2016 Trout Angler Survey

Conservation & Recreation Division
Bureau of Fisheries

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PROJECT: 2016 Trout Angler Survey
PROJECT LEADER: Mike Steuck and Jeff Kopaska
LOCATION: All Public Trout Fisheries in Iowa
PERIOD OF RESEARCH: Calendar Year 2016

ABSTRACT
A combination mail and online survey was conducted to evaluate the trout fishing activities and preferences of anglers fishing Iowa for trout in 2016. Similar surveys have been conducted in 1975, 1980, 1986, 1991, 1996 and 2001 by telephone, in 2006 by mail, and in 2011 by mail and online. A total of 3,605 angler surveys were completed, or 7.7% of the 46,604 anglers who purchased trout fees for calendar year 2016. Mean age of all trout anglers was 43.8 years of age and, similar to what was observed in 2011. Licensed trout anglers spent an estimated 489,455 days trout fishing in Iowa and made 720,611 trips to individual trout fisheries in 2016. Total annual angler trips were determined for each catchable, restrictive, urban winter pond, and put-and-grow trout fishery in Iowa. The average trout angler spent 11.0 days fishing Iowa's trout waters. Overall, trout fishing activity days, angler trips, and, mean days and trips per angler were at or above 2011 levels. This trend is also manifested in the percent of anglers fishing and total trips taken to community (urban) trout fisheries that have increased significantly since 2001. Trips to urban trout fisheries comprised 13.8% of all trout angler trips. Thirty percent of trout anglers purchased a trout fee specifically for an urban trout fishery. Angler satisfaction with the Iowa Trout Program was ranked at 8 on a scale of 1 to 10.

INTRODUCTION

The Iowa Department of Natural Resources' Trout Program has been stocking Iowa's coldwater streams with trout since the late 1800's. Today, a large portion of the trout caught in Iowa are still a result of some type of trout stocking because successful natural reproduction is insufficient or lacking in many streams. Since the 1940s, stocking of catchable-size trout on a frequent basis (put-and-take) has dominated Iowa's trout program. Today, 50 streams receive catchable-stocked rainbow and/or brook trout. Fingerling stockings on select private streams were added to the program in the 1960s to provide limited pressure, trophy brown trout fisheries (put-and-grow streams) where anglers had the opportunity to catch stream-reared trout and an occasional trophy-size trout. In the past thirty years, the state's trout fisheries have made significant gains with many streams developing self-sustaining populations. Forty years ago, only six streams had trout populations supported solely by natural reproduction; however, that number has increased greatly during the past 20 years as a result of better trout genetics, improved instream habitat and water quality, and best management practices in watersheds. An all-time high of 45 streams supported natural reproduction of trout in 2016 providing anglers with increased opportunities to catch truly wild trout in Iowa. Currently, the number of put-and-grow streams stocked with brown trout or brook trout is 11 and 2, respectively. Restrictive regulations were implemented on some fisheries in the late 1970s to add diversity to the program and to meet the desires of a growing number of anglers whose emphasis was on catching quality-size or large numbers of trout rather than harvesting fish. Experimental catch-and-release trout fisheries were established in the 1990s with the following goals: 1) protect the growing number of wild, self-sustaining trout populations; 2) improve catch rates for wild fish by increasing the trout density in wild populations; and 3) provide additional opportunities for catching trophy-size trout. Today, Iowa has 9 streams with restrictive regulations. Winter trout fisheries were initiated in the 1980s when small, warm-water, urban lakes were stocked with trout to provide ice fishing opportunities for urban anglers. The urban trout program expanded to 17 fisheries in 2016 in an effort to promote fishing and recruit and retain urban anglers. The urban program was also expanded to two stockings per location with one in the fall/winter and one in the winter/spring season. Stockings only occur when water temperatures are 60°F or lower and allow for angling during open water and through the ice. In 2016, the urban trout program was renamed the community trout fishing program.

Effective and efficient management of Iowa' trout program relies on a combination of sound biological data as well as an understanding of trout anglers and their preferences. It is important to be aware of angler's attitudes to ensure a close match between types of trout fisheries provided and anglers' use and demand for those types of fisheries. It is also important to gauge the level of user satisfaction with the program as fisheries managers work to provide a variety of trout fishing opportunities through stocking, restrictive regulations, and wild populations.

A survey of Iowa trout angler activities and preferences has been conducted every five years since 1975. Surveys conducted in 1975, 1980, 1986, 1991, 1996 and 2001 (Moeller 1976, 1987, 1992, 1997, 2002; and Paragamian 1983) were telephone surveys. The 2006 survey was redesigned from a telephone survey into a mail survey (Osterkamp and Kopaska 2007). Modifications to the 2011 survey format included sending selected trout fee purchasers (n=10,000) a postcard with a unique web address, that was their access code to an Internet-based survey (Steuck and Kopaska 2013). Individuals who had not completed the Internet survey within three weeks after the initial mailing were sent a follow-up mail survey which was an abbreviated version of the online survey. This survey was designed and implemented in a similar manner to the 2011 survey, except that some questions were changed for 2016 (Appendix A). This report summarizes data collected during the 2016 survey, discusses survey results and identifies trends in trout fishing activities since 1975. Collectively, these surveys provide fishery managers long-term data on angler use, habits and preferences that are useful in determining goals and best practices for existing and newly developed fisheries.

STUDY AREA

The 2016 trout angler survey collected information concerning 96 catchable-stocked, put-and-grow, naturally reproducing, restrictive regulation, and community trout fisheries in the Iowa counties of Allamakee, Black Hawk, Cerro Gordo, Clay, Clayton, Delaware, Dubuque, Fayette, Howard, Jackson, Johnson, Lee, Linn, Marshall, Mitchell, Muscatine, Polk, Pottawattamie, Scott, Story, Wapello, Warren, Webster, Winneshiek and, Woodbury. These fisheries, excluding put-and-grow streams, are either: 1) owned by a public agency and open to public fishing, 2) provide permanent public access on private lands through formal "angler easement" agreement or 3) provide public access on private lands through informal agreements with landowners to allow the public to fish without expressed permission. Put-and-grow

streams are primarily on private land and anglers must have expressed permission from the landowner each time they fish on that private property.

METHODS AND PROCEDURES

Anglers selected for this survey were chosen from all anglers that purchased a 2016 Iowa trout fee using a stratified random design and a list generated from the Electronic Licensing System in Iowa (ELSI). Survey recipients included resident anglers geographically stratified by Iowa's nine climatology zones, plus a group of nonresident trout anglers (Appendix B). Postcard invitations to participate in the online version of the survey were sent out to 10,017 anglers or approximately 1,000 to each group. Three survey groups in western Iowa had fewer than 1,000 anglers who purchased trout fees therefore, they received complete coverage. The six remaining Iowa groups and the nonresident group were randomly sub-sampled to reflect the proportion of anglers that purchased a trout fee relative to other groups. Results of the survey were calculated separately for each geographic survey group and expanded based on the number of trout anglers each survey response represented from that area. Overall results were then aggregated to derive total results for each question, i.e. means were summed and standard errors of the means (SEM) were squared, summed, square root taken, and result multiplied to determine ± 95 percent confidence intervals. Online responses comprised 48% of the total sample whereas paper responses made up the remaining 52% of responses. The gender balance of the two data sets was similar (e.g., online 87% male, paper 84% male) as was the mean age of respondents for the online (i.e., males 48, females 44) and paper (i.e., males 53, females 51); therefore, online and paper data were combined for all analyses with common data. Questions included in the online form are shown in Appendix A.

Methodology used in 2006, 2011 and 2016 were similar but differed from previous methodologies (1975-2001), when the survey sample of anglers to interview by telephone was selected from purchasers of trout fees. These previous trout angler surveys instructed individual license vendors to fill out a postcard on 10% of trout stamp purchases identifying the purchaser. Postcards were then mailed to the DNR, and a subsample was randomly selected for the telephone survey. The postcard system did not result in a truly random list of trout anglers, because some vendors rarely filled out the postcards. This resulted in some geographic areas with few or no trout anglers in the sample. In past telephone surveys, northeast Iowa fisheries staff conducted the telephone surveys in January and February of the following year. The change in 2006 to a mail survey allowed an order of magnitude greater portion of the trout angler population to be sampled, and the 2011 and 2016 surveys were designed similarly. Appendix A shows a copy of the online survey form. Responses on completed interview forms were tabulated and data computations were performed using Access and Excel software. Variation in previous surveys was presented as a ± 95 percent confidence interval calculated from all surveyed individuals (1975-2001) but was calculated from all districts combined for surveys beginning in 2006.

RESULTS

A record 46,604 trout fees were sold for the 2016 fishing year (Figure 1). A total of 3,605 angler surveys were completed, representing a sample size of 7.7% of all trout fee purchasers. Each interviewed angler represented 12.9 other 2016 trout anglers. The 2016 percentage of anglers sampled (7.7%) was less than 2011 (10.6%) and 2006 (12.5%), but greater than all years previous to 2006, [2001 (1.32%), 1996 (1.61%), 1991 (1.43%), 1986 (1.07%), 1980 (1.75%) and 1975 (2.36%)]. Anglers in every county in Iowa purchased a trout fee and more were sold in eastern Iowa compared to western Iowa (Appendix B). Counties with greater than 1,000 trout anglers in 2016 were: Linn - 4,042, Polk - 3,758, Dubuque - 2,912, Black Hawk - 2,741, Scott - 2,300, Johnson - 1,829, Winneshiek - 1,597, and Story – 1,165 (Appendix B). These eight counties accounted for 44% of all trout fee purchasers. Data collected in this survey was expanded to the numbers presented herein based on the total number of 2016 trout fees sold in the nine resident groups plus the nonresident trout angler group in 2016.

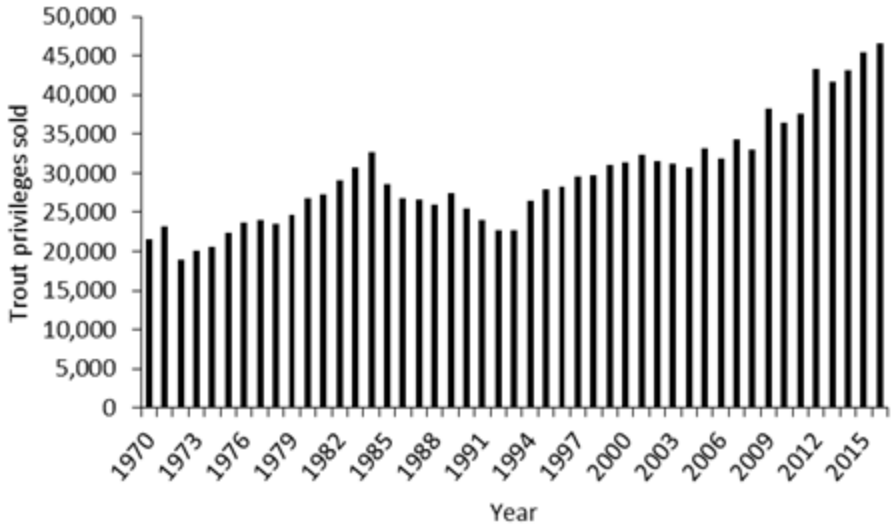

Figure 1. Number of trout privileges sold in Iowa from 1970 to 2016.

Nonresident anglers purchased 5,033 trout fees in 2016, or 10.8% of all trout fees purchased, a higher percentage than any of the previous eight surveys. The previous highest percentage of nonresident trout fees purchased was 10.1% in 1996. Non-resident anglers accounted for 8.2% of the 2016 respondents, which is similar to the 10.8% of non-resident trout fee purchasers. Minnesota, Illinois and Wisconsin residents were the majority of non-resident trout anglers at 30%, 25% and 14% respectively, with the remaining 31% coming from other states. Anglers from 49 states (not Rhode Island) and 6 foreign countries fished for trout in Iowa during 2016.

The mean age of all 2016 trout anglers was 43.8 years, similar to 2006 and 2011, but was 5.0 years younger than the 48.8 year average in 2001 (Table 1). The mean age of male and female trout anglers was similar, varying by only 2 years. Although gender distribution in Iowa is nearly equal, males (83.1%) continue to purchase a higher percentage of trout fees in Iowa than female anglers (16.9%), a trend similar to 2006 and 2011 (Table 1). Females purchased trout fees disproportionately to the number of females (50.5%) in Iowa's population according to the 2010 census (Table 1).

Table 1. Gender distribution and mean age by gender of 2016 trout fee purchasers. Gender distribution of Iowa population is also shown for reference.

Gender	Percent	Mean Age	Percent of Iowa population**
Female	16.9	42.3	50.5
Male	83.1	44.7	49.5

**U.S. Census, 2010, http://factfinder2.census.gov/

The percent of trout anglers in the 16–29 age range (22%) has remained similar to the percentage of all Iowa anglers in that same age range (21%) since 2006; however, the 1996 and 2001 surveys were below that level when compared to all other survey years (Table 2). The percent of 2016 trout anglers in the other age groups was similar to the 2006 and 2011 survey, although the percent of 30-49 age range trout anglers has declined since 2001. The percent of trout anglers >65 (13%) is comparable to the percent of Iowa population (15%) yet greater than the percent of all Iowa anglers (4%; Table 2).

Licensed anglers spent an estimated 489,455 days (SD ± 67) trout fishing in 2016 (Table 3). This averages to 11.0 days spent trout fishing per angler, a similar value to 2011 but down from 13.6 in 2006. The last three surveys have shown an increase from the all-time low average of 8.5 days/angler in the 2001 survey. Fifty-three percent of licensed trout anglers fished five or fewer days in 2016, similar to 2011 and up from 45% in 2006 but within the historic range of 43 to

60% (1975 to 2011; Table 4). Seventy-five percent of licensed trout anglers fish 1 to 15 days. Ten percent of trout fee purchasers did not go trout fishing in 2016.

An estimated 720,611 angler trips (SD ± 1,769) were made to the 96 different trout fisheries listed in the 2016 survey (Table 5). This is the highest number of angler trips in a given year since the survey began. The average number of trips per angler (16.3) in 2016 is slightly below the overall mean number of trips per angler (16.6) from 1975 to 2011. Trips to community fisheries contributed 99,444 or 13.8% of the total trout angling trips (Figure 2). The five most visited stream fisheries included North Bear, South Bear, Trout Run, Bailey's Ford and Coldwater (Table 6), with nearly 135,000 trips taken to these five streams alone. North Bear was most popular and was fished by 21% of all trout anglers, South Bear by 17%, Trout Run by 13%, Bailey's Ford by 11% and Bloody Run by 12% of all trout anglers. Patterson Creek more than doubled in the number of angler trips in 2016 and increased in rank from 34st to 29th (Table 6). Other streams that increased in rank include Trout Run, Coldwater, Bankston, Glovers, Bear (Fayette) and South Cedar. Coldwater rose from a rank of 28th in 2001 to 8th in 2006, was ranked 10th in 2011 and is now ranked 5th. Streams that showed decreases in the number of trips and rank included Swiss Valley, Waterloo, Turtle, Yellow River and Spring (Table 6). Swiss Valley was 4th in 2011 and was 8th in 2016. Waterloo dropped from 6th in 2011 to 14th in 2016, Turtle 17th to 25th, Yellow River 5th to 28th and Spring 28th to 43rd.

Table 2. Percent of trout anglers by age group, 1975 through 2016.

Age Group	Year									% of all Iowa anglers*	% of Iowa population**
	1975	1980	1986	1991	1996	2001	2006	2011	2016		
<16	NA	NA	NA	NA	NA	NA	2	2	2	NA	20
16-29	27	36	21	19	15	7	21	22	22	28	21
30-49	35	34	46	48	45	50	41	37	35	44	25
50-64	23	19	17	21	24	27	25	27	28	24	20
> 65	15	11	16	12	16	16	10	12	13	4	15

*ELSI, 2016.
**U.S. Census, 2010, http://factfinder2.census.gov/

Table 3. Total annual trout fishing activity days by licensed trout anglers, 1975 to 2016.

	Year								
	1975	1980	1986	1991	1996	2001	2006	2011	2016
Number of days	300,985	282,045	373,309	277,389	358,556	277,087	415,595	430,031	489,455
Number of trout fees sold	22,354	26,712	26,819	24,059	28,222	32,466	31,842	37,512	46,604
Mean days fished/angler	13.5	10.6	13.9	11.5	12.7	8.5	13.6	11.5	11.0

Table 4. Percent of anglers trout fishing at various activity levels, 1975 to 2016.

Number of days trout fishing	Year								
	1975	1980	1986	1991	1996	2001	2006	2011	2016
0	7	5	8	13	9	12	7	9	10
1-5	36	43	37	37	36	48	38	43	43
6-15	32	32	30	26	31	25	33	31	32
16-30	16	12	16	17	16	10	14	11	11
31-60	7	4	7	6	6	5	5	4	3
>60	2	4	2	1	2	<1	2	2	1

Table 5. Number of trout angler trips to the catchable, restrictive and community trout fisheries, 1975 to 2016*.

	Year								
	1975	**1980**	**1986**	**1991**	**1996**	**2001**	**2006**	**2011**	**2016**
Number of trips	363,145	386,054	521,845	485,186	528,885	373,320	527,673	582,851	720,611
Number of trout privileges sold	22,354	26,590	26,819	24,059	28,222	32,466	31,842	37,512	46,604
Trips per angler	16.2	14.5	19.5	20.2	18.7	11.5	16.6	15.5	16.3

*Data for 1975-2001 does not include trip information to the put-and-grow streams, 2006-2016 data includes put-and-grow streams.

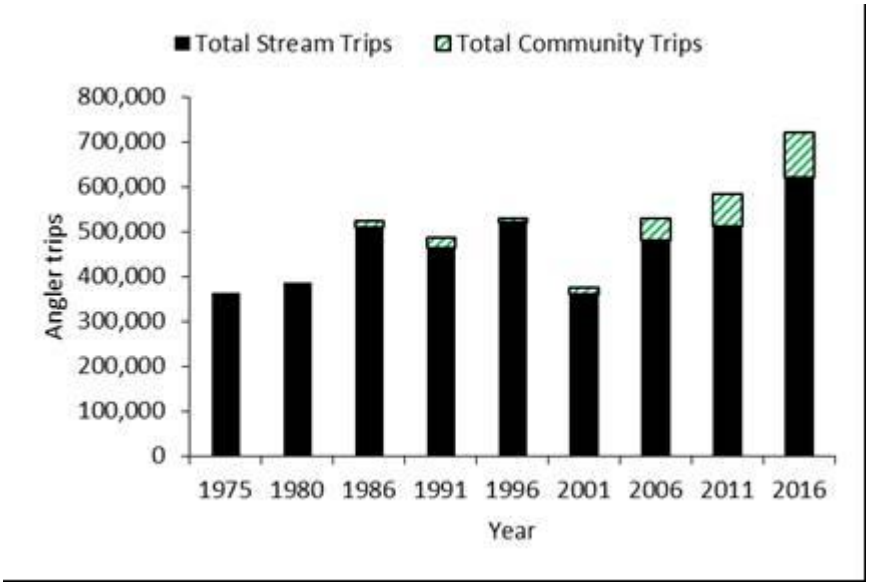

Figure 2. Number of trout angler trips to stream and community fisheries.

All restrictive regulation streams decreased slightly in rank except Bloody Run and McLoud Run (Table 6). Even though these streams decreased or held steady in rank, all increased in the number of angler trips this survey period. McLoud Run increased in rank from 61st to 57th and more than doubled in trips from 1,061 to 2,574.

Streams with the least angling pressure tend to be from the put-and-grow program, including Ozark Springs, Turner, Williams, Teeple, Grimes Hollow, Spring Falls, White Pine Hollow, Tributary to Tete de Morts, Pine, Ten Mile, Miners, Monastery and Tete des Morts (Table 6). Put-and-grow streams with the least angling use and ranked the lowest were Ozark Springs (79th), Turner (78st) and Williams (77th). Silver Creek in Allamakee County was discontinued as a public stream in 2010 due to loss of public access.

The six streams with the highest number of angler trips per mile of stream open to public fishing were the same as in 2011 and 2006. These streams included Baileys Ford (30,836 trips/mi), Trout Run (Winneshiek Co.) (21,450 trips/mi), Joy Springs (14,804 trips/mi), Richmond Springs (13,808 trips/mi), Turkey River (13,210 trips/mi), and, Twin Springs (13,048 trips/mi; Table 6).

Many anglers fish a stream more than once in a season. When anglers fish a stream at least once, the average number of trips made to that stream can be used to gauge angler use (Table 6). Turtle Creek anglers made an average of 6.5 trips to that stream in 2016 and was the highest average in 2011 (9.2 trips) and 2006 (9.0 trips). Other streams with high mean trips include Bankston (5.8), Bigalk (4.6), and Swiss Valley (4.5).

Table 6. Rank of stream trout fishery in terms of number of angler trips, number of angler trips (± 95% confidence interval), trips per stream mile, mean trips per angler and percent of anglers fishing at least once for each fishery and survey year. Asterisk denotes put and grow fishery.

Fishery	Rank by year			Number of Angler Trips by year			Trips per Stream Mile by year			Mean trips per angler		Percent of anglers fishing at least once	
	2016	2011	2006	2016	2011	2006	2016	2011	2006	2016	2011	2016	2011
North Bear (Winneshiek) NE of Highlandville	1	1	1	35,286 (24)	29,931 (28)	30,469 (2,228)	5,601	4,751	4,836	3.8	4.0	20.8%	20.1%
South Bear (Winneshiek) Highlandville	2	3	2	26,510 (19)	21,877 (15)	24,907 (1,922)	4,820	3,978	4,529	3.6	3.8	17.3%	16.6%
Trout Run (Winneshiek) Decorah Hatchery	3	9	6	25,740 (36)	16,755 (16)	17,885 (2,640)	21,450	13,963	14,905	3.7	3.4	12.9%	11.9%
Bailey's Ford (Delaware) S of Manchester	4	2	3	24,669 (24)	23,054 (21)	19,463 (2,384)	30,836	28,818	24,329	3.7	4.1	11.3%	10.0%
Coldwater (Winneshiek) E of Kendallville	5	10	8	22,720 (35)	16,462 (21)	14,919 (1,949)	11,958	8,665	7,852	4.1	3.8	11.0%	10.0%
Little Paint (Allamakee) Yellow R Forest	6	8	5	21,504 (23)	18,000 (18)	18,603 (2,332)	10,752	9,000	9,302	3.7	4.0	10.4%	10.3%
Bankston (Dubuque) NW portion of county	7	14	22	19,536 (28)	12,927 (22)	9,878 (1,764)	3,987	2,638	2,016	5.8	4.8	4.5%	4.3%
Swiss Valley (Dubuque) SW of Dubuque	8	4	21	18,412 (21)	21,212 (45)	10,288 (1,879)	2,748	3,166	1,536	4.5	6.6	5.5%	4.9%
Bloody Run-Catchable (Clayton) W of Marquette	9	12	12	17,920 (15)	14,907 (13)	14,114 (1,677)	2,108	1,754	1,661	2.9	3.2	11.8%	11.0%
Richmond Springs (Delaware) Backbone Pk	10	7	4	17,261 (16)	18,298 (22)	19,298 (2,566)	13,808	14,638	15,438	3.5	3.5	9.9%	10.5%
Sny Magill (Clayton) S of McGregor	11	11	11	17,172 (22)	15,830 (25)	14,485 (1,925)	2,910	2,683	2,455	3.4	4.3	9.0%	7.3%
Glovers (Fayette) SE of West Union	12	23	19	15,084 (20)	9,180 (13)	10,572 (1,531)	6,034	3,672	4,229	3.5	3.0	7.3%	6.2%
Joy Springs (Clayton) W of Strawberry Pt	13	19	13	14,804 (15)	10,968 (10)	13,988 (1,689)	14,804	10,968	13,988	2.7	2.4	9.5%	8.6%
Waterloo - Catchable (All) W of Dorchester	14	6	7	14,720 (16)	19,332 (54)	17,649 (2,074)	1,303	1,711	1,562	3.6	4.8	9.5%	9.8%
Fountain Springs (Delaware) NE of Greeley	15	13	10	14,181 (17)	13,521 (13)	14,540 (2,023)	5,909	5,634	6,058	3.2	3.0	7.5%	7.6%
Paint - Big (Allamakee) near Waterville	16	18	18	13,754 (17)	11,082 (16)	12,347 (1,708)	804	648	722	3.3	3.2	8.2%	7.6%
Grannis (Fayette) E of Fayette	17	21	15	13,443 (18)	10,633 (12)	13,278 (1,833)	8,962	7,089	8,852	3.1	2.7	7.7%	7.3%
Turkey River (Clayton) Big Spring Hatchery	18	15	9	13,210 (20)	12,748 (22)	14,564 (1,984)	13,210	12,749	14,564	3.3	3.8	6.6%	7.4%
Trout River (Winneshiek) SE Decorah	19	16	14	13,156 (19)	11,622 (19)	13,467 (1,984)	1,512	1,336	1,548	2.9	2.8	8.8%	9.8%
Twin Springs (Winneshiek) W edge Decorah	20	20	16	13,048 (26)	10,715 (14)	12,560 (2,060)	13,048	10,715	12,560	3.2	3.6	7.9%	8.1%
Big Mill (Jackson) W of Bellevue	21	27	29	11,692 (24)	7,458 (16)	6,690 (1,230)	3,340	2,131	1,912	4.2	3.3	4.1%	3.9%
Bigalk (Howard) N of Cresco	22	26	31	11,648 (36)	7,560 (20)	6,312 (1,082)	9,706	6,300	5,260	4.6	3.9	4.4%	3.9%
*Middle Bear (Winneshiek) N of Highlandville	23	25	20	10,995 (17)	7,953 (10)	10,327 (1,267)	3,320	2,410	3,129	2.8	3.0	8.4%	7.8%
Otter (Fayette) W of Elgin	24	29	33	10,563 (24)	6,110 (21)	5,728 (943)	1,225	711	666	4.2	3.2	4.1%	3.7%

Fishery	Rank by year			Number of Angler Trips by year			Trips per Stream Mile by year			Mean trips per angler		Percent of anglers fishing at least once	
	2016	2011	2006	2016	2011	2006	2016	2011	2006	2016	2011	2016	2011
Turtle (Mitchell) N of St Ansgar	25	17	17	10,516 (38)	11,091 (23)	12,505 (4,643)	3,895	4,108	4,631	6.5	9.2	4.2%	4.5%
Twin Bridges (Delaware) W of Colesburg	26	22	27	10,512 (33)	9,478 (21)	7,187 (1,643)	11,680	10,532	7,986	3.9	3.4	4.4%	4.5%
Maquoketa R (Clay_Del) NW of Backbone Pk	27	24	26	8,621 (17)	8,220 (14)	7,203 (1,125)	2,874	2,740	2,401	2.8	3.2	5.4%	4.7%
*Yellow River (Allamakee) Postville to mouth	28	5	23	8,559 (15)	19,601 (81)	8,710 (2,529)	276	632	281	2.9	6.8	5.0%	4.9%
Patterson (Allamakee) NW of Waukon	29	34	25	8,467 (19)	4,826 (9)	8,174 (3,276)	1,460	832	1,409	3.2	2.4	5.5%	5.6%
Bear (Fayette) N of Arlington	30	38	35	8,388 (18)	4,109 (10)	5,239 (870)	2,097	1,027	1,310	3.1	2.3	5.4%	4.1%
Buck (Clayton) E of Garnavillo	31	30	34	8,151 (20)	5,984 (16)	5,475 (1,085)	1,405	1,032	944	2.9	3.0	4.4%	3.8%
Little Mill (Jackson) W of Bellevue	32	35	42	8,066 (23)	4,753 (10)	4,245 (781)	2,241	1,320	1,179	4.1	3.3	3.0%	2.7%
Bohemian (Winneshiek) E of Protivin	33	37	37	7,849 (29)	4,342 (13)	4,844 (1,031)	6,541	3,618	4,037	4.2	3.4	3.1%	2.3%
Waterloo - Spec Reg (Alla) SE of Dorchester	34	33	24	6,879 (16)	4,908 (12)	8,268 (1,220)	4,913	3,506	5,906	3.4	2.9	4.3%	4.8%
Bloody Run-Special Reg W of Marquette	35	36	44	5,831 (12)	4,547 (10)	4,087 (584)	2,333	1,819	1,635	2.5	2.5	4.5%	4.0%
Dalton Pond (Jackson) E of Preston	36	48	52	5,669 (28)	2,755 (11)	2,682 (825)	NA	NA	NA	6.6	3.9	1.3%	1.3%
*Bear (Clayton) N of Edgewood	37	42	48	5,592 (17)	3,441 (8)	3,195 (712)	1,553	956	888	2.8	2.2	4.4%	3.7%
French Creek, Spec Reg (All) NW of Lansing	38	31	30	5,325 (12)	5,311 (11)	6,525 (780)	887	885	1,087	2.3	2.6	4.7%	4.9%
South Cedar (Clayton) SW of Garnavillo	39	53	54	4,922 (24)	2,091 (11)	2,469 (820)	1,295	550	650	4.0	2.6	1.6%	1.4%
Little Turkey R (Delaware) E of Colesburg	40	46	46	4,770 (14)	2,931 (8)	3,550 (768)	9,541	5,862	7,101	2.8	2.0	3.1%	2.7%
Clear (Allamakee) near Lansing	41	32	45	4,743 (18)	5,006 (24)	4,047 (1,030)	1,694	1,788	1,445	4.0	4.2	2.6%	2.6%
Brush (Jackson) NE of Andrew	42	39	39	4,678 (20)	3,978 (15)	4,742 (820)	1,231	1,047	1,248	3.0	3.0	2.2%	2.2%
Spring (Mitchell) W of Orchard	43	28	28	4,612 (13)	6,209 (12)	7,156 (2,091)	1,441	1,940	2,236	4.2	5.6	3.1%	3.7%
*North Canoe (Winneshiek) N of Decorah	44	41	41	4,445 (10)	3,528 (10)	4,276 (839)	1,482	1,176	1,425	2.4	2.2	4.0%	4.0%
Spring Branch-Spec Reg (Del) SE Manchester	45	40	32	4,409 (16)	3,672 (11)	5,870 (1,579)	1,520	1,266	2,024	2.9	3.0	2.5%	2.9%
West Canoe (Winneshiek) N of Decorah	46	43	40	3,729 (17)	3,261 (16)	4,607 (1,071)	NA	544	768	2.8	3.5	3.0%	2.9%
*North Cedar (Clayton) SW of McGregor	47	51	62	3,673 (31)	2,433 (33)	1,523 (448)	798	529	331	3.3	2.7	1.6%	1.6%
*Trout Run (Allamakee) SW of Lansing	48	45	47	3,620 (20)	3,103 (14)	3,511 (1,175)	3,620	3,104	3,511	2.5	2.6	2.8%	2.6%
Coon (Winneshiek) NE of Freeport	49	47	49	3,401 (11)	2,785 (12)	3,140 (612)	1,546	1,266	1,427	2.3	2.1	2.9%	2.9%
Hickory (Allamakee) NE of Luana	50	44	55	4,401 (14)	3,134 (21)	2,359 (529)	1,031	950	715	2.8	3.1	2.1%	1.9%
Wexford (Allamakee) N of Harpers Ferry	51	52	38	3,350 (19)	2,422 (8)	4,749 (1,013)	817	591	1,158	2.4	2.5	2.3%	2.1%
Mink (Fayette) N of Wadena	52	49	50	3,332 (11)	2,588 (9)	3,069 (717)	1,515	1,177	1,395	2.3	2.3	2.7%	1.9%

Fishery	Rank by year			Number of Angler Trips by year			Trips per Stream Mile by year			Mean trips per angler		Percent of anglers fishing at least once	
	2016	2011	2006	2016	2011	2006	2016	2011	2006	2016	2011	2016	2011
*Clear (Allamakee) E of Dorchester	53	54	53	3,075 (15)	1,997 (9)	2,611 (599)	809	526	687	2.5	2.2	2.5%	2.2%
*Little Turkey R (Delaware) SE of Colesburg	54	55	58	2,887 (14)	1,869 (9)	1,933 (798)	1,443	935	966	2.8	2.4	1.8%	1.3%
Wapsipinicon River (Mitchell) N of Mclntire	55	64	43	2,696 (38)	954 (6)	4,213 (2,186)	1,498	530	2,341	4.1	2.4	1.2%	1.3%
Ensign Hollow - Spec Reg (Clayton) S Volga	56	50	57	2,574 (9)	2,476 (12)	1,980 (372)	736	708	566	2.0	2.8	2.1%	1.9%
McLoud Run (Linn) in Cedar Rapids	57	61	56	2,574 (15)	1,061 (6)	2,209 (424)	1,072	442	920	3.8	2.0	1.3%	1.0%
*South Fork Big Mill (Jackson) W of Bellevue	58	65	66	2,488 (20)	776 (9)	1,389 (481)	2,764	862	1,543	3.8	2.3	1.0%	0.6%
*Casey Springs (Winneshiek) N of Decorah	59	56	59	2,441 (20)	1,688 (10)	1,744 (664)	1,017	704	726	3.1	2.2	1.9%	2.1%
*Little Maquoketa R (Dubuque) Epworth	60	62	67	2,344 (23)	1,035 (8)	986 (266)	617	272	260	3.0	2.3	1.3%	0.7%
*Ram Hollow (Delaware) SE of Colesburg	61	63	68	1,668 (13)	980 (9)	876 (237)	2,779	1,635	1,460	2.8	1.8	1.0%	1.0%
*Pine (Allamakee/Winneshiek) E of Sattre	62	57	60	1,534 (8)	1,399 (7)	1,736 (558)	334	304	377	2.2	2.0	1.6%	1.9%
*East Pine (Winneshiek) W of Burr Oak	63	66	69	1,481 (15)	767 (9)	876 (348)	308	160	182	3.3	2.1	0.8%	0.7%
*Burr Oak (Mitchell) NE of Osage	64	58	51	1,463 (7)	1,371 (9)	3,061 (2,146)	585	549	1,224	2.6	3.7	1.6%	1.2%
*Mossy Glen (Clayton) Strawberry Point	65	59	64	1,403 (9)	1,354 (12)	1,467 (433)	1,002	967	1,048	2.3	2.4	1.6%	1.2%
South Pine-Spec Reg (Winn) NE of Decorah	66	60	63	1,328 (11)	1,247 (7)	1,507 (455)	492	462	558	1.9	2.2	1.4%	1.5%
*Tete des Morts (Jackson) St Donatus	67	73	74	1,250 (19)	437 (14)	481 (339)	379	133	146	3.8	4.9	0.5%	0.2%
*Monastery Creek (Dubuque) SW of Dubuque	68	74	NA	1,099 (12)	288 (3)	NA	5,496	1,440	NA	2.9	1.4	0.7%	0.4%
*Miners (Clayton) Guttenberg	69	78	77	1,050 (22)	141 (3)	245 (89)	233	32	54	4.5	1.2	0.4%	0.4%
*Ten Mile (Winneshiek) NW of Decorah	70	69	65	999 (10)	598 (5)	1,389 (403)	294	176	408	2.0	1.7	1.4%	1.1%
*Pine (Winneshiek) N of Bluffton	71	67	61	863 (10)	691 (5)	1,578 (449)	76	61	140	2.2	1.5	0.9%	1.2%
*Tributary-Tete des Morts (Dubuque) StDonatus	72	76	78	783 (16)	180 (4)	245 (113)	783	181	245	4.9	1.7	0.2%	0.4%
*White Pine Hollow (Dubuque) Luxemburg	73	71	75	596 (8)	523 (6)	473 (195)	161	141	128	2.1	1.9	0.5%	0.5%
*Spring Falls (Delaware) W of Colesburg	74	70	72	595 (16)	528 (5)	536 (156)	793	704	715	3.8	1.6	0.3%	0.6%
*Grimes Hollow (Delaware) E of Colesburg	75	72	70	519 (9)	468 (5)	821 (353)	519	469	821	2.3	1.8	0.6%	0.4%
*Teeple (Allamakee) SW of Waukon	76	79	76	373 (12)	119 (3)	252 (86)	87	28	59	3.3	1.0	0.2%	0.2%
*Williams Creek (Allamakee) NW of Luana	77	75	71	270 (14)	221 (6)	600 (231)	142	116	316	2.5	1.7	0.2%	0.3%

Fishery	Rank by year			Number of Angler Trips by year			Trips per Stream Mile by year			Mean trips per angler		Percent of anglers fishing at least once	
	2016	2011	2006	2016	2011	2006	2016	2011	2006	2016	2011	2016	2011
*Turner (Fayette) St Lucas	78	77	73	239 (10)	156 (4)	536 (200)	217	143	488	3.2	1.9	0.2%	0.3%
*Ozark Springs (Jackson) N of Canton	79	68	NA	107 (3)	651 (13)	NA	153	931	NA	1.8	1.7	0.2%	0.7%
Silver (Allamakee)	NA	NA	36	NA	NA	4,899 (743)	NA	NA	2,333	NA	NA	NA	NA

Fishing pressure on the community trout fisheries in 2016 increased to 99,444 from 70,202 trips in 2011, 48,868 trips in 2006 and 12,920 trips in 2001 (Table 7). Trips to community trout fisheries increased to 13.8% of all trout angler trips in 2016 from 12% in 2011 and 9% in 2006 (Figure 2). The number of community fisheries available to anglers has slowly increased with 1 stocked for anglers in 1986, 3 stocked in 2001, 8 stocked in 2006, and 17 stocked in 2011 and 2016 (Table 7; Figure 3). Heritage Pond, Prairie Park Pond, Terry Trueblood Lake and Ada Hayden Lake were most visited community trout fisheries whereas Big Lake Park and Discovery Park Pond received the fewest estimated angler trips (Table 7).

Table 7. Total estimated angler trips to the community trout fisheries, 1986 to 2016.

Fishery	Year						
	1986	1991	1996	2001	2006	2011	2016
Ada Hayden Lake (Ames)						5,156	7,844
Bacon Creek (Sioux City)					3,905	4,495	4,500
Banner Lake (Indianola)					14,903	7,156	7,244
Big Lake Park (Council Bluffs)					3,645	1,967	2,839
Blue Pit (Mason City)		12,307	1,865	1,270	7,629	3,189	4,236
Copper Creek Lake (Pleasant Hill)						579	
Discovery Park Pond (Muscatine)						2,602	2,734
DMACC Pond (Ankeny)						5,084	
Heritage Pond (Dubuque)			3,543	6,213	6,919	6,571	13,260
Greater Ottumwa Park Pond (Ottumwa)						5,012	6,239
Lake of the Hills (Davenport)					3,961	7,013	4,155
Lake Sauganash (Council Bluffs)					2,320		
Mitchell Lake (Waterloo)	13,686	9,100					
Mooreland Park Pond (Fort Dodge)						622	5,179
North Prairie Lake (Cedar Falls)			3,668	5,437	5,586	7,101	5,214
Petoka Lake (Bondurant)						2,098	6,219
Prairie Park Pond (Cedar Rapids)						5,129	9,187
Sand Lake (Marshalltown)							3,332
Scharnberg Park Pond (Spencer)						3,676	4,124
Terry Trueblood Lake (Iowa City)							8,583
Wilson Lake (Ft. Madison/Burlington)						2,752	4,555
Total	13,686	21,407	9,076	12,920	48,868	70,202	99,444

Anglers that visit community fisheries tend to fish the same water body more than once in a season. Greater Ottumwa Park Pond anglers made an average of 12.9 trips to that pond in 2016 and had the highest average in 2011 with 11.2 trips (Table 8). Other streams with high mean trips include Wilson Lake (10.6), Bacon Creek Lake (10.2), and Big Lake Park (8.2).

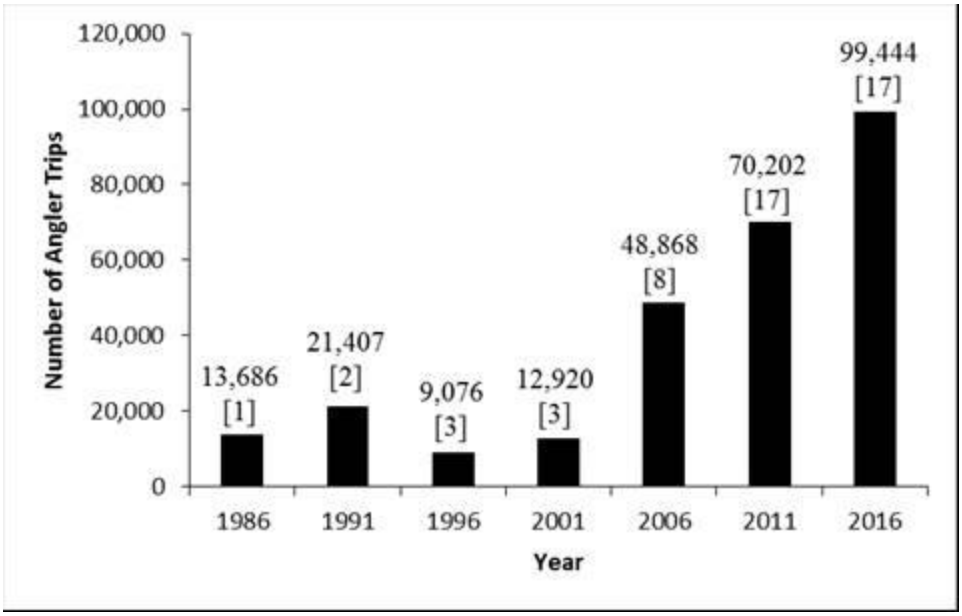

Figure 3. Estimated angler trips to community trout fisheries, 1986-2016. Number of community fisheries in brackets above bars.

Table 8. Rank of community trout fishery in terms of number of angler trips, number of angler trips (± 95% confidence interval), mean trips per angler, and percent of anglers fishing at least once for each fishery and survey year.

Fishery	Rank by year		Number of Angler Trips by year		Mean trips per angler		Percent of anglers fishing at least once	
	2016	2011	2016	2011	2016	2011	2016	2011
Heritage Pond (Dubuque)	1	4	13,260 (36)	6,571 (12)	6.0	4.2	2.9%	2.5%
Prairie Park Pond (Cedar Rapids)	2	6	9,187 (29)	5,129 (10)	6.0	3.3	2.1%	2.3%
Terry Trueblood Lake (Iowa City)	3	NA	8,583 (22)	NA	5.3	NA	2.4%	NA
Ada Hayden (Ames)	4	5	7,844 (37)	5,156 (31)	4.4	4.2	2.9%	2.5%
Banner Lake South (Sommerset State Park)	5	1	7,244 (29)	7,156 (16)	4.9	5.0	4.0%	5.1%
Greater Ottumwa Park Pond (Ottumwa)	6	8	6,239 (17)	5,011 (40)	12.9	11.2	2.9%	2.8%
Petoka Lake (Bondurant)	7	14	6,219 (14)	2,098 (8)	4.1	2.9	2.9%	1.3%
North Prairie Lake (Cedar Falls)	8	2	5,214 (17)	7,100 (24)	3.2	4.2	2.2%	2.7%
Moorland Park Pond	9	16	5,179 (18)	622 (15)	6.3	3.3	2.6%	0.4%
Wilson Lake (Ft Madison/Burlington)	10	12	4,555 (12)	2,751 (11)	10.6	7.8	2.5%	2.3%
Bacon Creek Lake (Sioux City)	11	9	4,500 (13)	4,495 (13)	10.2	9.6	4.1%	4.0%
Blue Pit (Mason City)	12	11	4,236 (11)	3,189 (11)	5.0	4.1	2.5%	2.6%
Lake of the Hills (Davenport)	13	3	4,155 (15)	7,012 (18)	3.3	5.2	1.7%	2.3%
Scharnberg Park Pond (Spencer)	14	10	4,124 (8)	3,675 (14)	7.0	7.2	5.0%	4.5%
Sand Lake (Marshalltown)	15	NA	3,332 (24)	NA	5.4	NA	0.9%	NA
Big Lake Park (Council Bluffs)	16	15	2,839 (6)	1,966 (9)	8.2	7.2	2.9%	2.3%
Discovery Park Pond (Muscatine)	17	13	2,734 (14)	2,602 (12)	3.6	3.8	1.2%	1.2%
DMACC Pond (Ankeny)	NA	7	NA	5,084 (15)	NA	4.4	NA	2.5%
Copper Creek Lake (Pleasant Hill)	NA	17	NA	579 (9)	NA	3.3	NA	0.5%

In previous surveys, anglers were asked if they fished only the community/urban trout fisheries. Those individuals who answered yes made up 3.5% of all trout anglers in 2001, 1.5% in 1996 and 6.0% in 1991. In the 2006 and 2011 survey, a

similar question was asked; “Did you (the angler) purchased your trout privilege specifically for a community trout fishery?” Those answering yes comprised 26% of respondents in 2006, 32% in 2011, and 30% in 2016 (Table 9).

Table 9. Percent of anglers that specifically purchased a trout fee for a community trout fishery.

	Year		
	2006	**2011**	**2016**
Yes	26	32	30
No	84	68	70

Estimated number of angling trips to trout fisheries with restrictive regulations (i.e., length limits or catch and release regulations) decreased from 2001 to 2011 and then increased in 2016 while the number of streams with restrictive regulations has increased by one during this same time period (Figure 4). A total of 28,920 angler trips (4.0% of all trips) were taken to restrictive regulation streams in 2016 whereas 30,304 angler trips (5.3% of all trips) were made in 2006, compared to 53,388 trips (14.3% of all trips) in 2001 (Table 10). Streams with restrictive regulations receiving the most visits were Waterloo (6,879 trips), Bloody Run (5,831 trips), French (5,325 trips) and Spring Branch (4,409 trips) in 2016. South Pine, a remote brook trout stream with difficult angler access, still received over 1,300 angler trips. Most (5 of 7) restrictive regulation streams decreased in usage 2001to 2011 whereas all restrictive regulation streams increased in usage during the 2016 survey period. The number of trips to the restrictive regulation portion of Waterloo Creek increased over 2,000 trips. It should be noted that French Creek had special regulations only on the upper portion during the 1986 through 1996 survey years, while the entire stream was under special regulations for the 2001 through 2016 surveys. Trout anglers were asked to rate their satisfaction with the amount of special (restrictive) regulations on trout streams in the 2016 survey on a scale of 1 to 10. The scale indicated a rating of 1 was very dissatisfied and a rating of 10 was very satisfied. Trout anglers indicated they are satisfied to very satisfied with the amount of restrictive regulations on trout streams as 65% rated this question a 7 or higher (Figure 5). The mean rating from trout anglers on special regulations was 7.2 and the median was 8.

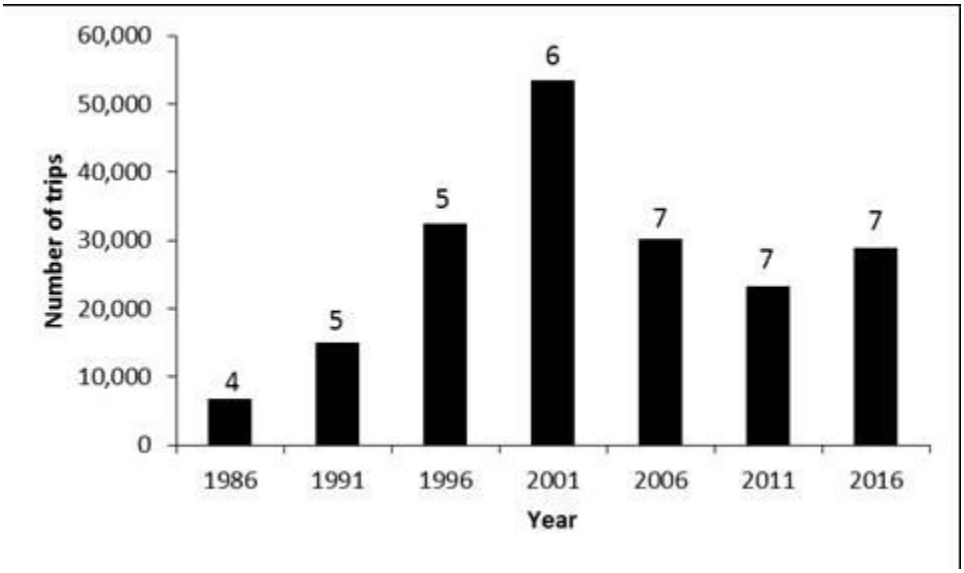

Figure 4. Estimated number of trips to trout fisheries with restrictive regulations, 1986-2016. Number above bar is the number of fisheries with restrictive regulations.

Table 10. Estimated number of trips to the trout fisheries with restrictive regulations, 1986 to 2016.

	Year						
	1986	**1991**	**1996**	**2001**	**2006**	**2011**	**2016**
Waterloo	--	--	--	10,406	8,268	4,909	6,879
Bloody Run	2,093	1,939	8,889	9,746	4,087	4,548	5,831
French*	743	1,939	8,268	15,275	6,525	5,311	5,325
Spring Branch	3,848	8,727	13,552	14,867	5,728	3,673	4,409
Ensign Hollow	--	1,566	932	2,185	1,980	2,477	2,574
McCloud Run	--	--	--	--	2,209	1,062	2,574
South Pine	--	--	808	909	1,507	1,247	1,328
Upper Swiss Valley	--	820	--	--	--	--	--
South Fork Big Mill	67	--	--	--	--	--	--
Total	6,751	14,991	32,449	53,388	30,304	23,227	28,920
% of Total Trips	1.3	3.1	6.1	14.3	5.3	4.0	4.0

*Only upper portion under special regulation 1986-1996, entire stream under special regulation 2001-2016

Anglers made an estimated 64,967 angling trips to 28 put-and-grow (fingerling stocked) streams in 2016, up almost 10,000 trips compared to 2011 (Table 11). This is a large increase compared to the 1975 to 2001 surveys when there were only 6 put-and-grow streams available to anglers. The mean number of trips per angler to put-and-grow streams averaged 3.2 trips from 1975 through 2011 and was 2.9 trips per angler in 2016.

Harvest, and/or catch-and-release, is an important component of any fishery and was addressed with the following question in the surveys from 1996 through 2016, “Of the trout you caught, which describes the number released?” Responses were similar to those of the 2006 and 2011 surveys, with the main differences being an increase in those anglers releasing all fish, and a decrease in those releasing “some” of their trout (Table 12). The percent of anglers releasing “none”, “about half”, and “most” of their trout was 15-17% for each category. Analysis by geographic zone showed that non-residents are likely to release “all” or “most” of their trout.

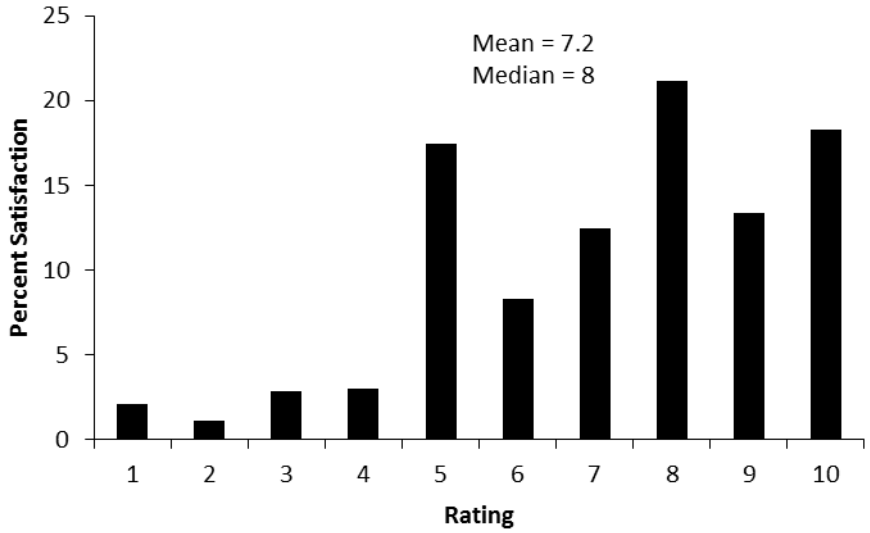

Figure 5. 2016 trout angler satisfaction rating of with the amount of special (restrictive) regulations on trout streams. 1=very dissatisfied, 10=very satisfied.

Table 11. Put-and-grow trout stream statistics, 1975 to 2016.

	Year								
	1975	**1980**	**1986**	**1991**	**1996**	**2001**	**2006**	**2011**	**2016**
N angler trips	2,041	N/A	3,563	1,128	3,605	4,314	53,909	56,959	64,967
Mean trips per angler	6.3	--	3.2	2.5	2.5	3.0	3.2	2.3	2.9

Table 12. Relative number of trout released for each category of release by successful anglers (in percent), 1996-2016.

Number Released	Year				
	1996	**2001**	**2006**	**2011**	**2016**
None	24	14	17	17	15
Some	24	22	33	32	27
About half	24	17	19	17	17
Most	17	20	15	17	17
All	11	27	16	17	24

Many anglers use a combination of bait, lures and flies while fishing for trout and interviewees in 1991 and 2001 through 2016 surveys were asked to identify the type of terminal tackle they primarily used (Table 13). The 2016 survey responses were similar to those of the 2006 and 2011 surveys with 41% of the anglers primarily using bait compared to 1991 when 60% of anglers reported using bait. The percent of anglers primarily using flies increased from 15% in 2006 and 2011 to 20% in 2016. Analysis of responses by geographic zone showed no differences.

Table 13. Percent type of terminal tackle primarily used, 1991 to 2016.

	Year				
	1991	**2001**	**2006**	**2011**	**2016**
Bait	60	43	48	47	41
Artificial lures	33	31	37	38	39
Flies	7	26	15	15	20

Surveys from 1975 through 1991 asked anglers, yes or no, “are you satisfied with the quality of trout fishing in Iowa?” Responses indicated favorable levels of satisfaction with the quality of trout fishing in Iowa (Table 14). The 2006, 2011 and 2016 surveys changed the question to be quantifiable, and asked anglers to rate their level of satisfaction with the trout program on a scale of 1 to 10. The scale indicated that a rating of 1 was very dissatisfied, and a rating of 10 was very satisfied. Similar to previous surveys, trout anglers are very satisfied with this program (Figure 6). The 2016 mean and median rating from all trout anglers on trout program satisfaction was 8.0, identical to 2011 survey ratings.

Table 14. Percent angler response to whether they are satisfied with the quality of trout fishing in Iowa, 1975 to 2001.

	Year					
	1975	**1980**	**1986**	**1991**	**1996***	**2001****
Satisfied	74	85	90	89	93	95
Not satisfied	26	15	10	11	7	5

*An additional three responses (out of 453 total) responded, “No opinion.”

**An additional nine responses (out of 428 total) responded, “No opinion.”

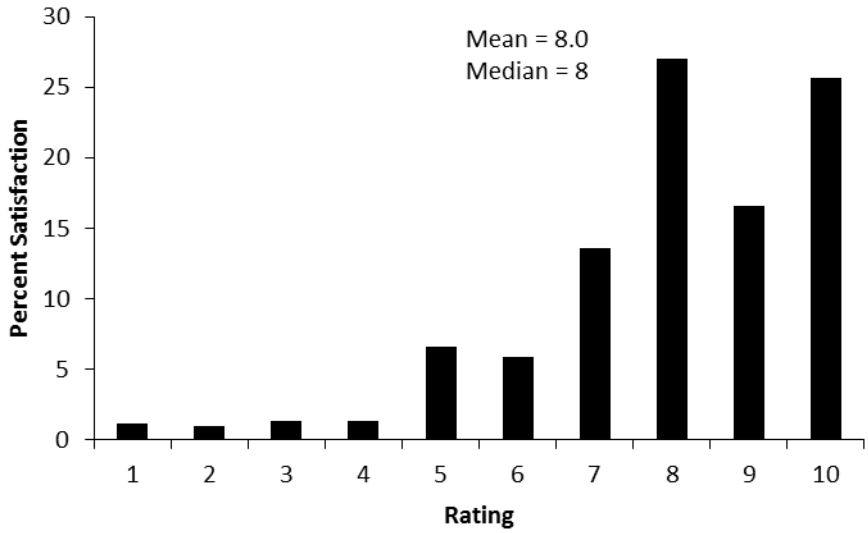

Figure 6. 2016 trout angler satisfaction rating of the trout program. 1=very dissatisfied, 10=very satisfied.

Trout anglers were asked to rate their satisfaction with the amount of public access trout streams in the 2016 survey on a scale of 1 to 10. The scale indicated a rating of 1 was very dissatisfied and a rating of 10 was very satisfied. Trout anglers indicated they are satisfied to very satisfied with the amount of public access to trout streams as 71% rated this question a 7 or higher (Figure 7). The mean rating from trout anglers on the amount of public access was 7.5 and the median was 8.

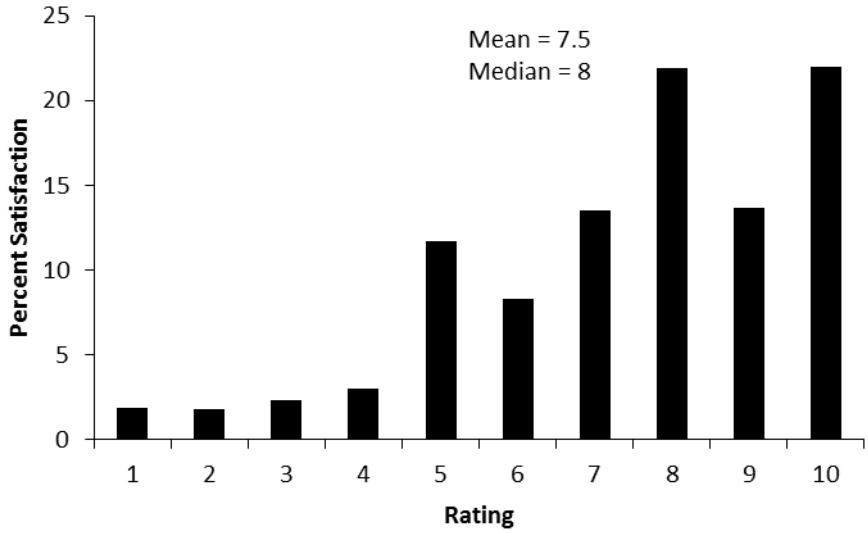

Figure 7. Trout angler satisfaction rating of the amount of public access to trout streams. 1=very dissatisfied, 10=very satisfied.

Angler responses to questions regarding the published stocking schedule were examined geographically (Appendix B). Anglers from northeast Iowa's trout region, as well as non-resident trout anglers had similar responses whereas anglers in east central and north central Iowa, bordering trout country, had similar responses. Regions that had stockings associated with community trout fisheries used the stocking schedule in similar ways (Table 15). Trout Region anglers were least likely to check the announced stocking schedule (39%) whereas anglers in areas with only community trout fisheries were most likely to check the stocking schedule (58%). Anglers who do check the stocking schedule generally use this information to fish the stocked water body (72%-84%). Most anglers are satisfied with the current amount of announced stocking (59%-67%).

Table 15. Angler perceptions of trout stocking announcements for residents and nonresidents grouped by geographic region, in 2016. Trout region = Northeast Iowa.

Question	Trout Region	Trout Border Regions	Winter Trout Only	Statewide
Answer NO to checking stocking schedule prior to fishing	61%	50%	42%	52%
Answer YES to checking stocking schedule prior to fishing	39%	50%	58%	48%
Those answering YES, then use information to fish streams being stocked	72%	76%	84%	75%
Those answering YES, then use information to avoid streams being stocked	28%	24%	16%	25%
Prefer stocking announcements be increased	17%	20%	24%	18%
Prefer stocking announcements stay the same	59%	62%	67%	63%
Prefer stocking announcements be reduced	24%	18%	9%	19%

Trout anglers were asked about their preferences regarding fishing at catchable stocked trout streams. Fishing at unstocked streams or put-and-grow streams are least preferred (Table 16). The most preferred options are to fish streams with unannounced stocking, or to fish a stream with announced stocking, but not fish it at the time of stocking.

Table 16. Trout angler preference regarding fishing at catchable stocked trout streams. 1 = least preferred, 4 = most preferred.

Question	Weighted Average Rank
I prefer to fish trout streams/lakes with announced stockings and fish at or near when the trout are stocked.	1.5
I prefer to fish trout streams/lakes with announced stockings but do not fish at or near the time when trout are stocked.	1.9
I prefer to fish trout streams with unannounced stockings.	1.9
I prefer to fish trout streams that are not stocked or are not stocked with catchable-sized trout (put and grow streams).	0.8

Trout anglers were asked to rank (1 to 4 with 1 being the most preferred fishery) which of the following trout stream fisheries they would prefer to fish; Fishery A is a low density trout population with some trophy (>16”) fish with catch rates likely low, but there is a chance that a trophy may be caught; Fishery B has a high density trout population without any large trout but catch rates are likely high with little chance that a trout larger than 10” will be caught; Fishery C is well stocked with trout and if you get there early you are likely to catch a limit of trout quickly; or Fishery D is well stocked with trout and harvest is not allowed so you are likely to catch a lot of trout no matter when you go but you cannot take any of these trout home with you. Responses were similar between Fisheries A, B and C and Fishery D was the least preferred (Figure 8).

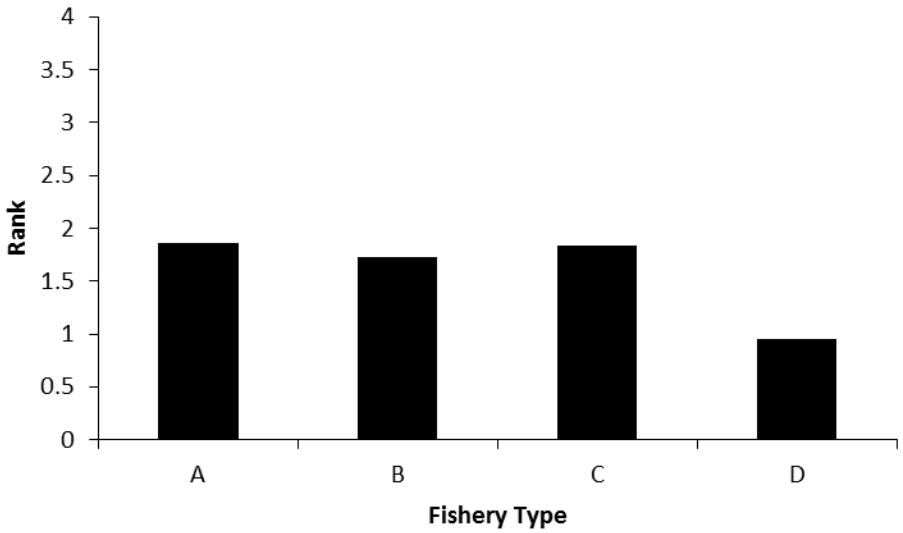

Figure 8. Trout angler preference of various types of fisheries. Fishery A has a low density trout population with some trophy (>16") fish, catch rates are likely to be low, but there is a chance that a trophy may be caught; Fishery B has a high density trout population without any large trout, catch rates are likely to be high, but there is little chance that a trout larger than 10" will be caught; Fishery C is well stocked with trout and if you get there early you are likely to catch a limit of trout quickly; or Fishery D is well stocked with trout and harvest is not allowed, you are likely to catch a lot of trout no matter when you go, but you cannot take any of these trout home with you. 1=most preferred, 4=least preferred.

Trout anglers were asked if they prefer to catch, Brook, Brown, Rainbow, or any species of trout. Most anglers (70%) have no species preference and they simply want trout to catch (Figure 9). Anglers that do have a species preference prefer brown trout (13%) and rainbow trout (11%) more than brook trout (6%).

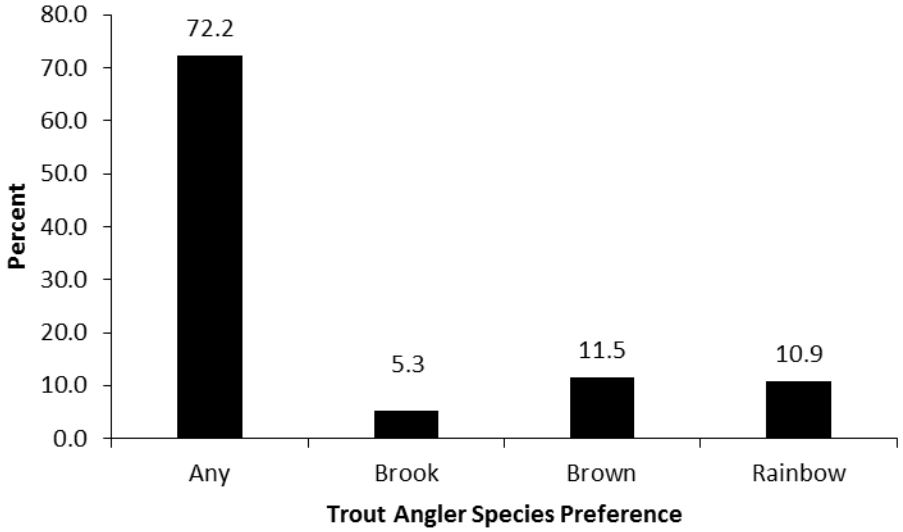

Figure 9. Trout species anglers prefer to catch by percent.

Trout anglers were asked to rank various amenities or features when considering where to go trout fishing (Figure 10). The most important aspects of the fishing experience are areas with good access, are close to home, have few other anglers, are in a wild/scenic area, the number of trout they catch, the size of trout they catch, and catching trout to eat. Amenities that were rated least important were having a playground available, if a family fishing event was occurring, if camping was available, and if restrooms were available. Further investigation to determine if gender or location influenced these responses showed insignificant differences from the weighted averages displayed in Figure 10.

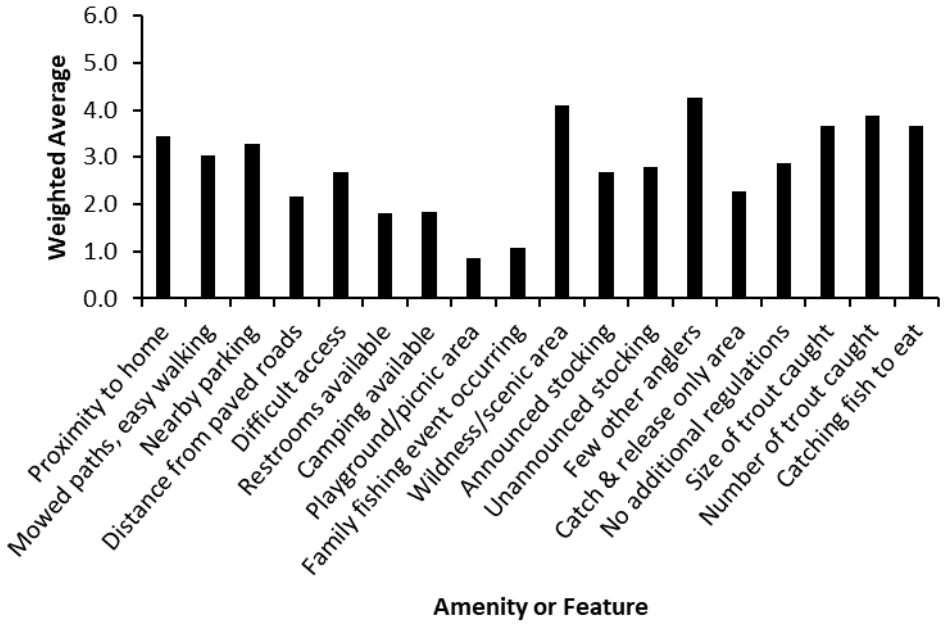

Figure 10. Trout angler rating (1 to 6) the importance of amenities and features when considering where to go fishing. 0 = not at all important, 6 = very important.

Trout anglers were asked to report the number of days fished each month. Highest fishing pressure occurred April through October with May having the overall highest fishing activity (Figure 11). Regional data indicates that western Iowa anglers are utilizing community trout stockings in the winter months, while the remaining areas of the state follow the overall trend of spring through fall fishing.

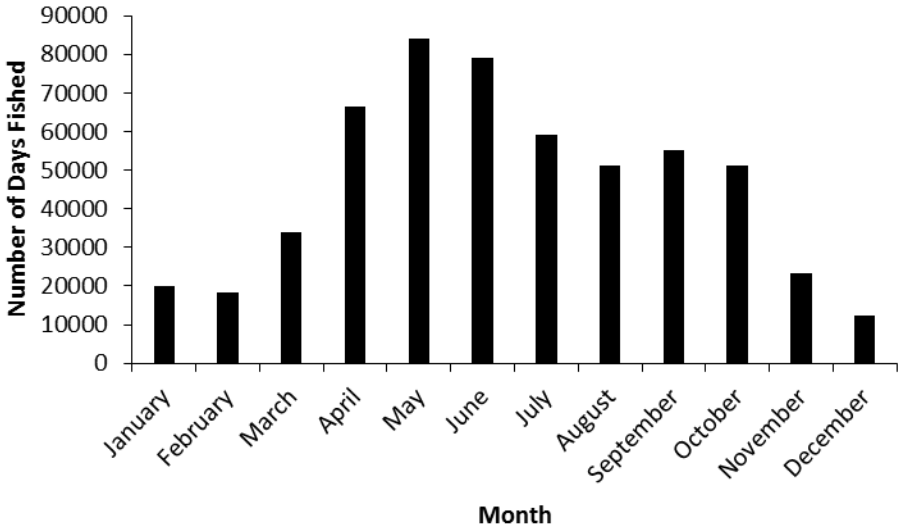

Figure 11. Number of days Iowa trout anglers fished by month.

One factor that may contribute to angler use and satisfaction is the number of streams that support natural reproduction of trout. The number streams supporting some form of trout natural reproduction has increased from five streams in 1985 to 78 streams in 2016 (Figure 12). No stocking is needed on streams with consistent reproduction to maintain a fishable trout population.

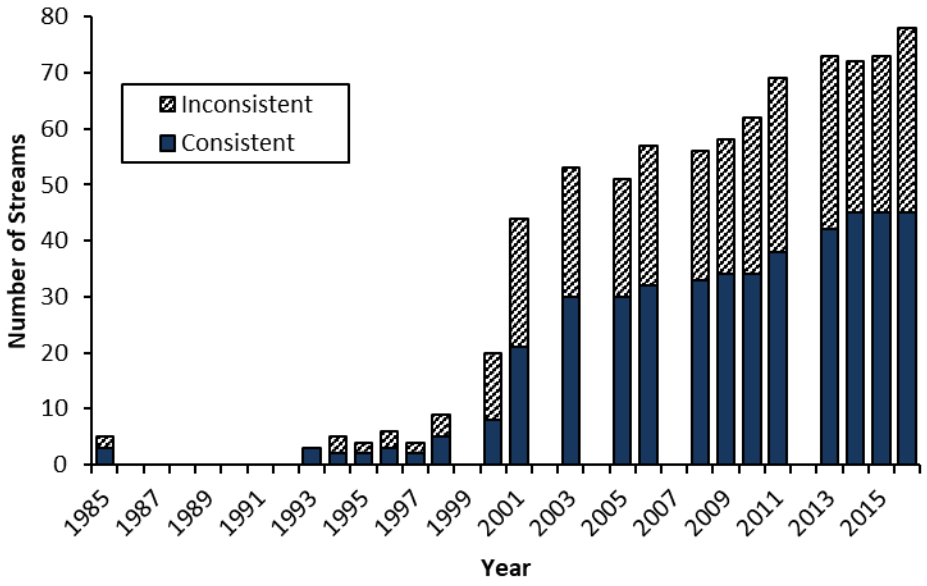

Figure 12. Iowa streams supporting natural reproduction of trout.

DISCUSSION

It stands to reason that the counties with the greatest populations (Appendix C) would purchase the greatest number of trout fees (Appendix B). However, western Iowa counties with large populations still had low numbers of trout fee purchases, even though increased opportunities are available nearby via community trout fisheries. All 17 community trout fisheries are located within 15 miles of at least one of the 26 major cities in Iowa except Clinton and Newton, thus helping bolster trout privilege sales in urban counties. Winneshiek County is the lone exception likely due to its location in the heart of trout stream country.

Gender and age differences of trout privilege purchasers have changed little over time (Table 1 and Table 2). Notably, only 16.9% of anglers were female, which is disproportionately small compared to the number of females in Iowa's population (50%). This continues to be a potential marketing area to focus on for trout fee sales and fishing license sales. An example is the Diversity Initiative started by Trout Unlimited (TU) that is focused on increasing female membership because in 2016, the Recreational Boating and Fishing Foundation cited that 34.4% of freshwater anglers are women, while women make up only 6% of the TU membership (Trout Unlimited 2018).

Trout anglers spent more days fishing and took more trips in 2016 than in any other survey year (Table 3 and Table 5). In addition, 2016 accounted for the highest number of trout fees sold (46,604) since 1970 (Figure 1). Record sales of trout fees may be a result of several internal factors including hatchery production and stocking of a quality product by hatchery staff, development of diverse trout angling opportunities (i.e., catchable stocking, put-and-grow, restrictive regulations, and community fisheries) continued increases in the number of streams with natural reproduction and continued popularity of community fisheries and corresponding family fishing events. External factors impacting sales may also include increased fishing during slow economic periods, especially when construction and housing starts diminish. Construction trades are a top occupation for anglers nationwide (Responsive Management 2013) and construction activity fell throughout Iowa in 2016 (Iowa Economy at a Glance 2018). This increase in free time may have influenced the increase in trout fishing activities and license sales in 2016.

As noted in the results, the rank of streams based on the number of angler trips changes each survey year (Table 6). Changes in the rank of streams and in the estimated number of trips taken to individual streams from the 2006, 2011and 2016 surveys should be viewed in light of the survey methodology changes that occurred during those time frames. Results indicate that less than 20% of streams had mean number of estimated trips in 2016 and 2011 that lied outside of the range of values (mean ± confidence interval) from the 2006 surveys. The changes in survey methodology have resulted in more reliable estimates and tighter confidence intervals. Changes in stream ranks based on angling trips may be a result of more streams with improved trout populations. Factors contributing to these improvements may include

changes in the stocking of catchable-sized fish, watershed improvement, riparian corridor management, bank stabilization, instream habitat restoration, wild fingerling stocking and increased natural reproduction. The number of high quality streams has continually increased over the last 20 years and anglers are able to experience quality fishing at many areas in Northeast Iowa.

A substantial increase in angler trips to put-and-grow streams occurred from 2001 to 2006 due to the increase in the number of put-and-grow streams in the program (Table 6). Angler trips to these streams increased again from 2011 to 2016 as the total number of trout anglers continue to increase and these new anglers expand their search for new trout water. The number of angler trips to put-and-grow streams is a very small (9% of total trips) proportion of the total stream trips, likely due to the increase in the number of streams with quality trout populations during this same time period, and the effort anglers must go through to find the landowners and ascertain permission prior to fishing (Table 11).

The number of anglers purchasing trout fees specifically for community/urban trout fisheries (30%, Table 9), and the large increase of almost 30,000 trips to community trout fisheries (Table 7), is likely a continued result of the new community trout fisheries that were developed between 2001 and 2011. The community trout program was expanded from 3 fisheries in 2001 to 8 fisheries 2006 and to 17 fisheries in 2011 (Figure 2). Additional opportunities for anglers to catch trout in urban areas increased the number of trips to community fisheries from 12,920 in 2001 to 48,868 in 2006 and to 70,202 in 2011. While 30% of trout anglers in this survey purchased a trout fee specifically for a community trout fishery, this is less than the 48% of trout anglers in the 2008 Iowa Angler Survey who said they purchased a trout stamp specifically for an urban fishery. Another factor that contributes to the increase in angler trips to community fisheries is the promotion of the stocking events by DNR Communications staff and the promotion of the family fishing events by our city and county partners. Strengthening these partnerships and promoting these fisheries may continue to increase use of these fisheries. Even though 30% of trout privilege purchasers specifically purchased a trout privilege for a community trout fishery (Table 9), only 14% of the trout angling trips were to community trout fisheries. The fact that 70% of trout anglers take 86% of trips to streams indicate that this groups is likely more dedicated to their sport. However, the fact that the smaller community trout program accounts for 30% of privilege sales indicates that program has a very high return on investment and might be teaching anglers about trout so they can eventually take these skills to trout streams in Northeast Iowa.

An increase in the angler trips to restrictive regulation streams occurred from 2011 (23,227) to 2016 (28,920) yet is well below the high that occurred in 2001 (53,388) (Table 10). Angler trips to restrictive regulation streams are an even smaller proportion (4%) of the total stream trips when compared to the put-and-grow fisheries (9%). Surveyed anglers are satisfied with the amount of restrictive regulation streams (Median=8; Figure 5) and the decrease from 2001 in angler trips to streams with restrictive regulations is likely due to the increase in the number of streams with quality trout populations regardless of if the streams have restrictive regulations or not. Restrictive regulations include artificial lures only and either a 14-inch minimum size limit (2 streams) or catch and release only (5 streams; no harvest). Trout anglers were asked to rank four different types of fisheries in terms of catch rates, size of trout caught, and harvest (Figure 8). They equally preferred to fish streams with high catch rates regardless of fish size and streams with an opportunity to catch a trophy. Trout anglers least preferred to fish streams where they could not harvest the fish. Similarly anglers were asked to rank various amenities or features when considering where to go fishing and three aspects pertaining to catch and harvest that ranked high were the number of trout they catch, the size of trout they catch and catching trout to eat (Figure 10). Since trout anglers take only 4% of the total trips to restrictive regulation streams, they are satisfied with the number of restrictive regulation streams, and they prefer to fish streams where harvest can occur suggests that the Iowa Trout Program has a sufficient number of special regulation streams at this time.

The proportion of trout released by successful anglers hasn't changed much in the last 25 years (Table 12). Interestingly, the number of anglers releasing all trout they catch increased from 17% to 24% and analysis by geographic zone indicated that non-residents are likely to release "all" or "most" of their trout. Non-residents traveling to Iowa to fish trout are less likely to have cold storage available for their catch so are more likely to release their fish. Roughly 58% of trout anglers released half or more of their trout (Table 12), which was an increase from 50% in 2006 and 51% in 2011. Interestingly, 66% of trout anglers in the 2007 Iowa Statewide Angler Survey indicated they release about half or more

of their trout (Responsive Management 2008). The entire statewide angler survey included only 1,600 survey responses, and only 400 from northeast Iowa. This discrepancy is likely due to the limited data for the statewide survey, versus the more comprehensive nature of the trout angler survey. The number of trout anglers using bait decreased from 47% in 2011 to 40% in 2016.

Overall angler satisfaction with the quality of the trout program and the amount of public angler access is high. Past surveys on angler satisfaction with the trout program that asked yes or no, are you satisfied with the quality of trout fishing in Iowa indicated a 95% satisfaction rate. The current rating scale used in the 2006, 2011 and 2016 surveys give a more accurate measure of satisfaction where a rating of 1 was very dissatisfied, and a 10 was very satisfied. The most recent survey suggest that 83% of trout fee purchasers are satisfied with the program, rating satisfaction with the overall program a 7 or higher and 71% of the respondents rating satisfaction with angler access a 7 or higher and is similar to the previous two survey years (Figure 6 and Figure 7).

A series of three questions was asked of online survey respondents regarding trout stocking announcements. Anglers who most relied on stocking announcements live in areas where community trout fisheries are stocked only twice per year. Anglers residing in areas with trout streams, and close proximity non-residents, check the stocking calendar the least (Table 15). Also, anglers from the trout stream region are more likely to avoid streams that were recently stocked. While the majority of anglers prefer that the stocking calendar remain the same, anglers from the trout zone would rather see fewer announced trout stockings. Anglers also preferred to fish streams with unannounced stockings, or to fish a stream with announced stockings, but not at the time of stocking (Table 16). This information, combined with the budgetary issues associated with maintaining a rigid stocking schedule, could be used to justify reducing the number of announced trout stockings on northeast Iowa streams.

Anglers were asked which species of trout they prefer to catch to assist managers with stocking and hatchery production decisions. Trout program staff opinions varied widely on what trout species they thought anglers preferred to catch. Most anglers (70%) have no species preference and just want trout to catch (Figure 9). Anglers that have a species preference, although relatively low, prefer brown trout (13%) and rainbow trout (11%) more than brook trout (6%). This may be because anglers just want trout to catch, and/or studies have found that anglers have a hard time correctly identifying the fish they catch (Reed 2011, Page et al. 2012). To assist Iowa anglers in trout species identification, trout species photos are shown in the Iowa DNR Fishing Regulation booklet.

In order to better serve our trout anglers, we asked them to rank eighteen various amenities or features that could be added or improved at public trout streams (Figure 10). Trout anglers preferred areas wild/scenic areas with few other anglers where they could catch fish, and it would be nice if that were close to home. The least important amenities were having a playground available, if a family fishing event was occurring, if camping was available and if restrooms were available, and there were no gender biases in these results. An opinion survey of Iowa residents on outdoor recreation found that desired fishing amenities with a rating on a scale of 0 to 10, where 0 is not at all important and 10 is extremely important were safe locations (8.8 mean rating), parking (7.8), and pedestrian access (7.7), picnic areas. Five amenities with mean ratings from 6.4 to 6.8 were bathrooms, ADA-accessible facilities, shade trees near fishing access and river access (Responsive Management 2018). The disparity in these responses may indicate that we are not enticing the broader Iowa audience of non-fishing outdoor recreationalists with the community trout fishing program. Previous investigations showed that the community trout fishing program created very few “new” anglers, but instead recruited existing local anglers to trout fishing (Iowa DNR, unpublished data). Recruiting new anglers, including underrepresented female anglers and younger participants, could be enhanced by increasing some of these amenities at our trout fishing accesses, and improving outreach efforts.

Knowing when anglers are fishing allows trout program staff to be efficient with production and stocking. The highest fishing pressure occurs April through October which encompasses the same months that the majority of streams are stocked with catchable sized trout and the weather is the nicest (Figure 11). The overall highest pressure months are May and June, similar to other fisheries in Iowa (Hawkins and Shoo 2015; Hawkins 2016; Wallace and Mork 2016).

Additional comments were received from many survey respondents. Increased angler access, continued stocking and more improved habitat would like to be seen by respondents. Many anglers also commented that an increased presence

of law enforcement is needed at all trout fisheries. Increased angler access and improved instream fish habitat is a priority for the Trout Program and is completed as budgets allow. Trout anglers continue to see stocking as the solution to catching trout even with increased natural reproduction in Iowa streams, improved natural fish populations and sustained catchable stocking levels since 2008 (Figure 12; Iowa DNR unpublished data). This shows that the Trout Program should continue to educate trout anglers on the importance of water quality/watershed, instream habitat, bank stabilization and riparian corridor improvement to trout populations and that quality wild populations of brown and/or brook trout are available for anglers to catch without the stocking of catchable sized trout.

Significant increases in both trout angler satisfaction and the number of streams that have brown and/or brook trout populations supported solely by natural reproduction since 1985, are strong evidence that the trout program is thriving and growing amidst change (Figure 12). It is impossible to identify specifically which factors have caused specific increases, and, to what degree. It is likely a combination of the following factors that have contributed significantly: 1) in-stream and corridor habitat improvement on public and private trout stream lands, 2) providing a diversity of trout fishing opportunities for anglers to choose from, 3) production of high quality trout stocks by the trout hatcheries, 4) land acquisition or easements of quality trout stream lands, 5) stocking of wild strains of brown and brook trout fingerlings in selected streams, and, 6) an increase in the number of trout stream watershed initiatives and farm program components that are designed to improve water quality. All trout program staff and administrators should continue to place emphasis on maintaining and improving these initiatives.

There are many challenges on the horizon for trout fisheries in Iowa. The expiration of continuous sign up conservation reserve program (CRP) incentives may have a detrimental effect on the improvements to the public trout streams that have been made over the last thirty years. The magnitude of the loss of CRP in the watersheds of Iowa's coldwater trout streams will contribute to the decrease in water quality, instream habitat and trout natural reproduction. Best management practices on public and private trout streams should be expanded and at a minimum, continued at the current level.

RECOMMENDATIONS

1. Continue to place a high priority on the implementation of habitat improvement projects on both private and public trout waters.
2. Continue to protect coldwater resources on private lands through conservation easements.
3. Continue to place emphasis on: a) the number of trout stream watershed initiatives and farm program components that are designed to improve water quality and fish habitat, b) in-stream and riparian corridor habitat improvement on public and private trout stream lands, c) land acquisition or easements of quality trout stream lands, d) production of high quality trout stocks by trout hatcheries, e) stocking of wild strains of brown and brook trout fingerlings in selected streams, f) providing a diversity of trout fishing opportunities.
4. Continue to evaluate the success of restrictive regulation trout fisheries with an emphasis on locating these opportunities geographically throughout the coldwater region.
5. Continue to evaluate reducing the number of catchable trout produced and stocked on a stream by stream basis, making reductions or additions according to angler use and attitudes as well as trout natural reproductive success in streams.
6. Continue to evaluate the success and location of community trout fisheries to recruit and retain trout anglers. Also, evaluate if anglers recruited by community trout fisheries participate in other trout fishing opportunities.
7. Investigate recruiting new trout anglers, including underrepresented female anglers and younger participants, through enhanced amenities at our trout fishing accesses. Also investigate improving outreach efforts targeted at those groups.
8. Continue an increased presence of law enforcement to reduce violations of trout fishing regulations.
9. Conduct a similar trout angler survey for calendar year 2021.

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- Boone Wildlife Research Station Staff

APPENDIX A. 2016 IOWA TROUT ANGLER SURVEY.

2016 Iowa Trout Angler Survey

1. In all of 2016, how many days did you spend trout fishing in Iowa?

Please enter a number

2. Did you purchase a trout stamp specifically for an urban area trout fishery?

◯ Yes ◯ No

3. Do you check the stocking schedule prior to going trout fishing?

◯ Yes ◯ No (if No, skip to Question 6.)

4. Do you use this information to:

◯ fish a stocked stream/lake, or ◯ avoid a stream/lake the day of stocking?

5. Historically, hatcheries have announced the day of stocking for many trout streams. Would you like to see these announced stream stockings: (select only one)

◯ Decreased ◯ Stay the Same ◯ Increased

6. Which of the following trout stream fisheries would you prefer to fish (rank these from 1 to 4 in order of your preference, with 1 being your most preferred option)?

- Fishery A has a low density trout population with some trophy (>16") fish, catch rates are likely to be low, but there is a chance that a trophy may be caught
- Fishery B has a high density trout population without any large trout, catch rates are likely to be high, but there is little chance that a trout larger than 10" will be caught
- Fishery C is well stocked with trout and if you get there early you are likely to catch a limit of trout quickly
- Fishery D is well stocked with trout and harvest is not allowed, you are likely to catch a lot of trout no matter when you go, but you cannot take any of these trout home with you

7. Overall, on a scale of 1 to 10, how satisfied are you with:

	Very dissatisfied 1	2	3	4	5	6	7	8	9	Very satisfied 10
The trout program?	○	○	○	○	○	○	○	○	○	○
The amount of public access to trout streams?	○	○	○	○	○	○	○	○	○	○
The number of special regulations on trout streams?	○	○	○	○	○	○	○	○	○	○

8. Of all the trout you caught in 2016, which of the following words best describes the number you released?

◯ None ◯ Some ◯ About half ◯ Most ◯ All

9. What do you primarily use to fish for trout: bait, artificial lures or flies? (Select only one)

◯ Bait ◯ Artificial Lures ◯ Flies

10. What best describes your preference regarding trout species found in Iowa (choose only one)?

◯ I do not care what kind of trout I catch as long as I have trout to catch

◯ I prefer to catch brook trout

◯ I prefer to catch brown trout

◯ I prefer to catch rainbow trout

11. Overall, on a scale of 0 to 6, rate the importance of the following amenities/features when considering where to go trout fishing?

	Not at all important 0	1	2	3	4	5	Very important 6
Access: Proximity to home	○	○	○	○	○	○	○
Mowed paths, easy walking	○	○	○	○	○	○	○
Nearby parking	○	○	○	○	○	○	○
Distance from paved roads	○	○	○	○	○	○	○
Difficult access	○	○	○	○	○	○	○
Amenities: Restrooms available	○	○	○	○	○	○	○
Camping available	○	○	○	○	○	○	○
Playground/picnic area	○	○	○	○	○	○	○
Family fishing event occurring	○	○	○	○	○	○	○
Wildness/scenic area	○	○	○	○	○	○	○
Fishing: Announced stocking	○	○	○	○	○	○	○
Unannounced stocking	○	○	○	○	○	○	○
Few other anglers	○	○	○	○	○	○	○
Catch & release only area	○	○	○	○	○	○	○
No additional regulations	○	○	○	○	○	○	○
Size of trout caught	○	○	○	○	○	○	○
Number of trout caught	○	○	○	○	○	○	○
Catching fish to eat	○	○	○	○	○	○	○

12. Which of the following best describes your preference regarding stocking catchable-sized trout (rank these from 1 to 4 in order of your preference, with 1 being your most preferred option)?

	I prefer to fish trout streams/lakes with announced stockings **and** fish at or near when the trout are stocked
	I prefer to fish trout streams/lakes with announced stockings **but** do not fish at or near the time when trout are stocked
	I prefer to fish trout streams with unannounced stockings
	I prefer to fish trout streams that are not stocked or are not stocked or are not stocked with catchable-sized trout (put and grow streams)

For the next question, please use whole numbers to indicate how many days you fished in each month of the year. If you fished more than one stream/lake in one day, that would just be a "1" for that day. Also, if you only fished for a few hours, that would also be "1" day. Add up your total days for your monthly totals.

13. Indicate the number of days you spent trout fishing in each month of the year.

January

February

March

April

May

June

July

August

September

October

November

December

For the next few questions, please use whole numbers to indicate how many days you fished at each place. Days simply means the number of times you fished at each stream/lake. If you fished more than one stream/lake in one day, each of those streams/lakes would get a "1" for that day. Also, if you only fished for a few hours, that would also be "1" day.

14. Indicate the number of days you fished for trout at each urban trout lake in 2016.

Ada Hayden Lake (Ames)

Bacon Creek Lake (Sioux City)

Banner Lake South at Summerset State Park

Big Lake Park (East and West Lakes)(Council Bluffs)

Blue Pit (Mason City)

Discovery Park Pond (Muscatine)

Greater Ottumwa Park Pond (Ottumwa)

Heritage Pond (Dubuque)

Lake of the Hills, West Lake Park (Davenport)

Moorland Park Pond (Ft. Dodge)

North Prairie Lake (Cedar Falls)

Petoka Lake (Bondurant)

Prairie Park Pond (Cedar Rapids)

Sand Lake (Marshalltown)

Scharnberg Park Pond (Spencer)

Terry Trueblood Lake (Iowa City)

Wilson Lake (Ft. Madison/Burlington)

2016 Iowa Trout Angler Survey

15. Indicate the number of days you fished each stream or lake in 2016. (Page 1 of 4, streams starting with letters A-E)
*indicates put and grow streams

Bailey's Ford (Delaware Co.) south of Manchester

Bankston (Dubuque Co.) northwest portion of county

*Bear (Clayton Co.) north of Edgewood

Bear (Fayette Co.) north of Arlington

Big Mill (Jackson Co.) west of Bellevue

Bigalk (Howard Co.) north of Cresco

Bloody Run - catchable (Clayton Co.) west of Marquette

Bloody Run - special regulations (Clayton Co.) west of Marquette

Bohemian (Winneshiek Co.) east of Protivin

Brush (Jackson Co.) northeast of Andrew

Buck (Clayton Co.) east of Garnavillo

*Burr Oak (Mitchell Co.) northeast of Osage

*Casey Springs (Winneshiek Co.) north of Decorah

*Clear (Allamakee Co.) east of Dorchester

Clear (Allamakee Co.) near Lansing

Coldwater (Winneshiek Co.) east of Kendallville

Coon (Winneshiek Co.) northeast of Freeport

Dalton Pond (Jackson Co.) east of Preston

*East Pine (Winneshiek Co.) west of Burr Oak

Ensign Hollow - special regulations (Clayton Co.) south of Volga

16. Indicate the number of days you fished each stream or lake in 2016. (Page 2 of 4, streams starting with letters F-M)
*indicates put and grow streams

Fountain Springs (Delaware Co.) northeast of Greeley

French Creek - special regulations (Allamakee Co.) northwest of Lansing

Glovers (Fayette Co.) southeast of West Union

Grannis (Fayette Co.) east of Fayette

*Grimes Hollow (Delaware Co.) east of Colesburg

Hickory (Allamakee Co.) northeast of Luana

Joy Springs (Clayton Co.) west of Strawberry Point

*Little Maquoketa River (Dubuque Co.) near Epworth

Little Mill (Jackson Co.) west of Bellevue

Little Paint (Allamakee Co.) Yellow River State Forest

Little Turkey River (Delaware Co.) east of Colesburg

*Little Turkey River (Delaware Co.) southeast of Colesburg

Maquoketa River (Clayton/Delaware Co.) northwest of Backbone State Park

McLoud Run (Linn Co.) in Cedar Rapids

*Middle Bear (Winneshiek Co.) north of Highlandville

*Miners (Clayton Co.) near Guttenburg

Mink (Fayette Co.) north of Wadena

*Monastery Creek (Dubuque Co.) southwest of Dubuque

Mossy Glen (Clayton Co.) near Strawberry Point

17. Indicate the number of days you fished each stream or lake in 2016.
(Page 3 of 4, streams starting with letters N-S)
*indicates put and grow streams

North Bear (Winneshiek Co.) northeast of Highlandville

*North Canoe (Winneshiek Co.) north of Decorah

*North Cedar (Clayton Co.) southwest of McGregor

Otter (Fayette Co.) west of Elgin

*Ozark Springs (Jackson Co.) north of Canton

Paint - Big (Allamakee Co.) near Waterville

Patterson (Allamakee Co.) northwest of Waukon

*Pine (Allamakee/Winneshiek) east of Satre

*Pine (Winneshiek Co.) north of Bluffton

*Ram Hollow (Delaware Co.) southeast of Colesburg

Richmond Springs (Delaware Co.) in Backbone State Park

Sny Magill (Clayton Co.) south of McGregor

South Bear (Winneshiek Co.) near Highlandville

South Cedar (Clayton Co.) southwest of Garnavillo

*South Fork Big Mill (Jackson Co.) west of Bellevue

South Pine - special regulations (Winneshiek Co.) northeast of Decorah

Spring (Mitchell Co.) west of Orchard

Spring Branch - special regulations (Delaware Co.) southeast of Manchester

*Spring Falls (Delaware Co.) west of Colesburg

Swiss Valley (Dubuque Co.) southwest of Dubuque

18. Indicate the number of days you fished each stream or lake in 2016. (Page 4 of 4, streams starting with letters T-Z)
*indicates put and grow streams

*Teeple (Allamakee Co.) southwest of Waukon

*Ten Mile (Winneshiek Co.) northwest of Decorah

*Tete des Morts (Jackson Co.) near St. Donatus

*tributary to Tete des Morts (Dubuque Co.) near St. Donatus

Trout River (Winneshiek Co.) southeast of Decorah

*Trout Run (Allamakee Co.) southwest of Lansing

Trout Run (Winneshiek Co.) at Decorah Trout Hatchery

Turkey River (Clayton Co.) at Big Spring Hatchery

*Turner (Fayette Co.) near St. Lucas

Turtle (Mitchell Co.) north of St. Ansgar

Twin Bridges (Delaware Co.) west of Colesburg

Twin Springs (Winneshiek Co.) west edge of Decorah

Wapsipinicon River (Mitchell Co.) north of McIntire

Waterloo - catchable (Allamakee Co.) west of Dorchester

Waterloo - special regulations (Allamakee Co.) southeast of Dorchester

West Canoe (Winneshiek Co.) north of Decorah

Wexford (Allamakee Co.) north of Harpers Ferry

*White Pine Hollow (Dubuque Co.) near Luxemburg

*Williams Creek (Allamakee Co.) northwest of Luana

*Yellow River (Allamakee Co.) Postville to mouth

19. If you would like to be sent a verification that you are entered for the drawing, or if you would like a copy of the survey results, please enter your email address in the box provided:

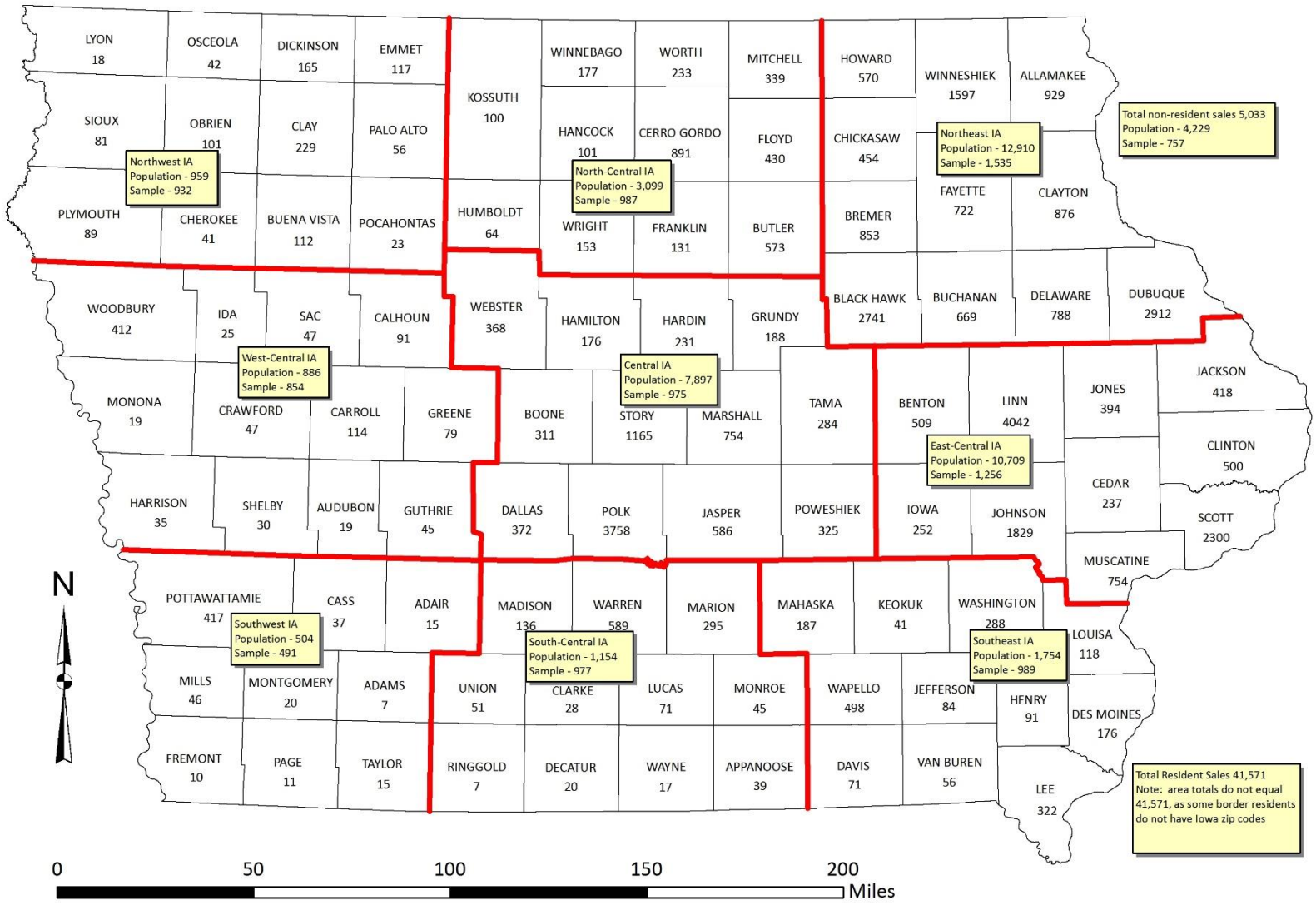
Email address

Verify email address

20. Thank you for completing this survey. If you have any further comments regarding Iowa's trout program, please share them in the comment box below.

Thank you for your participation in this survey, which also enters you into our prize drawing. No purchase or consideration is necessary for entry in the drawing. You may enter by simply clicking the "Done" button below. Rules for the drawing are available at www.iowadnr.gov/troutsurveycontestrules

APPENDIX B. TROUT PRIVILEGES SOLD BY COUNTY, BY GEOGRAPHICALLY STRATIFIED REGION AND SAMPLES PER REGION, 2016.



APPENDIX C. IOWA POPULATION BY COUNTY 2010.