



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: 2022



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On the cover: South Fork Walla Walla River (photo by Paul Sankovich).

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Funded by

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Columbia River Fish and Wildlife Conservation Office

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Executive Summary:

The Bull Trout 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 (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 Bull Trout x Brook Trout hybrids.

In 2022, we conducted electrofishing surveys in four streams in northeast Oregon (Appendix Table 1; Appendix Figures 1 – 4). Sampling reaches were spaced 1 km apart within potential Bull Trout spawning and early rearing areas identified through various modeling efforts (e.g., Isaak et al. 2015). While conducting the surveys, we measured the wetted stream width at the beginning, middle, and end of each reach and enumerated and visually estimated the fork length (FL) of the fish that were captured. Most of the sampling reaches were 100 m. To assist with an ODFW research project aimed at developing a model to predict Bull Trout occupancy (M. Meeuwig, ODFW, personal communication), we electrofished one 250-m (five contiguous 50-m) sampling reach in the North Fork Trail Creek. We also electrofished three 100-m sampling reaches in that stream.

In 2021, we PIT tagged and released 176 bull trout in the Little Sheep Creek drainage upstream from two, side-by-side culverts in Forest Road 3029 to obtain a mark-recapture abundance estimate for the adult population (fish ≥ 120 mm in fork length)(Sankovich 2022). In 2022, we operated a channel-spanning PIT tag antenna approximately 60 m downstream from the two culverts for 45 days from 6 July to 30 August. Our aim was to determine if any of the Bull Trout PIT tagged in 2021 moved past the PIT tag detection antenna while it was operating and begin to make inferences about the potential effects of the culverts, which appear to be a barrier to fish migration..

We also conducted a Bull Trout spawning ground survey in the Wallowa River upstream from Wallowa Lake and in the West Fork Wallowa River from its mouth upstream to Wallowa Falls on 26 September 2022.

Bull Trout eDNA had been detected previously at multiple sites in all four of the streams we electrofished in 2022. We captured Bull Trout of varying size (i.e., age) classes in Clear, Indian, and Deer Creeks (Appendix Table 1; Appendix Figures 2, 3, and 4), indicating populations, and not just stray individuals, were present in those streams. We captured only one Bull Trout in North Fork Trail Creek (Appendix Table 1; Appendix Figure 1). Whether that stream supports a Bull Trout population remains unclear. In streams where Bull Trout were present, densities ranged from 0.003 to 0.072 fish/m² (Appendix Tables 1). We captured no Brook Trout in any of the streams we electrofished in 2022.

Despite two battery power outages that lasted 20 and 8 days, we detected a Bull Trout at the PIT tag antenna in Little Sheep Creek. It was detected twice, on 15 July and 11 August. Its direction of travel was unknown, given there was only one antenna at the site. When tagged in 2021, the individual detected in 2022 was 185 mm in fork length.

We found no Bull Trout redds in the Wallowa and West Fork Wallowa rivers. There was ample spawning habitat available in the Wallowa River but not in the West Fork Wallowa River. We estimated it could accommodate perhaps 10-12, non-superimposed migratory adult-sized redds.

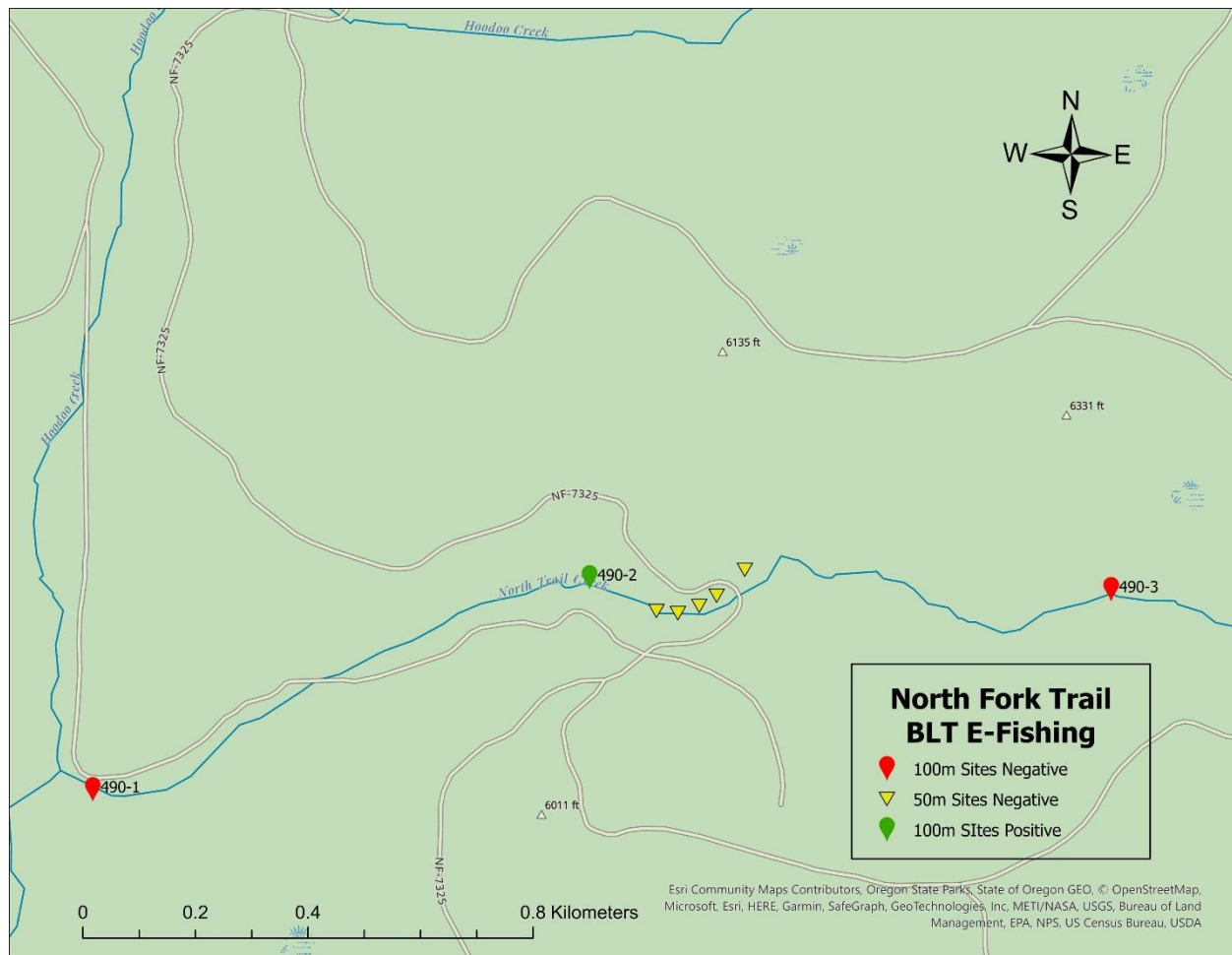
References:

- 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.
- Isaak, D. J., M. K. Young, D. E. Nagel, D. L. Horan, and M. C. Groce. 2015. The cold-water climate shield: delineating refugia for preserving salmonid fishes through the 21st century. *Global Change Biology* 21:1 -13.
- Sankovich, P. M. 2022. Bull Trout population monitoring in the Oregon portion of the mid-Columbia recovery unit. Progress Report: 2020-2021. U. S. Fish and Wildlife Service, Columbia River Fish and Wildlife Conservation Office, Vancouver (USA), Washington. 30 pp.

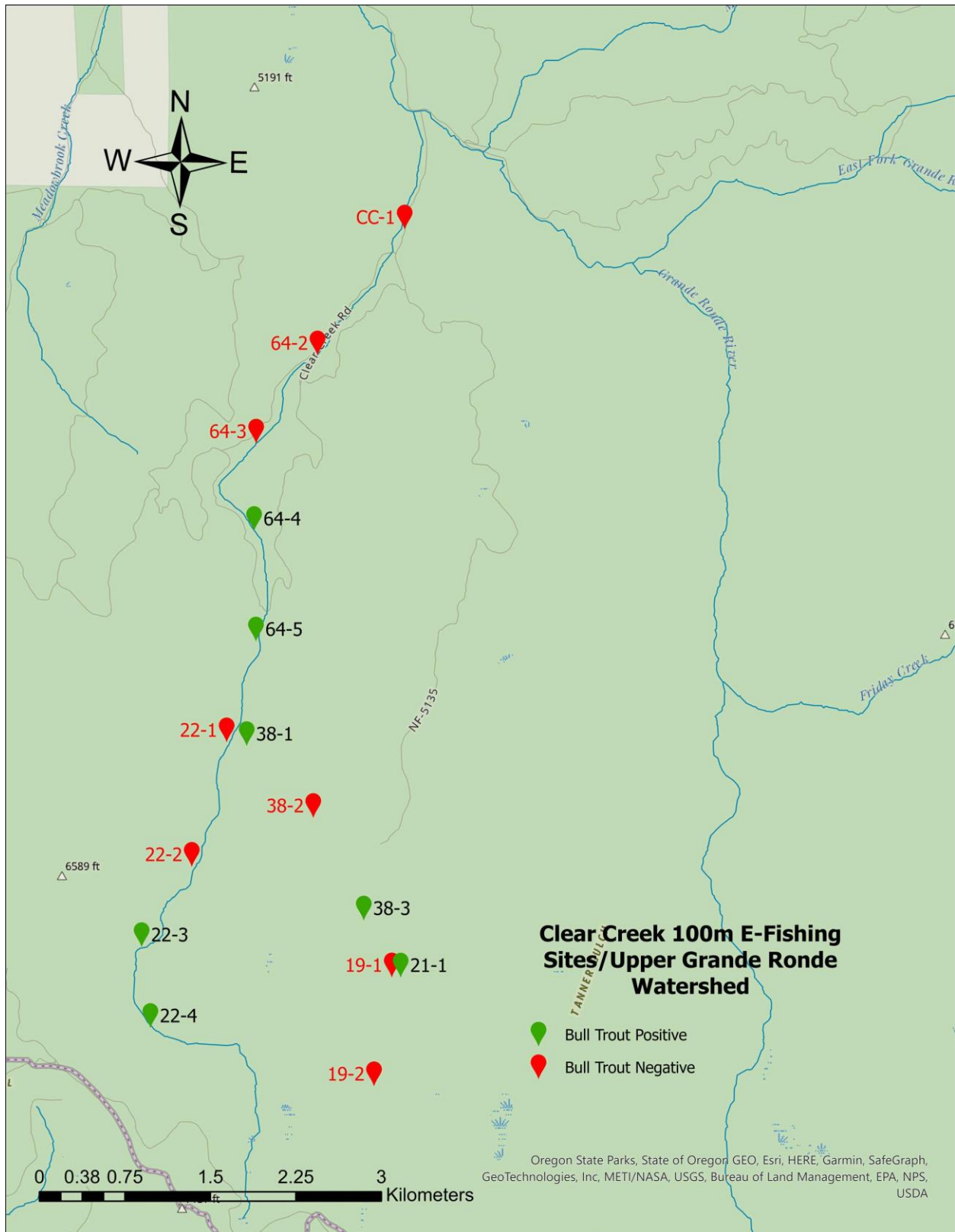
Appendix Table 1. Number, estimated mean fork length (FL), and density of Bull Trout (BuT), and number and density of Brook Trout (BT), juvenile steelhead (STHD), and Bull Trout x Brook Trout hybrids in electrofishing survey sites in northeast Oregon streams in 2022. The coordinates given are for the downstream boundary of each survey reach.

Stream	Date	Site number	Easting (UTM) (NAD83)	Northing (UTM) (NAD83)	Number of BuT	Mean FL (range)	Density BuT/m ²	Number of BT	Density BT/m ²	Number of STHD	Density STHD/m ²	Number Hybrid	Density Hybrid/m ²
Noth fork Trail Creek	7/19/2022	490-1	391934	4979689	0		0.000	0	0.000	4	0.020	0	0.000
Noth fork Trail Creek	7/20/2022	490-3	393744	4980044	0		0.000	0	0.000	4	0.017	0	0.000
Noth fork Trail Creek	7/20/2022	490-2	392817	4980065	1	150	0.004	0	0.000	7	0.028	0	0.000
Noth fork Trail Creek	8/1/2022	490-2a	392936	4980026	0		0.000	0	0.000	5	0.029	0	0.000
Noth fork Trail Creek	8/1/2022	490-2b	392974	4980022	0		0.000	0	0.000	6	0.031	0	0.000
Noth fork Trail Creek	8/1/2022	490-2c	393012	4980035	0		0.000	0	0.000	6	0.033	0	0.000
Noth fork Trail Creek	8/1/2022	490-2d	393043	4980053	0		0.000	0	0.000	6	0.033	0	0.000
Noth fork Trail Creek	8/1/2022	490-2e	393093	4980099	0		0.000	0	0.000	2	0.011	0	0.000
Clear Creek	8/2/2022	CC-1	396747	4989766	0		0.000	0	0.000	4	0.012	0	0.000
Clear Creek	8/2/2022	64-2	395982	4988662	0		0.000	0	0.000	7	0.017	0	0.000
Clear Creek	8/2/2022	64-3	395444	4987889	0		0.000	0	0.000	3	0.009	0	0.000
Clear Creek	8/4/2022	64-4	395426	4987123	3	100	0.016	0	0.000	1	0.005	0	0.000
Clear Creek	8/4/2022	64-5	395442	4986154	3	108 (100-115)	0.011	0	0.000	4	0.014	0	0.000
Clear Creek	8/11/2022	22-2	394879	4984179	0		0.000	0	0.000	11	0.044	0	0.000
Clear Creek	8/11/2022	22-3	394439	4983475	1	90	0.009	0	0.000	1	0.009	0	0.000
Clear Creek	8/15/2022	22-4	394516	4982766	6	86 (80-95)	0.036	0	0.000	1	0.006	0	0.000
Clear Creek	8/15/2022	19-2	396478	4982255	0		0.000	0	0.000	0	0.000	0	0.000
Clear Creek	8/16/2022	21-1	396712	4983208	3	82 (45-100)	0.045	0	0.000	0	0.000	0	0.000
Clear Creek	8/16/2022	19-1	396634	4983209	0		0.000	0	0.000	4	0.034	0	0.000
Clear Creek	8/16/2022	38-3	396388	4983708	1	60	0.010	0	0.000	5	0.050	0	0.000
Indian Creek	9/1/2022	549-2	440922	5025222	0		0.000	0	0.000	4	0.014	0	0.000
Indian Creek	9/7/2022	466-1	441370	5024066	2	153 (125-180)	0.006	0	0.000	5	0.014	0	0.000
Indian Creek	9/8/2022	466-2	441745	5023156	3	168 (150-180)	0.007	0	0.000	2	0.005	0	0.000

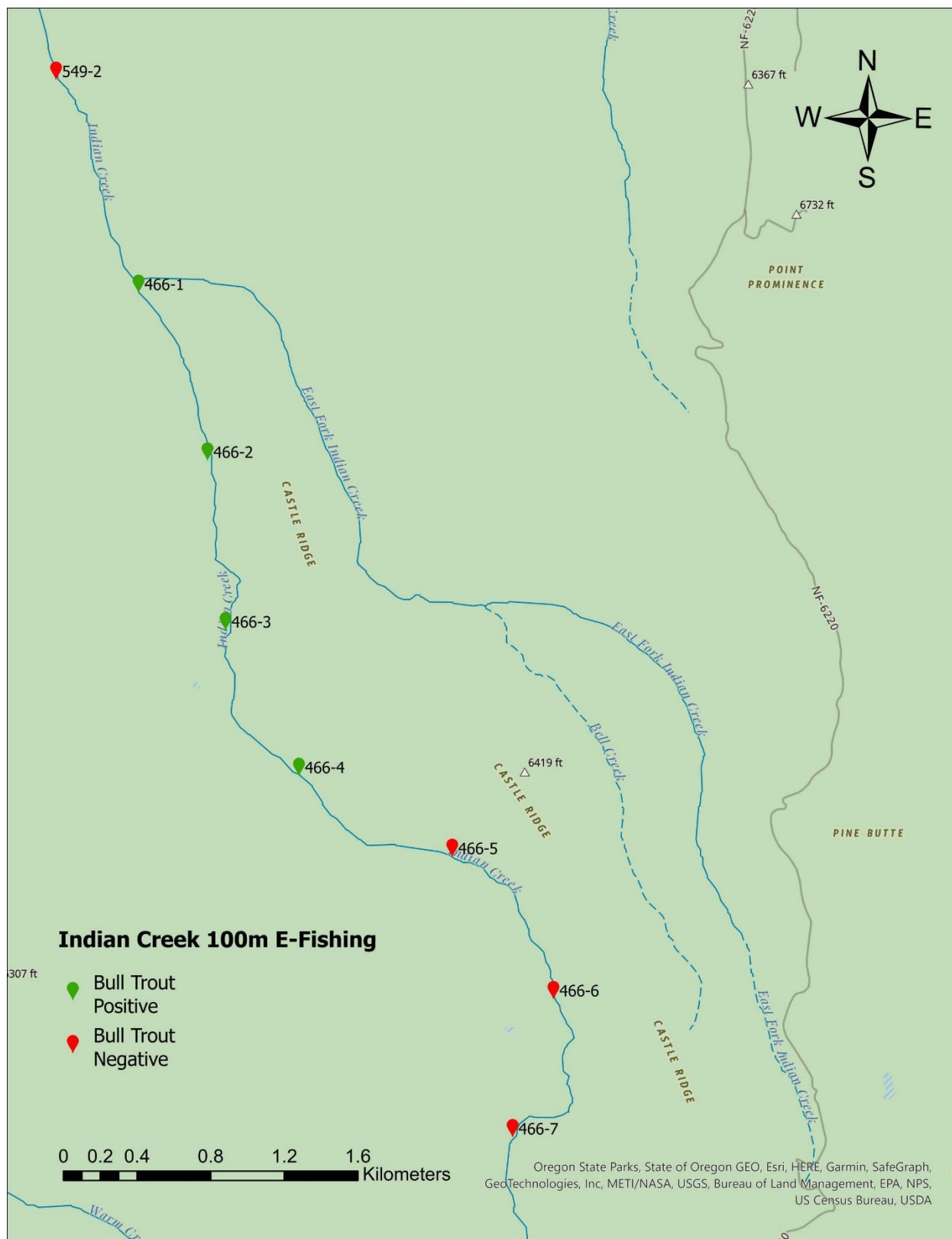
Indian Creek	9/8/2022	466-3	441843	5022235	3	137 (110-150)	0.011	0	0.000	3	0.011	0	0.000
Indian Creek	9/9/2022	466-6	443625	5020234	0		0.000	0	0.000	0	0.000	0	0.000
Indian Creek	9/9/2022	466-7	443403	5019485	0		0.000	0	0.000	0	0.000	0	0.000
Indian Creek	9/12/2022	466-4	442242	5021445	5	134 (110-150)	0.036	0	0.000	0	0.000	0	0.000
Indian Creek	9/12/2022	466-5	443075	5021006	0		0.000	0	0.000	0	0.000	0	0.000
Deer Creak	8/18/2022	278-2	451885	5036108	1	95	0.003	0	0.000	10	0.030	0	0.000
Deer Creak	8/18/2022	364-2	451989	5037784	0		0.000	0	0.000	5	0.016	0	0.000
Deer Creak	8/18/2022	364-1	452512	5038633	0		0.000	0	0.000	3	0.012	0	0.000
Deer Creak	8/19/2022	278-2	451789	5035200	0		0.000	0	0.000	4	0.016	0	0.000
Deer Creak	8/29/2022	278-8	453607	5030801	12	119 (90-170)	0.072	0	0.000	9	0.054	0	0.000



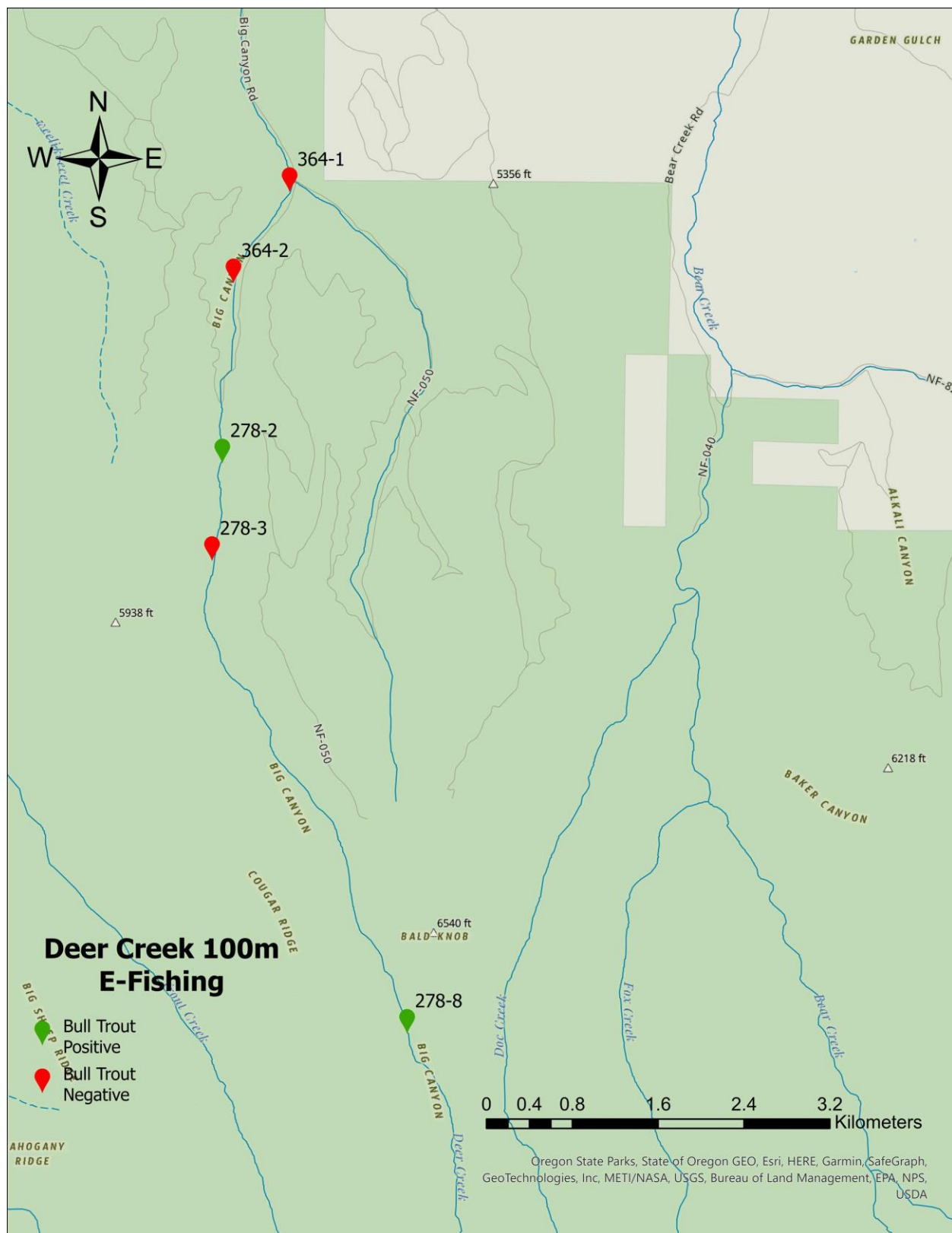
Appendix Figure 1. Results from an electrofishing survey in North Fork Trail Creek in 2022.



Appendix Figure 2. Results from an electrofishing survey in Clear Creek in 2022.



Appendix Figure 3. Results from an electrofishing survey in Indian Creek in 2022.



Appendix Figure 4. Results from an electrofishing survey in Deer Creek in 2022.

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