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

Brook Trout Distribution in the Spring Branch Tributaries of the East Little Walla Walla River

2011 Assessment Report

Marshall G. Barrows, Darren G. Gallion and Ryan C. Koch

U.S. Fish and Wildlife Service
Columbia River Fish and Wildlife Conservation Office
Vancouver, WA 98683

On the cover: *Brook Trout captured in the East Big Spring Branch of the East Little Walla Walla River. Photograph by Marshall Barrows (FWS).*

The correct citation for this report is:

Barrows, M. G., D. G. Gallion and R. C. Koch. 2023. Brook Trout Distribution in the Spring Branch Tributaries of the East Little Walla Walla River. 2011 Assessment Report. U.S. Fish and Wildlife Service, Columbia River Fish and Wildlife Conservation Office, Vancouver, WA.

Brook Trout Distribution in the Spring Branch Tributaries of the East Little Walla Walla River

2011 Assessment Report

Study Funded by

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

And authored by

Marshall G. Barrows
Darren G. Gallion
Ryan C. Koch

U.S. Fish and Wildlife Service
Columbia River Fish and Wildlife Conservation Office
1211 SE Cardinal Court, Suite 100
Vancouver, WA 98683

March 28, 2023

Disclaimers

The findings and conclusions in this report are those of the authors and do not necessarily represent the views of the U.S. Fish and Wildlife Service.

The mention of trade names or commercial products in this report does not constitute endorsement or recommendation for use by the federal government.

Table of Contents

List of Tables

List of Figures

Introduction

Invasive, self-sustaining populations of Brook Trout (*Salvelinus fontinalis)* have become established in basins throughout the Pacific Northwest where they may displace and compete with native salmonids (Dunham et al. 2002; Meyer et al. 2006). The Bull Trout Draft Recovery Plan (USFWS 2002) identifies the presence of Brook Trout within Bull Trout Core Areas as a major threat to the long-term persistence and eventual recovery of populations in the Columbia River Distinct Population Segment.

Historically, resource managers believed that Brook Trout did not reside within the Walla Walla River Basin. However, the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) documented a small, established population of Brook Trout occupying the East Big Spring Branch (EBSB) of the Little Walla Walla River (ELWWR) near Milton-Freewater, Oregon (Hoverson 2004; Mahoney et al. 2006). In addition, the US Fish and Wildlife Service (FWS) captured an adult Brook Trout in a pond near the headwaters of the EBSB in 2009. The capture of the fish renewed interest among agencies in further investigating the Brook Trout population in the spring branch tributaries of the ELWWR. Before removal, suppression or other management actions could be considered, a better understanding of the population was essential. In August of 2011, the FWS coordinated a multi-agency effort to assess the distribution of Brook Trout in the EBSB, the WBSB and the ELWWR.

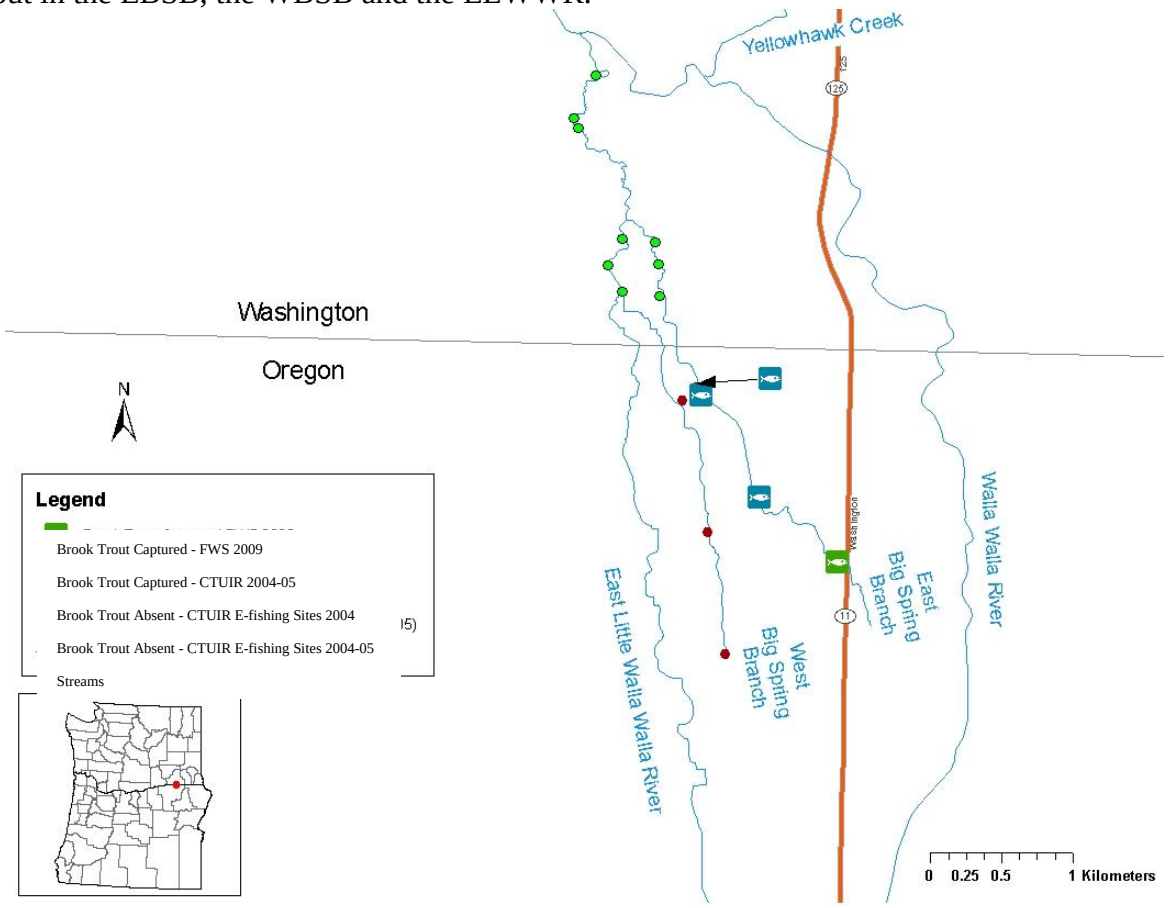

Figure 1. Locations sampled during 2004, 2005 and 2009 where Brook Trout were present or absent.

Study Area

The Little Walla Walla River originates within the city of Milton-Freewater, Oregon at the Little Walla Walla River Diversion (rkm 76.3) where a portion of Walla Walla River streamflows are diverted primarily for agricultural purposes (e.g., irrigation). The LWWR branches into the West and East Little Walla Walla rivers that travel roughly northwest before eventually rejoining the Walla Walla River in Washington. The East and West Big Spring Branches are small, spring-fed tributaries (part of the spring branch system) that enter the ELWWR approximately 2 rkm upstream from its confluence with the Walla Walla River. The entire study area is located on private land. The Oregon Department of Fish and Wildlife (ODFW) and Washington Department of Fish and Wildlife (WDFW) contacted landowners within their respective states requesting access and permission to conduct sampling. Permission was only granted for limited reaches of the EBSB, WBSB and ELWWR. As a result, all portions of the streams where permission was granted were included in the study (Figure 2).

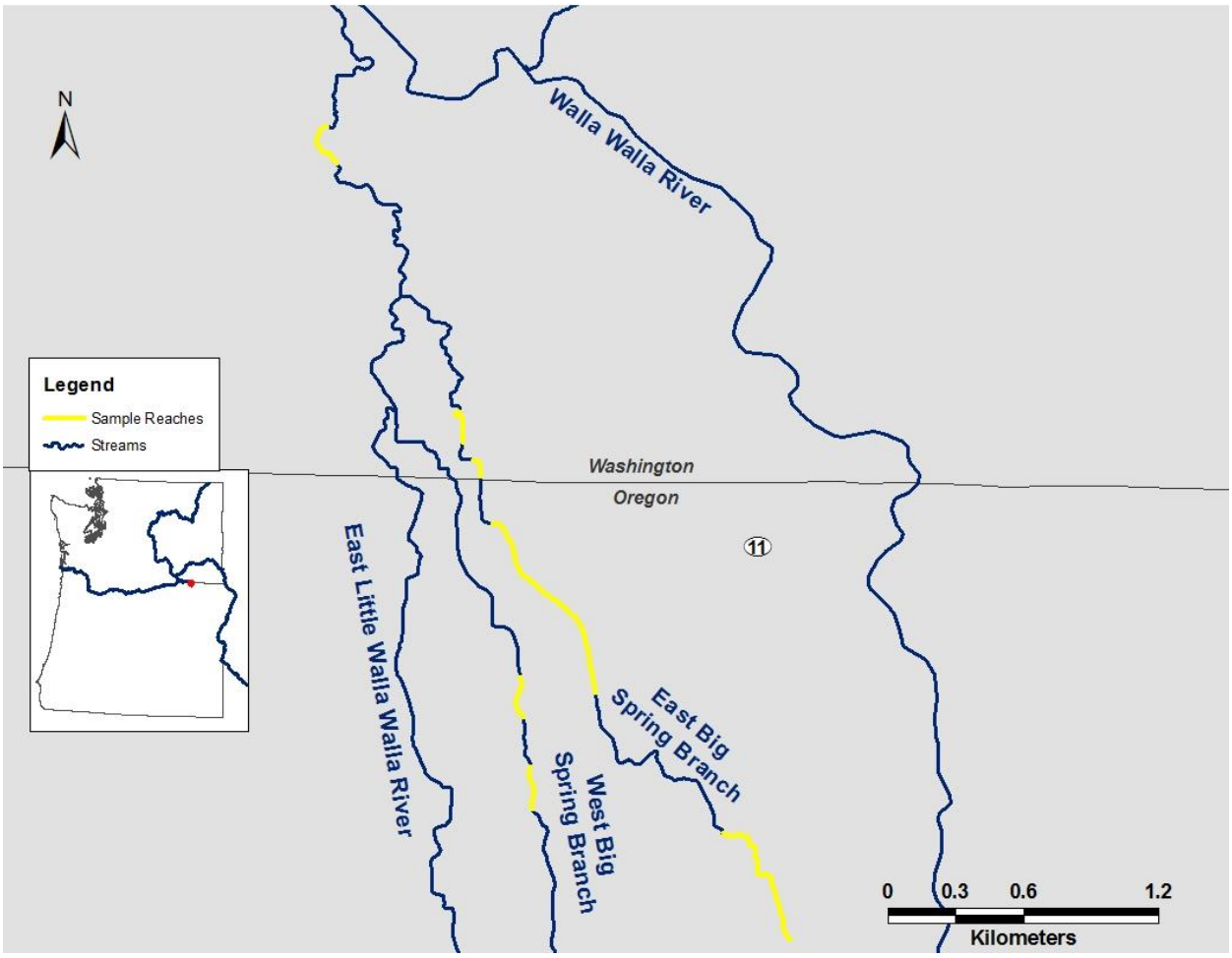

Figure 2. Stream reaches (in yellow) electrofished to determine Brook Trout distribution.

Methods

Field crews from the Washington Department of Fish and Wildlife (WDFW), the Oregon Department of Fish and Wildlife (ODFW), the CTUIR and the FWS sampled reaches within the EBSB, the WBSB and the mainstem ELWWR near Milton-Freewater, Oregon to describe Brook Trout distribution, summarize age structure through length-frequency analysis and to screen fish for diseases.

Brook Trout Distribution

Field crews from the Washington Department of Fish and Wildlife (WDFW), the Oregon Department of Fish and Wildlife (ODFW), the CTUIR and the FWS utilized single-pass electrofishing to determine Brook Trout distribution within the study area. We chose to sample as much area as possible due to limited stream access. Prior to each sampling effort, water temperatures were measured. To minimize fish stress, no sampling occurred when temperatures exceeded 18° C. Distribution sampling was conducted with Smith-Root model LR-24 shockers. Each reach was sampled from the downstream to the upstream boundary with no blocknets. All areas considered holding habitat for salmonid species were sampled. Fork length was documented and a genetic sample was collected from each Brook Trout captured for future analysis (e.g., hybridization with Bull Trout). All fish not tested for disease were released within the sample reach.

Disease Screening

To better understand diseases in wild fish populations, some of the captured fish (Brook Trout and other species) were euthanized and tested by the FWS Fish Health Center for the presence of diseases. The euthanized Brook Trout and other species were tested for the following diseases; Infectious Pancreatic Necrosis Virus, Infectious Hematopoietic Necrosis Virus, Viral Hemorrhagic Septicemia Virus, Spring Viremia of Carp Virus, Furunculosis (*Aeromonas salmonicida*), Enteric Redmouth (*Yersinia ruckeri*), Emphysematous Putrefactive Disease (*Edwardsiella ictaluri*), Coldwater Disease (*Flavobacterium psychrophilum*), Columnaris (*Flavobacterium columnare*), BKD (*Renibacterium salmoninarum*), Whirling Disease (*Myxobolus cerebralis*), Salmonid Ceratomyxosis (*Ceratomyxa shasta*).

Results

Brook Trout Distribution

Distribution sampling occurred on August 22, 2011. Most of the accessible habitat that was sampled was in the EBSB (2.0 rkm), but 0.4 rkm in the WBSB and 0.2 rkm in the ELWWR were also sampled. We captured a total of 36 Brook Trout during sampling efforts. Although fish were captured in all tributaries, Brook Trout were only captured in the EBSB (Table A1). Brook Trout were distributed throughout most of the stream segments that were sampled within the EBSB (Figure A1). Of the Brook Trout captured, one Brook Trout was captured near the

upstream terminus of the EBSB, 33 were captured in the middle segment in the vicinity of the Walla Walla Nursery and 2 were captured in the lower segment in Washington (Figure A3). Brook Trout distribution during 2011 was further downstream in the EBSB than previous sampling indicated.

Table 1. Summary of fish species captured during distribution surveys in the East Little Walla Walla River (ELWWR), the East Big Spring Branch (EBSB), and the West Big Spring Branch (WBSB) on August 22, 2011.

Tributary	Habitat Surveyed (rkm)	Brook Trout	*O. Mykiss*	Chinook Salmon	Sculpin	Dace	Red Side Shiner	Br. Lip Sucker
East Big Spring Branch	2.0	36	48	1	18	6	2	2
West Big Spring Branch	0.4	0	74	0	28	10	0	0
East Little Walla Walla R.	0.2	0	10	0	4	3	1	0

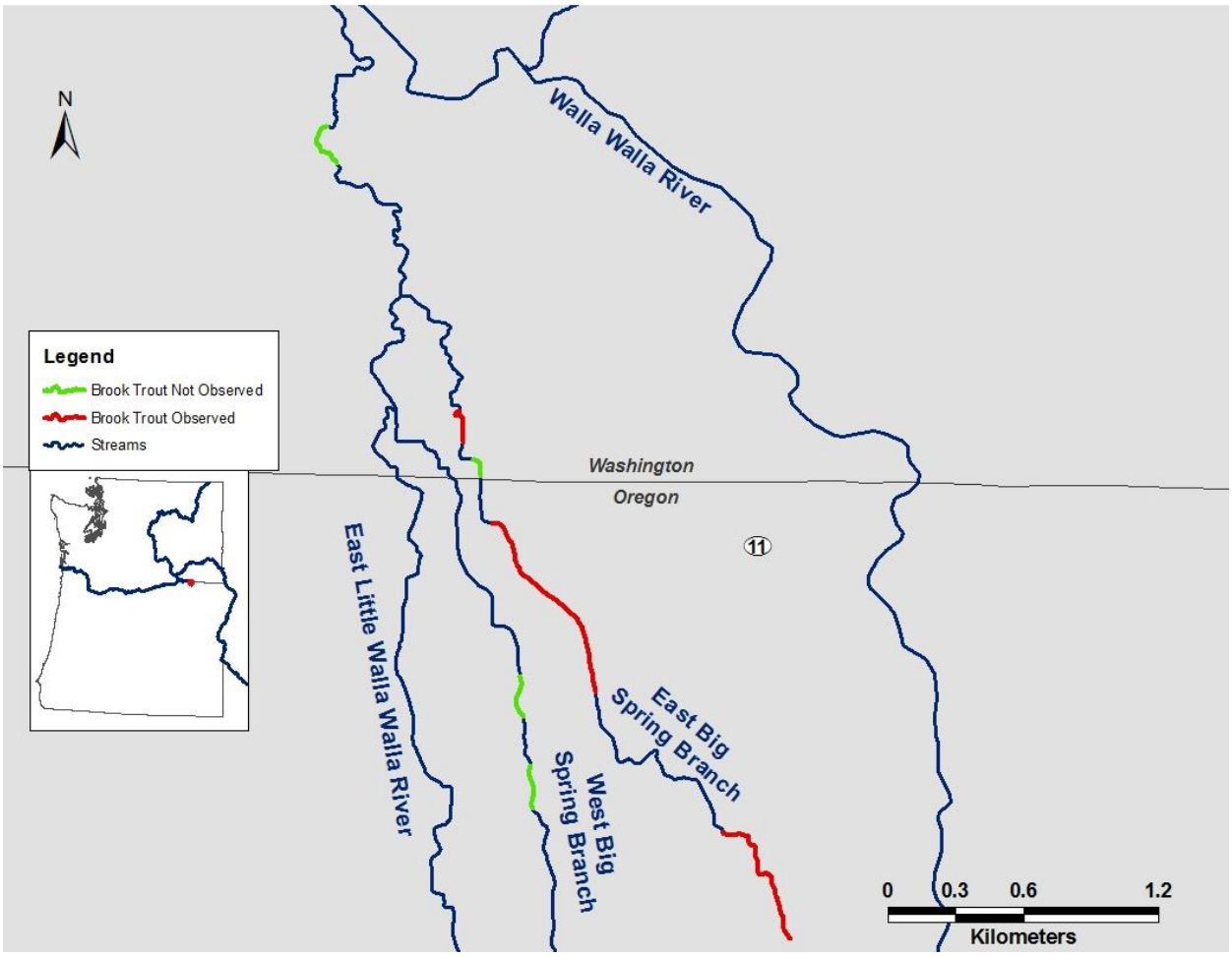

Figure 3. Sampling locations where Brook Trout were observed or not observed during 2011.

Brook Trout fork lengths ranged from 89 – 310 mm and averaged 207 mm. Other species encountered included rainbow trout (O.mykiss), dace *.spp* and sculpin *.spp* in the EBSB, WBSB and ELWWR. In addition, redside shiner (*Richarsonius balteatus*) were found in the ELWWR and EBSB. Lastly, Chinook salmon (*Oncorhynchus tshawytscha*) and bridgelip sucker (Catostomus columbianus) were only found in the EBSB (Table A1).

Disease Screening

None of the fish tested by the FWS Fish Health Center were positive for disease.

Discussion

Brook Trout were only captured within the EBSB upstream of rkm 0.8 in the EBSB. However, only relatively small portions of the WBSB and ELWWR were sampled due to limited landowner access. More effort to secure access to the streams coupled with a more extensive, spatially balanced approach would likely yield more reliable distribution results. In addition, sampling efficiency was not estimated, but was likely low.

Although the streams were relatively small, and typically just 1-3 meters in width, the habitat was complex and difficult to effectively sample. Vegetation, woody debris and undercut banks offered hiding places for fish. In addition, the streams were overgrown in some locations with tall grass and blackberries making sampling difficult. Many reaches had silt substrate that made it difficult for field crews to move through the stream without alerting fish to their presence, likely effecting sampling efficiency.

Due to the limited sampling reaches and the likely low sampling efficiency, Brook Trout may have been present but undetected in other portions of the study area. Since the primary concern is Brook Trout leaving the EBSB and entering the Walla Walla River where they could potentially spread upstream to invade Bull Trout strongholds in the South Fork Walla Walla River and Mill Creek, additional sampling efforts that focus on the lower Washington portion of the EBSB and the ELWWR downstream of the confluence with the EBSB may be warranted.

Future Plans

We recommend that future research be implemented to more thoroughly describe the spatial distribution of Brook Trout in the system. In addition, movement patterns should be monitored through the use of PIT tag technology or radio telemetry to describe Brook Trout movement within the study area and to determine if they move into the mainstem Walla Walla River.

Acknowledgements

We would like to thank and acknowledge the contributions of other individuals who provided assistance on this study. Don Anglin assisted with project coordination and planning. Glen Mendel secured landowner access in the Washington portion of the study area. Bill Duke secured landowner access in the Oregon portion of the study area and assisted with sampling. Ken Luhan (FWS Fish Health Center) was responsible for disease screening. We would also like to acknowledge Brian Mahoney, Joelle Olsen, Travis Olsen, Jeremy Trump, Michael Gembala, Eric Boyd, Paul Sankovich and other field staff for their assistance with fish sampling.

Literature Cited

Dunham, J.B., S. B. Adams, R. E. Schroeter, and D. C. Novinger. 2002. Alien Invasions In Aquatic Ecosystems: Toward an Understanding of Brook Trout Invasions and Potential Impacts on Inland Cutthroat Trout in Western North America. Rev. Fish Biol. Fish. 12: 373–391.

Hoverson, E. 2004. Habitat and Fisheries Assessment of the Mainstem, East and West Fork Little Walla Walla River Systems: A Historic Perspective, Present Status and Future Fisheries Potential of a Columbia Plateau Distributary. Walla Walla Basin Natural Production Monitoring and Evaluation Project. (Draft Progress Report). Confederated Tribes of the Umatilla Indian Reservation. Report submitted to Bonneville Power Administration. Project No. 2000-039-00.

Mahoney, B.D., M.B. Lambert, T.J. Olsen, E. Hoverson, P. Kissner, and J.D.M. Schwartz. 2006. Walla Walla Basin Natural Production Monitoring and Evaluation Project Progress Report, 2004 - 2005. Confederated Tribes of the Umatilla Indian Reservation. Report submitted to Bonneville Power Administration. Project No. 2000-039-00.

Meyer, K. A., J. A. Lamansky Jr., and D. J. Schill. 2006. Evaluation of an Unsuccessful Brook Trout Electrofishing Removal Project in a Small Rocky Mountain Stream. North American Journal of Fisheries Management. 26:849-860.

U.S. Fish and Wildlife Service. 2002. Chapter 10, Draft Umatilla-Walla Walla Recovery Unit, Oregon and Washington. 149 pp. In: U.S. Fish and Wildlife Service, Bull Trout (*Salvelinus confluentus*) Draft Recovery Plan. Portland, Oregon.

Contact Information

U.S. Fish and Wildlife Service
Columbia River Fish and Wildlife Conservation Office
1211 SE Cardinal Court, Suite 100
Vancouver, WA 98683

March 2023