Mad River Summer Steelhead Dive Summary
2021

Surveying through the Boulder Roughs of Reach H in the Grand Canyon of Mad River. Photo by Jacob Pounds

December 2021

Background and Purpose

Mad River Alliance has organized and implemented direct-observation snorkel surveys to quantify the number of adult summer-run steelhead in the Mad River since 2013. This survey is a focused effort to count adult and 1/2-pound summer-run steelhead to document run size. Historical data collected between 1980–2008 has also been compiled as a part of this effort. This report summarizes methods and results from 2021. Results from prior years can be found at madriveralliance.org.

Goals of the 2021 survey included the following:

1. Obtain a count of summer-run steelhead from R.W. Matthews Dam to the Kadle Hole (0.5 mile upstream of the Highway 101 bridge), 74.4 miles total.
2. Obtain private property access to reaches of the river near Pilot Creek that have not been surveyed in several years.
3. Provide dive training to community volunteers so they may learn surveying techniques and effective data collection.

Methods

In 2021, surveys were conducted on July 22-24 (Deer Creek to the Kadle Hole). Surveyors included trained volunteer snorkelers from Blue Lake Rancheria, Bureau of Land Management, California Department of Fish and Wildlife, Green Diamond Resource Company, Mad River Alliance, Timberland Resources Company, and other community volunteers.

The direct observation survey area includes approximately 75-mile stretch of river between R.W. Matthews Dam and the Kadle Hole, which encompasses the mainstem Mad River where summer-run steelhead have been historically been found. In 2021, about 67% of the survey area was monitored (47.3 river miles of the 75 miles). Surveys excluded 24.8 miles due to: (1) lack of volunteers (2) deteriorated river access points and locked gates on river access roads and (3) perceived safety issues that stem from the proliferation of cannabis farms in remote areas of Humboldt and Trinity County. However, it is important to note that these non-surveyed areas, reaches C-G are above the known uppermost anadromous flow barrier (Bug Creek Barrier), at most flows.

Results

The results of the 2021 survey documented 77 adult (≥ 16 inches fork length) and 49 half-pounder (< 16 inches fork length) summer-run steelhead (Table 1, Figure 1). This resulted in an encounter rate of 2.3 adult steelhead per mile which was the lowest rate since MRA initiated surveys in 2013 (Table 1).

No adult summer-run steelhead were counted above the lower Humbug Creek flow barrier, which leads us to believe that summer-run steelhead did not migrate upstream of the barrier prior to the 2021 survey. Annual rainfall was in the “below normal” range for the water year, and base flows were low as

early as April 2021. Presence of other species included Pacific lamprey and lamprey redds, freshwater mussels, western pond turtles, garter snakes, and Sacramento suckers.

Table 1. Mad River summer-run steelhead dive survey results 1980–2021.

Year	Miles Surveyed	Adults				Half-Pounders				Grand Total	Total Adults and Half-Pounders Per Mile
		Live	Dead	Total	Total per mile	Live	Dead	Total	Total per mile		
1980[p]	17.9	0	0	0	0	0	0	0	0	0	0
1981[p]	17.5	2	0	2	0	0	0	0	0	2	0
1982[p]	32.4	167	0	167	5	0	0	0	0	167	5
1983[p]	22.8	31	0	31	1	0	0	0	0	31	1
1984[p]	14.1	111	0	111	8	0	0	0	0	111	8
1985[p]	14.8	52	0	52	4	0	0	0	0	52	4
1986[p]	7.8	10	0	10	1	0	0	0	0	10	1
1987[p]	20.2	18	0	18	1	0	0	0	0	18	1
1988[p]	10.6	60	0	60	6	0	0	0	0	60	6
1989[p]	10.6	20	0	20	2	0	0	0	0	20	2
1990[p]	10.6	33	0	33	3	0	0	0	0	33	3
1991[p]	14.7	59	0	59	4	0	0	0	0	59	4
1992[p]	10.6	34	0	34	3	0	0	0	0	34	3
1993[p]	10.6	48	0	48	5	0	0	0	0	48	5
1994[p]	51.6	305	0	305	6	166	0	166	3	471	9
1995[p]	66.6	541	1	542	8	10	0	10	0	552	8
1996[p]	60.7	427	1	428	7	19	0	19	0	447	7
1997[p]	66.6	292	5	297	4	12	0	12	0	309	5
1998[p]	57	191	0	191	3	20	0	20	0	211	4
1999[p]	46.4	82	0	82	2	15	0	15	0	97	2
2000[p]	53.5	170	0	170	3	62	0	62	1	232	4
2001[p]	12.5	194	0	194	16	583	0	583	47	777	62
2002[p]	19.7	185	0	185	9	80	0	80	4	265	13
2003[p]	18.7	483	0	483	26	5	0	5	0	488	26

2004[p]	5.8	209	0	209	36	9	0	9	2	218	38
2005[p]	5.6	211	0	211	38	10	0	10	2	221	39
2006	-	-	-	-	-	-	-	-	-	-	-
2007	-	-	-	-	-	-	-	-	-	-	-
2008[p]	5.1	110	0	110	22	20	0	20	4	130	25
2009	-	-	-	-	-	-	-	-	-	-	-
2010	-	-	-	-	-	-	-	-	-	-	-
2011	-	-	-	-	-	-	-	-	-	-	-
2012	-	-	-	-	-	-	-	-	-	-	-
2013	50	280	0	280	6	28	0	28	1	308	6
2014	53.1	322	0	322	6	92	0	92	2	414	8
2015	47.2	336	0	336	7	222	0	222	5	558	12
2016	46.5	187	0	187	4	29	0	29	1	216	5
2017	46.5	151	0	151	3	40	0	40	1	191	4
2018	54.8	147	0	147	2.7	109	0	109	2	256	5
2019	51.8	117	0	117	2.3	49	0	49	.95	166	3
2020	-	-	-	-	-	-	-	-	-	-	-
2021	47.2	77	0	77	1.6	16	0	16	.34	93	2

' [p] ' = Data is provisional from 1980–2008, as it has not been checked since entered into the database.

' - ' = No data available; no survey conducted.

'Total Adult and Half-Pounder' column rounded to nearest whole number

Recommendations for Future Surveys

Goals for the 2021 summer steelhead dive surveys include the following:

1. Survey the entire river from R.W. Matthews Dam to the Kadle Hole;
2. Survey all reaches within a few days;
3. Rely on trained and experienced divers for the most strenuous and difficult reaches (H and I);
4. Produce annual summary reports detailing survey effort, including distance surveyed, total count, participating entities, other observations, and considerations for future years.

Prior to the 2015 dives, the group discussed using data from the CDFW-operated Adaptive Resolution Imaging Sonar (ARIS) sonar camera to target survey dates, with the idea that survey dates will be conducted after the entire run has entered the river. Although this practice has not been implemented, comparing survey data to ARIS sonar counts near the Humboldt Bay Municipal Water District facility can be one way to determine if trends in dive counts parallel the ARIS-observed run size. Dive counts would then be used as an index of adult summer-run steelhead population abundance and to assess in-stream distribution. If resources become available, comparing these data could be an effective way of truthing run size and dive observation.

Acknowledgements

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Table 2. Volunteers, planners, and participants in 2021 Survey

Michelle Fuller	Whelan Gilkerson	Maddy Brunt	Pat Righter
Jack Henry	John Pini	Matt Nannizzi	Michael Zontos
Dylan Leonard	Josh Koepke	Ishan Vernallis	Lesley
Jacob Pounds	Ivonne Romero	Daniel Holsapple	Jeremy Heidrick
Erin Phillips	Riley Gorman		