

WISCONSIN DEPARTMENT OF NATURAL RESOURCES COMMERCIAL TRAWLER VIDEO MONITORING REPORT

Reporting Period: December 2020 - July 2021

Contributors

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Photo credit: Titus Seilheimer

Introduction and Methods

Two video cameras placed in the stern of the commercial trawler, Peter/Paul, record the entire commercial trawl catch. Cameras record the entire time the boat engine is running on a given trawling day. One camera captures a portion of the aft end where the cod end of the net is emptied into a boxed-in area on the deck. The second camera is positioned above the fish cleaning area and records bycatch being passed over a measuring board before being discarded. However, during the earlier stages of trawling effort for this reported period, fishers discarded bycatch out the back door of the trawler prior to being passed across the measuring board, so the second camera only captured the fishers as they sorted the harvested catch. By April 2021, they were again using the measuring board and camera and passing all discarded fish past the measuring board and camera.

Therefore, observations included in this report before April were somewhat compromised as they were assessed by the department staff reviewer solely from the camera recording of the back deck area where the net is emptied. Passing fish across the second camera greatly facilitated catch monitoring.

Protocols for reviewing the catch from the videos are provided briefly in this report. For a full description of the protocols, see Trawl Monitor Standard Operating Procedure. Video footage is downloaded monthly, and two days of trawl video are randomly selected each month for review. Each month's video review currently takes 1-2 hours, depending upon the clarity of the catch images in the recordings. Using footage from both cameras, total harvested lake whitefish and bycatch are quantified for all trawl drags on the selected dates. The total harvest in pounds can be estimated from the following formula: $(N * X)/1.17$, where N = the number of fish estimated (by box), X = estimated mean weight of an individual harvested fish, and 1.17 is the conversion of round to dressed weight. Length measurements of individual fish in the bycatch can be approximated from the recordings. Reported and observed bycatch number (converted to weight) are also calculated as a proportion of the daily harvest of whitefish. During August these values are used as decision points to determine whether trawl fishers must change their fishing practices or cease trawling for a period in the event of high weight of by-catch species compared to the whitefish weight (Table 1). The trawl rule (NR 25.09(5) (bm) specifies actions that must be taken if too much bycatch of illegal fish is encountered in trawling activities. Bycatch includes illegal fish species and sub-legal-sized whitefish, all of which must be returned to the water.

Table 1. The trawl rule specifies actions that must be taken if too much bycatch of illegal fish is encountered in trawling activities. Bycatch includes illegal fish species and sub-legal-sized whitefish, which all must be returned to the water. Decision points and required resulting actions when trigger levels are met are specified in the table and are specific to time of year.

TRIGGER: WHEN BYCATCH AS A PROPORTION OF THE TOTAL LEGAL CATCH REACHES THE FOLLOWING LEVEL:	ACTION: REMOVE THE TRAWL FROM THE WATER AND TAKE THE FOLLOWING ACTION IF TRAWLING THE SAME DAY:	TIME OF YEAR
10% or more (by weight or numbers) in a single trawl drag	<ul style="list-style-type: none"> • Move/operate all parts of the trawl at least 3 miles from the site of the bycatch trigger; or • Move/operate all parts of the trawl to a water depth where no part of the trawl operates within 30 feet (5 fathoms) of the water depth in which the bycatch occurred 	All year
Daily average of 10 to 49.9% (by weight) or at least two lake sturgeon in a single week (Sunday to Saturday)	Move/operate all parts of the trawl at least 6 miles from the site of the bycatch trigger	August

More than 50% (by weight) or three or more lake sturgeon in a single day	Cease all trawling for the next three days	August
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This report starts where the first report ended (August 2020) and contains trawl data from December 2020 through July 2021, the last month the fisher trawled before the trawl season closure. The number and estimated weight of fish observed in the video recordings are compared to numbers and estimated/actual weights reported by the commercial fishers in the Electronic Fish Harvest Reporting System (EFHRS). Fishers must provide an initial estimate of catch in EFHRS before docking and a final total is later reported after they have processed their catch. Burbot are not considered a gamefish but must be reported by commercial fishers if they are harvested. Catches of burbot observed in the videos are being recorded by department staff.

Results

LAKE WHITEFISH

The video estimates of dressed weight of whitefish harvested are generally close to the actual harvest reported in EFHRS (Table 1). Figure 1 shows a photo of boxes of fish stacked, allowing for estimates of fish counts and total weight.

BYCATCH

Generally, the difference between observed and reported catch is relatively low (min/max: 5-275), but on some days, there is a considerable disparity between the numbers (Table 1). The differences in observed versus reported catch of lake trout and sub-legal whitefish are also generally low (Table 2). The modification of re-instituting the use of the measuring board and placement of each fish on the board has helped increase the accuracy of counting sub-legal whitefish as identifying whitefish as sub-legal size from the video footage can be very difficult. The continued discrepancies of more sub-legal whitefish reported than observed may reflect fish that are put into the fish boxes for processing but may later be discarded once they are more closely examined on the dressing table.

The number of sub-legal whitefish caught in the trawl is generally low, particularly as a percentage of the catch of legal-sized whitefish (min/max: 0-3%) (Table 3). However, the lake trout catch as a percentage of the whitefish catch is relatively high on some days (min/max: 0-25%), and mid-late summer bycatch of lake trout, in particular, does increase substantially as a percentage of the legal whitefish catch (Table 3); potentially requiring a change to fishing practices to minimize bycatch. The fisher decided to end fishing by July in 2021 as the lake whitefish catches had decreased considerably.

Summary and Recommendations

Trawl video monitoring protocols continue to work well. The system functions as designed and is on during all trawling operations. We have received exceptional cooperation in scheduling and downloading the data from the trawler video recorder. In most cases, staff

have been able to identify fish, with some exceptions. We are also able to closely determine the weight harvested when compared to the actual reported harvest.

Below are the recommendations (in italics) for improvement of the process that were communicated to the trawler during March 2021 in response to the first year of trawling (See April-August 2020 Commercial Trawling Video Report). Responses follow in bold text.

- 1) *Replace the measuring board on the dressing table for a clear view below camera, as required in NR 25.09 (2m) (a). Gathering accurate information on the number of bycatch species and sub-legal and discarded lake whitefish size will be dependent on viewing each fish independently. Given the disparity between our counts and those of the fishers, this cannot be achieved well enough using only the camera facing aft. Therefore, each fish to be discarded should be placed on the measuring board on the dressing table directly below that camera per NR 25.09 (2m) (a). This will also provide information on the size of sub-legal and discarded lake whitefish. **This has been accomplished, in general. It is easier to get an idea of the smaller fish as the larger ones don't show up as well, given the area covered by the camera. It would still be beneficial if the fishers left the fish in place on the board a little longer.***
- 2) *Always allow for clear view from cameras when fish are on the deck, as required in NR 25.09. The net camera view is often blocked by crew, particularly when they are preparing the net for the next trawl. Crew should not approach the net until all fish from the current haul have been sorted. **Accomplished.***
- 3) *Arrange for camera maintenance to fix date/time stamp issue. The video system is not recording the date and time of trawling. Suzy Q Fisheries will need to contact Team Electronics in Manitowoc to determine how to remedy the issue. **Accomplished.***
- 4) *Reminder to report all harvested and bycatch species. Commercial fishers are required to report all fish that are harvested. Although the fishers are harvesting burbot, they are not reporting them in their catch records. Also, there is evidence of other salmon/trout species being caught that are not being reported as bycatch. **Reporting of harvested and bycatch species has improved.***

To date the commercial trawler appears to be following the recommended courses of action and issues with the video recording system have been addressed.

Table 1. Daily totals of video observed, estimated and actual reported harvest for lake whitefish on days selected for video analysis. Difference between observed and actual harvest is still an estimate because harvest in video observations is estimated as described above.

DATE OF TRAWL	HARVESTED WHITEFISH (DRESSED WEIGHT)			DIFFERENCE OBS. – ACTUAL HARVEST
	OBS. VIDEO	EST. HARVEST EFHRS	ACTUAL HARVEST EFHRS	
12/09/2020	1838	1850	1843	-5
12/31/2020	556	500	427	129
01/12/2021	1346	1300	1265	81
01/21/2021	1581	1325	1366	215
02/18/2021	1466	1250	1191	275
02/20/2021	2158	2200	2273	-115
03/07/2021	1111	1000	976	135
03/27/2021	2244	1900	1970	274
04/20/2021	1154	1050	1102	52
04/28/2021	615	500	545	70
05/14/2021	1346	1250	1311	35
05/21/2021	1197	1100	1074	123
06/15/2021	1120	1200	1225	-105
06/16/2021	2222	2400	2382	-160
07/06/2021	828	800	765	63
07/15/2021	813	900	864	-51



Figure 1. Fishers filling fish boxes and stacking alongside make it relatively easy to determine the estimated weight of whitefish for the day.

Table 2. Daily totals of video observed and EFHRS reported bycatch numbers from the Lake Michigan whitefish trawl fishery. Red numbers indicate difference between observed and reported catch is ≥ 10 fish. *Commercial fishers report burbot in lbs and are counted in the video observations.

DATE OF TRAWL	NUMBER OF TRAWL DRAGS	LAKE TROUT		BURBOT*		SUB-LEGAL Lake Whitefish		OTHER BYCATCH	
		OBS VIDEO	REPT EFHRS	OBS VIDEO	REPT EFHRS	OBS VIDEO	REPT EFHRS	OBSERVED VIDEO	REPORTED EFHRS
12/9/2020	2	7	7	0	0	6	6	0	0
12/31/2020	1	0	2	2	0	2	3	0	0
1/12/2021	2	6	4	2	0	1	5	0	0
1/21/2021	3	9	8	4	0	4	5	0	0
2/18/2021	4	10	16	5	0	11	29	0	0
2/20/2021	4	48	66	13	0	35	46	2 lake trout or sublegal whitefish	0
03/07/2021	4	17	17	0	0	15	17	0	0
03/27/2021	4	28	27	12	0	35	37	0	0
04/20/2021	4	14	14	0	0	5	5	0	0
04/28/2021	2	8	10	0	0	9	10	0	0
05/14/2021	4	16	15	1	5	9	9	2 Chinook salmon	2 Chinook salmon
05/21/2021	4	29	31	1	5	10	31	0	1 Chinook salmon
6/15/2021	5	25	25	0	0	5	5	0	
6/16/2021	5	18	22	0	0	5	6	1 Chinook salmon	1 Chinook salmon
7/6/2021	5	33	32	2	10	15	14	0	
7/15/2021	4	4	2	3	0	7	2	4 round whitefish, 9 carp, 7 salmon, 1 brown trout, 1 rainbow trout	3 round whitefish, 7 chinook, 3 brown trout, 1 rainbow trout
Total	57	273	298	45	20	174	230	27	18

Table 3. Daily video observed and EFHRS reported lake trout and sub-legal lake whitefish calculated as a percentage of actual harvested (lbs) lake whitefish. Highlighted cells are where the percent of the illegal catch was $\geq 10\%$ of the legal catch for observed and/or reported data.

DATE OF TRAWL	LAKE TROUT		SUB-LEGAL WHITEFISH	
	VIDEO OBSERVED AS A PERCENTAGE OF WHITEFISH HARVEST	EFHRS REPORTED AS A PERCENTAGE OF WHITEFISH HARVEST	VIDEO OBSERVED AS A PERCENTAGE OF WHITEFISH HARVEST	EFHRS REPORTED AS A PERCENTAGE OF WHITEFISH HARVEST
12/9/2020	2	2	0	0
12/31/2020	0	3	1	1
1/12/2021	3	2	0	1
1/21/2021	4	3	0	1
2/18/2021	5	8	1	3
2/20/2021	12	17	2	3
03/07/2021	10	10	2	2
03/27/2021	8	8	2	3
04/20/2021	7	7	1	1
04/28/2021	9	11	2	3
05/14/2021	7	7	1	1
05/21/2021	16	17	1	4
6/15/2021	12	12	1	1
6/16/2021	4	5	0	0
7/6/2021	25	25	3	3
7/15/2021	3	1	1	0