

Yakama Nation Fisheries Resources Management Program

Pacific Lamprey Project

A Summary List of 2020 Annual Reports



Bonneville Power Administration

Project No. 2008-470-00

Contract No. 56662 REL 206

January 2020 – December 2020

Listed below are the main annual and 17 appendix report titles (with hyperlinks to the document) and the work element (WE) they address (in parenthesis; see the annual report for more details), and the recommended citation. Some of the appendix reports below are joint reports for the Bonneville Power Administration and the Bureau of Reclamation due to shared goals and objectives.

[Yakima Nation Pacific Lamprey Project 2020 annual report](#)

Citation: Lampman, R., Beals, T., Lumley, D., Goudy, S., & Saluskin, S. 2021. Yakama Nation Pacific Lamprey Project 2020 annual report (Project No. 2008-470-00). Prepared for the U.S. Dept. of Energy, Bonneville Power Administration, Portland, OR, 80 pp.

[Appendix C1: Yakima Basin larval lamprey monitoring report, 2020 \(WE #157\)](#)

Citation: Lumley, D., Beals, T., and Lampman, R. 2021c. Yakima Basin larval lamprey monitoring report, 2020. In Yakama Nation Pacific Lamprey Project 2020 annual report (Appendix C1, Project No. 2008-470-00). Prepared for the U.S. Dept. of Energy, Bonneville Power Administration, Portland, OR, 50 pp.

[Appendix C2: White Salmon and Klickitat Subbasin larval lamprey monitoring report, 2020 \(WE #157\)](#)

Citation: Lumley, D., Beals, T., and Lampman, R. 2021b. White Salmon and Klickitat Subbasin larval lamprey monitoring report, 2020. In Yakama Nation Pacific Lamprey Project 2020 annual report (Appendix C2, Project No. 2008-470-00). Prepared for the U.S. Dept. of Energy, Bonneville Power Administration, Portland, OR, 32 pp.

[Appendix C3: Crab Subbasin larval lamprey monitoring report, 2020 \(WE #157\)](#)

Citation: Lumley, D., Beals, T., and Lampman, R. 2021a. Crab Subbasin larval lamprey monitoring report, 2020. In Yakama Nation Pacific Lamprey Project 2020 annual report (Appendix C3, Project No. 2008-470-00). Prepared for the U.S. Dept. of Energy, Bonneville Power Administration, Portland, OR, 17 pp.

[Appendix D1 – Summary assessment of larval/juvenile lamprey entrainment in irrigation diversions within the Yakima Subbasin, 2020 \(WE #28\)](#)

Citation: Beals, T., Lumley, D., and Lampman, R. 2021c. Summary assessment of larval/juvenile lamprey entrainment in irrigation diversions within the Yakima Subbasin, 2020. In Yakama Nation Pacific Lamprey Project 2020 annual report (Appendices 2.1 / D1, Cooperative Agreement No. R15AC00060 / Project No. 2008-470-00). Prepared for the U.S. Dept. of Interior, Bureau of Reclamation, Boise, ID, and U.S. Dept. of Energy, Bonneville Power Administration, Portland, OR, 22 pp.

[Appendix D2 – A pilot study to assess the effects of sediment deposition on larval and juvenile lampreys in Prosser, Washington \(Chandler Canal\) \(WE #28\)](#)

Citation: Lampman, R. 2021a. A pilot study to assess the effects of sediment deposition on larval and juvenile lampreys in Prosser, Washington (Chandler Canal). In Yakama Nation Pacific Lamprey Project 2020 annual report (Appendices 2.3 / D2, Cooperative Agreement No. R15AC00060 / Project No. 2008-470-00). Prepared for the U.S. Dept. of Interior, Bureau of Reclamation, Boise, ID, and U.S. Dept. of Energy, Bonneville Power Administration, Portland, OR, 6 pp.

[Appendix E1 – Yakama Nation Pacific Lamprey Project outreach and education, 2020 \(WE #99\)](#)

Citation: Lumley, D., and Lampman, R. 2021b. Yakama Nation Pacific Lamprey Project outreach and education, 2020. In Yakama Nation Pacific Lamprey Project 2020 annual report (Appendix E1, Project No. 2008-470-00). Prepared for the U.S. Dept. of Energy, Bonneville Power Administration, Portland, OR, 45 pp.

Appendix E2 – Resource guide for lamprey outreach media by the Yakama Nation Pacific Lamprey Project (WE #99)¹

[E2-a1\) Fish Memory Card \(Elementary School\)](#)

[E2-a2\) Word Search Drawing Placemat \(Elementary School\)](#)

[E2-a3\) Fish Maze \(Elementary School\)](#)

[E2-a4\) Find the Difference Activity \(Elementary School\)](#)

[E2-b1\) Asum YNF Handout \(Middle School\)](#)

[E2-b2\) YNF Posters \(Middle School\)](#)

[E2-c1\) YNF Informational Pamphlets \(High School\)](#)

[E2-c2\) WA State Fisheries Resource List \(High School\)](#)

[E2-c3\) YNF Fish Images Library \(High School\)](#)

Citation: Washines, E. 2021. Resource guide for lamprey outreach media by the Yakama Nation Pacific Lamprey Project. In Yakama Nation Pacific Lamprey Project 2020 annual report (Appendix E2, Project No. 2008-470-00). Prepared for the U.S. Dept. of Energy, Bonneville Power Administration, Portland, OR, 37 pp.

[Appendix H1 – Summary assessment of juvenile/larval lamprey trapping and PIT tagging in the Yakima Basin, 2019-2020 water year \(WE #158\)](#)

Citation: Beals, T., Lumley, D., and Lampman, R. 2021b. Summary assessment of juvenile/larval lamprey trapping and PIT tagging in the Yakima Basin, 2019-2020 water year. In Yakama Nation Pacific Lamprey Project 2020 annual report (Appendices 2.4 / H1, Cooperative Agreement No. R15AC00060 / Project No. 2008-470-00). Prepared for the U.S. Dept. of Interior, Bureau of Reclamation, Boise, ID, and U.S. Dept. of Energy, Bonneville Power Administration, Portland, OR, 23 pp.

¹ A link to the google drive folder containing all nine of the educational resources is shown below (clicking on the link below will not work – instead please copy the hyperlink address below and paste it to your internet browser):

https://drive.google.com/open?id=1wRxOsP3TEWxC4QyfcX-84Ql3BX55xsJW&authuser=lamr%40yakamafish-nsn.gov&usp=drive_fs

[Appendix H2 – Columbia Basin juvenile Pacific Lamprey guide \(WE #158\)](#)

Citation: Beals, T., Lumley, D., and Lampman, R. 2021a. Columbia Basin Juvenile Pacific Lamprey Guide. In Yakama Nation Pacific Lamprey Project 2020 annual report (Appendices 2.5 / H2, Cooperative Agreement No. R15AC00060 / Project No. 2008-470-00). Prepared for the U.S. Dept. of Interior, Bureau of Reclamation, Boise, ID, and U.S. Dept. of Energy, Bonneville Power Administration, Portland, OR, 10 pp.

[Appendix J1 – Summary of past Pacific Lamprey aquaculture work by the YN, CTUIR, NOAA, and USFWS \(2012-2018\) \(WE #176\)](#)

Citation: Lampman, R. 2021c. Summary of past Pacific Lamprey aquaculture work by the YN, CTUIR, NOAA, and USFWS (2012-2018). In Yakama Nation Pacific Lamprey Project 2020 annual report (Appendices 3.1 / J1, Cooperative Agreement No. R15AC00060 / Project No. 2008-470-00). Prepared for the U.S. Dept. of Interior, Bureau of Reclamation, Boise, ID, and U.S. Dept. of Energy, Bonneville Power Administration, Portland, OR, 15 pp.

[Appendix K1 – Yakama Nation Adult Pacific Lamprey \(*Entosphenus tridentatus*\) collection in the Lower Columbia River, 2020 \(WE #28\)](#)

Citation: Lumley, D., and Lampman, R. 2021a. Yakama Nation Adult Pacific Lamprey (*Entosphenus tridentatus*) collection in the Columbia River, 2020. In Yakama Nation Pacific Lamprey Project 2020 annual report (Appendices 1.1 / K1, Cooperative Agreement No. R15AC00060 / Project No. 2008-470-00). Prepared for the U.S. Dept. of Interior, Bureau of Reclamation, Boise, ID, and U.S. Dept. of Energy, Bonneville Power Administration, Portland, OR, 19 pp.

[Appendix L1 – Guidance for the non-lethal collection of blood samples from adult Pacific Lamprey \(*Entosphenus tridentatus*\) \(WE #162\)](#)

Citation: Beals, T. and Lampman, R. 2021. Guidance for the non-lethal collection of blood samples from Pacific Lamprey (*Entosphenus tridentatus*). In Yakama Nation Pacific Lamprey Project 2020 annual report (Appendix L1, Project No. 2008-470-00). Prepared for the U.S. Dept. of Energy, Bonneville Power Administration, Portland, OR, 5 pp.

[Appendix L2 – Eyed *Lampetra* ID guide using specimens from Nass River Zolzap Creek \(BC, Canada\) \(WE #162\)](#)

Citation: Lampman, R. 2021b. Eyed *Lampetra* ID guide using specimens from Nass River Zolzap Creek (BC, Canada). In Yakama Nation Pacific Lamprey Project 2020 annual report (Appendix L3, Project No. 2008-470-00). Prepared for the U.S. Dept. of Energy, Bonneville Power Administration, Portland, OR, 26 pp.

[Appendix L3 – An ecological comparison between resource subsidies: Pacific Lamprey \(*Entosphenus tridentatus*\) and Pacific Salmon \(*Oncorhynchus* spp.\) \(WE #162\)](#)

Citation: Wensloff, J. 2021. An ecological comparison between resource subsidies: Pacific Lamprey (*Entosphenus tridentatus*) and Pacific Salmon (*Oncorhynchus* spp.). All Master's Theses. 1516. Central Washington University, Ellensburg, WA. Available at: <https://digitalcommons.cwu.edu/etd/1516>.

[Appendix L4 - Summary of freshwater mussel sightings within the Yakama Nation ceded lands from larval lamprey surveys \(2014-2020\) \(WE #162\)](#)

Citation: Beals, T., Lumley, D., and Lampman, R. 2021d. Summary of freshwater mussel sightings within the Yakama Nation ceded lands from larval lamprey surveys (2014-2020). In Yakama Nation Pacific Lamprey Project 2020 annual report (Appendix L4, Project No. 2008-470-00). Prepared for the U.S. Dept. of Energy, Bonneville Power Administration, Portland, OR, 21 pp.

[Appendix Q1 – Yakama Nation cultural oral interviews on asum \(lamprey eels\): Summary and review part IV \(2020\) \(WE #141\)](#)

Citation: Goudy, S., Buck, M., Washines, D., and Lampman, R. 2021. Yakama Nation cultural oral interviews on asum (lamprey eels): Summary and review part VI (2020). In Yakama Nation Pacific Lamprey Project 2020 annual report (Appendix Q1, Project No. 2008-470-00). Prepared for the U.S. Dept. of Energy, Bonneville Power Administration, Portland, OR, 18 pp.

[Appendix R1 – An experimental study to evaluate predation threats on two native larval lampreys in the Columbia River Basin, USA \(WE #162\)](#)

Citation: Arakawa, H. and Lampman, R.T. 2020. An experimental study to evaluate predation threats on two native larval lampreys in the Columbia River Basin, USA. *Ecology of Freshwater Fish* 29(4):611-622.

[Appendix R2 – Factors affecting the fate of Pacific lamprey carcasses and resource transport to riparian and stream macrohabitats \(WE #162\)](#)

Citation: Dunkle, M.R., Lampman, R.T., Jackson, A.D., and Caudill, C.C. 2020. Factors affecting the fate of Pacific lamprey carcasses and resource transport to riparian and stream macrohabitats. *Freshwater Biology* 65(8):1429-1439.

Bureau of Reclamation

Contract Agreement No. R19AC00060

January 2020 – December 2020

Listed below are the main annual and 10 appendix report titles (with hyperlinks to the document) and the objective number they address (in parenthesis; see the annual report for more details), and the recommended citation. Some of the appendix reports below are joint reports for the Bonneville Power Administration and the Bureau of Reclamation due to shared goals and objectives.

[Yakima Nation Pacific Lamprey Project 2020 annual report](#)

Citation: Lampman, R., Beals, T., Lumley, D., Goudy, S., & Saluskin, S. 2021. Yakama Nation Pacific Lamprey Project 2020 annual report (Cooperative Agreement No. R19AC00060). Prepared for the U.S. Dept. of Interior, Bureau of Reclamation, Boise, ID, 57 pp.

[Appendix 1.1 – Yakama Nation Adult Pacific Lamprey \(*Entosphenus tridentatus*\) collection in the Lower Columbia River, 2020 \(Objective #1\)](#)

Citation: Lumley, D., and Lampman, R. 2021a. Yakama Nation Adult Pacific Lamprey (*Entosphenus tridentatus*) collection in the Columbia River, 2020. In Yakama Nation Pacific Lamprey Project 2020 annual report (Appendices 1.1 / K1, Cooperative Agreement No. R15AC00060 / Project No. 2008-470-00). Prepared for the U.S. Dept. of Interior, Bureau of Reclamation, Boise, ID, and U.S. Dept. of Energy, Bonneville Power Administration, Portland, OR, 19 pp.

[Appendix 2.1 – Summary assessment of larval/juvenile lamprey entrainment in irrigation canals within the Yakima Subbasin, 2020 \(Objective #2\)](#)

Citation: Beals, T., Lumley, D., and Lampman, R. 2021c. Summary assessment of larval/juvenile lamprey entrainment in irrigation canals within the Yakima Subbasin, 2020. In Yakama Nation Pacific Lamprey Project 2020 annual report (Appendices 2.1 / D1, Cooperative Agreement No. R15AC00060 / Project No. 2008-470-00). Prepared for the U.S. Dept. of Interior, Bureau of Reclamation, Boise, ID, and U.S. Dept. of Energy, Bonneville Power Administration, Portland, OR, 22 pp.

[Appendix 2.2 – Intensive monitoring of larval/juvenile lamprey entrainment in irrigation canals within the Yakima Subbasin, 2020 \(Objective #2\)](#)

Citation: Beals, T., Lumley, D., and Lampman, R. 2021d. Intensive monitoring of larval/juvenile lamprey entrainment in irrigation canals within the Yakima Subbasin, 2020. In Yakama Nation Pacific Lamprey Project 2020 annual report (Appendices 2.1, Cooperative Agreement No. R15AC00060). Prepared for the U.S. Dept. of Interior, Bureau of Reclamation, Boise, ID, 26 pp.

[Appendix 2.3 – A pilot study to assess the effects of sediment deposition on larval and juvenile lampreys in Prosser, Washington \(Chandler Canal\) \(Objective #2\)](#)

Citation: Lampman, R. 2021a. A pilot study to assess the effects of sediment deposition on larval and juvenile lampreys in Prosser, Washington (Chandler Canal). In Yakama Nation Pacific Lamprey Project 2020 annual report (Appendices 2.3 / D2, Cooperative Agreement No. R15AC00060 / Project No. 2008-470-00). Prepared for the U.S. Dept. of Interior, Bureau of Reclamation, Boise, ID, and U.S. Dept. of Energy, Bonneville Power Administration, Portland, OR, 6 pp.

[Appendix 2.4 – Summary assessment of juvenile/larval lamprey trapping and PIT tagging in the Yakima Basin, 2019-2020 water year \(Objective #2\)](#)

Citation: Beals, T., Lumley, D., and Lampman, R. 2021b. Summary assessment of juvenile/larval lamprey trapping and PIT tagging in the Yakima Basin, 2019-2020 water year. In Yakama Nation Pacific Lamprey Project 2020 annual report (Appendices 2.4 / H1, Cooperative Agreement No. R15AC00060 / Project No. 2008-470-00). Prepared for the U.S. Dept. of Interior, Bureau of Reclamation, Boise, ID, and U.S. Dept. of Energy, Bonneville Power Administration, Portland, OR, 23 pp.

[Appendix 2.5 – Columbia Basin juvenile Pacific Lamprey guide \(Objective #2\)](#)

Citation: Beals, T., Lumley, D., and Lampman, R. 2021a. Columbia Basin Juvenile Pacific Lamprey Guide. In Yakama Nation Pacific Lamprey Project 2020 annual report (Appendices 2.5 / H2, Cooperative Agreement No. R15AC00060 / Project No. 2008-470-00). Prepared for the U.S. Dept. of Interior, Bureau of Reclamation, Boise, ID, and U.S. Dept. of Energy, Bonneville Power Administration, Portland, OR, 10 pp.

[Appendix 3.1 – Summary of past Pacific Lamprey aquaculture work by the YN, CTUIR, NOAA, and USFWS \(2012-2018\) \(Objective #3\)](#)

Citation: Lampman, R. 2021c. Summary of past Pacific Lamprey aquaculture work by the YN, CTUIR, NOAA, and USFWS (2012-2018). In Yakama Nation Pacific Lamprey Project 2020 annual report (Appendices 3.1 / J1, Cooperative Agreement No. R15AC00060 / Project No. 2008-470-00). Prepared for the U.S. Dept. of Interior, Bureau of Reclamation, Boise, ID, and U.S. Dept. of Energy, Bonneville Power Administration, Portland, OR, 15 pp.

[Appendix 3.2 – An experimental study to evaluate predation threats on two native larval lampreys in the Columbia River Basin, USA \(Arakawa and Lampman 2020\) \(Objective #3\)](#)

Citation: Arakawa, H. and Lampman, R.T. 2020. An experimental study to evaluate predation threats on two native larval lampreys in the Columbia River Basin, USA. Ecology of Freshwater Fish 29(4):611-622.

[Appendix 3.3 – Factors affecting the fate of Pacific lamprey carcasses and resource transport to riparian and stream macrohabitats \(Dunkle et al. 2020\) \(Objective #3\)](#)

Citation: Dunkle, M.R., Lampman, R.T., Jackson, A.D., and Caudill, C.C. 2020. Factors affecting the fate of Pacific lamprey carcasses and resource transport to riparian and stream macrohabitats. *Freshwater Biology* 65(8):1429-1439.

[Appendix 3.4 – An ecological comparison between resource subsidies: Pacific Lamprey \(*Entosphenus tridentatus*\) and Pacific Salmon \(*Oncorhynchus* spp.\) \(Objective #3\)](#)

Citation: Wensloff, J. 2021. An ecological comparison between resource subsidies: Pacific Lamprey (*Entosphenus tridentatus*) and Pacific Salmon (*Oncorhynchus* spp.). All Master's Theses. 1516. Central Washington University, Ellensburg, WA. Available at: <https://digitalcommons.cwu.edu/etd/1516>.