

**Sportfishing Catch and Effort from the Michigan
Waters of Lakes Michigan, Huron, Erie, and
Superior, and their Important Tributary Streams,
April 1, 1989 - March 31, 1990
(Appendices)**

Gerald P. Rakoczy
and
Richard D. Rogers

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APRIL 1, 1989 - MARCH 31, 1990
(APPENDICES)¹**

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and
Richard D. Rogers**

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of Lakes Michigan, Huron, Erie, and Superior,
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April 1, 1989 - March 31, 1990
Appendices¹**

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APPENDICES

SECTION I: LAKE MICHIGAN CATCH AND EFFORT ESTIMATES BY SITE

Appendix 1.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Menominee, by all modes of sportfishing, 1989. Two standard errors in parentheses.

Species	Total catch per hour	Month					Season
		Apr	May	Jun	Jul	Aug	
Chinook salmon	0.0106 (0.0083)	0 (0)	0 (0)	— (—)	320 (509)	571 (461)	891 (687)
Rainbow trout	0.0001 (0.0002)	0 (0)	0 (0)	— (—)	6 (13)	0 (0)	6 (13)
Brown trout	0.0297 (0.0166)	463 (587)	6 (12)	— (—)	953 (980)	1,081 (707)	2,503 (1,343)
Splake	0.0041 (0.0053)	250 (398)	92 (195)	— (—)	0 (0)	0 (0)	342 (443)
Northern pike	0.0010 (0.0021)	0 (0)	0 (0)	— (—)	0 (0)	87 (180)	87 (180)
Pumpkinseed	0.0028 (0.0057)	0 (0)	0 (0)	— (—)	239 (487)	0 (0)	239 (487)
Bluegill	0.0169 (0.0304)	0 (0)	0 (0)	— (—)	239 (487)	1,188 (2,508)	1,427 (2,555)
Smallmouth bass	0.0041 (0.0062)	0 (0)	0 (0)	— (—)	239 (487)	110 (196)	349 (525)
Yellow perch	0.3216 (0.1837)	17,421 (11,983)	7,178 (8,105)	— (—)	2,230 (3,660)	275 (577)	27,104 (14,934)
Walleye	0.0023 (0.0048)	0 (0)	0 (0)	— (—)	192 (397)	0 (0)	192 (397)
Freshwater drum	0.0010 (0.0021)	0 (0)	0 (0)	— (—)	0 (0)	87 (180)	87 (180)
Total	0.3942 (0.1905)	18,134 (12,004)	7,276 (8,107)	— (—)	4,418 (3,935)	3,399 (2,727)	33,227 (15,256)
Angler hours		20,146 (6,015)	14,526 (3,093)	— (—)	22,882 (8,293)	26,727 (6,857)	84,281 (12,710)
Angler trips		5,790 (1,878)	3,440 (635)	— (—)	6,258 (2,164)	7,590 (2,091)	23,078 (3,604)
Angler days		5,790 (1,878)	3,440 (635)	— (—)	6,258 (2,164)	7,010 (2,019)	22,498 (3,562)

Appendix 2.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Cedar River to Stoney Point, by all modes of sportfishing, 1989. Two standard errors in parentheses.

Species	Total catch per hour	Month					Season
		Apr	May	Jun	Jul	Aug	
Chinook salmon	0.0446 (0.0223)	0 (0)	0 (0)	— (—)	2,307 (1,209)	593 (562)	2,900 (1,333)
Rainbow trout	0.0009 (0.0019)	0 (0)	0 (0)	— (—)	0 (0)	60 (124)	60 (124)
Brown trout	0.0198 (0.0103)	917 (563)	56 (84)	— (—)	131 (125)	180 (201)	1,284 (616)
Lake trout	0.0002 (0.0004)	0 (0)	0 (0)	— (—)	13 (26)	0 (0)	13 (26)
Splake	0.0115 (0.0078)	696 (481)	54 (62)	— (—)	0 (0)	0 (0)	750 (485)
Northern pike	0.0001 (0.0002)	0 (0)	6 (12)	— (—)	0 (0)	0 (0)	6 (12)
Rock bass	0.0036 (0.0040)	0 (0)	96 (135)	— (—)	41 (82)	100 (209)	237 (262)
Smallmouth bass	0.0272 (0.0251)	0 (0)	484 (319)	— (—)	247 (381)	1,037 (1,514)	1,768 (1,593)
Yellow perch	0.1231 (0.1360)	0 (0)	0 (0)	— (—)	4,243 (3,820)	3,755 (7,812)	7,998 (8,696)
Other	0.0005 (0.0010)	0 (0)	32 (66)	— (—)	0 (0)	0 (0)	32 (66)
Total	0.2316 (0.1455)	1,613 (740)	728 (368)	— (—)	6,982 (4,028)	5,725 (7,983)	15,048 (8,980)
Angler hours		15,740 (6,460)	5,733 (2,058)	— (—)	31,123 (9,856)	12,390 (4,451)	64,986 (12,764)
Angler trips		3,645 (1,495)	1,264 (433)	— (—)	5,428 (1,871)	3,422 (1,211)	13,759 (2,718)
Angler days		3,645 (1,495)	1,264 (433)	— (—)	5,327 (1,858)	3,422 (1,211)	13,658 (2,709)

Appendix 3.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Little Bay de Noc, by all modes of sportfishing, 1989. Two standard errors in parentheses.

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0008 (0.0017)	0 (0)	0 (0)	201 (415)	0 (0)	0 (0)	0 (0)	201 (415)
Chinook salmon	0.0034 (0.0031)	0 (0)	0 (0)	716 (684)	84 (130)	0 (0)	0 (0)	800 (696)
Rainbow trout	0.0003 (0.0005)	0 (0)	0 (0)	32 (66)	38 (80)	0 (0)	0 (0)	70 (104)
Brown trout	0.0003 (0.0006)	0 (0)	0 (0)	0 (0)	76 (161)	0 (0)	0 (0)	76 (161)
Northern pike	0.0102 (0.0057)	231 (369)	197 (219)	483 (495)	649 (770)	416 (501)	451 (341)	2,427 (1,179)
Black bullhead	0.0022 (0.0039)	47 (100)	0 (0)	425 (883)	0 (0)	40 (89)	0 (0)	512 (893)
Brown bullhead	0.0038 (0.0057)	480 (1,008)	0 (0)	427 (883)	0 (0)	0 (0)	0 (0)	907 (1,340)
White perch	0.0023 (0.0050)	0 (0)	0 (0)	0 (0)	553 (1,190)	0 (0)	0 (0)	553 (1,190)
Rock bass	0.0128 (0.0095)	202 (316)	1,198 (1,309)	1,331 (1,551)	247 (310)	0 (0)	53 (109)	3,031 (2,080)
Pumpkinseed	0.0217 (0.0335)	715 (771)	71 (149)	374 (519)	3,977 (7,735)	0 (0)	0 (0)	5,137 (7,792)
Bluegill	0.0077 (0.0164)	0 (0)	0 (0)	0 (0)	1,832 (3,859)	0 (0)	0 (0)	1,832 (3,859)
Smallmouth bass	0.0085 (0.0050)	0 (0)	330 (349)	917 (696)	569 (657)	99 (139)	91 (111)	2,006 (1,034)
White crappie	0.0124 (0.0189)	0 (0)	2,951 (4,413)	0 (0)	0 (0)	0 (0)	0 (0)	2,951 (4,413)
Black crappie	0.0005 (0.0007)	16 (33)	0 (0)	57 (119)	34 (71)	0 (0)	0 (0)	107 (142)
Yellow perch	0.4027 (0.1712)	13,837 (13,144)	7,863 (6,387)	35,410 (20,171)	16,369 (10,219)	16,451 (12,836)	5,538 (3,589)	95,468 (30,042)

Appendix 3.—Continued:

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Walleye	0.1286 (0.0671)	14,527 (12,143)	1,916 (1,345)	5,345 (3,540)	2,545 (1,409)	5,124 (3,600)	1,026 (472)	30,483 (13,303)
Freshwater drum	0.0011 (0.0014)	0 (0)	136 (286)	92 (138)	32 (65)	0 (0)	0 (0)	260 (324)
Other	0.0007 (0.0009)	61 (139)	0 (0)	0 (0)	45 (113)	67 (106)	0 (0)	173 (208)
Total	0.6201 (0.2292)	30,116 (17,947)	14,662 (8,004)	45,810 (20,617)	27,050 (13,555)	22,197 (13,342)	7,159 (3,639)	146,994 (34,441)
Angler hours		74,986 (60,299)	38,874 (15,102)	49,017 (16,821)	45,022 (18,467)	21,386 (9,914)	7,759 (1,576)	237,044 (67,741)
Angler trips		20,498 (15,843)	11,631 (4,219)	12,723 (4,165)	10,849 (3,990)	7,923 (3,173)	2,252 (499)	65,876 (17,674)
Angler days		16,521 (12,899)	10,220 (3,823)	11,710 (3,896)	9,558 (3,621)	6,792 (2,771)	2,024 (465)	56,825 (14,737)

Appendix 4.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Big Bay de Noc, by all modes of sportfishing, 1989. Two standard errors in parentheses.

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Chinook salmon	0.0032 (0.0046)	0 (0)	0 (0)	112 (225)	126 (257)	0 (0)	0 (0)	238 (342)
Northern pike	0.0035 (0.0034)	182 (236)	41 (83)	0 (0)	0 (0)	16 (23)	23 (49)	262 (256)
Black bullhead	0.0024 (0.0035)	0 (0)	174 (250)	0 (0)	0 (0)	0 (0)	0 (0)	174 (250)
Brown bullhead	0.0042 (0.0084)	313 (627)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	313 (627)
Rock bass	0.0111 (0.0115)	46 (66)	743 (840)	30 (63)	0 (0)	0 (0)	0 (0)	819 (845)
Pumpkinseed	0.0022 (0.0035)	0 (0)	0 (0)	0 (0)	47 (95)	112 (232)	0 (0)	159 (251)
Bluegill	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	5 (9)	0 (0)	0 (0)	5 (9)
Smallmouth bass	0.0846 (0.0304)	2,418 (1,423)	1,975 (1,083)	1,476 (1,151)	236 (327)	123 (154)	21 (43)	6,249 (2,158)
Largemouth bass	0.0005 (0.0010)	0 (0)	0 (0)	34 (71)	0 (0)	0 (0)	0 (0)	34 (71)
Yellow perch	0.8372 (0.2628)	46,720 (16,346)	309 (272)	10,523 (7,858)	3,097 (3,182)	973 (874)	187 (390)	61,809 (18,441)
Walleye	0.0717 (0.0354)	449 (472)	229 (280)	2,747 (2,064)	1,368 (1,363)	374 (252)	125 (260)	5,292 (2,559)
Other	0.0890 (0.1810)	0 (0)	6,574 (13,352)	0 (0)	0 (0)	0 (0)	0 (0)	6,574 (13,352)
Total	1.1097 (0.3304)	50,128 (16,428)	10,045 (13,430)	14,922 (8,209)	4,879 (3,488)	1,598 (952)	356 (473)	81,928 (23,042)
Angler hours		29,741 (3,372)	12,646 (3,659)	16,092 (4,080)	10,540 (3,110)	4,158 (938)	654 (323)	73,831 (7,215)
Angler trips		7,435 (982)	3,205 (937)	4,090 (1,030)	3,113 (997)	1,334 (335)	202 (85)	19,379 (2,004)
Angler days		5,883 (917)	2,799 (891)	3,748 (1,016)	2,951 (967)	1,079 (290)	202 (85)	16,662 (1,922)

Appendix 5.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Manistique, by all modes of sportfishing, 1989. Two standard errors in parentheses.

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.0224 (0.0201)	0 (0)	0 (0)	0 (0)	0 (0)	640 (570)	0 (0)	640 (570)
Coho salmon	0.0002 (0.0003)	0 (0)	0 (0)	2 (4)	4 (9)	0 (0)	0 (0)	6 (10)
Chinook salmon	0.0586 (0.0157)	0 (0)	28 (42)	523 (194)	604 (293)	335 (164)	186 (130)	1,676 (411)
Rainbow trout	0.0350 (0.0129)	355 (225)	0 (0)	158 (81)	53 (40)	254 (229)	181 (117)	1,001 (353)
Brown trout	0.0013 (0.0015)	12 (25)	0 (0)	13 (27)	0 (0)	3 (5)	8 (17)	36 (41)
Northern pike	0.0053 (0.0036)	0 (0)	0 (0)	50 (41)	38 (50)	63 (79)	0 (0)	151 (102)
Channel catfish	0.0033 (0.0046)	0 (0)	58 (119)	27 (45)	8 (12)	0 (0)	0 (0)	93 (128)
Smallmouth bass	0.0016 (0.0022)	0 (0)	0 (0)	15 (17)	0 (0)	31 (62)	0 (0)	46 (64)
Yellow perch	0.0014 (0.0016)	0 (0)	0 (0)	31 (42)	8 (16)	0 (0)	0 (0)	39 (45)
Walleye	0.0184 (0.0110)	77 (124)	0 (0)	273 (181)	82 (115)	95 (187)	0 (0)	527 (310)
Total	0.1473 (0.0343)	444 (258)	86 (126)	1,092 (289)	797 (322)	1,421 (670)	375 (176)	4,215 (866)
Angler hours		2,265 (536)	992 (391)	7,992 (1,664)	5,695 (2,153)	7,983 (1,267)	3,686 (614)	28,613 (3,135)
Angler trips		446 (146)	299 (146)	1,799 (400)	1,253 (474)	1,844 (345)	751 (133)	6,392 (751)
Angler days		340 (123)	258 (139)	1,502 (354)	1,161 (455)	1,398 (295)	558 (112)	5,217 (683)

Appendix 6.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Charlevoix, by all modes of sportfishing, 1989. Two standard errors in parentheses.

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug	Sep	
Pink salmon	0.0004 (0.0009)	0 (0)	0 (0)	0 (0)	25 (53)	0 (0)	25 (53)
Coho salmon	0.0006 (0.0013)	0 (0)	0 (0)	0 (0)	38 (79)	0 (0)	38 (79)
Chinook salmon	0.0383 (0.0211)	0 (0)	0 (0)	52 (81)	1,645 (1,067)	593 (492)	2,290 (1,178)
Rainbow trout	0.0009 (0.0010)	7 (18)	0 (0)	14 (28)	34 (51)	0 (0)	55 (61)
Brown trout	0.0023 (0.0035)	96 (194)	0 (0)	0 (0)	42 (68)	0 (0)	138 (206)
Lake trout	0.1330 (0.0482)	250 (197)	2,329 (1,352)	2,318 (985)	3,046 (1,718)	19 (40)	7,962 (2,406)
Channel catfish	0.0002 (0.0004)	0 (0)	0 (0)	10 (20)	0 (0)	0 (0)	10 (20)
Smallmouth bass	0.0101 (0.0170)	0 (0)	0 (0)	0 (0)	531 (1,000)	75 (154)	606 (1,012)
Yellow perch	0.0141 (0.0216)	0 (0)	0 (0)	0 (0)	0 (0)	846 (1,284)	846 (1,284)
Round whitefish	0.0005 (0.0011)	31 (65)	0 (0)	0 (0)	0 (0)	0 (0)	31 (65)
Total	0.2005 (0.0662)	384 (285)	2,329 (1,352)	2,394 (989)	5,361 (2,260)	1,533 (1,384)	12,001 (3,148)
Angler hours		1,498 (647)	10,178 (4,985)	9,340 (2,108)	26,270 (9,695)	12,577 (4,513)	59,863 (12,003)
Angler trips		747 (358)	2,260 (1,075)	2,173 (511)	6,373 (2,338)	3,853 (1,302)	15,406 (2,951)
Angler days		681 (338)	2,260 (1,075)	2,060 (497)	5,552 (2,063)	3,339 (1,203)	13,892 (2,687)

Appendix 7.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Elk Rapids, by all modes of sportfishing, 1989. Two standard errors in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Chinook salmon	0.0483 (0.0532)	0 (0)	0 (0)	0 (0)	0 (0)	1,212 (2,296)	260 (301)	681 (447)	2,153 (2,358)
Rainbow trout	0.0193 (0.0116)	252 (286)	257 (210)	0 (0)	0 (0)	126 (270)	86 (117)	141 (214)	862 (508)
Brown trout	0.0020 (0.0041)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	87 (176)	87 (176)
Rainbow smelt	0.4825 (0.4636)	0 (0)	21,507 (20,521)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	21,507 (20,521)
Channel catfish	0.0006 (0.0012)	0 (0)	0 (0)	28 (57)	0 (0)	0 (0)	0 (0)	0 (0)	28 (57)
Rock bass	0.0007 (0.0014)	0 (0)	0 (0)	32 (65)	0 (0)	0 (0)	0 (0)	0 (0)	32 (65)
Smallmouth bass	0.0668 (0.0653)	0 (0)	14 (27)	2,963 (2,890)	0 (0)	0 (0)	0 (0)	0 (0)	2,977 (2,890)
Yellow perch	0.1144 (0.0730)	1,071 (2,172)	3,250 (2,217)	780 (783)	0 (0)	0 (0)	0 (0)	0 (0)	5,101 (3,201)
Lake whitefish	0.0733 (0.0496)	0 (0)	1,767 (1,760)	0 (0)	0 (0)	574 (1,235)	0 (0)	924 (341)	3,265 (2,177)
Other	0.0027 (0.0044)	0 (0)	0 (0)	121 (196)	0 (0)	0 (0)	0 (0)	0 (0)	121 (196)
Total	0.8107 (0.4849)	1,323 (2,191)	26,795 (20,716)	3,924 (3,002)	0 (0)	1,912 (2,621)	346 (323)	1,833 (627)	36,133 (21,221)
Angler hours		5,963 (1,417)	7,591 (752)	6,702 (2,063)	3,040 (640)	9,366 (3,834)	6,703 (1,728)	5,206 (775)	44,571 (5,052)
Angler trips		1,860 (693)	2,621 (395)	2,072 (592)	1,046 (251)	2,459 (995)	2,081 (500)	2,080 (431)	14,219 (1,573)
Angler days		1,339 (613)	2,192 (398)	1,767 (581)	849 (320)	2,184 (966)	1,712 (505)	1,396 (301)	11,439 (1,501)

Appendix 8.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for East Grand Traverse Bay, by all modes of sportfishing, 1989. Two standard errors in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Chinook salmon	0.0144 (0.0091)	0 (0)	0 (0)	0 (0)	39 (55)	623 (591)	378 (265)	0 (0)	1,040 (650)
Rainbow trout	0.0012 (0.0019)	0 (0)	7 (15)	0 (0)	69 (139)	0 (0)	0 (0)	12 (24)	88 (142)
Brown trout	0.0011 (0.0014)	0 (0)	22 (44)	0 (0)	60 (91)	0 (0)	0 (0)	0 (0)	82 (101)
Lake trout	0.1050 (0.0356)	0 (0)	1,422 (1,022)	2,490 (1,622)	1,357 (923)	2,217 (1,216)	87 (111)	0 (0)	7,573 (2,453)
Channel catfish	0.0019 (0.0021)	0 (0)	0 (0)	48 (96)	39 (55)	49 (100)	0 (0)	0 (0)	136 (149)
Smallmouth bass	0.0115 (0.0169)	0 (0)	0 (0)	0 (0)	827 (1,213)	0 (0)	0 (0)	0 (0)	827 (1,213)
Yellow perch	0.0946 (0.0913)	4,491 (5,917)	0 (0)	2,062 (2,786)	231 (332)	0 (0)	0 (0)	37 (76)	6,821 (6,549)
Lake whitefish	0.1279 (0.0646)	241 (508)	168 (219)	297 (387)	5,509 (4,055)	1,551 (1,813)	391 (445)	1,064 (675)	9,221 (4,565)
Round whitefish	0.0041 (0.0050)	0 (0)	0 (0)	48 (96)	226 (343)	0 (0)	0 (0)	25 (51)	299 (360)
Burbot	0.0002 (0.0004)	0 (0)	15 (30)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	15 (30)
Total	0.3621 (0.1231)	4,732 (5,939)	1,634 (1,047)	4,945 (3,250)	8,357 (4,362)	4,440 (2,264)	856 (530)	1,138 (682)	26,102 (8,475)
Angler hours		5,100 (1,612)	7,329 (2,531)	11,913 (2,350)	18,384 (3,979)	16,134 (3,813)	9,501 (2,579)	3,730 (988)	72,091 (7,247)
Angler trips		1,758 (680)	1,979 (733)	2,814 (617)	4,133 (926)	4,088 (1,002)	2,247 (621)	1,176 (317)	18,195 (1,931)
Angler days		1,683 (665)	1,745 (715)	2,781 (611)	3,875 (892)	3,610 (948)	2,016 (580)	1,083 (308)	16,793 (1,858)

Appendix 9.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for West Grand Traverse Bay, by all modes of sportfishing, 1989. Two standard errors in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Chinook salmon	0.0145 (0.0081)	0 (0)	88 (181)	0 (0)	480 (535)	443 (365)	847 (737)	0 (0)	1,858 (998)
Rainbow trout	0.0059 (0.0076)	462 (905)	76 (115)	0 (0)	109 (222)	27 (56)	0 (0)	74 (156)	748 (953)
Brown trout	0.0035 (0.0045)	65 (135)	0 (0)	0 (0)	127 (259)	30 (61)	231 (500)	0 (0)	453 (582)
Lake trout	0.0806 (0.0290)	0 (0)	2,946 (1,443)	962 (650)	5,215 (2,897)	1,170 (776)	0 (0)	0 (0)	10,293 (3,391)
Splake	0.0010 (0.0022)	124 (271)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	124 (271)
Northern pike	0.0009 (0.0019)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	117 (242)	0 (0)	117 (242)
White sucker	0.0018 (0.0033)	32 (70)	202 (425)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	234 (431)
Channel catfish	0.0004 (0.0008)	0 (0)	0 (0)	0 (0)	0 (0)	46 (95)	0 (0)	0 (0)	46 (95)
Smallmouth bass	0.0278 (0.0256)	0 (0)	0 (0)	19 (39)	0 (0)	226 (279)	2,931 (3,139)	376 (726)	3,552 (3,234)
Yellow perch	0.2048 (0.1122)	7,411 (9,152)	0 (0)	0 (0)	0 (0)	4,018 (6,548)	6,782 (5,788)	7,940 (5,577)	26,151 (13,829)
Lake whitefish	0.0103 (0.0080)	0 (0)	72 (105)	0 (0)	691 (824)	557 (581)	0 (0)	0 (0)	1,320 (1,014)
Round whitefish	0.1164 (0.1228)	0 (0)	0 (0)	0 (0)	11,790 (14,843)	2,209 (4,518)	264 (426)	601 (545)	14,864 (15,531)
Burbot	0.0016 (0.0026)	0 (0)	53 (109)	0 (0)	152 (311)	0 (0)	0 (0)	0 (0)	205 (330)
Total	0.4695 (0.1806)	8,094 (9,202)	3,437 (1,527)	981 (651)	18,564 (15,162)	8,726 (8,028)	11,172 (6,662)	8,991 (5,653)	59,965 (21,403)
Angler hours		8,939 (2,517)	15,546 (4,649)	10,343 (3,804)	38,337 (12,272)	23,485 (7,646)	25,332 (8,904)	5,735 (1,894)	127,717 (18,285)
Angler trips		2,710 (852)	4,399 (1,322)	2,487 (964)	8,487 (2,783)	5,265 (1,700)	6,895 (2,456)	1,613 (544)	31,856 (4,513)
Angler days		2,242 (752)	3,985 (1,244)	2,023 (831)	8,321 (2,740)	5,027 (1,651)	6,683 (2,418)	1,458 (502)	29,739 (4,374)

Appendix 10.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Frankfort, by all modes of sportfishing, 1989. Two standard errors in parentheses.

Species	Total catch per hour	Month							Season
		May	Jun	Jul	Aug	Sep	Oct	Nov	
Pink salmon	0.0020 (0.0047)	0 (0)	0 (0)	18 (43)	673 (1,601)	10 (23)	0 (0)	0 (0)	701 (1,602)
Coho salmon	0.0636 (0.0734)	0 (0)	0 (0)	650 (578)	17,766 (22,667)	3,552 (3,118)	50 (64)	58 (121)	22,076 (22,888)
Chinook salmon	0.0459 (0.0514)	137 (136)	383 (365)	853 (803)	13,253 (15,828)	1,296 (1,168)	15 (23)	0 (0)	15,937 (15,896)
Rainbow trout	0.0244 (0.0179)	47 (80)	1,229 (1,545)	4,396 (3,656)	1,222 (1,884)	74 (125)	1,285 (827)	218 (223)	8,471 (4,479)
Brown trout	0.0084 (0.0083)	823 (578)	84 (122)	516 (497)	1,395 (2,332)	57 (75)	26 (31)	0 (0)	2,901 (2,458)
Lake trout	0.0431 (0.0354)	1,522 (1,106)	2,100 (1,404)	4,036 (3,207)	7,219 (8,917)	80 (114)	0 (0)	0 (0)	14,957 (9,644)
Rock bass	0.0005 (0.0011)	0 (0)	0 (0)	174 (357)	0 (0)	0 (0)	0 (0)	0 (0)	174 (357)
Yellow perch	0.0072 (0.0080)	0 (0)	570 (1,179)	1,881 (2,154)	38 (76)	0 (0)	12 (26)	0 (0)	2,501 (2,457)
Round whitefish	0.0021 (0.0020)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	715 (573)	8 (17)	723 (573)
Total	0.1972 (0.1325)	2,529 (1,258)	4,366 (2,428)	12,524 (5,445)	41,566 (29,247)	5,069 (3,335)	2,103 (1,009)	284 (254)	68,441 (30,079)
Angler hours		18,525 (8,714)	35,815 (13,924)	71,968 (41,407)	151,810 (166,853)	51,818 (35,102)	13,060 (5,766)	4,020 (2,817)	347,016 (176,345)
Angler trips		4,925 (1,864)	7,883 (2,899)	14,968 (7,491)	29,807 (30,342)	10,195 (6,063)	3,143 (1,573)	1,176 (771)	72,097 (32,070)
Angler days		3,982 (1,580)	6,691 (2,601)	12,547 (6,818)	29,146 (30,338)	8,224 (5,171)	2,642 (1,469)	808 (560)	64,040 (31,707)

Appendix 11.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Manistee, by all modes of sportfishing, 1989. Two standard errors in parentheses.

Species	Total catch per hour	Month								Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	
Pink salmon	0.0002 (0.0003)	0 (0)	0 (0)	0 (0)	44 (72)	0 (0)	0 (0)	0 (0)	0 (0)	44 (72)
Coho salmon	0.0073 (0.0030)	0 (0)	71 (130)	95 (133)	466 (362)	294 (232)	976 (520)	35 (81)	0 (0)	1,937 (705)
Chinook salmon	0.0289 (0.0125)	59 (71)	556 (467)	974 (1,528)	2,619 (1,901)	2,772 (1,577)	631 (363)	61 (82)	0 (0)	7,672 (2,966)
Rainbow trout	0.0179 (0.0073)	58 (84)	286 (364)	970 (1,049)	2,179 (1,198)	21 (43)	255 (197)	631 (455)	364 (194)	4,764 (1,721)
Brown trout	0.0158 (0.0101)	3,053 (2,424)	891 (777)	0 (0)	140 (152)	49 (73)	29 (42)	43 (44)	0 (0)	4,205 (2,552)
Lake trout	0.0190 (0.0124)	0 (0)	601 (527)	1,664 (2,578)	1,822 (1,399)	964 (1,038)	0 (0)	0 (0)	0 (0)	5,051 (3,156)
Northern pike	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	6 (15)	0 (0)	6 (15)
Channel catfish	0.0001 (0.0002)	39 (80)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	39 (80)
Rock bass	0.0049 (0.0067)	0 (0)	736 (1,486)	505 (953)	33 (67)	0 (0)	0 (0)	25 (60)	0 (0)	1,299 (1,768)
Smallmouth bass	0.0004 (0.0008)	0 (0)	0 (0)	98 (202)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	98 (202)
Yellow perch	0.4334 (0.2319)	8,369 (5,747)	26,477 (30,446)	28,209 (23,551)	38,489 (41,489)	1,631 (2,346)	3,594 (3,255)	6,276 (6,793)	2,048 (1,716)	115,093 (57,456)
Round whitefish	0.0048 (0.0041)	46 (93)	56 (128)	53 (119)	505 (829)	0 (0)	0 (0)	625 (648)	0 (0)	1,285 (1,071)
Total	0.5328 (0.2404)	11,624 (6,239)	29,674 (30,503)	32,568 (23,785)	46,297 (41,584)	5,731 (3,021)	5,485 (3,322)	7,702 (6,840)	2,412 (1,727)	141,493 (57,743)
Angler hours		22,821 (8,320)	24,844 (15,489)	34,070 (21,973)	70,499 (34,983)	66,529 (22,672)	25,662 (6,948)	12,654 (5,481)	8,508 (936)	265,587 (51,078)
Angler trips		6,417 (2,463)	6,110 (3,833)	8,726 (4,574)	14,494 (6,659)	15,921 (5,337)	5,815 (1,541)	3,067 (1,008)	2,415 (572)	62,965 (10,873)
Angler days		5,727 (2,335)	5,409 (3,442)	7,416 (4,186)	11,010 (5,153)	14,827 (5,144)	4,900 (1,359)	2,414 (932)	2,040 (534)	53,743 (9,531)

Appendix 12.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Ludington, by all modes of sportfishing, 1989. Two standard errors in parentheses.

Species	Total catch per hour	Month						Season
		May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.0002 (0.0003)	0 (0)	0 (0)	67 (102)	0 (0)	0 (0)	0 (0)	67 (102)
Coho salmon	0.0091 (0.0053)	163 (219)	34 (70)	150 (186)	1,717 (1,423)	1,585 (1,359)	36 (69)	3,685 (1,991)
Chinook salmon	0.0414 (0.0160)	1,283 (639)	496 (476)	3,381 (2,403)	7,321 (4,065)	4,170 (2,638)	185 (245)	16,836 (5,473)
Rainbow trout	0.0116 (0.0050)	7 (14)	232 (362)	1,102 (1,055)	714 (643)	1,283 (942)	1,382 (835)	4,720 (1,801)
Brown trout	0.0040 (0.0020)	991 (618)	29 (64)	224 (275)	300 (301)	69 (112)	19 (32)	1,632 (752)
Lake trout	0.0349 (0.0136)	1,478 (1,057)	3,375 (2,136)	6,735 (3,644)	2,535 (1,698)	60 (67)	0 (0)	14,183 (4,674)
Northern pike	0.0007 (0.0016)	0 (0)	0 (0)	274 (604)	0 (0)	0 (0)	0 (0)	274 (604)
Rock bass	0.0007 (0.0009)	0 (0)	0 (0)	156 (274)	128 (264)	0 (0)	0 (0)	284 (380)
Smallmouth bass	0.0001 (0.0002)	0 (0)	0 (0)	35 (71)	0 (0)	0 (0)	0 (0)	35 (71)
Yellow perch	0.2835 (0.1124)	122 (185)	68,348 (32,572)	20,140 (12,119)	347 (480)	24,428 (16,735)	1,817 (3,882)	115,202 (38,771)
Round whitefish	0.0002 (0.0003)	0 (0)	0 (0)	0 (0)	0 (0)	59 (121)	27 (54)	86 (133)
Total	0.3864 (0.1265)	4,044 (1,411)	72,514 (32,648)	32,264 (12,946)	13,062 (4,716)	31,654 (17,023)	3,466 (3,979)	157,004 (39,539)
Angler hours		24,378 (6,631)	48,459 (16,056)	120,996 (53,529)	119,044 (58,894)	80,621 (24,154)	12,872 (4,204)	406,370 (85,069)
Angler trips		5,497 (1,365)	12,432 (3,318)	27,103 (10,735)	22,402 (10,820)	17,043 (4,661)	3,115 (1,071)	87,592 (16,372)
Angler days		5,161 (1,319)	10,945 (3,259)	22,230 (9,249)	18,689 (9,359)	13,561 (3,931)	2,814 (1,007)	73,400 (14,211)

Appendix 13.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Muskegon, by all modes of sportfishing, 1989. Two standard errors in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0059 (0.0066)	214 (403)	135 (190)	175 (382)	0 (0)	363 (827)	50 (109)	0 (0)	937 (1,020)
Chinook salmon	0.0184 (0.0124)	0 (0)	709 (747)	148 (325)	49 (99)	1,166 (1,329)	845 (1,008)	0 (0)	2,917 (1,859)
Rainbow trout	0.0081 (0.0061)	0 (0)	31 (52)	0 (0)	136 (181)	167 (312)	952 (850)	0 (0)	1,286 (925)
Brown trout	0.0030 (0.0033)	135 (203)	256 (435)	0 (0)	0 (0)	83 (188)	0 (0)	0 (0)	474 (516)
Lake trout	0.0122 (0.0091)	0 (0)	202 (291)	801 (859)	662 (945)	271 (425)	0 (0)	0 (0)	1,936 (1,377)
Channel catfish	0.0010 (0.0021)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	166 (339)	0 (0)	166 (339)
Smallmouth bass	0.0014 (0.0023)	0 (0)	0 (0)	0 (0)	216 (357)	0 (0)	0 (0)	0 (0)	216 (357)
Yellow perch	1.1021 (0.4748)	99,989 (49,737)	15,644 (17,545)	7,767 (9,707)	33,694 (30,743)	5,836 (13,167)	11,504 (10,850)	0 (0)	174,434 (64,125)
Total	1.1522 (0.4811)	100,338 (49,739)	16,977 (17,570)	8,891 (9,758)	34,757 (30,760)	7,886 (13,272)	13,517 (10,936)	0 (0)	182,366 (64,186)
Angler hours		23,736 (8,637)	17,326 (10,629)	18,468 (11,525)	45,329 (18,604)	29,693 (22,592)	22,891 (9,321)	829 (526)	158,272 (35,554)
Angler trips		5,756 (1,709)	4,904 (2,944)	5,103 (3,136)	11,294 (4,501)	5,991 (4,421)	7,033 (2,752)	402 (263)	40,483 (8,299)
Angler days		5,699 (1,704)	4,838 (2,920)	4,880 (3,000)	10,828 (4,331)	5,991 (4,421)	6,959 (2,711)	402 (263)	39,597 (8,133)

Appendix 14.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Grand Haven, by all modes of sportfishing, 1989. Two standard errors in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0087 (0.0060)	222 (473)	913 (864)	49 (91)	0 (0)	293 (577)	296 (239)	0 (0)	1,773 (1,170)
Chinook salmon	0.0163 (0.0083)	55 (73)	984 (809)	798 (873)	724 (863)	215 (227)	330 (211)	223 (505)	3,329 (1,587)
Rainbow trout	0.0054 (0.0031)	13 (27)	115 (218)	0 (0)	67 (134)	0 (0)	868 (550)	44 (64)	1,107 (611)
Brown trout	0.0023 (0.0016)	77 (81)	377 (317)	22 (45)	0 (0)	0 (0)	0 (0)	0 (0)	476 (330)
Lake trout	0.0205 (0.0130)	0 (0)	946 (1,098)	1,303 (1,679)	1,462 (1,504)	484 (433)	0 (0)	0 (0)	4,195 (2,544)
Channel catfish	0.0003 (0.0004)	0 (0)	0 (0)	0 (0)	38 (77)	0 (0)	32 (67)	0 (0)	70 (102)
Bluegill	0.0007 (0.0014)	0 (0)	0 (0)	0 (0)	145 (293)	0 (0)	0 (0)	0 (0)	145 (293)
Largemouth bass	0.0006 (0.0012)	0 (0)	0 (0)	0 (0)	125 (252)	0 (0)	0 (0)	0 (0)	125 (252)
Yellow perch	0.5947 (0.2772)	0 (0)	268 (541)	9,954 (5,755)	77,305 (48,734)	18,417 (12,117)	15,769 (13,253)	0 (0)	121,713 (52,258)
Freshwater drum	0.0005 (0.0010)	0 (0)	2 (4)	0 (0)	0 (0)	0 (0)	99 (201)	0 (0)	101 (201)
Other	0.0005 (0.0010)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	99 (201)	0 (0)	99 (201)
Total	0.6505 (0.2817)	367 (486)	3,605 (1,746)	12,126 (6,059)	79,866 (48,767)	19,409 (12,141)	17,493 (13,271)	267 (509)	133,133 (52,364)
Angler hours		6,225 (3,327)	30,312 (13,473)	24,761 (8,381)	76,108 (24,401)	41,520 (21,737)	14,952 (5,047)	10,799 (4,558)	204,677 (37,108)
Angler trips		1,778 (897)	6,506 (2,647)	5,427 (1,936)	20,318 (5,295)	10,847 (5,268)	5,378 (2,653)	3,433 (1,383)	53,687 (8,735)
Angler days		1,778 (897)	6,293 (2,522)	5,375 (1,936)	19,895 (5,108)	10,790 (5,265)	5,200 (2,598)	3,409 (1,375)	52,740 (8,565)

Appendix 15.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for St. Joseph-Benton Harbor, by all modes of sportfishing, 1989. Two standard errors in parentheses.

Species	Total catch per hour	Month								Season
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0496 (0.0161)	1,026 (1,140)	17,513 (6,271)	2,793 (1,119)	272 (390)	58 (117)	217 (216)	25 (51)	0 (0)	21,904 (6,488)
Chinook salmon	0.0296 (0.0095)	31 (44)	2,426 (1,513)	5,364 (2,434)	169 (228)	257 (218)	4,621 (2,490)	196 (146)	5 (7)	13,069 (3,813)
Rainbow trout	0.0078 (0.0030)	31 (47)	74 (75)	212 (263)	189 (334)	1,873 (938)	894 (713)	0 (0)	159 (121)	3,432 (1,262)
Brown trout	0.0077 (0.0034)	226 (157)	1,412 (899)	1,602 (1,042)	152 (324)	0 (0)	0 (0)	0 (0)	0 (0)	3,392 (1,423)
Lake trout	0.0197 (0.0069)	0 (0)	0 (0)	4,149 (1,887)	291 (309)	613 (609)	3,619 (1,969)	3 (7)	0 (0)	8,675 (2,811)
White sucker	0.0000 (0.0000)	0 (0)	0 (0)	10 (19)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	10 (19)
Channel catfish	0.0012 (0.0009)	0 (0)	6 (13)	123 (114)	66 (74)	106 (125)	148 (300)	99 (203)	0 (0)	548 (407)
Rock bass	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	4 (9)	0 (0)	0 (0)	0 (0)	0 (0)	4 (9)
Yellow perch	0.7093 (0.2126)	7 (14)	573 (846)	985 (1,250)	19,204 (14,558)	184,183 (64,770)	58,121 (42,530)	49,912 (29,619)	99 (205)	313,084 (84,235)
Walleye	0.0034 (0.0058)	0 (0)	0 (0)	1,229 (2,536)	28 (61)	0 (0)	255 (517)	0 (0)	0 (0)	1,512 (2,589)
Freshwater drum	0.0048 (0.0044)	0 (0)	0 (0)	28 (40)	2,027 (1,909)	53 (95)	0 (0)	0 (0)	0 (0)	2,108 (1,912)
Other	0.0000 (0.0000)	0 (0)	6 (13)	16 (32)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	22 (35)
Total	0.8331 (0.2212)	1,321 (1,153)	22,010 (6,568)	16,511 (4,461)	22,402 (14,701)	187,143 (64,780)	67,875 (42,659)	50,235 (29,620)	263 (238)	367,760 (84,700)
Angler hours		12,321 (6,766)	68,385 (19,308)	102,014 (27,837)	17,390 (8,801)	110,109 (27,002)	89,520 (27,340)	20,176 (7,975)	21,505 (24,220)	441,420 (58,290)
Angler trips		2,409 (941)	14,497 (3,732)	17,198 (4,607)	4,390 (2,272)	19,464 (4,571)	16,810 (4,756)	4,308 (1,456)	3,869 (3,951)	82,945 (10,121)
Angler days		2,107 (901)	13,924 (3,674)	16,781 (4,561)	4,052 (2,078)	19,060 (4,532)	16,752 (4,754)	4,110 (1,415)	2,763 (2,907)	79,549 (9,645)

Appendix 16.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for New Buffalo, by all modes of sportfishing, 1989. Two standard errors in parentheses.

Species	Total catch per hour	Month								Season
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	
Coho salmon	0.0776 (0.0452)	7 (16)	13,288 (7,584)	3,505 (2,047)	593 (448)	123 (128)	178 (259)	0 (0)	0 (0)	17,694 (7,873)
Chinook salmon	0.0246 (0.0172)	0 (0)	531 (416)	1,460 (930)	110 (107)	269 (234)	3,147 (3,142)	70 (93)	29 (41)	5,616 (3,315)
Rainbow trout	0.0060 (0.0039)	0 (0)	77 (90)	213 (175)	110 (166)	424 (330)	489 (596)	2 (5)	57 (74)	1,372 (732)
Brown trout	0.0032 (0.0022)	24 (45)	331 (266)	226 (268)	75 (97)	0 (0)	70 (154)	5 (10)	0 (0)	731 (422)
Lake trout	0.0256 (0.0174)	0 (0)	0 (0)	1,676 (1,111)	262 (223)	1,049 (794)	2,852 (3,015)	5 (8)	0 (0)	5,844 (3,317)
Channel catfish	0.0006 (0.0012)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	112 (246)	18 (38)	0 (0)	130 (249)
Black crappie	0.0041 (0.0086)	0 (0)	0 (0)	930 (1,928)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	930 (1,928)
Yellow perch	1.2751 (0.9511)	0 (0)	0 (0)	924 (2,032)	7,613 (4,796)	52,395 (34,898)	196,326 (183,085)	32,170 (19,799)	1,463 (1,318)	290,891 (187,507)
Total	1.4168 (0.9798)	31 (48)	14,227 (7,601)	8,934 (3,773)	8,763 (4,827)	54,260 (34,910)	203,174 (183,138)	32,270 (19,799)	1,549 (1,321)	323,208 (187,743)
Angler hours		258 (231)	19,966 (10,270)	42,867 (20,003)	17,346 (7,513)	41,890 (21,858)	91,462 (79,135)	8,753 (4,842)	5,591 (2,250)	228,133 (85,620)
Angler trips		116 (120)	4,297 (2,100)	7,265 (3,381)	2,693 (1,138)	6,481 (3,281)	13,994 (11,944)	1,466 (821)	922 (372)	37,234 (13,091)
Angler days		89 (108)	4,182 (2,075)	7,147 (3,346)	2,659 (1,124)	6,369 (3,244)	13,506 (11,523)	1,466 (821)	872 (357)	36,290 (12,684)

SECTION II: LAKE HURON CATCH AND EFFORT ESTIMATES BY SITE

Appendix 17.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Rogers City, by all modes of sportfishing, 1989. Two standard errors in parentheses.

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug	Sep	
Pink salmon	0.0218 (0.0109)	0 (0)	0 (0)	358 (228)	2,350 (1,255)	0 (0)	2,708 (1,276)
Coho salmon	0.0019 (0.0017)	0 (0)	0 (0)	105 (158)	41 (60)	92 (113)	238 (203)
Chinook salmon	0.0751 (0.0220)	0 (0)	0 (0)	2,340 (996)	6,138 (1,903)	864 (498)	9,342 (2,205)
Rainbow trout	0.0036 (0.0019)	69 (125)	0 (0)	162 (116)	222 (153)	0 (0)	453 (229)
Brown trout	0.0002 (0.0003)	0 (0)	0 (0)	10 (20)	21 (43)	0 (0)	31 (47)
Lake trout	0.0067 (0.0037)	31 (36)	146 (188)	390 (314)	260 (237)	0 (0)	827 (437)
Channel catfish	0.0002 (0.0003)	0 (0)	0 (0)	0 (0)	26 (38)	0 (0)	26 (38)
Yellow perch	0.0008 (0.0017)	0 (0)	98 (203)	0 (0)	0 (0)	0 (0)	98 (203)
Walleye	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	3 (6)	8 (16)	11 (17)
Total	0.1104 (0.0284)	100 (130)	244 (277)	3,365 (1,087)	9,061 (2,298)	964 (511)	13,734 (2,611)
Angler hours		1,524 (583)	1,775 (932)	21,781 (4,844)	77,327 (19,953)	21,949 (6,621)	124,356 (21,602)
Angler trips		424 (164)	532 (296)	5,296 (1,223)	15,850 (4,120)	4,065 (1,414)	26,167 (4,537)
Angler days		367 (152)	497 (289)	4,636 (1,075)	11,623 (3,069)	3,442 (1,227)	20,565 (3,491)

Appendix 18.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Tawas, by all modes of sportfishing, 1989. Two standard errors in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.0002 (0.0003)	0 (0)	0 (0)	41 (64)	0 (0)	0 (0)	0 (0)	0 (0)	41 (64)
Coho salmon	0.0007 (0.0009)	0 (0)	24 (31)	23 (49)	0 (0)	0 (0)	0 (0)	91 (176)	138 (185)
Chinook salmon	0.0076 (0.0043)	102 (105)	695 (629)	446 (397)	20 (30)	117 (160)	65 (115)	43 (76)	1,488 (781)
Rainbow trout	0.0010 (0.0006)	35 (61)	47 (57)	23 (36)	25 (39)	16 (34)	6 (14)	46 (58)	198 (120)
Atlantic salmon	0.0000 (0.0000)	0 (0)	5 (12)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	5 (12)
Brown trout	0.0007 (0.0007)	29 (43)	37 (44)	0 (0)	0 (0)	43 (91)	18 (46)	0 (0)	127 (119)
Lake trout	0.0043 (0.0024)	0 (0)	287 (245)	380 (323)	146 (139)	21 (38)	0 (0)	0 (0)	834 (430)
Northern pike	0.0001 (0.0002)	12 (27)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	12 (27)
Channel catfish	0.0007 (0.0008)	0 (0)	0 (0)	0 (0)	120 (157)	0 (0)	15 (31)	0 (0)	135 (160)
White bass	0.0006 (0.0010)	0 (0)	0 (0)	0 (0)	125 (214)	0 (0)	0 (0)	0 (0)	125 (214)
Rock bass	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	15 (31)	0 (0)	0 (0)	15 (31)
Yellow perch	1.3888 (0.4590)	4,740 (3,184)	395 (500)	27,222 (18,815)	64,519 (33,715)	45,262 (26,527)	92,696 (48,315)	36,118 (25,083)	270,952 (71,891)
Walleye	0.0043 (0.0024)	0 (0)	0 (0)	10 (21)	305 (265)	403 (324)	128 (152)	0 (0)	846 (446)
Freshwater drum	0.0004 (0.0006)	0 (0)	0 (0)	0 (0)	11 (21)	58 (96)	0 (0)	0 (0)	69 (98)
Burbot	0.0002 (0.0005)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	43 (101)	43 (101)
Total	1.4097 (0.4615)	4,918 (3,187)	1,490 (844)	28,145 (18,822)	65,271 (33,717)	45,935 (26,530)	92,928 (48,315)	36,341 (25,084)	275,028 (71,898)
Angler hours		18,346 (5,985)	19,599 (12,824)	40,554 (17,759)	54,943 (23,620)	22,381 (10,141)	29,732 (16,799)	9,545 (4,351)	195,100 (38,439)
Angler trips		5,495 (2,056)	5,287 (2,847)	8,282 (3,450)	11,040 (4,789)	4,927 (2,165)	5,864 (3,044)	2,098 (986)	42,993 (7,880)
Angler days		4,757 (1,798)	5,007 (2,789)	8,174 (3,439)	10,992 (4,777)	4,870 (2,141)	5,766 (3,016)	1,918 (884)	41,484 (7,754)

Appendix 19.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Au Gres, by all modes of sportfishing, 1989. Two standard errors in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Chinook salmon	0.0010 (0.0012)	0 (0)	10 (17)	0 (0)	0 (0)	0 (0)	258 (361)	57 (90)	325 (372)
Brown trout	0.0000 (0.0000)	0 (0)	7 (15)	0 (0)	0 (0)	0 (0)	0 (0)	3 (6)	10 (16)
Lake trout	0.0001 (0.0002)	0 (0)	40 (70)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	40 (70)
Northern pike	0.0003 (0.0003)	0 (0)	31 (51)	38 (79)	0 (0)	0 (0)	40 (81)	0 (0)	109 (124)
Channel catfish	0.0063 (0.0035)	0 (0)	5 (12)	836 (849)	521 (463)	63 (74)	560 (433)	0 (0)	1,985 (1,062)
White bass	0.0005 (0.0005)	0 (0)	0 (0)	5 (11)	111 (134)	43 (72)	0 (0)	0 (0)	159 (153)
Rock bass	0.0034 (0.0065)	104 (187)	0 (0)	959 (2,012)	0 (0)	0 (0)	0 (0)	0 (0)	1,063 (2,021)
Smallmouth bass	0.0003 (0.0005)	0 (0)	0 (0)	0 (0)	81 (125)	0 (0)	0 (0)	0 (0)	81 (125)
Largemouth bass	0.0002 (0.0004)	0 (0)	0 (0)	0 (0)	55 (113)	0 (0)	0 (0)	0 (0)	55 (113)
Yellow perch	2.1833 (0.6257)	63,157 (26,228)	855 (765)	52,844 (35,691)	155,365 (58,552)	149,703 (72,493)	224,327 (115,699)	40,610 (22,090)	686,861 (156,589)
Walleye	0.0108 (0.0045)	38 (57)	167 (284)	211 (376)	2,083 (1,054)	710 (470)	154 (236)	36 (70)	3,399 (1,272)
Freshwater drum	0.0003 (0.0004)	0 (0)	0 (0)	0 (0)	12 (25)	35 (53)	49 (105)	0 (0)	96 (120)
Burbot	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (6)	3 (6)
Total	2.2066 (0.6282)	63,299 (26,229)	1,115 (821)	54,893 (35,760)	158,228 (58,564)	150,554 (72,495)	225,388 (115,701)	40,709 (22,090)	694,186 (156,612)
Angler hours		33,051 (8,719)	19,088 (11,039)	58,334 (26,189)	85,262 (26,663)	47,662 (20,430)	59,407 (30,824)	11,789 (4,737)	314,593 (54,632)
Angler trips		9,915 (3,690)	5,055 (2,631)	11,743 (5,225)	13,761 (4,326)	10,385 (4,009)	11,002 (5,204)	2,665 (1,014)	64,526 (10,523)
Angler days		9,700 (3,669)	5,052 (2,631)	11,743 (5,225)	13,709 (4,314)	10,289 (3,965)	10,869 (5,169)	2,525 (987)	63,887 (10,474)

Appendix 20.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the mouth of Saginaw River to Saganing Creek, by all modes of sportfishing, 1989. Two standard errors in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Northern pike	0.0005 (0.0008)	0 (0)	0 (0)	61 (129)	0 (0)	37 (77)	0 (0)	0 (0)	98 (150)
Brown bullhead	0.0004 (0.0005)	78 (100)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	78 (100)
Channel catfish	0.0024 (0.0022)	0 (0)	0 (0)	0 (0)	370 (374)	0 (0)	87 (178)	0 (0)	457 (414)
White perch	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	25 (52)	0 (0)	0 (0)	25 (52)
White bass	0.0008 (0.0011)	0 (0)	78 (148)	67 (143)	0 (0)	0 (0)	0 (0)	0 (0)	145 (206)
Pumpkinseed	0.0005 (0.0010)	0 (0)	0 (0)	0 (0)	90 (184)	0 (0)	0 (0)	0 (0)	90 (184)
Largemouth bass	0.0027 (0.0037)	0 (0)	8 (17)	0 (0)	354 (615)	0 (0)	148 (302)	0 (0)	510 (685)
Yellow perch	0.6735 (0.3193)	5,437 (6,618)	1,946 (2,381)	4,126 (7,273)	20,657 (18,544)	31,044 (26,354)	28,120 (19,340)	38,190 (41,052)	129,520 (56,569)
Walleye	0.1374 (0.0463)	107 (167)	2,478 (2,067)	434 (464)	18,043 (6,427)	5,184 (3,106)	177 (219)	0 (0)	26,423 (7,451)
Freshwater drum	0.0048 (0.0071)	0 (0)	0 (0)	607 (1,286)	248 (389)	25 (53)	38 (78)	0 (0)	918 (1,347)
Other	0.0002 (0.0004)	0 (0)	38 (81)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	38 (81)
Total	0.8231 (0.3334)	5,622 (6,621)	4,548 (3,158)	5,295 (7,403)	39,762 (19,644)	36,315 (26,537)	28,570 (19,345)	38,190 (41,052)	158,302 (57,081)
Angler hours		7,676 (3,207)	12,868 (7,707)	35,593 (17,768)	72,847 (21,393)	36,953 (17,903)	18,885 (6,163)	7,498 (7,506)	192,320 (35,467)
Angler trips		2,799 (1,405)	2,948 (1,775)	7,664 (3,852)	13,664 (4,011)	7,950 (3,906)	3,555 (1,222)	1,856 (1,922)	40,436 (7,516)
Angler days		2,799 (1,405)	2,821 (1,704)	7,664 (3,852)	13,664 (4,011)	7,893 (3,884)	3,555 (1,222)	1,785 (1,837)	40,181 (7,467)

Appendix 21.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Essexville to the mouth of Saginaw River boat fishery, 1989. Two standard errors in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Northern pike	0.0003 (0.0006)	30 (60)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	— —	30 (60)
Brown bullhead	0.0144 (0.0301)	0 (0)	0 (0)	1,352 (2,804)	0 (0)	0 (0)	0 (0)	— —	1,352 (2,804)
Channel catfish	0.1055 (0.1106)	115 (233)	0 (0)	5,519 (6,006)	124 (198)	0 (0)	4,134 (8,135)	— —	9,892 (10,117)
White bass	0.0366 (0.0456)	307 (426)	3,017 (4,183)	113 (237)	0 (0)	0 (0)	0 (0)	— —	3,437 (4,211)
Yellow perch	0.1220 (0.1190)	54 (109)	8,358 (10,278)	1,352 (2,804)	1,176 (1,695)	0 (0)	500 (1,058)	— —	11,440 (10,840)
Walleye	0.0481 (0.0415)	196 (217)	1,206 (1,643)	340 (512)	916 (827)	0 (0)	1,854 (3,220)	— —	4,512 (3,750)
Freshwater drum	0.0104 (0.0217)	0 (0)	0 (0)	976 (2,025)	0 (0)	0 (0)	0 (0)	— —	976 (2,025)
Other	0.0011 (0.0017)	107 (163)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	— —	107 (163)
Total	0.3385 (0.1900)	809 (570)	12,581 (11,218)	9,652 (7,498)	2,216 (1,896)	0 (0)	6,488 (8,813)	— —	31,746 (16,237)
Angler hours		8,331 (2,618)	18,524 (11,562)	20,010 (8,397)	14,255 (8,016)	12,310 (6,245)	20,358 (12,543)	4,911 (2,980)	93,788 (21,717)
Angler trips		2,553 (1,334)	3,758 (2,344)	3,385 (1,464)	2,999 (1,633)	5,145 (2,717)	3,588 (2,169)	— —	21,428 (4,916)
Angler days		2,553 (1,334)	3,445 (2,164)	3,385 (1,464)	2,999 (1,633)	5,145 (2,717)	3,588 (2,169)	— —	21,115 (4,833)

Appendix 22.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Sebewaing to Essexville, by all modes of sportfishing, 1989. Two standard errors in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Rainbow trout	0.0004 (0.0010)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	25 (64)	25 (64)
White sucker	0.0006 (0.0012)	43 (88)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	43 (88)
Brown bullhead	0.0216 (0.0237)	0 (0)	59 (136)	1,062 (1,541)	205 (175)	134 (201)	0 (0)	0 (0)	1,460 (1,570)
Channel catfish	0.0786 (0.0569)	0 (0)	67 (125)	3,004 (2,948)	1,083 (1,188)	1,161 (1,789)	0 (0)	0 (0)	5,315 (3,649)
White perch	0.0155 (0.0231)	0 (0)	0 (0)	1,015 (1,540)	32 (67)	0 (0)	0 (0)	0 (0)	1,047 (1,541)
White bass	0.0083 (0.0097)	0 (0)	0 (0)	54 (114)	505 (630)	0 (0)	0 (0)	0 (0)	559 (640)
Largemouth bass	0.0008 (0.0017)	0 (0)	0 (0)	54 (112)	0 (0)	0 (0)	0 (0)	0 (0)	54 (112)
Black crappie	0.0002 (0.0004)	0 (0)	0 (0)	0 (0)	0 (0)	15 (33)	0 (0)	0 (0)	15 (33)
Yellow perch	0.2899 (0.3928)	1,626 (1,848)	0 (0)	0 (0)	674 (961)	1,910 (2,980)	11,445 (25,205)	3,950 (6,083)	19,605 (26,182)
Walleye	0.1221 (0.0741)	39 (87)	494 (680)	286 (392)	5,026 (2,925)	2,410 (3,515)	0 (0)	0 (0)	8,255 (4,641)
Freshwater drum	0.0074 (0.0102)	0 (0)	218 (490)	0 (0)	281 (473)	0 (0)	0 (0)	0 (0)	499 (681)
Other	0.0030 (0.0060)	0 (0)	22 (51)	182 (402)	0 (0)	0 (0)	0 (0)	0 (0)	204 (405)
Total	0.5483 (0.4176)	1,708 (1,852)	860 (860)	5,657 (3,712)	7,806 (3,398)	5,630 (4,947)	11,445 (25,205)	3,975 (6,083)	37,081 (26,949)
Angler hours		3,110 (1,205)	5,162 (3,053)	15,141 (6,344)	22,404 (7,486)	13,443 (9,694)	7,219 (5,847)	1,151 (1,546)	67,630 (15,415)
Angler trips		1,405 (549)	4,276 (2,969)	4,295 (2,230)	5,121 (1,718)	2,134 (1,567)	3,836 (2,503)	277 (374)	21,344 (5,089)
Angler days		1,172 (462)	3,690 (2,765)	3,636 (1,927)	4,818 (1,666)	1,789 (1,365)	2,912 (2,174)	231 (307)	18,248 (4,586)

Appendix 23.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Sand Point to Sebewaing, by all modes of sportfishing, 1989. Two standard errors in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Black bullhead	0.0007 (0.0012)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	51 (88)	0 (0)	51 (88)
Brown bullhead	0.0011 (0.0014)	0 (0)	17 (37)	24 (35)	40 (87)	0 (0)	0 (0)	2 (3)	83 (101)
Channel catfish	0.0702 (0.0452)	0 (0)	477 (856)	3,806 (2,988)	765 (691)	63 (106)	32 (69)	1 (2)	5,144 (3,187)
White perch	0.0004 (0.0008)	0 (0)	0 (0)	0 (0)	28 (57)	0 (0)	0 (0)	0 (0)	28 (57)
White bass	0.0011 (0.0011)	0 (0)	0 (0)	62 (66)	0 (0)	0 (0)	18 (41)	0 (0)	80 (78)
Rock bass	0.0028 (0.0038)	2 (4)	109 (242)	73 (121)	0 (0)	19 (49)	0 (0)	4 (7)	207 (275)
Pumpkinseed	0.0020 (0.0025)	0 (0)	0 (0)	12 (23)	0 (0)	0 (0)	125 (175)	6 (13)	143 (177)
Bluegill	0.0001 (0.0003)	0 (0)	0 (0)	0 (0)	0 (0)	6 (16)	0 (0)	0 (0)	6 (16)
Smallmouth bass	0.0062 (0.0067)	0 (0)	164 (363)	41 (84)	249 (304)	0 (0)	0 (0)	0 (0)	454 (481)
Largemouth bass	0.0051 (0.0066)	0 (0)	167 (348)	147 (305)	0 (0)	63 (139)	0 (0)	0 (0)	377 (483)
White crappie	0.0011 (0.0023)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	78 (164)	0 (0)	78 (164)
Black crappie	0.0002 (0.0005)	0 (0)	0 (0)	0 (0)	0 (0)	15 (39)	0 (0)	0 (0)	15 (39)
Yellow perch	0.1432 (0.0740)	2,437 (1,771)	0 (0)	1,225 (1,326)	1,413 (1,596)	179 (255)	4,885 (4,275)	361 (450)	10,500 (5,098)
Walleye	0.0711 (0.0356)	0 (0)	0 (0)	0 (0)	4,523 (2,333)	688 (711)	0 (0)	0 (0)	5,211 (2,439)
Freshwater drum	0.0085 (0.0077)	0 (0)	244 (386)	250 (354)	131 (177)	0 (0)	0 (0)	0 (0)	625 (553)
Other	0.0280 (0.0619)	2,000 (4,519)	0 (0)	0 (0)	50 (109)	0 (0)	0 (0)	0 (0)	2,050 (4,520)

Appendix 23.—Continued:

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Total	0.3417 (0.1242)	4,439 (4,854)	1,178 (1,093)	5,640 (3,306)	7,199 (2,935)	1,033 (778)	5,189 (4,283)	374 (450)	25,052 (7,966)
Angler hours		2,555 (1,255)	7,526 (5,077)	19,207 (6,149)	26,425 (7,112)	7,681 (4,714)	9,723 (5,357)	207 (239)	73,324 (12,912)
Angler trips		844 (405)	2,004 (1,198)	4,644 (1,460)	6,823 (1,889)	2,480 (1,398)	2,522 (1,209)	101 (130)	19,418 (3,276)
Angler days		738 (357)	1,618 (1,014)	4,224 (1,418)	6,154 (1,729)	2,060 (1,196)	2,214 (1,111)	86 (110)	17,094 (2,972)

Appendix 24.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Port Austin to Sand Point, by all modes of sportfishing, 1989. Two standard errors in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Pink salmon	0.0008 (0.0009)	0 (0)	129 (178)	16 (32)	0 (0)	26 (60)	0 (0)	0 (0)	171 (191)
Coho salmon	0.0006 (0.0006)	0 (0)	54 (83)	50 (75)	0 (0)	0 (0)	26 (54)	0 (0)	130 (124)
Chinook salmon	0.0121 (0.0063)	0 (0)	950 (900)	361 (351)	755 (625)	181 (250)	362 (298)	0 (0)	2,609 (1,215)
Rainbow trout	0.0018 (0.0024)	0 (0)	16 (34)	69 (107)	0 (0)	69 (115)	233 (483)	0 (0)	387 (509)
Brown trout	0.0007 (0.0012)	118 (257)	0 (0)	33 (69)	0 (0)	0 (0)	0 (0)	0 (0)	151 (266)
Lake trout	0.0307 (0.0162)	0 (0)	1,015 (1,038)	1,576 (1,177)	3,761 (2,697)	208 (224)	50 (65)	0 (0)	6,610 (3,129)
White sucker	0.0000 (0.0000)	3 (9)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (9)
Brown bullhead	0.0001 (0.0002)	1 (2)	23 (52)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	24 (52)
Channel catfish	0.0020 (0.0021)	0 (0)	13 (26)	0 (0)	261 (386)	77 (165)	75 (131)	0 (0)	426 (441)
White perch	0.0000 (0.0000)	0 (0)	10 (18)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	10 (18)
White bass	0.0015 (0.0021)	0 (0)	10 (22)	0 (0)	52 (111)	193 (411)	78 (161)	0 (0)	333 (456)
Rock bass	0.0001 (0.0002)	0 (0)	25 (52)	0 (0)	0 (0)	3 (10)	0 (0)	0 (0)	28 (53)
Pumpkinseed	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	1 (2)	0 (0)	0 (0)	1 (2)
Yellow perch	0.3598 (0.1685)	19,449 (21,166)	2,258 (2,314)	5,130 (6,949)	15,918 (10,458)	6,615 (6,280)	16,199 (15,616)	11,808 (9,638)	77,377 (31,420)
Walleye	0.0273 (0.0180)	0 (0)	0 (0)	0 (0)	1,910 (1,549)	3,647 (3,240)	316 (410)	0 (0)	5,873 (3,615)
Freshwater drum	0.0005 (0.0009)	0 (0)	0 (0)	0 (0)	0 (0)	77 (165)	27 (60)	0 (0)	104 (176)

Appendix 24.—Continued:

Species	Total catch per hour	Month							
		Apr	May	Jun	Jul	Aug	Sep	Oct	Season
Total	0.4382 (0.1798)	19,571 (21,168)	4,503 (2,700)	7,235 (7,058)	22,657 (10,936)	11,097 (7,091)	17,366 (15,633)	11,808 (9,638)	94,237 (31,817)
Angler hours		19,133 (9,790)	16,875 (9,298)	32,357 (15,868)	66,629 (26,317)	33,587 (20,857)	42,202 (30,715)	4,292 (3,721)	215,075 (50,189)
Angler trips		4,441 (2,404)	3,386 (1,738)	6,694 (3,283)	11,280 (4,445)	6,951 (4,243)	7,883 (5,365)	822 (697)	41,457 (9,306)
Angler days		3,963 (2,257)	3,159 (1,647)	6,295 (3,123)	10,759 (4,265)	6,474 (3,980)	6,897 (4,562)	804 (676)	38,351 (8,536)

SECTION III: LAKE ERIE CATCH AND EFFORT ESTIMATES BY SITE

Appendix 25.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Lake Erie boat fishery in the area from Point Mouillee to the mouth of the Raisin River, 1989. Two standard errors in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Rainbow trout	0.0000 (0.0000)	0 (0)	0 (0)	77 (115)	0 (0)	0 (0)	0 (0)	0 (0)	77 (115)
Black bullhead	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	223 (457)	0 (0)	223 (457)
Yellow bullhead	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	100 (210)	0 (0)	59 (119)	159 (241)
Brown bullhead	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	55 (111)	55 (111)
Channel catfish	0.0106 (0.0066)	0 (0)	4,374 (6,335)	5,954 (8,697)	4,481 (2,126)	3,125 (2,358)	1,145 (1,067)	93 (133)	19,172 (11,270)
White perch	0.0508 (0.0191)	0 (0)	1,124 (2,406)	14,411 (10,074)	43,931 (21,271)	24,662 (16,556)	6,330 (5,553)	1,708 (1,290)	92,166 (29,433)
White bass	0.0562 (0.0306)	512 (749)	67,477 (49,362)	23,570 (14,325)	7,899 (5,013)	370 (392)	2,066 (2,913)	136 (277)	102,030 (51,732)
Rock bass	0.0009 (0.0006)	0 (0)	234 (501)	45 (92)	500 (542)	437 (578)	225 (405)	153 (187)	1,594 (1,042)
Pumpkinseed	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	171 (349)	97 (199)	0 (0)	268 (402)
Bluegill	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	98 (152)	0 (0)	98 (152)
Smallmouth bass	0.0003 (0.0004)	0 (0)	0 (0)	0 (0)	343 (567)	132 (202)	13 (26)	0 (0)	488 (602)
Largemouth bass	0.0000 (0.0000)	87 (187)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	87 (187)
Black crappie	0.0002 (0.0003)	87 (187)	0 (0)	0 (0)	0 (0)	0 (0)	197 (405)	0 (0)	284 (446)
Yellow perch	0.4216 (0.1216)	0 (0)	2,005 (2,367)	26,025 (17,530)	49,328 (23,920)	77,177 (49,794)	243,026 (111,390)	367,274 (99,642)	764,835 (160,315)
Walleye	0.2627 (0.0869)	3,811 (4,143)	96,468 (56,831)	168,376 (98,060)	197,088 (54,893)	9,884 (6,823)	933 (1,210)	51 (74)	476,611 (126,190)

Appendix 25.—Continued:

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Freshwater drum	0.0079 (0.0056)	0 (0)	5,737 (8,334)	1,306 (1,323)	3,701 (3,666)	3,371 (3,186)	92 (142)	205 (297)	14,412 (9,742)
Other	0.0000 (0.0000)	0 (0)	88 (188)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	88 (188)
Total	0.8118 (0.1991)	4,497 (4,218)	177,507 (76,077)	239,764 (101,524)	307,271 (63,887)	119,429 (53,071)	254,445 (111,581)	369,734 (99,652)	1,472,647 (213,053)
Angler hours		47,190 (23,670)	365,392 (198,975)	535,326 (262,763)	498,853 (117,456)	161,657 (64,736)	120,705 (39,378)	84,899 (18,364)	1,814,022 (359,263)
Angler trips		12,760 (7,226)	72,933 (41,512)	99,750 (48,941)	96,077 (23,208)	32,800 (13,466)	25,810 (8,696)	16,542 (3,601)	356,672 (70,564)
Angler days		12,604 (7,165)	72,933 (41,512)	94,202 (46,136)	88,515 (21,545)	31,088 (12,861)	24,953 (8,494)	16,542 (3,601)	340,837 (67,955)

Appendix 26.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Lake Erie boat fishery from the mouth of the Raisin River to the Michigan-Ohio state line, 1989. Two standard errors in parentheses.

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Rainbow trout	0.0001 (0.0002)	0 (0)	0 (0)	178 (374)	0 (0)	0 (0)	0 (0)	0 (0)	178 (374)
Northern pike	0.0007 (0.0015)	0 (0)	0 (0)	0 (0)	0 (0)	1,351 (2,787)	0 (0)	0 (0)	1,351 (2,787)
Muskellunge	0.0000 (0.0000)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	81 (166)	0 (0)	81 (166)
Redhorse (spp)	0.0002 (0.0004)	0 (0)	0 (0)	0 (0)	0 (0)	380 (784)	0 (0)	0 (0)	380 (784)
Yellow bullhead	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	117 (239)	117 (239)
Channel catfish	0.0778 (0.0316)	4,646 (5,990)	13,767 (12,270)	36,897 (34,526)	25,706 (13,190)	54,562 (34,832)	9,671 (7,253)	8,848 (9,223)	154,097 (53,883)
White perch	0.0459 (0.0205)	83 (136)	1,699 (2,464)	12,784 (22,323)	30,927 (17,760)	20,239 (15,974)	14,632 (13,538)	10,488 (6,028)	90,852 (35,981)
White bass	0.1387 (0.0809)	29,182 (18,540)	208,338 (147,665)	19,225 (13,305)	6,412 (4,218)	1,623 (2,669)	2,667 (3,967)	7,183 (7,820)	274,630 (149,758)
Rock bass	0.0008 (0.0007)	0 (0)	0 (0)	279 (433)	101 (154)	881 (1,165)	252 (303)	26 (53)	1,539 (1,290)
Pumpkinseed	0.0002 (0.0004)	0 (0)	0 (0)	0 (0)	0 (0)	253 (523)	0 (0)	52 (84)	305 (530)
Bluegill	0.0072 (0.0048)	0 (0)	257 (545)	765 (1,605)	282 (506)	3,206 (4,378)	7,091 (6,811)	2,565 (3,309)	14,166 (8,924)
Redear sunfish	0.0000 (0.0000)	0 (0)	0 (0)	21 (43)	0 (0)	0 (0)	0 (0)	0 (0)	21 (43)
Smallmouth bass	0.0001 (0.0001)	0 (0)	0 (0)	0 (0)	59 (120)	0 (0)	0 (0)	78 (160)	137 (200)
Largemouth bass	0.0002 (0.0003)	0 (0)	0 (0)	49 (102)	25 (50)	0 (0)	229 (467)	0 (0)	303 (481)
White crappie	0.0006 (0.0009)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1,240 (1,835)	1,240 (1,835)

Appendix 26.—Continued:

Species	Total catch per hour	Month							Season
		Apr	May	Jun	Jul	Aug	Sep	Oct	
Black crappie	0.0001 (0.0002)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	25 (50)	94 (191)	119 (197)
Yellow perch	0.3416 (0.1162)	2,717 (5,106)	5,521 (4,879)	23,411 (15,619)	54,072 (22,468)	168,334 (127,068)	243,655 (109,934)	178,688 (65,048)	676,398 (182,378)
Walleye	0.3106 (0.1040)	20,561 (10,275)	194,028 (106,162)	183,050 (109,501)	195,105 (47,699)	20,740 (22,030)	1,533 (1,428)	14 (29)	615,031 (161,645)
Freshwater drum	0.0144 (0.0081)	0 (0)	1,482 (2,918)	3,515 (3,020)	4,932 (3,582)	12,743 (12,368)	5,379 (6,296)	512 (522)	28,563 (14,945)
Other	0.0164 (0.0335)	0 (0)	31,217 (66,135)	59 (125)	298 (459)	290 (439)	295 (466)	344 (272)	32,503 (66,140)
Total	0.9556 (0.2499)	57,189 (22,611)	456,309 (194,006)	280,233 (118,802)	317,919 (57,450)	284,602 (135,239)	285,510 (111,471)	210,249 (66,548)	1,892,011 (301,178)
Angler hours		89,446 (38,069)	447,424 (231,903)	602,225 (314,555)	431,166 (88,777)	183,501 (67,326)	145,481 (41,072)	80,698 (20,769)	1,979,941 (410,738)
Angler trips		15,469 (6,558)	73,925 (38,389)	112,475 (61,098)	80,666 (16,803)	36,672 (13,732)	29,444 (8,469)	16,928 (4,522)	365,579 (76,242)
Angler days		14,575 (6,355)	73,925 (38,389)	107,514 (58,700)	77,903 (16,224)	35,847 (13,476)	29,444 (8,469)	16,928 (4,522)	356,136 (74,140)

SECTION IV: LAKE SUPERIOR CATCH AND EFFORT ESTIMATES BY SITE

Appendix 27.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Traverse Bay boat fishery, 1989. Two standard errors in parentheses.

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug	Sep	
Coho salmon	0.0132 (0.0155)	0 (0)	52 (104)	0 (0)	13 (26)	43 (61)	108 (123)
Chinook salmon	0.0016 (0.0024)	0 (0)	0 (0)	0 (0)	13 (19)	0 (0)	13 (19)
Rainbow trout	0.0059 (0.0129)	48 (104)	0 (0)	0 (0)	0 (0)	0 (0)	48 (104)
Brook trout	0.0059 (0.0129)	48 (104)	0 (0)	0 (0)	0 (0)	0 (0)	48 (104)
Lake trout	0.3478 (0.2248)	419 (369)	1,050 (482)	714 (1,507)	602 (331)	69 (101)	2,854 (1,661)
Lake whitefish	0.0024 (0.0050)	0 (0)	20 (41)	0 (0)	0 (0)	0 (0)	20 (41)
Total	0.3767 (0.2297)	515 (397)	1,122 (495)	714 (1,507)	628 (333)	112 (118)	3,091 (1,673)
Angler hours		1,172 (622)	1,911 (444)	2,120 (1,951)	1,957 (848)	1,045 (449)	8,205 (2,305)
Angler trips		273 (153)	472 (118)	424 (408)	562 (250)	315 (174)	2,046 (545)
Angler days		273 (153)	472 (118)	424 (408)	562 (250)	315 (174)	2,046 (545)

Appendix 28.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Huron Bay boat fishery, 1989. Two standard errors in parentheses.

Species	Total catch per hour	Month					Season
		May	Jun	Jul	Aug	Sep	
Coho salmon	0.0155 (0.0191)	73 (133)	0 (0)	0 (0)	0 (0)	117 (189)	190 (231)
Chinook salmon	0.0040 (0.0045)	5 (10)	13 (27)	0 (0)	18 (39)	13 (24)	49 (54)
Rainbow trout	0.0007 (0.0014)	9 (18)	0 (0)	0 (0)	0 (0)	0 (0)	9 (18)
Lake trout	0.2402 (0.0846)	603 (429)	615 (306)	1,111 (632)	355 (246)	251 (213)	2,935 (885)
Yellow perch	0.0135 (0.0230)	0 (0)	0 (0)	165 (279)	0 (0)	0 (0)	165 (279)
Walleye	0.0020 (0.0041)	0 (0)	24 (49)	0 (0)	0 (0)	0 (0)	24 (49)
Lake whitefish	0.1174 (0.1099)	1,435 (1,318)	0 (0)	0 (0)	0 (0)	0 (0)	1,435 (1,318)
Total	0.3933 (0.1514)	2,125 (1,393)	652 (311)	1,276 (691)	373 (249)	381 (286)	4,807 (1,630)
Angler hours		4,287 (1,384)	2,408 (749)	2,639 (1,209)	1,595 (652)	1,292 (777)	12,221 (2,229)
Angler trips		895 (324)	451 (148)	599 (289)	356 (172)	307 (220)	2,608 (537)
Angler days		838 (315)	430 (147)	599 (289)	356 (172)	269 (197)	2,492 (522)

SECTION V: RIVER CATCH AND EFFORT ESTIMATES BY SITE

Appendix 29.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Muskegon River in the area from Croton Dam to Newaygo, 1989. Two standard errors in parentheses.

Species	Total catch per hour	Month									Season
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	
Chinook salmon	0.0438 (0.0472)	0 (0)	0 (0)	— —	— —	— —	— —	0 (0)	1,443 (1,633)	120 (192)	1,563 (1,644)
Rainbow trout	0.0739 (0.0606)	30 (63)	23 (46)	— —	— —	— —	— —	2,352 (2,030)	190 (407)	45 (92)	2,640 (2,074)
Brown trout	0.0132 (0.0118)	0 (0)	0 (0)	— —	— —	— —	— —	470 (406)	0 (0)	0 (0)	470 (406)
Black crappie	0.0248 (0.0534)	0 (0)	0 (0)	— —	— —	— —	— —	0 (0)	886 (1,898)	0 (0)	886 (1,898)
Yellow perch	0.0259 (0.0540)	0 (0)	0 (0)	— —	— —	— —	— —	927 (1,921)	0 (0)	0 (0)	927 (1,921)
Total	0.1816 (0.1148)	30 (63)	23 (46)	— —	— —	— —	— —	3,749 (2,824)	2,519 (2,537)	165 (213)	6,486 (3,803)
Angler hours		1,580 (689)	9,100 (1,245)	— —	— —	— —	— —	7,022 (4,249)	16,163 (6,951)	1,860 (1,695)	35,725 (8,442)
Angler trips		469 (277)	2,528 (758)	— —	— —	— —	— —	1,842 (1,084)	3,516 (1,580)	580 (555)	8,935 (2,152)
Angler days		444 (274)	2,528 (758)	— —	— —	— —	— —	1,842 (1,084)	3,516 (1,580)	431 (388)	8,761 (2,115)

Appendix 30.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Grand River in the areas from the Sixth Street Dam to the Butterworth access site, 1989. Two standard errors in parentheses.

Species	Total catch per hour	Month									Season
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	
Coho salmon	0.0116 (0.0112)	0 (0)	0 (0)	— —	— —	— —	— —	484 (520)	122 (255)	0 (0)	606 (579)
Chinook salmon	0.0077 (0.0070)	0 (0)	0 (0)	— —	— —	— —	— —	294 (329)	105 (138)	0 (0)	399 (357)
Rainbow trout	0.0440 (0.0280)	837 (1,059)	71 (114)	— —	— —	— —	— —	151 (318)	875 (807)	356 (365)	2,290 (1,421)
Brown trout	0.0007 (0.0015)	0 (0)	0 (0)	— —	— —	— —	— —	38 (80)	0 (0)	0 (0)	38 (80)
White sucker	0.0200 (0.0250)	107 (215)	934 (1,274)	— —	— —	— —	— —	0 (0)	0 (0)	0 (0)	1,041 (1,292)
Redhorse (spp)	0.0043 (0.0091)	0 (0)	225 (474)	— —	— —	— —	— —	0 (0)	0 (0)	0 (0)	225 (474)
Channel catfish	0.0008 (0.0017)	0 (0)	0 (0)	— —	— —	— —	— —	43 (91)	0 (0)	0 (0)	43 (91)
Rock bass	0.0087 (0.0184)	0 (0)	0 (0)	— —	— —	— —	— —	452 (955)	0 (0)	0 (0)	452 (955)
Smallmouth bass	0.0007 (0.0015)	0 (0)	0 (0)	— —	— —	— —	— —	38 (80)	0 (0)	0 (0)	38 (80)
Walleye	0.0096 (0.0125)	0 (0)	0 (0)	— —	— —	— —	— —	0 (0)	484 (645)	15 (30)	499 (646)
Other	0.0046 (0.0058)	0 (0)	138 (209)	— —	— —	— —	— —	100 (212)	0 (0)	0 (0)	238 (298)
Total	0.1126 (0.0488)	944 (1,081)	1,368 (1,380)	— —	— —	— —	— —	1,600 (1,207)	1,586 (1,073)	371 (366)	5,869 (2,411)
Angler hours		18,174 (1,635)	7,000 (3,561)	— —	— —	— —	— —	7,068 (3,373)	12,668 (4,810)	7,190 (1,575)	52,100 (7,235)
Angler trips		6,368 (882)	2,417 (1,332)	— —	— —	— —	— —	2,562 (1,266)	3,466 (1,332)	2,007 (585)	16,820 (2,504)
Angler days		5,218 (885)	2,245 (1,255)	— —	— —	— —	— —	2,350 (1,196)	3,380 (1,329)	1,753 (553)	14,946 (2,421)

SECTION VI: WINTER CATCH AND EFFORT ESTIMATES BY SITE

Appendix 31.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for Little Bay de Noc winter ice fishery, 1990. Two standard errors in parentheses.

Species	Total catch per hour	Month			Season
		Jan	Feb	Mar	
Coho salmon	0.0006 (0.0005)	0 (0)	0 (0)	113 (85)	113 (85)
Chinook salmon	0.0005 (0.0006)	0 (0)	0 (0)	88 (111)	88 (111)
Brown trout	0.0009 (0.0013)	99 (208)	0 (0)	69 (109)	168 (235)
Rainbow smelt	0.0610 (0.0294)	8,129 (5,276)	2,830 (1,666)	957 (1,058)	11,916 (5,633)
Northern pike	0.0129 (0.0055)	1,393 (885)	1,030 (563)	99 (121)	2,522 (1,056)
White sucker	0.0002 (0.0003)	5 (11)	43 (82)	0 (0)	48 (83)
White crappie	0.0003 (0.0006)	0 (0)	0 (0)	65 (135)	65 (135)
Black crappie	0.0008 (0.0016)	163 (327)	0 (0)	0 (0)	163 (327)
Yellow perch	0.9019 (0.1861)	102,337 (23,626)	22,597 (6,098)	51,134 (21,333)	176,068 (32,411)
Walleye	0.0484 (0.0148)	6,705 (2,528)	2,743 (1,103)	0 (0)	9,448 (2,758)
Lake whitefish	0.0000 (0.0000)	0 (0)	0 (0)	9 (19)	9 (19)
Burbot	0.0005 (0.0005)	32 (54)	13 (19)	60 (95)	105 (111)
Total	1.0282 (0.1944)	118,863 (24,359)	29,256 (6,442)	52,594 (21,361)	200,713 (33,033)
Angler hours		118,922 (13,892)	47,739 (3,596)	28,549 (11,155)	195,210 (18,176)
Angler trips		36,207 (4,720)	13,278 (1,351)	7,942 (3,104)	57,427 (5,808)
Angler days		30,433 (4,176)	10,291 (1,125)	7,409 (2,880)	48,133 (5,196)

Appendix 32.—Estimated catch per hour, number caught, and effort (angler hours, trips, and days) for the Keweenaw Bay winter ice fishery, 1990. Two standard errors in parentheses.

Species	Total catch per hour	<u>Month</u> Mar	Season
Coho salmon	0.0599 (0.0407)	661 (413)	661 (413)
Chinook salmon	0.0301 (0.0348)	332 (373)	332 (373)
Rainbow trout	0.0014 (0.0034)	15 (36)	15 (36)
Brown trout	0.0052 (0.0098)	57 (106)	57 (106)
Lake whitefish	0.0096 (0.0194)	106 (212)	106 (212)
Other	0.0011 (0.0028)	12 (30)	12 (30)
Total	0.1072 (0.0620)	1,183 (607)	1,183 (607)
Angler hours		11,031 (2,951)	11,031 (2,951)
Angler trips		3,439 (963)	3,439 (963)
Angler days		3,439 (963)	3,439 (963)