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# Economic Contributions of the Yellowstone River to Park County, Montana

MT Expression White Paper -2016-16

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9/20/2016



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## Economic Contribution of the Yellowstone River to Park County, Montana: White Paper

Jeremy L. Sage, Economist & Associate Director  
Institute for Tourism and Recreation Research, University of Montana

On August 19, 2016, Montana's Department of Fish, Wildlife and Parks (FWP) instituted a temporary emergency closure on a large extent of the Yellowstone River and its tributaries between the northern Yellowstone National Park boundary near Gardiner, MT and Laurel, MT, about 183 miles downriver. The closure applied to all water based recreation uses on the affected rivers and streams. FWP's actions followed the identification of the presence of an invasive parasite known to cause proliferative kidney disease in mountain whitefish. The parasite is believed to be the primary cause in the death of thousands of whitefish. FWP's decision to institute the temporary closure was based not only on the observed presence of the parasite, but also a number of confounding conditions that may threaten longer term impacts if not effectively addressed. Such conditions include: Low river flows, elevated water temperatures, and recreational pressure on the fisheries. FWP states that a major goal of the closure was to not only prevent spread of the parasite to other rivers, but more importantly, to protect infected fish from the stress of angling and other recreation in order to increase their survival to the following year. Infected fish that survive to the following year can show signs of developed resistance to the parasite.

Recognizing the potential for significant economic impacts flowing from the closure, Governor Steve Bullock took additional steps on August 29<sup>th</sup> by declaring an "invasive species emergency".<sup>1</sup> The Governor's declaration opened up more than \$15 million for use in worker retention grants and other programs.

The temporary closure is likely to significantly impact both the recreational fishing and the guided river excursion industries, as August and September are both busy seasons. This white paper provides a summary of the contribution of water based activities (fishing, rafting, floating, canoeing, and kayaking) to the Montana economy in general, and a preliminary estimation of the potential impacts the 2-3 week Yellowstone closure had on the Park County economy. ITRR aims to conduct a follow up study in the following months to fully assess the impacts of the closure, including a discussion of potential long term positive and negative effects.

**Problem Summary:** 1). The Upper Yellowstone River is the most fished (by angler days) river drainage in Montana by residents and nonresident visitors to the state.<sup>2,3</sup> 2). Closure of the affected portions of the river to all water based activities directly impacts spending behavior by visitors to counties affected by the closure, thus reducing revenue to river dependent business. 3) As river dependent businesses are affected, economic impacts spread throughout the region's economy.

**River Based Activities Contribute to Montana's Economy:** More than 11.7 million nonresident visitors are estimated to have traveled to Montana in 2015; nearly 5.4 million groups. Twelve percent (64,355) of the travel groups had at least one member who fished in Montana during their visit. According to a 2015 survey of nonresident visitors to Montana by the University of Montana's Institute for Tourism and Recreation Research

<sup>1</sup> Executive Order Proclaiming an Invasive Species Emergency to Exist in the State of Montana. Executive Order No. 14-2016. August 29, 2016. See Document [HERE](#).

<sup>2</sup> FWP, 2015. Montana Statewide Angling Pressure 2013. Statewide Management Plan Drainages Mapped on Page 16. Angling pressure in angler days by drainage by lake or stream shown in Table 5. See Document [HERE](#).

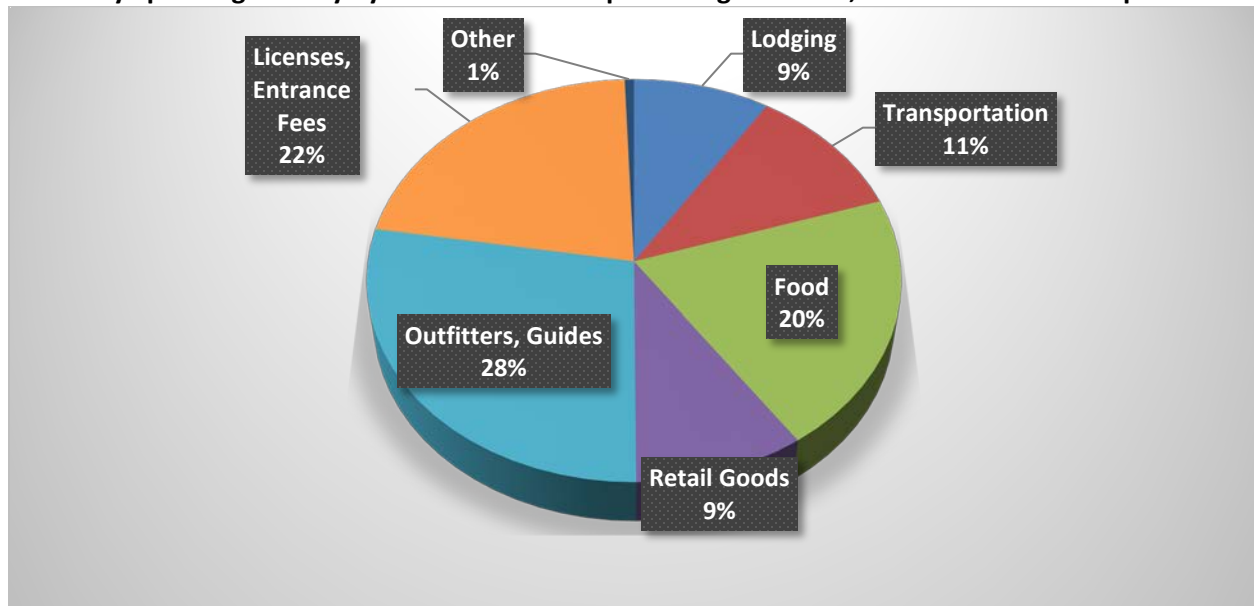
<sup>3</sup> Note: The Upper Yellowstone River Drainage region contains 987 unique water codes. Of those, 58 were included in the current temporary closure.

# Economic Contributions of the Yellowstone River to Park County, Montana

2016

(ITRR), travel groups who fished during their visit outstayed and outspent the average Montana visitor. Groups that fished, stay in Montana on average 9.17 nights and spends an average of \$218 per day of their visit, for total of \$1,999 per trip. The average Montana visitor spends 4.59 nights and \$149 per day, for a total of \$685 per trip. Visiting groups spend their trip funds across a wide swath of tourism and recreation supported businesses (Figure 1). In total, groups who fished spent \$128.6 million last year.

**Figure 1. Daily Spending Activity by Nonresident Groups Visiting Montana, Who Fish on Their Trip.**

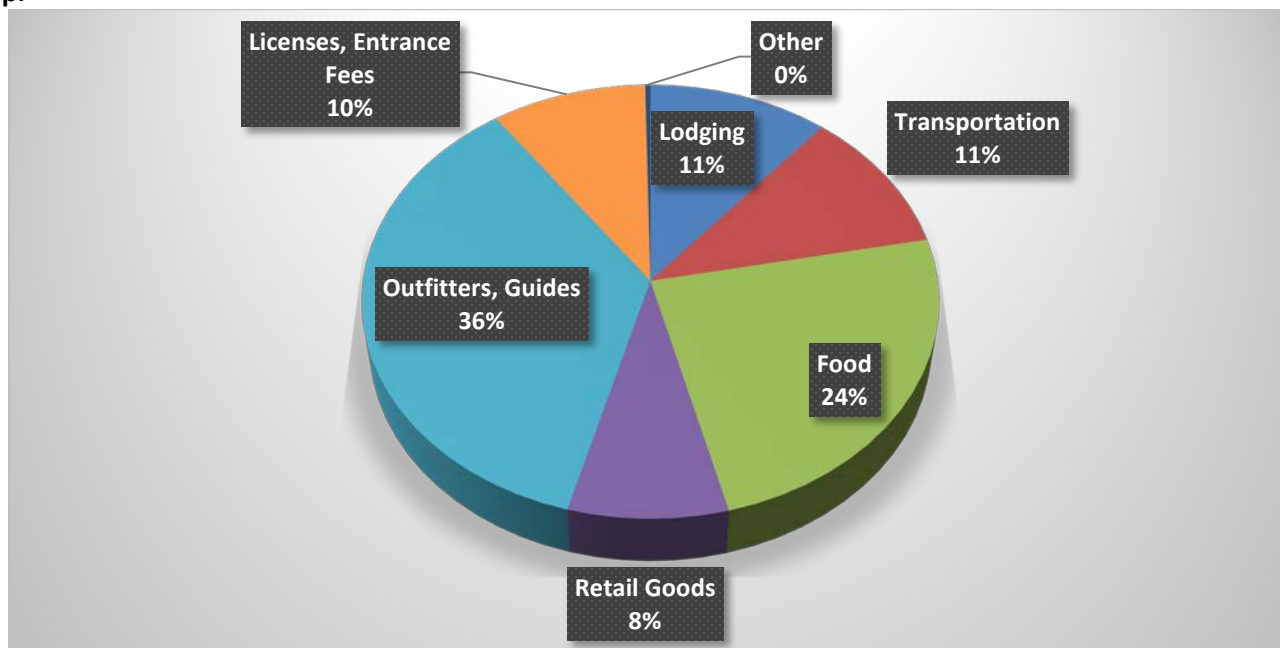


Like many visitors to Montana, travel groups who fished also take part in a wide variety of other activities while here, namely hiking (59%), wildlife watching (50%), recreational shopping (34%), visiting a local brewery (27%), visiting a museum (25%), visiting historic sites (25%), and participating in river rafting or floating (21%). More than half (56%) also visited Yellowstone National Park, and 34% visited Glacier National Park. Typically, visiting Yellowstone or Glacier is the primary purpose of their trip. Of the roughly nine nights these groups spent in Montana, 40% of the nights were in the Yellowstone Country Travel Region (incorporating the counties of Park, Gallatin, Sweetgrass, Stillwater, and Carbon).

In addition to fishing opportunities on Montana's rivers, many, especially the Upper Yellowstone River, are home to other recreationalists as they raft, float, kayak, and canoe. In 2015, 8% (42,900) of nonresident travel groups had at least one member who participated in one of these river activities on their trip to Montana. Similar to those groups that fished on their trips, these groups spent their vacation or travel dollars across many businesses in Montana (Figure 2), with outfitters or guides, and food outlets being the heaviest spending categories. Groups that participated in these water based activities spent an average of \$227 dollars per day on their trips in Montana, for a total of \$92 million. Like groups that fished, these travelers outstayed (9.47 night average) and outspent the average Montana visitor. Note that the spending for the two identified groups is not additive as there is significant overlap between them.

# Economic Contributions of the Yellowstone River to Park County, Montana 2016

**Figure 2. Daily Spending Activity by Groups Visiting Montana, Who River Raft, Float, Canoe, or Kayak on Their Trip.**



**Park County as a Hub of Outdoor Recreation:** As noted above, 40% of the nights spent in Montana by groups that fished were in Yellowstone Country and the Upper Yellowstone River is a major draw for water based recreation. Many of the activities on the river occur in Park County (Figure 3), home of Livingston, the north entrance to Yellowstone National Park in Gardiner, and the Paradise Valley in-between. In 2014, tourism related industries made up 31% of Park County’s total employment. Since 1998, travel and tourism employment has grown by 20.4% (1,210 to 1,457), while employment in all other sectors has grown 10.6% (2,955 to 3,267). A large majority of travel and recreation employment growth is attributable to accommodation and food service industries.<sup>4</sup>

**Figure 3. Park County, MT.**



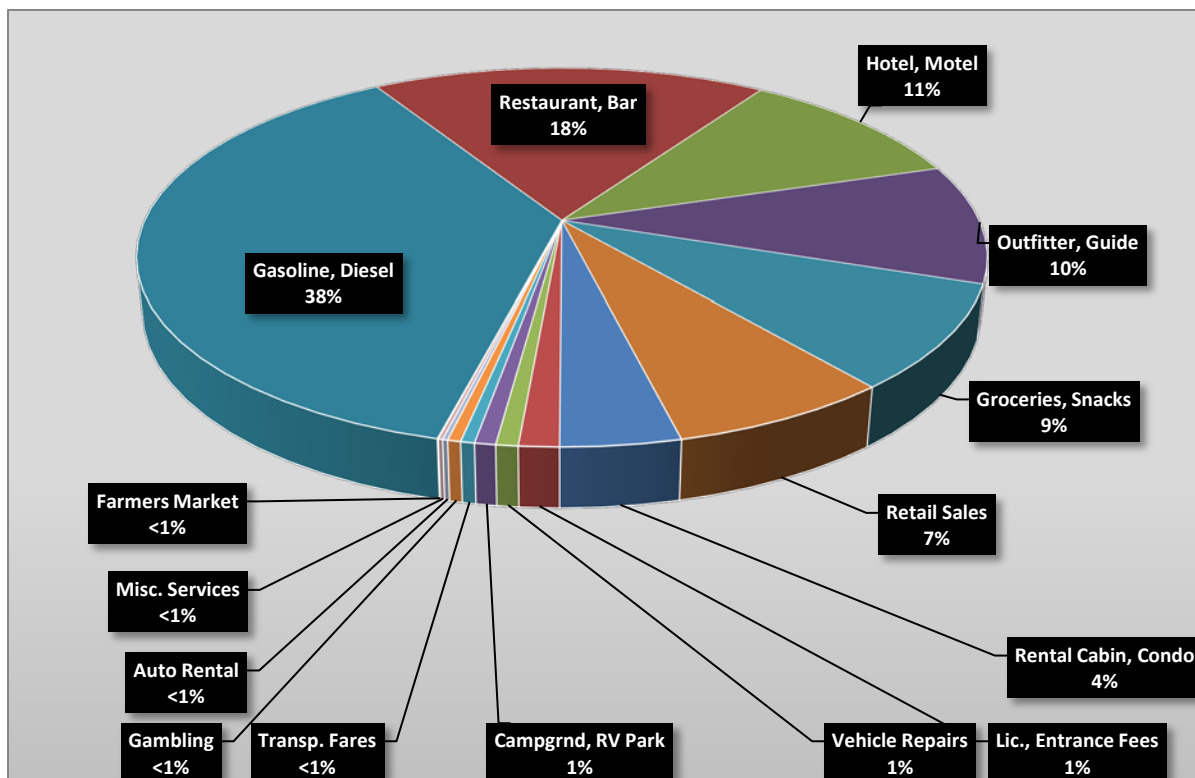
<sup>4</sup> Data generated using Headwaters Economics’ Economic Profile System (EPS). Data sources used in the EPS include U.S. Department of Commerce, 2016, Census Bureau, County Business Patterns, Washington, D.C.

# Economic Contributions of the Yellowstone River to Park County, Montana 2016

Growth in industries like accommodations and food service reflects the growing popularity of the region and its natural amenities. Attraction to the region is felt through both positive net migration and increasing visitors to amenity rich towns like Gardiner. Previous work by Economist Larry Swanson at University of Montana’s Center for the Rocky Mountain West identified rural counties near national parks, such as Park County, having experienced more population growth than their non-park-neighboring counterparts. These counties contain significant environmental and recreational amenities that people enjoy and wish to live near. Additional research from ITRR found that amenities attracting people to Montana for vacations are many of the same qualities that residents of the state appreciate – open and un-crowded spaces, wildlife, public lands, and abundant recreation opportunities. Frequently, Montanans who have relocated to the state from elsewhere, did so after having had an opportunity to vacation or work seasonally here.<sup>5</sup> As such, much of the economic vitality and future of amenity rich counties in Montana and across the west significantly depends on visitor attraction.<sup>6</sup>

In 2014 spending in Park County by nonresident visitors to Montana generated \$124.1 million in direct economic activity and another \$45.8 million in indirect activity. The top four expenditures by nonresident visitors were fuel, restaurants and bars, lodging, and outfitters and guides (Figure 4). This nonresident spending supported 2,410 jobs either directly or indirectly.

**Figure 4. 2014 Nonresident Expenditure Percentages in Park County.**



<sup>5</sup> Oschell, Christine, "The Montana Tourism Industry: The People and the Businesses" (2012). *Institute for Tourism and Recreation Research Publications*. Paper 231. [http://scholarworks.umt.edu/itr\\_r\\_pubs/231](http://scholarworks.umt.edu/itr_r_pubs/231)

<sup>6</sup> Swanson, L. 2016. Key Trends, Dependencies, Strengths and Vulnerabilities in Park County, Montana, and its Area Economy.

# Economic Contributions of the Yellowstone River to Park County, Montana 2016

**Influence of the Upper Yellowstone River:** The Upper Yellowstone River is perhaps one of the most sought after fishing destinations in the continental US. According to a FWP survey in 2013, the Upper Yellowstone garnered more angler days than any other river drainage, accounting for 10.9% of all stream and lake angler days in the state.<sup>7</sup> Neighboring Upper Missouri and Madison rivers ranked second and third with 8.4% and 8.0% respectively.<sup>8</sup> Nonresident anglers made up 35.8% of angler days on the Upper Yellowstone (Table 1). According to a 2015 report submitted to FWP, nonresident anglers on rivers spend an average of \$385.30, while lake anglers spent \$280.78 per fishing day. Combined, the 134,270 nonresident angler days spent on the Upper Yellowstone in 2013 generated \$50.3 million in spending, dispersed among transportation, food, lodging, and equipment and supply businesses (Table 2). Though more numerous, resident anglers spend considerably less on a daily basis on both rivers and lakes, \$80.51 and \$87.36 respectively. Resident anglers spent an estimated \$19.7 million in Montana over the course of their 240,013 days on the water.<sup>9</sup>

**Table 1. 2013 Angler Days on Montana’s Upper Yellowstone River Drainage Area.<sup>10</sup>**

	Summer			Winter			Grand Total
	Resident	Nonresident	Total	Resident	Nonresident	Total	
<b>Lake</b>	39,629	6,844	46,472	9,241	7,223	16,464	62,936
<b>Stream</b>	146,956	95,587	242,542	44,187	24,616	68,803	311,345
<b>Total</b>	<b>186,585</b>	<b>102,431</b>	<b>289,015</b>	<b>53,428</b>	<b>31,839</b>	<b>85,267</b>	<b>374,282</b>

**Table 2. 2013 Total Direct Annual Spending by Anglers on the Upper Yellowstone River. (Million\$)**

	Summer			Winter			Grand Total
	Resident	Nonresident	Total	Resident	Nonresident	Total	
<b>Lake</b>	\$3.46	\$1.92	\$5.38	\$0.81	\$2.03	\$2.84	\$8.22
<b>Stream</b>	\$11.83	\$36.83	\$48.66	\$3.56	\$9.48	\$13.04	\$61.70
<b>Total</b>	<b>\$15.29</b>	<b>\$38.75</b>	<b>\$54.04</b>	<b>\$4.36</b>	<b>\$11.51</b>	<b>\$15.88</b>	<b>\$69.92</b>

Roughly three-quarters of all angler days occur during summer months (FWP identifies summer as May-September, and winter as October-April), typically peaking in July and August. Averaged out over the summer, nearly 1,900 angler days and approximately \$353,000 per calendar day were spent by anglers on the Upper Yellowstone River, tributaries and lakes in 2013.<sup>11</sup> Note that this spending reflects the entire Upper Yellowstone River Drainage, which exceeds the closure area. The closure was contained to segments of the drainage area.

**A River Closure Flows Through the Economy:** As already discussed, businesses related to tourism and recreation are a major employer in Park County. The \$70 million in combined spending by anglers in 2013

<sup>7</sup> FWP defines an angler day as one fisherman fishing one body of water for any amount of time on a given day.

<sup>8</sup> FWP, 2015. Montana Statewide Angling Pressure 2013. Statewide Management Plan Drainages Mapped on Page 16. Angling pressure in angler days by drainage by lake or stream shown in Table 5. See Document [HERE](#).

<sup>9</sup> Christensen, N. 2015. Hunting and Fishing in Montana: The Economic Impact of Nonresident Spending and the Economic Significance of Resident Spending.

<sup>10</sup> FWP, 2015. Montana Statewide Angling Pressure 2013. Angling pressure in angler days by drainage by lake or stream shown in Tables 5, 7 and 9. See Document [HERE](#).

<sup>11</sup> Swanson, L. 2016. Key Trends, Dependencies, Strengths and Vulnerabilities in Park County, Montana, and its Area Economy.

contributed between 620 and 780 jobs to the region's employment base. Nonresident angler spending accounts for roughly 70% of those jobs. The August 19<sup>th</sup> closure of the Upper Yellowstone places a sizable, yet currently uncertain number of these jobs and associated business revenues in jeopardy. Uncertainty in the jobs and economic outlook of river activity supported businesses arises as a result of unknown changes to the travel behavior of potential visitors and residents wishing to fish, raft, or otherwise recreate on closed portions of the river. For example, anglers hoping to fish on the Upper Yellowstone have several choices ranging from cancelling their trip to Montana all together, to relocating their fishing to an open river or lake, to not fishing on this trip but still engaging in many other recreation opportunities in the region. How these decisions unfold across all potential anglers will greatly influence the ultimate impact of the parasite caused closure. It is likely that a significant proportion are changing their fishing location or the recreation activity they participate in. Whether such recreation changes are positive or negative, depends on perspective. Localized negative impacts are certainly felt within the affected area of the closure. However, potential positive spending impacts may accrue to neighboring areas as they see increased visitation by dislocated anglers and floaters. In discussions with local outfitters and fly shops near the prime areas of the Upper Yellowstone, business in the early days of the closure was down roughly 80% as compared to a typical August day. Fishing guides, though often able to switch rivers, were doing so at added travel cost to them, and thus reducing their take home at the end of the day. Several rafting companies in the Gardiner area closed up the rafting portion of their shop completely, as they were fully dependent upon the Upper Yellowstone. Several outfitters maintain close relationships with area lodging businesses, however as the outfitter had to move clients to different rivers, they also had to move their clients to different lodging that is closer to the new river. This comes at a substantial cost to the outfitter and the local lodging facilities.

Though uncertainty exists in the economic outcomes of the closure, both for the remainder of the season, and lingering future effects, estimates can be generated based on already observed behaviors and typical expenditures by recreationists. The above discussion helps create a pair of high and low effect scenarios, from which impacts can be estimated. The two scenarios assume the following:

### **High Potential Impact – River closed August 19-September 6**

- 100% of groups who come to MT specifically to float (2% of the total number of groups who floated)<sup>12</sup> will decide not to come to Montana;
  - Equivalent to a loss of 2% of total daily spending by groups who floated during their Montana visit.
  - Recall Figure 2, to see the industries most directly impacted by the reduced spending.
- Floating groups who still come to MT will not spend the money they would have used to float (Outfitter/guide expenditures) on other activities;
  - Represents a total loss of outfitter and guide expenditures from these groups.
- 80% of groups who come to MT specifically to fish (33% of the total number of groups who fished)<sup>13</sup> will decide not to come to MT;
  - Equivalent to a loss of 26.4% of total daily spending by groups who fished during their Montana visit.
  - Recall Figure 1, to see the industries most directly impacted by the reduced spending.

<sup>12</sup> Nickerson, Norma P.; Oschell, Christine; Rademaker, Lee; and Dvorak, Robert, "Montana's Outfitting Industry: Economic Impact and Industry-Client Analysis" (2007). *Institute for Tourism and Recreation Research Publications*. Paper 212. See Document [HERE](#).

<sup>13</sup> *Ibid.*



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- Fishing Groups who still come to MT will not spend the money they would have spent to fish (Licenses, Outfitters/guides) on other activities;
  - Represents a total loss of License, outfitter and guide expenditures from these groups.

## Low Potential Impact – River closed August 19-September 6

- 50% of groups who come to MT specifically to float (2% of the total number of groups who floated) will decide not to come to Montana
  - Equivalent to a loss of 1% of total daily spending.
- Floating groups who still come to MT will still spend the money they would have used to float (Outfitter/guide expenditures) on other activities - Proportionately dispersed based on typical spending.
- 20% of groups who come to MT specifically to fish (33% of the total number of groups who fished) will decide not to come to MT.
- Fishing Groups who still come to MT will spend the money they would have spent to fish (Licenses, Outfitters/guides) on other activities - Proportionately dispersed based on typical spending.

Using the most recent estimates of Park County nonresident visitor spending from ITRR (2014) as a base of comparison, Table 3 highlights the economic impact of all nonresident visitor expenditures absent a closure.<sup>14</sup> Given the two scenarios described above, employment is reduced due to the closure by 5.5 to 7.8 jobs, and total economic output of the county is reduced by \$359,750 to \$523,815 depending on assumptions made. It is important to note here that the jobs lost, are one year equivalents (1 job lasting 12 months = 2 jobs lasting 6 months). The impacts estimated below represent only those accrued during the approximate two week duration of the closure as a result of nonresident spending. Continued impacts on this floating and fishing season can be expected as several rafting outfitters closed up fully for the season, despite the river opening back up. This represents a loss of nearly a month and a half of potential revenue.

**Table 4. Park County Nonresident Visitor Spending Economic Impacts.**

Impact Type	Employment	Labor Income	Value Added	Output
<b>Direct Effect</b>	1,967.70	\$50,923,363	\$70,640,308	\$129,399,251
<b>Indirect Effect</b>	234.8	\$6,249,751	\$13,369,707	\$25,387,557
<b>Induced Effect</b>	213.9	\$6,087,429	\$12,897,491	\$22,579,396
<b>Total Effect</b>	<b>2,416.30</b>	<b>\$63,260,543</b>	<b>\$96,907,506</b>	<b>\$177,366,203</b>

**Table 5. Economic Indicator Changes due to Estimated High Closure Impact.**

Impact Type	Employment	Labor Income	Value Added	Output
<b>Direct Effect</b>	-6.50	-\$135,511	-\$182,777	-\$373,554
<b>Indirect Effect</b>	-0.80	-\$18,917	-\$49,523	-\$89,330
<b>Induced Effect</b>	-0.60	-\$16,423	-\$34,812	-\$60,931
<b>Total Effect</b>	<b>-7.80</b>	<b>-\$170,852</b>	<b>-\$267,111</b>	<b>-\$523,815</b>

<sup>14</sup> Grau, Kara, "2014 Economic Contribution of Nonresident Travel Spending in Montana Travel Regions and Counties" (2015). Institute for Tourism and Recreation Research Publications. Paper 315. [http://scholarworks.umn.edu/itr\\_r\\_pubs/315](http://scholarworks.umn.edu/itr_r_pubs/315)

**Table 6. Economic Indicator Changes due to Estimated Low Closure Impact.**

Impact Type	Employment	Labor Income	Value Added	Output
<b>Direct Effect</b>	-4.60	-\$87,213	-\$116,747	-\$253,010
<b>Indirect Effect</b>	-0.60	-\$13,289	-\$37,979	-\$67,112
<b>Induced Effect</b>	-0.40	-\$10,680	-\$22,644	-\$39,629
<b>Total Effect</b>	<b>-5.50</b>	<b>-\$111,182</b>	<b>-\$177,370</b>	<b>-\$359,750</b>

**Future Analyses:** As experts continue to identify the potential ramifications of changing climatic conditions, disturbances such as those contributing to the closure (e.g. low flows and elevated water temperatures) may increase in frequency and severity. Such a prospective warrants additional attention to the economic impacts of closures or other management actions taken to preserve the resource. Thus, as the summer fishing and floating seasons come to a close at the end of September, and the river is incrementally opened back up by FWP, ITRR aims to follow up this preliminary report with a more in-depth study of the economic impacts of the closure. The goal of a follow up investigation would be to not only more precisely quantify the impact to fishing and rafting based businesses during the closure period based on the actions of travelers, but also shed light on the future potential impacts of parasitic outbreaks and any lasting residual effects of this event. Residual effects are potentially positive and negative. Potentially positive effects stem from the containment of the outbreak to a limited set of rivers, while negative effects may continue if visitor willingness or desire to recreate in the affected areas declines.