

**Angler Survey of Experimental Recreational Bull Trout Fishery
at Hungry Horse Reservoir and South Fork Flathead River,
Montana for the 2006 season**

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SUMMARY

In 2004, Montana Fish, Wildlife and Parks (MFWP) applied to the U.S. Fish and Wildlife Service (USFWS) for authorization to allow a limited sport fishing season for bull trout (*Salvelinus confluentus*) under Section 10(a)(1)(A) of the Endangered Species Act. The USFWS permitted fishing for bull trout on Hungry Horse Reservoir (HHR), South Fork Flathead River (SFF) and Lake Koocanusa (LK) per the regulations proposed by MFWP, which allowed angler harvest of up to 300 fish from HHR and catch and release but no possession from SFF. The permit also requires a bull trout permit and catch card system, angler survey and development of educational information pertaining to these new fisheries.

During the 2005-2006 season, a total of 2,522 anglers secured permits to fish for bull trout, compared to 2,748 in the 2004-2005 season. Angler survey results estimated 1,314 angler days pressure on HHR and 793 days on SFF. Bull trout catch estimates were 2,154 for HHR with an estimated harvest of 58 fish. In the SFF, 531 bull trout were reportedly caught and released. Harvest of bull trout in HHR was well below the USFWS authorized take of 300 bull trout.

INTRODUCTION

We conducted an angler mail survey for the newly created recreational bull trout (*Salvelinus confluentus*) fisheries on Hungry Horse Reservoir, South Fork Flathead River and Lake Koochanusa for the 2005 – 2006 season. These fisheries are regulated by Montana Fish, Wildlife & Parks (MFWP) under special permit by the U.S. Fish and Wildlife Service (USFWS) due to listing of bull trout as a “threatened species” under the Endangered Species Act in 1998.

BACKGROUND

Bull trout were listed as “threatened” under the Endangered Species Act in 1998. At the time of listing, sport fishing for bull trout was continued only in Swan Lake because of stable populations.

Under special permit, the USFWS authorized experimental sport fishing for bull trout on Hungry Horse Reservoir (HHR), South Fork Flathead River (SFF) and Lake Koochanusa (LK) (Rumsey et al. 2005) once those populations were deemed to have reached recovery levels. This activity was intended to benefit the species by measuring the effects of restoring recreational fishing and by increasing public support for management of stable bull trout populations in the identified water bodies, for restoration of bull trout habitat and for other management activities that will increase the distribution and abundance of bull trout populations throughout the state.

METHODS

Conditions of the USFWS special permit (TE-077533) for new bull trout fisheries contained specific items agreed upon by both USFWS and MFWP. Part of the conditions called for the development and use of a harvest catch card. Also required was a formal survey of anglers participating in these experimental bull trout fisheries. 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.

Bull Trout Permit Application

The first step of developing a catch card harvest authorization involved creating an application for anglers who wanted to fish for bull trout. This form was made available through the Region One 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) that they chose to fish. All applications had to be submitted to the Region 1 FWP office in Kalispell, to ensure consistent high quality information was given to participating anglers. There was no charge for the bull trout catch card.

Bull Trout Catch Card

After processing a completed application, a permit and numbered catch card were issued to each individual. The catch cards provided general instructions for anglers fishing for bull trout on Hungry Horse Reservoir (HHR), South Fork Flathead River (SFF) and Lake Koocanusa. The cards required entry of the catch zone, fish length, month and day of catch for each fish harvested in HHR and LK and for each fish caught and released in SFF.

Upon landing a bull trout, an angler must either immediately release or legally harvest the fish. Immediately upon harvesting a bull trout from a permitted water, anglers must record the required information in ballpoint pen and notch out a triangle on the line for each fish.

Bull Trout Angler Mail Survey

As in the previous seasons, we felt we could obtain more thorough and accurate estimates by conducting a survey of catch card holders. The survey asked for additional information including whether the angler fished for bull trout or not and the number of days fished per validated water. The survey also requested specific catch card information pertaining to harvested or released fish by date, zone and size of fish.

RESULTS

Bull Trout Catch Cards

Catch card instructions required anglers to return the cards after their license expired or when they were done fishing for bull trout. Any angler who received a 2005 catch card but did not turn it in was required to present their prior year catch card or sign an affidavit attesting to information on the lost catch card before receiving a catch card for the current season. We also reminded anglers through the media to return their cards. By July 1, 2007 we received 1,276 catch cards of the 2,209 cards issued (57.8% return).

Bull Trout Angler Mail Survey

We mailed the initial survey to 2,209 anglers with catch cards on March 8, 2007. The results of the initial mail survey achieved a 64.5% return rate (n=1,299 and 176 undeliverable) by May 1, 2007. On May 8, we conducted a second survey reminder mailing to non-respondents to increase our level of returns. By June 16, 2007 we had received a total of 1,683 responses (83.5% return) for both mailings and ended the survey period due to declining returns. Returned surveys were processed by July 20, 2007.

Angler Preferred Waters

On the bull trout permit application, and subsequently on the catch card, 2,209 anglers declared the waters at which they intended to fish for bull trout. Total validations again were down slightly from 2004 and 2005 (Table 1). These anglers had seven possible combinations of waters to select (Table 1).

Table 1. Bull trout waters selected by anglers from bull trout permit applications through the 2006 season.

Waters Selected	Number Selected 2004	Percent of total 2004	Number Selected 2005	Percent of Total 2005	Number Selected 2006	Percent of Total 2006
All Three (HHR, SFF, LK)*	1,200	42	1,034	41	846	39
LK Only	1,040	37	911	36	768	35
HHR Only	125	4	103	4	76	3
SFF Only	95	3	115	4	154	7
HHR and SFF	215	8	194	8	170	7
LK and SFF	36	1	19	1	11	1
HHR and LK	147	5	146	6	184	8
Total Cards Issued	2,858	100	2,522	100	2,209	100
Total Validations that included HHR	1,687	59	1,477	59	1,276	58
Total Validations that included SFF	1,546	54	1,362	54	1,181	53

* HHR = Hungry Horse Reservoir, SFF = South Fork Flathead River, LK = Lake Koocanusa

Like the previous seasons, most anglers (39%) selected all three waters to fish. Another 17% of anglers selected some combination of Hungry Horse and South Fork, with the remaining combinations of waters receiving less than 10 percent each. Validations have been very consistent over all years. When viewing total cards by water, 58% (1,276) of the anglers included a validation for Hungry Horse Reservoir and 53% (1,181) included a validation for South Fork Flathead River.

Angler Demographics

The vast majority of permitted bull trout anglers for HHR and SFF were Montana residents (92% and 84%, respectively). The lower percentage of residents for SFF likely represents Wilderness guided fishing trips, which would tend to be used more by nonresidents. Non-resident anglers for HHR were primarily from the states of Idaho (1.6%) and California (1.1%) with remaining anglers from 26 other states and 1 Canadian province. Non-resident anglers for SFF were primarily from the states of California (2.2%) and Idaho (1.5%) with remaining anglers from 30 other states and 1 Canadian province.

Fishing Pressure Estimates

Based on survey results, bull trout anglers reported fishing 694 days on HHR and 603 days on SFF during the period surveyed (Table 2). To estimate total bull trout pressure, we used the number of anglers and angler days reported by survey respondents who fished for bull trout. For anglers not responding to the survey we assumed the same proportion fished for bull trout with the same effort (Table 2). The estimated pressure for HHR has declined during each year while the estimated pressure for SFF has increased.

Table 2. Bull trout season pressure estimates extrapolated from angler survey results for HHR and SFF through the 2006 season.

Angler-Days of Fishing Pressure						
	2004		2005		2006	
	HHR	SFF	HHR	SFF	HHR	SFF
From Survey	935	411	679	426	694	603
Estimated Total	1,650	725	1,314	793	940	897

Bull Trout Catch and Harvest Estimates

Bull trout anglers again reported catch and harvest by zone for HHR and SFF (Figures 1 and 2). Hungry Horse Reservoir the majority of bull trout again were caught and harvested in the southern zone "C", where the South Fork Flathead River enters the reservoir (Figure 1). Like previous seasons we expected a higher catch proportion to occur here due to staging and progressive spawning movements up river. Bull trout catch in mid-reservoir (Zone B) and in the north end (Zone A) increased as angling for staging adult bull trout decreased.

For the South Fork Flathead River, only catch and release fishing is allowed for bull trout (Figure 2). Catch rates continue to be very similar through all years in that during May and June, catch was mostly in zone "A", the lowest portion and most accessible portion of the river. During July and August, catch progressed somewhat up river into more remote areas of wilderness where access is limited.

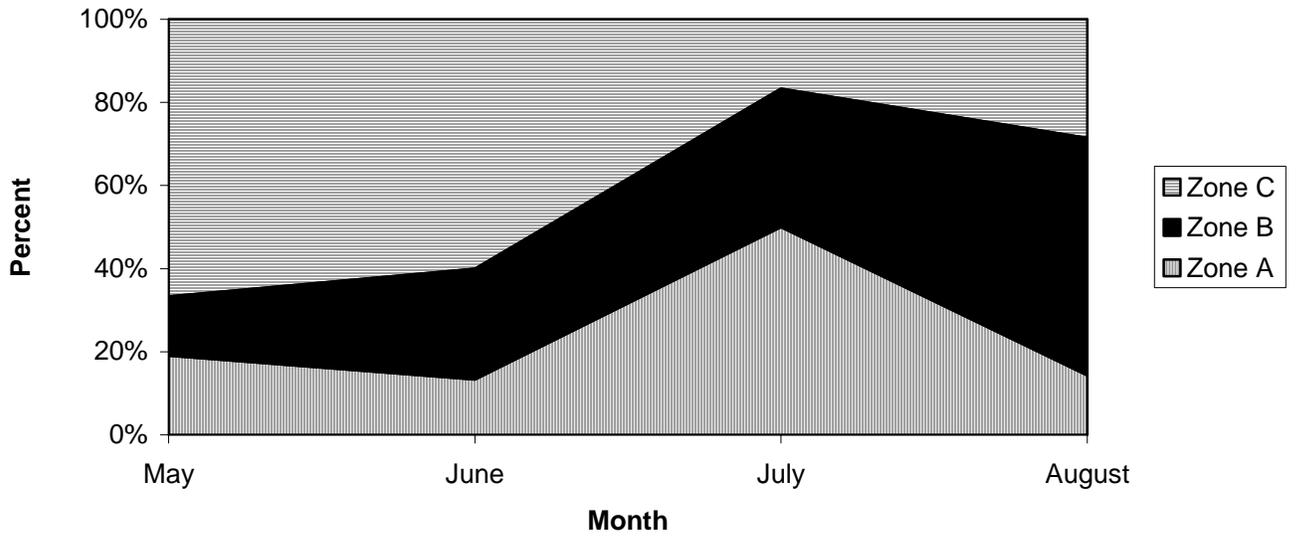


Figure 1. Hungry Horse Reservoir bull trout reported catch and harvest by zone, from angler survey, 2006. Zone A equals the northern portion of HHR nearest the dam, Zone B is central and Zone C is the southern portion. Zones are mapped in the Bull Trout Pamphlet, (Rumsey et al. 2005).

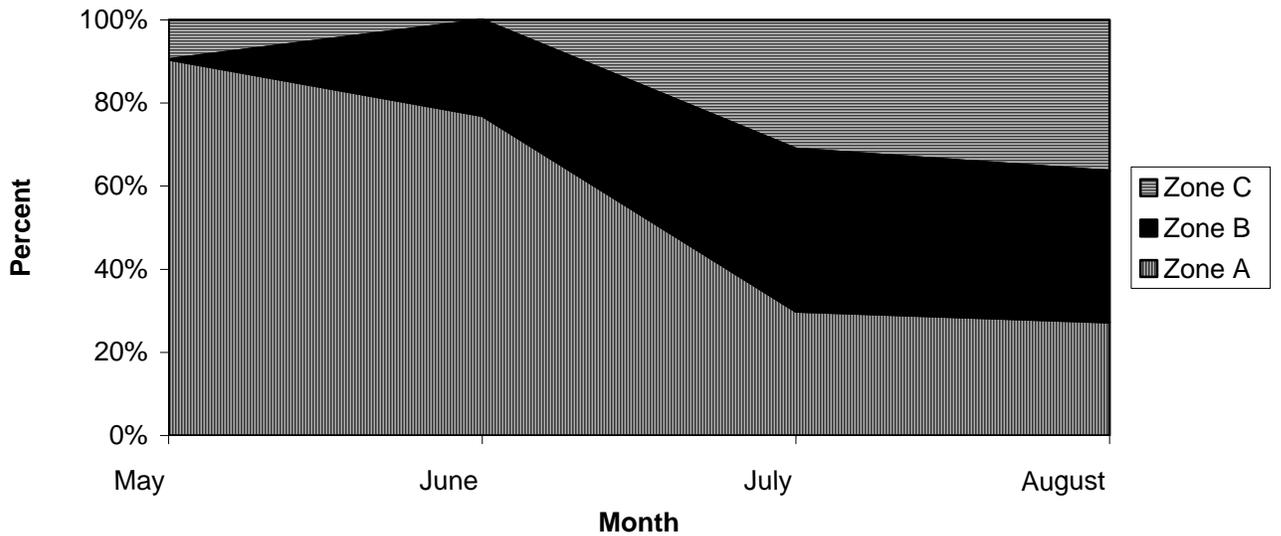


Figure 2. South Fork Flathead bull trout reported caught and released by zone, from angler survey, 2006. Zone A equals the northern portion of SFF, Zone B is central and Zone C is the southern portion nearest the headwaters. Zones are mapped in the Bull Trout Pamphlet, (Rumsey et al. 2005).

To derive a total catch and harvest estimate for each water, we had to estimate values for anglers who did not respond to the angler survey. We added catch from estimated pressure to catch reported from the angler survey assuming equal catch rates (Table 3). For Hungry Horse Reservoir in 2006, we estimated a total of 623 bull trout were caught, 56 harvested, with 91% released. The total catch and harvest estimates are likely more accurate than 2005 because we were able to better separate validations this year. Although, they still should be viewed with some caution because they include validations for all three systems and anglers may not have fished at Hungry Horse Reservoir. From the South Fork Flathead, 275 bull trout were reported caught and released by surveyed individuals. We estimated a total of 380 bull trout were caught and released.

Table 3. Bull trout catch and harvest estimates for Hungry Horse Reservoir and South Fork Flathead River through the 2006 season.

	Hungry Horse Reservoir						South Fork Flathead River		
	# Bull Trout Caught 2004	# Bull Trout Harvested 2004	# Bull Trout Caught 2005	# Bull Trout Harvested 2005	# Bull Trout Caught 2006	# Bull Trout Harvested 2006	# Bull Trout Caught 2004	# Bull Trout Caught 2005	# Bull Trout Caught 2006
Reported Catch (survey and catch cards)	201	27	778	44	460	43	98	285	275
Estimated catch from survey	355	48	2154	58	623	56	173	531	380
confidence intervals (p<0.01)			356	15	111	12		113	101

From the catch and harvest data, anglers recorded lengths of bull trout caught, harvested and released by water. Length frequency histograms for Hungry Horse Reservoir (Figure 3) and South Fork Flathead River (Figure 4) depict the size of bull trout caught, released or harvested by anglers. The distribution of bull trout caught and released for Hungry Horse Reservoir was similar to the previous season. The distribution of bull trout caught and released from South Fork Flathead shifted back to smaller sizes from 2005.

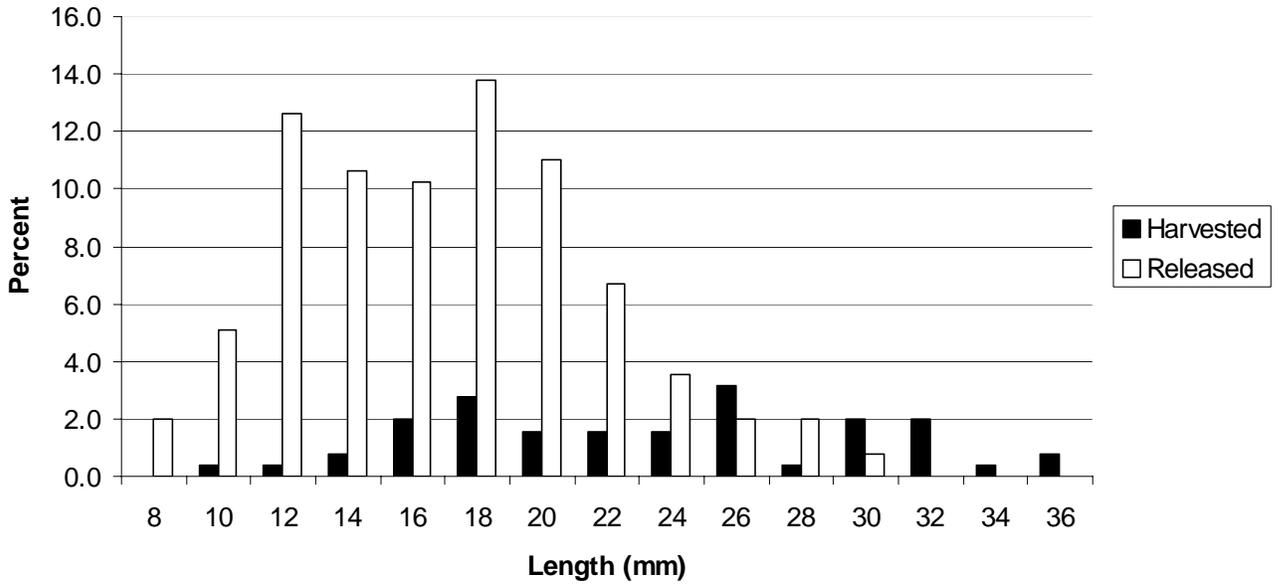


Figure 3. Length of bull trout harvested and released by percent for Hungry Horse Reservoir, 2006.

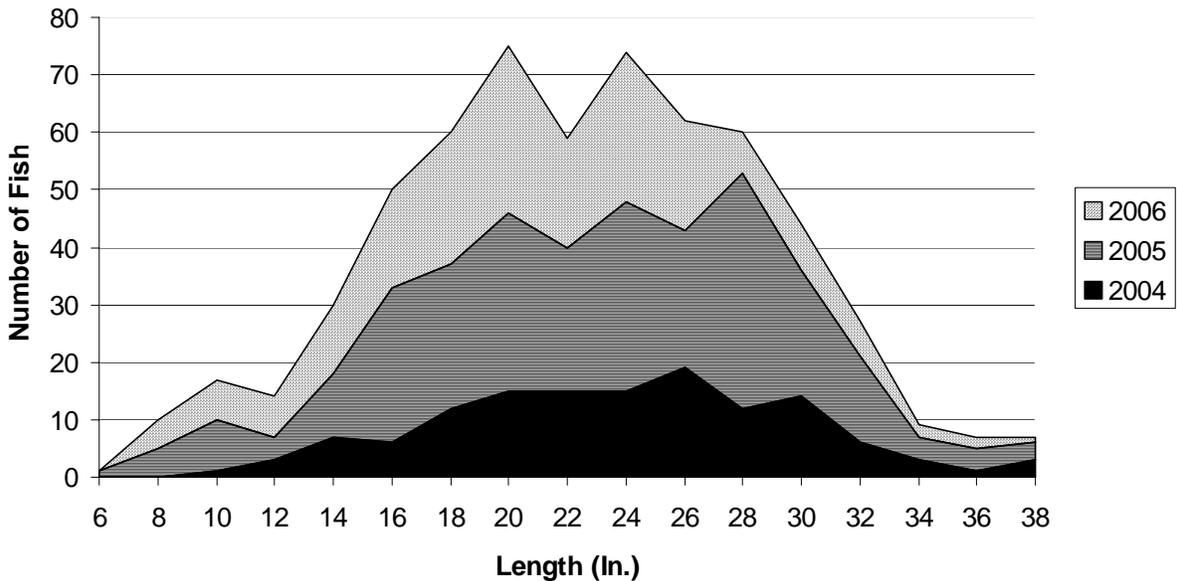


Figure 4. Length of bull trout caught and released in the South Fork Flathead River, 2004-2006.

Catch Card Violations

A total of 1,156 catch cards were returned to MFWP by July 15, 2007. Of those, we found technical violations on 215 cards (18.6 %) decreased only slightly from 2006 (19.2%). The vast majority of the violations continue to be combinations of not notching card for fish kept and not signing the catch card (97.7%). There were fewer serious violations (5) that included keeping two fish in one day and for harvest out of season. All violations were submitted to Region 1 Enforcement Division for follow-up and this year, letters were submitted to those that did not notch their cards and those that did not sign the catch card.

DISCUSSION

Provisions of the USFWS special permit authorized an angler take of up to 300 bull trout from HHR and catch and release only in the SFF for the 2005-2006 season. Catch card and angler survey estimated HHR bull trout harvest at only 58 fish, which was well within USFWS permitted limits.

HHR gill net monitoring and South Fork bull trout redd counts will continue to be conducted to evaluate population trends.

Reporting estimated catch and harvest on a catch card system requires angler cooperation for reliability. The ability to charge for a bull trout permit and mandatory turn-in of catch cards would increase efficiency and accuracy of the estimate. Mandatory turn-in would also eliminate the need for expensive and time consuming angler surveys requiring final data extrapolation. We hope to be able to improve on the catch card system in the future.

LITERATURE CITED

Rumsey, S, J. Cavigli, S. Hawxhurst. 2005. Angler Survey of Experimental Recreational Bull Trout Fishery in Hungry Horse Reservoir, South Fork Flathead River and Lake Koocanusa, Montana. Montana Fish, Wildlife & Parks. Kalispell, MT.