Outplanting Adult Salmonids

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Abrams, J., and P.F. Hassemer. 2003. Carcass distribution of out-planted and weir-released adult summer Chinook Salmon in the South Fork Salmon River, 1995-1997. Idaho Department of Fish and Game Report 03-43, Boise, Idaho. https://www.fws.gov/sites/default/files/documents/Chinook%20Carcass%20Distribution%20SFSR%201995.pdf

Examines the efficacy of outplanting adult Chinook salmon in the Stolle Meadows area in the upper South Fork Salmon River. Utilizes spawning ground surveys and records the location of recovered female Chinook carcasses to identify spawning locations and establish spawning fidelity for adult release locations.

Baumsteiger, J., D.M. Hand, D.E. Olson, R. Spateholts, G. FitzGerald, and W.R. Ardren. 2008. Use of parentage analysis to determine reproductive success of hatchery-origin spring Chinook Salmon outplanted into Shitike Creek, Oregon. North American Journal of Fisheries Management 28(5): 1472-1485. https://doi.org/10.1577/M07-195.1

Describes the use of genetic parentage analysis to determine reproductive success of hatchery-origin adults into newly-restored Shitike Creek, Oregon between 2002 and 2003. The study finds that outplanted adult hatchery fish taken from localized hatchery stocks can contribute to the overall juvenile production in a natural stream.

Cramer, S. P., N. Ackerman, and K. L. Witty. 2002. Spawning success of hatchery spring Chinook Salmon outplanted as adults in the Clearwater River Basin, Idaho, 2001. Report to Bonneville Power Administration, Portland, Oregon. https://www.cbfish.org/Document.mvc/Viewer/00006602-1

Evaluates spawning distribution, overlap with naturally-arriving spawners, and pre-spawning mortality of spring Chinook salmon outplanted as adults in the Clearwater River Subbasin in 2001.

Evans, M. L., M. A. Johnson, D. Jacobson, J. Wang, M. Hogansen, and K. G. O'Malley. 2015. Evaluating a multi-generational reintroduction program for threatened salmon using genetic parentage analysis. Canadian Journal of Fisheries and Aquatic Sciences 73(5):844-852. https://doi.org/10.1139/cjfas-2015-0317

Utilizes genetic parentage analysis to estimate the fitness of hatchery and wild Chinook salmon reintroduced above Foster Dam on the South Santiam River. Found that individual production of progeny was highly variable and detected a possible trend towards reduced fitness in mate pairs composed of hatchery versus wild salmon.

Keefer M. L., G. A. Taylor, D. F. Garletts, G. A. Gauthier, T. M. Pierce, and C. C. Caudill. 2010 Prespawn mortality in adult spring Chinook salmon outplanted above barrier dams. Ecology of Freshwater Fish 19:361–372. https://doi.org/10.1111/j.1600-0633.2010.00418.x

Examines prespawn mortality patterns using live detection and carcass recovery data for radio-tagged outplants between 2004-2007. Finds overall mortality is strongly condition dependent, consistently higher for females than males and higher for early release groups.

Kock, T. J., J. W. Ferguson, M. L. Keefer, and, C. B. Schreck. 2020. Review of trap-and-haul for managing Pacific salmonids (Oncorhynchus spp.) in impounded river systems. Reviews in Fish Biology and Fisheries 31:53-94. https://doi.org/10.1007/s11160-020-09627-7

Evaluates 17 trap-and-haul programs for Pacific salmon with a focus on facility design, operation, and biological effects. Identifies knowledge gaps and evaluates the practice as a current and future tool for fisheries management.

Kozfkay, C. C., M. Peterson, B. P. Sandford, E. L. Johnson, and P. Kline. 2019. The productivity and viability of Snake River Sockeye Salmon hatchery adults released into Redfish Lake, Idaho. Transactions of the American Fisheries Society 148(2):308-323. https://doi.org/10.1002/tafs.10136

Evaluates eight spawn years to address: metrics for eggs to smolts, smolts per female, and smolt-to-adult returns resulting from recent adult releases, how these numbers compared to historic estimates for Redfish Lake, and whether the combination of smolts per female and SARs result in population replacement.

Liermann, M., G. Press, M. McHenry, J. McMillan, M. Elofson, T. Bennett, and R. Moses. 2017. Relocation in and recolonization of Coho Salmon in two tributaries to the Elwha River: implications for management and monitoring. Transactions of the American Fisheries Society 146(5):955-966. https://doi.org/10.1080/00028487.2017.1317664

Discusses the reintroduction of Coho Salmon to the Indian Creek and Little River tributaries of the Elwha River. Transplantation led to immediate spawning, comparable with other soho salmon populations in the Pacific Northwest.

Matala, A. P., S. R. Narum, B. P. Saluskin, M. V. Johnston, J. E. Newell, D. E. Fast, and P. F. Galbreath. 2018. Early observations from monitoring a reintroduction program: return of Sockeye Salmon to a nursery lake of historical importance. Transactions of the American Fisheries Society 148(2): 271-288. https://doi.org/10.1002/tafs.10133

Covers the Cle Elum Lake reintroduction program's use of two donor stocks of Sockeye Salmon. Utilizes genetic stock identification to differentiate and assess the success of the two donor stocks: Osoyoos Lake and Lake Wenatchee from 2010 to 2012.

Naughton, G. P., M. L. Keefer, T. S. Clabough, M. J. Knoff, T. J. Blubaugh, M. R. Morasch, C. S. Sharpe, and C. C. Caudill. 2023. Prespawn mortality of spring chinook salmon in three Willamette River populations. North American Journal of Fisheries Management 43(3):715–729. https://doi.org/10.1002/nafm.10887

Examines incidence of pre-spawn mortality for Chinook salmon in the Willamette River basin among salmon that were transported and released upstream of dams on three tributaries. Aims to assess reasons for prespawn mortality, better understand the role of water temperatures in prespawn mortality, and test for associations between salmon traits and prespawn mortality.

Nuetzel, H. M., P. F. Galbreath, B. A. Staton, C. A. Crump, L. M. Naylor, and G. E. Shippentower. 2022. Improved productivity of naturalized spring Chinook Salmon following reintroduction from a hatchery stock in Lookingglass Creek, Oregon. Canadian Journal of Fisheries and Aquatic Sciences 80(2):375-392. https://doi.org/10.1139/cjfas-2022-0114

Evaluates reintroduction of Chinook salmon from hatchery stocks to Lookingglass Creek by monitoring the naturalization process. Compares the reproductive success of natural-origin and hatchery-origin salmon.

O'Malley, K. G., M.L. Evans, M. A. Johnson, M. A. Banks, D. Jacobson, and M. Hogansen. 2014. Genetic parentage analysis of spring Chinook salmon on the South Santiam River: insights into population productivity and reintroduction strategies. U.S. Army Corps of Engineers, Portland, Oregon. https://agsci.oregonstate.edu/sites/agscid7/files/south_santiam_2014_genetic_pedigree_report_07_21_14.pdf

Uses genetic parentage analysis to evaluate the contribution of salmon reintroductions to subsequent adult recruitment to the South Santiam River at Foster Dam. Parentage of salmon sampled as carcasses below Foster Dam was also examined to estimate reintroduction program contributions to below-dam recruitment.

O'Malley K. G., A. N. Black, M. A. Johnson, and D. P. Jacobson. 2017. Evaluating spring Chinook Salmon reintroductions above Detroit Dam, on the North Santiam River, using genetic parentage analysis. U.S. Army Corps of Engineers, Portland, Oregon. https://agsci.oregonstate.edu/sites/agscid7/files/omalley_et_al_north_santiam_usace-09-22-17.pdf

Builds off previous work using genetic parentage analysis by assigning the 2015 adult returns to salmon previously outplanted above Detroit Dam. Utilized the updated pedigree to estimate total lifetime fitness and a cohort replacement rate for salmon released above Detroit Dam.

O'Malley, K. G., S. Bohn, and C. K. Fitzpatrick. 2021. Adult salmonid trap and transport success above dams. U.S. Army Corps of Engineers, Portland, Oregon. https://agsci.oregonstate.edu/sites/agscid7/files/assets/omalley_ns_uwr_dec_2021_report122321.pdf

Documents the creation and maintenance of a tissue sample archive that will permit future studies to determine the number and proportion of ummarked, presumed natural-origin adult spring Chinook salmon, sampled at various locations in the Upper Willamette River Watershed. Also aims to estimate the total lifetime fitness and cohort replacement rate for adult spring Chinook salmon and evaluate the relative success of alternate reintroduction strategies.

O'Malley K. G., D. I. Dayan, C. K. Fitzpatrick, S. Bohn, and G. A. Grenbemer. 2023. Evaluating spring Chinook Salmon reintroductions above Detroit Dam and below Big Cliff Dam, on the North Santiam River, using genetic parentage analysis. U.S. Army Corps of Engineers, Portland, Oregon. https://agsci.oregonstate.edu/sites/agscid7/files/assets/omalley_et_al.2023_nsnt_chinook.pdf

Utilizes genetic parentage analysis to analyze the contribution of Chinook salmon outplants to subsequent natural-origin recruitment on the North Santiam River. Examines this recruitment above the Detroit Dam, and below the Big Cliff Dam.

Sankovich, P., and P. F. Hassemer. 1999. Spawning distribution of outplanted adult summer Chinook Salmon in the South Fork Salmon River, 1992-1994. Idaho Department of Fish and Game, Report 99-04, Nampa, Idaho. https://www.fws.gov/sites/default/files/documents/Spawning%20Dist.%20of%20Outplanted%20Adult%20Summer%20Chinook%20Salmon%201992.pdf

Studies the spawning distributions of Chinook Salmon outplanted in the Stolle Meadows reach of the South Fork Salmon River between 1992-1994. Finds the majority of outplanted salmon remain close to the release site.

Sard, N. M., K. G. O'Malley, D. P. Jacobson, M. J. Hogansen, M. A. Johnson, and M. A. Banks. 2015.

Factors influencing spawner success in a spring Chinook salmon (*Oncorhynchus tshawytscha*) reintroduction program. Canadian Journal of Fisheries and Aquatic Sciences 72(2):1390-1397. https://doi.org/10.1139/cjfas-2015-0007

Uses genetic parentage analysis to evaluate the efficacy of trap-and-haul practices in reintroducing adult Chinook Salmon above Cougar Dam on the South Fork McKenzie River, Oregon.

Stark, E.J., E. J. Atkinson, and C. C. Kozfkay. 2014. Captive rearing for Chinook Salmon (*Oncorhynchus tshawytscha*) and Atlantic salmon (*Salmo salar*): the Idaho and Maine experiences. Reviews in Fish Biology and Fisheries 24(3):849-880. https://doi.org/10.1007/s11160-014-9346-x

Evaluates the effectiveness of captive rearing programs in Idaho and Maine. Examines habitat selection, courting, and spawn timing. Notes similar behaviors between wild and hatchery-raised stocks in terms of habitat selection, courting, and spawn timing.