

2014 Threatened and Endangered Fish Survey of
East Loon Lake and West Loon Lake
Lake County, Illinois



Prepared by



Integrated Lakes Management
120 LeBaron St.
Waukegan, IL 60085.

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In 2014 Integrated Lakes Management, Inc. (ILM) completed the third of three annual threatened and endangered fish surveys on East Loon Lake and West Loon Lake. The purpose of this survey is to evaluate the effectiveness of active in-lake management in accordance with the Loon Lakes Management Association's (LLMA) authorization for the incidental take of the state threatened Banded Killifish (*Fundulus diaphanus*), state threatened Starhead Topminnow (*Fundulus dispar*), state threatened Blackchin Shiner (*Notropis heterodon*), state endangered Blacknose Shiner (*Notropis heterolepis*), state endangered Pugnose Shiner (*Notropis anogenus*), state threatened Iowa Darter (*Etheostoma exile*), and the state threatened Mudpuppy (*Necturus maculosus*) in pursuant of the Illinois Endangered Species Protection Act (520 ILCS 10/5.5).

The Lake County Health Department-Environmental Services (LCHD-ES) submitted *2013 Threatened and Endangered Fish Survey of East Loon Lake and West Loon Lake, Lake County, Illinois* to the Illinois Department of Natural Resources (IDNR). Similar reports have been written by EA Engineering, Science, and Technology, Survey of State-Listed Fishes from East and West Loon Lakes, Lake County, 2009. Also available are IDNR, Supplemental Fish Surveys from East and West Loon Lakes, 2007 and 2012, and Southern Illinois University, Northeastern Illinois Endangered and Threatened Species Recovery Project: Preliminary Fish Data Collected May through August, 2002. Additional reports summarizing the water quality and aquatic plant community on East Loon Lake and West Loon Lake from data collected in 1998, 2003, 2008, 2010, 2011, and 2013 are available from the LCHD-ES.

METHODS AND MATERIALS

FISH SAMPLING

ILM conducted the sampling effort under the following permits:

- Scientific Collection Permit NH14.5459
- Permit for Possession of Endangered or Threatened Species - Permit Type: S Permit No. 14-059S

The fish survey of East and West Loon Lake was conducted using two gear types; a 30-ft long bag seine with 1/8-inch mesh and a mechanical weed harvester. Two seine hauls, a radius sweep and a linear pull, were conducted at each location ranging in depth from 1 to 3 feet on West Loon Lake and 1 to 4 feet on East Loon Lake. Seining locations were kept consistent with the 2009 and 2012 T&E fish survey to allow for comparisons of populations over time. There are 5 seine locations on East Loon Lake and 7 seine locations on West Loon Lake. These locations were selected based on the preferred habitat of the target species: low turbidity, diverse abundant aquatic vegetation, sand and gravel substrates.

Concurrent with the 2009 and 2012 survey incidental take during mechanical aquatic plant harvesting was assessed. A 10-foot straight seine with 1/8 inch mesh was placed on the grate in the aquatic plant collection area of the harvester to reduce the loss of catch in the sample. All aquatic plants that were harvested during each run were examined for fish at the boat launch. There were four observed harvest routes on East Loon Lake varying in distance from 276 to 457 meters. Three harvest routes were analyzed on West Loon Lake with distances ranging from 47 to 88 meters. All adult fish collected by both

gear types were identified to species, and measured to the nearest millimeter. Once the fish were identified and measure they were safely released back into the water. One voucher specimen was kept for each T&E species collected. Catch per unit effort (CPUE) and run to measure relative abundance was calculated for each site.

Young of the year and voucher specimens for each target species were preserved in ethanol solution. Voucher specimens were verified by Ken Cummings, EA Engineering Science, and Technology Senior Scientist. In an effort to empirically measure fish population diversity Margalef's index was calculated. The index allows for comparisons to be made among sample sites and lakes. Margalef's index does not take into account species richness, by assuming that all species are equal. The higher the index values the greater diversity of species present.

Catch per unit effort was expressed as: N/A where N = number of fish sampled, A = estimated area sampled (m^2).

2014 ASSESSMENT

As a general note, there was a greater coverage of aquatic plants during the 2014 survey than in prior year surveys, particularly 2013. This difference in vegetation was noted by Loon Lake Harvester operators when conducting the harvester survey. Based on previous reports, it appears that aquatic herbicide application in 2013 reduced the overall coverage of plants, making the surveys more efficient at capturing fish. Loon Lake Harvester operators relayed that aquatic herbicide had not been used in 2014, resulting in difficult seine hauls through thick vegetation, and short harvester operation due to the machine quickly filling with plant material.

EAST LOON SEINE

The East Loon Lake seine survey resulted in the capture of 326 individuals from an estimated total area of $345 m^2$. This equals a catch per unit effort of $0.94 \text{ fish}/m^2$ sampled. Eight species were collected using this gear. The total catch for 2014 (326) was almost half the amount in 2013 (679). Bluegill was the most abundant species which represented 54% of the total catch. Brook silverside, the second most abundant species observed in 2014 comprised 36% of the total catch. Largemouth Bass, previously common in 2012 and 2013 accounted for 6.5% and 7.1%, only comprised 1% of the 2014 catch. The state threatened Starhead topminnow represented 6% of the catch (18 individuals). Starhead topminnow was the only species of concern observed in East Loon Lake.

The five seine locations of East Loon Lake resulted in a $0.05 \text{ fish}/m^2$ catch per unit effort, for species of concern. A total of 18 T&E individuals were collected. This is a 61% reduction in total T&E species since 2012. The 2014 East Loon Lake Margalef index, an index of species of diversity was 1.210. Seine locations 1 and 2 had the most diverse fish populations with Margalef index values of 1.422 and 0.827.

Seine hauls were influenced by the heavy presence of aquatic plants, which restricted the effectiveness of conducting a complete a seine haul of an area. Dense vegetation prevented a quick sweep of the

area, allowing fish to easily escape the seine. Tables 1, 2, and 3 show the catch summary data for the East Loon Lake Seine effort.

Table 1. Catch Summary for East Loon Lake Seine

Species	Total Catch	Total Percent	Length (MM)		Juveniles CATCH	Juveniles PERCENT
			MINIMUM	MAXAMIMUM		
BLUEGILL	177	54%	25	170	97	30%
PUMPKINSEED	2	1%	124	169	0	0%
WARMOOUTH	1	0%	61	61	1	0%
LARGEMOUTH BASS	3	1%	73	222	2	1%
LEAST DARTER	6	2%	30	32	3	1%
BROOKS SILVERSIDE	118	36%	60	80	0	0%
STARHEAD TOPMINNOW	18	6%	-	-	0	0%
TIGER MUSKIE	1	0%	205	205	0	0%
TOTALS	326	100%			103	32%
SPECIES= 8						

Table 2. Number of Threatened and Endangered Species Collected in East Loon Lake by Seining, 2014, 2013, 2012, and 2009

2014

Species	1ES	2ES	3ES	4ES	5ES	Total
Blacknose Shiner	0	0	0	0	0	0
Blackchin Shiner	0	0	0	0	0	0
Banded Killifish	0	0	0	0	0	0
Starhead Topminnow	0	0	9	3	6	18
Iowa Darter	0	0	0	0	0	0
juvenile Fundulus sp.	0	0	0	0	0	0
Pugnose Shiner	0	0	0	0	0	0
Total	0	0	9	3	6	18

2013

Species	1ES	2ES	3ES	4ES	5ES	Total
Blacknose Shiner	0	0	0	0	0	0
Blackchin Shiner	0	20	1	0	0	21
Banded Killifish	0	0	0	0	0	0
Starhead Topminnow	0	0	0	0	4	4
Iowa Darter	0	0	0	0	0	0
juvenile Fundulus sp.	0	0	0	0	0	0
Pugnose Shiner	0	0	0	0	0	0
Total	0	20	1	0	4	25

2012

Species	1ES	2ES	3ES	4ES	5ES	Total
Blacknose Shiner	0	3	0	0	0	3
Blackchin Shiner	0	0	5	1	0	6
Banded Killifish	2	3	11	3	7	26
Starhead Topminnow	0	0	0	4	0	4
Iowa Darter	0	0	0	0	0	0
juvenile Fundulus sp.	0	0	0	11	4	15
Pugnose Shiner	0	0	0	0	0	0
Total	2	6	16	19	11	54

2009

Species	1ES	2ES	3ES	4ES	5ES	Total
Blacknose Shiner	0	0	0	0	0	0
Blackchin Shiner	3	0	3	0	0	6
Banded Killifish	0	0	1	0	0	1
Starhead Topminnow	0	0	0	0	0	0
Iowa Darter	0	0	0	0	0	0
juvenile Fundulus sp.	0	0	0	0	0	0
Pugnose Shiner	0	0	0	0	0	0
Total	3	0	4	0	0	7

Table 3. Statistics for the 2014 Threatened and Endangered Fish Seine Survey on East Loon Lake

Fish Data	1ES	2ES	3ES	4ES	5ES	Lake
Total # of Individuals	6	117	9	68	126	326
Area Sampled(m ²)	71	75	71	71	57	345
Catch per Unit Effort	0.08	1.55	0.13	0.96	2.22	0.94
Total # of Species	2	2	1	7	5	8
Total # of T&E Species	0	0	1	1	1	5
Total # of T&E Individuals	0	0	9	3	6	18
Catch per Unit Effort of T&E	0.000	0.000	0.159	0.042	0.080	0.052
Margalef Index	0.558	0.210	0.000	1.422	0.827	1.210

EAST LOON HARVESTER

Aquatic plant harvesting conducted by the LLMA resulted in the capture of 99 individuals from a total harvest area of 1,436m². This equals a catch per unit effort of 0.04 fish/m² harvested, compared to 0.07 fish/m² in 2013. A total of 4 fish species were collected by the harvester. In 2014, Bluegill was the most abundant fish species captured representing 93% of the total catch. The Margalef index was 0.65 for East Loon Lake harvester in 2014. This was a reduction from the 2012 Margalef index of 3.28 when 9 fish species and 3 T&E species were captured. Due to the density of aquatic vegetation, the harvester routes were significantly shorter than in 2013, which occurred following an aquatic herbicide treatment. Tables 4 and 5 show the catch summary data for the East Loon Lake Harvester effort.

Table 4. Catch Summary for East Loon Lake Harvester

Species	Total Catch	Total Percent	Length (MM)		Juveniles CATCH	Juveniles PERCENT
			MINIMUM	MAXAMIMUM		
BLUEGILL	138	93%	21	103	131	88%
WARMOUTH	1	1%	45	45	1	1%
LARGEMOUTH BASS	2	1%	64	80	2	1%
BLACK CRAPPIE	8	5%	51	114	7	5%
TOTALS	149	100%			141	95%
SPECIES= 4						

Table 5. Statistics for the 2014 Threatened and Endangered Fish Harvester Survey on East Loon Lake

Fish Data	1EH	2EH	3EH	4EH	Lake
Total # of Individuals	7	84	8	50	99
Area Sampled(m ²)	453	403	1132	337	2326
Catch per Unit Effort	0.02	0.21	0.01	0.15	0.04
Total # of Species	2	3	2	2	4
Total # of T&E Species	0	0	0	0	0
Total # of T&E Individuals	0	0	0	0	0
Catch per Unit Effort of T&E	0	0	0	0	0
Margalef Index	0.514	0.451	0.481	0.256	0.653
Total Harvest Distance (m)	372	331	457	276	1436

WEST LOON SEINE

The West Loon Lake seine survey resulted in the capture of 274 individuals from an estimated total area of 529 m² (Table 5). This equals a catch per unit effort of 0.518 fish/m² sampled. The total catch for 2014(274 individuals) was approximately 16% of the catch in 2013(1643 individuals). In West Loon Lake 10 species were collected using this gear. Brook Silverside was the most abundant species and represented 49% of the total catch; Bluegill represented 34% of the total catch. The 7 seine locations resulted in a 0.032 fish/m² catch per unit effort, for species of concern. A total of 17 T&E individuals were collected, including Banded Killifish (13), Starhead Topminnow (2), and Pugnose Shiner (2). The Margalef value was 1.603. Five juvenile *Notropis* individuals were collected that were too small to identify.

Seine hauls were influenced by the heavy presence of aquatic plants, which restricted the effectiveness of conducting a complete and quick seine haul of an area. Dense vegetation prevented a quick sweep of the area, allowing fish to easily escape the seine. Tables 6, 7, and 8 show the catch summary data for the West Loon Lake Seine effort.

Table 6. Catch Summary for West Loon Lake Seine

Species	Total Catch	Total Percent	Length (MM)		Juveniles CATCH	Juveniles PERCENT
			MINIMUM	MAXIMUM		
BLUEGILL	93	34%	28	192	82	30%
LARGEMOUTH BASS	8	3%	60	320	4	1%
YELLOW PERCH	3	1%	62	145	2	1%
BANDED KILLIFISH	13	5%	-	-	0	0%
PUGNOSE SHINER	2	1%	-	-	0	0%
BLUNTNOSTE MINNOW	12	4%	-	-	0	0%
JOHNNY DARTER	3	1%	21	49	1	0%
BROOKS SILVERSIDE	133	49%	51	80	0	0%
<i>NOTROPIS</i> SPP.	5	2%	-	-	5	2%
STARHEAD TOPMINNOW	2	1%	-	-	0	0%
TOTALS	274	100%			94	34%
SPECIES= 10						

Table 7. Number of Threatened and Endangered Species Collected in West Loon Lake by Seining, 2014, 2013, 2012, and 2009

2014

Species	1WS	2WS	3WS	4WS	5WS	6WS	7WS	Total
Pugnose Shiner	0	0	2	0	0	0	0	2
Banded Killifish	0	1	0	1	11	0	0	13
Starhead Topminnow	2	0	0	0	0	0	0	2
Iowa Darter	0	0	0	0	0	0	0	0
juvenile Fundulus sp.	0	0	0	0	0	0	0	0
Pugnose Shiner	0	0	0	0	0	0	0	0
Total	2	1	2	1	11	0	0	17

2013

Species	1WS	2WS	3WS	4WS	5WS	6WS	7WS	Total
Blacknose Shiner	0	0	0	0	0	58	0	58
Blackchin Shiner	4	11	7	13	29	163	0	227
Banded Killifish	0	1	0	5	1	1	0	8
Starhead Topminnow	0	0	0	0	0	0	0	0
Iowa Darter	0	0	0	0	0	0	0	0
juvenile Fundulus sp.	0	0	0	0	0	0	0	0
Pugnose Shiner	0	0	0	0	2	0	0	2
Total	4	12	7	18	32	222	0	295

2012

Species	1WS	2WS	3WS	4WS	5WS	6WS	7WS	Total
Blacknose Shiner	37	13	0	0	2	0	0	52
Blackchin Shiner	0	4	0	0	15	0	20	39
Banded Killifish	1	0	4	1	1	0	7	14
Starhead Topminnow	0	0	0	0	0	0	0	0
Iowa Darter	0	0	0	0	0	0	0	0
juvenile Fundulus sp.	0	0	0	0	0	0	0	0
Pugnose Shiner	0	0	0	0	0	0	0	0
Total	38	17	4	1	18	0	27	105

2009

Species	1WS	2WS	3WS	4WS	5WS	6WS	7WS	Total
Blacknose Shiner	1	0	0	13	1	0	0	15
Blackchin Shiner	6	38	0	0	12	11	2	69
Banded Killifish	0	1	0	0	1	0	0	2
Starhead Topminnow	0	0	0	0	0	0	0	0
Iowa Darter	0	0	0	0	0	0	0	0
juvenile Fundulus sp.	0	0	0	0	0	0	0	0
Pugnose Shiner	0	0	0	0	0	0	0	0
Total	7	39	0	13	14	11	2	86

Table 8. Statistics for the 2014 Threatened and Endangered Fish Seine Survey on West Loon Lake

Fish Data	1WS	2WS	3WS	4WS	5WS	6WS	7WS	Lake
Total # of Individuals	2	12	13	8	101	8	130	274
Area Sampled(m ²)	43	33	47	58	75	136	136	529
Catch per Unit Effort	0.05	0.36	0.27	0.14	1.34	0.06	0.95	0.52
Total # of Species	1	3	3	4	6	3	3	10
Total # of T&E Species								0
Total # of T&E Individuals	2	1	2	1	11	0	0	17
Catch per Unit Effort of T&E	0.061	0.023	0.042	0.017	0.146	0.000	0.000	0.032
Margalef Index	0.000	0.805	0.780	1.443	1.083	0.962	0.411	1.603

WEST LOON HARVESTER

Aquatic plant harvesting conducted by the LLMA on West Loon Lake resulted in the capture of 145 individuals from a total estimated harvested area of 246 m². This equals a catch per unit effort of 1.67 fish/m² harvested. Six species were collected by the harvester. Bluegill was the dominant fish species harvested representing 88% (128 individuals) of the total catch and young of the year Bluegill accounting for 79 % of the total catch (114 individuals). The Margalef index value was 0.804 for the West Loon Harvester. Average harvesting depth followed the 4 foot contour in dense aquatic plant beds with Water Strargrass and Valisneria being the dominant species. Due to the density of aquatic vegetation, the harvester routes were significantly shorter than in 2013, which occurred following an aquatic herbicide treatment. Tables 9 and 10 show the catch summary data for the West Loon Lake Harvester effort.

Table 9. Catch Summary for West Loon Lake Harvester

Species	Total Catch	Total Percent	Length (MM)		Juveniles CATCH	Juveniles PERCENT
			MINIMUM	MAXAMIMUM		
BLUEGILL	128	88%	23	140	114	79%
WARMOUTH	3	2%	36	40	3	2%
BLACK CRAPPIE	12	8%	48	68	12	8%
YELLOW BULLHEAD	1	1%	60	60	1	1%
YELLOW PERCH	1	1%	160	160	1	1%
TOTALS	145	100%			131	90%
SPECIES=	5					

Table 10. Statistics for the 2014 Threatened and Endangered Fish Harvester Survey on West Loon Lake

Fish Data	1WH	2WH	3WH	Lake
Total # of Individuals	26	36	83	145
Catch per Unit Effort	0.45	0.45	0.77	1.67
Total # of Species	3	3	3	5
Total # of T&E Species	0	0	0	0
Total # of T&E Individuals	0	0	0	0
Catch per Unit Effort of T&E	0	0	0	0
Margalef Index	0.614	0.558	0.453	0.804
Total Harvest Distance (ft)	155	216	289	661

RECOMMENDATIONS

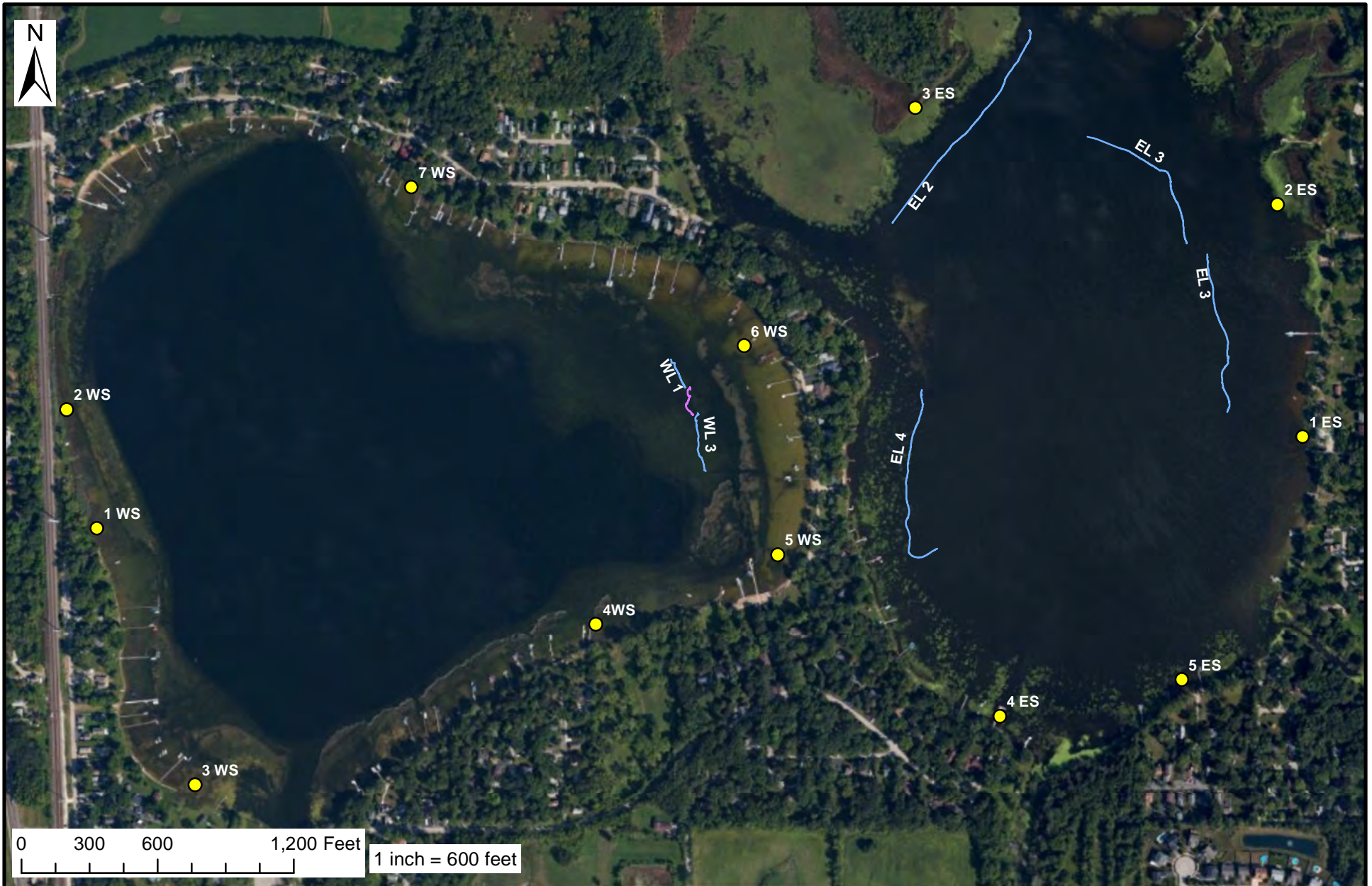
East Loon Lake and West Loon Lake are high quality aquatic resources. The 2014 fish survey accounted for a drastic reduction in the number of individuals collected over prior years. The low recovery of fish was influenced by the heavy presence of aquatic plants, which restricted the effectiveness of conducting a complete and quick seine haul of an area. Dense vegetation prevented a quick sweep of the area, allowing fish to easily escape the seine. Additionally, harvester routes were significantly shorter than in 2013, which occurred following an aquatic herbicide treatment. Due to this condition, it is difficult to draw a direct comparison of results to prior years.

To maintain and improve the overall quality of East Loon Lake and West Loon Lake, ILM recommends continuing to implement the 2013 recommendations.

- AVOID KNOWN AREAS WITH DENSE POPULATIONS OF SPECIES OF CONCERN AND LOW POPULATIONS OF EURASIAN WATERMILFOIL(EWM)
 - Mechanical harvesting should be targeting areas on each lake with dense exotic aquatic plant species, primarily EWM. On West Loon Lake the harvester was cutting on the east side of the lake in dense aquatic plants. However, this area had low populations of EWM and primarily harvested native plants. This is also a known area of large populations of T&E fish. This resulted in the incidental take of three T&E individuals, including the Pugnose Shiner which has not been documented in over 20 years.
- LIMIT HARVESTING EFFORTS FOLLOWING SUCCESSFUL HERBICIDE TREATMENTS
 - The 2013 herbicide treatment on East Loon Lake reduced the EWM population from 45% to 2% total lake coverage. Following a successful treatment, harvester operations should be modified to address current EWM populations ie: primarily operate on West Loon Lake or reduce harvesting time East Loon Lake.
- DO NOT USE THE HARVESTER TO REMOVE NATIVE SPECIES
 - Native plants help sustain healthy fish populations. The diversity of aquatic plant species in the Loon Lakes provide fish with places to hide and grow. Whitewater Lilies were completely removed by the harvester in specific near shore areas in the southern

portion of East Loon Lake. The conservation plan states the harvester should target exotic species and avoid near shore areas by harvesting in depths greater than 4 feet.

- **CONSIDER MODIFYING FUTURE HERBICIDE APPLICATIONS IN RESPONSE TO THE THREATENED AND ENDANGERED FISH POPULATIONS**
 - Weather including precipitation and temperature influence the timing of an herbicide treatment. These are also cues that fish use for spawning, future herbicide applications should be restricted following poor recruitment of threatened and endangered species.
- **DO NOT USE THE HARVESTER CUTTER HEAD TO FIND PLANTS OR DETERMINE LAKE DEPTH**
 - When the cutter head comes into contact with the lake bottom sediments are released into the water column, which can decrease water quality. Having a plant rake on the harvester can reduce lake bottom disturbance and improve active harvesting efforts. A plant rake on a metered rope can determine lake depth and density of species present at specific locations. This will allow the operator to focus on a known area of dense exotics in depths greater than four feet, minimizing bottom disturbances.
- **PARTICIPATE IN THE VOLUNTEER LAKE MONITOR PROGRAM OR CONTRACT FOR WATER QUALITY MONITORING**
 - Participation in the VLMP provides historic data that helps document water quality impacts and support lake management decisions. The sampling season is May through October with measurements taken twice a month. The Loon Lakes participation has not been sufficient to provide water quality data to support lake management decisions. Future data collection should be more thorough on both lakes.
- **CONTINUE TO IMPROVE MECHANICAL HARVESTER RECORD KEEPING**
 - By recording active harvesting times, more accurate catch per unit effort can be calculated resulting in a closer approximation of amount of individuals actually collected for the incidental take permit.
 - Ideally, the operator would use a GPS to lay down tracts during harvesting so that location and distance can be analyzed. This would greatly increase the efficiency of mechanical harvesting and allow for adjustments to be made for future management more quickly.



**Figure 1: East and West Loon Lake
Seine and Harvester Locations**

November 2014



PERMIT FOR POSSESSION OF ENDANGERED OR THREATENED SPECIES

Permit type: S Permit No. 14-059S is issued to: Sandy Kubilus (Integrated Lakes Management) 120 LeBaron Street, Waukegan, IL 60085 and the following research associates: Chris Ryan, Gregg Zink, and Chris Rysso to allow **sampling at Loon Lakes by bag seining and seine hauls** of the following animals or animal products of endangered or threatened species or federal endangered plants:

<u>SPECIES</u>	<u>ITEM</u>	<u>QUANTITY</u>
1. <u>Banded Killfish</u>	<u>Live Animal</u>	<u>1</u>
2. <u>Starhead Topminnow</u>	<u>Live Animal</u>	<u>1</u>
3. <u>Blackchin Shiner</u>	<u>Live Animal</u>	<u>1</u>
4. <u>Blacknose Shiner</u>	<u>Live Animal</u>	<u>1</u>
5. <u>Pugnose Shiner</u>	<u>Live Animal</u>	<u>1</u>
6. <u>Iowa Darter</u>	<u>Live Animal</u>	<u>1</u>

Permit version: Original X Renewal X Amended

Special Conditions: One specimen only of each species is allowed to be preserved as a voucher and then turned over to the Lake County Health Department.

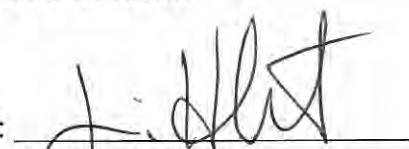
Standard conditions:

- **Reporting-** Annual reports must be submitted by January 31 of each year. Changes in inventory of specimens must be reported within 5 days. Changes in personal information or affiliation must be reported within 10 days.
- **Propagation-** Propagation requires a permit for such a purpose, only available under Scientific and Zoological/Botanical permits.

- **Disposal or Transfer-** Applicants must obtain a permit prior to transfer or disposal of specimens.
- **Facilities:** Holding facilities must meet the standards set forth by the Federal Animal Welfare Act.
- **Temporary holding:** Specimens allowed under limited permits may be held temporarily (up to 90 days) by other persons only after written consent of the director.
- **Revocation:** Permits may be revoked if false information was used to obtain permit, reports were not submitted, facility standards were not met, or applicant violates state or federal laws.

THIS PERMIT IS VOID IF IT CONTAINS ANY STRIKE-OUTS, OVERWRITES OR OTHER ALTERATIONS AND IS NON-TRANSFERABLE

ITEMS LISTED ON THIS PERMIT MAY BE SOLD, GIVEN AWAY OR OTHERWISE DISPOSED OF ONLY WITH PERMISSION OF THE ILLINOIS DEPARTMENT OF NATURAL RESOURCES

Signed: 
 Dr. Jim Herkert
 Office Director
 IDNR Office of Resource Conservation

Date issued: 9-4-14

Expiration Date: December 31, 2014

*This permit is issued pursuant to the Illinois Endangered Species Protection Act and authorizes only those activities listed above. This permit does NOT exempt the permittee from compliance with any other federal, state, or local law, statute, ordinance, or regulation. As a permit holder, the individual/agency acknowledges that all collections of Federal and State listed species be reported to the Endangered Species Program Manager (IL. DNR-Division of Natural Heritage) within 10 days of collection.



Illinois Department of Natural Resources

One Natural Resources Way Springfield, Illinois 62702-1271
www.dnr.illinois.gov

Pat Quinn, Governor
Marc Miller, Director

IMPORTANT INFORMATION REGARDING YOUR PERMIT!

Dear Illinois Endangered Species Possession Permit Holder,

Enclosed is your Illinois Endangered Species Possession Permit and a new reporting form for 2014. We are pleased to inform you that we are converting our IDNR Permits for Possession of Endangered and Threatened Species to an electronic email-based system to improve our tracking and permitting process. Updated permit application forms, annual report forms, and additional information detailing regulations of the possession of endangered species can be found on the following website:

<http://www.dnr.illinois.gov/conservation/NaturalHeritage/Pages/EndangeredSpeciesProgram.aspx>

In the future, all permit applications and annual reports are required to be submitted to the following email address:

DNR.ETPermit@illinois.gov

For this new electronic system, we are requiring that all permit holders provide an email address for contact purposes. This email address must be included on the annual reporting form and applications that are submitted for processing. If electronic correspondence and filing create an undue hardship for you, please call (217) 785-8764 to discuss alternative methods for submission of your application and reports. We appreciate your cooperation and patience during this transition.

Endangered Species Program
Division of Natural Heritage, IDNR

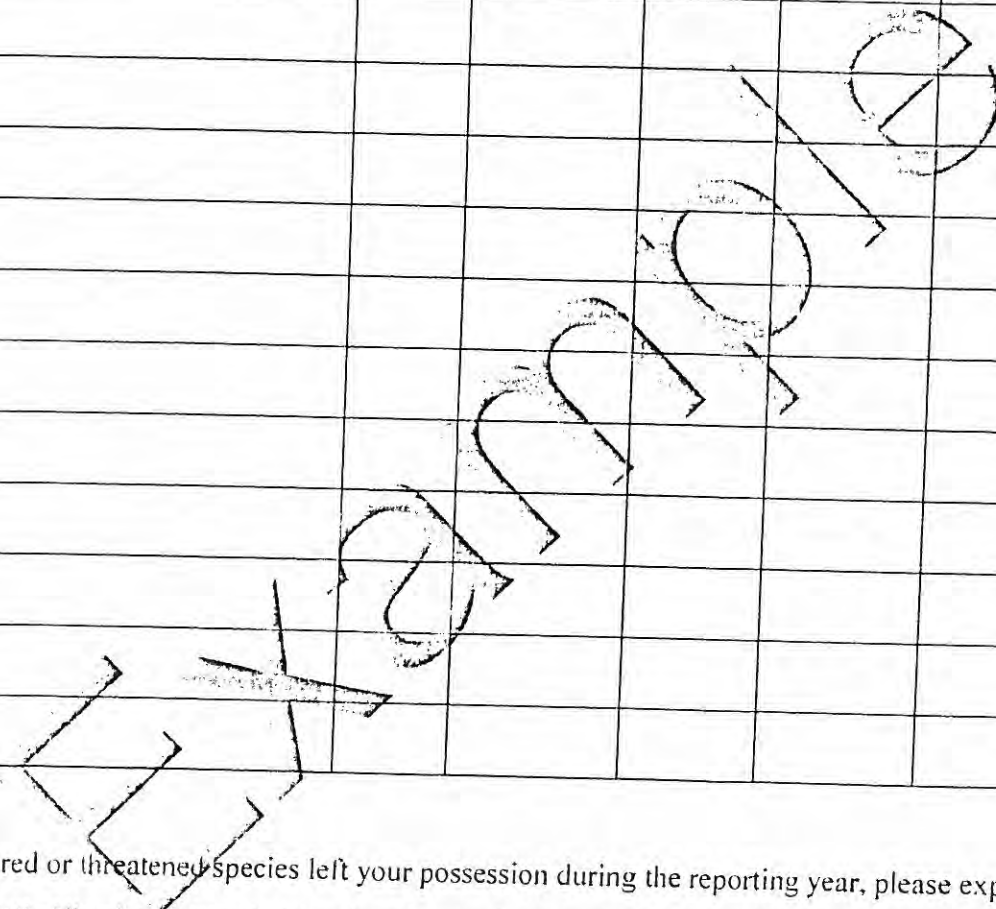
Attention - this form can be found online at:

<http://www.dnr.illinois.gov/conservation/NaturalHeritage/Pages/EndangeredSpeciesProgram.aspx>

Beginning with 2014 Annual Reports,

all forms must be submitted electronically to:
ANNUAL INVENTORY REPORT

SPECIES	# on hand Jan 1 of report year	# acquired from captive sources during reporting year	# collected from wild during reporting year	# propagated during reporting year	# leaving inventory during reporting year*	# on hand Dec. 31 of reporting year



*If any endangered or threatened species left your possession during the reporting year, please explain below or on a separate sheet. All endangered and threatened species must be accounted for. If given or sold to another person, please give name and address of the recipient. If specimens died while in your possession, provide all available information as to cause of death and disposal of carcasses.

ILLINOIS DEPARTMENT OF NATURAL RESOURCES

Authorization is hereby granted, under Section 5/3.22,
Chapter 520 and Section 5/20-100, Chapter 515 of the
Illinois compiled Statutes to:

Last Name: **Kubillus**

First Name: **Sandy**

Permit Number: **NH14.5459**

Issued: **1/14/2014**

Expires: **12/31/2014**

Business Name: **Integrated Lakes Management**

Street Address: **120 LeBaron Street**

City: **Waukegan**

State: **IL** Zip Code: **60085**

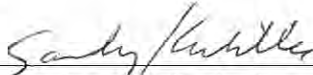
for strictly scientific, educational or zoological purposes, to take the Illinois fauna identified below subject to the following provisions:

Applicant and all research associates may conduct live trapping surveys (seine/kicknets/etc.) for all non-listed fish species and may conduct live trapping surveys for all freshwater mussel species and macroinvertebrates throughout the state of Illinois for the purpose of determining water quality. These surveys shall be conducted via scientifically accepted survey methods and all collected specimens are to be released unharmed at or near the original capture location once data is collected [As listed on the accompanying Illinois Department of Natural Resources (IDNR) scientific permit application/project proposal (on file in Springfield, IL.)] strictly for scientific, educational, and/or zoological purposes and all dead specimens will be sent to the landfill. A federal permit is required for all projects involving federally regulated species, including migratory birds. If Endangered and Threatened Species are to be captured, handled, and/or collected, the IDNR Division of Natural Heritage, Endangered Species Coordinator must first be notified and must approve in writing all project related activities of the permit applicant and a separate Endangered Species must be issued to cover all activities dealing with any listed species. Individuals working under direction of applicant include: Sandy Kubillus, Chris Ryan, Gregg Zink, Chris Rysso

I agree to the following provisions and terms of this Scientific Permit.

Permittee's

Signature:



(Permit not valid unless signed)

Approved By:



Office of Resource Conservation

Date:

2/4/14

TERMS FOR SCIENTIFIC PERMIT

1. Under no circumstances shall a scientific permit be used in lieu of sport or commercial licenses.
2. All taking shall be performed by or under the direct supervision of the permittee. Permittee must be present with persons involved in actual taking.
3. All gear left unattended must be tagged bearing name and scientific permit number of permittee.
4. Permittee must be at least eighteen (18) years of age.
5. Permits are not transferable and PERMITTEE SHALL CARRY PERMIT AT ALL TIMES WHEN TAKING FAUNA.
6. Agency, company or institution listed on the application is responsible for the taking activities and reports of the individual issued this permit
7. Scientific permits will not be valid for taking any species appearing on official State List of Endangered and Threatened Vertebrate Species of Illinois (see attached Administrative Rule, Part 1010) without specific written approval from the Department of Natural Resources.
8. A federal Permit is required for the taking of species protected by the Federal Government in addition to the State Scientific Permit.
9. The Division of Wildlife Resources may require special conditions or provisions on any Scientific Permit.
10. Use of rotenone or any other toxic materials for taking must have special written approval from the Department of Natural Resources and may need a variance from the Illinois Environmental Protection Agency.
11. By January 31 of next year, an annual report of the permittee's activities must be submitted to the Division of Wildlife Resources. In addition, the permittee shall submit a copy of all written reports, etc. that result from the permitted activity. Permits will be renewed after these annual reports and appropriate publications have been received.
12. Any permit may be revoked or suspended at any time by the Department of Natural Resources.
13. Permits expire December 31 each calendar year unless otherwise specified.

The Department of Natural Resources is an equal opportunity employer.



Illinois Department of Natural Resources

One Natural Resources Way Springfield, Illinois 62702-1271
<http://dnr.state.il.us>

Pat Quinn, Governor
Marc Miller, Director

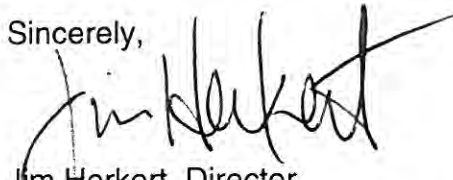
Dear Scientific Permit Holder:

Enclosed is your Scientific Permit which is issued in accordance with Section 520:10/4-5 of the Endangered Species Protection Act, Section 520:5/3.22 of the Illinois Wildlife Code, and Section 515:5/20-100 of the Illinois Fish Code. It authorizes, strictly for scientific, educational, or zoological purposes, the taking of Illinois fauna by methods or in quantities otherwise prohibited by these Codes, or other Federal or State Statutes that may apply. Failure to comply with the provisions of this permit will lead to its revocation.

Records of all specimens taken will be maintained and shall be made available by the permittee for inspection at all reasonable hours by an authorized Department person. By January 31, 2015 an annual report of your activities must be submitted to the Department of Natural Resources, Office of Resource Conservation on the enclosed form. In addition, the permittee shall submit one copy of all written reports, including but not limited to, research papers, theses, progress reports, publications, and environmental assessment reports that result from the permitted activity. Permits will be renewed only after the annual report and appropriate publications have been received.

Please read the terms of your Scientific Permit closely and note that it will expire on December 31, 2014. It is important that you adhere to the species and methods listed on the Permit.

Sincerely,



Jim Herkert, Director
Office of Resource Conservation

JH:tt

Species Handled	Number	Origin of Specimen	Disposition (released, destroyed, donated to what institution)

FOR OFFICE USE ONLY

Route File and Report to: Habitat Resources _____
 Wildlife Resources _____
 Fisheries _____

Date Routed: _____

Approved by: _____

Revised: November 18, 2004