

Creel and Lake Information

Lake Information

Lake Name: Bitter
Lake Code: UBS-Lake-409-800
Surface Area: 7,601.03 Hectares
County: Day
Start Date: 5/9/2018
End Date: 12/30/2018
Months Included: January, February, March, May, June, July, August

Table 1. Percent of angling parties interviewed primarily targeting a species (or any species) by month and overall for Bitter during 2017 - 2018. Any Species (ANY), Northern Pike (NOP), Walleye (WAE), White Bass (WHB).

Year	Month	# of Interviews	Percent of Anglers Targeting			
			ANY	NOP	WAE	WHB
2017	January	93	6.5	0.0	37.6	0.0
	February	37	16.2	0.0	43.2	0.0
	March	3	0.0	33.3	66.7	0.0
	May	60	1.7	3.3	90.0	5.0
	June	152	1.3	0.0	94.7	3.9
	July	269	1.9	0.0	98.1	0.0
	August	45	0.0	0.0	100.0	0.0
	Overall	659	3.0	0.5	85.0	1.4
2018	May	78	0.0	0.0	98.7	1.3
	June	97	3.1	0.0	95.9	1.0
	July	54	0.0	1.9	96.3	1.9
	Overall	229	1.3	0.4	96.9	1.3

Table 2. Monthly and overall number of interviews, angler hours, angler days, mean trip length, mean party size, percent of parties interviewed that were South Dakota residents, percent of angling activity from a boat or shack and percent of angling activity that occurred on weekends and holidays at Bitter (80% confidence interval).

Year	Month	# Interviews	Angler Hours	Angler Days	Trip Length (h)	Party Size	% SD Residents	% Boat or Shack	% Weekend/Holidays
2016-2017	January	93	24,473 (25,815)	2,046	11.96 (3.44)	2.10 (0.56)	45.16	96	43
	February	37	75,126 (6,002)	5,468	13.74 (0.15)	2.09 (0.74)	37.84	89	57
	March	3	21,667 (18,518)		0.00	1.32	100.00	0	67
	Overall	133	121,266 (32,332)	9,437	12.85 (1.72)	1.85 (0.32)	49.08	93	44
2017	May	60	11,865 (3,473)	2,678	4.43 (1.36)	2.45 (1.15)	40.00	82	38
	June	152	25,290 (6,454)	5,280	4.79 (0.77)	2.51 (0.75)	33.55	92	36
	July	269	39,781 (9,905)	79	502.85	2.40	60.97	100	52
	August	45	5,641 (2,698)	1,108	5.09	2.34	57.78	98	31
	Overall	526	82,577 (12,613)	634	130.30 (0.39)	2.42 (0.34)	50.38	95	44
2018	May	78	12,748 (6,786)	2,602	4.90	2.56 (0.75)	50.00	91	77
	June	97	30,732 (11,693)	5,401	5.69	2.72 (0.72)	39.18	97	33
	July	54	13,082 (5,729)	2,436	5.37	2.23	55.56	100	69
	Overall	229	56,562 (14,683)	10,652	5.31	2.50 (0.35)	46.72	96	56

Table 3. Estimated fishing pressure (angler hours) by month during the summer season 2018 daylight period on Bitter (80% confidence interval).

Lake	Month			Total
	May	June	July	
Bitter (Day)	12,748 (6,786)	30,732 (11,693)	13,082 (5,729)	56,562 (14,683)

Table 4. Estimated number of fish harvested, by species and month, for the summer season 2018 daylight period on Bitter (80% confidence interval).

Species	Month			Total
	May	June	July	
Northern Pike	13 (18)	223 (134)	0	236 (135)
Walleye	3,965 (2,473)	6,338 (3,063)	3,166 (1,563)	13,470 (4,236)
White Bass	499 (378)	102 (53)	911 (928)	1,511 (1,003)
Total	4,477 (2,869)	6,663 (3,250)	4,077 (2,491)	15,217 (5,374)

Table 5a. Estimated monthly and overall angler catch rate per hour fished (C/h) for all anglers by species at Bitter (80% confidence interval). Abbreviations for species are as follows: Northern Pike (NOP), Walleye (WAE), White Bass (WHB) and other species (Other).

Year	Month	NOP	WAE	WHB
		C/h	C/h	C/h
2016-2017	January	<0.01	0.17	0.00
	February	<0.01	0.04	0.01
	March	0.00	0.01	0.00
	Overall	<0.01	0.06	<0.01
2017	May	0.04	0.26 (0.16)	0.07 (0.08)
	June	0.03 (0.01)	0.92 (0.50)	0.04 (0.03)
	July	0.01 (<0.01)	0.32 (0.28)	0.01 (0.02)
	August	<0.01 (<0.01)	0.57 (0.36)	0.04
	Overall	0.02 (<0.01)	0.51 (0.20)	0.03 (0.02)
2018	May	0.04 (0.06)	0.55 (0.70)	0.15 (0.12)
	June	0.02 (0.02)	0.53 (0.41)	0.08 (0.08)
	July	<0.01 (<0.01)	0.66 (0.65)	0.28 (0.26)
	Overall	0.02 (0.02)	0.57 (0.31)	0.14 (0.08)

Table 5b. Estimated monthly and overall angler harvest rate per hour fished (H/h) for all anglers by species at Bitter (80% confidence interval). Abbreviations for species are as follows: Northern Pike (NOP), Walleye (WAE), White Bass (WHB) and other species (Other).

Year	Month	NOP	WAE	WHB
		H/h	H/h	H/h
2016-2017	January	<0.01	0.05	0.00
	February	<0.01	0.01	0.00
	March	0.00	0.01	0.00
	Overall	<0.01	0.02	0.00
2017	May	<0.01 (<0.01)	0.24 (0.15)	0.06 (0.08)
	June	0.01 (<0.01)	0.55 (0.29)	0.01 (0.01)
	July	<0.01 (<0.01)	0.16 (0.13)	<0.01 (<0.01)
	August	<0.01 (<0.01)	0.30 (0.26)	0.01
	Overall	0.01 (<0.01)	0.30 (0.11)	0.01 (0.01)
2018	May	<0.01 (<0.01)	0.31 (0.38)	0.04 (0.04)
	June	0.01 (<0.01)	0.21 (0.17)	<0.01 (<0.01)
	July	0.00	0.24 (0.24)	0.07
	Overall	<0.01 (<0.01)	0.24 (0.14)	0.03

Table 6a. Estimated monthly and overall angler catch rate per hour fished (C/h) only for anglers primarily targeting a species at Bitter. (80% confidence interval). Abbreviations for species are as follows: Northern Pike (NOP), Walleye (WAE), White Bass (WHB) and Other Species (Other).

Year	Month	NOP	WAE	WHB
		C/h	C/h	C/h
2016- 2017	January	0.00	0.17 (0.31)	0.00
	February	0.00	0.07	0.00
	March	0.00	0.23	0.00
	Overall	0.00	0.14 (0.14)	0.00
2017	May	0.30 (3.59)	0.28 (0.24)	1.84
	June	0.00	1.00 (0.35)	1.10 (0.24)
	July	0.00	0.27 (0.54)	0.00
	August	0.00	0.48 (0.25)	0.00
	Overall	0.30 (3.59)	0.52 (0.17)	1.47 (0.12)
2018	May	0.00	0.47 (0.26)	0.32
	June	0.00	0.55 (0.45)	0.00
	July	0.00	0.73 (0.21)	9.09
	Overall	0.00	0.54 (0.18)	4.97

Table 6b. Estimated monthly and overall angler harvest rate per hour fished (H/h) only for anglers primarily targeting a species at Bitter. (80% confidence interval). Abbreviations for species are as follows: Northern Pike (NOP), Walleye (WAE), White Bass (WHB) and Other Species (Other).

Year	Month	NOP	WAE	WHB
		H/h	H/h	H/h
2016- 2017	January	0.00	0.04 (0.11)	0.00
	February	0.00	0.03	0.00
	March	0.00	0.23	0.00
	Overall	0.00	0.06 (0.05)	0.00
2017	May	0.00	0.26 (0.22)	1.71
	June	0.00	0.59 (0.18)	1.08 (0.14)
	July	0.00	0.13 (0.30)	0.00
	August	0.00	0.32 (0.19)	0.00
	Overall	0.00	0.34 (0.11)	1.40 (0.07)
2018	May	0.00	0.34 (0.13)	0.32
	June	0.00	0.20 (0.13)	0.00
	July	0.00	0.23 (0.16)	7.27
	Overall	0.00	0.29 (0.09)	3.99

Table 7a. Estimated monthly and overall angler catch (C) for all anglers by species at Bitter (80% confidence interval). Abbreviations for species are as follows: Northern Pike (NOP), Walleye (WAE), White Bass (WHB) and other species (Other).

Year	Month	NOP	WAE	WHB
		C	C	C
2016-2017	January	26	4,272	0
	February	68	2,854	410
	March	0	254	0
	Overall	95	7,379	410
2017	May	421 (182)	3,128 (1,239)	878 (946)
	June	747 (266)	23,210 (6,983)	910 (677)
	July	419 (234)	12,609 (7,348)	546 (614)
	August	7 (13)	3,211 (1,321)	219
	Overall	1,594 (399)	42,158 (10,298)	2,553 (1,315)
2018	May	487 (372)	7,017 (4,674)	1,888 (1,173)
	June	759 (385)	16,309 (6,840)	2,581 (1,603)
	July	42 (42)	8,691 (4,453)	3,661 (2,673)
	Overall	1,288 (537)	32,017 (9,405)	8,131 (3,331)

Table 7b. Estimated monthly and overall angler harvest (H) for all anglers by species at Bitter (80% confidence interval). Abbreviations for species are as follows: Northern Pike (NOP), Walleye (WAE), White Bass (WHB) and other species (Other).

Year	Month	NOP	WAE	WHB
		H	H	H
2016-2017	January	26	1,104	0
	February	68	958	0
	March	0	254	0
	Overall	94	2,316	0
2017	May	23 (39)	2,797 (1,082)	722 (941)
	June	316 (157)	13,826 (3,829)	358 (255)
	July	93 (48)	6,276 (3,486)	69 (93)
	August	7 (13)	1,702 (1,193)	39
	Overall	439 (169)	24,602 (5,423)	1,187 (979)
2018	May	13 (18)	3,965 (2,473)	499 (378)
	June	223 (134)	6,338 (3,063)	102 (53)
	July	0	3,166 (1,563)	911 (928)
	Overall	236 (135)	13,470 (4,236)	1,511 (1,003)

Table 8. Estimated number and rate (number per hour) of Northern Pike (NOP), Walleye (WAE), White Bass (WHB) caught and harvested by anglers during the summer and winter fisheries on Bitter, (80% confidence interval).

Northern Pike

Season	Year	Catch	Harvest	Catch Rate	Harvest Rate
Summer	2009	392 (201)	79 (60)	0.01 (<0.01)	<0.01 (<0.01)
Summer	2010	2,585 (1,259)	279 (264)	0.11 (0.07)	0.01 (0.01)
Summer	2012	23,879 (5,626)	3,528 (844)	0.17 (0.06)	0.03 (<0.01)
Summer	2013	24,009 (13,880)	1,188 (873)	0.23 (0.22)	0.01 (0.01)
Summer	2014	13,204 (3,886)	1,863 (710)	0.17 (0.09)	0.02 (0.01)
Summer	2015	5,226 (1,568)	607 (245)	0.12 (0.06)	0.01 (<0.01)
Summer	2016	3,939 (995)	379 (143)	0.04 (0.01)	<0.01 (<0.01)
Summer	2017	1,594 (399)	439 (169)	0.02 (<0.01)	0.01 (<0.01)
Summer	2018	1,288 (537)	236 (135)	0.02 (0.02)	<0.01 (<0.01)
Winter	2008-2009	24	23	0.01	0.01
Winter	2009-2010	14	12	<0.01	<0.01
Winter	2010-2011	218	172	0.03	0.03
Winter	2011-2012	1,137	716	0.01	0.01
Winter	2012-2013	4,055	2,443	0.05	0.03
Winter	2013-2014	3,060	775	0.04	0.01
Winter	2014-2015	2,009	763	0.02	0.01
Winter	2015-2016	1,632	888	0.01	<0.01
Winter	2016-2017	95	94	<0.01	<0.01

Walleye

Season	Year	Catch	Harvest	Catch Rate	Harvest Rate
Summer	2009	10,930 (2,805)	6,320 (1,826)	0.27 (0.14)	0.16 (0.08)
Summer	2010	6,782 (2,551)	3,579 (1,437)	0.29 (0.16)	0.16 (0.09)
Summer	2012	140,773 (25,439)	60,235 (11,062)	1.03 (0.36)	0.44 (0.16)
Summer	2013	134,718 (69,010)	26,861 (13,404)	1.29 (0.99)	0.26 (0.20)
Summer	2014	104,940 (36,865)	10,348 (3,068)	1.37 (0.76)	0.14 (0.07)
Summer	2015	107,186 (34,334)	9,813 (3,230)	2.37 (1.28)	0.22 (0.11)
Summer	2016	148,229 (35,864)	63,441 (15,166)	1.32 (0.60)	0.57 (0.26)
Summer	2017	42,158 (10,298)	24,602 (5,423)	0.51 (0.20)	0.30 (0.11)
Summer	2018	32,017 (9,405)	13,470 (4,236)	0.57 (0.31)	0.24 (0.14)
Winter	2008-2009	682	436	0.16	0.10
Winter	2009-2010	117	16	0.02	<0.01
Winter	2010-2011	406	74	0.06	0.01
Winter	2011-2012	15,711	1,078	0.18	0.01
Winter	2012-2013	43,130	684	0.55	0.01
Winter	2013-2014	41,460	1,318	0.48	0.02
Winter	2014-2015	17,084	747	0.19	0.01
Winter	2015-2016	23,902	11,764	0.11	0.06
Winter	2016-2017	7,379	2,316	0.06	0.02

White Bass

Season	Year	Catch	Harvest	Catch Rate	Harvest Rate
Summer	2009	402 (213)	16 (21)	0.01 (<0.01)	<0.01 (<0.01)
Summer	2010	188 (266)	0	0.01 (0.01)	0.00
Summer	2012	6,565 (3,025)	657 (880)	0.05 (0.03)	<0.01 (<0.01)
Summer	2013	4,600 (2,115)	98	0.04 (0.02)	<0.01 (<0.01)
Summer	2014	7,138 (962)	5,635 (485)	0.09 (0.03)	0.07 (0.02)
Summer	2015	4,330 (2,388)	1,427 (1,444)	0.10 (0.06)	0.03 (0.03)
Summer	2016	2,001 (558)	492 (160)	0.02 (<0.01)	<0.01 (<0.01)
Summer	2017	2,553 (1,315)	1,187 (979)	0.03 (0.02)	0.01 (0.01)
Summer	2018	8,131 (3,331)	1,511 (1,003)	0.14 (0.08)	0.03
Winter	2011-2012	209	209	<0.01	<0.01
Winter	2016-2017	410	0	<0.01	0.00

Table 9. The number of fish harvested with each species by length group (mm) for the winter and summer fisheries at Bitter. Abbreviations for species are as follows: Northern Pike (NOP), Walleye (WAE), White Bass (WHB).

Winter 2016-2017			
Length Group (mm)	NOP (N=2)	WAE (N=57)	WHB (N=0)
280		1	
290		1	
300		1	
310		2	
320		6	
330		3	
340		5	
350		2	
360		7	
370		7	
380		8	
390		3	
400		4	
410		3	
420		2	
430		1	
440		1	
580	1		
590			
600			
610			
620			
630	1		

Summer 2017

Length Group (mm)	NOP (N=29)	WAE (N=1213)	WHB (N=47)
290		1	
300			
310		4	
320		3	1
330		19	
340		16	
350		45	1
360		59	
370		86	
380		124	11
390		122	2
400		125	8
410		124	10
420		130	1
430		92	6
440		84	5
450		59	
460		33	1
470		29	
480		29	1
490		15	
500		4	
510		2	
520		4	
530			
540			
550		2	
560	1		
570			
580	4		
590	2		
600	1		
610	2	1	
620			
630	1		
640	1		
650	2		
660	1		
670	3		
680	2	1	
690	2		
700			
710	1		
720			
730	1		
740			
750	1		
760	1		
770	2		
780			
790			
800			
810			
820			
830			
840			
850	1		

Summer 2018

Length Group (mm)	NOP (N=9)	WAE (N=572)	WHB (N=17)
210		3	
220			
230		2	
240		2	
250			
260			
270		1	
280		4	
290		6	1
300		6	
310		11	2
320		21	2
330		9	
340		17	1
350		14	
360		17	
370		19	1
380		44	1
390		40	
400		51	
410		55	1
420		40	4
430		49	1
440		35	2
450		34	
460		24	1
470		17	
480		14	
490		15	
500		6	
510		4	
520		4	
530		1	
540		3	
550		1	
560		1	
570	1		
580		1	
590	1		
600			
610			
620			
630	1	1	
640			
650			
660			
670			
680	1		
690			
700			
710			
720	1		
730	1		
740			
750			
760	1		
770			
780			
790	1		
800			
810			
820			
830			
840	1		

Figure 1a. Length frequency of angler-harvested Northern Pike measured by the creel clerk during creel surveys on Bitter.

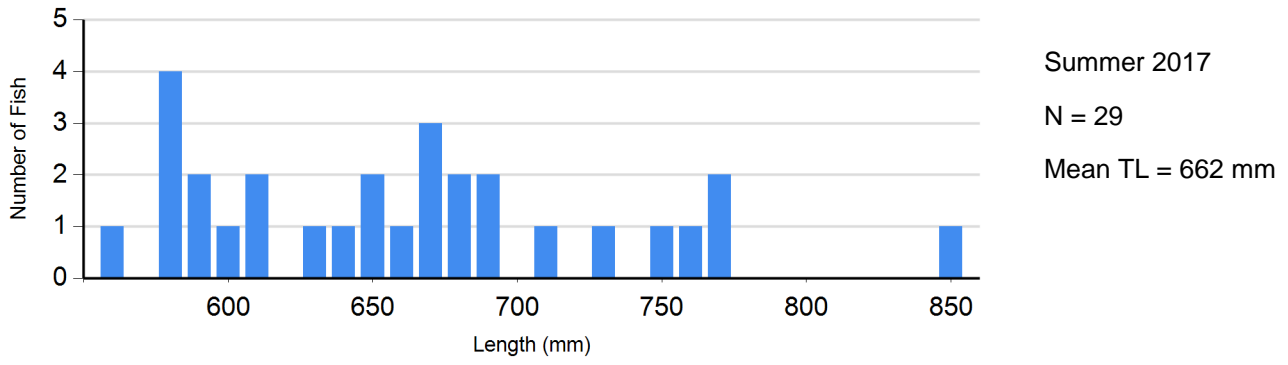


Figure 1b. Length frequency of angler-harvested Walleye measured by the creel clerk during creel surveys on Bitter.

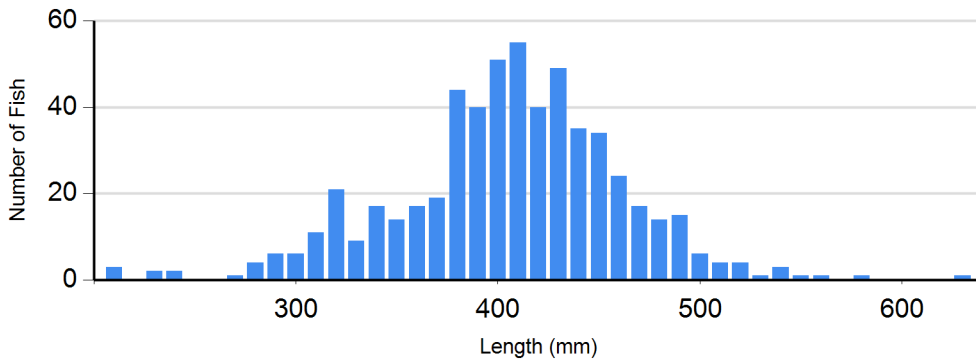
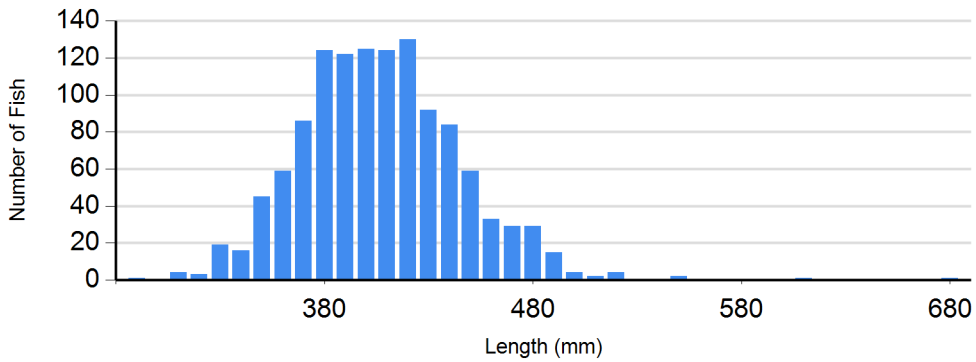
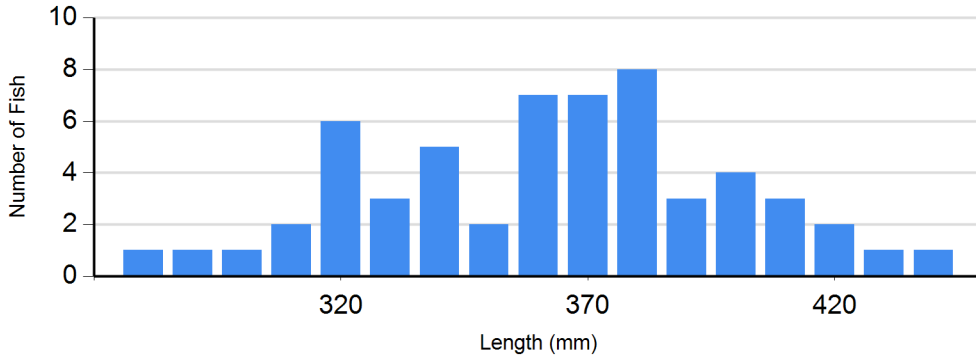


Figure 1c. Length frequency of angler-harvested White Bass measured by the creel clerk during creel surveys on Bitter.

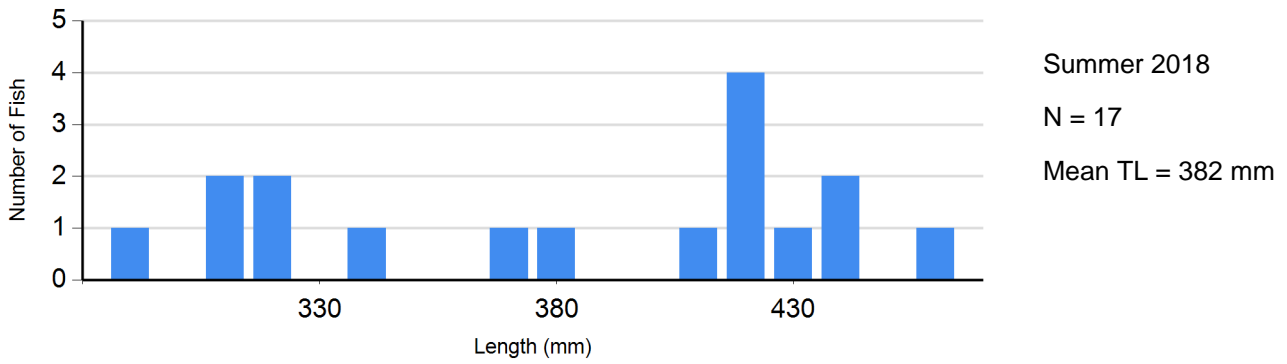
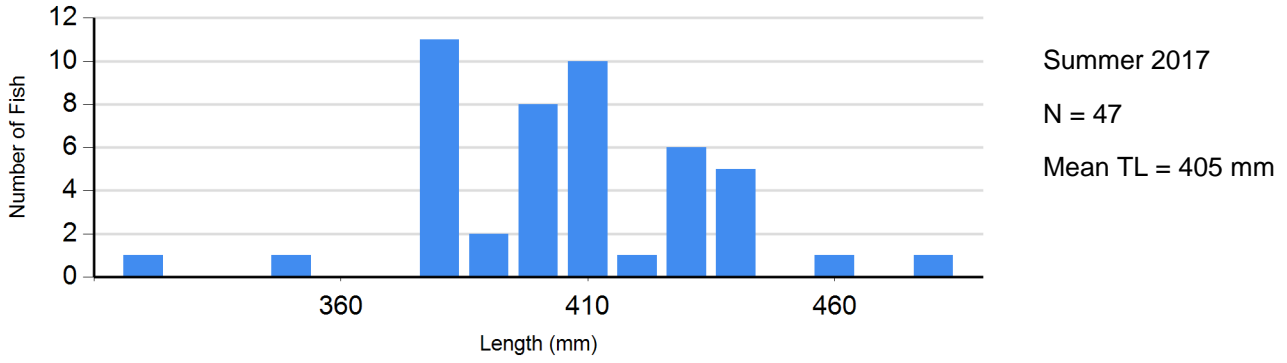


Figure 2. South Dakota county of residence for winter and summer resident anglers fishing Bitter, South Dakota between January 2017 and December 2018.

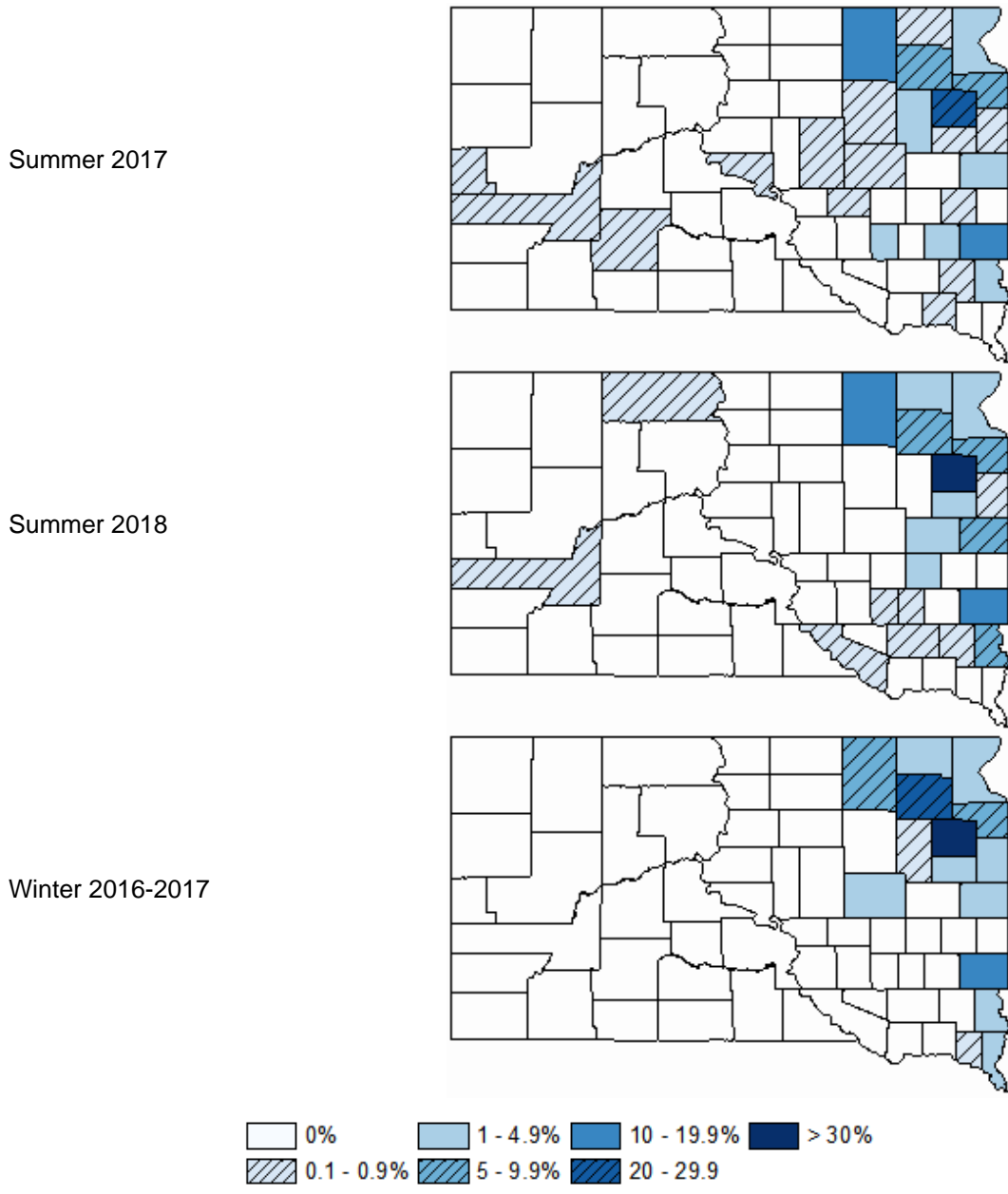


Table 10. Number of parties interviewed that harvested (or caught) a specified number of fish totaled over selected strata for a species.

Angler Harvest	Counts		
	NOP (n=526)	WAE (n=526)	WHB (n=526)
0.00	491	109	513
0.25	7	2	0
0.33	8	8	1
0.50	11	19	3
0.60	1	1	0
0.67	2	7	1
0.75	0	2	0
0.80	0	1	0
1.00	4	36	0
1.25	0	2	1
1.33	0	7	0
1.40	0	1	0
1.50	0	26	0
1.67	0	9	1
1.75	0	4	1
1.80	0	1	0
2.00	2	33	2
2.25	0	1	0
2.33	0	4	0
2.50	0	10	0
2.67	0	12	0
2.75	0	1	0
2.80	0	1	0
3.00	0	30	1
3.25	0	1	0
3.33	0	6	0
3.50	0	13	0
3.67	0	4	0
4.00	0	175	1
5.00	0	0	1

Angler Harvest	Counts		
	NOP (n=229)	WAE (n=229)	WHB (n=229)
0.00	218	80	215
0.20	0	2	0
0.25	3	3	0
0.33	3	4	5
0.40	1	0	0
0.50	4	21	0
0.60	0	1	0
0.67	0	3	1
0.75	0	2	0
1.00	0	17	3
1.25	0	1	0
1.33	0	6	0
1.50	0	11	0
1.67	0	4	0
1.75	0	1	0
2.00	0	13	2
2.33	0	2	0
2.40	0	2	0
2.50	0	4	0
2.86	0	0	1
3.00	0	7	0
3.25	0	1	0
3.33	0	1	0
3.50	0	3	0
3.67	0	3	0
4.00	0	36	1
4.50	0	1	0
20.00	0	0	1

**Winter 2016-
2017**

Counts

Angler Harvest	NOP (n=163)	WAE (n=163)	WHB (n=163)
0.00	159	119	163
0.20	1	1	0
0.33	2	3	0
0.50	1	4	0
0.60	0	1	0
0.67	0	1	0
1.00	0	8	0
1.33	0	2	0
1.50	0	4	0
1.67	0	1	0
2.00	0	6	0
2.25	0	1	0
2.50	0	1	0
3.00	0	3	0
3.50	0	1	0
4.00	0	6	0
5.00	0	1	0

Table 11 The number (N) and percent of total interviews in supplemental-response categories by question asked during interviews at Bitter.

Question: Considering all factors, how satisfied are you with your fishing trip today?

Response	Summer 2018 (n = 229)
Very Satisfied	25%
Moderately Satisfied	25%
Slightly Satisfied	21%
Neutral/No Opinion	15%
Slightly Dissatisfied	6%
Moderately Dissatisfied	3%
Very Dissatisfied	5%