

DESCHUTES RIVER STEELHEAD FISHERY FRAMEWORK

The Oregon Department of Fish and Wildlife (ODFW) has outlined the following fishery framework to establish standards for opening or closing the steelhead sport fishery on the lower Deschutes River.

STEP 1: Initial escapement estimate parameters:

Escapement estimates of wild steelhead above Sherars Falls on the Deschutes River from the previous run year will be finalized by May 1, annually. In February, preliminary escapement estimates of the previous run year will be released to give a status update of escapement estimate projections. Temporary rules will only be set using the May 1 escapement estimate. Based on wild steelhead escapement, the steelhead fishery will be set by these conditions:

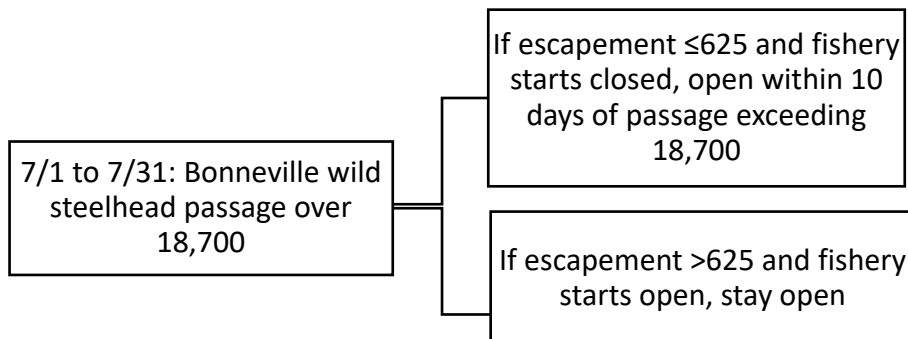
1. If escapement of wild steelhead above Sherars Falls is equal to or less than 625^{a,b} fish, and the lower Deschutes River steelhead sport fishery is open, the fishery will be closed by temporary rule starting June 1 until certain criteria for wild steelhead passage upstream over Bonneville Dam are met. In-season wild steelhead run evaluations will begin July 1.
2. If escapement of wild steelhead above Sherars Falls is greater than 625 fish, the lower Deschutes steelhead fishery will remain open by permanent rule or reopen by June 10. In-season run evaluations will begin July 1.

STEP 2: Wild steelhead over Bonneville Dam in-season passage parameters:

In-season evaluations of wild steelhead over Bonneville will be used to predict the run-strength of Deschutes-origin steelhead; the sport fishery will be open or closed in accordance with passage counts of wild fish over Bonneville by set dates. Bonneville passage count parameters for July 1 – July 31 and July 1 – August 31 are defined below:

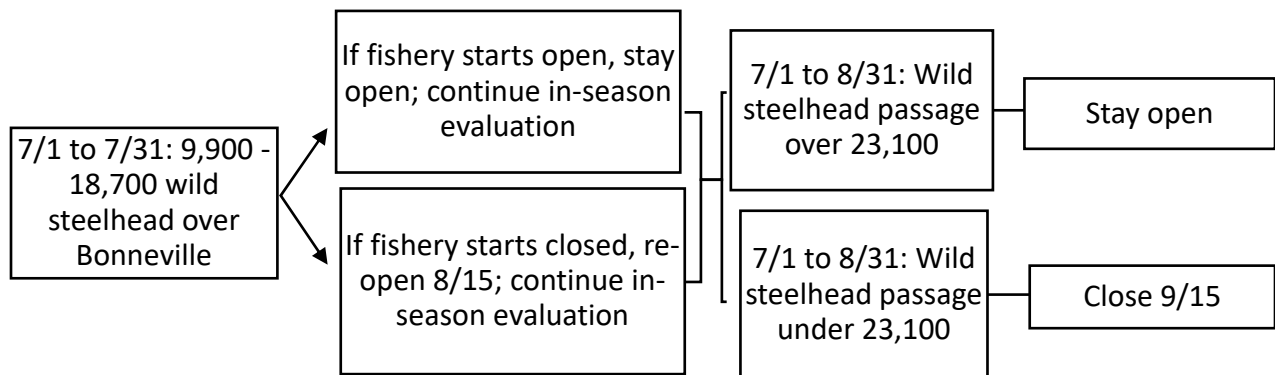
Wild steelhead returns passing upstream through Bonneville Dam from July 1 to July 31^c are greater than 18,700 wild fish

1. If the Deschutes steelhead sport fishery is open by permanent rule (escapement of previous run year >625), the fishery will remain open.
2. If the fishery is closed by temporary rule (escapement of previous run year ≤625), the fishery will open within 10 days of passage exceeding 18,700 wild fish.



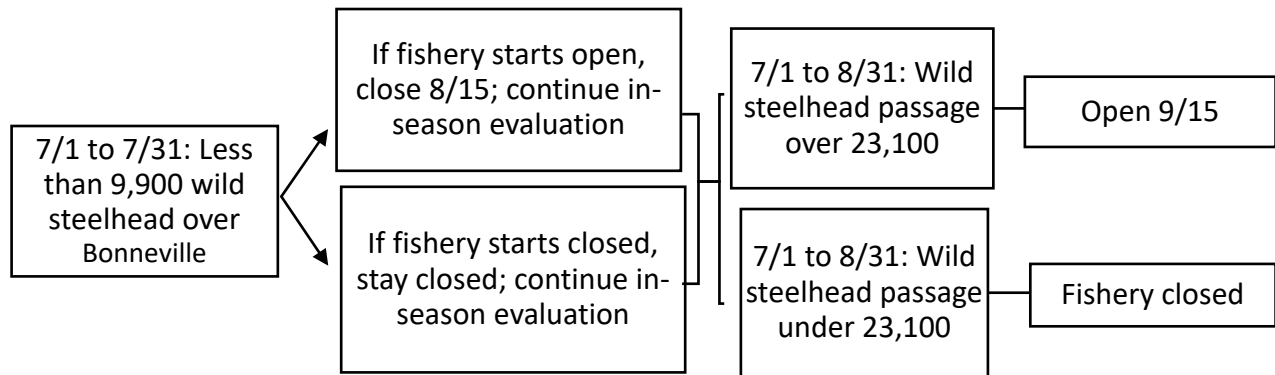
Wild steelhead returns passing upstream through Bonneville Dam from July 1 to July 31 are between 9,900 and 18,700 wild fish

1. If the Deschutes steelhead fishery is open by permanent rule (escapement of previous run year >625), the fishery will remain open; in-season evaluation will continue through August 31.
 - a. If passage of wild steelhead upstream through Bonneville Dam from July 1 through August 31 is above 23,100 wild fish, the fishery will remain open.
 - b. If passage of wild steelhead upstream through Bonneville Dam from July 1 through August 31 is less than 23,100 wild fish, the Deschutes steelhead fishery will close by September 15.
2. If the Deschutes steelhead fishery is closed by temporary rule (escapement of previous run year ≤625), the fishery will re-open August 15; in-season evaluation will continue through August 31.
 - a. If passage of wild steelhead over Bonneville from July 1 through August 31 exceeds 23,100 wild fish, the fishery will remain open.
 - b. If passage of wild steelhead over Bonneville from July 1 through August 31 is less than 23,100 wild fish, the fishery will re-close September 15.



Wild steelhead returns upstream through Bonneville Dam from July 1 to July 31 are less than 9,900 wild fish

1. If the Deschutes steelhead fishery is open by permanent rule (escapement of previous run year >625), the fishery will close by August 15; in-season evaluation will continue through August 31.
 - a. If passage of wild steelhead upstream through Bonneville Dam from July 1 through August 31 exceeds 23,100 wild fish, the fishery will re-open September 15.
 - b. If passage of wild steelhead upstream through Bonneville from July 1 through August 31 is less than 23,100 wild fish, the fishery will remain closed.
2. If the Deschutes steelhead fishery is closed by temporary rule (escapement of previous run year ≤625), the fishery will remain closed; in-season evaluation will continue through August 31.
 - a. If passage of wild steelhead upstream through Bonneville Dam from July 1 through August 31 exceeds 23,100 wild fish, the fishery will re-open September 15.
 - b. If passage of wild steelhead over Bonneville from July 1 through August 31 is less than 23,100 wild fish, the fishery will remain closed.



STEP 3: Sherars Falls Trap parameters:

Capture numbers of wild steelhead at the Sherars Falls Adult Salmon and Steelhead Trap (Sherars Trap) on the Deschutes River is a late-season metric to evaluate run-strength for Deschutes-origin fish. Sherars Trap numbers may alter the status of the Deschutes sport fishery under two conditions:

1. If 120 or more wild steelhead are captured at the Sherars Trap on or before October 31, and the Deschutes steelhead sport fishery is closed by temporary rule, the fishery will re-open within 10 days of meeting 120 wild steelhead captured during Sherars Trap operations.
2. If 60 or fewer wild steelhead are captured at the Sherars Trap by October 31, and the Deschutes steelhead fishery is open under permanent rule, the fishery will close November 15.

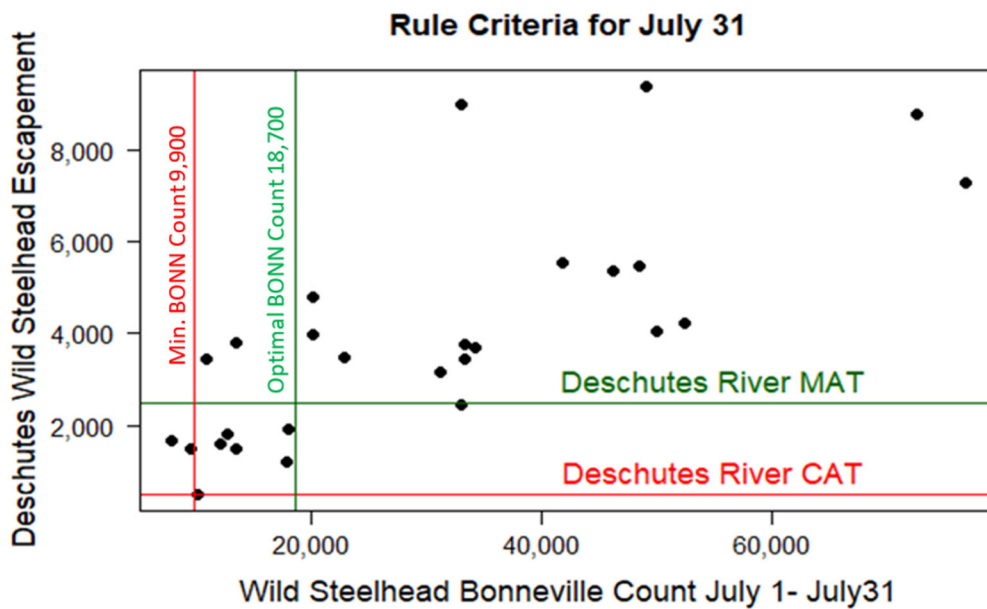


Figure 1: The relationship between wild steelhead counts over Bonneville Dam from July 1 to July 31 and wild steelhead escapement estimates for the Deschutes River above Sherars Falls. Minimum and optimal passage counts of wild steelhead over Bonneville (BONN) are included with vertical lines.

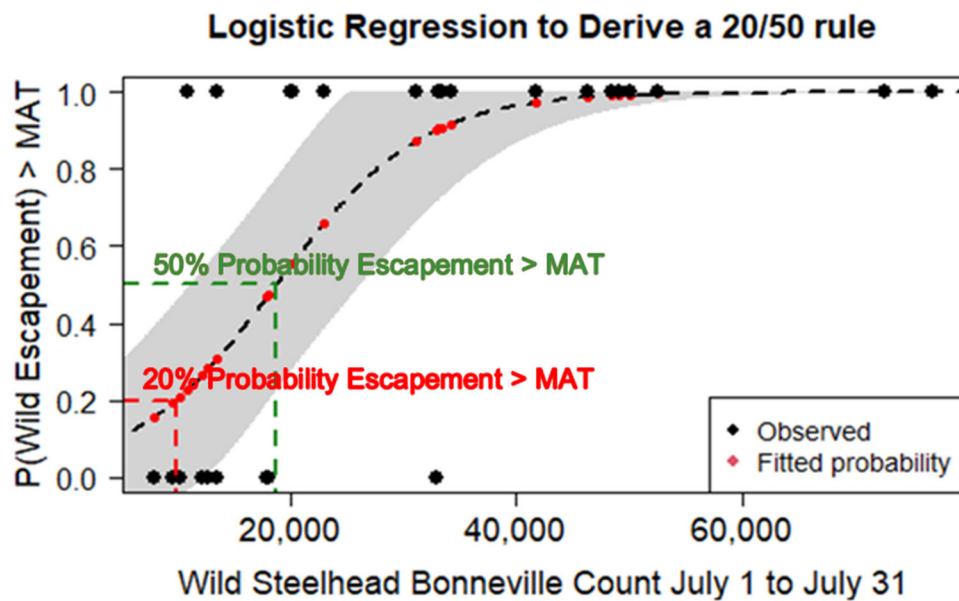


Figure 2: Logistic regression used to derive minimal and optimal Bonneville counts of wild steelhead from July 1 to July 31. The 20 and 50 percent probabilities thresholds reflect the likelihood that escapement of wild steelhead on the Deschutes River will be above or below MAT (2,500 fish) based on observed, in-season passage over Bonneville^d.

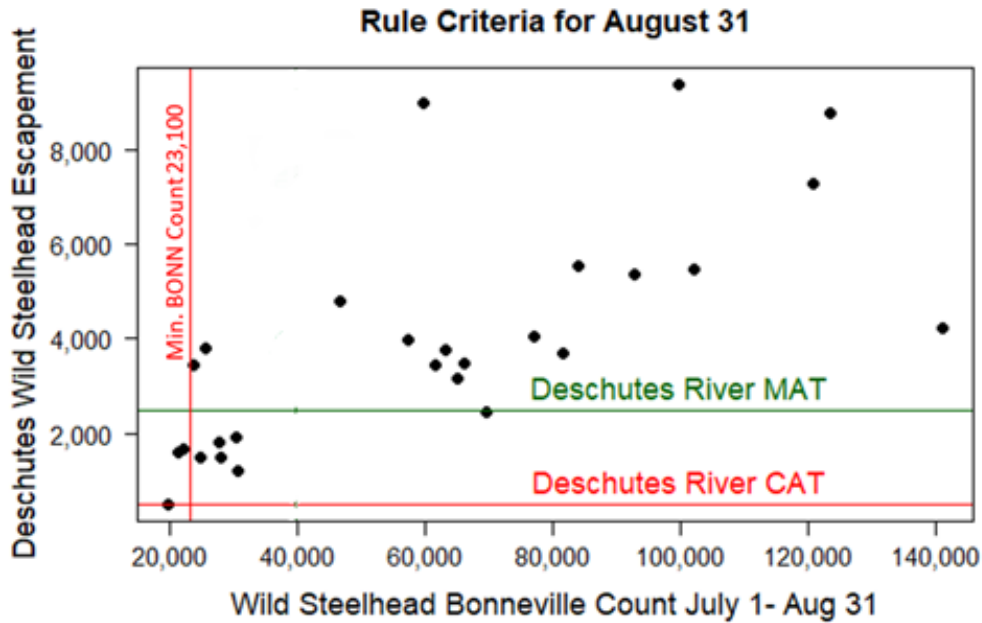


Figure 3: The relationship between wild steelhead counts over Bonneville Dam from July 1 to August 31 and wild steelhead escapement estimates for the Deschutes River above Sherars Falls. Minimum passage count of wild steelhead over Bonneville (BONN) is included with red vertical line.

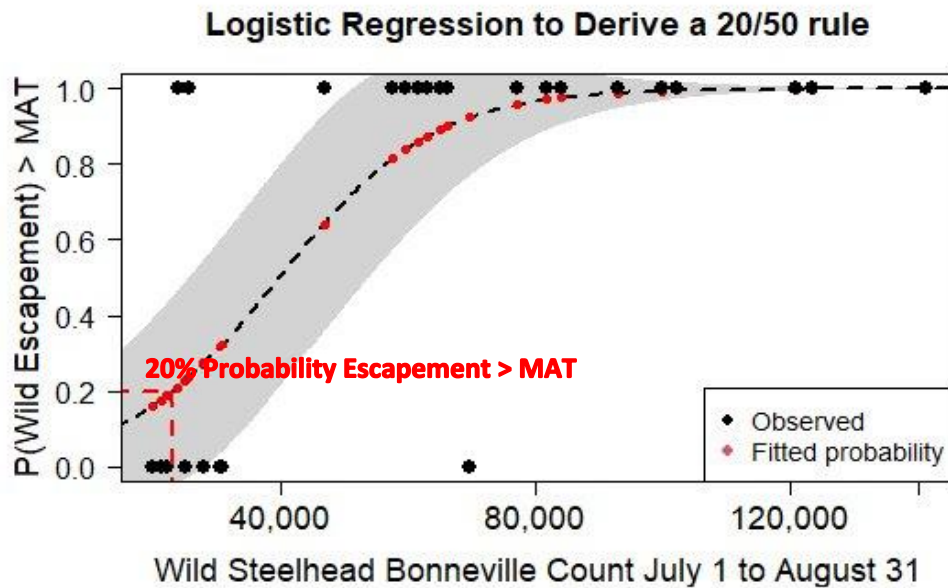


Figure 4: Logistic regression used to derive the minimal Bonneville count of wild steelhead from July 1 to August 31. The 20 percent probability threshold reflects the likelihood that escapement of wild steelhead on the Deschutes River will be above or below MAT (2,500 fish) based on observed, in-season passage over Bonneville.

Impacts to other Deschutes River Fisheries

Fall Chinook

If a temporary rule is in place which closes the Deschutes steelhead sport fishery, angling for Fall Chinook from the I-84 Bridge (river mile 0) upstream to the upper railroad trestle (river mile 40) will be concurrently closed.

The Fall Chinook sport angling fishery from the upper railroad trestle upstream to Sherars Falls will remain open by permanent rule. Steelhead are bycatch in this fishery. Annual catch of wild steelhead by Fall Chinook anglers in this fishery is generally low with a 5-year average of 58 wild steelhead captured and released. During the 2021 steelhead closures, 33 wild steelhead were estimated captured and released.

Coho Salmon

If a temporary rule is in place which closes the Deschutes River for steelhead angling, angling for coho salmon is concurrently closed from I-84 upstream to Pelton Dam (river mile 100).

Angling for coho salmon will remain open under permanent rule from the upper railroad trestle upstream to Sherars Falls. Steelhead are bycatch in this fishery. Annual catch of wild steelhead by salmon anglers in this fishery is generally low with a 5-year average of 58 wild steelhead captured and released. During the 2021 steelhead closures, 33 wild steelhead were estimated captured and released.

Redband Trout

If a temporary rule is in place which closes the Deschutes River for steelhead angling, angling for trout will remain open under permanent rules.

Table 1. Estimated Deschutes River wild steelhead escapement above Sherars Falls, sample size of wild steelhead at the Sherars Falls Trap, and wild steelhead counts to Bonneville Dam by time-period, from 1994 to 2022.

Run - Spawn Year	Deschutes Escapement	Wild Steelhead at Sherars Trap by Oct 31	Wild over Bonn July 1 - July 31	Wild Over Bonn July 1 - Aug 31
1994-1995	482	55	10,195	19,758
1995-1996	1,662	184	7,921	22,179
1996-1997	3,458	299	10,939	23,760
1997-1998	1,820	166	12,745	27,745
1998-1999	3,800	391	13,492	25,516
1999-2000	4,790	695	20,168	46,710
2000-2001	8,985	931	33,130	59,637
2001-2002	8,749	957	72,609	123,375
2002-2003	9,363	867	49,045	99,688
2003-2004	5,524	590	41,817	84,073
2004-2005	3,161	293	31,199	65,044
2005-2006	3,432	372	33,289	61,487
2006-2007	3,986	578	20,114	57,393
2007-2008	3,482	486	22,974	66,199
2008-2009	4,048	504	50,057	77,039
2009-2010	4,236	964	52,524	141,152
2010-2011	7,257	813	76,892	120,691
2011-2012	5,450	500	48,545	102,181
2012-2013	3,749	295	33,412	63,082
2013-2014	3,677	343	34,228	81,701
2014-2015	5,358	529	46,295	92,839
2015-2016	2,457	376	33,025	69,532
2016-2017	1,196	105	17,960	30,773
2017-2018	1,487	--	9,527	24,877
2018-2019	1,605	124	12,196	21,231
2019-2020	1,492	176	13,470	27,935
2020-2021	1,935	169	18,064	30,449
2021-2022	480	46	6,736	16,023

Endnotes:

- a. The combined Critical Abundance Threshold (CAT) for wild Deschutes River summer steelhead is 625 fish; the Minimum Abundance Threshold (MAT) is 2,500 fish. These metrics were determined by the Viable Salmonid Population (VSP) model in the Middle Columbia River Steelhead Distinct Population Segment ESA Recovery Plan. Within the Recovery Plan, Deschutes River steelhead are broken out between Eastside and Westside Populations. Managers have now grouped the populations as one for management purposes. The CAT is considered as a threshold for fishery restrictions in the Deschutes River Steelhead Fishery Management and Evaluation Plan (FMEP)(NOAA 2019). The foundation for both the MAT and CAT development is defined in McElhany *et al.* 2000. Run years 1994-95 and 2021-22 are the only years the less than 625 escapement threshold would have triggered fishery closures (Table 1).
- b. The spawner escapement estimate of wild steelhead above Sherars Falls on the Deschutes River is complete by May 1. Wild adult Deschutes steelhead generally enter the Deschutes River from July to November, but peak spawning occurs in early March. Data are collected to generate mark-recapture spawner escapement estimates from July until May 1, annually.
- c. On average, 50 percent of steelhead returning between July 1 and October 31 pass Bonneville Dam by mid-August. Wild fish tend to arrive earlier relative to the aggregate, with the 50 percent passage date being August 1 (WDFW Non-treaty fishery review, 2021). Using July 31 as the initial in-season evaluation cutoff for steelhead passage over Bonneville will provide a reliable representation of how wild steelhead returns are tracking for a given run year. August 31 as the second in-season evaluation date will provide run counts after over half of the wild steelhead return have passed over Bonneville.
- d. Because escapement has only fallen below the CAT twice, it is impossible to model the probability of falling below this threshold. Ideally the lower limit should be the point where the chance of falling below the CAT is 0.
- e. The minimum and maximum sample thresholds designated in the Sherars Falls Trap parameters were based on historical data and modeling from Chapman's Modification of the Lincoln-Peterson mark-recapture method.

References

- McElhany, P., M.H. Ruckelshaus, M.J. Ford, T.C. Wainwright, and E.P. Bjorkstedt. 2000. Viable salmonid populations and the recovery of ESUs. U.S. Dept. of Commerce, NOAA Tech. Memo. NMFS-NWFSC-42.
- National Marine Fisheries Service. 2009. Middle Columbia River Steelhead Distinct Population Segment ESA Recovery Plan. Northwest Region.
- NOAA Fisheries. 2019. Fisheries Management and Evaluation Plan for the Deschutes River, Oregon. Revised. Oregon Department of Fish and Wildlife, The Dalles.
- Review of 2021 non-treaty Columbia River fisheries and impacts on wild upriver summer steelhead. August 27, 2021. https://wdfw.wa.gov/sites/default/files/2021-08/summer_steelhead_summary_aug_27_2021.pdf