Non-Native Northern Pike

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Amec Foster Wheeler Environment & Infrastructure. 2017. Northern pike suppression in the Columbia River system. Report to Columbia Basin Trust and British Columbia Ministry of Forests, Lands and Natural Resource Operations, Project VE52635.2017. https://a100.gov.bc.ca/pub/acat/documents/r54684/CBT_NP_Suppression_26Jun17_1536961354501_6961046818.pdf

Presents an information review that includes a summary of northern pike suppression efforts in the Columbia River system and recommended actions that could strengthen current suppression efforts.

Baxter, J. T. A. and M. Neufeld. 2015. Lower Columbia River invasive northern pike suppression and stomach analysis, 2014. Prepared for Teck Trail Operations, Trail, British Columbia, Canada. https://www.bcfishn.com/wp-content/uploads/2013/11/LCR-NP-Suppression-Report-2014-Final.pdf

Summarizes the 2014 Northern Pike Gill-Net Suppression Program in the lower Columbia River.

Bean, N. J. 2010. Improved bioenergetics model for northern pike (*Esox lucius*) of Box Canyon Reservoir, Pend Oreille River, Washington. Report to Bonneville Power Administration, Project 1977-004-00, Portland, Oregon. https://www.cbfish.org/Document.mvc/Viewer/P123900

Determines the metabolic rate of northern pike collected in Box Canyon Reservoir, designs a more suitable bioenergetics model by incorporating these data, and applies the bioenergetics model to the Box Canyon Reservoir population of northern pike for the purpose of testing the model.

Bean, N. J., J. M. Connor, J. A. Olson, S. J. Harvey, and W. P. Baker. 2024.. Mechanical suppression of invasive northern pike in Box Canyon Reservoir, Washington. North American Journal of Fisheries Management 44(6):1249-1267. https://doi.org/10.1002/nafm.11044

Describes the methodology and equipment used for a multi-year gill northern pike suppression effort in Box Canyon Reservoir.

Bean, N. J., A. T. Scholz, and J. M. Connor. 2011. Diet and growth of northern pike (*Esox lucius Linnaeus, 1758)* in Box Canyon Reservoir, Pend Oreille River, Washington. Report to Bonneville Power Administration, Project 1977-004-00, Portland, Oregon. https://www.cbfish.org/Document.mvc/Viewer/P123897

Assesses the diet and growth of northern pike in Box Canyon Reservoir.

Bennett, D. H. and B. A. Rich. 1990. Life history, population dynamics, and habitat use of northern pike in the Coeur d'Alene Lake system. Idaho Fish & Game. https://idahodocs.contentdm.oclc.org/digital/collection/p16293coll7/id/235385/rec/3

Studies northern pike distribution, abundance, and life history characteristics in the Coeur d'Alene Lake system.

Bradford, M. J., C. P. Tovey, and L. M. Herborg. 2008. Biological risk assessment for northern pike (*Esox lucius*), pumpkinseed (*Lepomis gibbosus*), and walleye (*Sander vitreus*) in British Columbia. Fisheries and Oceans Canada, Canadian Science Advisory Secretariat Research Document 2008/74. https://waves-vagues.dfo-mpo.gc.ca/Library/336581.pdf

Assess the risk of northern pike (and other species) to native biota in British Columbia.

Campbell, M. A., M. C. Hale, C. S. Jalbert, K. Dunker, A. J. Sepulveda, J. A. López, J. A. Falke, and P. A. Westley. 2023. Genomics reveal the origins and current structure of a genetically depauperate freshwater species in its introduced Alaskan range. Evolutionary Applications 16(6):1119–1134. https://doi.org/10.1111/eva.13556

Analyzes both native and invasive populations of northern pike to characterize landscape genetic variation, determine the most likely origins of introduced populations, and investigate a population from Southeast Alaska of unclear provenance.

Carim, K. J., J. C. Dysthe, H. McLellan, M. K. Young, K. S. McKelvey, and M. K. Schwartz. 2019. Using environmental DNA sampling to monitor the invasion of nonnative *Esox lucius* (northern pike) in the Columbia River basin, USA. Environmental DNA 1(3):215–226. https://doi.org/10.1002/edn3.22

Describes the development and field-testing of an eDNA assay to detect northern pike.

Chapman, C. A. and W. C. Mackay. 1983. Versatility in habitat use by a top aquatic predator *Esox lucius* L. Journal of Fish Biology 25:109-115. https://doi.org/10.1111/j.1095-8649.1984.tb04855.x

Evaluates habitat selection by northern pike in an Alberta lake using radio location and ultrasonic telemetry.

Colville Confederated Tribes, Spokane Tribe of Indians, and Washington Department of Fish and Wildlife. 2017-2022. Lake Roosevelt northern pike suppression and monitoring. Annual report to Bonneville Power Administration, Projects 2017-004-00 and 1994-043-00. https://catalog.cbfwl.org/cgi-bin/koha/opac-detail.pl?biblionumber=43480

Reports on northern pike monitoring and suppression activities in Lake Roosevelt.

Colville Confederated Tribes, Spokane Tribe of Indians, and Washington Department of Fish and Wildlife. (n.d.). Lake Roosevelt northern pike suppression and monitoring plan 2018-2022. https://nwcouncil.app.box.com/s/ck1od0qn3hsqxee6i910kh5gb2dbg6su

Outlines a plan to eradicate northern pike in the Lake Roosevelt watershed through suppression, minimizing their spread, and public education.

Courtney, M. B., E. R. Schoen, A. Wizik, and P. A. H. Westley. 2018. Quantifying the net benefits of suppression: truncated size structure and consumption of native salmonids by invasive northern pike in an Alaska lake. North American Journal of Fisheries Management 38(6):1306-1315. https://doi.org/10.1002/nafm.10231

Examines the trade-off between northern pike population reduction and truncation of the size structure of the population.

Doutaz, D. J. 2019. Columbia River northern pike: Investigating the ecology of British Columbia's new apex invasive freshwater predator. Masters' thesis. Thompson Rivers University, Kamloops, British Columbia. https://tru.arcabc.ca/node/2329

Evaluates the ecology and behavior of a northern pike colony and discusses the development of a long-term population management strategy.

Dunker, K., R. Massengill, P. Bradley, C. Jacobson, N. Swenson, A. Wizik, and R. DeCino. 2020. A decade in review: Alaska's adaptive management of an invasive apex predator. Fishes 5(2):12. https://doi.org/10.3390/fishes5020012

Discusses management of invasive northern pike through population suppression, eradication, outreach, and angler engagement over ten years in Alaska.

Dunker, K. J., A. J. Sepulveda, R. L. Massengill, J. B. Olsen, O. L. Russ, J. K. Wenburg, and A. Antonovich. 2016. Potential of environmental DNA to evaluate northern pike (*Esox lucius*) eradication efforts: an experimental test and case study. PLoS ONE 11(9): e0162277 https://doi.org/10.1371/journal.pone.0162277

Evaluates the efficacy of eDNA sampling to detect invasive northern pike following piscicide eradication efforts in southcentral Alaskan lakes.

He, X. and J. F. Kitchell, 1990. Direct and indirect effects of predation on a fish community: a whole-lake experiment. Transactions of the American Fisheries Society 119(5):825-835. https://doi.org/10.1577/1548-8659(1990)119%3C0825:DAIEOP%3E2.3.CO;2

Discusses an experiment to test the relative importance of direct and indirect effects of northern pike predation on an assemblage of small fishes in a previously piscivore-free lake.

Harvey, S. J. 2011. Diet, growth and bioenergetics of northern pike (*Esox lucius Linnaeus, 1758*) in Box Canyon Reservoir, Pend Oreille River, Washington. Masters' thesis. Eastern Washington University, Cheney, Washington. https://dc.ewu.edu/theses/6

Describes the growth of northern pike, their food habits, and, using bioenergetics modeling, assesses the mass and total numbers of each species of forage fish the northern pike population consumes in Box Canyon Reservoir.

Independent Scientific Advisory Board. 2019. A review of predation impacts and management effectiveness for the Columbia River basin. ISAB, Portland, Oregon. https://www.nwcouncil.org/sites/default/files/ISAB%202019-1%20PredationMgmt3May.pdf [pages 53- 68 are specific to northern pike]

Describes the distribution, risk of invasion, and possible suppression of northern pike in the Columbia River basin.

King, L. and C. Lee. 2016. Evaluation of northern pike *Esox lucius* in Upper Lake Roosevelt and the Lower Kettle River, Washington, February 2016. Washington Department of Fish and Wildlife, Spokane Valley, Washington. https://www.cbfish.org/Document.mvc/Viewer/P154261

Describes a gill net survey on upper Lake Roosevelt and the lower Kettle River, WA to collect baseline information on the northern pike population.

Kling, D. M., J. N. Sanchirico, and A. K. Jaeger. 2019. Economics of the northern pike invasion in the Columbia River. Northwest Power and Conservation Council Document 2019-07, Portland, Oregon. https://www.nwcouncil.org/sites/default/files/Economics%20of%20the%20Northern%20Pike%20Invasion%20in%20the%20Columbia%20River%20Basin.pdf

Describes the economic and ecological modeling that would be necessary to estimate the range of possible medium- and long-run consequences of an expanded northern pike invasion in the Columbia River.

Mayer, K., D. L. Garrett, and A. H. Haukenes. 2025. Native and non-native species response to the colonization and subsequent suppression of northern pike *Esox lucius*. Journal of Fish Biology, 106(2), 420–429. https://doi.org/10.1111/jfb.15968

Investigates native species recovery after a multi-year gillnet suppression program in Box Canyon Reservoir.

McMahon, T. E., and D. H. Bennett. 1996. Walleye and northern pike: boost or bane to Northwest fisheries? Fisheries 21(8):6–13. https://doi.org/10.1577/1548-8446(1996)021%3C0006:WANP%3E2.0.CO;2

Outlines approaches for evaluating risks and benefits of introducing walleye and northern pike to expand angling opportunities.

Muhlfeld, C. C., D. H. Bennett, R. K. Steinhorst, B. Marotz, and M. Boyer. 2008. Using bioenergetics modeling to estimate consumption of native juvenile salmonids by nonnative northern pike in the Upper Flathead River System, Montana. North American Journal of Fisheries Management 28(3):636–648. https://doi.org/10.1577/M07-004.1

Estimates the abundance of nonnative northern pike and applies food habits data to estimate their annual consumption of native bull trout and westslope cutthroat trout juveniles in the upper Flathead River system.

Rich, B. A. 1992. Population dynamics, food habits, movement and habitat use of northern pike in the Coeur d'Alene Lake system, Idaho : completion report: Idaho Fish and Game. https://idahodocs.contentdm.oclc.org/digital/collection/p16293coll7/id/235470/rec/6

Describes population dynamics, food habits, movement and habitat use of northern pike in the Coeur d'Alene Lake system.

Sepulveda, A. J., D. S. Rutz, S. S. Ivey, K. J. Dunker, and J. A. Gross. 2013. Introduced northern pike predation on salmonids in southcentral Alaska. Ecology of Freshwater Fish 22(2):268–279. https://doi.org/10.1111/eff.12024

Describes the relative importance of salmonids and other prey species to northern pike diets in the Deshka River and Alexander Creek in Southcentral Alaska.

Walrath, J. D., M. C. Quist, and J. A. Firehammer. 2015. Trophic ecology of nonnative northern pike and their effect on conservation of native westslope cutthroat trout. North American Journal of Fisheries Management 35(1):158-177. https://doi.org/10.1080/02755947.2014.970678

Investigates the seasonal food habits of Northern Pike and determines their influence on westslope cutthroat trout in Coeur d'Alene Lake by using a bioenergetics modeling approach.