURPLETOP
TRIHYB	0	TRIFOLIUM HYBRIDUM	1	FAC-	Ad	P-Forb	ALSIKE CLOVER
TRIPRA	0	TRIFOLIUM PRATENSE	2	FACU+	Ad	P-Forb	RED CLOVER
TRIREP	0	TRIFOLIUM REPENS	2	FACU+	Ad	P-Forb	WHITE CLOVER
TRIFLE	5	Trillium flexipes	1	FAC-	Nt	P-Forb	DECLINED TRILLIUM
TRIREC	4	Trillium recurvatum	4	FACU-	Nt	P-Forb	RED TRILLIUM
TRISES	4	Trillium sessile	4	FACU-	Nt	P-Forb	SESSILE TRILLIUM
TYPGLA	0	TYPHA × GLAUCA	-5	OBL	Ad	P-Forb	HYBRID CATTAIL
ULMAME	3	Ulmus americana	-2	FACW-	Nt	Tree	AMERICAN ELM
ULMPUM	0	ULMUS PUMILA	5	UPL	Ad	Tree	SIBERIAN ELM
ULMRUB	3	Ulmus rubra	0	FAC	Nt	Tree	SLIPPERY ELM
UVUGRA	7	Uvularia grandiflora	5	UPL	Nt	P-Forb	LARGE-FLOWER BELLWORT
VACPAL	5	Vaccinium pallidum	5	UPL	Nt	Shrub	LATE LOW BLUEBERRY
VACSTA	4	Vaccinium stamineum	4	FACU-	Nt	Shrub	DEERBERRY
VALPAU	7	Valeriana pauciflora	-2	FACW-	Nt	P-Forb	PINK VALERIAN
VERTHA	0	VERBASCUM THAPSUS	5	UPL	Ad	B-Forb	WOOLLY MULLEIN
VERURU	3	Verbena urticifolia v. urticifolia	-1	FAC+	Nt	P-Forb	WHITE VERVIAN
VERALT	3	Verbesina alternifolia	-3	FACW	Nt	P-Forb	WINGSTEM
VERGIG	2	Vernonia gigantea	0	FAC	Nt	P-Forb	TALL IRONWEED
VERMIS	4	Vernonia missurica	-1	FAC+	Nt	P-Forb	MISSOURI IRONWEED
VERARV	0	VERONICA ARVENSIS	5	UPL	Ad	A-Forb	CORN SPEEDWELL
VERHED	0	VERONICA HEDERIFOLIA	5	UPL	Ad	A-Forb	IVY-LEAVED SPEEDWELL
VERSER	0	VERONICA SERPYLLIFOLIA	-3	FACW	Ad	P-Forb	THYME-LEAVED SPEEDWELL
VIBACE	8	Viburnum acerifolium	5	UPL	Nt	Shrub	MAPLE-LEAVED ARROWWOOD
VIBDEN	6	Viburnum dentatum	0	FAC	Nt	Shrub	SOUTHERN ARROWWOOD
VIBPRU	4	Viburnum prunifolium	3	FACU	Nt	Shrub	BLACK HAW
VINMIN	0	VINCA MINOR	5	UPL	Ad	Shrub	COMMON PERIWINKLE
VIOPAA	5	Viola palmata	5	UPL	Nt	P-Forb	CLEFT VIOLET
VIOPUB	5	Viola pubescens	4	FACU-	Nt	P-Forb	DOWNY YELLOW VIOLET
VIOSOR	1	Viola sororia	1	FAC-	Nt	P-Forb	WOOLLY BLUE VIOLET
VIOSTR	4	Viola striata	-3	FACW	Nt	P-Forb	COMMON WHITE VIOLET
VITAES	4	Vitis aestivalis	3	FACU	Nt	W-Vine	SUMMER GRAPE
VITRIP	1	Vitis riparia	-2	FACW-	Nt	W-Vine	RIVERBANK GRAPE
VITVUL	3	Vitis vulpina	-2	FACW-	Nt	W-Vine	FROST GRAPE
XANSTR	0	Xanthium strumarium	0	FAC	Nt	A-Forb	COCKLEBUR
ZANPAL	6	Zannichellia palustris	-5	OBL	Nt	P-Forb	HORNED PONDWEED
ZANAME	3	Zanthoxylum americanum	5	UPL	Nt	Shrub	PRICKLY ASH

Additional plants observed not identifiable to species:
Amelanchier sp. (possibly A. arborea or A. leavis)
Bidens sp. (either B. aristosa or B. coronata)
Crataegus sp. (possibly C. flabellata)
Geranium sp.
Iris sp.
Lycopus sp. (possibly L. rubellus)
Rosa sp.

Ruellia sp.
Rumex sp.
Triosteum sp.
Wisteria sp.
Unidentifiable fern (possibly Polypodium virgininum)

State-listed species located just off-site:
Isotria verticillata

APPENDIX C:

MASTER SPECIES LIST

GRIFFY LAKE MASTER PLAN 2008
MONROE COUNTY, INDIANA

Griffy Lake Nature Preserve Master Plant Species List

Includes all plants identified during all known studies at Griffy Lake Nature Preserve

Previous studies:

a Floristic Inventory of Griffy Lake Property (undated)
b Floristic Inventory of Griffy Lake and Leonard Springs (undated)
c Griffy Woods Nature Preserve Vascular Plant Species List (5/21/96)
d Mean Centimeter Overlap per Species Found on Ten Meter Line Transect at 1995 Sample Locations within Indiana's State Parks and Nature Preserves
e Baseline Environmental Survey, Griffy Reservoir, Late Summer 1982
f Notable Plant Species from Griffy Woods Area (undated)
g Master Species List, Lake Griffy Forest (5/28/98)
h Blatchely Plant Inventory for Griffy Creek and Huckleberry Hill (undated)

Scientific names in all CAPITAL LETTERS represent non-native species

Scientific Name	Common Name	Observed in 2007	Observed in Previous Study	Comments
ABUTILON THEOPHRASTI	BUTTONWEED	X	a, e	
Acalypha deamii	LARGE-SEEDED MERCURY	X		
Acalypha gracilens	SLENDER THREE-SEEDED MERCURY	X		
Acalypha rhomboidea	THREE-SEEDED MERCURY	X	a, b	
Acalypha virginica	THREE-SEEDED MERCURY	X	a, c	
Acer negundo	BOXELDER	X	a, b, e, h	*Negundo aceroides* (h)
ACER PLATANOIDES	NORWAY MAPLE		a, e	
Acer rubrum v. *rubrum*	RED MAPLE	X	a, b, c, d, e, g	*Acer rubrum* (c, d, e, g)
Acer saccharinum	SILVER MAPLE	X	a, b, d, e	
Acer saccharum s. *nigrum*	BLACK MAPLE	X	d	*Acer nigrum* (d)
Acer saccharum s. *saccharum*	SUGAR MAPLE	X	a, b, c, e, g	*Acer saccharum* (c, e, g)
Acer sp.	MAPLE		d	Likely an *Acer* sp. observed in other studies
Achillea millefolium	COMMON MILFOIL	X	a, b, c, e	
Actaea pachypoda	DOLL'S-EYES	X	a, b, d, e	*Actaea alba* (a, b)
Adiantum pedatum	MAIDENHAIR FERN	X	a, b, c, d, e	
Aesculus glabra	OHIO BUCKEYE	X	a, b, c, d, e	
Agalinis tenuifolia v. *tenuifolia*	SLENDER FALSE FOXGLOVE	X	a, e	*Gerardia tenuifolia* (a, e)
Agastache nepetoides	YELLOW GIANT HYSSOP		h	*Lophanthus nepetoides* (h)
Agastache scrophulariifolia	PURPLE GIANT HYSSOP		a, e	
Ageratina altissima	WHITE SNAKEROOT	X	a, b, d, e	*Eupatorium rugosum* (a, b, d, e)
Agrimonia gryposepala	TALL AGRIMONY	X	d	
Agrimonia parviflora	SWAMP AGRIMONY	X	a, b	
Agrimonia pubescens	SOFT AGRIMONY	X		
Agrimonia rostellata	WOODLAND AGRIMONY	X		

Scientific Name	Common Name	Observed in 2007	Observed in Previous Study	Comments
Agrimonia spp.	AGRIMONY		e	Likely a combination of *Agrimonia* spp. observed in other studies
AGROSTIS GIGANTEA	RED TOP	X	a	*Agrostis alba* (a)
Agrostis perennans	AUTUMN BENT GRASS	X		
AILANTHUS ALTISSIMA	TREE-OF-HEAVEN	X	a, e	
Alisma subcordatum	COMMON WATER PLANTAIN	X	a, b, d	
ALLIARIA PETIOLATA	GARLIC MUSTARD	X	a, b	
Allium canadense	WILD GARLIC	X	a, b, h	
ALLIUM SATIVUM	GARLIC		a, b	
Allium tricoccum v. *burdickii*	WILD LEEK	X	d	*Allium tricoccum* (d)
ALLIUM VINEALE	FIELD GARLIC	X	a, b, e	
ALOPECURUS PRATENSIS	MEADOW FOXTAIL	X		
AMARANTHUS RETROFLEXUS	ROUGH PIGWEED		a	
Ambrosia artemisiifolia v. *elatior*	COMMON RAGWEED	X	a, b, c, e	*Ambrosia artemisiifolia* (b, c, e)
Ambrosia trifida	GIANT RAGWEED	X	a, b, c, e	
Amelanchier laevis	SHADBUSH ROUND-LEAVED		a, b, e	
Amelanchier sp.	SHADBUSH	X	d	Possibly *Amelanchier arborea* or *Amelanchier laevis*
Amphicarpaea bracteata v. *bracteata*	HOG PEANUT	X	a, b, d, e	*Amphicarpa bracteata* (a, b, d, e)
ANAGALLIS ARVENSIS	POOR MAN'S WEATHERGLASS	X	a, e	
Anaphalis margaritacea	PEARLY EVERLATING		a, b, e	Possibly at site, though uncommon in Indiana
Andropogon gerardii	BIG BLUESTEM GRASS	X		
Andropogon virginicus	BROOM SEDGE	X	a, c, e	
Anemone acutiloba	SHARP-LOBED HEPATICA	X	a, b, c, h	*Hepatica acutiloba* (a, b, c, h)
Anemone americana	ROUND-LEAVED HEPATICA		a, e	*Hepatica americana* (a, e)
Anemone virginiana	TALL ANEMONE	X	a, b, e	
Antennaria neglecta	CAT'S FOOT	X	a, e	
Antennaria plantaginifolia	COMMON PUSSY TOES	X		
Antennaria solitaria	SOLITARY CAT'S FOOT		a, f	
Apios americana	GROUND NUT		a, e	
Aplectrum hyemale	ADAM-AND-EVE	X	a, b	
Apocynum cannabinum	DOGBANE	X	a, b, c, e	
Apocynum sibiricum	INDIAN HEMP	X		
Aquilegia canadensis	COLUMBINE		a, b, c	
Arabis laevigata	SMOOTH ROCK CRESS	X	a, b, e	
Aralia hispida	BRISTY SARSAPARILLA		a, e	Unlikely to occur on-site; not known from central or southern Indiana
Aralia racemosa	AMERICAN SPIKENARD	X	a, e	
Aralia spinosa	DEVIL'S WALKING STICK		a, e	
ARCTIUM MINUS	COMMON BURDOCK	X	a, b, e	
Arisaema dracontium	GREEN DRAGON	X	a, b, d	
Arisaema triphyllum	INDIAN TURNIP	X	a, b, c, d, e, g	*Arisaema atrorubens* (e)

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Aristida dichotoma	POVERTY GRASS	X		
Aristolochia serpentaria	BIRTHWORT	X	c, d, h	
Arnoglossum reniforme	GREAT INDIAN PLANTAIN		h	*Cacalia reniformis* (h)
Aruncus dioicus	GOAT'S-BEARD		h	*Spirea aruncus* (h)
Asarum canadense	CANADA WILD GINGER	X	a, b, c, d, e, h	
Asclepias exaltata	POKE MILKWEED		a, e	
Asclepias incarnata	SWAMP MILKWEED	X	a, c, e	
Asclepias quadrifolia	WHORLED MILKWEED		a, e	
Asclepias syriaca	COMMON MILKWEED	X	a, b, c, e	
Asclepias tuberosa	BUTTERFLYWEED	X	a, e	
Asimina triloba	PAPAW	X	a, b, c, d, e	
Asplenium platyneuron	EBONY SPLEENWORT	X	a, b, c, d, e	*Athyrium platyneuron* (e)
Athyrium filix-femina s. *angustum*	LADY FERN	X	d	*Athyrium filix-femina* (d)
Athyrium filix-femina s. *asplenioides*	SOUTHERN LADY FERN	X		
Aureolaria flava	SMOOTH FALSE FOXGLOVE	X	h	*Gerardia flava* (h)
AVENA SATIVA	OATS	X	a, e	*Avena fatua* (a); *Avena villosus* (e)
BARBAREA VULGARIS	YELLOW ROCKET	X	a, b, e	
BERBERIS THUNBERGII	JAPANESE BARBERRY	X		
Betula nigra	RIVER BIRCH	X	a, b, e	
Bidens aristosa	SWAMP MARIGOLD		a, e	
Bidens bipinnata	SPANISH NEEDLES	X	a, e	
Bidens cernua	NODDING BUR MARIGOLD	X		
Bidens comosa	SWAMP TICKSEED	X		
Bidens coronata	TALL SWAMP MARIGOLD		a, b	
Bidens frondosa	COMMON BEGGAR'S TICKS	X	a, b, c, e	
Bidens sp.	SWAMP MARIGOLD	X		Either *Bidens aristosa* or *Bidens coronata*
Blephilia ciliata	OHIO HORSE MINT	X		
Blephilia hirsuta	WOOD MINT	X	a, e	
Boehmeria cylindrica	FALSE NETTLE	X	a, b, d, e	
Botrychium dissectum	BRONZE FERN	X	a, c, e	
Botrychium rugulosum	TERNATE GRAPEFERN		h	*Botrychium ternatum* (h); unlikely to occur on-site; not known from Indiana
Botrychium virginianum	RATTLESNAKE FERN	X	a, b, d, e	
Brachyelytrum erectum	LONG-AWNED WOOD GRASS	X		
BRASSICA NIGRA	BLACK MUSTARD	X	a, b, e	
BROMUS INERMIS	HUNGARIAN BROME	X		
Bromus latiglumis	EARLY-LEAVED BROME	X		
Bromus pubescens	WOODLAND BROME	X		
Calystegia sepium	AMERICAN BINDWEED	X	a, e	*Convolvulus sepium* (e)
Campanulastrum americanum	AMERICAN BELLFLOWER	X	a, b, c, e	*Campanula americana* (a, b, c, e)
Campsis radicans	TRUMPET CREEPER	X	a, e	

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CAPSELLA BURSA-PASTORIS	SHEPHERD'S PURSE	X	a, e	
Cardamine angustata	SLENDER TOOTHWORT	X	a, b, d	*Dentaria heterophylla* (d)
Cardamine bulbosa	BULB BITTERCRESS		a, b, e, h	*Cardamine rhomboidea* (a, b, h)
Cardamine concatenata	TOOTHWORT	X	a, b, d, e	
Cardamine douglassii	NORTHERN BITTER CRESS	X		
CARDAMINE HIRSUTA	HAIRY BITTER CRESS	X		
Cardamine pensylvanica	PENNSYLVANIA BITTER CRESS	X	a, b, c, e	
Cardamine spp.	CRESS		d	Likely a combination of *Cardamine* spp. observed in other studies
Carex albicans v. *albicans*	BLUNT-SCALED OAK SEDGE	X		
Carex albursina	BLUNT-SCALED WOOD SEDGE	X	a, b, d	
Carex blanda	COMMON WOOD SEDGE	X		
Carex careyana	CAREY'S WOOD SEDGE	X		
Carex digitalis	NARROW-LEAVED WOOD SEDGE		h	
Carex frankii	BRISTLY CATTAIL SEDGE	X		
Carex glaucodea	BLUE SEDGE	X		
Carex gracillima	PURPLE-SHEATHED GRACEFUL SEDGE		h	
Carex granularis	PALE SEDGE	X		
Carex grisea	WOOD GRAY SEDGE	X	h	
Carex hirsutella	HAIRY GREEN SEDGE	X		
Carex jamesii	GRASS SEDGE	X	a, d, h	*Carex steudelii* (h)
Carex laxiculmis v. *laxiculmis*	WEAK-STEMMED WOOD SEDGE	X	d	*Carex laxiculmis* (d)
Carex lupulina	COMMON HOP SEDGE	X		
Carex lurida	BOTTLEBRUSH SEDGE	X		
Carex normalis	SPREADING OVAL SEDGE	X		
Carex pensylvanica	PENNSYLVANIA OAK SEDGE	X		
Carex picta	PAINTED SEDGE	X	a, b, c	
Carex platyphylla	BROAD-LEAVED WOOD SEDGE	X		
Carex projecta	LOOSE-HEADED OVAL SEDGE	X		
Carex radiata	STRAIGHT-STYLED BRACTED SEDGE	X		
Carex sparganioides	LOOSE-HEADED BRACTED SEDGE	X		
Carex swanii	DOWNY GREEN SEDGE	X		
Carex tribuloides v. *tribuloides*	BROAD-LEAVED OVAL SEDGE	X		
Carex virescens	SLENDER GREEN SEDGE	X		
Carex vulpinoidea	BROWN FOX SEDGE	X		
Carex spp.	SEDGE		d	Likely a combination of *Carex* spp. observed in other studies
Carpinus caroliniana s. *virginiana*	BLUE BEECH	X	a, b, c, d, e, g	*Carpinus caroliniana* (a, b, c, d, e, g)
Carya cordiformis	BITTERNUT HICKORY	X	a, b, c, d, e	
Carya glabra	PIGNUT HICKORY	X	a, b, c, d, e, g, h	*Carya porcina* (h); *Carya ovalis* (a, b)
Carya laciniosa	BIG SHELLBARK HICKORY	X	a, b, e	

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Carya ovata	SHAGBARK HICKORY	X	a, b, c, d, e, g	
Carya tomentosa	MOCKERNUT HICKORY	X	a, b, e, g	
Carya spp.	HICKORY		d	Likely a combination of *Carya* spp. observed in other studies
Catalpa speciosa	CIGAR TREE	X	a, e	
Caulophyllum thalictroides	BLUE COHOSH	X	a, b, e, h	
Celastrus scandens	CLIMBING BITTERSWEET	X	a, e, h	
Celtis occidentalis	HACKBERRY	X	a, b, c, d, e, h	
CENTAUREA STOEBE s. *MICRANTHOS*	SPOTTED KNAPWEED		a, e	*Centaurea maculosa* (a, e)
Cephalanthus occidentalis	BUTTONBUSH	X	a, b, e	
CERASTIUM GLOMERATUM	CLAMMY CHICKWEED	X		
Cerastium nutans v. *nutans*	NODDING CHICKWEED		h	*Cerastium nutans* (h)
Cerastium triflorum	MOUSE-EARED CHICKWEED		e	Unable to find references to this species name - misnamed?
Cerastium sp.	CHICKWEED		a, b	Likely a *Cerastium* sp. observed in other studies
Cercis canadensis	EASTERN REDBUD	X	a, b, c, d, e, g	
Chaerophyllum procumbens v. *procumbens*	COMMON STREAMBANK CHERVIL	X		
Chamaecrista nictitans	WILD SENSITIVE PLANT	X		
Chamaesyce nutans	NODDING SPURGE	X	a, c	*Euphorbia maculata* (a, c)
Chasmanthium latifolium	INDIAN WOOD OATS	X		
Chelone glabra	WHITE TURTLEHEAD		h	
CHENOPODIUM ALBUM	LAMB'S QUARTERS	X	a, b, e	
Chimaphila maculata	SPOTTED WINTERGREEN	X	a, e, f, h	
CICHORIUM INTYBUS	CHICKORY	X	a, b, e	
Cinna arundinacea	COMMON WOOD REED	X		
Circaea lutetiana s. *canadensis*	ENCHANTER'S NIGHTSHADE	X	a, d, e	*Circaea lutetiana* (a, d); *Circaea quadrisulcata* (e)
CIRSIUM ARVENSE	FIELD THISTLE	X	a	
Cirsium discolor	PASTURE THISTLE	X	a, b, e	
CIRSIUM VULGARE	BULL THISTLE	X	a, b, e	
Claytonia caroliniana	CAROLINA SPRINGBEAUTY		a, e	Unlikely to occur on-site; not known from Indiana
Claytonia virginica	SPRING BEAUTY	X	a, b, d	
Collinsonia canadensis	CITRONELLA HORSE BALM	X	a, b, c, d, e, h	
Comandra umbellata	BASTARD TOADFLAX		a, b	
COMMELINA COMMUNIS	COMMON DAY FLOWER	X	a, b, e	
COMMELINA DIFFUSA	CLIMBING DAY FLOWER	X		
CONIUM MACULATUM	POISON HEMLOCK	X		
Conoclinium coelestinum	MISTFLOWER	X	a	*Eupatorium coelestinum* (a)
Conopholis americana	CANCER ROOT	X	a, b, e, h	
CONVOLVULUS ARVENSIS	FIELD BINDWEED	X	a, e	
Conyza canadensis	HORSEWEED		a, b, c	*Erigeron canadensis* (a, b, c)
Corallorhiza odontorhiza	FALL CORAL ROOT	X		

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Corallorhiza wisteriana	SPRING CORAL ROOT		e	
Cornus alternifolia	PAGODA DOGWOOD		d, h	
Cornus canadensis	BUNCHBERRY		g	Unlikely to occur on-site; not known from central or southern Indiana
Cornus florida	FLOWERING DOGWOOD	X	a, b, c, d, e, g	
Cornus obliqua	PALE DOGWOOD	X		
Cornus racemosa	GRAY DOGWOOD	X	a, e	
CORONILLA VARIA	CROWN VETCH	X		
Corydalis flavula	PALE CORYDALIS	X		
Corylus americana	AMERICAN FILBERT		a, b, e	
Crataegus punctata	DOTTED HAWTHORN	X	a, c	
Crataegus sp.	HAWTHORN	X	a, b, e	Possibly *Crataegus flabellata* in 2007 study
Cryptotaenia canadensis	HONEWORT	X	a, e	
Cunila origanoides	DITTANY		a, b, d, e	Expected to occur on-site, but not seen during 2007 survey
Cuscuta campestris	FIELD DODDER	X	c	
Cuscuta gronovii	COMMON DODDER	X	a, b, c, e	
Cuscuta pentagona	PRAIRIE DODDER		a	
Cynanchum laeve	BLUEVINE	X		
Cynoglossum virginianum v. *virginianum*	COMMON WILD COMFREY	X	a, b, d	*Cynoglossum virginianum* (a, b, d)
CYPERUS AMURICUS	ASIAN FLATSEDGE	X		
Cyperus bipartitus	SHINING FLAT SEDGE	X		
Cyperus esculentus v. *leptostachyus*	FIELD NUT SEDGE	X	a	
Cyperus odoratus	COMMON RUSTY NUT SEDGE	X		
Cyperus strigosus	LONG-SCALED NUT SEDGE	X	a, c	
Cypripedium parviflorum v. *pubescens*	LARGE YELLOW LADY'S SLIPPER		d, h	*Cypripedium parviflorum* (d, h)
Cystopteris protrusa	COMMON FRAGILE FERN	X	a, b, d, e	*Cystopteris fragilis* (a, b, e)
DACTYLIS GLOMERATA	ORCHARD GRASS	X		
Danthonia spicata	POVERTY OAT GRASS	X	a, b, c	
DATURA STRAMONIUM	JIMSONWEED		a	
DAUCUS CAROTA	QUEEN ANNE'S LACE	X	a, b, c, e	
Delphinium tricorne	DWARF LARKSPUR	X	a, b, d, e	
Dennstaedtia punctilobula	HAY-SCENTED FERN		a, b, g	
Deparia acrostichoides	SILVERY SPLEENWORT	X	a, d, e	*Athyrium thelypterioides* (a, e)
Desmodium canadense	SHOWY TICK TREFOIL		d	
Desmodium ciliare	HAIRY TICK TREFOIL	X	a, b	
Desmodium cuspidatum	SMOOTH BRACTED TICK TREFOIL		a, b	
Desmodium glabellum	SMOOTH TICK TREFOIL		a	
Desmodium glutinosum	POINTED TICK TREFOIL		a, e	Unlikely to occur on-site; not known from central or southern Indiana; possibly a nomenclature issue
Desmodium nudiflorum	BARE-STEMMED TICK TREFOIL	X	a, b, d, h	
Desmodium obtusum	STIFF TICK TREFOIL	X		

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Desmodium paniculatum	PANICLED TICK TREFOIL		a, e	
Desmodium perplexum	PERPLEXING TICK TREFOIL	X	c	
Desmodium rotundifolium	ROUND-LEAVED TICK TREFOIL	X		
DIANTHUS ARMERIA	DEPTFORD PINK	X	a, e	
Dicentra canadensis	SQUIRREL CORN	X	a, b, d, e	
Dicentra cucullaria	DUTCHMAN'S BREECHES	X	a, b, e	
Dichanthelium acuminatum s. *implicatum*	OLD FIELD PANIC GRASS		a, c	*Panicum implicatum* (a, c)
Dichanthelium boscii	BEARDED PANIC GRASS	X	d	*Pancium boscii* (d)
Dichanthelium clandestinum	DEER-TONGUE GRASS	X		
Dichanthelium commutatum s. *commutatum*	VARIABLE PANIC GRASS	X		
Dichanthelium dichotomum s. *dichotomum*	FORKED PANIC GRASS	X		
Dichanthelium laxiflorum	LOOSE-FLOWERED PANIC GRASS	X		
Dichanthelium polyanthes	SMALL-FRUITED PANIC GRASS	X		
Dichanthelium sphaerocarpon	ROUND-FRUITED PANIC GRASS	X		
DIGITARIA ISCHAEMUM	SMOOTH CRAB GRASS	X		
DIGITARIA SANGUINALIS	HAIRY CRAB GRASS	X	a, e	*Digitalis sanguinalis* (a, e)
Diodia teres	BUTTONWEED	X		
Dioscorea villosa	COMMON WILD YAM	X	a, b, d	*Dioscorea quaternata* (a, b, d)
Diospyros virginiana	PERSIMMON	X	a, b, e	
Diplazium pycnocarpon	GLADE FERN	X	a, d, e	*Athyrium pycnocarpon* (a, d, e)
DIPSACUS FULLONUM	COMMON TEASEL	X	a, b, e	*Dipsacus sylvestris* (a, b, e)
Dirca palustris	LEATHERWOOD	X	a, c	
DRABA VERNA	MOUSE-EARED WHITLOW CRESS	X	a, e	
Dryopteris carthusiana	SPINULOSE WOOD FERN		d, h	*Dryopteris spinulosa* (d); *Aspidium spinulosum* (h)
Dryopteris goldiana	GOLDIE FERN		a, b, h	*Aspidium goldianum* (h)
Dryopteris marginalis	MARGINAL SHIELD FERN	X	d	
Dryopteris spp.	FERN		e	Likely a combination of *Dryopteris, Thelypteris,* and/or *Phegopteris spp.* observed in other studies
DUCHESNEA INDICA	INDIAN STRAWBERRY		a	
DYSSODIA PAPPOSA	FETID MARIGOLD		h	*Dyssodia chrysanthemoides* (h)
ECHINOCHLOA CRUS-GALLI	BARNYARD GRASS	X	a, b, c	
Echinocystis lobata	WILD CUCUMBER	X	a, c	
Eclipta prostrata	YERBA DE TAJO	X		
ELAEAGNUS UMBELLATA	AUTUMN OLIVE	X		
Eleocharis acicularis	NEEDLE SPIKE RUSH	X		
Eleocharis obtusa	BLUNT SPIKE RUSH	X	a, c	
Elephantopus carolinianus	ELEPHANT'S FOOT	X		
ELEUSINE INDICA	CROWFOOT GRASS	X		
Elymus canadensis	CANADA WILD RYE	X		
Elymus fatua	WILD RYE		a, e	Unable to find references to this species name - misnamed?

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Elymus hystrix	BOTTLEBRUSH GRASS	X		
ELYMUS REPENS	QUACK GRASS	X		
Elymus riparius	RIVERBANK WILD RYE	X		
Elymus villosus	HAIRY WILD RYE	X		
Elymus virginicus	VIRGINIA WILD RYE	X		
Enemion biternatum	FALSE RUE ANEMONE	X	a, d, e	*Isopyrum biternatum* (a, d, e)
Epifagus virginiana	BEECH DROPS	X	a, b, e	
Epilobium coloratum	CINNAMON WILLOW HERB	X		
Equisetum arvense	COMMON HORSETAIL	X	h	
Equisetum hyemale s. *affine*	TALL SCOURING RUSH	X	a, b	*Equisetum hyemale* (b)
Equisetum spp.	EQUISETUM		e	Likely a combination of *Equisetum* spp. observed in other studies
Eragrostis frankii	SANDBAR LOVE GRASS	X		
Eragrostis hypnoides	CREEPING LOVE GRASS	X		
Eragrostis spectabilis	PURPLE LOVE GRASS	X		
Erechtites hieracifolia	FIREWEED	X	a, c	
Erigenia bulbosa	HARBINGER-OF-SPRING	X	a, b, e	
Erigeron annuus	ANNUAL FLEABANE	X	a, b, e	
Erigeron philadelphicus	MARSH FLEABANE	X		
Erigeron strigosus	DAISY FLEABANE	X		
Erythronium albidum	WHITE ADDER'S TONGUE		a, e	
Erythronium americanum	YELLOW ADDER'S TONGUE	X	a, b, d, e	
Erythronium spp.	ADDER'S TONGUE		d	Likely a combination of *Erythronium albidum* and *Erythronium americanum*
EUONYMUS ALATA	WINGED EUONYMUS	X		
Euonymus americana	STRAWBERRY BUSH	X	h	
Euonymus atropurpurea	WAHOO	X	a, b, c, d, e, h	
EUONYMUS FORTUNEI	WINTERCREEPER	X		
Euonymus obovata	RUNNING STRAWBERRY BUSH	X	a, b	
Euonymus spp.	EUYNYMUS		d	Likely a combination of *Euonymus* spp. observed in other studies
Eupatoriadelphus fistulosus	HOLLOW JOE PYE WEED		a	*Eupatorium fistulosum* (a)
Eupatoriadelphus maculatus	SPOTTED JOE PYE WEED	X		
Eupatoriadelphus purpureus	PURPLE JOE PYE WEED		a, e	*Eupatorium purpureum* (a, e)
Eupatorium perfoliatum	COMMON BONESET	X	a, b, c, e	
Eupatorium serotinum	LATE BONESET	X		
Eupatorium spp.	EUPATORIUM		d	Likely a combination of *Ageratina* , *Conoclinium* , *Eupatorium* , and *Eupatoriadelphus* spp. observed in other studies
Euphorbia dentata	TOOTHED SPURGE	X		
Euthamia graminifolia	GRASS-LEAVED GOLDENROD	X	a, c	*Solidago graminifolia* (a, c)

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Fagus grandifolia	AMERICAN BEECH	X	a, b, c, d, e, g	
Fallopia scandens v. *scandens*	CLIMBING FALSE BUCKWHEAT	X	a, b, c, e	*Polygonum scandens* (a, b, c, e)
Festuca rubra	RED FESCUE		a	
Festuca subverticillata	NODDING FESCUE	X		
Fimbristylis autumnalis	AUTUMN SEDGE	X		
Floerkea proserpinacoides	FALSE MERMAID WEED	X	a, b, h	
Fragaria vesca	HILLSIDE STRAWBERRY		a, e	Unlikely to occur on-site; only known from a few scattered counties in Indiana
FRANGULA ALNUS	GLOSSY BUCKTHORN	X		
Fraxinus americana	WHITE ASH	X	a, b, c, d, e, g	
Fraxinus pennsylvanica v. *lanceolata*	GREEN ASH	X	a, b, c	*Fraxinus pennsylvanica* (a, b, c)
Fraxinus quadrangulata	BLUE ASH	X	a, b, c, d, e	
Fraxinus racemosa	GREEN ASH		e	Unable to find references to this species name; likely refers to *Fraxinus pennsylvanica* v. *lanceolata*
Fraxinus spp.	ASH		d	Likely a combination of *Fraxinus* spp. observed in other studies
Galearis spectabilis	SHOWY ORCHIS	X	a, b, e, h	*Orchis spectabilis* (a, b, e, h)
Galium aparine	ANNUAL BEDSTRAW	X	a, b, d, e, g	
Galium asprellum	ROUGH BEDSTRAW		a, b	Unlikely to occur on-site; only known from northern Indiana and one county in central Indiana
Galium circaezans v. *circaezans*	SMOOTH WILD LICORICE	X	a, b, c, d	*Galium circaezans* (a, b, c, d)
Galium circaezans v. *hypomalacum*	HAIRY WILD LICORICE	X		
Galium concinnum	SHINING BEDSTRAW	X	a, b, c, d, g, h	
Galium tinctorium	STIFF BEDSTRAW	X		
Galium triflorum	SWEET-SCENTED BEDSTRAW	X	a, b, d	
Gaura biennis	BIENNIAL GAURA	X	a, c	
Gaylussacia baccata	BLACK HUCKLEBERRY	X	a, c, h	*Gaylussacia resinosa* (h)
Geranium maculatum	WILD GERANIUM	X	a, b, d, e, h	
Geranium sp.	CRANESBILL	X		
Geum canadense	WHITE AVENS	X	a, b, c, e	
Geum vernum	SPRING AVENS	X	a, e, h	
Geum virginianum	PALE AVENS		a, e	
Geum spp.	AVENS		d	Likely a combination of *Geum* spp. observed in other studies
GLECHOMA HEDERACEA	GROUND IVY	X	a, b, c, e	
Gleditsia triacanthos	HONEY LOCUST	X	a, b, c, e	
Glyceria striata	FOWL MANNA GRASS	X		
Goodyera pubescens	RATTLESNAKE PLANTAIN	X	a, b, e, h	
Gymnocladus dioica	KENTUCKY COFFEE TREE	X	a, e	
Hackelia virginiana	STICKSEED	X	a, c	
Hamamelis virginiana	WITCH HAZEL	X	a, b, c, d, e	

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Hedeoma pulegioides	AMERICAN PENNYROYAL	X	a, c	
HELIANTHUS ANNUUS	COMMON SUNFLOWER		h	
Helianthus decapetalus	PALE SUNFLOWER		a	
Helianthus divaricatus	WOODLAND SUNFLOWER	X	a, d, e	
Helianthus x *doronicoides*	HELIANTHUS X DORONICOIDES		h	*Helianthus doronicoides* (h); unlikely to occur on-site; not known from central or southern Indiana
Helianthus tuberosus	JERUSALEM ARTICHOKE	X	a, c, e	
Heliopsis alevia	FALSE SUNFLOWER		h	Unable to find references to this species name - misnamed? Maybe Heliopsis laevis (= H. helianthoides)
Heliopsis helianthoides	FALSE SUNFLOWER	X		
HEMEROCALLIS FULVA	ORANGE DAY LILY		a, e	
Heuchera americana	TALL ALUMROOT	X	e, h	
Hibiscus laevis	HALBERD-LEAVED ROSE MALLOW	X		
Hibiscus moscheutos v. *moscheutos*	SWAMP ROSE MALLOW	X		
Hieracium gronovii	HAIRY HAWKWEED	X	h	
Hieracium paniculatum	PANICLED HAWKWEED		h	
Hieracium scabrum	ROUGH HAWKWEED	X	a, c	
Houstonia caerulea	BLUETS		a, b, e	
Houstonia longifolia	LONG-LEAVED BLUETS		a, e	
Houstonia purpurea	LARGE HOUSTONIA	X	a, c, e	
Huperzia lucidula	SHINING CLUBMOSS		a, f	*Lycopodium lucidulum* (a, f); searched in previously known location but did not find plant
Hybanthus concolor	GREEN VIOLET	X	a, b, d	
Hydrangea arborescens	WILD HYDRANGEA	X	a, b, c, d, e	
Hydrastis canadensis	GOLDEN SEAL	X	a, b, f	
Hydrophyllum appendiculatum	GREAT WATERLEAF	X	a, b, d, e	
Hydrophyllum canadense	CANADA WATERLEAF	X	a, b, d, e, h	
Hydrophyllum macrophyllum	LARGE-LEAF WATERLEAF	X	d	
Hydrophyllum virginianum	VIRGINIA WATERLEAF	X	a, b, d, e	
Hydrophyllum spp.	WATERLEAF		d	Likely a combination of *Hydrophyllum* spp. observed in other studies
Hypericum hypericoides s. *multicaule*	ST. ANDREW'S CROSS	X		
Hypericum mutilum	DWARF ST. JOHN'S WORT	X	a, c	
Hypericum punctatum	SPOTTED ST. JOHN'S WORT	X	a, c	
ILEX OPACA	AMERICAN HOLLY	X		
Impatiens capensis	SPOTTED TOUCH-ME-NOT	X	a, b, c, e	*Impatiens biflora* (c)
Impatiens pallida	PALE TOUCH-ME-NOT	X	a, b, c, e	
Impatiens sp.	TOUCH-ME-NOT		d	*Impatiens capensis* or *Impatiens pallida* (d)
Iodanthus pinnatifidus	VIOLET CRESS	X	a, b, c, e	
IPOMOEA HEDERACEA	IVY-LEAVED MORNING GLORY	X	a, c	
Ipomoea purpurea	COMMON MORNING GLORY		h	

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Iris sp.	IRIS	X		
Isotria verticillata	FIVE LEAVES		a, d, f, h	*Pogonia verticillata* (h); observed just off-site in 2007
Jeffersonia diphylla	TWINLEAF	X	a, b, d, e, h	
Juglans cinerea	BUTTERNUT	X	a, c, e, f	
Juglans nigra	BLACK WALNUT	X	a, b, c, e	
Juncus acuminatus	SHARP-FRUITED RUSH	X	a, c	
Juncus biflorus	TWO-FLOWERED RUSH	X		
Juncus dudleyi	DUDLEY'S RUSH	X	a	
Juncus effusus	COMMON RUSH	X		
Juncus tenuis	PATH RUSH	X	a, b, c	
Juniperus virginiana	EASTERN RED CEDAR	X	a, b, c, e	
Justicia americana	WATER WILLOW	X	a, b, e	
Krigia biflora v. *biflora*	TWO-FLOWER FALSE DANDELION	X	a, b, e, h	*Krigia biflora* (e); *Cynthia virginica* (h)
Lactuca biennis	TALL BLUE LETTUCE		h	*Lactuca leucophaea* (h)
Lactuca canadensis	WILD LETTUCE	X	a, b	
Lactuca floridana	BLUE LETTUCE	X	a, c, h	*Lactuca villosa* (h)
LACTUCA SALIGNA	WILLOW-LEAVED LETTUCE	X		
LACTUCA SERRIOLA	PRICKLY LETTUCE	X		
Lactuca spp.	LETTUCE		e	Likely a combination of *Lactuca* spp. observed in other studies
LAMIUM AMPLEXICAULE	HENBIT	X	a, b	
LAMIUM PURPUREUM	PURPLE DEAD NETTLE		a, b, e	
Laportea canadensis	CANADA WOOD NETTLE	X	a, b, c	
Leersia oryzoides	RICE CUT GRASS	X		
Leersia virginica	WHITE GRASS	X		
Lemna minor	SMALL DUCKWEED	X	a	
Lepidium virginicum	COMMON PEPPER GRASS	X	a, c	
LESPEDEZA CUNEATA	SILKY BUSH CLOVER	X		
Lespedeza frutescens	WAND-LIKE BUSH CLOVER	X	a, e	*Lespedeza intermedia* (a, e)
Lespedeza hirta	HAIRY BUSH CLOVER	X	h	
Lespedeza procumbens	TRAILING BUSH CLOVER	X		
Lespedeza violacea	VIOLET BUSH CLOVER	X	h	
LEUCANTHEMUM VULGARE	OX-EYE DAISY	X	a, b, c, e,	*Chrysanthemum leucanthemum* (a, b, c, e)
Leucospora multifida	OBE-WAN-CONOBEA	X		
LIGUSTRUM VULGARE	COMMON PRIVET	X	a, b	
Lindera benzoin	HAIRY SPICEBUSH	X	a, b, c, d, e	
Lindernia dubia v. *anagallidea*	SLENDER FALSE PIMPERNEL	X		
Lindernia dubia v. *dubia*	FALSE PIMPERNEL	X		
Linum medium v. *texanum*	SMALL YELLOW FLAX	X		
Linum striatum	STILL YELLOW FLAX		a, f	Searched in previously known location but did not find plant

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LINUM USITATISSIMUM	COMMON FLAX		a, e	
Linum virginianum	SLENDER YELLOW FLAX	X		
Liparis liliifolia	PURPLE TWAYBLADE	X		
Liquidambar styraciflua	SWEET GUM	X	a, b, c, e	
Liriodendron tulipifera	TULIP POPLAR	X	a, b, c, d, e, g	
Listera convallarioides	BROADLIPPED TWAYBLADE		e	Unlikely to occur on-site; not known from Indiana
Lithospermum latifolium	AMERICAN GROMWELL		h	
Lobelia inflata	INDIAN TOBACCO	X	a, d	
Lobelia siphilitica	GREAT BLUE LOBELIA	X	a, b, c, e	
Lobelia spicata	PALE SPIKED LOBELIA		a, e	
LOLIUM PERENNE	PERENNIAL RYE GRASS	X		
Lonicera dioica	LIMBER HONEYSUCKLE	X	a, e	
LONICERA JAPONICA	JAPANESE HONEYSUCKLE	X	a, b, e	
LONICERA MAACKII	AMUR HONEYSUCKLE	X		
LONICERA MORROWII	MORROW'S HONEYSUCKLE	X		
LOTUS CORNICULATUS	BIRDSFOOT TREFOIL	X	a, e	
Ludwigia alternifolia	SEEDBOX	X	h	
Ludwigia palustris	MARSH PURSLANE	X		
Ludwigia peploides s. *glabrescens*	CREEPING PRIMROSE WILLOW	X		
Luzula echinata	COMMON WOOD RUSH	X		
Lycopodium digitatum	TRAILING GROUND PINE	X	a, b, h, e	*Lycopodium complanatum* (h); *Lycopodium flabelliforme* (e)
Lycopus americanus	COMMON WATER HOREHOUND	X		
Lycopus uniflorus	NOTHERN BUGLE WEED	X	a, b, c	
Lycopus virginicus	BUGLE WEED	X		
Lycopus sp.	WATER HOREHOUND	X		Possibly *Lycopus rubellus*
Lysimachia ciliata	FRINGED LOOSESTRIFE		h	*Steironema ciliatum* (h)
Lysimachia lanceolata	LANCE-LEAVED LOOSESTRIFE	X	a, c, h	*Steironema lanceolatum* (h)
LYSIMACHIA NUMMULARIA	MONEYWORT	X	a, b, c, e	
Lysimachia quadrifolia	WHORLED LOOSESTRIFE		a, e	
MACLURA POMIFERA	HEDGE APPLE	X	a, e	
Magnolia acuminata	CUCUMBER MAGNOLIA		e	
Maianthemum racemosum	FEATHERY FALSE SOLOMON SEAL	X	a, b, d, e	*Smilacina racemosa* (a, b, d, e)
Malaxis unifolia	GREEN ADDER'S MOUTH		a, f, h	*Microstylis ophioglossoides* (h); searched in previously known location but did not find plant
Malus coronaria	WILD SWEET CRAB	X	a, c	*Pyrus coronaria* (a, c)
Malus sp.	APPLE		a, e	Possibly *Malus coronaria* observed in other studies
MARRUBIUM VULGARE	COMMON HOREHOUND		h	
Medeola virginiana	INDIAN CUCUMBER ROOT	X	h	
MEDICAGO LUPULINA	BLACK MEDICK	X	a, e	

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Melanthium virginicum	BUNCH FLOWER		h	Unlikely to occur on-site; only known from a few scattered counties in Indiana
MELILOTUS ALBA	WHITE SWEET CLOVER		a, b, c, e	
MELILOTUS OFFICINALIS	YELLOW SWEET CLOVER	X	a, e	
Menispermum canadense	MOONSEED	X	a, b, d, h	
Mentha arvensis v. villosa	WILD MINT	X		
MENTHA SPICATA	SPEARMINT	X	a, c	
MENTHA × PIPERITA	PEPPERMINT	X	a	
Mentha spp.	MINT		d	Likely a combination of *Mentha* spp. observed in other studies
Mertensia virginica	VIRGINIA BLUEBELLS	X		
MICROSTEGIUM VIMINEUM	NEPALESE BROWNTOP	X		
Mimulus alatus	WINGED MONKEY FLOWER	X		
Mimulus ringens	MONKEY FLOWER		a, b, e	
Mitchella repens	PARTRIDGE BERRY	X	a, b, c, e, h	
Mitella diphylla	BISHOP'S CAP	X	h	
Monarda fistulosa	WILD BERGAMOT	X	a, b, e	
Monarda punctata v. *villicaulis*	HORSEMINT	X		
Monotropa hypopitys	PINESAP		h	
Monotropa uniflora	INDIAN PIPE	X	a, b, c, e	
MORUS ALBA	WHITE MULBERRY	X	a, e	
Morus rubra	RED MULBERRY		a, b, c, e	
Morus sp.	MULBERRY		d	Likely *Morus alba* or *Morus rubra*
Muhlenbergia frondosa	COMMON SATIN GRASS	X		
Muhlenbergia mexicana	LEAFY SATIN GRASS	X	a, c	
Muhlenbergia schreberi	NIMBLEWILL	X		
Muhlenbergia sobolifera	ROCK SATIN GRASS	X		
Muhlenbergia tenuiflora	SLENDER SATIN GRASS	X		
MYOSOTIS SCORPIOIDES	COMMON FORGET-ME-NOT	X		
Myosotis verna	WHITE FORGET-ME-NOT		a, e	
Myrica pensylvanica	NORTHERN BAYBERRY	X		
Myriophyllum heterophyllum	VARIOUS-LEAVED WATER MILFOIL	X		
MYRIOPHYLLUM SPICATUM	EUROPEAN WATER MILFOIL	X	a	
Nyssa sylvatica	BLACK GUM	X	a, b, c, d, e, h	*Nyssa multiflora* (h)
Obolaria virginica	PENNYWORT	X		
Oenothera biennis	COMMON EVENING PRIMROSE	X	a, b, c, e, h	
Onoclea sensibilis	SENSITIVE FERN	X	a, d, e	
ORNITHOGALUM UMBELLATUM	COMMON STAR-OF-BETHLEHEM	X	a, b, e	
Osmorhiza claytonii	HAIRY SWEET CICELY	X	a, b, d, e, g	
Osmorhiza longistylis	ANISE ROOT		a, b, d, h	
Ostrya virginiana	HOP HORNBEAM	X	a, b, c, d, e	

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Oxalis grandis	GREAT YELLOW WOOD SOREL		d	
Oxalis illinoensis	ILLINOIS WOOD SORREL	X		
Oxalis montana	MOUNTAIN WOOD SORREL		a, e	Unlikely to occur on-site; not known from Indiana
Oxalis stricta	TALL WOOD SORREL	X	a, b, d, e	
Oxalis violacea	VIOLET WOOD SORREL	X	a, b	
Packera aurea	GOLDEN RAGWORT	X	a, b, e	*Senecio aureus* (a, b, e)
Packera glabella	BUTTERWEED	X	a, e	*Senecio glabellus* (a, e)
Packera obovata	ROUND-LEAVED RAGWORT	X	a, e	*Senecio obovatus* (a); *Senecio biflora (e)*
Panax quinquefolius	GINSENG	X	a, b, d, e, f	
Panicum dichotomiflorum	FALL PANICUM	X	a, c	
Panicum virgatum	PRAIRIE SWITCH GRASS	X		
Paronychia fastigiata	LOW FORKED CHICKWEED	X		
Parthenocissus quinquefolia	VIRGINIA CREEPER	X	a, b, d, e, g	
Paspallum setaceum v. *muhlenbergii*	HAIRY LENS GRASS	X		
Paspalum laeve	SMOOTH LENS GRASS	X		
Passiflora lutea	SMALL PASSION FLOWER	X		
PASTINACA SATIVA	WILD PARSNIP	X	a, e	
PAULOWNIA TOMENTOSA	PRINCESS TREE		a, e	
Pedicularis canadensis	WOOD BETONY		a, b, c, e, h	
Penstemon digitalis	FOXGLOVE BEARD TONGUE		a, e	
Penthorum sedoides	DITCH STONECROP	X	a, b, c	
PERILLA FRUTESCENS	BEEFSTEAK PLANT	X		
Persicaria amphibia v. *emersa*	WATER HEARTSEASE		a, e	*Polygonum coccineum* (a, e)
PERSICARIA CAESPITOSA	CREEPING SMARTWEED	X		
PERSICARIA HYDROPIPER	WATER PEPPER		a, e	*Polygonum hydropiper* (a, e)
Persicaria hydropiperoides	MILD WATER PEPPER	X	a, b	*Polygonum hydropiperoides* (a, b)
Persicaria pensylvanica	PINKWEED	X	a, c	*Polygonum pensylvanicum* (a, c)
Persicaria punctata	SMARTWEED	X	a, c	*Polygonum punctatum* (a, c)
Persicaria sagittata	ARROW-LEAVED TEAR-THUMB	X	a, b, c	*Polygonum sagittatum* (a, b, c)
PERSICARIA VULGARIS	LADY'S THUMB	X	a, b, d, e	*Polygonum persicaria* (a, b, d, e)
Phacelia bipinnatifida	LEAFY PHACELIA	X		
PHALARIS ARUNDINACEA	REED CANARY GRASS	X	a	
Phegopteris hexagonoptera	BROAD BEECH FERN	X	a, c, d, e	*Thelypteris hexagonoptera* (a); *Dryopteris hexagonoptera (c)*
PHLEUM PRATENSE	TIMOTHY GRASS		a, e	
Phlox divaricata	BLUE PHLOX	X	a, b, d, e	
PHLOX PANICULATA	GARDEN PHLOX		h	
Phryma leptostachya	LOPSEED	X	a, b, d, e	
Phyla lanceolata	FOG FRUIT	X	a, b	
Physalis heterophylla	CLAMMY GROUND CHERRY	X		
Phytolacca americana	POKEWEED	X	a, b, c, e	

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Pilea pumila	CANADA CLEARWEED	X	a, b, c, d, e, g	
Pinus strobus	WHITE PINE	X	a, b, e	
PINUS SYLVESTRIS	SCOTCH PINE	X		
Pinus virginiana	SCRUB PINE	X	a, e	
Plantago aristata	POOR JOE		a, c	
PLANTAGO LANCEOLATA	ENGLISH PLANTAIN	X	a, b, c, e	
PLANTAGO MAJOR	COMMON PLANTAIN	X	a, b, e	
Plantago rugelii	RED-STALKED PLANTAIN	X	a, c	
Platanthera peramoena	PURPLE FRINGELESS ORCHID		h	*Habenaria peramoena* (h)
Platanus occidentalis	SYCAMORE	X	a, b, c, e	
POA ANNUA	ANNUAL BLUE GRASS	X		
POA COMPRESSA	CANADIAN BLUE GRASS	X	a	
POA PRATENSIS	KENTUCKY BLUE GRASS	X	a	
Poa sylvestris	WOODLAND BLUE GRASS	X		
Podophyllum peltatum	MAY APPLE	X	a, b, d, e, g	
Polemonium reptans	JACOB'S LADDER	X	a, e	
Polemonium vanbruntiae	VANBRUNT'S POLEMONIUM		a, e	*Polemonium van-bruntiae* (a,e); unlikely to occur on-site; not known from Indiana
Polygala sanguinea	FIELD MILKWORT	X	a, e	
Polygonatum biflorum	SMALL SOLOMON'S SEAL	X	a, b, c, d, e, h	
Polygonatum pubescens	DOWNY SOLOMON'S SEAL	X		
POLYGONUM AVICULARE v. *AVICULARE*	COMMON KNOTWEED	X		
Polymnia canadensis	PALE LEAFCUP	X	a, b, d, h	
Polymnia spp.	LEAFCUP		d	Likely *Polymnia canadensis*
Polystichum acrostichoides	CHRISTMAS FERN	X	a, b, c, d, e, h	*Aspidium acrostichoides* (h)
Populus deltoides	EASTERN COTTONWOOD	X	a, b, e	
Populus grandidentata	BIG-TOOTH ASPEN	X	a, b, c, e	
Populus tremuloides	QUAKING ASPEN	X	h	
POTAMOGETON CRISPUS	BEGINNER'S PONDWEED	X		
Potamogeton sp.	PONDWEED		a, b, c	
Potentilla canadensis	DWARF CINQUEFOIL		a, c	Unlikely to occur on-site; not known from Indiana
Potentilla norvegica	ROUGH CINQUEFOIL		a, c	
Potentilla simplex	COMMON CINQUEFOIL	X	a, b, d, e	
Prenanthes alba	LION'S FOOT	X	a, e	
Prenanthes altissima	TALL WHITE LETTUCE		a, b, d, e	
Prunella vulgaris s. *lanceolata*	SELFHEAL	X	a, b, c, e	*Prunella vulgaris* (b, c, e)
Prunus serotina	WILD BLACK CHERRY	X	a, b, c, d, e, g	
Prunus virginiana	COMMON CHOKE CHERRY		a,e	
Pseudognaphalium obtusifolium	OLD-FIELD BALSAM	X		
Ptelea trifoliata v. *trifoliata*	SMOOTH WAFER ASH		a, e	*Ptelea trifoliata* (a, e)
Pteridium aquilinum v. *latiusculum*	BRACKEN FERN		a	*Pteridium aquilinum* (a)

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Pycnanthemum tenuifolium	SLENDER MOUNTAIN MINT	X	a, b, e	
Quercus alba	WHITE OAK	X	a, b, c, d, e, g	
Quercus bicolor	SWAMP WHITE OAK	X	a	
Quercus coccinea	SCARLET OAK	X	a, b, e	
Quercus imbricaria	JACK OAK		a, e	
Quercus macrocarpa	BURR OAK	X		
Quercus marilandica	BLACKJACK OAK		a, e	
Quercus montana	MOUNTAIN CHESTNUT OAK	X	a, b, c, d, e	*Quercus prinus* (a, b, c, d, e)
Quercus muhlenbergii	CHINKAPIN OAK	X	a, b, d, e	
Quercus palustris	PIN OAK		a, b, e	
Quercus rubra	NORTHERN RED OAK	X	a, b, c, d, e, g	
Quercus stellata	POST OAK		a, e	
Quercus velutina	BLACK OAK	X	a, b, c, d, e, g	
Ranunculus abortivus	LITTLE-LEAF BUTTERCUP	X	a, b	
Ranunculus fascicularis	EARLY BUTTERCUP		a, e, h	Unlikely to occur on-site; not known from central or southern Indiana
Ranunculus hispidus v. *hispidus*	ROUGH BUTTERCUP	X	a, e	*Ranunculus hispidus* (a, e)
Ranunculus recurvatus	HOOKED BUTTERCUP	X	a, d, e	
Ranunculus spp.	BUTTERCUP		d	Likely a combination of *Ranunculus* spp. observed in other studies
Rhus copallina v. *latifolia*	DWARF SUMAC	X	a, b, c, e	*Rhus copallina* (a, b, c, e)
Rhus glabra	SMOOTH SUMAC	X	a, b, c, e	
Rhus typhina	STAGHORN SUMAC	X		
Ribes cynosbati	PRICKLY WILD GOOSEBERRY	X	a, b, c	
Ribes spp.	GOOSEBERRY		d	
Robinia pseudoacacia	BLACK LOCUST	X	a, b, e	
RORIPPA NASTURTIUM-AQUATICUM	WATER CRESS		a, b, e	*Nasturtium officinale* (a, b, e)
Rorippa palustris s. *fernaldiana*	MARSH YELLOW CRESS		a	*Rorippa palustris* (a)
ROSA MULTIFLORA	JAPANESE ROSE	X	a, b, e	
Rosa palustris	SWAMPY ROSE	X	a, e	
Rosa setigera	ILLINOIS ROSE	X	a, c	
Rosa sp.	ROSE	X	d	
Rotala ramosior	WHEELWORT	X		
Rubus abactus	YANKEE BLACKBERRY	X		
Rubus allegheniensis	COMMON BLACKBERRY	X	a, b, c, e	
Rubus flagellaris	COMMON DEWBERRY		h	*Rubus villosus* (h)
RUBUS IDAEUS v. *IDAEUS*	AMERICAN RED RASPBERRY		a, b, e	*Rubus idaeus* (a, b, e); unlikely to occur on-site; not known from central or southern Indiana
Rubus occidentalis	BLACK RASPBERRY	X	a, c, d	
Rubus spp.	RUBUS		d	Likely a combination of *Rubus* spp. observed in other studies

Scientific Name	Common Name	Observed in 2007	Observed in Previous Study	Comments
Rudbeckia hirta v. *hirta*	BLACK-EYED SUSAN	X	a, e	*Rubdeckia hirta* (a, e)
Ruellia strepens	SMOOTH RUELLIA		a, e	
Ruellia sp.	RUELLIA	X		Possibly *Ruellia strepens*
RUMEX ACETOSELLA	FIELD SORREL		a, b, c	
RUMEX CRISPUS	CURLY DOCK	X	a, b, c	
RUMEX OBTUSIFOLIUS	BITTER DOCK	X	a, c	
Rumex sp.	DOCK	X		
Sabatia angularis	ROSE GENTIAN	X	a	
Sagittaria latifolia	COMMON ARROWHEAD	X		
Salix discolor	PUSSY WILLOW	X	a, e, h	
Salix interior	SANDBAR WILLOW	X	a	*Salix exigua* (a)
Salix nigra	BLACK WILLOW	X	a, b, c, e, h	
Sambucus nigra s. *canadensis*	COMMON ELDERBERRY	X	a, b, c, e	*Sambucus canadensis* (a, b, c, e)
Samolus valerandi	WATER PIMPERNEL	X		
Sanguinaria canadensis	BLOODROOT	X	a, b, d, e	
Sanicula canadensis	CANADIAN BLACK SNAKEROOT	X	a, c	
Sanicula marilandica	BLACK SNAKEROOT		a, b, h	Unlikely to occur on-site; not known from central or southern Indiana
Sanicula odorata	CLUSTERED BLACK SNAKEROOT	X	a, b	*Sanicula gregaria* (a, b)
Sanicula trifoliata	BEAKED BLACK SNAKEROOT		a, b, d	
Sanicula spp.	SNAKEROOT		d	Likely a combination of *Sanicula* spp. observed in other studies
SAPONARIA OFFICINALIS	BOUNCING BET		a, e	
Sassafras albidum	SASSAFRAS	X	a, b, c, d, e	
SCHEDONORUS ARUNDINACEUS	TALL FESCUE	X		
Schizachyrium scoparium	LITTLE BLUESTEM GRASS	X	a, e	*Andropogon scoparius* (e)
Schoenoplectus tabernaemontani	GREAT BULRUSH		a, b	*Scirpus validus* (a, b)
Scirpus atrovirens	DARK-GREEN BULRUSH	X		
Scirpus cyperinus	WOOL GRASS	X	a, b	
Scirpus pendulus	RED BULRUSH	X		
Scrophularia marilandica	LATE FIGWORT	X		
Scutellaria incana	DOWNY SKULLCAP	X		
Scutellaria lateriflora	MAD-DOG SKULLCAP	X	a, e, h	
Scutellaria ovata	HEART-LEAVED SKULLCAP	X	h	*Scutellaria versicola* (h)
Sedum ternatum	THREE-LEAVED STONECROP	X	a, d, e	
Senna hebecarpa	WILD SENNA	X	a, e	*Cassia hebecarpa* (e)
SETARIA FABERI	GIANT FOXTAIL GRASS	X	a, e	
SETARIA PUMILA	PIGEON GRASS	X	a, c	*Setaria glauca* (a, c)
SETARIA VIRIDIS v. *VIRIDIS*	GREEN FOXTAIL GRASS	X		
Sicyos angulatus	BUR CUCUMBER		a, b, e, h	
Silene stellata	STARRY CAMPION	X	h	

Scientific Name	Common Name	Observed in 2007	Observed in Previous Study	Comments
Silene virginica	FIRE PINK	X	a, e, h	
Silphium perfoliatum	CUP PLANT		a, e	
Sisyrinchium angustifolium	STOUT BLUE-EYED GRASS	X		
Sisyrinchium montanum	MOUNTAIN BLUE-EYED GRASS		d	Unlikely to occur on-site; not known from central or southern Indiana
Smilax hispida	BRISTLY GREEN BRIER	X	a, b, c	
Smilax illinoensis	ILLINOIS CARRION FLOWER	X		
Smilax lasioneura	COMMON CARRION FLOWER		h	*Smilax herbacea* (h)
Smilax rotundifolia	CAT BRIER	X	a, b, d, e	
Solanum carolinense	HORSE NETTLE	X	a, e	
SOLANUM DULCAMARA	BITTERSWEET NIGHTSHADE		a	
Solanum ptycanthum	BLACK NIGHTSHADE	X	a, c	*Solanum nigrum* (a, c)
Solidago altissima	TALL GOLDENROD	X	a, b, c, e	
Solidago caesia	BLUESTEM GOLDENROD	X	a, c, d, h	
Solidago canadensis	CANADA GOLDENROD		a, b	
Solidago flexicaulis	BROAD-LEAVED GOLDENROD	X	a, b, c, d, e, h	*Solidago latifolia* (a, c, h)
Solidago gigantea	LATE GOLDENROD	X	a, b	
Solidago juncea	EARLY GOLDENROD	X	a, e	
Solidago nemoralis	OLD-FIELD GOLDENROD	X	a, c	
Solidago ulmifolia	ELM-LEAVED GOLDENROD	X		
Sorghastrum nutans	INDIAN GRASS	X		
SORGHUM HALEPENSE	JOHNSON GRASS	X	a, e	
Sphenopholis nitida	SHINING WEDGE GRASS	X		
Spiranthes lacera v. *gracilis*	SLENDER LADIES' TRESSES		a, b	*Spiranthes gracilis* (a, b)
Spiranthes ovalis v. *erostellata*	OVAL LADIES' TRESSES	X		
Spiranthes romanzoffiana	HOODED LADIES' TRESSES		a, e	Unlikely to occur on-site; not known from central or southern Indiana
Spiranthes tuberosa	LITTLE LADIES' TRESSES		a, f	
Stachys tenuifolia v. *tenuifolia*	STREAMBANK HEDGE NETTLE	X		
Staphylea trifolia	BLADDERNUT	X	a, e	
STELLARIA MEDIA s. *MEDIA*	COMMON CHICKWEED	X	a, b, e	*Stellaria media* (a, b, e)
Stellaria pubera	GREAT CHICKWEED	X	d	
Streptopus lanceolatus v. *roseus*	TWISTEDSTALK		g	*Streptopus roseus* (g); unlikely to occur on-site; not known from Indiana
Strophostyles helvola	TRAILING WILD BEAN		a, c	*Strophostyles helvula* (a)
Strophostyles umbellata	CLUSTERED WILD BEAN	X		
Stylophorum diphyllum	CELANDINE POPPY	X	a, b, c, e	
Symphoricarpos orbiculatus	CORALBERRY	X	a, b	
Symphyotrichum cordifolium	HEART-LEAVED ASTER	X	a, b, c	*Aster cordifolius* (a, b, c)
Symphyotrichum dumosum	BUSHY ASTER		a, c, e	*Aster dumosus* (a,c,e); unlikely to occur on-site; not known from central or southern Indiana

Scientific Name	Common Name	Observed in 2007	Observed in Previous Study	Comments
Symphyotrichum lanceolatum	PANICLED ASTER	X		
Symphyotrichum lateriflorum	SIDE-FLOWERING ASTER	X	a, b, e	*Aster lateriflorus* (a, b, e)
Symphyotrichum novae-angliae	NEW ENGLAND ASTER		a, e	*Aster novae-angliae* (a, e)
Symphyotrichum pilosum v. *pilosum*	HAIRY ASTER	X	a	*Aster pilosus* (a)
Symphyotrichum racemosum	SMALL WHITE ASTER		a, b, e	*Aster racemosus* (a, b); *Aster vimineus* (e)
Symphyotrichum shortii	SHORT'S ASTER	X	a, b, d , h	*Aster shortii* (a, b, d, h)
Symphyotrichum tradescantii	SHORE ASTER		h	*Aster trandescantii* (h); unlikely to occur on-site; not known from Indiana; maybe refers to Symphyotrichum lateriflorum or Symphyotrichum ontarionis
Symphyotrichum urophyllum	ARROW-LEAVED ASTER	X		
Symphyotrichum spp.	ASTER		d	*Aster* spp. (d); likely a combination of *Symphyotrichum* spp. observed in other studies
SYMPHYTUM OFFICINALE	COMMON COMFREY		a, b, e, h	Unlikely to occur on-site; only known in a few counties in northern Indiana and one county in southeastern Indiana
Synandra hispidula	SYNANDRA	X	a, f, h	*Synandra grandiflora* (h)
SYRINGA VULGARIS	LILAC		a, e	Only would occur on-site as an escape from cultivation
TARAXACUM OFFICINALE	COMMON DANDELION	X	a, b, e	
Teucrium canadense v. *canadense*	AMERICAN GERMANDER	X		
Thalictrum dioicum	EARLY MEADOW RUE		a, e	
Thalictrum pubescens	LATE MEADOW RUE		a, e	*Thalictrum polygamum* (a,e); unlikely to occur on-site; known in Indiana only along Ohio River
Thalictrum thalictroides	RUE ANEMONE	X	a, b, d, e	*Anemonella thalictroides (a, b, e)*
Thaspium trifoliatum v. *aureum*	YELLOW MEADOW PARSNIP		a, c, h	*Thaspium trifoliatum flavum* (a, c); *Thaspium aureum* (h); *Thaspium trifoliatum* (h)
Thelypteris noveboracensis	NEW YORK FERN	X	a, d, e	
Thuja occidentalis	ARBOR VITAE		a, b	Only would occur on-site as an escape from cultivation
Tilia americana v. *americana*	AMERICAN LINDEN	X	a, b, c, d, e	*Tilia americana* (a, b, c, d, e)
Tipularia discolor	CRANE-FLY ORCHID	X	a, b	
Tovara virginiana	VIRGINIA KNOTWEED	X	a, b, e	*Polygonum virginianum* (a, b)
Toxicodendron pubescens	ATLANTIC POISON OAK		a	Unlikely to occur on-site; not known from Indiana
Toxicodendron radicans s. *radicans*	POISON IVY	X	a, b, c, d, e	*Toxicodendron radicans* (a, b, d); *Rhus radicans* (c); *Rhus toxicodendron* (e)
Tradescantia subaspera	BROAD-LEAVED SPIDERWORT	X		
Tradescantia virginiana	VIRGINIA SPIDERWORT	X	a, e, h	
Trichostema dichotomum	BLUE CURLS	X		
Tridens flavus	COMMON PURPLETOP	X		
TRIFOLIUM AUREUM	YELLOW HOP CLOVER		a, e	*Trifolium agrarium* (e)
TRIFOLIUM HYBRIDUM	ALSIKE CLOVER	X	a, c	
TRIFOLIUM PRATENSE	RED CLOVER	X	a, b, c, e	
TRIFOLIUM REPENS	WHITE CLOVER	X	a, b, c, e	

Scientific Name	Common Name	Observed in 2007	Observed in Previous Study	Comments
Trillium cernuum	NODDING TRILLIUM		d	Unlikely to occur on-site; not known from central or southern Indiana
Trillium flexipes	DECLINED TRILLIUM	X	a, e	
Trillium grandiflorum	LARGE WHITE TRILLIUM		a, e	
Trillium nivale	SNOW TRILLIUM		a, c, e	
Trillium recurvatum	RED TRILLIUM	X	a, d, e, h	*Trillium erectum* v. *recuvatum* (h)
Trillium sessile	SESSILE TRILLIUM	X	a, b, d	
Triosteum perfoliatum	LATE HORSE GENTIAN		h	
Triosteum sp.	HORSE GENTIAN	X		
TYPHA × GLAUCA	HYBRID CATTAIL	X		
Typha latifolia	BROAD-LEAVED CATTAIL		a, b, c, e	
Ulmus americana	AMERICAN ELM	X	a, b, c, d, e	
ULMUS PUMILA	SIBERIAN ELM	X		
Ulmus rubra	SLIPPERY ELM	X	a, b, c, d, e, g, h	*Ulmus fulva* (h)
URTICA DIOICA s. *DIOICA*	TALL NETTLE		a, b, d, e	*Urtica dioica* (a, b, d, e)
Uvularia grandiflora	LARGE-FLOWER BELLWORT	X	a, c, d, h	
Uvularia perfoliata	PERFOLIATE BELLWORT		a, d, e, h	Unlikely to occur on-site; only known in Indiana from Harrison County
Vaccinium pallidum	LATE LOW BLUEBERRY	X	a, b, c, d	
Vaccinium stamineum	DEERBERRY	X	a, e	
Valeriana pauciflora	PINK VALERIAN	X	a, e, h	
VERBASCUM THAPSUS	WOOLLY MULLEIN	X	a	
Verbena hastata	BLUE VERVAIN		a, b	
Verbena urticifolia v. *urticifolia*	WHITE VERVIAN	X	a, c, e	*Verbena urticifolia* (a, c, e)
Verbesina alternifolia	WINGSTEM	X	a, b, c, d, h	*Actinomeris alternifolia* (c, d); *Actinomaeris squarrosa* (h)
Verbesina occidentalis	YELLOW CROWNBEARD		a, e	Unlikely to occur on-site; not known from Indiana
Vernonia gigantea	TALL IRONWEED	X	a, b, c, e	*Vernonia altissima* (c, e)
Vernonia missurica	MISSOURI IRONWEED	X		
VERONICA ARVENSIS	CORN SPEEDWELL	X	a, e	
VERONICA HEDERIFOLIA	IVY-LEAVED SPEEDWELL	X		
VERONICA SERPYLLIFOLIA	THYME-LEAVED SPEEDWELL	X		
Viburnum acerifolium	MAPLE-LEAVED ARROWWOOD	X	a, b, c, d, e, h	
Viburnum dentatum	SOUTHERN ARROWWOOD	X		
Viburnum lantanoides	HOBBLEBUSH		a, e	*Viburnum alnifolium* (a, e); unliikely to occur on-site; not known from Indiana
Viburnum prunifolium	BLACK HAW	X	a, c	
VINCA MINOR	COMMON PERIWINKLE	X	a, b, e	
VINCETOXICUM NIGRUM	BLACK SWALLOW-WORT		a, e	*Cynanechum nigrum* (e); unlikely to occur on-site; only known in Indiana from Marion County
VIOLA BICOLOR	WILD PANSY		a, e	*Viola rafinesquii* (a); *Viola kitaibeliana* (e)
Viola cucullata	MARSH BLUE VIOLET		h	

Scientific Name	Common Name	Observed in 2007	Observed in Previous Study	Comments
Viola lanceolata	LANCE-LEAVED VIOLET		a, e	Unlikely to occur on-site; only known from northwestern Indiana and a few scattered counties in southern Indiana
Viola palmata	CLEFT VIOLET	X	d	*Viola triloba* (d)
Viola pubescens	DOWNY YELLOW VIOLET	X	a, e, f	*Viola pensylvanica* (e)
Viola sororia	WOOLLY BLUE VIOLET	X	a, b, e	*Viola papilionacea* (e)
Viola striata	COMMON WHITE VIOLET	X	a, c, e, h	
Viola spp.	VIOLET		d	Likely a combination of *Viola* spp. observed in other studies
Vitis aestivalis	SUMMER GRAPE	X	a, b, c	
Vitis cinerea	WINTER GRAPE		a, e	
Vitis riparia	RIVERBANK GRAPE	X	a	
Vitis vulpina	FROST GRAPE	X		
Vitis spp.	GRAPE		d	Likely a combination of *Vitis* spp. observed in other studies
Wisteria sp.	WISTERIA	X		
Xanthium strumarium	COCKLEBUR	X	a, b, c	*Xanthium pensylvanicum* (c)
YUCCA FLACCIDA	ADAM'S NEEDLE		a, b, e	*Yucca filamentosa* (a, b, e); only would occur on-site as an escape from cultivation
Zannichellia palustris	HORNED PONDWEED	X		
Zanthoxylum americanum	PRICKLY ASH	X	a, b	
Zanthoxylum clava-herculis	HERCULES' CLUB		a, e	Unlikely to occur on-site; not known from Indiana
Zizania aquatica v. *aquatica*	BROAD-LEAVED WILD RICE		a, e	*Zizania aquatica* (a, e)
	UNIDENTIFIABLE FERN	X		Possibly *Polypodium virginianum*
	UNIDENTIFIABLE GRASS		d	Likely a combination of grasses observed in other studies
	UNIDENTIFIABLE ORCHID		d	
	UNIDENTIFIABLE VASCULAR PLANT		d	

APPENDIX D:

EXOTIC PLANT SPECIES CONTROL TECHNIQUES

GRIFFY LAKE MASTER PLAN 2008
MONROE COUNTY, INDIANA

Woody Species

Amur honeysuckle, Japanese honeysuckle, Morrow's honeysuckle (40.6 acres):
Non-Chemical control: Burning does not work on thick stands of honeysuckle as there is rarely enough fuel in these areas to sustain a fire and re-sprouting is typically occurs from individuals following a fire. Mowing could work, but would need to be done several times per year over a three to five year timeframe to have any long-term effects. However, mowing on the relatively steep slopes and within the dense areas of Griffy Lake Nature Preserve will likely be ineffective long-term. Small plants can often be pulled or dug by hand when the soil is moist. Caution needs to be taken with pulled individuals as they can re-root if left in contact with the soil.

Chemical control: The best documented method is to cut the mature shrubs in the fall or winter and treat the cut stumps with a 50-100% glyphosate herbicide. Another option is basal-bark application using a triclopyr based herbicide along with a penetrant.

Autumn olive (63.5 acres):
Non-Chemical control: Burning will kill the tops of smaller-diameter individuals, but expect re-sprouting in most cases. Mowing could work, but would need to be completed several times per year over a three to five year timeframe to have any long-term effects. Plants will re-sprout following a burn or mowing event if herbicide is not used. Small plants can often be pulled or dug by hand when the soil is moist. Caution needs to be taken with pulled individuals as they can re-root if left in contact with the soil.

Chemical control: The best documented method is to cut the mature shrubs in the fall or winter and treat the cut stumps with a 50-100% glyphosate herbicide. Another option is basal-bark application using a triclopyr based herbicide along with a penetrant. Foliar applications of broad-leaf herbicides to the shrubs during the growing season have been completed with moderate success. This treatment option can cause a lot of off-target damage.

Black Locust (33.5 acres):
Non-Chemical control: Mowing and burning can temporarily control black locust, but mowing can promote seed germination and burning encourages sprouting. Cutting black locust without applying herbicide will stimulate sprouting and clonal spread (Czarapta, 2005).

Chemical control: Larger trees should be girdled and the girdle should be treated with a 50% glyphosate solution. Smaller individuals should be treated using a cut stump method like used for autumn olive and bush honeysuckle. A basal-bark application using a triclopyr based herbicide along with a penetrant is another potential treatment.

Japanese rose (Multiflora rose) (140.2 acres):
Non-Chemical control: Mowing has been proven effective but should occur three to six times per growing season for a minimum of two to four years. Early spring prescribed fires can help control multiflora rose in fire adapted communities, but larger plant may only be top killed and will quickly re-sprout. Multiflora rose is also susceptible to rose rosette disease. Rose rosette disease is a virus like disease that is spread by a native mite. Rose rosette disease can be grafted into multiflora rose plants; however, any other rose species located downwind of multiflora rose could also become infected. Infected plants usually die within two years (Czarapta, 2005).

Chemical control: Winter cut-stump applications can work, but are difficult due to the thorns and small stem diameter. The easiest way to treat multiflora rose is through a foliar application of

herbicide in early summer. In areas where off-target damage is an issue, use of a broadleaf-specific herbicide is recommended. In dense stands, a glyphosate based herbicide works well.

Privet (95.2 acres):
Non-Chemical control: Burning will kill the tops of smaller-diameter individuals, but expect re-sprouting in most cases. Mowing could work, but would need to be completed several times per year over a 3-5 year timeframe to get any long-term effects. Plants will re-sprout following a burn or mowing event if herbicide is not used. Small plants can often be pulled or dug by hand when the soil is moist. Caution needs to be taken with pulled individuals as they can re-root if left in contact with the soil.

Chemical control: The best documented method to control privet is to cut the mature shrubs in the fall or winter and treat the cut stumps with a 50-100% glyphosate herbicide. Another option is basal-bark application using a triclopyr based herbicide along with a penetrant. Foliar applications of broad-leaf herbicides to the shrubs during the growing season have been completed with moderate success. This can cause a lot of off-target damage though.

Siberian Elm (1.1 acres):
Non-Chemical control: Girdling trees in late spring to mid-summer is effective. Small individuals can be pulled or dug when the soil is moist.

Chemical control: A cut stump method using glyphosate or basal bark applications can be effective against Siberian elm as well.

Herbaceous Species

Garlic Mustard (109.5 acres):
Non-Chemical control: Hand pulling is effective in controlling garlic mustard. Pulled plants should be bagged and removed from the site. Cutting the plants has shown mixed results. If cut when flowering, cut plants need to be bagged and removed from the site. Fall burning has shown to be effective in control. Three to five years of consecutive burning is recommended as burning will release garlic mustard seeds in the seed bank (Czarapt, 2005). Biological control for garlic mustard is still being developed and is not yet available.

Chemical control: Cold weather application of glyphosate has been proven effective at controlling garlic method while reducing off target damage (Frey et al., 2007). Chemical control can be more cost effective when dealing with large populations.

Nepalese browntop (Japanese stilt grass) (75.6 acres):
Non-Chemical control: Hand-pulling can be used to control small populations. Mowing is effective if done at peak bloom time in September.

Chemical control: Glyphosate can be used to control large populations of Japanese stilt grass.

Ground ivy (Creeping Charlie) (75.6 acres):
Non-Chemical control: Small patches can be hand pulled or raked out when the soil is damp.

Chemical control: Large populations can be controlled using glyphosate or a broadleaf-specific herbicide.

Common Periwinkle:

Non-Chemical controls: Hand pulling of small population can be effective at controlling common periwinkle.

Chemical control: Large patches can be controlled with glyphosate or a broadleaf specific herbicide.

APPENDIX E:

SMALL MAMMALS TRAPPING RESULTS

GRIFFY LAKE MASTER PLAN 2008
MONROE COUNTY, INDIANA

SMALL MAMMAL TRAPPING AT GRIFFY LAKE NATURE PRESERVE, MONROE COUNTY, INDIANA: 14 JUNE – 23 JULY, 2007

Snap Trap Lines

Line #1. 14 – 18 June 2007 (UTM: 1654215; 433899). 100 snap traps along dead trees and logs. Dominate vegetation: oak, maple, and beech.

Mammals captured		Total
None		

Line # 2. 14 – 18 June 2007 (UTM: 1654226; 433905). 100 snap traps set off of "Hiking Trail" along dead logs. Dominate vegetation: oak, maple, and beech.

Mammals captured		Total
Peromyscus leucopus		2
Blarina brevicauda		2

Line # 3. 18 – 22 June 2007 (UTM: 1654282; 433940). 100 snap traps set at the north end of "Hiking Trail" along dead logs. Dominate vegetation: beech, maple, oak.

Mammals captured		Total
Microtus ochrogaster		7

Line # 4. 18 – 22 June 2007 (UTM: 1654297; 433955). 100 snap traps set at the north end of "Hiking Trail" along woods/grassy field edge. Dominate vegetation beech, maple, oak, green briar, multiflora rose, ivy and red bud.

Mammals captured		Total
Peromyscus leucopus		4
Blarina brevicauda		4

Line # 5. 19 – 23 June 2007 (UTM: 1654267; 433884). 100 snap traps set along dead trees near a ravine. Dominate vegetation: beech, tulip, maple, oak.

Mammals captured		Total
Peromyscus leucopus		1

Line # 6. 19 – 23 June 2007 (UTM: 1654301; 433892). 100 snap traps set along dead trees off of "Griffy Creek Trail" in bottomland habitat. Dominate vegetation: tulip, elm, sycamore and maple.

Mammals captured		Total
Peromyscus leucopus		2

Line # 7. 22 –26 June 2007 (UTM: 1654327; 433926). 100 snap traps set along dead trees off of "Griffy Creek Trail" in bottomland habitat. Dominate vegetation: tulip, sycamore and maple.

Mammals captured		Total
Peromyscus leucopus		4

Line # 8. 22 –26 June 2007 (UTM: 1654356; 433927). 100 snap traps set along dead trees off of “Griffy Creek Trail” in bottomland habitat. Dominate vegetation: ferns, tulip, beech, sycamore and maple.

Mammals captured		**Total**
Peromyscus leucopus		2
Blarina brevicauda		1

Line #9. 24 –28 June 2007 (UTM: 1654346; 433867). 100 snap traps set along dead trees off of “Branch Trail.” Dominate vegetation: pawpaw, cherry, beech, oak and maple.

Mammals captured		**Total**
None		

Line #10. 26 June –2 July 2007 (UTM: 16542941; 4338438). 100 snap traps set along a wet stream off of “Branch Trail.” Dominate vegetation: grasses, sycamore, walnut, and buckeye.

Mammals captured		**Total**
Peromyscus leucopus		2
Blarina brevicauda		1

Line #11. 26 June –2 July 2007 (UTM: 16542435; 4338803). 100 snap traps set along the border of cattails and grassland off of “Griffy Creek Trail.” Dominate vegetation: grasses, cattails, silver maple, elm, and willow.

Mammals captured		**Total**
Peromyscus leucopus		2
Microtus pinetorum		1
Tamias striatus		1

Line #12. 28 June–3 July 2007 (UTM: 16541881; 4339218). 100 snap traps set along dead logs off of “North Shore Trail.” Dominate vegetation: beech, maple, oak, and hickory.

Mammals captured		**Total**
None		

Line #13. 28 June–3 July 2007 (UTM: 16541552; 4339353). 100 snap traps set along dead logs off of “North Shore Trail.” Dominate vegetation: beech, maple, and oak.

Mammals captured		**Total**
Peromyscus leucopus		2

Line #14. 2 – 6 July 2007 (UTM: 16541758; 4339514). 100 snap traps set along dead logs off of “North Shore Trail.” Dominate vegetation: beech, maple, and oak.

Mammals captured		**Total**
Blarina brevicauda		1

Line #15. 2 – 6 July 2007 (UTM: 16541737; 4339552). 100 snap traps set along dead logs in a ravine off of “North Shore Trail.” Dominate vegetation: beech, maple, and sycamore.

Mammals captured		**Total**
Peromyscus leucopus		3
Blarina brevicauda		2

Line #16. 3 – 7 July 2007 (UTM: 16541655; 4339333). 100 snap traps set in a grassy area on the delta of a stream off of "North Shore Trail." Dominate vegetation: grasses, nettle, ferns, spice bush, beech, maple, hickory, and oak.

Mammals captured		**Total**
Peromyscus leucopus		3

Line #17. 3 – 7 July 2007 (UTM: 16541436; 4339537). 100 snap traps set along dead logs off of "North Shore Trail." Dominate vegetation: beech, maple, hickory, and oak.

Mammals captured		**Total**
None		

Line # 18. 6 – 10 July 2007 (UTM: 16541586; 4339864). 100 snap traps set along dead logs near a stick cabin off of "North Shore Trail." Dominate vegetation: beech, maple, juniper, and tulip.

Mammals captured		**Total**
None		

Line #19. 6 – 10 July 2007 (UTM: 16541364; 4339978). 100 snap traps set along dead logs near the north property line off of "North Shore Trail." Dominate vegetation: beech, maple, and oak.

Mammals captured		**Total**
Microtus pinetorum		1

Line #20. 7 – 11 July 2007 (UTM: 16541100; 4339880). 100 snap traps set along dead logs at the west end of "North Shore Trail." Dominate vegetation: spice bush and pawpaw with a few maple, beech, cherry, and oak.

Mammals captured		**Total**
Peromyscus leucopus		1

Line # 21. 7 – 11 July 2007 (UTM: 16540827; 4339823). 100 snap traps set along the west property line near a ravine. Dominate vegetation: spice bush, maple, beech, elm, hickory, sycamore, and oak.

Mammals captured		**Total**
Peromyscus leucopus		2

Line #22. 10 – 14 July 2007 (UTM: 16540634; 4339791). 100 snap traps set along a border of cattails near a stream. Dominate vegetation: grasses, cattail, sycamore, and mint.

Mammals captured		**Total**
Microtus pennsylvanicus		1

Line #23. 10 – 14 July 2007 (UTM: 16543618; 4340085). 100 snap traps set in a meadow in the woods near the north property line. Dominate vegetation: grasses, juniper, dogwood, and olive bushes.

Mammals captured		**Total**
Peromyscus leucopus		3
Microtus pinetorum		2

Line #24. 11 – 15 July 2007 (UTM: 16543437; 4339620). 100 snap traps set along dead logs on a ridge on the NE side of the property. Dominate vegetation: tulip, maple, beech, juniper, and sassafras.

Mammals captured		**Total**
Peromyscus leucopus		3

Line #25. 11 – 15 July 2007 (UTM: 16543365; 4339946). 100 snap traps set along dead logs on a ridge on the NE side of the property. Dominate vegetation: tulip, maple, oak, beech, dogwood, and sassafras.

Mammals captured		**Total**
Peromyscus leucopus		8

Line # 26. 14 – 18 July 2007 (UTM: 16541602; 4338640). 100 snap traps set along dead logs off a trail on the SE side of the property. Dominate vegetation: tulip, maple, oak, beech, and hickory.

Mammals captured		**Total**
Peromyscus leucopus		2
Blarina brevicauda		1

Line #27. 14 – 18 July 2007 (UTM: 16541748; 4338619). 100 snap traps set along dead logs in a dry stream bed on the SE side of the property. Dominate vegetation: sycamore, maple, ferns, spicebush, and hickory.

Mammals captured		**Total**
None		

Line # 28. 15 – 19 July 2007 (UTM: 16541743; 4338895). 100 snap traps set along dead logs on the end of a ridge near the SE side of the lake. Dominate vegetation: maple, oak, and beech.

Mammals captured		**Total**
Peromyscus leucopus		1

Line # 29. 15 – 19 July 2007 (UTM: 16540810; 4338831). 100 snap traps set along dead logs on the SW side of the property off of Dunn Road. Dominate vegetation: maple, oak, ash, cherry, and beech.

Mammals captured		**Total**
Peromyscus leucopus		3

Line # 30. 18 – 22 July 2007 (UTM: 16541423; 4338874). 100 snap traps set along dead logs off the loop trail on the south side of the property. Dominate vegetation: maple, oak, tulip, spicebush, and beech.

Mammals captured		**Total**
Peromyscus leucopus		1

Line # 31. 18 – 22 July 2007 (UTM: 16541179; 4339368). 100 snap traps set along dead logs at the end of a ridge near the south end of the lake. Dominate vegetation: maple, oak, tulip, and beech.

Mammals captured		**Total**
Peromyscus leucopus		1
Blarina brevicauda		1

Line # 32. 19 – 23 July 2007 (UTM: 16541320; 4338372). 100 snap traps set along dead logs along the south property line next to a retirement community. Dominate vegetation: maple, sycamore, nettle, and beech.

Mammals captured		**Total**
Peromyscus leucopus		1
Blarina brevicauda		1

Line # 33. 19 – 23 July 2007 (UTM: 16541040; 4339130). 100 snap traps set in a spicebush grove on a ridge-top on the south side of the property. Dominate vegetation: spicebush, maple, tulip, and multiflora rose.

Mammals captured		**Total**
Peromyscus leucopus		2
Blarina brevicauda		1
Microtus pinetorum		1

Sunken Can Lines

Line # C1. 14 June – 3 July 2007 (UTM: 1654210; 433898). 10 sunken cans set in bottomland woods under dead logs. Dominate vegetation: oak, maple, and beech.

Mammals captured		Total
Microtus pinetorum		2
Blarina brevicauda		2

Line # C2. 15 June – 13 July 2007 (UTM: 1654240; 433896). 10 sunken cans set in bottomland woods under dead logs off of "Hiking Trail" near "Griffy Creek Trail." Dominate vegetation: dogwood, maple, and beech.

Mammals captured		Total
Microtus pinetorum		2
Blarina brevicauda		1
Sorex fumeus		1
Sorex hoyi		1

Line # C3. 21 June – 13 July 2007 (UTM: 16542435; 4338803). 10 sunken cans set in bottomland woods under dead logs along cattail and marshy area off of "Wetland Trail." Dominate vegetation: cattail, maple, and beech.

Mammals captured		Total
Microtus pinetorum		2

Line # C4. 27 June – 13 July 2007 (UTM: 16542948; 4338750). 10 sunken cans set in bottomland woods under dead logs off of "Branch Trail" near its junction with "Griffy Creek Trail." Dominate vegetation: tulip, cottonwood, sycamore, maple, and beech.

Mammals captured		Total
Sorex fumeus		3

Line # C5. 29 June – 15 July 2007 (UTM: 16541870; 4339189). 10 sunken cans set in bottomland woods under dead logs off of "North Shore Trail." Dominate vegetation: oak, maple, and beech.

Mammals captured		Total
Microtus pinetorum		2
Blarina brevicauda		1
Peromyscus leucopus		1

Line # C6. 7 – 23 July 2007 (UTM: 16540875; 4339824). 10 sunken cans set in bottomland woods under dead logs near a stream bed. Dominate vegetation: pawpaw, sycamore, maple, and beech.

Mammals captured		Total
Microtus pinetorum		1
Sorex fumeus		1

Line # C7. 9 – 23 July 2007 (UTM: 16541607; 4338424). 10 sunken cans set in bottomland woods under dead logs on the south property line. Dominate vegetation: oak, spice bush, tulip, ash, maple, and beech.

Mammals captured		Total
None		

Line # C8. 10 – 23 July 2007 (UTM: 16540820; 4339130). 10 sunken cans set in bottomland woods under dead logs near the southwest edge of the lake. Dominate vegetation: oak, tulip, cherry, maple, and beech.

Mammals captured		**Total**
Sorex hoyi		1

Bat netting data

Site #N1. Indiana, Monroe County, Bloomington, Griffy Lake. Two 30 x 14 foot mist nets were placed along a dry creek bed (Griffy Creek). The site was netted on 24 June 2007. Netting from 8:45p.m. to 12:00a.m. Temperature stayed in the 70's F. Few calls on the bat detector.

BATS TAKEN	SEX	TIME	WEIGHT	CONDITION
Perimyotis subflavus	F	22:30	6.5 g	Lactating

Site #N2. Indiana, Monroe County, Bloomington, Griffy Lake. A 30 x 14 foot mist net and a 18 x 14 foot mist net were placed along a dry creek bed (Griffy Creek). The site was netted on 24 June 2007. Netting from 8:45p.m. to 12:00a.m. Temperature stayed in the 70's F. Few calls on the bat detector.

BATS TAKEN	SEX	TIME	WEIGHT	CONDITION
Myotis septentrionalis	M	21:50	7.5 g	Adult
Eptesicus fuscus	M	23:10	18 g	Adult

Site #N3. Indiana, Monroe County, Bloomington, Griffy Lake. Two 18 x 14 foot mist nets were placed along a small dry creek bed in young forest. The site was netted on 1 July 2007. Netting from 9:00p.m. to 12:00a.m. Temperature ranged from 71-62 F. Two calls on the bat detector.

BATS TAKEN	SEX	TIME	WEIGHT	CONDITION
No bats captured				

Site #N4. Indiana, Monroe County, Bloomington, Griffy Lake. Two 18 x 14 foot mist nets were placed along a small dry creek bed. The site was netted on 12 July 2007. Netting from 8:40p.m. to 11:50p.m. Temperature ranged from 73-65 F. One call on the bat detector.

BATS TAKEN	SEX	TIME	WEIGHT	CONDITION
No bats captured				

APPENDIX F:

BIRD OBSERVATIONS BY SEASON

GRIFFY LAKE MASTER PLAN 2008
MONROE COUNTY, INDIANA

Bird Census Data
Spring 2007

Species	Conservation Status*	4/19/07	4/20/07	5/1/07 to 5/3/07	5/7/07	5/8/07
Acadian Flycatcher [Empidonax virescens]				x	17	12
American Coot [Fulica americana]		1		x		
American Crow [Corvus brachyrhynchos]		1		x	7	9
American Goldfinch [Carduelis tristis]		3	6	x	14	13
American Robin [Turdus migratorius]		1			1	5
Baltimore Oriole [Icterus galbula]				x	8	8
Bank Swallow [Riparia riparia]			5			
Barn Swallow [Hirundo rustica]			2	x	1	8
Belted Kingfisher [Ceryle alcyon]					2	
Black-and-white Warbler [Mniotilta varia]					1	5
Blackpoll Warbler [Dendroica striata]					1	
Black-throated Green Warbler [Dendroica virens]				x	1	2
Blue Jay [Cyanocitta cristata]			2	x	18	12
Blue-gray Gnatcatcher [Polioptila caerulea]	rc, rs	6	8	x	13 (nb)	4
Blue-headed Vireo [Vireo solitarius]					1	
Blue-winged Teal [Anas discors]		18	13			
Blue-winged Warbler [Vermivora pinus]	cc, rc			x		1
Broad-winged Hawk [Buteo platypterus]					1	
Brown Thrasher [Toxostoma rufum]				x		2
Brown-headed Cowbird [Molothrus ater]		8	4	x	22	12
Canada Goose [Branta canadensis]		12	x	x	35 (fl)	27
Carolina Chickadee [Poecile carolinensis]		5	1	x	13	9
Carolina Wren [Thryothorus ludovicianus]				x	2	4
Caspian Tern [Sterna caspia]			2			

Species	Conservation Status*	4/19/07	4/20/07	5/1/07 to 5/3/07	5/7/07	5/8/07
Cerulean Warbler [Dendroica cerulea]	cc, rc, global concern				1	1
Chestnut-sided Warbler (Dendroica pensylvanica)					1	
Chimney Swift [Chaetura pelagica]	rc, rs		10	x	7	8
Common Grackle [Quiscalus quiscula]					3	5
Common Yellowthroat [Geothlypis trichas]				x	8	4
Downy Woodpecker [Picoides pubescens]				x	2	1
Eastern Bluebird [Sialia sialis]		2			2	
Eastern Kingbird [Tyrannus tyrannus]	rc, rs			x		1
Eastern Phoebe [Sayornis phoebe]			1		2	1
Eastern Towhee [Pipilo erythrophthalmus]	rc			x	6	6
Eastern Wood-Pewee [Contopus virens]	rc, rs			x	3	13
European Starling [Sturnus vulgaris]						5
Golden-crowned Kinglet [Regulus satrapa]					1	
Gray Catbird [Dumetella carolinensis]				x	1	7
Gray-cheeked Thrush [Catharus minimus]						1
Great Blue Heron [Ardea herodias]		2	1	x	2	2
Great Crested Flycatcher [Myiarchus crinitus]					1	5
Green Heron [Butorides virescens]					3	1
Hairy Woodpecker [Picoides villosus]		1		x		1
Hooded Warbler [Wilsonia citrina]					3	4
House Wren [Troglodytes aedon]				x	1	1
Indigo Bunting [Passerina cyanea]				x		1
Kentucky Warbler [Oporornis formosus]	cc, rc, cs, rs			x	10	6
Killdeer [Charadrius vociferus]		1	1	x	1	
Louisiana Waterthrush [Seiurus motacilla]		1		x	4	3
Magnolia Warbler [Dendroica magnolia]					1	

Species	Conservation Status*	4/19/07	4/20/07	5/1/07 to 5/3/07	5/7/07	5/8/07
Mallard [Anas platyrhynchos]		3		x	1	1
Mourning Dove [Zenaida macroura]			1			1
Nashville Warbler [Vermivora ruficapilla]				x	1	3
Northern Cardinal [Cardinalis cardinalis]		8	6	x	24	33
Northern Flicker [Colaptes auratus]	rc	1			1	1
Northern Parula [Parula americana]		1		x	9 (nb)	5
Northern Rough-winged Swallow [Stelgidopteryx serripennis]		25	2	x	2	4
Northern Waterthrush [Seiurus noveboracensis]						1
Orchard Oriole [Icterus spurius]	rc, rs					1
Osprey [Pandion haliaetus]			1			
Ovenbird [Seiurus aurocapillus]					3	5
Philadelphia Vireo [Vireo philadelphicus]					1	
Pied-billed Grebe [Podilymbus podiceps]		3	5			
Pileated Woodpecker [Dryocopus pileatus]		2	2	x	10	6
Prairie Warbler [Dendroica discolor]	cc, rc			x		1
Red-bellied Woodpecker [Melanerpes carolinus]		1		x	10	11
Red-eyed Vireo [Vireo olivaceus]				x	46	39
Red-headed Woodpecker [Melanerpes erythrocephalus]	cc, rc	1		x	1	
Red-winged Blackbird [Agelaius phoeniceus]				x	7	7
Rose-breasted Grosbeak [Pheucticus ludovicianus]					2	2
Ruby-crowned Kinglet [Regulus calendula]		4	2			
Ruby-throated Hummingbird [Archilochus colubris]						1
Scarlet Tanager [Piranga olivacea]				x	17	8
Solitary Sandpiper [Tringa solitaria]		2	2		7	1
Song Sparrow [Melospiza melodia]			2	x	5	3
Spotted Sandpiper [Actitis macularia]						3
Summer Tanager [Piranga rubra]				x		4

Species	Conservation Status*	4/19/07	4/20/07	5/1/07 to 5/3/07	5/7/07	5/8/07
Swainson's Thrush [Catharus ustulatus]					4	7
Swamp Sparrow [Melospiza georgiana]			1			
Tennessee Warbler [Vermivora peregrina]				x	12	21
Tree Swallow [Tachycineta bicolor]		30	50	x	4	5
Tufted Titmouse [Baeolophus bicolor]				x	20	25
Turkey Vulture [Cathartes aura]				x	2	
Veery [Catharus fuscescens]						4
Warbling Vireo [Vireo gilvus]				x	8	4
White-breasted Nuthatch [Sitta carolinensis]		1		x	8	3
White-eyed Vireo [Vireo griseus]	rc			x	2	7
White-throated Sparrow [Zonotrichia albicollis]					4	2
Wilson's Warbler [Wilsonia pusilla]						1
Wood Thrush [Hylocichla mustelina]	cc, rc			x	11	14
Worm-eating Warbler [Helmitheros vermivorus]	cc, rc, cs, rs				3	2
Yellow Warbler [Dendroica petechia]				x		
Yellow-bellied Sapsucker [Sphyrapicus varius]			1			
Yellow-billed Cuckoo [Coccyzus americanus]	rc, rs			x		
Yellow-rumped Warbler [Dendroica coronata]						4
Yellow-throated Vireo [Vireo flavifrons]				x	6	4
Yellow-throated Warbler [Dendroica dominica]		3	1	x	8	3
TOTAL COUNT		28	27	54	68	73

Conservation Status: cc: continental concern; rc: regional concern; cs: continental stewardship; rs: regional stewardship.
Species of concern: species showing decline in populations
Stewardship species: species that are concentrate in that area
Cerulean Warbler is also a species of Global concern -showing global population declines.
X denotes species seen/heard, but numbers not counted.
Nesting confirmed: fl: fledgling seen (and counted); nb: nest building; on: occupied nest; fy: feeding young
Nesting probable: pr: male and female pair; ag: aggravated behavior

Bird Census Data
Summer 2007

Species	Conservation Status*	6/6/07	6/7/07	6/21/07	7/10/07	7/16/07
Acadian Flycatcher [Empidonax virescens]		38	51		49	32
American Crow [Corvus brachyrhynchos]		14 (fl)	9 (fl)	x	5	14
American Goldfinch [Carduelis tristis]		3	6	x	14	25
American Robin [Turdus migratorius]		1	6 (fy)		2	6
Baltimore Oriole [Icterus galbula]		5 (pr)	1	x (on)	1	
Barn Swallow [Hirundo rustica]		3	5	x	2 (fy)	38
Barred Owl [Strix varia]					1 (& yng calling)	
Belted Kingfisher [Ceryle alcyon]		2 (pr)	1		5	3
Black-billed Cuckoo [Coccyzus erythropthalmus]		1				
Black-throated Green Warbler [Dendroica virens]			1			
Blue Jay [Cyanocitta cristata]		3	8	x	1	8
Blue-gray Gnatcatcher [Polioptila caerulea]	rc, rs	4		x	2	1
Blue-winged Warbler [Vermivora pinus]	cc, rc					
Brown-headed Cowbird [Molothrus ater]		13	9	x	2	2
Canada Goose [Branta canadensis]		23 (fl)		x	70	59
Carolina Chickadee [Poecile carolinensis]		8	11 (fl)	x	10 (fl)	6
Carolina Wren [Thryothorus ludovicianus]		3	5		2	8
Cedar Waxwing [Bombycilla cedrorum]		20 (pr)	2	x	2	
Cerulean Warbler [Dendroica cerulea]	cc, rc, global concern		2		1	
Chimney Swift [Chaetura pelagica]	rc, rs		3		1	11
Common Grackle [Quiscalus quiscula]		2	1	x		
Common Yellowthroat [Geothlypis trichas]		2	3	x	3	1
Downy Woodpecker [Picoides pubescens]		1	1	x	1	5 (fl)
Eastern Bluebird [Sialia sialis]		1	4	x		
Eastern Kingbird [Tyrannus tyrannus]	rc, rs	1	2	x		5 (fl)

Species	Conservation Status*	6/6/07	6/7/07	6/21/07	7/10/07	7/16/07
Eastern Phoebe [Sayornis phoebe]		4 (on)	2	x		1
Eastern Towhee [Pipilo erythrophthalmus]	rc	4	4		6	6
Eastern Wood-Pewee [Contopus virens]	rc, rs	8	12		5	13
European Starling [Sturnus vulgaris]			4			
Field Sparrow [Spizella pusilla]	rc, rs		1			
Gray Catbird [Dumetella carolinensis]		5 (fl)	1	x	2	1
Great Blue Heron [Ardea herodias]		1	1	x	2	1
Great Crested Flycatcher [Myiarchus crinitus]			2			2
Green Heron [Butorides virescens]		2		x	3	
Hairy Woodpecker [Picoides villosus]			3 (fy)			
House Finch [Carpodacus mexicanus]		2				12 (fl)
House Wren [Troglodytes aedon]		2				
Indigo Bunting [Passerina cyanea]		4	9 (pr)	x	1	5
Kentucky Warbler [Oporornis formosus]	cc, rc, cs, rs	11 (pr)	7 (fl)	x	4 (pr)	6 (fl)
Killdeer [Charadrius vociferus]		2 (pr)		x	6 (fl)	6
Louisiana Waterthrush [Seiurus motacilla]		7 (pr)	6 (fl)		6 (pr)	1
Mallard [Anas platyrhynchos]		1 male			7 (fl)	5 (fl)
Mourning Dove [Zenaida macroura]			1	x		4
Northern Cardinal [Cardinalis cardinalis]		26	25 (fy)	x	29	21
Northern Flicker [Colaptes auratus]	rc		2		1	
Northern Parula [Parula americana]		10	4		2	3
Northern Rough-winged Swallow [Stelgidopteryx serripennis]		1	3	x		
Orchard Oriole [Icterus spurius]	rc, rs	1		x		
Ovenbird [Seiurus aurocapillus]		2	3		2	
Pileated Woodpecker [Dryocopus pileatus]		5	6 (pr)	x	3	6
Prairie Warbler [Dendroica discolor]	cc, rc		2			
Prothonotary Warbler [Protonotaria citrea]	cc	1				
Red-bellied Woodpecker [Melanerpes carolinus]		10	3	x	4	11

Species	Conservation Status*	6/6/07	6/7/07	6/21/07	7/10/07	7/16/07
Red-eyed Vireo [Vireo olivaceus]		26	40	x	36	50 (fy)
Red-shouldered Hawk [Buteo lineatus]		1	1			1
Red-tailed Hawk [Buteo jamaicensis]			1			
Red-winged Blackbird [Agelaius phoeniceus]		9 (fl)		x	8	2
Ruby-throated Hummingbird [Archilochus colubris]		1 (nb)	1			1
Scarlet Tanager [Piranga olivacea]		11	13		16	15 (pr)
Song Sparrow [Melospiza melodia]		3	3	x	2	6
Summer Tanager [Piranga rubra]		4	3	x	3	2
Tree Swallow [Tachycineta bicolor]		2 (fy)	3	x (fy)		
Tufted Titmouse [Baeolophus bicolor]		15	21 (fl)		19 (fl)	25 (fl)
Turkey Vulture [Cathartes aura]				x		
Warbling Vireo [Vireo gilvus]		4	1	x	3	3
White-breasted Nuthatch [Sitta carolinensis]		12	15 (fl)	x	8	29 (fl)
White-eyed Vireo [Vireo griseus]	rc	3	2		1	3
Wood Duck [Aix sponsa]			1 female			1
Wood Thrush [Hylocichla mustelina]	cc, rc	16	13		13	15
Worm-eating Warbler [Helmitheros vermivorus]	cc, rc, cs, rs	3	3		4 (fl)	1
Yellow-billed Cuckoo [Coccyzus americanus]	rc, rs	6	1		4	2
Yellow-throated Vireo [Vireo flavifrons]		3	6	x	3	3
Yellow-throated Warbler [Dendroica dominica]		7	3	x	10	3
TOTAL COUNT		57	58	38	48	49

Conservation Status: cc: continental concern; rc: regional concern; cs: continental stewardship; rs: regional stewardship.
Species of concern: species showing decline in populations
Stewardship species: species that are concentrate in that area
Cerulean Warbler is also a species of Global concern -showing global population declines.
X denotes species seen/heard, but numbers not counted.
Nesting confirmed: fl: fledgling seen (and counted); nb: nest building; on: occupied nest; fy: feeding young
Nesting probable: pr: male and female pair; ag: aggravated behavior

Bird Census Data
Fall 2007

Species	Conservation Status*	9/12/07 to 9/14/07	9/14/07	9/21/07	9/28/07	10/5/07	10/19/07	10/29/07	11/9/07	11/15/07
Acadian Flycatcher [Empidonax virescens]		x	1							
American Crow [Corvus brachyrhynchos]		x	4	7	6	8	10	11	13	162
American Goldfinch [Carduelis tristis]		x	18		9	5	1	5	11	5
American Redstart [Setophaga ruticilla]			2	1		1				
American Robin [Turdus migratorius]							3		1	
American Woodcock [Scolopax minor]		x								
Bay-breasted Warbler [Dendroica castanea]			2	3		1				
Belted Kingfisher [Ceryle alcyon]		x	4	1	1	3	2			1
Blackpoll Warbler [Dendroica striata]			4	2		1				
Black-throated Green Warbler [Dendroica virens]			4			6				
Blue Jay [Cyanocitta cristata]		x	6		5	37	11	7	13	3
Blue-winged Teal [Anas discors]					9					
Brown Creeper [Certhia americana]								1		
Brown-headed Cowbird [Molothrus ater]							1			
Bufflehead [Bucephala albeola]								1		
Canada Goose [Branta canadensis]		x			62		8	83		2
Cape May Warbler [Dendroica tigrina]			5	1						
Carolina Chickadee [Poecile carolinensis]		x	13	3	12	16	17	33	14	14
Carolina Wren [Thryothorus ludovicianus]		x	7	4	4	7	9	6	6	1
Cedar Waxwing [Bombycilla cedrorum]		x	11							
Chestnut-sided Warbler (Dendroica pensylvanica)			2			1				
Chimney Swift [Chaetura pelagica]	rc, rs	x	5		2	6				
Common Yellowthroat [Geothlypis trichas]					2					
Cooper's Hawk [Accipiter cooperii]								1		

Species	Conservation Status*	9/12/07 to 9/14/07	9/14/07	9/21/07	9/28/07	10/5/07	10/19/07	10/29/07	11/9/07	11/15/07
Downy Woodpecker [Picoides pubescens]		x	8	4	2	5	5	3	5	
Eastern Bluebird [Sialia sialis]						6	1	3	4	
Eastern Kingbird [Tyrannus tyrannus]	rc, rs	x								
Eastern Phoebe [Sayornis phoebe]		x	2			2	1		1	
Eastern Screech-Owl [Otus asio]										1
Eastern Towhee [Pipilo erythrophthalmus]	rc	x				7	2	7	1	1
Eastern Wood-Pewee [Contopus virens]	rc, rs	x	5	2		1				
European Starling [Sturnus vulgaris]									7	
Fox Sparrow [Passerella iliaca]							1			
Gray Catbird [Dumetella carolinensis]		x	2	1		4				
Great Blue Heron [Ardea herodias]		x	2	1	1	1	1	1		
Green Heron [Butorides virescens]		x	2	1		1				
Hairy Woodpecker [Picoides villosus]			1					1	2	
Hermit Thrush [Catharus guttatus]									1	
Hooded Merganser [Lophodytes cucullatus]									4	
Hooded Warbler [Wilsonia citrina]			1							
House Finch [Carpodacus mexicanus]									6	
Indigo Bunting [Passerina cyanea]						3				
Killdeer [Charadrius vociferus]		x	16	16	3	12	2	2	1	
Magnolia Warbler [Dendroica magnolia]			1			2				
Mallard [Anas platyrhynchos]		x		7	6	11	8	2	12	36
Merlin [Falco columbarius]			1							
Mourning Dove [Zenaida macroura]		x			5		1			
Nashville Warbler [Vermivora ruficapilla]					1					
Northern Cardinal [Cardinalis cardinalis]		x	4	2	7	9	10	14	8	2
Northern Flicker [Colaptes auratus]	rc		2			3	1	2		
Northern Parula [Parula americana]		x	5							

Species	Conservation Status*	9/12/07 to 9/14/07	9/14/07	9/21/07	9/28/07	10/5/07	10/19/07	10/29/07	11/9/07	11/15/07
Ovenbird [Seiurus aurocapillus]			1			3				
Palm Warbler [Dendroica palmarum]						1				
Philadelphia Vireo [Vireo philadelphicus]					1					
Pied-billed Grebe [Podilymbus podiceps]		x								
Pileated Woodpecker [Dryocopus pileatus]		x	4	1	1	2			3	2
Red-bellied Woodpecker [Melanerpes carolinus]		x	5	2	6	14	6	21	11	7
Red-breasted Nuthatch [Sitta canadensis]		x	1		1	1			9	
Red-eyed Vireo [Vireo olivaceus]		x	3							
Red-headed Woodpecker [Melanerpes erythrocephalus]	cc, rc	x	3			2		5	2	2
Red-shouldered Hawk [Buteo lineatus]		x	1		2	1			2	
Red-tailed Hawk [Buteo jamaicensis]		x					1	3	2	2
Red-winged Blackbird [Agelaius phoeniceus]						2				
Rose-breasted Grosbeak [Pheucticus ludovicianus]			1		1	3				
Ruby-throated Hummingbird [Archilochus colubris]			1							
Scarlet Tanager [Piranga olivacea]		x								
Sharp-shinned Hawk [Accipiter striatus]									1	
Solitary Sandpiper [Tringa solitaria]		x	3	4	3	4	1			
Song Sparrow [Melospiza melodia]			2		1	2			5	6
Summer Tanager [Piranga rubra]		x	1			1				
Swainson's Thrush [Catharus ustulatus]		x								
Swamp Sparrow [Melospiza georgiana]							1			3
Tennessee Warbler [Vermivora peregrina]			15	7	2	4				
Tufted Titmouse [Baeolophus bicolor]		x	9		8	6	11	18	20	8
Turkey Vulture [Cathartes aura]		x	1	1	2		1	2	12	8
Veery [Catharus fuscescens]					1					
Warbling Vireo [Vireo gilvus]		x	5							
White-breasted Nuthatch [Sitta carolinensis]		x	10	1	8	12	8	12		1

Species	Conservation Status*	9/12/07 to 9/14/07	9/14/07	9/21/07	9/28/07	10/5/07	10/19/07	10/29/07	11/9/07	11/15/07
White-eyed Vireo [Vireo griseus]	rc	x				2				
White-throated Sparrow [Zonotrichia albicollis]						4	35	7	7	6
Winter Wren [Troglodytes troglodytes]							1			
Wood Duck [Aix sponsa]		x								
Wood Thrush [Hylocichla mustelina]	cc, rc	x				2				
Yellow-billed Cuckoo [Coccyzus americanus]	rc, rs	x								
Yellow-rumped Warbler [Dendroica coronata]			2	9	34	26	2			
Yellow-throated Vireo [Vireo flavifrons]		x	8	2		1				
Yellow-throated Warbler [Dendroica dominica]			4							
TOTAL COUNT		**44**	**48**	**24**	**31**	**46**	**30**	**25**	**29**	**21**

Conservation Status: cc: continental concern; rc: regional concern; cs: continental stewardship; rs: regional stewardship.
Species of concern: species showing decline in populations
Stewardship species: species that are concentrate in that area
Cerulean Warbler is also a species of Global concern -showing global population declines.
X denotes species seen/heard, but numbers not counted.
Nesting confirmed: fl: fledgling seen (and counted); nb: nest building; on: occupied nest; fy: feeding young
Nesting probable: pr: male and female pair; ag: aggravated behavior

Bird Census Data
Spring 2008

Species	Conservation Status*	4/9/08	4/11/08	4/13/08	4/15/08	4/16/08	4/17/08	4/18/08	4/23/08	4/28/08	4/29/08
Acadian Flycatcher [Empidonax virescens]											2
American Coot [Fulica americana]			1								
American Crow [Corvus brachyrhynchos]			10	1		5	1	1	11	2	4
American Goldfinch [Carduelis tristis]		4	22		4		4	15	36	19	8
American Robin [Turdus migratorius]										1	6
Baltimore Oriole [Icterus galbula]									1	2	3
Bank Swallow [Riparia riparia]										2	
Barn Swallow [Hirundo rustica]		1						2		19	8
Barred Owl [Strix varia]				2 (h-pair)							
Belted Kingfisher [Ceryle alcyon]		1	3	1		1	3	1	5	2	
Black Vulture [Coragyps atratus]			3								
Black-and-white Warbler [Mniotilta varia]										1	
Blackpoll Warbler [Dendroica striata]										1	
Blue Jay [Cyanocitta cristata]			17	1	3	2	2	4	29	16	5
Blue-gray Gnatcatcher [Polioptila caerulea]	rc, rs	4	6	1	18	16	17	16	18	11	2
Blue-headed Vireo [Vireo solitarius]											2
Blue-winged Warbler [Vermivora pinus]	cc, rc								2	1	3
Brown Creeper [Certhia americana]		1	1								
Brown Thrasher [Toxostoma rufum]							2				
Brown-headed Cowbird [Molothrus ater]		12	29	7	2		7	6	42	13	4
Bufflehead [Bucephala albeola]		2									
Canada Goose [Branta canadensis]		12 (on)	21	27	4	7	30	25	31	21 + 2y	6
Carolina Chickadee [Poecile carolinensis]		8	16	5	12	11	14	14	35	10	9
Carolina Wren [Thryothorus ludovicianus]		2	4	1	2	1	1	1	9	5	2
Chimney Swift [Chaetura pelagica]	rc, rs									58	19
Common Grackle [Quiscalus quiscula]			1	2					2	1	
Common Loon [Gavia immer]		1	1								
Common Yellowthroat [Geothlypis trichas]									2	2	

Species	Conservation Status*	4/9/08	4/11/08	4/13/08	4/15/08	4/16/08	4/17/08	4/18/08	4/23/08	4/28/08	4/29/08
Cooper's Hawk [Accipiter cooperii]											1
Dark-eyed Junco [Junco hyemalis]								1			
Downy Woodpecker [Picoides pubescens]		2	2		2	1	3	5	4	2	2
Eastern Bluebird [Sialia sialis]		2	1					2	3		1
Eastern Kingbird [Tyrannus tyrannus]	rc, rs	1				1				2	
Eastern Phoebe [Sayornis phoebe]		1	1		2	2	1		1	3	
Eastern Towhee [Pipilo erythrophthalmus]	rc	5	4	3		2	1	3	20	5	2
Field Sparrow [Spizella pusilla]	rc, rs		1		1	2	1	1	2		
Gray Catbird [Dumetella carolinensis]										4	2
Great Blue Heron [Ardea herodias]							1	1	3	4	
Hairy Woodpecker [Picoides villosus]			1				1		1		
Hermit Thrush [Catharus guttatus]			2	1	2						
Hooded Merganser [Lophodytes cucullatus]			2								
Hooded Warbler [Wilsonia citrina]											1
House Wren [Troglodytes aedon]										1	
Indigo Bunting [Passerina cyanea]											1
Kentucky Warbler [Oporornis formosus]	cc, rc, cs, rs								1	2	
Killdeer [Charadrius vociferus]					4			1	1	1	
Louisiana Waterthrush [Seiurus motacilla]		2	3	1			1		6	6	1
Mallard [Anas platyrhynchos]			3						2	1	
Mourning Dove [Zenaida macroura]								2	1	2	3
Nashville Warbler [Vermivora ruficapilla]										2	
Northern Cardinal [Cardinalis cardinalis]		10	36	15	14	11	11	14	45	19	15
Northern Flicker [Colaptes auratus]	rc	2							1		
Northern Parula [Parula americana]		2					3	5	14	8	2
Northern Rough-winged Swallow [Stelgidopteryx serripennis]		6	4		5	2		2	5	26	10
Northern Waterthrush [Seiurus noveboracensis]										1	
Orchard Oriole [Icterus spurius]	rc, rs								1	2	
Osprey [Pandion haliaetus]		1	1								
Ovenbird [Seiurus aurocapillus]										1	1
Palm Warbler [Dendroica palmarum]									6	8	11

Species	Conservation Status*	4/9/08	4/11/08	4/13/08	4/15/08	4/16/08	4/17/08	4/18/08	4/23/08	4/28/08	4/29/08
Pied-billed Grebe [Podilymbus podiceps]			5	5			1	1			
Pileated Woodpecker [Dryocopus pileatus]		3	7	2		1	4	3	9	4	2
Prairie Warbler [Dendroica discolor]	cc, rc						1		2	2	
Prothonotary Warbler [Protonotaria citrea]	cc							1	1		
Red-bellied Woodpecker [Melanerpes carolinus]		6	13		5	3	3	4	20	11	4
Red-eyed Vireo [Vireo olivaceus]									18	18	5
Red-headed Woodpecker [Melanerpes erythrocephalus]	cc, rc	4	5		3	2	12	8	16	4	3
Red-shouldered Hawk [Buteo lineatus]											1
Red-tailed Hawk [Buteo jamaicensis]										2	
Red-winged Blackbird [Agelaius phoeniceus]		6	14	10	3		8	7	25	14	1
Ruby-crowned Kinglet [Regulus calendula]		3	8				1				
Ruddy Duck [Oxyura jamaicensis]			1	1							
Scarlet Tanager [Piranga olivacea]									9	2	1
Solitary Sandpiper [Tringa solitaria]										1	
Song Sparrow [Melospiza melodia]		4	7	4	3	1	2	4	10	10	3
Spotted Sandpiper [Actitis macularia]										2	
Swainson's Thrush [Catharus ustulatus]											4
Swamp Sparrow [Melospiza georgiana]		6	1				2		1	1	
Tree Swallow [Tachycineta bicolor]		5	10	14	25	5	15	15	12	26	10
Tufted Titmouse [Baeolophus bicolor]		13	27	13	12	14	16	9	42	12	10
Turkey Vulture [Cathartes aura]			5		1	3				4	
Warbling Vireo [Vireo gilvus]									10	6	2
White-breasted Nuthatch [Sitta carolinensis]		6	14	2	3	3	6	5	19	11	4
White-eyed Vireo [Vireo griseus]	rc							1	7	6	
White-throated Sparrow [Zonotrichia albicollis]									2	26	2
Wild Turkey [Meleagris gallopavo]				1 (h)							
Wood Duck [Aix sponsa]		1	2				3		2	2	
Wood Thrush [Hylocichla mustelina]	cc, rc								4	2	2
Worm-eating Warbler [Helmitheros vermivorus]	cc, rc, cs, rs								1		2
Yellow Warbler [Dendroica petechia]							1	1	1	5	
Yellow-bellied Sapsucker [Sphyrapicus varius]		2	5		1						

Species	Conservation Status*	4/9/08	4/11/08	4/13/08	4/15/08	4/16/08	4/17/08	4/18/08	4/23/08	4/28/08	4/29/08
Yellow-rumped Warbler [Dendroica coronata]		36	38	4	18	16	15	12	43	52	57
Yellow-throated Vireo [Vireo flavifrons]								1	7	7	2
Yellow-throated Warbler [Dendroica dominica]		10	3		3	1	3	5	17	8	2
		36	44	24	25	24	35	36	54	64	47

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Cerulean Warbler is also a species of Global concern -showing global population declines.
X denotes species seen/heard, but numbers not counted.
Nesting confirmed: fl: fledgling seen (and counted); nb: nest building; on: occupied nest; fy: feeding young
Nesting probable: pr: male and female pair; ag: aggravated behavior

APPENDIX G:

HISTORIC WATER QUALITY DATA

GRIFFY LAKE MASTER PLAN 2008
MONROE COUNTY, INDIANA

Historic water quality data from Griffy Lake, 1991 through 2007.

Date	Secchi (ft)	% Oxic	epi pH	1% Light Level	TN	NH4	NO3	TP	SRP	Plankton	Chl *a*	ITSI	SD TSI	TP TSI	Chl TSI	Source
7/1/91	13.5	66.7%	--	--	1.082	0.281	0.069	0.028	0.003	4,647	--	19	40	41		CLP, 1991
6/3/94	7.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
6/10/94	8.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
6/22/94	5.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
7/1/94	9.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
7/18/94	9.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
8/1/94	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
8/15/94	11.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
8/27/94	15.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
9/13/94	9.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
5/15/95	11.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
6/2/95	9.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
6/22/95	8.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
7/9/95	11.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
7/27/95	14.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
9/8/95	11.2	44.4%	8.07	6	0.439	0.239	0.004	0.016	0.002	--	--	--	--	--	--	IU-SPEA, 1995
9/9/95	11.5	44.4%	7.79	6	0.377	0.170	0.007	0.021	0.003	--	8.5	--	--	--	--	IU-SPEA, 1995
9/15/95	16.1	44.4%	7.97	5.5	--	--	--	--	0.005	--	20.5	--	--	--	--	IU-SPEA, 1995
10/28/95	5.9	88.9%	7.8	--	0.795	0.081	0.010	0.038	0.015	--	--	--	--	--	--	IU-SPEA, 1995
10/28/95	5.6	66.7%	7.78	--	--	0.112	0.017	0.021	0.010	--	--	--	--	--	--	IU-SPEA, 1995
8/1/96	17.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
8/7/96	15.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
8/14/96	17.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
8/22/96	12.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
8/28/96	16.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
9/6/96	14.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
9/11/96	11.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
9/18/96	10.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
5/24/97	15.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
6/13/97	9.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor

Date	Secchi (ft)	% Oxic	epi pH	1% Light Level	TN	NH4	NO3	TP	SRP	Plankton	Chl *a*	ITSI	SD TSI	TP TSI	Chl TSI	Source
7/1/97	18.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
7/11/97	17.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
7/22/97	16.4	66.7%	8.19	27.5	0.338	0.098	0.163	0.062	0.003	6,725	0.9	7	37	63	30	CLP, 1997
8/6/97	14.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
8/22/97	9.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
9/12/97	8.2	55.6%	7.9	--	0.427	0.900	0.015	0.040	0.007	--	--	--	--	--	--	IU-SPEA, 1997
9/13/97	6.7	55.6%	8.2	--	--	0.086	0.015	--	0.005	--	7.6	--	--	--	--	IU-SPEA, 1997
10/31/97	8.9	100.0%	7.85	6.7	--	0.098	--	0.019	0.009	--	4.8	--	--	--	--	IU-SPEA, 1997
5/22/98	13.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
5/30/98	6.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
6/13/98	4.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
6/24/98	--	--	--	--	--	--	--	0.088	--	--	8.4	--	--	--	--	Volunteer Monitor
7/28/98	11.8	--	--	--	--	--	--	0.010	--	--	4.4	--	--	--	--	Volunteer Monitor
8/26/98	12.3	--	--	--	--	--	--	0.010	--	--	2.6	--	--	--	--	Volunteer Monitor
5/19/99	19.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
5/29/99	18.3	--	--	--	--	--	--	0.046	--	--	0.8	--	--	--	--	Volunteer Monitor
6/10/99	15.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
6/19/99	18.3	--	--	--	--	--	--	0.030	--	--	1.1	--	--	--	--	Volunteer Monitor
7/1/99	16.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
7/29/99	14.3	--	--	--	--	--	--	0.010	--	--	1.5	--	--	--	--	Volunteer Monitor
8/16/99	15.2	--	--	--	--	--	--	0.077	--	--	--	--	--	--	--	Volunteer Monitor
8/31/99	12.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
9/10/99	14.8	66.7%	8.2	6.5	0.609	0.750	0.022	0.036	0.004	--	2.3	--	--	--	--	IU-SPEA, 1999
9/11/99	23.0	--	8.3	6.3	--	0.839	0.022	--	--	--	--	--	--	--	--	IU-SPEA, 1999
10/29/99	12.1	100.0%	8.2	5.5	0.205	0.024	0.011	0.032	0.001	--	2.6	--	--	--	--	IU-SPEA, 1999
10/30/99	12.5	100.0%	7.9	4.5	--	--	0.012	--	--	--	--	--	--	--	--	IU-SPEA, 1999
5/10/00	12.3	--	--	--	--	--	--	0.113	--	--	0.7	--	--	--	--	Volunteer Monitor
5/22/00	6.3	--	--	--	--	--	--	--	--	--		--	--	--	--	Volunteer Monitor
6/15/00	13.9	--	--	--	--	--	--	0.072	--	--	1.1	--	--	--	--	Volunteer Monitor
5/27/01	--	--	--	--	--	--	--	0.025	--	--	0.2	--	--	--	--	Volunteer Monitor
6/30/01	--	--	--	--	--	--	--	0.028	--	--	0.3	--	--	--	--	Volunteer Monitor

Date	Secchi (ft)	% Oxic	epi pH	1% Light Level	TN	NH4	NO3	TP	SRP	Plankton	Chl *a*	ITSI	SD TSI	TP TSI	Chl TSI	Source
8/30/01	--	--	--	--	--	--	--	0.053	--	--	5.3	--	--	--	--	Volunteer Monitor
5/31/02	13.0	--	--	--	--	--	--	0.053	--	--	0.6	--	--	--	--	Volunteer Monitor
6/10/02	11.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
6/25/02	--	--	--	--	--	--	--	0.059	--	--	--	--	--	--	--	Volunteer Monitor
6/25/02	14.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Volunteer Monitor
7/19/02	13.4	--	--	--	--	--	--	0.016	--	--	1.7	--	--	--	--	Volunteer Monitor
8/27/02	15.0	--	--	--	--	--	--	0.020	--	--	1.9	--	--	--	--	Volunteer Monitor
7/2/03	11.2	--	--	--	--	--	--	--	--	--		--	--	--	--	Volunteer Monitor
5/25/04	10.3	--	--	--	--	--	--	0.010	--	--	1.5	--	--	--	--	Volunteer Monitor
6/16/04	12.4	--	--	--	--	--	--	--	--	--		--	--	--	--	Volunteer Monitor
6/24/04	10.8	--	--	--	--	--	--	0.010	--	--	1.7	--	--	--	--	Volunteer Monitor
8/1/04	10.0	--	--	--	--	--	--	--	--	--		--	--	--	--	Aquatic Control, 2005
8/6/04	9.2	--	--	--	--	--	--	--	--	--		--	--	--	--	Volunteer Monitor
6/22/05	8.4	--	--	--	--	--	--	0.042	--	--	4.4	--	--	--	--	Volunteer Monitor
7/1/05	7.5	--	--	--	--	--	--	--	--	--		--	--	--	--	Aquatic Control, 2006
7/21/05	--	--	--	--	--	--	--	0.015	--	--	0.5	--	--	--	--	Volunteer Monitor
4/11/06	4.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Aquatic Contol, 2007
5/1/06	8.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Aquatic Control, 2007
5/11/06	7.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Aquatic Control, 2007
6/15/06	12.5	100.0%	--	--	--	--	--	--	--	--	--	--	--	--	--	Aquatic Control, 2007
7/7/06	10.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Aquatic Control, 2007
6/6/07	10.1	--	--	--	--	--	--	0.029	--	--	1.8	--	--	--	--	Volunteer Monitor
8/1/07	10.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Aquatic Control, 2008
8/20/07	8.2	66.7%	7.4	10.5	0.601	0.826	0.013	0.041	0.013	20485	0.9	28	47	47	30	CLP, 2001
8/28/07	--	--	--	--	--	--	--	0.020	--	--	3.2	--	--	--	--	Volunteer Monitor

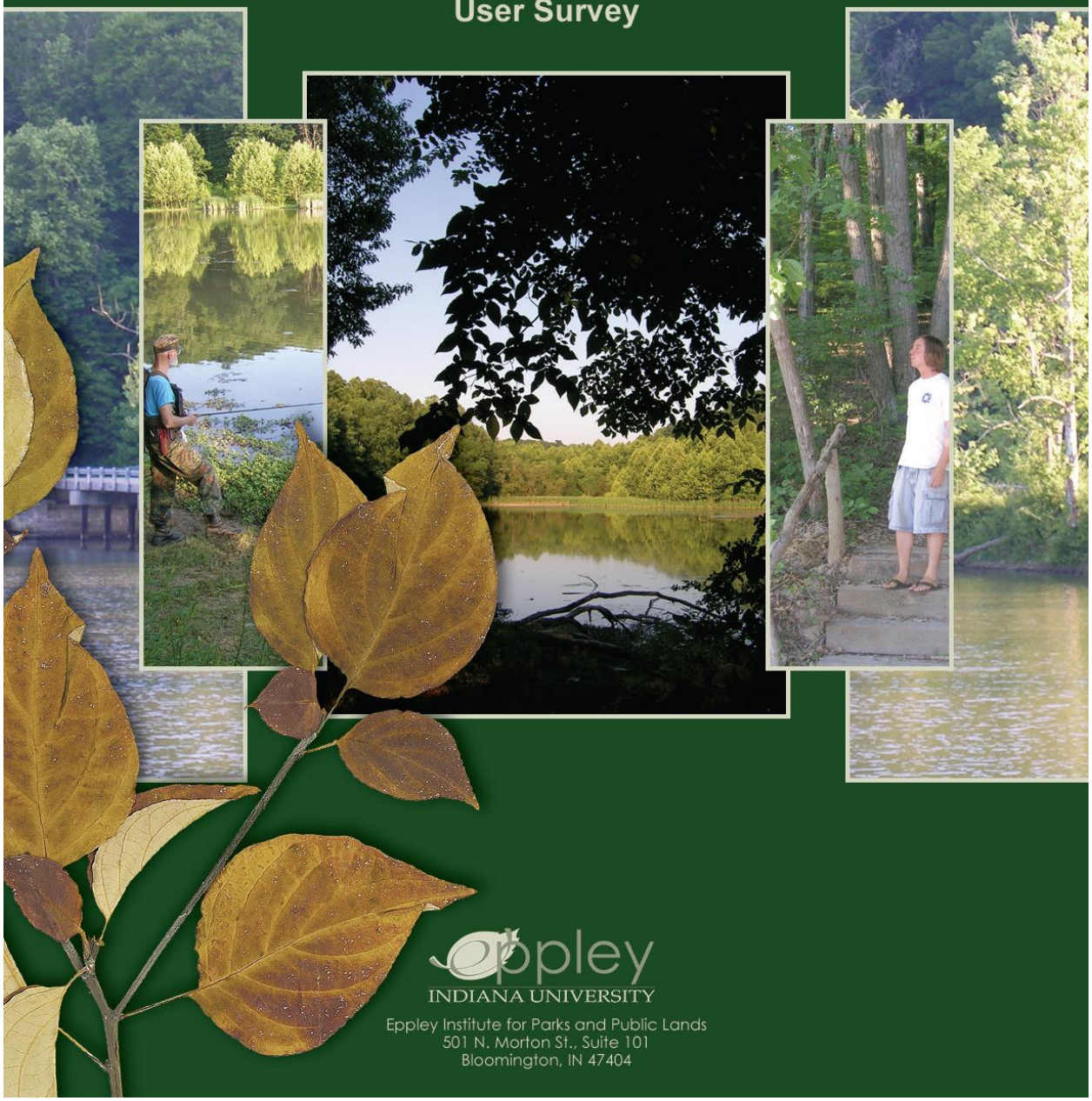
APPENDIX H:

USER SURVEY QUESTIONS
USER SURVEY RESULTS

GRIFFY LAKE MASTER PLAN 2008
MONROE COUNTY, INDIANA

Griffy Lake Nature Preserve
Management Plan

User Survey



Eppley
INDIANA UNIVERSITY
Eppley Institute for Parks and Public Lands
501 N. Morton St., Suite 101
Bloomington, IN 47404

Griffy Lake Nature Preserve Management Plan User Survey

1) Approximately how many times **total** in the last month have you visited Griffy?

_____

2) How many minutes does it take to get to Griffy from home?

- ❒ 0-5
- ❒ 6-10
- ❒ 11-15
- ❒ 16-20
- ❒ 21-25
- ❒ 26-30
- ❒ More than 30

3) What form of transportation do you use to get to Griffy?

- ❒ Car
- ❒ Bike
- ❒ Walk
- ❒ Other

Question 4: Activity definitions

Hiking/Walking
Please choose hiking/walking if it is your primary reason for visiting Griffy. Please do NOT select if you only use trails to get to the lake.

Trail running/Jogging
Please choose trail running/jogging as an activity that you participate in if you use the trails at Griffy exclusively or as part of a road and trail itinerary.

Boating
This activity includes all kinds of boats: canoes, kayaks, row boats, fishing boats with trolling motors, etc.

Dog area
If you and your dogs(s) use the dog area by the dam, then please select this activity.

4) Which of the following activities have you participated in at Griffy?
Please check all that apply.

- ❒ Hiking/Walking
- ❒ Trail running/Jogging
- ❒ Fishing from boat
- ❒ Fishing from shore
- ❒ Boating
- ❒ Dog Area
- ❒ Other_____

5) What is your primary activity when you visit Griffy?

- ❒ Hiking/Walking
- ❒ Trail running/Jogging
- ❒ Fishing from boat
- ❒ Fishing from shore
- ❒ Boating
- ❒ Dog Area
- ❒ Other_____

For the activity checked in question 5, please answer the corresponding questions below.

Please answer the following set of questions corresponding to your primary activity checked in question 5.

Hiking/Walking

How often do you go hiking/walking?

- ❒ 2 or more times a week
- ❒ Once a week
- ❒ Twice a month
- ❒ Once a month
- ❒ Less than once a month

What day(s) of the week do you typically go hiking (please check all that apply)?

- ❒ Monday
- ❒ Tuesday
- ❒ Wednesday
- ❒ Thursday
- ❒ Friday
- ❒ Saturday
- ❒ Sunday

What time of day do you usually go hiking? (check one)

- ❒ Early-Mid Morning
- ❒ Late Morning-Early Afternoon
- ❒ Mid-Late Afternoon
- ❒ Early Evening
- ❒ Mid-Late Evening

How much time do you usually spend hiking per visit? _____hours _____minutes

How often would you go hiking if Griffy were not here?

- ❒ Never
- ❒ Less often
- ❒ About the same; if so where would you go instead?_____

What is your primary reason for hiking at Griffy?

- ❒ Exercise
- ❒ Recreation
- ❒ Enjoy the outdoors
- ❒ Spend time with family and friends
- ❒ Other_____

What is your secondary reason for hiking at Griffy?

- ❒ Exercise
- ❒ Recreation
- ❒ Enjoy the outdoors
- ❒ Spend time with family and friends
- ❒ Other_____

Trail running/Jogging

How often do you go trail running/jogging ?

- ❒ 2 or more times a week
- ❒ Once a week
- ❒ Twice a month
- ❒ Once a month
- ❒ Less than once a month

What day(s) of the week do you typically go trail running/jogging ? (please check all that apply)?

- ❒ Monday
- ❒ Tuesday
- ❒ Wednesday
- ❒ Thursday
- ❒ Friday
- ❒ Saturday
- ❒ Sunday

What time of day do you usually go trail running/jogging?(check one)

- ❒ Early-Mid Morning
- ❒ Late Morning-Early Afternoon
- ❒ Mid-Late Afternoon
- ❒ Early Evening
- ❒ Mid-Late Evening

How much time do you usually spend trail running/jogging per visit?

_____hours _____minutes

How often would you go trail running/jogging if Griffy were not here?

- ❒ Never
- ❒ Less often
- ❒ About the same; if so where would you go instead?_____

What is your primary reason for trail running/jogging at Griffy?

- ❒ Exercise
- ❒ Recreation
- ❒ Enjoy the outdoors
- ❒ Spend time with family and friends
- ❒ Other_____

What is your secondary reason for trail running/jogging at Griffy?

- ❒ Exercise
- ❒ Recreation
- ❒ Enjoy the outdoors
- ❒ Spend time with family and friends
- ❒ Other_____

Fishing from boat

How often do you go fishing from a boat?

- ❒ 2 or more times a week
- ❒ Once a week
- ❒ Twice a month
- ❒ Once a month
- ❒ Less than once a month

Do you use your own boat at Griffy Lake ? **Yes or No**

Do you rent boats from Griffy Lake ? **Yes or No**

What day(s) of the week do you typically go fishing from a boat (please check all that apply)?

- ❒ Monday
- ❒ Tuesday
- ❒ Wednesday
- ❒ Thursday
- ❒ Friday
- ❒ Saturday
- ❒ Sunday

What time of day do you usually go fishing from a boat? (check one)

- ❒ Early-Mid Morning
- ❒ Late Morning-Early Afternoon
- ❒ Mid-Late Afternoon
- ❒ Early Evening
- ❒ Mid-Late Evening

How much time do you usually spend fishing from a boat per visit?

_____hours _____minutes

How often would you go fishing if Griffy were not here?

- ❒ Never
- ❒ Less often
- ❒ About the same; if so where would you go instead?_____

What is your primary reason for fishing at Griffy?

- ❒ Exercise
- ❒ Recreation
- ❒ Enjoy the outdoors
- ❒ Spend time with family and friends
- ❒ Other_____

What is your secondary reason for fishing at Griffy?

- ❒ Exercise
- ❒ Recreation
- ❒ Enjoy the outdoors
- ❒ Spend time with family and friends
- ❒ Other_____

Fishing from shore

How often do you go fishing from the shore ?

- ❒ 2 or more times a week
- ❒ Once a week
- ❒ Twice a month
- ❒ Once a month
- ❒ Less than once a month

What day(s) of the week do you typically go fishing from the shore (please check all that apply)?

- ❒ Monday
- ❒ Tuesday
- ❒ Wednesday
- ❒ Thursday
- ❒ Friday
- ❒ Saturday
- ❒ Sunday

What time of day do you usually go fishing from the shore? (check one)

- ❒ Early-Mid Morning
- ❒ Late Morning-Early Afternoon
- ❒ Mid-Late Afternoon
- ❒ Early Evening
- ❒ Mid-Late Evening

How much time do you usually spend fishing from the shore per visit?

_____hours _____minutes

How often would you go fishing if Griffy were not here?

- ❒ Never
- ❒ Less often
- ❒ About the same; if so where would you go instead?_____

What is your primary reason for fishing at Griffy?

- ❒ Exercise
- ❒ Recreation
- ❒ Enjoy the outdoors
- ❒ Spend time with family and friends
- ❒ Other_____

What is your secondary reason for fishing at Griffy?

- ❒ Exercise
- ❒ Recreation
- ❒ Enjoy the outdoors
- ❒ Spend time with family and friends
- ❒ Other_____

Boating

How often do you go boating?

- ❒ 2 or more times a week
- ❒ Once a week
- ❒ Twice a month
- ❒ Once a month
- ❒ Less than once a month

Do you use your own boat at Griffy Lake ? **Yes or No**

Do you rent boats from Griffy Lake ? **Yes or No**

What day(s) of the week do you typically go boating (please check all that apply)?

- ❒ Monday
- ❒ Tuesday
- ❒ Wednesday
- ❒ Thursday
- ❒ Friday
- ❒ Saturday
- ❒ Sunday

What time of day do you usually go boating? (check one)

- ❒ Early-Mid Morning
- ❒ Late Morning-Early Afternoon
- ❒ Mid-Late Afternoon
- ❒ Early Evening
- ❒ Mid-Late Evening

How much time do you usually spend boating per visit? _____hours _____minutes

How often would you go boating if Griffy were not here?

- ❒ Never
- ❒ Less often
- ❒ About the same; if so where would you go instead?_____

What is your primary reason for boating at Griffy?

- ❒ Exercise
- ❒ Recreation
- ❒ Enjoy the outdoors
- ❒ Spend time with family and friends
- ❒ Other_____

What is your secondary reason for boating at Griffy?

- ❒ Exercise
- ❒ Recreation
- ❒ Enjoy the outdoors
- ❒ Spend time with family and friends
- ❒ Other_____

Dog Area

How often do you use the dog area?

- ❒ 2 or more times a week
- ❒ Once a week
- ❒ Twice a month
- ❒ Once a month
- ❒ Less than once a month

What day(s) of the week do you typically use the dog area (please check all that apply)?

- ❒ Monday
- ❒ Tuesday
- ❒ Wednesday
- ❒ Thursday
- ❒ Friday
- ❒ Saturday
- ❒ Sunday

What time of day do you usually use the dog area? (check one)

- ❒ Early-Mid Morning
- ❒ Late Morning-Early Afternoon
- ❒ Mid-Late Afternoon
- ❒ Early Evening
- ❒ Mid-Late Evening

How much time do you usually spend at the dog area per visit?

_____hours _____minutes

How often would you go to a designated dog area if Griffy were not available?

- ❒ Never
- ❒ Less often
- ❒ About the same; if so where would you go instead?_____

What is your primary reason for using the dog area at Griffy?

- ❒ Exercise for my dog
- ❒ Exercise for me
- ❒ Recreation
- ❒ Enjoy the outdoors
- ❒ Spend time with family and friends
- ❒ Other_____

What is your secondary reason for using the dog area at Griffy?

- ❒ Exercise for my dog
- ❒ Exercise for me
- ❒ Recreation
- ❒ Enjoy the outdoors
- ❒ Spend time with family and friends
- ❒ Other_____

6) Would you visit Griffy more often if you could? **Yes or No**

7) What prevents you from going to Griffy more often?

- ❒ Not enough time
- ❒ Concern for personal safety
- ❒ Difficult to get to
- ❒ Weather
- ❒ Other_____

8) On a scale from 1-7, 1 being very unsatisfied and 7 being very satisfied, how would you rate your overall level of satisfaction with Griffy?

1 2 3 4 5 6 7

9) Do you feel like the lake is congested?

- ❒ Yes
- ❒ No
- ❒ I don't use the lake

10) If yes, what makes the lake feel too crowded or congested to you?

- ❒ Number of people in a group
- ❒ Number of people in your area
- ❒ Disrespectful behavior
- ❒ Other_____

11) Do you feel like the trails are congested?

- ❒ Yes
- ❒ No
- ❒ I don't use the trails

12) If yes, what makes the trails feel too crowded or congested to you?

- ❒ Number of people in a group
- ❒ Number of people in your area
- ❒ Disrespectful behavior
- ❒ Other_____

13) If paddleboats could be rented, would you use them?

Yes or No

14) If yes, what would you pay to rent a 2 person paddleboat for 1 hour?

- ❒ $1-2
- ❒ $3-5
- ❒ $6-8
- ❒ $8-10
- ❒ More than $10

15) How much would you pay to visit a nature center?

- ❒ $0
- ❒ $1-2
- ❒ $3-5
- ❒ $6-8
- ❒ $8-10
- ❒ More than $10

16) Would you participate in nature programs at Griffy?

Yes or No

17) What types of programs would you participate in at a nature center?

18) How much would you be willing to pay for nature programs (per person)?

- ❒ $1-2
- ❒ $3-5
- ❒ $6-8
- ❒ $8-10
- ❒ More than $10

19) Are you aware of the following regulations?
Please check all regulations of which you are aware.

❒ Park hours: 5AM to 11 PM

Prohibited activities include:

❒ Bicycling
❒ Motorcycling
❒ Use of four wheel drives, atv, and other vehicles
❒ Swimming
❒ Camping
❒ Woodcutting
❒ Creating any temporary structures
❒ Having off-leash dogs
❒ Fire-building
❒ Rafting
❒ Hunting/trapping
❒ Use of fire-arms
❒ Use of alcoholic beverages
❒ Horseback riding
❒ Military exercises
❒ Dumping

20) Do you think additional signage is needed at Griffy? **Yes or No**

21) What information would you like to get from signs at Griffy?

❒ Rules and regulations
❒ Operating hours
❒ Directional information
❒ Nature information
❒ Fees and services
❒ Other_____

22) What do you think are the biggest problems at Griffy? (check all that apply)

❒ Off-leash Dogs: (except in dog area)
❒ Mountain Bikes
❒ Off road vehicles
❒ Too Crowded
❒ Large groups of people
❒ Discourteous Users
❒ Trails not long enough
❒ Trails not wide enough
❒ Trails not ADA accessible
❒ Safety in Parking Lot
❒ Personal Safety
❒ Vandalism
❒ Signage
❒ Nothing
❒ Other_____

23) Is there anything about Griffy that you would like to see changed?

24) Do you consider Griffy safe? **Yes or No**

If no, why not? _____

25) If a "Friends of Griffy Lake" group were started, would you purchase a membership?

Yes or No

26) If yes, what would you be willing to pay as an annual membership fee?

- ❒ $5-10
- ❒ $10-25
- ❒ $25-50
- ❒ $50-75
- ❒ $75-100
- ❒ More than $100

27) Would you support the purchase of more land in the watershed to protect Griffy Lake?

Yes or No

28) On a scale from 1-7, 1 being very unsatisfied and 7 being very satisfied, how would you rate the quality of service offered at the boathouse?

1 2 3 4 5 6 7

- ❒ I don't use the boathouse

29) Which of the following improvements would you like to see at Griffy over the next ten years?

- ❒ Improved access
- ❒ Accessible fishing pier
- ❒ Nature center
- ❒ Upgrade boathouse facilities
- ❒ Better boats
- ❒ Loop trail around lake
- ❒ Benches along trails
- ❒ Perimeter trail around property
- ❒ Other_____

30) What do you think the parks and recreation department could do to reduce negative impacts to the land and water at Griffy Lake?

31) Where do you live?

- ❒ In the City of Bloomington
- ❒ In Monroe County but outside Bloomington's city limits
- ❒ Outside Monroe County

32) What is your zip code?

_____

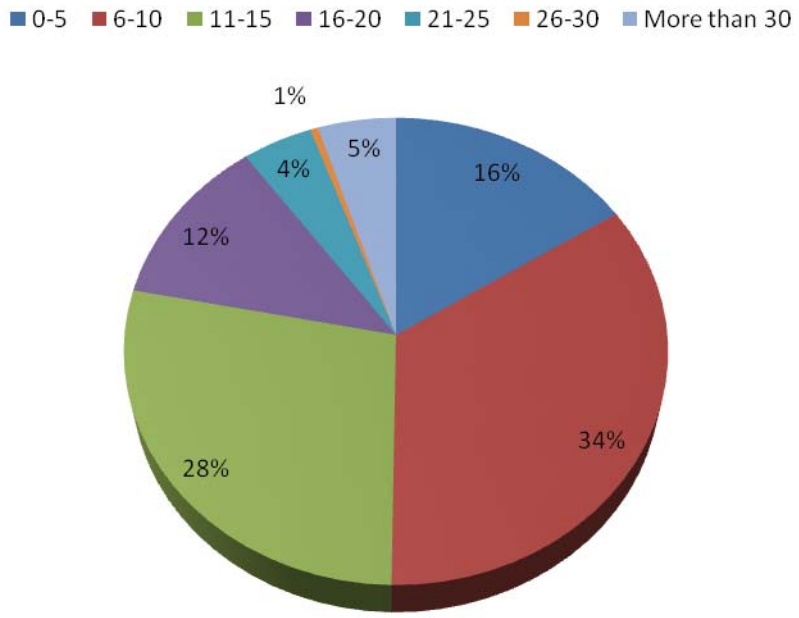
33) Household Income

- ❒ >20,000
- ❒ 20,000 – 39,999
- ❒ 40,000 – 59,999
- ❒ 60,000-79,999
- ❒ 80,000+
- ❒ Prefer not to answer

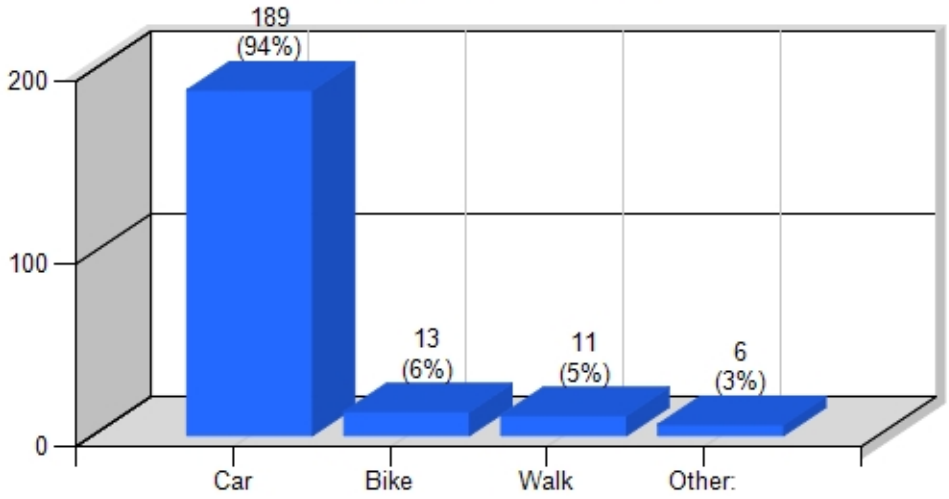
34) Education

- ❒ High School
- ❒ Some College
- ❒ 2-year degree
- ❒ 4-year degree
- ❒ Graduate degree or more
- ❒ Prefer not to answer

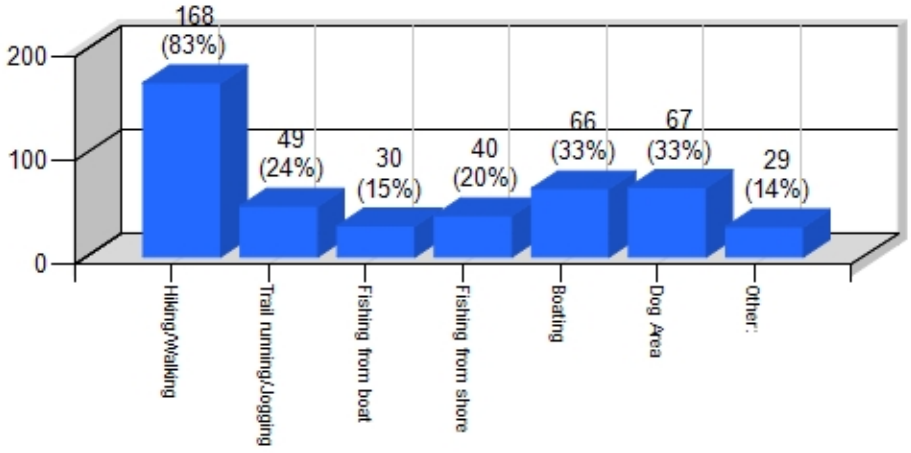
How many minutes does it take to get to Griffy from home? (193 Responses)



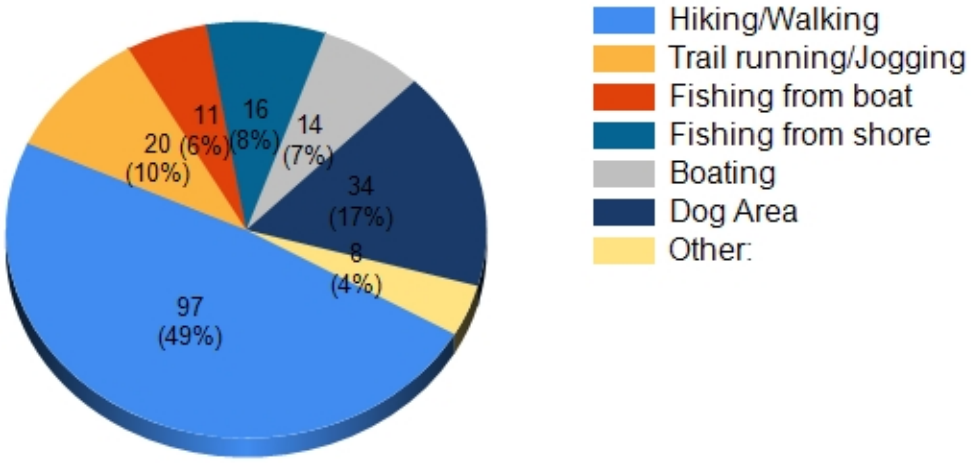
What form of transportation do you use to get to Griffy? (201 Responses)



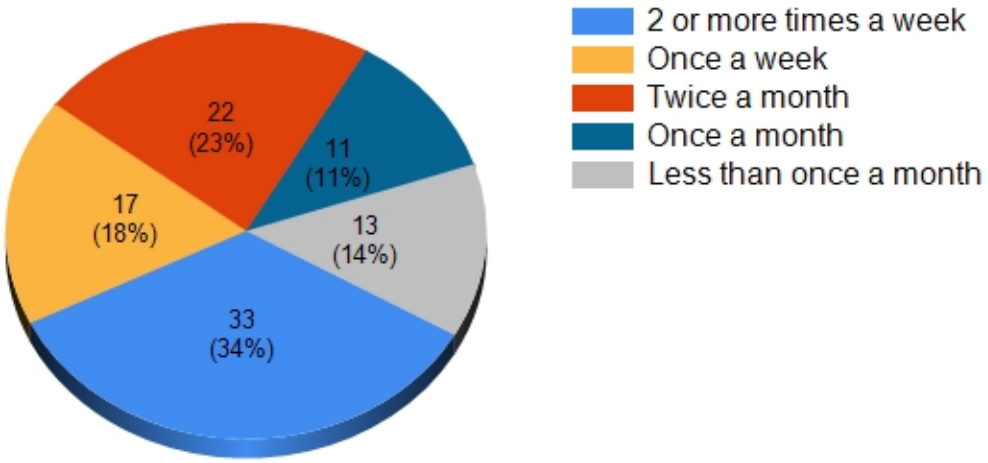
Which of the following activities have you participated in at Griffy? (202 Responses)



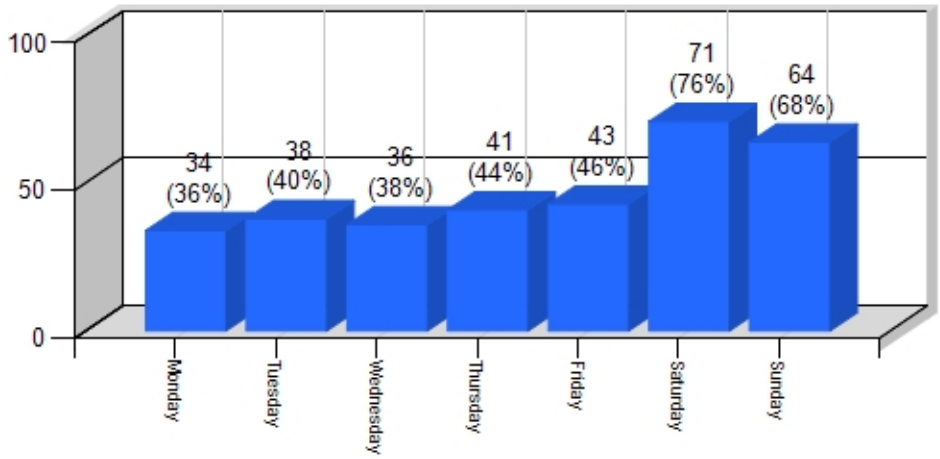
What is your primary activity when you visit Griffy? (200 Responses)

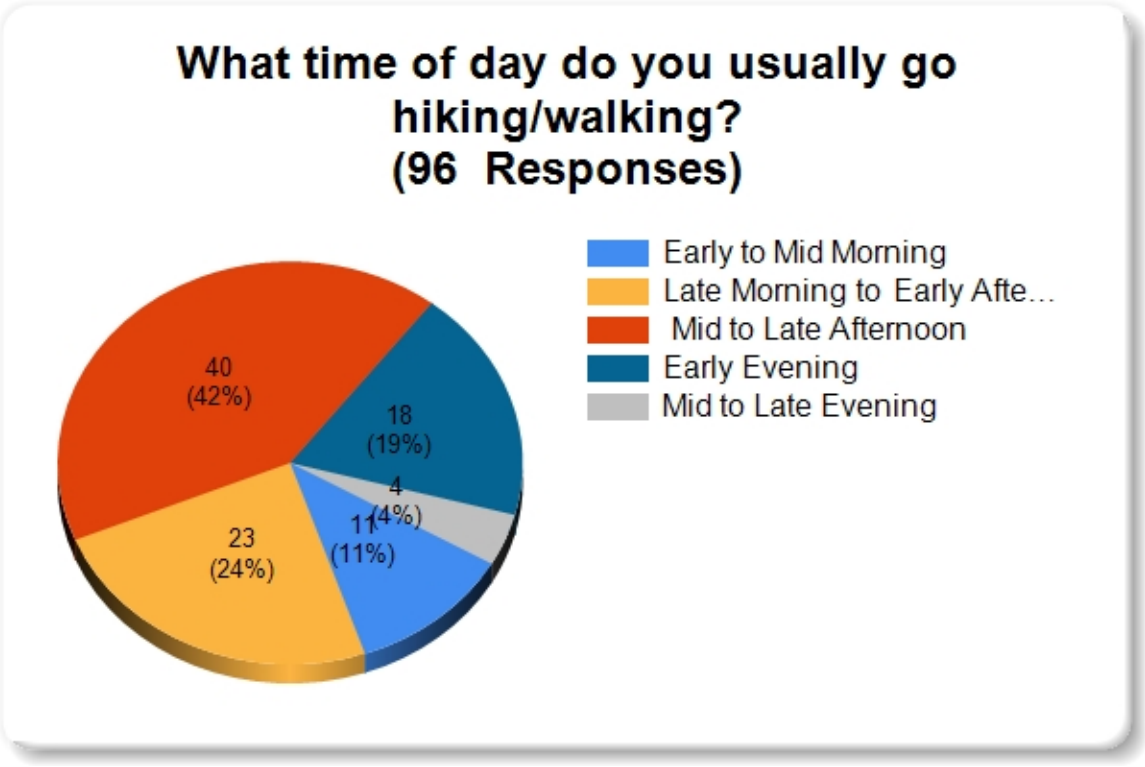


How often do you typically go hiking/walking? (96 Responses)



What day(s) of the week do you typically go hiking/walking? (94 Responses)

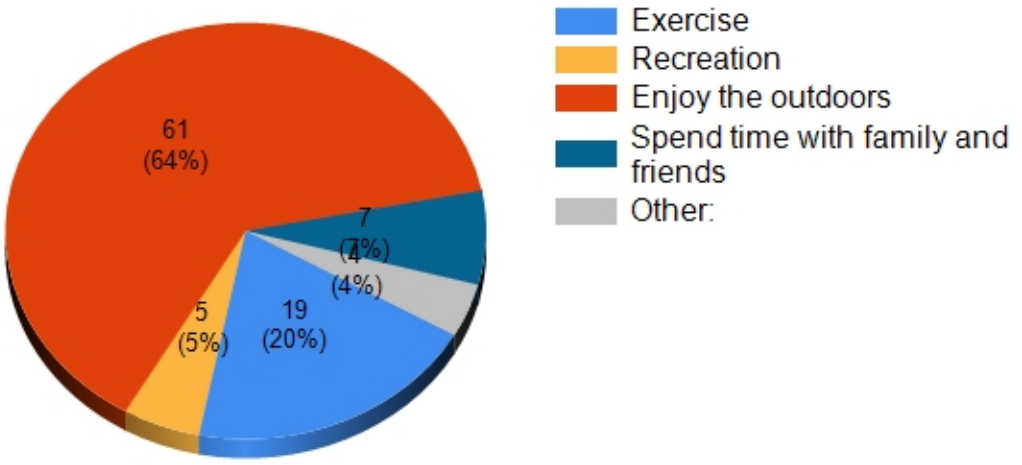




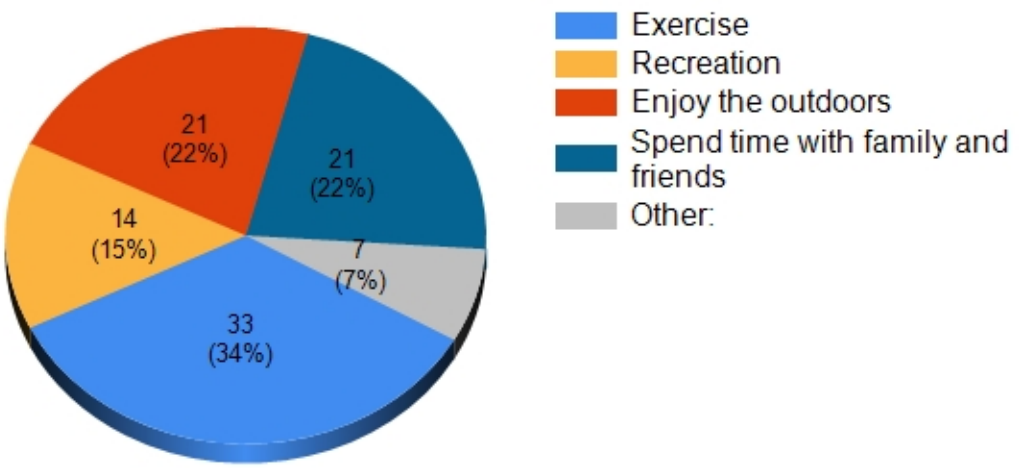
How much time do you spend Hiking/Walking at Griffy?
(236 Responses)

When asked **"Where else would you go hiking/walking if Griffy were not here?"** the majority of the 77 respondents answered, (in order from most frequent to least frequent), Lake Monroe, Yellowwood, Brown County, their own neighborhood, Leonard Springs, Clear Creek Trail, Cascades, and Hoosier National Forest. Many comments addressed the convenience of Griffy's proximity to their home.

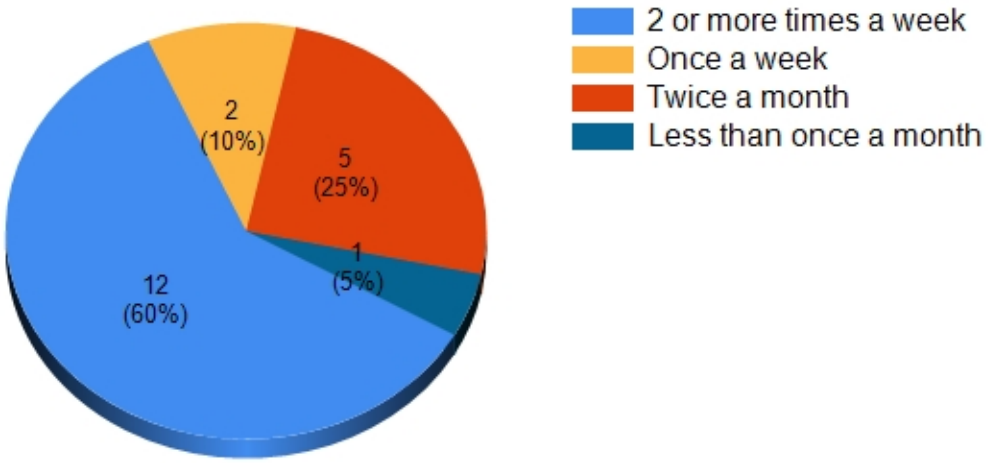
What is your primary reason for hiking/walking at Griffy? (96 Responses)



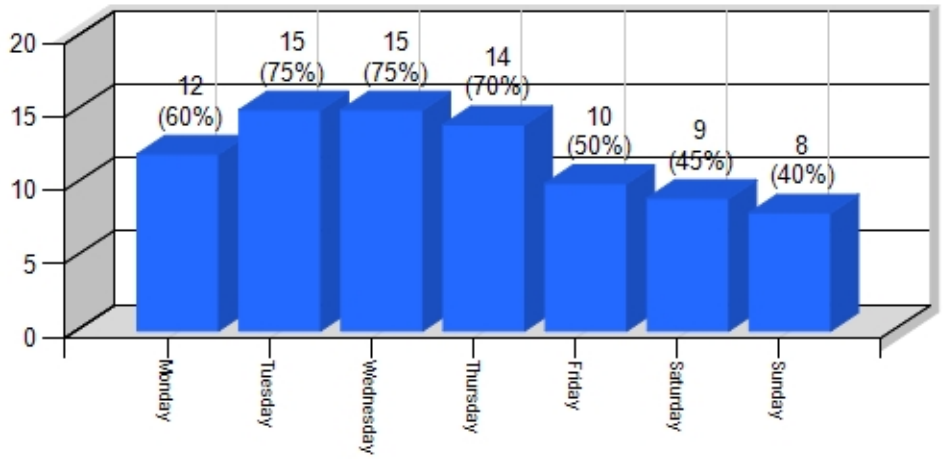
What is your secondary reason for hiking/walking at Griffy? (96 Responses)

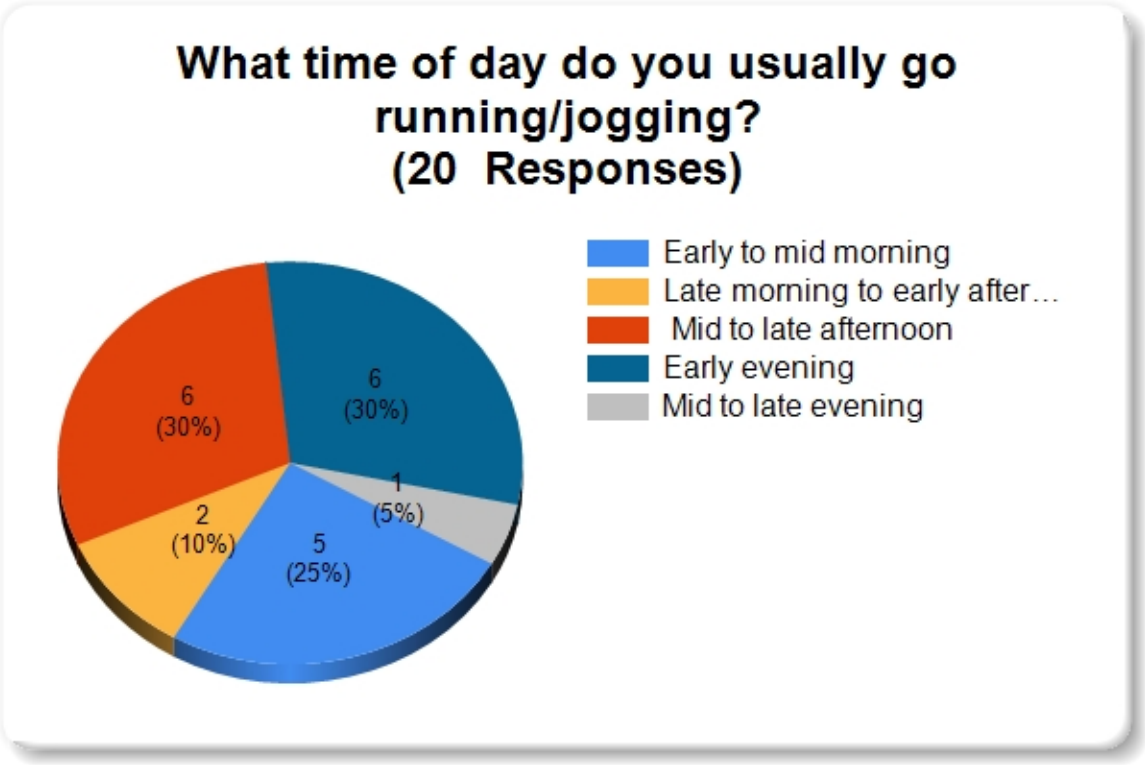


How often do you typically go trail running/jogging at Griffy? (20 Responses)

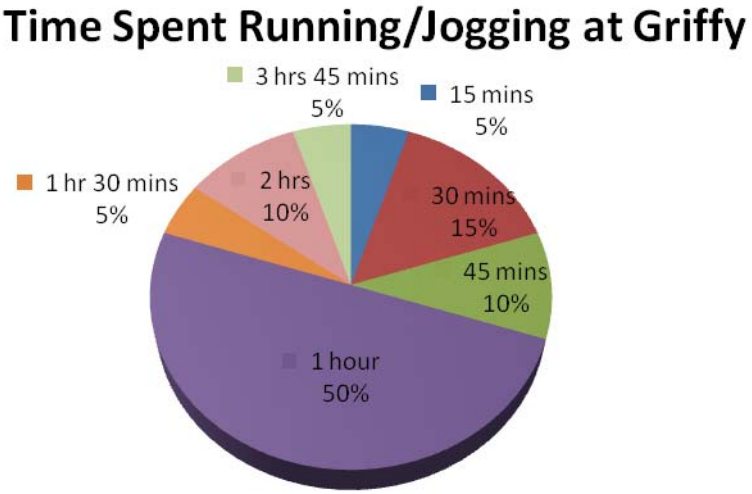


What day(s) of the week do you typically go trail running/jogging? (20 Responses)



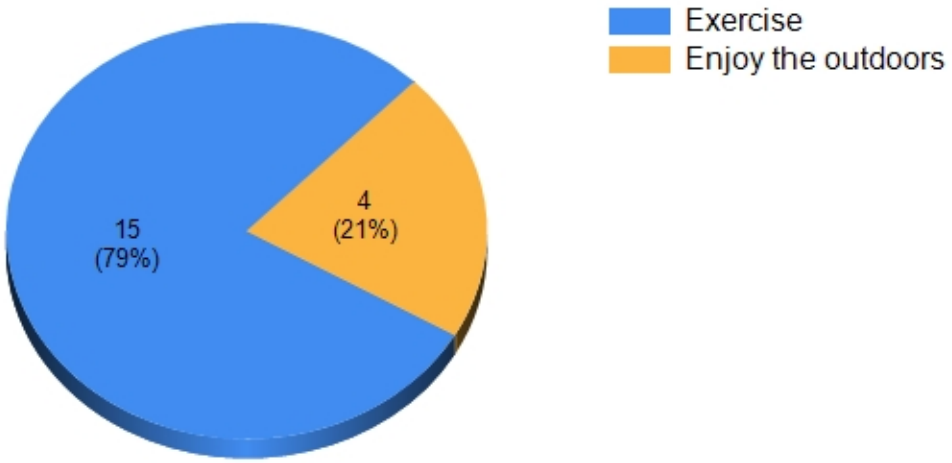


How much time do you usually spend trail running/jogging per visit?
(15 Responses)

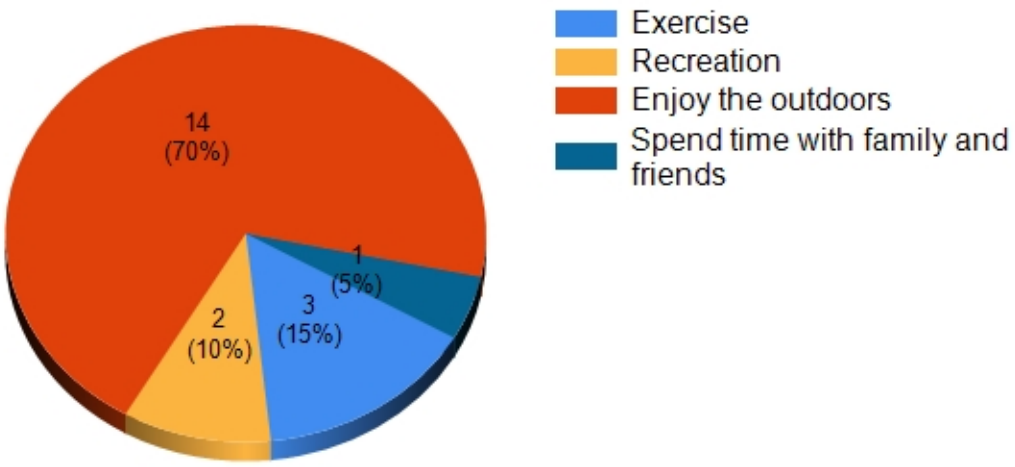


When asked, **"Where would you go trail running/jogging if Griffy were not here?"** the 18 respondents answered: around the IU campus, at Lake Monroe, and at Yellowwood.

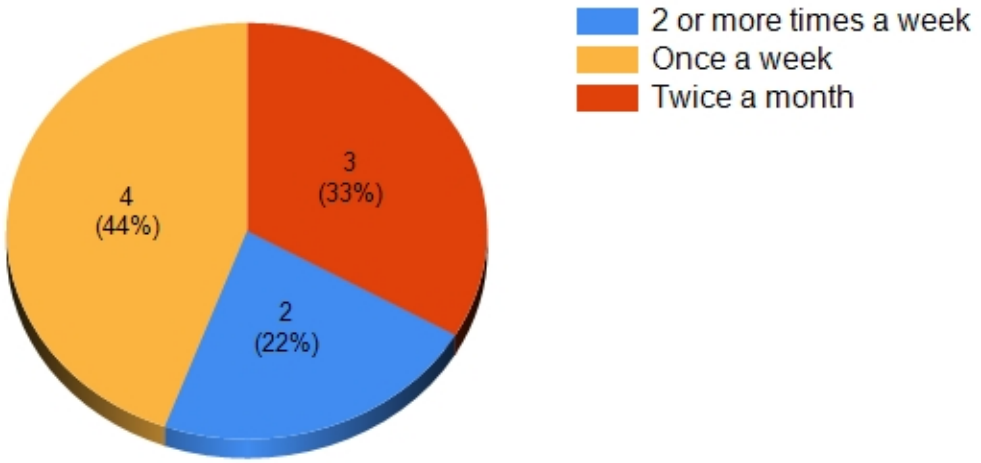
What is your primary reason for trail running/jogging at Griffy? (19 Responses)



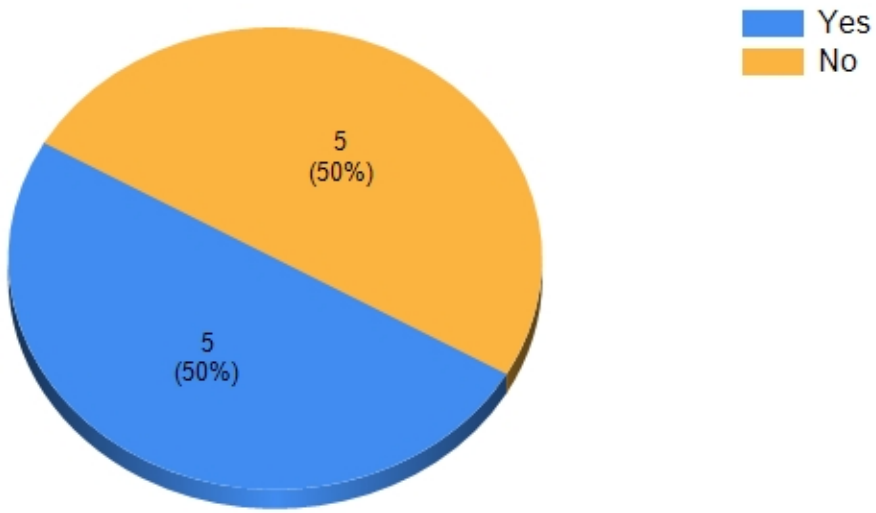
What is your secondary reason for trail running/jogging at Griffy? (20 Responses)



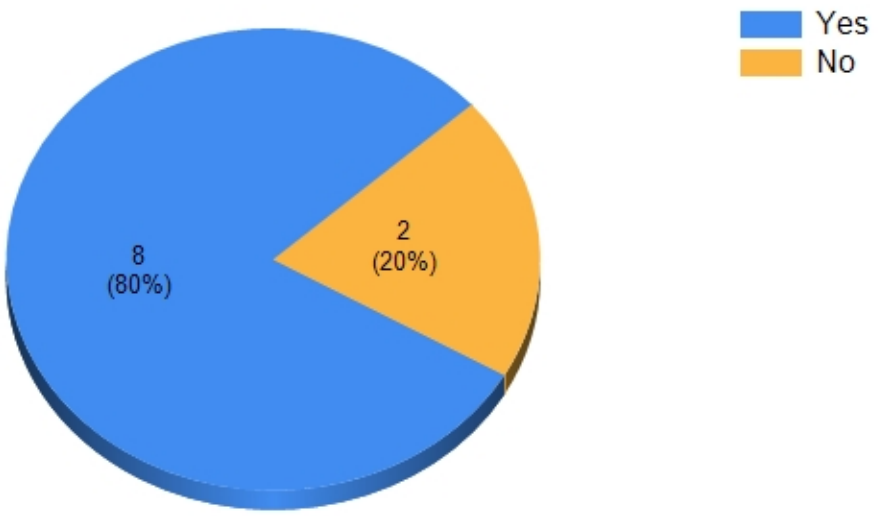
How often do you typically go fishing from a boat at Griffy?
(9 Responses)



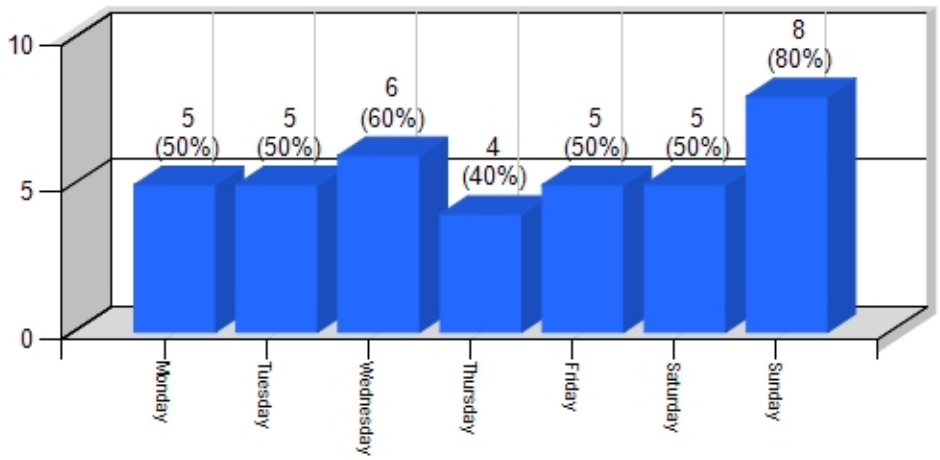
Do you rent boats from Griffy Lake?
(10 Responses)

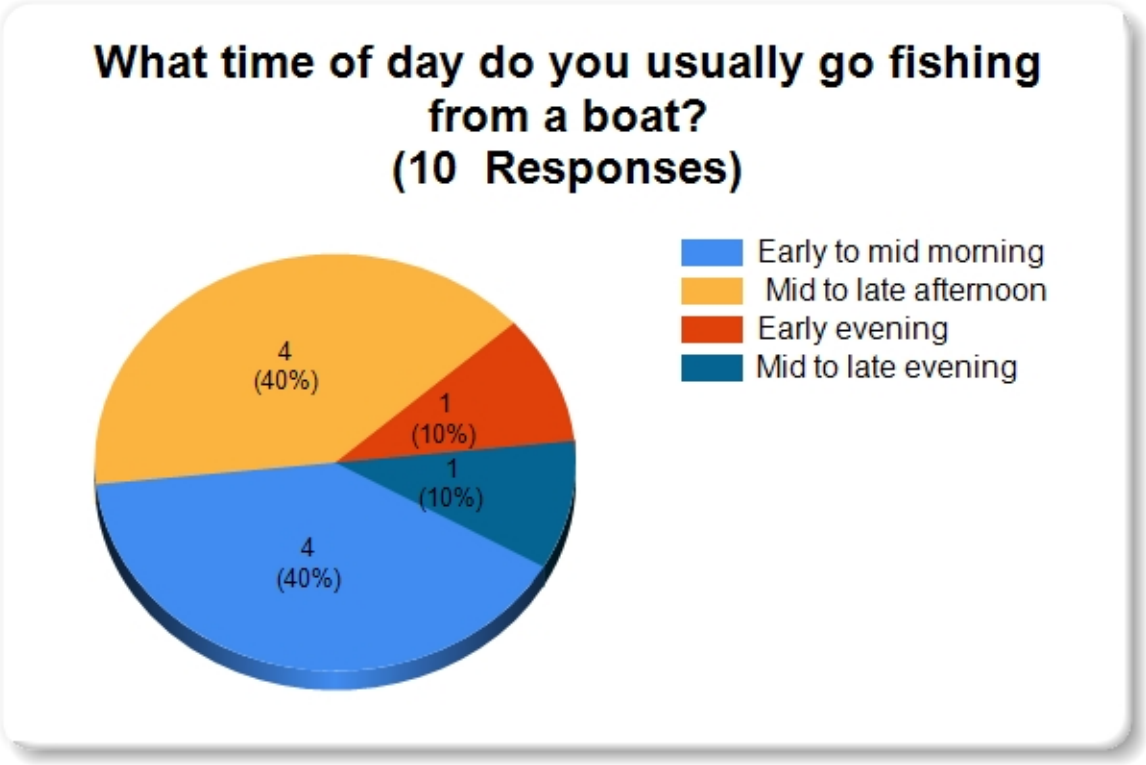


Do you use your own boat at Griffy Lake? (10 Responses)

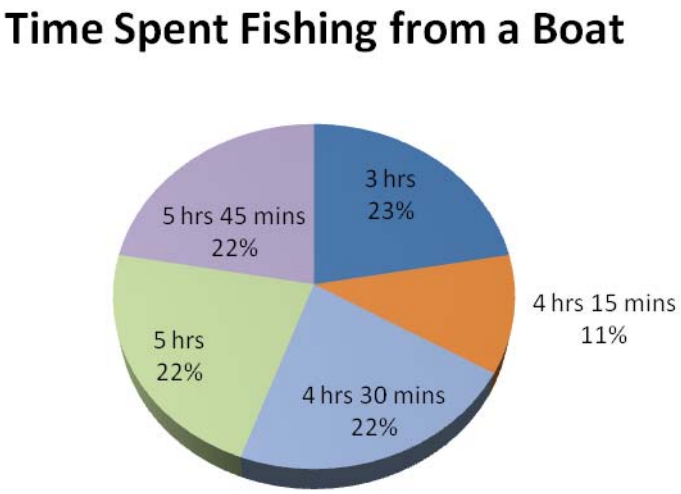


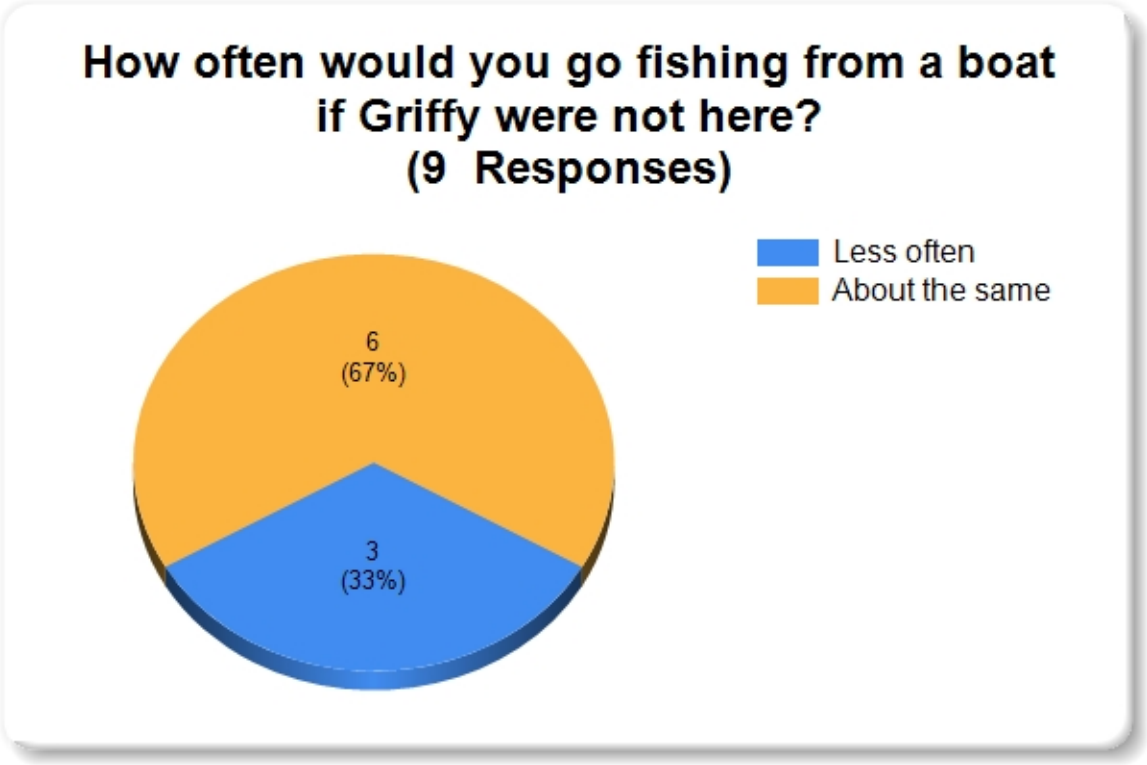
What day(s) of the week do you typically go fishing from a boat? (10 Responses)





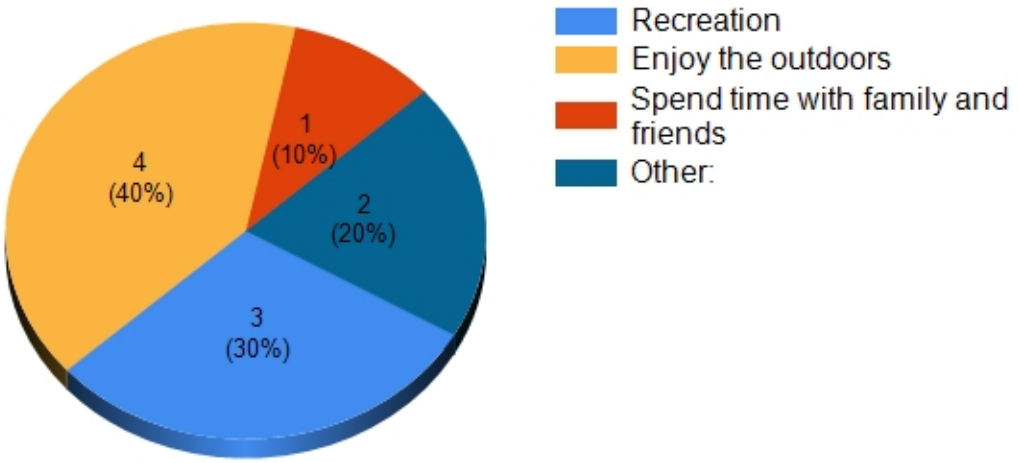
How much time do you usually spend fishing from a boat per visit?
(10 Responses)



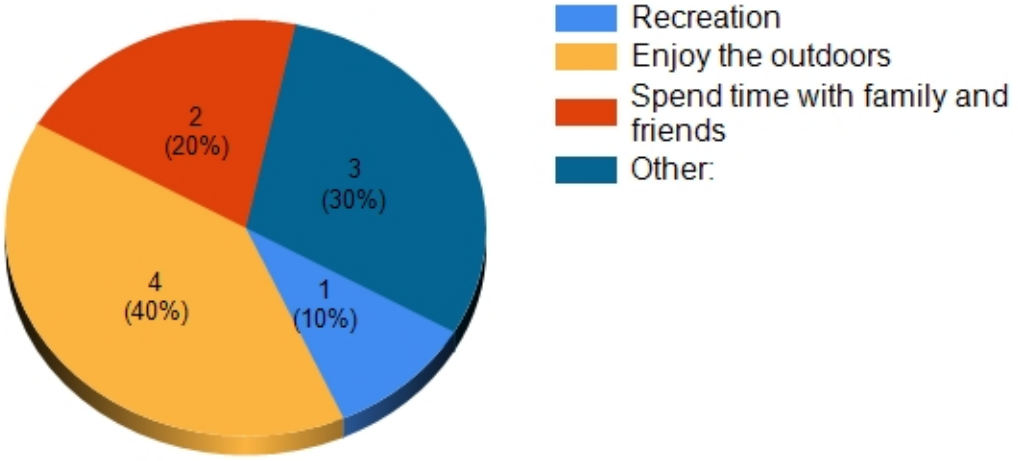


The nine respondents, mostly answered the question, **“Where would you go fishing from a boat if Griffy were not here?”** with Lake Monroe, Lake Lemon, and Yellowwood.

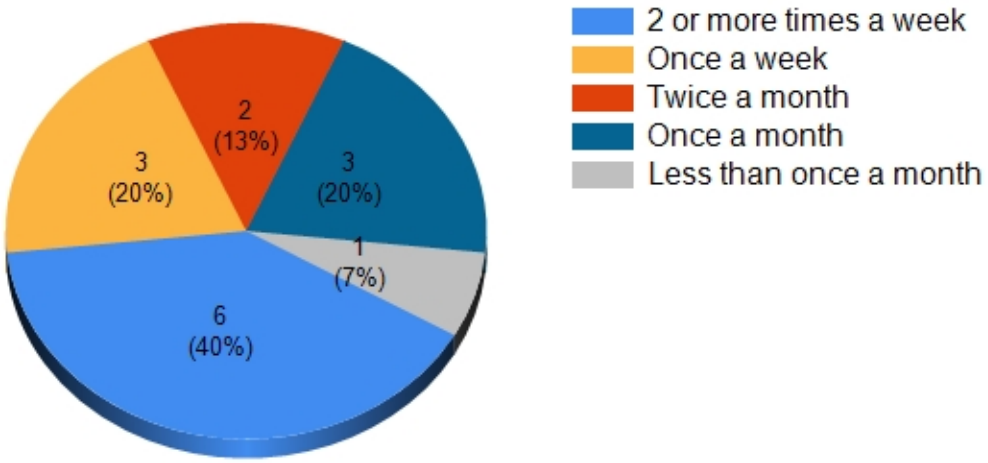
What is your primary reason for fishing from a boat at Griffy? (10 Responses)



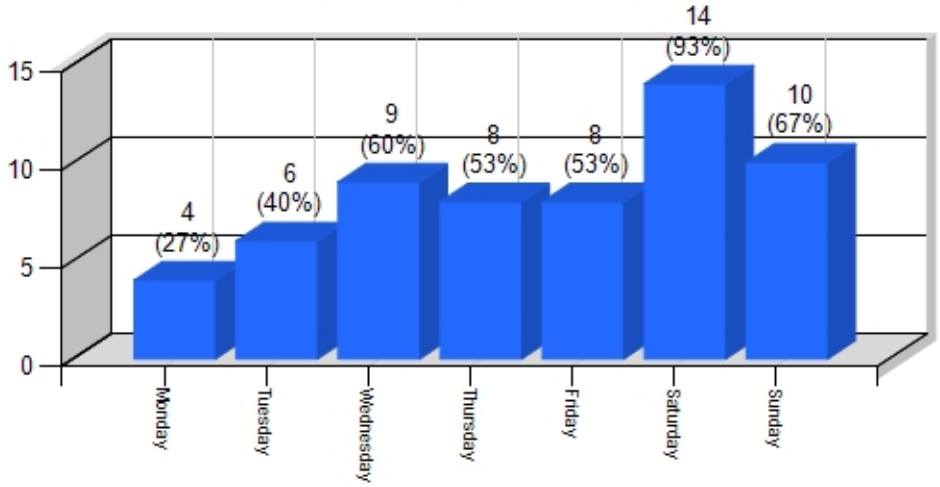
What is your secondary reason for fishing from a boat at Griffy? (10 Responses)

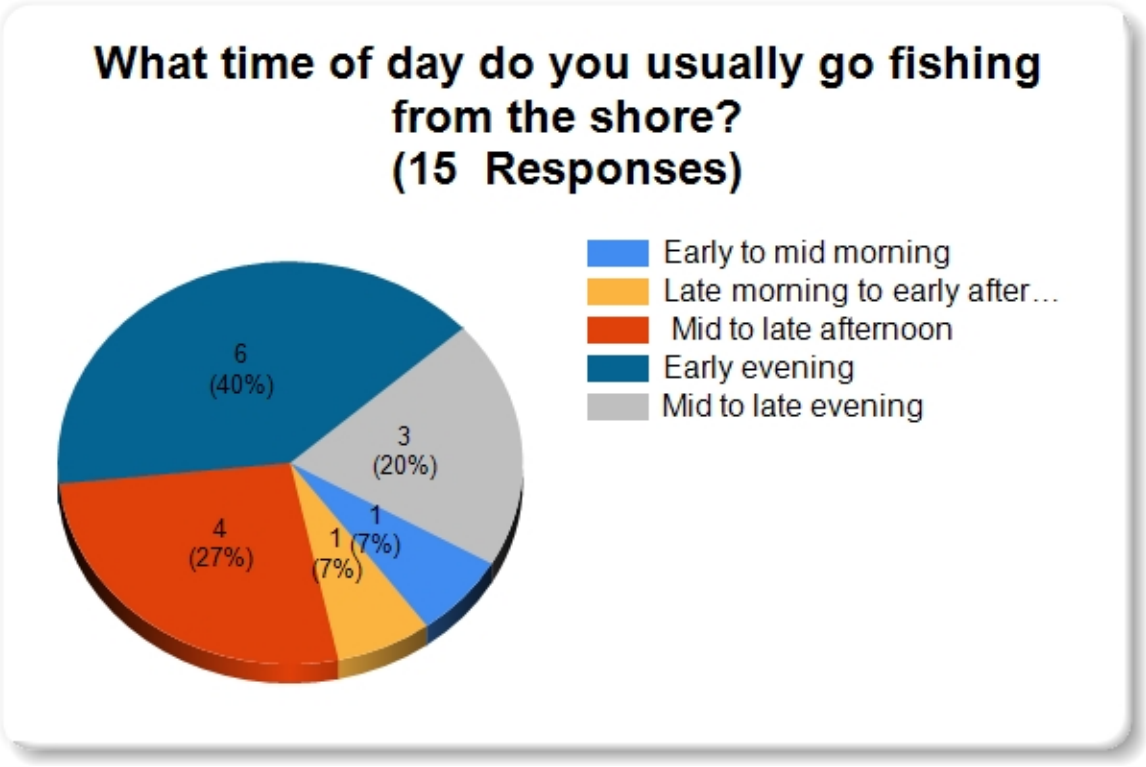


How often do you typically go fishing from the shore at Griffy? (15 Responses)

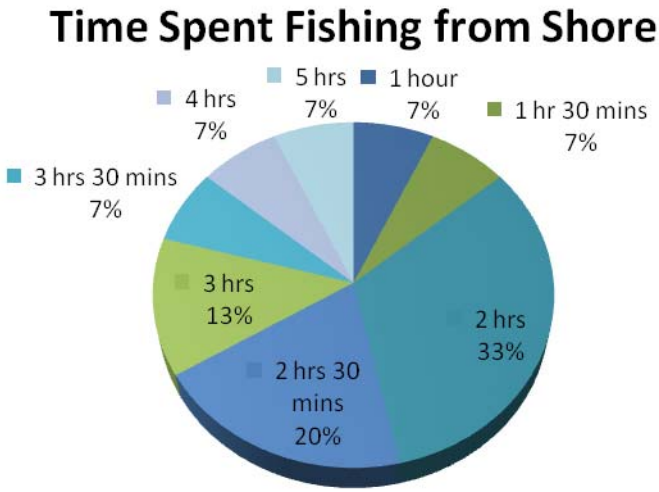


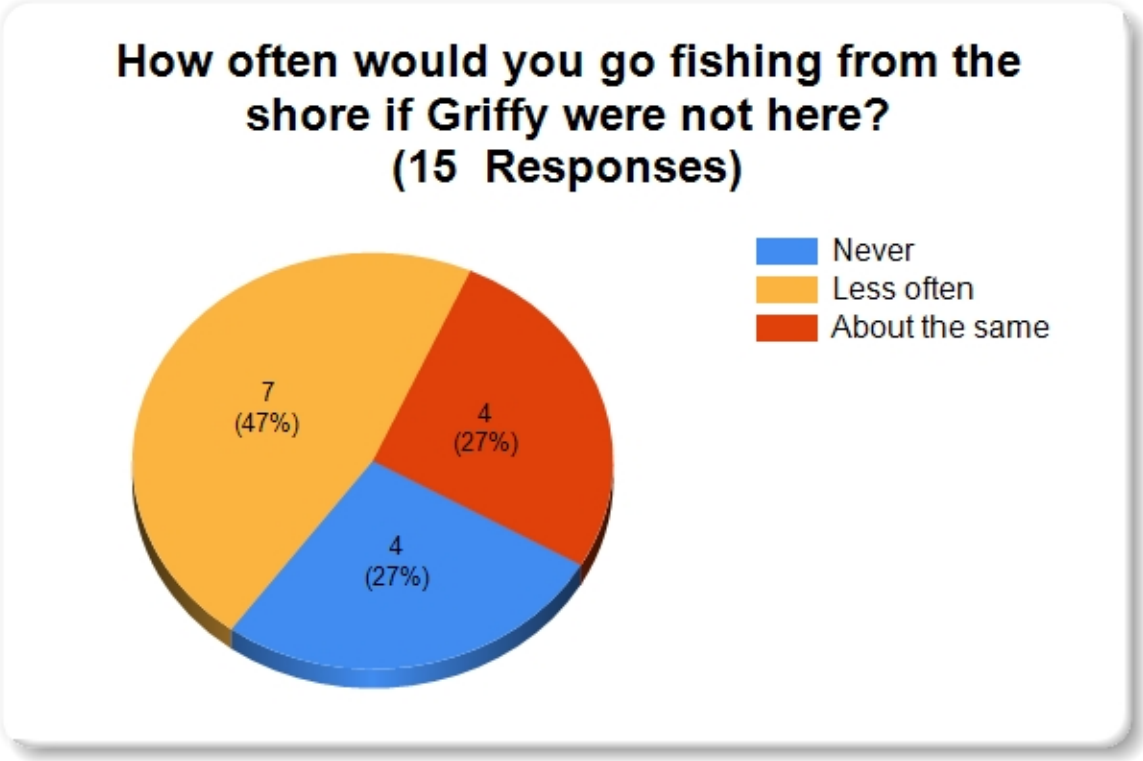
What day(s) of the week do you typically go fishing from the shore? (15 Responses)



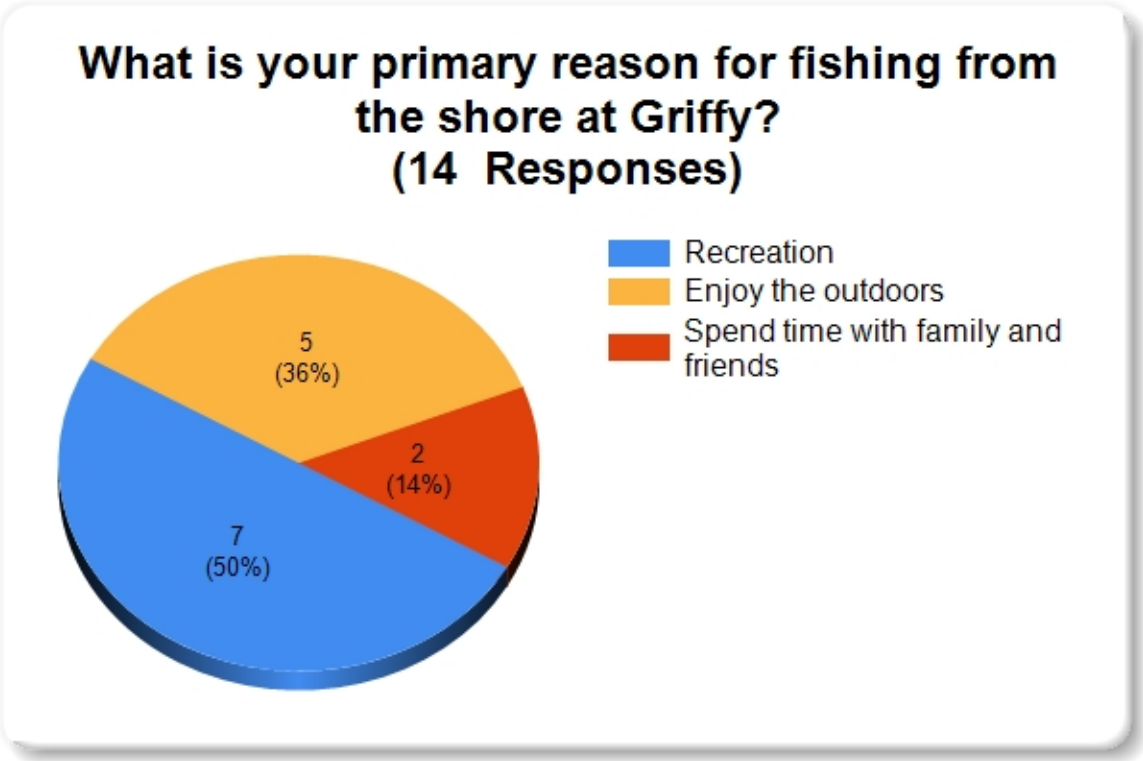


How much time do you usually fishing from the shore per visit?
(15 Responses)

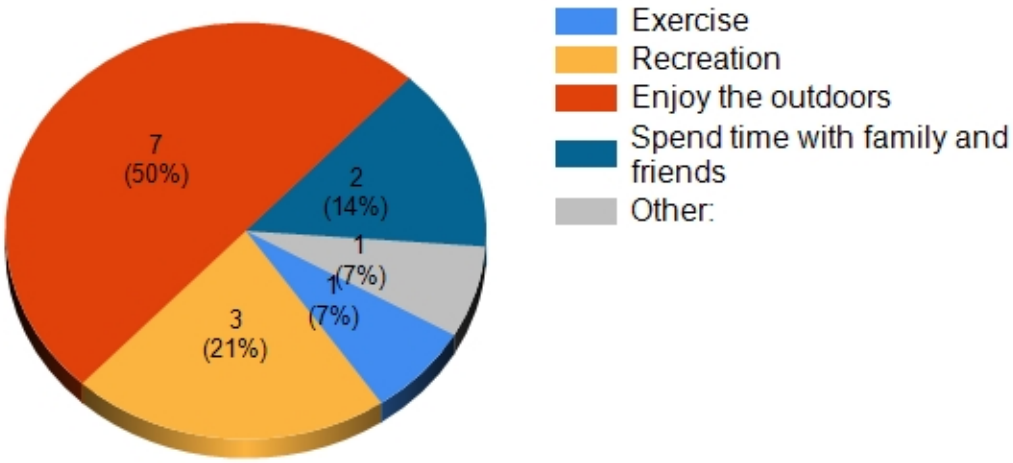




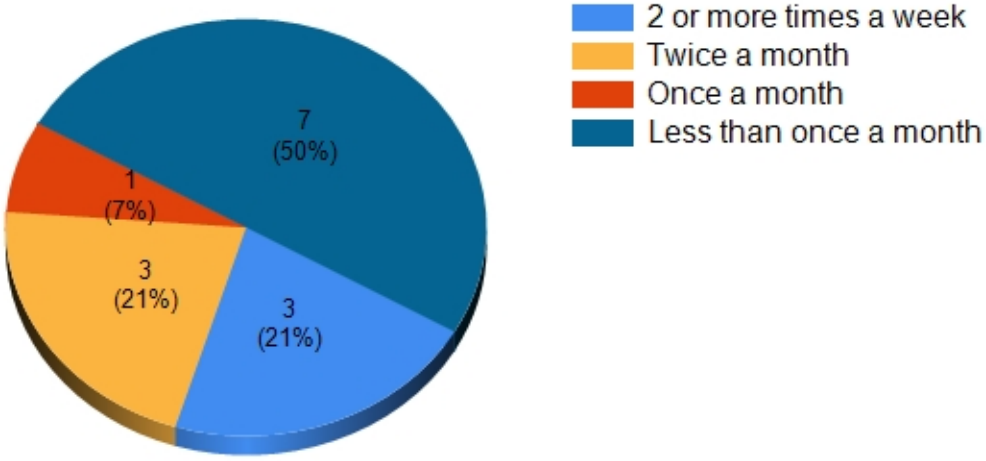
When asked, **"Where would you go fishing from the shore if Griffy were not here?"** the 13 respondents answered Lake Monroe, Lake Lemon and Yellowwood.



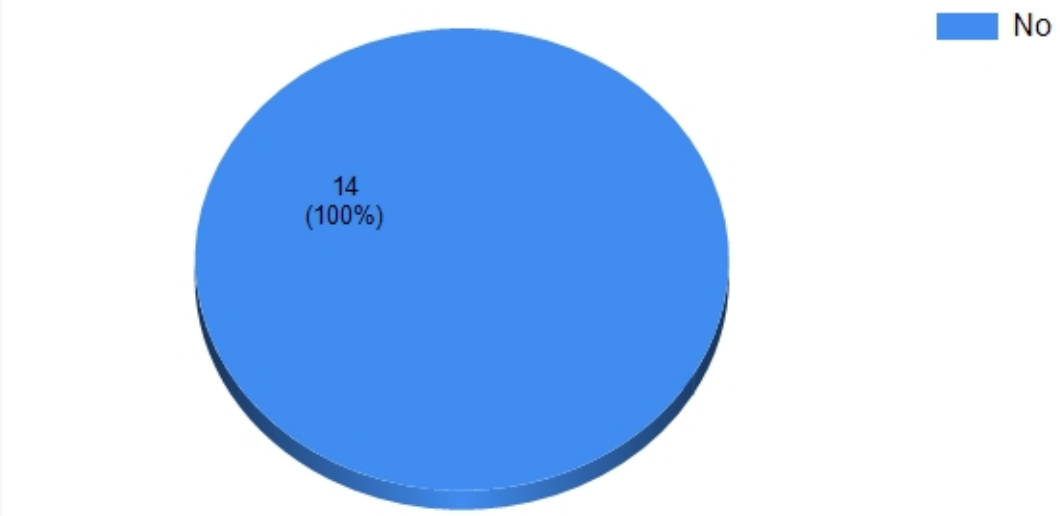
What is your secondary reason for fishing from the shore at Griffy? (14 Responses)



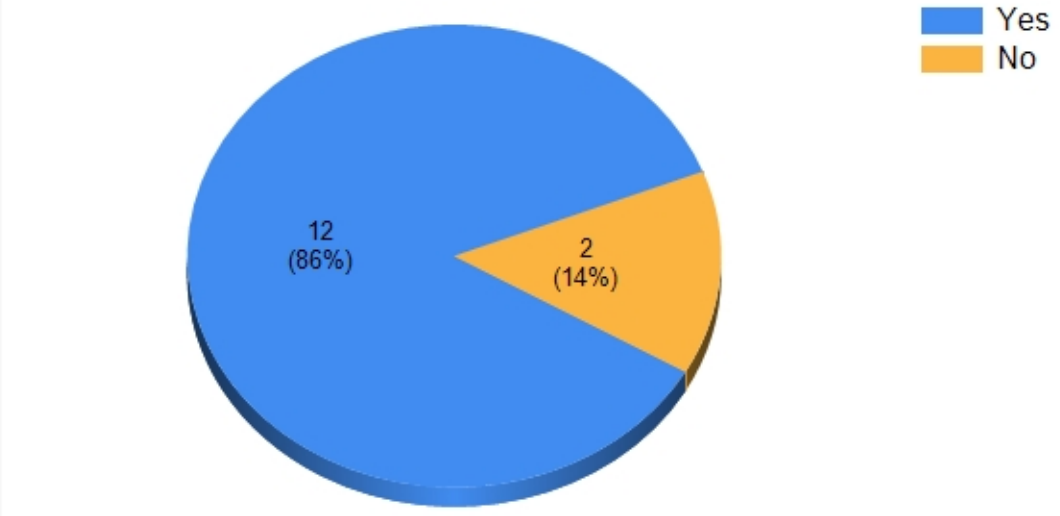
How often do you typically go boating at Griffy? (14 Responses)



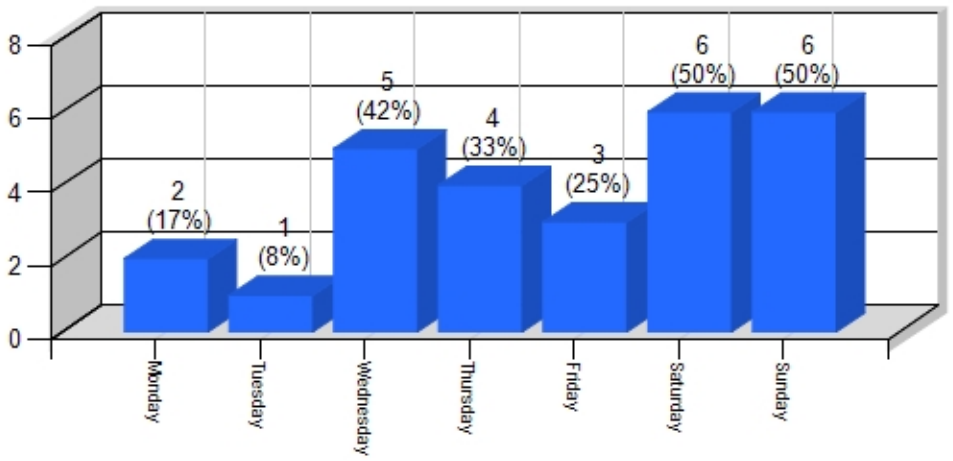
Do you use your own boat at Griffy Lake? (14 Responses)



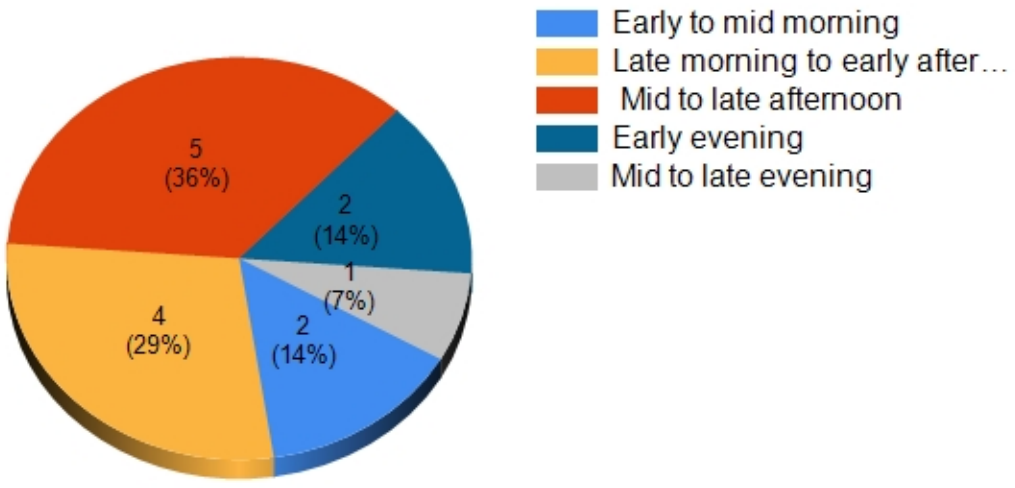
Do you rent boats from Griffy Lake? (14 Responses)



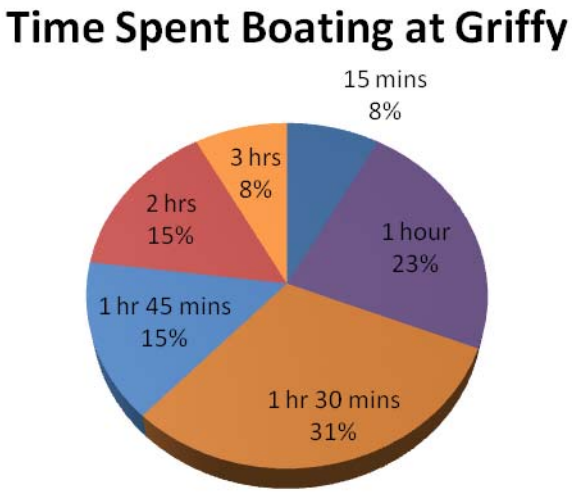
What day(s) of the week do you typically go boating?
(12 Responses)



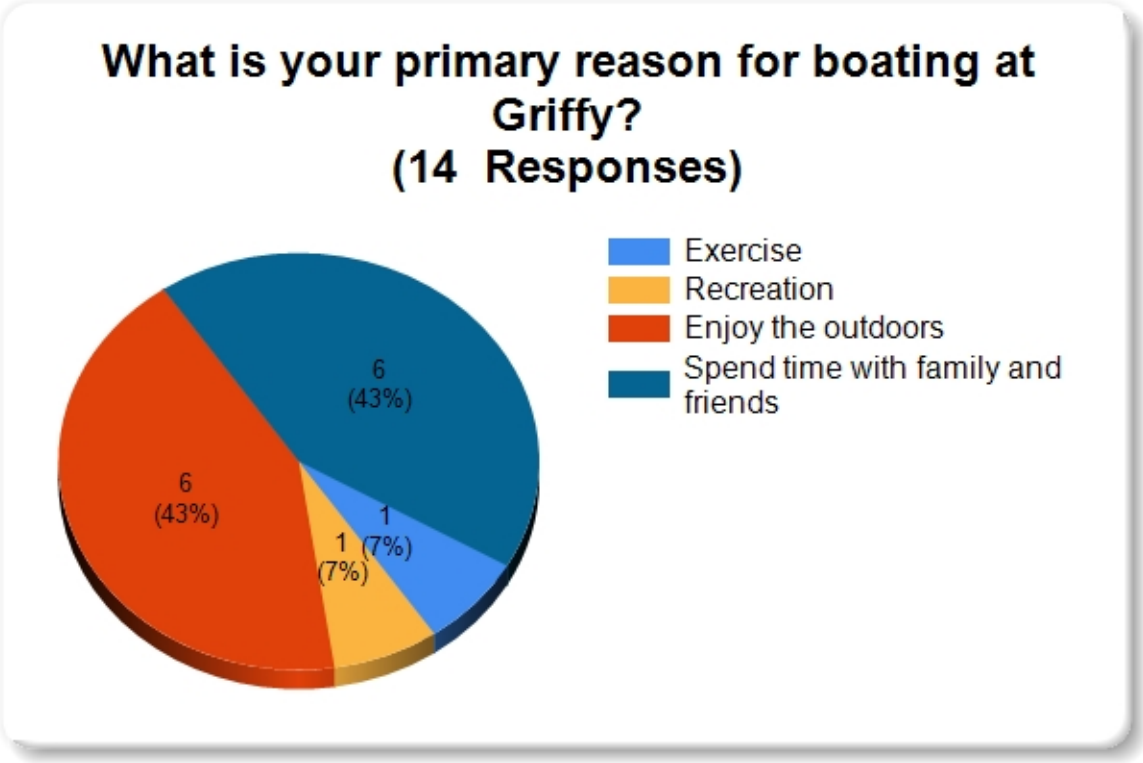
What time of day do you usually go boating?
(14 Responses)



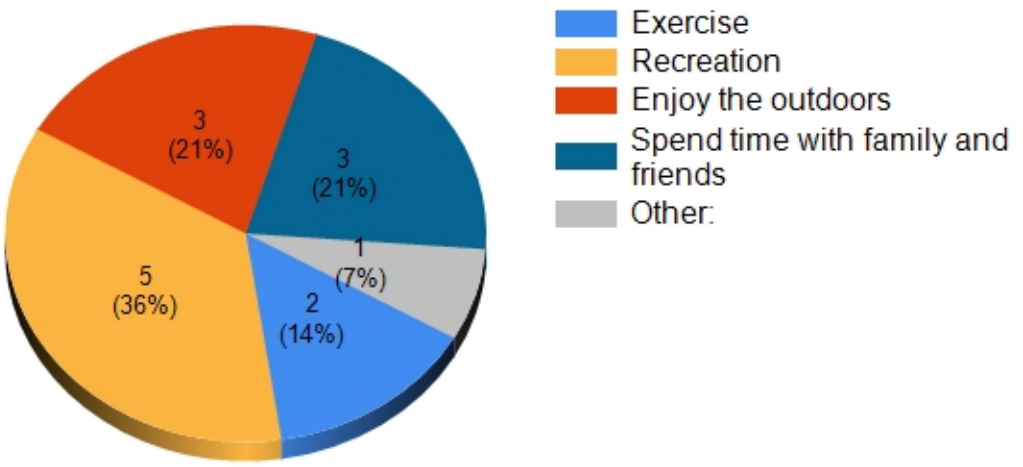
How much time do you usually spend boating per visit?
(14 Responses)



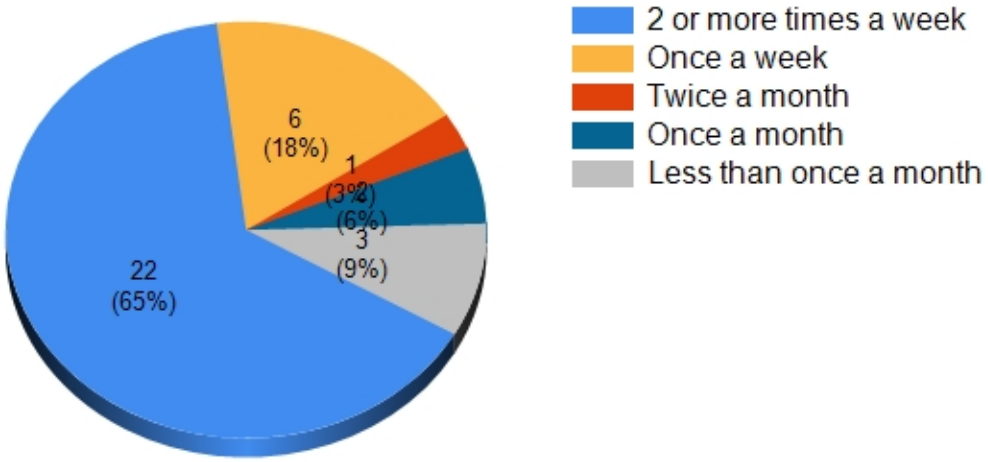
The 10 respondents to the question **"Where would you go boating if Griffy were not here?"** answered either Lake Monroe, or nowhere.



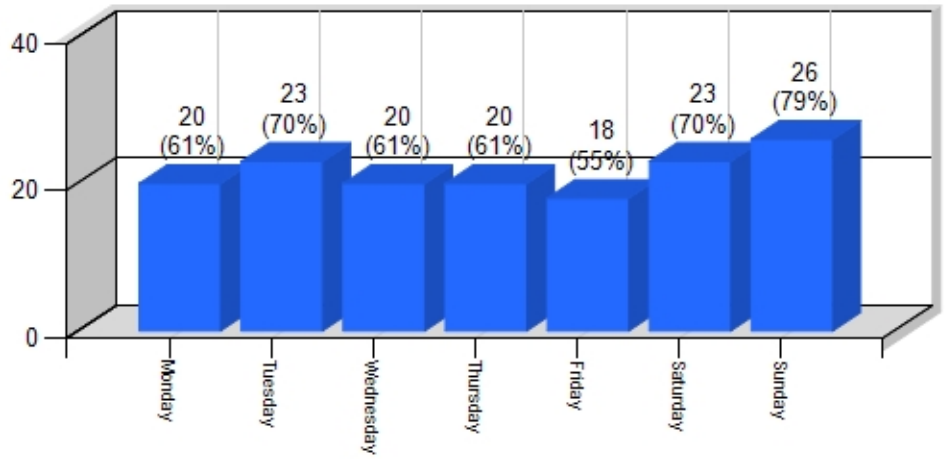
What is your secondary reason for boating at Griffy?
(14 Responses)



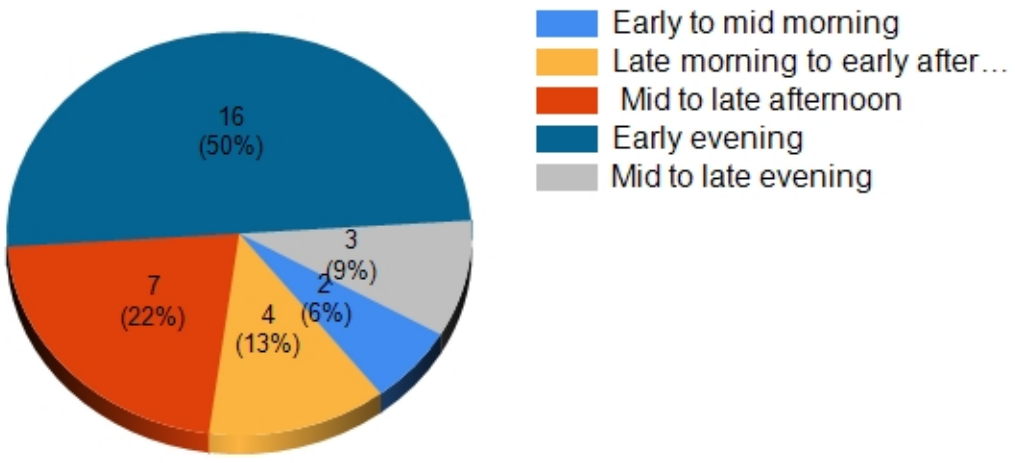
How often do you typically use the dog area at Griffy?
(34 Responses)



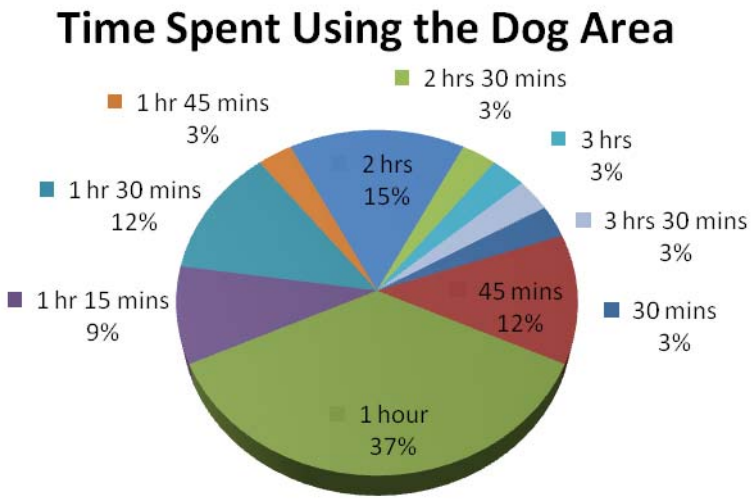
What day(s) of the week do you typically use the dog area?
(33 Responses)

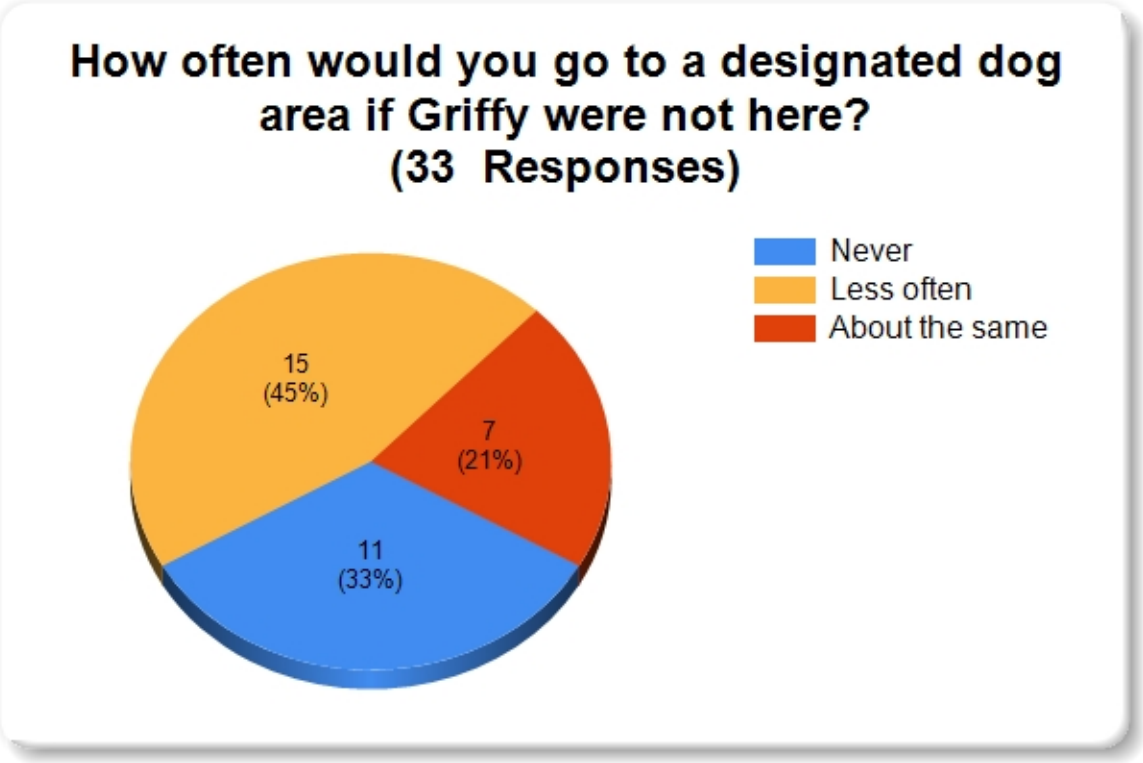


What time of day do you usually use the dog area?
(32 Responses)



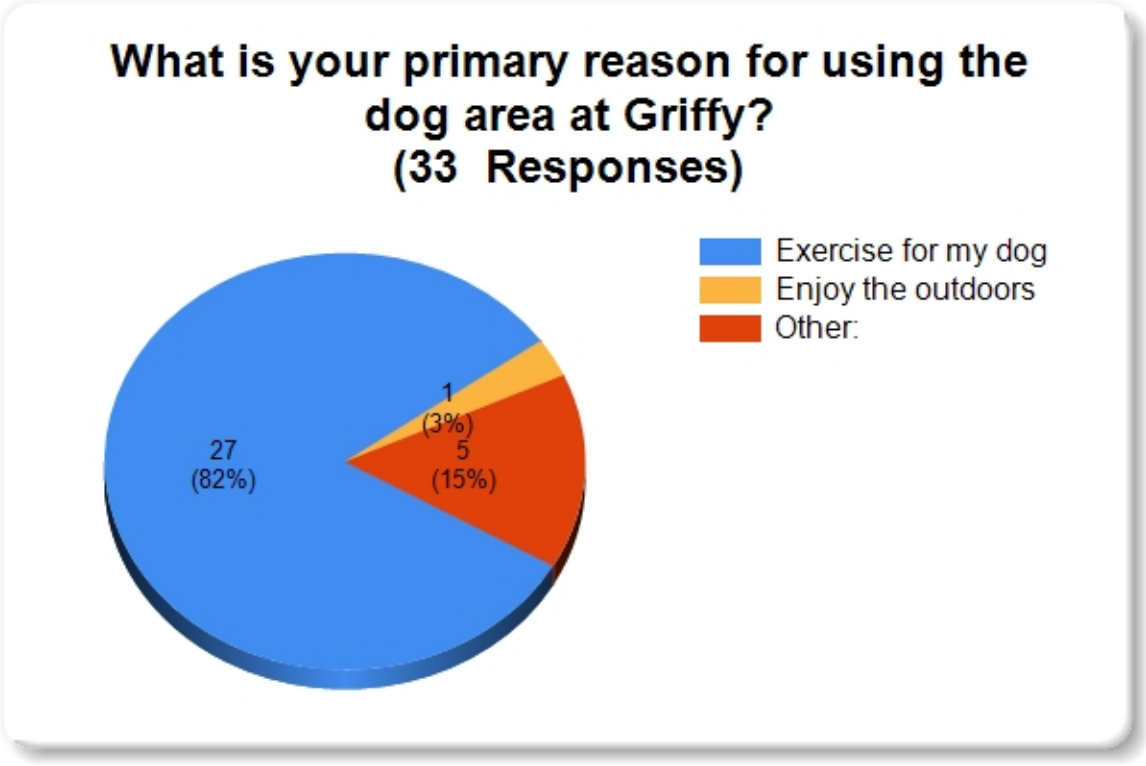
How much time do you usually spend using the dog area per visit?
(32 Responses)



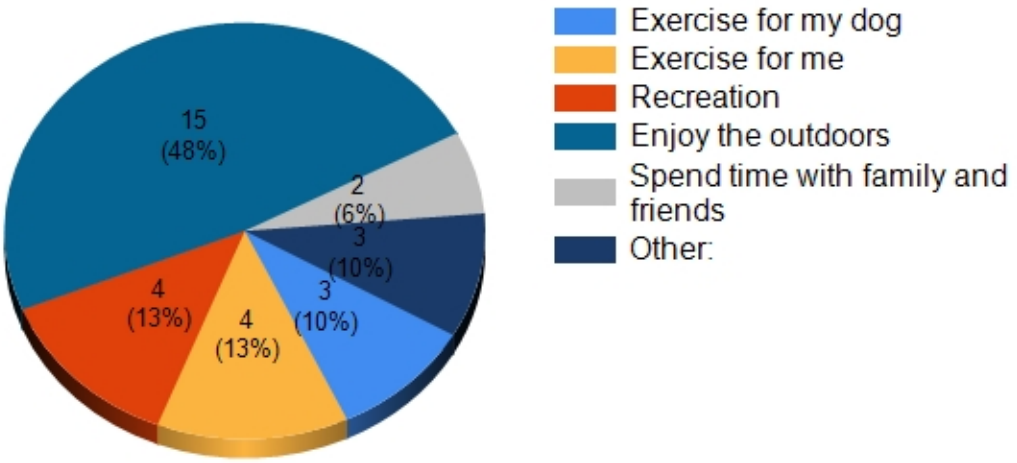


Where would you use a designated dog area if Griffy were not available?
(24 Responses)

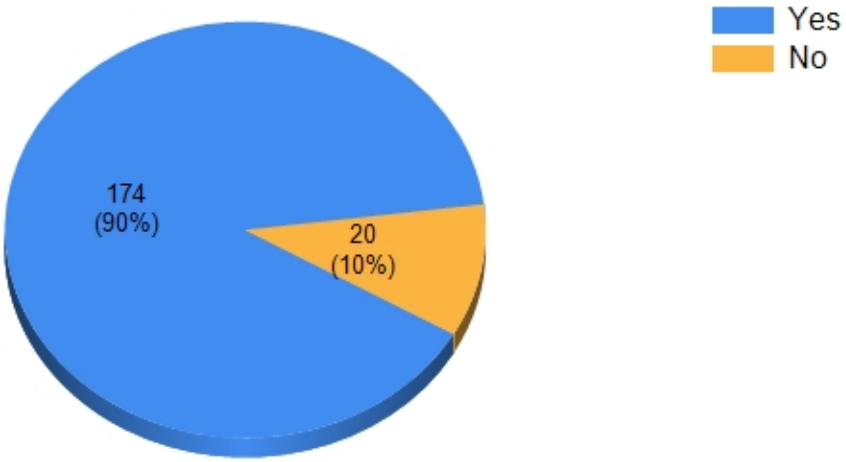
The majority of respondents indicated that they did not know of any other designated dog area.



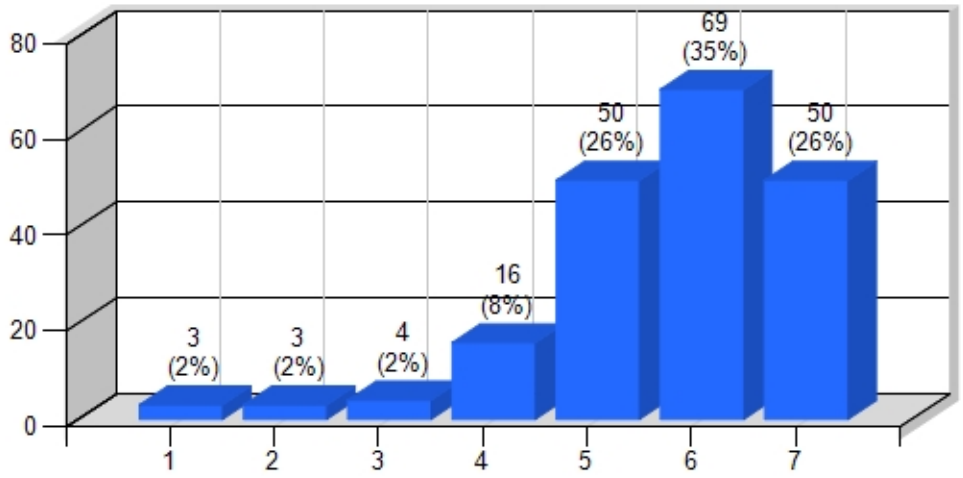
What is your secondary reason for using the dog area at Griffy?
(31 Responses)



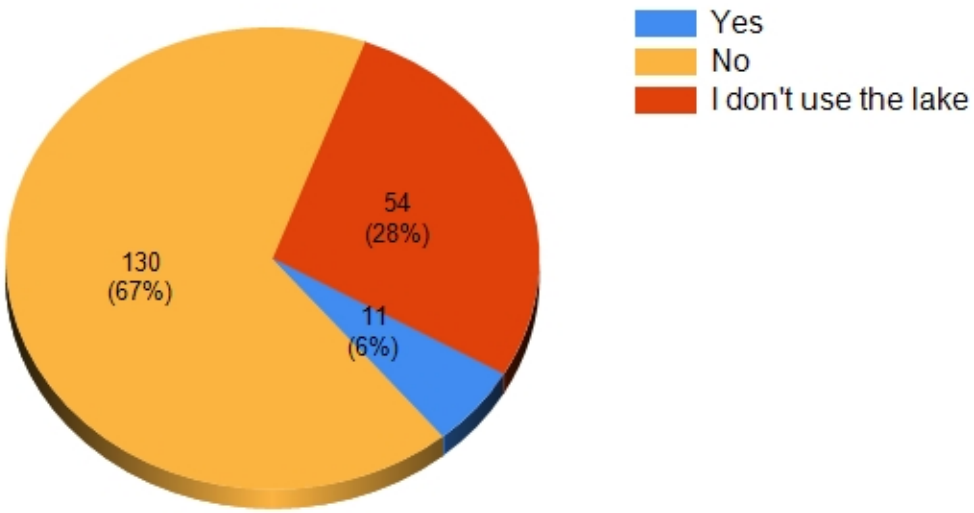
If you could, would you visit Griffy more often?
(194 Responses)



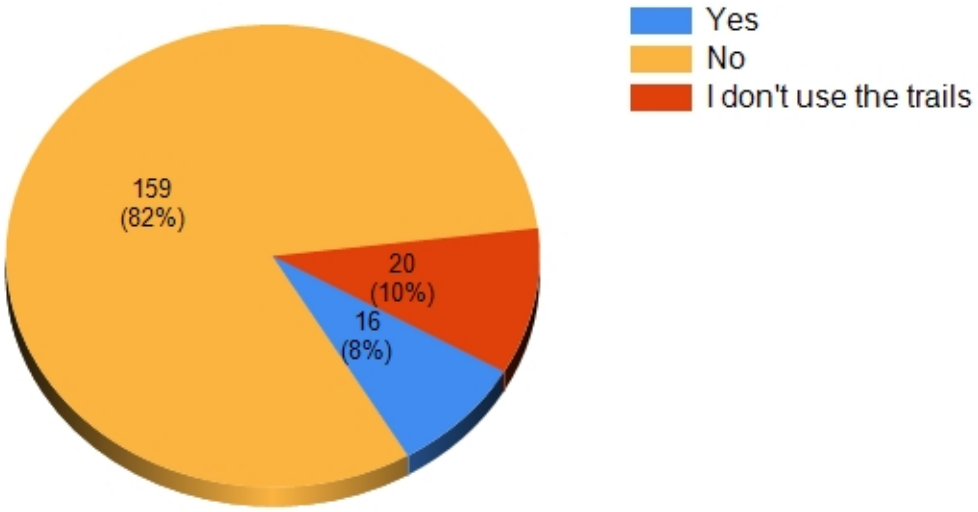
One a scale of 1-7, how would you rate your overall level of satisfaction with Griffy Lake? (195 Responses)



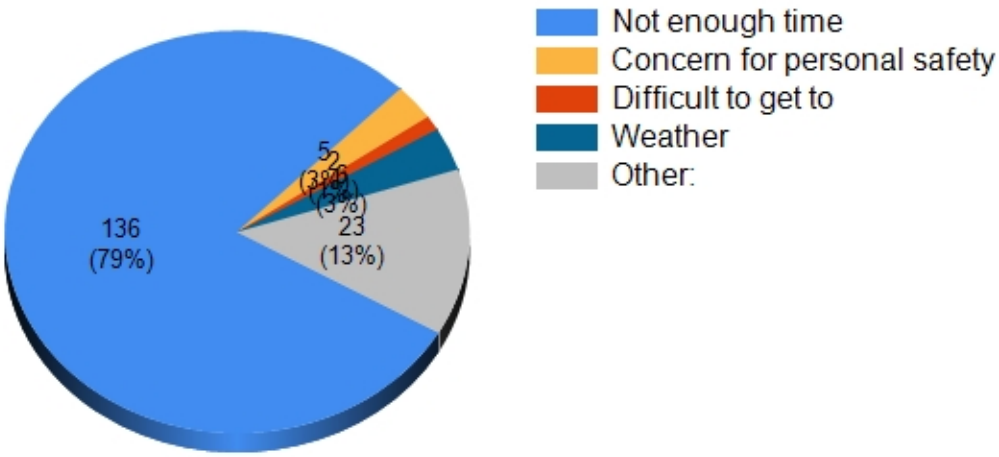
Do you feel like the lake is congested? (195 Responses)



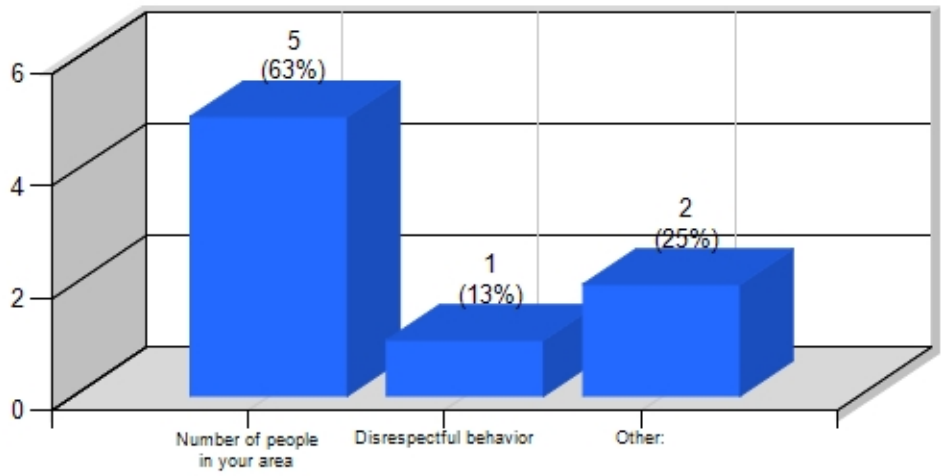
Do you feel like the trails are congested? (195 Responses)



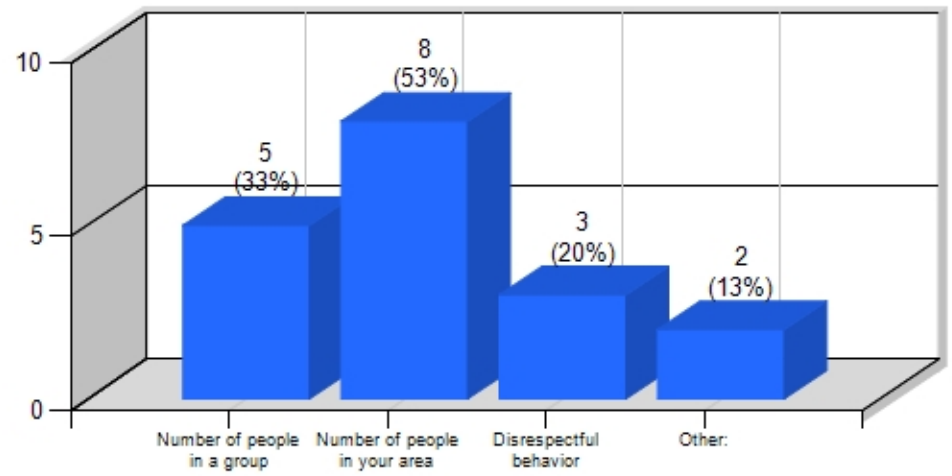
What prevents you from visiting Griffy more often? (172 Responses)



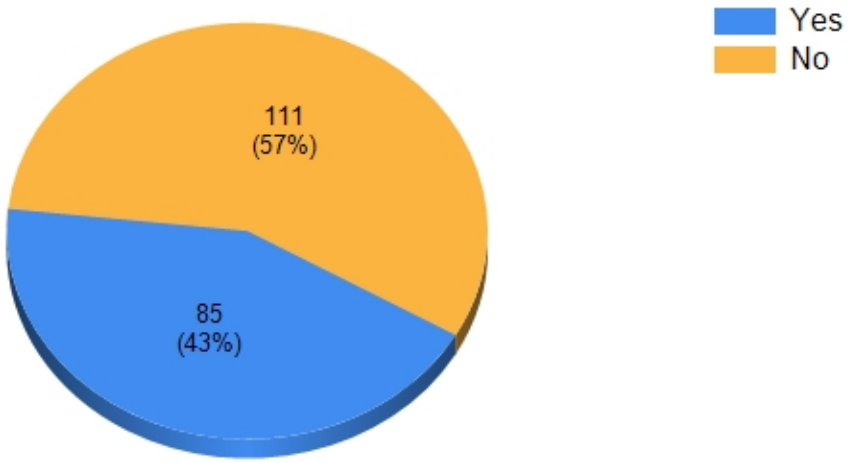
What makes the lake feel too crowded or congested?
(8 Responses)



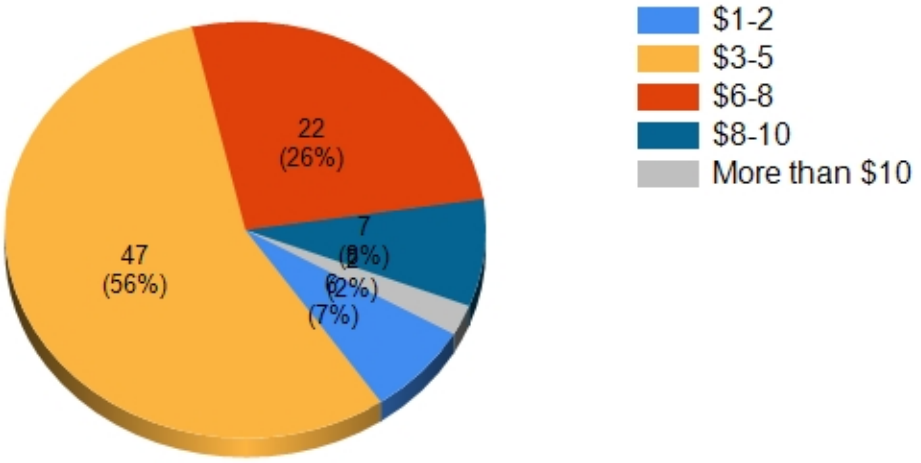
What makes the trails feel too crowded or congested?
(15 Responses)



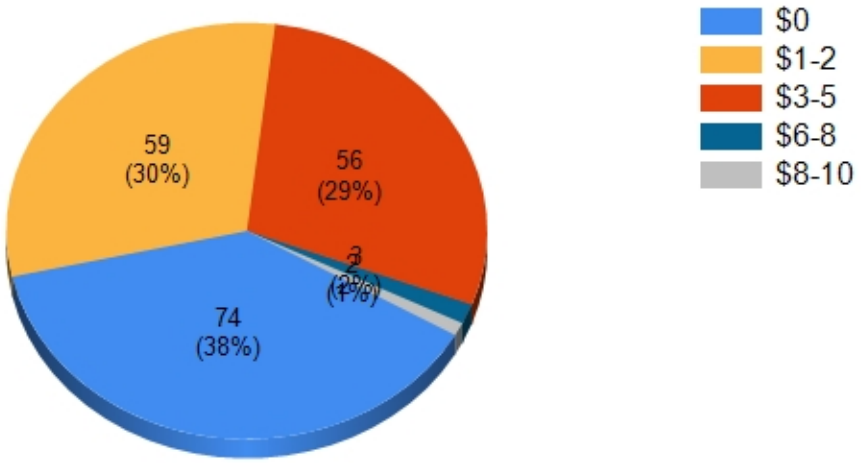
If paddleboats were rented would you use them?
(196 Responses)



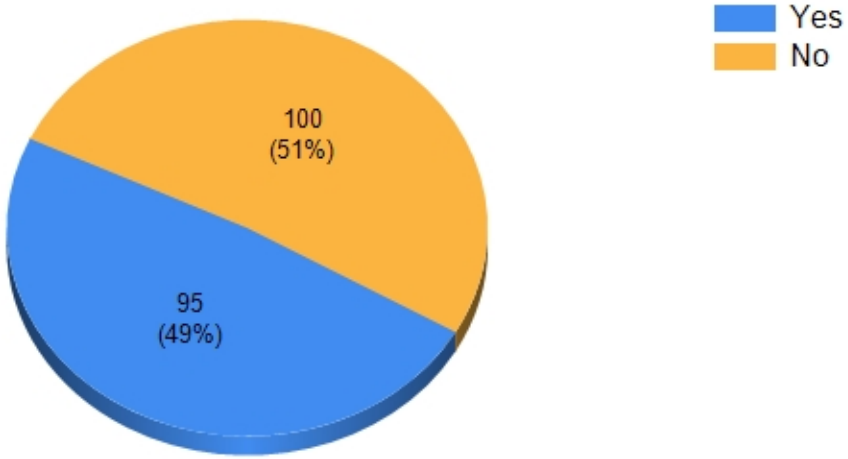
How much would you pay to rent a 2 person paddleboat for 1 hour?
(84 Responses)



How much would you pay to visit a nature center?
(194 Responses)



Would you participate in nature programs at Griffy?
(195 Responses)

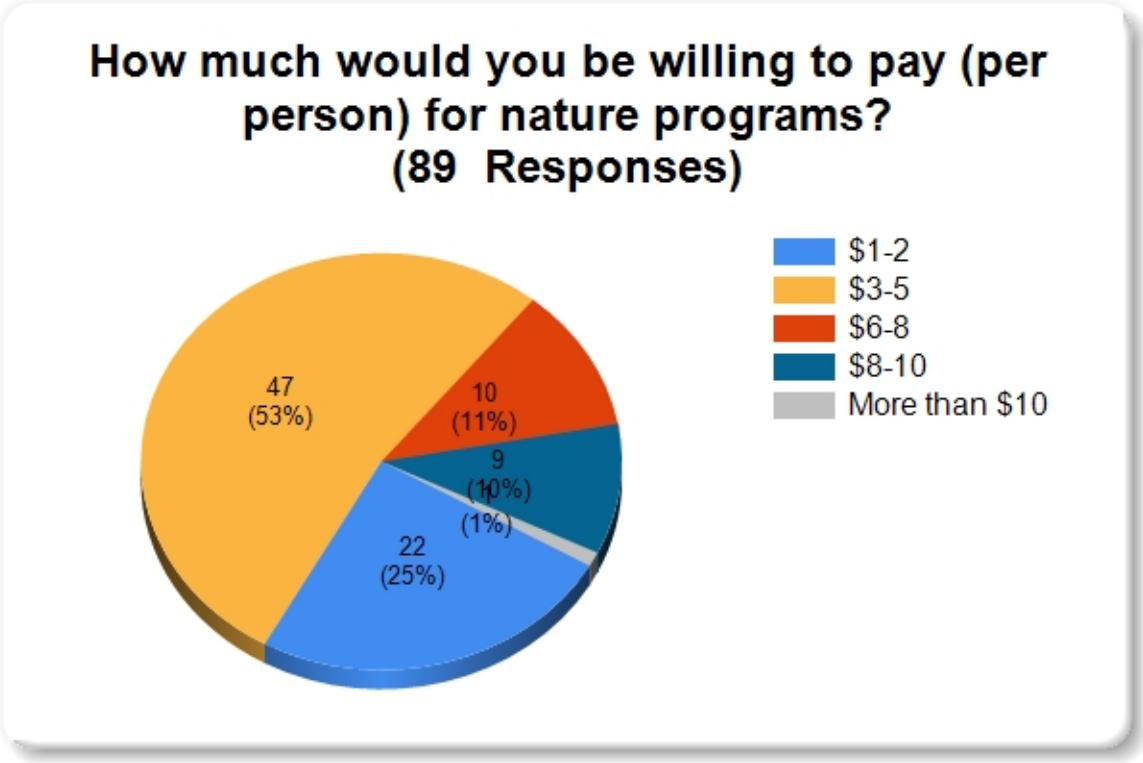


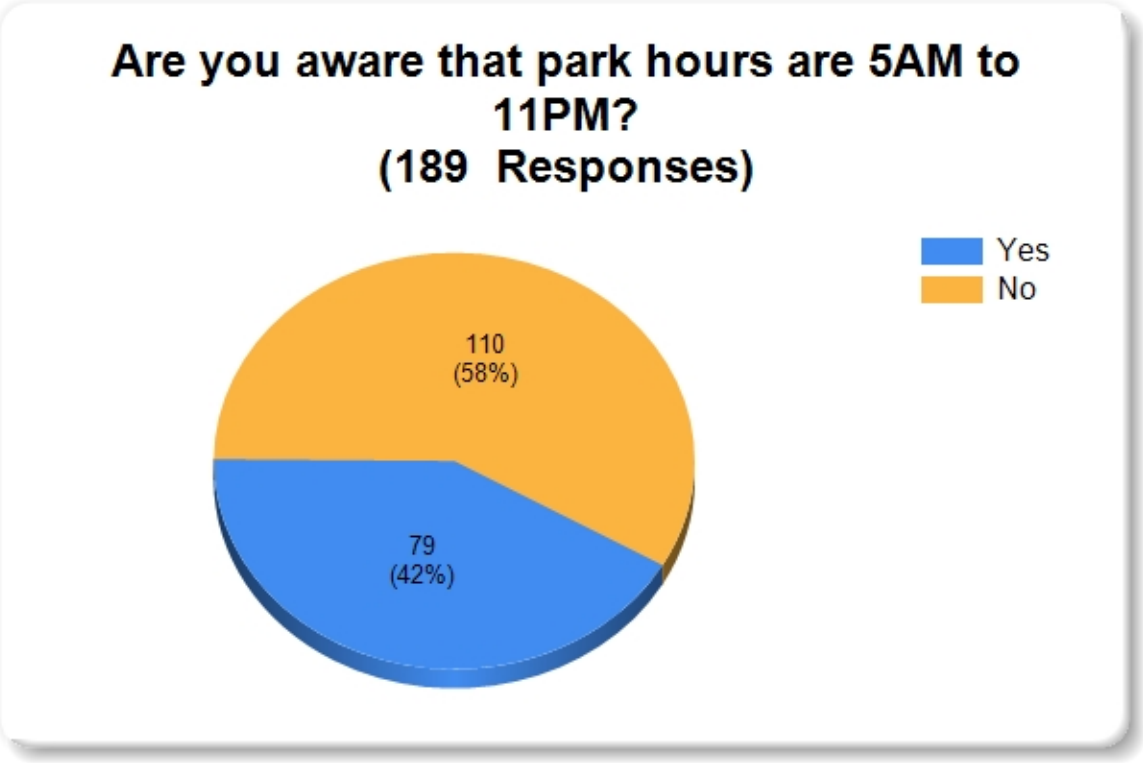
What types of programs would you participate in at a nature center?

(69 Responses)

Respondents indicated that they would participate in the following types of programs:

- Environmental education
- Plant and animal identification
- Wildlife education
- Geology
- Astronomy
- Children's programs
- Local geological history
- Astronomy
- Photography
- Crafts



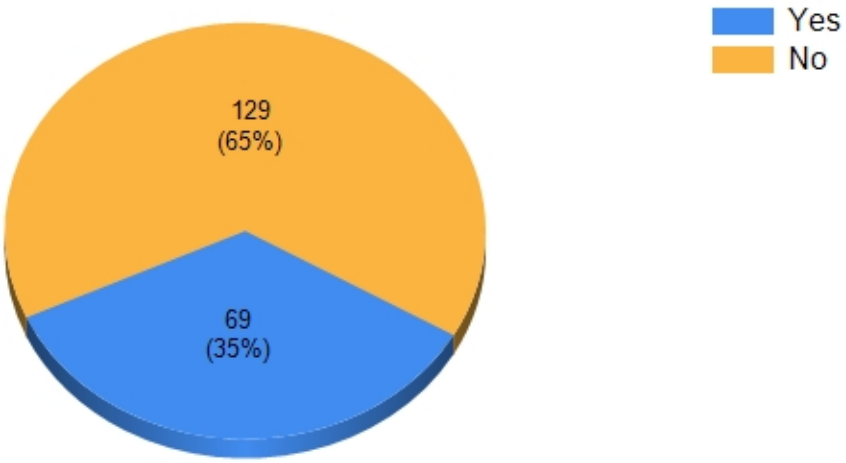

Are you aware that park hours are 5AM to 11PM?
(189 Responses)
Yes
No
110
(58%)
79
(42%)

Are you aware that the following activities are prohibited in the nature preserve?

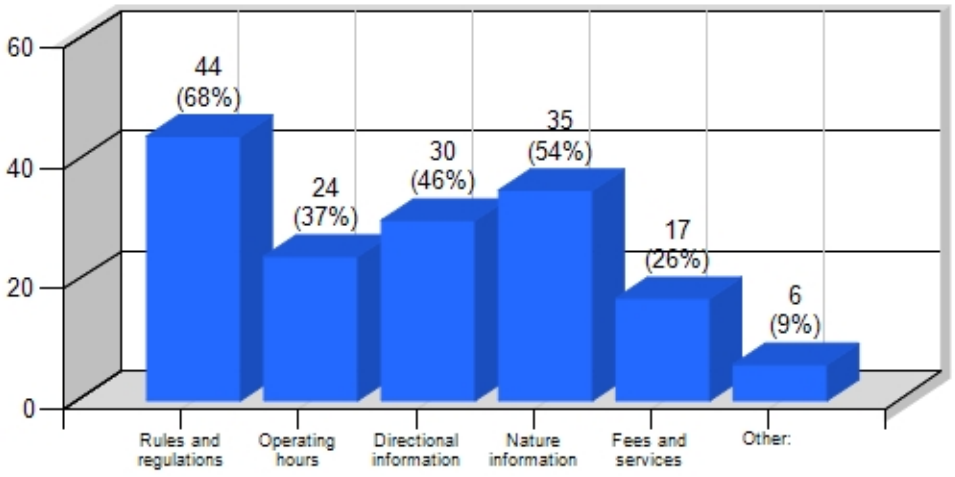
(196 Responses)

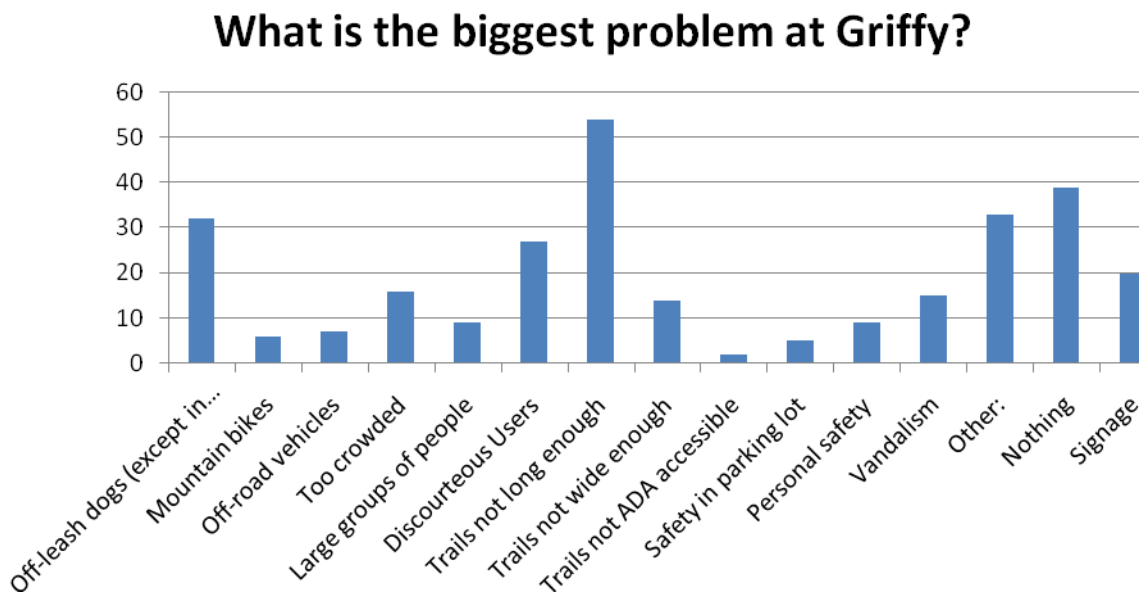
	Yes	**No**
Bicycling	97 (49.24%)	98 (49.75%)
Motorcycling	162 (82.23%)	33 (16.75%)
Four wheels drives, ATVs, and other vehicles	167 (84.77%)	27 (13.71%)
Swimming	140 (71.07%)	56 (28.43%)
Camping	141 (71.57%)	54 (27.41%)
Woodcutting	165 (83.76%)	28 (14.21%)
Creating any temporary structures	151 (76.65%)	43 (21.83%)
Fire-building	149 (75.63%)	46 (23.35%)
Rafting	109 (55.33%)	86 (43.65%)
Hunting	172 (87.31%)	22 (11.17%)
Trapping	171 (86.80%)	22 (11.17%)
Use of fire-arms	179 (90.86%)	17 (8.63%)
Use of alcoholic beverages	150 (76.14%)	44 (22.34%)
Horseback riding	135 (68.53%)	58 (29.44%)
Military exercises	145 (73.60%)	49 (24.87%)
Dumping	186 (94.42%)	10 (5.08%)

Do you think additional signs are needed at Griffy?
(198 Responses)



What information would you like to get from signs at Griffy?
(65 Responses)





Is there anything about Griffy that you would like to see changed?
(110 Responses)

The most frequent responses to the above question were related to dog leash laws and the management of dog excrement. Ten out of one hundred ten responses requested the enforcement of dogs on leashes and the cleanup of dog waste.

I love the other dogs that are at the park but it makes me feel unsafe when people bring aggressive dogs.

Off leash dogs are my biggest concern…a related problem is the dog poo that ends up on the trail at times. You may want to look into putting poo bags near the trailheads.

Like I mentioned above, signs regarding acceptable dog behavior and some trash cans with plastic bag dispensers.

An additional five respondents requested an improved dog park and programs.
I would like to see the dog area enhanced. These enhancements could include benches and a shaded area for humans to sit, more trashcans and free poop bags or shovels for disposing dog poop.

I would like for the lake to offer more programs for dogs and their owners.

The next most common responses were each addressed by eight respondents. These topic areas include **trail maintenance, water quality, trash management, and signage.**

Trail maintenance

The trails are great but during some recent rains they have become really rooty, and consequently dangerous. They need to be re-woodchipped around the entirety of the loop, especially the big hill and the back of the loop.

Better trail maintenance

…I would just like the trail to be relatively clear of fallen trees.

Water Quality

I wish there were a way to remove the pollution from the water so it would be cleaner and more habitable.

Sometimes I feel that Griffy is too mosey and dirty looking on the parking lot side of the street. Specifically last time I was there in this past week there was trash floating in the water. I know I do my part to keep Griffy clean, but perhaps for those who don't, there could be some sort of team cleaning the lake.

Trash Management

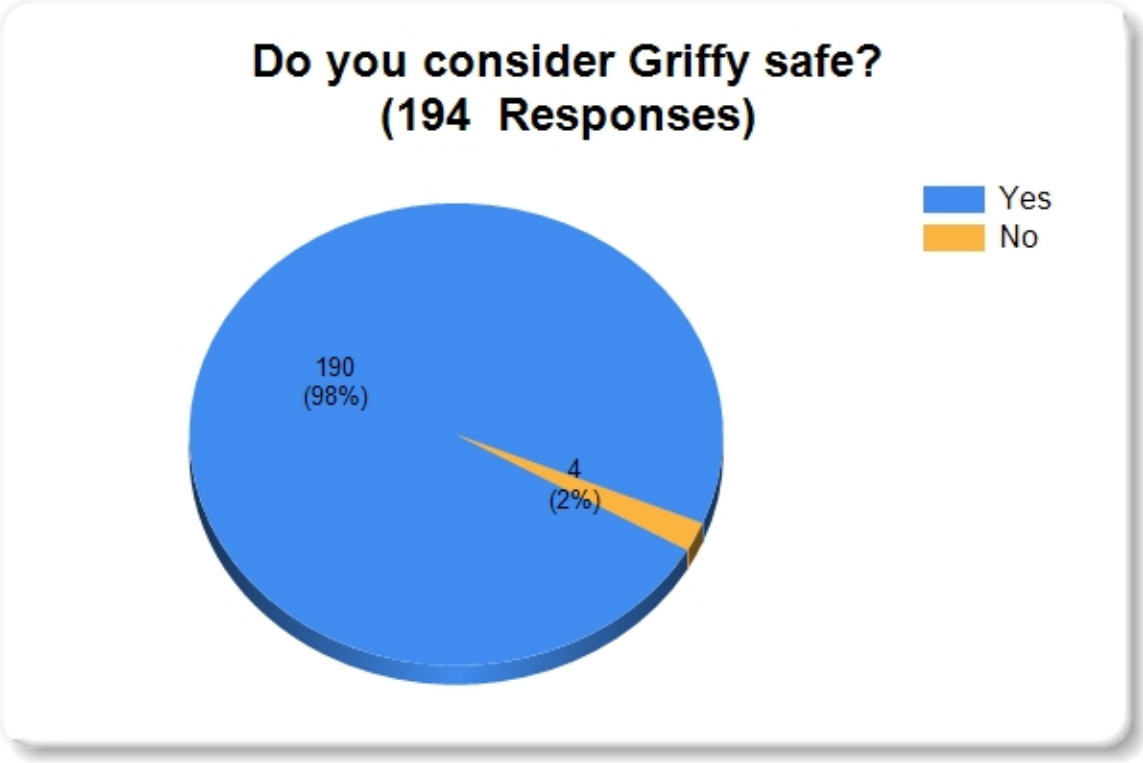
More trash cans around, so maybe people would not trash up the shore lines.

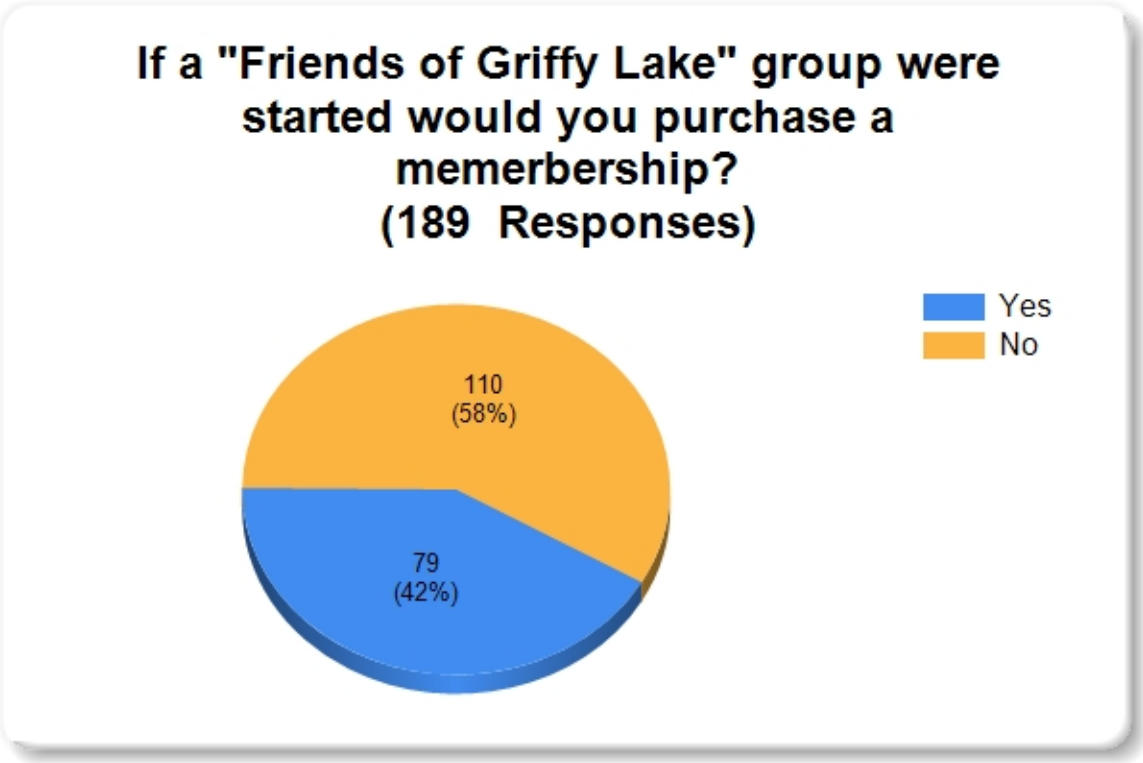
A trash can here or there or a recycle bin for bottles or something that is not just by the office building. Everyone brings a bottle of water or juice when going out for a walk…it sucks when you have to carry an empty water bottle for a while.

Signage

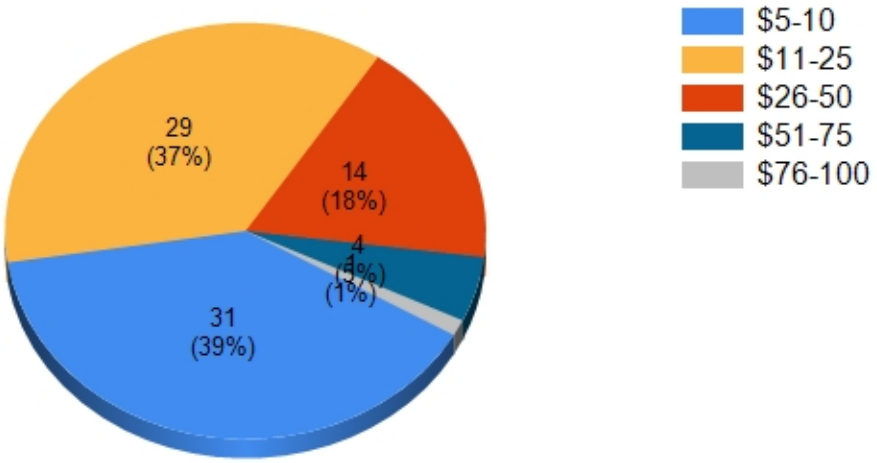
Clear signs stating activities that are prohibited, hours of the lake, and cost of the boats.

I think if there were some signs back on the rails with nature info, it would be cool, too.

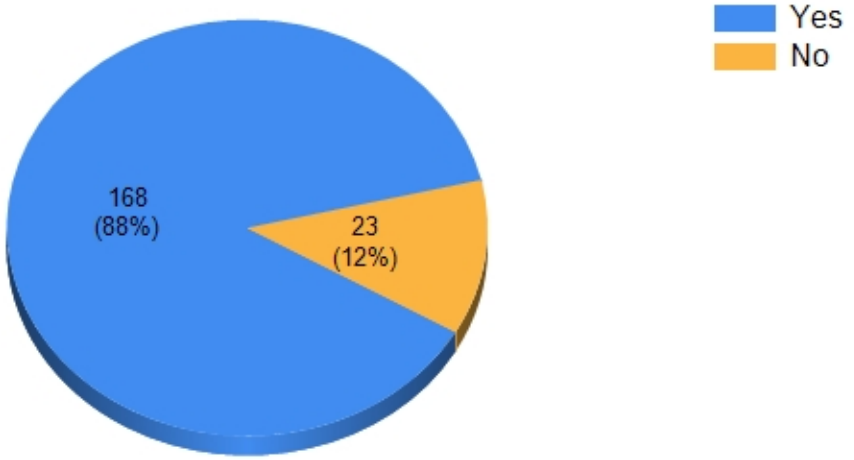

Do you consider Griffy safe?
(194 Responses)
Yes
No
190
(98%)
4
(2%)


If a "Friends of Griffy Lake" group were started would you purchase a memerbership?
(189 Responses)
Yes
No
110
(58%)
79
(42%)

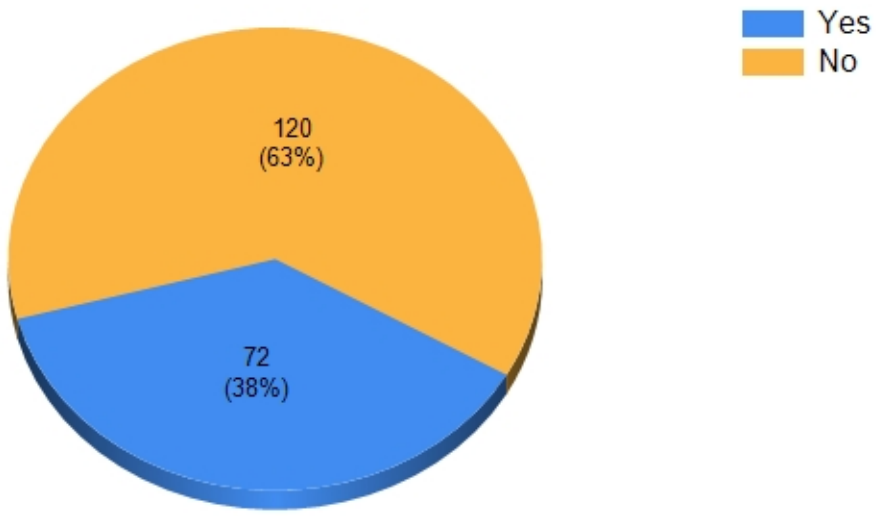
How much would you pay (annually) to be a member of a "Friends of Griffy Lake" group? (79 Responses)



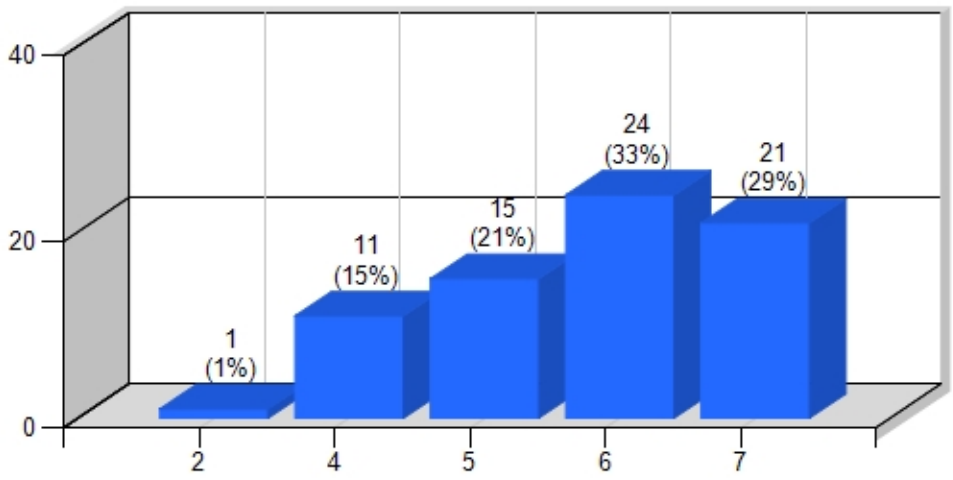
Would you support the purchase of more land in the watershed to protect Griffy Lake? (191 Responses)



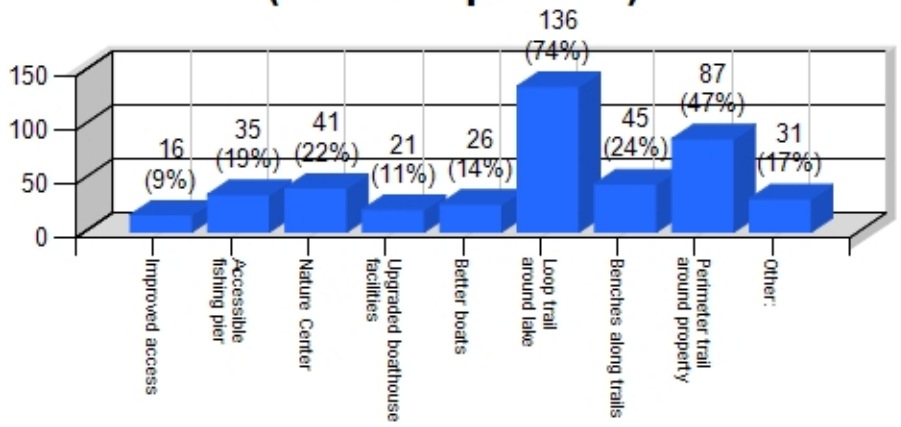
Do you use the boathouse at Griffy? (192 Responses)



How would you rate the quality of service offered at the boathouse? (72 Responses)



Which of the following improvements would you like to see at Griffy over the next 10 years?
(184 Responses)



What do you think the Parks & Recreation Department could do to reduce negative impacts to the land and water at Griffy Lake?
(85 Responses)

The most frequent responses to the above question related to trash cans and garbage management. Sixteen out of eighty-five respondents mentioned the need for more trash receptacles and/or a clean-up of the area.

More trash receptacles would keep people from littering.

Provide trash and recycling cans.

Trash cans along trails…

More trashcans along the trails to help reduce littering.

The second and third most common responses relate to education and signage, with eleven respondents for each topic.

Education

Educate people more about taking care of Griffy when they use it…a lot of people do things that they think are harmless without knowing the consequences for the ecosystem.

Make the public aware of the problems. I would have no idea that there are any negative impacts to the land and water.

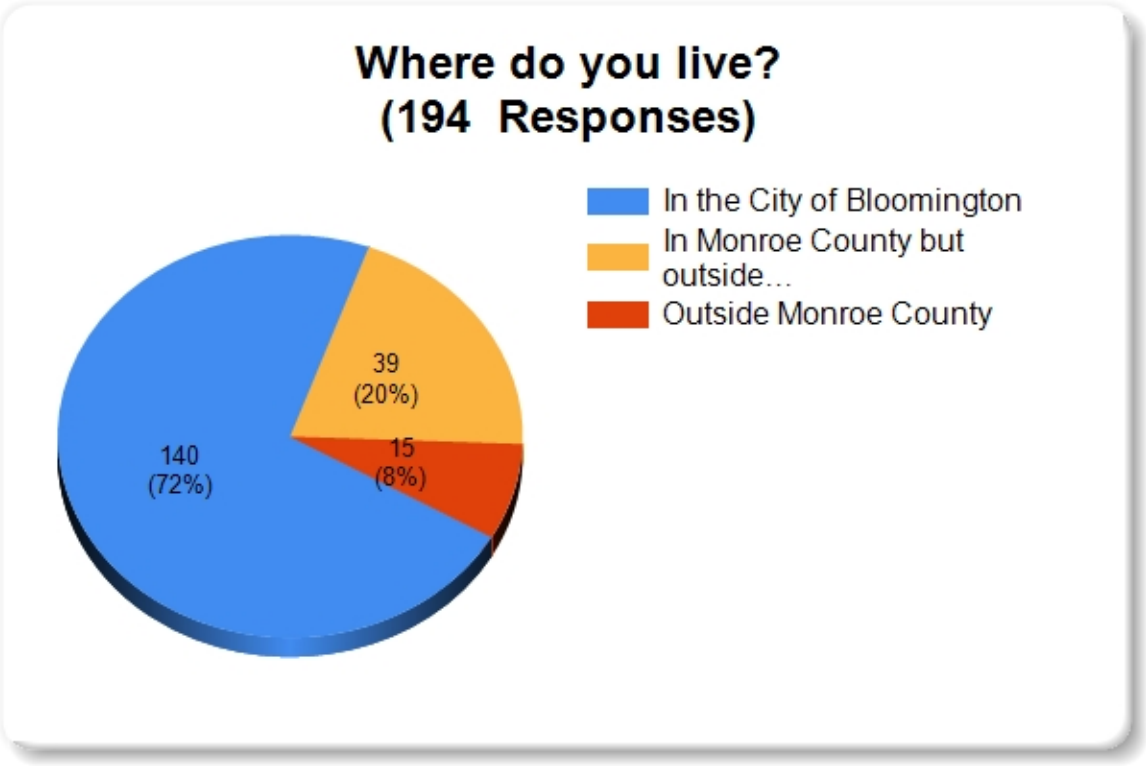
Educate the public and local landowners regarding best management practices to reduce negative impacts.

Signage

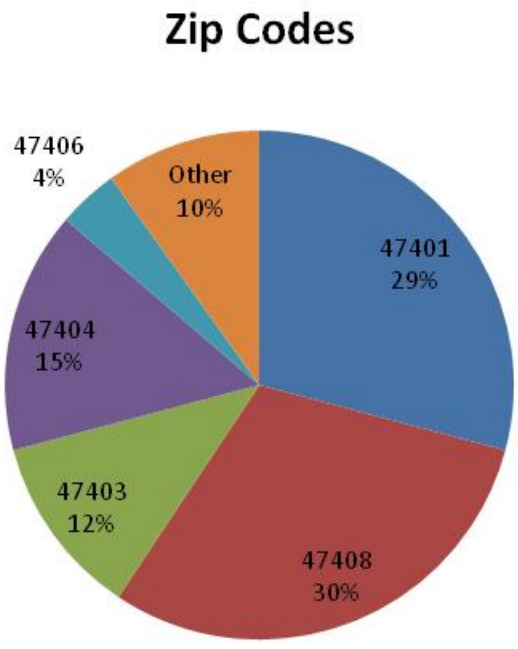
Stop dumping, increase educational signage about impact of man on nature (maybe around boathouse area where people hang out most?)

Decide what problems there are, then put up signs stating what we shouldn't do and what we can do to help.

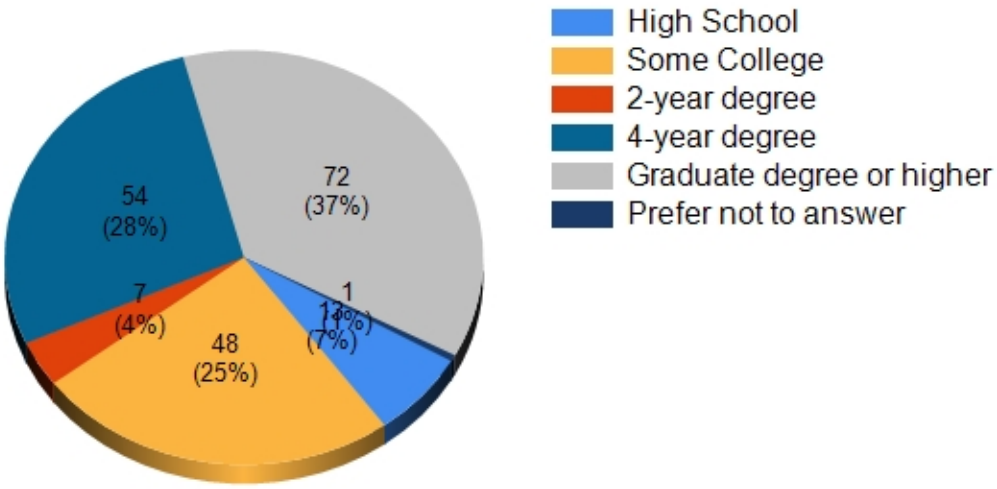
More signage is always a good thing-and a plan to replace said signage every couple of years built into the Griffy budget.



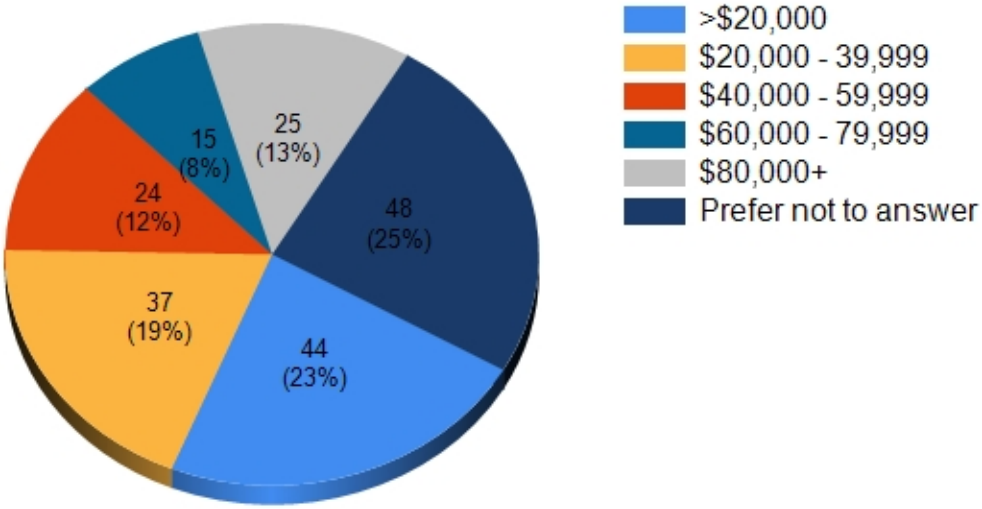
What is your zip code?
(182 Responses)



What is your level of education? (195 Responses)



What is your annual household income? (193 Responses)



APPENDIX I:

FRIENDS OF GRIFFY PLANNING INFORMATION

GRIFFY LAKE MASTER PLAN 2008
MONROE COUNTY, INDIANA

A General Guide to Organizing a Local Friends Group

Friends for Indiana State Parks and Reservoirs

Introduction

A friends group provides a unique opportunity to develop a lasting partnership that benefits both people and our natural and cultural resources. Sixteen million people visit our state parks and reservoirs every year. Our staff, our facilities and our programs, stretched thinly because of budget cuts, provide the supporting structure for those outdoor-lovers. A friends group, by providing funding and volunteer support, can help to "shore up" the structure of a property. In the process, those individuals who become friends will find a great deal of satisfaction in their efforts.

Where We Stand Today

In Indiana, we have local friends groups at Hardy Lake and at Brown County, Indiana Dunes, Spring Mill, Turkey Run/Shades, McCormick's Creek, Mounds and Lincoln State Parks. Groups are forming for Shakamak State Park, Cagles Mill Lake (LIeber SRA) and the Upper Wabash Reservoirs Interpretive Services. We have a supporting foundation at the Falls of the Ohio Interpretive Center. These groups have supported many projects, programs and special events. The Friends of Brown County State Park developed an easy access trail near the property office and helped to repair a residence now used to house graduate students doing research at the site. Native plant sales at Indiana Dunes often generate thousands of dollars for exhibits and equipment purchases. The Friends of the Mill support special events in the Pioneer Village, host astronomy programs and recently sponsored a dulcimer festival.The Clarksville Riverfront Foundation supports the annual Fossil Festival at Falls of the Ohio and spearheaded the celebration of the 200th anniversary of Lewis and Clark's Voyage of Discovery. The Friends of Hardy Lake host an annual Wildlife Weekend.

What Can A Friends Group Do?

- **Support the conservation and enhancement of the natural and cultural resources that are the foundation of state parks and reservoirs.**
- **Support interpretation and education that enriches visitor experiences and encourages land use ethics and appreciation for the unique natural and cultural resources of Indiana.**
- **Support the design, construction and maintenance of facilities that enhance visitor experiences at state parks and reservoirs.**
- **Support scientific research that leads to a better understanding of the natural and cultural resources of state parks and/or reservoirs.**
- **Generate funding, separate from revenue and legislative appropriations, to be used for conservation of resources, facilities and interpretation through memberships, grants, gifts, bequests or other means.**
- **Provide an avenue of volunteer service for Indiana's citizens that enriches their lives.**

General Concept for Local Friends Group

Nonprofit 501©(3)

The friends group should be a non-profit entity, completely separate financially from the property and/or the Division of State Parks and Reservoirs.

Board of Directors

The group is governed by a board. The size of the board is determined by a steering committee established to develop a framework for the group. The board in general, includes a president, a vice president, a secretary, a treasurer and several members at large. State Parks and Reservoirs always has at least one non-voting member who represents the interests of the property/division. Standing committees with chairs may include marketing and media(including newsletter, web, etc.), fundraising, grant development, projects and training and member services.

Strategic Planning

One of the first tasks of a board of directors is to establish a mission, goals and direction for the group. This planning process is best facilitated by an individual outside the group.

Meetings

The board determines a meeting schedule, which should be no less than quarterly and, more likely, on a monthly or bi-monthly basis. Meetings of the general membership are be held at least annually. Monthly or bi-monthly meetings are recommended so members can get acquainted and enjoy assisting with project planning and development. These membership meetings might also include guest speakers, member-only hikes or property updates to strengthen connections with property staff.

Initial Start-up Costs

There are a number of initial costs, for which funds could be generated through direct donations or founder's memberships. Some items might be supported through in-kind services by individuals, such as attorney's fees (for non-profit status), strategic planning facilitation, logo and marketing plan development, insurance, etc.

State Parks and Reservoirs Support

The property can provide some logistical support (initial mailings, etc.), guidance and participation from staff in planning events, participation in newsletter production by writing articles, verbal support in media coverage and ideas and direction for projects. A cooperative agreement will address these issues.

Friends events can be held on the property and donations or sales in association with the event are collected by the friends group. Arrangements can be made for the sale of friends' group products in property offices and gift shops as long as the sale of items doesn't conflict with property concession contracts.

Choice of Projects to Support

The primary purpose of the group is to support the planned projects\programs of the property. Priorities for projects are determined in consultation with the property manager or other property representative. It is important for the friends group to focus on support of initiatives and projects that are in line with both the property and division long range budget and planning process. The group is not intended as a political entity that lobbies legislators or local governments in relation to specific issues or projects.

Membership

The details of membership are established by the steering committee. There might be an initial "founder" membership drive to enlist larger dollar amounts to get the group started. The structure should include individual memberships and may also include family memberships. Discussions will occur about member benefits, which generally include a

How You Can Help

If you are interested in contributing time, services or funds to assist in the development of a friends group at your favorite property, contact:

Ginger Murphy, Assistant Director for Stewardship
State Parks and Reservoirs
402 W. Washington Rm. W298
Indianapolis, IN 46204
317-232-4143
gmurphy@dnr.IN.gov

Forming a Local Friends Group

newsletter and opportunities to participate in regular meetings and programs for the friends group.

Develop a Conceptual Framework

This effort, led by property staff and one or two interested individuals willing to spearhead the effort, will be used to approach individuals to serve on the steering committee.

Assemble a Steering Committee

This committee should represent local residents, community leaders with experience in organizing and planning, and property users who are passionate about the site and its resources.
It is important that steering committee members be willing to participate not only with their ideas and their expertise, but with their time and contacts in the community. It will also require their belief in and commitment to the success of the group. They will assist with several important tasks that will lay the groundwork for the formation of the friends:

- Agree on a general intent and purpose for the group.
- Research the efforts and approaches used in developing friends groups in other locations.
- Establish a timeline and budget for the initial work of the group.
- Seek initial funding or in-kind services for start-up costs such as attorney's fees, purchase of insurance, marketing and publicity.
- Develop a framework for bylaws and recommendations for the structure of a governing board.
- Recommend a membership fee structure and member benefits.

Establish a Board of Directors

The Board of Directors can come either from the steering committee or from outside the committee. There is some overlap between the work of the initial steering committee and the Board of Directors. The tasks on the next page are generally the responsibility of the board.

- Approve bylaws, which should include governing board structure, standing committees, election guidelines, terms for officers, meetings, etc.

State Parks and Reservoirs By The Numbers

The Division of State Parks and Reservoirs successfully manages land, buildings, equipment, staff and visitors all across the state. The total annual operations budget is $24.5 million, which represents only one quarter of one percent of the total state government spending. Legislative appropriations account for only 24% of the division's budget. The remainder of our operating funds (76%) are provided by our user fees (gate fees, camping, program fees, etc.) In other words, for every $1 we spend in state taxes, $3 are spent in fees paid by users.

Our construction, rehab and repair budget for the 2001-2003 biennium was $14.1 million. Our division-wide list of construction, rehab and repair projects for all properties currently totals over $400 million. The legislature originally provided $36.8 million in funding, but because of the state fiscal crisis, $22.7 million in CRR funds were withheld.

We maintain more than 2100 buildings on 34 properties.

Our inn lodging, with over 600 rooms, is the fourth largest state park inn system in the country.

We manage fifteen year-round Interpretive Centers, eight seasonal centers, one raptor rehabilitation facility, five historic homes, an historic mill and a pioneer village. These facilities were visited by over 700,000 people in 2004. Ten thousand educational and entertaining programs were attended by 260,000 students, teachers and family members.

Reservoir properties offer 69,000 acres of public hunting land.

We have 39,000 acres of lakes, accessed by 75 boat ramps, 10 marinas, 45 docks with 877 boat slips, 34 fishing piers and 18 beaches.

We maintain 7,061 campsites and 189 cabins.

We have over 600 miles of hiking, biking and horseback riding trails.

We have 17,000 picnic tables, 174 picnic shelters and 163 playgrounds.

Reservoir properties maintain over 350 wood duck nesting boxes.

- File the Articles of Incorporation for a Nonprofit Corporation form with the Indiana Secretary of State (download at http://www.in.gov/sos/business/forms.html). Cost is currently $30.00.
- Apply for and obtain a free federal ID (EIN) number. (This is required for the state cooperative agreement.) Instructions and IRS Form SS-4 are on line at www.irs.gov. (Search for "EIN Application".) The number can be obtained same-day by calling 800-829-4933.
- File for and obtain non-profit status for the group. This process may be most easily accomplished by an attorney if one is available.
- Finalize a membership structure and member services for the group and obtain approval of the property and division.
- Complete a cooperative agreement with the Division of State Parks and Reservoirs. A "standard" format for this agreement is in place. It requires that the group be registered as an incorporated entity with the state of Indiana, obtain non-profit status and acquire liability insurance.
- Continue efforts to obtain gifts from individuals, businesses, family foundations or other entities to establish a firm foundation for the group.

Select an Initial Project to Support

This will focus attention on the group and on the division's needs. The project, chosen in cooperation with property staff, might be related to stewardship, trail signage, school curriculum, exhibits or other appropriate property need.

Develop a Marketing Plan

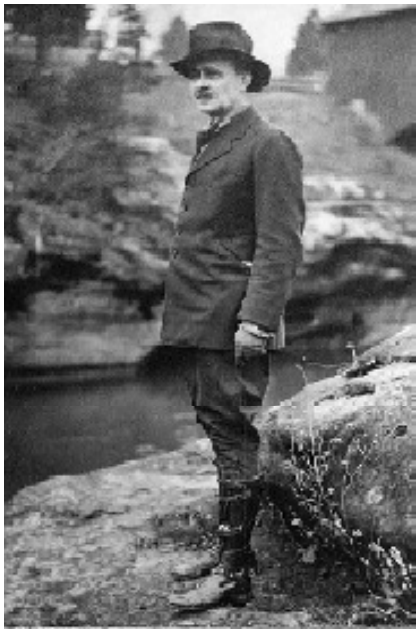
This plan for publicizing the group will include a logo, membership brochures, media contacts, PSAs, and other means for informing visitors about the effort.

Conduct a Founder's Drive

This effort might target specific individuals or groups who would contribute an amount to help establish an endowment/project fund.

Our Past: Richard Lieber's Vision

Richard Lieber was the founder of the Indiana State Park System. This quote, made in 1923, summarizes his vision for the young system: *"This then, is the value of our public estate. That we have set aside forever a part of the original domain. That by leaving it in its natural condition we have made the past intelligible to our and to coming generations. That we have attracted visitors from other states and shown them the beauty of our own. That we have found a measure of appreciation for the good of our day and an offset in part for some of its evils. That we have strengthened citizenship and helped create the appreciation of the soil which cannot but increase our attachment to our own state and to the nation. That we have tried in our State to educate the masses of our people to look upon conservation not merely as a means of self-preservation; a practical conserving of our resources, but also as a need for the appreciation and uplift of the soul of man."*



Our Present: Today's Mission

The mission of Indiana's Division of State Parks and Reservoirs is to manage and interpret our properties' unique natural, wildlife and cultural resources, using the principles of multiple use and preservation, while sustaining the integrity of these resources for current and future generations.

Our Vision

Excellence in stewardship, recreational diversity, interpretation, service and growth, resulting in unique places that people respectfully use, enjoy and cherish.

APPENDIX J:

HISTORIC BUILDING STATUS MEMO

GRIFFY LAKE MASTER PLAN 2008
MONROE COUNTY, INDIANA

Memo

April 28, 2008

From: Nancy Hiestand Program manager Housing and Neighborhood Development
To: Steve Cotter Parks and Recreation

Griffy Water Treatment Plant

The Griffy Water Treatment Plant is documented as early as 1978 (105-055-0308) by the earliest survey of historic sites and structures in the City of Bloomington. Its simple description "Large public works building with vertical brick strips separated by inset windows. Classic doorway and reinforced quoins" serves only to highlight how noticeable it was even 30 years ago. At the time it was unique in being located nearly 3 miles from the center of town. The building is also noted in the 1986 survey (105-055-80001) and most recently in the 2004 publication (105-055-90001). In all three surveys is classified as "contributing" however the most recent description reinforces its importance in three categories: Architecture, Community Planning and Engineering. It is one of several early public buildings, including the courthouse (Monroe County Government), Old City Hall (now the Waldron), the City Garage (now Prospect Place), that are sufficiently interesting architecturally to be considered significant. Among public works projects, it is certainly the most architecturally distinctive and important.

The architectural style of the Waterworks building is classical revival, and it is built of substantial materials, surprising for a functional public building. Its slate hipped roof covers a façade of repeating brick piers separated by two story steel-ventilator windows. The buff brick building is framed by limestone quoins, sill plates and frieze. Its central entrance is detailed by a double leaf door and classical portico.

Plans for the building indicate that they were initially drawn in 1925, but a review of city ordinances suggests that construction must have taken place later. Leonard Springs was the city reservoir and treatment facility immediately preceding Griffy's construction. A law authorizing the purchase of water and the Griffy Creek contract was passed in September of 1925. Ordinances allotting funds for plans and specification for the "City Waterworks" were authorized in April of 1927 and construction funds in the amount of $115,000 were allotted in July of 1927. This suggests a later construction date than 1925.

The building is not now designated by local ordinance as a historic site. However, since 2005, either partial or full demolition permits for all buildings listed in the survey and classified as contributing, notable or outstanding, go through the review of the City of

Bloomington Historic Preservation Commission before the demolition permit is issued. The local ordinance is intended to allow for public comment upon the loss of buildings considered significant to Bloomington's past. The Commission may delay a permit for 90 days or up to 120 days with the permission of the HAND director. The Commission may elect to recommend local designation of the building, in order to ensure its preservation. An act of Common Council would be required to prevent demolition. The Commission recommends on the basis of historic criteria and the building is certainly well documented. Common Council may consider other criteria, such as fiscal hardship and the greater good of the community in making their decision.

APPENDIX K:

GRIFFY FOCUS GROUP RESULTS

GRIFFY LAKE MASTER PLAN 2008
MONROE COUNTY, INDIANA

Griffy Lake Nature Preserve Management Plan
Focus Groups/ November 14, 2007/ Meadowood

Two focus groups were convened at Meadowood on November 14th as part of the Griffy Lake Nature Preserve Management Plan. The purpose of the Griffy Lake Nature Preserve Management Plan is to gain a better understanding of trail and lake use and user preferences. Results of the study will allow local recreation administrators and planners to better serve the community. As part of this process, a User Survey is being conducted. The survey began in June 2007 and will continue through April 2008. As well as a random sample of Griffy Lake Users intercepted at the Nature Preserve, community input is being garnered by surveying non-users and intercepting users at other venues. A group of Griffy Lake Nature Preserve Users and a group of Griffy Lake Nature Preserve Non Users met separately for about an hour to give input about their use of the Nature Preserve.

Bloomington Parks and Recreation Department values your input. If you would like to participate in the survey, please provide your email or mailing address on the sign-up sheet at the reception desk at Meadowood. An online link or a paper survey will then be provided. Thank you to all of the participants of the focus groups!

Results from the focus groups are detailed below.

Griffy Lake Nature Preserve User Group

- Members of the User Group walk or hike on the trails nearest Meadowood on a daily basis and use the trails near the Boathouse on an occasional basis.
- Users participate in the following activities: walking/ hiking, walking dogs, observing wildflowers/ birds.
- The main reasons for participating in these activities are to exercise and to enjoy the outdoors.
- Users deplore the lack of signs and information available from signs. Users would like to see more signs, a comprehensive map at trailheads, and get the following information from signs at Griffy: distance, time, directional information, regulations.
- Meadowood users (in particular Mr. De Jean) notifies Bloomington Parks and Recreation of maintenance issues on trails near Meadowood. Some maintenance issues were noted: bridge near the dam by the pond (if on Griffy Lake Nature Preserve property) needs repair; yellow trail needs more maintenance; trails are very narrow on some ridges and slopes.
- Meadowood users would like to see the following improvements where possible:
    - Benches (especially on main ridge);
    - Handrails at some places;
    - Shorter, ADA accessible trail (so that the woods may be experienced by all) somewhere in Bloomington; and
    - More signs with nature information.
- Meadowood users feel that GLNP is safe.
- Paintball teams are noted as a problem at Griffy Lake Nature Preserve.

- Meadowood users are open to discussion of a nature center on the condition that a nature center not only houses exhibits but interpreters.
- Meadowood users feel a Friends of Griffy group would be beneficial to the community and a way to channel energy by offering programs and creating volunteerism by fostering a sense of ownership.
- Meadowood users feel the dog park issue should be studied closely. Users are aware of trends in the development of dog parks across the country and feel an official dog park is a necessary amenity for the City of Bloomington. Meadowood users state that it is important to have an active group of dog owners to enforce rules and feel there may be a cooperative link between a Friends of Griffy group and dog owners. Meadowood users would like to see dog dispensers as well as dog specific trails.

Griffy Lake Nature Preserve Non-User Group:

- When asked what types of activities would interest them in using GLNP, non-users in general thought that guided activities, such as bird watching and interpretive walks, would attract them.
- Non-users also thought that interpretive signs with large lettering would attract more users in their age group.
- Non-users cited the following reasons for not using the Griffy Lake Nature Preserve:
    - No interest;
    - No time;
    - Fear of falling;
    - Not enough endurance to complete a trail loop; and
    - General physical/health issues.
- One member of the group indicated that she occasionally drives to the boathouse with family members to picnic. This particular member had a physical impairment that would not allow her to walk long distances.
- In jest, the group suggested that if the trail to the lake were downhill both ways, they would be more inclined to use it.
- It was suggested that rest stops be placed frequently along the trails. Permanent benches were identified as an appropriate rest stop.
- Those non-users who had been previous users of the preserve indicated that the greatest treasure of the preserve was the absence of noise pollution and the quiet tranquil setting.
- The deer population was indicated as a problem and members of the group indicated that deer can often be seen grazing in the yards of homes at Meadowood. The group felt it was important to control the deer population and suggested one or more of the following methods be used:
    - Birth control techniques;
    - Shooting females with sterilization pellets; or
    - Hunting.
- When asked if they thought additional infrastructure, such as a nature center, should be included in future plans for the preserve, the non-users group indicated that money would be better spent on maintaining and improving what is there already. As an

example, the group thought that eradicating invasive plants would be a better expenditure than constructing a new building.

- Non-users were in favor of purchasing adjacent land to help preserve the watershed, but thought it should be done on a case-by-case basis and only in circumstances when the adjacent land might be slated for development.
- There was discussion of future use of the nature preserve, in which participants felt it was important for the Bloomington Parks and Recreation Department to consider the aging population in Bloomington, but that the culture of the age group is changing to a more active culture than past generations.

APPENDIX L:

STEERING COMMITTEE MEETINGS

GRIFFY LAKE MASTER PLAN 2008
MONROE COUNTY, INDIANA

Griffy Lake Master Plan Update Steering Committee Members

George Bull, Park user
John Carter, Vice-President, Board of Park Commissioners
Keith Clay, Director, Indiana University Research and Teaching Preserve
Marti Crouch, Biologist
Christian Freitag, Executive Director, Sycamore Land Trust
Joel Keefer, Boater, neighbor
John Langley, Deputy Director, City of Bloomington Utilities Department
Mike Litwin, Vice-chair, Parks and Recreation Environmental Resources Advisory Council
Cathy Meyer, Naturalist, Monroe County Parks and Recreation
Brandon O'Leary, President, South Griffy Neighborhood Association
Julie Roberts, Utilities Service Board
Dave Rollo, President, Bloomington City Council
Angie Shelton, Indiana University Research and Teaching Preserve

Sara Peel, Project Manager, JFNew
Bill Jones, Project Team Member, Indiana University School of Public and Environmental Affairs
John Drew, Project Team Member, The Eppley Institute
Andrea Titzer, Project Team Member, The Eppley Institute

Steve Cotter, Bloomington Parks and Recreation
Angie Smith, Bloomington Parks and Recreation
Dave Williams, Bloomington Parks and Recreation

Steering Committee Meeting I

June 28, 2007 noon-1:00 pm

Present: George Bull, John Carter, Keith Clay, Marti Crouch, Christian Freitag, Joel Keefer, Dave Rollo, John Langley, Mike Litwin, Brandon O'Leary, Julie Roberts, Steve Cotter, Bill Jones, John Drew, Andrea Titzer, Sara Peel

Opening Welcome: Steve Cotter welcomed all of the attendees and reviewed the overall scope of the project. This includes assessments of the flora and fauna of the nature preserve; surveys of the preserve users; review of land use changes, recommendations not enacted, and information obtained during 1984 plan; inspection of the filtration plant, dock, and current parking facilities; identification of potential changes in trails, zoning, park coverage; and public and steering committee meetings.

Each of the steering committee members present introduced themselves and detailed their interest in the Griffy Lake Nature Preserve.

Sara Peel reviewed the specifics of the on-going flora and fauna surveys. Mammal, including bats, amphibian and reptile, bird, and plant community and species list have all been started this spring and will continue through the summer and fall.

- Mike Litwin questioned whether permits had been obtained for bat surveys, to which Sara responded that the subcontractor, John Whittaker with Indiana State University, had likely taken care of this but that she would check with him to make sure.
- The deer population and potential for a deer reduction program was also questioned. Sara indicated that this could be considered as a recommendation after survey data was tallied, but that no specific recommendations had been identified to date.

Sara also indicated that the final scope did not include any aquatic assessments of stream and lake water quality as these are hopefully going to be accomplished using a LARE (Lake and River Enhancement) Program grant. The application will be submitted this fall for a diagnostic study which will include an assessment of lake and stream water quality and identification of potential project sites to improve water quality. Mike Litwin questioned whether fisheries assessments were included in the current or future projects. Sara stated that as no aquatic assessments will be occurring under this project, it is unlikely that fisheries assessments will occur. They could, however, be included as a scope item within the diagnostic study.

Bill Jones reviewed the 1984 plan and its recommendations noting the items that have and have not been completely addressed since the original plan was finalized:

- Designate the area as the Griffy Lake Nature Preserve (complete)
- Institute a zoning plan (partial)
- Implement a nature center
- Implement a managed boat livery (complete)
- Create a wooden pedestrian walkway along Hinkle Road
- Create an interpretive trail (complete)
- Provide sanitary facilities at the Hinkle Road parking area (complete)
- Allow fishing boat access with electric motor only (complete)
- Include Griffy in IU's greenspace program
- Create a small parking lot at Dunn Street (complete)

- Enact a resolution of the Griffy Lake Advisory Council to recognize the need for environmental education (complete)
- Establish an environmental education council to the Bloomington Park Board (complete)
- Employ a forest naturalist (complete)
- Discontinue ROTC and other cross-country or off-trail use (partial)
- Encourage users to use trails through the installation of steps and cross logs (complete)
- Install protective measurements in steep streams and drainageways to reduce erosion (partial)
- Prohibit clear-cutting or logging (complete)
- Prohibit hiking along the shoreline (partial)
- Prohibit bike/motorcycle use (complete)

John Drew and Andrea Titzer presented specific information in regards to the user survey.

- Several individuals questioned how non-users and individuals who lived adjacent to the property and had direct walking access would be included in the user survey. Andrea indicated that several self-serve stations were set up for individuals to provide contact information by which survey access could be emailed to them. Additionally, a link to the survey will be added to the parks department website and residents will be invited to contact Steve Cotter if interested in participating.
- Marti Crouch questioned whether the impact of mushroom hunters or ginseng collectors would be addressed by the user survey. A discussion of how this was addressed in the survey and whether or not individuals would respond truthfully to this type of question ensued.
- Julie Roberts indicated that she no longer used the Griffy Lake Nature Preserve due to too many dogs being present. She also asked how non-users' opinions would be incorporated into the "user" survey. Several suggestions for a short-format survey were discussed. John and Andrea will attempt to incorporate these changes as soon as possible so that users can begin to respond to the survey.

Future meeting dates:

- September 11 at 4 pm (tentative)
- December 11 at 4 pm (tentative)
- Post March meeting to be scheduled at a later date

Questions/Comments:

- Several attendees stressed the need to maintain a balance between natural or wild areas of the nature preserve and those areas that are available for heavy or moderate use.
- Off trail use and use by school or university groups was also discussed. Steve indicated that most users clear their use through the parks department, but that some do not. Additionally, all off-trail use is off limits; however, ROTC maneuvers still occur on-site.
- The feasibility of restoring the filtration plant for other uses was discussed. Nothing concrete can be determined at this point in time; however, a survey of the building is included as part of this project.
- Steering committee members indicated the desire to determine how Griffy fits within the larger natural corridor. Christian Freitag stressed that Griffy is not just a local resource, it is part of the IDNR nature preserve system and is considered a facility for use by all individuals and should be managed as such.

Steering Committee Meeting II

September 4, 2007

Present: George Bull, John Carter, Angie Shelton, Marti Crouch, Christian Freitag, Joel Keefer, John Langley, Mike Litwin, Brandon O'Leary, Julie Roberts, Dave Williams, Angie Smith (for Keith Clay-sabbatical), Steve Cotter, Bill Jones, John Drew, Andrea Titzer, Sara Peel

1. Biological survey findings

a. Mammal survey data (complete)

- Sara provided copies of the mammal species that were anticipated to occur within the Griffy Nature Preserve range and explained that highlighted species were ones observed during the survey. Committee members expressed concern over the lack of bat species presence. Sara will check with the ISU surveyors to determine what should or could be done to remedy this situation. This may involve additional bat netting.
- Deer browse was discussed as a potential issue. The mammal surveyors did not per se note the presence of deer browse or the density of the deer population. IURTP research indicates that deer browse is an issue as evidenced by the exclusion plots.
- Deer population control methods were discussed and the committee agreed that some control methods were likely necessary. Christian noted that as a state nature preserve, Griffy should use the same methods that the state is currently using. Additional notation of the effectiveness of hunting was mentioned. Potential hunting options (limiting hunts to select individuals, lottery systems, etc.) were discussed.
- Marti questioned the potential impact of deer diseases on the population citing a recent news article regarding hemorrhagic diseases and brucellosis.
- Sara indicated that the contractors would investigate the need for deer population control and document potential solutions in the plan. These efforts will include discussions with the local DNR deer biologist.

b. Bird survey data (1/2 spring and all summer surveys complete)

- Sara provided a current listing of the bird survey data and explained that updates would occur throughout the project.

c. Plant survey data including community mapping; endangered, threatened, and rare species locations; exotic species locations

- Community, ETR, and exotic species location maps were provided as an update. The final surveys of the plant community will be completed in the next few weeks.
- Christian noted that herbicides are often the only way to control exotic species noting autumn olive and honeysuckle as two species where herbicides are necessary for their control.
- Marti questioned the impact of herbicides on the flora and fauna and noted the some herbicides are secreted out the roots of some plants. This could impact Griffy as an alternate water source and impact amphibian and reptile communities.
- The question of which species to tackle first was raised. Steve indicated that he hoped that the plan would outline the best methodology for control and which species should be controlled first. Additionally, Steve noted the bush honeysuckle seems to be the biggest issue as it covers the largest acreage at this time.
- Julie questioned current control methods and the effect of letting the exotic species grow without any control methods. Steve detailed methods used in the past, which include

student efforts to clear privet and multiflora rose with the apparent results of increasing privet density and decreasing rose density. He also noted that the parks department has not yet been able to adequately tackle the issue either monetarily or with an "army of volunteers."

- Future efforts will identify which species to address first, any herbicide alternatives for exotics control, and the ability of volunteer or outreach efforts to curtail the problem.

d. Amphibian and reptile survey data (summer surveys complete)

- Sara provided the current list of amphibians and reptiles identified. Steve noted a couple of errors or misidentifications on the list, which will be corrected prior to the final survey compilation.
- Marti noted that two of the frog/toad species were susceptible to Round-Up specifically, including the southern leopard frog and the green frog. She will confirm the impacts to these species and identify any others that may be susceptible to herbicides used to control exotics.

2. <u>User survey findings</u>

Andrea provided copies of the user surveys compiled to date (75 total) and reviewed the general findings. The three following issues were ones identified by many respondents.

a. Dog-related issues

- Sara questioned how the steering committee felt about dogs being allowed on the property? On leashes? In the park proper?
- Steering committee members identified the fact that the dog park is not "official" makes enforcement an issue and indicated three potential solutions:
  - identify the dog park as an official dog park in its current location and get tougher on offenders;
  - do not allow dogs (on or off leash) in the woods;
  - move the dog park to a different location.
- Dave noted that dogs are an issue at all parks, not just Griffy. The parks department has discussed options including providing a better facility, better enforcement, and better signage.
- Steve noted that evidence of erosion are apparent in areas of high dog use. Additionally, efforts to post signage along trails and the water have been abused, removed, and vandalized.
- Dave noted that a typical dog park requires a minimum of 3-5 acres of open land which can be fenced to allow rotational access. (The spillway area offers approximately 2 acres of open ground.) There has been pressure in the past to invest in a full-fledged facility; however, the money and effort have not been apparent to act on this pressure. Only a few intimidation or dog bites reports have been received.. Steve noted that there may be pressure to not report incidents as individuals fear that they could not bring their dogs back to the park.
- Noted problems with the dog park and the nature preserve include:
  - Erosion along shoreline;
  - Wildlife intimidation;
  - Kids and older adults are afraid of dogs off-leash within the park
  - Fear a change from family usage to one where dogs have free run of the park
  - Potential water quality impacts (Sediment, erosion, fecal material).

b. Light (or lack thereof) after hours

- The need for lighting in and around the boat ramp and boathouse was identified as an issue.
- The mayor included $10,000 in next year's budget for solar light acquisition and installation at Griffy.
- Questions that the parks department has at this time include the types of lights to be used and what areas should be lighted.
- Currently, there is not electricity at Griffy, therefore there are no lights. The use of solar lights should address this issue.
- Marti questioned whether the addition of lights could be a migration issue? Will shading, light frequency, etc. be taken into account. She stressed the appeal of a truly dark area within the vicinity of Bloomington for star observation, etc.
- Additional questions related to timers (park is open from 5 am to 11 pm) and motion sensors (goose impact) were also raised.
- Potential lighting options will be addressed in future meetings and included in the final plan.

c. Trail use/misuse

- Tabled until the next meeting due to lack of time.

3. <u>IU Research and Teaching Preserve collaboration</u>

- Bill highlighted identified issues at IURTP and potential areas for collaboration. Issues include: exotic species, lack of trail connectivity between IURTP and Griffy, the need for increased research. Collaboration includes: advertisement of co-productive programs, exotic species control opportunities, and use of the new IURTP pavilion. The pavilion is nearly complete and will eventually provide seating for 36, chalk boards, etc. It is designed for university class use, but could be used for other outside education opportunities. The facility is located 5-10 minutes from the IURTP parking lot and if a trail were built over Griffy Creek, the facility would be within a 15 minute hike of the boat ramp parking lot.

4. <u>Next meeting date</u>

Proposed for December 4, 2007 at 4 pm in the McCloskey Room. Bill questioned whether 1 hour provided adequate time for discussion. Potentially, post-meeting discussions could be held after the next meeting.

Steering Committee Meeting III

December 4, 2007

Present: Angie Shelton, Marti Crouch, John Langley, Mike Litwin, Cathy Meyer, Joel Keefer, George Bull, John Carter, Dave Williams, Angie Smith, Steve Cotter, John Drew, Bill Jones, Andrea Titzer, and Sara Peel

1. Exotic species control
    - Marti expressed concerns about making a decision regarding exotic species control using herbicide or non-herbicide methods. Marti indicated that herbicides do not create long term control; long term problems with pesticides/herbicides though generally accepted may not mean actually useful.
    - Steve stated that the Parks Department generally advocated non-herbicide treatment options. Volunteers are an option for exotics treatment; however, these individuals cannot treat as they need to be certified herbicide applicators.
    - Marti asked how many more volunteers would be needed if it was volunteer vs. trained/hired. Sara indicated that an estimate of volunteer numbers versus trained individuals will be generated as part of the management plan.
    - Cathy questioned the effectiveness of volunteers at Bryant Park with regards to exotics control. Steve indicated that volunteers were not entirely effective; there are school groups looking to do this type of effort which generates interest but not long term effectiveness. Additionally, the parks department does not have an idea as to how effectively they have kept up or if they are losing ground to exotics.
    - Steve indicated a need to look at other alternatives and attendees agreed that do not want to use herbicides unless there are not other options.
    - Mike and Cathy stressed the need to control exotic species in the interest of not letting a monotypic stand of exotics take over the preserve. Exotics control may also be necessitated by state nature preserve status. Sara will find out if the state requires herbicide control on the state nature preserves.
    - Steve indicated a bias towards non-herbicide methods, if possible for effective control.

    Follow up information/questions:
    - What are the effects long-term herbicide use on the exotics and the property overall? What other options are available for effective control and how do non-herbicide control methods stack up against herbicide control? Are there other Nature Preserves that have used long term control, if so what was effects/impacts?
    - Is it possible to use Griffy as a study situation where the effectiveness of herbicide vs. non-herbicide methods could be tracked?

2. Signage needs
    - Andrea indicated that 40% of survey respondents say signage is necessary and suggested upgrading Griffy signage to the state park system which uses international trail marking methods and trailhead signs which cover general information. Additionally, users indicate that vandalism problems continue to be an issue with signs at Griffy.
    - Dave stated that the department as a whole does not want rules and regulation signs posted at any park especially at Griffy. Additionally, he indicated that this is not the aesthetic that the department is going for at this location. They don't want anyone to

get lost but prefer a minimalist approach if possible and self serve type option ie. fliers/brochures/online etc. versus a large sign with lots of information.

- John questioned whether the state nature preserve status requires that you observe more rules/regulations. Sara will determine this and include information in the management plan.
- As for enforcement, Dave indicated that Griffy is not policed, not even self-policed, and would prefer that any additional signage be posted in as non-intrusive a way, if possible.
- Suggested sign preferences include: Leonard Springs type interpretive/informative sign; wooden TC Steele signs; all weather, graphic signs which are inexpensive and durable; something informative and non-invasive. Options for signage will be included in the management plan and will stress a plan which places signs at trailheads not every 10 feet. The signs should include information as to "why" Griffy is important, why it should be appreciated by public, and include rules discreetly stated.
- Additional suggestions include a Leonard Springs-type orientation sign and that trail maps, which are available online and at boathouse, be posted at the main parking lots.

3. Dog-related issues
    - Bill gave updates on dog-related issues throughout the city including: the political statement regarding a future dog park at the current Griffy location; Karst Farm and the donation for County dog park Additionally, Bill suggested three potential locations: 1 – dog area now <2 ac; 2 – across road ~ 9 ac; 3 – Ferguson Property which houses the park nursery ~ 9 ac.
    - Problems with the current site: too close to trails; dogs off leash; lake access; erosion within the park and along lakeshore. Additionally, the area is small, too small by most estimates for use as a dog park.
    - Problems with either of the other hypothetical potential locations: treatment of runoff; water access or the creation of pond of some type; design elements not determined at this time. Cathy questioned ecological issues including flooding area, parasites and wetland issues. Bill stressed that these areas are preliminary in nature and issues have not been worked out.
    - Cathy posed the question as to whether there are better areas and whether long term the department wants to spend money for creation, maintenance and upkeep of a dog park? Dave stated that long term the department really has little choice. The only issues remain where the park should be housed and how the money will be provided for its creation. Furthermore, the current dog area (#1) is not going to become an official park. Dave stated that space limits are likely a constraint on this location and that the department will likely be slowly getting out of this area and into permanent location. Per Dave, a larger area is better—the current area is too small an area (1-2 acres) and is not a long-term successful solution; ideally the department needs at least 3 to 5 acres so that a rotational option is available. Costs for creation include: fencing, which is the number one cost, roads, streets, water, and sewer. Steve indicated that there is demand for a dog park and that the city advocates creation of one.
    - Bill will follow up on stormwater requirements and dog parks in general so that information can be included in the management plan.

4. Nature Center
    - Andrea indicated that 33% of surveyed users would not pay to visit a nature center, 50% would pay $1 - $5 to visit a nature center, and 50% would participate in programs offered at a nature center.
    - Other surveys indicate that 68% of respondents needs are being met three-quarters of the time. However, strong negative comments regarding cutting down trees, additional use of the property given the additional attraction, and the cost of an interpreter, which would be necessary at all times.
    - Marti asked whether an interpretive center is planned long term at IURTP. Angie Shelton indicated that IURTP are creating a research building near Griffy at the golf course; however, this will not be for public use. Cathy stated that historic assessments indicated that utilities are not present in possible locations, that space would be an issue, and that the ground was not flat creating limited parking.
    - Angie Shelton inquired about long-term plan for a nature center at dog area. Steve stated that the previous plan proposed development of a nature center at Dunn and Meadowood and if trees were cleared then this area could work for a nature center.
    - Questions regarding the current educational program attendance were raised. Angie Smith reported that seasonal programs are offered but not well attended. Specific programs for Boy Scouts or school-related programs are well-used; however, generic programs are not well received by the general public. Steve stated that he thought overall that the needs of the community were being met by current offerings.

5. Shoreline Erosion
    - Sara outlined erosion areas as surveyed this fall and briefly suggested bioengineering options. Additionally, she raised the questions regarding access or boardwalk type stabilization rather than stabilizing the entire shoreline directly.
    - Joel stated that fishing from the shoreline is popular especially by individuals whom don't own or have access to a boat. Additionally, Joel indicated that fishing from the shoreline is popular in isolated locations.
    - Bill indicated that the 1984 report recommended access along the causeway north of parking area on the west side. The report also noted the need for bumpouts for fishing and pedestrian access. Dave said that a design was completed for this location a few years ago and that he was unsure, but though that the department may have been trying for grant money to complete this project.
    - Marti questioned the need and reason for stabilization and questioned whether it was for erosion control or otherwise? Steve and Bill both indicated that erosion is the main issue; however, in some areas the hillside is falling into the lake. The stabilization need is aesthetic, ecological, and safety related.
    - Andrea indicated that survey respondents requested fishing access; the boardwalk allows other portions of the population to access fishing where they previously could not.
    - Cathy stated that previous erosion control activities occurred at Griffy and asked how successful these activities have been. Steve stated that they used erosion blanket and planting in some areas and were only moderately successful. In areas where they directly planted acorns, some stabilization has occurred; however, these areas are not steeply sloped. Additionally, there is some concern over the potential introduction of exotic species through their control methods.
    - Sara will investigate and outline potential treatment methods for shoreline stabilization while allowing individual access to the shoreline. Conceptual designs for potential solutions will be included in the management plan.

6. Rules
    - Andrea outlined survey responses which indicate concern over the lack of enforcement of rules at Griffy. In particular, off-trail use and dogs off-leash were the two most common issues. Additional concerns include dumping of trash and dogs and people in the lake.
    - Bill indicated that rule enforcement at Bryant Park is not necessary and has essentially become self-enforcing. He questioned whether the department sees Griffy going in this direction. Dave stated that Griffy will likely never be this way and hopes, in some ways, that Griffy is not self-enforcing. Self-enforcement occurs at Bryant Park due to the high usage of the facility-a use rate which Griffy cannot sustain. Additionally, enforcement through a patrolman is not likely to happen at Griffy as there will likely not be someone out there all the time. Currently, the department pays a part-time patrolman who works seasonally. Poaching and animal control issues will likely not be able to be controlled using the County's animal control system as there simply are not enough individuals to police the entire county let along Griffy.
    - Vandalism and theft were questioned as problems at Griffy to which Dave indicated that these are sometimes an issue. Angie Smith indicated that the boathouse workers maintain a daily log and that the boathouse was broken into twice during the past season. Additionally, poaching was reported.
    - Cathy suggested that posting a sign which clearly indicates rules could cut down on some of the issues.
    - Potential signage options and information will be included in the management plan with the idea that signs be non-obtrusive and clearly state rules and provide information.

7. Other Items
    - Steve indicated that if anyone would like to get together outside of the steering committee to explore issues that he was open and willing to do so. Contact Steve to arrange a meeting time and place.
    - Cathy suggested exploring creation of a Friends of Griffy Group for roving interpreter, general knowledge ideas, exotics control, property clean-up, etc. She suggested that it would be solely volunteer-based, and that a group like this could address some rules/policing issues and the "need" for a nature center. Bill supported the idea and indicated that such a group was suggested during the 1984 plan. Steve suggested that Andrea review the survey question that asked respondents about their interest in such a group. Andrea indicated that most were in favor as far as she could remember and that she'd confirm this and any other responses related to the formation of a "Friends" group. Sara will identify any information that the state parks provide for starting a "Friends" group and provide that to the steering committee as a foundation for such an effort.

Next meeting: Draft of plan available in late April for everyone to review for discussion at the final steering committee meeting. Steve proposed May 8, 2008 meeting date and will confirm prior to scheduling.

Steering Committee meeting IV
May 7, 2008 4:00-5:00pm

Present: Keith Clay, Brandon O'Leary, Steve Cotter, Dave Williams, Bill Jones, John Drew, Andrea Titzer, Sara Peel, Angie Smith, Angie Shelton, George Bull, John Carter, Mike Litwin

Opening Welcome: John Drew welcomed all of the attendees and outlined the meeting process to review the recommendations of the GLNP Management Plan draft document.

Sara Peel reviewed recommendations relating to the natural and environmental resources.

John Drew reviewed recommendations relating to adjoining property influences and land acquisition and protection.

Bill Jones reviewed recommendations relating to the Griffy Lake Inventory.

Andrea Titzer reviewed recommendations relating to Recreational uses and facilities and infrastructures assessment.

Discussion/ comments:

- The Wetland trail and a possible ADA accessible boardwalk were discussed as part of Wetland trail improvements.
- The long term effects of septic/sewer systems in the watershed were discussed as an area of concern that should be included in the Management Plan as a topic to periodically observe/ evaluate.
- The presence of beaver on the South Shore was discussed as an area to be monitored.

Sara Peel announced that steering Committee members may contact her with revisions/ edits/ comments on the draft plan by June 2, 2008.

Attachments (2): Meeting guide, recommendations list

GLNP Management Plan

Steering Committee Meeting

May 7, 2008

4 PM

Agenda:

I. Introduction and presentation of forum format (5 minutes)
II. Discussion and Input from Steering Committee members on GLNP Management Plan Draft Report (45 minutes)

    The group will divide itself into 4 small groups according to interest or expertise areas. This format will allow members to focus their time on a specific area, begin with the group in which they have the most interest/expertise and then move to other groups if they have other interests.

    1. Natural and environmental resources
    2. Adjoining property influence + land acquisition and protection
    3. GLNP inventory
    4. Recreational uses + facilities and infrastructures assessment

III. Debrief with all Steering Committee members (10 minutes)

Discussion Groups and List of Recommended Actions

Group 1: Natural and environmental resources

Section 6

NATURAL FEATURES INVENTORY

- Exotic, Invasive Species Control
    - Control exotic species populations that immediately threaten imperiled plant species or high quality natural communities.
    - Control exotic and invasive species area perimeters if these areas are increasing in size.
    - Minor occurrences of exotic and invasive species that are present within the natural communities should be sought out and removed before they become major infestations.
    - Exotic and invasive species treatment within the Young (Successional) Mesic Upland Forest.
    - Heavily Degraded/Exotics community should be herbicided to reduce and eventually eliminate exotic species. In these areas, it will be necessary to plant and seed native vegetation after controlling the exotic and invasive species.

- Initiate a study to determine the effects of the deer population on the native plant community. A paired study similar to that used at IURTP is suggested. After results are determined, a course of action which could include deer population reduction should be enacted.

- Depending on the long-term management goals for the property, prescribed burning or selective thinning of trees may be enacted.
    - If the long-term management goals include maintaining open areas and keeping Dry-Mesic Upland Forest on terraces from transitioning into Mesic Upland Forest, it is recommended that prescribed burning, and potentially selective thinning of native trees, take place within these communities.
    - If the goal is to allow the site to progress naturally into the climax community, then burning is not recommended; it is then recommended that the young forest communities be allowed to naturally transition into more mature forest after exotic species are controlled.

- Surveys targeting specific ETR and Watch List species should occur in the future with populations of ETR and Watch List species monitored every few years to ensure that the populations are not decreasing.

- Areas with ETR and Watch List species present should be preserved in their current successional stage.

- Preserve areas with large, mature trees.

- Avoid disturbance to the habitat of the Cerulean Warbler, which occurs along the Griffy Creek riparian area east of the lake.

- Periodically revisit the impact of trails, off-trail usage, and other anthropogenic uses on the bird, reptile, amphibian, and mammal communities of Griffy Lake Nature Preserve.

- Pursue opportunities for design-based funding to address shoreline and streambed and bank erosion throughout the Griffy Lake Nature Preserve. Once design funding is obtained, it is recommended that the Parks Department complete design efforts, identify construction funding options, and pursue funding to implement shoreline and streambed and bank stabilization as prioritized during the design effort.

- Begin Canada goose control program and restore and/or stabilize the shoreline adjacent to the boathouse to deter Canada goose access in this area.

Section 7
GRIFFY LAKE INVENTORY

- Encourage efforts to reduce soil erosion and runoff from properties throughout the Griffy Lake watershed in order to reduce the transport of mercury from the watershed to Griffy Lake.

- Continue observation of the aquatic plant community to monitor the presence of exotic, invasive species and initiate treatment methodologies to control the density and location of these species.

- Investigate opportunities to couple lake drawdown efforts for dam repair with aquatic plant community control efforts.

- Investigate options for future dredging of areas of accumulated sediment within Griffy Lake.

- Work with City of Bloomington Utilities and watershed property owners to maintain water quality within Griffy Lake at drinking water standard conditions. This includes limiting sediment and nutrient loading to the lake with the overall goal of maintaining or improving water quality within Griffy Lake.

- Continue exotic, invasive aquatic plant monitoring and control methods to limit the negative impacts of exotic species on Griffy Lake.

- Implement an education program to inform area residents about the issues associated with exotic, invasive aquatic species and their impact to Griffy Lake as a back up water supply.

- Encourage the DNR to complete a post-Brazilian elodea fish community assessment of Griffy Lake to determine the impact of treatment on the fish community and the impact that additional post-ramp re-opening fishing pressure may have on the fish community.

- Construct fishing access piers along Griffy Lake's shoreline and limit access to other areas of the shoreline to deter user access and limit shoreline erosion.

- Complete recommended and/or required water control structure/dam repairs as detailed by ms consultants, inc.

- Install a water level gauge and implement a water level monitoring program so that changes and water level can be tracked and a water level management program implemented.

Section 8
USER GROUP AND PROPERTY USE PROFILES

- Close the dog exercise area located within GLNP and open an official dog park within the Griffy Lake area but outside of Griffy Lake Nature Preserve. Once this move occurs, implement enforcement of current leash and swimming limitations within GLNP.

- A yearly adjustment in boat rental and launch fees is recommended to help defray lake maintenance costs. A periodic scan to assess other facility fees is recommended.

- In order to generate the most revenue possible, all boats should be in working order and properly maintained to be readily available for rental. Proper maintenance includes not only patching and replacing skid pads, etc. but also educating boathouse employees to properly care for equipment. Proper care includes carrying boats to the water instead of sliding them, logging damage and maintenance needs, etc. Regular renewal of equipment to satisfy visitor expectations is also recommended.

- Create self-generated funding for GLNP by dedicating revenues generated through programs, boat launches, and rentals to a non reverting fund.

- To actively increase attendance at GLNP programs, it would be advisable to provide a more open registration process. Advanced registration can sometimes be inconvenient in hectic daily lives where it is often difficult to plan ahead. Onsite registration before the activity begins and advanced online registration complemented by onsite registration at the GLNP boathouse handled by a boathouse employee would provide more opportunity for attendance at programs. These alternate registration processes also cater to more spontaneous reactions to more accessible program information as made available through signage and an information kiosk.

- Program posters and fliers should also be made available at the boathouse. A foldable sign at the entry of the parking lot comparable to display signs at state parks shall be used each day a program is taking place. The sign, as in state parks, should announce the event name, time and short description if possible.

- It is recommended that a kiosk of information be designed and installed at the boathouse. Ideally, the GLNP kiosk would be two-sided. The front is a map of the area highlighting trails. The back of the kiosk would display informational material in the form of posted announcements and provides informational handouts. This two-sided approach may deter vandals since the front appearance of the kiosk is quite simple.

- Pursue the formation of a Friends of Griffy group with the funding requirements and duties to be determined by individuals interested in joining said group.

Section 9
FACILITIES AND INFRASTRUCTURE ASSESSMENT

- Improve the parking area and boathouse safety and walk-ability by re-grading and re-landscaping the area to accommodate proper drainage.

- Although according to the observational data the boathouse parking lot is rarely used to capacity, the surface area of the parking lot should be kept reorganizing the number of spaces and use of space. The parking area will be made more efficient by organizing a separate parking area for vehicles with boat trailers and a maneuvering area for these vehicles (or traffic flow direction).

- The parking lot needs general, consistent maintenance for potholes and runoff water concerns. During wet weather, water runs down the parking lot towards the boathouse essentially flooding the ground between the boathouse and parking lot. Water runoff should be addressed by channeling water to avoid this highly used area.

- The dam parking area needs major improvement considering its heavy use such as an improved drainage system to insure the lot remains accessible after rain.

- Place large limestone blocks at the Lanam Road entrance to deter ORV access and adjacent to Headley Road to deter use of the pull out area for vehicle parking.

- Create and maintain trail connections at appropriate locations to connect the Griffy Lake Nature Preserve with the Indiana University Research and Teaching Preserve. A desire for these connections to be developed and maintained was expressed both in the User Survey and in a public meeting. There does not appear to be any reason why these trails cannot be connected allowing more public access to both trail systems.

- Establish a safe route for visitors arriving at GLNP on foot or bicycle.
    - Follow through with the construction of a boardwalk and accessible fishing pier along the South side of the Causeway as recommended in the 1984 Master Plan.
    - To better control incoming and outgoing traffic speed from the boathouse parking lot, a traffic calming device is recommended. The installation of speed bumps near the entrance of the gravel parking lot will cut down on vehicles speeding through the lot.
    - Significantly reduce speed approaching and across the causeway. The current speed is 25 mph. Recommend a reduced speed of X.
    - Open a dialogue to determine whether public transportation to GLNP is desired by the community and possible for the City to implement.

- Maintain a policy of staying informed about any progress made on Bloomington and Monroe County planned trail opportunities

- Ensure collaborative planning for alternative transportation connections by including provisions for infrastructure improvements to accommodate easy connections.

- Signage is inconsistent at GLNP. Signage should be consistent throughout the Nature Preserve for informational and directional signage as well as park boundary signage.

- Signage should be more prevalent at “intersections” with other official and unofficial trails. By better defining the main trail through signage and physical barrier techniques (*ie*. fallen trees clearly designating the main path, fallen trees and brush blocking shoot off paths, etc.) users will be less likely to take the side paths. Messages of “Please stay on the trail” or “Trail at rest” at some of these key intersections may also alleviate the problem of many shoot off paths.
- Also, adequate signage will increase visitor satisfaction. Inadequate signage is cited as one of the biggest problems and many comments about recommendations for the future of Griffy Lake Nature Preserve request more signage. Visitors sometimes do not take full advantage of the Nature Preserve simply because they do not have enough information about the trails (length, difficulty, average completion time, etc.) and because the trails lack directional signage.
- There are no signs providing direction, information or rules and regulations for the GLNP or the dog use area. Install signage to provide this information.
- On the dam side of the North Shore trail, exposed jagged concrete is found at the base of the stairs leading from the creek to the trail. Improved stairway access is essential at this location because of the sheer numbers of people using this trail.
- To decrease ORV use in the GLNP, it is recommended that as part of a new, comprehensive signage effort, signage be posted at different access points indicating that Griffy is open to foot traffic only as per Title 11 of the Municipal Code.

- The Meadowwood user group noted some maintenance issues:
  - Bridge near the dam by the pond (if on Griffy property) needs repair.
  - Yellow trail needs more maintenance.
  - Trails are very narrow on some ridges and slopes.
  - Handrails should be installed in some places.
  - Paintball teams were noted as a safety concern. This activity should be discouraged in the future.
  - Users also deplore the lack of signage. Signage should be installed to provide information for the Meadowood user group and other users.

- Severe erosion is found along the North Shore trail:
  - The trail is severely eroded to the water line near the dam exposing tree roots and rocks,
  - The trail cuts directly up some ridges making it unstable and difficult to climb
  - Near the Hinkle Road trailhead, the trail has several heavily used “fishing spots”.

- The Hiking Trail has a section of extremely steep grade cutting directly up the hill. Water bars are installed but cannot direct water effectively on such a steep grade. This area should be addressed through vegetation planting to reduce soil erosion and maintain the trail.

- Also, many “visitor-made” secondary trails shoot off of the main trails. These trails are mainly dead ends and should be blocked to prevent user access and encourage individuals to remain on the established trail.

- Current trails should be maintained in order to meet visitor expectations, basic safety standards, and erosion control guidelines. The trail system should generally be

improved and maintained by meeting nationally recognized trail building, design, and maintenance standards such as those promoted by National Recreation Trail Program. Some standards should be tailored to fit the specific needs of GLNP as related to its particular soil type, controlling invasive species, etc.

- North Shore Trail is steep in sections; in these areas stone should be used to build more permanent retaining walls.

- Construction of a fishing pier is recommended off of the Hinkle side of the North Shore trail to attract fisherman to the pier and away from the heavily eroded areas along the North shore trail.

Group 2: Adjoining property influence and land acquisition and protection

Section 4
ADJOINING PROPERTY INFLUENCES

- Address areas identified as problem sites during the watershed tour. Complete a feasibility project to identify landowners that are willing to implement projects, determine design details, and develop cost estimates for implementation.

- Coordinate IURTP-sponsored nature walks with city efforts and advertising to reach a broader audience.

- Enact cooperation between the IURTP and GLNP to address research issues of concern to both parties.
    - Indiana University students can work on questions specific to the GLNP.
    - A joint internship program could provide research and learning opportunities for Indiana University, Ivy Tech, and high school students.
    - A small grants program could provide financial support for these internships and research projects.

- Trails within the IURTP and GLNP currently do not connect. Before any connection occurs, coordination between IURTP and BPR is necessary to determine the level of cooperation and the correct locations, if any, for trail connections.
    - By constructing connecting trails, a larger network of hiking trails would be possible along the southern shoreline of Griffy Lake.
    - IURTP is constructing a pavilion shelter near Griffy Creek. A footbridge across Griffy Creek near this point would provide important connectivity that could benefit both properties.

- Another area of potential cooperation is in the preparation of a coordinated map of both properties. Both the City and IURTP utilize Geographic Information Systems that could be merged and/or shared to facilitate this effort.

Section 5
ADJACENT LAND USE

- Limit development within sensitive habitat areas or those where slopes exceed 30% or are classified as floodplain forest, upland forest, or wetland.

- When any adjacent properties are listed for sale, the Parks and Recreation Department must make a determination on a case by case basis about whether the property is critical enough to purchase and add to the nature preserve.

- Bloomington Parks and Recreation work with the IDNR Division of Nature Preserves to expand the portion of the Griffy Lake Nature Preserve that is protected by being state-dedicated nature preserve.

APPENDIX M:

PUBLIC MEETINGS/OPEN HOUSES

GRIFFY LAKE MASTER PLAN 2008
MONROE COUNTY, INDIANA

Griffy Lake Nature Preserve Master Plan
Public Meeting

June 28, 2007, 5-7 pm, Council Chambers, Showers Building

Attendees: 15 plus 5 speakers/organizers

Questions raised since the 1984 study:

- Fish consumption advisory: unknown whether mercury was a problem in 1984 or the assessment had not been completed
- Development in the watershed which led to increased sedimentation
- Boat and canoe rental/boat access issues
- Nature activities implemented (small trail and facility)
- Use of the property has grown: no dog park in 1984
- Brazilian elodea issue: latest evidence suggests complete eradication
- IURTP trails: not present in 1984

Questions from meeting:

- Griffy Nature Preserve appears to be a unique area in Monroe County an possibly state wide. Are there other areas that are similar? None could be described that have both the natural area and lake but with high proximity to an urban area.
- Use of Griffy for environmental education: presently, the nature preserve is heavily used for environmental education between the university, school groups, and the public. Canoeing, nature trails, etc are always in high demand. Steve expects even greater growth as the Monroe County School Corp. incorporates more environmental education opportunities. There is room for growth and likely a future need for a check or balance on educational use.
- Treatment facility options: internally, this building has been discussed for future use as a nature center; however, it seldom works out that retrofitting a facility is successful. Long-term use is up in the air, but includes re-use as a nature center or being torn down. It is expensive to maintain a building that is not currently in use.

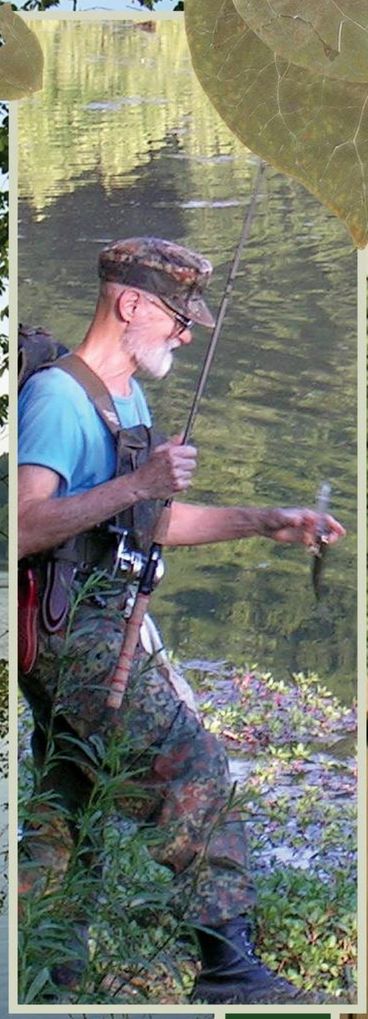
Comments and concerns from comment forms and maps from meeting:

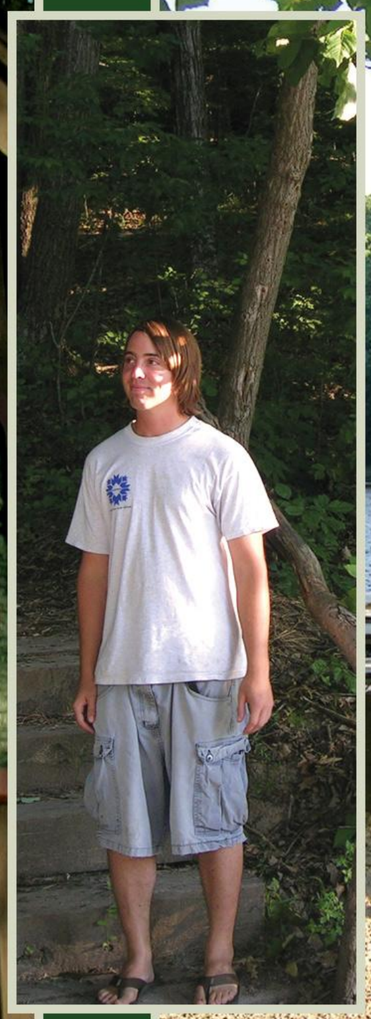
- Trail maps are unreadable: provide higher quality trail maps including information about IU trails and Griffy trails showing connection points
- Make maps more readily available
- Make official connections between Griffy and IU trail systems, provide connector signage on trails, indicate connectors on website
- North shoreline erosion from dogs: put in secure fencing to close off dog park from North shore trail
- Off leash dogs in nature preserve: enforce leash law, security officers should address patrons
  Increase education about leash law, provide corresponding signage.
- Causeway dangers: parking on road, fishing from road, reduce and enforce speed limits
- South side: chemical sinks

Griffy Lake Nature Preserve Management Plan

Dog and Human Recreation Issues

- Heavy use of current dog play area does not allow the grass to recover
- Dog play area is too small
- Dog owners take unleashed dogs on hiking trails
  - This violates leash law regulations
  - Unleashed dogs on trails frighten hikers, especially children
- Dogs and owners swim off northwest shore near dam
- Heavy shoreline erosion occurs due to high activity





Griffy Lake Nature Preserve
Management Plan

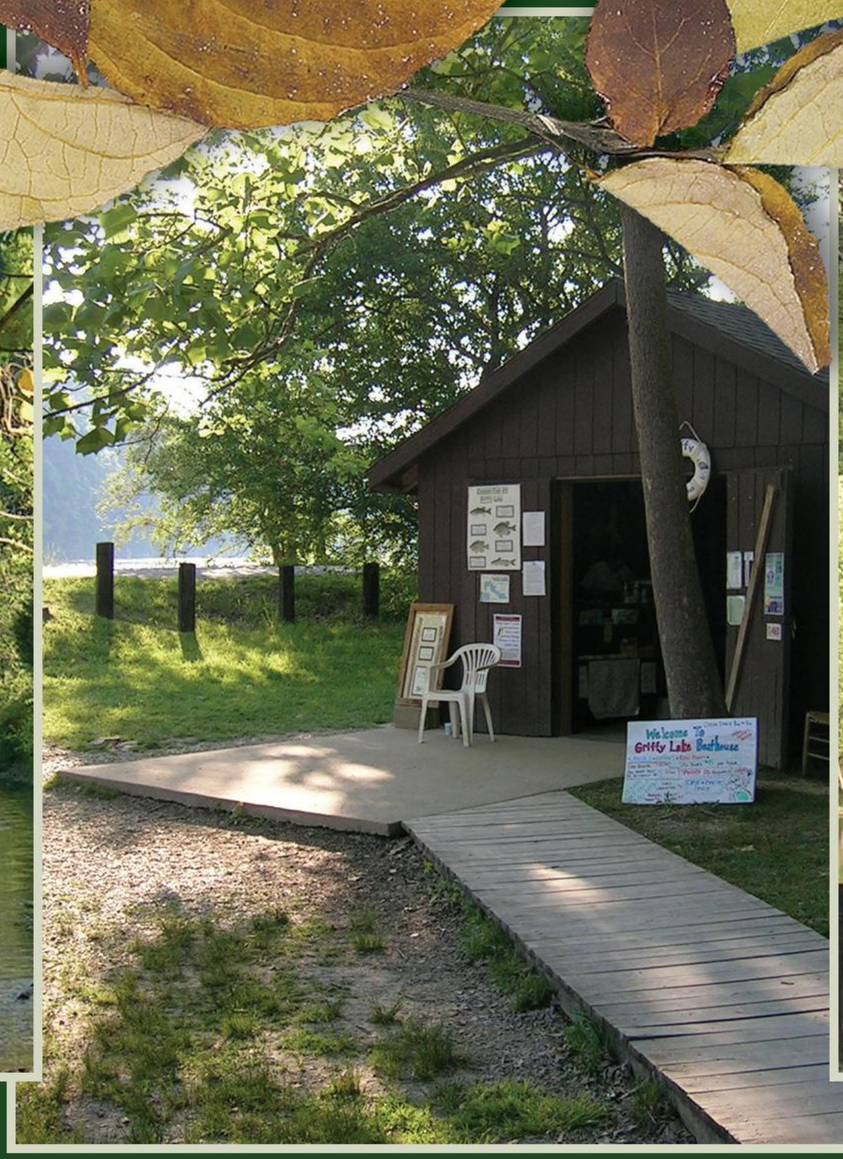
Watershed Management

Effects of Changing Uses on Adjacent Property

- More residential development increases automobile and foot traffic through the Griffy Lake property
- Runoff from construction sites and residential lawns contributes to Griffy Lake eutrophication

Land Acquisition Zones:

- A variety of current land uses surrounds the Griffy property
- Many of these parcels contain woodlands and relatively undisturbed natural areas

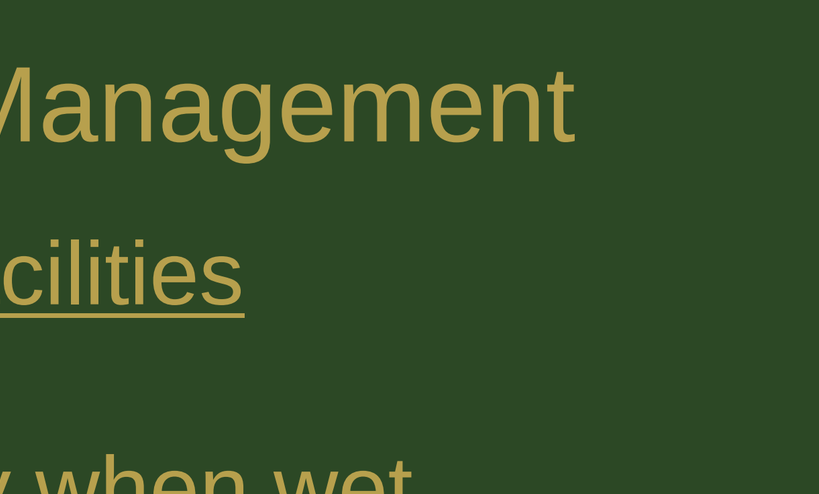


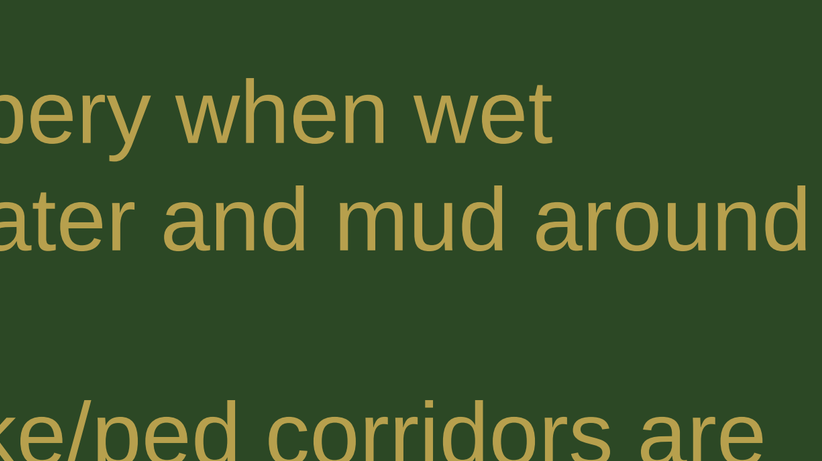
Griffy Lake Nature Preserve
Management Plan

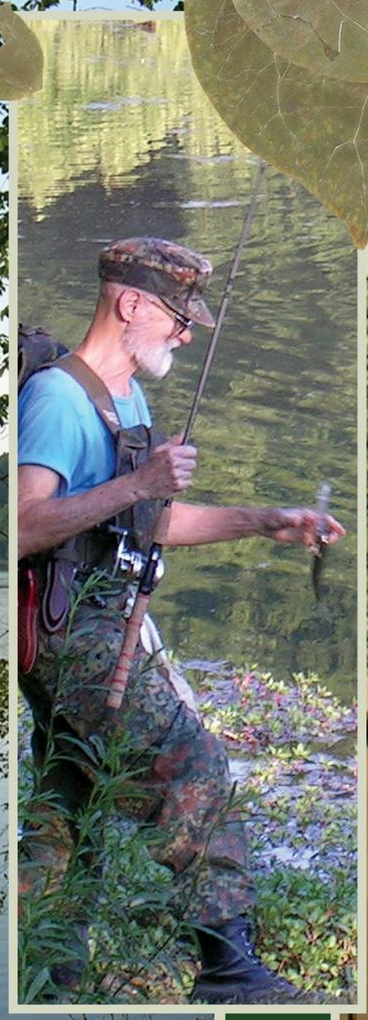
Facilities and Infrastructure Management

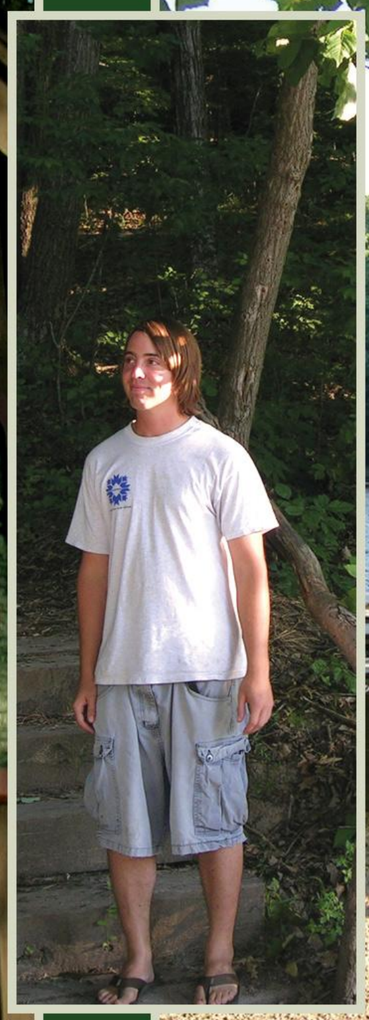
Bicycle and Pedestrian Facilities

- Boardwalks at boathouse are slippery when wet
- Poor drainage causes standing water and mud around the boathouse
- Connections to city and county bike/ped corridors are planned
- Connections between Griffy and IURTP (Indiana University Research and Teaching Preserve) trails are not obvious
- Approximately 150 cyclists cross the causeway on a nice day









Griffy Lake Nature Preserve
Management Plan
Facilities and Infrastructure Management

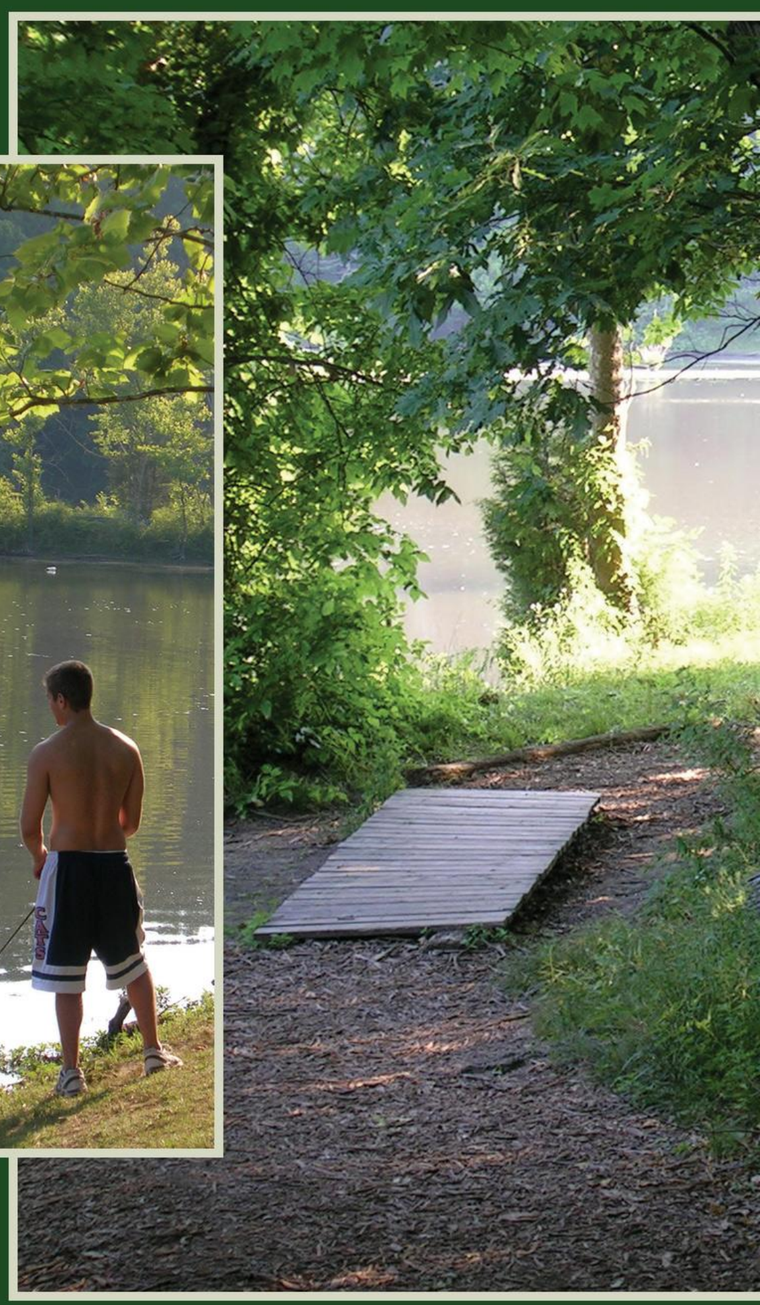
<u>Trail System</u>

- Increased use and trail design issues are contributing to trail erosion and degradation

- Off-leash dogs are causing severe erosion and creating secondary trails near dog play area

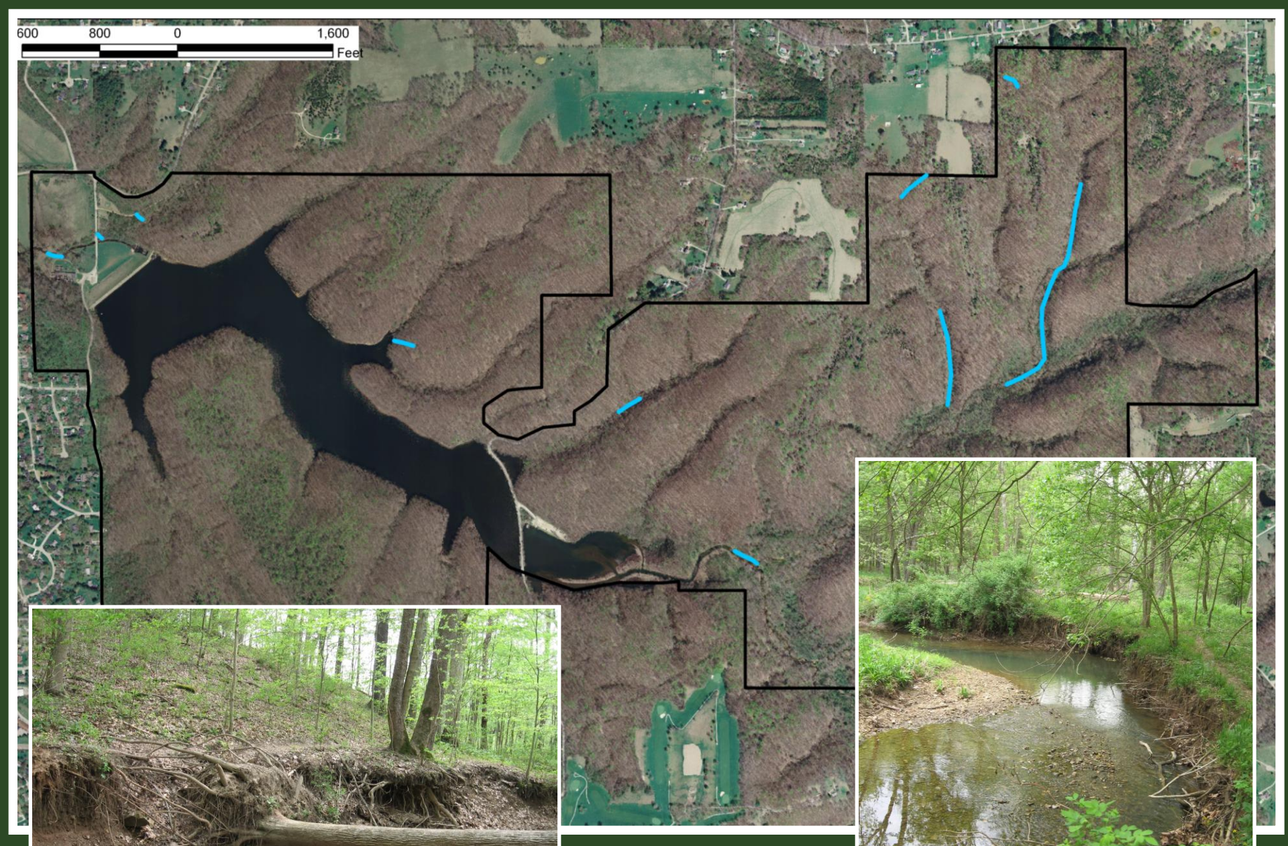
- 37% of Griffy users feel additional signs are needed at Griffy, according to the User Survey

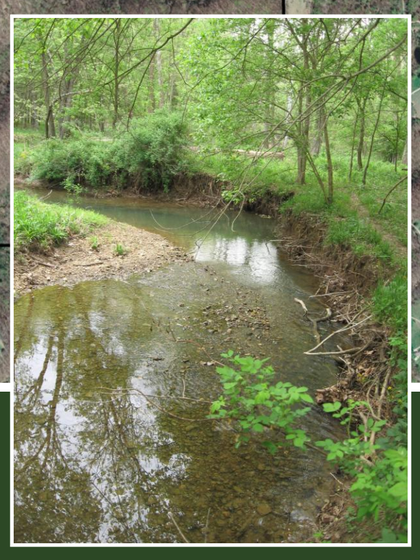
- User Survey responses indicate a desire for longer trails



Griffy Lake Nature Preserve

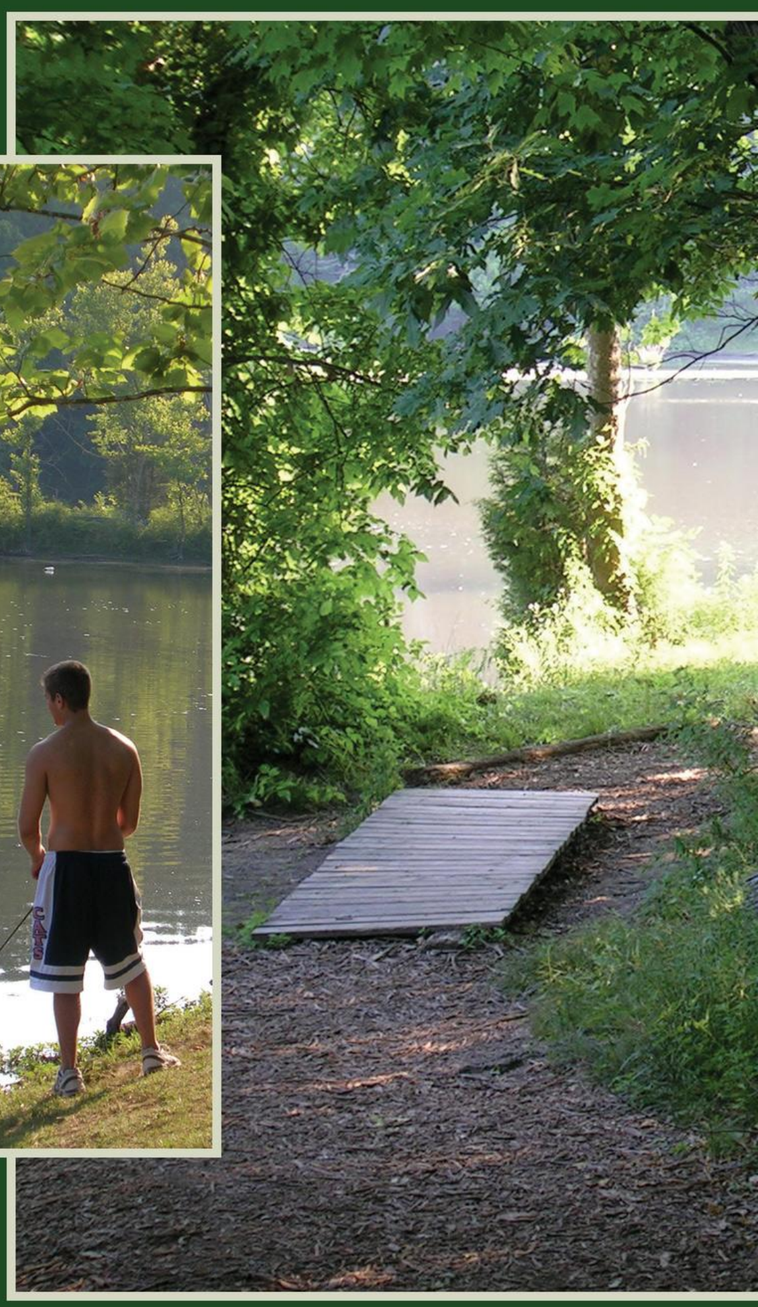
Management Plan





Shoreline and Property-wide Erosion

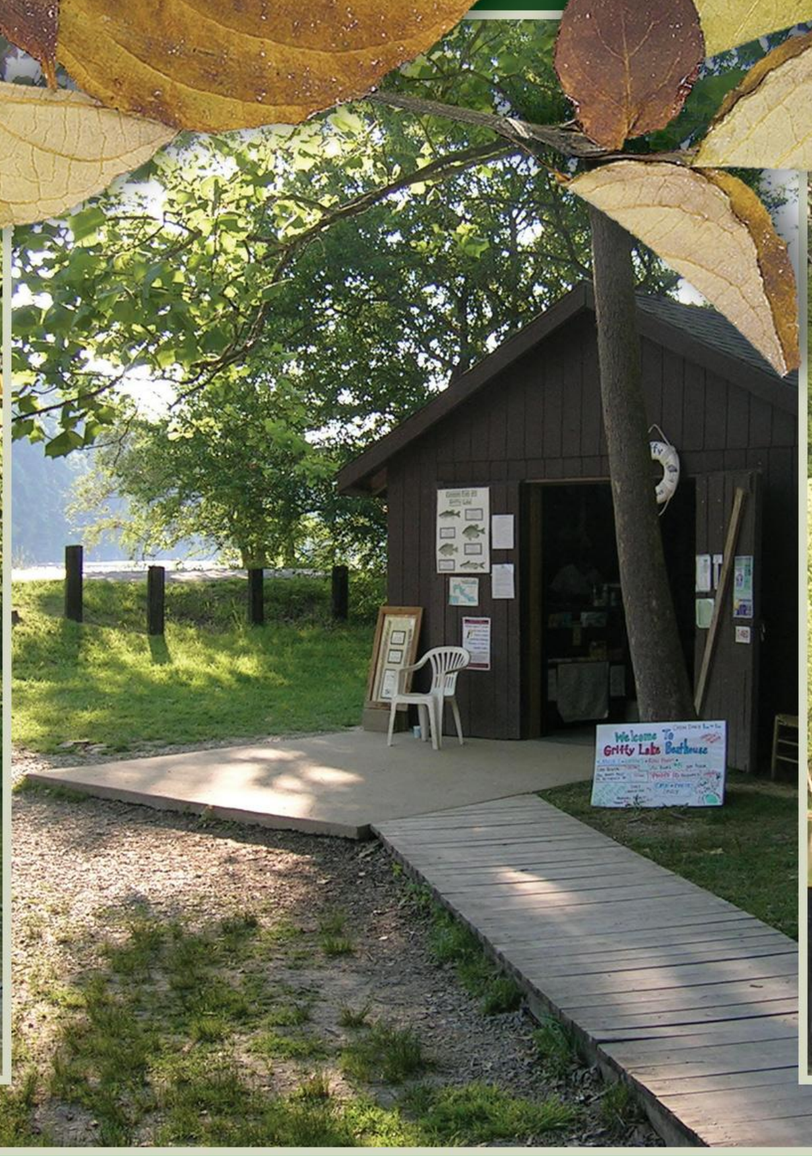
- Moderate to severe erosion occurs along 25% of the shoreline
- Most erosion is due to thin soils, steep slopes, and high use
- Moderate erosion occurs along causeway
- Severe erosion occurs at dog play area access point
- Moderate to severe erosion occurs along Griffy Creek and its tributaries



Griffy Lake Nature Preserve Management Plan

Aquatic Plant Management

- Native aquatic plants provide many important positive attributes to lakes – habitat, food, sediment stabilization, etc.
- In recent years, Griffy Lake's plant community has been overrun by non-native invasive plants such as Eurasian watermilfoil, curlyleaf pondweed, and Brazilian elodea
- Invasive plants crowd out native plants and interfere with boating and fishing
- Brazilian elodea was likely introduced to Griffy Lake from discarded aquarium contents
- Control of Brazilian elodea required whole-lake herbicide treatments with fluridone costing over $100,000
- As predicted, these treatments killed most of Griffy Lake's native plants. To date Chara, Primrose, Coontail have re-emerged



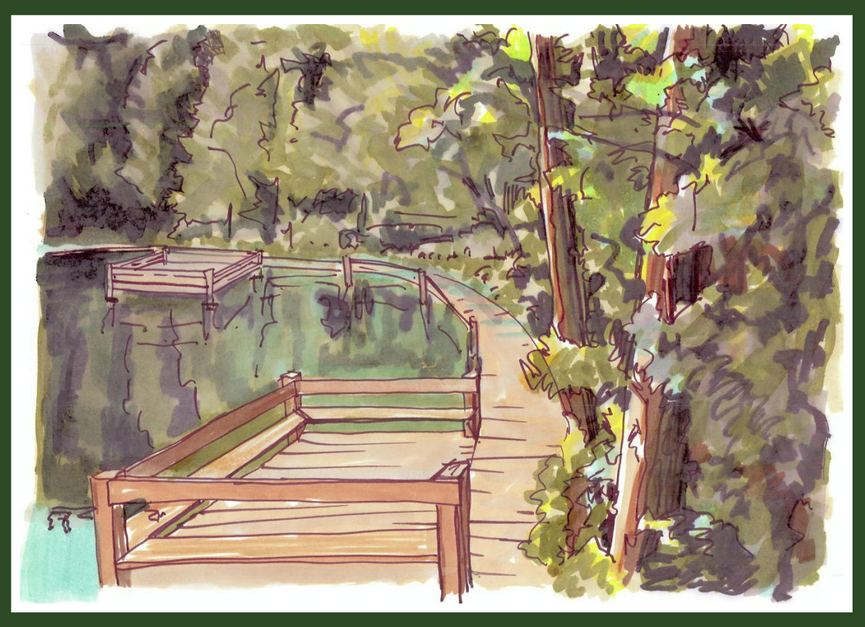
Griffy Lake Nature Preserve
Management Plan

Fishing Access

- Currently, only 22 boats total (rental or private) are allowed on Griffy Lake at one time to prevent crowding
- Only electric motors are allowed on Griffy Lake
- The Griffy Lake fishery is managed by the Indiana Department of Natural Resources
- Fish habitat is limited due to the steep slopes
- Steep shoreline slopes limit safe bank fishing
- No handicapped accessible fishing access is present

Structure attracts fish

Conceptual fishing access along north shore



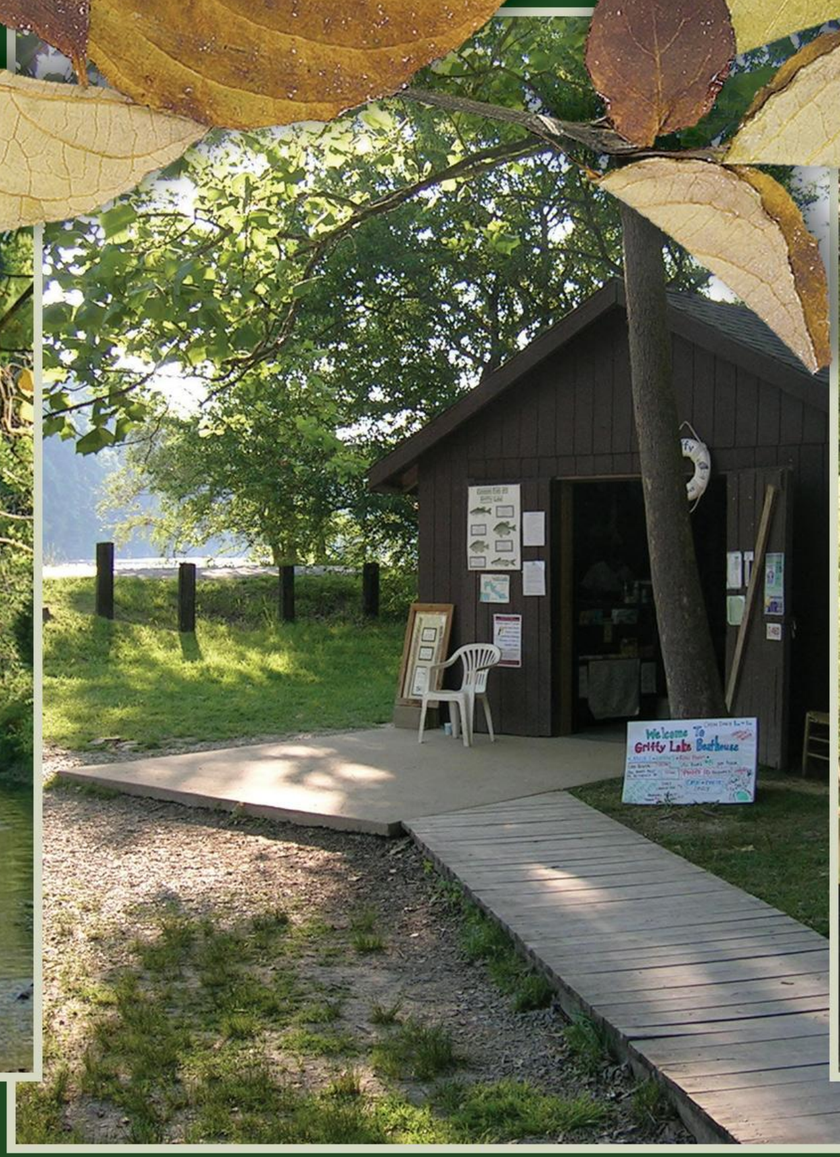
Conceptual handicap-accessible boardwalk along causeway

Griffy Lake Nature Preserve
Management Plan

Facilities and Infrastructure Management

Parking

- The boathouse parking lot rarely reaches capacity
- Parked boat trailers extend to the middle of the lot
- Vehicles frequently speed in the boathouse lot
- Roadside pullouts on Headley are dangerous to motorists and cyclists
- Dam parking area floods after heavy rainfall

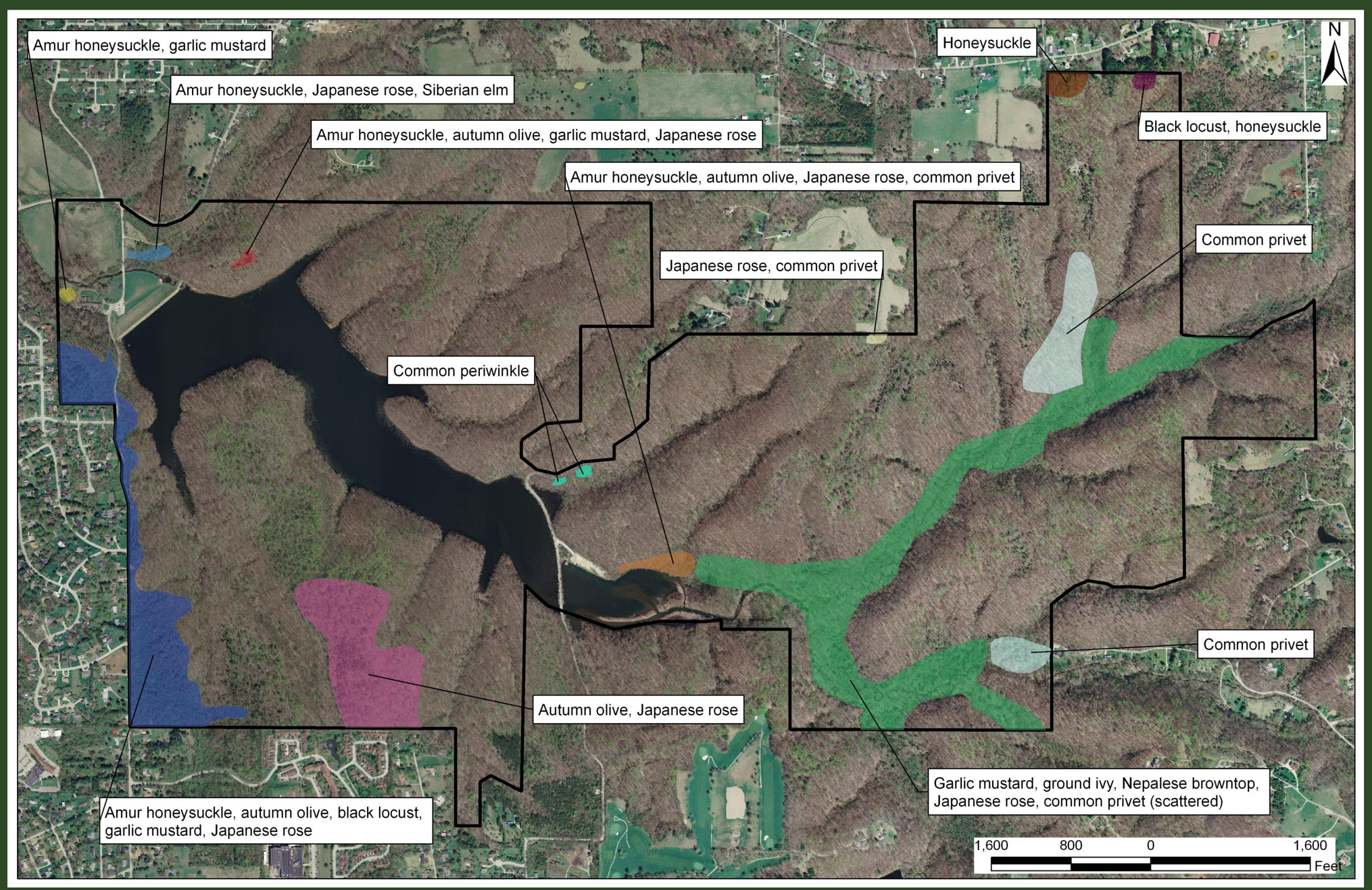


Griffy Lake Nature Preserve

Management Plan

Natural Resource Management

- Invasive plant species are reducing the value of wildlife habitat
- Invasive plant species are negatively affecting native plant communities
- Deer population is negatively impacting native plant community



Griffy Lake Nature Preserve
Management Plan

Comment Form

Open House/ March 3, 2008

Dog and Human Recreation Recommendations

Please fill in the comment sheet by checking **Agree** or **Disagree** for each recommendation and providing suggestions in the spaces below. We value your suggestions and comments.

1. Establish an official dog park at a Parks and Recreation property.

❑ Agree ❑ Disagree

Comments/ Suggestions:

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2. Close current dog play area adjacent to Griffy Lake Nature Preserve and restore dog play area to natural vegetation.

❑ Agree ❑ Disagree

Comments/ Suggestions:

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3. Increase enforcement of leash law in Griffy Lake Nature Preserve.

❑ Agree ❑ Disagree

Comments/ Suggestions:

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4. Exclude dogs from Griffy Lake Nature Preserve.

❑ Agree ❑ Disagree

Comments/ Suggestions:

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5. Post signage stating city leash rules and Griffy Lake swimming restrictions.

❑ Agree ❑ Disagree

Comments/ Suggestions:

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Griffy Lake Nature Preserve
Management Plan

Comment Form

Open House/ March 3, 2008

Watershed Management

Please fill in the comment sheet by checking **Agree** or **Disagree** for each recommendation and providing suggestions in the spaces below. We value your suggestions and comments.

1. Work closely with the city and county planning departments to consider Griffy management needs any time there is an application for a land use variance or a transfer of ownership of an adjacent property.

❑ Agree ❑ Disagree

Comments/ Suggestions:

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2. Whenever possible, acquire parcels, or portions of parcels adjacent to the Griffy Lake Nature Preserve that are wooded, undeveloped, and in a natural state requiring little to no additional active management.

❑ Agree ❑ Disagree

Comments/ Suggestions:

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3. Work with adjacent landowners to reduce soil erosion and pollutant input from agricultural and urban practices.

❑ Agree ❑ Disagree

Comments/ Suggestions:

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Griffy Lake Nature Preserve
Management Plan

Comment Form

Open House/ March 3, 2008

Bicycle and Pedestrian Facilities Recommendations

Please fill in the comment sheet by checking **Agree** or **Disagree** for each recommendation and providing suggestions in the spaces below. We value your suggestions and comments.

1. Landscape and re-grade the area around the boathouse and resurface boardwalks to address drainage and safety concerns.

❑ Agree ❑ Disagree

Comments/ Suggestions:

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2. Designate and indicate official trail connections with Indiana University Research and Teaching Preserve trails.

❑ Agree ❑ Disagree

Comments/ Suggestions:

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3. Collaborate with Bloomington and Monroe County trail planners to develop walk/ride alternatives for Griffy Lake Nature Preserve access.

❑ Agree ❑ Disagree

Comments/ Suggestions:

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4. Add traffic calming mechanism and pedestrian walkways for safety.

❑ Agree ❑ Disagree

Comments/ Suggestions:

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Griffy Lake Nature Preserve
Management Plan

Comment Form

Open House/ March 3, 2008

Trail System Recommendations

Please fill in the comment sheet by checking **Agree** or **Disagree** for each recommendation and providing suggestions in the spaces below. We value your suggestions and comments.

1. Maintain and re-design current trails to universally recognized trail building and design standards.

❑ Agree ❑ Disagree

Comments/ Suggestions:

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2. Adopt a temporary no dogs policy on the North Shore Trail to allow vegetation recovery.

❑ Agree ❑ Disagree

Comments/ Suggestions:

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_____

3. Maintain trails at a higher standard near Meadowood Retirement Community to better serve this specific user group.

❑ Agree ❑ Disagree

Comments/ Suggestions:

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4. Install adequate directional and informational signage to provide clear directions on trails.

❑ Agree ❑ Disagree

Comments/ Suggestions:

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5. Develop longer trails such as a loop trail around the entire property and around the lake.

❑ Agree ❑ Disagree

Comments/ Suggestions:

_____

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Griffy Lake Nature Preserve
Management Plan

Comment Form

Open House/ March 3, 2008

Shoreline and Property-Wide Erosion Recommendations

Please fill in the comment sheet by checking **Agree** or **Disagree** for each recommendation and providing suggestions in the spaces below. We value your suggestions and comments.

1. Restrict access to areas of the shoreline rated as severely eroding (>100 feet of erosion along shoreline measuring >5 feet in height).

❑ Agree ❑ Disagree

Comments/ Suggestions:

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_____

2. Stabilize the shoreline using riprap along severely eroding areas.

❑ Agree ❑ Disagree

Comments/ Suggestions:

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3. Stabilize the shoreline using existing brush and logs along moderately eroding areas.

❑ Agree ❑ Disagree

Comments/ Suggestions:

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4. Implement streambed and bank stabilization measures along eroding streams using natural techniques and rock grade controls to raise the elevation of the streambed.

❑ Agree ❑ Disagree

Comments/ Suggestions:

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5. Control the flow of water onto the preserve through the use of stormwater control measures (rain gardens, wetlands, etc.) and slow the flow of water on-site using step pools.

❑ Agree ❑ Disagree

Comments/ Suggestions:

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Griffy Lake Nature Preserve
Management Plan

Comment Form

Open House/ March 3, 2008

Aquatic Plant Management Recommendations

Please fill in the comment sheet by checking **Agree** or **Disagree** for each recommendation and providing suggestions in the spaces below. We value your suggestions and comments.

1. Use spot herbicide treatments to control returning non-native aquatic plants.

❑ Agree ❑ Disagree

Comments/ Suggestions:

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2. Use alternative, non-herbicide treatments such as winter water level drawdown, when possible, to freeze out invasive plant species, even if this technique will only manage, not eradicate the invasives.

❑ Agree ❑ Disagree

Comments/ Suggestions:

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3. Plant native rooted plants in and along Griffy Lake's shoreline to compete with the invasives and to provide habitat for fish and aquatic organisms.

❑ Agree ❑ Disagree

Comments/ Suggestions:

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_____

4. Increase the Parks Department budget to pay for aquatic plant management at Griffy Lake.

❑ Agree ❑ Disagree

Comments/ Suggestions:

_____

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Griffy Lake Nature Preserve
Management Plan

Comment Form

Open House/ March 3, 2008

Fishing Access Recommendations

Please fill in the comment sheet by checking **Agree** or **Disagree** for each recommendation and providing suggestions in the spaces below. We value your suggestions and comments.

1. Continue to limit the number of boats on Griffy Lake to maintain the tranquil setting and to prevent overcrowding.

❑ Agree ❑ Disagree

Comments/ Suggestions:

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_____

2. Construct visually pleasant and environmentally stable piers (see conceptual drawing on poster) at several locations along the shoreline to allow safe access to the water and to prevent shoreline erosion.

❑ Agree ❑ Disagree

Comments/ Suggestions:

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_____

3. Construct a boardwalk along Hinkle Road that would provide handicapped-accessible fishing and a safe walkway from the parking lot to the north shore trailhead (see conceptual drawing).

❑ Agree ❑ Disagree

Comments/ Suggestions:

_____

_____

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4. Install fish structures, such as wooden cribs, under water along the shoreline to provide habitat and to attract more fish.

❑ Agree ❑ Disagree

Comments/ Suggestions:

_____

_____

Griffy Lake Nature Preserve
Management Plan

Comment Form

Open House/ March 3, 2008

Parking Recommendations

Please fill in the comment sheet by checking **Agree** or **Disagree** for each recommendation and providing suggestions in the spaces below. We value your suggestions and comments.

1. Improve traffic flow in the boathouse parking lot.

❑ Agree ❑ Disagree

Comments/ Suggestions:

_____

_____

2. Install speed bumps near the entrance of the gravel parking lot to cut down on vehicles speeding through the lot.

❑ Agree ❑ Disagree

Comments/ Suggestions:

_____

_____

3. Limit Griffy Lake Nature Preserve parking access on Headley Road by installing guard rails or other barriers.

❑ Agree ❑ Disagree

Comments/ Suggestions:

_____

_____

4. Improve drainage system to insure the dam parking lot remains accessible after rain.

❑ Agree ❑ Disagree

Comments/ Suggestions:

_____

_____

5. Provide informational, directional, and regulatory signage at the dam parking area.

❑ Agree ❑ Disagree

Comments/ Suggestions:

_____

_____

Griffy Lake Nature Preserve
Management Plan

Comment Form

Open House/ March 3, 2008

Natural Resource Management

Please fill in the comment sheet by checking **Agree** or **Disagree** for each recommendation and providing suggestions in the spaces below. We value your suggestions and comments.

1. Begin control of invasive terrestrial plant species throughout the Nature Preserve using the most effective means (typically includes the use of herbicides) possible.

❑ Agree ❑ Disagree

Comments/ Suggestions:

_____

_____

2. Organize a volunteer corps to implement exotic and/or invasive species control measures for those species best suited to hand removal.

❑ Agree ❑ Disagree

Comments/ Suggestions:

_____

_____

3. Use controlled burns to protect and enhance the early successional communities present at the Nature Preserve.

❑ Agree ❑ Disagree

Comments/ Suggestions:

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_____

4. Implement deer population controls to limit the negative impacts to native plant and animal communities within the Nature Preserve.

❑ Agree ❑ Disagree

Comments/ Suggestions:

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5. Implement Canada goose control.

❑ Agree ❑ Disagree

Comments/ Suggestions:

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Griffy Lake Open House Comments Summary
March 5, 2008

General Comments

- Consider facility for small boat (canoe/kayak) slip storage. Rental as necessary.
- A considerable amount of activity that occurs at GLNP has negative implications. If additional encouragement of use is to occur, I strongly recommend that it not happen unless additional oversight and surveillance by authorized personnel also occurs.
- Need signs to alert students to not dump fish tanks in lake when moving
- Prominently post no-dumping signs informing of dangers.
- Establish steep fines even it relatively unenforced in the past.
- Land acquisition is more important than structure, piers, trails, etc.
- Create city bus line to Griffy for people to ride to the preserve.
- Filtration plant should be turned into a historic center and public meeting place.
- Silt pond should be installed where Griffy Creek enters Griffy Lake
- Boat trailer washer installed
- Improve trails to keep people on them
- Copies of plan at boathouse and to individuals
- Port-a-potty for after hours anglers.
- Fish stocking/survey needed; prevent shad
- Aquatic re-vegetation of coontail necessary.
- No parking in front of the boat ramp.
- Fishing limits, daily limits, fish specific limits should be initiated.

Dog - Human

Increase leash law enforcement

Responses 13 (76%) Agree; 4 (24%) Disagree

- Anyone afraid of meeting someone's family dog should stay home and watch TV
- Don't know-it would be an additional expense
- If possible within fiscal limitations
- Don't know-it would be an additional expense
- Unleashed dogs can be frightening to other dogs and small children

Exclude dogs

Responses 6 (38%) Agree; 10 (63%) Disagree

- Ludicrous-public outcry would occur and I'd be part of it
- no clear demarcation of nature preserve area
- but allow in dog park area
- maybe in certain parts
- as long as dogs are on leash I think it would be allowable to have them hiking with owners

Post signage re: leash law

Responses 16 (100%) Agree; 0 (0%) Disagree

- people and dogs will swim and run where they want regardless of signs
- will not stop activities
- at least tell owners to pick up dog waste

Watershed

Land use variance/ownership transfer

Responses 14 (100%) Agree; 0 (0%) Disagree

- zone Bethel Lane to protect GLNP
- The city missed an opportunity to get 160-180 acres just north of the current preserve when Charlie Gaston offered to give his dairy farm to the reserve if it could help leverage the acquisition of land that became Gramercy Park.
- These considerations must occur at ordinance approval long before specific proposals or transfers
- Keep impervious cover limited in watershed
- This is land that we can never get back. Development is essentially irrevocable. We have to protect this resource.
- We are losing green space quickly. We need to acquire more land ASAP.
- Too much soil erosion is washing into Griffy from development such as along East 10th street.

Acquire adjacent parcels

Responses 15 (94%) Agree; 1 (6%) Disagree

- yes, would be great
- strongly agree-once it is built on it's too late!
- all it takes is money
- conservation easements

Reduce soil erosion and loading

Responses 16 (100%) Agree; 0 (0%) Disagree

- encourage young farmers to work close to city-reduce travel of own food
- great as well
- biggest problem is enforcement of existing drainage requirements and restrictions.
- environmental education is also important
- extremely important. I would imagine this is where most of the pollution comes from
- workshops and other information for folks

Bike – Pedestrian

Landscape/re-grade boathouse area

Responses 12 (92%) Agree; 1 (8%) Disagree

- low priority
- current facilities are sufficient
- native landscaping
- pervious pavement if possible
- do away with grass area and replace with native plants; cover-over large portion of very large, under-utilized parking lot
- Re-landscaping is not necessary; re-grading and re-surfacing for safety is important
- slippery boardwalks
- consider landscaping with native plants to educate visitors

Designate IURTP trail connections
Responses 12 (86%) Agree; 2 (14%) Disagree

- high priority
- strongly agree
- if it is not done an unofficial connection will arise
- IU has different preference
- IURTP is for research not recreation
- include environmental education signage

Collaborate with Monroe County and Bloomington
Responses 14 (88%) Agree; 2 (13%) Disagree

- also high priority
- yes, so people who cannot drive can still access property
- being able to walk/ride to Griffy would increase use and make a day of it
- more greenways to improve and encourage non-vehicular transportation
- no parking or vehicle access adjacent to preserve in private areas/roads

Install traffic calming/pedestrian access along Headley Road
Responses 17 (89%) Agree; 2 (11%) Disagree

- Difficult. The road is narrow. Some mirrors at blind corners would help.
- I'd have to see what it looked like.
- traffic calming on Hinkle just north of lake is necessary
- pedestrian walkway at a minimum around sharp curves
- limit encouragement of large population participation
- Anything to promote bike/pedestrian access. Do NOT allow bikes on trails.
- Pretty much anywhere please!

Trail
Maintain trails to trail standard
Responses 9 (75%) Agree; 3 (25%) Disagree

- good investment
- If the standard is like the southside IU trails, then no, as they are way over done with too much paint on the trees.
- trails in general are in poor condition and need better surface

Temporarily no dogs on North trail
Responses 9 (82%) Agree; 2 (18%) Disagree

- I have a dog and would not mind limits
- is an alternate to enforce the leash law?
- enforced how?
- please stop blaming dogs. People cause most of the problems at Griffy

Maintain trails near Meadowood to serve user group
Responses 9 (90%) Agree; 1 (10%) Disagree

- I often walk those trails and never see people from Meadowood. They are easy trails to walk.
- those are nice trails
- who's responsible to maintain standards?

- that would be nice
- if they want it

Install better trail signage
Responses 9 (69%) Agree; 4 (31%) Disagree
- this is needed
- when needed, I guess yes. But really it isn't necessary to sign everything
- not too much
- too much signage detracts from the visual aesthetics-achieve a balance
- don't overdo it
- Keep signs as unobtrusive as possible

Develop longer trails
Responses 11 (73%) Agree; 4 (27%) Disagree
- Strongly disagree with a lake loop trail. This would degrade habitat for shoreline biota.
- if possible
- if it is not too hard to maintain it would be nice
- very good idea
- loop trails are great
- YES! This would be great but please pay attention to sensitive, biodiverse areas so as to limit damage through introduction of biological polluting seeds stuck to hiking boots.
- This would benefit many users. Strongly support this idea!
- We love to hike around the entire lake!

Shoreline
Restrict access at severely eroding areas
Responses 13 (100%) Agree; 0 (0%) Disagree
- restrict access by dogs through
- not enforceable
- Availability for public use is important. The long term viability of the resource should have equal/greater priority.

Stabilize severely eroding areas
Responses 9 (75%) Agree; 3 (25%) Disagree
- too vague
- if effective
- effective doesn't equal long-term solution
- only if this is a native solution-riprap is ugly and concrete is not an option
- with what? Concrete walls? What are the options?

Stabilize moderately eroding areas
Responses 12 (86%) Agree; 2 (14%) Disagree

Stabilize streams
Responses 8 (80%) Agree; 2 (20%) Disagree

- rock grade controls are very ugly
- if that works
- yes please
- Griffy Creek has been wandering for 100s of years, why change that now?

Control watershed inputs
Responses 11 (100%) Agree; 0 (0%) Disagree

- strongly agree
- very good; high priority
- don't know
- grass swales and rain gardens to lessen flows are great
- sounds nice but would be very costly
- not sure

Aquatic Plants
Spot treat with herbicides
Responses 4 (40%) Agree; 6 (60%) Disagree

- strongly disagree. No herbicides should contaminate Griffy. Find another way
- I'm very concerned with our reliance on herbicides/pesticides to remedy what humans created. Let's use our creative currency to develop safe treatments.
- Effective
- So long as the herbicide is non-toxic to biota
- consult with biologists at IU before getting into herbicides
- sterile grass carp should be used instead
- dredging and removing invasive [sic] species are better

Use non-herbicide methods
Responses 12 (100%) Agree; 0 (0%) Disagree

- strongly agree
- Both the first and this one together would be beneficial.
- take out the dam, dredge the lake and install a higher dam

Plant native vegetation along shoreline
Responses 13 (93%) Agree; 1 (7%) Disagree

- Make sure to use erosion blankets when necessary. Must be properly installed this time.
- yes, native vegetation would help control geese too
- Only if plants were originally there after filling the lake.
- educate visitors about native plants

Increase BPR budget for aquatic plant control
Responses 10 (91%) Agree; 1 (9%) Disagree

- it would be better to slash the budget as their management damages area.
- I'm not an expert on the technologies, but this is clearly under the scope and responsibility of the parks department.

- don't know
- Steady funding is a good idea but this should not be an opportunity to use herbicides because you now have the funding.
- I would prefer to see no herbicides/pesticides.

Fishing Access

Limit number of boats

Responses 13 (87%) Agree; 2 (13%) Disagree

- I've been turned away and I canoe there often
- I'd like to see a higher limit-30-40 boats
- Limit boats to the rental fleet only
- Absolutely
- No trailer boats. I've seen pontoon boats and bass boats. These add to the danger of new invasive plants.
- Limit the cost of boat rental to $1 per hour. Griffy is the only place where the poorer people have access to fishing and boating site near Bloomington.
- keep gasoline out
- maybe a few more-25 boat limit?

Construct piers

Responses 12 (86%) Agree; 2 (14%) Disagree

- environmentally stable and environmentally friendly materials-recycled plastics maybe?
- yes, yes, yes
- The preserve is not huge and risk of overbuilding is real.
- better access for ice fishing in the winter
- but within reason-carefully consider impact on trail traffic, noise, and usage

Construct boardwalk at Hinkle Road

Responses 11 (85%) Agree; 2 (15%) Disagree

- good idea
- possibly

Install fish structure

Responses 9 (69%) Agree; 4 (31%) Disagree

- Unsure, focus on invasive management
- I am disabled and would love to get access in main lake and along the causeway.
- Already large increase in fishing trash, non-filament line, hooks, pigs liver, etc in the water
- Don't know, could be good,

Parking

Improve traffic flow

Responses 2 (29%) Agree; 5 (71%) Disagree

- seems okay now
- not needed
- Parking lot is so small. I don't know how it could be improved

- don't notice a problem

Install speed bumps
Responses 5 (45%) Agree; 6 (55%) Disagree
- not a high priority unless there are accidents
- not a high priority unless there are accidents
- already have big potholes

Limit parking access on Headley
Responses 9 (90%) Agree; 1 (10%) Disagree

Improve drainage in dam parking area
Responses 6 (100%) Agree; 0 (0%) Disagree
- no opinion
- pervious pavement

Provide signage at dam parking area
Responses 4 (80%) Agree; 1 (20%) Disagree
- no opinion
- people will ignore them

Natural Resources
Invasive terrestrial control
Responses 6 (50%) Agree; 6 (50%) Disagree
- Indiana is polluted enough as it is with our contribution to the dead zone in the Gulf of Mexico
- Please, no herbicides
- I'd be cautious with herbicides-too many unintended effects
- eco-sensitive management can include herbicides. Better to get invasives under control than let them take over
- are these a problem? Consult with IU biologists about solution

Volunteer crew
Responses 12 (92%) Agree; 1 (8%) Disagree
- great idea but perhaps difficult to implement because of so many other volunteer opportunities in community

Controlled burning
Responses 6 (55%) Agree; 5 (45%) Disagree
- what about air pollution!?
- if effective
- need to know more
- yes, if fire is appropriate, then burn, burn, burn
- not in spring when birds nest
- consult with IU biologists for solution

Deer population control

Responses 8 (67%) Agree; 4 (33%) Disagree

- cull the herd
- introduce wolves

Canada goose control

Responses 8 (67%) Agree; 4 (33%) Disagree

- this is needed. They are obnoxious
- is this a priority issue? I'd think other areas could use the funds?
- native plants would cut down on population of geese
- too much Canadian goose manure for the lake.