



Department of  
Environmental  
Conservation

# Lake Champlain Ice Fishing Creel Survey Plan

**2021-2022**

**NOVEMBER 2020**

Andrew M. Cuomo, Governor | Basil Seggos, Commissioner

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# Overview

## Problem Statement

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The information on ice fishing angler use characteristics on the New York side of Lake Champlain is outdated. The last ice fishing survey conducted by New York was in 1999, in coordination with Vermont Fish and Wildlife (NYSDEC 2000). This survey predates significant changes to species composition, fisheries management practices and environmental disturbances in the lake, including the introduction of aquatic invasive species, increased sediment and phosphorus inputs, and climate change. New York does not have the necessary information base to understand angler use and expectations to help guide management actions.

## Need

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Current ice angler catch rates, harvest rates, preferred target species and angler opinion information about the Lake Champlain ice fishery is needed to inform management decisions and provide an information base to measure management actions against. This information will also compliment a planned open-water creel survey to provide a more complete direct measure of the fishery. Together the surveys will provide a foundation for the development of future fishery management plans.

## Goals and Objectives

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The goal of the ice fishing creel survey is to characterize the present-day ice angler use and exploitation of all species of sport fish in the New York waters of Lake Champlain. Specific objectives include determining:

- angler catch and harvest rates for all species of sport fish on four New York bays
- preferred angler target species
- angler opinions on the quality of the fishery

## Timeframe and Geographic Scope

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Ice fishing creel surveys will be conducted during the ice fishing seasons of 2021 and 2022 covering 4 selected bays (Cumberland, Willsboro, Bulwagga and South) on the New York shoreline of Lake Champlain. These bays will serve as a representative sample of New York's ice fishery. A two-year creel survey will provide a more accurate analysis of angler use and mitigate against significant unforeseen influences such as unusual weather patterns.

The ice fishing creel survey will be conducted from ice formation, approximately January 1, through ice-out, as late as March 31.

# Survey Design – Methods

## Ice fishing access point creel survey

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The ice fishing creel survey follows the two-stage probability sampling design for access point creel surveys (Pollock et al. 1994). The 2021 ice fishing creel schedule can be found in Table 1.

The primary sampling unit is the day, which is stratified by month and by weekend/holiday and weekday day type strata within each month.

The survey will be conducted four days per week, including both weekend days, and two randomly selected weekdays. The work week is characterized Thursday to Wednesday, following the DEC work week. Holidays will be included in the weekend strata for analysis. If a holiday falls on a weekday, only one other weekday and both weekend days will be surveyed that week.

Time blocks are randomly selected for each survey day. Secondary sampling units include early (AM) and late (PM) time blocks of relatively equal duration within each day, and the survey bays. Time blocks were set by using predicted daylight hours for Plattsburgh, NY for each month and dividing by two for two equal time blocks each day. Early (AM) surveys will begin one hour after sunrise, to allow anglers time to fish before we begin intercepting them. Late surveys (PM) will conclude at sunset. Table 2 provides a good estimate of start and end times, but clerks will exercise their judgement as daylight hours change throughout the month to maximize their time.

The survey bay will be randomly selected for each scheduled day. Clerks will spend between 4 and 6 hours at the designated access point for the bay they are surveying. The access point for Cumberland Bay is Plattsburgh Boat Launch, for Willsboro Bay is Willsboro Bay Boat Launch, for Bulwagga Bay is Bulwagga Bay Campground and for South Bay is South Bay State Boat Launch (Figures 2-5).

Two clerks will conduct the survey. A clerk will be assigned two north bays (Cumberland and Willsboro) or two south bays (Bulwagga and South) to survey for the season; each clerk will survey one of their bays each survey day.

Creel clerks will park their vehicle at the designated access point, intercept ice anglers as they leave the bay, and interview willing participants. Anglers who have fished for less than half an hour will not be interviewed. Clerks will interview as many anglers as possible within the allotted time, focusing on gathering as much catch data as possible. Clerks will record party size, total hours fished up to the time of the interview and catch and harvest information (Appendix 1). For anglers that were fishing in a group, clerks will ask if they combined their catch or if they separated it by angler. If the catch is combined, clerks will only interview one angler from the group, but will record responses to the opinion questions for all anglers on separate forms, using the same interview number. If pressed for time, the clerk may record responses to the opinion questions for one member of the group and move

on. If the catch is separated, the clerk will interview each angler. If the angler allows, the clerk will measure total length on up to 5 of each species harvested (Appendix 2).

Clerks will keep a tally of the number of anglers fishing by counting any anglers leaving the bay (Appendix 3). They will also record the total number of anglers interviewed that day on the Angler Count form. In addition, clerks will count the cars in the parking lot at the beginning of their shift.

Catch cards will be given to some anglers heading out on the ice. Clerks will ask if the angler intends to return before the clerk's end time for the day; if they will not, the clerk will give them a catch card. Catch cards can be returned by the angler to a drop box located at the access site.

### Angler Opinions

Anglers will be asked for their opinions about their overall satisfaction with the fishery of Lake Champlain (Appendix 1). They will also be asked for their opinion on the fishery of their targeted species. Clerks will further ask anglers to relate any comments or concerns they may have about the fishery of Lake Champlain.

### Safety

Clerks will report to the Lake Champlain Biologist when they have completed their workday and communicate any problems or questions to the biologist at this time.

In cases of extreme weather, a survey day may be cancelled and possibly rescheduled.

*Modifications to the survey methodology may be made for the 2022 ice fishing creel survey if information collected during the 2021 ice fishing creel survey warrants it.*

## **Data organization – Recording / Entry / Storage**

All creel data will be entered on survey forms printed on write in the rain paper. Clerks will manually enter data into an Excel spreadsheet using a DEC laptop. They will routinely back up the data to the laptop and a pen drive. They will also email the Excel file to the Biologist at the end of each day of data entry. The Biologist will maintain a master file on a computer and the Share drive in Ray Brook.

### Quality Assurance / Quality Control (QAQC)

The biologist will ride along with each technician on their first surveys to introduce them to the locations, provide instruction on interviewing, and show them how to fill out the data forms.

Technicians will meet in-person or have a call with the biologist no more than 1 day after completing their first solo survey to resolve any issues and answer questions. Technicians are expected to alert the biologist to any problems as they arise. The biologist will monitor data collected throughout the creel season to check for errors. A biologist will conduct unannounced site visits over the course of the creel to ensure clerks are performing their duties.

Two biologists will QAQC the data set before analysis begins.

All changes to the creel schedule or design will be documented.

## Data Analysis

Characterize the present-day angler use and exploitation of all species in the Lake Champlain fishery by analyzing the following:

- Angler's preferred target species will be ranked
- Catch and harvest rates for each species per hour will be estimated for the survey period by month
- Ratings of the fishery from angler opinion data will be averaged for each target species; anglers will rate their satisfaction with the quality of the fishery
- All angler comments and concerns will be recorded and used to develop opinion questions for the 2022 survey.

Clerks will record angler provided start time and end time as well as the time of the interview on the data form, later calculating hours fished.

A standard spreadsheet with preset formulas will be used to analyze the data each year.

### Daily catch:

Catch rate ( $R_1$ ) is the number of fish caught per angler-hour. This data will be collected from angler interviews. Catch rate will be calculated following the formula below from Pollack et al. 1997. Catch rate includes all fish caught, regardless of whether they were released or harvested.

$$\hat{R}_{1a} = \frac{\sum_{j=1}^n C_j^*}{\sum_{j=1}^n L_j^*},$$

Where  $C_j^*$  is the complete catch for the  $j$ th angler and  $L_j^*$  is the complete trip length for the  $j$ th angler.

More simply, catch rate = fish caught / angler hour.

### Harvest:

Harvest rate is the number of fish harvested per angler hour; it does not include fish that were released. Harvest rate = fish harvested / angler hour.

## Reporting

Once the first year of data has been collected, a technical brief will be written summarizing the current creel data and documenting any changes for the coming year's surveys.

Following the conclusion of the 2-year survey, a comprehensive report will be written summarizing the creel data.

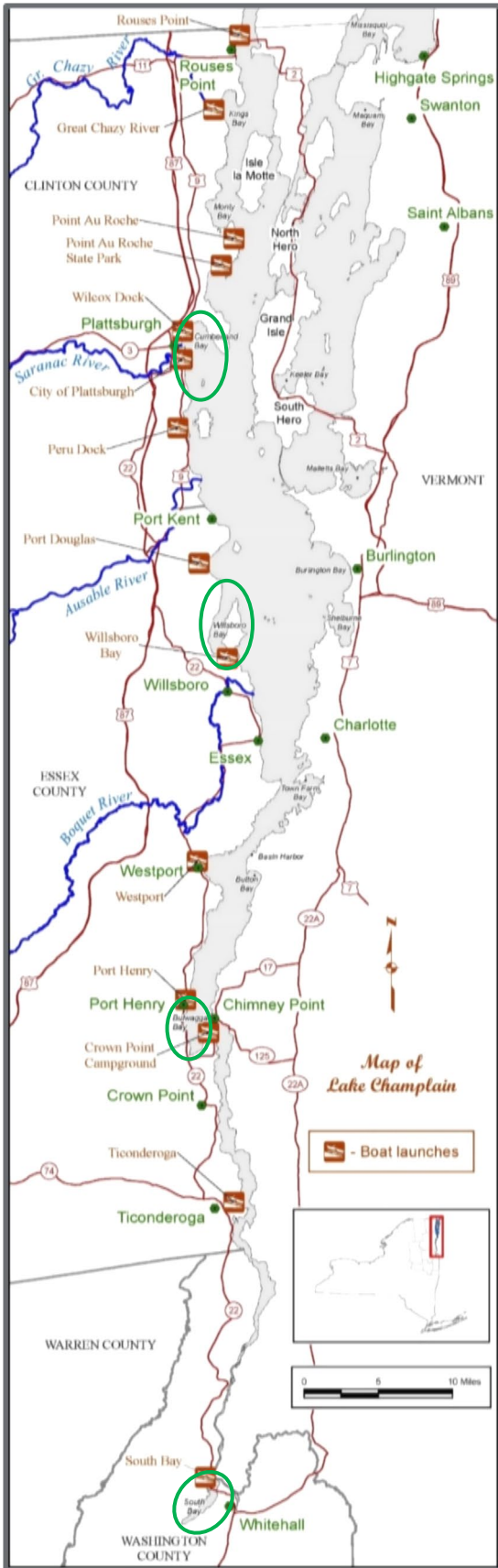
These reports will be submitted to Central Office for record keeping. They will also be presented at the next available Lake Champlain Fisheries Technical Committee meeting.

## Literature Cited

NSYDEC. 2000. Federal Aid in Sportfish Restoration Job Completion Report. Grant FA-5-R. Project II. Study 8 NYS Freshwater Angler Creel Survey. Job 119 North and South Lake Champlain Warmwater Creel Survey.

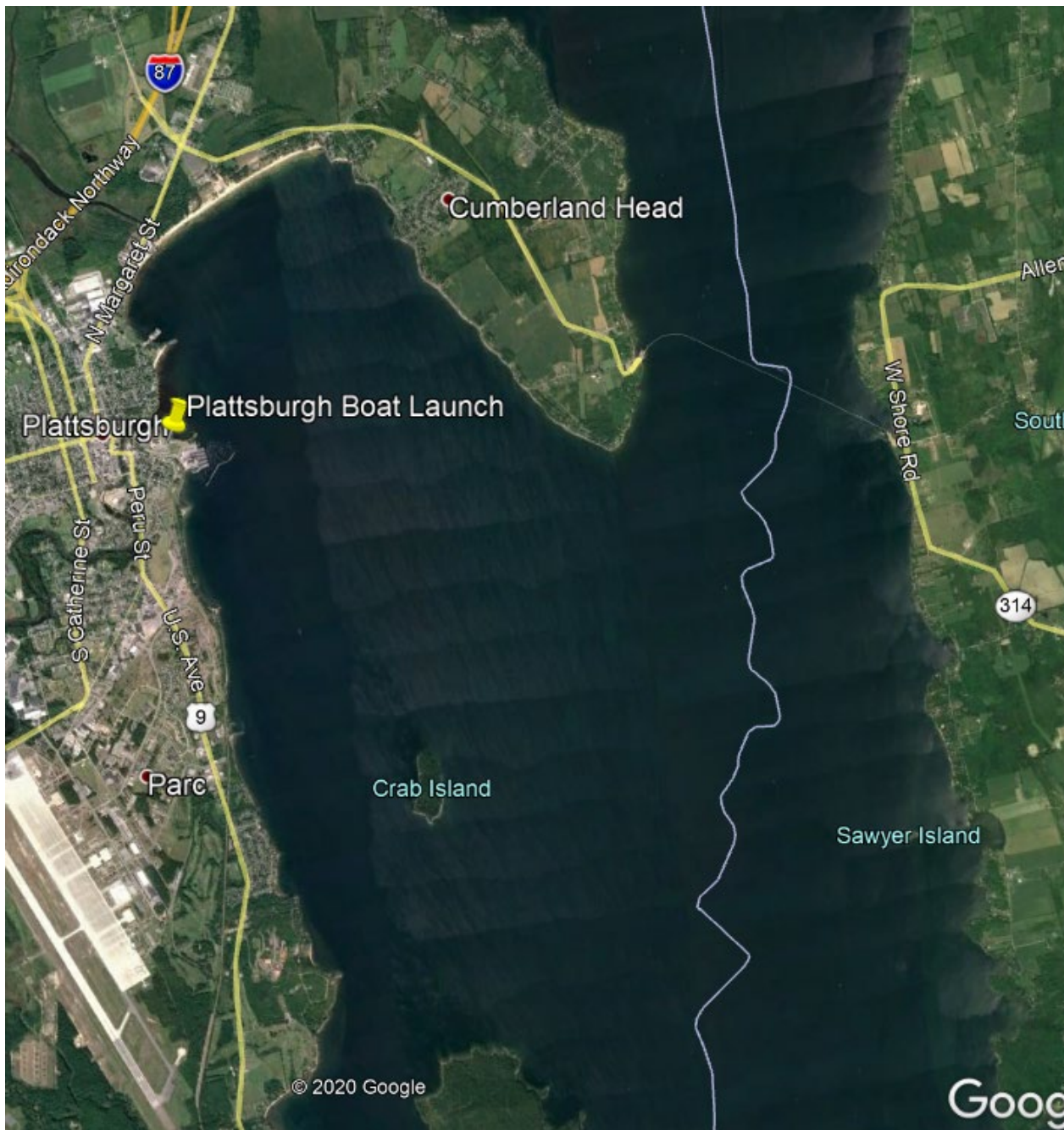
Pollock, K.M., Jones, C.M., Brown, T.L. (1994). Angler Survey Methods and their Applications in Fisheries Management. American Fisheries Society, Bethesda, Maryland, Special Publication Number 25.

Pollock, K. H., Hoenig, J. M., Jones, C. M., Robson, D. S., & Greene, C. J. (1997). Catch rate estimation for roving and access point surveys. *North American Journal of Fisheries Management*, 17(1), 11-19.



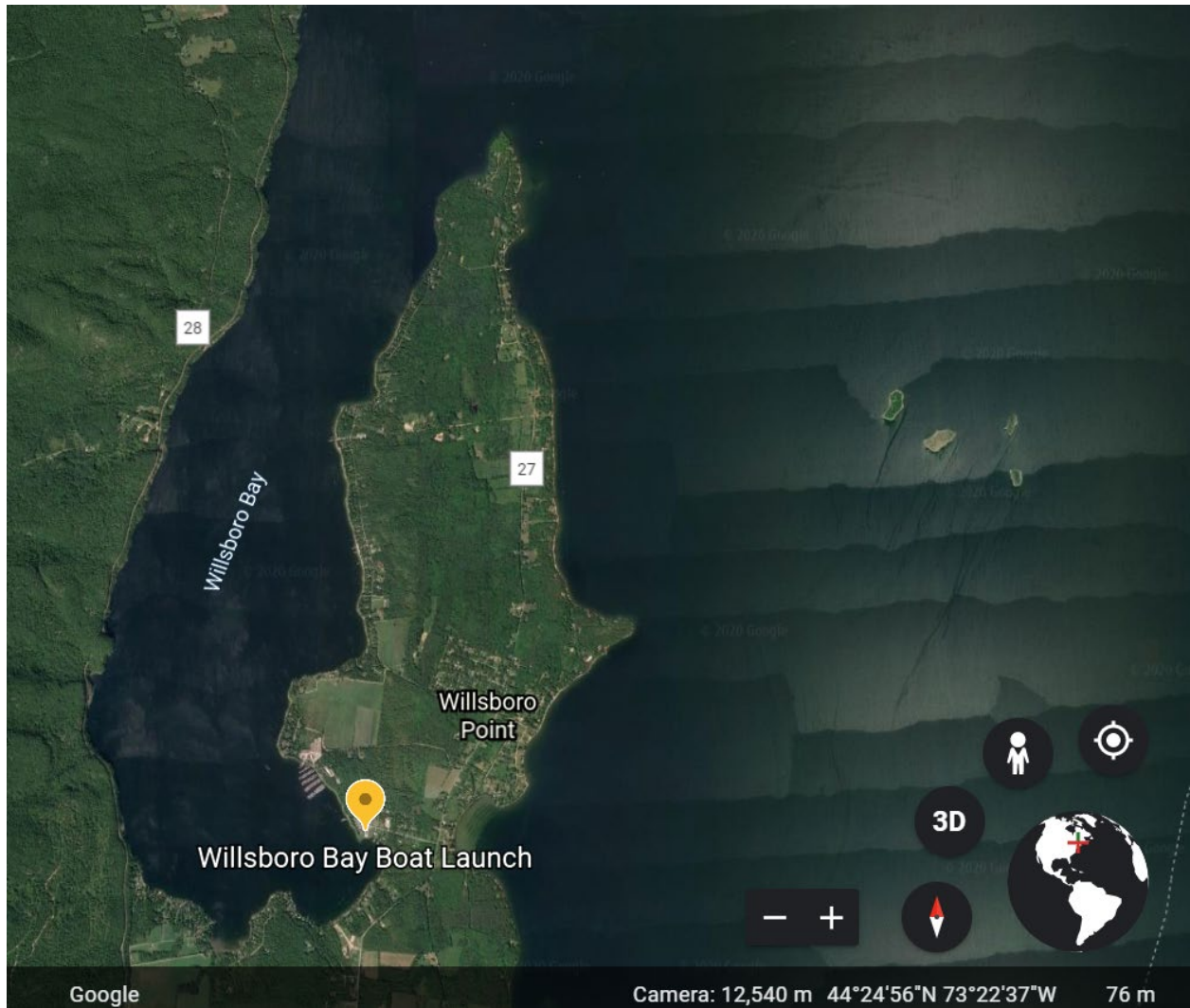
**Figure 1. Overview map of ice fishing bays to be surveyed on Lake Champlain.**





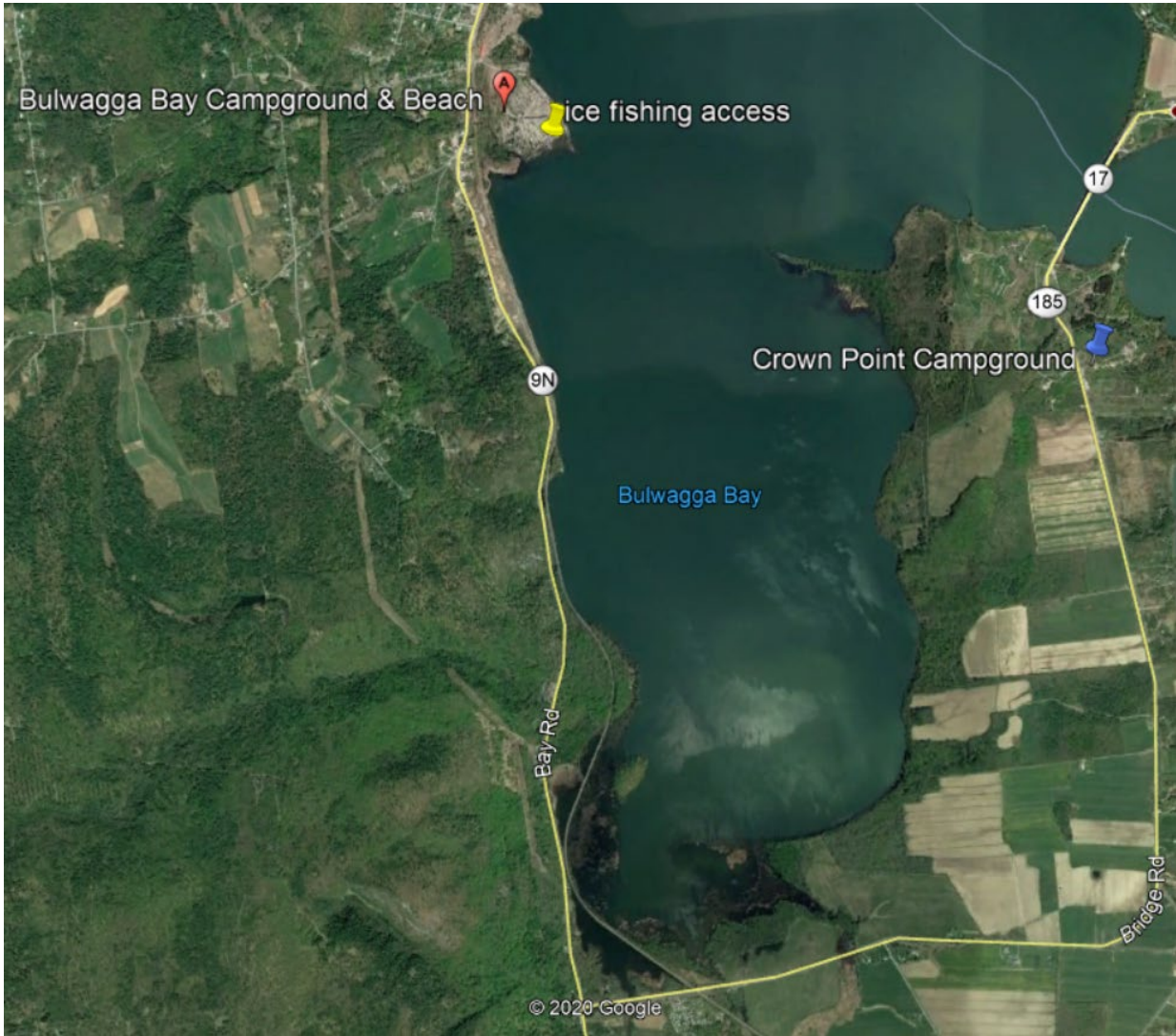
**Figure 2. Map of Lake Champlain showing Plattsburgh Boat Launch on Cumberland Bay.**

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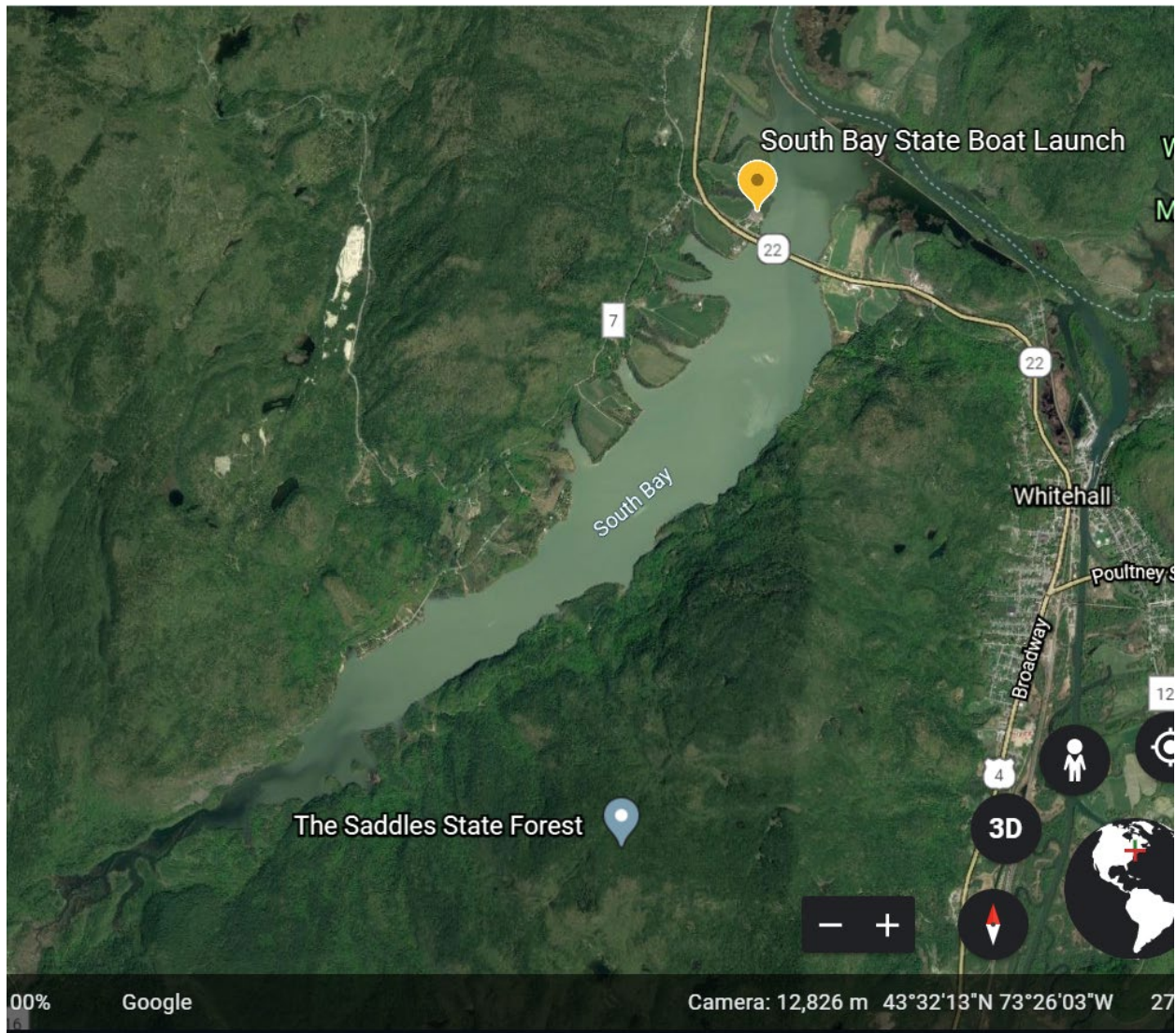
**Figure 3. Map of Lake Champlain showing Willsboro Bay Boat Launch on Willsboro Bay.**

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**Figure 4. Map of Lake Champlain showing Bulwagga Bay Campground ice fishing access on Bulwagga Bay.**

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**Figure 5. Map of Lake Champlain showing South Bay State Boat Launch on South Bay.**

**Table 1. Ice fishing access point creel schedule.**

Clerk A: North Bays

week #	Date	Day	Day type	shift AM/PM	shift times	Bay
1	1-Jan-21	Friday	weekday	PM	1230-1630	Cumberland
1	2-Jan-21	Saturday	weekend	PM	1230-1630	Willsboro
1	3-Jan-21	Sunday	weekend	PM	1230-1630	Willsboro
1	4-Jan-21	Monday	weekday	PM	1230-1630	Cumberland
2	9-Jan-21	Saturday	weekend	AM	800-1230	Willsboro
2	10-Jan-21	Sunday	weekend	AM	800-1230	Cumberland
2	11-Jan-21	Monday	weekday	AM	800-1230	Cumberland
2	12-Jan-21	Tuesday	weekday	PM	1230-1630	Willsboro
3	15-Jan-21	Friday	weekday	PM	1230-1630	Willsboro
3	16-Jan-21	Saturday	weekend	AM	800-1230	Cumberland
3	17-Jan-21	Sunday	weekend	PM	1230-1630	Willsboro
3	18-Jan-21	Monday	weekday	AM	800-1230	Cumberland
4	23-Jan-21	Saturday	weekend	PM	1230-1630	Willsboro
4	24-Jan-21	Sunday	weekend	AM	800-1230	Cumberland
4	25-Jan-21	Monday	weekday	PM	1230-1630	Cumberland
4	26-Jan-21	Tuesday	weekday	AM	800-1230	Willsboro
5	30-Jan-21	Saturday	weekend	PM	1230-1630	Willsboro
5	31-Jan-21	Sunday	weekend	AM	800-1230	Cumberland
5	2-Feb-21	Tuesday	weekday	PM	1215-1700	Cumberland
5	3-Feb-21	Wednesday	weekday	AM	745-1215	Willsboro
6	4-Feb-21	Thursday	weekday	AM	745-1215	Cumberland
6	6-Feb-21	Saturday	weekend	AM	745-1215	Willsboro
6	7-Feb-21	Sunday	weekend	PM	1215-1700	Willsboro
6	10-Feb-21	Wednesday	weekday	AM	745-1215	Cumberland
7	12-Feb-21	Friday	weekday	AM	745-1215	Cumberland
7	13-Feb-21	Saturday	weekend	AM	745-1215	Willsboro
7	14-Feb-21	Sunday	weekend	PM	1215-1700	Willsboro
7	15-Feb-21	Monday	weekday	AM	745-1215	Cumberland
8	19-Feb-21	Friday	weekday	PM	1215-1700	Cumberland
8	20-Feb-21	Saturday	weekend	AM	745-1215	Willsboro
8	21-Feb-21	Sunday	weekend	AM	745-1215	Cumberland
8	24-Feb-21	Wednesday	weekday	AM	745-1215	Willsboro
9	27-Feb-21	Saturday	weekend	AM	745-1215	Willsboro
9	28-Feb-21	Sunday	weekend	AM	745-1215	Cumberland
9	2-Mar-21	Tuesday	weekday	PM	1215-1745	Cumberland
9	3-Mar-21	Wednesday	weekday	AM	700-1215	Willsboro
10	4-Mar-21	Thursday	weekday	PM	1215-1745	Cumberland
10	5-Mar-21	Friday	weekday	PM	1215-1745	Willsboro
10	6-Mar-21	Saturday	weekend	AM	700-1215	Willsboro

10	7-Mar-21	Sunday	weekend	PM	1215-1745	Cumberland
11	12-Mar-21	Friday	weekday	PM	1215-1745	Willsboro
11	13-Mar-21	Saturday	weekend	AM	700-1215	Cumberland
11	14-Mar-21	Sunday	weekend	PM	1215-1745	Willsboro
11	16-Mar-21	Tuesday	weekday	AM	700-1215	Cumberland
12	20-Mar-21	Saturday	weekend	PM	1215-1745	Cumberland
12	21-Mar-21	Sunday	weekend	PM	1215-1745	Willsboro
12	23-Mar-21	Tuesday	weekday	PM	1215-1745	Cumberland
12	24-Mar-21	Wednesday	weekday	AM	700-1215	Willsboro
13	25-Mar-21	Thursday	weekday	PM	1215-1745	Willsboro
13	27-Mar-21	Saturday	weekend	AM	700-1215	Cumberland
13	28-Mar-21	Sunday	weekend	PM	1215-1745	Cumberland
13	30-Mar-21	Tuesday	weekday	AM	700-1215	Willsboro

### Clerk B: South Bays

week #	Date	Day	Day type	shift AM/PM	shift times	Bay
1	1-Jan-21	Friday	weekday	PM	1230-1630	Bulwagga
1	2-Jan-21	Saturday	weekend	PM	1230-1630	South Bay
1	3-Jan-21	Sunday	weekend	PM	1230-1630	Bulwagga
1	4-Jan-21	Monday	weekday	PM	1230-1630	South Bay
2	9-Jan-21	Saturday	weekend	AM	800-1230	Bulwagga
2	10-Jan-21	Sunday	weekend	AM	800-1230	South Bay
2	11-Jan-21	Monday	weekday	AM	800-1230	South Bay
2	12-Jan-21	Tuesday	weekday	PM	1230-1630	Bulwagga
3	15-Jan-21	Friday	weekday	PM	1230-1630	South Bay
3	16-Jan-21	Saturday	weekend	AM	800-1230	Bulwagga
3	17-Jan-21	Sunday	weekend	PM	1230-1630	South Bay
3	18-Jan-21	Monday	weekday	AM	800-1230	Bulwagga
4	23-Jan-21	Saturday	weekend	PM	1230-1630	South Bay
4	24-Jan-21	Sunday	weekend	AM	800-1230	Bulwagga
4	25-Jan-21	Monday	weekday	PM	1230-1630	Bulwagga
4	26-Jan-21	Tuesday	weekday	AM	800-1230	South Bay
5	30-Jan-21	Saturday	weekend	PM	1230-1630	Bulwagga
5	31-Jan-21	Sunday	weekend	AM	800-1230	South Bay
5	2-Feb-21	Tuesday	weekday	PM	1215-1700	South Bay
5	3-Feb-21	Wednesday	weekday	AM	745-1215	Bulwagga
6	4-Feb-21	Thursday	weekday	AM	745-1215	South Bay
6	6-Feb-21	Saturday	weekend	AM	745-1215	Bulwagga
6	7-Feb-21	Sunday	weekend	PM	1215-1700	South Bay
6	10-Feb-21	Wednesday	weekday	AM	745-1215	Bulwagga
7	12-Feb-21	Friday	weekday	AM	745-1215	South Bay

7	13-Feb-21	Saturday	weekend	AM	745-1215	South Bay
7	14-Feb-21	Sunday	weekend	PM	1215-1700	Bulwagga
7	15-Feb-21	Monday	weekday	AM	745-1215	Bulwagga
8	19-Feb-21	Friday	weekday	PM	1215-1700	Bulwagga
8	20-Feb-21	Saturday	weekend	AM	745-1215	South Bay
8	21-Feb-21	Sunday	weekend	AM	745-1215	Bulwagga
8	24-Feb-21	Wednesday	weekday	AM	745-1215	South Bay
9	27-Feb-21	Saturday	weekend	AM	745-1215	South Bay
9	28-Feb-21	Sunday	weekend	AM	745-1215	Bulwagga
9	2-Mar-21	Tuesday	weekday	PM	1215-1745	South Bay
9	3-Mar-21	Wednesday	weekday	AM	700-1215	Bulwagga
10	4-Mar-21	Thursday	weekday	PM	1215-1745	Bulwagga
10	5-Mar-21	Friday	weekday	PM	1215-1745	South Bay
10	6-Mar-21	Saturday	weekend	AM	700-1215	Bulwagga
10	7-Mar-21	Sunday	weekend	PM	1215-1745	South Bay
11	12-Mar-21	Friday	weekday	PM	1215-1745	Bulwagga
11	13-Mar-21	Saturday	weekend	AM	700-1215	Bulwagga
11	14-Mar-21	Sunday	weekend	PM	1215-1745	South Bay
11	16-Mar-21	Tuesday	weekday	AM	700-1215	South Bay
12	20-Mar-21	Saturday	weekend	PM	1215-1745	South Bay
12	21-Mar-21	Sunday	weekend	PM	1215-1745	Bulwagga
12	23-Mar-21	Tuesday	weekday	PM	1215-1745	South Bay
12	24-Mar-21	Wednesday	weekday	AM	700-1215	Bulwagga
13	25-Mar-21	Thursday	weekday	PM	1215-1745	Bulwagga
13	27-Mar-21	Saturday	weekend	AM	700-1215	Bulwagga
13	28-Mar-21	Sunday	weekend	PM	1215-1745	South Bay
13	30-Mar-21	Tuesday	weekday	AM	700-1215	South Bay

**Table 2. Ice fishing access point creel survey shift lengths.**

Month	Sunrise	Sunset	Daylight hours available	Time Block	Start, End Times	Available shift hours	Shift length (hours)
January	0730	1630	9 h	AM PM	0800-1230, 1230-1630	8	4.5 4.5
February	0715	1700	9 h 45 min	AM PM	0745-1215, 1215-1700	8.75	4.5 4.75
March	0630	1745	11 h 15 min	AM PM	0700-1215, 1215-1745	10.75	5.25 5.5

# Appendices

## Appendix 1. Ice fishing Creel form

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Clerk: \_\_\_\_\_ Bay: \_\_\_\_\_ Interview #: \_\_\_\_\_

Date: \_\_\_\_\_ Weekday / Weekend Time: \_\_\_\_:\_\_\_\_ # anglers in party: \_\_\_\_\_

1. Have you already been interviewed this winter? Yes / No
2. What time did you START fishing today? \_\_\_\_:\_\_\_\_AM / PM
3. What time did you STOP fishing today? \_\_\_\_:\_\_\_\_AM / PM
4. From where did you access the ice today? \_\_\_\_\_ [launch, marina, private]

5. What species were you fishing for today?	Number
Target 1: _____	Caught: ____ Kept: ____
Target 2: _____	Caught: ____ Kept: ____
Other 1: _____	Caught: ____ Kept: ____
Other 2: _____	Caught: ____ Kept: ____

### Angler opinion questions: [Circle angler's response]

6. On a scale of 1 to 5, with 1 being the worst and 5 being the best, how would you rate your fishing experience today?  
1      2      3      4      5
7. On a scale of 1 to 5, with 1 being the worst and 5 being the best, how would you rate your satisfaction with ice fishing on Lake Champlain this year?  
1      2      3      4      5      NA
8. On a scale of 1 to 5, with 1 being the worst and 5 being the best, how would you rate your satisfaction with ice fishing in Lake Champlain this year for [record primary target species] \_\_\_\_\_?  
1      2      3      4      5
9. On a scale of 1 to 5, with 1 being the worst and 5 being the best, how would you rate your satisfaction with ice fishing in Lake Champlain this year for [record secondary target species] \_\_\_\_\_?  
1      2      3      4      5      NA
10. How many days per year do you typically ice fish for Yellow Perch in Lake Champlain? \_\_\_\_\_
11. [If they answer 1 or more to Q 10, ask:] On a scale of 1 to 5, with 1 being the worst and 5 being the best. How would you rate your satisfaction with Yellow Perch fishing in Lake Champlain this year?  
1      2      3      4      5
12. Do you have any comments or concerns about the fishery?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

13. Can I measure the fish you kept? Yes / No [Record kept species on Fish form on back of page.]



## Appendix 2. Ice fishing Fish form

---

Fish #	Species	Length (mm)	Fin Clips
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			

## Appendix 3. Ice Fishing Catch Card

(Front)

### 2020 Lake Champlain Ice Fishing Creel Survey – Catch Card

Interview #: \_\_\_\_\_ # anglers in party: \_\_\_\_\_

1. What time did you STOP fishing today? \_\_\_\_\_ AM / PM
2. What were you fishing for today? \_\_\_\_\_
3. What did you catch and keep today?

Species	# Released	# Kept	Kept lengths (inches)
Largemouth bass			
Smallmouth bass			
Landlocked Atlantic salmon			
Lake Trout			
Rainbow Trout / Steelhead			
Brown Trout			
Walleye			
Northern Pike			
Yellow Perch			
Crappie			
Other panfish: sunfish, bluegill (circle)			
Other:			

#### Angler opinion questions:

4. On a scale of 1 to 5, with 1 being the worst and 5 being the best, how would you rate your fishing experience today? \_\_\_\_\_
5. Do you have any comments or concerns about the fishery?

\_\_\_\_\_

\_\_\_\_\_

(Back)

Thank you for participating in the NYSDEC Lake Champlain Ice Fishing Creel Survey for 2020. Please fill out this catch card when you finish fishing for the day. Please drop it at any drop box listed below or mail it to us by folding it in half, taping it closed and affixing postage.

#### List of drop box locations

City of Plattsburgh boat launch      Willsboro Bay boat launch  
 Bulwagga Bay Campground (2 boxes)      South Bay boat launch

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

NYS Dept. of Environmental Conservation  
 Fisheries  
 1115 NY-86  
 Ray Brook, NY 12977

## Appendix 4. Ice fishing Angler Count form

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Clerk: \_\_\_\_\_ Date: \_\_\_\_\_ Weekday / Weekend Bay: \_\_\_\_\_

Tally of number of anglers fishing (count any anglers leaving the bay):

--

Total number of anglers fishing: \_\_\_\_\_

Total number of anglers interviewed: \_\_\_\_\_

Tally of the number of cars in the parking lot:

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Comments: