

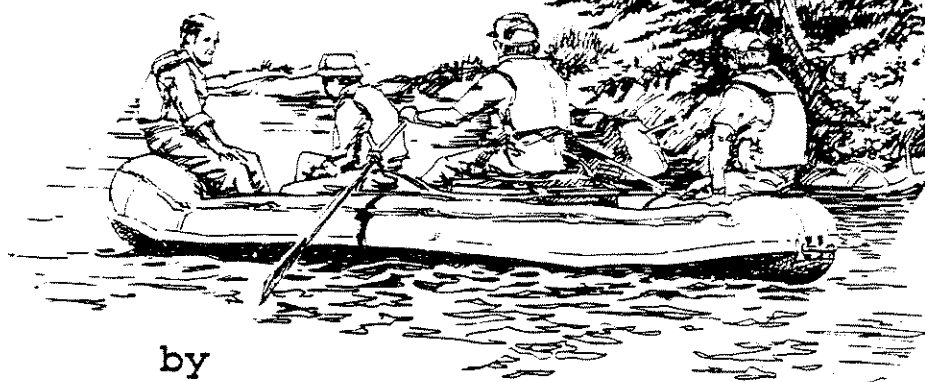
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REGION 2



1994

Blackfoot River User Survey



by

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and
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Region 2
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INTRODUCTION

The Blackfoot River has been a focal area for fisheries investigations and fish restoration activities since 1988, when a full-time biologist and technician were assigned to the drainage. Since 1988 basin-wide fish and habitat inventories have identified severe habitat deterioration, recruitment problems, over-fishing, and critically low numbers of native fish species throughout the Blackfoot basin. Goals for enhancing and maintaining this wild trout fishery were established to start addressing the identified problems.

Fishing regulations were changed in 1990 to address problems that appeared associated with angler harvest. The "general season" 5-trout limit allowing one fish larger than 14 inches was changed to a species specific regulation. The rainbow and brown trout limit declined to 3 trout with no fish allowed in the creel larger than 12 inches of length. Cutthroat and bull trout limit changed to catch and release only. Both regulations were needed to enhance poor numbers of spawning sized fish and limit harvest in heavily used sections.

Significant habitat restoration activities were initiated in cooperation with private landowners and the Big Blackfoot Chapter of Trout Unlimited in 1990. Eighteen stream restoration projects have been completed since then. Stream restoration activities will continue for sometime into the future. The primary goal of the restoration efforts is to re-establish healthy tributary streams and encourage streamside land management practices that are critical to the long term survival of Blackfoot River fish.

Angler use of the Blackfoot River is not well understood because of the lack of creel census information from the area. Logistical, man-power and monetary constraints have prevented the more systematic gathering of creel information on the Blackfoot River. The only angler information available on the Blackfoot River has been from the Statewide Angler Survey. The statewide survey has provided a means to reliably estimate fishing pressure on the larger bodies of water within the state. However the statewide survey lacks significant details necessary for management decision-making. In 1994 special funding was allocated to the Blackfoot River for a creel census evaluation effort. The 1994 creel census is the beginning of efforts to better understand angler use of the Blackfoot River including: fishing pressure, catch, conflict, facility use, and evaluation of angler attitudes on selected subjects.

OBJECTIVES

The objectives of this creel census were:

1. To determine the degree and distribution of fishing pressure as well as other aspects of fisherman catch, including hours fished, species and number of fish caught and type of tackle used.
2. To determine the extent and distribution of float fishing, to examine the degree of conflict between those float fishing and those fishing from the bank and/or wading and to survey users of the creek for their opinion on continued float fishing activity.

METHODS

Creel Census

We used an instantaneous count and personal interviews methodology to sample fishing pressure and catch (Neuhold, J.M. and K. H. Lu 1957). Estimated instantaneous counts were obtained using a small fixed-wing aircraft flown four times weekly; twice daily on a weekend day or holiday and twice during weekdays. The entire river count required 50 to 75 minutes to obtain.

The creel clerk interviewed anglers on the stream bank from February through November, 1994. Interviews were obtained from anglers throughout the survey period and from all sections of the River (Figure 1). Completed and uncompleted trips were kept separate for trip length calculations.

A stratified random sampling design was used to estimate total fishing pressure. Count days were chosen randomly for each week and weekend. Holidays were included with the weekends. Time of the counts was randomly selected for each sample day during daylight hours.

Estimates of fishing pressure were made for each stratified period and river section (Table 1 and 2). The river section and stratified periods were summed to obtain a total fishing pressure estimate and variance. Pressure for each river section and stratified period was estimated by multiplying the sampled days mean instantaneous counts (in that strata and river section) times the total possible hours fishable within the strata. Period lengths were chosen to minimize sample variance. The variance of each river section-strata period was estimated by multiplying the variance of sampled counts by the total hours in the strata period. Use totals and variances for all strata periods-river sections were summed for the total season pressure and variance estimate.

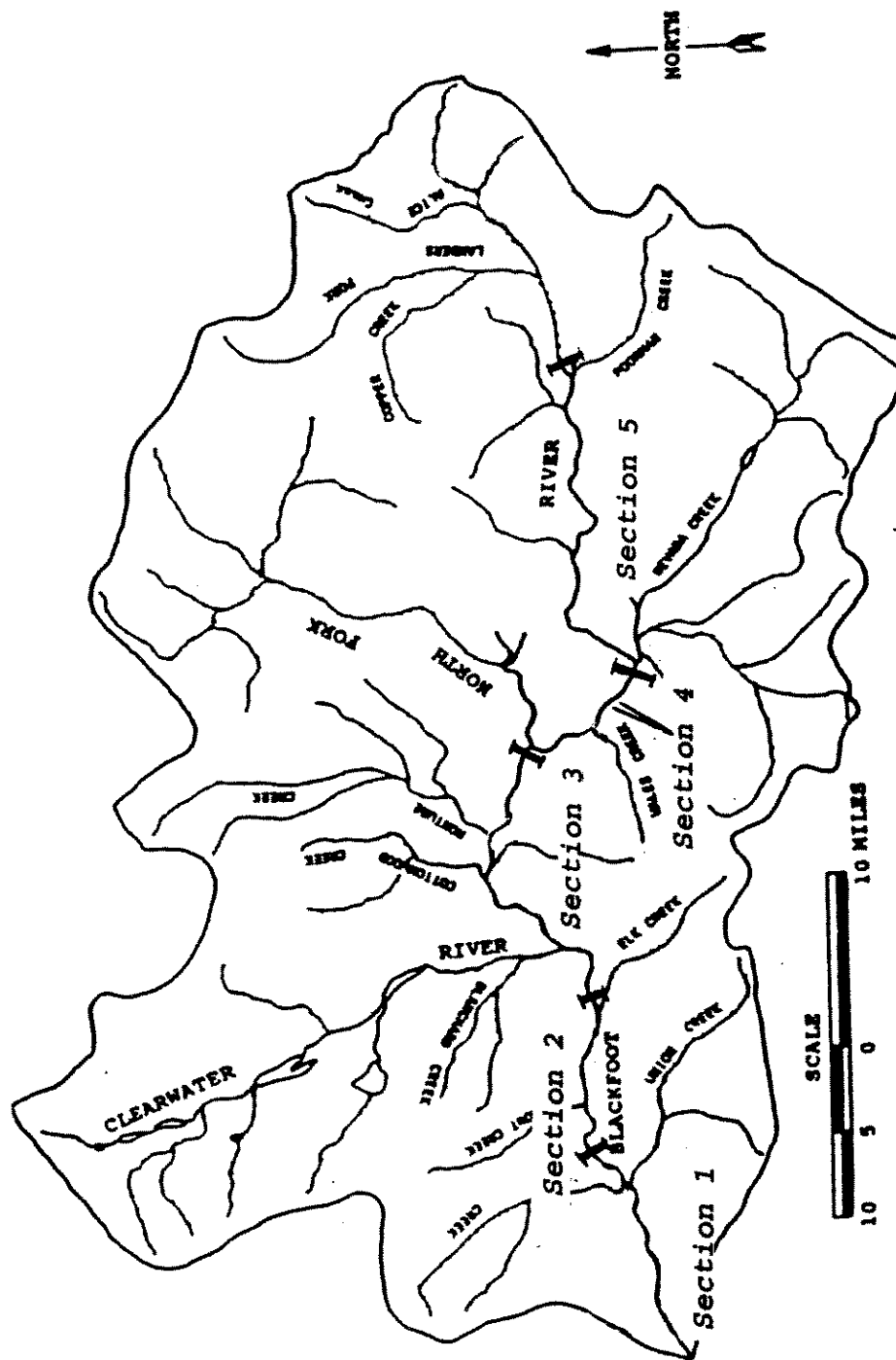


Figure 1. Blackfoot River drainage and 1994 creel census section locations and boundaries.

Table I. Definition of estimated time period strata for the 1994 Blackfoot River Creel Census.

Strata	Dates in strata	Day of week	Days in strata	Days sampled	Hours/day
1	02/01/94 - 03/15/94	weekdays	29	12	10
2	02/01/94 - 03/15/94	weekends	14	6	10
3	03/16/94 - 05/20/94	weekdays	48	18	13
4	03/16/94 - 05/20/94	weekends	18	9	13
5	05/21/94 - 06/30/94	weekdays	28	10	15
6	05/21/94 - 06/30/94	weekends	13	7	15
7	07/01/94 - 09/05/94	weekdays	44	19	13
8	07/01/94 - 09/05/94	weekends	22	11	13
9	09/06/94 - 11/30/94	weekdays	59	23	10
10	09/06/94 - 11/30/94	weekends	26	14	10
Totals			299	129	

Table II. Section definitions and length for the 1994 Blackfoot River Creel Census.

RESULTS

Angler Use

We made 825 instantaneous counts (by time strata and river section) and interviewed 1,116 anglers on the

Blackfoot River during the census period February 1 to November 30, 1994. Estimated angler use during this period was 10,432 angler-days. Bank anglers, anglers that use walking as a means to access the stream, averaged 2.7 hours per trip. Float anglers, anglers that use boats to access fishing areas, averaged 4.8 hours per trip.

Bank anglers comprised 69 % of the total estimated pressure on the Blackfoot River (Figure 2.) Float anglers accounted for 31 % of the anglers use on the Blackfoot River.

The precision of these use estimates is high as indicated by a 6.9 percent ratio of the 95 percent confidence interval to the point estimate of 7152 bank anglers.

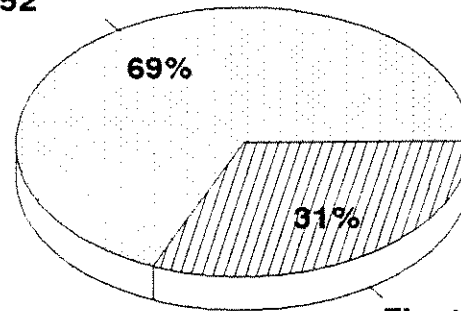
The peak angler use period for both float and bank anglers was from the general fishing season opening, May 21, to Labor Day, September 5 (Figure 3). Float anglers accounted for 52 % of the 3,396 angler-days in the first portion of the heavy use period May 21 to June 30. Bank anglers accounted for 73 % of the July 1 to Labor Day period angling use. Bank anglers dominate usage of the river during the early and late season periods with 78 % of the early/late season use (Feb. 1 - May 21 and Sept. 6 to Nov 31).

Section	Section Description	Section length (miles)
1	MOUTH TO WHITAKER BRIDGE	19.7
2	RED ROCK TO ROUNDUP FAS	10.5
3	SUNSET HILL FAS TO N. FORK	23.9
4	CEDAR MEADOWS FAS AREA	13.7
5	AUNT MOLLY TO LINCOLN	45.3
TOTAL		113.1

Float anglers fished the Blackfoot an average of 2.73 times during the census period.

Twenty-eight percent of the float anglers hired outfitters to fish the Blackfoot River.

Bank anglers
7152



Floating Anglers
3280

Flyfishing is a commonly used fishing method of fishing on

the Blackfoot River, used by 42 % of the anglers (Figure 4).

Hardware, bait and combinations of techniques are used by the majority of anglers, 58 percent.

Fifteen percent of anglers in 1994 were female and 85 % male (Figure 5).

The Blackfoot River was visited by non-resident recreationists from nearly every state and the countries Great Britain, Australia, Mexico, Canada and others accounting for 27.4 % of the total use.

Figure 2. Estimated angler-days of use for bank and floating anglers on the Blackfoot River in 1994.

Thousands of Angler-days

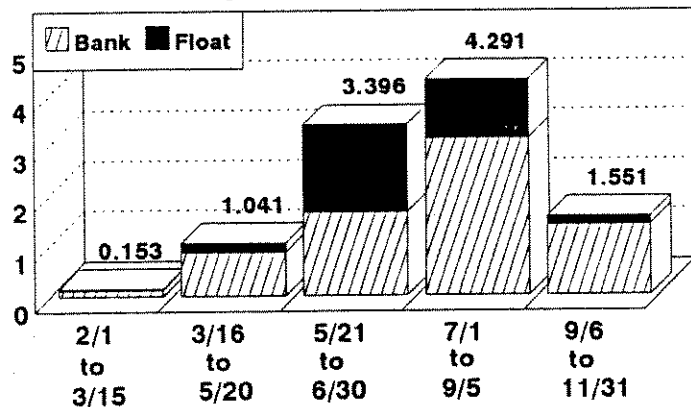


Figure 3. Estimated seasonal distribution of angling pressure on the Blackfoot River in 1994.

Non-angling and Angling Use

The Blackfoot River received an estimated 15,062 recreational days of use in 1994 for river based activities floating and fishing (excluding hunting, camping, picnicking, bird watching etc). The 10.5 mile long reach from Red Rock to

the Roundup FAS (fishing access site) received the heaviest use of all the sampled sections. An estimated 4,526

recreational-days total or 431 per mile or river including both fishing and recreational floating (Figure 6). The twenty mile reach from the mouth to Whitaker bridge received an estimated 7,469 recreational-days of use or 50 % of the total river traffic use. That use level equates to 379 recreational-days per mile. The largest user group on the mouth to Whitaker bridge section of the Blackfoot River is the recreational floater (non-angler) with an estimated 3016 recreational-days of use.

The Sunset Hill to the North Fork reach, 24 miles in length, received 68.8 recreational-days per mile. Recreational pressure on the Blackfoot River from Lincoln to the North Fork averaged 24 recreational-days per mile. The dominant user group in this area was the bank angler accounting for 82 %, although some recreational and angler floating does occur.

Twenty percent of anglers also participated in camping on their trips to the Blackfoot River (Table 3). The most popular camping area for those anglers was the Corrick River Bend campground, followed by Johnsrud Park, Russ Gates, and River Junction.

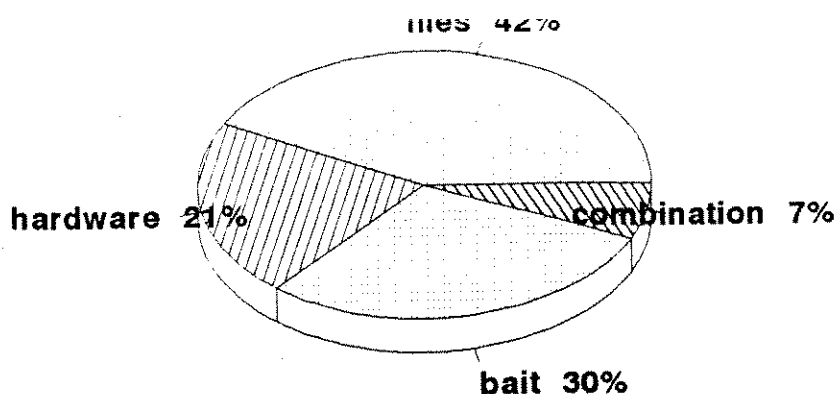


Figure 4. Type of fishing gear used by anglers on the Blackfoot River in 1994.

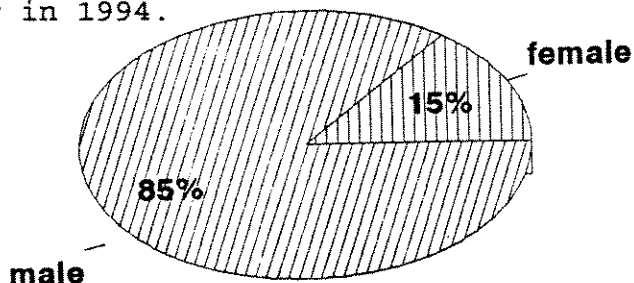


Figure 5. Gender of anglers using the Blackfoot River in 1994.

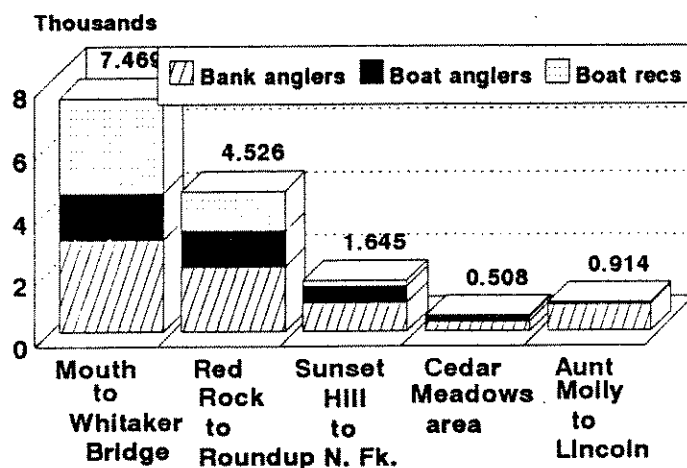


Figure 6. Estimated fishing and "recreation" pressure by section of the Blackfoot River in 1994.

Boat Usage

We estimated that 3,625 water craft launched on Blackfoot River in 1994. The Blackfoot River is a popular non-fishing recreational floating river, I will refer to this group of users as "recreational". An estimated 2314 recreational boats launched on the Blackfoot River in 1994 (Figure 7). The recreational boats carried an estimated 4630 people or 2 people per boat. Angler boats totaled to 1311 for the census period with 3280 anglers or 2.5 anglers per boat. An additional average of 0.6 person rode in the angler boats but did not fish.

Interaction of User Groups

Seventy-five percent of bank anglers observed no boats and 19 % saw 1 to 5 boats during the census period (Figure 8). Six percent of bank anglers saw more than 6 boats.

Sixty-five percent of float anglers encountered 1 to 5 bank anglers and 35 % saw 6 to 20 bank anglers (Figure 9).

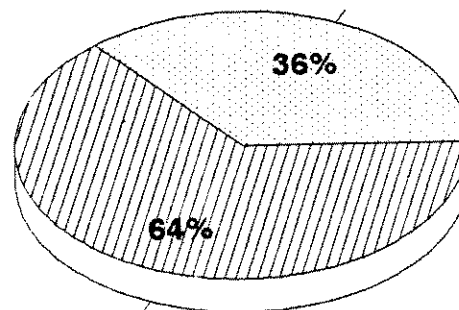
Float anglers perceived either no response or a friendly response from bank anglers when passing (Figure 10). No negative or aggressive behavior was evident to the sampled floaters. Float anglers indicated they moved around the bank anglers on the opposite bank 85 % of the time (Figure 11). Seventy-seven percent of float anglers indicated they stopped fishing in the bank anglers immediate area (Figure 12). Twenty-three percent of boat anglers fished through the bank anglers area.

No bank angler interviews were completed regarding boater conflicts.

Table III. Index of Campground useage by anglers on the Blackfoot River in 1994.

Campground location	Number interviewed
Angevine	1
Aunt Molly	4
Bear Creek	23
Bonner	2
East Twin	2
Johnsrud Park	33
KOA - Missoula	3
McNamara Bridge	1
Nevada-Ogden Road	5
River Junction	25
Corrick River Bend	53
Rock Creek Merc	2
Russ Gates	26
Swan Lake	5
Thibideau	15
Twin Creek	4

Angler boats
1311



Recreational boats
2314

Figure 7. Estimated boat usage by anglers and recreational floaters on the Blackfoot River in 1994.

Catch

An estimated 23,298 fish were caught in the Blackfoot River in 1994 (Table 4). Rainbow trout accounted for 52 % of the total catch. Mountain whitefish and cutthroat were the next most prevalent in the catch accounting with 24 and 14 % respectively. Brown trout and bull trout accounted for 8 and 2 percent respectively. No brook trout were captured by censused anglers during the entire season.

Of all the fish caught by anglers an estimated 19,004 were released back to the stream, 84 % of the total catch. We estimated 10,943 rainbow trout released by bank and float anglers (Figure 13). Cutthroat trout were the second largest group of fish released by anglers accounting for 3,196 fish in the catch.

Anglers harvested 4 times more whitefish than any other species (Figure 14). Rainbow trout were the only other species harvested in any significant numbers. Cutthroat and bull trout fishing regulations prohibit their harvest. The estimated harvest of 10 bull and cutthroat trout is suspected to be extremely low for an illegal take estimate. No special efforts were made to get an illegal harvest estimate.

Float anglers kept fewer fish than the bank anglers

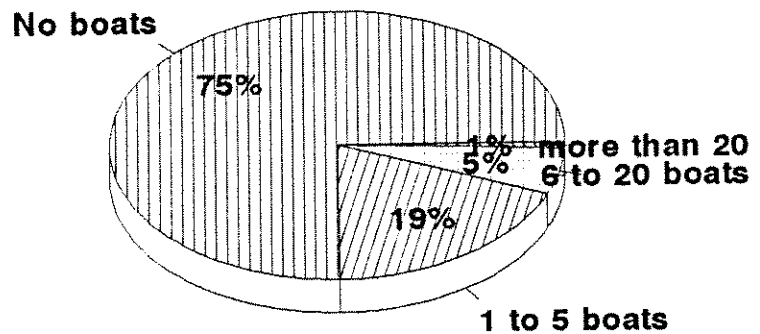


Figure 8. Bank anglers frequency of encounters with boats in 1994.

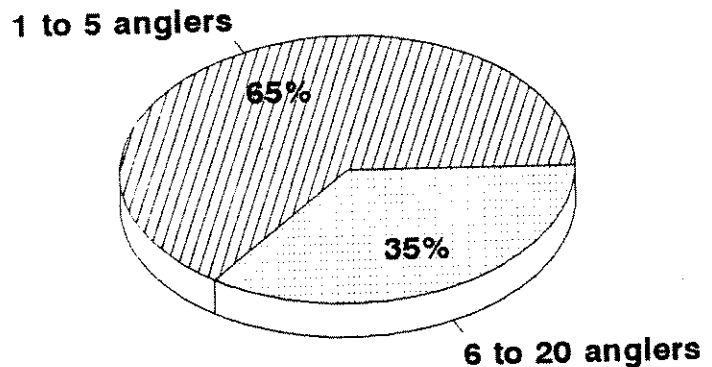


Figure 9. Floating anglers frequency of encountering bank anglers in 1994.

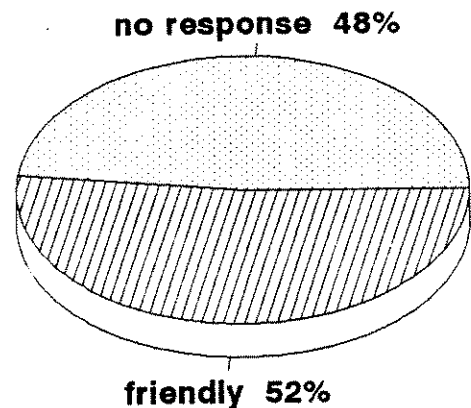


Figure 10. How floating anglers perceived walking angler response in 1994.

(Figure 14). However neither group of anglers kept many fish compared to the number of fish released.

The 10.5 mile long section, Red Rock to Roundup FAS, had the highest number of caught and released fish per mile with 674

(Figure 15). The mouth to Whitaker bridge section averaged 488 fish caught per mile. The Sunset Hill to North Fork reach averaged a catch and release rate of 168 fish per mile. The Cedar Meadows area and Aunt Molly to Lincoln sections averaged 67 and 20 fish per mile respectively.

Bull trout were caught in the greatest numbers in the mouth to Whitaker bridge section, 206 were estimated caught and released. Bull trout accounted for 9 % of the catch in that reach. The second largest number of bull trout caught and released occurred in the Lincoln to Aunt Molly section.

Overall catch rate for bank anglers

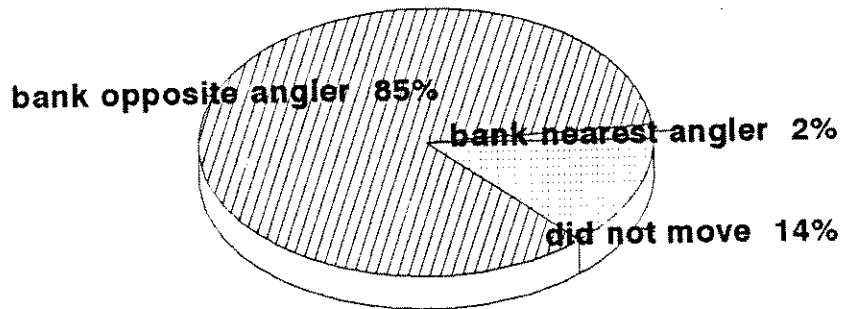


Figure 11. How boat anglers passed by bank anglers on the Blackfoot River in 1994.

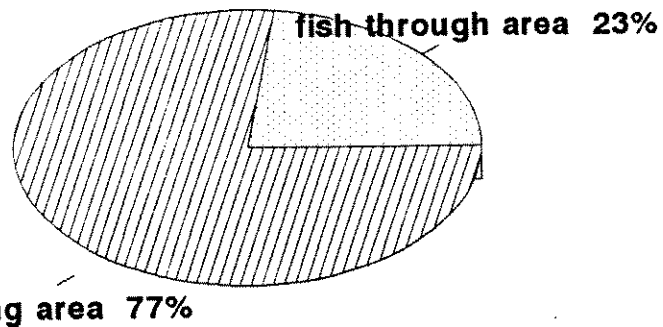


Figure 12. Upon meeting a walking angler the float angler responded in the following ways in 1994.

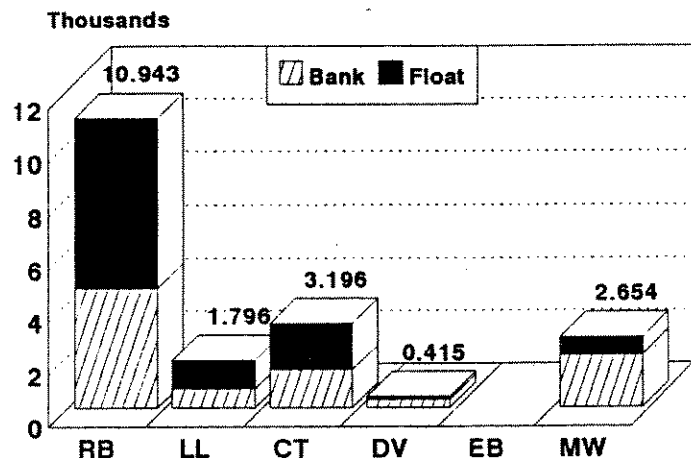


Figure 13. Summary of estimated number of released fish by species and type of angler in 1994.

averaged 0.70 fish/hr. Float anglers had an average catch rate of 0.62 fish/hr. Catch rates did not vary significantly between sections of river, time of the year or the angler types.

Table IV. Estimated catch by river section and fish species for the Blackfoot River in 1994.

Section	rainbow	brown	cutthroat	bull	brook	whitefish
mouth to Whitaker Brdg	4776	1251	963	206	0	2580
Red Rock to Roundup FAS	4793	191	536	59	0	1500
Sunset Hill to North Fork	1558	194	1177	17	0	1095
Cedar Meadows area	228	33	262	57	0	344
Aunt Molly FAS to Lincoln	413	137	258	86	0	584

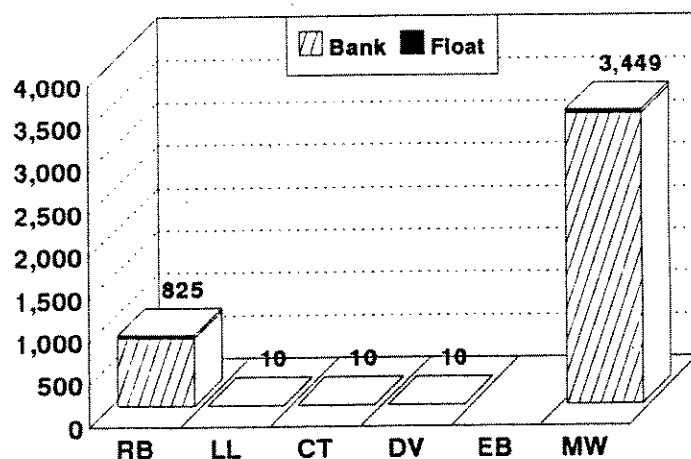


Figure 14. Summary of estimated number of fish kept by angler type and species for 1994.

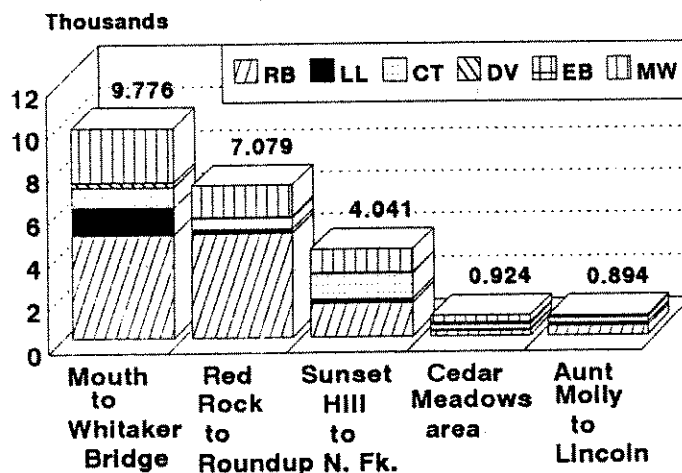


Figure 15. Summary of released fish by river section and species for 1994.

Summary and Conclusions

Non-angling and Angling Use

The perception of most long-term anglers on the Blackfoot is that use is increasing again from the declines that occurred in the 1980's. The declining use in the 1980's was felt by anglers to be a result of poor trout populations. Improving trout populations, high aesthetic values, accessibility, habitat restoration, rapidly increasing western Montana human population and the cultural influences of a major motion picture "A River Runs Through It" focusing on the Blackfoot River are all playing a role in the increased use.

We estimated 10,432 angler-days and 15,062 non-angler visitor days of pressure in 1994 on the Blackfoot River. These 1994 angler and non-angler use estimates for the Blackfoot River are below normal because of extremely low flows and warm water temperatures. The high stream temperatures and low flow conditions prompted news releases from the MDFWP and other concerned anglers in local media for anglers to refrain from fishing the main rivers in the summer of 1994. As a result the total pressure estimates declined 70 % from the 34,179 estimated in the statewide pressure estimate in 1993. Number estimates in this 1994 creel census are likely to be off by a factor of 3 or 1/3 of expected values in "normal" years. However relative factors are expected to be accurate i.e. percentage of non-residents, percentage of pressure by section, species composition of the catch, etc.

This creel census was the first attempt to measure aspects of recreational use and fishing pressure on the Blackfoot River over most of the river using standard census methods based on instantaneous counts of use and personal interviews. Two recreational use censuses were conducted in the "Blackfoot River Recreational Corridor". The "Recreational Corridor" is a 27-mile long section of the Blackfoot River with unique cooperative agreements between private landowners, MTDFWP, and Missoula County. The Recreational Corridor was established to provide for controlled public access to the predominately private lands bordering the Blackfoot River. In 1991 "recreational" use of this corridor was estimated at 28,563 visitor days (Baxter, G.W and J.H. Sproull 1992). Their recreational use estimates included: camping, hunting, floating, fishing, bird-watching, etc.

The heaviest used section of the river is the 10.5 mile long reach from Red Rock to the Roundup FAS (fishing access site). An estimated 431 recreational-days of use per mile of river occurred in 1994 (includes both recreational boating and angler use). The twenty mile reach from the mouth to Whitaker bridge received an estimated 7,469 recreational-days or 373 recreational-days per mile. The largest river user group on the mouth to Whitaker bridge section of the Blackfoot River is the recreational floater

(non-angler) with an estimated 3016 recreational-days of use.

Non-resident anglers contributed 27.4 % of the total fishing pressure on the Blackfoot River in 1994. In contrast, Rock Creek's non-resident use was at 39 % in 1993. The Blackfoot River had users from nearly every state and several other countries which is not as prevalent in Rock Creek. The Blackfoot River will probably attract significantly more non-resident use in the future.

The predominance of private land bordering the Blackfoot River has required "special" management via the "Blackfoot River Recreational Corridor" to insure public access and orderly use. Maintaining orderly use in the lower Blackfoot River is beginning to be increasingly difficult during the peak use period of June through August. A recreational river planning process started in January, 1995 is needed to explore management options with public input.

Angler Catch

The Blackfoot River supports a higher percentage of non-flyfishing anglers than Rock Creek. In Rock Creek 80 % of bank anglers (anglers that walk to their fishing spots) use flies for fishing. In contrast on the Blackfoot River only 42 % are flyfishing anglers. Artificial lure regulations in Rock Creek contribute to this discrepancy.

High catch and release rates occur for both Rock Creek and the Blackfoot River. In 1993 Rock Creek's predominate flyfishing anglers released 22,063 fish. In 1994 the Blackfoot River's mixture of bait, fly and hardware anglers released 19,004 fish or 84 % of the total catch. In a "normal" flow year the Blackfoot River could be sustaining 63,000 released fish (based upon a 1993 reduction in pressure of 70%). Bait and hardware anglers are practicing catch and release fishing to a high degree in the Blackfoot River. Improvements in the numbers of bull trout, cutthroat, and larger trout of all species in the 1993 large river population estimates indicate successful release of fish. The exact rates of survivorship for released fish would be difficult to obtain. However success or failure to attain conservative population improvement goals are adequate at this time.

The estimated harvest of 824 or 2472, including the factor of 3 correction, rainbow trout from the Blackfoot River does not seem to be excessive. Problems with compliance with the special fish size and species regulations do occur especially with the casual anglers within the bait and hardware group. Special programs are being developed by the Enforcement and Information/Education Division in 1995 to reach these anglers.

Catch for all anglers in 1994 in the Blackfoot River averaged near 0.70 fish per hour. This compares favorably with Rock Creek's 1993 rate of 0.99 fish/hr. Float anglers on Rock Creek however experienced a 2.17 fish/hr catch rate in 1993 in

contrast to the Blackfoot River's 0.62 fish/hr. The Blackfoot River may not be as good throughout its prolonged float season compared to Rock Creek's high-water only and salmonfly hatch season. Blackfoot float anglers may also be involved in "other" activities during their floats that reduce overall catch rates.

Float anglers fish an average of 2.1 hrs. longer per day than bank anglers on the Blackfoot River. The average bank angler fished for 2.7 hrs. and the average float angler 4.8 hrs.

Boat Usage

We estimated that 3,625 water craft launched on Blackfoot River in 1994. The Blackfoot River is a popular non-fishing recreational floating river. An estimated 2314 recreational boats (non-fishing) launched on the Blackfoot River in 1994. The majority of boats used the river below Roundup FAS.

An estimated 1,311 fishing boats launched on the Blackfoot River in 1994 and accounted for 31 % of the fishing pressure. In contrast in 1993 we estimated 500 floaters fished Rock Creek or 8.2 percent of all Rock Creek anglers. The Blackfoot River's larger size, better access and longer floatable season could result in considerably higher boat use in the future.

Float anglers can be further partitioned into commercial (guided) or private. Commercial floaters accounted for 28 % and private floaters 72 % of the floater usage on the Blackfoot River. Rock Creek experiences similar commercial to private use ratio with 27.2 commercial and 72.8 % private floaters.

Many questions need to be answered regarding boat usage on the Blackfoot River. How many boaters can the river accommodate? How many boaters can the access sites accommodate? How much crowding are river users willing to accept? Some landowners are beginning to feel the presents of the increased numbers of boaters on the river and are increasingly becoming less accepting of the public use? How will these conflicts be dealt with?

Interaction of User Groups

Seventy-five percent of bank anglers observed no boats and 19 % saw 1 to 5 boats during the census period. Only 6 % of bank anglers saw more than 6 boats. Sixty-five percent of float anglers encountered 1 to 5 bank anglers and 35 % saw 6 to 20 bank anglers. Bank anglers must be avoiding the high use floating periods and river sections based upon the low number of boats observed. Landowners are beginning to notice an upstream movement in the boat traffic. More conflicts with bank anglers is likely to result as boat traffic increases in the middle and upper reaches.

In 1994 boat anglers perceived either no response or a friendly response when passing bank anglers. No negative or aggressive behavior was evident to the sampled floaters. Float anglers

indicated they moved around the bank anglers and avoided fishing bank anglers water in a high percentage of their encounters. This indicates an understanding of float fishing etiquette by the float anglers which has probably help minimize conflicts. Programs to educate floaters on floating etiquette need to be developed and continually used. No bank angler interviews were completed regarding boater conflicts in 1994. The interviews were planned as part of this creel effort but were not completed. Future censuses will need to be sure and get this important information.

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