



Fraser River

Fishery Management Report

Jon Ewert - Aquatic Biologist (Hot Sulphur Springs)

General Information: The Fraser River is a highly diverse river offering many transitions in habitat type through the course of its length. Public access is somewhat limited in some sections and care should be taken to avoid trespass problems. Please consult with local agencies regarding access locations. Guided fishing is available on some privately held reaches. **During dry summers such as 2018, some sections of the Fraser experience dangerously high water temperatures for trout and voluntary angling closures are enacted. Please check current local information and do not fish if water temperatures exceed 65 degrees.**

Location: Eastern Grand County—towns of Winter Park, Fraser, and Granby.

Recreational Management: US Forest Service, towns of Winter Park, Fraser and Granby, Grand County, and BLM.

Amenities and General Info.

- The Fraser River flows through multiple towns which offer general amenities in close proximity to the river.
- Guide services available through several area outfitters.

Regulations

Fraser River - Grand County

a. From the headwaters downstream to the confluence with St. Louis Creek:

Creek:

1. Fishing is by artificial flies and lures only.

2. All rainbow trout must be returned to the water immediately upon catch.

b. From the confluence with St. Louis Creek downstream to the Colorado River:

1. The bag and possession limit for trout is two fish.

Previous Stocking

Whirling Disease-resistant Rainbow trout were stocked at various sizes from 2010-2013 with the goal of establishing a wild, self-sustaining rainbow fishery. Due to the success of this stocking, beginning in 2014 rainbow trout stocking ceased in order to give the rainbows a chance to sustain themselves. See discussion on following pages.

Sportfishing Notes

The Fraser offers an enjoyable mix of fishing for brook, rainbow and brown trout. The composition of these three species depends on the location in the river one fishes. It is home to the highest densities of mottled sculpin in the area. Streamer fishing for large browns beneath undercut banks is always an option. The most prolific insect hatch is caddis, which takes place after runoff. Golden stoneflies and various mayflies are also abundant. Terrestrial fishing can be productive in late summer as well.



This 5" sculpin had recently consumed a 3" dace. This is the only time we have documented sculpin piscivory in this area.



This brown trout, captured in the same reach, had recently eaten a sculpin.

Fraser River at Kaibab Park

Population Estimates								
	2009	2010	2011	2012	2013	2014	2015	2017
Date of survey	9/1	9/2	9/1	9/6	9/3	9/4	9/3	9/6
Brown trout: pounds per acre	76	62	60	56	87	73	71	114
>14" per acre	18	23	14	4	16	22	16	19
>6" per mile	857	607	578	1,409	845	715	729	1,464
mottled sculpin captured	256	466	533	1,279	521	262	469	249

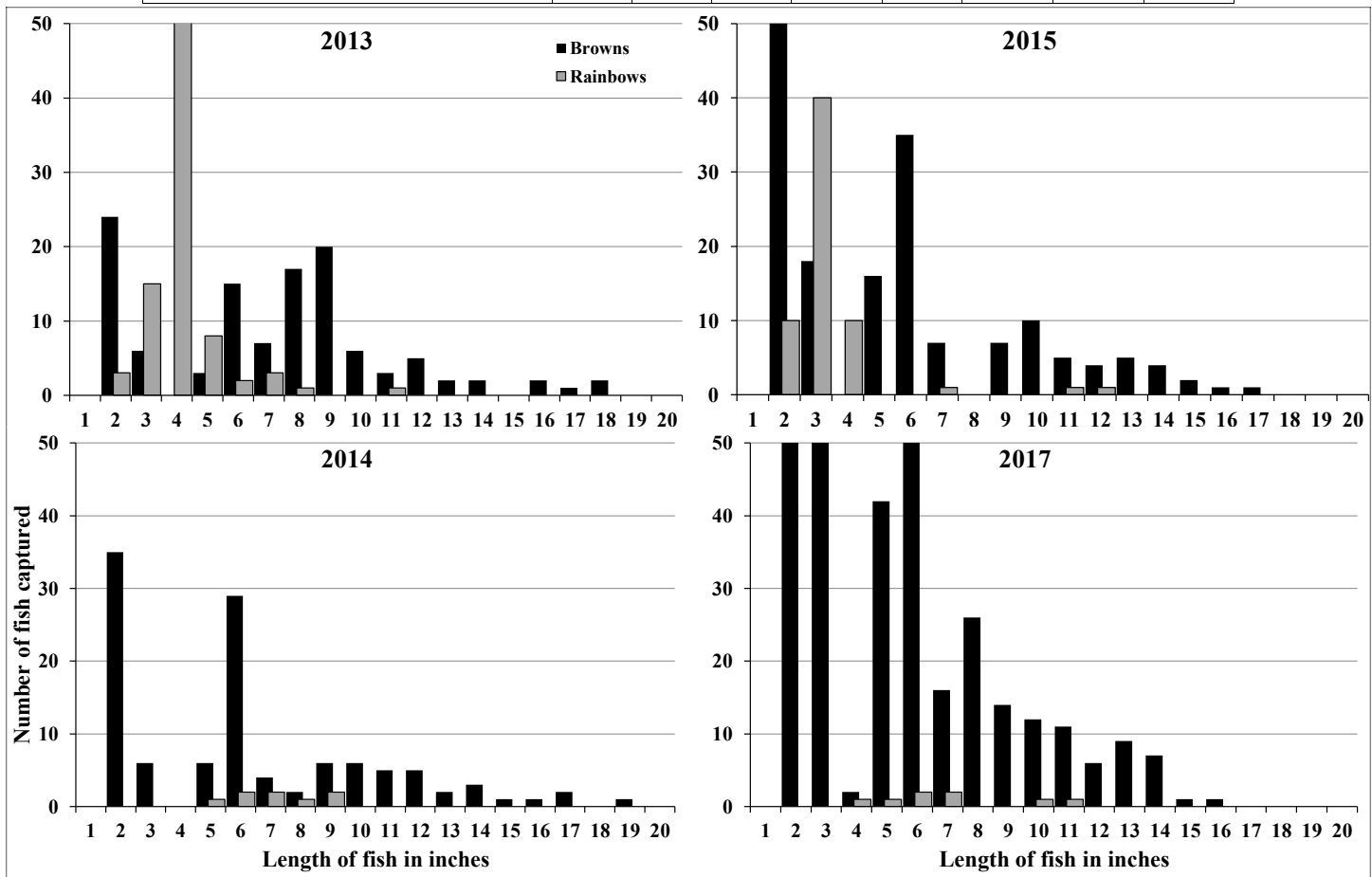


Figure 1. Size distribution of trout captured in Kaibab Park reach

The Kaibab Park station is located in the town of Granby where the river flows between the park and the fire station, immediately downstream of the Highway 40 crossing. This is the farthest downstream site on the Fraser that we survey regularly. This site was not surveyed in 2018. Population estimates are shown in the table above and Figure 1 displays the size distribution of brown and rainbow trout. Only brown trout population estimates appear in the table because rainbow trout have not constituted a significant portion of the fish population, despite the fact that rainbows have been stocked here on the same occasions that have been successful farther upstream.

2017 saw the highest biomass and fish-per-mile estimates to date for brown trout in this reach. Extreme high-water years such as 2014 likely have a flushing effect on juvenile brown trout here, while drought years such as 2012 see decreases in large fish density estimates, likely due to lack of habitat during low flows. 2017 conditions probably represent a “happy medium” situation in which the river has benefitted from the flush of recent high water years, yet the 2017 runoff wasn’t high enough to displace juveniles. At the same time, flows did not become so low that adult fish vacated the section.

The rainbow trout appearing in the 2015 sample were fingerlings stocked that year. This is the only location on the Fraser that rainbow fingerlings have been stocked since 2013. The 2014 and 2017 samples found that recruitment from rainbow fingerling stocking in this reach was poor.

Peak flows at Granby	
Date	Flow (cfs)
6/4/09	991
6/8/10	1767
7/1/11	1519
4/27/12	157
5/18/13	651
5/31/14	2256
6/12/15	1425
6/13/16	1351
6/11/17	1027
6/1/18	781

Fraser River on Grand County Water and Sanitation Property

Fraser River GCW&S Population Estimates				
Year	2007	2016	2017	2018
Date of survey	9/3	10/5	10/5	10/5
Brown trout				
Biomass (pounds per surface acre)	33	26	111	60
Fish >14" per acre	3	6	33	24
Fish > 6" per mile	752	430	923	528
Rainbow trout				
Biomass	9	6	16	19
Fish >14" per acre	3	2	8	12
Fish > 6" /mile	53	35	70	70
Brook trout				
Biomass	2	1	0	0
Fish > 6" /mile	44	9	0	0
Total trout biomass	44	33	127	79
Total sculpin captured	726	971	264	377

Table 1. Population estimates.

This reach is on property owned by Grand County Water and Sanitation District 1 immediately outside of Tabernash. In 2017 an in-stream physical habitat improvement project was constructed on the site, a cooperative effort by the Learning By Doing stakeholder group (for more information visit <https://co.grand.co.us/737/Learning-by-Doing>) and was opened to public access for the first time in 2018. Prior to the habitat project, this reach had relatively poor trout habitat, characterized by a high width-to-depth ratio, poor thalweg definition, sparse and shallow pools, and excessive riffles. All of these deficiencies were addressed in the habitat improvement project.

Table 1 (above) contains the trout population estimates obtained on the four occasions that we have surveyed the site. Prior to the habitat project (2007 and 2016), this site yielded the poorest estimates of any location discussed in this report, and among the lowest population estimates ever obtained in any location on the Fraser. We observed an immediate benefit after completion of the project, with greatly increased numbers of adult fish and a nearly four-fold increase in total trout biomass from 2016 to 2017. The total biomass estimate declined in 2018 by 38%. This decline is most likely attributable to the high level of public fishing pressure that this section experienced in 2018, discussed below. If public use of this reach becomes increasingly heavy in the future, some form of access management may be advisable in order to maintain the quality of the fishery.

Rainbow and brown trout size distribution is displayed in Figure 1 (right). Prior to the habitat project, we found high numbers of juvenile trout in their first two years of life, but by age 3 the fish had mostly vacated the reach in

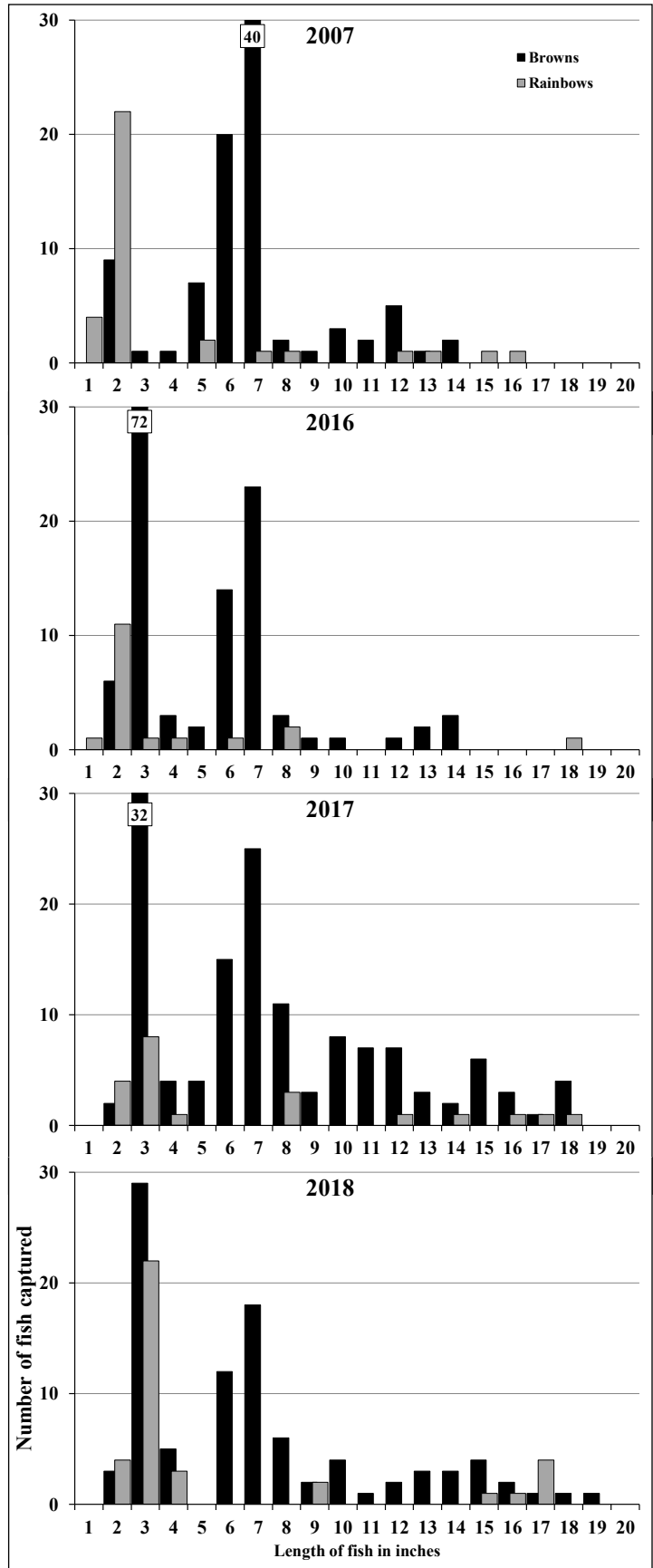


Figure 1. Size distribution of trout captured on GCW & S site.

Fraser River on Grand County Water and Sanitation Property, continued

search of more suitable habitat. This did not appear to be the case any more after completion of the project. Interestingly, on all occasions we collected a number of age-0 rainbow fry, with especially good numbers collected in 2018. These fish were not stocked, and are the product of wild reproduction. However, at this site and at Safeway (see pages 5-6), there appears to be a lack of recruitment of rainbows from Age-0 (2-4" in this survey) to Age-1 (6-10"). If wild rainbows are to persist into the future without stocking, the formation of strong Age-1 year classes is critical. At this site and at Safeway, the 2018 year class represents the best opportunity yet for this to happen, due to its strong numbers (see additional discussion on this topic in the Safeway report, pages 5-6).

The sharp decline in sculpin numbers captured in 2017 is most likely due to the fact that the electrofishing survey took place approximately two weeks after the habitat work was completed, which is a short amount of time for sculpin to recolonize after a high level of disturbance to the stream bed. We collected an increased number of sculpin in 2018, suggesting a recovery from the disturbance. If adult trout densities remain relatively high in this reach, it may not be reasonable to expect sculpin densities to return to the levels we saw prior to the project, due to predation pressure.

Angler survey

In August, September and October of 2018 we conducted a simple angler survey on this reach to obtain information about use rates and success. The survey consisted of a voluntary paper questionnaire for anglers to complete at the end of their trip. Results are presented in Tables 2 and 3.



2018 survey crew. Photo by Dave Showalter.

Angler survey	
# surveys completed	40
# anglers represented	58
Total hours fished	123.25
Avg. time of trip	2.1 hrs
Brown trout caught	51
Rainbow trout caught	24
Brook trout caught	2
Avg. catch per hour	0.62
Residence - Grand County	19
CO Front Range	14
Out of state	4
Other (Grand Junction)	1

Table 2. Angler survey results



Location of survey reach. Downstream terminus is at top, indicated by arrow, and upstream terminus is at bottom. CR 83 intersection is visible at left. Note that this photo was taken prior to construction of the habitat project.

Angler survey qualitative questions			
Why did you fish here today?	How often do you fish here?	Will you fish here again?	How would you rate this fishery?
Not crowded 15	First time 22	Yes 38	Excellent (4) 13
Small stream type 15	Once a month 7	No 1	Good (3) 15
Wild fishery 8	Once a week 4		Fair (2) 9
Fish size 4	Once a year 4		Poor (1) 2
Easy access 2	More than once/week 2		Avg. response 3.0
Number of fish 1			

Table 3. Qualitative results

Fraser River at Safeway

The Safeway station is located immediately behind the Safeway store in the town of Fraser (Figure 1, below). This station has the longest and most consistent history of fish population surveys. The Town of Fraser, in partnership with other entities including Trout Unlimited and the Colorado Division of Wildlife (now CPW), completed a habitat improvement project in this area in 2005. These surveys show that the habitat project has proven to be overwhelmingly successful.



Figure 1. Safeway Station location. Arrows indicate downstream and upstream terminus of survey reach.

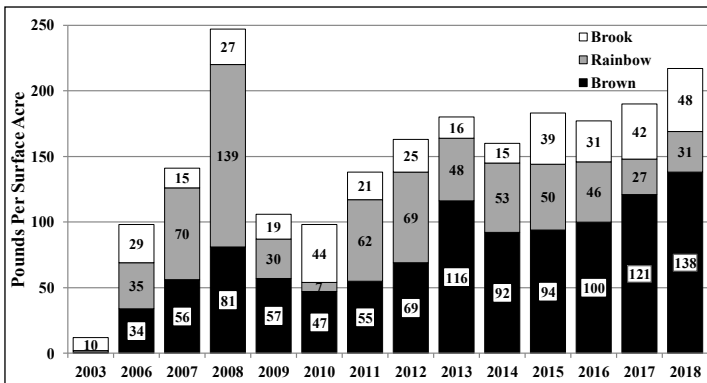


Figure 2. Safeway station trout biomass estimates.

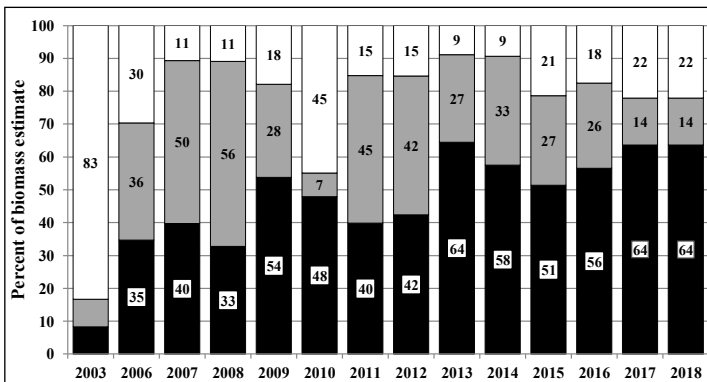


Figure 3. Biomass estimate percent contribution by species

Figure 2 (below, left) contains biomass estimates of trout in pounds per surface acre by species. Figure 3 contains the percent contribution to these estimates by species. 2003 was the only year that this station was surveyed prior to the habitat project construction. The survey that year yielded population estimates that were quite poor in all parameters of the trout population. All subsequent sampling occasions have produced estimates that are many times greater than the 2003 values.

Many of the changes in the rainbow population can be directly attributed to stocking patterns. Soon after the habitat project was completed, we stocked rainbows in this reach at high densities in order to quickly occupy habitat and possibly gain a competitive advantage over the brown trout. In 2007 and 2008, we stocked several hundred large brood fish, averaging 14-15", which produced the elevated rainbow biomass and quality fish density estimates in those years. The intention of stocking those fish was to "kick start" the rainbow population in the newly-improved habitat. These fish occupied the stream for a couple of seasons but did not accomplish natural reproduction. From 2010-13, we stocked an average of 49,215 whirling-disease resistant rainbow fingerlings from 1-4" in length, for a total of 196,861 fish stocked over the four-year period. The fish were stocked in various locations from the U.S. Highway 40 crossing upstream of Idlewild Campground downstream to the County Road 804 crossing near this station. These plants had good success, and rainbow fingerling stocking ceased after 2013 due to the success of the program. We were concerned about overstocking, and we also wanted to observe whether or not the rainbows would begin sustaining themselves through natural reproduction. The contribution of rainbows to the overall trout population has slowly dwindled since these fish first became established in 2011. 2017 yielded the lowest biomass estimate for rainbows since fingerling stocking ceased. The 2018 estimate revealed a slight rebound but the increase was not statistically significant. These trends may indicate that more stocking in the future is warranted.

Figure 4 contains density estimates of quality-sized (>14") trout. No brook trout larger than 14" have ever been captured in this reach. In 2018 we saw a possible reversal in a developing downward trend that we observed from 2013-2017.

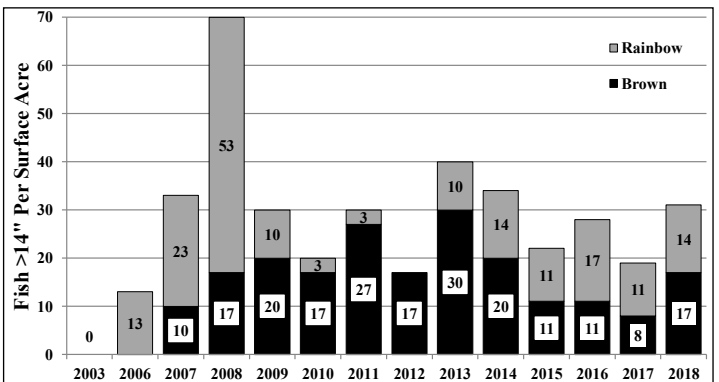


Figure 4. Safeway station quality trout density estimates.

Fraser River at Safeway, continued

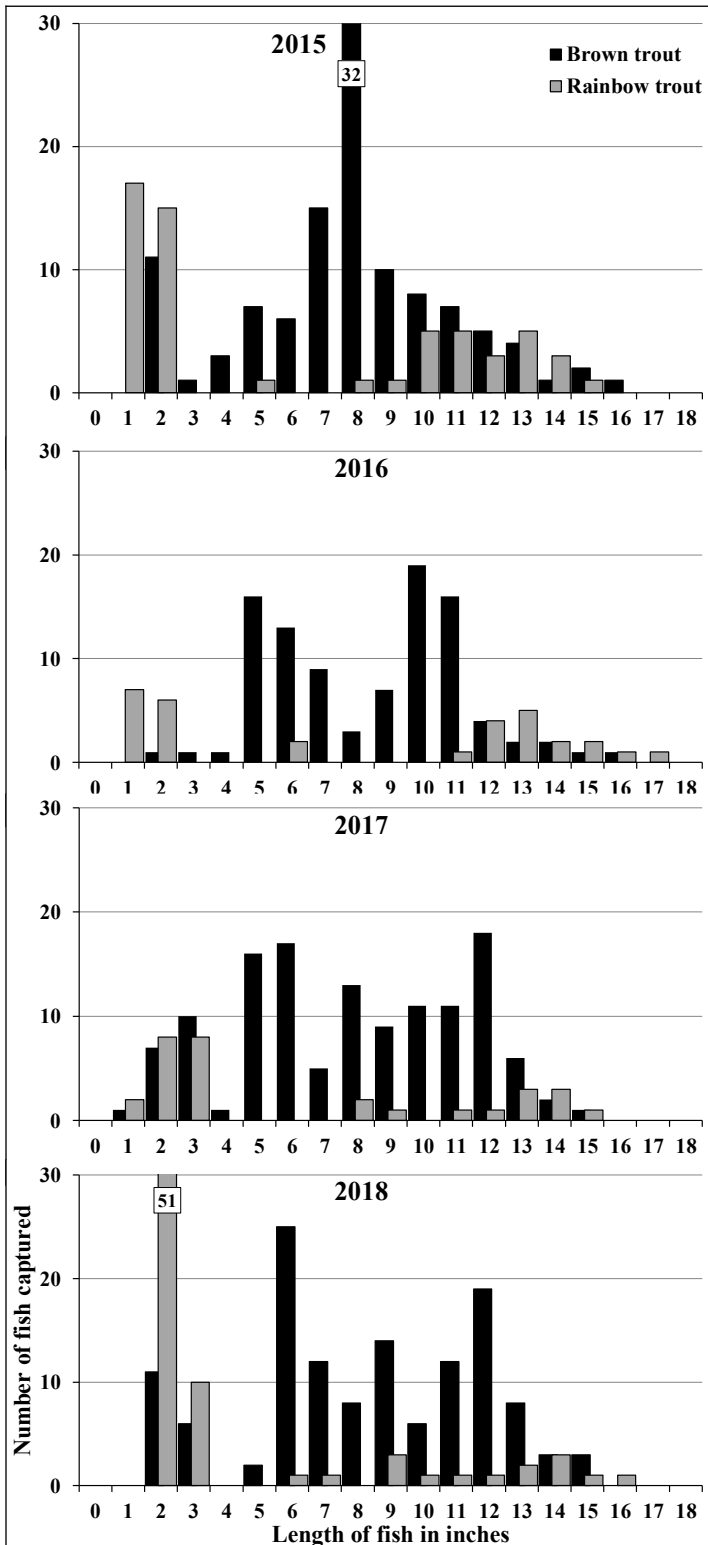


Figure 5. Size distribution of brown and rainbow trout captured in the Safeway reach.

Figure 5 (left) displays the size distribution of rainbow and brown trout captured at the Safeway station over the past four years.

2013 was the last year that rainbow fingerlings were stocked. They were stocked on August 1, averaging 3.75" in length. In 2013 we also caught a large number of 2" rainbows, which were not explained by stocked fish and were likely the result of wild reproduction. Because of this, and the success of these plants that we have observed here and at Confluence Park, after 2013 we ceased the stocking of rainbows in order to observe whether or not they will sustain themselves through natural reproduction. The group of rainbows visible in 2015 at 8-12" in length represent the last of these stocked fish.

For three of the past four years, age-0 rainbows (1-3" in length) produced by natural reproduction have outnumbered age-0 brown trout. We found roughly equal numbers of age-0 fish of the two species in 2017. In 2018 we found the strongest year class of Age-0 rainbows to date in the post-stocking period, far outnumbering brown trout. However, recruitment of rainbows from age-0 to age-1 to date has been poor, which is evident in the scarcity of rainbow trout in the 5-10" range from 2015 onward. If wild rainbows are going to persist in this reach, better survival to Age-1 is imperative. Because of their numbers, the 2018 year class represents the best chance to date to form a strong Age-1 year class in 2019. If this year class survives at better rates, they could finally recruit into the elusive intermediate-size range which will in turn produce mature adult wild rainbows in 2020 and beyond.



Figure 6. A sculpin from the Fraser River.
Photo by Kevin Birznies

Dates of Safeway Station surveys	
9/30/2003	9/6/2012
10/21/2006	9/4/2013
8/23/2007	9/3/2014
10/03/2008	9/2/2015
9/3/2009	8/31/2016
9/7/2010	9/5/2017
9/1/2011	9/4/2018

# sculpin captured	
2011	292
2012	550
2013	355
2014	122
2015	249
2016	148
2017	235
2018	233

Fraser River at Confluence Park

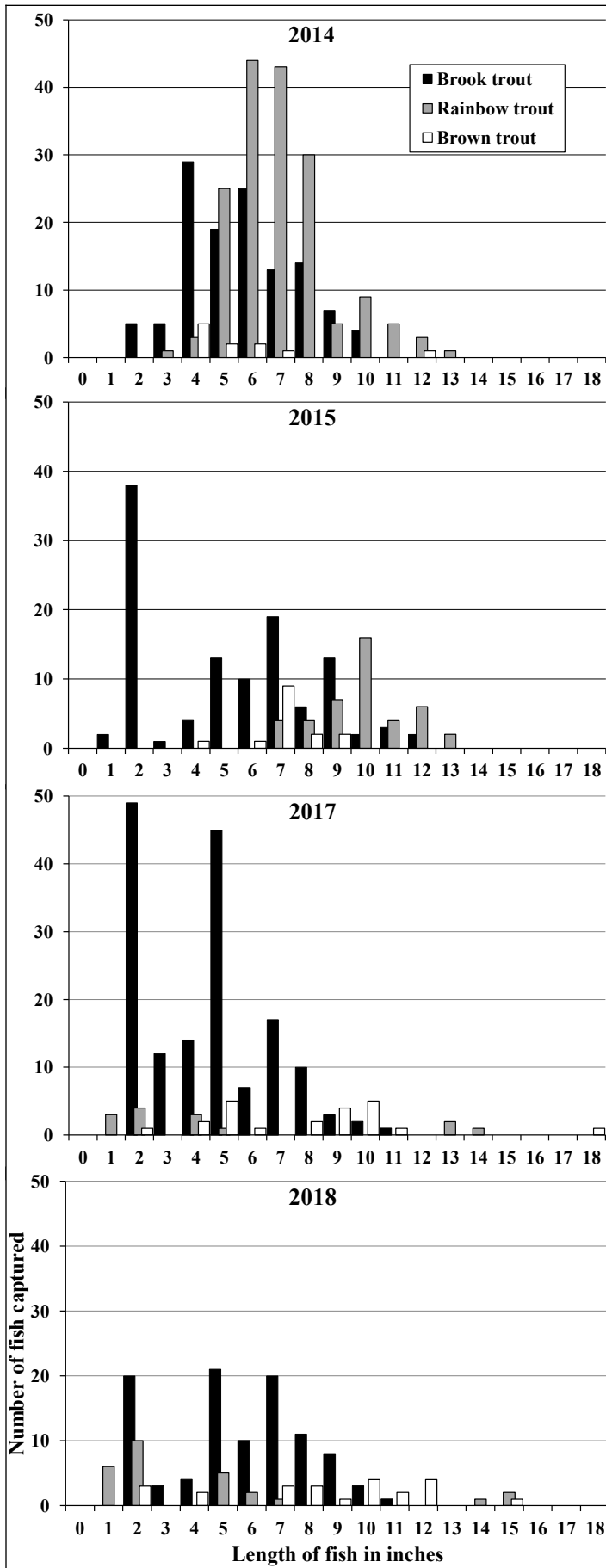


Figure 1. Size distribution of trout at Confluence Park

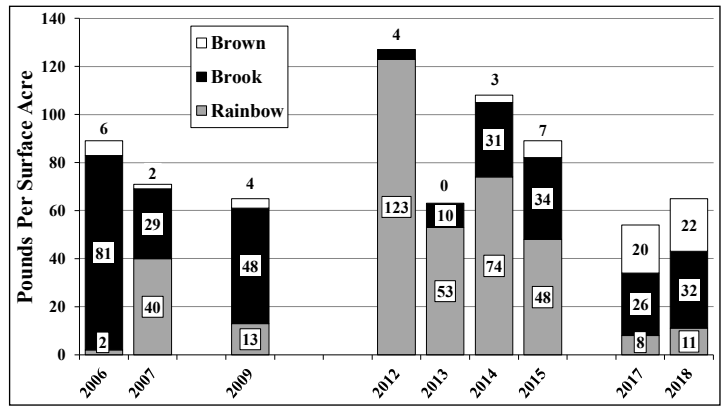


Figure 2. Biomass estimates at Confluence Park.

The Confluence Park station is located in the town of Winter Park. The upstream end of the station is the pool where Vasquez Creek joins the Fraser. Figure 2 (above) contains biomass estimates in pounds per surface acre. This reach was not sampled in the years with no data. This is a higher-gradient, forested reach with a colder temperature regime, which explains the relative scarcity of brown trout. Trout populations here have been highly dynamic, with 2017 and 2018 revealing an unprecedented influx of brown trout, but also (in 2017) the lowest total trout biomass estimates to date. These recent low total biomass estimates can be mostly attributed to the cessation of rainbow trout stocking.

Fingerling rainbow trout stocking in 2010-2013 was very successful at this site. By 2012 the data suggested that our rainbow stocking may be overpopulating the reach, which was one of the factors that led to the decision to cease rainbow stocking as discussed previously. The 2017 and 2018 data suggests that rainbow trout biomass has declined more rapidly here than at Safeway after the cessation of stocking and that rainbows will apparently not sustain themselves here without resumption of stocking.

Figure 1 (left) displays the size distribution of the trout captured in the last four surveys. These data reflect a dynamic situation with regard to competition between brook trout and stocked rainbows. During the period of 2012-2014, the high density of rainbows in the 5-12" range appeared to be suppressing the adult brook trout population, resulting in suppressed biomass estimates for brook trout in 2012 and 2013. By 2015, brook trout began regaining the upper hand, with multiple age classes in the smaller sizes outnumbering juvenile rainbows, which were nonexistent in that survey. Two distinct size-groups of brown trout appeared for the first time in 2017, as well as an 18" brown, the largest ever captured here. It is unlikely that the influx of brown trout was due solely to spawning movements, because the survey has occurred close to the same date on every occasion and the presence of multiple size-groups of browns, not only sexually mature ones. At this site, Safeway and Idlewild, there appears to be a current trend of increasing brown trout biomass and possibly expanding their range upstream in the Fraser.

Fraser River at Idlewild Campground

This site is located adjacent to the Forest Service campground just upstream of the town of Winter Park. This station is 675 feet in length and averages 20.2 feet in width. Table 1 contains population estimates collected on the three occasions we have surveyed this reach. Unlike our other monitoring sites, this reach is dominated by small brook trout which rarely exceed 10" in length.

Every parameter of the trout population in Table 1 experienced significant declines from 2014 to 2016, and the estimate of total trout biomass declined by 49.6%. The decline in brook trout biomass can likely be attributed to the absence of a 2014 year class (which would have appeared at the 2" mark), which by 2016 had resulted in a suppressed adult population. Brook trout in high-elevation mountain streams such as this are relatively short-lived (4-5 years), and therefore a missing year class can have a strong short-term effect on the adult population in the future. Sculpin capture declined only slightly, and this was not by a significant margin. 2018 estimates improved somewhat but not to the level seen in 2014. Sculpin cap-

ture declined again. Continued declines in sculpin capture at this site could be cause for concern, as they are strong indicators of water and habitat quality.

Figure 1 displays the size structure of brook and rainbow trout captured at this station over the three surveys to date. As discussed previously, 2013 was the last year that we stocked rainbow trout fingerlings in the Fraser. The decline in the rainbow trout population can likely be attributed to this change. The rainbows in the 5-10" range in 2014 are the result of past stocking. The two small rainbows we captured in 2014, 1-2" in length, are evidence of successful natural reproduction that year. Like Confluence Park, by 2018 it has become apparent that despite some successful reproduction, rainbow trout will not sustain themselves on this reach without additional stocking.

We were surprised to capture two brown trout larger than 18" in 2018 at this site, which contributed a large portion of the increased brown trout biomass estimate. These were far larger than any fish we had captured here before, and were obviously not resident fish, but rather migrants from downstream that were preparing to spawn. This is further evidence of the apparent trend this year of up-stream expansion of brown trout.



Figure 2. Brook trout from the Idlewild reach.
Photo by Kevin Birznicks

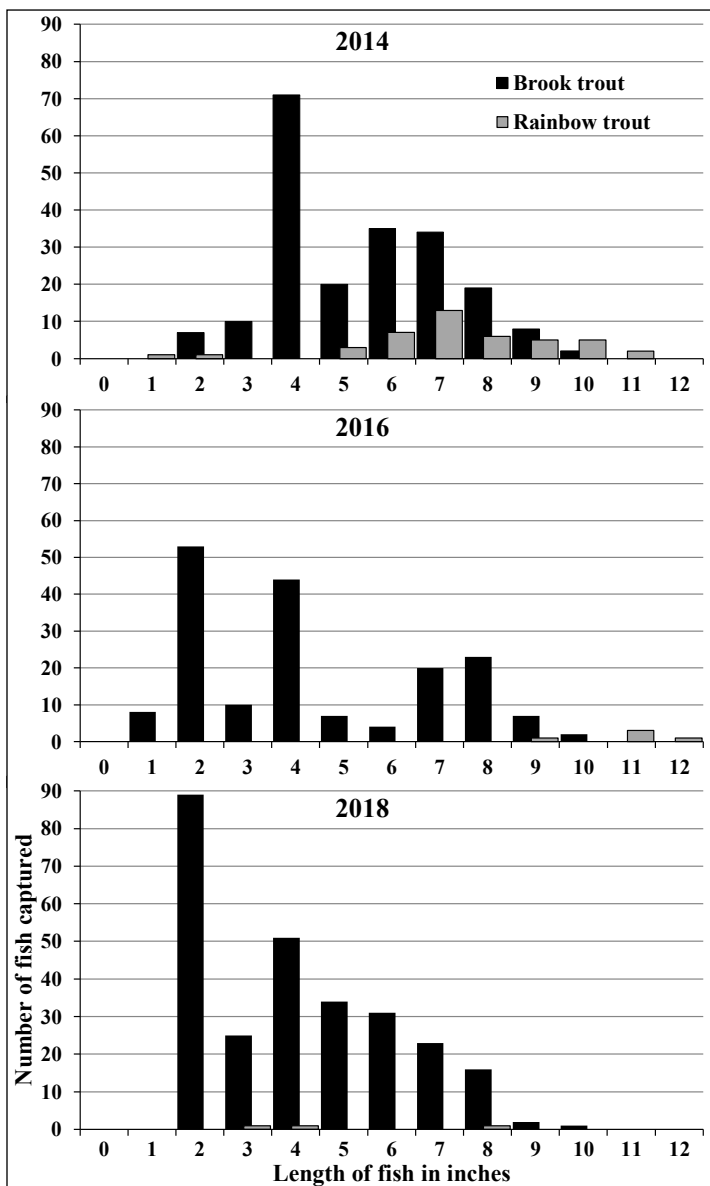


Figure 1. Size distribution of trout at Idlewild Campground.

Fraser River Idlewild Fish Population Estimates			
Year	2014	2016	2018
Date of survey	9/3	8/31	9/6
Brown trout			
Biomass (pounds per surface acre)	40 lbs/acre	11	28
Fish > 6" per mile	150/mile	55	39
Rainbow trout			
Biomass	33	16	1
Fish > 6" /mile	297	55	8
Brook trout			
Biomass	58	39	43
Fish > 6" /mile	794	443	671
Total trout biomass	131 lbs/acre	66	72
Total sculpin captured	69	60	52

Table 1. Population estimates.