

Wisconsin's 2018 open water sportfishing effort and harvest from Lake Michigan and Green Bay

Laura Schmidt

***Wisconsin Department of Natural Resources
Fisheries Management
Southern Lake Michigan Fisheries Work Unit
600 E. Greenfield Ave.
Milwaukee, WI 53204***

April 2019

Abstract – The sport fishery in Wisconsin waters of Lake Michigan and Green Bay was documented from March 1, 2018 through November 20, 2018. Fishing effort, harvest and harvest-rates were determined from 1) a stratified-random creel survey of launched-boat, pier, shore, and stream anglers; 2) a randomized mail survey of moored-boat anglers; and 3) mandatory charter-boat reporting. For a detailed description of methods see Eggold 1995.

Anglers spent an estimated 2,449,348 hours fishing on Lake Michigan and Green Bay during 2018 with a boat-angler effort at 1,947,657 hours, or almost 80% of the total hours. Fishing effort during 2018 was slightly lower than effort in 2017 and approximately 7% lower than the ten-year average.

The estimated harvest of 513,267 fish was dominated by walleye (123,711) followed by yellow perch (112,200). The boat fishery, comprised of launched-boat, moored-boat, and charter-boat anglers, dominated the fishery by harvesting an estimated 457,633 fish, which was 89% of the total harvest and led by walleye (111,825) followed by yellow perch (94,508). Pier anglers harvested primarily yellow perch (3,501) followed by smallmouth bass (1,591) and brown trout (1,222). Stream anglers harvested primarily walleye (11,545) followed by Chinook salmon (9,551) and yellow perch (5,139). Shore anglers harvested primarily yellow perch (9,052) followed by brown trout (1,805) and Chinook salmon (1,707). Overall harvest-rates were highest for walleye at 0.0505 fish/hour, followed by yellow perch (0.0458 fish/hour), Coho salmon (0.0349 fish/hour), and Chinook salmon (0.0344 fish/hour).

The 2018 Chinook harvest of 84,142 fish was slightly higher than 2017 harvest (83,873) but approximately 55% below the ten-year average. However, the harvest rate for salmonids in 2018 was 0.1086 which is slightly down from the ten-year average harvest rate of 0.1381. Along with a slight decrease in effort, the weak 2015-year class of Chinook likely contributed to the decline in harvest. The 2016 year-class of Chinook is stronger than the 2015-year class, which could be encouraging for future harvest.

Coho harvest in 2018 was 85,411 fish. This is lower than the harvest in the previous two years, but remains almost 10% above the ten-year average. While coho harvest is typically variable, harvest of fish drastically declined north of Port Washington, WI, suggesting that coho were not traveling further north, influencing harvest numbers. The 2018 rainbow trout harvest of 57,095 was approximately 8% below the ten-year average. Brown trout harvest in 2018 was 12,529, which was 31.5% below the ten-year average. A total of 26,747 lake trout were harvested in 2018, which was almost 19% above the ten-year average. Due to heavy rains in the fall and subsequent stream flows, anglers were able to catch lake trout in tributary rivers where they are typically not caught. The 2018 harvest-rate for all salmonids combined was 0.1086 fish/hour.

The 2018 harvest of yellow perch in Green Bay was 108,971, which was 32% below the ten-year average, but higher than harvest in 2015 and 2016. The Lake Michigan yellow perch harvest in 2018 was 3,229, which was 80% below the ten-year average but higher than 2017's harvest of 2,481 fish. Perch harvest in Lake Michigan remains on the downward trend observed since 1993. The sport catch remains primarily comprised of the 2015 year-class. Age was assigned using the anal spines of 53 Lake Michigan angler-caught yellow perch during 2018. The 2015 year-class represented 64% of the total. The 2012 year-class, which comprised the majority of the catch in 2017, represented 17% of the 2018 total. The 2014 year-class contributed 15% to the fishery.

In 2018, the standard weight of a 30-inch Chinook was 10 pounds, which was 2.2% above the ten-year average despite a slight decrease from 2017. The standard weight for a 22-inch Coho was 4.29 pounds, which was almost 7.8% above the ten-year average. The standard weight for a 25-inch rainbow was 3.74, which was 10.1% below the ten-year average. The standard weight of a 27-inch lake trout was 6.08 which was almost 7% above the ten-year average. The standard weight of a 22-inch brown trout was 3.45 pounds, which was 13% below the ten-year average.

REFERENCES

Eggold, B.T. 1995. Wisconsin's 1995 open water sportfishing effort and catch from Lake Michigan and Green Bay. Wisconsin Department of Natural Resources, Plymouth, Wisconsin. 19 pages.

Table 1. Estimated angler effort (hours) by location in Wisconsin waters of Lake Michigan and Green Bay during March through December of 2009 through 2018. Standard deviations are in Italics.

Location	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Average
Kenosha Co.	141,626 <i>8,197</i>	146,762 <i>8,287</i>	116,032 <i>5,801</i>	135,980 <i>2,851</i>	128,865 <i>5,255</i>	130,028 <i>5,420</i>	101,115 <i>5,005</i>	109,277 <i>5,481</i>	90,700 <i>3,810</i>	92,655 <i>4,185</i>	119,304 <i>5,672</i>
Racine Co.	175,220 <i>9,991</i>	161,959 <i>9,422</i>	151,135 <i>7,225</i>	131,342 <i>10,091</i>	122,651 <i>8,484</i>	122,670 <i>7,070</i>	102,899 <i>8,988</i>	107,400 <i>7,777</i>	90,695 <i>6,559</i>	110,575 <i>11,954</i>	127,655 <i>8,898</i>
Milwaukee Co.	302,368 <i>13,669</i>	340,503 <i>14,174</i>	276,843 <i>15,204</i>	324,011 <i>14,704</i>	290,866 <i>11,427</i>	255,180 <i>10,870</i>	266,000 <i>10,079</i>	296,612 <i>12,556</i>	267,191 <i>14,736</i>	233,031 <i>13,192</i>	285,261 <i>13,169</i>
Ozaukee Co.	209,223 <i>11,968</i>	215,809 <i>10,210</i>	256,961 <i>19,364</i>	208,450 <i>12,203</i>	203,739 <i>9,651</i>	190,049 <i>9,525</i>	172,696 <i>8,333</i>	215,442 <i>13,704</i>	179,360 <i>13,185</i>	167,683 <i>10,435</i>	201,941 <i>12,228</i>
Sheboygan Co.	222,741 <i>11,542</i>	238,132 <i>12,909</i>	199,350 <i>9,537</i>	225,384 <i>11,503</i>	206,006 <i>9,124</i>	213,716 <i>10,111</i>	216,025 <i>11,712</i>	211,476 <i>11,733</i>	179,246 <i>9,027</i>	163,946 <i>9,813</i>	207,602 <i>10,776</i>
Manitowoc Co.	198,420 <i>10,255</i>	206,362 <i>9,591</i>	179,525 <i>8,336</i>	212,739 <i>10,796</i>	178,186 <i>8,370</i>	188,585 <i>9,482</i>	169,683 <i>8,250</i>	185,257 <i>10,330</i>	139,241 <i>7,010</i>	141,366 <i>8,009</i>	179,936 <i>9,117</i>
Kewaunee Co.	405,917 <i>17,954</i>	382,614 <i>22,200</i>	323,860 <i>12,740</i>	311,407 <i>7,780</i>	373,777 <i>14,969</i>	355,094 <i>15,390</i>	366,474 <i>15,312</i>	290,327 <i>13,069</i>	318,589 <i>13,337</i>	327,150 <i>13,794</i>	345,521 <i>15,074</i>
E. Door Co.	184,720 <i>9,653</i>	213,147 <i>14,552</i>	151,136 <i>7,001</i>	204,549 <i>23,159</i>	197,007 <i>12,272</i>	173,099 <i>9,008</i>	217,815 <i>3,414</i>	204,727 <i>10,731</i>	193,014 <i>9,108</i>	187,941 <i>10,802</i>	192,716 <i>12,035</i>
Green Bay	1,017,143 <i>38,890</i>	936,050 <i>42,151</i>	886,143 <i>40,835</i>	771,724 <i>26,553</i>	1,078,064 <i>46,108</i>	991,943 <i>46,490</i>	1,115,376 <i>36,343</i>	1,007,835 <i>35,109</i>	1,084,806 <i>40,350</i>	1,025,001 <i>34,182</i>	991,409 <i>39,114</i>
Total Effort	2,857,378 <i>51,608</i>	2,841,338 <i>56,591</i>	2,540,985 <i>52,261</i>	2,525,586 <i>45,010</i>	2,779,161 <i>54,564</i>	2,620,364 <i>54,403</i>	2,728,083 <i>45,267</i>	2,628,353 <i>46,893</i>	2,542,842 <i>49,681</i>	2,449,348 <i>45,598</i>	2,651,344 <i>50,354</i>

Table 2. Estimated harvest and total harvest-rate (number per hour, all anglers combined) of salmonids in Wisconsin waters of Lake Michigan and Green Bay during March through December of 2009 through 2018. Standard deviations are in Italics.

Species	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Average
Coho Salmon	42,690 <i>1,989</i>	42,445 <i>2,039</i>	157,367 <i>11,432</i>	73,395 <i>3,114</i>	89,061 <i>3,927</i>	52,297 <i>6,572</i>	41,010 <i>4,329</i>	125,964 <i>5,552</i>	119,686 <i>7,135</i>	85,411 <i>5,175</i>	77,707
Chinook Salmon	214,621 <i>5,645</i>	315,294 <i>8,164</i>	169,752 <i>4,083</i>	390,385 <i>9,058</i>	145,301 <i>4,363</i>	130,698 <i>3,587</i>	113,973 <i>3,479</i>	139,082 <i>4,724</i>	83,873 <i>3,125</i>	84,142 <i>3,262</i>	185,811
Rainbow Trout	46,529 <i>2,063</i>	49,121 <i>2,023</i>	75,442 <i>2,588</i>	75,981 <i>2,592</i>	58,311 <i>1,969</i>	73,105 <i>2,286</i>	59,106 <i>1,707</i>	76,846 <i>2,897</i>	66,441 <i>2,659</i>	57,095 <i>2,011</i>	61,775
Brown Trout	15,792 <i>958</i>	13,029 <i>1,114</i>	9,936 <i>846</i>	21,337 <i>1,768</i>	17,094 <i>1,303</i>	23,324 <i>1,785</i>	20,174 <i>1,899</i>	23,879 <i>2,589</i>	20,398 <i>1,716</i>	12,529 <i>1,112</i>	18,296
Brook Trout	27 <i>0</i>	0 <i>0</i>	26 <i>0</i>	18 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	8
Lake Trout	14,946 <i>803</i>	17,483 <i>775</i>	17,788 <i>1,236</i>	29,094 <i>1,261</i>	27,240 <i>1,005</i>	25,425 <i>1,098</i>	35,715 <i>1,460</i>	19,137 <i>868</i>	20,345 <i>1,115</i>	26,747 <i>1,236</i>	22,426
Total Harvest	334,605 <i>6,453</i>	437,372 <i>8,760</i>	430,311 <i>12,502</i>	590,210 <i>10,158</i>	337,007 <i>6,406</i>	304,849 <i>8,104</i>	269,978 <i>6,285</i>	384,908 <i>8,306</i>	310,743 <i>8,481</i>	265,924 <i>6,651</i>	366,022 <i>8,476</i>
Harvest-Rate	0.1171	0.1539	0.1693	0.2337	0.1213	0.1163	0.0990	0.1464	0.1222	0.1086	0.1381

Table 3. Estimated harvest and total harvest-rate (number per hour, all anglers combined) of yellow perch in Wisconsin waters of Lake Michigan and Green Bay during March through December of 2009 through 2018. Standard deviations (estimates) are in Italics.

Location	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Average
Green Bay	204,209 <i>19,361</i>	225,995 <i>21,042</i>	254,942 <i>24,973</i>	148,980 <i>13,685</i>	215,422 <i>18,974</i>	118,980 <i>12,283</i>	93,964 <i>9,780</i>	72,223 <i>8,923</i>	117,412 <i>12,404</i>	108,971 <i>11,011</i>	159,814 <i>16,093</i>
Harvest-Rate	0.2008	0.2414	0.2877	0.1930	0.1998	0.1199	0.0842	0.0717	0.1082	0.1063	0.1613
Lake Michigan	50,744 <i>5,122</i>	51,265 <i>4,787</i>	16,982 <i>2,296</i>	9,115 <i>1,071</i>	8,830 <i>1,221</i>	8,174 <i>1,108</i>	5,358 <i>1,021</i>	2,132 <i>607</i>	2,481 <i>537</i>	3,229 <i>787</i>	16,269
Harvest-Rate	0.0276	0.0269	0.0103	0.0052	0.0052	0.0050	0.0033	0.0013	0.0017	0.0023	0.0059
Total Harvest	254,953 <i>20,027</i>	277,260 <i>21,579</i>	271,924 <i>25,078</i>	158,095 <i>13,727</i>	224,252 <i>19,013</i>	127,154 <i>12,333</i>	99,322 <i>9,834</i>	74,355 <i>8,944</i>	119,893 <i>12,416</i>	112,200 <i>11,040</i>	171,941 <i>16,280</i>
Harvest-Rate	0.0892	0.0976	0.1070	0.0626	0.0807	0.0485	0.0364	0.0283	0.0471	0.0458	0.0702

Note: Table 3 reflects that some Door County sites represent Green Bay for yellow perch harvest statistics.

Table 4. Estimated harvest-rate (harvest per hour), harvest and effort for all survey areas and **ALL FISHERY TYPES** for Wisconsin waters of Lake Michigan and Green Bay during 2018. Standard deviations are in Italics.

Species	Harvest per hour	March/April	May	June	July	August	Sept/Oct	Nov/Dec	Season
Coho Salmon	0.0349	229 <i>88</i>	27,233 <i>3,455</i>	26,865 <i>2,212</i>	24,993 <i>3,006</i>	4,623 <i>928</i>	1,468 <i>221</i>	0 <i>0</i>	85,411 <i>5,175</i>
Chinook Salmon	0.0344	75 <i>70</i>	2,090 <i>359</i>	12,779 <i>760</i>	31,181 <i>2,556</i>	20,080 <i>1,137</i>	17,933 <i>1,449</i>	4 <i>0</i>	84,142 <i>3,262</i>
Rainbow Trout	0.0233	4,549 <i>627</i>	3,155 <i>612</i>	17,448 <i>960</i>	19,246 <i>1,294</i>	10,951 <i>799</i>	1,746 <i>212</i>	0 <i>0</i>	57,095 <i>2,011</i>
Brown Trout	0.0051	6,325 <i>789</i>	1,976 <i>645</i>	221 <i>54</i>	1,641 <i>297</i>	925 <i>153</i>	1,440 <i>289</i>	1 <i>0</i>	12,529 <i>1,112</i>
Brook Trout	0.0000	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>
Lake Trout	0.0109	182 <i>69</i>	1,204 <i>130</i>	6,132 <i>412</i>	10,796 <i>1,025</i>	6,985 <i>525</i>	1,423 <i>90</i>	25 <i>0</i>	26,747 <i>1,236</i>
Splake	0.0000	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>
Northern Pike	0.0010	128 <i>67</i>	1,089 <i>333</i>	258 <i>170</i>	138 <i>74</i>	427 <i>164</i>	390 <i>167</i>	0 <i>0</i>	2,430 <i>452</i>
White Perch	0.0006	0 <i>0</i>	0 <i>0</i>	210 <i>172</i>	0 <i>0</i>	303 <i>219</i>	904 <i>926</i>	0 <i>0</i>	1,417 <i>967</i>
Smallmouth Bass	0.0031	460 <i>360</i>	1,656 <i>689</i>	1,229 <i>406</i>	1,620 <i>585</i>	1,654 <i>558</i>	966 <i>296</i>	0 <i>0</i>	7,585 <i>1,229</i>
Yellow Perch	0.0458	404 <i>209</i>	1,118 <i>571</i>	11,396 <i>3,866</i>	25,284 <i>4,815</i>	22,105 <i>4,233</i>	51,893 <i>8,090</i>	0 <i>0</i>	112,200 <i>11,040</i>
Walleye	0.0505	13,040 <i>2,383</i>	39,612 <i>5,431</i>	8,424 <i>1,647</i>	33,106 <i>4,008</i>	25,218 <i>3,583</i>	4,311 <i>877</i>	0 <i>0</i>	123,711 <i>8,219</i>
Total Harvest	0.2096	25,392 <i>2,625</i>	79,133 <i>6,579</i>	84,962 <i>4,944</i>	148,005 <i>7,614</i>	93,271 <i>5,851</i>	82,474 <i>8,335</i>	30 <i>0</i>	513,267 <i>15,372</i>
Angler Hours		279,515 <i>21,241</i>	323,008 <i>16,369</i>	365,239 <i>12,515</i>	641,476 <i>23,132</i>	457,623 <i>22,593</i>	382,417 <i>12,566</i>	70 <i>0</i>	2,449,348 <i>45,598</i>

Table 5. Estimated harvest-rate (harvest per hour), harvest and effort for the **BOAT FISHERY** with all surveys combined for Wisconsin waters of Lake Michigan and Green Bay during 2018. Standard deviations are in Italics.

Species	Harvest per hour	March/April	May	June	July	August	Sept/Oct	Nov/Dec	Season
Coho Salmon	0.0434	186 <i>84</i>	27,211 <i>3,455</i>	26,865 <i>2,212</i>	24,972 <i>3,006</i>	4,556 <i>926</i>	671 <i>69</i>	0 <i>0</i>	84,461 <i>5,170</i>
Chinook Salmon	0.0370	75 <i>70</i>	2,082 <i>359</i>	12,779 <i>760</i>	31,151 <i>2,556</i>	19,882 <i>1,135</i>	6,082 <i>773</i>	4 <i>0</i>	72,055 <i>3,022</i>
Rainbow Trout	0.0266	66 <i>36</i>	3,080 <i>611</i>	17,427 <i>959</i>	19,213 <i>1,294</i>	10,907 <i>797</i>	1,207 <i>147</i>	0 <i>0</i>	51,900 <i>1,905</i>
Brown Trout	0.0044	3,621 <i>625</i>	1,850 <i>643</i>	156 <i>47</i>	1,500 <i>293</i>	804 <i>145</i>	579 <i>172</i>	1 <i>0</i>	8,511 <i>971</i>
Brook Trout	0.0000	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>
Lake Trout	0.0137	172 <i>69</i>	1,204 <i>130</i>	6,132 <i>412</i>	10,796 <i>1,025</i>	6,963 <i>525</i>	1,322 <i>63</i>	25 <i>0</i>	26,614 <i>1,234</i>
Splake	0.0000	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>
Northern Pike	0.0010	87 <i>60</i>	989 <i>329</i>	258 <i>170</i>	114 <i>70</i>	371 <i>155</i>	166 <i>92</i>	0 <i>0</i>	1,985 <i>422</i>
White Perch	0.0007	0 <i>0</i>	0 <i>0</i>	210 <i>172</i>	0 <i>0</i>	303 <i>219</i>	904 <i>926</i>	0 <i>0</i>	1,417 <i>967</i>
Smallmouth Bass	0.0022	0 <i>0</i>	1,494 <i>682</i>	600 <i>270</i>	764 <i>435</i>	1,229 <i>508</i>	270 <i>140</i>	0 <i>0</i>	4,357 <i>1,002</i>
Yellow Perch	0.0485	0 <i>0</i>	413 <i>218</i>	10,672 <i>3,851</i>	22,893 <i>4,755</i>	20,850 <i>4,229</i>	39,680 <i>6,950</i>	0 <i>0</i>	94,508 <i>10,182</i>
Walleye	0.0574	2,687 <i>909</i>	39,484 <i>5,430</i>	8,070 <i>1,627</i>	33,106 <i>4,008</i>	25,218 <i>3,583</i>	3,260 <i>808</i>	0 <i>0</i>	111,825 <i>7,907</i>
Total Harvest	0.2350	6,894 <i>1,113</i>	77,807 <i>6,556</i>	83,169 <i>4,916</i>	144,509 <i>7,566</i>	91,083 <i>5,842</i>	54,141 <i>7,106</i>	30 <i>0</i>	457,633 <i>14,501</i>
Angler Hours		134,162 <i>18,934</i>	281,892 <i>16,127</i>	321,042 <i>12,168</i>	589,490 <i>22,824</i>	420,735 <i>22,485</i>	200,266 <i>10,395</i>	70 <i>0</i>	1,947,657 <i>43,603</i>

Table 6. Estimated harvest-rate (harvest per hour), harvest and effort for the **PIER FISHERY** with all survey areas combined for Wisconsin waters of Lake Michigan and Green Bay during 2018. Standard deviations are in Italics.

Species	Harvest per hour	March/April	May	June	July	August	Sept/Oct	Nov/Dec	Season
Coho Salmon	0.0020	13 <i>13</i>	13 <i>12</i>	0 <i>0</i>	21 <i>21</i>	67 <i>65</i>	132 <i>86</i>	0 <i>0</i>	246 <i>111</i>
Chinook Salmon	0.0067	0 <i>0</i>	8 <i>8</i>	0 <i>0</i>	19 <i>14</i>	116 <i>49</i>	686 <i>153</i>	0 <i>0</i>	829 <i>161</i>
Rainbow Trout	0.0013	0 <i>0</i>	43 <i>25</i>	21 <i>17</i>	21 <i>10</i>	44 <i>41</i>	35 <i>21</i>	0 <i>0</i>	164 <i>56</i>
Brown Trout	0.0098	883 <i>319</i>	33 <i>26</i>	40 <i>21</i>	134 <i>49</i>	86 <i>45</i>	46 <i>37</i>	0 <i>0</i>	1,222 <i>329</i>
Brook Trout	0.0000	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>
Lake Trout	0.0003	10 <i>10</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	22 <i>22</i>	0 <i>0</i>	0 <i>0</i>	32 <i>24</i>
Splake	0.0000	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>
Northern Pike	0.0003	5 <i>5</i>	0 <i>0</i>	0 <i>0</i>	24 <i>25</i>	8 <i>7</i>	0 <i>0</i>	0 <i>0</i>	37 <i>26</i>
White Perch	0.0000	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>
Smallmouth Bass	0.0128	0 <i>0</i>	48 <i>50</i>	159 <i>130</i>	731 <i>385</i>	314 <i>212</i>	339 <i>181</i>	0 <i>0</i>	1,591 <i>495</i>
Yellow Perch	0.0282	0 <i>0</i>	619 <i>524</i>	70 <i>42</i>	1,349 <i>602</i>	345 <i>168</i>	1,118 <i>696</i>	0 <i>0</i>	3,501 <i>1,073</i>
Walleye	0.0010	125 <i>156</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	125 <i>156</i>
Total Harvest	0.0624	1,036 <i>356</i>	764 <i>528</i>	290 <i>139</i>	2,299 <i>717</i>	1,002 <i>290</i>	2,356 <i>741</i>	0 <i>0</i>	7,747 <i>1,254</i>
Angler Hours		7,061 <i>1,229</i>	15,362 <i>1,397</i>	18,194 <i>1,750</i>	27,999 <i>3,090</i>	21,149 <i>1,604</i>	34,333 <i>3,541</i>	0 <i>0</i>	124,098 <i>5,584</i>

Table 7. Estimated harvest-rate (harvest per hour), harvest and effort for the **SHORE FISHERY** with all survey areas combined for Wisconsin waters of Lake Michigan and Green Bay during 2018. Standard deviations are in Italics.

Species	Harvest per hour	March/April	May	June	July	August	Sept/Oct	Nov/Dec	Season
Coho Salmon	0.0007	15 <i>15</i>	9 <i>9</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	58 <i>34</i>	0 <i>0</i>	82 <i>38</i>
Chinook Salmon	0.0155	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	11 <i>12</i>	82 <i>45</i>	1,614 <i>361</i>	0 <i>0</i>	1,707 <i>364</i>
Rainbow Trout	0.0056	380 <i>104</i>	30 <i>20</i>	0 <i>0</i>	12 <i>7</i>	0 <i>0</i>	192 <i>79</i>	0 <i>0</i>	614 <i>132</i>
Brown Trout	0.0164	1,578 <i>345</i>	93 <i>48</i>	25 <i>18</i>	7 <i>5</i>	35 <i>23</i>	67 <i>36</i>	0 <i>0</i>	1,805 <i>352</i>
Brook Trout	0.0000	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>
Lake Trout	0.0003	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	34 <i>33</i>	0 <i>0</i>	34 <i>33</i>
Splake	0.0000	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>
Northern Pike	0.0011	9 <i>9</i>	50 <i>36</i>	0 <i>0</i>	0 <i>0</i>	48 <i>53</i>	17 <i>16</i>	0 <i>0</i>	124 <i>66</i>
White Perch	0.0000	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>
Smallmouth Bass	0.0076	0 <i>0</i>	0 <i>0</i>	246 <i>137</i>	125 <i>72</i>	111 <i>87</i>	357 <i>188</i>	0 <i>0</i>	839 <i>258</i>
Yellow Perch	0.0824	352 <i>203</i>	86 <i>62</i>	654 <i>343</i>	1,042 <i>464</i>	98 <i>78</i>	6,820 <i>3,709</i>	0 <i>0</i>	9,052 <i>3,761</i>
Walleye	0.0020	0 <i>0</i>	47 <i>34</i>	130 <i>97</i>	0 <i>0</i>	0 <i>0</i>	39 <i>33</i>	0 <i>0</i>	216 <i>108</i>
Total Harvest	0.1317	2,334 <i>414</i>	315 <i>95</i>	1,055 <i>382</i>	1,197 <i>470</i>	374 <i>138</i>	9,198 <i>3,733</i>	0 <i>0</i>	14,473 <i>3,808</i>
Angler Hours		18,565 <i>1,782</i>	10,229 <i>1,089</i>	11,394 <i>1,226</i>	13,736 <i>1,483</i>	11,369 <i>1,193</i>	44,569 <i>3,033</i>	0 <i>0</i>	109,862 <i>4,323</i>

Table 8. Estimated harvest-rate (harvest per hour), harvest, and effort for the **STREAM FISHERY** with all survey areas combined for Wisconsin waters of Lake Michigan and Green Bay during 2018. Standard deviations are in Italics.

Species	Harvest per hour	March/April	May	June	July	August	Sept/Oct	Nov/Dec	Season
Coho Salmon	0.0023	15 <i>16</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	607 <i>189</i>	0 <i>0</i>	622 <i>189</i>
Chinook Salmon	0.0357	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	9,551 <i>1,161</i>	0 <i>0</i>	9,551 <i>1,161</i>
Rainbow Trout	0.0165	4,103 <i>617</i>	2 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	312 <i>129</i>	0 <i>0</i>	4,417 <i>630</i>
Brown Trout	0.0037	243 <i>103</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	748 <i>227</i>	0 <i>0</i>	991 <i>249</i>
Brook Trout	0.0000	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>
Lake Trout	0.0003	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	67 <i>55</i>	0 <i>0</i>	67 <i>55</i>
Splake	0.0000	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>
Northern Pike	0.0011	27 <i>29</i>	50 <i>37</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	207 <i>138</i>	0 <i>0</i>	284 <i>146</i>
White Perch	0.0000	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>
Smallmouth Bass	0.0030	460 <i>360</i>	114 <i>91</i>	224 <i>238</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	798 <i>441</i>
Yellow Perch	0.0192	52 <i>52</i>	0 <i>0</i>	0 <i>0</i>	0 <i>0</i>	812 <i>0</i>	4,275 <i>1,705</i>	0 <i>0</i>	5,139 <i>1,705</i>
Walleye	0.0431	10,228 <i>2,197</i>	81 <i>85</i>	224 <i>238</i>	0 <i>0</i>	0 <i>0</i>	1,012 <i>338</i>	0 <i>0</i>	11,545 <i>2,237</i>
Total Harvest	0.1248	15,128 <i>2,313</i>	247 <i>130</i>	448 <i>337</i>	0 <i>0</i>	812 <i>0</i>	16,779 <i>2,120</i>	0 <i>0</i>	33,414 <i>3,158</i>
Angler Hours		119,727 <i>9,380</i>	15,525 <i>2,174</i>	14,609 <i>2,000</i>	10,251 <i>1,547</i>	4,370 <i>934</i>	103,249 <i>5,301</i>	0 <i>0</i>	267,731 <i>11,317</i>

Table 9. Average weight, average length and standard weight of salmonids from Wisconsin's Lake Michigan creel survey during 2009 through 2018, all areas and fishery types combined. std = standard deviation.

Year	Average weight (lbs.)	± 1 std	Average length (in.)	± 1 std	Standard weight (lbs.)
Coho salmon					
2009	4.9807	1.9220	23.2278	2.9728	4.2262
2010	4.5751	2.2101	22.8805	3.7821	3.9833
2011	4.2329	1.8161	22.1766	2.6627	3.9868
2012	3.4466	1.4930	20.6385	2.8135	3.8802
2013	5.3848	2.6743	23.6931	3.4848	4.0654
2014	3.9803	1.9275	21.2898	3.0179	3.9316
2015	4.0000	1.8299	21.4375	3.3676	3.8470
2016	4.7300	1.9033	23.3117	2.6028	3.9260
2017	4.0892	2.1177	22.4113	2.6747	3.6520
2018	4.7184	2.5656	22.0095	3.8256	4.2930
Chinook salmon					
2009	11.0706	5.3288	29.6812	5.5420	9.7943
2010	8.7700	4.3646	28.0374	5.5873	8.5914
2011	10.1487	5.8206	28.0507	6.0373	10.2631
2012	10.2651	4.0305	30.0844	4.6550	8.8881
2013	10.4966	7.0121	28.1742	6.7792	10.2408
2014	11.3915	5.0015	30.0012	4.8944	10.2321
2015	10.4108	4.5165	29.7477	5.4302	9.1940
2016	10.3154	6.0139	28.1910	5.9369	10.3142
2017	11.8211	6.0754	29.6128	5.8775	10.4097
2018	13.1493	7.0864	30.6361	6.6760	10.0109
Rainbow trout					
2009	6.4368	2.6692	25.1826	3.9525	4.5698
2010	6.2216	2.5984	25.6125	3.9888	4.3301
2011	6.1851	2.6215	24.8381	3.8826	4.2453
2012	6.3634	2.4765	26.1214	3.7593	4.2812
2013	6.4838	2.6676	25.5596	3.7736	4.0376
2014	6.7767	2.8838	25.9776	3.8120	4.1739
2015	5.7588	2.4129	25.2419	4.4224	3.9037
2016	5.8938	2.5324	24.7988	3.8542	4.2855
2017	6.5706	2.7022	25.8441	4.0113	4.0464
2018	6.4566	2.9929	25.6198	4.1660	3.7403
Brown trout					
2009	6.7666	3.9047	22.8051	4.3925	4.4162
2010	7.7499	4.3883	24.2774	5.0338	3.8949
2011	4.9160	4.0068	19.7757	5.5077	4.1725
2012	4.7658	2.7347	20.7304	3.7789	4.0676
2013	5.8537	3.0350	22.0303	3.6793	3.9190
2014	5.8459	3.3608	21.2050	4.6428	4.2392
2015	5.1532	3.1955	20.9572	4.3664	3.8568
2016	5.3826	4.0422	20.7914	5.2190	3.9606
2017	5.7685	3.2424	21.9807	3.9553	3.9659
2018	6.1024	3.8362	22.9790	4.4280	3.4505
Lake trout					
2009	6.0985	2.5753	25.1504	3.2636	5.5297
2010	5.9275	3.2344	24.2994	3.9970	5.9239
2011	6.1933	3.1017	25.0834	3.6291	5.6477
2012	6.7815	3.6110	26.1740	4.1798	5.3274
2013	5.8791	2.7630	25.0904	3.1524	5.3559
2014	6.3332	3.4466	24.7813	4.0396	5.8595
2015	7.4777	3.7718	26.8174	4.1894	5.6124
2016	6.6598	3.4108	25.7354	3.8402	5.8303
2017	6.7796	3.3955	25.8882	3.9219	5.6707
2018	8.4836	4.4129	27.2497	4.0781	6.0765

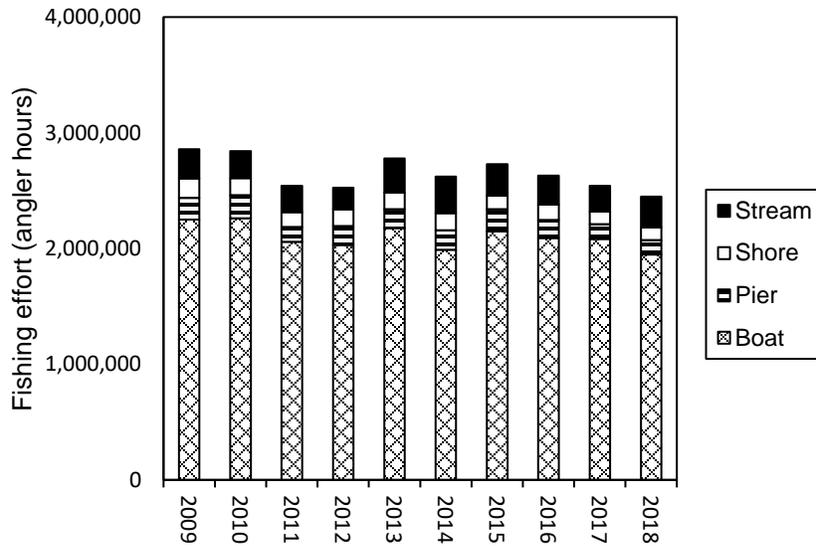


Figure 4. Fishing effort (angler hours) in Wisconsin waters of Lake Michigan and Green Bay from 2009 through 2018.

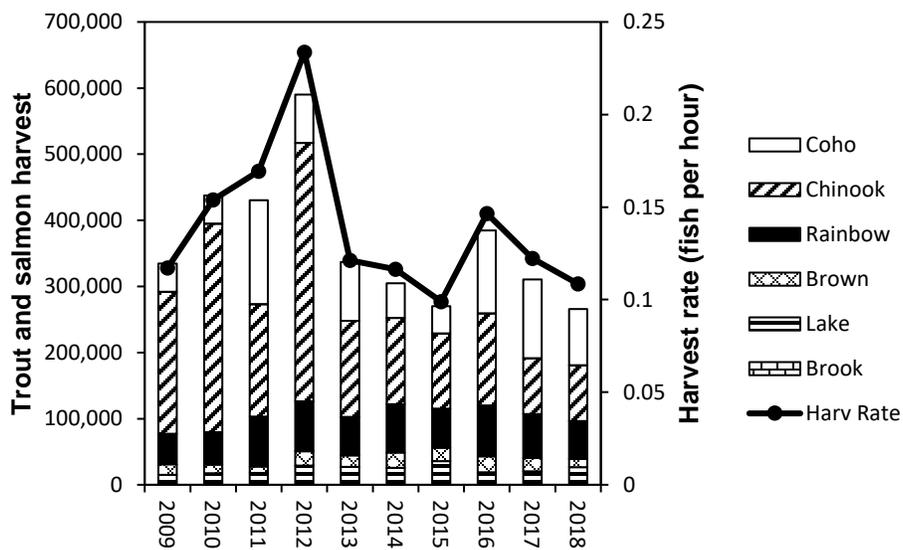


Figure 5. Trout and salmon harvest and harvest-rate from Wisconsin waters of Lake Michigan and Green Bay from 2009 through 2018.

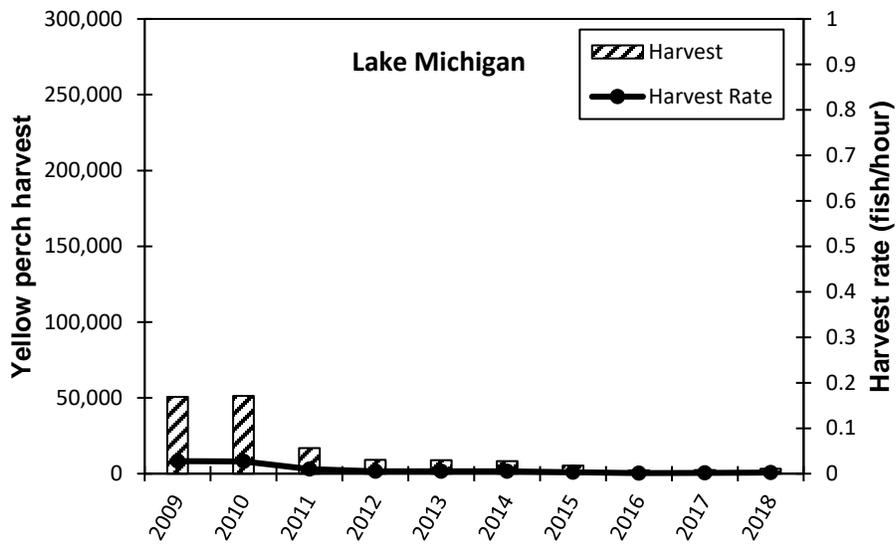
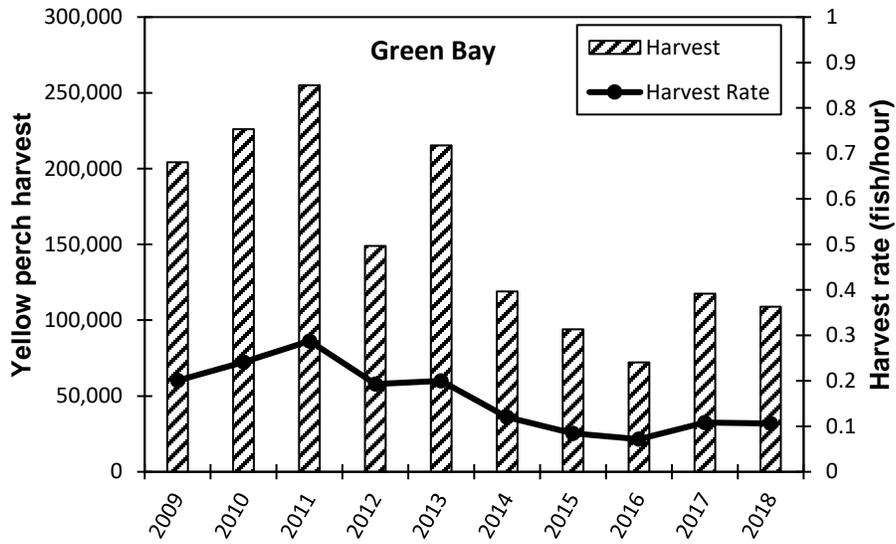


Figure 3. Yellow perch angler-harvest and harvest-rate from Wisconsin waters of Green Bay and Lake Michigan from 2009 through 2018. Note: Figure 3 reflects that some Door County sites represent Green Bay for yellow perch harvest statistics.