FINAL REPORT

ROBERT ALLERTON PARK POND, A STATE-LISTED FISH REFUGE

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State of Illinois
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STATE WILDLIFE GRANT

State of Illinois

Final Report

PROJECT NUMBER: T-27-D

PROJECT TITLE: Robert Allerton Park Pond, a State Listed Fish Refuge

INTRODUCTION

The Robert Allerton Park Pond presents an ideal opportunity to restore populations of at least five rare and declining fish species to the Sangamon River Basin. The five fish species are: redspotted sunfish (*Lepomis miniatus*), starhead topminnow (*Fundulus dispar*), ironcolor shiner (*Notropis chalybaeus*), lake chubsucker (*Erimyzon sucetta*) and mud darter (*Etheostoma aspirigene*).

Robert Allerton Park is a 1,500 acre park in Piatt County, Illinois; it is one of only three areas in central Illinois having more than 500 acres of contiguous forest. More than 600 acres of the park are "pristine" floodplain forest along the Sangamon River. In 2003 a restoration practicum course through the University of Illinois developed a restoration plan for a 1.3 acre pond located within Robert Allerton Park. The pond which is located adjacent to the historic estate of Robert Allerton was created in 1900 and until recently supported four fish species: common carp, largemouth bass, green sunfish and bluegill. During the restoration practicum students planned and executed the removal of all fish in the pond, with the goal of establishing a community of native non-game fish. The pond was treated with Rotenone to insure that all fish were eliminated.

Although small, the Allerton pond is unique for an Illinois pond as it has a constant groundwater source maintaining an average water temperature closer to the cool temperatures favored by many declining native fish species. The pond is protected from pollution and sedimentation events and is located in the heart of one of the largest natural areas in Central Illinois. The desired non-game fish have declined due to habitat destruction as a result of sedimentation, channelization, and the introduction of exotic species.

Currently all of the state fish hatcheries are being used to produce sport fish and right now they do not have room to take on non-game fish species. Additionally, the state production ponds do not have sufficient aquatic vegetation to maintain long-term breeding populations of these non-game fish. If this project were to be conducted at a state fish hatchery, ample aquatic vegetation would need to be established for the perpetuation of these species. Currently these fish species are most abundant naturally in spring-fed bodies of water, the Allerton pond provides this habitat need as it is fed primarily by a natural spring.

Since the Allerton pond is fed entirely by groundwater and runoff from the mansion and the small watershed, there is little sedimentation and water clarity has drastically improved since the removal of the common carp. The pond is also ideal for this project because the former fish population has already been removed, providing a very controlled situation for the introduction of imperiled species. Although the park is visited by thousands of people every year the proximity of the pond to the conference center allows staff to keep a close eye on activities around the pond. Allerton Park is open to visitors from 8:00am to sunset every day and park gates are locked every night that the conference center is not in session. When the gates are locked the Allerton pond is more than a mile walk from the gate and when the park is open the pond is still a 100 yard walk from any parking area, reducing the chances of undesirable fish being transported to the pond. Likewise, the pond is not close to other bodies of water that could act as a source for undesirable fish species. When the conference center is open park staff and security personnel are ever-present in the area of the pond and gardens. Allerton Park prohibits all fishing including in the Sangamon River and the Allerton pond.

Furthermore this site will lend itself to public awareness; Robert Allerton Park is visited by more than 100,000 people every year – including researchers, teachers, students, conference guests and the general public; signage around the pond describes the goal of restoring native non-game fish populations. This amount of visibility is ideal for improving the awareness of the comprehensive wildlife conservation plan.

Job 1.1: In the spring of year one the Allerton pond will be treated with SONAR to control curly leaf pondweed, such an application will be repeated in spring of year one if needed.

OBJECTIVE

At the onset of this project, Allerton Pond was choked with exotic, invasive plant species. The objective of Job 1.1 was to eliminate these undesirable plant species to allow for the establishment of more appropriate native plant species.

RESULTS

In March of 2006, the Allerton Pond was treated once with SONAR. Since that treatment, there has been no sign of curly leaf pondweed in the Allerton Pond. The pond was continuously monitored throughout the project and no signs of the return of this and other invasive aquatic plants have been observed.

Job 2.1: Throughout year one native plants will be introduced to the pond, these plants will be either collected from a pond on site, from an area pond with the permission of the IDNR, or purchased from an aquatic nursery. Arrowhead (*Sagittaria* spp.) will be collected from wetlands at Allerton. Blue flag iris (*Iris versicolor*), sweet flag (*Acorus americanus*), and water star grass (*Heteranthera*

***dubia*) will be collected from area ponds with the help of the IDNR. Pickerel weed (*Pontederia cordata*) and Vallisneria (*Vallisneria americana*) will be purchased from aquatic nurseries.**

OBJECTIVE

The objective of Job 2.1 is to establish several native plant species in Allerton Pond for ecological and aesthetic purposes.

RESULTS

Arrowhead: Individual plants were collected from the Allerton Diversified Farm pond on four occasions in 2006: May 18, June 14 and 28, and July 6 and on four occasions in 2007: May 20, June 17 and 20, and July7. On each occasion roughly 100 plants were transplanted. Arrowhead is doing well on all banks of the Allerton pond, but has been difficult to transplant into deeper (6"+ water).

Blue Flag Iris: Individual plants were collected from the Allerton Goldfish pond on June 22, 2006 and June 15, 2007. Blue flag iris is thriving and expanding on the west bank of the Allerton pond and is also doing well at the inlet of the pond.

Sweet Flag: Clumps of plants were collected from the Farmer City Rearing pond at Illinois Department of Natural Resources Clinton Lake Fish and Recreation Area on two occasions in 2006: May 18 and June 21 and two occasions in 2007: May 15 and June 25. The first planting failed, as plants appeared to be removed and eaten by muskrats. The second planting remained healthy for all of 2006 and returned in 2007. Both of the 2007 plantings were also successful.

Water Star Grass: This submerged plant was purchased in 2007 from a nursery and grown in pots for a month before it was planted into the Allerton Pond. This was very successful.

Pickerel Weed: Individual plants and tubers were purchased from J&J Tranzplant Aquatic Nursery, and introduced to Allerton Pond on June 18, 2006. Pickerel weed plants did not return very strong the following year. Individual plants and tubers were again purchased from J&J Tranzplant Aquatic Nursery and replanted into exclosures on June 10, 2007. This effort also failed, as muskrats or crayfish were determined to have eaten them.

Water celery: Individual plants were collected from an interstate pond owned and managed by the city of Chenoa, IL. In 2006, individuals were planted into 6"-18" of water in Allerton Pond, and they did not survive. Individual plants were again collected from Chenoa, IL in 2007. The plants were grown in pots at an alternative site for one month. These plants appear to be doing well. Water celery was also purchased from a nursery in 2007, but these plants did not survive.

All introduced plants appear to be doing well in very shallow water and along the banks, however we are experiencing some difficulty in getting plants to survive away from the banks. We believe that the over-abundance of crayfish in the pond may be damaging to the aquatic vegetation plantings. In the summer of 2007 plantings were done inside of crayfish exclosures and an attempt was made to reduce the crayfish population through trapping. The introduction of redspotted sunfish to the population should also help control the crayfish population in the pond. Overall aquatic vegetation is increasing and improving fish habitat.

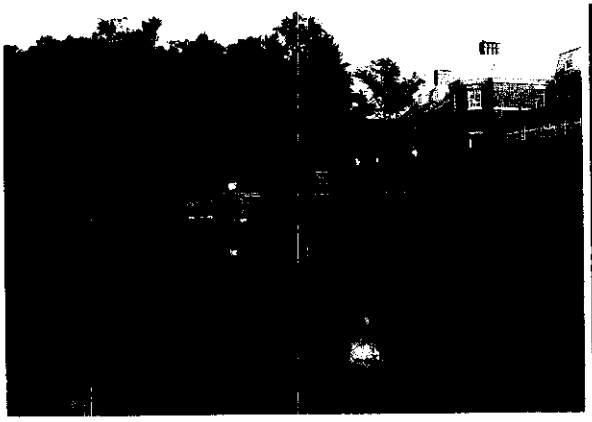


Figure 1. Emergent vegetation at the pond.

Figure 2. Blue flag iris in bloom.

Figures 3-4. Sweet flag plantings.

Figures 5-6. Exclosures utilized to protect aquatic plants from crayfish damage.

Job 3.1: Individual fish will be collected under the supervision of IDNR biologists from known populations located within the Sangamon River Basin and released into the Allerton pond the same day that they are collected. In year one starhead topminnow, ironcolor shiner, lake chubsucker and mud darter will be introduced.

OBJECTIVE

The objective of Job 3.1 is to establish a population of rare and declining fish species of the Sangamon River basin in the refuge pond.

RESULTS

25 starhead topminnows (State-Threatened), 25ironcolor shiners (State-Threatened), and 25lake chubsuckers were introduced to Allerton Pond in 2006 from spring-fed streams in the Sangamon River basin near Havana, IL. In 2007, 21 southern redbelly dace were collected from an unnamed tributary to Sugar Creek in McLean County and stocked into the pond. 25 adult Redspotted sunfish (State-Threatened) were collected from Fish Creek in Mason County in 2008. These fish were spawned in two rearing ponds at the Illinois Natural History Survey in Champaign, IL. Approximately 4000 fingerlings were harvested from these ponds. 187 individuals were stocked into Allerton Pond to establish a refuge population for this species. A sizeable population of mud darters has not been located and have not yet been introduced into the pond.

Figure 6-7. Fish stockings.

Job 3.2 : The Allerton fish populations will be monitored to confirm successful reproduction, and subsequent genetic analyses will be utilized to determine maintenance of genetic integrity. The population will be monitored by using dip-nets to capture fry, setting baited minnow traps, and electro fishing.

OBJECTIVE

Periodic monitoring of the fish population in the pond was conducted to document recruitment of the various fish species into the pond population.

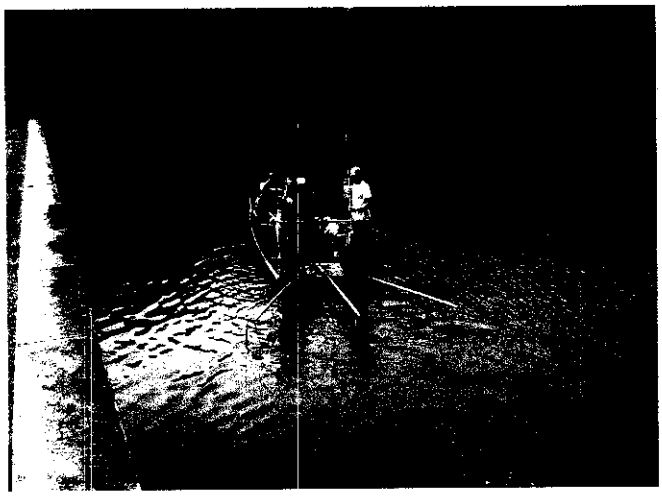
RESULTS

In May 2007 IDNR streams biologist Trent Thomas surveyed the Allerton pond using mini-fyke nets and boat electrofishing. Thomas determined that all three fish species present had successfully spawned in the pond and were doing excellent. During this survey 50 starhead topminnows and 43 lake chubsuckers were collected from Allerton Pond to be used in reintroduction efforts at Emiquon Nature Preserve in Fulton County, IL.

On April 24, 2008 the pond was surveyed again by Trent Thomas (IDNR). At this time, the pond was being prepared to be lowered for dam repairs. The crayfish numbers had also reached critical levels, posing a serious detriment to efforts to establish submerged vegetation. Emergent vegetation continued to thrive, but submerged plant species were nearly extirpated. All fish collected during the survey were removed and translocated to Emiquon Nature Preserve. The lake chubsuckers were collected in high numbers, and 190 mature individuals were collected. The populations of the two State-Threatened fish species appeared to have crashed, most likely due to the reduction in submerged vegetation and increased water turbidity from crayfish activity. Only five starhead

topminnows and twelve ironcolor shiners were collected during the survey. No southern redbelly dace were collected.

Dam repairs were made during the summer of 2008 and the pond was allowed to refill. The drawdown helped the spread of emergent plant species that were later inundated when normal water levels were restored. The introduction of redspotted sunfish should also help control crayfish numbers, allowing improved success with continued efforts to establish aquatic vegetation. The pond will be stocked again in 2009 with the original fish species that were greatly reduced in 2008.



Figures 8-9. Fish population monitoring efforts.

Job 4.1: Two informational signs will be designed and placed around the Allerton pond, the signs will highlight the use of native plants, the need for conservation of non-game fish species and the threats to aquatic ecosystems.

OBJECTIVE

The location of this pond and the exposure to park visitors provides and excellent opportunity as a public education tool. Signage at the site will support this effort.

RESULTS

A temporary sign was created and posted next to the pond early in the project. This sign drew a great deal of interest from visitors that would stop to observe the pond and read the sign. A boardwalk that extends out into the pond was constructed in 2007 and provides an excellent vantage point for pond observations. Permanent informational signs have not yet been installed, but are planned for the near future.

Allerton Pond will continue to serve as an education tool by making more people aware of the need for non-game wildlife conservation in Illinois. The Allerton Park Conference

Center is utilized by landscape designers, city planners, businesses, and private landowners. We expect Allerton Pond to be an example for any such group or individual that may have a farm pond, detention basin or other land in need of attention.

BUDGET: Year one of this project has a total federal funding cost of $6,353.46, and year two a total cost of $1,069.94. A detailed budget is below.

DETAILED BUDGET: YEAR 1

Federal Funding:

1st Year Funding – Federal	**Allocated**	**Spent**	**Surplus**
Herbicide (SONAR) – 3pt @ $275.00/pt	$825.00	$644	$181
Plants – Pickerel Weed 200 plants @ $1.75ea	$350.00	$310	$40
Plants – Vallisneria 200 plants @ $.50ea	$100.00	$90	$10
Plants – Collection trips to local ponds and lakes:	$185.00	$73	$112
Fish – Collection trips to western Illinois 3 –	$228.66	* $0	$228.66
Sampling Equipment for Fish Populations –			
30' seine net	$147.95	**$92.83	$55.12
16"X16" dip nets 3 @ $38.95	$116.85	$109.53	$7.32
Boat and Trailer	$4,000.00	$3,923.99	$77
Informational Restoration Signs 2	$400.00	***$0	$400
TOTAL:	**$6,353.46**	**$5,243.35**	**$1110.11**

*All fish introduced to the Allerton Pond have been collected and brought to the park by IDNR biologists, Allerton staff did not have to travel for fish collection in 2006.
**IDNR Biologist, Trent Thomas recommended crayfish control, a portion of money originally allotted for sampling equipment was used to purchase crayfish traps.
*** Informational signs have not yet been installed due to the fact that the boardwalk where they will be sited is still under construction. Once the boardwalk is completed signs approved by IDNR biologists will be installed.

DETAILED BUDGET: YEAR 2

An intern was funded in Year 2 of the project, but no additional charges beyond the first year funding were submitted by the grantee for federal reimbursement. This left a surplus balance at the end of the grant term.

2nd Year Funding – 1 summer intern working on pond restoration

Work – 37 hrs/week X 9 weeks @ $7.43 per/hour	2,475.02
2nd Year TOTAL:	**$2,475.02**

Allerton Mansion Pond topographic map (estimated using 2 foot contour intervals)

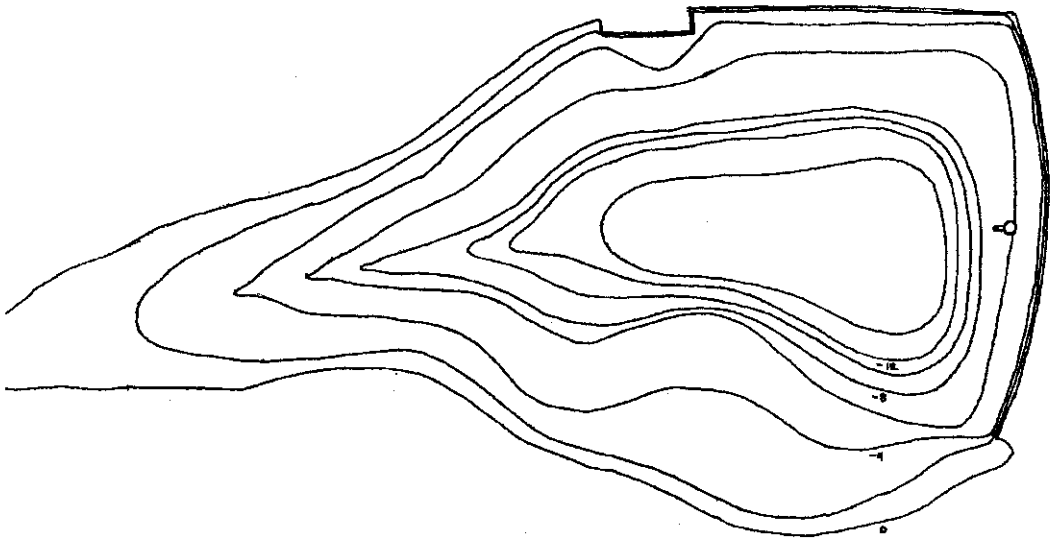
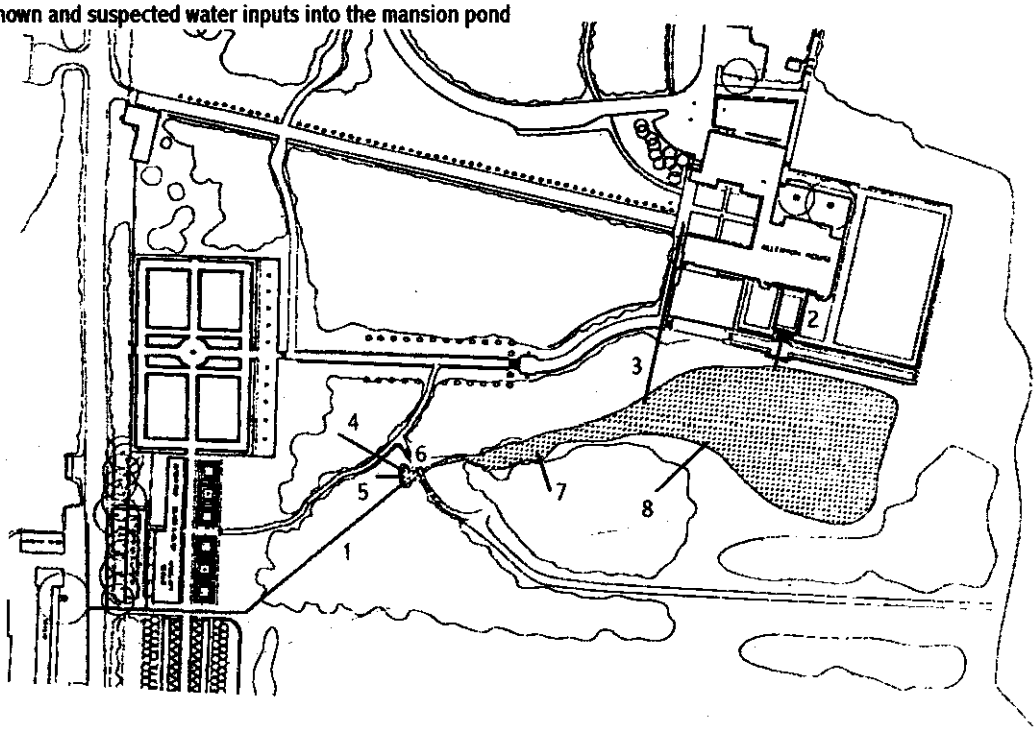


Figure 10. Allerton Pond topographic map.

Figure 11. Water inputs.

Known and suspected water inputs into the mansion pond



STATE WILDLIFE GRANT

State of Illinois

Annual Report for the period of June 1, 2006 – May 31, 2007

PROJECT NUMBER: T-27-D

PROJECT TITLE: Robert Allerton Park Pond, a State Listed Fish Refuge

APPROACH AND *PROGRESS*:

Job 1.1 : In the spring of year one the Allerton pond will be treated with SONAR to control curly leaf pondweed, such an application will be repeated in spring of year one if needed.

Progress 1.1 *: In March 2006 the Allerton pond was treated once with SONAR; since that treatment there has been no sign of curly leaf pondweed in the Allerton pond. We will continue to monitor the pond for signs of the return of this and other invasive aquatic plants.*

Job 2.1 : Throughout year one native plants will be introduced to the pond, these plants will be either collected from a pond on site, from an area pond with the permission of the IDNR, or purchased from an aquatic nursery. Arrowhead (*Sagittaria* spp.) will be collected from wetlands at Allerton. Blue flag iris (*Iris versicolor*), sweet flag (*Acorus americanus*), and water star grass (*Heteranthera dubia*) will be collected from area ponds with the help of the IDNR. Pickerel weed (*Pontederia cordata*) and Vallisneria (*Vallisneria americana*) will be purchased from aquatic nurseries.

Progress 2.1 *: Below are progress reports for each individual plant species.*

Arrowhead*: Individual plants were collected from the Allerton Diversified Farm pond on four occasions: May 18, June 14 and 28, and July 6. On each occasion roughly 100 plants were transplanted. Arrowhead is doing well on all banks of the Allerton pond, but has been difficult to transplant into deeper (6"+ water).*

Blue Flag Iris*: Individual plants were collected from the Allerton Goldfish pond on one occasion: June 22. Blue flag iris is thriving and expanding on the west bank of the Allerton pond and is also doing well at the inlet of the pond.*

Sweet Flag*: Clumps of plants were collected from the Farmer City Rearing pond at Illinois Department of Natural Resources Clinton Lake Fish and Recreation Area on two occasions: May 18 and June 21. The first planting failed, plants appeared to be removed and eaten by muskrats. The second planting remained healthy for all of 2006 and have returned in 2007.*

***Water Star Grass**: Viable populations of this submerged plant have not yet been identified on IDNR property and as such it has not yet been introduced to the Allerton pond.*

***Pickerel Weed**: Individual plants and tubers were purchased from J&J Tranzplant Aquatic Nursery, and introduced to the Allerton pond on June 18. Pickerel weed plants have not returned very strong, but will be replanted in exclosures in summer 2007.*

***Water celery**: Individual plants were collected from an interstate pond owned and managed by the city of Chenoa, IL. Individuals were planted into 6"-18" of water in the Allerton Pond, they do not appear to have survived.*

All introduced plants appear to be doing well in very shallow water and along the banks, however we are experiencing some difficulty in getting plants to survive away from the banks. We believe that the over abundance of crayfish in the pond may be damaging to the aquatic vegetation plantings. In summer 2007 plantings will be done inside of crayfish exclosures and an attempt will be made to reduce the crayfish population through trapping. Overall aquatic vegetation is increasing and improving fish habitat.

Job 3.1 : Individual fish will be collected under the supervision of IDNR biologists from known populations located within the Sangamon River Basin and released into the Allerton pond the same day that they are collected. In year one starhead topminnow, ironcolor shiner, lake chubsucker and mud darter will be introduced.

***Progress 3.1** : Starhead topminnows, ironcolor shiners and lake chubsuckers were introduced to the Allerton pond from spring-fed streams in the Sangamon River basin near Havana, IL. Mud darters have not yet been introduced.*

Job 3.2 : The Allerton fish populations will be monitored to confirm successful reproduction, and subsequent genetic analyses will be utilized to determine maintenance of genetic integrity. The population will be monitored by using dip-nets to capture fry, setting baited minnow traps, and electro fishing.

***Progress 3.2** : In May 2007 IDNR streams biologist Trent Thomas surveyed the Allerton pond using minnow traps and electro fishing. Thomas determined that all three species present had successfully spawned in the Allerton pond and were doing excellent. During this survey 50 starhead topminnows and 43 lake chubsuckers were collected from the Allerton pond to be used in reintroduction efforts at Emiquon Wetland Restoration, Fulton County, Illinois. Also during this survey IDNR biologists introduced another new species to the Allerton pond, the red belly dace, 21 individuals were released.*

Job 4.1 : Two informational signs will be designed and placed around the Allerton pond, the signs will highlight the use of native plants, the need for conservation of non-game fish species and the threats to aquatic ecosystems.

Progress 4.1 *: Informational signs have not yet been installed due to the fact that the boardwalk where they will be sited is still under construction. Once the boardwalk is completed signs approved by IDNR biologists will be installed.*

Result 4.1 : We expect the Allerton pond to benefit the CWCP by making more people aware of the need for non-game wildlife conservation in Illinois. The Allerton Park Conference Center is utilized by landscape designers, city planners, businesses, and private landowners; we expect the Allerton pond to be an example for any such group or individual that may have a farm pond, detention basin or other land in need of attention.

BUDGET: Year one of this project has a total federal funding cost of $6,353.46, and year two a total cost of $1,069.94. A detailed budget is below.

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Plants – Vallisneria 200 plants @ $.50ea	$100.00	$90	$10
Plants – Collection trips to local ponds and lakes:	$185.00	$91.70	$93.30
Fish – Collection trips to western Illinois 3 –	$228.66	*$0	$228.66
Sampling Equipment for Fish Populations –			
30' seine net	$147.95	**$92.83	$55.12
16"X16" dip nets 3 @ $38.95	$116.85	$109.53	$7.32
Boat and Trailer	$4,000.00	$3,923	$77
Informational Restoration Signs 2	$400.00	***$0	$400
TOTAL:	**$6,353.46**	**$5,261.06**	**$1,092.40**

*All fish introduced to the Allerton Pond have been collected and brought to the park by IDNR biologists, Allerton staff did not have to travel for fish collection in 2006.
**IDNR Biologist, Trent Thomas recommended crayfish control, a portion of money originally allotted for sampling equipment was used to purchase crayfish traps.
*** Informational signs have not yet been installed due to the fact that the boardwalk where they will be sited is still under construction. Once the boardwalk is completed signs approved by IDNR biologists will be installed.

2nd Year Funding - Federal

Herbicide (SONAR) – 3pt @ $275.00/pt	$825.00
Plants - Blue Flag Iris, Sweet Flag, Arrowhead, Water Star Grass	
Collection trips to local ponds and lakes: 5 – 50mile trips @ $.37/mi	$92.50
Fish – Collection trips to western Illinois 2 – 206mile trips @ $.37/mi	$152.44
2nd Year TOTAL:	**$1,069.94**

Federal Funding TOTAL **$7,423.40**

<u>Non-Federal Funding:</u>

1st Year Funding – 2 summer interns working on pond restoration

Work – 37 hrs/week X 9 weeks @ $7.43 per/hour	4,948.38
1st Year TOTAL:	**$4,948.38**

2nd Year Funding – 1 summer intern working on pond restoration

Work – 37 hrs/week X 9 weeks @ $7.43 per/hour	2,475.02
2nd Year TOTAL:	**$2,475.02**

Non-Federal Funding TOTAL **$7,423.40**