

I. Project Title: Smallmouth bass control in the lower Yampa River

II. Bureau of Reclamation Agreement Number: R13PG40020

Project/Grant Period: Start date: 10/01/2013

End date: 09/30/2015

Reporting period end date: 09/30/2015

Is this the final report? Yes X No

III. Principal Investigator:

M. Tildon Jones, U.S. Fish & Wildlife Service

1380 S 2350 W, Vernal, UT 84078

tildon_jones@fws.gov, (435) 789.0351

IV. Abstract:

USFWS completed five smallmouth bass removal passes in the lower Yampa River in 2015, removing 1,138 smallmouth bass. As in 2014, the majority of bass (72%) captured this year were sub-adult fish less than 200mm, representing two year classes of fish produced in 2012 and 2013. Catch rates, in contrast, were much lower this year than in 2014. Monitoring passes for overall fish community composition were also completed, and native suckers again were the most abundant species, as has been the case since these monitoring reaches were initiated. Walleye catch this year was higher than in past years.

V. Study Schedule: 2004-ongoing

VI. Relationship to RIPRAP:

Green River Action Plan: Yampa River

III.B.2 Control nonnative fishes via mechanical removal

III.B.2.a. Estimate nonnative abundance, status, trends, and distribution

III.B.2.e. Remove smallmouth bass

III.B.2.f(2) Remove channel catfish >400mm in Yampa Canyon

III.B.2.h. Monitor native and endangered fish response

VII. Accomplishment of FY 2015 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Nonnative Fish Removal

We completed five electrofishing passes in the lower Yampa River between May 26 and June 26, 2015. During this time, flows ranged from 10,100 cfs to just 2,520 cfs, and water temperatures increased from 10.2°C to 24.1°C. Water temperatures exceeded 16°C starting June 1, and we were able to conduct four removal passes after the river reached this temperature threshold. We scheduled sampling passes based on relatively low April snow pack and run off estimates, but substantial May rain in the basin maintained flows for an extended time. We also extended sampling trips through Island Park on the Green River in order to target spawning adult bass¹.

¹ Data from the Island Park passes are presented in the Project 123a report.

We were able to remove 1,138 smallmouth bass (SMB), including nine fish <100mm, 817 sub-adults (100-199mm), and 312 adults (≥ 200 mm) (Table 1). Of these adults, 11 were large enough (≥ 325 mm) to be classified as piscivores posing a competitive threat to adult Colorado pikeminnow. The total number of bass captured was much less than that of 2014 (n=3,966).

Catch rates for 2015 were much lower than those in 2014 (Fig. 1). For all passes combined, the catch rate for bass ≥ 100 mm was 8.2 fish/hour, in contrast to 23.7 fish/h in 2014. The total catch rate from this year consisted of 5.9 sub-adults/h and 2.3 adults/h. The catch rate for adult bass was highest on the first pass in late May, and decreased for the rest of the sampling passes (Figure 2). Sub-adult catch rates were fairly consistent across passes.

Length frequency data for 2015 showed a unimodal distribution centered around the 176-199 mm group (Fig. 3). This distribution most likely reflects two large year classes of bass spawned in 2012 and 2013. Many of these bass have already entered the adult size class (>200 mm), but the majority of fish (72%) caught this year were in the sub-adult size class. This year's length frequency distribution was very similar to 2010 (Fig. 4). We compared these two years because they were both three years after large year classes of bass were produced (2012 and 2007). As was the case with the 2007 year class, the 2012 cohort appears to be decreasing in abundance as it nears adult size, or these bass are leaving the reach as they grow into adult size.

Bass distribution shifted again from 2014 (Fig. 5). In 2014, bass were distributed relatively equally in all reaches, particularly for sub-adults. This year sub-adult catch rates were variable, and highest in the upstream reaches, as well as two lower gradient, open park reaches. Adult distribution was similar to that of sub-adults.

A component of this project is to remove channel catfish >400 mm. This is the length at which catfish are believed to transition to a higher level of piscivory, making them a competitive threat to Colorado pikeminnow and a predatory threat to native fishes. We removed 21 channel catfish meeting this size threshold.

Sampling for fish community composition

We sampled five, one-mile subreaches during pass 5 (June 23-26) in order to monitor fish community species composition (Fig. 6). As in previous years, native suckers (flannelmouth and bluehead) were the two most abundant species captured (Fig. 7). Other species captured, in decreasing abundance, were channel catfish, roundtail chub, smallmouth bass, and an equal number (n=1) of white sucker, walleye, carp, and brown trout.

We also collected several other nonnative fish species over the course of the five passes, including black bullhead, northern pike, walleye, and white sucker and white sucker hybrids (Table 2). Nine of the ten northern pike were classified as piscivores, as were all eleven walleye captured. Seven northern pike were collected in reach 8, near the Laddie Park area. Three of them were caught at the same time in the flooded mouth of Red Rock Canyon. One gray tagged pike was recaptured. This fish was originally tagged by CSU in

Lily Park in 2012 and released into the river at that time. The number of walleye caught this year is the highest since this project began. Six of the eleven walleye were in the most downstream reach, but the rest were in reaches 5-7. Finally, we encountered 32 Colorado pikeminnow this year, and one razorback sucker at the Echo Park spawning bar. Twenty-one of the pikeminnow were recaptures that already had tags. The razorback sucker was stocked in 2010 at the Ouray National Wildlife Refuge, 83 miles downstream.

Roundtail chub monitoring

In order to accommodate the chub sampling this year, along with other components of the project, we split chub sampling into two passes. On pass 1, we collected all the chub encountered in odd numbered reaches, and during pass 4 we sampled the even reaches. We were able to capture 90 roundtail chub, consisting of 86 adults and four sub-adults, and tagged 52 of these. We recaptured four roundtails that were previously tagged. One of these fish had originally been tagged in 2003 in Whirlpool Canyon and was recaptured as a tuberculated adult at Yampa RMI 22.8. Another was tagged in 2006 in Lily Park, and was found at RMI 19.4. The third recaptured chub was originally tagged in 2009, and recaptured again in 2011.

VIII. Additional noteworthy observations:

We captured a Colorado pikeminnow this year at Yampa RMI 5.2 on 6/26/2015. This fish was originally tagged on 4/15/2015 at Colorado River mile 94.

IX. Recommendations:

- Continue nonnative fish removal at current levels, focusing on time period when water temperatures are likely to initiate bass spawning (>16°C).
- Continue to monitor chub. Data collected over the last five years indicate that long term data is needed to assess movement and to allow for recaptures of marked fish. Colorado Parks and Wildlife also stocks bonytail in this reach at Deerlodge Park after our sampling season, and monitoring chubs may assist in estimating survival and movement of these fish.

X. Project Status: On track and ongoing

XI. FY 2015 Budget Status

- A. Funds Provided: \$ 92,029
- B. Funds Expended: \$ 92,029
- C. Difference: -0-
- D. Percent of the FY 2015 work completed: 100%
- E. Recovery Program funds spent for publication charges: -0-

XII. Status of Data Submission: Data are compiled and will be submitted to the database manager by December 2015.

XIII. Signed: M. Tiddon Jones 11/13/2015
Principal Investigator Date

Table 1. Sampling passes and smallmouth bass captured by size class, 2015.

Pass	Date	<100mm	Sub-adults	Adults	Piscivores
1	26-29 May	1	193	125	6
2	2-4 June	1	107	38	1
3	9-11 June	3	204	62	1
4	16-19 June	2	177	56	3
5	23-26 June	2	136	31	0
Total		9	817	312	11

Table 2. Other species captured during removal passes in Yampa Canyon.

Species	Number captured	Piscivores
Northern pike	10	9
White sucker and hybrids	12	
Walleye	11	11
Channel catfish	64	21
Black bullhead	1	
Colorado pikeminnow	32	
Roundtail chub	90	
Razorback sucker	1	

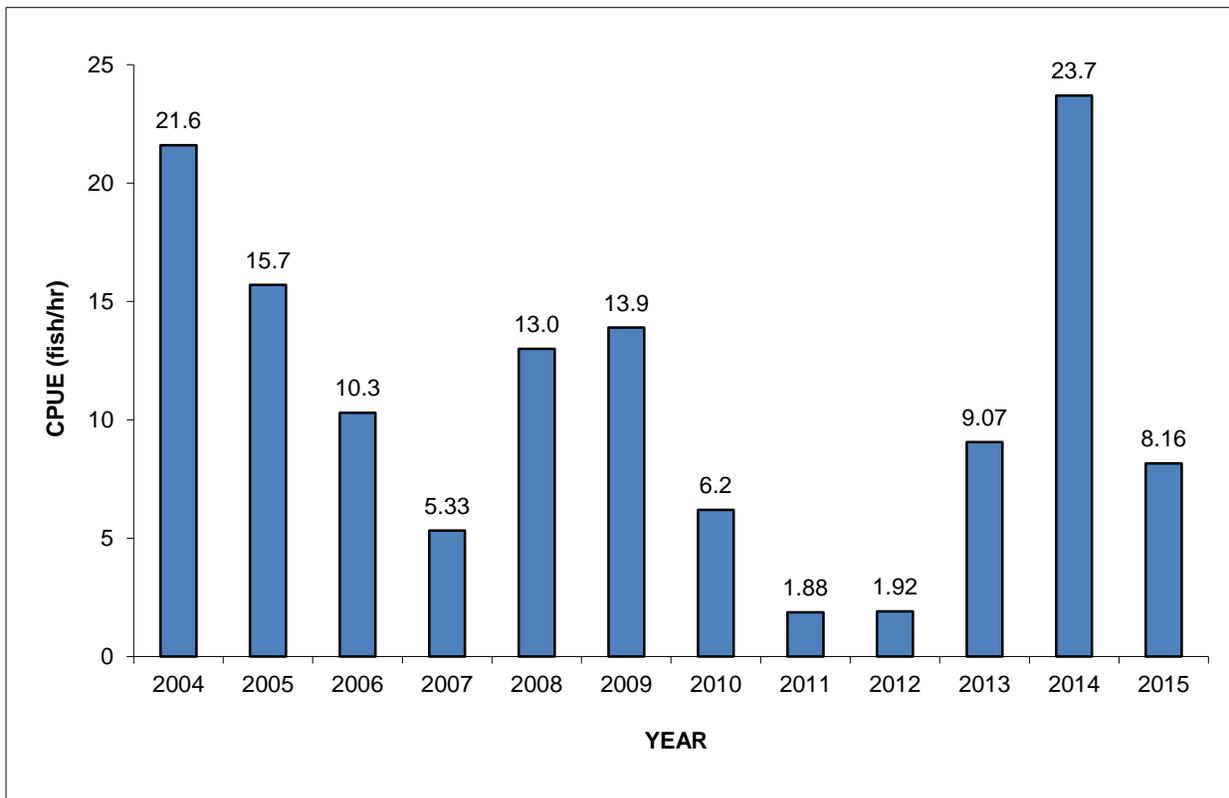


Figure 1. Overall catch rate of smallmouth bass ≥ 100 mm, Yampa Canyon 2004-2015.

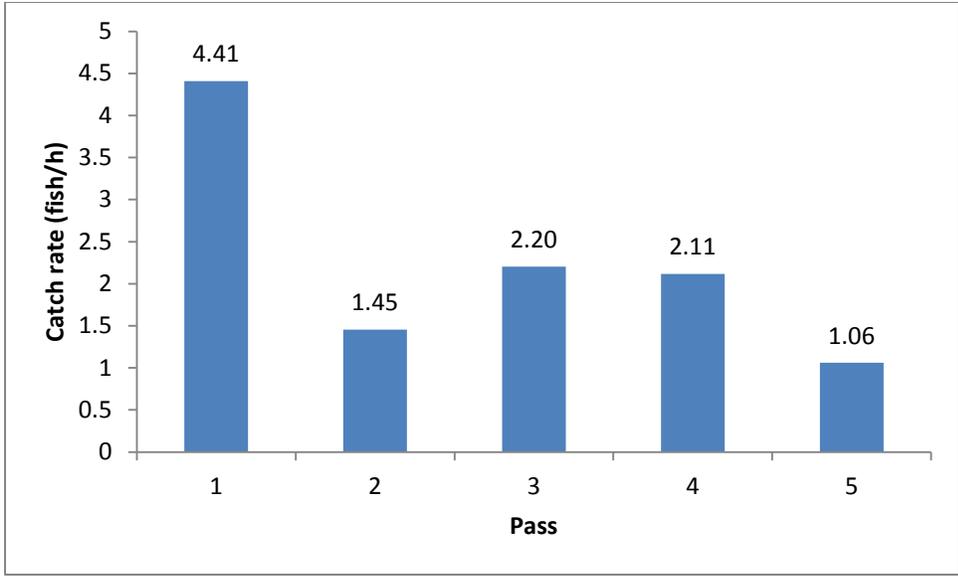


Figure 2. Adult smallmouth bass catch rates by pass, Yampa Canyon 2015.

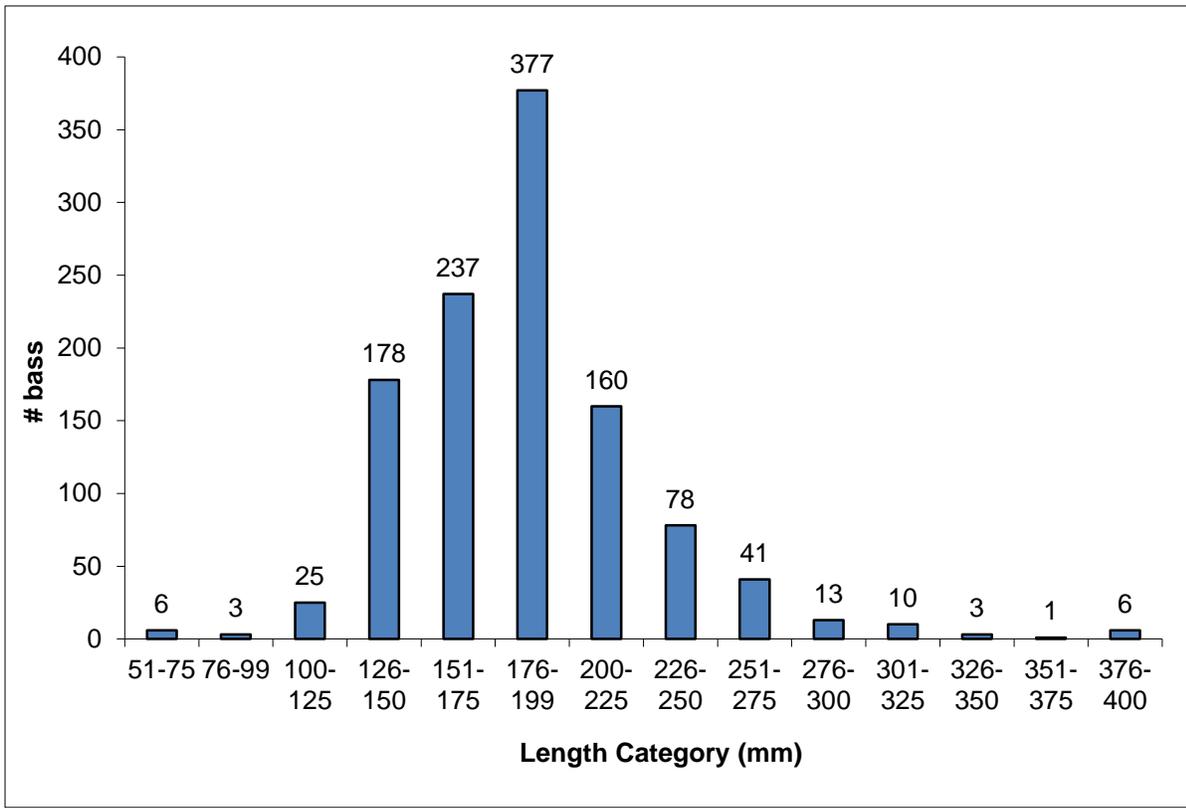


Figure 3. Length frequency histogram for smallmouth bass captured in Yampa Canyon, 2015.

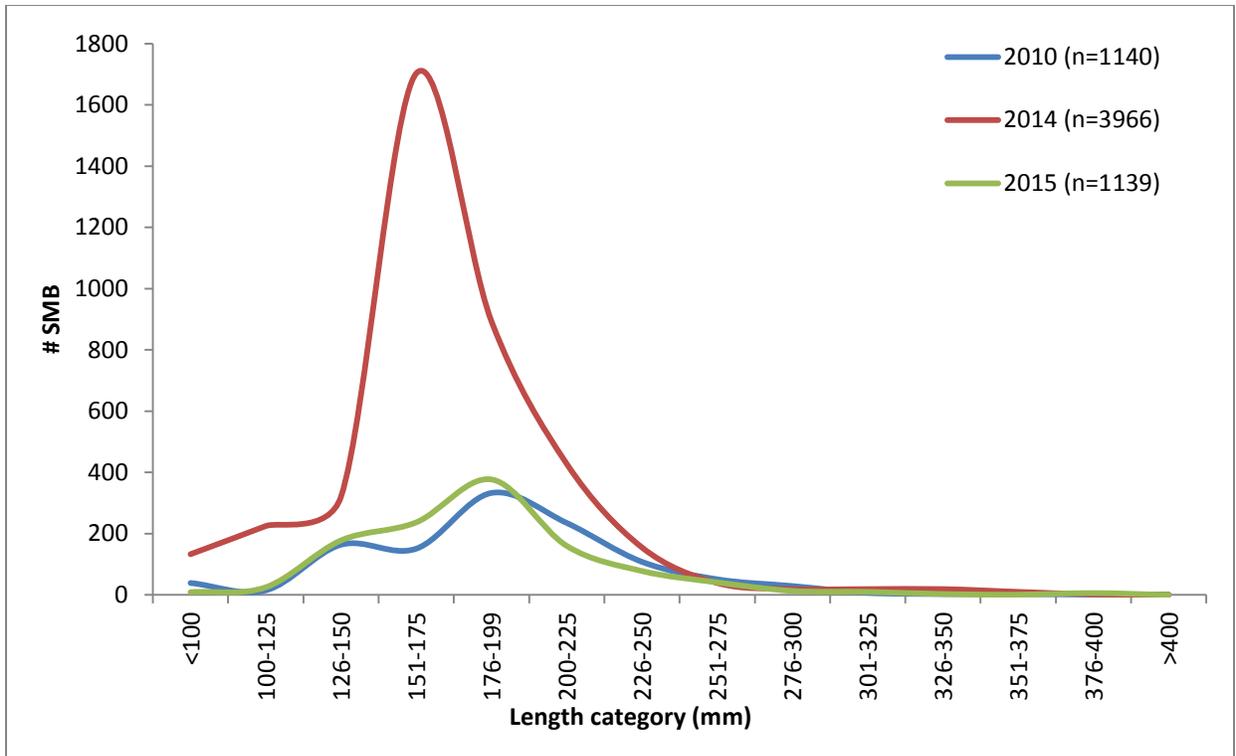


Figure 4. Length-frequencies for smallmouth bass captured in Yampa Canyon in 2010, 2014, and 2015.

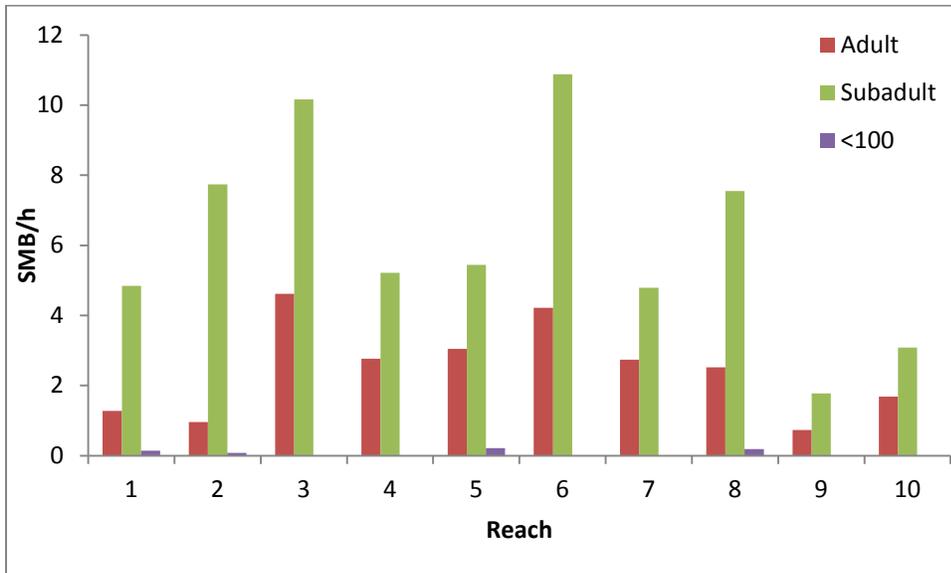


Figure 5. Catch rates of smallmouth bass in Yampa Canyon by reach, 2015.

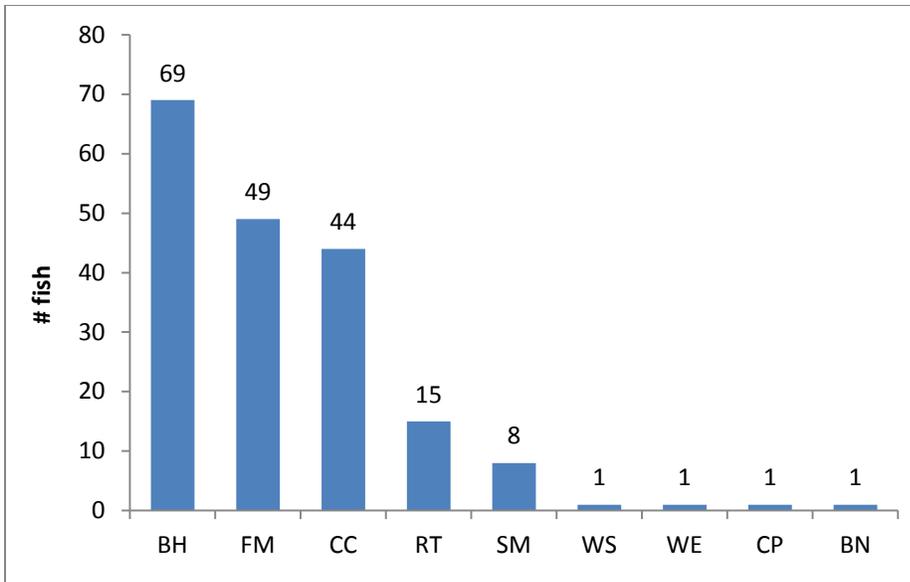


Figure 6. Total species composition for five, 1-mile monitoring reaches in Yampa Canyon, 2015. Species codes are BH (bluehead sucker), FM (flannelmouth sucker), CC (channel catfish), RT (roundtail chub), SM (smallmouth bass), WS (white sucker), WE (walleye), CP (common carp), and BN (brown trout).

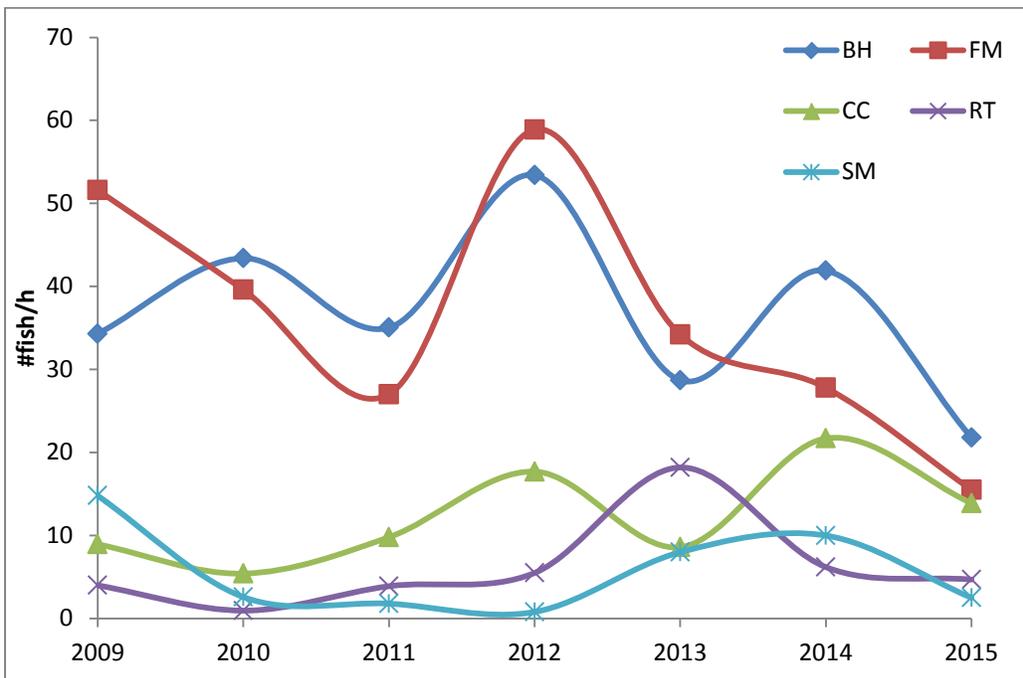


Figure 7. Annual catch rates of five most common species found in 1-mile monitoring reaches in Yampa Canyon, 2009-2015.