Summary of Fall 2010 Cormorant Hazing Activities at Oneida Lake

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Introduction

In order to minimize impacts of cormorant predation on the fish community of Oneida Lake the U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) conducted cormorant management activities from 1998 through 2009. Along with other activities, APHIS conducted "hazing" in the spring, summer, and fall to move birds off of the lake. Prior to the APHIS management program as many as 2,700 cormorants had been counted on the lake per day during the fall migration period, while the adult summer resident population had been as high as 900 birds. Cornell University research indicated that cormorant predation, prior to 1998, was having significant negative impacts on sport fish populations of the lake, including yellow perch and walleye. After control efforts by APHIS were implemented, cormorant use of the lake and associated impacts on walleye and perch declined dramatically. The average number of cormorants on the lake during the spring and fall migration period dropped to less than 200 birds per day from 2005-2008, while the resident summer population was consistently less than 150 birds per day.

Despite the documented success of the twelve year APHIS cormorant control program on Oneida Lake, funding was eliminated from the Federal budget for 2010. The New York State Department of Environmental Conservation (DEC) could not undertake a similar management program without dramatic reduction of existing programs due to financial constraints and reduced staffing. As a result, no hazing activities were conducted in spring and summer 2010. However, DEC staff was particularly concerned that the fall migration could have significant impacts on the fishery so a decision was made to attempt some form of fall hazing program. Concerned lake users indicated a willingness to assist in some way so staff settled on a joint effort conducted by both DEC staff and citizen volunteers. The use of volunteers in cormorant control programs in other states has apparently had mixed results so this was looked upon as an experimental program to determine the potential effectiveness in New York.

Methods

Organizing for the joint hazing effort began in early August and 59 volunteers were enrolled in a mandatory training session conducted on August 24, 2010. Volunteers were primarily recruited from the Oneida Lake Association (OLA) and the New York B.A.S.S. Chapter Federation but some were recruited as a result of a local newspaper article. Training topics included: purpose, goals and objectives of the program; record keeping; boat chase protocols; boat and personal safety; use of pyrotechnics; bird species identification; scheduling, logistics, and operational details; and general courtesy and responsibility expected of the volunteers. Volunteers were also encouraged to provide ideas and feedback on the project.

Past efforts conducted by APHIS were used as the basis for developing the 2010 hazing schedule. For the fall hazing period APHIS typically worked on the lake four weekdays per week for six weeks (late August to the beginning of October). No weekend hazing was conducted since lake recreational usage is higher at these times. The early October deadline was chosen so that waterfowl hunting opportunities would not be impacted by hazing activities. Due to the logistics involved with organizing and training, the 2010 joint hazing effort was scheduled for five weeks, rather than six, and ended on October 1st. However, the schedule did allow for hazing activities on five days rather than four. DEC staff were scheduled to conduct cormorant hazing and collection (23 birds were shot to determine what they were eating) activities each Monday

afternoon/evening and Thursday morning/afternoon throughout the hazing period. Volunteers were then asked to conduct harassment activities during the morning and evening hours of the remaining weekdays (Tuesdays, Wednesdays, Thursday evenings, and Fridays).

The lake was broken into seven zones to minimize the area that any one volunteer needed to cover while conducting hazing activities (Figure 1). Volunteers could choose which zone or zones they wanted to conduct their hazing activities in. The goal was to have as many zones covered as possible during times when volunteers were conducting their hazing activities. Certain areas of the lake tend to receive more cormorant use so volunteers were encouraged to emphasize activities in those zones.

DEC staff conducted lake-wide cormorant counts at the beginning of each week, prior to any hazing activities. Counts were also conducted the week prior to the start of the hazing project and the week after hazing ended. In addition, cormorant numbers were periodically monitored, from spring to fall, via evening roost counts by Cornell University researchers.

In prior years, pyrotechnic devices were used extensively by APHIS to enhance the effectiveness of the hazing program. These devices are fired from a pistol shaped hand launcher and travel approximately 150 feet before exploding with a loud bang. DEC staff felt these devices were both effective and safe enough that they should be made available to volunteers who wanted to use them, provided the volunteers receive training on their use first. Subsequently, OLA purchased 1,000 rounds of “bird bangers” along with several launchers for use by DEC staff and trained volunteers. Unfortunately purchase problems delayed the widespread availability of these devices until the last two weeks of the program. Several individuals did purchase their own launchers and pyrotechnics and used them prior to the OLA purchased materials being available. The logistics involved with making the devices available to volunteers was also a challenge. To address this issue, two weatherproof lock boxes were placed at marinas on either end of the lake (River Rat Marina in Brewerton and Oneida Lake Marina in Canastota). The lock combinations were subsequently provided to all of the volunteers so they could gain access to the pyrotechnics at any time. A sign out sheet was included in each lock box. The launcher and unused pyrotechnics were expected to be returned at the end of each shift to ensure their availability for subsequent users.

A DEC staff person was responsible for coordinating, updating and distributing the volunteer hazing schedule, including the sign up for pyrotechnic use. Staff provided calendar updates to all volunteers, via email, at least once per week. Volunteers were also asked to fill out a daily “Hazing Log” and return it to department staff as soon as possible. The summarized data from these logs is presented in the following discussion.

Results and Discussion

Cormorant count data from throughout the year is provided in Table 1. Results indicate that cormorant use of the lake in 2010 was significantly lower than it had been prior to the start of APHIS harassment activities in the late 1990's. Surprisingly, cormorant use of the lake in 2010 was no higher than it had been during the last few years of APHIS management activities. This was especially true for summer 2010 when fewer than 200 birds actually resided on the lake and little or no nesting activity was reported. Staff had anticipated increased use of the lake by

cormorants but this simply did not happen. The reason for the low numbers observed in 2010 is likely related to the cumulative effects of the management activities that occurred for the past thirteen years. APHIS hazing and removal efforts during those years likely discouraged cormorants from using the lake in 2010. Simply put, Oneida Lake has become a bad place to be in the minds of most cormorants.

Training was held at the Cornell Biological Field Station at Shackelton Point. The session went well and was favorably received by most of the 59 volunteers in attendance. A sign-up calendar was provided at the training session to allow volunteers to tentatively schedule when they could be on the lake. As it turned out, the majority of volunteers who signed up for hazing activities did so during the training. Only about one-third of the total time commitments from volunteers occurred after the training session. It is unclear why so few hazing commitments were made after the training, but the relatively low number of cormorants on the lake throughout the fall hazing period may have led many volunteers to take a “wait and see” approach to signing up. For the entire period, volunteers signed up to cover 60% of the zones/time periods that were potentially available.

Volunteers signed up to conduct 87 separate hazing trips during the five week time period. On average, volunteers covered two zones per outing but on one occasion a volunteer covered the entire lake. Fifty-four volunteer hazing logs were submitted for activities on the lake accounting for 62% of the scheduled trips. Several trips were known to be canceled due to poor weather or unexpected conflicts and it is likely that other unrecorded hazing efforts were conducted by volunteers. Eighteen (18) different boat owners submitted hazing logs and another 15 volunteers participated as assistants for a total of 33 active volunteers. One of the assistants listed was not on the training attendance roster so the actual participation rate of those who attended the training was 54%. This rate was lower than anticipated given the likely inconvenience that the training represented for many volunteers. The total time spent on the water by volunteers (including assistants) was 229 hours. Average trip length was 2.8 hours. Gas usage averaged 6.5 gallons per hazing trip. Gas usage was not reported for every outing but ranged between a low of 1.5 gallons and a high of 20 gallons. The longest single hazing effort recorded was 10.75 hours and corresponded with the maximum gas usage reported.

A total of 4,763 cormorants were “hazed” by volunteers during the harassment effort for an average of 88 per trip. The maximum number reported during any hazing effort was 350 on September 18, 2010 and several trips were conducted in which no cormorants were hazed at all. Volunteers used just 81 rounds of pyrotechnics during their hazing efforts. This number was substantially lower than expected but, again, was influenced by the fact that most volunteers did not have access to them until the last two weeks of the hazing operation. Volunteers who used pyrotechnics generally indicated that they were more effective at moving birds than boat chasing alone.

DEC staff conducted seven of ten scheduled hazing outings. Three of the planned efforts were canceled due to bad weather/rough lake conditions. DEC personnel did conduct two unplanned hazing efforts upon completion of their scheduled lake-wide cormorant counts. Total DEC staff time spent on the water conducting hazing activities was 90 hours. Approximately 1,070 cormorants were harassed during the nine hazing outings for an average of 119 per trip. Use of

pyrotechnics by DEC staff was also very limited with a total of just 23 rounds fired. However, DEC staff actively shot live rounds at cormorants to collect specimens for diet analysis.

Diet analysis was performed by Cornell University researchers on 23 cormorants collected by DEC staff. Twenty-one of these birds had at least one identifiable food item in their stomach. Gizzard shad accounted for 228 of the 256 (89%) identifiable items. Other species present included 15 emerald shiners, seven yellow perch (three adults), four logperch, and two walleye (no adults). Forty-one unidentifiable items were also present. Oneida Lake fish monitoring activities conducted by Cornell researchers revealed that juvenile gizzard shad were exceptionally abundant in 2010. Past diet studies revealed that juvenile gizzard shad comprised the vast majority of cormorant's diets during late summer and fall in years that shad were abundant. The preponderance of shad in the 2010 cormorant diet sample was consistent with these findings. Clearly, in years when gizzard shad production is high, they provide an important buffer against cormorant predation on gamefish species.

Cormorant use of Oneida Lake during September 2010 was substantially lower than expected. Past experience indicates that the peak fall cormorant migration usually occurs around mid- to late September and their numbers decline rapidly after the first week of October. However, in 2010 migrating cormorants never appeared to use the lake in September. Feedback from DEC staff and volunteers indicated that the 200-300 cormorants encountered on the lake through the month of September became very wary of nearby boats shortly after hazing began. These birds generally would take flight long before boaters could get within effective range of the pyrotechnics and tended to simply fly from one location on the lake to another. It is likely that that these birds were season long residents that did not want to leave the lake.

The highest number of cormorants counted during the hazing project was 381 birds on October 4 (Table 1). Only one count in September exceeded 300 birds. This suggested that the cormorants on the lake were primarily the same group of resident birds. In fact, it was not until the second week in October that large numbers (1,000-1,500) of cormorants were reported on the lake. This late migration is certainly not consistent with reports from previous years. Typically migrants had started coming through the first week of September and peaked in late September. The reason for the delay may have been weather related since National Weather Service data for Syracuse indicates that the month of September was nearly 2° F warmer than average. However, the middle of the month had slightly lower than average temperatures for two straight weeks but then it turned much warmer than normal for the remainder of the month. This warm spell may have caused some delays in the migration but the slightly cooler than average temperatures previous to it should not have contributed to any delays.

Because of the late migration it appears that our effort this year was more of a learning experience than it was an effective control tool. Given that the majority of cormorants present for almost the entire experimental hazing period were likely "resident birds", it's unclear whether the combined DEC and volunteer effort would have been effective at deterring use of the lake by migrating cormorants. However, given the dedication of the volunteers who actively participated, we suspect that the effort would have proven effective if migrating birds had been present.

Recommendations

At this time there is no indication that funding will be restored to APHIS for harassment activities on Oneida Lake. If a similar volunteer program is conducted in the future, the following suggestions should be considered:

- Based on the low number of birds present throughout the hazing period, there appears to be no need to start the program any earlier than what occurred in 2010.

- Although the number of migrating cormorants on the lake increased dramatically in early October extending the hazing effort further into October may cause conflict with duck hunters. Input from the duck hunting community would need to be gathered before a decision on whether or not to extend the program into early October could be made.

-Additional use of pyrotechnics, particularly around birds on their roost in the morning and evening hours, is recommended. Greater use of pyrotechnics may well disturb birds enough to move them off the lake.

-Based on volunteer comments, hazing just after dark was particularly distressing to roosted cormorants. Additional effort at these times should be experimented with to determine whether it is more effective at moving birds from the lake.

-Full lake coverage, when conducting volunteer hazing, is strongly suggested to maximize effectiveness. Greater emphasis needs to be placed on having volunteers fill in gaps in the schedule to insure hazing coverage across the entire lake. It likely is more productive to concentrate effort on fewer days but have full lake coverage than it is to have more days of hazing but only on a portion of the lake. Full lake coverage would likely be more effective at moving cormorants off the lake entirely rather than allowing them to find refuge in areas where hazing is not occurring.

-Continue to use the zone coverage approach for volunteers. Coverage of two to three zones appears to provide a nice balance of gas usage (costs) with effectiveness and requires just 3-4 boats on the lake during each morning and evening time period to achieve full lake coverage.

-Recruitment of more volunteers may be necessary to achieve the desired level of lake coverage during volunteer efforts. Based on the participation rate observed during this program, the number of volunteers with boats may have to double to achieve full lake coverage during most of the time periods. However, as noted earlier, participation may have simply been low due to the relatively small number of birds on the lake during most of the hazing period. A 50% increase in volunteer numbers could be more realistic, provided that the number of migrating cormorant is high enough to spark additional concern among volunteers.

-Activities conducted by APHIS over the preceding decade appeared to have had a strong influence on cormorant use of the lake in 2010. Because of the repeated hazing and nest deterrent activities of the past the birds appear to have become conditioned to avoid the lake, at least during the spring and summer. This has implications on determining how frequently the

hazing activities need to be conducted to enforce the avoidance behavior. However, at this time we have no way of determining the optimum level of these activities.

-To ensure better distribution of pyrotechnics among volunteers, establish an additional lockbox distribution point on both the north and south shores.

Acknowledgements
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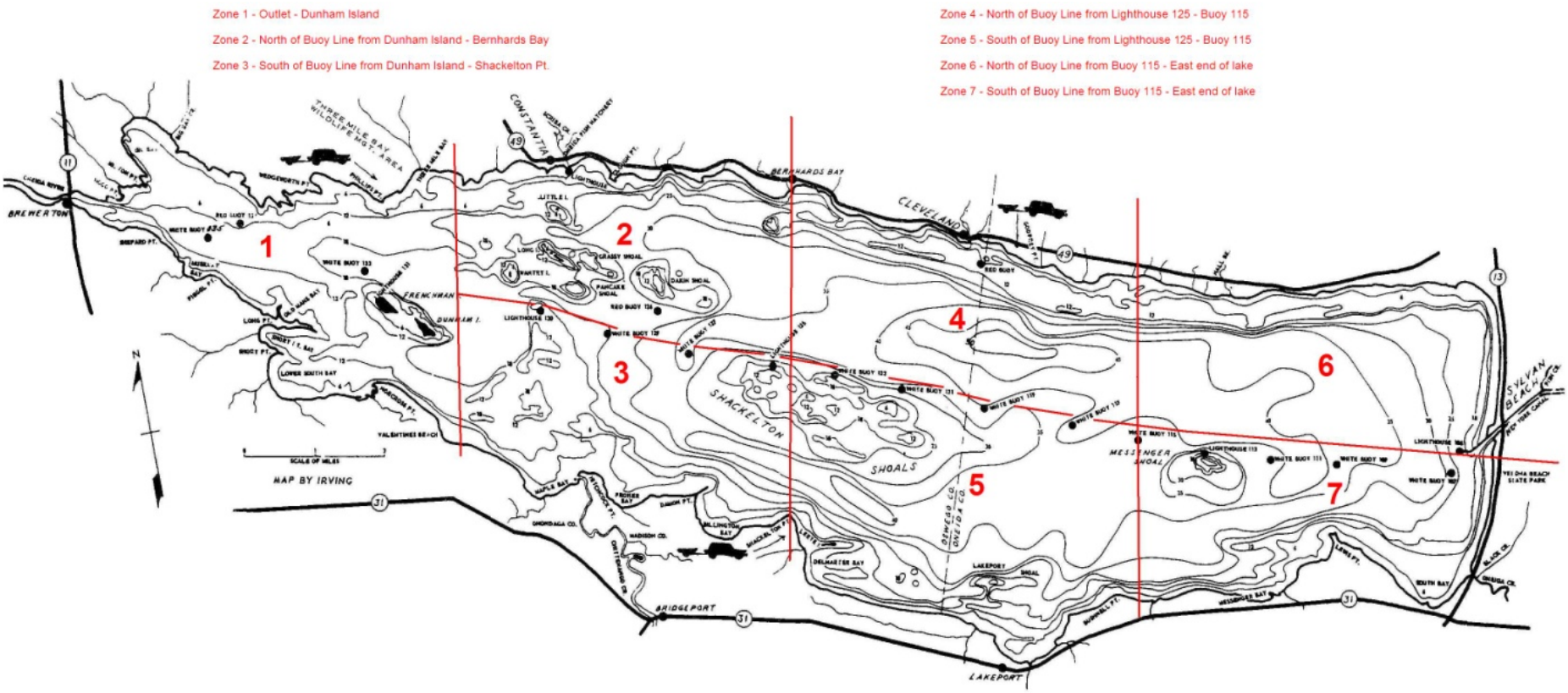

Figure 1. Oneida Lake cormorant hazing zone map for September 2010 harassment activities.

Table 1. Oneida Lake cormorant count data for 2010.

Date	Time	Count Type	Source	Staff	# Counted
13-Apr-10	5:45pm	Roosts	Cornell	Liz/Robin	70
20-Apr-10	7:45pm	Roosts	Cornell	Liz/Robin	310
29-Apr-10	6:45pm	Roosts	Cornell	Liz/Paul/Mike	238
5-May-10	7:50pm	Roosts	Cornell	Liz/Robin	190
13-May-10	4:00pm	Roosts	Cornell	Liz/Paul	75
21-May-10	7:40pm	Roosts	Cornell	Paul/Mike	170
28-May-10	7:50pm	Roosts	Cornell	Paul/Ryhan	190
4-Jun-10	6:45pm	Roosts	Cornell	Liz/Cara	7
11-Jun-10	7:41pm	Roosts	Cornell	Robin/Cara	41
15-Jun-10	7:30pm	Roosts	Cornell	Robin/Cara/Paul	57
23-Jun-10	7:00pm	Roosts	Cornell	Robin/Cara	41
8-Jul-10	7:50pm	Roosts	Cornell	Cara/Rosy	50
14-Jul-10	8:15pm	Roosts	Cornell	Cara/Rosy	70
27-Jul-10	8:00pm	Roosts	Cornell	Cara/Liz?	226
14-Aug-10	7:40pm	Roosts	Cornell	Lars	256
18-Aug-10	6:45pm	Roosts	Cornell	Liz/Robin	333
24-Aug-10	6:22pm	Roosts	Cornell	Liz	300
26-Aug-10	AM	Lakewide	R6 Wildlife	Farquhar/Lemon	240
6-Sep-10	PM	Roosts	Cornell		237
7-Sep-10	AM	Lakewide	R6 Wildlife		200
13-Sep-10	AM	Lakewide	R6 Wildlife		201
20-Sep-10	AM	Lakewide	R6 Wildlife		225
26-Sep-10	PM	Roosts	Cornell		277
27-Sep-10	AM	Lakewide	R6 Wildlife		320
4-Oct-10	Early PM	Lakewide	R7 Fisheries	Blackburn/Lemon	381
19-Oct-10	AM	Zone 3 and 5	Hazing Volunteer		1000
23-Oct-10	AM	Single Point flyby	Cornell	Tom B.	700