



Fraser River

FISH SURVEY AND MANAGEMENT INFORMATION 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.

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

Recreational Management: US Forest Service, towns of Winter Park, Fraser and Granby, 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:

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.



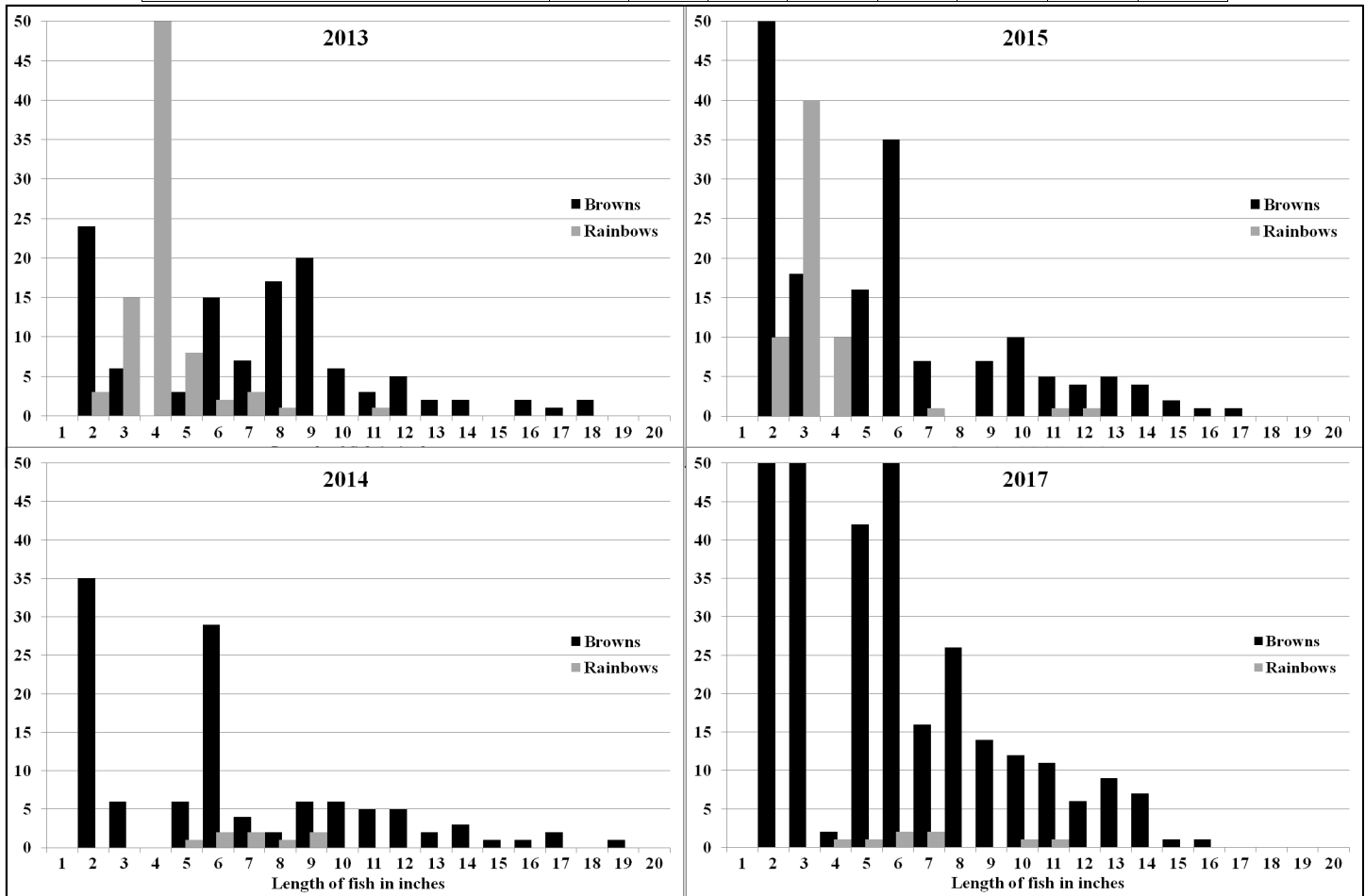
This 5" sculpin had recently consumed a 3" dace. This is the only time we have documented sculpin piscivory in this area.



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
Total number mottled sculpin	256	466	533	1,279	521	262	469	249



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. Population estimates are shown in the table above and the graphs display 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.

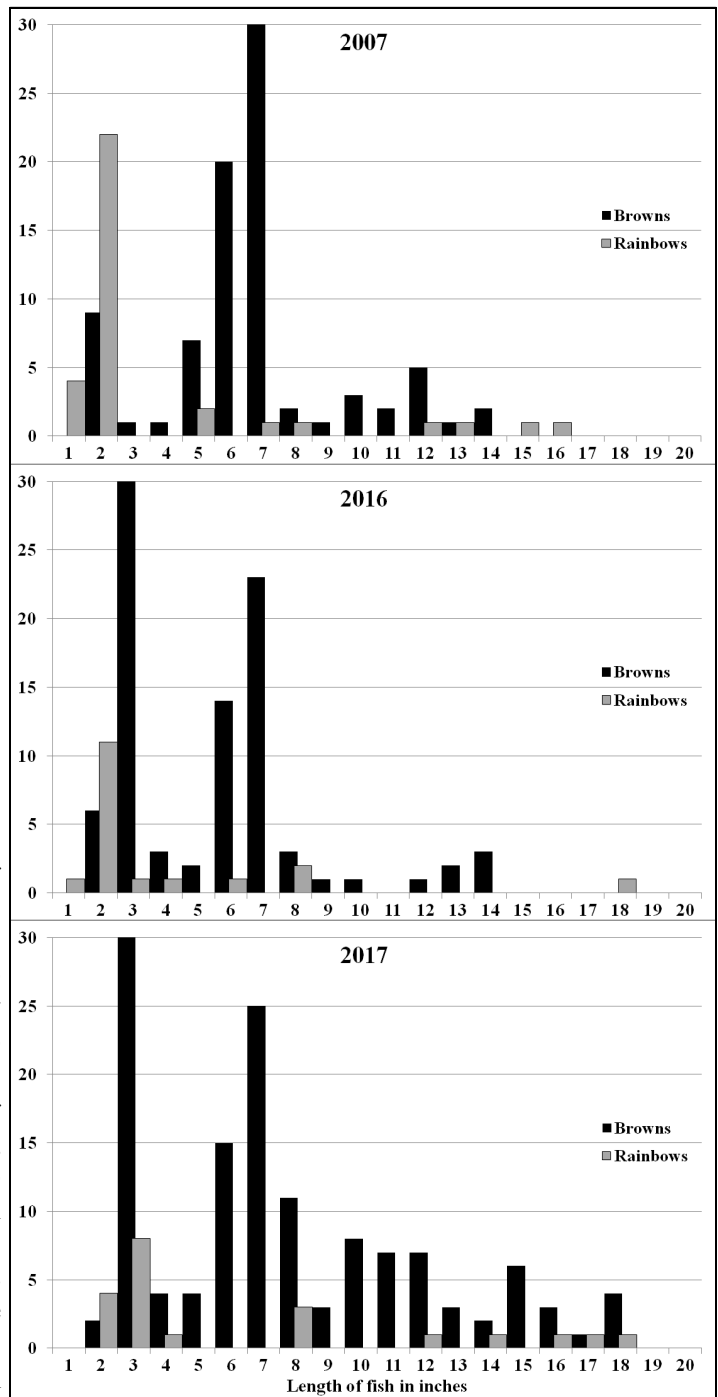
2017 saw the highest biomass and fish-per-mile estimates to date for brown trout in this reach. Extreme high-water years such as 2014 likely have a flushing effect on juvenile brown trout in this reach, while drought years such as 2012 see decreases in large fish density estimates. 2017 conditions probably 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.

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

Fraser River on Grand County Water and Sanitation Property

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



This reach is on property owned by Grand County Water and Sanitation District 1 immediately outside of Tabernash, and is slated to be opened to public access in 2018. In 2017 an in-stream physical habitat improvement project was constructed on the site. This project was a cooperative effort by the Learning By Doing stakeholder group (for more information visit <https://co.grand.co.us/737/Learning-by-Doing>). 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.

The table above contains the trout population estimates obtained on the three 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.

Rainbow and brown trout size distribution is displayed in the graphs above. 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 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. These fish were not stocked, and are the product of wild reproduction. This is an encouraging observation suggesting that a productive wild rainbow fishery may develop in this reach.

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. If adult trout numbers continue to improve in the future, sculpin numbers may not return to their previous levels, due to increased predation.

Fraser River at Safeway

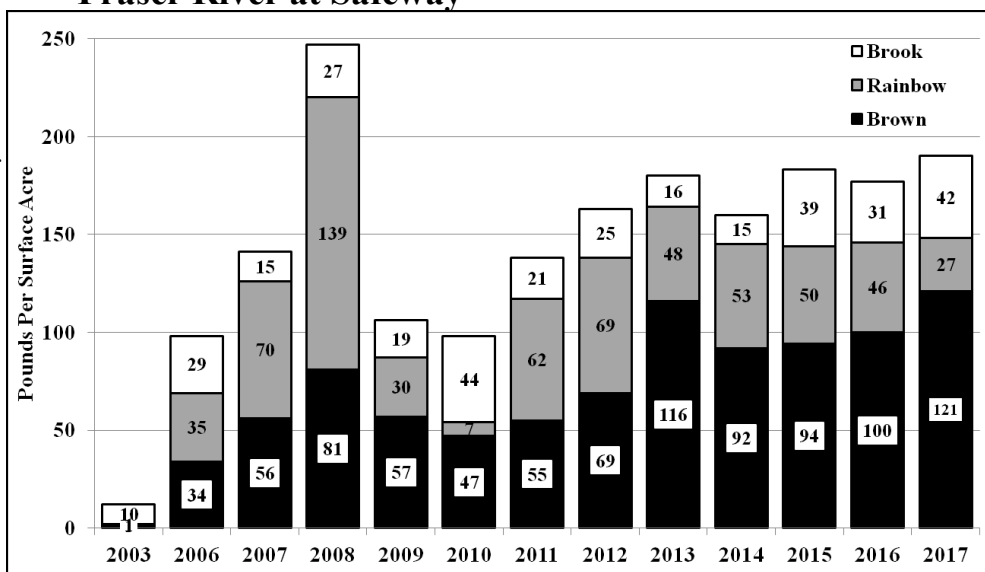
The Safeway station is located immediately behind the Safeway store in the town of Fraser. This station has the longest and most consistent history of surveys. The Town of Fraser, in partnership with other entities including Trout Unlimited and the Colorado Division of Wildlife (now CPW), completed a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

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.

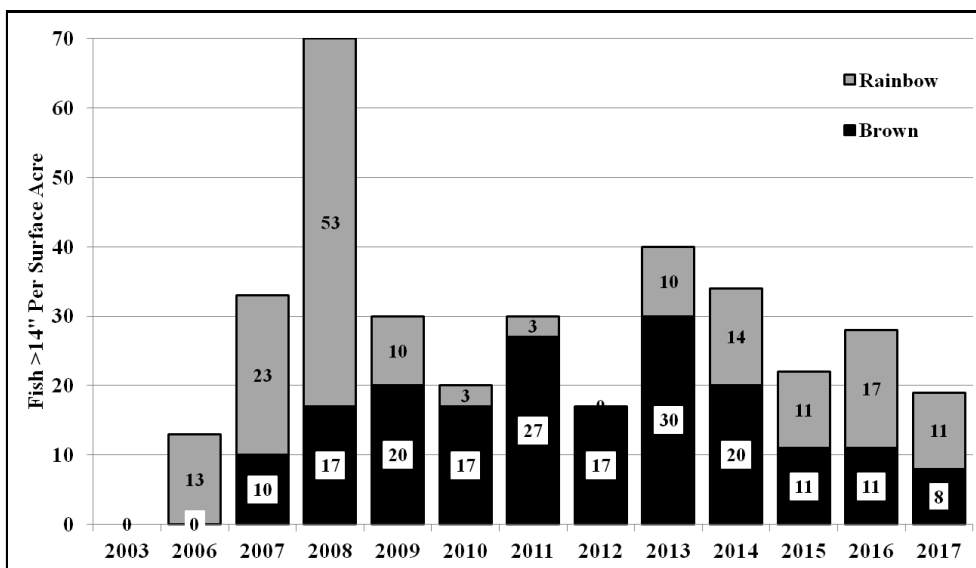
The figure above contains biomass estimates in pounds per surface acre by species. Many of the changes in the rainbow population can be directly attributed to stocking patterns. Soon after the habitat project was completed, we stocked rainbows in this reach at high densities in order to quickly occupy 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. In 2010, we began a four-year period of stocking approximately 50,000 whirling-disease resistant rainbow fingerlings at 3-5". 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. 2017 yielded the lowest biomass estimate for rainbows since fingerling stocking ceased, which may indicate that more stocking in the future is warranted.

The figure below contains estimates of fish greater than 14" per surface acre. No brook trout >14" have been captured at this site, which is not unexpected. The general downward trend in large fish that we have observed since 2013 is probably an effect of the cessation of rainbow stocking, because in addition to establishing a rainbow fishery, the abundance of small rainbows also provided forage for large, predatory browns, likely enhancing their numbers in the 2011-2014 period. It is encouraging that large rainbows outnumbered large browns in 2016 and 2017, and 2018 will be a critical year in determining whether or not the rainbows will sustain themselves long-term (see discussion on following page).

High water years may disadvantage brown trout on this section, probably by displacing juveniles to points downstream. Those years produce colder temperature regimes, which would also disadvantage browns. The lower-water years of 2012 and 2013 saw much higher recruitment of brown trout, resulting in increased population estimates beginning in 2012. The period of 2013-2017 saw the highest brown trout biomass estimates on this reach to date.

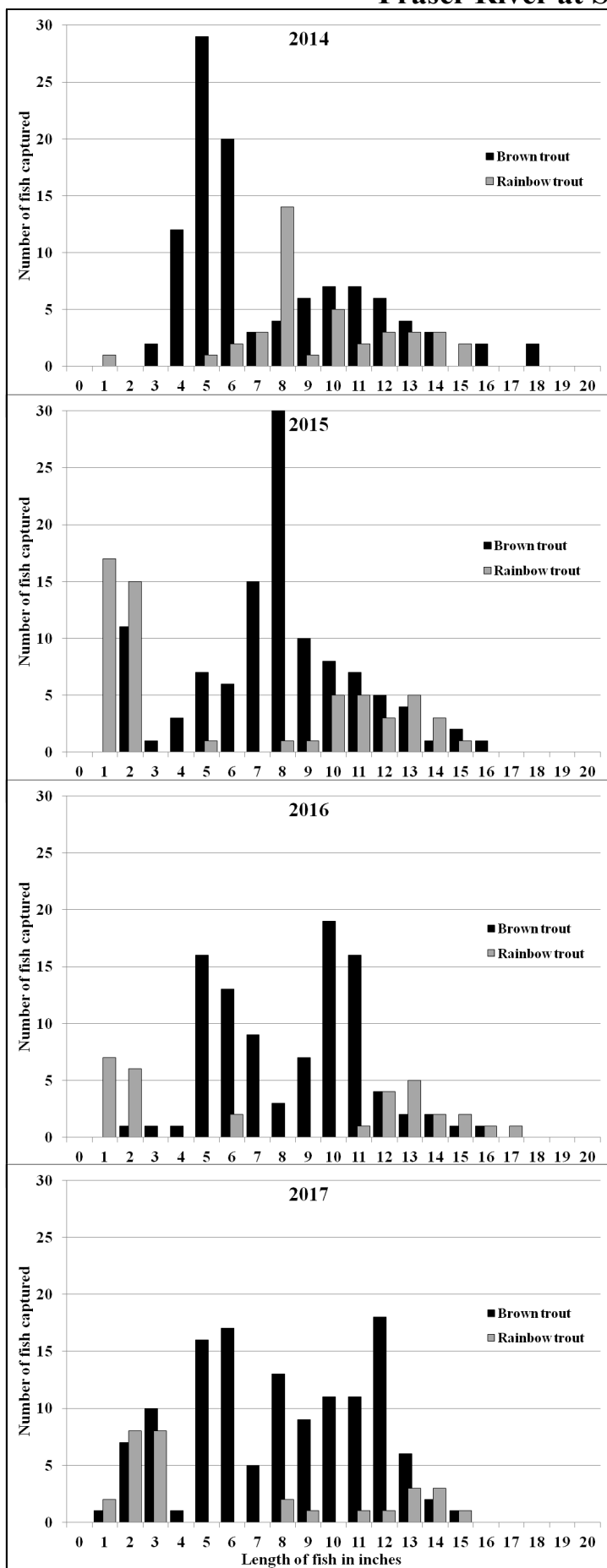


Trout biomass estimates (in pounds per surface acre) for the Safeway station.



Estimates of fish larger than 14" per surface acre

Fraser River at Safeway, continued



The graphs at left display 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. This data set nicely captures the progression of the 2013 year class of brown trout, which had grown to 5" by 2014, 8" in 2015, 10" in 2016, and 12+" in 2017. This is actually the last large year class of browns that we observed in this reach. We did not capture any Age-0 fish in 2014, which is probably a reflection of the high water that year having an impact on fry survival.

In 2015, 2016, and 2017 we captured moderate numbers of age-0 rainbow fry. Because we have not stocked since 2013, we know that these fish are the product of natural reproduction. It is especially encouraging to note that in '15 and '16, age-0 rainbows outnumbered age-0 brown trout by a significant margin. We found roughly equal numbers of age-0 fish of the two species in 2017. However, recruitment of rainbows from age-0 to age-1 appears to be poor, which is evident in the overall lack of rainbow trout in the 5-10" range from 2015 onward. If this trend continues into 2018 and adult rainbow densities dwindle, we will likely stock rainbow fingerlings again beginning in 2019.

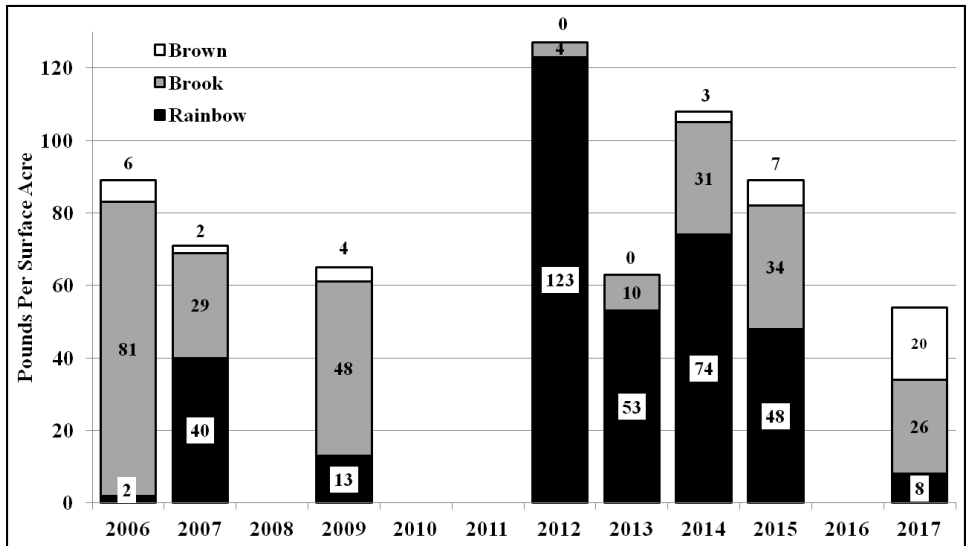
Dates of Safeway Station surveys	
9/30/2003	9/6/2012
10/21/2006	9/4/2013
8/23/2007	9/3/2014
10/03/2008	9/2/2015
9/3/2009	8/31/2016
9/7/2010	9/5/2017
9/1/2011	



A Fraser River sculpin. Photo by Kevin Birznieks

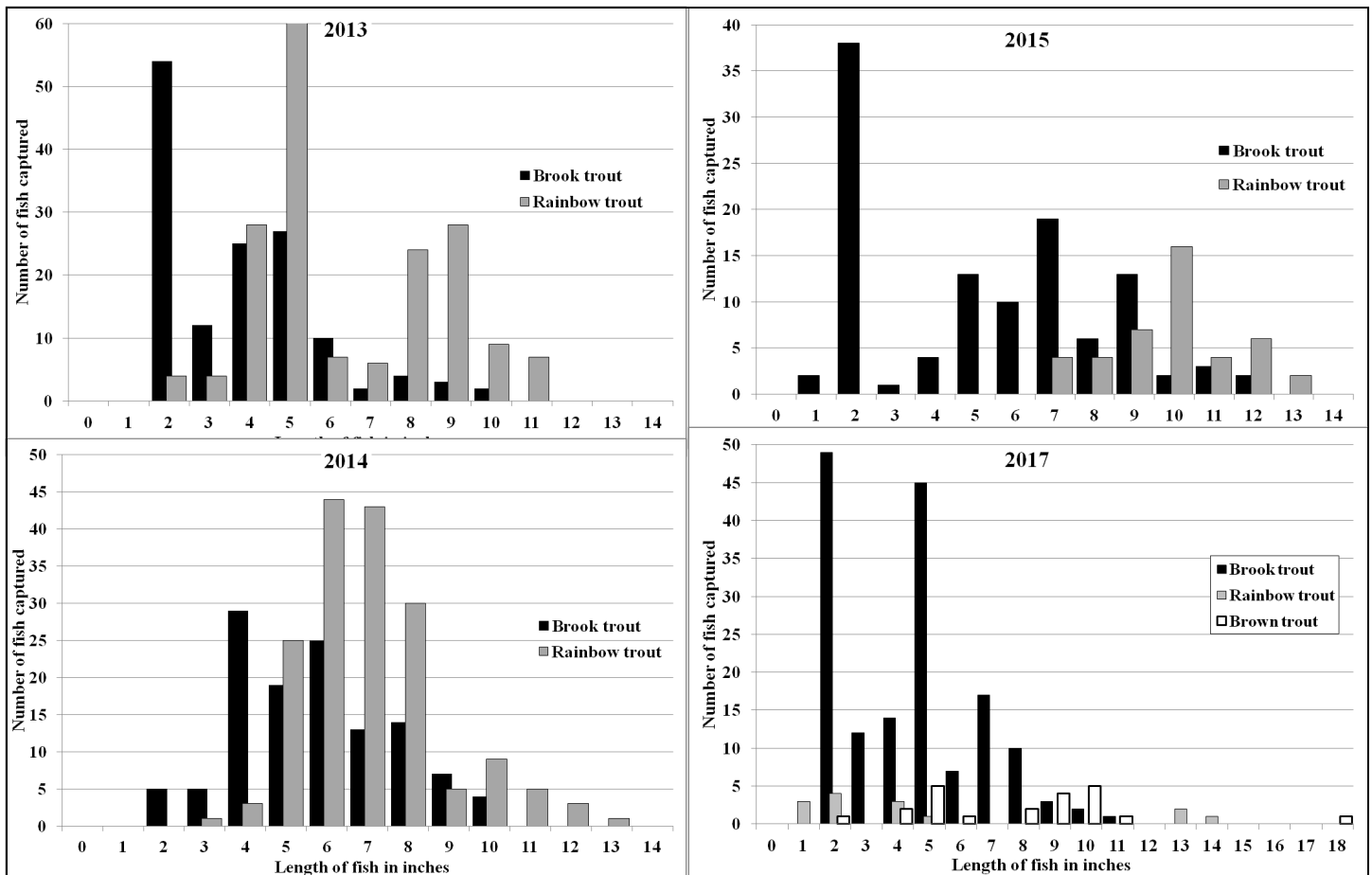
Fraser River at Confluence Park

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. The graph at right 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 revealing an unprecedented influx of brown trout, but also the lowest total trout biomass estimates to date.



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 data suggests that rainbow trout will not sustain themselves here without fingerling stocking.

The size distribution of the trout captured in the last four surveys is displayed below. 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, which is an unusual occurrence. 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 to spawning movements, because the survey has occurred close to the same date on every occasion.



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. The table at right contains population estimates collected on the two occasions we have surveyed this reach. Every parameter of the trout population listed in this table experienced significant declines in 2016, and the estimate of total trout biomass declined by 49.6%. Sculpin capture declined only slightly, and this was not by a significant margin.

The nearest other site that we surveyed in 2016 is the Safeway station in the town of Fraser. We did not observe similar declines in any of these parameters at that station compared to previous years. In 2013, the Confluence Park site saw a decline in biomass similar to this one; however, the decline was among rainbow trout only (brook trout actually increased) and is easily explained by changes in our stocking strategy at that time. Such a decline across three species of trout is unprecedented in the history of our Fraser River monitoring.

The figures below display the size structure of brook trout and rainbow trout captured at this station in 2014 and 2016. It is important to be aware that 2013 was the last year that we stocked rainbow trout fingerlings in the Fraser, and some of the decline in the rainbow trout population can be attributed to this change. The rainbows in the 5-10" range in 2014 are the result of past fingerling stocking. The two small rainbows we captured in 2014, 1-2" in length, are evidence of successful natural reproduction that year. The information collected in 2016 suggests that rainbows may not sustain themselves in this reach without the aid of future stocking.

The 2" brook trout captured in 2016 are young-of-the-year fish, and are evidence of a successful 2016 year class. We captured very few Age-0 fish in 2014. This is likely the result of a spring runoff that year that was far above normal. In some locations, unusually high spring runoff can either displace or kill an entire year class of juvenile brook or brown trout. This is likely what occurred here.

Because this station was a new location surveyed for the first time in 2014, it is impossible to know which of the two years is out of the ordinary. It is possible that the 2016 data reflects a return to "normal" fish densities for the site and that 2014 happened to be a particularly productive year. However, it is more common to observe a short-term suppression of fish populations in years with extremely high runoff such as 2014.

This reach has been the recipient of multiple discharge events in recent years that originate from the Moffat Tunnel. High levels of turbidity have occurred and CPW has received multiple reports from the public and other entities. While we have not observed a direct fish kill as a result of these events, this data appears to provide at least circumstantial evidence of some level of environmental stress or disturbance on the trout population here. We will continue to monitor this location in the future.

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

