

# **WISCONSIN DEPARTMENT OF NATURAL RESOURCES COMMERCIAL TRAWLER VIDEO MONITORING REPORT**

Reporting Period: December 2021 - August 2022

## Contributors

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## 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.

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 Procedures. Video footage is downloaded monthly, and two days of trawl video are randomly selected each month for review. **For this reporting period, three additional days of trawling were randomly selected per month to add further assurance that trawl catches were being assessed accurately. Limited archived data only allowed additional review back to March for this period (Table 1).** 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 as they are passed over the measuring board under the second camera. Reported and observed bycatch numbers (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 bycatch species compared to the whitefish weight (Table 2) as required in NR 25.09(5) (bm).

**Table 1.** Monthly totals of trawl casts made, casts observed initially (1) and additionally (2), and total casts reviewed. Numbers in parentheses are percentages of casts reviewed of the total casts made by commercial fishers.

	TOTAL CASTS MADE	CASTS REVIEWED 1	CASTS REVIEWED 2	TOTAL CASTS REVIEWED
December	50	3 (6)		3 (6)
January	61	7 (11)		7 (11)
February	59	7 (12)		7 (12)
March	103	8 (8)	14 (14)	22 (21)
April	98	9 (9)	9 (9)	18 (18)
May	60	10 (17)	10 (17)	20 (33)
June	45	8 (18)	9 (20)	17 (38)
July	11	2 (18)	9 (82)	11 (100)
August	3	0	3 (100)	3 (100)

**Table 2.** 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 must all 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.

<b>TRIGGER: WHEN BYCATCH AS A PROPORTION OF THE TOTAL LEGAL CATCH REACHES THE FOLLOWING LEVEL:</b>	<b>ACTION: REMOVE THE TRAWL FROM THE WATER AND TAKE THE FOLLOWING ACTION IF TRAWLING THE SAME DAY:</b>	<b>TIME OF YEAR</b>
10% or more (by weight or numbers) in a single trawl drag	<ul style="list-style-type: none"> <li>• Move/operate all parts of the trawl at least 3 miles from the site of the bycatch trigger; or</li> <li>• 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</li> </ul>	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

This report starts where the first report ended (July 2021) and contains trawl data from December 2021 through August 2022, 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 HARVEST

Video from 32 days of fishing effort were reviewed including 108 trawl casts of approximately one hour each. (Table 1). During this period, the fishers made 490 trawl casts, and 22% (108) of the casts were reviewed via video. The estimates of the dressed weight of whitefish harvested for a given date are generally close to the actual harvest reported into EFHRS. Figure 1 shows a photo of boxes of fish stacked, allowing for estimates of fish counts and total weight.

## BYCATCH

The accuracy in the number of fish reported as bycatch by the fishers compared to the number observed in the recordings has improved considerably over time. The difference between observed and reported catch has also decreased considerably since the last reporting period in 2021 (min./max.: 7 – 441 pounds) (Table 3). Aside from one event (7/26/2022) where it appears the fisher neglected to record sub-legal lake whitefish, the disparity in under-reporting lake trout and lake whitefish was generally three fish or fewer, with a few exceptions (min./max.: 0 – 13 fish) (Table 4). The re-institution of the use of the measuring board and placement of each fish on the board has helped increase the accuracy of counting sub-legal whitefish because identifying whitefish as sub-legal size from the video footage can be very difficult. In contrast to previous years, no trout or salmon (aside from lake trout) were observed or reported in the 32 days reviewed. However, round whitefish were considerably more prevalent in the catches compared to previous years.

The number of sub-legal whitefish caught in the trawl is still generally low, particularly as a percentage of the catch of legal-sized whitefish (0 – 2 %) (Table 5). In past years, the mid-late summer bycatch of lake trout has increased substantially as a percentage of the legal whitefish catch, potentially requiring a change to fishing practices to minimize bycatch. The dates initially chosen for video monitoring in July 2022 did not reveal an elevated catch of lake trout. However, further examination of EFHRS-reported catch data from non-video monitored dates in July revealed multiple catches of lake trout that exceeded 10% of the whitefish catches (min./max.: 1 – 23 %). This may suggest that random selection of two dates per month is not enough to properly evaluate bycatch rates. The only date in August where trawling occurred resulted in lake trout catch that was 10% by weight of the whitefish catch. These events would have warranted changes in fishing areas per Table 2. This further supports past observations that lake trout catches increase as a proportion of lake whitefish catch during the mid-late summer months.

## 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 from fishers in scheduling and downloading the data from the trawler video recorder. In most cases, staff have been able to identify fish brought aboard the trawler. We are also able to accurately determine the weight harvested when compared to the actual reported harvest.

To date the commercial trawler appears to be following the recommended courses of action (e.g., passing fish in front of camera above the measuring board, time stamping video recorder, etc.) and most recommendations for improvement of the process that were communicated to the trawler since the first trawling year have been followed. (See previous Commercial Trawling Video Reports for past recommended courses of action). One item, below in italics, could use more attention. Video monitoring indicates that this rule is being followed inconsistently.

- 1) Place the measuring board on the dressing table for a clear view below the 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 occasional 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.**

**Table 3.** Daily totals of video observed, estimated and actual reported harvest of lake whitefish on days selected for video analysis. The difference between observed and actual harvest is still an estimate because harvest in video observations is estimated as described above. \* Additional video dates observed.

DATE OF TRAWL	HARVESTED WHITEFISH (DRESSED WEIGHT)			DIFFERENCE OBS. – ACTUAL HARVEST
	OBS. VIDEO	EST. HARVEST EFHRS	ACTUAL HARVEST EFHRS	
12/24/2021	456	450	446	10
12/28/2021	2342	2300	2437	-95
01/03/2022	3205	3000	3288	-83
01/21/2022	2778	2500	2473	305
02/04/2022	3269	3300	3384	-115
02/17/2022	2778	3100	3219	-441
03/03/2022*	2111	2150	2196	-85
03/04/2022	1325	1400	1439	-114
03/14/2022	3013	3000	2945	68
03/15/2022*	2299	2150	2136	163
03/17/2022*	1316	1200	1208	108
04/02/2022*	1342	1250	1199	143
04/04/2022	755	850	917	-162
04/11/2022*	1652	1600	1546	106
04/18/2022*	1449	1500	1374	75
04/19/2022	2275	2050	2064	211
05/03/2022*	1359	1400	1366	-7
05/04/2022*	1534	1400	1405	129
05/17/2022	1504	1500	1542	-38
05/18/2022*	1128	1000	975	153
05/26/2022	1144	1000	1042	102



06/02/2022	1500	1450	1457	43
06/13/2022*	1339	1350	1371	-32
06/15/2022	1432	1300	1288	144
06/21/2022*	1352	1400	1417	-65
06/28/2022*	855	850	882	-27
07/04/2022	684	750	736	-52
07/12/2022	598	700	665	-67
07/13/2022*	397	425	431	-34
07/19/2022*	701	750	753	-52
07/26/2022*	1111	1150	1134	-23
08/02/2022*	833	1050	1088	-255



**Figure 1.** Fishers filling fish boxes and stacking alongside make it relatively easy to determine the estimated weight of whitefish for the day. *Photo credit: Wisconsin DNR.*

**Table 4.** Daily totals of video observed and EFHRS reported bycatch from the Lake Michigan lake whitefish trawl fishery, by number. Red numbers indicate difference between observed and reported

catch is  $\geq 10$  fish. \* Additional video dates observed. # 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
12/24/2021	1	5	5	0	7	1	2	0	0
12/28/2021	2	17	19	2	10	4	4	0	0
01/03/2022	4	26	27	2	4	8	13	0	0
01/21/2022	3	33	30	4	15	2	1	0	0
02/04/2022	4	35	36	8	10	4	3	0	0
02/17/2022	3	27	30	0	5	2	3	0	0
03/03/2022*	5	27	28	16	75	27	28	0	0
03/04/2022	3	7	9	0	15	1	2	0	0
03/15/2022*	6	39	39	15	25	10	8	0	0
03/17/2022*	3	19	17	12	25	0	0	0	0
03/14/2022	5	61	60	26	75	12	14	0	0
04/2/2022*	4	4	4	9	30	9	9	0	0
04/04/2022	4	7	8	6	12	0	2	0	0
04/11/2022*	3	9	10	10	20	1	3	0	0
04/18/2022*	2	4	5	1	10	9	1	0	0
04/19/2022	5	10	11	10	20	7	7	0	0
05/03/2022*	4	7	7	4	10	5	4	0	0
05/04/2022*	2	7	7	10	20	2	2	0	0
05/17/2022	5	3	3	3	5	15	12	0	0
05/18/2022*	4	13	10	4	8	8	5	0	0
05/26/2022	5	11	11	1	5	3	3	0	0
06/02/2022	5	25	26	2	5	1	3	0	0
06/13/2022*	5	47	45	2	7	0	0	2 round whitefish	4 round whitefish
06/15/2022	3	19	19	2	5	3	4	0	0
06/21/2022*	3	28	30	1	5	2	0	8 round whitefish	10 round whitefish
06/28/2022*	1	10	10	1	5	0	0	3 round whitefish	15 round whitefish
07/04/2022	1	7	7	0	0	0	0	2 round whitefish	5 round whitefish
07/12/2022	1	7	8	0	0	0	0	0	0
07/13/2022*	2	14	14	2	3	0	0	3 round whitefish	10 round whitefish
07/19/2022*	4	24	29	0	0	12	12	1 round whitefish	6 round whitefish
07/26/2022*	3	12	11	2	5	13	0	9 round whitefish	15 round whitefish

08/02/2022*	3	17	18	2	5	6	1	23 round whitefish	35 round whitefish
Total	108	581	593	157	446	167	146	51 round whitefish	100 round whitefish

**Table 5.** 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. \*Additional video dates observed.

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
12/24/2021	7	7	0	1
12/28/2021	4	5	0	0
01/03/2022	5	5	0	1
01/21/2022	8	7	0	0
02/04/2022	6	6	0	0
02/17/2022	5	5	0	0
03/03/2022*	7	7	2	2
03/04/2022	3	4	0	0
03/14/2022	12	12	1	1
03/15/2022*	11	11	1	1
03/17/2022*	9	8	0	0
04/02/2022*	4	4	1	1
04/04/2022	4	5	0	0
04/11/2022*	9	10	0	0
04/18/2022*	4	5	1	0
04/19/2022	3	3	0	0
05/03/2022*	7	7	1	0
05/04/2022*	7	7	0	0
05/17/2022	1	1	1	1
05/18/2022*	13	10	1	1
05/26/2022	6	6	0	0
06/02/2022	10	10	0	0
06/13/2022*	20	19	0	0
06/15/2022	9	9	0	0
06/21/2022*	12	12	0	0
06/28/2022*	7	7	0	0
07/04/2022	6	6	0	0



07/12/2022	6	7	0	0
07/13/2022*	19	19	0	0
07/19/2022*	19	23	2	2
07/26/2022*	6	6	2	0
08/02/2022*	9	10	1	0