Montana Fish, Wildlife & Parks

Fisheries Division
Federal Aid Job Progress Report

Montana Statewide Fisheries Management

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Project Title: Montana Statewide Fisheries Management

Job Title: (3140 Kootenai River Drainage Fisheries Management)

Abstract:

This was the ninth year of the surveys. Because harvest was eliminated from the Koocanusa fishery, not surprisingly, only 80 anglers obtained permit/catch cards. We determined to use the previous year's validations to generate a survey that included (minus undeliverable surveys) 766 mailings. By July 1, 2013 we had received a total of 603 responses (78.7% returned) for both mailings and returned catch cards. More than 80 percent of the anglers that said they fished at least one day were from Montana. We issued the fewest permits for Koocanusa for all years and also noted a decrease in both the number and percent of anglers that said they actually fished at Koocanusa for the third consecutive season. The decrease could be due to decreasing the harvest from two to one to no harvest of bull trout during those years. The number of days anglers fished at Koocanusa (2.4) was lowest since 2007.

We estimated that 742 bull trout were caught from Lake Koocanusa during the 2012 - 2013 season. This was by far, the lowest since the fishery was re-established in 2004. Anglers that used two poles 90 percent of the time or more accounted for higher percent of the caught bull trout (65.8) than those that used one line. During the 2011 season, anglers captured fewer bull trout during the five seasons since the two-line regulation was enacted by the Montana Legislature and made effective for the 2007-2008 season. Decreases in bull trout caught during 2011 and 2012 were undoubtedly due to decreasing numbers of anglers fishing for bull trout/rainbow trout as regulations decreased from harvest of two to one to no harvest in the three consecutive years.

For the 2012 - 2013 season, the mean length of caught bull trout (21.9"; range 9.0"- 41.0") increased for the first time since 2004. The mean lengths of bull trout caught correlates with redd counts for the Wigwam River during the same time period (Figure 2). Regression analysis showed that the correlation was strongly positively ($R^2 = 0.79$) and significant ($P << .01$). The results suggest that mortality (both harvest and catch-and release) associated with angling exerts strong negative pressure on adult bull trout numbers available for spawning in the system's most important spawning tributary and the effect is probably cumulative. There was only one known violation for Lake Koocanusa catch cards during the 2012 – 2013 season.

Angler Survey of Experimental Recreational Bull Trout Fishery for Lake Koocanusa, Montana 2012 - 2013.

Mike Hensler, Fisheries Management Biologist
Neil Benson, Fisheries Technician

Montana Fish, Wildlife & Parks
385 Fish Hatchery Road
Libby, Montana 59923

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SUMMARY

In 2004, the U.S. Fish and Wildlife Service authorized limited sport fishing for bull trout *Salvelinus confluentus* at Hungry Horse Reservoir, South Fork Flathead River and Lake Koocanusa as requested by Montana Fish, Wildlife & Parks after those fisheries were deemed to have reached recovery goals. A portion of the permit conditions called for a bull trout permit and catch card system, angler survey and development of educational information pertaining to these new fisheries. In 2012, Montana Fish Wildlife & Parks removed bull trout harvest from Lake Koocanusa for three main reasons: 1) decreasing mean lengths of bull trout caught and harvested; 2) an unstable trend of redd numbers in the Wigwam River (the major spawning tributary in the BC portion Lake Koocanusa bull trout) and Grave Creek (the major spawning tributary in the US portion of Lake Koocanusa); 3) unknown impacts to the bull trout population caused by anglers in the mainstem and tributaries of the BC portion of Koocanusa and the Kootenai drainage.

This was the ninth year of the surveys. Because harvest was eliminated from the Koocanusa fishery, not surprisingly, only 80 anglers obtained permit/catch cards. We determined to use the previous year's validations to generate a survey that included (minus undeliverable surveys) 766 mailings. By July 1, 2013 we had received a total of 603 responses (78.7% returned) for both mailings and returned catch cards. More than 80 percent of the anglers that said they fished at least one day were from Montana. We issued the fewest permits for Koocanusa for all years and also noted a decrease in both the number and percent of anglers that said they actually fished at Koocanusa for the third consecutive season. The decrease could be due to decreasing the harvest from two to one to no harvest of bull trout during those years. The number of days anglers fished at Koocanusa (2.4) was lowest since 2007.

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For the 2012 - 2013 season, the mean length of caught bull trout (21.9"; range 9.0"- 41.0") increased for the first time since 2004. The mean lengths of bull trout caught correlates with redd counts for the Wigwam River during the same time period (Figure 2). Regression analysis showed that the correlation was strongly positively ($R^2 = 0.79$) and significant ($P << .01$). There was only one known violation for Lake Koocanusa catch cards during the 2012 – 2013 season.

INTRODUCTION

In 2012, Montana Fish, Wildlife & Parks (MFWP) personnel conducted the eighth annual angler mail survey for the recreational bull trout (***Salvelinus confluentus***) fishery on Lake Koocanusa initiated in 2004. Because bull trout were listed as a "threatened species" under the Endangered Species Act in 1998, this fishery was authorized under special permit by the U.S. Fish and Wildlife Service (USFWS). In 2012, Montana Fish Wildlife & Parks decreased bull trout harvest from one per angler per year to catch and release for several reasons: 1) decreasing mean lengths of bull trout caught and harvested; 2) an unstable trend of redd numbers in the Wigwam River (the major spawning tributary in the BC portion Lake Koocanusa bull trout) and Grave Creek (the major spawning tributary in the US portion of Lake Koocanusa); 3) unknown amount of angler harvest in the mainstem and tributaries of the BC portion of Lake Koocanusa. We believed this to be the prudent course of action even though the USFWS permit stipulations allowed for more harvest.

BACKGROUND

Bull trout were listed as "threatened" under the Endangered Species Act in 1998. At the time of listing, sportfishing for bull trout had already been discontinued in Montana and was under review, except in Swan Lake which was considered to have a stable population.

The USFWS authorized an experimental sport fishery for bull trout at Lake Koocanusa because this fishery was deemed to have reached recovery levels. This activity was intended to benefit the species by researching the effects of restoring recreational fishing. In addition, allowing angling for bull trout likely increases public support for management of stable bull trout populations in the identified water bodies. We also believe the action will continue to garner additional support for restoration of bull trout habitats and other management activities that will improve bull trout populations throughout the state.

METHODS

Conditions of the USFWS special permit (TE-077533) for a new bull trout fisheries contained specific items agreed upon by both USFWS and MFWP (Hensler and Benson 2005). One condition called for the development and use of a catch card. Also required was a formal survey of anglers participating in these experimental bull trout fisheries which beginning in 2012 was required every other year. Educational materials were also developed to explain catch card use, bull trout identification, seasons, limits, and regulations pertinent to each fishery and bull trout conservation measures.

The first step in developing a catch card authorization involved creating an application for anglers interested in angling for bull trout. We made the form available through the Region 1 MFWP office and over MFWP's web site. The application required the angler's name, address, automated licensing system (ALS) number and permit area (waters) where they chose to fish. Anglers were not given duplicate catch cards during the season if the original was lost. To ensure consistent, high-quality information to and from participating anglers, we required that all applications be submitted to the Region One FWP office in Kalispell. There continued to be no charge for the permit/catch card.

After a completed application was processed, a permit and numbered catch card was issued to each angler. The catch cards provided general instructions for anglers fishing for bull trout on Lake Koocanusa and the request to keep the card until a survey was sent. The cards requested entry of the catch zone, fish length, month and day of catch for each fish harvested from Lake Koocanusa. Additionally, we requested supplemental information: total number of days fished for bull trout, total number of bull trout caught and released, and a catch and release log that included zone, length, month, and day. Because of potential incidental catch associated with large rainbow trout angling, we asked that anglers also provide the same information for rainbow trout greater than 22 inches. We also asked the percent of time each angler fished with two lines.

We offered to provide bull trout anglers a copy of the current bull trout fishing regulations and an informational pamphlet with each catch card issued. Pamphlets specifically outlined seasons, limits, restrictions, catch card use, catch-and-release fishing techniques and bull trout identification for all waters open to bull trout fishing. Special license procedures, regulations and conservation measures for bull trout were also itemized in the 2012 and 2013 Montana Fishing Regulations booklets. As was previously described, anglers were not allowed to harvest bull trout during the 2012 season. Upon landing a bull trout, anglers were required to immediately release the fish.

Completed catch cards helped to provide information on bull trout harvest, catch date, size and location for the 2012 - 2013 season. We still do not charge a fee for catch cards or assess a penalty for failure to return cards as specified. We requested that anglers retain their catch card until surveyed and return the 2012-2013 catch card with the survey to improve the reliability of information.

Only 80 catch cards were distributed to anglers for the 2012-2013 season. So to obtain the best and most thorough and accurate estimates of angling effort and catch rates, MFWP also conducted a mail survey of anglers that acquired catch cards from the previous season. The survey asked for the same information as requested on the catch cards. Surveys were initially mailed to both groups on March 1, 2013. A follow up mailing was conducted on April 15, 2013 to anglers who had not returned surveys. Anglers were also reminded to return their catch cards with the surveys.

For this report, we were primarily concerned with estimates of bull trout catch for Lake Koocanusa. We used the survey in combination with catch card returns to estimate the total number of bull trout caught and released. All estimates and graphs were generated in Microsoft Excel. Level of significance was at 0.05 unless otherwise noted.

FINDINGS

Bull Trout Catch Card Returns

Catch card instructions requested that anglers return the catch cards after their license expired with the survey. Anglers were no longer required to present the prior year's catch card or sign an affidavit attesting to information on a lost catch card before receiving a catch card for the current season. Some anglers did return catch cards but not surveys; some returned both; some returned only surveys. Not surprisingly, because there was no longer a harvest fishery for bull trout, only 80 catch cards were issued for the 2012 – 2013 season. By July 1, 2013, we received 74 catch cards/surveys (92.5%) from anglers that did receive a catch card.

Bull Trout Angler Mail Survey

On March 1, 2013, we mailed the initial survey to 760 Koocanusa anglers from the previous year. We conducted a second mailing to non-respondents to increase our level of returns. We removed non-deliverable surveys from the survey which made 766 total mailings (687 from previous year and 79 from catch cards). By July 1, 2013 we had received a total of 603 responses (78.7%) for both mailings and returned catch cards and ended the survey due to declining returns.

Angler Demographics

The vast majority of permitted bull trout anglers that fished at Lake Koocanusa were Montana residents (81.9%). This was similar to most other years. Anglers from 10 other states and provinces (13 in 2011, 13 in 2010, 13 in 2009, and 22 in 2008) were issued a catch card for Lake Koocanusa. Non-resident anglers were primarily from the states of Washington (6.6%), Idaho (3.5%) and Alberta (2.7%).

Fishing Pressure Estimates

After the season, 603 (78.7%) of the 766 anglers surveyed either returned catch cards or responded to the mail survey. We found that 208 of the respondents (34.5%) indicated that they did fish for bull trout. This was the third consecutive season that both number and percentage of anglers that fished for bull trout decreased (Figure 1).

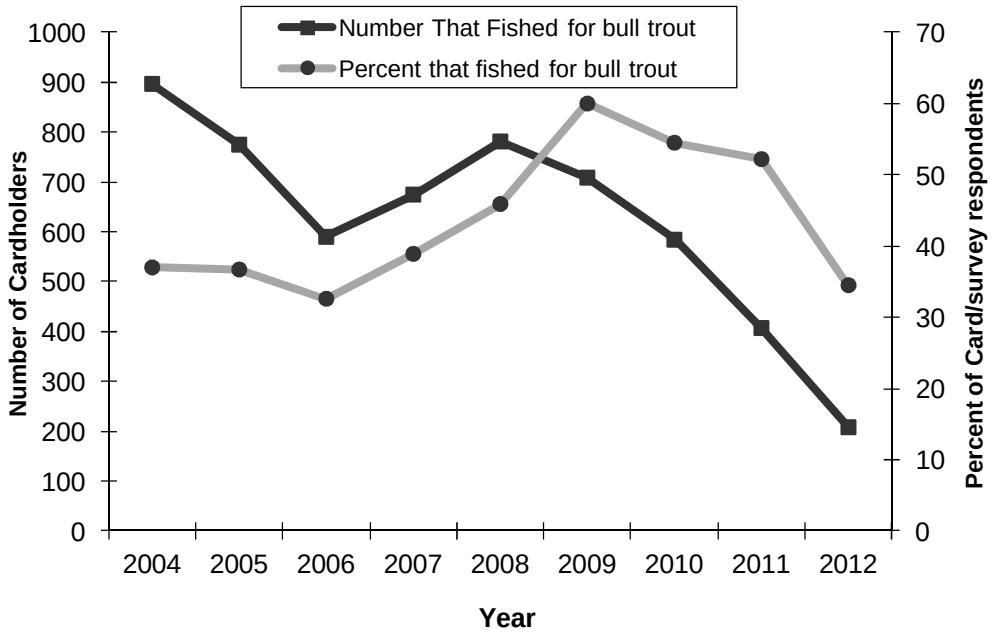

Figure 1. Estimated number of catch card holders and percent of total catch card holders that fished for bull trout at Lake Koocanusa, through the 2012 - 2013 season.

To estimate total number of angler-days of pressure on bull trout, we used the number of days anglers reported from catch cards and survey respondents who fished for bull trout. We assumed anglers not responding to the survey fished for bull trout with the same effort. The estimated total angler-days was lowest recorded and estimated days per angler (2.4) during the 2011 - 2012 season were lowest since 2007 (Table 2).

Table 1. Bull trout season angling pressure estimates calculated from catch card and survey results for Lake Koocanusa through the 2012 - 2013 season.

Number Angler-Days Fishing Pressure									
Season	2004	2005	2006	2007	2008	2009	2010	2011	2012
Number of Respondents	897	774	590	569	609	691	497	598	603
Angler-Days from survey	1,685	3,285	2,639	2,963	3,917	3,686	3,154	1,933	1,456
Estimated Angler-Days	3,483	4,874	3,390	3,595	4,607	4,537	3,720	2,521	1,850
Estimated days per angler	1.4	2.3	1.9	2.1	2.7	3.8	3.5	3.2	2.4

Harvest and Catch Estimates

Since there was no harvest for the 2012 - 2013 season, only catch estimates were calculated. To estimate total catch at Lake Koocanusa for the 2012 – 2013 season, we calculated the mean catch rate (0.97) for anglers who returned catch cards and surveys (n = 603). The estimated total catch calculated from all surveyed anglers was 742 bull trout (Table 3). This was by far, the lowest number of bull trout angled since the fishery was re-established in 2004.

Table 2. Estimated bull trout harvest (known harvest) and catch (known catch) for Lake Koocanusa through the 2012-2013 season.

Season	Bull Trout Harvested	Lower Bound	Upper Bound	Bull Trout Caught	Lower Bound	Upper Bound	Percent Released
2004 - 2005	650 (259)	259	652	2,399 (698)	*	*	72.1
2005 - 2006	371 (216)	216	373	3,595 (2,171)	2,171	3,611	89.7
2006 - 2007	180 (140)	140	181	1349 (909)	909	1,353	86.6
2007 - 2008	267 (220)	220	268	1,484 (997)	997	1,488	82.0
2008 - 2009	295 (249)	249	296	1,897 (1,358)	1,358	1,900	84.4
2009 - 2010	256(206)	206	257	1,810 (1,247)	1,247	1,815	85.8
2010 - 2011	163(138)	138	164	1,568 (1,328)	1,328	1,573	89.6
2011 - 2012	107(82)	82	108	1,318 (925)	925	1,323	91.9
2012 - 2013	No harvest			742 (608)	738	747	100

*Point estimate expanded from caught vs. released bull trout from catch cards with no variance calculated

We asked anglers to estimate the percent of time they fished with two lines to assess the potential impact of that legislated regulation change to bull trout catch and catch rates. During the 2012 - 2013 season, 51.4 percent of anglers said they fished with two lines all the time, 79.3 percent responded that they fished with two lines at least some of the time, both substantial increases of previous years (Table 3).

Table 3. Percent of anglers that used two lines to fish for bull trout in Lake Koocanusa through the 2012 - 2013 season.

Season	Total Number of Respondents	Percent That Fished with Two Lines at Least Some of The Time	Percent That Fished with Two Lines all of the Time	Known bull trout caught by all methods	Percent of bull trout caught by anglers using 2 lines more than 50 percent of the time
2006	One line	0	0	909	*
2007	None*	--	--	997	*
2008	430	59.1	33.7	1,358	53.4
2009	511	64.0	38.0	1,247	87.4
2010	469	65.8	41.2	1,328	76.1
2011	295	60.1	46.1	925	90.1
2012	208	79.3	51.4	608	90.1

*The regulation was put into effect after the start of the 2007 season

We analyzed catch rates for anglers for all years. Anglers that used two poles 50 percent or more of the time accounted for 90.1 percent of the bull trout caught. During the 2012 season, anglers captured the fewest bull trout since the two-line regulation was enacted by the Montana Legislature and made effective for the 2007 - 2008 season. Decreases in bull trout caught during 2011 and 2012 were undoubtedly due to decreasing numbers of anglers fishing for bull trout/rainbow trout (Figure 1) as regulations decreased from limit of two bull trout to one to no harvest in the three consecutive years. Rod hours and angler days needed to capture a bull trout

also increased substantially from 2011 – 2012 (Table 4). This may be a function of anglers targeting large rainbow trout farther from shore and amongst the kokanee.

Table 4. Bull trout caught and bull trout per rod hour and angler day for anglers fish fishing for bull trout in Lake Koocanusa through the 2012 - 2013 season.

Season	Bull Trout Caught	Rod hours per bull trout caught	Angler days per bull trout caught
2004 - 2005	2,399 (698)	Survey did not ask days angled	
2005 - 2006	3,595 (2,171)	8.1	1.4
2006 - 2007	1349 (909)	15.1	2.5
2007 - 2008	1,484 (997)	14.6	2.4
2008 - 2009	1,897 (1,358)	21.4	2.4
2009 - 2010	1,810 (1,247)	23.2	2.5
2010 - 2011	1,568 (1,328)	21.6	2.1
2011 - 2012	1,318 (925)	16.5	2.1
2012 - 2013	742 (608)	23.7	2.4

We also asked anglers to estimate and record lengths of bull trout they caught and released. For the 2012 - 2013 season, the mean length of caught bull trout (21.9"; range 9.0"- 41.0") increased for the first time since 2005. The mean lengths of bull trout caught correlates with redd counts for the Wigwam River during the same time period (Figure 2). Regression analysis showed that the correlation was strongly positively ($R^2 = 0.79$) and significant ($P << .01$). These results, in addition those discussed earlier, strongly suggest to us that mortality (both harvest and catch-and release) associated with angling exerts strong negative pressure on adult bull trout numbers available for spawning in the system's most important spawning tributary and the effect is probably cumulative.

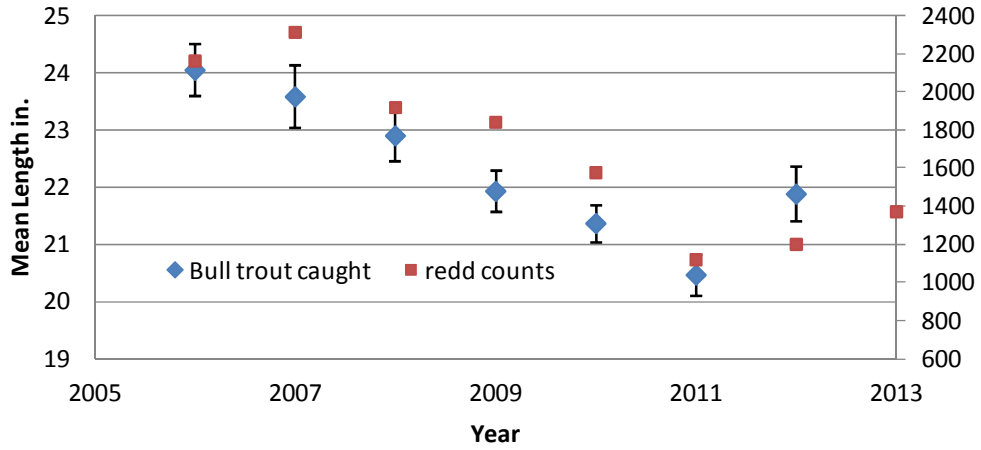

Figure 2. Mean lengths of bull trout caught and released through the 2012 - 2013 season from Lake Koocanusa, Montana and redd counts from Wigwam River B.C. Note: The 2005 data were not included in this graph as the spawning run was impeded by a substantial landslide.

As was typical for all years, anglers caught and released bull trout from all of the size classes (Figure 3). Lengths of the majority of bull trout caught were between 20 and 30 inches. The spikes in the 20 inch and 26 inch length classes were similar to but more pronounced than those from the previous year.

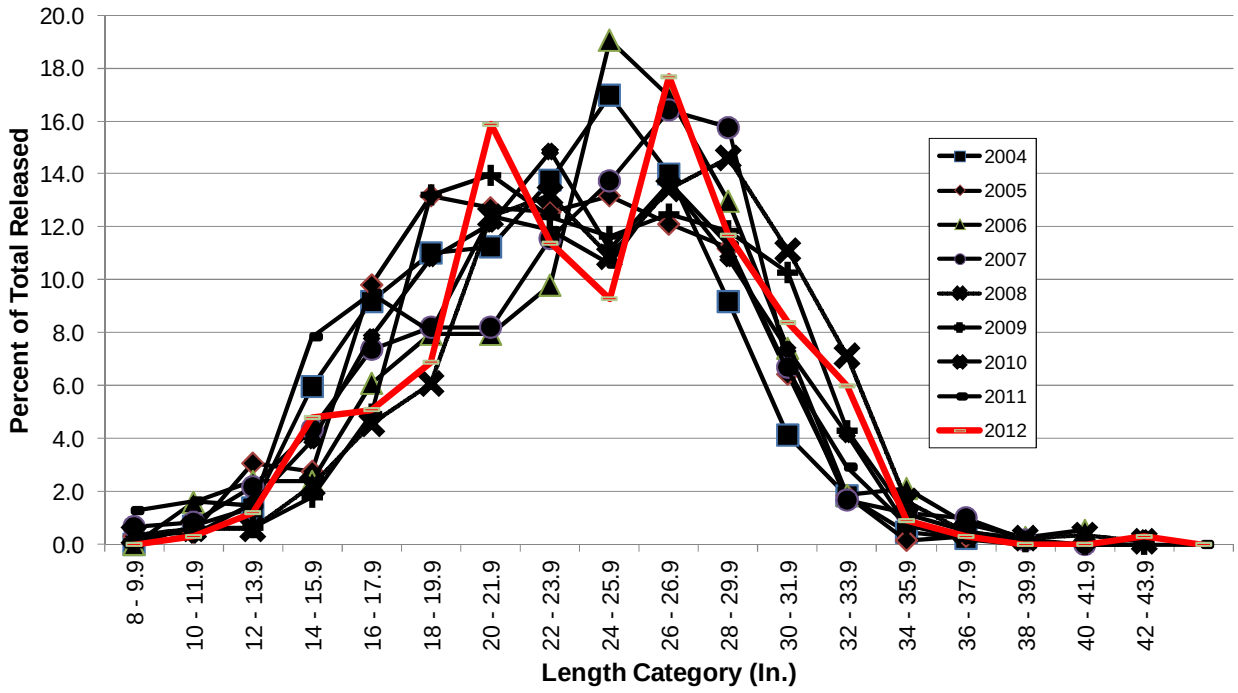

Figure 3. Lengths of bull trout caught and released through the 2012 - 2013 season from Lake Koocanusa, Montana.

Catch Card Violations

By July 1, 2013 we received 74 catch cards for the 80 cards issued for the Koocanusa bull trout fishery. We found technical violations on 1 card (1.3%). The violation was not signing the card. This was a significant decrease over the previous year and showed that most anglers understood the procedure and correctly filled out the catch card.

LITERATURE CITED

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