



U.S. Fish and Wildlife Service
Columbia River Fish & Wildlife Conservation Office



Bull Trout population monitoring in the Oregon portion of the mid-Columbia recovery unit

Annual Report: 2024



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On the cover: The North Powder River.

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Executive Summary:

The Bull Trout *Salvelinus confluentus* recovery plan calls for the use of a threats assessment tool for evaluating the threats to the species in recovery units for 5-year status reviews and potential delisting. To some extent, those threats evaluations and status assessments will be dependent on demographic and ecological information related to characteristics of a “recovered” recovery unit. Demographic and ecological data for most Bull Trout populations in the Oregon portion of the mid-Columbia recovery unit have not been collected consistently or extensively. A monitoring strategy for Bull Trout populations in the mid-Columbia recovery unit was recently developed (Howell et al. 2018). Our aim is to implement parts of that strategy by undertaking such activities as PIT tagging juvenile Bull Trout in rearing areas to take advantage of data generation provided by existing PIT tag detection sites downstream of those areas (e.g., in the Imnaha River), conducting electrofishing surveys to confirm results obtained from eDNA sampling efforts (presence/absence and distribution), and conducting electrofishing, snorkeling, and spawning ground surveys in streams supporting Bull Trout that are surveyed annually (abundance or relative abundance and distribution), or have not been surveyed in many years. In addition, we will participate in cooperative investigations (with the Oregon Department of Fish and Wildlife [ODFW] and Pacificorp) expanding on past work conducted in the Wallowa River drainage upstream from Wallowa Lake involving the genetic and demographic characteristics of Bull Trout, Brook Trout, and Brook Trout x Bull Trout hybrids.

In 2024, our objectives were to assess the distribution and relative abundance of Bull Trout, Brook Trout *Salvelinus fontinalis*, and Brook Trout x Bull Trout hybrids in streams in the Powder River subbasin in northeast Oregon and to collect genetic samples from Bull Trout and apparent hybrids in those streams. Bellerud et al. (1997) conducted distribution surveys in the Powder River subbasin in the late 1990s, and Howell (2017) conducted similar surveys, in addition to collecting genetic samples, almost twenty years later in 2013 – 2015 to determine if the distribution of Bull Trout, Brook Trout, and Brook Trout x Bull Trout hybrids had shifted and whether increases in stream temperature had played a role. The monitoring strategy for Bull Trout populations in the mid-Columbia recovery unit calls for continued monitoring of Bull Trout and Brook Trout distribution, relative abundance, and hybridization at 5-10 year intervals in the Powder River Core Area (Howell et al. 2018). We undertook our work in 2024 because surveys had not been conducted in that Core Area in 9-11 years. Although Howell (2018) collected genetic samples from Bull Trout captured in 2013 – 2015, sample sizes were typically too small for genetic analyses (e.g., genetic diversity within and among populations). Thus, we collected additional genetic samples in 2024 with the intent of increasing the sample size to 25-30 individuals for each stream containing Bull Trout. We also collected genetic samples from individuals that appeared to be hybrids to confirm they were, in fact, hybrids.

We conducted the surveys between 11 July and 19 August 2025 (Appendix Table 1). During the previous surveys, 100-m sampling sites were electrofished every 1000 km of stream (Bellerud et al. 1997; Howell 2017). Due to personnel and time constraints, we selectively sampled primarily at sites at or near the previously recorded upper and lower limits of distribution of Bull Trout in streams supporting only Bull Trout, and at or near the previously recorded upper limit of the Bull Trout distribution and the upper and lower limits of the zone of sympatry in streams supporting Bull Trout and Brook Trout. We also sampled at some sites to refine the lower limit of the

distribution of Brook Trout and to collect rainbow trout *Oncorhynchus mykiss* for an unrelated ODFW study. The genetic samples were stored in individual vials containing 100% ethanol and shipped to the ODFW genetics laboratory in Newport, Oregon for analyses.

We captured Bull Trout in six of the nine streams we sampled (Appendix Table 1; Appendix Figures 1 – 4). Brook Trout were captured in five streams, including two (Indian Creek and the North Powder River) where Bull Trout were also present (Appendix Table 1; Appendix Figures 1 – 4). We captured apparent Brook Trout x Bull Trout hybrids in those two streams in addition to Lake and North Fork Anthony creeks.

In occupied sites, Bull Trout densities ranged from 0.001 to 0.68 fish/m² (Appendix Table 1). Bull Trout were most abundant in Silver Creek and the North Powder River and most widely distributed in Silver Creek (Appendix Table 1; Appendix Figures 1 – 4). The distribution of Bull Trout in the North Powder River was limited to a small area in the headwaters.

Brook Trout densities in occupied sites ranged from 0.004 to 0.160 fish/m² (Appendix Table 1). Brook trout were most abundant and widely distributed in Lake Creek and the North Powder River (Appendix Table 1; Appendix Figures 1 – 4), both of which originate from headwater lakes containing Brook Trout.

Brook Trout x Bull Trout hybrid densities in occupied sites ranged from 0.003 to 0.008 fish/m² (Appendix Table 1). Hybrids were most abundant in the North Powder River (n = 5). One hybrid each was captured in Lake, North Fork Anthony, and Indian creeks.

The distributions of Bull Trout, Brook Trout, and Brook Trout x Bull Trout hybrids in 2024 were similar to those observed in 2013 – 2015 (Howell 2017), with a few exceptions. Whereas one Bull Trout was captured in Lake Creek in 2013 – 2015 (Howell 2017), we captured no Bull Trout and a single, relatively large (170 mm in fork length) hybrid in Lake Creek. We also captured no Bull Trout in North Fork Anthony Creek, although they had been captured at multiple sites in that stream previously (Howell 2017). Howell (2017) speculated that Fruit Creek likely did not support a Bull Trout population because Bull Trout were captured at only two sites, and only a single Bull Trout was captured at each of those sites. However, we captured Bull Trout at four of the five sites we sampled, and they ranged in fork length from 75 to 159 mm, indicating multiple age classes were present and that a population exists there. In Little Cracker Creek, we captured Bull Trout but no Brook Trout or hybrids, which had been captured previously in that stream (Bellerud et al 1997; Howell 2017). As Howell (2017) noted, there is limited habitat available to Bull Trout in Little Cracker Creek and that population is likely very small.

References:

Bellerude, B. L., Gunckel, S., Hemmingsen, A. R., Buchannon, D. V., and Howell, P. 1997. Bull trout life history, genetics, habitat needs, and limiting factors in central and northeast Oregon. Annual Report 1996. Bonneville Power Administration, Portland, Oregon.

Howell, P. H. 2017. [Changes in native bull trout and non-native brook trout distributions in the upper Powder River basin after 20 years, relationships to water temperature and implications of climate change](#). Ecology of Freshwater Fish. 2017; 1-10.

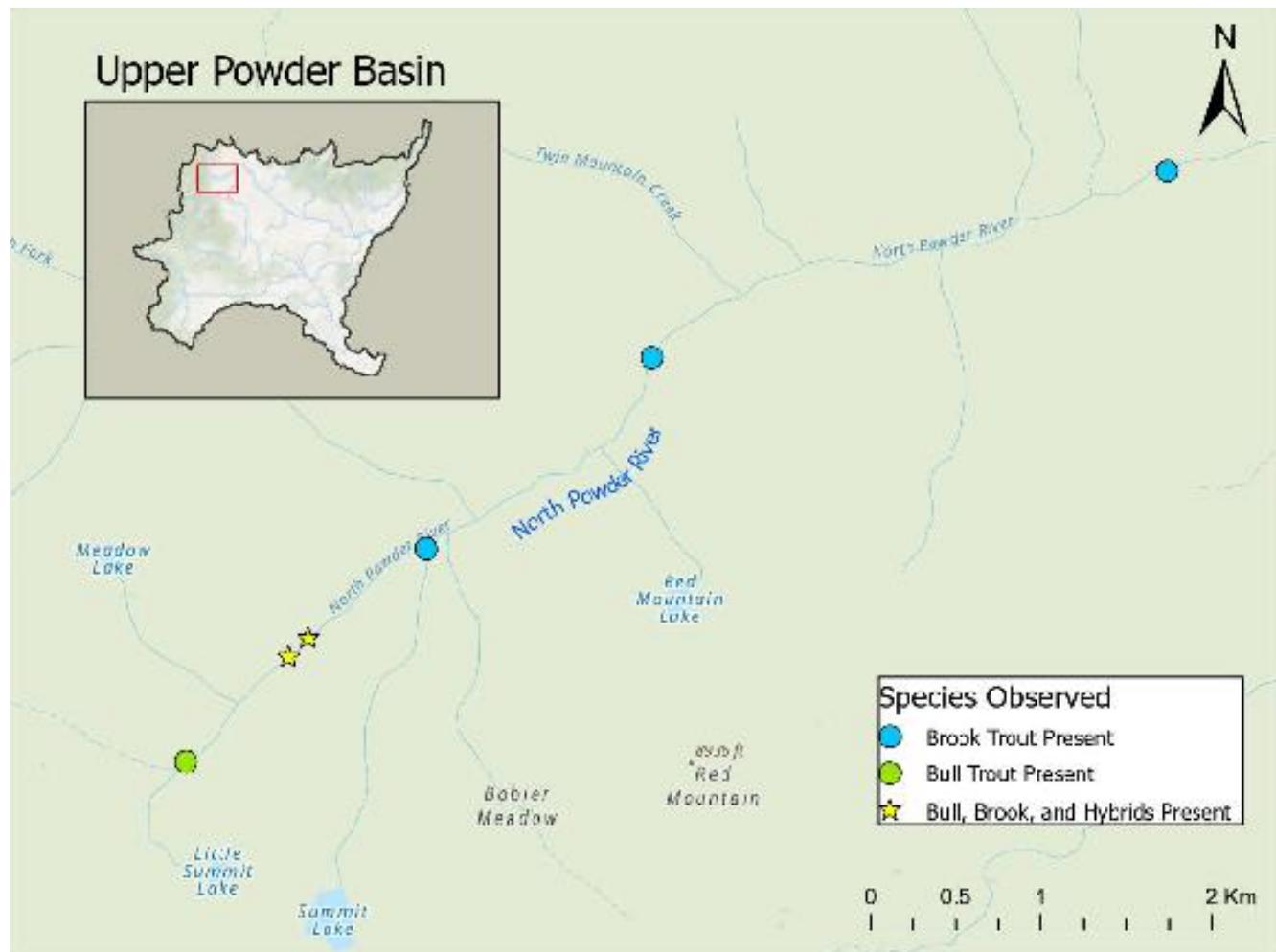
Howell, P., P. Sankovich, S. Gunckel, and C. Allen. 2018. [A demographic monitoring strategy for Bull Trout core areas in northeastern Oregon and portions of southeastern Washington](#). U. S. Fish and Wildlife Service, Oregon Fish and Wildlife Office, Portland, Oregon (USA). 91 pp.

Appendix

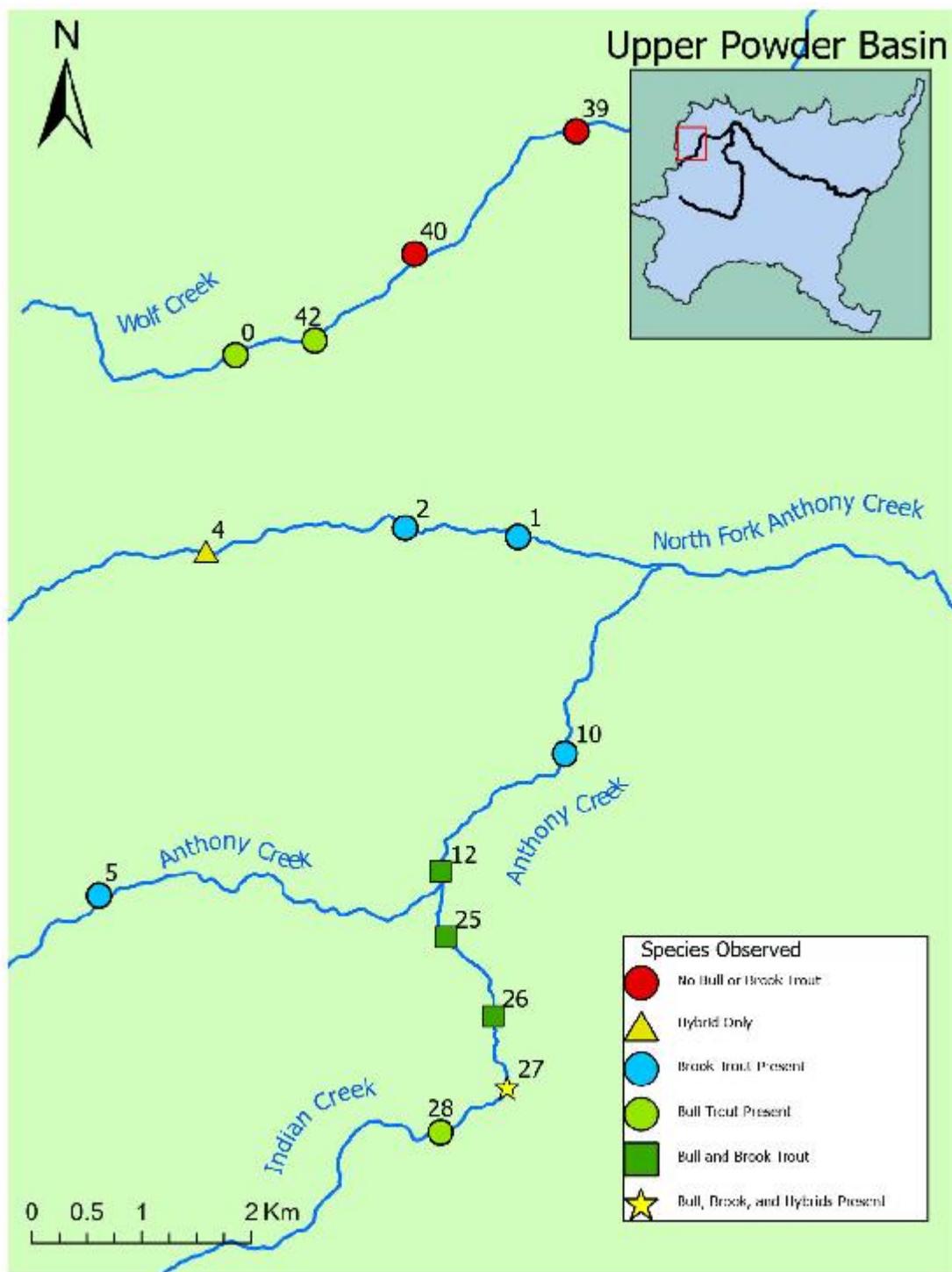
Appendix Table 1. Number, mean fork length (FL), range in fork length, and density of Bull Trout (BuT), and number and density of Brook Trout (BT), Brook Trout x Bull Trout hybrids, and rainbow trout (RBT) in electrofishing survey sites in streams in the Powder River subbasin in 2024.

Stream	Date	Site number	Easting (UTM) (NAD83)	Northing (UTM) (NAD83)	Reach Length (m)	Number of BuT	Mean FL (range)	Density of BuT/m ²	Number of BT	Density of BT/m ²	Number of Hybrids	Density of Hybrids/m ²	Number of RBT/m ²	Density of RBT/m ²
Silver Creek	7/11/2024	130	403696	4962596	100	1	50	0.002	0	0.000	0	0.000	3	0.006
Silver Creek	7/11/2024	133	401540	4964409	100	0		0.000	0	0.000	0	0.000	8	0.017
Silver Creek	7/12/2024	136	400260	4966920	100	4	122.5 (100 - 150)	0.011	0	0.000	0	0.000	8	0.022
Silver Creek	7/16/2024	130A	402178	4963862	100	2	72.5 (72 - 73)	0.003	0	0.000	0	0.000	13	0.017
Silver Creek	7/16/2024	136A	400049	4967294	100	7	142 (125 - 155)	0.017	0	0.000	0	0.000	5	0.012
Silver Creek	7/16/2024	136B	399996	4967321	70	5	142 (107 - 165)	0.017	0	0.000	0	0.000	5	0.017
Fruit Creek	7/12/2024	1	404165	4962511	100	0		0.000	0	0.000	0	0.000	18	0.053
Fruit Creek	7/19/2024	1A	404118	4963481	75	2	100 (75 - 125)	0.006	0	0.000	0	0.000	13	0.041
Fruit Creek	7/19/2024	2	404169	4964232	100	1	126	0.003	0	0.000	0	0.000	14	0.038
Fruit Creek	7/19/2024	1AB	404252	4962966	50	1	124	0.005	0	0.000	0	0.000	3	0.014
Fruit Creek	7/22/2024	1AC	404342	4963651	100	6	126 (76 - 159)	0.015	0	0.000	0	0.000	35	0.085
Little Cracker Creek	7/22/2024	LC1A	405548	4964310	30	2	135	0.022	0	0.000	0	0.000	6	0.065
Little Cracker Creek	7/22/2024	LC1B	405663	4964381	100	2	171	0.007	0	0.000	0	0.000	10	0.033
Little Cracker Creek	7/22/2024	LC1C	405748	4964457	50	3	159 (147 - 172)	0.020	0	0.000	0	0.000	5	0.033
Lake Creek	7/23/2024	109A	412922	4957839	200	0		0.000	0	0.000	0	0.000	20	0.029
Lake Creek	7/23/2024	109	412985	4958004	100	0		0.000	0	0.000	0	0.000	12	0.030
Lake Creek	7/23/2024	112	414633	4959737	100	0		0.000	18	0.057	0	0.000	0	0.000
Lake Creek	7/24/2024	109b	413415	4958517	80	0		0.000	1	0.004	0	0.000	15	0.063
Lake Creek	7/24/2024	1	413819	4958807	100	0		0.000	3	0.007	0	0.000	11	0.024
Lake Creek	7/24/2024	2	414075	4959037	100	0		0.000	12	0.042	1	0.003	12	0.042
NF Fork Anthony Creek	7/26/2024	1	409679	4988846	100	0		0.000	2	0.005	0	0.000	5	0.012

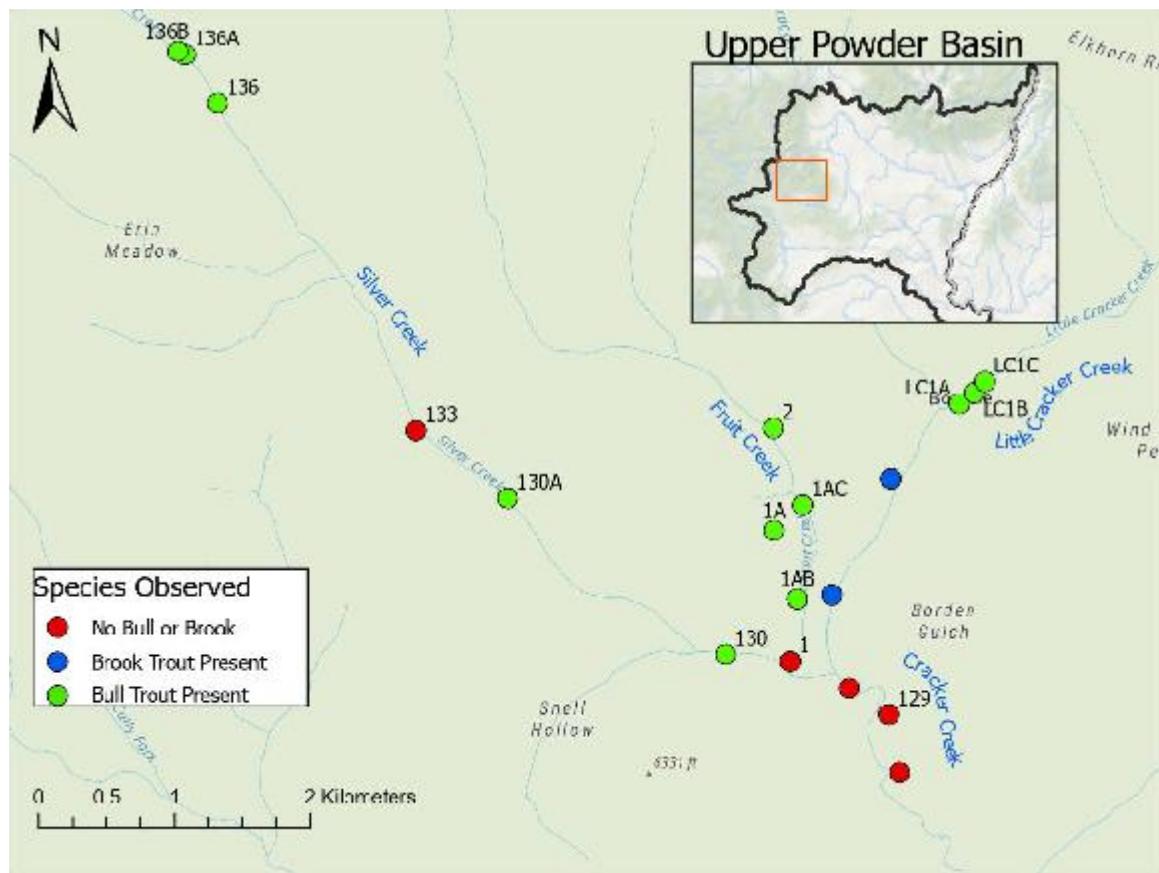
Stream	Date	Site number	(UTM) (NAD83)	Northing (UTM) (NAD83)	Reach Length (m)	Number of BuT	Mean FL (range)	Density of BuT/m ²	Number of BT	Density of BT/m ²	Number of Hybrids	Density of Hybrids/m ²	Number of RBT/m ²	Density of RBT/m ²
NF Fork Anthony Creek	8/1/2024	2	408653	4988926	100	0		0.000	5	0.016	0	0.000	10	0.033
NF Fork Anthony Creek	8/6/2024	5	405863	4985581	100	0		0.000	1	0.004	0	0.000	8	0.035
NF Fork Anthony Creek	8/6/2024	4	406838	4988724	100	0		0.000	0	0.000	1	0.003	6	0.019
Indian Creek	7/30/2024	28	408975	4983426	100	10	140 (101-189)	0.068	0	0.000	0	0.000	0	0.000
Indian Creek	7/30/2024	26	409452	4984480	100	0		0.000	24	0.118	0	0.000	0	0.000
Indian Creek	7/31/2024	27	409580	4983830	100	0		0.000	33	0.160	1	0.005	0	0.000
Indian Creek	7/31/2024	25	409022	4985202	100	1	157	0.004	15	0.065	0	0.000	0	0.000
Anthony Creek	7/31/2024	12	408977	4985800	100	0		0.000	5	0.010		0.000	1	0.002
Anthony Creek	8/1/2024	10	410105	4986873	100	0		0.000	7	0.013		0.000	8	0.015
Wolf Creek	8/2/2024	39	410212	4992536	50	0		0.000	0	0.000	0	0.000	13	0.121
Wolf Creek	8/2/2024	40	408736	4991421	100	0		0.000	0	0.000	0	0.000	11	0.077
Wolf Creek	8/5/2024	0	407109	4990502	100	10	122 (104 - 161)	0.058	0	0.000	0	0.000	8	0.046
Wolf Creek	8/5/2024	42	407829	4990632	100	3	108 (85 - 144)	0.016	0	0.000	0	0.000	11	0.057
North Powder River	8/7/2024	57	407413	4973094	100	0		0.000	14	0.034	0	0.000	2	0.005
North Powder River	8/8/2024	60	405398	4971450	200	1	93	0.001	22	0.029	2	0.003	0	0.000
North Powder River	8/8/2024	60a	405282	4971340	100	10	144 (125 - 189)	0.025	6	0.015	3	0.008	0	0.000
North Powder River	8/12/2024	61	404681	4970721	100	13	132 (71 - 190)	0.054	0	0.000	0	0.000	0	0.000
North Powder River	8/19/2024	59	406091	4971972	100	0		0.000	47	0.118	0	0.000	0	0.000
North Powder River	8/19/2024	58	410436	4974188	100	0		0.000	28	0.070	0	0.000	7	0.018



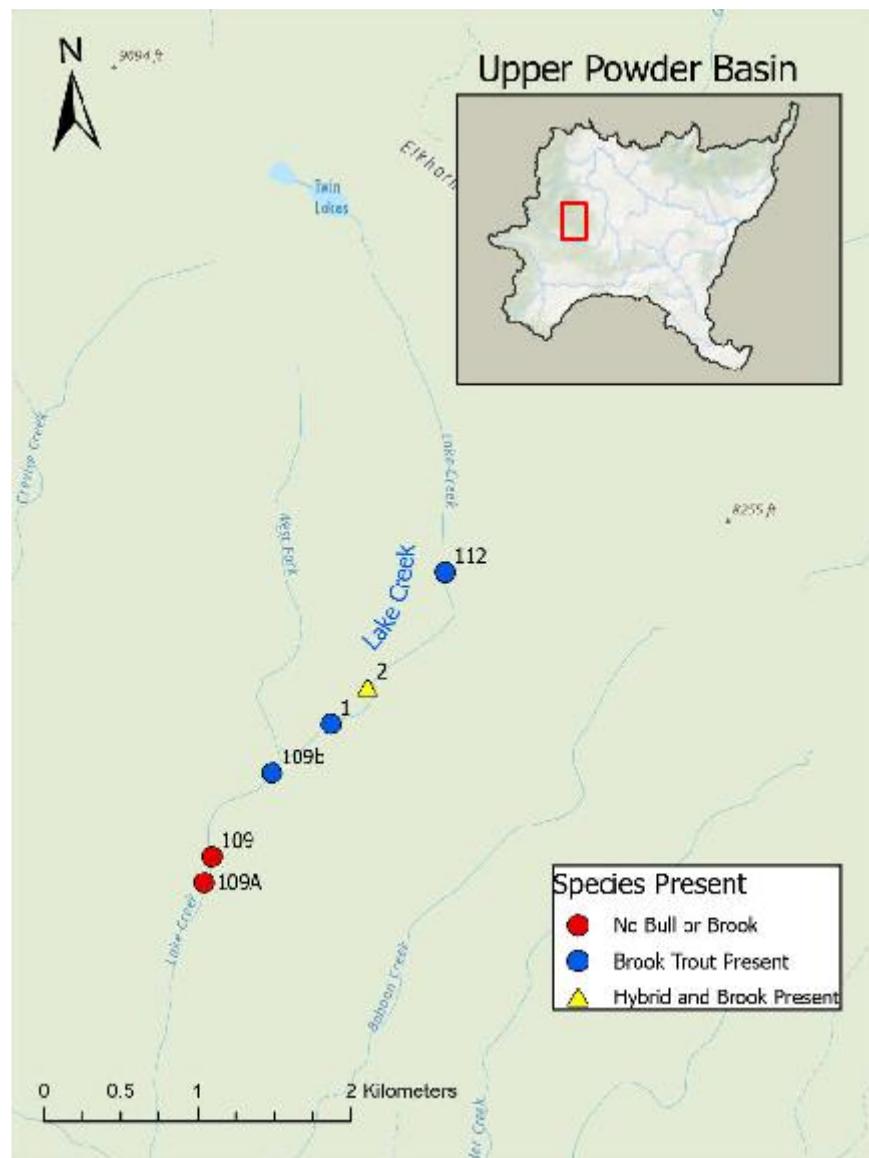
Appendix Figure 1. Presence/absence results from an electrofishing survey in the North Powder River in 2025.



Appendix Figure 2. Presence/absence results from electrofishing surveys in Indian, Anthony, North Fork Anthony, and Wolf creeks in 2024.



Appendix Figure 3. Presence/absence results from electrofishing surveys in Silver, Fruit, Little Cracker, and Cracker creeks in 2024.



Appendix Figure 4. Presence/absence results from an electrofishing survey in Lake Creek in 2024.

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