

**AMENDMENT
TO INCIDENTAL TAKE AUTHORIZATION
ISSUED TO LOON LAKES MANAGEMENT ASSOCIATION ON MAY 10, 2012
(IDNR ITA FILE #66)**

Background:

The Loon Lakes Management Association (hereinafter referred to as LLMA), with the assistance of Hey and Associates, Inc. prepared a conservation plan as application to the Illinois Department of Natural Resources (hereinafter referred to as the Department) for the incidental take of several Illinois endangered and threatened species related to the management of East Loon Lake and West Loon Lake in Lake County, Illinois (Illinois Natural Areas Inventory Site #0670 – Loon Lake). That conservation plan was received by the Department on March 2, 2010. Species for which incidental take authorization was requested were banded killifish (*Fundulus diaphanus*), starhead topminnow (*Fundulus dispar*), blackchin shiner (*Notropis heterodon*), blacknose shiner (*Notropis heterolepis*), pugnose shiner (*Notropis anogenus*), Iowa darter (*Etheostoma exile*), and mudpuppy (*Necturus maculosus*). After public notice and review as required by the Illinois Endangered Species Protection Act, authorization for incidental take of the species listed above was approved by the Department on May 10, 2012. That authorization remains in effect until May 10, 2015.

During discussion of the terms and conditions to be included in the incidental take authorization issued to LLMA in 2012, LLMA informed the Department that they would be interested in **extending the term of the authorization to allow continued management of East and West Loon Lakes**. The Department agreed to consider an extension of the incidental take authorization if data collected during the three-year term of the authorization indicated that lake management was not causing take of endangered and threatened species that will reduce the likelihood of survival or recovery of the species in the wild in Illinois, the biotic community of which the species are a part, or the habitat essential to the species' existence in Illinois.

Most management effort on East and West Loon Lakes is focused on the reduction of aquatic vegetation, particularly Eurasian watermilfoil (*Myriophyllum spicatum*). Vegetation management, including mechanical harvest of aquatic plants and chemical treatment of limited areas in East Loon Lake and West Loon Lake, was conducted in 2012-2014 in compliance with the terms and conditions of the 2012 Incidental Take Authorization. Reports prepared by the Lake County Health Department show that mechanical harvest did, as anticipated, result in the take of some individuals of endangered and threatened fish species. To determine the level of take related to mechanical harvest, plant material removed from the lakes was examined for the presence of fish of all species before being loaded into trucks for disposal. The number of runs made with the harvester, the length of each run, and the total area affected by the harvester varied between years. Results of these surveys are shown in the tables attached to this document. Fish surveys using seines to sample fish numbers and diversity in shallow portions of East Loon Lake and West Loon Lake were also performed in 2012-2014. Sampling with seines was conducted in the same areas from which earlier (pre-incidental take authorization) fish sampling

had been conducted. The efficiency of seining can be affected by factors such as the density of vegetation in the sampled areas. Results of those surveys are shown in the attached tables. Three-year sampling results show that endangered and threatened species made up 0.73% of the fish taken by the mechanical harvester in East Loon Lake and 0.33% of the fish taken by the harvester in West Loon Lake. In those same years, endangered and threatened species made up 5.69% of the fish collected by seining in East Loon Lake and 15.23% of fish collected by seining in West Loon Lake. Sampling by both methods (harvester and seines) is done in shallow, near-shore areas with submersed aquatic vegetation. These results suggest that the vulnerability of the several endangered and threatened fish species that occur in these lakes to take by mechanical harvesting of aquatic vegetation is not proportional to their abundance. Overall, bluegill were the most common fish collected, comprising from approximately 35% to 93% of the total fish collected. The proportion of bluegill was under 50% in only two of the 12 samples.

The apparent rarity of pugnose shiners (4 individuals) and Iowa darters (0 individuals) in both lakes is notable. Historically, these species have been found in East Loon and West Loon Lakes only sporadically and in very small numbers. Survey results for 2012-2014 indicate that, while still present or potentially present, these two species continue to be rare. Continued monitoring is needed to determine if viable populations of these species are present.

Active management of aquatic vegetation in East Loon and West Loon Lakes has been ongoing for at least 20 years. That management has included the use of mechanical harvesting, hand harvesting, and herbicides. With the issuance of the Incidental Take Authorization in 2012, the Department and LLMA agreed to certain restrictions on the manner in which the harvester is used in order to minimize the risk of take of endangered and threatened species.

Based on the survey results summarized here and the history of aquatic vegetation management in East Loon Lake and West Loon Lake, the Department has concluded that continued lake management in compliance with the terms and conditions of the Incidental Take Authorization is unlikely to have a significant adverse effect on the continued survival of endangered and threatened species.

Amendment Terms and Conditions:

1. This amendment modifies certain terms and conditions of the Incidental Take Authorization issued to LLMA on May 10, 2012 [IDNR ITA File #66] (hereinafter referred to as the original authorization). This amendment is effective upon the signature of the Department. The Department reserves the right to re-open discussion of these terms and conditions before the expiration date, if data provided by LLMA or other parties indicate that aquatic vegetation management is responsible for the take of endangered or threatened species to an extent that is reducing the likelihood of survival or recovery of the species in the wild within the State of Illinois, the biotic community of which the species are a part, or the habitat essential to the species' existence in Illinois. This amendment and the original authorization may be revoked if the Department finds that LLMA has failed to comply with any of these terms and conditions or has been responsible for the taking of banded killifish, starhead topminnow, blackchin shiner, blacknose shiner, pugnose shiner, Iowa darter or

mudpuppy beyond that which is incidental to activities associated with lake management in East Loon Lake and West Loon Lake in Lake County, Illinois.

2. Upon approval of this amendment by the Department, the **expiration date of the original authorization is extended to May 10, 2025**. The terms and conditions of the original authorization shall remain in effect through May 10, 2025, except as modified herein.
3. The effective period of this amendment may be altered by mutual written agreement between LLMA and the Department. The Illinois Endangered Species Protection Board shall be notified of any such alteration. Any substantive changes, including but not limited to a change in the project footprint or a change in the Illinois endangered or threatened species which could potentially be affected, will require that a new conservation plan be submitted to the Department to initiate the review and public notice process as required by the Act.
4. The original authorization and this amendment are non-transferable.
5. The Department reserves the right of entry to inspect potential habitat and species management practices.
6. All reports and other documentation required by the original authorization and this amendment shall be submitted to:

Illinois Department of Natural Resources
Endangered Species Program – Incidental Take Authorization Coordinator
One Natural Resources Way
Springfield, IL 62702-1271
(217)557-8243
DNR.ITAcordinator@illinois.gov

The Department's Endangered Species Program shall provide copies of all reports required under the original authorization and this amendment to the Illinois Endangered Species Protection Board and to the Department's Natural Heritage Database.

7. LLMA shall determine the formulations, application rates and scheduling of aquatic herbicide use in East and West Loon lakes based on needs identified annually. Application of aquatic herbicides shall proceed only after approval in writing by the Department's District Fisheries Biologist.
8. **Dredging shall not be a covered activity under this agreement.** If the need for dredging any portion of East Loon Lake or West Loon Lake is identified, LLMA shall prepare a conservation plan for listed species that could be affected by dredging if the best available information indicates the likelihood of adverse effects on those species.

9. LLMA shall provide copies of any reports on aquatic vegetation management and other lake management activities that are required by the Lake County Health Department to the Department. A copy of the aquatic herbicide applicator's current National Pollutant Discharge Elimination System (NPDES) permit shall be provided to the Lake County Health Department and the Department annually.
10. All personnel working in the vicinity of the project shall receive educational materials regarding the sensitive ecological context of the project. Materials shall include identification information on the potentially impacted State-listed species, protected status of the species, response protocol for when the species is encountered, live or dead, and explanation of environmental restrictions. A copy of the educational materials shall be provided to the Department.
11. Any taking of State-listed plants requires the express written permission of the landowner. LLMA shall obtain written permission from the landowner or their designee on any parcel where a listed plant species may be impacted. The Department reserves the right to request those written permissions at any time throughout the duration of this authorization. **This agreement does not authorize the taking of any State-listed plant species.**
12. Contractors and/or surveyors sampling fish must hold necessary permits for work with non-listed and listed species; these include an IDNR Scientific Collection Permit and an IDNR Endangered Species Permit.
13. No mechanical harvesting shall occur in less than 4 feet of water and no closer than 3 feet above the lake bottom, except as noted in the original authorization. No mechanical harvesting shall be conducted until June 18.
14. LLMA shall conduct, or cause to be conducted by qualified personnel, an **inspection of aquatic vegetation removed** from East and West Loon lakes by mechanical harvesting to identify and enumerate the species of fish and other aquatic vertebrates that are being taken by mechanical harvesting. **The next inspection shall be conducted in 2017 and shall be repeated no less often than every third year thereafter.** Reporting shall include maps of aquatic vegetation herbicide treatment areas and maps of aquatic vegetation removal areas for each year within the reporting period. A report covering the three-year period shall be due no later than December 31 of the reporting year.
15. LLMA shall conduct, or cause to be conducted by qualified personnel, a **survey of fish populations** in East and West Loon lakes to estimate the abundance and distribution of endangered and threatened species. Surveys shall be conducted using seines or other appropriate, non-lethal sampling gear. To the greatest extent practicable, these surveys should use methods and sampling strategies that were used in annual surveys conducted in 2012-2014. Population surveys shall be conducted in

the same years as the inspection of aquatic vegetation described above. Survey data and interpretation shall be included with the report required under #14 above.

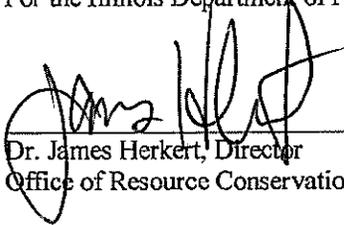
16. LLMA shall report any State-listed species encountered during any lake management activity to the Department in writing no later than 60 days after completion of each year's lake management activity or by December 31 of the year in which the activity was completed, whichever is earlier.

17. The LLMA official identified below is authorized to execute this agreement. Execution by LLMA indicates acceptance of all terms and conditions described in the original authorization and this amendment.

18. The execution of this agreement does not waive or excuse the responsibilities of LLMA to comply with other Federal, State or local regulations, including but not limited to obtaining any required permits for the execution of this project.

For the Illinois Department of Natural Resources

For the Loon Lakes Management Association



Dr. James Herkert, Director
Office of Resource Conservation



Tom Keefe
LLMA President

TOM KEEFE - PRESIDENT
Print name and title LLMA

5-11-15

Date

MAY 8, 2015

Date

East Loon Lake -- Fish Taken by Mechanical Harvester

	BK	ST	BCS	BNS	PS	ID	All Others
2012	2	2	0	0	0	0	271
2013	0	0	0	0	0	0	174
2014	0	0	0	0	0	0	99
Total	2	2	0	0	0	0	544

West Loon Lake -- Fish Taken by Mechanical Harvester

	BK	ST	BCS	BNS	PS	ID	All Others
2012	0	0	0	1	0	0	272
2013	0	0	0	1	0	0	182
2014	0	0	0	0	0	0	145
Total	0	0	0	2	0	0	599

East Loon Lake -- Fish Collected with Seines

	BK	ST	BCS	BNS	PS	ID	All Others
2012	26	4	6	3	0	0	442
2013	0	5	21	0	0	0	653
2014	0	18	0	0	0	0	308
Total	26	27	27	3	0	0	1403

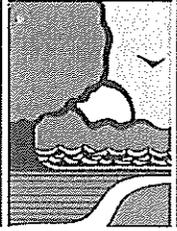
West Loon Lake -- Fish Collected with Seines

	BK	ST	BCS	BNS	PS	ID	All Others
2012	14	0	39	52	0	0	710
2013	8	0	226	58	2	0	1349
2014	13	2	0	0	2	0	257
Total	35	2	265	110	4	0	2316

BK – Banded Killifish
ST – Starhead Topminnow
BCS – Blackchin Shiner
BNS – Blacknose Shiner
PS – Pugnose Shiner
ID – Iowa Darter
All Others – total number of all other (non-listed) fish species taken

Data in these tables are from annual fish survey reports prepared by the Environmental Services Division of the Lake County Health Department (2012, 2013) and Integrated Lakes Management (2014)





Illinois
Department of
Natural Resources

One Natural Resources Way • Springfield, Illinois 62702-1271



<http://dnr.state.il.us>

April 11, 2012

Mr. Vince Mosca
Hey and Associates, Inc.
26575 West Commerce Drive - Suite 601
Volo, Illinois 60073

RE: *Incidental Take Authorization - Conservation Plan Review (Various Aquatic Species)
East and West Loon Lakes, Lake County, Illinois*

Dear Vince:

Pursuant to the Illinois Endangered Species Protection Act (520 ILCS 10/5.5) the Loon Lakes Management Association's (LLMA) authorization for the incidental take of the State threatened Banded killifish (*Fundulus diaphanus*); the State threatened Starhead topminnow (*Fundulus dispar*); State threatened Blackchin shiner (*Notropis heterodon*); the State endangered Blacknose shiner (*Notropis heterolepsis*); the State endangered Pugnose shiner (*Notropis anogenus*); the State threatened Iowa darter (*Etheostoma exile*); and the State threatened Mudpuppy (*Necturus maculosus*) in Lake County, Illinois [associated with LLMA's activities at/in East and West Loon Lakes in Lake County, Illinois] is hereby granted, subject to the terms and conditions described in the attached Authorization and Implementing Agreement. The Illinois Department of Natural Resources has determined that this authorized take is incidental to the LLMA's activities in East and West Loon Lakes in Antioch, Illinois in Lake County.

Please have an authorized LLMA Official(s) sign the last page of both copies of the Authorization and Implementing Agreement and return both copies to my attention. Upon receipt, I will have the agreements signed and return one (1) fully executed copy to you for your official records. This authorization shall be effective once signed by the Department.

Thank you for your cooperation and assistance during the incidental take preparation and review process. Please do not hesitate to contact our office at (217)782-6384 with any questions or comments you may have regarding this authorization agreement.

Sincerely,

Joseph A. Kath
Endangered Species Manager
IDNR-Office of Resource Conservation

Enclosures

Authorization for Incidental Take and Implementing Agreement

Pursuant to the Illinois Endangered Species Protection Act (520 ILCS 10/5.5) LLMA's authorization for the incidental take of the State threatened Banded killifish (*Fundulus diaphanus*); the State threatened Starhead topminnow (*Fundulus dispar*); State threatened Blackchin shiner (*Notropis heterodon*); the State endangered Blacknose shiner (*Notropis heterolepsis*); the State endangered Pugnose shiner (*Notropis anogenus*); the State threatened Iowa darter (*Etheostoma exile*); and the State threatened Mudpuppy (*Necturus maculosus*) in Lake County, Illinois (as described/shown in the conservation plan received by the Department on 02 March 2010) is hereby granted, subject to the terms and conditions described in the attached Authorization and Implementing Agreement. The Illinois Department of Natural Resources has determined that this authorized take is incidental to the LLMA's activities in East and West Loon Lakes in Antioch, Illinois in Lake County.

Procedural History

The Loon Lakes Management Association (LLMA) (acting through its environmental consultant, Hey and Associates, Inc.) prepared a conservation plan as described by the Illinois Endangered Species Protection Act (520 ILCS 10/5.5). That plan and LLMA's request for authorization for incidental take of the State threatened Banded killifish (*Fundulus diaphanus*); the State threatened Starhead topminnow (*Fundulus dispar*); State threatened Blackchin shiner (*Notropis heterodon*); the State endangered Blacknose shiner (*Notropis heterolepsis*); the State endangered Pugnose shiner (*Notropis anogenus*); the State threatened Iowa darter (*Etheostoma exile*); and the State threatened Mudpuppy (*Necturus maculosus*) were received by the Illinois Department of Natural Resources (Department) on 02 March 2010. Public notice of LLMA's request for authorization of incidental take of the above listed aquatic species was published in the Arlington Heights Daily Herald (Official State newspaper) and the "general" Daily Herald (widespread Northeastern Illinois Suburban distribution) on March 22, 23, and 24 2010, as well as on April 1, 2010 and April 8, 2010. Public comments on LLMA's conservation plan were accepted by the Department until April 14, 2010. No comments were received by the public during the period of March 22, 2010 through April 14, 2010.

Compliance with the Endangered Species Protection Act

The Illinois Endangered Species Protection Act includes six (6) criteria which must be met for the authorization of incidental take of an endangered or threatened species. These criteria and the Department's determination for each criteria are listed below.

1. The taking will not be the purpose of, but will only be incidental to, the carrying out of an otherwise lawful activity:

East and West Loon Lakes are natural glacial lakes in the Fox River watershed. Both lakes are widely used for recreation. East Loon Lake is the larger of the two and it includes the watersheds of West Loon Lake, Cedar Lake, Deep Lake, and Sun Lake. West Loon Lake is connected to East Loon Lake via a shallow channel and East Loon Lake then drains to Lake Marie and eventually to the Fox River via Sequoit Creek. The two lakes have been extensively researched and surveyed over the years by the LCHD, by the IDNR and its predecessor agency (Department of Conservation), and by private consultants.

The lakes provide habitat for several fish species that are listed as threatened or endangered by the IDNR and the Illinois Endangered Species Protection Board. The IDNR also has advised that the lakes could potentially host the mudpuppy (*Necturus maculosus*), which is an aquatic salamander and a newly State-listed (2009) amphibian species.

The LLMA is mindful of the need to protect listed species and is committed to doing so in recognition of the special natural resource distinction the species lend to the lakes. The lakes and their surrounding environs also host listed aquatic plants and terrestrial plants as well as listed birds.

The two lakes are located in Sections 20 and 21, Township 46 North, Range 10 East, 3rd P.M., in unincorporated Lake County, Illinois. The lakes lie east of IL Rt. 83 and south of IL. Rt. 173 and are near the Village of Antioch. The lakes are physically connected via a shallow channel.

The majority of the shorelines on both lakes are owned by private individuals in single family residences or by subdivisions which provide community beaches for their residents. A portion of the shoreline and lake bottom on each lake is owned by the Lake County Forest Preserves. There is no public access on either lake although fee-based access does currently exist at a private launch on West Loon Lake.

The LLMA currently conducts aquatic weed harvesting, contracts for aquatic herbicide applications, and performs other management activities to maintain and improve the quality of the lakes and the recreational uses of the lakes. There also is the potential for additional management activities in the future such as dredging sediment-clogged channels, and shoreline protection. Existing and future management projects and impacts associated with each include:

- A. Mechanical harvesting of aquatic plants: The LLMA owns and operates a mechanical aquatic plant harvester. Operation of that equipment could potentially result in taking of listed fish species or *Necturus maculosus* through injury or death by cutter heads or by removal from the water by the harvester's conveyor. Harvester operation can also result in removal of aquatic vegetation that may be consumed as food or used as shelter or spawning substrate by listed species and may also cause temporary turbidity in the area of operation (especially if operated at very shallow depths).
- B. Hand harvesting of aquatic plants: Hand harvesting will result in the removal of minor quantities of aquatic vegetation in near-shore areas and is not likely to cause adverse impact on the listed fish or amphibian species.
- C. Herbicide applications to aquatic plants: Use of aquatic herbicides will result in mortality of plants susceptible to the herbicide. Treating too large an area of a lake with herbicide at one time can also cause oxygen deficits with harmful repercussions for aquatic organisms, especially if done during summer months. In the extreme, complete eradication of rooted aquatic vegetation would negatively impact lake water quality and also adversely affect the shelter and spawning requirements of the listed fish species.
- D. Lake aeration would be expected to have beneficial effects on the listed species.
- E. Use of bacterial pellets: This technique purports to control sludge, muck, and nutrients in lakes through application of aerobic and anaerobic bacteria. It typically is applied to only small areas and is not expected to have adverse effects on listed species. This management technique has been used in limited fashion at beaches and boat launches on both lakes in the past. No adverse impacts would be expected since the treatment does not cause turbidity or result in oxygen deficits.

- F. Dredging maintenance: Dredging has been discussed as a means to restore depths in the connecting channel between the two lakes and in channels in East Loon Lake. This would result in short-term turbidity in the water column during dredging operations as well as disruption of benthic habitat in the dredged areas. Depending upon season and areas dredged, dredging could disrupt the spawning of listed species and could adversely affect reproductive success. Either mechanical or hydraulic dredging would be expected to result in injury or mortality to *Necturus maculosus* if any are encountered.
- G. Fish stocking: The lakes already contain predator fish such as largemouth bass, northern pike, walleye, channel catfish, and muskellunge and stocking efforts have taken place in the past. Adding to the population of gamefish as is typically done in lake stocking programs might adversely affect the population of listed species since some individuals likely become part of the forage base for predators. However, the listed fish species may have very well adapted to co-exist with predators, although this is not proven. Large predator fish such as muskellunge or muskellunge hybrids potentially could adversely affect *Necturus maculosus* if that species is present in the lakes. All fish stocking at Loon Lakes should only be done in accordance with and guidance from IDNR Fisheries Staff.
- H. Shoreline restoration: The LCHD estimates that 19 percent of the West Loon Lake shoreline and 30 percent of the East Loon Lake shoreline has some degree of erosion. Past shoreline protection efforts by the LLMA have included installation of geo-fabric, rip rap, and native shoreline plantings. Shoreline restoration involving native vegetation or installation of cobble, rip rap, or boulders would be expected to have beneficial impacts on the listed species. Conversely, shoreline protection with sheetpile armoring would reduce habitat for macroinvertebrates and other aquatic life. The only plans currently being considered involving sheetpile stabilization relate to the need to protect the banks and shore of the connecting channel with replacement sheetpile if and when the channel is dredged.
- I. Boat launch restoration and creation: This could result in lake bottom and shoreline disturbances although the area affected would be minimal. Minor turbidity increases might also result during construction.
2. The parties to the conservation plan will, to the maximum extent practicable, minimize and mitigate the impact caused by the taking.

The two lakes collectively comprise over 350 surface acres. The LLMA is aware that it has responsibilities regarding listed species when conducting management activities on the lakes. The LLMA is also aware that aquatic vegetation is an essential life requirement of many of the fish species. The LLMA is not at all interested in eliminating aquatic vegetation from the lakes, but rather in controlling the large monotypic stands of invasives through managed herbicide applications and through managed harvesting so that traditional recreational activities on the lakes can continue.

The LLMA plans to minimize the risk of taking listed species by minimizing the areas targeted for application of management measures. Of all the management measures now employed or being considered, mechanical weed harvesting is believed to pose the most direct threat to the species of interest because harvesters are known to gather small fish along with the cut weeds that are collected. LLMA will implement a plan that will restrict the harvester to cutting several narrow navigational lanes that will allow recreational boats to pass from launch ramps, private piers, and

near-shore moorings to the open waters of the lake. In addition to limiting the area of harvester operation, efforts also will be made to educate operators to recognize listed species so individuals that might be brought on board by the harvester's conveyor can potentially be returned to the water. Nonetheless, it is believed that even with precautions, it is possible that >50 individuals of all species may be taken (the Department fully recognizes that this number is merely an estimate discussed with local fisheries biologists, County and State, and should not be interpreted or used in any fashion as a benchmark), and that is why incidental take authorization is being sought. In addition, in order to reduce potential impacts on reproductive recruitment of listed fish, LLMA will not initiate harvesting until late-June of each year, by which time it is believed that these fish will have completed initial spawning. Also, large blocks of aquatic vegetation will be left unmanaged in each lake.

Eurasian watermilfoil/EWM (in late spring and throughout summer) is the aquatic macrophyte posing the greatest problems for residents and recreational users. Of these, EWM is the most invasive and problematic, and East Loon Lake is the lake most impacted by its presence with large areas of infestation. The LCHD's plant density surveys conducted in 2008 found EWM at 62 percent of the East Loon Lake sample sites in June, increasing to 73 percent presence in August 2008. In West Loon Lake, EWM was found at about 18 percent of sites in June and at 33 percent of sites in August.

With the cooperation of and assistance from the LCHD, the LLMA shall:

- a. Prioritize harvesting to occur in areas where Eurasian watermilfoil is most densely concentrated. LCHD will approve the aquatic plant management plan each year prior to implementation.
- b. Establish standard operational procedures so the harvester does not cut in shallow, near-shore waters (other than perpendicular lanes for specific piers and boat ramps) where the listed fish typically occur or at speeds that disturb substrate, create turbidity problems, or not allow time for fish to evade.
- c. Under the Annual Memorandum of Agreement between LLMA and LCHD, the LLMA will submit monthly reports to LCHD, mapping and documenting how many loads of biomass are cut and removed from the lakes by the harvester.

With respect to herbicide treatments, only spring applications of 2, 4-D to concentrations of Eurasian watermilfoil are currently being considered. However, with time, use of other approved aquatic herbicides also may be warranted for spot treatments of specific problem areas. Please note that any and all herbicides considered for treatment at any time during this project must first be approved in writing by the IDNR District Fisheries Biologist for Region II - **no herbicide applications what so ever shall be made without prior written approval of the local IDNR Fisheries Biologist.** As noted, the current greatest infestations of EWM are in East Loon Lake, minimizing the need for applications in West Loon. Please note that this herbicide provision applies solely to the LLMA and its subcontractors, as the actions of private citizens do not apply to this Authorization document.

Experience has shown that 2, 4-D is moderately to highly effective on Eurasian watermilfoil and expectations are that herbicide applications can be reduced with time as the EWM is controlled and beneficial native plants re-colonize areas now occupied by EWM. It is important to note that 2, 4-D does not affect aquatic monocots including many of the beneficial native pondweeds that occur in the lakes. If 2, 4-D is used per this Incidental Take Authorization, then only the AMINE formulation shall be used as there is less chance for toxic effects upon aquatic organisms.

3. The parties to the conservation plan will ensure that adequate funding for the conservation plan will be provided:

The LLMA is a not-for-profit (NFP) corporation responsible for lake management in and around East Loon Lake and West Loon Lakes in unincorporated northern Lake County, Illinois. The LLMA is comprised of the property owners that are on the tax assessment roll for Lake County Special Service Area No. 8, which itself was created for the specific purpose of providing funding for lake restoration and maintenance in the Loon Lakes watershed.

The LLMA's management activities are coordinated by the Lakes Management Unit of the Lake County Health Department (LCHD). The LLMA has existed since 1983 and the Special Service Area has been in existence for 20 years.

Unlike most other lakes in Lake County where homeowner or subdivision dues, user fees, or voluntary donations are relied upon to pay for management, East and West Loon Lakes benefit from having earmarked annual property tax revenues available for LLMA utilization. The tax levy for the Special Service Area has been established by ordinance to produce \$50,000 annually. This assures that the management and monitoring activities established by this *Conservation Plan* can be funded.

By ordinance, the LCHD coordinates the activities of the Special Service Area and oversees the disbursement of funds for lake management activities. The LCHD shall ensure that provisions of the *Conservation Plan and Incidental Taking Authorization* are observed.

Overall, the *Conservation Plan and subsequent Incidental Taking authorization* will allow the LLMA to continue to conduct lake management activities within the watersheds of the two lakes while avoiding or minimizing risk to several listed animal species known or believed to reside in the two lakes or adversely affecting the habitat of those listed species.

4. Based on the best available scientific data, the Department has determined that the taking will not reduce the likelihood of the survival or recovery of the endangered species or threatened species in the wild in Illinois, the biotic community of which the species is a part, or the habitat essential to the species' existence in Illinois:

The most intensive management activities planned for the lakes and the ones most likely to directly interface with the listed species will be aquatic plant control through mechanical harvesting and herbicide treatment of EWM.

As stated, mechanical harvesting will be limited to that necessary to open and maintain boat access lanes and will be primarily conducted in depths greater than those favored by the listed fish species (1.5 meters or less). The harvester currently used by LLMA has a cutting width of 5 feet and a maximum cutting depth of 8 feet. Standard operating procedure will be for the equipment operator to harvest only in water depths greater than 4-feet and keeping the cutter head no closer than 3-feet above the lake bottom in order to avoid fish seeking shelter in and along the substrate and also the bottom-dwelling *Necturus maculosus*.

Depths shallower than 4 feet are encountered only in near-shore areas where harvesting needs to be done to create lake access for specific piers, launches, or channels. For example, in Laguna Channel at the north end of East Loon Lake, the harvester will need to operate 2-feet above the channel bottom in order to provide boating access to the lake. These specific areas will be proposed by LLMA and submitted to LCHD for approval prior to each harvesting season.

To minimize potential impact to spawning fish, no harvesting shall be conducted until late-June of each year.

In addition, a policy shall be implemented so that cutting will be done at low forward speed in order to provide ample warning to fish allowing them to evade or to seek shelter in the substrate. Low operational speeds will improve cutting and harvesting efficiency and also minimize risk of turbidity in the shallower areas.

Harvester operators shall be instructed to return all turtles and any mudpuppies that might be collected to the lake. Authorization for operator handling of the listed species necessary to accomplish safe returns is requested as part of the Incidental Take permit. The harvester also will be equipped with clear color photos of all listed fish species and brief narrative descriptions in the hope that any listed fish removed from the water by conveyor can be identified and rapidly returned to the water.

With guidance and assistance from the LCHD, the LLMA shall map and annually prioritize areas for herbicide treatment of EWM. (The LCHD previously made recommendations for 2009 harvesting and herbiciding in the two lakes in its *2008 Summary Reports*). It is anticipated that no more than 25-30 acres per year (or approximately 15% of East Loon Lake) would be treated in any given year with a reasonable expectation to treat specific areas for 2 to 3 consecutive years to bring current infestations under control. No herbicide applications are currently made in West Loon Lake although it is possible that this alternative would need to be applied during this **initial three (3) year period of authorization (See Authorization Section below for more details). Any and all herbicides used now or in the future on any portion of the Loon Lakes property must first be approved in writing by the IDNR District Fisheries Biologist prior to any application. If approved by the IDNR, all applications shall be made in early- to mid-spring and only in areas infested with EWM.** Spring applications will result in plant die-off at a time when dissolved oxygen levels are typically high so problems associated with oxygen deficits due to plant decomposition should not materialize. Label instructions and application rates shall be observed and applications shall only be made by licensed aquatic herbicide applicators/operators.

Lake County Forest Preserves (LCFP) has stated that harvesting and herbicide treatments should **not** be conducted on those portions of the lakes where the lake bottom is owned by LCFP. This includes approximately 23.5 acres of West Loon Lake and 10.8 acres of East Loon Lake. Accordingly, both those areas **shall be avoided** in EWM herbicide treatment. However, it is proposed that minimal harvesting be allowed in West Loon Lake over Preserve-owned lake bottom to allow recreational boaters from an adjoining subdivision to have access lanes as they have

enjoyed in the past. The LLMA shall work with the LCFP to attempt to secure permission to harvest "horseshoe" lanes approximately 15-feet wide and extending no more than 3 feet beneath the lake surface in this 23.5-acre area. It is estimated that these lanes will constitute a total of 0.5 to 0.75 acre. The LCFP maintains ultimate jurisdiction in these areas and formal, written permission to harvest such lanes must be granted first by the LCFP before any such activities occur by the LLMA.

Lake County Forest Preserves also requested that three specific investigations or studies be conducted as part of the LLMA *Conservation Plan*: 1.) an investigation of E/T populations of fish and plant in each of the lakes (*including the mudpuppy*), 2.) an assessment of vegetation densities to determine if harvesting is necessary, and 3.) identification and location of invasive species within the lakes.

The LLMA (in conjunction and consultation with the LCHD, LCFP, and/or the IDNR) shall conduct supplemental fish surveys, with the listed fish in mind, *as well as surveys for the mudpuppy* in order to determine the effectiveness of the subject activities on the listed species of concern. The IDNR will take this task on only if Agency time and budget constraints are met and permission is granted from the IDNR Region II Fisheries Regional Administrator and/or the IDNR District Fisheries Biologist. If IDNR staff are unavailable, LCHD staff will conduct the survey. These monitoring activities shall take place annually for the duration of this initial (3) year authorization – therefore a total of three (3) annual reports shall be received by the LLMA. At least once during this time frame, LLMA will hire an independent fisheries/biological consultant to conduct a detailed survey. *Note: Such surveys should be modeled after previous studies conducted in the general project vicinity. If standards maintained in previous studies in the project area can be followed, the IDNR encourages such measures. These annual surveys shall be conducted concurrent with proposed harvesting efforts. All monitoring/survey activities shall be directly coordinated with Regional IDNR Fisheries Staff and each annual report (total of 3) documenting monitoring/survey results shall be provided to the IDNR (attn: Joseph Kath) and the LCFP within 60 days of survey completion.

In addition, the LLMA will provide the LCFP with: A copy of *EA Engineering, Science, and Technology's 2009 report Survey of State-Listed Fishes from East and West Loon Lakes, Lake County, Illinois* which documents the most recent survey of threatened and endangered fish in the lakes. Copies of the LCHD 2008 reports on West Loon and East Loon Lakes which document the results of 2008 aquatic plant surveys, including data and map information on species and densities. Separate maps in those reports illustrate current (2008) EWM densities in both June and August in each lake. The reports include the LCHD's map recommendations for herbicide applications and mechanical harvesting on the lakes which serve as the basis for current and future management activities. LCHD has agreed to pre-screen any proposed harvesting lanes on Forest Preserve property for listed plant species and advise LLMA staff on preferred harvesting lanes.

With respect to invasive species, Eurasian watermilfoil/EWM is the predominant invasive of concern in the two lakes. The lakes also include curlyleaf pondweed (*Potamogeton crispus*) but that species has not presented a management problem. Invasive zebra mussels are also present in the lakes.

If dredging is conducted, protocols will need to be developed to limit direct impacts to listed species. These could include pre-dredge seining in the work area to remove and re-locate fish along with expanded use of turbidity curtains to serve as fish barriers to prevent return of re-located individuals. Turbidity during dredging will need to be minimized in order to protect turbidity-intolerant species and to prevent suspended materials from being deposited in the lakes.

5. Any measures required under Section 5.5 of the Illinois Endangered Species Protection Act [520 ILCS 10/5.5 - 17 IL. Adm. Code Part 1080.40(b)], will be performed:

Additional measures are listed below under "Authorization." This authorization is, by definition, subject to those terms and conditions and official LLMA's signature(s) on this authorization indicates their commitment to performing those measures.

6. The public has received notice of the application and has had the opportunity to comment before the Department made any decision regarding the application:

The Loon Lakes Management Association (LLMA) (acting through its environmental consultant, Hey and Associates, Inc.) prepared a conservation plan as described by the Illinois Endangered Species Protection Act (520 ILCS 10/5.5). That plan and LLMA's request for authorization for incidental take of the State threatened Banded killifish (*Fundulus diaphanus*); the State threatened Starhead topminnow (*Fundulus dispar*); State threatened Blackchin shiner (*Notropis heterodon*); the State endangered Blacknose shiner (*Notropis heterolepsis*); the State endangered Pugnose shiner (*Notropis anogenus*); the State threatened Iowa darter (*Etheostoma exile*); and the State threatened Mudpuppy (*Necturus maculosus*) were received by the Illinois Department of Natural Resources (Department) on 02 March 2010. Public notice of LLMA's request for authorization of incidental take of the above listed aquatic species was published in the Arlington Heights Daily Herald (Official State newspaper) and the "general" Daily Herald (widespread Northeastern Illinois Suburban distribution) on March 22, 23, and 24, 2010, as well as on April 1, 2010 and April 8, 2010. Public comments on LLMA's conservation plan were accepted by the Department until April 14, 2010. No comments were received by the public during the period of March 22, 2010 through April 14, 2010.

Authorization

It is the determination of the Department that the measures to be implemented by the LLMA (in conjunction with the LCHD) will adequately minimize and mitigate for the possible taking of the State threatened Banded killifish (*Fundulus diaphanus*); the State threatened Starhead topminnow (*Fundulus dispar*); State threatened Blackchin shiner (*Notropis heterodon*); the State endangered Blacknose shiner (*Notropis heterolepsis*); the State endangered Pugnose shiner (*Notropis anogenus*); the State threatened Iowa darter (*Etheostoma exile*); and the State threatened Mudpuppy (*Necturus maculosus*) in Lake County, Illinois.

As far as estimating potentially adverse impacts of harvesting and other vegetation management activities at the subject site: It is worth noting that continued presence of listed fish species in East and West Loon Lakes after approximately 20 years of harvesting and other management suggests that management measures likely have not adversely altered habitat or reduced chances of survival. EA Engineering, Science, and Technology's seining efforts in July 2009 collected the following in West Loon and East Loon Lakes: Blacknose shiner (15), Blackchin shiner (75), and Banded killifish (3).

These fish are also found in other glacial lakes in northeastern Illinois, including other lakes in the Sequoit Creek watershed of which the Loon Lakes are a part. Other species such as the Pugnose shiner have not been documented for several years in Lake County lakes according to the LCHD.

Also, spring herbicide treatments for EWM control have been shown to be beneficial, often allowing beneficial native plants to re-colonize lake areas and become dominant after EWM concentrations are reduced. Reducing the level of harvesting or herbiciding may allow EWM to become more dominant which is an undesirable outcome for both native pondweeds and other aquatic plants.

With respect to vegetation harvesting, the IDNR Fisheries Division concluded in a *Supplemental Survey Report* for the lakes (dated January 22, 2008) that harvesting should be maintained because of the benefits of better access for recreational users, nutrient removal, and reduction in the potential for occurrence of algal blooms. The *Supplemental Survey Report* noted that continued confirmed presence of listed species was indicative that current and past lake management practices have not adversely altered listed species habitat or reduced their chances of survival.

Please note that it is the intent of this Incidental Take Authorization (ITA) document to help guide and regulate activities strictly associated with the LLMA/LCHD in East and West Loon Lakes – for the most part, the Department cannot, nor does it wish, to regulate the activities of the LCFPD. This ITA document is structured to allow the LLMA/LCHD to continue to conduct lake management activities within the watersheds of the two (2) lakes that it owns, while avoiding and/or minimizing risk to several listed species known to reside in the lakes. In areas owned by the LCFPD, the ITA document maintains that formal permission must first be granted by the LCFPD to allow the LLMA/LCHD to conduct any activities in such areas.

Lastly, it is our opinion (IDNR) that the restrictions authorized herein would not diminish the likelihood of the survival of the State threatened Banded killifish (*Fundulus diaphanus*); the State threatened Starhead topminnow (*Fundulus dispar*); State threatened Blackchin shiner (*Notropis heterodon*); the State endangered Blacknose shiner (*Notropis heterolepsis*); the State endangered Pugnose shiner (*Notropis anogenus*); the State threatened Iowa darter (*Etheostoma exile*); and the State threatened Mudpuppy (*Necturus maculosus*) in the wild within the State of Illinois, the biotic community of which the species is a part or the habitat essential to the species' existence in Illinois.

Pursuant to Section 5.5 of the Illinois Endangered Species Protection Act [520 ILCS 10/5.5 - 17 IL. Adm. Code Part 1080.40(b)], this authorization is issued subject to the following additional terms and conditions:

The Loon Lakes Management Association (LLMA) and the Lake County Health Department (LCHD) will be the participants in the implementation of the Conservation Plan and this Incidental Take Authorization.

1. This authorization is effective upon signature of the Department and shall remain in effect for a period of three (3) years [commencing at the start of weed harvesting and herbicide application in year 2012 or 2013], unless terminated pursuant to Section 5.5. of the Illinois Endangered Species Protection Act [520 ILCS 10/5.5 - 17 IL. Adm. Code Part 1080.80]. If, after three (3) years of project activities, no adverse impacts to the listed species of concern are recorded, then the Department will work with the applicant to more than likely extend this Authorization for a greater length of time (i.e. 5 years, 10 years, etc.).

NOTE: An annual evaluation/survey each year for the first three (3) years will be required in order to determine the effectiveness of the proposed project activities on the species of concern. These annual surveys shall be conducted concurrent with proposed harvesting efforts.

2. Therefore, the effectiveness of each year for the first three (3) years of weed harvesting and herbicide application and any impacts to any and all listed species shall be evaluated by the LLMA, LCHD, LCFP, and ultimately, the IDNR. A comprehensive report covering each year for the first three (3) years shall be prepared by an agent of the LLMA and provided to the LCHD, LCFP, and IDNR (attn: Joseph Kath) within 60 days after completion of weed harvesting and herbicide application. Upon review of each annual report, the IDNR shall maintain ultimate jurisdiction over future activities. The IDNR shall notify the LLMA within 120 days of report receipt if activities can continue on site with or without modification(s) for the subsequent year.

3. In the event that the measures planned to minimize takings are deemed ineffective at any time during this initial three (3) year authorization, all subject adverse management activities shall cease immediately and the LLMA shall work with the LCHD's Lakes Management Unit and the IDNR to develop and employ alternate management measures. Such actions shall be reviewed and officially approved by the IDNR prior to the commencement of any FURTHER in-field activities. These alternate management measures shall be developed and approved by the LCHD and IDNR within 6 months after initial measures are officially deemed "ineffective".

*IN SUMMARY: The LLMA (in conjunction and consultation with the LCHD, LCFP, and/or the IDNR) shall conduct supplemental fish surveys, with the listed fish in mind, *as well as surveys for the mudpuppy* in order to determine the effectiveness of the subject activities on the listed species of concern. The IDNR will take this task on only if Agency time and budget constraints are met and permission is granted from the IDNR Region II Fisheries Regional Administrator and/or the IDNR District Fisheries Biologist. If IDNR staff are unavailable, LCHD staff will conduct the survey. These monitoring activities shall take place annually for the duration of this initial (3) year authorization – therefore a total of three (3) annual reports shall be received by the LLMA. At least once during this time frame, LLMA will hire an independent fisheries/biological consultant to conduct a detailed survey. *Such surveys should be modeled after previous studies conducted in the general project vicinity. If standards maintained in previous studies in the project area can be followed, the IDNR encourages such measures. These annual surveys shall be conducted concurrent with proposed harvesting efforts. All monitoring/survey activities shall be directly coordinated with Regional IDNR Fisheries Staff and each annual report (total of 3) documenting monitoring/survey results shall be provided to the IDNR (attn: Joseph Kath) and the LCFP within 60 days of survey completion.

4. In addition to ALL commitments/provisions/tasks/criteria noted in EVERY section of this Incidental Take Authorization document, the following conditions summarized below shall be followed/implemented by the LLMA and its partners:

a. In order to reduce potential impacts on reproductive recruitment of listed fish, LLMA will not initiate harvesting until late-June of each year, by which time it is believed that these fish will have completed initial spawning. Also, large blocks of aquatic vegetation will be left unmanaged in each lake.

b. Mechanical harvesting will be limited to that necessary to open and maintain boat access lanes and will be primarily conducted in depths greater than those favored by the listed fish species (1.5 meters or less). The harvester currently used by LLMA has a cutting width of 5 feet and a maximum cutting depth of 8 feet. Standard operating procedure will be for the equipment operator to harvest only in water depths greater than 4-feet and keeping the cutter head no closer than 3-feet above the lake bottom in order to avoid fish seeking shelter in and along the substrate and also the bottom-dwelling *Necturus maculosus*.

c. In summary, the LLMA shall minimize or mitigate the effects of all proposed actions on listed species referenced in this Incidental Take Authorization by:

-Practicing *de minimis* aquatic weed harvesting and herbicide application, currently concentrating on EWM control in East Loon Lake.

-In the case of herbicide applications, it is possible that a range of aquatic herbicides would be used for spot treatment of problem areas throughout the 5-year span of this *Plan*. The *Plan* keeps that option open should it be needed, particularly for EWM control. Short-term plans, however, call only for spring season application of herbicide (not to exceed 25-30 acres of East Loon Lake) to areas of EWM concentration as a means of controlling that invasive. **PLEASE NOTE: Any and all herbicides used now or in the future on any portion of the Loon Lakes property must first be approved in writing by the IDNR District Fisheries Biologist and/or the IDNR Region II Fisheries Regional Administrator prior to any application. Also, if 2, 4-D is used per this Incidental Take Authorization, then only the AMINE formulation shall be used as there is less chance for toxic effects upon aquatic organisms.**

-The LLMA shall work with the LCHD to map and target the priority areas for herbicide treatment of Eurasian watermilfoil. LCHD will review and approve LLMA's annual aquatic plant management plan.

-Operating harvesting equipment only in water depths primarily greater than 4 feet which will avoid the shallow water habitat preferred by many of the listed fish species. LCHD will pre-approve any harvesting plans. No harvesting will commence prior to late-June.

-Operating harvesting equipment at low cutting speed to give fish an opportunity to escape and operating in such a manner that cutter heads do not come within 1 foot of the bottom substrate that is favored by *Necturus maculosus* and also by small fish when disturbed.

-Providing the harvester operator with clear descriptions and photos of the listed species so that collected individuals have some opportunity of being returned to the lakes.

-Limiting dredging and shoreline restoration activities to those areas that are problematic. For shoreline restoration and protection projects, efforts will be focused at using naturalized measures that will enhance shoreline fish and macroinvertebrate habitat.

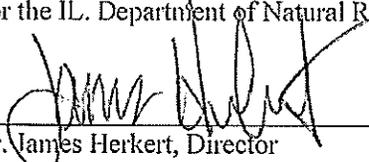
-Stocking fish only in accordance with IDNR Division of Fisheries (IDNR-Office of Resource Conservation) recommendations.

5. The effective period of this authorization may be altered by mutual agreement between the LLMA and the Department.

6. This authorization may be revoked pursuant to Section 5.5 of the Act if the Department finds that the LLMA has failed to comply with any of these terms and conditions or has been responsible for the take of any State threatened Banded killifish (*Fundulus diaphanus*); the State threatened Starhead topminnow (*Fundulus dispar*); State threatened Blackchin shiner (*Notropis heterodon*); the State endangered Blacknose shiner (*Notropis heterolepsis*); the State endangered Pugnose shiner (*Notropis anogenus*); the State threatened Iowa darter (*Etheostoma exile*); and the State threatened Mudpuppy (*Necturus maculosus*) in Lake County, Illinois associated with this project.

7. The LLMA official identified below is authorized to execute this agreement. Execution by the LLMA indicates acceptance of all terms and conditions described in this document.

For the IL. Department of Natural Resources



Dr. James Herkert, Director
Office of Resource Conservation

5-10-12

Date Signed

For the LLMA (Lake County, Illinois)



Signature

Mike Clifton President

Please print name and official title

4-18-12

Date Signed

